

Full lift safety valve / Standard safety valve

ARI-SAFE

**Full lift safety valve D/G
Standard safety valve F**

- Type-test approved acc. to DIN EN ISO 4126-1 / AD2000-A2 / TRD421
- TÜV · SV · . . . -663 · D/G **Figure 901/911**
- TÜV · SV · . . . -663 · F **Figure 901/911**
- Further approvals: see inside

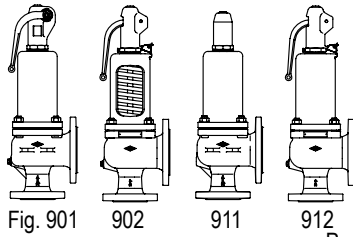


Fig. 901 902 911 912 Page 2

ARI-SAFE

**Standard safety valve
for the heating technology**

- Type-test approved acc. to DIN EN ISO 4126-1 / DIN EN 12828 / TRD 721
- TÜV · SV · . . . -688 · D/G/H **Figure 903**
- TÜV · SV · . . . -688 · D **Figure 904**

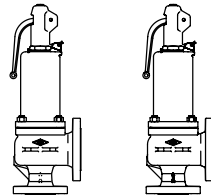


Fig. 903 904 Page 14

ARI-SAFE-P

Standard safety valve D/G/F

- Type-test approved acc. to DIN EN ISO 4126-1 / AD2000-A2
- TÜV · SV · . . . -811 · D/G **Figure 921/923**
- TÜV · SV · . . . -811 · F **Figure 921/923**

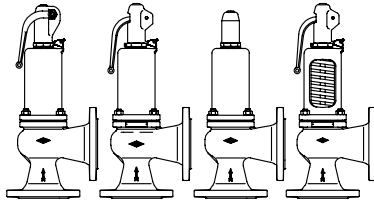


Fig. 921 922 923 924 Page 20

ARI-SAFE-TC

**Full lift safety valve D/G
Standard safety valve F**

- Type-test approved acc. to DIN EN ISO 4126-1 / AD2000-A2 / TRD421
- TÜV · SV · . . . -995 · D/G **Figure 941-943**
- TÜV · SV · . . . -995 · F **Figure 941/943**

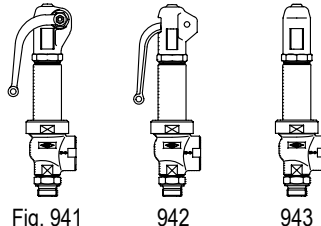


Fig. 941 942 943 Page 26

ARI-SAFE-TC

**Standard safety valve
for the heating technology**

- Type-test approved acc. to DIN EN ISO 4126-1 / DIN EN 12828 / TRD 721
- TÜV · SV · . . . -997 · D/G/H **Figure 945**
- TÜV · SV · . . . -997 · D **Figure 946**

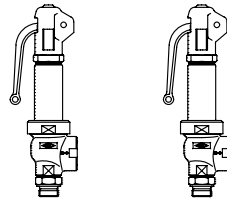


Fig. 945 946 Page 30

ARI-SAFE-TCP

Standard safety valve D/G/F

- Type-test approved acc. to DIN EN ISO 4126-1 / AD2000-A2
- TÜV · SV · . . . -1041 · D/G **Figure 961-963**
- TÜV · SV · . . . -1041 · F **Figure 961/963**

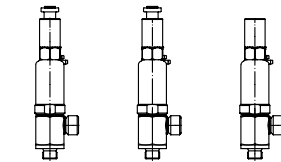


Fig. 961 962 963 Page 34

ARI-SAFE-TCS

Standard safety valve D/G/F

- Type-test approved acc. to DIN EN ISO 4126-1 / AD2000-A2
- TÜV · SV · . . . -1041 · D/G **Figure 951-953**
- TÜV · SV · . . . -1041 · F **Figure 951/953**

