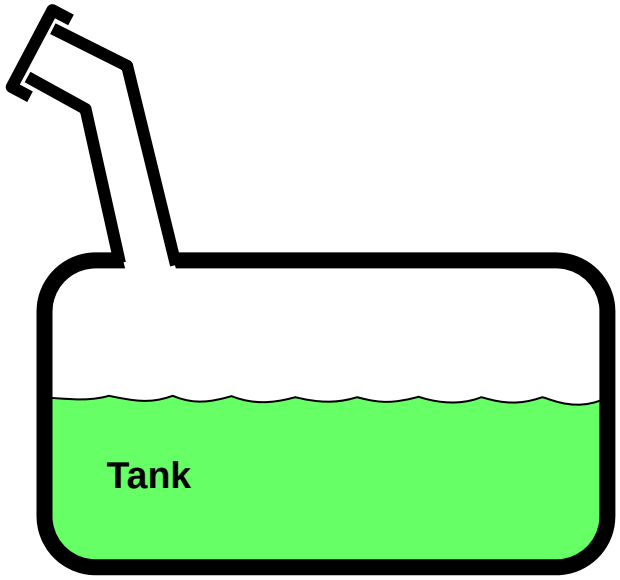
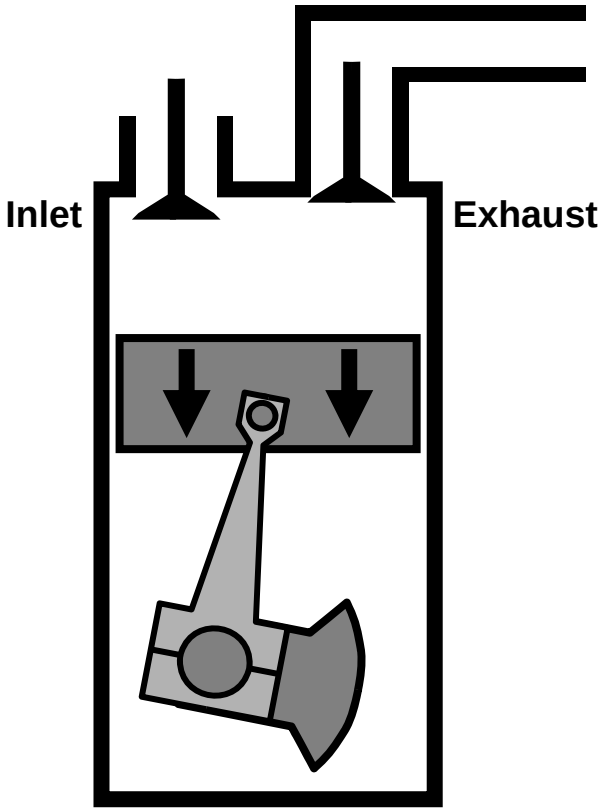
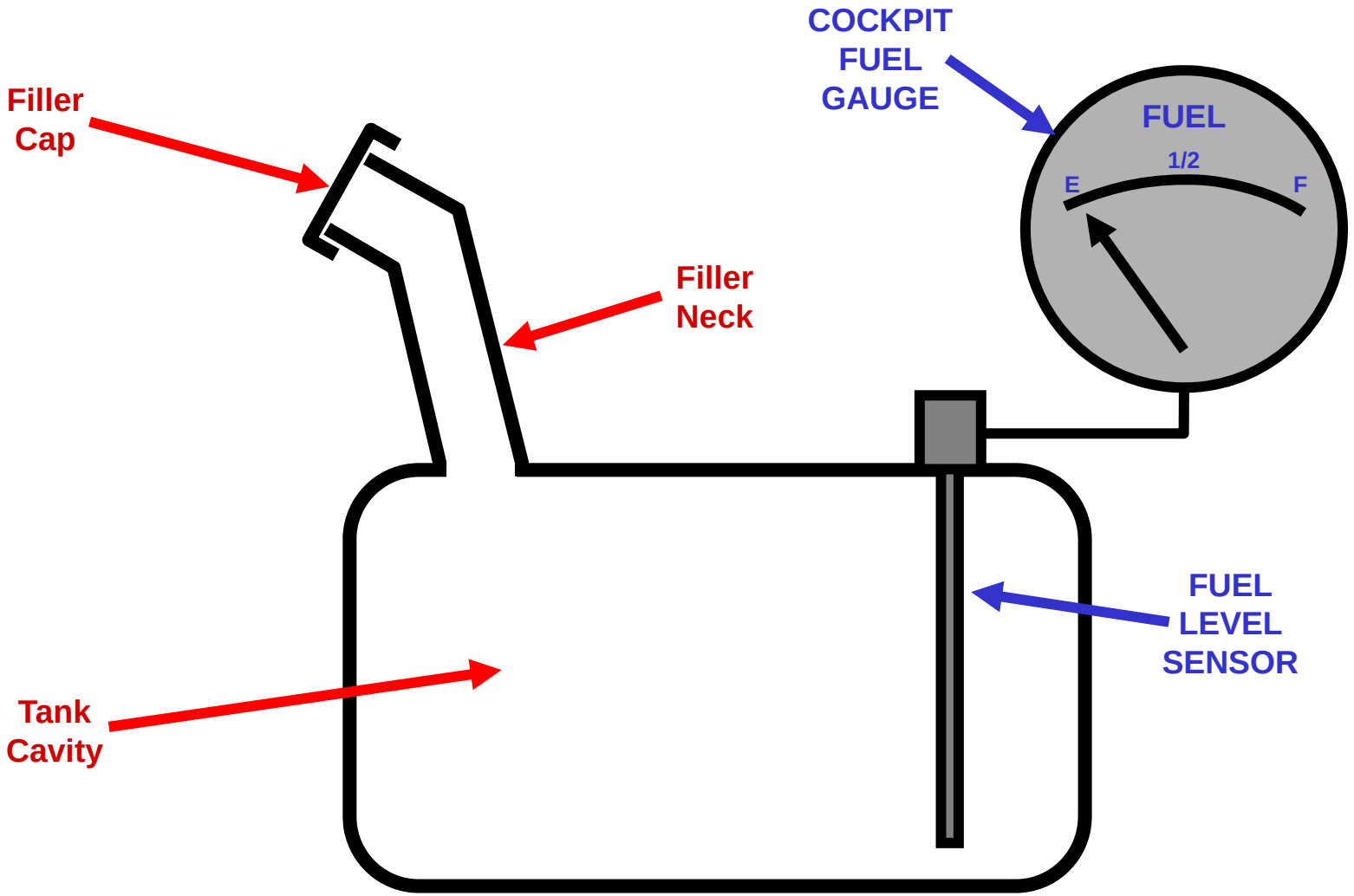
Simple Carburettor Fuel System for a Piston Engine

