

## D - ADJUSTMENTS

### 1991 Mazda Miata

#### 1991 ENGINE PERFORMANCE On-Vehicle Adjustments

B2200, B2600i, Miata, MPV, MX-6,  
Navajo, Protege, RX7, 323, 626, 929

### ENGINE MECHANICAL

Before performing any on-vehicle adjustments of 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

#### RX7

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.

1) Connect a jumper wire between ground and Green test connector near battery. See Fig. 1. Connect timing light to leading spark plug wire (bottom wire) of front rotor housing.

2) If Yellow mark on pulley aligns with indicator pin, go to next step. See Fig. 2. See IGNITION TIMING SPECIFICATIONS - RX7 TABLE. If Yellow mark does not align with indicator pin, loosen Crank Angle Sensor (CAS) lock bolt. Rotate CAS until timing marks are aligned. Tighten lock bolt.

3) Connect timing light to trailing spark plug wire (top wire) of front rotor housing. If Red mark on pulley does not align with indicator pin, loosen CAS lock bolt. Rotate CAS until timing marks are aligned. Tighten lock bolt.

CAUTION: On RX7, ignition timing is set AFTER top dead center.

#### IGNITION TIMING SPECIFICATIONS - RX7 TABLE (Degrees ATDC@RPM)

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Application	Leading (Yellow)	Trailing (Red)
RX7 (1)	5@750	20@750

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(1) - Connect jumper wire between Green test connector and ground.

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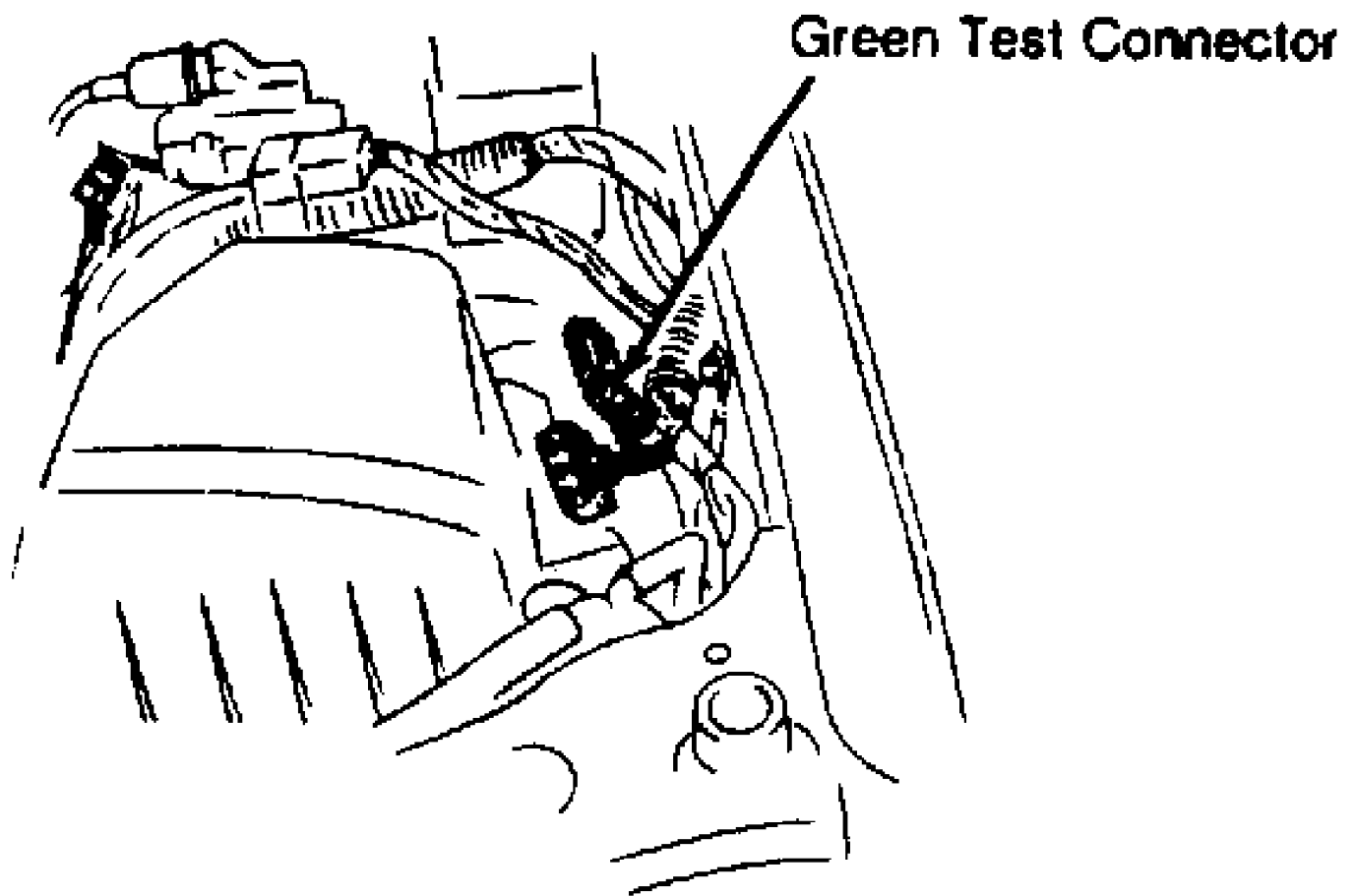


Fig. 1: RX7 Locating Green Test Connector  
Courtesy of Mazda Motors Corp.

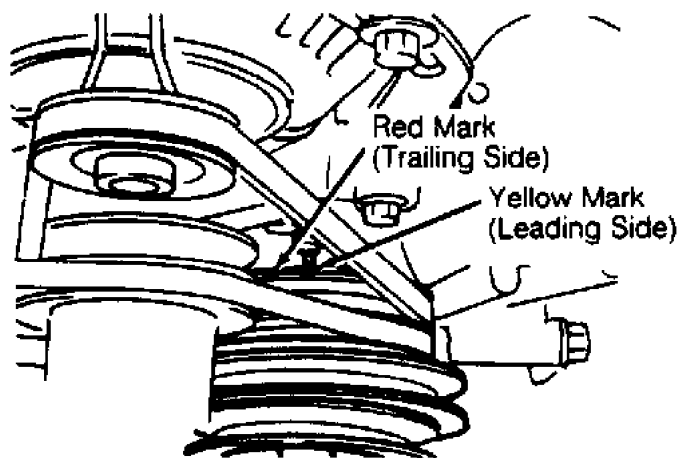


Fig. 2: RX7 Locating Ignition Timing Marks  
Courtesy of Mazda Motors Corp.

EXCEPT RX7

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.

B2200 & B2600i

On B2200 (PFI) and B2600i, connect jumper wire between ground and Green test connector in right rear corner of engine compartment. See Fig. 4. On all models, connect timing light. Set timing to specification. See IGNITION TIMING SPECIFICATIONS - EXCEPT RX7 TABLE. See Fig. 3. On B2200 (PFI) and B2600i, remove jumper wire.

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 20A WIPER fuse will blow.

