I - SYSTEM/COMPONENT TESTS

1992 Subaru SVX

1992 ENGINE PERFORMANCE
System & Component Testing

Justy, Legacy, Loyale, SVX

INTRODUCTION

Before testing separate components or systems, perform procedures in F - BASIC TESTING article in the ENGINE PERFORMANCE Section. Since many computer-controlled and monitored components set a trouble code if they malfunction, also perform procedures in G - TESTS W/ CODES article in the ENGINE PERFORMANCE Section.

NOTE: Testing individual components does not isolate shorts or opens. Perform all voltage tests with a Digital Volt-Ohmmeter (DVOM) with a minimum 10-megohm input impedance, unless stated otherwise in test procedure. Use ohmmeter to isolate wiring harness shorts or opens.

AIR INDUCTION SYSTEMS

TURBOCHARGER TROUBLE SHOOTING

High Boost Pressure

If turbocharger fails, excessive boost pressures can cause engine knock and overheating. Check wastegate operation, electrical circuits between wastegate duty solenoid and ECU, and ECU problems.

Low Boost Pressure

Low boost pressure can cause lack of power, poor acceleration and increased fuel consumption. Check for leaks in intake and exhaust system, incorrect ignition timing, electrical circuits between wastegate duty solenoid and ECU, and ECU problems.

Oil Leaks

1) Worn turbocharger oil seals can cause excessive oil consumption and White smoke from exhaust. Remove center exhaust pipe, and examine turbocharger from exhaust side. If excessive carbon deposits exist on turbine exhaust side, oil is leaking from turbine.

2) Turbocharger is not necessarily defective when oil is present on blower side. Oil most likely has come from oil vapors contained in blow-by gases present in intake system or defective PCV system.

3) If intake side contains oil and a rattle is present, remove turbocharger. Check both end and side play.

TURBOCHARGER COMPONENT TESTING

NOTE: Replace turbocharger if found to be defective. Turbocharger assembly cannot be disassembled or adjusted.

Boost Pressure

1) Disconnect wastegate duty solenoid connector. Ensure engine is at normal operating temperature. Disconnect rubber hose from pressure switch. Using a "T" fitting, connect an air pressure gauge. Use enough hose so gauge may be moved inside passenger compartment.

2) Boost pressure should be checked at 4600 RPM with a wide open throttle. Normal pressure is 6.2-7.3 psi (4.3-5.1 kg/cm^2).

Reconnect wastegate duty solenoid.

3) If boost pressure is too high, check rubber hose connecting intake manifold to wastegate valve. Replace hose if defective. If wastegate valve is not operating and remains closed, replace turbocharger. If boost pressure is too low, replace turbocharger.

NOTE: When testing wastegate valve, DO NOT apply any more pressure than specified. Excessive pressure will damage wastegate control valve diaphragm.

Wastegate Valve

Disconnect and plug wastegate valve control vacuum hose from actuator. Install a test vacuum hose to wastegate valve actuator. Apply 9-10 psi (6.0-7.0 kg/cm^2) of air pressure to test vacuum hose; wastegate valve linkage should operate. Replace wastegate valve if linkage does not operate.

End Play & Side Play

Maximum end play on turbine shaft is .0035" (.09 mm). Maximum side play is .0067" (.17 mm). Side play is checked by moving intake and exhaust side of shaft simultaneously. Replace turbocharger assembly if measurements are not as specified.

COMPUTERIZED ENGINE CONTROLS

CONTROL UNIT

Ground Circuits

1) Turn ignition off. Using DVOM, touch negative lead to ground. Using positive lead, backprobe each control unit ground terminal. See CONTROL UNIT GROUND TERMINAL IDENTIFICATION table. Resistance should be zero ohms. If resistance is not zero ohms, repair open to ground.

2) Using DVOM, touch negative lead of voltmeter to a good ground. Touch positive lead of voltmeter to each ground terminal. With engine running, voltmeter should indicate less than one volt. If voltmeter reading is greater than one volt, check for open, corrosion or loose connection on ground lead.

CONTROL UNIT GROUND TERMINAL IDENTIFICATION TABLE

Application	Wire Color
Justy	
Carbureted	
Terminal No. 12	Black/Red
Terminal No. 16	Black
Terminal No. 17	Black
PFI	
Terminal No. 1	Black/Red
Terminal No. 1	Black/Green
Terminal No. 2	Black/Green
Terminal No. 10	Black/Red
Terminal No. 13	Black/Blue
Terminal No. 26	Black/Blue
Legacy	
Terminal No. 11	Black/Red
Terminal No. 14	Black/White
Terminal No. 15	Black
Terminal No. 22	Black/Red

Terminal No. 24	Black/Yellow
Terminal No. 25	Black/Yellow
Loyale	
Terminal No. 9	Black
Terminal No. 30	Black/Red
Terminal No. 35	Black
Terminal No. 42	Black/Red
Terminal No. 44	Black/Red
Terminal No. 50	Black/Yellow
Terminal No. 51	Black
SVX	
Terminal No. 5	Black/Red
Terminal No. 11	Black/Red
Terminal No. 14	Black/White
Terminal No. 22	Black
Terminal No. 24	Blue/Black
Terminal No. 25	Black/Yellow

Power Circuits (Ignition Off)

Turn ignition off. Using DVOM, check for battery voltage between control unit power terminals and ground. See CONTROL UNIT POWER TERMINAL IDENTIFICATION table. If battery voltage is not present, check fuse or fusible link. If fuse or fusible link is okay, check for an open in wire between fuse/fusible link and control unit.

Power Circuits (Ignition On)

Turn ignition switch to ON position. Using DVOM, check for battery voltage between control unit power terminals and ground. See CONTROL UNIT POWER TERMINAL IDENTIFICATION table. If battery voltage is not present, check fuse. If fuse is okay, check for an open in wire and a defective ignition switch.

NOTE: Following procedure does not apply to Justy carbureted.

Power Circuits (Ignition Cranking)

1) Connect DVOM between ground and control unit terminal. See CONTROL UNIT POWER TERMINAL IDENTIFICATION table. Turn ignition switch to START position. Battery voltage should be present between control unit terminal and ground, ONLY when ignition switch is in START position.

2) If voltage is not present, check fusible link. If fusible link is okay, check for an open wire between fusible link and control unit terminal, or check for a defective ignition switch.

CONTROL UNIT POWER TERMINAL IDENTIFICATION TABLE

Application	Wire Color
Justy	
Carbureted	
Ignition Off (1)	
Terminal No. 6	White/Blue
Terminal No. 15	White/Blue
Ignition On (2)	
Terminal No. 8	White/Green
Terminal No. 9	Black/White
PFI	
Ignition Off (1)	
Terminal No. 1	Red
Ignition On (3)	

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     Terminal No. 2  ..............................  White/Blue
     Terminal No. 12  ..................................  Red
   Ignition Cranking
     Terminal No. 17  ..............................  Black/White

Legacy
  Ignition Off (4)
   Terminal No. 15  ..............................  Yellow/Red
  Ignition On (5)
   Terminal No. 2  ..............................  Yellow/Red
   Terminal No. 12  ..................................  Yellow
   Terminal No. 13  ..............................  Yellow/Red
   Terminal No. 15  ..............................  Yellow/Red

Loyale
  Ignition Off (6)
     Terminal No. 27  ..............................  Black/White
  Ignition On (7)
   Terminal No. 29  ..................................  White
   Terminal No. 38  ..................................  Red/Blue
   Terminal No. 41  ..................................  White
   Terminal No. 49  ..................................  Red/Blue
  Ignition Cranking (8)
   Terminal No. 18  ............................  Lt. Green/Yellow

SVX
  Ignition On (9)
   Terminal No. 2  ..............................  White/Red
   Terminal No. 13  ..............................  White/Red

(1) - Check fuse No. 2.
(2) - Check fuse No. 1.
(3) - Check fuses No. 1, 2 and 7.
(4) - Check fuse No. 14.
(5) - Check fuses No. 14 and 16.
(6) - Check fuse No. 5.
(7) - Check fuses No. 5 and 12.
(8) - Check fuse No. 20.
(9) - Check fusible link.
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ENGINE SENSORS & SWITCHES

A/C Switch

See L - WIRING DIAGRAMS article in ENGINE PERFORMANCE, and test switch and circuits as necessary.

Airflow Sensor

Remove rubber cover from electrical connector on airflow sensor. Leave connector connected. Connect DVOM between terminals and record readings. See AIRFLOW SENSOR SPECIFICATIONS table. If readings are not as specified, check electrical wiring. If wiring is okay, replace airflow sensor.

NOTE: DO NOT start engine unless specified. Place ignition switch in OFF or ON position as indicated.

NOTE: Airflow sensor test specifications for Justy are not available from manufacturer.

AIRFLOW SENSOR SPECIFICATIONS TABLE

Ign. Switch	Wire Colors	Readings
Legacy		
Key On	Red & Black/Red	10-13 Volts
Engine On	Red & Black/Red	13-14 Volts
Key On	Black & Black/Red	0-0.3 Volt
Engine On	Black & Black/Red	0.8-1.2 Volts
Key On	White & Black/Red	Zero Volts
Engine On	White & Black/Red	Zero Volts
Loyale		
Key Off	Black & Ground	0-10 Ohms
Key On	Red & Ground	10 Volts Min.
Key On	White & Black	(1) .1-.5 Volt
SVX		
Key On	Black/Red	10-13 Volts
Key On	White	0-0.3 Volts
Key On	Black	Zero Volts
Engine On	Black/Red	13-14 Volts
Engine On	White	0.8-1.2 Volts
Engine On	Black	Zero Volts

(1) - Voltage should be higher when blowing air from air cleaner side.

Atmospheric Pressure Sensor (Justy & Legacy)
See HIGH ALTITUDE COMPENSATOR under EMISSION SYSTEMS & SUB-SYSTEMS.

Clutch Switch (Justy)
See L - WIRING DIAGRAMS article in ENGINE PERFORMANCE and test switch and circuits as necessary.

Coolant Temperature Sensor
Disconnect coolant temperature sensor connector. Connect ohmmeter leads between sensor terminals. See COOLANT TEMPERATURE SENSOR RESISTANCE table.

COOLANT TEMPERATURE SENSOR RESISTANCE

Application (1)	Temperature	Ohms
Justy PFI,		
Legacy & SVX	68°F (20°C)	2000-3000
Legacy & SVX	176°F (80°C)	300-400
Loyale	14°F (-10°C)	7000-11,500
Loyale	68°F (20°C)	2000-3000
Loyale	122°F (50°C)	700-1000

(1) - Information not available for Justy 1.2L carbureted.

Crank Angle Sensor
For testing information, see G - TESTS W/ CODES article in the ENGINE PERFORMANCE Section.

EGR Temperature Sensor (Loyale Calif.)
See G - TESTS W/ CODES and L - WIRING DIAGRAMS articles in the ENGINE PERFORMANCE Section..

Electrical Load Sensors (Justy)
See L - WIRING DIAGRAMS article in ENGINE PERFORMANCE, and

test switch and circuits as necessary.

Oxygen Sensor
For testing procedures, see appropriate trouble codes for rich or lean running in G - TESTS W/ CODES article in the ENGINE PERFORMANCE Section. Also see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

P/N Switch (Except Justy)
See G - TESTS W/ CODES and L - WIRING DIAGRAMS articles in the ENGINE PERFORMANCE Section and test switch and circuits as necessary.

Throttle Position Sensor (Or Switch)
For testing and adjustments, see D - ADJUSTMENTS and G - TESTS W/ CODES articles in the ENGINE PERFORMANCE Section.

Pressure Sensor
For testing, see G - TESTS W/ CODES article in the ENGINE PERFORMANCE Section. Also see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

Vehicle Speed Sensor
For testing, see G - TESTS W/ CODES article in the ENGINE PERFORMANCE Section. Also see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

RELAYS & SOLENOIDS

CARBURETED

EGR Solenoid
See EXHAUST GAS RECIRCULATION (EGR) under EMISSION SYSTEMS & SUB-SYSTEMS. See G - TESTS W/ CODES article in the ENGINE PERFORMANCE Section for appropriate trouble codes.