And how it works

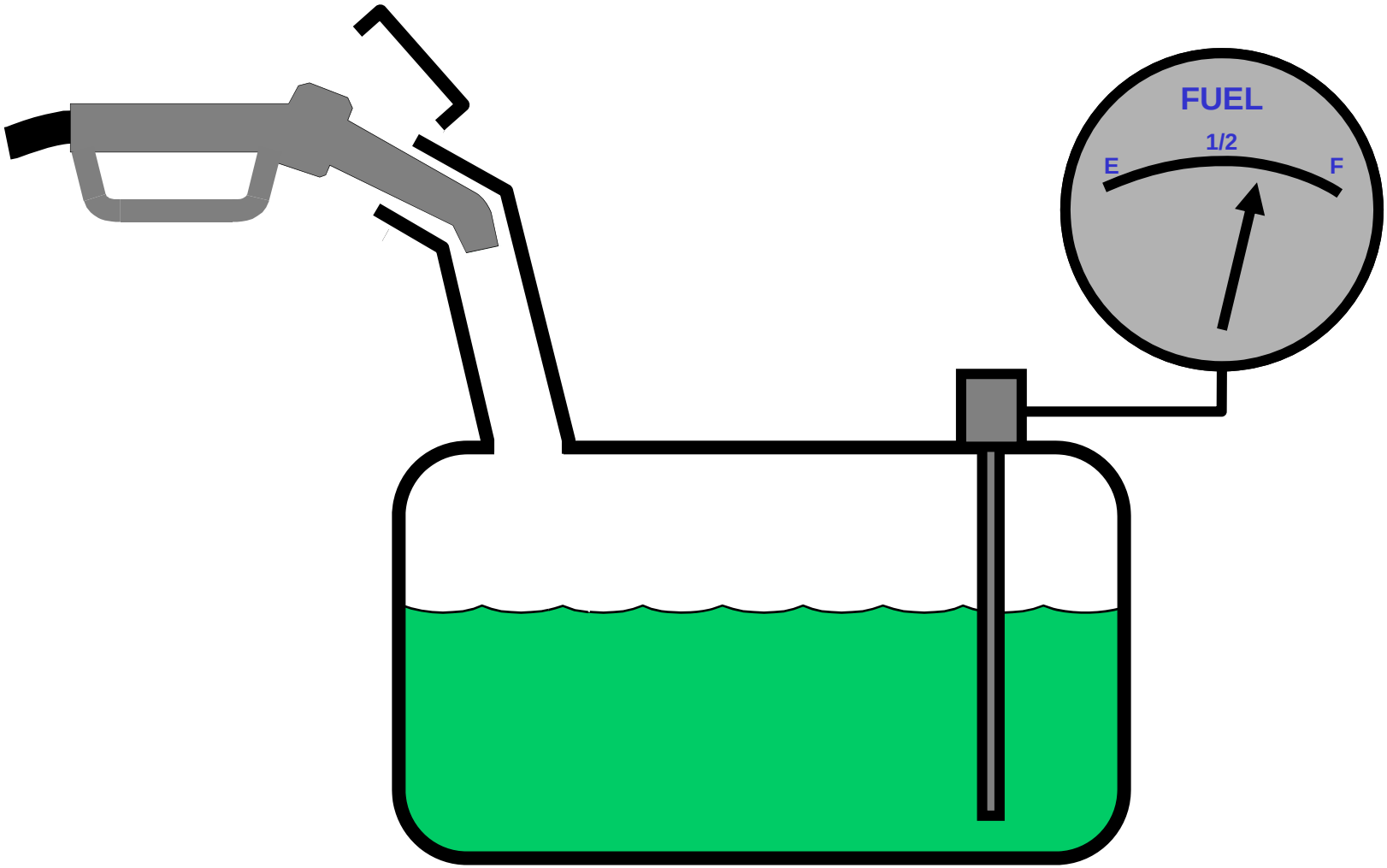




PISTON ENGINE – Carburettor Fuel System

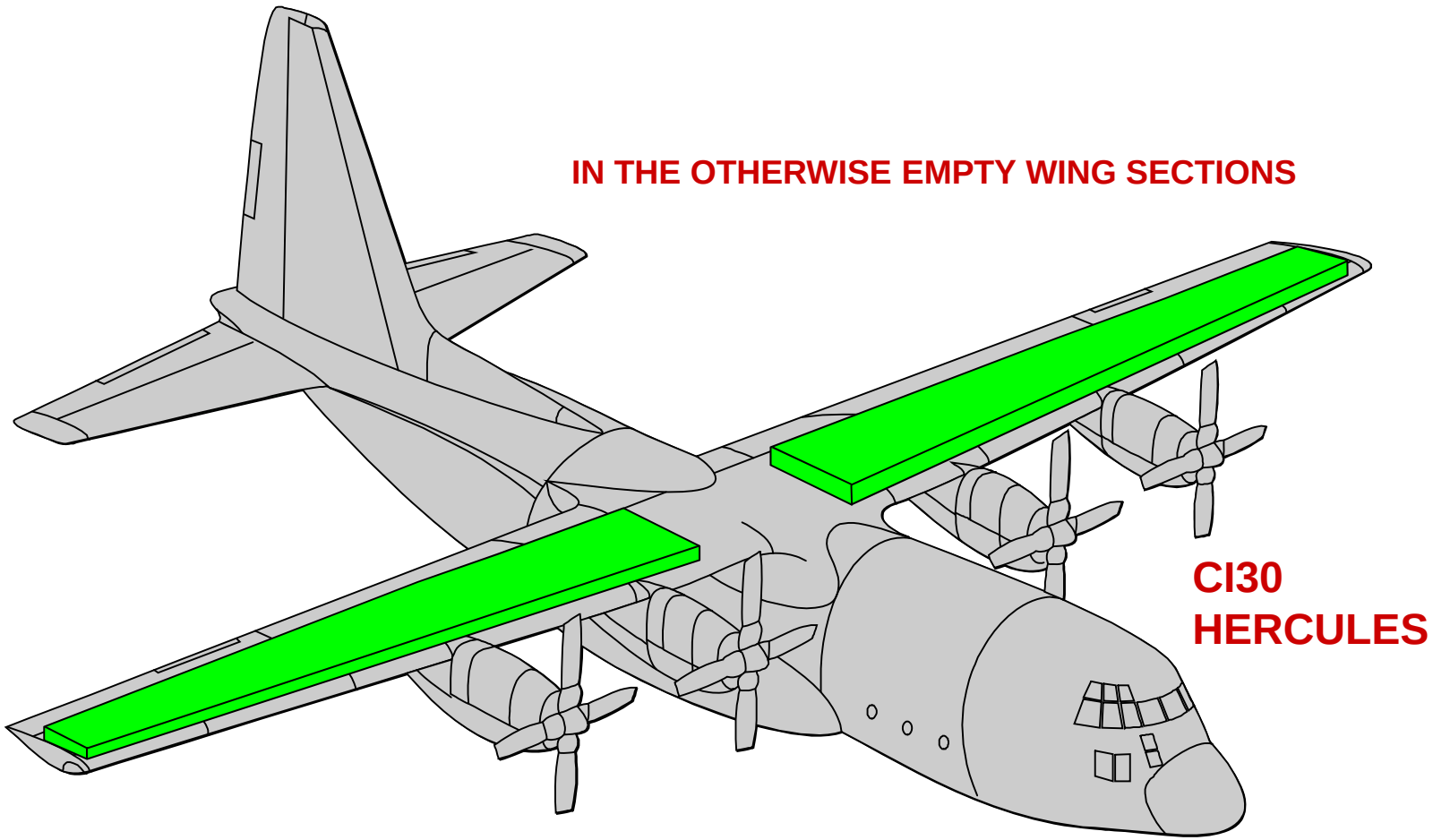


PISTON ENGINE – Carburettor Fuel System - Tanks

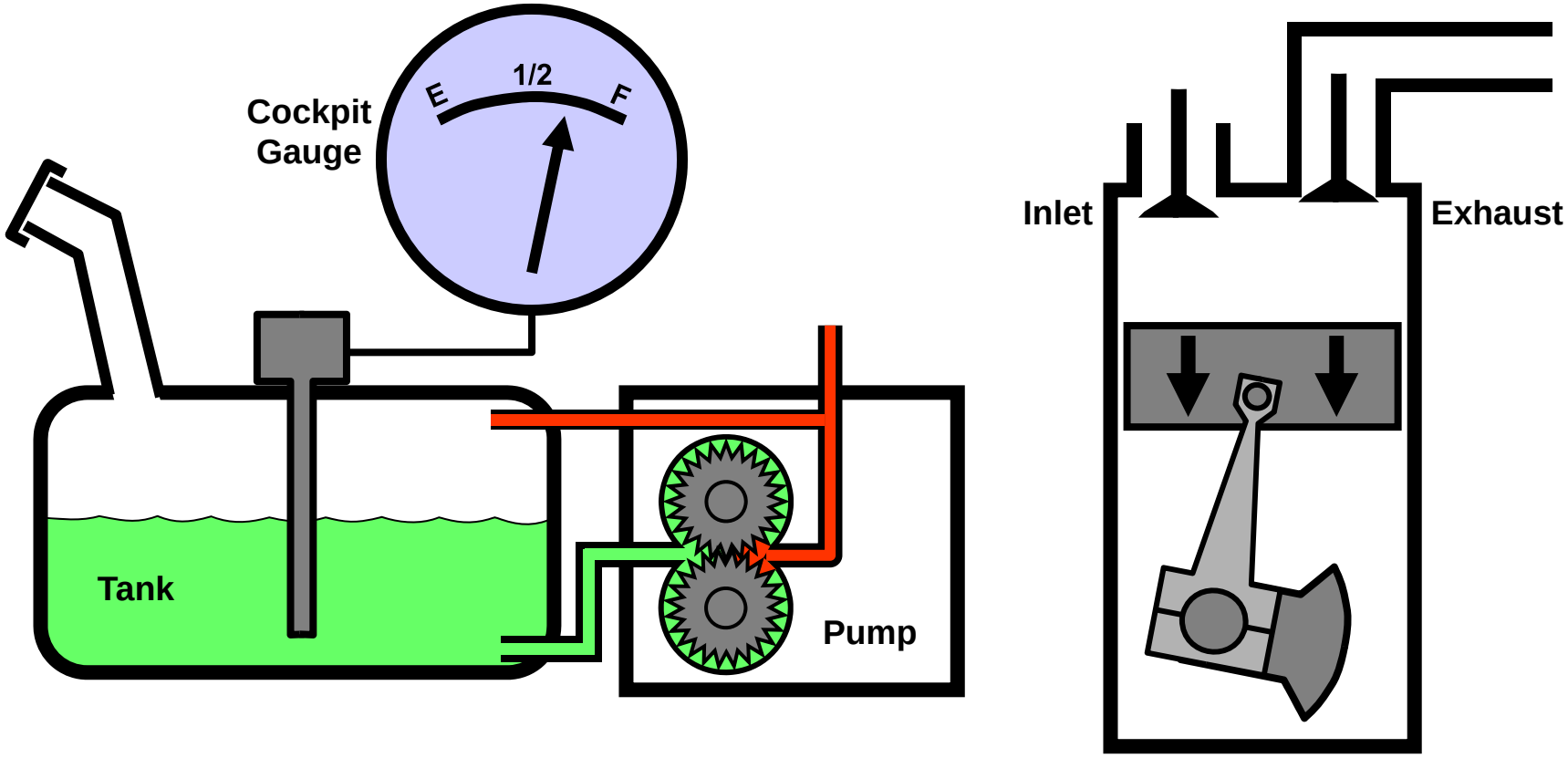


PISTON ENGINE – Carburettor Fuel System - Tanks

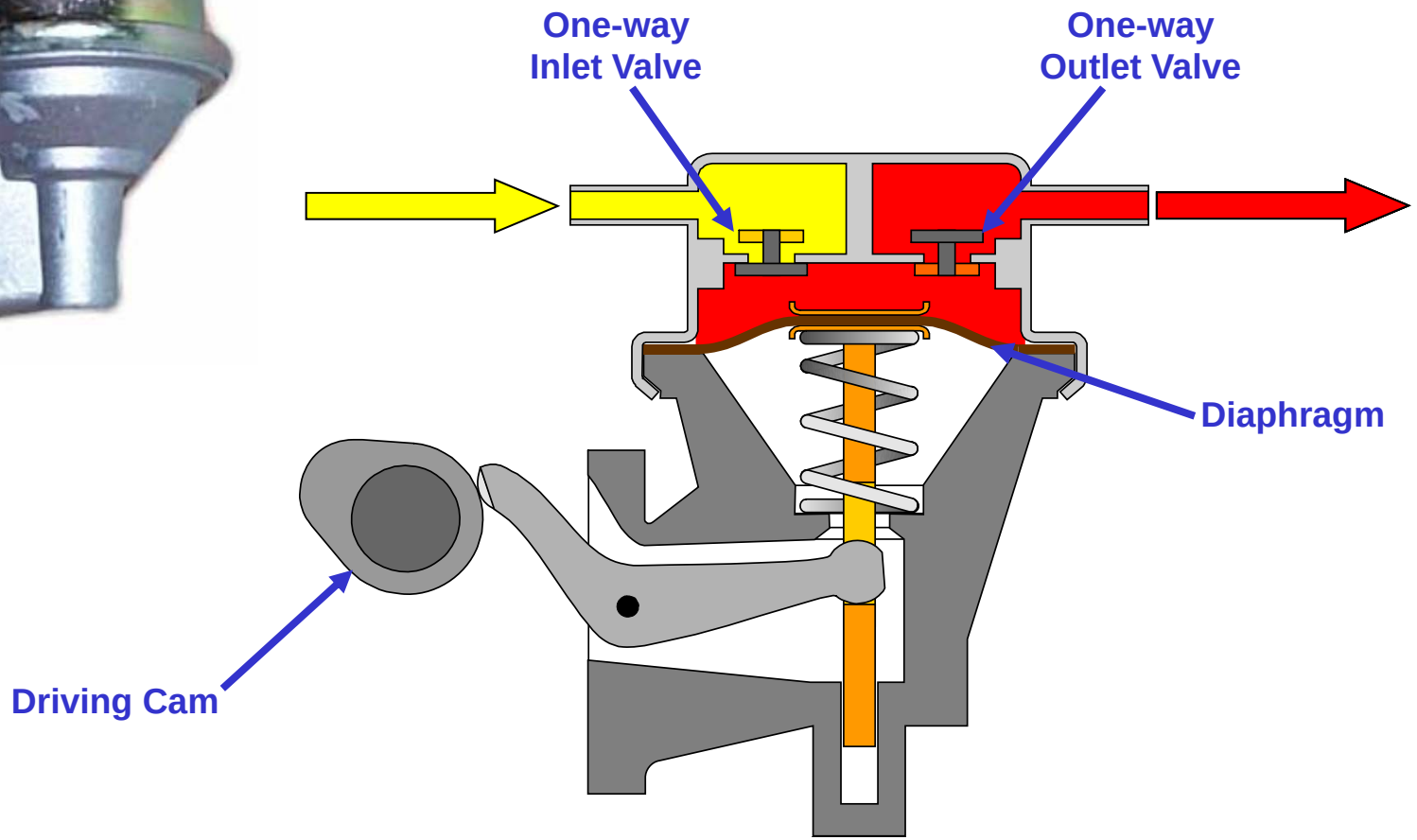
WHERE ARE THE FUEL TANKS IN AIRCRAFT?



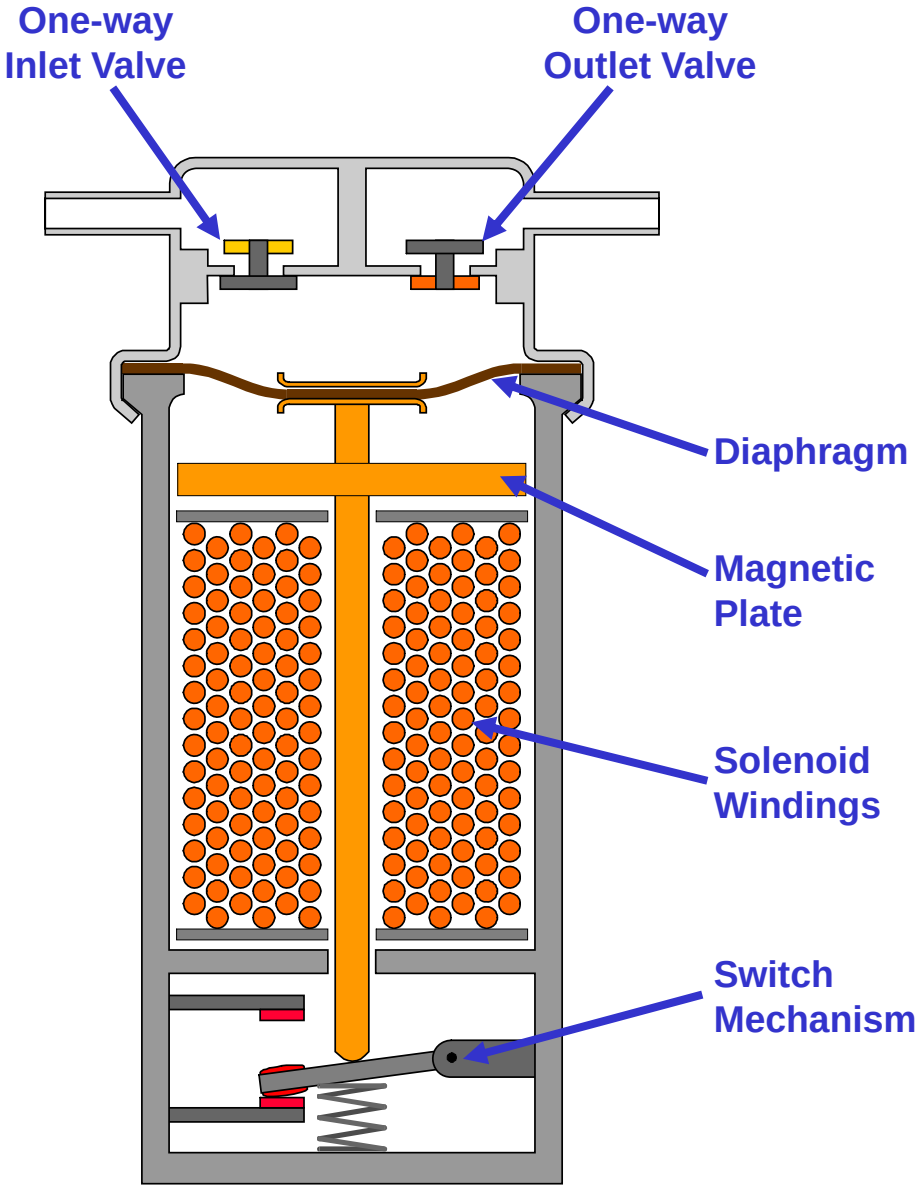
PISTON ENGINE – Carburettor Fuel System - Aircraft Tanks



