

D - ADJUSTMENTS

1992 Subaru SVX

1992 ENGINE PERFORMANCE
On-Vehicle Adjustments

Justy, Legacy, Loyale, SVX

ENGINE MECHANICAL

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

VALVE CLEARANCE

NOTE: Legacy, Loyale and SVX engines are equipped with hydraulic lash adjusters. No adjustment is required.

3-CYLINDER VALVE CLEARANCE

Justy

1) Place cylinder to be adjusted at Top Dead Center (TDC) position of compression stroke. Insert thickness gauge between valve and valve rocker arm, and check valve clearance. Adjust valves when engine is cold. Use Valve Clearance Adjuster (498767000) and adjust to specification. See 3-CYLINDER VALVE CLEARANCE SPECIFICATIONS table.

2) After adjustment, rotate crankshaft several turns and recheck valve clearance.

3-CYLINDER VALVE CLEARANCE SPECIFICATIONS

Application	(1) Clearance In. (mm)
Intake .....	.006 (.15)
Exhaust .....	.010 (.25)

(1) - Adjust valves with engine cold.

IGNITION TIMING

3-CYLINDER IGNITION TIMING

Justy

1) Warm engine to normal operating temperature. Place transmission in Neutral and turn off all accessories. Connect test mode connector. See Fig. 1.

2) Start engine and check timing marks located on crankshaft pulley. See 3-CYLINDER IGNITION TIMING SPECIFICATIONS table. If necessary, loosen distributor hold-down bolt and adjust ignition timing by rotating distributor. After adjusting ignition timing, tighten distributor hold-down bolt.

3-CYLINDER IGNITION TIMING SPECIFICATIONS

Application	(1) Degrees BTDC @ RPM
A/T	5 @ 800
M/T	5 @ 850

(1) - With test mode connector connected

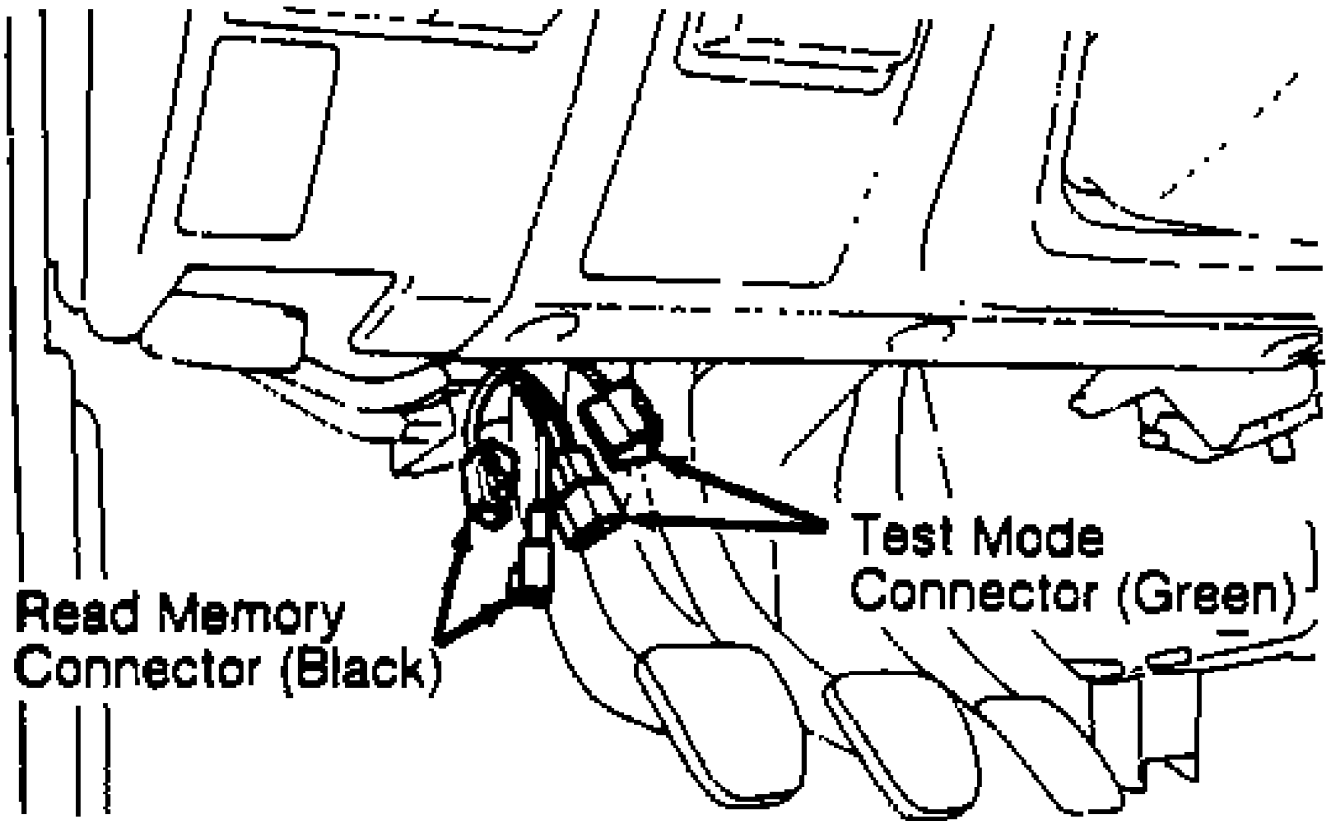


Fig. 1: Locating Test Mode & Read Memory Connectors (Justy)
Courtesy of Subaru of America, Inc.