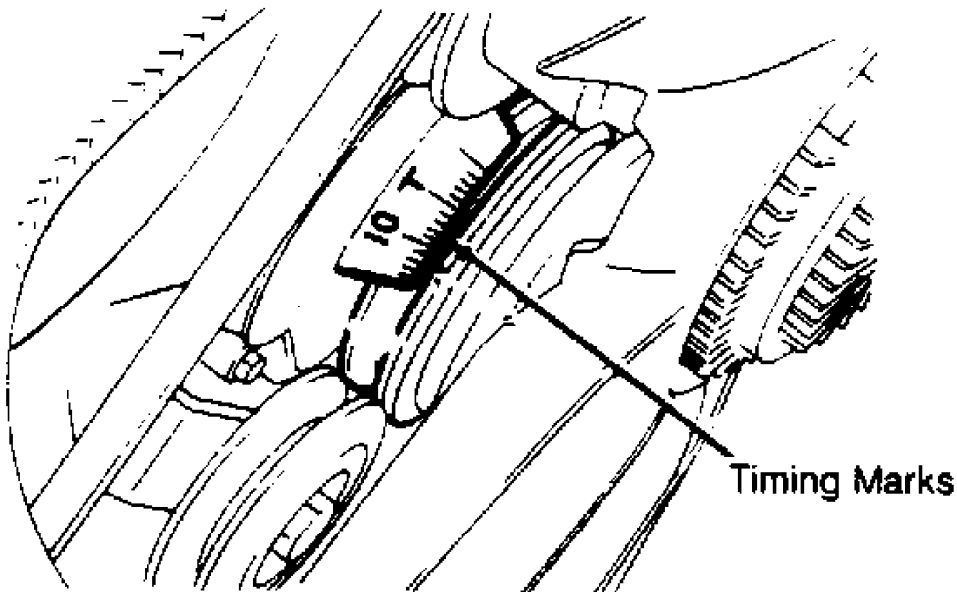
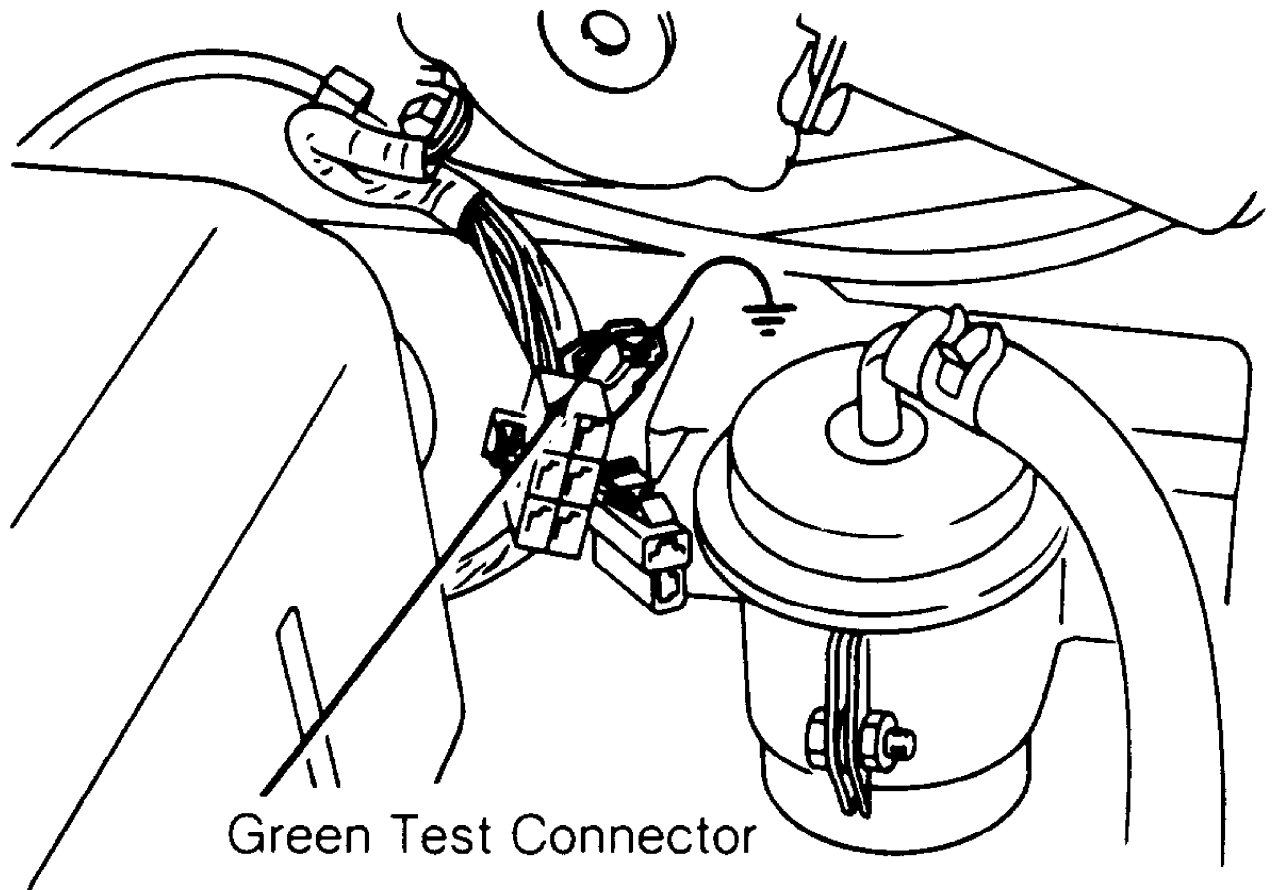


Fig. 3: Except RX7 Locating Typical Ignition Timing Marks  
Courtesy of Mazda Motors Corp.



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Fig. 4: B2200 & B2600i Locating Green Test Connector  
Courtesy of Mazda Motors Corp.

Miata, Protege & 323

1) Connect Diagnostic Tester (49B0199A0) to diagnostic connector and select SELF TEST mode, or connect jumper wire between diagnostic connector terminals TEN and GND. See Fig. 5.

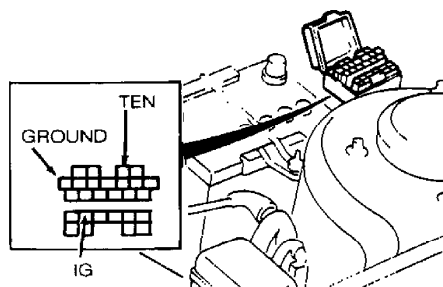


Fig. 5: Miata, Protege & 323 Diagnostic Connector Terminal ID  
Courtesy of Mazda Motors Corp.

2) Connect timing light. Set timing to specification. See IGNITION TIMING SPECIFICATIONS - EXCEPT RX7 TABLE. See Fig. 3.

Disconnect diagnostic tester or jumper wire from diagnostic connector.

MPV & 929

Connect jumper wire between ground and Green test connector in left front corner of engine compartment. See Figs. 6, 7 and 9. Connect timing light. Set timing to specification. See IGNITION TIMING SPECIFICATIONS - EXCEPT RX7 TABLE. See Fig. 3. Remove jumper wire.

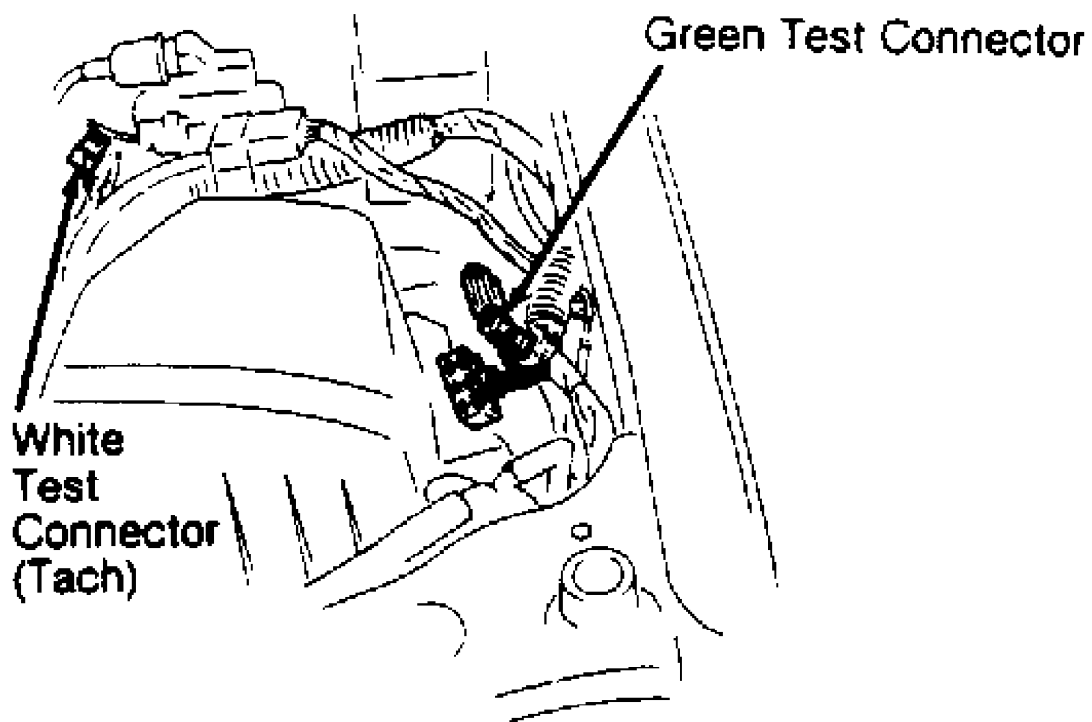


Fig. 6: MPV 2.6L Locating Green & White Test Connectors  
Courtesy of Mazda Motors Corp.

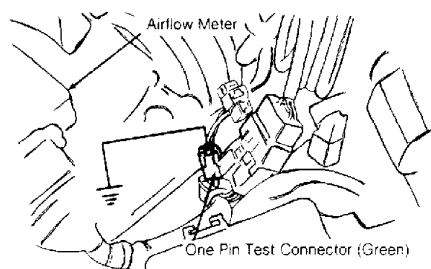


Fig. 7: MPV 3.0L & 929 SOHC Locating Green Test Connector  
Courtesy of Mazda Motors Corp.

MX-6 & 626

1) On non-turbo vehicles, disconnect and plug distributor vacuum advance hose. On turbo vehicles, connect jumper wire between ground and Green test connector near left shock tower. See Fig. 8.

2) Connect timing light. Set timing to specification. See IGNITION TIMING SPECIFICATIONS - EXCEPT RX7 TABLE. See Fig. 3. On non-turbo vehicles, connect distributor vacuum advance hose. On turbo vehicles, remove jumper wire.

