

MSD **IGNITION** **INSTALLATION INSTRUCTIONS**

MSD Pro-Billet Ready-to-Run Chrysler V8 Distributor PN 8388; 318, 340, 360, PN 8386; 383, 400 PN 8387; 426, 440

Important: Read these Instructions before attempting the installation.

Parts Included:

1 - Pro-Billet Distributor
1 - Rotor, PN 8467
1 - Distributor Cap
1 - Advance Kit
1 - O-ring Seal
1 - Parts Bag

Replacement Cap:

Distributor PN 8386, PN 8387 - PN 8431
Distributor PN 8388, PN 8433

Note: These distributors feature HEI style plug wire terminals. You may need to change the terminals and boots of your wires. MSD offers a kit, PN 8848, that comes with nine HEI style boots and terminals.

TIMING FUNCTIONS

Before continuing with the installation, here are a few definitions you should be aware of:

Initial Timing: This is the base timing (also referred to as idle timing) of the engine before the centrifugal advance begins.

Centrifugal Advance: The centrifugal (or mechanical) advance mechanism is made up of weights, springs, advance cams, and an advance stop bushing. The amount and rate of advance that your distributor is capable of is determined by the centrifugal timing. If you ever wish to lock out the centrifugal advance, refer to the centrifugal advance section.

Total Timing: This is the total of the initial timing plus the centrifugal advance added together. Example: 10° Initial + 25° centrifugal = 35° Total Timing. (When checking Total timing, disconnect and plug the vacuum advance.)

Vacuum Advance: The vacuum advance will advance the timing up to 10° during partial throttle driving (with 15 lbs of vacuum). The vacuum line should be routed to a ported vacuum outlet above the throttle plates.

CHOOSING AN ADVANCE CURVE

The function of the advance curve is to match the ignition timing to the burning rate of the fuel and speed (rpm) of the engine. Any factor that changes the burning rate of the fuel or the engine speed can cause a need for an ignition timing change. Figure 1 shows some of the factors that will affect engine timing.

FACTOR	Advance Timing	Retard Timing
	For	For
Cylinder Pressure	Low	High
RPM	High	Low
Vacuum	High	Low
Energy of Ignition	Low	High
Fuel Octane	High	Low
Mixture (Air/Fuel)	Rich	Lean
Temperature	Cool	Hot
Combustion Chamber Shape	Open	Compact
Spark Plug Location	Offset	Center
Combustion Turbulence	Low	High
Load	Light	Heavy

Figure 1 Ignition Timing Factors.

As you can see from the chart, most factors will change throughout the range of the engine operation. The timing mechanism of the distributor must make timing changes based on these factors.

Example: An engine has 11:1 compression, a high energy ignition and turns 5,500 rpm. With the specifications given, you will have to retard the timing for the high compression, low rpm and high energy ignition. By comparing the engine's specifications against the chart, a usable timing guideline can be found. Engines with a combination of items from both columns will require a timing that is set in the mid range.

Obviously a full technical explanation of correct ignition timing would be very complicated. The best way to arrive at a suitable ignition curve for your engine is to use the Ignition Timing Factors Chart as a guide and compare it to the Advance Graphs in Figure 4 until a suitable curve is found. When selecting your advance curve, use detonation (engine ping) as an indicator of too much advance, and a decrease in power as an indicator of too little advance.

TIPS ON SELECTING AN ADVANCE CURVE

- Use as much initial advance as possible without encountering excessive starter load.
- Start the centrifugal advance just above the idle rpm.
- The starting point of the centrifugal advance curve is controlled by the installed length and tension of the spring.
- How quickly the centrifugal advance (slope) comes in is controlled by the spring stiffness. The stiffer the spring, the slower the advance curve.
- The amount of advance is controlled by the advance bushing. The bigger the bushing, the smaller the amount of advance.

CENTRIFUGAL ADVANCE CURVE

SELECTING THE ADVANCE SPRINGS

The rate, or how quick the advance comes in is determined by the type of springs which are installed on the distributor. The MSD distributors are equipped with two Heavy Silver springs installed. These will give you the slowest advance curve possible. The parts kit contains two additional sets of springs which can be used to match the advance curve to your particular application. Refer to the Spring Combination Chart (Figure 3) for combinations that can be achieved.

To change the springs, remove the cap and rotor and use needlenose pliers to remove the springs. Be sure the new springs seat in the groove on the pin.

