

HANDBOOK

REFRIGERATING SYSTEMS PROTECTORS



ANTI-ACID SOLID CORE FILTER DRIERS WITH MOLECULAR SIEVES AND ACTIVATED ALUMINA – SERIES 42

Approved by Underwriters Laboratories Inc.

SOLID CORE FILTER DRIERS WITH 100% MOLECULAR SIEVES – SERIE 43

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APPLICATIONS

The filters, shown in this chapter, are classified “Pressure vessels” in the sense of the Pressure Equipment Directive 94/23/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).

Filters series 42 and series 43 have been developed for specific installations on refrigerating systems using HFC refrigerant fluids, particularly R134a , R404A , R407C , R410A and R507 mixed with polyolester lubricants. In spite of this, the new block may be successfully used also in refrigerating systems using the old CFC or HCFC refrigerant fluids, mixed with mineral lubricants

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).

On specific customers' request, Castel is also able to supply them filters series 42 and series 43 with:

- solder connections made of copper tube EN 12735-1 – Cu-DHP
- ORFS (O-Ring Face Seal) threaded connections according to SAE J 1453 Standard

The blocks in the filters series 42 are molded from a blend of dehydrating charge, 80% of 3 Å molecular sieves and 20 % of activated alumina, and a special binding agent in appropriate proportions. The choice of blend, molecular sieves – activated alumina, gives to the block a very high capacity of acid adsorption also maintaining very good dehydrating characteristics. The presence of a controlled and defined percentage of activated alumina, lower than the maximum value recommended by ASERCOM, keeps unchanged the original concentration of additives in the polyolester lubricant.

The blocks in the filters series 43 are molded from a blend of dehydrating charge, totally made of 3 Å molecular sieves, and a special binding agent in appropriate proportions. The choice of the 3 Å molecular sieves, as sole dehydrating material, gives to the block a superlative capacity of water adsorption also maintaining quite good deacidifying characteristics.

The manufacturing process gives a considerable compactness and stoutness to both the products so that they are resistant to shocks and abrasions.

The shape of the block is designed in order to offer the maximum possible surface area to the incoming fluid. The internal cavity is also positioned in such a way as to have a uniform wall thickness. As a result, the fluid encounters a constant strength at all points, flows linearly through the block, and ensures efficient dehydration and minimum charge loss.

The block is chemically inert, not deliquescent, does not react with refrigerating fluids, and is capable of blocking oil by-products dragged into the circuit. Impurities accumulate in the ring between the metal shell and the block; this prevents filter clogging.

FILTER SELECTION BASED ON REFRIGERANT FLOW CAPACITY

Refrigerant flow capacities shown on Table 3 and 4 are referred to the following operating conditions according to ARI STANDARD 710-2004 :

- Liquid temperature + 30 °C
- Evaporating temperature - 15 °C

total pressure drop , inlet and outlet connections included, 0,07 bar / 0,14 bar

For different operating conditions apply the following formula:

$$Q = Q_{ref} \times L_1$$

with:

Q = required refrigeration flow capacity [kW]

Q_{ref} = reference refrigeration flow capacity [kW]

(see Tables 3 or 5)

L₁ = correction factor in presence of operative

temperatures different from reference conditions (see Table 7)

EXAMPLE

Refrigerant: R404A

Required refrigeration flow capacity: 15 [kW]

Liquid temperature: + 40 [°C]

Evaporating temperature: - 10 [°C]

Set pressure drop: 0,14 [bar]

Filter with 100% molecular sieve core and ODF solder connections

$$Q = Q_{ref} \times L_1 \quad 15 = Q_{ref} \times 0,86 \quad Q_{ref} = 15/0,86 = 17,44 \text{ [kW]}$$

Comparing this calculated reference flow capacity with the values shown on table 3, the result involves the selection of filter 4305/3S with a flow capacity of 17,8 kW., at a pressure drop of 0,14 bar.

TABLE 1A: General Characteristics of filters with high water capacity core (100% molecular sieves). SAE Flare connections

Catalogue Number	International Reference	Block Filtering Surface [cm ²]	Nominal Volume [cm ³]	Connections	PED Directive			Risk Category
					TS [°C]		PS [bar]	
					min.	max.		
4303/2	032	47	50	1/4"	-40	+80	45 (1)	Art. 3.3
4303/3	033			3/8"				
4305/2	052	70	80	1/4"				
4305/3	053			3/8"				
4308/2	082	103	130	1/4"				
4308/3	083			3/8"				
4308/4	084			1/2"				
4316/2	162	155	250	1/4"				
4316/3	163			3/8"				
4316/4	164			1/2"				
4316/5	165			5/8"				
4330/3	303	310	500	3/8"				
4330/4	304			1/2"				
4330/5	305			5/8"				
4332/4	304	255	500	1/2"				
4332/5	305			5/8"				
4341/4	414	330	670	1/2"				
4341/5	415			5/8"				
4341/6	416			3/4"				
4303/2F (2)	—	47	50	1/4"	-40	+80	45 (1)	Art. 3.3
4305/2F (2)	—	70	80	1/4"				
4308/2F (2)	—	103	130	1/4"				
4308/3F (2)	—			3/8"				
4316/3F (2)	—	155	250	3/8"				

(1) : MWP = 435 psi according to UL approval for filters series 4303, 4305, 4316, 4332

MWP = 400 psi according to UL approval for filters series 4308, 4330, 4341

(2) : Male-female connections (Inlet female)

FILTER SELECTION BASED ON WATER CAPACITY

System data:

Refrigerant: R407C

Liquid temperature: + 50 [°C]

Weight of refrigerant: 34 [kg]

According to ARI STANDARD 710-2004 and DIN 8949:2000, the adsorption capacity of the drier is given by:

$$(1.050 - 50) \times 34 / 1.000 = 34 \text{ g di H}_2\text{O}$$

where:

1.050 ppm. = moisture in the refrigerant entering the filter according to ARI STANDARD 710-2004 and DIN 8949:2000

50 ppm. = moisture in the refrigerant flowing out the filter according to ARI STANDARD 710-2004 and DIN 8949:2000

Comparing the absorption capacity required with the values shown in table 4A and 4B, drier mod.4341 should be select-ed, with a water absorption capacity of 40,5 g at 50 °C.

