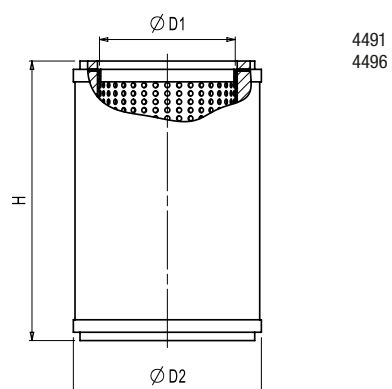
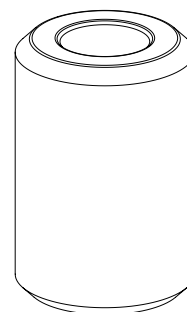
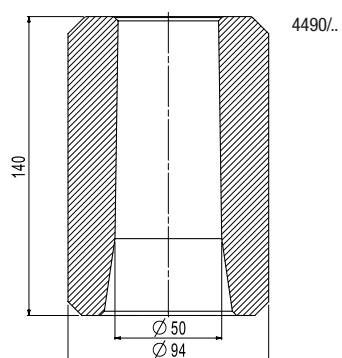
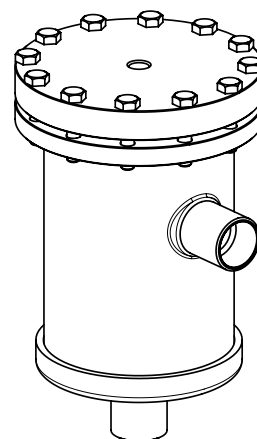
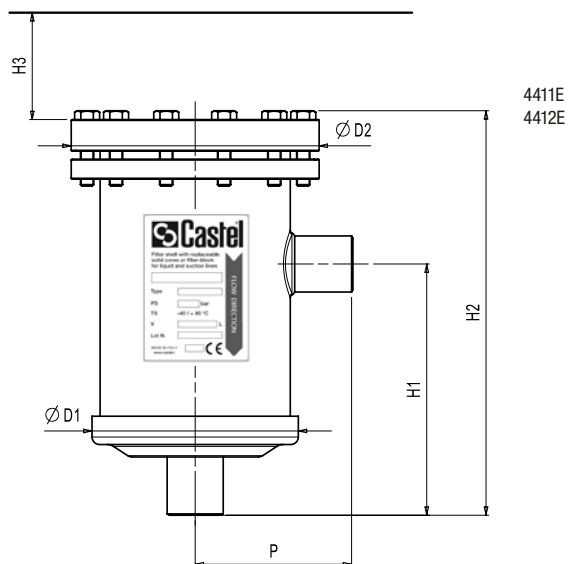


TABLE 10: GENERAL CHARACTERISTICS OF FILTER DRIERS WITH REPLACEABLE SOLID CORE

Catalogue Number		Number of Cores	Core Filtering Surface [cm ²]	Nominal Volume		Connections			PS [bar]	TS [°C]		Risk Category according to PED Recast
						ODS		W		min.	max.	
Theaded cover	Blind cover			[cu.in]	[cm ³]	Ø [in.]	Ø [mm]	Ø [mm]				
Subcritical												
4411E/5AF	4411E/5BF	1	420	48	800	5/8"	16	21,3	62	-40	+80	I
4411E/7AF	4411E/7BF					7/8"	22	26,9				
4411E/9AF	4411E/9BF					1.1/8"	–	33,7				
4411E/11AF	4411E/11BF					1.3/8"	35	42,4				
4411E/13AF	4411E/13BF					1.5/8"	–	48,3				
4411E/M42AF	4411E/M42BF					–	42	48,3				
4411E/17AF	4411E/17BF					2.1/8"	54	60,3				
4412E/7AF	4412E/7BF	2	840	96	1600	7/8"	22	26,9				
4412E/9AF	4412E/9BF					1.1/8"	–	33,7				
4412E/11AF	4412E/11BF					1.3/8"	35	42,4				
4412E/13AF	4412E/13BF					1.3/8"	35	42,4				
4412E/M42AF	4412E/M42BF					–	42	48,3				
4412E/17AF	4412E/17BF					2.1/8"	54	60,3				