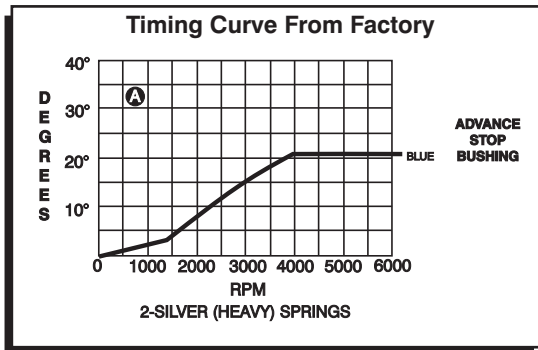


Figure 2 The Factory Equipped Curve.

SPRING COMBINATION	RATE OF ADVANCE	FIGURE 4 (Page 3)
2- Heavy Silver		A
1- Heavy Silver 1- Light Blue		B
1-Heavy Silver 1-Light Silver		C
2- Light Blue		D
1- Light Silver 1- Light Blue		E
2- Light Silver		F
	FASTEST	

Figure 3 Spring Combination Chart.

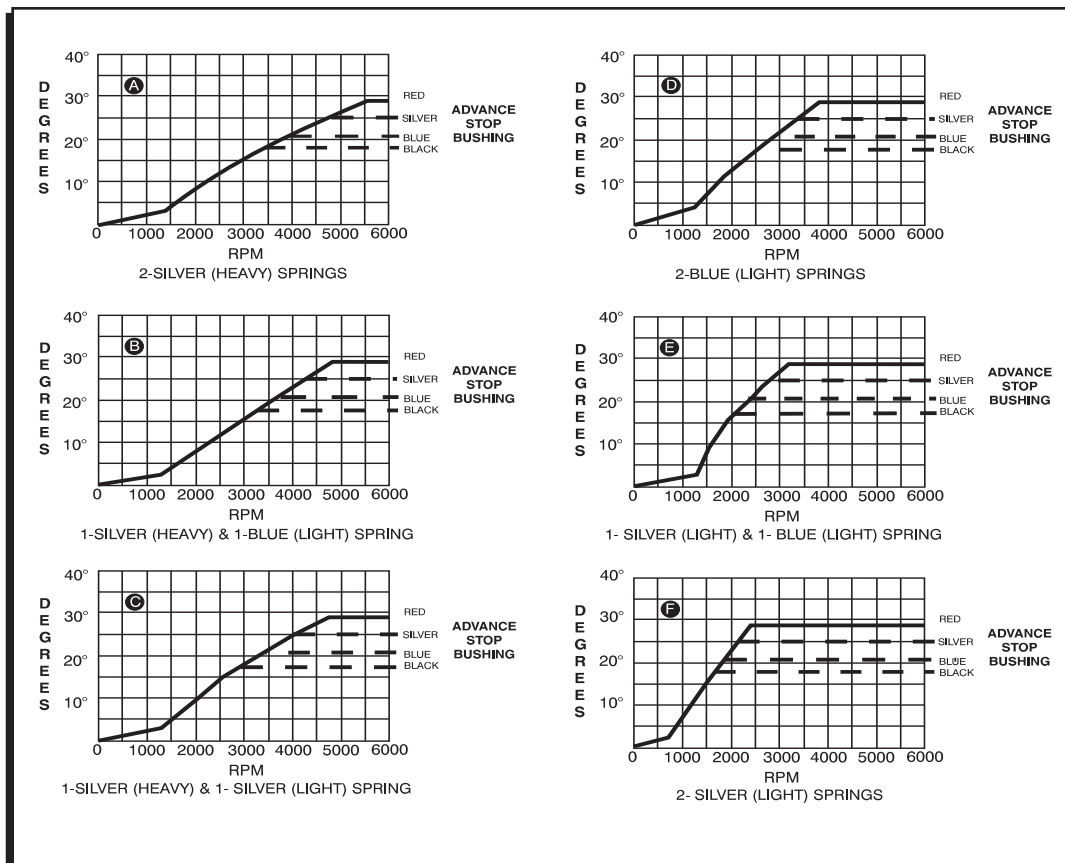


Figure 4 Advance Curves.

SELECTING THE ADVANCE STOP BUSHING

Three different advance stop bushings are supplied in the distributor kit. The distributor comes with a Blue (21°) bushing already installed. If a different amount of centrifugal advance is desired, follow the next procedure to change the bushings. The chart in Figure 5 gives the size and approximate degrees for the corresponding bushings.

BUSHING DIAMETER	APPROXIMATE CRANKSHAFT DEGREES
Red - 0.283"	28°
Silver - 0.313"	25°
Blue - 0.343"	21°
Black - 0.375"	18°

Figure 5 Advance Stop Bushing Chart.