If the dehydrating capacity of products is expressed in water drops, it must be remembered that:

$$1 \text{ g H}_2\text{O} = 20 \text{ water drops}$$

In this case and when a molecular sieve drier is selected, the following result is obtained:

$$34 \times 20 = 680 \text{ water drops.}$$

If moisture exceeds the values specified in ARI STANDARD 710-2004 and DIN 8949:2000, a drier with a higher adsorption capacity shall be selected.

**TABLE 1B: General Characteristics of filters with high water capacity core (100% molecular sieves).
Solder connections**

Catalogue Number	International Reference	Block Filtering Surface [cm ²]	Nominal Volume [cm ³]	Connections				PED Directive			
				ODS		ODM		TS [°C]		PS [bar]	Risk Category
				Ø [in.]	Ø [mm]	Ø [in.]	Ø [mm]	min.	max.		
4303/2S	032S	47	50	1/4"	–	3/8"	–	-40	+80	45 (1)	Art. 3.3
4303/3S	033S			3/8"	–	1/2"	–				
4305/2S	052S	70	80	1/4"	–	3/8"	–				
4305/3S	053S			3/8"	–	1/2"	–				
4305/M10S	–	103	130	–	10	–	12				
4308/2S	082S			1/4"	–	3/8"	–				
4308/3S	083S			3/8"	–	1/2"	–				
4308/M10S	–			–	10	–	12				
4308/M12S	–			–	12	–	14				
4308/4S	084S			1/2"	–	5/8"	16				
4316/3S	163S	155	250	3/8"	–	1/2"	–				
4316/M10S	–			–	10	–	12				
4316/M12S	–			–	12	–	14				
4316/4S	164S			1/2"	–	5/8"	16				
4316/5S	165S			5/8"	16	3/4"	–				
4316/7S	167S			7/8"	–	1.1/8"	–				
4330/3S	303S	310	500	3/8"	–	1/2"	–				
4330/4S	304S			1/2"	–	5/8"	16				
4330/5S	305S			5/8"	16	3/4"	–				
4330/7S	307S			7/8"	–	1.1/8"	–				
4330/9S	309S			1.1/8"	–	1.3/8"	35				
4332/4S	304S	225	500	1/2"	–	5/8"	16				
4332/5S	305S			5/8"	16	3/4"	–				
4341/4S	414S	330	670	1/2"	–	5/8"	16				
4341/5S	415S			5/8"	16	3/4"	–				
4341/6S	416S			3/4"	–	7/8"	–				
4341/7S	417S			7/8"	–	1.1/8"	–				
4375/4S	754S	660	1340	1/2"	–	5/8"	16				
4375/5S	755S			5/8"	16	3/4"	–				
4375/6S	756S			3/4"	–	7/8"	–				
4375/7S	757S			7/8"	–	1.1/8"	–				
4375/9S	759S			1.1/8"	–	1.3/8"	35				

(1) : MWP = 435 psi according to UL approval for filters series 4303, 4305, 4316, 4332, 4375
MWP = 400 psi according to UL approval for filters series 4308, 4330, 4341

**TABLE 2A: General Characteristics of filters with with antiacid core
(80% molecular sieves + 20% activated alumina). SAE Flare connections**

Catalogue Number	International Reference	Block Filtering Surface [cm ²]	Nominal Volume [cm ³]	Connections	PED Directive			Risk Category
					TS [°C]		PS [bar]	
					min.	max.		
4203/2	032	47	50	1/4"	-40	+80	45 (1)	Art. 3.3
4203/3	033			3/8"				
4205/2	052	70	80	1/4"				
4205/3	053			3/8"				
4208/2	082	103	130	1/4"				
4208/3	083			3/8"				
4208/4	084			1/2"				
4216/2	162	155	250	1/4"				
4216/3	163			3/8"				
4216/4	164			1/2"				
4216/5	165			5/8"				
4230/3	303	310	500	3/8"				
4230/4	304			1/2"				
4230/5	305			5/8"				
4232/4	304	255	500	1/2"				
4232/5	305			5/8"				
4241/5	415	330	670	5/8"				
4241/6	416			3/4"				

(1) : MWP = 435 psi according to UL approval for filters series 4203, 4205, 4216, 4232, 4275
MWP = 400 psi according to UL approval for filters series 4208, 4230, 4241

**TABLE 2B: General Characteristics of filters with antiacid core
(80% molecular sieves + 20% activated alumina). Solder connections**

Catalogue Number	International Reference	Block Filtering Surface [cm ²]	Nominal Volume [cm ³]	Connections				PED Directive			Risk Category
				ODS		ODM		TS [°C]		PS [bar]	
				Ø [in.]	Ø [mm]	Ø [in.]	Ø [mm]	min.	max.		
4203/2S	032S	47	50	1/4"	—	3/8"	—	-40	+80	45 (1)	Art. 3.3
4205/2S	052S	70	70	1/4"	—	3/8"	—				
4205/3S	053S			3/8"	—	1/2"	—				
4205/M10S	—			—	10	—	12				
4208/2S	082S	103	130	1/4"	—	3/8"	—				
4208/3S	083S			3/8"	—	1/2"	—				
4208/M10S	—			—	10	—	12				
4208/M12S	—			—	12	—	14				
4208/4S	084S	155	250	1/2"	—	5/8"	16				
4216/3S	163S			3/8"	—	1/2"	—				
4216/M10S	—			—	10	—	12				
4216/M12S	—			—	12	—	14				
4216/4S	164S			1/2"	—	5/8"	16				
4216/5S	165S	310	500	5/8"	16	3/4"	—				
4230/3S	303S			3/8"	—	1/2"	—				
4230/4S	304S			1/2"	—	5/8"	16				
4230/5S	305S	255	500	5/8"	16	3/4"	—				
4232/4S	304S			1/2"	—	5/8"	16				
4232/5S	305S	330	670	5/8"	16	3/4"	—				
4241/5S	415S			5/8"	16	3/4"	—				
4241/6S	416S			3/4"	—	7/8"	—				
4241/7S	417S	660	1340	7/8"	—	1.1/8"	—				
4275/4S	754S			1/2"	—	5/8"	16				
4275/5S	755S			5/8"	16	3/4"	—				
4275/6S	756S			3/4"	—	7/8"	—				
4275/7S	757S			7/8"	—	1.1/8"	—				
4275/9S	759S	1.1/8"	—	1.3/8"	35	I					