Float Bowl Control Solenoid
See FUEL EVAPORATION under EMISSION SYSTEMS & SUB-SYSTEMS.

Fuel Pump Relay
For testing procedures, see F - BASIC TESTING article in the ENGINE PERFORMANCE Section. Also see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

High Altitude Compensator Solenoids
See HIGH ALTITUDE COMPENSATOR under EMISSION SYSTEMS & SUB-SYSTEMS. See G - TESTS W/ CODES article in the ENGINE PERFORMANCE Section for appropriate trouble codes.

Main Relay
For testing procedures, see F - BASIC TESTING article in the ENGINE PERFORMANCE Section. Also see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

Purge Control Solenoid
See FUEL EVAPORATION under EMISSION SYSTEMS & SUB-SYSTEMS.

Vacuum Line Control (VLC) Solenoid
See HIGH ALTITUDE COMPENSATOR under EMISSION SYSTEMS & SUB-SYSTEMS. See G - TESTS W/ CODES article in the ENGINE PERFORMANCE Section for appropriate trouble codes.

FUEL INJECTION

EGR Solenoid

See EXHAUST GAS RECIRCULATION (EGR) under EMISSION SYSTEMS & SUB-SYSTEMS. See G - TESTS W/ CODES article in the ENGINE PERFORMANCE Section for appropriate trouble codes.

Fuel Injector(s)

1) Connect tachometer to engine. Start engine, and run it at idle. Remove harness connector from injectors one at a time. Engine idle speed should drop 100-300 RPM as each injector is disconnected. If engine idle speed does not drop, check wiring connector, injector resistance and injection signal from computer.

2) Turn ignition off. Disconnect electrical connector from each injector. Measure injector resistance. See INJECTOR RESISTANCE SPECIFICATIONS table. If injector is not to specification, replace injector.

INJECTOR RESISTANCE SPECIFICATIONS TABLE

Application	Ohms
Justy PFI	10.0-18.0
Legacy PFI	11.0-12.0
Loyale TBI	0.5-2.0
SVX PFI	11.0-12.0

Kickdown Relay Control (TBI)

For testing procedures, see G - TESTS W/ CODES article in the ENGINE PERFORMANCE Section.

Fuel Pump Relay

For testing procedures, see F - BASIC TESTING article in the ENGINE PERFORMANCE Section. Also see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

Main Relay

For testing procedures, see F - BASIC TESTING article in the ENGINE PERFORMANCE Section. Also see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

Purge Control Solenoid

See FUEL EVAPORATION under EMISSION SYSTEMS & SUB-SYSTEMS. See G - TESTS W/ CODES article in the ENGINE PERFORMANCE Section for appropriate trouble codes.

FUEL SYSTEM

FUEL DELIVERY

NOTE: For fuel system pressure testing, see F - BASIC TESTING article in the ENGINE PERFORMANCE Section.

FUEL CONTROL

Duty Solenoid (Carbureted)

Disconnect harness and measure resistance between solenoid terminals. Ensure resistance is 10-100 ohms. If resistance is not 10-100 ohms, replace solenoid(s). Also see appropriate trouble code(s) in G - TESTS W/ CODES article in the ENGINE PERFORMANCE Section.

Feedback System

Manufacturer recommends performing complete inspection of self-diagnostic system. This includes checking mechanical condition of engine, available fuel to carburetor or injectors and ignition. Repair or replace components as required, and test drive vehicle.

IDLE CONTROL SYSTEM

System Inspection

Check self-diagnostic system for any trouble codes. See G - TESTS W/ CODES article in the ENGINE PERFORMANCE Section.

Auxiliary Air Valve (Justy PFI & Loyale)

1) With engine running, pinch hose between Auxiliary Air Valve (AAV) and intake manifold. Engine speed should drop about 100 RPM with engine warm and more with engine cold. Release hose. Ensure engine returns to previous speed.

2) If RPM is not as specified, turn ignition off. Check AAV resistance. If reading is either zero or infinity, replace AAV. Check AAV solenoid for any short to ground. If short is present, replace solenoid.

3) Check for voltage at harness connector. Ensure 12 volts are available at Blue wire of AAV electrical connector. If 12 volts are not available, check main relay, fuses and power source.

By-Pass Air Control Valve (Loyale)

1) With engine running, disconnect electrical connector. Engine speed should drop slightly with engine warm and significantly with engine cold. Reconnect electrical connector. Ensure engine returns to previous speed.

2) If engine does not return to previous speed, turn engine off. Turn ignition switch to ON position. Ensure 10-12 volts are available at Black/White wire of Air Control Valve (ACV) electrical connector.

3) Turn ignition off. Ensure resistance of ACV is 7.3-13.0 ohms at -4 to 176°F (-20 to 80°C). If resistance is not as specified, replace ACV. Check ACV solenoid for any short to ground. If short is present, replace ACV.

4) Attach electrical connector to ACV. Disconnect connector at ECU. Turn ignition on. Ensure 10-12 volts are present at terminal No. 45 (Green/Red wire) of ECU connector. If voltage is not as specified, check harness between ACV and ECU.

5) Turn ignition off, and reconnect ECU connector. Turn ignition on. Backprobe terminal No. 45 (Green/Red wire) of ECU. One volt or less should exist for about one minute after ignition switch is turned to ON position. After one minute, at least 10 volts should exist. If voltage is not as specified, check for a bad ground, problem with ECU circuits (sensors) or faulty ECU.

By-Pass Air Control Valve (Legacy & SVX)

Turn ignition off. Disconnect By-Pass Air Control Valve (BACV) harness connector. Connect ohmmeter leads between terminals No. 1 (White wire) and 2 (Yellow/Red wire). Resistance should be 9 ohms. Measure resistance between terminals No. 2 (Yellow/Red wire) and 3 (Black wire). Resistance should be 9 ohms. If BACV resistance is not as specified, replace BACV. See G - TESTS W/ CODES article in the ENGINE PERFORMANCE Section for more detailed test procedures.

Dashpot (Justy PFI)

To check and adjust dashpot, see D - ADJUSTMENTS article in the ENGINE PERFORMANCE Section.

Fast Idle & Idle-Up Control Device (Justy PFI)

Using a hand vacuum pump, check to see if control device will hold vacuum. On models equipped with A/C, ensure idle speed increases when A/C is turned on. On models without A/C, idle speed should increase when headlights, rear defogger or heater blower is turned on. See Fig. 1.

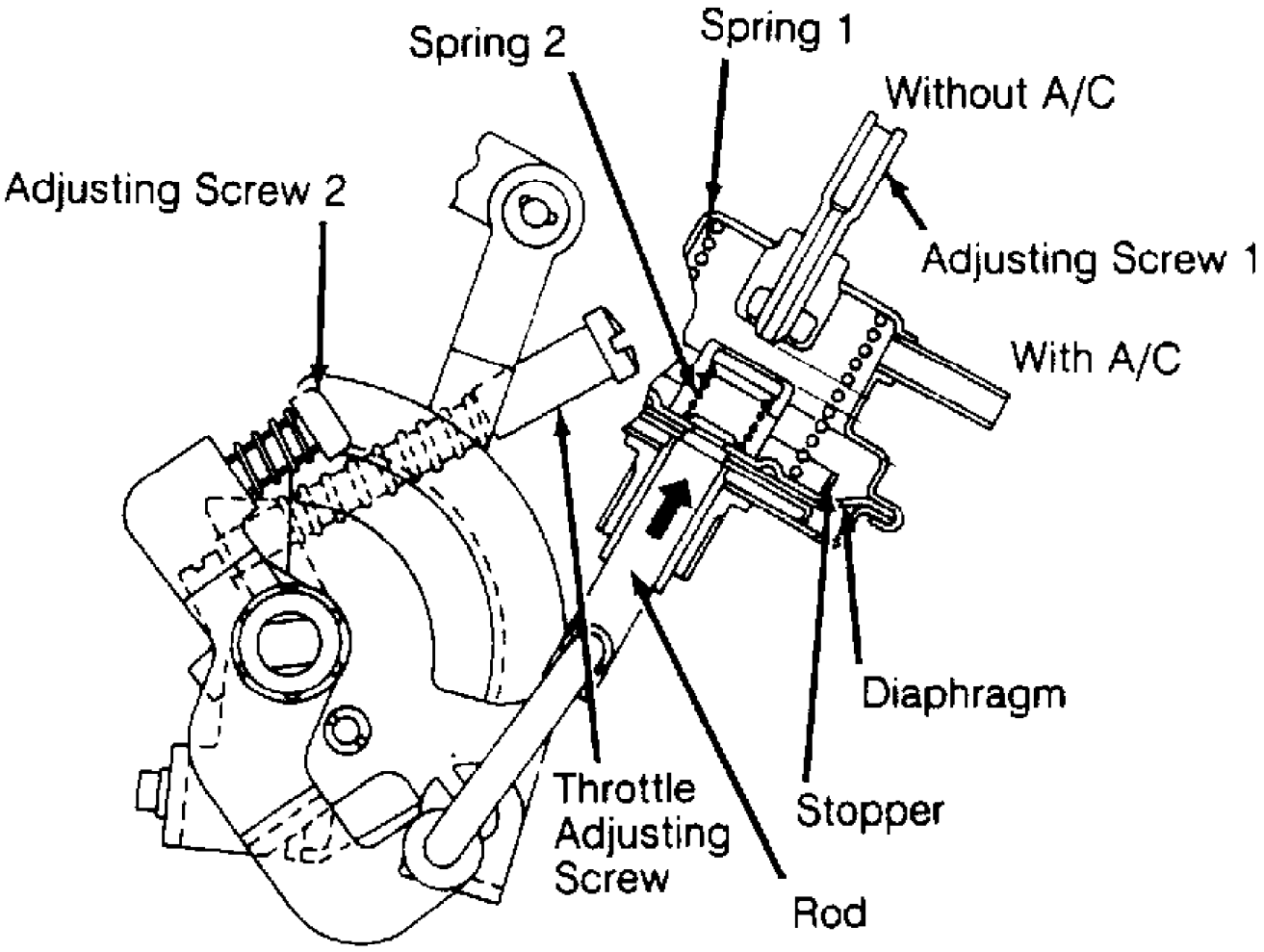


Fig. 1: Fast Idle Control Device (FICD) Control Actuator
Courtesy of Subaru of America, Inc.

Idle Compensator (Justy Carbureted)

Remove top of air cleaner. With engine running, apply a source of heated air to warm up idle compensator. Ensure idle compensator opens and idle speeds up. Allow idle compensator to cool (compensator should close). Replace idle compensator if it does not test as described.

Idle-Up Solenoid (Justy Carbureted)

Disconnect harness and measure resistance between solenoid terminals. See Fig. 2. Ensure resistance is 33-40 ohms. If resistance is not as specified, replace solenoid. Also see appropriate trouble code(s) in G - TESTS W/ CODES article in the ENGINE PERFORMANCE Section.