4-CYLINDER IGNITION TIMING

Loyale

1) Ensure engine is at normal operating temperature and idle speed is correct. Place transaxle in Park (A/T), or Neutral (M/T).

2) Ensure throttle valve is closed and throttle position sensor is correctly adjusted. Connect 2 test mode connectors. See Fig. 2.

NOTE: When checking timing, CHECK ENGINE warning light will illuminate. This is not an indication of a problem. Ignition timing cannot be set if idle contacts in TPS are open and test mode connectors are not connected.

3) Check timing marks located on crankshaft pulley. See 4-CYLINDER IGNITION TIMING SPECIFICATIONS table. If necessary, adjust ignition timing by loosening distributor hold-down bolt and rotating distributor. After adjusting ignition timing, disconnect 2 test mode connectors.

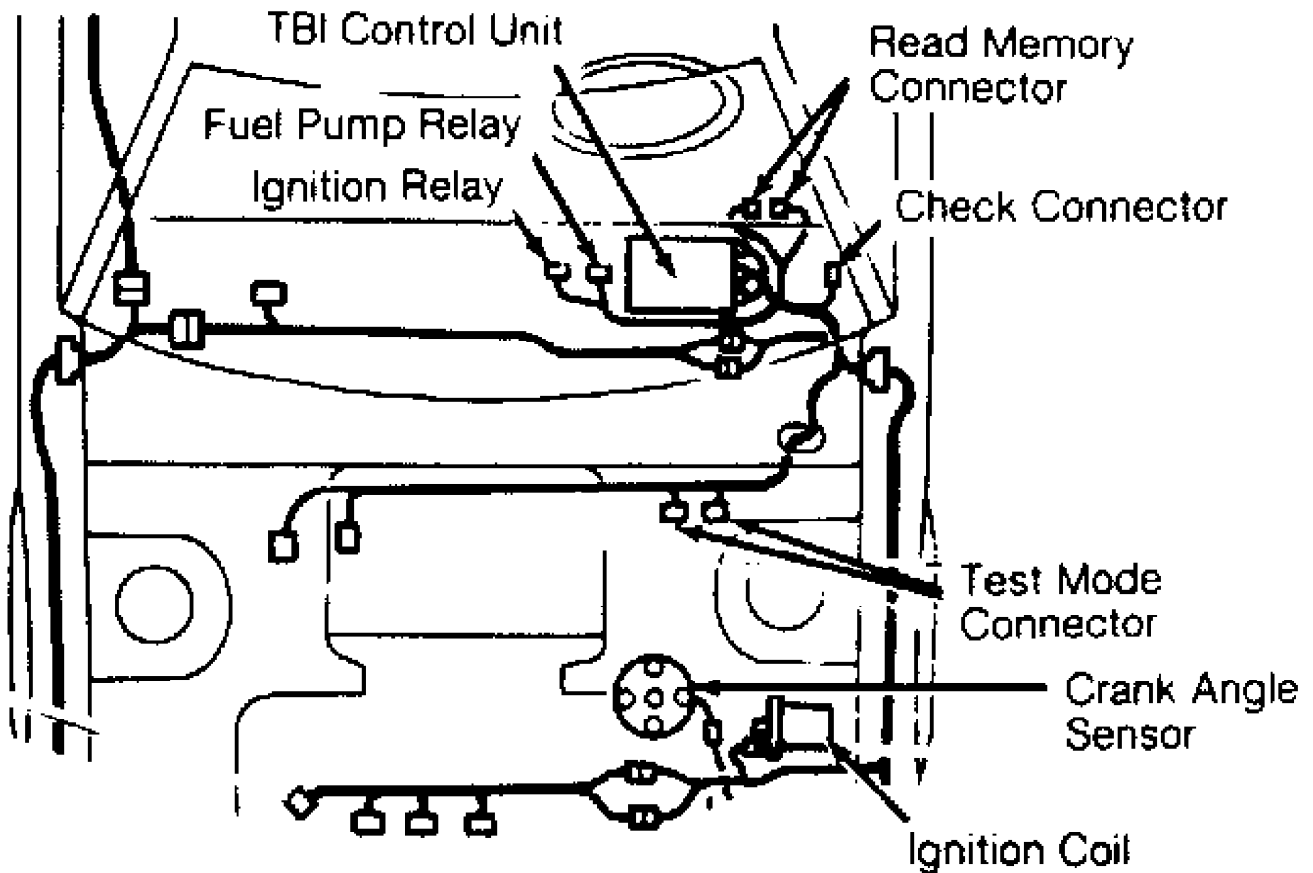


Fig. 2: Locating Test Mode Connectors (Loyale)
 Courtesy of Subaru of America, Inc.

