PLEASE SPECIFY BELOW ITEMS IN PSVDATA SHEETS:
1- PSV function (**scenarios**)
2- Over pressure
3- Minimum design temperature
4- PSV type
5- Molecular weight, Cp/Cv & Z factor

Contract No.: D | POI: IFA | Rev.: D0

Sheet 1 of 36

Data sheet shall be issued in project format and below items to be specified:
% Allowable Overpressure: 21% for fire case, 10% for other case
Nuzzle Type: Full Nuzzle
Type : Conventional, Bellows, Pilot Operated
Bonnet Type: close
Inlet/ Outlet Connection: size, rating, Flange Face Finish, Facing (inlet rating to be considered 300# as min)
Material to be specified
Test Gag: is required
Bug Screen is required for Balance Bellows type

PSV shall normally be sized in accordance with ASME Section VIII, API RP 520, API RP 521

PSV Calculation and Data Sheet

GENERAL COMMENTS:
1- Please mention PSV sizes on PID
2- Over pressure shall be considered for calculating relieving pressure and properties at relieving condition to be revised in this regard.
3- Mass flow rate announced in data sheets seems to be discharge flow rate. Maximum flow rate which will be determined after receiving PSV vendor documents based on selected orifice, shall be reported by vendor. Also PSV suction line pressure drop which should be less than 3% of set pressure, shall be calculated based on **maximum discharge flow rate**.

Comment 2 & 3 are mentioned in PSV-61120 DSH as an example

1	AI
2	AI
✗	NI: Approved with Comments (Fabrication not Proceed)
4	RJ: Rejected
5	NR: Not be Returned

Date: 26.03.2022 Signature: A.AB

urchaser: NARGAN

equisition No.: DPIC98-12-001-000-ME-MR-4150-0001-D1

Item No. (Tag No.): PK-6101

Vendor Doc. No.: DPIC9812-000-VD-1002-ME-DS-0045

REV.	DATE ISSUE	Purpose of Issue	PREPARED	CHECKED	APPROVED
D0	24-Feb-22	IFA	Y.GHALAVAND	DR.A.NEJATI	DR.A.NEJATI

KASRAVAND Engineering & Construction

TABULATION OF REVISED PAGES

Page	Rev-D0	Rev-D1	Rev-D2	Rev-D3	Rev-D4
1	x				
2	x				
3	x				
4	x				
5	x				
6	x				
7	x				
8	x				
9	x				
10	x				
11	x				
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27	x				
28	x				
29	x				
30	x				
31	x				
32	x				
33	x				
34	x				
35	x				

Page	Rev-D0	Rev-D1	Rev-D2	Rev-D3	Rev-D4
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PURPOSE:

The purpose of this document is to calculate pressure safety valves flow rates and orifice sizes based on the corresponding scenarios.

The calculation is performed by C
attached to this document.

Fire scenario for each PSV shall also be determined.
Also, the simultaneity of "Closed Outlet" scenarios shall be determined by vendor. Flare will be sized based on maximum simultaneous flow rate of PSVs.

ATTACHMENTS:

Calculations for PSVs are performed according to the following table:

PSV Tag	Related Equipment	Dominant Scenario	Max. Flowrate
PSV-61120	D-PK6101-2	Closed Outlet	27623 kg/h
PSV-61131	D-PK6101-2	Closed Outlet	27623 kg/h
PSV-61121	E-PK6101-3	Closed Outlet	8123 kg/h
PSV-61122	E-PK6101-3	Closed Outlet	19500 kg/h
PSV-61135	E-PK6101-3	Closed Outlet	19500 kg/h
PSV-61123	E-6101	Closed Outlet	19500 kg/h
PSV-61132	E-6101	Closed Outlet	19500 kg/h
PSV-61124	D-PK6101-3	Closed Outlet	19500 kg/h
PSV-61133	D-PK6101-3	Closed Outlet	19500 kg/h
PSV-61125	D-PK6101-1A	Closed Outlet	27623 kg/h
PSV-61128	D-PK6101-1B	Closed Outlet	27623 kg/h

All the relieving scenarios (with complete process data such as flowrate, temperature, composition, phase, etc.) shall be reported in each PSV. In each PSV datasheet, the relieving scenario and simultaneities of scenarios shall be reported.