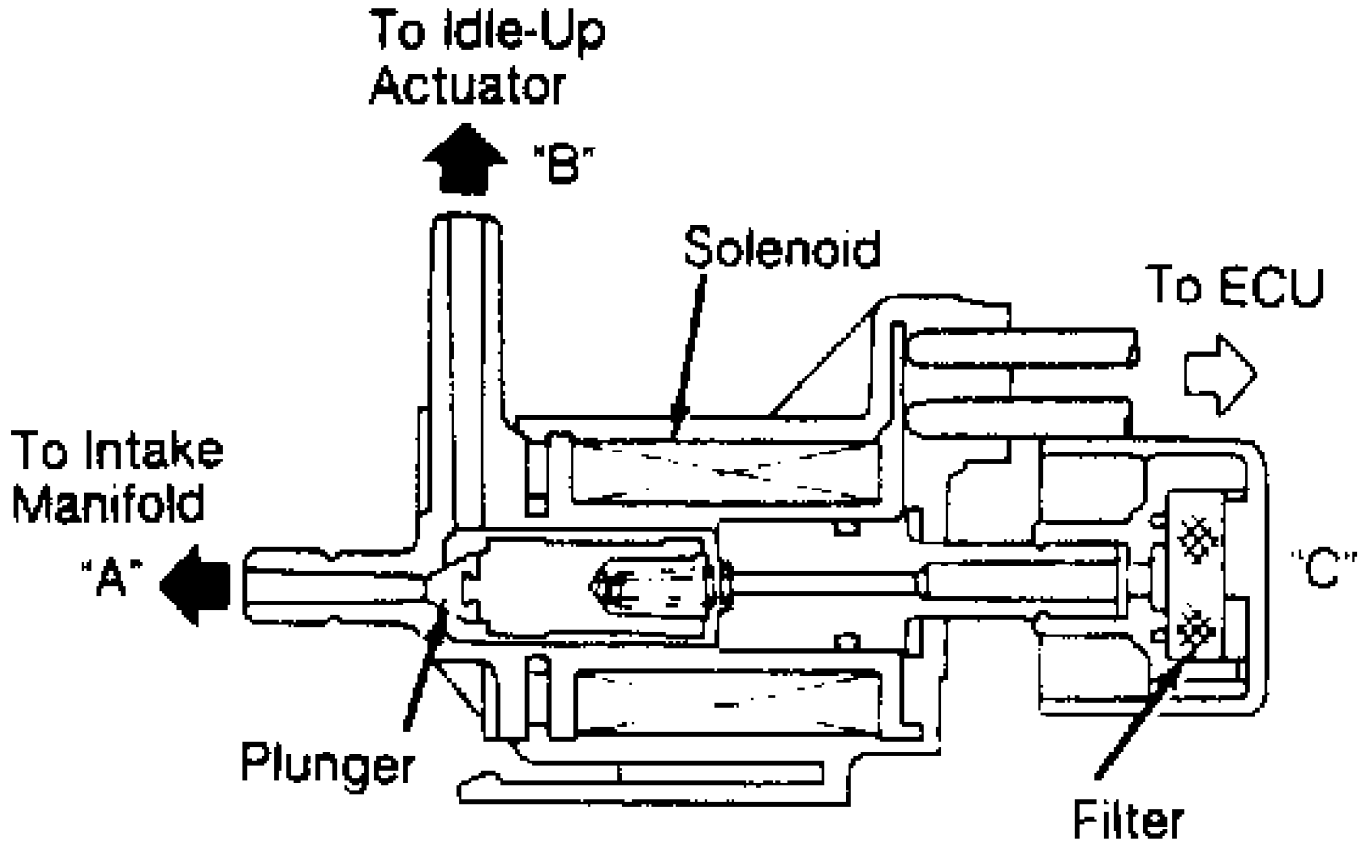


Fig. 2: Identifying Idle-Up Solenoid (Justy Carbureted)
Courtesy of Subaru of America, Inc.

IGNITION SYSTEM

NOTE: For basic ignition checks (coil, wires, crank angle sensor), see G - TESTS W/ CODES article in the ENGINE PERFORMANCE Section.

TIMING CONTROL SYSTEMS

Electronic Advance
For testing, see D - ADJUSTMENTS article in the ENGINE PERFORMANCE Section.

Knock Sensor (Legacy & Loyale)
For testing, see G - TESTS W/ CODES article in the ENGINE PERFORMANCE Section. Also see L - WIRING DIAGRAMS article in the ENGINE PERFORMANCE Section.

EMISSION SYSTEMS & SUB-SYSTEMS

AIR INJECTION (JUSTY)

Suction Valve
1) Blow air through suction valve air inlet section. Air should flow smoothly through valve outlet. See Figs. 3 and 4. If air does not flow through smoothly, reed valve is stuck closed. Replace reed valve.

2) Blow air through valve outlet. If air flows out inlet, reed valve is broken or stuck open. Replace reed valve.

3) Open suction valve. Inspect gasket, inlet case and outlet case for damage (cracks). Clean reed valve with gasoline and inspect for waves, cracks or dents in reed valve seat. Inspect for broken or cracked point of reed valve, or rusted stopper. Replace as required. See Fig. 5.

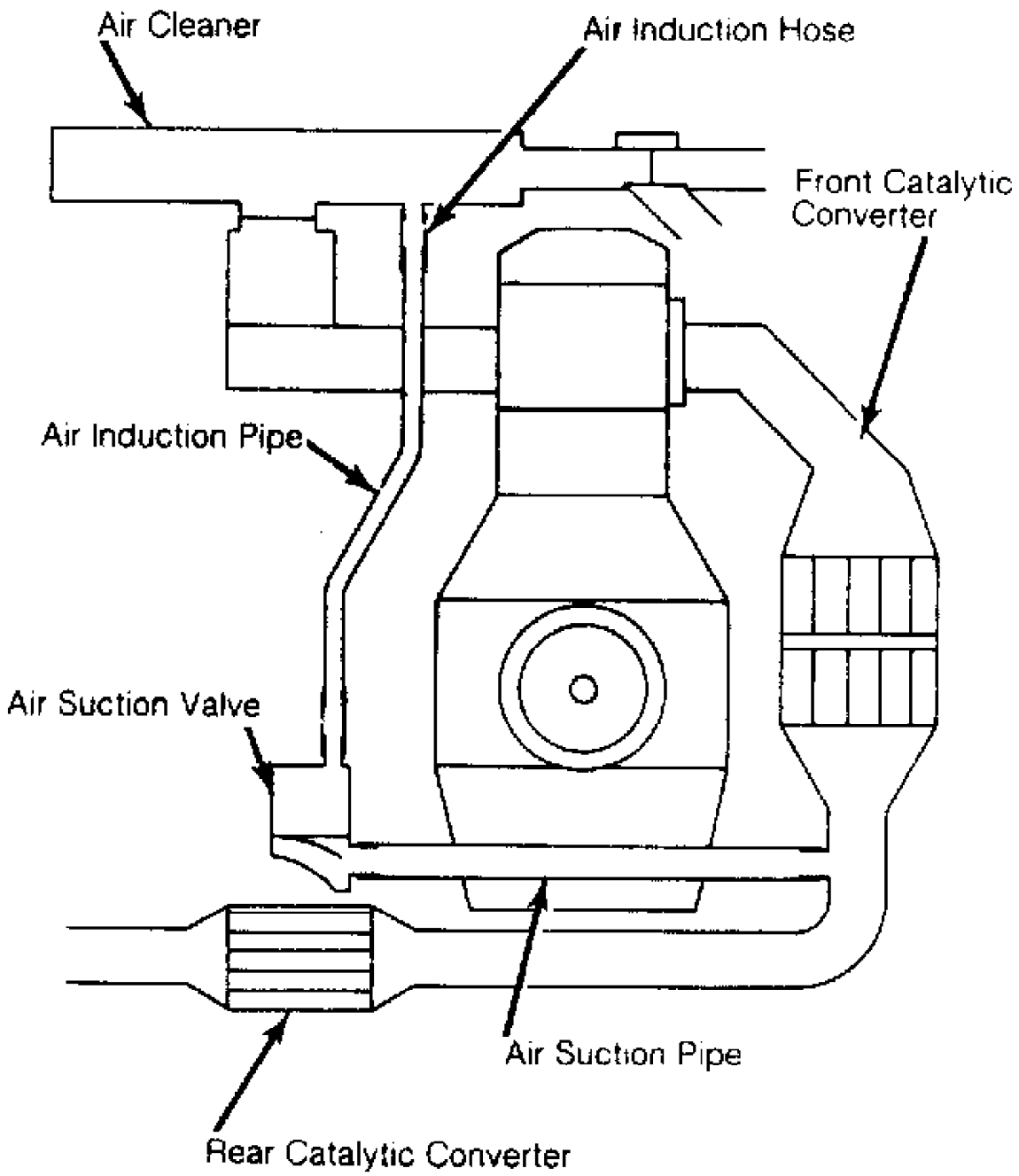


Fig. 3: Air Injection System (Justy)
Courtesy of Subaru of America, Inc.

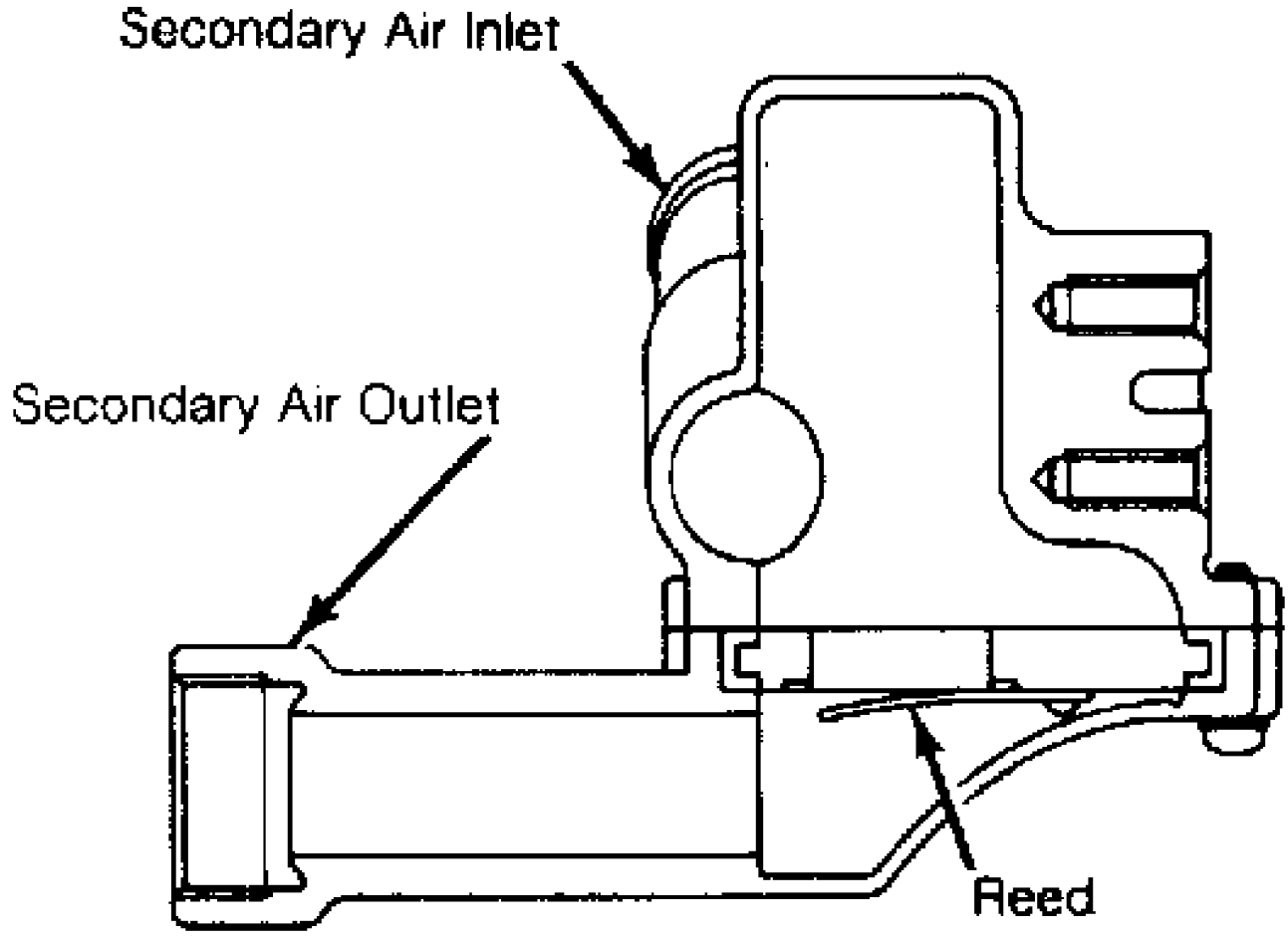


Fig. 4: Cross-Sectional View Of Suction Valve (Justy)
Courtesy of Subaru of America, Inc.

