

Safety Valves

Type 06413

HEROSE



Cryogenic Safety Valves, angle type, stainless steel, PN50, type tested TÜV-SV.780. S/G

Full lift safety valve, orifice $d_0=23\text{mm}$ standard safety valve,
with carbon filled PTFE valve seal, closed bonnet, with lifting device
"cleaned and degreased for oxygen service"

Part No. 06413.X.0000

Inlet: male thread type G (BSPP) acc. to ISO 228/1, Outlet: female thread type G (BSPP) acc. to ISO 228/1

Part No. 06413.X.2000

Inlet: male thread type R (BSPT) acc. to ISO 7/1, Outlet: female thread type G (BSPP) acc. to ISO 228/1

Part No. 06413.X.5000

Inlet: male thread NPT acc. to ANSI B 1.20.1, Outlet: female thread type G (BSPP) acc. to ISO 228/1

Part No. 06413.X.6000

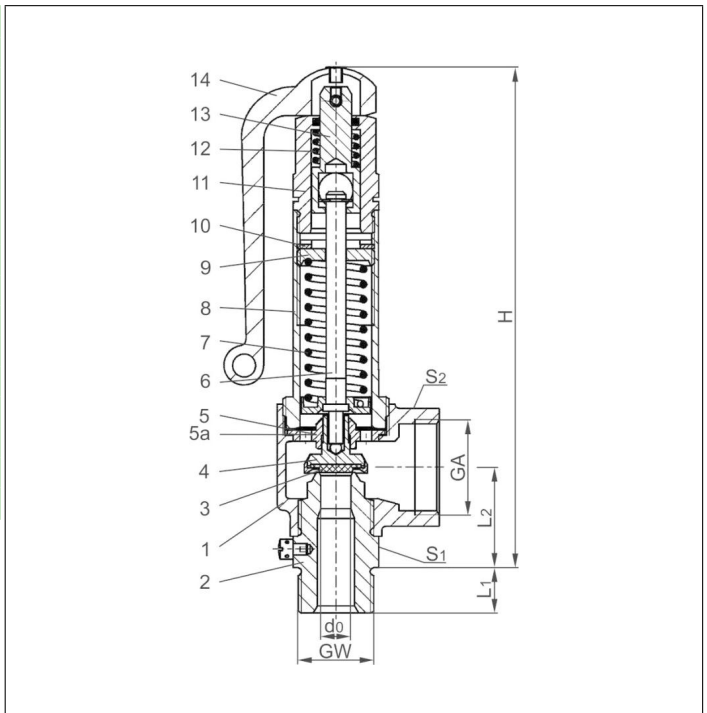
Inlet: male thread NPT acc. to ANSI B 1.20.1, Outlet: female thread NPT acc. to ANSI B 1.20.1



Applications:

Provided as safety device for protection against excessive pressure in stationary and moveable gas cylinders and pressure vessels. Approved for air gases, vapours and cryogenic liquefied gases incl. LNG.
Working temperature: $-196^\circ\text{C} / -321^\circ\text{F}$ (77K) up to $+185^\circ\text{C} / +365^\circ\text{F}$ (458K), suitable for horizontal installation

Materials	DIN EN	ASME/ASTM
1 Outlet body	1.4308	A 351 CF8
2 Inlet body	1.4301	A 479 Grade 304
3 Valve seal	PTFE / Carbon filled (25%)	
4 Disc	1.4301	A 479 Grade 304
5 Guide plate	1.4301	A 479 Grade 304
5a Guide plate from GW 1	1.4301	A 479 Grade 304
6 Stem	1.4571	A 479 Grade 316Ti
7 Spring	1.4571	A 313 Grade 316Ti
8 Bonnet	1.4308	A 351 CF8
9 Spring clamp	1.4301	A 479 Grade 304
10 Thread ring	1.4301	A 479 Grade 304
11 Lifting cap	1.4301	A 479 Grade 304
12 Lifting spring	1.4571	A 313 Grade 316Ti
13 Lifting stem	1.4301	A 479 Grade 304
14 Lever	1.4408	A 351 CF8M



Essential: Valves are delivered at a set pressure, therefore when ordering please confirm set pressure, medium and temperature.

Standard marking acc. to Pressure Equipment Directive 97/23/EC (PED) and ASME Code Section VIII.



Type 06413	Technical data									
	GW	1/2	3/4	1	1-1/4	1-1/2	2			
Nominal size	d ₀	7.0	7.0	10.5	10.5	15.0	23.0	23.0	23.0	23.0
Dimension code	.X.	0704	0706	1004	1006	1510	2312	2314	2320	2320
Set pressure range	bar	3.3-50.0	3.3-50.0	2.9-50.0	2.9-50.0	2.9-50.0	2.0-50.0	2.0-50.0	2.0-50.0	2.0-50.0
Outlet	GA	1	1	1	1	1-1/4	2	2	2	2
Height	H	175	175	175	175	194	270	270	270	268
Length	L ₁	14	16	14	16	18	20	20	20	25
Length	L ₂	36	36	36	36	42	56	56	56	54
Wrench size across flats	S ₁	30	30	30	30	41	55	55	55	65
Wrench size across flats	S ₂	41	41	41	41	50	70	70	70	70
Weight	ca. kg	1.00	1.02	0.98	1.01	1.52	3.80	3.85	3.85	4.28
Coefficient of discharge	α _w	0.82	0.82	0.58	0.58	0.5	0.62	0.62	0.62	0.62
Coefficient of discharge	rated slope	0.862	0.862	1.517	1.517	2.769	7.55	7.55	7.55	7.55

Dimensions in mm.