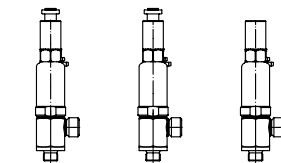


Fig. 951 952 953 Page 38

ALSO FOR HORIZONTAL APPLICATION



Fig. 900



Fig. 940

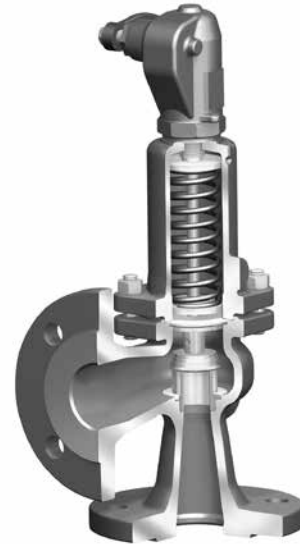


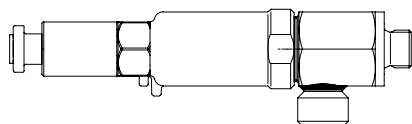
Fig. 920



Fig. 950/960

Features:

- Direct loaded with spring
- Wear resistant seat/disc
- Precision disc alignment and guide
- Possible with soft seal disc
- Possible with EPDM bellows
- Possible with stainless steel bellows
- ARI-SAFE-TC/TCP/TCS:
All common thread types

ARI-SAFE-TCS - Standard safety valve D/G/F

ALSO FOR HORIZONTAL APPLICATION

(please indicate installation position horizontal/vertical up to 5 bar set pressure with your order)

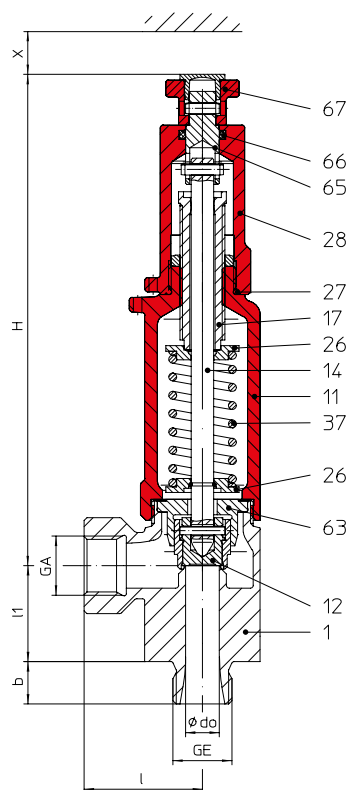
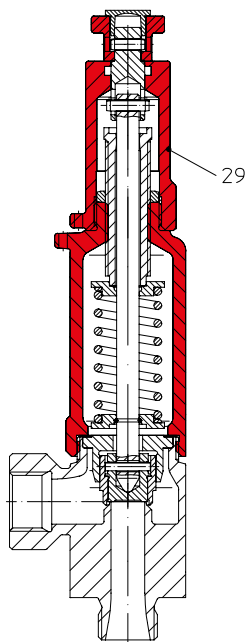
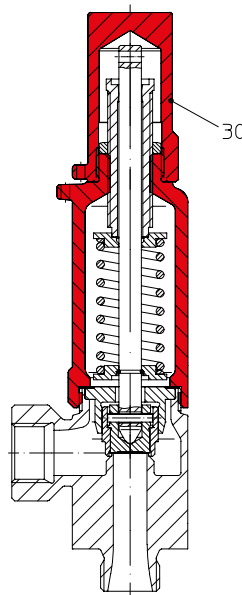
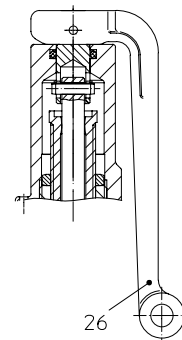

Fig.951
 closed lifting device

Fig.952
 open lifting device

Fig.953
 gastight cap

Fig.951 / Fig.952
 optional with lever

Figure	Nominal pressure	Material	Nominal diameter	Temperature range	Thread
67.951 / 952 / 953	PN100	1.4581/EN-JS1049	DN15 - 25	-10°C to +300°C (up to +400°C on request)	DIN ISO 228 Part 1
57.951 / 953	PN100	1.4581	DN15 - 25	-60°C to +300°C (up to +400°C on request)	DIN ISO 228 Part 1

Flange design on request.

