

Data Sheet

# Semi-hermetic filter drier Types **DCR CO<sub>2</sub>**

Danfoss **ELIMINATOR®** filter drier **with replaceable solid core**.  
Designed for subcritical and transcritical CO<sub>2</sub> applications



Danfoss ELIMINATOR® filter driers with replaceable solid core, type DCR, are for use in liquid and / or suction lines in CO<sub>2</sub> refrigeration systems.

They offer a high system reliability by design and performance with a high flow rate, in a lightweight shape.

All solid cores have an optimized uniform grain size ensuring effective dirt removal and low pressure drop. The robust solid cores withstand pressure surge and vibration.

## Features

- Easy handling - compact design.
- Cartridge design – Ease of serviceability.
- Optimized core plate, inlet and outlet design offers higher flow capacity.

### **DCR housing and top cover:**

- PED approved for PS up to 90 bar/1305 Psig.
- No welded joints – High Product Reliability.
- DCR housing (including core holder) are made entirely of steel and are thus compatible with CO<sub>2</sub>.
- 100% leak tested.
- Zinc-chromated steel top covers with drain plug for Liquid evacuation.

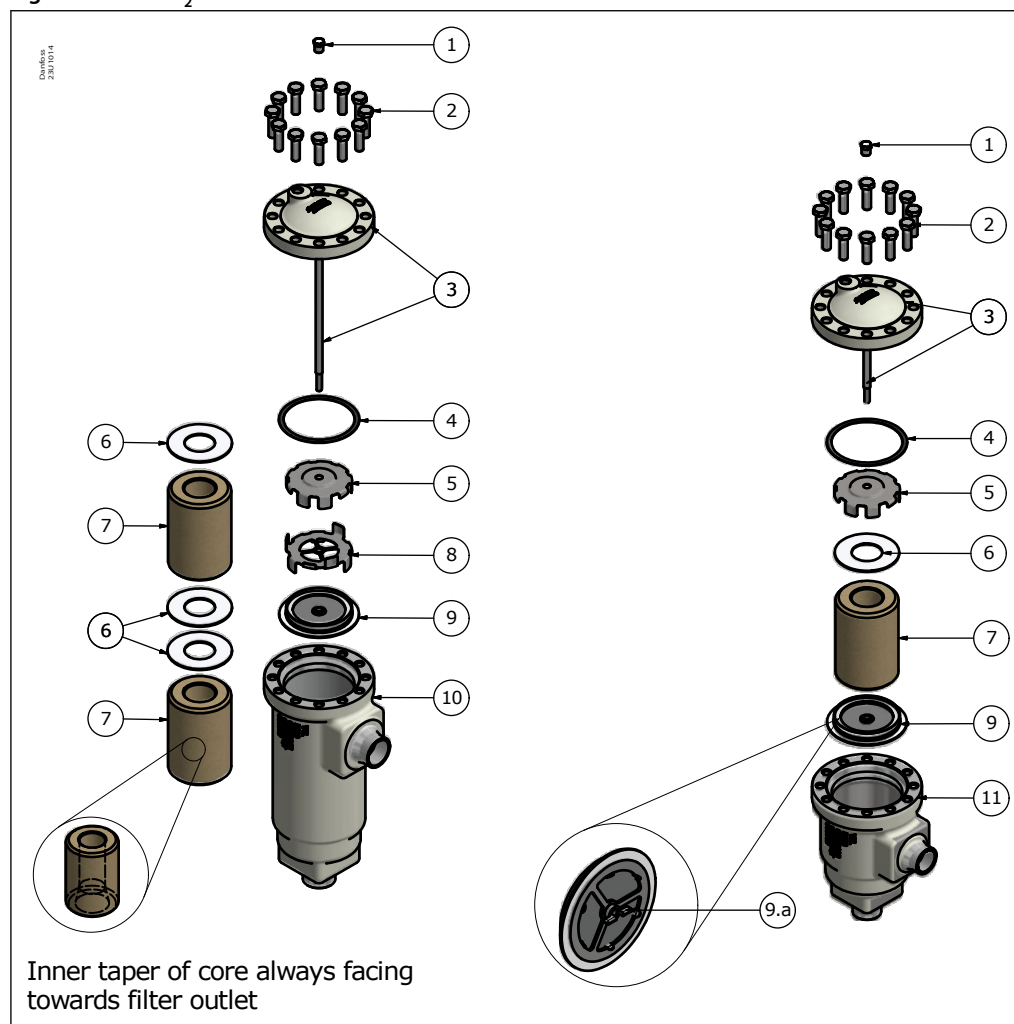
### **Inserts for DCR housing:**

- 48 - DM - 100% molecular sieve solid core Provides high moisture adsorption at low and high condensing temperatures.
- 48 - DC - 80% molecular sieve and 20% activated alumina solid core adsorbs moisture and acid in the system.
- 48 - F strainer Retains dirt particles larger than 15 µm.
- 48 - DA - 30% molecular sieve and 70% activated alumina solid core suitable after compressor burnout.
- All solid cores have an optimized uniform grain size ensuring effective dirt removal and low pressure drop. The robust solid cores withstand pressure surge and vibration.

## Functions

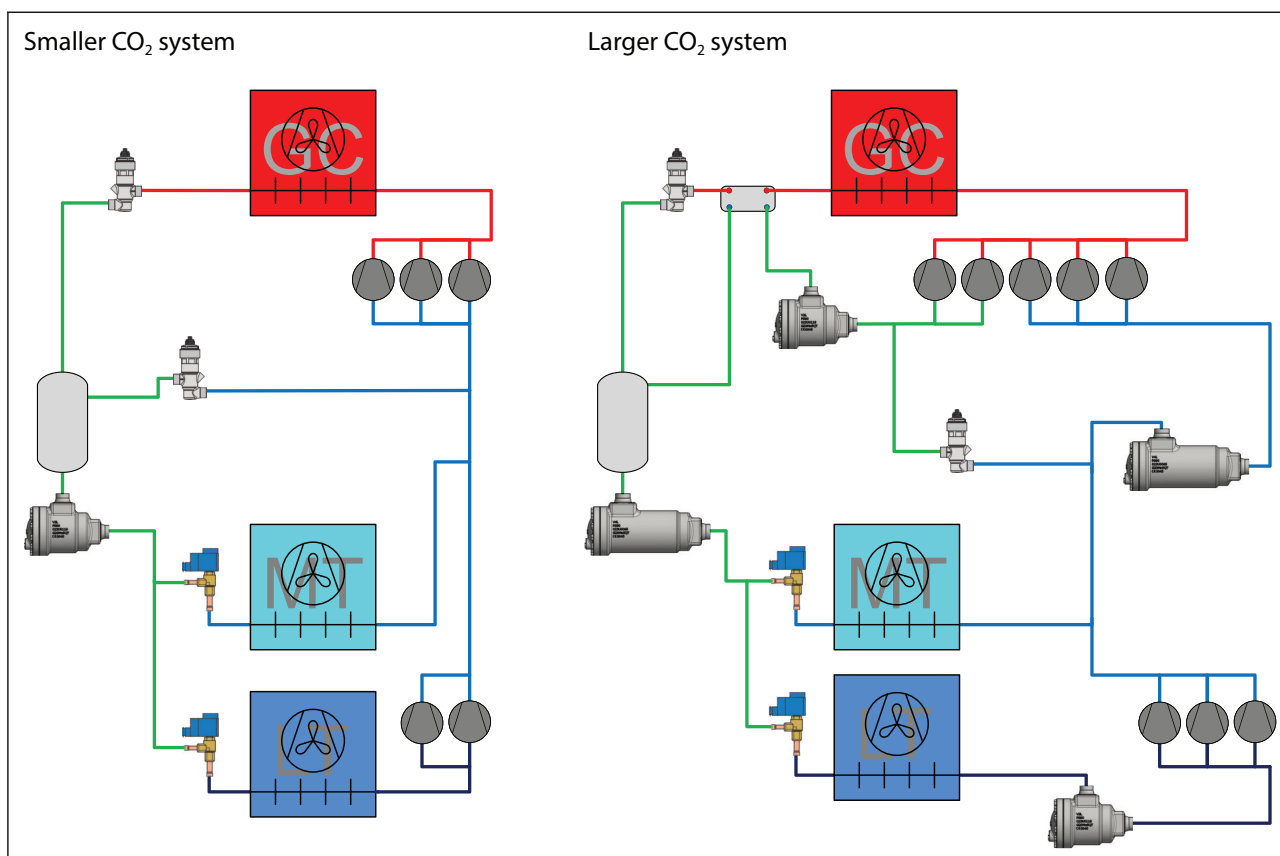
Danfoss ELIMINATOR® filter driers with replaceable solid core, type DCR protect CO<sub>2</sub> refrigeration, systems from moisture, acids, and solid particles. With these contaminants eliminated, systems are safer from harmful chemical reactions and from abrasive impurities.