JUSTIN GORAZD s.p.-ATIS
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Safety Valves

Type 06420



Cryogenic Safety Valves, angle type, bronze, PN40

d₀=7.0 & 10.5mm up to PN50

type tested TÜV-SV.1111. S/G

Standard safety valve,

with PCTFE valve seal, (D₀7 = Metal to metal seated), closed bonnet

"cleaned and degreased for oxygen service"

Part No. 06420.X.0000

Inlet: male thread type G (BSPP) acc. to ISO 228/1, Outlet: female thread type G (BSPP) acc. to ISO 228/1

Part No. 06420.X.2000

Inlet: male thread type R (BSPT) acc. to ISO 7/1, Outlet: female thread type G (BSPP) acc. to ISO 228/1

Part No. 06420.X.5000

Inlet: male thread NPT acc. to ANSI B 1.20.1, Outlet: female thread type G (BSPP) acc. to ISO 228/1

Part No. 06420.X.6000

Inlet: male thread NPT acc. to ANSI B 1.20.1, Outlet: female thread NPT acc. to ANSI B 1.20.1

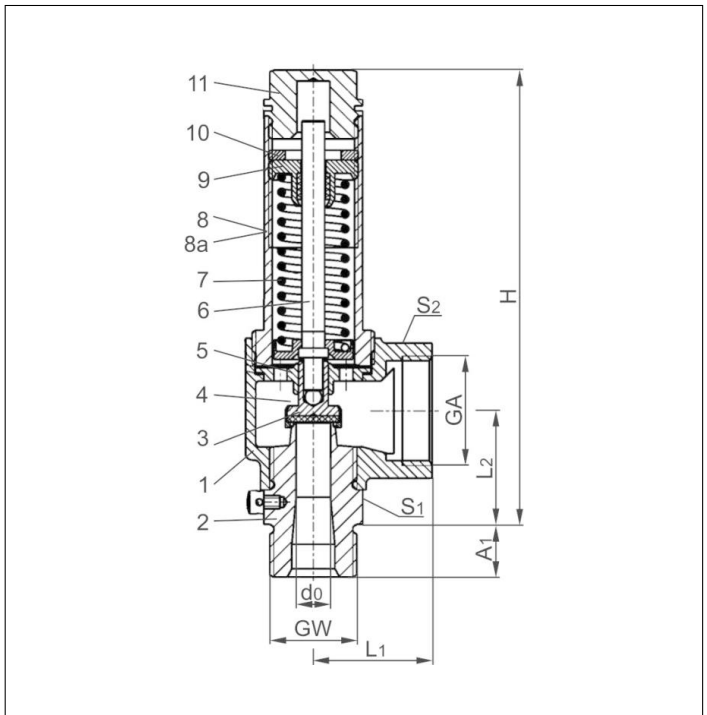


Applications:

Provided as safety device for protection against excessive pressure in stationary and moveable gas cylinders and pressure vessels. Approved for air gases, vapours and cryogenic liquefied gases incl. LNG.

Working temperature: -196°C / -321°F (77K) up to +185°C / +365°F (458K), with PCTFE-seal up to +150°C / 302°F (423K), suitable for horizontal installation

Materials	DIN EN	ASME/ASTM
1 Outlet body	CC491K	SB62 UNS C83600
2 Inlet body	1.4301	SA 479 Grade 304
3 Valve seal	PCTFE	
4 Disc	CC493K	B 505 UNS C93200
5 Guide plate	CC493K	B 505 UNS C93200
6 Stem	CW453K	B 103 UNS C52100
7 Spring	1.4571	A 313 Grade 316Ti
8 Bonnet	1.4301	A 276 Grade 304
9 Spring clamp	CW614N	B 455 UNS C38500
10 Thread ring	CW614N	B 455 UNS C38500
11 Cap	CW614N	B 455 UNS C38500



Essential: Valves are delivered at a set pressure, therefore when ordering please confirm set pressure, medium and temperature.

Standard marking acc. to Pressure Equipment Directive 97/23/EC (PED).



Type 06420	Technical data									
Nominal size	GW	1/2	3/4	1/2	3/4	3/4	1	1	1-1/4	1-1/4
Orifice	d ₀	7.0	7.0	10.5	10.5	14.0	14.0	18.0	18.0	23.0
Dimension code	.X.	0704	0706	1004	1006	1406	1410	1810	1812	2312
Set pressure range	bar	0.4-50.0	0.4-50.0	0.4-50.0	0.4-50.0	0.4-40.0	0.4-40.0	0.4-40.0	0.4-40.0	0.4-10.0
Outlet	GA	1	1	1	1	1-1/4	1-1/4	1-1/2	1-1/2	1-1/2
Height	H	140	140	140	140	159	159	186	187	187
Length	A ₁	14	16	14	16	16	18	18	20	20
Length	L ₁	36	36	36	36	50	50	48	48	48
Length	L ₂	36.5	36.5	36.5	34.5	44	44	50.5	51.5	52
Wrench size across flats	S ₁	30	30	30	30	41	41	50	50	50
Wrench size across flats	S ₂	41	41	41	41	50	50	58	58	58
Weight	ca. kg	0.78	0.80	0.76	0.79	1.25	1.31	1.87	1.99	1.90
Coeff. of disch. from 3.0 bar	α _w	0.78	0.78	0.69	0.69	0.66	0.66	0.66	0.66	0.54

Dimensions in mm.

