Airpack B.V. - Air Compressor –

Integrated Methanol and Ammonia Plant

17735-COM PSV Data Sheets (K020)

code-2
M. Vakii

REV.	DATE	DESCRIPTION	DRAWN	CHECKED	APPROVED
03	26-03-2024	Issued for Approval	L.K.	J.J.	S.K.
02	11-03-2024	Issued for Approval	L.K.	J.J.	S.K.
01	08-11-2023	Issued for Approval	S.K.	J.J.	S.K.

LIST OF REVISED PAGES

Page \ Rev.	01	02	03	04	05	Page \ Rev.	01	02	03	04	05	Page \ Rev.	01	02	03	04	05	Page \ Rev.	01	02	03	04	05
1	X	X	X			**26**						**51**						**76**					
2	X	X	X			**27**						**52**						**77**					
3	X	X	X			**28**						**53**						**78**					
4	X	X	X			**29**						**54**						**79**					
5	X	X	X			**30**						**55**						**80**					
6	X	X	X			**31**						**56**						**81**					
7	X	X	X			**32**						**57**						**82**					
8						**33**						**58**						**83**					
9						**34**						**59**						**84**					
10						**35**						**60**						**85**					
11						**36**						**61**						**86**					
12						**37**						**62**						**87**					
13						**38**						**63**						**88**					
14						**39**						**64**						**89**					
15						**40**						**65**						**90**					
16						**41**						**66**						**91**					
17						**42**						**67**						**92**					
18						**43**						**68**						**ATTACHMENT**					
19						**44**						**69**						**1**					
20						**45**						**70**						**2**					
21						**46**						**71**						**3**					
22						**47**						**72**						**4**					
23						**48**						**73**						**5**					
24						**49**						**74**						**6**					
25						**50**						**75**						**7**					

	INDEX		
No.	Device	Tag Number	Page
1	Pressure Safety Valve	320PSV-8201	4
2	Pressure Safety Valve	320PSV-8202	5
3	Pressure Safety Valve	320PSV-8203	6
4	Pressure Safety Valve	320PSV-8204	7
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			

Note

GENERAL	1	Tag Number				320PSV-8201	
	2	Service				Pressure Safety Valve	
	3	P&ID No.				N278-VD-6019-PR-PID-0002	
	4	Location				Package inlet	
	5	Line number				DAMPENER KV-020-001	
	6	Area classification				Safe area	
	7	Nozzle				Full nozzle	
	8	Design type				Safety	
	9	Conv., Bellows, Pilot op.				Conventional type	
	10	Bonnet Type				Closed	
	11	Bonnet connection				Bolted	
PROCESS CONDITIONS	12	Fluid	State			Air	Vapor
	13	Pressure	Inlet		Max.	9,5 bar(g)	12,5 bar(g)
	14	Temperature	Norm.		Max.	46 °C	-
	15	Design	Press.		Temp.	12,5 bar(g)	75 °C
	16	Ambient Temp.	Min.		Max.	-	-
	17	Flow				35 Nm^3/hr	
BASIS AND SELECTION	18	Set Pressure				12,5 bar(g)	
	19	Molecular Weight	Oper. Sp. Gr.			-	-
	20	Back Pres. (bar(g))				ATM	
	21	Allowable Overpressure (%)				10%	
	22	Compressibility Factor (Z)				1	
	23	Ratio of Specific Heat (Cp/Cv)				-	
	24	Operating Viscosity (cP)				-	
	25	Barometric Pressure				1,013 bar(a)	
	26	Max. Allowable Relief Pressure				14,7 bar(a)	
	27	Design Code				API 520 / 521	
	28	Size Basis				Blocked discharge	
	29	Required discharge Area (sq.mm)				VTA	
	30	Selected Area (sq.mm)				VTA	
	31	Orifice Designation				VTA	
	32	Blow-down				5-7%	
CONNECTIONS	33	Inlet Size	Outlet Size			3/4"	VTA
	34	Inlet Connection	Outlet Conn.			RF	RF
	35	Inlet Rating	Outlet Rating			300#	VTA
	36						
	37						
MATERIAL	38	Body and Bonnet				SS316	
	39	Seat and Disc				SS316	
	40	Guide and Rings				CS	
	41	Spring				CS	
	42	Nozzle				SS316	
OPTIONS	43	Tag plate				SS316, Plate with steel wire	
	44						
	45						
	46						
	47						
CERTIFICATES	48	3.1 Material certificate				Yes	
	49	Calibration certificate				Yes	
	50	Leakage test acc to API STD 527				Yes	
	51	Functional test				No	
CALCULATIONS	52	Sizing calculation				Yes	
	53						
	54						
PURCHASE	55	Manufacturer				According to approved vendor list	
	56	Model				VTA	
	57						

NOTES :

- Vendor to confirm chosen materials are suitable for process conditions.

