Equations

**Mass conservation**

**Momentum**

The spatial pressure derivative can be written as a function of the two other thermodynamic state variables and

For a perfect gas,

**Energy conservation**

**Matrix form**

RDE area with angles

Frolov’s outer

The area reads

**Mass conservation**

**Momentum**

The spatial pressure derivative can be written as a function of the two other thermodynamic state variables and

For a perfect gas,

**Energy conservation**

**Matrix form**

Expression of the friction factor