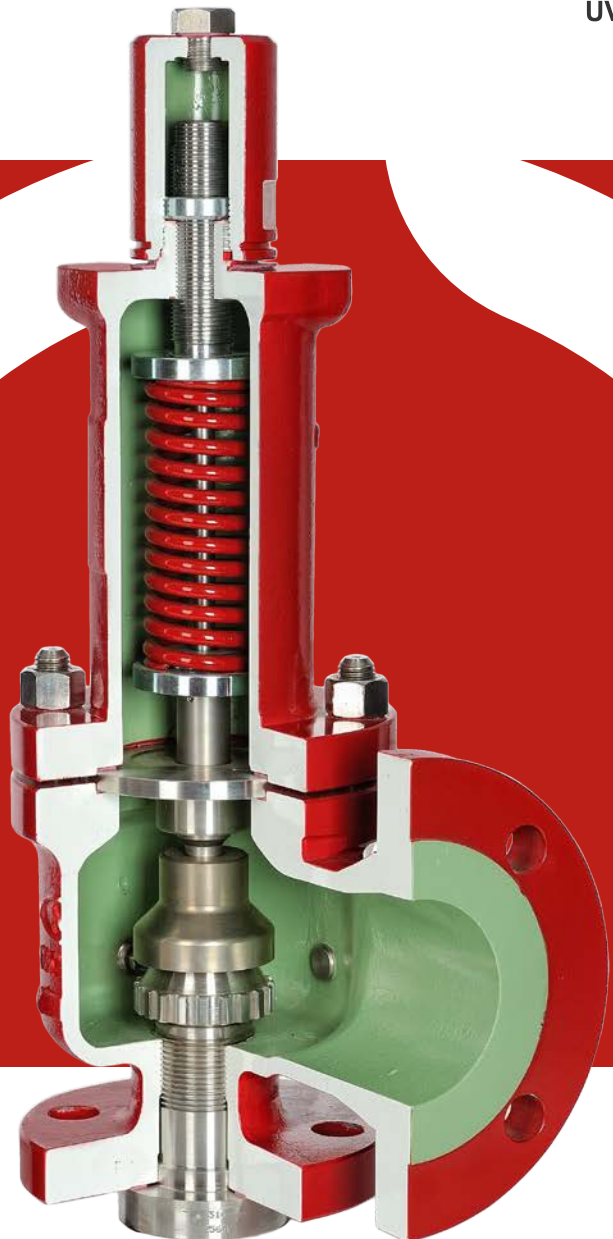


6400



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 9001-2016 certification.

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



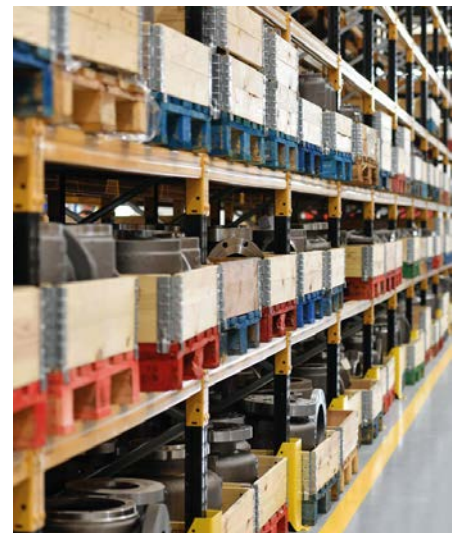
Production capacity

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 count with 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 starts an internationalization process, establishing 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.



ValNac, Safety Valves Making safety since 1976!



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General Features

Model 6400, is an angular type safety valve at 90° between the inlet and the outlet connections, with flanged connections, full nozzle, direct action and spring loaded. Subdivided into three types: Conventional, Balanced (with bellows) and Balanced-Piston. All three are designed with specific trims to work with gases and vapours or liquids.

