

Safety relief valves for thermal, hydraulic and domestic water systems

311-312-313-314-513- 514-527 EST series



General

The 311, 312, 313, 314, 513 and 514 series safety relief valves are made by Caleffi S.p.A. in compliance with the essential safety requirements laid down by Directive 97/23/CE of the European Parliament and the Council of the European Union for harmonisation of member States with regard to pressurised equipment.

Function

Safety relief valves are typically used for pressure control on heat generators in heating systems, on hot water storage units in hydraulic and domestic water systems, and in hydraulic systems.

On reaching the setting pressure, the valve opens and, by discharging into the atmosphere, prevents the pressure in the system from reaching dangerous levels for the generator and for the components installed in the system.

527 EST series valves are fail-safe devices, i.e. they are guaranteed to operate even in the case of wear or breakage of the diaphragm.

Code				
311425	1/2"	2,5 bar	1	50
311430	1/2"	3 bar	1	50
311435	1/2"	3,5 bar	1	50
311525	3/4"	2,5 bar	1	50
311530	3/4"	3 bar	1	50
311535	3/4"	3,5 bar	1	50



Product range

311 series	Certified standard safety relief valve. F-F connections.	_____ sizes 1/2", 3/4"
312 series	Certified standard safety relief valve. M-F connections.	_____ size 1/2"
313 series	Certified standard safety relief valve with pressure gauge or pressure gauge connection. F-F connections.	_____ sizes 1/2", 3/4"
314 series	Certified standard safety relief valve with pressure gauge or pressure gauge connection. M-F connections.	_____ size 1/2"
513 series	Certified standard safety relief valve. F-F connections.	_____ sizes 1/2"x1/2", 1"x1 1/4", 1 1/4"x1 1/2"
514 series	Certified standard safety relief valve. M-F connections.	_____ size 1/2"
527 EST series	Certified standard safety relief valve. F-F connections.	_____ size 1/2"x3/4", 3/4"x1", 1"x1 1/4", 1 1/4"x 1 1/2"

Technical specifications

Materials:

Body:	- 1/2"-3/4":	brass EN 12165 CW617N
	- 1"-1 1/4":	brass EN 1982 CB753S
Cover:	brass EN 12165 CW617N	
	- 513-514 (1/2"):	PA6G30
Control stem:		brass EN 12164 CW614N
Obturator seal:		EPDM
Diaphragm:		EPDM
Spring:		steel EN 12270-1
Control knob:	- 311-312-313-314-513 (1/2")-514:	ABS
	- 513 (1" and 1 1/4")-527 EST:	PA6G20
Nominal pressure:		PN 10
Working temperature range:		5-110 °C

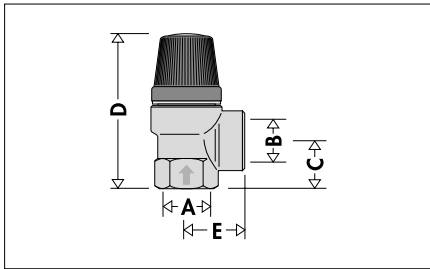
Performance:

Opening overpressure:	527 EST; $P_{set} +10\% \cdot P_{set}$
	311-312-313-314-513-514; $P_{set} +20\% \cdot P_{set}$
Closing differential:	$P_{set} -20\% \cdot P_{set}$
Medium:	water, air
PED category:	IV

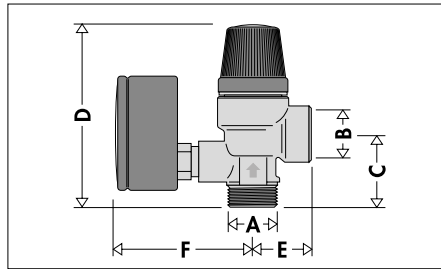
Settings:

311 series	1,5-2-2,5-3-3,5-4-5-5,5-6-7-8-9 bar (1,5 bar only 1/2") (2-5,5-9 bar only 3/4")
312 series	1,8-2,5-3-3,5-4-5-6-7-8 bar
313 series with pressure gauge	2,5-3-6-7-8 bar
313 series with pressure gauge connection	3 bar
314 series with pressure gauge	2,5-3-6-7-8 bar
314 series with pressure gauge connection	3-6 bar
513 series	1,5-2-2,5-3-3,5-4 - 5,5-6-7-8-9 bar (1,5-2 only 1/2" and 1")(4-5,5-9 only 1")
514 series	2-2,5-3-3,5-4-5-6-7-8 bar
527 EST series standard	2,25-2,5-2,7-3-3,5-4-4,5-5-5,4-6 bar
527 EST series special settings	1-1,5-2-7-8 bar

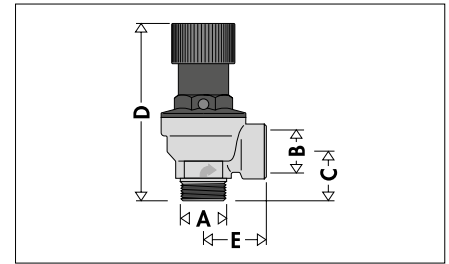
Dimensions



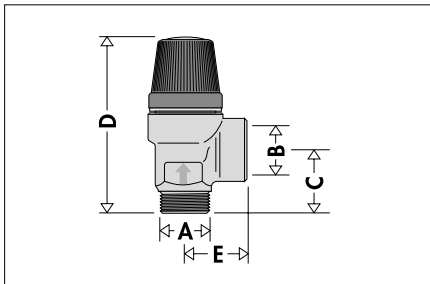
Code	A	B	C	D	E	Mass (kg)
3114..	1/2"	1/2"	19,5	65,5	25,5	0,13
3115..	3/4"	3/4"	24	74,5	27,5	0,21



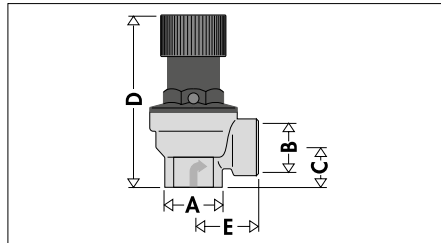
Code	A	B	C	D	E	F	Mass (kg)
3144..	1/2"	1/2"	32	78	25,5	61	0,24



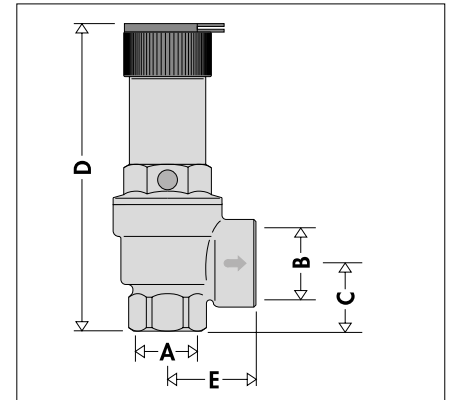
Code	A	B	C	D	E	Mass (kg)
5144..	1/2"	1/2"	23	81,5	29,5	0,18



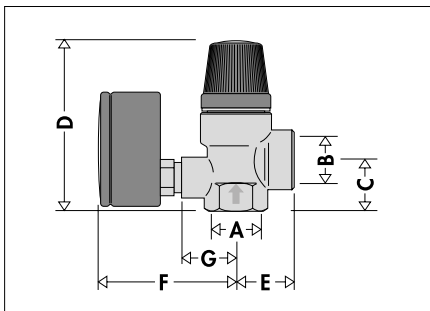
Code	A	B	C	D	E	Mass (kg)
3124..	1/2"	1/2"	23,5	69,5	25,5	0,13



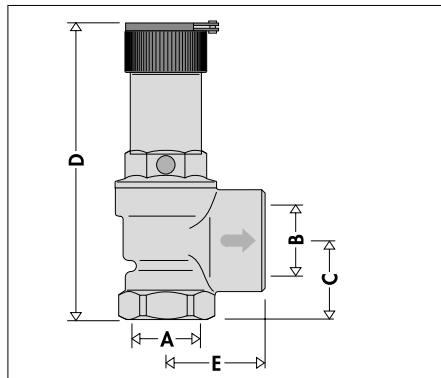
Code	A	B	C	D	E	Mass (kg)
5134..	1/2"	1/2"	19	78,5	29,5	0,18



