

Data Sheet

Strainer housing
Type **FIA 250-300**

(10-12 in.)

Brings reliability and durability demanded in industrial refrigeration applications



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 ⁽¹⁾), (US 100 and 72 mesh ⁽¹⁾).

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

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Features

- Applicable to HC, HCFC, HFC, R717 (Ammonia) and R744 (CO₂)
- 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 °C/+150 °C (-76 °F/+302 °F)
- Max. working pressure:
 - 40 bar (580 psig)
- Classification: DNV, CRN, BV, EAC etc.

Portfolio overview

Figure 1: FIA 250 - 300



Table 1: Portfolio overview

Description	Values
Valve body/connection material	Stainless steel
Equipment	Cover
Connection standard	EN 10220 DIN ANSI/ASME B 36.10
Connection type	Butt weld
Max. working pressure [bar/psig]	40 bar/580 psig
Packing format	Single pack

Media

Refrigerants

FIA strainers are currently authorized by Danfoss for use with more than 70 R-numbers HCFC, non-flammable HFC, Ammonia, CO₂ and hydrocarbons.

New refrigerants

Danfoss products are continually evaluated for use with new refrigerants depending on market requirements.

When a refrigerant is approved for use by Danfoss, it is added to the relevant portfolio, and the R number of the refrigerant (e.g. R513A) will be added to the technical data of the code number. Therefore, products for specific refrigerants are best checked at store.danfoss.com/en/, or by contacting your local Danfoss representative.

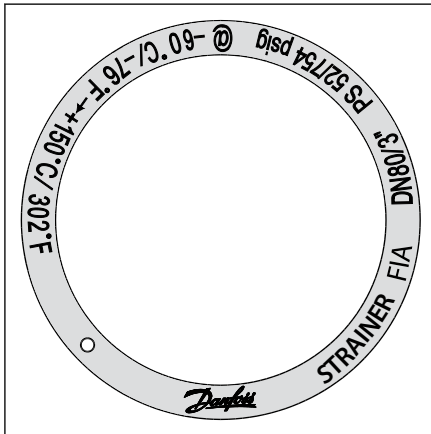
Product specification

Design

Table 2: Design

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

Figure 2: Example of marking ring, FIA



Material specification

Figure 3: Material specification

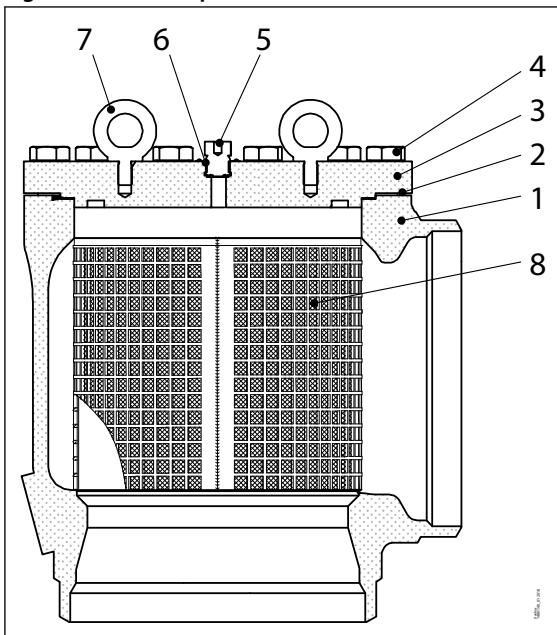


Table 3: Material specification according to standards

No.	Part	Material	DIN	ISO	ASTM
1	Housing	Steel	G20Mn5QT, 10213-3 P285QH+QT, 10222-4		LCC, A352 LF2, A350
2	Gasket	Fibre, Non-asbestos			
3	Cover	Steel	P285QH EN10222-4 P275NL1 or 2 EN10028-3		LF2, A350 A, A662
4	Bolts	Stainless steel	A2-70	A2-70	Type 308
5	Pressure relief screw	Stainless Steel			

Strainer housing, Type FIA 250-300

No.	Part	Material	DIN	ISO	ASTM
6	Packing washer	Stainless steel			
7	Eye bolts DIN 580	Steel			
8	Strainer insert	Stainless Steel			

Pressure and temperature

Figure 4: Pressure/temperature range

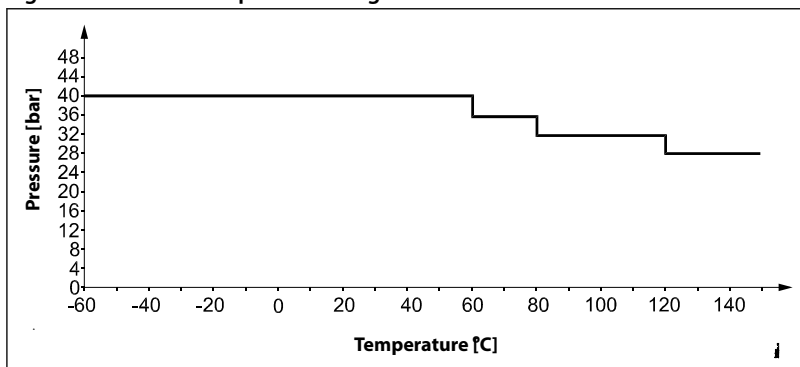


Table 4: Pressure and temperature

Pressure range	Temperature range
40 bar (580 psig) at -60 °C – +60 °C (-76 °F – +140 °F)	-60 °C – +150 °C (-76 – 302 °F)
36 bar (522 psig) at +60 °C – +80 °C (+140 °F – +176 °F)	
32 bar (464 psig) at +80 °C – +120 °C (+176 °F – +248 °F)	
28 bar (406 psig) at +120 °C – +150 °C (+248 °F – +302 °F)	

