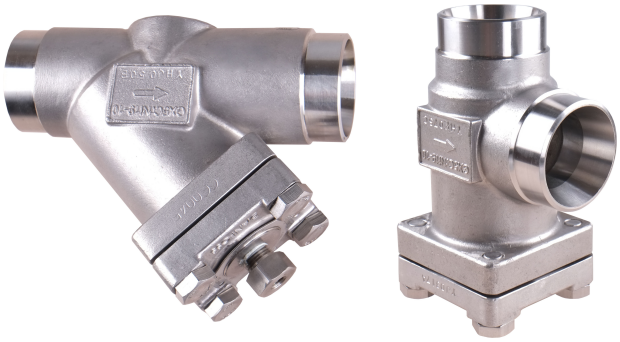
ENGINEERING TOMORROW

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 (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, 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 (CO_2) 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.

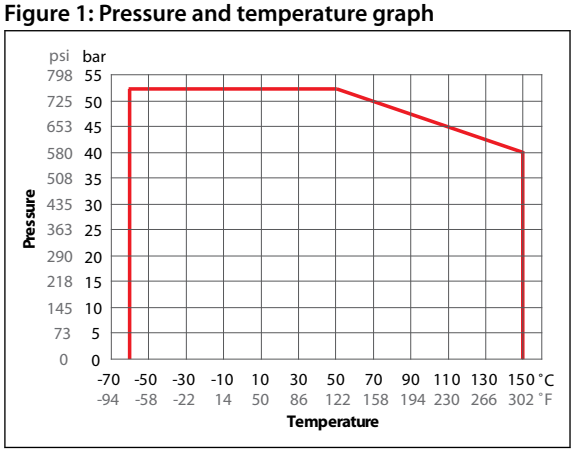
Product specification

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



Design

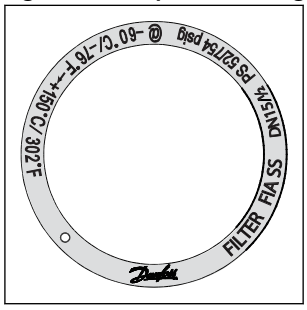
Materials

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.)

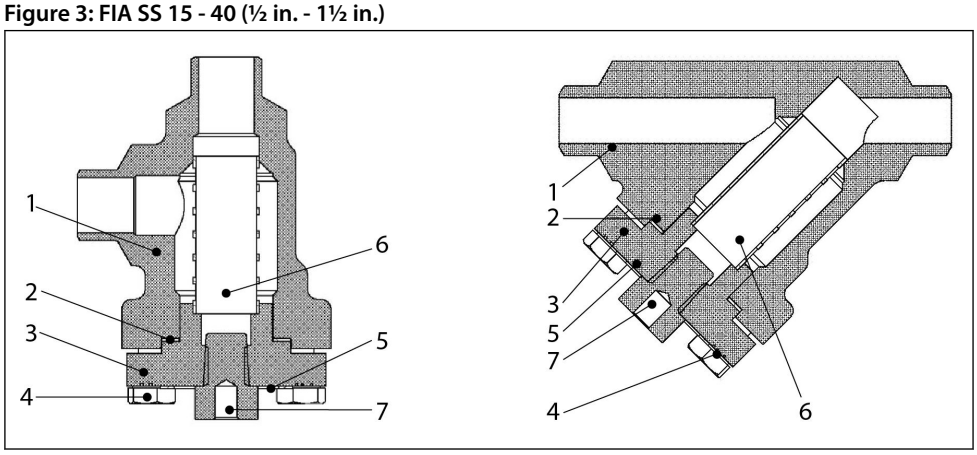
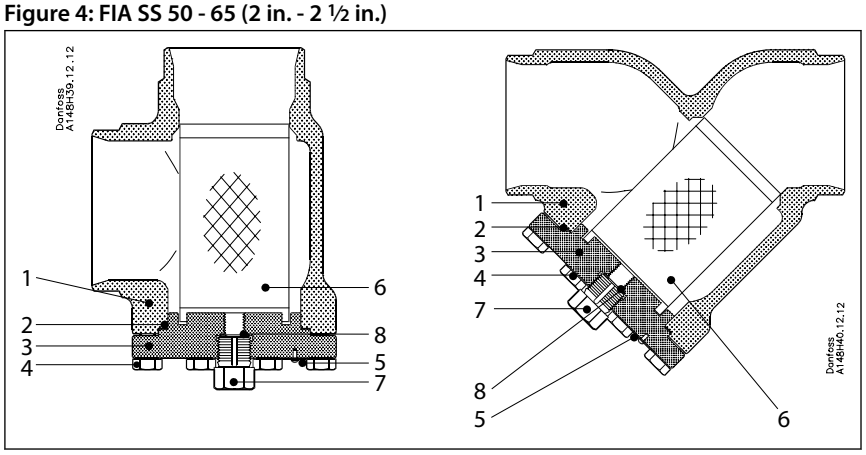


