Safety Valves

Product Information

ART 642

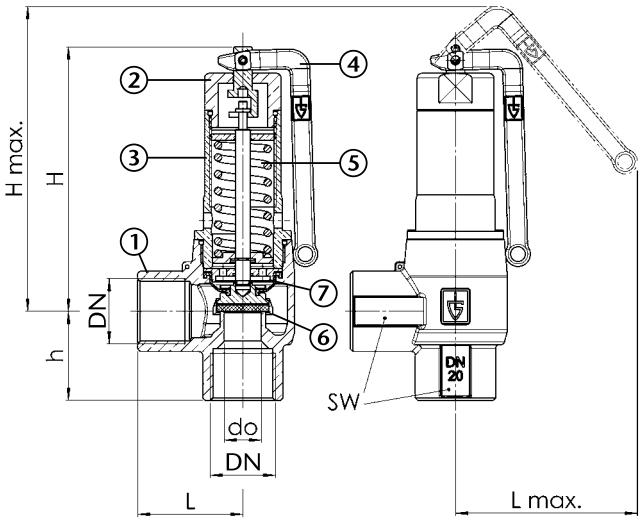
Gunmetal Safety Valve

Features

- Screwed BSP Parallel (ISO 228)
- Body Gunmetal
- Suitable for Gases, Liquids & Steam
- Fitted with Diaphragm to Protect Spring Housing
- Set Range 0.5 to 16 Bar
- WRAS Approved (½"-1¼") Other Sizes Under Approval
- ISO 4126-1, PED 2014/68/EU, TRD 421
- Classification - GL, DNV
- ATEX Approval Available at Extra Cost
- 24 Month Warranty
- Test Certificate to EN10204-3.1 Available on Request

Typical Applications

- Pressure Vessels
- Mechanical engineering
- Pump protection
- Pressure booster systems water/air-side
- Cooling/Chilling Systems
- Steam and industrial boiler systems



DN	½"	¾"	1"	1¼"	1½"	2"	2½"
L	35	42	45	47	58	68	80
Lmax	63	75	78	100	140	150	155
H	90	106	120	150	192	229	275
h	28	36	38	37	45	55	65
Hmax	102	120	133	153	210	252	298
SW	27	34	41	50	60	70	90
do	13	15	18	23	30	39	48
kg	0.5	0.8	1.1	1.7	3.3	5.8	8.9

N.	Part Name	Materials
1	Body	Gunmetal
2	Housing Cap	Brass/Gunmetal
3	Spring Housing	Brass/Gunmetal
4	Lifting Lever	Stainless Steel CF8M
5	Spring	Stainless Steel 302
6	Seat-Seal	PTFE
7	Diaphragm	EPDM

Technical Data	
Max Pressure	16 Bar
Working Temperature	EPDM Diaphragm -50°C to +195°C

Dimensions in mm

ART 642

Discharge Capacities

DN	15				20				25				32			
Bar	Air Nm³/h	Steam kg/h	Water m³/h	Heating kW	Air Nm³/h	Steam kg/h	Water m³/h	Heating kW	Air Nm³/h	Steam kg/h	Water m³/h	Heating kW	Air Nm³/h	Steam kg/h	Water m³/h	Heating kW
0.5	74	56	2.1	36	85	64	2.7	41	105	79	3.4	51	208	157	6.6	101
1	106	84	2.9	53	124	97	3.7	62	156	123	4.6	78	315	251	8.9	158
2	173	136	4.1	84	204	159	5.2	98	266	208	6.5	128	525	413	12.6	254
3	233	181	5.0	110	279	217	6.4	131	372	289	8.0	175	729	570	15.4	344
4	293	226	5.8	135	357	276	7.4	164	477	368	9.2	219	916	710	17.7	423
5	352	272	6.5	159	438	338	8.2	198	574	443	10.3	260	1103	851	19.8	500
6	412	318	7.1	184	512	395	9.0	228	671	518	11.3	299	1289	992	21.7	576
7	471	364	7.7	207	586	452	9.7	258	768	593	12.2	338	1476	1130	23.5	650
8	531	410	8.2	231	660	509	10.4	287	865	668	13.1	376	1662	1269	25.1	724
9	591	456	8.7	254	734	566	11.0	315	963	743	13.9	414	1849	1408	26.6	795
10	650	502	9.2	276	808	623	11.6	344	1060	818	14.6	451	2036	1546	28.1	865
11	710	548	9.6	299	882	680	12.2	372	1157	892	15.3	487	2222	1683	29.4	938
12	770	594	10.1	321	956	738	12.7	399	1254	967	16.0	523	2409	1820	30.7	1008
13	829	640	10.5	343	1030	795	13.3	426	1351	1042	16.7	559	2595	1958	32.0	1078
14	889	686	10.9	365	1104	852	13.8	453	1448	1117	17.3	594	2782	2097	33.2	1145
15	948	732	11.3	386	1178	909	14.3	480	1545	1192	17.9	629	2969	2234	34.4	1213
16	1008	778	11.6	407	1252	966	14.7	506	1643	1267	18.5	664	3155	2372	35.5	1282

