

Got a question for John? E-mail him at [vintagetechn@amasautomotive.com](mailto:vintagetechn@amasautomotive.com)

# Timing IS everything!

**READER'S QUESTION:** A FRIEND AND I RECENTLY HAD THE 327/365 OUT OF MY '64 FOR A VALVE JOB AND CAM CHANGE, AND WE RE-INSTALLED IT LAST WEEKEND. WE HAVEN'T BEEN ABLE TO GET IT TO RUN, AND IT BACKFIRES THROUGH THE CARB WHILE CRANKING. WE FOLLOWED THE SHOP MANUAL PROCEDURE EXACTLY, INSTALLED THE NEW TIMING SET "DOT-TO-DOT", COLD-LASHED THE VALVES PER YOUR PROCEDURE, SET THE TIMING SET BACK TO "DOT-TO-DOT", AND LEFT IT ALIGNED THAT WAY. AFTER GETTING THE ENGINE BACK IN THE CAR, WE INSTALLED THE DISTRIBUTOR SO THE ROTOR POINTS TO THE #1 WIRE TOWER AS SHOWN IN THE SHOP MANUAL, BUT WE CAN'T GET IT TO START AND RUN. I KNOW THE CRANK AND CAM SPROCKETS AND TIMING CHAIN ARE INSTALLED PROPERLY, SO THAT CAN'T BE IT. WHERE SHOULD WE GO NEXT?

**RESPONSE:** It's backfiring through the carb and won't run because it's 180-degrees out of time – several cylinders are firing with the intake valves open.

The shop manual procedure and timing set instructions to align the crank and cam sprockets "dot-to-dot" when installing the timing chain is a visual convenience, as it's easier to correctly align them with the dots close together. What isn't always noted in manuals is that when the sprockets are aligned "dot-to-dot", the engine is at top dead center on the compression stroke for #6 cylinder, not for the #1 cylinder. You then have to rotate the crank one full revolution, with the crank sprocket dot at 12 o'clock AND the cam sprocket

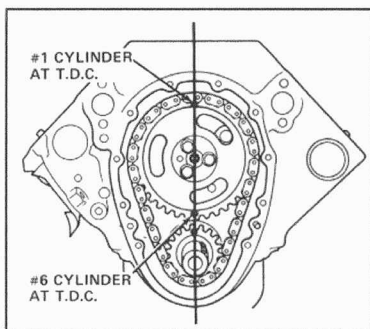
dot at 12 o'clock, for the engine to be set at #1 TDC on the compression stroke, so you can properly install the distributor with the rotor pointing to the #1 wire tower.

Your fix is quite simple – turn the crank so you have it set at #1 TDC on the compression stroke and re-install the distributor. With the timing index line on the balancer aligned with the "0" on the timing tab, it's either at #1 or #6 TDC on the compression stroke; if both valves on #1 cylinder are closed (rocker arms parallel to each other), it's on #1. If one valve is partially open (rocker arms not parallel to each other), it's on #6.

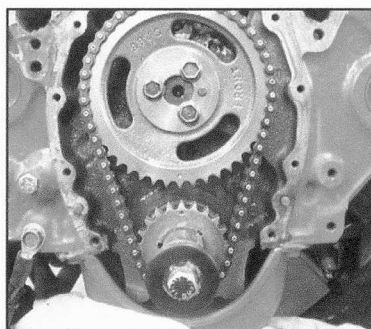
With the engine set on #1 TDC on the compression stroke, turn the

crank slightly to align the timing index line on the balancer with your desired initial timing on the tab (10 degrees is a good starting point) and re-install the distributor with the rotor pointing to the #1 wire tower. Connect a test light from the coil (-) terminal to ground and turn the ignition "on"; if the light doesn't come on, turn the distributor slightly clockwise (as viewed from the top) until it does, then turn the distributor slightly counter-clockwise until the light JUST goes out (points opening, firing position) and snug the hold-down bolt.

The engine will fire immediately, and the timing will be within a degree of where you set it at the timing tab, so it will run properly for cam break-in. ■



**1** This is the diagram that **should** be in the manuals, but isn't; it shows that with the sprockets "dot-to-dot", the engine is at #6 TDC on the compression stroke, and with both dots at 12 o'clock, the engine is at #1 TDC on the compression stroke.



**2** Here's a timing set aligned at "dot-to-dot" for visual installation convenience; however, the engine is at #6 TDC when aligned this way, not at #1 TDC.



**3** If both rocker arms for #1 cylinder are parallel as shown here (valves closed) with the timing index line on the balancer aligned with the "0" on the timing tab, the engine is at #1 TDC on the compression stroke.