The dehydrating capacity of Castel drier is relative to the charge of refrigerant and not to the refrigeration potential of the plant. As a matter of fact, for the same refrigerant potential and for the same type of refrigerant fluid, there can be different refrigerant charges according to the type, design and working conditions of the plant as well as to the shutter degree.

The data shown in the following tables are deduced from the test results of the present Castel production.
It is important to note in the case of a high oil level in the circuit (> 5%) the data shown in the tables will be reduced considerably.

MOLECULAR SIEVE FILTER DRIERS - MSD

APPLICATIONS

The filters, shown in this chapter, are classified “Pressure vessels” in the sense of the Pressure Equipment Directive 97/23/EC, Article 1, Section 2.1.1 and are subject of Article 3, Section 1.1 of the same Directive.
They are designed for installation on commercial refrigerating systems and on civil and industrial conditioning plants, which use refrigerant fluids 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).

CONSTRUCTION

The filter is completely manufactured in steel, either with nickel-plated Flare threaded connections.
The product range also includes types with copper plated solder connections, offering the possibility to solder the copper pipe inside the connections (ODS) or outside the connections, using a copper sleeve (ODM). The filter charge is not replaceable.

EXAMPLE OF SELECTION

System data:
Refrigerant: R22
Condensing temperature: +50°C
Weight of refrigerant: 34 Kg

According to ARI STANDARDS 710:86, the adsorption capacity of the drier is given by:

(1.050 – 60) x 34 / 1.000 = 33,66 g of H_2O

where:

1.050 p.p.m. = moisture in the refrigerant entering the filter according to ARI STANDARD 710:86
60 p.p.m. = moisture in the refrigerant flowing out the filter according to ARI STANDARD 710:86

Comparing the absorption capacity required with the values shown in table 2, drier mod. 4032 should be selected, with a water absorption capacity of 47,1 g at 50 °C.
If the dehydrating capacity of products is expressed in water drops, it must be remembered that:

1 g of H_2O = 20 water drops.

In this case and when a molecular sieve drier is selected, the following result is obtained:
33,66 x 20 = 673 water drops.

If moisture exceeds the values specified in ARI STANDARDS, a drier with a higher adsorption capacity shall be selected.

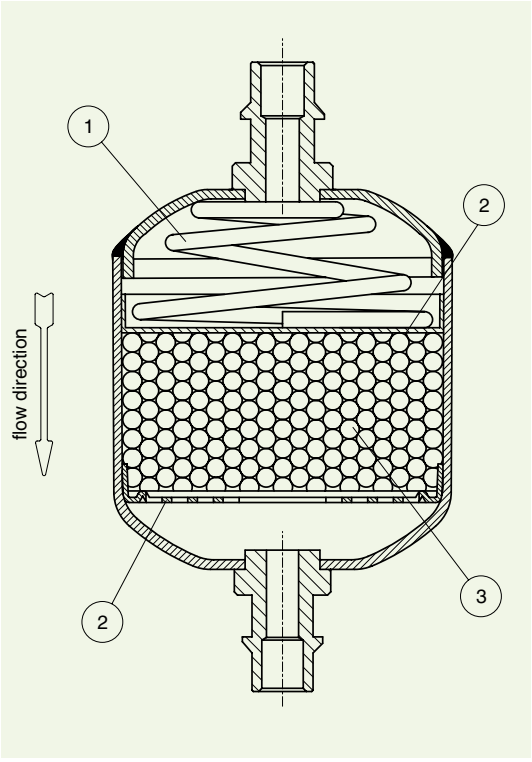


Fig. 1 – Molecular sieve dehydrator (MSD)
1 – Spring
2 – Stainless steel mesh
3 – Dehydrating charge

TABLE 1: General Characteristics

Catalogue Number		International Reference	Nominal Volume [cm³]	Connections					TS [°C]		PS [bar]	Risk Category according to PED
Threaded Connections	Solder Connections			SAE Flare	ODS		ODM		min.	max.		
					Ø [in.]	Ø [mm]	Ø [in.]	Ø [mm]				
4003/2	–	032	50	1/4"	–	–	–	–	– 40	+80	42	Art. 3.3
4003/2F (1) R	–	–		1/4"	–	–	–	–				
–	4003/2S R	032S		–	1/4"	–	3/8"	–				
4003/3	–	033		3/8"	–	–	–	–				
–	4003/3S R	033S		–	3/8"	–	1/2"	–				
4005/2	–	052	80	1/4"	–	–	–	–				
4005/2F (1) R	–	–		1/4"	–	–	–	–				
–	4005/2S R	052S		–	1/4"	–	3/8"	–				
4005/3	–	053		3/8"	–	–	–	–				
–	4005/3S R	053S		–	3/8"	–	1/2"	–				
4008/2	–	082	130	1/4"	–	–	–	–				
4008/2F (1) R	–	–		1/4"	–	–	–	–				
–	4008/2S R	082S		–	1/4"	–	3/8"	–				
4008/3	–	083		3/8"	–	–	–	–				
4008/3F (1) R	–	–		3/8"	–	–	–	–				
–	4008/3S R	083S		–	3/8"	–	1/2"	–				
–	4008/M10S R	–		–	–	10	–	12				
4008/4	–	084		1/2"	–	–	–	–				
–	4008/4S R	084S		–	1/2"	–	5/8"	16				
4016/2	–	162	250	1/4"	–	–	–	–				
4016/3	–	163		3/8"	–	–	–	–				
4016/3F (1) R	–	–		3/8"	–	–	–	–				
–	4016/3S R	163S		–	3/8"	–	1/2"	–				
–	4016/M10S R	–		–	–	10	–	12				
4016/4	–	164		1/2"	–	–	–	–				
–	4016/4S R	164S		–	1/2"	–	5/8"	16				
4016/5	–	165		5/8"	–	–	–	–				
4032/4	–	304	500	1/2"	–	–	–	–				
–	4032/4S R	304S		–	1/2"	–	5/8"	16				
4032/5	–	305		5/8"	–	–	–	–				
–	4032/5S R	305S		–	5/8"	16	3/4"	–				
4041/4	–	414	670	1/2"	–	–	–	–				
4041/5	–	415		5/8"	–	–	–	–				
–	4041/5S R	415S		–	5/8"	16	3/4"	–				
4041/6	–	416		3/4"	–	–	–	–				

