

FREE EXHAUST SAFETY VALVES TYPE D

FEATURES

Type D safety valves are devices designed to protect installations against possible overpressures. They operate automatically and close when the pressure conditions have returned to normal. Of the spring-loaded valve type, with free exhaust, the type D valve is made of brass or stainless steel.

It is supplied sealed as standard with an FPM seal and a test wheel. Type D valves have CE approval and can be used on compressed air and other compatible non-hazardous gases. The calibration certificate and manufacturer's file, according to the decree of November 20, 2017 relating to the monitoring of pressure equipment, are on request.

MODELS AVAILABLE

D7: 1/4" M (Brass/Stainless Steel).

D10: 3/8" M or 1/2" M (Brass/Stainless steel).

D14: 3/4" M (Brass/Stainless steel).

LIMITS OF USE

Type	D 7	D 10	D 14
PS Fluid:	60 bar	60 bar	30 bar
<u>Maximum material temperatures:</u> to be interpreted taking into account the working pressure at the operating temperature.			
Matter	Brass	Stainless steel	
TS Fluid:	<u>FPM range:</u> -20°C / +200°C		
TS Fluid:	<u>NBR range:</u> -10°C / +100°C		
TS Fluid:	<u>EPDM range:</u> -50°C / +150°C		
TS Fluid:	<u>Silicone range:</u> -60°C / +200°C		
TS Fluid:	<u>PTFE range:</u> -196°C / +250°C		



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HYDRAULIC CHARACTERISTICS

Type	D 7	D 10	D 14
DN input	1/4" M	3/8" M or 1/2" M	3/4" M
Orifice do (mm)	7	10	14
Area (cm ²)	0.385	0.785	1,539
Lift (mm)	2	4	7
Flow coefficient	0.81	0.77	0.72 > 3 bar 0.81
Flow coefficient ATEX Ex 2 G c	0.81	0.77	0.72 > 3 bar 0.81
ASME VIII Div.1 Flow Coefficient	0.712	0.712	0.712
CRN flow coefficient	0.712	0.712	0.712
Minimum calibration (bar)	0.3	0.3	0.3
Max setting (bar)	60	60	30
Maximum flow rate at Osp +10%			
Closing pressure at Osp -10%			
Osp: Opening start pressure			

DIRECTIVES AND MANUFACTURING STANDARD

OBJECT	Standard	NB
EC Pressure Directive 2014/68	Category IV (module H1)	CE 0036
ATEX Directive	Ex II 2 G c	CE 0036
Construction standard EN	ISO 4126-1	
US Construction Standard	ASME VIII Division 1 (40 bar (D7-D10) / 60 bar (D14))	
Approval for Canada	CRN (40 bar)	
Approval for Russia	GOST-R	
Threaded connection	ISO 228	
CALIBRATION CERTIFICATE – TEST AND MATERIAL		
Certificate according to EN 10 204 2.2 of calibration and conformity as standard with engraving of the serial number on the valve.		

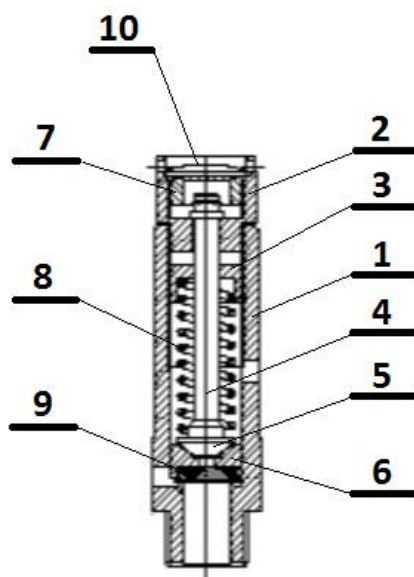
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CONSTRUCTION