TABLE 11: REFRIGERANT FLOW CAPACITY OF FILTERS WITH REPLACEABLE CORE

Catalogue Number		Flow capacity at pressure drop 0,07 bar (1)) [kW]	Flow capacity at pressure drop 0,14 bar (1)) [kW]
Theaded cover	Blind cover		
4411E/5AF	4411E/5BF	52	62
4411E/7AF	4411E/7BF	91	119
4411E/9AF	4411E/9BF	125	162
4411E/11AF	4411E/11BF	145	189
4411E/13AF	4411E/13BF	156	203
4411E/M42AF	4411E/M42BF	156	203
4411E/17AF	4411E/17BF	156	203
4412E/7AF	4412E/7BF	91	119
4412E/9AF	4412E/9BF	141	183
4412E/11AF	4412E/11BF	191	248
4412E/13AF	4412E/13BF	208	281
4412E/M42AF	4412E/M42BF	208	281
4412E/17AF	4412E/17BF	208	281

(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 710-2009 - with liquid temperature at -5 °C and evaporating temperature at -40 °C)

NOTE: for temperatures different from standard values use correction factors L1 listed on TABLE 5

TABLE 12: DIMENSIONS AND WEIGHTS OF FILTERS

Catalogue Number		Connections			Dimensions [mm]						Weight [g]
		ODS		W	Ø D1	Ø D2	H1	H2	H3	P	
Theaded cover	Blind cover	Ø [in.]	Ø [mm]	Ø [mm]							
4411E/5AF	4411E/5BF	5/8"	16	21,3	121	149	144	231	185	90	5158
4411E/7AF	4411E/7BF	7/8"	22	26,9			150	237		95	5300
4411E/9AF	4411E/9BF	1.1/8"	–	33,7			155	242		100	5400
4411E/11AF	4411E/11BF	1.3/8"	35	42,4			167	254		112	5450
4411E/13AF	4411E/13BF	1.5/8"	–	48,3			158	245	324	103	5500
4411E/M42AF	4411E/M42BF	–	42	48,3			292	379		95	6600
4411E/17AF	4411E/17BF	2.1/8"	54	60,3			297	384		100	6800
4412E/7AF	4412E/7BF	7/8"	22	26,9			309	396		112	6950
4412E/9AF	4412E/9BF	1.1/8"	–	33,7			300	387		103	7000
4412E/11AF	4412E/11BF	1.3/8"	35	42,4							
4412E/13AF	4412E/13BF	1.5/8"	–	48,3							
4412E/M42AF	4412E/M42BF	–	42	48,3							
4412E/17AF	4412E/17BF	2.1/8"	54	60,3							

TABLE 13: GENERAL CHARACTERISTICS, DIMENSIONS AND WEIGHTS OF SOLID CORES

Catalogue Number	Batch characteristic	Filtering Surface [cm ²]	Nominal Volume		Dimensions [mm]			Weight [g]
			[cu.in]	[cm ³]	Ø D1	Ø D2	H	
4490/E (1)	High moisture adsorption (100% molecular sieve)	420	48	800	50	94	140	730
4490/B (2)								
4490/AB (2)	Moisture and acid adsorption (80% molecular sieve + 20% activated alumina)							
4490/BB (2)	High acid adsorption, motor burn-out core (25% molecular sieve + 75% activated alumina)							

