

Calculation header

Identifier *BINAK*
 Tag No. *FE-2102*

Medium selection and state

Medium  *Natural Gas (AGA8)*
 Mixture composition  *GOLKHARI*
 State  *Gaseous*
 Gas *Gas, dry (Operating conditions)*

Inlet properties

Operating temperature t_1 *32.0* °C
 Operating pressure p_1 *6.75* bar(g)
 Operating density (t_1 , p_1) ρ_1  *7.4162* kg/m³
 Isentropic exponent (t_1 , p_1) κ_1  *1.2318* -

Pipeline




☒ Pipe class  *ANSI*
 Size class  *8"*
 Schedule  *Schedule 60*

Orifice plate




Throttle *Single stage*
 Type of orifice plate *Single-hole orifice*
 Type of bore *Cylindrical bore*
☐ Flow coefficient C  *0.89454* -

Operating data

☐ Critical flow according to R. W. Miller Calculation ☐ Safety-related application *d*

Permanent pressure loss $\Delta\omega$ *250.0* mbar
 Throttle orifice (20°C) d  *89.441* mm
☒ Mass flow rate q_m *12,396.0* kg/h
☐ Volume flow rate (operating conditions) q_v  *7,359.2* GPM(US)
 Flow type  *Non-critical*



Calculated auxiliary values

| | | | |
|-----------------------------------|---|--------|-------|
| Sound pressure level (A-weighted) | LpAe  | 64.5 | dB(A) |
| Diameter ratio | β  | 0.4507 | - |
| Power loss | P  | 15.773 | hp(l) |

Outlet properties

| | | | |
|--------------------|---|----------|--------|
| Operating pressure | p2  | 6.5 | bar(g) |
| Mach number | Ma2  | 0.043195 | - |




Hint:

-  Approximate value: Min. orifice thickness for Δp - E,min
-  Approximate value: Dynamic viscosity (t1, p1) - η_1

Comments:**Mixture composition**

Methane: 67.3 %, Nitrogen: 0.387 %, Carbon dioxide: 3.01 %, Ethane: 11.9 %, Propane: 6.26 %, n-Butane: 1.3 %, i-Butane: 0.615 %, n-Pentane: 0.318 %, i-Pentane: 0.665 %, n-Hexane: 0.576 %, n-Heptane: 0.149 %, n-Octane: 0.0496 %, n-Nonane: 0.0298 %, n-Decane: 0.00993 %, Water: 0.743 %, Hydrogen sulphide: 6.77 %

Legend

-  Calculated value
-  Lookup value
-  Hint