DN	40				50				65			
Bar	Air Nm³/h	Steam kg/h	Water m³/h	Heating kW	Air Nm³/h	Steam kg/h	Water m³/h	Heating kW	Air Nm³/h	Steam kg/h	Water m³/h	Heating kW
0.5	285	215	9.2	138	494	372	15.5	239	729	549	23.6	352
1	414	331	12.5	208	700	559	21.1	352	1034	826	31.9	520
2	677	534	17.6	327	1145	902	29.8	553	1734	1366	45.1	838
3	931	728	21.6	439	1573	1230	36.5	741	2383	1862	55.2	1123
4	1169	906	24.9	540	1975	1532	42.1	913	2992	2320	63.8	1383
5	1407	1085	27.9	638	2378	1834	47.1	1078	3602	2778	71.3	1633
6	1645	1266	30.5	736	2780	2139	51.6	1243	4211	3240	78.1	1883
7	1883	1441	33.0	830	3182	2436	55.7	1403	4821	3690	84.4	2125
8	2121	1619	35.2	924	3585	2737	59.5	1561	5430	4146	90.2	2365
9	2359	1796	37.4	1014	3987	3036	63.2	1713	6040	4599	95.7	2595
10	2597	1973	39.4	1104	4389	3334	66.6	1866	6649	5050	100.8	2827
11	2835	2148	41.3	1197	4792	3630	69.8	2023	7259	5499	105.8	3065
12	3074	2322	43.1	1286	5194	3925	72.9	2173	7868	5945	110.5	3291
13	3312	2498	44.9	1376	5597	4222	75.9	2325	8478	6396	115.0	3522
14	3550	2675	46.6	1461	5999	4521	78.8	2468	9087	6848	119.3	3739
15	3788	2850	48.2	1548	6401	4817	81.5	2616	9697	7297	123.5	3962
16	4026	3026	49.8	1635	6804	5114	84.2	2764	10306	7747	127.6	4187

ART 642 Blowing off rates at 10% above set pressure.

Seat-Seal/Diaphragm Options

Option	Materials	Type	Working Temp.
PTFE/EPDM	Polytetrafluorethylen/Ethylen-Propylene-Diene **(Standard)**	Flat seal and moulded diaphragm	–50°C to +195°C
EPDM/EPDM	Ethylen-Propylene-Diene/Ethylen-Propylene-Diene	Flat seal and moulded diaphragm	–50°C to +150°C
PTFE/FKM	Polytetrafluorethylen/Fluorcarbon	Flat seal and moulded diaphragm	–30°C to +200°C
FKM/FKM	Fluorcarbon/Fluorcarbon	Elastomere seals and moulded diaphragm	–20°C to +200°C

