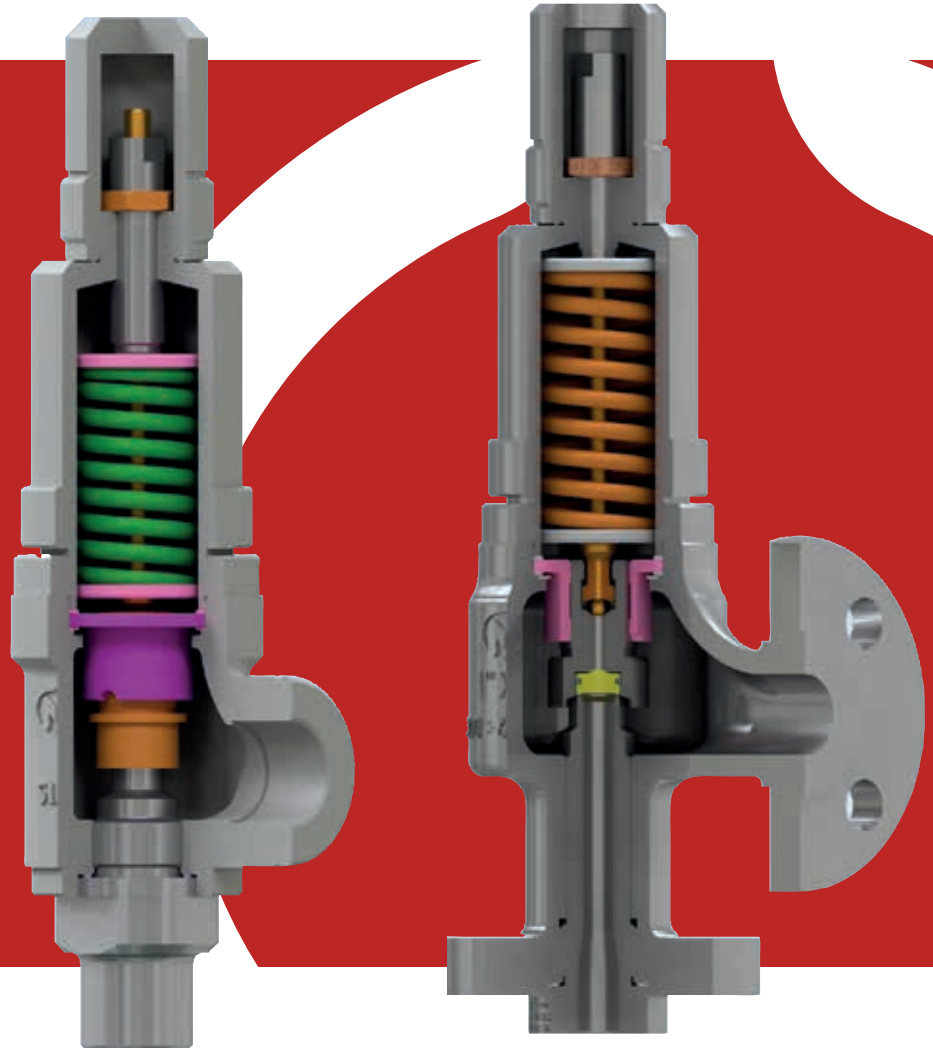
ValNac

Safety Valves

www.valnacsafety.com

5100

ASME UV



Making excellence
something personal

Production, R+D+I, Evolution

ValNac, Safety Valves was established in Spain in 1976. The main target was to assist the petrochemical and chemical industries emerging in Spain at that time. Right from the start ValNac, Safety Valves, has been designing and producing safety valves according to most recognized international standards and norms: API, ASME, ASTM and the European directives 2014/68/UE and 2014/34/ UE. Our production process is accredited by an ISO 9001-2015 certification.

