



# ASPC Project



<b>END CUSTOMER</b>	: Arya Sasol Polymer Company
<b>CONTRACTOR</b>	: DYPNF Co., Ltd.
<b>VENDOR NAME</b>	: Airpack Netherlands BV
<b>EQUIPMENT DESCRIPTION</b>	: Screw Compressor & Roots Blower Package
<b>PURCHASE ORDER NUMBER</b>	: PO-PC2312-08

Customer Document : 3944-VD-0171-DYP-RE-400-CAL-0007  
Number

Airpack Document Number : 23383-12D

Document Title : PSV sizing calculations

Review Code and Status		Contractor Initials/Signature	Date signed
<input type="checkbox"/>	<b>Code 1</b> <b>REJECTED</b> - Vendor to revise and Resubmit. Work cannot proceed		
<input type="checkbox"/>	<b>Code 2</b> Comments As Noted - Work May proceed, subject to compliance with and incorporation of comments		
<input type="checkbox"/>	<b>Code 3</b> No Comments - Work may proceed.		
<input type="checkbox"/>	<b>Code 4</b> Information only - Review not required.		

Rev. No.	Description	Date	Prepared by	Checked by	Approved by
01	Issued for Information	24-04-2026	SC	SC	JJ
00	Issued for Information	24-12-2025	SC	SC	JJ

**44C-40001A/B**

# Safety Relief Valve Sizing Report

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1 General			
2	Tag No.	tba1	Project
3 Valve - General			
4	Article Number		Quantity 1
5	Valve Type	Conventional Design	Lifting Device Packed lever - screwed (H4)
6	Body Material	1.0619/SA-216 WCB/WCC - CS	Cap Type
7	Bonnet Type	Closed	Test Gag No
8	Nozzle Type	Full nozzle	Design Standard API 526
9	Sealing Type	Metal sealing	Discharge coefficient acc. to ASME XIII / VIII (UV)
10 Connections			
11	Inlet		Outlet
12	Standard	EN 1092	Standard EN 1092
13	Type	Integrated flange	Type Integrated flange
14	DN/NPS	DN 100	DN/NPS DN 150
15	PN/PR	PN 16	PN/PR PN 16
16	Flange Facing	Form B1	Flange Facing Form B1
17 Service Condition			
18	Design Pressure (min/max)	Not specified	Required Capacity Not specified
19	Set Pressure	4,20 bar-g	Required Capacity Std-Cond. 0,00 SCFM
20	Overpressure	10,00 %	Volume Flow Standard ASME (60°F @ 14.7psi)
21	Relieving Pressure	5,63 bar-a	Fluid State Gas
22	Operating Pressure	Not specified	Fluid Designation Nitrogen
23	Environmental Pressure	1,01 bar-a	Ratio of Specific Heats, k 1,400
24	Rupt. Disc Correc. Factor	1,000	Compressibility Factor, Z 1,000
25			Molecular Weight, M 28,010 kg/kmol
26	Backpressure		Temperature
27	Constant Superimposed	0,00 bar-g	Relieving 20,00 °C
28	Variable Superimposed	0,00 bar	Normal Operating 25,00 °C
29	Built-up	0,00 bar	Min Design Not specified
30	Total	0,00 bar-g	Max Design Not specified
31 Sizing & Selection - Summary			
32	Required Discharge Area	Not specified	Discharge Coefficient (Kd) 0,801
33	Selected Discharge Area	2.248,006 mm <sup>2</sup>	Nameplate Capacity 4.164,48 SCFM
34	Selected Diameter	53,500 mm	Cold Differential Test Pressure 4,20 bar-g
35	Selected API Orifice	L	Back Pressure Correction Factor 1,000
36	Certified Capacity	8.476,30 kg/h	Reaction Force, API 520-2 (2020) 833,57 N
37	Certified Capacity Std-Cond.	4.218,48 SCFM	Noise Level in 1 m, API 521 137 dB
38	Capacity Exceed	N/A	
39 Notes		Dimensions & Weight	
40	- Noise level calculation based on API 521 at fully gaseous state to atmosphere without consideration of possible discharge pipe.		a 179 mm
41			b 181 mm
42			H 853 mm
43			M 107,0 kg

Prepared by:		Sizing Reference:	-
Date:		Config ID:	
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**44C-80004A/B**

