

# MSD INSTALLATION INSTRUCTIONS

## MSD Pro-Billet Distributor Plug with Cam Sync Chevrolet V8, PN 85141 Ford 289/302, PN 85221 Ford 351W, PN 85061; Ford 351C/460 PN 85211

### Parts Included:

- |                               |   |
|-------------------------------|---|
| 1 - Cam Sync Distributor Plug | 1 - O-ring (Ford) or Gasket (Chevrolet)           |
| 1 - Tube of Gear Lubricant    | 1 - 3-Pin Metripack Connector with Secondary Lock |
| 1 - Slip Collar (Chevrolet)   | 3 - Metripack Terminals and Seals                 |
| 2 - O-rings (Chevrolet)       |   |

**WARNING:** When installing any electronic accessory or component, disconnect the battery cables. When disconnecting, always remove the negative cable first and install it last.

This distributor plug is equipped with an adjustable Hall-Effect Cam Sync Sensor for fuel injected engines. The Cam Sync can be adjusted to achieve the proper lead time required for the particular ECU being used.

If using a Holley HP or Dominator ECU, it is recommended to use an adapter harness, Holley PN 558-431 or PN 558-306.

### HALL-EFFECT PICKUP

#### LED OPERATION

The LED is On whenever the magnet is **not** in front of the pickup. The LED turns Off when the magnet passes over the center of the pickup (for approximately 40°).

#### SPECIFICATIONS

Accepts 5 – 18 Volts continuous

Output: Within 1.5 volts, of supply voltage, on the red wire (Signal Hi) and 0.3 volt above ground (Signal Lo).

Protected from reverse polarity, short circuit, and over voltage.

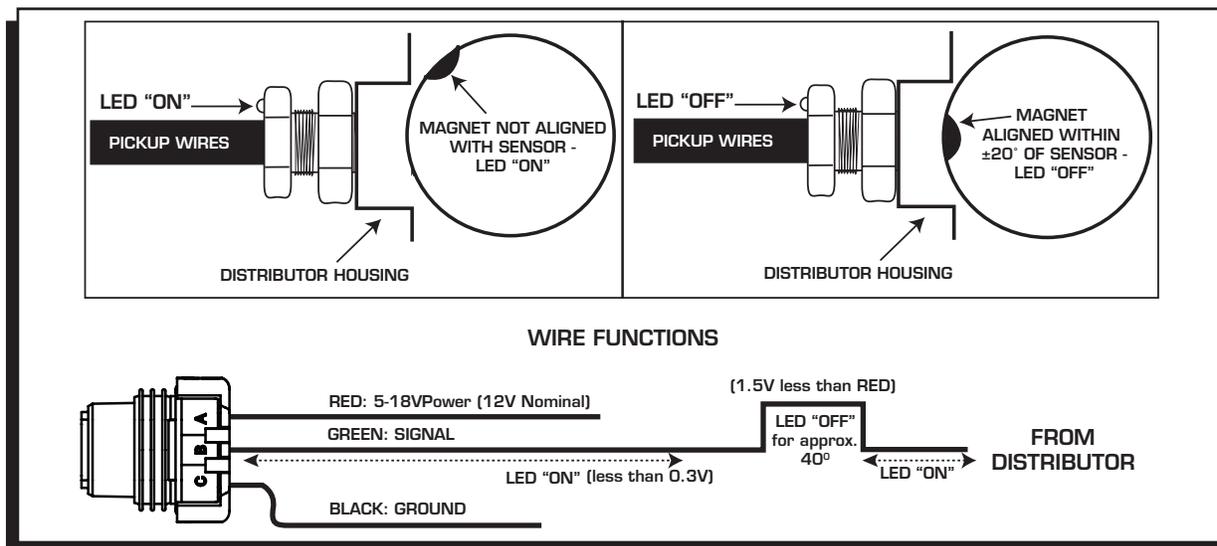


Figure 1 Installing the Hall-Effect Pickup.

### ADJUSTING THE SLIP COLLAR FOR CHEVROLET APPLICATIONS

The slip collar has been set for use with stock deck height blocks. If any modifications have been made to the intake manifold sealing surfaces, deck of the block, or cylinder heads - the slip collar height may need to be changed.

1. Loosen the slip collar and remove the gasket. Insert the distributor into the engine until it bottoms out against the oil pump drive.
2. After it bottoms out, slide the slip collar down into position and tighten it.
3. Remove the distributor and reinstall the gasket.

