Supplemental Information
for
451-260 Camshaft, Standard, Crane
Oversized Base Circle, Tapered Lobes
MGT (Use with 433-365 Tappet Set ONLY)

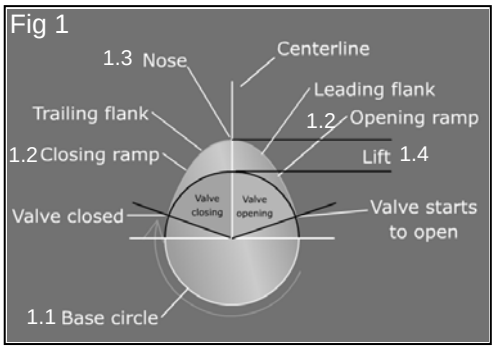
What You Must Know About This Cam

The Crane cam is very different from a stock T-Series cam is several ways. First the material is superior to the original cam, which is not surprising given the advances in steel alloys and manufacturing in the last 60 years. Second, Crane increased the base circle. Third, Crane tapered the cam lobes. Let's consider the consequences of these changes.

Base Circle, Ramp Angles, and Nose Radius

The Crane cam (2.1) has a larger base circle (1.1) than the stock cam (2.2). That allows the cam to have a higher lift (1.4) while maintaining modest ramp angles (1.2) and a more gently radiused nose (1.3). Crane did this to reduce wear and increase the longevity of the cam and tappets. It is an effective strategy, but there are consequences.

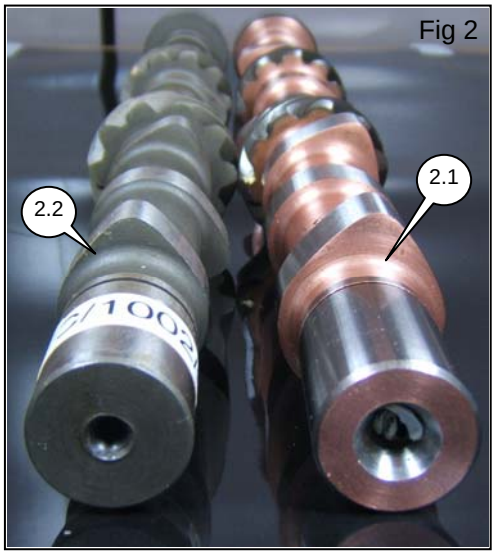
Fig 1



Base Circle & Cam Lubrication

The tappets used in the T-Series have holes in the sides. The hollow body of the tappet fills with oil from the rocker gallery. As the tappet drops down in the lifter bore, the lower holes are uncovered, and oil drains out of the tappet body, flowing over the camshaft. However, when a cam with a larger base circle is used with tappets that have the holes in the side, the tappets may not drop down far enough in the tappet bore to expose the oil holes. The oil will not drain out, and that reduces the oil flowing over the cam, decreasing lubrication and increasing heat build-up in the tappet and the cam. This is especially critical in the T-Series because the connecting rods, which squirt oil on the cam in every other MG engine, squirt oil on the thrust side of the cylinder wall (away from the cam) instead. We have elongated the lower oil holes (3a) in the Moss 433-365 T-Series tappets so the oil can drain out onto the cam lobes. While it is true that tappets without modified oil holes have been used with the Crane cam for years with reasonable results, improving the oil flow to the cam cannot hurt and may significantly increase tappet life. This issue was discussed at length in the December 2003 "Sacred Octagon", pages 26-28.

Fig 2



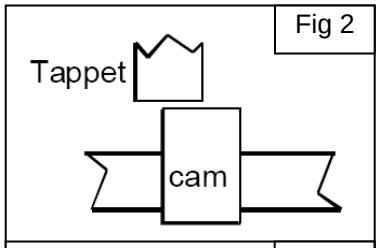
Base Circle & Pushrod Length

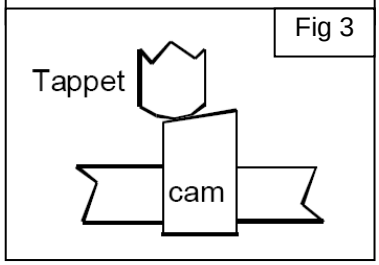
If the head has been shaved, the stock pushrods may be too long. Crane used to supply us with sets of short pushrods, which we sold as 433-335. These pushrods are not currently available, but if the problem comes up it must be dealt with.

