Internal Combustion Engines

Lecture-11

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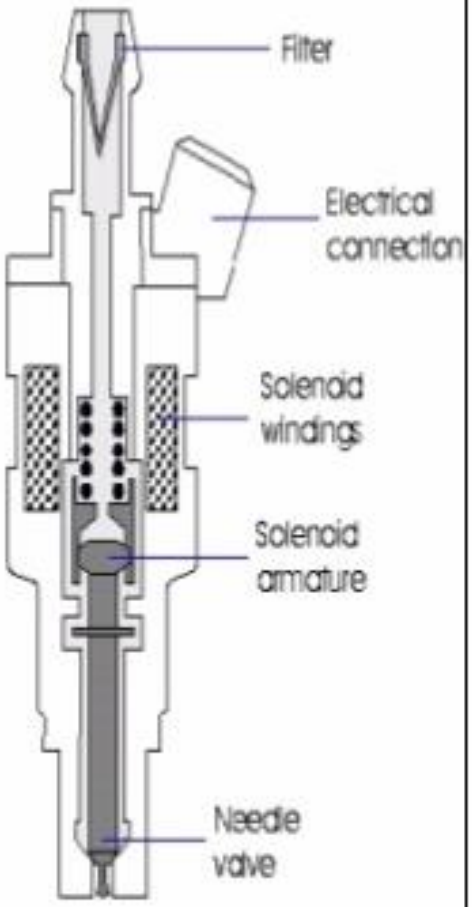
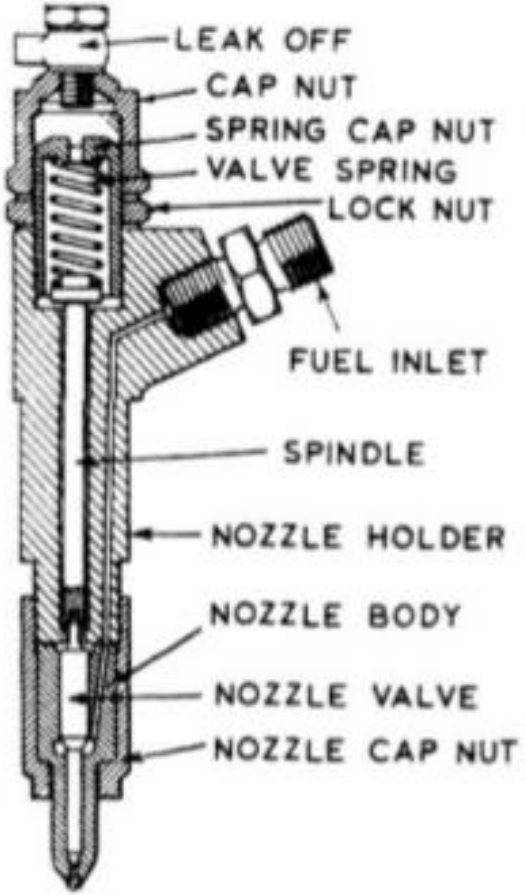
Injector