Design

- Valve body is angular type at 90° between inlet and outlet flanges. Its large internal capacity and smooth section changes help reducing turbulences. Therefore, fluid evacuation on 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.
- Stem-push rod design in two parts, enables push rod material to be hardened to withstand high charges, facilitating displacement, avoiding seizure with guide.
- 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 before 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.
- For design of the different valve types has taken into account standardisation, enabling a conventional type valve to be converted into balanced with minimum parts change.

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	API-526 / 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*

Standard sizes and ratings:

ASME

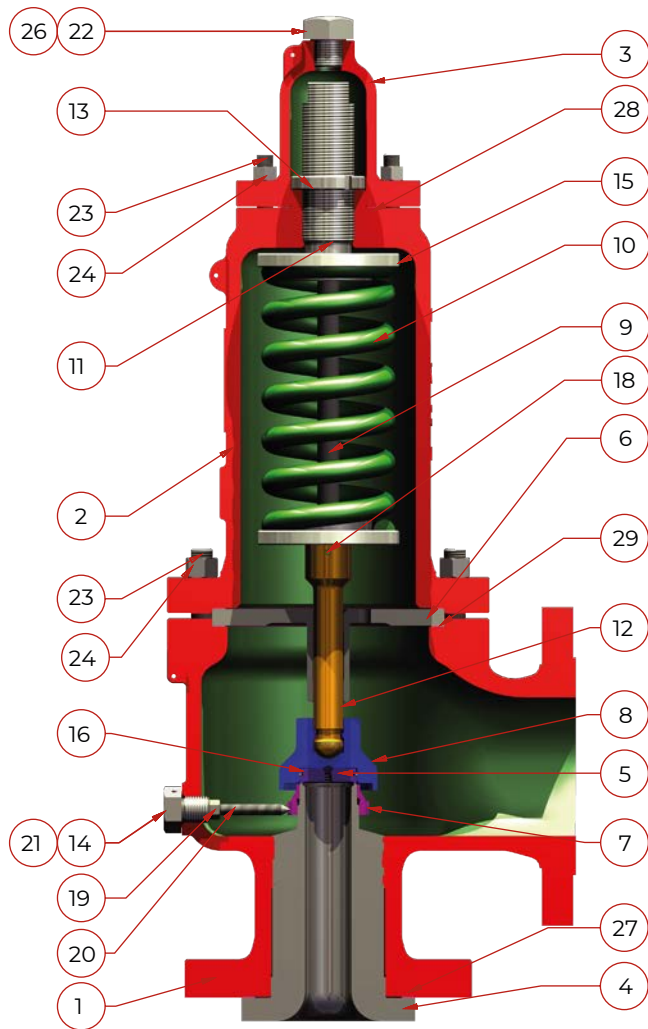
Sizes	1"x2" up to 12"x16"
Rating	150# up to 2500#