Our know how and capacity to adapt to the constantly changing demands of themarket, made possible the introduction of new products designed for new applicationson the market, like THERMOSOLAR PLANTS, where ValNac, Safety Valves has supplied safety valves to more than 31 complete plants all over the world, whileat the same time continuously supplying to all main companies of the Spanish petrochemical, chemical and refining industries.

Production capacity

ValNac, Safety Valves, valves' have their discharge coefficients approved in laboratory tests, in order to guarantee and assure that correct values are being used for every sizing process.

In our Technical sales department we have a modern software which allows us to verify all the possibilities, and to assure strict fulfillment of all international standards.

ValNac, Safety Valves has established representation agreements with the most important O.E.M. companies in the safety sector of the industry, consolidating us as one of the main companies by product range; design and consulting in new plants or in new process.

Our continuous growth, shows a clear trend, which confirms the integration of our workers to provide first class service to our customers and partners.

Factory & Location

Our facilities in Rubí (Barcelona - Spain), with more than 3.000 Sq m are fully prepared for our production activities: machining with modern CNC, assembling and testing. We also have long term agreements with approved workshops, which provides us with flexibility and fast feedback to customers demands, with full quality guarantee which has always been our main target.

Strategic alliances

Nowadays ValNac, Safety Valves is an international company, with representation agreements in different countries and continents all over the world, with specialized companies that will provide added value in our service towards the end user.

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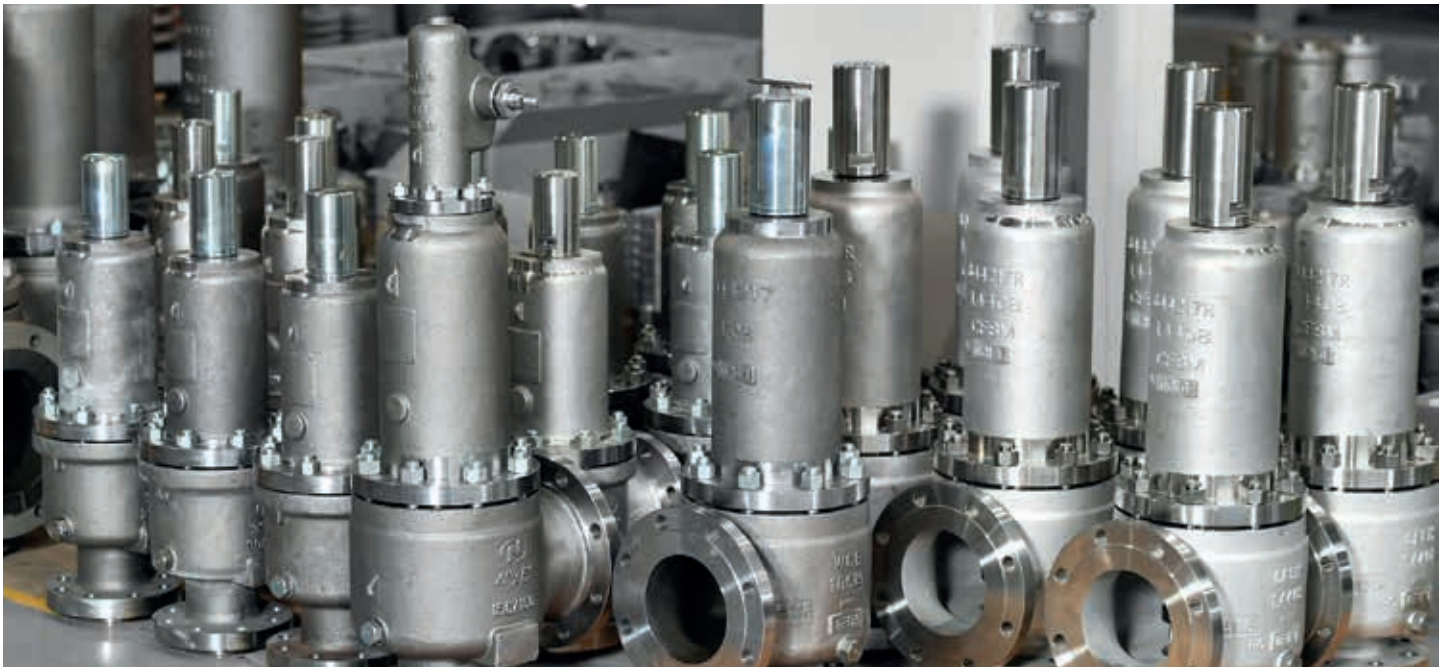


