



INSTALLATION INSTRUCTIONS

Cam Sync Distributor Plug for MSD CPC Ignition, PN 8514

Parts Included:

1 - Cam Sync Distributor Plug, PN 8514
1 - Gasket

2 - O-ring Seals
1 - Tube of Gear Lubricant

Note: A bronze gear is installed on the distributor plug. If you plan on street driving, a steel gear will be required. MSD offers a steel gear, PN 8531 and a replacement bronze gear, PN 8471. These gears have a 0.500" shaft. MSD also offers a series of oversized gears.

Note: If you do not have a degreed balancer, you will need an MSD Timing Tape, PN 8985 to set the timing and cam sync position accurately.

This Distributor Plug is fit with a Hall Effect style pickup that provides the MSD CPC Ignition System, PN 7600, with a camshaft synchronization signal. It is important to have the Ignition system installed and wired in order to position the Distributor Plug to achieve the proper phasing.

Before installing the plug, you need to know your engine's desired maximum (total) timing. Then, add 4° additional to offset the CPC Ignition's built-in timing compensation circuit. If your maximum timing is going to be 36°, position the engine at 40°.

The Plug is fit with an Adjustable Slip Collar that allows you to compensate for any machine work to the engine, heads or intake or when used with tall deck engine blocks. It is recommended to check the following

ADJUSTING THE SLIP COLLAR

Before installing the Distributor Plug, the slip collar adjustment may need to be set. MSD offers a special tool, the 3-in-1 Distributor Set Up Tool, PN 8599, to make these adjustments accurately. If the tool is not available, follow this procedure.

1. Loosen the slip collar and insert the distributor into the engine until it bottoms out against the oil pump drive.
2. After it bottoms out, raise the distributor 0.010" - 0.030" then slide the slip collar down into position and tighten it.

CHECKING GEAR MESH

It is recommended to check for proper gear mesh between the cam gear and distributor gear. To do this, coat the distributor gear with moly grease and install the distributor. Crank the engine over several times, pull the distributor out and inspect the gear pattern shown on the grease. The proper mesh will leave an even pattern in the middle of the gear (Figure 1). Adjust the slip collar to obtain the correct mesh.

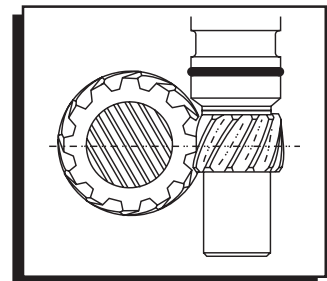


Figure 1 Correct Gear Mesh.

CHECKING THE OIL PUMP TO DISTRIBUTOR SHAFT OVERLAP

The proper overlap between the distributor shaft and the oil pump shaft is very important. The tongue of the distributor shaft should fit into the groove of the oil pump shaft by at least 1/4". To check this:

1. Measure the distance between the base of the slip collar to the tip of the distributor shaft (Figure 2).
2. Using a straight edge, measure the distance from the intake manifold distributor flange to the bottom groove on the oil pump shaft (Figure 2).
3. Take the two measurements and subtract them. The difference is the overlap. If there is not enough or too much overlap a different oil pump shaft is required.

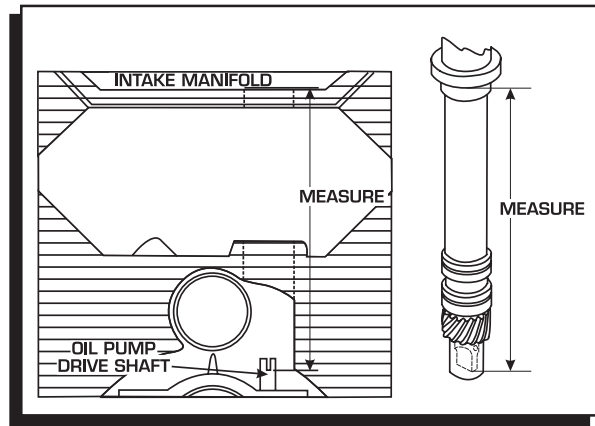


Figure 2 Measuring Oil Pump Overlap.