Fig 3

Tapered Lobes

The original cam lobes were “flat”, (Fig 2) meaning the individual lobe was not “tapered” or “crowned”. The bottom surface or “foot” of the tappet was dead flat as well (Fig 2). Stock type tappets are called “flat bottom tappets” for that reason. With the stock cam and tappets, the tappets rotate because they are offset with respect to the center of the cam lobe. (Fig 2) T-Series engines are known (or notorious) for wearing out tappets much sooner than other cars, and part of the reason is inadequate tappet rotation. To promote tappet rotation, Crane “tapers” each lobe 0.0011", meaning the lobe is higher by 0.0011” on one side than the other.(Fig 3). If the lobes of a cam are tapered, the foot of the tappet ***must*** be crowned (rounded) as well. If you run flat bottom tappets with a cam that has tapered lobes, the cam/tappets will wear much faster, and the chance of a catastrophic failure is very high. The correct curvature for the tappet depends on the cam; for the Crane cam, a 0.0005 to 0.0008" crown is correct. We have our tappets crowned to those specifications. If you hold them face to face there's just a hair gap on one edge. The new crown of the lifter foot matches the cam lobe (Fig 3) and together they cause the tappet to rotate properly, at an optimal rate (assuming the lifter bores are where they should be).





Why We Recommend the 433-365 Tappets for the Crane Cam

This is a special set of tappets that have been

- Measured to ensure they are within factory spec for the outside diameter
- Checked for ovality
- Rockwell hardness tested (54HRC minimum)
- Crowned to match the taper of the lobes on the Crane Cam
- Micro-polished
- Parkerized (phosphate etching that improves oil retention and wear resistance)
- Machined to elongate the oil holes

These are the only tappets available for this application designed specifically to be used with the Crane cam.

More Information

There is a great deal of information in the instruction pamphlet that we include with the 433-365 tappet set. It explains all the work done to the tappets and it has a wealth of tips on building a T-series engine to minimize the chance of a cam/tappet failure. We also have a great deal of information available about modern oil, the loss of ZDDP and the importance of ZDDP with flat-tappet engines, especially during break in. Please go to our website and search using the cam part number 451-260.

*Although every effort has been made to ensure the accuracy and clarity of this information, errors and/or omissions on our part are almost inevitable. Any suggestions that you may have that will improve the information (especially detailed installation notes) are welcome. Please use the simple email form on the **“Contact Us”** page on the Moss website: http://www.mossmotors.com/AboutMoss/ContactUs.aspx*
If you prefer, you may call our Technical Services Department at 805-681-3411. So many people call us for help that we are often not able to answer the calls as fast as we’d like, and you may be asked to leave a message. We apologize in advance for the inconvenience. We will get back to you within 2 business days.

Moss Motors, Ltd.
440 Rutherford Street, Goleta, California 93117
In the US & Canada Toll Free (800) 667-7872 FAX (805) 692-2510 (805) 681-3400
Moss Europe Ltd.
Hampton Farm Industrial Estate, Hampton Road West, Hanworth Middlesex, TW13 6DB
In the UK: 020-8867-2020 FAX:- 020-8867-2030

Installation Instructions – 214E

Flat Tappet Camshaft Installation

For more information, see www.cranecams.com

READ CAREFULLY AND COMPLETELY BEFORE INSTALLATION

WARNING: NEW LIFTERS MUST BE INSTALLED WITH YOUR NEW CAMSHAFT.

Prior to installation:

- Check the compatibility of the camshaft with the remainder of the valve train components (valve springs, rockers, etc.)
- On race type, high load spring applications, use lighter load springs or remove the inner spring (dual spring application) just for break-in.

Due to the EPA's mandate for zinc removal from most motor oils, proper flat tappet camshaft break-in procedure is more critical than ever before. This is true for both hydraulic and mechanical flat tappet camshafts. As a point of interest, the most critical time in the life of a flat tappet camshaft is the first 20 minutes of "break-in" during which the bottoms of the tappets "mate-in" with the cam lobes.

There are some oils with additive packages that are better for camshaft "break-in". **These include, but are not limited to: (Brad Penn or Joe Gibbs racing) or a "race only" petroleum- based oil and include Crane Cams Part # 99003-1 Super Lube" additive.**
Do not use API rated "SL" or "SM" oil.

