Rotec ENGINEERING

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HOW THE TBI REGULATOR WORKS:

The metering regulator is such a simple yet incredibly effective device. It's basically a negative pressure regulator in that there is only atmospheric pressure above the diaphragm. Fuel pump pressure on the inlet side of the regulator is blocked by a flow valve, this valve can only allow fuel to flow when the diaphragm experiences a drop in atmospheric pressure at the spray bar.

The under side of the diaphragm is connected directly to the TBI spray bar, therefore when the engine is running negative pressure is created at the spray bar and this pressure is proportional to the speed of the engine. The resultant negative pressure developed pulls on the underneath of the diaphragm and this in turn opens the fuel flow valve which allows fuel to transfer to the spray bar and match fuel demand exactly!

The degree to which the valve opens depends on how much air passes the spray bar. The clever part is that the incoming fuel pressure at the regulator then aids in the closure of the fuel flow valve. As this works also on the underneath of the diaphragm it results in a perfect balance between fuel pressure and the negative pressure created at the spray bar. Consequently, altering the fuel pressure will have no effect as the balance will readjust automatically to match the exact fuel demand the engine requires for any given power setting.

The mechanism is basically a flow matching devise, i.e. the flow required by the engine is drawn and matched exactly by the metering device.

This principle is also used in scuba diving equipment. Take the respirator the diver has in his mouth: when the diver draws a breath it creates a small negative pressure on the diaphragm and the flow valve opens; but, on the other side of the flow valve is an Oxygen tank with very high levels of air pressure! Why does this pressure not blow up the diver's lungs? Reason: because as soon as the diver draws breath the diaphragm opens the flow regulator which exposes the tank pressures and instantly tries to close the flow valve. Therefore as the driver draws a breath the diaphragm allows a bit more air in. The final result is air flow on demand by the diver, adjusting up or down via the flow valve which in turn is controlled by the divers level of breathing, the volume of which controls proportionally the resultant negative pressure at the diaphragm.

GRAVITY FEED?

Yes no problem if the head flow matches the engines requirement. And, yes it will work even with the regulator in series.

Paul & Matt Chernikeeff

Rotec Engineering Pty Ltd.