

FROM QUALITY OUR NATURAL DEVELOPMENT

Achieved the goal of fifty years working in the industry of Refrigeration and Air Conditioning, Castel Quality Range of Products is well known and highly appreciated all over the world. Quality is the main issue of our Company and it has a special priority, in every step, all along the production cycle. UNI EN ISO 9001:2008, issued by ICIM, certifies the Quality System of the Factory. Moreover Castel Products count a number of certifications in conformity with EEC Directives and with European and American Quality Approval.

We produce on high tech machinery and updated automatic production lines, operating in conformity with the safety and environment standards currently enforced.

Castel offers to the Refrigeration and Air Conditioning Market and to the Manufacturers fully tested products suitable with HCFC and HFC Refrigerants currently used in the Refrigeration & Air Conditioning Industry.

July 2011

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EXTERNAL LEAKAGE

All the products illustrated in this Handbook are submitted, one by one, to tightness tests besides to functional tests. Allowable external leakage, measurable during the test, agrees to the definition given in Par. 9.4 of EN 12284 : 2003 Standard:

"During the test, no bubbles shall form over a period of at least one minute when the specimen is immersed in water with low surface tension, ...".

PRESSURE CONTAINMENT

All the products illustrated in this Handbook, if submitted to hydrostatic test, guarantee a pressure strength at least equal to 1,43 x PS in compliance with the Directive 97/23/EC.

All the products illustrated in this Handbook, if submitted to burst test, guarantee a pressure strength at least equal to 3 x PS according to EN 378-2 : 2008 Standard. A great number of products illustrated in this Handbook can guarantee an higher pressure strength, equal to 5 x PS according the UL Standard 207: 2009.

WEIGHTS

The weights of the items listed in this Handbook include packaging.

GUARANTEE

All Castel products are covered by a 12 - months warranty. This warranty covers all products or parts thereof that turn out to be defective within the warranty period. In this case, at his own expenses, the customer shall return the defective item with a detailed description of the claimed defects. The warranty doesn't apply if the defect of Castel products are due to mistakes either by customer or by third parties such wrong installations, use contrary to Castel indications, tampering. In case of defects of its own products, Castel will only replace the defective goods and will not refund damages of any kind.

The technical data shown on this catalogue are indicative. Castel reserves the right to modify the same at any time without any previous notice.

The products listed in this handbook are protected according to the law.



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

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
3142/25																		
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	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
3182/9																		
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	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/M42																		
3182/17																		

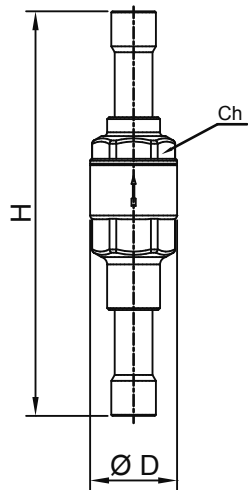
Standard rating conditions according to AHRI Standard 760-2007

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)

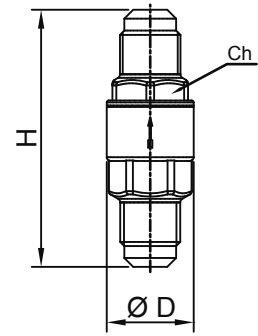
TABLE 2: Dimensions and Weights

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	101.5	34	118	-	-	-	-	4225						
3122/13	125.5	37	141					68	1625					
3122/M42	142	42.5	173					88	2955					
3122/17	92	-	-					-	-	-	-	4225		
3132/2	107											19	111	
3132/3	132											23	131	
3132/M10				25	171									
3132/M12	139			29	232									
3132/4	165			-	-	-	-					-	-	360
3132/5		36	360											
3132/6		23	131											
3132/7		25	171											
3133/M10	107	-	-	-	-	-	-	232						
3133/M12	132							29	232					
3133/5	139							36	360					
3133/7	165							23	131					
3142/7	84.5							28.5	170	60	-	-	-	1320
3142/M28									201					1885
3142/9		232	3315											
3142/11		101.5	34	232	68	1885								
3142/13	125.5	37	256	88	3315									
3142/M42	142	42.5	285	104	-	-	-	4875						
3142/17			329					5690						
3142/21			1280											
3142/25	151	95	130.5	100.5	60	-	-	1295						
3182/7								1295						
3182/M28								1855						
3182/9								3255						
3182/11	177	109.5	150	116	68	-	-	1855						
3182/13	221	123.5	195.5	143.5	104			3255						
3182/M42								4780						
3182/17								4780						

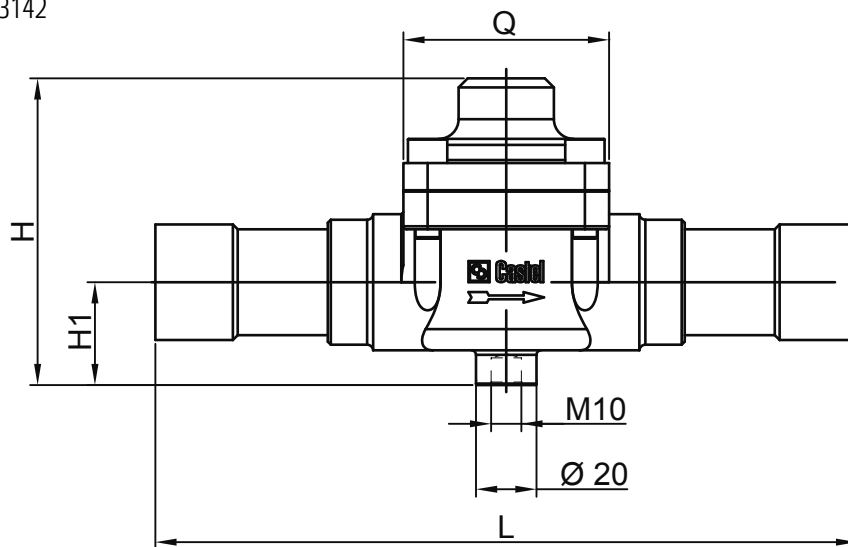
3132
3133



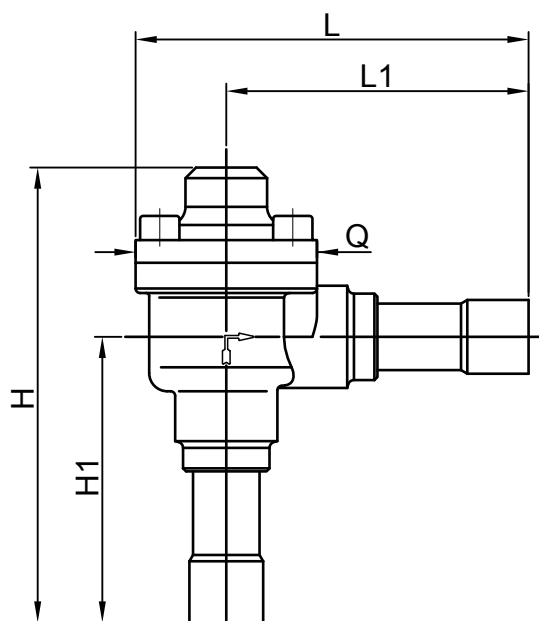
3112



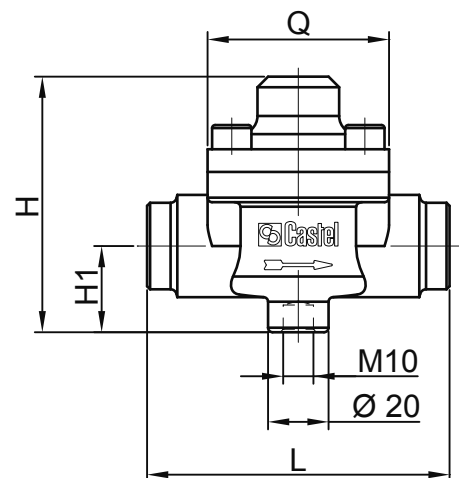
3142



3182



3122





APPLICATIONS

The hermetic 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.

CONSTRUCTION

These valves are available in the following two types:

- Two-ways shut-off valves types 6010/2 and 6012/22
- Three-ways valves; two main connections plus a third one for charging types:
 - 6065, with right access connection
 - 6075, with left access connection

N.B. : the third way must be equipped with a valve core (for example type 8394/A or other similar ones) to be ordered separately.