CHANGING THE ADVANCE STOP BUSHINGS

1. Remove the distributor cap and rotor.
2. Remove the locknut and washer on the bottom of the advance assembly (Figure 6).
3. Remove the bushing and install the new one. Install the washer and locknut.

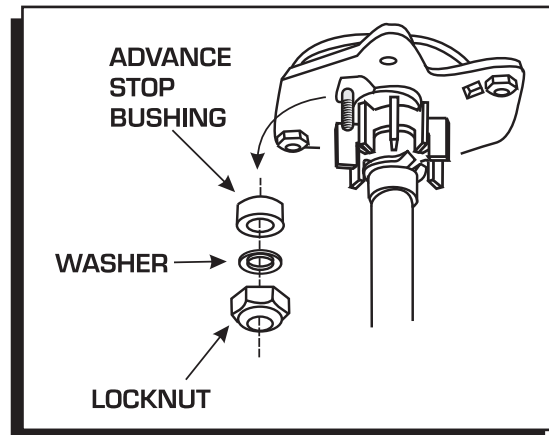


Figure 6 Changing the Advance Stop Bushing.

LOCKING OUT THE CENTRIFUGAL ADVANCE

1. Remove the cap and rotor.
2. Remove the advance springs, weights and the advance stop bushing from the advance assembly.
3. Remove the roll-pin from the shaft and slide the retaining sleeve down (Figure 7).
4. Slide the shaft two inches out of the housing.

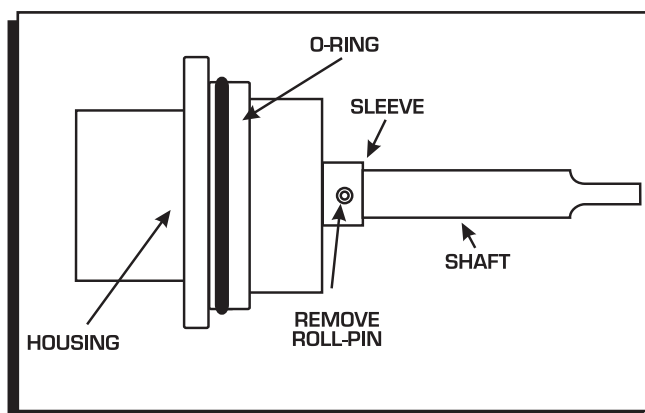


Figure 7 Removing the Retaining Sleeve.

5. Rotate the shaft 180° and insert the advance stop bushing pin into the small hole on the advance plate (Figure 8).
6. Install the locknut and washer to the advance stop bushing pin.
7. Install the retaining sleeve and roll-pin.

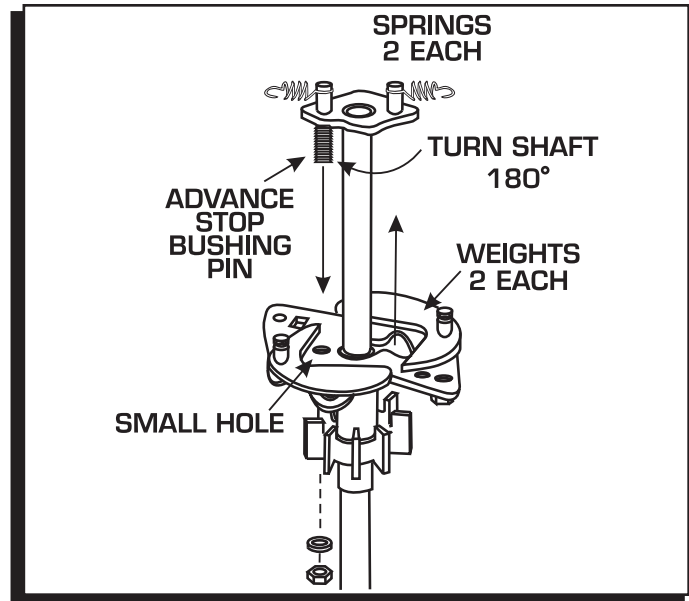


Figure 8 Locking Out the Centrifugal Advance.

INSTALLING THE DISTRIBUTOR

Note: The original ballast resistor can be bypassed with the Ready-to-Run Distributor.

1. Remove the existing distributor cap without disconnecting any of the spark plug wires.
2. With the cap off, crank the engine until the rotor is aimed at a fixed point on the engine. Note this position by making a mark (Figure 9).
3. Place the distributor cap back on and note which plug wire the rotor is pointing to. MARK THE SPARK PLUG WIRES and remove the distributor cap.
4. Disconnect the wiring from the distributor.

