

# INSTRUCTIONS

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# SPEEDWAY motors®

## 289-6502 - Small Block Ford HEI Distributor

### Installation Instructions:

**NOTE:** This distributor fits small block Ford engine displacements from 221ci through 302ci but will **NOT** fit 351ci Windsor small blocks due to that engine's taller deck height.

**NOTE:** The included distributor gear is designed for iron hydraulic or solid flat tapped camshafts. Consult your cam manufacturer to determine gear compatibility. Speedway Motors carries a selection of bronze, melonized, and steel gears for proper camshaft compatibility.

**NOTE:** This distributor requires a single 12-volt wire that is hot in "START" and "RUN" key positions. On Ford ignition switches this is typically a red wire with green stripe. Any resistance wire (usually pink and connected inline between the ignition switch and firewall harness connection point) **MUST** be removed or bypassed. If desired you can use a standard automotive relay, triggered by the factory resistance wire, to provide 12-volts directly from the battery so as to not disturb under dash wiring.

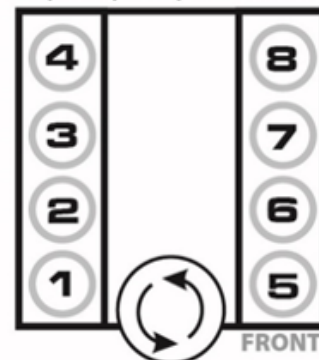
### Pre-Installation Checks:

Before you begin installation on a running vehicle confirm and note base timing settings. Note the general position of the vacuum advance cannister as well so that you have sufficient room to rotate the distributor for timing adjustments. Bring your engine's #1 cylinder (passenger side forward most cylinder) to top dead center (TDC) by using the timing marks on your crankshaft damper and inspecting piston location with the spark plug removed. You can do this with a remote starter button or by turning the crankshaft with a ratchet. You can use your thumb over the #1 cylinder spark plug hole to feel engine compression as you approach TDC. Once TDC has been confirmed note the location of the distributor's rotor tip (which will be pointing to cylinder #1 post terminal on the old distributor cap).

There are two commonly used small block Ford firing orders, please confirm which firing order your engine uses or refer to your camshaft spec card if this is a new engine. Note which firing order your engine/cam uses so that your plug wires can be transferred to the new distributor or new spark plug wires installed if your current spark plug wires are not compatible (this distributor uses male/HEI distributor terminal compatible plug wires).



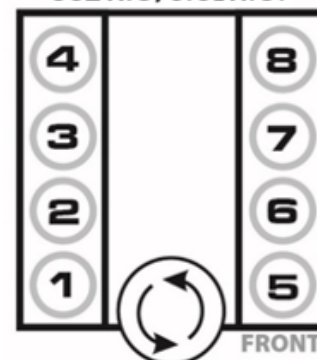
221, 260, 289, 302 Non-HO



1-5-4-2-6-3-7-8

**Fig 1.** 221, 260, 289, 302 Non-H.O. Firing Order: 1-5-4-2-6-3-7-8 (counterclockwise rotor rotation)

302 H.O./5.0LH.O.



1-3-7-2-6-5-4-8

**Fig 2.** 302 H.O./5.0LH.O. and most aftermarket camshafts: 1-3-7-2-6-5-4-8 (counterclockwise rotor rotation)

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### Removal of Old Distributor (if applicable):

1. If this is a new long block or fresh engine build with no distributor installed, verify cylinder #1 is at TDC and then continue to the next step of instructions. Otherwise, begin the removal of the old distributor by disconnecting the vehicle's battery negative terminal and disconnecting all vehicle wiring from the distributor and ignition coil.
2. Remove the ignition coil and mounting bracket from the engine, as it will not be used with the new HEI-style distributor.
3. Note the spark plug wire order if reusing the plug wires installed and then disconnect them from the distributor cap.
4. If not already noted previously, note the distributor's rotor position and the terminal on the cap it points to.
5. Remove the vacuum advance vacuum line if equipped.
6. Remove the distributor hold down bolt and clamp and then remove the distributor.
7. Note that the rotor and distributor shaft will rotate as you remove the distributor due to the helical cut distributor gear mesh with the camshaft gear.
8. Once the distributor has been removed do **NOT** make any attempt to rotate the engine by hand or with the starter/ignition switch, as this will take the engine off TDC.

### Installation of New HEI-Style Distributor:

1. Disconnect the ignition coil wiring connector from the distributor cap, then press down and rotate the four spring loaded cap retainers to allow removal of the distributor's cap.
2. Lubricate the distributor's O-ring gasket and the distributor gear with clean engine oil.
3. Rotate the new distributor's shaft to position the rotor's tip in the same direction/cap terminal as the distributor that was removed. Alternatively, choose a terminal on the cap you wish to designate as your #1 cylinder and position the rotor tip to it.
4. Lower the distributor into the engine, noting that the rotor will rotate as the distributor gear meshes with the camshaft gear, thus it may take more than one attempt to get the gear mesh right to maintain the rotor position you desire. The distributor's base should be seated flush with the block. If not, you may have not properly engaged the oil pump drive shaft.
5. Using a suitable tool, rotate the oil pump shaft a few degrees and attempt installation of the distributor again until the rotor is properly positioned, and the distributor is fully seated.
6. Install the hold down clamp and bolt finger tight for now.
7. Reinstall the distributor cap by securing it with the four spring loaded retainers, ensuring the cap is seated properly, and reconnect the ignition coil wiring to the cap.