Rep	Designation	Brass Version	Stainless steel version
1	Body	Brass CW 614 N	Forged stainless steel 1.4401
2	Test wheel	Brass CW 614 N	Forged stainless steel 1.4401
3	Adjustment screw	Brass CW 614 N	Forged stainless steel 1.4401
4	Stem	Brass CW 614 N	Forged stainless steel 1.4401
5	Flap	Brass CW 614 N	Forged stainless steel 1.4401
6	Seat	Brass CW 614 N	Forged stainless steel 1.4401
7	Cap	Brass CW 614 N	Forged stainless steel 1.4401
8	Spring	C72 UNI 3823	Forged stainless steel 1.4401
9	Seat	FPM	NBR/FPM/PTFE
10	Plate	Brass CW 614 N	Forged stainless steel 1.4401



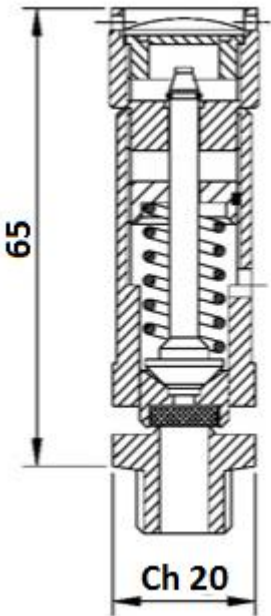
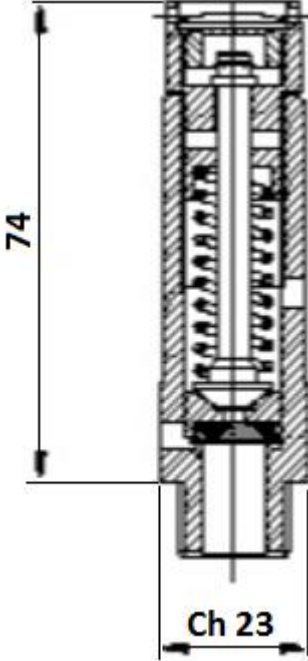
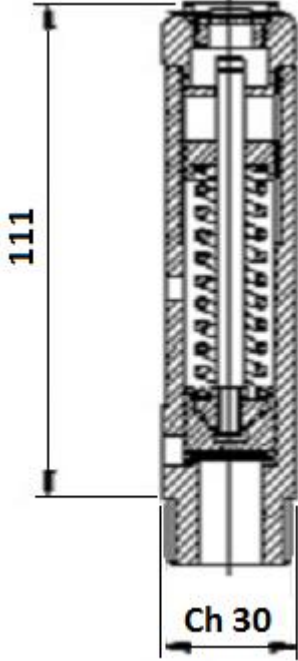
Designation	Brass Version (Kg)	Stainless steel version (Kg)
D7	0.130	
D10	0.200	
D14	0.500	

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DIMENSIONS (mm)

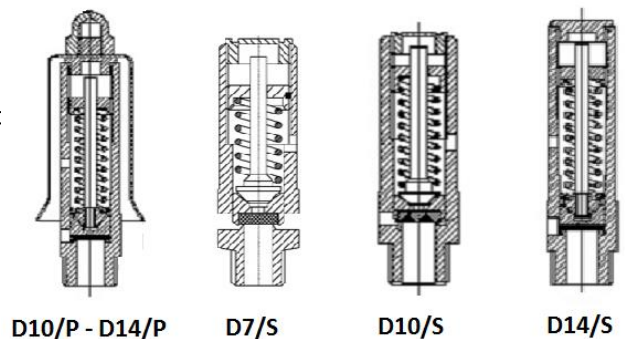
D 7	D 10	D 14
		

INSTALLATION

The valve must be positioned as close as possible to the capacity to be protected. It must always be installed in a vertical position. No tap must be inserted between the capacity to be protected and the valve. No foreign body must block the valve discharge port. Since the exhaust is free, install the valve away from the operators' work areas and check that there is no danger when the valve is operating. The valve must be installed and maintained in accordance with the rules of the art and in accordance with the instructions supplied with the device.

OPTION

- Valve construction nickel-plated brass.
- Brass construction valve with stainless steel body and flange
- Valve without test wheel type D7/S - D10/S - D14/S.
- Valve with deflector types D10/P - D14/P.
- Bearings: EPDM, NBR, Silicone or metallic.
- Connections: BSPT, NPT.



