

Calculation header

Identifier *BINAK*
 Tag No. *FE-2101*

Medium selection and state

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

Inlet properties

Operating temperature t_1 *46.11* °C
 Operating pressure p_1 *6.75* bar(g)
 Operating density (t_1 , p_1) ρ_1  *7.9608* kg/m³
 Isentropic exponent (t_1 , p_1) κ_1  *1.1924* -

Pipeline




☒ Pipe class  *ANSI*
 Size class  *6"*
 Schedule  *Schedule 80*

Orifice plate




Throttle *Single stage*
 Type of orifice plate *Single-hole orifice*
 Type of bore *Cylindrical bore*
☐ Flow coefficient C  *0.89829* -

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  *66.893* mm
☒ Mass flow rate q_m *7,220.4* kg/h
☐ Volume flow rate (operating conditions) q_v  *3,993.4* GPM(US)
 Flow type  *Non-critical*



Calculated auxiliary values

Sound pressure level (A-weighted)	LpAe 	59.3	dB(A)
Diameter ratio	β 	0.45714	-
Power loss	P 	8.5629	hp(l)

Outlet properties

Operating pressure	p2 	6.5	bar(g)
Mach number	Ma2 	0.045398	-




Hint:

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

Comments:**Mixture composition**

Methane: 57.4 %, Nitrogen: 0.128 %, Carbon dioxide: 3.45 %, Ethane: 17.4 %, Propane: 10.5 %, n-Butane: 2.93 %, i-Butane: 1.27 %, n-Pentane: 0.492 %, i-Pentane: 0.758 %, n-Hexane: 0.807 %, n-Heptane: 0.285 %, n-Octane: 0.0787 %, n-Nonane: 0.0295 %, n-Decane: 0.00984 %, Water: 1.58 %, Hydrogen sulphide: 2.8 %

Legend

-  Calculated value
-  Lookup value
-  Hint