Legacy

1) Ensure engine is at normal operating temperature and idle speed is correct. Place transaxle in Neutral (M/T) or Park (A/T). Attach timing light to No. 1 spark plug wire.

2) Check timing marks located on crankshaft pulley. See 4-CYLINDER IGNITION TIMING SPECIFICATIONS table. If timing is not as specified, check self-diagnostic system for trouble codes and repair as necessary. See G - TESTS W/ CODES article.

4-CYLINDER IGNITION TIMING SPECIFICATIONS

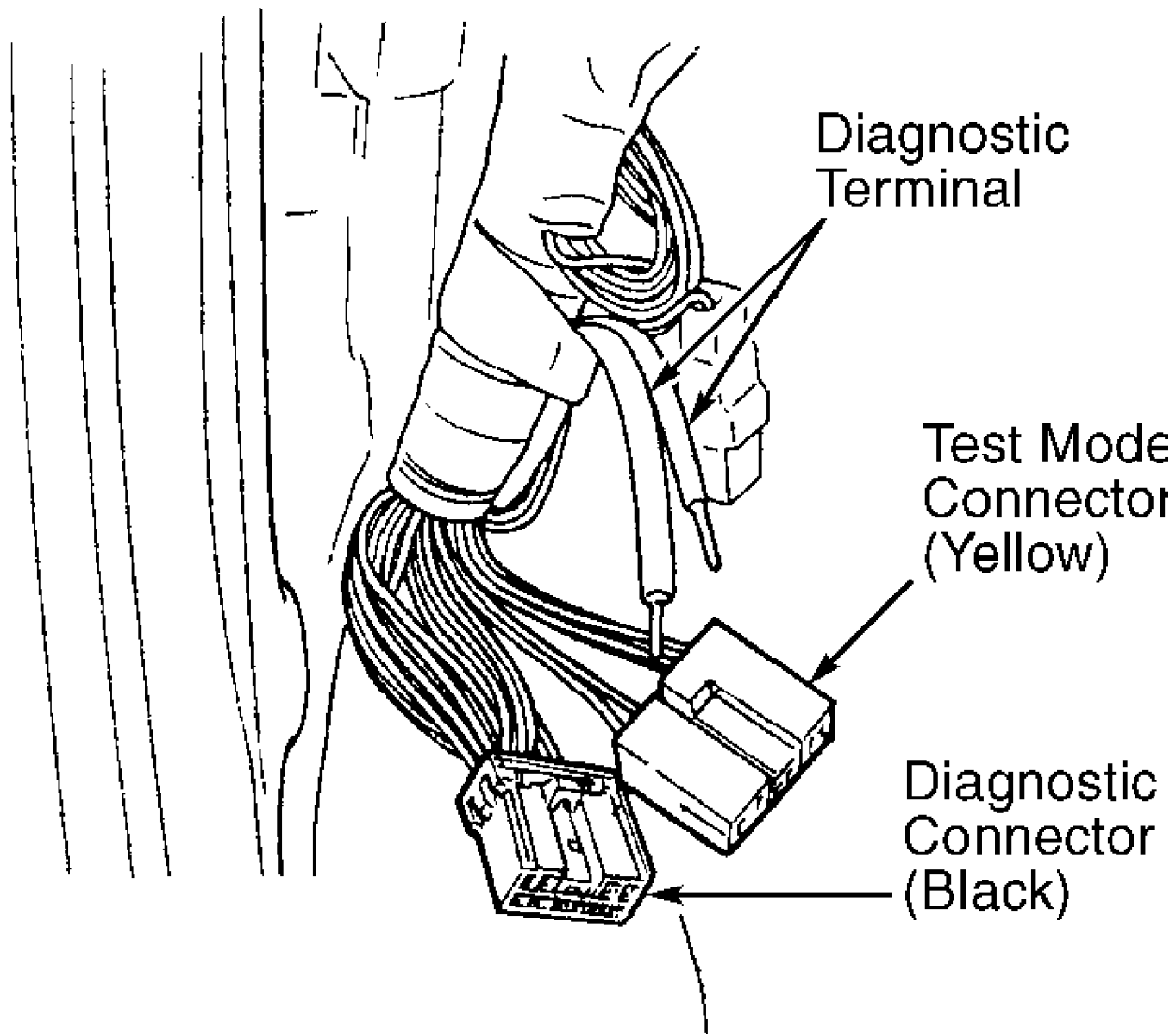
Application	Degrees BTDC @ RPM
Legacy Non-Turbo A/T	12-28 @ 700
Legacy Non-Turbo M/T	18-22 @ 700
Legacy Turbo	7-23 @ 700
Loyale	20 @ 700

6-CYLINDER IGNITION TIMING

SVX

Ensure engine is at normal operating temperature and A/C switch is in OFF position. Connect Subaru Test Mode Monitor to test

mode monitor connector, located under left side of dash. See Fig. 3. Using test mode monitor, select mode 07 to measure ignition timing. See 6-CYLINDER IGNITION TIMING SPECIFICATION table. If ignition timing is not as specified, check self-diagnostic system for trouble codes and repair as necessary. See G - TESTS W/ CODES article.



