



1. Use a 0-1" dial indicator; a 0-500" is adequate for under .500" lift cams.
2. Place indicator on intake lifter of the cylinder you found TDC with and pre-load from .050" to .100". This places some pressure on the lifter. Sometimes a pushrod is required if you can't reach lifter with dial indicator. Place indicator on top of pushrod securely. Be sure to line up pushrod with indicator. Be Sure Degree Wheel is accurately set on zero when you are at this point. Remember, you are located at TDC-compression now.
3. Rotate engine in forward direction (power stroke) As piston approaches bottom dead center (BDC) and comes up for the exhaust stroke, the exhaust valve will be opening. As piston continues on up to top of cylinder the intake valve will begin opening and the exhaust valve will now start closing. When piston is at the TDC point, both intake and exhaust valves will be open, somewhat.
4. As the intake lifter rises the dial indicator should be watched closely. The lifter clearance indicated on your timing tag is the amount the dial indicator should move when you take a degree wheel reading, i.e. .020" lifter checking clearance means the lifter rises .020". Take the opening reading.
5. Now continue in forward direction and take a reading .020" (or whatever checking clearance indicated on timing tag) before the intake lifter is fully in the down position. These two readings are your intake opening (BTDC) and intake closing (ABDC) figures.
6. Now move dial indicator over to the exhaust lifter of the same cylinder and check the exhaust opening (BBDC) and exhaust closing (ATDC).
7. You now have your cam timing figures according to the way they check out in your engine. It is advisable to repeat the checking three or four times, as you will find that the figures will not repeat too well, especially when taken at a low figure such as .020". A figure of .050" is more accurate and is available in most instances from us, if not already on your timing tag.

B. What Do The Numbers Mean?

1. All timing tag figures are determined from factory timing figures for stock cams. ~~If the stock cam times in at 40° intake opening and 50° intake closing, and the checking clearance is .020", the cam duration is calculated by adding opening & closing figures—plus 180°. In this case it would be 40° + 50° + 180° = 270°.~~ If our profile has a duration of 290° it is 20° longer than stock. Therefore, we add 10° to the opening number and 10° to the closing number, giving us 50° intake opening and 60° closing. (50° + 60° + 180° = 290°).
2. If you check your cam out and find that it has an opening figure of 55° and a closing of 55° (55° + 55° + 180° = 290°), it means the intake is opening 5° sooner than the tag indicates. "Sooner" means advanced. This means you could move the cam 5° retard (on the degree wheel) and the cam would be "straight up"—not advanced and not retarded. Note! When a cam is straight up, both intake and exhaust lifters will be up (or open) the same amount. Some means of changing cam gear or sprocket location has to be used in order to fine-tune the cam; either an offset key () for keyed gears and sprockets or slotted () for bolt-on sprockets. The keys usually have to be made special, as well as the slotting of the sprockets. After locating correct location of bolted-on sprockets it is wise to drill and pin the sprocket to the flange no slippage.
3. Running a cam advanced usually develops more torque and a stronger bottom end & midrange. When retarded, the horsepower comes in farther up the the rpm range and the engine runs better at top end. Selection of best cam timing is one of individual need, as all engine building techniques differ and engineering combinations are multiple in number. Tuning a cam is as important as tuning your ignition system or tuning the chassis. The proper tuning of all these is what makes a winner—its not done by accident.
4. At this point, cam timing changes may, or may not, improve performance. A timing change giving improved performance is naturally a change in the right direction, but should not exceed a 2° change at a time.

WARNING ! ! ! ! ! ! !

Retarding the cam brings the exhaust valve closer to the piston and advancing the cam brings the intake valve closer to the piston. CAM TIMING CHANGES SHOULD BE FOLLOWED BY A VALVE TO PISTON CLEARANCE CHECK.