

D - ADJUSTMENTS

1994 Toyota Paseo

1994 ENGINE PERFORMANCE
Toyota 4-Cylinder On-Vehicle Adjustments

Paseo & Tercel

ENGINE MECHANICAL

Before performing any on-vehicle adjustments to fuel or ignition systems, ensure engine mechanical condition is okay.

VALVE CLEARANCE

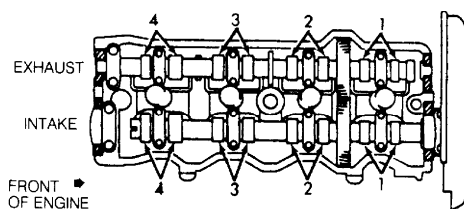
NOTE: On Tercel, adjust valve clearance with engine at normal operating temperature. On Paseo, adjust valve clearance with engine cold.

NOTE: If valve cover uses grommets below retaining nuts or bolts, keep grommets in order so they are installed in original locations during reassembly.

Paseo

1) Remove valve cover(s) and gasket(s). Rotate crankshaft so timing mark on crankshaft pulley aligns with "0" mark on front cover and cylinder No. 1 (front cylinder at timing belt or timing chain end) is at TDC on compression stroke.

2) Ensure valves on cylinder No. 1 are closed. If valves are not closed, rotate crankshaft 360 degrees (one full revolution). With cylinder No. 1 at TDC, check valve clearance on specified valves. See VALVE CLEARANCE ADJUSTMENT SEQUENCE table. See Fig. 1.



94F44235

Fig. 1: Typical 4-Cylinder Valve Arrangement (Camry, Celica, Corolla, Paseo, Previa & T100)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

3) Using feeler gauge, measure and record valve clearance between valve lifter and camshaft. Ensure valve clearance is within specification. See VALVE CLEARANCE SPECIFICATIONS table.

4) To check remaining valves, rotate crankshaft 360 degrees (one full revolution) until cylinder No. 4 is at TDC on compression stroke. Measure valve clearance on specified valves. See VALVE CLEARANCE ADJUSTMENT SEQUENCE table.

5) If valve clearance requires adjustment, rotate crankshaft so camshaft lobe on valve to be adjusted is facing upward, away from valve lifter. Rotate valve lifter so notch on valve lifter is toward spark plug.

6) Valve Clearance Adjuster (SST 09248-55040) is used for adjusting valve clearance. Press valve lifter downward using SST "A" of valve clearance adjuster. See Fig. 2. Install SST "B" between

