ENGINEERING
TOMORROW

Catalogue

# Strainers for Industrial Refrigeration

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# Strainer
## Type FIA 15-200, 52 bar (754 psi)

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ENGINEERING TOMORROW

# Strainer
## Type FIA 15-200, 52 bar (754 psi)

FIA strainers are a range of angleway and straightway strainers, which are carefully designed to give favourable flow conditions. The design makes the strainer easy to install, and ensures quick strainer inspection and cleaning.

FIA strainers are used ahead of automatic controls, pumps, compressors etc., for initial plant start-up and where permanent filtration of the refrigerant is required. The strainer reduces the risk of undesirable system breakdowns and reduces wear and tear on plant components.

FIA strainers are equipped with a screen mesh of stainless steel, available in sizes 100, 150, 250 and 500µ (microns*), (US 150, 100, 72, 38 mesh*).

* Mesh is the number of threads per inch.
µ (microns) is the distance between two threads (1µ = 1/1000 mm).

**Features**

- Applicable to HCFC, HFC, R717 (Ammonia), R744 ($CO_2$) and all flammable refrigerants.
- Modular Concept:
  – Each valve housing is available with several different connection types and sizes.
  – Possible to convert FIA strainers to any other product in the Flexline™ SVL family (shut-off valve, hand operated regulating valve, check & stop valve or check valve) just by replacing the complete top part.
- Fast and easy overhaul service. It is easy to replace the top part and no welding is needed
- Filter net of stainless steel mounted direct without extra gaskets means easy servicing
- Two types of strainer inserts are available:
  - A plain insert of stainless steel.
  - A pleated insert (DN 15-200) with extra large surface, which ensures long intervals between cleaning and low pressure drop.
- FIA 15 – 40 (1/2 – 1 1/2 in):
  A special insert (50µ) can be used in combination with a standard version when cleaning a plant during commissioning.
- FIA 50 – 200 (2 – 8 in):
  A large capacity filter bag (50µ) can be inserted for cleaning plant during commissioning.
- FIA 80-200 (3 – 8 in) can be equipped with a magnetic insert for detention of iron particles and other magnetic particles.
- Each strainer clearly marked with type, size and performance range
- Housing and bonnet of low temperature steel in accordance with the requirements of the Pressure Equipment Directive and those of other international classification authorities
- Temperature range:
  -60 – 150 °C / -76 – 302 °F
- Max. working pressure:
  52 bar g / 754 psi g
- Classification: DNV, CRN, BV, EAC etc.
  To get an updated list of certification on the products please contact your local Danfoss Sales Company

## Design

*Connections*
*Available with the following connections:*

- Butt-weld DIN (EN 10220)
  DN 15 – 200 (1/2 – 8 in)
- Butt-weld ANSI (B 36.10 Schedule 80),
  DN 15 – 40 (1/2 – 1 1/2 in)
- Butt-weld ANSI (B 36.10 Schedule 40),
  DN 50 – 200 (2 – 8 in)
- Butt-weld GOST (8734-75 and 8732-78),
- DN 15 – 150 (1/2 – 6 in)
- Socket Weld (ANSI B 16.11),
  DN 15 – 50 (1/2 – 2 in)
- FPT Female Pipe Thread, NPT
  (ANSI/ASME B 1.20.1),
  DN 15 – 32 (1/2 – 1 1/4 in)

*Strainer Insert*
A filter grid and filter net of stainless steel ensure long element life. The filter net offers a very high degree of cleanability.

*Housing*
The strainer housing is made of special, cold resistant steel.

*Pressure Equipment Directive (PED)*
FIA strainers are approved in accordance with the European standard specified in the Pressure Equipment Directive and are CE marked.
For further details / restrictions - see Installation Instruction

| | | | |
|---|---|---|---|
| **Nominal bore** | DN ≤ 25 (1 in) | DN 32 – 80 mm (1 1/4 – 3 in) | DN 100 – 200 mm (4 – 8 in) |
| **Classified for** | Fluid group I | | |
| **Category** | Article 3, paragraph 3 | II | III |

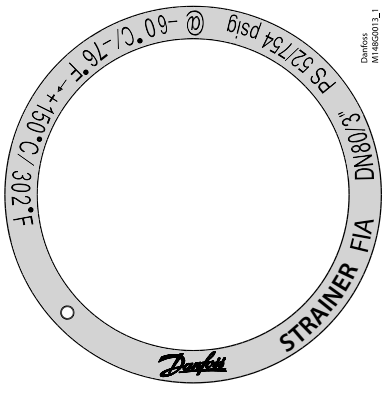
*Installation / Maintenance*
The strainer is designed to resist high internal pressures. However, the piping system in general should be designed to avoid liquid traps and reduce the risk of hydraulic pressure caused by thermal expansion.

Install the strainer with the cover in downward position.

Danfoss recommends replacement / cleaning of the strainer when the differential pressure loss >0.5 bar (7.3 psi) in the liquid line and >0.05 bar (0.7 psi) in the suction line. The max. permissible differential pressure is 1 bar (15 psi).

For further information refer to installation instruction for FIA.

*Identification:*




*Example of marking ring, FIA*

## Technical data

- *Refrigerants*
  Applicable to HCFC, HFC, R717 (Ammonia), R744 ($CO_2$) and all flammable refrigerants.
- *Temperature range*
  -60 – 150 °C / -76 °F – 302 °F.
- *Max. working pressure:*
  52 bar g / 754 psi g.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## Selection of strainer size

The mesh aperture size of the strainer must satisfy the requirements stated by the suppliers of the equipment to be protected.

The following recommendations of aperture size apply in general to refrigeration installations:

*All lines*
First start up: ..... **50**µ
(Use strainer insert with removable insert for FIA DN15-40 or separate filter bag for FIA DN 50-200. 50µ insert should normally be removed after the first 24 hours of operation)

*Liquid Lines*
Ahead of pumps: ..... **500**µ [38 mesh]
After pumps: ..... **150**µ [100 mesh] / 250µ [72 mesh]
In front of AKVA valves ..... **100**µ [150 mesh]

*Protection of automatic regulation equipment*
Generally ..... **150**µ [100 mesh] / 250µ [72 mesh]
Sensitive equipment, e.g.
suction regulators with low temperature ..... **250**µ [72 mesh]

*Definition*
Mesh is the number of threads per inch. µ (microns) is the distance between two threads (1µ = 1 /1000 mm).

*Suction Lines*
Ahead of screw compressor ..... **250**µ [72 mesh]
Ahead of piston compressor ..... **150**µ [100 mesh]

*Flow coefficient (DIN/ANSI)*

| **Connection size (DN)** / **FIA** | µ | **mesh** | **wire** mm | **wire** in. | **free space** % | **screen area** | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Plain inserts | | Pleated inserts | |
| | | | | | | $cm^2$ | $in^2$ | $cm^2$ | $in^2$ |
| 15 - 20 (½" - ¾") | 100 | | 0.068 | 0.003 | 35 | 25 | 3.9 | 45 | 7.0 |
| | 150 | 100 | 0.10 | 0.004 | 36 | 25 | 3.9 | 45 | 7.0 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 25 | 3.9 | 45 | 7.0 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 25 | 3.9 | 45 | 7.0 |
| 25 - 40 (1" - 1½") | 100 | | 0.068 | 0.003 | 35 | 71 | 11 | 160 | 25.0 |
| | 150 | 100 | 0.10 | 0.004 | 36 | 71 | 11 | 160 | 25.0 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 71 | 11 | 160 | 25.0 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 71 | 11 | 160 | 25.0 |
| 50 (2") | 100 | | 0.068 | 0.003 | 35 | 71 | 11 | 200 | 31.2 |
| | 150 | 100 | 0.10 | 0.004 | 36 | 87 | 13.5 | 200 | 31.2 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 87 | 13.5 | 200 | 31.2 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 87 | 13.5 | 200 | 31.2 |
| 65 (2½") | 150 | 100 | 0.10 | 0.004 | 36 | 127 | 19.7 | 305 | 47.6 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 127 | 19.7 | 305 | 47.6 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 127 | 19.7 | 305 | 47.6 |
| 80 (3") | 150 | 100 | 0.10 | 0.004 | 36 | 205 | 31.8 | 450 | 70.2 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 205 | 31.8 | 450 | 70.2 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 205 | 31.8 | 450 | 70.2 |
| 100 (4") | 150 | 100 | 0.10 | 0.004 | 36 | 370 | 57.4 | 790 | 123.2 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 370 | 57.4 | 790 | 123.2 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 370 | 57.4 | 790 | 123.2 |
| 125 (5") | 150 | 100 | 0.10 | 0.004 | 36 | 510 | 79.1 | 1105 | 172.4 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 510 | 79.1 | 1105 | 172.4 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 510 | 79.1 | 1105 | 172.4 |
| 150 (6") | 150 | 100 | 0.10 | 0.004 | 36 | 726 | 112.5 | 1600 | 249.6 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 726 | 112.5 | 1600 | 249.6 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 726 | 112.5 | 1600 | 249.6 |
| 200 (8") | 150 | 100 | 0.10 | 0.004 | 36 | 1315 | 203.8 | 2900 | 453.1 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 1315 | 203.8 | 2900 | 453.1 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 1315 | 203.8 | 2900 | 453.1 |

## Selection of strainer size
*(Continued)*

*$K_v$ values*

| DN | FIA angle - plain filter net | | | | FIA angle - pleated filter net | | |
|---|---|---|---|---|---|---|---|
| | µ100 | µ150 | µ250 | µ500 | µ150 | µ250 | µ500 |
| 15 | 3.3 | 3.4 | 3.5 | 3.7 | 4.2 | | |
| 20 | 6.9 | 7.1 | 7.3 | 7.7 | 8.8 | | |
| 25 | 13.8 | 14.0 | 14.5 | 15.2 | 17.2 | 17.9 | |
| 32 | 23.0 | 23.8 | 24.7 | 25.5 | 29.2 | 30.5 | |
| 40 | 25.1 | 25.5 | 26.4 | 28.1 | 31.4 | 32.6 | |
| 50 | 45.1 | 45.9 | 47.6 | 50.2 | 56.7 | 58.8 | 62.0 |
| 65 | | 56.1 | 57.8 | 60.4 | 69.3 | 71.4 | 74.6 |
| 80 | | 104.6 | 108.0 | 113.1 | 129.2 | 133.4 | 139.7 |
| 100 | | 162.4 | 167.5 | 176.0 | 200.6 | 206.9 | 217.4 |
| 125 | | 275.4 | 283.9 | 298.4 | 340.2 | 350.7 | 368.6 |
| 150 | | 362.1 | 373.2 | 391.9 | 447.3 | 462.9 | |
| 200 | | 572.9 | 590.8 | 620.5 | 704.9 | 730.0 | |

| DN | FIA straight - plain filter net | | | | FIA straight - pleated filter net | | |
|---|---|---|---|---|---|---|---|
| | µ100 | µ150 | µ250 | µ500 | µ150 | µ250 | µ500 |
| 15 | 2.5 | 2.6 | 2.7 | 2.8 | 3.3 | | |
| 20 | 5.3 | 5.4 | 5.6 | 5.9 | 6.9 | | |
| 25 | 10.5 | 10.7 | 11.1 | 11.6 | 13.8 | 14.5 | |
| 32 | 17.6 | 18.2 | 18.9 | 19.5 | 23.9 | 24.7 | |
| 40 | 19.2 | 19.5 | 20.2 | 21.5 | 25.5 | 26.4 | |
| 50 | 34.5 | 35.1 | 36.4 | 38.4 | 45.9 | 47.6 | 50.2 |
| 65 | | 42.9 | 44.2 | 46.2 | 56.1 | 57.8 | 60.4 |
| 80 | | 80.0 | 82.6 | 86.5 | 104.6 | 108.0 | 113.1 |
| 100 | | 124.2 | 128.1 | 134.6 | 162.4 | 167.5 | 176.0 |
| 125 | | 210.6 | 217.1 | 228.2 | 275.4 | 283.9 | 298.4 |
| 150 | | 276.9 | 285.4 | 299.7 | 362.1 | 374.0 | |
| 200 | | 438.1 | 451.8 | 474.5 | 570.8 | 587.3 | |


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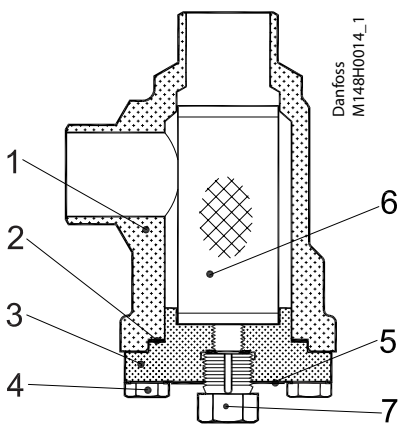
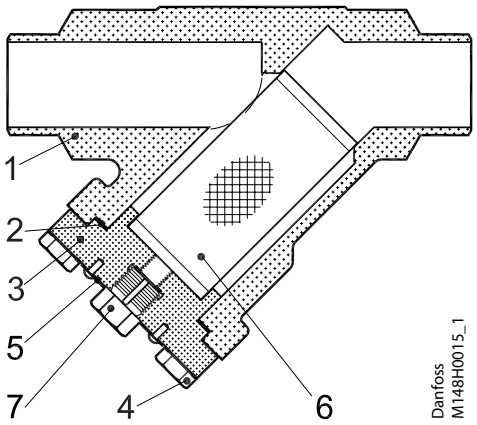
## Material specification

*FIA 15 – 40 (1/2 in – 1 1/2 in)*



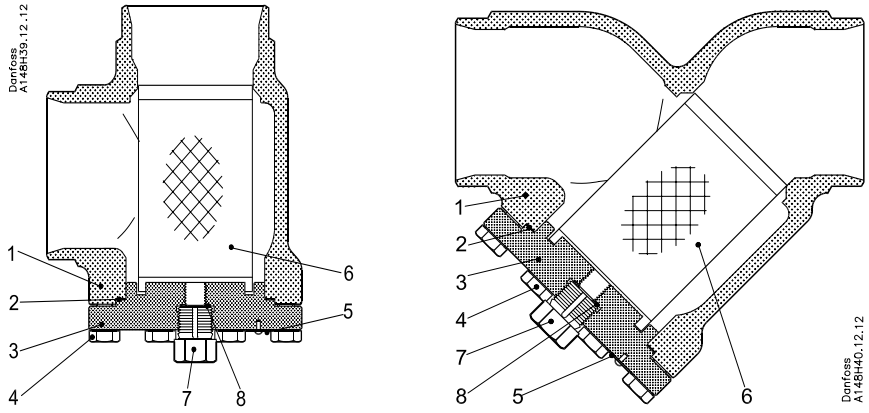




**FIA 15 – 40** (1/2 – 1 1/2 in)

| No. | Part | Material | DIN | ISO | ASTM |
|---|---|---|---|---|---|
| 1 | Housing | Steel | G20Mn5QT, 10213-3<br>---<br>P285QH+QT, 10222-4 | | LCC, A352<br>---<br>LF2, A350 |
| 2 | Gasket | Fibre, Non-asbestos | | | |
| 3 | Cover | Steel | P285QH EN10222-4<br>---<br>P275NL1 or 2 EN10028-3 | | LF2, A350<br>---<br>A, A662 |
| 4 | Bolts | Stainless steel | A2-70 | A2-70 | Type 308 |
| 5 | Marking label | Aluminium | | | |
| 6 | Strainer insert | Stainless steel | | | |
| 7 | Pressure relief (screw) | Stainless steel | | | |

## Material specification

*FIA 50 – 200 (2 in – 8 in)*




**FIA 50-200** (2 in - 8 in)

| No. | Part | Material | DIN | ISO | ASTM |
|---|---|---|---|---|---|
| 1 | Housing | Steel | G20Mn5QT, 10213-3<br>----------<br>P285QH+QT, 10222-4 | | LCC, A352<br>----------<br>LF2, A350 |
| 2 | Gasket | Fibre, Non-asbestos | | | |
| 3 | Cover | Steel | P285QH EN10222-4<br>----------<br>P275NL1 or 2 EN10028-3 | | LF2, A350<br>----------<br>A, A662 |
| 4 | Bolts | Stainless steel | A2-70 | A2-70 | Type 308 |
| 5 | Marking label | Aluminium | | | |
| 6 | Strainer insert | Stainless steel | | | |
| 7 | Pressure relief (screw) | Stainless steel | | | |
| 8* | Packing washer | Aluminium | | | |

* pos 8 used in FIA 50-200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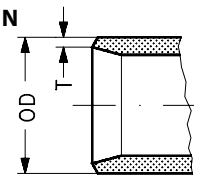
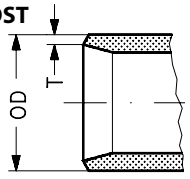
## Connections

### DIN



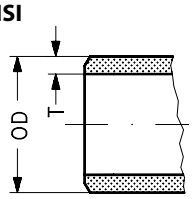

| Size [mm] | Size [in] | OD [mm] | T [mm] | OD [in] | T [in] |
|---|---|---|---|---|---|
| *Butt-weld DIN (EN 10220)* | | | | | |
| 15 | 1/2 | 21.3 | 2.3 | 0.839 | 0.091 |
| 20 | 3/4 | 26.9 | 2.3 | 1.059 | 0.091 |
| 25 | 1 | 33.7 | 2.6 | 1.327 | 0.103 |
| 32 | 1 1/4 | 42.4 | 2.6 | 1.669 | 0.102 |
| 40 | 1 1/2 | 48.3 | 2.6 | 1.902 | 0.103 |
| 50 | 2 | 60.3 | 2.9 | 2.37 | 0.11 |
| 65 | 2 1/2 | 76.1 | 2.9 | 3 | 0.11 |
| 80 | 3 | 88.9 | 3.2 | 3.50 | 0.13 |
| 100 | 4 | 114.3 | 3.6 | 4.50 | 0.14 |
| 125 | 5 | 139.7 | 4.0 | 5.50 | 0.16 |
| 150 | 6 | 168.3 | 4.5 | 6.63 | 0.18 |
| 200 | 8 | 219.1 | 6.3 | 8.63 | 0.25 |

### GOST



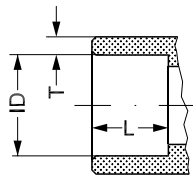

| Size [mm] | Size [in] | OD [mm] | T [mm] | OD [in] | T [in] |
|---|---|---|---|---|---|
| *Butt-weld GOST (8734-75 and 8732-78)* | | | | | |
| 10 | 3/8 | 14 | 2 | 0.551 | 0.079 |
| 15 | 1/2 | 18 | 2 | 0.709 | 0.079 |
| 20 | 3/4 | 25 | 2.5 | 0.984 | 0.098 |
| 25 | 1 | 32 | 3 | 1.260 | 0.118 |
| 32 | 1 1/4 | 38 | 3 | 1.496 | 0.118 |
| 40 | 1 1/2 | 45 | 3 | 1.772 | 0.118 |
| 50 | 2 | 57 | 3.5 | 2.244 | 0.138 |
| 65 | 2 1/2 | 76.1 | 2.9 | 3 | 0.11 |
| 80 | 3 | 88.9 | 3.2 | 3.50 | 0.13 |
| 100 | 4 | 108 | 4 | 4.252 | 0.157 |
| 125 | 5 | 133 | 4 | 5.236 | 0.157 |
| 150 | 6 | 159 | 4.5 | 6.260 | 0.177 |

### ANSI



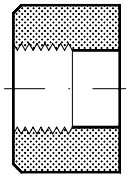

| Size [mm] | Size [in] | OD [mm] | T [mm] | OD [in] | T [in] |
|---|---|---|---|---|---|
| *Butt-weld ANSI (B 36.10 Schedule 80)* | | | | | |
| 15 | 1/2 | 21.3 | 3.7 | 0.839 | 0.146 |
| 20 | 3/4 | 26.9 | 4.0 | 1.059 | 0.158 |
| 25 | 1 | 33.7 | 4.6 | 1.327 | 0.181 |
| 32 | 1 1/4 | 42.4 | 4.9 | 1.669 | 0.193 |
| 40 | 1 1/2 | 48.3 | 5.1 | 1.902 | 0.201 |
| *Butt-weld ANSI (B 36.10 Schedule 40)* | | | | | |
| 50 | 2 | 60.3 | 3.9 | 2.37 | 0.15 |
| 65 | 2 1/2 | 73.0 | 5.2 | 2.87 | 0.20 |
| 80 | 3 | 88.9 | 5.5 | 3.50 | 0.22 |
| 100 | 4 | 114.3 | 6.0 | 4.50 | 0.24 |
| 125 | 5 | 141.3 | 6.6 | 5.56 | 0.26 |
| 150 | 6 | 168.3 | 7.1 | 6.63 | 0.28 |
| 200 | 8 | 219.1 | 8.2 | 8.63 | 0.32 |

### SOC




| Size [mm] | Size [in] | ID [mm] | T [mm] | ID [in] | T [in] |
|---|---|---|---|---|---|
| *Socket welding ANSI (B 16.11)* | | | | | |
| 15 | 1/2 | 21.8 | 6.0 | 0.858 | 0.235 |
| 20 | 3/4 | 27.2 | 4.6 | 1.071 | 0.181 |
| 25 | 1 | 33.9 | 7.2 | 1.335 | 0.284 |
| 32 | 1 1/4 | 42.7 | 6.1 | 1.743 | 0.240 |
| 40 | 1 1/2 | 48.8 | 6.6 | 1.921 | 0.260 |
| 50 | 2 | 61.2 | 6.2 | 2.41 | 0.24 |

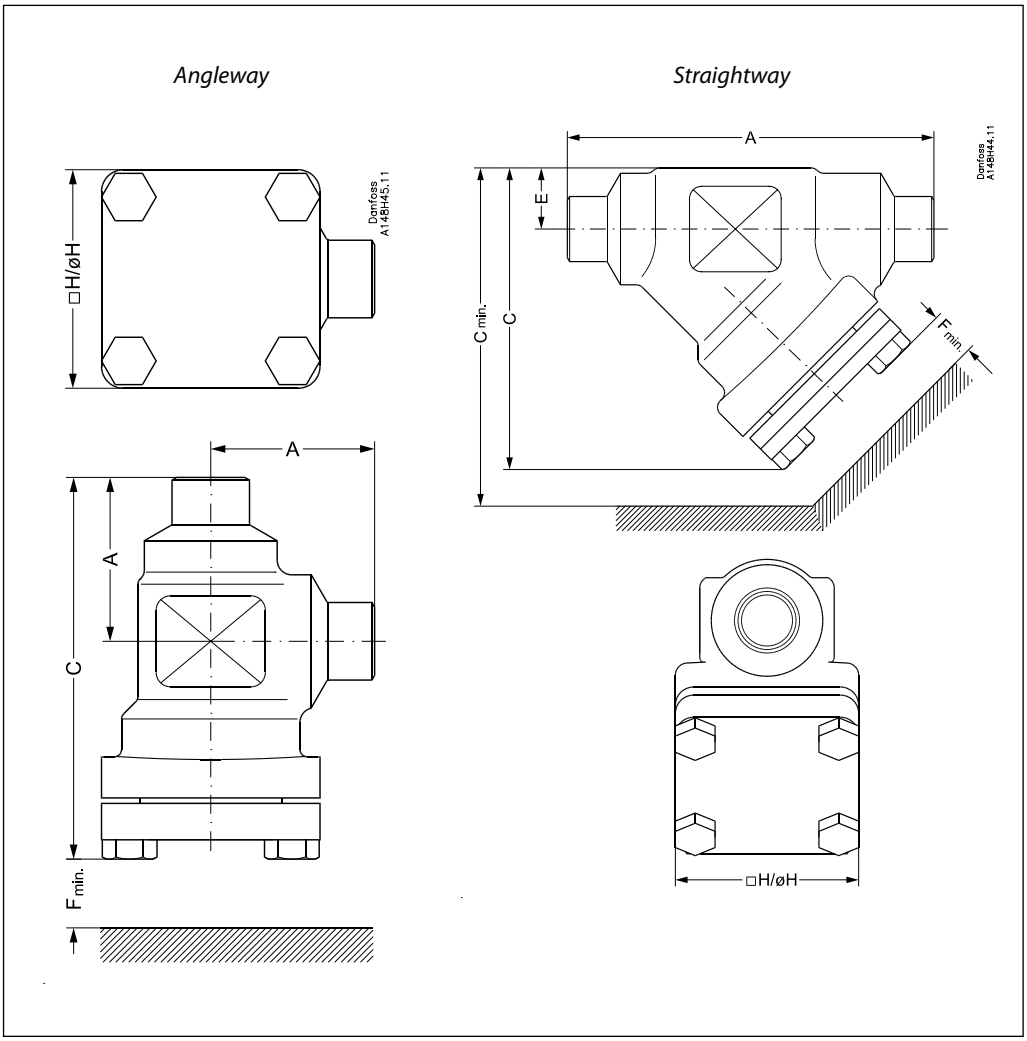
### FPT



| Size [mm] | Size [in] | Inside pipe tread |
|---|---|---|
| *FPT inside pipe thread, NPT (ANSI/ASME B 1.20.1)* | | |
| 15 | 1/2 | (½ × 14 NPT) |
| 20 | 3/4 | (¾ × 14 NPT) |
| 25 | 1 | (1 × 11.5 NPT) |
| 32 | 1 1/4 | (1¼ × 11.5 NPT) |