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Fig. 3: Locating Test Mode Connector (SVX)
 Courtesy of Subaru of America, Inc.

6-CYLINDER IGNITION TIMING SPECIFICATION

Application	Degrees BTDC @ RPM
SVX	12-28 @ 610

IDLE SPEED & MIXTURE

NOTE: On carbureted models, mixture adjustment is not a part of normal tune-up procedure and should not be performed unless mixture control unit is replaced, or vehicle fails emissions testing. See 3-CYLINDER IDLE MIXTURE. Idle mixture is electronically controlled on fuel injected models; adjustment procedure is not available from manufacturer.

COLD (FAST) IDLE

NOTE: Fast idle on TBI engines is controlled by air control valve. On PFI engines, fast idle is controlled by auxiliary air valve. Adjustment is not necessary on either system.

Justy (Carbureted)

Fast idle is adjusted by measuring throttle valve opening. Measure clearance between throttle valve and bore of carburetor. On M/T models, clearance should be .030" (.77 mm). On A/T models, clearance should be .034" (.86 mm).

DASHPOT

Justy PFI

1) While slowly returning throttle valve from fully open position, read engine RPM when dashpot lever comes in contact with dashpot.

2) Ensure engine speed is 2200–2400 RPM when dashpot lever contacts dashpot. If engine speed is not to specification, loosen lock nut and turn adjusting screw to obtain correct adjustment.

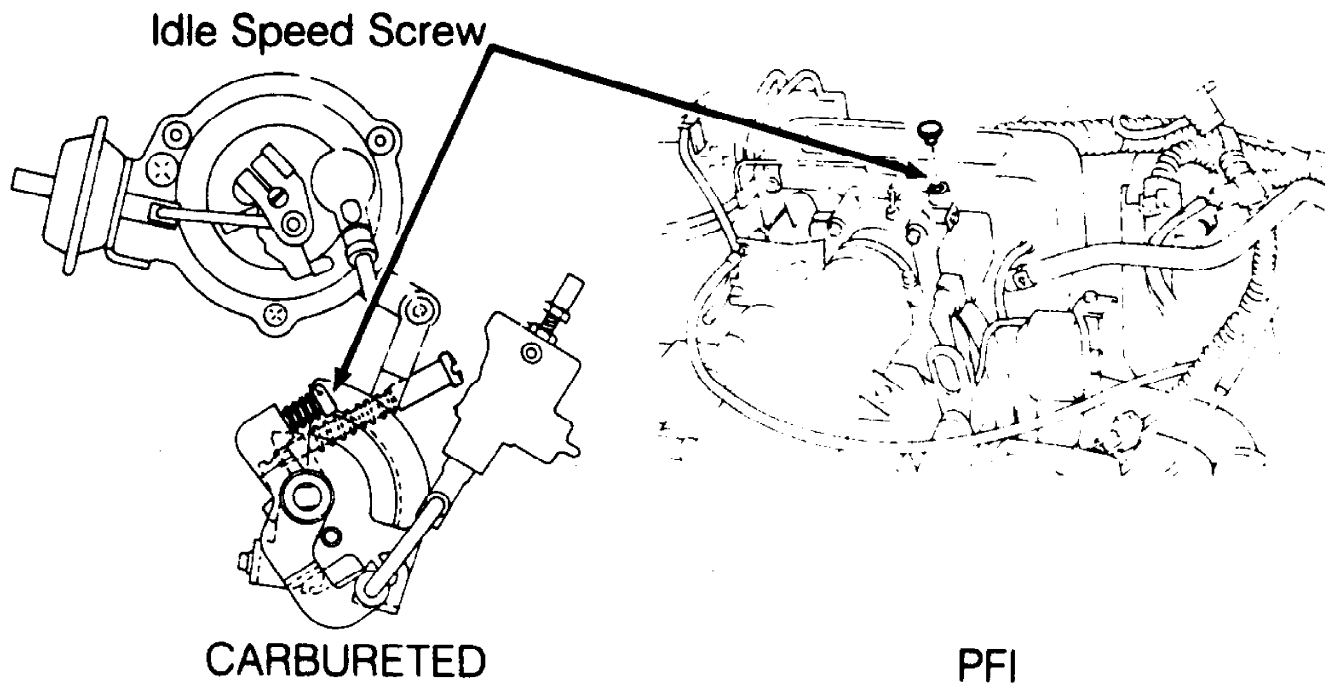
3-CYLINDER IDLE SPEED

Justy

1) Ensure ignition timing is correct. Ensure vacuum hoses, blow-by hoses, rocker arm cover, oil cap and other components connected to intake system are securely attached.

