FE Power LLC
22355 Oakdale Drive *email: jayb@fepower.net*
Rogers, MN 55374 *web site: www.fepower.net*
January 7, 2017

Adjustable Timing Set for FE Engines

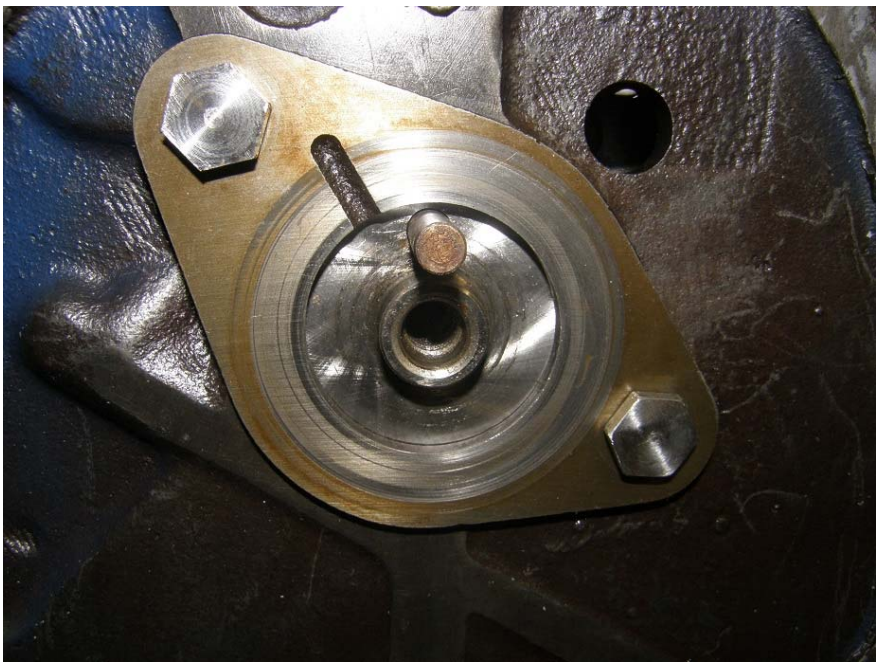
Thank-you for purchasing the FE Power Adjustable Timing Set. This timing chain set is designed to allow easy adjustment of the cam timing on all FE engines. Here are the key features of this timing chain set:

- Cam timing is easily set without the need to remove and replace the bottom gear
- Laser marks on top gear show 10 degrees of advance or retard in 2 degree increments
- Top gear is drilled for double pins, spiral groove in rear for oil to thrust plate
- Works with fuel pump eccentric and mechanical fuel pump
- The roller timing chain is made in USA and uses solid rollers, not split rollers

Prior to installation, the engine builder should consider piston to valve clearance issues when changing the cam timing. Advancing the cam will increase piston to exhaust valve clearance, and decrease piston to intake valve clearance. Retarding the cam will decrease piston to exhaust valve clearance, and increase piston to intake valve clearance. It is a good idea to check the limits of the engine's piston to valve clearance, at the maximum anticipated advance and retard limits, to be sure that changing the cam timing will not cause a piston to valve clearance issue.

Installation:

The adjustable timing set comes with two low-head bolts that must be installed on the cam retaining plate, to prevent interference with the back of the top timing gear. These bolts should be installed on the retaining plate and torqued to 45 foot-pounds. A picture of cam retainer plate with these bolts installed is shown below:



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Next, position the crank so that the inner keyway is in the 12 o'clock position, and install the crank gear on the crankshaft, to within about 3/4 inch of its final position. The machined dot on the crank gear should be at 12 o'clock. Tighten the six adjustment bolts on the cam gear, with the adjustment marks at 0 degrees so that the initial cam timing will be straight up. Install the dowel pin in the cam if it is not already there, and rotate the cam so that the dowel pin is at either 6 o'clock or 12 o'clock (either position will result in the correct cam timing). Position the timing chain on the cam gear and loop the chain around the crank gear; it's a good idea to soak the chain in motor oil for a few hours before the installation. The machined dot on the cam gear should be pointing down at 6 o'clock to line up with the dot on the crank gear. Push the cam gear dowel pin hole onto the dowel pin to hold it in place, then alternately tap the crank and cam gear until they are pushed into their final positions. A picture of the timing set, installed on an engine is shown below:

Install the washer and the cam bolt, and torque the cam bolt to 40 foot-pounds. Next, confirm that you have clearance between the cam retainer plate bolt heads that you installed earlier, and the back of the cam gear. Push the cam gear back as far as possible so that it is bottomed against the cam retainer plate.