Code	A	B	C	D	E
5274.. EST	1/2"	3/4"	26	93	33
5275.. EST	3/4"	1"	30	136	39,5
5276.. EST	1"	1 1/4"	39	166	48
5277.. EST	1 1/4"	1 1/2"	42,5	185	56



Code	A	B	C	D	E	F	G	Mass (kg)
3134..	1/2"	1/2"	21,5	72	25,5	61	24	0,24
3135..	3/4"	3/4"	24	74,5	27,5	61	24	0,29



Code	A	B	C	D	E	Mass (kg)
5136..	1"	1 1/4"	38	144	48	0,85
5137..	1 1/4"	1 1/2"	44	187	57,5	2,1

Code completion

bar	••	bar	••	bar	••
1	10	2.7	27	5.4	54
1.5	15	3	30	5.5	55
1.8	28	3.5	35	6	60
2	20	4	40	7	70
2.25	22	4.5	45	8	80
2.5	25	5	50	9	90

Safety relief valve for thermal systems, (527 EST series)

Functional details

Discharge overpressure <10 %

Full valve discharge flow rate should occur at pressure values $P_S < 1,1 \cdot P_{\text{setting}}$. This feature, combined with the special range of settings, allows the correct valve to be available as per the maximum working pressure value of the system or generator.

Closing differential <20 %

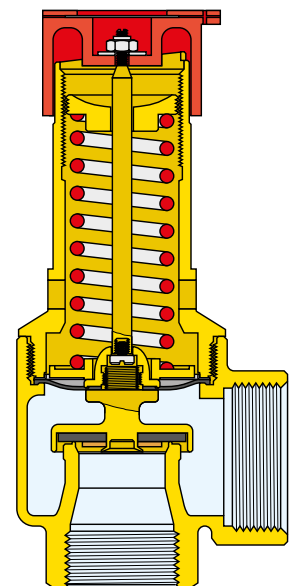
The valve must close within pressure values $P_r > 0,8 \cdot P_{\text{setting}}$. This feature allows minimizing the loss of water from the system if the valve is opened.

Positive safety

Valve performance is guaranteed even in the event of diaphragm deterioration or breakage.

Increased outlet diameter

This feature renders negligible the decrease in the discharge capacity or the change in behaviour on opening or closing due to the presence of the conveyance pipe.

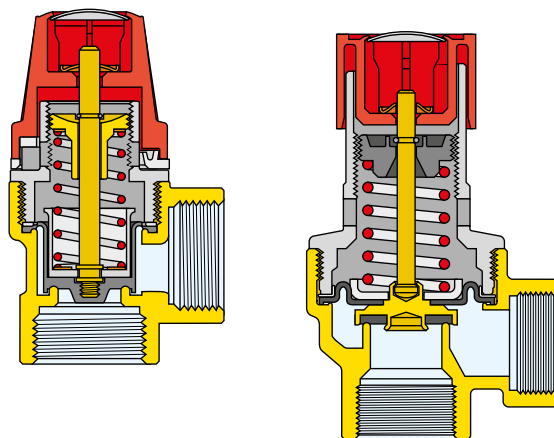


Standard safety relief valves

The standard safety relief valves 311, 312, 313, 314, 513 and 514 series are used in heating systems, in domestic water systems to protect the hot water storage and in hydraulic systems.

Heating systems

In compliance with Italian legislation, standard safety relief valves may be applied to heat generators with ratings lower than 35 kW.