(1) : MWP = 435 psi according to UL approval for filters series 4203, 4205, 4216, 4232, 4275
MWP = 400 psi according to UL approval for filters series 4208, 4230, 4241

TABLE 3: Refrigerant Flow Capacity of filters with high water capacity core

Catalogue Number	Refrigerant Flow Capacity, pressure drop 0,07 bar (1) [kW]						Refrigerant Flow Capacity, pressure drop 0,14 bar (1) [kW]					
	R1 34a	R22	R404A R507	R407C	R410A	R507	R1 34a	R22	R404A R507	R407C	R410A	R507
4303/2	6,4	7,0	4,6	7,0	6,8	4,4	7,7	8,4	5,5	8,4	8,1	5,3
4303/2F												
4303/2S	7,9	8,6	5,7	8,6	8,3	5,5	9,4	10,3	6,8	10,4	10,0	6,5
4303/3	14,7	16,1	10,6	16,2	15,6	10,2	17,7	19,3	12,7	19,4	18,7	12,2
4303/3S	18,6	20,3	13,4	20,4	19,7	12,9	22,3	24,4	16,1	24,5	23,6	15,4
4305/2												
4305/2F	6,6	7,2	4,7	7,2	7,0	4,6	8,6	9,4	6,2	9,4	9,1	5,9
4305/2S	8,1	8,9	5,9	8,9	8,6	5,6	10,6	11,6	7,6	11,6	11,2	7,3
4305/3	15,2	16,6	10,9	16,7	16,1	10,5	19,7	21,6	14,2	21,7	20,9	13,7
4305/3S												
4305/M10S	19,2	21,0	13,8	21,1	20,3	13,3	25,0	27,3	18,0	27,4	26,5	17,3
4308/2												
4308/2F	6,9	7,5	4,9	7,5	7,3	4,8	8,9	9,8	6,4	9,8	9,4	6,2
4308/2S	8,4	9,2	6,1	9,2	8,9	5,8	10,9	12,0	7,9	12,0	11,6	7,6
4308/3												
4308/3F	17,8	19,5	12,9	19,6	18,9	12,4	23,2	25,4	16,7	25,5	24,6	16,1
4308/3S												
4308/M10S	22,6	24,7	16,3	24,8	23,9	15,7	29,4	32,1	21,2	32,2	31,1	20,4
4308/M12S	28,6	31,3	20,6	31,4	30,3	19,8	37,2	40,7	26,8	40,9	39,4	25,8
4308/4	23,7	25,9	17,1	26,0	25,1	16,4	30,8	33,7	22,2	33,8	32,6	21,3
4308/4S	28,6	31,3	20,6	31,4	30,3	19,8	37,2	40,7	26,8	40,9	39,4	25,8
4316/2	6,9	7,5	4,9	7,5	7,3	4,8	9,3	10,1	6,7	10,2	9,8	6,4
4316/3												
4316/3F	19,5	21,3	14,0	21,4	20,6	13,5	26,3	28,8	18,9	28,9	27,9	18,2
4316/3S												
4316/M10S	24,3	26,6	17,5	26,7	25,8	16,9	32,9	35,9	23,7	36,1	34,8	22,8
4316/M12S	33,8	36,9	24,3	37,0	35,8	23,4	45,6	49,8	32,8	50,0	48,3	31,6
4316/4	27,9	30,5	20,1	30,6	29,6	19,3	37,7	41,2	27,1	41,3	39,9	26,1
4316/4S	33,8	36,9	24,3	37,0	35,8	23,4	45,6	49,8	32,8	50,0	48,3	31,6
4316/5	37,1	40,6	26,8	40,8	39,3	25,7	50,2	54,8	36,1	55,0	53,1	34,7
4316/5S	44,6	48,7	32,1	48,9	47,2	30,9	60,2	65,7	43,3	66,0	63,7	41,7
4316/7S	47,2	51,6	34,0	51,8	50,0	32,7	63,7	69,7	45,9	69,9	67,5	44,2
4330/3	21,4	23,4	15,4	23,5	22,7	14,8	28,9	31,6	20,8	31,7	30,6	20,0
4330/3S	26,8	29,3	19,3	29,4	28,4	18,6	36,2	39,6	26,1	39,7	38,3	25,1
4330/4	30,6	33,4	22,0	33,5	32,4	21,2	41,3	45,1	29,7	45,3	43,7	28,6
4330/4S	37,0	40,4	26,6	40,6	39,1	25,6	49,9	54,5	35,9	54,8	52,8	34,6
4330/5	38,3	41,9	27,6	42,1	40,6	26,6	51,8	56,6	37,3	56,8	54,8	35,9
4330/5S	46,1	50,4	33,2	50,6	48,8	32,0	62,3	68,0	44,8	68,3	65,9	43,1
4330/7S												
4330/9S	48,7	53,2	35,1	53,4	51,6	33,7	65,7	71,8	47,3	72,1	69,6	45,5
4332/4	33,2	36,3	23,9	36,4	35,2	23,0	46,5	50,8	33,5	51,0	49,2	32,2
4332/4S	40,1	43,8	28,9	44,0	42,4	27,8	56,1	61,3	40,4	61,6	59,4	38,9
4332/5	39,4	43,1	28,4	43,3	41,8	27,3	55,2	60,3	39,8	60,6	58,5	38,3
4332/5S	47,7	52,1	34,3	52,3	50,5	33,0	66,7	72,9	48,1	73,2	70,7	46,2
4341/4	34,2	37,4	24,6	37,5	36,2	23,7	51,3	56,1	37,0	56,3	54,4	35,6
4341/4S	40,8	44,6	29,4	44,8	43,2	28,3	61,2	66,9	44,1	67,2	64,8	42,4
4341/5	40,4	44,2	29,1	44,4	42,8	28,0	60,7	66,3	43,7	66,6	64,2	42,0
4341/5S	49,0	53,5	35,3	53,7	51,8	33,9	73,4	80,3	52,9	80,6	77,8	50,9
4341/6												
4341/6S	66,4	72,6	47,8	72,9	70,3	46,0	99,6	108,9	71,8	109,3	105,5	69,0
4341/7S	73,4	80,2	52,9	80,5	77,7	50,8	110,1	120,3	79,3	120,8	116,6	76,3
4375/4S	52,8	57,7	38,0	57,9	55,9	36,6	79,2	86,6	57,0	86,9	83,9	54,9
4375/5S	53,9	58,9	38,8	59,1	57,1	37,3	80,8	88,4	58,2	88,7	85,6	56,0
4375/6S	79,7	87,1	57,4	87,4	84,4	55,2	119,5	130,7	86,1	131,2	126,6	82,8
4375/7S	91,8	100,3	66,1	100,7	97,2	63,6	137,7	150,5	99,1	151,1	145,8	95,4
4375/9S	95,4	104,3	68,7	104,7	101,1	66,1	143,2	156,5	103,1	157,1	151,6	99,2