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FREE EXHAUST SAFETY VALVES TYPE D

AIR FLOW in Nm³/h at 0°C

According to ISO 4126-1 standard

Type	D7	D10	D14	Type	D7	D10	D14	Type	D7	D10	D14
P (bar)	Nm ³ /h			P (bar)	Nm ³ /h			P (bar)	Nm ³ /h		
0.5	33	64	117	20.5	500	968	1999	40.5	966	1873	-
1	45	86	162	21	511	991	2045	41	978	1896	-
1.5	56	109	210	21.5	523	1014	2092	41.5	990	1918	-
2	68	132	259	22	535	1036	2139	42	1001	1941	-
2.5	80	154	311	22.5	546	1059	2185	42.5	1013	1964	-
3	91	177	365	23	558	1082	2232	43	1025	1986	-
3.5	103	199	412	23.5	570	1104	2279	43.5	1036	2009	-
4	115	222	458	24	581	1127	2325	44	1048	2031	-
4.5	126	245	505	24.5	593	1149	2372	44.5	1060	2054	-
5	138	267	552	25	605	1172	2419	45	1071	2077	-
5.5	150	290	598	25.5	616	1195	2465	45.5	1083	2099	-
6	161	313	645	26	628	1217	2512	46	1095	2122	-
6.5	173	335	692	26.5	640	1240	2559	46.5	1106	2145	-
7	185	358	738	27	651	1262	2605	47	1118	2167	-
7.5	196	380	785	27.5	663	1285	2652	47.5	1130	2190	-
8	208	403	832	28	675	1308	2699	48	1141	2212	-
8.5	220	426	878	28.5	686	1330	2745	48.5	1153	2235	-
9	231	448	925	29	698	1353	2792	49	1165	2258	-
9.5	243	471	972	29.5	710	1376	2839	49.5	1176	2280	-
10	255	493	1018	30	721	1398	2885	50	1188	2303	-
10.5	266	516	1065	30.5	733	1421	-	50.5	1200	2326	-
11	278	539	1112	31	745	1443	-	51	1211	2348	-
11.5	290	561	1158	31.5	756	1466	-	51.5	1223	2371	-
12	301	584	1205	32	768	1489	-	52	1235	2393	-
12.5	313	607	1252	32.5	780	1511	-	52.5	1246	2416	-
13	325	629	1298	33	791	1534	-	53	1258	2439	-
13.5	336	652	1345	33.5	803	1557	-	53.5	1270	2461	-
14	348	674	1392	34	815	1579	-	54	1281	2484	-
14.5	360	697	1438	34.5	826	1602	-	54.5	1293	2506	-
15	371	720	1485	35	838	1624	-	55	1305	2529	-
15.5	383	742	1532	35.5	850	1647	-	55.5	1316	2552	-
16	395	765	1578	36	861	1670	-	56	1328	2574	-
16.5	406	788	1625	36.5	873	1692	-	56.5	1340	2597	-
17	418	810	1672	37	885	1715	-	57	1351	2620	-
17.5	430	833	1719	37.5	896	1737	-	57.5	1363	2642	-
18	441	855	1765	38	908	1760	-	58	1375	2665	-
18.5	453	878	1812	38.5	920	1783	-	58.5	1386	2687	-
19	465	901	1859	39	931	1805	-	59	1398	2710	-
19.5	476	923	1905	39.5	943	1828	-	59.5	1410	2733	-
20	488	946	1952	40	955	1851	-	60	1421	2755	-

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FREE EXHAUST SAFETY VALVES TYPE D

