


Calculation header

Identifier *BINAK*
 Tag No. *RO-2141*

Medium selection and state

Medium  *Natural Gas (AGA8)*
 Mixture composition  *BDV-2141*
 State *Gaseous*
 Gas *Gas, dry (Operating conditions)*

Inlet properties

Operating temperature t_1 *59.89* °C
 Operating pressure p_1 *62.0* bar(g)
 Operating density (t_1 , p_1) ρ_1  *67.467* kg/m³
 Isentropic exponent (t_1 , p_1) κ_1  *1.2377* -

Pipeline




☒ Pipe class  *ANSI*
 Size class  *1 1/2"*
 Schedule  *Schedule 160*

Orifice plate



Throttle *Single stage*
 Type of orifice plate *Single-hole orifice*
 Type of bore *Cylindrical bore*
☐ Flow coefficient C  *0.79164* -

Operating data

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

Permanent pressure loss $\Delta\omega$ *55.0* bar
 Throttle orifice (20°C) d  *5.57* mm
☒ Mass flow rate q_m *1,722.0* kg/h
☐ Volume flow rate (operating conditions) q_v  *112.38* GPM(US)
 Flow type  *Non-critical*



Calculated auxiliary values

Sound pressure level (A-weighted)	LpAe 	81.4	dB(A)
Diameter ratio	β 	0.1639	-
Power loss	P 	102.02	hp(l)

Outlet properties

Operating pressure	p2 	7.0	bar(g)
Mach number	Ma2 	0.18645	-




Hint:

-  Approximate value: Dynamic viscosity (t_1 , p_1) - η_1
-  Approximate value: Min. orifice thickness for Δp - E_{\min}

Comments:**Mixture composition**

Methane: 65.8 %, Nitrogen: 0.307 %, Carbon dioxide: 3.25 %, Ethane: 14.2 %, Propane: 7.96 %, n-Butane: 1.91 %, i-Butane: 0.864 %, n-Pentane: 0.388 %, i-Pentane: 0.717 %, n-Hexane: 0.674 %, n-Heptane: 0.201 %, n-Octane: 0.0613 %, n-Nonane: 0.0306 %, n-Decane: 0.0102 %, Water: 0.459 %, Hydrogen sulphide: 3.25 %

Legend

-  Calculated value
-  Lookup value
-  Hint