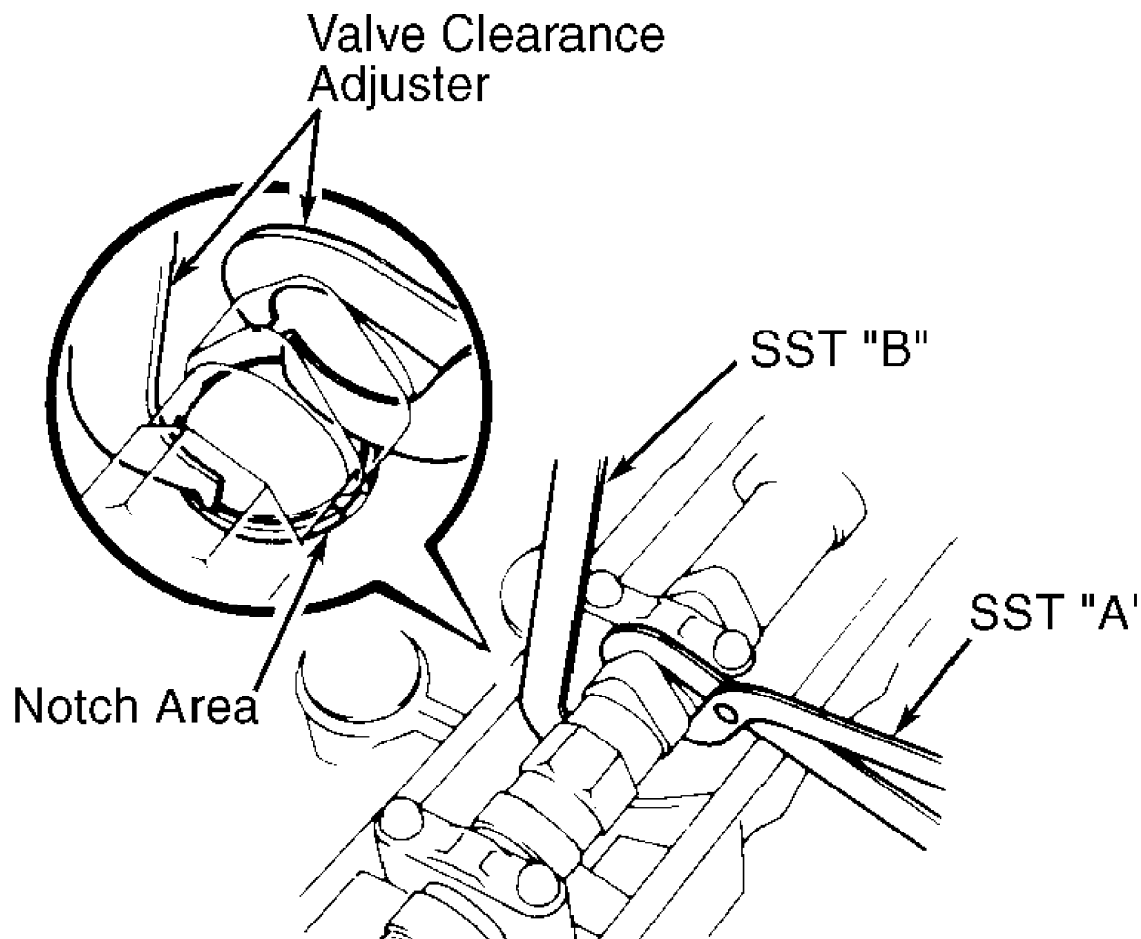
camshaft and valve lifter. Remove SST "A". Shim thickness can also be determined by using the following formula: $N = T + A$.

- * N = Thickness of adjuster shim required.
- * T = Thickness of adjuster shim removed.
- * A = Measured clearance minus valve clearance specification.

7) Using small screwdriver and magnet, remove adjusting shim. Using micrometer, measure thickness of adjusting shim removed. Using measured clearance and adjusting shim thickness, determine correct thickness of adjusting shim to be used. See SHIM THICKNESS table. Install adjusting shim. Recheck valve clearance.

NOTE: Before installing valve cover gasket, apply sealant at camshaft bearing caps-to-cylinder head surfaces where valve cover gasket seals.

8) Install valve cover using NEW gasket. On Previa, remove bolt from accessory drive shaft. Reverse removal procedure to install remaining components.



94G44236

Fig. 2: Removing & Installing Valve Clearance Adjusting Shim
Courtesy of Toyota Motor Sales, U.S.A., Inc.

Piston No. On TDC	Adjust Intake Valves	Adjust Exhaust Valves
1	1 & 2	1 & 3
4	3 & 4	2 & 4

VALVE CLEARANCE SPECIFICATIONS TABLE (4-CYLINDER)

Application	(1) In. (mm)
Paseo	
Exhaust012-.016 (.30-.41)
Intake006-.010 (.15-.25)
Tercel	
Exhaust & Intake008 (.20)

(1) - On Tercel, adjust valve clearance with engine at normal operating temperature. On Paseo, adjust valve clearance with engine cold.

