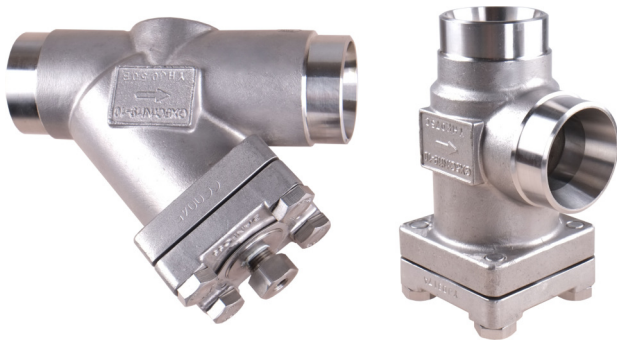


Data Sheet

Strainer housing
Type **FIA SS**

Designed for highly demanding production environments,
where corrosion is a risk due to harsh environments



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.

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.

Features

- Applicable to HCFC, HFC, R717 (Ammonia) and R744 (CO₂) 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, Butt-weld ANSI and socket weld connections
- Max. operating pressure:
 - 52 bar (754 psig)
- Temperature range:
 - -60 °C – 150 °C (-76 °F – 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

Media

Refrigerants

Applicable to HCFC, HFC, R717 (Ammonia), R744 (CO₂) and all flammable refrigerants. For further information please see installation guide for FIA SS.

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.

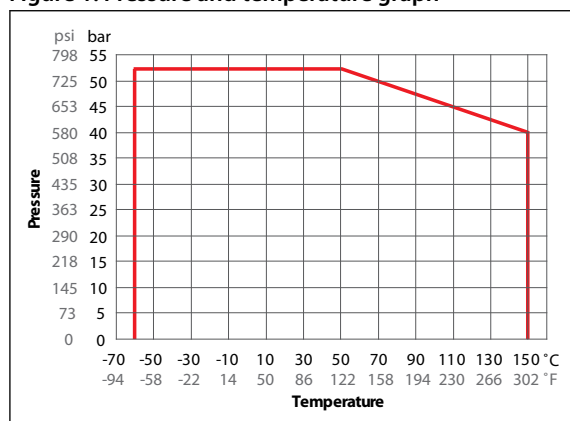
Product specification

Pressure and temperature

Table 1: Pressure and temperature

Temperature range	-60 °C – 150 °C (-76 °F – 302 °F)
Max. operating pressure	52 bar (754 psig)

Figure 1: Pressure and temperature graph



— FIA SS DN15-DN65

Design

Materials

Housing

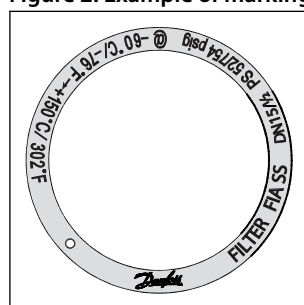
Made of stainless steel approved for low temperature operations

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

Marking

Figure 2: Example of marking ring, FIA SS



Installation

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 guide for FIA SS.

Material specification

FIA SS 15 - 40 (½ in. - 1½ in.)

Figure 3: FIA SS 15 - 40 (½ in. - 1½ in.)

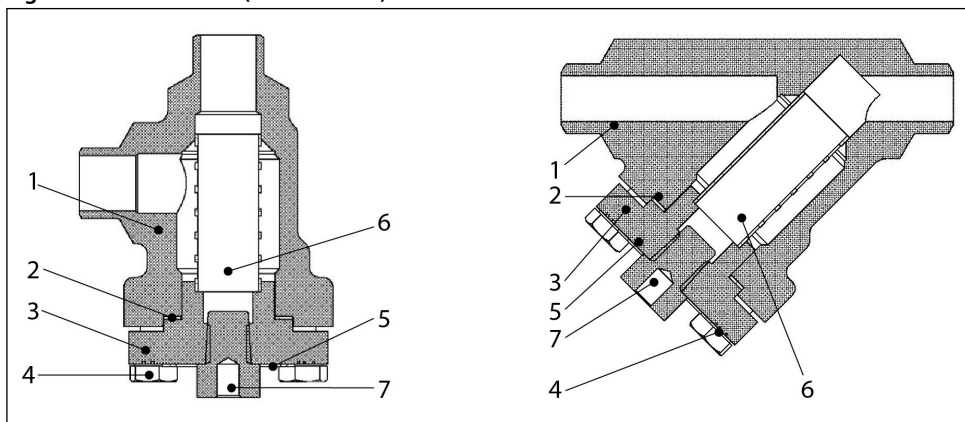


Table 2: Parts list and materials

No.	Part	Material	DIN	ISO	ASTM
1	Housing	Stainless steel (FIA SS only)	GX5CrNi19-10 EN10213-4		AISI 304
2	Gasket	Fibre, Non-asbestos			
3	Cover	Stainless steel (FIA SS only)	GX5CrNi19-10 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) NPT ¼"	Stainless steel			