### 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 2). Adjust the slip collar to obtain the correct mesh.

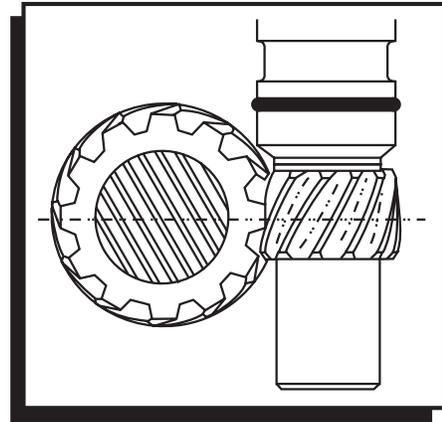


Figure 2 Correct Gear Mesh.

### 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 3).
2. Using a straight edge, measure the distance from the intake manifold distributor flange to the bottom groove on the oil pump shaft (Figure 3).
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.

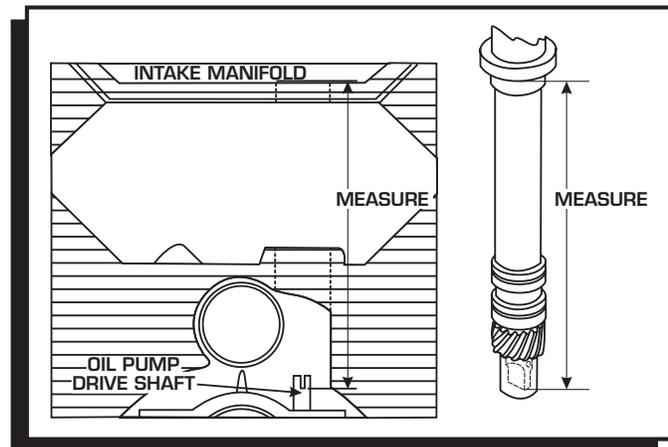


Figure 3 Measuring Oil Pump Overlap.

**INSTALLING THE DISTRIBUTOR PLUG**

1. FORD: Make sure the O-ring is installed and apply a liberal amount of the supplied lubricant to the gear.  
 CHEVY: Make sure the gasket is installed and apply a liberal amount of the supplied lubricant to the gear. (The supplied O-rings can only be used if the block has been modified as shown in Figure 4.)
2. Install the distributor plug making sure that it fully seats on the manifold or engine block. You may need to rotate the oil pump shaft to get the assembly to fully seat.
3. Position the distributor hold down clamp onto the housing step, but do not tighten it completely.

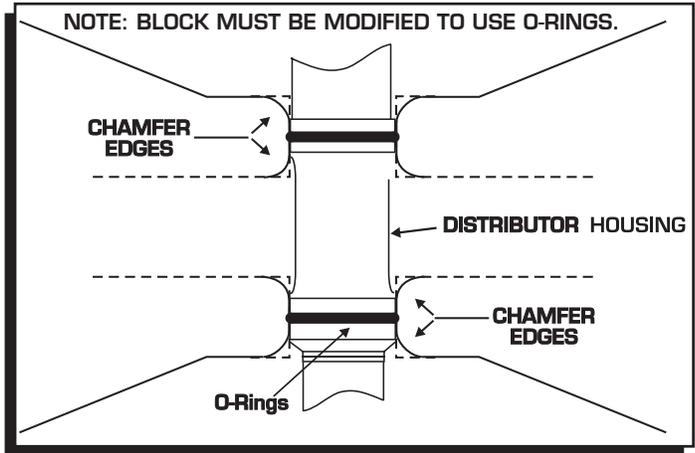


Figure 4 Modified Block for use with O-Rings.

**SETTING THE CAM SYNC PICKUP**

The Hall-Effect Pickup is designed to provide an aftermarket ECU with a sync signal. This signal must be advanced more than the corresponding Cylinder #1 ignition trigger signal. The amount of advance or lead depends on the EFI system being used. Always check with the EFI manufacturer to determine the amount of advance required for the cam sync signal.

For example: An ECU requires 10° of cam sync signal advance relative to the Cylinder #1 ignition trigger event, and your engine will be running a total ignition timing of 36°.

Once the distributor plug is installed, rotate the engine until the number one cylinder is positioned at the required cam sync position. Referring to the example above, if 10° of cam sync lead is required, position Cylinder #1 at 46° BTDC.