AIR FLOW in l/min at 0°C

According to ISO 4126-1 standard

Type	D7	D10	D14	Type	D7	D10	D14	Type	D7	D10	D14
P (bar)	l/min			P (bar)	l/min			P (bar)	l/min		
0.5	548	1062	1949	20.5	8327	16141	33310	40.5	16107	31219	-
1	743	1439	2706	21	8522	16518	34088	41	16301	31596	-
1.5	937	1816	3498	21.5	8716	16895	34866	41.5	16496	31973	-
2	1132	2193	4325	22	8911	17272	35644	42	16690	32350	-
2.5	1326	2570	5186	22.5	9105	17649	36421	42.5	16885	32727	-
3	1521	2947	6082	23	9300	18026	37199	43	17079	33104	-
3.5	1715	3324	6860	23.5	9494	18403	37977	43.5	17274	33481	-
4	1909	3701	7638	24	9689	18780	38755	44	17468	33858	-
4.5	2104	4078	8416	24.5	9883	19157	39533	44.5	17663	34235	-
5	2298	4455	9194	25	10078	19533	40311	45	17857	34612	-
5.5	2493	4832	9972	25.5	10272	19910	41089	45.5	18052	34989	-
6	2687	5209	10750	26	10467	20287	41867	46	18246	35366	-
6.5	2882	5586	11528	26.5	10661	20664	42645	46.5	18441	35743	-
7	3076	5963	12305	27	10856	21041	43423	47	18635	36120	-
7.5	3271	6340	13083	27.5	11050	21418	44201	47.5	18830	36497	-
8	3465	6717	13861	28	11245	21795	44979	48	19024	36874	-
8.5	3660	7094	14639	28.5	11439	22172	45757	48.5	19218	37251	-
9	3854	7471	15417	29	11634	22549	46535	49	19413	37628	-
9.5	4049	7848	16195	29.5	11828	22926	47313	49.5	19607	38005	-
10	4243	8225	16973	30	12023	23303	48090	50	19802	38382	-
10.5	4438	8602	17751	30.5	12217	23680	-	50.5	19996	38759	-
11	4632	8979	18529	31	12412	24057	-	51	20191	39135	-
11.5	4827	9356	19307	31.5	12606	24434	-	51.5	20385	39512	-
12	5021	9732	20085	32	12801	24811	-	52	20580	39889	-
12.5	5216	10109	20863	32.5	12995	25188	-	52.5	20774	40266	-
13	5410	10486	21641	33	13190	25565	-	53	20969	40643	-
13.5	5605	10863	22419	33.5	13384	25942	-	53.5	21163	41020	-
14	5799	11240	23197	34	13578	26319	-	54	21358	41397	-
14.5	5994	11617	23974	34.5	13773	26696	-	54.5	21552	41774	-
15	6188	11994	24752	35	13967	27073	-	55	21747	42151	-
15.5	6383	12371	25530	35.5	14162	27450	-	55.5	21941	42528	-
16	6577	12748	26308	36	14356	27827	-	56	22136	42905	-
16.5	6772	13125	27086	36.5	14551	28204	-	56.5	22330	43282	-
17	6966	13502	27864	37	14745	28581	-	57	22525	43659	-
17.5	7161	13879	28642	37.5	14940	28958	-	57.5	22719	44036	-
18	7355	14256	29420	38	15134	29334	-	58	22914	44413	-
18.5	7549	14633	30198	38.5	15329	29711	-	58.5	23108	44790	-
19	7744	15010	30976	39	15523	30088	-	59	23303	45167	-
19.5	7938	15387	31754	39.5	15718	30465	-	59.5	23497	45544	-
20	8133	15764	32532	40	15912	30842	-	60	23692	45921	-

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FREE EXHAUST SAFETY VALVES TYPE D