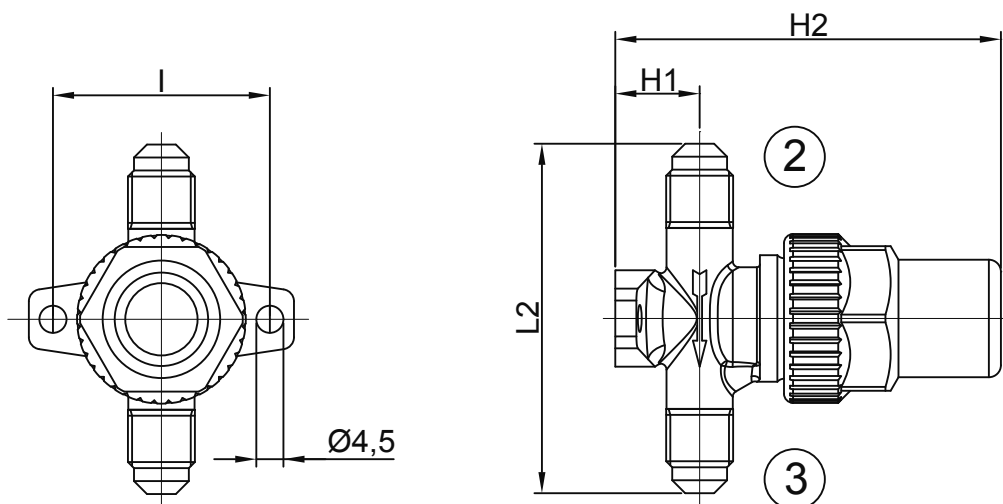
The main parts of the hermetic valves are made with the following materials:

- Hot forged brass EN 12420 - CW 617N for body
- Steel, with proper surface protection, or brass for the spindle
- Chloroprene rubber (CR) and aramidic fibers for gland seal
- Glass reinforced PBT for cap that covers the spindle

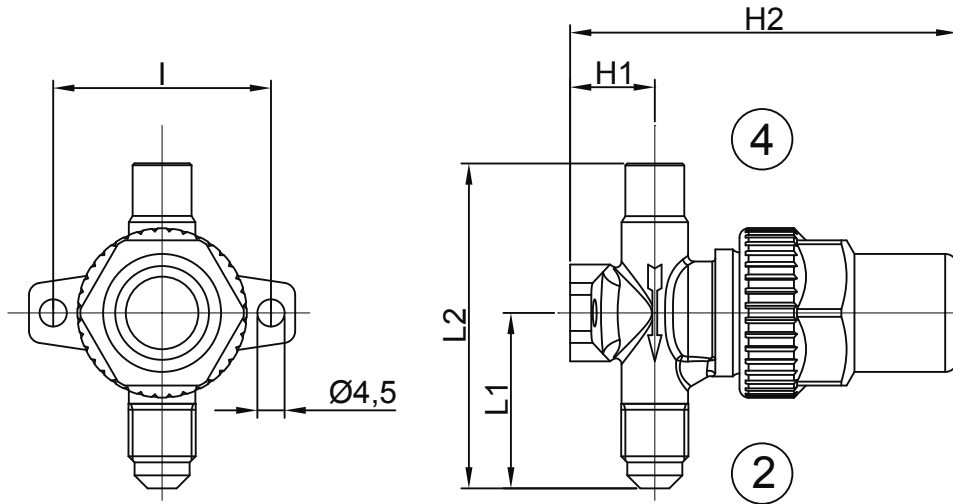
TABLE 1: General Characteristics										
Catalogue Number	Connections				Kv Factor [m ³ /h]	TS [°C]		PS [bar]	Risk Category according to PED	
	SAE Flare			ODS (4)		min.	max.			
	(1)	(2)	(3)	Ø [in.]						Ø [mm]
6010/2	1/4"	1/4"	1/4"	-	-	0.27	-40	+130	Art. 3.3	
6012/22		1/4"	-	1/4"						
6020/222		1/4"	1/4"	-						
6020/233		3/8"	3/8"	-						
6020/244		1/2"	1/2"	-						
6020/255		5/8"	5/8"	-						
6062/22M6		1/4"	-	-	6	0.46	-40	+110		
6062/23M10		3/8"			10					1.38
6072/22M6		1/4"			6					0.46
6072/23M8		3/8"			8					1.29
6072/23M10		3/8"			10					1.38
6072/24M12		1/2"			12					2.55
6072/25M16		5/8"			16					3.40

TABLE 2: Dimensions and Weights													
Catalogue Number	Dimensions [mm]									Weight [g]			
	H ₁	H ₂	H ₃	H ₄	H ₅	l	L ₁	L ₂	P ₁				
6010/2	14	66	-	-	-	36	-	58	-	160			
6012/22			29	55.5									
6020/222	25	51	61	115			62	-			-	-	360
6020/233			60				67						
6020/244			77				520						
6020/255			79				530						
6062/22M6	25.5	31	56.5	-	1	-	25	72	30.5	205			
6062/23M10		33	58.5							200			
6072/22M6		31	56.5							205			
6072/23M8		33	58.5							210			
6072/23M10		33	58.5							220			
6072/24M12		29.5	38.5							68	-	1	-
6072/25M16	39.5		69	320									

