



LEVEL				MME DOC.:	MPE-007	20502	A
CONTROL VALVE				CLIENT DOC.:			
NO.	BY	APP	DATE	DESCRIPTION			
0	SES	IES	05/28/24	FOR APPROVAL			
1	DGJ	IES	07/03/24	FOR APPROVAL			
2	DGJ	IES	07/11/24	FOR APPROVAL			

CLIENT DELTA 2
P.O. NO.: PO-ENER-MME-2024-100-002
PROJECT: BOC
JOB NO.: MPE-007
SERVICE: PROPANE REFERIGERATION PACKAGE

GENERAL	1	Tag No.	LCV-0001A/B				
	2	Qty	2				
	3	Service / Line Size-Schedule	CHILLER EXPANSION LINE / 1.5"-SCH80 Inlet / 4"-SCH40 Outlet				
	4	Line No. / Vessel No.	TBA / CHILLER				
	5	Function	LEVEL CONTROL VALVE EXPANSION TYPE				
BODY	6	Type of Body	UN-BALANCED PLUG				
	7	Body Size / Port Size / Travel	1" / 1" 25.40 mm / 3/4" 19.0 mm				
	8	Guiding / No. of Ports	STEM GUIDED WITH CONTOUR PLUG / 1				
	9	End Conn. & Rating	300# ANSI R.F. FLANGE				
	10	Body Material / Bolt-Nut	LOW TEMP SA350-LF2 / SA320-L7M / SA194-7M				
	11	Packing Type / Material	V-RING / PTFE				
	12	Lubricator / Isolating Valve	----				
	13	Bonnet Type	LOW TEMP SA352-LCB/LCC/GRAPHITE/316 SST GASKET				
	14	Trim Characteristic	REDUCED TRIM, LINEAR TRIM, UN-BALANCED, & PLUG DOWN				
	15	Trim Material : Seat/Plug Stem	316 SST / 316 SST HD 316 SST				
	16	Required Seat Tightness	ANSI / FCI 70-2-1991 CLASS IV				
	17	Maximum Allow. Sound Level	82 dbA @ 3 ft				
	18	Flow Direction (FTO or FTC)	FLOW TO OPEN				
ACTUATOR	19	MFR / Model No. / Size (NOTE 14 & 17)	VSI / PISTON L-Act / 50				
	20	Type of Actuator / Service	SPRING OPPOSED DIAPHRAGM / DIRECT ACTING (AIR-TO-OPEN)				
	21	Close at / Open at	6 PSIG / 30 PSIG 0.41 / 2.07 BarG				
	22	Flow Action to / Direction	OPEN / UP				
	23	Fail Position	CLOSE (PLUG DOWN) (AIR-TO-OPEN; FAIL-TO-CLOSE)				
	24	Air Supply Pressure Nor /Max (NOTE 16)	101.5 PSIG / 108.75 PSIG 7.00 / 7.50 BarG				
	25	Handwheel / Location	NONE / ---				
POSITIONER	26	MFR / Model No. (NOTE 10)	ROTORK / 4-20 Ma HART YT-3300				
	27	Filter Reg. / Gauges / Bypass (NOTE 21)	REQ'D SITECNA FR304 / REQ'D / NOT REQ'D				
	28	Input Signal	4-20 mA HART				
	29	Output Signal	0 - 100 % LYI-TBA/LYI-TBA				
	30	Action (NOTE 14)	DIRECT ACTING				
TRANSDUCER (AIR SET)	31	Make / Model No. / Tag	PART OF POSITIONER				
	32	Input / Output Signal					
	33	Filter Reg. / Gauges / Bypass					
	34	Installation					
	35	Air Supply Pressure Nor /Max					
SOLENOID	36	Assembly	N/A				
	37	MFR / Model No.					
	38	MYCOM Document					
	39	Tag Numbers					
	40	Assembly					
OPTIONS	41	Flow Units	LPM				
	42	Fluid	100% PROPYLENE LIQUID				
	43	Quantity Max Flow / Cv CALCULATED	33	GPM	/ 7,209.0 lb/h	3,273 kg/h / 1.48	
	44	Quantity Operating Flow / Cv / Cv (SELECTED)	29	GPM	/ 6,270.9 lb/h	2,847 kg/h / 1.27 / 9	
	45	Valve Cv / Valve FL	TBA @ 100% FLOW				
	46	Norm. Inlet Pressure / ΔP	18.78 BarG		14.9 Bar		
	47	Max. Inlet Pressure / ΔP	19 BarG		15.3 Bar		
	48	Max. Inlet Shut Off / Discharge Pressure	22 BarG		3.86 BarG		
	49	Temperature Max / Operating	57.0 °C / 56.0 °C				
	50	Specific gravity / Mol Wt.	0.437 / ---				
	51	Operating Viscosity / % Flash	0.069 cP / 42.94				
	52	% Superheat / % Solids	--- / ---				
	53	Vapor Pressure / Crit. Pressure	Barg 18.68 / NOT AVAILABLE				
	54	Predicted Sound Level dbA	82 dbA @ 3 ft @ 1m NORMAL				
	55	Manufacturer	VSI				
	56	Model No. (NOTE 2)	1" -300# ANSI RF / Globe / G-Stream				