Calculation header

Identifier	trochemical
Tag No.	PSV-61120

Medium selection and state

Phase		Single phase
Medium	✓	Propylene
State	📖	Gaseous
Gas		Gas, dry (Standard conditions)

Design data

Design temperature	tD,max	135.0	
Design pressure	pD,max	23.0	

Over pressure shall be considered for relieving pressure

Properties at relieving condition to be revised based on corrected relieving pressure

Pressures

Set pressure		23.0	bar(g)
Relieving pressure		23.0	bar(g)
Back pressure	pb	0.1	bar(g)

Back pressure f all of the PSVs will be finalized after ~~receiving complete~~ requested relieving data of PSVs. Preliminary, consider 0.5 barg for all of the PSVs as Back Pressure.

Properties at relievir

Temperature of fluid	t1	60.0	°C
Density of fluid	ρ	53.688	kg/m³
Isentropic exponent	κ	0.92611	-

Required flow capacity

◉ Mass flow rate		kg/h
○ Volume flow rate (standard conditions)		m³/h

This flow rate seems to be discharge flow rate. Maximum flow rate which will be determined after receiving PSV vendor documents and specifying selected orifice, shall be reported by vendor

Pressure relief valve

Calculation standard		API 520:2014
Valve manufacturer	📖	API 526
Series	📖	Spring-loaded
Material	📖	Carbon Steel
Valve selection	📖	A0: 1185.80408, 3" x 4", Type: K
☒ Valve from database		
Rated coefficient of discharge (gas/vapor) Kdr,G	📖	0.975 -

Pressure relief valve (continued)

◉ Narrowest flow cross-section	A0	*1,185.8*	
○ Narrowest flow diameter	d0	*38.9*	
Nominal diameter of inlet	DN1	*3"*	
Nominal diameter of outlet	DN2	*4"*	
Pressure class	PN	*class 300*	

There is a reducer on PSV out let line in PID. Please check and revise.

Results

Required discharge coefficient for A0	Kdr,min	*0.94*	-
Required flow cross-section for Kdr	A0,min	*1,143.0*	mm^2
Rated mass flow	qm,t	*28,659.0*	kg/h
Rated volume flow	qn,t	*15,265.0*	m^3/h
Flow reserve	R	*3.7493*	%

Application

Maximum set pressure	p,max	*45.592*	bar(g)

Please clarify

Feeding pipe

☐ Inlet pipeline

Discharge pipe

☐ Discharge pipe

Confirmation:

✓ The fluid data is calculated thermodynamically by means of FLUIDCAL

Comments:

Series

Spring-loaded pressure-relief valves according to API Standard 526

Legend

- Calculated value
- Modified calculated value
- Lookup value
- Confirmation

Calculation header

dual PSV as per project legend shall be added.

Identifier	*Dehdasht Petrochemical*
Tag No.	*PSV-61121*

Medium selection and state

Phase	*Single phase*
Medium	*Propylene*
State	*Gaseous*
Gas	*Gas, dry (Standard conditions)*

Design data

135

Design temperature	tD,max	*125.0*	°C
Design pressure	pD,max	*23.0*	bar(g)

Pressures

Set pressure	pSet	*23.0*	bar(g)
Relieving pressure	p0	*23.0*	bar(g)
Back pressure	pb	*0.1*	bar(g)

Properties at relieving conditions

Temperature of fluid	t1	*60.0*	°C
Density of fluid	ρ	*53.688*	kg/m³
Isentropic exponent	κ	*0.92611*	-

Required flow capacity

◉ Mass flow rate	qm	*8,123.0*	kg/h
○ Volume flow rate (standard conditions)	qn	*4,326.8*	m³/h

