JOKWANG I.L.I

Pressure Safety & Relief Valve Specification and Calculation Sheet

Sheet No.	7 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-3040	
	Tag No.	2	R2-PSV-3402/3403	
	Service Line	3	C-301A/B-E1 (Oil Cooler) TS	
	Model No.	4	JSV-FF100	
	Quantity	5	2	
TYPE	Nozzle Type	6	Full Nozzle	
	Design Type	7	Conventional	
	Bonnet Type	8	Close	
	Lever Type	9	None	
	Cap Type	10	Screwed	
CONN.	Size. Inlet / Outlet	11	3/4"X1"	
	Inlet. Rating / Facing	12	ASME CL.150 RF	
	Outlet. Rating / Facing	13	ASME CL.150 RF	
MATERIALS	Body (Base)	14	SA216 WCB	
	Bonnet	15	SA216 WCB	
	Seat	16	316 SS-st.	
	Disc	17	316 SS-st.	
	Guide	18	316 SS	
	Gasket (Bonnet)	19	PTFE	
	Spring	20	316 SS	
	Bellows	21	None	
BASIS	Approved by	22	UV STAMP	
	Comply with NACE	23	No	
	EN 10204	24	No	
	Code	25	API RP 520-Certification	
	Fire	26	No	
	Sizing Basis	27	Thermal Expansion	
	Rupture Disk	28	No	
SERVICE CONDITION	Fluid / State	29	CW / LIQUID	
	Mol. Weight / Specific Gravity	30	0.986	
	Compressibility Factor	31	-	
	Ratio of Specific Heat	32	-	
	Viscosity	33	0.504 cP	
	Operating / Relieving Temp.	34	38 / 55 ℃	
	Design Min. / Design Max. Temp.	35	-18/65 ℃	
	Operating / Set Pressure	36	0.49 / 1.029 MPag	
	Design Pressure / C.D.T.P	37	1.029 / 1.029 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. 0.87465 MPag / 14.9999%	
SIZING & SELECTION	Required Capacity	44	0.012 m3/h	
	Valve Actual Capacity	45	12.5 m3/h	
	Calculated Orifice Area	46	0.128125 ㎟	
	Selected Orifice Area	47	132.9 ㎟	
	Orifice Dia.(mm)	48	D1(13)	
			-	
			-	
ETC	Paint System & Color	49	See Remark	
	Test Gag	50	Yes	
	Bug screen	51	No	

Calculation

Calculation of Area

A1 = 11.78*W1*(√G/(P1-Pb))/(Kd*Kb*Kc*Kv)

= 11.78*0.2*√(0.986/(1131.9-9))/(0.615*1*1*0.886)

= **0.128125** ㎟

Calculation of Capacity

W = A*Kd*Kb*Kc*Kv/(11.78*√(G/(P1-Pb)))

= 132.9*0.615*1*1*0.886/(11.78*√(0.986/(1131.9-9)))

= 207.50 ℓ/min
= **12.5** m3/h

W	Valve Capacity	207.50 ℓ/min
W1	Required Capacity	0.2 ℓ/min
P	Set Pressure	1029 KPag
A1	Calculated Area	0.128125 ㎟
A	Selected Area	132.9 ㎟
Kd	Coefficient of Discharge	0.615
G	Specific Gravity	0.986
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	0.886
P1	Set Pressure plus Overpressure	1131.9 KPag

Remarks

*Remark
- Operating Pressure : 5.0 kg/㎠g
- Setting Pressure : 10.5 kg/㎠g
- Design Pressure : 10.5 kg/㎠g
- Constant Back Pressure : kg/㎠g
- Variable Back Pressure : kg/㎠g
- Built-up Back Pressure : 0.1 kg/㎠g
- RequiredCapacity : 0.6902 kg/h
- Valve Capacity : 6803.4 kg/h