

History of Erson Cams



In 1964, armed with a tremendous wealth of knowledge and a single cam-grinding machine, Sig Erson Racing Camshafts was born. The goal: To produce the best possible camshafts for all types of racing. The first Erson facility was a small 1600 square foot truck repair shop in Hawthorne, California. Meager beginnings for what Erson Cams was to become.

With no budget for advertising or even state of the art machinery (lobe models and masters were often hand ground) Sig Erson Racing Camshafts quickly gained a huge following in both racing and the burgeoning hot rod scene of the 60's and 70's. It was simple, if you wanted an engine that made incredible power yet was easy on valve train parts, an Erson Cam was your only choice.

Sig Erson Racing Camshafts quickly outgrew the Hawthorne Facility and moved, in 1967 to a 4000 sq ft facility in Long Beach, California. In 1969, Mr. Erson and his crew of 10 full time cam grinders, moved yet again to a 10,000 sq ft building. At the time it was the largest facility in the country dedicated to state of the art camshaft development and grinding. In 1981 Super Shops Inc purchased Sig Erson Racing Camshafts. The name was changed to Erson Cams and the company was relocated to Carson City, Nevada.

In 1987, Steve Tanzi joined the Erson staff and Erson Cams popularity increased exponentially. Erson Camshafts have powered motor sport racings greats to some impressive milestones:

- Eddie Hill: The first Top Fuel Dragster to break the four-second barrier.**
- Chuck Etchells: The first Top Fuel Funny Car to break the four-second barrier.**
- Jim Epler: The first Top Fuel Funny Car to run 300 mph.**
- John Force: Thirteen NHRA Championships, and 100+ National Event wins with Erson Cams.**
- Tony Pedregon: 2007 NHRA Funny Car World Champion and ET record holder**
- Countless land speed records at both El Mirage and Bonneville Salt Flats.**
- Circle Track Dirt and Asphalt Erson powers many prominent race teams.**

1997 marked the beginnings of dark times with Super Shops Inc. going bankrupt. Erson Cams and its sister company Mallory Electric, were purchased by a succession of owners: Echlin, Dana and finally Mr. Gasket. Despite the lack of ownership support, Erson Cams persevered, continuing to develop new product lines such as the FSP Valve Springs, FE Ford, Chrysler Shaft Mount Billet Rocker Arms and continued the development of camshafts.

In 2006 Erson Cams was purchased by Engine Parts Warehouse, Inc./PBM Performance Products of Louisville, KY. With the merger of Erson Cams and PBM Performance Products a complete line of valve train and related components was developed. This new product line offers state of the art valve train systems to complete race and performance engine packages.

Erson Cams has moved to a new 30,000 sq ft facility in Carson City, Nevada. Erson Cams under the new ownership has developed over 100 new cam lobe profiles to satisfy the needs of the modern market from hydraulic roller 4-7 swap camshafts to new fuel profiles that are setting NHRA records.

- The FXR Series of flat tappet camshafts have become the engine builder's favorite.**
- The Energy Series camshafts, big power cams that any racing budget can afford.**
- The 422 series of solid roller lobes, setting new track records throughout the country.**
- LS1 specific .365" roller hydraulic racing lobes.**
- New F.S.P. series springs. Both new dimensions and further development on the most consistent and most durable valve spring the racing world has ever seen.**

The Erson staff are constantly working directly with professional race teams and engine builders to bring our customers the latest and most powerful camshafts in the industry through innovation and cutting edge technology.

Erson Cams: Over 40 Years of Power and Excellence.

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First To The Finish Line



Over 80% of the camshafts now sold in the high performance aftermarket are for late model, low compression engines. Traditional high performance camshafts are totally unsuited for these engines. They kill low-end power, waste fuel and idle poorly.

Erson Cams has devoted thousands of hours to developing and testing camshafts specifically for the low compression engines and low octane fuels of the 1990s.

These camshaft designs feature minimum duration with maximum opening velocity and lift. Valve timing is altered to produce high cylinder pressure and to keep heat in the combustion chamber. Intake opening and exhaust closing points are tailored to eliminate fuel loss during the overlap period.

The following camshaft series incorporates all the performance building, fuel saving technology developed in our testing programs and are available only from Erson Cams.

THE RV CAM

The RV camshaft was originated by Erson Cams in 1972. Originally designed for use in heavy vehicle and towing applications, these camshafts have proven to be the perfect answer for late model, low compression engines, and are now used primarily in passenger cars, station wagons and light utility vehicles.

RV Cams are suitable for use in otherwise stock low compression engines. Usable power is increased between 1500 and 5000 (depending on application). These camshafts have a smooth idle, excellent throttle response and acceleration, plus good fuel efficiency. For the best possible performance, the engine should be equipped with headers, a free-flow exhaust system, a small 4-barrel carburetor and a re-curved ignition system.

These camshafts are ideal for sedans, station wagons, pickups, vans and motor homes. Suitable for over-the-road driving, trailer towing, etc. Idle is smooth and standard gearing is satisfactory.

RV Cams are available for all late model American passenger car and light truck engines in hydraulic or mechanical designs.

THE M/P CAM

The M/P Cam has sufficient duration and special valve timing to bleed off enough compression at low RPM to prevent pre-ignition, plus deliver good mid-range power. It will also pull strong up to 5500/6000 RPM. The idle is fairly smooth and throttle response is good.

When installing an M/P Cam, it will be necessary to re-curve the ignition. The curve must be tailored to advance smoothly to full advance at 3000/3500 RPM. Vacuum advance should be provided to enhance gas mileage at part-throttle cruise. The existing carburetor or fuel injection system should be leaned out.

It will take careful tuning, but acceptable performance, plus greatly improved mileage can be expected from a high performance, high compression engine.

THE TQ CAM

Erson TQ Cams have undergone extensive testing during the past three decades and offer a big potential for performance improvement in a well set-up low compression engine.

TQ Cams feature computer designed profiles incorporating short, fast opening ramps and maximum open velocity. Closing velocity is lower than opening and the closing ramp is slower and longer. This type design allows the engine to deliver good RPM and great power, without sacrificing idle characteristics, low-end power and throttle response. Lobe placement and camshaft phasing have been altered to maintain high cylinder pressure with low compression ratios.

TQ Cams maintain good low and mid-range power and good idle characteristics, while producing good, usable power up to 5500/6000 RPM, depending on engine displacement and other performance equipment installed.

TQ Cams should be used in engines with headers, a free-flow exhaust system and a good intake system with a small, 4-barrel carburetor. Distributor mechanical advance should be shortened to provide more low RPM advance. Standard gearing can be retained, but a lower gear ratio is beneficial to take advantage of the higher RPM potential.

TQ Cams are available for all late model American passenger car and light truck engines for use with hydraulic or mechanical tappets.

THE HIGH-FLOW CAM

The High-Flow series of high performance camshafts are computer designed short duration, maximum lift camshafts for fully modified, late model engines with compression ratios of 8:1 up to 10.5:1.

High-Flow Cams feature the highest possible lift with the shortest practical duration to produce good usable low-end power and excellent high RPM performance without wasting fuel.

For best results, engines should have a good high performance intake and exhaust system, modified ignition and lower gear ratio.

Due to their broad power range and good revving ability, the High-Flow Cams have proven to be consistent E.T. Bracket winners.

High-Flow Cams are available for all late model, American passenger car engines in hydraulic or mechanical designs.

First To The Finish Line



THE BLOWER CAM

Erson Cams, one of the industry's leaders in camshaft design technology, is proud to introduce its new line of Blower Cams for the high performance enthusiast. Camshaft profiles, ranging in performance and application from the smaller, roots-style superchargers; all the way up to the larger, more performance-oriented blowers of the family--not excluding Paxton or Vortex style Superchargers.

As we are all aware, every engine combination is different, however, basic engine requirements still remain the same. Blower Cams are not exception to the rule. They have certain design characteristics that allow the supercharged engine builder to achieve the expected results he or she is striving for. These designs have been developed over many years of research at dyno facilities all over the country. That's why Erson feels confident to offer these profiles as some of the best, most competitive performance street blower grinds in the country!

THE JB CAM

The JB Cams were developed to compliment the unique characteristics of jet boats. The jet unit has a power absorption curve similar in shape to the power output curve of an engine, except at the top-end where the impeller power absorption curve becomes very steep. The RPM, where the power developed curve crosses the power absorbed curve, is the absolute maximum RPM the unit can turn. The spread between the curves is excess power and translates into acceleration.

All JB Cams are developed to compliment the unusual shaped power absorption curve of the impeller. These designs produce power over a broad range and provide excellent acceleration if properly matched to the impeller curve.

A special JB Cam can be produced for any modern OHV American production engine. Call our technical department to order one.

THE OVAL TRACK CAM

Erson Cams has an ongoing program testing oval track cams on the dyno and at the track. Cams for all types of cars, from Hobby Class to "alky" burning Outlaw Sprints are constantly evaluated and refined to produce the best cam available.

This catalog lists oval track cams for most popular engines. These cams were selected from our testing program and are proven performers. We realize it is impossible to list a satisfactory oval track cam for every engine combination run under the various sanctions around the country. We encourage our customers to work closely with our Technical Department when ordering an oval track cam.

Erson Cams will custom grind a cam for your application. We will choose from our vast selection of Masters, the correct intake and exhaust profile, special lobe center, cam phasing, etc. to fit your needs.

THE ROLLER TAPPET CAM

Roller Tappet Cams, when not banned by the governing body, are the way to go for the most serious racing application. Roller Tappet designs produce more power over a broader range than any comparable tappet combination due to the high tappet velocity possible. They also provide good durability in most applications.

We do not stock Roller Tappet Cams. Each cam is custom ground to order. Take advantage of this service, work with our Technical Department! You will receive a custom ground cam with the features best suited to your application.



Warranty and Sales Policies



LIMITED WARRANTY

Erson Cams/PBM Performance Products warrants that all of its products are free from defects in material and workmanship, and against excessive wear for a period of 12 months from date of purchase. This **limited warranty** shall cover only the original purchaser. This warranty is valid on camshafts only where new lifters and proper valve springs are used, such as those found in our recommended matched components and cam kits. All flat tappet camshafts should use Erson Assembly Paste E911001 and E911000 4 oz Break-In Additive to engine oil to prevent premature scuffing of lifter face and cam lobe.

Erson Cams/PBM Performance Products's obligation under this warranty is limited to the repair or replacement of its product. To make a warranty claim, the part must be returned within one year of purchase to the address listed below, freight prepaid. Items covered under warranty will be returned to you freight collect.

Erson Cams Warranty Department
7301 Global Drive Louisville KY. 40258

It is the responsibility of the installer to ensure that all of the components are correct before installation. Proper assembly always requires that the installer measure all tolerances for proper clearance. We assume no liability for any errors made in tolerances, component selection, or installation.

There is absolutely no warranty on the following:

- 1) Any parts used in racing applications
- 2) Any product that has been physically altered, improperly installed or maintained;
- 3) Any product used in improper applications, abused, or not used in conjunction with the proper parts.

There are no implied warranties of merchantability or fitness for a particular purpose. There are no warranties, which extend beyond the description of the face hereof. Erson Cams/PBM Performance Products will not be responsible for incidental and consequential damages, property damage or personal injury damages to the extent permitted by law. Where required by law, implied warranties of merchantability and fitness are limited for a term of one (1) year from the date of original purchase.

This limited warranty gives you specific legal rights and you may also have other legal rights, which vary from state to state.

SALES AND ORDERING POLICY

We encourage customers to contact Erson technical department before making a camshaft selection. New products and profiles are developed continuously and our technical staff will be pleased to help keep you on top of the latest trends.

No merchandise should be returned to the factory for warranty or exchange without first contacting the factory for authorization and a RGA number. All returned merchandise should be sent attention Customer Service Department with complete details and instructions regarding the merchandise and any problem encountered.

All return shipments must be sent freight prepaid insured, as we will not accept collect shipments. Be sure to include your return address. Erson Cams/PBM reserves the right to change specifications, designs, materials and prices listed in this catalog at our discretion. Every effort has been made to guarantee all information in this catalog is correct. We cannot be responsible for typographical errors in specifications or prices. For Erson Cam Technical information call (775)246-4062 Monday through Friday, 7:00 AM to 5:00 PM P.S.T.

IMPORTANT NOTICE

This catalog has been completed using our best efforts. We assume no liability for errors contained herein. The catalog on our website is updated on a regular basis and should be used to supplement the information contained herein.

It is the responsibility of the installer

Prices on all products are subject to change without

notice. We reserve the right to make changes in products at any time.

Technical Information



Camshafts

Camshafts are interchangeable between all years and engine sizes. All factory cams are standard hydraulic types. Erson Cams offer hydraulic and solid lifter cams. Roller camshafts are available special order.

Springs, Retainers and Locks

Do not use the stock springs, retainers and locks with any type of performance cam. Erson/PBM offers performance components that can be used with the stock 3/8" diameter stem valves.

Some 1973-74 AMC V8 heads use 11/32" stem exhaust valves. Different retainers and locks are required for the different size. Some 1978-79 AMC heads came from the factory with a shorter installed spring height. Different springs and/or retainers may be required for these as well.

Valves, Guides and Seals

For serious performance applications, we recommend replacing the stock 3/8" stem valves with 11/32" stem stainless valves. Bronze guides must be installed in the heads to accept 11/32" stem valves. Stock length Chevrolet small block valves (which are the same length as most AMC valves) can be used.

With the correct springs and retainers, camshafts with a valve lift of .700" can be accommodated. Camshafts with a lift higher than .700" may require valves .100" longer than stock (which are readily available for Chevrolet small block). 290 and 304 engines can use up to 1.94" diameter intake valves and 1.50" exhaust valves. 343 and larger engines can use up to 2.10" intake valves and 1.75" exhaust valves.

No matter what combination of valve stem diameter, retainer or seal you decide to use in your AMC engine be sure to check the retainer to valve guide seal or to valve guide clearance. Erson Cams recommends .150" at T.D.C. of the lobe checked with the proper length pushrod.

Distributor Drive Gears

AMC V8 engines are unique in that they have a removable distributor drive gear that is keyed to the camshaft.

NOTE: Only prematched gears which are in good condition are to be reused or new distributor drive gears are to be installed and broken-in together. Under no circumstances should an old gear be mated to a new gear.

Lifters

PBM/Erson offers high-performance hydraulic and solid lifters for all AMC V8 engines. Changing from a hydraulic cam to solid (or vice versa) will require a change in pushrod length.

Valve Timing

Erson Cams recommends that whenever possible you should phase or time your camshaft to the crankshaft known as degreeing the cam. Just as an engine runs poorly when ignition timing is not set properly, inaccurate valve timing can cause the following symptoms: sluggish performance, low vacuum, poor mileage, detonation overheating and in extreme circumstances mechanical failure. If you are unsure of how to degree a camshaft or simply do not have the tools, pay a professional engine builder to do it---***it's worth the price.***

Pushrods and Rocker Arms

Do not use the factory pushrods with performance camshafts or springs. Doing so might break off the ball type ends.

The ideal length of a pushrod depends on many variables. However, in most cases where stock length valves are used, standard length Chevrolet small block pushrods will work with hydraulic camshafts. Standard length Ford 351W pushrods will usually work with solid lifter camshafts. PBM/Erson offers both of these pushrods in standard and heat-treated for use with guideplates.

1966-73 AMC engines were supplied from the factory with screw-in studs and stamped steel, non-adjustable rocker arms. However, they can be made adjustable by replacing the stock studs and nuts with 3/8" Chevrolet small block studs and locking nuts available from PBM/Erson. Adjustable rockers are required for solid lifter camshafts, and sometimes necessary for high-performance hydraulic camshafts.

The stock rocker arms should not be used with valve lift higher than .510" or spring loads more than 300 lbs, even if they are adjustable. PBM/Erson offers forged and billet aluminum roller rocker arms for AMC V8 in 1.6 and 1.7 ratios. 1.7 ratio rockers may require elongation of the hole in the head for pushrod clearance. PBM/Erson roller rockers are available for use with 3/8" or 7/16" studs. Both stud sizes are available from PBM/Erson. 7/16" studs are recommended for valve lifts higher than .550" and spring loads more than 350 lbs.

We recommend the use of hardened pushrods and guideplates when using roller rocker arms.

1974-91 AMC V8 engines were supplied with pedestal-bridge type rocker arms from the factory. These rockers are non-adjustable and can only be used with hydraulic camshafts with .510" maximum valve lift. They may also require special length pushrods to get the proper lifter pre-load.

To install earlier style adjustable rockers or PBM/Erson roller rockers, the heads must be machined to allow the installation of screw-in studs. Guideplates and hardened pushrods must be used with adjustable/roller rockers on 1974-91 AMC heads.

Energy Plus Series



AMERICAN MOTORS 1966-92 290/304/343/360/390/401 cubic inch V8

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000 Notes a, c	E710010	IN 250° EX 260°	184° 194°	.392" .424"	110°	5°	.000" .000"
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1200-4000 Notes a, c	E710012	IN 270° EX 280°	204° 214°	.448" .472"	110°	5°	.000" .000"
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Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800 Note c	E710014	IN 288° EX 288°	218° 218°	.474" .475"	112°	5°	.000" .000"
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2000-4800 Notes a, c	E710016	IN 284° EX 284°	218° 218°	.488" .488"	110°	5°	.000" .000"
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2000-4800 Note c	E710018	IN 304° EX 304°	218° 218°	.478" .478"	114°	0°	.000" .000"
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Eliminator Hydraulic

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Good mid to high rpm torque and horsepower. For use with manual transmission or high stall automatic. Will have lower vacuum than stock.

2200-5400 Notes a, c	E710020	IN 300° EX 310°	234° 244°	.520" .544"	112°	5°	.000" .000"
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NOTES:

- a) Preferred latest computer design concepts in each application.
- c) This cam may require conversion to an adjustable valve train.

These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.

Energy Plus Series



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3325	504S	206	HA2011	1601-8	N/A	7600
3325	504S	206	HA2011	1601-8	N/A	7600
3325	504S	206	HA2011	1601-8	N/A	7600
3325	504S	206	HA2011	1601-8	N/A	7600
3325	504S	206	HA2011	1601-8	N/A	7600
3325	504S	206	HA2011	1601-8	N/A	7600

Erson Break-In & Oil Additive



Erson's Break-In and Oil Additive with ZDDP is the best insurance for your new performance engine or classic car with flat tappet lifters and camshaft.

- Safe, proven ZDDP EP agent takes the worry out of using new oil formulas in engine that have flat tappet camshafts and lifters.
- Turns modern SM quality oil into the ideal oil for superior break-in and everyday use for superior protection.
- Compatible with ALL high-quality oils, standard or synthetic.
You choose your preferred oil.
- One 4 oz. bottle of Erson's ZDDPlus™ per oil change with SM oil is more economical than 5 quarts of exotic oil.
- Erson with ZDDP is economical and provides the protection required for high performance engines. Great for every oil change.

Part # E911000- Erson's Break-In Oil Additive 4 oz.
Part # E911001- Erson's Assembly Paste with ZDDP

Hydraulic Flat Tappet Camshafts



AMC/JEEP® INLINE 6 CYLINDER 1964-97 199-258 CID ENGINES 1.6:1 STOCK ROCKER RATIO

PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Excellent replacement cam for stock engines improve low end torque without sacrificing driveability/mileage. Works with stock gearing.	1000-4000	E720111 RV5H	IN 274° EX 280° 202° 208°	.437" .448"	110°	4°	.000" .000"
Improved low end torque and mid-range hp with minor modifications. Works best with 8.5-9.5:1 compression using headers and/or free flowing exhaust system. Great for low range or towing light to mod loads.	1500-4500	E720112 RV12H	IN 280° EX 288° 208° 214°	.448" .458"	112°	4°	.000" .000"
The "Performer" . Street performance at its best. Increased torque and great mid-range performance when installed in slightly modified engines. Fair idle.	2000-5000	E723121 TQ20H	IN 292° EX 292° 214° 214°	.478" .478"	112°	4°	.000" .000"
One of Erson's premier profiles. High-lift, short duration, single pattern camshaft delivers greater mid-range torque and top end hp. No less than 9.5:1 compression, aluminum after-market intake, 500 cfm 2 barrel or 390 cfm 4 barrel and headers for best results.	2500-5500	E720321 Hi Flow AH	IN 284° EX 284° 220° 220°	.504" .504"	110°	4°	.000" .000"

AMC V8 1966-91 290-401 CID ENGINES

PROFERAL BILLET
1.6:1 STOCK ROCKER RATIO

The "Commuter" . Excellent replacement camshaft for stock vehicles to improve low end torque and driveability. Compatible with stock compression, torque converter and gearing. Good idle.	1000-4000	E710112 RV12H	IN 280° EX 288° 208° 214°	.448" .458"	110°	0°	.000" .000"
The "Performer" . Erson's most popular grind for improving all around street performance with minor modifications. A 600 cfm 4 barrel and free flowing dual exhaust system increases low end torque and mid-range hp. OK with stock converter.	1500-4500	E710121 TQ20H	IN 292° EX 292° 214° 214°	.478" .478"	111°	4°	.000" .000"
High-lift, short duration, dual pattern offers great mid-range in slightly modified engines with no less than 9.0:1 compression. Use good dual plane intake, 4 barrel carburetor and header for best results. Automatic cars advance cam 4°.	2200-5500	E710321 TQ40H	IN 284° EX 296° 220° 228°	.504" .504"	110°	0°	.000" .000"
High performance street seeking increased mid-range and top end performance from modified 360-401 CID engines. Use no less than 9.5:1 compression, torker style intake, up to 750 cfm 4 barrel and headers to complete package.	3000-6300	E710421 Hi Flow I H	IN 296° EX 296° 228° 228°	.504" .504"	108°	0°	.000" .000"
Hot Street/E.T. Brackets. Recommended for 390-413 CID engines with no less than 10.5:1 compression. Use modified cylinder heads, single plane intake, 750 cfm 4 barrel and headers for increased upper mid-range torque and top end hp. Automatic cars use 3,500 RPM converter. OK with nitrous oxide.	3500-6800	E710621 Hi Flow IV H	IN 312° EX 320° 248° 256°	.536" .552"	110°	4°	.000" .000"

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3100	504S	206	HA2011	N/A	N/A	T3035
3100	504S	206	HA2011	N/A	N/A	T3035
3100	504S	206	HA2011	N/A	N/A	T3035
3100	504S	206	HA2011	N/A	N/A	T3035
3100	504S	206	HA2011	1601-8	N/A	7600
3100	504S	206	HA2011	1601-8	N/A	7600
3100	504S	206	HA2011	1601-8	N/A	7600
3100	504S	206	HA2011	1601-8	N/A	7600
3100	504S	206	HA2011	1601-8	N/A	7600

Hydraulic Flat Tappet Camshafts



AMC V8 1966-91 290-401 CID ENGINES

1.6:1 STOCK ROCKER RATIO
PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Excellent entry level cam for high-performance street seeking strong mid-range power. 360-401 CID engines need 10.5:1 compression and aftermarket intake/exhaust systems for best results. 4-speed manual transmission or automatics with 2500-3000 RPM converter recommended.	3000-6500	E710501 Hi Flow AM	IN 286° EX 294°	242° 246°	.544" .544"	108°	0° .022" .022"
Pro Street/E.T. Brackets. 390-401 CID with 10.5-11.5:1 compression need modified cylinder heads, matched to a single plane intake, 750 cfm 4 barrel, 1.750" primary tube headers and 3" exhaust for best results. 2800-3400 lb automatic cars use 3500 RPM converter, 28" tire and 4.56 gear.	3500-7000	E710502 F-296-I	IN 296° EX 302°	258° 264°	.600" .600"	108°	2° .028" .030"
E.T. Brackets, 2600-3200 lb Javelins, AMXs, Gremlins, etc. using 390-413 CID engines need 11.5:1 compression resulting in consistent, reliable top end power. Compatible in 4 speed or automatic with 4500 RPM converter.	4000-7500	E710503 F-306-1A	IN 306° EX 314°	268° 276°	.600" .600"	108°	0° .028" .030"

NOTE--

It may be necessary to machine spring seat on some AMC/Jeep cylinder heads. For information regarding this procedure, call Erson's Technical Service Team at 775-882-1622.

NOTE--

For engines with non-adjustable valvetrains, it may be necessary to shim the rocker arm bridges to eliminate excessive hydraulic lifter pre-load.

TECH TIP--

Most American production engines cannot accept more than .500" lift without modifying the valve guides. When installing a cam with more than .500" lift, it is absolutely essential that clearance between the valve spring retainer and guide be checked. Do not attempt to operate an engine with less than .150" retainer-to-guide clearance. If you are using valve seals, check the clearance from the top of the seal rather than the top of the guide.

When using a flat tappet camshaft and high pressure valve springs with more than 130 lbs. of seat lead or 330 lbs. of nose load, Erson Cams requires a 30 minute break-in period using only the outer springs. Install the inner spring only after the break-in period. Following this procedure will greatly reduce the chance of camshaft or lifter failure.

When installing a hydraulic lifter racing cam in an engine that does not have adjustable rocker arms, care must be taken to ensure that the lifter is still able to adjust itself. If the cam has more than .500" valve lift, or if the heads or block have been milled excessively, the engine must be converted to adjustable rockers or adjustable pushrods.

We recommend that all competition roller camshafts be ordered directly through our Technical Department. By doing so, you will have access to our entire profile selection. You can select any combination of profiles and lobe centers. We will custom grind camshafts with dual patterns, special base circle sizes, etc.

For questions regarding the selection and/or installation of Erson Cams products, contact Erson's Technical Service Team at 775-882-1622.

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3300	506	204	HA2011	N/A	N/A	7600
3300	506	204	HA2011	N/A	N/A	7600
3300	506	204	HA2011	N/A	N/A	7600



1971 AMC Javelin SST



BUICK 1978-87 181/196/231/252 cubic inch V6 (even Fire w/integral dist. drive gear)

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000 Note a	E670010	IN 260° EX 270°	194° 204°	.424" .448"	114°	5°	.000" .000"
1200-4000 Note a	E670012	IN 270° EX 280°	204° 214°	.448" .472"	112°	5°	.000" .000"

Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800 Note a	E670014	IN 280° EX 290°	214° 224°	.472" .496"	112°	5°	.000" .000"
2000-4800 Note a	E670016	IN 290° EX 290°	224° 224°	.496" .496"	112°	5°	.000" .000"

Eliminator Hydraulic

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Good mid to high rpm torque and horsepower. For use with manual transmission or high stall automatic. Will have lower vacuum than stock.

2200-5600 Notes a, c	E670018	IN 300° EX 310°	234° 244°	.520" .544"	112°	5°	.000" .000"
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BUICK 1967-76 400/430/455 cubic inch V8

Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800 Note a	E630010	IN 280° EX 290°	214° 224°	.469" .493"	112°	5°	.000" .000"
2000-4800 Note a, c	E630012	IN 290° EX 300°	224° 234°	.493" .517"	112°	5°	.000" .000"

NOTES:

a) Preferred latest computer design concepts in each application.

c) This cam may require conversion to an adjustable valve train.

These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3000	501S	205	HA969	N/A	N/A	7500
3000	501S	205	HA969	N/A	N/A	7500
3000	501S	205	HA969	N/A	N/A	7500
3000	501S	205	HA969	N/A	N/A	7500
3200* <small>*Needs added installed height</small>	501S	205	HA969	N/A	N/A	7500
3100	504S	N/A	HA969	N/A	N/A	8540
3100	504S	N/A	HA969	N/A	N/A	8540

Hydraulic Camshafts



BUICK/JEEP® V6 1975-77 231 CID DAUNTLESS ODDFIRE ENGINES

1.53:1 STOCK ROCKER RATIO
PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Excellent camshaft for early Jeeps wishing to improve low end torque and hp. Great for rock crawling/open road driving. Good idle.	800-4000	E690111 RV5H	IN 274° EX 280° 202° 208°	.418" .428"	108°	0°	.000" .000"
Super low end torque with improved mid-range performance. Great on-/off-road driveability in slightly modified engines. Good idle.	1500-4700	E690112 RV12H	IN 280° EX 288° 208° 214°	.428" .438"	110°	4°	.000" .000"
Jeeps seeking strong low end and controllable mid-range power look no further. Should have 8.5-9.5:1 compression with headers and free flowing exhaust for best results.	2000-5200	E690201 RV15H	IN 288° EX 288° 214° 214°	.438" .438"	110°	4°	.000" .000"

HYDRAULIC FLAT TAPPET CAMSHAFTS

BUICK V6 1977 1/2-88 196-231-252 CID EVENFIRE ENGINES

1.55:1 STOCK ROCKER RATIO
PROFERAL BILLET

Excellent replacement camshaft to improve low end performance and driveability. Compatible with stock compression, torque converter and gearing. Approved for use with turbochargers. Good idle.	1000-4000	E670131 RV5H	IN 274° EX 274° 202° 202°	.423" .423"	110°	4°	.000" .000"
Designed to improve low end torque and mid-range performance. Great open road driveability and fuel efficiency. Naturally aspirated engines need free flowing dual exhaust system for best results. Enhances turbo charger performance with minimal effort.	1500-4800	E670101 RV10H	IN 280° EX 280° 208° 208°	.434" .434"	111°	4°	.000" .000"
The "Performer" . Erson's most popular Buick Grand National camshaft. Noticeable increase in mid-range performance in both acceleration and turbo response time. May require fuel system modifications for best results.	2000-5400	E670121 TQ20H	IN 292° EX 292° 214° 214°	.463" .463"	111°	4°	.000" .000"
Naturally aspirated or turbo charged street machines seeking improved mid-range torque and top end hp look no further. Prefers 4 or 5 speed manual transmission and mid-3 series gearing for both results.	2500-5800	E670321 Hi Flow AH	IN 284° EX 284° 220° 220°	.488" .488"	112°	4°	.000" .000"

CAUTION: Do not attempt to operate an engine with less than .150" retainer-to-guide clearance. If you are using valve seals, check the clearance from the top of the seal rather than the top of the guide.

CAUTION: Due to the unusual chamber design in the Buick cylinder head, valve-to-piston interference is always a problem. We recommend checking clearance on any camshaft of 290 degrees of duration or more.

WARNING---Some early Buick engines used 11/32" valve stems with 11° steel retainers. Only use matched components. Failure to do so may result in serious engine damage.

Hydraulic Camshafts

MATCHED COMPONENTS



VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3000	501S	205	HA969	N/A	N/A	7500
3000	501S	205	HA969	N/A	N/A	7500
3000	501S	205	HA969	N/A	N/A	7500
3000	501S	205	HA969	N/A	N/A	7500
3000	501S	205	HA969	N/A	N/A	7500
3000	501S	205	HA969	N/A	N/A	7500
3000	501S	205	HA969	N/A	N/A	7500

Hydraulic Flat Tappet Camshafts



BUICK V8 "EARLY" 1961-67/ROVER 1968-94

1961-67 BUICK 215-300-340 CID ENGINES
1968-94 ROVER 215/3.5L 240/3.9L 256/4.2L ENGINES

1.6:1 STOCK ROCKER RATIO

CAM APPLICATIONS BASIC RPM RANGE PART NO. GRIND NO. DURATION ADV @.050 GROSS LIFT LOBE CENTER ADV VALVE LASH

Excellent replacement camshaft for vehicles seeking improved low end performance. No modifications necessary. Compatible with stock compression and gearing. Good idle.	1000-4000	E640111 RV5H	IN 274° EX 280°	202° 208°	.437" .448"	110°	4°	.000" .000"
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Rovers and TR-8s with lightly modified cylinder heads, aftermarket aluminum intake and free flowing dual exhaust system increases low end torque and mid-range hp. Fair idle.	1500-4500	E640201 RV15H	IN 288° EX 288°	214° 214°	.458" .458"	111°	4°	.000" .000"
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The "Performer" . Broader power and more mid-range performance from modified engines. 4 or 5 speed manual transmission and low gears deliver best results. Noticeable idle.	2000-5000	E643121 TQ20H	IN 292° EX 292°	214° 214°	.478" .478"	112°	5°	.000" .000"
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BUICK 1968-80 350 CID "H", "J" SERIES ENGINES

PROFERAL BILLET
1.6:1 STOCK ROCKER RATIO

Broad power range, City and Expressway driving, towing. Cars, heavier rigs. Good idle, response and high fuel efficiency.	1000-4000	E650101 RV10H	IN 280° EX 280°	208° 208°	.448" .448"	111°	4°	.000" .000"
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Excellent choice for increasing low end torque and mid-range hp. Compatible with up to 9.5:1 compression, single 4 barrel and free flowing exhaust system. OK with stock converter, gearing and headers recommended.	1200-4500	E650011 MP1	IN 280° EX 292°	208° 214°	.448" .478"	114°	6°	.000" .000"
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The "Performer" . Super low- and mid-range power. Good idle, fuel efficiency and driveability. 4-barrel and headers recommended.	1500-4700	E653121 TQ20H	IN 292° EX 292°	214° 214°	.478" .478"	111°	4°	.000" .000"
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High-lift, short duration dual pattern camshaft builds excellent mid-range torque with minor modifications. Should have after-market aluminum dual plane intake, 600 cfm 4-barrel and headers for best results.	2000-5000	E650321 TQ40H	IN 284° EX 296°	220° 228°	.504" .504"	110°	4°	.000" .000"
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Strong mid-range power plus good RPM potential, broad power range. Rough idle.	2500-5500	E650231 Hi Flow 1H	IN 296° EX 296°	228° 228°	.504" .504"	108°	0°	.000" .000"
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TECH TIP:

When installing these cams, valve-to-piston clearance must be checked as there is a possibility of valve-to-piston interference. We recommend .080" intake and .100" exhaust minimum clearance.

WARNING--Some early Buick engines used 11/32" valve stems with 11° steel retainers. Only use matched components. Failure to do so may result in serious engine damage.

CAUTION: Not all optional high-performance parts for early Buick, Oldsmobile and Rover engines are interchangeable. Please call Erson's Technical Service Team at 775-882-1622 for assistance selecting additional components.

NOTE: It may be necessary to use stock OEM style valve locks due to an atypical 11° taper at the retainer.

NOTE: Late Model Buick 350 cubic inch V8 engines have several different valve spring installed heights. The two most common are 1.727" and 1.670" using a 1.300 O.D. spring. For assistance, in selecting these and other Buick valvetrain components, call Erson's Technical Service Team at 775-882-1622.

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
3100	N/A	N/A	HA969*	N/A	N/A	T3003
3100	N/A	N/A	HA969*	N/A	N/A	T3003
3100	N/A	N/A	HA969*	N/A	N/A	T3003
3100	N/A	N/A	HA969*	N/A	N/A	T3003
3100	N/A	N/A	HA969*	N/A	N/A	T3003

*1970-1980

Hydraulic Flat Tappet Camshafts



BUICK 1967-76 400-430-455 CID ENGINES

PROFERAL BILLET
1.6:1 STOCK ROCKER RATIO

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION @.050		GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
The "Performer" . Excellent replacement camshaft for vehicles seeking improved low end and mid-range performance with minor modifications. Compatible with stock compression, torque converter and gearing. Should have free flowing dual exhaust system for best results.	1000-4200	E630121 TQ20H	IN 292° EX 292°	214° 214°	.478" .478"	111°	4°	.000" .000"
Increased low end torque and mid-range HP over a broader RPM range. Good idle and driveability without harming fuel efficiency. OK with stock torque converter, power brakes and mild gearing.	1500-5000	E630021 MP2	IN 292° EX 310°	214° 226°	.478" .493"	114°	4°	.000" .000"
High-lift, short duration dual pattern camshaft offers increased mid-range torque and HP. Vehicles perform best with aftermarket dual plane intake, up to 750 cfm 4-barrel and free flowing exhaust system. Largest cam with stock converter. Fair idle.	2000-5200	E630321 TQ40H	IN 284° EX 296°	220° 228°	.504" .504"	112°	4°	.000" .000"
Excellent choice for mid-'60s, early-'70s Buick muscle cars seeking strong mid-range and top end performance from slightly modified 455 CID engines. Vehicles with 9.5-10.5:1 compression. Performer® style intake, 750 cfm carburetion and 3" diameter free flowing exhaust pull hardest.	2500-6000	E630223 TQ50H	IN 296° EX 306°	228° 235°	.504" .504"	110°	0°	.000" .000"



1970 Buick GS 455

TECH TIP:

When installing a hydraulic lifter racing camshaft in an engine that does not have adjustable rocker arms, care must be taken to ensure that the lifter is still able to adjust itself. If the camshaft has more than .500" valve lift or the heads or block have been milled excessively, the engine must be converted to adjustable rockers or adjustable pushrods.

CAUTION: Due to the unusual chamber design in the Buick cylinder head, valve-to-piston interference is always a problem. We recommend checking clearance on any camshaft of 290 degrees of duration or more.

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3100	504S	N/A	HA969	N/A	N/A	8540
3100	504S	N/A	HA969	N/A	N/A	8540
3100	504S	N/A	HA969	N/A	N/A	8540
3100	504S	N/A	HA969	N/A	N/A	8540



Energy Plus Series



CADILLAC 1968-84 368/425/472/500 cubic inch V8

CAM APPLICATIONS BASIC RPM RANGE PART NO. DURATION ADV @.050 GROSS LIFT LOBE CENTER ADV VALVE LASH

Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800 Notes a, c	E520210	IN 280° 214° EX 284° 218°	.507" .424"	112°	0°	.000" .000"
1200-4000 Notes a, c	E520214	IN 284° 218° EX 298° 228°	.525" .533"	110°	0°	.000"

NOTES:

- a) Preferred latest computer design concepts in each application.
 - c) This cam may require conversion to an adjustable valve train.
- These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.

Hydraulic Flat Tappet Camshafts



CADILLAC 1968-84 V8 368-425-472-500 CID ENGINES

PROFERAL BILLET
1.65:1 STOCK ROCKER RATIO

CAM APPLICATIONS BASIC RPM RANGE PART NO. GRIND NO. DURATION ADV @.050 GROSS LIFT LOBE CENTER ADV VALVE LASH

Excellent replacement cam for stock engines. Builds good power down low. Recommended for towing light to moderate loads. Needs free flowing dual exhaust.	1000-4000	E520101 RV10H	IN 280° 208° EX 280° 208°	.462" .462"	112°	0°	.000" .000"
Excellent choice for trucks, motor homes and heavier rigs with Cadillac powered transplants seeking high low end torque and driveability.	1500-4500	E520201 RV15H	IN 288° 214° EX 292° 214°	.472" .493"	112°	4°	.000" .000"
Entry level performance grind offering good low end torque and mid-range HP. Should have aftermarket Performer® style intake, 4-barrel carburetion and 2.5" or larger free flowing exhaust system. OK with stock converter.	2000-5000	E520321 TQ40H	IN 284° 220° EX 296° 228°	.519" .519"	112°	4°	.000" .000"
Great mid-range torque and top end HP from Cadillac powered hot rods, street machines and trucks using 472-500 CID engines. Works best with 9.5:1 compression, aftermarket intake, lightly modified cylinder heads. 4-barrel and 3.70 or lower gears.	2500-6000	E520501 TQ50H	IN 296° 228° EX 306° 235°	.519" .519"	114°	4°	.000" .000"

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
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3200* *Needs added installed height	501S	205	HA969	N/A	N/A	T3034
3200	501S	205	HA969	N/A	N/A	T3034

CUSTOM GRINDS AVAILABLE.
Consult Erson's Technical Service.
Premium upgrades for Extreme Applications.

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
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3000	501S	205	HA969	N/A	N/A	T3034
3000	501S	205	HA969	N/A	N/A	T3034
3000	501S	205	HA969	N/A	N/A	T3034
3000	501S	205	HA969	N/A	N/A	T3034



The information in this section is specific to Chevrolet small block and big block engines. You may already know some or all of the comments and tech tips offered. If so, feel free to skip this section. However, if you are new to camshafts and valve-trains, or new to engine building, you may want to read this section before ordering/installing a camshaft and/or valve-train components into your engine.

Valve Springs

Stock Chevrolet valve springs are not designed for high-performance camshafts. They simply can't handle the added lift of a high-performance camshaft. For this reason, we recommend changing springs anytime you change the camshaft in a small block or big block Chevrolet engine.

Installing a high-lift camshaft in a Chevrolet performance or racing engine requires changes in related valve-train components. These changes are necessary to maintain valve-train stability. The cylinder heads may require modification to accommodate these components.

Most camshafts designed for Chevrolet street engines do not require the use of special valve-train components. However, do not assume that your engine's valve-train geometry will match a particular camshaft. Follow proper installation and break-in procedure to get the most from your camshaft.

1965-66 engines require a grooved rear camshaft bearing journal to ensure proper oiling. Do not use an ungrooved camshaft in these engines.

The end exhaust spring pockets on most stock small block heads are very thin. Pay particular attention to these pockets when machining the heads for larger diameter valve springs, especially on earlier models. You have two options when performing this modification:

- Round the edge of the cutter to match the radius of the spring wire.
- Install a .030" shim in the pocket before machining, then cut only to that depth.

Rocker Arm Studs

If you've installed a high-performance camshaft and must continually adjust the valves, check the rocker arm studs. Stock pressed in studs are notorious for pulling out of the head, especially on small block heads. Place a straight edge across the studs. If any studs are higher than the others, this is a good indication that they are pulling out of the head. Remove the heads and replace the pressed in studs with screw-in studs.

Flat Tappet Camshafts

When you install a flat tappet camshaft in a 1987-present Chevrolet small block engine originally equipped with a hydraulic roller valve-train, you must also install new lifters, pushrods, and timing chain. These components must be designed to match the flat tappet camshaft. Using any of the old components will shorten the life of your camshaft and valve-train components, or lead to total camshaft failure.

Roller Camshafts

Because the lobes on roller camshafts are ground without taper, a thrust button is required. Most roller camshafts also require a bronze distributor gear.

Hydraulic Roller Camshafts

This type of camshaft is similar to a solid roller camshaft, except it uses a hydraulic lifter with a roller wheel. Alloy steel billets require aluminum bronze gears and SADI billets require stock distributor gears.

Rail Rockers

Rail rockers are designed for use with late model Chevrolet engines. These rocker arms use self-guiding "rails" to guide the rocker and keep it centered over the valve tip. Because the pushrod slots no longer guide the pushrods, Chevrolet has enlarged the slots in production heads (even cast iron heads) to eliminate rubbing between the pushrod and pushrod slot.

Higher-Than-Stock Rocker Arm Ratios

Rocker arms with higher-than-stock ratios move the pushrods closer to the rocker arm studs. Because of this, you must check the clearance between the pushrod and the head. This is a common problem, and should be checked any time you change rocker arm ratio.

Pushrods

Pushrod length is the largest determining factor in valve-train geometry. When using a camshaft with a base circle smaller than stock, a longer-than-stock pushrod may be required to compensate for the smaller base circle.

Many Chevrolet big block engines are equipped with 5/16" diameter pushrods and thin, stamped steel guideplates. When installing a high-performance camshaft, these pushrods and guideplates should be replaced with 3/8" diameter pushrods and heavy duty guideplates.

Small block Chevrolet engines are not limited to 5/16" diameter pushrods. 3/8" pushrod and guideplate kit can be bolted on to any Chevrolet head originally equipped with guideplates. Early heads can be modified to accept guideplates.

Oil Seals

When changing to a camshaft with higher-than-stock lift, clearance between the bottom of the retainer and the top of the oil seal must be greater than the camshaft lift. Before assembling the heads, install one seal, valve, and retainer. Do not install the spring. Check the clearance between the bottom of the retainer and the top of the oil seal.

Rocker Arm Slots

When installing a high-lift camshaft, the slot in the rocker arm will sometimes hit the stud. This is most common in big blocks, but should be checked in all engines. Solve the problem by installing roller rocker arms or long slot rocker arms.

Fuel Pumps

A fuel pump pushrod actuates the fuel pump on all Chevrolet engines, except fuel injected models. You must remove the fuel pump before removing the camshaft. This allows the fuel pump pushrod to clear the camshaft. If the fuel pump is not removed prior to camshaft removal, the camshaft and/or the fuel pump pushrod will be damaged.

Chevrolet Technical Info



Early Chevrolet Engines

If you are the proud owner of a 1955-57 original small block Chevrolet, 265 cubic inch engine or a 1965-1966 big block Chevrolet engine and you wish to change camshafts, then be aware of this: These engines had a unique system which required the use of a grooved rear camshaft journal. This groove completed a path in which pressurized engine oil traveled to the lifter galleys, supplying oil to the filters, pushrods and rocker arms. If a non-grooved camshaft is used, serious damage will result. We can cut this groove for you or you can have your machine shop cut the rear camshaft journal to the following dimensions: .1875" wide by .1094" deep in the center of the rear journal.

Mark V Big Block Engines

The Mark V Big Block uses a non-adjustable valve-train. When installing a camshaft with higher than stock life or non-stock rocker arms on this engine, you must convert the valve-train to an adjustable type.

Cylinder Head Configuration

SMALL BLOCK CHEVROLET



Stock Small Block Cylinder Head



SB2



Dart-Buick Splayed Valve

•FIRING ORDER

STOCK	1	8	4	3	6	5	7	2
RACE	1	8	7	3	6	5	4	2
LS1	1	8	7	2	6	5	4	3

•LIFTER BORE ANGLES

41°IN	41°EX	STOCK
41°IN	44°EX	SB2
45°IN	45°EX	LS1

•JOURNAL DIAMETERS

1.868" STOCK
1.875" ROLLER BEARINGS
1.950" ROCKET BLOCK
1.968" SB2
2.165" LS1

Generation VI

The Generation VI big block Chevrolet was introduced in 1996 as a 454 or a 502 cubic inch engine. This engine, unlike the Mark IV and Mark V big blocks, came with a hydraulic roller camshaft. This camshaft core is similar to the 1987 and later small block camshaft with regards to the front journal. Both have a step cut in the front journal which accommodates the camshaft retaining plate or thrust plate. This camshaft requires a specific timing chain which is not interchangeable with earlier engines.

LT1 Small Block Engines

Most valve-train components in the first generation LT1 (1970-71) and second generation LT1 (1995-96) are interchangeable. However, because of the front-mounted distributor and water pump drive setup on the newer LT1 engine, a special timing chain set is required.

4.3L V6 Engine

Chevrolet built this 90° V6 engine with two different camshafts and three different camshaft drive systems. 1985-86 engines were built with flat tappet camshafts. 1987-later engines featured hydraulic roller camshafts. Because of the stepped nose on the hydraulic roller camshafts, the two camshaft types require different timing chain sets. In 1992, a balance shaft was added to the roller camshaft setup. This requires a third type of timing chain set to drive the camshaft and balance shaft.

BIG BLOCK CHEVROLET



Stock Cylinder Head

•FIRING ORDER

STOCK	1	8	4	3	6	5	7	2
RACE	1	8	7	3	6	5	4	2
RACE	1	8	7	2	6	5	4	3

•COMMON LIFTER BORE ANGLES

38.75°IN	45°EX	STOCK
45°IN	45°EX	PROSTOCK
42°IN	48°EX	PROSTOCK

•JOURNAL DIAMETERS

1.950" STOCK
1.968" ROLLER BEARINGS
2.125" ROCKET BLOCK

Energy Plus Series



CHEVROLET 1990-94 189 cubic inch (3.1L) V6 1980-89 173 cubic inch (2.8L) V6

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
------------------	-----------------	----------	--------------------	------------	-------------	-----	------------

Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000 Note a	E199010	IN 282° EX 290°	196° 202°	.395" .410"	109°	0°	.000" .000"
1200-4000 Note a	E199012	IN 260° EX 270°	194° 204°	.398" .420"	104°	0°	.000" .000"
1200-4000 Note a	E199014	IN 270° EX 280°	204° 214°	.420" .443"	110°	0°	.000" .000"

Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800 Note a	E199016	IN 280° EX 290°	214° 224°	.443" .465"	112°	5°	.000" .000"
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CHEVROLET 1962-84 194/230/250 cubic inch V6

Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000 Notes a, c	E160002	IN 260° EX 270°	194° 204°	.464" .490"	110°	5°	.000" .000"
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Mechanical Flat Tappet Camshaft Eliminator

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Mid to high rpm torque and horsepower. For serious racing only. Need proper selection of rear axle ratio and improvements in carburation and exhaust systems. For use with manual transmission or automatic. Will not have enough vacuum for power accessories.

2000-4800 Notes a, c	E160123	IN 310° EX 320°	248° 258°	.586" .613"	106°	1°	.022" .022"
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NOTES:

a) Preferred latest computer design concepts in each application.

c) This cam may require conversion to an adjustable valve train.

These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.



MATCHED COMPONENTS

VALVE
SPRINGS

RETAINERS

VALVE
LOCKS

LIFTERS

PUSH
RODS

ROCKER
ARMS

TIMING
SET

3000

501S

205

HA2095

N/A

N/A

Call for specific app.

3000

501S

205

HA2095

N/A

N/A

Call for specific app.

3000

501S

205

HA2095

N/A

N/A

Call for specific app.

3000

501S

205

HA2095

N/A

N/A

Call for specific app.

3000

501S

205

HA817

N/A

N/A

Call for specific app.

3450

502

201

MA992

N/A

N/A

Call for specific app.

Energy Plus Series



CHEVROLET 1978-84 200/229 cubic inch V6 (90° ODD Fire)

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
------------------	-----------------	----------	--------------------	------------	-------------	-----	------------

Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000	E190114	IN 260° 194°	.398"	114°	5°	.000"
Note a		EX 270° 204°	.420"			.000"

1200-4000	E190118	IN 270° 204°	.420"	112°	5°	.000"
Note a		EX 280° 214°	.433"			.000"

Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800	E193128	IN 280° 214°	.443"	112°	5°	.000"
Note a		EX 290° 224°	.465"			.000"

2000-4800	E193130	IN 290° 224°	.465"	112°	5°	.000"
Note a		EX 300° 234°	.488"			.000"

Mechanical Flat Tappet Camshaft Eliminator

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Mid to high rpm torque and horsepower. For serious racing only. Need proper selection of rear axle ratio and improvements in carburation and exhaust systems. For use with manual transmission or automatic. Will not have enough vacuum for power accessories.

2200-6500	E193132	IN 300° 238°	.480"	112°	5°	.022"
Note a		EX 300° 238°	.480"			.022"

2200-6500	E193134	IN 300° 238°	.480"	112°	5°	.022"
Note a		EX 310° 248°	.503"			.022"

2200-6500	E194136	IN 310° 248°	.503"	112°	5°	.022"
Notes a, c		EX 320° 258°	.525"			.022"

NOTES:

a) Preferred latest computer design concepts in each application.

c) This cam may require conversion to an adjustable valve train.

These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3000	501S	205	HA817	N/A	N/A	700
3000	501S	205	HA817	N/A	N/A	700
3000	501S	205	HA817	N/A	N/A	700
3000	501S	205	HA817	N/A	N/A	700
3200	501S	205	MA992	N/A	N/A	700
3200	501S	205	MA992	N/A	N/A	700
3200	501S	205	MA992	N/A	N/A	700

Energy Plus Series



CHEVROLET 1985-86 262 cubic inch (4.3L) V6 (90° ODD Fire)

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
------------------	-----------------	----------	--------------------	------------	-------------	-----	------------

Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000	E195110	IN 269°	202°	.410"	113°	2°	.000"
		EX 284°	213°	.410"			.000"
1200-4000	E195108	IN 269°	202°	.404"	112°	2°	.000"
		EX 271°	207°	.414"			.000"

Mechanical Flat Tappet Camshaft Eliminator

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Mid to high rpm torque and horsepower. For serious racing only. Need proper selection of rear axle ratio and improvements in carburation and exhaust systems. For use with manual transmission or automatic. Will not have enough vacuum for power accessories.

2200-6500 Note a	E195324	IN 300°	238°	.480"	112°	5°	.022"
		EX 310°	248°	.503"			.022"
2200-6500 Notes a, c	E195326	IN 310°	248°	.503"	112°	5°	.022"
		EX 320°	258°	.525"			.022"

NOTES:

a) Preferred latest computer design concepts in each application.

c) This cam may require conversion to an adjustable valve train.

These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.



Energy Plus Series



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3000	501S	205	HA817	N/A	N/A	700
3000	501S	205	HA817	N/A	N/A	700
3200	501S	205	MA992	N/A	N/A	700
3200	501S	205	MA992	N/A	N/A	700



Hydraulic Flat Tappet Camshafts



CHEVROLET 90° V6 1985-86 262/4.3L CID ENGINES

1.5:1 STOCK ROCKER RATIO

PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION		GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
			ADV	@.050				
Excellent replacement camshaft. First level over stock offers improved low end performance and driveability. Compatible with stock compression and gearing. Good idle.	1000-4000	E195001 TQ10H	IN 274° EX 274°	202° 202°	.410" .410"	110°	4°	.000" .000"
The "Commuter" . Good all around driveability in passenger cars and light trucks seeking improved low end performance. Great for towing light to moderate loads. Good idle. Compatible with 1.6 rockers.	1200-4300	E195111 RV5H	IN 274° EX 280°	202° 208°	.410" .420"	111°	4°	.000" .000"
Great cam for slightly modified V6 engines in 2 wheel drive and 4x4 pick-ups seeking strong low and mid-range performance. Works best with headers and free flowing exhaust. Compatible with 1.6 rockers and small superchargers.	1500-4500	E195112 RV12H	IN 280° EX 288°	208° 214°	.420" .429"	112°	4°	.000" .000"
The "Performer" . Our most popular cam for improving mid-range performance. Easy on parts, requires limited modifications for noticeable gains.	2000-5000	E195121 TQ20H	IN 292° EX 292°	214° 214°	.449" .449"	111°	4°	.000" .000"
Excellent choice for modified V6 engines with aluminum aftermarket intake manifolds, 390 cfm 4 barrel, lightly modified cylinder heads and free flowing exhaust system enhance mid-range torque and top end horsepower.	2500-5500	E195321 TQ40H	IN 284° EX 296°	220° 228°	.472" .472"	110°	4°	.000" .000"



Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3000	501S	205	HA817	N/A	N/A	700
3000	501S	205	HA817	N/A	N/A	700
3000	501S	205	HA817	N/A	N/A	700
3000	501S	205	HA817	N/A	N/A	700
3000	501S	205	HA817	N/A	N/A	700

CUSTOM GRINDS AVAILABLE.
Consult Erson's Technical Service.
Premium upgrades for Extreme Applications.

Erson Break-In & Oil Additive



Erson's Break-In and Oil Additive with ZDDP is the best insurance for your new performance engine or classic car with flat tappet lifters and camshaft.

- Safe, proven ZDDP EP agent takes the worry out of using new oil formulas in engine that have flat tappet camshafts and lifters.
- Turns modern SM quality oil into the ideal oil for superior break-in and everyday use for superior protection.
- Compatible with ALL high-quality oils, standard or synthetic.
You choose your preferred oil.
- One 4 oz. bottle of Erson's ZDDPlus™ per oil change with SM oil is more economical than 5 quarts of exotic oil.
- Erson with ZDDP is economical and provides the protection required for high performance engines. Great for every oil change.

Part # E911000- Erson's Break-In Oil Additive 4 oz.
 Part # E911001- Erson's Assembly Paste with ZDDP

Hydraulic Roller Camshafts



CHEVROLET 90° V6 1987-97 262/4.3L CID ENGINES **Non Balance shaft**

1.5:1 STOCK ROCKER RATIO
S.A.D.I. BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
First performance level over stock, improved low end and mid-range performance compatible with stock compression and gearing. OK for towing light to moderate loads.	1200-4500	E195501 RH-276-3	IN 276° EX 276° 208° 208°	.480" .480"	112°	4°	.000" .000"
Excellent choice for passenger cars and light trucks seeking strong low end and mid-range performance. Compatible with on board fuel management and power brakes. Works best with 4 or 5-speed manual transmission and mid-3 series gearing.	1500-4800	E195502 RH-276-4	IN 276° EX 282° 208° 214°	.480" .480"	114°	6°	.000" .000"
Slightly modified engines seeking performance-oriented hydraulic roller with emphasis on mid-range torque and horsepower. Headers with free flowing cat-back exhaust system recommended. Aftermarket computer chip may be necessary.	2000-5200	E195503 RH-282-6A	IN 282° EX 286° 214° 218°	.480" .510"	112°	4°	.000" .000"
New lobe technology incorporates faster ramps and longer seat timing resulting in more torque throughout. Great all around performance in street machines, hot rods and sport trucks. May need aftermarket computer chip to enhance performance.	2500-6000	E195504 RH-282-3	IN 282° EX 282° 222° 222°	.480" .480"	112°	4°	.000" .000"

Solid Roller Camshafts



CHEVROLET 90° V6 ODDFIRE COMMON CRANK PIN ENGINES

1.5:1 STOCK ROCKER RATIO
ALLOY STEEL BILLET

Competition Eliminator. Excellent choice for D/Ed or D/EA classes using 230-260 cubic inch engines. Successful competitors use hand fabricated aluminum sheet metal intakes, heavily modified cylinder heads and high-stall 2-speed automatics with 1.65" IN and 1.6" EX rockers.	6000-9000	E190901 R-314-7	IN 314° EX 330° 284° 298°	.712" .667"	111°	0°	.025" .025"
Competition Eliminator. Recommended for 230-260 cubic inch V6 engines competing in D/D or D/A classes using clutchless 5-speed transmissions. Use 1.65" IN and 1.6" EX rockers for best results.	6500-9500	E190902 R-314-7A	IN 314° EX 330° 284° 298°	.712" .667"	113°	0°	.025" .025"
Competition Eliminator. Recommended for large cubic inch, high-compression V6 engines using 5-speed clutchless transmissions. Prefers heavily modified splayed valve cylinder heads with 1.65" IN and 1.55" EX rockers for enhanced flow characteristics.	6500-9500	E190903 R-312-6	IN 312° EX 346° 282° 308°	.727" .688"	113°	0°	.025" .025"

Hydraulic Roller Camshafts

MATCHED COMPONENTS



VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3200	501S	205	HA2079	N/A	N/A	700
3200	501S	205	HA2079	N/A	N/A	700
3200	501S	205	HA2079	N/A	N/A	700
3200	501S	205	HA2079	N/A	N/A	700
3850	507/508	203	RL950	N/A	N/A	N/A
3850	507/508	203	RL950	N/A	N/A	N/A
3850	507/508	203	RL950	N/A	N/A	N/A

Hydraulic Flat Tappet Camshafts



CHEVROLET INLINE 6 CYLINDER 194-230-250 CID ENGINES

1.75:1 STOCK ROCKER RATIO
PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
The "Commuter" . More power than stock. Heavy traffic, expressway use. Smooth idle, good fuel efficiency.	1000-4000	E160001 RV5H	IN 274° EX 280°	202° 208°	.478" .490"	110°	4° .000" .000"
Excellent choice for increasing low and mid-range performance. Works well with minor modifications to the intake and exhaust sides of the motor. Suitable for marine applications with outdrives.	1500-4500	E160112 RV12H	IN 280° EX 288°	208° 214°	.490" .500"	112°	4° .000" .000"
The "Performer" . Chevrolet II's, Camaros and light duty trucks seeking improved mid-range performance. For increased top end, use aftermarket aluminum intake with 390 cfm 4 barrel or 500 cfm 2 barrel and headers.	2000-5000	E160121 TQ20H	IN 292° EX 292°	214° 214°	.523" .523"	110°	4° .000" .000"

CHEVROLET INLINE 6 CYLINDER 292 CID TRUCK ENGINES

1.75:1 STOCK ROCKER RATIO
PROFERAL BILLET

The "Commuter" . More power than stock. Heavy traffic, expressway use. Smooth idle, good fuel efficiency.	1000-4000	E170001 RV5H	IN 274° EX 280°	202° 208°	.478" .490"	110°	4° .000" .000"
Excellent choice for increasing low and mid-range performance. Works well with minor modifications to the intake and exhaust sides of the motor. Suitable for marine applications with outdrives.	1500-4500	E170112 RV12H	IN 280° EX 288°	208° 214°	.490" .500"	112°	4° .000" .000"
The "Performer" . Chevrolet II's, Camaros and light duty trucks seeking improved mid-range performance. For increased top end, use aftermarket aluminum intake with 390 cfm 4 barrel or 500 cfm 2 barrel and headers.	2000-5000	E170121 TQ20H	IN 292° EX 292°	214° 214°	.523" .523"	110°	4° .000" .000"

CAUTION:

When using high-pressure springs (springs having more than 130 pounds of seat load or more than 330 pounds of nose load) with a flat tappet camshaft, Erson Cams requires that you break the camshaft in for 30 minutes while using just the outer spring. Only after the break-in period should the inner spring be installed. Following this procedure will greatly reduce any chance of camshaft or lifter failure.

CHEVROLET 90° V6 1978-84 200-229 CID (3.8L) ENGINES

1.5:1 STOCK ROCKER RATIO
PROFERAL BILLET

Erson's first choice over stock offering improved low end and mid-range performance. Compatible with stock compression, converter and gearing. Good idle, throttle response and fuel efficiency.	1000-4000	E190116 RV5H	IN 274° EX 280°	202° 208°	.410" .420"	111°	4° .000" .000"
Excellent choice for improving mid-range performance without compromising valve-train stability. Works well in light duty trucks towing small boats, personal water crafts, etc. Good idle and driveability.	1500-4500	E190126 RV12H	IN 280° EX 288°	208° 214°	.420" .429"	110°	4° .000" .000"
The "Performer" . Super low and mid-range power. Good idle, fuel efficiency and driveability. 4 barrel carburetor and headers recommended.	2000-5000	E193126 TQ20H	IN 292° EX 292°	214° 214°	.449" .449"	111°	4° .000" .000"

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3000	501S	205	HA817	N/A	N/A	Call for specific app.
3000	501S	205	HA817	N/A	N/A	Call for specific app.
3200	501S	205	HA817	N/A	N/A	Call for specific app.
N/A	N/A	N/A	HA817	N/A	N/A	TG2528S
N/A	N/A	N/A	HA817	N/A	N/A	TG2528S
N/A	N/A	N/A	HA817	N/A	N/A	TG2528S
3000	501S	205	HA817	N/A	N/A	T3033
3000	501S	205	HA817	N/A	N/A	T3033
3000	501S	205	HA817	N/A	N/A	T3033

Energy Plus Series



CHEVROLET 1955-95 262/265/267/283/302/305/307/327/350/400 cubic inch V8

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000 Notes a, b	E110004	IN 250° EX 260°	184° 194°	.368" .398"	104°	0°	.000" .000"
1200-4000 Note a	E110006	IN 250° EX 260°	184° 194°	.368" .398"	112°	5°	.000" .000"
1200-4000 Notes a, b	E110008	IN 260° EX 270°	194° 204°	.398" .420"	104°	0°	.000" .000"
1200-4000 Note a	E110009	IN 260° EX 270°	194° 204°	.398" .420"	112°	5°	.000" .000"
1200-4000	E110012	IN 260° EX 270°	194° 214°	.398" .443"	112°	5°	.000" .000"
1200-4000 Notes a, b	E110014	IN 270° EX 280°	204° 214°	.420" .443"	110°	0°	.000" .000"
1200-4000 Note a	E110016	IN 270° EX 280°	204° 214°	.420" .443"	112°	5°	.000" .000"
1200-4000	E110018	IN 266° EX 266°	209° 209°	.414" .414"	110°	2°	.000" .000"
1200-4000 Note a	E110020	IN 275° EX 278°	209° 216°	.435" .455"	112°	5°	.000" .000"

NOTES:

- a) Preferred latest computer design concepts in each application.
 - b) Preferred choice for computer controlled engines.
- These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.

Energy Plus Series



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700



700 Timing Sets



- Ideal for high performance, street and mild race
- Double-row chain design is prestretched, heat-treated and enlarged pin chain
- Features 3 keyway crank gear for precise timing adjustments
- Very reliable and affordable
- Clamshell packaging

Chevrolet

Part#	Description
700	V6-200 229 262
701	V8-396 400 402

Chrysler

703	V8-273 318 340 360
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Ford

702	V8-255 302 351W (Late 1972-2002)
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Complete PBM Timing listed on pages 339-342.



CHEVROLET 1955-95 262/265/267/283/302/305/307/327/350/400 cubic inch V8

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800 Note a	E110022	IN 280° EX 280°	214° 214°	.443" .443"	110°	5°	.000" .000"
2000-4800 Note a	E110024	IN 280° EX 280°	214° 214°	.443" .443"	112°	5°	.000" .000"
2000-4800 Note a	E110026	IN 280° EX 290°	214° 224°	.443" .465"	112°	12°	.000" .000"
2000-4800 Note a	E110028	IN 280° EX 290°	214° 224°	.443" .465"	112°	5°	.000" .000"
2000-4800 Note a	E110030	IN 284° EX 284°	218° 218°	.458" .458"	110°	5°	.000" .000"
2000-4800	E110032	IN 281° EX 281°	225° 225°	.480" .480"	108°	4°	.000" .000"
2000-4800	E110034	IN 306° EX 306°	222° 222°	.447" .447"	114°	4°	.000" .000"
2000-4800	E110036	IN 288° EX 292°	224° 224°	.450" .460"	114°	2°	.000" .000"
2000-4800 Note a	E110038	IN 290° EX 290°	224° 224°	.465" .465"	112°	5°	.000" .000"
2000-4800 Note a	E110040	IN 290° EX 300°	224° 234°	.465" .488"	112°	5°	.000" .000"
2000-4800	E110042	IN 284° EX 284°	230° 230°	.453" .453"	114°	2°	.000" .000"

NOTE: All Chevrolet small block camshafts may be used in the 1955-56 Engines if late model cam bearings are used.
NOTE: These camshafts CANNOT be used in 1987 and later 305 & 350 V8 Engines originally produced using roller lifters.

NOTES:

- a) Preferred latest computer design concepts in each application.
 - c) This cam may require conversion to an adjustable valve train.
- These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700

Energy Plus Series



CHEVROLET 1955-95 262/265/267/283/302/305/307/327/350/400 cubic inch V8

CAM APPLICATIONS BASIC RPM RANGE PART NO. DURATION ADV @.050 GROSS LIFT LOBE CENTER ADV VALVE LASH

Eliminator Hydraulic

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Good mid to high rpm torque and horsepower. For use with manual transmission or high stall automatic. Will have lower vacuum than stock.

2200-5600 Note a	E110044	IN 292° EX 292°	230° 230°	.480" .480"	108°	1°	.000" .000"
2200-5600 Note a	E110046	IN 292° EX 300°	232° 234°	.488" .488"	108°	2°	.000" .000"
2200-5600 Note a	E110048	IN 300° EX 310°	234° 244°	.488" .510"	112°	5°	.000" .000"
2200-5600	E110050	IN 290° EX 300°	222° 231°	.468" .480"	110°	4°	.000" .000"
2200-5600 Note a	E110052	IN 310° EX 310°	244° 244°	.510" .510"	108°	1°	.000" .000"
2200-5600 Notes a, c	E110054	IN 310° EX 320°	244° 254°	.510" .533"	112°	5°	.000" .000"

ENERGY PLUS Mechanical Series Flat Tappet-Eliminator

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Mid to high rpm torque and horsepower. For serious racing only. Need proper selection of rear axle ratio and improvements in carburation and exhaust systems. For use with manual transmission or automatic. Will not have enough vacuum for power accessories.

2200-6500	E110730	IN 282° EX 290°	240° 248°	.506" .506"	106°	0°	.024" .024"
2200-6500	E110732	IN 287° EX 295°	256° 264°	.537" .557"	106°	0°	.024" .024"
2200-6500 Small Base Circle	E110734	IN 287° EX 295°	256° 264°	.537" .557"	106°	0°	.024" .024"
2200-6500	E110736	IN 325° EX 332°	262° 273°	.512" .536"	112°	4°	.022" .024"

NOTE: All Chevrolet small block camshafts may be used in the 1955-56 Engines if late model cam bearings are used.
NOTE: These camshafts CANNOT be used in 1987 and later 305 & 350 V8 Engines originally produced using roller lifters.

NOTES:

- a) Preferred latest computer design concepts in each application.
- c) This cam may require conversion to an adjustable valve train.

These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3000	501	205	HA817	1601-8	100-16	700
3200	501	205	HA817	1601-8	100-16	700
3000	501	205	HA817	1601-8	100-16	700
3200	501	205	HA817	1601-8	100-16	700
3200	501	205	HA817	1601-8	100-16	700
3200	501	205	HA817	1601-8	100-16	700
3400	502	201	MA992	1602-8	800-16	700
3400	502	201	MA992	1602-8	800-16	700
3400	502	201	MA992	1602-8	800-16	700
3400	502	201	MA992	1602-8	800-16	700

Hydraulic Camshafts

FOR NON-EMISSIONS CONTROLLED VEHICLES



CHEVROLET SMALL BLOCK V8

1957-86 262-400 CID ENGINES

1987-94 305/350 CID NON HYDRAULIC ROLLER ENGINES

1.5:1 STOCK ROCKER RATIO

PROFERAL BILLET

CAM APPLICATIONS

BASIC RPM RANGE

PART NO. GRIND NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

Smooth idle. Slightly over stock. No modifications necessary. 2 barrel, 4 barrel or computer controlled fuel injection compatible. Improved low RPM driveability.	1000-3500	E110001 TQ-10-H	IN 274° EX 274°	202° 202°	.410" .410"	108°	0°	.000" .000"
The "Commuter" . More power through entire range. Stop and go traffic and expressway use. Good idle, throttle response and fuel efficiency.	1000-3750	E110111 RV5H	IN 274° EX 280°	202° 208°	.410" .420"	110°	4°	.000" .000"
Broad power range. City and expressway driving and towing. Cars, wagons, pickups and heavier rigs. Good idle, throttle response and high-fuel efficiency.	1250-4000	E110101 RV10H	IN 280° EX 280°	208° 208°	.420" .420"	111°	4°	.000" .000"
Good idle and fuel efficiency in smaller engines. Computer compatible. Works well in light trucks and 4x4 trucks. Towing light to moderate loads. OK with small superchargers.	1500-4500	E111011 M/P1	IN 280° EX 292°	208° 214°	.420" .449"	114°	6°	.000" .000"
Strong mid-range power. City, fast expressway and open road towing. Delivers maximum mid-range torque. Good idle, throttle response and fuel efficiency.	1750-4750	E110201 RV15H	IN 288° EX 288°	214° 214°	.429" .429"	111°	4°	.000" .000"
Good idle and throttle response in larger engines. Prefers 4 barrel, headers, manual transmission and low gears for towing moderate to heavy loads. OK with small superchargers.	2000-5000	E111021 M/P2	IN 292° EX 310°	214° 226°	.449" .462"	114°	6°	.000" .000"
The "Performer" . Super low and mid-range power. Good idle, fuel efficiency and driveability. 4 barrel and headers recommended.	2000-4750	E113121 TQ20H	IN 292° EX 292°	214° 214°	.449" .449"	111°	4°	.000" .000"
Fair idle. Reasonable fuel efficiency. Good low and mid-range horsepower. Great camshaft for street rods or slightly modified street cars. 4 barrel and headers.	2250-5000	E110321 Hi-Flow AH	IN 284° EX 284°	220° 220°	.472" .472"	108°	0°	.000" .000"
Street and Strip . High-lift, dual pattern. Fair idle. Reasonable fuel efficiency. Needs 4 barrel, headers and lower gears. OK with automatic and 2,500 RPM stall speed torque converter.	2500-5500	E113321 TQ40H	IN 284° EX 296°	220° 228°	.472" .472"	110°	4°	.000" .000"
Recommended for roots, vane or centrifugal-style superchargers. Low-moderate boost 5-8 lbs. Good idle with increased low and mid-range performance.	2000-5500	E113322 Hi-Boost 1H	IN 284° EX 296°	220° 228°	.472" .472"	112°	4°	.000" .000"
Fair idle and fuel efficiency. Strong mid-range performance. Works best with 4 barrel, headers, 4 speed manual transmission and low gears.	2750-5750	E113221 TQ30H	IN 310° EX 310°	226° 226°	.462" .462"	114°	6°	.000" .000"

Hydraulic Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3000	501S	205	HA817	1601-8	100-16	700
3000	501S	205	HA817	1601-8	100-16	700
3000	501S	205	HA817	1601-8	100-16	700
3000	501S	205	HA817	1601-8	100-16	700
3000	501S	205	HA817	1601-8	100-16	700
3000	501S	205	HA817	1601-8	100-16	700
3000	501S	205	HA817	1601-8	100-16	700
3000	501S	205	HA817	1601-8	100-16	700
3000	501S	205	HA817	1601-8	100-16	700
3000	501S	205	HA817	1601-8	100-16	700
3000	501S	205	HA817	1601-8	100-16	700
3000	501S	205	HA817	1601-8	100-16	700

Hydraulic Camshafts



CHEVROLET SMALL BLOCK V8

1957-86 262-400 CID ENGINES

1987-94 305/350 CID NON HYDRAULIC ROLLER ENGINES

1.5:1 STOCK ROCKER RATIO

PROFERAL BILLET

CAM APPLICATIONS

BASIC RPM RANGE

PART NO. GRIND NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

Hot Street/E.T. Brackets, etc. High-lift. Short duration. Delivers broad power range, strong top end. Fair idle. Needs 4 barrel, headers, compression and gears.	2750-5750	E110421 Hi-Flow IH	IN 296° EX 296°	228° 228°	.472" .472"	108°	0°	.000" .000"
Street and Strip. High-lift, dual pattern. Rough idle. Good mid and top-range horsepower. Needs 4 barrel intake, headers and lower gears. OK with automatic and 3,000 RPM stall speed torque converter. 9:1 compression or more.	2800-6200	E113421 TQ50H	IN 296° EX 306°	228° 235°	.472" .472"	110°	4°	.000" .000"
Designed for street rodders looking for more mid-range performance. Blown cars with 8-15 lbs. boost. Cylinder head modifications and large exhaust helpful.	2500-6000	E113323 Hi-Boost 2H	IN 296° EX 316°	228° 240°	.472" .472"	114°	6°	.000" .000"
Runs strong 3,500-7,000 RPM. Stick or automatic with gears. Needs good intake and headers. 9.5:1 or more compression. Lopey idle.	3200-6400	E110521 Hi-Flow IIIH	IN 306° EX 306°	235° 235°	.472" .472"	108°	0°	.000" .000"
Runs strong 4,000-7,500 RPM. Needs lower gears, 4 barrel, headers and compression for maximum performance. Rough idle.	3500-6500	E115911 Hi-Flow IIIH	IN 316° EX 316°	240° 240°	.472" .472"	108°	0°	.000" .000"
Serious pro-street cars with 6-71 superchargers or equivalent. 12(+) lbs. of boost, multiple carburetion, large, free flowing exhaust system, aftermarket or modified cylinder heads. Uses 2,500-3,500 RPM converter and low gears.	3500-7000	E113324 Hi-Boost 3H	IN 308° EX 316°	244° 252°	.503" .517"	114°	4°	.000" .000"
2 barrel or 4 barrel limited sportsman racers on 1/4-3/8 mile oval tracks. Proven winner in .500" lift rule hydraulic classes.	3500-6500	E111122 OTH500	IN 318° EX 318°	244° 244°	.504" .504"	106°	0°	.000" .000"
More top end than OTH500. 2 barrel or 4 barrel limited sportsmans on 3/8-1/2 mile tracks. Championship performance in .500" lift rule hydraulic camshaft classes.	3750-6750	E110622 OTH525	IN 324° EX 324°	252° 252°	.502" .502"	106°	0°	.000" .000"
Hot Street/E.T. Brackets. 377-410 CID engines with no less than 10.5:1 compression. Aftermarket or modified cylinder heads. Automatic cars use 3,500-4,000 RPM converter and 3" exhaust. Nitrous oxide optional.	3750-7000	E115912 Hi-Flow IVH	IN 312° EX 320°	248° 256°	.503" .517"	110°	4°	.000" .000"
Hot Street/E.T. Brackets. Upper mid-range and top end power in 388-410 CID engines with no less than 11.0:1 compression using large valve aftermarket cylinder heads, single plane intake manifold, 750-850 cfm carburetion and open or free flowing exhaust.	4000-7200	E113422 TQ60H	IN 316° EX 324°	252° 260°	.517" .517"	108°	0°	.000" .000"

Hydraulic Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3000	501S	205	HA817	1601-8	100-16	700
3000	501S	205	HA817	1601-8	100-16	700
3000	501S	205	HA817	1601-8	100-16	700
3000	501S	205	HA817	1601-8	100-16	700
3000	501S	205	HA817	1601-8	100-16	700
3000	501S	205	HA817	1601-8	100-16	700
3000	501S	205	HA817	1601-8	100-16	700
3000	501S	205	HA817	1601-8	100-16	700
3200	501S	205	HA817	1601-8	100-16	700
3200	501S	205	HA817	1601-8	100-16	700
3200	501S	205	HA817	1601-8	100-16	700
3200	501S	205	HA817	1601-8	100-16	700

Hydraulic Camshafts



SMALL BLOCK CHEVROLET

1957-86 262-400 CID ENGINES

1987-94 305/350 CID NON HYDRAULIC ROLLER ENGINES

CAM APPLICATIONS	RPM RANGE	PART NO. GRIND NO	DURATION		GROSS LIFT 1.5	GROSS LIFT 1.6	LOBE CENTER	ADV	VALVE LASH
			ADV	@.050					
Hot Street Machine with at least 9.5:1 compression. Aftermarket dual or single plane intake, 650cfm or larger carb. Headers and dual exhaust. 2500 RPM converter and 3.42 or lower gears. Has slightly lopey idle.	2400-5400	E110100 HL-290-355	IN 294° EX 298°	228° 232°	.532" .532"	.568" .568"	108°	0°	.000" .000"
Hot Street Machine with at least 9.5:1 compression. Aftermarket dual or single plane intake, 650 cfm or larger carb. Headers, dual exhaust, 2500 RPM converter and 3.42 or lower gears. Lopey idle.	2500-5500	E110103 HL-294-355	IN 294° EX 302°	228° 236°	.532" .532"	.568" .568"	108°	0°	.000" .000"
Excellent choice for street machines with roots or centrifugal type superchargers, running 6 to 8 lbs of boost. 2500 RPM converter and good exhaust. Also works well with fuel injected normally aspirated engines. Will require performance chip or tunable type fuel injection.	2700-5700	E110106 HL-294-355-1	IN 294° EX 302°	228° 236°	.532" .532"	.568" .568"	112°	0°	.000" .000"
Hot Street/E.T Brackets no less than 10:1 compression, aftermarket heads with 1.6 rockers for best performance. Needs good intake manifold, 750 CFM or larger carb At least 2800 RPM converter and 3.73 or lower gears.	2800-5800	E110109 HL-298-355	IN 298° EX 306°	232° 240°	.532" .532"	.568" .568"	108°	0°	.000" .000"
Excellent choice for street machines with roots or centrifugal type superchargers, running 6 to 12 lbs of boost. 2800 RPM converter and good exhaust. Also works well with fuel injected normally aspirated engines. Will require performance chip or tunable type fuel injection.	2800-5800	E110112 HL-298-355-1	IN 298° EX 306°	232° 240°	.532" .532"	.568" .568"	112°	0°	.000" .000"
Hot Street/E.T Brackets no less than 10:1 compression, aftermarket heads with 1.6 rockers for best performance. Needs good intake manifold, 750 cfm or larger carb. At least 3000 RPM converter and 4.10 or lower gears.	3000-6000	E110115 HL-302-355	IN 302° EX 310°	236° 244°	.532" .532"	.568" .568"	108°	0°	.000" .000"
Serious street machines with roots or centrifugal type superchargers, up to 15 lbs of boost. Needs 2500 RPM converter, headers and free flowing exhaust. Also a good choice for 383ci or larger cubic inch engines with aftermarket fuel injection.	3000-6000	E110118 HL-302-355-1	IN 302° EX 310°	236° 244°	.532" .532"	.568" .568"	112°	4°	.000" .000"
Hot Street/E.T Brackets no less than 10:1 compression, aftermarket heads with 1.6 rockers for best performance. Needs good intake manifold, 750 cfm or larger carb. At least 3000 RPM converter and 4.10 or lower gears.	3200-6200	E110121 HL-306-355	IN 306° EX 314°	240° 248°	.532" .532"	.568" .568"	108°	2°	.000" .000"

Hydraulic Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3200 ^A	501	205	HA817	1601-8	135-16	700
3200 ^A	501	205	HA817	1601-8	135-16	700
3200 ^A	501	205	HA817	1601-8	135-16	700
3200 ^A	501	205	HA817	1601-8	135-16	700
3200 ^A	501	205	HA817	1601-8	135-16	700
3200 ^A	501	205	HA817	1601-8	135-16	700
3200 ^A	501	205	HA817	1601-8	135-16	700
3200 ^A	501	205	HA817	1601-8	135-16	700
3200 ^A	501	205	HA817	1601-8	135-16	700

A - Increase installed height needed for high lift. Check coil bind.