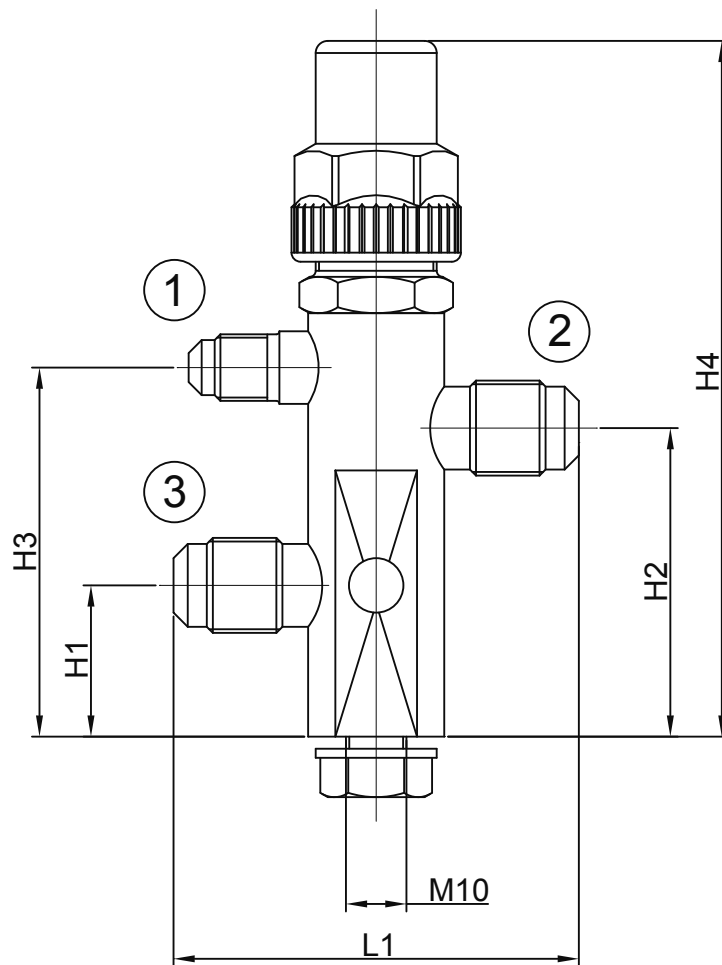
6010



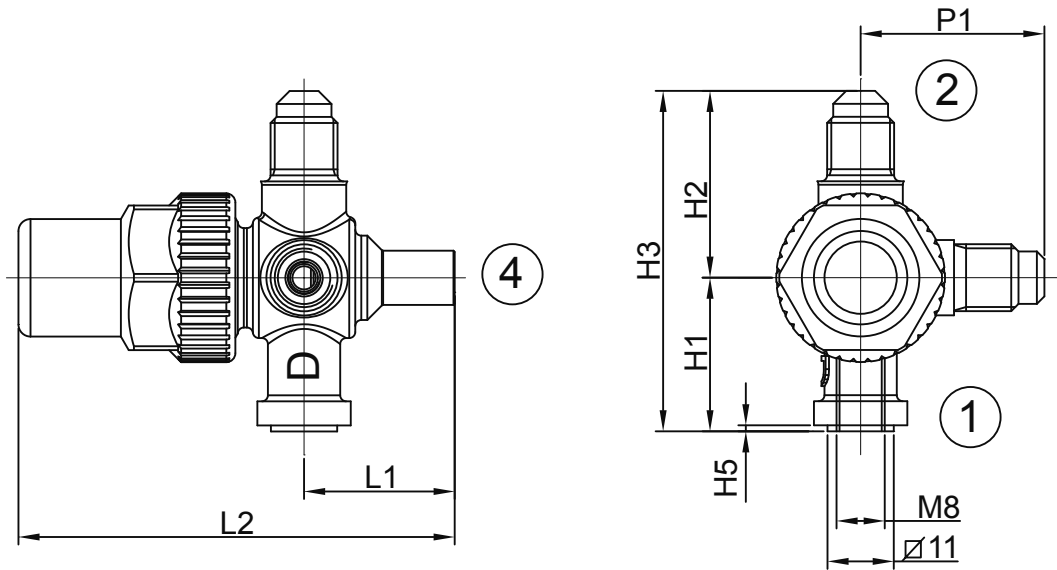
6012



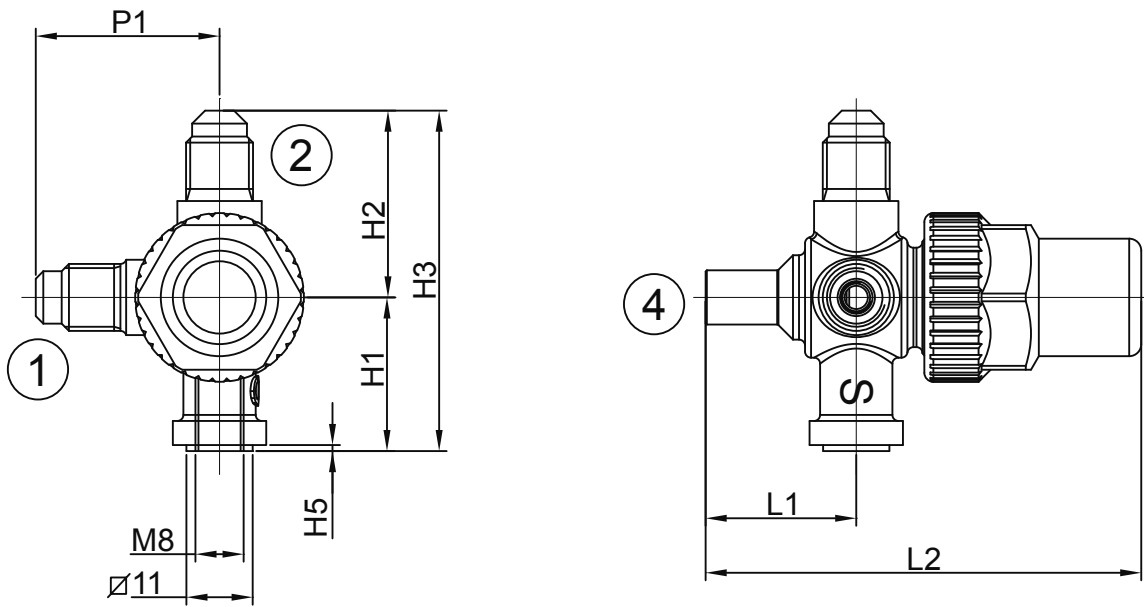
6020



6062



6072





APPLICATIONS

The receiver 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.

CONSTRUCTION

These valves are available in the following two types:

- Two-ways valves, 90° angle connections, types 6110 and 6120
- Three-ways valves; two main connections (90° angle) plus a third one for charging, type 6132. The access connection may be shut off by the back-seating of the spindle
- Two-ways valves, 120° angle connections, type 6140

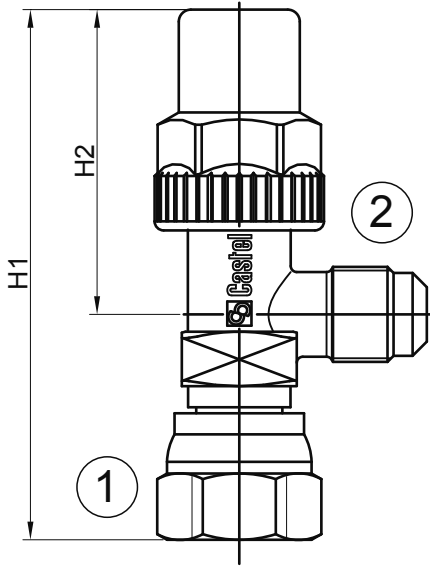
The main parts of the receiver valves are made with the following materials:

- Hot forged brass EN 12420 - CW 617N for body
- Steel, with proper surface protection, for the spindle
- Chloroprene rubber (CR) and aramidic fibers for gland seal
- Glass reinforced PBT for cap that covers the spindle

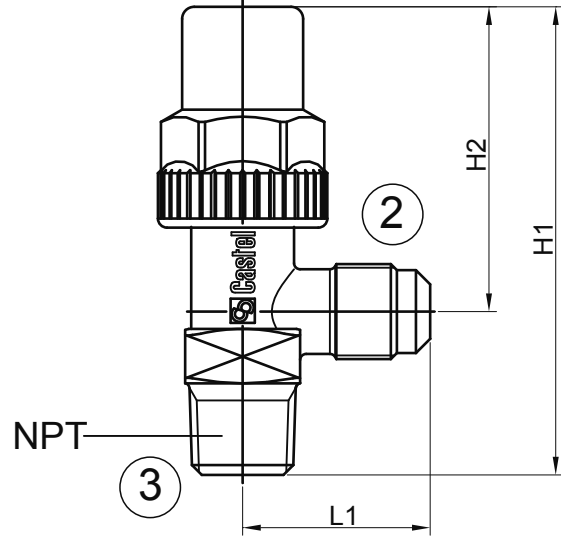
TABLE 1: General Characteristics									
Catalogue Number	Connections			Kv Factor [m ³ /h]	TS [°C]		PS [bar]	Risk Category according to PED	
	SAE Flare		NPT		min.	max.			
	(1)	(2)	(3)						
6110/21	-	1/4"	1/8"	0.44	-60	+130	45	Art. 3.3	
6110/22		1/4"	1/4"						
6110/X15		1/4"	-						
6110/23	1/4" f	1/4"	3/8"	0.45					
6110/32		3/8"	1/4"	1.35					
6110/33		3/8"	3/8"						
6110/X13	3/8" f	3/8"	-						
6110/43	-	1/2"	3/8"	2.40					
6110/44		1/2"	1/2"	3.40					
6110/54		5/8"	1/2"						
6110/66		3/4"	3/4"	6.00					
6120/22		1/4"	1/4"	0.44					
6120/23		1/4"	3/8"	0.45					
6120/32		3/8"	1/4"	1.35					
6120/33		3/8"	3/8"	1.35					
6120/43		1/2"	3/8"	2.40					
6120/44		1/2"	1/2"	3.40					
6120/54		5/8"	1/2"						
6120/66		3/4"	3/4"	6.00					
6132/22	1/4"	1/4"	1/4"	0.45					+110
6132/33		3/8"	3/8"	1.20					
6132/44		1/2"	1/2"	2.20					
6132/54		5/8"	1/2"	3.85					
6140/22	-	1/4"	1/4"	0.36					+130
6140/23		1/4"	3/8"						

TABLE 2: Dimensions and Weights								
Catalogue Number	Dimensions [mm]				Weight [g]			
	H ₁	H ₂	L ₁	L ₂				
6110/21	70.5	48	27.5	-	100			
6110/22	72							
6110/X15	83							
6110/23	77	50	29					
6110/32			31		-			
6110/33								
6110/X13	87							
6110/43	88	55.5	34.5					
6110/44	92							
6110/54								
6110/66					128	88	42.5	
6120/22	27.5				-	72	48	110
6120/23	30					77	50	
6120/32		80						
6120/33		80						
6120/43	33	93	55.5					
6120/44		94						
6120/54								
6120/66	40	129.5	88			670		
6132/22	56	29	94			64	240	
6132/33			97				250	
6132/44			63.5				36	112
6132/54	115	365						
6140/22	57	-	69		46	115		
6140/23						125		

