LAB – Fuel System Service

Students: 1. _____
2. _____
3. _____

Fill in each box with the appropriate information.
Be sure to have the Instructor's initials before moving on to the next step. These are there to ensure everything is SAFE and CORRECT. Each team member must be able to answer questions from your instructor to receive credit for this lab.

LAB CREDITS			
ALL VEHICLES:		**1 LAB**	
VEHICLE IDENTIFICATION			
Year:		Make:	
Model:		Mileage:	

The Fuel System is a system that is worth inspecting and maintaining to make sure there are no problems. Proper maintenance can save you money by reducing the chance of "break down."

SYSTEM IDENTIICATION

CIRCLE the Type of FUEL:

Gasoline Diesel Propane (LPG) Natural Gas (CNG) _____

CIRCLE the Type of FUEL DELIVERY:

Carburetor Throttle Body Fuel Injection Port Fuel Injection

Mixer (LPG, CNG) Direct-Injection (Diesel, some gas)

STOP! ***INSTRUCTOR'S INITALS:***

FUEL CAP AND FILLER

Where is the Gas Cap located?

Inspect the Gas Cap Seal – it should be a reasonably soft rubber to seal vapours in. A leaky Gas Cap seal is a common cause of Check Engine Light. How does it look?

Inspect the Fuel Filler Neck (tube) if it can be seen – on some vehicles road debris (kick-up from the tires) can corrode this tube and cause a fuel or vapour leak. How does it look?

Continue…

FUEL TANK

I've had metal tanks rust through from the *OUTSIDE* and leak

I've had metal tanks rust through from the *INSIDE* and leak

I've seen plastic tanks *SPLIT* and leak

Fuel Tanks are usually located somewhere near the rear of the vehicle. They are made of either METAL, or PLASTIC.

WHERE is your fuel tank located?

WHAT is your fuel tank made of?

DESCRIBE the condition it is in:

FUEL LINES AND CONNECTIONS

I've had fuel lines rust through and leak

I've had connections lose their seal and leak

Fuel lines usually go along the frame under the vehicle. They are not allowed inside the passenger compartment.

Fuel Lines are usually about 8-10mm in diameter. There will be ONE "feed" line from the tank to the motor. There *MAY* be one smaller "return line" from the motor back to the tank. There WILL be one small "vapour" line from the tank to the motor. DO NOT confuse these lines with even smaller BRAKE lines.

LOOK especially for rust and corrosion if they are metal, or abrasions or cracks if they are plastic – any potential "leak" is also potential for "FIRE!"

DESCRIBE the condition are the Fuel Lines (all):

There are usually CONNECTIONS for these lines at all the components (tank, filter, engine). There should be ZERO leaks at connections.

NOTE any LEAKS you found:

STOP! ***INSTRUCTOR'S INITALS:***

AIR FILTER REPLACEMENT

The Air Filter is one of the last remaining components you can regularly maintain the automobile. They are usually under the hood and connected to the INTAKE SYSTEM of the engine.

WHERE is your air filter located (be descriptive):

There are usually CLIPS, or WINGNUTS, or SCREW CLAMPS that hold the air filter ON, or IN a container or holder.

NOTE the way the Air Filter is installed!

REMOVE the Air Filter and show your instructor

STOP! ***INSTRUCTOR'S INITALS:***

MOST air filters use a paper filter element. You can put a trouble light on one side of the filter, and see if you can see light through the paper. If you can, the filter is still "good." I replace filters once a year, whether I need it or not.

COTTON element filters (like K&N) can be washed and then oiled with a special oil

CLEAN the air filter housing of any dirt, dust, debris, mouse nests, whatever – let NONE of it fall into the engine!

INSTALL the new air filter, **THE CORRECT WAY AROUND** and secure correctly

Dirty filters on a carb'd engine will *LOSE FUEL ECONOMY!*

The dirt is acting like a CHOKE

Dirty filters on an EFI engine will *LOSE POWER!*

The computer MATCHES the fuel to the air

STOP! ***INSTRUCTOR'S INITALS:***

FUEL FILTER REPLACEMENT

Fewer and fewer cars today have an easily replaceable fuel filter. If that is your vehicle, inform your instructor to be allowed to skip this section.

FUEL PUMPS are cooled by the fuel IN THE TANK, and FLOWING THROUGH the pump

WHERE is the Fuel Filter located on this vehicle?

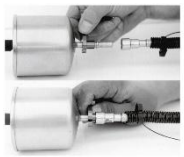
If you want the pump to LAST, change the filter every year

There are many types of connections to Fuel Filters. Some require special tools.

CIRCLE the type of connection does this vehicle has:

Uses Hose Clamps

Uses Flare Fittings
(use TWO FLARE NUT WRENCHES)



Uses Disconnect Tools

If you do not have a replaceable filter, I recommend replacing the pump every ten years….

…changing it in my driveway is a lot more convenient at the top of the Coquihalla in the dead of winter

> ***DO THIS: With the engine running, pull the Fuel Pump FUSE or RELAY – this will make the engine burn off the fuel in the fuel lines and then quit running***

WEAR SURGICAL GLOVES – FUEL IS <u>NOT</u> GOOD FOR YOUR SKIN AND YOU WILL SMELL LIKE FUEL FOR THE REST OF THE DAY

DISCONNECT and remove the Fuel Filter (ask for a demo?), and SHOW IT your INSTRUCTOR

STOP!	***INSTRUCTOR'S INITALS:***	

INSTALL the new fuel filter. Use the appropriate tools!

START the ENGINE and make sure there are *ZERO LEAKS!*

STOP!	***INSTRUCTOR'S INITALS:***	

