JOKWANG I.L.I

Pressure Safety & Relief Valve Specification and Calculation Sheet

Sheet No.	2 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-1 031	
	Tag No.	2	R2-PSV-1311/1312	
	Service Line	3	C-1 01A/B-E2A (LUBE OIL COOLER) PLATE SIDE	
	Model No.	4	JSV-FF100	**Calculation**
	Quantity	5	2	
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*0.2*√(0.981/(1131.9-9))/(0.615*1*1*0.895)
	Inlet. Rating / Facing	12	ASME CL.150 RF	
	Outlet. Rating / Facing	13	ASME CL.150 RF	= **0.126515** ㎟
MATERIALS	Body (Base)	14	SA216 WCB	
	Bonnet	15	SA216 WCB	
	Seat	16	316 SS-st.	
	Disc	17	316 SS-st.	Calculation of Capacity
	Guide	18	316 SS	
	Gasket (Bonnet)	19	PTFE	
	Spring	20	316 SS	W = A*Kd*Kb*Kc*Kv/(11.78*√(G/(P1-Pb)))
	Bellows	21	None	
BASIS	Approved by	22	UV STAMP	= 132.9*0.615*1*1*0.895/(11.78*√(0.981/(1131.9-9)))
	Comply with NACE	23	No	
	EN 10204	24	No	= 210.10 ℓ/min
	Code	25	API RP 520-Certification	= **12.6** m3/h
	Fire	26	No	
	Sizing Basis	27	Thermal Expansion	
	Rupture Disk	28	No	

SERVICE CONDITION	Fluid / State	29	CW / LIQUID	
	Mol. Weight / Specific Gravity	30	0.981	
	Compressibility Factor	31	-	
	Ratio of Specific Heat	32	-	
	Viscosity	33	0.437 cP	
	Operating / Relieving Temp.	34	36 / 64.4 ℃	
	Design Min. / Design Max. Temp.	35	-18/65 ℃	
	Operating / Set Pressure	36	0.539 / 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. 0.87464 MPag / 15.0009%	
SIZING & SELECTION	Required Capacity	44	0.012 m3/h	
	Valve Actual Capacity	45	12.6 m3/h	
	Calculated Orifice Area	46	0.126515 ㎟	
	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	

W	Valve Capacity	210.10 ℓ/min
W1	Required Capacity	0.2 ℓ/min
P	Set Pressure	1029 KPag
A1	Calculated Area	0.126515 ㎟
A	Selected Area	132.9 ㎟
Kd	Coefficient of Discharge	0.615
G	Specific Gravity	0.981
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	0.895
P1	Set Pressure plus Overpressure	1131.9 KPag

Remarks

*Remark
- Operating Pressure : 5.5 kg/㎠g
- Setting Pressure : 10.5 kg/㎠g
- Design Pressure : 10.5 kg/㎠g
- Built-up Back Pressure : 0.1 kg/㎠g
- Required Capacity : 12 kg/h
- Valve Capacity : 7357.5 kg/h