FLOW in Kg/h at 20°C

According to ISO 4126-1 standard

Type	D7	D10	D14	Type	D7	D10	D14	Type	D7	D10	D14
P (bar)	Kg/h			P (bar)	Kg/h			P (bar)	Kg/h		
0.5	43	82	151	20.5	646	1252	2584	40.5	1249	2422	-
1	58	112	210	21	661	1281	2644	41	1264	2451	-
1.5	73	141	271	21.5	676	1310	2704	41.5	1280	2480	-
2	88	170	335	22	691	1340	2765	42	1295	2509	-
2.5	103	199	402	22.5	706	1369	2825	42.5	1310	2539	-
3	118	229	472	23	721	1398	2885	43	1325	2568	-
3.5	133	258	532	23.5	736	1427	2946	43.5	1340	2597	-
4	148	287	592	24	752	1457	3006	44	1355	2626	-
4.5	163	316	653	24.5	767	1486	3067	44.5	1370	2656	-
5	178	346	713	25	782	1515	3127	45	1385	2685	-
5.5	193	375	773	25.5	797	1544	3187	45.5	1400	2714	-
6	208	404	834	26	812	1574	3248	46	1415	2743	-
6.5	224	433	894	26.5	827	1603	3308	46.5	1430	2772	-
7	239	463	955	27	842	1632	3368	47	1445	2802	-
7.5	254	492	1015	27.5	857	1661	3429	47.5	1461	2831	-
8	269	521	1075	28	872	1691	3489	48	1476	2860	-
8.5	284	550	1136	28.5	887	1720	3549	48.5	1491	2889	-
9	299	579	1196	29	902	1749	3610	49	1506	2919	-
9.5	314	609	1256	29.5	917	1778	3670	49.5	1521	2948	-
10	329	638	1317	30	933	1808	3730	50	1536	2977	-
10.5	344	667	1377	30.5	948	1837	-	50.5	1551	3006	-
11	359	696	1437	31	963	1866	-	51	1566	3036	-
11.5	374	726	1498	31.5	978	1895	-	51.5	1581	3065	-
12	389	755	1558	32	993	1925	-	52	1596	3094	-
12.5	405	784	1618	32.5	1008	1954	-	52.5	1611	3123	-
13	420	813	1679	33	1023	1983	-	53	1627	3153	-
13.5	435	843	1739	33.5	1038	2012	-	53.5	1642	3182	-
14	450	872	1799	34	1053	2041	-	54	1657	3211	-
14.5	465	901	1860	34.5	1068	2071	-	54.5	1672	3240	-
15	480	930	1920	35	1083	2100	-	55	1687	3270	-
15.5	495	960	1980	35.5	1099	2129	-	55.5	1702	3299	-
16	510	989	2041	36	1114	2158	-	56	1717	3328	-
16.5	525	1018	2101	36.5	1129	2188	-	56.5	1732	3357	-
17	540	1047	2161	37	1144	2217	-	57	1747	3387	-
17.5	555	1077	2222	37.5	1159	2246	-	57.5	1762	3416	-
18	571	1106	2282	38	1174	2275	-	58	1777	3445	-
18.5	586	1135	2342	38.5	1189	2305	-	58.5	1792	3474	-
19	601	1164	2403	39	1204	2334	-	59	1808	3504	-
19.5	616	1194	2463	39.5	1219	2363	-	59.5	1823	3533	-
20	631	1223	2523	40	1234	2392	-	60	1838	3562	-

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FREE EXHAUST SAFETY VALVES TYPE D

ASSEMBLY AND MAINTENANCE REGULATIONS

1 - DESCRIPTION

1.1 NGI spring-loaded valves are suitable for steam, gases and liquids. They result from decades of experience in numerous applications and largely fulfil their function of ultimate protection of pressure vessels. They can ensure that the internal pressure does not exceed the maximum permitted, even if other safety devices installed upstream prove to be faulty, provided that they have been correctly dimensioned.

1.2 NGI safety valves are manufactured from brass or stainless steel. All valves are factory-calibrated and sealed to ensure maximum safety and minimum maintenance.

2 - WARRANTY

2.1 Before any relationship with our services, identify the type of valve and the individual number engraved on the valve's body.

2.2 NGI safety valves are guaranteed for 24 months from delivery. Parts found to be defective by an expert assessment at our factory will be replaced at our expense. Claims resulting from improper use, modification of the valve, or leakage due to the passage of impurities will not be taken into account.

3 - TRANSPORT, VERIFICATION UPON RECEIPT AND STORAGE

3.1 CAUTION: The safety valve can be damaged by vibration, shock and contact with impurities. Therefore, the valve must be handled with care without removing the protective caps before installation or operating the test lever.

