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## XJS and XJ6 Fuel Tanks

The twin fuel tank setup on fuel injected 1979-1987 Series III XJ6 cars is occasionally the source of problems, especially now that most of these cars are more than 15 years old. This model has a fuel tank changeover switch on the dash above the console that selects which tank is in use. If this switch does not change tanks properly, first pop the switch out to check that the 6-pin connector has not overheated and melted due to a poor connection. These connectors are not available new at this time and have to be robbed from a used harness if needed. If any corrosion is present at the connection, it is a wise move to clean this off. The switch itself will sometimes go bad, but these are not a major problem.

The operation of the Series III fuel changeover system is a bit more complicated than it might first appear. Like almost all fuel injection systems, the fuel pump sends sufficient fuel from the tank to satisfy engine demand under extended wide-open throttle. In normal operation, unused fuel is returned to the tank. On the Series III Jaguar, the changeover system is designed to return the fuel to the tank from which it originally was drawn. There are three valves involved in this: a main changeover valve in the trunk, which selects from which tank fuel is drawn, and two fuel return valves, which open and close in concert to return fuel to the proper tank. Suppose that one is operating from the LH fuel tank. The changeover valve will be set to pull fuel from the LH tank, the LH return valve will be open, and the RH return valve will be closed. If the dash switch is operated to select the other tank, the changeover valve will switch to pull fuel from the RH tank, and the RH return valve will open and the LH return valve will close. If the return valves are not operating properly, fuel can be cross-pumped into the incorrect tank, often resulting in fuel leakage as that tank becomes overfilled. Improper operation is also indicated if a tank suddenly has more fuel in it after driving than it did before.

Return valve operation is easily checked from outside the car. With the engine idling, open each fuel cap and using a flashlight and something like a long bladed screwdriver (to push open the spring-loaded lower flap) one can see the return fuel flow into the tank since the return fuel pipe is just below the tank's filler neck. At idle, there should be a solid flow of fuel returning to the tank selected and no fuel flow at all into the other tank. Operate the changeover switch and recheck the return flows. The fuel should now be returning to the newly-selected tank only. If the fuel is returning into both tanks or into the wrong tank, there is a problem with one or both of the fuel return valves. Sometimes return valve non-operation is due to varnish or similar trash and cleaning will restore the valve to function; sometimes the valve simply will be dead and require replacement.

A common problem on the 1988-1994 XJ6, which is also referred to as the XJ40, is water in the fuel tank. This model's fuel filler is located under an unsealed cover on the top of the left rear fender. Surrounding the filler neck is a rubber drain cup, with a small hole connecting to a tube which drains away any water collecting in the rubber cup. It is very common for the rubber cup's drain hole to become clogged by trash and debris, allowing water to stand in the drain cup. If the water level in the cup consistently stands above the level of the fuel cap, water will eventually make its way past the fuel cap seal into the fuel tank and cause a no-start condition. This will require draining the fuel tank, replacing the fuel filter, and purging the fuel lines of water to correct the no-start condition. The moral of this story: keep the rubber cup's drain hole clear. This is something that should be checked at every fuel stop! The drain hole is approximately 3/32 of an inch in diameter and, looking down on the filler cap and assuming 12 o'clock is toward the front of the car, is located at the 7 o'clock position.

Fuel tank leakage due to rust is an all-too-common occurrence on both the Series I-III and XJ-S cars and there isn't an easy way to prevent this from happening. On the XJ-S models it can be caused by rust around the rear window allowing water to enter the trunk area and to saturate the insulating pad beneath the fuel tank, causing it to rust. While repairing rear window rust is neither easy nor cheap, it will always be cheaper than repairing the rust and replacing the tank!

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