

HANDBOOK

# REFRIGERATING SYSTEM PROTECTORS

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Ed. 2017



# REPLACEABLE SOLID CORE FILTER DRIERS

## FOR REFRIGERATION PLANTS THAT USE HCFC, HFC OR HFO REFRIGERANTS



### APPLICATIONS

The filters in series 44 illustrated in this chapter are designed for installation on commercial refrigeration systems and on civil and industrial air conditioning plants that use the following refrigerant fluids:

- HCFC (R22)
- HFC (R134a, R404A, R407C, R410A, R507)
- HFO and HFO/HFC mixtures (R1234ze, R448A, R449A, R450A, and R452A)

belonging to Group 2, as defined in Article 13, Chapter 1, Point (b) of Directive 2014/68/EU, with reference to EC Regulation No. 1272/2008.

For specific applications with refrigerant fluids not listed above, please contact Castel Technical Department.

### OPERATION

In the case of filters with more than one cartridge, 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

**Filters in series 4410:** these are built with an aluminium cover, zinc plated screws, and the steel body is equipped with brazing connections:

- made from copper pipe EN 12735-1 – Cu-DHP. (No suffix after the connection code)
- Machined from a steel bar EN 10025 S355JR. (“F” suffix after connection code)

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

**Filters in series 4420:** these filters are manufactured with: zinc plated steel cover, stainless steel screws, steel body equipped with brazing connections machined from steel bar EN 10025 S355JR.

Sold only in the configuration of codes with an “A” suffix, equipped with 1/4” NPT threaded cover for mounting an access fitting with valve core (for example kit G9150/R05)

**Cartridges in series 4490, type A and type B, and 4491:** 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 deacidifying characteristics.

**Cartridges in series 4490, type AA and type AB, and 4491, type AA:** 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 very high deacidifying capacity maintaining very good moisture adsorption characteristics.

The presence of a controlled and defined percentage of activated alumina, lower than the maximum value

recommended by ASERCOM, maintains the original concentration of additives in the polyester oil.

The cartridges in series 4490 have volume of 48 cubic inches, equivalent to about 800 cm<sup>3</sup>, and are suitable for being used with filters in series 4411, 4412, 4413 and 4414. The cartridges in series 4491 have volume of 96 cubic inches, equivalent to about 1600 cm<sup>3</sup>, and are suitable for being used with filters in series 4421, 4423, and 4424.

Both 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 REPLACEMENT

Cartridges must be ordered separately from the filter. They are supplied in individual packages, which are hermetically sealed in metal containers (type 4490), and in special bags (type 4491). Both types of packaging are suitable for long-term storage of the cartridge.

Each cartridge is supplied with two synthetic gaskets to be used as a seal between the two cartridges and between the cartridge and its covers.

If the filter is installed in a system without a by-pass, the cartridge replacement must be done following these instructions:

1. Close the valve on the liquid outlet line.
2. Start the compressor and its auxiliaries in order to transfer the refrigerant charge to the high pressure side of the plant (liquid vessel);

3. Stop the compressor at a sufficiently high suction pressure above atmospheric pressure;
4. Close the service valve on the suction side of the compressor.

NOTE: if during the transfer of the refrigerant to the high-pressure side of the plant, the discharge pressures reach values that are too high (the condenser is flooded due to insufficient capacity of the liquid vessel), shut off the valve on the suction side of the compressor and immediately stop the compressor.

5. Quickly replace the filter cartridge. During preparation for installation of the new cartridge, wrap the filter in a clean rag. The slight over-pressure in the filter and the technician's skill will prevent air from getting into the plant.
6. The cleanliness of the inside of the body is guaranteed by the scraping effect of the cup, which is characteristic of Castel filters.  
If it is assumed that air has entered the plant during filter cartridge replacement, put the low-pressure side of the plant under vacuum. Always do this to the circuit involved in the operation.
7. Open the valve on the liquid outlet line.
8. Slowly open the compressor's suction valve and start the compressor and its auxiliaries.
9. Top the charge up, if necessary.

## APPROVALS

Filters in series 4410 and 4420 have been approved by the American certification authority Underwriters Laboratories Inc. Filters in series 4410 and 4420 are certified **UL Listed** for the USA with file SA7054, in compliance with American standard UL 207.