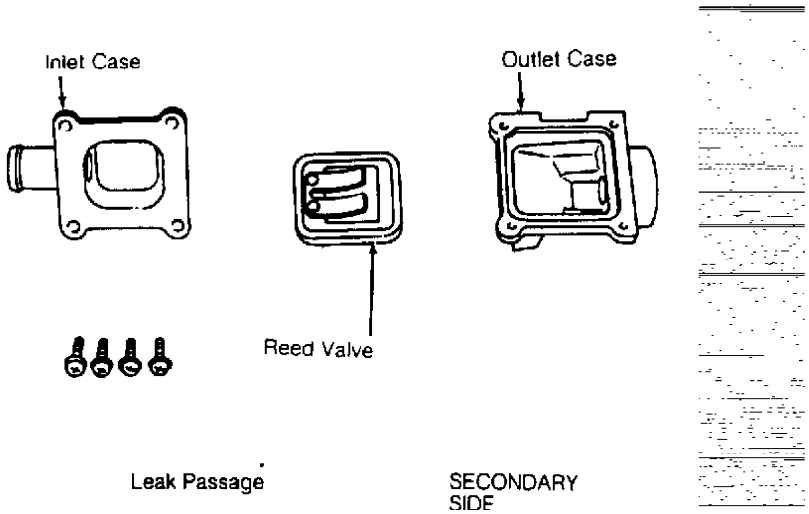


Fig. 5: Exploded View Of Suction Valve (Justy)
Courtesy of Subaru of America, Inc.

EXHAUST GAS RECIRCULATION (EGR)

EGR System (Justy Carbureted, Loyale & SVX)

1) Apply about 8 in. Hg to EGR valve using hand vacuum pump. With engine warmed up, engine should stall or idle rough. See Fig. 6, 7 or 8.

2) If engine idle does not change, check EGR pipe and gas passages for clogging and leaks. Clean or replace if necessary. When cleaning, inspect exhaust gas inlet to intake manifold for presence of deposits. Inspect EGR inlet pipe for exhaust deposits.

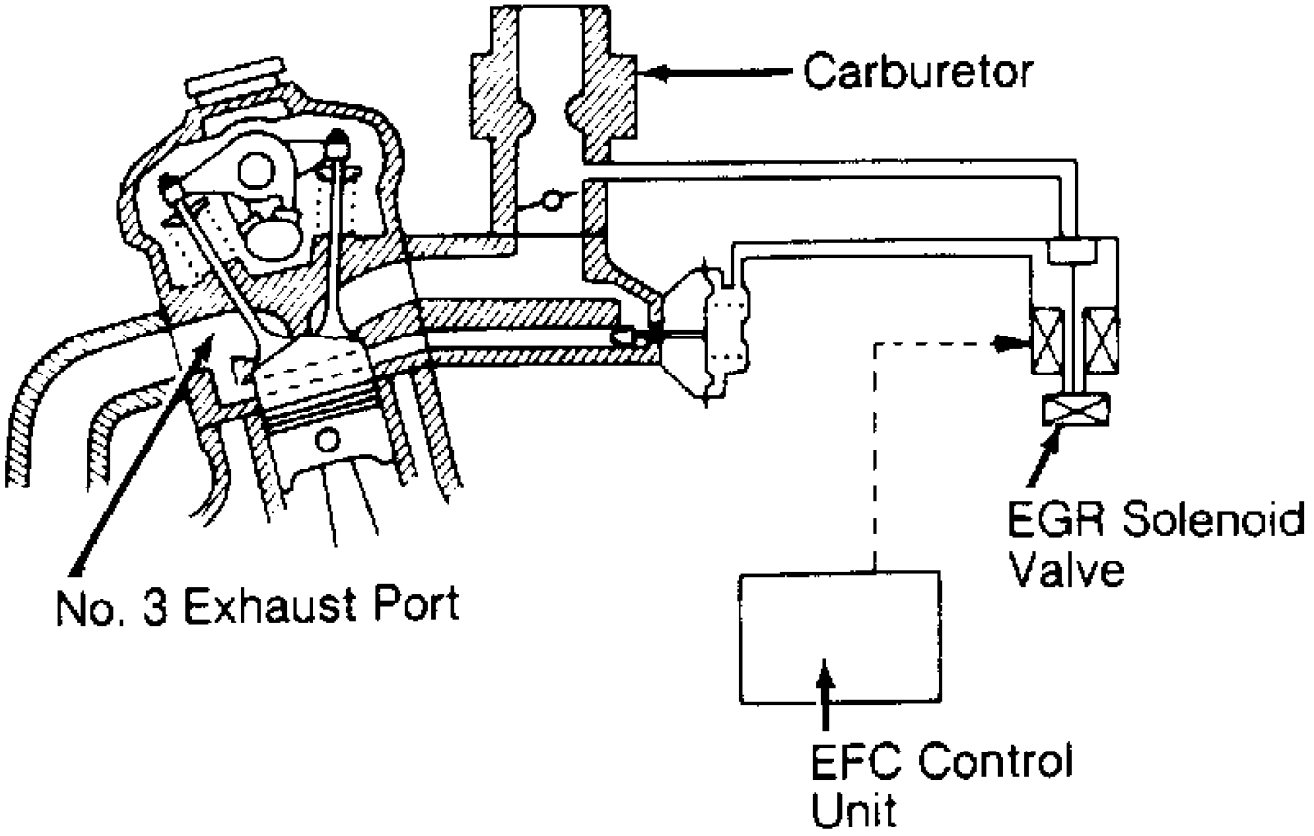


Fig. 6: EGR System (Justy Carbureted)
Courtesy of Subaru of America, Inc.

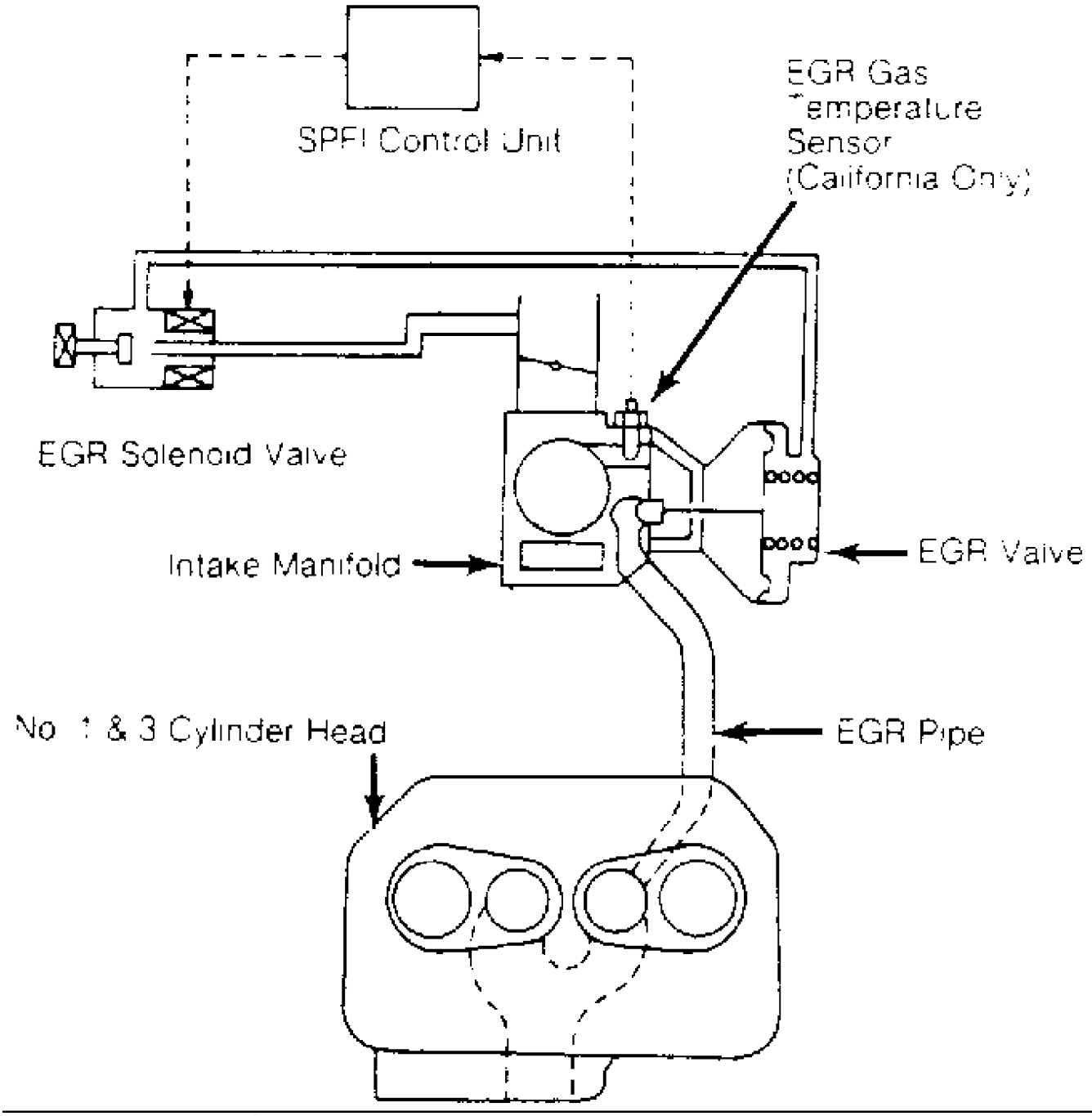


Fig. 7: EGR System (Loyale)
Courtesy of Subaru of America, Inc.

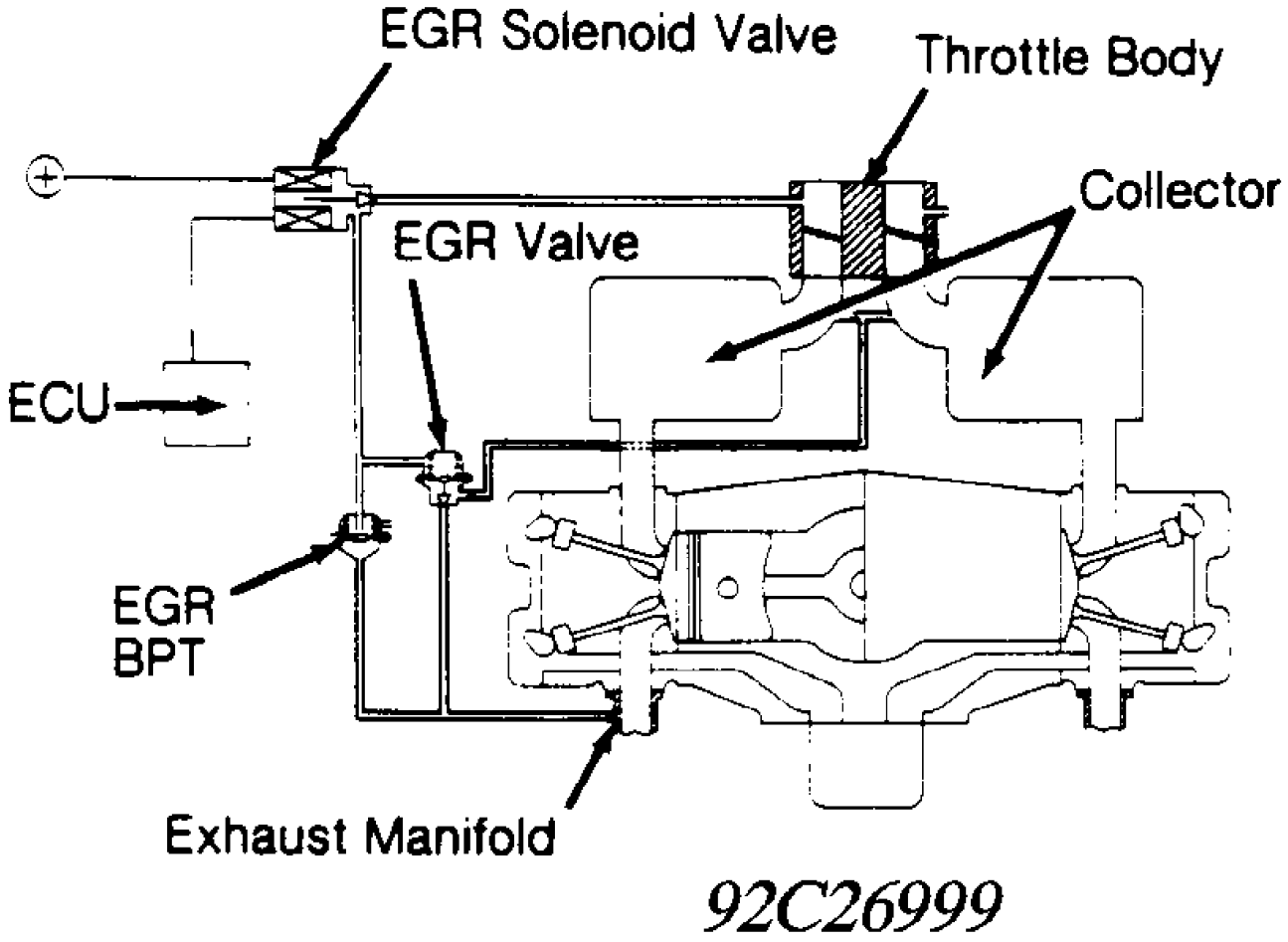


Fig. 8: EGR System (SVX)
Courtesy of Subaru of America, Inc.

