TOYOTA THROTTLE POSITIONER SYSTEM

Corolla, Starlet, Tercel

DESCRIPTION

The throttle positioner (TP) system controls exhaust emissions during deceleration by holding the throttle plate at an above-idle position during off-throttle operation. This prevents the fuel mixture from being starved of air and helps control HC and CO emissions. The controlling unit is a throttle positioner diaphragm which is vacuum operated.

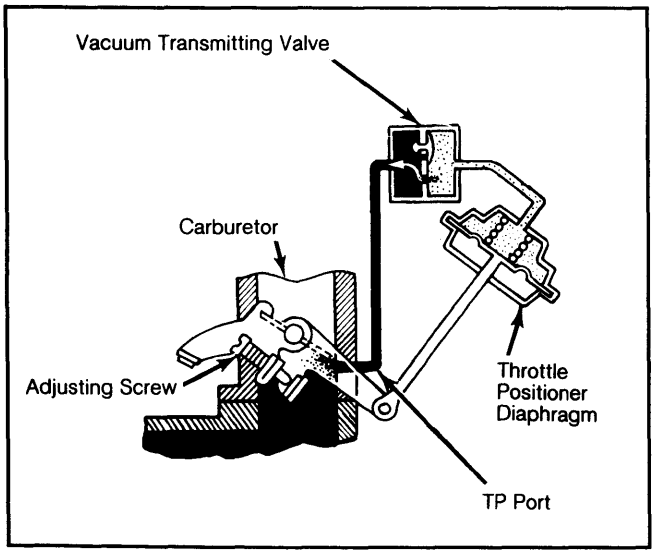
The system consists of a throttle positioner diaphragm, a vacuum transmitting valve (VTV) on Corolla and Tercel models, a bimetal vacuum switching valve (BVSV) and jet restrictor on Starlet models, and a thermostatic vacuum switching valve (TVSV) on Tercel models.

OPERATION

COROLLA

The throttle positioner system is vacuum controlled. When the throttle is open and vacuum at the TP port is low, the positioner moves to the set position. When the throttle is released, as during deceleration, the positioner keeps it from closing completely until vacuum bleeds through the VTV. High vacuum present at TP port will then pull the positioner back and allow the throttle to close completely.

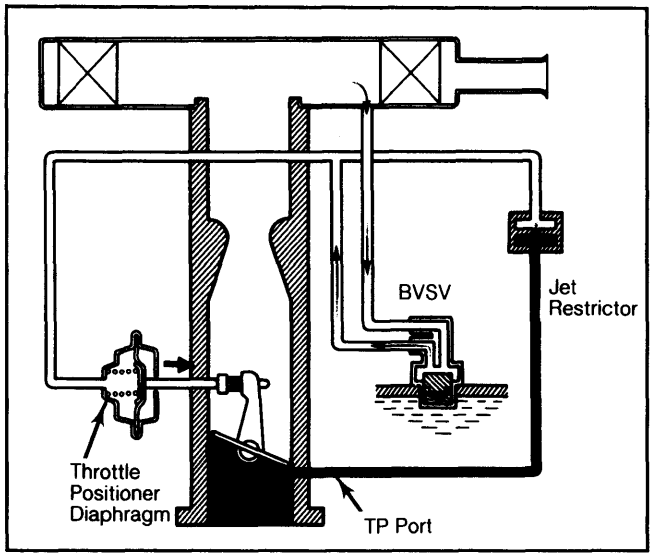
Fig. 1: Corolla Throttle Positioner System



STARLET

The throttle positioner system is vacuum controlled. When the engine is cold, the BVSV is open and holds positioner in a set position. When the engine is warm, the throttle open and vacuum at TP port is low, the positioner is also in a set position. When the throttle is released, as during deceleration, the positioner keeps it from closing completely until vacuum bleeds through the jet restrictor. High vacuum present at TP port will then pull the positioner back and allow the throttle to close completely.

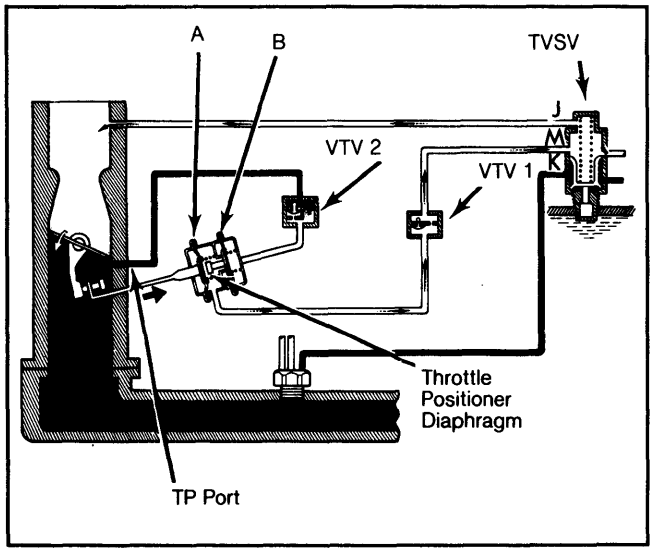
Fig. 2: Starlet Throttle Positioner System



TERCEL

The throttle positioner system is vacuum controlled. When the engine is cold, the TVSV is open and holds the positioner in a set position. When the engine is warm, the throttle open and vacuum at TP port is low, the positioner is also in a set position. When the throttle is released, as during deceleration, the positioner keeps it from closing completely until vacuum bleeds through the VTV. The high vacuum present at the TP port will then pull the positioner back and allow the throttle to close completely.