(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 / 0,14 bar , inlet and outlet connections included, (according to ARI STANDARD 710-2004 - with liquid temperature at + 30 °C and evaporating temperature at - 15 °C)

TABLE 4A: Refrigerant Water Capacity of filters with high water capacity core

Catalogue Number	Water Capacity at + 24 °C (1) [g H ₂ O]					Dehydratable Charge at + 24 °C [kg refrigerant]				
	R134a	R22	R404A R507	R407C	R410A	R134a	R22	R404A R507	R407C	R410A
4303/2	4,9	4,4	5,0	4,0	4,3	5,3	4,7	5,4	4,3	4,6
4303/2F										
4303/2S										
4303/3										
4303/3S										
4305/2	7,7	7,1	7,9	6,3	6,9	8,3	7,6	8,5	6,8	7,4
4305/2F										
4305/2S										
4305/3										
4305/3S										
4305/M10S	12,9	11,8	13,2	10,6	11,5	13,9	12,7	14,2	11,4	12,4
4308/2										
4308/2F										
4308/2S										
4308/3										
4308/3F										
4308/3S										
4308/M10S										
4308/M12S										
4308/4										
4308/4S										
4316/2	25,2	23,0	25,7	20,6	22,5	27,1	24,7	27,6	22,2	24,2
4316/3										
4316/3F										
4316/3S										
4316/M10S										
4316/M12S										
4316/4										
4316/4S										
4316/5										
4316/5S										
4316/7S										
4330/3	50,4	46,0	51,5	41,3	44,9	54,2	49,5	55,3	44,3	48,4
4330/3S										
4330/4										
4330/4S										
4330/5										
4330/5S										
4330/7S	46,6	42,6	47,6	38,2	41,5	50,1	45,8	51,2	41,1	44,6
4330/9S										
4332/4										
4332/4S										
4332/5										
4332/5S	63,3	57,8	64,7	51,8	56,4	68,1	62,2	69,6	55,7	60,6
4341/4										
4341/4S										
4341/5										
4341/5S										
4341/6										
4341/6S										
4341/7S										
4375/4S	126,6	115,6	129,4	103,7	112,8	136,1	124,3	139,1	111,4	121,3
4375/5S										
4375/6S										
4375/7S										
4375/9S										

(1) : Water capacity values are referred to the following conditions, fixed in ARI STANDARD 710-2004 and DIN 8949:2000:
 - Liquid temperatures: 24 °C and 52 °C
 - Equilibrium point dryness, EPD: 60 ppm for R22
 - Equilibrium point dryness, EPD: 50 ppm for R134a, R404A, R407C, R410A e R507

TABLE 4B: Refrigerant Water Capacity of filters with high water capacity core

Catalogue Number	Water Capacity at + 52 °C (1) [g H ₂ O]					Dehydratable Charge at + 52 °C [kg refrigerant]				
	R134a	R22	R404A R507	R407C	R410A	R134a	R22	R404A R507	R407C	R410A
4303/2	4,2	3,6	4,6	3,2	3,5	4,5	3,9	4,9	3,4	3,8
4303/2F										
4303/2S										
4303/3										
4303/3S										
4305/2	6,7	5,7	7,3	5,1	5,6	7,2	6,1	7,8	5,5	6,0
4305/2F										
4305/2S										
4305/3										
4305/3S										
4305/M10S										
4308/2	11,1	9,3	12,2	8,5	9,3	11,9	10,0	13,1	9,1	10,0
4308/2F										
4308/2S										
4308/3										
4308/3F										
4308/3S										
4308/M10S										
4308/M12S										
4308/4										
4308/4S										
4316/2	21,7	18,4	23,9	16,6	18,1	23,3	19,8	25,7	17,8	19,5
4316/3										
4316/3F										
4316/3S										
4316/M10S										
4316/M12S										
4316/4										
4316/4S										
4316/5										
4316/5S										
4316/7S										
4330/3	43,5	36,9	47,8	33,2	36,2	46,7	39,6	51,4	35,7	38,9
4330/3S										
4330/4										
4330/4S										
4330/5										
4330/5S										
4330/7S										
4330/9S										
4332/4	40,2	34,1	44,2	30,7	33,4	43,2	36,7	47,5	33,0	35,9
4332/4S										
4332/5										
4332/5S										
4341/4	54,6	46,3	60,1	41,7	45,4	58,7	49,8	64,6	44,8	48,8
4341/4S										
4341/5										
4341/5S										
4341/6										
4341/6S										
4341/7S										
4375/4S	109,2	92,7	120,2	83,5	90,8	117,4	99,6	129,2	89,7	97,6
4375/5S										
4375/6S										
4375/7S										
4375/9S										