2) Warm engine and oxygen sensor by operating engine at 2500 RPM for about one minute after engine reaches normal operating temperature. Disconnect and plug canister purge hose at check valve (near intake manifold).

3) Connect both ends of test mode and read memory connectors. See Fig. 1. Place transaxle in Neutral (M/T) or Park (A/T) position. Start engine and use idle speed screw to adjust idle speed to specification. See Fig. 4. See 3-CYLINDER IDLE SPEED SPECIFICATIONS table. Disconnect both test mode and read memory connector ends.



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Fig. 4: Locating Idle Speed Screw Carbureted & PFI (Justy)
 Courtesy of Subaru of America, Inc.

3-CYLINDER IDLE SPEED SPECIFICATIONS

Application	(1) RPM
Carbureted	750-850
PFI	650-750

(1) - With test mode and read memory connectors connected.

3-CYLINDER IDLE MIXTURE

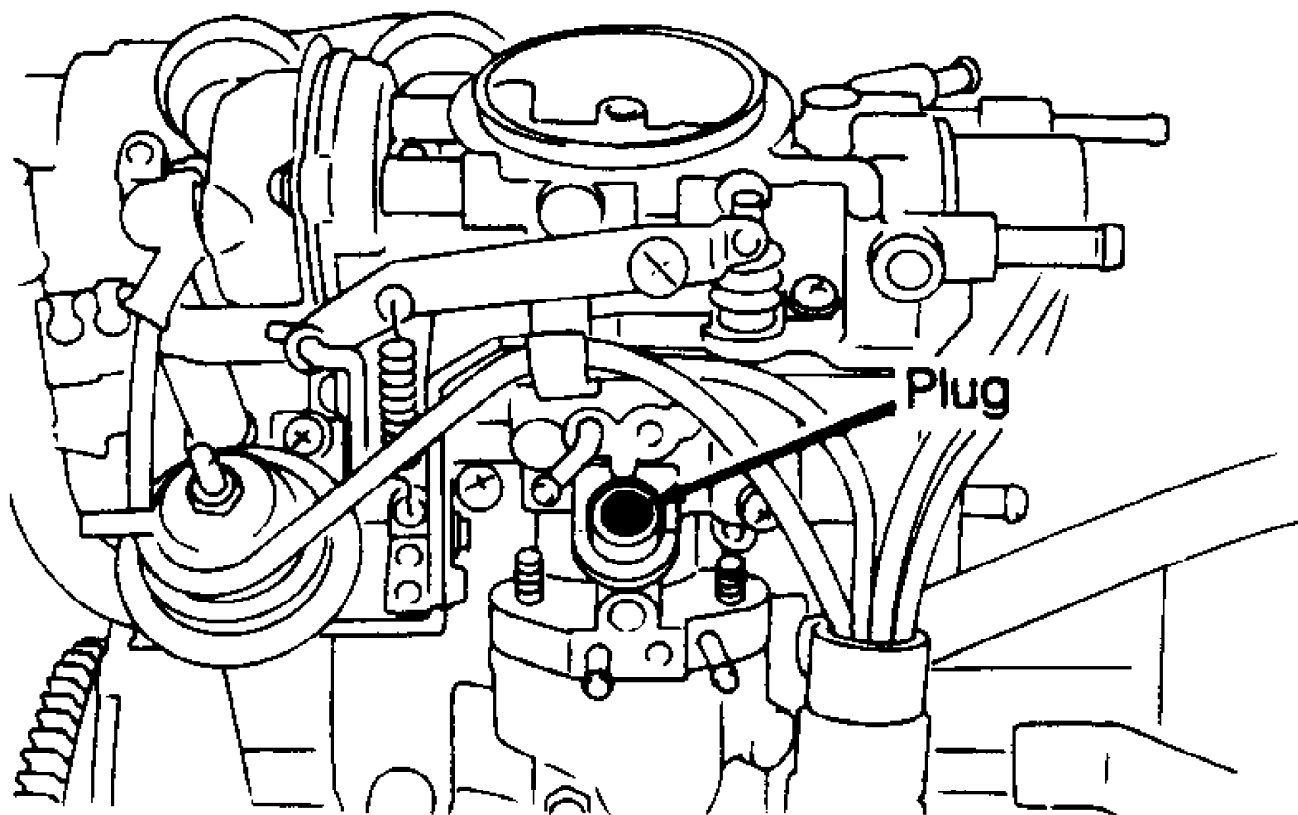
NOTE: Idle mixture on fuel injected models is electronically controlled; adjustment procedure is not available from manufacturer.

Justy (Carbureted)

1) Warm engine to operating temperature. Connect dwell meter to Yellow/Red wire of Pink 6-pin check connector located on left inner fender panel. Set dwell meter on 4-cylinder scale and observe needle movement with engine at idle. See 3-CYLINDER MIXTURE SOLENOID DUTY RATIO table. If needle fluctuates in proper range (mixture solenoid duty cycle is correct), no other action is necessary.