**TABLE 39: General characteristics of filter driers with replaceable solid core**

| Catalogue Number   |             |                   | Core Cat. Number                    | Number of Cores | Core Filtering Surface [cm <sup>2</sup> ] | Nominal Volume |                    | Connections |        |        | PS [bar]  | TS [°C] |      | TA [°C] |      | Risk Category according to PED Recast |
|--------------------|-------------|-------------------|-------------------------------------|-----------------|---|----------------|--------------------|-------------|--------|--------|-----------|---------|------|---------|------|---------------------------------------|
| Copper connections |             | Steel connections |                                     |                 |   |                |                    | ODS         |        | W (2)  |           | min.    | max. | min.    | max. |                                       |
| Theaded cover      | Blind cover | Theaded cover     |                                     |                 |   | [cu.in]        | [cm <sup>3</sup> ] | Ø [in.]     | Ø [mm] | Ø [mm] |           |         |      |         |      |                                       |
| 4411/5A            | 4411/5B     | 4411/5AF          | 4490/A - 4490/B ; 4490/AA - 4490/AB | 1               | 420                                       | 48             | 800                | 5/8"        | 16     | 21,3   | 45<br>(1) | - 40    | + 80 | - 20    | + 50 | I                                     |
| 4411/7A            | 4411/7B     | 4411/7AF          |                                     |                 |   |                |                    | 7/8"        | 22     | 26,9   |           |         |      |         |      |                                       |
| 4411/M28A          | 4411/M28B   | -                 |                                     |                 |   |                |                    | -           | 28     | 33,7   |           |         |      |         |      |                                       |
| 4411/9A            | 4411/9B     | 4411/9AF          |                                     |                 |   |                |                    | 1.1/8"      | -      | 33,7   |           |         |      |         |      |                                       |
| 4411/11A           | 4411/11B    | 4411/11AF         |                                     |                 |   |                |                    | 1.3/8"      | 35     | 42,4   |           |         |      |         |      |                                       |
| 4411/13A           | 4411/13B    | 4411/13AF         |                                     |                 |   |                |                    | 1.5/8"      | -      | 48,3   |           |         |      |         |      |                                       |
| 4411/M42A          | 4411/M42B   | 4411/M42AF        |                                     |                 |   |                |                    | -           | 42     | 48,3   |           |         |      |         |      |                                       |
| 4411/17A           | 4411/17B    | 4411/17AF         |                                     |                 |   |                |                    | 2.1/8"      | 54     | 60,3   |           |         |      |         |      |                                       |
| 4411/21A           | 4411/21B    | 4411/21AF         |                                     | 2.5/8"          | -   | 76,1           |                    |             |        |        |           |         |      |         |      |                                       |
| 4412/7A            | 4412/7B     | 4412/7AF          |                                     | 2               | 840                                       | 96             | 1600               | 7/8"        | 22     | 26,9   |           |         |      |         |      |                                       |
| 4412/M28A          | 4412/M28B   | 0,05 cm           |                                     |                 |   |                |                    | -           | 28     | 33,7   |           |         |      |         |      |                                       |
| 4412/9A            | 4412/9B     | 4412/9AF          |                                     |                 |   |                |                    | 1.1/8"      | -      | 33,7   |           |         |      |         |      |                                       |
| 4412/11A           | 4412/11B    | 4412/11AF         |                                     |                 |   |                |                    | 1.3/8"      | 35     | 42,4   |           |         |      |         |      |                                       |
| 4412/M42A          | 4412/M42B   | 4412/M42AF        |                                     |                 |   |                |                    | -           | 42     | 48,3   |           |         |      |         |      |                                       |
| 4412/17A           | 4412/17B    | 4412/17AF         |                                     |                 |   |                |                    | 2.1/8"      | 54     | 60,3   |           |         |      |         |      |                                       |
| 4413/7A            | 4413/7B     | 4413/7AF          |                                     | 3               | 1260                                      | 144            | 2400               | 7/8"        | 22     | 26,9   |           |         |      |         |      |                                       |
| 4413/9A            | 4413/9B     | 4413/9AF          | 1.1/8"                              |                 |   |                |                    | -           | 33,7   |        |           |         |      |         |      |                                       |
| 4413/11A           | 4413/11B    | 4413/11AF         | 1.3/8"                              |                 |   |                |                    | 35          | 42,4   |        |           |         |      |         |      |                                       |
| 4413/13A           | 4413/13B    | 4413/13AF         | 1.5/8"                              |                 |   |                |                    | -           | 48,3   |        |           |         |      |         |      |                                       |
| 4413/M42A          | 4413/M42B   | 4413/M42AF        | -                                   |                 |   |                |                    | 42          | 48,3   |        |           |         |      |         |      |                                       |
| 4414/11A           | 4414/11B    | 4414/11AF         | 4                                   | 1680            | 192                                       | 3200           | 1.3/8"             | 35          | 42,4   |        |           |         |      |         |      |                                       |
| 4414/13A           | 4414/13B    | 4414/13AF         |                                     |                 |   |                | 1.5/8"             | -           | 48,3   |        |           |         |      |         |      |                                       |
| 4414/M42A          | 4414/M42B   | 4414/M42AF        |                                     |                 |   |                | -                  | 42          | 48,3   |        |           |         |      |         |      |                                       |
| 4414/17A           | 4414/17B    | 4414/17AF         |                                     |                 |   |                | 2.1/8"             | 54          | 60,3   |        |           |         |      |         |      |                                       |
| -                  | -           | 4423/17A          | 4491/A ; 4491/AA                    | 3               | 1890                                      | 300            | 4800               | 2.1/8"      | 54     | 60,3   | 32<br>(1) |         |      |         |      | II                                    |
|                    |             | 4423/21A          |                                     |                 |   |                |                    | 2.5/8"      | 67     | 76,1   |           |         |      |         |      |                                       |
|                    |             | 4423/25A          |                                     |                 |   |                |                    | 3.1/8"      | 80     | 88,9   |           |         |      |         |      |                                       |
|                    |             | 4424/25A          |                                     | 3.1/8"          | 80  | 88,9           |                    |             |        |        |           |         |      |         |      |                                       |
|                    |             | 4424/34A          |                                     | 4.1/4"          | 108                                       | 114,3          |                    |             |        |        |           |         |      |         |      |                                       |

