



APPLICATIONS

The check valves, shown in this chapter, are classified "Pressure accessories" in the sense of the Pressure Equipment Directive 97/23/EC, Article 1, Section 2.1.4 and are subject of Article 3, Section 1.3 of the same Directive.

They are designed for installation on commercial refrigerating systems and on civil and industrial conditioning plants, which use the following refrigerant fluids: R22, R134a, R404A, R407C, R410A; R507 proper to the Group II (as defined in Article 9, Section 2.2 of Directive 97/23/EC and referred to in Directive 67/548/EEC). For specific applications with refrigerant fluids not listed above, always proper to the Group II, please contact Castel Technical Department.

Check valves series 3112, 3132 and 3133 are approved by Underwriters Laboratories Inc. of the United States according to UL 207 Standard.

MATERIALS

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

- Hot forged brass EN 12420 - CW 617N for body and cover
- Copper tube EN 12735-1 - Cu-DHP for solder connections
- Austenitic stainless steel AISI 302 for the spring
- Chloroprene rubber (CR) for outlet seal gaskets. Metal-rubber laminated gaskets for the valves series 3122, 3142 and 3182
- P.T.F.E. for seat gasket

INSTALLATION

The valves can be installed in any section of a refrigerating system, where it is necessary to avoid an inversion of the refrigerating flow, in compliance with the limits and capacities indicated in table 2. Table 1 shows the following functional characteristics of a check valve.

- PS
- TS
- Kv factor
- Minimum opening pressure differential, which is the minimum pressure differential between inlet and outlet at which a check valve can open and stay opened.

Before connecting the valve to the pipe it is advisable to make sure that the refrigerating system is clean. In fact the valves with P.T.F.E. gaskets are particularly sensitive to dirt and debris. Furthermore check that the flow direction in the pipe corresponds to the arrow stamped on the body of the valve.

The allowed operating positions are:

types 3122 and 3142 with horizontal axis and valve cover facing upward

types 3182 with inlet facing down and the valve cover facing upward

types 3112, 3132 and 3133 preferably with vertical axis and arrow upward. Sloping axis, up to horizontal position, are tolerable.

The brazing of valves with solder connections should be carried out with care, using a low melting point filler material. Before starting to braze, it's necessary to disassemble the valves series 3122, while this operation is not necessary with solder connection valves. In any case, to avoid direct contact between the torch flame and the valve body, which could be damaged and compromise the proper functioning of the valve.

TABLE 1: General Characteristics

Catalogue Number	Connections					Kv Factor [m ³ /h]	Minimum Opening Pressure Differential [bar]	PED Directive			
	SAE Flare	ODS		ODM				TS [°C]		PS [bar]	Risk Category
		Ø [in.]	Ø [mm]	Ø [in.]	Ø [mm]			min.	max.		
3112/2	1/4"					0.5	0.1	- 40	+105	45	Art. 3.3
3112/3	3/8"					1.5					
3112/4	1/2"	-	-	-	-	1.8					
3112/5	5/8"					3.3					
3112/6	3/4"					5.0					
3122/M22		-	22	-	28	6.6					
3122/7		7/8"	-	1.1/8"	-						
3122/M28		-	28	1.3/8"	35	8.8					
3122/9		1.1/8"	-	1.3/8"	35						
3122/11		1.3/8"	35	1.5/8"		15.2					
3122/13		1.5/8"	-	2"		25.0					
3122/M42		-	42	2"							
3122/17		2.1/8"	54			40.0					I
3132/2		1/4"	-			0.5	0.1	- 40	+105	45	Art. 3.3
3132/3		3/8"	-			1.5					
3132/M10		-	10								
3132/M12		-	12			1.8					
3132/4		1/2"	-			3.3					
3132/5		5/8"	16			5.0					
3132/M18		-	18								
3132/6		3/4"	-			1.5					
3132/7		7/8"	22			1.8					
3133/M10		-	10			3.3					
3133/M12		-	12			5.0					
3133/5		5/8"	16			6.6	0.1	- 40	+105	45	Art. 3.3
3133/7		7/8"	22			8.8					
3142/7		7/8"	22			15.2					
3142/M28		-	28			25.0					
3142/9		1.1/8"	-								
3142/11		1.3/8"	35			40.0					
3142/13		1.5/8"	-			8.5					
3142/M42		-	42			9.5					
3142/17		2.1/8"	54			19.0					
3142/21		2.5/8"	-			37.0					
3142/25		3.1/8"	-			45.4					
3182/7		7/8"	22				0.1	- 35	+160	45	Art. 3.3
3182/M28		-	28								
3182/9		1.1/8"	-								
3182/11		1.3/8"	35								
3182/13		1.5/8"	-								
3182/M42		-	42								
3182/17		2.1/8"	54								