FIA SS 50 - 65 (2 in. - 2½ in.)

Figure 4: FIA SS 50 - 65 (2 in. - 2½ in.)

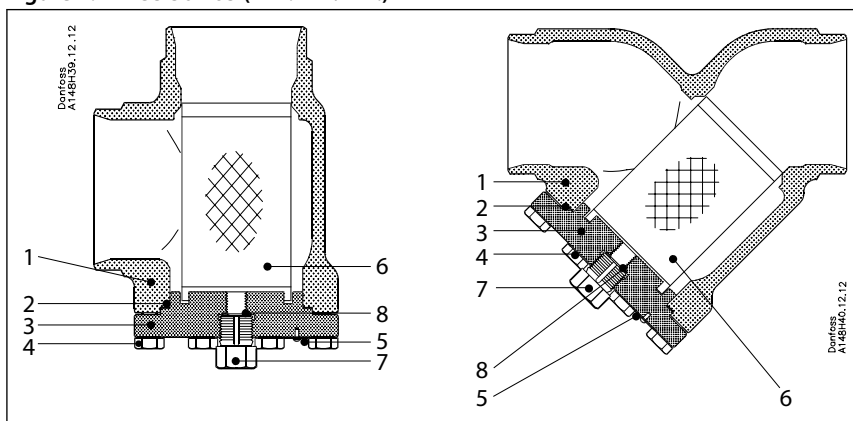


Table 3: Parts list and materials

No.	Part	Material	DIN	ISO	ASTM
1	Housing	Stainless steel (FIA SS only)	GX5CrNi19-10 EN10213-4		AISI 304
2	Gasket	Fibre, Non-asbestos			
3	Cover	Stainless steel (FIA SS only)	GX5CrNi19-10 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) G ½"	Stainless steel			
8	Packing washer	Aluminium			

Connections

Available with the following connections:

- Butt-weld DIN (EN 10220)
 - DN 15 - 65 (½ in. - 2½ in.)
- Butt-weld ANSI (B 36.19M)
 - DN 15 - 65 (½ in. - 2½ in.)
- Socket weld ANSI (B 16.11)
 - DN 20 - 50 (¾ - 2 in.)

Figure 5: Connections

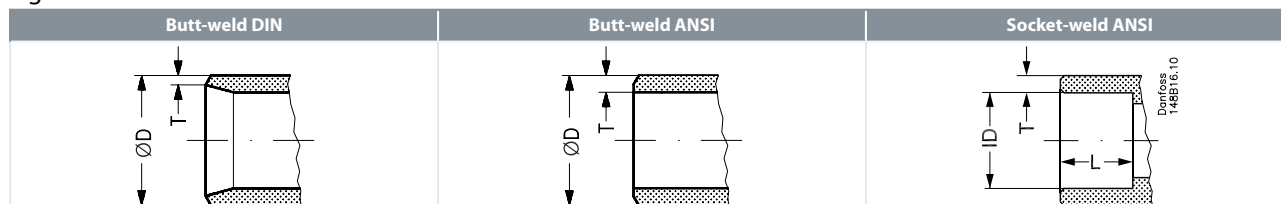


Table 4: Butt-weld DIN (EN 10220)

Connection	Size	mm/in.	$\varnothing D$	T
DIN	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	

Table 5: Butt-weld ANSI (B 36.19M, SCHEDULE 40)

Connection	Size	mm/in.	$\varnothing D$	T
ANSI	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
	65	mm	73.0	5.2
	2½	in.	2.87	0.20

Table 6: Butt-weld ANSI (B 36.19M, SCHEDULE 10)

Connection	Size	mm/in.	$\varnothing D$	T
ANSI	50	mm	60.3	2.8
	2	in.	2.37	0.11
	65	mm	73	3.1
	2½	in.	2.87	0.12