Hydraulic Flat Tappet Camshafts



SMALL BLOCK CHEVROLET

1957-86 262-400 CID ENGINES

1987-94 305/350 CID NON HYDRAULIC ROLLER ENGINES

CAM APPLICATIONS	RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.5	GROSS LIFT 1.6	LOBE CENTER	ADV	VALVE LASH
Hot Street/E.T Brackets no less than 10:1 compression, aftermarket heads with 1.6 rockers for best performance. Needs good intake manifold, 750 cfm or larger carb. At least 3000 RPM converter and 4.10 or lower gears.	3200-6200	E110124 HL-306-355-1	IN 306° 240° EX 314° 248°	.532" .532"	.568" .568"	110°	2°	.000" .000"
Hot Street/E.T Brackets strong mid-range torque and top end horsepower, in 383 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake, 1.6 rockers for best performance. 3000 to 3500 RPM converter and 4.10 or lower gears. Rough idle.	3500-6500	E110127 HL-310-355	IN 310° 244° EX 318° 252°	.532" .532"	.568" .568"	108°	2°	.000" .000"
Hot Street/E.T Brackets strong mid-range torque and top end horsepower, in 383 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake, 1.6 rockers for best performance. 3000 to 3500 RPM converter and 4.10 or lower gears. Rough idle.	3750-6750	E110130 HL-314-355	IN 314° 248° EX 320° 256°	.532" .517"	.568" .552"	110°	4°	.000" .000"
Pro Street/E.T Brackets max effort in larger cubic inch engines. No less than 11:1 compression, aftermarket heads, Victor style intake with at least 850 cfm carb, large tube headers. 3500 to 4000 RPM converter and 4.56 gears. Pulls strong to 7000 RPM.	4000-7000	E110133 HL-318-355	IN 318° 252° EX 324° 260°	.532" .517"	.568" .552"	110°	4°	.000" .000"

NITROUS GRINDS

SMALL BLOCK CHEVROLET 1957-86 262-400 CID ENGINES • 1987-94 305/350 CID NON HYDRAULIC ROLLER ENGINES

Hot Street Machine with at least 9.5:1 compression. Aftermarket dual or single plane manifold, 650 cfm or larger carb, headers and a 2500 RPM converter. 3.42 or lower gears. Up to 150 HP shot of nitrous.	3000-6000	E110136 HL-290-355-N	IN 294° 228° EX 302° 236°	.532" .532"	.568" .568"	112°	0°	.000" .000"
Hot Street/E.T Brackets with at least 10.0:1 compression. Good heads and a single plane manifold, headers and free flowing exhaust. Strong mid-range performance. 3000 RPM converter and 3.73 or lower gear. Up to 250 HP shot of nitrous.	3500-6500	E110139 HL-298-355-N	IN 298° 232° EX 310° 244°	.532" .532"	.568" .568"	113°	0°	.000" .000"
Hot Street/E.T Brackets strong mid-range torque and top end horsepower, in 383 CID and larger engines. No less than 11.0:1 compression, aftermarket heads, single plane intake, 1.6 rockers for best performance. 3000 to 3500 RPM converter and 4.10 or lower gear. Up to 400 HP shot of nitrous.	3800-6800	E110142 HL-310-355-N	IN 310° 244° EX 318° 252°	.532" .532"	.568" .568"	114°	0°	.000" .000"

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3200 ^A	501	205	HA817	1601-8	135-16	700
3200 ^A	501	205	HA817	1601-8	135-16	700
3200 ^A	501	205	HA817	1601-8	135-16	700
3200 ^A	501	205	HA817	1601-8	135-16	700
3200 ^A	501	205	HA817	1601-8	135-16	700
3200 ^A	501	205	HA817	1601-8	135-16	700
3200 ^A	501	205	HA817	1601-8	135-16	700
3200 ^A	501	205	HA817	1601-8	135-16	700

A - Increase installed height needed for high lift. Check coil bind.

Hydraulic Camshafts

STROKER MUSCLE - Small Base Circle



SMALL BLOCK CHEVROLET V8 1957-94

262, 305, 350, 400 CID Flat Tappet Lifters

1.100" for Stroker Engines

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050		GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Good idle and fuel efficiency in smaller engines. Computer compatible. Works well in light trucks/4x4 trucks. Towing light to moderate loads. OK with small superchargers.	1500-4500	E111011S M/P1	IN 280° EX 292°	208° 214°	.420" .449"	114°	6°	.000" .000"
Good idle and throttle response in larger engines. Prefers 4-barrel, headers, manual transmission and low gears for towing moderate to heavy loads. OK with small superchargers.	2000-5000	E111021S M/P2	IN 292° EX 310°	214° 226°	.449" .462"	114°	6°	.000" .000"
The "Performer" . Super low and mid-range power. Good idle, fuel efficiency and driveability. 4-barrel and headers recommended.	2000-4750	E113121S TQ20H	IN 292° EX 292°	214° 214°	.449" .449"	111°	4°	.000" .000"
Street and Strip . High-lift, dual pattern. Fair idle. Reasonable fuel efficiency. Needs 4-barrel, headers and lower gears. OK with automatic and 2500 RPM stall speed torque converter.	2500-5500	E113321S TQ40H	IN 284° EX 296°	220° 228°	.472" .472"	110°	4°	.000" .000"
Hot Street/E.T. Brackets, etc. High-lift. Short duration. Delivers broad power range, strong top end. Fair idle. Needs 4-barrel, headers, compression and gears.	2750-5750	E110421S Hi-Flow 1H	IN 296° EX 296°	228° 228°	.472" .472"	108°	0°	.000" .000"
Street and Strip . High-lift, dual pattern. Rough idle. Good mid and top-range horsepower. Needs 4-barrel intake, headers and lower gears. OK with automatic and 3000 RPM stall speed torque converter. 9:1 compression or more.	2800-6200	E113421S TQ50H	IN 296° EX 306°	228° 235°	.472" .472"	110°	4°	.000" .000"
Runs strong 3500-7000 RPM. Stick or automatic with gears. Needs good intake and headers. 9.5:1 or more compression. Lopey idle.	3200-6400	E110521S Hi-Flow 11H	IN 306° EX 306°	235° 235°	.472" .472"	108°	0°	.000" .000"
Hot Street/E.T. Brackets . 377-410 CID engines with no less than 10.5:1 compression. Aftermarket or modified cylinder heads. Automatic cars use 3500-4000 RPM converter and 3" exhaust. Nitrous oxide optional.	3750-7000	E115912S Hi-Flow 1VH	IN 312° EX 320°	248° 256°	.503" .517"	110°	4°	.000" .000"

Hydraulic Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3000	501	205	HA817	1601	100-16	700
3000	501	205	HA817	1601	100-16	700
3000	501	205	HA817	1601	100-16	700
3000	501	205	HA817	1601	100-16	700
3000	501	205	HA817	1601	100-16	700
3000	501	205	HA817	1601	100-16	700
3000	501	205	HA817	1601	100-16	700
3000	501	205	HA817	1601	100-16	700
3200	501	205	HA817	1601	100-16	700

Mechanical Flat Tappet Camshafts



CHEVROLET SMALL BLOCK V8 1957-97 262-400 CID ENGINES

1.5:1 STOCK ROCKER RATIO
PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Hot Street/S.C.C.A. Slalom Racer. Good low and mid-range power in small cubic inch engines. 600-650 cfm 4 barrel, dual plane manifold, 1.6 rockers and 4 speed with low gears.	2500-5500	E113123 TQ30M	IN 280° 230° EX 280° 230°	.465" .465"	108°	0°	.022" .022"
Moderate lift and duration delivers more power through entire RPM range. The ideal street camshaft with minor modifications.	3000-6000	E110721 Hi-Flow IM	IN 286° 242° EX 286° 242°	.510" .510"	108°	0°	.022" .022"
Hot Street/E.T. Bracket. Super mid-range performance. Needs 4 barrel, headers and low gears for best performance. 1.6 rockers optional.	3250-6250	E110821 Hi-Flow IIM	IN 294° 246° EX 294° 246°	.510" .510"	108°	0°	.022" .022"
327-350 CID engines with no less than 10.0:1 compression. Can be used with 1.6:1 rockers to enhance mid-range performance or with manual or automatic transmission and 3000 RPM converter.	3250-6500	E110822 F-282-3	IN 282° 246° EX 290° 254°	.510" .510"	108°	2°	.025" .025"
High Performance Marine/Blower Grind. Also works well in 3000-3400 lb Street Machine with 4 or 5-speed manual transmission. OK with nitrous oxide.	3000-6500	E110823 Hi-Boost IM	IN 282° 246° EX 290° 254°	.510" .510"	114°	6°	.025" .025"
Hot Street/E.T. Bracket. Works well in 350-406 CID engines with 10.0-11.0:1 compression. Aftermarket heads, 1.6 rockers, single plane manifold, free flowing exhaust, 3500 converter and low gears.	3500-6600	E110824 F-286-3	IN 286° 250° EX 294° 258°	.510" .510"	110°	4°	.025" .025"
Mid-range and top end performer. Good closed-course road race camshaft. Easy on parts. Works best with 4 or 5-speed manual transmission.	3750-6750	E110921 320HLM	IN 320° 256° EX 320° 256°	.534" .534"	108°	0°	.022" .022"
High Performance Blower Grind. 250 series or 6-71 roots-style supercharger. Single 850 or twin 650-750 cfm carburetors, good heads, low gears, 3500 RPM converter.	3500-7000	E110825 Hi-Boost IIM	IN 292° 254° EX 302° 264°	.562" .562"	114°	4°	.025" .025"
E.T. Bracket/Road Racer. No less than 11.0:1 compression, 2800-3200 lb modified production car. Single 4 barrel, good heads with mild head work. Headers and free flowing 3" exhaust system.	3800-6800	E110826 F-296-1	IN 296° 258° EX 302° 264°	.562" .562"	108°	0°	.025" .025"

NOTE:

It is possible to install a high performance hydraulic (non-roller) camshaft or a mechanical flat tappet camshaft in a block originally equipped with a hydraulic roller camshaft. Matching lifters, pushrods, timing chains and, in some cases, rocker arms must be used to accommodate this conversion.

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T

Mechanical Flat Tappet Camshafts



CHEVROLET SMALL BLOCK V8 1957-97 262-400 CID ENGINES

**1.5:1 STOCK ROCKER RATIO
PROFERAL BILLET**

E.T. Bracket/Oval Track Camshaft. 355-406 CID engines with 11.0:1-12.0:1 compression. Modified steel or aluminum heads. Light to moderate weight chassis, fast 3/8-1/2 mile tracks. Alcohol or gas.	4000-7000	E110827 F-298-4	IN 298° EX 306°	260° 268°	.562" .562"	108°	0°	.022" .022"
E.T. Bracket/Road Racer. Builds big torque in 355-388 CID engines with 12.0-12.5:1 compression. Works well with single 4 barrel or low profile 2x4 barrel manifolds.	4200-7200	E110828 F-302-2	IN 302° EX 310°	264° 272°	.562" .562"	108°	0°	.022" .022"
Hot Street/Strip/Bracket Racer. New design. Strong through broad range. Pulls hard from 4000 up. For the built engine with no less than 12.0:1 compression only.	4500-7500	E111031 990AH	IN 312° EX 312°	268° 268°	.575" .575"	108°	0°	.022" .022"
Strong mid-range and top end camshaft. Pulls hard past 7000 in well set up engine. Bracket racers favorite. Can be used with 1.6:1 rockers.	5000-8000	E118631 990SB	IN 318° EX 318°	278° 278°	.550" .550"	108°	0°	.022" .022"
E.T. Bracket/Super Categories. Serious drag racing only. Light 2 speed dragsters or alterds with 5000-5500 RPM converter. 331-377 CID engines with no less than 13.0:1 compression. Good flowing heads a must!	5000-8500	E111009 2450X	IN 310° EX 320°	276° 286°	.565" .565"	108°	0°	.022" .022"
383-406 Hot Street Cam. Needs minimum 10-1 compression, good heads. Great camshaft for the occasional shot of nitrous.	3200-6500	E110829	IN 282° EX 290°	246° 254°	.510" .510"	112°	4°	.022" .022"
1/4-3/8 mile. Big torque down low and through the mid-range. Great for 2 barrel and small 4 barrel classes.	3200-6500	E116405	IN 288° EX 288°	250° 250°	.563" .563"	106°	6°	.022" .022"
3/8-1/2 mile fast tracks. 4 barrel, big power out of the corners, yet runs strong on the top end.	3200-7000	E116425	IN 292° EX 298°	254° 260°	.563" .563"	106°	4°	.022" .022"

NOTE:

It is possible to install a high performance hydraulic (non-roller) camshaft or a mechanical flat tappet camshaft in a block originally equipped with a hydraulic roller camshaft. Matching lifters, pushrods, timing chains and, in some cases, rocker arms must be used to accommodate this conversion.

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T



1973 Chevrolet Camaro

Hydraulic Flat Tappet Camshafts



RESTRICTED ENGINES -RP SERIES

Other Custom Grinds Available, please inquire.

CHEVROLET SMALL BLOCK 1957-97 262-400 CID ENGINES

CAM APPLICATIONS	RPM RANGE FIRING ORDER	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.5	LOBE CENTER	ADV	VALVE LASH
Restricted intake. 9-1 to 10-1 compression. Good exhaust. Short 1/4-3/8 mile sticky tracks. Great for heavier cars.	2000-5500 STD	E110422 HiFlow 1H RP	IN 296° 228° EX 284° 220°	.472" .472"	107°	5°	.000" .000"
Restricted intake. 9-1 to 10-1 compression. Good exhaust. Short 1/4-3/8 mile sticky tracks. Great for heavier cars.	2000-5500 4-7 SWAP	E110422-47 HiFlow1HRP7/4	IN 296° 228° EX 284° 220°	.472" .472"	107°	5°	.000" .000"
Heavy cars with intake restricted motors. Serious mid-range torque. 10-1 to 11-1 compression. Tremendous power out of the corners and on re-starts.	3000-6500 STD	E110522 HiFlow2HRP	IN 306° 235° EX 296° 228°	.472" .472"	107°	5°	.000" .000"
Heavy cars with intake restricted motors. Serious mid-range torque. 10-1 to 11-1 compression. Tremendous power out of the corners and on re-starts.	3000-6500 4-7 SWAP	E110522-47 HiFlow2HRP7/4	IN 306° 235° EX 296° 228°	.472" .472"	107°	5°	.000" .000"
Monster torque. 11.5-1 to 12.5-1 compression. BIG low and mid-range power. Must have good exhaust. Heavy car and sticky track.	3500-6800 STD	E115913 HiFlow3HRP	IN 316° 240° EX 306° 235°	.472" .472"	106°	4°	.000" .000"
Monster torque. 11.5-1 to 12.5-1 compression. BIG low and mid-range power. Must have good exhaust. Heavy car and sticky track.	3500-6800 4-7 SWAP	E115913-47 HiFlow3HRP7/4	IN 316° 240° EX 306° 235°	.472" .472"	106°	4°	.000" .000"



Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3000	501	205	HA817	1601-8	120-16	700
3000	501	205	HA817	1601-8	120-16	700
3000	501	205	HA817	1601-8	120-16	700
3000	501	205	HA817	1601-8	120-16	700
3000	501	205	HA817	1601-8	120-16	700
3000	501	205	HA817	1601-8	120-16	700



Oval Track Racing



MECHANICAL FLAT TAPPET CAMSHAFTS

CHEVROLET SMALL BLOCK V8 1957-97 262-400 CID ENGINES

1.5:1 STOCK ROCKER RATIO

PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION IN ADV	DURATION EX @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
For small displacement engines using stock heads with no modifications. OK for 2 barrel or 4 barrel classes, with headers on short tracks. 1/4 mile to tight 3/8 mile. Advance 4° for best results.	3000-6000	E116300 F-282-1	IN 282°	246° EX 282° 246°	.510" .510"	106°	0°	.022" .022"
Increased mid-range and top end power in 327-355 CID engines. Aftermarket intake and carburetion with "cast iron" exhaust. OK with flat top pistons. Easy on parts.	3200-6400	E116301 F-282-2	IN 282°	246° EX 290° 254°	.510" .510"	106°	0°	.022" .022"
New oval track camshaft from Erson. Good low end power, yet likes to run upstairs. 4 barrel and headers recommended. 1/4 mile to fast 3/8 mile dirt or asphalt tracks.	3500-6700	E116306 F-286-1A	IN 286°	250° EX 294° 258°	.510" .510"	106°	0°	.022" .022"
Top end camshaft in 327-355 CID engines on tight tracks, with limited "cast iron" intakes. 2 barrel to small 4 barrel carburetion. Low lift. Can be used with stamped steel rockers.	3750-6750	E116302 F-290-1	IN 290°	254° EX 294° 258°	.510" .510"	106°	0°	.022" .022"
Strong camshaft for limited 2 barrel classes up to 360 CID, on 1/4 mile to 3/8 mile dirt or asphalt tracks. 1.6:1 rocker ratio on the intake enhances performance, rules permitting.	3800-7000	E116307 F-294-1	IN 294°	258° EX 294° 258°	.510" .510"	106°	4°	.022" .022"
355-406 cubic inch engines, 1/4-1/2 mile tracks, cylinder heads and improved intake recommended. No less than 12.0:1 compression for this barn burner.	4000-7250	E116303 F-298-1	IN 298°	260° EX 302° 264°	.562" .562"	106°	0°	.022" .022"
One of Erson's most popular grinds. 355-406 engines, running on fast 3/8-1/2 mile tracks. Quick out of the turns and fast down the shoots.	4200-7500	E116308 F-298-3	IN 298°	260° EX 306° 268°	.562" .562"	106°	4°	.022" .022"
When modified heads are allowed, yet 2 barrel or 390 cfm 4 barrel restrictions are imposed, this camshaft is a proven winner! 3/8-1/2 mile fast tracks, asphalt or dirt.	4500-7200	E116309 F-302-3	IN 302°	264° EX 296° 258°	.562" .562"	106°	6°	.022" .022"
355 CID or larger engines, in late model sportsman cars, on 1/2-5/8 mile tracks with tight turns. Good in traffic.	4500-7600	E116304 F-302-1	IN 302°	264° EX 306° 268°	.562" .562"	106°	0°	.022" .022"
Big inch engines with good intake and exhaust systems. Needs modified heads and larger valves. May consider 1.6:1 rockers for more top end. Fast 1/2-5/8 mile tracks.	4500-7800	E116305 F-306-1	IN 302°	268° EX 314° 276°	.562" .562"	106°	0°	.022" .022"

NOTE:

LT-1 and LS-1 engines cannot be converted to mechanical flat tappet or hydraulic flat tappet camshafts and valvetrains.

NOTE:

For information regarding Erson Cams Grand National .875" diameter flat tappet profiles and proper component selection regarding these profiles, call Erson's Technical Service Team at 775.882.1622.

NOTE:

It is possible to install a high performance hydraulic (non-roller) camshaft or a mechanical flat tappet camshaft in a block originally equipped with a hydraulic roller camshaft. Matching lifters, pushrods, timing chains and, in some cases, rocker arms must be used to accommodate this conversion.

Oval Track Racing

MATCHED COMPONENTS



VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T
3400	502	201	MA992 / ML535	1901-8	800-16	7981/8981T

Mechanical Flat Tappet Camshafts



OVAL TRACK FXR SERIES

CHEVROLET 1955-97 262-400 CUBIC INCH

.375 LOBE ROCKER RATIO 1.5

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV	@.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
1/4-3/8 mile, good mid-range. 2 bbl 4412 or 4 bbl with good intake and exhaust.	3200-6800	E116400 FXR-288-1	IN 288° EX 292°	250° 254°	.562" .562"	106°	4°	.018" .018"
Good 2 bbl cam FAST 1/4-3/8 11.5+ OK with small 4 bbl 327-358.	3400-7000	E116410 FXR-292-1	IN 292° EX 296°	254° 258°	.562" .562"	106°	4°	.018" .018"
2 bbl or 390 cfm 4 bbl Restricted Class. This cam should be considered for 3/8-1/2 mile fast tracks.	3200-5600	E116420 FXR-292-2	IN 292° EX 292°	254° 254°	.562" .562"	108°	0°	.018" .018"
355-406 cu in 1/4-1/2 mile track. Good cylinder heads and intake 12.1+ strong runner.	3400-7200	E116430 FXR-296-1	IN 296° EX 302°	258° 264°	.562" .562"	106°	4°	.018" .018"
3/8-1/2 mile 355-406 12.1+ 4bbl. Good intake and exhaust. Great top end performance.	3600-7400	E116440 FXR-298-1	IN 298° EX 306°	260° 268°	.562" .562"	106°	4°	.018" .018"
355-406 Late Model Sportsman 1/2 mile to 5/8. 12.1+ 4 bbl with good intake.	3500-7400	E116450 FXR-302-1	IN 302° EX 310°	264° 272°	.562" .562"	106°	4°	.018" .018"
2 bbl or 390 cfm 4 bbl for larger engines 3/8-1/2 mile fast track. Good heads. For restricted classes.	3800-7200	E116460 FXR-298-2	IN 298° EX 292°	260° 254°	.562" .562"	106°	6°	.018" .018"
Big inch engines with good intake and exhaust system, good heads a must! For fast 1/2-5/8 mile track.	4500-7800	E116470 FXR-306-1	IN 306° EX 314°	268° 276°	.562" .562"	106°	0°	.018" .018"

FXR SERIES OVAL TRACK NITRIDED CAMSHAFTS

CHEVROLET 1955-97 262-400 CUBIC INCH

FXR Series Nitrided Camshafts are designed to withstand the increased loads and higher valve spring pressures being used in today's race engines. The surface hardness is approximately .020"-.025" deep and measures 59-60 Rockwell "C" Scale. Erson only recommends ML535 direct lube lifters with these camshafts.

CAM APPLICATIONS	RPM RANGE	PART NO. GRIND NO.	DURATION ADV	@.050	GROSS LIFT 1.5	GROSS LIFT 1.6	LOBE CENTER	ADV	VALVE LASH
355-406 CID in 1/4-1/2 mile tracks. Good cylinder heads and intake 12.0:1+ compression. Strong runner.	3400-7200	E116480 F-296-2	IN 296° EX 302°	258° 264°	.562" .562"	.600" .600"	106°	4°	.018" .018"
355-406 CID in 1/4-1/2 mile tracks. Good cylinder heads and intake 12.0:1+ compression. Great top end performance.	3600-7400	E116482 F-296-3	IN 296° EX 302°	258° 264°	.562" .562"	.600" .600"	108°	4°	.018" .018"
355-406 CID 1/4-1/2 mile tracks, cylinder heads and improved intake recommended. No less than 12.0:1 compression for this barn burner.	3500-7300	E116486 F-298-4	IN 298° EX 302°	260° 264°	.562" .562"	.600" .600"	106°	4°	.018" .018"
355 CID or larger engines, in late model sportsman cars, on 1/2-5/8 mile tracks with tight turns. Good in traffic.	3600-7500	E116490 F-302-4	IN 302° EX 306°	264° 268°	.562" .562"	.600" .600"	106°	0°	.018" .018"

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700

■ Premium components in red

Mechanical Flat Tappet Camshafts



OVAL TRACK 4-7 SWAP FXR SERIES

CHEVROLET 1955-97 262-400 CUBIC INCH

.375 LOBE ROCKER RATIO 1.5

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV	@.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
1/4-3/8 mile, good mid-range. 2 bbl 4412 or 4 bbl with good intake and exhaust.	3200-6800	E116400-47 FXR-288-1-47	IN 288° EX 292°	250° 254°	.562" .562"	106°	4°	.018" .018"
1/4-3/8 mile. Big torque down low and through the mid-range. Great for 2 barrel and small 4 barrel classes.	3200-6500	E116405-47 FXR-288-2-47	IN 288° EX 288°	250° 250°	.562" .562"	106°	6°	.022" .022"
Good 2 bbl cam FAST 1/4-3/8 11.5+ OK with small 4 bbl 327-358.	3400-7000	E116410-47 FXR-292-1-47	IN 292° EX 296°	254° 258°	.562" .562"	106°	4°	.018" .018"
2 bbl or 390 cfm 4 bbl Restricted Class. This cam should be considered for 3/8-1/2 mile fast tracks.	3200-5600	E116420-47 FXR-292-2-47	IN 292° EX 292°	254° 254°	.562" .562"	108°	0°	.018" .018"
3/8-1/2 mile fast tracks. 4 barrel, big power out of the corners, yet runs strong on the top end.	3200-7000	E116425-47 FXR-292-3-47	IN 292° EX 298°	254° 260°	.562" .562"	106°	4°	.022" .022"
355-406 cu in 1/4-1/2 mile track. Good cylinder heads and intake 12.1+ strong runner.	3400-7200	E116430-47 FXR-296-1-47	IN 296° EX 302°	258° 264°	.562" .562"	106°	4°	.018" .018"
3/8-1/2 mile 355-406 12.1+ 4bbl. Good intake and exhaust. Great top end performance.	3600-7400	E116440-47 FXR-298-1-47	IN 298° EX 306°	260° 268°	.562" .562"	106°	4°	.018" .018"
355-406 Late Model Sportsman 1/2 mile to 5/8. 12.1+ 4 bbl with good intake.	3500-7400	E116450-47 FXR-302-1-47	IN 302° EX 310°	264° 272°	.562" .562"	106°	4°	.018" .018"
2 bbl or 390 cfm 4 bbl for larger engines 3/8-1/2 mile fast track. Good heads. For restricted classes.	3800-7200	E116460-47 FXR-298-2-47	IN 298° EX 292°	260° 254°	.562" .562"	106°	6°	.018" .018"
Big inch engines with good intake and exhaust system, good heads a must! For fast 1/2-5/8 mile track.	4500-7800	E116470-47 FXR-306-1-47	IN 306° EX 314°	268° 276°	.562" .562"	106°	0°	.018" .018"

**CUSTOM GRINDS AVAILABLE
CONSULT ERSON TECHNICAL SERVICE.**

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700
3400	502S	201	MA992 ML535/536	1903-8	800-16	700

■ Premium components in red

Oval Track Racing



MECHANICAL ROLLER CAMSHAFTS

CHEVROLET 1955-97 262-400 CUBIC INCH CAM APPLICATIONS **50MM 1.968 Roller Cam**

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV	@.050	LOBE LIFT	LOBE CENTER	ADV	VALVE LASH
Short track small engine 2 barrel class or open carb with heavy car.	3200-6600	E119930 50MM Roller	IN 282° EX 288°	248° 252°	.422 .422	106°	0°	.020" .022"
Short track 2 barrel and 390 4 barrel, small engine.	3200-7200	E119932 50MM Roller	IN 288° EX 290°	252° 256°	.422 .422	106°	0°	.020" .022"
Short track late model 358 with good heads and valve train, or larger engine 400ci with high rocker ratios. 1.8/1.7.	5000-8500	E119934 50MM Roller	IN 294° EX 302°	260° 268°	.422 .422	106°	0°	.020" .022"
Late model 406-415ci good heads and valve train with high rocker ratios.	5000-8500	E119936 50MM Roller	IN 296° EX 302°	262° 268°	.422 .422	106°	0°	.020" .022"
Late model 430ci good heads and valve train.	5000-8500	E119938 50MM Roller	IN 296° EX 298°	262° 272°	.422 .422	107°	0°	.022" .022"
Late model 415-430ci 18° heads and good valve train. High ratios.	5400-8500	E119940 50MM Roller	IN 298° EX 304°	264° 270°	.422 .422	107°	0°	.022" .022"
355-400ci with good heads, high rpm long track.	5600-8500	E119942 50MM Roller	IN 304° EX 304°	270° 278°	.422 .430	108°	0°	.022" .026"
Good short track 410-421ci. Good cylinder heads. Broad torque band, high ratios 1.8/1.7.	4500-8200	E119944 50MM Roller	IN 290° EX 298°	256° 264°	.422 .422	107°	0°	.022" .022"
421+ci with good heads. Great powerband with good torque range. 1.8/1.7 ratio.	4500-8200	E119946 50MM Roller	IN 294° EX 304°	260° 270°	.422 .422	107°	0°	.022" .022"
350-383 ci. good heads 1.6 Int. rockers 1/4-3/8 mile tracks	4000-7500	E119952 STD SBC	IN 290° EX 290°	256° 264°	.422 .430	107°	5°	.022 .026
355-383 ci. good heads 1/4-3/8 mile tracks	4000-7500	E119957 STD SBC	IN 282° EX 290°	256° 264°	.430 .430	107	5	.026 .026
358-410 ci. winged sprint or late model 1/4-3/8 mile tracks	4000-7500	E119960 STD SBC	IN 286° EX 290°	260° 264°	.430 .430	107	5	.026 .026
358-410 ci. winged sprint or late model 1/4-3/8 mile tracks	4000-7500	E119950 STD SBC	IN 286° EX 290°	260° 264°	.450 .430	107	5	.026 .026
380-410 ci. late model or sprint car 3/8-1/2 tracks 1.6 intake rockers	4000-7500	E119975 STD SBC	IN 294° EX 294°	260° 268°	.422 .430	107	5	.022 .026
380-410 ci. late model or sprint car 3/8-1/2 mile tracks 1.6 Int. rockers	4000-7500	E119965 STD SBC	IN 286° EX 294°	260° 268°	.430 .430	107	5	.026 .026
410 + ci. late model or sprint 3/8-1/2 mile track 1.6 Int. rocker	4200-8200	E119980 STD SBC	IN 298° EX 298°	264° 272°	.422 .430	107	5	.022 .026
410 + ci. late model or sprint car 3/8-1/2 mile tracks	4200-8200	E119985 STD SBC	IN 290° EX 298°	264° 272°	.430 .430	107	5	.026 .026
410 + ci. late model or sprint car 3/8-1/2 mile tracks	4200-8200	E119990 STD SBC	IN 290° EX 298°	264° 272°	.450 .430	107	5	.026 .026



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
E915042*	VTR747	VL7000-8+	RL956	1900 Series	T&D	8981TA
E915043*		VL7002-8+	RL983	7/16 or 3/8	check catalog	
E915042*	VTR747	VL7000-8+	RL956	1900 Series	T&D	8981TA
E915043*		VL7002-8+	RL983	7/16 or 3/8	check catalog	
E915042*	VTR747	VL7000-8+	RL956	1900 Series	T&D	8981TA
E915043*		VL7002-8+	RL983	7/16 or 3/8	check catalog	
E915042*	VTR747	VL7000-8+	RL956	1900 Series	T&D	8981TA
E915043*		VL7002-8+	RL983	7/16 or 3/8	check catalog	
E915042*	VTR747	VL7000-8+	RL956	1900 Series	T&D	8981TA
E915043*		VL7002-8+	RL983	7/16 or 3/8	check catalog	
E915042*	VTR747	VL7000-8+	RL956	1900 Series	T&D	8981TA
E915043*		VL7002-8+	RL983	7/16 or 3/8	check catalog	
E915042*	VTR747	VL7000-8+	RL956	1900 Series	T&D	8981TA
E915043*		VL7002-8+	RL983	7/16 or 3/8	check catalog	
E915042*	VTR747	VL7000-8+	RL956	1900 Series	T&D	8981TA
E915043*		VL7002-8+	RL983	7/16 or 3/8	check catalog	
E915042*	VTR747	VL7000-8+	RL956	1900 Series	T&D	8981TA
E915043*		VL7002-8+	RL983	7/16 or 3/8	check catalog	
E915042*	VTR747	VL7000-8+	RL956	1900 Series	T&D	8981TA
E915043*		VL7002-8+	RL983	7/16 or 3/8	check catalog	
E915042*	VTR747	VL7000-8+	RL956	1900 Series	T&D	8981TA
E915043*		VL7002-8+	RL983	7/16 or 3/8	check catalog	
E915042*	VTR747	VL7000-8+	RL956	1900 Series	T&D	8981TA
E915043*		VL7002-8+	RL983	7/16 or 3/8	check catalog	
E915042*	VTR747	VL7000-8+	RL956	1900 Series	T&D	8981TA
E915043*		VL7002-8+	RL983	7/16 or 3/8	check catalog	
E915042*	VTR747	VL7000-8+	RL956	1900 Series	T&D	8981TA
E915043*		VL7002-8+	RL983	7/16 or 3/8	check catalog	

Tech Note FSP springs can be installed to .030 before coil bind.

*Always check installed height @ coil bind.

+VL7000-8 1/2 set 5/16 CAUTION: Check valve stem diameter

+VL7002-8 1/2 set 11/32

Hydraulic Roller Camshafts

EMISSION AND COMPUTER CONTROLLED



CHEVROLET SMALL BLOCK V8

1987-97 305/5.0L, 350/5.7L, 1992-95 5.7L LT1 ENGINES

1.5:1 STOCK ROCKER RATIO

S.A.D.I. BILLET

CAM APPLICATIONS

BASIC RPM RANGE

PART NO. GRIND NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

305 and 350 cubic inch engines seeking improved low end performance. Compatible with stock compression, fuel injection and gearing. OK for towing light loads. Headers or free flowing cat-back exhaust system recommended.

1250-4250

E119825
RH-276-3

IN 276°
EX 276°

208°
208°

.480"
.480"

112°

4°

.000"
.000"

Camaros, Firebirds and light trucks wishing to improve low and mid-range performance. Aftermarket intake and exhaust helpful. Low boost superchargers OK.

1500-4500

E119826
RH-276-4

IN 276°
EX 282°

208°
214°

.480"
.480"

114°

6°

.000"
.000"

Performance oriented passenger cars with aftermarket intake manifolds, larger throttle bodies and free flowing exhaust produce good low and mid-range torque and increase power. Also works well in 1500-2500 series trucks towing moderate loads.

1750-4750

E119827
RH-282-2A

IN 282°
EX 288°

214°
219°

.480"
.480"

115°

7°

.000"
.000"

Super mid-range performance. New lobe design incorporates faster ramps for improved timing events. Cylinder heads, manifold, free flowing exhaust, 5 speed manual transmission or 4 speed automatics with low gears recommended. Computer modifications may be necessary.

2200-5500

E119828
RH-282-5

IN 282°
EX 286°

222°
226°

.480"
.480"

116°

8°

.000"
.000"

RETROFIT HYDRAULIC ROLLER TAPPET CAMSHAFTS

FOR EMISSION CONTROL DEVICES, COMPUTER COMPATIBLE

CHEVROLET SMALL BLOCK V8 1957-86 262-400 CID ENGINES

1987-97 305/350 CID HYDRAULIC FLAT TAPPET ENGINES

1.5:1 STOCK ROCKER RATIO

S.A.D.I. BILLET

First performance level over stock. Increased low and mid-range performance compatible with stock computers, injection, converters and gearing.

1500-4500

E119821
RH-276-4

IN 276°
EX 282°

208°
214°

.480"
.480"

114°

6°

.000"
.000"

305-350 CID engines in cars or trucks seeking more mid-range performance. Automatic with overdrive stock converters, mild gearing. Free flowing exhaust. Level 1 intake modifications.

1750-4750

E119822
RH-282-2A

IN 282°
EX 288°

214°
219°

.480"
.480"

115°

7°

.000"
.000"

Modified 305 engine or 350 CID engines with aftermarket manifolds, throttle modifications, headers and free flowing exhaust. Strong mid-range performance.

2000-5000

E119823
RH-282-6

IN 282°
EX 286°

214°
218°

.480"
.510"

114°

6°

.000"
.000"

New lobe technology. Increases idle quality without sacrificing mid and upper mid-range performance. Aftermarket heads and free flowing exhaust suggested. Computer modifications may be necessary to improve idle characteristics.

2200-5500

E119824
RH-282-3A

IN 282°
EX 282°

222°
222°

.480"
.480"

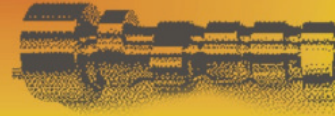
116°

8°

.000"
.000"



Hydraulic Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3200	501S	205	HA2079+ SL929	1932-8	800-16	7975
3200	501S	205	HA2079+ SL929	1932-8	800-16	7975
3200	501S	205	HA2079+ SL929	1932-8	800-16	7975
3200	501S	205	HA2079+ SL929	1932-8	800-16	7975

+HA2079 OEM Lifter

3200	501S	205	SL930*	1929-8	800-16	700
3200	501S	205	SL930*	1929-8	800-16	700
3200	501S	205	SL930*	1929-8	800-16	700
3200	501S	205	SL930*	1929-8	800-16	700

*SL930- Fits blocks 1987-93 5.0, 5.7 & 4.3L. Recommended for Street performance use only.

*Use RL930 for blocks below 1987.

Retro-Fit Hydraulic Roller Tappet Camshafts



FOR NON-EMISSIONS CONTROLLED VEHICLES

CHEVROLET SMALL BLOCK V8 1957-86 262-400 CID ENGINES

1.5:1 STOCK ROCKER RATIO

1987-97 305/350 CID HYDRAULIC FLAT TAPPET ENGINES

S.A.D.I. BILLET

CAM APPLICATIONS

BASIC RPM RANGE

PART NO. GRIND NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

Recommended for passenger cars and trucks seeking improved throttle response and low end torque without sacrificing mileage. Excellent for towing light to moderate loads. Good idle.	1500-4000	E119814 RH-276-2	IN 276° EX 282°	208° 214°	.480" .480"	110°	4°	.000" .000"
Mild hydraulic roller offering improved low and mid-range power in passenger cars and light trucks. Works well with stock converter and mild gearing. Noticeable idle.	1750-4250	E119811 RH-282-1	IN 282° EX 282°	214° 214°	.480" .480"	110°	0°	.000" .000"
Dual purpose cam! Camaros and sport trucks seeking broad power with strong mid-range performance. Should have 5-speed transmission with 3.40-3.70 gearing. Or an excellent choice for supercharged street rods and street machines needing all around power.	2000-5000	E119815 RH-282-8	IN 282° EX 294°	214° 226°	.480" .510"	114°	6°	.000" .000"
Street Rods and Street Machines. This cam offers higher torque throughout the entire mid-range. Should have lightly modified cylinder heads, 4 barrel carburetion and headers with dual exhaust. Largest cam with stock converter.	2200-5200	E119813 RH-288-1	IN 288° EX 288°	219° 219°	.480" .480"	110°	0°	.000" .000"
Improved mid-range and upper mid-range performance when used with aftermarket cylinder heads, manifold and carburetion. Should have headers with free flowing exhaust for best results. Also works well with small superchargers and nitrous oxide. Marine compatible.	2500-5500	E119816 RH-286-1	IN 286° EX 294°	218° 226°	.510" .510"	112°	4°	.000" .000"
New lobe technology offers higher cylinder pressure and better throttle response by modifying timing points. Improved mid-range performance without compromising driveability. Marine compatible.	2400-5400	E119817 RH-282-4A	IN 282° EX 286°	222° 226°	.480" .480"	112°	4°	.000" .000"
Supercharged Street Rods and Street Machines pushing 8 to 15 PSI of boost through modified aftermarket cylinder heads create respectable gains in mid-range torque and horsepower. OK with nitrous oxide.	3000-6000	E119818 RH-294-1	IN 294° EX 296°	226° 234°	.510" .533"	114°	6°	.000" .000"
Hot Street/E.T. Brackets. 350-400 CID engines with no less than 10.0:1 compression should have modified cylinder heads, single plane intake manifold, up to 750 cfm carburetion and headers for best results. Automatic cars use 3000 RPM converter, 4.56 gear and 28" tire. OK with nitrous oxide and 1.6:1 rockers.	3250-6250	E119819 RH-302-1	IN 302° EX 310°	234° 242°	.510" .510"	110°	4°	.000" .000"
Hot Street/E.T. Brackets. Large gains in mid-range torque and top end HP from modified 383-410 CID SBC's with no less than 10.5:1 compression. Compatible with 4 or 5-speed transmission or 3-speed transmission with 3500 RPM converter and low gears.	3500-6500	E119820 RH-310-1	IN 310° EX 318°	242° 250°	.510" .510"	108°	0°	.000" .000"

NOTE:

When converting an engine originally equipped with hydraulic flat tappets to an engine using longer than stock retrofit hydraulic roller tappets one must also use shorter than originally equipped pushrods.

Retro-Fit Hydraulic Roller Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3200	501S	205	RL930 SL930*	1929-8	800-16	700
3200	501S	205	RL930 SL930*	1929-8	800-16	700
3200	501S	205	RL930 SL930*	1929-8	800-16	700
3200	501S	205	RL930 SL930*	1929-8	800-16	700
3200	501S	205	RL930 SL930*	1929-8	800-16	700
3200	501S	205	RL930 SL930*	1929-8	800-16	700
3200	501S	205	RL930 SL930*	1929-8	800-16	700
3200	501S	205	RL930 SL930*	1929-8	800-16	700
3200	501S	205	RL930 SL930*	1929-8	800-16	700
3200	501S	205	RL930 SL930*	1929-8	800-16	700

*SL930- Fits blocks 1987-93 5.0, 5.7 & 4.3L. Recommended for Street performance use only.

Retro-Fit Hydraulic Roller Tappet Camshafts

HR ENERGY PLUS



SMALL BLOCK CHEVROLET 262-400 CI 8 CYL 1955-98

S.A.D.I. BILLET

CAM APPLICATIONS	RPM RANGE PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.5	GROSS LIFT 1.6	LOBE CENTER	ADV	VALVE LASH
Strong mid-range power needs at least 9.5:1 compression, dual plane intake, free flowing exhaust and at least 2000 RPM converter for best performance. Will have noticeable idle.	2200-5200 E119840 ¹ RH-272-320	IN 272° EX 280°	218° 226°	.480" .480"	.512" .512"	108°	0° .000" .000"
Hot street machine with at least 10:1 compression. Aftermarket dual or single plane manifold. 650 cfm or larger carb, headers and a 2500 RPM converter. 3.42 or lower gears. Lopey idle.	2500-5500 E119835 ¹ RH-286-365 E119845	IN 294° EX 302° IN 286° EX 294°	226° 234° 226° 234°	.510" .510" .548" .548"	.544" .544" .584" .584"	108° 108°	0° 0° .000" .000"
Excellent choice for street machines with roots or centrifugal type superchargers, running 6 to 12 lbs of boost. 2000 RPM converter and good exhaust. Also works well with fuel injected normally aspirated engines. Will require performance chip or tuneable type fuel injection.	2500-5500 E119847 ¹ RH-286-365-1	IN 286° EX 294°	226° 234°	.548" .548"	.584" .584"	112°	0° .000" .000"
Hot street machine with at least 10:1 compression. Aftermarket dual or single plane manifold, 650 cfm or larger carb, headers and a 2800 RPM converter. 3.73 or lower gears.	2800-5800 E119848 RH-290-365	IN 290° EX 298°	230° 238°	.548" .548"	.584" .584"	108°	0° .000" .000"
Hot Street/E.T. Brackets. No less than 10:1 compression, aftermarket heads with 1.6 rockers for best performance. Needs good intake manifold, 750 CFM or larger carb. At least 3000 RPM converter and 4.10 or lower gears.	3000-6000 E119849 ¹ RH-298-365	IN 298° EX 306°	238° 246°	.548" .548"	.584" .584"	108°	0° .000" .000"
Serious street machines with roots or centrifugal type superchargers, up to 15 lbs of boost. Needs 2500 RPM converter, headers and free flowing exhaust. Also a good choice for 383 ci or larger cubic inch engines with aftermarket fuel injection.	3000-6000 E119851 ¹ RH-298-365-1	IN 298° EX 306°	238° 246°	.548" .548"	.584" .584"	112°	0° .000" .000"
Hot Street/E.T. Brackets. Strong mid-range torque and top end horsepower, in 383 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake, 1.6 rockers for best performance. 3000-3500 RPM converter and 4.10 or lower gears. Rough idle.	3500-6500 E119853 ¹ RH-302-365	IN 302° EX 310°	242° 250°	.548" .548"	.584" .584"	108°	2° .000" .000"
Pro Street/E.T. Brackets. Max effort in larger cubic inch engines. No less than 11.1 compression, aftermarket heads, Victor style intake with at least 850 CFM carb, large tube headers. 3500-4000 RPM converter and 4.56 gears. Pulls strong to 7000 RPM.	3800-6800 E119855 ¹ RH-310-365	IN 310° EX 318°	250° 258°	.548" .548"	.584" .584"	108°	4° .000" .000"

1-NOTE: Thrust Button must be used on Retro Roller conversions, to hold cams to back of engine. Part # PBM325.

Retro-Fit Hydraulic Roller Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981

*SL930- Fits blocks 1987-93 5.0, 5.7 & 4.3L. Recommended for Street performance use only.

Retro-Fit Hydraulic Roller Tappet Camshafts



NITROUS ENERGY

SMALL BLOCK CHEVROLET 262-400 CI 8 CYL 1955-98

CAM APPLICATIONS	RPM RANGE PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.5	GROSS LIFT 1.6	LOBE CENTER	ADV	VALVE LASH
Hot Street Machine with at least 9:1 compression. Aftermarket dual or single plane manifold, 650 cfm or larger carb, headers and a 2500 RPM converter. 3.42 or lower gears. Up to 150 HP shot of nitrous.	3000-6000 E119858 ¹ RH-286-365-N	IN 286° EX 298° 226° 238°	.548" .548"	.584" .584"	112°	0°	.000" .000"
Hot Street/E.T. Brackets. With at least 9.5:1 compression. Good heads and a single plane manifold, headers and free flowing exhaust. Strong mid-range performance. 3000 RPM converter and 3.73 or lower gear. Up to 250 HP shot of nitrous.	3500-6500 E119862 ¹ RH-294-365-N	IN 294° EX 306° 238° 246°	.548" .548"	.584" .584"	112°	0°	.000" .000"
Hot Street/E.T. Brackets. Strong mid-range torque and top end horsepower, in 383 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake, 1.6 rockers for best performance. 3000-3500 RPM converter and 4.10 or lower gear. Up to 400 HP shot of nitrous.	3800-6800 E119866 ¹ RH-302-365-N	IN 302° EX 314° 242° 254°	.548" .548"	.584" .584"	114°	0°	.000" .000"

1-NOTE:Thrust Button must be used on Retro Roller conversions, to hold cams to back of engine. Part # PBM325.



Retro-Fit Hydraulic Roller Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981

*SL930- Fits blocks 1987-93 5.0, 5.7 & 4.3L. Recommended for Street performance use only.



Retro-Fit Hydraulic Roller Tappet Camshafts



HR ENERGY PLUS 4-7 SWAP

SMALL BLOCK CHEVROLET 262-400 CI 8 CYL 1955-98

CAM APPLICATIONS	RPM RANGE PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.5	GROSS LIFT 1.6	LOBE CENTER	ADV	VALVE LASH
Strong mid-range power needs at least 9.5:1 compression, dual plane intake, free flowing exhaust and at least 2000 RPM converter for best performance. Will have noticeable idle.	2200-5200 E119840-47 ¹ RH-272-320-47	IN 272° EX 280°	218° 226°	.480" .480"	.512" .512"	108°	0° .000" .000"
Hot street machine with at least 10:1 compression. Aftermarket dual or single plane manifold. 650 cfm or larger carb, headers and a 2500 RPM converter. 3.42 or lower gears. Lopey idle.	2500-5500 E119845-47 ¹ RH-286-365-47	IN 286° EX 294°	226° 234°	.548" .548"	.584" .584"	108°	0° .000" .000"
Excellent choice for street machines with roots or centrifugal type superchargers, running 6 to 12 lbs of boost. 2000 RPM converter and good exhaust. Also works well with fuel injected normally aspirated engines. Will require performance chip or tuneable type fuel injection.	2500-5500 E119847-47 ¹ RH-286-365-47A	IN 286° EX 294°	226° 234°	.548" .548"	.584" .584"	112°	0° .000" .000"
Hot Street/E.T. Brackets. No less than 10:1 compression, aftermarket heads with 1.6 rockers for best performance. Needs good intake manifold, 750 CFM or larger carb. At least 3000 RPM converter and 4.10 or lower gears.	3000-6000 E119849-47 ¹ RH-298-365-47	IN 298° EX 306°	238° 246°	.548" .548"	.584" .584"	108°	0° .000" .000"
Serious street machines with roots or centrifugal type superchargers, up to 15 lbs of boost. Needs 2500 RPM converter, headers and free flowing exhaust. Also a good choice for 383 ci or larger cubic inch engines with aftermarket fuel injection.	3000-6000 E119851-47 ¹ RH-298-365-47A	IN 298° EX 306°	238° 246°	.548" .548"	.584" .584"	112°	0° .000" .000"
Hot Street/E.T. Brackets. Strong mid-range torque and top end horsepower, in 383 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake, 1.6 rockers for best performance. 3000-3500 RPM converter and 4.10 or lower gears. Rough idle.	3500-6500 E119853-47 ¹ RH-302-365-47	IN 302° EX 310°	242° 250°	.548" .548"	.584" .584"	108°	2° .000" .000"
Pro Street/E.T. Brackets. Max effort in larger cubic inch engines. No less than 11.1 compression, aftermarket heads, Victor style intake with at least 850 CFM carb, large tube headers. 3500-4000 RPM converter and 4.56 gears. Pulls strong to 7000 RPM.	3800-6800 E119855-47 ¹ RH-310-365-47	IN 310° EX 318°	250° 258°	.548" .548"	.584" .584"	108°	4° .000" .000"

1 NOTE: Thrust Button must be used on Retro Roller conversions, to hold cams to back of engine. Part # PBM325.

Retro-Fit Hydraulic Roller Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981

*SL930- Fits blocks 1987-93 5.0, 5.7 & 4.3L. Recommended for Street performance use only.

Retro-Fit Hydraulic Roller Tappet Camshafts



4-7 SWAP NITROUS ENERGY

SMALL BLOCK CHEVROLET 262-400 CI 8 CYL 1955-98

CAM APPLICATIONS	RPM RANGE PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.5	GROSS LIFT 1.6	LOBE CENTER	ADV	VALVE LASH
Hot Street Machine with at least 9:1 compression. Aftermarket dual or single plane manifold, 650 cfm or larger carb, headers and a 2500 RPM converter. 3.42 or lower gears. Up to 150 HP shot of nitrous.	3000-6000 E119858-47' RH-286-365-47N	IN 286° 226° EX 298° 238°	.548" .548"	.584" .584"	112°	0°	.000" .000"
Hot Street/E.T. Brackets. With at least 9.5:1 compression. Good heads and a single plane manifold, headers and free flowing exhaust. Strong mid-range performance. 3000 RPM converter and 3.73 or lower gear. Up to 250 HP shot of nitrous.	3500-6500 E119862-47' RH-294-365-47N	IN 294° 238° EX 306° 246°	.548" .548"	.584" .584"	112°	0°	.000" .000"
Hot Street/E.T. Brackets. Strong mid-range torque and top end horsepower, in 383 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake, 1.6 rockers for best performance. 3000-3500 RPM converter and 4.10 or lower gear. Up to 400 HP shot of nitrous.	3800-6800 E119866-47' RH-302-365-47N	IN 302° 242° EX 314° 254°	.548" .548"	.584" .584"	114°	0°	.000" .000"

1-NOTE: Thrust Button must be used on Retro Roller conversions, to hold cams to back of engine. Part # PBM325.



Retro-Fit Hydraulic Roller Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981
3400	502S	201	RL930 SL930*	1929-8	800-16	700 7981

*SL930- Fits blocks 1987-93 5.0, 5.7 & 4.3L. Recommended for Street performance use only.



Hydraulic Roller Camshafts

LATE MODEL STEP NOSE



HR ENERGY PLUS

SMALL BLOCK CHEVROLET 262-400 CI 8 CYL

S.A.D.I. BILLET

1987-1997 OE 305-350 Originally Equipped with Hydraulic Roller Camshaft, including LT1 and LT4

CAM APPLICATIONS

	RPM RANGE	DURATION	GROSS GROSS	LOBE	ADV	VALVE	
	PART NO.	ADV @.050	LIFT 1.5	CENTER		LASH	
	GRIND NO.		LIFT 1.6				
Strong mid-range power needs at least 9.5:1 compression, dual plane intake, free flowing exhaust and at least 2000 RPM converter for best performance. Will have noticeable idle.	2200-5200 E119700 RH-272-320	IN 272° EX 280°	218° 226°	.480" .480"	.512" .512"	108° 0°	.000" .000"
Great choice for fuel injected street machines. Strong mid-range power needs at least 9.0:1 compression. Free flowing exhaust and at least 2200 RPM converter for best performance. Small supercharger or 125HP shot of nitrous O.K. May require performance chip.	2400-5400 E119703 RH-272-320	IN 272° EX 280°	218° 226°	.480" .480"	.512" .512"	112° 4°	.000" .000"
	E119735	IN 294° EX 302°	226° 234°	.510" .510"	.544" .544"	108° 0°	.000" .000"
Hot street machine with at least 10:1 compression. Aftermarket dual or single plane manifold. 650 cfm or larger carb, headers and a 2500 RPM converter. 3.42 or lower gears. Lopey idle.	2500-5500 E119706 RH-286-365	IN 286° EX 294°	226° 234°	.548" .548"	.584" .584"	108° 0°	.000" .000"
Excellent choice for street machines with roots or centrifugal type superchargers, running 6 to 12 lbs of boost. 2000 RPM converter and good exhaust. Also works well with fuel injected normally aspirated engines. Will require performance chip or tuneable type fuel injection.	2700-5700 E119709 RH-286-365-1	IN 286° EX 294°	226° 234°	.548" .548"	.584" .584"	112° 4°	.000" .000"
Hot street machine with at least 10:1 compression. Aftermarket dual or single plane manifold, 650 cfm or larger carb, headers and a 2800 RPM converter. 3.73 or lower gears.	2800-5800 E119710 RH-290-365	IN 290° EX 298°	230° 238°	.548" .548"	.584" .584"	108° 0°	.000" .000"
Hot Street/E.T. Brackets. No less than 10:1 compression, aftermarket heads with 1.6 rockers for best performance. Needs good intake manifold, 750 CFM or larger carb. At least 3000 RPM converter and 4.10 or, lower gears.	3000-6000 E119712 RH-298-365	IN 298° EX 306°	238° 246°	.548" .548"	.584" .584"	108° 0°	.000" .000"

Long pin hollow nose can be used with opti-spare type ignition.

Hydraulic Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	201	HA2079+ SL929	1931	800-16	7975
3400	502S	201	HA2079+ SL929	1931	800-16	7975
3400	502S	201	HA2079+ SL929	1931	800-16	7975
3400	502S	201	HA2079+ SL929	1931	800-16	7975
3400	502S	201	HA2079+ SL929	1931	800-16	7975
3400	502S	201	HA2079+ SL929	1931	800-16	7975

+OEM Lifter

Hydraulic Roller Camshafts

HR ENERGY PLUS

LATE MODEL STEP NOSE



SMALL BLOCK CHEVROLET 262-400 CI 8 CYL

S.A.D.I. BILLET

1987-1997 OE 305-350 Originally Equipped with Hydraulic Roller Camshaft, including LT1 and LT4

CAM APPLICATIONS

RPM RANGE PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.5	GROSS LIFT 1.6	LOBE CENTER	ADV	VALVE LASH
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<p>Serious street machines with roots or centrifugal type superchargers, up to 15 lbs of boost. Needs 2500 RPM converter, headers and free flowing exhaust. Also a good choice for 383 ci or larger cubic inch engines with aftermarket fuel injection.</p>	<p>3200-6200 E119715 RH-298-365-1</p>	<p>IN 298° EX 306°</p>	<p>238° 246°</p>	<p>.548" .548"</p>	<p>.584" .584"</p>	<p>112°</p>	<p>4°</p>	<p>.000" .000"</p>
<p>Hot Street/E.T. Brackets. Strong mid-range torque and top end horsepower, in 383 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake, 1.6 rockers for best performance. 3000-3500 RPM converter and 4.10 or lower gears. Rough idle.</p>	<p>3500-6500 E119718 RH-302-365</p>	<p>IN 302° EX 310°</p>	<p>242° 250°</p>	<p>.548" .548"</p>	<p>.584" .584"</p>	<p>108°</p>	<p>2°</p>	<p>.000" .000"</p>
<p>Pro Street/E.T. Brackets. Max effort in larger cubic inch engines. No less than 11.1 compression, aftermarket heads, Victor style intake with at least 850 CFM carb, large tube headers. 3500-4000 RPM converter and 4.56 gears. Pulls strong to 7000 RPM.</p>	<p>3800-6800 E119721 RH-310-365</p>	<p>IN 310° EX 318°</p>	<p>250° 258°</p>	<p>.548" .548"</p>	<p>.584" .584"</p>	<p>108°</p>	<p>4°</p>	<p>.000" .000"</p>



**Gary Spencer's Camaro @ Bonneville Salt Flats
Top Speed 252.7 MPH**

Hydraulic Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	201	HA2079+ SL929	1931	800-16	7975
3400	502S	201	HA2079+ SL929	1931	800-16	7975
3400	502S	201	HA2079+ SL929	1931	800-16	7975

+OEM Lifter



S & M Performance, Mt. Airy, NC

Hydraulic Roller Camshafts



NITROUS ENERGY

LATE MODEL STEP NOSE

SMALL BLOCK CHEVROLET 262-400 CI 8 CYL

1987-1997 OE 305-350 Originally Equipped with Hydraulic Roller Camshaft, including LT1 and LT4

CAM APPLICATIONS

	RPM RANGE	DURATION	GROSS	GROSS	LOBE	ADV	VALVE	
	PART NO.	ADV	LIFT 1.5	LIFT 1.6	CENTER		LASH	
	GRIND NO.	@.050						
Hot Street Machine with at least 9:1 compression. Aftermarket dual or single plane manifold, 650 cfm or larger carb, headers and a 2500 RPM converter. 3.42 or lower gears. Up to 150 HP shot of nitrous.	3000-6000	IN 286°	226°	.548"	.584"	112°	0°	.000"
	E119724 RH-286-365-N	EX 298°	238°	.548"	.584"			.000"
Hot Street/E.T. Brackets. With at least 9.5:1 compression. Good heads and a single plane manifold, headers and free flowing exhaust. Strong mid-range performance. 3000 RPM converter and 3.73 or lower gear. Up to 250 HP shot of nitrous.	3500-6500	IN 294°	234°	.548"	.584"	112°	0°	.000"
	E119727 RH-294-365-N	EX 306°	246°	.548"	.584"			.000"
Hot Street/E.T. Brackets. Strong mid-range torque and top end horsepower, in 383 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake, 1.6 rockers for best performance. 3000-3500 RPM converter and 4.10 or lower gear. Up to 400 HP shot of nitrous.	3800-6800	IN 302°	242°	.548"	.584"	114°	0°	.000"
	E119730 RH-302-365-N	EX 314°	254°	.548"	.584"			.000"



Hydraulic Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	201	HA2079+ SL929	1931	800-16	7975
3400	502S	201	HA2079+ SL929	1931	800-16	7975
3400	502S	201	HA2079+ SL929	1931	800-16	7975

+OEM Lifter



Hydraulic Roller Camshafts

4-7 SWAP HR ENERGY PLUS

LATE MODEL STEP NOSE



SMALL BLOCK CHEVROLET 262-400 CI 8 CYL

1987-1997 OE 305-350 Originally Equipped with Hydraulic Roller Camshaft, including LT1 and LT4

S.A.D.I. BILLET

CAM APPLICATIONS

	RPM RANGE PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.5	GROSS LIFT 1.6	LOBE CENTER	ADV	VALVE LASH
Strong mid-range power needs at least 9.5:1 compression, dual plane intake, free flowing exhaust and at least 2000 RPM converter for best performance. Will have noticeable idle.	2200-5200 E119700-47 RH-272-320-47	IN 272° EX 280°	218° 226°	.480" .480"	.512" .512"	108°	0° .000" .000"
Great choice for fuel injected street machines. Strong mid-range power needs at least 9.0:1 compression. Free flowing exhaust and at least 2200 RPM converter for best performance. Small supercharger or 125HP shot of nitrous O.K. May require performance chip.	2400-5400 E119703-47 RH-286-365-47	IN 272° EX 280°	218° 226°	.480" .480"	.512" .512"	112°	4° .000" .000"
Hot street machine with at least 10:1 compression. Aftermarket dual or single plane manifold. 650 cfm or larger carb, headers and a 2500 RPM converter. 3.42 or lower gears. Lopey idle.	2500-5500 E119706-47 RH-286-365-47	IN 286° EX 294°	226° 234°	.548" .548"	.584" .584"	108°	0° .000" .000"
Excellent choice for street machines with roots or centrifugal type superchargers, running 6 to 12 lbs of boost. 2000 RPM converter and good exhaust. Also works well with fuel injected normally aspirated engines. Will require performance chip or tuneable type fuel injection.	2700-5700 E119709-47 RH-286-365-1-47	IN 286° EX 294°	226° 234°	.548" .548"	.584" .584"	112°	4° .000" .000"
Hot street machine with at least 10:1 compression. Aftermarket dual or single plane manifold, 650 cfm or larger carb, headers and a 2800 RPM converter. 3.73 or lower gears.	2800-5800 E119710-47 RH-290-365-47	IN 290° EX 298°	230° 238°	.548" .548"	.584" .584"	108°	0° .000" .000"
Hot Street/E.T. Brackets. No less than 10:1 compression, aftermarket heads with 1.6 rockers for best performance. Needs good intake manifold, 750 CFM or larger carb. At least 3000 RPM converter and 4.10 or lower gears.	3000-6000 E119712-47 RH-298-365-47	IN 298° EX 306°	238° 246°	.548" .548"	.584" .584"	108°	0° .000" .000"

For carbureted engines or aftermarket fuel injection capable of changing firing order.

Hydraulic Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	201	HA2079+ SL929	1931	800-16	7975
3400	502S	201	HA2079+ SL929	1931	800-16	7975
3400	502S	201	HA2079+ SL929	1931	800-16	7975
3400	502S	201	HA2079+ SL929	1931	800-16	7975
3400	502S	201	HA2079+ SL929	1931	800-16	7975
3400	502S	201	HA2079+ SL929	1931	800-16	7975

+OEM Lifter

Hydraulic Roller Camshafts

4-7 SWAP HR ENERGY PLUS

LATE MODEL STEP NOSE



SMALL BLOCK CHEVROLET 262-400 CI 8 CYL

1987-1997 OE 305-350 Originally Equipped with Hydraulic Roller Camshaft, including LT1 and LT4

S.A.D.I. BILLET

CAM APPLICATIONS

	RPM RANGE PART NO. GRIND NO.	DURATION ADV @.050	GROSS GROSS LIFT 1.5 LIFT 1.6	LOBE CENTER	ADV	VALVE LASH
<p>Serious street machines with roots or centrifugal type superchargers, up to 15 lbs of boost. Needs 2500 RPM converter, headers and free flowing exhaust. Also a good choice for 383 ci or larger cubic inch engines with aftermarket fuel injection.</p>	<p>3200-6200 E119715-47 RH-298-365-1-47</p>	<p>IN 298° 238° EX 306° 246°</p>	<p>.548" .584" .548" .584"</p>	112°	4°	.000" .000"
<p>Hot Street/E.T. Brackets. Strong mid-range torque and top end horsepower, in 383 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake, 1.6 rockers for best performance. 3000-3500 RPM converter and 4.10 or lower gears. Rough idle.</p>	<p>3500-6500 E119718-47 RH-302-365-47</p>	<p>IN 302° 242° EX 310° 250°</p>	<p>.548" .584" .548" .584"</p>	108°	2°	.000" .000"
<p>Pro Street/E.T. Brackets. Max effort in larger cubic inch engines. No less than 11.1 compression, aftermarket heads, Victor style intake with at least 850 CFM carb, large tube headers. 3500-4000 RPM converter and 4.56 gears. Pulls strong to 7000 RPM.</p>	<p>3800-6800 E119721-47 RH-310-365-47</p>	<p>IN 310° 250° EX 318° 258°</p>	<p>.548" .584" .548" .584"</p>	108°	4°	.000" .000"

For carbureted engines or aftermarket fuel injection capable of changing firing order.



Hydraulic Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	201	HA2079+ SL929	1931	800-16	7975
3400	502S	201	HA2079+ SL929	1931	800-16	7975
3400	502S	201	HA2079+ SL929	1931	800-16	7975

+OEM Lifter



Darrin Stewart

Hydraulic Roller Camshafts

4-7 SWAP NITROUS ENERGY LATE MODEL STEP NOSE



SMALL BLOCK CHEVROLET 262-400 CI 8 CYL

1987-1997 OE 305-350 Originally Equipped with Hydraulic Roller Camshaft, EXCEPT LT1 and LT4

CAM APPLICATIONS	RPM RANGE PART NO. GRIND NO.	DURATION		GROSS GROSS		LOBE CENTER	ADV	VALVE LASH
		ADV	@.050	LIFT 1.5	LIFT 1.6			
Hot Street Machine with at least 9:1 compression. Aftermarket dual or single plane manifold, 650 cfm or larger carb, headers and a 2500 RPM converter. 3.42 or lower gears. Up to 150 HP shot of nitrous.	3000-6000	IN 286°	226°	.548"	.584"	112°	0°	.000"
	E119724-47 RH-286-365-47N	EX 298°	238°	.548"	.584"			.000"
Hot Street/E.T. Brackets. With at least 9.5:1 compression. Good heads and a single plane manifold, headers and free flowing exhaust. Strong mid-range performance. 3000 RPM converter and 3.73 or lower gear. Up to 250 HP shot of nitrous.	3500-6500	IN 294°	234°	.548"	.584"	112°	0°	.000"
	E119727-47 RH-294-365-47N	EX 306°	246°	.548"	.584"			.000"
Hot Street/E.T. Brackets. Strong mid-range torque and top end horsepower, in 383 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake, 1.6 rockers for best performance. 3000-3500 RPM converter and 4.10 or lower gear. Up to 400 HP shot of nitrous.	3800-6800	IN 302°	242°	.548"	.584"	114°	0°	.000"
	E119730-47 RH-302-365-47N	EX 314°	254°	.548"	.584"			.000"



Hydraulic Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	201	HA2079+ SL929	1931	800-16	7975
3400	502S	201	HA2079+ SL929	1931	800-16	7975
3400	502S	201	HA2079+ SL929	1931	800-16	7975

+OEM Lifter



Solid Roller Camshafts

LOW-LIFT STREET/E.T. BRACKET



CHEVROLET SMALL BLOCK V8 262-400 CID ENGINES

1.5:1 STOCK ROCKER RATIO
ALLOY STEEL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Entry level, roller camshaft for mild street machine or street rod. 9.5:1 compression, single 4 barrel, headers and moderate gearing. OK in heavy car.	2500-6000	E119830* R-270-1	IN 270° EX 278° 230° 238°	.555" .555"	112°	4°	.022" .022"
Street roller camshaft with excellent low and mid-range power. 10.0:1 compression, 650-750 cfm carburetion and mild head work with dual plane manifold makes big torque.	3000-6500	E119800* R-278-1	IN 278° EX 286° 238° 246°	.555" .555"	108°	0°	.022" .022"
High performance street roller with broad power range. Works well in supercharged street rods with 8-12 lbs boost. Marine, 17-19 foot hulls with loose impeller. OK with nitrous oxide.	3400-6800	E119831* R-286-1A	IN 286° EX 294° 246° 254°	.555" .555"	114°	6°	.022" .022"
All out street roller. Works well in 3000-3400 lb E.T. Bracket cars. 10.5:1 compression minimum. 1.6:1 rockers enhance mid-range performance. Low gears and small shot of nitrous oxide.	3500-7000	E119801* R-294-1	IN 294° EX 302° 254° 260°	.555" .555"	108°	0°	.022" .022"
Our largest, low lift blower camshaft for the street. Aftermarket aluminum heads, big valves, 6-71 supercharger, 2x4 barrel carburetion, low gears and 3500 converter.	3500-7000	E119833* R-282-1A	IN 282° EX 292° 253° 263°	.600" .600"	114°	6°	.022" .022"
327-355 cubic inch E.T. Bracket cars with 11.0-12.0:1 compression, 2800-3200 lbs, good heads, 750(+) cfm carburetion, free flowing exhaust, 1.6 rocker, low gears, 4000 converter.	4000-7500	E119832* R-302-3	IN 302° EX 312° 260° 270°	.555" .555"	106°	0°	.022" .022"
Maximum camshaft for the street. Our most popular E.T. Bracket camshaft by far. 12.5:1 compression, aftermarket heads. .640" lift with 1.6 rockers, 2.050-1.60 valves, good intake and exhaust. Pulls hard! OK with nitrous oxide.	4500-7800	E119802* R-296-1	IN 296° EX 308° 266° 278°	.600" .600"	108°	0°	.022" .022"

Erson Break-In & Oil Additive

Erson's Break-In and Oil Additive with ZDDP is the best insurance for your new performance engine or classic car with flat tappet lifters and camshaft.

*** For 4-7 swap firing order put 4-7 after the part number for small base circle put S after the part number**

- Safe, proven ZDDP EP agent takes the worry out of using new oil formulas in engine that have flat tappet camshafts and lifters.
- Turns modern SM quality oil into the ideal oil for superior break-in and everyday use for superior protection.
- Compatible with ALL high-quality oils, standard or synthetic.
You choose your preferred oil.
- One 4 oz. bottle of Erson's ZDDPlus™ per oil change with SM oil is more economical than 5 quarts of exotic oil.
- Erson with ZDDP is economical and provides the protection required for high performance engines. Great for every oil change.

Part # E911000- Erson's Break-In Oil Additive 4 oz.
Part # E911001- Erson's Assembly Paste with ZDDP

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3600	506	203	RL950 / RL940+	1903-8	800-16	8981T
3600	506	203	RL950 / RL940+	1903-8	800-16	8981T
3600	506	203	RL950 / RL940+	1903-8	800-16	8981T
3600	506	203	RL950 / RL940+	1903-8	800-16	8981T
3600	506	203	RL950 / RL940+	1903-8	800-16	8981T
3600	506	203	RL950 / RL940+	1903-8	800-16	8981T
3600	506	203	RL950 / RL940+	1903-8	800-16	8981T

+RL940 Horizontal Tie-Bar

Solid Roller Camshafts

DRAG-RACE COMPETITION



CHEVROLET SMALL BLOCK V8 262-400 CID ENGINES

1.5:1 STOCK ROCKER RATIO
ALLOY STEEL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
E.T. Brackets. Recommended for 350-406 cubic inch engines with no less than 11.1 compression, ported and polished cast iron or aftermarket cylinder heads, single 750 cfm 4 barrel with 1.750" primary tube headers. 3000-3400 lb automatic cars use 4000 RPM converter.	4000-7500	E119906* R-286-5	IN 286° EX 294° 260° 268°	.675" .645"	108°	4°	.026" .026"
E.T. Brackets/Road Racer. 350-377 cubic inch engines with 11.5-12.5:1 compression, large valves, modified cylinder heads, single plane or low profile 2x4 barrel induction and free flowing exhaust makes great mid-range and horsepower. Works best with 4 or 5 speed manual transmission.	4200-7600	E119907* R-290-5	IN 290° EX 298° 264° 272°	.675" .645"	108°	4°	.026" .026"
E.T. Brackets/Super Street. 2800-3200 lb door-slammers sporting 350-406 cubic inch engines with 12.0-12.5:1 compression makes great all around power! Heavily modified cylinder heads, use 1.6 rockers on both sides to enhance performance.	4500-7700	E119908* R-294-6	IN 294° EX 302° 268° 276°	.675" .645"	106°	0°	.026" .026"
Super Stock. Erson's version of one of the industry's most popular camshafts! Longer seat timing on the intake builds higher torque for automatic cars. Use 1.8" IN rockers and 1.6" EX rockers for best results.	4500-8000	E119909* R-294-3	IN 294° EX 308° 268° 282°	.615" .645"	104°	4°	.026" .026"
E.T. Brackets/Super Stock/Super Street. Excellent all around camshaft makes great mid-range torque and top end horsepower. Intended for 327-350 cubic inch, heavy automatic cars. 3 speed automatics use 4500 RPM converter, 5.38" gears and 30" tires. 1.7" IN and 1.6" ex rockers are helpful.	4500-7800	E119910* R-298-3	IN 298° EX 306° 272° 280°	.645" .645"	104°	0°	.026" .026"
E.T. Brackets/Super Stock. 327-350 cubic inch door-slammers with good cylinder heads and intake should use 1.7" IN and 1.6" EX for best results. 3 speed automatic use 5000 RPM converter.	4600-7800	E119911* R-300-1	IN 300° EX 304° 274° 278°	.675" .645"	104°	4°	.026" .026"
E.T. Brackets/Super Stock/Super Gas. Serious E.T. bracket racers with 377-406 cubic inch engines boasting 12.8-13.5:1 compression, super stock 327-350 cubic inch, 4 speed cars or 2400 lb super gas roadsters, this cam's for you!	4800-8000	E119912* R-302-5	IN 302° EX 310° 276° 284°	.675" .675"	106°	4°	.026" .026"

*ALL GROSS LIFT FIGURES ARE CALCULATED WITH STOCK ARM RATIOS.

*** For 4-7 swap firing order put 4-7 after the part number for small base circle put S after the part number**

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA

A: Titanium
 B: Heads determine which shaft system
 *: Pushrod lengths will vary
 T: Super 7°

■ Premium components in red

Solid Roller Camshafts

DRAG-RACE COMPETITION



1.5:1 STOCK ROCKER RATIO

ALLOY STEEL BILLET

CHEVROLET SMALL BLOCK V8 262-400 CID ENGINES

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Super Stock/Super Gas. 350 cubic inch stick cars may install this camshaft straight up or advanced, depending upon vehicle weight and compression. 377(+) cubic inch, super gas roadsters pull hard coming off throttle stop. May use 1.6" rocker both sides to enhance flow characteristics.	5000-8000	E119913* R-308-2	IN 308° EX 308° 278° 282°	.712" .675"	106°	4°	.026" .026"
Super Comp./Competition Eliminator. Small cubic inch (up to 357 CID) engines with 13.0-15.0:1 compression, using heavily modified 18° cylinder heads in light (1,500 lb) chassis makes relentless top end power. Recommend 1.65" IN and 1.6" EX rockers for more top end.	5200-8200	E119914* R-310-4	IN 310° EX 314° 280° 288°	.712" .675"	110°	3°	.026" .026"
Super Stock/Super Gas/Super Comp. 2600-3200 lb super stock automatic cars with 350-364 cubic inch engines or 383-410 cubic inch super gas roadsters and super comp dragsters with no less than 13.0:1 compression, compete well with this camshaft. Compatible with alcohol or gas and 1.6" rocker on both intake and exhaust.	5500-8400	E119915* R-314-6	IN 314° EX 314° 284° 288°	.712" .675"	106°	2°	.026" .026"
Super Comp. Primarily intended for large cubic inch, small blocks in light chassis such as super comp dragsters or super pro, E.T. bracket categories. 2 speed automatic cars use 5500 RPM converter with 1.6" IN rockers and 1.55" EX rockers.	5500-8500	E119916* R-312-1	IN 312° EX 318° 282° 292°	.712" .675"	109°	4°	.026" .026"
Competition Eliminator. Designed for and a proven winner in 287-323 cubic inch econo-altered and econo-dragsters running "B" or "C" classes. Aluminum sheet metal intake, heavily modified cylinder heads and high-stall automatic using 1.7" IN and 1.6" EX rockers are recommended for serious competition.	6000-9200	E119917* R-314-7	IN 314° EX 330° 284° 298°	.712" .667"	111°	0°	.026" .026"
Competition Eliminator. Same camshaft as above, however, this one is intended for clutchless 4 or 5 speed manual transmission in altered or dragsters. Prefers Dart-Buick splayed valve cylinder heads with 1.65" IN and 1.55" EX rockers.	6000-9200	E119918* R-314-7A	IN 314° EX 330° 284° 298°	.712" .667"	113°	0°	.026" .026"
Competition Eliminator. 323-347 cubic inch econo-altered or econo-dragsters with 14.8-16.0:1 high-compression engines. Prefers Dart-Buick splayed valve cylinder heads with 1.7" IN and 1.6" EX rockers and high-stall, 2 speed automatics for championship performance.	6400-9400	E119919* R-314-8	IN 314° EX 338° 284° 302°	.727" .688"	111°	0°	.026" .026"
Competition Eliminator. 347 and larger cubic inch engines sporting 4 or 5 speed manual, clutchless transmissions work well in gas dragsters and altered. Can be used with Dart-Buick splayed valve or SB2 cylinder head configurations. Prefers 1.75" IN and 1.6" EX rocker ratios.	6600-9600	E119920* R-316-1	IN 316° EX 346° 286° 308°	.727" .688"	111°	0°	.026" .026"

*ALL GROSS LIFT FIGURES ARE CALCULATED WITH STOCK ARM RATIOS.

* For 4-7 swap firing order put 4-7 after the part number for small base circle put S after the part number

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA

A: Titanium
 B: Heads determine which shaft system
 *: Pushrod lengths will vary
 T: Super 7°

■ Premium components in red

Solid Roller Camshafts

OVAL TRACK



1.5:1 STOCK ROCKER RATIO
ALLOY STEEL BILLET

CHEVROLET SMALL BLOCK V8 262-400 CID ENGINES

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Heavy, late model sportsman, 355 CID engines. 9.0:1 compression or more. 390(+) cfm carburetion. 1.6" IN and EX rockers.	3500-6500	*E119921 R-282-2	IN 282° EX 288°	253° 259°	.600" .600"	106°	4° .022" .024"
358-410 cubic inch engines. Winged sprint cars or late model sportsman. 1/4-1/2 mile tacky tracks.	3800-6800	*E119922 R-286-4	IN 286° EX 290°	260° 264°	.675" .645"	106°	6° .022" .024"
Erson's first camshaft recommended for non-restricted classes. Late models or limited sprinters, tight 3/8-1/2 mile dirt or asphalt tracks. Use 1.6" EX rocker.	4000-7200	*E119923 R-286-3	IN 286° EX 294°	260° 268°	.645" .615"	106°	4° .022" .024"
355-406 CID engines with limited carburetion. 2 barrel or 390 cfm 4 barrel, 3/8-1/2 mile dirt or asphalt tracks.	4200-7500	*E119924 R-290-1	IN 290° EX 290°	264° 264°	.645" .645"	106°	4° .022" .024"
377(+) cubic inch, late model sportsman, modified or super modified. Slick 3/8-5/8 mile tracks. No restrictions.	4200-7600	*E119925 R-290-2	IN 290° EX 294°	264° 268°	.645" .645"	106°	4° .022" .024"
Late model sportsman/sprint car. Closed course road racer. 350-410 CID. No restrictions. Alcohol or gas.	4400-7800	*E119926 R-290-4	IN 290° EX 298°	264° 272°	.645" .645"	106°	2° .022" .024"
410(+) cubic inch, injected alcohol, outlaw sprint car or late model on fast 1/2-5/8 mile track.	4500-8000	*E119927	IN 294° EX 300°	268° 274°	.675" .645"	106°	4° .022" .024"

*ALL GROSS LIFT FIGURES ARE CALCULATED WITH STOCK ARM RATIOS.

*** For 4-7 swap firing order put 4-7 after the part number for small base circle put S after the part number**

NOTE--

When ordering a hydraulic roller camshaft for your street machine or truck, make sure that the salesperson is aware of your particular application, which will help prevent you from receiving the wrong camshaft core.

Without a doubt, the Chevrolet engine has been the target of more factory and aftermarket research and development than any other engine. Intake manifolds, cylinder heads and block configurations are some of the more obvious areas of which engineers and engine builders exhibit continued efforts to enhance both strength and performance. Camshafts are no exception. Many issues must be taken into consideration before ordering a camshaft intended for use in competition. Four areas of concern are: the lifter bore angles, journal diameters, cylinder head configuration and firing order. All of this must be known by our staff before we begin grinding. If you plan on ordering a camshaft for competition, call Erson's Technical Service Team at 775-882-1622 for information regarding profile and billet selection. The following charts will serve as an example of camshaft core options.

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA
3850 E915043	508 ^A / 507 517 ^A / VTR743 ^{TA}	203 203/VL7010 ^T	RL950 RL981	1903-8* 1903-8*	801-16 Shaft System ^B	8981/8981T 8981T/8981TA

A: Titanium
 B: Heads determine which shaft system
 *: Pushrod lengths will vary
 T: Super 7°

■ Premium components in red

Erson Camshafts offers our Cam-Pro Analysis/Professional Cam Card as a professional option for your existing camshafts. Please contact Erson's Technical Service Team for more details.

Hydraulic Roller Camshafts

LS1



GM GEN 111 LS1, LS2, LS6 4.8L, 5.3L, 5.7L, 6.0L 1997-PRESENT

CAM APPLICATIONS	RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.7	GROSS LIFT 1.8	LOBE CENTER	ADV	VALVE LASH
Excellent choice for trucks seeking improved low and mid-range torque without sacrificing mileage. Great for tow vehicles, does not require computer modifications.	1200-4200	E112000 LSRH-256-1	IN 256° 202° EX 264° 210°	.510" .510"	.540" .540"	114°	2°	.000" .000"
Mild hydraulic roller with strong mid-range torque. This cam gives a good performance increase without having to make other internal modifications. Will benefit from free flowing exhaust. Good mileage and idle, computer compatible.	1500-4500	E112001 LSRH-264-1	IN 264° 210° EX 272° 218°	.510" .510"	.540" .540"	112°	0°	.000" .000"
Great mid-range power, good choice for supercharged engines with 5-8 PSI of boost. Needs free flowing exhaust, ok with nitrous. Will require computer tuning.	2000-5200	E112003 LSRH-268-1	IN 268° 215° EX 276° 223°	.544" .544"	.576" .576"	112°	2°	.000" .000"
Hot Street strong mid-range and top end performance, needs headers and good exhaust. 2000 RPM converter. Will require computer tuning.	2500-5800	E112006 LSRH-286-1	IN 286° 220° EX 294° 228°	.578" .578"	.612" .612"	112°	2°	.000" .000"
Hot Street/E.T. Brackets, best dual purpose street strip cam. Needs 2500 RPM converter 3.42 or lower gear. Will require computer tuning.	2800-6000	E112009 LSRH-286-1A	IN 286° 226° EX 294° 234°	.621" .621"	.657" .657"	110°	0°	.000" .000"
Hot Street/E.T. Brackets. Turbo-charged engines with up to 25 PSI of boost. Best with at least 3000 RPM converter and 3.42 or lower gears. Will require computer tuning.	3000-6500	E112012 LSRH-290-1	IN 290° 230° EX 290° 230°	.621" .621"	.657" .657"	114°	0°	.000" .000"
Hot Street/E.T. Brackets, ported factory or aftermarket heads, good intake, headers and exhaust. 3000 RPM converter, 3.73 or lower gear. Will require computer tuning.	3000-6500	E112115 LSRH-294-1	IN 294° 234° EX 302° 242°	.621" .621"	.657" .657"	110°	2°	.000" .000"
Hot Street/E.T. Brackets, strong mid-range torque and top end horsepower in engines up to 427 CID. No less than 11.0:1 compression, aftermarket heads, good intake and exhaust. 3000-3500 RPM converter and 4.10 or lower gears. Rough idle, will require computer tuning.	3500-7000	E112118 LSRH-302-1	IN 302° 242° EX 310° 250°	.621" .621"	.657" .657"	110°	4°	.000" .000"

SOLID ROLLER LS1

GM GEN 111 LS1, LS2, LS6 4.8L, 5.3L, 5.7L, 6.0L 1997-PRESENT

Hot Street/E.T. Brackets, entry level roller camshaft for mild street machines. Needs headers, exhaust, and at least 2800 RPM converter. 3.42 or lower gear.	2500-6500	E112021 R-270-370	IN 270° 232° EX 278° 240°	.629" .629"	.666" .666"	110°	0°	.022" .024"
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Hydraulic Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
E915045	514	200	SL973	TBA	6645	8980
E915045	514	200	SL973	TBA	6645	8980
E915045	514	200	SL973	TBA	6645	8980
E915045	514	200	RL973	TBA	6645	8980
E915045	514	200	RL973	TBA	6645	8980
E915045	514	200	RL973	TBA	6645	8980
E915045	514	200	RL973	TBA	6645	8980
E915045	514	200	RL973	TBA	6645	8980
E915045	514	200	RL973	TBA	6645	8980
TBA	TBA	TBA	RL971	TBA	6645	8980

Energy Plus Series



BIG BLOCK CHEVROLET 1967-95 396/402/427/454 cubic inch V8 1969-90 366 cubic inch V8 (CHAIN DRIVE)

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000 Note a	E120002	IN 270° EX 280°	204° 214°	.476" .501"	112°	5°	.000" .000"
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Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800 Note a	E120004	IN 278° EX 278°	212° 212°	.476" .476"	110°	4°	.000" .000"
2000-4800 Note a	E120006	IN 280° EX 280°	214° 214°	.501" .501"	114°	5°	.000" .000"
2000-4800 Note a	E120008	IN 280° EX 290°	214° 224°	.501" .527"	112°	5°	.000" .000"
2000-4800 Note a	E120009	IN 284° EX 284°	218° 218°	.519" .519"	110°	5°	.000" .000"
2000-4800	E120012	IN 308° EX 328°	222° 235°	.500" .505"	115°	5°	.000" .000"
2000-4800	E120014	IN 292° EX 292°	224° 224°	.510" .510"	115°	1°	.000" .000"
2000-4800 Notes a, c	E120016	IN 290° EX 292°	224° 232°	.527" .553"	114°	4°	.000" .000"

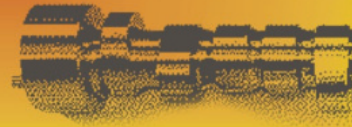
NOTES:

a) Preferred latest computer design concepts in each application.

c) This cam may require conversion to an adjustable valve train.