2) If needle fluctuates out of normal range, raise engine speed to 2000-3000 RPM for 2-3 minutes. Return engine to idle and set idle speed. If needle still fluctuates outside range, check spark plugs and ignition timing.

3) If spark plugs and ignition timing are okay, check vacuum hose routing, air cleaner element and carburetor. Remove idle mixture screw plug and adjust idle mixture screw until mixture solenoid duty ratio (at idle) is correct. See Fig. 5.



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Fig. 5: Locating Idle Mixture Plug & Screw (Justy)
 Courtesy of Subaru of America, Inc.

3-CYLINDER MIXTURE SOLENOID DUTY RATIO (1)

Altitude	Degrees	Allowable Variation (Degrees)
Sea Level	36.0	4.5
5250 Ft.	67.5	4.5

(1) - Adjustment is made at idl

4-CYLINDER IDLE SPEED

Loyale

1) Warm engine to normal operating temperature. Turn engine off. Disconnect electrical connector for air control valve. Start engine.

2) Turn idle adjustment screw and adjust idle speed to 500-600 RPM. See Fig. 6. Reconnect electrical connector for air control valve. Ensure idle speed is within specification. See IDLE SPEED & CO LEVEL SPECIFICATIONS (LOYALE) table.

IDLE SPEED & CO LEVEL SPECIFICATIONS (LOYALE)

Idle RPM

CO Level

500-600 (1)

(1) - Idle mixture is computer controlled; adjustment is not necessary.

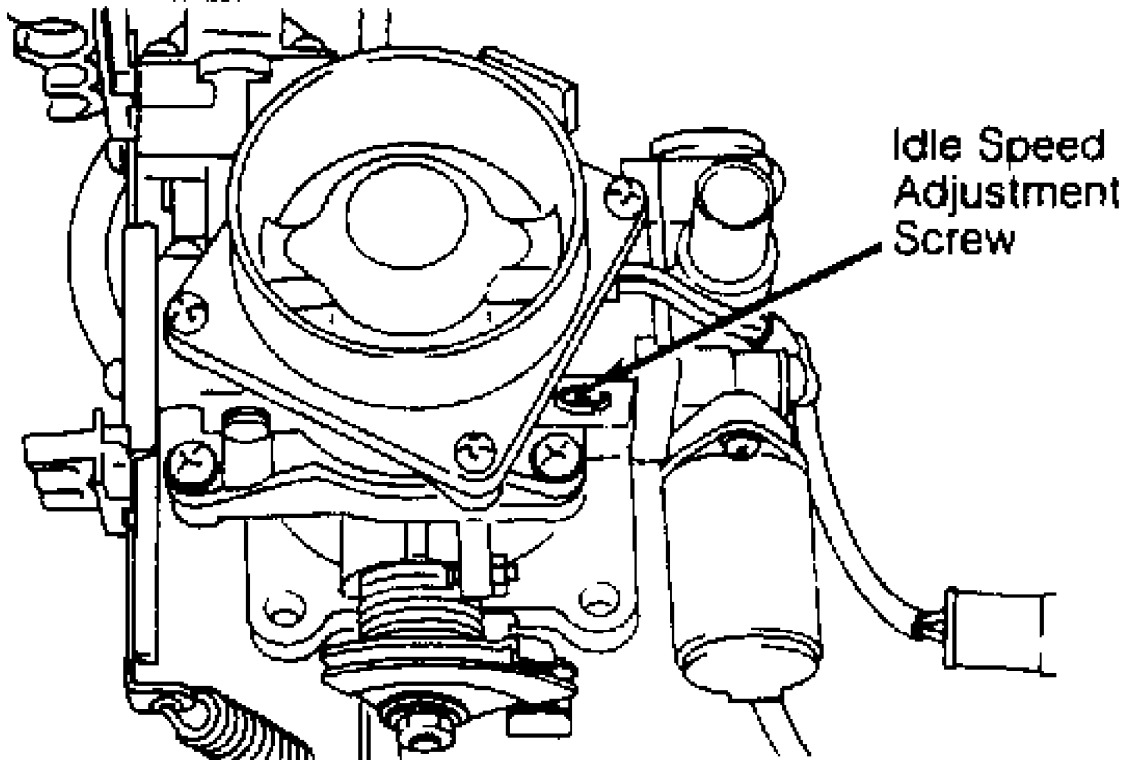


Fig. 6: Adjusting Idle Speed (Loyale)
Courtesy of Subaru of America, Inc.

Legacy

1) Ensure air filter is clean, vacuum hoses are properly routed, and timing is correct. Warm engine to operating temperature and attach inductive pick-up tachometer to No. 1 spark plug wire.

NOTE: Because spark plugs No. 1 and 2 fire simultaneously, some tachometers may register actual engine speed twice.

2) Check idle speed with all accessories off and then with all accessories on. See IDLE SPEED SPECIFICATIONS (LEGACY) table. If idle speed is not as specified, check self-diagnostic system for trouble codes and repair as necessary. SeeG - TESTS W/ CODES article.