Strainer housing, type FIA SS

Table 7: Socket welding ANSI (B 16.11)

Connection	Size	mm/in.	ID	T	L
SOC	20	mm	27.2	4.6	13
	¾	in.	1.071	0.181	0.51
	25	mm	33.9	7.2	13
	1	in.	1.335	0.284	0.51
	32	mm	42.7	6.1	13
	1¼	in.	1.743	0.240	0.51
	40	mm	48.8	6.6	13
	1½	in.	1.921	0.260	0.51
	50	mm	61.2	6.2	16
	2	in.	2.41	0.24	0.63

Selection of strainer size

Micron specification (μ) 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: Recommendations of aperture size

All lines	
First start up	50 μ
Liquid Lines	
Ahead of pumps	500 μ
After pumps	150 μ / 250 μ
In front of AKVA valves	100 μ
Protection of automatic regulation equipment	
Generally	150 μ / 250 μ
Sensitive equipment, e.g.suction regulators with low temperature	250 μ
Suction Lines	
Ahead of screw compressor	250 μ
Ahead of piston compressor	150 μ

NOTE:

Use filter element with removable insert for FIA SS DN15 - 40 or separate filter bag for FIA SS DN 50 - 65. 50 μ insert should normally be removed after the first 24 hours of operation.

Flow coefficient (DIN/ANSI)

Table 9: Flow coefficient (DIN/ANSI)

Connection size (DN) FIA SS	μ	Wire [mm]	Wire [in.]	Free space [%]	Screen area			
					Plain elements		Pleated elements	
					cm ²	in ²	cm ²	in ²
15 - 20 (½" - ¾")	50	0.25	0.01	35	-	-	45	7.0
	100	0.068	0.003	35	25	3.9	45	7.0
	150	0.10	0.004	36	25	3.9	45	7.0
	250	0.10	0.004	51	25	3.9	45	7.0
	500	0.16	0.006	57.6	25	3.9	45	7.0
25 - 40 (1" - 1½")	50	0.25	0.01	35	-	-	160	25
	100	0.068	0.003	35	71	11	160	25.0
	150	0.10	0.004	36	71	11	160	25.0
	250	0.10	0.004	51	71	11	160	25.0
	500	0.16	0.006	57.6	71	11	160	25.0
50 (2")	50	0.25	0.01	35	-	-	200	31.2
	100	0.068	0.003	35	71	11	200	31.2
	150	0.10	0.004	36	87	13.5	200	31.2
	250	0.10	0.004	51	87	13.5	200	31.2
	500	0.16	0.006	57.6	87	13.5	200	31.2

Strainer housing, type FIA SS

Connection size (DN) FIA SS	μ	Wire [mm]	Wire [in.]	Free space [%]	Screen area			
					Plain elements		Pleated elements	
					cm ²	in ²	cm ²	in ²
65 (2½")	50	0.25	0.01	35	-	-	305	47.6
	150	0.10	0.004	36	127	19.7	305	47.6
	250	0.10	0.004	51	127	19.7	305	47.6
	500	0.16	0.006	57.6	127	19.7	305	47.6
80 (3")	50	0.25	0.01	35	-	-	450	70.2
100 (4")	50	0.25	0.01	35	-	-	790	123.2
125 (5")	50	0.25	0.01	35	-	-	1105	172.4
150 (6")	50	0.25	0.01	35	-	-	1600	249.6
200 (8")	50	0.25	0.01	35	-	-	2900	453.1

Kv values

Table 10: FIA SS angle

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

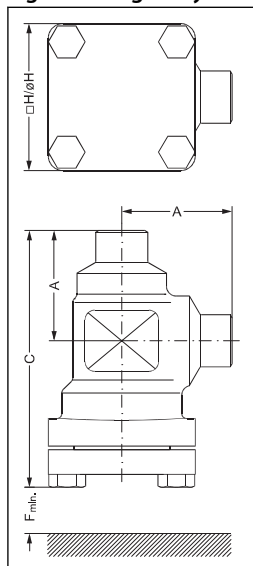
Table 11: FIA SS straight

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

Dimensions and weights

Angleway

Figure 5: Angleway



Strainer housing, type FIA SS

Table 12: Angleway

Strainer size		A	C	H	F _{min.}	Weight
FIA SS 15 - 20 (½" - ¾")	mm	45	105	60	68	1.1 kg
	in.	1.77	4.13	2.36	2.68	2.4 lbs
FIA SS 25 - 40 (1" - 1½")	mm	55	132	70	95	1.7 kg
	in.	2.17	5.20	2.76	3.74	3.7 lbs
FIA SS 50 (2")	mm	60	132	77	92	2.8 kg
	in.	2.36	5.20	3.03	3.62	6.2 lbs
FIA SS 65 (2½")	mm	70	152	90	107	3.8 kg
	in.	2.76	5.98	3.54	4.21	8.4 lbs