*EN/ISO Flanges available upon request

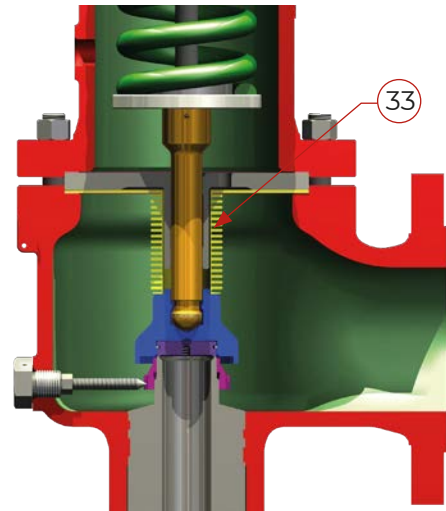


Parts list

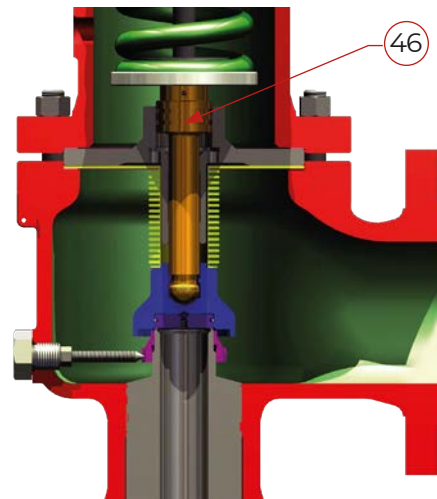
CONVENTIONAL VALVE



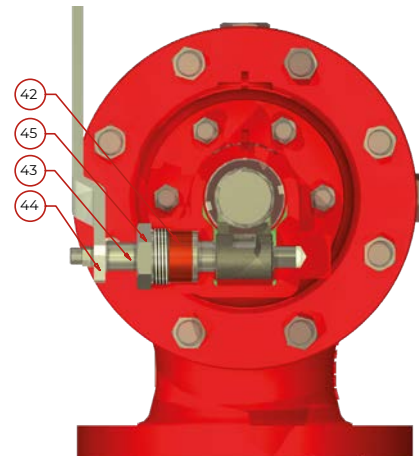
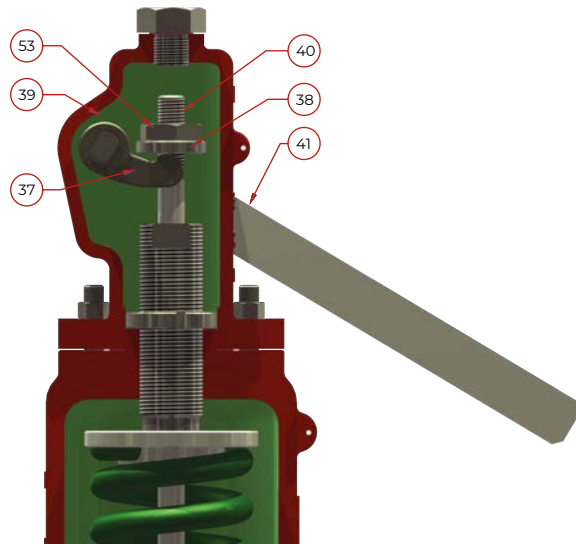
BELLOWS VALVE