(1) : Water capacity values are referred to the following conditions, fixed in ARI STANDARD 710-2004 and DIN 8949:2000:
 - Liquid temperatures: 24 °C and 52 °C
 - Equilibrium point dryness, EPD: 60 ppm for R22
 - Equilibrium point dryness, EPD: 50 ppm for R134a, R404A, R407C, R410A e R507

TABLE 5: Refrigerant Flow Capacity of filters with antiacid core

Catalogue Number	Refrigerant Flow Capacity, pressure drop 0,07 bar (1) [kW]						Refrigerant Flow Capacity, pressure drop 0,14 bar (1) [kW]					
	R134a	R22	R404A	R407C	R410A	R404A R507	R134a	R22	R404A R507	R407C	R410A	R507
4203/2	6,4	7,0	4,6	7,0	6,8	4,4	7,7	8,4	5,5	8,4	8,1	5,3
4203/2S	7,9	8,6	5,7	8,6	8,3	5,5	9,4	10,3	6,8	10,4	10,0	6,5
4203/3	14,7	16,1	10,6	16,2	15,6	10,2	17,7	19,3	12,7	19,4	18,7	12,2
4205/2	6,6	7,2	4,7	7,2	7,0	4,6	8,6	9,4	6,2	9,4	9,1	5,9
4205/2S	8,1	8,9	5,9	8,9	8,6	5,6	10,6	11,6	7,6	11,6	11,2	7,3
4205/3	15,2	16,6	10,9	16,7	16,1	10,5	19,7	21,6	14,2	21,7	20,9	13,7
4205/3S	19,2	21,0	13,8	21,1	20,3	13,3	25,0	27,3	18,0	27,4	26,5	17,3
4208/2	6,9	7,5	4,9	7,5	7,3	4,8	8,9	9,8	6,4	9,8	9,4	6,2
4208/2S	8,4	9,2	6,1	9,2	8,9	5,8	10,9	12,0	7,9	12,0	11,6	7,6
4208/3	17,8	19,5	12,9	19,6	18,9	12,4	23,2	25,4	16,7	25,5	24,6	16,1
4208/3S	22,6	24,7	16,3	24,8	23,9	15,7	29,4	32,1	21,2	32,2	31,1	20,4
4208/4	23,7	25,9	17,1	26,0	25,1	16,4	30,8	33,7	22,2	33,8	32,6	21,3
4208/4S	28,6	31,3	20,6	31,4	30,3	19,8	37,2	40,7	26,8	40,9	39,4	25,8
4216/2	6,9	7,5	4,9	7,5	7,3	4,8	9,3	10,1	6,7	10,2	9,8	6,4
4216/3	19,5	21,3	14,0	21,4	20,6	13,5	26,3	28,8	18,9	28,9	27,9	18,2
4216/3S	24,3	26,6	17,5	26,7	25,8	16,9	32,9	35,9	23,7	36,1	34,8	22,8
4216/4	27,9	30,5	20,1	30,6	29,6	19,3	37,7	41,2	27,1	41,3	39,9	26,1
4216/4S	33,8	36,9	24,3	37,0	35,8	23,4	45,6	49,8	32,8	50,0	48,3	31,6
4216/5	37,1	40,6	26,8	40,8	39,3	25,7	50,2	54,8	36,1	55,0	53,1	34,7
4216/5S	44,6	48,7	32,1	48,9	47,2	30,9	60,2	65,7	43,3	66,0	63,7	41,7
4230/3	21,4	23,4	15,4	23,5	22,7	14,8	28,9	31,6	20,8	31,7	30,6	20,0
4230/3S	26,8	29,3	19,3	29,4	28,4	18,6	36,2	39,6	26,1	39,7	38,3	25,1
4230/4	30,6	33,4	22,0	33,5	32,4	21,2	41,3	45,1	29,7	45,3	43,7	28,6
4230/4S	37,0	40,4	26,6	40,6	39,1	25,6	49,9	54,5	35,9	54,8	52,8	34,6
4230/5	38,3	41,9	27,6	42,1	40,6	26,6	51,8	56,6	37,3	56,8	54,8	35,9
4230/5S	46,1	50,4	33,2	50,6	48,8	32,0	62,3	68,0	44,8	68,3	65,9	43,1
4232/4	33,2	36,3	23,9	36,4	35,2	23,0	46,5	50,8	33,5	51,0	49,2	32,2
4232/4S	40,1	43,8	28,9	44,0	42,4	27,8	56,1	61,3	40,4	61,6	59,4	38,9
4232/5	39,4	43,1	28,4	43,3	41,8	27,3	55,2	60,3	39,8	60,6	58,5	38,3
4232/5S	47,7	52,1	34,3	52,3	50,5	33,0	66,7	72,9	48,1	73,2	70,7	46,2
4241/5	40,4	44,2	29,1	44,4	42,8	28,0	60,7	66,3	43,7	66,6	64,2	42,0
4241/5S	49,0	53,5	35,3	53,7	51,8	33,9	73,4	80,3	52,9	80,6	77,8	50,9
4241/6	66,4	72,6	47,8	72,9	70,3	46,0	99,6	108,9	71,8	109,3	105,5	69,0
4241/6S												
4241/7S	73,4	80,2	52,9	80,5	77,7	50,8	110,1	120,3	79,3	120,8	116,6	76,3
4275/4S	52,8	57,7	38,0	57,9	55,9	36,6	79,2	86,6	57,0	86,9	83,9	54,9
4275/5S	53,9	58,9	38,8	59,1	57,1	37,3	80,8	88,4	58,2	88,7	85,6	56,0
4275/6S	79,7	87,1	57,4	87,4	84,4	55,2	119,5	130,7	86,1	131,2	126,6	82,8
4275/7S	91,8	100,3	66,1	100,7	97,2	63,6	137,7	150,5	99,1	151,1	145,8	95,4
4275/9S	95,4	104,3	68,7	104,7	101,1	66,1	143,2	156,5	103,1	157,1	151,6	99,2