PISTON ENGINE – Carburettor Fuel System

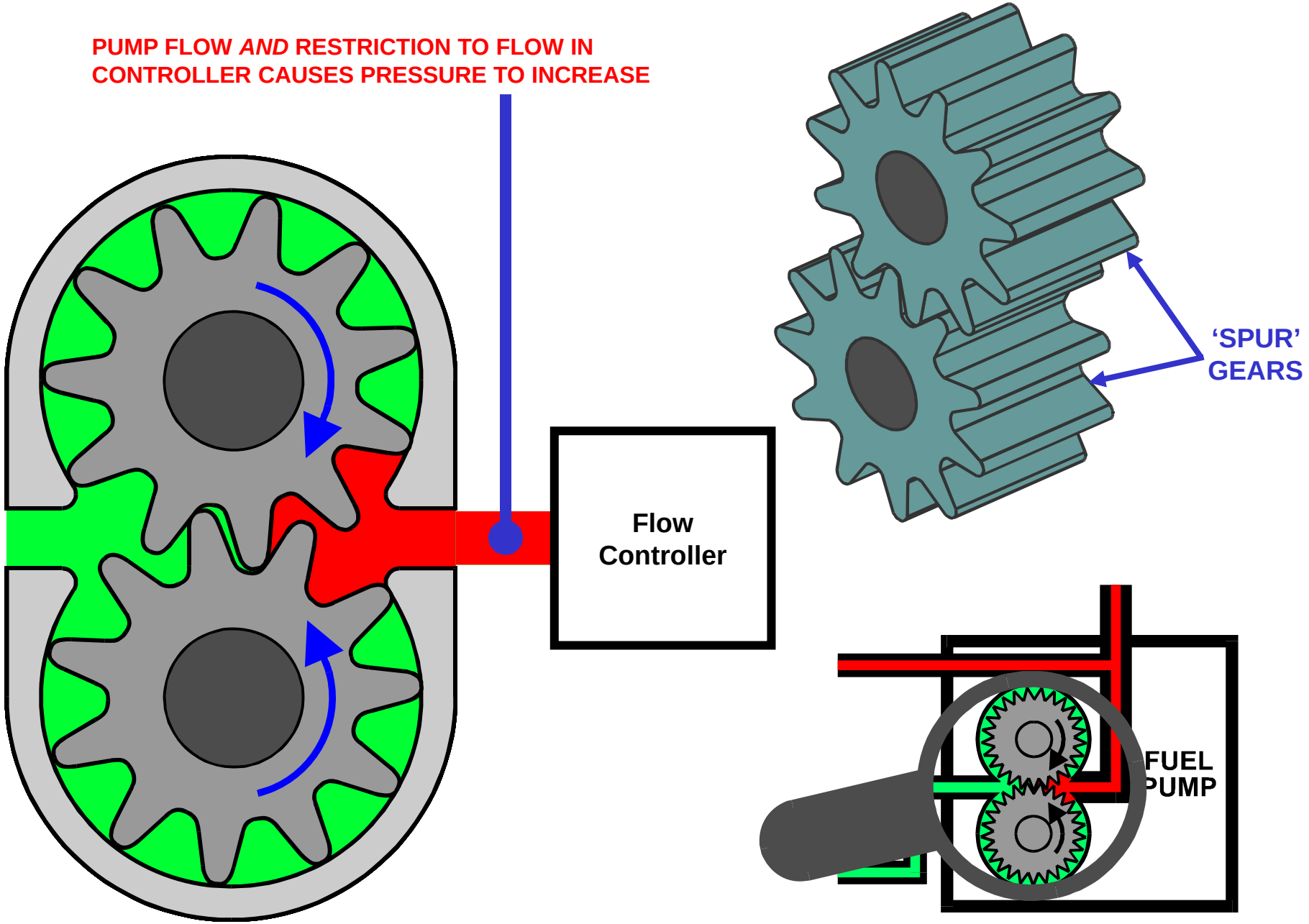


PISTON ENGINE – Mechanical Diaphragm Pump

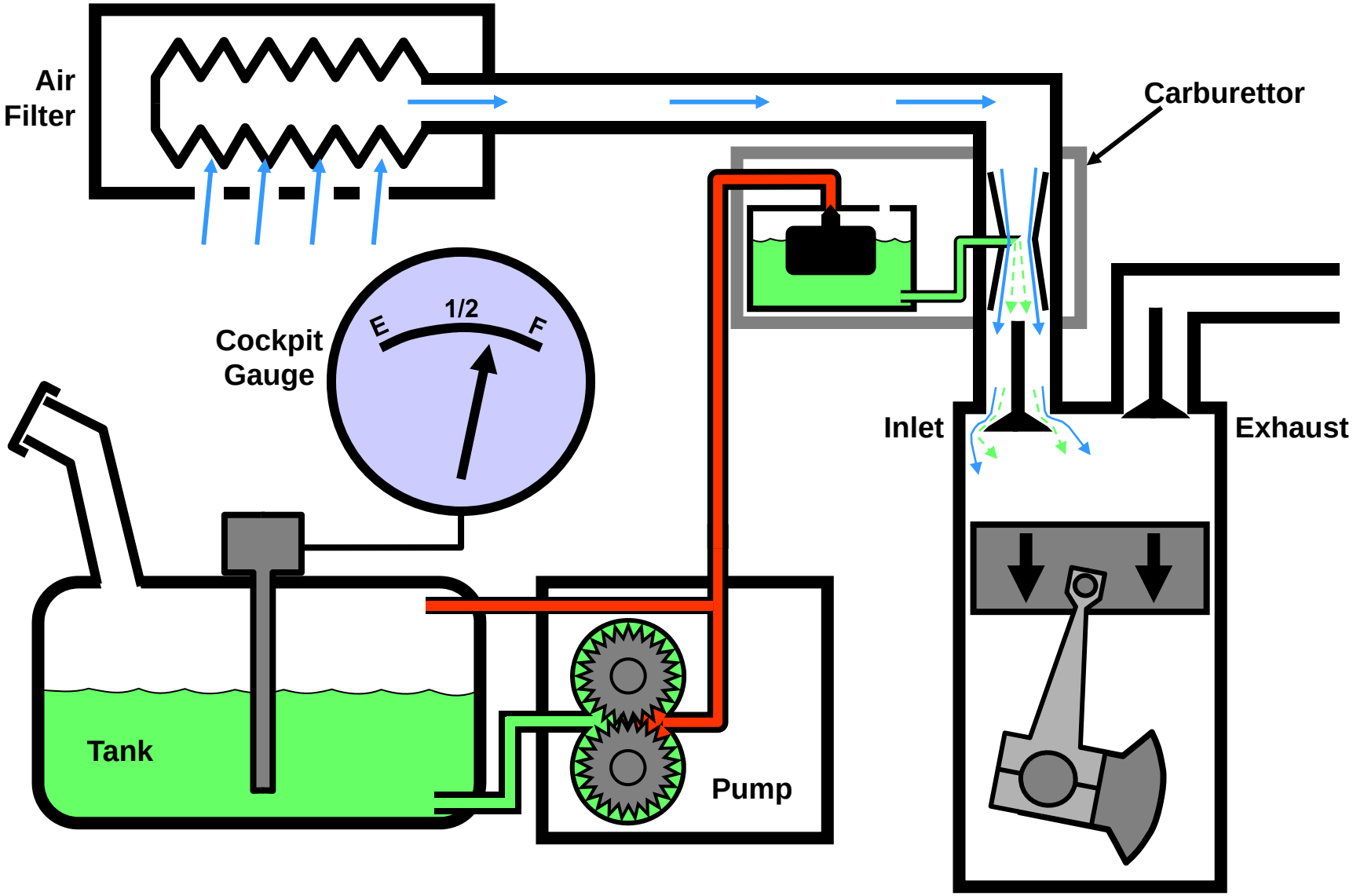


PISTON ENGINE – Solenoid Diaphragm Pump

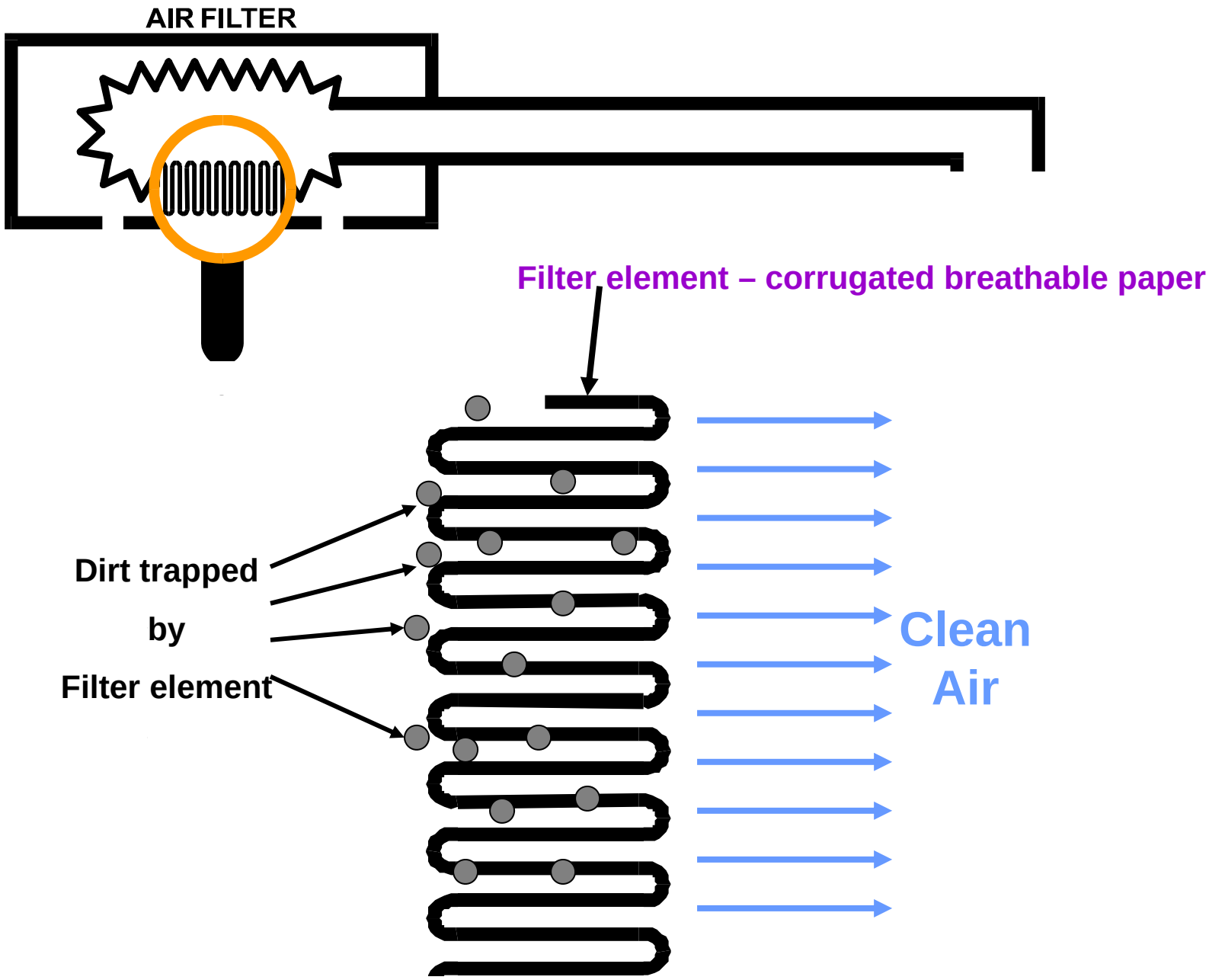
PUMP FLOW *AND* RESTRICTION TO FLOW IN
CONTROLLER CAUSES PRESSURE TO INCREASE