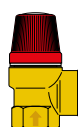


311-312-313-314 SERIES TECHNICAL SPECIFICATIONS

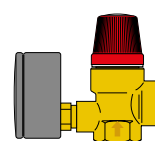
Size	Ø Outlet mm	Cross Section net cm ²	Press. of setting (bar)	Nom. disch. press. (bar)	Press. of closing (bar)	Coeff. of outflow K	Flow rate of discharge (W) kg/h	Maximum potential of the generator kW	kcal/h
1/2"	13	1,327	1,5	1,80	1,2	0,5	88,49	51,3	44.200
1/2"	13	1,327	1,8	2,16	1,44	0,5	99,38	57,6	49.600
1/2"	13	1,327	2,50	3,00	2,00	0,5	124,44	72,3	62.200
1/2"	13	1,327	3	3,60	2,40	0,5	142,17	82,5	71.000
1/2"	13	1,327	3,50	4,20	2,80	0,5	161,39	93,6	80.600
1/2"	13	1,327	4	4,80	3,20	0,5	178,25	103,3	89.000
1/2"	13	1,327	5	6	4	0,5	213,32	123,7	106.400
1/2"	13	1,327	6	7,20	4,80	0,5	248,81	144,6	124.400
1/2"	13	1,327	7	8,40	5,60	0,5	284,35	165,2	142.100
1/2"	13	1,327	8	9,60	6,40	0,5	322,78	187,5	161.300
3/4"	13	1,327	2	2,40	1,60	0,5	106,63	61,8	53.300
3/4"	13	1,327	2,50	3,00	2,00	0,5	124,44	72,3	62.200
3/4"	13	1,327	3	3,60	2,40	0,5	142,17	82,5	71.000
3/4"	13	1,327	3,50	4,20	2,80	0,5	161,39	93,6	80.600
3/4"	13	1,327	4	4,80	3,20	0,5	178,25	103,3	89.000
3/4"	13	1,327	5	6,00	4,00	0,5	213,26	123,6	106.600
3/4"	13	1,327	5,5	6,60	4,4	0,5	234,23	135,9	116.900
3/4"	13	1,327	6	7,20	4,80	0,5	248,81	144,6	124.400
3/4"	13	1,327	7	8,40	5,60	0,5	284,35	165,2	142.100
3/4"	13	1,327	8	9,60	6,40	0,5	322,78	187,5	161.300
3/4"	13	1,327	9	10,80	7,2	0,5	364,20	211,2	181.700

513-514 SERIES TECHNICAL SPECIFICATIONS

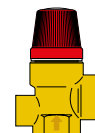
Size	Ø Outlet mm	Cross Section net cm ²	Press. of setting (bar)	Nom. disch. press. (bar)	Press. of closing (bar)	Coeff. of outflow K	Flow rate of discharge (W) kg/h	Maximum potential of the generator kW	kcal/h
1/2"	15	1,767	1,50	1,80	1,20	0,5	117,80	68,3	58.900
1/2"	15	1,767	2	2,40	1,60	0,5	141,99	82,3	70.900
1/2"	15	1,767	2,50	3,00	2,00	0,5	165,65	96,2	82.800
1/2"	15	1,767	3	3,60	2,40	0,5	189,32	110,0	94.600
1/2"	15	1,767	3,50	4,20	2,80	0,5	214,90	124,6	107.400
1/2"	15	1,767	4	4,80	3,20	0,5	237,35	137,6	118.600
1/2"	15	1,767	5	6	4	0,5	284,01	164,7	141.700
1/2"	15	1,767	6	7,20	4,80	0,5	331,31	192,5	165.600
1/2"	15	1,767	7	8,40	5,60	0,5	378,64	220,1	189.300
1/2"	15	1,767	8	9,60	6,40	0,5	429,81	249,8	214.900



- 311415 1/2" 1,5 bar
- 311425 1/2" 2,5 bar
- 311430 1/2" 3 bar
- 311435 1/2" 3,5 bar
- 311440 1/2" 4 bar
- 311450 1/2" 5 bar
- 311460 1/2" 6 bar
- 311470 1/2" 7 bar
- 311480 1/2" 8 bar
- 311520 3/4" 2 bar
- 311525 3/4" 2,5 bar
- 311530 3/4" 3 bar
- 311535 3/4" 3,5 bar
- 311540 3/4" 4 bar
- 311550 3/4" 5 bar
- 311555 3/4" 5,5 bar
- 311560 3/4" 6 bar
- 311570 3/4" 7 bar
- 311580 3/4" 8 bar
- 311590 3/4" 9 bar



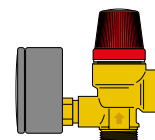
- 313425 1/2" 2,5 bar
- 313430 1/2" 3 bar
- 313460 1/2" 6 bar
- 313470 1/2" 7 bar
- 313480 1/2" 8 bar
- 313525 3/4" 2,5 bar
- 313530 3/4" 3 bar
- 313560 3/4" 6 bar
- 313570 3/4" 7 bar
- 313580 3/4" 8 bar