Pressure relief valve

Calculation standard		*API 520:2014*	
Valve manufacturer		*API 526*	
Series		*Spring-loaded*	
Material		*Carbon Steel*	
Valve selection		*A0: 506.4506, 2" x 3", Type: H*	
☒ Valve from database			
Rated coefficient of discharge (gas/vapor)	Kdr,G	*0.975*	-

Pressure relief valve (continued)

◉ Narrowest flow cross-section	A0		*506.45*	mm^2
○ Narrowest flow diameter	d0		*25.4*	mm
Nominal diameter of inlet	DN1	*2"*		
Nominal diameter of outlet	DN2	*3"*		
Pressure class	PN	*class 300*		

Results

Required discharge coefficient for A0	Kdr,min	*0.647*	-
Required flow cross-section for Kdr	A0,min	*336.1*	mm^2
Rated mass flow	qm,t	*12,240.0*	kg/h
Rated volume flow	qn,t	*6,519.7*	m^3/h
Flow reserve	R	*50.683*	%

Application

Maximum set pressure	p,max	*45.902*	bar(g)

Feeding pipe

☐ Inlet pipeline

Discharge pipe

☐ Discharge pipe

Confirmation:

✓ The fluid data is calculated thermodynamically by means of FLUIDCAL

Comments:

Series

Spring-loaded pressure-relief valves according to API Standard 526

Legend

- Calculated value
- Modified calculated value
- Lookup value
- Confirmation

Calculation header

Identifier	*Dehdasht Petrochemical*
Tag No.	*PSV-61122*

Medium selection and state

Phase		*Single phase*
Medium	✓	*Propylene*
State	📖	*Gaseous*
Gas		*Gas, dry (Standard conditions)*

Design data

Design temperature	tD,max	*135.0*	°C
Design pressure	pD,max	*23.0*	bar(g)

Pressures

Set pressure	pSet	*23.0*	bar(g)
Relieving pressure	p0 ⌨	*23.0*	bar(g)
Back pressure	pb ✗	*0.1*	bar(g)

Properties at relieving conditions

Temperature of fluid	t1	*60.0*	°C
Density of fluid	ρ ⌨	*53.688*	kg/m³
Isentropic exponent	ϰ ⌨	*0.92611*	-

Required flow capacity

◉ Mass flow rate	qm	*19,500.0*	kg/h
○ Volume flow rate (standard conditions)	qn ⌨	*10,387.0*	m³/h

Pressure relief valve

Calculation standard		*API 520:2014*	
Valve manufacturer	📖	*API 526*	
Series	📖	*Spring-loaded*	
Material	📖	*Carbon Steel*	
Valve selection	📖	*A0: 830.32092, 3" x 4", Type: J*	
☒ Valve from database			
Rated coefficient of discharge (gas/vapor)	Kdr,G 📖	*0.975*	-

Pressure relief valve (continued)

◉ Narrowest flow cross-section	A0		*830.32*	mm²
○ Narrowest flow diameter	d0		*32.5*	mm
Nominal diameter of inlet	DN1	*3"*		
Nominal diameter of outlet	DN2	*4"*		
Pressure class	PN	*class 300*		

Results

Required discharge coefficient for A0	Kdr,min	*0.947*	-
Required flow cross-section for Kdr	A0,min	*806.85*	mm²
Rated mass flow	qm,t	*20,067.0*	kg/h
Rated volume flow	qn,t	*10,689.0*	m³/h
Flow reserve	R	*2.9092*	%

Application

Maximum set pressure	p,max	*45.592*	bar(g)

Feeding pipe

☐ Inlet pipeline

Discharge pipe

☐ Discharge pipe

Confirmation:

✓ The fluid data is calculated thermodynamically by means of FLUIDCAL

Comments:

