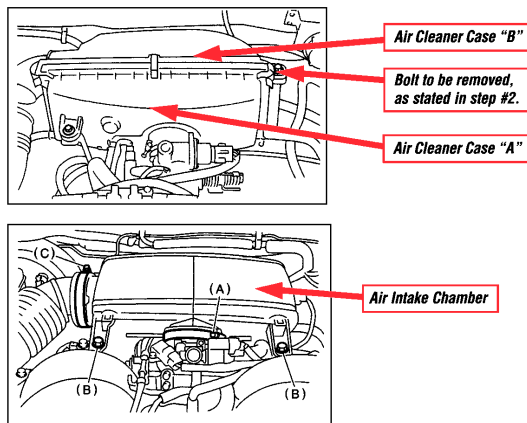


# insider info

## ISC Valve Cleaning

If you encounter a driveability concern such as idle surges or whistling, it may be caused by carbon buildup on the idle speed control (ISC) valve. In these cases, it is not necessary to replace the ISC valve. Cleaning the ISC valve could correct the condition. To clean an ISC valve, perform the following procedure.

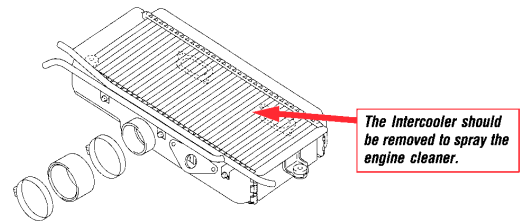
*Note: Refer to the chart for vehicle applicability.*



## Normally Aspirated Engine ISC Cleaning Procedure

1. Warm up the engine.
2. On 2.2 and 2.5L engines only, remove the bolt that attaches the air cleaner case "B" to the bracket. Undo the three clips that hold air cleaner case "B" to air cleaner case "A." Remove the air cleaner case "B" and the air cleaner element and set them aside. (On all 3.0L H6, remove the entire air intake chamber).
3. Start the engine and maintain 1000-1500 rpm.
4. Spray engine cleaner GM Top Engine Cleaner (Part #12345089) or equivalent toward the upper air-stream of the throttle chamber for approximately 10 seconds.
5. Stop the engine and let it sit for three minutes.
6. Restart the engine and maintain 1000-1500 rpm.
7. Spray engine cleaner on the upper air-stream of the throttle chamber for approximately 10 seconds.
8. Turn the engine off.
9. Reinstall the air cleaner element and air cleaner case "B."
10. Operate the engine between 1000-2000 rpm until no white smoke appears from the tailpipe.
11. Turn the ignition switch OFF and clear memory.

## Turbo Engine ISC Cleaning Procedure



1. Warm up the engine.
2. Remove the intercooler and set it aside.
3. Disconnect the mass airflow sensor connector.
4. Cycle the key ON/OFF once (to enter failsafe mode).
5. Start the engine and maintain 1000-1500 rpm.
6. Spray engine cleaner GM Top Engine Cleaner (Part #12345089) or equivalent on the upper air-stream of the throttle chamber for approximately 10 seconds.
7. Stop the engine and let it sit for three minutes.
8. Restart the engine and maintain 1000-1500 rpm.
9. Spray engine cleaner on the upper air-stream of the throttle chamber for approximately 10 seconds.
10. Turn the engine off.
11. Reinstall the intercooler and reconnect the mass airflow sensor connector.
12. Operate the engine between 1000-2000 rpm until no white smoke appears from the tailpipe.
13. Turn the ignition switch OFF and clear memory.

Model Year	Model	Engine Type
1999	Legacy	2.2L California
2000-2001	Legacy	2.5L MT
All	Legacy	3.0L MT
2004	Baja	2.5L Turbo
1999	Impreza	2.2L California
2000-2001	Impreza	2.2L
2002-2004	Impreza	2.0/2.5L Turbo

## H6 Driveability

If you get an H6 Subaru vehicle in the shop with a driveability concern, i.e. hesitation, make certain the owner is using a premium grade fuel (91 octane or higher). With the recent increase in fuel prices, there may be some people who have dropped down a notch or two in octane ratings to save a few pennies. While this is understandable, these vehicles were designed to operate properly



on a premium grade fuel. If the owner says they are using a premium grade fuel, ask them if they tend to buy just one brand. If so, suggest they try another brand to see if engine operation is improved. It will take a few tanks of the different brand of fuel for the engine control module (ECM) to 're-learn' its operating parameters on this different fuel.