Dimensions in mm

ART 645

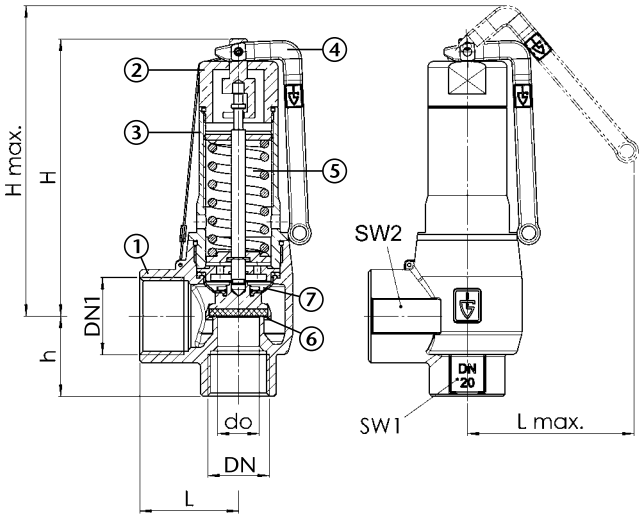
Gunmetal High Discharge Safety Valve

Features

- Screwed BSP Parallel (ISO 228)
- Body Gunmetal
- Suitable for Gases, Liquids & Steam
- Fitted with Diaphragm to Protect Spring Housing
- Set Range 0.5 to 16 Bar
- WRAS Approved (½"-1") Other Sizes Under Approval
- ISO 4126-1, PED 2014/68/EU, TRD 421
- Classification - GL, DNV
- ATEX Approval Available at Extra Cost
- 24 Month Warranty
- Test Certificate to EN10204-3.1 Available on Request
- High Capacity Discharge

Typical Applications

- Pressure Vessels
- Mechanical engineering
- Pump protection
- Pressure booster systems water/air-side
- Cooling/Chilling Systems
- Steam and industrial boiler systems



DN	½"	¾"	1"	1¼"	1½"	2"
DN1	¾"	1"	1¼"	1½"	2"	2½"
L	36	43	47	58	68	80
Lmax	63	78	100	140	150	155
H	90	115	146	192	229	275
h	30	35	37	45	55	65
Hmax	102	133	148	210	252	298
SW1	27	34	41	55	65	80
SW2	34	41	50	60	70	90
do	13	18	23	30	39	48
kg	0.5	0.9	1.6	3.3	5.8	8.9

N.	Part Name	Materials
1	Body	Gunmetal
2	Housing Cap	Brass/Gunmetal
3	Spring Housing	Brass/Gunmetal
4	Lifting Lever	Stainless Steel CF8M
5	Spring	Stainless Steel 302
6	Seat-Seal	PTFE
7	Diaphragm	EPDM

Technical Data	
Max Pressure	16 Bar
Working Temperature	EPDM Diaphragm -50°C to +195°C

Dimensions in mm

ART 645

Discharge Capacities

DN	15				20				25			
Bar	Air Nm³/h	Steam kg/h	Water m³/h	Heating kW	Air Nm³/h	Steam kg/h	Water m³/h	Heating kW	Air Nm³/h	Steam kg/h	Water m³/h	Heating kW
0.5	77	58	2.3	37	141	106	4.3	68	208	157	6.6	101
1	114	91	3.0	57	222	177	5.8	112	315	251	8.9	158
2	188	148	4.3	91	366	288	8.3	177	525	413	12.6	254
3	256	200	5.3	121	499	390	10.1	235	729	570	15.4	344
4	327	253	6.1	151	626	486	11.7	290	916	710	17.7	423
5	393	303	6.8	178	754	582	13.1	342	1103	851	19.8	500
6	460	354	7.5	206	882	678	14.3	394	1289	992	21.7	576
7	526	403	8.1	232	1009	773	15.5	445	1476	1130	23.5	650
8	593	453	8.6	258	1137	868	16.5	495	1662	1269	25.1	724
9	660	502	9.1	283	1265	963	17.5	543	1849	1408	26.6	795
10	726	551	9.6	309	1392	1057	18.5	592	2036	1546	28.1	865
11	793	601	10.1	335	1520	1151	19.4	642	2222	1683	29.4	938
12	859	649	10.6	359	1647	1245	20.2	689	2409	1820	30.7	1008
13	926	698	11.0	385	1775	1339	21.1	737	2595	1958	32.0	1078
14	992	748	11.4	408	1903	1434	21.9	783	2782	2097	33.2	1145
15	1059	797	11.8	433	2030	1528	22.6	830	2969	2234	34.4	1213
16	1126	846	12.2	457	2158	1622	23.4	877	3155	2372	35.5	1282