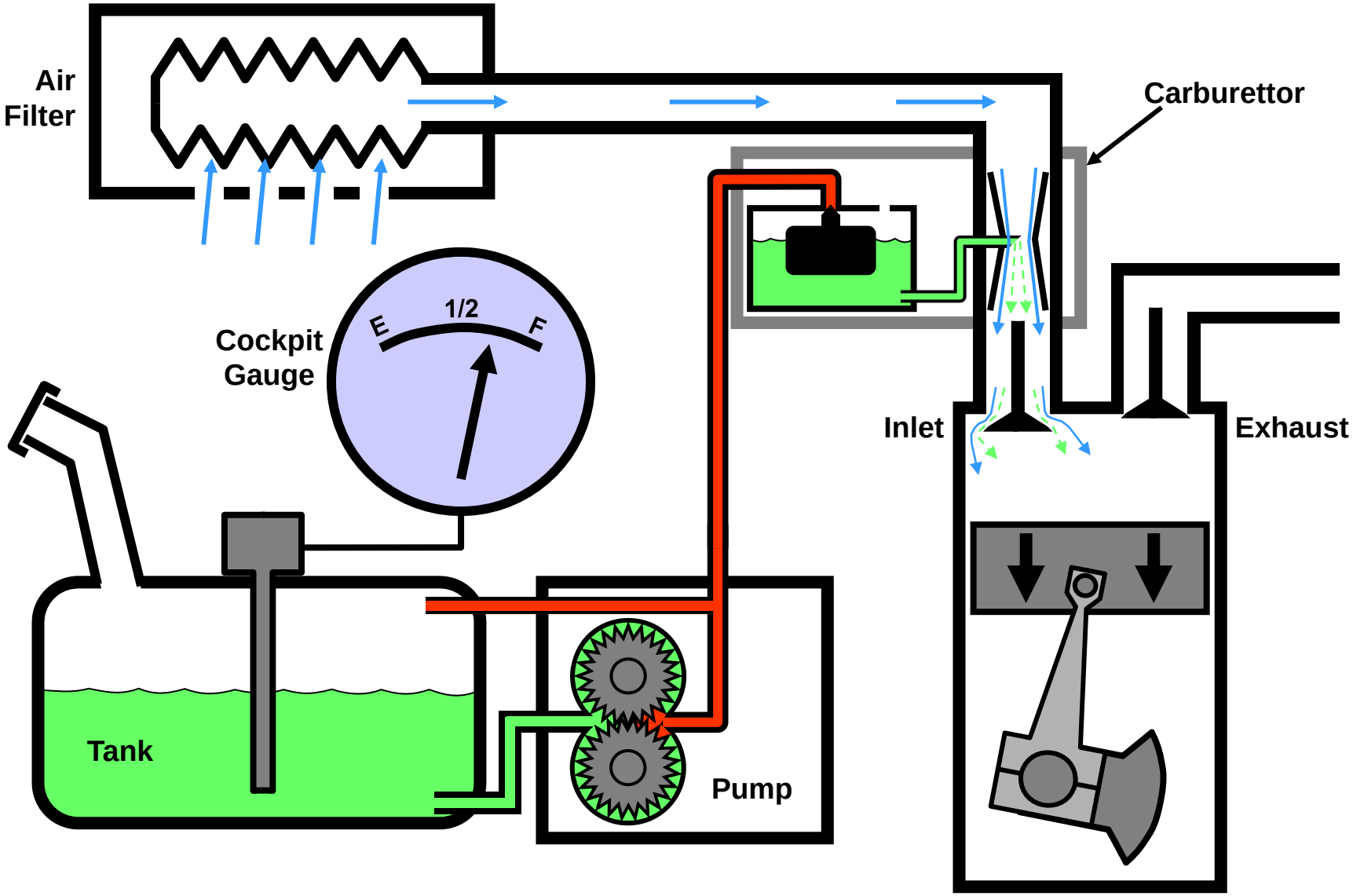
PISTON ENGINE – Gear Type Pump



PISTON ENGINE – Carburettor Fuel System



PISTON ENGINE – Air Filter

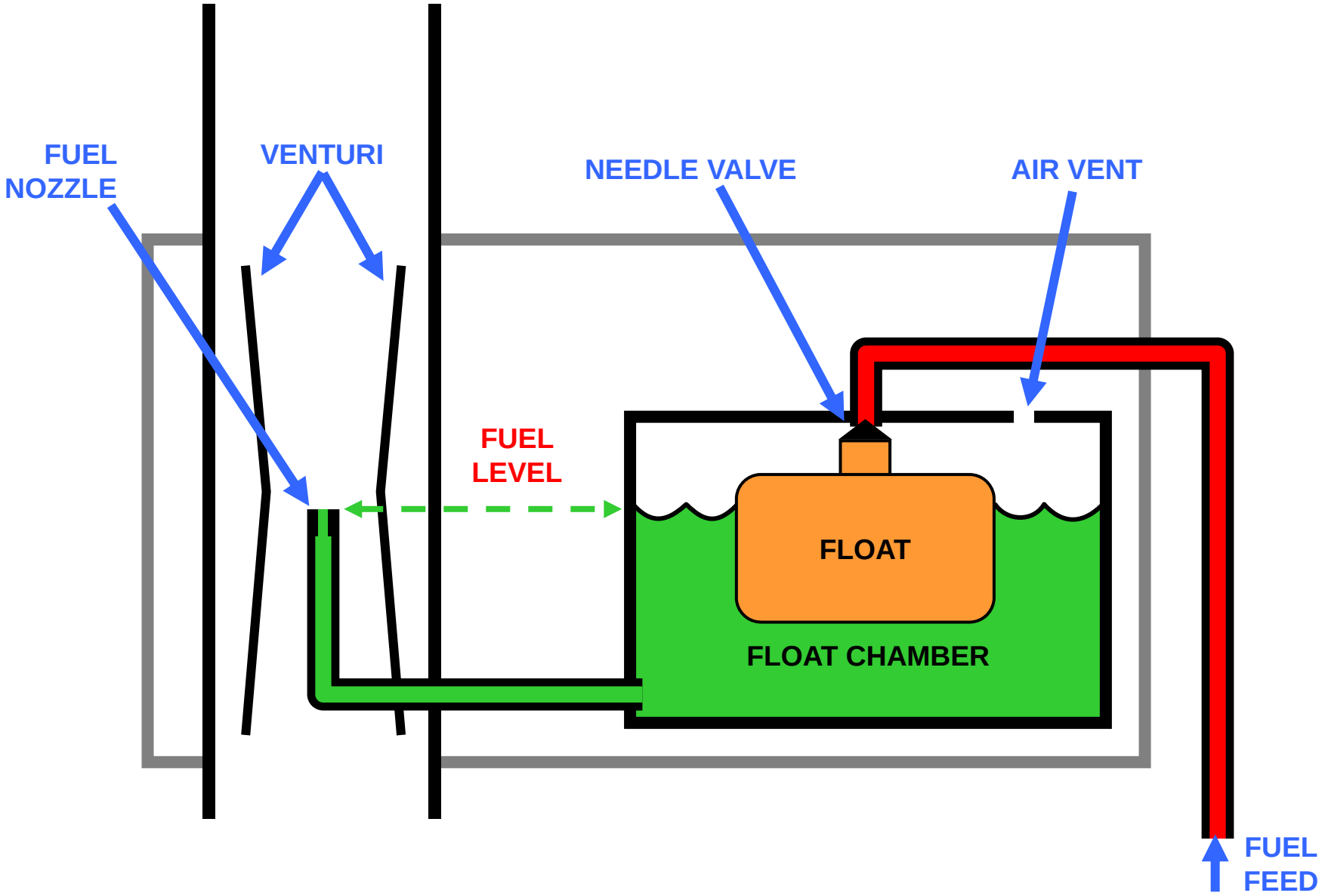


PISTON ENGINE – Carburettor Fuel System

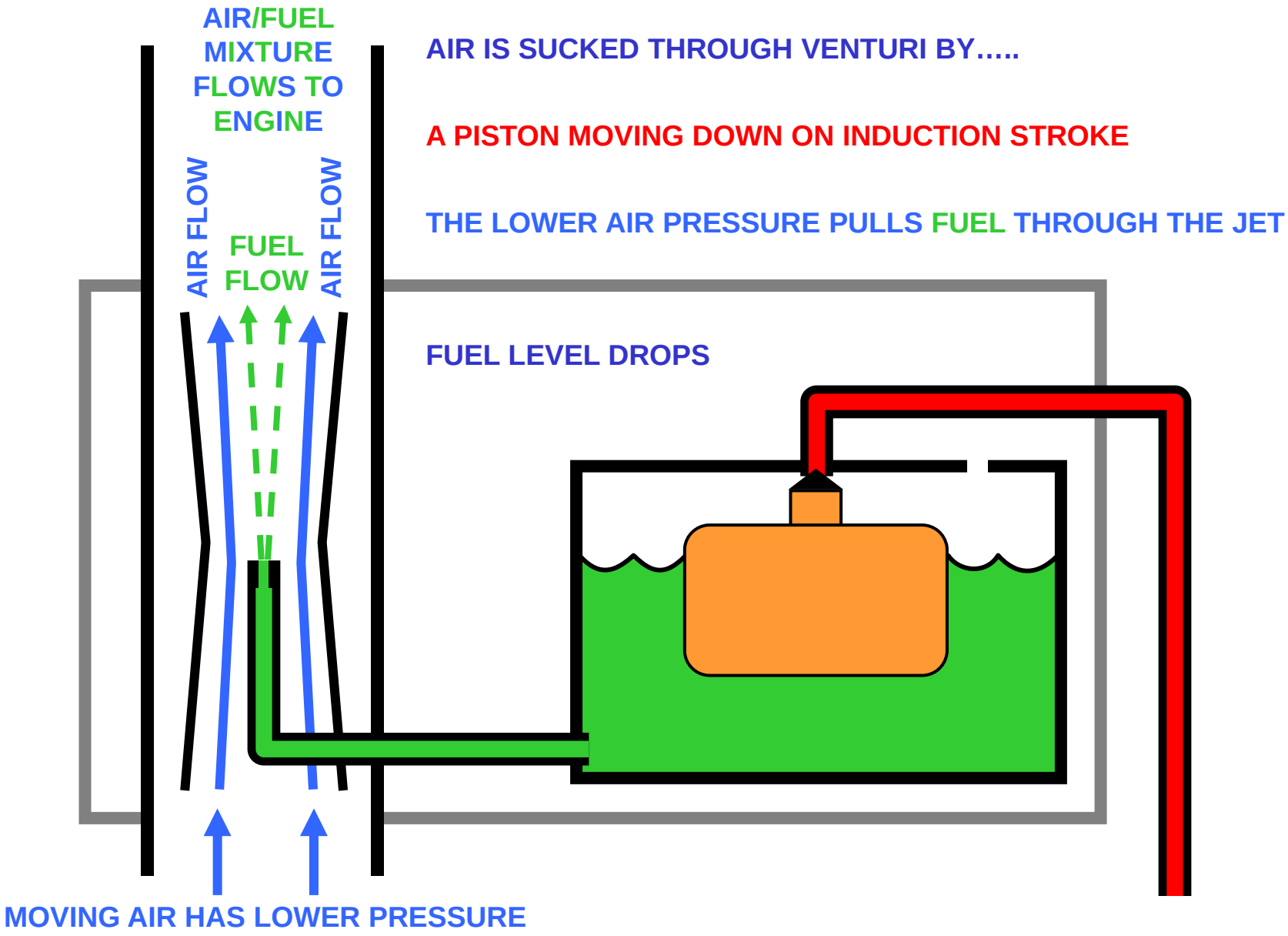
We are now going to look at how the carburettor controls the flow to the engine