These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.

Energy Plus Series



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
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3050	502/504S	205/206	HA817	1603/1604	105-16	701
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3050	502/504S	205/206	HA817	1603/1604	105-16	701
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3050	502/504S	205/206	HA817	1603/1604	105-16	701
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3050	502/504S	205/206	HA817	1603/1604	105-16	701
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3050	502/504S	205/206	HA817	1603/1604	105-16	701
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3050	502/504S	205/206	HA817	1603/1604	105-16	701
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3050	502/504S	205/206	HA817	1603/1604	105-16	701
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3050	502/504S	205/206	HA817	1603/1604	105-16	701
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RETAINERS



CHROME-MOLY VALVE SPRING RETAINERS

These retainers are machined from aircraft-quality, chrome-moly, alloy-steel that far exceeds the industry standards for steel retainers. All retainers are heat-treated to 46-50 "Rockwell-C", then tumbled and finished with black-oxide to prevent rust. PBM Chrome-Moly Retainers, deliver incredible strength, with just slightly more weight than more expensive titanium retainers. Chrome-moly retainers are designed for Street, Off-Road and all but the most severe racing applications. They are ideal for Oval-Track racing.

Complete Retainer listing on pages 327-328

Energy Plus Series



BIG BLOCK CHEVROLET 1967-95 396/402/427/454 cubic inch V8 1969-90 366 cubic inch V8 (CHAIN DRIVE)

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Eliminator Hydraulic

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Good mid to high rpm torque and horsepower. For use with manual transmission or high stall automatic. Will have lower vacuum than stock.

2200-5600 Notes a, c	E120018	IN 292° EX 292°	230° 230°	.544" .544"	109°	2°	.000" .000"
2200-5600 Note c	E120020	IN 293° EX 310°	232° 239°	.549" .558"	110°	6°	.000" .000"
2200-5600 Notes a, c	E120022	IN 300° EX 310°	234° 244°	.553" .578"	112°	5°	.000" .000"
2200-5600 Note c	E120024	IN 314° EX 314°	241° 250°	.559" .578"	110°	5°	.000" .000"
2200-5600 Notes a, c	E120026	IN 310° EX 320°	244° 254°	.578" .603"	110°	5°	.000" .000"

Mechanical Flat Tappet Camshafts - Eliminator

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Mid to high rpm torque and horsepower. For serious racing only. Need proper selection of rear axle ratio and improvements in carburation and exhaust systems. For use with manual transmission or automatic. Will not have enough vacuum for power accessories.

2200-6500	E121620	IN 336° EX 316°	242° 242°	.520" .520"	114°	6°	.020" .024"
2200-6500 Notes a, c	E121622	IN 310° EX 320°	248° 258°	.570" .595"	110°	5°	.026" .026"
2200-6500 Note c	E121624	IN 303° EX 309°	257° 264°	.617" .636"	108°	3°	.026" .026"
2200-6500 Notes a, c	E121626	IN 320° EX 330°	258° 268°	.595" .621"	110°	5°	.026" .026"
2200-6500 Note c	E121628	IN 342° EX 333°	264° 270°	.559" .580"	112°	4°	.022" .026"

NOTES:

When installing above camshafts in the 1991 and later 454 cubic inch "L19" V8 Engine with a "NET BUILD LASH" non-adjustable valve train, it may be necessary to convert to an adjustable valve train by using Pre-'91 valve components.

NOTES:

- a) Preferred latest computer design concepts in each application.
- c) This cam may require conversion to an adjustable valve train.

These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.



MATCHED COMPONENTS

VALVE RETAINERS VALVE LIFTERS PUSH ROCKER TIMING

3050 502/504S 205/206 HA817 1603/1604 105-16 701

3050 502/504S 205/206 HA817 1603/1604 105-16 701

3050 502/504S 205/206 HA817 1603/1604 105-16 701

3050 502/504S 205/206 HA817 1603/1604 105-16 701

3050 502/504S 205/206 HA817 1603/1604 105-16 701

3425 502/504S 205/206 MA992 1603/1604 805-16 701

3425 502/504S 205/206 MA992 1603/1604 805-16 701

3425 502/504S 205/206 MA992 1603/1604 805-16 701

3425 502/504S 205/206 MA992 1603/1604 805-16 701

3425 502/504S 205/206 MA992 1603/1604 805-16 701

Hydraulic Flat Tappet Camshafts



CHEVROLET BIG BLOCK V8 396-502 CID ENGINES

1.72:1 STOCK ROCKER RATIO
PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050		GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Ersen's first choice over stock. Excellent for 2 wheel drive pickups with campers, 4x4s, utility trucks and motorhomes wishing to improve low end performance and driveability.	1000-4000	E120102 MP1	IN 280° EX 292°	208° 214°	.482" .514"	112°	4°	.000" .000"
Strong mid-range power. City, fast expressway and open road towing. Delivers maximum mid-range torque. Good idle, throttle response and fuel efficiency.	1250-4250	E120201 RV15H	IN 288° EX 288°	214° 214°	.492" .492"	112°	4°	.000" .000"
The "Performer" . Super low and mid-range power. Good idle, fuel efficiency and driveability. 4 barrel, headers and free flowing dual exhaust system recommended. OK for towing moderate loads.	1500-5000	E120121 TQ20H	IN 292° EX 292°	214° 214°	.514" .514"	112°	4°	.000" .000"
Suburbans, duallies and 4x4s seeking more mid-range torque and horsepower. Recommended for towing horse trailers, boats or fifth wheels when used with a dual plane intake manifold. A 4 barrel, free flowing exhaust and low gears.	1500-4750	E121021 MP2	IN 292° EX 310°	214° 226°	.514" .530"	114°	4°	.000" .000"
Great camshaft for the slightly modified street car or sport truck. Good low end torque and mid-range horsepower can be used with 4 speed manual or automatic with stock converter.	1750-5000	E120320 Hi-Flow AH	IN 284° EX 284°	220° 220°	.542" .542"	111°	0°	.000" .000"
High-lift, short duration, dual pattern camshaft. Builds good torque down low with strong mid-range power. Largest cam recommended with stock converter.	1800-5250	E120621 TQ40H	IN 284° EX 296°	220° 228°	.542" .542"	110°	0°	.000" .000"
Fair idle. Dual pattern camshaft. Works best in 454-502 cubic inch marine applications with through transom exhaust and single 4 barrel. Mini day cruiser or jets with "A" impeller.	2000-5500	E122061 Viking 100H	IN 306° EX 322°	221° 235°	.500" .512"	114°	4°	.000" .000"
Mid-range and strong top end. Needs 4 barrel, headers and low gears. OK with automatic with low gears. Fair idle and fuel efficiency.	2250-5400	E120221 TQ30H	IN 310° EX 310°	226° 226°	.530" .530"	114°	4°	.000" .000"
Strong street and strip cam for heavier car. High-lift and short duration guarantees lots of torque. OK for TURBO HYDRO for 3.55 gears.	2500-5500	E120421 Hi-Flow IH	IN 296° EX 296°	228° 228°	.542" .542"	111°	0°	.000" .000"

CAUTION:

Most production engines can not accept more than .500 valve lift without modifying the valve guides for increased clearance. When installing a cam with more than .500 valve lift, it is absolutely essential that the valve spring retainer to guide clearance be checked. Do not attempt to operate an engine with less than .150 retainer to guide clearance. If you are using valve seals, check the clearance from the top of the seal rather than the top of the guide.

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3050	504	202	HA817	1603-8 INT 1604-8 EXH	805-16	701
3050	504	202	HA817	1603-8 INT 1604-8 EXH	805-16	701
3050	504	202	HA817	1603-8 INT 1604-8 EXH	805-16	701
3050	504	202	HA817	1603-8 INT 1604-8 EXH	805-16	701
3050	504	202	HA817	1603-8 INT 1604-8 EXH	805-16	701
3050	504	202	HA817	1603-8 INT 1604-8 EXH	805-16	701
3050	504	202	HA817	1603-8 INT 1604-8 EXH	805-16	701
3050	504	202	HA817	1603-8 INT 1604-8 EXH	805-16	701
3050	504	202	HA817	1603-8 INT 1604-8 EXH	805-16	701
3050	504	202	HA817	1603-8 INT 1604-8 EXH	805-16	701

Hydraulic Flat Tappet Camshafts



1.72:1 STOCK ROCKER RATIO
PROFERAL BILLET

CHEVROLET BIG BLOCK V8 396-502 CID ENGINES

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
High-lift. Dual pattern camshaft. Needs 4 barrel, headers and low gears. 10.0:1 compression. 4 speed or automatic with 2500 (+) RPM converter. OK with small shot of nitrous oxide.	2750-5800	E120721 TQ50H	IN 296° EX 306° 228° 235°	.542" .542"	110°	0°	.000" .000"
Dual purpose camshaft. Replaces JB-100 with strong emphasis on marine applications having an "A" impeller or street machines with small super-charger.	2800-6000	E120322 Hi-Boost IH	IN 296° EX 316° 228° 240°	.542" .542"	112°	4°	.000" .000"
Vehicles seeking strong mid-range performance and broad power. Should have 427-454 CID engine with no less than 10.0:1 compression, gasket-matched cylinder heads to intake, 4 barrel and headers. 2500 RPM converter with low gears recommended.	3000-6250	E120521 Hi-Flow IHH	IN 306° EX 306° 235° 235°	.542" .542"	111°	0°	.000" .000"
Designed for jet boats and river racers equipped with 454-468 CID engines with 10.0-11.0:1 compression. Single or two 4 barrel tunnel ram style intakes with blueprinted pumps and A-B impeller recommended.	3250-6400	E125421 JB200	IN 306° EX 316° 235° 240°	.542" .542"	112°	4°	.000" .000"
Single pattern camshaft offering super mid-range and top end performance. Excellent bracket cam in 454 cubic inch engines with no less than 10.5:1 compression.	3500-6500	E120321 Hi-Flow IIIH	IN 316° EX 316° 240° 240°	.542" .542"	111°	0°	.000" .000"
For the more serious jet boater. New lobe technology builds higher cylinder pressure. Must have good exhaust (no wet manifolds), tunnel ram style intake, blueprinted pump and loose impeller.	3800-6800	E125521 JB300	IN 308° EX 316° 244° 252°	.576" .576"	112°	4°	.000" .000"
Serious street machines. 6.71 super-charger. Multiple carburetion, low gear, free flowing exhaust, large cubic inch marine applications. OK with nitrous oxide.	4000-7000	E120323 Hi-Boost IIIH	IN 312° EX 320° 248° 256°	.576" .593"	114°	4°	.000" .000"
Strong mid-range and top end performance. 468(+) cubic inch engines. No less than 11.0:1 compression. 2800-3200 lb vehicle. 4 series gear. High performance with low maintenance.	4200-7200	E120324 TQ70H	IN 320° EX 324° 256° 260°	.593" .593"	110°	0°	.000" .000"

CAUTION:

Most production engines can not accept more than .500 valve lift without modifying the valve guides for increased clearance. When installing a cam with more than .500 valve lift, it is absolutely essential that the valve spring retainer to guide clearance be checked. Do not attempt to operate an engine with less than .150 retainer to guide clearance. If you are using valve seals, check the clearance from the top of the seal rather than the top of the guide.

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3050	504	202	HA817	1603-8 INT	805-16	701
3050	504	202	HA817	1603-8 INT	805-16	701
3050	504	202	HA817	1603-8 INT	805-16	701
3050	504	202	HA817	1603-8 INT	805-16	701
3050	504	202	HA817	1603-8 INT	805-16	701
3050	504	202	HA817	1603-8 INT	805-16	701
3050	504	202	HA817	1603-8 INT	805-16	701
3050	504	202	HA817	1603-8 INT	805-16	701
3050	504	202	HA817	1603-8 INT	805-16	701

Hydraulic Flat Tappet Camshafts



BIG BLOCK CHEVROLET 396-502 CID ENGINES

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050		GROSS LIFT 1.7	LOBE CENTER	ADV	VALVE LASH
Strong mid range power needs at least 9.0:1 compression. Dual plane intake, free flowing exhaust and at least 2000 RPM converter for best performance. Has slightly lopey idle.	2200-5200	E120100 HL-290-355	IN 294° EX 298°	228° 232°	.604" .604"	110°	0°	.000" .000"
Strong mid range power needs at least 9.5:1 compression, dual plane intake, free flowing exhaust and at least 2000 RPM converter for best performance. Will have slightly lopey idle.	2500-5500	E120103 HL-294-355	IN 294° EX 302°	228° 236°	.604" .604"	110°	0°	.000" .000"
Excellent choice for street machines with roots or centrifical type superchargers, running 6 to 8 lbs of boost. 2500 RPM converter and good exhaust. Also works well with fuel injected normally aspirated engines. Will require performance chip or tunable type fuel injection.	2700-5700	E120106 HL-294-355-1	IN 294° EX 302°	228° 236°	.604" .604"	112°	0°	.000" .000"
Hot street machine with at least 10:1 compression. Aftermarket dual or single plane manifold, 750cfm or larger carb, headers. 2500 RPM converter, 3.42 or lower gears. Lopey idle.	2800-5800	E120109 HL-298-355	IN 298° EX 306°	232° 240°	.604" .604"	108°	0°	.000" .000"
Hot street machine with at least 10:1 compression. Aftermarket dual or single plane manifold, 750cfm or larger carb, headers. 2500 RPM converter, 3.42 or lower gears. Lopey idle.	3000-6000	E120112 HL-302-255	IN 302° EX 310°	236° 244°	.604" .604"	108°	0°	.000" .000"
Hot Street/E.T Brackets strong mid range torque and top end horsepower, in 454 CID and larger engines. No less than 10.5:1 compression, after market heads, single plane intake. 3000 RPM converter and 3.73 or lower gear.	3200-6200	E120115 HL-306-355	IN 306° EX 314°	240° 248°	.604" .604"	108°	2°	.000" .000"
Hot Street/E.T Brackets strong mid range torque and top end horsepower, in 454 CID and larger engines. No less than 10.5:1 compression, after market heads, single plane intake. 3000 RPM converter and 3.73 or lower gear.	3400-6400	E120118 HL-306-355-1	IN 306° EX 314°	240° 248°	.604" .604"	112°	4°	.000" .000"

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3050	504S	202	HA817 HA817R	1603-8 1604-8	122-16	701
3050	504S	202	HA817 HA817R	1603-8 1604-8	122-16	701
3050	504S	202	HA817 HA817R	1603-8 1604-8	122-16	701
3050	504S	202	HA817 HA817R	1603-8 1604-8	122-16	701
3050	504S	202	HA817 HA817R	1603-8 1604-8	122-16	701
3050	504S	202	HA817 HA817R	1603-8 1604-8	122-16	701
3050	504S	202	HA817 HA817R	1603-8 1604-8	122-16	701

Check for coil bind.
Installed height must be correct.

Hydraulic Flat Tappet Camshafts



BIG BLOCK CHEVROLET 396-502 CID ENGINES

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.7	LOBE CENTER	ADV	VALVE LASH
Hot Street/E.T Brackets strong mid range torque and top end horsepower, in 454 CID and larger engines. No less than 10.5:1 compression, after market heads, single plane intake. 3500 RPM converter and 4.10 or lower gear.	3750-6750	E120120 HL-314-355	IN 314° 248° EX 320° 256°	.604" .586"	110°	4°	.000" .000"
Pro Street machines with roots or centrifugal type superchargers, up to 15 lbs of boost. Needs headers and free flowing exhaust, 3000 RPM converter and 373 or lower gears. Also a good choice for 500 CID and larger engines, with carburetor or aftermarket fuel injection.	3750-6750	E120124 HL-314-355-1	IN 314° 248° EX 320° 256°	.604" .586"	112°	4°	.000" .000"
Hot Street/E.T Brackets strong mid-range torque and top end horsepower, in 496 CID and larger engines. No less than 10.5:1 compression, after market heads, single plane intake. 3500 to 4000 RPM converter and 4.10 or lower gear.	4000-7000	E120127 HL-318-355	IN 318° 252° EX 324° 260°	.604" .586"	110°	4°	.000" .000"
Pro Street/E.T Brackets max effort in 540 and larger cubic inch engines. No less than 10.5:1 compression, aftermarket heads, Victor style intake with at least 850 CFM carb, large tube headers. Needs at least a 3000 RPM converter and 4.10 gears.	4000-7000	E120130 HL-318-355-1	IN 318° 252° EX 324° 260°	.604" .586"	112°	4°	.000" .000"



DG Machine-Dale Green

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3050	504S	202	HA817 HA817R	1603-8 1604-8	122-16	701
3050	504S	202	HA817 HA817R	1603-8 1604-8	122-16	701
3050	504S	202	HA817 HA817R	1603-8 1604-8	122-16	701
3050	504S	202	HA817 HA817R	1603-8 1604-8	122-16	701

Check for coil bind.
Installed height must be correct.



Hydraulic Flat Tappet Camshafts



NITROUS GRINDS

BIG BLOCK CHEVROLET 396-502 CID ENGINES

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.7	LOBE CENTER	ADV	VALVE LASH
Hot Street Machine with at least 9:1 compression. Aftermarket dual or single plane manifold, 750cfm or larger carb, headers and a 2500 RPM converter. 3.42 or lower gears. Up to 150 HP shot of nitrous.	3000-6000	E120133 HL-290-355-N	IN 294° 226° EX 302° 236°	.604" .604"	112°	0°	.000" .000"
Hot Street Machine with at least 10.0:1 compression. Aftermarket dual or single plane manifold, 750cfm or larger carb, headers and a 2500 RPM converter. 3.42 or lower gears. Up to 150 HP shot of nitrous.	3500-6500	E120136 HL-298-355-N	IN 298° 232° EX 310° 244°	.604" .604"	113°	0°	.000" .000"
Hot Street/E.T Brackets with at least 10.5:1 compression. Good heads and a single plane manifold, headers and free flowing exhaust. Strong mid-range performance. 3000 RPM converter and 3.73 or lower gear. Up to 250 HP shot of nitrous.	3800-6800	E120139 HL-310-355-N	IN 310° 244° EX 318° 252°	.604" .604"	114°	0°	.000" .000"



Ron Trower's Sand Dragster

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3050	504S	202	HA817 HA817R	1603-8 1604-8	122-16	701
3050	504S	202	HA817 HA817R	1603-8 1604-8	122-16	701
3050	504S	202	HA817 HA817R	1603-8 1604-8	122-16	701



Mechanical Flat Tappet Camshafts



CHEVROLET BIG BLOCK V8

1967-90 MARK IV 396, 402, 427, 454/7.4L ENGINES

1991-95 GEN V 454/7.4L, 502/8.2L ENGINES

1.72:1 STOCK ROCKER RATIO

PROFERAL BILLET

CAM APPLICATIONS

BASIC RPM
RANGE

PART NO.
GRIND NO.

DURATION
ADV @.050

GROSS
LIFT

LOBE
CENTER

ADV

VALVE
LASH

High-lift, short duration camshaft offers improved mid-range torque and horsepower. Works best with headers and 3" free flowing exhaust system. OK with 4 speed or automatic and low gears.	3000-6000	E121721 Hi-Flow IM	IN 286° EX 286°	242° 242°	.585" .585"	110°	0°	.025" .025"
High Performance Street/E.T. Bracket camshaft. 10.5:1 compression, 4 barrel, free flowing exhaust. Pulls hard in heavier chassis when advanced 4°.	3250-6250	E121821 Hi-Flow IIM	IN 294° EX 294°	246° 246°	.585" .585"	110°	0°	.025" .025"
Hot Street/E.T. Brackets/Marine. Good mid-range power with 10.5-11.0:1 compression and 4 speed with low gears. Jet boat with blueprinted pump and A-B impeller. Works well with nitrous oxide.	3500-6500	E120306 F-282-4	IN 282° EX 290°	246° 254°	.585" .585"	112°	4°	.025" .025"
Great low end torque and mid-range horsepower. Works best with lightly modified cylinder heads. 750-850 cfm, 4 barrel carburetion, and 3500 RPM converter. Intended for 1/8-1/4 mile drag strips or 1.4-3/8 mile tacky dirt tracks.	3750-6750	E120307 F-286-2	IN 286° EX 294°	250° 258°	.585" .585"	108°	0°	.025" .025"
Hot Street/Marine/Blower grind. 6-71 Superchargers producing 8-15 lbs. of boost or jet boats with tunnel ram style intake manifolds using 2x750 cfm carburetors, open exhaust and blueprinted pum produce big power. OK with nitrous oxide.	4000-7000	E120308 F-292-1	IN 292° EX 302°	254° 264°	.645" .645"	114°	4°	.025" .025"
Hot Street/E.T. Brackets/Oval Track. Strong mid-range performance from 11.0-12.0:1 big blocks using TH-400 transmission with 4000 RPM converter. 3/8-1/2 mile asphalt modifieds or late model sportsman on dry, slick track.	4200-7200	E120309 F-298-4	IN 298° EX 306°	260° 268°	.645" .645"	108°	0°	.025" .025"
E.T. Brackets/Oval Track/Road Racer. Great all around power. 12.5:1 427's-11.5:1 468 cubic inch engines. S.C.C.A. production road racers or late model sportsman/modifieds on 1/2 mile high banked asphalt tracks.	4400-7400	E120303 F-302-2	IN 302° EX 310°	264° 272°	.645" .645"	108°	0°	.025" .025"
E.T. Brackets. 2800-3200 lb early Camaro or Nova. 427-454 CID engines, single plane manifold, oval port heads, mild head work. Upper mid-range and top end power. Easy on parts.	4400-7400	E125021 1900X	IN 308° EX 314°	268° 274°	.610" .625"	108°	0°	.025" .025"

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3425	504	202	MA992	1920-8* 1921-8*	805-16	7991
3425	504	202	MA992	1920-8* 1921-8*	805-16	7991
3425	504	202	MA992	1920-8* 1921-8*	805-16	7991
3425	504	202	MA992	1920-8* 1921-8*	805-16	7991
3425	504	202	MA992	1920-8* 1921-8*	805-16	7991
3425	504	202	MA992	1920-8* 1921-8*	805-16	7991
3425	504	202	MA992	1920-8* 1921-8*	805-16	7991
3425	504	202	MA992	1920-8* 1921-8*	805-16	7991
3425	504	202	MA992	1920-8* 1921-8*	805-16	7991

*Pushrod lengths will vary

Mechanical Flat Tappet Camshafts



CHEVROLET BIG BLOCK V8

1967-90 MARK IV 396, 402, 427, 454/7.4L ENGINES

1991-95 GEN V 454/7.4L, 502/8.2L ENGINES

1.72:1 STOCK ROCKER RATIO

PROFERAL BILLET

CAM APPLICATIONS

BASIC RPM RANGE

PART NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

Pro Street/Marine/Blower grind.
Popular in large, cubic inch pro-street cars. 3200-3400 lb. Camaros, Chevelles, etc. Automatic transmission with 4500 converter, 500 (+) cubic inch blown river racers, flats with V-drive.

4000-7500

E120310
F-306-2

IN 306°
EX 314°

268°
276°

.645"
.645"

114°

4°

.024"
.025"

E.T. Brackets. Very popular camshaft in 427-454 CID big blocks with 11.5-12.5:1 compression. Good heads, single 4 barrel, 4500 RPM converter. Modified or limited super-modifieds on fast 1/2 mile track.

4500-7500

E120304
F-306-1A

IN 306°
EX 314°

268°
276°

.645"
.645"

108°

0°

.024"
.025"

E.T. Brackets/Super Street. 454 (+) cubic inch engines with 12.5-13.5:1 compression with good heads and intake using up to 1,050 cfm carburetion on alcohol or gas. 2400-2800 lb. cars use 5000 RPM converter, 14" x 32" slick and 5.38 gears.

4750-7800

E120311
F-310-2

IN 310°
EX 314°

272°
276°

.645"
.645"

108°

0°

.024"
.025"

E.T. Brackets/Super Categories. 468(+) CID engines with 13.5-14.5:1 compression. Aftermarket aluminum heads, large single or dual 4 barrel carburetion, 2200-2600 lb. roadsters. Use 4500-5500 RPM converter.

5000-8000

E124931
2450X

IN 310°
EX 320°

276°
286°

.650"
.650"

108°

0°

.024"
.025"

E.T. Brackets/Super Categories. Intended for 500(+) cubic inch engines with no less than 14.5:1 compression. Light 2 speed dragsters or altered with good flowing cylinder heads, carbureted on gas or alcohol injected. Use 5500 RPM converter.

5500-8500

E124531
2505X

IN 320°
EX 330°

286°
296°

.650"
.650"

110°

2°

.024"
.025"

Tony Pedregon 2007 NHRA World Funny Car Championship



Mechanical Flat Tappet Camshafts

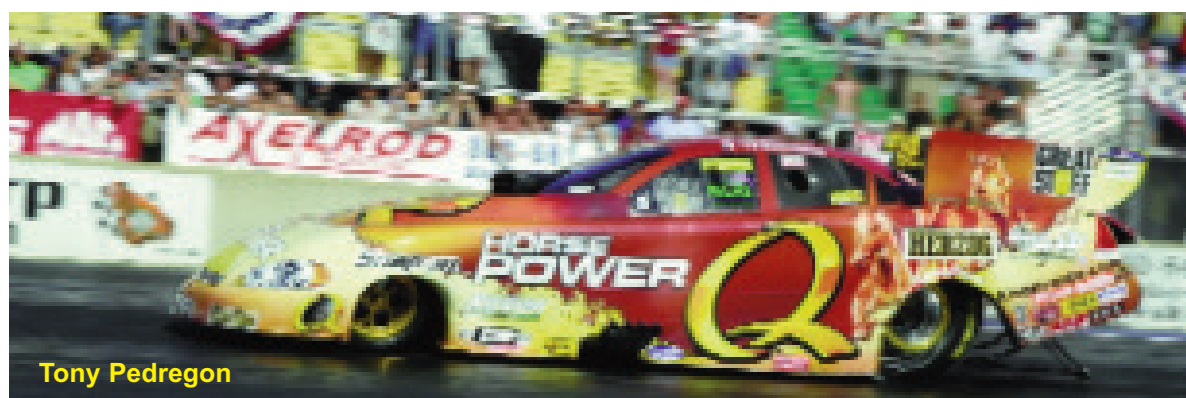


MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3450	504	202	MA992+ ML535	1920-8* 1921-8*	805-16	7991
3450	504	202	MA992+ ML535	1920-8* 1921-8*	805-16	7991
3450	504	202	MA992+ ML535	1920-8* 1921-8*	805-16	7991
3450	504	202	MA992+ ML535	1920-8* 1921-8*	805-16	7991
3450	504	202	MA992+ ML535	1920-8* 1921-8*	805-16	7991

+MA992 OEM Lifter. ML535 recommended.

*Pushrod lengths will vary



Tony Pedregon

Retro-Fit Hydraulic Roller Tappet Camshafts



1.72:1 STOCK ROCKER RATIO

CHEVROLET BIG BLOCK V8 396-502 CID ENGINES

PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
2 wheel drive and 4x4 pickups, dualies and RVs seeking improved low end performance for towing. Compatible with stock compression, torque converter and gearing. Free flowing exhaust enhances mileage and performance.	1250-4250	E120202 RH-276-1	IN 276° EX 282° 208° 214°	.550" .550"	112°	4°	.000" .000"
Good idle and low end performance with increased mid-range. Our largest camshaft. Recommended for 454 CID pickups and RVs towing with stock compression. RV converter, free flowing exhaust.	1500-4500	E120203 RH-282-7	IN 282° EX 294° 214° 226°	.550" .550"	114°	4°	.000" .000"
Mild Street Performance/Marine grind. Increased mid-range in heavier chassis, i.e.: Chevelles, Impalas, Corvettes, 9.0:1 compression, dual plane manifold, 3 speed automatics, 3.55-3.73 gears, small shot nitrous oxide.	2000-5000	E120204 RH-286-1	IN 286° EX 294° 218° 226°	.585" .585"	112°	4°	.000" .000"
High Performance Street Machines. New lobe design. Increases cylinder pressure and torque. Fair idle. Good low and mid-range performance. 9.5:1-10.0:1 compression. 4 speed or automatic. Easy on parts.	2500-5500	E120205 RH-282-4	IN 282° EX 286° 222° 226°	.550" .550"	110°	0°	.000" .000"
Hot Street and E.T. Brackets. Rough idle. 9.5:1-10.0:1 compression. Mild head work, gasket matching, etc. Single plane manifold, 750 cfm 3" exhaust, 2500 converter and low gears needed for best results.	3000-6000	E120206 RH-294-2	IN 294° EX 302° 226° 234°	.585" .585"	108°	0°	.000" .000"
Hot Street/E.T. Brackets/ Performance Marine. 427-468 CID engines. 10.0:1-10.7:1 compression. Single or dual 4 barrel, carburetion, headers, 3 speed automatics with 3000 RPM converter. OK with nitrous oxide.	3500-6500	E120207 RH-302-2	IN 302° EX 310° 234° 242°	.585" .585"	112°	4°	.000" .000"
High Performance Street/E.T. Brackets. 454 or larger CID engines using 10.5:1-11.25:1 compression, aftermarket heads, single plane manifold, 850 cfm, 3800 converter and 4.10 or lower gears increase mid-range and top end performance.	3800-6800	E120208 RH-310-2	IN 310° EX 318° 242° 250°	.585" .585"	110°	2°	.000" .000"

All of the above cams must be checked for valve clearance. We recommend .080" intake and .100" exhaust.

NOTE:

1967-90 big block Chevrolet engines came equipped with adjustable valvetrains. This made adjusting hydraulic lifter pre-load very easy. For example, using a 7/16" x 20" stud, common to big block Chevrolet engines, each 360° rotation in an upward or downward directions equals .050". Therefore, to properly adjust a hydraulic valvetrain, one would go 3/4 to 1 full turn past zero lash at the rocker arm adjusting nut, providing the lifter is at the base circle of the camshaft.

In 1991, General Motors introduced the 454-502 cubic inch, Generation V, big block engine. These engines produced from 1991-95 had non-adjustable valvetrains. When installing any camshaft with over .500" gross valve lift, the cylinder heads must be converted to adjustable valvetrains.

In 1996, General Motors introduced the 454-502 cubic inch, Generation VI, big block engine. These engines came equipped with hydraulic roller camshafts and have adjustable valvetrains. They require the use of a 2-bolt thrust plate for proper camshaft positioning and a special timing set.

TECH INFO:

For those customers who wish to have their hydraulic roller camshaft ground on a 2 piece billet, contact Erson's Technical Support Team at 775.882.1622.

Retro-Fit Hydraulic Roller Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3425	504	202	RL931 SL931*	1946-8* 1965-8*	805-16	7991
3425	504	202	RL931 SL931*	1946-8* 1965-8*	805-16	7991
3425	504	202	RL931 SL931*	1946-8* 1965-8*	805-16	7991
3425	504	202	RL931 SL931*	1946-8* 1965-8*	805-16	7991
3425	504	202	RL931 SL931*	1946-8* 1965-8*	805-16	7991
3425	504	202	RL931 SL931*	1946-8* 1965-8*	805-16	7991
3425	504	202	RL931 SL931*	1946-8* 1965-8*	805-16	7991

*SL931- Recommended for Street performance use only

*Pushrod lengths will vary

Retro-Fit Hydraulic Roller Tappet Camshafts



HR ENERGY PLUS

BIG BLOCK CHEVROLET 396-454 CI 8 CYL 1965-96

CAM APPLICATIONS	RPM RANGE PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.7	LOBE CENTER	ADV	VALVE LASH
Strong mid-range power needs at least 9.5:1 compression, dual plane intake, free flowing exhaust and at least 2000 RPM converter for best performance. Will have slightly lopey idle.	2500-5500 E120230 ¹ RH-288-355	IN 288° EX 296°	226° 234°	.604" .604"	108°	0° .000" .000"
Hot street machine with at least 10:1 compression. Aftermarket dual or single plane manifold, 750 cfm or larger carb, headers, good exhaust. 2500 RPM converter, 3.42 or lower gears. O.K. with 125 HP shot of nitrous.	2700-5700 E120231 RH-290-355	IN 290° EX 298°	230° 238°	.604" .604"	110°	2° .000" .000"
Hot Street Machine with at least 10:1 compression. Aftermarket dual or single plane manifold, 750 cfm or larger carb, headers, 2500 RPM converter, 3.42 or lower gears. Lopey idle.	3000-6000 E120233 ¹ RH-298-365	IN 298° EX 306°	238° 246°	.621" .621"	108°	0° .000" .000"
Excellent choice for street machines with roots or centrifugal type superchargers, running 6-12 lbs of boost. 2500 RPM converter and good exhaust. Also works well with fuel injected normally aspirated engines. Will require performance chip.	3000-6000 E120234 RH-298-365-1	IN 298° EX 306°	238° 246°	.621" .621"	112°	0° .000" .000"
Hot Street/E.T. Brackets strong mid-range torque and top end horsepower, in 454 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake. 3000-3500 RPM converter and 3.73 or lower gear.	3500-6500 E120236 ¹ RH-306-365	IN 306° EX 314°	246° 254°	.621" .621"	108°	2° .000" .000"
Serious street machines with roots or centrifugal type superchargers, up to 15 lbs of boost. Needs 2500 RPM converter, headers and free flowing exhaust. Also a good choice for 540 and larger cubic inch engines with aftermarket fuel injection.	3800-6800 E120339 ¹ RH-314-365	IN 314° EX 322°	254° 262°	.621" .621"	110°	2° .000" .000"
Hot Street/E.T. Brackets. Strong mid-range torque and top end horsepower, in 496 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake, 3000-3500 RPM converter and 4.10 or lower gear.	3800-6800 E120340 RH-314-365	IN 314° EX 322°	254° 262°	.621" .621"	114°	2° .000" .000"
Pro Street/E.T. Brackets. Max effort in 540-632 cubic inch engines. No less than 10.5:1 compression, aftermarket heads, Victor style intake with at least 850 CFM carb, large tube headers. Needs at least a 3000 RPM converter and 3.73 gears.	3500-6500 E120341 ¹ RH-322-365	IN 322° EX 330°	262° 270°	.621" .621"	112°	0° .000" .000"

1-NOTE: Thrust Button must be used on Retro Roller conversions, to hold cams to back of engine. Part # PBM325.

Retro-Fit Hydraulic Roller Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991

*SL931- Recommended for Street performance use only

NOTE 2 - 11/32

NOTE 3 - 3/8

NOTE 4 - 7.550"

NOTE 5 - 8.550"

Retro-Fit Hydraulic Roller Tappet Camshafts



NITROUS ENERGY

BIG BLOCK CHEVROLET 396-454 CI 8 CYL 1965-96

CAM APPLICATIONS	RPM RANGE PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.7	LOBE CENTER	ADV	VALVE LASH
Hot Street Machine with at least 9:1 compression. Aftermarket dual or single plane manifold. 750 cfm or larger carb, headers and a 2500 RPM converter. 3.42 or lower gears. Up to 150 HP shot of nitrous.	3200-6200 E120343 ¹ RH-290-365-N	IN 290° EX 302°	230° 242°	.621" .621"	114°	0° .000" .000"
Hot Street/E.T. Brackets. With at least 9.5:1 compression. Good heads and a single plane manifold, headers and free flowing exhaust. Strong mid-range performance. 3000 RPM converter and 3.73 or lower gear. Up to 250 HP shot of nitrous.	3500-6500 E120346 ¹ RH-302-365-N	IN 302° EX 314°	242° 254°	.621" .621"	114°	2° .000" .000"
Hot Street/E.T. Brackets. Strong mid-range torque and top end horsepower, in 496 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake. 3000-3500 RPM converter and 4.10 or lower gear. Up to 400 HP shot of nitrous.	3800-6800 E120349 ¹ RH-310-365-N	IN 310° EX 322°	250° 262°	.621" .621"	114°	0° .000" .000"

1-NOTE: Thrust Button must be used on Retro Roller conversions, to hold cams to back of engine. Part # PBM325.



1970 Chevy Chevelle SS 396

Retro-Fit Hydraulic Roller Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991

NOTE 2 - 11/32
 NOTE 3 - 3/8
 NOTE 4 - 7.550"
 NOTE 5 - 8.550"

*SL931- Recommended for Street performance use only



1965 Chevy Corvette 396 Turbo Jet

Retro-Fit Hydraulic Roller Tappet Camshafts



HR ENERGY PLUS

BIG BLOCK CHEVROLET 396-454 CI 8 CYL 1965-96

CAM APPLICATIONS	RPM RANGE PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.7	LOBE CENTER	ADV	VALVE LASH
Strong mid-range power needs at least 9.5:1 compression, dual plane intake, free flowing exhaust and at least 2000 RPM converter for best performance. Will have slightly lopey idle.	2500-5500 E120230-47¹ RH-288-355	IN 288° EX 296°	226° 234°	.604" .604"	108°	0° .000" .000"
Hot street machine with at least 10:1 compression. Aftermarket dual or single plane manifold, 750 cfm or larger carb, headers, good exhaust. 2500 RPM converter, 3.42 or lower gears. O.K. with 125 HP shot of nitrous.	2700-5700 E120231-47¹ RH-290-355	IN 290° EX 298°	230° 238°	.604" .604"	110°	2° .000" .000"
Hot Street Machine with at least 10:1 compression. Aftermarket dual or single plane manifold, 750 cfm or larger carb, headers, 2500 RPM converter, 3.42 or lower gears. Lopey idle.	3000-6000 E120233-47¹ RH-298-365	IN 298° EX 306°	238° 246°	.621" .621"	108°	0° .000" .000"
Excellent choice for street machines with roots or centrifugal type superchargers, running 6-12 lbs of boost. 2500 RPM converter and good exhaust. Also works well with fuel injected normally aspirated engines. Will require performance chip.	3000-6000 E120234-47¹ RH-298-365-1	IN 298° EX 306°	238° 246°	.621" .621"	112°	0° .000" .000"
Hot Street/E.T. Brackets strong mid-range torque and top end horsepower, in 454 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake. 3000-3500 RPM converter and 3.73 or lower gear.	3500-6500 E120236-47¹ RH-306-365	IN 306° EX 314°	246° 254°	.621" .621"	108°	2° .000" .000"
Serious street machines with roots or centrifugal type superchargers, up to 15 lbs of boost. Needs 2500 RPM converter, headers and free flowing exhaust. Also a good choice for 540 and larger cubic inch engines with aftermarket fuel injection.	3800-6800 E120339-47¹ RH-314-365	IN 314° EX 322°	254° 262°	.621" .621"	110°	2° .000" .000"
Hot Street/E.T. Brackets. Strong mid-range torque and top end horsepower, in 496 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake, 3000-3500 RPM converter and 4.10 or lower gear.	3800-6800 E120340-47¹ RH-314-365	IN 314° EX 322°	254° 262°	.621" .621"	114°	2° .000" .000"
Pro Street/E.T. Brackets. Max effort in 540-632 cubic inch engines. No less than 10.5:1 compression, aftermarket heads, Victor style intake with at least 850 CFM carb, large tube headers. Needs at least a 3000 RPM converter and 3.73 gears.	3500-6500 E120341-47¹ RH-322-365	IN 322° EX 330°	262° 270°	.621" .621"	112°	0° .000" .000"

1-NOTE: Thrust Button must be used on Retro Roller conversions, to hold cams to back of engine. Part # PBM325.

Retro-Fit Hydraulic Roller Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946 INT ⁴ 1965 EX ⁵	805-16	701 7991

*SL931- Recommended for Street performance use only

NOTE 2 - 11/32

NOTE 3 - 3/8

NOTE 4 - 7.550"

NOTE 5 - 8.550"

Retro-Fit Hydraulic Roller Tappet Camshafts



NITROUS ENERGY 4-7 SWAP

BIG BLOCK CHEVROLET 396-454 CI 8 CYL 1965-96

CAM APPLICATIONS	RPM RANGE PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.7	LOBE CENTER	ADV	VALVE LASH
Hot Street Machine with at least 9:1 compression. Aftermarket dual or single plane manifold. 750 cfm or larger carb, headers and a 2500 RPM converter. 3.42 or lower gears. Up to 150 HP shot of nitrous.	3200-6200 E120343-47 ¹ RH-290-365-47N	IN 290° 230° EX 302° 242°	.621" .621"	114°	0°	.000" .000"
Hot Street/E.T. Brackets. With at least 9.5:1 compression. Good heads and a single plane manifold, headers and free flowing exhaust. Strong mid-range performance. 3000 RPM converter and 3.73 or lower gear. Up to 250 HP shot of nitrous.	3500-6500 E120346-47 ¹ RH-302-365-47N	IN 302° 242° EX 314° 254°	.621" .621"	114°	2°	.000" .000"
Hot Street/E.T. Brackets. Strong mid-range torque and top end horsepower, in 496 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake. 3000-3500 RPM converter and 4.10 or lower gear. Up to 400 HP shot of nitrous.	3800-6800 E120349-47 ¹ RH-310-365-47N	IN 310° 250° EX 322° 262°	.621" .621"	114°	0°	.000" .000"

1 NOTE: Thrust Button must be used on Retro Roller conversions, to hold cams to back of engine. Part # PBM325.



Tom McGibbon's Bel Air

Retro-Fit Hydraulic Roller Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946-8INT ⁴ 1965 EX ⁵	805-16	701 7991
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946-8INT ⁴ 1965 EX ⁵	805-16	701 7991
3450	502 ² 504 ³	201 ² 202 ³	RL931 SL931*	1946-8INT ⁴ 1965 EX ⁵	805-16	701 7991

NOTE 2 - 11/32

NOTE 3 - 3/8

NOTE 4 - 7.550"

NOTE 5 - 8.550"

*SL931- Recommended for Street performance use only

Dirt Late Model Car- Driver Darren Duffy



Solid Roller Camshafts



CHEVROLET BIG BLOCK V8 396-502 CID ENGINES

1.70:1 STOCK ROCKER RATIO

ALLOY STEEL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Hot Street/Street Rods/Marine. 9.5-10.1:1 compression. 750 cfm single 4 barrel, dual plane manifold. Jet boat with "A" impeller. Good low end performance in heavy chassis.	3250-6500	E129869 R-278-2	IN 278° EX 286° 238° 246°	.629" .629"	112°	4°	.022" .024"
Hot Street/Marine/Blower Grind. B&m 250 series. 6-71 style supercharger. Single or 2x4 barrel carburetion. 4 speed or automatic transmission with 2500 RPM converter. Jet boat with blueprinted pump and "A" impeller.	3400-6700	E129870 R-286-1B	IN 286° EX 294° 246° 254°	.629" .629"	114°	4°	.022" .024"
Hot Street/E.T. Brackets. 396 or larger CID engines with no less than 10.0:1 compression. Strong low end and mid-range performance. 4 speed manual or automatic transmission with 3000-3500 RPM converter.	3500-6500	E129890 R-286-1	IN 286° EX 294° 246° 254°	.629" .629"	108°	0°	.022" .024"
Hot Street/E.T. Brackets/Oval Track. Strong mid-range performance. 10.5-11.0:1 compression. Single 750-850 cfm, 4 barrel 3" free flowing exhaust. OK with nitrous oxide. Heavy late model or modifieds on 1/4-1/2 mile dirt or asphalt tracks.	3750-7000	E129871 R-282-1	IN 282° EX 292° 253° 263°	.680" .680"	110°	2°	.024" .026"
Hot Street/E.T. Brackets/Oval Track. Great baseline camshaft for modified big blocks. Mild head work, slightly larger valves, 3200-3400 lb cars. Fast 3/8-1/2 mile tracks.	3800-6800	E129891 R-294-1	IN 294° EX 302° 254° 260°	.629" .629"	108°	0°	.022" .024"
E.T. Brackets/Oval Track. 396-427 CID engines with 11.0:1 compression. 4 speed or automatic transmissions and 4000 RPM converter. Easy on parts. Good closed-course, road race camshaft.	4000-7000	E129892 R-288-1A	IN 302° EX 308° 260° 266°	.629" .629"	108°	0°	.022" .024"
E.T. Brackets/Oval Track. Our first in a series of new lobe designs with more area under the curve. 1/8-1/4 mile drags or 468 CID asphalt modifieds on 1/4-1/2 track.	4000-7200	E129872 R-286-2	IN 286° EX 294° 260° 268°	.697" .697"	108°	0°	.024" .026"
E.T. Brackets/Pro-Street/Blower Grind. Largest streetable camshaft. 6-71 supercharger. 2x4 barrel carburetion. 2800-3200 lb chassis. 4000-4500 RPM converter.	4000-7000	E129873 R-302-3A	IN 302° EX 312° 260° 270°	.629" .629"	114°	4°	.022" .024"
E.T. Brackets/Oval Track/Road Racer/Marine. 427-468 CID engines. A 11.5-12.5:1 compression. Aftermarket rectangle port or modified oval port cylinder heads. 850-1050 cfm. Popular all around camshaft. Broad power range.	4200-7200	E129874 R-290-3	IN 290° EX 298° 264° 272°	.731" .697"	108°	2°	.024" .026"
E.T. Brackets/Super Street/Marine. Without a doubt, our most popular camshaft. Excellent mid-range and top end power. Easy on parts, 468 CID engines with no less than 11.5:1 compression, 3200-3600 lb engines. OK with nitrous oxide.	4200-7300	E129893 R-296-1	IN 296° EX 308° 266° 278°	.680" .680"	108°	0°	.024" .026"

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T

■ Premium components in red

*Pushrod lengths will vary

Solid Roller Camshafts



1.70:1 STOCK ROCKER RATIO

CHEVROLET BIG BLOCK V8 396-502 CID ENGINES

ALLOY STEEL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
E.T. Brackets/Oval Track. 468 cubic inch or larger engines with 13.0-14.5:1 compression, on 1/8 drag strips. Good 1/4 mile camshaft in smaller engines. Also works well on 1/2-5/8 mile, high-banked asphalt tracks in modifieds and super modifieds.	4400-7500	E129875 R-294-4	IN 294° EX 298° 268° 272°	.731" .697"	108°	2°	.025" .026"
E.T. Brackets/Oval Track. 396-427 CID engines with 12.5:1 compression or more or 454-468 CID engines with no less than 11.5:1 compression. Great camshaft in heavier chassis with 5.13 or lower gears and 4000-4500 RPM converter. More top end than E129875.	4400-7600	E129876 R-294-2	IN 294° EX 302° 268° 276°	.697" .697"	108°	0°	.025" .026"
E.T. Brackets/Super Street. 427-434 CID engines with 12.5-13.5:1 compression. Single 850-1050 CFM carburetion, ported and polished GM rectangle port or aftermarket oval port cylinder heads with 2.250" x 1.88" stainless valves. OK with 2 or 3 speed automatics.	4500-7500	E129877 R-298-3A	IN 298° EX 306° 272° 280°	.731" .731"	108°	0°	.025" .026"
E.T. Brackets/Super Street/Super Gas. 454-502 CID engines in full bodied cars or roadsters. 13.0-14.0:1 compression ratios, good heads, single open plenum-style manifold with 1.050 cfm carburetion, alcohol or gas.	4500-7500	E129894 R-302-2A	IN 302° EX 306° 274° 278°	.740" .740"	108°	0°	.025" .026"
E.T. Brackets/Super Gas/Marine. Very popular all around camshaft. Makes big power, yet easy on parts. Single 4 barrel or tunnel ram applications; roadsters or altered with 2 speed automatics. Unblown gas, flat bottoms or hydros with V-drives.	4600-7800	E129878 R-302-4	IN 302° EX 310° 276° 284°	.731" .731"	108°	0°	.025" .026"
Super Gas/Super Stock. Low compression 454s or high compression 396-427 CID super stockers. Also works well in larger cubic inch big blocks competing in super gas with 2.250" primary tubes and 2 speed power glides with 4500-5000 RPM converter.	4750-7800	E129879 R-304-1	IN 304° EX 310° 278° 284°	.765" .731"	108°	2°	.025" .026"
Super Street/Super Gas. 427-468 CID engines in 2400-2800 lb chassis. Must have fairly high compression, good flowing cylinder heads and manifold. Will work on cars with open exhaust or cars with free flowing 4" mufflers.	4800-8000	E129880 R-306-2	IN 306° EX 314° 280° 288°	.765" .731"	110°	2°	.025" .026"
Super Gas/Super Comp. Great camshaft in 468-502 CID roadsters with 13.0:1 compression or more. Compatible with alcohol or gas. Also, high compression 427 CID engines in super stock with 1.80:1 intake rockers, 2 or 3 speed automatics with 5000 RPM converter.	5000-8000	E129881 R-310-2	IN 310° EX 314° 284° 288°	.731" .731"	108°	0°	.025" .026"

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T

■ Premium components in red

*Pushrod lengths will vary

Solid Roller Camshafts



1.70:1 STOCK ROCKER RATIO

CHEVROLET BIG BLOCK V8 396-502 CID ENGINES

ALLOY STEEL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Super Comp/Super Gas. 468-500 CID engines up to 14.5:1 compression. Large, single, 4 barrel carburetor; 2 speed power glide 5000 RPM converter. Alcohol or gas.	5000-8200	E129882 R-310-3	IN 310° EX 318°	284° 292°	.731" .731"	110°	2° .026" .026"
Competition Eliminator/Super Stock. 430-480 CID A/Dragster engines or 427-454 CID high compression SS, SS/GT 4 speed cars, can use up to 1.8:1 rocker intake only.	5000-8750	E129883 R-314-9	IN 314° EX 346°	284° 308°	.825" .780"	114°	0° .026" .026"
Pro-Stock/Competition Eliminator. 500 CID, NHRA legal, pro-stock engines. Best of everything! 1.85" IN x 1.80" EX rockers. 4 or 5 speed manual transmission. Also works in large cubic inch A/Dragsters.	6500-9300	E129884 R-308-3	IN 308° EX 342°	284° 312°	.867" .808"	116°	0° .026" .026"
Blown-Gas Categories. Hydros, flat bottoms and coupes. 10-71 to 14-71 root-type or high helix superchargers. No less than 16 nozzles. Powerful nostalgia eliminator!	5000-9000	E129885 R-314-5	IN 314° EX 324°	286° 296°	.782" .748"	110°	0° .026" .026"
Super Comp. 480-541 CID engines in light rear engine dragsters or roadsters. A 14.0-15.0:1 compression. Large single 4 barrel carburetion. Alcohol or gas. Ported and polished aluminum cylinder heads with big 2.300" x 1.900" valves.	5250-8500	E129886 R-314-4	IN 314° EX 324°	288° 298°	.765" .731"	110°	2° .026" .026"
Super Comp/Super Eliminator/Top Sportsman. 541-650 CID engines with no less than 14.5:1 compression on alcohol or gas. 1700-2100 lb rear engine dragsters. 2 speed power glide with 5000-5500 RPM converter.	5500-8500	E129887 R-322-4	IN 322° EX 338°	292° 302°	.808" .780"	112°	4° .026" .026"
Pro-Modified/I.H.R.A. Pro-Stock. 650(+) CID engines. Heavily modified billet cylinder heads, sheet metal intake and big carburetors. A 4 or 5 speed manual transmission. Lots of nitrous oxide, class permitting.	5500-8500	E129888 R-322-5	IN 322° EX 348°	292° 318°	.825" .808"	118°	0° .026" .026"
Blown Alcohol Categories. NHRA, IHRA, NDBA, etc. 430-450 CID engines using billet cylinder heads, high helix roots type or screw type superchargers and 3 speed planetary transmissions compete heads up for championship results.	6000-10000	E129889 R-322-6	IN 322° EX 316	294° 288°	.850" .850"	116°	4° .026" .026"

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T
3870 E915160	510 516	203 203	RL951 RL982	1920-8* 1921-8*	805-16 Shaft System	8991 8991T

■ Premium components in red

*Pushrod lengths will vary

Solid Roller Camshafts



PROFESSIONAL DRAG RACE SERIES

BIG BLOCK CHEVROLET 396-454 CI 8 CYL 1965-96

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.7	GROSS LIFT 1.8	LOBE CENTER	ADV	VALVE LASH
E.T. Brackets/Super Gas/Super Comp, in 509 to 540 cubic inch engine. Needs at least 12.5:1 compression, 4500 RPM converter. Good choice for heavy chassis. Works with gas or alcohol.	4200-7200	E129025 R-310-4	IN 310° 280° EX 318° 292°	.807" .765"	.855" .810"	112°	0°	.026" .026"
E.T. Brackets/Super Gas/Super Comp, in 540 to 565 cubic inch engines. Must have at least 13.1:1 compression, 5000 RPM converter. Will work in door cars as well as dragsters. Makes great power and is easy on parts.	4500-7500	E129030 R-314-1	IN 314° 284° EX 328° 298°	.807" .748"	.855" .792"	112°	0°	.026" .026"
E.T. Brackets/Super Gas/Super Comp, in 555 to 598 cubic inch engines. Must have at least 13.1:1 compression, 5000 RPM converter. Primarily for light cars, roadsters or dragsters.	4700-7700	E129035 R-314-2	IN 314° 284° EX 328° 298°	.807" .748"	.855" .792"	114°	0°	.026" .026"
E.T. Brackets/Super Comp/Top Sportsman, in 598 to 632 cubic inch engines. With symmetrical port heads, 14.1 to 16.0:1 compression, works with alcohol or gas.	4500-7500	E129040 R-310-5	IN 310° 286° EX 340° 310°	.867" .807"	.918" .855"	114°	0°	.026" .026"
E.T. Brackets/Super Comp/Top Sportsman, in 598 to 632 cubic inch engines. With symmetrical port heads, 14.1 to 16.0:1 compression, works with alcohol or gas. This is a proven grind for dragsters seeking a strong top end charge and big MPH.	4500-7500	E129045 R-310-6	IN 310° 286° EX 340° 310°	.867" .807"	.918" .855"	116°	0°	.026" .026"

BIG BLOCK CHEVROLET 396-454 CI 8 CYL 1965-96

2.125 or larger journal

Top Sportsman cars or dragsters. 8000 RPM in 565-598 CID engines, 7500 RPM in 632 and larger engines, needs at least 14.1:1 compression, Big Chief heads, single Dominator or tunnel ram. Should use .903" diameter lifters.	4500-7500	E129050 R-319-1	IN 319° 282° EX 338° 306°	.892" .814"	.945" .862"	114°	0°	.026" .028"
Intended for Top Sportsman dragsters with 632 CID and larger engines. 14.1:1 plus compression, Big Chief heads. Can run single 4 bbl, but works best with tunnel ram and injection or dual Dominators. Should use .903" diameter lifters.	4800-7800	E129055 R-326-5	IN 326° 288° EX 346° 314°	.892" .814"	.945" .862"	116°	0°	.026" .028"

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
E915048	509	203	RL951 RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL951 RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL951 RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA

NOTE 8 - 8.280"
NOTE 9 - 9.250"

Solid Roller Camshafts



NITROUS ROLLER GRIND

BIG BLOCK CHEVROLET 396-454 CI 8 CYL 1965-96

CALL FOR SPECIFIC APPLICATIONS

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.7	GROSS LIFT 1.8	LOBE CENTER	ADV	VALVE LASH
Best in 454-500 CID engines with 12.5:1-14.0:1 compression. Mild lift so it can be used with factory heads that have limited valve spring options. Great for Pro-street cars with 540 CID or larger engines. Can use up to 350 HP or fogger system.	4500-7500	E129065 R-306-47N	IN 306° 280° EX 322° 296°	.765" .731"	.810" .774"	114°	0°	.026" .028"
Use in 540-598 CID engines with no less than 13.0:1 compression. Conventional or Big Chief heads. Works good in smaller CID engines with limited tires. Up to 500 HP shot.	4800-7800	E129070 R-316-47N	IN 316° 286° EX 340° 304°	.807" .780"	.855" .826"	116°	0°	.026" .028"
Dragsters and Top Sportsman cars with 598-632 CID engines 14.0:1 or better compression, conventional or Big Chief heads. Great for limited tire cars in shootout classes. Up to 600 HP shot.	4500-7500	E129075 R-320-47N	IN 320° 290° EX 346° 308°	.824" .780"	.873" .826"	117°	0°	.026" .028"
Maximum effort in 598-632 CID engines with no less than 14.1:1 compression. Big Chief heads, single Dominator or two 4 bbl tunnel ram. 500 HP plus nitrous system.	4700-7700	E129080 R-312-47N	IN 312° 288° EX 340° 310°	.867" .807"	.918" .855"	118°	0°	.026" .028"

NITROUS ROLLER GRIND

BIG BLOCK CHEVROLET 396-454 CI 8 CYL 1965-96

**CALL FOR SPECIFIC APPLICATIONS
2.125 or larger journal**

Pro Mod/Top Sportsman maximum effort in 540-598 CID engine. Features our newest intake profile with .525" lobe lift. Needs at least 14.1:1 compression, should use .903" diameter lifters.	4500-7500	E129082 R-322-1N	IN 322° 284° EX 344° 312°	.892" .814"	.945" .862"	118°	0°	.026" .028"
Pro Mod/Top Sportsman maximum effort in 598 and larger CID engines. Features our newest intake profile with .525" lobe lift. Needs at least 14.1:1 compression, should use .903" diameter lifters.	4800-7800	E129084 R-328-1N	IN 328° 290° EX 350 316°	.892" .814"	.945" .862"	118°	0°	.026" .028"

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
E915048	509	203	RL951 RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL951 RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA

NOTE 8 - 8.280"
NOTE 9 - 9.250"

Solid Roller Camshafts



TRUCK PULLING ROLLER GRIND

BIG BLOCK CHEVROLET 396-454 CI 8 CYL 1965-96

CALL FOR SPECIFIC APPLICATIONS

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.7	GROSS LIFT 1.8	LOBE CENTER	ADV	VALVE LASH
Designed for 454-496 CID engines with factory cast iron heads, that are limited on valve springs and require less lift. Needs at least 12.0:1 compression, good intake and exhaust.	4800-7800	E129086 R-312-1P	IN 312° 286° EX 308° 282°	.765" .731"	.810" .774"	110°	2°	.026" .028"
Use in 454-496 CID engines with 13.5:1 or better compression. Aftermarket aluminum heads, Victor style intake, large tube headers. 2 or 4wd trucks great torque and top end horsepower.	5000-8000	E129088 R-316-1P	IN 316° 286° EX 308° 282°	.807" .765"	.855" .810"	110°	2°	.026" .028"
Primarily for 540-598 CID engines 14.1:1 compression. Conventional heads, injected alcohol or gas. 2 or 4wd trucks.	5000-8000	E129090 R-320-1P	IN 322° 292° EX 314° 284°	.824" .807"	.873" .855"	110°	2°	.026" .028"
Designed for 598 CID and larger engines with Big Chief heads. Needs 14.1:1 or more compression, single Dominator or two 4bbl tunnel ram. Alcohol or gas.	4800-7800	E129092 R-326-1P	IN 326° 296° EX 318° 288°	.867" .807"	.918" .855"	112°	4°	.026" .028"

TRUCK PULLING ROLLER GRIND

BIG BLOCK CHEVROLET 396-454 CI 8 CYL 1965-96

**CALL FOR SPECIFIC APPLICATIONS
2.125 or larger journal**

Maximum effort in 598 CI and larger engines. Features our newest intake profile with .525" lobe lift. Must have at least 14.1:1 compression. Big Chief heads will work with single Dominator or two 4 bbl tunnel ram, alcohol or gas. Should use 903" diameter lifters.	5000-8000	E129095 R-334-1P	IN 334° 296° EX 312° 286°	.892" .814"	.945" .814"	112°	4°	.026" .028"
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Schnell Performance-Bonneville Salt Flats

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
E915048	509	203	RL951 RL982	1920-8 ^s 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL951 RL982	1920-8 ^s 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ^s 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ^s 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ^s 1921-8 ⁹	Shaft system	8991T 8991TA

NOTE 8 - 8.280"

NOTE 9 - 9.250"

Solid Roller Camshafts

ROLLER CAMSHAFTS 4-7 SWAP



BIG BLOCK CHEVROLET 396-454 CI 8 CYL 1965-96

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.7	GROSS LIFT 1.8	LOBE CENTER	ADV	VALVE LASH
E.T. Brackets/Super Gas/Super Comp, in 509 to 540 cubic inch engine. Needs at least 12.5:1 compression, 4500 RPM converter. Good choice for heavy chassis. Works with gas or alcohol.	4200-7200	E129025-47 R-310-4	IN 310° 280° EX 318° 292°	.807" .765"	.855" .810"	112°	0°	.026" .026"
E.T. Brackets/Super Gas/Super Comp, in 540 to 565 cubic inch engines. Must have at least 13.1:1 compression, 5000 RPM converter. Will work in door cars as well as dragsters. Makes great power and is easy on parts.	4500-7500	E129030-47 R-314-1	IN 314° 284° EX 328° 298°	.807" .748"	.855" .792"	112°	0°	.026" .026"
E.T. Brackets/Super Gas/Super Comp, in 555 to 598 cubic inch engines. Must have at least 13.1:1 compression, 5000 RPM converter. Primarily for light cars, roadsters or dragsters.	4700-7700	E129035-47 R-314-2	IN 314° 284° EX 328° 298°	.807" .748"	.855" .792"	114°	0°	.026" .026"
E.T. Brackets/Super Comp/Top Sportsman, in 598 to 632 cubic inch engines. With symmetrical port heads, 14.1 to 16.0:1 compression, works with alcohol or gas.	4500-7500	E129040-47 R-310-5	IN 310° 286° EX 340° 310°	.867" .807"	.918" .855"	114°	0°	.026" .026"
E.T. Brackets/Super Comp/Top Sportsman, in 598 to 632 cubic inch engines. With symmetrical port heads, 14.1 to 16.0:1 compression, works with alcohol or gas. This is a proven grind for dragsters seeking a strong top end charge and big MPH.	4500-7500	E129045-47 R-310-6	IN 310° 286° EX 340° 310°	.867" .807"	.918" .855"	116°	0°	.026" .026"

BIG BLOCK CHEVROLET 396-454 CI 8 CYL 1965-96

2.125 or larger journal

Top Sportsman cars or dragsters. 8000 RPM in 565-598 CID engines, 7500 RPM in 632 and larger engines, needs at least 14.1:1 compression, Big Chief heads, single Dominator or tunnel ram. Should use .903" diameter lifters.	4500-7500	E129050-47 R-319-1	IN 319° 282° EX 338° 306°	.892" .814"	.945" .862"	114°	0°	.026" .028"
Intended for Top Sportsman dragsters with 632 CID and larger engines. 14.1:1 plus compression, Big Chief heads. Can run single 4 bbl, but works best with tunnel ram and injection or dual Dominators. Should use .903" diameter lifters.	4800-7800	E129055-47 R-326-5	IN 326° 288° EX 346° 314°	.892" .814"	.945" .862"	116°	0°	.026" .028"

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
E915048	509	203	RL951 RL982	1920-8 ^ø 1921-8 ^ø	Shaft system	8991T 8991TA
E915048	509	203	RL951 RL982	1920-8 ^ø 1921-8 ^ø	Shaft system	8991T 8991TA
E915048	509	203	RL951 RL982	1920-8 ^ø 1921-8 ^ø	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ^ø 1921-8 ^ø	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ^ø 1921-8 ^ø	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ^ø 1921-8 ^ø	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ^ø 1921-8 ^ø	Shaft system	8991T 8991TA

NOTE 8 - 8.280"
NOTE 9 - 9.250"

Solid Roller Camshafts



NITROUS ROLLER GRIND 4-7 SWAP

BIG BLOCK CHEVROLET 396-454 CI 8 CYL 1965-96

CALL FOR SPECIFIC APPLICATIONS

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.7	GROSS LIFT 1.8	LOBE CENTER	ADV	VALVE LASH
Best in 454-500 CID engines with 12.5:1-14.0:1 compression. Mild lift so it can be used with factory heads that have limited valve spring options. Great for Pro-street cars with 540 CID or larger engines. Can use up to 350 HP or fogger system.	4500-7500	E129065-47 R-306-47N	IN 306° EX 322°	280° 296°	.765" .731"	.810" .774"	114°	0° .026" .028"
Use in 540-598 CID engines with no less than 13.0:1 compression. Conventional or Big Chief heads. Works good in smaller CID engines with limited tires. Up to 500 HP shot.	4800-7800	E129070-47 R-316-47N	IN 316° EX 304°	286° 304°	.807" .780"	.855" .826"	116°	0° .026" .028"
Dragsters and Top Sportsman cars with 598-632 CID engines 14.0:1 or better compression, conventional or Big Chief heads. Great for limited tire cars in shootout classes. Up to 600 HP shot.	4500-7500	E129075-47 R-320-47N	IN 320° EX 346°	290° 308°	.824" .780"	.873" .826"	117°	0° .026" .028"
Maximum effort in 598-632 CID engines with no less than 14.1:1 compression. Big Chief heads, single Dominator or two 4 bbl tunnel ram. 500 HP plus nitrous system.	4700-7700	E129080-47 R-312-47N	IN 312° EX 340°	288° 310°	.867" .807"	.918" .855"	118°	0° .026" .028"

NITROUS ROLLER GRIND 4-7 SWAP

BIG BLOCK CHEVROLET 396-454 CI 8 CYL 1965-96

**CALL FOR SPECIFIC APPLICATIONS
2.125 or larger journal**

Pro Mod/Top Sportsman maximum effort in 540-598 CID engine. Features our newest intake profile with .525" lobe lift. Needs at least 14.1:1 compression, should use .903" diameter lifters.	4500-7500	E129082-47 R-322-1N	IN 322° EX 344°	284° 312°	.892" .814"	.945" .862"	118°	0° .026" .028"
Pro Mod/Top Sportsman maximum effort in 598 and larger CID engines. Features our newest intake profile with .525" lobe lift. Needs at least 14.1:1 compression, should use .903" diameter lifters.	4800-7800	E129084-47 R-328-1N	IN 328° EX 350°	290° 316°	.892" .814"	.945" .862"	118°	0° .026" .028"

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
E915048	509	203	RL951 RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL951 RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8 ⁸ 1921-8 ⁹	Shaft system	8991T 8991TA

NOTE 8 - 8.280"
NOTE 9 - 9.250"

Solid Roller Camshafts



TRUCK PULLING ROLLER GRIND 4-7 SWAP

BIG BLOCK CHEVROLET 396-454 CI 8 CYL 1965-96

CALL FOR SPECIFIC APPLICATIONS

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.7	GROSS LIFT 1.8	LOBE CENTER	ADV	VALVE LASH
Designed for 454-496 CID engines with factory cast iron heads, that are limited on valve springs and require less lift. Needs at least 12.0:1 compression, good intake and exhaust.	4800-7800	E129086-47 R-312-1P	IN 312° 286° EX 308° 282°	.765" .731"	.810" .774"	110°	2°	.026" .028"
Use in 454-496 CID engines with 13.5:1 or better compression. Aftermarket aluminum heads, Victor style intake, large tube headers. 2 or 4wd trucks great torque and top end horsepower.	5000-8000	E129088-47 R-316-1P	IN 316° 286° EX 308° 282°	.807" .765"	.855" .810"	110°	2°	.026" .028"
Primarily for 540-598 CID engines 14.1:1 compression. Conventional heads, injected alcohol or gas. 2 or 4wd trucks.	5000-8000	E129090-47 R-320-1P	IN 322° 292° EX 314° 284°	.824" .807"	.873" .855"	110°	2°	.026" .028"
Designed for 598 CID and larger engines with Big Chief heads. Needs 14.1:1 or more compression, single Dominator or two 4bbl tunnel ram. Alcohol or gas.	4800-7800	E129092-47 R-326-1P	IN 326° 296° EX 318° 288°	.867" .807"	.918" .855"	112°	4°	.026" .028"

TRUCK PULLING ROLLER GRIND 4-7 SWAP

BIG BLOCK CHEVROLET 396-454 CI 8 CYL 1965-96

**CALL FOR SPECIFIC APPLICATIONS
2.125 or larger journal**

Maximum effort in 598 CI and larger engines. Features our newest intake profile with .525" lobe lift. Must have at least 14.1:1 compression. Big Chief heads will work with single Dominator or two 4 bbl tunnel ram, alcohol or gas. Should use 903" diameter lifters.	5000-8000	E129095-47 R-334-1P	IN 334° 296° EX 312° 286°	.892" .814"	.945" .814"	112°	4°	.026" .028"
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Schnell Performance-Bonneville Salt Flats

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
E915048	509	203	RL951 RL982	1920-8° 1921-8°	Shaft system	8991T 8991TA
E915048	509	203	RL951 RL982	1920-8° 1921-8°	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8° 1921-8°	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8° 1921-8°	Shaft system	8991T 8991TA
E915048	509	203	RL982	1920-8° 1921-8°	Shaft system	8991T 8991TA

NOTE 8 - 8.280"

NOTE 9 - 9.250"

Hydraulic Roller Camshafts



BIG BLOCK CHEVROLET GEN VI 454-502 1996-99

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.7	LOBE CENTER	ADV	VALVE LASH
Great for trucks looking to improve low and mid-range performance. Compatible with stock computer, injection, converter and gearing.	1000-4000	E120800 RH-260-300	IN 260° 204° EX 268° 212°	.510" .510"	114°	2°	.000" .000"
Strong low and mid-range performance, great for towing. Compatible with stock computer and injection. Will benefit from free flowing exhaust.	1250-4250	E120802 RH-264-300	IN 264° 208° EX 272° 216°	.510" .510"	114°	2°	.000" .000"
Excellent choice for slightly modified engines in towing applications. Needs good exhaust and computer modifications. Will require adjustable valve train and additional retainer to guide clearance on stock heads.	1500-4500	E120804 RH-272-320	IN 272° 218° EX 280° 226°	.544" .544"	114°	2°	.000" .000"
Strong mid-range power needs at least 9.5:1 compression, works with fuel injection but will require computer programming. Best with good intake and free flowing exhaust. Needs at least 2000 RPM converter and 3.42 gears for best performance. Ok with up to 125 shot of nitrous.	2500-5500	E120806 RH-294-340	IN 294° 226° EX 302° 234°	.578" .578"	112°	2°	.000" .000"
For use with carbureted engines. Strong mid-range power needs at least 9.5:1 compression, dual plane intake, free flowing exhaust and at least 2000 RPM converter for best performance. Noticeable idle.	2250-5250	E120808 RH-288-355	IN 288° 226° EX 296° 234°	.603" .603"	108°	0°	.000" .000"
Hot street machine uses our newest hi-lift short duration lobe technology. Aftermarket dual or single plane manifold, 750 cfm or larger carb, headers. 2500 RPM converter, 3.42 or lower gears.	2500-5500	E120810 RH-290-365	IN 290° 230° EX 298° 238°	.621" .621"	110°	0°	.000" .000"
Hot street machine with at least 10:1 compression. Aftermarket dual or single plane manifold, 750 cfm or larger carb, headers. 2800 RPM converter, 3.42 or lower gears.	3000-6000	E120812 RH-302-340	IN 302° 234° EX 310° 242°	.578" .578"	108°	0°	.000" .000"
Hot street machine with at least 10:1 compression. Aftermarket dual or single plane manifold, 850 cfm or larger carb, headers. 3000 RPM converter, 3.73 or lower gears. Lopey idle.	3200-6200	E120814 RH-300-355	IN 300° 238° EX 308° 246°	.603" .603"	110°	0°	.000" .000"
Hot street/E.T. Brackets strong mid-range torque and top end horsepower, in 454 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake. 3000-3500 RPM converter and 4.10 or lower gear.	3500-6500	E120816 RH-302-365	IN 302° 242° EX 310° 250°	.621" .621"	110°	4°	.000" .000"

Hydraulic Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3450	504S	202	HA2080			8994
3450	504S	202	HA2080			8994
3450	504S	202	HA2080			8994
3450	504S	202	HA2080			8994
3450	504S	202	HA2080			8994
3450	504S	202	HA2080			8994
3450	504S	202	HA2080			8994
3450	504S	202	HA2080			8994
3450	504S	202	HA2080			8994
3450	504S	202	HA2080			8994

Hydraulic Roller Camshafts

MARINE



BIG BLOCK CHEVROLET GEN VI 454-502 1996-99 Standard firing order

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.7	LOBE CENTER	ADV	VALVE LASH
Great replacement cam for pleasure boats seeking improved low and mid-range power. Ok with stock compression, intake and exhaust.	1500-4500	E120820 RH-276-320M	IN 276° 222° EX 284° 230°	.544" .544"	114°	2°	.000" .000"
Best choice for slightly modified engines. Great low and mid-range power. Good for supercharged engines with up to 8 PSI of boost.	2000-5000	E120822 RH-294-340M	IN 294° 226° EX 302° 234°	.578" .578"	114°	4°	.000" .000"
Strong mid-range and top end power in 454-496 CID engines. Needs 9.5:1 compression, good intake. Best choice for heavier boats needing torque to get on plane.	2200-5200	E120824 RH-292-355M	IN 292° 230° EX 300° 238°	.603" .603"	112°	2°	.000" .000"
Strong top end power in 496 CID and larger engines. Needs 10:1 compression good cylinder heads and intake. Also great choice for supercharged engines up to 540 Cid.	2500-5500	E120826 RH-310-365M	IN 302° 242° EX 310° 250°	.621" .621"	114°	0°	.000" .000"



Hydraulic Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3425	504S	201	HA2080			8994
3425	504S	201	HA2080			8994
3425	504S	201	HA2080			8994
3425	504S	201	HA2080			8994



Hydraulic Roller Camshafts



BIG BLOCK CHEVROLET GEN VI 454-502 1996-99

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.7	LOBE CENTER	ADV	VALVE LASH
Hot Street machine, 9.5:1-10.1:1 compression. Single or dual plane intake, 750 CFM carb. Minimum 2800 RPM converter and 3.73 gear. Good low end performance in heavy chassis.	3250-6500	E120828 R-278-370	IN 278° 238° EX 286° 246°	.629" .629"	110°	2°	.025" .025"
Hot Street/E.T. Brackets, no less than 10.1:1 compression, single plane intake, 850 CFM carb. 3000-3500 RPM converter. 4.10 gear. Strong low and mid-range power.	3500-6500	E120831 R-286-1	IN 286° 246° EX 294° 254°	.629" .629"	108°	0°	.025" .025"
E.T. Brackets/Pro Street, 11.0:1 compression, 850 CFM or larger carb, 4000 RPM converter, 4.56 gear. Good mid-range performance and torque for a heavy car.	4000-7000	E120834 R-286-2	IN 286° 260° EX 294° 268°	.697" .697"	108°	0°	.026" .028"
E.T. Brackets/Super Street/Super Gas. 454-502 CID engines in full bodied cars or roadsters. 13.0-14.0:1 compression, good heads, 1050 CFM carb, alcohol or gas. Easy on parts.	4500-7500	E120837 R-302-2A	IN 302° 274° EX 306° 278°	.740" .740"	108°	0°	.026" .028"
E.T. Brackets/Super Gas/Super Comp. 468-502 CID engines 13.5:1 or higher compression, good flowing heads, Victor style intake, 1050 CFM or larger carb. 4500-5000 RPM converter.	4500-7800	E120840 R-306-450	IN 306° 280° EX 314° 288°	.765" .765"	110°	2°	.026" .028"



Hydraulic Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3850	508	204	RL951			8994
3850	508	204	RL951			8994
3870	510	204	RL951			8994
3870	510	204	RL951			8994
3870	510	204	RL951			8994



Technical Information

INTRODUCTION TO CHRYSLER



Small Block V8

1964-91 273, 318, 340 and 360 "LA" engines are the most popular and most modified of the Mopar small block V8 class. These are often mistakenly referred to as the "A" engine. Many engine variations exist, with a multitude of aftermarket products available.

Camshafts

Most "A" engines came from the factory with standard hydraulic lifter camshafts. The exceptions to this are the early 273 and 340 "six-pack" engines equipped with solid lifter camshafts, and 1986-91 engines equipped with hydraulic roller camshafts.

Erson's "A" camshafts will fit all 1964-91 "A" engines, including engines originally equipped with hydraulic roller camshafts. However, these camshafts will not fit early 318, pre-1964, "A" engines or 1992-later "Magnum" engines.

Lifters

Erson's high performance hydraulic, solid and solid roller lifters fit all 1964-91 "A" engines. Changing from one type of lifter to another may require changing the length and/or type of pushrod. Adjustable rocker arms may also be required.

If solid roller lifters are used, modifications to the oiling system are required (refer to Chrysler's book, Mopar Engines, available from Mopar Performance). A bronze distributor gear must be used with a solid roller camshaft.

Rocker Arms and Pushrods

All "A" V8 engines were equipped with shaft mounted rocker arms at the factory. Most of these are non-adjustable. When installing a hydraulic lifter camshaft with larger than stock lift, pushrod length may have to be changed to correct lifter preload. When changing to a solid lifter camshaft, adjustable rockers are required.

Erson Cams offers two types of adjustable rocker arms for "A", "B" and "RB" engines with production heads. The economical cast iron rockers are recommended for camshafts with valve lift under .550" and maximum spring loads of 350 lbs. The full roller aluminum rockers are recommended for camshafts with higher lift and/or spring loads. These rocker arms will not fit 1970 340 "six-pack" engines.

Changing to adjustable rockers will require different pushrods because of the different end types. Erson Cams offers pushrods of two different lengths for use with adjustable rockers: one for solid lifters and one for hydraulic lifters.

W-2 and W-5 Heads

Erson Cams offers full roller aluminum rockers for "Econo W-2" as well as W-2 and W-5 heads. Special length pushrods are required. Pushrod length can be determined only after the engine is assembled.

Big Block "B" and "RB" Engines

"B" and "RB" engines include two basic blocks: a low deck block (B) and a high deck or raised deck block (RB). Each block is different in dimension. For example

the B block features a crankshaft centerline dimension of 9.98" to the top of the block. The same dimension for the RB block is 10.725". However, both blocks feature a cylinder-to-cylinder bore spacing of 4.80". The same bore spacing on each block makes most valvetrain components interchangeable between the two.

If the B/RB block is hot-tanked for cleaning purposes, the camshaft bearings must be replaced.

Camshafts

Camshaft sprockets on all B and RB camshafts (except 440-6 bbl) attach to the camshaft with a single bolt. The 440-6 barrel uses a 3 bolt sprocket similar to the Hemi. All "B" and "RB" engines use the same camshaft bearings.

Installing a camshaft with a duration of 286° or more in the "B"/"RB" engine will require valve clearance pockets in the top of the pistons. This does not apply to the low compression engines (8.5:1 or less) built from 1972-78. In the low compression engines, a camshaft with 292° duration and .509" lift can be installed with stock heads and pistons.

High lift hydraulic camshafts (.533" and higher) will require dual valve springs. Stock Chrysler single springs are not designed to handle the added lift. The extra lift may also require shorter guides. Be sure to check keeper-to-guide clearance or retainer-to seal clearance if seals or used.

Rocker Arms

Ductile iron adjustable rocker arms fit all "B" engines 350/440. New 1.75:1 rockers are an easy way to bolt on up to 10% more power. High ratio rockers increase power in the mid-range and top end, with a slight loss of low end power. To determine valve lift with 1.75 rocker arms, multiply valve lift with 1.5 rockers by 1.167(eg.: 990SB with 1.5:1 rocker lift is .550 x 1.167 = .642" lift).

Valve Springs

When installing a high lift camshaft that requires dual springs, the inner spring seats of Chrysler production heads may have to be cut to the same height as the outer seat. Also, the outside diameter of the valve guides may have to be reduced so that the dual springs will fit over them.

High lift camshafts, along with increased valve spring pressure from dual springs, usually require an adjustable valvetrain. An adjustable valvetrain will allow the valve lash to be set correctly.

Other information

Lash caps are recommended for any camshaft with more than .700" lift.

Valve-To-Piston Clearance

"B" and "RB" performance engines that are run with 4 or 5 speed manual transmissions should be set up with the following valve-to-piston clearance:

Intake: = .100" Exhaust: = .120"

Engines that are run with automatic transmissions should have a minimum of .090" clearance on intake and exhaust valves.