DN	32				40				50			
Bar	Air Nm³/h	Steam kg/h	Water m³/h	Heating kW	Air Nm³/h	Steam kg/h	Water m³/h	Heating kW	Air Nm³/h	Steam kg/h	Water m³/h	Heating kW
0.5	346	261	10.3	167	559	421	16.5	264	867	653	25.7	409
1	505	403	13.9	254	802	641	22.4	403	1241	991	34.8	624
2	816	643	19.7	394	1301	1025	31.7	629	2049	1615	49.2	991
3	1117	873	24.1	526	1783	1393	38.8	840	2806	2194	60.3	1323
4	1429	1108	27.9	660	2283	1770	44.8	1055	3591	2785	69.6	1660
5	1720	1327	31.1	780	2747	2120	50.1	1246	4322	3334	77.8	1960
6	2011	1547	34.1	899	3212	2472	54.8	1436	5053	3888	85.2	2260
7	2302	1762	36.9	1014	3677	2815	59.2	1621	5785	4428	92.0	2549
8	2593	1979	39.4	1129	4142	3162	63.3	1804	6516	4975	98.4	2838
9	2884	2196	41.8	1239	4607	3508	67.2	1980	7248	5519	104.4	3115
10	3175	2411	44.0	1350	5072	3852	70.8	2156	7979	6060	110.0	3392
11	3466	2625	46.2	1463	5537	4195	74.3	2338	8710	6598	115.4	3678
12	3757	2838	48.2	1571	6002	4535	77.6	2511	9442	7134	120.5	3949
13	4048	3054	50.2	1681	6467	4879	80.7	2687	10173	7675	125.4	4226
14	4339	3270	52.1	1785	6932	5224	83.8	2852	10905	8218	130.2	4487
15	4630	3484	53.9	1892	7397	5566	86.7	3022	11636	8756	134.7	4754
16	4921	3699	55.9	1999	7862	5910	89.3	3194	12367	9297	139.1	5024

ART 645 Blowing off rates at 10% above set pressure.

Seat-Seal/Diaphragm Options

Option	Materials	Type	Working Temp.
PTFE/EPDM	Polytetrafluorethylen/Ethylen-Propylene-Diene **(Standard)**	Flat seal and moulded diaphragm	–50°C to +195°C
EPDM/EPDM	Ethylen-Propylene-Diene/Ethylen-Propylene-Diene	Flat seal and moulded diaphragm	–50°C to +150°C
PTFE/FKM	Polytetrafluorethylen/Fluorcarbon	Flat seal and moulded diaphragm	–30°C to +200°C
FKM/FKM	Fluorcarbon/Fluorcarbon	Elastomere seals and moulded diaphragm	–20°C to +200°C

Dimensions in mm

Assembly and Maintenance Instructions

1. Safety

- Only use the valve;
  - for the intended purpose
  - in satisfactory condition
  - with respect for safety and potential hazards.
- Always observe the installation instructions;
- Faults that may impair safety must be addressed immediately;
- The valves are exclusively intended for the application area stated in these installation instructions. Any other or further use is not valid as the intended use;
- The manufacturer's warranty shall be null and void if the sealed cover is removed;
- All assembly work is to be carried out by authorised specialist staff.

2. General Notes

Safety valves are high-quality fittings which require a particularly careful handling.

The sealing surfaces are precision-machined at the seat and cone to attain the required tightness. Always avoid the penetration of foreign particles into the valve during assembly and during the operation. The tightness of a safety valve can be impaired when using hemp, PTFE tape and welding beads, amongst other things. Also rough handling of the finished valve during storage, transport and assembly can result in a safety valve leaking. If the safety valves are painted, make sure that the sliding parts do not come into contact with the paint.

3. Range of Application

For details on the range of application of the individual versions please refer to the datasheets of the manufacturer.

4. Installation and Assembly

Spring-loaded safety valves are to be installed with the spring bonnet pointing vertically upward in line with the direction of the arrow.

To ensure satisfactory operation of the safety valves they must be installed in such a way that the safety valve is not exposed to any impermissible static, dynamic or thermal loads.

Appropriate protection devices must be applied if the medium that discharges upon actuation of the valve can lead to direct or indirect hazards to people or the environment. Always pay attention to possible fumes discharging from the relief bores in the spring bonnet.

Supply

Supply connection pieces for safety valves are to be kept as short as possible and are to be designed in such a way that there can be no pressure loss greater than 3% (Max.) of the response pressure.

Removal of condensate discharge

In the event of possible condensation the pipes or the valves themselves must be fitted at their lowest point with a continuously operating condensate discharge device. Hazard-free removal of the condensate or medium discharge must be ensured. The body, pipes and silencers must be protected against freezing.