(1): Supplied with cover gaskets as spare part

(2): Supplied without cover gasket as part part

TAB 14: WATER CAPACITY / DEHYDRATABLE CHARGE AND ACID CAPACITY OF SOLID CORES

Part number	Dehydrating charge	Water Capacity at + 24 °C (1) [g H ₂ O]	Dehydratable Charge at + 24 °C [kg R744]	Water Capacity at -6,6 °C (1) [g H ₂ O]	Dehydratable Charge at -6,6 °C [kg R744]	Acid Capacity (2) [g]
4490/B 4490/E	100% Molecular sieve	75,7	78,8	91,6	95,4	
4490/AB	80% Molecular sieve + 20% activated alumina	64,1	66,8	77,6	80,8	
4490/BB	25% Molecular sieve + 75% activated alumina					62

(1) Drying capacity is based on the following moisture content test standards before and after drying:

EPD ; from 1110 ppm W to 50 ppm W at 24 °C

EPD ; from 445 ppm W to 50 ppm W at - 6,6 °C

(2) : Neutralized oleic acid

TABLE 15: GENERAL CHARACTERISTIC, DIMENSIONS AND WEIGHTS OF MECHANICAL BLOCK

Catalogue Number	Filtering Surface		Dimensions [mm]			Weight [g]
	[sq.in]	[cm ²]	Ø D1	Ø D2	H	
4495/C	127	820	60	87	138	480

REFRIGERATING SYSTEM PROTECTORS

7.5 – HIGH PRESSURE REPLACEABLE SOLID CORE FILTER DRIERS

APPLICATIONS

The high pressure replaceable filter driers in series 4431E and 4432E are considered “Pressure Vessels” according to the definition provided in Article 2, Point 2 of the Directive 2014/68/EU (PED Recast) and are subject to the classification indicated in Article 4, Points 1.a) and 3 of the same Directive.

These filters have been developed by Castel for all the applications that use the trans-critical R744 refrigerant fluid belonging to Group 2, defined in Article 13, Chapter 1, Point (b) of Directive 2014/68/EU, with reference to EC Regulation No. 1272/2008.

OPERATION

In the case of filters with two cartridges, the fluid passage takes place in parallel. As a result, the pressure drop does not increase in proportion with the number of cartridges. A large ring area between the cartridge and the inner surface of the filter allows for the accumulation of solid particles and prevents clogging. Before leaving the filter, the refrigerant fluid must pass through the mesh sieve in which cartridges are mounted. This eliminates the danger that small particles of drying material be dragged into circulation. Furthermore, at the filter outlet, a plastic cup, the edge of which closely adheres to the inner surface of the filter, prevents dirt from reaching the outlet connection during normal operation and cartridge change.

CONSTRUCTION

Filter shells: these are built with a thick aluminium cover, stainless steel screws, and the reinforced steel body is equipped with brazing connections machined from a steel bar EN 10025 S355JR.

They are sold in the following two configurations:

- Codes with an “A” suffix, equipped with 1/4” NPT threaded cover for mounting an access fitting with valve core (for example G9150/R05)
- Codes with a “B” suffix, equipped with blind cover

Cartridges 4490/B: are made from moulding a dehydrating filler, made completely from 3 Å molecular sieves, with a suitable binder. The choice of using only 3 Å molecular sieves as the dehydrating material grants the cartridge extraordinary moisture adsorption capacity while maintaining reasonable de-acidifying characteristics.

These cartridges are supplied without cover gasket as spare parts, **Cartridges 4490/AB:** are made from moulding a dehydrating filler, made from 80% 3 Å molecular sieves and 20% activated alumina, with a suitable binder. The use of a blend of molecular

sieves – activated alumina, grant the cartridges a high deacidifying capacity maintaining very good moisture adsorption characteristics.

These cartridges are supplied without cover gasket as spare parts **Cartridges 4490/BB:** are made from moulding a dehydrating filler, made from 25% 3 Å molecular sieves and 75% activated alumina, with a suitable binder. The use of a blend of molecular sieves and a big quantity of activated alumina, grant the cartridges a very high deacidifying capacity. These cartridges can be used as a compressor motor burn-out core. They are supplied without cover gasket as spare parts.

