Castel®
Italian technology

POLYHEDRA

VALVES WITH BALL SHUTTER

For refrigeration plants that use:
HFC, HFO, HC refrigerants

APPLICATIONS

The 2-ways valves with ball shutter illustrated in this leaflet are designed for installation on commercial refrigeration systems and on civil and industrial air conditioning plants that use the following refrigerant fluids:

- HFC (R134a, R32, R404A, R407C, R410A, R507)
- HFO and HFO/HFC mixture (R1234yf, R1234ze, R448A, R449A, R450A, R452A, R452B, R454B, R513A)
- HC (R290, R600, R600a, R1270)

belonging to Group 1 and 2, as defined in Article 13, Chapter 1, Point (a) and (b) of Directive 2014/68/EU, with reference to EC Regulation No. 1272/2008.

For specific applications with refrigerant fluids not listed above, please contact Castel Technical Department.

CONSTRUCTION

The specific design of Castel valves with ball shutter:

- ensures the internal pressure equilibrium when the valve is closed,
- permits the two-directional flow of the refrigerant
- prevents any risk of ejection or explosion of the spindle.

The electric welding of the body and the seal gaskets, assembled on the spindle, ensure perfect hermetic seal of the valve.

Valves with ball shutter are available in the following two types:

- Valves in series 6570N – 6590N, full port, without access fitting.
- Valves in series 6570N/A – 6590N/A, full port, with access fitting. These valves are equipped with mechanism 8395/A3 and cap 8392/A.

The main parts of the valves with ball shutter are made with the following materials:

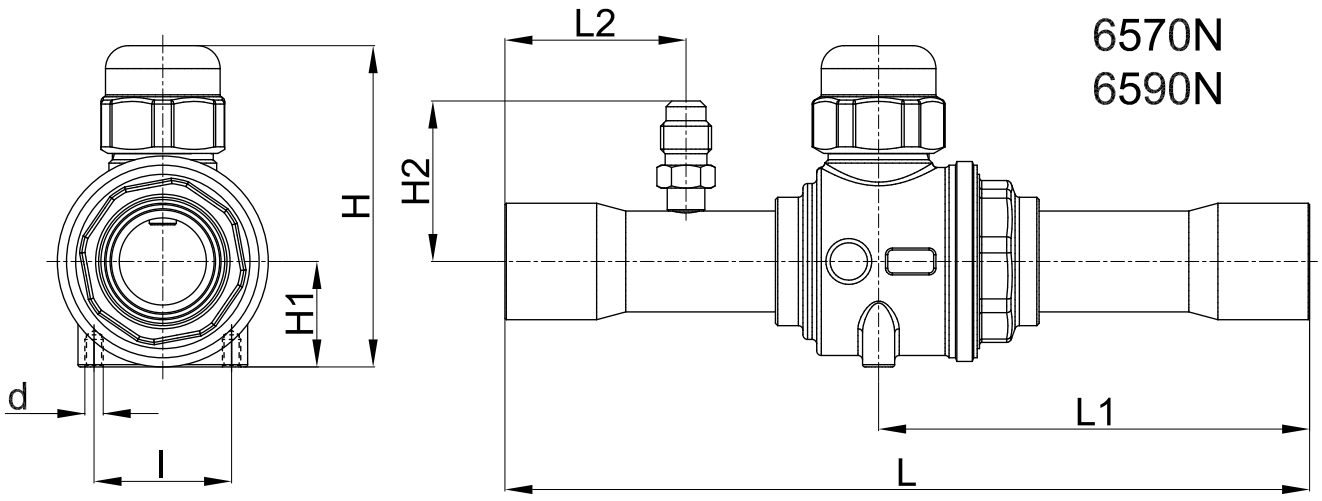
- Hot forged brass EN 12420 – CW 617N for the body
- Hot forged brass EN 12420 – CW 617N, chromium plated, for the ball
- Copper pipe EN 12735-1 – Cu--DHP for solder connections
- Steel, with proper surface protection, for the spindle.
- Hydrogenated nitrile butadiene rubber (HNBR) for outlet seal gaskets.
- P.T.F.E. for the ball seat gaskets
- Hot forged brass EN 12420 – CW 617N for the protective cap of the spindle,

INSTALLATION

The valves with ball shutter can be installed in all sections of a refrigerating system, in compliance with the limits and capacities indicated in the respective tables. Instead the first table shows the following functional characteristics of a valve with ball shutter.