Straightway

Figure 6: Straightway

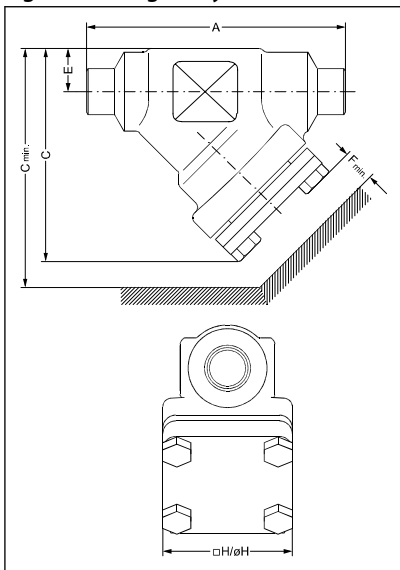


Table 13: Straightway

Strainer size		A	C	C _{min.}	H	E	F _{min.}	Weight
FIA SS 15 - 20 (½" - ¾")	mm	120	99	133	60	20	68	1.4 kg
	in.	4.72	3.90	5.24	2.36	0.79	2.68	3.1 lbs
FIA SS 25 - 40 (1" - 1½")	mm	155	129	177	70	26	95	2.4 kg
	in.	6.10	5.08	6.97	2.76	1.02	3.74	5.3 lbs
FIA SS 50 (2")	mm	148	138	184	77	32	92	3.5 kg
	in.	5.83	5.43	7.24	3.03	1.26	3.62	7.7 lbs
FIA SS 65 (2½")	mm	176	165	219	90	40	107	5.3 kg
	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**

Butt-weld Angleway

Table 14: Butt-weld Angleway

Type	Size		FIA SS With-out Filter Element	FIA: Filter insert-plain				FIA: Filter insert-plain			
	mm	in.		100µ	150µ	250µ	500µ	50µ	150µ	250µ	500µ
Butt-weld DIN (EN 10220) - Angleway											
FIA SS 15 D ANG	15	½	148B5295	148H3122	148H3124	148H3126	148H3128	148H3412	148H3303	148H3363	-
FIA SS 20 D ANG	20	¾	148B5383								
FIA SS 25 D ANG	25	1	148B5492								
FIA SS 32 D ANG	32	1¼	148B5587	148H3123	148H3125	148H3127	148H3129	148H3413	148H3304	148H3269	-
FIA SS 40 D ANG	40	1½	148B5666								
FIA SS 50 D ANG	50	2	148B5757	148H3157	148H3130	148H3138	148H3144	148H3414	148H3179	148H3184	148H3189
FIA SS 65 D ANG	65	2½	148B5851	-	148H3131	148H3139	148H3145	148H3415	148H3180	148H3185	148H3190
Butt-weld ANSI (B 36.19M SCHEDULE 10) - Angleway											
FIA SS 65 A ANG	65	2½	148B6498	-	148H3131	148H3139	148H3145	148H3415	148H3180	148H3185	148H3190
FIA SS 65 A ANG	65	2½	148B5857	-	148H3131	148H3139	148H3145	148H3415	148H3180	148H3185	148H3190

Socket-weld Angleway

Table 15: Socket-weld Angleway

Type	Size		FIA SS With-out Filter Element	FIA: Filter insert-plain				FIA: Filter insert-pleated			
	mm	in.		100µ	150µ	250µ	500µ	50µ	150µ	250µ	500µ
Socket weld ANSI (B 16.11) Angleway											
FIA SS 40 SOC ANG	40	1½	148B7009	148H3123	148H3125	148H3127	148H3129	148H3413	148H3304	148H3269	-