Series

Spring-loaded pressure-relief valves according to API Standard 526

Legend

- Calculated value
- Modified calculated value
- Lookup value
- Confirmation

Calculation header

Identifier	*Dehdasht Petrochemical*
Tag No.	*PSV-61123*

Medium selection and state

Phase		*Single phase*
Medium	✓	*Propylene*
State	📖	*Gaseous*
Gas		*Gas, dry (Standard conditions)*

Design data

Design temperature	tD,max	*135.0*	°C
Design pressure	pD,max	*23.0*	bar(g)

Pressures

Set pressure	pSet	*23.0*	bar(g)
Relieving pressure	p0 ⌨	*23.0*	bar(g)
Back pressure	pb ✗	*0.1*	bar(g)

Properties at relieving conditions

Temperature of fluid	t1	*60.0*	°C
Density of fluid	ρ ⌨	*53.688*	kg/m³
Isentropic exponent	ϰ ⌨	*0.92611*	-

Required flow capacity

◉ Mass flow rate	qm	*19,500.0*	kg/h
○ Volume flow rate (standard conditions)	qn ⌨	*10,387.0*	m³/h

Pressure relief valve

Calculation standard		*API 520:2014*	
Valve manufacturer	📖	*API 526*	
Series	📖	*Spring-loaded*	
Material	📖	*Carbon Steel*	
Valve selection	📖	*A0: 830.32092, 3" x 4", Type: J*	
☒ Valve from database			
Rated coefficient of discharge (gas/vapor)	Kdr,G 📖	*0.975*	-

Pressure relief valve (continued)

◉ Narrowest flow cross-section	A0		*830.32*	mm^2
○ Narrowest flow diameter	d0		*32.5*	mm
Nominal diameter of inlet	DN1	*3"*		
Nominal diameter of outlet	DN2	*4"*		
Pressure class	PN	*class 300*		

Results

Required discharge coefficient for A0	Kdr,min	*0.947*	-
Required flow cross-section for Kdr	A0,min	*806.85*	mm^2
Rated mass flow	qm,t	*20,067.0*	kg/h
Rated volume flow	qn,t	*10,689.0*	m^3/h
Flow reserve	R	*2.9092*	%

Application

Maximum set pressure	p,max	*45.592*	bar(g)

Feeding pipe

☐ Inlet pipeline

Discharge pipe

☐ Discharge pipe

Confirmation:

✓ The fluid data is calculated thermodynamically by means of FLUIDCAL

Comments:

Series

Spring-loaded pressure-relief valves according to API Standard 526

Legend

- Calculated value
- Modified calculated value
- Lookup value
- Confirmation

Calculation header

Identifier		*Dehdasht Petrochemical*
Tag No.		*PSV-61124*

Medium selection and state

Phase		*Single phase*
Medium	✓	*Propylene*
State	📖	*Gaseous*
Gas		*Gas, dry (Standard conditions)*

Design data

Design temperature	tD,max	*135.0*	°C
Design pressure	pD,max	*23.0*	bar(g)

Pressures

Set pressure	pSet	*23.0*	bar(g)
Relieving pressure	p0 ⌨	*23.0*	bar(g)
Back pressure	pb ✗	*0.1*	bar(g)

Properties at relieving conditions

Temperature of fluid	t1	*60.0*	°C
Density of fluid	ρ ⌨	*53.688*	kg/m³
Isentropic exponent	ϰ ⌨	*0.92611*	-

Required flow capacity

◉ Mass flow rate	qm	*19,500.0*	kg/h
○ Volume flow rate (standard conditions)	qn ⌨	*10,387.0*	m³/h

Pressure relief valve

Calculation standard		*API 520:2014*	
Valve manufacturer	📖	*API 526*	
Series	📖	*Spring-loaded*	
Material	📖	*Carbon Steel*	
Valve selection	📖	*A0: 830.32092, 3" x 4", Type: J*	
☒ Valve from database			
Rated coefficient of discharge (gas/vapor)	Kdr,G 📖	*0.975*	-

Pressure relief valve (continued)

◉ Narrowest flow cross-section	A0		*830.32*	mm²
○ Narrowest flow diameter	d0		*32.5*	
Nominal diameter of inlet	DN1	*3"*		
Nominal diameter of outlet	DN2	*4"*		
Pressure class	PN	*class 300*		

PSV suction line size is 2" in PID. Also outlet line size is 4" with expander. Please revise.