## Dimensions and weights

### FIA 15 - 65




*Angleway*

| Strainer size | | A | C | H | $F_{min.}$ | Weight |
|---|---|---|---|---|---|---|
| FIA 15 – 20 | [mm] | 45 | 105 | 60 | 68 | 1.1 kg |
| (1/2 – 3/4 in) | [in] | 1.77 | 4.13 | 2.36 | 2.68 | 2.4 lbs |
| FIA 25 – 40 | [mm] | 55 | 132 | 70 | 95 | 1.7 kg |
| (1 – 1 1/2 in) | [in] | 2.17 | 5.20 | 2.76 | 3.74 | 3.7 lbs |
| FIA 50 | [mm] | 60 | 132 | 77 | 92 | 2.8 kg |
| (2 in) | [in] | 2.36 | 5.20 | 3.03 | 3.62 | 6.2 lbs |
| FIA 65 | [mm] | 70 | 152 | 90 | 107 | 3.8 kg |
| (2 1/2 in) | [in] | 2.76 | 5.98 | 3.54 | 4.21 | 8.4 lbs |

*Straightway*

| Strainer size | | A | C | $C_{min.}$ | H | E | $F_{min.}$ | Weight |
|---|---|---|---|---|---|---|---|---|
| FIA 15 – 20 | [mm] | 120 | 99 | 133 | 60 | 20 | 68 | 1.4 kg |
| (1/2 – 3/4 in) | [in] | 4.72 | 3.90 | 5.24 | 2.36 | 0.79 | 2.68 | 3.1 lbs |
| FIA 25 – 40 | [mm] | 155 | 129 | 177 | 70 | 26 | 95 | 2.4 kg |
| (1 – 1 1/2 in) | [in] | 6.10 | 5.08 | 6.97 | 2.76 | 1.02 | 3.74 | 5.3 lbs |
| FIA 50 | [mm] | 148 | 138 | 184 | 77 | 32 | 92 | 3.5 kg |
| (2 in) | [in] | 5.83 | 5.43 | 7.24 | 3.03 | 1.26 | 3.62 | 7.7 lbs |
| FIA 65 | [mm] | 176 | 165 | 219 | 90 | 40 | 107 | 5.3 kg |
| (2 1/2 in) | [in] | 6.93 | 6.50 | 8.62 | 3.54 | 1.57 | 4.21 | 11.7 lbs |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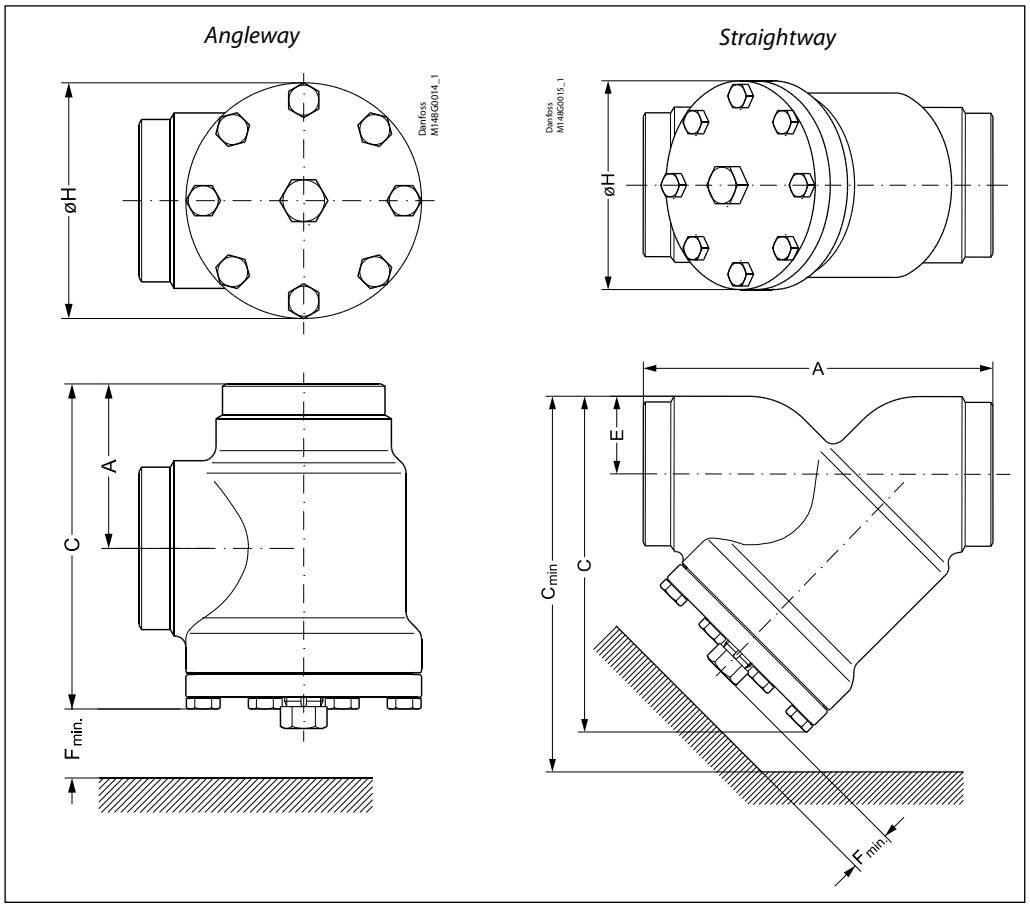
## Dimensions and weights

### FIA 80 - 200




*Angleway*

| Strainer size | | A | C | H | $F_{min.}$ | Weight |
|---|---|---|---|---|---|---|
| FIA 80 | [mm] | 90 | 189 | 129 | 133 | 7.3 kg |
| (3 in) | [in] | 3.54 | 7.44 | 5.08 | 5.24 | 16.1 lbs |
| FIA 100 | [mm] | 106 | 223 | 156 | 163 | 11.9 kg |
| (4 in) | [in] | 4.17 | 8.78 | 6.14 | 6.42 | 26.2 lbs |
| FIA 125 | [mm] | 128 | 268 | 192 | 190 | 21.2 kg |
| (5 in) | [in] | 5.04 | 10.6 | 7.56 | 7.48 | 46.7 lbs |
| FIA 150 | [mm] | 145 | 303 | 219 | 223 | 30.5 kg |
| (6 in) | [in] | 5.71 | 11.93 | 8.62 | 8.78 | 67.2 lbs |
| FIA 200 | [mm] | 180 | 372 | 276 | 280 | 68 kg |
| (8 in) | [in] | 7.09 | 14.65 | 10.87 | 11.02 | 150 lbs |

*Straightway*

| Strainer size | | A | C | $C_{min.}$ | H | E | $F_{min.}$ | Weight |
|---|---|---|---|---|---|---|---|---|
| FIA 80 | [mm] | 216 | 204 | 271 | 129 | 48 | 133 | 8.6 kg |
| (3 in) | [in] | 8.50 | 8.03 | 10.67 | 5.08 | 1.89 | 5.24 | 19 lbs |
| FIA 100 | [mm] | 264 | 256 | 337 | 156 | 60 | 163 | 14.9 kg |
| (4 in) | [in] | 10.39 | 10.08 | 13.27 | 6.14 | 2.36 | 6.42 | 32.8 lbs |
| FIA 125 | [mm] | 322 | 313 | 408 | 192 | 74 | 190 | 26.9 kg |
| (5 in) | [in] | 12.68 | 12.32 | 16.06 | 7.56 | 2.91 | 7.48 | 59.3 lbs |
| FIA 150 | [mm] | 370 | 370 | 482 | 219 | 91 | 223 | 51 kg |
| (6 in) | [in] | 14.57 | 14.57 | 18.98 | 8.62 | 3.58 | 8.78 | 112 lbs |
| FIA 200 | [mm] | 464 | 465 | 605 | 276 | 117 | 280 | 95 kg |
| (8 in) | [in] | 18.27 | 18.31 | 23.82 | 10.87 | 4.61 | 11.02 | 209 lbs |

## Strainer, type FIA 15-200, 52 bar (754 psi)

### Ordering

The table below is used to identify the strainer required. Please note that you have to order **FIA strainer without insert, a strainer insert** and **accessories.**

*Example:*
FIA 50 D ANG + FIA-X 50 150µ Strainer insert + Filter Bag = **148H5912** + **148H3130** + **148H3150**

| Size mm | Size in. | Type | FIA Without strainer insert | Strainer insert 100µ 150 mesh | Strainer insert 150µ 100 mesh | Strainer insert 250µ 72 mesh | Strainer insert 500µ 38 mesh | Pleated Strainer insert 150µ 100 mesh | Pleated Strainer insert 250µ 72 mesh | Pleated Strainer insert 500µ 38 mesh |
|---|---|---|---|---|---|---|---|---|---|---|
| *Butt-weld DIN (EN 10220) - Angleway* | | | | | | | | | | |
| 15 | ½ | FIA 15 D ANG | **148B5242** | **148H3122** | **148H3124** | **148H3126** | **148H3128** | **148H3303** | **148H3363** | - |
| 20 | ¾ | FIA 20 D ANG | **148B5342** | | | | | | | |
| 25 | 1 | FIA 25 D ANG | **148B5442** | **148H3123** | **148H3125** | **148H3127** | **148H3129** | **148H3304** | **148H3269** | - |
| 32 | 1¼ | FIA 32 D ANG | **148B5543** | | | | | | | |
| 40 | 1½ | FIA 40 D ANG | **148B5624** | | | | | | | |
| 50 | 2 | FIA 50 D ANG | **148B5712** | **148H3157** | **148H3130** | **148H3138** | **148H3144** | **148H3179** | **148H3184** | **148H3189** |
| 65 | 2½ | FIA 65 D ANG | **148B5812** | - | **148H3131** | **148H3139** | **148H3145** | **148H3180** | **148H3185** | **148H3190** |
| 80 | 3 | FIA 80 D ANG | **148B5905** | - | **148H3119** | **148H3120** | **148H3121** | **148H3181** | **148H3186** | **148H3191** |
| 100 | 4 | FIA 100 D ANG | **148B6006** | - | **148H3132** | **148H3140** | **148H3146** | **148H3182** | **148H3187** | **148H3192** |
| 125 | 5 | FIA 125 D ANG | **148B6105** | - | **148H3133** | **148H3141** | **148H3147** | **148H3183** | **148H3188** | **148H3193** |
| 150 | 6 | FIA 150 D ANG | **148B6202** | - | **148H3134** | **148H3142** | **148H3148** | **148H3226** | **148H3293*** | - |
| 200 | 8 | FIA 200 D ANG | **148B6302** | - | **148H3135** | **148H3143** | **148H3149** | **148H3297** | **148H3294*** | - |
| *Butt-weld DIN (EN 10220) - Straightway* | | | | | | | | | | |
| 15 | ½ | FIA 15 D STR | **148B5243** | **148H3122** | **148H3124** | **148H3126** | **148H3128** | **148H3303** | **148H3363** | - |
| 20 | ¾ | FIA 20 D STR | **148B5343** | | | | | | | |
| 25 | 1 | FIA 25 D STR | **148B5443** | **148H3123** | **148H3125** | **148H3127** | **148H3129** | **148H3304** | **148H3269** | - |
| 32 | 1¼ | FIA 32 D STR | **148B5544** | | | | | | | |
| 40 | 1½ | FIA 40 D STR | **148B5625** | | | | | | | |
| 50 | 2 | FIA 50 D STR | **148B5713** | **148H3157** | **148H3130** | **148H3138** | **148H3144** | **148H3179** | **148H3184** | **148H3189** |
| 65 | 2½ | FIA 65 D STR | **148B5813** | - | **148H3131** | **148H3139** | **148H3145** | **148H3180** | **148H3185** | **148H3190** |
| 80 | 3 | FIA 80 D STR | **148B5906** | - | **148H3119** | **148H3120** | **148H3121** | **148H3181** | **148H3186** | **148H3191** |
| 100 | 4 | FIA 100 D STR | **148B6007** | - | **148H3132** | **148H3140** | **148H3146** | **148H3182** | **148H3187** | **148H3192** |
| 125 | 5 | FIA 125 D STR | **148B6106** | - | **148H3133** | **148H3141** | **148H3147** | **148H3183** | **148H3188** | **148H3193** |
| 150 | 6 | FIA 150 D STR | **148B6203** | - | **148H3134** | **148H3142** | **148H3148** | **148H3226** | **148H3293*** | - |
| 200 | 8 | FIA 200 D STR | **148B6303** | - | **148H3135** | **148H3143** | **148H3149** | **148H3297** | **148H3294*** | - |
| *Butt-weld ANSI (B 36.10 Schedule 80) - Angleway* | | | | | | | | | | |
| 15 | ½ | FIA 15 A ANG | **148B5244** | **148H3122** | **148H3124** | **148H3126** | **148H3128** | **148H3303** | **148H3363** | - |
| 20 | ¾ | FIA 20 A ANG | **148B5344** | | | | | | | |
| 25 | 1 | FIA 25 A ANG | **148B5444** | **148H3123** | **148H3125** | **148H3127** | **148H3129** | **148H3304** | **148H3269** | - |
| 32 | 1¼ | FIA 32 A ANG | **148B5545** | | | | | | | |
| 40 | 1½ | FIA 40 A ANG | **148B5642** | | | | | | | |
| *Butt-weld ANSI (B 36.10 Schedule 80) - Straightway* | | | | | | | | | | |
| 15 | ½ | FIA 15 A STR | **148B5247** | **148H3122** | **148H3124** | **148H3126** | **148H3128** | **148H3303** | **148H3363** | - |
| 20 | ¾ | FIA 20 A STR | **148B5347** | | | | | | | |
| 25 | 1 | FIA 25 A STR | **148B5447** | **148H3123** | **148H3125** | **148H3127** | **148H3129** | **148H3304** | **148H3269** | - |
| 32 | 1¼ | FIA 32 A STR | **148B5552** | | | | | | | |
| 40 | 1½ | FIA 40 A STR | **148B5644** | | | | | | | |
| *Butt-weld ANSI (B 36.10 Schedule 40) - Angleway* | | | | | | | | | | |
| 50 | 2 | FIA 50 A ANG | **148B5714** | **148H3157** | **148H3130** | **148H3138** | **148H3144** | **148H3179** | **148H3184** | **148H3189** |
| 65 | 2½ | FIA 65 A ANG | **148B5814** | - | **148H3131** | **148H3139** | **148H3145** | **148H3180** | **148H3185** | **148H3190** |
| 80 | 3 | FIA 80 A ANG | **148B5907** | - | **148H3119** | **148H3120** | **148H3121** | **148H3181** | **148H3186** | **148H3191** |
| 100 | 4 | FIA 100 A ANG | **148B6008** | - | **148H3132** | **148H3140** | **148H3146** | **148H3182** | **148H3187** | **148H3192** |
| 125 | 5 | FIA 125 A ANG | **148B6107** | - | **148H3133** | **148H3141** | **148H3147** | **148H3183** | **148H3188** | **148H3193** |
| 150 | 6 | FIA 150 A ANG | **148B6204** | - | **148H3134** | **148H3142** | **148H3148** | **148H3226** | **148H3293*** | - |
| 200 | 8 | FIA 200 A ANG | **148B6304** | - | **148H3135** | **148H3143** | **148H3149** | **148H3297** | **148H3294*** | - |
| *Butt-weld ANSI (B 36.10 Schedule 40) - Straightway* | | | | | | | | | | |
| 50 | 2 | FIA 50 A STR | **148B5716** | **148H3157** | **148H3130** | **148H3138** | **148H3144** | **148H3179** | **148H3184** | **148H3189** |
| 65 | 2½ | FIA 65 A STR | **148B5815** | - | **148H3131** | **148H3139** | **148H3145** | **148H3180** | **148H3185** | **148H3190** |
| 80 | 3 | FIA 80 A STR | **148B5908** | - | **148H3119** | **148H3120** | **148H3121** | **148H3181** | **148H3186** | **148H3191** |
| 100 | 4 | FIA 100 A STR | **148B6009** | - | **148H3132** | **148H3140** | **148H3146** | **148H3182** | **148H3187** | **148H3192** |
| 125 | 5 | FIA 125 A STR | **148B6108** | - | **148H3133** | **148H3141** | **148H3147** | **148H3183** | **148H3188** | **148H3193** |
| 150 | 6 | FIA 150 A STR | **148B6205** | - | **148H3134** | **148H3142** | **148H3148** | **148H3226** | **148H3293*** | - |
| 200 | 8 | FIA 200 A STR | **148B6305** | - | **148H3135** | **148H3143** | **148H3149** | **148H3297** | **148H3294*** | - |

D = Butt-weld DIN ANG = Angleway
A = Butt-weld ANSI STR = Straightway

* 60 mesh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## Strainer, type FIA 15-200, 52 bar (754 psi)

### Ordering *(continued)*

| Size mm | Size in. | Type | FIA Without strainer insert | Strainer insert 100µ 150 mesh | Strainer insert 150µ 100 mesh | Strainer insert 250µ 72 mesh | Strainer insert 500µ 38 mesh | Pleated Strainer insert 150µ 100 mesh | Pleated Strainer insert 250µ 72 mesh | Pleated Strainer insert 500µ 38 mesh |
|---|---|---|---|---|---|---|---|---|---|---|
| *Butt-weld GOST - Angleway* | | | | | | | | | | |
| 150 | 6 | FIA 150 G ANG | **148B6206** | - | **148H3134** | **148H3142** | **148H3148** | **148H3226** | **148H3293*** | - |
| *Butt-weld GOST - Straightway* | | | | | | | | | | |
| 150 | 6 | FIA 150 G STR | **148B6207** | - | **148H3134** | **148H3142** | **148H3148** | **148H3226** | **148H3293*** | - |
| *FPT inside pipe thread, NPT (ANSI/ASME B 1.20.1) - Angleway* | | | | | | | | | | |
| 15 | ½ | FIA 15 FTP ANG | **148B5246** | **148H3122** | **148H3124** | **148H3126** | **148H3128** | **148H3303** | **148H3363** | - |
| 20 | ¾ | FIA 20 FTP ANG | **148B5346** | | | | | | | |
| 25 | 1 | FIA 25 FTP ANG | **148B5446** | **148H3123** | **148H3125** | **148H3127** | **148H3129** | **148H3304** | **148H3269** | - |
| 32 | 1¼ | FIA 32 FTP ANG | **148B5547** | | | | | | | |
| *FPT inside pipe thread, NPT (ANSI/ASME B 1.20.1) - Straightway* | | | | | | | | | | |
| 15 | ½ | FIA 15 FTP STR | **148B5249** | **148H3122** | **148H3124** | **148H3126** | **148H3128** | **148H3303** | **148H3363** | - |
| 20 | ¾ | FIA 20 FTP STR | **148B5349** | | | | | | | |
| 25 | 1 | FIA 25 FTP STR | **148B5449** | **148H3123** | **148H3125** | **148H3127** | **148H3129** | **148H3304** | **148H3269** | - |
| 32 | 1¼ | FIA 32 FTP STR | **148B5549** | | | | | | | |
| *Socket welding ANSI (B 16.11) - Angleway* | | | | | | | | | | |
| 15 | ½ | FIA 15 SOC ANG | **148B5245** | **148H3122** | **148H3124** | **148H3126** | **148H3128** | **148H3303** | **148H3363** | - |
| 20 | ¾ | FIA 20 SOC ANG | **148B5345** | | | | | | | |
| 25 | 1 | FIA 25 SOC ANG | **148B5445** | **148H3123** | **148H3125** | **148H3127** | **148H3129** | **148H3304** | **148H3269** | - |
| 32 | 1¼ | FIA 32 SOC ANG | **148B5546** | | | | | | | |
| 40 | 1½ | FIA 40 SOC ANG | **148B5643** | | | | | | | |
| 50 | 2 | FIA 50 SOC ANG | **148B5715** | **148H3157** | **148H3130** | **148H3138** | **148H3144** | **148H3179** | **148H3184** | **148H3189** |
| *Socket welding ANSI (B 16.11) - Straightway* | | | | | | | | | | |
| 15 | ½ | FIA 15 SOC STR | **148B5248** | **148H3122** | **148H3124** | **148H3126** | **148H3128** | **148H3303** | **148H3363** | - |
| 20 | ¾ | FIA 20 SOC STR | **148B5348** | | | | | | | |
| 25 | 1 | FIA 25 SOC STR | **148B5448** | **148H3123** | **148H3125** | **148H3127** | **148H3129** | **148H3304** | **148H3269** | - |
| 32 | 1¼ | FIA 32 SOC STR | **148B5548** | | | | | | | |
| 40 | 1½ | FIA 40 SOC STR | **148B5645** | | | | | | | |
| 50 | 2 | FIA 50 SOC STR | **148B5717** | **148H3157** | **148H3130** | **148H3138** | **148H3144** | **148H3179** | **148H3184** | **148H3189** |

SOC = Socket welding
FPT = Inside pipe thread
G = Butt-weld GOST

ANG = Angleway
STR = Straightway

* 60 mesh

*Accessories*

| Part | Accessory for | Code number |
|---|---|---|
| Magnet insert | FIA 80-100 | **148H3447** |
| | FIA 125-200 | **148H3448** |

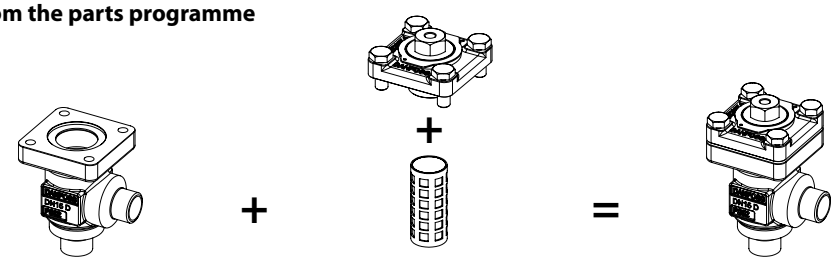
| Part | Accessory for | Code number |
|---|---|---|
| Strainer insert µ150 with removable insert µ50 for the first start up | FIA 15-20 | **148H3301** |
| | FIA 25-40 | **148H3302** |

| Part | Accessory for | Code number |
|---|---|---|
| Filter bag | FIA 50 | **148H3150** |
| | FIA 65 | **148H3151** |
| | FIA 80 | **148H3152** |
| | FIA 100 | **148H3153** |
| | FIA 125 | **148H3154** |
| | FIA 150 | **148H3155** |
| | FIA 200 | **148H3156** |

| Part | Accessory for | Code number |
|---|---|---|
| Purge valve complete | FIA 50 - 300 | **148B3745** |
| Blind nut with gasket | | **148H3450** |

