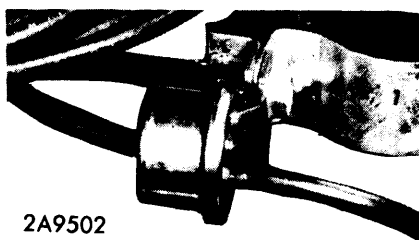


JEEP TRANSMISSION CONTROLLED SPARK

DESCRIPTION & OPERATION

System's purpose is to reduce the emission of oxides of nitrogen by lowering peak combustion pressure and temperature during the power stroke. TCS system consists of a solenoid vacuum valve inserted in vacuum line leading to vacuum advance control unit, a temperature override switch located at firewall, and a solenoid control switch located at the transmission. In addition, a coolant temperature override switch is used on all V-8 engines. Jeep Wagoneers and trucks equipped with a 360" engine and standard cooling also incorporate a thermal vacuum switch.

Solenoid Vacuum Valve - Attached to ignition coil bracket (V-8 engines) or to a bracket at rear of intake manifold (6 cylinder engines). When valve is energized, carburetor ported vacuum is blocked and distributor vacuum line is vented to atmosphere through a port in the valve, resulting in no vacuum advance. When valve is de-energized, ported vacuum is applied to distributor resulting in normal vacuum advance.

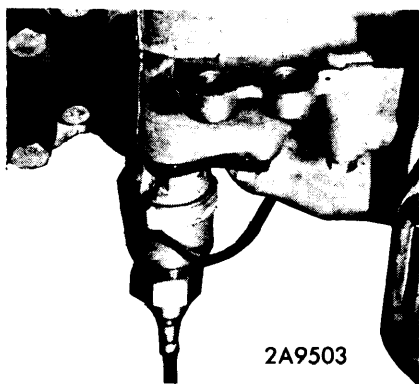


2A9502

SOLENOID VACUUM VALVE

Temperature Override Switch - When ambient temperatures are above 63°F, override switch completes the electrical circuit from the battery to the solenoid vacuum valve and valve is then controlled by the solenoid control switch.

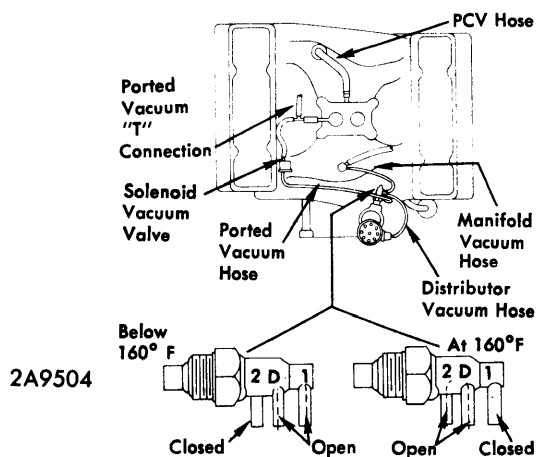
Solenoid Control Switch - Switch, located at transmission, opens or closes in relation to car speed (automatic transmission) or gear range (manual transmission). At speeds above 25-30 MPH (auto. trans.) or in high gear (manual trans.) the switch opens and breaks the ground circuit to the solenoid vacuum valve. At speeds under 25 MPH (auto. trans.) or when in lower gear ranges (manual trans.) the switch closes and completes the ground circuit to the solenoid vacuum valve. On automatic transmissions, switch is operated by transmission oil pressure. On manual transmissions, switch is operated by shifter shaft.



2A9503

SOLENOID CONTROL SWITCH (AUTOMATIC TRANSMISSION)

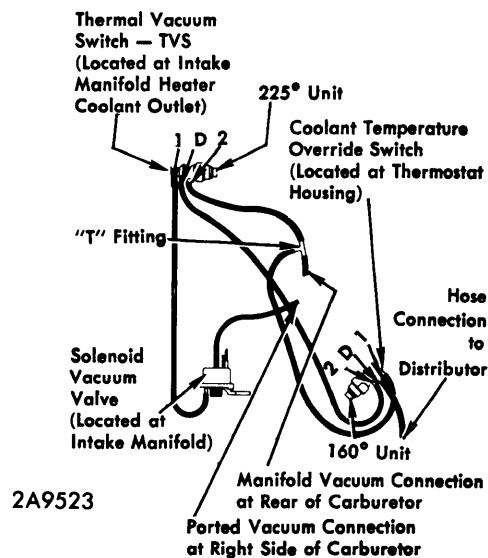
Coolant Temperature Override Switch - Switch is threaded into thermostat housing and incorporates a thermal unit which reacts to coolant temperatures to route either intake manifold or carburetor ported vacuum to the distributor vacuum advance diaphragm. When coolant temperature is below 160°F, ports "1" and "D" are open and port "2" is closed. This allows intake manifold vacuum to be applied through a hose connection to the distributor advance diaphragm, resulting in full vacuum advance. When coolant temperature reaches 160°F port "1" closes and ports "2" and "D" are open. Intake manifold vacuum is then blocked off and carburetor ported vacuum is applied through the solenoid vacuum valve to distributor advance diaphragm, resulting in decreased vacuum advance. Coolant temperature override switch is used on some cars not equipped with a TCS system. In this case, port "2" is connected directly to carburetor ported vacuum connection.