MECHANICAL

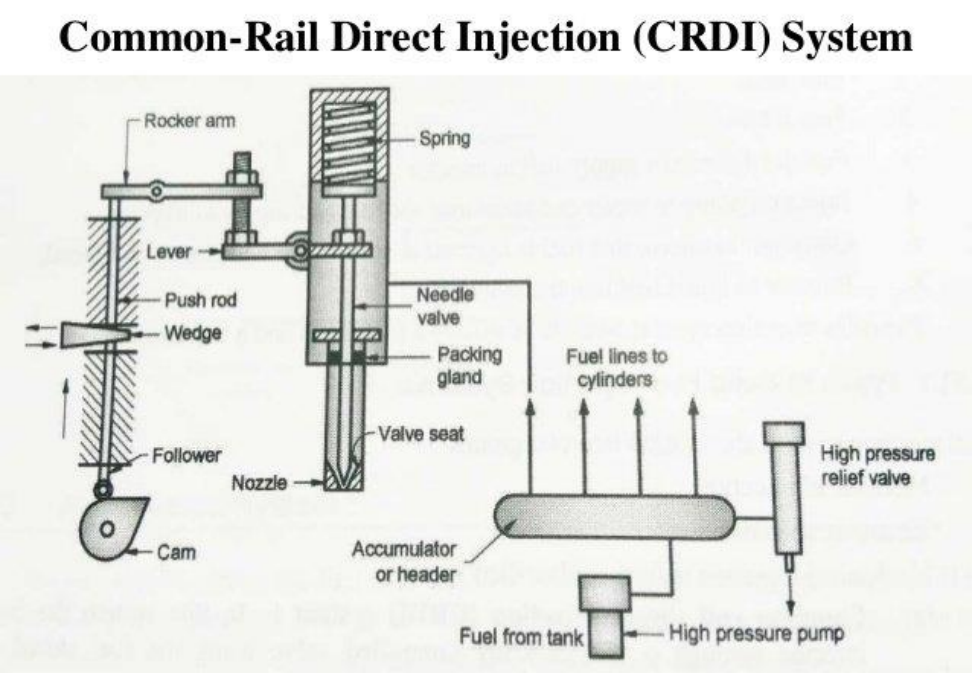
ELECTRONIC

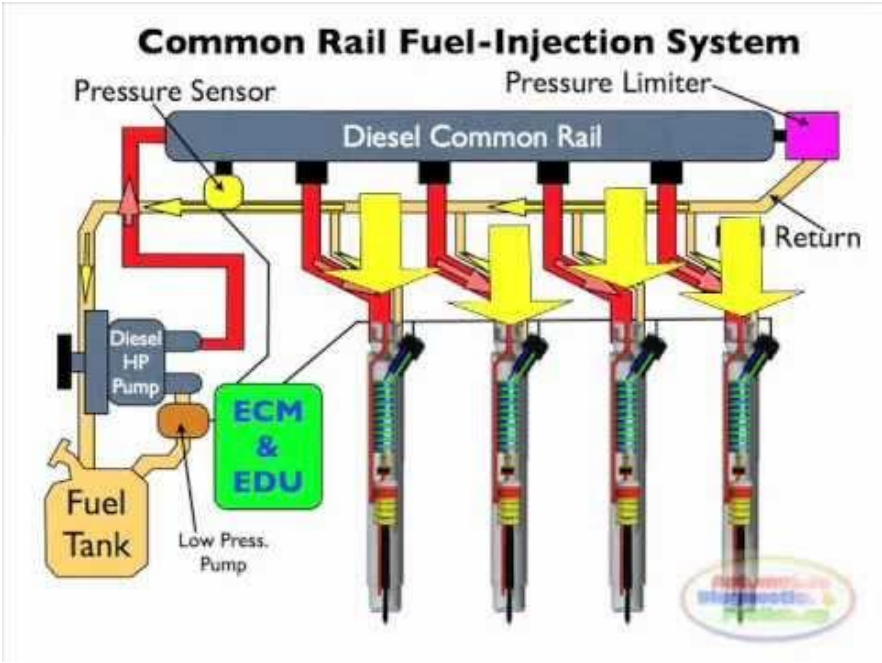


HYDRAULIC

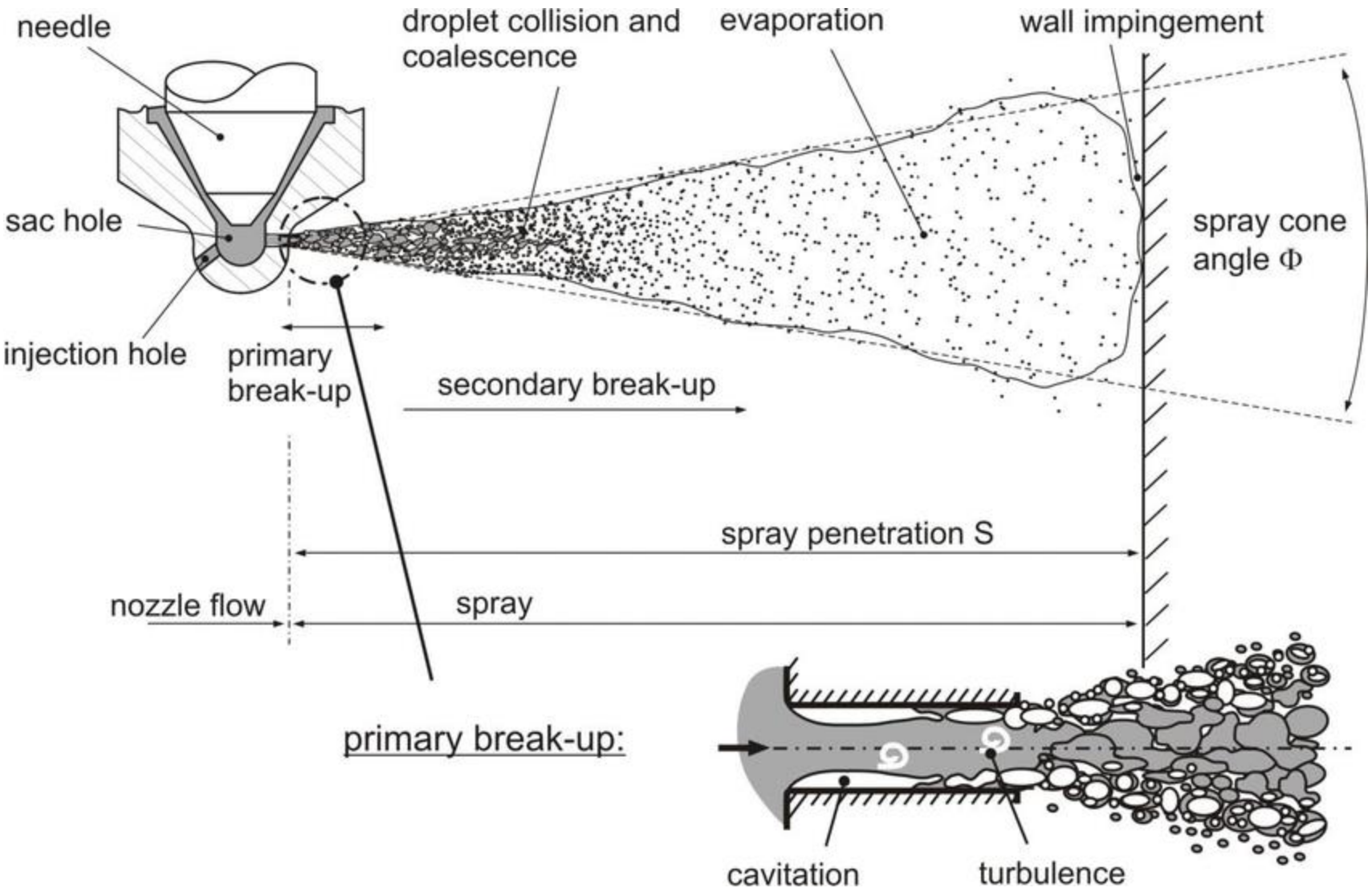


Common Rail System

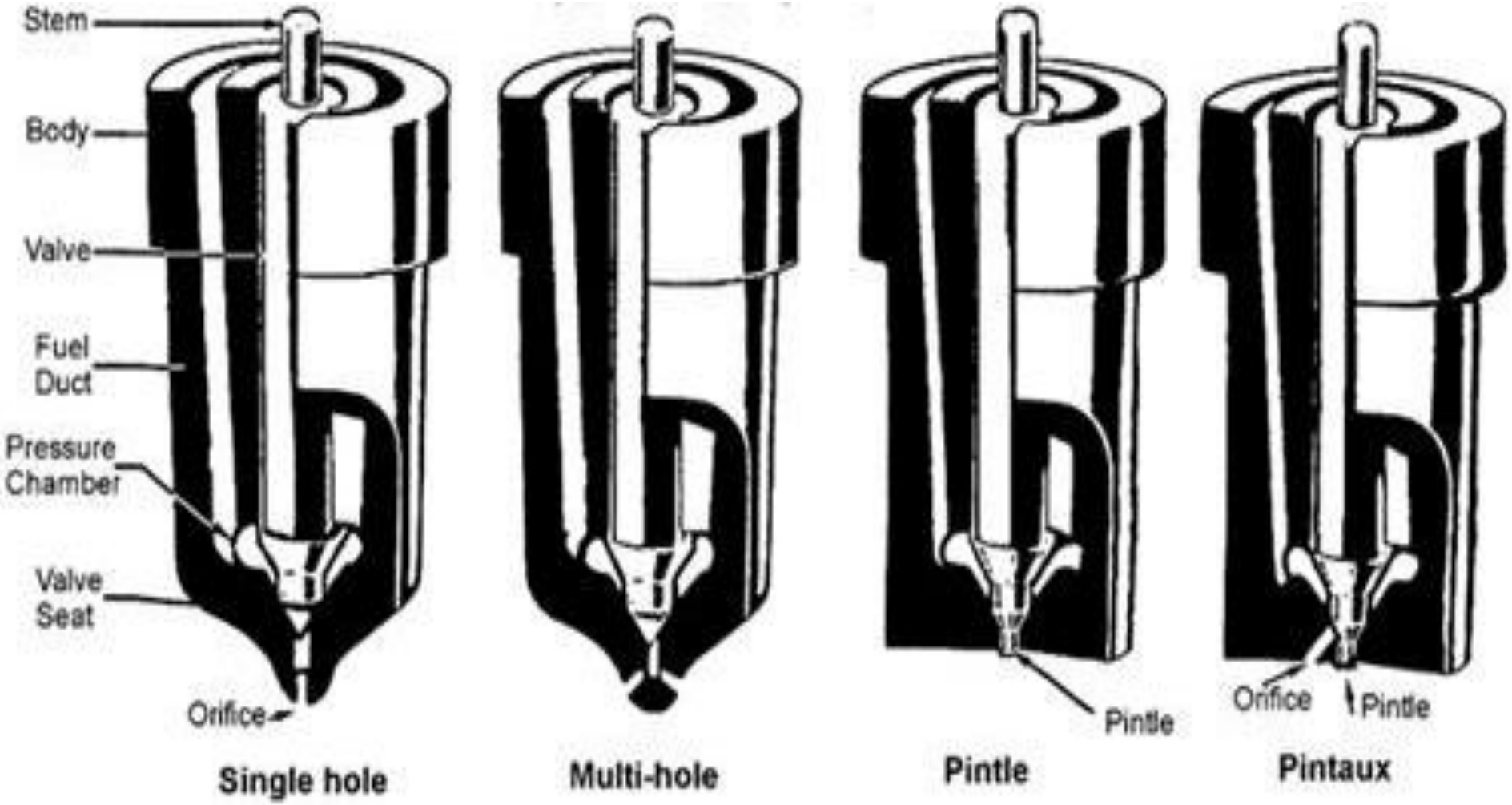




Spray Formation



Types of Injector Nozzle



Example Problem

9.1 A six cylinder, four-stroke diesel engine develops 125 kW at 3000 rpm. Its brake specific fuel consumption is 200 gm/kW h. Calculate the quantity of fuel to be injected per cycle per cylinder. Specific gravity of the fuel may be taken as 0.85.

Solution

$$\text{Fuel consumed/hour} = bsfc \times \text{Power output}$$

$$= 200 \times 10^{-3} \times 125 = 25 \text{ kg}$$

$$\text{Fuel consumption/cylinder} = \frac{25}{6} = 4.17 \text{ kg/h}$$

$$\text{Fuel consumption/cycle} = \frac{\text{Fuel consumption/minute}}{n}$$

where $n = N/2$ for four-stroke cycle engines

$$= \frac{4.17/60}{3000/2} = 4.63 \times 10^{-5} \text{ kg}$$

$$= 0.0463 \text{ gm}$$

$$\text{Volume of fuel injected} = \frac{0.0463}{0.85}$$

$$= 0.0545 \text{ cc/cycle}$$

Thank You