- PS
- TS
- Kv factor

Brazing of the valves with ball shutter with solder connections should be carried out with care, using a low melting point filler material (min. 5% Ag). It is important to avoid direct contact between the torch flame and the valve body, which could be damaged and compromise the proper functioning of the entire valve.



General characteristics										
Catalogue Number		Connections		Ball Port Ø [mm]	Kv Factor [m3/h]	PS [bar]	TS [°C]		TA [°C]		Risk Category according to PED Recast
		ODS									
without access fitting	with access fitting	Ø [in.]	Ø [mm]				min.	max.	min.	max.	
6570N/M6	6570N/M6A	–	6	10	0,8	50	-40	+150	-40	+50	Art. 4.3
6570N/2	6570N/2A	1/4"	–								
6570N/3	6570N/3A	3/8"	–		3						
6570N/M10	6570N/M10A	–	10								
6570N/M12	6570N/M12A	–	12		5						
6570N/4	6570N/4A	1/2"	–								
6570N/M15	6570N/M15A	–	15	15	17						
6570N/5	6570N/5A	5/8"	16								
6570N/M18	6570N/M18A	–	18								
6570N/6	6570N/6A	3/4"	–								
6570N/7	6570N/7A	7/8"	22	19	29						
6570N/M28	6570N/M28A	–	28	25	51						
6570N/9	6570N/9A	1.1/8"	–								
6590N/11	6590N/11A	1.3/8"	35	32	86	50	-40	+150	-40	+50	II
6590N/13	6590N/13A	1.5/8"	–	38	117						
6590N/M42	6590N/M42A	–	42								
6590N/17	6590N/17A	2.1/8"	54	50	214						
–	6570N/M64A	–	64	60	380						
	6570N/21A	2.5/8"	–								
	6570N/24A	3"	76	73	550						
	6570N/25A	3.1/8"	80								
	6570N/28A	3.1/2"	89	82	710	35					
	6570N/29A	3.5/8"	92								

Dimensions and weights											
Catalogue Number		Dimensions [mm]								Weight [g]
		H	H_1	H_2	L	L_1	L_2	l	d	
6570N/M6	6570N/M6A	48	15	29	121	65	25	18	M4	198
6570N/2	6570N/2A									
6570N/3	6570N/3A									201
6570N/M10	6570N/M10A									
6570N/M12	6570N/M12A									
6570N/4	6570N/4A									
6570N/M15	6570N/M15A	55	19	32	139	73	30	25,5		311
6570N/5	6570N/5A									
6570N/M18	6570N/M18A									
6570N/6	6570N/6A									
6570N/7	6570N/7A	70	23	34	175	94	40	30		570
6570N/M28	6570N/M28A	79	27	37	204	109	45			708
6570N/9	6570N/9A									
6590N/11	6590N/11A	117	37	45	210	112	43		M6	1518
6590N/13	6590N/13A	127	44	45	239	126	48			2470
6590N/M42	6590N/M42A									
6590N/17	6590N/17A	148	54	53	275	149	58			4360
–	6570N/M64A	150	55	57	343	186	68	75	M8	6000
	6570N/21A									6240
	6570N/24A	186,5	70	64	365,5	196,5	69	89	M8	10735
	6570N/25A									10790
	6570N/28A	195	75	68	373	197,5	70,5	75	M8	12789
	6570N/29A									12807