3.2 Upon receipt, check:

- that the packaging is in good condition,
- that the valve delivered complies with the order,
- that the equipment has not been damaged,
- that the valve is delivered with the calibration certificate, the number of which must correspond to the one engraved on the valve body.

3.3 It is recommended that the valve be installed upon receipt and not left unused. If the equipment is to be stored, it should be in a dry place protected from the elements.

4 - PRECAUTIONS FOR USE

4.1 Before any installation, ensure that the installation is completely depressurized and brought to room temperature.

4.2 Any adjustment or modification may only be carried out by technicians qualified in safety valves.

4.3 BEWARE OF TOXIC GASES

If the valve is installed on an acid tank, wear gloves and goggles and any other necessary personal protection.

4.4 The valve may only be put into service if it has been calibrated, sealed and certified by NGI. The calibration certificate shall state the exact pressure of its calibration.

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4.5 When a free exhaust valve in service is to be tested, ensure beforehand that no one remains in the direction of the exhaust. Do not allow toxic, explosive or flammable products to be discharged into the atmosphere. Provide a controlled degassing procedure in a confined space before the test.

4.6 Do not work on the valve, break its seal or modify its setting pressure.

4.7 Do not create cold or hot thermal shock on the valve.

4.8 In the event of a malfunction, immediately consult SECTORIEL or NGI.

4.9 CAUTION: IN CORROSIVE ENVIRONMENTS ONLY STAINLESS STEEL VALVES SHOULD BE INSTALLED.

4.10 The type of connection must be in accordance with the piping class of the installation.

4.11 We recommend that you preferably select a valve with a channeled exhaust. If the valve discharges directly to the atmosphere, direct the exhaust in such a way as not to cause any material or personal damage. On request, it is possible to supply a valve with a leak detector for control.

5 - INSTALLATION

5.1 Check that the seal has not been damaged.

5.2 Spring-loaded safety valves must be mounted in a vertical position with the bonnet upwards.

5.3 Taking care not to damage the bearing surfaces, remove the protective caps and install the valve on the installation according to its connection type.

5.4 It is prohibited to insert an isolation valve between the capacity to be protected and the safety valve.

5.5 It is prohibited to insert a reduction limiting the flow to be evacuated between the capacity to be protected and the valve.

5.6 For piped exhaust valves, ensure that the discharge piping discharges to a location that is safe for personnel and the environment.

5.7 If the valve exhaust is to be connected to a pipe, ensure that the pipe is as short as possible to create minimum back pressure.

5.8 Exhaust piping connected to a channeled exhaust valve must not be supported by the valve itself. Otherwise, leaks may occur.

6 - CLEANING AND LUBRICATION

6.1 NGI valves are designed to require no lubrication.

6.2 Keep the valve clean and in working order. In particular, check that the exhaust remains free and that no foreign bodies are obstructing the discharge pipe.

7 - CURRENT MAINTENANCE

7.1 The safety valve is a sensitive safety element that must be checked periodically. If a malfunction is found, contact SECTORIEL or NGI.

7.2 ATTENTION : NGI and SECTORIEL are no longer responsible for the proper functioning of the valve if it has been dismantled or modified or recalibrated by a person not authorized by NGI or SECTORIEL.

Information given as an indication only and subject to possible modifications.

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FREE EXHAUST SAFETY VALVES TYPE D

8 - PERIODIC INSPECTION

8.1 In order to ensure that the safety valve is still operational, it must be tested periodically. To carry out this test, the test lever or wheel must be operated manually briefly. In order to protect the installation during this test, the test pressure must remain between 80 and 90% of the set pressure. The valve must be wide open to allow a significant flow.

When re-closing, ensure that the seat is watertight again. When starting an installation, it is recommended to carry out this test regularly.

8.2 For uses on gases or steam on installations located on French territory, comply with the provisions of the decree of November 20, 2017 relating to the monitoring of pressure equipment.

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