IDLE SPEED SPECIFICATIONS (LEGACY)

Application	RPM
Accessories Off	600-800
Accessories On	800-900

6-CYLINDER IDLE SPEED ADJUSTMENT

1) Ensure air filter is clean, vacuum hoses are properly routed, and timing is correct. Warm engine to operating temperature and connect Subaru Test Mode Monitor to test mode connector. See Fig. 3. Measure engine RPM (mode F04).

2) Check idle speed with all accessories off, then check with all accessories on. See IDLE SPEED SPECIFICATIONS (SVX) table. If idle speed is not as specified, check self-diagnostic system for trouble code(s) and repair as necessary. SeeG - TESTS W/ CODES article.

IDLE SPEED SPECIFICATIONS (SVX)

Application	RPM
Accessories Off	510-710
Accessories On	750-850

THROTTLE POSITION SENSOR/SWITCH

3-CYLINDER THROTTLE POSITION SWITCH

Justy (PFI)

1) With ignition off, disconnect Throttle Position Switch (TPS) connector. Using an ohmmeter, measure resistance between terminals No. 2 and 3 with throttle fully closed and then with throttle fully open. See Fig. 6. Record reading.

2) Ensure readings are as specified. See 3-CYLINDER THROTTLE POSITION SWITCH RESISTANCE (PFI) table. If necessary, loosen attaching screws and rotate TPS until correct resistance is obtained. Replace TPS if resistance cannot be adjusted to specification.

3-CYLINDER THROTTLE POSITION SWITCH RESISTANCE (PFI)

Application	Ohms
Terminals No. 2 & 3	
Throttle Fully Closed	Less Than One
Throttle Fully Open	Infinite

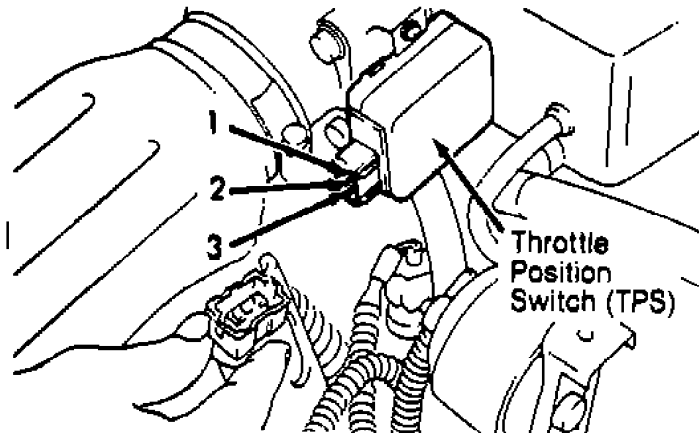


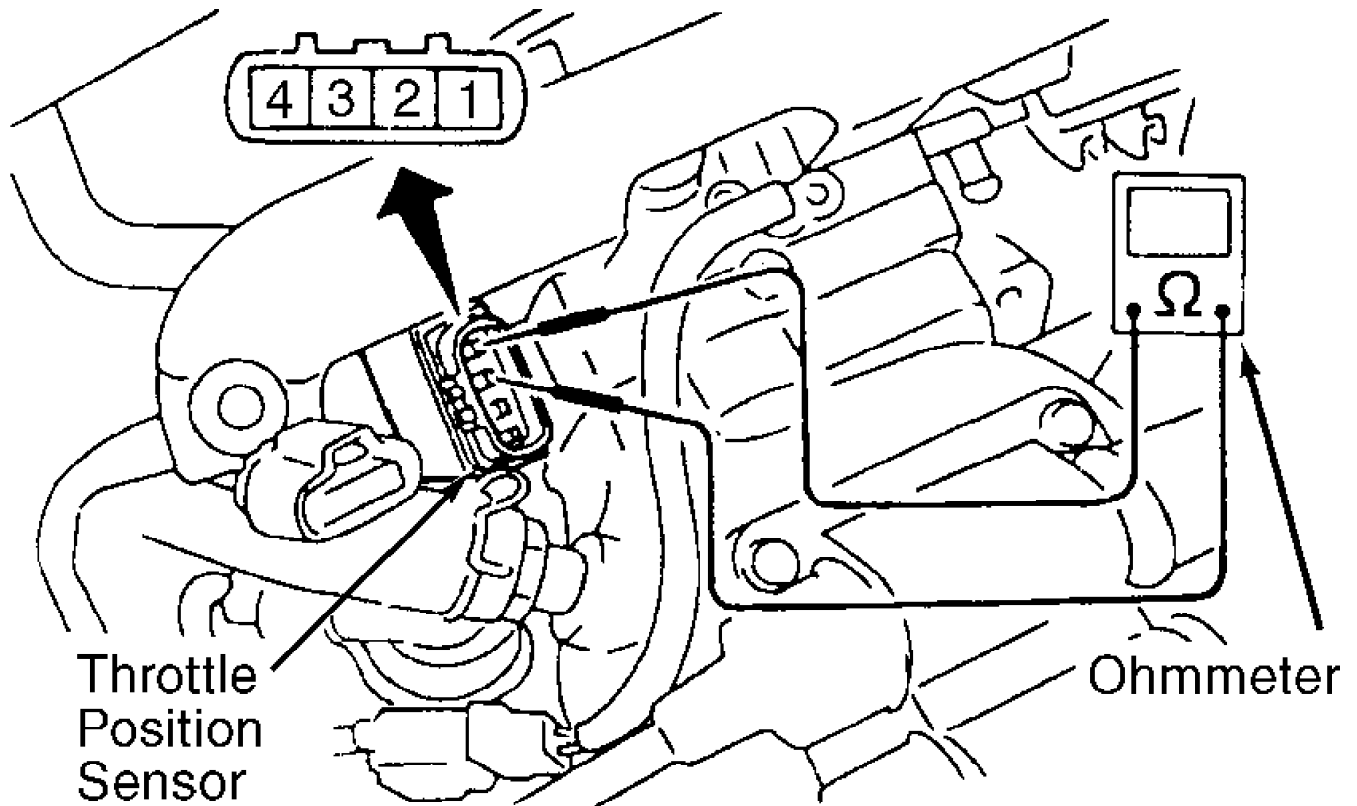
Fig. 7: Identifying TPS Connector Terminals (Justy PFI)
 Courtesy of Subaru of America, Inc.