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Safety Valves

Type 06420



Discharge capacities

Calculation of flow rate acc. to AD2000-Merkblatt A2 / DIN EN ISO 4126-1

Medium:

Air in m³/h at 0°C and 1013.25 mbar

The capacity indicated below is for a fully opened valve.

d₀ - orifice

A₀ - flow area

Set pressure in bar (g)	GW	1/2 & 3/4	1/2 & 3/4	3/4 & 1	1 & 1-1/4	1-1/4
	d ₀ (mm)	7.0	10.5	14.0	18.0	23.0
	A ₀ (mm ²)	38.48	86.6	153.9	254.5	415.3
	Medium	Air				
0.4		24	43	77	122	157
0.5		27	49	87	141	178
1.0		40	77	130	216	287
1.5		54	101	178	290	375
2.0		65	126	219	362	472
3.0		88	175	299	494	660
4.0		110	220	375	620	829
5.0		133	266	452	748	999
6.0		156	311	529	874	1168
7.0		178	356	605	1001	1337
8.0		202	402	684	1130	1510
9.0		224	447	760	1257	1680
10.0		247	493	839	1387	1853
12.0		293	583	992	1641	-
14.0		338	674	1146	1895	-
16.0		384	764	1300	2149	-
18.0		429	855	1453	2403	-
20.0		479	954	1623	2682	-
22.0		525	1045	1778	2939	-
24.0		571	1136	1933	3195	-
26.0		617	1228	2088	3452	-
28.0		662	1319	2243	3708	-
30.0		715	1423	2421	4002	-
32.0		761	1516	2577	4261	-
34.0		807	1608	2734	4520	-
36.0		854	1700	2891	4779	-
38.0		900	1792	3047	5038	-
40.0		954	1900	3231	5342	-
42.0		1001	1993	-	-	-
44.0		1048	2086	-	-	-
46.0		1094	2179	-	-	-
48.0		1141	2272	-	-	-
50.0		1198	2385	-	-	-

Safety Valves

Type 06418

HEROSE



Cryogenic Safety Valve, angle type, bronze, PN50, type tested TÜV-SV.780. S/G

Full lift safety valve, orifice $d_0=23\text{mm}$ standard safety valve,
with carbon filled PTFE valve seal, closed bonnet, with lifting device
"cleaned and degreased for oxygen service"

Part No. 06418.X.0040

Inlet: male thread type G (BSPP) acc. to ISO 228/1, Outlet: female thread type G (BSPP) acc. to ISO 228/1

Part No. 06418.X.2040

Inlet: male thread type R (BSPT) acc. to ISO 7/1, Outlet: female thread type G (BSPP) acc. to ISO 228/1

Part No. 06418.X.5040

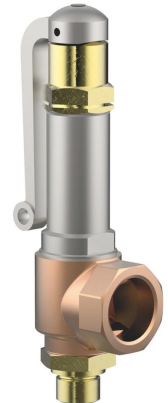
Inlet: male thread NPT acc. to ANSI B 1.20.1, Outlet: female thread type G (BSPP) acc. to ISO 228/1

Part No. 06418.X.6040

Inlet: male thread NPT acc. to ANSI B 1.20.1, Outlet: female thread NPT acc. to ANSI B 1.20.1

Available options - on request only:

- external parts nickel plated · with installed elbow at the outlet



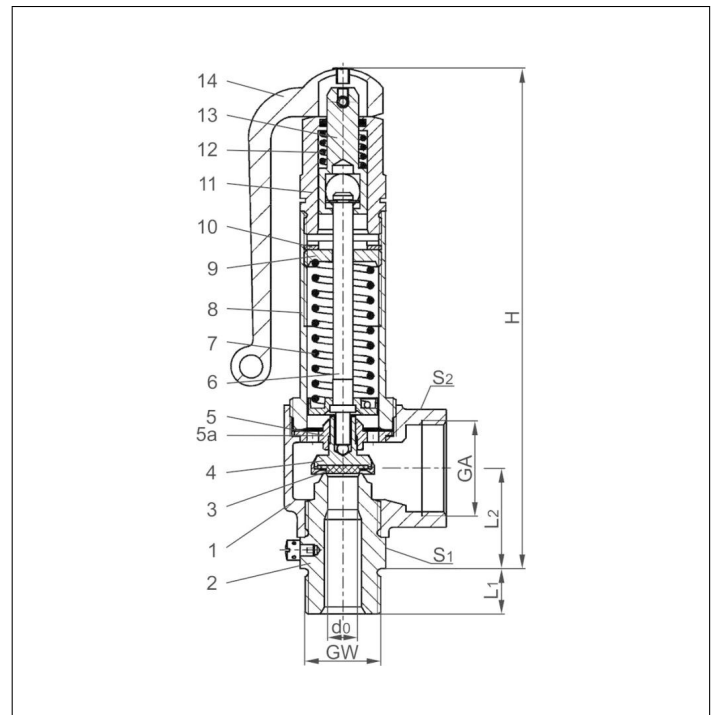
Applications:

Provided as safety device for protection against excessive pressure in stationary and moveable gas cylinders and pressure vessels. Approved for air gases, vapours and cryogenic liquefied gases incl. LNG.
Working temperature: $-196^\circ\text{C} / -321^\circ\text{F}$ (77K) up to $+185^\circ\text{C} / +365^\circ\text{F}$ (458K), suitable for horizontal installation