CAUTION: We do not recommend the use of synthetic oils for "break-in". Prior to installing the camshaft and lifters, it is recommended that the crankcase be drained and filled with new, **clean oil, as listed above**. The oil filter should also be changed at this time. Proper flat tappet camshaft break-in starts with the cam installation and includes the following steps:

1. Before installing the camshaft and lifters, wash them thoroughly in clean mineral spirits to remove the rust preventative that is placed on the cam before shipping. NOTE: As a "rule of thumb", always thoroughly clean any part before installing it in an engine. Never "assume" that the parts are cleaned before packaging. During shipping, packaging material can rub into the component surface and must be removed!

2. DO NOT "pump-up" hydraulic lifters before use. This can cause the lifters to hold a valve open during engine cranking, which will cause low compression. The low compression will delay engine start-up and is very detrimental to proper camshaft "break-in".

CRANE CAMS INC. 530 Fentress Blvd, Daytona Beach, FL 32114
www.cranecams.com Tech Line: (386) 258-6174 Fax: (386) 258-6167

CRANE FLAT TAPPET CAMSHAFT INSTALLATION INSTRUCTIONS

The pictures shown in these instructions are for a small block Chevrolet. Check your engine manual for timing mark alignment for other engines.

1. Disconnect the battery, drain the cooling system, and remove the radiator. Remove all accessories necessary to make the cam, lifters, and timing chain accessible. Rotate the crankshaft slowly until the timing marks are aligned as shown in Figure 1.

Figure 1

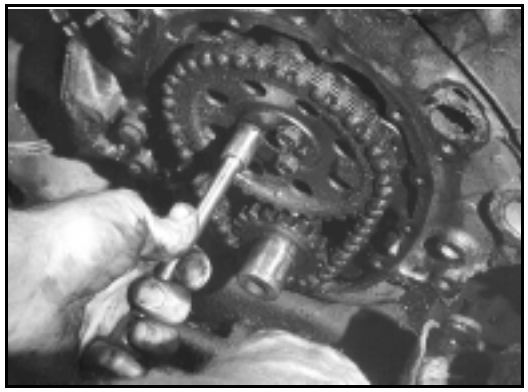


Figure 2

2. Remove the camshaft timing sprocket as shown in Figure 2, and the timing chain. Re-install the cam sprocket and slowly remove the camshaft from the block. Excessive force is not required. If the camshaft can't be removed easily, stop and look for the obstruction. (Such as lifters, fuel pump rod, distributor gears, etc.) Clean the new cam with mineral spirits, or equivalent solvent. Temporarily install the cam sprocket on your new Crane cam. Then, using Crane *Moly Paste* assembly lube**, Part # 99002-1** coat all of the lobes and distributor gear (Figure 3). Lubricate the bearing journals using a top quality, petroleum-based oil such as, Brad Penn or Joe Gibbs racing oil. It is also highly recommended that you pour a bottle of Crane Cams Super Lube, **Part # 99003-1** into the engine to further fortify the initial break-in oil. We do not recommend the use of synthetic oils or other additives with our cams and lifters during break-in.

Figure 3

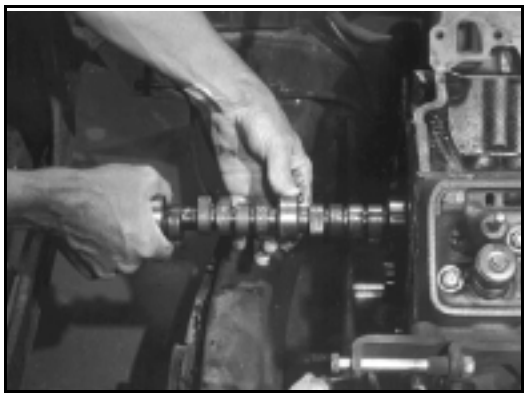


Figure 4

3. Carefully slide your cam into the block. Be careful not to damage cam bearings (Figure 4).

4. Remove the cam sprocket, install a new Crane chain, and bolt the assembly in place. Check the timing mark alignment (Figure 5) or your engine manual. Tighten the cam sprocket retaining bolts to correct torque specifications (Figure 6). This is very important as most cam damage is caused by the cam gear coming loose due to improperly torqued bolts or worn keys and keyways. If the gear loosens, the cam will slide back into the block causing the lifters to hit the adjacent lobes and bearing journals.