SHIM THICKNESS TABLE

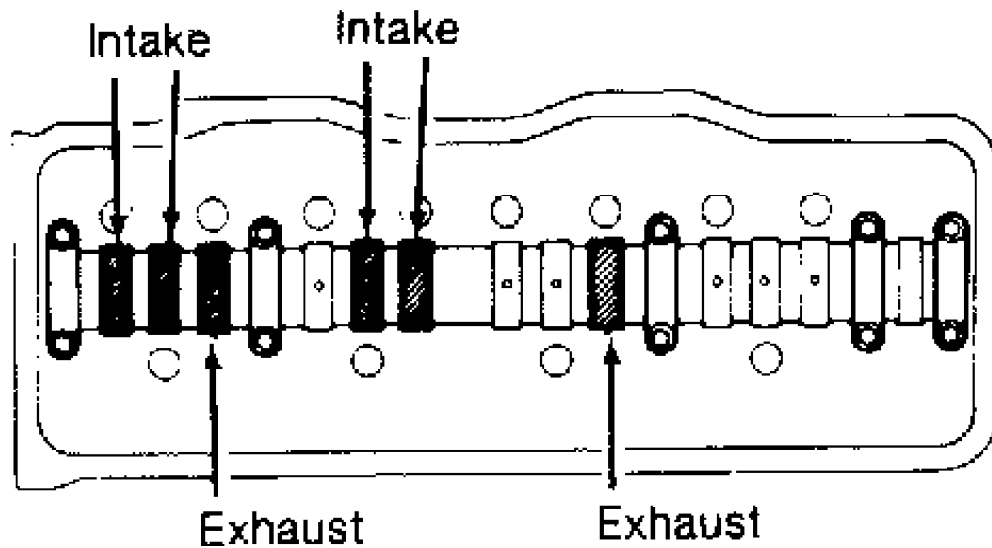
Thickness mm (in.)	Shim No.
2.50 (0.0984)	1
2.55 (0.1004)	2
2.60 (0.1024)	3
2.65 (0.1043)	4
2.70 (0.1063)	5
2.75 (0.1083)	6
2.80 (0.1102)	7
2.85 (0.1122)	8
2.90 (0.1142)	9
2.95 (0.1161)	10
3.00 (0.1181)	11
3.05 (0.1201)	12
3.10 (0.1220)	13
3.15 (0.1240)	14
3.20 (0.1260)	15
3.25 (0.1280)	16
3.30 (0.1299)	17

Tercel

1) Check and adjust valve clearance with engine at normal operating temperature. Remove valve cover and gasket. Rotate crankshaft pulley so crankshaft pulley groove aligns with "0" mark on timing belt cover and cylinder No. 1 (front cylinder at timing belt end) is at TDC on compression stroke.

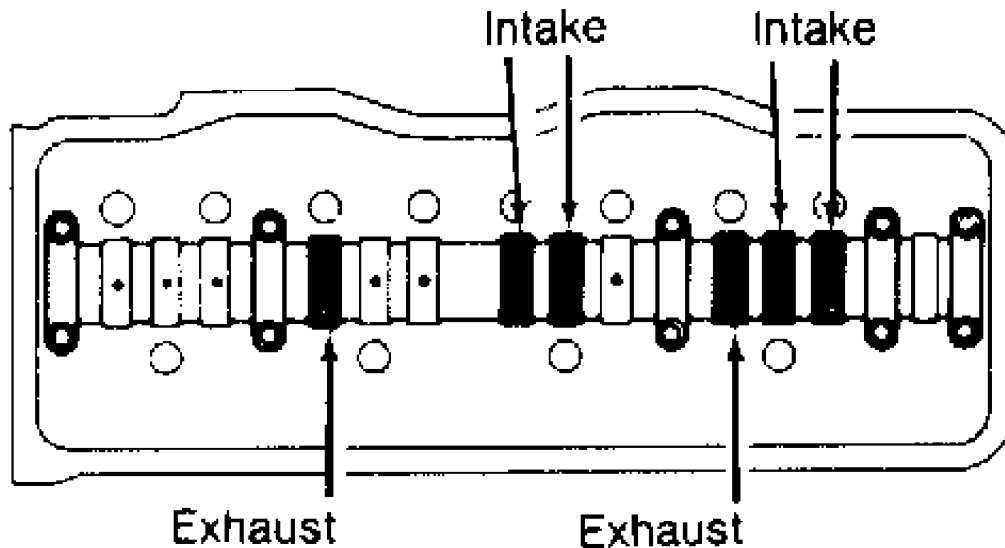
2) Ensure rocker arms on cylinder No. 1 are loose and rocker arms on cylinder No. 4 are tight. If rocker arms are not as described, rotate crankshaft 360 degrees and realign pulley groove with "0" mark on timing belt cover.