Results

Required discharge coefficient for A0	Kdr,min	*0.947*	-
Required flow cross-section for Kdr	A0,min	*806.85*	mm²
Rated mass flow	qm,t	*20,067.0*	kg/h
Rated volume flow	qn,t	*10,689.0*	m³/h
Flow reserve	R	*2.9092*	%

Application

Maximum set pressure	p,max	*45.592*	bar(g)

Feeding pipe

☐ Inlet pipeline

Discharge pipe

☐ Discharge pipe

Confirmation:

✓ The fluid data is calculated thermodynamically by means of FLUIDCAL

Comments:

Series

Spring-loaded pressure-relief valves according to API Standard 526

Legend

- Calculated value
- Modified calculated value
- Lookup value
- Confirmation

Calculation header

Identifier		*Dehdasht Petrochemical*
Tag No.		*PSV-61125*

Medium selection and state

Phase		*Single phase*
Medium	✓	*Propylene*
State	📖	*Gaseous*
Gas		*Gas, dry (Standard conditions)*

Design data

Design temperature	tD,max	*107.0*	°C
Design pressure	pD,max	*23.0*	bar(g)

Please revise based on compressor design pressure

Pressures

Set pressure		*23.0*	bar(g)
Relieving pressure	p0	*23.0*	bar(g)
Back pressure	pb	*0.1*	bar(g)

Properties at relieving conditions

Temperature of fluid	t1	*90.0*	°C
Density of fluid	ρ	*42.543*	kg/m³
Isentropic exponent	κ	*0.99177*	-

Required flow capacity

◉ Mass flow rate	qm	*27,623.0*	kg/h
○ Volume flow rate (standard conditions)	qn	*14,714.0*	m³/h

Pressure relief valve

Calculation standard		*API 520:2014*	
Valve manufacturer	📖	*API 526*	
Series	📖	*Spring-loaded*	
Material	📖	*Carbon Steel*	
Valve selection	📖	*A0: 1840.64148, 4" x 6", Type: L*	
☒ Valve from database			
Rated coefficient of discharge (gas/vapor)	Kdr,G 📖	*0.975*	-

Pressure relief valve (continued)

◉ Narrowest flow cross-section	A0		*1,840.6*	mm^2
○ Narrowest flow diameter	d0		*48.4*	mm
Nominal diameter of inlet	DN1	*4"*		
Nominal diameter of outlet	DN2	*6"*		
Pressure class	PN	*class 300*		

Results

Required discharge coefficient for A0	Kdr,min	*0.68*	-
Required flow cross-section for Kdr	A0,min	*1,284.0*	mm^2
Rated mass flow	qm,t	*39,599.0*	kg/h
Rated volume flow	qn,t	*21,093.0*	m^3/h
Flow reserve	R	*43.356*	%

Application

Maximum set pressure	p,max	*46.46*	bar(g)

Feeding pipe

☐ Inlet pipeline

Discharge pipe

☐ Discharge pipe

Confirmation:

✓ The fluid data is calculated thermodynamically by means of FLUIDCAL

Comments:

Series

Spring-loaded pressure-relief valves according to API Standard 526

Legend

- Calculated value
- Modified calculated value
- Lookup value
- Confirmation

Calculation header

Comments for PSV-61125 are applicable for this tag NO.