(1) Male-female connections (Inlet female)

R *Available on request*

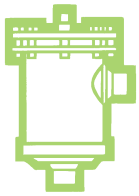
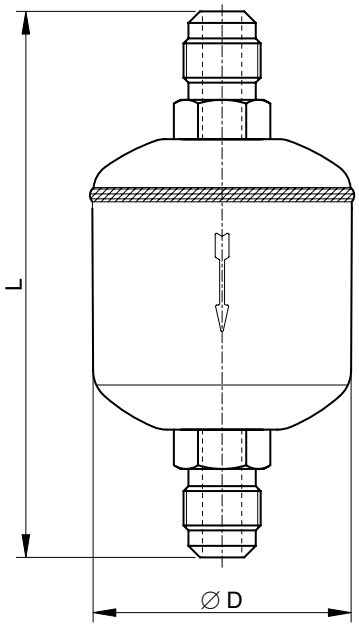


TABLE 2: Refrigerant Flow Capacity and Water Capacity

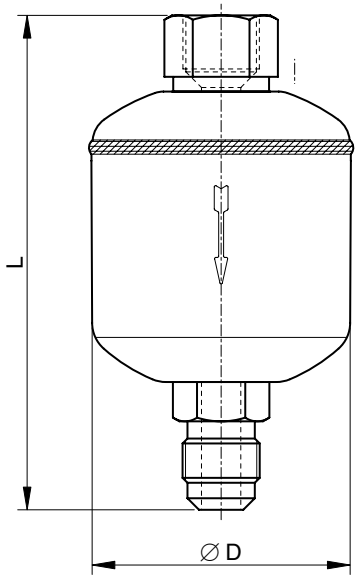
Catalogue Number	Refrigerant Flow Capacity, pressure drop 0,07 bar (1) [kW]					Water Capacity at + 25 °C [g H_2O]					Dehydratable Charge at + 25 °C [kg refrigerant]					Water Capacity at + 50 °C [g H_2O]					Dehydratable Charge at + 50 °C [kg refrigerant]				
	R134a	R22	R404A R507	R407C	R410A	R134a	R22	R404A R507	R407C	R410A	R134a	R22	R404A R507	R407C	R410A	R134a	R22	R404A R507	R407C	R410A	R134a	R22	R404A R507	R407C	R410A
4003/2	5,8	6,3	4,1	6,2	6,3	5,2	4,6	5,3	4,3	4,7	5,6	4,9	5,7	4,6	5,0	4,7	4,0	5,2	3,6	3,9	5,1	4,3	5,6	3,8	4,2
4003/2F																									
4003/2S	7,1	7,7	5,4	7,6	7,7																				
4003/3	17,1	18,5	12,0	18,4	18,6																				
4003/3S	21,0	22,7	14,7	22,6	22,8																				
4005/2	6,4	6,9	4,5	6,8	6,9	10,1	8,9	10,3	8,3	9,0	11,0	9,5	11,1	8,9	9,7	9,1	7,7	10,0	6,9	7,6	9,8	8,3	10,8	7,4	8,2
4005/2F																									
4005/2S	7,9	8,5	5,5	8,3	8,5																				
4005/3	18,1	19,6	12,8	19,5	19,7																				
4005/3S	22,6	24,5	16,0	24,4	24,6																				
4008/2	6,7	7,2	4,7	7,1	7,2	17,8	15,6	18,2	14,5	15,8	19,2	16,8	19,5	15,6	17,0	16,1	13,6	17,6	12,2	13,4	17,3	14,6	18,9	13,1	14,4
4008/2F																									
4008/2S	8,2	8,8	5,8	8,7	8,8																				
4008/3	18,6	20,1	13,1	19,9	20,2																				
4008/3F																									
4008/3S	23,4	25,3	16,5	25,1	25,4																				
4008/M10S																									
4008/4	24,5	26,5	17,3	26,3	26,6																				
4008/4S	29,4	31,8	20,7	31,5	31,9																				
4016/2	6,7	7,2	4,7	7,1	7,2	34,1	29,8	34,8	27,8	30,3	36,7	32,1	37,4	29,9	32,5	30,7	26,0	33,6	23,3	25,6	33,0	28,0	36,2	25,1	27,5
4016/3	19,4	21,0	13,7	20,8	21,1																				
4016/3F																									
4016/3S	24,2	26,2	17,1	26,0	26,3																				
4016/M10S																									
4016/4	33,7	36,4	23,7	36,1	36,5																				
4016/4S	40,4	43,7	28,4	43,3	43,9																				
4016/5	39,3	42,5	27,7	42,2	42,7																				
4032/4	36,4	39,4	25,6	39,1	39,6	61,7	54,0	62,9	50,3	54,8	66,3	58,1	67,6	54,1	58,9	55,6	47,1	60,9	42,2	46,3	59,8	50,6	65,5	45,4	49,8
4032/4S	43,7	47,3	30,7	46,9	47,5																				
4032/5	42,6	46,0	29,9	45,6	46,2																				
4032/5S	51,1	55,2	35,9	54,7	55,4																				
4041/4	39,3	42,5	27,7	42,2	42,7	95,1	83,2	97,0	77,6	84,5	102	89,5	104	83,4	90,9	85,7	72,6	93,8	65,1	71,3	92,2	78,1	100	70,0	76,7
4041/5	46,0	49,7	32,4	49,3	49,9																				
4041/5S	55,2	59,6	38,9	59,1	59,8																				
4041/6	58,8	63,6	41,4	63,1	63,9																				