Construction

Safety valve, spring loaded, direct loaded

Requirement

acc. to EN ISO 4126-1, VdTÜV-leaflet 100, AD2000-A2

Type-test approval

Standard safety valve:	Fig. 951/952/953	TÜV · SV ... -1041 · D/G
Standard safety valve:	Fig. 951/953	TÜV · SV ... -1041 · F

Sizing

for steam, air and water refer to capacity tables, calculations acc. to EN ISO 4126-1, TRD 421 and AD2000-A2

Details required

Medium gasform:	Mass flow (kg/h), molar mass (kg/kmol), Isotropic exponent, temperature (°C), set pressure (barg), back pressure (barg)
Medium liquid:	Mass flow (kg/h), density (kg/m ³), viscosity, temperature (°C), set pressure (barg), back pressure (barg)

Order data:

ARI-SAFE-TCS - Safety valve, Figure, DN ... / ..., PN .. / .., Material, Set pressure bar, Installation position

	standard: without metal bellows
Superimposed back pressure	no backpressure allowed
Built up back pressure	max. 10% from set pressure (higher on request)

Parts				
Pos.	Sp.p.	Description	Fig. 67.961/962/963	Fig. 57.961/963
1		Body	GX5CrNiMoN19-11-2, 1.4581	
7	x	Gasket	Pure graphite (CrNi laminated with graphite)	
11		Bonnet, closed	EN-GJS-400-18U-LT, EN-JS1049	GX5CrNiMoN19-11-2, 1.4581
12		Disc	X6CrNiMoTi17-12-2, 1.4571	
14	x	Spindle	X6CrNiMoTi17-12-2, 1.4571	
17		Adjusting screw	X2CrNiMo17-12-2, 1.4404	
27		O-ring	FPM	
28		Cap, closed	GX5CrNiMoN19-11-2, 1.4581	
29		Cap, open	GX5CrNiMoN19-11-2, 1.4581	
30		Cap, gasticht	EN-GJS-400-18U-LT, EN-JS1049	GX5CrNiMoN19-11-2, 1.4581
36		Lever, closed (optional: Fig. ... .951 / Fig. ... .952)	EN AC-4420 (Al)	
37	x	Spring	FDSiCr	X10CrNi18-8, 1.4310
63		Guide bush	X6CrNiMoTi17-12-2, 1.4571	
65		Coupling	X6CrNiMoTi17-12-2, 1.4571	
66		O-ring	FPM	
67		Lift button	X6CrNiMoTi17-12-2, 1.4571	
		L Spare parts		

DN	15	20	25
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Spring ranges: Standard design		
Standard safety valve Fig. 951/952/953	(barg)	0,5
	(barg)	> 0,5 - 1
	(barg)	> 1 - 1,4
	(barg)	> 1,4 - 2,95
	(barg)	> 2,95 - 4,9
	(barg)	> 4,9 - 12
	(barg)	> 12 - 20
	(barg)	> 20 - 27
	(barg)	> 27 - 35
	(barg)	> 35 - 45
	(barg)	> 45 - 59
	(barg)	> 59 - 100

Information / restriction of technical rules need to be observed!

The engineer, designing a system or a plant, is responsible for the selection of the correct valve.

Resistance and fitness must be verified (contact manufacturer for information, refer to Product overview and Resistance list).

DN	15	20	25
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Dimensions							
G	(inch)	1/2" x 1/2"	1/2" x 3/4"	3/4" x 1/2"	3/4" x 3/4"	3/4" x 1"	1" x 1"
d0	(mm)	12	12	12	12	12	12
A0	(mm ²)	113	113	113	113	113	113
GE	(inch)	1/2"	1/2"	3/4"	3/4"	3/4"	1"
GA	(inch)	1/2"	3/4"	1/2"	3/4"	1"	1"
b	(mm)	15	15	16	16	16	18
l	(mm)	42	47	42	47	50	50
l1	(mm)	34	34	34	34	34	34
H	(mm)	189	189	189	189	189	189
X	(mm)	100	100	100	100	100	100

Weights							
standard	(kg)	1,2	1,2	1,2	1,2	1,2	1,2

Pressure-temperature-ratings	Intermediate values for max. permissible operational pressures can be determined by linear interpolation of the given temperature / pressure chart.									
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acc. to DIN EN 1092-1			-60°C to <-10°C	-10°C to 100°C	150°C	200°C	250°C	300°C	350°C	400°C	450°C
1.4581	100	(bar)	50	100	98	93,3	88,5	83,3	80,4	78	--