3) To check valve clearance, measure clearance between camshaft lobe and rocker arm on proper intake and exhaust valves using proper thickness feeler gauge. Perform STEP 1. See Fig. 3. Valve clearance should be within specification. See VALVE CLEARANCE SPECIFICATIONS (4-CYLINDER) table.



STEP 1 (NO. 1 CYLINDER AT TDC COMPRESSION STROKE)

◆ FRONT OF ENGINE



STEP 2 (NO. 1 CYLINDER AT TDC EXHAUST STROKE)

92A24802

Fig. 3: Adjusting Valve Clearance (Tercel)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

4) Adjust valve clearance if necessary by loosening adjusting screw lock nut and rotating adjusting screw. Tighten lock nut. Recheck

valve clearance.

5) Rotate crankshaft 360 degrees, and realign pulley groove with "0" mark on timing belt cover. This will place cylinder No. 1 at TDC of exhaust stroke. Check valve clearance on remaining valves. Perform STEP 2. See Fig. 3. Adjust valve clearance if necessary. Shim thickness can also be determined by using the following formula: $N = T + A$.

- * N = Thickness of adjuster shim required.
- * T = Thickness of adjuster shim removed.
- * A = Measured clearance minus valve clearance specification.

6) Apply sealant at camshaft bearing caps-to-cylinder head surfaces where valve cover gasket seals. Install valve cover using NEW gasket.

IGNITION TIMING

CAUTION: Some tachometers may not be compatible with ignition system. Consult tachometer manufacturer before connecting tachometer to system. To avoid possible damage to ignitor and/or coil, DO NOT allow tachometer terminal to become grounded.

1) Warm engine to normal operating temperature. Shut engine off. Connect timing light. Connect tachometer to proper terminals of data link connector. See Fig. 4 and 5.

NOTE: On Tercel models, data link connector may be located in rear corner of engine compartment on the firewall or on side of fuse/relay box, near the battery.

2) Install Jumper Wire (SST 09843-18020) between terminals TE1 and E1 of data link connector. On all models except Previa, data link connector is located in engine compartment. On Previa, data link connector is located near emergency brake lever. See Figs. 6 and 7.

3) On all models, apply parking brake. Start engine. Ensure engine returns to idle.

NOTE: Timing marks are located on front cover.

4) Ensure base timing is within specification with engine at specified RPM with transmission/transaxle in Neutral and all accessories off. See appropriate IGNITION TIMING table.

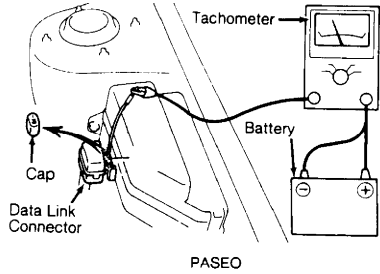
5) If ignition timing is incorrect, loosen distributor hold-down bolt or nut. Adjust ignition timing by rotating distributor. Tighten distributor hold-down bolt or nut. Remove jumper wire from data link connector. Ensure advance timing is within specification. See appropriate IGNITION TIMING table.

