



## 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 <sup>3</sup> /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"	-	8.8					
3122/M28		-	28	1.3/8"	35	15.2					
3122/9		1.1/8"	-	1.3/8"	35	25.0					
3122/11		1.3/8"	35	1.5/8"	-	40.0					
3122/13		1.5/8"	-	2"	-	0.5					
3122/M42		-	42	2"	-	1.5					
3122/17		2.1/8"	54	-	-	1.8					
3132/2		1/4"	-	-	-	3.3					
3132/3		3/8"	-	-	-	5.0					
3132/M10		-	10	-	-	6.6	0.1	- 40	+105	45	Art. 3.3
3132/M12		-	12	-	-	8.8					
3132/4		1/2"	-	-	-	15.2					
3132/5		5/8"	16	-	-	25.0					
3132/M18		-	18	-	-	40.0					
3132/6		3/4"	-	-	-	0.5					
3132/7		7/8"	22	-	-	1.5					
3133/M10		-	10	-	-	1.8					
3133/M12		-	12	-	-	3.3					
3133/5		5/8"	16	-	-	5.0					
3133/7		7/8"	22	-	-	6.6	0.3				
3142/7		7/8"	22	-	-	8.8					
3142/M28		-	28	-	-	15.2					
3142/9		1.1/8"	-	-	-	25.0					
3142/11		1.3/8"	35	-	-	40.0					
3142/13		1.5/8"	-	-	-	0.1					
3142/M42		-	42	-	-	0.1					
3142/17		2.1/8"	54	-	-	0.1					
3142/21		2.5/8"	-	-	-	0.1					
3142/25		3.1/8"	-	-	-	0.1					
3182/7		7/8"	22	-	-	8.5	0.1	- 35	+160	45	Art. 3.3
3182/M28		-	28	-	-	9.5					
3182/9		1.1/8"	-	-	-	19.0					
3182/11		1.3/8"	35	-	-	37.0					
3182/13		1.5/8"	-	-	-	45.4					
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	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/M10	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	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
3182/7	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/M28																		
3182/9	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
3182/11	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
3182/13																		
3182/M42	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
3182/17																		

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Standard rating conditions according to AHRI Standard 760-2007

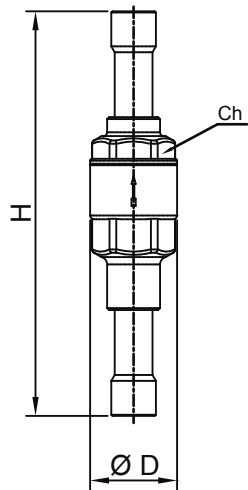
Condensing temperature	110 °F	(43,3 °C)
Liquid temperature	100 °F	(37,8 °C)
Subcooling	10 °R	(5,5 °K)
Evaporating temperature	40 °F	(4,4 °C)
Suction temperature	65 °F	(18,3 °C)
Superheating	25 °R	(13,9 °K)
Discharge temperature	160 °F	(71,1 °C)