BELLOWS-PISTON VALVE



LEVER OPTION



Bill of materials

CLASS		H	C	E	N1 (Duplex)	O (Super Duplex)	NACE - A
ITEM	DENOMINATION	-29 a 425 °C	-29 to 538 °C	-196 to 538 °C	-29 to 260°C	-29 to 316°C	-29 to 425 °C
1	BODY	SA 216 WCB	SA 217 WC6	SA 351 CF8M	SA 995 CD4MCuN	SA 995 CD3MWCuN	SA 216 WCB
2	BONNET	SA 216 WCB	SA 217 WC6	SA 351 CF8M	SA 995 CD4MCuN	SA 995 CD3MWCuN	SA 216 WCB
2a	OPEN BONNET	SA 216 WCB	SA 216 WCB	----	----	----	SA 216 WCB
3	CAP	SA 216 WCB	SA 216 WCB	SA 351 CF8M	SA 351 CF8M	SA 351 CF8M	SA 216 WCB
4	NOZZLE	SEE SUBCLASS					
5	DISC						
6	GUIDE	A 351 CF8M	A 351 CF8M	A 351 CF8M	A 351 CF8M	A 479 S32760	A 351 CF8M
7	ADJUSTING RING	A 351 CF8M	A 351 CF8M	A 351 CF8M	A 351 CF8M	A 479 S32760	A 351 CF8M
8	DISC HOLDER	A 479 431	A 479 431	A 351 CF8M	A 351 CF8M	A 479 S32760	A 351 CF8M
9	STEM	A 479 431	A 479 431	A 479 316	A 479 316	A 479 316	A 479 316
10	SPRING	50CRV4 C.S. (5)	H21 T.S. (4)	A 313 316 (1)	A 313 316 (1)	A 313 316 (1)	INCONEL X-750
11	ADJUSTING SCREW	A 479 431	A 479 431	A564 630	A564 630	A564 630	A564 630
12	PUSH ROD	A 479 431	A 479 431	A 564 630	A 564 630	A 564 630	A 564 630
13	NUT	C.S.	C.S.	A 479 316	A 479 316	A 479 316	C.S.
14	LOCK SCREW	C.S.	C.S.	S.S.	S.S.	A 479 S32760	C.S.
15	SPRING BUTTON	C.S.	C.S.	A 479 316	A 479 316	A 479 316	C.S.
16	ELASTIC RING	316 S.S.	316 S.S.	316 S.S.	316 S.S.	316 S.S.	316 S.S.
17	PLUG	C.S.	C.S.	S.S.	S.S.	A 479 S32760	C.S.
18	ELASTIC PIN	302 S.S.	302 S.S.	302 S.S.	302 S.S.	302 S.S.	302 S.S.
19	NUT	316 S.S.	316 S.S.	316 S.S.	316 S.S.	A 479 S32760	316 S.S.
20	LOCK STUD	316 S.S.	316 S.S.	316 S.S.	316 S.S.	316 S.S.	316 S.S.
21	GASKET	Compressed Fibers	Graphite + 316 S.S.		Compressed Fibers (2)		
22	PLUG	C.S.	C.S.	S.S.	S.S.	S.S.	C.S.
23	STUDS	SA 193 B7	SA 193 B16	SA 193 B8	SA 193 B8	SA 193 B8	SA 193 B7
24	NUTS	SA 194 2H	SA 194 4	SA 194 G8	SA 194 G8	SA 194 G8	SA 194 2H
26	GASKET	Graphite + 316 SS.					
27	GASKET						
28	GASKET						
29	GASKET						
33	BELLOWS	316Ti S.S.	316Ti S.S. (3)	316Ti S.S. (3)	316Ti S.S. (3)	316Ti S.S.	INCONEL 625
34	GASKET	Compressed Fibers	Graphite+316 INOX.		Compressed Fibers (12)		
37	CAM	316 S.S.	316 S.S.	316 S.S.	316 S.S.	316 S.S.	316 S.S.
38	BRACKET	C.S.	C.S.	316 S.S.	316 S.S.	316 S.S.	C.S.
39	LEVER CAP	SA 216 WCB	SA 216 WCB	SA 351 CF8M	SA 351 CF8M	SA 351 CF8M	SA 216 WCB
40	LEVER STEM	A 479 431	A 479 431	A 479 316	A 479 316	A 479 316	A 479 316
41	LEVER	C.S.	C.S.	C.S.	C.S.	C.S.	C.S.
42	PACKING	Compressed Fibers	Braid Graphite		Compressed Fibers (2)		
43	LEVER SHAFT	A 479 316	A 479 316	A 479 316	A 479 316	A 479 316	A 479 316
44	NUT	C.S.	C.S.	C.S.	C.S.	C.S.	C.S.
45	PACKING GLAND	C.S.	C.S.	S.S.	S.S.	S.S.	S.S.
46	PISTON	A 479 431	A 479 431	A 479 431	A 479 431	A 479 316	A 479 431
47	LOCK WASHER	304 S.S.	304 S.S.	304 S.S.	304 S.S.	304 S.S.	304 S.S.
53	NUT	C.S.	C.S.	S.S.	S.S.	S.S.	S.S.