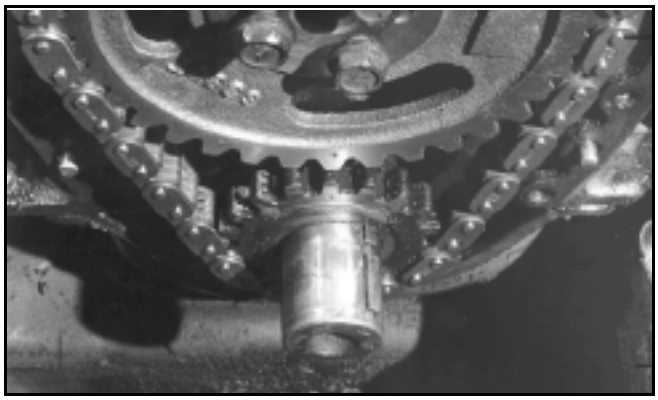


Figure 5

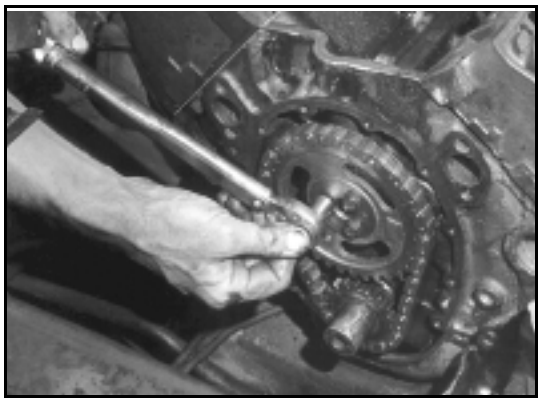


Figure 6

NOTE: ***Thread locking compound should be applied to the threads of all camshaft timing gear bolts. Be sure to apply proper torque to the bolts, as well.*** A camshaft bolt locking plate, part number 99168-1, is recommended for Chevrolet 262-400 and 396-454 cubic inch engines. (Figure 7)

Figure 7

Several cams require a plate that bolts to the block with a spacer between the cam gear and the front cam-bearing journal. Some replacement gears have the spacer made on the gear. If so, make sure the original spacer is not used. To check gear alignment, put a straightedge across the timing gears from top to bottom. To verify that you have the correct spacer to cam gear combination, check that the camshaft end play is .004" to .008". (This procedure is for engines with cam retaining plates only.)

Note: Many 1972 and later Ford-Mercury V-8 engines are originally equipped with a retarded crankshaft sprocket. This may cause idling and performance problems when installing aftermarket camshafts. Eliminate this problem by installing a pre-1972 crankshaft sprocket, (the non-retarded sprocket will have the alignment dot and keyway slot directly in line with each other), or by degreeing in your camshaft, or with appropriate Crane timing chain and gear set.

5. To help prevent premature lobe wear, **new lifters must be installed** with this new camshaft. (No matter how little running time is on the "old" lifters.) O.E.M. lifters are acceptable, but we recommend new Crane performance lifters for maximum reliability. With the supplied **moly paste lube Part # 9902-1**; coat the bottom of the lifters, cam lobes and distributor gear. Use Crane Cams assembly lube **Part # 99008-1** on all other surfaces and components (Figure 8).

Figure 8

6. If cylinder head machining capabilities are not available or desired, and stock springs and retainers are used, make certain spring travel from assembled height to coil bind is a minimum of .060" more than the gross lift of the cam. Check with your Crane dealer for available Valve Spring and Retainer Kits that use stock diameter springs and require no head machining.

7. As a general rule, any cam with the same, or less, lift than any of our milder series cams for any given engine, should have a safe amount of piston to valve clearance if the engine, piston, cylinder head combination is stock. When using cams with higher lift, or engines with internal engine modifications to pistons and/or cylinder heads to increase compression, piston to valve clearance must be checked. Check with modeling clay when assembling the engine. **Minimum clearance is .080" intake and .100" exhaust.**

8. On engines with separate adjustable rocker arms such a small block Chevrolet, we recommend installing the pushrods and rocker arms on one cylinder at a time and adjusting the valves on that particular cylinder. Do not tighten the adjusting nut down before adjusting the valves. If the adjustment is too tight this will cause the valve to hit the piston when you turn the engine over, resulting in bent valves, bent or broken pushrods, rocker arm studs to be pulled out of the head, and premature cam wear**.** On engines with shaft mounted adjustable rocker arms, back off all adjusters all the way before installing the assembly.