Fig. 3: Tercel Throttle Positioner System



TESTING

THROTTLE POSITIONER

Corolla

1) Warm engine to normal operating temperature. If necessary, check and adjust idle speed. Allow

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engine to idle and note that throttle positioner diaphragm releases throttle blade.

2) Disconnect vacuum hose from throttle positioner diaphragm. Throttle positioner should now be set. With throttle positioner activated, engine speed should be 1400 RPM.

3) If not, correct by turning throttle positioner adjusting screw. Reconnect vacuum hose and see that engine returns to idle within 1-3 seconds.

Starlet

1) With engine coolant temperature below 104°F (40°C), start engine and check that throttle positioner is activated.

2) Warm engine to normal operating temperature. If necessary, check and adjust idle speed. Allow engine to idle and note that throttle positioner diaphragm releases throttle blade.

3) Disconnect and plug vacuum hose from throttle positioner diaphragm. Throttle positioner should now be set. Disconnect and plug vacuum hose from EGR valve.

4) With throttle positioner activated, engine speed should be 2000 RPM. If not, correct by turning throttle positioner adjusting screw making sure cooling fan is off. Reconnect vacuum hose and see that engine returns to idle within 1-6 seconds.

Tercel

1) With engine coolant temperature below 122°F (50°C), start engine and increase engine speed to 3500 RPM. Disconnect vacuum hose from throttle positioner diaphragm A. Throttle positioner should now be set.

2) Warm engine to normal operating temperature. If necessary, check and adjust idle speed. Disconnect and plug vacuum hoses from EGR valve and throttle positioner diaphragms "A" and "B". Throttle positioner should now be set.

3) With throttle positioner activated, engine speed should be 1400 RPM. If not, correct by turning throttle positioner adjusting screw making sure cooling fan is off.

4) Reconnect vacuum hose to diaphragm "B" and see that engine returns to idle within 2-6 seconds. Reconnect vacuum hose to diaphragm "A".

5) Disconnect and plug vacuum hose located between TVSV and VTV 1 at VTV 1 and vacuum hose from diaphragm "B". Increase engine speed to above 4500 RPM and plug VTV 1 pipe.

NOTE: Ensure that stopper lever is separated from throttle positioner adjusting screw before plugging pipe.

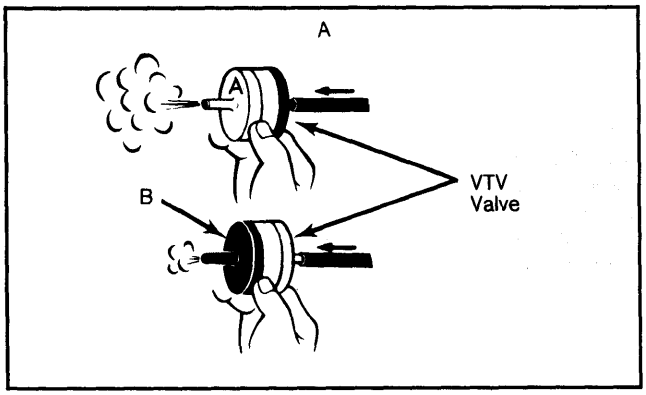
6) Release accelerator. Engine speed should be 2500-3000 RPM. Remove plug from VTV 1 pipe. Engine speed should return to 1400 RPM within 4-10 seconds. Reconnect all hoses.

VACUUM TRANSMITTING VALVE

Corolla & Tercel

Blow air through each side of valve(s). On corolla and VTV 1 of Tercel, air should pass freely from side "B" to "A", but should pass with difficulty from side "A" to side "B". *See Fig. 4.* On VTV 2 of Tercel, air should pass with difficulty from both sides.

Fig. 4: Vacuum Transmitting Valve Test



BIMETAL VACUUM SWITCHING VALVE (BVSV)

Starlet

1) Drain coolant from radiator and remove BVSV. Immerse threaded end of BVSV in container of water with thermometer.

2) With water temperature below 104°F (40°C), blow air into top pipe and check that BVSV is open. Heat water to above 129°F (54°). Blow air into top pipe and check that BVSV is closed.

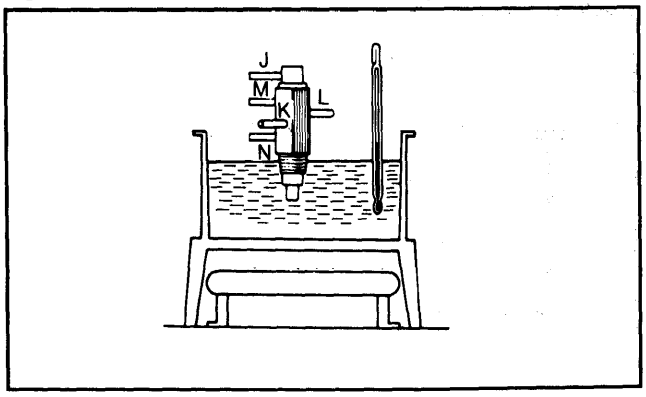
THERMOSTATIC VACUUM SWITCHING VALVE (TVSV)

Tercel

1) Drain coolant from radiator and remove TVSV. Place threaded end of valve in container of ice water with thermometer.

2) With temperature below 45°F (7°C), check that air flows from pipe "J" to pipe "M" and "L" and from pipe "K" to pipe "N". *See Fig. 5.*

Fig. 5: Thermostatic Vacuum Switching Valve (TVSV) Test



3) Heat water to 63-122°F (17-50°C). Check that air flows from pipe "K" to pipe "N" and "L" and from pipe "J" to pipe "M".

4) Continue heating water to above 154°F (68°C). Check that air flows from pipe "K" to pipe "M" and "L" and does not flow from pipe "J" to any other pipe.