(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 / 0,14 bar , inlet and outlet connections included, (according to ARI STANDARD 710-2004 - with liquid temperature at + 30 °C and evaporating temperature at - 15 °C)

TABLE 6A: Refrigerant Water Capacity of filters with antiacid core

Catalogue Number	Water Capacity at + 24 °C (1) [g H ₂ O]					Dehydratable Charge at + 24 °C [kg refrigerant]				
	R134a	R22	R404A R507	R407C	R410A	R134a	R22	R404A R507	R407C	R410A
4203/2	4,2	3,7	4,3	3,4	3,7	4,5	4,0	4,6	3,7	3,9
4203/2S										
4203/3										
4205/2	6,5	6,0	6,7	5,4	5,9	7,0	6,5	7,2	5,8	6,3
4205/2S										
4205/3										
4205/3S										
4208/2	11,0	10,0	11,2	9,0	9,8	11,8	10,8	12,1	9,7	10,5
4208/2S										
4208/3										
4208/3S										
4208/4										
4208/4S										
4216/2	21,4	19,6	21,8	17,5	19,1	23,0	21,0	23,5	18,8	20,6
4216/3										
4216/3S										
4216/4										
4216/4S										
4216/5										
4216/5S										
4230/3	42,8	39,1	43,8	35,1	38,2	46,1	42,0	47,0	37,7	41,1
4230/3S										
4230/4										
4230/4S										
4230/5										
4230/5S										
4232/4	39,6	36,2	40,5	32,5	35,3	42,6	38,9	43,5	34,9	37,9
4232/4S										
4232/5										
4232/5S										
4241/5	53,8	49,1	55,0	44,0	47,9	57,9	52,8	59,1	47,3	51,5
4241/5S										
4241/6										
4241/6S										
4241/7S										
4275/4S	107,6	98,3	110,0	88,1	95,9	115,7	105,7	118,3	94,8	103,1
4275/5S										
4275/6S										
4275/7S										
4275/9S										

(1) : Water capacity values are referred to the following conditions, fixed in ARI STANDARD 710-2004 and DIN 8949:2000:

- Liquid temperatures: 24 °C and 52 °C
- Equilibrium point dryness, EPD: 60 ppm for R22
- Equilibrium point dryness, EPD: 50 ppm for R134a, R404A, R407C, R410A e R507

TABLE 6B: Refrigerant Water Capacity of filters with antiacid core

Catalogue Number	Water Capacity at + 52 °C (1) [g H ₂ O]					Dehydratable Charge at + 52 °C [kg refrigerant]				
	R134a	R22	R404A R507	R407C	R410A	R134a	R22	R404A R507	R407C	R410A
4203/2	3,6	3,1	3,9	2,7	3,0	3,8	3,3	4,2	2,9	3,2
4203/2S										
4203/3										
4205/2	5,7	4,8	6,2	4,3	4,8	6,1	5,2	6,7	4,7	5,1
4205/2S										
4205/3										
4205/3S										
4208/2	9,4	7,9	10,4	7,2	7,9	10,1	8,5	11,2	7,8	8,5
4208/2S										
4208/3										
4208/3S										
4208/4										
4208/4S										
4216/2	18,4	15,6	20,3	14,1	15,4	19,8	16,8	21,8	15,2	16,5
4216/3										
4216/3S										
4216/4										
4216/4S										
4216/5										
4216/5S										
4230/3	37,0	31,4	40,6	28,2	30,8	39,7	33,6	43,7	30,3	33,1
4230/3S										
4230/4										
4230/4S										
4230/5										
4230/5S										
4232/4	34,2	29,0	37,6	26,1	28,4	36,7	31,2	40,4	28,1	30,5
4232/4S										
4232/5										
4232/5S										
4241/5	46,4	39,4	51,1	35,4	38,6	49,9	42,3	54,9	38,1	41,5
4241/5S										
4241/6										
4241/6S										
4241/7S										
4275/4S	92,8	78,8	102,2	71,0	77,2	99,8	84,7	109,9	76,3	83,0
4275/5S										
4275/6S										
4275/7S										
4275/9S										

(1) : Water capacity values are referred to the following conditions, fixed in ARI STANDARD 710-2004 and DIN 8949:2000:

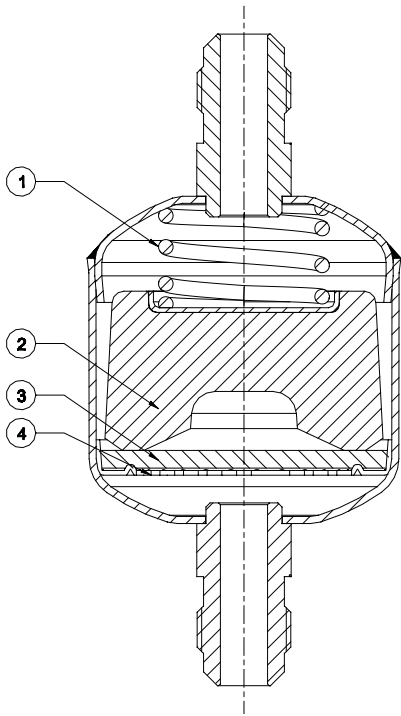
- Liquid temperatures: 24 °C and 52 °C
- Equilibrium point dryness, EPD: 60 ppm for R22
- Equilibrium point dryness, EPD: 50 ppm for R134a, R404A, R407C, R410A e R507