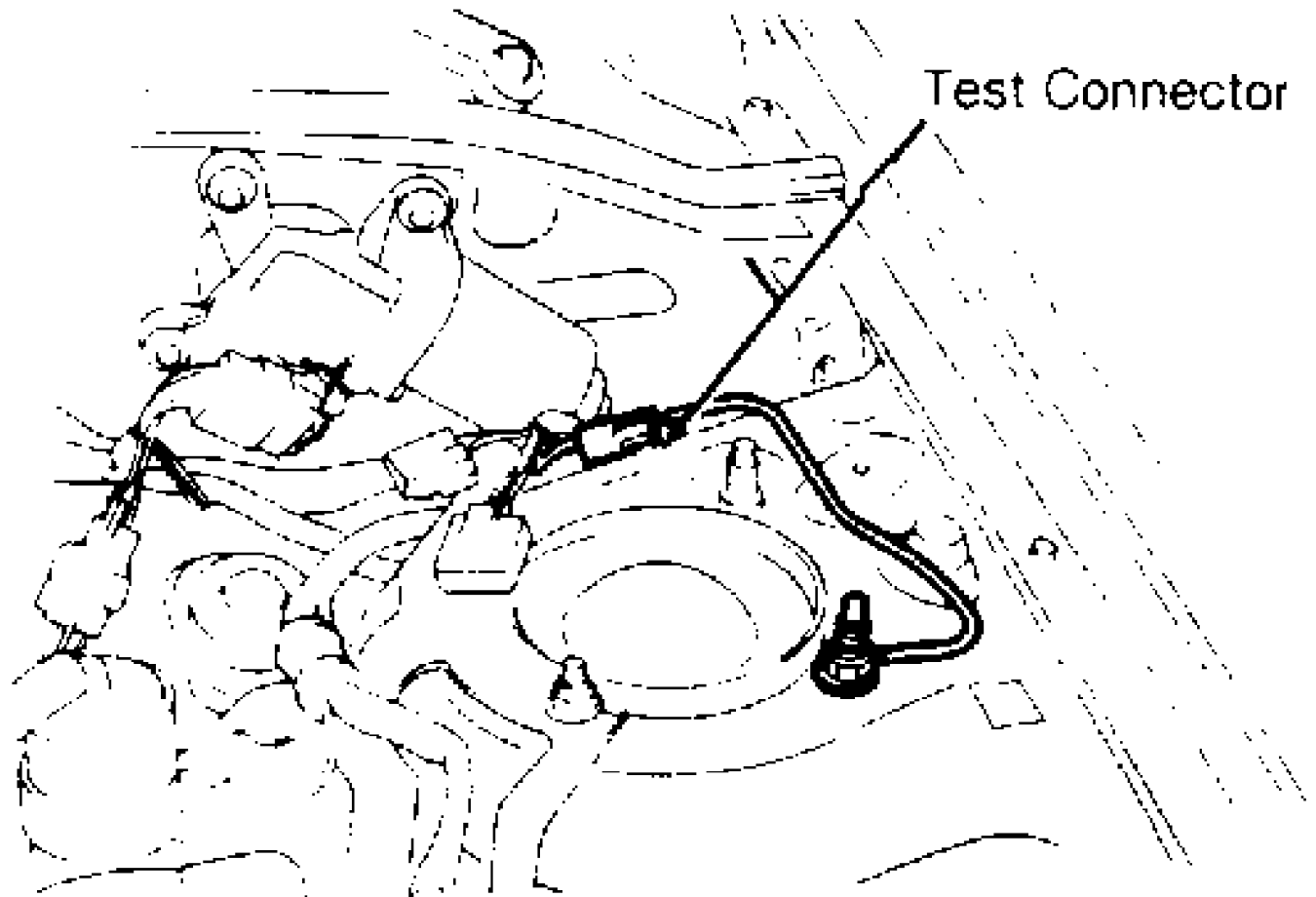


Fig. 8: MX-6 & 626 Locating Green Test Connector  
Courtesy of Mazda Motors Corp.

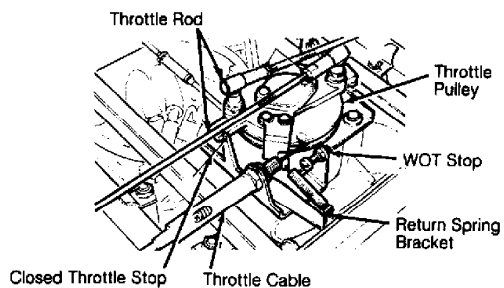


Fig. 9: Locating Green Test Connector (929 DOHC)  
Courtesy of Mazda Motors Corp.

Navajo

1) Engine is equipped with Electronic Distributorless Ignition System (EDIS). Base (initial) timing is preset at 10 degrees BTDC and is not adjustable. To check base timing, turn ignition off.

2) Disconnect Spark Angle Word (SAW) in-line connector in Yellow/Light Green wire near EDIS module, in right front corner of engine compartment. Start engine.

3) Connect timing light and check timing. If ignition timing is not at 10 degrees BTDC, see appropriate H - TESTS W/O CODES and appropriate G -TEST W/ CODES articles in the ENGINE PERFORMANCE section. Turn off engine. Connect SAW in-line connector.

IGNITION TIMING SPECIFICATIONS TABLE - EXCEPT RX7  
(Degrees BTDC@RPM)

Application	Man. Trans.	(1) Auto. Trans.
B2200		
Carbureted	6@825	6@825
PFI (2)	6@750	6@770
B2600i (2)	5@750	5@770
Miata (2)	10@850	8@850
MPV		
2.6L (2)	5@750	5@770
3.0L (2)	11@800	11@800
MX-6 & 626		
Non-Turbo (2) (3)	6@750	6@750
Turbo (2)	9@750	9@750
Navajo	(4)	(4)
Protege		
DOHC (2)	10@750	10@750
SOHC (2)	5@750	5@750
323 (2)	7@750	7@750
929		
DOHC (2)	N/A	8@700
SOHC (2)	N/A	15@650

(1) - Place automatic transmission in Park.

(2) - Connect jumper wire between Green test connector and ground.

(3) - Disconnect and plug distributor vacuum advance hose.

(4) - See ignition timing adjustment procedure.

## 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.

### CHOKE (B2200 CARBURETED)

Apply about 16" Hg vacuum to choke pull-off diaphragm. Lightly push the choke plate toward the closed position. Measure clearance between top of choke plate and air horn. If clearance is not .067-.085" (1.70-2.16 mm), bend lever on choke plate shaft until clearance is within specification.

### COLD (FAST) IDLE SPEED (B2200 CARBURETED)

NOTE: For adjustments of the choke unloader, fast idle cam (static

adjustment) and secondary throttle valve, see appropriate N - REMOVE/INSTALL/OHAUL article in the ENGINE PERFORMANCE section.

1) Warm engine to normal operating temperature. Turn off engine. Disconnect and plug vacuum hoses to idle compensator and reed valves. Hold throttle valve slightly open. Push choke plate fully closed. Release throttle valve.

2) Remove pressure from choke plate. Start engine without touching accelerator pedal or throttle valve. If engine speed is not 3000-4000 RPM, turn fast idle screw until within specification.

## DASHPOT

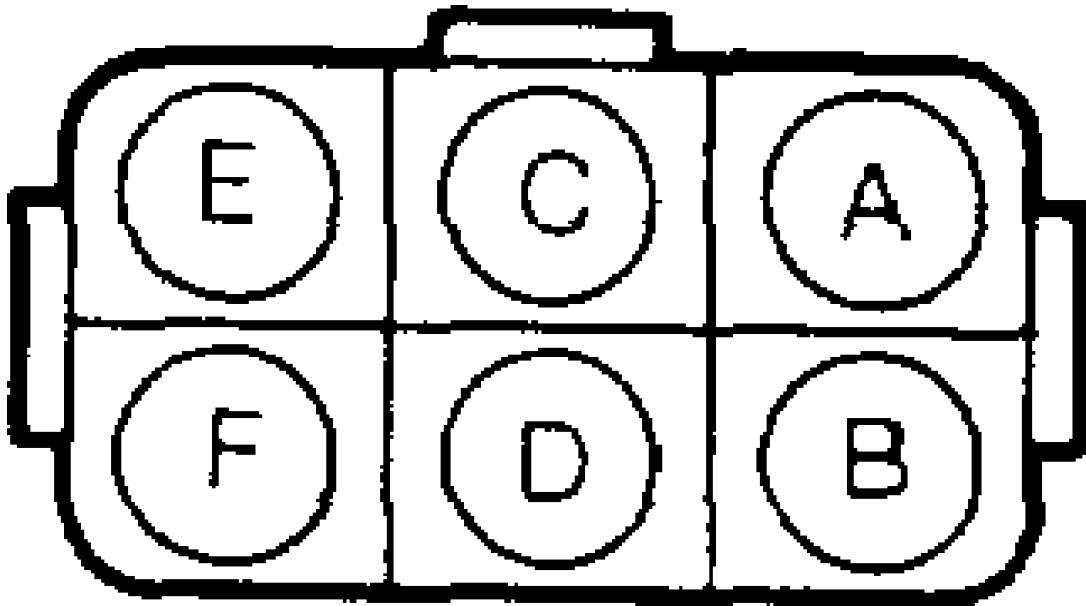
NOTE: Before adjusting dashpot, warm engine to normal operating temperature. Turn off all accessories. Place transmission in Neutral (M/T) or Park (A/T). On RX7, ensure TPS is adjusted. See THROTTLE POSITION SENSOR (TPS).