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### Connecting Plug Wires and Final Wiring Steps:

If your spark plug wires are compatible with the HEI-style cap, transfer the wires from the old cap to the new cap one at a time in proper firing order rotation beginning with your cylinder #1 wire on the distributor cap terminal you designated for cylinder #1. If your wires are from an old points-based ignition with Ford's small cap distributor you will need a set of HEI compatible plug wires. Speedway Motors offers a multitude of pre-terminated and cut to fit wire sets in several colors and diameters. We suggest swapping the new plug wires one at a time to prevent confusion or crossing up the firing order.

The HEI-style distributor has only two wire connections—BAT and TACH. BAT is where you will connect your 12-volt ignition switched wire that is hot in both START and RUN and is the only mandatory connection. TACH is for aftermarket tachometers that use the coil's negative terminal to trigger. The TACH connection will not power a factory Ford in-dash tach or add on style Ford optional tach if the tach was originally wired in series with the resistance wire to the positive terminal of the original coil. You will have to wire in a tach adapter or have your tach updated to work with a coil negative signal connection. Both of these connections require insulated female spade terminals or you can use OE-style GM terminal connector, PN 91012343 for a cleaner appearance and more secure connection.

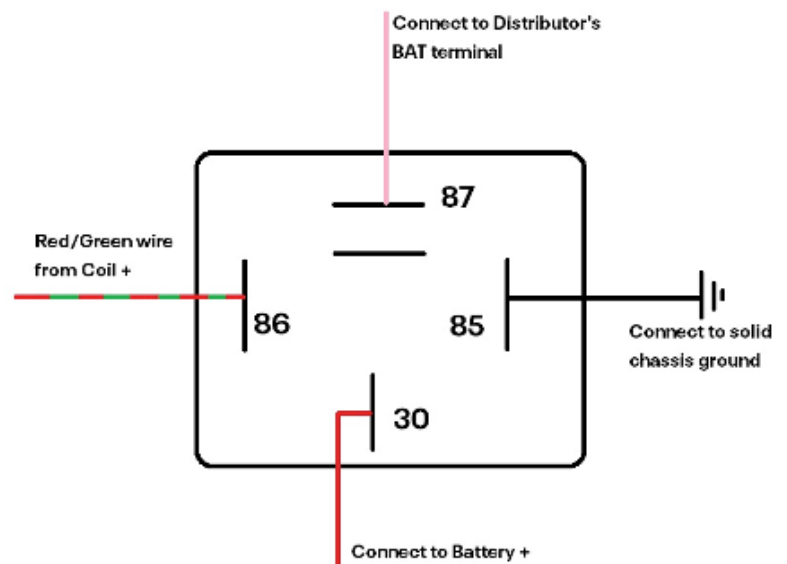


Fig 3.

The original resistance wire will need to be bypassed to allow full 12-volts to the distributor's BAT connection from your ignition switch. We recommend using 12-gauge stranded automotive wire. Alternatively, if you do not wish to modify your under dash wiring or make changes to the firewall wiring connections, you can use the factory coil positive wire to trigger a standard 12-volt relay that will provide 12-volts to the distributor's BAT terminal directly from the battery. This relay can be wired using 12-gauge stranded automotive wiring as well and mounted in the engine compartment with no modifications to the original wiring. See Fig 3 for a wiring diagram. Once all wiring has been completed the battery negative terminal can be reconnected.

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### Final Adjustments and Setting Timing:

1. Temporarily plug the distributor vacuum advance hose to the new distributor.
2. Double check plug wire connections and firing order and all wiring before starting the vehicle.
3. Check and set the vehicle's base timing. Base timing will vary with engine model year, engine modifications, and fuel octane rating. We recommend starting with 8 to 10 degrees of initial advance and work from there until you hear spark knock/ping and then back the timing off two degrees. Most engines will be happy somewhere between 10 and 14 degrees, again depending upon modifications and fuel used.
4. Once the base timing has been set, shut off the engine, tighten the distributor hold down clamp, remove the vacuum advance hose plug and reconnect the hose to the distributor's vacuum advance canister.
5. Once base timing is set you can adjust the vacuum advance to suit your application via the included hex key wrench. The wrench is placed into the vacuum advance port once the vacuum hose has been removed. Turning the vacuum advance adjuster clockwise will add timing, while turning the adjuster counterclockwise will remove timing (when vacuum is applied to the advance cannister). You can lock the vacuum advance function out by turning the adjustment counterclockwise until it stops. Just like your static base timing, you can add timing advance to the vacuum system until you hear spark knock/ping and then back the vacuum advance adjustment off until the spark knock/ping goes away under load.

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