

 <b>JOKWANG I.L.I</b> <small>Since 1968</small>			Pressure Safety & Relief Valve Specification and Calculation Sheet							
			Sheet No.		10 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-3756A/B							
	Service Line	3	W-302-E (Cold Box)							
	Model No.	4	JSV-FF100		<div>Calculation</div>					
	Quantity	5	2							
TYPE	Nozzle Type	6	Full Nozzle		Calculation of Area					
	Design Type	7	Conventional		$A1 = 13160 \times W1 \times (\sqrt{ZT/M}) / (C \times Kd \times (P \times 1.21 + 101.325) \times Kb \times Kc)$ $= 13160 \times 574 \times (\sqrt{1.008 \times 136 / 3.2}) / (356.06 \times 0.831 \times (5933 \times 1.21 + 101.325) \times 1 \times 1)$ $= \underline{22.952062} \text{ mm}^2$					
	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.600 RF							
	Outlet. Rating / Facing	13	ASME CL.150 RF							
MATERIALS	Body (Base)	14	SA351 CF8M		Calculation of Capacity					
	Bonnet	15	SA351 CF8M							
	Seat	16	316 SS-st.		$W = A \times C \times Kd \times (P \times 1.21 + 101.325) \times Kb \times Kc / (13160 \times \sqrt{ZT/M})$ $= 70.97 \times 356.06 \times 0.831 \times (5933 \times 1.21 + 101.325) \times 1 \times 1 / (13160 \times \sqrt{(1.008 \times 136 / 3.2)})$ $= \underline{1775} \text{ kg/h}$					
	Disc	17	316 SS-st.							
	Guide	18	316 SS							
	Gasket (Bonnet)	19	PcTFE							
	Spring	20	316 SS							
	Bellows	21	None							
BASIS	Approved by	22	KGS UV STAMP							
	Comply with NACE	23	No							
	EN 10204	24	No							
	Code	25	API RP 520							
	Fire	26	Yes							
	Sizing Basis	27	Fire Case							
	Rupture Disk	28	No		W	Valve Capacity	1775 kg/h			
SERVICE CONDITION	Fluid / State	29	Hydrocarbon (HC) / GAS		W1	Required Capacity	574 kg/h			
	Mol. Weight / Specific Gravity	30	3.2		P	Set Pressure	5933 KPag			
	Compressibility Factor	31	1.008		A1	Calculated Area	22.952062 mm <sup>2</sup>			
	Ratio of Specific Heat	32	1.4		A	Selected Area	70.97 mm <sup>2</sup>			
	Viscosity	33	0.008 cP		Kd	Coefficient of Discharge	0.831			
	Operating / Relieving Temp.	34	42 / -137 °C		C	Coefficient base on Ratio of Specific Heat	356.06			
	Design Min. / Design Max. Temp.	35	-196 / 66 °C		T	Kelvin Temperature	136 K			
	Operating / Set Pressure	36	4.942 / 5.933 MPag		M	Molecular Weight	3.2			
	Design Pressure / C.D.T.P	37	5.933 / 5.9036 MPag		Z	Compressibility Factor	1.008			
	Back Pressure	Superimposed - Constant	38	0.0294 MPag		Kb	Correction Factor Due to Back Pressure	1		
		Superimposed - Variable	39	- MPag		Kc	Correction Factor for a rupture disk	1		
		Built-up	40	0.0217 MPag		<div>Remarks</div>				
		Total	41	0.0511 MPag						
	Allowable Overpressure	42	21 %							
	Closing Pressure / Blowdown(%)	43	Min. 5.51769 MPag / 7%		<u>*Remark</u> Service Requirement : Cryogenic					
SIZING & SELECTION	Required Capacity	44	574 kg/h		- Operating Pressure : 50.4 kgf/cm <sup>2</sup> g - Setting Pressure : 60.5 kgf/cm <sup>2</sup> g - Design Pressure : 60.5 kgf/cm <sup>2</sup> g - Constant Back Pressure : 0.3 kgf/cm <sup>2</sup> g - Built-up Back Pressure : 0.222 kgf/cm <sup>2</sup> g					
	Valve Actual Capacity	45	1775 kg/h							
	Calculated Orifice Area	46	22.952062 mm <sup>2</sup>							
	Selected Orifice Area	47	70.97 mm <sup>2</sup>							
	Orifice Dia.(mm)	48	D(9.5)							
ETC	Paint System & Color	49	See Remark							
	Test Gag	50	Yes							
	Bug screen	51	No							