


Calculation header

Identifier *BINAK*
 Tag No. *FE-2211*

Medium selection and state

Medium   *Nitrogen*
 State  *Gaseous*
 Gas *Gas, dry (Operating conditions)*
 Critical pressure pc  *492.52* psi(a)

Inlet properties

Operating temperature t1 *60.0* °C
 Operating pressure p1 *8.0* bar(g)
 Operating density (t1, p1) ρ1  *9.1109* kg/m³
 Isentropic exponent (t1, p1) κ1  *1.4119* -




Pipeline

☒ Pipe class  *ANSI*
 Size class NPS  *2"*
 Schedule SCH  *Schedule 40*




Orifice plate

Throttle *Single stage*
 Type of orifice plate *Single-hole orifice*
 Type of bore *Cylindrical bore*
☐ Flow coefficient C  *0.78335* -

Operating data

☐ Critical flow according to R. W. Miller Calculation ☐ Safety-related application *d*
 Permanent pressure loss Δω *250.0* mbar
 Throttle orifice (20°C) d  *5.3466* mm
☒ Mass flow rate qm *42.49* kg/h
☐ Volume flow rate (operating conditions) qv  *20.533* GPM(US)
 Flow type  *Non-critical*


Calculated auxiliary values

Sound pressure level (A-weighted)	LpAe 	30.6	dB(A)
Diameter ratio	β 	0.10184	-
Power loss	P 	0.043864	hp(l)


Outlet properties

Operating pressure	p2 	7.75	bar(g)
Mach number	Ma2 	1.6469 E-3	-





Hint:

 Approximate value: Min. orifice thickness for Δp - E,min

Confirmation:

 The calculation of the fluid data is done thermodynamically by means of NIST-REFPROP

Legend

-  Calculated value
-  Lookup value
-  Hint
-  Confirmation