Materials	DIN EN	ASME/ASTM
1 Outlet body	CC491K	B 62 UNS C83600
2 Inlet body	CW614N	B 455 UNS C38500
3 Valve seal	PTFE / Carbon filled (25%)	
4 Disc	CC493K	SB 505 UNS C93200
5 Guide plate	CC493K	SB 505 UNS C93200
5a Guide plate from GW 1	CW453K	SB 103 UNS C52100
6 Stem	CW453K	SB 103 UNS C52100
7 Spring	1.4571	A 313 Grade 316Ti
8 Bonnet	1.4308	A 351 CF 8
9 Spring clamp	CW614N	B 455 UNS C38500
10 Thread ring	CW614N	B 455 UNS C38500
11 Lifting cap	CW614N	B 455 UNS C38500
12 Lifting spring	1.4571	A 313 Grade 316Ti
13 Lifting stem	CW614N	B 455 UNS C38500
14 Lever	1.4408	A 351 CF8M

Essential: Valves are delivered at a set pressure, therefore when ordering please confirm set pressure, medium and temperature.

Standard marking acc. to Pressure Equipment Directive 97/23/EC (PED) and ASME Code Section VIII.



Type 06418	Technical data									
	Nominal size	GW	1/2	3/4	1	1-1/4	1-1/2	2		
Orifice	d_0	7.0	7.0	10.5	10.5	15.0	23.0	23.0	23.0	
Dimension code	.X.	0704	0706	1004	1006	1510	2312	2314	2320	
Set pressure range	bar	3.3-50.0	3.3-50.0	2.9-50.0	2.9-50.0	2.9-50.0	2.0-50.0	2.0-50.0	2.0-50.0	
Outlet	GA	1	1	1	1	1-1/4	2	2	2	
Height	H	175	175	175	175	194	270	270	268	
Length	L_1	14	16	14	16	18	20	20	25	
Length	L_2	36	36	36	36	42	56	56	54	
Wrench size across flats	S_1	30	30	30	30	41	55	55	65	
Wrench size across flats	S_2	41	41	41	41	50	70	70	70	
Weight	ca. kg	1.00	1.02	0.98	1.01	1.52	3.80	3.85	4.28	
Coefficient of discharge	α_w	0.82	0.82	0.58	0.58	0.5	0.62	0.62	0.62	
Coefficient of discharge	rated slope	0.862	0.862	1.517	1.517	2.769	7.55	7.55	7.55	

Dimensions in mm.

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Safety Valves

Type 06418

HEROSE



Discharge capacities

Medium:

Air in m³/h at 0°C and 1013.25 mbar

Air in SCFM at 60°F (15.6°C) and 14.7 psia (1013.25 mbar)

The capacity indicated below is for a fully opened valve.

d₀ - orifice

A₀ - flow area

Calculation of discharge capacity acc. to AD2000-Merkblatt A2 / DIN EN ISO 4126-1 resp. ASME Code Sec. VIII.
The safety valve is marked with the lower capacity of both calculations.

Set pressure in bar (g)	GW	1/2 & 3/4	1/2 & 3/4	1	1-1/4, 1-1/2 & 2	Set pressure in psig	GW	1/2 & 3/4	1/2 & 3/4	1	1-1/4, 1-1/2 & 2
	d ₀ (mm)	7.0	10.5	15.0	23.0		d ₀ (inch)	0.276	0.414	0.591	0.907
	A ₀ (mm ²)	38.48	86.6	176.63	415.27		A ₀ (in ²)	0.060	0.134	0.274	0.644
	Medium	Air in m ³ /h					Medium	Air in SCFM			
2.0		-	-	-	563	50		60	102	180	524
2.9		-	143	252	737	60		70	118	208	607
3.0		-	147	259	756	70		79	134	236	690
3.3		93	158	279	814	80		89	150	265	772
4.0		108	185	325	949	90		98	167	294	855
5.0		130	222	391	1142	100		107	183	322	938
6.0		153	260	458	1335	110		117	199	350	1021
7.0		174	298	524	1528	120		126	215	379	1103
8.0		196	335	590	1721	130		136	231	407	1186
9.0		219	373	656	1914	140		145	248	435	1269
10.0		241	410	722	2107	150		155	264	464	1352
12.0		285	486	855	2493	175		179	304	535	1558
14.0		330	561	987	2879	200		202	344	606	1766
16.0		373	636	1119	3265	225		226	384	677	1972
18.0		418	711	1252	3651	250		250	425	748	2179
20.0		461	787	1384	4037	275		273	465	818	2386
22.0		507	862	1517	4422	300		297	506	889	2593
24.0		550	937	1649	4808	325		321	546	960	2800
26.0		595	1012	1781	5194	350		345	586	1031	3007
28.0		638	1088	1914	5580	375		368	626	1102	3213
30.0		683	1163	2046	5966	400		392	667	1173	3420
32.0		727	1238	2178	6352	425		416	707	1244	3627
34.0		772	1313	2311	6738	450		439	748	1315	3834
36.0		815	1389	2443	7124	475		463	788	1386	4041
38.0		860	1464	2576	7510	500		487	828	1457	4248
40.0		904	1539	2708	7896	525		510	869	1528	4455
42.0		949	1614	2840	8282	550		534	909	1599	4662
44.0		992	1690	2973	8668	575		558	949	1670	4868
46.0		1037	1765	3105	9054	625		605	1030	1812	5282
48.0		1081	1840	3238	9440	675		653	1111	1954	5696
50.0		1126	1915	3370	9825	725		700	1191	2096	6109