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

(1) For temperatures > 300°C, material Inconel X-750

(2) For temperatures > 232°C and < -29°C, material Graphite with 316 S.S. reinforcement

(3) For temperatures > 450°C, material Inconel 625

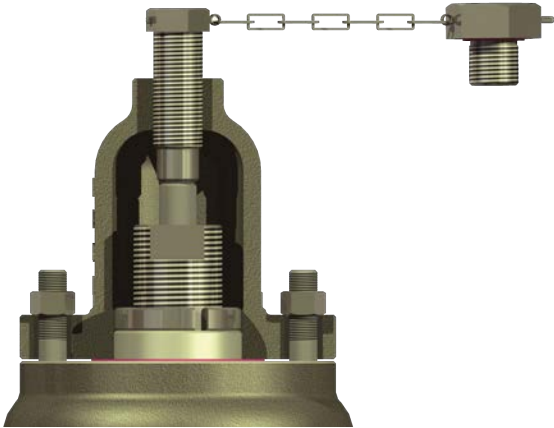
(4) When the spring is unenclosed, carbon or alloy steel is used

(5) For temperatures > 232°C, material T.S.

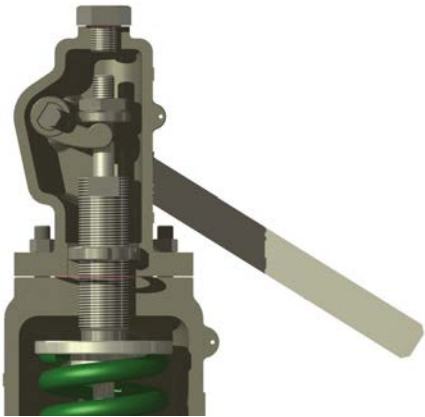
Other material alloys available upon request.

Options

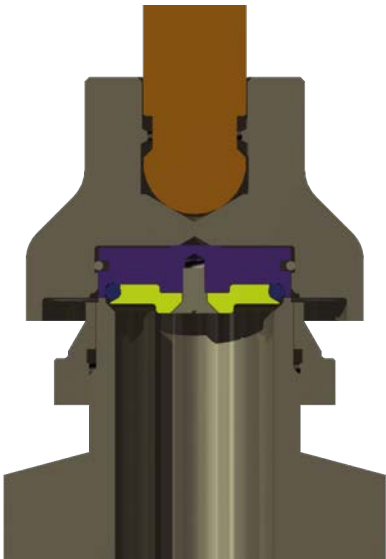
TEST-GAG



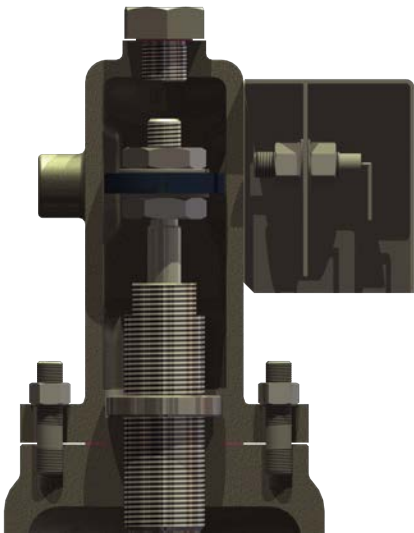
LEVER



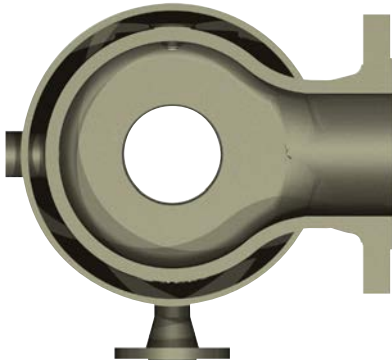
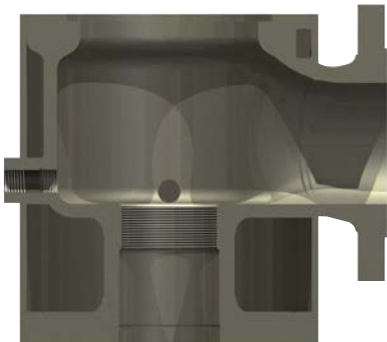
O-RING