(1) : MWP = 470 psi according to UL approval  
 (2) : only for shells with steel connections

**TABLE 40: Refrigerant flow capacity of filter driers with replaceable solid core**

| Catalogue Number   |             |                   | Pressure drop 0,07 bar (1) [kW] |      |       |       |       |      |         |       |       |       |       |
|--------------------|-------------|-------------------|---------------------------------|------|-------|-------|-------|------|---------|-------|-------|-------|-------|
| Copper connections |             | Steel connections |                                 |      |       |       |       |      |         |       |       |       |       |
| Theaded cover      | Blind cover | Theaded cover     | R134a                           | R22  | R404A | R407C | R410A | R507 | R1234ze | R448A | R449A | R450A | R452A |
| 4411/5A            | 4411/5B     | 4411/5AF          | 83                              | 90   | 59    | 85    | 87    | 57   | 73      | 78    | 77    | 66    | 60    |
| 4411/7A            | 4411/7B     | 4411/7AF          | 145                             | 158  | 103   | 149   | 153   | 100  | 128     | 138   | 136   | 116   | 105   |
| 4411/M28A          | 4411/M28B   | –                 | 198                             | 216  | 141   | 204   | 209   | 137  | 175     | 188   | 186   | 158   | 143   |
| 4411/9A            | 4411/9B     | 4411/9AF          | 198                             | 216  | 141   | 204   | 209   | 137  | 175     | 188   | 186   | 158   | 143   |
| 4411/11A           | 4411/11B    | 4411/11AF         | 231                             | 252  | 165   | 238   | 244   | 160  | 204     | 220   | 217   | 184   | 167   |
| 4411/13A           | 4411/13B    | 4411/13AF         | 248                             | 270  | 177   | 255   | 262   | 171  | 219     | 235   | 232   | 198   | 179   |
| 4411/M42A          | 4411/M42B   | 4411/M42AF        | 248                             | 270  | 177   | 255   | 262   | 171  | 219     | 235   | 232   | 198   | 179   |
| 4411/17A           | 4411/17B    | 4411/17AF         | 248                             | 270  | 177   | 255   | 262   | 171  | 219     | 235   | 232   | 198   | 179   |
| 4411/21A           | 4411/21B    | 4411/21AF         | 248                             | 270  | 177   | 255   | 262   | 171  | 219     | 235   | 232   | 198   | 179   |
| 4412/7A            | 4412/7B     | 4412/7AF          | 145                             | 158  | 103   | 149   | 153   | 100  | 128     | 138   | 136   | 116   | 105   |
| 4412/9A            | 4412/9B     | 4412/9AF          | 224                             | 244  | 160   | 231   | 236   | 155  | 198     | 213   | 210   | 179   | 162   |
| 4412/11A           | 4412/11B    | 4412/11AF         | 304                             | 331  | 216   | 313   | 321   | 210  | 268     | 289   | 285   | 242   | 219   |
| 4412/M42A          | 4412/M42B   | 4412/M42AF        | 331                             | 361  | 236   | 341   | 350   | 229  | 292     | 315   | 310   | 264   | 239   |
| 4412/17A           | 4412/17B    | 4412/17AF         | 331                             | 361  | 236   | 341   | 350   | 229  | 292     | 315   | 310   | 264   | 239   |
| 4413/7A            | 4413/7B     | 4413/7AF          | 145                             | 158  | 103   | 149   | 153   | 100  | 128     | 138   | 136   | 116   | 105   |
| 4412/M28A          | 4412/M28B   | –                 | 224                             | 244  | 160   | 231   | 236   | 155  | 198     | 213   | 210   | 179   | 162   |
| 4413/9A            | 4413/9B     | 4413/9AF          | 224                             | 244  | 160   | 231   | 236   | 155  | 198     | 213   | 210   | 179   | 162   |
| 4413/11A           | 4413/11B    | 4413/11AF         | 325                             | 354  | 232   | 335   | 343   | 225  | 287     | 309   | 304   | 259   | 234   |
| 4413/13A           | 4413/13B    | 4413/13AF         | 359                             | 391  | 256   | 369   | 379   | 248  | 317     | 341   | 336   | 286   | 259   |
| 4413/M42A          | 4413/M42B   | 4413/M42AF        | 359                             | 391  | 256   | 369   | 379   | 248  | 317     | 341   | 336   | 286   | 259   |
| 4414/11A           | 4414/11B    | 4414/11AF         | 376                             | 410  | 268   | 387   | 397   | 260  | 332     | 358   | 353   | 300   | 271   |
| 4414/13A           | 4414/13B    | 4414/13AF         | 422                             | 460  | 301   | 435   | 446   | 292  | 373     | 401   | 396   | 337   | 305   |
| 4414/M42A          | 4414/M42B   | 4414/M42AF        | 422                             | 460  | 301   | 435   | 446   | 292  | 373     | 401   | 396   | 337   | 305   |
| 4414/17A           | 4414/17B    | 4414/17AF         | 422                             | 460  | 301   | 435   | 446   | 292  | 373     | 401   | 396   | 337   | 305   |
| –                  | –           | 4423/17A          | 443                             | 483  | 316   | 456   | 468   | 307  | 391     | 421   | 415   | 354   | 320   |
|                    |             | 4423/21A          | 488                             | 532  | 348   | 503   | 516   | 338  | 431     | 464   | 458   | 389   | 352   |
|                    |             | 4423/25A          | 665                             | 725  | 474   | 685   | 703   | 460  | 587     | 632   | 624   | 531   | 480   |
|                    |             | 4424/25A          | 731                             | 797  | 521   | 753   | 772   | 506  | 646     | 695   | 685   | 583   | 528   |
|                    |             | 4424/34A          | 1170                            | 1276 | 835   | 1206  | 1236  | 810  | 1034    | 1113  | 1097  | 934   | 845   |