   Make sure the pushrod is in the tappet and in the rocker arm seat when making valve adjustments.

   For hydraulic lifter camshaft valve adjustment, turn the engine in the normal direction of rotation until the exhaust lifter on the cylinder that you're adjusting starts to move up, then adjust the intake valve on that cylinder to zero lash with no preload, then 1/2 to 1 full turn more. Turn the engine over again until the intake lifter has come to full lift and then is almost all the way back down. Now, set the exhaust valve to zero lash, then 1/2 to 1 full turn more. Continue the above procedure for each cylinder until all valves are adjusted the same.

   This procedure will give you the correct lifter preload for any hydraulic lifter cam with adjustable rocker arms. If your engine has non-adjustable rocker arms, a lifter pre- load of .060" to .090" must be maintained. Use the adjusting sequence as above to insure that the lifter is on the heel of the cam when preload is measured. Generally, pushrods for each cylinder should be the same unless valve stem heights are not correctly matched. When checking lifter preload make sure the valve is not open on the one you are checking. You may need to wait a few minutes for the lifter to bleed down. It may be necessary to change pushrod length, use adjustable pushrods, shim rocker stands or shafts, install straight screw-in studs in place of stock bottleneck type, use allen set adjusting nuts, or machine the cylinder heads for adjustable rocker arms, studs and guide plates. Part number 99170-1, Rocker Arm Pedestal Shim Kit is available for many Ford engines with pedestal mounted rocker arms. Detailed, easy to follow instructions on correctly checking for proper lifter preload can be found elsewhere in this brochure.

The Fast and Easy Way to Check Lifter Preload

If the adjustment procedures are followed correctly for hydraulic lifter cams, no further adjustment is necessary for the life of the cam.

The same basic adjustment procedure should be used for mechanical lifter cams. Instead of lifter preload, you must use the clearance specs on the cam card for your cam. Mechanical lifter cams require a second adjustment after break-in, then periodically at tune-up time for the life of the cam.

9. Clean all parts and gasket surfaces; install new gaskets and re-assemble the engine.

10. Rotate the crankshaft until the number one cylinder is coming up the compression stroke, and then align the timing mark on the damper with the recommended factory initial timing setting. On the compression stroke, both valves will be closed. Install the distributor with rotor pointing to #1 cylinder spark plug wire in the cap.

CRANE FLAT TAPPET CAMSHAFT RECOMMENDED BREAK-IN PROCEEDURE

11. If possible prime the oiling system. When priming, rotate the engine at least one complete revolution to assure oil gets to all valve train components. **Valve covers should be off to assure that all rockers are oiling.**

12. Preset the ignition timing to start the engine at a fast idle**. It is important that the static ignition timing be as close as possible and if the engine has a carburetor, it should be filled with fuel. The engine needs to start quickly without excessive cranking to insure immediate lubrication to the cam lobes.**

13. Start the engine and immediately bring to 3,000 rpm. Timing should be adjusted, as closely as possible, to reduce excessive heat or load during break-in. Get the engine running fairly smoothly and vary the engine speed from 1500-3000 RPM in a slow, to moderate, acceleration/deceleration cycle. During this time, be sure to check for any leaks and check out any unusual noises. If something doesn't sound right, shut the engine off and check out the source of the noise. Upon restart, resume the high idle speed cycling. Continue the varying "break-in" speed for 20- 30 minutes. This is necessary to provide proper lifter rotation to properly mate each lifter to its lobe.

14. Let the engine cool, and then drain the crankcase and properly dispose of the oil and oil filter. Refill the crankcase with a **premium petroleum-based oil**, not a synthetic oil. At this point the initial "break-in" is complete. You can drive the vehicle in your normal manner. We recommend changing the oil and filter after 500 miles. You might want to put another 5000 miles on the cam before switching to a synthetic, if that is your preference.