Safety Valves

Type 06418

HEROSE



Cryogenic Safety Valve, angle type, bronze, PN50, type tested TÜV-SV.780. S/G

Full lift safety valve, orifice $d_0=23\text{mm}$ standard safety valve,
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Inlet: male thread type G (BSPP) acc. to ISO 228/1, Outlet: female thread type G (BSPP) acc. to ISO 228/1

Part No. 06418.X.2000

Inlet: male thread type R (BSPT) acc. to ISO 7/1, Outlet: female thread type G (BSPP) acc. to ISO 228/1

Part No. 06418.X.5000

Inlet: male thread NPT acc. to ANSI B 1.20.1, Outlet: female thread type G (BSPP) acc. to ISO 228/1

Part No. 06418.X.6000

Inlet: male thread NPT acc. to ANSI B 1.20.1, Outlet: female thread NPT acc. to ANSI B 1.20.1

Available options - on request only:

- external parts nickel plated
- with installed elbow at the outlet



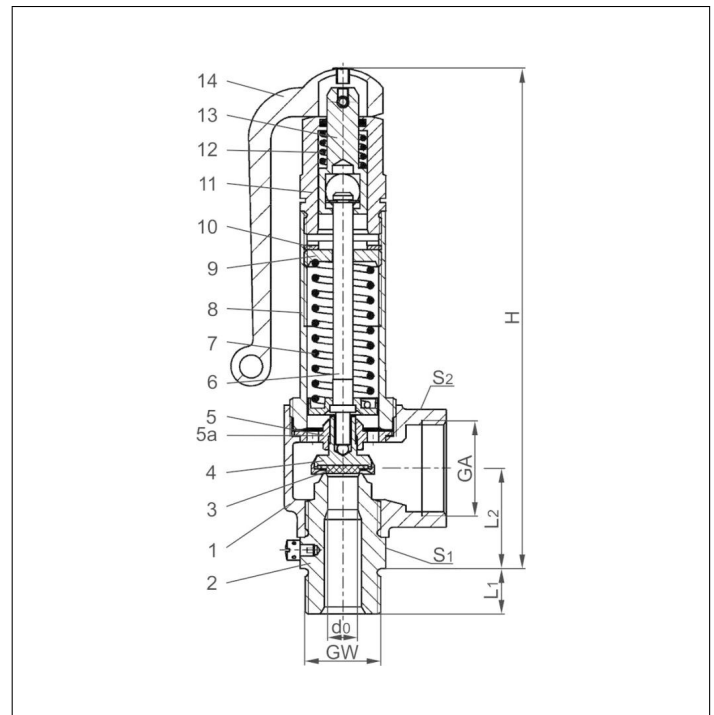
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Materials	DIN EN	ASME/ASTM
1 Outlet body	CC491K	B 62 UNS C83600
2 Inlet body	1.4301	SA 479 Grade 304
3 Valve seal	PTFE / Carbon filled (25%)	
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10 Thread ring	CW614N	B 455 UNS C38500
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14 Lever	1.4408	A 351 CF8M

Essential: Valves are delivered at a set pressure, therefore when ordering please confirm set pressure, medium and temperature.

Standard marking acc. to Pressure Equipment Directive 97/23/EC (PED) and ASME Code Section VIII.



Type 06418	Technical data									
	Nominal size	GW	1/2	3/4	1	1-1/4	1-1/2	2		
Orifice	d_0	7.0	7.0	10.5	10.5	15.0	23.0	23.0	23.0	
Dimension code	.X.	0704	0706	1004	1006	1510	2312	2314	2320	
Set pressure range	bar	3.3-50.0	3.3-50.0	2.9-50.0	2.9-50.0	2.9-50.0	2.0-50.0	2.0-50.0	2.0-50.0	
Outlet	GA	1	1	1	1	1-1/4	2	2	2	
Height	H	175	175	175	175	194	270	270	268	
Length	L_1	14	16	14	16	18	20	20	25	
Length	L_2	36	36	36	36	42	56	56	54	
Wrench size across flats	S_1	30	30	30	30	41	55	55	65	
Wrench size across flats	S_2	41	41	41	41	50	70	70	70	
Weight	ca. kg	1.00	1.02	0.98	1.01	1.52	3.80	3.85	4.28	
Coefficient of discharge	α_w	0.82	0.82	0.58	0.58	0.5	0.62	0.62	0.62	
Coefficient of discharge	rated slope	0.862	0.862	1.517	1.517	2.769	7.55	7.55	7.55	

Dimensions in mm.

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Safety Valves

Type 06418

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Discharge capacities

Medium:

Air in m³/h at 0°C and 1013.25 mbar

Air in SCFM at 60°F (15.6°C) and 14.7 psia (1013.25 mbar)

The capacity indicated below is for a fully opened valve.

d₀ - orifice

A₀ - flow area

Calculation of discharge capacity acc. to AD2000-Merkblatt A2 / DIN EN ISO 4126-1 resp. ASME Code Sec. VIII.
The safety valve is marked with the lower capacity of both calculations.