Connections

Available with the following connections:

Table 5: Connections

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

Figure 5: DIN

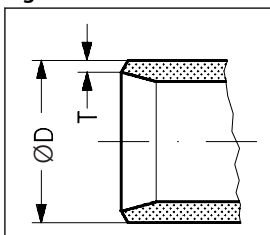
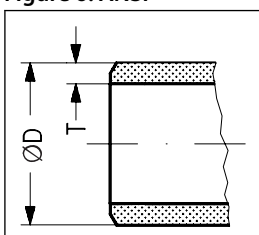


Table 6: DIN

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

Figure 6: ANSI



Strainer housing, Type FIA 250-300

Table 7: ANSI

Butt-weld DIN (EN 10220)					
Size		ØD	T	ØD	T
mm	in.	mm	mm	in.	in.
250	10	273	9.3	10.75	0.25
300	12	323.9	9.5	12.75	0.28

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:

Table 8: Selection of strainer size

Liquid Lines	
After pumps	150µ [100 mesh] / 250µ [72 mesh]
In front of AKVA valves	100µ [150 mesh]
Protection of automatic regulation equipment	
Generally	150µ [100 mesh] / 250µ [72 mesh]
Sensitive equipment, e.g. suction regulators with low temperature	250µ [72 mesh]
Suction Lines	
Ahead of screw compressor	250µ [72 mesh]
Ahead of piston compressor	150µ [100 mesh]

NOTE:

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

Flow coefficient (DIN/ANSI)

Table 9: Flow coefficient (DIN/ANSI)

Connection size (DN) FIA	µ	Mesh	Wire		Free space %	Screen area	
			mm	in.		Plain inserts	
			cm ²	in ²			
250 (10")	150	100	0.1	0.004	36	1800	70.9
	250	72	0.1	0.004	51	1800	70.9
300 (12")	150	100	0.1	0.004	36	2590	102
	250	72	0.1	0.004	51	2590	102

Kv values

Table 10: Kv values

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

Installation

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 guide for FIA.

Dimensions and weights

Figure 7: Angleway

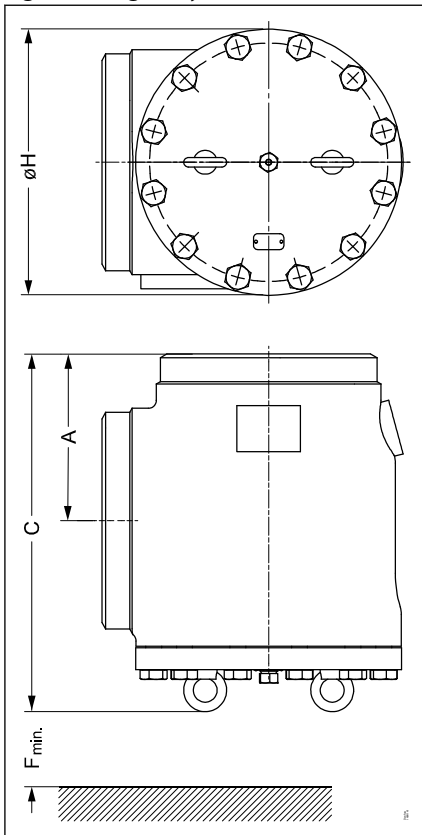


Table 11: Angleway

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

Table 12: Ordering

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

D = Butt-weld DIN

A = Butt-weld ANSI

ANG = Angleway

Certificates, declarations, and approvals

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

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

Table 13: Valid Approvals

File name	Document type	Document topic	Approval authority
RU Д-ДК.БЛ08.В.00828_19	EAC Declaration	Machinery & Equipment	EAC
0045 202 1204 Z 00354 19 D 001(00)	Pressure - Safety Certificate		TÜV
BV 03709-F0 BV	Marine - Safety Certificate		
RU Д-ДК.РА01.В.72058_20	EAC Declaration	PED	EAC
C-ДК.БЛ08.В.01095_20	Pressure - Safety Certificate	PED	EAC
DNV GL TAP000000S Rev. 1	Marine - Safety Certificate		DNV GL
033F0685.AJ	EU Declaration	EMCD/PED	Danfoss
033F0691.AD	Manufacturers Declaration	RoHS	Danfoss
033F0691.AD	Manufacturers Declaration	RoHS	Danfoss
0045 202 1204 Z 00355 19 D 001(00)	Pressure - Safety Certificate		TÜV
033F0453.AD	Manufacturers Declaration	ATEX	Danfoss
19.10048.266	Marine - Safety Certificate		RMRS

Table 14: Compliance

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

Table 15: Conformity Approvals

	<p>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 guide.</p>
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