Cartridges 4490/E: are made from moulding a dehydrating filler, made completely from 3 Å molecular sieves, with a suitable binder. The choice of using only 3 Å molecular sieves as the dehydrating material grants the cartridge extraordinary moisture adsorption capacity while maintaining reasonable de-acidifying characteristics. These cartridges are supplied with cover gasket as spare parts,

All the cartridges listed above have volume of 48 cubic inches (equivalent to about 800 cm³), have a hollow cylinder shape and are of the same size as the corresponding products of the main international brands. Consequently they are interchangeable. The hollow cylinder shape provides a large surface area to the fluid which to cross it in a radial direction. As a result, drying is highly efficient with a minimum loss of charge.

Cartridge 4495: characterized by a large filter surface, these consist of metal mesh fabric with a controlled porosity filter sieve insert, which can retain solid particles to 20 microns. At both ends, soft felt gaskets ensure perfect seal with the plastic cups. These cartridges can be used in the 4411E and 4412E filter shell by replacing the internal components with spare 9151/R02. If the 4412E filter shell is used, the 9900/X74 centering disc is also required.

CERTIFICATIONS

The American certification authority Underwriters Laboratories Inc. has approved filter driers in series 4431E and 4432E with file SA7054. These filters are certified **UL-CSA Listed** for the USA and Canada with a Design Pressure of 1300 PSI, in compliance with American standard UL 207 and Canadian standard C22.2 No. 140.3-15.



Castel



FILTER/DRYERS MWP = **1305** PSIG
LISTED **81D4** T. RANGE = -40/+176°F

Filter shell with replaceable
solid cores or filter-block
for liquid and suction lines

R744

Type

4431E/7AF

PS

90 bar

TS

-40 / + 80 °C

V

1,6 L

Lot N.