This is done by the: -

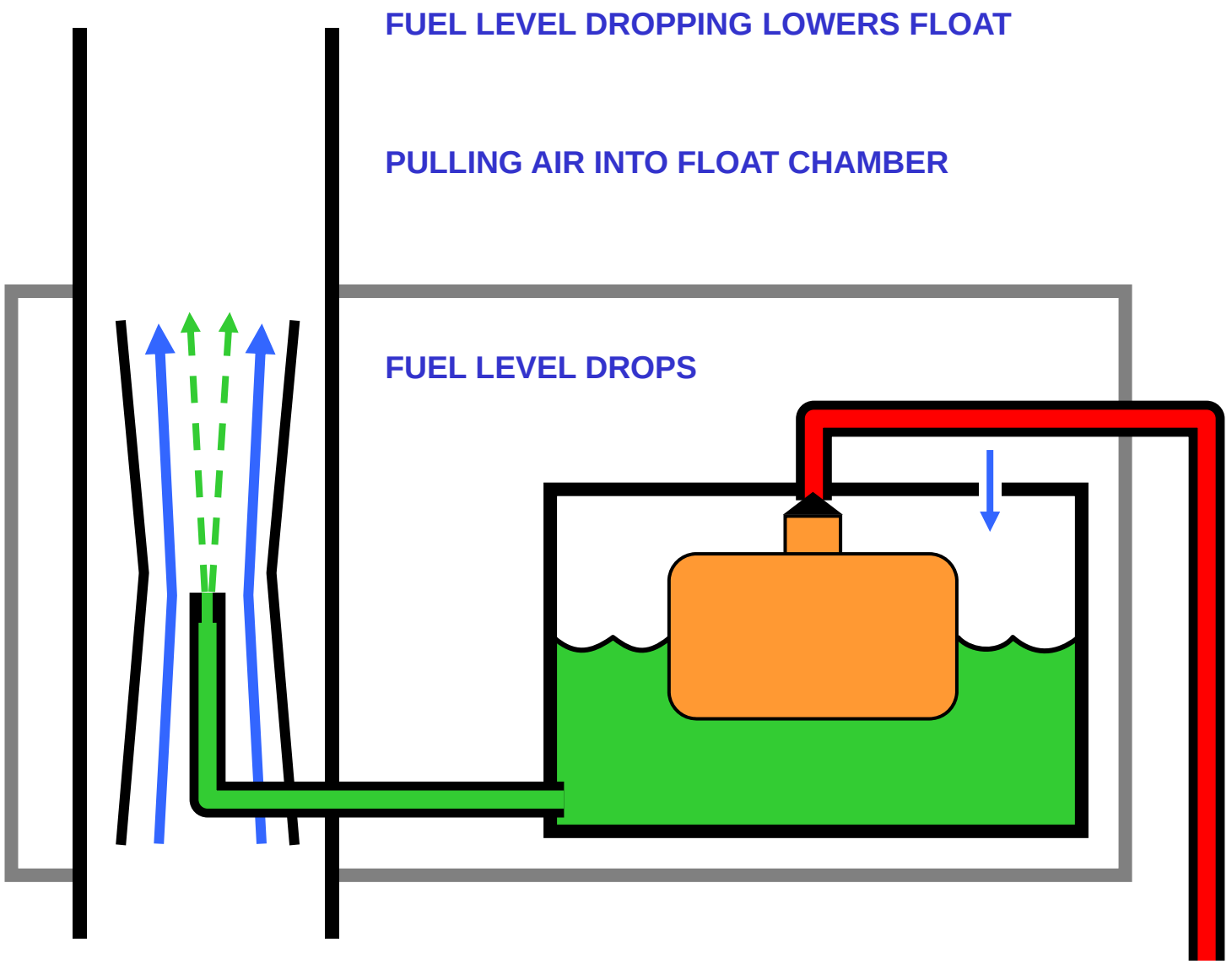
THE FLOAT CHAMBER



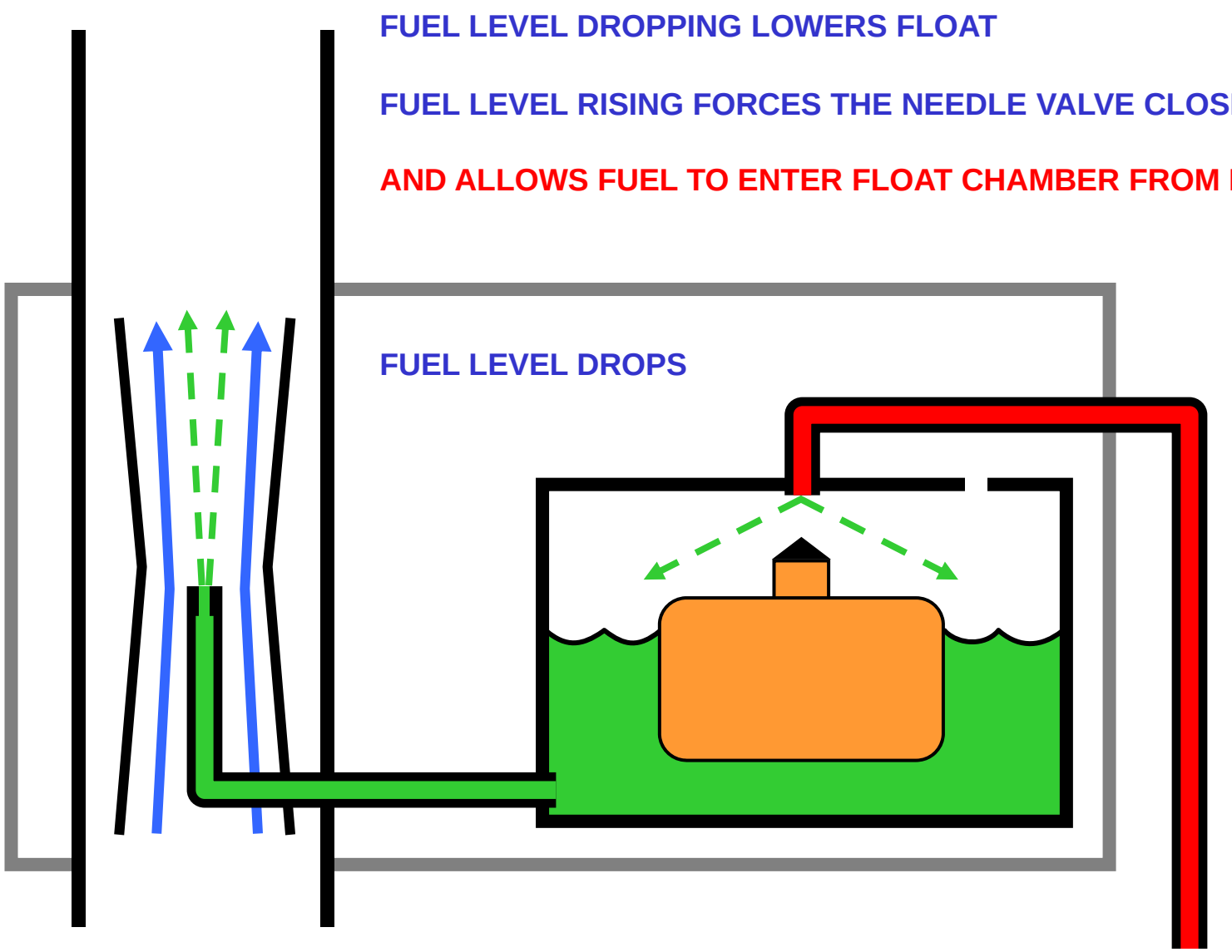
SIMPLIFIED PISTON ENGINE FUEL SYSTEM



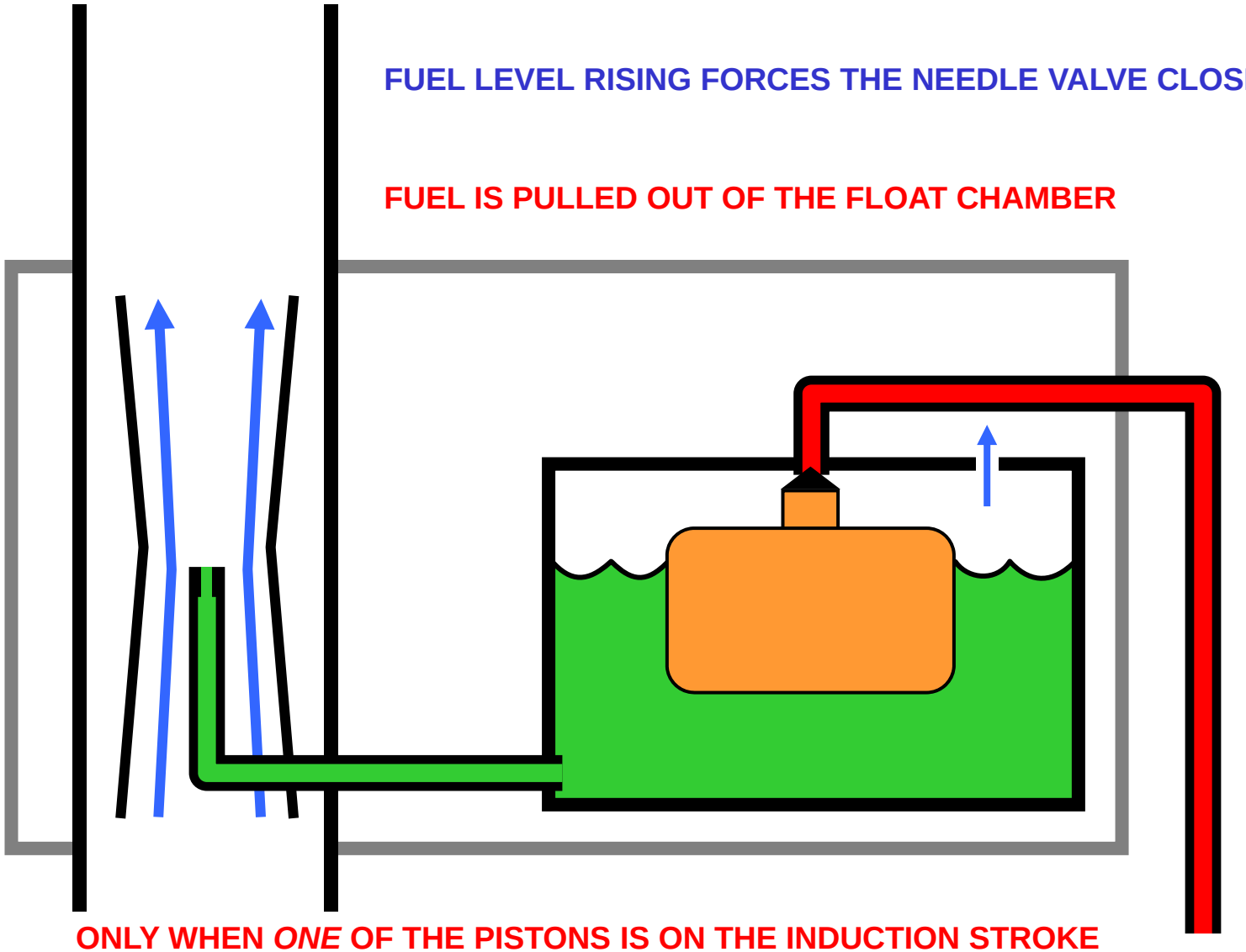
SIMPLIFIED PISTON ENGINE FUEL SYSTEM



SIMPLIFIED PISTON ENGINE FUEL SYSTEM



SIMPLIFIED PISTON ENGINE FUEL SYSTEM



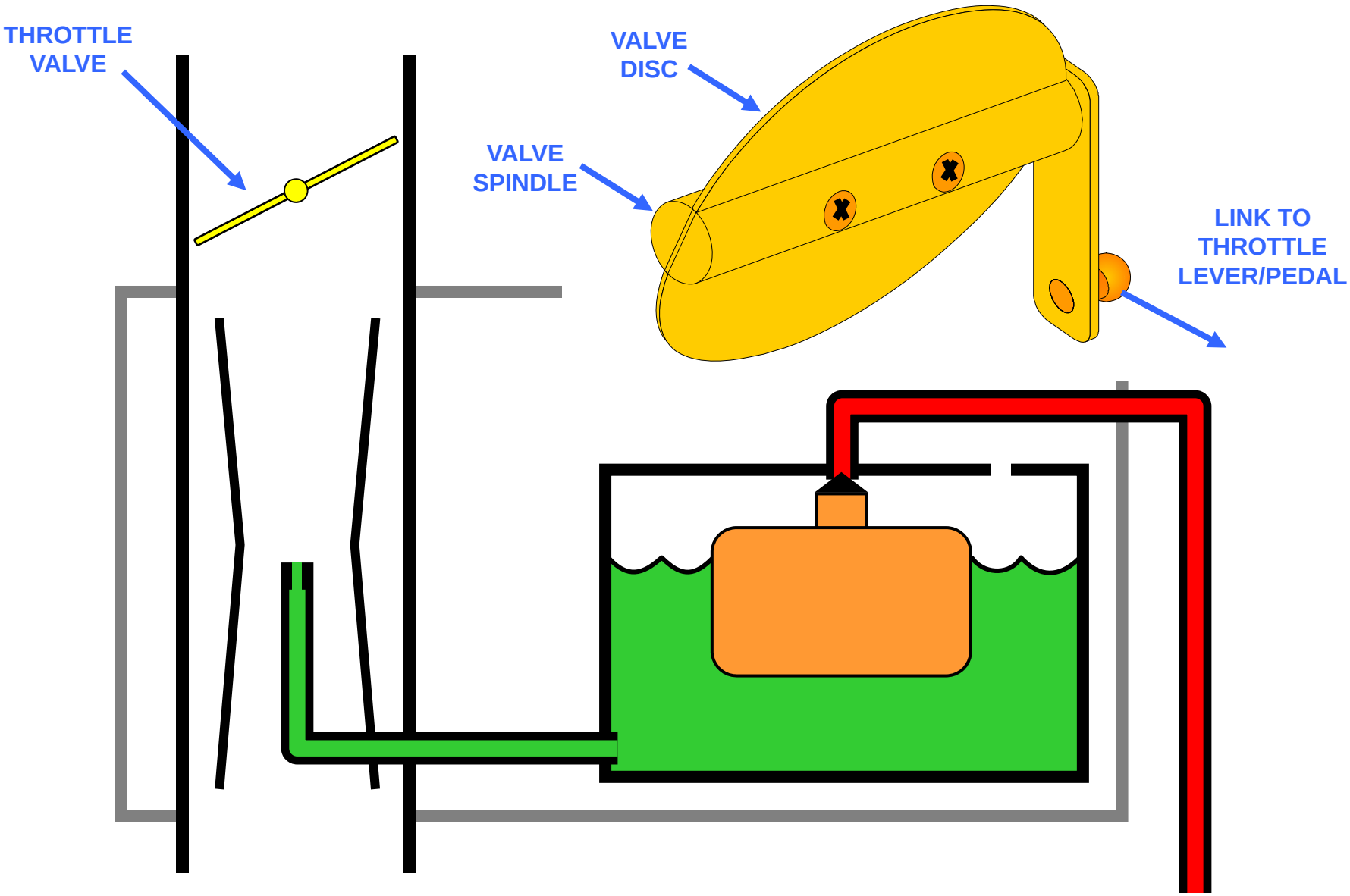
SIMPLIFIED PISTON ENGINE FUEL SYSTEM

We now need to look at controlling the air/fuel mixture flowing into the engine

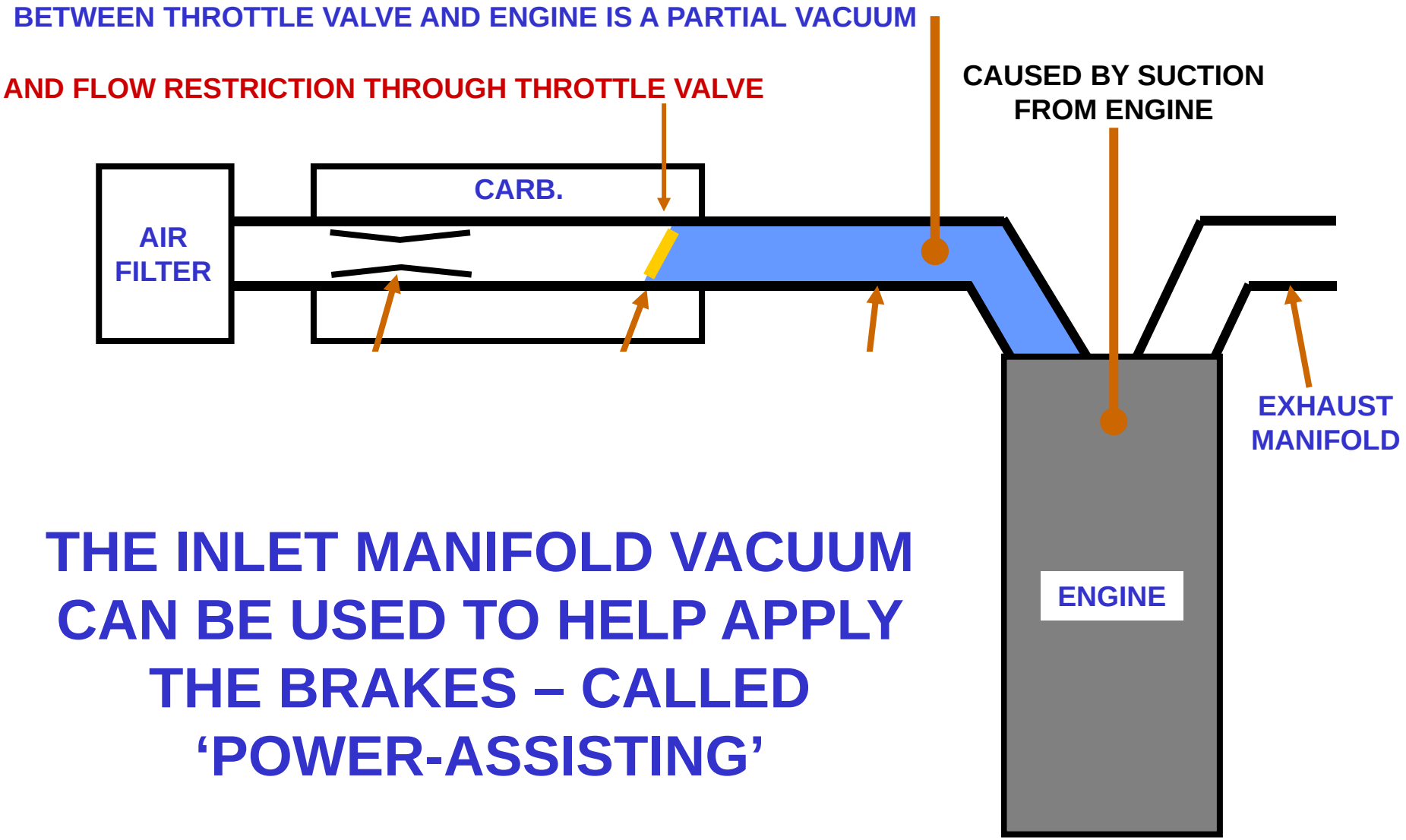
Controlling the air/fuel mixture means controlling the engine

The carburettor part which controls the flow is….

THE THROTTLE

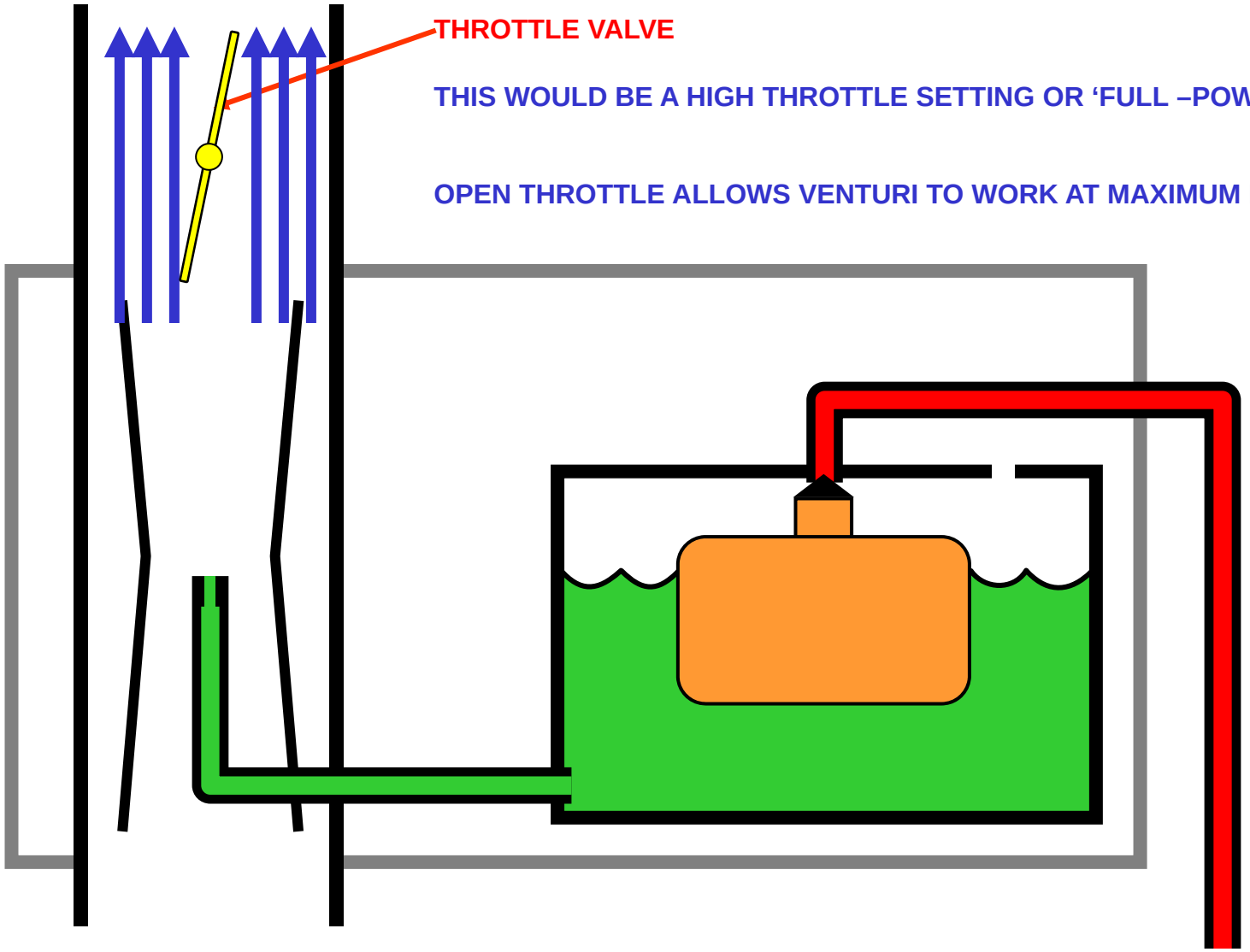


SIMPLIFIED PISTON ENGINE FUEL SYSTEM



THE INLET MANIFOLD VACUUM CAN BE USED TO HELP APPLY THE BRAKES – CALLED ‘POWER-ASSISTING’