## Ordering FIA strainers from the parts programme

***Example***
*(select from table 1 and 2)*

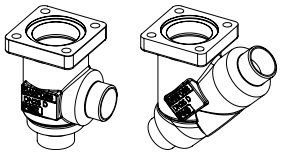


Strainer housing, size 25 (1 in.), DIN butt weld, angleway,
**148B5452**
Table 1

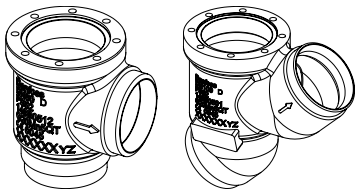
Top part, FIA, size 25 (1 in.)
**148B5484**
+
Strainer insert, 250µ, 72 mesh
**148H3127**
*Table 2*

***Table 1***
*SVL valve housings w/different connections*

*DN 15-65 mm (½ - 2½ in.)*



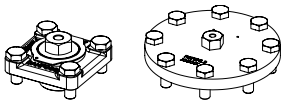
*DN 80-125 mm (3 - 5 in.)*

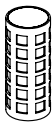


| Sizes [DN] | | Valve Housing SVL | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DIN-Butt weld | | ANSI-Butt weld | | GOST-Butt-weld | | SOC | | FPT | | T |
| mm | in. | ANG | STR | ANG | STR | ANG | STR | ANG | STR | ANG | STR | ANG |
| 15 | ½ | 148B5252 | 148B5253 | 148B5254 | 148B5255 | 148B5391 | 148B5392 | 148B5256 | 148B5257 | 148B5258 | 148B5259 | |
| 20 | ¾ | 148B5352 | 148B5353 | 148B5354 | 148B5355 | 148B5393 | 148B5394 | 148B5356 | 148B5357 | 148B5358 | 148B5359 | |
| 25 | 1 | 148B5452 | 148B5453 | 148B5454 | 148B5455 | 148B5498 | 148B5499 | 148B5456 | 148B5457 | 148B5458 | 148B5459 | |
| 32 | 1¼ | 148B5576 | 148B5577 | 148B5578 | 148B5579 | 148B5593 | 148B5594 | 148B5580 | 148B5581 | 148B5582 | 148B5583 | |
| 40 | 1½ | 148B5652 | 148B5653 | 148B5654 | 148B5655 | 148B5681 | 148B5682 | 148B5656 | 148B5657 | | | |
| 50 | 2 | 148B5741 | 148B5742 | 148B5743 | 148B5744 | 148B5759 | 148B5760 | 148B5745 | 148B5746 | | | |
| 65 | 2½ | 148B5816 | 148B5817 | 148B5818 | 148B5819 | 148B5816 | 148B5817 | | | | | |
| 80 | 3 | 148B5912 | 148B5913 | 148B5914 | 148B5915 | 148B5912 | 148B5913 | | | | | |
| 100 | 4 | 148B6014 | 148B6015 | 148B6016 | 148B6017 | 148B6033 | 148B6034 | | | | | |
| 125 | 5 | 148B6112 | 148B6113 | 148B6114 | 148B6115 | 148B6133 | 148B6134 | | | | | |

***Table 2***
*FIA complete top part including gaskets and bolts*

| FIA 15-65 | FIA 80-125 |
|---|---|





| Sizes [DN] | | Complete top part FIA | | Strainer insert 100µ 150 mesh | Strainer insert 150µ 100 mesh | Strainer insert 250µ 72 mesh | Strainer insert 500µ 38 mesh | Pleated Strainer insert 150µ 100 mesh | Pleated Strainer insert 250µ 72 mesh | Pleated Strainer insert 500µ 38 mesh |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | in. | | | | | | | | | |
| 15 | ½ | 148B5284 | + | 148H3122 | 148H3124 | 148H3126 | 148H3128 | 148H3303 | - | - |
| 20 | ¾ | | | | | | | | | |
| 25 | 1 | 148B5484 | + | 148H3123 | 148H3125 | 148H3127 | 148H3129 | 148H3304 | 148H3269 | - |
| 32 | 1¼ | | | | | | | | | |
| 40 | 1½ | | | | | | | | | |
| 50 | 2 | 148B5748 | + | 148H3157 | 148H3130 | 148H3138 | 148H3144 | 148H3179 | 148H3184 | 148H3189 |
| 65 | 2½ | 148B5832 | + | - | 148H3131 | 148H3139 | 148H3145 | 148H3180 | 148H3185 | 148H3190 |
| 80 | 3 | 148B5922 | + | - | 148H3119 | 148H3120 | 148H3121 | 148H3181 | 148H3186 | 148H3191 |
| 100 | 4 | 148B6024 | + | - | 148H3132 | 148H3140 | 148H3146 | 148H3182 | 148H3187 | 148H3192 |
| 125 | 5 | 148B6122 | + | - | 148H3133 | 148H3141 | 148H3147 | 148H3183 | 148H3188 | 148H3193 |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ENGINEERING
TOMORROW

# Strainer
## Type FIA 250-300, 52 bar (754 psi)

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ENGINEERING
TOMORROW

# Strainer
## Type FIA 250-300, 52 bar (754 psi)

FIA 250-300 (10-12 in.) strainers are a range of angleway strainers, which are carefully designed to give favourable flow conditions. The design makes the strainer easy to install, and ensures quick strainer inspection and cleaning.

FIA strainers are used ahead of automatic controls, pumps, compressors etc., for initial plant start-up and where permanent filtration of the refrigerant is required. The strainer reduces the risk of undesirable system breakdowns and reduces wear and tear on plant components.

FIA 250-300 (10-12 in.) strainers are equipped with a screen mesh of stainless steel, available in sizes 150 and 250 (microns*), (US 100 and 72 mesh*).

* Mesh is the number of threads per inch.
µ (microns) is the distance between two threads (1µ = 1 /1000 mm).

**Features**

- Applicable to HC, HCFC, HFC, R717 (Ammonia) and R744 ($CO_2$)
- Available with DIN and ANSI connections.
- Filter net of stainless steel mounted direct. without extra gaskets means easy servicing.
- FIA 250-300 (10-12 in.) can be equipped with a magnetic insert for detention of iron particles and other magnetic particles.
- Each strainer clearly marked with type, size and performance range.
- Housing and bonnet of low temperature steel in accordance with the requirements of the Pressure Equipment Directive and those of other international classification authorities.
- Temperature range: –60/+150°C (–76/+302°F)
- Max. working pressure: 40 bar g (580 psi g)
- Classification: DNV, CRN, BV, EAC etc. To get an updated list of certification on the products please contact your local Danfoss Sales Company.

## Design

*Connections*
*Available with the following connections:*

- Butt-weld DIN (EN 10220)
  DN 250 - 300 (10-12 in.)
- Butt-weld ANSI (B 36.10 Schedule 40),
  DN 250 - 300 (10-12 in.)

*Strainer Insert*
A filter grid and filter net of stainless steel ensure long element life. The filter net offers a very high degree of cleanability.

*Housing*
The strainer housing is made of special, cold resistant steel.

*Pressure Equipment Directive (PED)*
FIA strainers are approved in accordance with the European standard specified in the Pressure Equipment Directive and are CE marked.
For further details / restrictions - see Installation Instruction

| **Nominal bore** | DN 250 mm (10 in.) | DN 300 (12 in.) |
|---|---|---|
| **Classified for** | Fluid group I | |
| **Category** | III | IV |

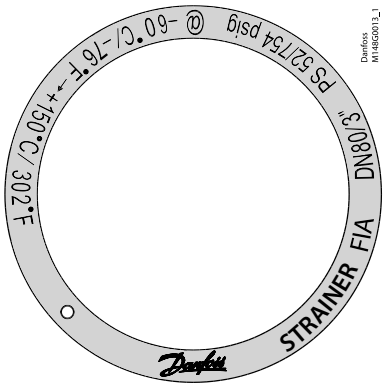
*Installation/Maintenance*
The strainer is designed to resist high internal pressures. However, the piping system in general should be designed to avoid liquid traps and reduce the risk of hydraulic pressure caused by thermal expansion.

Install the strainer with the cover in downward position.

Danfoss recommends replacement/cleaning of the strainer when the differential pressure loss >0.5 bar (7.3 psi) in the liquid line and >0.05 bar (0.7 psi) in the suction line. The max. permissible differential pressure is 1 bar (15 psi).

For further information refer to installation instruction for FIA.

*Identification:*




*Example of marking ring, FIA*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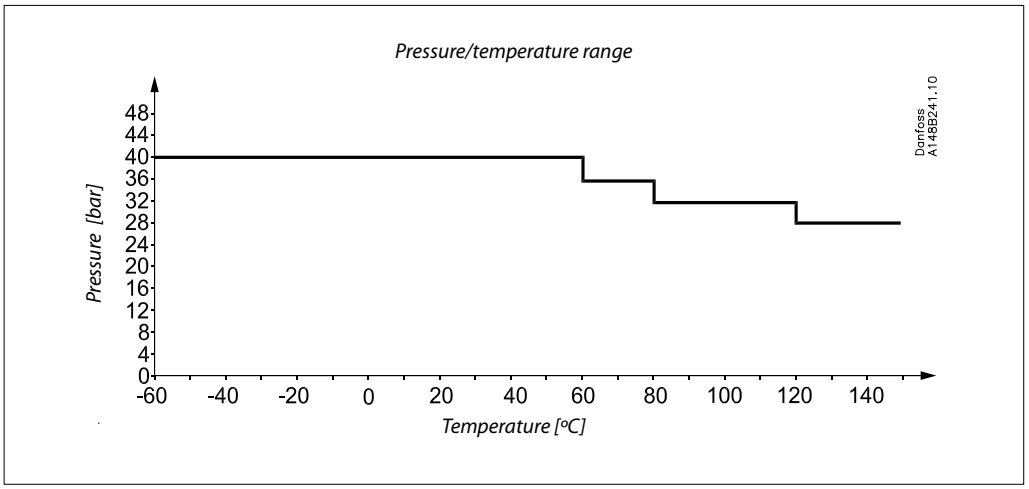
## Technical data

- *Refrigerants*
  Applicable to HC, HCFC, HFC, R717 (Ammonia) and R744 (CO2)
- *Pressure range*
  40 bar g (580 psi g) at –60°C to +60°C (–76°F to +140°F)
  36 bar g (522 psi g) at +60°C to +80°C (+140°F to +176°F)
  32 bar g (464 psi g) at +80°C to +120°C (+176°F to +248°F)
  28 bar g (406 psi g) at +120°C to +150°C (+248°F to +302°F)
- *Temperature range*
  –60/+150°C (–76/+302°F)




## Selection of strainer size

The mesh aperture size of the strainer must satisfy the requirements stated by the suppliers of the equipment to be protected.

The following recommendations of aperture size apply in general to refrigeration installations:

*Liquid Lines*
After pumps: ..... **150**µ [100 mesh] / 250µ [72 mesh]
In front of AKVA valves ..... **100**µ [150 mesh]

*Protection of automatic regulation equipment*
Generally ..... **150**µ [100 mesh] / 250µ [72 mesh]
Sensitive equipment, e.g.
suction regulators with low temperature ..... **250**µ [72 mesh]

*Definition*
Mesh is the number of threads per inch.
µ (microns) is the distance between two threads (1µ = 1 /1000 mm).

*Suction Lines*
Ahead of screw compressor ..... **250**µ [72 mesh]
Ahead of piston compressor ..... **150**µ [100 mesh]

*Flow coefficient (DIN/ANSI)*

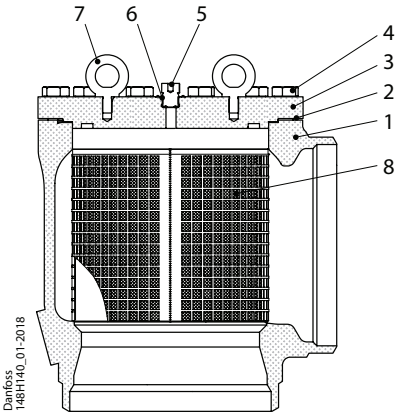
| **Connection size (DN)** / **FIA** | µ | **mesh** | **wire** mm | **wire** in. | **free space** % | **screen area** Plain inserts cm² | **screen area** Plain inserts in² |
|---|---|---|---|---|---|---|---|
| 250 (10″) | 150 | 100 | 0.10 | 0.004 | 36 | 1800 | 70.9 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 1800 | 70.9 |
| 300 (12″) | 150 | 100 | 0.10 | 0.004 | 36 | 2590 | 102.0 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 2590 | 102.0 |

*$K_v$ values*

| DN | **FIA angle - plain filter net** | |
|---|---|---|
| | µ150 | µ250 |
| 250 | 784.5 | 808.9 |
| 300 | 1062.3 | 1095.4 |

## Material specification

*FIA 250-300 (10-12 in.)*

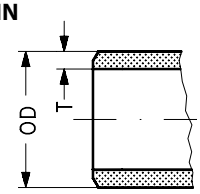



**FIA 250-300** (10-12 in.)

| No. | Part | Material | DIN | ISO | ASTM |
|---|---|---|---|---|---|
| 1 | Housing | Steel | G20Mn5QT, 10213-3<br>----------<br>P285QH+QT, 10222-4 | | LCC, A352<br>----------<br>LF2, A350 |
| 2 | Gasket | Fibre, Non-asbestos | | | |
| 3 | Cover | Steel | P285QH EN10222-4<br>----------<br>P275NL1 or 2 EN10028-3 | | LF2, A350<br>----------<br>A, A662 |
| 4 | Bolts | Stainless steel | A2-70 | A2-70 | Type 308 |
| 5 | Pressure relief screw | Stainless Steel | | | |
| 6 | Packing washer | Stainless steel | | | |
| 7 | Eye bolts DIN 580 | Steel | | | |
| 8 | Strainer insert | Stainless Steel | | | |

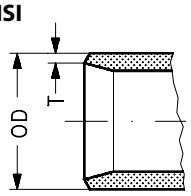
## Connections

### DIN




| Size mm | Size in. | OD mm | T mm | OD in. | T in. |
|---|---|---|---|---|---|
| *Butt-weld DIN (EN 10220)* | | | | | |
| 250 | 10 | 273 | 6.3 | 10.75 | 0.25 |
| 300 | 12 | 323.9 | 7.1 | 12.75 | 0.28 |

### ANSI




| Size mm | Size in. | OD mm | T mm | OD in. | T in. |
|---|---|---|---|---|---|
| *Butt-weld ANSI (B 36.10 Schedule 40)* | | | | | |
| 250 | 10 | 273 | 9.3 | 10.75 | 0.25 |
| 300 | 12 | 323.9 | 9.5 | 12.75 | 0.28 |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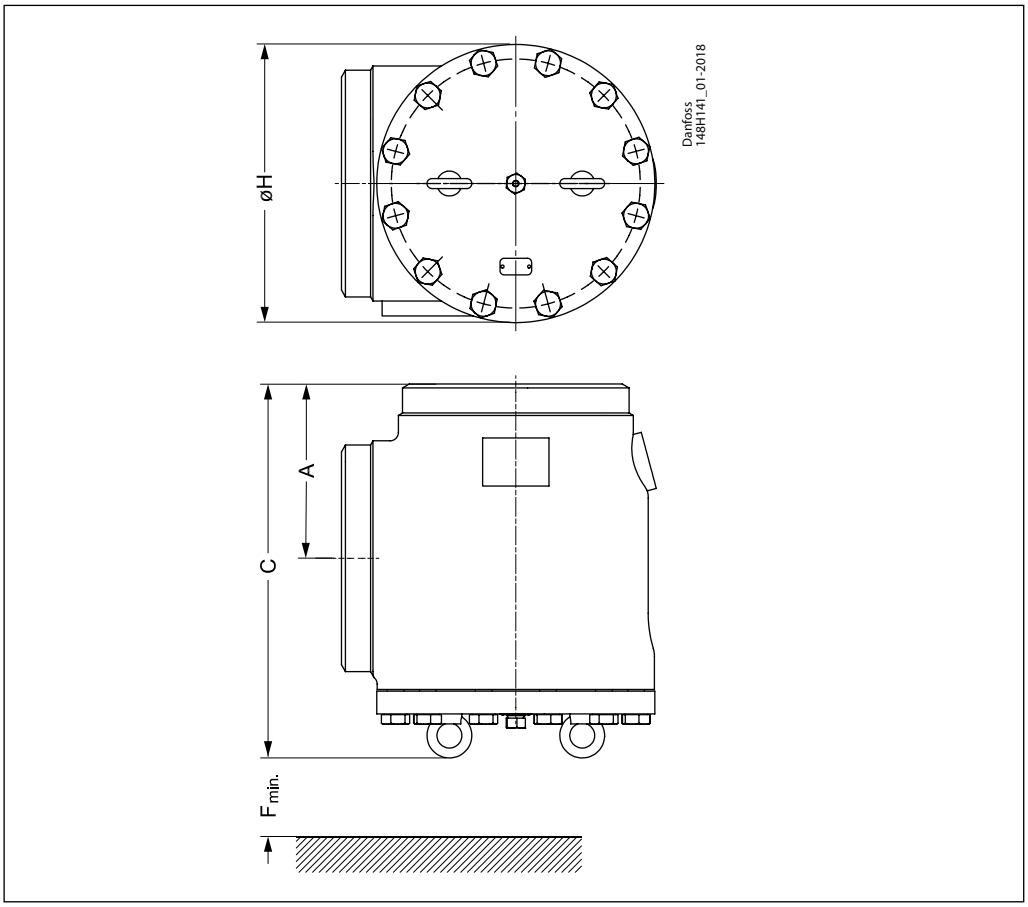
## Dimensions and weights

### FIA 250-300




*Angleway*

| Strainer size | | A | C | H | $F_{min.}$ | Weight |
|---|---|---|---|---|---|---|
| FIA 250 | mm | 210 | 450.5 | 334 | 285 | 89.6 kg |
| (10") | in. | 8.27 | 17.74 | 13.14 | 11.22 | 197.5 lbs |
| FIA 300 | mm | 240 | 510.5 | 384 | 340 | 122 kg |
| (12") | in. | 9.45 | 20.1 | 15.12 | 13.39 | 269 lbs |

## Ordering

The table below is used to identify the strainer required. Please note that you have to order **FIA strainer without insert and a strainer insert.**

*Example:*
FIA 250 D ANG + 150µ Strainer insert = **148H3171** + **148H3136**

| Size | | Type | FIA Without strainer insert | Strainer insert 150µ 100 mesh | Strainer insert 250µ 72 mesh |
|---|---|---|---|---|---|
| mm | in. | | | | |
| *Butt-weld DIN (EN 10220) - Angleway* | | | | | |
| 250 | 10 | FIA 250 D ANG | **148H3171** | **148H3136** | **148H3175** |
| 300 | 12 | FIA 300 D ANG | **148H3172** | **148H3137** | **148H3176** |
| *Butt-weld ANSI (B 36.10 Schedule 40) - Angleway* | | | | | |
| 250 | 10 | FIA 250 A ANG | **148H3173** | **148H3136** | **148H3175** |
| 300 | 12 | FIA 300 A ANG | **148H3174** | **148H3137** | **148H3176** |

D = Butt-weld DIN
A = Butt-weld ANSI
ANG = Angleway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ENGINEERING
TOMORROW

# Strainer
## Type FIA 15-200, 65 bar (943 psi)

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Dimensions and weights ..... 33
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Ordering ..... 36


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ENGINEERING
TOMORROW

# Strainer
## Type FIA 15-200, 65 bar (943 psi)

FIA strainers are a range of angleway and straightway strainers, which are carefully designed to give favourable flow conditions. The design makes the strainer easy to install, and ensures quick strainer inspection and cleaning.

FIA strainers are used ahead of automatic controls, pumps, compressors etc., for initial plant start-up and where permanent filtration of the refrigerant is required. The strainer reduces the risk of undesirable system breakdowns and reduces wear and tear on plant components.

FIA strainers are equipped with a screen mesh of stainless steel, available in sizes 100, 150, 250 and 500µ (microns*), (US 150, 100, 72, 38 mesh*).

* Mesh is the number of threads per inch.
µ (microns) is the distance between two threads
(1µ = 1 /1000 mm).

**Features**

- Modular Concept:
  – Each valve housing is available with DIN and ANSI butt weld connection and in several different sizes.
  – Possible to convert FIA strainers to any other product in the SVL family (Shut-off valve, regulating valve, check & stop valve or check valve) just by replacing the complete top part.
- Fast and easy overhaul service. It is easy to replace the top part and no welding is needed.
- Filter net of stainless steel mounted direct without extra gaskets means easy servicing.
- Two types of strainer inserts are available:
  - A plain insert of stainless steel.
  - A pleated insert (DN 15-200) with extra large surface, which ensures long intervals between cleaning and low pressure drop.
- FIA 15-40 (½ – 1 ½ in.):
  A special insert (50µ) can be used in combination with a standard version when cleaning a plant during commissioning.
- FIA 50-200 (2 - 8 in.):
  A large capacity filter bag (50µ) can be inserted for cleaning plant during commissioning.
- FIA 65-200 (2½ - 8 in.) can be equipped with a magnetic insert for detention of iron particles and other magnetic particles.
- Each strainer clearly marked with type, size and performance range
- Housing and bonnet of low temperature steel in accordance with the requirements of the Pressure Equipment Directive and those of other international classification authorities
- Classification: DNV, CRN, BV, EAC etc.
  To get an updated list of certification on the products please contact your local Danfoss Sales Company.
- Equipped with 42CrMo5 bolts to withstand high pressure.

## Technical data

- *Refrigerants*
  Applicable to HCFC, HFC, R717 (Ammonia), R744 ($CO_2$) and flammable refrigerants.
  For further information refer to the product instruction for FIA.
- *Temperature range*
  –60/+150°C (–76/+302°F).
- *Max. working pressure*
  65 bar (943 psig)

## Design

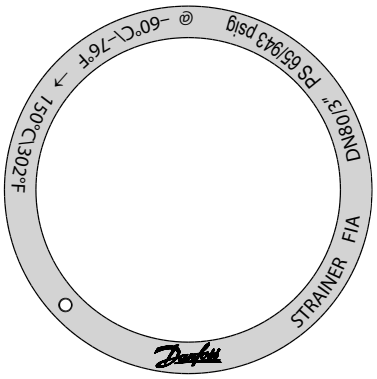
*Strainer Insert*
A filter grid and filter net of stainless steel ensure long element life. The filter net offers a very high degree of cleanability.

*Housing*
The strainer housing is made of special, cold resistant steel.

*Installation/Maintenance*
The strainer is designed to resist high internal pressures. However, the piping system in general should be designed to avoid liquid traps and reduce the risk of hydraulic pressure caused by thermal expansion.
Install the strainer with the cover in downward position.

Danfoss recommends replacement/cleaning of the strainer when the differential pressure loss >0.5 bar (7.3 psi) in the liquid line and >0.05 bar (0.7 psi) in the suction line. The max. permissible differential pressure is 1 bar (15 psi).

For further information refer to installation instruction for FIA.