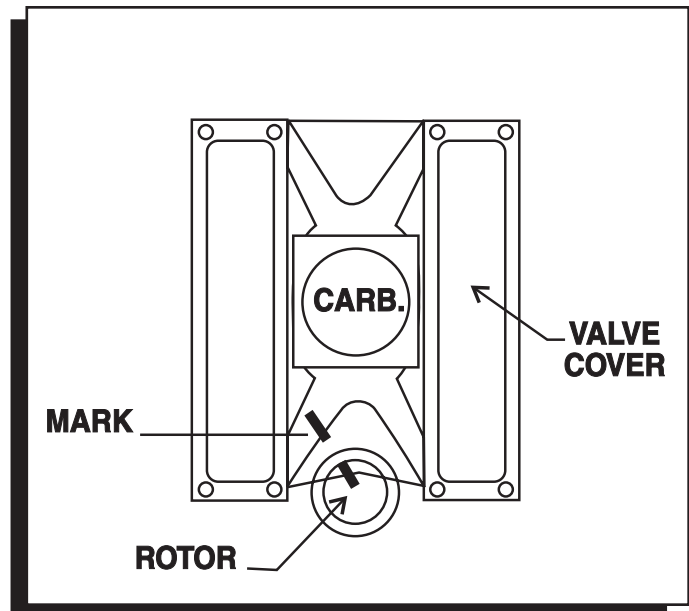


Figure 9 Marking the Rotor Location.

5. Loosen the distributor hold-down clamp, slide the clamp out of the way and lift the distributor out of the engine.
6. Install the supplied O-ring seal in the groove on the distributor land. Apply a thin layer of oil to the housing O-ring.
7. Install the distributor making sure that the rotor comes to rest pointing at the fixed mark. If the distributor will not fully seat with the rotor pointing to the marked position, you may need to rotate the oil pump shaft until the rotor lines up and the distributor fully seats.
8. Position and tighten the hold-down clamp onto the distributor.
9. Install the rotor and distributor cap. It is recommended to use a drop of Blue Loctite on the distributor cap hold down bolts.
10. Install the spark plug wires from the old cap one at a time to ensure correct location.
11. Connect the supplied wiring harness to the distributor. Route the wires to their connections as shown in Figure 10.