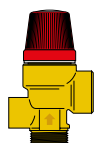
- 313432 1/2" 3 bar
- 313532 3/4" 3 bar



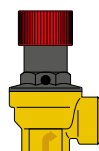
- 312428 1/2" 1,8 bar
- 312425 1/2" 2,5 bar
- 312430 1/2" 3 bar
- 312435 1/2" 3,5 bar
- 312440 1/2" 4 bar
- 312450 1/2" 5 bar
- 312460 1/2" 6 bar
- 312470 1/2" 7 bar
- 312480 1/2" 8 bar



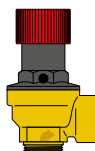
- 314425 1/2" 2,5 bar
- 314430 1/2" 3 bar
- 314460 1/2" 6 bar
- 314470 1/2" 7 bar
- 314480 1/2" 8 bar



- 314432 1/2" 3 bar
- 314462 1/2" 6 bar



- 513415 1/2" 1,5 bar
- 513420 1/2" 2 bar
- 513425 1/2" 2,5 bar
- 513430 1/2" 3 bar
- 513435 1/2" 3,5 bar
- 513460 1/2" 6 bar
- 513470 1/2" 7 bar
- 513480 1/2" 8 bar



- 514420 1/2" 2 bar
- 514425 1/2" 2,5 bar
- 514430 1/2" 3 bar
- 514435 1/2" 3,5 bar
- 514440 1/2" 4 bar
- 514450 1/2" 5 bar
- 514460 1/2" 6 bar
- 514470 1/2" 7 bar
- 514480 1/2" 8 bar

Domestic water systems

513 and 514 series valves comply with the requirements of "Section R" for safety standards of equipment containing hot liquids under pressure (Italian legislation):

"in the case of water heaters intended for domestic use, the expansion system protecting the storage may consist of a discharge valve, with an outlet having a diameter, in mm, of not less than:

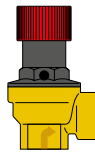
$$D_{min} = \sqrt{\frac{V}{5}}$$

where V is the volume of the heater in litres, with a minimum of 15 mm",

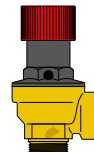
To illustrate the above, see the table with the hot water storage capacity limits for each type of valve.

513-514 SERIES TECHNICAL SPECIFICATIONS

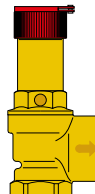
Size	Ø Outlet mm	Net cross section cm ²	Setting press. (bar)	Nom. disch. press. (bar)	Closing press. (bar)	Boiler capacity l
1/2"	15	1,767	6	7,20	4,80	1.000
1/2"	15	1,767	7	8,40	5,60	1.000
1/2"	15	1,767	8	9,60	6,40	1.000
1"	25	4,9087	6	7,20	4,80	3.000
1"	25	4,9087	7	8,40	5,60	3.000
1"	25	4,9087	8	9,60	6,40	3.000
1"	25	4,9087	9	10,8	7,20	3.000
1 1/4"	32	8,0424	6	7,20	4,80	5.000
1 1/4"	32	8,0424	7	8,40	5,60	5.000
1 1/4"	32	8,0424	8	9,60	6,40	5.000



- 513460 1/2" 6 bar
- 513470 1/2" 7 bar
- 513480 1/2" 8 bar



- 514460 1/2" 6 bar
- 514470 1/2" 7 bar
- 514480 1/2" 8 bar



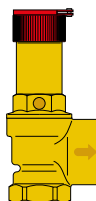
- 513660 1" 6 bar
- 513670 1" 7 bar
- 513680 1" 8 bar
- 513690 1" 9 bar
- 513760 1 1/4" 6 bar
- 513770 1 1/4" 7 bar
- 513780 1 1/4" 8 bar

Hydraulic systems

The safety relief valves can also be used for discharging cold water; in this case, the indicated discharge flow rates are the results of experimental testing, without the use of any conversion formula for fluids of different types.