General Features

Safety and Relief Valve 5100

Model 5100, is an angular type safety valve at 90° between the inlet and the outlet connections, full nozzle and direct action and spring loaded,with pop action and full lift.

Design

- Valve body is an angular type at 90° between inlet and outlet flanges. In flange version, flanges are casted (not welded). Its large internal capacity and smooth section changes help reducing turbulences. Therefore, fluid evacuation discharge is improved.
- Full nozzle type, guided and screwed to body, enabling perfect alignment and easy disassembling.
- Disc is separate from disc-holder, for that reason its repair or change is improved and a better selection of materials can be performed.
- Guide has a large push rod guide area to prevent premature damage, ensuring perfect alignment with all internals.
- Bellows are performed so its average area is equal to orifice area thus achieving perfect valve balance and consequently perfect operation against variable back pressures. Its meticulous design enables maximum pressures and temperatures to be supported achieving a high degree of elasticity.
- Springs are designed with an experimented highly reliable calculation software and manufactured with the ideal material qualities for the process conditions, ensuring elasticity and accurate repetition of valve opening.
- They are used interchangeably as safety or relief valves, both in gases and liquids. Their use is typical as thermal expansion valves and they are also used to release small flows.
- They are constructed with threaded and flanged connections, in this case flanges are integral, although they can also be manufactured with buttwelding and socket-welding connections. Upon request, they allow the installation of different accessories such as manual operation lever, test-gag, O-Ring, heated jacket, etc.
- This catalogue reflects standard valves. Upon request, our technical department can design special applications. The safety valve is an automatic direct action accessory whose function is to relief excessive overpressures in the recipients and installations that protects. Its main characteristics, allowing is its sudden fluid discharge with complete and fast opening (pop) Automatic valve opening is produced because of the additional push provided by the overpressure of the fluid itself helping to overcome spring resistance. Once the installation has recovered its normal service condition, the valve closes again.
- Safety valve behaviour is totally different according to whether the fluid it works with on the installation is in gas or liquid phases. To achieve good valve functioning and correct dimensioning, this model was designed with internals for working with gas (Type-51G) or liquid (Type-51L).

Codes and Standards

Valves have been designed and manufactured in compliance with the following directives, codes and standards:

European Directive	2014/68/UE (PED) 2014/34/UE (ATEX)
Design	EN ISO 4126-1 / ASME XIII / ASME VIII
Certifications	PED MODULE B+D / ASME “UV” and NB”
Pressure and Temperature Ratings	ASME B16.34 / EN 12516-1
Tests	API-527 / ASME B16.34 / ASME XIII
Quality System	EN ISO 9001:2015
Materials	ASME/ASTM and EN