MAGNETIC SENSOR



HEATING JACKET



General Dimensions

"Orifice API 526"	Rating	Inlet	Outlet	Flow Area (cm ²)	General Dimensions						Standard	Lever											
					A	B	C	D	E	F	Weight - (Kg)												
D	150 x 150	1"	2"	0,78	105	114	422	29	90	490	16	17											
	300L x 150							32															
	300 x 150							34															
	600 x 150	1½"	2"		140	178	518	44	556	31	33												
	900 x 300							60															
1500 x 300	1½"	3"	140	178	518	60	582	39	41														
E	150 x 150	1"	2"	1,43	105	114	422	29	90	490	16	17											
	300L x 150							32															
	300 x 150							34															
	600 x 150	1½"	2"		140	178	518	44	556	31	33												
	900 x 300							60															
1500 x 300	1½"	3"	140	178	518	60	582	39	41														
F	150 x 150	1½"	2"	2,27	124	121	499	34	90	563	26	27											
	300L x 150							37															
	300 x 150							41															
	600 x 150	1½"	3"		140	178	518	44	566	34	36												
	900 x 300							60															
1500 x 300	140	178	518	60	582	40	42																
G	150 x 150	1½"	3"	3,63	124	121	499	34	90	563	27	29											
	300L x 150							37															
	300 x 150							41															
	600 x 150	2"	3"		156	172	643	57	699	56	59												
	900 x 300							70				59	62										
1500 x 300	2"	3"	156	172	643	57	100	699	56	59													
H	150 x 150	1½"	3"	5,72	130	124	505	40	90	569	28	29											
	300L x 150							40															
	300 x 150							44															
	600 x 150	2"	3"		154	162	643	57	672	40	43												
	900 x 150							57				696	53	56									
1500 x 300	154	162	643	57	699	53	56																
J	150 x 150	2"	3"	9,07	137	124	623	36	120	679	38	41											
	300L x 150							45															
	300 x 150							50															
	600 x 150	3"	4"		184	181	721	65	789	66	69												
	900 x 150							65				782	85	87									
1500 x 300	184	181	721	65	782	85	87																
K	150 x 150	3"	4"	13,2	156	162	693	41	120	761	66	69											
	300L x 150							45															
	300 x 150							50															
	600 x 150	6"	6"		184	181	721	56	789	111	114												
	900 x 150							56				871	111	114									
1500 x 300	184	181	721	56	871	111	114																
L	150 x 150	3"	4"	20,4	156	165	693	41	120	761	67	69											
	300L x 150							50															
	300 x 150							54															
	600 x 150	4"	6"		179	203	869	60	973	117	123												
	900 x 150							69				971	118	124									
1500 x 150	179	222	888	69	990	125	131																
M	150 x 150	4"	6"	26	178	184	871	43	150	974	118	124											
	300L x 150							50															
	300 x 150							54															
	600 x 150	4"	6"		197	222	888	60	971	125	131												
	900 x 150							60				990	125	131									
N	150 x 150	4"	6"	32,2	197	210	881	43	150	983	118	124											
	300L x 150							50															
	300 x 150							54															
	600 x 150	4"	6"		222	888	60	990	60	131													
	900 x 150						60				990	60	131										
P	150 x 150	4"	6"	46,6	181	229	892	44	150	994	118	124											
	300L x 150							51															
	300 x 150							59															
	600 x 150	4"	6"		225	254	916	65	1018	125	131												
	900 x 150							65				1018	125	131									
Q	150 x 150	6"	8"	78,5	240	241	1056	45	150	1158	187	193											
	300L x 150							56															
	300 x 150							69					207	213									
R	150 x 150	6"	8"	113	240	241	1056	45	150	1158	191	197											
	300L x 150							56					234	240									
	300 x 150	6"	10"		240	241	1056	69			1158	234	240										
	600 x 150							69						1158	234	240							
T	150 x 150	8"	10"	184	276	279	1270	51	150	1365	300	314											
	300L x 150							65					315	329									
V	150 x 150	10"	14"	314	330	370	1530	60	220	1555	515	525											
	300 x 150							60					220	1555	530	540							
W	150 x 150	12"	16"	452	380	390	1700	60	220	1725	705	715											
	300 x 150												12"	16"	452	380	390	1700	60	220	1725	705	715
	300 x 150																						