SIMPLIFIED PISTON ENGINE FUEL SYSTEM



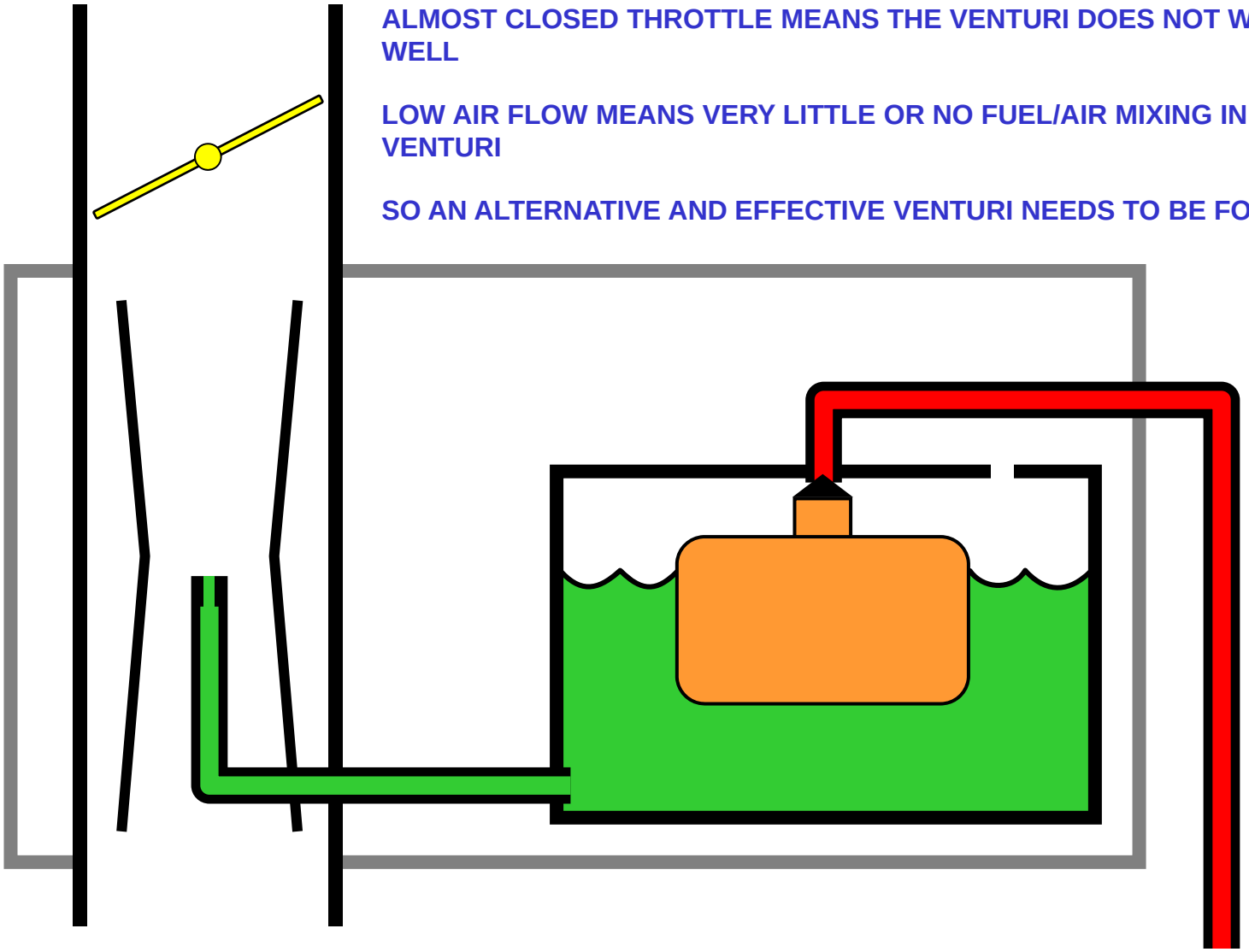
SIMPLIFIED PISTON ENGINE FUEL SYSTEM

LOW THROTTLE SETTING - CALLED ‘IDLE’ OR ‘TICK-OVER’

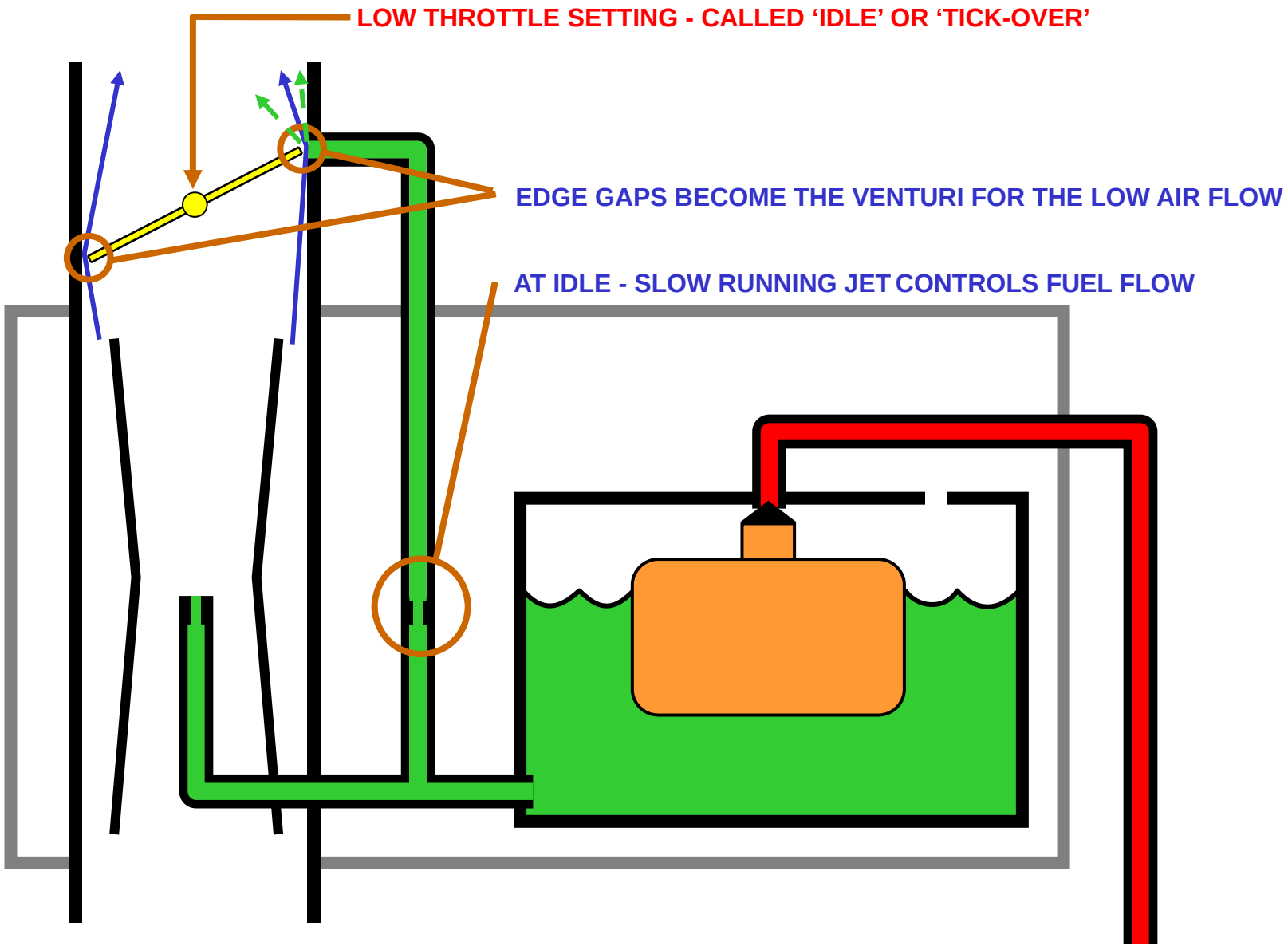
ALMOST CLOSED THROTTLE MEANS THE VENTURI DOES NOT WORK VERY WELL

LOW AIR FLOW MEANS VERY LITTLE OR NO FUEL/AIR MIXING IN THE VENTURI

SO AN ALTERNATIVE AND EFFECTIVE VENTURI NEEDS TO BE FOUND



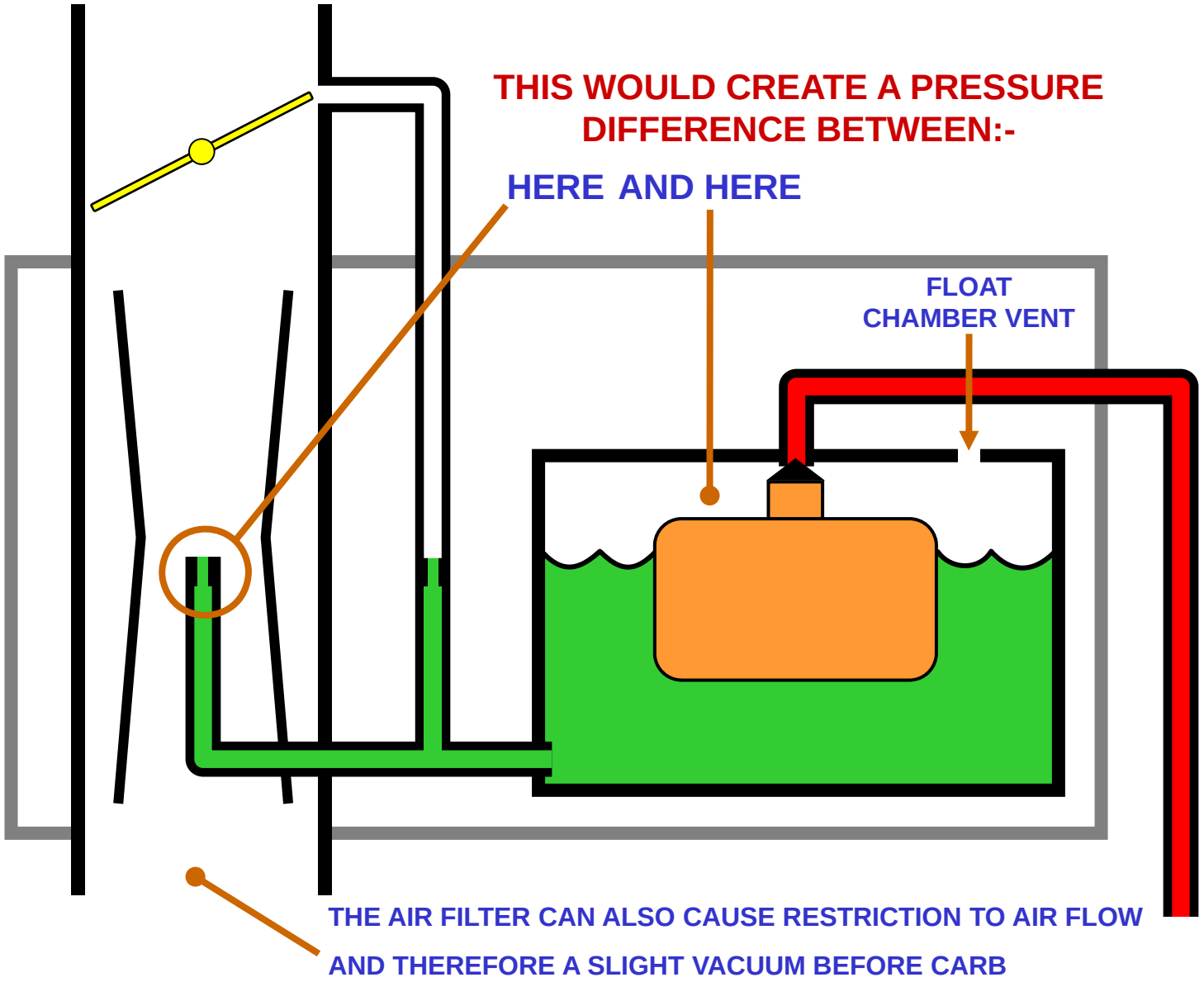
SIMPLIFIED PISTON ENGINE FUEL SYSTEM



SIMPLIFIED PISTON ENGINE FUEL SYSTEM

NEXT IS….

BALANCED AIR PRESSURE AT THE MAIN JET



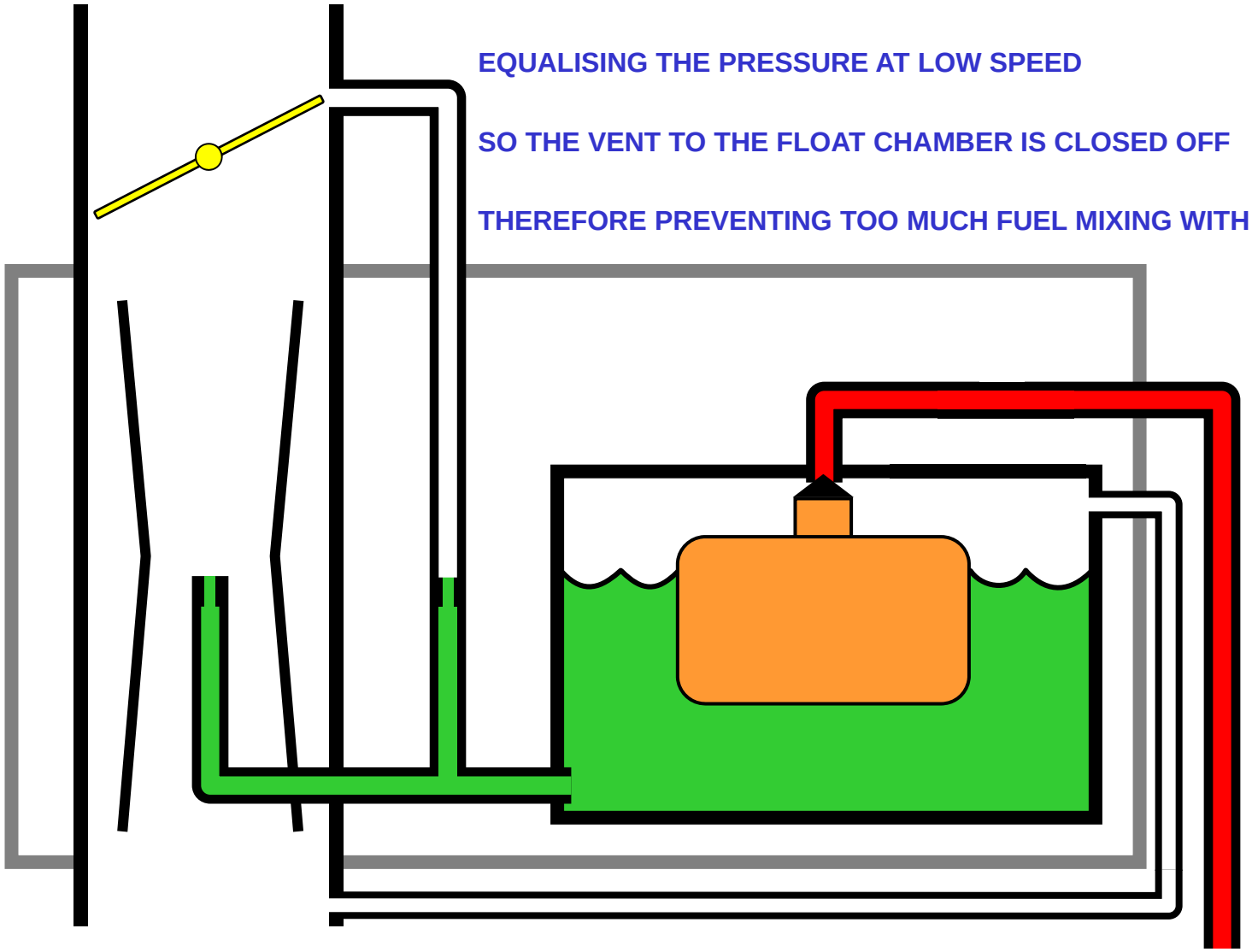
SIMPLIFIED PISTON ENGINE FUEL SYSTEM

AND THE FLOAT CHAMBER IS CONNECTED TO THE CARB AIR INTAKE

EQUALISING THE PRESSURE AT LOW SPEED

SO THE VENT TO THE FLOAT CHAMBER IS CLOSED OFF

THEREFORE PREVENTING TOO MUCH FUEL MIXING WITH THE AIR



SIMPLIFIED PISTON ENGINE FUEL SYSTEM

NEXT….

