

Safety Valve

proportional

AT 4537, 4538, 4537D, 4538D

Dimension range	PN	Temperature range	Material
DN 25-100	40	-60 - 350 °C	Nodular iron
DN 25-100	40	-85 - 450 °C	Steel

Range of Application

Safety valve with proportional characteristics for hot water boilers and large heat-exchangers. Suitable as overflow valve at constant back-pressure and a large flow.

Quality Assurance

Approved by TÜV and several other classification authorities.
 Type approved by DNV as proportional safety valve on hot water boilers.
 Fulfils the requirements according to ISO 4126.
 Certificate SS-EN 10204, type 2, 3 and from most of the classification authorities.
 Type of certificate has to be specified upon ordering.

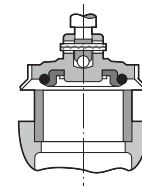
CE-marking

Meets the requirements in AFS 2016:1 and 2014/68/EU (Pressure Equipment Directive) according to category IV, fluids group 1 and 2.

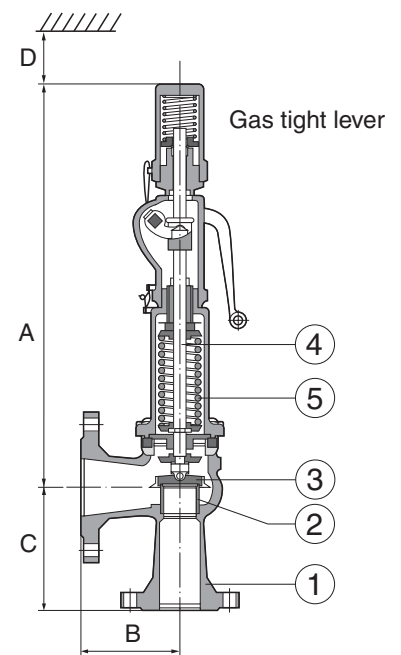


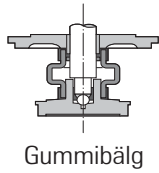
Material Specification

		AT 4537/4537D	AT 4538/4538D
1	Body	0.7043/ nodular iron Gr.60-40-18	1.0619/SA 216 WCB
2	Seat	1.4404/316L	1.4404/316L
3	Disc	1.4122/ hardened stainless steel	1.4122/ hardened stainless steel
4	Spindle	1.4021/420	1.4021/420
5	Spring	1.1200, 1.8159, 1.7102/carbon steel	1.1200, 1.8159, 1.7102/carbon steel
6	Bonnet	0.7040, 0.7043, 1.0619/ nodular iron Gr.60-40-18, SA 216 WCB	0.7040, 0.7043, 1.0619/ nodular iron Gr.60-40-18, SA 216 WCB
7	Guide	1.4104, 1.0501, 0.7040/ chrome- or carbon steel	1.4104, 1.0501, 0.7040/ chrome- or carbon steel
8	Spring plate 2 pcs	1.0718/steel 1.4104 PTFE/chrome steel	1.0718/steel
9	Adjusting screw	PTFE 1.3541/hardened stainless steel	1.4404 PTFE/316L PTFE 1.3541/hardened stainless steel
10	Ball		
11a	Cap (2)	1.0718 or 0.7043/ 12L13 or Gr.60-40-18	1.0718 or 0.7043/ 12L13 or Gr.60-40-18
11b	Lever (4)	1.0718 or 0.7043/ 12L13 or Gr.60-40-18	1.0718 or 0.7043/ 12L13 or Gr.60-40-18
12	Soft seal for AT4537D/4538D	EPDM (as standard)	EPDM (as standard)
13	Bonnet	0.7040, 0.7043, 1.0619/ nodular iron Gr.60-40-18, SA 216 WCB	0.7040, 0.7043, 1.0619/ nodular iron Gr.60-40-18, SA 216 WCB



Soft sealing disc





Dimension and Weight

DN Inlet	25	32	40	50	65	80	100
DN Outlet	40	50	65	80	100	125	150
Flow diameter Ø	23	29	37	46	60	74	92
A	360	456	497	544	654	731	788
B	100	110	115	120	140	160	180
C	105	115	140	150	170	195	220
D	150	200	250	300	350	400	450
Weight	11	14	18	24	34	58	79

Measurements in mm, weight in kg.

Function and Design

Spring loaded and directly acting safety valve with proportional characteristics. Disc with lifting aid gives a large discharge capacity. If possible, a soft sealing disc should be used since it has better tightness and is easier to renovate. Standard O-ring is EPDM for AT 4537D and AT 4538D for e.g. water and steam at max 150°C.