2A9504

COOLANT TEMPERATURE OVERRIDE SWITCH

Thermal Vacuum Switch (TVS) - Used only on Jeep Wagoneers and trucks equipped with 360" engine and standard cooling system. Switch is located at the intake manifold heater coolant outlet. When coolant temperature is below 225°F, carburetor ported vacuum is routed through ports "1" and "D" of the switch and distributor vacuum advance is con-



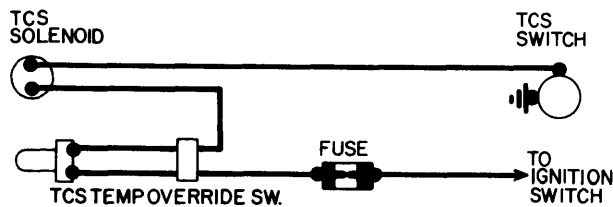
2A9523

THERMAL VACUUM SWITCH HOSE ROUTING

Exhaust Emission Systems

JEEP TRANSMISSION CONTROLLED SPARK (Cont.)

trolled by the TCS system and the coolant temperature override switch. If coolant temperature reaches 225°F, port "I" closes and port "2" opens. This allows intake manifold vacuum to be routed through ports "2" and "D". Port "D" is connected by a hose to port "2" of the coolant temperature override switch, therefore, intake manifold vacuum is applied to distributor vacuum advance diaphragm resulting in full vacuum advance. This causes engine speed to increase approximately 200 RPM. When coolant temperature drops below 225°F, port "2" of the TVS switch closes and carburetor ported vacuum is again routed through ports "I" and "D". Engine speed decreases due to reduced distributor vacuum advance.



25M070

T.C.S. ELECTRICAL SCHEMATIC

MAINTENANCE

Periodic maintenance of Transmission Controlled Spark components is not normally required, should a switch or valve fail to operate properly it should be replaced. However the following components do require maintenance or adjustment to keep exhaust emission system as a whole, working properly.

Component	Service Interval (Miles)
Oil Filler Cap.....	Clean Every 6,000
Exhaust Heat Valve	Lubricate Every 6,000
Drive Belts.....	Adjust Every 6,000
Air Cleaner	Clean Every 6,000
	Replace Every 12,000
Distributor Cam Wick.....	Rotate Every 6,000
	Replace Every 12,000
Oil Filler Cap.....	Clean Every 6,000
PCV Valve	Replace Every 12,000
PCV Filter (6 Cyl.).....	Clean Every 12,000
Charcoal Canister Inlet Filter (V8 Auto. Trans. Only).....	Replace Every 12,000
Carburetor	Adjust Every 12,000
Spark Plugs.....	Clean Every 12,000
Ignition Timing.....	Check Every 12,000

JEEP EMISSION CONTROLLED DISTRIBUTOR VACUUM APPLICATION

MANUAL TRANSMISSION (GEAR)		AUTOMATIC TRANSMISSION (VEHICLE SPEED)	AMBIENT (AIR) TEMPERATURE	COOLANT TEMPERATURE	VACUUM APPLIED TO DISTRIBUTOR
3 SPEED	4 SPEED				
1-2	1-2-3	Under 25 MPH	Below 63° F	Below 160° F	Manifold
1-2	1-2-3	Under 25 MPH	Below 63° F	Above 160° F	Ported
1-2	1-2-3	Under 25 MPH	Above 63° F	Above 160° F	None
1-2	1-2-3	Under 25 MPH	Above 63° F	Below 160° F	Manifold
3	4	25-30 MPH	Below 63° F	Below 160° F	Manifold
3	4	25-30 MPH	Below 63° F	Above 160° F	Ported
3	4	25-30 MPH	Above 63° F	Above 160° F	Ported
3	4	25-30 MPH	Above 63° F	Below 160° F	Manifold

NOTE — If equipped with thermal vacuum switch (TVS), intake manifold vacuum is applied to the distributor when engine coolant temperature reaches 225°F.