15. After the first hour or 100 miles of operation, change the oil and filter and re-adjust the valves (if mechanical lifters). Adjust them while the engine is warm. Some aids to help set lifter preload on nonadjustable rocker arm equipped engines are part number 99170-1 Rocker Arm Pedestal Shim Kit for Ford engines with pedestal mounted rocker arms. Part number 99179-1 Rocker Arm Bridge Shim Kit is for Oldsmobile and some AMC V-8 and 6 cylinder engines with pivot bridge mounted rocker arms. If you don't understand these instructions, please feel free to contact one of our Technical Consultants.

THE FAST AND EASY WAY TO CHECK HYDRAULIC LIFTER PRE-LOAD

One of the most important steps in hydraulic camshaft installation is checking the lifter preload. This is the distance that the pushrod has extended into the lifter and depressed the pushrod seat from its retaining ring. Accurately checking that this amount is correct (usually about a minimum of .060" to a maximum of .090") is critical to engine operation and life of the cam lobes, lifters and the engine's valve train itself. If your engine has too little, or no, lifter preload, the valve train will be very noisy when the engine is running. If your engine has too much lifter preload, it may idle roughly, have low manifold vacuum and poor low-end performance and may stall when put into gear.

The most accurate method of checking lifter preload is by use of a dial indicator, but if you don't have a dial indicator, or don't know how to use one, there's an easy way that will work just as well. Follow the instructions in your repair manual and torque all the bolts in their proper sequence. You'll be ready to check lifter preload when you reach the step where you're ready to adjust the valve lash.

First, allow a couple of minutes for the lifter to bleed-down after you have placed some preload on it. This bleed-down period must be allowed to remove any of the oil that the lifter may have inside.

VALVE TIMING MARKS
The valve timing marks shown are for camshaft installation use only and are not to be used for installing the distributor. See step 10 for distributor installation.

Many new lifters **(you must use new lifters with any new cam installation)** come with some amount of oil in them, and you should allow one or two minutes for the bleed-down to occur.

Using the valve cover gasket surface of the cylinder head as a guide, lay a marking implement (metal scribe, etc.) flat on the reference guide. You'll be making two marks, so be sure your guide is flat and easily accessible. Now scribe a line on the pushrod. Next unbolt the rocker assembly and loosen the bolts so that the pushrod will stand free in the pushrod seat of the lifter. You'll also note that the pushrod seat in the lifter will be forced up against the snap ring in the top of the lifter by the plunger spring in the lifter.

Now scribe another mark on the pushrod. You'll now have two marks on the pushrod. The difference between the two marks is the amount of travel that the pushrod made into the lifter, or the lifter preload.

You should maintain a minimum of .060" to a maximum of .090” lifter preload. In most installations you'll normally find that you should have either the correct amount of preload or too much pre-load. You can correct excessive lifter preload by shimming up a bridge-mount assembly by using Crane Cams' 99179-1 Rocker Arm Shim Kit.

Should you find that you have too little lifter preload, or you have free-play between the rocker arm and pushrod, you can also remedy this problem. Simply measure the amount of free-play between rocker arm and pushrod and then add .060" to this figure. This will allow you to buy new Crane pushrods in "longer than stock" length, or the stock length plus that amount you've measured out. Don't forget to add the .060" extra to allow the extra length needed to finally get the amount of preload that you were after in the first place. We can make pushrods to any length, but your measurements must be accurate, so check your measurements several times to be sure.

Normally, you'll only need to check two pushrods per cylinder head, one each intake and exhaust. However, if the valve stem heights of all the valves in the head are uneven (measure from the spring seat to top of the valve) or different from factory specs (found in your manual) then it will be necessary to check lifter preload on each valve.

If you're having a valve job done on your head(s), you can ask the machinist to check valve stem height for you. This is actually a normal part of a properly done performance job, but you might want to ask anyway. The end result will allow you to lay a straightedge across all the valve stems on the assembled head and have valve stem height check the same across the stems.

On other engines, which have individual studs, shoulder bolts or pedestals (such as the 151 cu.in Pontiac 4 cylinder) it is still relatively easy to check lifter preload quick and easy. For those engines that have bottleneck type studs, we have special adjusting nuts that simplify the preload checking process. This type of stud has a shoulder that is larger than the thread and the adjustment nut is tightened down to the shoulder, thus eliminating any adjustment. Special adjusting nuts are tubular in design with an allen head set screws in the top. These nuts are also counterbored at the bottom so that they actually fit over the shoulder part of the stud.