Technical Information

Overpressure

The safety valve is fully open at an overpressure exceeding the set pressure with a maximum of 10 %.

For set pressure lower than 1,0 bar, the overpressure is set pressure + 0,1 bar. If lower overpressure is requested please contact Armatec.

Blowdown

Steam/air/gases:	Max 10% at set pressure $\geq 3,0$ bar Max 0,3 bar at set pressure $< 3,0$ bar
Liquids:	Max 20% at set pressure $\geq 3,0$ bar Max 0,6 bar at set pressure $< 3,0$ bar

If lower blowdown pressure is requested please contact Armatec.

Pressure and Temperature

DN	AT 4537		AT 4538	
	Set pressure max. bar	Temp. -60°C to +350°C	Set pressure max. bar	Temp. -85°C to +450°C
25	40		40	
32	40		40	
40	40		40	
50	40		40	
65	40		40	
80	40		40	
100	40		40	

Temperature max +150°C for valves with EPDM O-ring disc (AT 4537D och AT 4538D).

Pressure and temperatures according to applied standards for each valve material.

At temperatures above 200°C the temperature has to be specified in the order, so that a high temperature spring is used.

If other temperatures and pressures limits are requested please contact Armatec.

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Soft sealing

Temperature range soft sealed safety valves (standard O-ring is EPDM):

O-ring	Neoprene (CR) K -40°C to +100°C, e.g. refrigerants Ethylene (EPDM) D -45°C to +150°C, e.g. hot water and low temperature steam Viton (FPM) L -20°C to +180°C, e.g. oil and air
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Additional information

Sizing based on submitted data can be performed on request.

Please state: Fluid, density (for liquids), capacity/power, maximum temperature and set pressure

Bar implies bar gauge: bar(ö), bar(g), bar(e), atö or kg/cm² if nothing else is stated.

Nm³/h implies "free" capacity air/gas (N=normal) and is equal with m³/h if other is not stated.

At temperatures above 200°C the temperature has to be specified in the order, so that a high temperature spring is used.

Min. set pressure 1 barg for soft sealed valves.

Lower set pressures on request.

Pressure and temperatures acc. to applied standards for respective valve material.

Coefficient of discharge steam/gases ζ_d D/G

0,7

Coefficient of discharge liquids ζ_d F

0,45

Flow diameter, Do see Dimension and weight.

Sizing DN25-50

DN Seat Pset bar	25			32			40			50		
	23 mm			29 mm			37 mm			46 mm		
	Steam	Air	Water	Steam	Air	Water	Steam	Air	Water	Steam	Air	Water
0,2	152	180	5789	241	287	9200	393	466	15000	608	720	23111
0,5	236	289	8189	374	460	13000	610	748	21222	943	1156	32778
1	342	430	11078	544	684	17667	887	1111	28667	1367	1711	44333
2	548	697	15667	870	1108	24889	1411	1800	40556	2189	2778	62667
3	737	947	19222	1167	1500	30556	1900	2444	49667	2944	3778	76778
4	919	1178	22111	1456	1889	35222	2378	3067	57333	3667	4744	88667
5	1100	1422	24778	1744	2267	39444	2844	3700	64111	4400	5711	99111
6	1278	1667	27111	2033	2656	43111	3311	4322	70222	5122	6689	108556
7	1456	1911	29333	2322	3033	46667	3778	4944	75889	5844	7656	117778
8	1633	2156	31333	2600	3422	49778	4244	5578	81111	6567	8622	125556
9	1811	2389	33222	2889	3811	52889	4711	6200	86000	7278	9589	133333
10	2000	2633	35000	3178	4189	55667	5178	6833	90667	8000	10556	140000
12	2356	3122	38444	3744	4967	61000	6100	8078	99333	9433	12444	153333
14	2711	3600	41444	4322	5733	65889	7033	9333	107333	10867	14333	165556
16	3078	4089	44333	4889	6500	70444	7967	10589	114444	12222	16333	177778
18	3433	4567	47000	5456	7267	74778	8889	11778	122222	13667	18222	187778
20	3789	5056	49556	6033	8044	78778	9822	13000	127778	15111	20222	197778
22	4156	5544	52000	6611	8811	82667	10756	14333	134444	16556	22111	207778
24	4522	6022	54333	7189	9578	86333	11667	15566	140000	18000	24111	216667
26	4878	6511	56556	7767	10344	89889	12556	16778	146667	19444	26000	225556
28	5244	6989	58667	8344	11111	93222	13556	18000	152222	21000	27889	234444
30	5611	7478	60667	8922	11889	96444	14444	19333	156667	22444	29889	243333
32	5978	7956	62667	9511	12556	99667	15444	20556	162222	23889	31778	251111
34	-	8444	64667	-	13333	102778	-	21778	167778	-	33778	258889
36	-	8933	66444	-	14111	105667	-	23111	172222	-	35667	265556
38	-	9411	68333	-	14889	108556	-	24333	176667	-	37667	273333
40	-	9900	70111	-	15667	111111	-	25556	181111	-	39556	280000

Pset = set pressure

According to applied standards the value above should be multiplied with the safety factor 0,9.