B2200 (Carbureted With M/T)

Slowly increase engine RPM until throttle lever separates from dashpot. If engine speed is not 2700-2900 RPM when throttle lever separates from dashpot, loosen lock nut and adjust dashpot as necessary. Tighten lock bolt.

RX7 Turbo

1) Remove turbocharger intercooler. Disconnect TPS connector. Connect ohmmeter between TPS connector terminals "A" and "B". See Fig. 10.



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Fig. 10: Identifying TPS Connector Terminals (RX7)  
Courtesy of Mazda Motors Corp.

2) Increase engine RPM until throttle lever separates from dashpot. If resistance is not 1800-3800 ohms when lever separates from



dashpot, loosen lock nut and adjust dashpot. Tighten lock bolt.

#### All Others

Operate engine at 4000 RPM (3500 RPM on RX7 non-turbo). Slowly decrease engine RPM until throttle lever contacts dashpot. If engine RPM is not as specified when throttle lever contacts dashpot, loosen lock nut and adjust dashpot as necessary. See DASHPOT SPECIFICATIONS TABLE. Tighten lock bolt.

DASHPOT SPECIFICATIONS (1) TABLE

Application	RPM
B2200 (Carbureted With M/T) .....	2700-2900
Miata .....	2350-2650
MPV (3.0L) .....	3200-3800
Protege	
DOHC .....	About 3500
SOHC .....	About 2700
RX7	
Non-Turbo .....	2700-3100
Turbo .....	(2)
323 .....	About 3000
929 (SOHC) .....	3200-3800

(1) - Dashpots are not used on unlisted models.

(2) - See dashpot adjustment procedure.

## 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.

#### B2200 (Carbureted)

Connect tachometer to negative side of ignition coil primary circuit (White wire). Ensure choke is fully open and throttle valve lever is not resting on fast idle cam. If idle speed is not 825 RPM, turn idle speed adjusting screw on carburetor until within specification.

#### B2200 (PFI) & B2600i

Connect jumper wire between ground and Green 1-pin test connector in right rear corner of engine compartment. See Fig. 4. Connect tachometer to negative side of ignition coil primary circuit (White wire). If idle speed is not within specification, rotate idle air adjusting screw on throttle body. See IDLE SPEED SPECIFICATIONS TABLE. Disconnect jumper wire.

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 20A WIPER fuse will blow.

#### Miata, Protege & 323

1) Connect Diagnostic Tester (49B0199A0) to diagnostic connector and select SELF TEST mode, or connect jumper wire between diagnostic connector terminals TEN and GND. See Fig. 5. 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.

#### MPV

1) Connect jumper wire between ground and Green 1-pin test connector in left front corner of engine compartment. See Figs. 6 and 7. On 2.6L, connect tachometer to White 1-pin test connector in left front corner of engine compartment. See Fig. 6.

2) On 3.0L, connect tachometer to test connector at ignition coil (White wire). On all models, if idle speed is not within specification, rotate idle air adjusting screw on throttle body. See IDLE SPEED SPECIFICATIONS TABLE. Disconnect jumper wire.

#### MX-6 & 626

1) Connect jumper wire between ground and Green 1-pin test connector near left shock tower. See Fig. 9. Connect tachometer to White 1-pin test connector near left shock tower.

2) If idle speed is not within specification, rotate idle air adjusting screw on throttle body. See IDLE SPEED SPECIFICATIONS TABLE. Disconnect jumper wire.

NOTE: On Navajo, idle speed is computer controlled and is not adjustable. However, use the following initial throttle angle adjustment procedure (minimum air rate setting) as a basis for diagnosing idle speed problems or if throttle stop screw has been incorrectly set.

#### Navajo

1) Ensure the following conditions exist: throttle bore, throttle plate and Idle Speed Control (ISC) air by-pass valve are free of contamination, oxygen sensor is free of contamination and is operating, throttle stop lever is resting against throttle stop screw, no vacuum leaks are present, cooling system is full and ignition timing is set to specification.

2) Perform a thorough basic inspection and self-test (KOEO, KOER and Continuous Memory self-tests) to confirm operation of sub-systems which may contribute to idle speed control problems. See appropriate G - TEST W/ CODES article in the ENGINE PERFORMANCE section.

3) With engine off, disconnect negative battery cable for at least 5 minutes. Connect negative battery cable. Start engine and allow idle speed to stabilize for 2 minutes. Snap throttle open and return to idle. Lightly press and release accelerator. Turn engine off. Disconnect ISC air by-pass solenoid.

NOTE: If engine RPM fluctuates during idle, the throttle plate may be open enough to allow canister purge flow. To verify this condition, disconnect and plug the canister purge line. If purge is present, close the throttle plate until the fluctuations stop.

4) Start engine. Operate engine at 2500 RPM for 30 seconds. Allow engine to idle for 2 minutes. Turn throttle stop screw until engine idles at 675 RPM.

5) Turn off engine. Repeat step 4). Turn off engine. Disconnect negative battery cable for at least 5 minutes. Connect ISC air by-pass solenoid connector. Connect negative battery cable. Verify throttle plate is not stuck in bore and linkage is not preventing throttle stop lever from contacting throttle stop.

6) Start engine and allow to idle for 2 minutes. Snap throttle open and return to idle. Lightly press and release accelerator. Allow engine to idle. If engine does not idle properly, see appropriate H - TESTS W/O CODES article in the ENGINE PERFORMANCE section.

RX7

1) Ensure TPS is adjusted. See THROTTLE POSITION SENSOR (TPS). Connect tachometer to test connector at the trailing coil/igniter assembly. If tachometer does not operate, connect it to the Black 1-pin test connector at leading coil/igniter assembly.

2) If using an inductive pick-up tachometer (secondary ignition), connect it to front or rear trailing spark plug wire. If the pick-up is connected to either of leading spark plug wires, a false reading will result.

3) If idle speed is not within specification, rotate idle air adjusting screw on throttle body. See IDLE SPEED SPECIFICATIONS TABLE. Disconnect jumper wire.

929

1) Connect jumper wire between ground and Green 1-pin test connector in left front corner of engine compartment. See Figs. 7 and 9. Connect tachometer to test connector at ignition coil.

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	Man. Trans. RPM	(1) Auto. Trans. RPM
B2200		
Carbureted .....	825	825
PFI (2) .....	750	770
B2600i (2) .....	750	770
Miata (2) .....	850	850
MPV		
2.6L (2) .....	750	770
3.0L (2) .....	800	800
MX-6 (2) .....	750	750
Navajo .....	(3)	(3)
Protege (2) .....	750	750
RX7 (2) .....	750	750
323 (2) .....	750	750
626 (2) .....	750	750
929		
DOHC (2) .....	N/A	700
SOHC (2) .....	N/A	650

(1) - Place automatic transmission in Park.

(2) - Connect jumper wire between Green test connector and ground.

(3) - See idle speed adjustment procedure.

#### IDLE MIXTURE

B2200 (Carbureted)

1) Check for presence of mixture screw roll pin. See Fig. 11. If roll pin has already been removed, go to next step. If roll pin is present, remove carburetor. Drive out mixture screw roll pin. Install carburetor.