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TABLE 3: Refrigerant Flow Capacity [kW]

Catalogue Number	Liquid line						Suction line						Hot Gas line					
	R134a	R22	R404A	R407C	R410A	R507	R134a	R22	R404A	R407C	R410A	R507	R134a	R22	R404A	R407C	R410A	R507
3112/2	8.5	9.2	6.0	8.6	8.6	5.8	0.9	1.3	1.1	1.1	1.5	1.1	4.3	5.4	4.8	5.8	6.8	4.8
3112/3	25.5	27.5	17.9	25.8	25.8	17.3	2.8	3.8	3.3	3.4	4.5	3.3	12.8	16.2	14.4	17.4	20.4	14.3
3112/4	30.6	32.9	21.4	31.0	30.9	20.7	3.4	4.6	4.0	4.1	5.4	4.0	15.3	19.4	17.3	20.9	24.5	17.2
3112/5	56.1	60.4	39.3	56.9	56.7	38.0	6.2	8.4	7.4	7.5	9.9	7.4	28.1	35.6	31.7	38.3	44.9	31.5
3112/6	85.0	91.5	59.5	86.2	85.9	57.5	9.5	12.8	11.2	11.4	15.0	11.2	42.5	54.0	48.0	58.1	68.0	47.7
3122/M22	112.2	120.8	78.5	113.7	113.3	75.9	12.5	16.8	14.7	15.0	19.8	14.7	56.1	71.3	63.4	76.7	89.8	63.0
3122/7																		
3122/M28	149.6	161.0	104.7	151.6	151.1	101.2	16.6	22.4	19.6	20.0	26.4	19.6	74.8	95.0	84.5	102.3	119.7	84.0
3122/9																		
3122/11	258.4	278.2	180.9	261.9	261.0	174.8	28.7	38.8	33.9	34.5	45.6	33.9	129.2	164.2	145.9	176.6	206.7	145.0
3122/13	425.0	457.5	297.5	430.8	429.3	287.5	47.3	63.8	55.8	56.8	75.0	55.8	212.5	270.0	240.0	290.5	340.0	238.5
3122/M42																		
3122/17	680.0	732.0	476.0	689.2	686.8	460.0	75.6	102.0	89.2	90.8	120.0	89.2	340.0	432.0	384.0	464.8	544.0	381.6
3132/2	8.5	9.2	6.0	8.6	8.6	5.8	0.9	1.3	1.1	1.1	1.5	1.1	4.3	5.4	4.8	5.8	6.8	4.8
3132/3	25.5	27.5	17.9	25.8	25.8	17.3	2.8	3.8	3.3	3.4	4.5	3.3	12.8	16.2	14.4	17.4	20.4	14.3
3132/M10																		
3132/M12	30.6	32.9	21.4	31.0	30.9	20.7	3.4	4.6	4.0	4.1	5.4	4.0	15.3	19.4	17.3	20.9	24.5	17.2
3132/4																		
3132/5	56.1	60.4	39.3	56.9	56.7	38.0	6.2	8.4	7.4	7.5	9.9	7.4	28.1	35.6	31.7	38.3	44.9	31.5
3132/M18	85.0	91.5	59.5	86.2	85.9	57.5	9.5	12.8	11.2	11.4	15.0	11.2	42.5	54.0	48.0	58.1	68.0	47.7