(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 + 30 °C and evaporating temperature at - 15 °C )

Continued

**TABLE 40: Refrigerant flow capacity of filter driers with replaceable solid core**

| Catalogue Number   |             |                   | Pressure drop 0,14 bar (1) [kW] |      |       |       |       |      |         |       |       |       |       |
|--------------------|-------------|-------------------|---------------------------------|------|-------|-------|-------|------|---------|-------|-------|-------|-------|
| Copper connections |             | Steel connections |                                 |      |       |       |       |      |         |       |       |       |       |
| Theaded cover      | Blind cover | Theaded cover     | R134a                           | R22  | R404A | R407C | R410A | R507 | R1234ze | R448A | R449A | R450A | R452A |
| 4411/5A            | 4411/5B     | 4411/5AF          | 99                              | 108  | 71    | 102   | 105   | 69   | 87      | 94    | 93    | 79    | 71    |
| 4411/7A            | 4411/7B     | 4411/7AF          | 188                             | 205  | 134   | 194   | 199   | 130  | 166     | 179   | 177   | 150   | 136   |
| 4411/M28A          | 4411/M28B   | –                 | 257                             | 281  | 184   | 265   | 272   | 178  | 227     | 245   | 241   | 206   | 186   |
| 4411/9A            | 4411/9B     | 4411/9AF          | 257                             | 281  | 184   | 265   | 272   | 178  | 227     | 245   | 241   | 206   | 186   |
| 4411/11A           | 4411/11B    | 4411/11AF         | 300                             | 328  | 214   | 310   | 317   | 208  | 265     | 286   | 282   | 240   | 217   |
| 4411/13A           | 4411/13B    | 4411/13AF         | 322                             | 351  | 230   | 332   | 340   | 223  | 284     | 306   | 302   | 257   | 232   |
| 4411/M42A          | 4411/M42B   | 4411/M42AF        | 322                             | 351  | 230   | 332   | 340   | 223  | 284     | 306   | 302   | 257   | 232   |
| 4411/17A           | 4411/17B    | 4411/17AF         | 322                             | 351  | 230   | 332   | 340   | 223  | 284     | 306   | 302   | 257   | 232   |
| 4411/21A           | 4411/21B    | 4411/21AF         | 322                             | 351  | 230   | 332   | 340   | 223  | 284     | 306   | 302   | 257   | 232   |
| 4412/7A            | 4412/7B     | 4412/7AF          | 188                             | 205  | 134   | 194   | 199   | 130  | 166     | 179   | 177   | 150   | 136   |
| 4412/9A            | 4412/9B     | 4412/9AF          | 291                             | 317  | 207   | 300   | 307   | 201  | 257     | 277   | 273   | 232   | 210   |
| 4412/11A           | 4412/11B    | 4412/11AF         | 395                             | 430  | 281   | 407   | 417   | 273  | 349     | 375   | 370   | 315   | 285   |
| 4412/M42A          | 4412/M42B   | 4412/M42AF        | 447                             | 487  | 319   | 461   | 472   | 309  | 395     | 425   | 419   | 357   | 323   |
| 4412/17A           | 4412/17B    | 4412/17AF         | 447                             | 487  | 319   | 461   | 472   | 309  | 395     | 425   | 419   | 357   | 323   |
| 4413/7A            | 4413/7B     | 4413/7AF          | 196                             | 213  | 139   | 202   | 207   | 135  | 173     | 186   | 183   | 156   | 141   |
| 4412/M28A          | 4412/M28B   | –                 | 302                             | 329  | 215   | 311   | 319   | 209  | 267     | 287   | 283   | 241   | 218   |
| 4413/9A            | 4413/9B     | 4413/9AF          | 302                             | 329  | 215   | 311   | 319   | 209  | 267     | 287   | 283   | 241   | 218   |
| 4413/11A           | 4413/11B    | 4413/11AF         | 438                             | 478  | 313   | 452   | 463   | 303  | 387     | 417   | 411   | 350   | 316   |
| 4413/13A           | 4413/13B    | 4413/13AF         | 484                             | 528  | 345   | 499   | 511   | 335  | 428     | 460   | 454   | 386   | 349   |
| 4413/M42A          | 4413/M42B   | 4413/M42AF        | 484                             | 528  | 345   | 499   | 511   | 335  | 428     | 460   | 454   | 386   | 349   |
| 4414/11A           | 4414/11B    | 4414/11AF         | 526                             | 574  | 375   | 542   | 556   | 364  | 465     | 501   | 494   | 420   | 380   |
| 4414/13A           | 4414/13B    | 4414/13AF         | 591                             | 644  | 421   | 609   | 624   | 409  | 522     | 562   | 554   | 471   | 426   |
| 4414/M42A          | 4414/M42B   | 4414/M42AF        | 591                             | 644  | 421   | 609   | 624   | 409  | 522     | 562   | 554   | 471   | 426   |
| 4414/17A           | 4414/17B    | 4414/17AF         | 591                             | 644  | 421   | 609   | 624   | 409  | 522     | 562   | 554   | 471   | 426   |
| –                  | –           | 4423/17A          | 620                             | 676  | 442   | 639   | 655   | 429  | 548     | 590   | 582   | 495   | 448   |
|                    |             | 4423/21A          | 683                             | 745  | 487   | 704   | 722   | 473  | 603     | 649   | 641   | 545   | 493   |
|                    |             | 4423/25A          | 931                             | 1015 | 664   | 959   | 984   | 645  | 822     | 885   | 873   | 743   | 672   |
|                    |             | 4424/25A          | 1023                            | 1116 | 730   | 1054  | 1081  | 709  | 904     | 973   | 960   | 817   | 739   |
|                    |             | 4424/34A          | 1638                            | 1786 | 1168  | 1688  | 1731  | 1134 | 1447    | 1558  | 1536  | 1308  | 1183  |