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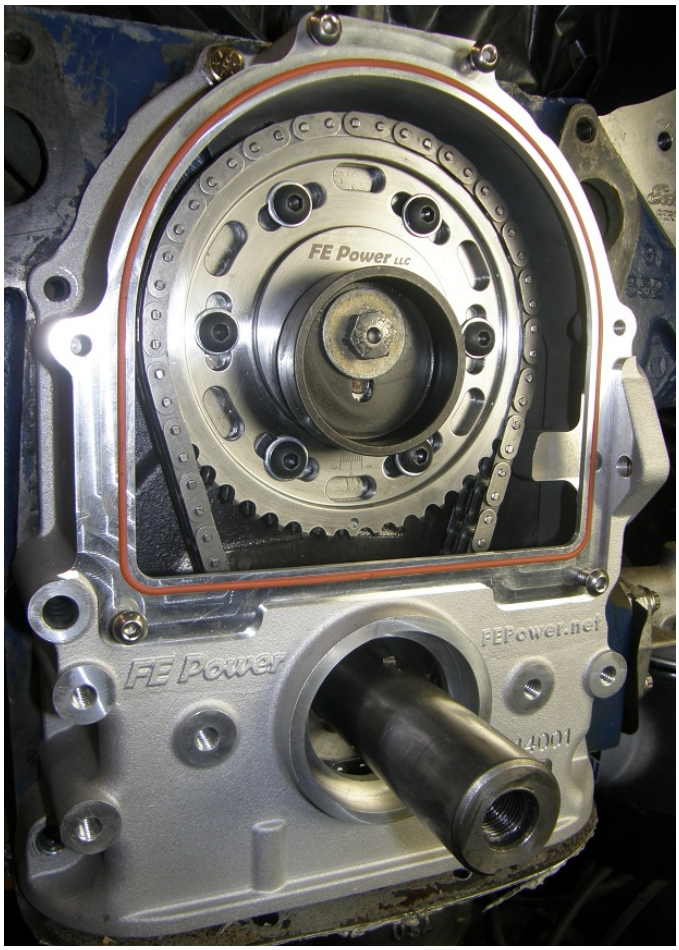
Use a penlight or small flashlight to shine a light behind the cam gear to check for clearance. On the left (driver's) side you can hold the light from under the cam gear and view light between the bolt head and the cam gear from the top to confirm clearance. Only a very small amount is needed. ***If, for whatever reason, you do not have clearance between the bolt heads and the back of the cam gear, the bolts must be removed and ground down to provide clearance.***

To adjust the cam timing, first degree the cam. If the cam timing needs to be changed, loosen all six adjustment screws. Make sure that the crank bolt is in and tight, and use the crank bolt to turn the crank. Valve spring pressure will keep the cam from moving, so that as the crank turns the outer half of the cam gear will also turn, and the cam timing will move. Once the cam timing is set to the desired level, as read off the laser marks on the cam gear, torque the six adjustment screws to 16-18 foot-pounds. It is a good idea to use some blue Loctite on these screws to eliminate any chance of them coming loose. Also, at this time if a fuel pump eccentric is to be used, it cam be installed now (the eccentric blocks the view of the laser marks on the cam gear, so it must not be in place when the cam timing is being adjusted). Blue Loctite is also good insurance on the cam bolt, and make sure that the washer under the cam bolt is large enough in diameter to block the cam dowel pin from coming out. A picture showing the completed installation, with one of the FE Power #14001 timing covers in position, is shown below:



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Terms of Sale:

FE Power LLC makes every effort to ensure the quality of these products, and we will do our best to work with any customer who is not satisfied with this product, in order to resolve the situation. However, because of the small percentage of customers who abuse return or refund policies, **FE Power LLC sells these parts AS IS, with no warranty regarding quality, fit or finish, and no returns or refunds available.**