

Ball valves for CO₂ systems



Applications

The ball valves, shown in this leaflet, 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 refrigerant fluid R744.

Ball valves, introduced by Castel for CO₂ systems, are the following types:

- Valves series 6570EL and 6590EL with PS = 60 bar, copper connections equipped, for subcritical systems.
- Valves series 6590E with PS = 80 bar, copper connections equipped, for trans-critical systems low pressure side and medium pressure side.
- Valves series 6597E with PS = 120 bar, reinforced copper connections (K65) equipped, for trans-critical systems high pressure side.
- Valves series 6598E with PS = 140 bar, stainless steel connections equipped, for trans-critical systems high pressure side.

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 welding of the body and the seals gaskets, assembled on the spindle, prevent any leaks.

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

- Hot forged brass EN 12420 – CW 617N for body and cap that cover the spindle.
- Hot forged brass EN 12420 – CW 617N , chrome plated, for ball.
- Steel, with proper surface protection, for the spindle.
- Ethylene-propylene rubber (EPDM) for outlet seal gaskets.
- Modified P.T.F.E. for seat ball gaskets.
- Copper tube EN 12735-1 – Cu-DHP for solder connections of series 6570EL , 6590EL and 6590E.
- Copper tube EN 12735-1 – CuFe2P (K65) for solder connections of series 6597E.
- Stainless steel tube AISI 304 for solder connections of series 6598E.

Installation

The ball valves can be installed in any section of a refrigerating system, where it is necessary to intercept the refrigerating flow. The following tables show the main functional characteristics of a ball valve:

- PS
- TS
- Kv factor
- Ball port diameter



General Characteristics

	Catalogue Number	Connections		Ball Port Ø [mm]	Kv Factor [m³/h]	PED Directive			
	without access fitting	ODS				TS [°C]		PS [bar]	Risk Category
		Ø [in.]	Ø [mm]			min.	max.		
SERIES 6570EL 6590EL	6570EL/M6	-	6	10	0,8	-40	+150	60	Art. 3.3
	6570EL/2	1/4"	-						
	6570EL/3	3/8"	-						
	6570EL/M10	-	10						
	6570EL/M12	-	12		5				
	6570EL/4	1/2"	-						
	6570EL/5	5/8"	16	15	17				
	6570EL/M18	-	18						
	6570EL/6	3/4"	-	19	29				
	6570EL/7	7/8"	22						
	6570EL/M28	-	28						
	6570EL/9	1.1/8"	-	25	51				
	6590EL/11	1.3/8"	35						
	6590EL/13	1.5/8"	-	38	117				
	6590EL/M42	-	42						
	6590EL/17	2.1/8"	54						
	SERIES 6590E	6590E/M6	-	6	10				0,8
6590E/2		1/4"	-	3					
6590E/3		3/8"	-						
6590E/M10		-	10						
6590E/M12		-	12	5					
6590E/4		1/2"	-						
6590E/5		5/8"	16	15	17				
6590E/M18		-	18						
6590E/6		3/4"	-	19	29				
6590E/7		7/8"	22						
6590E/M28		-	28						
6590E/9		1.1/8"	-	25	51				
6590E/11		1.3/8"	35			32	86		
6590E/13		1.5/8"	-	38	117				
6590E/M42		-	42			38	117	1	
SERIES 6597E	6597E/3	3/8"	-	10	3	-40	+150	120	Art. 3.3
	6597E/4	1/2"	-		5				
	6597E/5	5/8"	16	15	17				
	6597E/6	3/4"	-						
	6597E/7	7/8"	22	19	29				
	6597E/9	1.1/8"	-						
	6597E/11	1.3/8"	35	32	86				
	6597E/13	1.5/8"	-						
	6597E/17	2.1/8"	54	50	214				1
SERIES 6598E	6598E/M6	-	6	10	0,8	-40	+150	140	Art. 3.3
	6598E/M10	-	10		3				
	6598E/M12	-	12		5				
	6598E/M16	5/8"	16	15	17				
	6598E/M18	-	18						
	6598E/M22	7/8"	22	19	29				
	6598E/M28	-	28						
	6598E/M35	1.5/16"	33,4	32	86				
	6598E/M42	-	42,2						38





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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. The large range of products belonging to the Castel "GoGreen" line has been developed to be used in CO₂ (R744)- and HC hydrocarbon-filled systems.



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