(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 + 30 °C and evaporating temperature at - 15 °C )

**TABLE 41: General characteristics, dimensions and weights of solid cores**

| Catalogue Number | Batch characteristic  | Filtering Surface [cm <sup>2</sup> ] | Nominal Volume |                    | Dimensions [mm]  |                  |     | Weight [g] |
|------------------|---|--------------------------------------|----------------|--------------------|------------------|------------------|-----|------------|
|                  |   |                                      | [cu.in]        | [cm <sup>3</sup> ] | Ø D <sub>1</sub> | Ø D <sub>2</sub> | H   |            |
| 4490/A (1)       | High moisture adsorption<br>(100% molecular sieve)                            | 420                                  | 48             | 800                | 47               | 96               | 140 | 730        |
| 4490/B (2)       |   |                                      |                |                    |                  |                  |     |            |
| 4490/AA (1)      | Moisture and acid adsorption<br>(80% molecular sieve + 20% activated alumina) | 630                                  | 100            | 1600               | 53               | 122              | 165 | 1560       |
| 4490/AB (2)      |   |                                      |                |                    |                  |                  |     |            |
| 4491/A (3)       | High moisture adsorption<br>(100% molecular sieve)                            | 630                                  | 100            | 1600               | 53               | 122              | 165 | 1560       |
| 4491/AA (3)      | Moisture and acid adsorption<br>(80% molecular sieve + 20% activated alumina) |                                      |                |                    |                  |                  |     |            |

- (1): Supplied with cover gaskets as spare part, either for Castel filters or for competitors ones  
 (2): Supplied without cover gasket as part part  
 (3): Supplied with cover gasket as spare part

