

# 1975-79 EXHAUST EMISSION SYSTEMS

## Ford & Bosch Dual Diaphragm Vacuum Unit

3-129

### DESCRIPTION

The dual diaphragm unit consists of 2 independently operating diaphragms. The outer (primary) diaphragm utilizes carburetor vacuum to advance ignition timing. The inner (secondary) diaphragm is actuated by intake manifold vacuum to provide additional ignition timing retard during periods of closed throttle operation. Thereby assisting in reduction of hydrocarbon emissions.

### OPERATION

The outer diaphragm is coupled to the movable breaker plate. An increase in vacuum pressure moves the diaphragm against advance diaphragm spring tension, causing the movable breaker plate to pivot opposite distributor rotation. This advances ignition timing during normal road-load operation, but not during deceleration or idle.

When intake manifold vacuum is applied to inner diaphragm (retard) it moves inward toward the distributor. This allows the advance diaphragm to move, causing the movable breaker plate to pivot in the same direction as distributor rotation. This retard of ignition timing automatically occurs during engine idle or deceleration.

Some models with A/C also include a fast-idle compensator. This will apply intake manifold vacuum to primary side of diaphragm during hot engine conditions.

### TESTING

**Vacuum Advance** - Disconnect vacuum lines from both outer and inner diaphragms. Plug line removed from inner diaphragm. Install a tachometer. Increase idle speed by using first step of fast idle cam. Using a timing light, observe ignition timing setting. Connect carburetor vacuum line to outer diaphragm. Timing should advance slowly if equipped with a Spark Delay Valve (SDV), or immediately on all other models.

**Vacuum Retard** - Readjust engine idle speed to 550-600 RPM. Using a timing light, observe timing. Remove plug from manifold vacuum line and connect line to inner diaphragm. Timing should retard immediately. Replace dual diaphragm unit if either of the diaphragms are leaking or if the retard portion is out of calibration. Replacement is also called for if the advance portion cannot be calibrated to specifications. See Ford Motor Co. Vacuum Advance & Retard Specifications in DISTRIBUTORS & IGNITION SYSTEMS section.

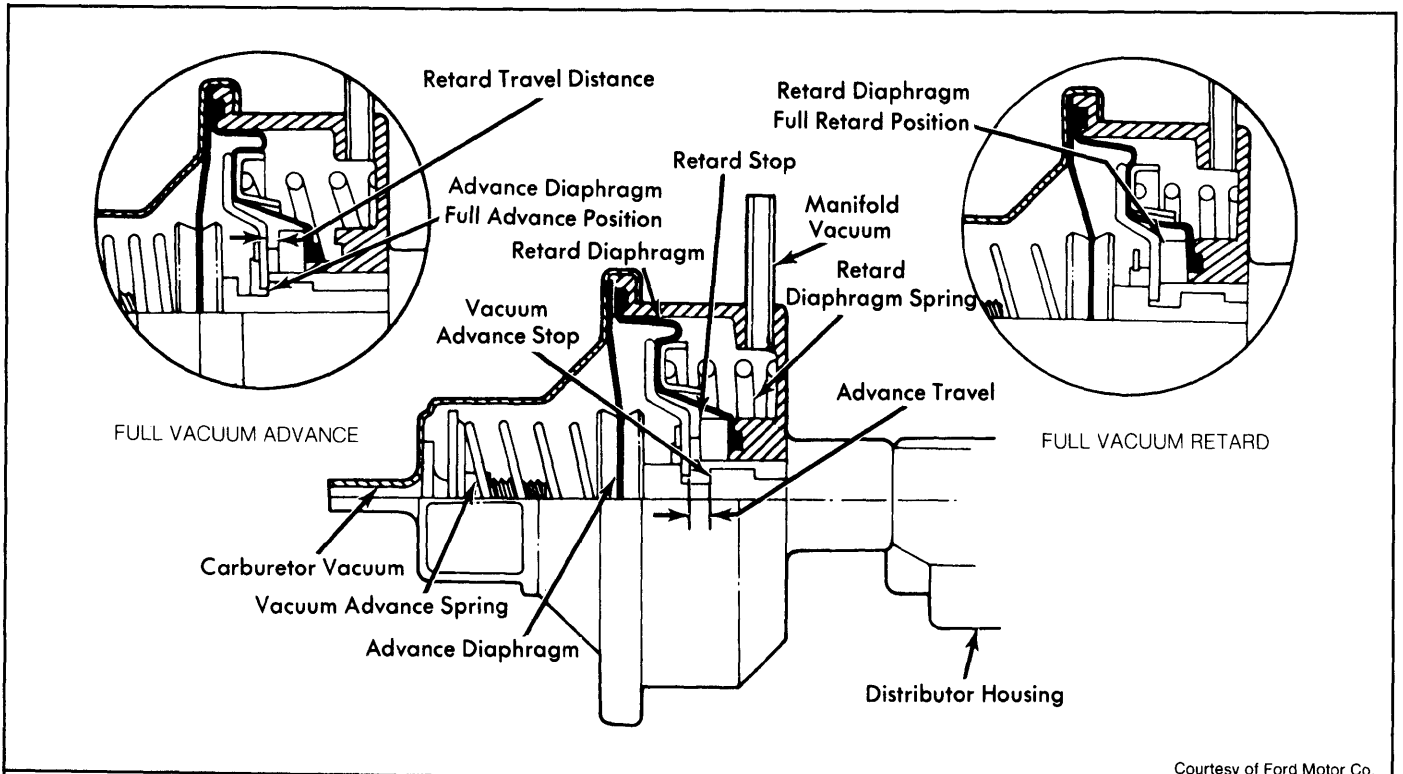


Fig. 1: Dual Diaphragm Vacuum Advance & Retard Unit