Figure 1: DCR CO<sub>2</sub>



|   |                          |     |                      |
|---|--------------------------|-----|----------------------|
| 1 | Plug for cover           | 7   | Core                 |
| 2 | Cover Bolts              | 8   | Core plate middle    |
| 3 | Cover plate & core shaft | 9   | Core holder assembly |
| 4 | Cover gasket             | 9.a | Wing nut             |
| 5 | Core plate bottom        | 10  | Housing for 2 cores  |
| 6 | Core felt gasket         | 11  | Housing for 1 core   |

## Applications



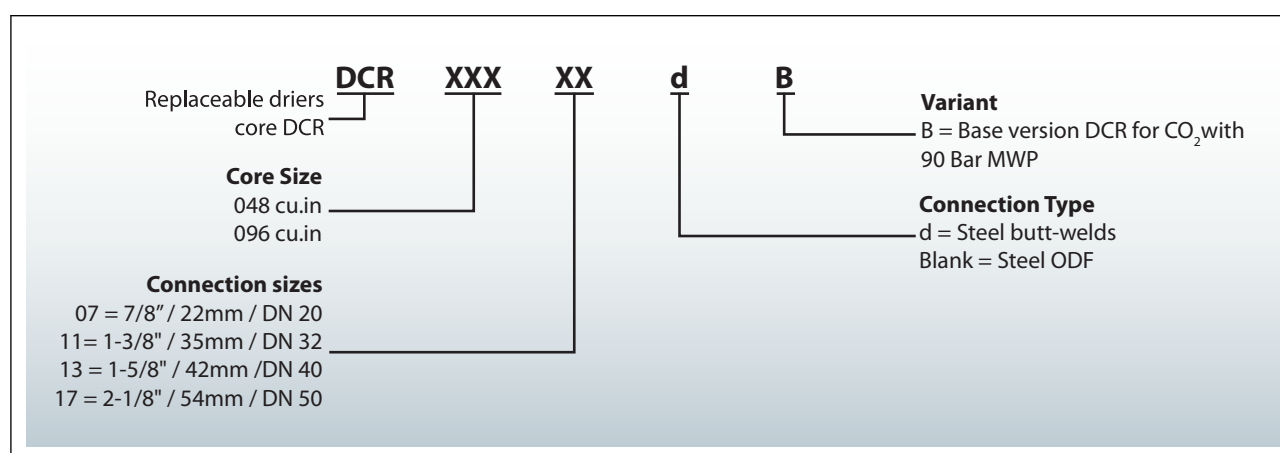
## Product Specification

### Technical data

Table 1: Technical data

| Parameter                | Specification                 |
|--------------------------|-------------------------------|
| Maximum working pressure | 90/1305 bar/psig              |
| Temperature range        | - 55 to 100 °C / -67 to 212 F |
| Housing material         | G20Mn5+QT 1.6220 EN10213-3    |
| Cover material           | G20Mn5+QT 1.6220 EN10213-3    |
| Gasket material          | Grafilit-EM                   |
| Core holder material     | 11SMn30 1.0715 EN 10087       |
| M12 Bolt material        | A2-70                         |