513 SERIES TECHNICAL SPECIFICATIONS

Size	Ø Outlet mm	Net cross section cm ²	Setting press. (bar)	Nom. disch. press. (bar)	Closing press. (bar)	Discharge flow rate m ³ /h
1"	25	4,9087	1,5	1,80	1,20	7,6
1"	25	4,9087	2	2,40	1,60	8,0
1"	25	4,9087	2,50	3,00	2,00	8,3
1"	25	4,9087	3	3,60	2,40	8,7
1"	25	4,9087	3,50	4,20	2,80	9,1
1"	25	4,9087	4	4,80	3,20	9,4
1"	25	4,9087	5,5	6,60	4,40	10,4
1"	25	4,9087	6	7,20	4,80	10,5
1"	25	4,9087	7	8,40	5,60	11,5
1"	25	4,9087	8	9,60	6,40	12,3
1"	25	4,9087	9	10,80	7,20	12,9
1 1/4"	32	8,0424	2,50	3,00	2,00	13,2
1 1/4"	32	8,0424	3	3,60	2,40	13,8
1 1/4"	32	8,0424	3,50	4,20	2,80	14,1
1 1/4"	32	8,0424	6	7,20	4,80	17,5
1 1/4"	32	8,0424	7	8,40	5,60	18,6
1 1/4"	32	8,0424	8	9,60	6,40	19,4



- 513615 1" 1,5 bar
- 513620 1" 2 bar
- 513625 1" 2,5 bar
- 513630 1" 3 bar
- 513635 1" 3,5 bar
- 513640 1" 4 bar
- 513655 1" 5,5 bar
- 513660 1" 6 bar
- 513670 1" 7 bar
- 513680 1" 8 bar
- 513690 1" 9 bar
- 513725 1 1/4" 2,5 bar
- 513730 1 1/4" 3 bar
- 513735 1 1/4" 3,5 bar
- 513760 1 1/4" 6 bar
- 513770 1 1/4" 7 bar
- 513780 1 1/4" 8 bar

Certification

CE Mark

The 311, 312, 313, 314, 513 and 514 series safety relief valves meet the requirements of Directive 2014/68/EU for pressurised equipment (also referred to as PED). They are therefore classified as category IV and are CE marked.

ATTESTATO DI ESAME CE DEL TIPO

N. PA055 Rev. 6		Seconde il modulo 8 della direttiva 97/23/CE	
Dati dell'Organismo Notificatore			
Consejo PASCAL S.L. a scuola unico VIA SCARLETT 13 - 20141 - MILANO - ITALIA			
Numero Identificativo CE 1115			
Dati del Costruttore/Produttore			
Costruttore CALEFFI S.p.A. (Indirizzo di fabbrica)			
Indirizzo S.R. 299 N. 28 ZONA FONTANETTO D'ADDONA (MO)			
Mandatario			
Indirizzo			
Dati			
TIPO		Valvole di sicurezza Mod. F 227 e 512 Pressione nominale massima Temperatura massima ammissibile Temperatura minima ammissibile Pressione di servizio	
CATEGORIE DI ESECUZIONE		IV II, III, IV 110 °C 1,6 °C	
Categorie di apparecchiatura		IV	
Prescrizioni documentarie applicabili dal fabbricante di cui l'ESAME CE esamina una copia			
Il presente	X	Documenti normativi e soluzioni adottate	X
Progetto di fabbricazione	X	Ingegneri, tecnici della qualificazione dei procedimenti di produzione e dati valutati alla ISO 9001:2008/CEI	X
Utilizzo per l'uso	X	Documentazione di origine Inventario prodotti	X
Documenti tecnici dei materiali utilizzati nei sistemi valutati con la notazione CE	X	Esecuzioni degli esposti e delle prove CE e la procedura di esecuzione dei controlli previsti	X
Controlli del sistema	X	Resposta al rischio e alla prova esposta il risultato che il tipo soddisfa i requisiti dell'attestato della direttiva 97/23/CE	X
Condizioni di validità dell'attestato			
Data			
12/05/2010			