Technical Information

ERSON'S Cam recommendation form



Name: _____
Address: _____
Phone: _____
E-mail address: _____

Vehicle:
Year: _____ Make: _____ Model: _____
Weight: _____ Use: _____
Street: _____ Street/Strip: _____ Show car: _____
1/8 mile drag: _____ 1/4 mile drag: _____ Puller: _____
Oval track: _____ Asphalt: _____ Dirt: _____
1/4 mile: _____ 3/8 mile: _____ 1/2 mile: _____
Marine: _____ Jet Drive: _____ Prop Drive: _____

Engine:
Year: _____ Make: _____ Number of cylinders: _____
Cubic inch: _____ Compression: _____ Bore: _____
Stroke: _____ Rod type: _____ Piston type: _____
Cast: _____ Forged: _____

Cylinder Heads:
Make: _____ Model: _____ Chamber CC's: _____
Stock: _____ Ported: _____ Port matched: _____
Valve size intake: _____ Valve size exhaust: _____
Rocker ratio intake: _____ Rocker ratio exhaust: _____

Induction:
Carb/s cfm: _____ Mechanical FI: _____ Electronic FI: _____
Manifold type: _____ Blown: _____ Turbo/s: _____
Type of Fuel: _____ Nitrous: _____ No. Stages: _____

Exhaust:
Manifold type: _____ Headers/diameter: _____ Mufflers: _____

Drivetrain:
Transmission type: _____ Converter stall speed: _____
Rear axle ratio: _____ Tire diameter: _____
D.O.T.: _____ Slick: _____ Other: _____

RPM range: _____ Idle speed: _____

Emissions standards required: _____

Computer controlled:
Stock: _____ Chip: _____ Large injectors: _____
Mass air sensor: _____ Speed density sensor: _____

Cam currently used: _____ Type: _____
Intake duration: _____ @.050: _____ Valve lift: _____
Exhaust duration: _____ @.050: _____ Valve lift: _____
Lobe separation: _____ Intake lobe centerline: _____

Cam type desired:
Hydraulic: _____ Mechanical/Solid: _____
Hydraulic roller: _____ Solid roller: _____

Desired change in performance: _____

Mechanical Flat Tappet Camshafts



CHRYSLER/DODGE/PLYMOUTH 1960-80
170, 198, 225 CID 6 CYLINDER ENGINES

1.5:1 STOCK ROCKER RATIO
PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050		GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Smooth idle, broad torque range cam for passenger cars, station wagons, pickups and RVs.	1000-4000	E470301 RV10M	IN 254° EX 254°	210° 210°	.435" .435"	111°	4°	.022" .022"
Strong mid-range power. OK with torque flyte with gears. Fair idle.	2000-5000	E470621 TQ20M	IN 270° EX 270°	220° 220°	.465" .465"	111°	4°	.022" .022"
Hot Street/E.T. Brackets. Strong mid-range performance from slightly modified engines with 9.5-10.5:1 compression. Should have 4 speed transmission and low gears for best results.	3000-6000	E470302 TQ30M	IN 280° EX 280°	230° 230°	.465" .465"	110°	4°	.022" .022"
E.T. Brackets. Dodge Darts, Plymouth Valiants and other Chrysler products seeking mid-range torque and top end horsepower need modified cylinder heads, aftermarket aluminum 4 barrel manifold with up to 600 cfm carburetion, 1 5/8" primary tube header and low gears for win-	3800-6800	E470521 Hi-Flow AM	IN 286° EX 294°	242° 246°	.510" .510"	108°	0°	.022" .022"

NOTE:

Most American production engines cannot accept more than .500" lift without modifying the valve guides. When installing a camshaft with more than .500" lift, it is absolutely essential that clearance between the valve spring retainer and guide be checked. Do not attempt to operate an engine with less than .150" retainer-to-guide clearance. If you are using valve seals, check the clearance from the top of the seal rather than the top of the guide.

NOTE:

When using a flat tappet camshaft and high pressure valve springs with more than 130 lbs of seat lead or 330 lbs of nose load, Erson Cams requires a 30 minute break-in period using only the outer springs. Install the inner spring only after the break-in period. Following this procedure will greatly reduce the chance of camshaft or lifter failure.

NOTE:

When installing a hydraulic lifter racing camshaft in an engine that does not have adjustable rocker arms, care must be taken to ensure that the lifter is still able to adjust itself. If the camshaft has more than .500" valve lift, or if the heads or block have been milled excessively, the engine must be converted to adjustable rockers or adjustable pushrods.

We recommend that all competition roller camshafts be ordered directly through our Technical Department. By doing so, you will have access to our entire profile selection. You can select any combination of profiles and lobe centers. We will custom grind camshafts with dual patterns, special base circle sizes, etc.

For questions regarding the selection and/or installation of Erson Cams products, call Erson's Technical Service Team at 775.882.1622.

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3150	N/A	N/A	MA2084	N/A	N/A	T3022
3150	N/A	N/A	MA2084	N/A	N/A	T3022
3150	N/A	N/A	MA2084	N/A	N/A	T3022
3150	N/A	N/A	MA2084	N/A	N/A	T3022



1970 Dodge Challenger R/T

Energy Plus Series



CHRYSLER 1964-89 273/340/360 CUBIC INCH V8 (exc. roller lifters) 1967-89 318 CUBIC INCH V8 (exc. roller lifters)

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000 Note a	E420010	IN 260° EX 270°	194° 204°	.398" .420"	110°	5°	.000" .000"
1200-4000 Note a	E420012	IN 270° EX 270°	204° 204°	.420" .420"	110°	4°	.000" .000"
1200-4000 Note a	E420014	IN 270° EX 280°	204° 214°	.420" .443"	112°	5°	.000" .000"

Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800	E420016	IN 268° EX 276°	210° 220°	.429" .444"	114°	2°	.000" .000"
2000-4800 Note a, d	E420018	IN 280° EX 280°	214° 214°	.443" .443"	110°	4°	.000" .000"
2000-4800 Note a, d	E420020	IN 284° EX 284°	218° 218°	.458" .458"	110°	5°	.000" .000"

CHRYSLER 1964-89 273/340/360 cubic inch V8 (exc. roller lifters) 1967-89 318 cubic inch V8 (exc. roller lifters)

Eliminator Hydraulic

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Good mid to high rpm torque and horsepower. For use with manual transmission or high stall automatic. Will have lower vacuum than stock.

2200-5600 Notes a, d	E420022	IN 292° EX 292°	230° 230°	.480" .480"	109°	2°	.000" .000"
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NOTES:

a) Preferred latest computer design concepts in each application.

d) Base circle size of this camshaft is smaller than stock size. Special pushrods or rocker arms may be required to keep geometry correct and avoid damage.

These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3100	504S	206	HA2011	N/A	N/A	703
3100	504S	206	HA2011	N/A	N/A	703
3100	504S	206	HA2011	N/A	N/A	703
3100	504S	206	HA2011	N/A	N/A	703
3100	504S	206	HA2011	N/A	N/A	703
3100	504S	206	HA2011	N/A	N/A	703
3100	504S	206	HA2011	N/A	N/A	703
3100	504S	206	HA2011	N/A	N/A	703

Hydraulic Flat Tappet Camshafts



CHRYSLER "A" 1964-86 273, 340, 360 CID ENGINES

1.5:1 STOCK ROCKER RATIO

1967-85 318 CID ENGINES

PROFERAL BILLET

CAM APPLICATIONS

BASIC RPM RANGE

PART NO. GRIND NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

The "Commuter" . More power through entire range. Stop and go traffic and expressway driving use. Good idle, throttle response and fuel efficiency.	800-3800	E420111 RV5H	IN 274° EX 280°	202° 208°	.410" .420"	108°	0°	.000" .000"
Broad power range. City and expressway driving or towing. Cars, wagons, pickups or heavier rigs. Good idle, throttle response and high fuel efficiency.	1000-4000	E420101 RV10H	IN 280° EX 280°	208° 208°	.420" .420"	111°	4°	.000" .000"
Dodge vans and pickups seeking improved low end and mid-range performance. Good on or off-road driveability with slightly modified engine. OK for towing light to moderate loads. Compatible with stock converter and gearing.	1250-4250	E420112 RV12H	IN 280° EX 288°	208° 214°	.420" .429"	110°	4°	.000" .000"
Good idle and fuel efficiency with more low end and mid-range power. Excellent replacement camshaft for passenger cars or light trucks with campers, towing moderate loads. Works best with aftermarket, dual plane intake, 600 cfm 4 barrel and headers with free flowing dual exhaust. OK with small shot of nitrous oxide!	1250-4500	E421011 MP/1	IN 280° EX 292°	208° 214°	.420" .449"	114°	4°	.000" .000"
Strong mid-range power. City, fast expressway and open road towing. Delivers maximum, mid-range torque. Good idle, throttle response and fuel efficiency.	1500-4600	E420201 RV15H	IN 288° EX 288°	214° 214°	.429" .429"	110°	4°	.000" .000"
The "Performer" . Super low and mid-range power. Good idle, fuel efficiency and driveability. 4 barrel and headers recommended.	1800-4800	E420121 TQ20H	IN 292° EX 292°	214° 214°	.449" .449"	112°	4°	.000" .000"
Excellent choice for slightly modified, daily drivers, i.e.: Dodge Darts or Plymouth Challengers with 8.75-9.5:1 compression in 318-340 CID engines. Should have aftermarket aluminum, dual plane style intake with up to 650 cfm 4 barrel carburetion and gasket-matched cylinder heads for best results. Largest camshaft with stock converter and mid-3 series gearing.	2000-5000	E420322 Hi-Flow AH	IN 284° EX 284°	220° 220°	.472" .472"	108°	0°	.000" .000"
High lift, dual pattern. Needs 4 barrel, headers, lower gears and medium stall speed converter if used with automatic. Extremely strong mid-range camshaft.	2250-5200	E420222 TQ40H	IN 284° EX 296°	220° 228°	.472" .472"	110°	0°	.000" .000"

NOTE:

1992-later 5.2L and 5.9L "Magnum" engines came with a 1.6:1 pedestal-mount rockers as opposed to 1.5:1 shaft-mount in earlier engines.

NOTE:

Erson Cams does not offer hydraulic roller camshafts for 1986-91, (5.2L) or 1987-92, (5.9L) engines. Nor do we offer hydraulic roller camshafts for 1992-later 5.2L or 5.9L "Magnum" V8 engines. However, as billets become available, we will be ready to grind.

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3175	N/A	N/A	HA2011	N/A	N/A	703
3175	N/A	N/A	HA2011	N/A	N/A	703
3175	N/A	N/A	HA2011	N/A	N/A	703
3175	N/A	N/A	HA2011	N/A	N/A	703
3175	N/A	N/A	HA2011	N/A	N/A	703
3175	N/A	N/A	HA2011	N/A	N/A	703
3175	N/A	N/A	HA2011	N/A	N/A	703
3175	N/A	N/A	HA2011	N/A	N/A	703

Hydraulic Flat Tappet Camshafts



**CHRYSLER "A" 1964-86 273, 340, 360 CID ENGINES
1967-85 318 CID ENGINES**

**1.5:1 STOCK ROCKER RATIO
PROFERAL BILLET**

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Noticeable idle and increased mid-range performance from 318-340 CID engines with 9.5-10.5:1 compression using an aftermarket single or dual plane intake manifold, 600-650 cfm 4 barrel carburetion, lightly modified stock cast iron cylinder heads and headers. May require vacuum canister if used with power brakes.	2500-5500	E420221 TQ30H	IN 310° EX 310° 226° 226°	.462" .462"	111°	4	.000" .000"
Hot Street, E.T. Brackets, etc. High lift, short duration. Delivers broad power range and strong top end. Fair idle. Needs 4 barrel, headers, compression and gears.	2700-5700	E420421 Hi Flow IH	IN 296° EX 296° 228° 228°	.472" .472"	108°	0°	.000" .000"
High lift, dual pattern. Needs 4 barrel, headers and lower gears. Works best with stick or high-stall automatic. Strong top end camshaft. Rough idle. Should have at least 9:1 compression ratio.	2800-6200	E420223 TQ50H	IN 296° EX 306° 228° 235°	.472" .472"	110°	0°	.000" .000"
Runs strong 3500-7000 RPM. Stick or automatic, with gears. Needs good intake and headers. 9.5:1 or more compression. Lopey idle.	3000-6000	E420521 Hi-Flow IHH	IN 306° EX 306° 235° 235°	.472" .472"	108°	0°	.000" .000"
Strong past 7000 RPM in well set up engine. Needs headers and good carburetion. Excellent for E.T. Bracket racing. Rough idle.	3500-6500	E420321 Hi-Flow IIIH	IN 316° EX 316° 240° 240°	.472" .472"	108°	0°	.000" .000"
Hot Street/E.T. Brackets. Super mid-range torque and top end horsepower from 318-360 CID engines with 10.5-11.5:1 compression. Should have ported and polished stock or W-2 style cylinder heads with gasket-matched, open plenum, intake manifold and 750 cfm 4 barrel or multiple carburetion, headers and 2.5"-3" free flowing exhaust for best results. Automatic cars use 3500-4000 RPM converter and 4.10 or lower gears.	4000-7000	E420621 Hi-Flow IVH	IN 312° EX 320° 248° 256°	.503" .517"	110°	4°	.000" .000"

NOTE:

1992-later 5.2L and 5.9L "Magnum" engines came with a 1.6:1 pedestal-mount rockers as opposed to 1.5:1 shaft-mount in earlier engines.

NOTE:

Erson Cams does not offer hydraulic roller camshafts for 1986-91, (5.2L) or 1987-92, (5.9L) engines. Nor do we offer hydraulic roller camshafts for 1992-later 5.2L or 5.9L "Magnum" V8 engines. However, as billets become available, we will be ready to grind.

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3175	N/A	N/A	HA2011	N/A	N/A	703
3175	N/A	N/A	HA2011	N/A	N/A	703
3175	N/A	N/A	HA2011	N/A	N/A	703
3175	N/A	N/A	HA2011	N/A	N/A	703
3175	N/A	N/A	HA2011	N/A	N/A	703
3175	N/A	N/A	HA2011	N/A	N/A	703



1968 Plymouth GTX

Hydraulic Flat Tappet Camshafts



CHRYSLER "A" 1964-86 273, 340, 360 CID ENGINES

1967-85 318 CID ENGINES

.355 Lobe

CAM APPLICATIONS	RPM RANGE PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.5	GROSS LIFT 1.6	LOBE CENTER	ADV	VALVE LASH
Strong mid-range power needs at least 9.0:1 compression. Dual plane intake, free flowing exhaust and at least 2000 RPM converter for best performance. Has slightly lopey idle.	2400-5400 E420125 HL-290-1	IN 294° EX 298°	226° 232°	.532" .532"	.568" .568"	108°	2° .000" .000"
Strong mid-range power needs at least 9.5:1 compression, dual plane intake, free flowing exhaust and at least 2000 RPM converter for best performance. Lopey idle.	2600-5600 E420128 HL-294-1	IN 294° EX 302°	228° 236°	.532" .532"	.568" .568"	108°	2° .000" .000"
Excellent choice for street machines with roots or centrifical type superchargers, running 6-8 lbs of boost. 2500 RPM converter and good exhaust. Also works well with aftermarket fuel injection aspirated engines. Up to 150 shot of nitrous.	2800-5800 E420130 HL-294-1A	IN 294° EX 302°	228° 236°	.532" .532"	.568" .568"	112°	4° .000" .000"
Hot street machine with at least 10:1 compression. Aftermarket dual or single plane manifold, 750 cfm or larger carb, headers. 2500 RPM converter, 3.55 or lower gears.	3000-6000 E420132 HL-298-1	IN 298° EX 306°	232° 240°	.532" .532"	.568" .568"	110°	2° .000" .000"
Hot street machine with at least 10:1 compression. Aftermarket dual or single plane manifold, 750 cfm or larger carb, headers. 2800 RPM converter, 3.55 or lower gears.	3200-6500 E420135 HL-302-1	IN 302° EX 310°	236° 244°	.532" .532"	.568" .568"	110°	4° .000" .000"
Hot Street/E.T. Brackets strong mid-range torque and top end horsepower, in 340 CID and larger engines. No less than 11.0:1 compression, aftermarket heads, single plane intake. 3000-3500 RPM converter and 3.91 or lower gear.	3800-6800 E420137 HL-306-1	IN 306° EX 314°	240° 248°	.532" .532"	.568" .568"	108°	2° .000" .000"



Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3325	504S	206	HA2011	1640-8	N/A	703
3325	504S	206	HA2011	1640-8	N/A	703
3325	504S	206	HA2011	1640-8	N/A	703
3325	504S	206	HA2011	1640-8	N/A	703
3325	504S	206	HA2011	1640-8	N/A	703
3325	504S	206	HA2011	1640-8	N/A	703



1968 Plymouth GTX

Mechanical Flat Tappet Camshafts



**CHRYSLER "A" 1964-92 273, 340, 360 CID
1967-91 318 CID ENGINES**

**1.5:1 STOCK ROCKER RATIO
PROFERAL BILLET**

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Excellent choice for 273-340 cubic inch, early Mopars with 9.5-10.5:1 compression, seeking improved low end and mid-range performance without expensive engine and cylinder head modifications. Use 1.6:1 shaft-mount rockers, aluminum dual plane intake, 600 cfm 4 barrel and headers to enhance flow characteristics.

2800-5800

E420305
TQ30M

IN 280°
EX 280°
230°
230°

.465"
.465"

110°

4°

.018"
.018"

Hot Street/E.T. Brackets. Great mid-range performance from 318-340 CID engines with 10.5-11.5:1 compression. Needs modified stock or W-2 style cylinder heads, gasket-matched, single plane, open plenum intake manifold and up to 750 cfm 4 barrel carburetion, 3200-3600 lb. Bracketeers can use 4 speed manual or torque flyte automatic with 3500 RPM converter and low gears.

3500-6500

E420306
Hi-Flow AM

IN 286°
EX 294°
242°
246°

.510"
.510"

108°

0°

.018"
.018"

Hot Street/E.T. Brackets/Oval Track. Excellent choice for Darts and Dusters seeking uncompromised mid-range and top end power. 318-360 CID engines with 11.0-12.5:1 compression using modified W-2 or W-5 cylinder heads, "Victor Jr." style intake, single blueprinted 750 cfm 4 barrel and 1.750" diameter, equal length headers will see large gains. Also works well in modified sportsman cars on fast 1/4-3/8 mile dirt or asphalt tracks with no carburetor restrictions.

3800-7000

E420307
F-288-2

IN 288°
EX 296°
250°
258°

.562"
.562"

106°

0°

.018"
.018"

Oval Track. Proven winner and repeated track champion in well set up, modified sportsman cars running on 1/4-1/2 mile tracks. Works best in 340-360 CID engines with up to 12.5:1 compression using ported and polished, W-2 style cylinder heads, aftermarket 1.6:1 rockers, single plane manifold with 500 cfm 2 barrel and headers.

4000-7300

E420308
F-302-3

IN 302°
EX 296°
264°
258°

.562"
.562"

106°

6°

.018"
.018"

E.T. Brackets. Recommended for 2600-3000 lb door-slammers with 340 cubic inch or larger engines having 12.5-13.5:1 compression. Needs modified W-2 or W-5 cylinder heads, large valves, roller rockers, matched intake and single or multiple carburetion on alcohol or gas. Open headers or large diameter free flowing exhaust, enhance performance. Automatic cars, use 4500 RPM 8" converter, 4.56 gears and 28" tire.

4500-7800

E420309
F-308-1A

IN 308°
EX 308°
272°
272°

.612"
.612"

106°

4°

.018"
.018"

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	N/A	MA2084	N/A	N/A	7985
3400	502S	N/A	MA2084	N/A	N/A	7985
3400	502S	N/A	MA2084	N/A	N/A	7985
3400	502S	N/A	MA2084	N/A	N/A	7985
3400	502S	N/A	MA2084	N/A	N/A	7985

Mechanical Flat Tappet Camshafts



**CHRYSLER "A" 1964-92 273, 340, 360 CID
1967-91 318 CID ENGINES**

.903 Diameter Lifter

CAM APPLICATIONS	RPM RANGE PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.5	GROSS LIFT 1.6	LOBE CENTER	ADV	VALVE LASH
E.T. Brackets/Hot street machine in 340 CID and larger engines. Needs at least 11.0:1 compression, aftermarket heads. Can use high rise dual plane intake for street or single plane for best performance. Use 750 cfm or larger carb, headers and at least 2.5" exhaust. Minimum 3500 RPM converter and 3.91 or lower gears.	3800-7000 E420105 F-313-1	IN 288° 250° EX 296° 258°	.562" .562"	.600" .600"	108°	0°	.018" .020"
E.T. Brackets/Hot street machine in 340-408 CID engines. Needs at least 11.5:1 compression, aftermarket heads and a single plane intake. Use 850 cfm or larger carb, headers and at least 3" exhaust. Minimum 3500 RPM converter and 4.10 gears.	3800-7000 E420109 F-321-1	IN 296° 258° EX 302° 264°	.562" .562"	.600" .600"	108°	0°	.018" .020"
E.T. Brackets/Pro street machine in larger CID engines. Needs at least 12.0:1 compression, aftermarket heads and a single plane intake. Use 850 cfm or larger carb, large tube headers and 3" to 4" exhaust. Minimum 4000 RPM converter and 4.30 gears.	4000-7000 E420115 F-325-1	IN 302° 264 EX 306° 270	.612" .612"	.653" .653"	108°	2°	.018" .020"
E.T. Brackets/Pro street machine. Needs at least 12.5:1 compression, aftermarket heads and a single plane intake. Use 850 cfm or Dominator carb, large tube headers and 3" to 4" exhaust. Minimum 4500 RPM converter and 4.56 or lower gears.	4500-7500 E420120 F-329-1	IN 304° 266 EX 308° 272	.612" .612"	.653" .653"	108°	4°	.018" .020"



Erson Break-In & Oil Additive

Erson's Break-In and Oil Additive with ZDDP is the best insurance for your new performance engine or classic car with flat tappet lifters and camshaft.

- Safe, proven ZDDP EP agent takes the worry out of using new oil formulas in engine that have flat tappet camshafts and lifters.
- Turns modern SM quality oil into the ideal oil for superior break-in and everyday use for superior protection.
- Compatible with ALL high-quality oils, standard or synthetic.
You choose your preferred oil.
- One 4 oz. bottle of Erson's ZDDPlus™ per oil change with SM oil is more economical than 5 quarts of exotic oil.
- Erson with ZDDP is economical and provides the protection required for high performance engines. Great for every oil change.

Part # E911000- Erson's Break-In Oil Additive 4 oz.
Part # E911001- Erson's Assembly Paste with ZDDP

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3425	504S	206	ML752	1934-8	N/A	8985
3425	504S	206	ML752	1934-8	N/A	8985
3425	504S	206	ML752	1934-8	N/A	8985
3425	504S	206	ML752	1934-8	N/A	8985
3425	504S	206	ML752	1934-8	N/A	8985

Mechanical Flat Tappet Camshafts



CHRYSLER/DODGE/PLYMOUTH 1964 -92 273, 340, 360 CID "A" ENGINES

1.5:1 STOCK ROCKER RATIO

1967-91 318 CID "A" ENGINES

CAM APPLICATIONS

BASIC RPM RANGE

PART NO. GRIND NO.

DURATION ADV @.050

GROSS LIFT

PROFERAL BILLET VALVE LASH

LOBE CENTER

ADV

VALVE LASH

Hot Street/E.T. Brackets. Excellent choice for high performance Street Machines seeking an entry level camshaft with stout mid-range performance. Recommended for 318-360 cubic inch engines with 10.5-11.5:1 compression, modified stock or aftermarket cylinder heads, matched single plane intake, 750 cfm 4 barrel and headers. Also works well with 1.6:1 rockers and small shot of nitrous oxide. Automatic cars use 3500 RPM converter.

3600-6600

E420991
R-286-1

IN 286° 246°
EX 294° 254°

.555"
.555"

108°

0°

.022"
.022"

E.T. Brackets/Oval Track. Strong mid-range torque and top end HP from modified 340-360 CID engines with 11.5-12.5:1 compression. Should have ported and polished W-2 or W-5 cylinder heads, shaft-mount roller rockers, match-ported and flowed single plane intake with blueprinted 750 cfm 4 barrel and headers for best results. Also works well in alcohol injected 360 cubic inch limited sprinters on 3/8-1/2 mile tracks.

4500-7600

E420992
R-286-5A

IN 286° 260°
EX 294° 268°

.675"
.645"

106°

4°

.026"
.028"

Pro Brackets/Super Categories. Roadsters, altereds and other full chassis cars weighing 2000-2600 lbs will reap substantial gains in upper mid-range and top end power from 340 cubic inch and larger engines boasting 13.5-14.5:1 compression. For best results, use heavily modified Mopar or aftermarket aluminum cylinder heads. 1.6 shaft mount roller rockers, single or multiple carburetion on alcohol or gas and open headers. 2 speed automatic cars use 5000 RPM converter, 5.13 gears and 14" x 32" slick.

5000-8000

E420993
R-302-7

IN 302° 276°
EX 310° 284°

.675"
.645"

106°

0°

.026"
.028"

Please note that Erson's offering of profiles does not include our full capacity of profiles that are available. Being a completely diverse camshaft company affords us the ability to provide a much wider variety of profiles which are not depicted. Please call our technical department for expert advice and/or recommendations.

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3850 E915043	507 / 508 517	N/A N/A	RL965 RL965	N/A N/A	N/A N/A	8985 8985
3850 E915043	507 / 508 517	N/A N/A	RL965 RL965	N/A N/A	N/A N/A	8985 8985
3850 E915043	507 / 508 517	N/A N/A	RL965 RL965	N/A N/A	N/A N/A	8985 8985

■ Premium components in red

CUSTOM GRINDS AVAILABLE.
Consult Erson's Technical Service.
Premium upgrades for Extreme Applications.

Energy Plus Series



CHRYSLER 1958-78 350/361/383/400/413/426/440 (exc. Hemi) CUBIC INCH V8 (exc. roller lifters)
 ("B" Engine-use with single bolt gear)

CAM APPLICATIONS

BASIC RPM RANGE

PART NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000 Note a	E410050	IN 260° EX 270°	194° 204°	.398" .420"	110°	5°	.000" .000"
1200-4000 Note a	E410052	IN 270° EX 280°	204° 214°	.420" .443"	112°	5°	.000" .000"

Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800	E410054	IN 268° EX 284°	214° 225°	.449" .464"	115°	2°	.000" .000"
2000-4800 Note a	E410056	IN 272° EX 272°	224° 224°	.455" .455"	112°	4°	.000" .000"
2000-4800 Notes a, d	E410058	IN 290° EX 300°	224° 234°	.465" .488"	112°	5°	.000" .000"

Eliminator Hydraulic

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Good mid to high rpm torque and horsepower. For use with manual transmission or high stall automatic. Will have lower vacuum than stock.

2200-5600 Notes a, g	E410060	IN 310° EX 310°	244° 244°	.510" .510"	108°	5°	.000" .000"
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NOTES:

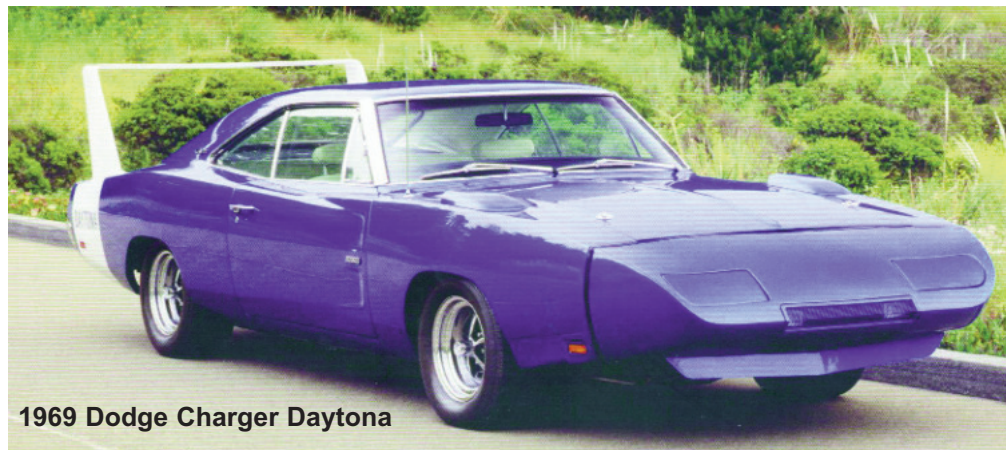
- a) Preferred latest computer design concepts in each application.
 - d) Base circle size of this camshaft is smaller than stock size. Special pushrods or rocker arms may be required to keep geometry correct and avoid damage.
 - g) The valve lift of this camshaft may require special pushrods, rocker arms or springs to keep geometry correct or prevent binding and damage.
- These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.

Energy Plus Series



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3050	504S	206	HA2011	N/A	N/A	7607 Single bolt
3050	504S	206	HA2011	N/A	N/A	7607 Single bolt
3050	504S	206	HA2011	N/A	N/A	7607 Single bolt
3050	504S	206	HA2011	N/A	N/A	7607 Single bolt
3050	504S	206	HA2011	N/A	N/A	7607 Single bolt
3050	504S	206	HA2011	N/A	N/A	7607 Single bolt



1969 Dodge Charger Daytona

Hydraulic Flat Tappet Camshafts



CHRYSLER/DODGE/PLYMOUTH 361, 383, 400 CID "B" ENGINES

1.5:1 STOCK ROCKER RATIO

413, 426W, 440 CID "RB" ENGINES

PROFERAL BILLET

CAM APPLICATIONS

BASIC RPM RANGE

PART NO. GRIND NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

Erson's first choice over stock for heavy passenger cars and trucks seeking a good idle and driveability with improved low end and mid-range performance. Compatible with stock compression, converter and gearing. OK for towing light to moderate loads.	1250-4250	E411011 MP/1	IN 280° EX 292°	208° 214°	.420" .449"	114°	4°	.000" .000"
The "Performer" . Super low and mid-range power. Good idle, fuel efficiency and driveability. 4 barrel and headers recommended.	1500-4500	E410121 TQ20H	IN 292° EX 292°	214° 214°	.449" .449"	111°	4°	.000" .000"
Good idle and throttle response from larger engines. Dodge power wagons and Ram Chargers with stock or aftermarket dual plane intake manifolds, 4 barrel carburetion and headers with dual exhaust will see noticeable gains when towing moderate to heavy loads. Works best with 4 or 5 speed manual transmission and low gears.	1500-4750	E411021 MP/2	IN 292° EX 310°	214° 226°	.449" .462"	114°	4°	.000" .000"
Excellent choice for slightly modified street machines or muscle trucks seeking improved low-end torque and mid-range HP. 383-440 cubic inch engines run best with 8.75-9.5:1 compression, aftermarket aluminum dual plane intake, 650-750 cfm carburetion and headers with large diameter, free flowing dual exhaust.	1800-4800	E410322 Hi-Flow AH	IN 284° EX 284°	220° 220°	.472" .472"	112°	4°	.000" .000"
High-lift, dual pattern. Needs 4 barrel, headers, lower gears and medium stall speed converter if used with automatic. Extremely strong mid-range camshaft.	2000-5000	E410222 TQ40H	IN 284° EX 296°	220° 228°	.472" .472"	110°	0°	.000" .000"
Expect a noticeable idle and strong mid-range performance from 383-440 cubic inch engines with 9.5-10.5:1 compression. Use mildly-ported stock cylinder heads, gasket-matched to an aftermarket dual plane intake with up to 750 cfm carburetion for best results. May require a vacuum canister if used with power brakes.	2500-5500	E410221 TQ30H	IN 310° EX 310°	226° 226°	.462" .462"	111°	4°	.000" .000"
Hot Street, E.T. Brackets, etc. High-lift, short duration, delivers broad power range and strong top end. Fair idle. Needs 4 barrel, headers, compression and gears.	2500-5500	E410421 Hi-Flow IH	IN 296° EX 296°	228° 228°	.472" .472"	108°	0°	.000" .000"
High-lift, dual pattern. Needs 4 barrel, headers and lower gears. Works best with stick or high-stall automatic. Strong top end camshaft. Rough idle. Should have at least 9.1 compression.	2600-5800	E410223 TQ50H	IN 296° EX 306°	228° 235°	.472" .472"	110°	0°	.000" .000"

NOTE:

All hydraulic camshafts are ground on single-bolt, Chrysler big block billets. To have a particular camshaft ground on a 3-bolt, high performance billet, call Erson's Technical Service Team at 775-882-1622.

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3050	504	N/A	HA2011	N/A	N/A	7607
3050	504	N/A	HA2011	N/A	N/A	7607
3050	504	N/A	HA2011	N/A	N/A	7607
3050	504	N/A	HA2011	N/A	N/A	7607
3050	504	N/A	HA2011	N/A	N/A	7607
3050	504	N/A	HA2011	N/A	N/A	7607
3050	504	N/A	HA2011	N/A	N/A	7607
3050	504	N/A	HA2011	N/A	N/A	7607
3050	504	N/A	HA2011	N/A	N/A	7607

Hydraulic Flat Tappet Camshafts



CHRYSLER/DODGE/PLYMOUTH 361, 383, 400 CID "B" ENGINES

1.5:1 STOCK ROCKER RATIO

413, 426W, 440 CID "RB" ENGINES

PROFERAL BILLET

CAM APPLICATIONS

BASIC RPM RANGE

PART NO. GRIND NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

Runs strong 3500-7000 RPM. Stick or automatic, with gears. Needs good intake and headers with 9.5:1 or more compression. Lopey idle.

3000-6000

E410521
Hi-Flow I1H

IN 306° 235°
EX 306° 235°

.472"
.472"

108°

0°

.000"
.000"

Hot Street/E.T. Brackets. strong mid-range torque and top end power from 413-440 cubic inch "RB" engines with 10.5-11.5:1 compression. Use modified big valve, Stage V or Stage VI aluminum cylinder heads, 1.6 shaft-mount roller rockers, "Victor Jr." style intake, 850 cfm 4 barrel, and 2.0"-2.125" headers for best results. 3000-3400 lb automatic cars use 3500 RPM converter, 4.56 gear and 28"-30" soft compound tire.

3500-6500

E411322
Hi-Flow IVH

IN 312° 248°
EX 320° 256°

.503"
.517"

110°

4°

.000"
.000"

Hot Street/E.T. Brackets. Increased upper mid-range and top end power in 2800-3200 lb door-slamers using 440 cubic inch or larger Chrysler big blocks with no less than 11.5:1 compression. Must have good cylinder heads, 1.6 shaft-mount roller rockers, single or 2x4 barrel open plenum intake and 850(+) cfm carburetion. Torque flyte automatic cars, use 4000 RPM converter and 4.30 gears with 30"-32" tire.

4000-7000

E411224
TQ60H

IN 316° 252°
EX 324° 260°

.517"
.517"

108°

0°

.000"
.000"



NOTE:

All hydraulic camshafts are ground on single-bolt, Chrysler big block billets. To have a particular camshaft ground on a 3-bolt, high performance billet, call Erson's Technical Service Team at 775-882-1622.

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3050	504	N/A	HA2011	N/A	N/A	7607
3050	504	N/A	HA2011	N/A	N/A	7607
3050	504	N/A	HA2011	N/A	N/A	7607



Dodge Challenger

Hydraulic Flat Tappet Camshafts



**CHRYSLER/DODGE/PLYMOUTH 350, 361, 383, 400 CID "B" ENGINES
413, 426W, 440 CID "RB" ENGINES**

**1.5:1 STOCK ROCKER RATIO
3-BOLT PROFERAL BILLET**

CAM APPLICATIONS	RPM RANGE PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.5	GROSS LIFT 1.6	LOBE CENTER	ADV	VALVE LASH
Strong mid-range power needs at least 9.0:1 compression. Dual plane intake, free flowing exhaust and at least 2000 RPM converter for best performance. Has slightly lopey idle.	2200-5200 E410125 HL-290-1	IN 290° 226° EX 298° 232°	.532" .532"	.568" .568"	108°	0°	.000" .000"
Strong mid-range power needs at least 9.5:1 compression, dual plane intake, free flowing exhaust and at least 2000 RPM converter for best performance. Has slightly lopey idle.	2500-5500 E410128 HL-294-1	IN 294° 228° EX 302° 236°	.532" .532"	.568" .568"	108°	0°	.000" .000"
Excellent choice for street machines with roots or centrifical type superchargers, running 6-8 lbs of boost. 2500 RPM converter and good exhaust. Also works well with aftermarket fuel injection aspirated engines. Up to 150 shot of nitrous.	2700-5700 E410130 HL-294-1A	IN 294° 228° EX 302° 236°	.532" .532"	.568" .568"	112°	4°	.000" .000"
Hot street machine with at least 10:1 compression. Aftermarket dual or single plane manifold, 750 cfm or larger carb, headers. 2500 RPM converter, 3.55 or lower gears.	2800-5800 E410132 HL-298-1	IN 298° 232° EX 306° 240°	.532" .532"	.568" .568"	110°	0°	.000" .000"
Hot street machine with at least 10:1 compression. Aftermarket dual or single plane manifold, 750 cfm or larger carb, headers. 2800 RPM converter, 3.55 or lower gears. Lopey idle.	3000-6000 E410135 HL-302-1	IN 302° 236° EX 310° 244°	.532" .532"	.568" .568"	110°	2°	.000" .000"
Hot street/E.T. Brackets strong mid-range torque and top end horsepower, in 440 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake. 3000-3500 RPM converter and 3.91 or lower gear.	3200-6200 E410137 HL-306-1	IN 306° 240° EX 314° 248°	.532" .532"	.568" .568"	108°	0°	.000" .000"



VALVE LOCKS



PBM Machined Valve Locks are formed from alloy-steel and heat-treated for maximum strength and durability, these locks are 3-times stronger than Original-Equipment Valve Locks. Our machined locks are economical and are recommended for moderate competition applications without ultra-high spring pressures and minimal valve float.

Our high-strength, 4130 Valve Locks are designed for serious competition, high-spring loads, and applications where valve-float cannot be avoided. These valve locks are precision machined from chrome-moly bar stock and heat-treated to 38-42 "Rockwell-C", then plated for identification. Use these locks with steel or titanium retainers only.

Applications listed page 329

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3325	504S	206	HA2011	TBA	TBA	7607
3325	504S	206	HA2011	TBA	TBA	7607
3325	504S	206	HA2011	TBA	TBA	7607
3325	504S	206	HA2011	TBA	TBA	7607
3325	504S	206	HA2011	TBA	TBA	7607
3325	504S	206	HA2011	TBA	TBA	7607

Erson's Professional *FSP* Damperless Valve Springs



Erson's FSP Valve Springs have set the standard in the performance spring market. Professional engine builders count on the FSP valve spring's engineering for maximum performance and durability that heightens valve train stability. All springs are heat-set @300°F, for more consistent loads and less load loss. Each set of 16 is quality-inspected, matched and tested to out-perform any other steel valve spring in the industry.

FSP Valve Springs are used by professional racers in all venues from Sportsman to NHRA Pro Classes. Longer life, more laps, BEST VALUE!

Applications listed pages 320-321

Mechanical Flat Tappet Camshafts



CHRYSLER/DODGE/PLYMOUTH 350, 361, 383, 400 CID "B" ENGINES

1.5:1 STOCK ROCKER RATIO

413, 426W, 440 CID "RB" ENGINES

3-BOLT PROFERAL BILLET

CAM APPLICATIONS

BASIC RPM RANGE

PART NO. GRIND NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

<p>Hot Street/E.T. Brackets. Excellent choice for 3400-3800 lb "B"-bodied Chrysler products seeking strong mid-range performance. Works best in 383-440 CID engines with 10.0-11.0:1 compression using modified stock cylinder heads, single or multiple carburetion and headers with 3" diameter, dual exhaust system. Use 4 speed manual transmission with 4.10 gear and nitrous oxide for best results.</p>	3500-6500	<p>E410001 F-282-6</p>	<p>IN 282° EX 290°</p>	<p>246° 254°</p>	<p>.510" .510"</p>	110°	4°	<p>.018" .018"</p>
<p>Hot Street/E.T. Brackets. Maximum street performance from 413-440 cubic inch engines boasting 11.0-12.0:1 compression. Should have mildly-ported, Stage IV or V cylinder heads, gasket-matched to a single plane intake with 750-850 cfm carburetion and 2" diameter headers. Works well with 4 speed or automatic with 4000 RPM converter and low gears.</p>	3800-6800	<p>E410002 F-296-2</p>	<p>IN 296° EX 306°</p>	<p>258° 268°</p>	<p>.562" .562"</p>	108°	0°	<p>.018" .018"</p>
<p>E.T. Brackets. 2800-3200 lb E.T. Bracket cars, i.e.: Darts, Challengers, Cudas, etc.; using 413-440 cubic inch engines with 11.5-12.5:1 compression will notice increased mid-range and top end performance. Good heads and intake a must! Automatic cars use 4500 RPM converter and 4.88-5.13 gear, depending on tire.</p>	4250-7400	<p>E410003 F-304-2</p>	<p>IN 304° EX 304°</p>	<p>266° 266°</p>	<p>.612" .612"</p>	108°	0°	<p>.018" .020"</p>
<p>E.T. Brackets. Increased upper mid-range and top end power when used in light bracket cars using 440-452 cubic inch engines with 12.5-13.5:1 compression. Suggest ported, polished and flowed Stage V or VI aluminum cylinder heads, single plane, high-rise, open plenum intake with 850(+) cfm carburetion. Use 2"-2.125" primary tube, open headers. Automatic cars use 5000 RPM converter, 4.88 gear and 30" tire.</p>	4600-7600	<p>E410004 F-308-1</p>	<p>IN 308° EX 308°</p>	<p>272° 272°</p>	<p>.612" .612"</p>	108°	4°	<p>.018" .020"</p>
<p>E.T. Brackets/Super Categories. Maximum effort bracket cars using 440-482 CID engines with 13.5-14.5:1 compression, produce exceptional big end power. Works best with modified, aftermarket cylinder heads, single 1050 cfm 4 barrel or 2 x 750 cfm carburetors, mounted on tunnel ram or cross-ram style intake, burning alcohol or gas with 2.250" primary tube headers. 2 speed automatic cars use 5000 RPM converter, 4.56 gears and 32" tire.</p>	5000-8000	<p>E410005 F-320-1</p>	<p>IN 320° EX 320°</p>	<p>280° 280°</p>	<p>.612" .612"</p>	108°	0°	<p>.018" .020"</p>

IMPORTANT NOTE:

Mechanical flat tappet racing cams have been the staple of the high performance industry for years. Setting numerous speed records and winning many championship events even as we speak. Not until recently have solid roller cams gained such wide spread popularity. However, solid roller cams are not ideal for all driving conditions. Mechanical flat tappet cams however deliver adequate power for most high performance applications with much less cost and maintenance. The one draw back is as with any cast iron camshaft and rotating lifter assembly, that they are sensitive to wear induced during the break-in procedure. Erson Cams recommends that all high performance mechanical flat tappet camshafts with heavier than stock OEM valve spring loads, be broken-in on the outer spring only. Erson also recommends the use of any good engine break-in oil supplement.

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3450	504	N/A	MA2084	N/A	N/A	7606
3450	504	N/A	MA2084	N/A	N/A	7606
3450	504	N/A	MA2084	N/A	N/A	7606
3450	504	N/A	MA2084	N/A	N/A	7606
3450	504	N/A	MA2084	N/A	N/A	7606

Mechanical Flat Tappet Camshafts



**CHRYSLER/DODGE/PLYMOUTH 350, 361, 383, 400 CID "B" ENGINES
413, 426W, 440 CID "RB" ENGINES**

**1.5:1 STOCK ROCKER RATIO
3-BOLT PROFERAL BILLET**

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.5	LOBE CENTER	ADV	VALVE LASH
E.T. Brackets/Hot Street Machine in 440 to 500 CID engines. Needs 10.0:1 or higher compression, recommend aftermarket aluminum heads, factory heads need to be ported with 2.14/1.81 valves. Can use high rise dual plane intake for street or single plane for best performance. Use 750 cfm or larger carb, headers and 2.5" or larger exhaust. Minimum 3000 RPM converter and 3.55 or lower gears.	3000-6000	E410105 F-295-1	IN 288° 250° EX 296° 258°	.562" .562"	108°	0°	.015" .017"
E.T. Brackets/Hot Street Machine in 440 to 528 CID engines. 10.5:1 to 12.5:1 compression, high flowing aluminum heads and a single plane intake. Use 850 cfm or larger carb, headers and at least 3" exhaust. Minimum 3200 RPM converter and 3.91 gears. Would only recommend for street cars in 500 CI and larger engines.	3200-6200	E410109 R-313-1	IN 296° 258° EX 302° 264°	.562" .562"	108°	0°	.015" .017"
E.T. Brackets/Pro Street Machine in 500 to 572 CID engines. Needs at least 11.0:1 compression, large runner aluminum heads and a single plane intake. Use 850 cfm or larger carb, large tube headers and 3" to 4" exhaust. Minimum 3200 RPM converter and at least 3.91 gears. Will also work good in high RPM 440 to 472 CID engines with 12.1:1 or higher compression, a light chassis and 4000 to 4500 RPM converter.	3500-6500 R-321-1	E410115	IN 302° 264° EX 306° 270°	.612" .612"	108°	0°	.015" .017"
E.T. Brackets/Pro Street Machine max effort in 500 to 572 CID engines. Needs 11.0:1 or higher compression, the best flowing aftermarket heads and a single plane intake. Use at least an 850 cfm carb for street or 1050 cfm or larger Dominator on 540 CI and larger engines, large tube headers, 3" to 5" exhaust. Minimum 3500 RPM converter and at least 4.10 gears.	3800-6800	E410120 R-325-1	IN 304° 266° EX 308° 272°	.612" .612"	110°	2°	.015" .017"

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

3 BOLT

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3425	504S	206	MA2084	N/A	N/A	7606
3425	504S	206	MA2084	N/A	N/A	7606
3425	504S	206	MA2084	N/A	N/A	7606
3425	504S	206	MA2084	N/A	N/A	7606
3425	504S	206	MA2084	N/A	N/A	7606

Hydraulic Roller Camshafts



**CHRYSLER/DODGE/PLYMOUTH 350, 361, 383, 400 CID "B" ENGINES
413, 426W, 440 CID "RB" ENGINES**

3-BOLT PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.5	LOBE CENTER	ADV	VALVE LASH
Strong mid-range power needs at least 9.0:1 compression, dual plane intake, free flowing exhaust and at least 2000 RPM converter for best performance. Good replacement for factory 383-440 magnum camshaft. Will have slightly lopey idle.	2000-5000	E419100 RH-272-320	IN 272° EX 280°	218° 226°	.480" .480"	108°	0° .000" .000"
Strong mid-range power needs at least 9.0:1 compression, dual plane intake, free flowing exhaust and at least 2000 RPM converter for best performance. Higher lift version of E419100. Can be used with fuel injection or up to 150 shot of nitrous. Will have slightly lopey idle.	2000-5000	E419105 RH-286-340	IN 286° EX 294°	218° 226°	.510" .510"	110°	0° .000" .000"
Hot Street Machine with at least 9.5:1 compression. Aftermarket dual or single plane manifold, 750 cfm or larger carb, headers. 2200 RPM converter, 3.23 or lower gears. Lopey idle.	2500-5500	E419110 RH-286-365	IN 286° EX 296°	226° 234°	.548" .533"	108°	0° .000" .000"
Excellent choice for street machines with roots or centrifugal type superchargers, running 6 to 12 lbs of boost. 2000 RPM converter and good exhaust. Also works well in normally aspirated engines with aftermarket fuel injection. Great choice for up to 250 shot of nitrous.	2800-5800	E419115 RH-290-365	IN 290° EX 300°	230° 238°	.548" .533"	112°	0° .000" .000"
Hot Street Machine with at least 10:1 compression. Aftermarket dual or single plane manifold, 750 cfm or larger carb, headers. 2500 RPM converter, 3.55 or lower gears. Lopey idle.	3000-6000	E419120 RH-294-365	IN 294° EX 304°	234° 242°	.548" .533"	108°	0° .000" .000"
Hot Street/E.T. Brackets strong mid-range torque and top end horsepower, in 440 CID and larger engines. No less than 10.5:1 compression, ported factory or aftermarket heads, single plane intake. Headers and minimum 2.5" exhaust. 3000 to 3500 RPM converter and 3.91 or lower gear.	3200-6200	E419125 RH-306-365	IN 306° EX 314°	246° 254°	.548" .548"	110°	0° .000" .000"
Hot Street/E.T. Brackets strong mid-range torque and top end horsepower, in 496 CID and larger engines. No less than 10.5:1 compression, aftermarket heads, single plane intake. Headers and 3" exhaust. 3000 to 3500 RPM converter and 4.10 or lower gear.	3500-6500	E419130 RH-314-365	IN 314° EX 322°	254° 262°	.548" .548"	112°	2° .000" .000"
Pro Street/E.T. Brackets max effort in 528 to 572 cubic inch engines. No less than 10.5:1 compression, aftermarket heads, single plane intake with at least 850 CFM carb, large tube headers, 3" to 4" exhaust. Needs at least a 3000 RPM converter and 3.91 gears.	3500-6500	E419135 RH-322-365	IN 322° EX 330°	262° 270°	.548" .548"	112°	2° .000" .000"

Hydraulic Roller Camshafts



MATCHED COMPONENTS

3 BOLT

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3425	504S	206	N/A	N/A	N/A	8606
3425	504S	206	N/A	N/A	N/A	8606
3425	504S	206	N/A	N/A	N/A	8606
3425	504S	206	N/A	N/A	N/A	8606
3425	504S	206	N/A	N/A	N/A	8606
3425	504S	206	N/A	N/A	N/A	8606
3425	504S	206	N/A	N/A	N/A	8606
3425	504S	206	N/A	N/A	N/A	8606
3425	504S	206	N/A	N/A	N/A	8606

Solid Roller Camshafts



**CHRYSLER/DODGE/PLYMOUTH 350, 361, 383, 400 CID "B" ENGINES
413, 426W, 440 CID "RB" ENGINES**

1.5:1 STOCK ROCKER RATIO

3-BOLT ALLOY STEEL BILLET

CAM APPLICATIONS

**BASIC RPM
RANGE**

**PART NO.
GRIND NO.**

**DURATION
ADV @.050**

**GROSS
LIFT**

**LOBE
CENTER**

ADV

**VALVE
LASH**

Pro Street/E.T. Brackets.

Recommended for 3200-3600 lb "A" or "B" bodies street machines using 413-440 cubic inch engines with 11.0-12.0:1 compression. Excellent mid-range performance when used with modified cast iron or aluminum cylinder heads, single plane intake, 850 cfm 4 barrel, 2" diameter primary tube headers and 150 HP shot of nitrous oxide. Torque flyte cars use 3500 RPM converter, 4.56 gear and 28" soft-compound tires.

3500-6500

E419705
R-276-1

IN 276° 252°
EX 286° 260°

.675"
.645"

110°

4°

.026"
.028"

E.T. Brackets. Weekend warriors seeking reliable top end power and valvetrain stability from big block Chrysler engines up to 452 cubic inches with no less than 11.5:1 compression. Smaller engines (i.e.: 383-400 CID), may need higher compression to run well. Should have modified Stage V big valve or Stage VI aluminum cylinder heads, gasket-matched MI® or similar plane intake, blueprinted 850 cfm 4 barrel and 2.125" primary tube headers for best results. Needs 4500 RPM converter and can be used with 1.6:1 rockers.

4500-7500

E419706
R-294-7

IN 294° 268°
EX 302° 276°

.645"
.615"

108°

0°

.026"
.028"

Super Gas/Super Stock. Excellent upper mid-range torque and top end HP can be found in 2400-2800 lb super gassers using tall deck Chrysler big block engines up to 482 cubic inches with 12.5-13.5:1 compression. Works best with modified B-1 or Indy type cylinder heads, matched single plane intake with 1050 cfm Dominator or tunnel ram with 2 x 750s, can be used with 1.6 shaft-mount roller rockers, clearance permitting and 2.250" diameter primary tube headers. Also works well in 4 speed 383 cubic inch super stockers.

5000-8000

E419707
R-308-4

IN 308° 278°
EX 312° 282°

.727"
.712"

108°

4°

.026"
.028"

Super Gas/Super Comp. When you come off the throttle stop and you need to charge, this is the camshaft for you! Intended for 1800-2400 lb altereds, dragsters and roadsters using up to 500 cubic inch engines with 13.5-14.5:1 compression. Compatible with B1-T5 or similar aftermarket cylinder heads, 1.6 or 1.7 roller rockers, single dominator on gas or tunnel ram style injected alcohol induction and large diameter headers. 2 speed automatic cars use 5500 RPM converter, 4.10 gear and 32" tires.

5500-8500

E419708
R-316-2

IN 316° 286°
EX 316° 292°

.712"
.675"

110°

2°

.026"
.028"

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3870 E915044	510 517	N/A N/A	RL968 RL968	N/A N/A	N/A N/A	8606 8606
3870 E915044	510 517	N/A N/A	RL968 RL968	N/A N/A	N/A N/A	8606 8606
3870 E915044	510 517	N/A N/A	RL968 RL968	N/A N/A	N/A N/A	8606 8606
3870 E915044	510 517	N/A N/A	RL968 RL968	N/A N/A	N/A N/A	8606 8606

■ Premium components in red

Solid Roller Camshafts



1.5:1 STOCK ROCKER RATIO
ALLOY STEEL BILLET

CHRYSLER 392 CID EARLY HEMI, 417 DONOVAN ENGINES

CAM APPLICATIONS

BASIC RPM
RANGE

PART NO.
GRIND NO.

DURATION
ADV @.050

GROSS
LIFT

LOBE
CENTER

ADV

VALVE
LASH

A/Gas Supercharged. Excellent choice for serious blown gas coupes seeking that big top end charge. 392 (+) CID engines would have modified big valve cylinder heads, race-prepped 6.71 supercharger, Hilborn or equivalent fuel injection and 2 or 3 speed transmission for best results.

5000-8500

E480141
R-304-2

IN 304° 278°
EX 314° 288°

.675"
.645"

110°

0°

.026"
.026"

Top Fuel. Newcomers and teams on a budget seeking an excellent base-line camshaft. Easy on parts yet highly competitive. Also compatible with 1.65:1 Titan rockers.

5000-8500

E480151
R-310-5

IN 310° 284°
EX 310° 284°

.615"
.615"

110°

0°

.026"
.026"

Top Fuel. Recommended for front engine top fuelers with up to 430 cubic inch restricted engines seeking relentless yet controllable torque and HP. Intake opens at 33° B.T.D.C. and exhaust opens at 77° B.B.D.C. Overlap at .050" equals 62°.

5500-9000

E480161
R-312-4

IN 312° 286°
EX 312° 286°

.675"
.675"

112°

2°

.026"
.026"

Top Fuel. When qualifying isn't everything and winning is, this cam is for you. Nationally competitive points chasers using the best parts and technology money can buy will receive championship performance from this cam.

5500-9000

E480171
R-318-4

IN 318° 288°
EX 308° 282°

.712"
.675"

112°

0°

.026"
.026"

CHRYSLER/DODGE/PLYMOUTH

1.57:1 INTAKE/1.52:1 EXHAUST STOCK ROCKER RATIO

426 HEMI 45° BLOCK ENGINES (INCLUDES KEITH BLACK, STAGE VI & EARLIER BLOCKS)

ALLOY STEEL BILLET

Super Comp/Top Sportsman. Good top end power from 1800-2200 lb dragsters and alters using 426-500 cubic inch engines with 13.5-15.0:1 compression. Should use modified aluminum cylinder heads, single dominator, 2x4 barrel or injected alcohol type induction for best results. Automatic cars use 5000 RPM converter.

4800-7800

E469500
R-318-3

IN 318° 288°
EX 322° 292°

.761"
.737"

110°

2°

.026"
.026"

E.T. Brackets/Super Stock. Excellent choice for 2600-3100 lb door-slamers, i.e.: SS/AA through SS/BA with 426-439 CID engines. Single or 2x4 barrel carburetion recommended with 2.125"-2.250" x 28" long primary tube headers for best results.

5000-8000

E469501
R-312-3

IN 312° 288°
EX 312° 288°

.800"
.775"

108°

4°

.026"
.026"

Alcohol Dragsters/Flat Bottoms Hydros. Primarily intended for 430-480 cubic inch blown alcohol engines. Should have high-helix or screw-type supercharger with 3 speed planetary transmission and high-ratio intake rockers for increased power.

5500-9500

E469502
R-324-3

IN 324° 294°
EX 326° 298°

.761"
.760"

114°

0°

.026"
.026"

Top Fuel. Proven Winner! Intelligent choice for top fuel teams on a budget. Excellent match race camshaft. Easy on parts.

4800-7800

E469503
R-326-3

IN 326° 296°
EX 314° 288°

.745"
.684"

110°

0°

.026"
.026"

Top Fuel. Highly competitive profile! Needs good heads, prefers high-ratio intake rocker.

5000-8000

E469504
R-326-4

IN 326° 296°
EX 326° 296°

.745"
.722"

112°

0°

.026"
.026"

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
E915043	517	N/A	N/A	N/A	N/A	N/A
E915043	517	N/A	N/A	N/A	N/A	N/A
E915043	517	N/A	N/A	N/A	N/A	N/A
E915043	517	N/A	N/A	N/A	N/A	N/A
E915043	517	N/A	N/A	N/A	N/A	N/A
E915043	517	N/A	N/A	N/A	N/A	N/A
E915043	517	N/A	N/A	N/A	N/A	N/A
E915043	517	N/A	N/A	N/A	N/A	N/A
E915043	517	N/A	N/A	N/A	N/A	N/A

Solid Roller Camshafts



CHRYSLER/DODGE/PLYMOUTH

1.57:1 INTAKE/1.52:1 EXHAUST STOCK ROCKER RATIO

426 HEMI 48° STANDARD CORE ENGINES

ALLOY STEEL BILLET

(INCLUDES KEITH BLACK, STAGE VII & LATER BLOCKS, EXCEPT STAGE X & RODECK TFX BLOCKS)

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Blown Alcohol. Top alcohol funny cars equipped with 500(+) cubic inch engines with no less than 11.5:1 compression. Should be used with screw-type superchargers, good flowing cylinder heads with high-ratio rockers and 3 speed planetary transmission.	5500-9500	E466004 R-324-4	IN 324° 296° EX 324° 296°	.785" .760"	116°	3°	.026" .026"
A/Fuel. 480(+) cubic inch engines with no less than 13.5:1 compression, need big valve, high-flow cylinder heads with high-ratio intake rockers, state-of-the-art fuel system and clutch management system for National Event winning performance.	2500-6500	E466005 R-322-6A	IN 322° 294° EX 316° 288°	.785" .760"	114°	2°	.026" .026"
Top Fuel. Top fuel dragsters and funny cars who haven't made the change to the large core billet, this one's for you! A standard of the industry, 4-second E.T.'s at 300 mph.	5000-8300	E466006 R-328-4	IN 328° 298° EX 328° 298°	.745" .722"	113°	0°	.026" .026"

NOTE:

All gross lift figures are calculated using stock rocker ratios.

NOTE:

For more up to date information regarding Erson's complete list of computer designed lobe profiles or more information about our championship grinds not listed, please call Erson's Technical Service Team at 775.882.1622.



Mike Fuller's Nostalgia Chrysler
Pleasantville, CA

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
E915055	509	N/A	N/A	N/A	N/A	N/A
E915055	509	N/A	N/A	N/A	N/A	N/A
E915055	509	N/A	N/A	N/A	N/A	N/A



1971 Plymouth 'Cuda Hemi

Solid Roller Camshafts



PROFESSIONAL SERIES

CHRYSLER/DODGE/PLYMOUTH

426 HEMI, LARGE CORE, 2.125" JOURNAL 48° ENGINES
(INCLUDES: B.A.E. BLOCK, RODECK TFX, KEITH BLACK STAGE 10)

1.57:1 INTAKE/1.52:1 EXHAUST ROCKER RATIO
ALLOY STEEL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
A/Fuel. Baseline camshaft for 480(+) cubic inch injected nitro cars with no less than 13.5:1 static compression. Big valve cylinder head and high cfm runners add to winning performance. Use 1.7" intake and 1.6" exhaust rockers, state-of-the-art fuel system and high-tech clutch management for best results. Designed for use with 1" lifters.	4000-6500	E466901 R-318-4	IN 318° 294° EX 314° 288°	.785" .737"	114°	2°	.026" .026"
Blown-Alcohol Categories. Primarily intended for 500(+) cubic inch funny cars with no less than 11.5:1 static compression. This camshaft also works well in blown alcohol hydros. The use of high-flow billet cylinder heads with 1.7" intake and 1.6" exhaust rockers, screw-type supercharger and 3 speed planetary transmission yield highly competitive results.	5500-9500	E466902 R-322-7	IN 322° 296° EX 322° 296°	.785" .760"	116°	3°	.026" .026"
Top Fuel. Attention Top Fuel Crew Chiefs! Excellent choice for 500 cubic inch nitro burners when atmospheric conditions indicate bad air, i.e.: high altitude. Intake opens at 34° B.T.D.C. eliminating aggressive behavior at the hit and exhaust opens at a safe 82° B.B.D.C. Overlap at .050" equals 74°, reducing cylinder pressure and cooling combustion chamber, requiring high-fuel volume. Use high-ratio rockers for best results.	5000-8000	E466903 R-324-5	IN 324° 296° EX 324° 296°	.746" .722"	114°	0°	.026" .026"
Top Fuel Dragsters/Funny Cars. Regarded as one of the best good air camshafts in the industry. Intake opens at 37° B.T.D.C. and the exhaust opens at a conservative 81° B.B.D.C. Overlap at .050" equals 74°, reducing cylinder pressure and cooling combustion chamber, requiring high-fuel volume. Use high-ratio rockers for best results.	5300-8300	E466904 R-326-5	IN 326° 298° EX 326° 298°	.746" .722"	112°	0°	.026" .026"
Top Fuel/Funny Cars. Well funded teams seeking low 4 second E.T.s and 320+ MPH speeds need this camshaft! A good blower, high-flow billet cylinder heads, strong magnets, high-tech fuel system and state-of-the-art clutch management is required for championship performance. Also works well in blown fuel hydros. Intake opens at 36° B.T.D.C. and exhaust opens at 82° B.B.D.C. with 70° overlap at .050" lift.	5200-8200	E466905 R-326-6	IN 326° 300° EX 324° 296°	.746" .722"	114°	0°	.026" .026"

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
E915050 E915049 E915048	509	N/A	N/A	N/A	N/A	N/A
E915050 E915049 E915048	509	N/A	N/A	N/A	N/A	N/A
E915050 E915049 E915048	509	N/A	N/A	N/A	N/A	N/A
E915050 E915049 E915048	509	N/A	N/A	N/A	N/A	N/A
E915050 E915049 E915048	509	N/A	N/A	N/A	N/A	N/A

Solid Roller Camshafts



PROFESSIONAL SERIES

CHRYSLER/DODGE/PLYMOUTH

426 HEMI, LARGE CORE, 2.125" JOURNAL 48° ENGINES
(INCLUDES: B.A.E. BLOCK, RODECK TFX, KEITH BLACK STAGE 10)

1.57:1 INTAKE/1.52:1 EXHAUST ROCKER RATIO
ALLOY STEEL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
A/Fuel Dragsters; The old standby, very popular profile used by highly competitive teams, "when tippin' the can was all you ran" 429-480 CID engines, 1.7 IN 1.6 EX rockers, not recommended in bad air.	4500-6500	E466908 R-310-4	IN 310° 284° EX 314° 288°	.807" .760"	110°	2°	.026" .026"
A/Fuel Dragsters; Small cubic inch A/Fuel cars i.e. 420-450 cid engines limited to 97 percent by sanctioning bodies. Multiple national event winner. Referred to as "The Hale Mary" cam.	4500-6500	E466909 R-306	IN 306° 276° EX 314° 288°	.850" .760"	113°	0°	.026" .026"
A/Fuel Dragsters; using 420-450 cid engines limited to 97% nitro. High lift short duration helps to create higher static cylinder pressure, also utilizing better head flow technology. New series of computer generated lobe designs aids in performance gains. Must check valve spring travel when using Brad VI cylinder heads.	4500-6500	E466910 R-309-1	IN 309° 272° EX 315° 278°	.892" .840"	114°	2°	.026" .026"
AA/Fuel Hydros. This cam was made famous by Alan Johnson and is a staple for performance in Blown Fuel categories recommended in Blown Fuel categories. Recommended for classes that do not limit or dilute nitromethane.	4500-8500	E466906 R-320-1	IN 320° 295° EX 322° 295°	.824" .760"	112.5	0°	.026" .026"
AA/Fuel Funnycars; Referred to as our "Starter Cam". Performance oriented and valve train safe. Recommended for teams that love to compete without having to pay the price of larger more aggressive cams.	4500-8500	E466907 R-326-7	IN 326° 298° EX 326° 298°	.807" .760"	114°	2°	.026" .026"
AA/Fuel Dragsters and Funnycars; Our #1 choice for highly competitive teams. This cam has won several world championships in both standard and 7-4 swap firing order configuration. Best of everything and well-funded Team required.	4500-8500	E466911 R-322-7	IN 322° 298° EX 326° 302°	.880" .800"	114°	2°	.026" .026"
AA/Fuel Dragsters and Funnycars; Only well funded and highly competitive teams need apply here. Big intake duration helps to soften low end performance without sacrificing 60 foot times while providing exceptional performance and MPH. Widely used in the NHRA.	4500-8500	E466912 R-326-8	IN 326° 302° EX 340° 304°	.880" .800"	114°	0°	.026" .026"

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
E915050 E915049 E915048	509	N/A	N/A	N/A	N/A	N/A
E915050 E915049 E915048	509	N/A	N/A	N/A	N/A	N/A
E915050 E915049 E915048	509	N/A	N/A	N/A	N/A	N/A
E915050 E915049 E915048	509	N/A	N/A	N/A	N/A	N/A
E915050 E915049 E915048	509	N/A	N/A	N/A	N/A	N/A
E915050 E915049 E915048	509	N/A	N/A	N/A	N/A	N/A
E915050 E915049 E915048	509	N/A	N/A	N/A	N/A	N/A

Technical Information

INTRODUCTION TO FORD

Throughout the years, Ford Motor Company has introduced and manufactured some of the automobile industries most powerful as well as reliable engines. From Henry Ford's 4 cylinder flat heads found in the original Model T's to the Ford modular V8 of the '90s, Ford has always been a leader in design technology. With contributions from such famous engine builders as Holman and Moody, Carol Shelby, Bill Stroppe, Bob Glidden, Jack Rousch and Robert Yates, Ford has continued to be a serious contender in the never ending wars at race tracks all over the world.

In an attempt to inform our customers of some of the more important aspects of valvetrain assembly, with regards to Ford engines, we have assembled a brief Ford technical section. This section covers areas of concern to individuals modifying stock Ford valvetrains. For more in depth information, customers should acquire the Ford Motorsports SVO Performance Equipment catalog as it is an excellent source of information. For complete one-on-one tech talk, call Ford's performance hot line at 1.810.468.1356.

Blocks

1985-95 302 Ford engines were equipped with hydraulic roller valvetrains. These blocks have taller lifter bores than 1962-84 blocks. It is possible to install hydraulic flat tappet, mechanical flat tappet or solid roller type camshafts in these engines as long as the proper matching components are used. With regards to solid roller camshafts and lifters, be aware that smaller base circle camshafts allow the roller lifter to set lower in the lifter bore. This may cause interference between the lifters link bar retaining button or rivet and the lifter boss in the block. Clearance the block to allow .060" minimum clearance are interchangeable, the pushrods are not.

289/302 Heads

To convert late 289/302 heads for use with mechanical tappets, all valves must be replaced with early (1963-66) type valves. Another option is to machine the valve stem keeper grooves to early dimensions. Rocker arms must be replaced with early Ford rockers (part no. C20Z-6564-A), or equivalent aftermarket roller tip rocker arms. For guideplates, part no. C90Z6A564B, and rocker arm studs, part no. C30Z-6A527-B, must be used to install guideplates. Late heads must have the guide boss machined .230" and tapped to accept the stud.

429/460 Engines

We have found a number of 429/460 engines with a 7° retarded crank sprocket. Be sure to check during cam installation that your engine does not have this sprocket. These engines also have no provision for adjusting the valves when a mechanical tappet camshaft is installed. The easiest method to provide adjustment is to use adjustable pushrods. It is possible to modify the heads to utilize the rocker arms and studs from the Super CJ engine.

Rocker Studs

Positive Stop Studs-Positive stop studs are stock on 1969-76 302-351W and 1968-72 429 engines with hydraulic cams. These studs allow no preload adjustment. They work only on hydraulic cams with .519" lift or less. For high performance or racing applications, we highly recommend replacing positive stop studs with conventional screw-in studs and guideplates.

Conventional Studs-A few 289-302 engines and most engines with solid cams used this type of stud. A lock nut on the stud keeps the valve lash from changing.

Rocker Arms

2 types of studs and 3 types of rockers are available on Ford engines:

Rail Type Rockers-Rail rockers were used on 1966-68 289 engines and 1968-76 302 and 351W engines. This type of rocker features a slot in the end of the rocker arm to maintain alignment on the valve tip. Rail rockers must be used with long stem valves.

Fulcrum Rockers

These were installed on 351C, 351M and 400 engines. They were also used on 429-460 engines that did not use guideplates. A fulcrum or "sled" and a bolt keep the rocker aligned. Models built before 1977 use a slotted pedestal to hold the fulcrum. Screw-in studs and guideplates are required when replacing fulcrum rockers.

A flat pedestal and a U-shaped guide were used on 1977-later 302-351W engines to keep the fulcrum rocker aligned. Our screw-in studs allow you to easily convert to stud-type rockers. These engines are equipped with long valves. This allows easy installation of rail rockers.

Shaft-Mounted Rockers

Shaft-mounted rockers were used on 352-428 engines. The stock rockers were well suited for cams with a lift of .550" or less. However, there is not enough preload for proper lifter operation when using cams with a lift of more than .550". You must replace the stock rockers with adjustable rockers to use solid or hydraulic lifters with the higher lift cam.

Valve Locks

Some Ford engines (351C and 351M-400) use multi-groove valve locks. PBM/Erson Cams offers multi-groove heat-treated valve locks for maximum load carrying capacity and durability. These are ideal for moderate competition applications where ultra high spring pressures are not used and valve float is minimized.

Timing Chain Sets

In 289, 302, and 351W engines, Ford periodically redesigned the arrangement of the cam gear, cam spacer, fuel pump eccentric, and front cover clearance. Always check these items for interference problems. Erson/PBM offers quality gear drives and timing chains.

Dowel Pins

1972-earlier 289, 302, and 351W featured cams with dowell pins of two different lengths. Dowell pins measuring 1.375" extended through the 1-piece fuel pump eccentric. 1973-later engines featured a 2-piece fuel pump eccentric, which required the shorter 1.125" dowell pins.

If the fuel pump eccentric is removed from the engine, use a thicker-than-stock retaining washer to take up the space lost by the eccentric.

A common failure on Ford engines is the shearing of dowell pins. The bolt in the center of the cam sometimes comes loose and allows the dowel pin to be loaded in shear. To help prevent dowel pin shearing, use a suitable thread locker on the center bolt and torque to the manufacturer's recommended torque specifications.

Technical Information

INTRODUCTION TO FORD

Valve Springs

Because Ford Motor Co. has so many different engine families and so many different horsepower ratings within each family, the issue of valve spring selection becomes complex. However, the basic rule is application and area of installation. Whether you are setting up a stock cylinder head or an all out competition Ford SVO cylinder head the rule applies at both ends of the spectrum. The following chart is comprised of common Ford installed heights.

ENGINE FAMILY	YEARS	INTAKE	EXHAUST
289 High Performance	All	1.770"	1.770"
Standard 289	1963-66 ^{1/2}	1.780"	1.780"
	1966 ^{1/2} -67 ^{1/2}	1.640"	1.640"
	1967 ^{1/2} -68	1.660"	1.660"
Boss 302	All	1.820"	1.850"
Standard 302	1968-69 ^{1/2}	1.660"	1.660"
	1969 ^{1/2} -72	1.690"	1.690"
	1973-78	1.690"	1.600"
	1979-95	1.780"	1.600"
351W	1969-78	1.780"	1.780"
	1979-95	1.780"	1.600"
351C, 351M, 400	All	1.820"	1.820"
Boss 351C	All	1.900"	1.900"
429-460 Production	All	1.810"	1.820"
429 CJ & SCJ	All	1.900"	1.900"

Camshafts

Camshafts for 289-302 Ford small block engines are exactly the same dimensionally as the 302 HO and 351W engines. This means one can be used in the other's block but the firing order between the two engines are different for performance as well as structural reasons. The Ford early 289 and 302 non-HO engines have a 1,5,4,2,6,3,7,8 firing order and the late model 302 HO and 351W engines have a 1,3,7,2,6,5,4,8 firing order. The early Ford 289-302 engines are identified by our 210 prefix and the late model 302 HO and 351W engines are identified by the 212 prefix.

It is possible to put a hydraulic roller camshaft in an early pre-1985 block. However, the following must be considered. This conversion requires the use of a small base circle camshaft which properly positions the taller hydraulic roller lifters in a non-hydraulic roller block. The block must be modified to accept stock Ford hydraulic roller lifter retention hardware and the use of an aluminum bronze distributor gear becomes mandatory. Due to the use of dissimilar alloys in this area longevity becomes a concern. These types of applications are special order items and can be ordered through Erson's Special Order Department.

All camshafts produced by Erson Cams for the early 289-302 engine and the 302 HO and 351W engine will be manufactured and ground on standard OEM journal diameter cores. For camshaft cores with larger than stock diameters, i.e.: race blocks or roller bearing blocks, camshafts should be ordered from Erson's Special Orders Department and are subject to billet availability.

1958-63 Ford FE engines used a camshaft with a flanged front bearing and a spring loaded thrust button. The flanged camshaft billets are no longer available. 1963^{1/2} later camshaft cores will replace the earlier cams. For information regarding this conversion, contact Erson Cam's Technical Service Team at 775.246.4062.

Hydraulic Roller Cams

You can use conventional hydraulic and solid lifter cams with Ford engines that come stock with hydraulic roller cams. However, you must also change the lifters, pushrods, valve springs, and rocker arms to accommodate the cam change.

Essential Information for "FE" Engines

1958 through mid-1963 engines used a cam with a flanged front bearing and a spring loaded thrust button. The flanged cam billets are no longer available. 1963^{1/2} and later type cams will replace the earlier cams. If you have the early engine, you must remove the soft plugs from the oil galleys on either side of the front cam bearing and tap the holes to 7/16 NC. Purchase cam bolt 304815-S and 2 washers. 34808-S and 44730-S8, and pump eccentric C3AZ6287A. The timing chain, crank, and cam sprockets must be changed to the later type. Some cam sprockets are manufactured with an integral spacer, purchase Ford spacer C3AZ6265A.

Do not, under any circumstances, use a common hardware bolt to hold the sprocket on the cam. Use only a Ford bolt. Use Loctite on the cam bolt and thrust plate bolts and torque to proper specs. When the cam is properly installed, it will rotate freely and will have approximately .010" end play. If any parts are omitted or substitutions made, the cam bolt may come loose or excessive end play may result. This could cause severe damage to the cam, tappets and engine.

NOTE--Most American production engines cannot accept more than .500" lift without modifying the valve guides. When installing a cam with more than .500" lift, it is absolutely essential that clearance between the valve spring, retainer and guide be checked. Do not attempt to operate an engine with less than .150" retainer-to-guide clearance. If you are using valve seals, check the clearance from the top of the seal rather than the top of the guide.

Firing Order--289-302 engines: 1-5-4-2-6-3-7-8
302 HO and 351W engines: 1-3-7-2-6-5-4-8

Solid Lifters

Because mechanical cams require lash adjustment, many production Ford heads will require machine work to run these cams, Ford engines with non-adjustable valvetrains must be converted to adjustable valvetrains to run solid lifter or mechanical camshafts.

Technical Information

INTRODUCTION TO FORD



Rocker Arm and Stud Combinations

Conventional stud mount adjustable rocker arms with pressed in studs were used on 1962-66^{1/2} 221, 260 CID engines and 289 high performance engines. A slot in the head or a guideplate aligns the rocker arm over the valve stem in the absence of rail type rockers. Guideplates are required when using Erson's non-rail type rocker arms.

To convert early 1966^{1/2}-68 standard 289, 1968-76 302-351W and 1968-72 429-460 engines equipped with positive stop stud non-adjustable rockers, the following steps must be taken. Convert by re-machining or replacing existing valve to valves equipped with .250" tip lengths, as opposed to OEM valves intended for use with rail type rockers using .395" valve tips. Remove the pressed in positive stop stud and machine the guideplate boss down .230". Drill and tap using the appropriate hardware to accommodate a 7/16 x 14 bot-tomed stud. Install, using a brand name thread locker, the new fully adjustable stud through the guideplate and torque to 50 ft./lbs. Now, you are ready to install any roller tipped or full roller rocker arm. This combination will handle any hydraulic, hydraulic roller, mechanical flat tappet or street roller type camshaft.

1970-82 351C, 351M and 400 CID engines as well as 1973-95 429-460 Ford engine were also equipped with non-adjustable valvetrains. These engines employed a non-adjustable rocker arm mounted on a slotted pedestal which slides on a "sled" fulcrum retained by a bolt as opposed to a stud. To convert to a fully adjustable valvetrain the same steps must be taken as in the previous paragraph. For milling instructions regarding these applications see accompanying illustration.

For 1972 and later 302 and 351W engines equipped with pedestal-mount fulcrum style stamped steel rockers, the same steps must be taken to install a fully adjustable stud. However, machining of the guideplate boss must begin at the top of the pedestal-mount(-) .230". See illustration.

For vehicles wishing to maintain pedestal-mount rockers, Erson/PBM offers full roller 1.6 and 1.7:1 billet rocker arms. Adjustment upwards is accomplished by shimming the stands to achieve the recommended .040" pre-load required for most hydraulic lifters. Adjustment downwards is accomplished by milling the stands or shorter pushrods.

NOTE: Pressed in studs of any type are not recommended for mechanical flat tappet camshafts with higher than 330 lbs. of pressure over the nose.

NOTE: Rail type rocker arms are intended for stock hydraulic camshafts only.

Necessary modifications for cylinder heads equipped with pedestal-mount non-adjustable rocker arms to convert to fully adjustable rocker arms.

Necessary modification to fully adjustable valvetrains

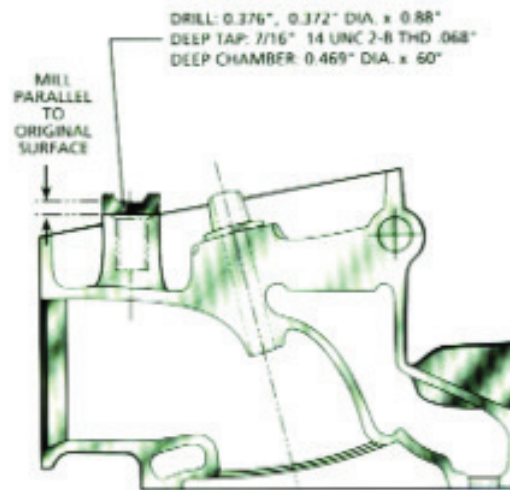


Illustration depicts typical Ford pedestal-mount non-adjustable cylinder head. Numbers represent proper milling dimensions to accommodate screw-in stud and guideplate assembly. Engines equipped with positive stop studs machine down from the top of the stud boss perpendicular to the existing hole.

All 302/351W	.230"
All 351C/351M/400	.300"
1973-95 429/460	.300"
1968-72 429/460	.230"

DO NOT MILL PARALLEL TO THE BOTTOM OF THE HEAD.

Technical Information

ERSON'S Cam recommendation form



Name: _____
Address: _____
Phone: _____
E-mail address: _____

Vehicle:
Year: _____ Make: _____ Model: _____
Weight: _____ Use: _____
Street: _____ Street/Strip: _____ Show car: _____
1/8 mile drag: _____ 1/4 mile drag: _____ Puller: _____
Oval track: _____ Asphalt: _____ Dirt: _____
1/4 mile: _____ 3/8 mile: _____ 1/2 mile: _____
Marine: _____ Jet Drive: _____ Prop Drive: _____

Engine:
Year: _____ Make: _____ Number of cylinders: _____
Cubic inch: _____ Compression: _____ Bore: _____
Stroke: _____ Rod type: _____ Piston type: _____
Cast: _____ Forged: _____

Cylinder Heads:
Make: _____ Model: _____ Chamber CC's: _____
Stock: _____ Ported: _____ Port matched: _____
Valve size intake: _____ Valve size exhaust: _____
Rocker ratio intake: _____ Rocker ratio exhaust: _____

Induction:
Carb/s cfm: _____ Mechanical FI: _____ Electronic FI: _____
Manifold type: _____ Blown: _____ Turbo/s: _____
Type of Fuel: _____ Nitrous: _____ No. Stages: _____

Exhaust:
Manifold type: _____ Headers/diameter: _____ Mufflers: _____

Drivetrain:
Transmission type: _____ Converter stall speed: _____
Rear axle ratio: _____ Tire diameter: _____
D.O.T.: _____ Slick: _____ Other: _____

RPM range: _____ Idle speed: _____

Emissions standards required: _____

Computer controlled:
Stock: _____ Chip: _____ Large injectors: _____
Mass air sensor: _____ Speed density sensor: _____

Cam currently used: _____ Type: _____
Intake duration: _____ @.050: _____ Valve lift: _____
Exhaust duration: _____ @.050: _____ Valve lift: _____
Lobe separation: _____ Intake lobe centerline: _____

Cam type desired:
Hydraulic: _____ Mechanical/Solid: _____
Hydraulic roller: _____ Solid roller: _____

Desired change in performance: _____

Energy Plus Series



FORD 1974-98 140 CUBIC INCH (2.3L), 2300cc OHC 4 CYL
1983-88 122 CUBIC INCH (2.0L), 2000cc OHC 4 CYL

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000 Note a	E253530	IN 270° 220° EX 270° 220°	.454" .454"	111°	3°	FOLLOWER
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Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800 Note a	E253540	IN 280° 230° EX 280° 230°	.479" .479"	112°	4°	FOLLOWER
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Eliminator Hydraulic

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Good mid to high rpm torque and horsepower. For use with manual transmission or high stall automatic. Will have lower vacuum than stock.

2200-5600 Note a	E253550	IN 288° 240° EX 288° 240°	.504" .504"	112°	4°	FOLLOWER
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FORD 1965-94 240/300 CUBIC INCH 6 CYL

Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000 Note a	E270100	IN 270° 204° EX 280° 214°	.451" .475"	110°	4°	.000" .000"
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NOTES:

a) Preferred latest computer design concepts in each application.
 These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.