### Indentification



### Core selection

Table 2: Core selection

| Refrigerant and oil types |                            | DC                             | DM          | DA          |
|---------------------------|----------------------------|--------------------------------|-------------|-------------|
| Refrigerant               | CO <sub>2</sub> (R744)     | Recommended                    | Recommended | Recommended |
|                           | Mineral oil AB             | Recommended                    | Recommended | Recommended |
| Oil                       | POE or PAG, pure           | Recommended                    | Recommended | Recommended |
|                           | POE or PAG, with additives | Not recommended <sup>(1)</sup> | Recommended | Recommended |

<sup>(1)</sup> DC filter driers cores contain activated alumina, which is a polar material used for acid adsorption. Many oil additives are also polar substances and can be adsorbed by the activated alumina, rendering them useless, and reducing the drier's acid capacity, though this is not harmful to the system.

## Dimensions and Weights

Figure 2: Dual core housing with DN connection

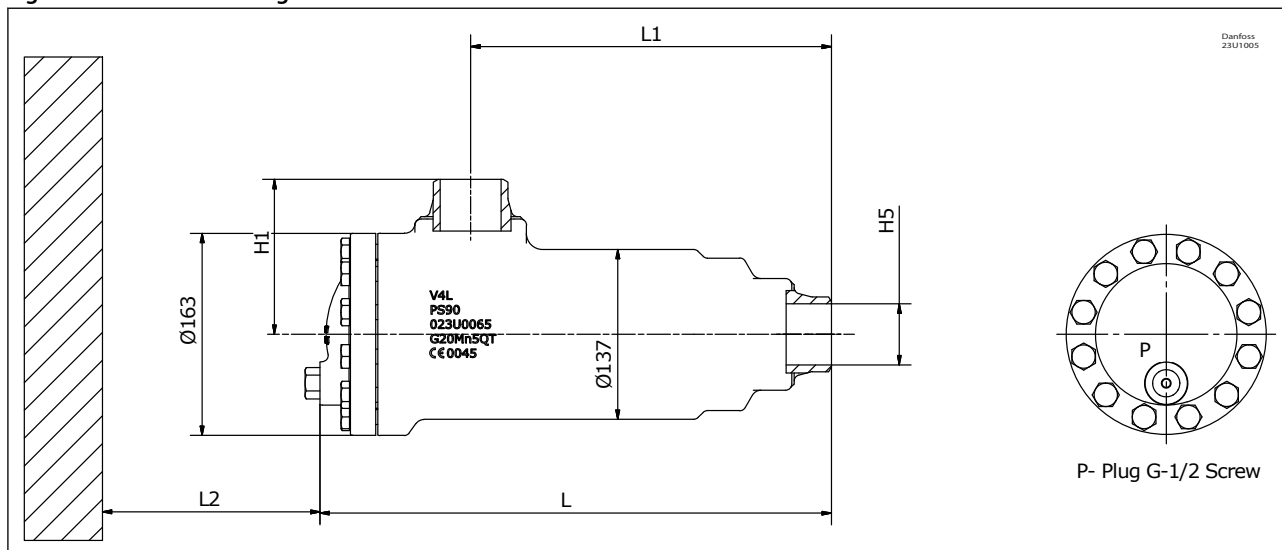


Figure 3: Dual core housing with ODF Connection

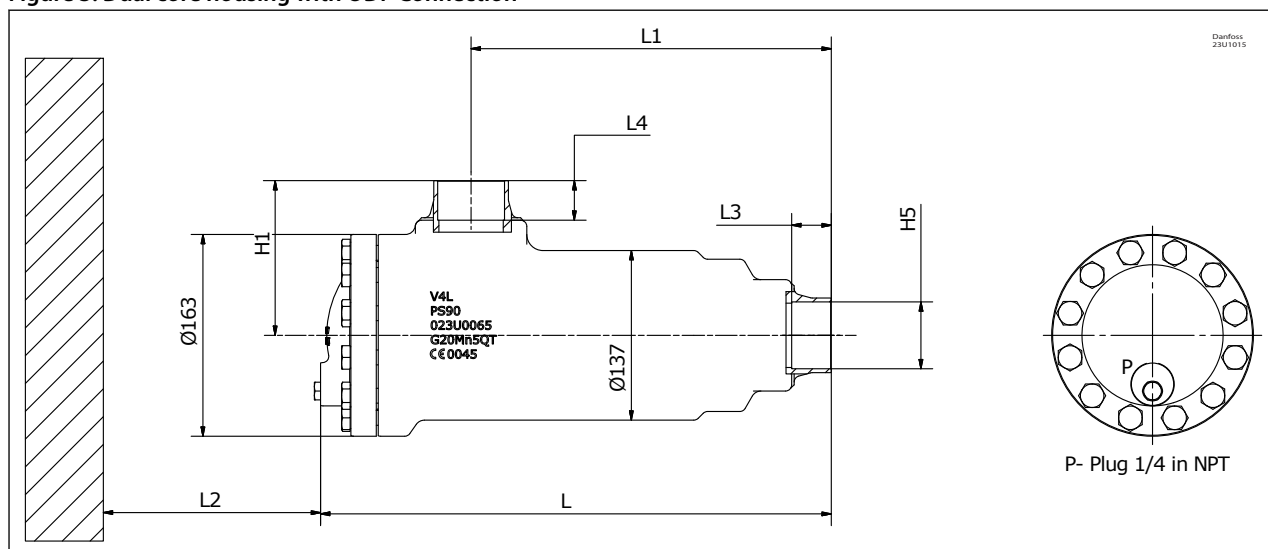


Figure 4: Single core housing with DN Connection

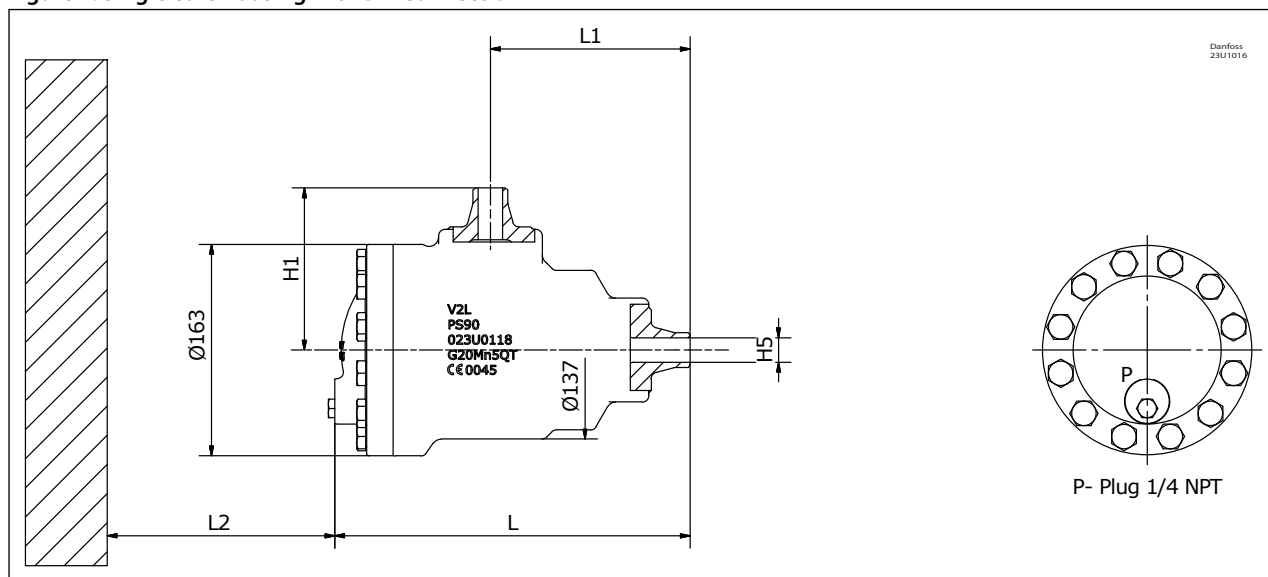


Figure 5: Single core housing with ODF Connection

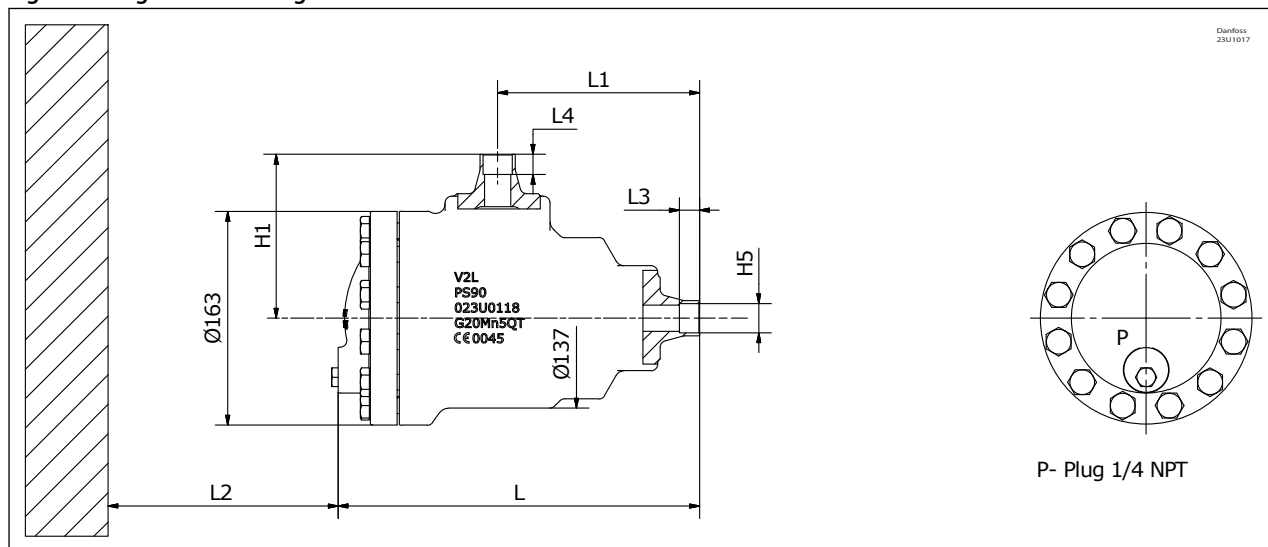


Table 3: Dimension and Weight

| Type of DCR | Number of core | Dimension in mm / [in.] |            |            |            |            |           |             | Net Weight<br>Kg / lb |
|-------------|----------------|-------------------------|------------|------------|------------|------------|-----------|-------------|-----------------------|
|             |                | L                       | L1         | L2         | L3         | L4         | H1        | H5          |                       |
| DCR 04811B  | 1              | 275.6 / 10.9            | 154 / 6.1  | 250 / 9.8  | 23.0 / 0.9 | 23.0 / 0.9 | 125 / 4.9 | 35.0 / 1.4  | 13.8 / 30.4           |
| DCR 04811dB | 1              | 275.6 / 10.9            | 154 / 6.1  | 250 / 9.8  | -          | -          | 125 / 4.9 | 32.6 / 1.3  | 13.8 / 30.4           |
