

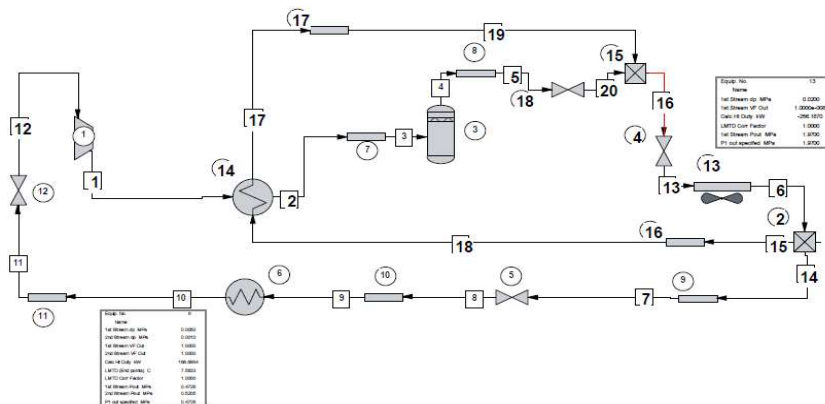
<div><div>DELTA</div><div>PROCESS EQUIPMENT</div></div>		LEVEL				MME DOC.: MPE-007 20502 A			
		CONTROL VALVE				CLIENT DOC:			
		NO.	BY	APP	DATE	DESCRIPTION			
CLIENT		0	SES	IES	05/28/24	FOR APPROVAL			
P.O. NO.: PO-ENER-MME-2024-100-002									
PROJECT: BOC									
JOB NO.: MPE-007									
SERVICE: 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					/ REQUIRED / NOT REQUIRED		
	40	Assembly							
OPTIONS	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 1.4 / 9		
	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		
	49	Temperature Max / Operating					57.0 °C / 56.0 °C		
	50	Specific gravity / Mol Wt.					0.51 / ---		
	51	Operating Viscosity / % Flash					0.069 cP / ---		
	52	% Superheat / % Solids					--- / ---		
	53	Vapor Pressure / Crit. 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	
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 <input checked="" type="checkbox"/> REQUIRED <input type="checkbox"/> NOT REQUIRED WITH CHARPY IMPACT TEST PER ASME									
5 MANUFACTURER CALCULATION / SIZING SHEET <input checked="" type="checkbox"/> REQUIRED <input type="checkbox"/> NOT REQUIRED									
6 DIE- STAMPED STAINLESS STEEL NAMEPLATE <input checked="" type="checkbox"/> REQUIRED <input type="checkbox"/> 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
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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



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 VLAVE SIZE 1"/ANSI/CL300 IS ACCEPTABLE.