**TABLE 42: Water capacity and dehydratable charge of one solid core**

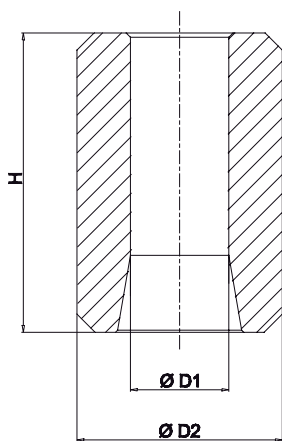
| Catalogue Number   | Nominal Volume |                    | Water Capacity at + 24 °C (1) [g H <sub>2</sub> O] |     |            |       |       | Dehydratable Charge at + 24 °C [kg refrigerant] |     |            |       |       |
|--------------------|----------------|--------------------|--|-----|------------|-------|-------|---|-----|------------|-------|-------|
|                    | [cu.in]        | [cm <sup>3</sup> ] | R134a  | R22 | R404A R507 | R407C | R410A | R134a   | R22 | R404A R507 | R407C | R410A |
| 4490/A<br>4490/B   | 48             | 800                | 82   | 75  | 84         | 67    | 73    | 88  | 81  | 90         | 72    | 79    |
| 4490/AA<br>4490/AB |                |                    | 70   | 64  | 71         | 57    | 62    | 75  | 69  | 77         | 61    | 67    |
| 4491/A             | 100            | 1600               | 216  | 197 | 220        | 177   | 192   | 232   | 212 | 237        | 190   | 207   |
| 4491/AA            |                |                    | 183  | 167 | 187        | 150   | 163   | 197   | 180 | 201        | 161   | 176   |

Continued

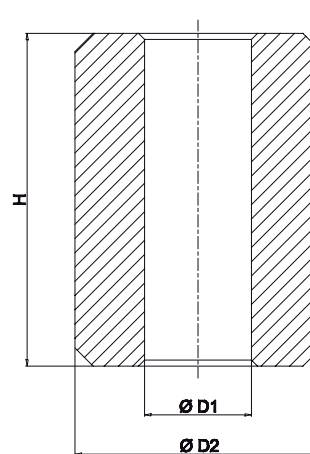
**TABLE 42: Water capacity and dehydratable charge of one solid core**

| Catalogue Number   | Nominal Volume |                    | Water Capacity at + 52 °C (1) [g H <sub>2</sub> O] |     |            |       |       | Dehydratable Charge at + 52 °C [kg refrigerant] |     |            |       |       |
|--------------------|----------------|--------------------|--|-----|------------|-------|-------|---|-----|------------|-------|-------|
|                    | [cu.in]        | [cm <sup>3</sup> ] | R134a  | R22 | R404A R507 | R407C | R410A | R134a   | R22 | R404A R507 | R407C | R410A |
| 4490/A<br>4490/B   | 48             | 800                | 71   | 60  | 78         | 54    | 59    | 76  | 65  | 84         | 58    | 63    |
| 4490/AA<br>4490/AB |                |                    | 60   | 51  | 66         | 46    | 50    | 65  | 55  | 71         | 50    | 54    |
| 4491/A             | 100            | 1600               | 186  | 158 | 205        | 142   | 155   | 200   | 170 | 220        | 153   | 166   |
| 4491/AA            |                |                    | 158  | 134 | 174        | 121   | 131   | 170   | 144 | 187        | 130   | 141   |

- (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



4490



4491

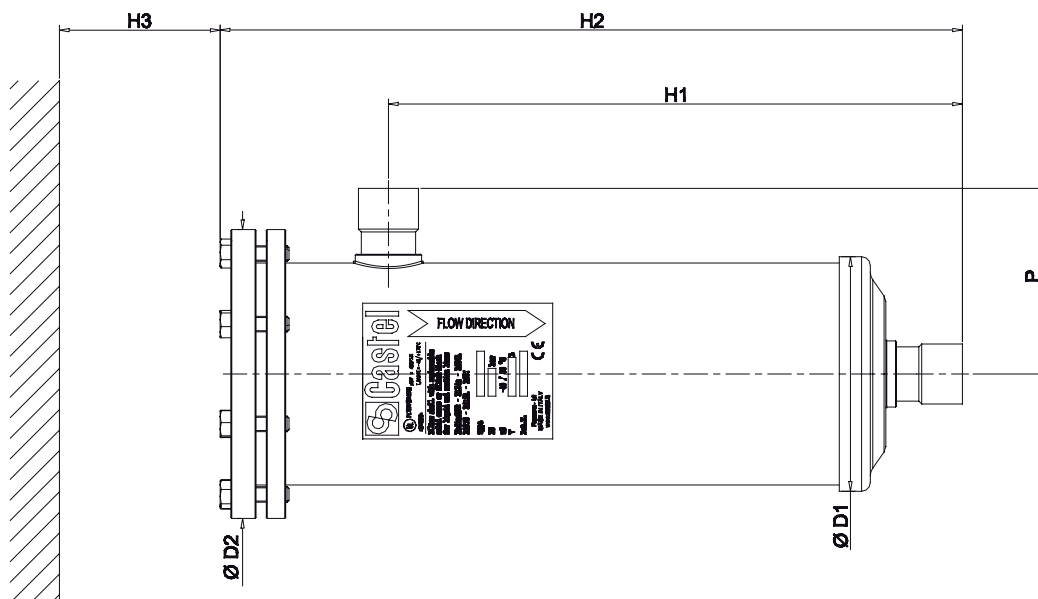
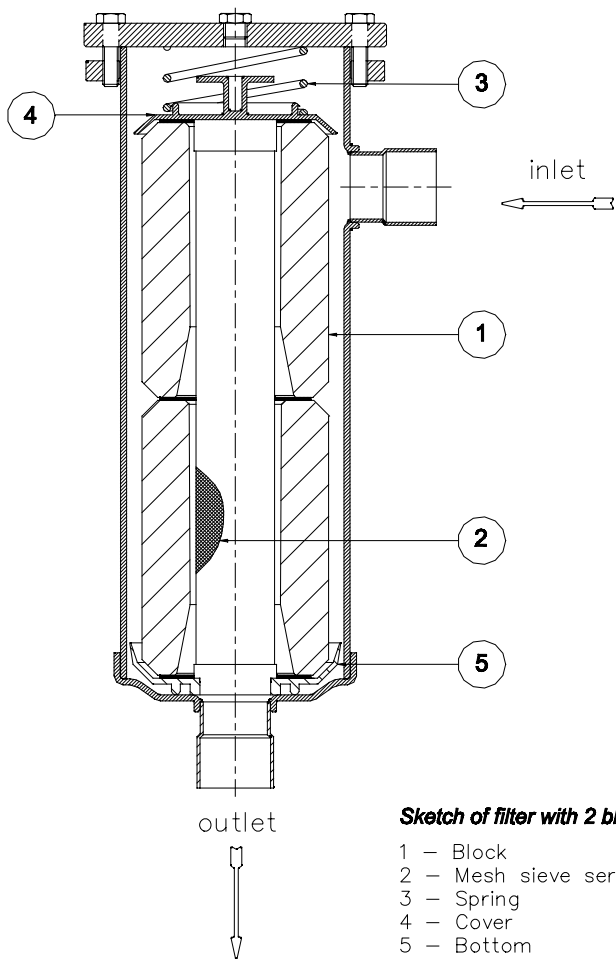
TABLE 43: Dimensions and weights of filters with copper connections