Energy Plus Series



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
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3150	502S	205	HA2012	N/A	N/A	N/A
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3150	502S	205	HA2012	N/A	N/A	N/A
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3150	502S	205	HA2012	N/A	N/A	N/A
------	------	-----	--------	-----	-----	-----

3300	N/A	N/A	N/A	N/A	N/A	N/A
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Mechanical Flat Tappet Camshafts



FORD 1971-74 2000CC/2.0L OHC, 4 CYLINDER ENGINES

1.6:1 STOCK ROCKER RATIO
PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Strong street performer. Strong bottom end and mid-range, plus good increase in top end. OK for automatic. Good idle and fuel efficiency.	1000-4000	E259122 P-260-M	IN 260° EX 260° 206° 206°	.408" .408"	110°	0°	.000" .000"
Broad power range. Street or competition. Stick shift or automatic with lower gears. Likes headers and good carburetion. Fair idle.	1500-4750	E259222 P-270-M	IN 270° EX 270° 212° 212°	.432" .432"	110°	0°	.000" .000"
Mid-range and top end cam. Stick shift only. Hot street, drags, slaloms, etc. Needs headers and good carburetion. Lopey idle.	2500-5500	E259322 P-280-M	IN 280° EX 280° 228° 228°	.494" .494"	110°	0°	.000" .000"
Strictly top end competition cam. RPM must be kept up at all times. Must have open exhaust.	3500-6500	E259422 P-310-M	IN 310° EX 310° 260° 260°	.500" .500"	110°	0°	.000" .000"

NOTE--

Overhead cams are extremely sensitive to excessive camshaft and follower wear during the critical break-in period. Because the camshaft and followers are farthest from the oil pump, they are the last components in the engine to receive oil. This lack of oil combined with higher than stock spring pressures and improper valvetrain geometry are the most common causes of premature camshaft and follower failure.

To check for proper valvetrain geometry, coat the follower pad with machinist layout dye and assemble the valvetrain dry with a light spring. Rotate the engine twice to establish a wear pattern on the follower. Now compare the pattern on your followers to the followers illustrated. The correct pattern would be one which is centered on the followers pad.

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A

Late models at East Bay, FL Spring 2007



Hydraulic Flat Tappet Camshafts



1.66:1 STOCK ROCKER RATIO

FORD 1974-87 2300CC/2.3L OHC, 4 CYLINDER ENGINES

PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050		GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Erson's first choice over stock, can be used in stock or slightly modified engines seeking improved low end and mid-range performance.	1000-4000	E253222 264P	IN 264° EX 264°	205° 205°	.418" .418"	110°	4°	.000" .000"
Better mid-range and strong low end performance from 2300cc engines with improved intake and exhaust systems. Excellent add on for stock turbocharged cars.	1500-4500	E253322 274P	IN 274° EX 274°	212° 212°	.450" .450"	110°	4°	.000" .000"
Recommended for serious turbocharged cars seeking sustained high boost and strong mid-range performance. Needs 4 or 5 speed transmission and mid-3 series gearing for best results.	1500-5500	E253522 276P	IN 276° EX 274°	218° 212°	.456" .450"	110°	4°	.000" .000"
Strong street performer when used in modified 2300cc engines. 9.0-10.5:1 compression, 390 cfm 4 barrel, headers and mild head work with a 75 horsepower shot of nitrous brings this combo to life.	2500-5500	E253622 280P	IN 280° EX 284°	222° 226°	.456" .455"	110°	4°	.000" .000"
Light street machines, kit cars and hot rods seeking improved mid-range torque and horsepower should have modified intake and exhaust system for best results. Also works on turbocharged cars.	3000-6000	E253722 284P	IN 284° EX 284°	226° 226°	.455" .455"	110°	4°	.000" .000"
Hot street machines needing strong mid-range and top end power must have modified aftermarket intake and exhaust system to work best. Needs manual transmission and low gears. Noticeable idle.	3500-7000	E253422 288P	IN 288° EX 288°	230° 230°	.500" .500"	110°	4°	.000" .000"



Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3150	N/A	N/A	N/A	N/A	N/A	N/A
3150	N/A	N/A	N/A	N/A	N/A	N/A
3150	N/A	N/A	N/A	N/A	N/A	N/A
3150	N/A	N/A	N/A	N/A	N/A	N/A
3150	N/A	N/A	N/A	N/A	N/A	N/A
3150	N/A	N/A	N/A	N/A	N/A	N/A

Erson Break-In & Oil Additive



Erson's Break-In and Oil Additive with ZDDP is the best insurance for your new performance engine or classic car with flat tappet lifters and camshaft.

- Safe, proven ZDDP EP agent takes the worry out of using new oil formulas in engine that have flat tappet camshafts and lifters.
- Turns modern SM quality oil into the ideal oil for superior break-in and everyday use for superior protection.
- Compatible with ALL high-quality oils, standard or synthetic.
You choose your preferred oil.
- One 4 oz. bottle of Erson's ZDDPlus™ per oil change with SM oil is more economical than 5 quarts of exotic oil.
- Erson with ZDDP is economical and provides the protection required for high performance engines. Great for every oil change.

Part # E911000- Erson's Break-In Oil Additive 4 oz.
Part # E911001- Erson's Assembly Paste with ZDDP

Hydraulic Flat Tappet Camshafts



FORD 1962-83 144-170-200-250 CID ENGINES **1.5:1 STOCK ROCKER RATIO
PROFERAL BILLET**

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
The "Commuter" . More power through entire range. Stop and go traffic and expressway use. Good idle, throttle response, fuel efficiency.	1000-4000	E280111 RV5H	IN 274° 202° EX 280° 208°	.410" .420"	110°	4°	.000" .000"
Smooth idle, broad torque range cam for passenger cars, station wagons, pickups and RVs.	1250-4300	E280101 RV10H	IN 280° 208° EX 280° 208°	.420" .420"	111°	4°	.000" .000"
High torque, broad power range cam for on and off-road. Good idle.	1600-4700	E280201 RV15H	IN 288° 214° EX 288° 214°	.429" .449"	111°	4°	.000" .000"
Smooth, strong broad range cam in 200/250 engine. Mid-range cam in smaller engine. Fair idle.	2000-5000	E280121 TQ20H	IN 292° 214° EX 292° 214°	.449" .449"	110°	4°	.000" .000"

NOTE-- Between 1960-67, mechanical flat tappet camshafts were used in 144-170 CID 6 cylinder engines. Call Erson's Technical Service Team at 775.882-1622 for more information regarding these applications.



NOTE--

When installing aftermarket valve springs during camshaft upgrades, it is important to check the spring seat register. Often, the manufacturer cuts the cylinder head to accommodate a specific spring. This register, if not removed, decreases spring travel and can cause premature coil bind on the inner spring, resulting in valvetrain failure.

FORD 1965-95 240-300 CID 6 CYLINDER ENGINES, GEAR DRIVEN **1.6:1 STOCK ROCKER RATIO
PROFERAL BILLET**

Broad power range. City and expressway driving and towing. Cars, wagons, pickups and heavier rigs. Good idle, throttle response and fuel efficiency.	1000-4000	E270101 RV10H	IN 280° 208° EX 280° 208°	.448" .448"	110°	4°	.000" .000"
The "Performer" . Superior low and mid-range power. Good idle, fuel efficiency and driveability. 4 barrel carburetor and headers recommended.	1500-4500	E270121 TQ20H	IN 292° 214° EX 292° 214°	.478" .478"	111°	4°	.000" .000"
Works great in slightly modified engines with up to 9.5:1 compression. High-lift and short duration builds good torque and mid-range performance.	2000-5000	E270321 Hi-Flow AH	IN 284° 220° EX 284° 220°	.504" .504"	110°	4°	.000" .000"

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
N/A	N/A	N/A	N/A	N/A	N/A	T3026*
N/A	N/A	N/A	N/A	N/A	N/A	T3026*
N/A	N/A	N/A	N/A	N/A	N/A	T3026*
N/A	N/A	N/A	N/A	N/A	N/A	T3026*

*Will not fit 250. Please call for 250 application.

N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A

Mechanical Flat Tappet Camshafts



FORD V6 1983-86 2600CC, 2800CC V6 ENGINES

PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Low end power camshaft with good broad range. OK for automatic transmission. Smooth idle.	1200-4200	E254210 RV10M	IN 254° EX 254°	210° 210°	.426" .426"	111°	4° .018" .018"
Strong low and mid-range power camshaft for street driven cars. OK with automatic with gears. Good idle.	2000-5000	E254221 270+F	IN 270° EX 270°	220° 220°	.456" .456"	111°	0° .018" .018"
Mid-range performance camshaft. Broad power range. Needs headers and 4 speed for best results.	3000-6000	E254321 280-F	IN 286° EX 286°	242° 242°	.500" .500"	111°	0° .018" .018"

NOTE-- Camshafts for 1972-79 Ford 2600-2800cc V6 engines have smaller journal diameters than 1983-85 Ford V6 engines commonly found in Bronco IIs and light-duty Ford trucks. Therefore, these camshafts are not interchangeable. Call Erson's Technical Service Team at 775.882.1622 for profiles suitable for this application.

NOTE-- It is recommended that year, make and model be supplied to the salesperson when ordering these camshafts.

FORD V8 "Y BLOCK" 272-292-312 ENGINES

1.47:1 STOCK ROCKER RATIO
PROFERAL BILLET

Strong low and mid-range power for passenger cars and pickups. Smooth idle.	1250-4250	E201121 RV10M	IN 254° EX 254°	210° 210°	.426" .426"	111°	4° .018" .018"
Broad power range cam. Fair idle. OK for automatic transmission with 3.78 or lower gears.	2000-5000	E201131 TQ20M	IN 270° EX 270°	220° 220°	.456" .456"	112°	0° .018" .018"
Broad power range. High-lift, short duration cam. Pulls hard from idle up. Good for automatic transmission with lower gears.	3500-6500	E201721 Hi-Flow IM	IN 286° EX 286°	242° 242°	.500" .500"	112°	0° .018" .018"
Mid-range and top end power cam. Needs good intake system, heads and headers to work.	3800-6800	E201821 Hi-Flow IIM	IN 294° EX 294°	246° 246°	.500" .500"	112°	0° .018" .018"

NOTE--

All valve lifts in this series are figured using 1.47:1 rocker ratios. The 1957 high performance engines had 1.54:1 rocker arm ratio. If you have these rockers, the lift will be increased proportionately.

NOTE--

We offer an extensive selection of computer-designed camshaft lobes to complement your Ford "Y Block". For more extreme profiles, call Erson's Technical Service Team at 775.882.1622.

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A	N/A	N/A	N/A	N/A	N/A	T3031
N/A	N/A	N/A	N/A	N/A	N/A	T3031
N/A	N/A	N/A	N/A	N/A	N/A	T3031
N/A	N/A	N/A	N/A	N/A	N/A	T3031

Erson Break-In & Oil Additive



Erson's Break-In and Oil Additive with ZDDP is the best insurance for your new performance engine or classic car with flat tappet lifters and camshaft.

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- Erson with ZDDP is economical and provides the protection required for high performance engines. Great for every oil change.

Part # E911000- Erson's Break-In Oil Additive 4 oz.

Part # E911001- Erson's Assembly Paste with ZDDP

Mechanical Flat Tappet Camshafts



FORD FLAT HEAD 1949-53 239CI

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.1	LOBE CENTER	ADV	VALVE LASH
Strong low and mid-range power, can use stock intake and carburation, great for street rods. Lopey idle.	1250-4000	E290101 Hi-Flow-1M	IN 250° 226°	.360"	106°	0°	.015"
			EX 250° 226°	.360"			.015"
Great mid-range and top end power, needs modified intake, carburation and exhaust. Serious street effort, rough idle.	1500-4200	E290105 Hi-Flow-2M	IN 270° 234°	.340"	106°	2°	.018"
			EX 270° 234°	.340"			.018"
Drag race and competition use. Need increased compression, good intake, carburation and headers. Strong top end performance.	2500-4500	E290110 Hi-Flow-3M	IN 278° 242°	.340"	108°	4°	.018"
			EX 278° 242°	.340"			.018"

FORD FLAT HEAD 1932-48 239CI

Strong low and mid-range power, can use stock intake and carburation, great for street rods. Lopey idle.	1250-4000	E291100 Hi-Flow-1M	IN 250° 226°	.360"	106°	0°	.015"
			EX 250° 226°	.360"			.015"
Great mid-range and top end power, needs modified intake, carburation and exhaust. Serious street effort, rough idle.	1500-4200	E291104 Hi-Flow-2M	IN 270° 234°	.340"	106°	2°	.018"
			EX 270° 234°	.340"			.018"
Drag race and competition use. Need increased compression, good intake, carburation and headers. Strong top end performance.	2500-4500	E291109 Hi-Flow-3M	IN 278° 242°	.340"	108°	4°	.018"
			EX 278° 242°	.340"			.018"



1949 Ford Coupe

Hydraulic Roller Camshafts



FORD 4.6/5.4 SOHC 2 VALVE 1991-PRESENT

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050		GROSS LIFT 1.8	LOBE CENTER	ADV	VALVE LASH
Excellent choice for passenger cars and light trucks seeking improved low and mid-range performance. Computer compatible.	1200-5200	E213000 RH-262-280	IN 262° EX 270°	206° 214°	.504" .504"	112°	0°	.000" .000"
Great for performance street cars seeking improved mid-range power, while still maintaining good driveability. Requires programmer.	1500-5000	E213003 RH-270-300	IN 270° EX 278°	214° 222°	.540" .540"	112°	2°	.000" .000"
Hot Street gives strong mid-range and top end performance. Minimum 2000 RPM converter and 3.55 gears. OK with up to 150 HP shot of nitrous, requires programmer.	2000-5500	E213006 RH-262-310	IN 262° EX 270°	224° 232°	.558" .558"	112°	2°	.000" .000"
Hot Street gives strong upper mid-range and top end performance. Minimum 2500 RPM converter and 3.73 gears. OK with 200 HP shot of nitrous, requires programmer.	2500-6000	E213009 RH-262-310	IN 270° EX 278°	232° 240°	.558" .558"	112°	4°	.000" .000"
Hot Street/E.T. Brackets strong top end performance. 3000 RPM converter and 4.10 gears. Requires programmer.	3000-6500	E213012 RH-278-310	IN 278° EX 286°	240° 248°	.558" .558"	112°	4°	.000" .000"



Energy Plus Series



FORD 1962-91 221/255/260/289/302 CUBIC INCH V8

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000 Note a	E210026	IN 260° EX 270°	194° 204°	.424" .448"	110°	5°	.000" .000"
1200-4000 Notes a, f	E210028	IN 270° EX 280°	204° 214°	.448" .472"	112°	5°	.000" .000"

Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800 Note a	E210030	IN 278° EX 278°	212° 212°	.448" .448"	110°	4°	.000" .000"
2000-4800 Notes a, f	E210032	IN 280° EX 290°	214° 224°	.472" .496"	112°	5°	.000" .000"
2000-4800	E210034	IN 288° EX 288°	218° 218°	.460" .460"	112°	5°	.000" .000"
2000-4800 Notes a, f	E210036	IN 284° EX 284°	218° 218°	.488" .488"	110°	5°	.000" .000"
2000-4800 Notes a, g	E210038	IN 290° EX 300°	224° 234°	.496" .520"	112°	5°	.000" .000"

Note: These cams can be used in the 351W and 302 HIGH OUTPUT Engines by rewiring the distributor to firing order 1-5-4-2-6-3-7-8.

NOTES:

- a) Preferred latest computer design concepts in each application.
 - e) This mechanical lifter cam requires the valve train to be adjustable.
 - f) The cam base circle sizes of this camshaft may require the valve train to be adjustable or use of special length pushrods.
 - g) The valve lift of this camshaft may require special pushrods, rocker arms or springs to keep geometry correct or prevent binding and damage.
- These performance cams are legal only pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.

Energy Plus Series



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3100	502S	205	HA900	1620/1621	106-16	702
3100	502S	205	HA900	1620/1621	106-16	702
3100	502S	205	HA900	1620/1621	106-16	702
3100	502S	205	HA900	1620/1621	106-16	702
3100	502S	205	HA900	1620/1621	106-16	702
3100	502S	205	HA900	1620/1621	106-16	702
3100	502S	205	HA900	1620/1621	106-16	702



Energy Plus Series



FORD 1962-91 221/255/260/289/302 CUBIC INCH V8

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Eliminator Hydraulic

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Good mid to high rpm torque and horsepower. For use with manual transmission or high stall automatic. Will have lower vacuum than stock.

2200-5600 Notes a, g	E210040	IN 292° 230° EX 292° 230°	.512" .512"	109°	2°	.000" .000"
2200-5600 Notes a, g	E210042	IN 300° 234° EX 310° 244°	.520" .544"	112°	5°	.000" .000"

Eliminator Mechanical

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Mid to high rpm torque and horsepower. For serious racing only. Need proper selection of rear axle ratio and improvements in carburation and exhaust systems. For use with manual transmission or automatic. Will not have enough vacuum for power accessories.

2200-6500 Note e	E210050	IN 310° 228° EX 310° 228°	.477" .477"	114°	6°	.018" .018"
2200-6500 Notes a, g	E210052	IN 298° 238° EX 308° 248°	.512" .536"	112°	5°	.025" .025"
2200-6500 Notes a, g	E210054	IN 314° 254° EX 314° 254°	.571" .571"	106°	4°	.024" .024"



Note: These cams can be used in the 351W and 302 HIGH OUTPUT Engines by rewiring the distributor to firing order 1-5-4-2-6-3-7-8.

NOTES:

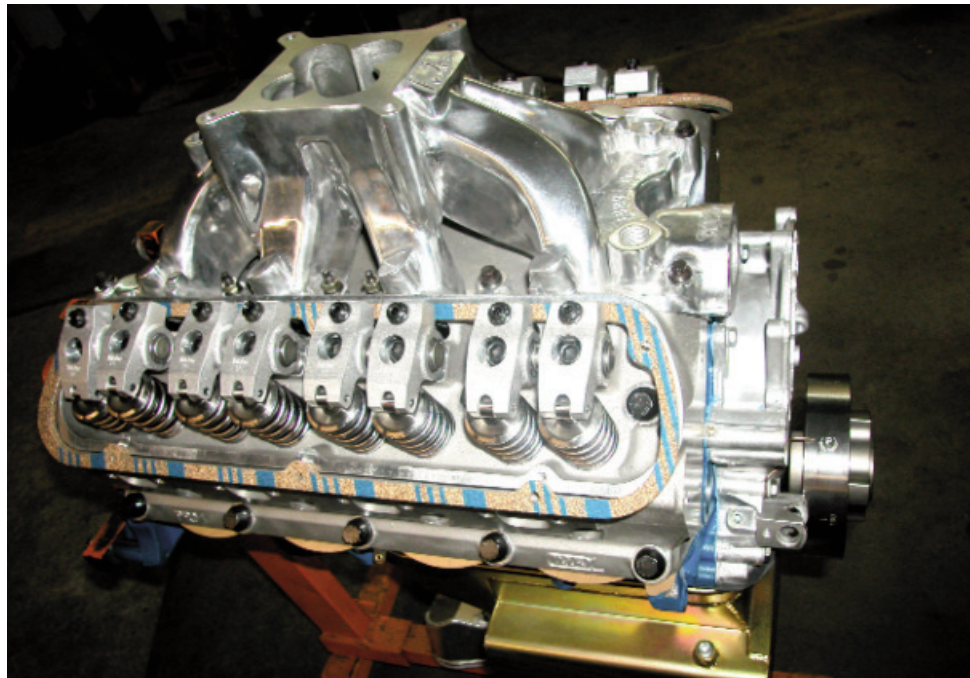
- a) Preferred latest computer design concepts in each application.
 - e) This mechanical lifter cam requires the valve train to be adjustable.
 - f) The cam base circle sizes of this camshaft may require the valve train to be adjustable or use of special length pushrods.
 - g) The valve lift of this camshaft may require special pushrods, rocker arms or springs to keep geometry correct or prevent binding and damage.
- These performance cams are legal only pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.

Energy Plus Series



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3100	502S	205	HA900	1620/1621	106-16	702
3100	502S	205	HA900	1620/1621	106-16	702
3400	502S	201	MA914	1620/1621	806-16	702
3400	502S	201	MA914	1620/1621	806-16	702
3400	502S	201	MA914	1620/1621	806-16	702





FORD 1985-94 302 CUBIC INCH V8 (W/HYD ROLLER LIFTERS) FIRING ORDER 1-3-7-2-6-5-4-8

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000	E212700	IN 266°	210°	.445"	115°	0°	.000"
		EX 266°	210°	.445"			.000"

Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800 Notes a, g	E212704	IN 279°	212°	.493"	112°	5°	.000"
		EX 289°	222°	.510"			.000"
2000-4800 Note a	E212708	IN 282°	220°	.498"	110°	0°	.000"
		EX 282°	220°	.498"			.000"
2000-4800 Note a	E212712	IN 281°	215°	.546"	112°	0°	.000"
		EX 287°	220°	.547"			.000"
2000-4800 Notes a, g	E212716	IN 289°	222°	.510"	112°	5°	.000"
		EX 299°	232°	.534"			.000"

NOTE: These cams were specifically designed to be used in engines originally produced using roller lifters. The OEM hydraulic roller lifter will not operate properly in engine blocks produced for flat lifters.
NOTE: These camshafts can be used in the stock 1985 and later 302 engine by rewiring the distributor to firing order 1-3-7-2-6-5-4-8.

FORD 1969-91 351W CUBIC INCH, 302 CUBIC INCH H/O V8 (EXC. ROLLER LIFTERS) FIRING ORDER 1-3-7-2-6-5-4-8

Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000 Note a	E212014	IN 250°	184°	.392"	110°	5°	.000"
		EX 260°	194°	.424"			.000"

NOTES:
a) Preferred latest computer design concepts in each application.
g) The valve lift of this camshaft may require special pushrods, rocker arms or springs to keep geometry correct or prevent binding and damage.
These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
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3400	502S	201	HA2205	1622-8	806-16	702
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3400	502S	201	HA2205	1622-8	806-16	702
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3400	502S	201	HA2205	1622-8	806-16	702
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3400	502S	201	HA2205	1622-8	806-16	702
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3400	502S	201	HA2205	1622-8	806-16	702
------	------	-----	--------	--------	--------	-----

3100	502S	205	HA900	1620/1621	106-16	702
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Hydraulic Flat Tappet Camshafts



FORD SMALL BLOCK V8 1962-84 221-260-289-302 CID ENGINES

**1.6:1 STOCK ROCKER RATIO
FIRING ORDER 1 5 4 2 6 3 7 8**

EXCEPT 1982-LATER 302 HO ENGINES

PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050		GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Erson's first choice over stock. Excellent replacement camshaft offering more low end performance. No modifications necessary. OK with stock carburetion, compression and converter. Good idle.	800-3800	E210120 TQ10H	IN 274° EX 274°	202° 202°	.437" .437"	108°	0°	.000" .000"
The "Commuter" . More power through entire range. Stop and go traffic and expressway driving use. Good idle, throttle response and fuel efficiency.	1000-4000	E210111 RV5H	IN 274° EX 280°	202° 208°	.437" .448"	110°	4°	.000" .000"
Broad power range. City and expressway driving or towing. Cars, wagons, pickups, heavier rigs. Good idle and throttle response, plus high fuel efficiency.	1200-4200	E210201 RV10H	IN 280° EX 280°	208° 208°	.448" .448"	111°	4°	.000" .000"
Early Broncos and Ford pickups seeking improved low end and mid-range performance. Good on and off-road driveability with slightly modified engine. OK for towing light to moderate loads.	1250-4400	E210112 RV12H	IN 280° EX 288°	208° 214°	.448" .458"	110°	4°	.000" .000"
Good idle and fuel efficiency. Excellent replacement camshaft for cars or trucks with campers towing moderate loads. May be used with small displacement centrifugal or roots type superchargers.	1250-4750	E211011 M/P1	IN 280° EX 292°	208° 214°	.448" .478"	114°	6°	.000" .000"
The "Performer" . Super low and mid-range power. Good idle, fuel efficiency and driveability. 4 barrel and headers recommended.	1500-4500	E210121 TQ20H	IN 292° EX 292°	214° 214°	.478" .478"	110°	4°	.000" .000"
Fair idle with reasonable fuel efficiency. good low and mid-range horsepower in lighter chassis. Street rods or street machines with up to 9.5:1 compression.	2000-5000	E210321 Hi-Flow AH	IN 284° EX 284°	220° 220°	.504" .504"	108°	0°	.000" .000"
High lift. Dual pattern. Needs 4 barrel, headers, lower gears and medium stall speed converter if used with automatic. Extremely strong mid-range camshaft.	2200-5200	E210222 TQ40H	IN 284° EX 296°	220° 228°	.504" .504"	110°	4°	.000" .000"
Recommended for centrifugal, vane or small B&M roots-type superchargers. Low to moderate boost levels; 5-12 lbs. Fair idle with strong low and mid-range performance.	2250-5500	E210422 Hi-Boost IH	IN 284° EX 286°	220° 228°	.504" .504"	114°	6°	.000" .000"
Engines with 9.5-10.5:1 compression, aftermarket intake manifold, 600-650 cfm 4 barrel, mild head work and headers offer increased mid-range performance. Works best with 4 speed top loader and lower gears.	2500-5800	E210221 TQ30H	IN 310° EX 310°	226° 226°	.493" .493"	110°	4°	.000" .000"
Broad power range. High lift with short duration guarantees extra performance for the smaller engine. Good for automatic transmission in 289 or larger engines.	3000-6000	E210421 Hi-Flow IH	IN 296° EX 296°	228° 228°	.504" .504"	108°	0°	.000" .000"

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702

Hydraulic Flat Tappet Camshafts



1.6:1 STOCK ROCKER RATIO
 FIRING ORDER 1 5 4 2 6 3 7 8
 PROFERAL BILLET

FORD SMALL BLOCK V8 1962-84 221-260-289-302 CID ENGINES
 EXCEPT 1982-LATER 302 HO ENGINES

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Serious street machines/street rodents seeking more mid-range and top end performance. 289-306 CID engines with aftermarket cylinder heads and big valves, free flowing exhaust, single or 2x4 barrel carburetion. 8-15 lbs. boost. OK with nitrous oxide!	3000-6500	E210522 Hi-Boost IIH	IN 296° EX 316°	228° 240°	.504" .504"	114°	6° .000" .000"
Super power range, high lift camshaft. Strong from 3500-7500 in 289 or larger engine. Needs 4 speed, 4 barrel and headers.	3500-6500	E210521 Hi-Flow IIH	IN 306° EX 306°	235° 235°	.504" .504"	108°	0° .000" .000"
Good mid-range and top end power. Needs all the good stuff to work best. E.T. Bracket winner. Should have no less than 10.0:1 compression.	3600-6600	E210621 Hi-Flow IIIH	IN 316° EX 316°	240° 240°	.504" .504"	108°	0° .000" .000"
Competition camshaft. 5500-7500 RPM. Needs good heads, lots of carburetor area and open exhaust to work its best.	3800-6800	E211121 500HLH	IN 318° EX 318°	244° 244°	.538" .538"	108°	0° .000" .000"
Hot Street/E.T. Brackets. 300(+) cubic inch engines with 10.5-11.5:1 compression, modified aftermarket cylinder heads, 750 cfm 4 barrel, 2.5"-3" exhaust, C-4 automatic with 4000 RPM converter. OK with nitrous oxide.	4000-7000	E210921 Hi-Flow IVH	IN 312° EX 320°	248° 256°	.536" .552"	110°	4° .000" .000"



1966 Ford Fairlane GTA

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702



1970 Ford Torino Cobra SCJ

Mechanical Flat Tappet Camshafts



FORD SMALL BLOCK V8 1962-84 221-260-289-302 CID ENGINES
EXCEPT 1982-LATER 302 HO ENGINES

1.6:1 STOCK ROCKER RATIO
FIRING ORDER 1 5 4 2 6 3 7 8
PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Hot Street/E.T. Brackets. 289-302 CID engines with 9.5-10.0:1 compression. Excellent low and mid-range power in 3200-3600 lb vehicles having 600-650 cfm. 4 barrel, headers, free flowing exhaust and 4 or 5 speed manual transmission.	3000-6000	E210021 TQ30M	IN 280° 230° EX 280° 230°	.496" .496"	110°	4°	.018" .018"
Hot Street/E.T. Brackets. Strong mid-range performance in 10.0-11.0:1 compression engines. Mildly ported stock heads or aftermarket heads with larger valves, single 4 barrel or low profile 2x4 barrel set-ups, 4 speed manual or C-4 automatics with 3000-3500 RPM converter.	3500-6500	E210322 Hi-Flow AM	IN 286° 242° EX 294° 246°	.544" .544"	108°	0°	.022" .022"
Hot Street/E.T. Brackets/Oval Track. One of our most popular cams. Good mid-range and upper mid-range performance in 3000-3400 lb. early Mustangs, Comets, Mavericks, etc. No less than 10.5:1 compression. Fast 1/4-3/8 mile, dirt or asphalt tracks.	3800-6800	E210301 F-282-2	IN 282° 246° EX 290° 254°	.544" .544"	106°	0°	.022" .022"
Pro Street/E.T. Brackets. 289-302 engines with ported and polished aftermarket cylinder heads; large diameter, free flowing exhaust, 700-750 cfm 4 barrel and low gears. Excellent nitrous camshaft.	4000-7000	E210306 F-288-1	IN 288° 250° EX 296° 258°	.600" .600"	110°	4°	.024" .024"
E.T. Brackets. 2800-3200 lb. door-slamers with 11.5-12.5:1 compression engines. Good heads and intake, 750 cfm carburetion. 4 speed or C-4 automatic with trans brake and 4000 RPM converter. 10" slick or 12" D.O.T. soft compound tire and low gears. OK with nitrous.	4500-7500	E210307 F-296-1	IN 296° 258° EX 302° 264°	.600" .600"	108°	2°	.024" .024"
E.T. Brackets/Super Street. Excellent mid-range and top end power in 2600-3000 lb. door-cars. 289-310 CID engines with 12.5-13.5:1 compression, single 4 barrel or tunnel ram on alcohol or gas. 2 or 3 speed automatics with 5000 RPM converter and 5.13 gears. Use E915251 valve springs at 1.900" installed height.	5000-8000	E210308 F-304-1A	IN 304° 266° EX 308° 272°	.653" .653"	106°	4°	.024" .024"

NOTE--

It is recommended that during the critical break-in period on any high performance flat tappet mechanical valvetrain, strict attention be paid to proper set up. Always follow the manufacturer's recommended valve spring installation procedures. This may include modifications to the cylinder head and/or the use of longer valves or offset locks and retainers to accommodate these new dimensions. We also recommend you break-in the new camshaft and lifters on the outer spring only. This helps to insure against premature failure during the first few minutes of operation when loads are high and lubrication scarce.

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	205	MA914	1928-8	806-16	702
3400	502S	205	MA914	1928-8	806-16	702
3400	502S	205	MA914	1928-8	806-16	702
3400	502S	205	MA914	1928-8	806-16	702
3400	502S	205	MA914	1928-8	806-16	702
3400	502S	205	MA914	1928-8	806-16	702

Solid Roller Camshafts



1.6:1 STOCK ROCKER RATIO

FIRING ORDER 1 5 4 2 6 3 7 8

PROFERAL BILLET

FORD SMALL BLOCK V8 1962-84 221-260-289-302 CID ENGINES

CAM APPLICATIONS

BASIC RPM
RANGE

PART NO.
GRIND NO.

DURATION
ADV @.050

GROSS
LIFT

LOBE
CENTER

ADV

VALVE
LASH

Hot Street/E.T. Brackets. 289-306 CID with 10.5-11.5:1 compression in 3000-3400 lb. vehicles. Mildly ported and polished aftermarket cylinder heads, open plenum style intake manifold with up to 750 cfm carburetion. 4 speed top loader or C-4 automatic with 3500 RPM converter and low gears. OK with small supercharger or nitrous oxide.

3800-6800

E210900
R-286-1C

IN 286° 246°
EX 294° 254°

.592"
.592"

110°

4°

.024"
.024"

Hot Street/E.T. Brackets. Excellent mid-range and top end power in 289-302 CID engines with 11.5-12.5:1 compression. Modified aftermarket cylinder heads with headers and large diameter, free flowing exhaust. 4 speed top loader or C-4 automatic with 4000 RPM converter and 4.30 or lower gears. OK with nitrous!

4200-7200

E210901
R-282-1B

IN 282° 253°
EX 292° 263°

.640"
.640"

106°

0°

.024"
.024"

E.T. Brackets/Super Street. New competition lobe design offers more area under the curve for enhanced volumetric efficiency. Strong top end in 2600-3000 lb. door slammers using 302(+) CID engines with 12.5-13.5:1 compression. Good heads and intake recommended for best results. Automatic cars with 4500 RPM converters, advance camshaft 4-6° for more bottom end.

4500-7800

E210902
R-292-1

IN 282° 266°
EX 300° 274°

.656"
.656"

106°

0°

.024"
.024"

Pro Brackets/Super Stock. 302-310 CID engines with 13.5:1 or higher compression in 2200-2600 lb. door-cars. Heavily ported cylinder heads with large valves, match ported open-plenum single or 2x4 barrel tunnel ram-style intake manifolds with modified 750 cfm or larger carburetion on alcohol or gas. 4 speed or automatic with 5000 RPM converter and 5.38 or lower gears. Works well in 302 super stock automatic cars.

4800-8300

E210903
R-298-4

IN 298° 272°
EX 304° 278°

.720"
.688"

104°

0°

.024"
.024"

NOTE--

Roller camshafts do not require break-in, but to avoid premature engine failure we advise you prime the engine's oil system prior to start-up.

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3850	507/508	203	RL960	1928-8	807-16	8982
3850	507/508	203	RL960	1928-8	807-16	8982
3850	507/508	203	RL960	1928-8	807-16	8982
3850	507/508	203	RL960	1928-8	807-16	8982



FORD 1969-91 351W CUBIC INCH, 1985-95 302 CUBIC INCH H/O V8 (EXC. ROLLER LIFTERS)

FIRING ORDER 1-3-7-2-6-5-4-8

CAM APPLICATIONS

BASIC RPM RANGE

PART NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000 Note a	E212016	IN 260° EX 270°	194° 204°	.424" .448"	110°	5°	.000" .000"
1200-4000 Note a	E212018	IN 270° EX 280°	204° 214°	.448" .472"	112°	5°	.000" .000"

Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800 Note a	E212020	IN 280° EX 290°	214° 224°	.472" .496"	112°	5°	.000" .000"
2000-4800	E212022	IN 288° EX 288°	218° 218°	.461" .461"	113°	6°	.000" .000"
2000-4800 Note a	E212024	IN 284° EX 284°	218° 218°	.488" .488"	110°	5°	.000" .000"
2000-4800 Notes a, g	E212026	IN 290° EX 300°	224° 234°	.496" .520"	110°	4°	.000" .000"
2000-4800 Notes a, g	E212028	IN 290° EX 300°	224° 234°	.496" .520"	112°	5°	.000" .000"

Eliminator Hydraulic

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Good mid to high rpm torque and horsepower. For use with manual transmission or high stall automatic. Will have lower vacuum than stock.

2200-5600 Notes a, g	E212029	IN 300° EX 310°	234° 244°	.520" .544"	112°	5°	.000" .000"
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NOTE: These cams can be used in the 221 thru 302 Engines by rewiring the distributor to firing order 1-3-7-2-6-5-4-8.

NOTES:

a) Preferred latest computer design concepts in each application.

g) The valve lift of this camshaft may require special pushrods, rocker arms or springs to keep geometry correct or prevent binding and damage.

These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.



MATCHED COMPONENTS

VALVE
SPRINGS

RETAINERS

VALVE
LOCKS

LIFTERS

PUSH
RODS

ROCKER
ARMS

TIMING
SET

3100

502S

205

HA900

1620/1621

106-16

702

3100

502S

205

HA900

1620/1621

106-16

702

3100

502S

205

HA900

1620/1621

106-16

702

3100

502S

205

HA900

1620/1621

106-16

702

3100

502S

205

HA900

1620/1621

106-16

702

3100

502S

205

HA900

1620/1621

106-16

702

3100

502S

205

HA900

1620/1621

106-16

702

3100

502S

205

HA900

1620/1621

106-16

702

Hydraulic Flat Tappet Camshafts



FORD V8 1968-93
1968-93 351W/5.8L ENGINES
1982-84 302/5.0L HO ENGINES

1.6:1 STOCK ROCKER RATIO
FIRING ORDER 1 3 7 2 6 5 4 8
PROFERAL BILLET

CAM APPLICATIONS

BASIC RPM RANGE

PART NO. GRIND NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

The "Commuter" . More power through entire range. Stop and go traffic and expressway use. Good idle, throttle response and fuel efficiency.	1000-4000	E212111 RV5H	IN 274° EX 280°	202° 208°	.437" .448"	110°	4°	.000" .000"
Broad power range. City and expressway driving or towing. Cars, wagons, pickups and heavier rigs. Good idle and throttle response, plus high fuel efficiency.	1200-4200	E212101 RV10H	IN 280° EX 280°	208° 208°	.448" .448"	111°	4°	.000" .000"
Late model Broncos and Ford pickups seeking improved low end and mid-range performance. Good on or off-road driveability with stock or slightly modified engines. OK for towing light to moderate loads.	1250-4400	E212112 RV12H	IN 280° EX 288°	208° 214°	.448" .458"	110°	4°	.000" .000"
Good idle and fuel efficiency. Excellent replacement camshaft for cars or trucks with campers, towing moderate loads. May be used with small displacement centrifugal, vane or roots-type superchargers. Computer compatible.	1250-4750	E212011 M/P1	IN 280° EX 292°	208° 214°	.448" .478"	114°	6°	.000" .000"
"The Performer" . Super low and mid-range power. Good idle, fuel efficiency and driveability. 4 barrel and headers recommended.	1500-4500	E212121 TQ20H	IN 292° EX 292°	214° 214°	.478" .478"	110°	4°	.000" .000"
Good idle and throttle response in larger engines. Prefers 4 barrel, headers, 4 or 5 speed manual transmission and low gears for towing moderate to heavy loads. OK for small superchargers.	1500-4800	E212021 M/P2	IN 292° EX 310°	214° 226°	.478" .493"	114°	4°	.000" .000"
Excellent choice for street rods or slightly modified street machines with up to 9.5:1 compression. Noticeable idle with reasonable fuel efficiency. Produces good low end and mid-range torque and horsepower in lighter chassis.	1800-5000	E212321 Hi-Flow AH	IN 284° EX 284°	220° 220°	.504" .504"	108°	0°	.000" .000"
High lift, dual pattern. Needs 4 barrel, headers, lower gears and medium stall speed converter if used with automatic. Extremely strong mid-range camshaft.	2000-5200	E212222 TQ40H	IN 284° EX 296°	220° 228°	.504" .504"	110°	0°	.000" .000"
Recommended for centrifugal, vane or small B&M roots-type superchargers with low to moderate boost levels, 5-12 lbs. Fair idle with strong low and mid-range performance.	2200-5500	E212422 Hi-Boost IH	IN 284° EX 296°	220° 228°	.504" .504"	112°	4°	.000" .000"

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702

Hydraulic Flat Tappet Camshafts



FORD V8 1968-93
1968-93 351W/5.8L ENGINES
1982-84 302/5.0L HO ENGINES

1.6:1 STOCK ROCKER RATIO
FIRING ORDER 1 3 7 2 6 5 4 8
PROFERAL BILLET

CAM APPLICATIONS

BASIC RPM RANGE

PART NO. GRIND NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

For 351W engines with 9.5-10.5:1 compression seeking increased mid-range performance. Works best with aftermarket dual plane style intake, 600-650 cfm carburetion, mild head work and headers with free flowing dual exhaust. 4 speed top loader and lower gears in 3200-3600 lb. cars is highly recommended.

2500-5800

E212221
TQ30H

IN 310° 226°
EX 310° 226°

.493"
.493"

110°

4°

.000"
.000"

Hot Street/E.T. Brackets. High lift, short duration. Delivers broad power range and strong top end. Fair idle. Needs 4 barrel, headers, compression and gears.

3000-6000

E212421
Hi-Flow IH

IN 296° 228°
EX 296° 228°

.504"
.504"

108°

0°

.000"
.000"

High lift, dual pattern. Needs 4 barrel, headers and lower gears. Works best with stick or high-stall automatic. Strong top end camshaft. Rough idle. Should have at least 9:1 compression.

3200-6300

E212223
TQ50H

IN 296° 228°
EX 306° 235°

.504"
.504"

110°

0°

.000"
.000"

Runs strong 3500-7000 RPM. Stick or automatic, with gears. Needs good intake and headers, 9.5:1 or more compression. Lopey idle.

3500-7000

E212521
Hi-Flow IIIH

IN 306° 235°
EX 306° 235°

.504"
.504"

108°

0°

.000"
.000"

Hot Street/E.T. Brackets. 302-351 cubic inch engines with 10.5-11.5:1 compression using modified aftermarket cast iron or aluminum cylinder heads, 750 cfm 4 barrel and 2.5"-3" exhaust will produce good upper RPM horsepower. Automatic cars use with 4000 RPM converter and low gears. OK with nitrous oxide!

3800-6800

E212921
Hi-Flow IVH

IN 312° 248°
EX 320° 256°

.536"
.552"

110°

4°

.000"
.000"



1968 1/2 Ford Mustang GT Fastback

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702
3100	502S	205	HA900	1621-8	106-16	702



1970 Ford Mustang Boss 302

Mechanical Flat Tappet Camshafts



FORD SMALL BLOCK V8
 1969-83 351W/5.8L ENGINES
 1982-84 302/5.0L ENGINES

1.6:1 STOCK ROCKER RATIO
 FIRING ORDER 1 3 7 2 6 5 4 8
 PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Mild Street/Slalom Racer. Street rods and daily drivers seeking super low end power from 302-351 cubic inch engines with 9.5-10.0:1 compression. Works well in 3200-3600 lb. vehicles with 600-650 cfm. 4 barrel, headers, free flowing exhaust and 4 or 5 speed manual transmission.	2800-6000	E212030 TQ30M	IN 280° EX 280° 230° 230°	.496" .496"	110°	4°	.018" .018"
Hot Street/E.T. Brackets. Strong mid-range performance in 10.0-11.0:1 compression engines. Vehicles using mildly-ported, stock heads or aftermarket heads with larger valves, single 4 barrel or 2x4 barrel set ups. 4 speed manual or C-4 automatics with 3000-3500 RPM converter.	3200-6500	E212322 Hi-Flow AM	IN 286° EX 294° 242° 246°	.544" .544"	108°	0°	.022" .022"
Hot Street/E.T. Brackets/Oval Track. One of Erson's most popular camshafts. Good mid-range and upper mid-range performance in 3000-3400 lb. early Mustangs, Comets, Mavericks, etc. Recommended for engines with no less than 10.5:1 compression. Oval track applications running fast 1/4-3/8 mile dirt or asphalt tracks.	3500-6800	E212301 F-282-2	IN 282° EX 290° 246° 254°	.544" .544"	106°	0°	.024" .024"
Pro Street/E.T. Brackets. 302-351 cubic inch engines using ported and polished aftermarket cylinder heads; large diameter, free flowing exhaust. 700-750 cfm 4 barrel and low gears. OK with 1.7:1 rockers and/or nitrous oxide. We recommend 10.5-11.5:1 compression for best results.	3800-7200	E212302 F-286-3	IN 286° EX 294° 250° 258°	.544" .544"	110°	4°	.024" .024"
E.T. Brackets/Oval Track. Excellent mid-range torque and horsepower from 351-358 CID engines with 11.5-12.5:1 compression using modified aftermarket Windsor or Cleveland style cylinder heads. Proven winner in late model sportsman cars on 3/8-1/2 mile tracks. OK with single 750 cfm 4 barrel on alcohol or gas!	4200-7400	E212303 F-296-1A	IN 296° EX 302° 258° 264°	.600" .600"	106°	4°	.024" .024"

NOTE--

Due to the many different cylinder head options available from Ford as well as the aftermarket industry, it is important to measure the installed height of both the intake spring and exhaust spring as they may be different, requiring an entirely different spring from one side to the other. Call Erson's Technical Service Team at 775.882.1622 for more information regarding our selection of valve springs applying to your application.

TECH TIP--

Do like the pros do! When installing any aftermarket cam, particularly mechanical flat tappet cams, strict attention must be paid to the break-in procedure. In most cases, it is necessary to run the cam and lifters in on the outer spring only, when using double springs, for the first 30 minutes of operation. This procedure will often help to reduce the premature valvetrain to cam and lifter failure. The alternative, rebuilding your engine, is much more costly and time consuming.

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	201	MA914	1928-8*	806-16	702 7605
3400	502S	201	MA914	1928-8*	806-16	702 7605
3400	502S	201	MA914	1928-8*	806-16	702 7605
3400	502S	201	MA914	1928-8*	806-16	702 7605
3400	502S	201	MA914	1928-8*	806-16	702 7605

*Pushrods will vary

Mechanical Flat Tappet Camshafts



FORD SMALL BLOCK V8
1969-83 351W/5.8L ENGINES
1982-84 302/5.0L ENGINES

1.6:1 STOCK ROCKER RATIO
FIRING ORDER 1 3 7 2 6 5 4 8
PROFERAL BILLET

CAM APPLICATIONS

BASIC RPM RANGE

PART NO. GRIND NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

E.T. Brackets/Oval Track. A favorite with Wednesday night E.T. Bracket racers or Oval Track racers on 1/2 mile dirt or asphalt tracks. Must have good heads and intake, free flowing, large diameter exhaust system. 4 speed manual or C-4 automatic with 4000 RPM converter to work best.

4500-7600

E212304
F-298-4

IN 298° 260°
EX 306° 268°

.600"
.600"

108°

0°

.024"
.024"

E.T. Brackets/Super Street. New lobe technology designed specifically for .875" diameter flat tappets, allows for a faster, yet more dynamically stable valvetrain. 2600-3000 lb. door-slammers with 351-380 cubic inch engines sporting 12.5-13.5:1 compression, produces big, top end power. Use E915251 spring at 1.900" installed.

4800-8200

E212305
F-304-1A

IN 304° 266°
EX 308° 272°

.653"
.653"

106°

4°

.024"
.024"

NOTE--

Due to the many different cylinder head options available from Ford as well as the aftermarket industry, it is important to measure the installed height of both the intake spring and exhaust spring as they may be different, requiring an entirely different spring from one side to the other. Call Erson's Technical Service Team at 775.882.1622 for more information regarding our selection of valve springs applying to your application.

TECH TIP--

Do like the pros do! When installing any aftermarket cam, particularly mechanical flat tappet cams, strict attention must be paid to the break-in procedure. In most cases, it is necessary to run the cam and lifters in on the outer spring only, when using double springs, for the first 30 minutes of operation. This procedure will often help to reduce the premature valvetrain to cam and lifter failure. The alternative, rebuilding your engine, is much more costly and time consuming.



1970 Ford Mustang Boss 302

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	201	MA914	1928-8*	807-16	7605
3400	502S	201	MA914	1928-8*	807-16	7605

*Pushrods will vary



1968 1/2 Ford Mustang GT Fastback

Hydraulic Roller Camshafts



FORD SMALL BLOCK V8
1985-LATER 302/5.0L HO ENGINES
1994-LATER 351W/5.8L ENGINES
CAM APPLICATIONS

1.6:1 STOCK ROCKER RATIO
FIRING ORDER 1 3 7 2 6 5 4 8
S.A.D.I. BILLET

	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050		GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Improved low end and mid-range power in 302-351 CID engines with 8.5-9.5:1 compression. Works well with stock 4 barrel carburetion or speed density style fuel injection. However, idle quality may improve with mass air flow style fuel injection. Compatible with stock transmissions, converters and gearing. Light duty trucks and Broncos, towing moderate loads.	1800-4800	E212836 RH-282-1A	IN 282° EX 282°	214° 214°	.512" .512"	112°	4°	.000" .000"
Improved mid-range performance in 302-351 CID engines with 9.0-9.5:1 compression ratios. Works well with aftermarket intake and 4 barrel carburetion or mass air flow fuel injection. Can be used with 1.7:1 rockers, clearance permitting. Prefers 5 speed manual, however, will work fine with automatic transmission.	2000-5200	E212832 RH-288-1	IN 288° EX 288°	219° 219°	.512" .512"	110°	0°	.000" .000"
Dual pattern, high lift, short duration intake offers big mid-range torque, while longer exhaust duration lets your engine breathe. Will work with stock or slightly modified aftermarket cylinder heads and intake with up to 650 cfm carburetion or mass air flow fuel injection. Recommended for engines with no less than 9.5:1 compression, headers and free flowing dual exhaust. OK with nitrous oxide!	2300-5800	E212837 RH-286-1	IN 286° EX 294°	218° 226°	.544" .544"	112°	4°	.000" .000"
High lift, short duration, single pattern camshaft pulls hard through the mid-range without sacrificing top end power in 302-351 CID engines using 9.5:1 compression. Works fine with single, 4 barrel or mass air flow fuel injection and headers with 2.5"-3" free flowing exhaust. Prefers 5 speed manual and mid-3 series gearing.	2500-6500	E212833 RH-290-1	IN 290° EX 290°	222° 222°	.544" .544"	112°	4°	.000" .000"
New computerized lobe design incorporates faster ramps for improved timing events. More mid-range and upper mid-range power without compromising low speed driveability. 4 barrel carburetion or mass air flow fuel injection with 65-70 mm throttle body and heavier injectors, enhance performance. Recommended with 5 speed transmission. Can use 1.7 rockers!	2500-6500	E212838 RH-282-4A	IN 282° EX 286°	222° 226°	.512" .512"	112°	4°	.000" .000"

Hydraulic Roller Camshafts



VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	205	HA2205	1622-8*	806-16	702
3400	502S	205	HA2205	1622-8*	806-16	702
3400	502S	205	HA2205	1622-8*	806-16	702
3400	502S	205	HA2205	1622-8*	806-16	702
3400	502S	205	HA2205	1622-8*	806-16	702

*Pushrods will vary 302 to 351W

Hydraulic Roller Camshafts



FORD SMALL BLOCK V8
1985-LATER 302/5.0L HO ENGINES
1994-LATER 351W/5.8L ENGINES
CAM APPLICATIONS

1.6:1 STOCK ROCKER RATIO
FIRING ORDER 1 3 7 2 6 5 4 8
S.A.D.I. BILLET

	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
<p>Hot Street. 302-351 CID engines with 9.5-10.0:1 compression. Aftermarket cast iron or aluminum cylinder heads (i.e.: GT-40, Dart, TFS, etc.) with minor modifications. Gasket matched Victor Jr. style intake or extrude honed GT-40 or Cobra style fuel injected manifolds with modified mass air flow fuel injection. Intended for 5 speed cars with low gears. Can be used with 1.7 rockers!</p>	2800-6500	E212839 RH-294-3	IN 294° 226° EX 294° 226°	.512" .512"	112°	4°	.000" .000"
<p>Non-computer controlled, naturally aspirated street machines with 9.5-10.5:1 compression in 302 CID engines, will find strong mid-range torque and top end horsepower with this camshaft. Popular with ported, aftermarket, aluminum cylinder heads, matched Victor Jr. style intake and 750 cfm carburetion. 4 or 5 speed manual or C-4 automatic with 3000 RPM converter and low gears. Good choice for nitrous oxide.</p>	3000-6700	E212840 RH-294-2A	IN 294° 226° EX 302° 234°	.544" .544"	110°	4°	.000" .000"
<p>Great low end and mid-range for very slightly modified 302-351 engines in both cars and light trucks. Computer modifications may be necessary.</p>	2200-5500	E212835	IN 268° 214° EX 276° 222°	.512" .512"	110°	4°	.000" .000"
<p>302-351 engines. 10.5-11.5 compression. Must have good cylinder heads and intake, gears 5 speed transmission.</p>	2800-6500	E212842	IN 288° 226° EX 296° 230°	.568" .568"	110°	4°	.000" .000"



Dee Trowers - Sand Dragster

Hydraulic Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	205	HA2205	1622-8*	806-16	702
3400	502S	205	HA2205	1622-8*	806-16	702
3400	502S	205	HA2205	1622-8*	806-16	702
3400	502S	205	HA2205	1622-8*	806-16	702

*Pushrods will vary 302 to 351W



Hydraulic Roller Camshafts

HR ENERGY PLUS



ENGINES WITH OE HYDRAULIC ROLLER CAMSHAFTS
 1.6:1 STOCK ROCKER RATIO
 FIRING ORDER: 1 3 7 2 6 5 4 8
 S.A.D.I. BILLET

FORD SMALL BLOCK 1985-LATER 302/5.0L HO ENGINES
 1994-LATER 351W/5.8L ENGINES

CAM APPLICATIONS	RPM RANGE PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT 1.6	LOBE CENTER	ADV	VALVE LASH
Great mid-range power in 302-347 CID carbureted engines. Needs 9.0:1-9.5:1 compression, good intake and exhaust, 650 cfm carb. 2000 RPM converter and 3.27 or lower gears. Tight lobe center makes it aggressive out of the hole and also gives it a lopey idle.	2000-5000 E212845 RH-268-320	IN 268° EX 276°	214° 222° .512" .512"	106°	0°	.000" .000"
Good dual purpose cam for 302-351 CID carbureted engines. Needs at least 9.5:1 compression, good heads, intake and headers. 2500 RPM converter and 3.55 gears. Pulls strong to 6000 RPM.	2500-5500 E212848 RH-276-320	IN 276° EX 284°	222° 230° .512" .512"	106°	0°	.000" .000"
This cam makes strong mid-range torque and top end horsepower in 351-408 CID carbureted engines. Needs minimum of 10:1 compression, aftermarket heads, single plane intake, 750 CFM carb and headers for best performance. 2800-3500 converter and 3.73 gears. Pulls hard to 6500 RPM.	3000-6000 E212851 RH-294-340	IN 294° EX 302°	226° 234° .544" .544"	108°	0°	.000" .000"
For 351 and larger CID fuel injected street strip engines. Needs 10:1 compression, good flowing heads, mass air flow, 70mm throttle body, larger injectors and headers for best performance. 3000 RPM converter and 3.73 gears. Works great with nitrous!	3000-6000 E212854 RH-294-340-1	IN 294° EX 302°	226° 234° .544" .544"	112°	0°	.000" .000"
Higher lift version of E212851 camshaft, it uses our newest lobe designs to take advantage of high flowing aftermarket heads. Needs 10:1 compression, single plane intake, 750 CFM carb and headers. 3000 RPM or higher stall with 3.73 or lower gears.	3000-6000 E212857 RH-286-365	IN 286° EX 296°	226° 234° .584" .568"	108°	0°	.000" .000"
Hot Street/E.T. Brackets. Great for 351 CID or larger carbureted engines. Needs 10.5-12.5:1 compression, aluminum heads, Victor intake, 750-850 CFM carb and headers.	3500-6500 E212860 RH-294-365	IN 294° EX 302°	234° 242° .584" .584"	108°	0°	.000" .000"
Hot Street/E.T. Brackets. Great for 351 CID or larger fuel injected engines. Needs 10.5-12.5:1 compression, aluminum heads, good intake, mass airflow, 75mm throttle body, larger injectors and headers. 3500 RPM stall and 4.10 gears. Up to 200 HP shot of nitrous.	3500-6500 E212863 RH-294-365-1	IN 294° EX 302°	234° 242° .584" .584"	112°	0°	.000" .000"
Pro Street/E.T. Brackets. Max effort in larger CID engines. Needs at least 11.0:1 compression, aftermarket heads, super Victor, 850 CFM carb with free flowing exhaust. 4000-4500 converter, 4.10-4.56 gears. Will pull to 7000 RPM.	3800-7000 E212866 RH-302-365	IN 302° EX 310°	242° 250° .584" .584"	108°	4°	.000" .000"

Hydraulic Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502S	201	HA2205	1622 ⁶ 1934 ⁷	125-16	7605
3400	502S	201	HA2205	1622 ⁶ 1934 ⁷	125-16	7605
3400	502S	201	HA2205	1622 ⁶ 1934 ⁷	125-16	7605
3400	502S	201	HA2205	1622 ⁶ 1934 ⁷	125-16	7605
3400	502S	201	HA2205	1622 ⁶ 1934 ⁷	125-16	7605
3400	502S	201	HA2205	1622 ⁶ 1934 ⁷	125-16	7605
3400	502S	201	HA2205	1622 ⁶ 1934 ⁷	125-16	7605
3400	502S	201	HA2205	1622 ⁶ 1934 ⁷	125-16	7605
3400	502S	201	HA2205	1622 ⁶ 1934 ⁷	125-16	7605

NOTE 6 - 302

NOTE 7 - 351W

Solid Roller Camshafts



FORD V8

1969-93 351W/5.8L ENGINES
1982-84 302/5.0L ENGINES

1.6:1 STOCK ROCKER RATIO
FIRING ORDER 1 3 7 2 6 5 4 8
ALLOY STEEL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
E.T. Brackets/Hot Street. Street rods or street machines seeking strong low end and mid-range performance. 351-358 CID with 10.0-11.0:1 compression engines using aftermarket or mildly ported stock cylinder heads. OK with nitrous oxide or small displacement supercharger.	3000-6500	E212991 R-278-2	IN 278° EX 286° 238° 246°	.592" .592"	112°	4°	.024" .024"
Oval Track. Designed for alcohol burning 358-430 CID engines in late model sportsman, modified or outlaw sprint cars on fast 1/2-5/8 mile tracks. Figures represent 1.7:1 intake and 1.6:1 exhaust rockers as suggested for best results.	4500-7600	E212992 R-292-2	IN 292° EX 300° 266° 274°	.697" .688"	106°	4°	.024" .024"
Superstock/Super Gas. Extremely powerful, pulls hard in 358-380 cubic inch super gas roadsters with 13.0-14.5:1 compression. Requires heavily ported, aftermarket, aluminum cylinder heads, match-porting, open plenum intake and 830 cfm annular discharge 4 barrel on alcohol or gas. Also works well in SS/GT automatic cars with 5000(+) RPM converter when advanced 4°.	5000-8300	E212993 R-302-6	IN 302° EX 308° 276° 282°	.720" .688"	106°	0°	.024" .024"

NOTE--

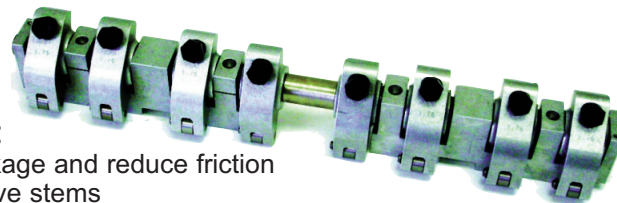
The use of solid roller camshafts may not be possible in 1985-later 302s and 1994-later 351W hydraulic roller blocks. Due to the combination of tall lifter bore bosses in these engines and smaller base circle camshafts resulting from taller, more aggressive lobes, interference may occur at the roller lifter button, which attaches the cross bar to the lifter body, and the point in the block where the lifter slides into the lifter bore. This interference will prevent the lifter from making contact with the camshaft at the base circle. It is possible to run a hydraulic flat tappet camshaft or a mechanical flat tappet camshaft in hydraulic roller block providing matched components are used.



Roller Rocker for Ford FE V8

Erson's roller rockers for Ford FE V8 feature:

- Needle bearings at the shaft to prevent galling, breakage and reduce friction
- A roller at the valve tip reduces side loads on the valve stems
- Rockers are fully adjustable and compatible with hydraulic, solid, or roller lifter camshafts
- Billet aluminum bodies made from heat-treated 2024 extruded aluminum for higher strength
- Unique truss design results in less deflection and allow higher valve spring loads
- 8620 Steel shafts are heat-treated and centerless ground to ensure straightness
- Special outboard supports help prevent failure
- All rockers, spacers, shafts and stands are included and come fully assembled
- See page 337 for applications



Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3850	507/508	203	RL960	1928-8*	807-16	8605
3850	507/508	203	RL960	1928-8*	807-16	8605
3850	507/508	203	RL960	1928-8*	807-16	8605

*Pushrods will vary



1900 SERIES-5/16 .080 Wall



Choice of Custom Engine Builders
Available in custom lengths

Length	Part#	Length	Part#
6.000"	1913-8	7.000"	1928-8
6.050"	1914-8	7.050"	1929-8
6.100"	1915-8	7.100"	1930-8
6.150"	1916-8	7.200"	1931-8
6.200"	1917-8	7.300"	1932-8
6.250"	1918-8	7.400"	1933-8
6.300"	1919-8	7.500"	1934-8
6.350"	1987-8	7.600"	1935-8
6.400"	1988-8	7.700"	1900-8
6.450"	1989-8	7.750"	1902-8
6.500"	1990-8	7.800"	1901-8
6.550"	1991-8	7.850"	1901.50-8
6.600"	1992-8	7.900"	1903-8
6.650"	1993-8	7.950"	1904-8
6.700"	1994-8	8.000"	1905-8
6.750"	1995-8	8.050"	1906-8
6.800"	1996-8	8.100"	1907-8
6.850"	1997-8	8.150"	1908-8
6.900"	1998-8	8.200"	1909-8
6.950"	1999-8	8.250"	1910-8
		8.350"	1912-8

See pages 334-335 for all Pushrod applications.

Energy Plus Series



FORD 1970-82 351C/351M/400 CUBIC INCH V8

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000 Note a	E220034	IN 270° 204° EX 280° 214°	.484" .510"	112°	5°	.000" .000"
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Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800 Note a	E220036	IN 280° 214° EX 280° 214°	.510" .510"	110°	5°	.000" .000"
2000-4800 Notes a, c	E220038	IN 280° 214° EX 290° 224°	.510" .536"	112°	5°	.000" .000"
2000-4800 Note a	E220040	IN 284° 218° EX 284° 218°	.528" .528"	110°	5°	.000" .000"
2000-4800 Notes a, c	E220042	IN 290° 224° EX 300° 234°	.536" .562"	112°	5°	.000" .000"

Mechanical Flat Tappet Camshaft - Eliminator

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Mid to high rpm torque and horsepower. For serious racing only. Need proper selection of rear axle ratio and improvements in carburation and exhaust systems. For use with manual

2200-6500 Notes a, c	E220044	IN 313° 248° EX 323° 258°	.580" .606"	108°	5°	.025" .025"
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NOTES:

a) Preferred latest computer design concepts in each application.

c) This cam may require conversion to an adjustable valve train.

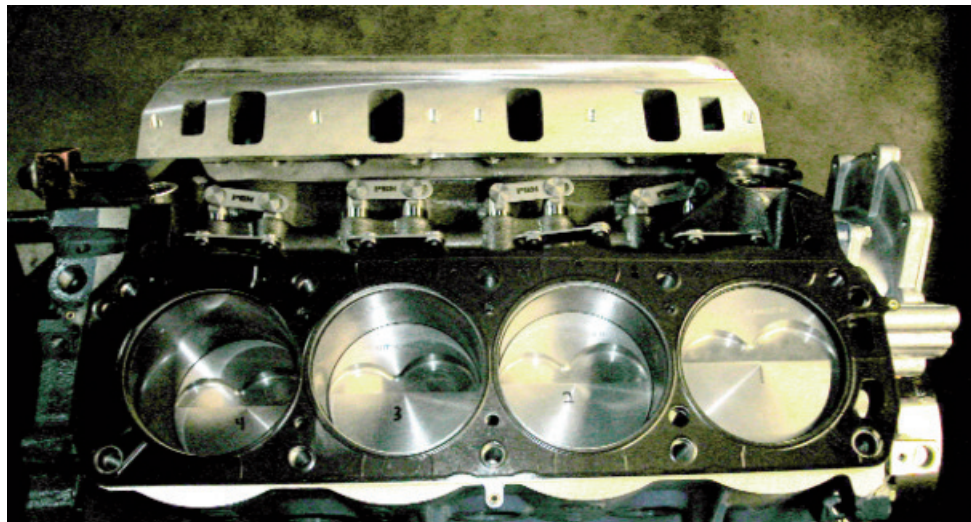
These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.

Energy Plus Series



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3100	502S	205	HA900	N/A	N/A	7521
3100	502S	205	HA900	N/A	N/A	7521
3100	502S	205	HA900	N/A	N/A	7521
3100	502S	205	HA900	N/A	N/A	7521
3100	502S	205	HA900	N/A	N/A	7521
3400	502S	201	MA914	N/A	N/A	7521



Hydraulic Flat Tappet Camshafts



FORD V8 1970-82

BOSS 351C, 351C, 351M, 400M ENGINES

1.73:1 STOCK ROCKER RATIO
PROFERAL BILLET

CAM APPLICATIONS

BASIC RPM
RANGE

PART NO.
GRIND NO.

DURATION
ADV @.050

GROSS
LIFT

LOBE
CENTER

ADV

VALVE
LASH

Broad power range. City and expressway driving, towing. Cars, wagons, pickups, heavier rigs. Good idle and throttle response, plus high fuel efficiency.	1000-4000	E220101 RV10H	IN 280° EX 280°	208° 208°	.484" .484"	112°	4°	.000" .000"
Light Ford trucks and passenger cars seeking improved low end performance and driveability. May be used with stock components or in slightly modified engines. Recommended for towing light to moderate loads.	1250-4750	E220112 RV12H	IN 280° EX 288°	208° 214°	.484" .495"	110°	4°	.000" .000"
Good idle and fuel efficiency. Excellent replacement camshaft for passenger cars or light trucks with campers, towing moderate loads. May be used with small displacement centrifugal or vane type superchargers. Computer compatible!	1500-4500	E220021 M/P1	IN 280° EX 292°	208° 214°	.484" .517"	114°	4°	.000" .000"
The "Performer" . Super low and mid-range power. Good idle, fuel efficiency and driveability. 4 barrel and headers recommended.	1800-4800	E220121 TQ20H	IN 292° EX 292°	214° 214°	.517" .517"	110°	4°	.000" .000"
Good idle and throttle response in large engines. Prefers stock or aftermarket dual plane intake manifold, 4 barrel carburetion, headers and 4 or 5 speed manual transmission with low gears for towing moderate to heavy loads. OK with small superchargers!	2000-5000	E221021 M/P2	IN 296° EX 310°	214° 226°	.517" .533"	114°	4°	.000" .000"
Excellent choice for street rods or slightly modified street machines with up to 9.5:1 compression. Noticeable idle with reasonable fuel efficiency. Produces good low end torque and mid-range horsepower in 3200-3600 lb. vehicles.	2250-5500	E220321 Hi-Flow AH	IN 284° EX 284°	220° 220°	.545" .545"	112°	4°	.000" .000"
High lift, dual pattern. Needs 4 barrel, headers, lower gears and medium speed converter if used with automatic. Extremely strong mid-range camshaft.	2500-5500	E220222 TQ40H	IN 284° EX 296°	220° 228°	.545" .545"	110°	0°	.000" .000"
For 351-400 cubic inch engines with 9.5-10.5:1 compression, seeking increased mid-range performance. Works best with aftermarket dual plane style intake. 600-650 cfm carburetion, mild head work and headers with free flowing dual exhaust. Highly recommend 4 speed top loader or 3 speed automatic with mild converter and low gears.	2800-5800	E220221 TQ30H	IN 310° EX 310°	226° 226°	.533" .533"	110°	4°	.000" .000"

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3100	502	205	HA900	N/A	N/A	7521
3100	502	205	HA900	N/A	N/A	7521
3100	502	205	HA900	N/A	N/A	7521
3100	502	205	HA900	N/A	N/A	7521
3100	502	205	HA900	N/A	N/A	7521
3100	502	205	HA900	N/A	N/A	7521
3100	502	205	HA900	N/A	N/A	7521
3100	502	205	HA900	N/A	N/A	7521
3100	502	205	HA900	N/A	N/A	7521

Hydraulic Flat Tappet Camshafts



FORD V8 1970-82

BOSS 351C, 351C, 351M, 400M ENGINES

1.73:1 STOCK ROCKER RATIO
PROFERAL BILLET

CAM APPLICATIONS

BASIC RPM
RANGE

PART NO.
GRIND NO.

DURATION
ADV @.050

GROSS
LIFT

LOBE
CENTER

ADV

VALVE
LASH

Hot Street/E.T. Brackets. High lift, short duration. Delivers broad power range and strong top end. Fair idle. Needs 4 barrel, headers, compression and gears.

3000-6000

E220421
Hi-Flow IH

IN 296° 228°
EX 296° 228°

.545"
.545"

108°

0°

.000"
.000"

High lift, dual pattern. Needs 4 barrel, headers and lower gears. Works best with stick or high stall automatic. Strong top end camshaft. Rough idle. Should have at least 9:1 compression.

3200-6300

E220223
TQ50H

IN 296° 228°
EX 306° 235°

.545"
.545"

110°

0°

.000"
.000"

Runs strong 3500-7000 RPM. Stick or automatic with gears. Needs good intake and headers. 9.5:1 or more compression. Lopey idle.

3500-6500

E220521
Hi-Flow IIH

IN 306° 235°
EX 306° 235°

.545"
.545"

108°

0°

.000"
.000"

Runs strong 4000-7500 RPM. Needs lower gears, 4 barrel, headers and compression for maximum performance. Rough idle.

3800-6800

E220621
Hi-Flow IIIH

IN 316° 240°
EX 316° 240°

.545"
.545"

108°

0°

.000"
.000"

Hot Street/E.T. Brackets. 351 cubic inch Cleveland engines with 10.5-11.5:1 compression using modified 2V or 4V cylinder heads, large valves, Victor Jr. style intake, 750 cfm 4 barrel, and 3" diameter, free flowing exhaust produce good top end power. Automatic cars use 4000 RPM converter and low gears. OK with nitrous oxide!

4000-7000

E220921
Hi-Flow IVH

IN 312° 248°
EX 320° 256°

.579"
.596"

110°

4°

.000"
.000"



Ron Trowers - Sand Dragster

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3100	502	205	HA900	N/A	N/A	7521
3100	502	205	HA900	N/A	N/A	7521
3100	502	205	HA900	N/A	N/A	7521
3100	502	205	HA900	N/A	N/A	7521
3050	502	201	HA900	N/A	N/A	7521



Advantage Marine - Brad & Nancy Johnson

Mechanical Flat Tappet Camshafts



FORD V8 1970-82

BOSS 351C, 351C/M, 400M ENGINES

1.73:1 STOCK ROCKER RATIO

PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Street rods or street machines seeking super low end and mid-range power. Recommended for 351 cubic inch engines with 9.5-10.5:1 compression, 2V or 4V cylinder heads, single 4 barrel, headers and free flowing dual exhaust. Works fine with 4 speed top loader or automatic with mild converter.	2800-6000	E220030 TQ30M	IN 280° 230° EX 280° 230°	.536" .536"	110°	0°	.018" .018"
Hot Street/E.T. Brackets. Strong mid-range performance in 10.0-11.0:1 compression engines using mildly ported 2V or 4V cylinder heads, single or 2x4 barrel carburetion, 4 speed manual or 3 speed automatic with 3000-3500 RPM converter and low gears. OK with small shot of nitrous oxide!	3500-6500	E227242 Hi-Flow AM	IN 286° 242° EX 294° 246°	.588" .588"	110°	4°	.024" .024"
Hot Street/E.T. Brackets. More mid-range torque and horsepower can be expected from 351-362 cubic inch engines with 10.5-11.5:1 compression using this camshaft. Needs dual plane or Victor Jr. style intake, 750 cfm 4 barrel, headers and 3" free flowing exhaust. 4 speed or automatic with 3500-4000 RPM converter, low gears and sticky D.O.T. tires.	3750-7200	E220306 F-286-2	IN 286° 250° EX 294° 258°	.588" .588"	108°	0°	.024" .024"
Oval Track. Proven winner! Excellent choice for Thunderbird bodied, late model sportsman cars with no less than 12.5:1 compression. Works best with large valved, ported and polished 2V cylinder heads, in cars with no restrictions on fast 3/8-1/2 mile dirt or asphalt tracks.	4000-7500	E220307 F-296-1A	IN 296° 258° EX 302° 264°	.648" .648"	106°	4°	.024" .024"
E.T. Brackets. Super upper, mid-range and top end power from 2800-3200 lb. Mustangs, Comets, Mavericks, etc., with 351 or larger cubic inch engines. Suggest good heads and intake, 750 cfm 4 barrel carburetion, open headers or large diameter, free flowing exhaust. Automatic cars use 4000-4500 RPM converter, with no less than 12.0:1 compression.	4500-7800	E220308 F-306-1A	IN 306° 268° EX 314° 276°	.648" .648"	108°	0°	.024" .024"
E.T. Brackets/Super Street. 2400-2800 lb. door cars using 351-390 cubic inch engines with 12.5-13.5:1 compression will produce excellent upper RPM range power. Needs heavily modified, 4V style cylinder heads, matched open plenum intake and 850 cfm blueprinted carburetion on alcohol or gas. Automatic cars use 4500-5000 RPM, 8" converter.	4800-8000	E220309 F-310-1	IN 310° 272° EX 310° 272°	.648" .648"	106°	0°	.024" .024"

TECH TIP--

For camshaft kits using the E915051 spring, installed height should be changed to 1.850" for 144 lbs. closed.

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502	201	MA914	N/A	N/A	7521
3400	502	201	MA914	N/A	N/A	7521
3400	502	201	MA914	N/A	N/A	7521
3400	502	201	MA914	N/A	N/A	7521
3400	502	201	MA914	N/A	N/A	7521
3400	502	201	MA914	N/A	N/A	7521

Solid Roller Camshafts



FORD V8

351 CLEVELAND ENGINES

1970-82 351C, BOSS 351C, 351M, 400M ENGINES

1.6:1 STOCK ROCKER RATIO

PROFERAL BILLET

CAM APPLICATIONS

BASIC RPM RANGE

PART NO. GRIND NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

Hot Street/E.T. Brackets. High performance street machines needing that extra edge. Recommended for 10.5-11.5:1 351-362 cubic inch engines with slightly modified 2V or 4V cylinder heads, single 750 cfm 4 barrel, headers and 3" diameter, free flowing exhaust. Works best in 4 speed cars with small shot of nitrous oxide.

3000-6500

E229618
R-278-2

IN 278° 238°
EX 286° 246°

.640"
.640"

112°

4°

.022"
.022"

Saturday Night Special/E.T. Brackets. Good mid-range torque and top end horsepower from 351(+) cubic inch engines with 11.5-12.5:1 compression. Works best with modified cylinder heads, 3 angle valve job, gasket-matched intake, 750-850 cfm 4 barrel, 1.750" headers and 3" exhaust with 2 chamber Flow-Masters®. Automatic cars require 4000 RPM converter and low gearing.

4000-7000

E229619
R-282-1B

IN 282° 253°
EX 292° 263°

.692"
.692"

106°

0°

.024"
.024"

Super Gas/Super Stock. Expect more power from 351-390 cubic inch super gassers and E.T. bracket cars with 13.0-14.5:1 compression in 2200-2600 lb. chassis. Requires large valved, heavily modified 4V cylinder heads; single plane, open plenum style intake with 850-1050 cfm 4 barrel on alcohol or gas. 2 speed automatic cars use 5000 RPM converter. Also works well in SS/GT automatic cars.

5000-8000

E229620
R-302-4A

IN 302° 276°
EX 310° 284°

.744"
.709"

104°

0°

.024"
.024"



1970 Ford Mustang Boss 302

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3850	507/508	203	TBA	N/A	N/A	7521
3850	507/508	203	TBA	N/A	N/A	7521
3850	507/508	203	TBA	N/A	N/A	7521



1970 Ford Torino Cobra SCJ

Energy Plus Series



FORD 1963-76 352/360/390/406/410/427/428 CUBIC INCH V8

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000 Note a	E240030	IN 260° EX 270°	194° 204°	.458" .484"	110°	5°	.000" .000"
1200-4000 Note a, g	E240032	IN 270° EX 280°	204° 214°	.484" .510"	112°	5°	.000" .000"

Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800 Notes a, g	E240034	IN 280° EX 280°	214° 214°	.510" .510"	110°	5°	.000" .000"
2000-4800 Notes a, g	E240036	IN 280° EX 290°	214° 224°	.510" .536"	112°	5°	.000" .000"
2000-4800 Notes a, g	E240038	IN 284° EX 284°	218° 218°	.528" .528"	110°	5°	.000" .000"
2000-4800 Note g	E240040	IN 300° EX 300°	223° 223°	.514" .514"	112°	2°	.000" .000"
2000-4800 Notes a, g	E240042	IN 290° EX 300°	224° 234°	.536" .562"	110°	5°	.000" .000"

Mechanical Flat Tappet Camshaft - Eliminator

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Mid to high rpm torque and horsepower. For serious racing only. Need proper selection of rear axle ratio and improvements in carburation and exhaust systems. For use with manual transmission or automatic. Will not have enough vacuum for power accessories.

2200-6500 Note c	E240044	IN 324° EX 324°	245° 245°	.524" .524"	114°	0°	.025" .025"
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NOTES:

- a) Preferred latest computer design concepts in each application.
 - c) This cam may require conversion to an adjustable valve train.
 - g) The valve lift of this camshaft may require special pushrods, rocker arms or springs to keep geometry correct or prevent binding and damage.
- These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3050	504S	206	HA2083	1635-8*	N/A	7611
3050	504S	206	HA2083	1635-8*	N/A	7611
3050	504S	206	HA2083	1635-8*	N/A	7611
3050	504S	206	HA2083	1635-8*	N/A	7611
3050	504S	206	HA2083	1635-8*	N/A	7611
3050	504S	206	HA2083	1635-8*	N/A	7611
3425	504S	202	MA872	1635-8*	N/A	7611

*Pushrods for Erson Adjustable Rockers

Hydraulic Flat Tappet Camshafts



FORD FE 1963-76

352, 360, 390, 406, 410, 427, 428 CID ENGINES

1.73:1 STOCK ROCKER RATIO

PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Broad power range. City and expressway driving or towing. Cars, wagons, pickups, heavier rigs. Good idle and throttle response, plus high fuel efficiency.	1000-4000	E240101 RV10H	IN 280° 208° EX 280° 208°	.490" .490"	111°	4°	.000" .000"
Ford pickups, up to F-250 series and heavy passenger cars seeking improved low end power and driveability. Good choice for stock or slightly modified 360-390 cubic inch engines, towing light to moderate loads.	1250-4250	E240112 RV12H	IN 280° 208° EX 288° 214°	.490" .500"	110°	4°	.000" .000"
Strong mid-range power. City, fast expressway and towing. Delivers maximum mid-range torque. Good idle and throttle response, plus fuel efficiency.	1500-4500	E240110 RV15H	IN 288° 214° EX 288° 214°	.500" .500"	111°	4°	.000" .000"
The "Performer" . Super low and mid-range power. Good idle, fuel efficiency and driveability. 4 barrel and headers recommended.	1800-4800	E240121 TQ20H	IN 292° 214° EX 292° 214°	.523" .523"	110°	4°	.000" .000"
Good idle and throttle response from 390-428 cubic inch engines, in 2 wheel drive or 4 wheel drive Ford pickups, towing moderate to heavy loads. Prefers stock or aftermarket dual plane intake, 600-650 cfm 4 barrel carburetion, headers and 4 or 5 speed manual transmission with low gears.	2000-5000	E241021 M/P2	IN 292° 214° EX 310° 226°	.523" .539"	114°	4°	.000" .000"
Expect a fair idle and reasonable fuel efficiency from slightly modified 390-428 CID engines with 8.75-9.5:1 compression. Produces good low end torque and mid-range horsepower in heavier chassis (i.e.: Galaxies, Fairlanes and early Thunderbirds).	2200-5200	E240321 Hi-Flow AH	IN 284° 220° EX 284° 220°	.551" .551"	112°	4°	.000" .000"
High lift, dual pattern. Needs 4 barrel, headers, lower gears and medium stall speed converter if used with automatic. Extremely strong mid-range camshaft.	2500-5500	E240222 TQ40H	IN 284° 220° EX 296° 228°	.551" .551"	110°	0°	.000" .000"

CAUTION--

1958-63 engines used a camshaft with a flanged front bearing and a spring loaded thrust button. The flanged camshaft billets are no longer available therefore 1963 1/2 and later camshafts will be supplied in all cases. If you have the early camshaft type engine, you must remove the soft plugs from the oil galleries on either side of the front camshaft bearing and tap the holes to 7/16 N.C. Purchase camshaft bolt 304815-S and 2 washers, 34808-S and 44730-S8, and pump eccentric C3AZ6287A. The timing chain, crank and camshaft sprockets must be changed to the later type. Some camshaft sprockets are manufactured with an integral spacer, purchase Ford spacer C3AZ6265A. Under no circumstances should you use a common hardware bolt to hold the sprocket on the camshaft. Use only the Ford part. Use Loctite on camshaft bolt and thrust plate bolts and torque to proper specs. When camshaft is properly installed, it will rotate freely and have approximately .010" end play. If any parts are omitted or substitutions made, the camshaft bolt may come loose or excessive end play may result, causing severe damage to the camshaft, tappets and engine.