*Example of marking ring, FIA*

*Pressure Equipment Directive (PED)*
SVL valves are approved according to the European standard specified in the Pressure Equipment Directive and are CE marked.

For further details / restrictions - see Installation guide.

| | SVL | | |
|---|---|---|---|
| **Nominal bore** | DN≤ 25 mm (1 in.) | DN32-80 mm (1¼ - 3 in.) | DN100 - 200 mm (4-8 in.) |
| **Classified for** | Fluid group I | | |
| **Category** | Article 3, paragraph 3 | II | III |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## Selection of strainer size

The mesh aperture size of the strainer must satisfy the requirements stated by the suppliers of the equipment to be protected.

The following recommendations of aperture size apply in general to refrigeration installations:

*All lines*
First start up: ..... **50**µ
(Use strainer element with removable insert for FIA DN15-40 or separate filter bag for FIA DN 50-200. 50µ insert should normally be removed after the first 24 hours of operation)

*Liquid Lines*
Ahead of pumps: ..... **500**µ [38 mesh]
After pumps: ..... **150**µ [100 mesh] / 250µ [72 mesh]
In front of AKVA valves ..... **100**µ [150 mesh]

*Protection of automatic regulation equipment*
Generally ..... **150**µ [100 mesh] / 250µ [72 mesh]
Sensitive equipment, e.g.
suction regulators with low temperature ..... **250**µ [72 mesh]

*Definition*
Mesh is the number of threads per inch.
µ (microns) is the distance between two threads (1µ = 1 /1000 mm).

*Suction Lines*
Ahead of screw compressor ..... **250**µ [72 mesh]
Ahead of piston compressor ..... **150**µ [100 mesh]

*Flow coefficient (DIN/ANSI)*

| **Connection size (DN)** **FIA** | µ | **mesh** | **wire** mm | **wire** in. | **free space** % | **screen area** Plain elements cm² | Plain elements in² | Pleated elements cm² | Pleated elements in² |
|---|---|---|---|---|---|---|---|---|---|
| 15 - 20 (1/2" - 3/4") | 100 | | 0.068 | 0.003 | 35 | 25 | 3.9 | 45 | 7.0 |
| | 150 | 100 | 0.10 | 0.004 | 36 | 25 | 3.9 | 45 | 7.0 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 25 | 3.9 | 45 | 7.0 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 25 | 3.9 | 45 | 7.0 |
| 25 - 40 (1" - 1 1/2") | 100 | | 0.068 | 0.003 | 35 | 71 | 11 | 160 | 25.0 |
| | 150 | 100 | 0.10 | 0.004 | 36 | 71 | 11 | 160 | 25.0 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 71 | 11 | 160 | 25.0 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 71 | 11 | 160 | 25.0 |
| 50 (2") | 100 | | 0.068 | 0.003 | 35 | 71 | 11 | 200 | 31.2 |
| | 150 | 100 | 0.10 | 0.004 | 36 | 87 | 13.5 | 200 | 31.2 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 87 | 13.5 | 200 | 31.2 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 87 | 13.5 | 200 | 31.2 |
| 65 (2 1/2") | 150 | 100 | 0.10 | 0.004 | 36 | 127 | 19.7 | 305 | 47.6 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 127 | 19.7 | 305 | 47.6 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 127 | 19.7 | 305 | 47.6 |
| 80 (3") | 150 | 100 | 0.10 | 0.004 | 36 | 205 | 31.8 | 450 | 70.2 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 205 | 31.8 | 450 | 70.2 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 205 | 31.8 | 450 | 70.2 |
| 100 (4") | 150 | 100 | 0.10 | 0.004 | 36 | 370 | 57.4 | 790 | 123.2 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 370 | 57.4 | 790 | 123.2 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 370 | 57.4 | 790 | 123.2 |
| 125 (5") | 150 | 100 | 0.10 | 0.004 | 36 | 510 | 79.1 | 1105 | 172.4 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 510 | 79.1 | 1105 | 172.4 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 510 | 79.1 | 1105 | 172.4 |
| 150 (6") | 150 | 100 | 0.10 | 0.004 | 36 | 726 | 112.5 | 1600 | 249.6 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 726 | 112.5 | 1600 | 249.6 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 726 | 112.5 | 1600 | 249.6 |
| 200 (8") | 150 | 100 | 0.10 | 0.004 | 36 | 1315 | 203.8 | 2900 | 453.1 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 1315 | 203.8 | 2900 | 453.1 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 1315 | 203.8 | 2900 | 453.1 |

## Selection of strainer size
*(Continued)*

*$K_v$ values*

| DN | FIA angle - plain filter net | | | | FIA angle - pleated filter net | | |
|---|---|---|---|---|---|---|---|
| | µ100 | µ150 | µ250 | µ500 | µ150 | µ250 | µ500 |
| 15 | 3.3 | 3.4 | 3.5 | 3.7 | 4.2 | | |
| 20 | 6.9 | 7.1 | 7.3 | 7.7 | 8.8 | | |
| 25 | 13.8 | 14.0 | 14.5 | 15.2 | 17.2 | 17.9 | |
| 32 | 23.0 | 23.8 | 24.7 | 25.5 | 29.2 | 30.5 | |
| 40 | 25.1 | 25.5 | 26.4 | 28.1 | 31.4 | 32.6 | |
| 50 | 45.1 | 45.9 | 47.6 | 50.2 | 56.7 | 58.8 | 62.0 |
| 65 | | 56.1 | 57.8 | 60.4 | 69.3 | 71.4 | 74.6 |
| 80 | | 104.6 | 108.0 | 113.1 | 129.2 | 133.4 | 139.7 |
| 100 | | 162.4 | 167.5 | 176.0 | 200.6 | 206.9 | 217.4 |
| 125 | | 275.4 | 283.9 | 298.4 | 340.2 | 350.7 | 368.6 |
| 150 | | 362.1 | 373.2 | 391.9 | 447.3 | 462.9 | |
| 200 | | 572.9 | 590.8 | 620.5 | 704.9 | 730.0 | |

| DN | FIA straight - plain filter net | | | | FIA straight - pleated filter net | | |
|---|---|---|---|---|---|---|---|
| | µ100 | µ150 | µ250 | µ500 | µ150 | µ250 | µ500 |
| 15 | 2.5 | 2.6 | 2.7 | 2.8 | 3.3 | | |
| 20 | 5.3 | 5.4 | 5.6 | 5.9 | 6.9 | | |
| 25 | 10.5 | 10.7 | 11.1 | 11.6 | 13.8 | 14.5 | |
| 32 | 17.6 | 18.2 | 18.9 | 19.5 | 23.9 | 24.7 | |
| 40 | 19.2 | 19.5 | 20.2 | 21.5 | 25.5 | 26.4 | |
| 50 | 34.5 | 35.1 | 36.4 | 38.4 | 45.9 | 47.6 | 50.2 |
| 65 | | 42.9 | 44.2 | 46.2 | 56.1 | 57.8 | 60.4 |
| 80 | | 80.0 | 82.6 | 86.5 | 104.6 | 108.0 | 113.1 |
| 100 | | 124.2 | 128.1 | 134.6 | 162.4 | 167.5 | 176.0 |
| 125 | | 210.6 | 217.1 | 228.2 | 275.4 | 283.9 | 298.4 |
| 150 | | 276.9 | 285.4 | 299.7 | 362.1 | 374.0 | |
| 200 | | 438.1 | 451.8 | 474.5 | 570.8 | 587.3 | |


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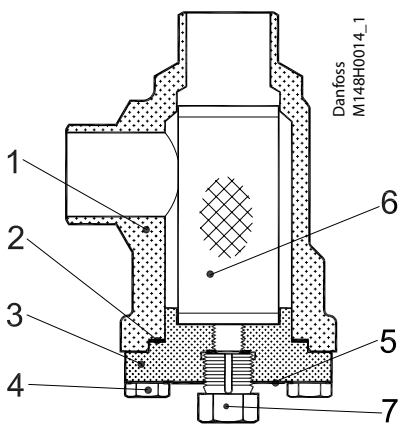
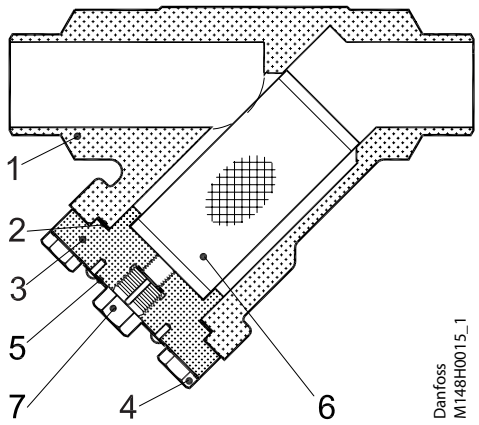
## Material specification

*FIA 15 - 40 ($^1/_2$ in. - 1 $^1/_2$ in.)*



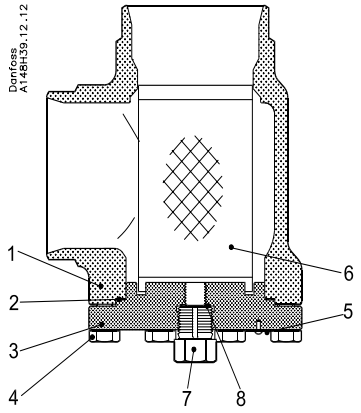



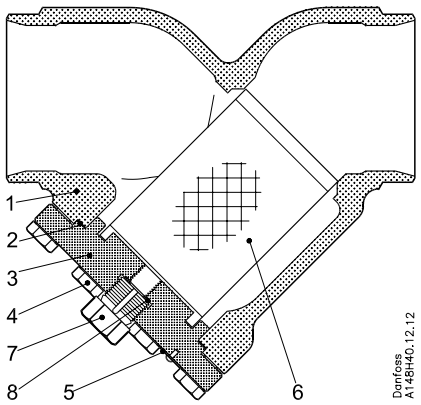

**FIA 15-40** ($^1/_2$ in. - 1$^1/_2$ in.)

| No. | Part | Material | DIN | ISO | ASTM |
|---|---|---|---|---|---|
| 1 | Housing | Steel | G20Mn5QT, 10213-3<br>---<br>P285QH+QT, 10222-4 | | LCC, A352<br>---<br>LF2, A350 |
| 2 | Gasket | Fibre, Non-asbestos | | | |
| 3 | Cover | Steel | P285QH EN10222-4<br>---<br>P275NL1 or 2 EN10028-3 | | LF2, A350<br>---<br>A, A662 |
| 4 | Bolts | High temperature steel | 42CrMo5<br>10269 | | A193 |
| 5 | Marking label | Aluminium | | | |
| 6 | Strainer element | Stainless steel | | | |
| 7 | Pressure relief (screw) | Stainless steel | | | |

## Material specification

*FIA 50 - 200 (2 in. - 8 in.)*




**FIA 50-200** (2 in. - 8 in.)

| No. | Part | Material | DIN | ISO | ASTM |
|---|---|---|---|---|---|
| 1 | Housing | Steel | G20Mn5QT, 10213-3<br>---<br>P285QH+QT, 10222-4 | | LCC, A352<br>---<br>LF2, A350 |
| 2 | Gasket | Fibre, Non-asbestos | | | |
| 3 | Cover | Steel | P285QH EN10222-4<br>---<br>P275NL1 or 2 EN10028-3 | | LF2, A350<br>---<br>A, A662 |
| 4 | Bolts | High temperature steel | 42CrMo5<br>10269 | | A193 |
| 5 | Marking label | Aluminium | | | |
| 6 | Strainer element | Stainless steel | | | |
| 7 | Pressure relief (screw) | Stainless steel | | | |
| 8* | Packing washer | Aluminium | | | |

* pos 8 used in FIA 50-200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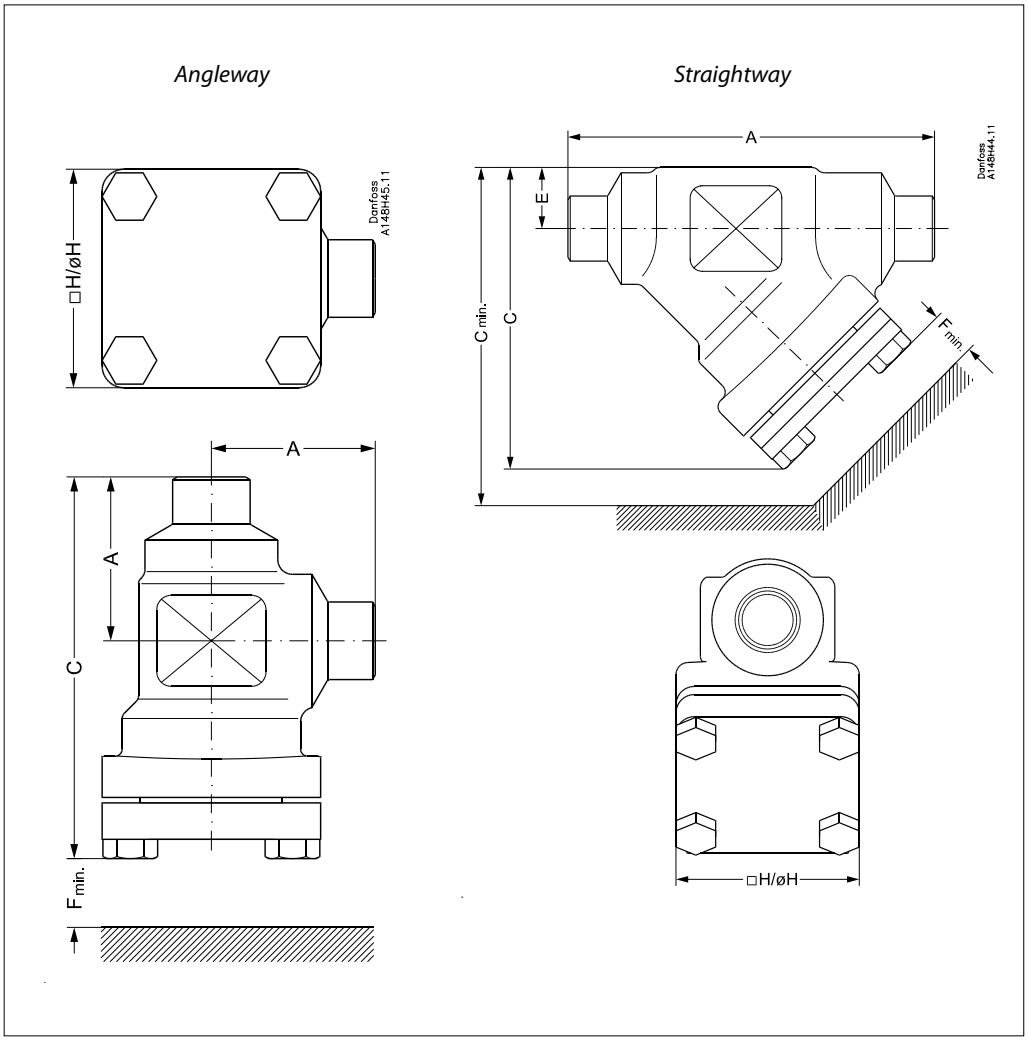
## Dimensions and weights

### FIA 15 - 65




*Angleway*

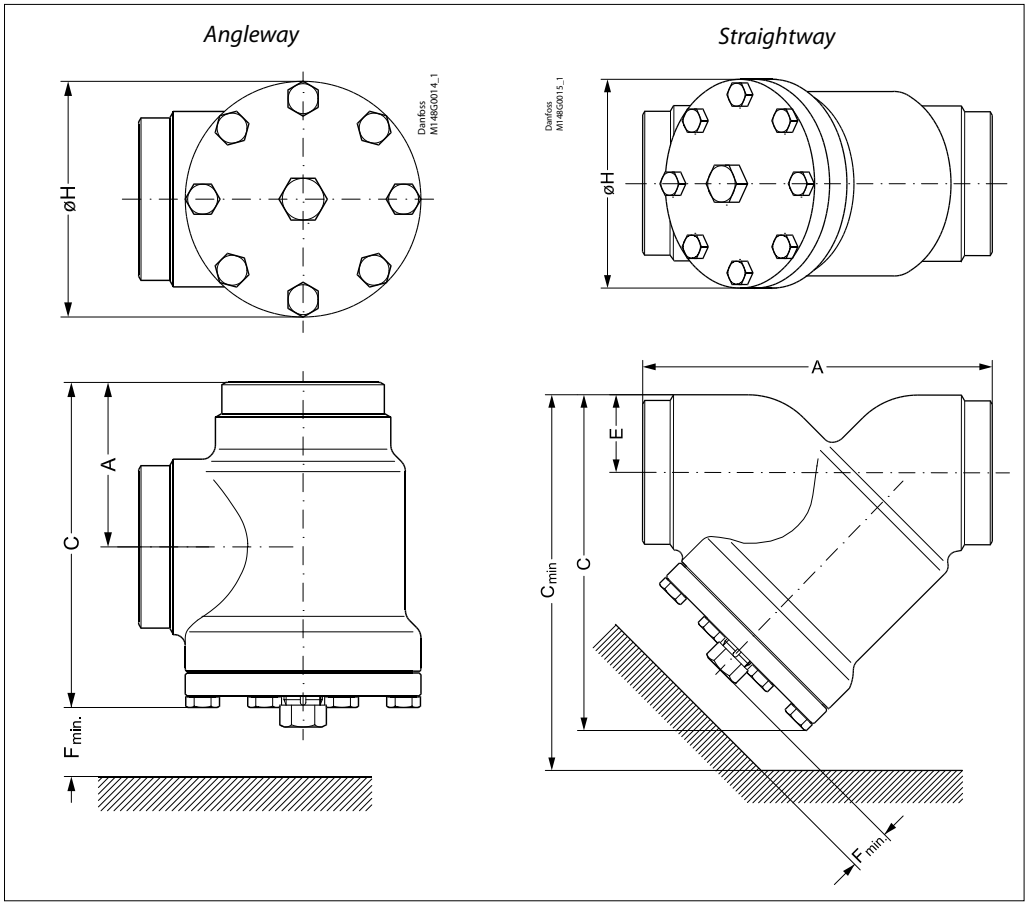
| Strainer size | | A | C | H | $F_{min.}$ | Weight |
|---|---|---|---|---|---|---|
| FIA 15-20 | mm | 45 | 105 | 60 | 68 | 1.1 kg |
| ($^1/_2$" - $^3/_4$") | in. | 1.77 | 4.13 | 2.36 | 2.68 | 2.4 lbs |
| FIA 25-40 | mm | 55 | 132 | 70 | 95 | 1.7 kg |
| (1" - 1$^1/_2$") | in. | 2.17 | 5.20 | 2.76 | 3.74 | 3.7 lbs |
| FIA 50 | mm | 60 | 132 | 77 | 92 | 2.8 kg |
| (2") | in. | 2.36 | 5.20 | 3.03 | 3.62 | 6.2 lbs |
| FIA 65 | mm | 70 | 152 | 90 | 107 | 3.8 kg |
| (2$^1/_2$") | in. | 2.76 | 5.98 | 3.54 | 4.21 | 8.4 lbs |

*Straightway*

| Strainer size | | A | C | $C_{min.}$ | H | E | $F_{min.}$ | Weight |
|---|---|---|---|---|---|---|---|---|
| FIA 15-20 | mm | 120 | 99 | 133 | 60 | 20 | 68 | 1.4 kg |
| ($^1/_2$" - $^3/_4$") | in. | 4.72 | 3.90 | 5.24 | 2.36 | 0.79 | 2.68 | 3.1 lbs |
| FIA 25-40 | mm | 155 | 129 | 177 | 70 | 26 | 95 | 2.4 kg |
| (1" - 1$^1/_2$") | in. | 6.10 | 5.08 | 6.97 | 2.76 | 1.02 | 3.74 | 5.3 lbs |
| FIA 50 | mm | 148 | 138 | 184 | 77 | 32 | 92 | 3.5 kg |
| (2") | in. | 5.83 | 5.43 | 7.24 | 3.03 | 1.26 | 3.62 | 7.7 lbs |
| FIA 65 | mm | 176 | 165 | 219 | 90 | 40 | 107 | 5.3 kg |
| (2$^1/_2$") | in. | 6.93 | 6.50 | 8.62 | 3.54 | 1.57 | 4.21 | 11.7 lbs |

## Dimensions and weights

### FIA 80 - 200




*Angleway*

| Strainer size | | A | C | H | $F_{min.}$ | Weight |
|---|---|---|---|---|---|---|
| FIA 80 | mm | 90 | 189 | 129 | 133 | 7.3 kg |
| (3") | in. | 3.54 | 7.44 | 5.08 | 5.24 | 16.1 lbs |
| FIA 100 | mm | 106 | 223 | 156 | 163 | 11.9 kg |
| (4") | in. | 4.17 | 8.78 | 6.14 | 6.42 | 26.2 lbs |
| FIA 125 | mm | 128 | 268 | 192 | 190 | 21.2 kg |
| (5") | in. | 5.04 | 10.6 | 7.56 | 7.48 | 46.7 lbs |
| FIA 150 | mm | 145 | 303 | 219 | 223 | 30.5 kg |
| (6") | in. | 5.71 | 11.93 | 8.62 | 8.78 | 67.2 lbs |
| FIA 200 | mm | 180 | 372 | 276 | 280 | 68 kg |
| (8") | in. | 7.09 | 14.65 | 10.87 | 11.02 | 150 lbs |

*Straightway*

| Strainer size | | A | C | $C_{min.}$ | H | E | $F_{min.}$ | Weight |
|---|---|---|---|---|---|---|---|---|
| FIA 80 | mm | 216 | 204 | 271 | 129 | 48 | 133 | 8.6 kg |
| (3") | in. | 8.50 | 8.03 | 10.67 | 5.08 | 1.89 | 5.24 | 19 lbs |
| FIA 100 | mm | 264 | 256 | 337 | 156 | 60 | 163 | 14.9 kg |
| (4") | in. | 10.39 | 10.08 | 13.27 | 6.14 | 2.36 | 6.42 | 32.8 lbs |
| FIA 125 | mm | 322 | 313 | 408 | 192 | 74 | 190 | 26.9 kg |
| (5") | in. | 12.68 | 12.32 | 16.06 | 7.56 | 2.91 | 7.48 | 59.3 lbs |
| FIA 150 | mm | 370 | 370 | 482 | 219 | 91 | 223 | 51 kg |
| (6") | in. | 14.57 | 14.57 | 18.98 | 8.62 | 3.58 | 8.78 | 112 lbs |
| FIA 200 | mm | 464 | 465 | 605 | 276 | 117 | 280 | 95 kg |
| (8") | in. | 18.27 | 18.31 | 23.82 | 10.87 | 4.61 | 11.02 | 209 lbs |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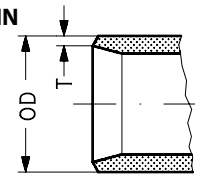
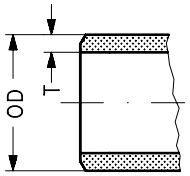
## Connections