Identifier	*Dehdasht Petrochemical*
Tag No.	*PSV-61128*

Medium selection and state

Phase		*Single phase*
Medium	✓	*Propylene*
State	📖	*Gaseous*
Gas		*Gas, dry (Standard conditions)*

Design data

Design temperature	tD,max	*107.0*	°C
Design pressure	pD,max	*23.0*	bar(g)

Pressures

Set pressure	pSet	*23.0*	bar(g)
Relieving pressure	p0	*23.0*	bar(g)
Back pressure	pb	*0.1*	bar(g)

Properties at relieving conditions

Temperature of fluid	t1	*90.0*	°C
Density of fluid	ρ	*42.543*	kg/m³
Isentropic exponent	κ	*0.99177*	-

Required flow capacity

◉ Mass flow rate	qm	*27,623.0*	kg/h
○ Volume flow rate (standard conditions)	qn	*14,714.0*	m³/h

Pressure relief valve

Calculation standard		*API 520:2014*
Valve manufacturer	📖	*API 526*
Series	📖	*Spring-loaded*
Material	📖	*Carbon Steel*
Valve selection	📖	*A0: 1840.64148, 4" x 6", Type: L*
☒ Valve from database		
Rated coefficient of discharge (gas/vapor)	Kdr,G 📖	*0.975* -

Pressure relief valve (continued)

◉ Narrowest flow cross-section	A0		*1,840.6*	mm^2
○ Narrowest flow diameter	d0		*48.4*	mm
Nominal diameter of inlet	DN1	*4"*		
Nominal diameter of outlet	DN2	*6"*		
Pressure class	PN	*class 300*		

Results

Required discharge coefficient for A0	Kdr,min	*0.68*	-
Required flow cross-section for Kdr	A0,min	*1,284.0*	mm^2
Rated mass flow	qm,t	*39,599.0*	kg/h
Rated volume flow	qn,t	*21,093.0*	m^3/h
Flow reserve	R	*43.356*	%

Application

Maximum set pressure	p,max	*46.46*	bar(g)

Feeding pipe

☐ Inlet pipeline

Discharge pipe

☐ Discharge pipe

Confirmation:

✓ The fluid data is calculated thermodynamically by means of FLUIDCAL

Comments:

Series

Spring-loaded pressure-relief valves according to API Standard 526

Legend

- Calculated value
- Modified calculated value
- Lookup value
- Confirmation

Calculation header

Comments for PSV-61131 are applicable for this tag NO.

Identifier	*Dehdasht Petrochemical*
Tag No.	*PSV-61131*

Medium selection and state

Phase		*Single phase*
Medium	✓	*Propylene*
State	📖	*Gaseous*
Gas		*Gas, dry (Standard conditions)*

Design data

Design temperature	tD,max	*135.0*	°C
Design pressure	pD,max	*23.0*	bar(g)

Pressures

Set pressure	pSet	*23.0*	bar(g)
Relieving pressure	p0	*23.0*	bar(g)
Back pressure	pb	*0.1*	bar(g)

Properties at relieving conditions

Temperature of fluid	t1	*60.0*	°C
Density of fluid	ρ	*53.688*	kg/m³
Isentropic exponent	κ	*0.92611*	-

Required flow capacity

◉ Mass flow rate	qm	*27,623.0*	kg/h
○ Volume flow rate (standard conditions)	qn	*14,714.0*	m³/h

Pressure relief valve

Calculation standard		*API 520:2014*
Valve manufacturer	📖	*API 526*
Series	📖	*Spring-loaded*
Material	📖	*Carbon Steel*
Valve selection	📖	*A0: 1185.80408, 3" x 4", Type: K*
☒ Valve from database		
Rated coefficient of discharge (gas/vapor) Kdr,G	📖	*0.975* -

Pressure relief valve (continued)

◉ Narrowest flow cross-section	A0		*1,185.8*	mm^2
○ Narrowest flow diameter	d0		*38.9*	mm
Nominal diameter of inlet	DN1	*3"*		
Nominal diameter of outlet	DN2	*4"*		
Pressure class	PN	*class 300*		

Results

Required discharge coefficient for A0	Kdr,min	*0.94*	-
Required flow cross-section for Kdr	A0,min	*1,143.0*	mm^2
Rated mass flow	qm,t	*28,659.0*	kg/h
Rated volume flow	qn,t	*15,265.0*	m^3/h
Flow reserve	R	*3.7493*	%