ATTESTATO DI ESAME CE DEL TIPO

N. PA056 Rev. 1		Seconde il modulo 8 della direttiva 97/23/CE	
Dati dell'Organismo Notificatore			
Società Consulente PASCAL S.r.l. VIA G. GIARDINO, 4 - 20123 - MILANO - ITALIA			
Numero Identificativo CE 1115			
Dati del Costruttore/Produttore			
Costruttore CALEFFI S.p.A. (Indirizzo di fabbrica)			
Indirizzo S.R. 299 - via 24 L ZONA FONTANETTO D'ADDONA (MO)			
Mandatario			
Indirizzo			
Dati			
TIPO		Valvole di sicurezza Mod. F 227 e 512 Pressione nominale massima Temperatura massima ammissibile Temperatura minima ammissibile Pressione di servizio	
CATEGORIE DI ESECUZIONE		IV II, III, IV 110 °C 1,6 °C	
Categorie di apparecchiatura		IV	
Prescrizioni documentarie applicabili dal fabbricante di cui l'ESAME CE esamina una copia			
Il presente	X	Documenti normativi e soluzioni adottate	X
Progetto di fabbricazione	X	Ingegneri, tecnici della qualificazione dei procedimenti di produzione e dati valutati alla ISO 9001:2008/CEI	X
Utilizzo per l'uso	X	Documentazione di origine Inventario prodotti	X
Documenti tecnici dei materiali utilizzati nei sistemi valutati con la notazione CE	X	Esecuzioni degli esposti e delle prove CE e la procedura di esecuzione dei controlli previsti	X
Controlli del sistema	X	Resposta al rischio e alla prova esposta il risultato che il tipo soddisfa i requisiti dell'attestato della direttiva 97/23/CE	X
Condizioni di validità dell'attestato			
Data			
12/05/2010			

Installation

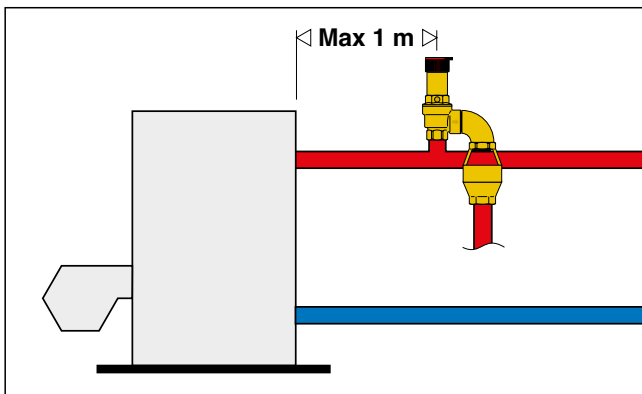
Before installing a safety relief valve, it must be correctly sized by qualified technical personnel in accordance with the current regulations governing the specific applications. Any use other than the intended use is prohibited.

Safety relief valves must be installed by competent technical personnel qualified in accordance with current legislation.

The safety relief valve must be installed in line with the flow direction indicated by the arrow on the valve body.

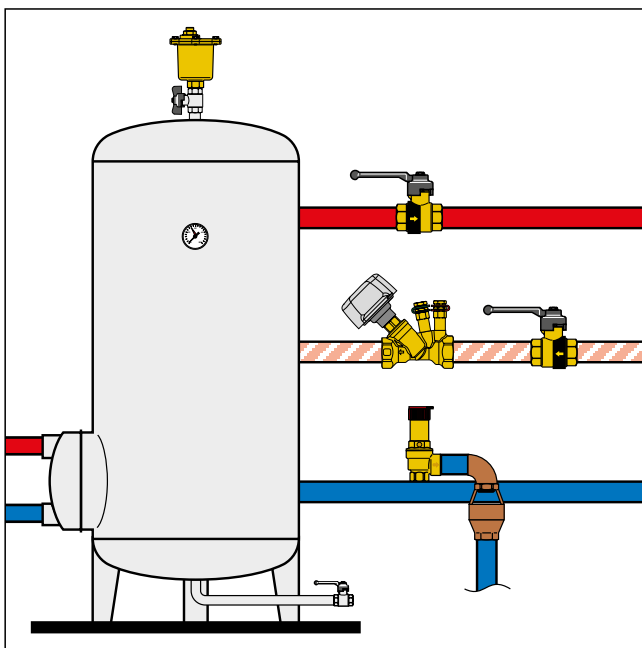
Heating system

The safety relief valves must be installed on the top of the generator or on the flow pipe no more than one metre from the generator (Section R). The connecting pipework between the safety relief valve and the generator must not be interrupted.