| DCR 04807B  | 1              | 275.6 / 10.9            | 154 / 6.1  | 250 / 9.8  | 15.4 / 0.6 | 15.4 / 0.6 | 125 / 4.9 | 22.23 / 0.9 | 13.8 / 30.4           |
| DCR 04807dB | 1              | 275.6 / 10.9            | 154 / 6.1  | 250 / 9.8  | -          | -          | 125 / 4.9 | 18.9 / 0.7  | 13.8 / 30.4           |
| DCR 09613B  | 2              | 412.6 / 16.2            | 291 / 11.5 | 400 / 15.7 | 27.0 / 1.1 | 27.0 / 1.1 | 125 / 4.9 | 42.0 / 1.7  | 19.0 / 42.0           |
| DCR 09613dB | 2              | 412.6 / 16.2            | 291 / 11.5 | 400 / 15.7 | -          | -          | 125 / 4.9 | 38.1 / 1.5  | 19.0 / 42.0           |
| DCR 09617B  | 2              | 412.6 / 16.2            | 291 / 11.5 | 400 / 15.7 | 32.0 / 1.3 | 32.0 / 1.3 | 125 / 4.9 | 54 / 2.1    | 19.0 / 42.0           |
| DCR 09617dB | 2              | 412.6 / 16.2            | 291 / 11.5 | 400 / 15.7 | -          | -          | 125 / 4.9 | 49.2 / 1.9  | 19.0 / 42.0           |
| DCR 09617dB | 2              | 412.6 / 16.2            | 291 / 11.5 | 400 / 15.7 | -          | -          | 125 / 4.9 | 49.2 / 1.9  | 19.0 / 42.0           |