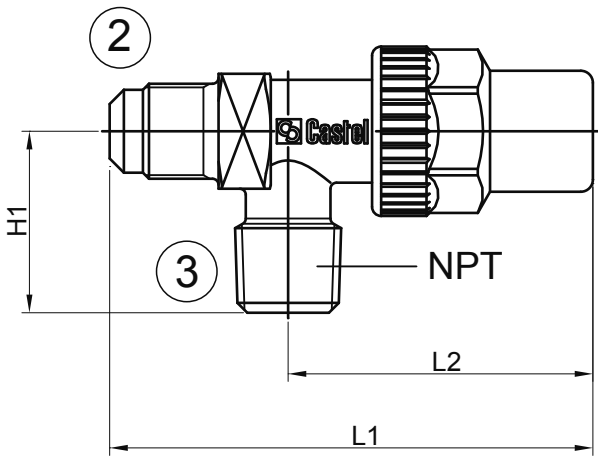
6110/X13
6110/X15



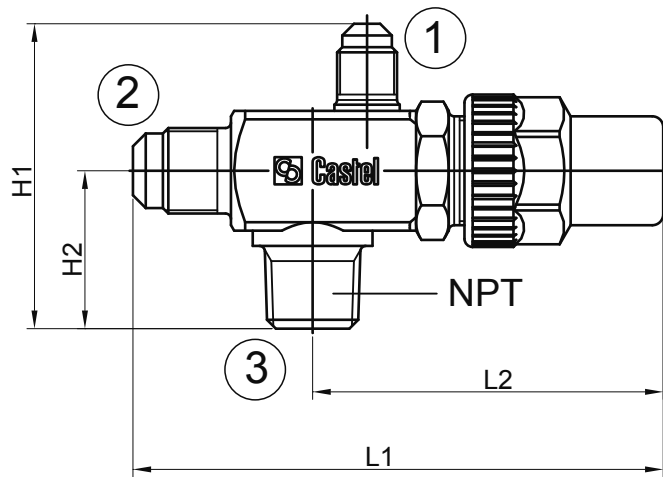
6110



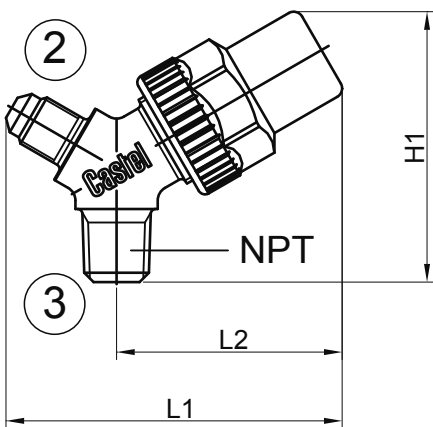
6120



6132



6140



APPLICATIONS

The stop 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.

CONSTRUCTIONS

The very compact design of these brass valves allows minimum dimensional sizes and the fixing flange complies with current market requirements.

Valves 6170 and 6175 must be completed with the following devices, to be ordered separately:

- Valve code 8394/A or code 8394/B
- Cap with gasket code 8392/A

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

- Hot forged brass EN 12420 - CW 617N for body
- Brass EN 12164 - CW 614N for spindle and protection cap
- Chloroprene rubber (CR) for outlet seal gaskets for series 6165 and 6175
- Chloroprene rubber (CR) and aramidic fibers for gland seal, only for series 6170

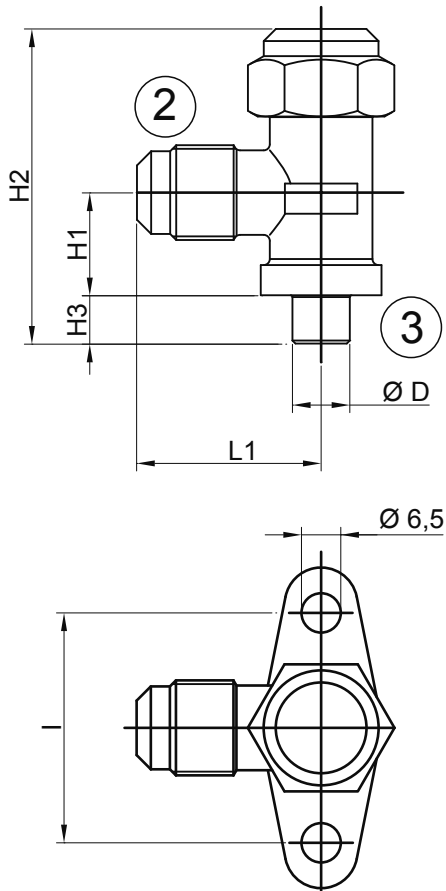
TABLE 1: General Characteristics

Catalogue Number	N° vie	Connections				Kv Factor [m³/h]	TS [°C]		PS [bar]	Risk Category according to PED
		SAE Flare		ODS (3)			min.	max.		
		(1)	(2)	Ø [in.]	Ø [mm]					
6165/22	2	-	1/4"	1/4"	-	0.68	-20	+110	45	Art. 3.3
6165/33			3/8"	3/8"		1.70				
6175/33	3	1/4"	3/8"	3/8"	16	1.70				
6175/44			1/2"	1/2"		3.40				
6175/55			5/8"	5/8"		4.60				
6170/66			3/4"	3/4"		9.00				
6170/77			7/8"	7/8"		10.80				

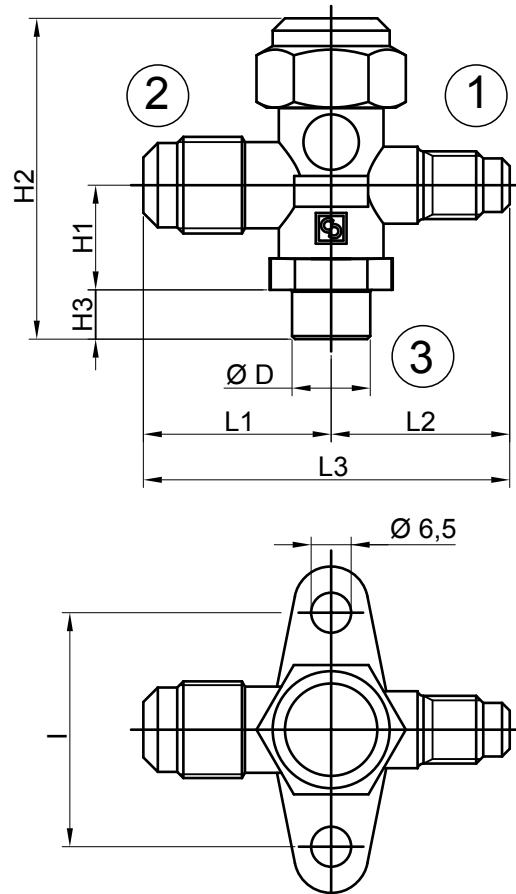
TABLE 2: Dimensions and Weights

Catalogue Number	Dimensions [mm]								Weight [g]
	H ₁	H ₂	H ₃	D	L ₁	L ₂	L ₃	l	
6165/22	17	52	8	9.5	29	-	-	38	113
6165/33				12.7	30,5				120
6175/33				29	59.5	135			
6175/44	20	65	8	15.9	36	31	67	38	225
6175/55				19.0					235
6170/66	28.5	104	12	22.2	47	36	83	50	655
6170/77				28.6					670

6165



6170
6175



APPLICATIONS

The diaphragm 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.

CONSTRUCTION

Diaphragm valves don't have gland seal. The external sealing is ensured by some thin metal discs (diaphragms), which hermetically divide the spindle chamber from the fluid flow area.