### DIN




| Size mm | Size in. | OD mm | T mm | OD in. | T in. | | | $k_v$-angle $m^3/h$ | $k_v$-straight $m^3/h$ | $C_v$-angle USgal/min | $C_v$-straight USgal/min |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Butt-weld DIN (EN 10220)* | | | | | | | | | | | |
| 15 | ½ | 21.3 | 2.3 | 0.839 | 0.091 | | | 7.0 | 4.9 | 8.1 | 5.7 |
| 20 | ¾ | 26.9 | 2.3 | 1.059 | 0.091 | | | 14.6 | 10.2 | 16.9 | 11.8 |
| 25 | 1 | 33.7 | 2.6 | 1.327 | 0.103 | | | 24.8 | 17.4 | 28.8 | 20.2 |
| 32 | 1¼ | 42.4 | 2.6 | 1.669 | 0.102 | | | 42.6 | 29.8 | 49.4 | 34.6 |
| 40 | 1½ | 48.3 | 2.6 | 1.902 | 0.103 | | | 45.2 | 31.6 | 52.4 | 36.7 |
| 50 | 2 | 60.3 | 2.9 | 2.37 | 0.11 | | | 80 | 65 | 93 | 76 |
| 65 | 2½ | 76.1 | 2.9 | 3 | 0.11 | | | 120 | 97 | 140 | 113 |
| 80 | 3 | 88.9 | 3.2 | 3.50 | 0.13 | | | 182 | 152 | 211 | 176 |
| 100 | 4 | 114.3 | 3.6 | 4.50 | 0.14 | | | 313 | 278 | 363 | 323 |
| 125 | 5 | 139.7 | 4.0 | 5.50 | 0.16 | | | 514 | 470 | 596 | 545 |
| 150 | 6 | 168.3 | 4.5 | 6.63 | 0.18 | | | 785 | 597 | 911 | 693 |
| 200 | 8 | 219.1 | 6.3 | 8.63 | 0.25 | | | 1168 | 1024 | 1355 | 1188 |

### ANSI




| Size mm | Size in. | OD mm | T mm | OD in. | T in. | | | $k_v$-angle $m^3/h$ | $k_v$-straight $m^3/h$ | $C_v$-angle USgal/min | $C_v$-straight USgal/min |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Butt-weld ANSI (B 36.10 Schedule 80)* | | | | | | | | | | | |
| 15 | ½ | 21.3 | 3.7 | 0.839 | 0.146 | | | 7.0 | 4.9 | 8.1 | 5.7 |
| 20 | ¾ | 26.9 | 4.0 | 1.059 | 0.158 | | | 14.6 | 10.2 | 16.9 | 11.8 |
| 25 | 1 | 33.7 | 4.6 | 1.327 | 0.181 | | | 24.8 | 17.4 | 28.8 | 20.2 |
| 32 | 1¼ | 42.4 | 4.9 | 1.669 | 0.193 | | | 42.6 | 29.8 | 49.4 | 34.6 |
| 40 | 1½ | 48.3 | 5.1 | 1.902 | 0.201 | | | 45.2 | 31.6 | 52.4 | 36.7 |
| *Butt-weld ANSI (B 36.10 Schedule 40)* | | | | | | | | | | | |
| 50 | 2 | 60.3 | 3.9 | 2.37 | 0.15 | | | 80 | 65 | 93 | 76 |
| 65 | 2½ | 73.0 | 5.2 | 2.87 | 0.20 | | | 120 | 97 | 140 | 113 |
| 80 | 3 | 88.9 | 5.5 | 3.50 | 0.22 | | | 182 | 152 | 211 | 176 |
| 100 | 4 | 114.3 | 6.0 | 4.50 | 0.24 | | | 313 | 278 | 363 | 323 |
| 125 | 5 | 141.3 | 6.6 | 5.56 | 0.26 | | | 514 | 470 | 596 | 545 |
| 150 | 6 | 168.3 | 7.1 | 6.63 | 0.28 | | | 785 | 597 | 911 | 693 |
| 200 | 8 | 219.1 | 8.2 | 8.63 | 0.32 | | | 1168 | 1024 | 1355 | 1188 |

## Ordering

| Size [DN] | Parts Program | | | | |
|---|---|---|---|---|---|
| | Housing | | | | Top complete |
| | ANG | | STR | | FIA |
| | DIN | ANSI | DIN | ANSI | |
| 6 | | | | | |
| 10 | | | | | |
| 15 | 148B6622 | 148B6612 | 148B6642 | 148B6632 | 148B5783 |
| 20 | 148B6623 | 148B6613 | 148B6643 | 148B6633 | 148B5783 |
| 25 | 148B6624 | 148B6614 | 148B6644 | 148B6634 | 148B5784 |
| 32 | 148B6625 | 148B6615 | 148B6645 | 148B6635 | 148B5784 |
| 40 | 148B6626 | 148B6616 | 148B6646 | 148B6636 | 148B5784 |
| 50 | 148B6627 | 148B6617 | 148B6647 | 148B6637 | 148B5785 |
| 65 | 148B6628 | 148B6618 | 148B6648 | 148B6638 | 148B5786 |
| 80 | 148B6629 | 148B6619 | 148B6649 | 148B6639 | 148B5787 |
| 100 | 148B6630 | 148B6620 | 148B6650 | 148B6640 | 148B5788 |
| 125 | 148B6631 | 148B6621 | 148B6651 | 148B6641 | 148B5789 |
| 150 | | | | | |
| 200 | | | | | |

| Size [DN] | Complete valve | | | |
|---|---|---|---|---|
| | FIA | | | |
| | ANG | | STR | |
| | DIN | ANSI | DIN | ANSI |
| 6 | | | | |
| 10 | | | | |
| 15 | | | | |
| 20 | | | | |
| 25 | | | | |
| 32 | | | | |
| 40 | | | | |
| 50 | | | | |
| 65 | | | | |
| 80 | | | | |
| 100 | | | | |
| 125 | | | | |
| 150 | 148B6669 | 148B6671 | 148B6670 | 148B6672 |
| 200 | 148B6677 | 148B6679 | 148B6678 | 148B6680 |

*Strainer element*

| FIA Size | | Strainer insert 100µ 150 mesh | Strainer insert 150µ 100 mesh | Strainer insert 250µ 72 mesh | Strainer insert 500µ 38 mesh | Pleated Strainer insert 150µ 100 mesh | Pleated Strainer insert 250µ 72 mesh | Pleated Strainer insert 500µ 38 mesh |
|---|---|---|---|---|---|---|---|---|
| mm | in. | | | | | | | |
| 15 | ½ | **148H3122** | **148H3124** | **148H3126** | **148H3128** | **148H3303** | **148H3363** | - |
| 20 | ¾ | | | | | | | |
| 25 | 1 | **148H3123** | **148H3125** | **148H3127** | **148H3129** | **148H3304** | **148H3269** | - |
| 32 | 1¼ | | | | | | | |
| 40 | 1½ | | | | | | | |
| 50 | 2 | **148H3157** | **148H3130** | **148H3138** | **148H3144** | **148H3179** | **148H3184** | **148H3189** |
| 65 | 2½ | - | **148H3131** | **148H3139** | **148H3145** | **148H3180** | **148H3185** | **148H3190** |
| 80 | 3 | - | **148H3119** | **148H3120** | **148H3121** | **148H3181** | **148H3186** | **148H3191** |
| 100 | 4 | - | **148H3132** | **148H3140** | **148H3146** | **148H3182** | **148H3187** | **148H3192** |
| 125 | 5 | - | **148H3133** | **148H3141** | **148H3147** | **148H3183** | **148H3188** | **148H3193** |
| 150 | 6 | - | **148H3134** | **148H3142** | **148H3148** | **148H3226** | **148H3293*** | - |
| 200 | 8 | - | **148H3135** | **148H3143** | **148H3149** | **148H3297** | **148H3294*** | - |

* 60 mesh

*Accessories*

| Part | Accessory for | Code number |
|---|---|---|
| Magnet insert | FIA 65-100 | **148H3447** |
| | FIA 125-200 | **148H3448** |

| Part | Accessory for | Code number |
|---|---|---|
| Strainer element µ150 with removable element µ50 for the first start up | FIA 15-20 | **148H3301** |
| | FIA 25-40 | **148H3302** |

| Part | Accessory for | Code number |
|---|---|---|
| Filter bag | FIA 50 | **148H3150** |
| | FIA 65 | **148H3151** |
| | FIA 80 | **148H3152** |
| | FIA 100 | **148H3153** |
| | FIA 125 | **148H3154** |
| | FIA 150 | **148H3155** |
| | FIA 200 | **148H3156** |

| Part | Accessory for | Code number |
|---|---|---|
| Purge valve complete | FIA 50 - 300 | **148B3745** |
| Blind nut with gasket | | **148H3450** |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ENGINEERING
TOMORROW

# Strainers in stainless steel
## Type FIA SS

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ENGINEERING TOMORROW

# Strainers in stainless steel
## Type FIA SS

In certain specific areas such as outdoor applications and corrosive atmospheres, such as coastal installations, there is a need for high surface protection to prevent failure due to corrosion.

Today's food safety standards often call for daily treatment with detergents to protect against bacteria growth, again producing a need for high surface protection.

FIA SS strainers are a range of angle-way and straight-way strainers which are carefully designed to give favourable flow conditions.

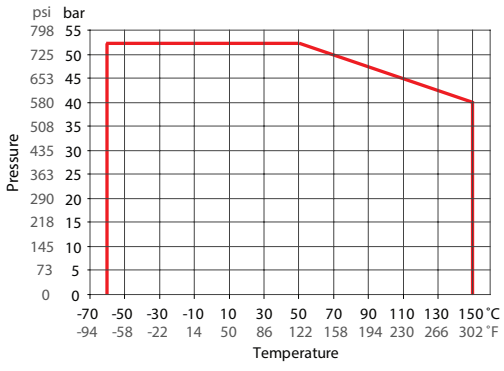
The design makes the strainer easy to install, and ensures quick strainer inspection and cleaning.

FIA SS strainers are used ahead of automatic controls, pumps, compressors etc., for initial plant start-up and where permanent filtration of the refrigerant is required. The strainer reduces the risk of undesirable system breakdowns and reduces wear and tear on plant components.

**Features**

- Applicable to HCFC, HFC, R717 (Ammonia), R744 ($CO_2$) and all flammable refrigerants.
- Designed to give favourable flow conditions.
- Housing is made of special cold resistant stainless steel approved for low temperature operations.
- Easy to disassemble for inspection and service.
- Butt-weld DIN and ANSI connections.
- Max. operating pressure:
  52 bar g (754 psig)
- Temperature range:
  –60/+150°C (–76 +302°F).
- Compact and light valves for easy handling and installation.
- Classification: DNV, CRN, BV, EAC etc.
  To get an updated list of certification on the products please contact your local Danfoss Sales Company.

**Pressure and temperature range**



## Design

*Connections*
*Available with the following connections:*

- Butt-weld DIN (EN 10220)
  DN 15 - 65 (½ - 2½ in.)
- Butt-weld ANSI (B 36.19M)
  DN 15 - 65 (½ - 2½ in.)

*Strainer Insert*
A filter grid and filter net of stainless steel ensure long element life. The filter net offers a very high degree of cleanability.

*Housing*
Made of stainless steel approved for low temperature operations.

*Pressure Equipment Directive (PED)*
FIA SS strainers are approved in accordance with the European standard specified in the Pressure Equipment Directive and are CE marked.
For further details / restrictions - see Installation Instruction.

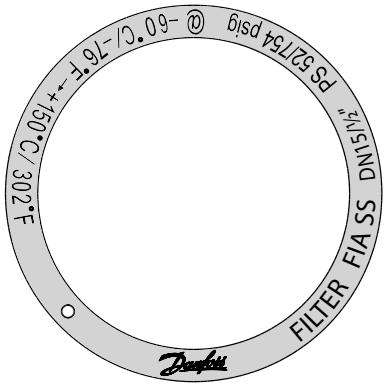
*Installation/Maintenance*
The strainer is designed to resist high internal pressures. However, the piping system in general should be designed to avoid liquid traps and reduce the risk of hydraulic pressure caused by thermal expansion.

Install the strainer with the cover in downward position.

Danfoss recommends replacement/cleaning of the strainer when the differential pressure loss >0.5 bar (7.3 psi) in the liquid line and >0.05 bar (0.7 psi) in the suction line. The max. permissible differential pressure is 1 bar (15 psi).

For further information refer to installation instruction for FIA SS.

*Identification:*




*Example of marking ring, FIA SS*

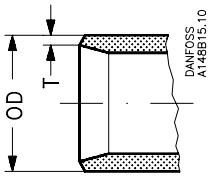
| | FIA SS | |
|---|---|---|
| **Nominal bore** | DN ≤ 25 (1 in.) | DN 32-65 mm (1¼ - 2½ in.) |
| **Classified for** | Fluid group I | |
| **Category** | Article 3, paragraph 3 | II |

## Technical data

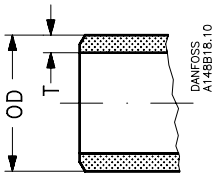
- *Refrigerants*
  Applicable to HCFC, HFC, R717 (Ammonia), R744 ($CO_2$) and all flammable refrigerants.
  For further information please see installation instruction for FIA SS.
- *Temperature range*
  –60°C/+150°C (–76°F/+302°F).
- *Max. working pressure:*
  52 bar g (754 psi g).

## Connections

*DIN*




*ANSI*




| Size | | OD | T |
|---|---|---|---|
| **Butt-weld DIN (EN 10220)** | | | |
| 15 | mm | 21.3 | 2.3 |
| ½ | in. | 0.839 | 0.091 |
| 20 | mm | 26.9 | 2.3 |
| ¾ | in | 1.059 | 0.091 |
| 25 | mm | 33.7 | 2.6 |
| 1 | in. | 1.327 | 0.103 |
| 32 | mm | 42.4 | 2.6 |
| 1¼ | in. | 1.669 | 0.102 |
| 40 | mm | 48.3 | 2.6 |
| 1½ | in. | 1.902 | 0.103 |
| 50 | mm | 60.3 | 2.9 |
| 2 | in. | 2.37 | 0.11 |
| 65 | mm | 76.1 | 2.9 |
| 2½ | in. | 3 | 0.11 |

| Size | | OD | T |
|---|---|---|---|
| **Butt-weld ANSI (B 36.19M, SCHEDULE 40)** | | | |
| 15 | mm | 21.3 | 2.8 |
| ½ | in. | 0.839 | 0.11 |
| 20 | mm | 26.9 | 2.9 |
| ¾ | in | 1.06 | 0.11 |
| 25 | mm | 33.7 | 3.5 |
| 1 | in. | 1.33 | 0.14 |
| 32 | mm | 42.4 | 3.6 |
| 1¼ | in. | 1.67 | 0.14 |
| 40 | mm | 48.3 | 3.7 |
| 1½ | in. | 1.9 | 0.15 |
| **Butt-weld ANSI (B 36.19M, SCHEDULE 10)** | | | |
| 50 | mm | 60.3 | 2.8 |
| 2 | in. | 2.37 | 0.11 |
| 65 | mm | 73 | 3.1 |
| 2½ | in. | 2.87 | 0.12 |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## Selection of strainer size

The mesh aperture size of the strainer must satisfy the requirements stated by the suppliers of the equipment to be protected.

The following recommendations of aperture size apply in general to refrigeration installations:

*All lines*
First start up: ..... **50**µ
(Use filter element with removable insert for FIA SS DN15-40 or separate filter bag for FIA SS DN 50-65. 50µ insert should normally be removed after the first 24 hours of operation)

*Liquid Lines*
Ahead of pumps: ..... **500**µ [38 mesh]
After pumps: ..... **150**µ [100 mesh] / 250µ [72 mesh]
In front of AKVA valves ..... **100**µ [150 mesh]

*Protection of automatic regulation equipment*
Generally ..... **150**µ [100 mesh] / 250µ [72 mesh]
Sensitive equipment, e.g.
suction regulators with low temperature ..... **250**µ [72 mesh]

*Definition*
Mesh is the number of threads per inch.
µ (microns) is the distance between two threads (1µ = 1 /1000 mm).

*Suction Lines*
Ahead of screw compressor ..... **250**µ [72 mesh]
Ahead of piston compressor ..... **150**µ [100 mesh]

*Flow coefficient (DIN/ANSI)*

| **Connection size (DN)** **FIA SS** | µ | **mesh** | **wire** [mm] | **wire** [in] | **free space** [%] | **screen area** | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Plain elements | | Pleated elements | |
| | | | | | | [cm²] | [in²] | [cm²] | [in²] |
| 15 – 20 (½ – ¾ in) | 100 | | 0.068 | 0.003 | 35 | 25 | 3.9 | 45 | 7.0 |
| | 150 | 100 | 0.10 | 0.004 | 36 | 25 | 3.9 | 45 | 7.0 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 25 | 3.9 | 45 | 7.0 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 25 | 3.9 | 45 | 7.0 |
| 25 – 40 (1– 1 ½ in) | 100 | | 0.068 | 0.003 | 35 | 71 | 11 | 160 | 25.0 |
| | 150 | 100 | 0.10 | 0.004 | 36 | 71 | 11 | 160 | 25.0 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 71 | 11 | 160 | 25.0 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 71 | 11 | 160 | 25.0 |
| 50 (2 in) | 100 | | 0.068 | 0.003 | 35 | 71 | 11 | 200 | 31.2 |
| | 150 | 100 | 0.10 | 0.004 | 36 | 87 | 13.5 | 200 | 31.2 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 87 | 13.5 | 200 | 31.2 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 87 | 13.5 | 200 | 31.2 |
| 65 (2 ½ in) | 150 | 100 | 0.10 | 0.004 | 36 | 127 | 19.7 | 305 | 47.6 |
| | 250 | 72 | 0.10 | 0.004 | 51 | 127 | 19.7 | 305 | 47.6 |
| | 500 | 38 | 0.16 | 0.006 | 57.6 | 127 | 19.7 | 305 | 47.6 |

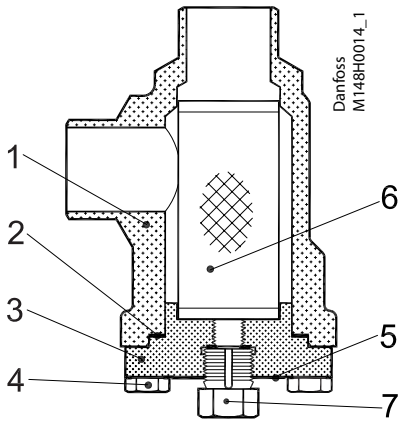
*$K_v$ values*

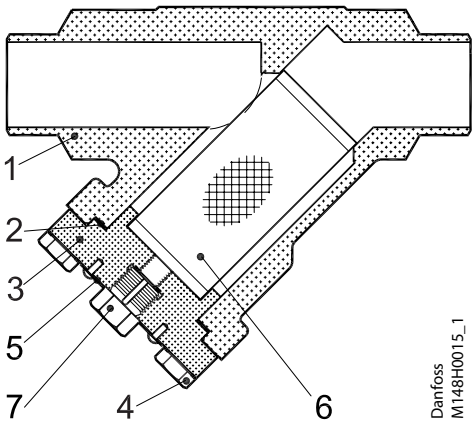
| DN | **FIA SS angle - plain filter net** | | | | **FIA SS angle - pleated filter net** | | |
|---|---|---|---|---|---|---|---|
| | µ100 | µ150 | µ250 | µ500 | µ150 | µ250 | µ500 |
| 15 | 3.3 | 3.4 | 3.5 | 3.7 | 4.2 | | |
| 20 | 6.9 | 7.1 | 7.3 | 7.7 | 8.8 | | |
| 25 | 13.8 | 14.0 | 14.5 | 15.2 | 17.2 | 17.9 | |
| 32 | 23.0 | 23.8 | 24.7 | 25.5 | 29.2 | 30.5 | |
| 40 | 25.1 | 25.5 | 26.4 | 28.1 | 31.4 | 32.6 | |
| 50 | 45.1 | 45.9 | 47.6 | 50.2 | 56.7 | 58.8 | 62.0 |
| 65 | | 56.1 | 57.8 | 60.4 | 69.3 | 71.4 | 74.6 |

| DN | **FIA SS straight - plain filter net** | | | | **FIA SS straight - pleated filter net** | | |
|---|---|---|---|---|---|---|---|
| | µ100 | µ150 | µ250 | µ500 | µ150 | µ250 | µ500 |
| 15 | 2.5 | 2.6 | 2.7 | 2.8 | 3.3 | | |
| 20 | 5.3 | 5.4 | 5.6 | 5.9 | 6.9 | | |
| 25 | 10.5 | 10.7 | 11.1 | 11.6 | 13.8 | 14.5 | |
| 32 | 17.6 | 18.2 | 18.9 | 19.5 | 23.9 | 24.7 | |
| 40 | 19.2 | 19.5 | 20.2 | 21.5 | 25.5 | 26.4 | |
| 50 | 34.5 | 35.1 | 36.4 | 38.4 | 45.9 | 47.6 | 50.2 |
| 65 | | 42.9 | 44.2 | 46.2 | 56.1 | 57.8 | 60.4 |

## Material specification

*FIA SS 15 – 65 (½ in – 2 ½ in)*




**FIA SS 15-65** (½ – 2 ½ in)

| No. | Part | Material | DIN | ISO | ASTM |
|---|---|---|---|---|---|
| 1 | Housing | Stainless steel (FIA SS only) | GX5CrNi19-10<br>EN10213-4 | | AISI 304 |
| 2 | Gasket | Fibre, Non-asbestos | | | |
| 3 | Cover | Stainless steel (FIA SS only) | GX5CrNi19-10<br>EN10213-4 | | AISI 304 |
| 4 | Bolts | Stainless steel | A2-70 | A2-70 | Type 308 |
| 5 | Marking label | Aluminium | | | |
| 6 | Filter element | Stainless steel | | | |
| 7 | Pressure relief (screw) | Stainless steel | | | |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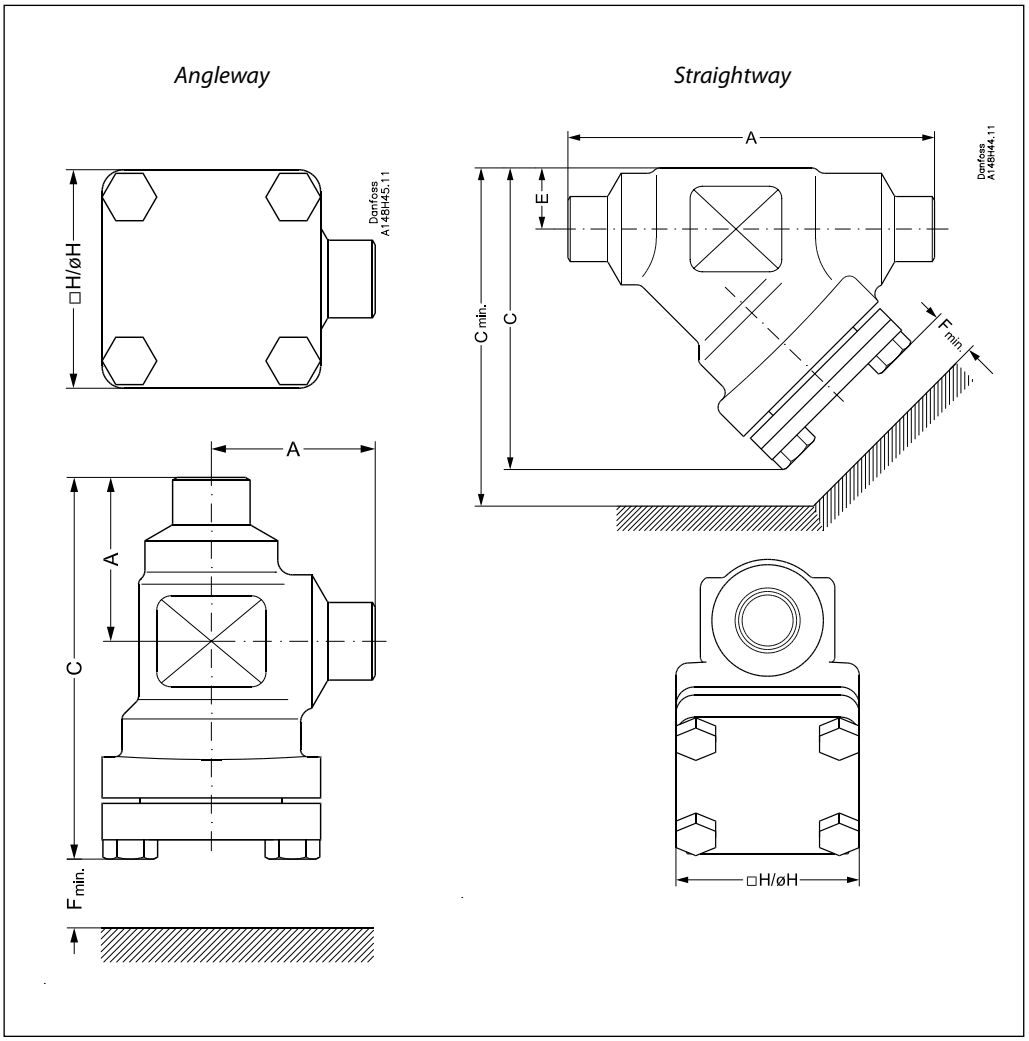
## Dimensions and weights

