

Injection Valves

The Injection valves of Bosch exist as Single-Spray and Twin-Spray version, with different flow-rates and different injection angles. There are three sizes of housing deliverable: compact, standard and long. Moreover, there are additionally extended valve-top levels (?). The hydraulic connections of all housings are compatible.

The EV 6, EV 12 and EV 14 valves are approved for the operation with ethanol (E85) since 1993. In case of operation with methanol, a cleaning with gasoline has to take place after usage.

The operation with fuel-pressures of up to 8 bar is permitted in motorsports, but the minimum power supply voltage has to be enhanced.

The conversion of the flow-rates at changed pressures can be done by using the following formula:

$$\text{Flow rate } (Q_{\text{stat}P2}) = \sqrt{\frac{P2}{P1}} * Q_{\text{stat}P1}$$

P1 = current pressure, P2 = target pressure

Q_{stat} = Flowrate at 100% opening time

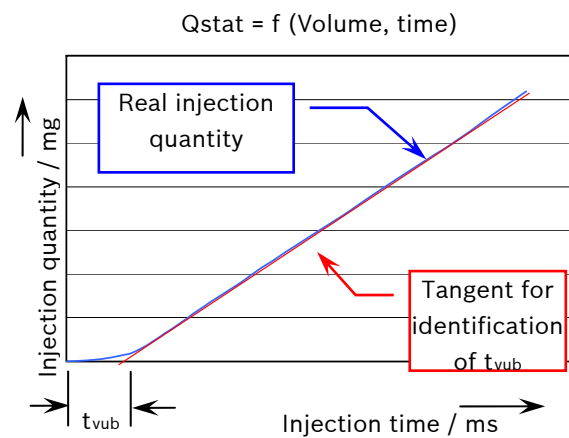
Usually, the flow rates are shown in g/min, but it depends on the test medium. For this purpose, the following conversion is possible:

Q_{stat} in g/min n-Heptan/0,684 = cm³/min

Q_{stat} in g/min Gasoline/0,744 = cm³/min

Q_{stat} in g/min ch20v3/0,780 = cm³/min

In order to achieve a better comparability, the flow rates are usually stated at 3 bar (300 kPa).



Delaytime due to limited opening speed $\cdot t_{vub}$
 Due to the limited opening speed of the valves, depending on the supply-voltage, the fuel-injection will not yet take place during the delaytime of t_{vub} .

An adjustment of the opening time (t_{bubat}) depending on the supply voltage can be calibrated in all Bosch-Motorsports engine ECUs.

The valve-cooling is done by the fuel-flow.

The closing of the valves is aided and accelerated by the fuel-pressure.