JOKWANG I.L.I

Pressure Safety & Relief Valve Specification and Calculation Sheet

Sheet No.	4 of 11	Rev . No	1
Project Name	Yeosu No.2 Complex Project(R2) 2nd PO		
Project No.			
Date	2021-01-22	By	S.W.PARK
Checked	M.J.LEE	Approved	J.H.LEEM

GENERAL	P&ID No.	1	H530-R2-PID-3037	
	Tag No.	2	R2-PSV-3371	
	Service Line	3	HP Cold drain to W-302-D6 (Cold Drains Vaporizer)	
	Model No.	4	JSV-FF100	**Calculation**
	Quantity	5	1	
TYPE	Nozzle Type	6	Full Nozzle	Calculation of Area
	Design Type	7	Conventional	
	Bonnet Type	8	Close	
	Lever Type	9	None	A1 = 11.78*W1*(√G/(P1-Pb))/(Kd*Kb*Kc*Kv)
	Cap Type	10	Screwed	
CONN.	Size. Inlet / Outlet	11	3/4"X1"	= 11.78*0.933333*√(0.449/(6526.3-9))/
	Inlet. Rating / Facing	12	ASME CL.600 RF	(0.615*1*1*0.969)
	Outlet. Rating / Facing	13	ASME CL.150 RF	
MATERIALS	Body (Base)	14	SA351 CF8M	= **0.153134** ㎟
	Bonnet	15	SA351 CF8M	
	Seat	16	316 SS-st.	
	Disc	17	316 SS-st.	Calculation of Capacity
	Guide	18	316 SS	
	Gasket (Bonnet)	19	PcTFE	
	Spring	20	316 SS	W = A*Kd*Kb*Kc*Kv/(11.78*√(G/(P1-Pb)))
	Bellows	21	None	
BASIS	Approved by	22	KGS UV STAMP	= 132.9*0.615*1*1*0.969/(11.78*√(0.449/(6526.3-9)))
	Comply with NACE	23	No	
	EN 10204	24	No	= 810.00 ℓ/min
	Code	25	API RP 520-Certification	= **48.6** m3/h
	Fire	26	No	
	Sizing Basis	27	Thermal Expansion	
	Rupture Disk	28	No	

SERVICE CONDITION	Fluid / State	29	Hydrocarbon(HC) / LIQUID	
	Mol. Weight / Specific Gravity	30	0.449	
	Compressibility Factor	31	-	
	Ratio of Specific Heat	32	-	
	Viscosity	33	0.120 cP	
	Operating / Relieving Temp.	34	-148 / 60 ℃	
	Design Min. / Design Max. Temp.	35	-196/66 ℃	
	Operating / Set Pressure	36	4.873 / 5.933 MPag	
	Design Pressure / C.D.T.P	37	5.933 / 5.933 MPag	
	Back Pressure – Superimposed - Constant	38	- MPag	
	Back Pressure – Superimposed - Variable	39	- MPag	
	Back Pressure – Built-up	40	0.009 MPag	
	Back Pressure – Total	41	0.009 MPag	
	Allowable Overpressure	42	10 %	
	Closing Pressure / Blowdown(%)	43	Min. 5.04305 MPag / 15%	
SIZING & SELECTION	Required Capacity	44	0.056 m3/h	
	Valve Actual Capacity	45	48.6 m3/h	
	Calculated Orifice Area	46	0.153134 ㎟	
	Selected Orifice Area	47	132.9 ㎟	
	Orifice Dia.(mm)	48	D1(13)	
			-	
			-	
ETC	Paint System & Color	49	None	
	Test Gag	50	Yes	
	Bug screen	51	No	

W	Valve Capacity	810.00 ℓ/min
W1	Required Capacity	0.933333 ℓ/min
P	Set Pressure	5933 KPag
A1	Calculated Area	0.153134 ㎟
A	Selected Area	132.9 ㎟
Kd	Coefficient of Discharge	0.615
G	Specific Gravity	0.449
Pb	Back Pressure	9 KPag
Kb	Correction Factor Due to Back Pressure	1
Kc	Correction Factor for a rupture disk	1
Kv	Correction Factor due to Viscosity	0.969
P1	Set Pressure plus Overpressure	6526.3 KPag

Remarks

*Remark
Service Requirement : Cryogenic Service

- Operating Pressure : 49.7 kg/㎠g
- Setting Pressure : 60.5 kg/㎠g
- Design Pressure : 60.5 kg/㎠g
- Built-up Back Pressure : 0.1 kg/㎠g
- Required Capacity : 24.695 kg/h
- Valve Capacity : 22539.8 kg/h