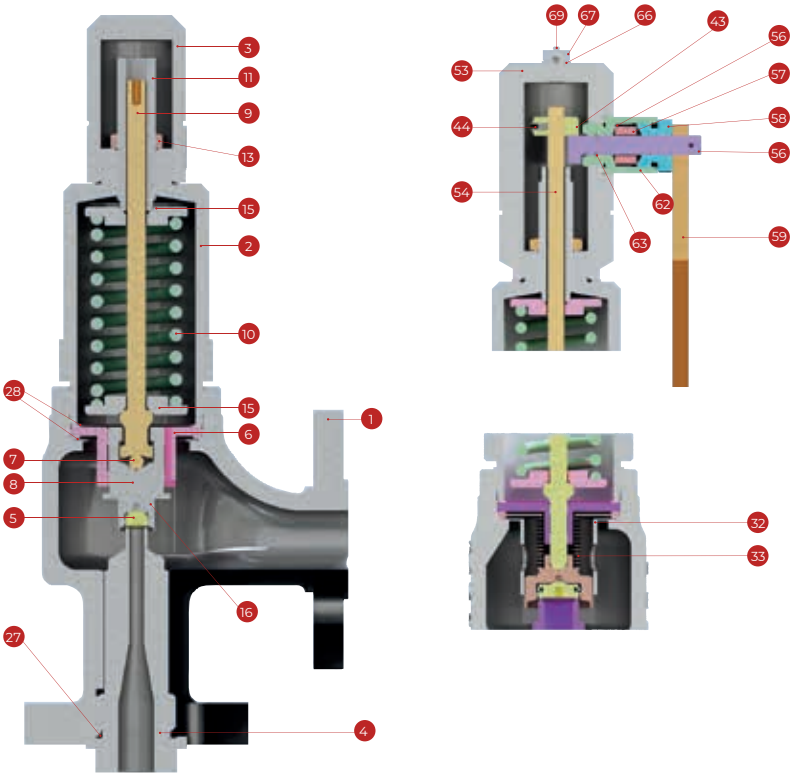
Sizes and Ratings*

NPT Threaded according to ASME B16.34	Sizes: ½”x ¾” up to 1”x1¼”
BSPP Threaded according to EN 12516-1	Sizes: ½”x ¾” up to 1”x1¼ “
ASME Flanged according to ASME B16.5	Sizes: ½”x 1” up to 1”x1” Rating: 150# up to 2500#

*EN Flanges and other connections upon request

ValNac
Safety Valves

Parts List



Technical Information / Operating technical characteristics table

SAFETY VALVE MODEL 5100

SERVICE		GAS	LIQUID
REDUCED DISCHARGE COEFFICIENT Kdr (1)		0,864	0,750
BLOWDOWN	MAX.	10% (2)	15% (3
VARIABLE BACKPRESSURE	AT 10% OVERPRESSURE	50% Built-up 45% Superimposed	35% Built-up 25% Superimposed
SET PRESSURE RANGE	bar g	0,5 ÷ 425	

(1) 10% Overpressure or 0,1 bar whichever is greater

(2) Or 0,3 bar, the highest value.

(3) Or 0,45 bar, the highest value.

