

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

Control valve sizing to be updated based on below comments.

GENERAL	1	Tag No.					
	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					
	23	Fail Position	AIR-TO-OPEN; FAIL-TO-CLOSE				
	24	Air Supply Pressure Nor /Max (NC)	7.00 / 7.50		BarG		
POSITIONER	25	Handwheel / Location					
	26	MFR / Model No. (NC)	YT-3300				
	27	Filter Reg. / Gages / Bypass (NC)	REQ'D / NOT REQ'D				
TI (A)	28	Tag					
	29	Filter Reg. / Gages / Bypass (NC)					
SI	30	Pressure Nor /Max (NC)	N/A				
	31	Tag					
OPTIONS	32	Filter Reg. / Gages / Bypass (NC)					
	37	MFR / Model No.					
	38	MYCOM Document					
	39	Tag Numbers					
	40	Assembly					
	41	Flow Units	LPM				
	42	Fluid	100% PROPYLENE LIQUID				
	43	Quantity Max Flow / Cv	CALCULATED 30	LPM	7,209.0 lb/h	3,273 kg/h	1.5
44	Quantity Operating Flow / Cv / Cv (SELECTED)	29	LPM	6,895.6 lb/h	3,131 kg/h		
45	Valve Cv / Valve FL	TBA @ 100% FLOW					
46	Norm. Inlet Pressure / ΔP	18.68 BarG		14 Bar			
47	Max. Inlet Pressure / ΔP	19 BarG		14 Bar			
48	Max. Inlet Shut Off / Discharge Pressure	22 BarG		4.86 BarG			
	Operating	57.0 °C		56.0 °C			
	Wt.	0.51 / ---					
	% Flash	0.069 cP / ---					
	Welds	--- / ---					
	Test Pressure	NOT AVAILABLE / 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					

Flashing has been occurred at control valve outlet, vapor fraction at outlet is 42.94%.

Vendor to consider also normal (2847 kg/h) and minimum flow (1139 kg/h) in CV calculation.

To be deleted

18.78

REQUIRED / NOT REQUIRED

to be updated

Operating viscosity to be corrected to 0.059 cP.

3.84

NOTES:

- SYSTEM DESIGN PRESSURE & TEMPERATURE: FV to 22.0 BarG @ 120 °C
- CADMIUM PLATED MATERIAL SHALL BE 316 STAINLESS STEEL
- INSTRUMENT SHALL BE SERVICE AND TROPICAL CLIMATE
- MATERIAL TEST RECORDS: REQUIRED NOT REQUIRED WITH CHARPY IMPACT TEST PER ASME
- MANUFACTURER: REQUIRED NOT REQUIRED
- DIE- STAMPED STEEL: REQUIRED NOT REQUIRED
- CUSTOMER SPECIFICATIONS: & N/A
- HARD COPY OF INSTRUMENT DATA SHEET TO BE PROVIDED
- 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

For liquid services to be specified.

Vapor pressure is 18.68 barg.

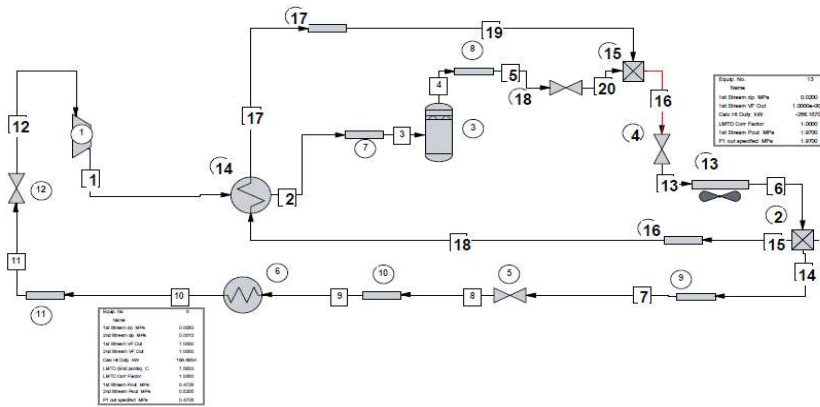
LEVEL				MME DOC.:	MPE-007	20502	A
CONTROL VALVE				CLIENT DOC.:			
NO.	BY	APP	DATE	DESCRIPTION			
0	SES	IES	05/28/24	FOR APPROVAL			

CLIENT DELTA 0
 P.O. NO.: PO-ENER-MME-2024-100-002
 PROJECT: BOC
 JOB NO.: MPE-007
 SERVICE: PROPANE REFERIGERATION PACKAGE

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.