3132/6																		
3132/7	85.0	91.5	59.5	86.2	85.9	57.5	9.5	12.8	11.2	11.4	15.0	11.2	42.5	54.0	48.0	58.1	68.0	47.7
3133/M10	25.5	27.5	17.9	25.8	25.8	17.3	2.8	3.8	3.3	3.4	4.5	3.3	12.8	16.2	14.4	17.4	20.4	14.3
3133/M12	30.6	32.9	21.4	31.0	30.9	20.7	3.4	4.6	4.0	4.1	5.4	4.0	15.3	19.4	17.3	20.9	24.5	17.2
3133/5	56.1	60.4	39.3	56.9	56.7	38.0	6.2	8.4	7.4	7.5	9.9	7.4	28.1	35.6	31.7	38.3	44.9	31.5
3133/7	85.0	91.5	59.5	86.2	85.9	57.5	9.5	12.8	11.2	11.4	15.0	11.2	42.5	54.0	48.0	58.1	68.0	47.7
3142/7	112.2	120.8	78.5	113.7	113.3	75.9	12.5	16.8	14.7	15.0	19.8	14.7	56.1	71.3	63.4	76.7	89.8	63.0
3142/M28	149.6	161.0	104.7	151.6	151.1	101.2	16.6	22.4	19.6	20.0	26.4	19.6	74.8	95.0	84.5	102.3	119.7	84.0
3142/9																		
3142/11	258.4	278.2	180.9	261.9	261.0	174.8	28.7	38.8	33.9	34.5	45.6	33.9	129.2	164.2	145.9	176.6	206.7	145.0
3142/13	425.0	457.5	297.5	430.8	429.3	287.5	47.3	63.8	55.8	56.8	75.0	55.8	212.5	270.0	240.0	290.5	340.0	238.5
3142/M42																		
3142/17	680.0	732.0	476.0	689.2	686.8	460.0	75.6	102.0	89.2	90.8	120.0	89.2	340.0	432.0	384.0	464.8	544.0	381.6
3142/21																		
3142/25																		
3182/7	144.5	155.6	101.2	146.5	145.9	97.8	16.1	21.7	19.0	19.3	25.5	19.0	72.3	91.8	81.6	98.8	115.6	81.1
3182/M28	161.5	173.9	113.1	163.7	163.1	109.3	18.0	24.2	21.2	21.6	28.5	21.2	80.8	102.6	91.2	110.4	129.2	90.6
3182/9																		
3182/11	323.0	347.7	226.1	327.4	326.2	218.5	35.9	48.5	42.4	43.1	57.0	42.4	161.5	205.2	182.4	220.8	258.4	181.3
3182/13	629.0	677.1	440.3	637.5	635.3	425.5	69.9	94.4	82.5	84.0	111.0	82.5	314.5	399.6	355.2	429.9	503.2	353.0
3182/M42																		
3182/17	771.8	830.8	540.3	782.2	779.5	522.1	85.8	115.8	101.2	103.1	136.2	101.2	385.9	490.3	435.8	527.5	617.4	433.1