# Safety Relief Valve Sizing Report

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1 General			
2	Tag No.	Project	
3	Customer		
4 Valve - General			
5	Article Number	5262.6464	Quantity 2
6	Valve Type	Conventional Design	Lifting Device Packed lever - screwed (H4)
7	Body Material	1.0619/SA-216 WCB/WCC - CS	Cap Type
8	Bonnet Type	Closed	Test Gag No
9	Nozzle Type	Full nozzle	Design Standard API 526
10	Sealing Type	Metal sealing	Discharge coefficient acc. to ASME XIII / VIII (UV)
11 Connections			
12	Inlet		Outlet
13	Standard	EN 1092	Standard EN 1092
14	Type	Integrated flange	Type Integrated flange
15	DN/NPS	DN 100	DN/NPS DN 150
16	PN/PR	PN 16	PN/PR PN 16
17	Flange Facing	Form B1	Flange Facing Form B1
18 Service Condition			
19	Design Pressure (min/max)	Not specified	Required Capacity 10.056,00 kg/h
20	Set Pressure	3,50 bar-g	Required Capacity Std-Cond. 7.784,89 m³/h
21	Overpressure	10,00 %	Volume Flow Standard Physical (0°C @ 1.013bar)
22	Relieving Pressure	4,86 bar-a	Fluid State Gas
23	Operating Pressure	Not specified	Fluid Designation Air
24	Environmental Pressure	1,01 bar-a	Ratio of Specific Heats, k 1,400
25	Rupt. Disc Correc. Factor	1,000	Compressibility Factor, Z 1,000
26			Molecular Weight, M 28,960 kg/kmol
27	Backpressure		Temperature
28	Constant Superimposed	0,00 bar-g	Relieving 280,00 °C
29	Variable Superimposed	0,00 bar	Normal Operating 280,00 °C
30	Built-up	0,00 bar	Min Design Not specified
31	Total	0,00 bar-g	Max Design Not specified
32 Sizing & Selection - Summary			
33	Required Discharge Area	4.173,329 mm²	Discharge Coefficient (Kd) 0,801
34	Selected Discharge Area	5.026,548 mm²	Nameplate Capacity 8.048,04 SCFM
35	Selected Diameter	80,000 mm	Cold Differential Test Pressure 3,59 bar-g
36	Selected API Orifice	P	Back Pressure Correction Factor 1,000
37	Certified Capacity	12.111,91 kg/h	Reaction Force, API 520-2 (2020) 1.609,09 N
38	Certified Capacity Std-Cond.	9.376,48 m³/h	Noise Level in 1 m, API 521 141 dB
39	Capacity Exceed	20,44 %	
40 Notes		Dimensions & Weight	
41	- Noise level calculation based on API 521 at fully gaseous state to atmosphere without consideration of possible discharge pipe.		a 181 mm
42			b 229 mm
43			H 855 mm
44			M 114,0 kg

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## 45 Tag numbers

46	VM140	VM140		
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**44C-80001/80005A/B**

# Safety Relief Valve Sizing Report

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1 General			
2	Tag No.	Project	
3 Valve - General			
4	Article Number	Quantity	1
5	Valve Type	Conventional Design	Lifting Device Packed lever - screwed (H4)
6	Body Material	1.0619/SA-216 WCB/WCC - CS	Cap Type
7	Bonnet Type	Closed	Test Gag No
8	Nozzle Type	Full nozzle	Design Standard API 526
9	Sealing Type	Metal sealing	Discharge coefficient acc. to ASME XIII / VIII (UV)
10 Connections			
11	Inlet		Outlet
12	Standard	EN 1092	Standard EN 1092
13	Type	Integrated flange	Type Integrated flange
14	DN/NPS	DN 100	DN/NPS DN 150
15	PN/PR	PN 16	PN/PR PN 16
16	Flange Facing	Form B1	Flange Facing Form B1
17 Service Condition			
18	Design Pressure (min/max)	Not specified	Required Capacity Not specified
19	Set Pressure	2,80 bar-g	Required Capacity Std-Cond. 0,00 SCFM
20	Overpressure	10,00 %	Volume Flow Standard ASME (60°F @ 14.7psi)
21	Relieving Pressure	4,09 bar-a	Fluid State Gas
22	Operating Pressure	Not specified	Fluid Designation Air
23	Environmental Pressure	1,01 bar-a	Ratio of Specific Heats, k 1,400
24	Rupt. Disc Correc. Factor	1,000	Compressibility Factor, Z 1,000
25			Molecular Weight, M 28,960 kg/kmol
26	Backpressure		Temperature
27	Constant Superimposed	0,00 bar-g	Relieving 20,00 °C
28	Variable Superimposed	0,00 bar	Normal Operating 25,00 °C
29	Built-up	0,00 bar	Min Design Not specified
30	Total	0,00 bar-g	Max Design Not specified
31 Sizing & Selection - Summary			
32	Required Discharge Area	Not specified	Discharge Coefficient (Kd) 0,801
33	Selected Discharge Area	2.248,006 mm <sup>2</sup>	Nameplate Capacity 3.026,06 SCFM
34	Selected Diameter	53,500 mm	Cold Differential Test Pressure 2,80 bar-g
35	Selected API Orifice	L	Back Pressure Correction Factor 0,995
36	Certified Capacity	6.230,96 kg/h	Reaction Force, API 520-2 (2020) 602,62 N
37	Certified Capacity Std-Cond.	2.999,30 SCFM	Noise Level in 1 m, API 521 135 dB
38	Capacity Exceed	N/A	
39 Notes		Dimensions & Weight	
40	- Noise level calculation based on API 521 at fully gaseous state to atmosphere without consideration of possible discharge pipe.		a 179 mm
41			b 181 mm
42			H 853 mm
43			M 106,4 kg

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Date:		Config ID:	
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