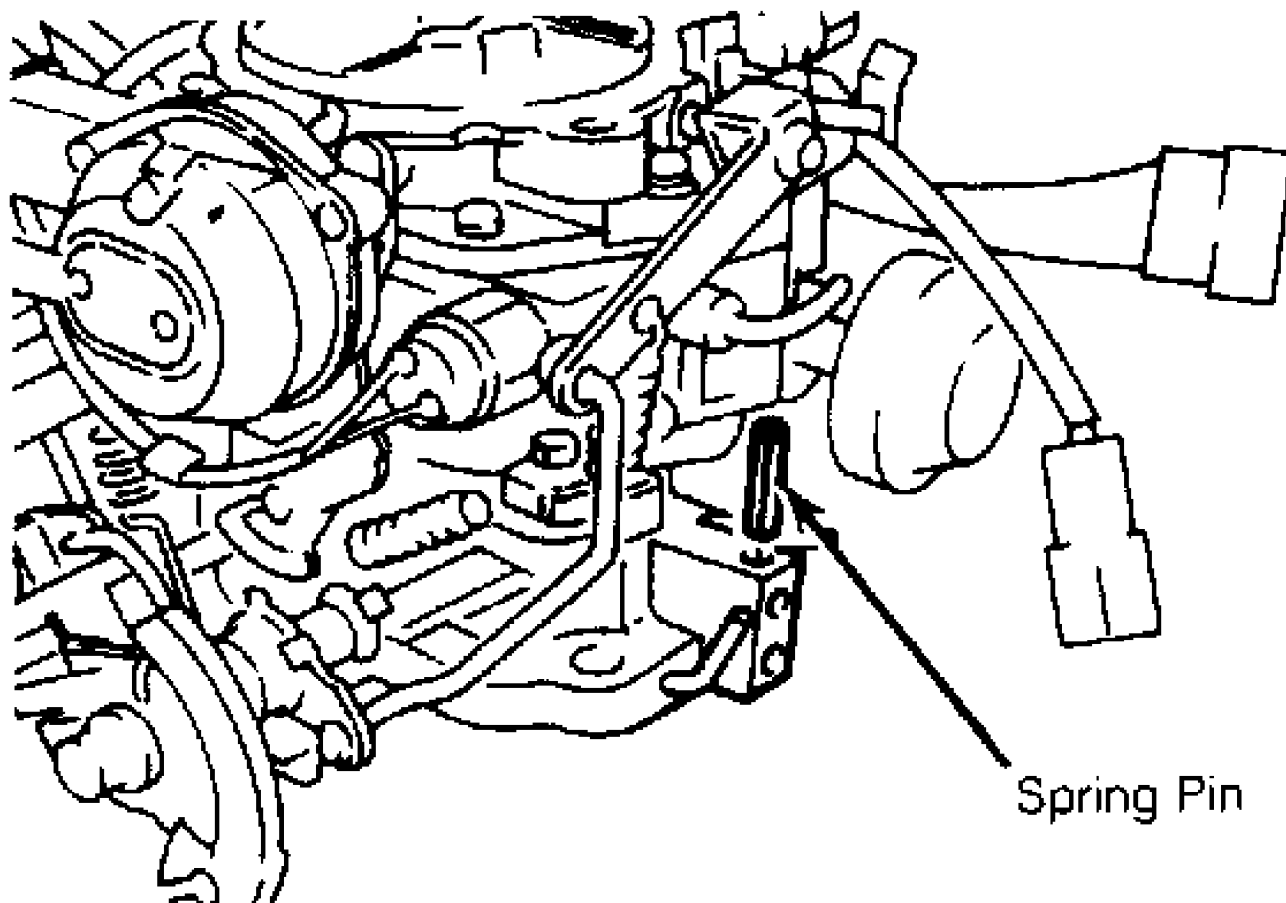


Fig. 11: B2200 Carbureted Removing Carburetor Mixture Screw Roll Pin  
 Courtesy of Mazda Motors Corp.

2) Install air cleaner. Ensure idle compensator valve is closed. Warm engine to normal operating temperature. Connect dwell meter (on 4-cylinder setting) between ground and mixture check connector. See Fig. 12.

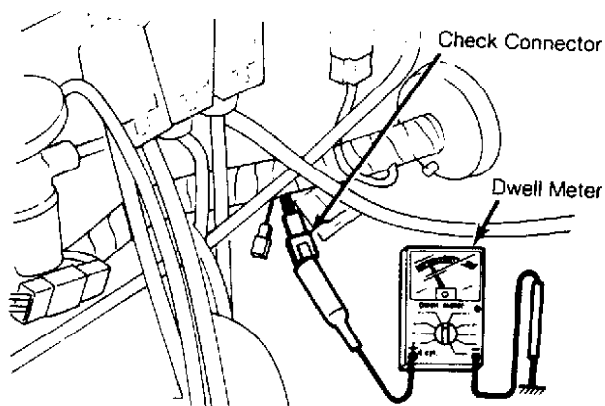


Fig. 12: B2200 Carbureted Connecting Meter to Mixture Check Connector  
 Courtesy of Mazda Motors Corp.

3) Adjust idle speed to 825 RPM. Turn mixture adjusting screw until dwell reading is 27-45 degrees. Reset idle speed (if necessary).

Replace mixture roll pin after adjustment. If mixture cannot be adjusted to specification, see appropriate H - TESTS W/O CODES article in the ENGINE PERFORMANCE section.

Except B2200 (Carbureted)

Air/fuel mixture is computer-controlled and cannot be manually adjustment. If CO level is excessive, see H - TESTS W/O CODES article in the ENGINE PERFORMANCE section.

## THROTTLE POSITION SENSOR (TPS)

### B2200 (CARBURETED)

See B2200 (CARBURETED) under THROTTLE (IDLE) SWITCH.

### B2200 (PFI), B2600i, MPV (2.6L), MX-6 & 626

#### Inspection & Adjustment

1) Warm engine to normal operating temperature. Remove throttle body air inlet hose. Disconnect TPS connector. Install Test Harness (49G018901) between TPS and harness.

2) Turn ignition on. Ensure that throttle valve is fully closed. Using a voltmeter capable of measuring voltage variations of .01 volt, measure voltage at Red and Black wires of test harness. See Fig. 13.

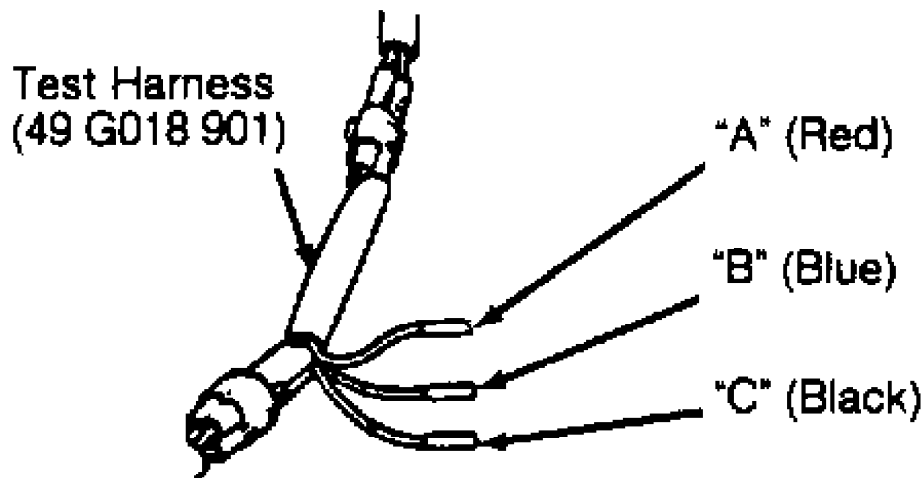


Fig. 13: TPS Test Harness Terminal ID B2200 PFI, B2600i, MPV 2.6L, MX-6 & 626

Courtesy of Mazda Motors Corp.

3) If voltage is 4.5-5.5 volt at Red wire, and about zero volt at Black wire, go to next step. If voltages are not as specified, check battery voltage and wiring harness between electronic control unit and TPS. If battery voltage and harness are okay, replace ECU.

4) Record voltage at Red wire. Measure voltage at Blue wire

of test harness with the throttle valve at different positions within its entire range. See B2200 PFI, B2600i, MPV 2.6L, MX-6 & 626 TPS VOLTAGE TABLE.

5) If measured voltages do not match voltages specified, loosen TPS screw. Rotate TPS until Blue wire voltage is as specified. Tighten TPS screw. If TPS cannot be adjusted to specification, replace TPS. Disconnect negative battery cable and apply brake pedal for 5 seconds to erase engine control unit memory.

6) If measured voltages increase smoothly and match the voltages specified, turn ignition off. Disconnect test harness. Reconnect TPS connector. Disconnect negative battery cable and apply brake pedal for 5 seconds to erase engine control unit memory.

B2200 PFI, B2600i, MPV 2.6L, MX-6 & 626 TPS VOLTAGE TABLE

Red Wire Voltage	Blue Wire Voltage Closed Throttle	Blue Wire Voltage Wide Open Throttle
4.50-4.59	.37-.54	3.58-4.23
4.60-4.69	.38-.55	3.66-4.32
4.70-4.79	.39-.56	3.74-4.41
4.80-4.89	.40-.57	3.82-4.51
4.90-4.99	.40-.58	3.90-4.60
5.00-5.09	.41-.60	3.97-4.70
5.10-5.19	.42-.61	4.05-4.79
5.20-5.29	.43-.62	4.13-4.88
5.30-5.39	.44-.63	4.21-4.98
5.40-5.49	.44-.64	4.29-5.07
5.50	.44-.66	4.29-5.17

## MIATA, PROTEGE & 323 (A/T)

### Inspection

1) Disconnect TPS connector. Connect an ohmmeter between TPS connector terminals "E" and IDL. See Fig. 14. Insert feeler gauge of specified thickness between throttle lever and throttle stop screw. See MIATA, PROTEGE & 323 WITH A/T TPS CONTINUITY TEST TABLE.

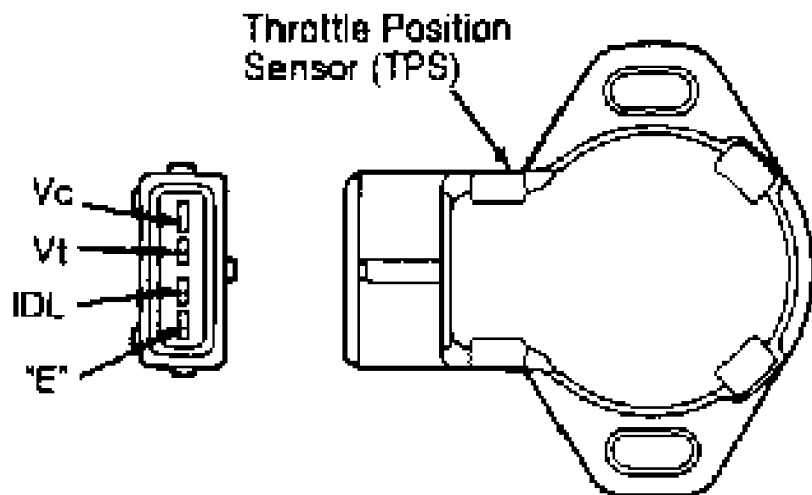


Fig. 14: Miata, Protege & 323 W/ A/T TPS Connector Terminal ID  
Courtesy of Mazda Motors Corp.