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3100	504S	206	HA2083	1635-8	N/A	7611
3100	504S	206	HA2083	1635-8	N/A	7611
3100	504S	206	HA2083	1635-8	N/A	7611
3100	504S	206	HA2083	1635-8	N/A	7611
3100	504S	206	HA2083	1635-8	N/A	7611
3100	504S	206	HA2083	1635-8	N/A	7611
3100	504S	206	HA2083	1635-8	N/A	7611

Hydraulic Flat Tappet Camshafts



FORD FE 1963-76

352, 360, 390, 406, 410, 427, 428 CID ENGINES

1.73:1 STOCK ROCKER RATIO

PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
For 352-428 cubic inch engines with 9.5-10.5:1 compression seeking improved mid-range performance. Works best with aftermarket, aluminum dual plane style intake, 600-650 cfm 4 barrel, mild head work and headers with free flowing, dual exhaust. Needs 4 speed top loader or 3 speed automatic with mild converter and low gears for best results.	2500-5800	E240221 TQ30H	IN 310° 226°	.539"	110°	4°	.000"
			EX 310° 226°				
Hot Street/E.T. Brackets. High lift, short duration, broad power range and strong top end. Fair idle. Needs 4 barrel, headers, compression and gears.	3000-6000	E240421 Hi-Flow IH	IN 296° 228° EX 296° 228°	.551" .551"	108°	0°	.000" .000"
High lift, dual pattern. Needs 4 barrel, headers and lower gears. Works best with stick or high stall automatic. Strong top end camshaft. Rough idle. Should have at least 9:1 compression.	3200-6300	E240223 TQ50H	IN 296° 228° EX 306° 235°	.551" .551"	110°	0°	.000" .000"
Runs strong 3500-7000 RPM. Stick or automatic, with gears. Needs good intake and headers, 9.5:1 or more compression. Lopey idle.	3500-6500	E240521 Hi-Flow IIIH	IN 306° 235° EX 306° 235°	.551" .551"	108°	0°	.000" .000"
Runs strong 4000-7500 RPM. Needs lower gears, 4 barrel, headers and compression for maximum performance. Rough idle.	3800-6800	E240621 Hi-Flow IIIH	IN 316° 240° EX 316° 240°	.551" .551"	108°	0°	.000" .000"

CAUTION--

1958-63 engines used a camshaft with a flanged front bearing and a spring loaded thrust button. The flanged camshaft billets are no longer available therefore 1963 1/2 and later camshafts will be supplied in all cases. If you have the early camshaft type engine, you must remove the soft plugs from the oil galley on either side of the front camshaft bearing and tap the holes to 7/16 N.C. Purchase camshaft bolt 304815-S and 2 washers, 34808-S and 44730-S8, and pump eccentric C3AZ6287A. The timing chain, crank and camshaft sprockets must be changed to the later type. Some camshaft sprockets are manufactured with an integral spacer, purchase Ford spacer C3AZ6265A. Under no circumstances should you use a common hardware bolt to hold the sprocket on the camshaft. Use only the Ford part. Use Loctite on camshaft bolt and thrust plate bolts and torque to proper specs. When camshaft is properly installed, it will rotate freely and have approximately .010" end play. If any parts are omitted or substitutions made, the camshaft bolt may come loose or excessive end play may result, causing severe damage to the camshaft, tappets and engine.

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3050	504S	206	HA2083	1635-8	N/A	7611
3050	504S	206	HA2083	1635-8	N/A	7611
3050	504S	206	HA2083	1635-8	N/A	7611
3050	504S	206	HA2083	1635-8	N/A	7611
3050	504S	206	HA2083	1635-8	N/A	7611



1966 Ford Fairlane GTA

Mechanical Flat Tappet Camshafts



FORD FE 1963-76

352, 360, 390, 406, 410, 427, 428 CID ENGINES

1.75:1 STOCK ROCKER RATIO

PROFERAL BILLET

CAM APPLICATIONS

BASIC RPM RANGE

PART NO. GRIND NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

Super low end torque and mid-range power from 352-428 cubic inch Ford engines with 9.5-10.5:1 compression. Excellent choice for pickups or heavy passenger cars with slightly modified engines, 4 speed or automatic transmission and mid-3 series gearing.

2500-5500

E240025
TQ25M

IN 270° 220°
EX 280° 230°

.542"
.542"

110°

4°

.018"
.018"

Hot Street/E.T. Brackets. Strong mid-range performance from 10.0-11.0:1 engines using mildly ported or after-market cylinder heads, single or low profile 2x2 barrel set-ups and headers with dual exhaust. Needs 4 speed top loader or 3 speed automatic with 3000-3500 RPM converter and 3.90 or lower gears.

3200-6200

E240322
Hi-Flow AM

IN 286° 242°
EX 294° 246°

.595"
.595"

110°

4°

.024"
.024"

Hot Street/E.T. Brackets. More mid-range torque and horsepower can be expected from 390-428 cubic inch engines with 10.5-11.5:1 compression using this camshaft. Needs large, dual plane or open plenum style intake with 750-850 cfm 4 barrel headers and 3" diameter, free flowing exhaust. Use 3500-4000 RPM converter with 3 speed automatics and low gears in 3200-3600 lb. vehicles.

3500-6500

E240305
F-286-2

IN 286° 250°
EX 294° 258°

.595"
.595"

108°

0°

.024"
.024"

Super mid-range and top end power from 390-428 cubic inch engines with 11.0-12.0:1 compression. Works best with large valves, modified after-market or Cobra Jet style cylinder heads; single or 2x4 barrel carburetion and 4 speed top loader with low gears. OK with nitrous oxide!

3800-6800

E240306
F-292-1

IN 292° 254°
EX 302° 264°

.656"
.656"

114°

4°

.024"
.024"

Hot Street/E.T. Brackets. Excellent choice for high performance street machines or AC Cobras equipped with 427-428 cubic inch engines having 11.5-12.5:1 compression. Requires modified cylinder heads, single or multiple carburetion and 4 speed transmission with low gears for peak performance.

4000-7000

E240931
1000 HLM

IN 304° 258°
EX 304° 258°

.620"
.620"

110°

0°

.024"
.024"

E.T. Brackets/Super Gas. 2600-3000 lb early Mustangs using 390-428 cubic inch engines with 12.5-14.0:1 compression. Requires modified cylinder heads, 850-1050 cfm carburetion, large tube headers, 3 speed automatic with 4500 RPM converter, 32" tire and 4.56 gear for best results.

4500-7500

E240307
F-306-1

IN 306° 268°
EX 314° 276°

.656"
.656"

108°

0°

.024"
.024"

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3425	504S	206	MA872	1635-8	N/A	7611
3425	504S	206	MA872	1635-8	N/A	7611
3425	504S	206	MA872	1635-8	N/A	7611
3425	504S	206	MA872	1635-8	N/A	7611
3425	504S	206	MA872	1635-8	N/A	7611
3425	504S	206	MA872	1635-8	N/A	7611

Solid Roller Camshafts



FORD V8 FE 1963-76

352, 360, 390, 406, 410, 427, 428 CID ENGINES

1.75:1 STOCK ROCKER RATIO

ALLOY STEEL BILLET

CAM APPLICATIONS

BASIC RPM RANGE

PART NO. GRIND NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

Hot Street Machines. Strong low end and mid-range performance from Mustangs, Cobras, Fairlanes, etc., using 390-428 cubic inch engines with 10.5-11.5:1 compression. Works best with modified cylinder heads, after-market intake, 750 cfm 4 barrel and headers. Needs 4 speed top loader or 3 speed automatic with 3000 RPM converter and low gears. OK with Nitrous oxide!

3000-6500

E240901
R-278-2

IN 278° 238°
EX 286° 246°

.648"
.648"

112°

4°

.024"
.024"

Pro Street Machines. 2800-3200 lb. Door-Cars, back halved, tubbed and caged will produce serious mid-range torque and upper mid-range horsepower from 390-428 cubic inch engines with 11.5-12.5:1 compression. Should have modified Cobra Jet heads, low riser 2x4 barrel, back-to-back carburetion, headers and 3" diameter, free flowing exhaust for best results.

4000-7200

E240902
R-294-1

IN 294° 254°
EX 302° 260°

.648"
.648"

108°

0°

.024"
.024"

CAUTION--

Ductile iron adjustable shaft-mount rockers are not recommended for solid roller camshaft applications.



Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3850	507/508	204	RL958	1635-8	N/A	8611
3850	507/508	204	RL958	1635-8	N/A	8611



PRO RACE SERIES ROLLER LIFTERS



- Lifter body manufactured from billet alloy steel
- Machined to exact tolerances heat-treated for unparalleled wear resistance
- Roller wheel manufactured high strength alloy .750" diameter for correct cam geometry
- Full .360° wide contact area on camshaft
- Axle through heat-treated steel *the strongest in the business*
- Tie-bar heat-treated stainless steel
- Pushrod seat counterbored for min weight & max contact area
- Steel buttons with precision formed alloy steel for permanent attachment
- Hydraulic roller Eaton-style oil metering design for precision oil control
- Horizontal tie-bar designed to make camshaft change w/out manifold removal
- Applications listed page 331

See pages 330-333 for all lifter applications

Energy Plus Series



FORD 1968-95 370/429/460 CUBIC INCH V8

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000 Note a	E260020	IN 260° EX 270°	194° 204°	.464" .490"	110°	5°	.000" .000"
1200-4000 Note a	E260022	IN 270° EX 280°	204° 214°	.490" .516"	112°	5°	.000" .000"

Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800 Note a	E260024	IN 278° EX 278°	212° 212°	.490" .490"	110°	4°	.000" .000"
2000-4800 Note a	E260026	IN 280° EX 290°	214° 224°	.516" .543"	112°	5°	.000" .000"
2000-4800 Note a	E260028	IN 284° EX 284°	218° 218°	.534" .534"	110°	5°	.000" .000"

Eliminator Hydraulic

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Good mid to high rpm torque and horsepower. For use with manual transmission or high stall automatic. Will have lower vacuum than stock.

2200-5600 Note a	E260030	IN 300° EX 300°	234° 234°	.569" .569"	110°	5°	.000" .000"
2200-5600 Note a	E260032	IN 300° EX 310°	234° 244°	.569" .595"	112°	5°	.000" .000"

NOTES:

a) Preferred latest computer design concepts in each application.
These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.

Energy Plus Series



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3100	502S	205	HA900	N/A	N/A	7990
3100	502S	205	HA900	N/A	N/A	7990
3100	502S	205	HA900	N/A	N/A	7990
3100	502S	205	HA900	N/A	N/A	7990
3100	502S	205	HA900	N/A	N/A	7990
3050	502S	205	HA900	N/A	N/A	7990



Energy Plus Series



FORD V8
429-460 CID ENGINES
CAM APPLICATIONS

1.73:1 STOCK ROCKER RATIO

PROFERAL BILLET

	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Broad power range. City and expressway driving or towing. Cars, wagons, pickups, heavier rigs. Good idle and throttle response, plus fuel efficiency.	1000-4000	E260101 RV10H	IN 280° EX 208°	.484" .490"	111°	4°	.000" .000"
Strong mid-range power. City, fast expressway and towing. Delivers maximum, mid-range torque. Good idle, throttle response, plus fuel efficiency.	1250-4250	E260201 RV15H	IN 288° EX 288°	.495" .495"	111°	4°	.000" .000"
The "Performer" . Super low and mid-range power. Good idle, fuel efficiency and driveability. 4 barrel and headers recommended.	1500-4500	E260121 TQ20H	IN 292° EX 292°	.517" .517"	111°	4°	.000" .000"
Good idle and throttle response from larger engines. Prefers stock or after-market dual plane intake manifold, 4 barrel carburetion, headers and 4 or 5 speed manual transmission with low gears for towing moderate to heavy loads. OK for use with small superchargers.	1500-4750	E261021 MP/2	IN 292° EX 310°	.517" .533"	114°	4°	.000" .000"
Excellent choice for slightly modified street machines or muscle trucks seeking improved low end torque and mid-range horsepower. 429-460 cubic inch engines with 8.75-9.5:1 compression. Runs best with aftermarket aluminum intake, 600-650 cfm carburetion, headers and free flowing dual exhaust.	1800-4800	E260321 Hi-Flow AH	IN 284° EX 284°	.545" .545"	112°	4°	.000" .000"
High lift, dual pattern. Needs 4 barrel, headers, lower gears and medium stall speed converter if used with automatic. Extremely strong mid-range camshaft.	2000-5000	E260222 TQ40H	IN 284° EX 296°	.545" .545"	110°	0°	.000" .000"
Expect a noticeable idle and strong mid-range performance from 429-460 cubic inch engines with 9.5-10.5:1 compression. Use gasket-matched cylinder heads and aftermarket dual plane intake with up to 750 cfm carburetion, headers and 3" diameter exhaust system, 4 speed top loader or 3 speed automatic with mild converter and low gears for best results.	2250-5400	E260221 TQ30H	IN 310° EX 310°	.533" .533"	111°	4°	.000" .000"
Hot Street/E.T. Brackets . High lift, short duration, broad power range and strong top end. Fair idle. Needs 4 barrel, headers, compression and gears.	2500-5500	E260421 Hi-Flow IH	IN 296° EX 296°	.545" .545"	108°	0°	.000" .000"
High lift, dual pattern. Needs 4 barrel, headers and lower gears. Works best with stick or high stall automatic. Strong top end camshaft. Rough idle. Should have at least 9:1 compression ratio.	2500-5800	E260223 TQ50H	IN 296° EX 306°	.545" .545"	110°	0°	.000" .000"

NOTE--

Many 1968-72 Ford 429 CID engines came with positive stop rocker arm studs. 1973-95 Ford 429-460 engines came with pedestal-mount, non-adjustable valvetrains. It is important to realize that when changing to an aftermarket camshaft, changes in lobe design warrant the need for an adjustable valvetrain. Converting to an adjustable valvetrain will insure proper lifter pre-load and a smooth and quiet operating engine. It should also be noted that this is mandatory when converting from a hydraulic camshaft to a mechanical camshaft.

Energy Plus Series



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3100	502	205	HA900	N/A	N/A	7990
3100	502	205	HA900	N/A	N/A	7990
3100	502	205	HA900	N/A	N/A	7990
3100	502	205	HA900	N/A	N/A	7990
3100	502	205	HA900	N/A	N/A	7990
3100	502	205	HA900	N/A	N/A	7990
3100	502	205	HA900	N/A	N/A	7990
3100	502	205	HA900	N/A	N/A	7990
3100	502	205	HA900	N/A	N/A	7990
3100	502	205	HA900	N/A	N/A	7990

Hydraulic Flat Tappet Camshafts



FORD V8

1.73:1 STOCK ROCKER RATIO

429-460 CID ENGINES
CAM APPLICATIONS

PROFERAL BILLET

	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Special design camshaft for jet boat use. Best in otherwise stock 460 engine with tight impeller. Good idle.	2500-5750	E260621 JB100	IN 296° 228° EX 306° 235°	.545" .545"	108°	0°	.000" .000"
Runs strong 3500-7000 RPM. Stick or automatic with gears. Needs good intake and headers with 9.5:1 or more compression. Lopey idle.	3000-6000	E260521 Hi-Flow IIIH	IN 306° 235° EX 306° 235°	.545" .545"	108°	0°	.000" .000"
Designed for jet boats with a looser impeller and other engine modifications. Some lobe at idle.	3400-6400	E260721 JB200	IN 306° 235° EX 316° 240°	.545" .545"	108°	0°	.000" .000"
Runs strong 4000-7500 RPM. Needs lower gears. 4 barrel, headers and compression for maximum performance. Rough idle.	3800-6800	E260526 Hi-Flow IIIH	IN 316° 240° EX 316° 240°	.545" .545"	108°	0°	.000" .000"
Hot Street/E.T. Brackets. 429-460 cubic inch, big block Ford engines with 10.5-11.5:1 compression using modified stock or aftermarket aluminum Cobra Jet cylinder heads, Victor Jr. style single plane intake, 850 cfm 4 barrel with or without nitrous oxide, produces good top end power, 3200-3600 lb. automatic cars use 3500-4000 RPM converter with 4.10 or lower gears.	4000-7000	E260527 Hi-Flow IVH	IN 312° 248° EX 320° 256°	.579" .597"	110°	4°	.000" .000"



HYDRAULIC SPRINGS

- Made from the highest quality alloys
- "Custom Wound" springs are engineered to endure stresses of high performance engines
- Each set is matched for load consistency, a variance of + or - 10% is acceptable
- Thousands of Engine Builders have come to rely on PBM Valve Springs
- Applications listed page 323



See pages 320-326 for all Valve Spring applications & specifications

NOTE--

Many 1968-72 Ford 429 CID engines came with positive stop rocker arm studs. 1973-95 Ford 429-460 engines came with pedestal-mount, non-adjustable valvetrains. It is important to realize that when changing to an aftermarket camshaft, changes in lobe design warrant the need for an adjustable valvetrain. Converting to an adjustable valvetrain will insure proper lifter pre-load and a smooth and quiet operating engine. It should also be noted that this is mandatory when converting from a hydraulic camshaft to a mechanical camshaft.

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3100	502	205	HA900	N/A	N/A	7990
3100	502	205	HA900	N/A	N/A	7990
3100	502	205	HA900	N/A	N/A	7990
3100	502	205	HA900	N/A	N/A	7990
3050	502	205	HA900	N/A	N/A	7990



Hot Licks Boat

Mechanical Flat Tappet Camshafts



FORD V8

429-460 CID ENGINES

1.73:1 STOCK ROCKER RATIO
PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Hot Street Marine. Super low end and mid-range performance from street machines or Lake Racers, with 429-460 cubic inch engines having 10.5-11.5:1 compression. Works best with open plenum style, single 4 barrel manifold and 750-850 cfm carburetion. Lots of summer fun in 18'-21' day cruisers or jets with blueprinted pump and A-Impeller.	3500-6500	E260300 F-282-4	IN 282° EX 290° 246° 254°	.588" .588"	112°	4°	.024" .024"
E.T. Brackets. Excellent choice for 2800-3200 lb. E.T. bracket racers in need of strong upper, mid-range and top end power without sacrificing reliability. 429-460 CID engines with 11.5-12.45:1 compression using modified Cobra Jet style cylinder heads, Victor Jr. intake, blueprinted 850 cfm carburetor and open headers or large diameter, free flowing exhaust. Automatic cars use 4000-4500 RPM converter.	4000-7200	E264031 1500X	IN 306° EX 310° 266° 272°	.590" .615"	108°	0°	.024" .024"
E.T. Brackets/Super Gas. 460 cubic inch or larger engines with 12.5-13.5:1 compression in 2200-2600 lb. roadsters or altered. Needs good heads and intake, single or multiple carburetion on alcohol or gas. Also works well in unblown gas flats or hydros. 2 speed automatic cars use 4500-5000 RPM 8" converter, 4.30" rear gear and 14" x 32" slick.	4500-7600	E260301 F-314-2	IN 314° EX 322° 276° 284°	.648" .648"	108°	0°	.024" .024"
Super Pro/Super Gas/Super Comp. 500(+) cubic inch engines with 13.0-15.0:1 compression using heavily-modified, Super Cobra Jet or Ford SVO wedgie style cylinder heads, single 1050 cfm carburetor on a matched, ported and flowed open plenum intake. Burning alcohol or high octane fuel builds reliable top end power. Recommend 2.250" primary tube, open headers for best results.	5000-8200	E266431 2500DP	IN 314° EX 326° 285° 296°	.650" .650"	110°	2°	.024" .024"
Big mid-range torque. 11.5-12.1 compression. Must have good cylinder heads and big intake. Great choice for hot street and ET Brackets.	3600-6800	E260325	IN 298° EX 302° 260° 264°	.648" .648"	110°	2°	.024" .024"

NOTE--

Many 1968-72 Ford 429 CID engines came with positive stop rocker arm studs. 1973-95 Ford 429-460 engines came with pedestal-mount, non-adjustable valvetrains. It is important to realize that when changing to an aftermarket camshaft, changes in lobe design warrant the need for an adjustable valvetrain. Converting to an adjustable valvetrain will insure proper lifter pre-load and a smooth and quiet operating engine. It should also be noted that this is mandatory when converting from a hydraulic camshaft to a mechanical camshaft.

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3425	502	201	MA914	N/A	N/A	8990
3425	502	201	MA914	N/A	N/A	8990
3425	502	201	MA914	N/A	N/A	8990
3425	502	201	MA914	N/A	N/A	8990
3425	502	201	MA914	N/A	N/A	8990

Solid Roller Camshafts



FORD V8

429-460 CID ENGINES

CAM APPLICATIONS

1.73:1 STOCK ROCKER RATIO

ALLOY STEEL BILLET

	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
<p>Hot Street/E.T. Brackets. Super low end and mid-range performance from 429-460 CID engines with 10.5-11.5:1 compression. Prefers mildly ported 4V or Cobra Jet-style cylinder heads, single 750-850 cfm 4 barrel and free flowing dual exhaust. 3200-3600 lb. vehicles, use 4 speed top loader or C-6 automatic with 3000 RPM converter and 3.90 or lower gears.</p>	3500-6700	E260901 R-286-1C	IN 286° 246° EX 294° 254°	.640" .640"	110°	4°	.024" .024"
<p>Pro Street/E.T. Brackets. Excellent mid-range torque and upper mid-range power without sacrificing reliability from 429-472 CID engines with 11.0-12.5:1 compression. Works best with single or 2x4 barrel carburetion, modified cylinder heads with oversize valves and 2.0" diameter headers with large diameter, low restriction exhaust system. C-6 automatic cars, use 4000 RPM converter and low gears.</p>	4000-7200	E260902 R-294-1	IN 294° 254° EX 302° 260°	.640" .640"	108°	0°	.024" .024"
<p>E.T. Brackets. 2800-3200 lb. fully modified, door-slammers with no less than 460 cubic inches and 12.0-13.5:1 compression will produce good mid-range and top end power from this camshaft. Needs good heads and intake with blueprinted 850 cfm carburetion, open headers and 8", 4500 RPM converter for best results.</p>	4200-7500	E260903 R-292-1A	IN 292° 266° EX 300° 274°	.709" .709"	108°	0°	.026" .026"
<p>Super Pro/Super Gas/Marine and Pullers. Excellent choice for roadsters, altered, flat bottoms, monster trucks and pullers seeking all around top end performance. Recommended for 460-500 cubic inch, Ford big blocks with 13.0-14.5:1 compression, heavily modified Super-Cobra Jet or aftermarket aluminum SVO-type cylinder heads, 1050 cfm carburetion or injected alcohol induction systems. Needs high stall, 2 speed automatic or Crower-glide with 2 speed Lenco and low gears in heavier chassis.</p>	4500-7800	E260904 R-302-4	IN 302° 276° EX 310° 284°	.744" .744"	108°	0°	.026" .026"
<p>Super Gas/Super Comp/Super Pro. Intended for 1800-2200 lb. dragsters, altered and roadsters seeking bone jarring, upper RPM range, torque and horsepower. 496-514 cubic inch Ford big blocks with no less than 14.5:1 compression, should have heavily modified or hand-fabricated cylinder heads and intake with single or multiple carburetion on gas or injected alcohol type induction systems. Also works well in unblown gas hydros.</p>	5000-8000	E260905 R-312-2	IN 312° 286° EX 318° 292°	.778" .744"	110°	2°	.026" .026"

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3850	507/508	203	RL957	N/A	N/A	8990
3850	507/508	203	RL957	N/A	N/A	8990
3850	507/508	203	RL957	N/A	N/A	8990
4200	517 VTR747	203 VL7010	RL957	N/A	N/A	8990
4300	516	203	RL957	N/A	N/A	8990

■ Premium components in red

Energy Plus Series



OLDSMOBILE 1967-85 260/307/350/400/403/425/455 CUBIC INCH V8 39° BANK ANGLE

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV	DURATION @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000 Notes a, c	E540009	IN 260° EX 270°	194° 204°	.424" .448"	110°	5°	.000" .000"
1200-4000 Note a, c	E540010	IN 270° EX 280°	204° 214°	.448" .472"	112°	5°	.000" .000"
1200-4000 Note c	E540014	IN 270° EX 280°	204° 214°	.448" .472"	114°	8°	.000" .000"

Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800 Note a	E540016	IN 280° EX 290°	214° 224°	.472" .496"	112°	5°	.000" .000"
2000-4800 Note a	E540018	IN 284° EX 284°	218° 218°	.488" .488"	110°	5°	.000" .000"
2000-4800 Note a	E540020	IN 290° EX 300°	224° 234°	.496" .520"	112°	5°	.000" .000"

Eliminator Hydraulic

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Good mid to high rpm torque and horsepower. For use with manual transmission or high stall automatic. Will have lower vacuum than stock.

2200-5600 Note c	E540022	IN 308° EX 308°	232° 232°	.474" .474"	113°	1°	.000" .000"
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NOTE: These camshafts have cam base circles .100" to .150" diameters less than the stock camshaft. Since these engines have non-adjustable rocker arms, the use of longer pushrods or adjustable pushrods may be necessary.

NOTES:

a) Preferred latest computer design concepts in each application.

c) This cam may require conversion to an adjustable valve train.

These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3175	502S	205	HA951	N/A	N/A	7800
3175	502S	205	HA951	N/A	N/A	7800
3175	502S	205	HA951	N/A	N/A	7800
3175	502S	205	HA951	N/A	N/A	7800
3175	502S	205	HA951	N/A	N/A	7800
3175	502S	205	HA951	N/A	N/A	7800
3175	502S	205	HA951	N/A	N/A	7800

Hydraulic Flat Tappet Camshafts



OLDSMOBILE 1967-84

1.6:1 STOCK ROCKER RATIO

260, 307, 350, 400, 403, 425, 455 CID ENGINES 39° LIFTER BORE ANGLE

PROFERAL BILLET

CAM APPLICATIONS

BASIC RPM RANGE

PART NO. GRIND NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

Excellent replacement camshaft for vehicles seeking improved low end performance and driveability. Compatible with stock compression, torque converter and gearing. Smooth idle.	800-4000	E540011 M/P1	IN 280° EX 292°	208° 214°	.448" .478"	114°	4°	.000" .000"
The "Performer" . Offers increased low end torque and mid-range horsepower with minor modifications. Stock or performer-style intake, 4 barrel carburetion and free flowing dual exhaust system delivers respectable results. Good idle.	1200-4500	E540121 TQ20H	IN 292° EX 292°	214° 214°	.478" .478"	111°	4°	.000" .000"
The M/P1 camshaft's big brother. Intended for 400-455 cubic inch engines with up to 9.5:1 compression. Builds good torque down low, popular for towing moderate loads. OK with stock converter and power brakes. Good idle.	1500-5000	E541021 M/P2	IN 292° EX 310°	214° 226°	.478" .493"	114°	4°	.000" .000"
High lift, short duration dual pattern camshaft offers improved mid-range performance. Runs best with aftermarket aluminum intake, up to 750 cfm 4 barrel and headers with free flowing dual exhaust. Largest cam with stock converter and mid-3 series gearing. Fair idle.	2000-5500	E540222 TQ40H	IN 284° EX 296°	220° 228°	.504" .504"	110°	0°	.000" .000"
Strong launch characteristics and mid-range performance from 455 CID jet boats with 9.5-10.5:1 compression. Should have aftermarket dual plane intake, 750 cfm 4 barrel, through transom exhaust, blueprinted pump and A-impeller for best results. Fair idle.	2500-6000	E545321 JB100	IN 296° EX 306°	228° 235°	.504" .504"	112°	4°	.000" .000"
Hot Street/E.T. Brackets . 400-455 cubic inch muscle cars with 10.5-11.5:1 compression make great mid-range torque and top end horsepower. Good heads, intake and exhaust necessary for competitive results. 3 speed automatic cars use 3500 RPM converter, 4.56 gears and 28" tall tire.	3500-6500	E540400 Hi-Flow IV H	IN 312° EX 320°	248° 256°	.536" .552"	110°	4°	.000" .000"

CAUTION--

Most production engines cannot accept more than .500" valve lift without modifying the valve guides for increased clearance. When installing a cam with more than .500" valve lift, it is essential to check the valve spring retainer-to-guide clearance. Do not attempt to operate an engine with less than .150" retainer-to-guide clearance. If you are using valve seals, check the clearance from the top of the seal rather than the top of the guide.

NOTE--

Be sure you know what engine you have before you order. Oldsmobile engines came with two different bore angles and lifter bore diameters. These camshafts are not interchangeable. Refer to our Oldsmobile engine identification chart for assistance.

TECH TIP--

Oldsmobile engines are equipped stock with light duty 5/16" diameter pushrods. We recommend changing to heavy duty 3/8" diameter pushrods in any application where RPM will exceed 5000 particularly marine engines.

TECH TIP--

When installing a hydraulic lifter racing cam in an engine that does not have adjustable rocker arms, care must be taken to ensure that the lifter is still able to adjust itself. If the cam has more than .500" valve lift or if the heads or block have been milled excessively, the engine must be converted to adjustable rockers or adjustable pushrods.

TECH TIP--

To assist in pushrod selection, Oldsmobile V8 engines displacing 260, 307, 330, 350 and 403 cubic inches are referred to as small blocks. Engines displacing 400, 425 and 455 cubic inches are referred to as big blocks.

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3175	502S	205	HA951	N/A	N/A	7800
3175	502S	205	HA951	N/A	N/A	7800
3175	502S	205	HA951	N/A	N/A	7800
3175	502S	205	HA951	N/A	N/A	7800
3175	502S	205	HA951	N/A	N/A	7800
3175	502S	205	HA951	N/A	N/A	7800
3300	502S	205	HA951	N/A	N/A	7800



Solid Roller Camshafts



OLDSMOBILE V8 1967-84

1.6:1 STOCK ROCKER RATIO

260, 307, 350, 400, 403, 425, 455 CID ENGINES 39° LIFTER BORE ANGLE, .841" LIFTER BORE

ALLOY STEEL BILLET

CAM APPLICATIONS

BASIC RPM RANGE

PART NO. GRIND NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

E.T. Brackets/Marine. Strong mid-range torque and horsepower from 400-455 cubic inch engines with no less than 11.0:1 compression. Works well in 2800-3200 lb. door-slamers or lake racers equipped with tunnel ram style intake, blueprinted pump and B-impeller. OK with nitrous oxide.

3500-6800

E540901
R-282-1C

IN 282°
EX 292°

253°
263°

.640"
.640"

110°

4°

.026"
.026"

E.T. Bracket/Super Stock. Super mid-range and top end performance from 307-400 cubic inch engines. Bracket racers should have modified cylinder heads, reinforced block, good intake and exhaust system with no less than 12.5:1 compression. Super stock GT automatic cars should use 1.8 rockers on intake side for best results.

4500-7500

E540902
R-298-5

IN 298°
EX 306°

272°
280°

.656"
.688"

104°

2°

.026"
.026"

E.T. Bracket/Super Stock. Intended for 400(+) cubic inch drag racers seeking improved upper mid-range and top end performance. High compression engines with all the right parts necessary for serious competition. Super stock GT automatic cars use 1.8 rockers on intake side for best results. Has won N.H.R.A. national event!

5000-7800

E540903
R-302-8

IN 302°
EX 306°

276°
280°

.656"
.688"

106°

4°

.026"
.026"

ENGINE IDENTIFICATION

YEAR	CUBIC INCH	MODEL	LIFTER DIAMETER	CAM BANK ANGLE
64	330	All	842	45°
65	330	All	842	45°
65	400	All	842	45°
65	425	All	842	45°
66	330	All	842	45°
66	400	All	921	39°
66	425	All except Toronado	842	45°
66	425	Toronado only	921	39°
67	330	All	842	45°
67	400	All	921	39°
67	425	All except Toronado	842	39°
67	425	Toronado only	921	39°
68-69	400	All	842	39°
68-80	350	All	842	39°
68-76	455	All	842	39°
75-82	260	All	842	39°
77-79	403	All	842	39°
80-84	307	All	842	39°

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3850	507/508	203	N/A	N/A	N/A	7800
3850	507/508	203	N/A	N/A	N/A	7800
3850	507/508	203	N/A	N/A	N/A	7800



Energy Plus Series



PONTIAC 1955-81 265/287/301/316/326/347/350/370/389/400/421/428/455 CUBIC INCH V8

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Torque Master Hydraulic

These cams are ideal for Trucks, RV's, cars. Good idle quality. Low rpm torque. Will work with stock or slightly modified engine. Stock rear end gears. Manual or auto transmission.

1200-4000 Note a	E310009	IN 270° EX 280°	204° 214°	.420" .443"	110°	5°	.000" .000"
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Street Fighter Hydraulic

This range of camshafts offer great power increase over stock cams, some are suited for nitrous, engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and HP. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or auto transmission.

2000-4800 Note a	E310014	IN 280° EX 290°	214° 224°	.443" .465"	112°	5°	.000" .000"
2000-4800 Note a	E310016	IN 284° EX 284°	218° 218°	.458" .458"	110°	5°	.000" .000"
2000-4800 Note a	E310018	IN 290° EX 300°	224° 234°	.465" .488"	112°	5°	.000" .000"
2000-4800 Note c	E310019	IN 301° EX 313°	224° 236°	.408" .408"	115°	3°	.000" .000"

Eliminator Hydraulic

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Good mid to high rpm torque and horsepower. For use with manual transmission or high stall automatic. Will have lower vacuum than stock.

2200-5600	E310022	IN 292° EX 292°	230° 230°	.480" .480"	110°	5°	.000" .000"
2200-5600	E310024	IN 308° EX 320°	231° 240°	.470" .470"	112°	0°	.000" .000"

NOTES:

a) Preferred latest computer design concepts in each application.

c) This cam may require conversion to an adjustable valve train.

These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.

Energy Plus Series



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3175	502S	205	HA951	N/A	N/A	7700
3175	502S	205	HA951	N/A	N/A	7700
3175	502S	205	HA951	N/A	N/A	7700
3175	502S	205	HA951	N/A	N/A	7700
3175	502S	205	HA951	N/A	N/A	7700
3175	502S	205	HA951	N/A	N/A	7700
3175	502S	205	HA951	N/A	N/A	7700



1969 Pontiac Firebird

Hydraulic Flat Tappet Camshafts



GM/PONTIAC 1979-89

1.75:1 STOCK ROCKER RATIO
PROFERAL BILLET

151 CID (2.5L) ENGINES WITH CROSS FLOW CYLINDER HEAD

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Excellent replacement camshaft for stock engines seeking improved low end performance and driveability. The "Commuter". Fast city, expressway driving. Good idle and fuel efficiency.	1000-4000	E114001 RV5H	IN 274° EX 280° 202° 208°	.410" .420"	110°	0°	.000" .000"
Erson's first choice for a mileage camshaft with great performance benefits, improved low end and mid-range power from lightly modified engines with 8.5-9.5:1 compression. OK with stock converter.	1500-4750	E114010 RV10H	IN 280° EX 280° 208° 208°	.420" .420"	111°	4°	.000" .000"
Iron dukes wishing to increase mid-range performance look no further. 151-155 CID engines with no less than 9.0:1 compression benefit from modified intake and exhaust systems. Prefers 4 speed manual transmission and low gears.	1500-5000	E114011 M/P1	IN 280° EX 292° 208° 214°	.420" .449"	114°	6°	.000" .000"

*These cams are subject to core availability.

NOTES--

- Pontiac's 326-455 CID engines use a specific lifter. The 265-301 CID engines use the same lifter as a Chevrolet V8 while Pontiac's 151 CID engines use the same lifter as a Buick V8.
- 1977-78 151 cubic inch engines do not use cross low cylinder heads. These engines also use stock Chevrolet hydraulic flat tappets unlike other Pontiac engines requiring specific hydraulic flat tappets.
- 1981-89 151 CID 4 cylinder engines were equipped with non-adjustable valvetrains. For information regarding proper procedures for eliminating excessive lifter pre-load, call Erson's Technical Service Team at 775.882.1622.
- 1985-later engines installed in front wheel drive N-bodied cars require a shorter camshaft core. They are not interchangeable with other 151 CID 4 cylinder engines (i.e.: 1979-89).
- 1987-89 151 cubic inch engines are equipped with hydraulic roller camshafts and related components. Standard hydraulic flat tappet, mechanical flat tappet and solid roller camshafts can be used in these engines in conjunction with matched components.

* WARNING--

1990-91 151CID 4 cylinder engines came with timing chains. Our camshafts will not function in these engines.

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3000	N/A	N/A	HA969	N/A	N/A	TG2542S
N/A	N/A	N/A	HA969	N/A	N/A	TG2542S
N/A	N/A	N/A	HA969	N/A	N/A	TG2542S



DG Machine-Dale Green

Hydraulic Flat Tappet Camshafts



PONTIAC V8 1955-81
265-455 CID ENGINES

1.5:1 STOCK ROCKER RATIO/1.65:1 OPTIONAL RATIO
PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Excellent replacement camshaft for stock engines in heavier chassis seeking more low end performance. Compatible with stock compression, gearing, torque converter and power brakes. Good idle.	1000-4200	E310011 MP1	IN 280° 208° EX 292° 214°	.420" .449"	114°	6°	.000" .000"
The "Performer" . Super low and mid-range power. Good idle, fuel efficiency and driveability. 4 barrel and headers recommended.	1250-4500	E310121 TQ20H	IN 292° 214° EX 292° 214°	.449" .449"	110°	4°	.000" .000"
Great low and mid-range performance from larger engines with no less than 9.0:1 compression. Aftermarket dual plane intake, 4 barrel carburetion and headers with free flowing dual exhaust system helpful.	1750-4800	E310123 Hi-Flow AH	IN 284° 220° EX 284° 220°	.472" .472"	112°	4°	.000" .000"
High lift, short duration, dual pattern camshaft builds good torque down low and delivers strong mid-range performance when it counts. Largest camshaft with stock converter.	2200-5200	E310222 TQ40H	IN 284° 220° EX 296° 228°	.472" .472"	110°	4°	.000" .000"
Hot Street cars wishing to improve mid-range performance this single pattern camshaft is for you. Should have 9.5:1 compression, single plane torker-style intake with up to 750 cfm 4 barrel and headers for best results.	2500-5500	E310421 Hi-Flow 1H	IN 296° 228° EX 296° 228°	.472" .472"	108°	0°	.000" .000"
High lift, dual pattern. Needs 4 barrel, headers and lower gears. Works best with stick or high stall automatic. Strong top end camshaft. Rough idle. Should have at least 9:1 compression.	2700-5700	E310223 TQ50H	IN 296° 228° EX 306° 235°	.472" .472"	110°	4°	.000" .000"
Excellent substitute for Pontiac's Ram Air IV camshaft. Can be used with 1.65:1 rocker to give .520" gross valve lift enhancing mid-range and top end performance. OK with nitrous oxide.	3000-6000	E310031 MP3	IN 306° 235° EX 316° 240°	.472" .472"	114°	6°	.000" .000"
High performance GTOs and Firebirds with 389 cubic inch or larger engines need no less than 10.25:1 compression to produce exceptional mid-range and top end results. Also works well with 1.65:1 rockers.	3500-6500	E310321 Hi-Flow III H	IN 316° 240° EX 316° 240°	.472" .472"	108°	0°	.000" .000"
Hot Street/E.T. Brackets . 400-455 cubic inch engines with no less than 10.5:1 compression need modified stock or aftermarket aluminum cylinder heads, single plane intake, up to 850 cfm 4 barrel and headers for best results. Automatic cars use 3500-4000 RPM converter and low gears. OK with nitrous oxide.	3800-6800	E310444 Hi-Flow IV H	IN 312° 248° EX 320° 256°	.503" .517"	110°	4°	.000" .000"

NOTE--

It is important to remember that Pontiac engines require a specific hydraulic tappet. Both the pushrod seat and the oil gallery groove in the main body are at different locations relative to other General Motors V8 engines such as Chevrolet, Oldsmobile and Buick. Therefore, they are not interchangeable.

Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3175*	502S	205	HA951	N/A	N/A	7700
3175*	502S	205	HA951	N/A	N/A	7700
3175*	502S	205	HA951	N/A	N/A	7700
3175*	502S	205	HA951	N/A	N/A	7700
3175*	502S	205	HA951	N/A	N/A	7700
3175*	502S	205	HA951	N/A	N/A	7700
3175*	502S	205	HA951	N/A	N/A	7700
3175*	502S	205	HA951	N/A	N/A	7700
3175*	502S	205	HA951	N/A	N/A	7700
3175*	502S	205	HA951	N/A	N/A	7700

*Will need intake height and spring pocket modifications

Mechanical Flat Tappet Camshafts



PONTIAC V8 1955-81
265-455 CID ENGINES

1.5:1 STOCK ROCKER RATIO/1.65:1 OPTIONAL RATIO
PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Hot Street/E.T. Brackets. Intended for 389-455 cubic inch engines with no less than 10.0:1 compression needing stronger mid-range performance. Should have lightly modified cylinder heads. 750 cfm 4 barrel and headers for best results. Prefers 4 speed transmission. 1.65:1 rockers and 75-150 horsepower shot of nitrous oxide.	3500-6500	E310501 F-282-6	IN 282° 246° EX 290° 254°	.510" .510"	110°	4°	.024" .024"
Great mid-range and top end performance from heavier Pontiacs using 400-455 CID engines with 10.5-11.5:1 compression. Good flowing aluminum aftermarket cylinder heads with 1.65:1 rockers improve top end performance. Automatic cars use 3500-4000 RPM converter.	4000-7000	E310502 F-286-2	IN 286° 250° EX 294° 258°	.510" .510"	108°	0°	.024" .024"
E.T. Brackets/Super Street. 2800-3200 lb. Pontiac door-slammers sporting 455-469 cubic inch engines should have no less than 11.5:1 compression. Automatic cars use 4500 RPM 8" converter, 30" tire and 4.88 gear for competitive results.	4500-7500	E310503 F-306-1A	IN 306° 268° EX 314° 276°	.562" .562"	108°	0°	.024" .024"

NOTE--

Most Pontiac heads have a stepped inner spring boss that is .775" diameter. This is larger than the inside diameter of many aftermarket valve springs. We recommend placing the inner spring on the head to check this area for interference.



1970 Pontiac GTO Judge

Mechanical Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3400	502	201	MA992	N/A	N/A	8700
3400	502	201	MA992	N/A	N/A	8700
3400	502	201	MA992	N/A	N/A	8700



1969 Pontiac Firebird

Solid Roller Camshafts



PONTIAC V8 1955-81
265-455 CID ENGINES

1.5:1 STOCK ROCKER RATIO/1.65:1 OPTIONAL RATIO

ALLOY STEEL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
High performance street machines, i.e.: GTOs, Firebirds, LeMans seeking streetable low end and mid-range performance from a solid roller. 400-455 CID engines should have 10.5:1 compression, good flowing cylinder heads and large diameter free flowing exhaust for best results. Can be used with 1.65:1 rockers and nitrous oxide.	2800-5800	E310991 R-278-2	IN 278° EX 286°	238° 246°	.555" .555"	112°	4° .026" .026"
Serious Pro Street/E.T. Bracket cars will notice large gains in mid-range and top end performance from 455-469 CID engines with 10.5-11.5:1 compression. Aluminum heads, torker-style intake, 750-850 cfm 4 barrel, 1.65 rockers and 1.750" diameter headers enhance performance.	3200-6200	E310992 R-282-1C	IN 282° EX 292°	253° 263°	.600" .600"	110°	4° .026" .026"
E.T. Brackets/Super categories. Great launch characteristics and strong top end performance from 389-400 cubic inch super stock automatic cars when advanced 4°. Can also be used in high compression 455(+) cubic inch 2 speed automatic cars with 4000-4500 RPM converter.	4000-6500	E310993 R-302-7	IN 302° EX 310°	276° 284°	.675" .645"	106°	0° .026" .026"
Primarily intended for 3400-3600 lb. early Pontiac Firebird super stockers using 455-462 cubic inch high compression engines. Strong upper mid-range and top end performance automatic cars use 5000 RPM converter for best results.	5200-7200	E310994 R-314-9A	IN 314° EX 318°	284° 288°	.727" .712"	108°	2° .026" .026"

NOTE--

We do not offer a specific camshaft accessory for Pontiac V8 engines equipped with solid roller valvetrains. For information regarding the use of our optional high performance parts, contact Erson's Technical Service Team at 775.882.1622.



Ron Trower- Sand Dragster

Solid Roller Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
3600	506	203	N/A	N/A	N/A	8700
3600	506	203	N/A	N/A	N/A	8700
3850	507/508	203	N/A	N/A	N/A	8700
3850	507/508	203	N/A	N/A	N/A	8700



Quick Time Performance Parts-Rick Aukland

Energy Plus Series



MECHANICAL CAMSHAFTS

TOYOTA 1975-80 134 CID 2189cc 20R OHC 4 CYL
 1981-82 144 CID 2367cc 22RE OHC 4 CYL

CAM APPLICATIONS	BASIC RPM RANGE	PART NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
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Street Fighter Mechanical

This range of camshafts offer great power increase over stock cams, some are suited for nitrous. Engine modifications will further enhance performance. Fair idle quality. Good low to mid-range torque and horsepower. Will work with stock or modified engine. Can use stock rear end gears. For use with manual or automatic transmission.

2000-4800 Note a	E722214	IN 257° EX 268°	214° 224°	.416" .430"	110°	5°	.008" .008"
2000-4800 Note a	E722216	IN 268° EX 277°	224° 234°	.430" .444"	110°	5°	.008" .008"

Eliminator Mechanical

Hot Street and Strip, these cams require modifications, stall converters, gears, headers, raised compression, larger carbs. Some applications are suited for nitrous and super charge use. Rough idle quality. Mid to high rpm torque and horsepower. For serious racing only. Need proper selection of rear axle ratio and improvements in carburation and exhaust systems. For use with manual transmission or automatic. Will not have enough vacuum for power accessories.

2200-6500 Note a	E722218	IN 277° EX 287°	234° 244°	.444" .458"	110°	5°	.008" .008"
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NOTES:

a) Preferred latest computer design concepts in each application.
 These performance cams are legal only for pre-1966 California and pre-1968 federally certified cars; or for off-road and racing vehicles which may never be used upon a highway.

Energy Plus Series



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
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N/A	N/A	N/A	N/A	N/A	N/A	N/A
-----	-----	-----	-----	-----	-----	-----

N/A	N/A	N/A	N/A	N/A	N/A	N/A
-----	-----	-----	-----	-----	-----	-----

N/A	N/A	N/A	N/A	N/A	N/A	N/A
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Mechanical Flat Tappet Camshafts



TOYOTA 1970-82

2T, 2TC, 3TC 1588cc 1770cc 4 CYLINDER HEMI ENGINES

PROFERAL BILLET

CAM APPLICATIONS

BASIC RPM RANGE

PART NO. GRIND NO.

DURATION ADV @.050

GROSS LIFT

LOBE CENTER

ADV

VALVE LASH

High performance imports receive vastly improved mid-range performance with minor modifications. Works best with modified exhaust system and 4 or 5 speed manual transmission.

2200-5500

E735501
TQ30M

IN 280° 230°
EX 280° 230°

.465"
.465"

110°

4°

.022"
.022"

E.T. Brackets/Oval Track. Excellent mid-range torque and upper RPM range horsepower. Should have no less than 10.5:1 compression, single or 2x2 barrel carburetion and headers for best results. 1/4 mile dirt or asphalt tracks.

3400-6700

E735502
Hi-Flow AM

IN 286° 242°
EX 294° 246°

.510"
.510"

106°

4°

.022"
.022"

E.T. Brackets/Oval Track. Same basic foundation as Hi Flow AM however more compression, modified cylinder heads and 1/4-3/8 mile oval tracks bring out the best in this camshaft.

4000-7200

E735503
F-286-4

IN 286° 250°
EX 290° 254°

.510"
.510"

106°

4°

.022"
.022"

TECH TIP--

Valve guides must be shortened to allow .060" clearance between retainer and seal.

HIGH PERFORMANCE CAMSHAFTS

TOYOTA 1974-92

20R, 22R, 22RE 4 CYLINDER S.O.H.C. ENGINES

1.457 STOCK ROCKER RATIO
PROFERAL BILLET

Excellent replacement camshaft for vehicles seeking improved low end torque driveability. Compatible with stock compression and gearing. OK for towing light to moderate loads.

1000-4000

E722112
T268-A

IN 268° 210°
EX 268° 210°

.436"
.436"

109°

4°

.008"
.008"

Increased low end torque and mid-range horsepower with minor engine modifications. Sport trucks and 4x4s run best with headers and free flowing exhaust system. 4 or 5 speed manual transmission and low gears.

2000-5000

E722212
T276-A

IN 276° 218°
EX 276° 218°

.447"
.447"

109°

4°

.008"
.008"

Toyota Celicas and sport trucks wishing to produce more mid-range torque and horsepower look no further. Large cfm 2 barrels lightly modified cylinder heads and free flowing exhaust systems enhance performance.

3000-6000

E722312
T292-A

IN 292° 232°
EX 292° 232°

.491"
.491"

109°

4°

.008"
.008"

NOTE--

We recommend the use of 22R or 22RE aluminum followers with insert-style contact pads for improved stability at high RPMs.

NOTE--

New cam followers should be used when installing a new camshaft. Contact your Toyota dealer for these components.

Mechanical Flat Tappet Camshafts



VOLKSWAGEN 1961-LATER

1.1:1 STOCK ROCKER RATIO
PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
Strong low and mid-range power camshaft. Pulls hard through broad range. OK for stock carburetor and exhaust. Good idle.	2500-5800	E746522 VW15	IN 274° 220° EX 274° 220°	.380" .380"	106°	0°	.004" .004"
Broad range power camshaft. Good for Class 9 and Score Limited 1600 class. Also good for 1600-1835 on or off-road with 1 barrel carburetor.	3000-6500	E749622 VW190	IN 278° 225° EX 278° 225°	.440" .440"	108°	0°	.004" .004"
High lift, broad power range camshaft for street/strip and off-road use. Fantastic power in well setup engines. 1600cc and over.	3500-7200	E749422 VW200	IN 280° 242° EX 280° 242°	.441" .441"	106°	0°	.004" .004"
Consistent "overall" winner in unlimited, single seat, off-road racing. Primarily designed for engines over 2 liters.	4000-8000	E740422 VW205-10	IN 288° 258° EX 288° 258°	.470" .470"	110°	0°	.006" .006"
Mid-range and top end power for the fast, off-road course. Must be a large cc engine, in a high RPM application.	4500-8500	E740522 VW207	IN 294° 264° EX 294° 264°	.470" .470"	110°	0°	.006" .006"
Primarily intended for dragsters weighing in at under 1000 lbs. with 2000 cc or larger high-compression engines. Should have billet cylinder heads, high ratio rockers, titanium valves, and multiple carburetion on alcohol or gas for best results.	6000-10000	E745322 VW210	IN 322° 286° EX 322° 286°	.466" .466"	110°	4°	.008" .008"

NOTE--

- Listed IN valve lash clearances are for engines using 1966-later cylinder heads. When adjusting valves on 1961-65 model heads, add .004" to recommended valve lash.
- Camshaft drive gear and bolts are not included with the camshaft. Order proper size gear for your application separately. VW engines come with various size camshaft gears to compensate for variations in the camshaft centerline-to-crank centerline distance. Check the gear size on your stock camshaft (stamped next to teeth) and order the same size gear with new camshaft.
- When using a stroker crankshaft or aftermarket connecting rods, it is important to check the connecting rod-to-camshaft clearance to avoid interference problems. If such interference does exist, Erson can supply special camshafts with a decreased base circle diameter to cure the problem.
- When using a Stage II oil pump on VW type 2 engines, care must be taken in the choice of cam bolts. To avoid interference between the oil pump and camshaft gear, use only E913012 camshaft bolts.

NOTE--

To adjust the valves on a VW engine, first remove the plugs, rocker covers and distributor cap. When facing the rear of the engine, #1 is to your right at flywheel end, #2 is right pulley end, #3 is left flywheel end and #4 is left pulley end. The VW firing order is 1, 4, 3, 2, but for adjustment, convert this to 2, 1, 4, 3. Adjust #2 first, rotor should point at #2 wire in cap, piston at T.D.C. and both valves closed, timing mark on pulley will point down. Adjust both valves. Rotate crank 180° clockwise. Move to the other side of the car, adjust #4, rotate crank 180° clockwise and adjust #3.

NOTE--

All valve lashings should be done "cold".

NOTE--

VW valve locks are 3 groove rotator type. The ends of these locks butt against each other and prevent the locks from clamping on the valve stem, allowing the valves to rotate. This is an excellent system and extends valve and seat lift. For strictly drag applications, we have found that grinding .010"/.015" from the sides of both locks allows them to clamp the valve stem, adding significant strength. This also increases the installed height of the retainer by .015".

Mechanical Flat Tappet Camshafts



HIGH PERFORMANCE RACING CAMSHAFTS

VW RABBIT, SCIROCCO, JETTA 1974-89

1457/1788cc 1.8L WATER COOLED ENGINES

PROFERAL BILLET

CAM APPLICATIONS	BASIC RPM RANGE	PART NO. GRIND NO.	DURATION ADV @.050	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
For late model engines with hydraulic tappets. Improved low and mid-range power over stock camshaft.	2000-5500	E792007 RS-428-H	IN 274° EX 280° 202° 208°	.410" .420"	110°	0°	.000" .000"
Improved low and mid-range over stock VW high performance camshaft. Will work with stock injectors and ignition system.	2500-6000	E792008 RS-428-M	IN 280° EX 280° 208° 208°	.420" .420"	111°	4°	.008/.010 .008/.010
For high performance street cars with modified injection and ignition systems. Mid-range and top end performer.	3000-6500	E792009 RS-441-M	IN 268° EX 268° 232° 232°	.441" .441"	110°	0°	.008/.010 .008/.010

CAUTION--

Most production engines cannot accept more than .500" valve lift without modifying the valve guides for increased clearance. When installing a cam with more than .500" valve lift, it is necessary to check the valve spring retainer-to-guide clearance. Do not attempt to operate an engine with less than .150" retainer-to-guide clearance. If you are using valve seals, check the clearance from the top of the seal rather than the top of the guide.

NOTE--

For all out racing or turbo-charged applications, call Erson's Technical Service Team at 775.882.1622.

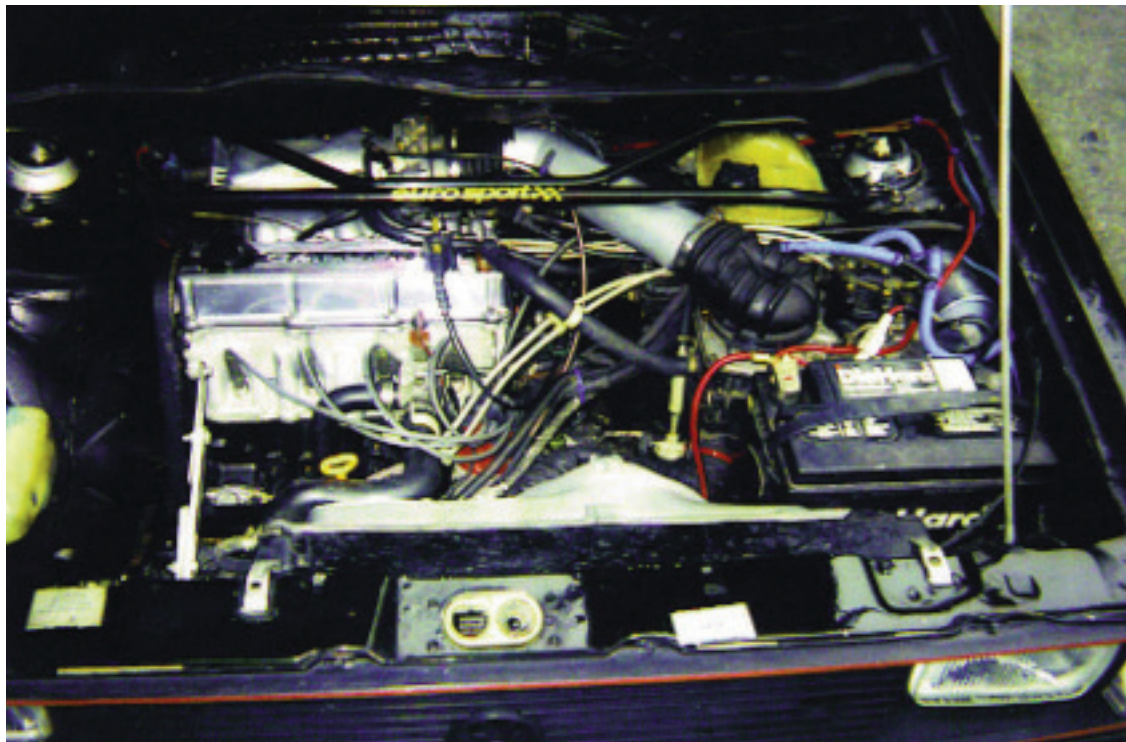


Hydraulic Flat Tappet Camshafts



MATCHED COMPONENTS

VALVE SPRINGS	RETAINERS	VALVE LOCKS	LIFTERS	PUSH RODS	ROCKER ARMS	TIMING SET
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A



Technical Information

ERSON'S Cam recommendation form



Name: _____
Address: _____
Phone: _____
E-mail address: _____

Vehicle:
Year: _____ Make: _____ Model: _____
Weight: _____ Use: _____
Street: _____ Street/Strip: _____ Show car: _____
1/8 mile drag: _____ 1/4 mile drag: _____ Puller: _____
Oval track: _____ Asphalt: _____ Dirt: _____
1/4 mile: _____ 3/8 mile: _____ 1/2 mile: _____
Marine: _____ Jet Drive: _____ Prop Drive: _____

Engine:
Year: _____ Make: _____ Number of cylinders: _____
Cubic inch: _____ Compression: _____ Bore: _____
Stroke: _____ Rod type: _____ Piston type: _____
Cast: _____ Forged: _____

Cylinder Heads:
Make: _____ Model: _____ Chamber CC's: _____
Stock: _____ Ported: _____ Port matched: _____
Valve size intake: _____ Valve size exhaust: _____
Rocker ratio intake: _____ Rocker ratio exhaust: _____

Induction:
Carb/s cfm: _____ Mechanical FI: _____ Electronic FI: _____
Manifold type: _____ Blown: _____ Turbo/s: _____
Type of Fuel: _____ Nitrous: _____ No. Stages: _____

Exhaust:
Manifold type: _____ Headers/diameter: _____ Mufflers: _____

Drivetrain:
Transmission type: _____ Converter stall speed: _____
Rear axle ratio: _____ Tire diameter: _____
D.O.T.: _____ Slick: _____ Other: _____

RPM range: _____ Idle speed: _____

Emissions standards required: _____

Computer controlled:
Stock: _____ Chip: _____ Large injectors: _____
Mass air sensor: _____ Speed density sensor: _____

Cam currently used: _____ Type: _____
Intake duration: _____ @.050: _____ Valve lift: _____
Exhaust duration: _____ @.050: _____ Valve lift: _____
Lobe separation: _____ Intake lobe centerline: _____

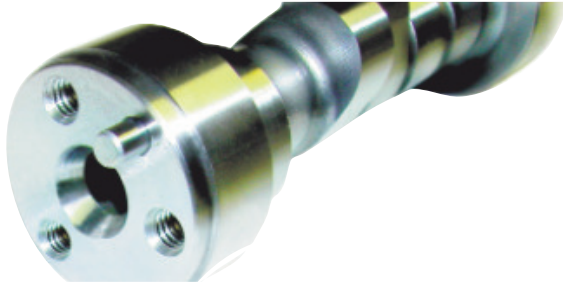
Cam type desired:
Hydraulic: _____ Mechanical/Solid: _____
Hydraulic roller: _____ Solid roller: _____

Desired change in performance: _____

Technical Information

CUSTOM CAMSHAFTS GRINDING INFORMATION

HYDRAULIC ROLLER, MECHANICAL ROLLER HYDRAULIC FLAT TAPPET, MECHANICAL FLAT TAPPET



ORDERING INFORMATION: Erson Cams will grind any of the applications listed below to your specifications. Please use the part number that identifies your engine and the cam profiles that are listed on our lobe profile sheet. With this information please call or fax your information to the Erson Technical Service Department (800)641-7920/Fax (775)246-7839.

APPLICATION	YEAR	ENGINE SIZE	CAMSHAFT/TAPPET	PART NO.
American Motors L6	1965-91	199, 232, 258/4.2L	Flat tappet: Hydraulic or Mechanical	E720000
American Motors V8	1965-93	290, 304, 343, 360, 390, 401	Flat tappet; Hydraulic or Mechanical	E710000
American Motors L6	1998-04	4.0L EFI	Flat tappet Hydraulic	E730000
American Motors V8	1966-93	290, 304, 343, 360, 390, 401	Roller; Mechanical	E710999
Buick V6	1962-71	198, 225	Flat tappet; Hydraulic or Mechanical	E660000
Buick V6	1962-71	198, 225	Roller; Mechanical	E660999
Buick V6	1975-77	231	Flat tappet; Hydraulic or Mechanical	E690000
Buick V6	1978-85	196, 231, 252	Flat tappet; Hydraulic or Mechanical	E670000
Buick V6	1978-85	196, 231, 252	Roller; Mechanical	E670999
Buick V8	1961-67	215, 300, 340	Flat tappet; Hydraulic or Mechanical	E640000
Buick V8	1968-80	350	Flat tappet; Hydraulic or Mechanical	E650000
Buick V8	1967-76	400, 430, 455	Flat tappet; Hydraulic or Mechanical	E630000
Buick V8	1967-76	400, 430, 455	Retrofit Roller Hydraulic	E630996
Cadillac V8	1968-84	368, 425, 472, 500	Flat tappet; Hydraulic or Mechanical	E520000
Cadillac V8	1968-84	368, 425, 472, 500	Retrofit Roller Hydraulic	E540996
Chevrolet L4	1962-70	153 (Chevy II)	Flat tappet; Hydraulic or Mechanical	E180000
Chevrolet L6	1962-84	194, 230, 250	Flat tappet; Hydraulic or Mechanical	E160000
Chevrolet L6	1937-63	216, 235, 261	Flat tappet; Hydraulic or Mechanical	E150000
Chevrolet L6	1963-90	292	Flat tappet; Hydraulic or Mechanical	E170000
Chevrolet V6	1978-84	200/3.3L, 229/3.8L	Flat tappet; Hydraulic or Mechanical	E190000
Chevrolet V6	-	Odd-fire, 37° tappet bore	Roller; Mechanical	E190999
Chevrolet V6	1985-86	262/4.3L	Flat tappet; Hydraulic or Mechanical	E195000
Chevrolet V6	1987-91	262/4.3L	Roller; Hydraulic	E195999
Chevrolet V6	1981-94	(60°); 173/2.8L, 189/3.1L	Flat tappet; Hydraulic or Mechanical	E199000
Chevrolet V6	1981-94	(60°); 173/2.8L, 189/3.1L	Roller; Mechanical	E199999
Chevrolet V8 GEN III	1997-UP	LS1/LS2/LS6/4.8L,5.3L,5.7L,6.0L	Roller Hydraulic	E110993
Chevrolet V8 Small Block	1957-96	262-400	Flat tappet; Hydraulic or Mechanical	E110000
Chevrolet V8 Small Block	1957-86	262-400	Solid Roller 4-7 Swap	E110994
Chevrolet V8 Small Block	1957-86	262-400	Solid Roller 4x7-3x2 Firing Order Swap	E110994A
Chevrolet V8 Small Block	1987-96	305/5.0L, 350/5.7L/LT-1	Roller; Hydraulic Stepnose	E110995
Chevrolet V8 Small Block	1987-97	305/5.0L, 350/5.7L/LT-1	4-7 Swap Roller Hydraulic Stepnose	E110995-47
Chevrolet V8 Small Block	1957-86	262-400	Roller; <i>Retrofit</i> Hydraulic	E110996
Chevrolet V8 Small Block	1957-86	262-400	4-7 Swap Retro Fit Roller Hydraulic	E110996-47
Chevrolet V8 Small Block	1957-96	262-400	Roller; Mechanical, 2-piece iron gear 8620 billet	E110997
Chevrolet V8 Small Block	1957-96	262-400	Roller; Mechanical, small base circle	E110998
Chevrolet V8 Small Block	1957-96	262-400	Roller; Mechanical	E110999
Chevrolet V8 Big Block	1967-95	396, 402, 427, 454/7.4L, 502/8.2L	Flat tappet; Hydraulic or Mechanical	E120000
Chevrolet V8 Big Block	1967-95	396, 402, 427, 454/7.4L, 502/8.2L	Solid Roller 4-7 Swap	E120994
Chevrolet V8 Big Block	1967-95	396, 402, 427, 454/7.4L, 502/8.2L	Solid Roller 4x7-3x2 Firing Order Swap	E120994A
Chevrolet V8 Big Block	1996-99	454, 502	Gen 6 Roller Hydraulic Stepnose	E120995
Chevrolet V8 Big Block	1996-99	454, 502	Gen 6 Stepnose Solid Roller	E120995SR
Chevrolet V8 Big Block	1967-95	396, 402, 427, 454/7.4L, 502/8.2L	Roller; Hydraulic	E120996
Chevrolet V8 Big Block	1967-95	396, 402, 427, 454/7.4L, 502/8.2L	Retro Fit 4-7 Swap Roller Hydraulic	E120996-47
Chevrolet V8 Big Block	1967-95	396, 402, 427, 454/7.4L, 502/8.2L	Roller; Mechanical, 2-piece iron gear 8620 billet	E120997
Chevrolet V8 Big Block	1967-95	396, 402, 427, 454/7.4L, 502/8.2L	Roller; Mechanical, small base circle	E120998
Chevrolet V8 Big Block	1967-95	396, 402, 427, 454/7.4L, 502/8.2L	Roller; Mechanical	E120999
Chevrolet V8 Big Block	1958-65	348, 409, 427(Z-11)	Flat Tappet; Hydraulic or Mechanical	E140000
Chevrolet V8 Big Block	1958-65	348, 409, 427(Z-11)	Retrofit Roller Hydraulic	E140996
Chevrolet V8 Big Block	1958-65	348, 409, 427(Z-11)	Solid Roller	E140999

Technical Information

CAMSHAFT SPECIAL GRINDING INFORMATION



APPLICATION	YEAR	ENGINE SIZE	CAMSHAFT/TAPPET	PART NO.
Chrysler L6	1960-80	170, 198, 225; Slant 6	Flat tappet; Mechanical	E470000
Chrysler L6	1960-87	170, 198, 225; Slant 6	Retrofit Flat tappet Hydraulic	E470001
Chrysler V8 LA	1965-95	273, 340, 360; 1967-95 318	Flat tappet; Hydraulic or Mechanical	E420000
Chrysler V8 LA	1965-89	273, 340, 360, 1967-95 318	Retro Fit Roller Hydraulic	E420996
Chrysler V8 LA	1965-95	273, 340, 360; 1967-95 318	Roller; Mechanical	E420999
Chrysler V8 B, RB	1958-79	361, 383, 400, 413, 426 Wedge, 440	Flat tappet; Hydraulic or Mechanical	E410000
Chrysler V8 B, RB	1958-79	361,383,400,413,426 Wedge, 440	Retro Fit Roller Hydraulic	E410996
Chrysler V8 B, RB	1958-79	361, 383, 400, 413, 426 Wedge, 440	Roller; Mechanical	E410999
Chrysler V8 Magnum	1992-98	318/360	Roller Hydraulic	E430996
Chrysler V8 Hemi	2003-UP	5.7/6.1L	Roller Hydraulic	E440996
Chrysler V8 Hemi	1966-71	426	Retro Fit Roller Hydraulic	E460996
Chrysler V8 Hemi	1957-58	392; Donovan 417	Roller; Mechanical	E480999
Chrysler V8 Hemi	1966-71	426	Flat tappet; Hydraulic or Mechanical	E460000
Chrysler V8 Hemi	1966-71	426	Retrofit Roller Mechanical	E490994
Chrysler V8 Hemi	1966-71	426	Roller; Mechanical	E460999
Chrysler V8 Aftermarket Hemi	-	Keith Black Stage 7, 48°	Roller; Mechanical	E466994
Chrysler V8 Aftermarket Hemi	-	Keith Black Stage 7 & TFX, 48°	Roller; Mechanical, 2.125 journal 9310 billet	E466999
Ford L4 1.6L	1971-80	O.H.V. 1600cc	Flat tappet; Mechanical	E250000
Ford L4 2.0L	1971-74	O.H.C. 2000cc	Mechanical tappet/follower	E259000
Ford L4 2.0L	1983-88	O.H.C. 2.0L Ranger	Hydraulic tappet/follower	E253000
Ford L4 2.3L	1974-90	2300cc/2.3L, Pinto, Ranger, Aerostar	Hydraulic tappet/follower	E253000
Ford L6	1960-83	144, 170, 200, 250	Flat tappet; Hydraulic or Mechanical	E280000
Ford L6	1965-92	240, 300	Flat tappet; Hydraulic or Mechanical	E270000
Ford V6	1972-79	2600cc, 2800cc	Flat tappet; Hydraulic or Mechanical	E252000
Ford V6	1983-86	2.8L Bronco II, Ranger, Aerostar	Flat tappet; Hydraulic or Mechanical	E254000
Ford V8	1955-62	272, 292, 312	Flat tappet; Hydraulic or Mechanical	E200000
Ford V8 Windsor	1962-95	221, 255, 260, 289, 302 Boss, 302/5.0L Except H.O.	Flat tappet; Hydraulic or Mechanical	E210000
Ford V8 Windsor	1962-95	221, 255, 260, 289, 302 Boss, 302/5.0L Except H.O.	Roller; Mechanical	E210999
Ford V8 Windsor	1969-95	351W/5.8L; 1982-84 302/5.0L H.O.	Flat tappet; Hydraulic or Mechanical	E212000
Ford V8 Windsor	1969-95	351W/5.8L; 1985-95 302/5.0: H.O.	Roller; Hydraulic	E212996
Ford V8 Windsor		260; 351W	Retrofit Roller Hydraulic Small Base Circle	E212996R
Ford V8 Windsor	1969-95	351W/5.8L; 1985-95 302/5.0L H.O.	Roller; Hydraulic, small base circle	E212998
Ford V8 Windsor	1969-95	351W/5.8L; 1985-95 302/5.0L H.O.	Roller; Mechanical	E212999
Ford V8 Modular	1991-UP	4.6/5/4 SOHC 2 valve	Roller Hydraulic	E213996
Ford V8 Modular	1996-03	4.6 DOHC 4 Valve	Roller Hydraulic	E214996
Ford V8 Cleveland	1970-82	351C, 351M, 351Boss, 400	Retro Fit Roller Hydraulic	E220996
Ford V8 Cleveland	1970-82	351C, 351M, 351 Boss, 400	Flat tappet; Hydraulic or Mechanical	E220000
Ford V8 Cleveland	1970-82	351C, 351M, 351 Boss, 400	Roller; Mechanical	E220999
Ford V8 FE	1963-76	352, 360, 390, 427, 428	Retro Fit Roller Hydraulic	E240996
Ford V8 FE	1963-76	352, 360, 390, 406, 410, 427, 428	Flat tappet; Hydraulic or Mechanical	E240000
Ford V8 FE	1963-76	352, 360, 390, 406, 410, 427, 428	Roller; Mechanical	E240999
Ford V8 Big Block	1968-95	429, 429CJ, 429SCJ, 460	Flat tappet; Hydraulic or Mechanical	E260000
Ford V8 Big Block	1968-95	429,429CJ,429SCJ, 460,406, 410	Retro Fit Roller Hydraulic	E260996
Ford V8 Big Block	1968-95	429, 429CJ, 429SCJ, 460	Roller; Mechanical	E260999
Ford V8 Flat Head	1949-53	239	Flat Tappet Mechanical	E290000
Ford V8 Flat Head	1932/49	239	Flat Tappet Mechanical	E291000
Oldsmobile V8 39°	1966-84	307, 350, 400, 403, 425, 455	Flat tappet; Hydraulic or Mechanical	E540000
Oldsmobile V8 39°	1966-84	307, 350, 400, 403, 425, 455	Retro Fit Roller Hydraulic	E540996
Oldsmobile V8 39°	1966-84	307, 350, 400, 403, 425, 455	Roller; Mechanical	E540999
Oldsmobile V8 45°	1964-67	330, 400, 425	Flat tappet; Hydraulic or Mechanical	E550000
Pontiac L4	1979-84	151 "Iron Duke"	Flat tappet; Hydraulic or Mechanical	E114000
Pontiac L4	1979-84	151 "Iron Duke"	Roller; Mechanical	E114999
Pontiac V8	1955-81	265/4.3L, 287, 301/4.9L, 326, 350 389,400/6.6L, 421, 428, 455	Flat tappet; Hydraulic or Mechanical	E300000
Pontiac V8	1955-81	265/4.3L,287,301/4.9L,326,350 389,400/6.6L,421,455	Retro Fit Roller Hydraulic	E310996
Pontiac V8	1955-81	265/4.3L, 287, 301/4.9L, 326, 350 389,400/6.6L, 421, 428, 455	Flat tappet; Hydraulic or Mechanical	E310999

Technical Information

CAMSHAFT SPECIAL GRINDING INFORMATION



APPLICATION	YEAR	ENGINE SIZE	CAMSHAFT/TAPPET	PART NO.
Porsche	-	912	Flat tappet; Mechanical	E735500
Toyota L4	1975-91	2000cc/20R, 2400cc/22R/ 22RE/22REC/22RTEC	Mechanical tappet/follower	E722000
Toyota L4 Hemi	1970-82	1600cc/2TC, 1800cc/3TC	Flat tappet; Mechanical	E735000
VW 411/Porsche 914	-	-	Flat tappet; Mechanical	E750000
VW Type 1	-	-	Flat tappet; Mechanical	E740000
VW Water Cooled	-	-	Flat tappet; Mechanical	E792000
Misc	-	-	Flat tappet; Hydraulic or Mechanical	E880000
Misc	-	-	Roller; Hydraulic or Mechanical	E880999

BEARING JOURNAL SPECIFICATIONS



<u>DESCRIPTION</u>	<u>FINISHED SIZE</u>	<u>TYPE</u>	<u>USAGE</u>
SB CHEVY STD	1.8682-1.8692	BUSHING	ALL
SM CHEVY ROLLER STD	1.8745-1.8755	ROLLER	ALL
BB & ROCKET BLOCK	1.9487-1.9497	BUSHING	ALL
50MM SERIES 8	1.9679-1.9686	ROLLER	ALL
55MM SERIES 8	2.1649-2.1656	ROLLER	ALL
60MM SERIES 8	2.3616-2.3623	ROLLER/BUSHING	ALL
65MM SERIES 8	2.5584-2.5591	ROLLER/BUSHING	ALL
70MM SERIES 8	2.7553-2.7560	ROLLER/BUSHING	ALL
LS1-6 55 MM SERIES 6 & 7	2.1650-2.1660	BUSHING	ALL
LS1-6 55 MM SERIES 8	2.1649-2.1656	BUSHING/ROLLER	ALL
LS1-6 55 MM GM SPEC	2.1649-2.1669	BUSHING	STOCK

Technical Information

LOBE DESIGNS



HYDRAULIC FLAT TAPPET

LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH	LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH
RV5H	202	274	0.273	0.000	H300/.335	236	300	0.335	0.000
RV10H	208	280	0.280	0.000	H304/.335	240	304	0.335	0.000
RV15H	214	288	0.288	0.000	H308/.335	244	308	0.335	0.000
V100H	222	290	0.298	0.000	H312/.335	248	312	0.335	0.000
TQ20H	214	292	0.299	0.000	H316/.335	252	314	0.335	0.000
TQ30H	226	310	0.310	0.000	H316/.345	252	316	0.345	0.000
HIFLOW AH	220	284	0.315	0.000	H320/.345	256	320	0.345	0.000
HIFLOW IH	228	296	0.315	0.000	H324/.345	260	324	0.345	0.000
HIFLOW IIH	235	306	0.315	0.000	NEW				
HIFLOW IIIH	240	316	0.315	0.000	H290/.355	224	290	0.355	0.000
					H294/.355	228	294	0.355	0.000
					H298/.355	232	298	0.355	0.000
					H302/.355	236	302	0.355	0.000
					H306/.355	240	306	0.355	0.000
					H310/.355	244	310	0.355	0.000
					H314/.355	248	314	0.355	0.000
					H318/.355	252	318	0.355	0.000

SOLID FLAT TAPPET - .842 TAPPET DIAMETER MINIMUM

LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH
RV10M	210	254	0.290	0.015
RV15M	218	266	0.290	0.015
TQ20M	220	270	0.310	0.015
TQ30M	230	280	0.310	0.015
HIFLOW IM	242	286	0.340	0.015
HIFLOW 11M	246	296	0.340	0.015
HIFLOW 111M	254	306	0.340	0.015
F270/.325	230	270	0.325	0.018
F270/.340	234	270	0.340	0.018
F274/.340	238	274	0.340	0.018
F278/.340	242	278	0.340	0.018
F282/.340	246	282	0.340	0.018
F286/.340	250	286	0.340	0.018
F290/.340	254	290	0.340	0.018
F294/.340	258	294	0.340	0.018
F296/.340	262	296	0.340	0.018

LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH
F320/.355	284	320	0.355	0.017
F324/.355	288	324	0.355	0.017
F284/.375	246	284	0.375	0.018
F288/.375	250	288	0.375	0.018
F292/.375	254	292	0.375	0.018
F296/.375	258	296	0.375	0.018
F298/.375	260	298	0.375	0.018
F302/.375	264	302	0.375	0.018
F306/.375	268	306	0.375	0.018
F310/.375	272	310	0.375	0.018
F314/.375	276	314	0.375	0.018
F318/.375	280	318	0.375	0.018
F322/.375	284	322	0.375	0.018
F326/.375	288	326	0.375	0.018

SOLID FLAT TAPPET - .875 TAPPET DIAMETER MINIMUM

LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH
F234/.260	194	234	0.260	0.008
F306/.408	269	306	0.408	0.018
F310/.408	272	310	0.408	0.018
F314/.408	276	314	0.408	0.018
F320/.408	280	320	0.408	0.018
F328/.408	285	328	0.408	0.018
F334/.408	289	334	0.408	0.018

LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH
F296/.408-A	258	296	0.408	0.018
F302/.408-A	264	302	0.408	0.018
F304/.408-A	266	304	0.408	0.018
F306/.408-A	269.5	306	0.408	0.018
F308/.408-A	272	308	0.408	0.018

Technical Information

LOBE DESIGNS



SOLID FLAT TAPPET - .903 TAPPET DIAMETER MINIMUM

LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH	LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH
F332/.360	291	332	0.360	0.017	F321/.415	258	321	0.415	0.018
NEW F332/.400	291	332	0.400	0.017	F325/.415	262	325	0.415	0.018
F336/.400	295	336	0.400	0.017	F329/.415	266	329	0.415	0.018
F295/.415	242	295	0.415	0.018	F333/.415	270	333	0.415	0.018
F299/.415	246	299	0.415	0.018	F337/.415	274	337	0.415	0.018
F313/.415	250	313	0.415	0.018	F340/.420	298	340	0.420	0.017
F317/.415	254	317	0.415	0.018	F344/.420	302	344	0.420	0.017

HYDRAULIC ROLLER

LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH	LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH
RH252/.280	196	252	0.280	0.000	RH288/.355	226	288	0.355	0.000
RH256/.280	200	256	0.280	0.000	RH292/.355	230	292	0.355	0.000
RH260/.280	204	260	0.280	0.000	RH296/.355	234	296	0.355	0.000
RH264/.280	208	264	0.280	0.000	RH300/.355	238	300	0.355	0.000
RH256/.300	200	256	0.300	0.000	NEW RH304/.355	242	304	0.355	
RH260/.300	204	260	0.300	0.000	0.000 RH308/.355	246	308	0.355	
RH264/.300	208	264	0.300	0.000					
RH268/.300	212	268	0.300	0.000	RH286/.365	226	286	0.365	0.000
RH272/.300	216	272	0.300	0.000	RH290/.365	230	286	0.365	0.000
RH276/.300	220	276	0.300	0.000	RH294/.365	234	294	0.365	0.000
RH280/.300	224	280	0.300	0.000	RH298/.365	238	298	0.365	0.000
RH 4.6/5.4 NEW					RH302/.365	242	302	0.365	0.000
RH262/.310	224	262	0.310	0.000	RH306/.365	246	306	0.365	0.000
RH266/.310	228	266	0.310	0.000	RH310/.365	250	310	0.365	0.000
RH270/.310	232	270	0.310	0.000	RH314/.365	254	314	0.365	0.000
RH274/.310	236	274	0.310	0.000	RH318/.365	258	318	0.365	0.000
RH278/.310	240	278	0.310	0.000	RH322/.365	262	322	0.365	0.000
RH282/.310	244	282	0.310	0.000	RH326/.365	266	326	0.365	0.000
RH286/.310	248	286	0.310	0.000	RH330/.365	270	330	0.365	0.000
RH290/.310	252	290	0.310	0.000	NEW				
RH276/.320	208	276	0.320	0.000	LSHR286/.365	226	286	0.365	0.000
RH282/.320	214	282	0.320	0.000	LSHR290/.365	230	290	0.365	0.000
RH288/.320	219	288	0.320	0.000	LSHR294/.365	234	294	0.365	0.000
RH294/.320	226	294	0.320	0.000	LSHR298/.365	238	298	0.365	0.000
RH282/.320A	222	282	0.320	0.000	LSHR302/.365	242	302	0.365	0.000
RH286/.320A	226	286	0.320	0.000	LSHR306/.365	246	306	0.365	0.000
RH268/.320B	214	268	0.320	0.000	LSHR310/.365	250	310	0.365	0.000
RH272/.320B	218	272	0.320	0.000	LSHR314/.365	254	314	0.365	0.000
RH276/.320B	222	276	0.320	0.000	JL LOBE				
RH280/.320B	226	280	0.320	0.000	RH290/.308	213	290	0.308	0.000
RH284/.320B	230	284	0.320	0.000	RH290/.314	219	290	0.314	0.000
RH286/.340	218	286	0.340	0.000	RH270/.333	211	270	0.333	0.000
RH290/.340	222	290	0.340	0.000	RH270/.333B	215	270	0.333	0.000
RH294/.340	226	294	0.340	0.000	RH276/.340	220	276	0.340	0.000
RH302/.340	234	302	0.340	0.000	RH280/.350	219	280	0.350	0.000
RH310/.340	242	310	0.340	0.000	RH282/.350	219	282	0.350	0.000
RH318/.340	250	318	0.340	0.000					