TABLE 7: Correction factors - L₁ of the refrigeration capacity for temperatures different from standard values

Liquid temperature [°C]	Refrigerant	Evaporating temperature [°C]										
		+10	+5	0	-5	-10	-15	-20	-25	-30	-35	-40
0	R134a							1,32	1,29	1,27	1,25	1,23
	R22							1,27	1,25	1,24	1,23	1,21
	R404A							1,44	1,42	1,39	1,36	1,33
	R407C							1,33	1,31	1,29	1,27	1,25
	R410A							1,36	1,34	1,33	1,31	1,30
	R507							1,46	1,43	1,40	1,37	1,34
10	R134a							1,20	1,18	1,16	1,14	1,12
	R22							1,18	1,16	1,15	1,13	1,12
	R404A							1,29	1,26	1,24	1,21	1,18
	R407C							1,22	1,20	1,18	1,16	1,14
	R410A							1,24	1,22	1,21	1,19	1,18
	R507							1,30	1,27	1,24	1,22	1,19
20	R134a	1,21	1,19	1,18	1,15	1,13	1,11	1,09	1,07	1,05	1,03	1,01
	R22	1,15	1,14	1,13	1,12	1,11	1,09	1,08	1,07	1,05	1,04	1,03
	R404A	1,27	1,25	1,23	1,21	1,18	1,16	1,13	1,11	1,08	1,06	1,03
	R407C	1,20	1,18	1,17	1,15	1,13	1,12	1,10	1,08	1,06	1,05	1,03
	R410A	1,17	1,17	1,16	1,15	1,14	1,13	1,11	1,10	1,09	1,07	1,06
	R507	1,28	1,26	1,24	1,21	1,19	1,16	1,14	1,11	1,09	1,06	1,03
30	R134a	1,10	1,08	1,06	1,04	1,02	1,00	0,98	0,96	0,94	0,92	0,89
	R22	1,06	1,05	1,04	1,02	1,01	1,00	0,99	0,97	0,96	0,95	0,93
	R404A	1,11	1,09	1,07	1,05	1,02	1,00	0,98	0,95	0,93	0,90	0,87
	R407C	1,08	1,06	1,05	1,03	1,02	1,00	0,98	0,97	0,95	0,93	0,91
	R410A	1,05	1,04	1,03	1,02	1,01	1,00	0,99	0,98	0,96	0,95	0,93
	R507	1,11	1,09	1,07	1,05	1,02	1,00	0,98	0,95	0,92	0,90	0,87
40	R134a	0,98	0,96	0,95	0,93	0,91	0,89	0,87	0,84	0,82	0,80	0,78
	R22	0,96	0,95	0,94	0,93	0,92	0,90	0,89	0,88	0,86	0,85	0,84
	R404A	0,95	0,93	0,90	0,88	0,86	0,84	0,81	0,79	0,76	0,74	0,71
	R407C	0,96	0,94	0,93	0,91	0,90	0,88	0,86	0,85	0,83	0,81	0,79
	R410A	0,92	0,91	0,90	0,89	0,88	0,87	0,86	0,85	0,83	0,82	0,81
	R507	0,94	0,92	0,90	0,88	0,86	0,83	0,81	0,78	0,76	0,73	0,71
50	R134a	0,87	0,85	0,83	0,81	0,79	0,77	0,75	0,73	0,71	0,69	0,67
	R22	0,86	0,85	0,84	0,83	0,82	0,81	0,79	0,78	0,77	0,75	0,74
	R404A	0,77	0,76	0,74	0,71	0,69	0,67	0,65	0,62	0,60	0,58	0,55
	R407C	0,83	0,82	0,80	0,79	0,77	0,76	0,74	0,72	0,71	0,69	0,67
	R410A	0,78	0,77	0,77	0,76	0,75	0,74	0,72	0,71	0,70	0,69	0,67
	R507	0,77	0,75	0,73	0,71	0,68	0,66	0,64	0,61	0,59	0,56	0,54
60	R134a	0,75	0,73	0,71	0,69	0,67	0,65	0,63	0,61	0,59	0,57	0,55
	R22	0,76	0,75	0,74	0,73	0,72	0,70	0,69	0,68	0,67	0,65	0,64
	R404A	0,60	0,58	0,56	0,54	0,52	0,50	0,47	0,45	0,43	0,41	0,38
	R407C	0,70	0,69	0,68	0,66	0,65	0,63	0,62	0,60	0,58	0,57	0,55
	R410A	0,64	0,63	0,62	0,61	0,60	0,59	0,58	0,57	0,56	0,55	0,53
	R507	0,58	0,57	0,55	0,53	0,50	0,48	0,46	0,44	0,41	0,39	0,37