| Catalogue Number | Connections |        | Dimensions [mm]  |                  |                |                |                | Weight [g] |      |  |      |
|------------------|-------------|--------|------------------|------------------|----------------|----------------|----------------|------------|------|--|------|
|                  | ODS         |        | Ø D <sub>1</sub> | Ø D <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | H <sub>3</sub> |            | P    |  |      |
|                  | Ø [in.]     | Ø [mm] |                  |                  |                |                |                |            |      |  |      |
| 4411/5 (A-B)     | 5/8"        | 16     | 121              | 149              | 144            | 231            | 185            | 89         | 3800 |  |      |
| 4411/7 (A-B)     | 7/8"        | 22     |                  |                  |                |                |                |            |      |  | 3800 |
| 4411/M28 (A-B)   | –           | 28     |                  |                  | 150            | 237            |                | 95         | 3850 |  |      |
| 4411/9 (A-B)     | 1.1/8"      |        |                  |                  |                |                |                |            |      |  |      |
| 4411/11 (A-B)    | 1.3/8"      | 35     |                  |                  | 155            | 242            |                | 100        | 3900 |  |      |
| 4411/13 (A-B)    | 1.5/8"      | –      |                  |                  |                |                |                |            |      |  |      |
| 4411/M42 (A-B)   | –           | 42     |                  |                  | 167            | 254            |                | 112        | 3990 |  |      |
| 4411/17 (A-B)    | 2.1/8"      | 54     |                  |                  | 158            | 245            |                | 103        | 4130 |  |      |
| 4411/21 (A-B)    | 2.5/8"      | –      |                  |                  |                |                |                |            |      |  |      |
| 4412/7 (A-B)     | 7/8"        | 22     |                  |                  |                |                |                |            |      |  |      |
| 4412/M28 (A-B)   | –           | 28     |                  |                  | 292            | 379            | 95             | 5050       |      |  |      |
| 4412/9 (A-B)     | 1.1/8"      | –      |                  |                  |                |                |                |            |      |  |      |
| 4412/11 (A-B)    | 1.3/8"      | 35     |                  |                  | 297            | 384            | 100            | 5150       |      |  |      |
| 4412/M42 (A-B)   | –           | 42     |                  |                  | 309            | 396            | 112            | 5270       |      |  |      |
| 4412/17 (A-B)    | 2.1/8"      | 54     |                  |                  | 300            | 387            | 103            | 5400       |      |  |      |
| 4413/7 (A-B)     | 7/8"        | 22     |                  |                  |                |                |                |            |      |  |      |
| 4413/9 (A-B)     | 1.1/8"      | –      |                  |                  |                |                |                |            |      |  |      |
| 4413/11 (A-B)    | 1.3/8"      | 35     |                  |                  | 433            | 520            | 95             | 6350       |      |  |      |
| 4413/13 (A-B)    | 1.5/8"      | –      |                  |                  |                |                |                |            |      |  |      |
| 4413/M42 (A-B)   | –           | 42     |                  |                  | 438            | 525            | 100            | 6480       |      |  |      |
| 4414/11 (A-B)    | 1.3/8"      | 35     | 450              | 537              | 112            | 6520           |                |            |      |  |      |
| 4414/13 (A-B)    | 1.5/8"      | –      |                  |                  |                |                |                |            |      |  |      |
| 4414/M42 (A-B)   | –           | 42     | 580              | 667              | 100            | 7780           |                |            |      |  |      |
| 4414/17 (A-B)    | 2.1/8"      | 54     | 592              | 679              | 112            | 7960           |                |            |      |  |      |
|                  |             |        | 583              | 670              | 103            | 7900           |                |            |      |  |      |