Certified coefficient of discharge Kdr (Values for D/G variable: < 3 bar)			
DN	15	20	25
TÜV · SV · ... - 1041 · D/G		0,26	
TÜV · SV · ... - 1041 · F		0,19	

Capacity saturated steam / air / water (incl. 10% overpressure)

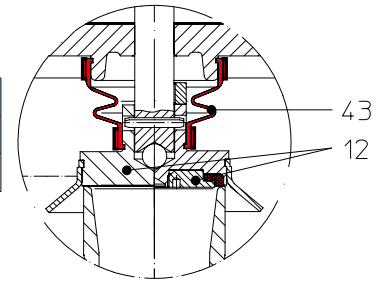
DN		15	20	25	15	20	25	15	20	25
Connections	(inch)	G1/2" x 1/2"	G3/4" x 1/2"	G1" x 1"	G1/2" x 1/2"	G3/4" x 1/2"	G1" x 1"	G1/2" x 1/2"	G3/4" x 1/2"	G1" x 1"
	(inch)	G1/2" x 3/4"	G3/4" x 3/4"		G1/2" x 3/4"	G3/4" x 3/4"		G1/2" x 3/4"	G3/4" x 3/4"	
			G3/4" x 1"			G3/4" x 1"			G3/4" x 1"	
do	(mm)	12			12			12		
Set pressure		Saturated steam (kg/h)			Air 0°C and 1,013 bara (Nm³/h)			Water 20°C (t/h)		
horizontal application ↓	0,5 (barg)	20	20	20	24	24	24	0,81	0,81	0,81
	1 (barg)	30	30	30	37	37	37	1,15	1,15	1,15
	2 (barg)	48	48	48	62	62	62	1,62	1,62	1,62
	3 (barg)	68	68	68	86	86	86	1,99	1,99	1,99
← max. set pressure stainless steel version	4 (barg)	84	84	84	108	108	108	2,30	2,30	2,30
	5 (barg)	100	100	100	130	130	130	2,57	2,57	2,57
	6 (barg)	117	117	117	152	152	152	2,81	2,81	2,81
	7 (barg)	133	133	133	174	174	174	3,04	3,04	3,04
	8 (barg)	149	149	149	196	196	196	3,25	3,25	3,25
	9 (barg)	166	166	166	218	218	218	3,45	3,45	3,45
	10 (barg)	182	182	182	240	240	240	3,63	3,63	3,63
	11 (barg)	198	198	198	262	262	262	3,81	3,81	3,81
	12 (barg)	215	215	215	284	284	284	3,98	3,98	3,98
	13 (barg)	231	231	231	306	306	306	4,14	4,14	4,14
	14 (barg)	247	247	247	328	328	328	4,3	4,3	4,3
	15 (barg)	264	264	264	351	351	351	4,45	4,45	4,45
	16 (barg)	280	280	280	373	373	373	4,59	4,59	4,59
	17 (barg)	297	297	297	395	395	395	4,74	4,74	4,74
	18 (barg)	313	313	313	417	417	417	4,87	4,87	4,87
	19 (barg)	329	329	329	439	439	439	5,01	5,01	5,01
	20 (barg)	346	346	346	461	461	461	5,14	5,14	5,14
	25 (barg)	428	428	428	571	571	571	5,74	5,74	5,74
	30 (barg)	512	512	512	681	681	681	6,29	6,29	6,29
	35 (barg)	595	595	595	791	791	791	6,80	6,80	6,80
	40 (barg)	680	680	680	901	901	901	7,26	7,26	7,26
	45 (barg)	765	765	765	1010	1010	1010	7,71	7,71	7,71
	50 (barg)	852	852	852	1120	1120	1120	8,12	8,12	8,12
	55 (barg)	940	940	940	1230	1230	1230	8,52	8,52	8,52
60 (barg)	1030	1030	1030	1340	1340	1340	8,90	8,90	8,90	
65 (barg)	1120	1120	1120	1450	1450	1450	9,26	9,26	9,26	
70 (barg)	1200	1200	1200	1560	1560	1560	9,61	9,61	9,61	
75 (barg)	1300	1300	1300	1675	1675	1675	9,95	9,95	9,95	
80 (barg)				1785	1785	1785	10,27	10,27	10,27	
85 (barg)				1895	1895	1895	10,59	10,59	10,59	
90 (barg)				2005	2005	2005	10,90	10,90	10,90	
95 (barg)				2110	2110	2110	11,16	11,16	11,16	
100 (barg)				2220	2220	2220	11,36	11,36	11,36	

