

Solenoids and Dashpots

The majority of carburetors that you will encounter from the 1950's through the 1980's either had a dashpot or a solenoid. A few of the 80's vehicles had a combination device called a "solepot". Solenoids and dashpots have different functions. We will explain in this month's issue.

DASHPOTS

A dashpot is typically mounted on the driver's side front corner of either a two barrel or a four barrel carburetor. The full correct name is an "Anti-stall Dashpot". These devices simply slow down the closing of the primary throttle shaft and the plates (butterflies) to keep the engine from dying on a quick deceleration or closing of the throttle plates. Dashpots act exactly like a shock absorber. If the throttle plates are allowed to close too quickly, the engine will experience an instantaneously over-rich mixture causing the engine to die. By slowing down the closing of the throttle plates and preventing the instantaneous rich mixture, the dashpot also becomes an emissions device. It prevents extra high carbon monoxide ratios on deceleration.

The use of dashpots was usually on automatic transmission equipped vehicles (but not always). Except for emissions purposes, dashpots on manual transmission vehicles serve no drivability purpose. A perfect example of a dashpot improving drivability would be at a traffic light. If you stepped on the gas pedal quickly in anticipation of going and then realized it was just a green left turn arrow, you would let off the gas pedal quickly and hit the brakes. Without a dashpot, the engine will probably die, with the dashpot it will not. This driving circumstance does not happen very often, but situations like this do occur. To say that dashpots are a big improvement in drivability is not an accurate statement. They absolutely do improve emissions on deceleration as stated earlier. At Pony Carburetors we provide dashpots on the majority of automatic transmission carburetors as an option. This is not because it is a big deal for the operation of the vehicle, but because they are correct as the vehicle left the factory.

Here's an interesting story about dashpots: In 1969 only, 351W and 390 manual transmission-equipped Mustangs and Cougars had carburetors that had dashpots from the factory. The automatic transmission vehicles with the same engines in those vehicles did not have dashpots. Ford later sent out a technical service bulletin (TSB) indicating this issue. This was a major engineering error.

Autolite 1100 (1 barrel) carburetors for automatic transmissions also had an anti-stall dashpot, but it was built into the carburetor. The automatic transmission Autolite 1100 (1965-1967, not CA emissions) had two diaphragms—one on each side of the float bowl. The manual transmission carburetors (not CA emissions) had one diaphragm on the driver's side of the carburetor. This one diaphragm is the accelerator pump. For 1966-67 CA Emissions and 1968-69 all Autolite 1100 carburetors had two diaphragms (one accelerator pump and one dashpot).

SOLENOIDS

Solenoids used on Ford engine (and nearly all other manufacturers) had one of two purposes. The first was anti-dieseling and the second was interlocked with the air conditioner compressor.

Ford first used a solenoid in 1969 on both the Boss 302 and Boss 429 engines. The solenoid was interlocked with the ignition switch. With the ignition on, power was supplied to the solenoid to extend the plunger. When following the correct set-up procedure, the curb idle (hot idle) speed was to be set and adjusted with the solenoid plunger extended. Then adjusting the plunger to the desired RPM (about 900+ or -), the regular curb idle speed screw was then to be backed off one full turn. Once the ignition switch was turned off, the plunger would depress allowing the throttle shaft and plates to close further against the curb idle speed screw. By allowing the throttle plates to close more and shutting off the air/fuel mixture to the engine, the engine was not supposed to diesel. The term dieseling is also called after-run. This means the engine continues to run after the

ignition is turned off. In the real world, we have never experienced a dieseling problem with these engines (Boss 302 & 429 or any other) unless the ignition timing was late or the idle speed was too fast. At Pony Carburetors we provide and install solenoids because they are correct, not because they are a significant performance device.

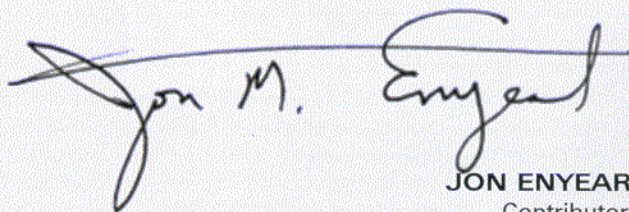
The second use for electric solenoids was interlocked with the air conditioning compressor and was first used in 1970. When the air conditioning was turned on inside the car, power was provided to both the air conditioner compressor clutch and the electric solenoid, causing the plunger to extend. The proper adjustment procedure was to first get the correct curb idle speed without the air conditioning on. Next, by turning on the air conditioning system, the compressor would "drag" on the engine and slow it down (typically 100 rpms + or -). The plunger on the solenoid is adjusted to bring the idle speed back to the original no a/c idle speed. Ultimately, the engine will idle at the same rpm with or without the air conditioning on. These devices and engineering do work and are functional.

SOLEPOTS

In the early 1980's, by adding a dashpot to an electric solenoid, the word and device "solepot" was invented. One device could essentially perform two functions. The first was to slow down the closing of the primary throttle shaft and plates for emission purposes (like a dashpot) and the second almost always interlocked with the air conditioning compressor. These devices worked very well and our most common application of the solepot is on the 1983-85 Mustang 302 GT with manual transmission.

With any luck the information provided in this article will have helped a few people understand solenoids and dashpots. As always, we welcome your comments and questions about any of our Good Carbs articles or any carburetor related questions in general.

Happy Driving!



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