**TABLE 44: Dimensions and weights of filters with steel connections**

| Catalogue Number | Connections |        |        | Dimensions [mm]  |                  |                |                |                |      | Weight [g] |     |       |
|------------------|-------------|--------|--------|------------------|------------------|----------------|----------------|----------------|------|------------|-----|-------|
|                  | ODS         |        | W      | Ø D <sub>1</sub> | Ø D <sub>2</sub> | H <sub>1</sub> | H <sub>2</sub> | H <sub>3</sub> | P    |            |     |       |
|                  | Ø [in.]     | Ø [mm] | Ø [mm] |                  |                  |                |                |                |      |            |     |       |
| 4411/5AF         | 5/8"        | 16     | 21,3   | 121              | 149              | 144            | 231            | 185            | 90   | 3810       |     |       |
| 4411/7AF         | 7/8"        | 22     | 26,9   |                  |                  | 150            | 237            |                | 95   | 3860       |     |       |
| 4411/9AF         | 1.1/8"      | –      | 33,7   |                  |                  | 155            | 242            |                | 100  | 4050       |     |       |
| 4411/11AF        | 1.3/8"      | 35     | 42,4   |                  |                  | 167            | 254            |                | 112  | 4190       |     |       |
| 4411/13AF        | 1.5/8"      | –      | 48,3   |                  |                  | 158            | 245            |                | 103  | 4150       |     |       |
| 4411/M42AF       | –           | 42     | 48,3   |                  |                  | 152            | 239            |                | 95   | 4350       |     |       |
| 4411/17AF        | 2.1/8"      | 54     | 60,3   |                  |                  | 292            | 379            |                | 95   | 5280       |     |       |
| 4411/21AF        | 2.5/8"      | –      | 76,1   |                  |                  | 297            | 384            |                | 100  | 5320       |     |       |
| 4412/7AF         | 7/8"        | 22     | 26,9   |                  |                  | 309            | 396            | 112            | 5380 |            |     |       |
| 4412/9AF         | 1.1/8"      | –      | 33,7   |                  |                  | 300            | 387            | 103            | 5400 |            |     |       |
| 4412/11AF        | 1.3/8"      | 35     | 42,4   |                  |                  | 433            | 520            | 95             | 6400 |            |     |       |
| 4412/M42AF       | –           | 42     | 48,3   |                  |                  | 438            | 525            | 100            | 6600 |            |     |       |
| 4412/17AF        | 2.1/8"      | 54     | 60,3   |                  |                  | 450            | 537            | 112            | 6770 |            |     |       |
| 4413/7AF         | 7/8"        | 22     | 26,9   |                  |                  | 580            | 667            | 100            | 7700 |            |     |       |
| 4413/9AF         | 1.1/8"      | –      | 33,7   |                  |                  | 592            | 679            | 112            | 7900 |            |     |       |
| 4413/11AF        | 1.3/8"      | 35     | 42,4   |                  |                  | 583            | 670            | 103            | 8000 |            |     |       |
| 4413/13AF        | 1.5/8"      | –      | 48,3   |                  |                  | 518            | 641            | 600            | 142  | 18450      |     |       |
| 4413/M42AF       | –           | 42     | 48,3   |                  |                  | 538            | 661            | 600            | 162  | 17370      |     |       |
| 4414/11AF        | 1.3/8"      | 35     | 42,4   |                  |                  | 163            | 200            | 705            | 829  | 760        | 172 | 18720 |
| 4414/13AF        | 1.5/8"      | –      | 48,3   |                  |                  |                |                |                |      |            |     | 21600 |
| 4414/M42AF       | –           | 42     | 48,3   | 24300            |                  |                |                |                |      |            |     |       |
| 4414/17AF        | 2.1/8"      | 54     | 60,3   |                  |                  |                |                |                |      |            |     |       |
| 4423/17A         | 2.1/8"      | 54     | 60,3   |                  |                  |                |                |                |      |            |     |       |
| 4423/21A         | 2.5/8"      | 67     | 76,1   |                  |                  |                |                |                |      |            |     |       |
| 4423/25A         | 3.1/8"      | 80     | 88,9   |                  |                  |                |                |                |      |            |     |       |
| 4424/25A         | 3.1/8"      | 80     | 88,9   |                  |                  |                |                |                |      |            |     |       |
| 4424/34A         | 4.1/4"      | 108    | 114,3  |                  |                  |                |                |                |      |            |     |       |



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