(1) Maximum values of the refrigerant flow capacity at which the drier can be used when fluid dehydration is not the a major problem, provided that the original moisture is limited before the installation of the drier. The maximum refrigerant flow capacities are referred to a total pressure drop of 0,07 bar, inlet and outlet connections included, (according to ARI STANDARD 710:86 – with condensing temperature at + 30 °C and evaporating temperature at -15 °C).

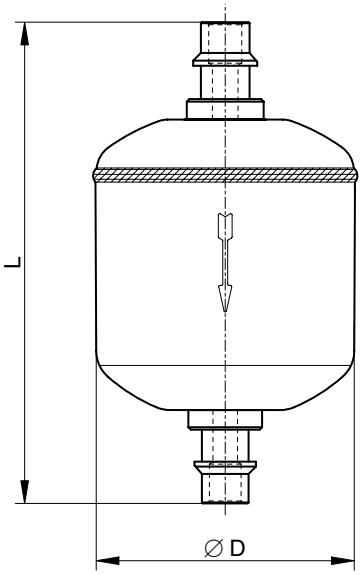
(2) : Water capacity values with R22 are referred to the following conditions, fixed in ARI STANDARD 710:86:
- Liquid temperatures: 25 °C and 50 °C
- Equilibrium point dryness, EPD: 60 ppm
Water capacity values with the other refrigerant fluids are referred to the following conditions, fixed in DIN 8949:2000 Standard:
- Liquid temperatures: 25 °C and 50 °C
- Equilibrium point dryness, EPD: 50 ppm



male connections



male - female connections (female - in)



solder connections

TABLE 3: Dimensions and Weights

Catalogue Number	Connections			Dimensions [mm]		Weight [g]
	SAE Flare	ODS				
		Ø [in.]	Ø [mm]	Ø D	L	
4003/2	1/4"	–	–	52	103	260
4003/2F	1/4"	–	–		92	250
4003/2S	–	1/4"	–		94	235
4003/3	3/8"	–	–		111	275
4003/3S	–	3/8"	–		96	235
4005/2	1/4"	–	–		119	300
4005/2F	1/4"	–	–		108	300
4005/2S	–	1/4"	–		110	285
4005/3	3/8"	–	–		127	320
4005/3S	–	3/8"	–		112	275
4008/2	1/4"	–	–		146	400
4008/2F	1/4"	–	–		135	390
4008/2S	–	1/4"	–		137	375
4008/3	3/8"	–	–		154	415
4008/3F	3/8"	–	–		142	395
4008/3S	–	3/8"	–		139	375
4008/M10S	–	–	10			375
4008/4	1/2"	–	–		162	450
4008/4S	–	1/2"	–		146	390
4016/2	1/4"	–	–	73	158	720
4016/3	3/8"	–	–		166	735
4016/3F	3/8"	–	–		154	720
4016/3S	–	3/8"	–		151	745
4016/M10S	–	–	10			695
4016/4	1/2"	–	–		174	780
4016/4S	–	1/2"	–		158	695
4016/5	5/8"	–	–		183	820
4032/4	1/2"	–	–	91	187	1415
4032/4S	–	1/2"	–		173	1355
4032/5	5/8"	–	–		196	1460
4032/5S	–	5/8"	16		179	1400
4041/4	1/2"	–	–		222	1715
4041/5	5/8"	–	–		231	1810
4041/5S	–	5/8"	16		214	1620
4041/6	3/4"	–	–		232	1920