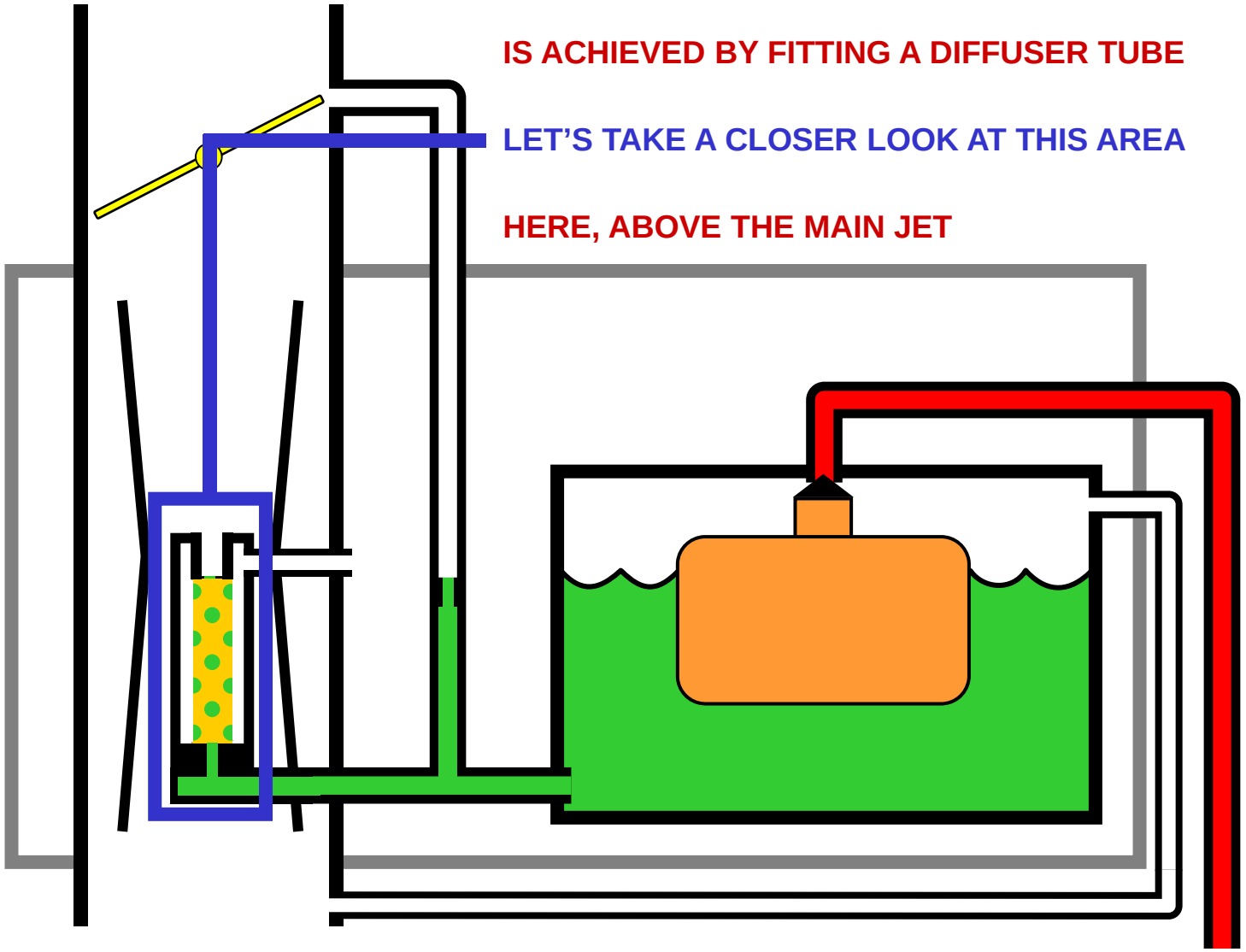
MORE EFFICIENT MIXING OF AIR AND FUEL

MORE EFFICIENT MIXING OF AIR AND FUEL

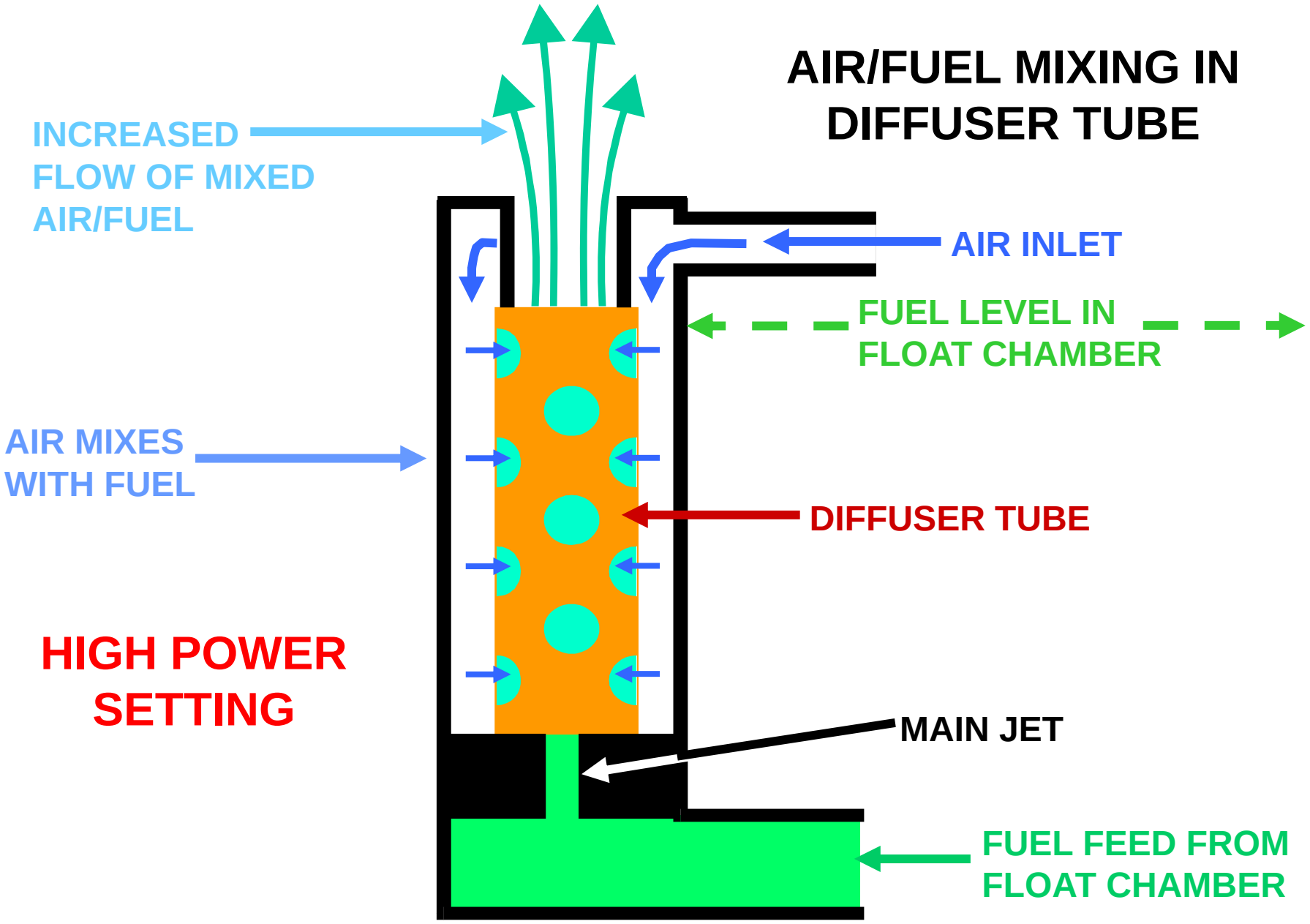
IS ACHIEVED BY FITTING A DIFFUSER TUBE

LET'S TAKE A CLOSER LOOK AT THIS AREA

HERE, ABOVE THE MAIN JET



SIMPLIFIED PISTON ENGINE FUEL SYSTEM



SIMPLIFIED PISTON ENGINE FUEL SYSTEM

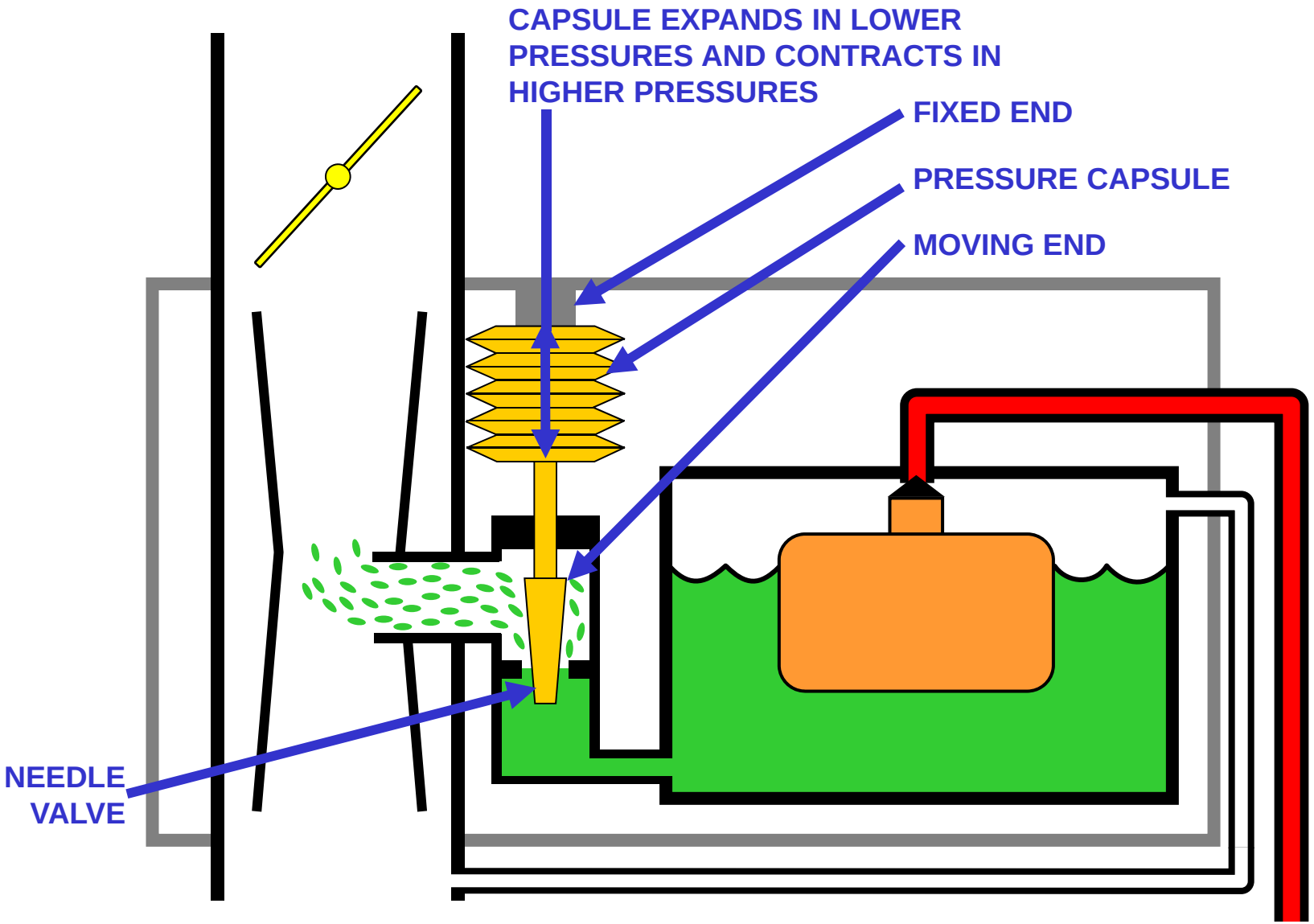
NEXT……

AUTOMATIC MIXTURE CONTROL

This is required to take into account that at higher altitude there is less air, so therefore less fuel is required.

This change in fuel flow is controlled by a device that can sense the change in air pressure.