Soft sealing disc						
Body design	Pos.	Description	P min.	Material	Temperature range	Abbreviation
EN-JL1040, EN-JS1049, 1.0619+N	12	Disc	0,5 bar	X20Cr13+QT, 1.4021+QT / EPDM	-40 °C to +150 °C	E
			0,5 bar	X20Cr13+QT, 1.4021+QT / FPM Viton (FKM)	-20 °C to +180 °C	V
			0,5 bar	X20Cr13+QT, 1.4021+QT / CR Neoprene	-30 °C to +100 °C	N
			1,0 bar ¹⁾	X20Cr13+QT, 1.4021+QT / SHR ²⁾	-20 °C to +220 °C	S
1.4408, 1.4581	12	Disc	0,5 bar	X6CrNiMoTi17-12-2, 1.4571 / EPDM	-40 °C to +150 °C	E
			0,5 bar	X6CrNiMoTi17-12-2, 1.4571 / FPM Viton (FKM)	-20 °C to +180 °C	V
			0,5 bar	X6CrNiMoTi17-12-2, 1.4571 / CR Neoprene	-30 °C to +100 °C	N
			1,0 bar ¹⁾	X6CrNiMoTi17-12-2, 1.4571 / SHR ²⁾	-20 °C to +220 °C	S
SA216WCB	12	Disc	0,5 bar	SA276 Gr. 440 / EPDM	-40 °C to +150 °C	E
			0,5 bar	SA276 Gr. 440 / FPM Viton (FKM)	-20 °C to +180 °C	V
			0,5 bar	SA276 Gr. 440 / CR Neoprene	-30 °C to +100 °C	N
			1,0 bar	SA276 Gr. 440 / SHR	-20 °C to +220 °C	S

Fig. 950/960 with soft sealing disc max. 40 bar

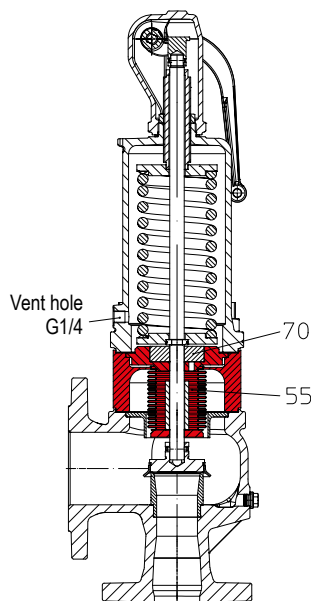
¹⁾ DN20/32 min. 2,0 bar ²⁾ only Fig. 900

EPDM-Bellows seal (DN15 - 150)			
Pos.	Description	Material	Temperature range
43	EPDM-Bellows seal	EPDM 70 Shore A	-10 °C to +120 °C

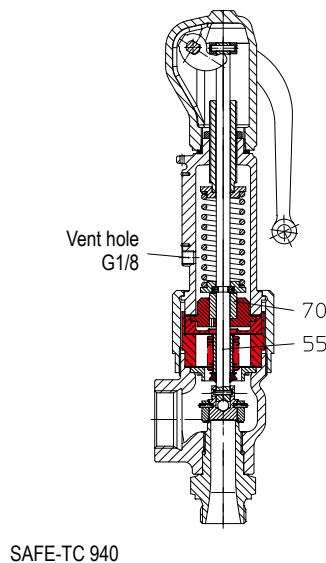


Balanced stainless steel-bellows (Only for closed version!)		
Pos.	Description	Material
55	Bellows unit	X6CrNiMoTi17-12-2, 1.4571; SA240 / SA479 Gr.316 Ti (SAFE-SN ANSI)
70	Balanced piston (DN15-100)	X6CrNiMoTi17-12-2, 1.4571; SA479 Gr.316 Ti (SAFE-SN ANSI)