### FIA SS 15 – 65




*Angleway*

| Strainer size | | A | C | H | $F_{min.}$ | Weight |
|---|---|---|---|---|---|---|
| FIA SS 15 – 20 | [mm] | 45 | 105 | 60 | 68 | 1.1 kg |
| (1/2 – 3/4 in) | [in] | 1.77 | 4.13 | 2.36 | 2.68 | 2.4 lbs |
| FIA SS 25 – 40 | [mm] | 55 | 132 | 70 | 95 | 1.7 kg |
| (1 – 1 1/2 in) | [in] | 2.17 | 5.20 | 2.76 | 3.74 | 3.7 lbs |
| FIA SS 50 | [mm] | 60 | 132 | 77 | 92 | 2.8 kg |
| (2 in) | [in] | 2.36 | 5.20 | 3.03 | 3.62 | 6.2 lbs |
| FIA SS 65 | [mm] | 70 | 152 | 90 | 107 | 3.8 kg |
| (2 1/2 in) | [in] | 2.76 | 5.98 | 3.54 | 4.21 | 8.4 lbs |

*Straightway*

| Valve size | | A | C | $C_{min.}$ | H | E | $F_{min.}$ | Weight |
|---|---|---|---|---|---|---|---|---|
| FIA SS 15 – 20 | [mm] | 120 | 99 | 133 | 60 | 20 | 68 | 1.4 kg |
| (1/2 – 3/4 in) | [in] | 4.72 | 3.90 | 5.24 | 2.36 | 0.79 | 2.68 | 3.1 lbs |
| FIA SS 25 – 40 | [mm] | 155 | 129 | 177 | 70 | 26 | 95 | 2.4 kg |
| (1 – 1 1/2 in) | [in] | 6.10 | 5.08 | 6.97 | 2.76 | 1.02 | 3.74 | 5.3 lbs |
| FIA SS 50 | [mm] | 148 | 138 | 184 | 77 | 32 | 92 | 3.5 kg |
| (2 in) | [in] | 5.83 | 5.43 | 7.24 | 3.03 | 1.26 | 3.62 | 7.7 lbs |
| FIA SS 65 | [mm] | 176 | 165 | 219 | 90 | 40 | 107 | 5.3 kg |
| (2 1/2 in) | [in] | 6.93 | 6.50 | 8.62 | 3.54 | 1.57 | 4.21 | 11.7 lbs |

## Ordering

The table below is used to identify the strainer required. Please note that you have to order **FIA SS strainer without element, a strainer element** and **accessories.**

*Example:*
FIA SS 50 D ANG + FIA-X 50 150µ Strainer Element + Filter Bag = **148H5757** + **148H3130** + **148H3150**

| Size mm | Size in. | Type | FIA SS Without Filter Element | Filter Element 100µ 150 mesh | Filter Element 150µ 100 mesh | Filter Element 250µ 72 mesh | Filter Element 500µ 38 mesh | Pleated filter element 150µ 100 mesh | Pleated filter element 250µ 72 mesh | Pleated filter element 500µ 38 mesh |
|---|---|---|---|---|---|---|---|---|---|---|
| *Butt-weld DIN (EN 10220) - Angleway* | | | | | | | | | | |
| 15 | ½ | FIA SS 15 D ANG | **148B5295** | **148H3122** | **148H3124** | **148H3126** | **148H3128** | **148H3303** | **148H3363** | - |
| 20 | ¾ | FIA SS 20 D ANG | **148B5383** | | | | | | | |
| 25 | 1 | FIA SS 25 D ANG | **148B5492** | **148H3123** | **148H3125** | **148H3127** | **148H3129** | **148H3304** | **148H3269** | - |
| 32 | 1¼ | FIA SS 32 D ANG | **148B5587** | | | | | | | |
| 40 | 1½ | FIA SS 40 D ANG | **148B5666** | | | | | | | |
| 50 | 2 | FIA SS 50 D ANG | **148B5757** | **148H3157** | **148H3130** | **148H3138** | **148H3144** | **148H3179** | **148H3184** | **148H3189** |
| 65 | 2½ | FIA SS 65 D ANG | **148B5851** | - | **148H3131** | **148H3139** | **148H3145** | **148H3180** | **148H3185** | **148H3190** |
| *Butt-weld ANSI (B 36.19M SCHEDULE 10) - Angleway* | | | | | | | | | | |
| 65 | 2½ | FIA SS 65 A10 ANG | **148B6498** | - | **148H3131** | **148H3139** | **148H3145** | **148H3180** | **148H3185** | **148H3190** |
| *Butt-weld DIN (EN 10220) - Straightway* | | | | | | | | | | |
| 15 | ½ | FIA SS 15 D STR | **148B5296** | **148H3122** | **148H3124** | **148H3126** | **148H3128** | **148H3303** | **148H3363** | - |
| 20 | ¾ | FIA SS 20 D STR | **148B5384** | | | | | | | |
| 25 | 1 | FIA SS 25 D STR | **148B5493** | **148H3123** | **148H3125** | **148H3127** | **148H3129** | **148H3304** | **148H3269** | - |
| 32 | 1¼ | FIA SS 32 D STR | **148B5588** | | | | | | | |
| 40 | 1½ | FIA SS 40 D STR | **148B5667** | | | | | | | |
| 50 | 2 | FIA SS 50 D STR | **148B5758** | **148H3157** | **148H3130** | **148H3138** | **148H3144** | **148H3179** | **148H3184** | **148H3189** |
| 65 | 2½ | FIA SS 65 D STR | **148B5852** | - | **148H3131** | **148H3139** | **148H3145** | **148H3180** | **148H3185** | **148H3190** |
| *Butt-weld ANSI (B 36.19M SCHEDULE 40) - Straightway* | | | | | | | | | | |
| 15 | ½ | FIA SS 15 A40 STR | **148B6493** | **148H3122** | **148H3124** | **148H3126** | **148H3128** | **148H3303** | **148H3363** | - |
| 20 | ¾ | FIA SS 20 A40 STR | **148B6494** | | | | | | | |
| 25 | 1 | FIA SS 25 A40 STR | **148B6495** | **148H3123** | **148H3125** | **148H3127** | **148H3129** | **148H3304** | **148H3269** | - |
| 32 | 1¼ | FIA SS 32 A40 STR | **148B6496** | | | | | | | |
| 40 | 1½ | FIA SS 40 A40 STR | **148B6497** | | | | | | | |
| *Butt-weld ANSI (B 36.19M SCHEDULE 10) - Straightway* | | | | | | | | | | |
| 50 | 2 | FIA SS 50 A10 STR | **148B5758** | **148H3157** | **148H3130** | **148H3138** | **148H3144** | **148H3179** | **148H3184** | **148H3189** |
| 65 | 2½ | FIA SS 65 A10 STR | **148B6499** | - | **148H3131** | **148H3139** | **148H3145** | **148H3180** | **148H3185** | **148H3190** |

D = Butt-weld DIN
A = Butt-weld ANSI

ANG = Angleway
STR = Straightway

*Accessories*

| Part | Accessory for | **Code number** |
|---|---|---|
| Filter element µ150 with removable element µ50 for the first start up | FIA SS 15-20 | **148H3301** |
| | FIA SS 25-40 | **148H3302** |

| Part | Accessory for | **Code number** |
|---|---|---|
| Filter bag | FIA SS 50 | **148H3150** |
| | FIA SS 65 | **148H3151** |

| Part | Accessory for | **Code number** |
|---|---|---|
| Blind nut with gasket | FIA SS 50 - 65 | **148H3450** |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ENGINEERING
TOMORROW

# Strainers
type FA

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ENGINEERING
TOMORROW

# Strainers
type FA

Strainer type FA with interchangeable filter insert is used in lines carrying fluorinated refrigerants, ammonia, water, brine, oil, and gas.

**Features**

- Retains contaminants, e.g. slag, and weld beads and swarf.
- Pressure drop insignificant
- Classification: DNV, CRN, BV, EAC etc. To get an updated list of certification on the products please contact your local Danfoss Sales Company.

**Technical data**

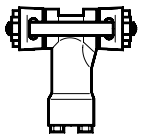
- *Temperature of media*
  -50 – 140 °C
- *Max. working pressure*
  PS = 28 bar
- *Max. test pressure*
  p' = 42 bar
- *Filter insert*
  Stainless steel weave, mesh size 150µ (100 mesh)

**Materials**

- Gaskets are non asbestos
- Valve housing made of GGG - 40.3

## Ordering

### Complete valves



| Type | Application | Connection to valve or pipeline | Strainer area [cm²] | Strainer vol. [cm³] | $k_v$ value [1] [m³/h] | Staybolts | Code no. |
|---|---|---|---|---|---|---|---|
| FA 15 | For direct fitting on valve | 6 F, TE 12, CVM | 40 | 68 | 3.3 | M12 × 180 | **006-0040** [2] |
| | | TEA 20, TEAT 20, TEVA 20 | | | 3.3 | M12 × 170 | **006-0042** [2] |
| | | EVR 15, EVRA 3 | | | 3.3 | M12 × 188 | **006-0043** [2] |
| | | EVRA/T 10-15 | | | 3.3 | M12 × 107 | **006-1012** [2] |
| FA 20 | | EVR 20 | 60 | 145 | 7.0 | M12 × 240 | **006-0046** [2] |
| | | TEA 85, TEAT 85, TEVA 85 | | | 7.0 | M12 × 206 | **006-0048** [2] |
| | | EVRA/T 20 | | | 7.0 | M12 × 127 | **006-1013** [2] |
| FA 15 | For fitting in pipelines | 1/4 in weld flanges | 40 | 68 | 1.9 | M12 × 127 | **006-0050** [3] |
| | | 3/8 in weld flanges | | | 2.6 | M12 × 127 | **006-0051** [3] |
| | | 1/2 in weld flanges | | | 3.5 | M12 × 127 | **006-0052** [3] |
| | | 3/4 in weld flanges | | | 3.5 | M12 × 127 | **006-0053** [3] |
| | | 1/2 in solder flanges | | | 2.6 | M12 × 127 | **006-0057** [3] |
| | | 5/8 in solder flanges | | | 3.4 | M12 × 127 | **006-0058** [3] |
| | | 3/4 in solder flanges | | | 3.2 | M12 × 127 | **006-0059** [3] |
| | | 7/8 in solder flanges | | | 3.5 | M12 × 127 | **006-0075** [3] |
| | | 1 in solder flanges | | | 3.5 | M12 × 127 | **006-0060** [3] |
| FA 20 | | 1/2 in weld flanges | 60 | 145 | 5.1 | M12 × 160 | **006-0065** [3] |
| | | 3/4 in weld flanges | | | 7.4 | M12 × 160 | **006-0066** [3] |
| | | 1 in weld flanges | | | 7.4 | M12 × 160 | **006-0067** [3] |
| | | 5/8 in solder flanges | | | 5.1 | M12 × 160 | **006-0071** [3] |
| | | 1 1/8 in solder flanges | | | 7.3 | M12 × 160 | **006-0074** [3] |

[1] The $k_v$ value is the flow of water in m³/h at a pressure drop in the strainer of 1 bar, ρ =1000 kg/m³.
[2] Code no. with bolts, screws and gaskets but without flanges
[3] Code no. with flanges, bolts, screws and gaskets.

*Components / Accessories*

*Strainer housing without flanges*

| Type | Strainer area [cm²] | Strainer volume [cm³] | $k_v$ value [1] [m³/h] | Code no. |
|---|---|---|---|---|
| FA 15 | 40 | 68 | 3.3 | **036-0060** |
| FA 20 | 60 | 145 | 7.0 | **036-0061** [2] |
| FA 20 | 60 | 145 | 7.0 | **036-0062** [3] |

[1] The $k_v$ value is the flow of water in m³/h at a pressure drop in the strainer of 1 bar, ρ = 1000 kg/m³.
[2] For direct fitting in pipeline.
[3] For direct fitting on to valves.

*Single flanges with flange gaskets for FA 15*

| Version | Type | Code no. |
|---|---|---|
| 3/8 in weld | T | **006-1120** |
| | G | **006-1121** |
| 1/2 in weld | T | **006-1122** |
| | G | **006-1123** |
| 3/4 in weld | T | **006-1124** |
| | G | **006-1125** |
| 5/8 in solder | T | **006-1162** |
| | G | **006-1163** |
| 7/8 in solder | T | **006-1176** |
| | G | **006-1177** |

*Staybolt set with gaskets*

| Version | Code no. |
|---|---|
| M12 × 107 mm | **006-1101** |
| M12 × 127 mm | **006-1108** |
| M12 × 160 mm | **006-1136** |
| M12 × 170 mm | **006-1103** |
| M12 × 180 mm | **006-1102** |
| M12 × 188 mm | **006-1104** |
| M12 × 206 mm | **006-1106** |
| M12 × 240 mm | **006-1105** |

*Single flanges with flange gaskets for FA 20 [1]*

| Version | Type | Code no. |
|---|---|---|
| 3/4 in weld | T | **006-1128** |
| | G | **006-1129** |
| 1 in weld | T | **006-1130** |
| | G | **006-1131** |
| 1 1/8 in solder | T | **006-1174** |
| | G | **006-1175** |

[1] Only for code no. **036-0061**.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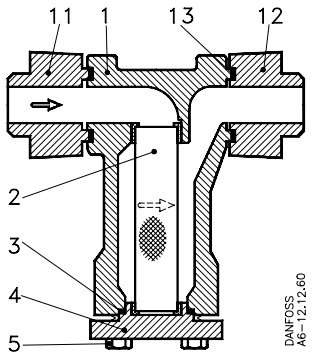
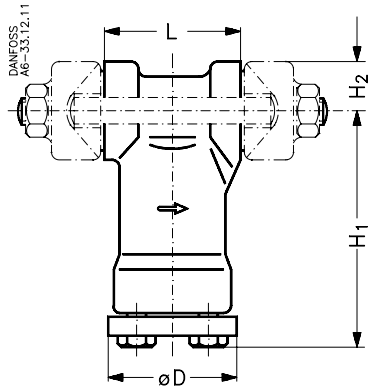
## Design

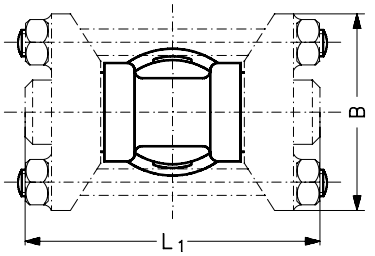
1. Strainer housing
2. Strainer
3. Gasket
4. Cover
5. Screw
11. Flange (tongue)
12. Flange (groove)
13. Flange gasket
14. Flange screw




*FA 15 and 20*

## Dimensions and weights




*FA 15 and 20*

| Type | Code no. | $H_1$ [mm] | $H_2$ [mm] | L [mm] | Weld flanges $L_1$ [mm] | Solder flanges $L_1$ [mm] | B [mm] | ∅ D [mm] | Weight [kg] |
|---|---|---|---|---|---|---|---|---|---|
| FA 15 | **006-0040 → 006-0043** | 95 | 20 | 54 | | | | 51 | 1.2 |
| FA 15 | **006-0050 → 006-0058** | 95 | 20 | | 116 | 109 | 80 | 51 | 1.7 |
| FA 20 | **006-0046 → 006-0048** | 106 | 26 | 72 | | | | 60 | 2.2 |
| FA 20 | **006-0065 → 006-0074** | 106 | 26 | | 142 | 137 | 96 | 60 | 2.9 |

ENGINEERING
TOMORROW

# ELIMINATOR® filter drier with replaceable solid core
## Type DCR

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ENGINEERING
TOMORROW

# ELIMINATOR® filter drier with replaceable solid core
## Type DCR

Danfoss ELIMINATOR® filter driers with replaceable solid core, type DCR, are for use in liquid and / or suction lines in refrigeration, freezing and air-conditioning systems.

Besides being able to meet the demanding requirements of high working pressure levels when operating with R410A thanks to replaceable solid cores the DCR programme offers flexibility with respect to different applications.

Available with steel and copper connections.

**Features**

**DCR housing:**

- PED approved for PS up to 46 bar
- DCR housing (incl. core holder) are made entirely of steel and are thus compatible with all refrigerants
- DCR housings have undergone phosphate pre-treatment and have a corrosion-resistant powder-paint finish
- DCR housings are helium leak tested

**Top covers for DCR housings:**

- Zinc-chromated steel top covers with or without external access connection

**Inserts for DCR housings - strainer**

**48 - F strainer - compatible with all refrigerants:**

- Retains dirt particles larger than 15 µm
- For use direct in DCR housings
- Utilised in the suction or liquid line

**Inserts for DCR housings - solid cores**

**48 - DM** - 100% molecular sieve solid core suitable for HFC (R134a, R404A, R507, R407C and R410A) refrigerants:

- Provides high moisture adsorption at low and high condensing temperatures
- Effective protection against impurities

**48 - DC** - 80% molecular sieve and 20% activated alumina solid core suitable for HCFC (R22) refrigerants and compatible with HFC (R134a, R404A, R507, R407C and R410A) refrigerants:

- Adsorbs moisture and acid in the system throughout the entire temperature range

**48 - DA** - 30% molecular sieve and 70% activated alumina solid core suitable after compressor burnout and compatible with HCFC (R22) / HFC (R134a, R404A, R507, R407C and R410A) refrigerants:

- High acid adsorption and standard water adsorption

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

**Approvals**

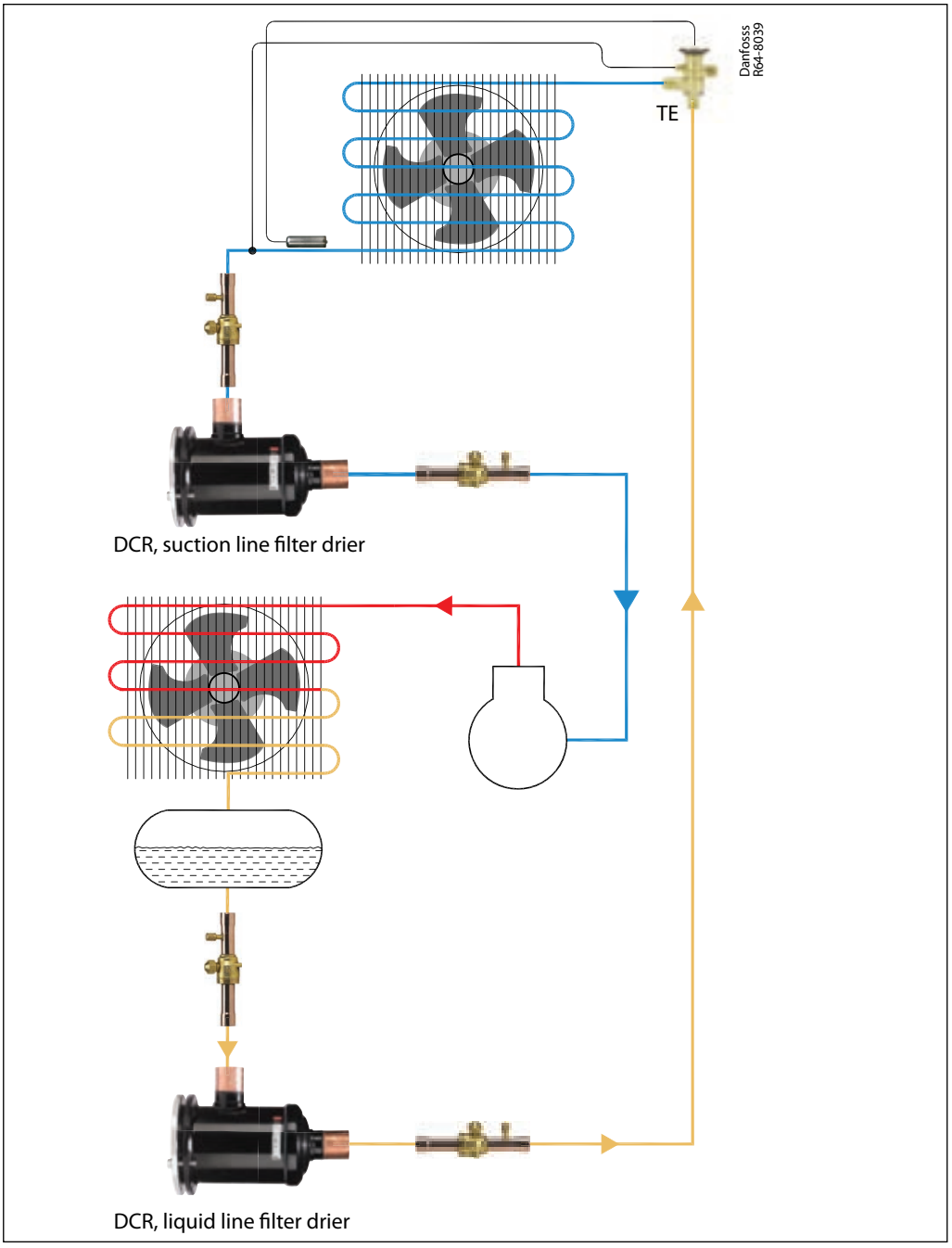
CE marked in accordance with the European Pressure Equipment Directive - 97/23/EC

UL US listed 207 and C22.2 no. 140.3
EN 12284

**Introduction**

Danfoss ELIMINATOR® filter driers with replaceable solid core, type DCR, protect refrigeration, freezing and air-conditioning systems from moisture, acids, and solid particles.

With these contaminants eliminated, systems are safer from harmful chemical reactions and from abrasive impurities.