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

- Hot forged brass EN 12420 – CW 617N for body
- Brass EN 12164 – CW 614N for spindle
- Harmonic steel for spring
- nylon for seat sealing gaskets

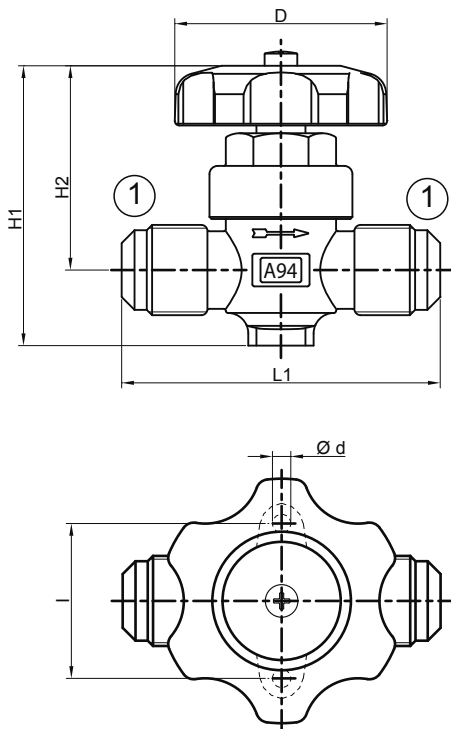
TABLE 1: General Characteristics

Catalogue Number	Connections			Kv Factor [m³/h]	TS [°C]		PS [bar]	Risk Category according to PED
	SAE Flare (1)	ODS (2)			min.	max.		
		Ø [in.]	Ø [mm]					
6210/2	1/4"	-	-	0.28	-35	+90	28	Art. 3.3
6210/3	3/8"			1.00				
6210/4	1/2"			1.30				
6210/5	5/8"			1.80				
6210/6	3/4"			3.65				
6220/M6	-			6				
6220/2	1/4"	-	1.00					
6220/3	3/8"	-						
6220/M10	-	10	1.30					
6220/4	1/2"	-	1.80					
6220/5	5/8"	16	3.65					
6220/6	3/4"	-						
6220/7	7/8"	-						

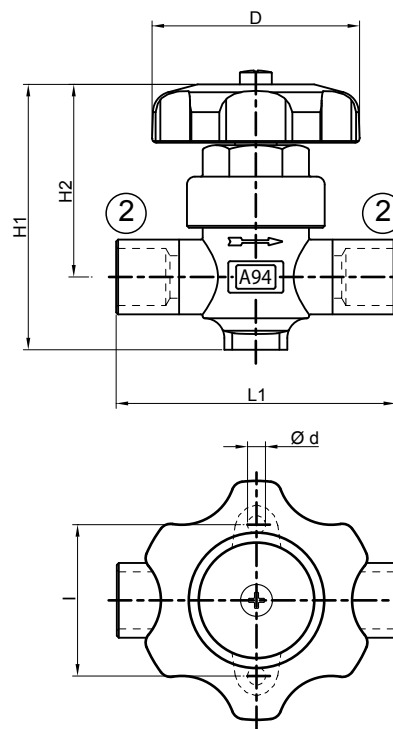
TABLE 2: Dimensions and Weights

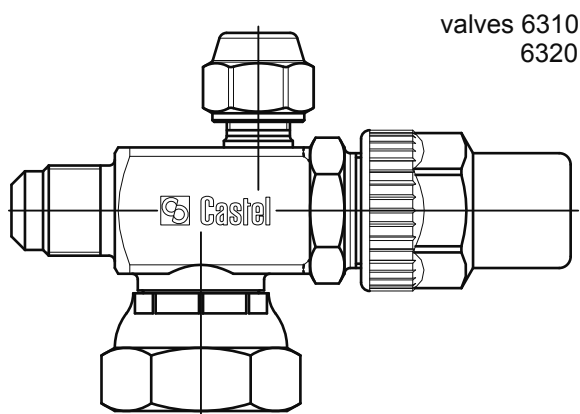
Catalogue Number	Dimensions [mm]						Weight [g]	
	H ₁	H ₂	L ₁	d	l	D		
6210/2	68	53.5	58	4.5	36	52	200	
6210/3	72		74		38		325	
6210/4			78		340			
6210/5			340					
6210/6	86	62.5	98	6.2	50	60	655	
6220/M6	68	53.5	53	4.5	36	52	195	
6220/2			72		61		38	300
6220/3					70			305
6220/M10					71			
6220/4					92			580
6220/5			86		62.5		94	6.2
6220/6	645							
6220/7								

6210



6220

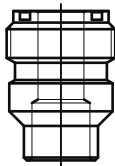




valves 6310
6320



gasket 7990



coupling 7910

APPLICATIONS

The rotalock 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.

CONSTRUCTION

Rotalock valves, mounted with 7910 fittings and 7990 gaskets, assure fast installation and safe sealing.

Before tightening it is possible to turn the valve in every direction.

All Rotalock valves have an additional charging connection, which can be excluded by the back sealing of the spindle.

Fittings 7910 and gaskets 7990 have to be ordered separately

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

- Hot forged brass EN 12420 - CW 617N for body
- Steel, with proper surface protection, for the spindle
- Chloroprene rubber (CR) and aramidic fibers for gland seal
- Glass reinforced PBT for cap that covers the spindle
- Steel bar EN 10277-3 11 S Mn Pb 37 for 7910 fittings
- P.T.F.E. for 7990 gaskets

TABLE 1: General Characteristics

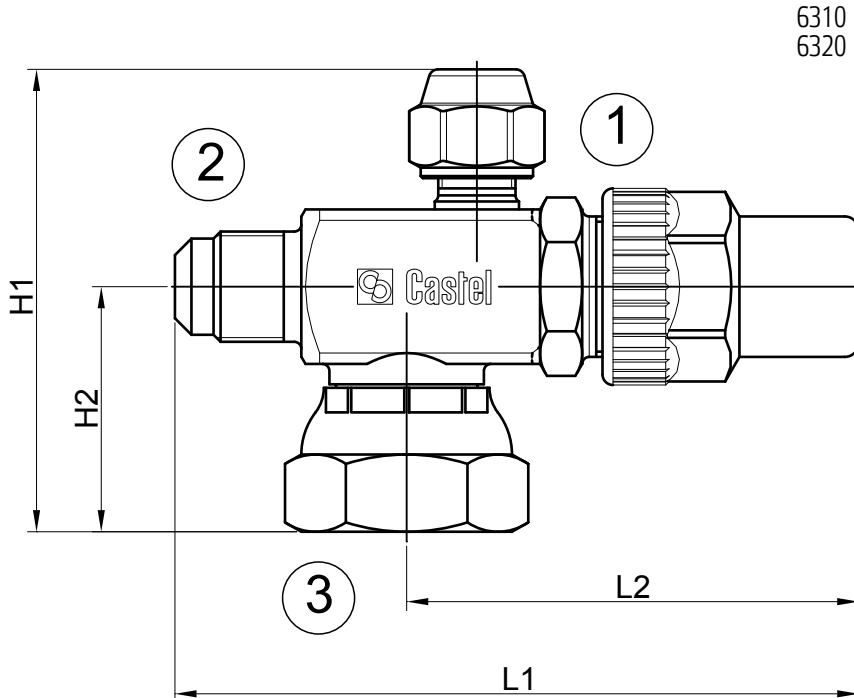
Catalogue Number	Connections			Union code	Gasket code	Factor Kv [m³/h]	TS [°C]		PS [bar]	Risk Category according to PED
	SAE Flare		swivel nut				min.	max.		
	(1)	(2)								
6310/2	1/4"	1/4"	3/4" UNF	7910/6	7990/6	0.46	-60	+110	45	Art. 3.3
6310/3		3/8"				1/2"				
6310/4		1/2"								
6320/3		3/8"	1" UNS	7910/8	7990/8	1.40				
6320/4		1/2"				3.10				
6320/5		5/8"				3.4				
6320/6		3/4"								

TABLE 2: Dimensions and Weights

Catalogue Number	Dimensions [mm]				Weight [g]	
	H ₁	H ₂	L ₁	L ₂		
6310/2	68.5	33.5	94	64	290	
6310/3			97		300	
6310/4					330	
6320/3	69.5	34.5	114.5	77.5	400	
6320/4	72	36.5			415	
6320/5					117.5	425
6320/6					425	

TABLE 3: Unions Dimensions and Weights

Catalogue Number	Connections		L	Weight [g]	Gasket code	
	Threaded	Solder [mm]				
		ODF				ODM
7910/6	3/4" UNF	10	13	26	28	7990/6
7910/8	1" UNS	-	19		47	7990/8



6310
6320

APPLICATIONS

The capped 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.