EGR Valve

1) Look through opening in EGR valve body. Warm engine to normal operating temperature. Increase engine speed and check if valve shaft moves when engine reaches 3500-4000 RPM under no-load condition.

2) If shaft does not move, remove valve and manually check valve movement. If valve appears okay, check vacuum lines for leaks. Clean or replace valve if it does not operate properly.

NOTE: When cleaning EGR valve, DO NOT wash in solvent or degreaser, or permanent damage to valve diaphragm will result.

3) Depress valve diaphragm and inspect valve seat area. Inspect valve inlet and outlet for deposits and clean as necessary. Blow clean with compressed air. Recheck valve operation by applying 8 in. Hg with a hand vacuum pump. Install unit using a new gasket.

EGR Solenoid Valve (Justy Carbureted & Loyale)

1) Remove connector from solenoid valve. Measure resistance of solenoid valve. Resistance should be 33-40 ohms. If resistance is not 33-40 ohms, replace solenoid valve. Measure resistance between solenoid valve terminal leads and body ground. If solenoid is shorted, replace solenoid valve.

2) Check vacuum passage for opening and closing operation.

When EGR solenoid is not energized, passage between "A" and "B" should be closed and passage between "B" and "C" should be open. When solenoid is energized, passage between "A" and "B" should be open and passage between "B" and "C" should be closed. See Fig. 9.

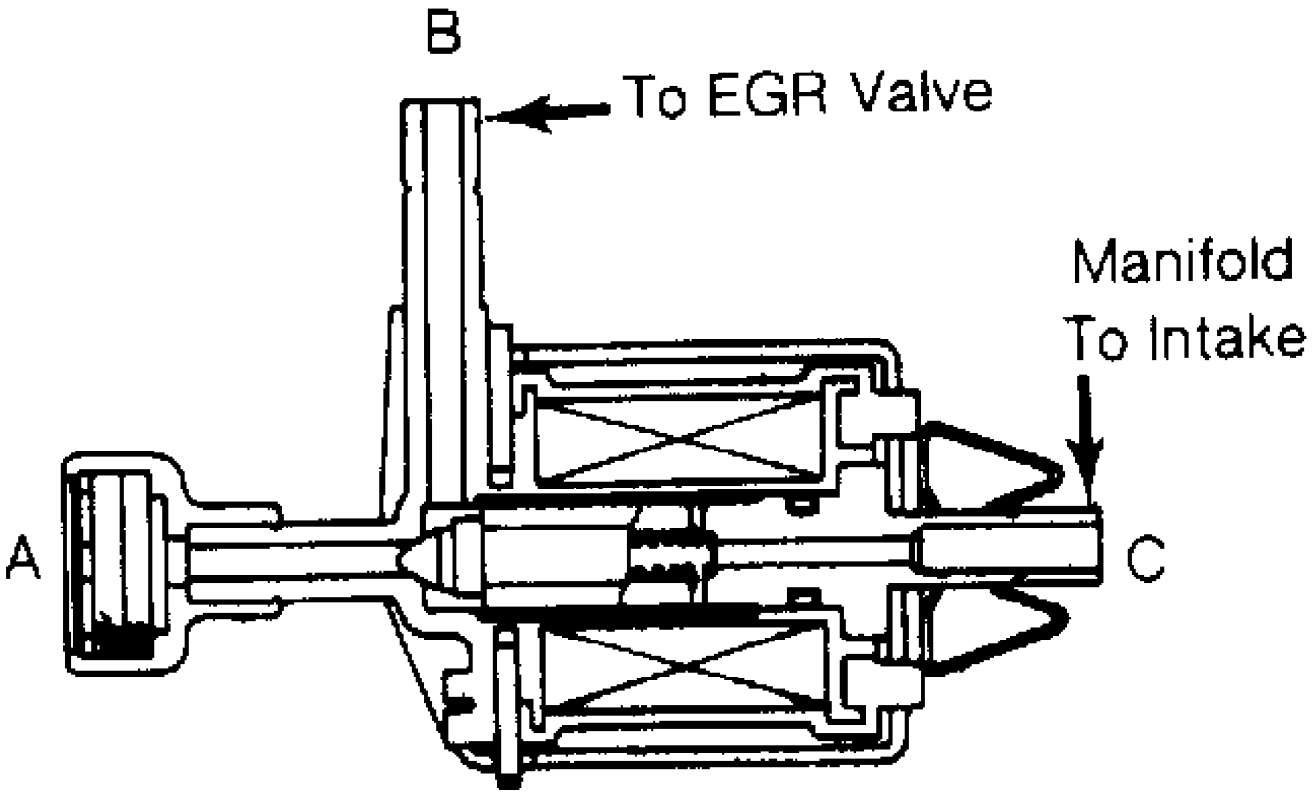


Fig. 9: Cross-Sectional View Of EGR Solenoid Valve
Courtesy of Subaru of America, Inc.

FUEL EVAPORATION

WARNING: DO NOT inhale fuel vapor when blowing into fuel evaporation hoses.

System Test

Remove fuel filler cap. Disconnect vent hose between charcoal canister and fuel tank. Blow air toward canister. Ensure air flows freely into canister. Blow air toward fuel tank. Ensure air flows into tank with a slight resistance from 2-way valve. See Fig. 10, 11, 12, 13 or 14.

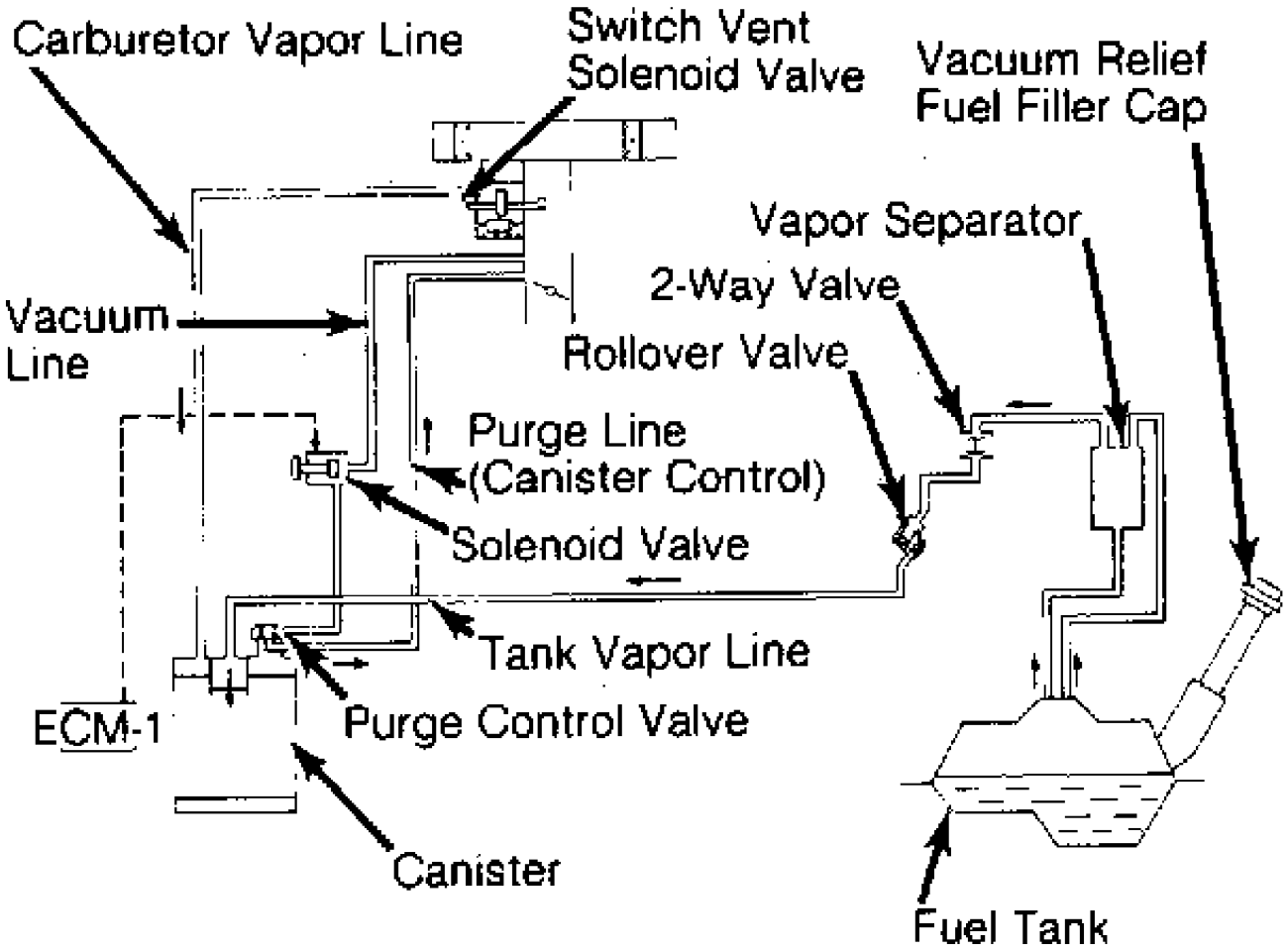


Fig. 10: Fuel Evaporation System (Justy)
Courtesy of Subaru of America, Inc.

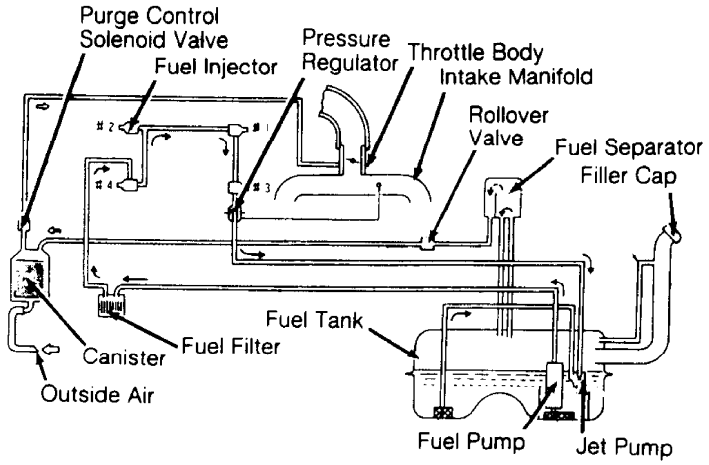


Fig. 11: Fuel Evaporation System (Legacy Non-Turbo)
Courtesy of Subaru of America, Inc.