Refrigerant flow capacity of liquid line [kW]																				
Catalogue Number		R134a	R32	R404A	R407C	R410A	R507	R1234yf	R1234ze	R448A	R449A	R450A	R452A	R452B	R454B	R513A	R290	R600	R600a	R1270
6570N/M6	6570N/M6A	13,6	20,1	9,5	13,8	13,7	9,2	10,1	12,0	12,5	12,6	12,7	9,7	16,0	16,4	11,6	16,3	19,1	17,0	17,0
6570N/2	6570N/2A																			
6570N/3	6570N/3A	51	75,4	36	52	52	35	38	45	47	47	48	36	60	61	44	61	72	64	64
6570N/M10	6570N/M10A																			
6570N/M12	6570N/M12A	85	126	60	86	86	58	63	75	78	79	80	61	100	102	73	102	120	106	106
6570N/4	6570N/4A																			
6570N/M15	6570N/M15A	289	427	202	293	292	196	214	256	266	267	270	206	341	348	248	346	406	360	360
6570N/5	6570N/5A																			
6570N/M18	6570N/M18A																			
6570N/6	6570N/6A																			
6570N/7	6570N/7A	493	729	345	500	498	334	365	436	454	456	461	352	581	593	422	591	693	615	615
6570N/M28	6570N/M28A	867	1282	607	879	876	587	642	767	798	802	811	619	1023	1043	743	1039	1219	1081	1081
6570N/9	6570N/9A																			
6590N/11	6590N/11A	1462	2161	1023	1482	1477	989	1082	1293	1346	1352	1368	1043	1724	1760	1252	1753	2055	1823	1823
6590N/13	6590N/13A	1989	2940	1392	2016	2009	1346	1472	1760	1831	1839	1861	1419	2346	2394	1704	2384	2796	2480	2480
6590N/M42	6590N/M42A																			
6590N/17	6590N/17A	3638	5378	2547	3687	3674	2461	2692	3219	3349	3364	3405	2596	4291	4378	3116	4361	5115	4537	4537
–	6570N/M64A	6460	9549	4522	6547	6525	4370	4780	5715	5947	5974	6046	4609	7619	7775	5533	7744	9082	8056	8056
	6570N/21A																			
	6570N/24A	9350	13822	6545	9477	9444	6325	6919	8272	8608	8646	8751	6672	11028	11253	8008	11209	13145	11660	11660
	6570N/25A																			
	6570N/28A	12070	17842	8449	12233	12191	8165	8932	10678	11112	11161	11296	8612	14236	14527	10338	14470	16969	15052	15052
	6570N/29A																			

Refrigerant flow capacity of suction line [kW]																				
Catalogue Number		R134a	R32	R404A	R407C	R410A	R507	R1234yf	R1234ze	R448A	R449A	R450A	R452A	R452B	R454B	R513A	R290	R600	R600a	R1270
6570N/M6	6570N/M6A	1,5	3,4	1,8	1,8	2,6	1,8	1,2	1,1	1,9	1,8	1,3	1,7	2,8	2,8	1,4	2,4	1,0	1,3	2,8
6570N/2	6570N/2A																			
6570N/3	6570N/3A	5	12,8	7	7	10	7	4	4	7	7	5	6	10	11	5	9	4	5	10
6570N/M10	6570N/M10A																			
6570N/M12	6570N/M12A	9	21	11	11	17	11	7	7	12	11	8	11	17	18	9	15	6	8	17
6570N/4	6570N/4A																			
6570N/M15	6570N/M15A	31	72	37	39	56	38	25	24	41	37	27	36	59	60	30	52	22	27	59
6570N/5	6570N/5A																			
6570N/M18	6570N/M18A																			
6570N/6	6570N/6A																			
6570N/7	6570N/7A	53	123	64	66	96	65	43	41	70	64	46	61	101	102	52	88	37	46	101
6570N/M28	6570N/M28A	93	217	112	116	168	114	75	72	122	112	81	108	178	179	91	156	66	81	177
6570N/9	6570N/9A																			
6590N/11	6590N/11A	157	366	189	195	284	192	126	122	206	189	137	181	300	301	154	262	111	136	299
6590N/13	6590N/13A	213	497	257	266	386	261	172	166	281	257	186	247	408	410	209	357	151	185	407
6590N/M42	6590N/M42A																			
6590N/17	6590N/17A	389	910	471	486	706	477	315	304	514	471	340	452	747	749	383	653	276	338	745
–	6570N/M64A	692	1615	836	863	1254	847	559	540	912	836	604	802	1326	1330	680	1159	490	600	1322
	6570N/21A																			
	6570N/24A	1001	2338	1210	1249	1815	1227	809	781	1320	1210	875	1161	1920	1925	985	1678	710	869	1914
	6570N/25A																			
	6570N/28A	1292	3018	1562	1612	2343	1583	1044	1008	1704	1562	1129	1498	2478	2485	1271	2166	916	1122	2471
	6570N/29A																			