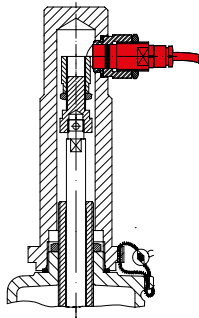
Test: German "TA-Air TÜV-Test-No. 922-960324"



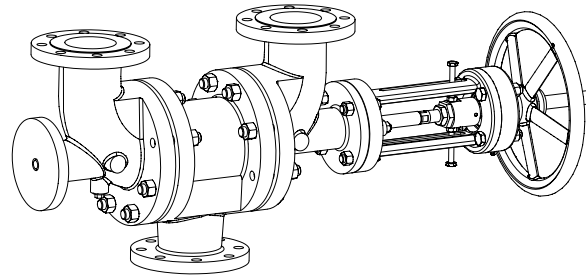
SAFE 900



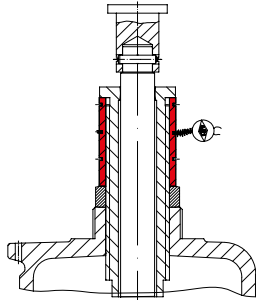
SAFE-TC 940



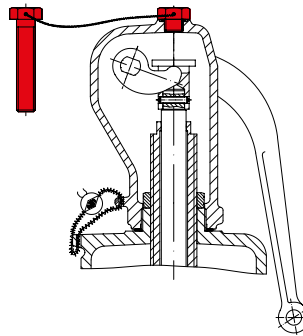
Proximity switch



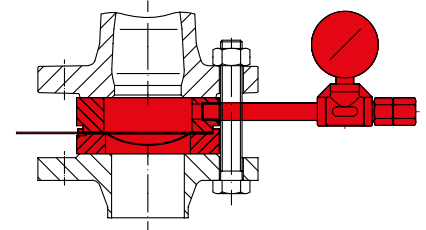
Changeover valve



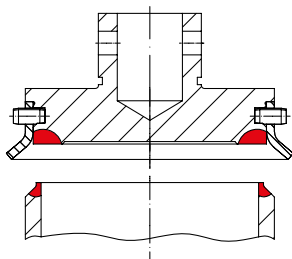
Lock bushing



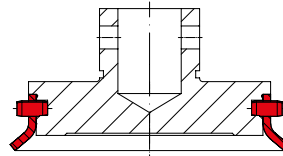
Test gag



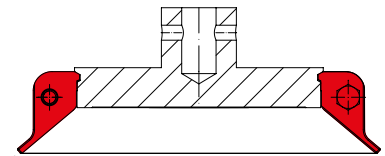
Rupture disc
(Sizing refer to page 40.)



Seat 1.4571 / Stellite No. 21
Disc 1.4571 / Stellite No. 6
Sitz SA479Gr.316Ti / Stellite No. 21 (SAFE-SN ANSI)
Kegel SA479Gr.316Ti / Stellite No. 6 (SAFE-SN ANSI)
removable lifting aid

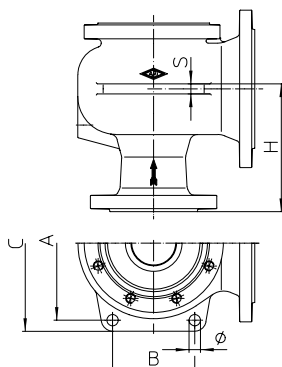


DN15-100



DN125-250

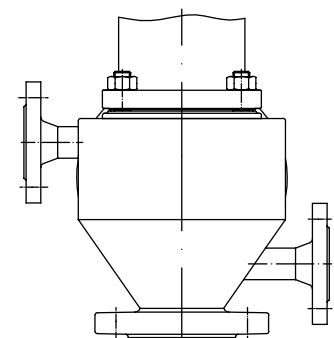
removable lifting aid



Body-Material	DN1 x DN2 (mmxmm)	A (mm)	B (mm)	C (mm)	Ø (mm)	S (mm)	H (mm)
1.0619+N	50 x 80	176	70	204	14	12	155
1.4408	65 x 100	212	90	242			175
EN-JL1040	80 x 125	245	130	280	18	16	205
EN-JS1049	100 x 150	295	165	332			230
1.0619+N	125 x 200	318	183	362	22	20	260
1.4408	150 x 250	360	200	408			295
EN-JL1040	125 x 125	226	110	254	14	10	205
1.0619+N	150 x 150	262	146	298			232
EN-JS1049	200 x 300	465	256	521	26	22	305
1.0619+N	250 x 350	544	300	600			337