4-CYLINDER THROTTLE POSITION SENSOR

NOTE: All testing procedures are performed with engine at normal operating temperature.

Legacy

With engine off, disconnect TPS connector. Using ohmmeter, measure resistance between terminals No. 2 and 3 with throttle fully closed. See Fig. 8. Record reading. Measure resistance between terminals No. 2 and 4 with throttle fully closed and then with throttle fully open. Record readings. If readings are not as specified, replace throttle position sensor. See 4-CYLINDER THROTTLE POSITION SENSOR RESISTANCE table.



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Fig. 8: Identifying TPS Connector Location & Terminals (Legacy)
 Courtesy of Subaru of America, Inc.

Loyale

1) With ignition off, disconnect TPS connector. Using an ohmmeter, measure resistance between terminals "B" and "D". See Fig. 9. Record reading. Measure resistance between terminals "B" and "C" with throttle fully closed, then measure with throttle fully open. Record readings.

2) Ensure readings are as specified. See 4-CYLINDER THROTTLE POSITION SENSOR RESISTANCE table. If necessary, loosen attaching screws and rotate TPS until correct resistance is obtained. Replace TPS if resistance cannot be adjusted to specification.

4-CYLINDER THROTTLE POSITION SENSOR RESISTANCE

Application	Ohms
Legacy	
Terminals No. 2 & 3	12,000

Terminals No. 2 & 4	
Throttle Fully Closed	..... 10,000-12,000
Throttle Fully Open	..... 3000-5000
Loyale	
Terminals "B" & "D"	..... 3500-6500
Terminals "B" & "C"	
Throttle Fully Closed	.... Less Than 1000
Throttle Fully Open	..... More Than 2400

6-CYLINDER THROTTLE POSITION SENSOR

NOTE: All testing procedures are performed with engine at normal operating temperature.

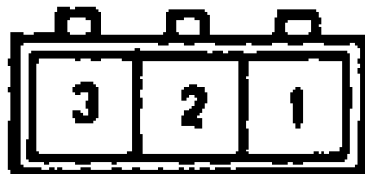
SVX

1) With engine off, disconnect TPS electrical connector. Using ohmmeter, measure resistance between TPS terminals No. 1 and 3 with throttle fully closed. See Fig. 9. Record reading.

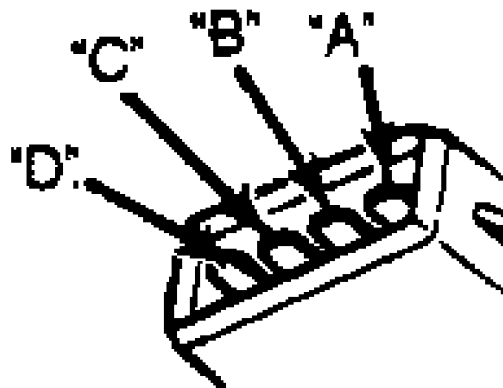
2) Measure resistance between terminals No. 2 and 3 with throttle fully closed and then fully open. Record readings. If readings are not as specified, replace TPS. See 6-CYLINDER THROTTLE POSITION SENSOR RESISTANCE (SVX) table.

6-CYLINDER THROTTLE POSITION SENSOR RESISTANCE (SVX)

Application	Ohms
SVX	
Terminals No. 1 & 3	..... 5000
Terminals No. 2 & 3	
Throttle Fully Closed	..... 10,000-12,000
Throttle Fully Open	..... 3000-5000



PFI Engines



TBI Engines

Fig. 9: Identifying TPS Connector Terminals (Loyale & SVX)
 Courtesy of Subaru of America, Inc.