2) If continuity is not as specified, adjust TPS. See ADJUSTMENT. If continuity is as specified, connect ohmmeter between

TPS connector terminals Vt and "E". If resistance is less than 1000 ohms with throttle fully closed and about 5000 ohms with throttle wide open, TPS is adjusted. If resistance is not as specified, adjust TPS. See ADJUSTMENT.

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

#### Adjustment

- 1) Disconnect TPS connector. Connect ohmmeter between TPS connector terminals "E" and IDL. See Fig. 14. Loosen TPS attaching screws.
- 2) Insert a .010" (.25 mm) feeler gauge between throttle lever and throttle stop screw. Rotate TPS 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 TPS attaching screws. Open throttle valve fully and verify resistance between terminals "E" and Vt is about 5000 ohms.

#### MIATA, PROTEGE & 323 WITH A/T TPS CONTINUITY TEST TABLE

Test Condition (1)	(2) Continuity
.004" (.1 mm) .....	Yes
.024" (.6 mm) .....	No
(1) - Insert feeler gauge of specified thickness between throttle lever and throttle stop screw.	
(2) - Check continuity with ohmmeter connected between TPS terminals "E" and IDL.	

### MIATA, PROTEGE & 323 (M/T)

#### Inspection

- 1) Disconnect TPS connector. Insert feeler gauge of specified thickness between throttle lever and throttle stop screw. See MIATA, PROTEGE & 323 WITH M/T TPS CONTINUITY TEST TABLE.
- 2) Connect ohmmeter between specified terminals of TPS connector. See Fig. 15. If continuity is not as specified, adjust TPS. See ADJUSTMENT.

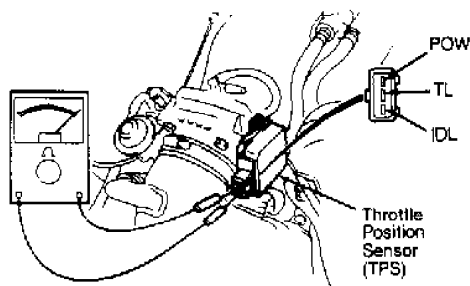


Fig. 15: Miata, Protege & 323 W/ M/T TPS Connector Terminal ID  
 Courtesy of Mazda Motors Corp.

#### Adjustment

- 1) Disconnect TPS connector. Connect ohmmeter between

terminals IDL and TL of TPS connector. See Fig. 15. Insert a .016" (.41 mm) feeler gauge between throttle lever and throttle stop screw.

2) Loosen TPS screws. Rotate TPS 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 TPS attaching screws. Open throttle valve fully a few times. Recheck TPS adjustment.

MIATA, PROTEGE & 323 W/ M/T TPS CONTINUITY TEST TABLE

Test Condition	Continuity Between IDL-TL	Continuity Between POW-TL
Miata		
.016" (.4 mm) (1)	Yes	No
.027" (.7 mm) (1)	No	No
Wide Open Throttle	No	Yes
Protege&323		
.004" (.10 mm) (1)	Yes	No
.039" (1.0 mm) (1)	No	No
Wide Open Throttle	No	Yes

(1) - Insert feeler gauge of specified thickness between throttle lever and throttle stop screw.

MPV (3.0L) & 929

Inspection

Disconnect TPS connector. Using an ohmmeter, measure resistance between specified terminals of TPS connector. See Figs. 16 and 17. If resistance is not as specified in MPV 3.0L & 929 TPS RESISTANCE TABLE, adjust TPS. See ADJUSTMENT.

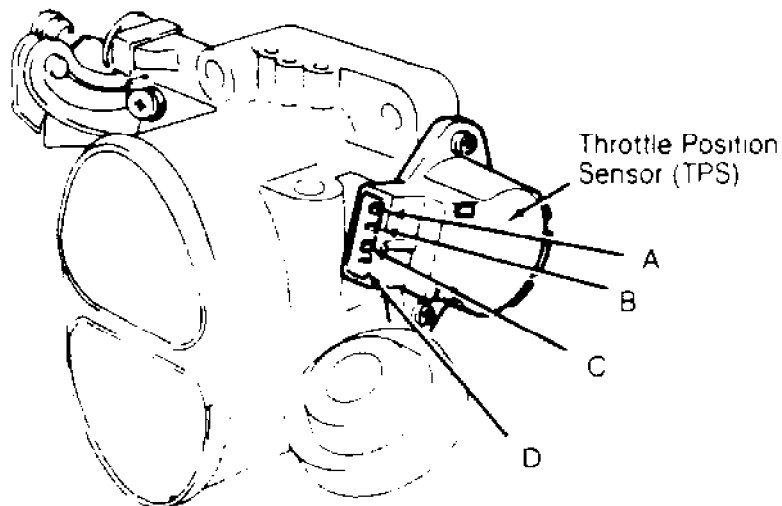
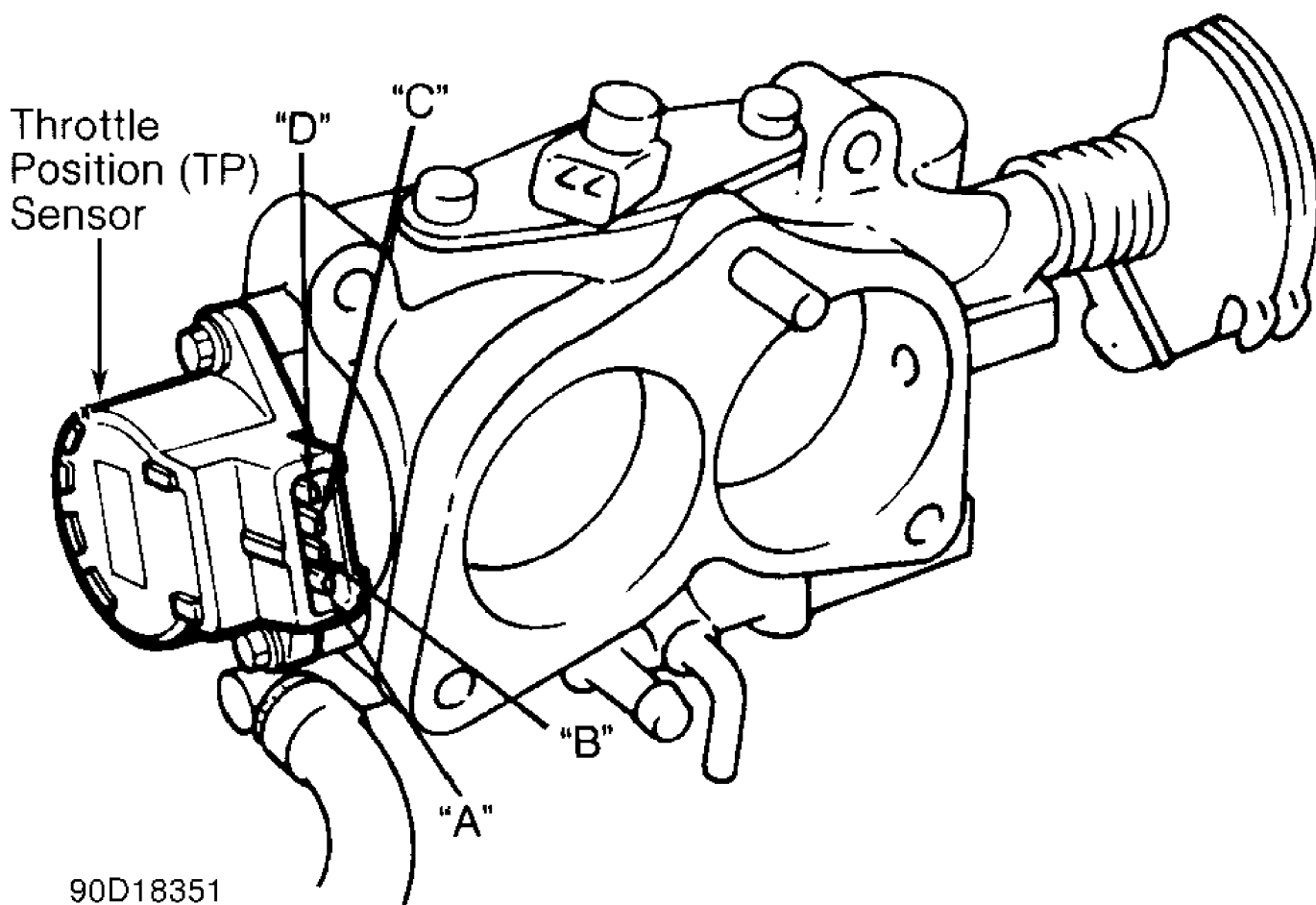


Fig. 16: MPV 3.0L & 929 SOHC TPS Terminal ID  
Courtesy of Mazda Motors Corp.





