



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			

CLIENT DELTA 1
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	18.68 BarG		14.8 Bar		
	47	Max. Inlet Pressure / ΔP	19 BarG		15.2 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 / ---				
	52	% Superheat / % Solids	--- / ---				
	53	Vapor Pressure / Crit. Pressure	Barg 18.7 / 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:

1 SYSTEM DESIGN PRESSURE & TEMPERATURE: FV to 22.0 BarG @ 120 °C

2 CADMIUM PLATED B7 BOLTS & 2H NUTS, WETTED MATERIAL SHALL BE 316 STAINLESS STEEL

3 INSTRUMENT SHALL BE SUITABLE FOR OFF-SHORE SERVICE AND TROPICAL CLIMATE

4 MATERIAL TEST REPORT REQUIRED NOT REQUIRED WITH CHARPY IMPACT TEST PER ASME

5 MANUFACTURER CALCULATION / SIZING SHEET REQUIRED NOT REQUIRED

6 DIE- STAMPED STAINLESS STEEL NAMEPLATE REQUIRED NOT REQUIRED

7 CUSTOMER SPECIFICATION: N/A & N/A

8 HARD COPY OF IEC-79, EExi IIB-T5 CERTIFICATE

9 AREA CLASSIFICATION: IEC-79, ZONE 2, GROUP IIB, T3

10 DIGITAL VALVE POSITIONER USING HART PROTOCOL COMMUNICATION

11 ALL DOCUMENTS TO BE SUBMITTED IN BOTH HARD AND ELECTRONIC FORMAT

12 INDIVIDUAL PART WEIGHT MUST BE CERTIFIED

13 MATERIAL SHALL BE PER APPROVED BY CLIENT

14 DIRECT ACTING CONTROLLER BY PURCHASER. ACTUATOR SIGNAL PRESSURE DECREASE AS CONTROLLER OUTPUT DECREASES

15 INSTRUMENT MOUNTING HARDWARE, FASTENERS, LINKAGES & WINGES SHALL BE 316 SS

16 MIN AIR SUPPLY PRESSURE IS 4.5 barg

17 MECHANICAL SCALE INDICATOR / POINTER SHALL BE SUPPLIED

18 PNEUMATIC TUBING SHALL BE 316 STAINLESS STEEL

19 PAINTING SHALL BE HIGH BUILT, HIGH TEMP EPOXY FOR ONSHORE SERVICE

20 ELECTRICAL CONNECTION:M20

21 REGULATOR SET @ 2.75 barg

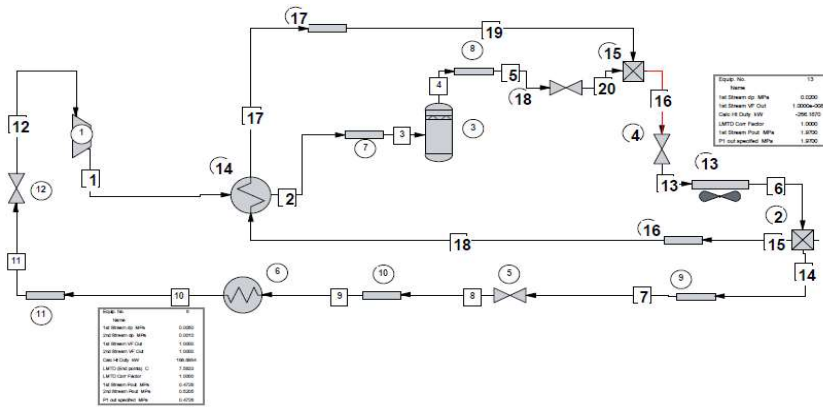
LEVEL				MME DOC.:	MPE-007	20502	A
CONTROL VALVE				CLIENT DOC.:			
NO.	BY	APP	DATE	DESCRIPTION			
0	SES	IES	05/28/24	FOR APPROVAL			
1	DGJ	IES	07/03/24	FOR APPROVAL			

CLIENT DELTA 1
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.