CONSTRUCTION

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

- Hot forged brass EN 12420 – CW 617N for body
- Steel, with proper surface protection, for the spindle
- Chloroprene rubber (CR) and aramidic fibers for gland seal
- Glass reinforced PBT for cap that covers the spindle

INSTALLATION

The brazing of capped valves with solder connections, type 6420, should be carried out with care, using a low melting point filler material. It's necessary to remove the spindle assembly, with gland too, before brazing the body. It's important to avoid direct contact between the torch flame and the valve body, which could be damaged and compromise the proper functioning of the valve.

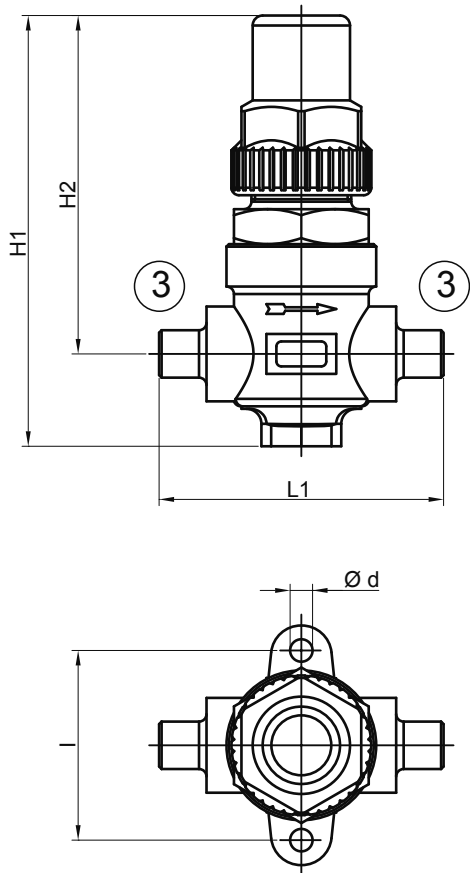
TABLE 1: General characteristics

Catalogue Number	Connections				Kv Factor [m ³ /h]	TS [°C]		PS [bar]	Risk Category according to PED		
	SAE Flare		ODS (3)			min.	max.				
	(1)	(2)	Ø [in.]	Ø [mm]							
6410/2	1/4"	-	-	-	0.40	-60	+110	45	Art. 3.3		
6410/3	3/8"				1.00						
6410/4	1/2"				1.45						
6410/5	5/8"				1.70						
6410/6	3/4"				3.50						
6420/2	-				1/4"					0.40	
6420/3					3/8"					1.00	
6420/3S3					3/8" - IN						
6420/M10	-				-					10	1.45
6420/M12					-					12	
6420/4					1/2"					-	
6420/5					5/8"					16	1.70
6420/M18					-					18	3.50
6420/6					3/4"					-	
6420/M22					-					22	
6420/7	7/8"	-									

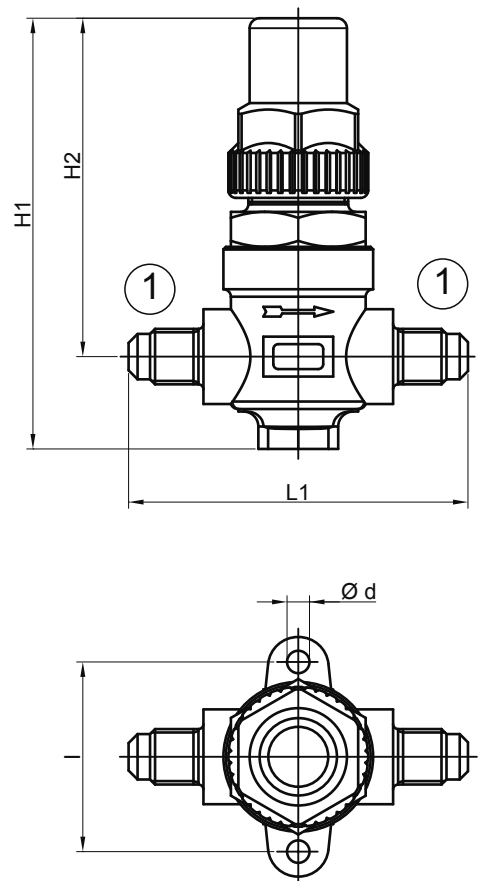
TABLE 2: Dimensions and Weights

Catalogue Number	Dimensions [mm]							Weight [g]
	H ₁	H ₂	L ₁	L ₂	L ₃	d	l	
6410/2	85.5	67	68	-	-	4.5	38	305
6410/3			74					325
6410/4			78					330
6410/5			98					695
6410/6			113					89.5
6420/2	85.5	67	57	-	-	4.5	38	305
6420/3			61					
6420/3S3			67.5					
6420/M10			61					
6420/M12			70					
6420/4			71					
6420/5			92					700
6420/6	113	89.5	94	-	-	6.2	50	685
6420/M22			690					
6420/7								

6420



6410





APPLICATIONS

The globe 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.

CONSTRUCTION

These valves are available in the following two types:

- 6512 with straight solder connections
- 6532 with solder angle connections.

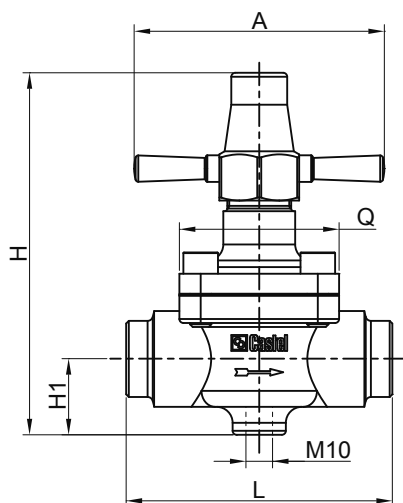
The main parts of the globe valves are made with the following materials:

- Hot forged brass EN 12420 – CW 617N for body, cover and cap that covers the spindle
- Steel, with proper surface protection, for the spindle
- Chloroprene rubber (CR) and aramid fibers for gland seal
- Metal-rubber laminated for outlet seal gaskets
- P.T.F.E. for seat gaskets

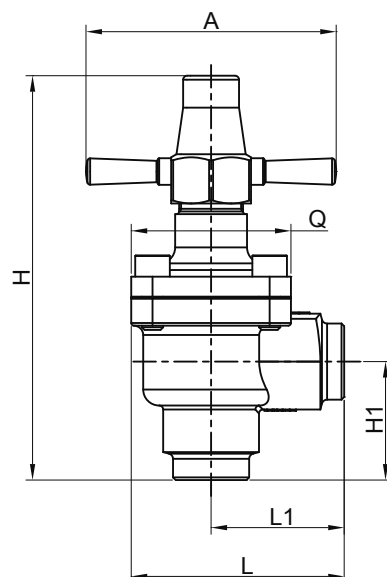
TABLE 1: General Characteristics									
Catalogue Number	Connections				Kv Factor [m ³ /h]	TS [°C]		PS [bar]	Risk Category according to PED
	ODS		ODM			min.	max.		
	Ø [in.]	Ø [mm]	Ø [in.]	Ø [mm]					
6512/M22	-	22	-	28	7.1	-35	+160	45	Art. 3.3
6512/7	7/8"	-	1.1/8"	-					
6512/M28	-	28	1.3/8"	35	8.4				
6512/9	1.1/8"	-	1.3/8"	35					
6512/11	1.3/8"	35	1.5/8"	-	15.0				
6512/13	1.5/8"	-	2"	-					
6512/M42	-	42	2"	-	25.0				
6512/17	2.1/8"	54	-	-					
6532/M22	-	22	-	28	8.2				
6532/7	7/8"	-	1.1/8"	-					
6532/M28	-	28	1.3/8"	35	9.1				
6532/9	1.1/8"	-	1.3/8"	35					
6532/11	1.3/8"	35	1.5/8"	-	18.7				
6532/13	1.5/8"	-	2"	-					
6532/M42	-	42	2"	-	38.0				
6532/17	2.1/8"	54	-	-					
					48.5				

TABLE 2: Dimensions and Weights							
Catalogue Number	Dimensioni [mm]						Weight [g]
	H	H ₁	L	L ₁	Q	A	
6512/M22	136	28.5	100	-	60	94	1415
6512/7							
6512/M28							
6512/9							
6512/11							166
6512/13	199	37	141	88	138	3500	
6512/M42							
6512/17							215
6532/M22	147	44.5	80	50	60	94	1350
6532/7							
6532/M28							
6532/9	165	52.5	93	59	68	126	1910
6532/11							
6532/13							
6532/M42	238	65	139	86.5	104	138	4920
6532/17							4765

6512



6532





APPLICATIONS

The ball 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.

