PRV SIZING

v1.3.17

Date: 9/29/2020

Prepared By:

Customer:		Sizing Units:	US
Customer Ref #:		Tag Units:	US
Customer P/N:			

FLUID PROPERTIES

Fluid State	Air/Gas		Molecular Weight (M)	39.95	lbm/lbm·mol
Name	Argon		Cp/Cv (k)	1.67	
Required Capacity	4000	SCFM	Gas Constant (C)	377.64	
			Compressibility(Z)	1.00	
Certification	ASME Section VIII		Lap Joint Flange	No	
Set Pressure	225	psig	Tri-Clamp	No	

PROCESS CONDITIONS

Operating Pressure		psig	Max Design Temp		°F
MAWP		psig	Min Design Temp		°F
Atmospheric Pressure	14.7	psia	Operating Temp		°F
Constant SI Backpressure		psig	Relief Temp	60	°F
Variable SI Backpressure		psig			
Built-up Backpressure		psig	Rupture Disc	No	

CALCULATIONS

Series/Orifice	740	J	Coefficient of Discharge	0.878	
			Back Pressure Correction	1.00	
ASME Calculated Adisch	1.049	in²	Rupture Disk Correction	1.00	
Selected Adisch	1.418	in²	Balanced Bellows	1.00	
Overpressure	10%				
Valve Capacity (Fluid)	5407	SCFM	Reaction Force	574.00	lbf
Valve Capacity (Air)	5984		Noise @ 100 ft	125.30	dB

Material	Brass/Bronze	Connection	NPT x FNPT
Seating	Metal	Inlet / Outlet	2 / 3
Cap	Lift Lever	Options	None
		Flange Face Finish	Not Applicable

Note: Valve capacity is at 10% or 3psi overpressure, whichever is greater. Above options are not exhaustive! Please contact Aquatrol if an option not listed above is available!

PART NUMBER

740JJ1M1K1-225

TAG

No: 740JJ1M1K1-225 Size: 2 x 3

Set: 225 psi Cap: 5984 SCFM

*Tag will also display serial number, date of manufacture, and necessary symbols for certification

COMMENTS

DISCLAIMER

Contact Us: 1-800-323-0688 | D:630-365-5400 | F: 630-365-5434 | sales@aquatrol.com | 600 E North St. P.O. Box 8012

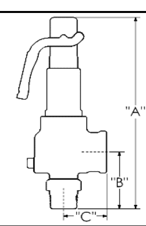
No.	Item		Value	Unit	
1	General Data				
2	Customer				
3	Cust. Ref #				
4	Cust. P/N				
5	P&ID #				
6	Service				
7	P.O. #				
8	Quantity				
9	Valve Description and Materials				
10	Part Number		740JJ1M1K1-225		
11	Valve Type		Safety Valve		
12	Valve Style		Conventional Spring Operated		
13	Orifice Designation		J		
14	Nozzle Type		Full		
15	Bonnet Open/Closed		Open		
16	Inlet - Size/Class/Face		2	NPT	
17	Outlet - Size/Class/Face		3	FNPT	
18	Cap Style		Lift Lever		
19	Additional Options		None		
20	ASME Cert.	CE Cert.	Sect. VIII	No	
21	Materials of Construction				
22	Nozzle		B16 Brass		
23	Disc		SA479-316 SS		
24	Body/Bonnet		B584-C84400		
25	Spring		302/17-7 SS		
26	Gaskets		PTFE		
27	Pressure				
28	MAWP			psig	
29	Operating Pressure			psig	
30	Set Pressure	Pset	225.00	psig	
31	Atmospheric Pressure	Patm	14.70	psia	
32	Accumulation		10.00	%	
33	Flowing Pressure	P	262.20	psia	
34	Constant SI Backpressure			psig	
35	Variable SI Backpressure			psig	
36	Built-Up Backpressure			psig	
37	Total Backpressure	Pb		psig	
38	Temperature				
39	Max Design Temperature			°F	°R
40	Min. Design Temperature			°F	°R
41	Operating Temperature			°F	°R
42	Relief Temperature	T	60	°F	520 °R

No.	Item	Symbol	Value	Unit	Value	Unit
43	Sizing/Selection Summary					
44	Calc. KA	Selected KA	0.921	in^2	1.245	in^2
45	Calc. Ad	Selected Ad	1.049	in^2	1.418	in^2
46	Selected Valve Kd	K_d	0.878			
47	Required Capacity	Vr	4000	SCFM		
48	Selected Fluid Capacity	Va	5407	SCFM		
49	Stamped Capacity		5984	SCFM		
50	Reaction Force		574	lbf		
51	Noise Level		125.3	dB at	100	ft
52	Operating Conditions					
53	Fluid State		Air/Gas			
54	Ratio of Sp. Heats, Cp/Cv	k	1.67			
55	Gas Constant	C	377.64			
56	Molecular Weight	M	39.95	lbm/lbm·mol		
57	Density at Relieving	ρ	0.111	lbm/ft3		
58	Specific Gravity	G				
59	Viscosity at Relieving	v		cP		
60	Compressibility Factor	Z	1.00			
61	Backpressure Correction	k_b	1.00			
62	Rupture Disc Correction	k_c	1.00			
63	Viscosity Correction	k_v	1.00			
64	Sizing Calculations					
65	Design Code/Sizing Std.		ASME Section VIII/API 520 Part I			
66	Kd * Discharge Area	KA	0.921	in^2		
67	(Vr*(T*Z*M)^0.5/(6.32*C*P*Kb*Kc)					
68	Fluid Capacity	Va	5407	SCFM		
69	C*KA*P*(M/T)^0.5					
70	Static Pressure @ Outlet	Po	57.05	psia		
71	.0024*(Wa/Do)*(T/(k*M))^0.5					
72	Reaction Force	F_r	574	lbf		
73	((V*60*ρ)/366)*((k*T)/((k+1)*M))^0.5+Ao*(Po-Pa)					
74	L Value	L	59.16			
75	API 521 Figure 18					
76	Speed of Sound	c	1038.46	ft/s		
77	223*((k*T)/M)^0.5					
78	Noise @ 100 ft	L_{100}	125.30	dB		
79	L+100log(0.5*(Va*ρ/60)*c²)					
80	Noise @ r (r=100 ft)	L_r	125.30	dB		
81	L100-(20*log(r/100))					
82	Calculation Notes: Unit for Temperature is °R. Units for Va is					
83	SCFM.					
84						

Notes: Imported from Sizing Software

Revisions

Rev.	Date	By	Status	Appvd
1				
2				
3				
4				
5				



Valve Dimensions

A	14 1/2	in
B	4	in
C	3 1/4	in
Weight	18.00	lbs

*Valve pictured does not represent actual selected valve

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