Table 2: Parts list and materials

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. - 21/2 in.)

Figure 4: FIA SS 50 - 65 (2 in. - 2 ½ in.)



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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

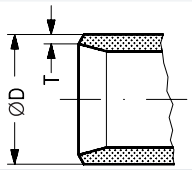
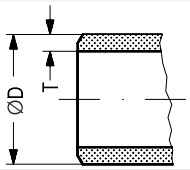
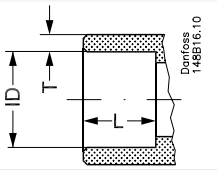
Butt-weld DIN	Butt-weld ANSI	Socket-weld ANSI
		

Table 4: Butt-weld DIN (EN 10220)

Connection	Size	mm/in.	øD	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.	øD	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.	øD	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

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

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: Recommendations of aperture size

All lines	
First start up	50µ
Liquid Lines	
Ahead of pumps	500µ [38 mesh]
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:
(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)

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

Flow coefficient (DIN/ANSI)

Table 9: Flow coefficient (DIN/ANSI)

Connection size (DN) FIA SS	µ	Mesh	Wire [mm]	Wire [in.]	Free space [%]	Screen area			
						Plain elements		Pleated elements	
						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

Connection size (DN) FIA SS	µ	Mesh	Wire [mm]	Wire [in.]	Free space [%]	Screen area			
						Plain elements		Pleated elements	
						cm²	in²	cm²	in²
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

