

D - ADJUSTMENTS

1994 ENGINE PERFORMANCE Mazda - On-Vehicle Adjustments

ENGINE MECHANICAL

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

VALVE CLEARANCE

NOTE: All piston engines are equipped with hydraulic valve lash adjusters. Valve clearance is not adjustable.

IGNITION TIMING

NOTE: Before adjusting ignition timing, warm engine to normal operating temperature. Turn off all accessories. Place transmission in Neutral (M/T) or Park (A/T). Ensure idle speed is correct. See IDLE SPEED under IDLE SPEED & MIXTURE. If timing is not within specification, loosen distributor or Crank Angle Sensor (CAS) lock bolt. Rotate distributor or CAS until timing marks are aligned. Tighten lock bolt.

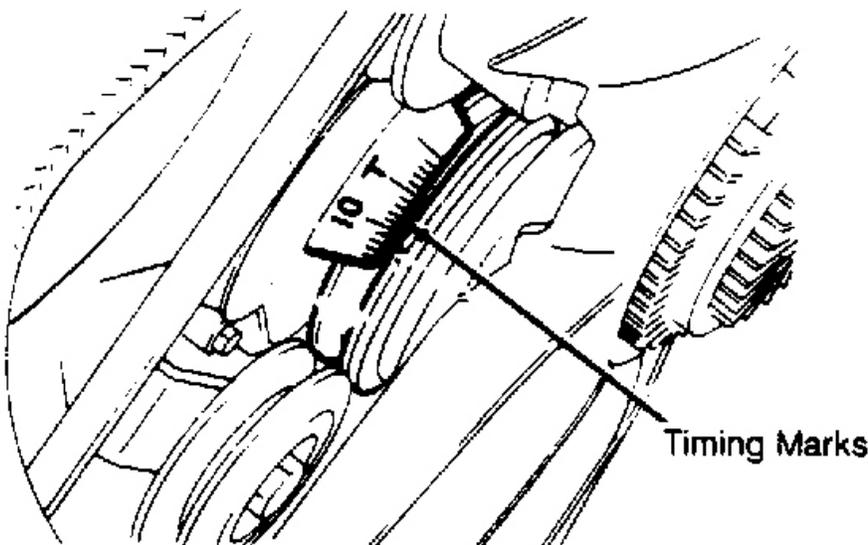
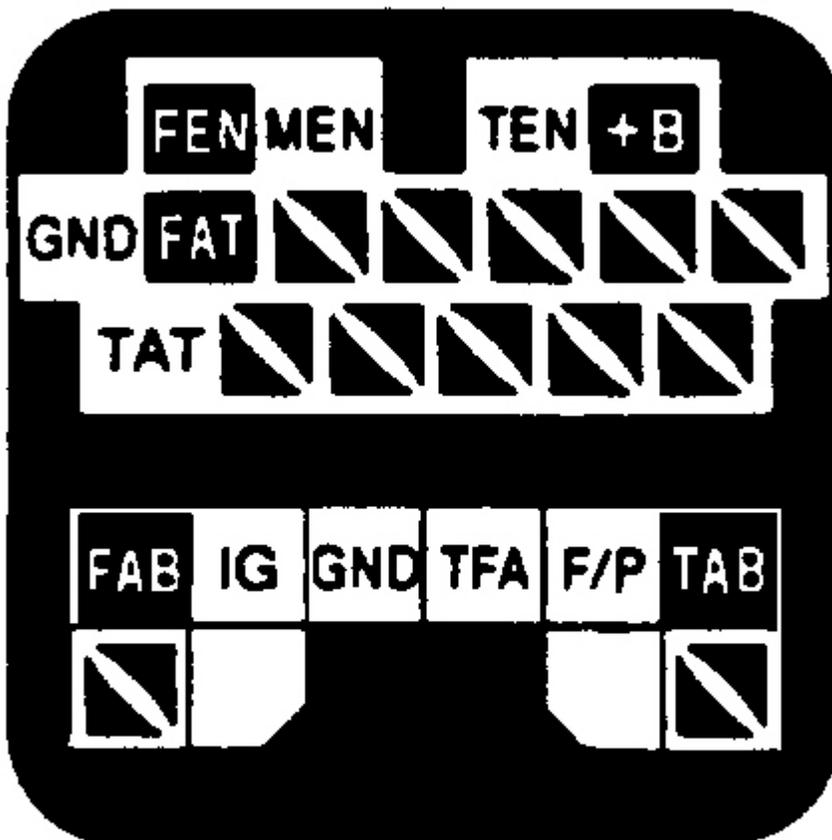


Fig. 1: Locating Ignition Timing Marks

Courtesy of MAZDA MOTORS CORP.

NOTE: On Miata, use Blue 1-pin connector near airflow meter as a source of battery power for positive lead of tachometer or timing light (battery is in trunk). **DO NOT** ground this connector, or 20-amp WIPER fuse will blow.