Technical information / Operating technical characteristics table

SAFETY VALVE MODEL 6400

SERVICE		GAS	LIQUID
REDUCED DISCHARGE COEFFICIENT Kdr (1)		0,873	0,72
BLOWDOWN	MAX.	7% (2)	20% (3)
VARIABLE BACKPRESSURE	AT 10% OVERPRESSURE	50% Built-up	35% Built-up
		45% Superimposed	25% Superimposed
SET PRESSURE RANGE	bar g	0,5 ÷ 425	

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

(2) 0,2 bar g, the highest value.

(3) 0,6 bar g, the highest value.



Definitions (ASME PTC 25)

Actual discharge area: The measured minimum net area that determines the flow through a valve.

Coefficient of discharge: The ratio of the measured relieving capacity to the theoretical relieving capacity.

Conventional direct spring-loaded PRV: A direct spring-loaded pressure relief valve whose operational characteristics are directly affected by changes in the back pressure.

Back pressure: The static pressure existing at the outlet of a pressure relief device due to pressure in the discharge system.

Balanced direct spring-loaded PRV: A direct spring-loaded pressure relief valve that incorporates means of minimizing the effect of back pressure on the operational characteristics (opening pressure, closing pressure, and relieving capacity).

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.

Blowdown pressure: The value of decreasing inlet static pressure at which no further discharge is detected at the outlet of a pressure relief valve after the valve has been subjected to a pressure equal to or above the popping pressure.

Bore area: The minimum cross-sectional flow area of a nozzle.

Bore diameter: The minimum diameter of a nozzle.

Built-up back pressure: Pressure existing at the outlet of a pressure relief device caused by the flow through that particular device into a discharge system.

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.

Constant back pressure: A superimposed back pressure that is constant with time.

Developed lift: The actual travel of the disk from closed positions to the position reached when the valve is at flow-rating pressure.

Effective discharge area: A nominal or computed area of flow through a pressure relief valve, differing from the actual discharge area, for use in recognized flow formulas to determine the capacity of a pressure relief valve.

Effective seat area: A computed area for use in calculating the set pressure of a given pressure relief valve when tested using an auxiliary lift-assist device.

Flow path: The three-dimensional and geometric characteristics of a device that affects the measured relieving capacity. It is defined from the cross section of the inlet to the cross section of the outlet, including all streamlines in the flow.

Inlet size: The nominal pipe size of the inlet of a pressure relief valve, unless otherwise designated.

Leak test pressure: The specified inlet static pressure at which a quantitative seat leakage test is performed in accordance with a standard procedure.

Lift: The actual travel of the disk away from the closed position when a valve is relieving.

Maximum allowable pressure: The maximum pressure for which the equipment is designed as specified by the manufacturer.

Outlet size: The nominal pipe size of the outlet of a pressure relief valve, unless otherwise designated.

Overpressure: A pressure increase over the set pressure of a pressure relief valve, usually expressed as a percentage of set pressure.

Popping pressure: The value of increasing inlet static pressure at which the disk moves in the opening direction at a faster rate as compared with corresponding movement at higher or lower 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.

Pressure Relief Valve (PRV): A pressure relief device designed to actuate on inlet static pressure and reclose after normal conditions have been restored.

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.

Relieving pressure: Set pressure plus overpressure.

Safety valve: A pressure relief valve characterized by rapid opening and normally used to relieve compressible fluids.