It is called a *pressure bellows* or *pressure capsule.*

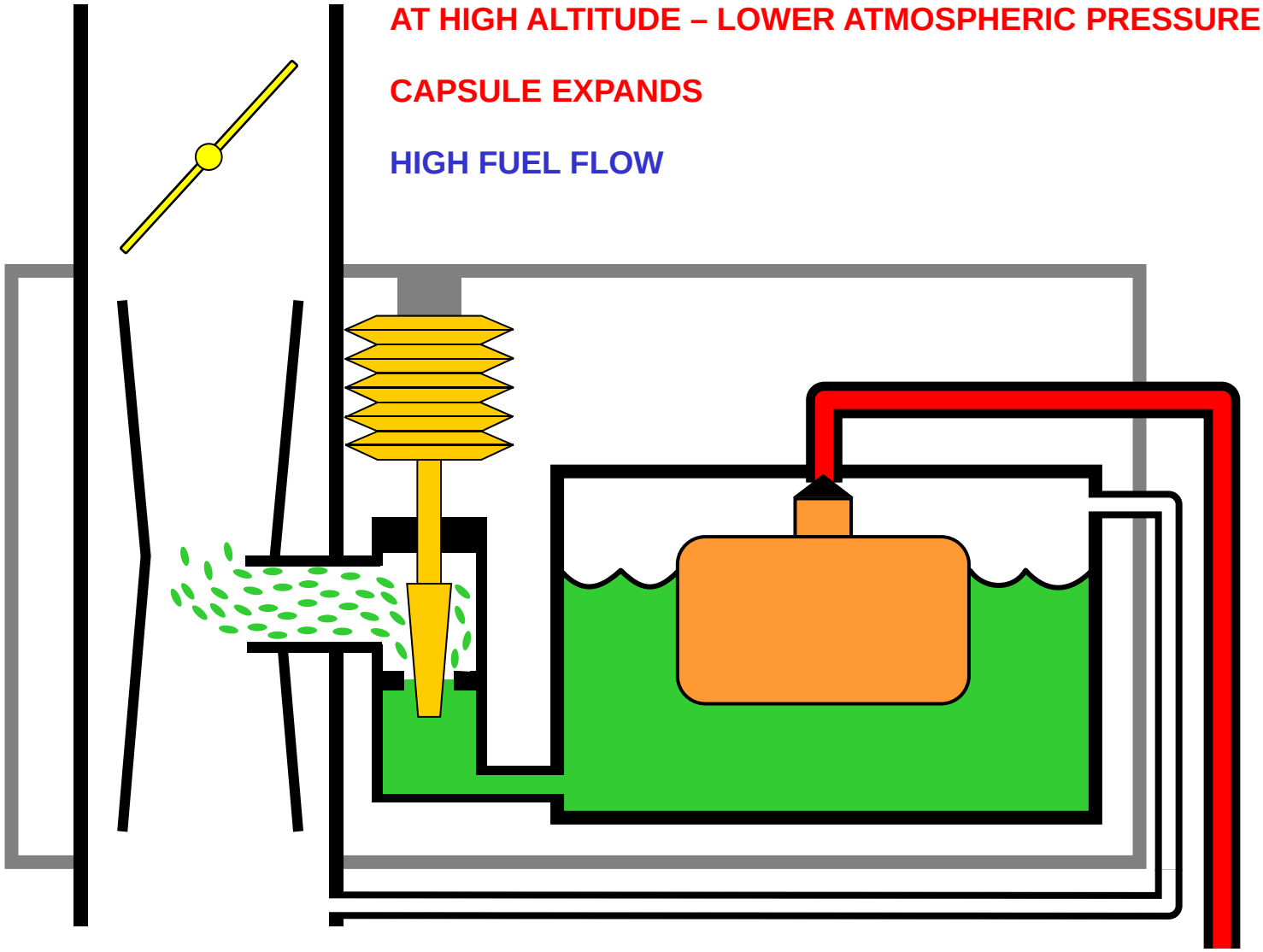


SIMPLIFIED PISTON ENGINE FUEL SYSTEM

AT HIGH ALTITUDE – LOWER ATMOSPHERIC PRESSURE

CAPSULE EXPANDS

HIGH FUEL FLOW

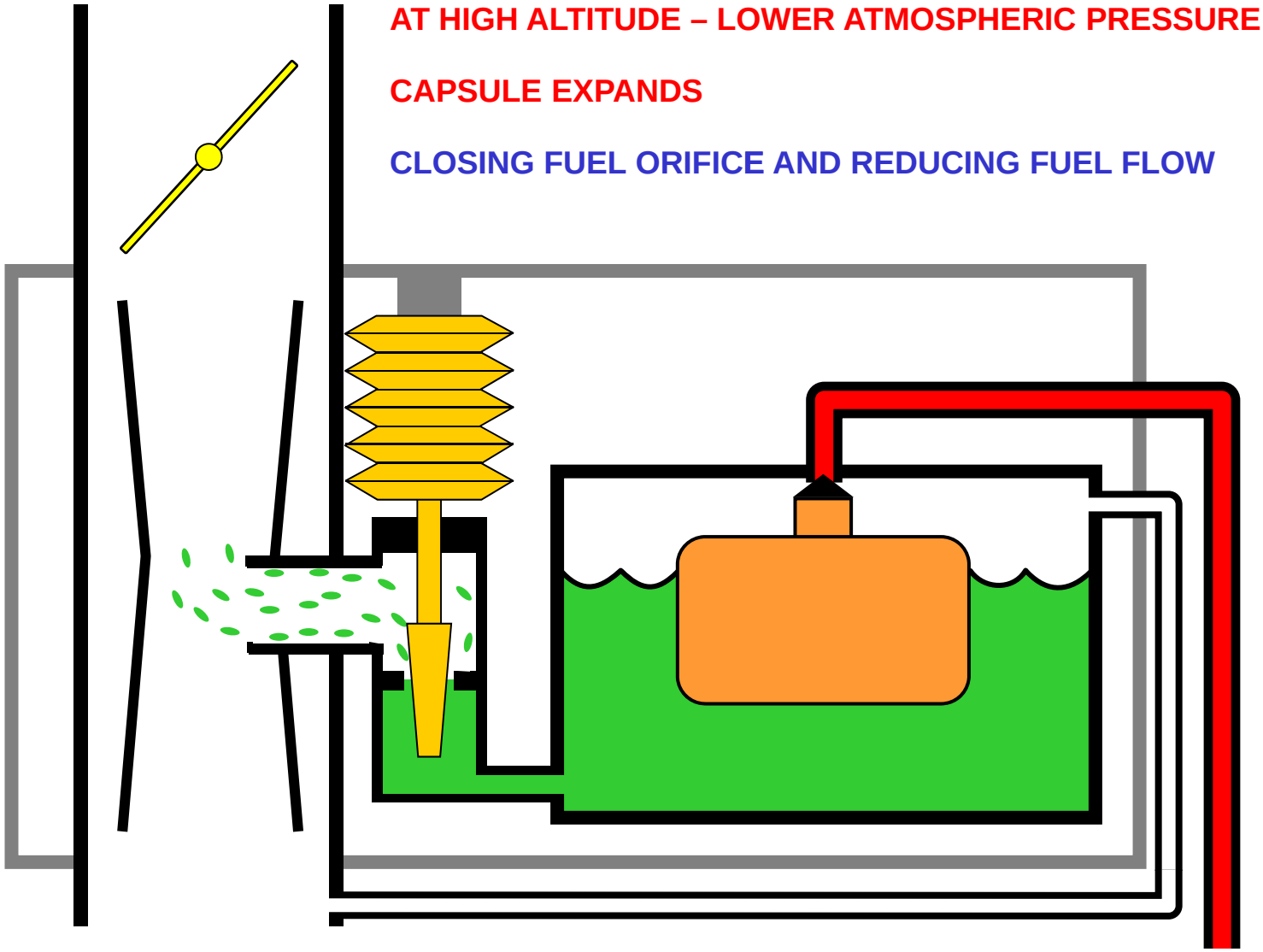


SIMPLIFIED PISTON ENGINE FUEL SYSTEM

AT HIGH ALTITUDE – LOWER ATMOSPHERIC PRESSURE

CAPSULE EXPANDS

CLOSING FUEL ORIFICE AND REDUCING FUEL FLOW



SIMPLIFIED PISTON ENGINE FUEL SYSTEM

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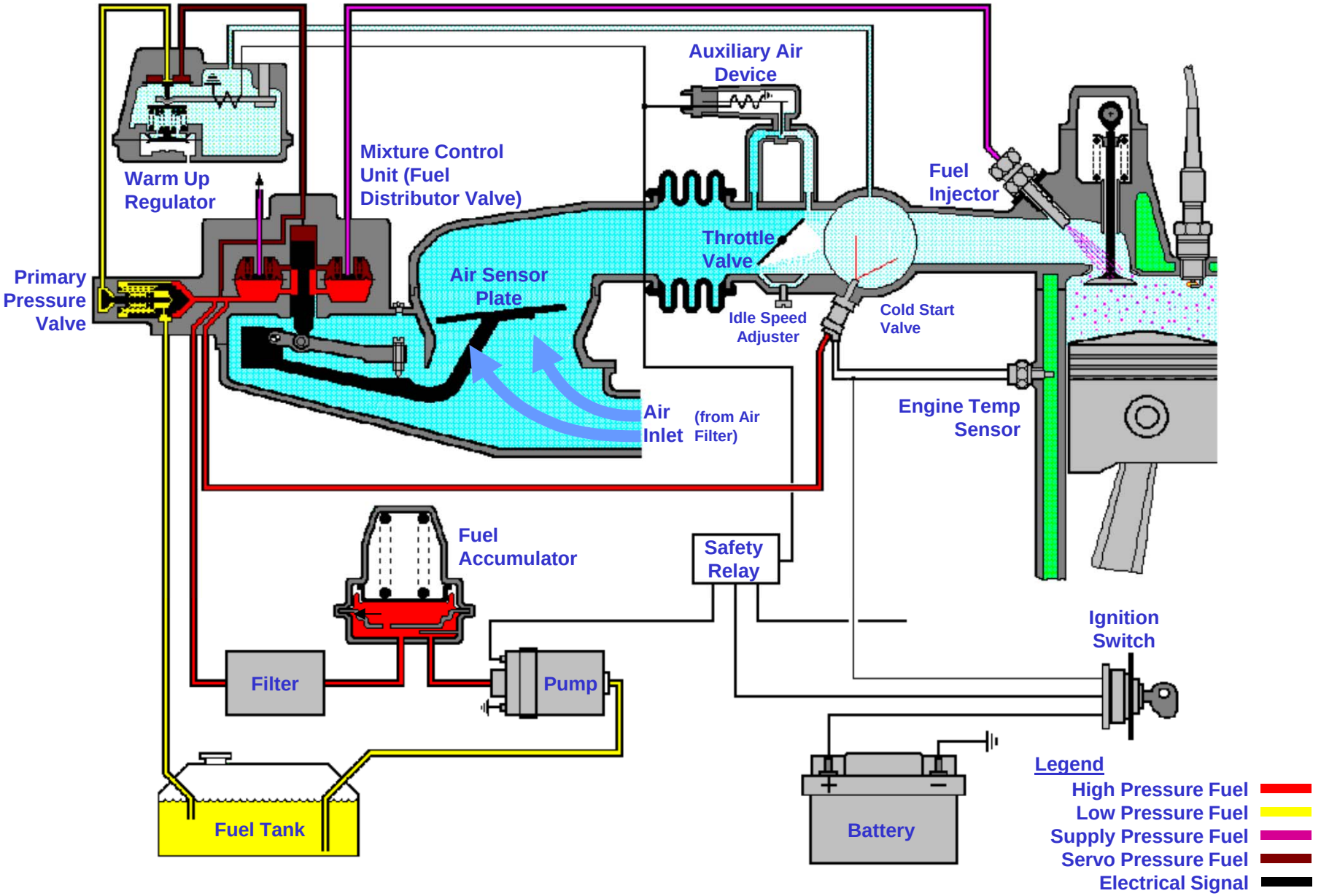
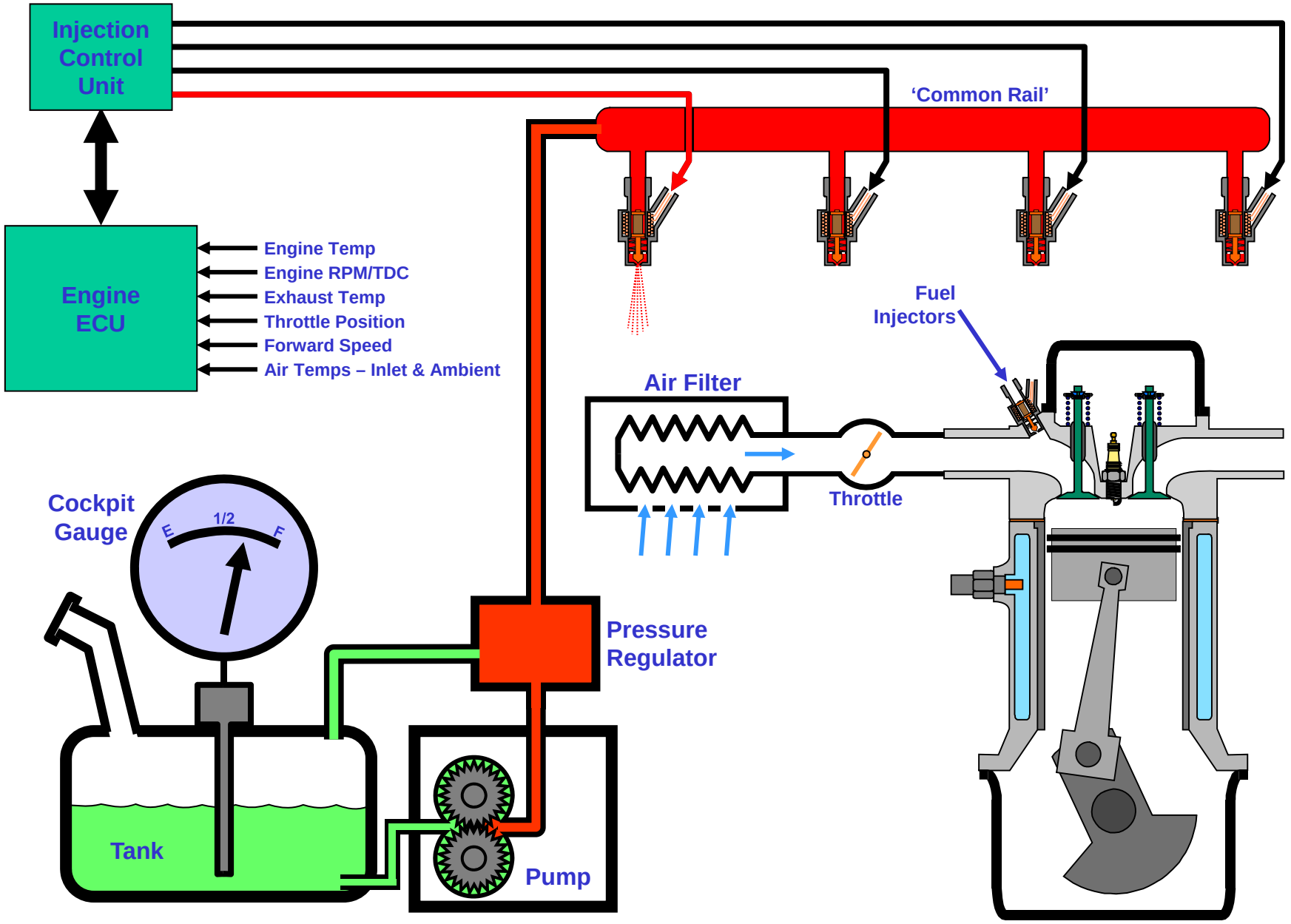


PISTON ENGINE – Hydro-Mechanical Fuel Injection System



PISTON ENGINE – Electronic Fuel Injection System

Any Questions?