1. Connect Diagnostic Tester (49 B019 9A0) to diagnostic connector and select SELF-TEST mode (position 1), or connect jumper wire between diagnostic connector terminals TEN and GND. See **Fig. 2**.
2. Connect timing light. Set timing to specification. See **IGNITION TIMING SPECIFICATIONS** table. See **Fig. 1**. Disconnect diagnostic tester or jumper wire from diagnostic connector.



94A44453

Fig. 2: Diagnostic Connector Terminal ID (Miata)

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Courtesy of MAZDA MOTORS CORP.

IGNITION TIMING SPECIFICATIONS

Application	M/T	(1) A/T
Miata (2)	10 @ 850	10 @ 800

(1) Place automatic transmission in Park.

(2) Connect jumper wire between terminals TEN and GRN of diagnostic connector.

IDLE SPEED & MIXTURE

NOTE: Mixture adjustment is **NOT** a normal tune-up procedure. **DO NOT** adjust mixture unless mixture control unit is replaced or vehicle fails emissions test.

NOTE: Idle mixture is not adjustable. If idle mixture is incorrect, see TESTS W/CODES article in the **ENGINE PERFORMANCE** section.

IDLE SPEED

NOTE: Before adjusting idle speed, warm engine to normal operating temperature. Turn off all accessories. Place transmission in Neutral (M/T) or Park (A/T). Ensure ignition timing is adjusted. See IGNITION TIMING .

NOTE: On Miata, use Blue 1-pin connector near airflow meter as a source of battery power for positive lead of tachometer or timing light (battery is in trunk). **DO NOT** ground this connector, or 20-amp WIPER fuse will blow.

1. Connect Diagnostic Tester (49 B019 9A0) to diagnostic connector and select SELF-TEST mode, or connect jumper wire between diagnostic connector terminals TEN and GND. See Fig. 2 . Connect tachometer to diagnostic connector terminal IG (-).
2. If idle speed is not within specification, rotate idle air adjusting screw on throttle body. See IDLE SPEED SPECIFICATIONS table. Disconnect jumper wire.

IDLE SPEED SPECIFICATIONS

Application	M/T: RPM	(1) A/T: RPM
Miata (2)	850	800

(1) Place automatic transmission in Park.

(2) Connect jumper wire between terminals TEN and GRN of diagnostic connector.

THROTTLE POSITION (TP) SENSOR

INSPECTION (A/T)

1. Disconnect TP sensor connector. Connect ohmmeter between TP sensor connector terminals "E" and IDL. See **Fig. 3** . Insert feeler gauge of specified thickness between throttle lever and throttle stop screw. See TP SENSOR CONTINUITY (A/T) table.
2. If continuity is not as specified, adjust TP sensor. See ADJUSTMENT procedure. If continuity is as specified, connect ohmmeter between TP sensor connector terminals Vt and "E". If resistance is less than 1000 ohms with throttle fully closed and about 5000 ohms with throttle wide open, TP sensor is adjusted. If resistance is not as specified, adjust TP sensor. See ADJUSTMENT procedure.

NOTE: **If ohmmeter reading indicates a rough transition anywhere in range between lowest and highest readings, TP sensor potentiometer is faulty. Replace TP sensor.**

ADJUSTMENT

1. Disconnect TP sensor connector. Connect ohmmeter between TP sensor connector terminals "E" and IDL. See **Fig. 3** . Loosen TP sensor attaching screws.
2. Insert a .010" (.25 mm) feeler gauge between throttle lever and throttle stop screw. Rotate TP sensor clockwise about 30 degrees, then rotate counterclockwise until ohmmeter indicates continuity.
3. Remove feeler gauge. Insert a .016" (.40 mm) feeler gauge between throttle lever and throttle stop screw. If ohmmeter indicates no continuity, go to next step. If ohmmeter indicates continuity, repeat adjustment procedure.
4. Tighten TP sensor attaching screws. Open throttle valve fully and verify resistance between terminals "E" and Vt is about 5000 ohms.

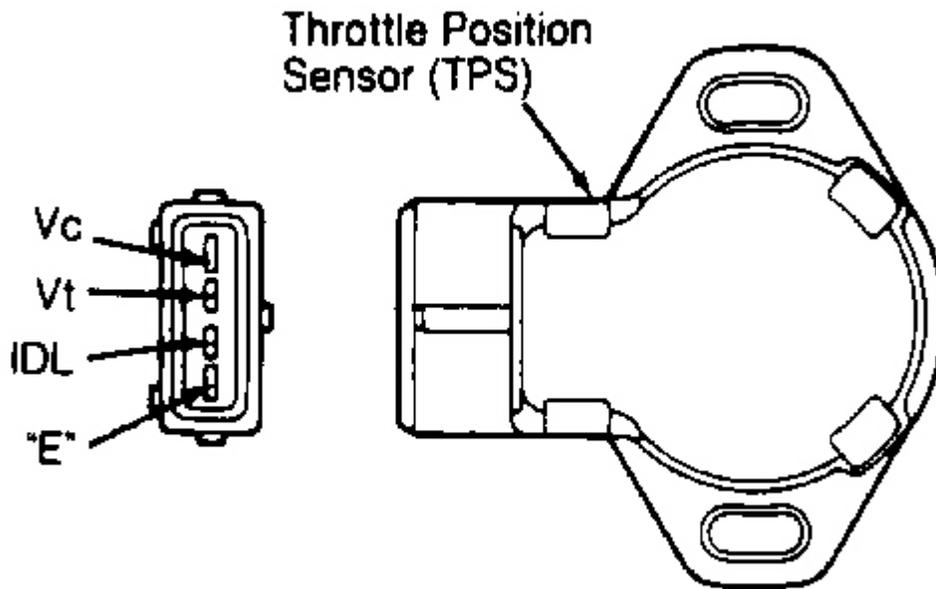


Fig. 3: TP Sensor Connector Terminal ID (A/T)
 Courtesy of MAZDA MOTORS CORP.