1. With power going to the Hall-Effect sensor, rotate the housing until the red LED turns off (the sensor output will be 'Signal Hi'). This will be the 10° of advance for the ECU. Consult Table 1 before proceeding.
  - a. For engines that would have the **rotor rotating CW**: It is important to rotate the housing CW until the LED turns on, to find the edge of the magnet. Then rotate the housing CCW just until the LED turns off.
  - b. For engines that would have the **rotor rotating CCW**: It is important to rotate the housing CCW until the LED turns on, to find the edge of the magnet. Then rotate the housing CW just until the LED turns off.
2. Tighten the hold down clamp, locking the cam sync distributor plug in place.

Table 1 Rotor Rotation Based on Engine Type.

Engine Type	Rotor Rotation
Chevrolet	Clockwise (CW)
Ford	Counter-Clockwise (CCW)

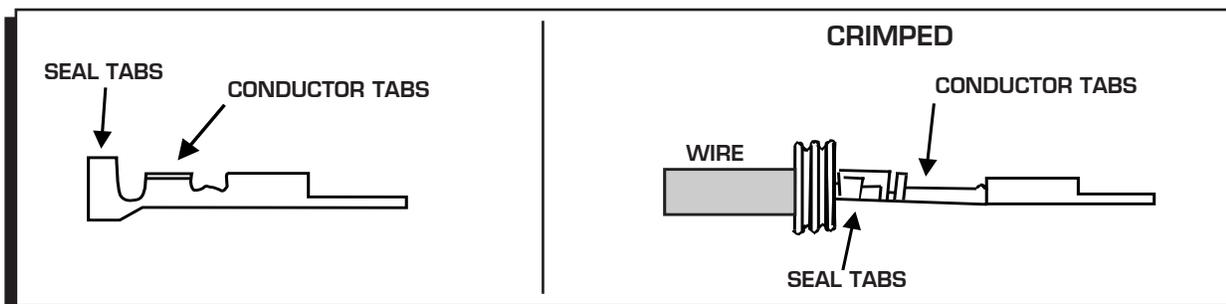
**MATING CONNECTOR INSTALLATION**

To install the Metripack seals, terminals, and connector (Figure 5) it is recommended to use MSD's Pro-Crimp Tool, PN 35051, with Weatherpack Dies, PN 3509.

1. Strip the wire about 3/16" and install the seal over the insulation. (For small diameter wires, strip the wire about 3/8" and fold it in half before crimping).
2. Crimp the exposed wire with the conductor crimp tabs.
3. Once the wire is crimped, crimp the seal tabs over the seal.
4. Position each wire into the connector making sure they are in the correct position as shown in Table 2. *Please note that your mating wire colors may be different from the pickup's shown in Figure 1.* Fully insert each terminal and listen for an audible click. Make sure the terminal has locked in the connector shell by gently pulling on the wire and confirming that it does not back out.
5. Install the secondary lock to the connector.

**Table 2 Wiring Connector.**

<b>A</b>	<b>5-18 Volts</b>
<b>B</b>	<b>Signal</b>
<b>C</b>	<b>Ground</b>

**Figure 5 Installing the Terminals.****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 warranty service, **Proof of Purchase** must be supplied for verification. After the warranty period has expired, repair service is based on a minimum and maximum fee.

**All returns must have a Return Material Authorization (RMA) number** issued to them before being returned. To obtain an RMA number please contact MSD Customer Service at 1 (888) MSD-7859 or visit our website at [www.msdpower.com/rma](http://www.msdpower.com/rma) to automatically obtain a number and shipping information.

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 using Ground shipping methods (ground shipping is covered by warranty). For more information, call MSD at (915) 855-7123. MSD technicians are available from 7:00 a.m. to 5:00 p.m. Monday - Friday (mountain time).

**Limited Warranty**

MSD warrants this product to be free from defects in material and workmanship under its intended normal use\*, when properly installed and purchased from an authorized MSD dealer, for a period of one year from the date of the original purchase. This warranty is void for any products purchased through auction websites. If found to be defective as mentioned above, it will be repaired or replaced at the option of MSD. Any item that is covered under this warranty will be returned free of charge using Ground shipping methods.

This shall constitute the sole remedy of the purchaser and the sole liability of MSD. To the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representation whether expressed or implied, including any implied warranty of merchantability or fitness. In no event shall MSD or its suppliers be liable for special or consequential damages.

\*Intended normal use means that this item is being used as was originally intended and for the original application as sold by MSD. Any modifications to this item or if it is used on an application other than what MSD markets the product, the warranty will be void. It is the sole responsibility of the customer to determine that this item will work for the application they are intending. MSD will accept no liability for custom applications.