Body-Material	NPS (inch)	A (mm)	B (mm)	C (mm)	Ø (mm)	S (mm)	H (mm)
SA216WCB	2" x 3"	176	70	204	14	12	143
	3" x 4"	212	90	242			162
	4" x 6"	295	165	332	18	16	186
	6" x 8"	318	183	362	22	20	248
	6" x 10"	360	200	405	22	22	251

Support tongues, drilled



Heating jacket

	SAFE Fig. 900			SAFE-SN BR 900	SAFE-P Fig. 920	SAFE-TC Fig. 940			SAFE- TCS/ TCP Fig. 950 / 960
	Fig. 901-912	Fig. 903	Fig. 904	Fig. 901-912	Fig. 921-924	Fig. 941-943	Fig. 945	Fig. 946	Fig. 951-953 Fig. 961-963
Pressure equipment directive PED 2014/68/EU Module H1, B+D	X	X	X	X	X	X	X	X	X
BV Bureau Veritas Frankreich / France	X	--	--	X	X	X	--	--	X
DNV Det Norske Veritas Norwegen / Norway	X	--	--	X	X	X	X	X	X
GL Germanischer Lloyd	X	--	--	X	X	X	--	--	X
LROS (LRS) Lloyds Register of Shipping	X	--	--	X	X	X	--	--	--
SELO (SQLO) China / Chine	X	X	X	X	X	X	X	X	X
ASME Code Section VIII-Division 1 (UV-stamp)	--	--	--	X	--	--	--	--	--
Canada Registration (UV-stamp)	X	--	--	X	--	--	--	--	--
EAC Russland / Russia	X	X	X	X	X	X	X	X	X
RMROS (RS) Russian Maritime Register of Shipping	X	X	X	X	X	X	X	X	X
Promatomnadzor White russia (Rep. of Belarus)	X	X	X	X	X	X	X	X	X
Prombezpeka Ukraine	X	X	X	X	X	X	X	X	X
Rostechnadzor (Gosgortekhnadsor) Russland / Russia	X	X	X	X	X	X	X	X	X

Single approvals

Arbejdstilsynet Danish emploment protection	X	X	X	X	X	X	X	X	X
ABS American Bureau of Shipping	X	X	X	X	X	X	X	X	X
AIB Vincotte Belgien / Belgium	X	X	X	X	X	X	X	X	X
IBR Indien Boiler Regulations	X	--	--	X	X	X	--	--	--
ISPESL Italien / Italy	X	X	X	X	X	X	X	X	X
RINA Italien / Italy	X	--	--	X	X	X	--	--	--
Stoomwezen Niederlande / Netherlands	X	X	X	X	X	X	X	X	X
NK Japan	X	X	X	X	X	X	X	X	X
UDT Polen / Poland	X	X	X	X	X	X	X	X	X

myValve® - Your Valve Sizing-Program.

myValve® is a powerful software tool that not only helps you size your system components; it also gives you instant access to all other data about the selected product, such as order information, spare parts drawings, operating instructions, data sheets, etc., whenever you need it.