These special adjusting nuts allow you to achieve the proper lifter preload as previously outlined. Tighten the adjusting nut down until you reach zero lash (no preload and no lash), then tighten it 1/2 to 1 turn more. Hold the nut with an end wrench and tighten the allen head set screw tight against the top of the stud. Continue this process until all of the valves have been adjusted.

On engines with pedestal or shoulder bolt mounted rocker arms you can use shims under the pedestal or shoulder to reduce the preload. If preload is too little, or there's none at all, you'll need to have longer than stock pushrods made. Use the same procedure outlined earlier to determine lifter preload and the amount longer your pushrods must be.

On engines that have individually mounted rocker arms, you should be able to achieve correct lifter preload by first tightening the adjusting nut or bolt down to zero lash. Now torque into place the adjusting nut or bolt by tightening 3/4 to 1 full turn of torque wrench rotation. This should place the pushrod at the correct lifter preload point. If for some reason you cannot achieve the correct lifter preload (.060" to .090") with 3/4 to 1 full turn tighter, then you'll have to follow the instructions outlined earlier and use the appropriate shim kit or longer than stock pushrods.

If you do not understand the previously mentioned steps, or you have additional problems: Stop before you make a mistake that will damage your new cam or valve train, and call one of our Technical Consultants.

TROUBLESHOOTING GUIDE

Adjust valve lash properly

All engines have a means for changing their valve lash. Be sure and follow the instructions included with the cam, lifters, or rocker arms. Take the extra time required to check the items mentioned before you fire up the engine.

Check for rocker arm interference

Installing a Crane performance camshaft usually means that you are increasing the maximum valve lift over that the stock camshaft. On engines which have stud mounted rocker arms be sure and check the rocker arm slot that allows the rocker to pivot at maximum lift. Be sure that there is some slight amount (.060") of additional travel left in this slot when the valve is at maximum lift. Be sure that the rocker arm contacts only the valve tip, and not the valve spring or valve spring retainer.

Check valve-to-piston clearance

Many times inexperienced or first time camshaft installers forget to check the engine’s valve-to-piston clearance and end up by bending some, or all, of the engine’s valves when they strike the piston. This is especially critical on an engine with domed pistons, or where the camshaft being installed has more duration and/or maximum valve lift than that of the previous cam. Check this clearance before you fire up the engine. Several ways can be used, the easiest being to use modeling clay placed atop the valve area of a piston and then bolting the cylinder head in place and torquing it to specs. Adjust the valves (don't forget to use the head gasket for an accurate clearance check) then rotate the engine by hand several times. Remove the head(s) and carefully peel off the clay and measure it with a micrometer. Allow a minimum clearance of .080" intake and .100" exhaust.

Bent pushrods means mechanical interference

If you bend one, two or several pushrods for no apparent reason, then you are experiencing some form of definite mechanical interference in the engine's valve train. Check for rocker arm to stud interference. Valve spring coil binding, interference between the retainer and the valve seal or retainer and valve guide. Also, high RPM might be showing valve-to-piston clearance problems that are causing your valves to strike the pistons

and then bending the pushrods. If this occurs, and you suspect valve-to-piston clearance problems, it's a good idea to also check for bent, or leaking valves, and possible piston damage.

Never advance or retard your cam timing without first taking the time to "degree in" the camshaft in the engine

A cam change that doesn't seem to have enough low-end power might be an indication. Frequently, retarded cam timing is due to factory retarded timing gears. Always degree-in the cam before you make any timing changes.

Be sure and properly lube the cam

Many cams are ruined in the first couple of minutes of their life when they are installed dry or improperly lubricated. Be sure and follow the instructions included with the camshaft or correct pre-lubrication of the cam and lifters before you fire up the engine.

Follow cam break-in instructions - especially with regards to oil and filter replacement

Dirty oil and clogged, old oil filters mean abrasives in the oiling system and wear for the camshaft, lifters and all other engine components as well! Spend a couple of extra dollars and buy high quality oil, and filters, and above all, change both frequently. This will add life to not only cam and lifters, but the entire engine assembly as well.