2022001234



MADE IN ITALY

FLOW DIRECTION

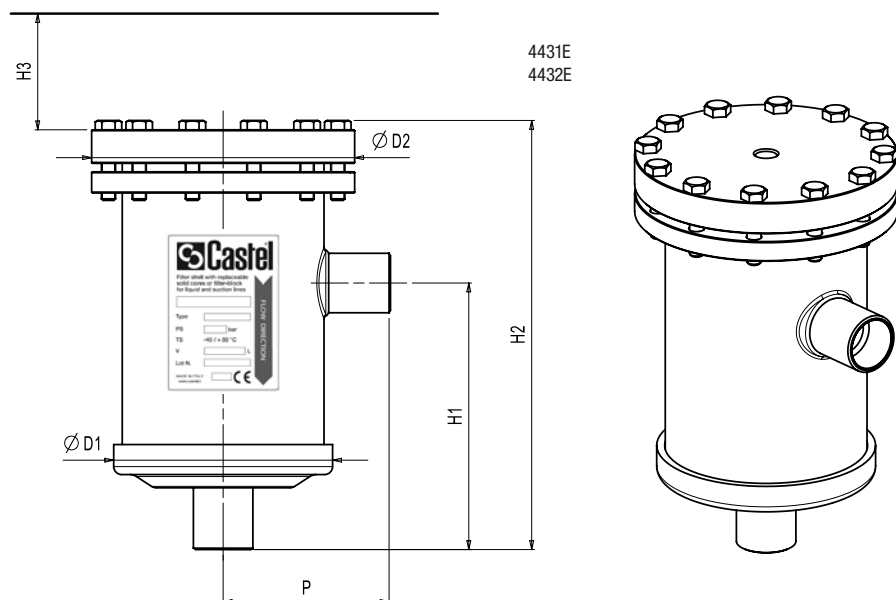


TABLE 16: GENERAL CHARACTERISTICS OF HIGH PRESSURE FILTER DRIERS WITH REPLACEABLE SOLID CORE

Catalogue Number		Number of Cores	Core Filtering Surface [cm2]	Nominal Volume		Connections			PS [bar]	TS [°C]		Risk Category according to PED Recast
						ODS		W		min.	max.	
Theaded cover	Blind cover			[cu.in]	[cm3]	Ø [in.]	Ø [mm]	Ø [mm]				
4431E/5AF	4431E/5BF	1	420	48	800	5/8"	16	21,3	90	− 40	+ 80	II
4431E/7AF	4431E/7BF					7/8"	22	26,9				
4431E/9AF	4431E/9BF					1.1/8"	–	33,7				
4431E/11AF	4431E/11BF					1.3/8"	35	42,4				
4431E/13AF	4431E/13BF					1.5/8"	–	48,3				
4431E/M42AF	4431E/M42BF					–	42	48,3				
4431E/17AF	4431E/17BF					2.1/8"	54	60,3				
4432E/7AF	4432E/7BF	2	840	96	1600	7/8"	22	26,9				
4432E/9AF	4432E/9BF					1.1/8"	–	33,7				
4432E/11AF	4432E/11BF					1.3/8"	35	42,4				
4432E/13AF	4432E/13BF					1.3/8"	35	42,4				
4432E/M42AF	4432E/M42BF					–	42	48,3				
4432E/17AF	4432E/17BF					2.1/8"	54	60,3				

TABLE 17: REFRIGERANT FLOW CAPACITY OF FILTERS WITH REPLACEABLE CORE

Catalogue Number		Flow capacity at pressure drop 0,07 bar (1)) [kW]	Flow capacity at pressure drop 0,14 bar (1)) [kW]
Theaded cover	Blind cover		
4431E/5AF	4431E/5BF	52	62
4431E/7AF	4431E/7BF	91	119
4431E/9AF	4431E/9BF	125	162
4431E/11AF	4431E/11BF	145	189
4431E/13AF	4431E/13BF	156	203
4431E/M42AF	4431E/M42BF	156	203
4431E/17AF	4431E/17BF	156	203
4432E/7AF	4432E/7BF	91	119
4432E/9AF	4432E/9BF	141	183
4432E/11AF	4432E/11BF	191	248
4432E/13AF	4432E/13BF	208	281
4432E/M42AF	4432E/M42BF	208	281
4432E/17AF	4432E/17BF	208	281

(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 710-2009 - with liquid temperature at -5 °C and evaporating temperature at - 40 °C)

NOTE: for temperatures different from standard values use correction factors L1 listed on TABLE 5

TABLE 18: DIMENSIONS AND WEIGHTS OF FILTERS

Catalogue Number		Connections			Dimensions [mm]						Weight [g]
		ODS		W	Ø D1	Ø D2	H1	H2	H3	P	
Theaded cover	Blind cover	Ø [in.]	Ø [mm]	Ø [mm]							
4431E/5AF	4431E/5BF	5/8"	16	21,3	124	149	145	238	185	89	4210
4431E/7AF	4431E/7BF	7/8"	22	26,9			151	244		95	4240
4431E/9AF	4431E/9BF	1.1/8"	–	33,7							4290
4431E/11AF	4431E/11BF	1.3/8"	35	42,4			156	249		100	4430
4431E/13AF	4431E/13BF	1.5/8"	–	48,3			168	261		112	4570
4431E/M42AF	4431E/M42BF	–	42	48,3							4550
4431E/17AF	4431E/17BF	2.1/8"	54	60,3			159	252		103	4480
4432E/7AF	4432E/7BF	7/8"	22	26,9			293	385	324	95	5780
4432E/9AF	4432E/9BF	1.1/8"	–	33,7							5830
4432E/11AF	4432E/11BF	1.3/8"	35	42,4			298	390		100	5970
4432E/13AF	4432E/13BF	1.5/8"	–	48,3						310	402
4432E/M42AF	4432E/M42BF	–	42	48,3			6090				
4432E/17AF	4432E/17BF	2.1/8"	54	60,3			301	393		103	6020