Ball valves series 6590 are approved by Underwriters Laboratories Inc. of the United States according to UL 207 Standard.

CONSTRUCTIONS

The specific design of Castel ball valves:

- ensures the internal equilibrium of pressures when the valve is closed,
- permits the bi-directional flow of the refrigerant and, consequently, the assembly on the plant without taking into account the direction of the refrigerant.
- prevents any risk of ejection or explosion of the spindle.

The opening and closing of the valve is realized by turning the spindle one fourth of a turn. A standstill in turning realizes either a full opening or a full closing, moreover the arrow printed on the spindle head shows the flow direction.

The electric welding of the bodies and the seal gaskets, assembled on the spindle, prevent any leaks.

Ball valves are available in the following two types:

Type 6590 with full port, and type 6591 with reduced port.

Type 6590/A with full port and access fitting. These ball valves are equipped with valve core 8394/A and cap 8392/A.

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

- Hot forged brass EN 12420 - CW 617N for body
- Hot forged brass EN 12420 - CW 617N, chromium plated, for ball
- Copper tube EN 12735-1 - Cu-DHP for solder connections
- Steel, with proper surface protection, for the spindle.
- Chloroprene rubber (CR) for outlet seal gaskets
- P.T.F.E. for seat ball gaskets
- Glass reinforced PBT for cap that covers the spindle. Hot forged brass EN 12420 - CW 617N for caps on sizes from 6590/M64A up to 6591/34A.

INSTALLATION

The brazing of ball valves should be carried out with care, using a low melting point filler material. 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 valve.

TABLE 1: General Characteristics

Catalogue Number		Connections		Ball Port Ø [mm]	Kv Factor [m³/h]	PED Directive			
without access fitting	without access fitting	ODS				TS [°C]		PS [bar]	Risk Category
		Ø [in.]	Ø [mm]			min.	max.		
6590/M6	-	-	6	10	0.8	-40	+150	45 (1)	Art. 3.3
6590/2		1/4"	-		3				
6590/3	6590/3A	3/8"	-						
6590/M10	6590/M10A	-	10						
6590/M12	6590/M12A	-	12						
6590/4	6590/4A	1/2"	-	5					
6590/M15	6590/M15A	-	15	15	14.5				
6590/5	6590/5A	5/8"	16						
6590/M18	6590/M18A	-	18						
6590/6	6590/6A	3/4"	-						
6590/7	6590/7A	7/8"	22	19	24				
6590/M28	6590/M28A	-	28	25	40				
6590/9	6590/9A	1.1/8"	-						
6590/11	6590/11A	1.3/8"	35	32	68				
6590/13	6590/13A	1.5/8"	-	38	100				
6590/M42	6590/M42A	-	42						
6590/17	6590/17A	2.1/8"	54	50	178				
6590/M64	6590/M64A	-	64	65	293				
-	6590/21A	2.5/8"	-						
-	6590/25A	3.1/8"	80	80	430	45	I		
-	-	-	-	-	-	42			
6591/5	-	5/8"	16	10	5	-40	+150	45	Art. 3.3
6591/7		7/8"	22	15	14.5				
6591/M28		-	28	19	24				
6591/9		1.1/8"	-						
6591/11		1.3/8"	35	25	40				
6591/13		1.5/8"	-	32	68				
6591/M42		-	42						
6591/17		2.1/8"	54	38	100				
6591/M64		6591/M64A	-	64	50			178	
6591/21		6591/21A	2.5/8"	-					
-	6591/24A	3"	-	65	293				
-	6591/25A	3.1/8"	-						
-	6591/28A	3.1/2"	89	80	430				
-	6591/29A	3.5/8"	-						
-	6591/33A	4.1/8"	105						
-	6591/34A	4.1/4"	108						

(1) : MWP = 435 psi according to UL approval

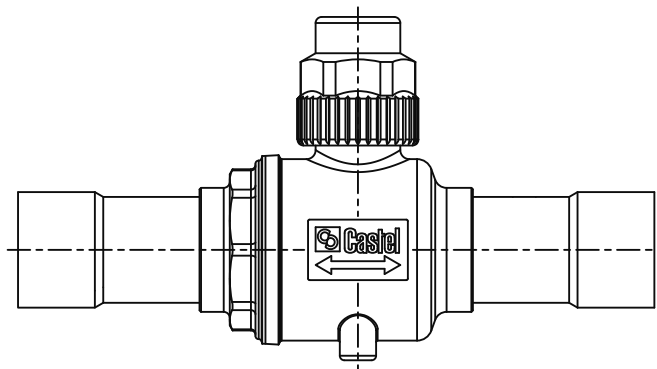
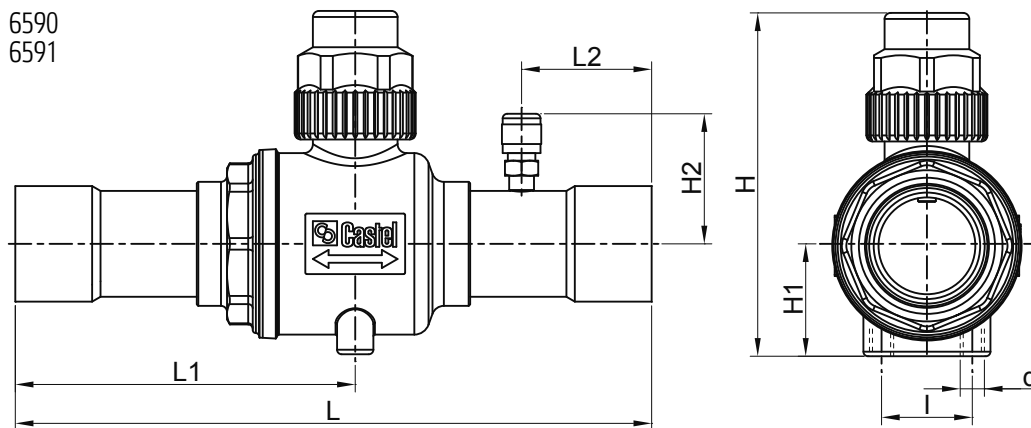


TABLE 2: Dimensions and Weights

Catalogue Number		Dimensions [mm]							Weight [g]	
		H	H ₁	H ₂	L	L ₁	L ₂	l		d
6590/M6	-	73	20	-	121	65	-	18	M5	260
6590/2				33			24			300
6590/3	6590/3A	80	24	-	141	74	-	30	M6	290
6590/M10	6590/M10A			36			32			410
6590/M12	6590/M12A	95.5	27.5	-	177	92	-	30	M6	450
6590/4	6590/4A			38			33			760
6591/5	-	101.5	30	-	206	108.5	-	30	M6	800
6590/M15	6590/M15A			41			43			1050
6590/5	6590/5A	117	37	-	210	112	-	30	M6	1518
6590/M18	6590/M18A			45			43			2470
6590/6	6590/6A	127	44	-	239	126	-	30	M6	2520
6591/7	-			45			48			4360
6590/7	6590/7A	148	54	-	253	133	-	30	M6	4400
6591/M28	-			53			58			8120
6591/9	-	172.5	62	-	330	175	-	30	M6	8090
6590/M28	6590/M28A			64			68			8310
6590/9	6590/9A	196.5	75	-	350	185	-	75	M10	8350
6591/11	-			70			76			12400
6590/11	6590/11A	400	209	-	400	209	-	75	M10	12450
6591/13	-			86			86			12500
6591/M42	-	172.5	62	-	350	185	-	75	M10	8120
6590/13	6590/13A			64			68			8090
6590/M42	6590/M42A	196.5	75	-	380	199	-	75	M10	8310
6591/17	-			70			76			8350
6590/17	6590/17A	400	209	-	400	209	-	75	M10	12400
6591/M64	6591/M64A			86			86			12450
6591/21	6591/21A	172.5	62	-	350	185	-	75	M10	8120
6590/M64	6590/M64A			64			68			8090
6591/21	6591/21A	196.5	75	-	380	199	-	75	M10	8310
6590/M64	6590/M64A			70			76			8350
6591/34A	6591/34A	400	209	-	400	209	-	75	M10	12400
6591/34A	6591/34A			86			86			12450



APPLICATIONS

The 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. They are used for mounting and intercepting the gauges on control panels.