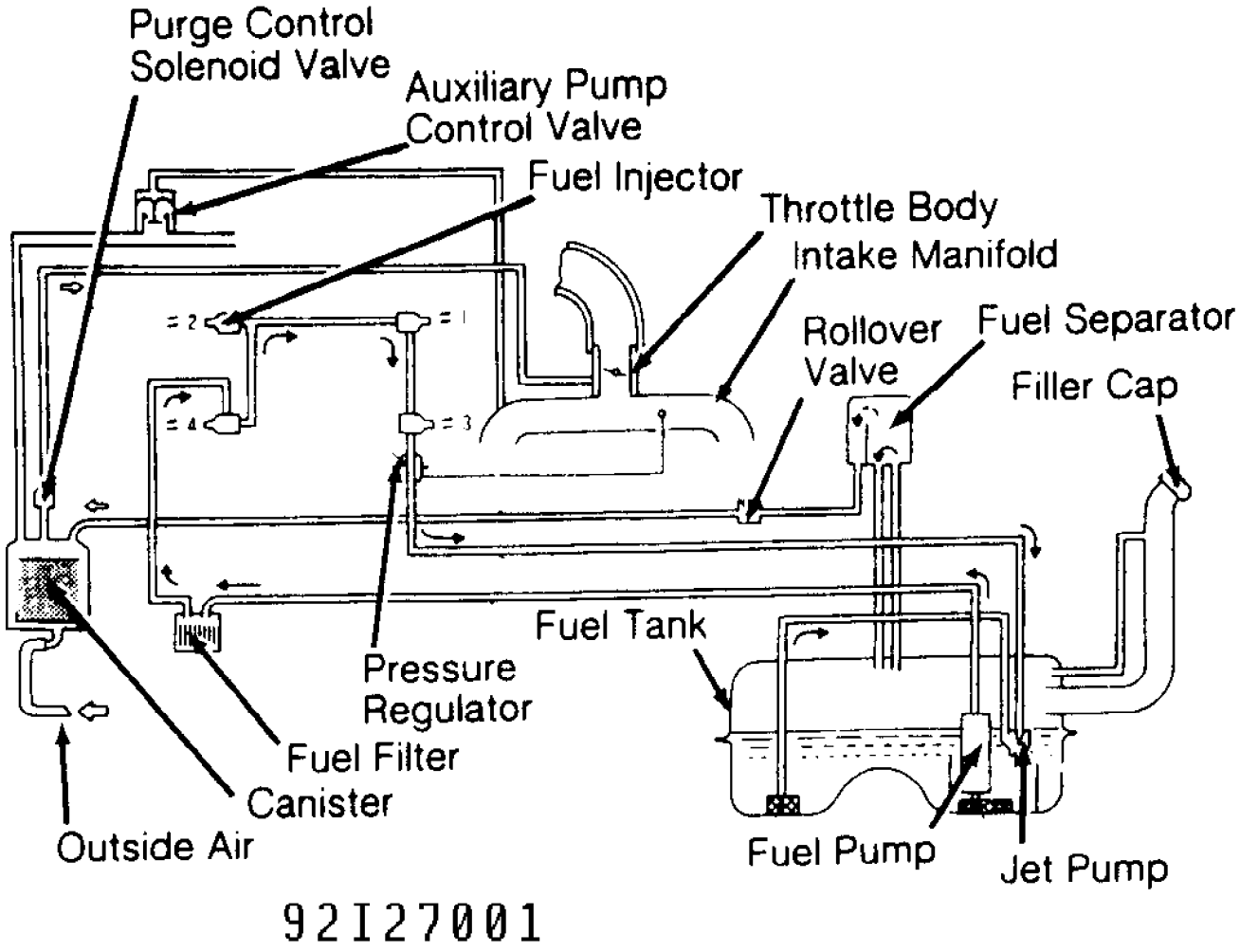


Fig. 12: Fuel Evaporation System (Legacy Turbo)
Courtesy of Subaru of America, Inc.

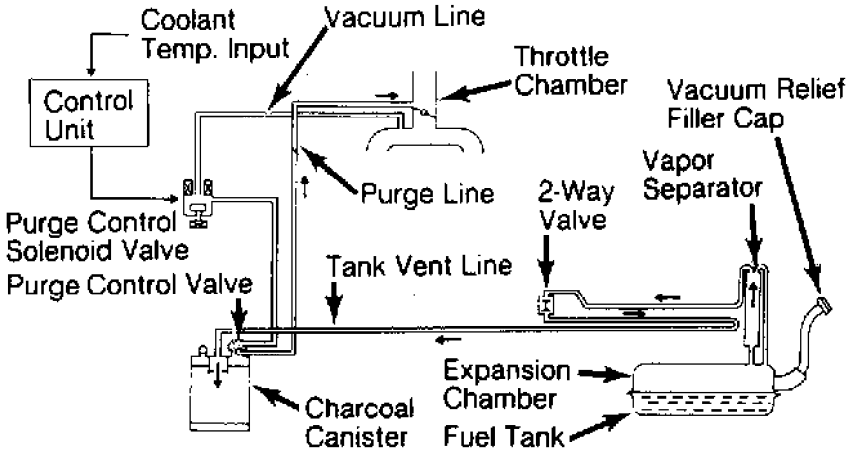


Fig. 13: Fuel Evaporation System (Loyale)
Courtesy of Subaru of America, Inc.

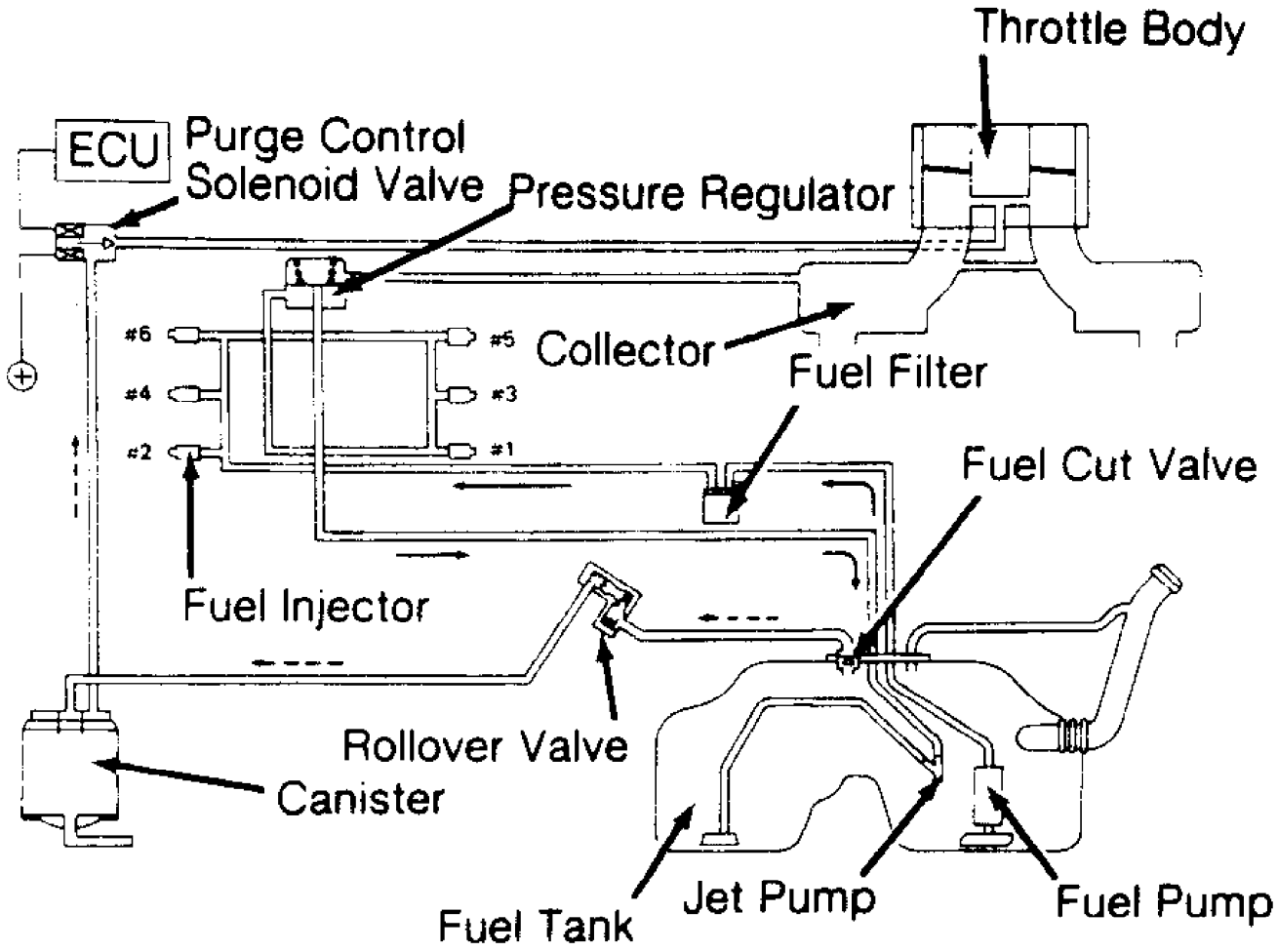


Fig. 14: Identifying Fuel Evaporation System (SVX)
Courtesy of Subaru of America, Inc.

Charcoal Canister

1) Remove vacuum hose from canister purge vent port (main purge vent on turbo). See Fig. 15. Blow air into canister purge vent port. Airflow will be blocked if valve is operating properly.

2) Remove hoses from canister's fuel tank and carburetor ports. Blow air into each port. Ensure air flows into canister.

3) On Turbo models, remove secondary purge hose. Blow into hose. Air should flow with a slight resistance.

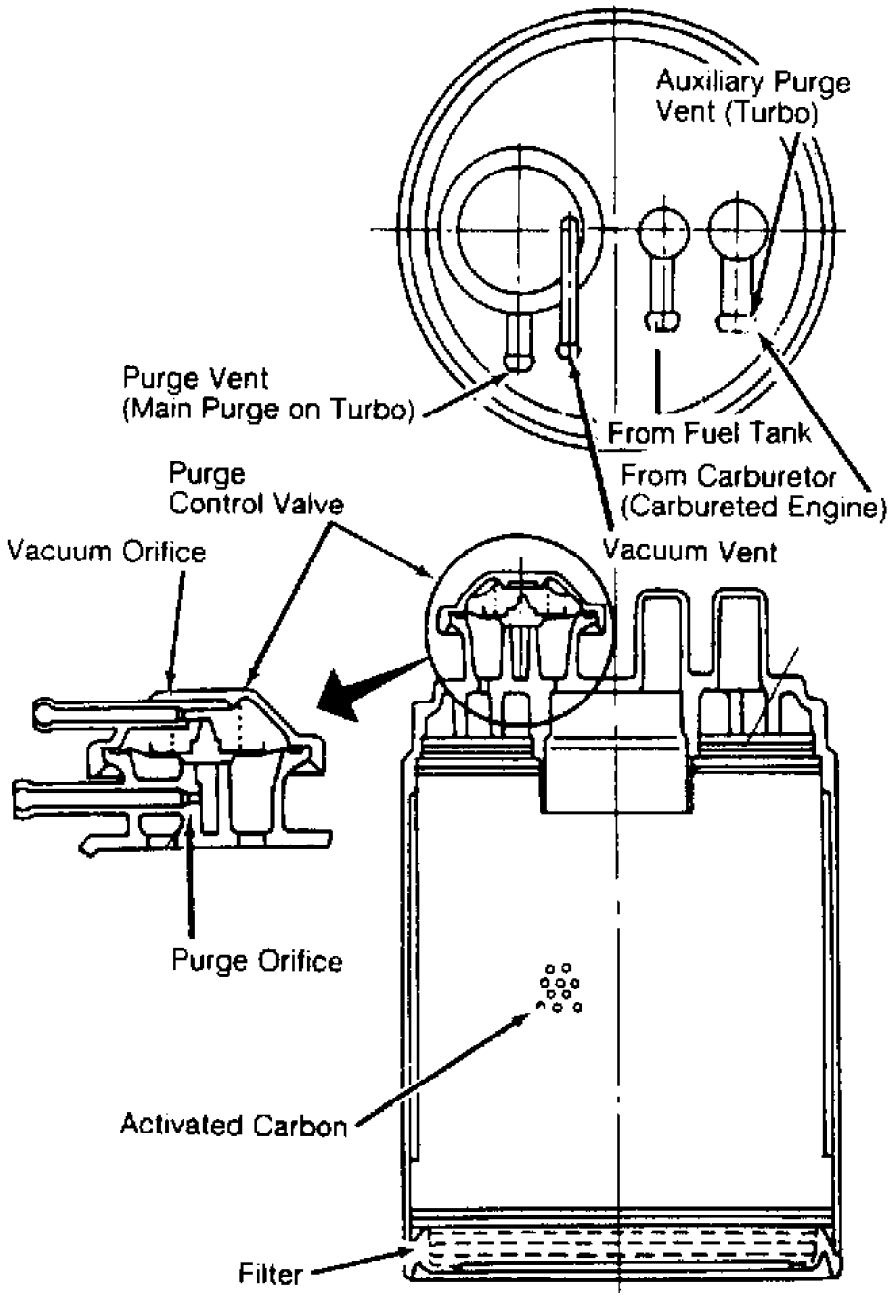


Fig. 15: Identifying Charcoal Canister Hose
Courtesy of Subaru of America, Inc.