If you are able to duplicate the owner's concern, perform a Clear Memory function of the ECM, then road test the vehicle again. If the concern has gone away, then the most likely cause of the problem is the fuel being used in the vehicle at that time.

Another factor to take into consideration is the use of oxygenated or reformulated fuels, known as State Winter Oxygenated Gasoline. Oxygenates are fuel additives (alcohols and ethers) that contain oxygen, which can boost gasoline's octane quality, enhance combustion and reduce exhaust emissions. The term oxygenated gasoline most

commonly refers to the wintertime program that reduces emissions of carbon monoxide (CO) from motor vehicles. Although required by the federal Clean Air Act, winter oxygenated gasoline programs are implemented by the states. For more information on state fuel programs go to: [www.epa.gov/otaq/regs/fuels/oxy-area.pdf](http://www.epa.gov/otaq/regs/fuels/oxy-area.pdf).

### **Rough Idle and Check Engine Light**

A rough engine idle condition may occur when the vehicle's battery is disconnected for less than 30 minutes on some 2001 and later Subaru vehicles, up to and including the 2003 Legacy and Baja. The rough idle condition only affects four cylinder, non-turbo vehicles. 2004 model year vehicles may also be affected.

Clearing the memory with the Select Monitor will correct this condition. Also, the ECU will most likely clear itself if the battery is allowed to remain disconnected for more than 30 minutes.

## Insider Info

### DTC P0507 - Idle Control System RPM Higher Than Expected

If you find yourself diagnosing a DTC P0507 — Idle Control System RPM higher than expected — check to see if the accelerator or cruise control cables are adjusted properly.



### Evaporative Canister Rattle Noise

If you encounter a rattle noise while driving or when closing the rear doors of a 2004 Impreza, the evaporative canister bracket may be rubbing on the right rear tie down hook. Push or bend the canister bracket slightly to the left to increase clearance between the two parts. This can be done by hand in most cases.

### Reading OBD Readiness Codes

Many states are now including an inspection of the OBD system as part of their emissions test procedure. This includes, but may not be limited to, inspection of the MIL or Check Engine Light for proper illumination, operation, and status of the Readiness Codes.

Readiness Codes can be checked with a generic scan tool and the New Select Monitor (NSM). Follow the tree below to access the Readiness Codes with the New Select Monitor:

- Each System Check
- EGI
- OBD System
- 12 Data Display

Any item that is a Readiness Code will have an indicator to the right that tells you whether it is Complete or Incomplete. Complete means that the system has been tested by the onboard diagnostic system. Incomplete means that the system has not been tested. In either case the results of the test are not indicated. No support indicates that this vehicle is not equipped with that system.

A vehicle must have all of the Readiness Codes reading Complete before it can be inspected for proper emissions.

Misfire, Fuel System and Component Monitoring are continuously checked and will change from Incomplete to Complete while the ignition is turned from off to on.

The Readiness Codes will all indicate incomplete after the memory of an ECM has been cleared.

Follow the steps below to activate the Readiness Codes to complete:

- 1996 models: Connect the Test Mode (inspection mode connector) and drive on a flat road (highway) at approximately 50 to 55 mph for 20 to 30 minutes.
- 1997 and later: Drive on flat road (highway) at approximately 50 to 55 mph for 30 minutes for warm-up. Then perform 10 minutes at steady speed (without any throttle angle change) at 50-60 mph.

### OBD II Cylinder Misfire Codes

If you encounter cylinder misfire codes on Subaru vehicles equipped with the OBD II system, check the past service history to see if the vehicle's fuel filter was recently changed.

There is a short period of time when the vehicle is first started, after the filter has been changed, when the cylinders may not get the fuel charge they should. This may translate into a slight cylinders misfire, which is enough to trigger a misfire DTC.

If the fuel filter was changed recently, clear the codes and test drive the vehicle. Chances are good that the codes will not return if the filter change was the cause of the problem.



### Legacy and Impreza Engines with No Injection Pulse #1 Cylinder

Built into the fuel injection control unit is logic that will shut off the #1 injector if the computer believes that it can no longer control the Idle Air Control valve. Remember this while trying to diagnose a "hard" code for the Idle Air Control Valve or a dead miss in number one cylinder due to no injection at idle. A problem in the Idle Air Control valve circuit can be responsible. (Component testing shows that it is usually not the valve itself.)

Another unusual computer response is if the computer is deprived of its "back up power supply." If deprived of this power, some computers will generate a false code for the Idle Air Control valve and kill the injector for cylinder #1. The pin location of this power supply can be found in the Control Unit Module I/O Signal pages of the appropriate service manual. ■