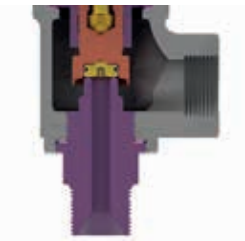
Bill of Materials

ITEM	CLASS	H	C	E (a)
TC(0)	CLASS TEMP.	-46 ÷ 345 °C	-29 ÷ 538 °C	-196 ÷ 455 °C
1	BODY	SA-216 WCB/WCC SA-352 LCB/LCC	SA 217 WC6	SA 351 CF3M / CF8M
2	BONNET	SA-216 WCB/WCC SA-352 LCB/LCC	SA 217 WC6	SA 351 CF3M / CF8M
2a	OPEN BONNET	SA-216 WCB/WCC SA-352 LCB/LCC	SA-216 WCB/WCC SA-352 LCB/LCC	SA 351 CF3M / CF8M
3	CAP	SA-216 WCB/WCC SA-352 LCB/LCC	SA-216 WCB/WCC SA-352 LCB/LCC	SA 351 CF3M / CF8M
4	NOZZLE	SEE SUB CLASS		
5	DISC			
6	GUIDE	A 479 316/316L	A 479 316/316L	A 479 316/316L
7	SPHERE	AISI 316	AISI 316	AISI 316
8	DISC HOLDER	A 479 316/316L	A 479 316/316L	A 479 316/316L
9	STEM	A 479 316/316L	A 479 316/316L	A 479 316/316L
10	SPRING	50CRV4 / T.S. H12 or H21 (T>232°C)	50CRV4 / T.S. H12 or H21 (T>232°C)	1.4401 / Inconel X-750 (T>300°C)
11	ADJUSTING SCREW (13)	A 479 316/316L	A 479 316/316L	A 479 316/316L
13	NUT	A 479 316/316L	A 479 316/316L	A 479 316/316L
15	SPRING BUTTON	A 479 316/316L	A 479 316/316L	A 479 316/316L
16	ELASTIC RING	AISI 316	AISI 316	AISI 316
27	NOZZLE GASKET	Graphite+316 S.S.	Graphite+316 S.S.	Graphite+316 S.S.
28	GUIDE GASKET	Graphite+316 S.S.	Graphite+316 S.S.	Graphite+316 S.S.
29	CAP GASKET	Graphite+316 S.S.	Graphite+316 S.S.	Graphite+316 S.S.
32	BELLOWS PROTECTOR	A 479 316/316L	A 479 316/316L	A 479 316/316L
33	BELLOWS	AISI 316Ti	AISI 316Ti	AISI 316Ti / Inconel 625 (T>450°C)
43	BRACKET	B 164 N04400	A 479 316/316L	A 479 316/316L
44	SET BOLT	DIN 913 - A4	DIN 913 - A4	DIN 913 - A4
48	PLAIN LEVER CAP	SA-216 WCB/WCC SA-352 LCB/LCC	SA 479 316/316L	SA 479 316/316L
53	LEVER CAP	SA-216 WCB/WCC SA-352 LCB/LCC	SA 479 316/316L	SA 479 316/316L
54	LEVER STEM	SA-216 WCB/WCC SA-352 LCB/LCC	A 479 316/316L	A 479 316/316L
56	LEVER SHAFT	A 479 316/316L	A 479 316/316L	A 479 316/316L
57	PACKING	Braid Graphite	Braid Graphite	Braid Graphite
58	PACKING GLAND	A 479 316/316L	A 479 316/316L	A 479 316/316L
59	LEVER	1.0460+Fe/Zn5C	1.0460+Fe/Zn5C	1.0460+Fe/Zn5C
62	SHAFT BRACKET	A 479 316/316L	A 479 316/316L	A 479 316/316L
63	ELASTIC RING	AISI 316	AISI 316	AISI 316
64	SHAFT BRACKET GASKET	Graphite+316 S.S.	Graphite+316 S.S.	Graphite+316 S.S.
65	SPIRAL SPIN	SA B18.8.2 304	SA B18.8.2 304	SA B18.8.2 304
66	PLUG GASKET	Graphite+316 S.S.	Graphite+316 S.S.	Graphite+316 S.S.
67	TEST GAG - PLUG	A 479 316/316L	A 479 316/316L	A 479 316/316L
69	CHAIN	A-105+Fe/Ni3 Br	A-105+Fe/Ni3 Br	A-105+Fe/Ni3 Br
70	TEST GAG - STUD	A 479 316/316L	A 479 316/316L	A 479 316/316L

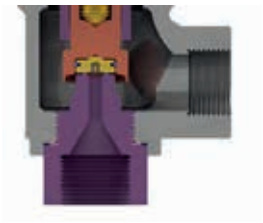
SUBCLASS		1	2	3	4
4	NOZZLE	SA 479 316	SA 479 316 + ST	SA 479 316+ST	SA 479 316
5	DISC	SA 479 316	SA 564 630	SA 479 316+ST	SA 564 630

(0) If a subclass is defined, the class temperature range will be restricted by the most restrictive temperature limits.
(a) For material manufactured according to EN standard, the maximum temperature will be 400°C according to EN 10213.
Other material combinations are available upon request.