Saturated steam in kg/h. Air in Nm³/h (free air) at 0°C and atmospheric pressure 1013 mbar(a). Water in kg/h at 20°C.

Capacities are given for an overpressure of 10% of set pressure.

Contact Armatec for sizing with other fluids etc.

Sizing DN65-100

DN Seat Pset bar	65 60 mm			80 74 mm			100 92 mm		
	Steam	Air	Water	Steam	Air	Water	Steam	Air	Water
	0,2	1033	1222	39333	1567	1856	59889	2422	2878
0,5	1600	1967	55667	2433	2989	84778	3767	4622	131111
1	2322	2922	75444	3544	4444	114444	5478	6878	177778
2	3722	4733	106667	5667	7211	162222	8756	11111	251111
3	5011	6433	131111	7622	9789	198889	11778	15111	306667
4	6244	8078	151111	9511	12222	228889	14667	19000	354444
5	7489	9733	168889	11333	14778	256667	17556	22778	396667
6	8711	11333	184444	13222	17222	281111	20444	26667	434444
7	9944	13000	200000	15111	19778	303333	23333	30556	468889
8	11111	14667	213333	16889	22222	324444	26222	34444	501111
9	12333	16222	226667	18778	24778	344444	29111	38333	532222
10	13556	17889	238889	20667	27333	362222	32000	42222	561111
12	16000	21222	261111	24333	32333	397778	37667	49889	614444
14	18444	24556	282222	28111	37333	428889	43444	57667	663333
16	20889	27778	301111	31778	42333	458889	49222	65444	708889
18	23333	31111	320000	35556	47333	486667	55000	73222	752222
20	25778	34333	337778	39222	52333	513333	60667	80889	793333
22	28222	37667	353333	43000	57333	537778	66556	88667	831111
24	30778	41000	370000	46778	62333	562222	72333	96444	868889
26	33222	44222	384444	50556	67333	584444	78222	105556	904444
28	35667	47556	398889	54333	72333	606667	84000	113333	937778
30	38222	50889	413333	58111	77444	627778	89889	121111	971111
32	40667	54111	426667	61889	82444	648889	95778	128889	1003333
34	-	57444	440000	-	88556	668889	-	136667	1034444
36	-	61556	452222	-	93667	687778	-	-	-
38	-	64889	464444	-	98778	706667	-	-	-
40	-	68222	476667	-	103889	725556	-	-	-

Pset = set pressure

According to applied standards the value above should be multiplied with the safety factor 0,9.

Saturated steam in kg/h. Air in Nm³/h (free air) at 0°C and atmospheric pressure 1013 mbar(a). Water in kg/h at 20°C.

Capacities are given for an overpressure of 10% of set pressure.

Contact Armatec for sizing with other fluids etc.

Accessories and Options

Full lift opening characteristic, series AT 4541.

Soft sealing O-ring of Kalrez (FFKM) C for temperature range 0-250°C.

Drain plug on valve body.

Installation

Connection	Flanges drilled acc. to
Inlet	DIN EN 1092-1, PN40
Outlet	DIN EN 1092-1, PN16

See separate installation instruction. The valve should be mounted with the bonnet in vertical position.

Maintenance and Spare parts

See separate installation and maintenance instruction.

Marking

Manufacturer, Armatec article number, DN, PN, CE-marking, material and arrow showing the flow direction.

TÜV approval label with manufacturer fig. no. 441 mounted on body.

Set pressure is punched on the outlet flange and on the TÜV approval label.

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How to order

Metal seated safety valve

Example: AT 4537-4-5,0-25

AT 4537	-4	-5,0	-25
Fig. no. AT 4537=nodular iron AT 4538=steel	Design -2=gas tight cap -4=gas tight lifting device	Set pressure (barg)	DN

How to order soft sealed

Soft seated safety valve

Example: AT 4537D4-5,0-25

AT 4537	D	4	-5,0	-25
Fig. no. AT 4537=nodular iron AT 4538=steel	O-ring D=EPDM L=Viton® K=Neoprene N=Nitrile	Design 2=gas tight cap 4=gas tight lifting device	Set pressure (barg)	DN