TP SENSOR CONTINUITY

Test Condition ⁽¹⁾	⁽²⁾ Continuity
.004" (.10 mm)	Yes
.024" (.60 mm)	No

(1) Insert feeler gauge of specified thickness between throttle lever and throttle stop screw.
 (2) Check continuity with ohmmeter connected between TP sensor terminals "E" and IDL.

INSPECTION (M/T)

1. Disconnect TP sensor connector. Insert feeler gauge of specified thickness between throttle lever and throttle stop screw. See TP SENSOR CONTINUITY (M/T) table.
2. Connect ohmmeter between specified terminals of TP sensor connector. See **Fig. 4** . If continuity is not as specified, adjust TP sensor. See ADJUSTMENT procedure.

ADJUSTMENT

1. Disconnect TP sensor connector. Connect ohmmeter between terminals IDL and TL/E of TP sensor

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- connector. See **Fig. 4** . Insert a .016" (.41 mm) feeler gauge between throttle lever and throttle stop screw.
2. Loosen TP sensor screws. Rotate TP sensor clockwise about 30 degrees, then rotate counterclockwise until ohmmeter indicates continuity.
 3. Remove feeler gauge. Insert a .027" (.69 mm) feeler gauge between throttle lever and throttle stop screw. If ohmmeter indicates no continuity, go to next step. If ohmmeter indicates continuity, repeat adjustment procedure.
 4. Tighten TP sensor attaching screws. Open throttle valve fully a few times. Recheck TP sensor adjustment.

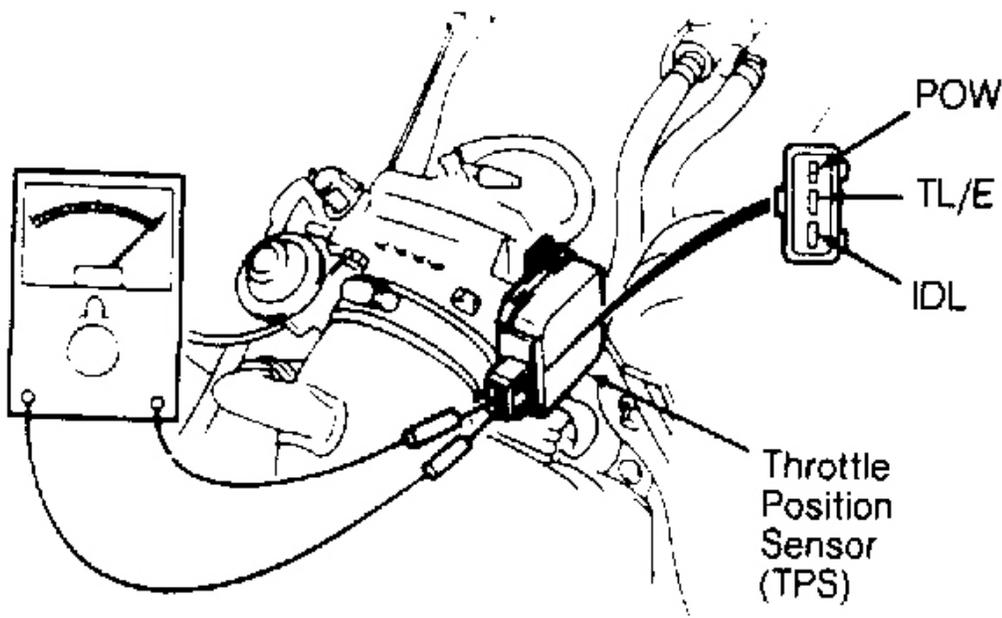


Fig. 4: TP Sensor Connector Terminal ID (M/T)
 Courtesy of MAZDA MOTORS CORP.

TP SENSOR CONTINUITY

Condition	Continuity Between IDL & TL/E	Continuity Between POW & TL/E
.016" (.41 mm) ⁽¹⁾	Yes	No
.027" (.7 mm) ⁽¹⁾	No	No
WOT	No	Yes

Insert feeler gauge of specified thickness between throttle lever and throttle stop screw.

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(1)

THROTTLE (IDLE) SWITCH

NOTE: Throttle switch is either a part of TP sensor, which is adjusted automatically when TP is adjusted, or a separate, nonadjustable switch on throttle body. See THROTTLE POSITION (TP) SENSOR .