## Ordering

DCR housing and insert are ordered separately. Select housing and top cover from the below table.

Figure 6: DCR housing with DN connection

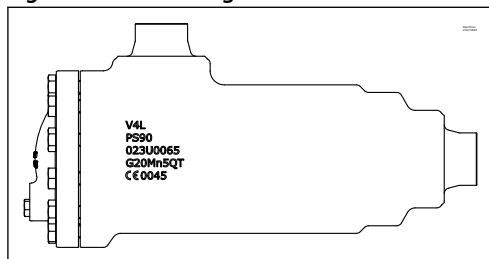


Figure 7: DCR housing with solder ODF

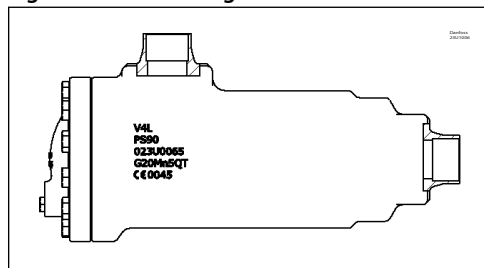


Table 4: DCR Housing with steel connectors + top cover

| Type        | Number of cores | Steel connectors |           | Cover type    | Max. working pressure PS | Packing type (Qty)  | Code number |
|-------------|-----------------|------------------|-----------|---------------|--------------------------|---------------------|-------------|
|             |                 | Solder ODF       | Butt weld |               |                          |                     |             |
|             |                 | [in.]            | [mm]      |               | [bar]/ Psig              |                     |             |
| DCR 04811B  | 1               | ODF 1 3/8"       | -         | Plug 1/4" NPT | 90 / 1305                | Single              | 023U1008    |
| DCR 04811B  | 1               | ODF 1 3/8"       | -         | Plug 1/4" NPT | 90 / 1305                | Industrial (18 pcs) | 023U1009    |
| DCR 04811dB | 1               | -                | DN 32     | Plug 1/4" NPT | 90 / 1305                | Single              | 023U1011    |
| DCR 04811dB | 1               | -                | DN 32     | Plug 1/4" NPT | 90 / 1305                | Industrial          | 023U1012    |
| DCR 04807B  | 1               | ODF 7/8"         | -         | Plug 1/4" NPT | 90 / 1305                | Single              | 023U1014    |
| DCR 04807B  | 1               | ODF 7/8"         | -         | Plug 1/4" NPT | 90 / 1305                | Industrial          | 023U1015    |
| DCR 04807dB | 1               | -                | DN 20     | Plug 1/4" NPT | 90 / 1305                | Single              | 023U1017    |
| DCR 04807dB | 1               | -                | DN 20     | Plug 1/4" NPT | 90 / 1305                | Industrial (18 pcs) | 023U1018    |
| DCR 09613B  | 2               | ODF 1 5/8"       | -         | Plug 1/4" NPT | 90 / 1305                | Single              | 023U0996    |
| DCR 09613B  | 2               | ODF 1 5/8"       | -         | Plug 1/4" NPT | 90 / 1305                | Industrial (12 pcs) | 023U0997    |
| DCR 09613dB | 2               | -                | DN 40     | Plug 1/4" NPT | 90 / 1305                | Single              | 023U0999    |
| DCR 09613dB | 2               | -                | DN 40     | Plug 1/4" NPT | 90 / 1305                | Industrial (12 pcs) | 023U1000    |
| DCR 09617B  | 2               | ODF 2 1/8"       | -         | Plug 1/4" NPT | 90 / 1305                | Single              | 023U1002    |
| DCR 09617B  | 2               | ODF 2 1/8"       | -         | Plug 1/4" NPT | 90 / 1305                | Industrial (12 pcs) | 023U1003    |
| DCR 09617dB | 2               | -                | DN 50     | Plug 1/4" NPT | 90 / 1305                | Single              | 023U1005    |
| DCR 09617dB | 2               | -                | DN 50     | Plug 1/4" NPT | 90 / 1305                | Industrial (12 pcs) | 023U1006    |
| DCR 09617dB | 2               | -                | DN 50     | Plug G 1/2    | 90 / 1305                | Single              | 023U1202    |
| DCR 09617dB | 2               | -                | DN 50     | Plug G 1/2    | 90 / 1305                | Industrial (12)     | 023U1203    |