Set pressure in bar (g)	GW	1/2 & 3/4	1/2 & 3/4	1	1-1/4, 1-1/2 & 2	Set pressure in psig	GW	1/2 & 3/4	1/2 & 3/4	1	1-1/4, 1-1/2 & 2
	d ₀ (mm)	7.0	10.5	15.0	23.0		d ₀ (inch)	0.276	0.414	0.591	0.907
	A ₀ (mm ²)	38.48	86.6	176.63	415.27		A ₀ (in ²)	0.060	0.134	0.274	0.644
	Medium	Air in m ³ /h					Medium	Air in SCFM			
2.0	-	-	-	-	563	50	60	102	180	524	
2.9	-	143	252	737	60	70	118	208	607		
3.0	-	147	259	756	70	79	134	236	690		
3.3	93	158	279	814	80	89	150	265	772		
4.0	108	185	325	949	90	98	167	294	855		
5.0	130	222	391	1142	100	107	183	322	938		
6.0	153	260	458	1335	110	117	199	350	1021		
7.0	174	298	524	1528	120	126	215	379	1103		
8.0	196	335	590	1721	130	136	231	407	1186		
9.0	219	373	656	1914	140	145	248	435	1269		
10.0	241	410	722	2107	150	155	264	464	1352		
12.0	285	486	855	2493	175	179	304	535	1558		
14.0	330	561	987	2879	200	202	344	606	1766		
16.0	373	636	1119	3265	225	226	384	677	1972		
18.0	418	711	1252	3651	250	250	425	748	2179		
20.0	461	787	1384	4037	275	273	465	818	2386		
22.0	507	862	1517	4422	300	297	506	889	2593		
24.0	550	937	1649	4808	325	321	546	960	2800		
26.0	595	1012	1781	5194	350	345	586	1031	3007		
28.0	638	1088	1914	5580	375	368	626	1102	3213		
30.0	683	1163	2046	5966	400	392	667	1173	3420		
32.0	727	1238	2178	6352	425	416	707	1244	3627		
34.0	772	1313	2311	6738	450	439	748	1315	3834		
36.0	815	1389	2443	7124	475	463	788	1386	4041		
38.0	860	1464	2576	7510	500	487	828	1457	4248		
40.0	904	1539	2708	7896	525	510	869	1528	4455		
42.0	949	1614	2840	8282	550	534	909	1599	4662		
44.0	992	1690	2973	8668	575	558	949	1670	4868		
46.0	1037	1765	3105	9054	625	605	1030	1812	5282		
48.0	1081	1840	3238	9440	675	653	1111	1954	5696		
50.0	1126	1915	3370	9825	725	700	1191	2096	6109		

Safety Valves

Type 06417



Cryogenic Safety Valves, angle type, bronze, PN40, type tested TÜV-SV.780. S/G

Standard safety valve (0.2 - 25.0 bar)

Metal to metal seated, closed bonnet, with lifting device

"cleaned and degreased for oxygen service"

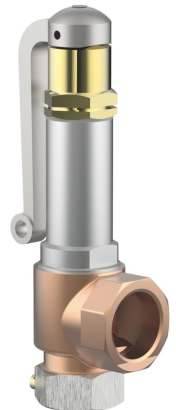
Part No. 06417.X.0000

Inlet: female thread type G (BSPP) acc. to ISO 228/1

Outlet: female thread type G (BSPP) acc. to ISO 228/1

Available options - on request only:

- external parts nickel plated
- with installed elbow at the outlet



Applications:

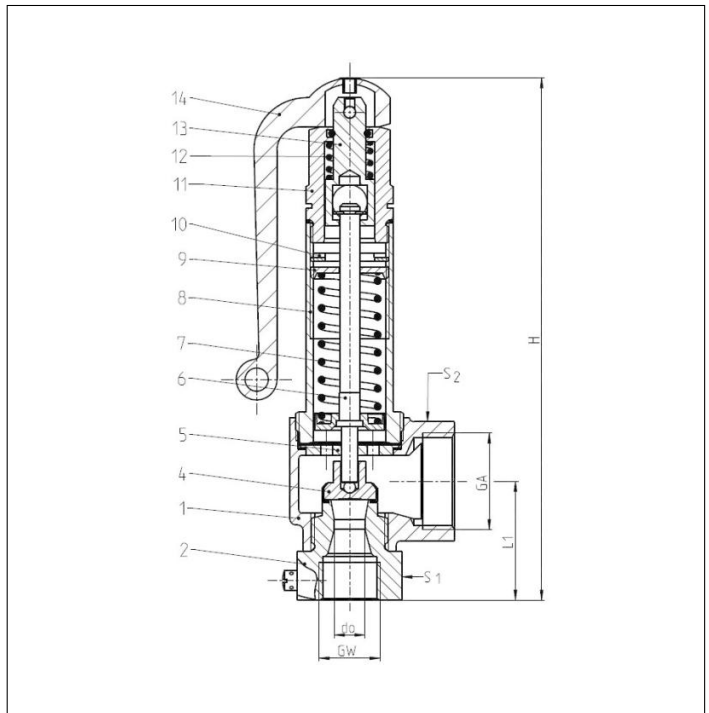
Provided as safety device for protection against excessive pressure in stationary and moveable gas cylinders and pressure vessels. Approved for air gases, vapours and cryogenic liquefied gases incl. LNG.

Working temperature: -196°C / -321°F (77K) up to +185°C / +365°F (458K)

Materials	DIN EN	ASME/ASTM
1 Outlet body	CC491K	B 62 UNS C83600
2 Inlet body	1.4301	A 276 Grade 304
4 Disc	1.4541	A 276 Grade 321
5 Guide plate	CW453K	B 103 UNS C52100
6 Stem	CW453K	B 103 UNS C52100
7 Spring	1.4571	A 313 Grade 316Ti
8 Bonnet	1.4308	A 351 CF 8
9 Spring clamp	CW614N	B 283 UNS C38500
10 Thread ring	CW614N	B 283 UNS C38500
11 Lifting cap	CW614N	B 283 UNS C38500
12 Lifting spring	1.4571	A 276 Grade 316Ti
13 Lifting stem	CW614N	B 283 UNS C38500
14 Lever	1.4408	A 351 CF8M

Essential: Valves are delivered at a set pressure, therefore when ordering please confirm set pressure, medium and temperature.