2-Way Valve
Remove valve from hoses. Mark hoses for reinstallation. Blow

air into each valve port. Ensure air flows through valve with light resistance. Visually inspect valve for cracks.

Bowl Vent Or Purge Control Solenoid Valve

1) Connect ohmmeter leads between terminals of solenoid. See BOWL VENT OR PURGE CONTROL SOLENOID VALVE RESISTANCE table. If resistance is not as specified, replace solenoid valve.

2) Using an ohmmeter, ensure windings are not grounded. Apply battery voltage to valve terminals. Ensure passage opens and closes as voltage is applied and removed. See Fig. 16.

BOWL VENT OR PURGE CTRL SOLENOID VALVE RESISTANCE TABLE

Application	Ohms
Justy Carbureted	10-100
Justy PFI	30-50
Legacy	(1) 36
Loyale	10-100
SVX	(2)

(1) - At 68°F (20°C).
(2) - Information is not available from manufacturer.

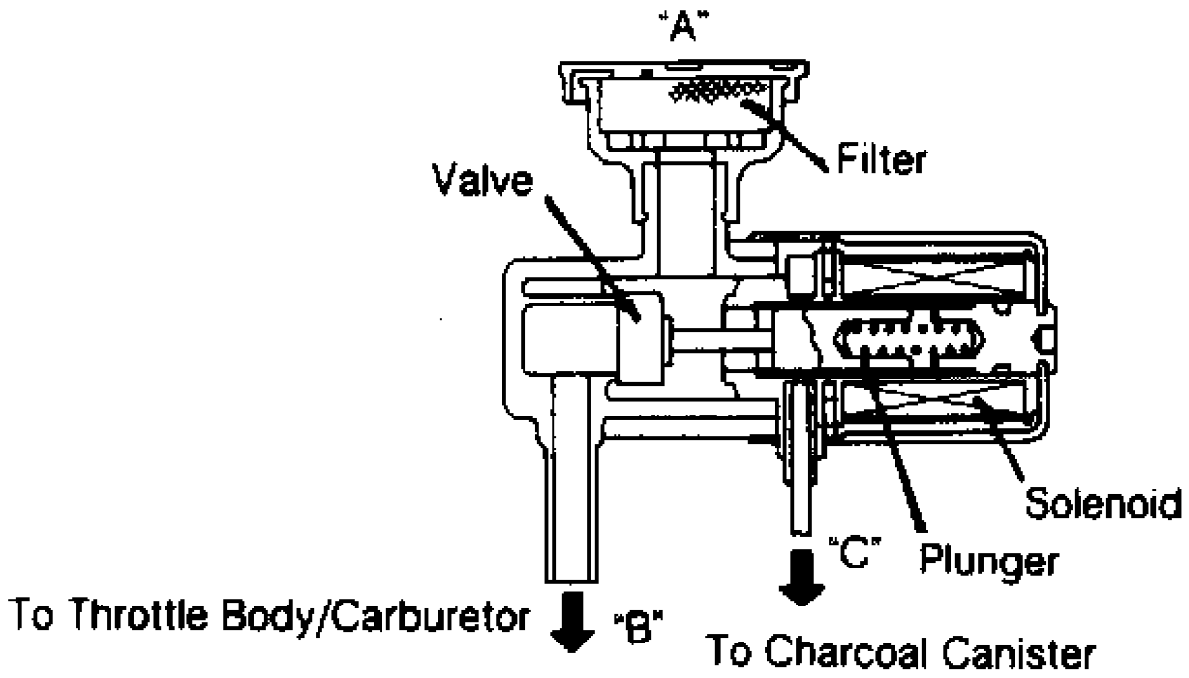


Fig. 16: Testing Bowl Vent Or Purge Control Solenoid Valve
Courtesy of Subaru America, Inc.

HIGH ALTITUDE COMPENSATOR

Atmospheric Pressure Sensor (Justy PFI & Legacy)

Atmospheric pressure sensor is located in ECU. If appropriate trouble code appears, replace ECU.

High Altitude Compensator Solenoids (Justy Carbureted)

1) Connect ohmmeter leads between terminals of Black/White and White/Red wires of solenoid. If resistance is not 33-40 ohms, replace solenoid valve.

2) Ensure windings are not grounded. Apply battery voltage to valve terminals. Ensure vacuum passage opens and closes as voltage is applied and removed.

3) When solenoid is not energized, passage between "A" and "B" should be closed. See Fig. 17. When solenoid is energized, passage between "A" and "B" should be open. If solenoid valve does not operate properly, replace solenoid valve.

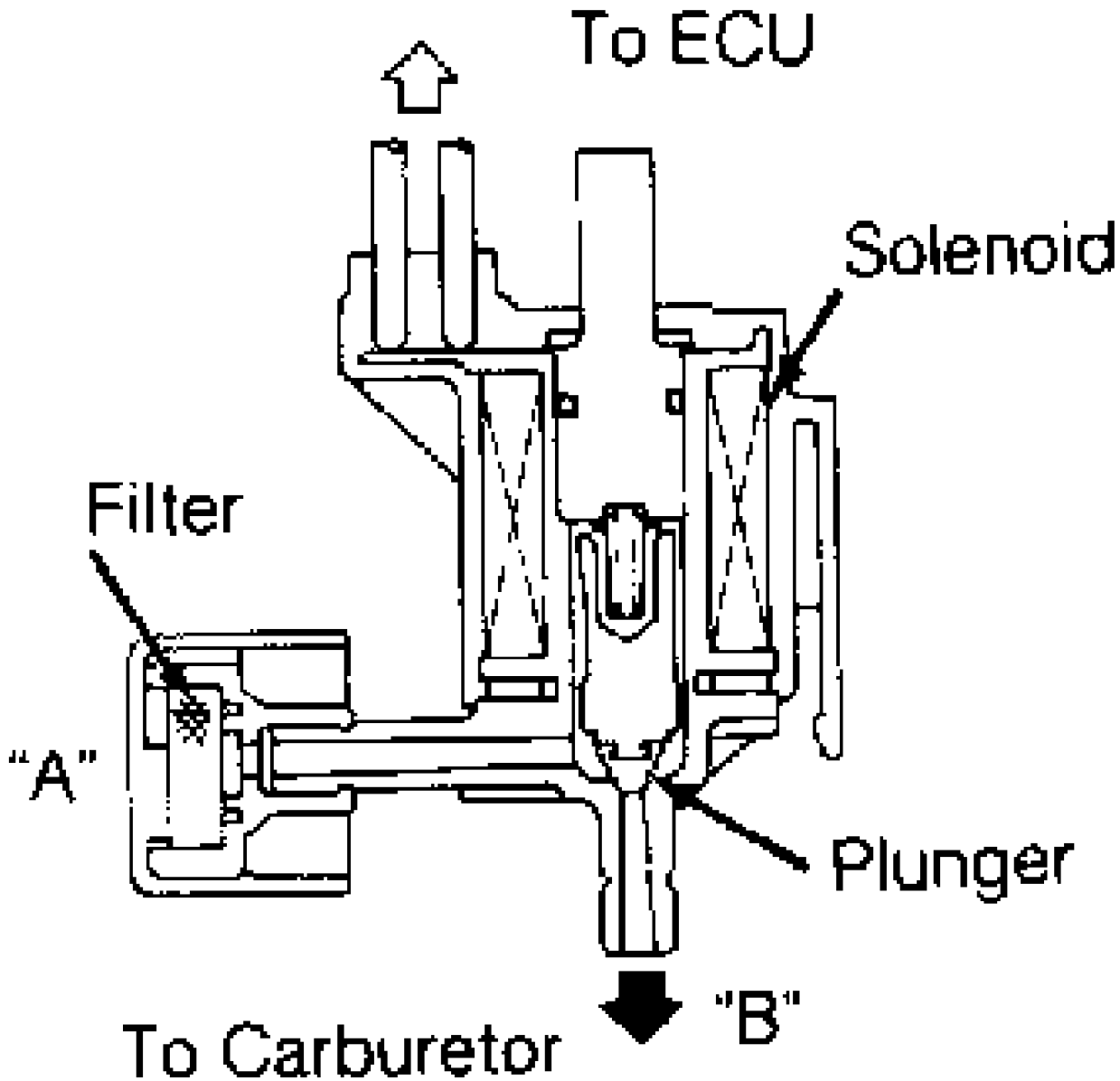


Fig. 17: Testing High Altitude & Vacuum Line Control Solenoid(s)
Courtesy of Subaru America, Inc.

Vacuum Line Control Solenoid Valve (Justy Carbureted)

1) Connect ohmmeter leads between terminals of solenoid. If

resistance is not 10-100 ohms, replace solenoid valve.

2) Using an ohmmeter, ensure windings are not grounded. Apply battery voltage to valve terminals. Ensure passage opens and closes as voltage is applied and removed.

3) When solenoid is not energized, passage between "A" and "B" should be closed and passage between "B" and "C" should be open. See Fig. 17. When solenoid is energized, passage between "A" and "B" should be open and passage between "B" and "C" should be closed. If solenoid valve does not operate properly, replace solenoid valve.

POSITIVE CRANKCASE VENTILATION (PCV)

NOTE: To identify PCV systems, see Figs. 18-22.

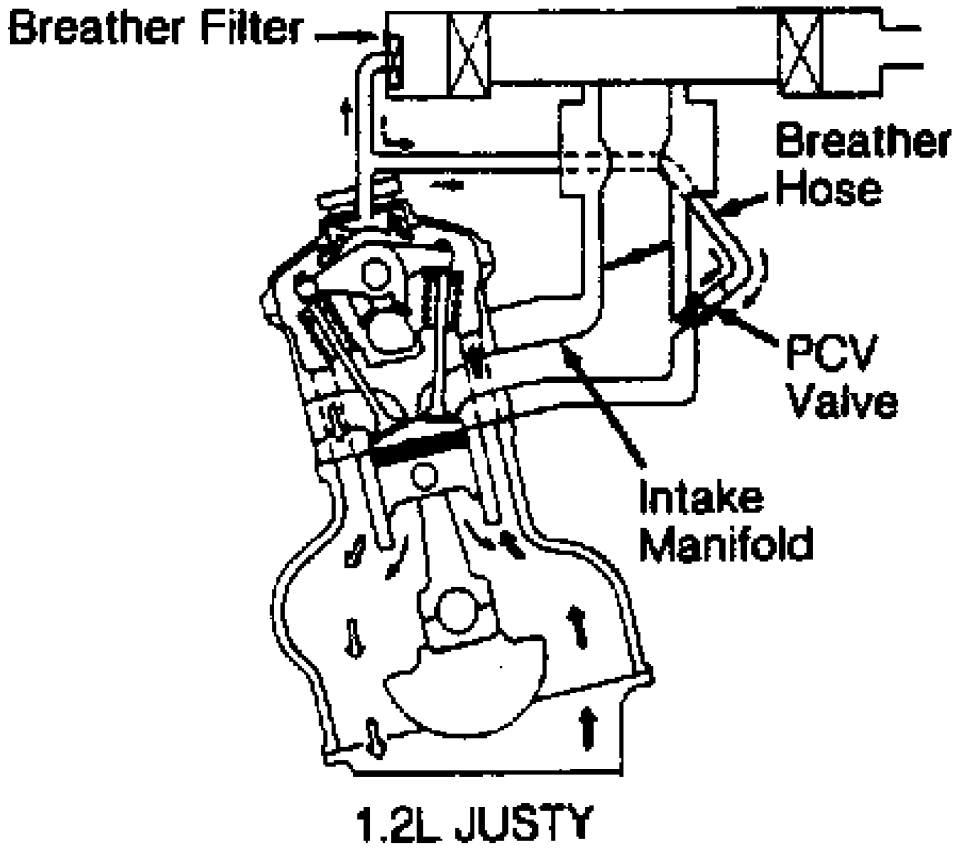


Fig. 18: Positive Crankcase Ventilation (PCV) Systems (Justy)
Courtesy of Subaru America, Inc.