Rev	By	Date	Description
03	LK	26-3-2024	Issue for Approval
02	LK	11-3-2024	Issue for Approval
01	SK	8-11-2023	Issue for Approval

INSTRUMENT AND VALVE DATASHEET

Pressure Safety Valve

Airpack Netherlands

شرکت توسعه صنعت لاوان
Lavan Industry Development Company

GENERAL	1	Tag Number				320PSV-8202	
	2	Service				Pressure Safety Valve	
	3	P&ID No.				N278-VD-6019-PR-PID-0002	
	4	Location				1st stage discharge	
	5	Line number				DAMPENER KV-020-002	
	6	Area classification				Safe area	
	7	Nozzle				Full nozzle	
	8	Design type				Safety	
	9	Conv., Bellows, Pilot op.				Conventional type	
	10	Bonnet Type				Closed	
	11	Bonnet connection				Bolted	
PROCESS CONDITIONS	12	Fluid	State			Air	Vapor
	13	Pressure	Inlet		Max.	23,3 bar(g)	30,5 bar(g)
	14	Temperature	Norm.		Max.	157 °C	-
	15	Design	Press.		Temp.	30,5 bar(g)	175 °C
	16	Ambient Temp.	Min.		Max.	-	-
	17	Flow				35 Nm^3/hr	
BASIS AND SELECTION	18	Set Pressure				30,5 bar(g)	
	19	Molecular Weight	Oper. Sp. Gr.			-	-
	20	Back Pres. (bar(g))				ATM	
	21	Allowable Overpressure (%)				10%	
	22	Compressibility Factor (Z)				1	
	23	Ratio of Specific Heat (Cp/Cv)				-	
	24	Operating Viscosity (cP)				-	
	25	Barometric Pressure				1,013 bar(a)	
	26	Max. Allowable Relief Pressure				34,5 bar(a)	
	27	Design Code				API 520 / 521	
	28	Size Basis				Blocked discharge	
	29	Required discharge Area (sq.mm)				VTA	
	30	Selected Area (sq.mm)				VTA	
	31	Orifice Designation				VTA	
	32	Blow-down				5-7%	
CONNECTIONS	33	Inlet Size	Outlet Size			3/4"	VTA
	34	Inlet Connection	Outlet Conn.			RF	RF
	35	Inlet Rating	Outlet Rating			300#	VTA
MATERIAL	36	Body and Bonnet				SS316	
	37	Seat and Disc				SS316	
	38	Guide and Rings				CS	
	39	Spring				CS	
	40	Nozzle				SS316	
	41						
	42						
OPTIONS	43	Tag plate				SS316, Plate with steel wire	
	44						
	45						
	46						
	47						
CERTIFICATES	48	3.1 Material certificate				Yes	
	49	Calibration certificate				Yes	
	50	Leakage test acc to API STD 527				Yes	
	51	Functional test				No	
CALCULATIONS	52	Sizing calculation				Yes	
	53						
	54						
PURCHASE	55	Manufacturer				According to approved vendor list	
	56	Model				VTA	
	57						

NOTES :

- Vendor to confirm chosen materials are suitable for process conditions.