CONSTRUCTION

The valves are equipped with:

- a little flange for fixing the valve to the control panel
- a SAE-Flare connection for joining it to the copper tube
- an NPT (type 8320) or a swivel SAE Flare (8321) connection for mounting the gauge

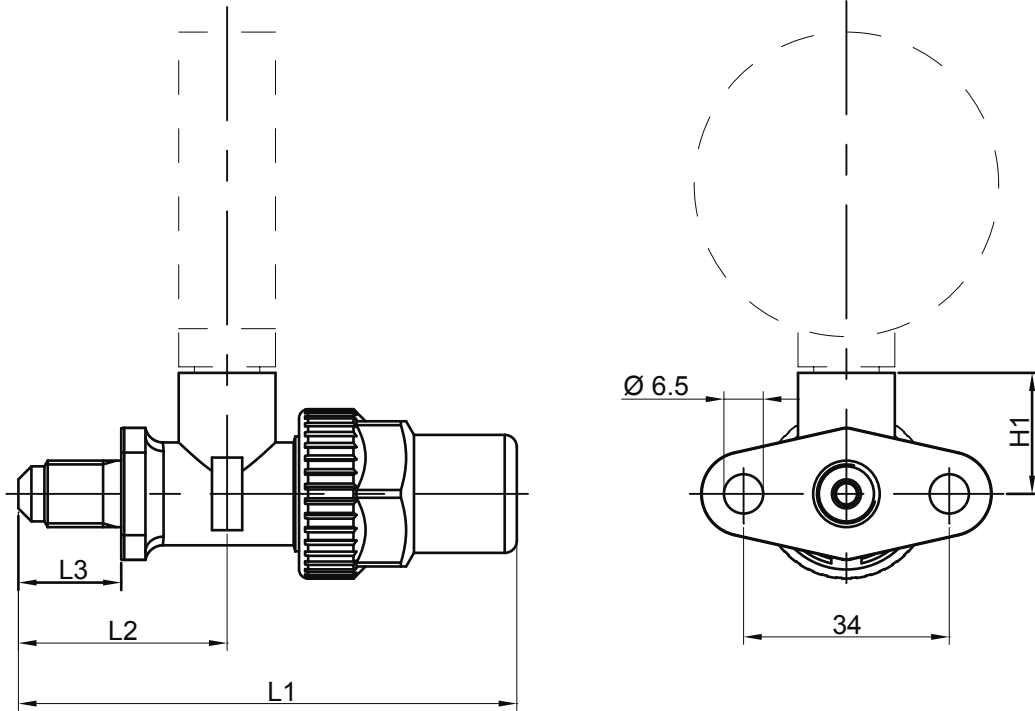
The main parts of this valve are made with the following materials:

- Hot forged brass EN 12420 - CW 617N for body
- Steel, with proper surface protection, for the spindle
- Chloroprene rubber (CR) and aramidic fibers for gland seal
- Glass reinforced PBT for cap that covers the spindle

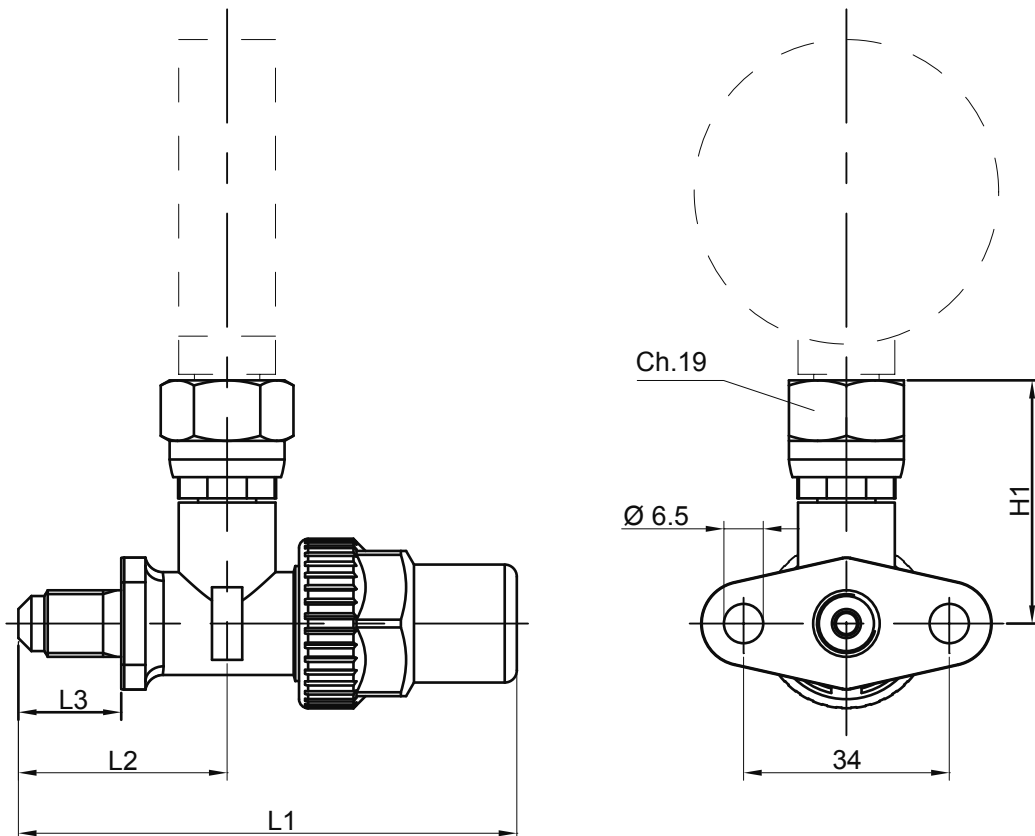
TABLE 1: General Characteristics and Dimensions

Catalogue Number	Connections			Dimensions [mm]				Weight [g]	TS [°C]		PS [bar]	Risk Category according to PED
	SAE Flare	NPT	SAE Flare	H ₁	L ₁	L ₂	L ₃		min.	max.		
8320/21	1/4"	1/8"	-	19	83	35	17	140	-60	+130	45	Art. 3.3
8320/22	1/4"	1/4"	-	37								
8321/22	1/4"	-	1/4" f	40								

8320



8321



APPLICATIONS

The valve, shown in this chapter, is 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.

The piercing valve is a fast and cheap means of providing a loading, outlet or inlet point in the refrigerating system. It can be applied on copper tube with a 6 mm to 10 mm diameter, and can be installed in any position on the system.

CONSTRUCTION

The main parts of the piercing valve are made with the following materials:

- Hot forged brass EN 12420 – CW 617N for body
- Hardened steel for the needle
- Chloroprene rubber (CR) for the outlet seal gaskets

INSTALLATION

The threaded fork must be installed astride of the copper tube, the valve is fastened to the pipe by tightening the lower nut and screwing it the needle pierces the pipe. The hole, pierced by the needle, connects the pipe inlet with the SAE-Flare connection as shown in figures 1 and 2.

TABLE 1: General Characteristics and Dimensions

Catalogue Number	Connections		Dimensions [mm]				Weight [g]	TS [°C]		PS [bar]	Risk Category according to PED
	SAE Flare	Pipe Diameter [mm]	H ₁	H ₂	L ₁	L ₂		min.	max.		
8330/A	1/4"	6 - 10	72	25.5	29	36	104	-10	+70	25	Art. 3.3