OIL SEALS

There are two slots on the housing for the supplied O-rings. These are for use **only on engines that have been modified** as shown in Figure 3. The O-rings will increase oil pressure by preventing the oil from passing through the oil gallery lands. If your block is not modified as shown, do not use the O-rings. The oil pressure will remain as if a standard distributor was used.

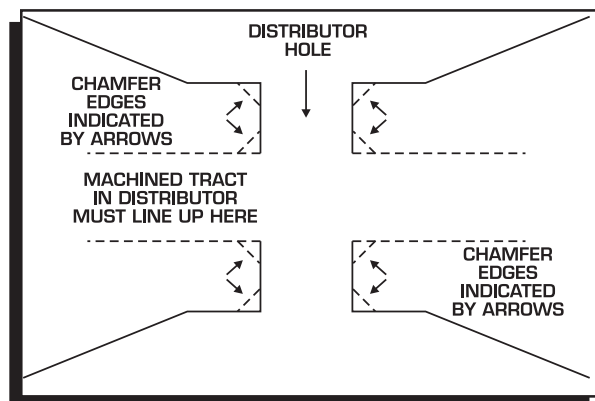


Figure 3 Modified For O-Rings.

INSTALLATION

1. Position the engine and crank trigger pickup, with the number one cylinder on the compression stroke, at the desired maximum timing, with an additional 4° to offset the CPC Ignition's built-in timing compensation circuit. (For example, if you're maximum timing is going to be 36° BTDC, position the engine at 40°.)
2. Align the crank trigger pickup with one of the trigger wheel magnets. The max timing is now set.
3. Next, advance the position of the number one cylinder an additional 22°. (The engine will need to be rotated backwards.) This additional advance is the approximate lead of the cam sync sensor and will get you close enough to fire the engine.
4. Install the gasket to the distributor housing and apply a liberal amount of the supplied gear lube to the distributor gear. Failure to do so will result in premature gear wear.
5. Install the distributor housing into the engine. Make sure the oil pump intermediate shaft and the distributor align and that the housing sits down completely in the engine and install the distributor hold-down clamp but don't tighten it completely.

PHASING THE SIGNAL

At this point, the max timing should be set and the engine should be advanced an additional 22°. The Distributor Plug should be installed and clamped loosely in place. By using the Monitor or Pro-Data+ software to check the sync you can get the phasing close enough to fire the engine. From that point, the sync signal can be adjusted to within specification by using the Cam Max and Cam Min values from the monitor or laptop.

1. Connect the 3-pin connector from the Ignition Control Unit. There will be a Red, Black and Red/Green wire.
2. Have your laptop on with the ignition connected or connect the Hand Held Monitor. Turn the ignition On, do not crank the engine.
3. Scroll to the Cam Sync cursor and slowly rotate the Distributor Sync Plug until the screen just shows Cam Sync On.
4. Rotate the engine one revolution by hand. The Sync will stay On for one revolution, then turn off for another revolution.
5. The sync is now close enough to fire the engine. Go through all of your wiring checks before starting the engine. Leave the laptop or monitor connected and scroll to the Cam Max and Cam Min values.
6. With the engine running, the Cam Max and Cam Minimum will display values between 0 and 99. The optimum setting is approximately a value of 50. Slowly rotate the distributor plug until there is an even difference from 0 on the Max and 99 on the Min (Figure 4). However, if you are unable to achieve a 50-50 reading, a value of 25 Min and 75 Max will work. The goal is to have the Min and Max values in an equal area of the cam sync zone.

