SUBARU®

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SERVICE BULLETIN

APPLICABILITY LEGACY VEHICLES **DATE** 11-12-91

SUBJECT: DIAGNOSTIC AIDS FOR DRIVEABILITY COMPLAINTS

The following diagnostic aids are offered to assist you when addressing complaints relating to driveability and engine performance. It is important to determine that the customer complaint is not a normal operating characteristic before attempting to repair. Familiarize yourself with normal operating characteristics so you never get yourself in the position of trying to repair a normal characteristic.

The first chart lists four driveability symptoms and a listing of potentially failed components arranged in numerical priority. When using the chart, first choose which of the four driveability complaints you wish to troubleshoot for. Then, in the column below the symptom, proceed numerically with checking and confirming proper operation of each component referred to. As an example, when troubleshooting for a hard or no start condition, the first item to check would be for the appearance of trouble codes followed by confirming proper operation of the ignition relay and then the fuel pump, etc.

The second chart lists components and identification characteristics that may aid in the diagnosis procedure.

Refer to the applicable service manual for procedures on accessing the trouble code and clear memory modes of the self diagnosis system.

This information is designed as a general overview only based on information gathered through the Tech Helpline and FHI. It is not all inclusive nor is it intended to replace the information previously released or available through Service Bulletins, Updates or the Service Manual.

Chart 1 Driveability Component/Symptom

Causes and Contributors List for Driveability Complaints

Suspected Component or Defect / Symptom	Rough Idle Engine Warm	Rough Idle After Starting RPM Hunting	Rough Idle At Start Idle Drop Stall	Hard/No Start
U-Check, Read Memory/Trouble Code	1	1	1	1
IGN Relay Malfunction	2	2	2	2
Cam Angle Sensor Mounting Bolt(s) Loose	3		4	5
O2 Sensor/Heater Defect, Output Correct	4			
Cam Timing Belt Out of Position	5			7
Spark Plug Fouling	6	6		
ISC Valve/Carbon Clogging, Malfunction	7	3	3	
Idle Adjust Screw Mis-Adjusted	8			
Vacuum, Intake Air Leaking	9			
Fuel Pressure Regulator Malfunction	10			
Fuel Injector Leaking, Clogging	11	7		4
Air Flow Meter/Output Incorrect	12	5		
Ex. Valve Sticking	13			
Water Temp. Sensor/Output Incorrect		4		
In. Valve/Carbon Deposit			5	
Fuel Pump Malfunction				3
Crank Angle Sensor Malfunction				6
Compression Abnormal				8
Wiring, Connector, Grounding/ Poor	14	8	6	9

Chart 2 Diagnosis and Identification Characteristics

POSSIBLE CAUSES	DIAGNOSTIC/IDENTIFICATION CHARACTERISTICS
Ignition Relay Malfunction	Select Monitor display may go blank, Codes 24 and 35.
Cam Angle Sensor Malfunction	No signal from cam angle sensor, loose mounting bolts.
O^2 Sensor Malfunction	Is O^2 feedback present warm engine idling, is heater circuit operating correctly. Substitution test.
Timing Belt Out of Position	Check for recent engine work, cannot be timed, backfire.
Spark Plug Fouling	Black smoke, rough idle.
ISC Valve Sticking	Check duty ratio, warm engine, A/C and fans off. Substitution test.
Idle Adjust Screw Mis-Adjusted	Investigate previous repair attempts, look for evidence of mis-adjustment. Substitution test.
Throttle Valve Mis-Adjustment	See August, 1991 Helpline Update for check and adjustment tips.
Vacuum Leak	Look for out of spec. Select Monitor readings. Use propane enrichment to locate.
Fuel Pressure Regulator Malfunction	Fuel pressure should change when vacuum hose is pulled from pressure sensor.
Fuel Injector Leakage	Intermittent hard starting after cold soak, with grey or black smoke upon start-up, condition clears up by itself. Swap test including fuel gallery pipe to confirm.
Air Flow Meter Malfunction	Normal operation is a smooth and gradual voltage drop down to low end of spec. when starting cold engine. Swap with known good one to confirm.
Exhaust Valve Sticking	Vacuum gauge reading fluctuation during occurrence. May happen during start or warm-up. Excessive engine cranking speed (loss of compression).
Water Temp Sensor Output Incorrect	Select Monitor reading is abnormal.
Intake Valve	Isolate with leak down tester. Fuel problems.

Chart 2 Diagnosis and Identification Characteristics (cont'd.)

POSSIBLE CAUSES	DIAGNOSTIC/IDENTIFICATION CHARACTERISTICS
Fuel Pump	Check for electrical signal, operation and pressure.
Crank Angle Sensor Malfunction	Resistance check, hard or no start.
Abnormal Compression	Disconnect injector connector one by one to identify the cylinder. Excessive crank speed, check for mechanical problems, use leak down tester.
Electrical Wiring Poor Connection	"Everything" has been checked or replaced, problem still exists intermittently.
Fuel Problems	Suspect improper winter/summer blend, tank contamination, poor quality
ECU	Perform substitution test with known good unit, confirm by problem transfer using "failed" unit.

CAUTION

VEHICLE SERVICING PERFORMED BY UNTRAINED PERSONS COULD RESULT IN SERIOUS INJURY TO THOSE PERSONS OR TO OTHERS.

Subaru Service Bulletins are intended for use by professional technicians ONLY. They are written to inform those technicians of conditions that may occur in some vehicles, or to provide information that could assist in the proper servicing of the vehicle. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do the job correctly and safely. If a condition is described, DO NOT assume that this Service Bulletin applies to your vehicle, or that your vehicle will have that condition.