Butt-weld Straightway

Table 16: Butt-weld Straightway

Type	Size		FIA SS With-out Filter Element	FIA: Filter insert-plain				FIA: Filter insert-pleated			
	mm	in.		100µh	150µ	250µ	500µ	50µ	150µ	250µ	500µ
Butt-weld DIN (EN 10220) - Straightway											
FIA SS 15 D STR	15	½	148B5296	148H3122	148H3124	148H3126	148H3128	148H3412	148H3303	148H3363	-
FIA SS 20 D STR	20	¾	148B5384								
FIA SS 25 D STR	25	1	148B5493								
FIA SS 32 D STR	32	1¼	148B5588	148H3123	148H3125	148H3127	148H3129	148H3413	148H3304	148H3269	-
FIA SS 40 D STR	40	1½	148B5667								
FIA SS 50 D STR	50	2	148B5758	148H3157	148H3130	148H3138	148H3144	148H3414	148H3179	148H3184	148H3189
FIA SS 65 D STR	65	2½	148B5852	-	148H3131	148H3139	148H3145	148H3415	148H3180	148H3185	148H3190
Butt-weld ANSI (B 36.19M SCHEDULE 40) - Straightway											
FIA SS 15 A STR	15	½	148B6493	148H3122	148H3124	148H3126	148H3128	148H3412	148H3303	148H3363	-
FIA SS 20 A STR	20	¾	148B6494								
FIA SS 25 A STR	25	1	148B6495								
FIA SS 32 A STR	32	1¼	148B6496	148H3123	148H3125	148H3127	148H3129	148H3413	148H3304	148H3269	-
FIA SS 40 A STR	40	1½	148B6497								
FIA SS 65 A STR	65	2½	148B5856	-	148H3131	148H3139	148H3145	148H3415	148H3180	148H3185	148H3190
Butt-weld ANSI (B 36.19M SCHEDULE 10) - Straightway											
FIA SS 50 A STR	50	2	148B5758	148H3157	148H3130	148H3138	148H3144	148H3414	148H3179	148H3184	148H3189
FIA SS 65 A STR	65	2½	148B6499	-	148H3131	148H3139	148H3145	148H3415	148H3180	148H3185	148H3190

Socket-weld Straightway

Table 17: Socket-weld Straightway

Type	Size		FIA SS With- out Filter El- ement	FIA: Filter insert-plain				FIA: Filter insert-pleated			
	mm	in.		100µ	150µ	250µ	500µ	50µ	150µ	250µ	500µ
Socket weld ANSI (B 16.11) Straightway											
FIA SS 20 SOC STR	20	¾	148B4753	148H3122	148H3124	148H3126	148H3128	148H3412	148H3303	148H3363	-
FIA SS 25 SOC STR	25	1	148B4754								
FIA SS 32 SOC STR	32	1¼	148B7008	148H3123	148H3125	148H3127	148H3129	148H3413	148H3304	148H3269	-
FIA SS 40 SOC STR	40	1½	148B7010								
FIA SS 50 SOC STR	50	2	148B7011	148H3157	148H3130	148H3138	148H3144	148H3414	148H3179	148H3184	148H3189

D = Butt-weld DIN

A = Butt-weld ANSI

SOC = Socket weld ANSI

ANG = Angleway

STR = Straightway

Accessories

Table 18: Filter element µ150

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

Table 19: Filter bag

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

Table 20: Blind nut with gasket

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

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 21: Compliance table FIA 250-300

Nominal bore	DN ≤ 25 (1 in.)	DN 32 - 65 mm (1 1/4 in. - 2 1/2 in.)
Classified for	Fluid group I	
Category	Article 4, paragraph 3	II

Table 22: Pressure Equipment Directive (PED)


	<p>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 guide.</p>
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Table 23: Valid Approvals

File name	Document type	Document topic	Approval authority
BV 03709-E0 BV	Marine - Safety Certificate		BV
033F0691.AD	Manufacturers Declaration	RoHS	Danfoss
DNV GL TAP000000S Rev. 1	Marine - Safety Certificate		DNV GL
033F0685.AJ	EU Declaration	EMCD/PED	Danfoss
033F0686.AG	Manufacturers Declaration	PED	Danfoss
033F0453.AD	Manufacturers Declaration	ATEX	Danfoss
CRN.0C16578.523467890YTN	Pressure - Safety Certificate	CRN	TSSA

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