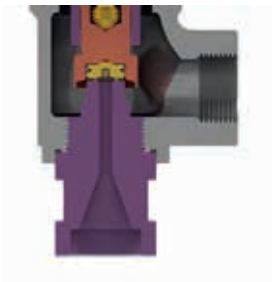
Connections



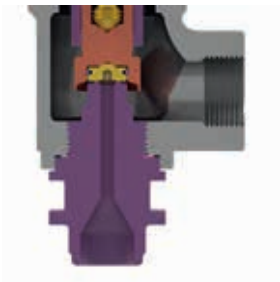
MALE



FEMALE

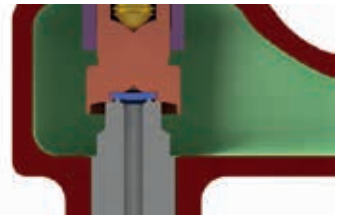


SOCKET WELDING

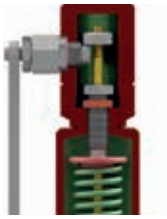


BUTT WELDING

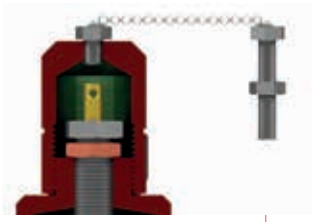
Accesories



O-RING



LEVER



TEST-GAG 70

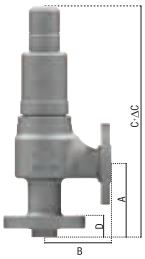
HEATING JACKET

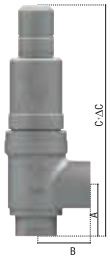
General dimensions

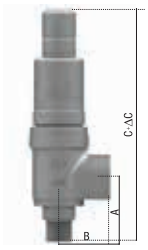
	TYPE	ø mm	cm²
ORIFICES	C	6,3	0,310
	D	10	0,785
	E*	12,7	1,267

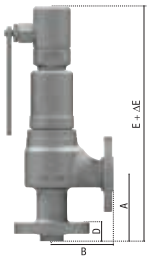
General diemensions

			INLET	ORIFICES	OUTLET	MODEL 5100 (Conventional)						
						General Dimensions (mm.)					Std.	Lever
						A	B	C	D	E	Weight (Kg.)	
FLANGED CONNECTIONS	DIN	INLET PN-16÷40 OUTLET PN16	DN15	C	DN25	99	90	321	26	354	6,5	7,7
			DN20	C, D, E					28			
			DN25									
		INLET PN-63÷100 OUTLET PN40	DN15	C	DN25	109	90	331	30	364		
			DN20	C, D, E					32			
			DN25									
		INLET PN160 OUTLET PN40	DN15	C	DN25	109	90	331	30	364	7,5	8,7
		INLET PN-250÷320 OUTLET PN40	DN15	C	DN25	109	90	331	36	364		
		INLET PN400 OUTLET PN40	DN15	C	DN25	AVAILABLE UPON REQUEST						
	ASME	INLET 150÷600# OUTLET 150#	1/2"	C	1"	99	90	321	30	354	6,5	7,7
			3/4"	C, D, E								
			1"									
		INLET 900# OUTLET 300#	1/2"	C	1"	109	90	331	34	364	7,5	8,7
			3/4"	C, D, E					37			
		INLET 1500# OUTLET 300#	1/2"	C	1"	109	90	331	34	364		
			3/4"	C, D					37			
		INLET 2500# OUTLET 300#	1/2"	C	1"	111	90	418	42	451	10,5	11,7
THREADED CONNECTIONS	NPT / GAS	M / F	1/2"	C	3/4" | 1"	81	64	302	-	335	4,6	5,8
			3/4"									
			3/4"	C, D, E	1"	81	64	302	-	335		
			1"									
		F / F	1/2"	C	3/4" | 1"	46	64	267	-	300	4,4	5,6
			3/4"									
			1/2"	D	1"	46	64	267		300		
			3/4"									
			1"			61	64	282	-	315		
			3/4"	E	1"	46	64	267		300		
			1"			61	64	282		305		