**Technical data**

| Type | Maximum working pressure PS [bar] | Temperature range |
|---|---|---|
| DCR 048 | 46 | - 40 – 70 °C |
| DCR 096 | 46 | - 40 – 70 °C |
| DCR 144 | 35[1]) / 46[2]) | - 40 – 70 °C |
| DCR 192 | 28[1]) / 40[2]) | - 40 – 70 °C |

[1]) For usage with strainer or as a receiver application
[2]) For "*drier*" application using all the permissible cores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## Capacitiy

### Drying and liquid capacity , type 48-DM

| Type | Nº of cores | Drying capacity [kg refrigerant] [1] | | | | | | | | | | Liquid capacity [kW] [2] | | | | | Max. working pressure PS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | R134a | | R404A | | R507 | | R22/R407C | | R410A | | R134a | R404A | R507 | R22 / R407C | R410A | |
| | | [°C] | | | | | | | | | | | | | | | |
| | | 24 | 52 | 24 | 52 | 24 | 52 | 24 | 52 | 24 | 52 | | | | | | [bar] |
| DCR 0485 | 1 | 82.5 | 78.0 | 88.7 | 84.0 | 90.3 | 83.4 | 82.7 | 76.4 | 75.2 | 69.3 | 80.6 | 59.4 | 57.5 | 84.5 | 87.9 | 46 |
| DCR 0487 | 1 | 82.5 | 78.0 | 88.7 | 84.0 | 90.3 | 83.4 | 82.7 | 76.4 | 75.2 | 69.3 | 128.0 | 92.5 | 89.6 | 132.6 | 136.8 | 46 |
| DCR 0489 | 1 | 82.5 | 78.0 | 88.7 | 84.0 | 90.3 | 83.4 | 82.7 | 76.4 | 75.2 | 69.3 | 184.3 | 132.6 | 128.4 | 190.4 | 195.9 | 46 |
| DCR 04811 | 1 | 82.5 | 78.0 | 88.7 | 84.0 | 90.3 | 83.4 | 82.7 | 76.4 | 75.2 | 69.3 | 249.3 | 180.5 | 174.8 | 258.5 | 266.8 | 46 |
| DCR 04813 | 1 | 82.5 | 78.0 | 88.7 | 84.0 | 90.3 | 83.4 | 82.7 | 76.4 | 75.2 | 69.3 | 304.1 | 222.0 | 215.1 | 317.1 | 328.5 | 46 |
| DCR 04817 | 1 | 82.5 | 78.0 | 88.7 | 84.0 | 90.3 | 83.4 | 82.7 | 76.4 | 75.2 | 69.3 | 434.3 | 324.1 | 314.3 | 459.4 | 480.7 | 46 |
| DCR 04821 | 1 | 82.5 | 78.0 | 88.7 | 84.0 | 90.3 | 83.4 | 82.7 | 76.4 | 75.2 | 69.3 | 320.4 | 234.4 | 227.1 | 334.5 | 346.8 | 46 |
| DCR 0967 | 2 | 165.0 | 155.0 | 177.3 | 168.1 | 180.5 | 166.8 | 165.3 | 152.8 | 150.5 | 138.7 | 119.6 | 85.7 | 83.0 | 123.2 | 126.6 | 46 |
| DCR 0969 | 2 | 165.0 | 155.0 | 177.3 | 168.1 | 180.5 | 166.8 | 165.3 | 152.8 | 150.5 | 138.7 | 189.5 | 136.4 | 131.9 | 195.6 | 201.2 | 46 |
| DCR 09611 | 2 | 165.0 | 155.0 | 177.3 | 168.1 | 180.5 | 166.8 | 165.3 | 152.8 | 150.5 | 138.7 | 259.7 | 187.2 | 181.4 | 268.6 | 276.7 | 46 |
| DCR 09613 | 2 | 165.0 | 155.0 | 177.3 | 168.1 | 180.5 | 166.8 | 165.3 | 152.8 | 150.5 | 138.7 | 331.9 | 240.8 | 233.3 | 344.7 | 356.1 | 46 |
| DCR 09617 | 2 | 165.0 | 155.0 | 177.3 | 168.1 | 180.5 | 166.8 | 165.3 | 152.8 | 150.5 | 138.7 | 477.2 | 349.1 | 338.3 | 498.2 | 516.6 | 46 |
| DCR 1449 | 3 | 247.5 | 233.9 | 266.0 | 252.7 | 270.8 | 250.1 | 248.0 | 229.1 | 225.7 | 208.0 | 184.4 | 132.7 | 128.5 | 190.5 | 196.0 | 35[3] / 46[4] |
| DCR 14411 | 3 | 247.5 | 233.9 | 266.0 | 252.7 | 270.8 | 250.1 | 248.0 | 229.1 | 225.7 | 208.0 | 272.5 | 196.9 | 190.7 | 282.2 | 290.9 | 35[3] / 46[4] |
| DCR 14413 | 3 | 247.5 | 233.9 | 266.0 | 252.7 | 270.8 | 250.1 | 248.0 | 229.1 | 225.7 | 208.0 | 340.1 | 246.8 | 239.1 | 353.2 | 364.9 | 35[3] / 46[4] |
| DCR 14417 | 3 | 247.5 | 233.9 | 266.0 | 252.7 | 270.8 | 250.1 | 248.0 | 229.1 | 225.7 | 208.0 | 442.3 | 323.0 | 313.0 | 461.3 | 478.0 | 35[3] / 46[4] |
| DCR 19211 | 4 | 329.9 | 311.9 | 354.7 | 336.2 | 361.0 | 333.5 | 330.6 | 305.5 | 300.9 | 277.0 | 290.0 | 211.6 | 205.0 | 302.3 | 313.1 | 28[3] / 40[4] |
| DCR 19213 | 4 | 329.9 | 311.9 | 354.7 | 336.2 | 361.0 | 333.5 | 330.6 | 305.5 | 300.9 | 277.0 | 359.8 | 261.7 | 253.6 | 374.2 | 387.0 | 28[3] / 40[4] |
| DCR 19217 | 4 | 329.9 | 311.9 | 354.7 | 336.2 | 361.0 | 333.5 | 330.6 | 305.5 | 300.9 | 277.0 | 442.5 | 321.7 | 311.7 | 460.2 | 475.8 | 28[3] / 40[4] |
| DCR 19221 | 4 | 329.9 | 311.9 | 354.7 | 336.2 | 361.0 | 333.5 | 330.6 | 305.5 | 300.9 | 277.0 | 505.6 | 366.0 | 354.6 | 524.3 | 541.0 | 28[3] / 40[4] |

### Drying and liquid capacity , type 48-DC

| Type | Nº of cores | Drying capacity [kg refrigerant] [1] | | | | | | | | | | Liquid capacity [kW] [2] | | | | | Max. working pressure PS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | R134a | | R404A | | R507 | | R22/R407C | | R410A | | R134a | R404A | R507 | R22 / R407C | R410A | |
| | | [°C] | | | | | | | | | | | | | | | |
| | | 24 | 52 | 24 | 52 | 24 | 52 | 24 | 52 | 24 | 52 | | | | | | [bar] |
| DCR 0485 | 1 | 64.7 | 61.2 | 69.6 | 65.9 | 70.8 | 65.4 | 64.9 | 59.9 | 59.0 | 54.4 | 80.6 | 59.4 | 57.5 | 84.5 | 87.9 | 46 |
| DCR 0487 | 1 | 64.7 | 61.2 | 69.6 | 65.9 | 70.8 | 65.4 | 64.9 | 59.9 | 59.0 | 54.4 | 128.0 | 92.5 | 89.6 | 132.6 | 136.8 | 46 |
| DCR 0489 | 1 | 64.7 | 61.2 | 69.6 | 65.9 | 70.8 | 65.4 | 64.9 | 59.9 | 59.0 | 54.4 | 184.3 | 132.6 | 128.4 | 190.4 | 195.9 | 46 |
| DCR 04811 | 1 | 64.7 | 61.2 | 69.6 | 65.9 | 70.8 | 65.4 | 64.9 | 59.9 | 59.0 | 54.4 | 249.3 | 180.5 | 174.8 | 258.5 | 266.8 | 46 |
| DCR 04813 | 1 | 64.7 | 61.2 | 69.6 | 65.9 | 70.8 | 65.4 | 64.9 | 59.9 | 59.0 | 54.4 | 304.1 | 222.0 | 215.1 | 317.1 | 328.5 | 46 |
| DCR 04817 | 1 | 64.7 | 61.2 | 69.6 | 65.9 | 70.8 | 65.4 | 64.9 | 59.9 | 59.0 | 54.4 | 434.3 | 324.1 | 314.3 | 459.4 | 480.7 | 46 |
| DCR 04821 | 1 | 64.7 | 61.2 | 69.6 | 65.9 | 70.8 | 65.4 | 64.9 | 59.9 | 59.0 | 54.4 | 320.4 | 234.4 | 227.1 | 334.5 | 346.8 | 46 |
| DCR 0967 | 2 | 129.4 | 122.3 | 139.1 | 131.9 | 141.6 | 130.8 | 129.7 | 119.9 | 118.1 | 108.8 | 119.6 | 85.7 | 83.0 | 123.2 | 126.6 | 46 |
| DCR 0969 | 2 | 129.4 | 122.3 | 139.1 | 131.9 | 141.6 | 130.8 | 129.7 | 119.9 | 118.1 | 108.8 | 189.5 | 136.4 | 131.9 | 195.6 | 201.2 | 46 |
| DCR 09611 | 2 | 129.4 | 122.3 | 139.1 | 131.9 | 141.6 | 130.8 | 129.7 | 119.9 | 118.1 | 108.8 | 259.7 | 187.2 | 181.4 | 268.6 | 276.7 | 46 |
| DCR 09613 | 2 | 129.4 | 122.3 | 139.1 | 131.9 | 141.6 | 130.8 | 129.7 | 119.9 | 118.1 | 108.8 | 331.9 | 240.8 | 233.3 | 344.7 | 356.1 | 46 |
| DCR 09617 | 2 | 129.4 | 122.3 | 139.1 | 131.9 | 141.6 | 130.8 | 129.7 | 119.9 | 118.1 | 108.8 | 477.2 | 349.1 | 338.3 | 498.2 | 516.6 | 46 |
| DCR 1449 | 3 | 194.1 | 183.5 | 208.7 | 197.8 | 212.4 | 196.2 | 194.6 | 179.8 | 177.1 | 162.2 | 184.4 | 132.7 | 128.5 | 190.5 | 196.0 | 35[3] / 46[4] |
| DCR 14411 | 3 | 194.1 | 183.5 | 208.7 | 197.8 | 212.4 | 196.2 | 194.6 | 179.8 | 177.1 | 162.2 | 272.5 | 196.9 | 190.7 | 282.2 | 290.9 | 35[3] / 46[4] |
| DCR 14413 | 3 | 194.1 | 183.5 | 208.7 | 197.8 | 212.4 | 196.2 | 194.6 | 179.8 | 177.1 | 162.2 | 340.1 | 246.8 | 239.1 | 353.2 | 364.9 | 35[3] / 46[4] |
| DCR 14417 | 3 | 194.1 | 183.5 | 208.7 | 197.8 | 212.4 | 196.2 | 194.6 | 179.8 | 177.1 | 162.2 | 442.3 | 323.0 | 313.0 | 461.3 | 478.0 | 35[3] / 46[4] |
| DCR 19211 | 4 | 258.9 | 244.7 | 278.3 | 263.8 | 283.2 | 261.7 | 259.4 | 239.7 | 236.1 | 217.6 | 290.0 | 211.6 | 205.0 | 302.3 | 313.1 | 28[3] / 40[4] |
| DCR 19213 | 4 | 258.9 | 244.7 | 278.3 | 263.8 | 283.2 | 261.7 | 259.4 | 239.7 | 236.1 | 217.6 | 359.8 | 261.7 | 253.6 | 374.2 | 387.0 | 28[3] / 40[4] |
| DCR 19217 | 4 | 258.9 | 244.7 | 278.3 | 263.8 | 283.2 | 261.7 | 259.4 | 239.7 | 236.1 | 217.6 | 442.5 | 321.7 | 311.7 | 460.2 | 475.8 | 28[3] / 40[4] |
| DCR 19221 | 4 | 258.9 | 244.7 | 278.3 | 263.8 | 283.2 | 261.7 | 259.4 | 239.7 | 236.1 | 217.6 | 505.6 | 366.0 | 354.6 | 524.3 | 541.0 | 28[3] / 40[4] |

[1]) Drying capacity is based on following moisture content test standards before and after drying:
- R134a: 1050 – 50 ppm W
- R404A, R507: 1020 – 50 ppm W
- R407C: 1020 – 50 ppm W
- R410A: 1050 – 50 ppm W
- R22: 1050 – 60 ppm

In accordance with ARI 710-2004

[2]) Given in accordance with ARI 710-2004 for:
- $t_e$= -15 °C
- $t_c$= 30 °C
- Δp = 0.07 bar

[3]) For usage with strainer or as a receiver application

[4]) For "*drier*" application using all the permissible cores

Refrigerants other than specified in the table please contact Danfoss for the approval.

## Capacitiy (continued)

### Drying and acid capacity , type 48-DA

| Type | Number of cores | Drying capacity [g of water] [1] Evaporating temperature $t_e$ [°C] | | | | | | | | | | | | Acid capacity [2] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | -40 | -20 | 4.4 | -30 | -20 | 4.4 | -40 | -20 | 4.4 | -40 | -20 | 4.4 | |
| | | R22 / R407C | | | R134a | | | R404A / R507 | | | R410A | | | [g] |
| DCR 048 | 1 | 28 | 19 | 12 | 45 | 38 | 27 | 47 | 30 | 19 | 42 | 35 | 25 | 26.6 |
| DCR 096 | 2 | 56 | 37 | 24 | 90 | 77 | 54 | 94 | 60 | 37 | 84 | 70 | 50 | 53.3 |
| DCR 144 | 3 | 84 | 56 | 36 | 135 | 115 | 81 | 142 | 90 | 56 | 126 | 105 | 75 | 79.9 |
| DCR 192 | 4 | 112 | 74 | 48 | 180 | 153 | 108 | 189 | 120 | 75 | 168 | 140 | 100 | 106.5 |

[1]) Drying capacity is expressed during drying in:
- R22: EPD = 10 ppm W, corresponding to a dew point temperature = -50 °C
- R134a: EPD = 50 ppm W, corresponding to a dew point temperature = -37 °C
- R404A: EPD = 10 ppm W, corresponding to a dew point temperature = -40 °C
- R407C: EPD = 10 ppm W, corresponding to a dew point temperature = -40 °C

[2]) Adsorption capacity of oleic acid at 0.05 TAN (Total Acid Number)

### Recommended plant capacity in suction line - burn-out, type 48-DA

| Type | Recommended plant capacity [kW] Evaporating temperature $t_e$ [°C] | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | -40 | -20 | 4.4 | -30 | -20 | 4.4 | -40 | -20 | 4.4 | -40 | -20 | 4.4 |
| | Pressure drop Δp [bar] | | | | | | | | | | | |
| | 0.04 | 0.10 | 0.21 | 0.04 | 0.07 | 0.14 | 0.04 | 0.10 | 0.21 | 0.04 | 0.10 | 0.21 |
| | R22 / R407C | | | R134a | | | R404A / R507 | | | R410A | | |
| DCR 0485 | 3.1 | 8.9 | 21.0 | 3.0 | 5.4 | 13.0 | 2.4 | 7.1 | 17.5 | 3.1 | 8.9 | 21.0 |
| DCR 0487 | 5.8 | 16.1 | 37.8 | 5.6 | 9.9 | 23.4 | 4.5 | 12.9 | 31.2 | 5.8 | 16.1 | 37.8 |
| DCR 0489 | 7.8 | 21.6 | 50.7 | 7.5 | 13.3 | 31.5 | 6.0 | 17.2 | 41.8 | 7.8 | 21.6 | 50.7 |
| DCR 04811 | 10.0 | 27.3 | 63.3 | 9.6 | 16.8 | 39.5 | 7.7 | 21.8 | 51.9 | 10.0 | 27.3 | 63.3 |
| DCR 04813 | 10.0 | 27.3 | 63.3 | 9.6 | 16.8 | 39.5 | 7.7 | 21.8 | 51.9 | 10.0 | 27.3 | 63.3 |
| DCR 04817 | 10.0 | 27.3 | 63.3 | 9.6 | 16.8 | 39.5 | 7.7 | 21.8 | 51.9 | 10.0 | 27.3 | 63.3 |
| DCR 04821 | 10.0 | 27.3 | 63.3 | 9.6 | 16.8 | 39.5 | 7.7 | 21.8 | 51.9 | 10.0 | 27.3 | 63.3 |
| DCR 0965 | 3.3 | 9.1 | 21.4 | 3.2 | 5.7 | 13.4 | 2.5 | 7.4 | 18.0 | 3.3 | 9.2 | 21.6 |
| DCR 0967 | 5.8 | 16.2 | 38.1 | 5.6 | 9.9 | 23.6 | 4.5 | 12.9 | 31.4 | 5.8 | 16.2 | 38.1 |
| DCR 0969 | 8.7 | 24.6 | 58.3 | 8.4 | 15.0 | 35.9 | 6.8 | 19.7 | 48.1 | 8.7 | 24.6 | 58.3 |
| DCR 09611 | 11.9 | 33.4 | 79.3 | 11.4 | 20.4 | 48.9 | 9.3 | 26.8 | 65.4 | 11.9 | 33.4 | 79.3 |
| DCR 09613 | 14.1 | 39.9 | 95.2 | 13.6 | 24.3 | 58.5 | 11.0 | 32.0 | 78.7 | 14.1 | 39.9 | 95.2 |
| DCR 09617 | 14.1 | 39.9 | 95.2 | 13.6 | 24.3 | 58.5 | 11.0 | 32.0 | 78.7 | 14.1 | 39.9 | 95.2 |
| DCR 09621 | 14.1 | 39.9 | 95.2 | 13.6 | 24.3 | 58.5 | 11.0 | 32.0 | 78.7 | 14.1 | 39.9 | 95.2 |
| DCR 1445 | 3.5 | 10.0 | 22.8 | 3.4 | 6.0 | 14.0 | 2.7 | 7.7 | 18.9 | 3.5 | 10.0 | 22.8 |
| DCR 1447 | 6.6 | 18.9 | 42.9 | 6.3 | 11.2 | 26.4 | 5.1 | 14.5 | 35.6 | 6.6 | 18.9 | 42.9 |
| DCR 1449 | 8.8 | 25.1 | 57.2 | 8.4 | 15.0 | 35.2 | 6.8 | 19.4 | 47.5 | 8.8 | 25.1 | 57.2 |
| DCR 14411 | 13.2 | 38.1 | 92.2 | 12.7 | 23.0 | 56.2 | 10.3 | 30.7 | 76.6 | 13.2 | 38.1 | 92.2 |
| DCR 14413 | 13.2 | 38.1 | 92.2 | 12.7 | 23.0 | 56.2 | 10.3 | 30.7 | 76.6 | 13.2 | 38.1 | 92.2 |
| DCR 14417 | 13.2 | 38.1 | 92.2 | 12.7 | 23.0 | 56.2 | 10.3 | 30.7 | 76.6 | 13.2 | 38.1 | 92.2 |
| DCR 14421 | 13.2 | 38.1 | 92.2 | 12.7 | 23.0 | 56.2 | 10.3 | 30.7 | 76.6 | 13.2 | 38.1 | 92.2 |
| DCR 1925 | 4.2 | 11.5 | 27.3 | 4.0 | 7.1 | 16.8 | 3.2 | 9.2 | 22.7 | 4.2 | 11.5 | 27.3 |
| DCR 1927 | 7.9 | 21.6 | 51.4 | 7.6 | 13.4 | 31.6 | 6.1 | 17.4 | 42.7 | 7.9 | 21.6 | 51.4 |
| DCR 1929 | 10.6 | 28.9 | 68.9 | 10.2 | 18.0 | 42.1 | 8.2 | 23.3 | 57.2 | 10.6 | 28.9 | 68.9 |
| DCR 19211 | 14.8 | 41.8 | 99.4 | 14.3 | 25.5 | 61.2 | 11.6 | 33.6 | 82.2 | 14.8 | 41.8 | 99.4 |
| DCR 19213 | 18.0 | 51.1 | 122.1 | 17.4 | 31.1 | 75.0 | 14.1 | 41.1 | 101.0 | 18.0 | 51.1 | 122.1 |
| DCR 19217 | 18.0 | 51.1 | 122.1 | 17.4 | 31.1 | 75.0 | 14.1 | 41.1 | 101.0 | 18.0 | 51.1 | 122.1 |
| DCR 19221 | 18.0 | 51.1 | 122.1 | 17.4 | 31.1 | 75.0 | 14.1 | 41.1 | 101.0 | 18.0 | 51.1 | 122.1 |

Data given in accordance with ARI-Standard 710-2004 for $t_e$ = 4.4 °C and $t_c$ = 32.2 °C

### Strainer mounted in suction line, type 48-F

| Refrigerant | R22 / R407C | | | R134a | | | R404A / R507 | | | R410A | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Evaporating temperature [°C] | -40 | -20 | 4.4 | -30 | -20 | 4.4 | -40 | -20 | 4.4 | -40 | -20 | 4.4 |
| Pressure drop Δp [bar] | 0.04 | 0.10 | 0.21 | 0.04 | 0.07 | 0.14 | 0.04 | 0.10 | 0.21 | 0.04 | 0.10 | 0.21 |
| Recommended system capacity [kW] | 15 | 47 | 113 | 15 | 28 | 69 | 12 | 38 | 93 | 15 | 47 | 113 |

### Strainer mounted in liquid line

| Refrigerant | R22 / R407C | R134a | R404A / R507 | R410A |
|---|---|---|---|---|
| Recommended system capacity [kW] | 390 | 350 | 260 | 390 |

The data given apply to DCR 04811 with 48-F core

Liquid capacity is given in accordance with ARI 710-2004 for:
- $t_e$ = -15 °C
- $t_c$ = 30 °C
- Δp = 0.07 bar


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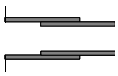
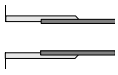
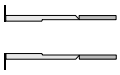
## Type of connector and recommended soldering material

| | |
|---|---|
|  | Copper ODF solder connector **Copper pipe** |
|  | Steel ODF solder connector **Copper pipe** |
|  | Steel butt weld connector **Steel pipe** |

| Solder connector | Recommended soldering material |
|---|---|
| Copper | Min. 5% Ag |
| Steel | Silver-flo 55 + Easy-flow flux |

## Ordering

DCR housing and insert are ordered separately. Select housing and top cover with all internal parts assembled from table 1 or 2 and required number of inserts from table 3.