GENERAL	1	Tag Number				320PSV-8203	
	2	Service				Pressure Safety Valve	
	3	P&ID No.				N278-VD-6019-PR-PID-0002	
	4	Location				2nd stage discharge	
	5	Line number				DAMPENER KV-020-004	
	6	Area classification				Safe area	
	7	Nozzle				Full nozzle	
	8	Design type				Safety	
	9	Conv., Bellows, Pilot op.				Conventional type	
	10	Bonnet Type				Closed	
	11	Bonnet connection				Bolted	
PROCESS CONDITIONS	12	Fluid	State			Air	Vapor
	13	Pressure	Inlet		Max.	30 bar (g)	39 bar(g)
	14	Temperature	Norm.		Max.	116°C	-
	15	Design	Press.		Temp.	39 bar (g)	135 °C
	16	Ambient Temp.	Min.		Max.	-	-
	17	Flow				35 Nm^3/hr	
BASIS AND SELECTION	18	Set Pressure				39 bar(g)	
	19	Molecular Weight	Oper. Sp. Gr.			-	-
	20	Back Pres. (bar(g))				ATM	
	21	Allowable Overpressure (%)				10%	
	22	Compressibility Factor (Z)				1	
	23	Ratio of Specific Heat (Cp/Cv)				-	
	24	Operating Viscosity (cP)				-	
	25	Barometric Pressure				1,013 bar(a)	
	26	Max. Allowable Relief Pressure				43,9 bar(a)	
	27	Design Code				API 520 / 521	
	28	Size Basis				Blocked discharge	
	29	Required discharge Area (sq.mm)				VTA	
	30	Selected Area (sq.mm)				VTA	
	31	Orifice Designation				VTA	
	32	Blow-down				5-7%	
CONNECTIONS	33	Inlet Size	Outlet Size			3/4"	VTA
	34	Inlet Connection	Outlet Conn.			RF	RF
	35	Inlet Rating	Outlet Rating			300#	VTA
MATERIAL	36	Body and Bonnet				SS316	
	37	Seat and Disc				SS316	
	38	Guide and Rings				CS	
	39	Spring				CS	
	40	Nozzle				SS316	
	41						
	42						
OPTIONS	43	Tag plate				SS316, Plate with steel wire	
	44						
	45						
	46						
	47						
CERTIFICATES	48	3.1 Material certificate				Yes	
	49	Calibration certificate				Yes	
	50	Leakage test acc to API STD 527				Yes	
	51	Functional test				No	
CALCULATIONS	52	Sizing calculation				Yes	
	53						
	54						
PURCHASE	55	Manufacturer				According to approved vendor list	
	56	Model				VTA	
	57						

NOTES :

- Vendor to confirm chosen materials are suitable for process conditions.

GENERAL	1	Tag Number				320PSV-8204	
	2	Service				Pressure Safety Valve	
	3	P&ID No.				N278-VD-6019-PR-PID-0002	
	4	Location				Water system	
	5	Line number				3/4"-CWR-320-26-B24C-N	
	6	Area classification				Safe area	
	7	Nozzle				Full nozzle	
	8	Design type				Safety	
	9	Conv., Bellows, Pilot op.				Conventional type	
	10	Bonnet Type				Closed	
	11	Bonnet connection				Bolted	
PROCESS CONDITIONS	12	Fluid	State			Water	Liquid
	13	Pressure	Inlet	Max.		4,4 bar(g)	
	14	Temperature	Norm.	Max.			46 °C
	15	Design	Press.	Temp.		7 bar(g)	75 °C
	16	Ambient Temp.	Min.	Max.		-	-
	17	Flow				1 Nm^3/h	
TUBE RUPTURE CASE	18	Fluid	State			Water/Air	Liquid/Gas
	19	Pressure	Temperature			max. 39 bar(g)	135 °C
						35 Nm^3/h	
						7 bar(g)	
						-	-
						ATM	
						10%	
						1	
						-	
						-	
						1,013 bar(a)	
						8,7 bar(a)	
						API 520 / 521	
CONNECTIONS	36	Inlet Size	Outlet Size				
	37	Inlet Connection	Outlet Conn.			RF	RF
	38	Inlet Rating	Outlet Rating			150#	VTA
MATERIAL	39	Body and Bonnet				CS	
	40	Seat and Disc				SS316	
	41	Guide and Rings				CS	
	42	Spring				CS	
	43	Nozzle				SS316	
	44						
OPTIONS	45	Tag plate				SS316, Plate with steel wire	
	46						
	47						
CERTIFICATES	48	3.1 Material certificate				Yes	
	49	Calibration certificate				Yes	
	50	Leakage test acc to API STD 527				Yes	
	51	Functional test				No	
CALCULATIONS	52	Sizing calculation				Yes	
	53						
	54						
PURCHASE	55	Manufacturer				According to approved vendor list	
	56	Model				VTA	
	57						

There is no blocked outlet scenario for this PSV. considering outlet valve blockage, pressure will reach to 7 barg that is the cooling system design pressure and there is no need for PSV protection. But, in case of inlet & outlet valve blockage and exchanger hot side in service, the liquid expansion will happen.
So, all applicable scenario will be:
- Tube rupture
- Thermal Expansion

mment CNI:
ify why CS is considered for PSV-8204
dor reply:
s is according to the PO.
reply:
Please clarify technical point of using CS for this PSV.

NOTES :
- Vendor to confirm chosen materials are suitable for process conditions.

Rev	By	Date	Description
03	LK	26-3-2024	Issue for Approval
02	LK	11-3-2024	Issue for Approval
01	SK	8-11-2023	Issue for Approval

INSTRUMENT AND VALVE DATASHEET
Pressure Safety Valve
Airpack Netherlands
شرکت توسعه صنعت لاوان Lavan Industry Development Company
Sheet 7 of 7
Based on P&ID Rev.07