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Standard rating conditions according to AHRI Standard 760-2007

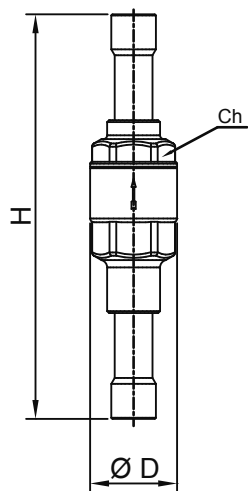
Condensing temperature	110 °F	(43,3 °C)
Liquid temperature	100 °F	(37,8 °C)
Subcooling	10 °R	(5,5 °K)
Evaporating temperature	40 °F	(4,4 °C)
Suction temperature	65 °F	(18,3 °C)
Superheating	25 °R	(13,9 °K)
Discharge temperature	160 °F	(71,1 °C)

TABLE 2: Dimensions and Weights

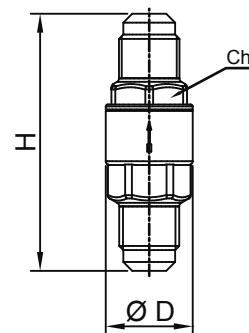
Catalogue Number	Dimensions [mm]							Weight [g]				
	H	H ₁	L	L ₁	Q	Ø D	Ch					
3112/2	56	-	-		-	19	16	86				
3112/3	68					23	20	131				
3112/4	73					25	22	166				
3112/5	85					29	25	242				
3112/6	98					36	32	400				
3122/M22	84.5					28.5	100		60	-		1180
3122/7		1090										
3122/M28		1625										
3122/9		2955										
3122/11		4225										
3122/13	101.5	34	118		68							
3122/M42	125.5	37	141		88							
3122/17	142	42.5	173		104							
3132/2	92	-	-		-	19	-	111				
3132/3	107					23		131				
3132/M10	132					25		171				
3132/M12						29		232				
3132/4	139					36		360				
3132/M18	165					23		131				
3132/6						25		171				
3132/7						29		232				
3133/M10	107					36		360				
3133/M12	132					23		131				
3133/5	139	25	171									
3133/7	165	29	232									
3142/7	84.5	28.5	170		60	-		1320				
3142/M28			201					1885				
3142/9			232					3315				
3142/11			101.5					34	232	68	4875	
3142/13			125.5					37	256	88	5690	
3142/M42			142					42.5	285	104	1280	
3142/17			142					42.5	329	104	1295	
3182/7	151	95	130.5	100.5	60			1855				
3182/M28								3255				
3182/9								4780				
3182/11								177	109.5	150	116	68
3182/13								221	123.5	195.5	143.5	104
3182/M42	221	123.5	195.5	143.5	104							
3182/17												

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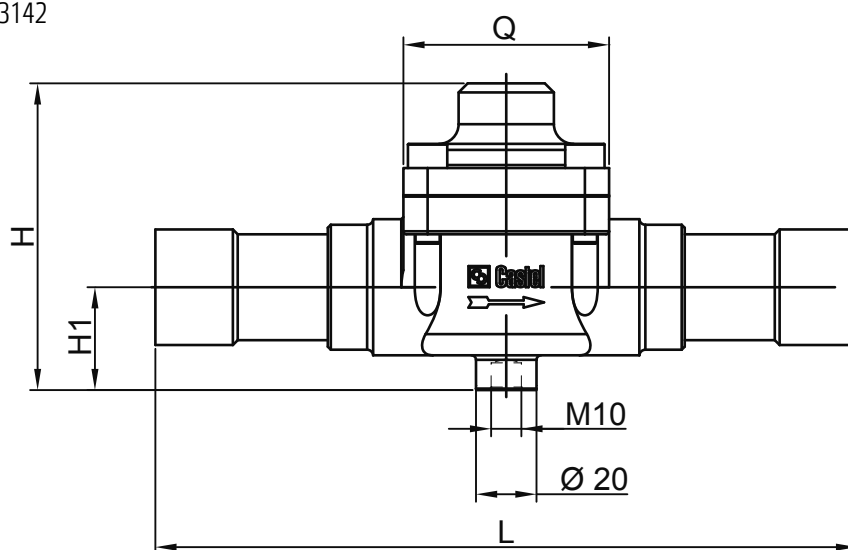
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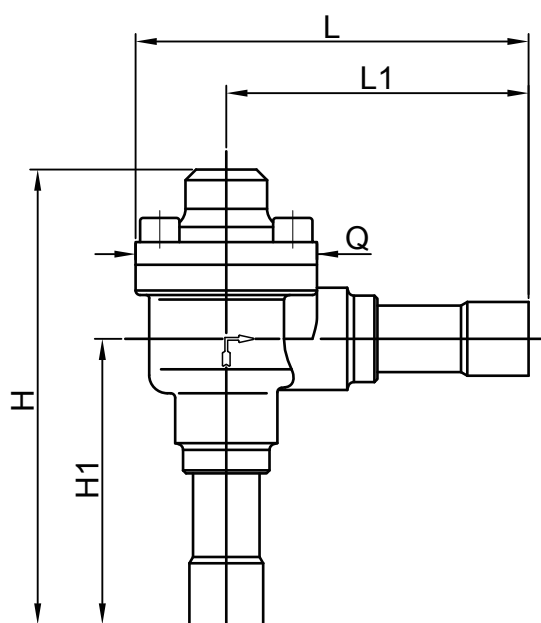
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