SOLID ROLLER

LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH	LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH
R270/.370	230	270	0.370	0.022	R320/.430	288	320	0.430	0.026
R278/.370	238	278	0.370	0.022	R326/.430	292	326	0.430	0.026
R286/.370	246	286	0.370	0.022	R330/.430	298	330	0.430	0.026
R294/.370	254	294	0.370	0.022	R332/.430	301	332	0.430	0.026
R302/.370	260	302	0.370	0.022	R334/.430	302	334	0.430	0.026
R308/.370	266	308	0.370	0.022	R338/.430	306	338	0.430	0.026
R312/.370	270	312	0.370	0.022					
R316/.370	274	316	0.370	0.022	R321/.430A1	290	321	0.430	0.026
R320/.370	278	320	0.370	0.022					
					R322/.430A2	290	322	0.430	0.026
R276/.400	247	276	0.400	0.022					
R282/.400	253	282	0.400	0.022	R318/.430A3	286	318	0.430	0.026
R288/.400	259	288	0.400	0.022					
R292/.400	263	292	0.400	0.022	R274/.430B	248	274	0.430	0.026
R296/.400	267	296	0.400	0.022	R278/.430B	252	278	0.430	0.026
R302/.400	272	302	0.400	0.022	R282/.430B	256	282	0.430	0.026
R308/.400	278	308	0.400	0.022	R286/.430B	260	286	0.430	0.026
R314/.400	284	314	0.400	0.022	R290/.430B	264	290	0.430	0.026
					R294/.430B	268	294	0.430	0.026
R274/.410	248	274	0.410	0.022	R298/.430B	272	298	0.430	0.026
R278/.410	252	278	0.410	0.022	R300/.430B	274	300	0.430	0.026
R282/.410	256	282	0.410	0.022	R302/.430B	276	302	0.430	0.026
R286/.410	260	286	0.410	0.022	R304/.430B	278	304	0.430	0.026
R290/.410	264	290	0.410	0.022	R306/.430B	280	306	0.430	0.026
R292/.410	266	292	0.410	0.022	R308/.430B	282	308	0.430	0.026
R294/.410	268	294	0.410	0.022	R310/.430B	284	310	0.430	0.026
R298/.410	272	298	0.410	0.022	R312/.430B	286	312	0.430	0.026
R300/.410	274	300	0.410	0.022	R314/.430B	288	314	0.430	0.026
R302/.410	276	302	0.410	0.022	R318/.430B	292	318	0.430	0.026
R304/.410	278	304	0.410	0.022	R322/.430B	296	322	0.430	0.026
R306/.410	280	306	0.410	0.022	R324/.430B	298	324	0.430	0.026
R308/.410	282	308	0.410	0.022					
R310/.410	284	310	0.410	0.022	R308/.430C	279	308	0.430	0.026
R314/.410	288	314	0.410	0.022					
NEW					R290/.435	262	290	0.435	0.026
R338/.415S	308	338	0.415	0.022	R294/.435	266	294	0.435	0.026
					R298/.435	270	298	0.435	0.026
R282/.422	248	282	0.422	0.022	R302/.435	274	302	0.435	0.026
R286/.422	252	286	0.422	0.022	R306/.435	278	306	0.435	0.026
R290/.422	256	290	0.422	0.022	R310/.435	284	310	0.435	0.026
R294/.422	260	294	0.422	0.022					
R296/.422	262	296	0.422	0.022	R308/.435A	282	308	0.435	0.026
R298/.422	264	298	0.422	0.022					
R300/.422	266	300	0.422	0.022	R324/.440B	296	324	0.440	0.026
R302/.422	268	302	0.422	0.022	R326/.440B	298	326	0.440	0.026
R304/.422	270	304	0.422	0.022	R328/.440B	300	328	0.440	0.026
R306/.422	272	306	0.422	0.022					
					R314/.445	283	314	0.445	0.026
					R318/.445	285	318	0.445	0.026
					R322/.445	288	322	0.445	0.026
					R324/.445	291	324	0.445	0.026
					R330/.445	298	330	0.445	0.026

Technical Information

LOBE DESIGNS



SOLID ROLLER

LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH	LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH
R272/.450	248	272	0.450	0.026	R326/.472	294	326	0.472	0.026
R276/.450	252	276	0.450	0.026	R334/.472	302	334	0.472	0.026
R280/.450	254	280	0.450	0.026	R314/.475	283	314	0.475	0.026
R286/.450	260	286	0.450	0.026	R320/.475	288	320	0.475	0.026
R290/.450	264	290	0.450	0.026	R322/.475	290	322	0.475	0.026
R294/.450	268	294	0.450	0.026	R326/.475	293	326	0.475	0.026
R298/.450	272	298	0.450	0.026	R328/.475	296	328	0.475	0.026
R300/.450	274	300	0.450	0.026	R332/.475	299	332	0.475	0.026
R302/.450	276	302	0.450	0.026	R334/.475	302	334	0.475	0.026
R304/.450	278	304	0.450	0.026	R336/.475	304	336	0.475	0.026
R306/.450	280	306	0.450	0.026	R324/.475-A	296	324	0.475	0.026
R308/.450	282	308	0.450	0.026	R334/.475-A	306	334	0.475	0.026
R310/.450	284	310	0.450	0.026	R304/.475S	274	304	0.475	0.026
R312/.450	286	312	0.450	0.026	R306/.475S	276	306	0.475	0.026
R314/.450	288	314	0.450	0.026	R308/.475S	278	308	0.475	0.026
R316/.450	290	316	0.450	0.026	R310/.475S	280	310	0.475	0.026
R318/.450	292	318	0.450	0.026	R312/.475S	282	312	0.475	0.026
R320/.450	294	320	0.450	0.026	R314/.475S	284	314	0.475	0.026
R322/.450	296	322	0.450	0.026	R316/.475S	286	316	0.475	0.026
R324/.450	298	324	0.450	0.026	R318/.475S	288	318	0.475	0.026
R310/.455S	282	310	0.455	0.026	R322/.475S	292	322	0.475	0.026
R312/.455S	284	312	0.455	0.026	R326/.475S	296	326	0.475	0.026
R338/.459F2	302	338	0.459	0.026	R328/.475S	298	328	0.475	0.026
R340/.459F2	304	340	0.459	0.026	R332/.475S	302	332	0.475	0.026
R346/.459F2	308	346	0.459	0.026	R334/.475S	304	334	0.475	0.026
R348/.459F2	310	348	0.459	0.026	R336/.475S	306	336	0.475	0.026
R350/.459F2	312	350	0.459	0.026	R338/.475S	308	338	0.475	0.026
R354/.459F2	316	354	0.459	0.026	R340/.475S	310	340	0.475	0.026
R312/.460B	284	312	0.460	0.026	R342/.475S	312	342	0.475	0.026
R314/.460B	286	314	0.460	0.026	R344/.475S	314	344	0.475	0.026
R316/.460B	288	316	0.460	0.026	R346/.475S	316	346	0.475	0.026
R344/.460FI	308	339	0.460	0.026	R348.475S	318	348	0.475	0.026
R339/.460FI	312	344	0.460	0.026	R316/.475S4	286	316	0.475	0.026
R348/.462F3	312	348	0.462	0.026	.920 ROLLER				
R350/.465F4	313	350	0.465	0.026	R308/.475SL	280	308	0.475	0.026
R344/.465S1	313	344	0.465	0.026	R310/.475SL	282	310	0.475	0.026
R340/.465S2	308	340	0.465	0.026	R312/.475SL	284	312	0.475	0.026
R342/.465S2	310	342	0.465	0.026	R314/.475SL	286	314	0.475	0.026
R344/.465S2	312	344	0.465	0.026	R316/.475SL	288	316	0.475	0.026
R346/.465S2	314	346	0.465	0.026	R318/.475SL	290	318	0.475	0.026
R342/.465S2X	310	342	0.465	0.026	R320/.475SL	292	320	0.475	0.026
R344/.465S2X	312	344	0.465	0.026	R322/.475SL	294	322	0.475	0.026
R342/.465S4	310	342	0.465	0.026	R324/.475SL	296	324	0.475	0.026
R344/.465S4	312	344	0.465	0.026	R326/.475SL	298	326	0.475	0.026
					R328/.475SL	300	328	0.475	0.026
					R330/.475SL	302	330	0.475	0.026
					R332/.475SL	304	332	0.475	0.026
					R334/.475SL	306	334	0.475	0.026



SOLID ROLLER

LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH	LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH
R316/.475SX	286	316	0.475	0.026	R316/.500S4	288	316	0.500	0.026
R322/.479F2	286	322	0.479	0.026	R318/.500S4	290	318	0.500	0.026
R324/.479F2	288	324	0.479	0.026	R320/.500S4	292	320	0.500	0.026
R326/.479F2	290	326	0.479	0.026	R322/.500S4	294	322	0.500	0.026
R329/.479F2	292	329	0.479	0.026	R324/.500S4	296	324	0.500	0.026
R330/.479F2	294	330	0.479	0.026	R326/.500S4	298	326	0.500	0.026
R334/.479F2	298	334	0.479	0.026	R328/.500S4	300	328	0.500	0.026
R338/.479F2	302	338	0.479	0.026	R330/.500S4	302	330	0.500	0.026
R340/.479F2	304	340	0.479	0.026	R332/.500S4	304	332	0.500	0.026
R344/.479F2	308	344	0.479	0.026	R322/.510	292	322	0.510	0.026
R346/.479F2	310	346	0.479	0.026	R324/.510	294	324	0.510	0.026
R350/.479F2	312	350	0.479	0.026	R326/.510	296	326	0.510	0.026
R354/.479F2	316	354	0.479	0.026	R330/.510	300	330	0.510	0.026
R318/.480F1	288	318	0.480	0.026	R334/.510	304	334	0.510	0.026
R320/.480F1	290	320	0.480	0.026	R338/.510	308	338	0.510	0.026
R324/.480F1	292	324	0.480	0.026	R340/.510	310	340	0.510	0.026
R340/.480F1	310	340	0.480	0.026	R342/.510	312	342	0.510	0.026
R324/.481F4	289	324	0.481	0.026	R300/.510A	276	300	0.510	0.026
R318/.485A	288	318	0.485	0.026	R302/.510A	278	302	0.510	0.026
R320/.485A	290	320	0.485	0.026	R304/.510A	280	304	0.510	0.026
R322/.485A	292	322	0.485	0.026	R306/.510A	282	306	0.510	0.026
R312/.485E	284	312	0.485	0.026	R308/.510A	284	308	0.510	0.026
R312/.485F	284	312	0.485	0.026	R310/.510A	286	310	0.510	0.026
R310/.485J	285	310	0.485	0.026	R312/.510A	288	312	0.510	0.026
R308/.485S	278	308	0.485	0.026	R304/.510B	280	304	0.510	0.026
R310/.485S	280	310	0.485	0.026	R306/.510B	282	306	0.510	0.026
R312/.485S	282	312	0.485	0.026	R308/.510B	284	308	0.510	0.026
R314/.485S	284	314	0.485	0.026	R310/.510B	286	310	0.510	0.026
R316/.485S	286	316	0.485	0.026	R312/.510B	288	312	0.510	0.026
R318/.485S	288	318	0.485	0.026	R330/.510B	306	330	0.510	0.026
R320/.485S	290	320	0.485	0.026	R312/.510S	284	312	0.510	0.026
R322/.485S	292	322	0.485	0.026	R314/.510S	286	314	0.510	0.026
R324/.485S	294	324	0.485	0.026	R316/.510S	288	316	0.510	0.026
R326/.485S	296	326	0.485	0.026	R318/.510S	290	318	0.510	0.026
R328/.485S	298	328	0.485	0.026	R330/.510S	302	330	0.510	0.026
R317/.485S2	290	317	0.485	0.026	NEW				
R314/.485S4	284	314	0.485	0.026	R307/.525	307	270	0.525	0.026
R314/.485SX	284	314	0.485	0.026	R309/.525	309	272	0.525	0.026
R340/.500F2	300	340	0.500	0.026	R311/.525	311	274	0.525	0.026
					R313/.525	313	276	0.525	0.026
					R315/.525	315	278	0.525	0.026
					R317/.525	317	280	0.525	0.026
					R319/.525	319	282	0.525	0.026
					R322/.525	322	284	0.525	0.026
					R324/.525	324	286	0.525	0.026
					R326/.525	326	288	0.525	0.026
					R328/.525	328	290	0.525	0.026
					R330/.525	330	292	0.525	0.026
					R332/.525	332	294	0.525	0.026
					R334/.525	334	296	0.525	0.026
					R336/.525	336	298	0.525	0.026



SOLID ROLLER 2.125 JOURNAL .920 FOLLOWER

LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH
R316/.450L	288	316	0.450	0.026
R320/.450L	292	320	0.450	0.026
R320/.475SL	292	320	0.475	0.026
R322/.475SL	294	322	0.475	0.026
R324/.475SL	296	324	0.475	0.026
R326/.475SL	298	326	0.475	0.026

OVERHEAD CAM

	LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH		LOBE I.D.	.050 DUR.	LASH DUR.	LOBE LIFT	LASH
NISSAN OHC	268N	202	268	0.440	0.010	PINTO MECH	P-260-M	206	260	0.440	0.010
	280N	208	280	0.450	0.010		P-270-M	212	270	0.470	0.010
	288N	216	288	0.480	0.010		P-280-M	228	280	0.540	0.010
	298N	224	298	0.480	0.010		P-310-M	260	310	0.550	0.010
	310N	238	310	0.530	0.010		RS-428-H	222	260	0.428	0.000
COSWORTH MECHANICAL	C317/.431	266	317	0.431	0.008	VW SOHC HYD	RS-428-M	224	260	0.428	0.010
	C324/.431	272	324	0.431	0.008		RS-441-M	232	268	0.441	0.010
	C335/.431	278	335	0.431	0.008		RS-460-M	246	278	0.460	0.010
	C328/.446S	268	328	0.446	0.008		RS-460-M1	260	294	0.460	0.010
	C340/.446S	278	340	0.446	0.008		RS-475-M	268	300	0.475	0.010
	C348/.446SV	277	348	0.446	0.008		RS-510-M	284	318	0.510	0.010
PINTO HYDRAULIC	C328/.460	274	328	0.460	0.008	TOYOTA 20-R-22R	T268	204	268	0.425	0.008
	C336/.460	282	336	0.460	0.008		T-276	210	276	0.440	0.008
	C334/.480	283	334	0.480	0.008		T-292	226	292	0.475	0.008
	C338/.480	287	338	0.480	0.008		T-268-A	210	268	0.420	0.008
	264P	205	264	0.442	0.000		T276-A	218	276	0.438	0.008
	274P	212	274	0.477	0.000		T292-A	232	292	0.473	0.008
	276P	218	276	0.477	0.000						
	280P	222	280	0.477	0.000						
284P	226	284	0.477	0.000							
288P	230	288	0.532	0.000							

Technical Information

A COMMON SENSE APPROACH TO MAXIMUM CAM PERFORMANCE AND SATISFACTION



For over 30 years, Erson Cams® has grown from a small one man operation to one of the major camshaft and valvetrain component manufacturers in the high performance aftermarket. During this time, we have seen our production change from 80 percent race car camshafts to a broad spectrum of specialized camshafts and components to fulfill the needs of all automotive enthusiasts.

Selecting the proper camshaft for a race car is difficult. However, if all the variables are taken into consideration, a competent technician can make a satisfactory selection. It is as difficult to select the proper camshaft for low compression, low performance vehicles of the 1990s. This catalog contains the broadest spectrum of specialty camshafts currently offered to the motoring public. Whether you need better mileage, better load carrying, trailer towing potential or better performance, the cam best suited to your needs is available.

Realizing that installing the wrong camshaft is both frustrating and costly, the following is written to help in the selection of the cam best suited for the application. In addition, we will supply as much data as practical to ensure maximum performance and durability from the cam after installation.

When in the market for a new camshaft, we recommend talking to your local dealer first. Through close association with customers in the area, he is aware of the equipment that is working best and can usually suggest the best cam for the application.

Should the application raise any questions on cam selection that the dealer cannot answer satisfactorily, we advise contacting our Technical Department for a recommendation. There is no charge or obligation for this service and a wealth of current knowledge is available for the asking. In addition, we are not reluctant to make a special cam for any application if we feel it is required for top performance. Of course, there is an additional charge for this service.

The most important reason for working closely with the dealer and the factory when purchasing a camshaft is to ensure maximum performance and the right cam the first time. Many factors affect camshaft selection: engine size, induction system, type of transmission, gear ratios, type and weight of chassis, operating conditions and, most important, the needs of the customer. All factors must be considered in the light of past experience before an intelligent selection can be made.

Cars equipped with a torque converter type automatic transmission are particularly sensitive to certain camshaft characteristics and will require special consideration when selecting a cam for maximum performance (as torque in the low and mid-range must be maintained if satisfactory performance is to be expected). Cams with relatively short duration, high lift and high rates of valve acceleration are normally used and special lobe center spacing is common.

TYPES OF CAMS

There are basically four types of camshafts available for today's engine builder: Hydraulic Flat Tappet, Hydraulic Roller, Mechanical Flat Tappet and Solid Roller type camshafts. In the next section we will briefly try to explain the advantages and disadvantages of each type.

HYDRAULIC TAPPET CAMS

Previously the most common type of cam used as original equipment in nearly all production engines and in most modified engines was the flat tappet hydraulic. The only exceptions to this are serious race applications.

The hydraulic cams offered in this catalog are manufactured from new proferal iron castings of equal or superior quality to those supplied as original equipment. These heat-treated cast iron (proferal) billet cams must use hardenable iron tappets and motor oil meeting S.A.E. and A.P.I. classifications of S.D. or S.E.

When installed correctly using the recommended component kit, the proper oil, and broken-in correctly, these cams will have a life expectancy equal to that of the engine.

There are many advantages to the hydraulic camshaft. Properly designed hydraulic cams have no valve or tappet noise, periodic valve adjustments are not required and these cams and kits can usually be switched on a one-for-one basis with the stock parts. No machine work is required and no costly adjustment devices are necessary. The installation of a hydraulic high performance or specialty cam and kit may be carried out by the average amateur mechanic with ordinary hand tools in a relatively short time.

For the average installation, hydraulic tappets have no drawbacks. They are a self-adjusting mechanism designed to take up any slack of clearance in the valve train and will function with no problems under nearly all conditions, as long as the engine is not operated above the maximum designed RPM.

If the engine is operated above the maximum designed RPM of the camshaft and valve float occurs, the tappet will attempt to adjust out of the lash caused by valve float and will overfill (pump up). Since the tappet is now over-length, the valves will be held off the seat and performance will suffer until the tappet returns to the correct length. Although a well-designed hydraulic cam and properly engineered parts kits have extremely high RPM potential, valve float is possible.

We also recommend frequent oil and filter changes to prevent varnish or gum build up in the tappets, as they are manufactured to extremely close tolerance.

HYDRAULIC ROLLER CAMS

From the mid-1980s onward, Hydraulic Roller Cams have become increasingly popular with not only the original equipment manufacturers, but the automotive enthusiast as well. The Hydraulic Roller Valve Train combines the performance characteristics of a Solid Roller Cam and the reliability of a Hydraulic Flat Tappet Cam, enhancing the performance of today's engines.

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Much like the Hydraulic Flat Tappet Camshaft, the Hydraulic Roller Camshaft uses a follower which resembles a solid roller lifter, yet has the valving of a Hydraulic Flat Tappet. This allows for a quiet and virtually friction-free valve train which requires little to do maintenance. The other and most beneficial advantage would be the use of more aggressive camshaft lobe profiles, offering more area under the curve for better cylinder filling capability and increased mid-range performance.

Another important advantage is that Hydraulic Roller Camshafts require no break-in period. This eliminates any possibility of premature camshaft and/or lifter failure due to improper break-in.

The only real disadvantages to using a Hydraulic Roller Valve Train are: 1) the initial cost is noticeably higher due to the types of materials needed to withstand the higher loads, and 2) Roller Hydraulic Lifters are heavier than Hydraulic Flat Tappet Lifters and they are accelerated at much higher rates due to lobe design. This usually requires the use of a slightly stronger valve spring. Failure to do so will result in early valve train harmonics; i.e.; separation or float.

MECHANICAL TAPPET CAMS

Mechanical tappet cams were at one time used in all high performance applications and in many production engines. These cams are made from the same billets as the hydraulic tappet cams and have the same lubrication requirements. Mechanical tappets are made from the same grade hardenable iron as the hydraulics, but do not contain the self-adjusting mechanism.

The primary advantage of a mechanical tappet cam is higher RPM potential. Although equivalent mechanical and hydraulic cams would float the valves at the same RPM, the mechanical cam would not have a pump up condition from this valve float, therefore, the engine would not stumble or misfire and would continue to run. As soon as the RPM is reduced below the float point, the engine performance would return to normal.

One other advantage of the mechanical cam is a smoother idle and higher manifold vacuum when compared to a hydraulic cam of equal horsepower.

The primary disadvantages of a mechanical cam are the necessary periodic valve adjustments and in many applications, slightly more valve train noise, particularly at idle. Another problem is that many engines have no provision for valve train adjustment since they are designed to use hydraulic tappets exclusively. Converting some of these engines to use mechanical tappets can be costly and time consuming.

MUSHROOM TAPPET CAMS

Mushroom tappet cams are also flat tappet mechanical cams, but they utilize a tappet that has a larger diameter base than the diameter of the tappet body. The mushroom tappet cams and tappets listed in this catalog are manufactured from the same materials as our regular flat tappet cams and have the same lubrication requirements.

Mushroom tappet cams have been in use for many years. Many early 'L' head engines such as the Model T, Model A, Chrysler 6 and 8 were equipped with mushroom tappets. Mushroom tappet cam and kits are not available for

small block and big block Chevrolet engines. These cams have evolved as a direct result of some racing associations banning the use of roller tappet cams.

To clarify this, we must first understand that the maximum allowable velocity measured (at the tappet) is in direct proportion to the diameter of the tappet. The formula for this calculation is:

$$v \text{ max} = \frac{T.D. \cdot .025}{2} \cdot 57.3$$

T.D. is the diameter of the tappet in thousandths of an inch and the answer will be the maximum velocity possible, measured in thousandths of an inch per degree of cam rotation.

Mushroom cams will produce better power over a broader range than could be achieved with the standard diameter tappet, but are not as effective as a roller tappet.

The use of mushroom cams is limited to specialized closed course racing applications at this time.

SOLID ROLLER TAPPET CAMS

Roller cams and tappets have been available to racing enthusiasts since the days of the Model T and are now more popular than ever. The roller tappet cam and kit has always been considered a prestige item and many have been purchased for this reason, although a flat tappet cam is satisfactory.

The important thing to remember when selecting a camshaft is, if a flat tappet cam will do the job, use it. If the stress levels in the engine are high or competition requires valve opening and closing velocities in excess of that possible with a flat tappet, use a roller.

Roller tappet camshafts cannot be ground on regular iron castings. Special castings of nodular iron or steel billets must be used to stand the high stress loadings encountered.

The principal advantage of a roller tappet setup is its ability to survive in an environment that would quickly destroy a flat tappet camshaft. It also produces tappet velocities far in excess of a flat tappet.

High stress levels created by blowers, fuel, heavy springs and valve float are tolerated by the roller tappet assembly due to its basic strength and high load carrying capacity.

Since the rollers used in racing applications are equipped with anti-friction (needle) bearings, they have the added advantage of being able to survive with marginal lubrication. Roller tappets will operate in oil so diluted with nitro that it would cause complete failure of a flat tappet cam.

Due to recent advances in valve spring design techniques and metallurgy, springs that will accommodate ultra-high lifts are now available. Computer designed cam profiles that can take full advantage of these springs without valve float or damage to valve train components are also available. In many cases, these designs cannot be used with the stock diameter flat tappet, as the velocity is too high and a roller must be used.

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From a design standpoint, the roller tappet has an infinite base diameter. Valve lifts and acceleration rates impossible within the diametrical limits of the average flat tappet are possible without danger of premature cam failure.

The primary disadvantage of the roller tappet is the high initial cost. Roller tappets are expensive to manufacture. All component parts must be of first quality and many stock parts that are adequate with flat tappet assemblies must be replaced to ensure proper functioning of the roller tappet installation.

DUAL PATTERN CAMS

The term dual pattern cam refers to the difference in the profile of the intake lobe and the exhaust lobe on a given camshaft. Dual pattern cams are produced for hydraulic, flat tappet mechanical, flat tappet mushroom, and roller tappet applications.

Dual pattern cams are designed for a number of reasons. Our turbo cams are also dual pattern, but with shorter duration exhaust lobes. Some of our highly competitive, all-out drag race cams are also dual pattern.

Dual pattern designs are used when testing shows this is necessary to achieve a certain desired result. In most applications, dual pattern designs are not required.

ASYMMETRIC CAMS

The term asymmetric cam refers to a profile that is different on the opening side as opposed to the closing side, and can be produced for all three basic cam types (hydraulic flat tappet, mechanical and roller).

Cam lobe profiles for engines such as the Pinto 2000 and 2300, the Honda car, and any other engine using a cam with a lever type cam follower, have visibly asymmetric profiles. These designs, although dramatically different on the opening side compared to the closing side, actually deliver symmetric motion at the valve. The unusual shape is dictated by the geometry of the valve train.

The other common type of asymmetric cam is used with a normal valve train. The difference between the opening side and the closing side of the lobe is not apparent to the eye, but can be picked up by plotting the cam lobe. The most common practice is to use maximum acceptable velocity on the opening side, possibly with a shallow ramp, and use less velocity on the closing side with a higher, longer ramp. The theory is the valve train will operate at higher RPM without false motion (float) and more power will be produced over a broader range.

We use this type of profile on most of our cams. The RV, TQ and HI Flow series all use asymmetric design with excellent results.

CHOOSING THE RIGHT CAMSHAFT

Right from the start you must decide what your ultimate goal is when modifying your engine and vehicle. There are very few situations in which a cam change is practical without other alterations on the vehicle. The extent of these modifications and the owner's ultimate performance goals, to a large degree, will determine the camshaft choice.

RV CAMS

RV cams were first introduced by Erson Cams in the early '70s. RV cams should be installed with the complete recommended component kit, and the engine should be fitted with headers and a free flow exhaust system, modified ignition curve, and a smaller four barrel or large two barrel carburetor. The high torque intake manifolds offered for many engines complement the RV cams. RV cams produce sufficient low end torque to operate with automatic transmission and standard gears, although we recommend a lower gear in any application involving heavy loads or heavy towing.

Properly set-up engines with RV cams idle well, have excellent throttle response and good power up to 5000 RPM in some applications. These engines will get excellent mileage when full power is not used excessively.

TQ CAMS

The TQ cam series was developed when our customers needed a cam that would provide improved performance without ruining the vehicle's utility value. TQ cams provide improved acceleration, higher RPM potential, and excellent performance while maintaining a satisfactory idle and low speed torque.

To complement a TQ cam, we recommend installing the complete component kit, headers and a good exhaust system, moderate size four barrel carburetor, and a Mallory® ignition system. TQ cams respond well to lower axle ratios, particularly when used with automatic transmissions. Whenever possible, the compression ratio should be raised to 9 or 9.5:1.

HI FLOW CAMS

The Hi Flow series cams are designed for the performance enthusiast willing to accept a rougher than stock idle and higher idle RPM. These cams should not be considered unless the complete component kit, a good intake system, ignition and headers with free flow exhaust system are also installed. Although not essential, higher compression is beneficial. These cams can be made to operate with standard gearing in a light car with a large engine, but maximum performance will not be achieved without a gear change. The Hi Flow cams are designed to provide maximum lift and minimum duration within the physical limitations of the valve train to ensure power over a broad operating range.

PARTS OF A CAMSHAFT

A camshaft may be described as a shaft with one cam lobe for each tappet in the engine. Lobes are positioned radially on the shaft in such a manner as to ensure proper valve timing and firing order. The shaft is also equipped with a number of bearing journals for support during operation.

The camshaft is usually manufactured from an alloy iron casting but may be machined from a steel forging or from a solid steel bar, depending on the application.

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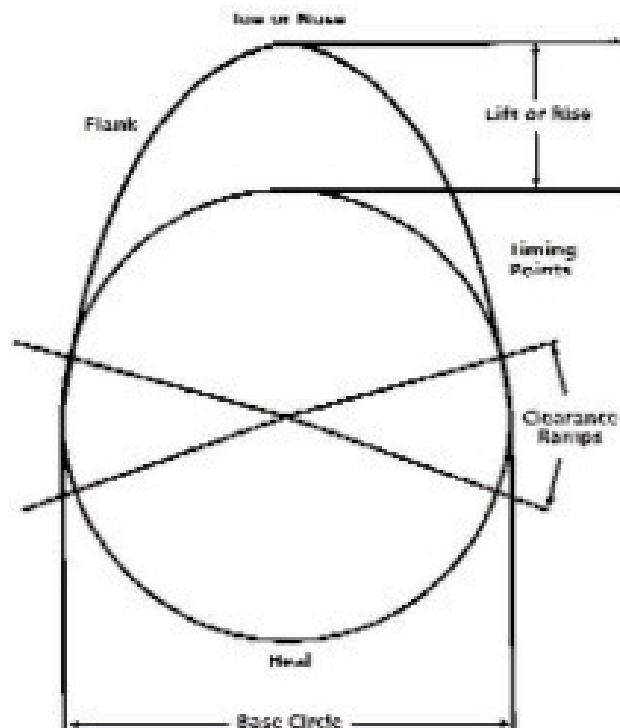


THE CAM LOBE

A number of special technical terms are used when discussing a cam lobe and will be presented here to make it easier for the reader to understand the text. When more than one term is in common usage, both will be given to prevent confusion.

The base circle is a circle in theory only and is used in the design and manufacture of cams as a reference point. The base circle is concentric with the axis of the camshaft. A portion of the base circle is the area on which the tappet rides when the valve is closed. On modern long duration racing cams, the concentric portion of the base circle may be as little as 100° of camshaft rotation. The balance of the 360° being devoted to the clearance ramps and the lobe proper. The concentric portion of the base circle is commonly called the heel.

The clearance ramps of a cam are designed to gradually take up the clearance (lash) in the valve train, begin the acceleration of the tappet and the balance of the valve train on the opening side, slow the valve and the valve train and lower the valve gently to the seat on the closing side. Properly designed ramps are necessary, not only to provide quiet operation, but also to ensure long life of valve train components by minimizing opening and closing shock and high cam loading that may occur if acceleration is not carefully controlled. The flank of the cam is the position that actually opens and closes the valve. Working on the principle of a lever, the flank of the cam bears against the tappet as the cam rotates. The rotary motion of the cam is converted into linear motion of the tappet. The shape of the flank is responsible for the rate of lift and to a large degree, the dynamic stability and durability of the valve train. The nose or toe of the cam connects the two flanks and is the portion of the lobe that bears against the camface of the tappet at full lift.



THE TIMING TAG

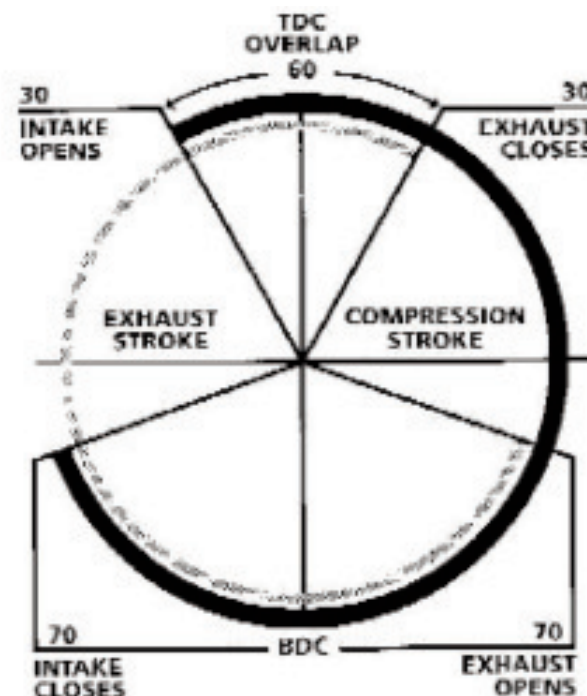
All racing cams from reputable manufacturers include a timing tag with figures relating to the camshaft. These figures are necessary if the engine builder wishes to get the most from his engine. Although, we have found that many people do not understand the timing tag and are unable to use the information to full advantage.

The following explanation of the timing tag is intended to give you a clearer understanding of the tag's information.

All Erson racing cams are supplied with a four page timing folder. The first page gives the following information:

1. The recommended valve clearance.
2. The gross lift at the valve.
3. The timing diagram which represents one complete cycle, two complete revolutions (720°) of the crankshaft.

The timing diagram graphically illustrates the relationship between the valve opening and closing points and the piston travel, measured in degrees of crankshaft rotation. The valve opening and closing points are always given in relation to TDC (top dead center) of piston or BDC (bottom dead center). Intake valves open before TDC and close after BDC. The exhaust valves open before BDC and close after TDC. The heavy black line on the outside of the timing diagram indicates the open period of the intake valve, and the gray line on the inside indicates the open period of the exhaust valve. To determine the intake duration from the sample timing tag, use the following procedure: Start at the upper left hand corner of the diagram marked "intake opens". (NOTE: The figure 30 means that the intake valve opens 30° before TDC).



"Cam Basics Math"

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Now simply follow the black line in a clockwise direction past TDC and BDC to the point in the lower left hand corner of the diagram marked "Intake closes." (NOTE: The figure 70 means that the intake valve closed 70° past BDC). Now by adding the total distance traveled in degrees, we can tell what the total duration of the intake opening is as follows, $30^{\circ} + 180^{\circ}$ (the number of degrees between TDC and BDC is always 180°) + $70^{\circ} = 280^{\circ}$ duration. To determine the exhaust duration, you simply follow the same procedure beginning in the lower right hand corner marked "exhaust opens" and following around to the upper right hand corner marked "exhaust closes". If you add these figures ($70^{\circ} + 180^{\circ} + 30^{\circ}$) you will find the exhaust duration to be 280° . How about overlap? Add the intake opening before TDC (30°) to the exhaust closing after TDC (30°) and you have the overlap of 60° .

If you wish to determine if the cam is ground "advanced", "retarded" or "split overlap", use the following procedure: If the intake duration and the exhaust duration are the same (as in the diagram 280°), then the amount of advance or retard that has been ground into the cam can be determined from the intake opening and exhaust closing figures. If the intake opening figure is greater, then the cam is advanced. If they are the same (as the diagram 30° and 30°), the cam has a split overlap.

To determine the amount of advance or retard that the cam has, just subtract the smaller number from the larger and divide the remainder by two and you have your answer in crankshaft degrees. Now, to check the advance or retard of the cam with unequal intake and exhaust durations, reduce the valve duration of the "longer" to that of the "shorter" by subtracting an equal amount of degrees from both the opening and closing figures of the "longer" valve. With this done, proceed as before.

The data given on page three of the timing folder is for use in checking the cam only and gives the following information:

1. The gross valve lift measures at the cam.
2. The timing diagram with timing points checked at .050 rise off base circle.

On short duration cams the intake opening and exhaust closing number at .050" lift will be shown with a minus sign (-5).



INSTALLING A CAM

The installation of a cam is not extremely difficult and may be undertaken by anyone with a reasonable understanding of auto mechanics, a representative selection of mechanics' tools, a manual covering disassembly and assembly of the engine in question and sufficient patience to follow instructions.

The first factor to consider is the condition of the engine. Since the installation of a cam may increase horsepower by as much as 20 percent and allow up to 2000 more RPM before valve float, it stands to reason that the engine must be in first class condition before making any modifications that will increase stress on the engine components.

Once the old camshaft is out of the engine, it is an ideal time to inspect the various components of the valve train. Check the timing sprockets and chain for wear or damage. If the engine has accumulated fairly high mileage, it would be good insurance to replace the chain and sprockets at this time with a heavy duty setup to ensure proper valve timing and long chain life.

Give the bearing journals on the camshaft you removed a thorough visual inspection. The condition of the journals is a good indicator of the condition of the bearing inserts in the block which are almost impossible to check with the engine assembled.

Check the distributor drive gear on the old camshaft and the gear on the distributor. If they show any sign of wear, it is wise to replace the gear on the distributor before installing the new cam, as running against a worn gear will destroy the gear on the camshaft.

Also, check the condition of the valves and valve guides. Since the cam may have more lift, higher spring pressure and an increased rate of lift compared to the stock cam just removed, the valves and guides must be in perfect shape before installing a cam.

It is important to use the complete component part kit recommended for the installation. Using parts that are not designed for the installation will greatly increase the chances of damaging the cam and engine. Component parts supplied by the cam manufacturer are mechanically and metallurgically compatible and will mate in, guaranteeing long and trouble-free service.

The information and suggestions contained in this article are generalized due to the great variety of engines currently produced and are not intended to cover all aspects of camshaft installation. We recommend following a detailed manual which covers the operations to be performed. Care must be exercised when installing a new cam and valve train components, or severe damage to the cam and the engine may result.

Assuming all the components mentioned earlier have been found satisfactory or replaced with new parts, we can proceed with the actual camshaft installation.

First, install the camshaft sprocket on the cam, including any thrust plate if used on the engine. Check the thrust plate for proper end clearance. Although the sprocket will have to be removed after the camshaft has been installed to facilitate fitting the chain, it is necessary to have the sprocket on the camshaft when checking the cam in the engine. The sprocket also serves as a convenient handle during installation, Coat

Technical Information

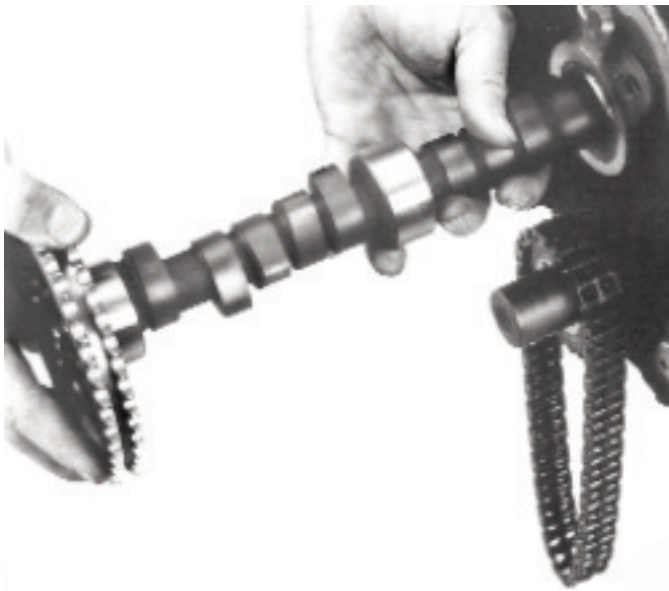
A COMMON SENSE APPROACH TO MAXIMUM CAM PERFORMANCE AND SATISFACTION



the lobes and distributor drive gear with the special break-in compound supplied with the cam and coat the bearing journals with motor oil.



Install the camshaft in the engine, taking care not to damage the soft surface of the cam bearings in the block. When the camshaft is fully installed, make sure that the thrust surface of the sprocket touches the block. If the engine is equipped with a thrust plate, bolt the plate to the block.

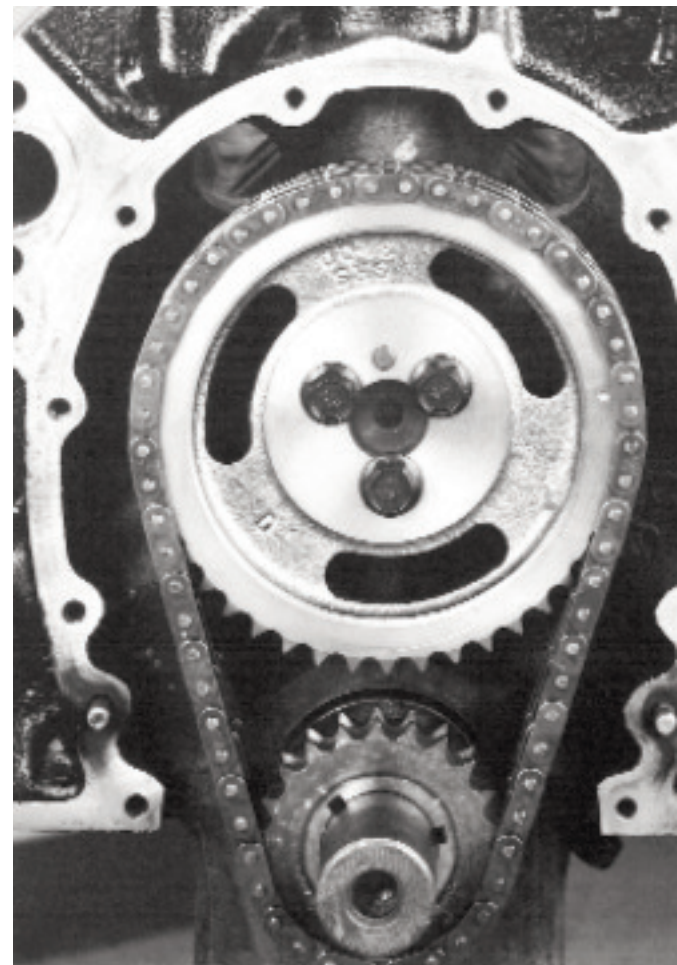


Rotate the cam several turns by hand. It should turn easily and no binding should be felt when rotating. Next, coat the camface of each tappet with break-in compound and insert the tappets in their bores. Apply pressure against the cam sprocket to be sure that the thrust faces are in contact and rotate the cam again. There should be no hard spots or interference to rotation. If interference can be felt at this time, check for contact between the sides of cam lobes and the tappets.

The cam drive sprocket may now be removed to facilitate installing the timing chain. Consult your manual for proper procedure when timing the camshaft.

If the camshaft is to be degreed, now is the time to proceed with this phase of the work. Complete instruction for degreeding the camshaft is given in a later section of this article.

If valve springs are being installed with the heads on the engine, care must be exercised to ensure the proper spring height is arrived at. Do not shim springs tighter than the recommended dimension. Complete instructions for installing and checking valve springs, seals, etc., are given in the section on valve springs.



The balance of the engine may now be assembled following the information given in the manual. When the engine is completely assembled, read the section on valve adjustment in this article and perform whatever adjustments are necessary for the installation.

Break in the camshaft according to the data given in the camshaft break in section.

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VALVE LASH

All engines using mechanical (solid) tappets must be fitted with some form of adjustment in the valve train to allow the specified lash to be set. Most contemporary American automotive engines modified for racing use rocker arms with adjusting screws, rocker arms with moveable pivots, or adjustable pushrods as the adjustment medium. Of the three types in common use today, the moveable pivot type, as introduced in 1955 on the 265 Chevrolet V8, is the most common and the simplest.

The reason we must provide lash in the valve train when using mechanical tappets, is to accommodate changes in length of the many components as they expand and contract due to changes in temperature. The lash required for satisfactory operation in a particular application is arrived at by the cam designer when the profile is designed. All that is required to change the operating clearance of a cam profile is to change the ramp length. Hydraulic cams have ramps designed to operate at .000" clearance while mechanical cams may have ramps designed to operate at up to .025" measured at the cam.

The trend in recent years has been toward greater operating clearance for high performance camshafts. This trend was initiated by Chrysler Corp. on their factory high performance engines in 1960 and has since been adopted by all camshaft manufacturers for applications that require sustained high power output.

Manufacturers adopted wide operating clearance because tests performed on engines during operation found that little change in clearance occurs between cold and hot in the modern OHV engine. Starting the engine from cold, the valve lash will vary considerably during the warm-up period, but when the engine is fully warmed up and temperature stabilized, the clearance will be within .002" to .003" of the cold setting. Although all of the valve train components such as tappets, pushrods and valve stems expand, reducing the operating clearance, other components such as the block, head and rocker arm mounting devices also expand, increasing the clearance. In most engines these changes nearly cancel each other out.

For many years, cam designers were aware of these minor changes that could be easily measured on the hot or cold engine and most camshafts used clearances of .012" to .014", which were assumed to be sufficient to accommodate all variations that take place in the valve train of the OHV engine. Designs utilizing these small clearances performed adequately for passenger car use, but consistently burned exhaust valves when used for extended full-throttle operation. To determine the cause, dynamometer tests were conducted utilizing a specially designed machine that could measure valve lash with the engine running at high RPM, at full throttle, and under load. These tests indicated that the exhaust valve stem would expand sufficiently to eliminate all of the valve lash and hold the valve off the seat. Since the greater portion of the heat picked up by the exhaust valve during operation is transferred to the head by way of the seat, with only a small portion going from the stem through the guide, it follows that as soon as the exhaust valve fails to seat properly, heat buildup increases at an accelerated rate. This in turn aggravates the valve stem growth, causes pre-ignition, valve burning and can contribute to ultimate engine failure.

We have found that a valve lash of .030" to .032" is sufficient to prevent the exhaust valve from being held off the seat in the most severe competition applications, barring engine malfunctions that would cause severe localized overheating.

VALVE ADJUSTMENT

In the last section, we discussed the reasons for valve lash and some of the effects on performance. We will now briefly cover the actual mechanics of adjusting the valves.

The most common question we hear regarding the valve adjustment is whether the valves should be adjusted with the engine hot or cold. As mentioned earlier, we find very little difference between cold (60°F) and hot and fully normalized (180°) on OHV engines. You should be able to adjust either way with no problem. Air-cooled engines, such as the VW and Porsche, have completely different expansion characteristics than a water-cooled engine and should be adjusted cold, since the cylinders and heads are subject to extreme expansion and will give false readings if adjusted hot.

All clearances supplied on the timing folders for Erson Cams are cold settings derived from actual tests performed on the engines in question. Where necessary, clearances are altered to suit the expansion characteristics of the engine.

Another common question is whether the valves should be adjusted with the engine running or stopped. Although there may be some advantages to adjusting the valves with the engine running, we feel that they are more offset by the inconvenience. Adjusting the valves running on a modified engine is impractical for a number of reasons: Idle speed is too high to get a proper feel of the gauge. The high idle also tends to throw hot oil on the mechanic, the engine and the surrounding area. To properly adjust the valves, we recommend the exhaust opening, intake closing adjustment method. We have used this method for years and find it to be easy to remember, accurate and suitable for all types of engines.

With the long duration, long ramp cams now in use, it is difficult to adjust valves using conventional techniques while making sure the tappet is not on the ramp of the cam. If the valve is adjusted with the tappet on the ramp of the cam, the clearance will be greater than called for and performance will suffer.

With valves in approximate adjustment (plus or minus .010"), rotate the engine in the normal direction as you roll the exhaust pushrod between your thumb and forefinger. As soon as the pushrod becomes tight and can no longer be rotated, the exhaust valve is just starting to open. At this point, the tappet is near the center of the heel of the intake lobe for this cylinder and ready for adjustment. After adjusting the intake, continue to rotate the engine in the normal direction while attempting to rotate the intake pushrod between your thumb and forefinger as the intake valve is closing. As soon as you can rotate the intake pushrod, the exhaust tappet will be near the center of the heel of the exhaust lobe and ready for adjustment.

ADJUSTING HYDRAULIC TAPPETS

We recommend adjusting hydraulic tappets to the factory recommended specs in most applications. There is no advantage to installing a hydraulic cam if it is going to be necessary to constantly readjust the tappets.

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On engines with the fixed pivot-type rocker arms and no adjustment mechanism, we recommend the valve train be assembled in its stock condition. Most hydraulic tappets have sufficient range of plunger travel to accommodate the smaller base circle of a cam with higher lift than stock with no problems. In the rare case when plunger travel is not adequate, longer pushrods must be installed.

Most engines with moveable pivot arms, such as the Chevrolet, must be adjusted after the camshaft is installed. The factory recommends turning the adjusting screw three-quarters of a turn after all lash has been removed from the valve train. We find this setting to be sufficient for all applications. Although it is messy, we feel this adjustment is best made with the engine running, although this can be done with the engine not running. The important thing is to be sure the tappet is on the heel of the cam when making the adjustment.

The method we recommend is removing one rocker arm cover and starting the engine. All tappets must be adjusted to the point where there is no valve noise. With the engine idling, back-off the first rocker stud nut until it starts to click. Tighten the nut slowly until the click just disappears, then turn the nut three-quarters of a turn. This will cause the engine to stumble, since the valve is being held off the seat, but idle will smooth up as soon as the tappet accommodates to the new setting. Repeat this procedure on the balance of the rockers. This adjustment is all that is required and no further adjustments should be necessary unless the engine is disassembled.

Many people running hydraulic cams in highly competitive applications feel it necessary to run with the valves adjusted to .000" to .003" lash with the hydraulic plunger against the snap ring. This technique has the advantage of guaranteeing no pump-up if the valves should be floated inadvertently at the line or during a shift, while still retaining the advantages of hydraulic tappets. The only drawback to this technique is when this is done with the moveable pivot-type rocker arms, it will upset the rocker arm geometry and can cause damage to the valve train and cam. To operate a moveable pivot-type rocker arm at zero lash with plunger against the snap ring without damaging the valve train or cam, special short pushrods must be used to bring the rocker arm geometry back to normal.

WHY CHECK YOUR CAMSHAFT?

Of the thousands of racing cams installed each year, only a very small percentage are actually checked in the engine to verify valve timing. Many top cars in all classes of racing run cams that have been installed "out of the box" and are able to consistently win against the most formidable competition.

Since it is possible to operate a race car successfully without any special attention to the camshaft installation, some people tend to overlook the many advantages that can be had from checking the cam at the time of installation.

The primary reason for checking the cam in the engine is to be sure that the valves open and close at the proper time in relation to piston travel. Although the chances of the cam timing being within tolerance as installed are quite good due to modern manufacturing and inspection methods used by most manufacturers, the engine builder cannot be sure of the cam timing if it isn't checked.

Another advantage of knowing the actual timing is that it gives an accurate starting point if subsequent testing shows cam phasing must be changed to alter the engine characteristics.

In addition, it is invaluable to have this date, should the engine be damaged. If the engine builder has all the figures available, it is easy to duplicate the original setup and performance. Knowing the actual valve timing gives a valuable reference point for tuning and maintaining the engine.

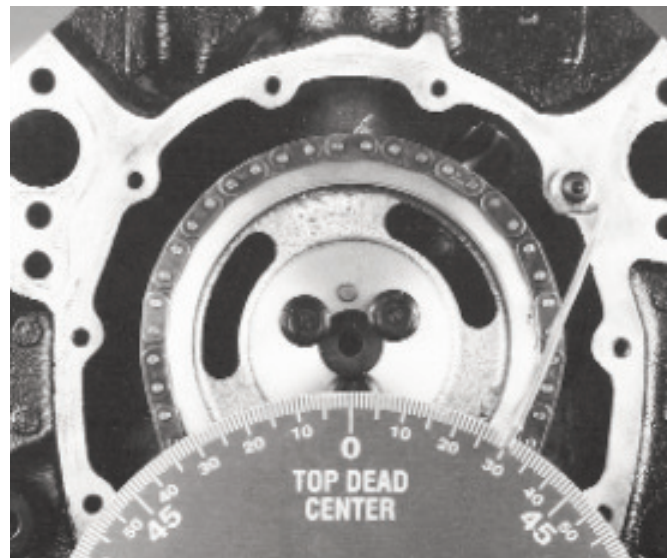
PREPARING TO CHECK YOUR CAMSHAFT

To check the camshaft in the engine, you will need the following tools: one dial indicator with a minimum of .500" travel and a rigid mount for the dial indicator; one degree wheel, calibrated in one degree increments no smaller than six inches in diameter; one pointer, to be attached to the block to read the degree wheel; some method of rotating the engine smoothly in either direction. In addition, a piston stop is handy, but not necessary.

To check the cam, the engine must be torn down to expose the tappets and, if possible, number one piston. All pushrods must be removed from the engine to eliminate valve spring pressure against the cam. To ensure accuracy, the cam must be checked at the tappet. Although it is possible to check the timing at the valve, it is not practical, and not recommended. Because the entire valve train is flexible to some degree, the pressure of the valve springs against the cam will deflect the cam sufficiently to cause errors in readings. By eliminating as many of the valve train components as possible, errors will be reduced. The rocker arms, and in some cases, the rocker arm mounting stud locations, are not consistent and can cause variations in readings.

FINDING EXACT TOP DEAD CENTER

The first step in degreeing the camshaft is to mount the degree wheel securely to the engine's crankshaft. Although the degree wheel may be mounted to either end of the crankshaft, it is common practice to mount the wheel on the front. The degree wheel can be mounted to the crank snout with one bolt, but it is better to fit the degree wheel to the harmonic damper with several bolts. Next, mount the pointer to a convenient bolt hole on the engine block in such a manner as to make it easy to read the degree wheel. When mounting the wheel, the engine should be rotated to place number one piston as close to TDC as possible and align the TDC mark of the wheel with the pointer before securing the wheel. This eliminates the necessity of excessive adjustment after finding exact TDC.

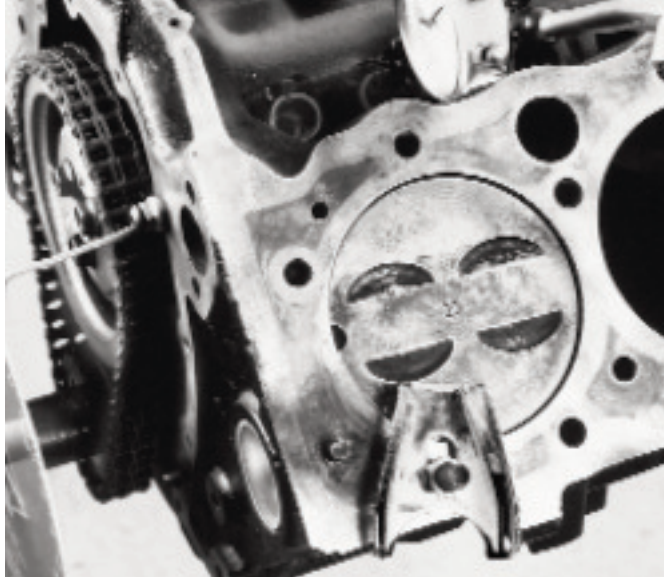


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It is not practical to attempt to find TDC by feel or by eye as piston travel per degree of crankshaft rotation near the top and bottom of the stroke is very small. There are two methods for finding TDC in common use: the piston stop method and the dial indicator method. Both employ two readings taken at a point in which piston travel per degree of crankshaft rotation is high and eliminate any chance of error caused by piston dwell at TDC.



The easiest and most practical method of finding TDC, if the cylinder heads are not on the engine, is with a piston stop. The stop is best made from 1/2 x 1 inch steel, should bridge the bore and be bolted on either side. If the engine is equipped with deflector type pistons, this is all that is required as the piston deflector will contact the steel strap and stop rotation satisfactorily. Should the engine be equipped with flat top pistons, the steel trap should be equipped with a stop locator in its center that will contact the piston between 1/4 and 1/2 inch down the bore. This is easily accomplished by drilling a third hole in the center of the strap, placing a bolt through the hold and securing it with a nut. The end of the bolt should face the piston and will act as the stop.

If the heads must be left on the engine, it will be necessary to purchase or make a stop that will screw into the spark plug hole. This type of stop is easily fabricated from an old spark plug shell and a piece of steel rod. To fabricate a stop, screw the spark plug shell into the head, rotate the crankshaft until the piston is approximately 1/2" below the block surface. Push the rod through the plug shell until it contacts the piston, mark the rod then remove the rod and the plug shell. Braze the rod into the shell and radius any sharp corners of the rod that contact the piston, to prevent marking the piston. This stop should be retained and used in the future when checking the engine. Always remove the pushrods before installing a plug hole piston stop, as the valves may hit the stop, causing severe damage.

Rotate the engine until number one piston is as close to TDC as possible by eye. Line up the TDC mark on the degree wheel with the pointer on the block and secure the degree wheel against rotation. Rotate the crankshaft enough to make room for the piston top on number one cylinder.

With the piston stop in place on number one cylinder, rotate the engine until the piston is firmly against the stop, then make a temporary mark on the degree wheel in line with the pointer. Now, rotate the engine in the opposite direction until the piston again contacts the stop. Make another temporary mark on the degree wheel in line with the pointer. Exact TDC is halfway between the two temporary marks on the degree wheel.

Count the number of degrees from TDC in a clockwise direction to the mark. Now count the number of degrees in a counterclockwise direction from TDC to the other mark. If there are the same number of degrees on each side of TDC, the degree wheel is located perfectly. If there is an unequal number, the wheel will have to be relocated. As an example, if there are 44° on one side of the TDC and 40° on the other side of TDC the wheel will have to be moved 2° to be exactly on TDC (42° on either side). After moving the degree wheel, repeat the entire procedure to double check for accuracy.

When the number of degrees check out exactly the same on either side of the TDC, the degree wheel is properly located and the piston stop may be removed.

It is also possible to find TDC by using the dial indicator. With the cylinder head removed from the engine, mount the indicator firmly to the head surface. The stem of the indicator should be aligned with the axis of the cylinder bore and positioned so the indicator stem will make contact with the piston about halfway before TDC.

Rotate the engine until, the piston makes contact with the indicator stem. Continue turning the crank a few degrees more until the indicator is into its operating range. Make a note of the indicator reading and mark the degree wheel in line with the pointer. Now, rotate the crankshaft in the opposite direction until the piston returns to the same reading on the indicator as before. Mark the degree wheel in line with the pointer. TDC is exactly between the two marks. Adjust the degree wheel, as explained with the piston stop method.

MOUNTING DIAL INDICATOR

Care must be exercised when mounting the dial indicator on the engine to ensure accurate and repeatable readings. A flexible indication mounting will make accurate checking impossible. Although the magnetic-type indicator mounts can be used, it is well worth the time to fabricate a rigid mount that will bolt to the cylinder head surface if future camshaft checking is contemplated.

The indicator stem must be aligned with the axis of the tappet bore as accurately as possible. Misalignment will affect the readings.

The tappet used for checking the cam must be the same type that will be used when running the engine.

If the roller tappets used in your engine are linked together in pairs to prevent rotation, be sure to install them this way when checking the cam. A mechanical tappet is normally substituted when checking a hydraulic cam.

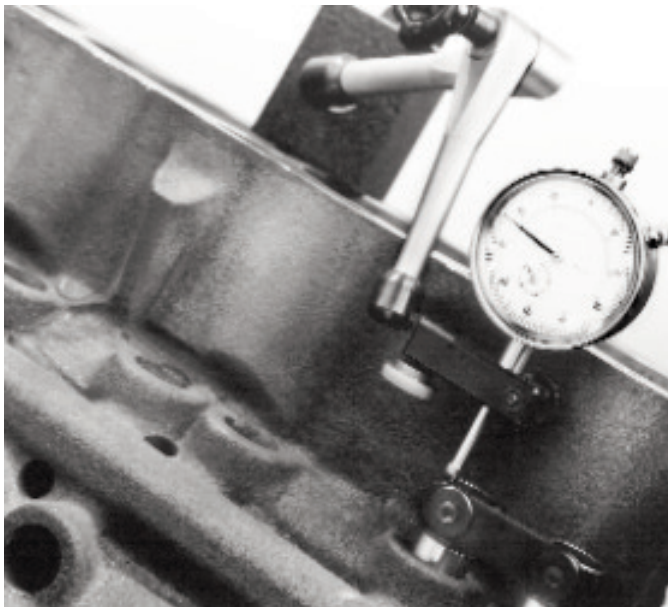
Since most indicator stems are not long enough to reach the tappet, some form of extension must be used between the tappet and the dial indicator stem. A pushrod of suitable length can be made, or an extension that presses into the tappet may be used.

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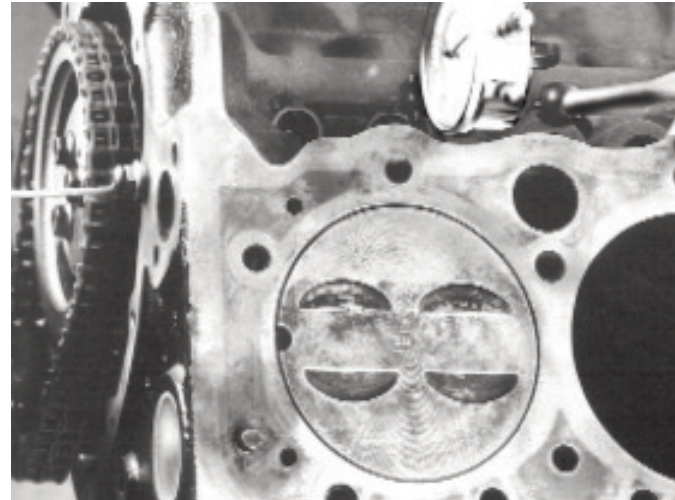


With the tappet on the heel of the cam, the dial indicator must be adjusted so that the stem is depressed at least $.020''$ /. $.030''$ into the operating range. Set the dial to zero and rotate the engine slowly for several complete revolutions in the normal direction of rotation to check out the installation. Watch for any flexing in the indicator mount. The indicator hand should return to zero each time the tappet is on the heel of the cam, and the same gross lift reading should be noted each time the tappet in on the nose of the cam. The operation of the indicator and the rotation of the engine should be smooth and easy to ensure accurate results.



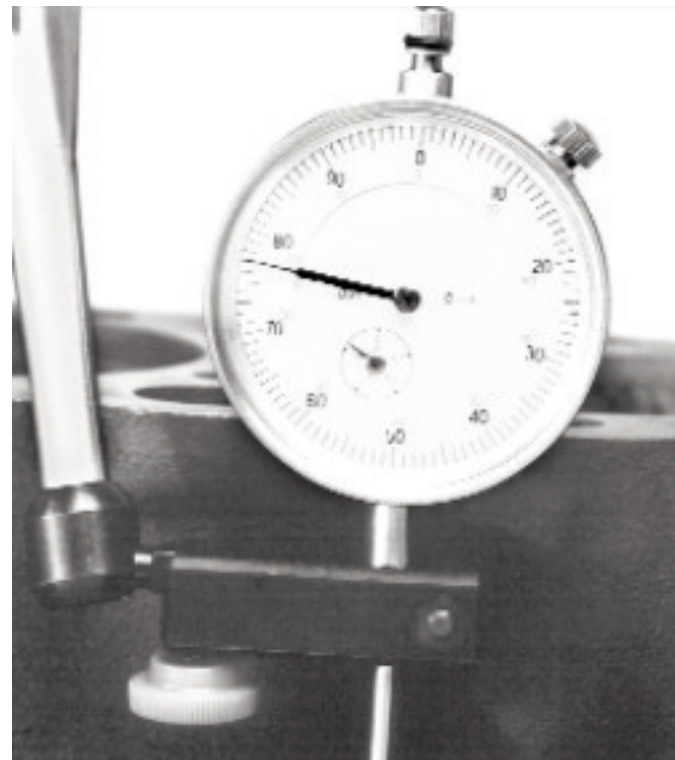
CHECKING GROSS CAM LIFT

The gross lift at the cam is easily measured by rotating the crank two full turns. Starting with the needle on zero and the tappet on the heel of the cam, the indicator will read the gross lift directly. Compare this figure with that given on page three of our timing folder. The tolerance on gross lift is plus or minus $.002''$. Small variations in gross lift between lobes are usually caused by the cam not being perfectly straight.



CHECK VALVE TIMING

Assuming the base circle and gross lift checks have been completed, the actual valve timing may now be checked against the figures given on page three of our timing folder.



If the dial indicator does not return to zero when the tappet is on the base circle, the tappet is probably sticking in the boss. This must be corrected before proceeding. Always rotate the engine in the normal direction of rotation to prevent backlash in the cam drive from affecting the figures obtained.

CHECKING BASE CIRCLE

The base circle or heel of the cam should be concentric with the axis of the camshaft. To check the base circle of a cam for runout, rotate the engine slowly with the tappet on the heel of the cam, watching the dial indicator needle for movement. Runout of $.001''$, or $.0015''$, is acceptable. If the cam has more than $.0015''$ runout, the cam is either bent or it was ground incorrectly.

If some lobes have excessive base circle runout while others are within tolerance, the cam was probably bent during shipment. If all lobes have the same runout, the master cam or the cam grinding machine is at fault. In either case, the cam should be returned to the factory for correction.

CHECKING GROSS CAM LIFT

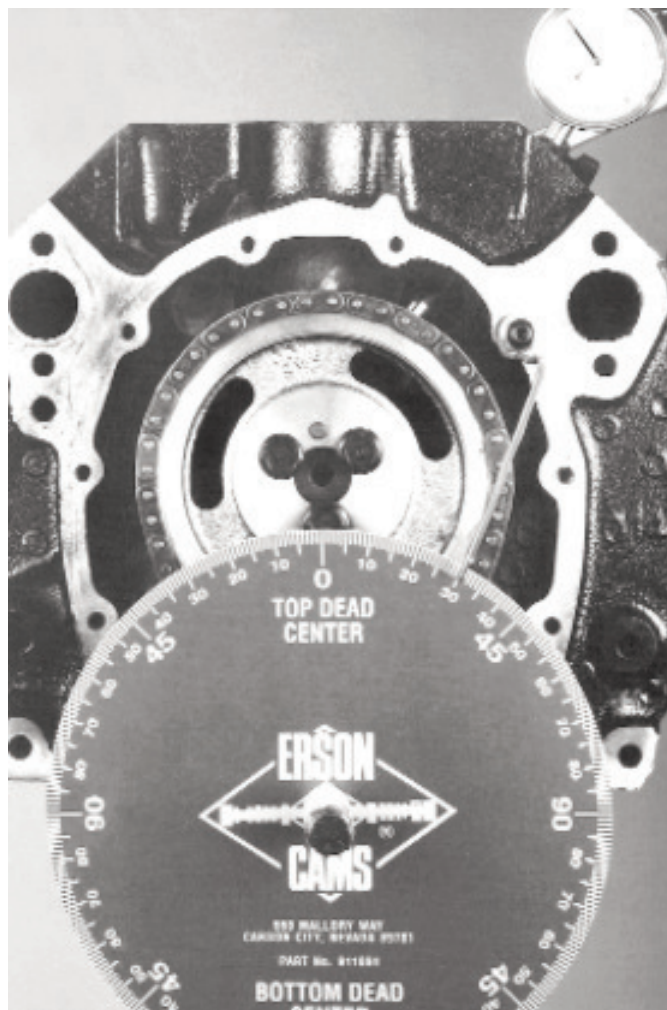
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Starting with an intake lobe, the engine should be rotated slowly until the tappet is on the heel of the cam and the dial indicator checked for zero. Continue rotating the engine in the normal direction until the indicator hand starts to move.



Carefully continue to rotate the engine in the normal direction until the indicator reads $.050''$, the specified checking point. Should the crank be turned too far and the indicator runs past the $.050''$ checking point, don't back up. Continue rotating in the normal direction and try again.

When the indicator is on $.050''$ exactly, read the degree wheel. Since intakes open before TDC, count from the pointer in a counterclockwise direction to TDC. This is the intake opening point in degrees. Continue rotating the engine in the normal direction. Watch the indicator as the tappet travels over the nose of the cam and note the gross lift. Continue to rotate the engine and stop when the indicator again shows $.050''$ off the heel. Read the degree wheel. Since intakes close after BDC, count in a clockwise direction to the BDC mark on the degree wheel. This figure is the intake closing point in degrees.

The dial indicator may now be transferred to the exhaust lobe for the same cylinder, taking care to guarantee proper installation as outlined earlier. Do not move the degree wheel in relation to the crankshaft! Rotate the engine several turns to check out the installation and proceed to check the exhaust in the same manner as described for the intake. Since the exhaust lobe opens before BDC, count the degrees in a counterclockwise direction from the pointer to BDC, mark on the degree wheel, the exhaust closes after TDC; count in a clockwise direction. When checking the cam, all data obtained should be written down immediately. Don't trust anything to memory and don't use the corner of an old envelope for your figures. On a clean sheet of paper, make a simplified timing diagram using the diagram on the timing tag as a model. Enter the figures on this diagram as they are obtained and a great deal of confusion will be eliminated.

When degreasing the cam, try to understand what is actually taking place as the engine is being rotated. By observing the components in motion, you will have a better understanding of how the engine functions and how timing affects performance.

ANALYZING THE TIMING DATA

After completing the checking procedure just described, cam data for one cylinder will be available. To be any value to the engine builder, this information must be carefully studied and evaluated.

The cam data obtained can be broken down into four categories: the amount of base circle runout, if any, measured in thousandths of an inch; the gross lift at the cam, measured in thousandths of an inch; the duration in fifty-thousandths lift off the base circle measured in crank degrees and the opening and closing points of the valves as related to TDC and BDC of piston travel measured in crank degrees.

Of these four sets of figures, the first three are determined during manufacture of the cam and the engine builder can do nothing to change them. Their value is a check of the accuracy of the camshaft only and should be compared against the data given on page three of the timing folder.

The fourth set of figures indicates the relationship between the piston and the valves and can be changed to advantage by the engine builder to extract maximum power from the engine, and to tailor the power curve to best suit the application.

Tolerance for base circle runout is $.0015''$ total indicator reading maximum. Since each Erson cam is checked for base circle runout during manufacture, any excessive runout found when checking in the engine is caused by the camshaft being bent. Unfortunately, camshafts bend rather easily in transit and when being handled. Although it is relatively easy to straighten a camshaft, it does require special tools and knowledge and is best left to the experts.

The gross lift figure is read directly off the indicator and should be accurate within plus or minus $.002''$ of the figure given on the timing tag.

If gross lift figures vary between lobes on the same shaft, it indicates the camshaft is bent. A variation between lobes within the tolerance is acceptable.

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The duration of the camshaft is arrived at by adding the opening and closing figures plus 180. The duration figures should be the same as that given on page three of the timing tag, plus or minus two degrees. As an example, if the card called for .260", any figure between 258° and 262° would be acceptable. The duration figure is affected by the lift at which the readings are taken. If a large variation in duration is found, check the indicator mounting, etc., to be sure readings are being made at exactly the designated lift.

The opening and closing points of the cam can be altered by moving the camshaft in relation to the crankshaft. Cam timing may be set straight up, advanced or retarded to suit the application. When the camshaft is moved in relation to the crankshaft, all the timing points, intake opening and closing, and exhaust opening and closing will be changed a like amount.

We feel that checking one cylinder is all that is necessary, but it is relatively easy to check the entire camshaft once the procedure and tools have been mastered.

The degree wheel should not be moved when checking other cylinders. Instead, remark the wheel temporarily with new TDC and BDC marks. On a V8 engine, two cylinders can be checked on each position.

CHECKING BY THE SPLIT OVERLAY METHOD

Since the tools necessary to check the camshaft by the method just outlined represent a sizable investment and may be out of the financial reach of the novice or casual engine builder, we will outline a simple method by which the cam-to-crank relationship can be checked quickly and accurately using simple hand tools. The only applications in which this system will not work are with dual pattern cams and 396/454 Chevrolet engines, which have different tappet boss angles for intake and exhaust.

When checking by this method, the engine must be disassembled to expose the tappets and number one piston. The stock timing chain cover with the timing tab or pointer in place should be installed and the stock crank pulley or harmonic damper should be in place.

Although we have found most stock timing marks to be accurate from the factory, the accuracy should be verified at this time. Install a piston stop as outlined earlier and rotate the engine until the piston is against the stop. Mark the crank pulley accurately in line with the zero mark on the timing tab, rotate the engine in the opposite direction until the piston is against the stop and again mark the crank pulley to the permanent timing mark. Both measurements should be the same. TDC is exactly between the two marks. If there is a variation, a new timing mark will have to be made on the crank pulley or the tab will have to be relocated.

Rotate the engine in the normal direction, stopping when the timing marks line up and the cam is in overlap position (both tappets on the flanks of the cam) on number one cylinder. Place a straight edge across the two tappets for number one cylinder and check any difference in height with feeler gauges. If both tappets are the same height or within .005",

the cam can be considered to have split overlap.

If the intake tappet is higher than the exhaust tappet, the cam is advanced. If the exhaust is higher, the cam is retarded. Although no rule can be given for the number of thousandths per degree due to the constantly varying lift rate of the cam, it is safe to use .006" per degree in most cases. As an example, if an engine was found to have .024" difference between the intake and exhaust tappets and the intake tappet was the higher of the two, it would be safe to assume that the camshaft was approximately four degrees advanced.

ALTERING CAMSHAFT-TO-CRANKSHAFT RELATIONSHIP

There are two reasons a mechanic might want to change the relationship between the camshaft and the crankshaft in an engine; to correct an error in cam timing found when checking the camshaft or to alter the performance characteristics of the engine.

Although a great deal has been written about the consequences of advancing and retarding camshafts, it can be stated very simply that advancing the camshaft raises the cylinder pressure due to the earlier closing of the valves and consequently increases the mid-range power at the expense of top end. Retarding the cam has the reverse effect and within limits, will help the top end power while hurting mid-range.

It has been found over many years of experimenting with all types of engines, that most engines perform best with the camshaft in an advanced position. Usually between 2 and 6 crank degrees advance provides the best overall performance and has been found in many applications to also help power at peak RPM and above.

Seldom is an engine found to respond satisfactorily when the camshaft is retarded. The only exception to this being certain applications where it is beneficial to lose mid-range power or when using a cam design that is not adequate for the intended application. It is relatively easy to alter the camshaft to crankshaft relationship to suit the application by using offset keys and bushings available for this purpose.

When advancing or retarding the camshaft in an effort to improve performance or to alter performance characteristics, it is important to know the actual valve timing of the engine before making the changes. To move the camshaft indiscriminately, with no knowledge of the starting point, is a waste of time and can cause serious damage to the engine.

When advancing or retarding the cam, make a significant change, enough to definitely affect performance. The initial change should be at least four crankshaft degrees. Small changes can be made later to put the cam timing right on.

An important thing to remember when altering the cam-to-crank relationship is that this also changes the piston-to-valve relationship. Whenever valve-to-piston timing is changed in an overhead valve engine, one valve or the other is moved closer to the piston and the clearance would be checked before running the engine. Also, remember that any time the camshaft timing is changed, the ignition timing is

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changed a like amount. The ignition timing must be reset whenever the camshaft is moved.

ALTERING VALVE LASH

Altering the valve lash to change engine performance characteristics is a favorite trick of many old time tuners. By increasing the clearance, valve opening is later and closing is earlier. Since duration (valve open time) is reduced, power in the low and mid-range is increased, although top end power may suffer (particularly if clearance is increased to the point where the valve is opening and closing off the ramp area of the cam). Increasing the clearance over that specified by the camshaft manufacturer should be approached with caution, particularly in high RPM applications and should be considered only as a stop-gap method of changing performance. If it is found that an engine runs much better with looser clearance, it may be possible to achieve the same results by advancing the camshaft, or it may be necessary to contact the manufacturer for a milder grind or a change in lobe center placement. The maximum amount clearance that should be increased over that specified is .004" to prevent damage to valve train.

Running with less than specified valve clearance increases the duration and in most cases, will increase top end power of the engine. In addition to the increase in duration, there may be an increase in RPM potential of the engine since the valves are opening and closing further down the ramps and valve action will be smoother. Since tightening the valve clearance cannot damage the valve train from a mechanical standpoint, it is acceptable to reduce clearance by as much as .012" on cams that have a specified running clearance of .028" or more. Of course, this might cause the exhaust valve to run off the seat on a blown or fuel burning engine which could cause damage if run for a long period of time.

LOBE CENTER LINE

Lobe center line, or lobe centers, is the number of degrees between the theoretical center line of the exhaust and intake lobe for a given cylinder, measured in camshaft degrees. On automotive applications the average lobe center is 110°, but will vary between 118° and 100° depending on the application.

The lobe center line of the American automotive camshaft is determined at the time the camshaft is ground and cannot be changed except by regrinding the camshaft.

Contrary to what some cam manufacturers say, very minor changes in lobe centers can alter the power range of an engine sufficiently to make a winner out of an also ran. Subtle changes in lobe centers are one of the top secrets of the successful cam designer.

To decrease the lobe centers of a given camshaft, the exhaust lobe would be retarded and the intake lobe advanced. This would cause the exhaust to open later and close later and the intake to open earlier and close earlier.

A camshaft with closer lobe centers will have more overlap (valves open more at TDC at start of intake stroke) and higher cylinder pressure due primarily to the earlier closing. The camshaft with the closer lobe centers will always produce more power in the mid-range than a cam using the same profile and wide lobe center, and in many applications will produce more power all throughout the range depending on many variables such as the induction system, rod angularity and flow capacity of the ports.

The full potential of lobe center changes can only be appreciated by someone who has had the opportunity to work with an engine that is equipped with a separate cam for intake and exhaust such as the Offy, Jag, four cam Ford, etc. Until a person has been able to change lobe centers at will, he cannot fully appreciate the affects on performance.

CHECKING FOR INTERFERENCE

Probably the most common cause of damage to the racing engine is interference. Although interference can be caused by a number of factors, we will concentrate on interference in the valve train that could be caused by the installation of a racing cam.

Automotive Enthusiasts have found many ways to increase the power of the Internal Combustion Engine. One very common way of increasing torque is to increase the cubic inch displacement of an engine (like they say, there is no substitute for cubic inches). This can be achieved three ways: 1) increasing the bore, 2) increasing the stroke, or 3) increasing both. With regards to having to check clearances, one often overlooked area is that of the camshaft and its proximity to the connecting rods.

When an engine is stroked, the engine builder is effectively increasing the throw of the crankshaft. This longer throw increases power, but at the same time it also increases the loads imposed on the cylinder walls. To decrease these loads, engine builders use longer than stock length connecting rods. The combination of longer than stock rods and a longer than stock stroke moves the big end of the connecting rod dangerously close, if not in contact with the camshaft - mostly rollers.

There are several ways to approach this problem. One way would be to clearance the camshaft side of the connecting rods during the balancing process. The other would be to use tapered or clearanced rod bolts-usually offered by companies such as ARP, SPX or Pioneer. However, nothing seems to work as well as having your camshaft ground with what is known as a small base circle. This takes planning and should be considered during the preliminary assembly stage. The minimum clearance between any rotating part and another is .060".

For information regarding small base circle cams, contact your camshaft manufacturer.

However, the most common area in which interference encountered when installing a hot cam is between the valves and pistons during the overlap period. This clearance should be checked after the camshaft timing has been checked and set, and should be rechecked if the cam is subsequently advanced or retarded, or if a cam with different lobe centers or duration is installed.

The best method for checking valve-to-piston clearance is with modeling clay. Stick a 1/4 inch thick strip of clay to the piston in the valve pocket area. Cover the clay with cellophane or oil the valve to prevent sticking when the valve contacts the clay. Install the cylinder head with the gasket and secure with several bolts around the cylinder being checked. Install the pushrods for this cylinder and adjust to the clearance specified on the timing tag.

Rotate the engine carefully for two full revolutions. If any resistance to rotation is felt, check to be sure the valve is not touching the piston as this could damage the valve or the valve train.

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Remove the head and section the clay with a sharp knife or razor blade in the area where the valves touched the clay. Measure the clay to determine the clearance. The minimum clearance should be .090" intake and .110" exhaust for a competition application. Clearance of .070" intake and .090" exhaust are satisfactory for the average dual purpose engine. If the clearance is less than specified, the pistons must be machined to provide increased clearance. Under no circumstances sink the valve to increase clearance as this could ruin the flow characteristics of the heads.



When checking the valve-to-piston clearance, it is also wise to check for valve-to-block interference. This can occur on some engines when valve lift is increased over stock!

Another source of interference that is sometimes encountered in Hemi or semi-Hemi engines is valve-to-valve interference, where the intake and exhaust valve collide during the overlap period. This is usually not a problem, but can occur when oversized valves are installed or camshafts with close lobe center spacing and long duration are used.

The only way to check for the condition is to install light springs on the valves for one cylinder and install the head on the block. Set valves at normal operating clearance and slowly rotate the engine. About 30° before TDC on the exhaust stroke, press the intake valve down by hand until it contacts the exhaust valve and measure the travel. Repeat every 10° until the intake valve no longer contacts the exhaust valve or about 30° after TDC. If clearance is less than .060" at any point, the valves will have to be reduced in size or the camshaft changed.

The second most common area for interference is between the valve spring retainer and the valve seals or the valve guide. Since the average valve seal is nearly 3/16" (.1875") thick, the valve guide height must be reduced by this much in most cases to provide clearance between the retainer and the seal at full lift. This is easily checked by installing the retainer that is to be used on the valve, without the springs. Depress the valve by hand to the valve lift figure given on the timing tag. At this point, there should be at least .150" clearance between the bottom of the retainer and the top of the seal. If there is not enough clearance, the seals will have to be removed and the guides machined for more clearance.

Another common cause of interference and consequent cam and valve train damage is valve spring coil bind. Coil bind is when the coils of the spring stack solid at or before full lift. The spring becomes solid and will not allow the valve to move any further. The shock and load on the valve train when coil bind occurs will demolish the cam. Coil bind cannot occur when our component parts kit is used with our cam and the springs are installed at the recommended height. Coil bind usually occurs when people attempt to assemble hybrid kits or use stock springs with high lift cams.

The best way to avoid coil bind is to use the proper springs set at the recommended height. Should it be found necessary to check for coil bind, the best method is to set the operating clearance on the valve to be checked, rotate the engine until full lift is reached and check for clearance between the coils with a feeler gauge. Be sure to check around the entire diameter of the spring, as springs usually coil bind on one side only. It may be necessary to use considerable pressure to get the gauge between the coils, since some of the coils are actually being compressed. There should be at least .050" clearance at full lift.

The only other point in the valve train liable to cause interference is the rocker arm assembly. The rocker arm and its potential problems are covered in the next section.

ROCKER ARM GEOMETRY

Rocker arm geometry on an engine must be right! If the rocker arm geometry is incorrect, the engine will be subject to constant valve train problems. Incorrect rocker arm geometry can cause premature valve guide wear, damage to the valve stem end and rocker arm, and in severe cases, failure of the cam due to loads in excess of the stress limits of the cam and tappets.

There are two types of rocker arm assemblies in common use on current American production engines: the fixed pivot (shaft type) and the moveable pivot (stud type).

Both types of rocker arm assemblies have redeeming features and potential problems and each type will be discussed individually.

The moveable pivot or ball and socket type rocker assembly is now found on the greater percentage of engines and is gaining popularity each year as new engine designs are released.

The primary advantage of the ball and socket type rocker assembly is that its geometry is self-compensating for changes in cam lift.

When the lift at the cam is increased, the base circle radius of the cam is reduced by the like amount. This reduced base circle radius lowers the tappet height when on the heel of the cam and the pushrod end of the rocker arm is lowered by a like amount. Since the pivot point of the rocker arm is not fixed and is free to move up and down the stud, the change in base circle radius is automatically compensated for in the rocker arm geometry and will keep the loading of the valve train within specified limits.

Since the geometry of the entire valve train is carefully calculated by the factory engineers at the time the engine is designed, care must be exercised that this balance is not upset when the engine is modified for high performance.

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The dimension of each component in the valve train is critical to the overall geometry. Check all dimensions starting at the base circle of the cam and including the length of the tappet, the pushrod and the valve stem height dimension. If the valves are changed or modified, it is important to retain the stock stem dimension measured from the spring seat to the tip of the valve. If a longer stem valve must be used, this must be compensated for by installing longer pushrods. In addition, any material milled off the block or head surface will tend to upset the geometry and excessive milling must be compensated for by installing shorter pushrods.