90D18351

Fig. 17: 929 DOHCTPS Terminal ID  
Courtesy of Mazda Motors Corp.

#### Adjustment

1) Insert a feeler gauge of specified thickness between throttle lever and throttle stop screw. Check continuity between TPS connector terminals "C" and "D". See Figs. 16 and 17.

2) If continuity is not as specified in MPV 3.0L & 929 TPS ADJUSTMENT TABLE, loosen TPS mounting screws. Rotate TPS until continuity is as specified. Tighten mounting screws. Connect TPS connector.

#### MPV 3.0L & 929 TPS RESISTANCE TABLE

Application & Test	Ohms
MPV 3.0L & 929 SOHC	
Between Terminals "A" & "D" .....	3500-6500
Between Terminals "B" & "D" .....	
Closed Throttle .....	About 1000 or less
Wide Open Throttle .....	3500-6500
929 DOHC	
Between Terminals "A" & "D" .....	3000-6000
Between Terminals "B" & "D" .....	
Closed Throttle .....	200-600
Wide Open Throttle .....	3300-7000

## MPV 3.0L & 929 TPS ADJUSTMENT TABLE

Test Condition (1)	Continuity Between C-D
MPV 3.0L & 929 SOHC	
.020" (.5 mm)	Yes
.028" (.7 mm)	No
929 DOHC	
.004" (.1 mm)	Yes
.012" (.3 mm)	No

(1) - Insert feeler gauge of specified thickness between throttle lever and throttle stop screw.

## NAVAJO

NOTE: On Navajo, TPS is not adjustable. Replace TPS if voltage readings are not within specification.

1) Ensure throttle linkage is not preventing throttle stop lever from contacting throttle stop screw. Disconnect Electronic Control Assembly (ECA) 60-pin connector. Inspect connector for damaged pins, corrosion or loose wires and repair as necessary.

2) Connect Breakout Box (T83L-50-EEC-IV) between ECA and ECA harness. Connect digital voltmeter positive lead to pin No. 47 and negative lead to pin No. 46 of breakout box.

3) Turn ignition on. Observe voltmeter reading while slowly moving throttle between fully closed and wide open positions. If voltage is .34 with throttle fully closed and 4.84 with throttle fully open, TPS voltages are within specification.

4) If voltages are not within specification, ensure throttle angle (minimum air rate) is correct. See IDLE SPEED under IDLE SPEED & MIXTURE. If throttle angle is correct, remove TPS.

5) Check for damaged, corroded or misadjusted pins. If pins are okay, install TPS, ensuring it is correctly seated. Check voltage readings again. If voltage readings are not as specified, perform KOEO self-test. See appropriate G - TEST W/ CODES article in the ENGINE PERFORMANCE section. If KOEO self-test indicates no problems, replace TPS.

## RX7

### Inspection

1) Warm engine to normal operating temperature. Turn off engine. Connect Engine Signal Monitor (499200162) between ECU and ECU wire harness using Adapter Harness (49G018903).

2) Check voltages at ECU terminals 2F and 2G. See Fig. 18. See RX7 TPS VOLTAGE TABLE. If voltages are not within specification, remove engine signal monitor and adapter harness. Adjust TPS. See ADJUSTMENT.

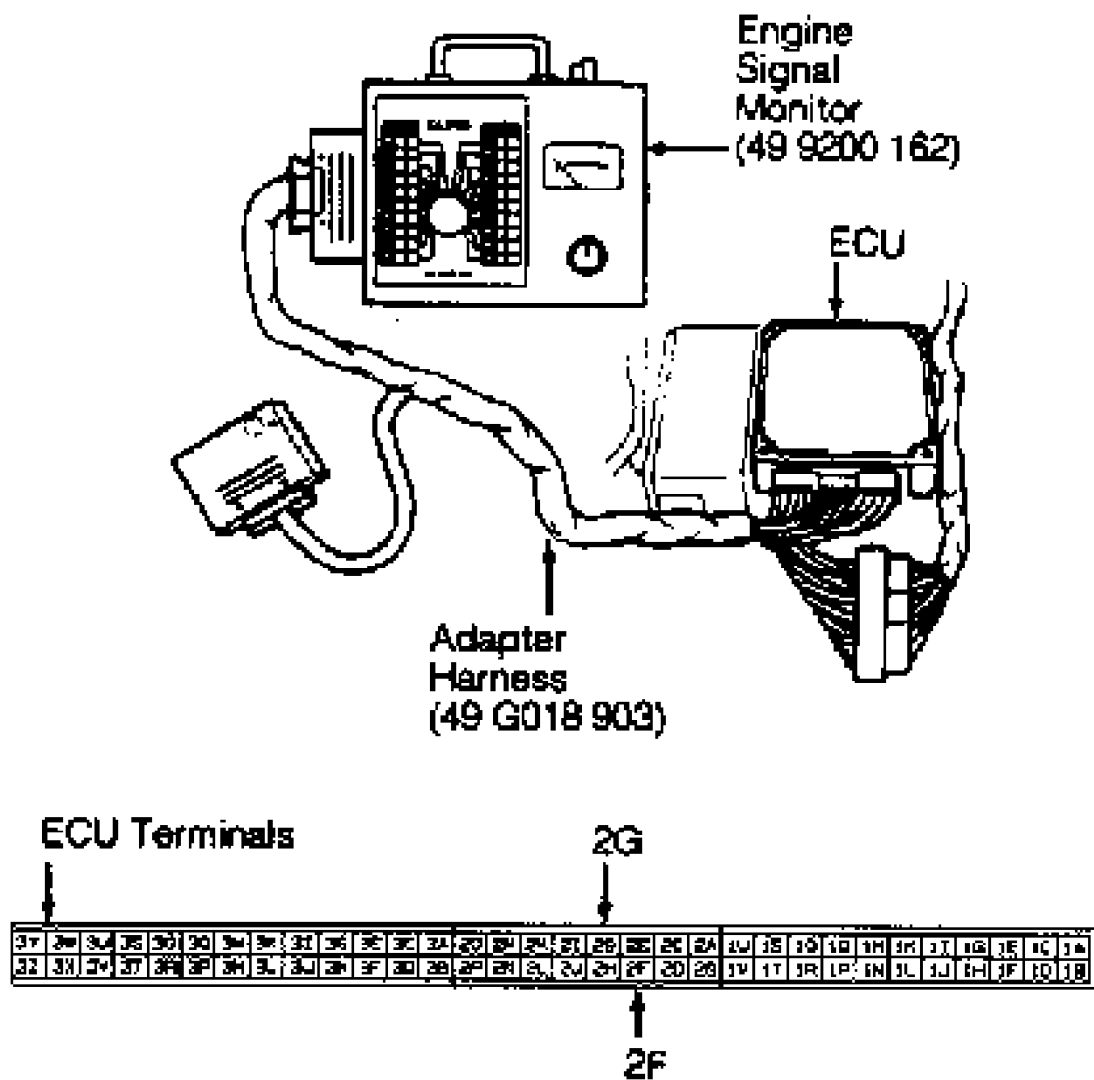
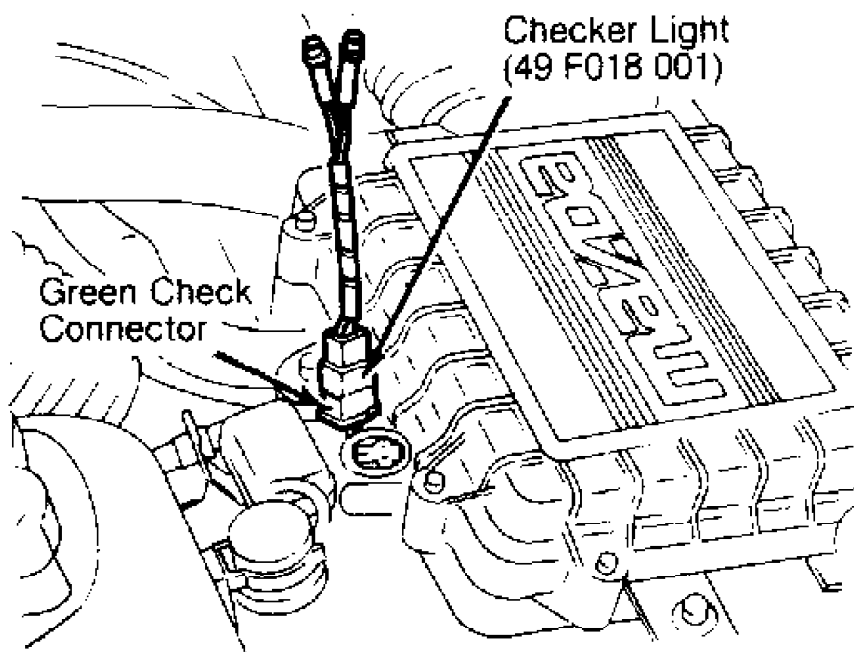