Application

Maximum set pressure	p,max	*45.592*	bar(g)

Feeding pipe

☐ Inlet pipeline

Discharge pipe

☐ Discharge pipe

Confirmation:

✓ The fluid data is calculated thermodynamically by means of FLUIDCAL

Comments:

Series

Spring-loaded pressure-relief valves according to API Standard 526

Legend

- Calculated value
- Modified calculated value
- Lookup value
- Confirmation

Calculation header

Identifier	*Dehdasht Petrochemical*
Tag No.	*PSV-61132*

Medium selection and state

Phase		*Single phase*
Medium	✓	*Propylene*
State	📖	*Gaseous*
Gas		*Gas, dry (Standard conditions)*

Design data

Design temperature	tD,max	*135.0*	°C
Design pressure	pD,max	*23.0*	bar(g)

Pressures

Set pressure	pSet	*23.0*	bar(g)
Relieving pressure	p0 ⌨	*23.0*	bar(g)
Back pressure	pb ✗	*0.1*	bar(g)

Properties at relieving conditions

Temperature of fluid	t1	*60.0*	°C
Density of fluid	ρ ⌨	*53.688*	kg/m³
Isentropic exponent	ϰ ⌨	*0.92611*	-

Required flow capacity

◉ Mass flow rate	qm	*19,500.0*	kg/h
○ Volume flow rate (standard conditions)	qn ⌨	*10,387.0*	m³/h

Pressure relief valve

Calculation standard		*API 520:2014*	
Valve manufacturer	📖	*API 526*	
Series	📖	*Spring-loaded*	
Material	📖	*Carbon Steel*	
Valve selection	📖	*A0: 830.32092, 3" x 4", Type: J*	
☒ Valve from database			
Rated coefficient of discharge (gas/vapor)	Kdr,G 📖	*0.975*	-

Pressure relief valve (continued)

◉ Narrowest flow cross-section	A0		*830.32*	mm²
○ Narrowest flow diameter	d0		*32.5*	mm
Nominal diameter of inlet	DN1	*3"*		
Nominal diameter of outlet	DN2	*4"*		
Pressure class	PN	*class 300*		

Results

Required discharge coefficient for A0	Kdr,min	*0.947*	-
Required flow cross-section for Kdr	A0,min	*806.85*	mm²
Rated mass flow	qm,t	*20,067.0*	kg/h
Rated volume flow	qn,t	*10,689.0*	m³/h
Flow reserve	R	*2.9092*	%

Application

Maximum set pressure	p,max	*45.592*	bar(g)

Feeding pipe

☐ Inlet pipeline

Discharge pipe

☐ Discharge pipe

Confirmation:

✓ The fluid data is calculated thermodynamically by means of FLUIDCAL

Comments:

Series

Spring-loaded pressure-relief valves according to API Standard 526

Legend

- Calculated value
- Modified calculated value
- Lookup value
- Confirmation

Calculation header

Comments for PSV-61124 are applicable for this tag NO.

Identifier	*Dehdasht Petrochemical*
Tag No.	*PSV-61133*

Medium selection and state

Phase		*Single phase*
Medium	✓	*Propylene*
State	📖	*Gaseous*
Gas		*Gas, dry (Standard conditions)*

Design data

Design temperature	tD,max	*135.0*	°C
Design pressure	pD,max	*23.0*	bar(g)

Pressures

Set pressure	pSet	*23.0*	bar(g)
Relieving pressure	p0	*23.0*	bar(g)
Back pressure	pb	*0.1*	bar(g)

Properties at relieving conditions

Temperature of fluid	t1	*60.0*	°C
Density of fluid	ρ	*53.688*	kg/m³
Isentropic exponent	κ	*0.92611*	-