Product data

PROPERTY	INDICATION
Produktkey	15101600110
Article code	35901002SAG1
Type	ARI-SAFE-ANSI
Designation	ANSI-Full W/Standard safety valve with flanges
Material	SA216WC8
Pressure	ANSI300
Connection	Flanged
Nominal diameter	1" x 2"
Feature1	Design: closed bonnet/ closed lifting device Plug
Feature2	Pressure range: 30 - 39 psig/02,05 - 02,70 bar
TAG-No.	
Note	

Product data Calculated: 10

Figure	NPS	Class	API	ASME	d0	d1	d2	AD-cal.	Kd	Capacity	Design	Version
35.901-ANSI	1" x 2"	ANSI300	F	29.0	22.0	29.0	661.0	245.944	0.817	109.828	closed bonnet/...	standard
35.901-ANSI	1 1/2" x 2"	ANSI300	G	29.0	29.0	661.0	661.0	245.944	0.817	1511.045	closed bonnet/...	standard
35.901-ANSI	1 1/2" x 3"	ANSI300	H	36.0	36.0	1018.0	1018.0	245.944	0.817	2327.147	closed bonnet/...	standard
35.901-ANSI	2" x 3"	ANSI300	J (H)	45.0	45.0	1590.0	1590.0	245.944	0.817	3634.739	closed bonnet/...	standard

Contents:

Module ARI-Safety valve SAFE-Calculation

- Sizing of valve-size with given capacity, temperature, set pressure and back pressure;
- Sizing acc. to SAFE DIN EN, AD2000, ASME VIII, API520.

Media:

Integrated media-databank (more than 160 media) with conditions:

- Vapours / gases
- Steam (saturated and superheated)
- Liquids

Special features:

- Project administration of the calculation and product data incl. spare part drawings concerning to project and tag number.
- Direct output of calculation and product data in PDF format.
- Product data could be taken for a direct order.
- SI- and ANSI-units with direct conversion to another databank.
- Settings with over pressure or absolute pressure.
- All ARI valves are integrated in a databank.
- Direct access relating to the product on data sheets, operating instructions, pressure-temperature-diagram, controller characteristics, spare part drawings and CAD-symbols on the website.
- Operation in company networks possible (no complex installations on individually PC's necessary).
- Extensive catalogue extending over several product groups.

System requirements:

Windows operating systems, Linux, etc.

To ARI-Armaturen to the att. of Mrs./Mr. Fax No. +49 52 07 / 994 -

If the type of bursting disc is not yet determined, we are offering our assistance for sizing.
Please send us the questionnaire containing the appropriate data.

Customer:
.....
Handled by:
Date:

Telephone:
Fax:
E-mail:

Necessary data

Medium:
 liquid gas

Temperature:°C

Safety valve

Type / Figure:	.....	Set pressure:	..... bar(g)
Nominal diameter: (Input / Output)	DN /	Flow diameter d_0:	..... mm
Nominal pressure: (Input / Output)	PN /	Flow cross-section A_0:	..... mm ²
		Certified coefficient of discharge $K_{dr}(\alpha_w)$:	.....

Rupture disc

Bursting pressure:	..... bar(g)	Material:	<input type="checkbox"/> 1.4401
(Bursting pressure = Set pressure of the safety valve)			<input type="checkbox"/> Nickel
Tolerance:	<input type="checkbox"/> + 10%		<input type="checkbox"/> Inconel
	<input type="checkbox"/>%		<input type="checkbox"/> Monel
Quantity:	..... piece		<input type="checkbox"/> Aluminium
(incl. reserve)	(minimum 3 pieces recommended)		<input type="checkbox"/> Teflon foil medium side
TÜV-approval:	<input type="checkbox"/> yes <input type="checkbox"/> no		<input type="checkbox"/> other

Halter (incl. 1/4"-vent)

Nominal pressure:	PN	Material:	<input type="checkbox"/> 1.4571
Quantity (Holder):	..... piece		<input type="checkbox"/> other

Indication device

(Pressure gauge / excess flow valve)

Quantity: piece

Burst disc alarm

Quantity: piece

Bursting disc selection

Construction

Reverse buckling bursting disc
 other

Manufacturer / Type:

Nominal size selection of the bursting disc

• Acc. to DIN EN ISO 4126-3 and API 520 „90%-determination“

DN

Example:

Remark:

Max. capacity SAFE 900, DN 50, 10 bar without bursting disc = 9610 Nm³/h
Max. capacity SAFE 900, DN 50, 10 bar with bursting disc = 0,9 x 9610 Nm³/h = 8649 Nm³/h

• Acc. to AD2000-A1 (5.4.2.2)

$$A_{geom} \times \alpha > 1,5 \times A_0 \times \alpha_w$$