Blowing-off pipe / backpressure

The blow-off pipe of the safety valves must be designed to ensure that the required mass flow can be discharged pressure-free during the blowing-off process.

5. Operation/Maintenance

Safety valves are the ultimate safety device for the tank or system. They must be able to prevent impermissible overpressure even when all other upstream control and monitoring equipment fail. To ensure these characteristics safety valves require maintenance, just like any other technical device. The maintenance intervals are determined by the operator in depending upon the operating conditions.

The operating pressure of the plant is to be at least 5 % lower than the closing pressure of the safety valve. In this way, the valve can satisfactorily close again after blowing off.In the event of minor leaks, which may be caused by contamination between the sealing surfaces, the valve can be made to blow off through lifting, for cleaning purposes. If this does not remove the leak, the sealing surface is probably damaged and this can only be repaired at our factory or by authorised specialists. Lifting is by actuating the lifting lever on the upper part of the valve (Fig. a). For delivery purposes the lifting lever is tied by means of a strap which has to be removed for actuating the lifting device.

Prior to removal make sure that the safety valve is not under pressure.

Lifting for maintenance purposes

It is recommended and in some plant specific situations mandatory to manually "blow off" the valve by lifting the seal off the seat with the use of the lifting lever (fig a), in order to ensure correct functioning of the safety valve.

The line pressure must be ≥ 85% of the set pressure before the lifting the lever. The lifting lever is NOT to be operated when the pressure is zero.

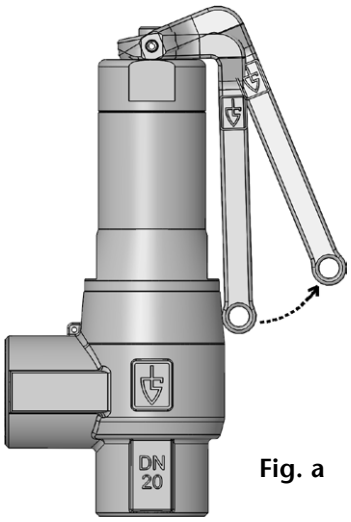


Fig. a

Dimensions in mm

Assembly and Maintenance Instructions

6. Dismantling the Fitting

In addition to the general installation instructions it must be ensured that the system is made pressure free prior to disassembly of the safety valve.

7. Repairs

Repair work on safety valves is only to be carried out by Goetze KG Armaturen or by officially approved specialist workshops authorised by Goetze KG Armaturen using original spare parts only.

8. Warranty

Every valve is tested prior to leaving the factory. We grant a warranty for our products which entails a free of charge repair of any parts that are returned and verified as being prematurely unsuitable for use due to defective material or manufacturing. We shall not assume any liability for any damage or other such obligations. If the seal is damaged due to any incorrect handling of or installation, non-observance of these operating and maintenance instructions, contamination or normal wear, warranty claims shall be null and void.

9. Marking/Testing

Type Description	
EN ISO 4126-1	
Set Pressure	p [bar]
Narrowest cross-section of flow:	A [mm²]
Reduced Discharge Ratio:	S/G k_{dr} designed for steam/gas L k_{dr} designed for liquids
Lift (at 10% above set pressure)	h [mm]

We check the safety valves for pressure resistance and tightness, adjust the requested set pressure and seal them.

The identification on the type plate or on the spring bonnet of the valve is applied using a permanent marking system.

In addition markings and technical data according to DIN EN ISO 4126-1 are included on the identification plate.

10. Declaration of Conformity

According to Annex VII of the Directive 97/23/EC

We, **Goetze KG Armaturen, D-71636 Ludwigsburg** declare under sole responsibility that the delivered poduct:

Safety valve

SeriesEC type test

642	✓
645	✓

has been manufactured in compliance with the Directive 97/23/EC and DIN ISO4126 and was subjected to the conformity assessment procedure:

Module B+D

An EC type test certificate is available for the equipment part for pressure devices.

The manufacturer produces the safety valves on behalf of Albion Valves UK Limited under the trademark "Albion".

The monitoring of the production quality assurance is performed by TÜV SÜD Industrie Service GmbH (0036).

Ludwigsburg, 30.04.2013

(Place and date of issue)

D. Weimann

Management

Dimensions in mm

Certificate No. 1437B

Certificate No. 1437A

Distributor