Breaking rocker arm pushrod seats

We have found this to be a somewhat common problem, especially when an engine has several thousand miles of usage on the rockers. This usually occurs when a cam is installed that has a higher lift than the cam previously used. The additional amount of travel required of the rocker arm tends to relocate the load generated by the valve train and concentrates it partially in the already worn area of the rocker arm pushrod seat and partially in the area not yet worn. The result is a concentration of this loading in an area of thinner metal, and breaking through or punching out of the pushrod seat often occurs. The cure is to install new stock-type steel rocker arms, or a set of Crane aluminum rockers.

LIMITED WARRANTY

Crane Cams, Incorporated warrants that all of its products are free from defects in material and workmanship. All Crane Cams performance products are subject to the conditions established in this policy. Crane Cams, Incorporated warrants that when our products are properly installed in their correct application, they will be free from defect and will function as specified. Due to the variety of modifications made on performance engines that may affect performance, economy and engine life, Crane Cams' obligation under this warranty is limited to the repair or replacement, only of Crane products, when the consumer returns these Crane Cams products directly to Crane Cams, Incorporated, Warranty Department, 530 Fentress Blvd., Daytona Beach, FL 32114. There is absolutely no warranty, implied or otherwise, on Crane Cams parts used in competition (racing) engine applications. This limited warranty begins on the date of purchase and is good for a period of one year from validated date of purchase unless otherwise specified to the original purchaser. This warranty will be void on all products that show evidence of misapplication, improper installation, abuse, lack of proper maintenance, negligence, racing engine use, or alteration from their original design. Crane Cams, Incorporated reserves the right to make necessary changes in the products it manufactures and markets at any time to improve product performance. These changes in products will be made without obligation to change or improve products that were previously manufactured. This warranty limits any implied warranty to one year, and no person, company or organization is authorized to assume for Crane Cams, Incorporated any other liability in connection with the sale of Crane Cams products. Some states do not allow limitations on how long an implied warranty lasts. This limited warranty gives you specific legal rights, and you may also have other rights, which vary, from state to state.

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CRANE Cams® CAMSHAFT SPECIFICATION CARD

PART NUMBER: 340-0002 ENGINE TYPE: MECHANICAL BLUEPRINTED

GRINDNO: 553-OS

ENGINE IDENT: 1940-1954 MG TC-TD-TF 4 CYLINDER 1250 C.C.

VALVE SETTING: INTAKE .018 EXHAUST .020 → HOT

LIFT: INTAKE @ CAM 238 @ VALVE 357
EXHAUST @ CAM 238 @ VALVE 357
ALL LIFTS ARE BASED ON ZERO LASH AND THEORETICAL ROCKER RATIOS

ROCKER ARM RATIO 1.5

CAM TIMING		OPENS	CLOSES	ADVERTISED DURATION
.014 @ TAPPET	INTAKE	11 BTDC	51 ABDC	242°
LIFT	EXHAUST	51 BBDC	11 ATDC	242°

SPRING REQUIREMENTS

	TRIPLE	DUAL	OUTER	INNER
PART NUMBER	---	---	---	---
LOADS: CLOSED:	---	LBS @ ---	OR ---	
OPEN:	---	LBS @ ---		

RECOMMENDED RPM RANGE WITH MATCHING COMPONENTS

MINIMUM RPM	1000
MAXIMUM RPM	4500
VALVE FLOAT	5500

CAM TIMING		OPENS	CLOSES	MAX LIFT	DURATION
@ .050	INTAKE	(15) ATDC	25 ABDC	110° ATDC	190°
TAPPET LIFT	EXHAUST	25 BBDC	(15) BTDC	110° BTDC	190°

OVERSIZED LOBES ARE TO REDUCE WEAR. IF STOCK PUSHRODS ARE TOO LONG USE CRANE PUSHRODS PART #905-0003. (Moss 433-335, but not currently available from Crane (4 Jan 2010)

IMPORTANT!

Crane Cams continuously improves and upgrades its cam designs. In some cases this may mean that two Crane Cams with the same part number may actually be different grinds. You must check the GRIND NUMBER stamped on the front of the camshaft and check it against the Grind Number near the top of the Spec Card. For more information on the finest available camshafts, valve train components, and automotive ignition products, visit your local Crane dealer or call the Crane Cams tech line at: (386) 258-6174 or fax (386) 258-6167.

CRANE CAMS, INC. 530 FENTRESS BLVD. DAYTONA BEACH, FL 32114
TECHNICAL INFORMATION CALL (386) 258-6174 OR FAX (386) 258-6167

CRANE TECHNOLOGIES GROUP