Standard marking acc. to Pressure Equipment Directive 97/23/EC (PED).



Type 06417	Technical data	
Nominal size	GW	1/2
Orifice	d ₀	10.5
Dimension code	.X.	1004
Set pressure range	bar	0.2-25.0
Outlet	GA	1
Height	H	180
Length	L ₁	41
Wrench size across flats	S ₁	30
Wrench size across flats	S ₂	41
Weight	ca. kg	0.99
Coeff. of discharge from 3.0 bar	α _w	0.67

Dimensions in mm.

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Safety Valves

Type 06417



Discharge capacities

Calculation of flow rate acc. to AD2000-Merkblatt A2 / DIN EN ISO 4126-1

Medium:

Air in m³/h at 0°C and 1013.25 mbar

The capacity indicated below is for a fully opened valve.

d_0 - orifice

A_0 - flow area

Set pressure in bar (g)	GW	1/2
	d_0 (mm)	10.5
	A_0 (mm ²)	86.6
	Medium	Air
0.2		25
0.5		48
1.0		74
1.5		99
2.0		124
3.0		170
4.0		214
5.0		258
6.0		302
7.0		345
8.0		390
9.0		434
10.0		479
12.0		566
14.0		654
16.0		742
18.0		830
20.0		926
22.0		1015
24.0		1103
25.0		1148
26.0		-
28.0		-
30.0		-
32.0		-
34.0		-
36.0		-
38.0		-
40.0		-

Safety Valves

Type 06416



Cryogenic Safety Valves, angle type, bronze, PN40, type tested TÜV-SV.780. S/G

Standard safety valve (0.2 - 25.0/40.0 bar)

Metal to metal seated, closed bonnet, with lifting device

"cleaned and degreased for oxygen service"

Part No. 06416.X.0000

Inlet: male thread type G (BSPP) acc. to ISO 228/1, Outlet: female thread type G (BSPP) acc. to ISO 228/1

Part No. 06416.X.2000

Inlet: male thread type R (BSPT) acc. to ISO 7/1, Outlet: female thread type G (BSPP) acc. to ISO 228/1

Part No. 06416.X.5000

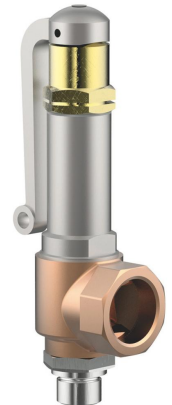
Inlet: male thread NPT acc. to ANSI B 1.20.1, Outlet: female thread type G (BSPP) acc. to ISO 228/1

Part No. 06416.X.6000

Inlet: male thread NPT acc. to ANSI B 1.20.1, Outlet: female thread NPT acc. to ANSI B 1.20.1

Available options - on request only:

- external parts nickel plated
- with installed elbow at the outlet



Applications:

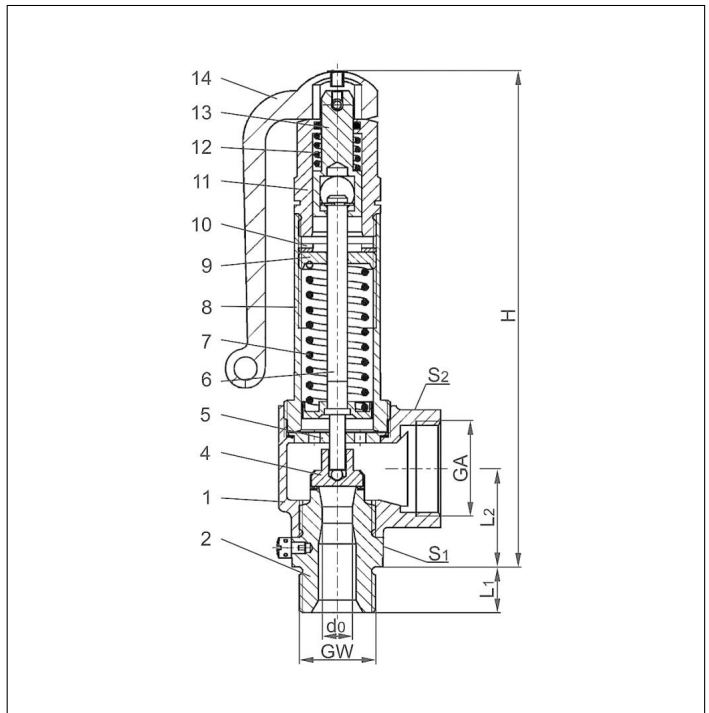
Provided as safety device for protection against excessive pressure in stationary and moveable gas cylinders and pressure vessels. Approved for air gases, vapours and cryogenic liquefied gases incl. LNG.

Working temperature: -196°C / -321°F (77K) up to +185°C / +365°F (458K)

Materials	DIN EN	ASME/ASTM
1 Outlet body	CC491K	B 62 UNS C83600
2 Inlet body	1.4301	A 276 Grade 304
4 Disc	1.4541	A 276 Grade 321
5 Guide plate	CW453K	B 103 UNS C52100
6 Stem	CW453K	B 103 UNS C52100
7 Spring	1.4571	A 313 Grade 316Ti
8 Bonnet	1.4308	A 351 CF 8
9 Spring clamp	CW614N	B 283 UNS C38500
10 Thread ring	CW614N	B 283 UNS C38500
11 Lifting cap	CW614N	B 283 UNS C38500
12 Lifting spring	1.4571	A 276 Grade 316Ti
13 Lifting stem	CW614N	B 283 UNS C38500
14 Lever	1.4408	A 351 CF8M

Essential: Valves are delivered at a set pressure, therefore when ordering please confirm set pressure, medium and temperature.