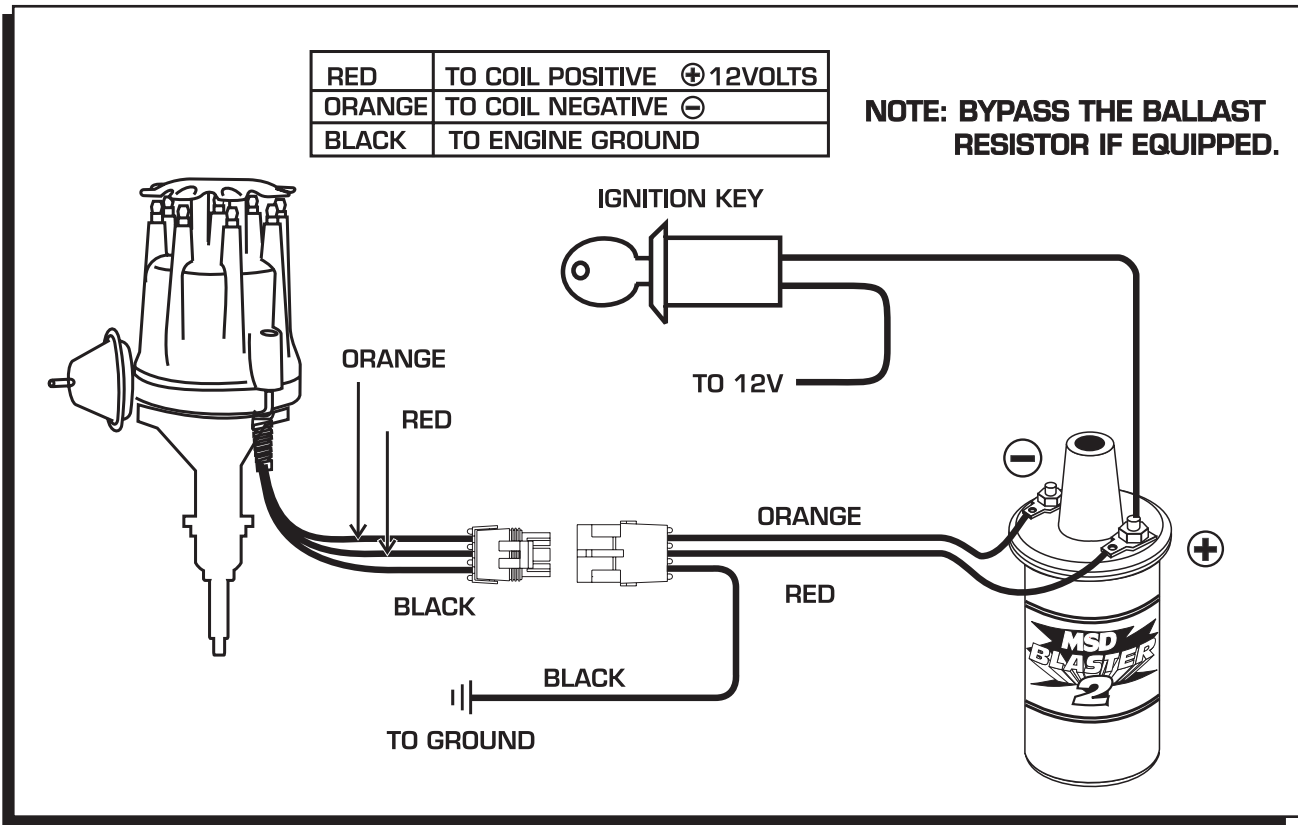


Figure 10 Wiring the Ready-to-Run Chrysler Distributor.

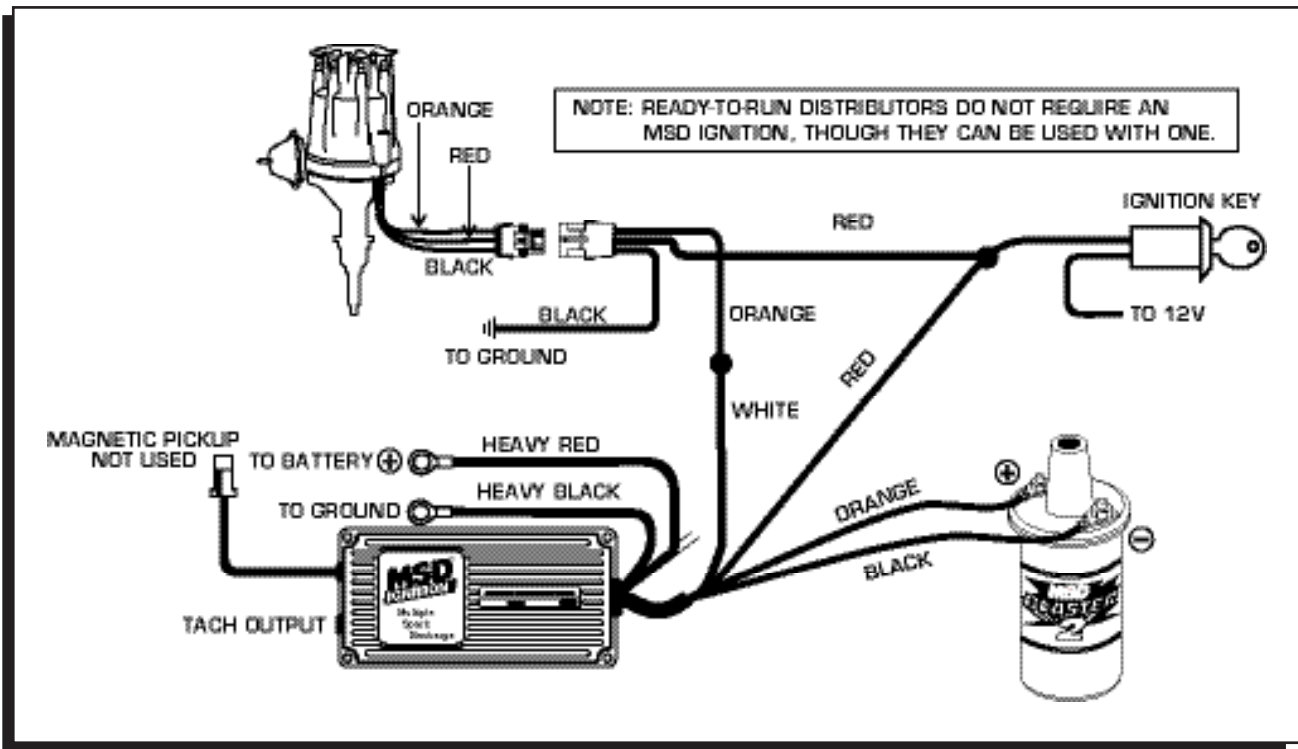


Figure 11 Connecting an MSD Ignition Control.