TABLE 8: Dimensions and Weights

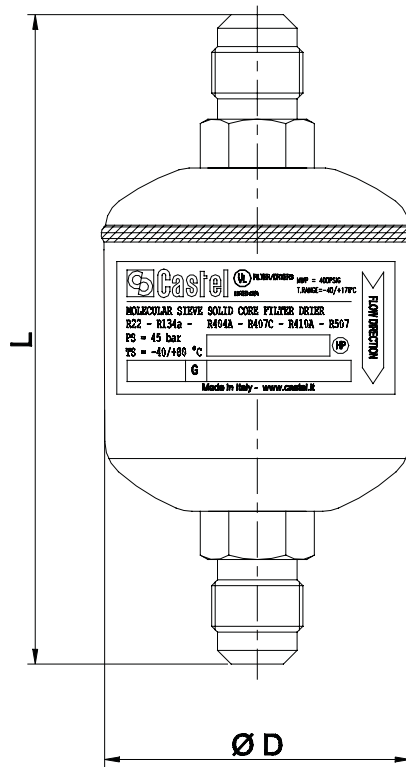
Catalogue Number		Connections			Dimensions [mm]		Weight [g]
		SAE Flare	ODS		Ø D	L	
			Ø [in.]	Ø [mm]			
4303/2	4203/2	1/4"	-	-	52	103	240
4303/2F	-	1/4"	-	-		92	230
4303/2S	4203/2S	-	1/4"	-		94	220
4303/3	4203/3	3/8"	-	-		111	235
4303/3S	-	-	3/8"	-		96	220
4305/2	4205/2	1/4"	-	-		119	275
4305/2F	-	1/4"	-	-		109	
4305/2S	4205/2S	-	1/4"	-		110	260
4305/3	4205/3	3/8"	-	-		127	295
4305/3S	4205/3S	-	3/8"	-		112	260
4305/M10S	-	-	-	10			
4308/2	4208/2	1/4"	-	-		146	380
4308/2F	-	1/4"	-	-		135	
4308/2S	4208/2S	-	1/4"	-		137	345
4308/3	4208/3	3/8"	-	-		154	395
4308/3F	-	3/8"	-	-		142	380
4308/3S	4208/3S	-	3/8"	-		139	345
4308/M10S	-	-	-	10			
4308/M12S	-	-	-	12		146	380
4308/4	4208/4	1/2"	-	-		162	430
4308/4S	4208/4S	-	1/2"	-		146	380
4316/2	4216/2	1/4"	-	-		158	635
4316/3	4216/3	3/8"	-	-		166	690
4316/3F	-	3/8"	-	-		154	680
4316/3S	4216/3S	-	3/8"	-		151	620
4316/M10S	-	-	-	10			
4316/M12S	-	-	-	12		158	640
4316/4	4216/4	1/2"	-	-		174	680
4316/4S	4216/4S	-	1/2"	-	158	640	
4316/5	4216/5	5/8"	-	-	183	740	
4316/5S	4216/5S	-	5/8"	16	166	640	
4316/7S	-	-	7/8"	-	171	650	
4330/3	4230/3	3/8"	-	-	245	1380	
4330/3S	4230/3S	-	3/8"	-	230	1240	
4330/4	4230/4	1/2"	-	-	253	1360	
4330/4S	4230/4S	-	1/2"	-	237	1280	
4330/5	4230/5	5/8"	-	-	262	1480	
4330/5S	4230/5S	-	5/8"	16	245	1370	
4330/7S	-	-	7/8"	-	250	1420	
4330/9S	-	-	1.1/8"	-	250	1450	
4332/4	4232/4	1/2"	-	-	187	1300	
4332/4S	4232/4S	-	1/2"	-	173	1200	
4332/5	4232/5	5/8"	-	-	196	1320	
4332/5S	4232/5S	-	5/8"	16	179	1250	
4341/4	-	1/2"	-	-	222	1560	
4341/4S	-	-	1/2"	-	208	1450	
4341/5	4241/5	5/8"	-	-	231	1580	
4341/5S	4241/5S	-	5/8"	16	214	1470	
4341/6	4241/6	3/4"	-	-	232	1640	
4341/6S	4241/6S	-	3/4"	-	219	1560	
4341/7S	4241/7S	-	7/8"	-		1600	
4375/4S	4275/4S	-	1/2"	-	387	2540	
4375/5S	4275/5S	-	5/8"	16	393	2640	
4375/6S	4275/6S	-	3/4"	-	398	2820	
4375/7S	4275/7S	-	7/8"	-	398	2900	
4375/9S	4275/9S	-	1.1/8"	-	398	3050	



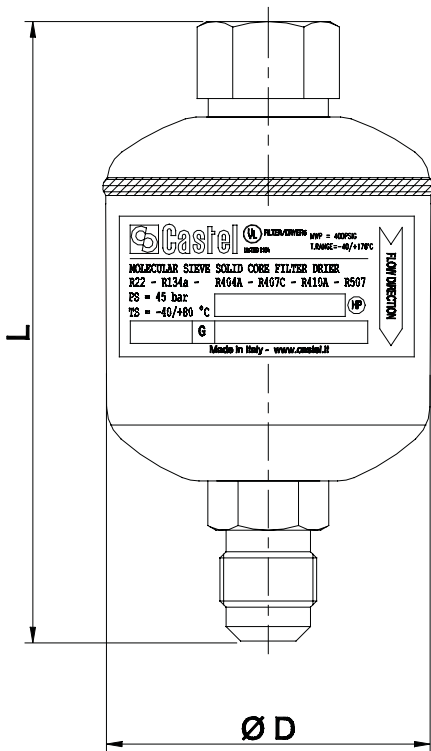
Flow direction

Solid core dehydrator

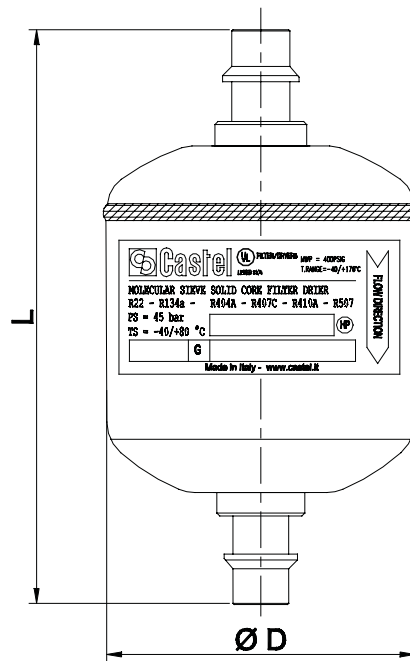
- 1 - Spring
- 2 - Bock
- 3 - Felt
- 4 - Stainless steel mesh



Male connections



**Male - female connections
(female - in)**



Solder connections

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