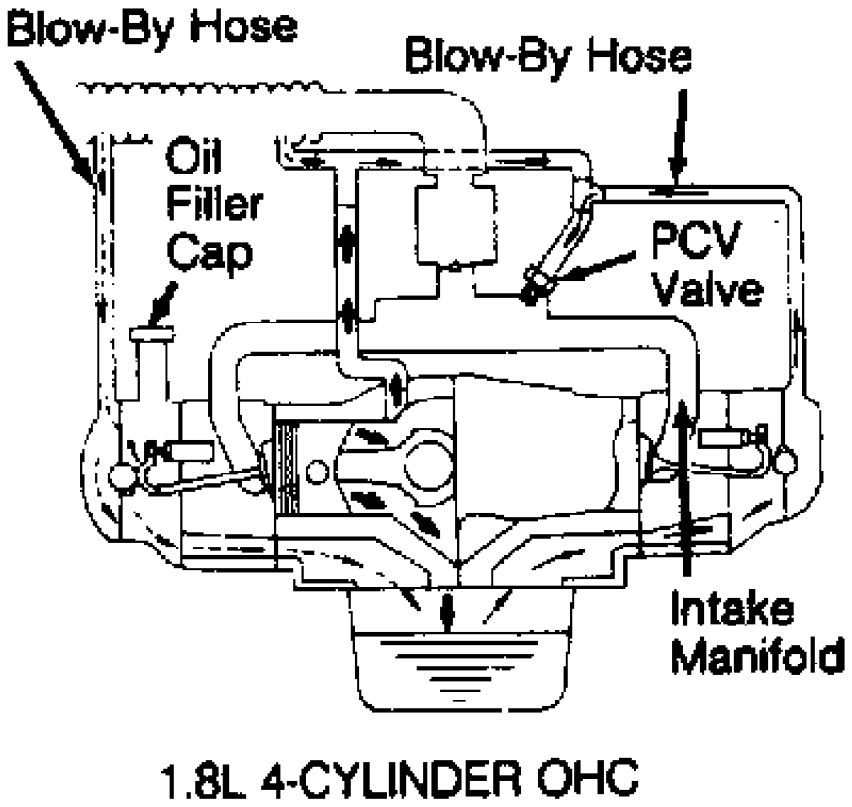


Fig. 19: Positive Crankcase Ventilation (PCV) Systems (Loyale)
Courtesy of Subaru America, Inc.

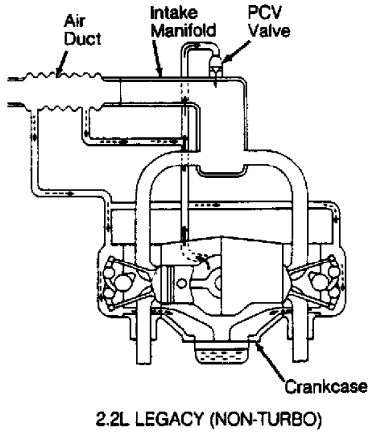


Fig. 20: Positive Crankcase Ventilation (PCV) Sys (Legacy Non-Turbo)
Courtesy of Subaru America, Inc.

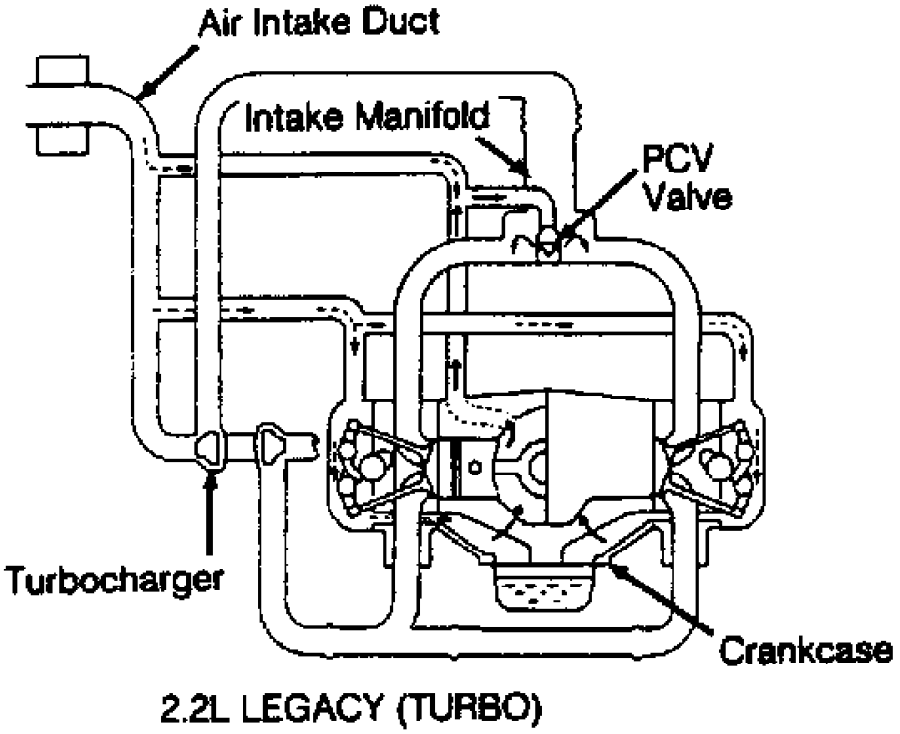


Fig. 21: Positive Crankcase Ventilation (PCV) Systems (Legacy Turbo)
Courtesy of Subaru America, Inc.

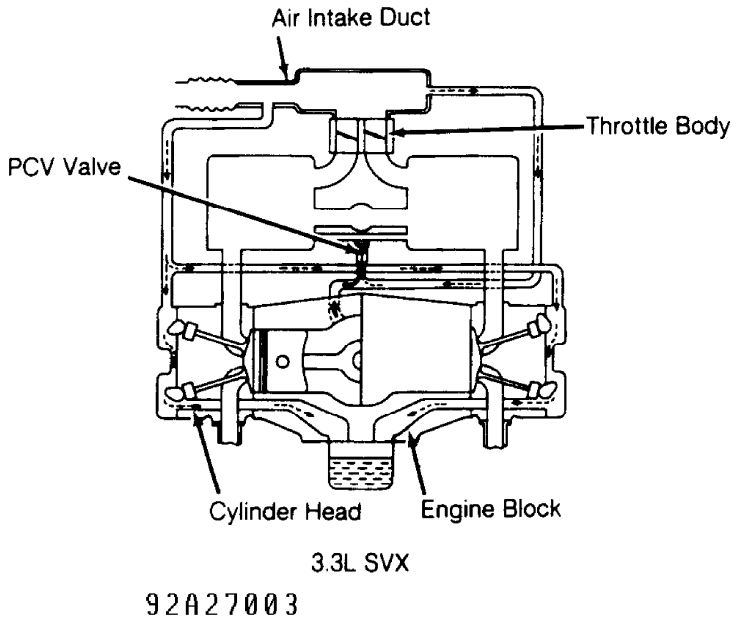


Fig. 22: Positive Crankcase Ventilation (PCV) Systems (SVX)
Courtesy of Subaru America, Inc.

THERMOSTATIC AIR CLEANER (JUSTY)

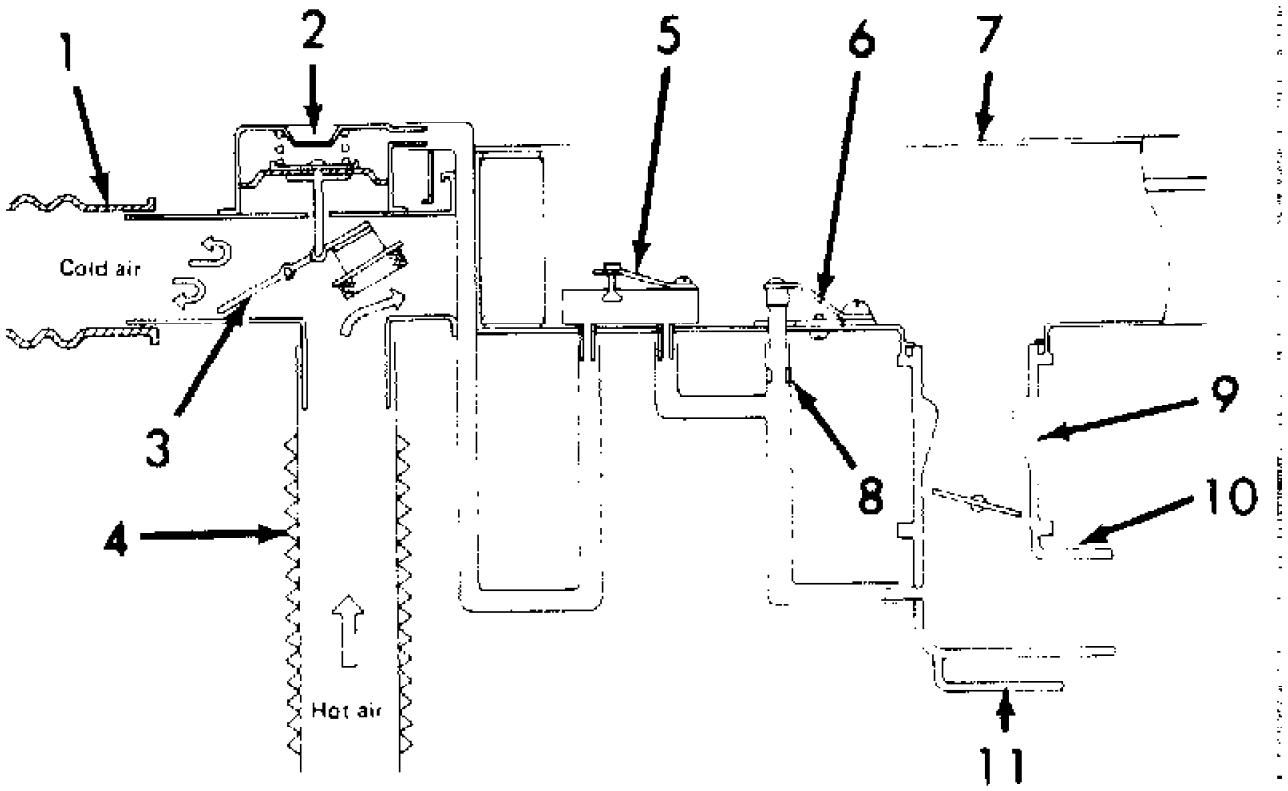
Air Control Diaphragm & Valve

1) In warm weather, it may be difficult to find a malfunction in hot air control system. In cold weather, vacuum leaks or faulty air control valve will result in engine stalling or hesitation, increased fuel consumption and/or lack of power.

2) Check vacuum hoses for cracks and proper connections. Inspect air control diaphragm (vacuum motor) with engine stopped. See Fig. 23.

3) Disconnect vacuum hose from air control diaphragm. Apply vacuum to diaphragm. Valve should rise to open position (hot air inlet uncovered, fresh air inlet blocked).

4) If diaphragm does not hold vacuum, replace it. With valve in open position, pinch hose to trap vacuum. Valve should remain open for at least 30 seconds. If valve closes too soon, replace air control diaphragm.



1. Air Duct
2. Vacuum Motor
3. Air Control Valve
4. Hot Air Duct
5. Temperature Sensor
6. Idle Compensator
7. Air Cleaner
8. Orifice
9. Carburetor
10. Intake Manifold
11. Coolant Passage

Fig. 23: Cross-Sectional View Of Thermostatic Air Cleaner (Justy) Courtesy of Subaru of America, Inc.

NOTE: Ensure engine is cold before performing the following test. Check hoses, air control diaphragm and valve first.

Temperature Sensor Valve

1) Start engine, allow to idle. Observe position of air control valve. Valve should be open (hot air inlet uncovered, fresh air inlet blocked).

2) Continue to observe valve as engine warms. Air control valve should gradually move to closed position (hot air inlet blocked). If valve does not move to closed position, replace temperature sensor valve assembly.