Hydraulic and domestic water system

Safety relief valves must be installed close to the hot water storage, taking care not to fit any shut-off devices between the valve and the storage.

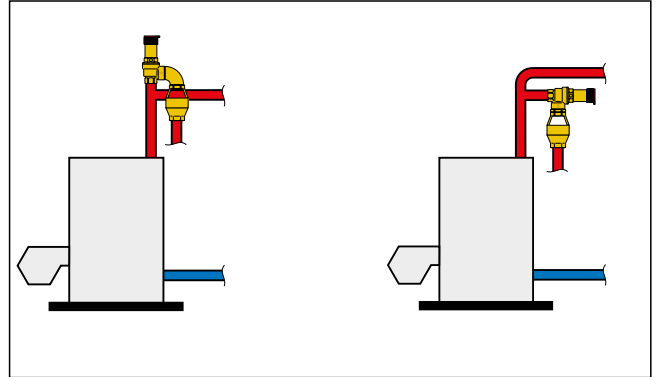


Mounting

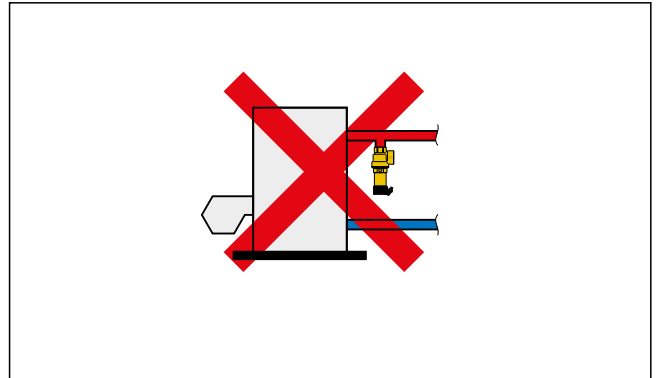
Safety relief valves can be fitted vertically or horizontally, but not upside down.

This prevents deposits of impurities from affecting correct functioning.

Correct installation



Incorrect installation



Discharge pipework

The discharge pipework from the safety relief valve must be fitted in such a way as not to prevent the correct operation of the valve and not to cause damage or injury.

In accordance with current legislation, the safety relief valve discharge must be visible and carried in suitable collection pipework.

As shown in the diagrams, it is advisable to install a tundish directly in the discharge pipework for low capacity valves, as diagram 1.

In the case of larger capacities, proceed as shown in diagram 2.

Diagram 1

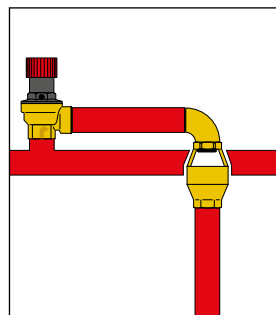
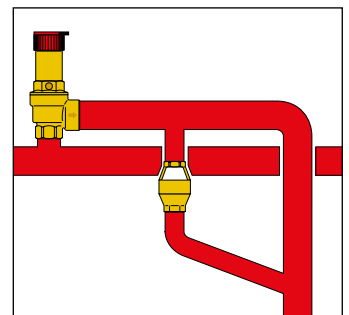


Diagram 2



SPECIFICATION SUMMARY

311 series

Certified, standard membrane safety relief valve. Bearing CE mark as per Directive 2014/68/EU. Threaded connections 1/2" F x 1/2" F (and 3/4" x 3/4"). Available setting values: 1,5 - 2 - 2,5 - 3 - 3,5 - 4 - 5 - 5,5 - 6 - 7 - 8 - 9, 1,5 bar only for 1/2", 2 - 5,5 - 9 bar only for 3/4". Maximum working temperature 110 °C. Brass body. Diaphragm and seal in EPDM. ABS knob. **Opening overpressure 20 %, closing differential 20 %.**

We reserve the right to make changes and improvements to our products and the related technical data in this publication, at any time and without prior notice.