TABLE 2: Dimensions and Weights

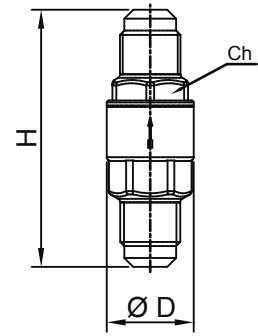
Catalogue Number	Dimensions [mm]							Weight [g]							
	H	H <sub>1</sub>	L	L <sub>1</sub>	Q	Ø D	Ch								
3112/2	56	-	-	-	-	19	16	86							
3112/3	68					23	20	131							
3112/4	73					25	22	166							
3112/5	85					29	25	242							
3112/6	98					36	32	400							
3122/M22	84.5					28.5	100	-	60	-	-	1180			
3122/7		1090													
3122/M28		1625													
3122/9		2955													
3122/11	101.5	34	118	-	-	-	-	4225							
3122/13	125.5	37	141					68	111						
3122/M42	142	42.5	173					88	131						
3122/17	92	-	-					-	-	-	-	171			
3132/2	107											19	232		
3132/3	132											23	360		
3132/M10				25	131										
3132/M12	139			29	171										
3132/4	165			-	-	-	-					-	-	232	
3132/5														36	360
3132/M18														23	131
3132/6														25	171
3132/7	107			-	-	-	-					-	-	232	
3133/M10	132	29	360												
3133/M12	139	36	131												
3133/5	165	23	171												
3133/7	107	25	232												
3133/M10	132	29	360												
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	285	104	1295										
3142/21	142	42.5	285	104	1855										
3142/25	142	42.5	329	104	3255										
3182/7	151	95	130.5	100.5	60	-	-	4780							
3182/M28								1280							
3182/9								1295							
3182/11								177	109.5	150	116	68	1855		
3182/13								177	109.5	150	116	68	3255		
3182/M42								221	123.5	195.5	143.5	104	4780		
3182/17	221	123.5	195.5	143.5	104	4780									

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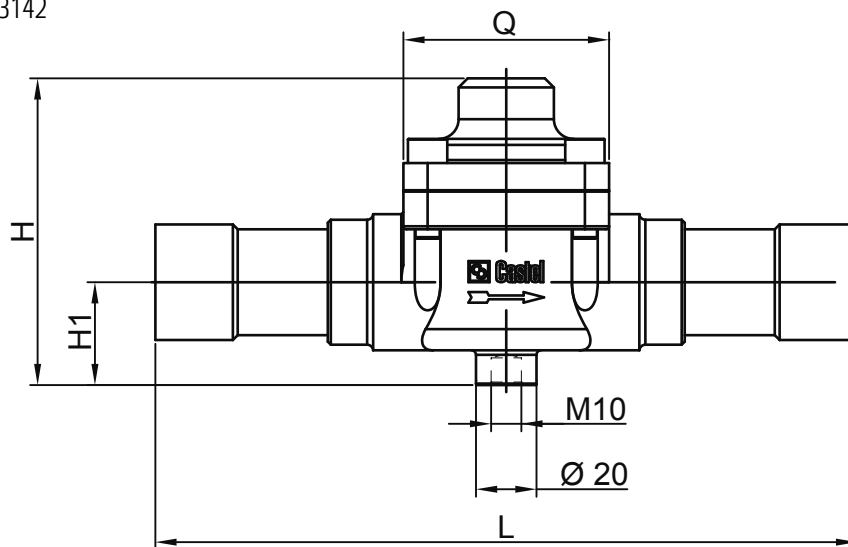
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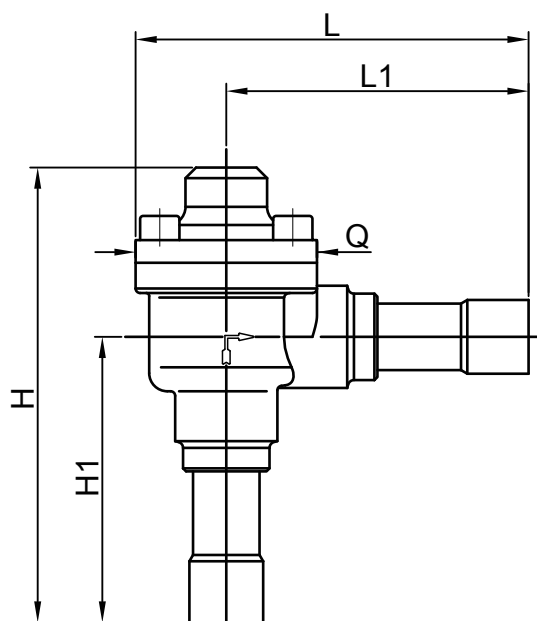
3112



3142



3182



3122 3781