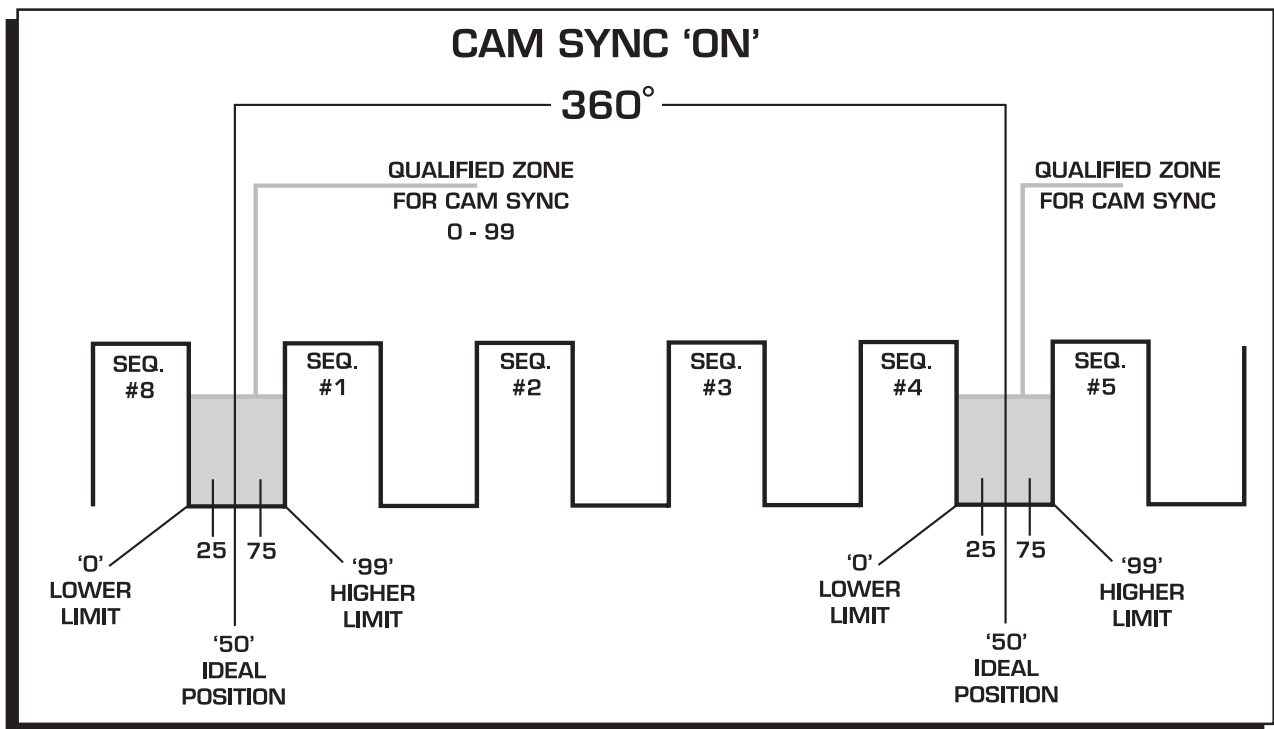


Figure 4 Cam Sync Signal.

Note: If the cam sync ever falls out of phase, the engine will immediately inhibit the output. The LED on the end panel of the ignition unit will blink a code 11. This will also be shown on the monitor and software as No Cam Sync.



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Tech Notes

Service

In case of malfunction, this MSD component will be repaired free of charge according to the terms of the warranty. When returning MSD components for service, Proof of Purchase must be supplied for warranty verification. After the warranty period has expired, repair service is charged based on a minimum and maximum charge.

Send the unit prepaid with proof of purchase to the attention of: **Customer Service Department, Autotronic Controls Corporation, 12120 Esther Lama, Suite 114, El Paso, Texas 79936.**

When returning the unit for repair, leave all wires at the length in which you have them installed. Be sure to include a detailed account of any problems experienced, and what components and accessories are installed on the vehicle.

The repaired unit will be returned as soon as possible after receipt, COD for any charges. (Ground shipping is covered by warranty). All units are returned regular UPS unless otherwise noted. For more information, call the MSD Customer Service Line (915) 855-7123. MSD technicians are available from 8:00 a.m. to 5:00 p.m. Monday - Friday (Mountain Time).

Limited Warranty

Autotronic Controls Corporation warrants MSD Ignition products to be free from defects in material and workmanship under normal use and if properly installed for a period of one year from date of purchase. If found to be defective as mentioned above, it will be replaced or repaired if returned prepaid along with proof of date of purchase. This shall constitute the sole remedy of the purchaser and the sole liability of Autotronic Controls Corporation. To the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representations whether expressed or implied, including any implied warranty of merchantability or fitness. In no event shall Autotronic Controls Corporation be liable for special or consequential damages.