Required flow capacity

◉ Mass flow rate	qm	*19,500.0*	kg/h
○ Volume flow rate (standard conditions)	qn	*10,387.0*	m³/h

Pressure relief valve

Calculation standard		*API 520:2014*	
Valve manufacturer	📖	*API 526*	
Series	📖	*Spring-loaded*	
Material	📖	*Carbon Steel*	
Valve selection	📖	*A0: 830.32092, 3" x 4", Type: J*	
☒ Valve from database			
Rated coefficient of discharge (gas/vapor)	Kdr,G 📖	*0.975*	-

Pressure relief valve (continued)

◉ Narrowest flow cross-section	A0		*830.32*	mm^2
○ Narrowest flow diameter	d0		*32.5*	mm
Nominal diameter of inlet	DN1	*3"*		
Nominal diameter of outlet	DN2	*4"*		
Pressure class	PN	*class 300*		

Results

Required discharge coefficient for A0	Kdr,min	*0.947*	-
Required flow cross-section for Kdr	A0,min	*806.85*	mm^2
Rated mass flow	qm,t	*20,067.0*	kg/h
Rated volume flow	qn,t	*10,689.0*	m^3/h
Flow reserve	R	*2.9092*	%

Application

Maximum set pressure	p,max	*45.592*	bar(g)

Feeding pipe

☐ Inlet pipeline

Discharge pipe

☐ Discharge pipe

Confirmation:

✓ The fluid data is calculated thermodynamically by means of FLUIDCAL

Comments:

Series

Spring-loaded pressure-relief valves according to API Standard 526

Legend

- Calculated value
- Modified calculated value
- Lookup value
- Confirmation

Calculation header

Identifier	*Dehdasht Petrochemical*
Tag No.	*PSV-61135*

Medium selection and state

Phase	*Single phase*
Medium	*Propylene*
State	*Gaseous*
Gas	*Gas, dry (Standard conditions)*

Design data

Design temperature	tD,max	*135.0*	°C
Design pressure	pD,max	*23.0*	bar(g)

Pressures

Set pressure	pSet	*23.0*	bar(g)
Relieving pressure	p0	*23.0*	bar(g)
Back pressure	pb	*0.1*	bar(g)

Properties at relieving conditions

Temperature of fluid	t1	*60.0*	°C
Density of fluid	ρ	*53.688*	kg/m³
Isentropic exponent	κ	*0.92611*	-

Required flow capacity

◉ Mass flow rate	qm	*19,500.0*	kg/h
○ Volume flow rate (standard conditions)	qn	*10,387.0*	m³/h

Pressure relief valve

Calculation standard		*API 520:2014*	
Valve manufacturer		*API 526*	
Series		*Spring-loaded*	
Material		*Carbon Steel*	
Valve selection		*A0: 830.32092, 3" x 4", Type: J*	
☒ Valve from database			
Rated coefficient of discharge (gas/vapor)	Kdr,G	*0.975*	-

Pressure relief valve (continued)

◉ Narrowest flow cross-section	A0		*830.32*	mm^2
○ Narrowest flow diameter	d0		*32.5*	mm
Nominal diameter of inlet	DN1	*3"*		
Nominal diameter of outlet	DN2	*4"*		
Pressure class	PN	*class 300*		

Results

Required discharge coefficient for A0	Kdr,min	*0.947*	-
Required flow cross-section for Kdr	A0,min	*806.85*	mm^2
Rated mass flow	qm,t	*20,067.0*	kg/h
Rated volume flow	qn,t	*10,689.0*	m^3/h
Flow reserve	R	*2.9092*	%

Application

Maximum set pressure	p,max	*45.592*	bar(g)

Feeding pipe

☐ Inlet pipeline

Discharge pipe

☐ Discharge pipe

Confirmation:

✓ The fluid data is calculated thermodynamically by means of FLUIDCAL

Comments:

Series

Spring-loaded pressure-relief valves according to API Standard 526

Legend

- Calculated value
- Modified calculated value
- Lookup value
- Confirmation