4-CYLINDER IGNITION TIMING TABLE (Degrees BTDC @ RPM)

Application (1)	(2) Base Timing	(3) Advance Timing
Paseo	10 @ 750	6-18 @ 750
Tercel		
A/T	10 @ 800	7-17 @ 800
M/T	10 @ 750	7-17 @ 750

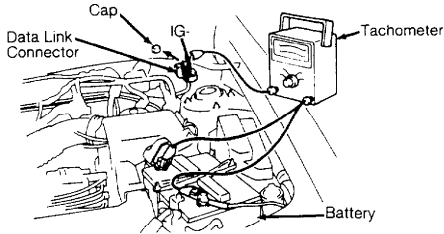
(1) - Check with transmission/transaxle in Neutral, parking brake applied, electric cooling fan (if equipped) and A/C off.

- (2) - With jumper wire installed between data link connector terminals TE1 and E1.
 - (3) - With jumper wire removed from data link connector.
-



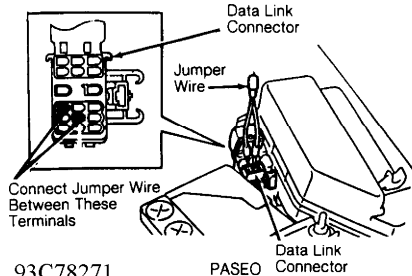
93J78260

Fig. 4: Connecting Tachometer (Paseo)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.



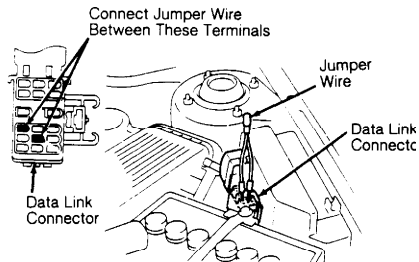
94144261

Fig. 5: Connecting Tachometer (Tercel)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.



93C78271

Fig. 6: Installing Jumper Wire Between Data Link Connector Terminals (Paseo)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.



93G78275

Fig. 7: Installing Jumper Wire Between Data Link Connector Terminals (Tercel)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

IDLE SPEED & MIXTURE

NOTE: Mixture adjustment is not possible on any model.

4-CYLINDER IDLE SPEED

CAUTION: Some tachometers may not be compatible with ignition system. Consult tachometer manufacturer before connecting tachometer to system. To avoid possible damage to ignitor and/or coil, DO NOT allow tachometer terminal to become grounded.

NOTE: Check and adjust idle speed with air cleaner installed, all air intake system hoses and vacuum lines connected, electronic fuel injection system wiring connectors tight, transmission/transaxle in Neutral, all accessories and electric cooling fan off (if equipped), and engine at normal operating temperature.

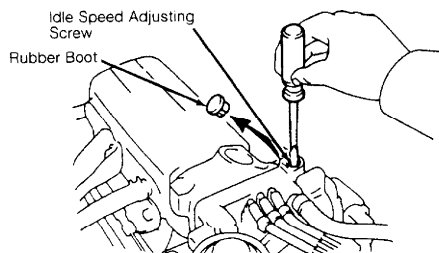
Paseo

1) Install tachometer on proper terminals of data link connector. See Fig. 4 and 5. Start and operate engine at 2500 RPM for about 2 minutes. Allow engine to idle.

2) Install Jumper Wire (SST 09843-18020) between terminals TE1 and E1 of data link connector. See Figs. 6 and 7.

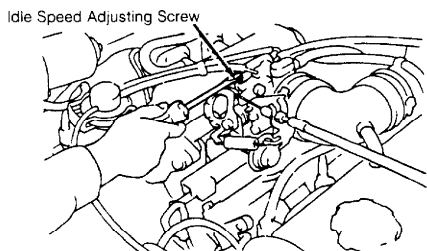
3) Ensure idle speed is within specification. See 4-CYLINDER IDLE SPEED SPECIFICATIONS table. If idle speed requires adjustment, remove rubber boot (if equipped) from throttle body. See Figs. 8 and 9.

4) Rotate idle speed adjusting screw to obtain correct idle speed. See Fig. 6. Install rubber boot. Remove jumper wire and tachometer.



94D44274

Fig. 8: Idle Speed Adjusting Screw Location (Paseo)
Courtesy of Toyota Motor Sales, U.S.A., Inc.