Figure 8: DCR insert

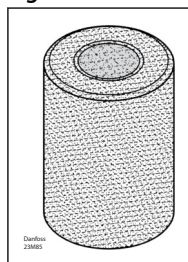


Table 5: DCR core surface and volume

| Core                     | surface            | volume             |
|--------------------------|--------------------|--------------------|
|                          | [cm <sup>2</sup> ] | [cm <sup>3</sup> ] |
| DM048, DC 048 and DA 048 | 612                | 727                |
| DM096, DC 096 and DA 096 | 1225               | 1454               |
| 48-F                     | 405                | -                  |

## Semi-hermetic filter drier, type DCR for CO<sub>2</sub>

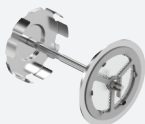
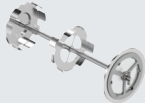
Table 6: DCR inserts code numbers

| Type                            | Material                                                 | Code Number                |
|---------------------------------|----------------------------------------------------------|----------------------------|
|                                 |                                                          | Industrial pack (8 pieces) |
| 48-DM solid core <sup>(1)</sup> | 100% molecular sieve                                     | 023U1393                   |
| 48-DC solid core <sup>(1)</sup> | 80% molecular sieve & 20% Al <sub>2</sub> O <sub>3</sub> | 023U4382                   |
| 48-DA solid core <sup>(1)</sup> | 30% molecular sieve & 70% Al <sub>2</sub> O <sub>3</sub> | 023U5382                   |
| 48-F strainer <sup>(1)</sup>    | Felt gasket, 15 µm                                       | 023U1921                   |

<sup>(1)</sup> DC filter driers cores contain activated alumina, which is a polar material used for acid adsorption. Many oil additives are also polar substances and can be adsorbed by the activated alumina, rendering them useless, and reducing the drier's acid capacity, though this is not harmful to the system.

## Spare parts

Table 7: Spare part list

| Part                                                                                | Description                | Code number | Quantity |
|-------------------------------------------------------------------------------------|----------------------------|-------------|----------|
|    | Front plate assembly       | 023U1154    | 1        |
|   | Single core internal parts | 023U1155    | 1        |
|  | Two core internal parts    | 023U1156    | 1        |
|  | 1/4" NPT cover             | 023U1157    | 1        |
|  | 1/2" G Thread cover        | 023U1158    | 1        |
|  | Flat gasket                | 023U1159    | 5        |
|  | M12 Bolts                  | 023U1160    | 12       |

## Certificates, declarations, and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

Some approvals may change over time. You can check the most current status at [danfoss.com](https://danfoss.com) or contact your local Danfoss representative if you have any questions.

**Table 8: Certificates, declarations, and approvals**

| Document type                   | Document topic  | Approval authority |
|---------------------------------|-----------------|--------------------|
| Mechanical - Safety Certificate | c UL us listing | UL                 |
| Manufacturers Declaration       | RoHS            | Danfoss            |
| EU Declaration                  | PED             | Danfoss            |
| Pressure - Safety Certificate   | -               | NSW                |

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