The clearance between the elongated slot in the rocker and stud must be checked on the pushrod side, with the valve closed and on the valve side with the valve fully open, whenever a cam with greater than stock lift is installed.

Interference at either end of the slot will hurt performance and can damage the camshaft and valve train. Rocker arm-to-stud clearance can be increased by grinding the ends of the slot or special accessory type rocker arms may be installed.

If lubrication is marginal or loading severe, the ball and socket type rocker arm may gall and burn. Should this happen, the rocker and ball assembly must be replaced immediately as the excessive loading on the cam may cause severe damage. Normally, the exhaust rockers are more heavily loaded than the intakes and are the first to fail. We recommend replacing a galled exhaust rocker and ball with an intake rocker and ball that is well broken in. Replace the intake rocker and ball with all new parts.

The fixed pivot or shaft type rocker arm assembly is trouble-free in most applications. Although the geometry will not be correct when large increases in lift are made, the rocker assembly is seldom so far out that any changes need be made.

Should excessive valve guide wear be experienced, it may be necessary to mill the bottom of the rocker shaft stands to correct the geometry. The amount to mill must be calculated for each application as this is determined by the change in lift over stock, the rocker arm dimensions, and the rocker arm ratio.

Care must be taken when shaft type rocker arms with adjusting screws are used with high lift cams. Any increase in lift must be compensated for by the adjustment screw and in extreme cases, the screw can become extended far beyond the original design limits. This situation not only weakens the screw but will upset the rocker arm geometry and change the rocker ratio. This condition is easily corrected by installing longer pushrods.

VALVE SPRINGS

The valve springs on a modified engine are subjected to extreme stress from high RPM operation, high valve lifts and excessive heat. Springs for this type application must be manufactured from special alloy wires such as chrome-vanadium, chrome-silicon and in extreme applications, Vasco Jet 1000 or titanium. In addition, racing valve springs must receive special treatments to prolong life, prevent breakage and loss of tension due to set. These special treatments include heat setting, shot peening, deburring and coating.

Springs for racing applications must be carefully designed to ensure that the maximum stress limits of the wire is not exceeded during operation. Springs must be designed with the highest possible natural harmonic frequency consistent with the stress limits of the wire and the dimensional limits imposed by the particular application. Since it is seldom possible to raise the natural harmonic frequency of the spring high enough to eliminate harmonics during operation without overstressing the wire, flat counter wound dampers or inner and outer springs with an interference fit are used to reduce the amplitude and duration of spring harmonics that may occur.

There are two basic types of valve springs in common use for racing applications: the constant rate spring, which has symmetrical coil spacing and will increase in pressure at a given rate throughout its entire travel; and the variable rate spring that has progressively closer spaced coils at one end and will increase in pressure progressively (the rate increasing as the spring is compressed). Both designs are sound and can be adapted to most applications.

CHECKING VALVE SPRINGS

If a spring checker is available, the valve springs can be checked against our specifications before installation. Springs should be checked at the installed (valve seated) dimension and at compressed (valve open) dimension. When dual springs are used, the pressure of the inner and outer should be added together at the seated and open dimension to get the actual spring pressure at the valve. Remember the dimension of the inner spring is normally 1/8" (.125") less than the outer, due to the ledge on most retainers.

The manufacturing tolerance on valve springs is plus or minus 7% of the load. Assuming a designed seated pressure of 100 pounds, a spring could vary between 92 to 107 pounds at the same dimension, and be within tolerance. The variation in open pressure, of course, could be much greater. When a dual spring combination is used the tolerance of the outer and inner must be added together and the total variation could be significant. It is recommended that when using dual springs, low limit inners be mated with high limit outers and vice versa to make the pressures as uniform as possible.

If a set of new springs all read high or low, the problem may be the spring checker. First, make sure that the dial is calibrated to zero. If this checks OK, a laboratory standard spring will have to be used to calibrate the machine.

Since valve spring pressure, particularly the valve open pressure, has a definite effect on the RPM potential of an engine, spring pressure should be rechecked periodically as all valve springs take a certain amount of set as they are used. The amount of set a spring takes, and how quickly it takes the set, is determined by a number of factors, including the type of wire, the spring design, RPM during use, heat encountered by the spring during operation and whether or not the valves are floated during operation. Springs that have lost twenty-five pounds or more should be shimmed back to standard if this can be done without getting dangerously close to coil bind. If shimming to standard would require more than .060" of shims, the spring is used up and should be replaced.

Technical Information

A COMMON SENSE APPROACH TO MAXIMUM CAM PERFORMANCE AND SATISFACTION



INSTALLING SPRINGS WITH HEADS INSTALLED

Valve springs can be installed with the heads on the engine.

About eighty percent of the springs we sell can be installed on the head without any special machine work and will accommodate the standard valve seal. On these applications, racing springs can be installed with the heads on the engine.

Although some time may be saved by installing the springs without removing the heads, it should be determined before proceeding that the valve seats and guides are in satisfactory condition. If the heads are in need of a valve job, now is the time to do it.



There are a number of satisfactory tools on the market that will allow the springs to be removed while the heads are on the engine. Fittings that screw into the spark plug hole and accept a high pressure air line are available and should be used to prevent valves from dropping into the cylinder.

When working the heads on the engine, it is best to do one cylinder at a time. Rotate the engine until the piston is at TDC install the air fitting in the plug hole and attach to shop air supply. With the special tool, remove stock intake and exhaust springs and retainers. Check the condition of the valve seals and replace if necessary. Install one of the new retainers on the valve and pull up firmly, measure from the bottom of the retainer to the valve spring seat on the head with a machinist scale. This is the valve spring installed height. If the dimension is greater than what is called for, figure how many shims are required to correct the dimension. When the dimension is correct, install the spring and proceed with the other valve on this cylinder. Follow the same procedure for all cylinders.

INSTALLING SPRINGS WITH HEADS REMOVED

When installing valve springs with the heads removed from the engine, it should first be determined if work needs to be done to the valve seats or guides. We feel it is desirable to do a competition valve job at this time and strongly recommend knurling the valve guides at the same time. We have found knurled guides hold up better and longer than standard and have better oil control.

If the installation requires machining for large diameter, dual springs, or special valve seals, this should be done before other work.

When all machine work on the heads is complete, the valves may be installed. If valve stem seals have been installed, check to be sure they will not hit the retainers at full lift, as outlined in the section on interference. Install the retainer to be used on the first valve and pull up firmly to simulate an installed condition. Measure from the underside of retainers (area where outer spring will seat) to spring seat on cylinder head. Compute the number of shims required, if any, to correct the spring dimension. Install shims against the head and recheck the dimension.

We strongly recommend our heat-treated heavy duty valve locks for all racing applications. These locks are the strongest available, are moderately priced and will prevent costly damage to the engine by eliminating any chance of valve locks pulling off the stem at high RPM.

IN CONCLUSION

The foregoing should answer most questions regarding cam selection, installation and checking procedure. Should any questions arise that are not covered by this text, feel free to call or write our technical department at any time. It is our continuing policy to keep current on the hot tips and to pass this information on to our customers when requested. Erson Technical Department 775-246-4062.



FSP Valve Springs



Erson's Professional FSP Damperless Valve Springs



have set the standard in the performance spring market. Professional engine builders count on the FSP valve spring's engineering for maximum performance and durability that heightens valve train stability. All springs are heat-set @300°F, for more consistent loads and less load loss. Each set of 16 is quality-inspected, matched and tested to out-perform any other steel valve spring in the industry.

FSP Valve Springs are used by professional racers in all venues from Sportsman to NHRA Pro Classes. Longer life, more laps, **BEST VALUE!**

- Specially Formed Structural Process provides highest levels of performance and durability to date by any steel spring
- Designed for the professional and sportsman racer--oval track, endurance and drag racing
- Independently tested to outperform any other steel spring on the market, i.e. less load loss, less height loss, more cycles
- Every spring is individually tested, documented and set matched 100% (no exceptions) FSP Springs provide longer life for maximum economy and value
- FSP Springs use super-clean, ultra-strong, specially blended steel alloy of the highest quality available in the world



Tony Pedregon used Erson E915050 valve springs to power the Quakerstate AA/Fuel Funnycar to the 2007 World Championship.



FSP PROFESSIONAL RACING



•Oval Track •Endurance Racing •Drag Racing

PART#	O.D.	I.D.	SEAT PRESSURE	OPEN PRESSURE	COIL BIND	SPRING RATE	MAX LIFT
E915042-Ideal for small block Chevy high-lift, high RPM oval track/drag race applications.							
E915042-DUAL	1.580	.828	249#@2.050	650#@1.270	1.200	514	.800
E915043-Designed for use in the demanding oval track market using roller tappet camshafts or where the increased spring pressure is required for maximum performance.							
E915043-DUAL	1.580	.832	235#@1.950	610#@1.250	1.170	536	.730
E915044-Similar to the E915043 as shown above, this spring is designed for use where a slightly taller assembled height is available and a slightly higher spring rate.							
E915044-DUAL	1.610	.842	235#@2.050	645#@1.300	1.220	547	.780
E915047-Drag race high-lift, high-load application with shorter installed height							
E915047-TRIPLE	1.675	.874	315#@2.050	900#@1.270	1.200	753	.780
E915046-Targeted primarily for classes that require stock size and configuration valve springs, the 1.750" installed height allows for .600" + lift with a hydraulic or mechanical flat tappet camshaft.							
E915046-SINGLE	1.255	.830	115#@1.750	350#@1.175	1.100	409	.600
E915045-LS1 high-lift Hydraulic Roller							
E915045-DUAL	1.290	.945	155#@1.810	405#@1.150	1.100	378	.660

Professional Drag Racing

PART#	O.D.	I.D.	SEAT PRESSURE	OPEN PRESSURE	COIL BIND	SPRING RATE	MAX LIFT
E915160-Designed for use in serious bracket class applications using normally aspirated engines, these springs will allow the racer to have the consistency required to win round after round.							
E915160-DUAL	1.640	.860	250#@2.000	803#@1.150	1.070	650	.880
E915170-Similar to the 915160, except with a slightly taller installed height and increased seat pressure, yet nearly identical open pressure.							
E915170-DUAL	1.640	.860	280#@2.100	794#@1.250	1.150	605	.900
E915048-Primarily for supercharged alcohol and fuel use, these springs deliver the open pressures required to maintain valve train stability, RPM and long spring life. The springs are also an excellent choice for Pro Stock Truck, Competition Eliminator and Pro Mod engine applications.							
E915048-TRIPLE	1.677	.635	346#@2.100	1014#@1.200	1.142	742	.900
E915049-Use like the E915048 as shown above, except for applications where a taller assembled height and increased overall travel is desired, such as in Pro Stock.							
E915049-TRIPLE	1.677	.632	346#@2.200	1073#@1.200	1.142	728	1.005
E915050-Use for supercharged alcohol and fuel use like the E915048 as shown above, also great for Blown Alcohol applications. This is the ultra-version heat-treated valve spring.							
E915050-TRIPLE	1.667	.632	375#@2.200	1145#@1.200	1.142	770	1.005
E915055-Similar to the E915049 as shown above, designed for 1/4 mile Drag Race applications where longer valves are used.							
E915055-TRIPLE	1.667	.635	415#@2.300	1215#@1.250	1.180	765	1.070

CYLOY EXTREME DUTY ROLLER SPRINGS

Race Proven Time Tested

- Delivers consistent spring pressure beyond any normal spring
- Manufactured from high tech alloy with high metallurgical content
- CST process removes surface imperfections that create stress risers
- Reduced friction in inner & outer springs creates even transition within seat & max life pressure
- CST process improves the life of Cyloy springs with consistent spring pressures



Part#	Description	Seat Pressure	Open Pressure	Coil Bind	Max Lift	Retainer
3840	Dual w/damper 1.550	210#@1.900	660#@1.200	1.100	.700	502*/502S/504S/507/507S/508*/VTR741
3850	Dual w/damper 1.550	220#@1.950	580#@1.230	1.190	.720	502*/502S/504S/507/507S/508*/VTR741
3860	Dual w/damper 1.560	240#@2.000	600#@1.250	1.190	.750	502*/502S/504S/507/507S/508*/VTR741
3870	Dual w/damper 1.625	235#@2.000	650#@1.250	1.150	.780	504S/507/507S/510*/VTR741
3875	Dual w/damper 1.550	240#@2.100	710#@1.400	1.350	.700	507/507S/508*/VTR741
3900	Triple spr assy 1.630	340#@2.100	850#@1.300	1.210	.800	509*

ROLLER VALVE SPRINGS



- Made from the highest quality alloys
- “Custom Wound” springs are engineered to endure stresses of high performance engines
- Each set is matched for load consistency, a variance of + or - 10% is acceptable
- Thousands of Engine Builders have come to rely on PBM Valve Springs

Part#	Description	Seat Pressure	Open Pressure	Coil Bind	Max Lift	Retainer
3600	Dual w/damper 1.540	190#@1.900	450#@1.300	1.200	.660	502/502S/504S/507/507S/508*/VTR741

* Titanium

Valve Springs



- Made from the highest quality alloys
- "Custom Wound" springs are engineered to endure stresses of high performance engines
- Each set is matched for load consistency, a variance of + or - 10% is acceptable
- Thousands of Engine Builders have come to rely on PBM Valve Springs



HYDRAULIC SPRINGS

Part#	Description	Seat Pressure	Open Pressure	Coil Bind	Max Lift	Retainer
3000	Single w/damper	1.250	110#@1.700	300#@1.250	1.160	.500 lift 501/501S/500
3050	Dual w/damper	1.510	120#@1.880	320#@1.280	1.200	.600 lift 502/504S/507/511*
3100	Single w/damper	1.460	110#@1.800	275#@1.250	1.150	.550 lift 502/502S/504S 506/511*
3150	Single w/damper	1.440	100#@1.530	250#@1.030	.925	.500 lift 502/502S/504S 506/511*
3175	Single w/damper	1.440	110#@1.680	280#@1.180	1.125	.510 lift 502/502S/506/511*
3200	Single w/damper	1.260	110#@1.800	310#@1.200	1.160	.600 lift 501/501S/500
3300	Single w/damper	1.440	110#@1.750	215#@1.250	1.086	.600 lift 502/502S/504S 506/511*
3325	Single w/damper	1.480	110#@1.800	280#@1.250	1.160	.550 lift 502/502S/504S 506/511*

MECHANICAL SPRINGS

Part#	Description	Seat Pressure	Open Pressure	Coil Bind	Max Lift	Retainer
3200	Single w/damper	1.260	135#@1.750	310#@1.200	1.160	.550 lift 501/501S/500
3400	Dual w/damper	1.440	135#@1.800	320#@1.200	1.125	.600 lift 502/502S/504S/ 506/511*
3051	Dual w/damper	1.510	140#@1.800	320#@1.250	1.200	.550 lift 502/504S/507/511*
3425	Dual w/damper	1.460	140#@1.900	380#@1.250	1.150	.650 lift 502/502S/504S/ 506/511*
3450	Dual w/damper	1.460	145#@1.850	380#@1.250	1.150	.650 lift 502/502S/504S/ 506/511*
3500	Single w/damper	1.540	145#@1.900	308#@1.300	1.200	.600 lift 502/502S/504S/507/ 507S/508/VTR741

CONICAL OVAL WIRE SPRINGS



Absolute BEST valve spring for the LS1 engine or SB Chevrolet.

- Conical design oval wire valve spring will fit factory retainer
- Design delivers superior dampening
- Oval wire design allows higher valve lift and increased seat and nose pressures
- Ideal for hydraulic roller cam applications

Part#	Description	Installed Pressure	Open Pressure	Coil Bind	Max Lift	Retainer
3250	Conical wire beehive	110#@1.750	270#@1.200	1.050	.600	512/513

Spring Terminology



•SPRING TERMINOLOGY--	O.D. - Outside Diameter I.D. - Inside Diameter F.L. - Free Length - Overall length of a spring not under load
•TOTAL COILS--	Number of coils in a given spring
•V/C - VALVE CLOSED--	Installed length of a valve spring
•V/O - VALVE OPEN--	Length of a valve spring at full valve lift
•DEFLECTION--	Travel from free length to a given length
•SOLID HEIGHT--	Length of a spring where all coils are compressed and touching
•RATE PER INCH--	Amount of pressure required to compress a spring one inch

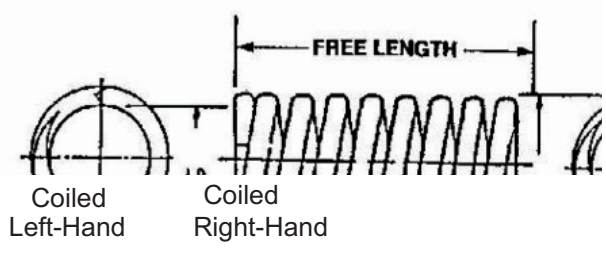
'How to Identify' _____

- **SPRING TERMINOLOGY**O.D. – Outside Diameter
I.D. – Inside Diameter
F.L. – Free Length - Over
- **TOTAL COILS**Number of coils in a given

•DIRECTION OF WIND-- Direction of coils - Left Hand or Right Hand

Direction of Coiling Helical Compression Springs

- **SOLID HEIGHT**Length of a spring where a
- **RATE PER INCH**Amount of pressure require



Spring Terminology



By knowing the rate per inch and the free length of a given spring, the valve closed and valve open loads can be figured based on the information furnished by the customer.

The customer must furnish the installed height of the valve spring (Valve closed) and the lift of the valve (Valve open).

EXAMPLE: Customer has advised that the valve spring will be installed at 1.800 (V/C) and the cam lift is .500 or 1.300 (V/O). The spring we have identified is 2.250 F.L. and has a rate of 200#.

Loads would be figured as follows:

2.250 F.L.	2.250 F.L.
<u>-1.800</u> V/C	<u>-1.300</u> V/O
.450 Deflection	.950 Deflection
<u>x 200#</u> Rate	<u>x 200#</u> Rate
90# V/C Load	190# V/O Load

Rates are figured on each spring. If the spring is a combination of an inner and outer, the V/C and V/O loads would be figured on each spring and then added together. When doing this, it must be remembered to allow for the step height of the retainer that the inner spring sits on.

Spring Terminology



IMPORTANT!

PLEASE READ

- SPECIFICATIONS ARE FOR REFERENCE ONLY
- NUMBER OF COILS AND FREE LENGTH MAY VARY DURING MANUFACTURING TO OBTAIN SPECIFIED LOADS
- SOME SPRINGS LISTED ARE AVAILABLE BY SPECIAL ORDER ONLY
- CONTACT THE PBM-ERSON TECHNICAL DEPARTMENT FOR EXACT SPECIFICATION INFORMATION AND AVAILABILITY BEFORE ORDERING



The information contained here-in has been compiled to assist in the identification and design of performance valve springs. While the specifications listed are for performance valve springs, this same information can be applied to any other compression spring-valve spring, clutch spring, etc.

Performance springs are sold by dimensions only. There are listings for domestic and import engines as well as motorcycles. In some cases the same spring is used for a domestic, import and motorcycle applications. Therefore specific applications can not be listed.

Test heights listed in the spring specification are for manufacturing and testing purposes. In most instances they are not the valve open or valve closed heights.

Springs are listed by PBM-Erson Part Number and also by ascending wire size to assist in identifying springs by physical dimensions. The easiest way to identify a part is to determine the wire size, go to that section and attempt to match the other dimension known - O.D., I.D., F.L., coils and direction of wind.

WARRANTY DISCLAIMER

The products listed in this catalog are sold without any express or implied warranty of merchantability or fitness for a particular purpose. PBM-Erson disclaims liability for any special, incidental or consequential damages, including, but not limited to, lost profits or revenues, the cost of purchases or replacement goods, damaged or lost property or equipment, or claims by the customer of the purchaser, which may arise and/or result from the sale, installation or use of these products.

The vehicle manufacturer's warranty may be negatively impacted by the installation of these products.

This warranty disclaimer is subject to applicable state law.

Retainers



TITANIUM VALVE SPRING RETAINERS

Designed for all out Professional Drag Racing and other severe duty applications, PBM Titanium Retainers are made from aircraft-certified, 6AL-V4 grade, bar stock. The tremendous high-temperature strength and ductility of this material makes it ideal for these types of applications. PBM's Titanium Retainers will lower effective retainer mass approximately 40% compared to steel retainers- with no loss of dependability.

NOTE: Titanium retainers are designed for exclusive use with our 10° valve locks. They are not compatible with standard locks.

TITANIUM 7° RETAINERS

Part#	Description	Spring Type	Stem Size	Install Height	Lock Degree	Fits PBM/Erson Spring
500	Titanium 1.250 OD	Single	11/32	+.050	7 degree	3000-3200
512*	Titanium .935 OD	Single	5/16 or 8MM	Std	7 degree	3250
514*	Titanium 1.155 OD .674 ID	Dual	5/16 or 8MM	+.050	7 degree	4125-E915045

*LS1 (Use PBM200 locks with these part numbers)

TITANIUM 10° RETAINERS

Part#	Description	Spring Type	Stem Size	Install Height	Lock Degree	Fits PBM/Erson Spring
508	Titanium 1.55-1.630 OD	Dual	Any stem size	+.150	10 degree	3500, 3600, 3800, 3840, 3850, 3860, 3875
509	Titanium 1.55-1.630 OD	Triple	Any	+.095	10 degree	3900, E915048, E915049, E915050, E915055
510	Titanium 1.55-1.630 OD	Dual	Any	+.095	10 degree	3870
511	Titanium 1.430-1.500 OD	Dual/Triple	Any	+.110	10 degree	3050, 3100, 3150, 3175, 3300, 3325, 3400, 3425, 3450
516	Titanium 1.500"x1.175"x.850"	Dual	Any	+.100	10 degree	4300, E915160, E915170
517	Titanium 1.500"x1.150"x.825"	Dual	Any	+.100	10 degree	4150, E915043, E915044, 4200, E915042

SUPER 7° TITANIUM RETAINERS

Part#	Description	Spring Type	Stem Size	Install Height	Lock Degree	Fits PBM/Erson Spring
VTR741	Super 7° Titanium Pro Series 1.500"x1.120"x.730"	Dual	11/32	+.050	Super 7 degree	3840, 3850, 3860, 3870, 3875, 3600, 3500, 3800
VTR743	Super 7° Titanium Pro Series 1.500"x1.140"x.815"	Dual	11/32	+.050	Super 7 degree	4150, E915043
VTR747	Super 7° Titanium Pro Series 1.500"x1.160"x.835"	Dual	11/32	+.050	Super 7 degree	E915043, E915044, E915160, E915042, E915170



CHROME-MOLY VALVE SPRING RETAINERS

These retainers are machined from aircraft-quality, chrome-moly, alloy-steel that far exceeds the industry standards for steel retainers. All retainers are heat-treated to 46-50 “Rockwell-C”, then tumbled and finished with black-oxide to prevent rust. PBM Chrome-Moly Retainers, deliver incredible strength, with just slightly more weight than more expensive titanium retainers. Chrome-moly retainers are designed for Street, Off-Road and all but the most severe racing applications. They are ideal for Oval-Track racing.

CHROME -MOLY 7° RETAINERS

Part#	Description	Spring Type	Stem Size	Install Height	Lock Degree	Fits PBM/Erson Spring
501S	Steel 1.250 OD (stamped)	Single	11/32	Std	7 degree	3000-3200-E915045
501	Chrome moly 1.250 OD	Single	11/32	Std	7 degree	3000-3200-E915045
502	Chrome moly 1.43-1.550 OD	Single/Dual	11/32	+ .100	7 degree	3050-3100-3150-3175-3200-3300-3325-3400-3425-3450-3500-3600-3800-3840-3850-3860
502S	Chrome moly 1.43-1.550 OD	Single/Dual	11/32	Std	7 degree	3050-3100-3150-3175-3200-3325-3400-3425-3450-3500-3600-3800-3840-3850-3860
504S	Chrome moly 1.43-1.550 OD	Dual	3/8	Std	7 degree	3050-3100-3150-3300-3325-3400-3425-3450-3500-3600-3800-3840-3850-3860-3870
505P	Chrome moly 1.54-1.630 OD	Dual/Triple	3/8	+ .150	7 degree	3500-3600-3800-3840-3850-3860-3870-3875
513*	Steel .935 OD	Single	5/16 or 8mm	Std	7 degree	3250

*LS1 (Use PBM200 locks with these part numbers)

CHROME -MOLY 10° RETAINERS

Part#	Description	Spring Type	Stem Size	Install Height	Lock Degree	Fits PBM/Erson Spring
506	Chrome moly 1.437-1.55 OD	Dual	Any	Std	10 degree	3100-3150-3175-3300-3325-3400-3425-3450
507	Chrome moly 1.55-1.630 OD	Dual	Any stem size	+ .100	10 degree	3050-3500-3600-3800-3840-3850-3860-3870-3875
507S	Chrome moly 1.55-1.630 OD	Dual	Any	Std	10 degree	3500-3600-3800-3840-3850-3860-3870-3875
519	Chrome moly 1.240 OD	Single	Any stem size	Std	10 degree	E915046

Valve Locks



SUPER 7° VALVE LOCKS

- Bead lock groove design offers superior strength over square lock
- Outside angle provides precision locking that is identical from side-to-side
- Heat-treated and black-oxidized 4130 Chrome-Moly bar stock
- Available in Lightweight Titanium

TITANIUM VALVE LOCKS

Part#	Description
VL7000-8	5/16 - Radius groove- +.050 1/2 set
VL7001-8	5/16 - Radius groove - 1/2 set
VL7002	11/32 - Radius groove
VL7002-8	11/32 - Radius groove - 1/2 set
VL7003	11/32 - Radius groove - +.050
VL7003-8	11/32 - Radius groove - +.050 - 1/2 set

STEEL VALVE LOCKS

Part#	Description
VL7005-8	5/16 - Radius groove- +.050 1/2 set
VL7006-8	5/16 - Radius groove - 1/2 set
VL7007-8	5/16 - Conventional groove - 1/2 set
VL7008	11/32 - Radius groove
VL7008-8	11/32 - Radius groove - 1/2 set
VL7009	11/32 - Radius groove - +.050
VL7009-8	11/32 - Radius groove - +.050 1/2 set
VL7010	11/32 - Conventional groove
VL7010-8	11/32 - Conventional groove - 1/2 set
VL7011	11/32 - Conventional groove - +.050

All will accept lash caps.



VALVE LOCKS

PBM Machined Valve Locks are formed from alloy-steel and heat-treated for maximum strength and durability, these locks are 3-times stronger than Original-Equipment Valve Locks. Our machined locks are economical and are recommended for moderate competition applications without ultra-high spring pressures and minimal valve float.

Our high-strength, 4130 Valve Locks are designed for serious competition, high-spring loads, and applications where valve-float cannot be avoided. These valve locks are precision machined from chrome-moly bar stock and heat-treated to 38-42 "Rockwell-C", then plated for identification. Use these locks with steel or titanium retainers only.

10° VALVE LOCKS

Part#	Description	Stem Size	Bead Location
203	Machined	11/32	Conventional groove stock
203+50	Machined	11/32	Conventional groove +.050
203-50	Machined	11/32	Square groove -.050
204	Machined	3/8	Conventional groove stock
VL7013	Machined	5/16	Radius groove stock
VL7013-8	Machined	5/16	Radius groove 1/2 set stock
VL7014	Machined	5/16	Radius groove +.050
VL7014-8	Machined	5/16	Radius groove 1/2 set +.050
VL7015	Machined	11/32	Radius groove stock
VL7015-8	Machined	11/32	Radius groove 1/2 set stock
VL7016	Machined	11/32	Radius groove +.050
VL7016-8	Machined	11/32	Radius groove 1/2 set +.050

7° VALVE LOCKS

Part#	Description	Stem Size	Bead Location
201	Machined	11/32	stock
202	Machined	3/8	stock
205	Stamped	11/32	stock
205+50	Stamped	11/32	+.050
205-30	Stamped	11/32	-.030
205-60	Stamped	11/32	-.060
206	Stamped	3/8	stock
206+50	Stamped	3/8	+.050
206-30	Stamped	3/8	-.030
206-60	Stamped	3/8	-.060
207-30	Stamped	5/16	-.030
207-60	Stamped	5/16	-.060

VALVE LOCKS-BULK

Part#	Description	Stem Size	Bead Location
205-100	Stamped	11/32	stock
205-30-100*	Stamped	11/32	-.030
205-60-100*	Stamped	11/32	-.060
206-30-100*	Stamped	3/8	-.030
206-60-100*	Stamped	3/8	-.060

All will accept lash caps.



PROFESSIONAL SERIES ES ULTRA ROLLER LIFTERS



- Pressurized Oil Circuit Lubricates Roller, Axle & Bearings
- Body Diameters available .842, .875, .903, .936
- Hardened Pushrod Seat
- Optional Nose Roller sizes available .750, .810, .850
- Precision machined from exotic alloys
- Delivers over twice the cycle life of conventional lifters
- Superior finish on all bodies

SMALL BLOCK CHEVROLET-TIE-BAR PRESSURE OILING

Part#	Description	Wheel Dia	Body Dia
RL953	Std on center	.750	.842
RL981	+.300 on center	.750	.842
RL956	+.300 .180 offset	.750	.842
RL983	+.300 .200 offset	.810	.903

BIG BLOCK CHEVROLET-TIE-BAR PRESSURE OILING

Part#	Description	Wheel Dia	Body Dia
RL982	+.300 on center	.750	.842
RL985	+.300 .180 offset	.750	.842
RL987	+.300 on center	.810	.903
RL988	+.300 - .200 offset	.810	.903

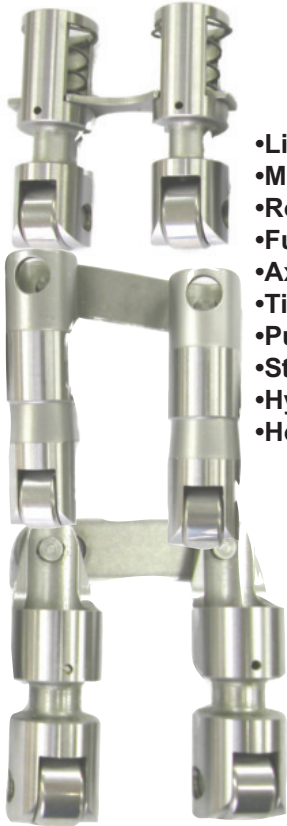
All PBM Roller Lifters are rebuildable.

HYDRAULIC ROLLER LIFTERS STREET SERIES



- Ideal for Street Use
- Precision formed bodies
- Bodies are carbonitrided and tempered
- Roller wheel is steel alloy hardened
- Roller pin staked in place & made of steel alloy
- Stainless steel & heat-treated for tie-bar durability
- Tie-bar button Hi-Alloy steel for durability

Part#	Description	Wheel Diameter	Body Diameter
SL929	SBC Hydraulic Non-Retro-Fit	.700	.842
SL930	SBC Hydraulic Retro-Fit	.700	.842
SL931	BBC Hydraulic Retro-Fit	.700	.842
SL963	FE and 460 Ford	.700	.875
SL973	LS1 Hydraulic Retro-Fit	.700	.842
SL975	348-409 chevy	.700	.842
SL995	Cadillac	.700	.842



PRO RACE SERIES

- Lifter body manufactured from billet alloy steel
- Machined to exact tolerances heat-treated for unparalleled wear resistance
- Roller wheel manufactured high strength alloy .750" diameter for correct cam geometry
- Full .360° wide contact area on camshaft
- Axle through heat-treated steel *the strongest in the business*
- Tie-bar heat-treated stainless steel
- Pushrod seat counterbored for min weight & max contact area
- Steel buttons with precision formed alloy steel for permanent attachment
- Hydraulic roller Eaton-style oil metering design for precision oil control
- Horizontal tie-bar designed to make camshaft change w/out manifold removal

SB CHEVROLET-Solid Roller

Part#	Description	Wheel Diameter	Body Diameter
RL940	Horizontal tie-bar	.750	.842
RL955	.300 tall bowtie vertical tie-bar	.750	.842
RL920	.300 tall with right .180 offset	.750	.842

SB CHEVROLET-Hydraulic Roller

RL930	Vertical tie-bar	.750	.842
RL934	Vertical tie-bar Hi. RPM	.750	.842

LS1-Roller Lifters

RL970	High lift Hydraulic roller	.750	.842
RL971	Solid roller high lift	.750	.842
RL972	Solid roller vertical tiebar	.750	.842
RL973	Hydraulic roller vertical tiebar	.750	.842
RL974	Hydraulic Roller vertical hi. RPM.	.750	.842

BB CHEVROLET-Solid Roller

RL951	Vertical tie-bar	.750	.842
RL941	Horizontal tie-bar	.750	.842
RL925	.300 tall vertical tie-bar	.750	.842
RL927	.300 tall .180 offset	.750	.842

BB CHEVROLET-Hydraulic

RL931	Vertical tie-bar	.750	.842
RL932	Hydraulic on center <i>HI RPM</i>	.750	.842
RL986	Hydraulic Gen VI Dogbone	.750	.842

SB Ford Windsor, 260-302-351 CID

RL960	Solid roller vertical tie-bar	.750	.875
RL962	Hydraulic roller vertical tie-bar	.750	.875

Ford FE-302-390-410-428 CID

RL958	Solid roller vertical tie-bar	.750	.875
RL963	Hydraulic roller vertical tie-bar	.750	.875

Ford Big Block-429-460 CID

RL957	Solid roller vertical tie-bar	.750	.875
RL963	Hydraulic roller vertical tie-bar	.750	.875

Chrysler-318-340-360 CID

RL965	Solid roller vertical tie-bar	.750	.903
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Chrysler-B Engine and Hemi

RL968	Solid roller vertical tie-bar	.750	.903
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Solid Flat Tappet Lifters



Highest Quality Slipper Crown Flat Tappet Lifters On the Market!

PRO-DUTY



- All new design for racing applications requiring solid flat tappet lifters
- Forged lifter body manufactured to much tighter tolerances for consistent diameter and proper radius on lifter crown
- Body and lifter face have a superior finish for optimum lifter performance
- Hard face bottom with precision crown with .012 oil hole for additional oil supply

Part#	Description
ML535	V8 with .842 dia w/.012 oil hole in tappet face
ML536	V8 with .842 dia no oil hole
ML657	V8 .875 dia with .012 oil hole in tappet face
ML752	V8 .903 dia with .012 oil hole in tappet face



Lifter Application Guide



PART#	APPLICATION	CYL	CID	YEAR	TYPE
HA817	GM	4	153	70-62	HYD
		6	140-145-164-200-215-229-260-262-268	86-60	HYD
		8	ALL EXC DIESEL & '80 4.9L	86-55	HYD
		8	267-305-307-348-350-366-409-427-454 EXC ROLLER & DIESEL	95-60	HYD
HA900	FORD	4	140-153-HSC	94-79	HYD
		6	182-231-240-300	84-65	HYD
		8	221-255-260-289-302-351-370-400-429-460	94-62	HYD
HA951	GM	4	195	63-61	HYD
		8	260-307-316-326-330-336-347-348-350- 389-400-403-421-455	84-55	HYD
HA969	AMC	4	151	83-80	HYD
		8	350	71-70	HYD
	GM	4	112-121-140-151-153	94-62	HYD
		6	184-194-196-230-231-250-252-292- BRAZIL 4.6L	90-62	HYD
HA2011	AMC	4	150	88-83	HYD
		6	196-199-232-258	88-61	HYD
		8	350	ALL	HYD
	CHRYSLER	4	150-151	00-82	HYD
		6	232-242-258	00-65	HYD
		8	239-273-304-318-327-340-360-401	89-65	HYD
	NAVISTAR/I.H.C.	6	232-258	75-70	HYD
		8	404-446	82-72	HYD
HA2012	FORD	4	122-140	94-74	HYD
	MAZDA	4	2.3L	96-94	HYD
HA2079	GM	4	151-ROLLER	93-85	ROLLER
		6	204-231-262	00-86	ROLLER
		8	249-265-275-300-305-350	00-87	ROLLER
HA2083	FORD	6	144-170-179-200-250	92-63	HYD
		6	GREAT BRITAN	87	HYD
		8	330-332-341-352-359-360-361-389-390- 391-410-427-428-429-430-462	78-55	HYD
HA2095	AMC	6	173	87-84	HYD
	GM	6	173-189	93-80	HYD
HA2205	FORD	6	182-231	00-89	ROLLER
		8	302-351	00-85	ROLLER
	MAZDA	8	3.0L	96-94	ROLLER
MA872	FORD	6	144-159-170-171	92-60	MECH
		8	279-302-317-332-352-390-401-406-427- 428-475-477-534	81-52	MECH
MA914	FORD	8	260-289-302-351C-400-429 HI-PERF	94-62	MECH
MA992	GM	4	153	70-62	MECH
		6	140-145-164-194-200-229-230-250-292	84-60	MECH
		8	283-301-302-305-307-326-327-348-350- 370-389-400-402-421-427-454-455	88-55	MECH
MA2084	CHRYSLER	6	170-198-225	87-60	MECH
		8	250-273-318-340-360-361-383-400-413- 426-440	89-57	MECH

Pushrods



PROFESSIONAL SERIES PUSHRODS

DUAL TAPER .165" WALL

210° CLEARANCED RADIUS ENDS

ONE PIECE SEAMLESS
4340 CHROME MOLY

DIE FORMED ENDS

LASER ETCHED LENGTHS



- 7/16-3/8 .165" wall pushrods
- Optimum stiffness to provide adequate clearance to the head, lifter and lifter bore
- One piece construction with die formed ends
- Seamless SAE 4340 chrome moly
- 210° clearance radius ends for increased load bearing surface
- Superior strength reduced deflection and valve bounce
- Laser etched lengths for easy identification
- Pushrods are available in .050 length increments

Part#	Description
1980-8	8.450" 7/16 .165 wall
1981-8	8.500" 7/16 .165 wall
1982-8	8.550" 7/16 .165 wall
1983-8	8.600" 7/16 .165 wall
1984-8	8.650" 7/16 .165 wall

Pushrods



1900 SERIES-3/8 .080 Wall



- 3/8 Pushrods with 5/16 ends
- .080 Seamless 4340 one piece
- Reduced Deflection
- Custom Lengths Available

Length	Part#	Length	Part#
7.500"	1945-8	8.380"	1922-8
7.550"	1946-8	8.400"	1962-8
7.600"	1947-8	8.450"	1963-8
7.650"	1948-8	8.500"	1964-8
7.700"	1949-8	8.550"	1965-8
7.750"	1950-8	8.600"	1966-8
7.800"	1951-8	8.650"	1967-8
7.900"	1952-8	8.680"	1924-8
7.950"	1953-8	8.700"	1968-8
8.000"	1954-8	8.750"	1969-8
8.050"	1955-8	8.780"	1926-8
8.100"	1956-8	8.800"	1970-8
8.150"	1957-8	9.250"	1921-8
8.200"	1958-8	9.350"	1923-8
8.250"	1959-8	9.450"	1937-8
8.280"	1920-8	9.500"	1938-8
8.300"	1960-8	9.650"	1925-8
8.350"	1961-8	9.750"	1927-8

All pushrods are available with thicker walls and length in .050 increments.

1900 SERIES-5/16 .080 Wall



Choice of Custom Engine Builders Available in custom lengths

Length	Part#	Length	Part#
6.000"	1913-8	7.000"	1928-8
6.050"	1914-8	7.050"	1929-8
6.100"	1915-8	7.100"	1930-8
6.150"	1916-8	7.200"	1931-8
6.200"	1917-8	7.300"	1932-8
6.250"	1918-8	7.400"	1933-8
6.300"	1919-8	7.500"	1934-8
6.350"	1987-8	7.600"	1935-8
6.400"	1988-8	7.700"	1900-8
6.450"	1989-8	7.750"	1902-8
6.500"	1990-8	7.800"	1901-8
6.550"	1991-8	7.850"	1901.50-8
6.600"	1992-8	7.900"	1903-8
6.650"	1993-8	7.950"	1904-8
6.700"	1994-8	8.000"	1905-8
6.750"	1995-8	8.050"	1906-8
6.800"	1996-8	8.100"	1907-8
6.850"	1997-8	8.150"	1908-8
6.900"	1998-8	8.200"	1909-8
6.950"	1999-8	8.250"	1910-8
		8.350"	1912-8

1600 Series



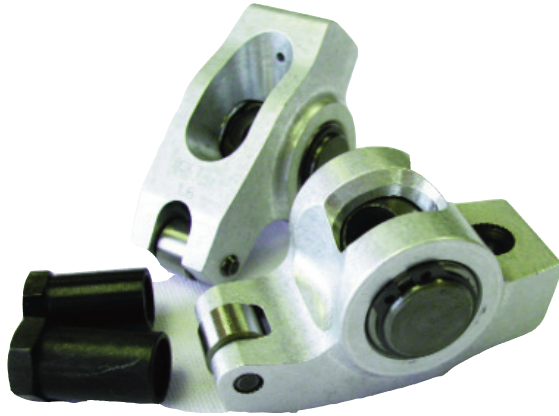
Recommended for mild street performance. 1010 steel pushrods are guideplate compatible. Black oxidized .065" wall.

5/16 Diameter		3/8 Diameter	
Length	Part#	Length	Part#
6.250"	1622-8	7.701"	1610-8
6.804"	1620-8	8.280"	1603-8
6.876"	1621-8	8.682"	1611-8
7.205"	1631-8	9.250"	1604-8
7.266"	1632-8		
7.500"	1640-8 (Solid)		
7.800"	1601-8		
7.900"	1602-8		

Rocker Arms



Extreme Duty Rocker Arms



- Heavy Duty Nose Roller & Axle
- Designed for High Spring Loads
- Designed to clear most large OD Valve Springs
- Aircraft quality alloy
- Recommended for Mechanical & Roller Cams

Small Block Chevrolet

Part#	Description
800-16	1.5 3/8
800-8	1.5 3/8 1/2 set
801-16	1.5 7/16
801-8	1.5 7/16 1/2 set
802-16	1.6 3/8
802-8	1.6 3/8 1/2 set
803-16	1.6 7/16
803-8	1.6 7/16 1/2 set

Big Block Chevrolet

Part#	Description
805-16	1.7 7/16
805-8	1.7 7/16 1/2 set
Small Block Ford	
806-16	1.6 3/8
806-8	1.6 3/8 1/2 set
807-16	1.6 7/16
807-8	1.6 7/16 1/2 set

Roller Tip Rocker Arms



High strength steel alloy heat-treated to resist rocker arm flex. Hardened roller tip reduces friction and increases HP potential over OEM stock rocker arms. SBC rocker arms feature long slot design for added clearance and increased oil metering which improves oil flow to the pivot area. Limited hydraulic or mild mechanical lift cams.

Small Block Chevrolet

Part#	Description
120-16	1.5:1, 3/8", stamped steel
121-16	1.6:1, 3/8", stamped steel
135-16*	1.5:1 long slot
136-16*	1.5:1 long slot (rail type)

Big Block Chevrolet

Part#	Description
122-16	1.7:1, 7/16", stamped steel
Small Block Ford	
125-16	302 Late model 1.6:1, stamped steel

*Not Roller Tip

Rocker Arms



Aluminum Roller Rocker Arms - Street Series



PBM Rocker Arms are recommended for Street/Hydraulic Cams, mild street performance. Great with lower spring loads. Extruded aluminum, precision clearances with tolerance of $\pm .001$. Oversized nose roller for superior load distribution. Roller trunion, roller tip. Red anodize finish. Each set includes polylocks.

Small Block Chevrolet

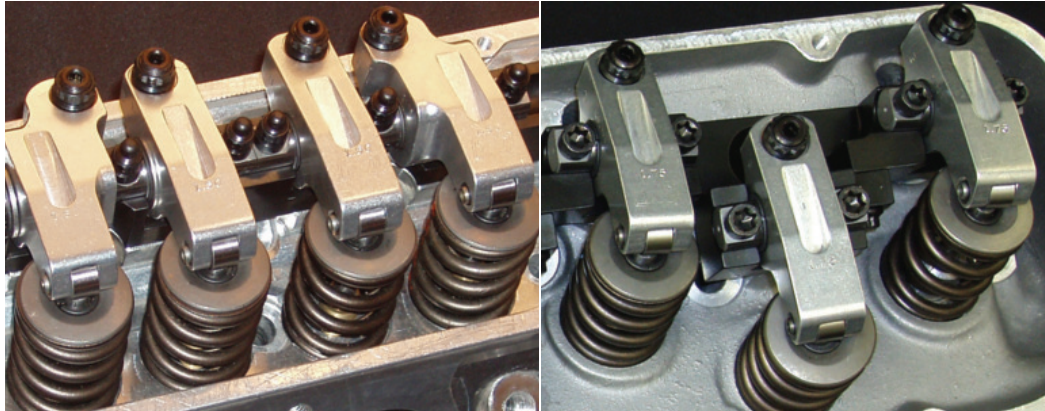
Big Block Chevrolet

Part#	Description		
100-16	1.5:1, 3/8"	105-16	1.7:1, 7/16"
101-16	1.5:1, 7/16"		Small Block Ford
102-16	1.6:1, 3/8"	106-16	1.6:1, 3/8"
103-16	1.6:1, 7/16"	107-16	1.6:1, 7/16"





SHAFT MOUNT ROLLER ROCKER ARM SYSTEMS



- **Pressurized** tip oiling
- **Precision** CNC machined
- **Hardened**, precision machined pushrod cup
- **2024** aluminum body fatigue resistant
- **Hardened** alloy roller tip & axle
(needle roller bearings optional)

- **Pressurized** bearing oiling
- **Bigger 3/16"** hex for trouble-free adjustment
- **Heat-treated** steel rocker shafts-Strongest Available
- **2024** aluminum material strengths at elevated temperatures
- **7/16"** -20 adjuster screw for more consistent valve lash

Part#	Description	Length	Int O/S	Exh O/S	Ratio
SMALL BLOCK CHEVROLET					
TDM2144	Dart Sportsman II Aluminum/Pro 1	1.450	0.250	0.080	1.6 x 1.5
TDM2144-1.5	Dart Sportsman II Aluminum/Pro 1	1.450	0.250	0.080	1.5 x 1.5
TDM2150	Dart Iron Eagle	1.450	0.170	0.170	1.6 x 1.5
TDM2150-1.5	Dart Iron Eagle	1.450	0.170	0.170	1.5 x 1.5
TDM2323	Edelbrock 18°	1.520	0.550	0.170	1.6 x 1.5
TDM2053	PBM 15°-Dart 15°, 16°, 18°	1.520	0.550	0.170	1.6 x 1.5
TDM2055	PBM 15° - Dart 15°, 16°, 18°	1.650	0.550	0.170	1.8 x 1.7
TDM2324	PBM 15° - Edelbrock casting 15°, 16°, 18°	1.520	0.550	0.170	1.7 x 1.7
TDM2126	Dart 13°	1.650	0.550	0.170	1.8 x 1.7
BIG BLOCK CHEVROLET					
TDM3031	Dart Big Chief 14°	1.850	1.250/0.750	O/C	1.7 x 1.7
TDM3036	Dart Big Chief 18°	1.750	0.750/0.400	O/C	1.7 x 1.7
TDM3102	Dart 320, 360, 1 piece Int Stand (Pro 1)	1.650	O/C	O/C	1.7 x 1.7
FORD					
TDM7301	Dart Windsor, Pro 1 CNC	1.450	O/C	O/C	1.6 x 1.6
TDM7302	Dart Windsor, Pro 1 CNC	1.520	O/C	O/C	1.6 x 1.6
TDM7304	Edelbrock Victor Jr	1.450	O/C	O/C	1.6 x 1.6
TDM7306	TFS Street Heat/High Port	1.450	0.220	0.170	1.6 x 1.6
TDM7310	TFS 302 Twisted Wedge	1.450	O/C	0.080	1.7 x 1.7
TDM7312	TFS Track Heat/Bracket Heat	1.450	O/C	0.080	1.6 x 1.6
TDM7315	Trick Flow R Head	1.450	O/C	O/C	1.7 x 1.7

Partial listing of T&D, please call for other applications.

Performance Timing Sets



Billet Timing Sets 9 Keyway



- Billet crank and cam gear
- 9 keyway crankshaft gear
- CNC machined billet gears
- Induction hardened crankgear
- Adjustability + or - 2, 4, 6, 8°
- Available with torrrington bearings
- .250 diameter high tensile rollers

Billet Timing shown with torrrington bearing

GM

Part#	Description
8975T	V6-262 V8-305 350 w/roller cam
8978T	SBC LS2, LR4, LSR with thrust bearing
8980	LS1 w/torrington oil pump drive
8981	SBC 283-400
8981T	SBC 283-400 w/torrington
8983T	SBC with BBC crank snout with thrust bearing
8900T	SBC rocket block/Dart with thrust bearing
8991	BBC 396-454
8991T	BBC 396-454 w/torrington

FORD

Part#	Description
8521T	V8-351C M 400
8522T	351C, 351M, 400 Windsor crank snout With thrust bearing
8605	SBF 302-351-W EFI, 89 up
8982	SBF 302-351 early 72-88
8611	FE 352-428 Ford
8990	BBF 429-460 V-8

Chrysler

8606	BB 383-440 three bolt
8607	BB 383-440 billet single bolt w/torrington 9 keyway
8985	SB 318-360 V-8

Pontiac

8700	V8-287 316 326 347 350 370 389 400 421 428 455
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Line Bore Kits

GM

Part#	Description
8975LB5	V6-262 V8-305 350 w/roller cam -.005
8975LB10	V6-262 V8-305 350 w/roller cam -.010
8981LB5	SBC -.005
8981TLB5	SBC -.005 w/torrington
8981LB10	SBC -.010
8981TLB10	SBC -.010 w/torrington

GM

Part#	Description
8991LB5	BBC -.005
8991TLB5	BBC -.005 w/torrington
8991LB10	BBC -.010
8991TLB10	BBC -.010 w/torrington

FORD

8982LB5	351W-Late 1965-early 1972 -.005
8982LB10	351W-Late 1965-early 1972 -.010

Tech Notes:

Check for clearance between timing chain and oil gallery boss. Some late model blocks may require material removal of boss for chain clearance.

PBM Timing Sets 8605, 8982, 8611, and 8990 requires camshaft thrust plate modification to clear roller thrust bearing or bronze washer. Thrust plate holes must be countersunk so the screws supplied with timing set are slightly below the surface of the thrust plate.

Performance Timing Sets



7000 Series Timing Sets 3 Keyway

- .250 Double Roller Timing Chains
- Cast Iron Cam Gears
- 3 Keyway Crank Gears
- Available with torrrington bearings

CHEVROLET

Part#	Description
7981	V6-200 229 262
7981T	377 383 400 w/torrington
7975	V6 262; V8 305 350 with roller cam
7991	V8 396 400 402
7991T	427 454 w/torrington

AMC

7600	V8 290 304 360 390 401
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BUICK

7500	V6 181 196 231 with integral dist drive gear
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FORD

7605	V8 255 302 351W (Late 1972-2002)
7982	V8 289 302 Boss 351W (Late 1965-early 1972)
7611	V8 330 352 390 427 428
7521	V8 351C M 400
7990	V8 429 460

PERFORMANCE PARTS KITS

Part#	Description
780T	Thrust Bearing SB & BB Chevy
780W	Bronze Washer SB & BB Chevy
782T	Thrust Bearing SB Ford
782W	Bronze Washer SB Ford
782TPK	SB Ford Camshaft Thrust Plate w/counter sunk holes and screws

OLDSMOBILE

Part#	Description
7800	V8 260F 307Y 330 350R 400 403 425 455

PONTIAC

7700	V8 287 316 326 347 350 370 389 400 421 428 455
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CHRYSLER

7985	V8 273 318 340 360
7607	V8 383 400 413 426 440 with single bolt cam
7606	V8 383 400 413 426 440 with three bolt cam

Line Bore Kits

7981LB5	V8 283 302 305 -.005
7981LB10	307 327 350 -.010
7981TLB5	377 383 400 w/torrington -.005
7991LB5	427 454 -.005
7991LB10	427 454 -.010
7991TLB5	427 454 w/torrington -.005

PERFORMANCE OPTIONS

- T = Press fit thrust bearing
- LB5 = Reduced by .005 CD
- LB10 = Reduced by .010 CD

Performance Timing Sets



Fast Adjust Timing Sets



PROFESSIONAL TIMING

The ultimate adjustable timing set. PBM has made camshaft timing quick and easy. **PBM Fast Adjust** is easy to use; install cam gear to "0" for straight-up cam position or advance/retard your camshaft by adjusting the cam sprocket + or - 12° total. Then tighten the 6 lock bolts and you are **READY TO RACE.**

SMALL BLOCK CHEVROLET

Part#	Description
8900TA*	V8-350 400 Dart Raised cam block
8900TA005*	V8-350 400 Dart Raised Cam .005 short
8900TA010*	V8-350 400 Dart Raised cam .010 short
8981TA*	SBC
8981TA005*	For line bored blocks .005 short
8981TA010*	For line bored blocks .010 short
8983TA*	SBC w/BBC crank snout

Big Block Chevrolet

8991TA* V8 396, 400, 402, 427, 454

Ford

8982TA* V8-255 302 351W (Late 1972-2002)

*With Torrington bearing

Torrington Bearings

780T Fits the following PBM Timing Sets
900, 901, 8900TA, 8981T, 8981TLB5,
8981TLB10, 8981TA, 8981TA005,
8981TA010, 8991T, 8991TLB5, 8991TLB10,
8991TA

782T 8605, 8611, 8975T 8975TLB5, 8975TLB10,
8982, 8982TA, 8985

Thrust Washers

780W 8606, 8981, 8981LB10, 8981LB5, 8991,
8991LB5, 8991LB10

782W 8990



Performance Timing Sets



GEN V BB Chevrolet Timing Sets



- 9 keyway lower gear
- Steel crank gear
- .334 Single Roller

GM

Part#	Description
8994	Big Block 454 Gen VI (1996-early 1999)
8995	Big Block 454 Gen VI (late 1999-2000)
8997	Big Block 454 Gen VI V8 8.1L (2001)
8998	Big Block 454 Gen VI V8 8.1L (2002-05)

Gear Drive Systems



Gear drives come complete with cam bolt and lock plate. Precision machined for accuracy. Designed to keep perfect timing. Ideal for high performance street and all out racing.

Chevrolet

Part#	Description
900	V6-200 229 262
906	V6-262 V8-305 350 w/roller cam
901	V8-396 400 402 427 454
908	BBC 1996-early 1999/late 1999-2000
Chrysler	
905	V8-383 400 413 426 440 w/three bolt cam
Ford	
902	V8-255 302 351W Late 1972-2002/ V8-289 302 Boss
903	V8-351C M 400
904	V8-429 460
Pontiac	
907	V8-287 316 326 347 350 370 389 400 421 428 455

700 Timing Sets

- Ideal for high performance, street and mild race
- Double-row chain design is prestretched, heat-treated and enlarged pin chain
- Features 3 keyway crank gear for precise timing adjustments
- Very reliable and affordable
- Clamshell packaging



Chevrolet

Part#	Description
700	V6-200 229 262
701	V8-396 400 402

Chrysler

703	V8-273 318 340 360
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Ford

702	V8-255 302 351W (Late 1972-2002)
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Belt Drive Systems



Latest in cam timing systems with the most accurate valve train components. Belt drive systems absorb significant amounts of crankshaft harmonics.

Chevrolet

Part#	Description
800B	V6-200 229 262

Valve Train Components



SPRING CUPS



PBM Spring Cups are designed to hold up under high spring loads. They also locate the valve spring to eliminate valve spring "Dance", a problem that will cause spring failure, while also protecting the cylinder head. Both OD and ID spring cups are available.

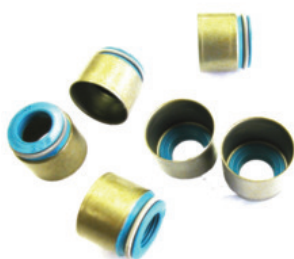
O.D. STYLE SPRING CUP

Part#	I.D.	O.D.	Spring O.D.
2601	0.687	1.55	1.440
2602	0.640	1.58	1.475
2603	0.630	1.63	1.510
2604	0.630	1.68	1.565
2605	0.630	1.74	1.650

I.D. STYLE SPRING LOCATORS

Part#	I.D.	O.D.	Spring O.D.
2651	0.525	1.290	0.875
2652	0.640	1.550	0.740
2653	0.640	1.620	0.740
2654	0.570	1.500	0.740
2655	0.570	1.620	0.740
2659	0.570	1.550	0.790
2660	0.570	1.570	0.825
2661	0.570	1.570	0.850
2675	0.570	1.300	0.875
2677	0.570	1.300	0.675
2679	0.570	1.500	0.675
2681	0.570	1.500	0.850
2682	0.570	1.500	0.825
2685	0.570	1.660	0.630

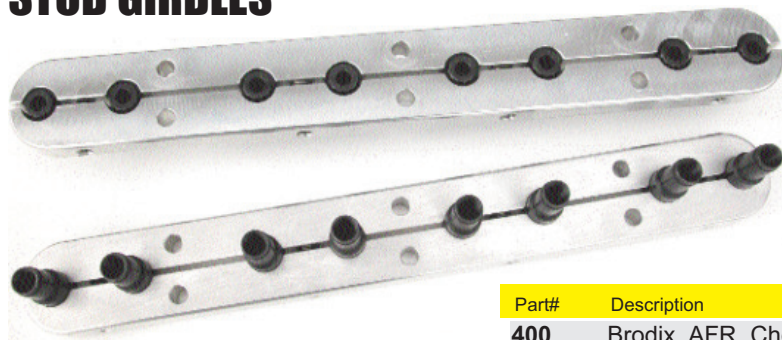
HIGH TEMPERATURE SEALS



Our high temperature Viton seals offer superior oil control via a spring wiper. Seals will not get brittle and lose their ability to control oil. All seals are metal cased for positive fitment on valve guides. RS Series have a reduced outside diameter ideally suited for triple and double spring applications where clearance is a problem.

Part#	Description
530380	.530" guide OD 3/8" valve
560380	.560" guide OD 3/8" valve
5001132	.500" guide OD 11/32" valve
5301132	.530" guide OD 11/32" valve
5621132	.562" guide OD 11/32" valve
5001132RS	.500" guide OD 11/32" valve, reduced OD .540"
5301132RS	.530" guide OD 11/32" valve, reduced OD .570"

STUD GIRDLES



Stud girdles help eliminate stud movement that changes valve actuation, due to flex and angle changes. PBM Stud Girdles are manufactured from 6061-T6 aluminum for maximum durability.

Part#	Description
400	Brodix, AFR, Chevy w/ 60-40 stud spacing 1 pc design 7/16" stud
401	SBC w/ 3/8 stud 2 pc design
401F	SBF w/ 3/8 stud 1 pc design
402	SBC w/ 7/16 stud 2 pc design
402F	SBF w/ 7/16 stud 1 pc design
403	BBC O.E. Iron heads 1 pc design 7/16 stud
404	SBC Canfield 200-220 1 pc design 7/16 stud
404F	SBF AFR 7/16 stud
405	SBF Canfield 195 1 pc design 7/16 stud
406	BBC Dart/Merlin/RHS 1 pc design 7/16 stud

Timing Degree Wheel & Accessories



PROFESSIONAL 16" DEGREE WHEEL



16" Pro Camshaft Degree Wheel

Erson's new 16" Pro Camshaft Degree Wheel features an adjustable outer ring with machined 1/2 degree increments for accurate cam timing. Specially designed adaptors allow you to mount the Pro Degree Wheel to virtually any engine, then rotate the engine in either direction. All components are CNC-machined from billet aluminum. Adapter Hubs required for proper use of the new Pro Degree Wheel.

Part#	Description
E916001	16" Professional Degree Wheel
E916002	Adapter Blank
E916003	Adapter, SB Chevrolet
E916004	Adapter, BB Chevrolet
E916005	Adapter, Oldsmobile
E916006	Adapter, SB Ford/Pontiac
E916007	Adapter, BB Ford
E916008	Adapter, Chrysler

DEGREE WHEEL



Aluminum-degree wheel with an 8" diameter and a thickness of .050" is accurately calibrated in degrees. Etched gradation and numbers guarantee continued readability and accuracy. An accurate degree wheel is a necessity in every tuner's tool box. Use it for degreasing camshafts, adjusting valves, setting ignitions, and more.

Part#	Description
E911004	8-inch Diameter Aluminum Degree Wheel

SPEED & GEAR RATIO COMPUTER (DREAM WHEEL)



Circular slide rule type calculator. One side computes RPM, speed, gear ratio and tire diameter, other side computes valve lift, cam lift and rocker arm ratio. Handy to have in your tool box to compute tire growth, tire or clutch slippage, and more.

Part#	Description
E911003	Speed and Ratio Computer

Energy Series Camshaft Kits



Camshaft kits are supplied with performance camshaft, matched lifters and assembly lube. It is recommended that you use the Erson assembly lube supplied in your Cam Kit along with **Erson E911000 ZDDP Additive** for extended protection against wear and should be used with every oil change.

Three performance categories of Cam Kits are offered.

- Torque Master Series- Intake Duration 184°-209°
- Street Fighter Series - Intake Duration 214°-230°
- Eliminator Series - Intake Duration 230°-244°

SMALL BLOCK CHEVROLET 1955-95 262-265-267-283-302-305-307-327-350-400 V8 _____

PART NO.	ADV DURATION	.050 DURATION	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
E110008K	IN 260°	194°	.398"	104°	0°	.000"
	EX 270°	204°	.420"			.000"
E110014K	IN 270°	204°	.420"	110°	0°	.000"
	EX 280°	214°	.443"			.000"
E110016K	IN 270°	204°	.420"	112°	5°	.000"
	EX 280°	214°	.443"			.000"
E110018K	IN 266°	209°	.414"	110°	2°	.000"
	EX 266°	209°	.414"			.000"
E110020K	IN 275°	209°	.435"	112°	5°	.000"
	EX 278°	216°	.455"			.000"
E110022K	IN 280°	214°	.443"	110°	5°	.000"
	EX 280°	214°	.443"			.000"
E110024K	IN 280°	214°	.443"	112°	5°	.000"
	EX 280°	214°	.443"			.000"
E110026K	IN 280°	214°	.443"	112°	12°	.000"
	EX 290°	224°	.465"			.000"
E110030K	IN 284°	218°	.458"	110°	5°	.000"
	EX 284°	218°	.458"			.000"
E110032K	IN 281°	225°	.480"	108°	4°	.000"
	EX 281°	225°	.480"			.000"
E110034K	IN 304°	222°	.447"	114°	4°	.000"
	EX 304°	222°	.447"			.000"
E110036K	IN 288°	224°	.450"	114°	2°	.000"
	EX 292°	224°	.460"			.000"
E110038K	IN 290°	224°	.465"	112°	5°	.000"
	EX 290°	224°	.465"			.000"
E110040K	IN 280°	224°	.465"	112°	5°	.000"
	EX 280°	234°	.488"			.000"
E110042K	IN 284°	230°	.453"	114°	1°	.000"
	EX 284°	230°	.453"			.000"
E110044K	IN 292°	230°	.480"	108°	2°	.000"
	EX 292°	230°	.480"			.000"
E110046K	IN 292°	232°	.488"	108°	5°	.000"
	EX 300°	234°	.488"			.000"
E110048K	IN 300°	234°	.488"	112°	2°	.000"
	EX 310°	244°	.510"			.000"
E110050K	IN 290°	222°	.468"	110°	4°	.000"
	EX 300°	231°	.480"			.000"
E110052K	IN 310°	244°	.510"	108°	1°	.000"
	EX 310°	244°	.510"			.000"
E110054K	IN 310°	244°	.510"	112°	5°	.000"
	EX 320°	254°	.533"			.000"

All applications are for Hydraulic Flat Face Lifters. Lifters have proper crown on bottom of lifter face. Proper preload of .004-.006 @ operating temperature. Initial start keep engine @ 1500-2500 rpms for 5-10 minutes.

Energy Series Camshaft Kits



Camshaft kits are supplied with performance camshaft, matched lifters and assembly lube. It is recommended that you use the Erson assembly lube supplied in your Cam Kit along with **Erson E911000 ZDDP Additive** for extended protection against wear and should be used with every oil change.

Three performance categories of Cam Kits are offered.

- Torque Master Series- Intake Duration 184°-209°
- Street Fighter Series - Intake Duration 214°-230°
- Eliminator Series - Intake Duration 230°-244°

BIG BLOCK CHEVROLET 1967-95 396-402-427-454 V8 **1969-90** 366 V* (Chain Drive)

PART NO.	ADV DURATION	.050 DURATION	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
E120002K	IN 270° EX 280°	204° 214°	.476" .501"	112°	5°	.000" .000"
E120004K	IN 278° EX 278°	212° 212°	.476" .476"	110°	4°	.000" .000"
E120006K	IN 280° EX 280°	214° 214°	.501" .501"	114°	5°	.000" .000"
E120008K	IN 280° EX 290°	214° 224°	.501" .527"	112°	5°	.000" .000"
E120009K	IN 284° EX 284°	218° 218°	.519" .519"	110°	5°	.000" .000"
E120012K	IN 308° EX 328°	222° 235°	.500" .505"	115°	5°	.000" .000"
E120014K	IN 292° EX 292°	224° 224°	.510" .510"	115°	1°	.000" .000"
E120016K	IN 290° EX 292°	224° 232°	.527" .553"	114°	4°	.000" .000"
E120018K	IN 292° EX 292°	230° 230°	.544" .544"	109°	2°	.000" .000"
E120022K	IN 300° EX 310°	234° 244°	.553" .578"	112°	5°	.000" .000"
E120026K	IN 310° EX 320°	244° 254°	.578" .603"	110°	5°	.000" .000"

All applications are for Hydraulic Flat Face Lifters. Lifters have proper crown on bottom of lifter face. Proper preload of .004-.006 @ operating temperature. Initial start keep engine @ 1500-2500 rpms for 5-10 minutes.

Energy Series Camshaft Kits



Camshaft kits are supplied with performance camshaft, matched lifters and assembly lube. It is recommended that you use the Erson assembly lube supplied in your Cam Kit along with **Erson E911000 ZDDP Additive** for extended protection against wear and should be used with every oil change.

Three performance categories of Cam Kits are offered.

- Torque Master Series- Intake Duration 184°-209°
- Street Fighter Series - Intake Duration 214°-230°
- Eliminator Series - Intake Duration 230°-244°

CHRYSLER 1958-78 350-361-383-400-413-426-440(exc Hemi) V8

PART NO.	ADV DURATION	.050 DURATION	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
E410052K	IN 270°	204°	.420"	112°	5°	.000"
	EX 280°	214°	.443"			.000"
E410054K	IN 268°	214°	.449"	115°	2°	.000"
	EX 284°	225°	.464"			.000"
E410056K	IN 272°	224°	.455"	112°	4°	.000"
	EX 272°	224°	.455"			.000"
E410058K	IN 290°	224°	.465"	112°	5°	.000"
	EX 300°	234°	.488"			.000"
E410060K	IN 310°	244°	.510"	108°	5°	.000"
	EX 310°	244°	.510"			.000"

CHRYSLER 1964-89 273-340-360 V8 1967-89 318 V8

E420014K	IN 270°	204°	.420"	112°	5°	.000"
	EX 280°	214°	.443"			.000"
E420016K	IN 268°	210°	.429"	114°	2°	.000"
	EX 276°	220°	.444"			.000"
E420022K	IN 292°	230°	.480"	109°	2°	.000"
	EX 292°	230°	.480"			.000"

FORD 1962-91 221-255-260-289-302 V8

E210026K	IN 260°	194°	.424"	110°	5°	.000"
	EX 270°	204°	.448"			.000"
E210028K	IN 270°	204°	.448"	112°	5°	.000"
	EX 280°	214°	.472"			.000"
E210030K	IN 278°	212°	.448"	110°	4°	.000"
	EX 278°	212°	.448"			.000"
E210032K	IN 280°	214°	.472"	112°	5°	.000"
	EX 290°	224°	.496"			.000"
E210034K	IN 288°	218°	.460"	112°	5°	.000"
	EX 288°	218°	.460"			.000"
E210036K	IN 284°	218°	.488"	110°	5°	.000"
	EX 284°	218°	.488"			.000"
E210038K	IN 290°	224°	.496"	112°	5°	.000"
	EX 300°	234°	.520"			.000"
E210040K	IN 292°	230°	.512"	109°	2°	.000"
	EX 292°	230°	.512"			.000"
E210042K	IN 300°	234°	.520"	112°	5°	.000"
	EX 310°	244°	.544"			.000"

All applications are for Hydraulic Flat Face Lifters. Lifters have proper crown on bottom of lifter face. Proper preload of .004-.006 @ operating temperature. Initial start keep engine @ 1500-2500 rpms for 5-10 minutes.

Energy Series Camshaft Kits



Camshaft kits are supplied with performance camshaft, matched lifters and assembly lube. It is recommended that you use the Erson assembly lube supplied in your Cam Kit along with **Erson E911000 ZDDP Additive** for extended protection against wear and should be used with every oil change.

Three performance categories of Cam Kits are offered.

- Torque Master Series- Intake Duration 184°-209°
- Street Fighter Series - Intake Duration 214°-230°
- Eliminator Series - Intake Duration 230°-244°

FORD 1969-91 351W 1985-95 302 H/O V8

PART NO.	ADV DURATION	.050 DURATION	GROSS LIFT	LOBE CENTER	ADV	VALVE LASH
E212016K	IN 260° EX 270°	194° 204°	.424" .448"	110°	5°	.000" .000"
E212018K	IN 270° EX 284°	204° 225°	.448" .464"	112°	5°	.000" .000"
E212020K	IN 280° EX 290°	214° 224°	.472" .496"	112°	5°	.000" .000"
E212024K	IN 284° EX 284°	218° 218°	.488" .488"	110°	5°	.000" .000"
E212028K	IN 290° EX 300°	224° 234°	.496" .520"	112°	5°	.000" .000"
E212029K	IN 300° EX 310°	234° 244°	.520" .544"	112°	5°	.000" .000"

FORD 1963-76 352-360-390-406-410-427-428 V8

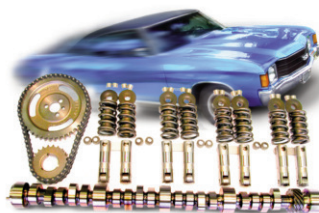
E240030K	IN 260° EX 270°	194° 204°	.458" .484"	110°	5°	.000" .000"
E240032K	IN 270° EX 280°	204° 214°	.484" .510"	112°	5°	.000" .000"
E240034K	IN 280° EX 280°	214° 214°	.510" .510"	110°	5°	.000" .000"
E240036K	IN 280° EX 290°	214° 224°	.510" .536"	112°	5°	.000" .000"
E240040K	IN 300° EX 300°	223° 223°	.514" .514"	112°	2°	.000" .000"

FORD 1963-76 352-360-390-406-410-427-428 V8

E260020K	IN 260° EX 270°	194° 204°	.464" .490"	110°	5°	.000" .000"
E260022K	IN 270° EX 280°	204° 214°	.490" .516"	112°	5°	.000" .000"
E260026K	IN 280° EX 290°	214° 224°	.516" .543"	112°	5°	.000" .000"
E260028K	IN 284° EX 284°	218° 218°	.534" .534"	110°	5°	.000" .000"

All applications are for Hydraulic Flat Face Lifters. Lifters have proper crown on bottom of lifter face. Proper preload of .004-.006 @ operating temperature. Initial start keep engine @ 1500-2500 rpms for 5-10 minutes.

Hydraulic Roller Retro-Fit Cam Kits



Up-date your Small Block or Big Block Chevy with Erson's **NEW SL Series Hydraulic Roller Cam Kits**. **Awesome HP** increase and **Reliability** eliminate camshaft and lifter wear associated with flat tappet cams and lifters. SL Series Kits are designed for Street Performance and RPM range of 6200 or below.

HRK-Kit includes:

- HR Camshaft
- HR SL Lifters
- Valve Springs
- Retainers
- Valve Locks
- Valve Stem Seals
- Timing Set
- Assembly Lube

SMALL BLOCK CHEVROLET 262-400 CI 8 Cyl 1955-98

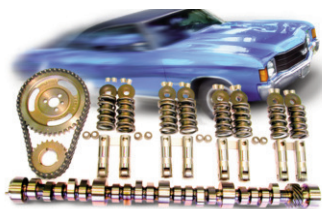
PART NO.	ADV DUR	.050 DUR	GROSS LIFT 1.5	GROSS LIFT 1.7	LOBE CENTER	ADV	VALVE LASH
E119840HRK	IN 272° EX 280°	218° 226°	.480" .480"	.512" .512"	108°	0°	.000" .000"
E119845HRK	IN 286° EX 294°	226° 234°	.548" .548"	.584" .584"	108°	0°	.000" .000"
E119847HRK	IN 286° EX 294°	226° 234°	.548" .548"	.584" .584"	112°	0°	.000" .000"
E119848HRK	IN 290° EX 298°	230° 238°	.548" .548"	.584" .584"	108°	0°	.000" .000"
E119849HRK	IN 298° EX 306°	238° 246°	.548" .548"	.584" .584"	108°	0°	.000" .000"
E119851HRK	IN 298° EX 306°	238° 246°	.548" .548"	.584" .584"	112°	0°	.000" .000"
E119853HRK	IN 302° EX 310°	242° 250°	.548" .548"	.584" .584"	108°	2°	.000" .000"
E119855HRK	IN 310° EX 318°	250° 258°	.548" .548"	.584" .584"	108°	4°	.000" .000"
E119858HRK	IN 286° EX 298°	226° 238°	.548" .548"	.584" .584"	112°	0°	.000" .000"
E119862HRK	IN 294° EX 306°	238° 246°	.548" .548"	.584" .584"	112°	0°	.000" .000"
E119866HRK	IN 302° EX 314°	242° 254°	.548" .548"	.584" .584"	114°	0°	.000" .000"

Other hydraulic roller grinds available, please inquire.

For higher RPM applications use RL930 (SBC) and RL931 (BBC)

1-NOTE: Thrust Button must be used on Retro Roller conversions, to hold cams to back of engine. Part # PBM326.

Hydraulic Roller Retro-Fit Cam Kits



Up-date your Small Block or Big Block Chevy with Erson's **NEW SL Series Hydraulic Roller Cam Kits**. **Awesome HP** increase and **Reliability** eliminate camshaft and lifter wear associated with flat tappet cams and lifters. SL Series Kits are designed for Street Performance and RPM range of 6200 or below.

HRK-Kit includes:

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- HR SL Lifters
- Valve Springs
- Retainers
- Valve Locks
- Valve Stem Seals
- Timing Set
- Assembly Lube



SMALL BLOCK CHEVROLET 262-400 CI 8 Cyl 1955-98

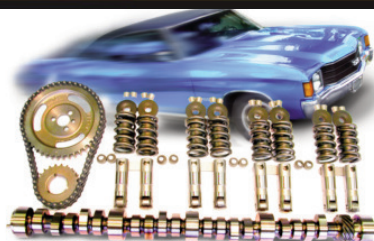
PART NO.	ADV DUR	.050 DUR	GROSS LIFT 1.5	GROSS LIFT 1.7	LOBE CENTER	ADV	VALVE LASH
E119840-47HRK	IN 272° EX 280°	218° 226°	.480" .480"	.512" .512"	108°	0°	.000" .000"
E119845-47HRK	IN 286° EX 294°	226° 234°	.548" .548"	.584" .584"	108°	0°	.000" .000"
E119847-47HRK	IN 286° EX 294°	226° 234°	.548" .548"	.584" .584"	112°	0°	.000" .000"
E119848-47HRK	IN 290° EX 298°	230° 238°	.548" .548"	.584" .584"	108°	0°	.000" .000"
E119849-47HRK	IN 298° EX 306°	238° 246°	.548" .548"	.584" .584"	108°	0°	.000" .000"
E119851-47HRK	IN 298° EX 306°	238° 246°	.548" .548"	.584" .584"	112°	0°	.000" .000"
E119853-47HRK	IN 302° EX 310°	242° 250°	.548" .548"	.584" .584"	108°	2°	.000" .000"
E119855-47HRK	IN 310° EX 318°	250° 258°	.548" .548"	.584" .584"	108°	4°	.000" .000"
E119858-47HRK	IN 286° EX 298°	226° 238°	.548" .548"	.584" .584"	112°	0°	.000" .000"
E119862-47HRK	IN 294° EX 306°	238° 246°	.548" .548"	.584" .584"	112°	0°	.000" .000"
E119866-47HRK	IN 302° EX 314°	242° 254°	.548" .548"	.584" .584"	114°	0°	.000" .000"

Other hydraulic roller grinds available, please inquire.

For higher RPM applications use RL930 (SBC) and RL931 (BBC)

1-NOTE: Thrust Button must be used on Retro Roller conversions, to hold cams to back of engine. Part # PBM326.

Hydraulic Roller Retro-Fit Cam Kits



Up-date your Small Block or Big Block Chevy with Erson's **NEW SL Series Hydraulic Roller Cam Kits**. **Awesome HP** increase and **Reliability** eliminate camshaft and lifter wear associated with flat tappet cams and lifters. SL Series Kits are designed for Street Performance and RPM range of 6200 or below.

HRK-Kit includes:

- HR Camshaft
- HR SL Lifters
- Valve Springs
- Retainers
- Valve Locks
- Valve Stem Seals
- Timing Set
- Assembly Lube

BIG BLOCK CHEVROLET 396-454 CI 8 Cyl 1965-96

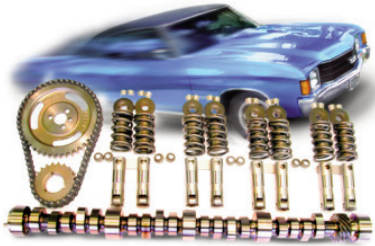
PART NO. RPM RANGE	ADV DURATION	.050 DURATION	GROSS LIFT 1.7	LOBE CENTER	ADV	VALVE LASH
E120230HRK 2500-5500	IN 288° EX 296°	226° 234°	.604" .604"	108°	0°	.000" .000"
E120231HRK 2700-5700	IN 290° EX 298°	230° 238°	.621" .621"	110°	2°	.000" .000"
E120233HRK 3000-6000	IN 298° EX 306°	238° 246°	.621" .621"	108°	0°	.000" .000"
E120234HRK 3000-6000	IN 298° EX 306°	238° 246°	.621" .621"	112°	0°	.000" .000"
E120236HRK 3500-6500	IN 306° EX 314°	246° 254°	.621" .621"	108°	2°	.000" .000"
E120339HRK 3800-6800	IN 314° EX 322°	254° 262°	.621" .621"	110°	2°	.000" .000"
E120340HRK 3800-6800	IN 314° EX 322°	254° 262°	.621" .621"	114°	2°	.000" .000"
E120341HRK 3500-6500	IN 322° EX 330°	262° 270°	.621" .621"	112°	0°	.000" .000"
E120343HRK 3200-6200	IN 290° EX 302°	230° 242°	.621" .621"	114°	0°	.000" .000"
E120346HRK 3500-6500	IN 302° EX 314°	242° 254°	.621" .621"	114°	2°	.000" .000"
E120349HRK 3800-6800	IN 310° EX 322°	250° 262°	.621" .621"	114°	0°	.000" .000"

Other hydraulic roller grinds available, please inquire.

For higher RPM applications use RL930 (SBC) and RL931 (BBC)

1-NOTE: Thrust Button must be used on Retro Roller conversions, to hold cams to back of engine. Part # PBM326.

Hydraulic Roller Retro-Fit Cam Kits



Up-date your Small Block or Big Block Chevy with Erson's **NEW SL Series Hydraulic Roller Cam Kits**. **Awesome HP** increase and **Reliability** eliminate camshaft and lifter wear associated with flat tappet cams and lifters. SL Series Kits are designed for Street Performance and RPM range of 6200 or below.

- HRK-Kit includes:**
- HR Camshaft
 - HR SL Lifters
 - Valve Springs
 - Retainers
 - Valve Locks
 - Valve Stem Seals
 - Timing Set
 - Assembly Lube

BIG BLOCK CHEVROLET 396-454 CI 8 Cyl 1965-96

PART NO. RPM RANGE	ADV DURATION	.050 DURATION	GROSS LIFT 1.7	LOBE CENTER	ADV	VALVE LASH
E120230-47HRK 2500-5500	IN 288° EX 296°	226° 234°	.604" .604"	108°	0°	.000" .000"
E120231-47HRK 2700-5700	IN 290° EX 298°	230° 238°	.621" .621"	110°	2°	.000" .000"
E120233-47HRK 3000-6000	IN 298° EX 306°	238° 246°	.621" .621"	108°	0°	.000" .000"
E120234-47HRK 3000-6000	IN 298° EX 306°	238° 246°	.621" .621"	112°	0°	.000" .000"
E120236-47HRK 3500-6500	IN 306° EX 314°	246° 254°	.621" .621"	108°	2°	.000" .000"
E120339-47HRK 3800-6800	IN 314° EX 322°	254° 262°	.621" .621"	110°	2°	.000" .000"
E120340-47HRK 3800-6800	IN 314° EX 322°	254° 262°	.621" .621"	114°	2°	.000" .000"
E120341-47HRK 3500-6500	IN 322° EX 330°	262° 270°	.621" .621"	112°	0°	.000" .000"
E120343-47HRK 3200-6200	IN 290° EX 302°	230° 242°	.621" .621"	114°	0°	.000" .000"
E120346-47HRK 3500-6500	IN 302° EX 314°	242° 254°	.621" .621"	114°	2°	.000" .000"
E120349-47HRK 3800-6800	IN 310° EX 322°	250° 262°	.621" .621"	114°	0°	.000" .000"

Other hydraulic roller grinds available, please inquire.

For higher RPM applications use RL930 (SBC) and RL931 (BBC)

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PBM Performance Products and Erson Camshafts are the “Best Kept Secret in the Winner’s Circle”. Our involvement with professional engine builders and race teams allows us to develop products that deliver race winning performance with superior power and reliability that puts you in the winner’s circle. Check out the full line of PBM Performance Products and Erson Cams from complete cylinder head kits, engine block kits, rotating assemblies, along with Erson’s complete line of camshafts, valve train system and related components.

**We can put you in the
“Winner’s Circle!”**