Refrigerant flow capacity of hot gas line [kW]																				
Catalogue Number		R134a	R32	R404A	R407C	R410A	R507	R1234yf	R1234ze	R448A	R449A	R450A	R452A	R452B	R454B	R513A	R290	R600	R600a	R1270
6570N/M6	6570N/M6A	6,8	14,5	7,7	9,5	10,9	7,6	5,3	5,5	9,4	8,6	6,1	8,0	12,2	12,3	6,5	10,2	5,2	6,0	11,5
6570N/2	6570N/2A																			
6570N/3	6570N/3A	26	54,5	29	36	41	29	20	21	35	32	23	30	46	46	24	38	19	22	43
6570N/M10	6570N/M10A																			
6570N/M12	6570N/M12A	43	91	48	60	68	48	33	34	59	54	38	50	77	77	41	64	32	37	72
6570N/4	6570N/4A																			
6570N/M15	6570N/M15A	145	309	163	202	231	162	113	116	201	183	130	170	260	262	138	217	110	126	245
6570N/5	6570N/5A																			
6570N/M18	6570N/M18A																			
6570N/6	6570N/6A																			
6570N/7	6570N/7A	247	527	278	345	394	277	193	199	342	313	222	289	444	447	236	370	187	216	418
6570N/M28	6570N/M28A	434	926	490	607	694	487	339	349	602	550	390	509	780	787	415	651	329	379	734
6570N/9	6570N/9A																			
6590N/11	6590N/11A	731	1562	826	1023	1170	820	571	589	1015	927	658	858	1316	1327	700	1097	556	640	1238
6590N/13	6590N/13A	995	2125	1123	1392	1591	1116	777	801	1381	1261	895	1168	1790	1805	952	1493	756	870	1685
6590N/M42	6590N/M42A																			
6590N/17	6590N/17A	1819	3886	2054	2547	2910	2042	1421	1466	2525	2307	1637	2136	3274	3302	1742	2731	1382	1592	3082
–	6570N/M64A	3230	6901	3648	4522	5168	3625	2523	2603	4484	4096	2907	3792	5814	5863	3093	4849	2455	2827	5472
	6570N/21A																			
	6570N/24A	4675	9988	5280	6545	7480	5247	3652	3768	6490	5929	4208	5489	8415	8487	4477	7018	3553	4092	7920
	6570N/25A																			
	6570N/28A	6035	12894	6816	8449	9656	6773	4714	4864	8378	7654	5432	7086	10863	10955	5779	9060	4587	5282	10224
	6570N/29A																			

Standard rating conditions according to AHRI Standard 760-2007

Condensing temperature	110 °F	(43,3 °C)
Liquid temperature	100 °F	(37,8 °C)
Subcooling	10 °R	(5,5 °K)
Evaporating temperature	40 °F	(4,4 °C)
Evaporator superheating	10 °R	(5,5 °K)
Suction line temperature	65 °F	(18,3 °C)
Suction superheating	15 °R	(8,4 °K)
Discharge temperature	160 °F	(71,1 °C)
Discharge temperature	160 °F	(71,1 °C)

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LOW GWP

ISO 14001

Castel has always been aware of environmental sustainability issues and gives its contribution to a cleaner environment, supplying the refrigeration and air conditioning industry with state-of-the-art and environment-friendly technology. With its commitment and steady research in its laboratories, Castel has developed a whole range of products using natural refrigerants, which reduce emissions to the minimum.

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