- NOTES:
- SYSTEM DESIGN PRESSURE & TEMPERATURE: FV to 22.0 BarG @ 120 °C
 - CADMIUM PLATED B7 BOLTS & 2H NUTS, WETTED MATERIAL SHALL BE 316 STAINLESS STEEL
 - INSTRUMENT SHALL BE SUITABLE FOR OFF-SHORE SERVICE AND TROPICAL CLIMATE
 - MATERIAL TEST REPORT REQUIRED NOT REQUIRED WITH CHARPY IMPACT TEST PER ASME
 - MANUFACTURER CALCULATION / SIZING SHEET REQUIRED NOT REQUIRED
 - DIE- STAMPED STAINLESS STEEL NAMEPLATE REQUIRED NOT REQUIRED
 - CUSTOMER SPECIFICATION: N/A & N/A
 - HARD COPY OF IEC-79, EExi IIB-T5 CERTIFICATE
 - AREA CLASSIFICATION: IEC-79, ZONE 2, GROUP IIB, T3
 - DIGITAL VALVE POSITIONER USING HART PROTOCOL COMMUNICATION
 - ALL DOCUMENTS TO BE SUBMITTED IN BOTH HARD AND ELECTRONIC FORMAT
 - INDIVIDUAL PART WEIGHT MUST BE CERTIFIED
 - MATERIAL SHALL BE PER APPROVED BY CLIENT
 - DIRECT ACTING CONTROLLER BY PURCHASER. ACTUATOR SIGNAL PRESSURE DECREASE AS CONTROLLER OUTPUT DECREASES
 - INSTRUMENT MOUNTING HARDWARE, FASTENERS, LINKAGES & WINGES SHALL BE 316 SS
 - MIN AIR SUPPLY PRESSURE IS 4.5 barg
 - MECHANICAL SCALE INDICATOR / POINTER SHALL BE SUPPLIED
 - PNEUMATIC TUBING SHALL BE 316 STAINLESS STEEL
 - PAINTING SHALL BE HIGH BUILT, HIGH TEMP EPOXY FOR ONSHORE SERVICE
 - ELECTRICAL CONNECTION:M20
 - REGULATOR SET @ 2.75 barg

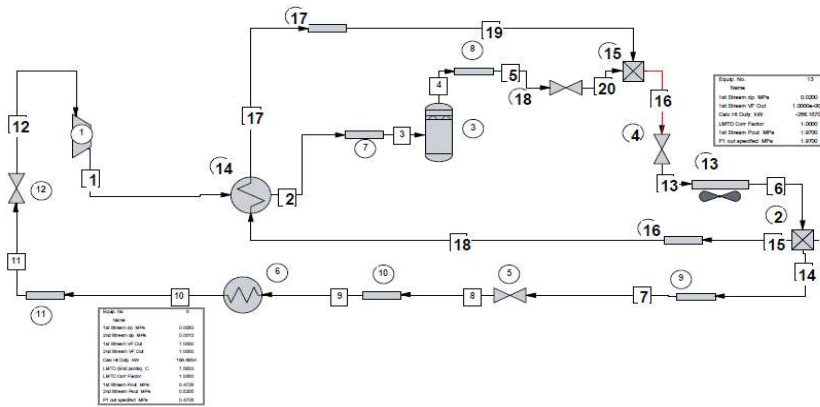
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A. SELECTED VALVE DATA

MAYEKAWA VALVE SIZING CALCULATION

HYSIS SIMULATION



Stream No. 7

Name		
-- Overall --		
Molar flow kmol/h		64.5523
Mass flow kg/h		2846.5000
Temp C		56.3228
Pres MPa		1.9682
Vapor mole fraction		0.0000
Enth kW		-2089.8
Tc C		96.6700
Pc MPa		4.2496
Std. sp gr. wtr = 1		0.508
Std. sp gr. air = 1		1.523
Degree API		147.2079
Average mol wt		44.0960
Actual dens kg/m3		436.7512
Actual vol m3/h		6.5174
Std liq m3/h		5.6067
Std vap 0 C m3/h		1446.8534
-- Vapor only --		
Molar flow kmol/h		64.5523
Mass flow kg/h		2846.5000
Average mol wt		44.0960
Actual dens kg/m3		436.7512
Actual vol m3/h		6.5174
Std liq m3/h		5.6067
Std vap 0 C m3/h		1446.8534
Cp kJ/kg-K		3.5933
Z factor		0.0730
Visc cP		0.06919
Th cond Btu/hr-ft-F		0.0439
-- Liquid only --		
Molar flow kmol/h		64.5523
Mass flow kg/h		2846.5000
Average mol wt		44.0960
Actual dens kg/m3		436.7512
Actual vol m3/h		6.5174
Std liq m3/h		5.6067
Std vap 0 C m3/h		1446.8534
Cp kJ/kg-K		3.5933
Z factor		0.0730
Visc cP		0.06919
Th cond Btu/hr-ft-F		0.0439
Surf. tens. dyne/cm		3.5382

HYSIS SIZING

Control Valve Sizing for Stream # 7

Loadings and Properties

	Vapor	Liquid
Flow rate	0.0000 kg/h	2846.5000 kg/h
Flow rate	0.0000 m3/h	6.5174 m3/h
Density	0.0000 kg/m3	436.7512 kg/m3
Total flow	2846.5000 kg/h	
Upstream pressure	1.9682 MPa	
Downstream pressure	0.4860 MPa	
Critical flow factor	0.9800	
Corr. factor for reducers	1.0000	
Static head	0.0000 mm	
Seat type	Single-Seat	
Flow type	Two phase flow	
Calc. coefficient Cvc	1.6216	
Capacity coefficient Cv	9.0000	
Cvc / Cv ratio	0.1802	
Valve size	1.0000 in	

VENDOR RECOMMENDED VALVE SIZE 1"/ANSI/CL300 IS ACCEPTABLE.