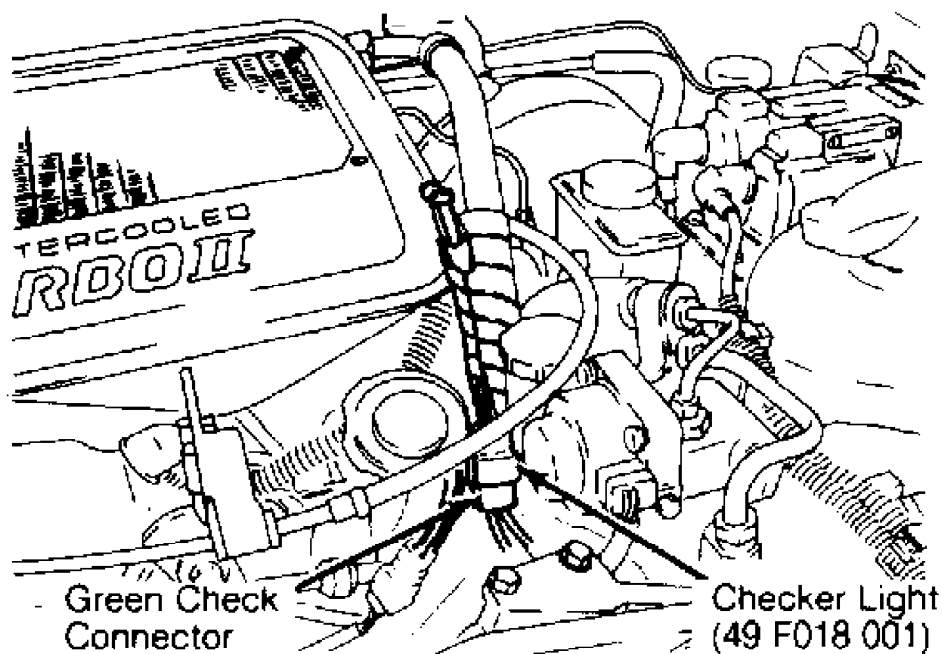
Fig. 18: RX7 Connecting Engine Signal Monitor  
Courtesy of Mazda Motors Corp.

#### Adjustment

1) Warm engine to normal operating temperature. Turn off engine. Connect Checker Light (49F018001) to Green 3-pin test connector. See Fig. 19. Turn ignition on.



NON-TURBO ENGINE



TURBO ENGINE

Fig. 19: Locating Checker Light Connector (RX7)  
 Courtesy of Mazda Motors Corp.

2) If one of the lights comes on, TPS is adjusted. If both or neither lights come on, turn the TPS adjusting screw until only one of

the lights comes on. See Fig. 20. Replace TPS if it cannot be adjusted.

RX7 TPS VOLTAGE TABLE

Terminal	Throttle Closed Voltage	Throttle Full Open Voltage
2F (Narrow Range) .....	.75-1.25 .....	About 5
2G (Full Range) .....	.25-1.25 .....	4.1-4.4

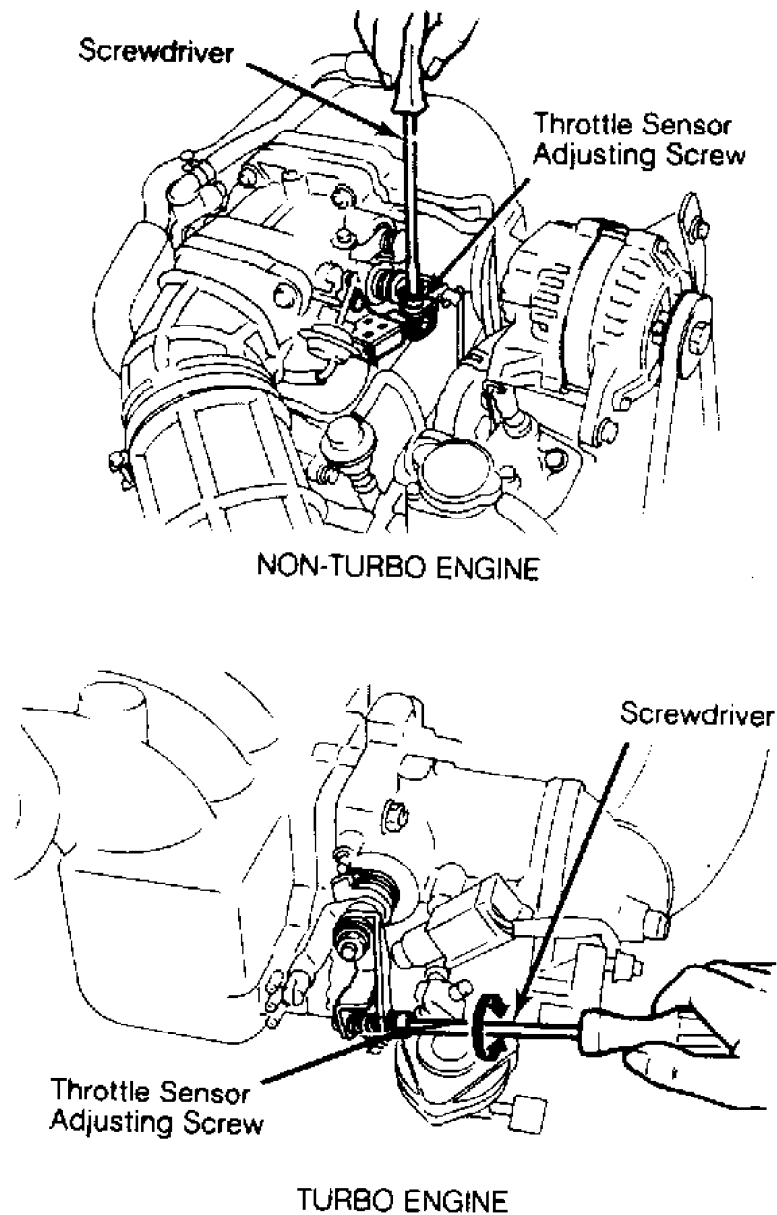


Fig. 20: RX7 Locating TPS Adjusting Screw  
Courtesy of Mazda Motors Corp.

## THROTTLE (IDLE) SWITCH

## B2200 (CARBURETED)

1) Warm engine to operating temperature. Connect tachometer. Operate engine at idle. Using voltmeter, backprobe Light Green/Red wire terminal of idle switch connector. See Fig. 21.

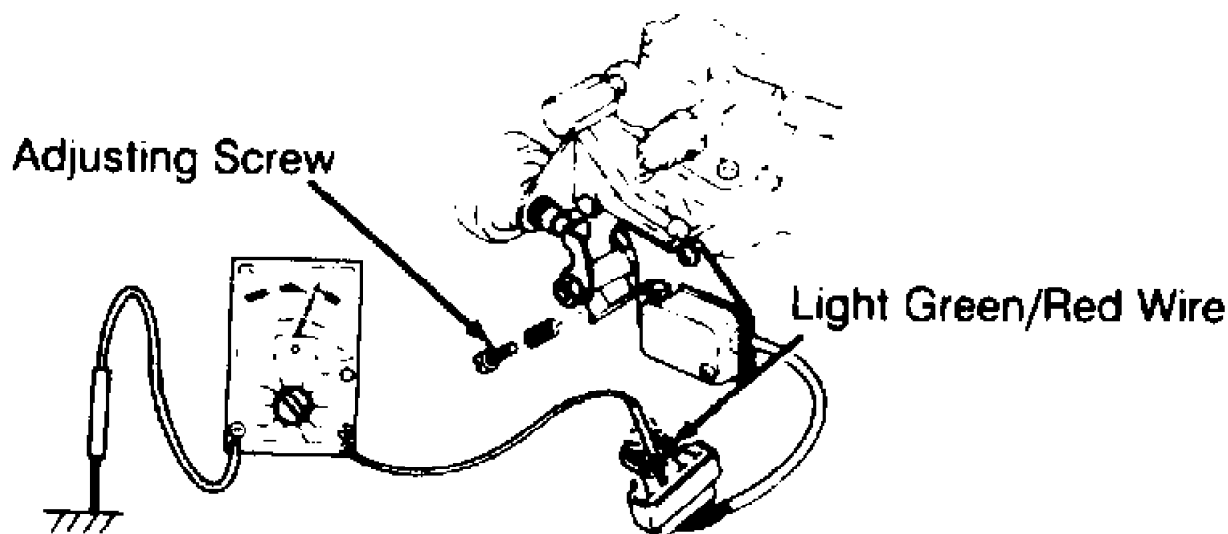


Fig. 21: B2200 Carbureted Adjusting Throttle Switch  
Courtesy of Mazda Motors Corp.

2) Increase engine speed to more than 2000 RPM. Gradually decrease engine speed. If voltage is not as specified in B2200 CARBURETED THROTTLE SWITCH VOLTAGE TEST TABLE, turn idle switch adjusting screw until voltage is within specification.

B2200 CARBURETED THROTTLE SWITCH VOLTAGE TEST TABLE

RPM	Volts
825 (Idle)	About 12
About 1000 or more	Less than 1.5

## EXCEPT B2200 (CARBURETED)

Throttle switch is part of the throttle position sensor (adjusted automatically when TPS is adjusted) or is a separate, nonadjustable switch on the throttle body. See THROTTLE POSITION SENSOR (TPS).