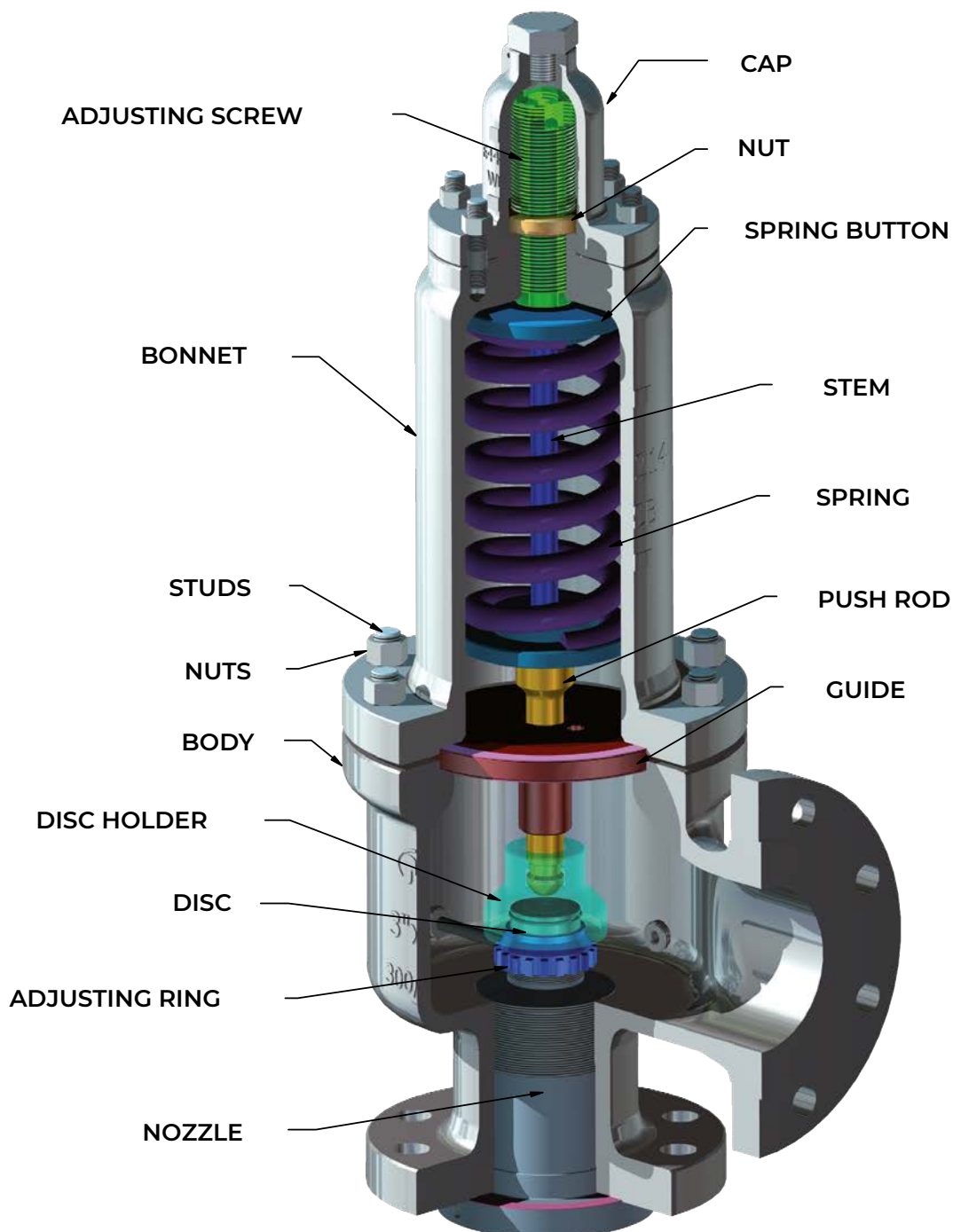


Set pressure: The value of increasing inlet static pressure at which a pressure relief device displays one of the operational characteristics as defined under opening pressure, popping pressure, start-to-leak pressure, burst pressure, or breaking pressure. (The applicable operating characteristic for a specific device design is specified by the device manufacturer).

Safety relief valve: A pressure relief valve characterized by rapid opening or by gradual opening that is generally proportional to the increase in pressure. It can be used for compressible or incompressible fluids.

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.

Safety valve main components:





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