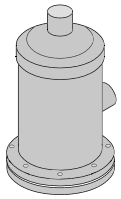
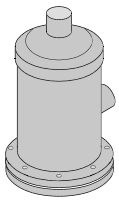


**Table 1. Housing with copper connectors + top cover**

| Type | Number of cores | Copper connectors | | Cover type | Max. working pressure PS | Code number |
|---|---|---|---|---|---|---|
| | | Solder ODF | | | | |
| | | [in.] | [mm] | | [bar] | |
| DCR 0485s | 1 | 5/8 | 16 | Plug | 46 | 023U7250 |
| DCR 0487s | 1 | 7/8 | 22 | Plug | 46 | 023U7251 |
| DCR 0487s | 1 | 7/8 | 22 | – | 46 | 023U7571 |
| DCR 0489s | 1 | – | 28 | Plug | 46 | 023U7252 |
| DCR 0489s | 1 | 1 1/8 | – | Plug | 46 | 023U7253 |
| DCR 0489s | 1 | – | 28 | – | 46 | 023U7268 |
| DCR 04811s | 1 | 1 3/8 | 35 | Plug | 46 | 023U7254 |
| DCR 04813s | 1 | 1 5/8 | – | Plug | 46 | 023U7255 |
| DCR 04813s | 1 | – | 42 | Plug | 46 | 023U7256 |
| DCR 04813s | 1 | – | 42 | – | 46 | 023U7303 |
| DCR 04817s | 1 | 2 1/8 | 54 | Plug | 46 | 023U7257 |
| DCR 04821s | 1 | 2 5/8 | – | Plug | 46 | 023U7276 |
| DCR 0967s | 2 | 7/8 | 22 | Plug | 46 | 023U7258 |
| DCR 0969s | 2 | – | 28 | Plug | 46 | 023U7259 |
| DCR 0969s | 2 | 1 1/8 | – | Plug | 46 | 023U7260 |
| DCR 0969s | 2 | 1 1/8 | – | – | 46 | 023U7278 |
| DCR 09611s | 2 | 1 3/8 | 35 | Plug | 46 | 023U7261 |
| DCR 09613s | 2 | 1 5/8 | – | Plug | 46 | 023U7262 |
| DCR 09613s | 2 | – | 42 | Plug | 46 | 023U7263 |
| DCR 09613s | 2 | – | 42 | – | 46 | 023U7463 |
| DCR 09617s | 2 | 2 1/8 | 54 | Plug | 46 | 023U7264 |
| DCR 09617s | 2 | 2 1/8 | 54 | – | 46 | 023U7290 |
| DCR 09621s | 2 | 2 5/8 | – | Plug | 46 | 023U7281 |
| DCR 1449s | 3 | – | 28 | Plug | 35[1]) / 46[2]) | 023U7265 |
| DCR 14411s | 3 | 1 3/8 | 35 | Plug | 35[1]) / 46[2]) | 023U7267 |
| DCR 14411s | 3 | 1 3/8 | – | – | 35[1]) / 46[2]) | 023U7275 |
| DCR 14413s | 3 | 1 5/8 | – | Plug | 35[1]) / 46[2]) | 023U7282 |
| DCR 14413s | 3 | – | 42 | Plug | 35[1]) / 46[2]) | 023U7269 |
| DCR 14413s | 3 | 1 5/8 | 42 | – | 35[1]) / 46[2]) | 023U7297 |
| DCR 14417s | 3 | 2 1/8 | 54 | Plug | 35[1]) / 46[2]) | 023U7270 |
| DCR 19211s | 4 | 1 3/8 | – | – | 28[1]) / 40[2]) | 023U7083 |
| DCR 19213s | 4 | 1 5/8 | – | Plug | 28[1]) / 40[2]) | 023U7272 |
| DCR 19213s | 4 | – | 42 | Plug | 28[1]) / 40[2]) | 023U7273 |
| DCR 19213s | 4 | 1 5/8 | – | – | 28[1]) / 40[2]) | 023U7082 |
| DCR 19217s | 4 | 2 1/8 | 54 | Plug | 28[1]) / 40[2]) | 023U7274 |

[1]) For usage with strainer or as a receiver application
[2]) For "drier" application using all the permissible cores

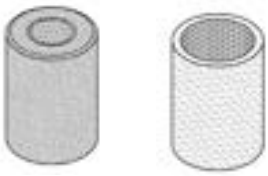
## Ordering (continued)



### Table 2. Housing with steel connectors + top cover

| Type | Number of cores | Steel connectors | | | Cover type | Max. working pressure PS | Code number |
|---|---|---|---|---|---|---|---|
| | | Solder ODF | | Butt weld | | | |
| | | [in.] | [mm] | [in.] | | [bar] | |
| DCR 0485 | 1 | 5/8 | 16 | 1/2 | Plug | 46 | 023U7050 |
| DCR 0487 | 1 | 7/8 | 22 | 3/4 | Plug | 46 | 023U7051 |
| DCR 0487 | 1 | 7/8 | 22 | 3/4 | – | 46 | 023U7151 |
| DCR 0489 | 1 | – | 28 | 1 | Plug | 46 | 023U7052 |
| DCR 0489 | 1 | 1 1/8 | – | 1 | Plug | 46 | 023U7053 |
| DCR 04811 | 1 | 1 3/8 | 35 | 1 1/4 | Plug | 46 | 023U7054 |
| DCR 04813 | 1 | 1 5/8 | – | 1 1/2 | Plug | 46 | 023U7055 |
| DCR 04813 | 1 | – | 42 | 1 1/2 | Plug | 46 | 023U7056 |
| DCR 04817 | 1 | 2 1/8 | 54 | 2 | Plug | 46 | 023U7057 |
| DCR 04821 | 1 | 2 5/8 | – | 2 1/2 | Plug | 46 | 023U7076 |
| DCR 0967 | 2 | 7/8 | 22 | 3/4 | Plug | 46 | 023U7058 |
| DCR 0969 | 2 | – | 28 | 1 | Plug | 46 | 023U7059 |
| DCR 0969 | 2 | 1 1/8 | – | 1 | Plug | 46 | 023U7060 |
| DCR 09611 | 2 | 1 3/8 | 35 | 1 1/4 | Plug | 46 | 023U7061 |
| DCR 09611 | 2 | 1 3/8 | 35 | 1 1/4 | – | 46 | 023U7161 |
| DCR 09613 | 2 | 1 5/8 | – | 1 1/2 | Plug | 46 | 023U7062 |
| DCR 09613 | 2 | – | 42 | 1 1/2 | Plug | 46 | 023U7063 |
| DCR 09617 | 2 | 2 1/8 | 54 | 2 | Plug | 46 | 023U7064 |
| DCR 1449 | 3 | – | 28 | 1 | Plug | 35 [1]) / 46 [2]) | 023U7065 |
| DCR 1449 | 3 | 1 1/8 | – | 1 | Plug | 35 [1]) / 46 [2]) | 023U7066 |
| DCR 14411 | 3 | 1 3/8 | 35 | 1 1/4 | Plug | 35 [1]) / 46 [2]) | 023U7067 |
| DCR 14413 | 3 | 1 5/8 | – | 1 1/2 | Plug | 35 [1]) / 46 [2]) | 023U7068 |
| DCR 14413 | 3 | – | 42 | 1 1/2 | Plug | 35 [1]) / 46 [2]) | 023U7069 |
| DCR 14417 | 3 | 2 1/8 | 54 | 2 | Plug | 35 [1]) / 46 [2]) | 023U7070 |
| DCR 19211 | 4 | 1 3/8 | 35 | 1 1/4 | Plug | 28 [1]) / 40 [2]) | 023U7071 |
| DCR 19213 | 4 | 1 5/8 | – | 1 1/2 | Plug | 28 [1]) / 40 [2]) | 023U7072 |
| DCR 19213 | 4 | – | 42 | 1 1/2 | Plug | 28 [1]) / 40 [2]) | 023U7073 |
| DCR 19217 | 4 | 2 1/8 | 54 | 2 | Plug | 28 [1]) / 40 [2]) | 023U7074 |
| DCR 19221 | 4 | 2 5/8 | – | 2 1/2 | Plug | 28 [1]) / 40 [2]) | 023U7086 |

[1]) For usage with strainer or as a receiver application
[2]) For "*drier*" application using all the permissible cores



### Table 3. Type DCR, inserts

| Type | Material | Code number | | |
|---|---|---|---|---|
| | | Industrial pack (8 pcs.) | | Multi pack (3 pcs.) |
| | | with gasket | without gasket | with gasket |
| 48-DM solid core | 100% molecular sieve | 023U1392 | 023U1393 | 023U1391 |
| 48-DC solid core | 80% molecular sieve & 20% $Al_3O_2$ | 023U4381 | 023U4382 | 023U4380 |
| 48-DA solid core | 30% molecular sieve & 70% $Al_3O_2$ | 023U5381 | 023U5382 | 023U5380 |
| 48-F strainer | Felt-gasket, 15 µm | 023U1921 | – | – |

1) Not for usage with DCR 048 – 192 housings

**Core surface**

DM 048, DC 048 and DA 048 = 612 $cm^2$
DM 096, DC 096 and DA 096 = 1225 $cm^2$
DM 144, DC 144 and DA 144 = 1837 $cm^2$
DM 192, DC 192 and DA 192 = 2450 $cm^2$
48-F = 405 $cm^2$

**Core volume**

DM 048, DC 048 and DA 048 = 727 $cm^3$
DM 096, DC 096 and DA 096 = 1454 $cm^3$
DM 144, DC 144 and DA 144 = 2181 $cm^3$
DM 192, DC 192 and DA 192 = 2908 $cm^3$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## Core selection

| Refrigerant and oil types | | DC | DM | DA |
|---|---|---|---|---|
| Refrigerant | HFC (R134a, R404A, R507, R407C and R410A) | Recommended | Recommended | Recommended |
| | HFO (R1234ze, R407F, R407A) | Recommended | Recommended | Recommended |
| | HCFC (R22) | Recommended | Recommended | Recommended |
| Oil | Mineral or AB | Recommended | Recommended | Recommended |
| | POE or PAG, pure | Recommended | Recommended | Recommended |
| | POE or PAG, with additives | Not recommended[1]) | Recommended | Recommended |

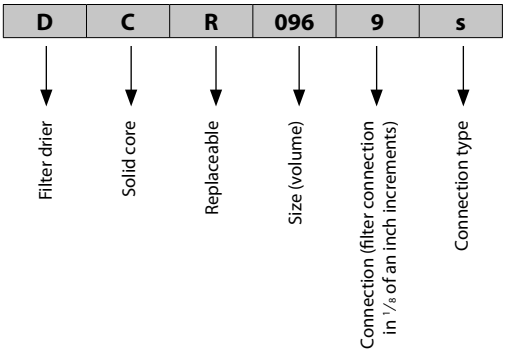
[1]) DC filter driers cores contain activated alumina, which is a polar material used for acid adsorption. Many oil additives are also polar substances and can be adsorbed by the activated alumina, rendering them useless, and reducing the drier's acid capacity, though this is not harmful to the system.

## Identification

**Type codes**

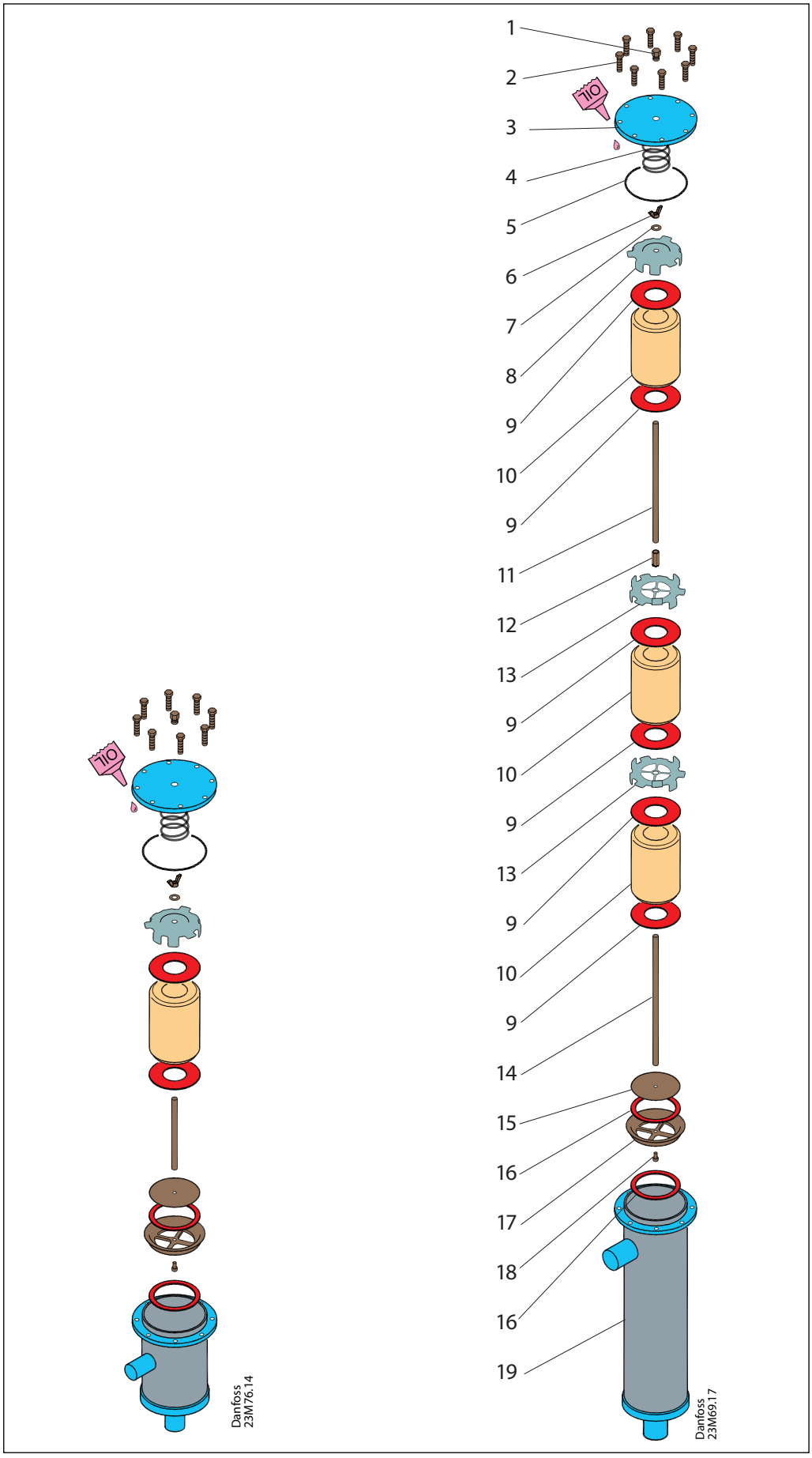
| Type | Code | Description |
|---|---|---|
| Filter drier | D | Drier |
| Solid core | C | Solid core |
| | R | Replaceable |
| Size (volume) | 048 | 48 in³ |
| | 096 | 96 in³ |
| | 144 | 144 in³ |
| | 192 | 192 in³ |
| Connection (filter connection in 1/8 of an inch increments) | 5 | 5/8 in. / 16 mm |
| | 7 | 7/8 in. / 22 mm |
| | 9 | 1 1/8 in. / 28 mm |
| | 11 | 1 3/8 in. / 35 mm |
| | 13 | 1 5/8 in. / 42 mm |
| | 17 | 2 1/8 in. / 54 mm |
| | 21 | 2 5/8 in. |
| Connection type | (blank) | Steel connectors |
| | s | Copper connectors |

### Example for type codes



## Design / Function

Example:




1. Plug 1/4 in. NPT
2. Top cover bolts
   M8 × 35, class 10.9
3. Top cover
4. Spring
5. Top cover gasket
   ø121.8 × ø113.6 × 0.8 mm
6. Wing nut
   M10 (torque max. 3 Nm)
7. Lock washer
8. Top plate
9. Felt gasket
   ø95.5 × ø45.5 × 2 mm
10. Solid core
11. Extension rod
12. Extension nut
13. Core plate
14. Distance rod
15. Wire mesh
16. Felt gasket
    ø95.5 × ø78 × 2 mm
17. Core holder
18. Hex socket head screw M6
19. Filter drier shell



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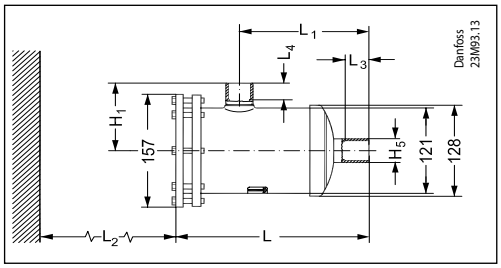
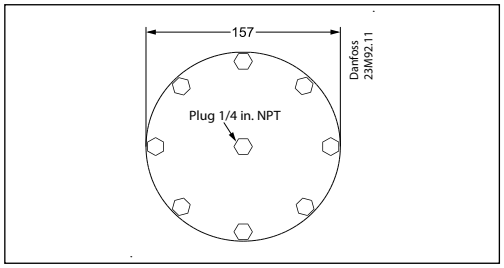
## Dimensions and weights

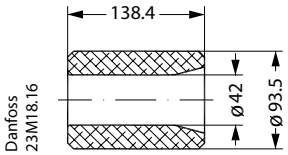
### DCR housing




### DCR top cover




### DCR solid core




48-DM, 48-DC and 48-DA

| Type | Number of cores | DCR with steel connectors | | | | | | | DCR with copper connectors | | | | | | | Net weight[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | L | $L_1$ | $L_2$ | $L_3$ | $L_4$ | $H_1$ | $H_5$ | L | $L_1$ | $L_2$ | $L_3$ | $L_4$ | $H_1$ | $H_5$ | |
| | | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [Kg] |
| DCR 0485(s) | 1 | 242.9 | 162.7 | 170 | 12 | 12 | 96.8 | 21 | 259.9 | 179.7 | 170 | 12 | 12 | 112.8 | 19 | 5.2 |
| DCR 0487(s) | 1 | 237 | 156.8 | 170 | 17 | 17 | 90.3 | 27 | 259.5 | 179.3 | 170 | 17 | 17 | 112.8 | 25 | 5.2 |
| DCR 0489(s) | 1 | 240.4 | 160.2 | 170 | 22 | 22 | 94.3 | 34 | 261.9 | 181.7 | 170 | 20 | 20 | 115.8 | 32 | 5.2 |
| DCR 0489(s) | 1 | 240.4 | 160.2 | 170 | 22 | 22 | 94.3 | 34 | 261.9 | 181.7 | 170 | 20 | 20 | 115.8 | 32 | 5.2 |
| DCR 04811(s) | 1 | 242.8 | 162.6 | 170 | 25 | 25 | 97.3 | 42 | 264.3 | 184.1 | 170 | 25 | 25 | 118.8 | 39 | 5.2 |
| DCR 04813(s) | 1 | 248 | 167.8 | 170 | 29 | 29 | 103.3 | 48 | 265.5 | 185.3 | 170 | 29 | 29 | 120.8 | 46 | 5.2 |
| DCR 04813(s) | 1 | 248 | 167.8 | 170 | 29 | 29 | 103.3 | 48 | 265.5 | 185.3 | 170 | 29 | 29 | 120.8 | 46 | 5.2 |
| DCR 04817(s) | 1 | 253.7 | 173.5 | 170 | 33 | 33 | 110.8 | 60 | 267.7 | 187.5 | 170 | 34 | 34 | 124.8 | 58 | 5.2 |
| DCR 04821(s) | 1 | 256.5 | 176.3 | 170 | 38 | 38 | 115.8 | 73 | 269.5 | 189.3 | 170 | 34 | 34 | 128.8 | 71 | 5.2 |
| DCR 0965(s) | 2 | 381.9 | 301.7 | 310 | 12 | 12 | 96.8 | 21 | 398.9 | 318.7 | 310 | 12 | 12 | 112.8 | 19 | 6.6 |
| DCR 0967(s) | 2 | 376 | 295.8 | 310 | 17 | 17 | 90.3 | 27 | 398.5 | 318.3 | 310 | 17 | 17 | 112.8 | 25 | 6.6 |
| DCR 0969(s) | 2 | 379.4 | 299.2 | 310 | 22 | 22 | 94.3 | 34 | 400.9 | 320.7 | 310 | 20 | 20 | 115.8 | 32 | 6.6 |
| DCR 0969(s) | 2 | 379.4 | 299.2 | 310 | 22 | 22 | 94.3 | 34 | 400.9 | 320.7 | 310 | 20 | 20 | 115.8 | 32 | 6.6 |
| DCR 09611(s) | 2 | 381.8 | 301.6 | 310 | 25 | 25 | 97.3 | 42 | 403.3 | 323.1 | 310 | 25 | 25 | 118.8 | 39 | 6.6 |
| DCR 09613(s) | 2 | 387 | 306.8 | 310 | 29 | 29 | 103.3 | 48 | 404.5 | 324.3 | 310 | 29 | 29 | 120.8 | 46 | 6.6 |
| DCR 09613(s) | 2 | 387 | 306.8 | 310 | 29 | 29 | 103.3 | 48 | 404.5 | 324.3 | 310 | 29 | 29 | 120.8 | 46 | 6.6 |
| DCR 09617(s) | 2 | 392.7 | 312.5 | 310 | 33 | 33 | 110.8 | 60 | 406.7 | 326.5 | 310 | 34 | 34 | 124.8 | 58 | 6.6 |
| DCR 09621(s) | 2 | 395.5 | 315.3 | 310 | 38 | 38 | 115.8 | 73 | 408.5 | 328.3 | 310 | 34 | 34 | 128.8 | 71 | 6.6 |
| DCR 1445(s) | 3 | 523.9 | 443.7 | 310 | 12 | 12 | 96.8 | 21 | 540.9 | 460.7 | 310 | 12 | 12 | 112.8 | 19 | 7.8 |
| DCR 1447(s) | 3 | 518 | 437.8 | 310 | 17 | 17 | 90.3 | 27 | 540.5 | 460.3 | 310 | 17 | 17 | 112.8 | 25 | 7.8 |
| DCR 1449(s) | 3 | 521.4 | 441.2 | 310 | 22 | 22 | 94.3 | 34 | 542.9 | 462.7 | 310 | 20 | 20 | 115.8 | 32 | 7.8 |
| DCR 1449(s) | 3 | 521.4 | 441.2 | 310 | 22 | 22 | 94.3 | 34 | 542.9 | 462.7 | 310 | 20 | 20 | 115.8 | 32 | 7.8 |
| DCR 14411(s) | 3 | 523.8 | 443.6 | 310 | 25 | 25 | 97.3 | 42 | 545.3 | 465.1 | 310 | 25 | 25 | 118.8 | 39 | 7.8 |
| DCR 14413(s) | 3 | 529 | 448.8 | 310 | 29 | 29 | 103.3 | 48 | 546.5 | 466.3 | 310 | 29 | 29 | 120.8 | 46 | 7.8 |
| DCR 14413(s) | 3 | 529 | 448.8 | 310 | 29 | 29 | 103.3 | 48 | 546.5 | 466.3 | 310 | 29 | 29 | 120.8 | 46 | 7.8 |
| DCR 14417(s) | 3 | 534.7 | 454.5 | 310 | 33 | 33 | 110.8 | 60 | 548.7 | 468.5 | 310 | 34 | 34 | 124.8 | 58 | 7.8 |
| DCR 14421(s) | 3 | 537.5 | 457.3 | 310 | 38 | 38 | 115.8 | 73 | 550.5 | 470.3 | 310 | 34 | 34 | 128.8 | 71 | 7.8 |
| DCR 1925(s) | 4 | 663.9 | 583.7 | 310 | 12 | 12 | 96.8 | 21 | 680.9 | 600.7 | 310 | 12 | 12 | 112.8 | 19 | 9.1 |
| DCR 1927(s) | 4 | 658 | 577.8 | 310 | 17 | 17 | 90.3 | 27 | 680.5 | 600.3 | 310 | 17 | 17 | 112.8 | 25 | 9.1 |
| DCR 1929(s) | 4 | 661.4 | 581.2 | 310 | 22 | 22 | 94.3 | 34 | 682.9 | 602.7 | 310 | 20 | 20 | 115.8 | 32 | 9.1 |
| DCR 1929(s) | 4 | 661.4 | 581.2 | 310 | 22 | 22 | 94.3 | 34 | 682.9 | 602.7 | 310 | 20 | 20 | 115.8 | 32 | 9.1 |
| DCR 19211(s) | 4 | 663.8 | 583.6 | 310 | 25 | 25 | 97.3 | 42 | 685.3 | 605.1 | 310 | 25 | 25 | 118.8 | 39 | 9.1 |
| DCR 19213(s) | 4 | 669 | 588.8 | 310 | 29 | 29 | 103.3 | 48 | 686.5 | 606.3 | 310 | 29 | 29 | 120.8 | 46 | 9.1 |
| DCR 19213(s) | 4 | 669 | 588.8 | 310 | 29 | 29 | 103.3 | 48 | 686.5 | 606.3 | 310 | 29 | 29 | 120.8 | 46 | 9.1 |
| DCR 19217(s) | 4 | 674.7 | 594.5 | 310 | 33 | 33 | 110.8 | 60 | 688.7 | 608.5 | 310 | 34 | 34 | 124.8 | 58 | 9.1 |
| DCR 19221(s) | 4 | 677.5 | 597.3 | 310 | 38 | 38 | 115.8 | 73 | 690.5 | 610.3 | 310 | 34 | 34 | 128.8 | 71 | 9.1 |

[1]) Without core.
For total weight add 0.7 kg per core for 48-DM and 48-DC, 0.8 kg per core for 48-DA or 0.4 kg per strainer 48-F

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