94G44277

Fig. 9: Idle Speed Adjusting Screw Location (Tercel)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

Tercel

1) Install tachometer on proper terminals of data link connector. See Fig. 7. Disconnect electrical connector from idle-up Vacuum Switching Valve (VSV). See Fig. 10.

2) Start and operate engine at 2500 RPM for about 2 minutes. Allow engine to idle. Ensure idle speed is within specification. See 4-CYLINDER IDLE SPEED SPECIFICATIONS table.

3) If idle speed requires adjustment, remove rubber boot (if equipped) from throttle body. See Figs. 8 and 9.

4) Rotate idle speed adjusting screw to obtain correct idle speed. See Fig. 8. Install rubber boot. Reconnect electrical connector on idle-up VSV. Remove tachometer.

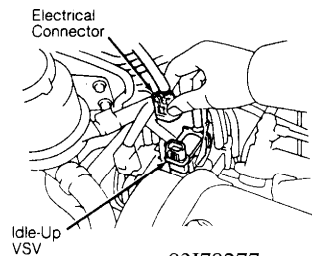


Fig. 10: Identifying Idle-Up Vacuum Switching Valve (Tercel)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

4-CYLINDER IDLE SPEED SPECIFICATIONS TABLE

Application (1)	RPM
Paseo (2)	750
Tercel (3)	
A/T	800
M/T	750

- (1) - Check with transmission/transaxle in Neutral, parking brake applied and all accessories off.
- (2) - Check with jumper wire installed between data link connector terminals TE1 and E1.
- (3) - Check with idle-up Vacuum Switching Valve (VSV) disconnected.

THROTTLE POSITION SENSOR

1) Disconnect electrical connector from Throttle Position Sensor (TPS). Loosen TPS mounting screws. Connect ohmmeter between terminals IDL and E2. See Figs. 11 and 12.

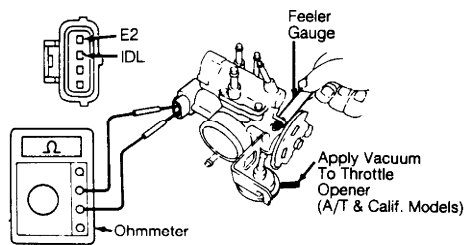
2) Apply vacuum to throttle opener (if equipped). To set initial clearance, insert proper thickness feeler gauge between throttle stop screw and throttle lever. See appropriate THROTTLE POSITION SENSOR ADJUSTMENT table.

3) With ohmmeter showing no continuity, rotate TPS clockwise until continuity exists. Tighten TPS mounting screws. Using specified feeler gauge, recheck adjusted clearance. Disconnect ohmmeter. Install electrical connector on TPS.

4-CYLINDER THROTTLE POSITION SENSOR ADJUSTMENT TABLE

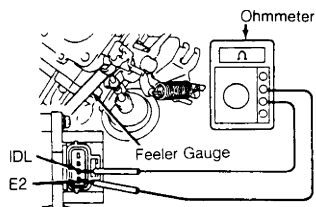
Application	Initial Clearance In. (mm)	Adjusted Clearance In. (mm)	Ohmmeter Reading
Paseo (1)	.024 (.61)	.020 (.51)	Continuity
		.028 (.71)	No Continuity
Tercel (2)	.024 (.61)	.020 (.51)	Continuity
		.028 (.71)	No Continuity

- (1) - On A/T and California models, apply vacuum to throttle opener before checking TPS adjustment.
 - (2) - On California models, apply vacuum to throttle opener before checking TPS adjustment.
-



93I78285 PASEO

Fig. 11: Adjusting Throttle Position Sensor (Paseo)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.



TERCEL

93F78290

Fig. 12: Adjusting Throttle Position Sensor (Tercel)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

DASHPOT & THROTTLE VALVE OPENER CONTROL SYSTEM

For testing and adjustment procedures, see THROTTLE CONTROLS in I - SYSTEM/COMPONENT TESTS article.