Orifice	Fluid	Bonnet Type	Outlet Size	Set Pressure Range [barg]				
				Up to	From	Up to	From	Up to
C	Liquid	ALL	¾" | 1¼"	31,9	32,0	58,9	86,0	430,0
	Gas & Steam		¾"	14,89	14,90	43,00	-	-
			1¼"	13,29	13,30	35,59	35,60	430,0
D	Liquid	ALL	1¼"	25,9	26,0	68,9	69,0	290,0
	Gas & Steam			40,9	41,0	119,0	120,0	290,0
E	Liquid	ALL	1 ¼"	18,9	19,0	55,9	60,0	200,0
		VENTED		20,9	21,0	55,9	56,0	110,0
	Gas & Steam	CLOSED		33,9	34,0	97,4	97,5	200,0
		OPEN		18,1	18,2	453,0	454,0	200,0
		VENTED		20,3	20,4	49,9	50,0	120,0
			ΔC, ΔE	0 mm.	50 mm.		85 mm.	

Only "E" Orifice has bellows option. Minimum set pressure for bellows = 5 barg

Definitions (en ISO 4126-1)

- **Blowdown:** The difference between actual popping pressure of a pressure relief valve and actual reseating pressure expressed as a percentage of set pressure or in pressure units.
- **Built-up back pressure:** The pressure existing at the outlet of the safety valve caused by fl ON through the valve and the discharge system.
- **Coefficient of discharge:** The value of actual flowing capacity (from tests).
- **Cold differential test pressure:** The inlet static pressure at which a pressure relief valve is adjusted to open on the test stand. This test pressure includes corrections for service conditions of superimposed back pressure and/or temperature.
- **Flow area:** The minimum cross-sectional flow area (but not the curtain area) between inlet and nozzle which is used to calculate the theoretical flow to discharge.
- **Lift:**The diameter corresponding to the flow area.
- **Maximum allowable pressure:** The maximum pressure for which the equipment is designed as specified by the manufacturer.
- **Overpressure:** A pressure increase over the set pressure, at which the safety valve achieves the lift specified by manufacturer, usually expressed as a percentage of the set pressure.
- **Pressure:** The pressure unit used in this standard is the bar (1 bar = 105 Pa). It is quoted as gauge (relative to atmospheric pressure) or absolute as appropriate.
- **Relieving pressure:** The pressure used for the sizing of the safety valve which is greater than or equal to the set pressure plus the overpressure.
- **Re-seating pressure:** The value of decreasing inlet static pressure at which the valve disk re-establishes contact with the seat or at which lift becomes zero.
- **Safety valve**: Valve which automatically, without the assistance of any energy other than that of the fluid concerned, discharges a quantity of the fluid so as to prevent a predetermined safe pressure being exceededand which is designed to re-clase and prevent further flow or fluid after nominal pressure conditions of service have been restored.
- **Set pressure:** The value of increasing inlet static pressure at which a pressure relief device displays one of the operational characteristics as defined under opening pressure, popping pressure, start-to-leak pressure, burst pressure, or breaking pressure. (The applicable operating characteristic for a specific device design is specified by the device manufacturer).
- **Superimposed back pressure:** The static pressure existing at the outlet of a pressure relief device at the time the device is required to operate. It is the result of pressure in the discharge system from other sources.

VALVE 5100

Safety valve specially designed to work with gases, vapor or liquids for industrial applications

Making safety since 1976

MOD-6400 ASME UV

SAFETY VALVE

MOD-5100 ASME UV

SAFETY VALVE

MOD-3-50

SAFETY VALVE

MOD-3-51

SAFETY VALVE

MOD-5500

SAFETY VALVE

PILOT OPERATED

SAFETY VALVE

MOD-2000

EMERGENCY VALVE

MOD-3400

BREATHER VALVE

VALVE SILENCER

ValNac
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