Standard marking acc. to Pressure Equipment Directive 97/23/EC (PED).



Type 06416	Technical data				
	Nominal size	GW	1/2	3/4	1
Orifice	d ₀	10.5	10.5	14.0	
Dimension code	.X.	1004	1006	1410	
Set pressure range	bar	0.2-25.0	0.2-25.0	0.2-40.0	
Outlet	GA	1	1	1-1/4	
Height	H	175	175	194	
Length	L ₁	14	16	18	
Length	L ₂	36	36	42	
Wrench size across flats	S ₁	30	30	41	
Wrench size across flats	S ₂	41	41	50	
Weight	ca. kg	0.96	1.00	1.50	
Coeff. of discharge from 3.0 bar	α _w	0.67	0.67	0.67	

Dimensions in mm.

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Safety Valves

Type 06416



Discharge capacities

Calculation of flow rate acc. to AD2000-Merkblatt A2 / DIN EN ISO 4126-1

Medium:

Air in m³/h at 0°C and 1013.25 mbar

The capacity indicated below is for a fully opened valve.

d₀ - orifice

A₀ - flow area

Set pressure in bar (g)	GW	1/2 & 3/4	1
	d ₀ (mm)	10.5	14.0
	A ₀ (mm ²)	86.6	153.9
	Medium	Air	
0.2		25	49
0.5		48	87
1.0		74	135
1.5		99	175
2.0		123	217
3.0		170	303
4.0		214	381
5.0		258	459
6.0		302	537
7.0		345	614
8.0		390	694
9.0		434	772
10.0		479	851
12.0		566	1007
14.0		654	1163
16.0		742	1319
18.0		830	1475
20.0		926	1647
22.0		1015	1805
24.0		1103	1962
25.0		1148	2041
26.0		-	2120
28.0		-	2277
30.0		-	2458
32.0		-	2617
34.0		-	2776
36.0		-	2934
38.0		-	3093
40.0		-	3280

Safety Valves

Type 06413

HEROSE



Discharge capacities

Medium:

Air in m³/h at 0°C and 1013.25 mbar

Air in SCFM at 60°F (15.6°C) and 14.7 psia (1013.25 mbar)

The capacity indicated below is for a fully opened valve.

d₀ - orifice

A₀ - flow area

Calculation of discharge capacity acc. to AD2000-Merkblatt A2 / DIN EN ISO 4126-1 resp. ASME Code Sec. VIII.

The safety valve is marked with the lower capacity of both calculations.

Set pressure in bar (g)	GW	1/2 & 3/4	1/2 & 3/4	1	1-1/4, 1-1/2 & 2	Set pressure in psig	GW	1/2 & 3/4	1/2 & 3/4	1	1-1/4, 1-1/2 & 2
	d ₀ (mm)	7.0	10.5	15.0	23.0		d ₀ (inch)	0.276	0.414	0.591	0.907
	A ₀ (mm ²)	38.48	86.6	176.63	415.27		A ₀ (in ²)	0.060	0.134	0.274	0.644
	Medium	Air in m ³ /h					Medium	Air in SCFM			
2.0	-	-	-	-	563	50	60	102	180	524	
2.9	-	143	252	737	60	70	118	208	607		
3.0	-	147	259	756	70	79	134	236	690		
3.3	93	158	279	814	80	89	150	265	772		
4.0	108	185	325	949	90	98	167	294	855		
5.0	130	222	391	1142	100	107	183	322	938		
6.0	153	260	458	1335	110	117	199	350	1021		
7.0	174	298	524	1528	120	126	215	379	1103		
8.0	196	335	590	1721	130	136	231	407	1186		
9.0	219	373	656	1914	140	145	248	435	1269		
10.0	241	410	722	2107	150	155	264	464	1352		
12.0	285	486	855	2493	175	179	304	535	1558		
14.0	330	561	987	2879	200	202	344	606	1766		
16.0	373	636	1119	3265	225	226	384	677	1972		
18.0	418	711	1252	3651	250	250	425	748	2179		
20.0	461	787	1384	4037	275	273	465	818	2386		
22.0	507	862	1517	4422	300	297	506	889	2593		
24.0	550	937	1649	4808	325	321	546	960	2800		
26.0	595	1012	1781	5194	350	345	586	1031	3007		
28.0	638	1088	1914	5580	375	368	626	1102	3213		
30.0	683	1163	2046	5966	400	392	667	1173	3420		
32.0	727	1238	2178	6352	425	416	707	1244	3627		
34.0	772	1313	2311	6738	450	439	748	1315	3834		
36.0	815	1389	2443	7124	475	463	788	1386	4041		
38.0	860	1464	2576	7510	500	487	828	1457	4248		
40.0	904	1539	2708	7896	525	510	869	1528	4455		
42.0	949	1614	2840	8282	550	534	909	1599	4662		
44.0	992	1690	2973	8668	575	558	949	1670	4868		
46.0	1037	1765	3105	9054	625	605	1030	1812	5282		
48.0	1081	1840	3238	9440	675	653	1111	1954	5696		
50.0	1126	1915	3370	9825	725	700	1191	2096	6109		