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

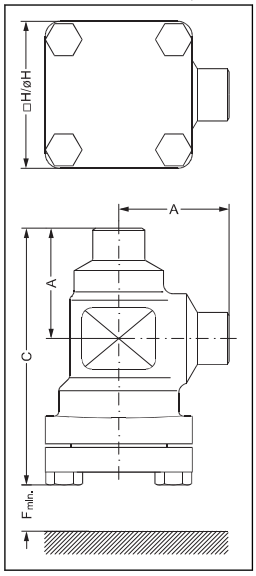


Table 12: Angleway

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

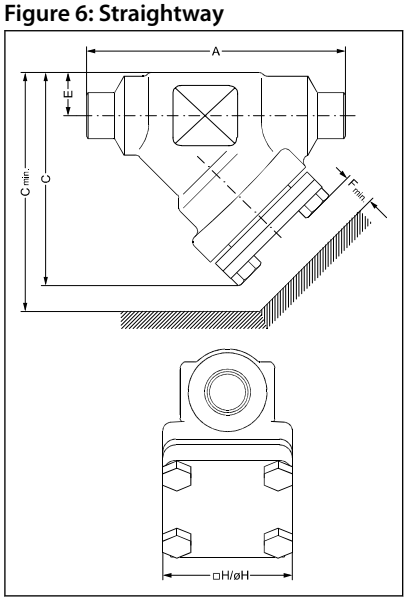


Table 13: Straightway

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 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
	mm	in.								
Butt-weld DIN (EN 10220) - Angleway										
FIA SS 15 D ANG	15	½	148B5295	148H3122	148H3124	148H3126	148H3128	148H3303	148H3363	-
FIA SS 20 D ANG	20	¾	148B5383							
FIA SS 25 D ANG	25	1	148B5492	148H3123	148H3125	148H3127	148H3129	148H3304	148H3269	-
FIA SS 32 D ANG	32	1¼	148B5587							
FIA SS 40 D ANG	40	1½	148B5666							
FIA SS 50 D ANG	50	2	148B5757	148H3157	148H3130	148H3138	148H3144	148H3179	148H3184	148H3189
FIA SS 65 D ANG	65	2½	148B5851	-	148H3131	148H3139	148H3145	148H3180	148H3185	148H3190
Butt-weld ANSI (B 36.19M SCHEDULE 10) - Angleway										
FIA SS 65 A10 ANG	65	2½	148B6498	-	148H3131	148H3139	148H3145	148H3180	148H3185	148H3190
FIA SS 65 A40 ANG	65	2½	148B5857	-	148H3131	148H3139	148H3145	148H3180	148H3185	148H3190

Socket-weld Angleway

Table 15: Socket-weld Angleway

Type	Size		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
	mm	in.								
Socket weld ANSI (B 16.11) Angleway										
FIA SS 40 SOC ANG	40	1½	148B7009	148H3123	148H3125	148H3127	148H3129	148H3304	148H3269	-

Butt-weld Straightway

Table 16: Butt-weld Straightway

Type	Size		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
	mm	in.								
Butt-weld DIN (EN 10220) - Straightway										
FIA SS 15 D STR	15	½	148B5296	148H3122	148H3124	148H3126	148H3128	148H3303	148H3363	-
FIA SS 20 D STR	20	¾	148B5384							
FIA SS 25 D STR	25	1	148B5493	148H3123	148H3125	148H3127	148H3129	148H3304	148H3269	-
FIA SS 32 D STR	32	1¼	148B5588							
FIA SS 40 D STR	40	1½	148B5667							
FIA SS 50 D STR	50	2	148B5758	148H3157	148H3130	148H3138	148H3144	148H3179	148H3184	148H3189
FIA SS 65 D STR	65	2½	148B5852	-	148H3131	148H3139	148H3145	148H3180	148H3185	148H3190
Butt-weld ANSI (B 36.19M SCHEDULE 40) - Straightway										
FIA SS 15 A40 STR	15	½	148B6493	148H3122	148H3124	148H3126	148H3128	148H3303	148H3363	-
FIA SS 20 A40 STR	20	¾	148B6494							
FIA SS 25 A40 STR	25	1	148B6495	148H3123	148H3125	148H3127	148H3129	148H3304	148H3269	-
FIA SS 32 A40 STR	32	1¼	148B6496							
FIA SS 40 A40 STR	40	1½	148B6497							
FIA SS 65 A40 STR	65	2½	148B5856	-	148H3131	148H3139	148H3145	148H3180	148H3185	148H3190
Butt-weld ANSI (B 36.19M SCHEDULE 10) - Straightway										
FIA SS 50 A10 STR	50	2	148B5758	148H3157	148H3130	148H3138	148H3144	148H3179	148H3184	148H3189
FIA SS 65 A10 STR	65	2½	148B6499	-	148H3131	148H3139	148H3145	148H3180	148H3185	148H3190

Socket-weld Straightway

Table 17: Socket-weld Straightway

Type	Size		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
	mm	in.								
Socket weld ANSI (B 16.11) Straightway										
FIA SS 20 SOC STR	**20**	¾	**148B4753**	**148H3122**	**148H3124**	**148H3126**	**148H3128**	**148H3303**	**148H3363**	-
FIA SS 25 SOC STR	**25**	1	**148B4754**	**148H3123**	**148H3125**	**148H3127**	**148H3129**	**148H3304**	**148H3269**	-
FIA SS 32 SOC STR	**32**	1¼	**148B7008**							
FIA SS 40 SOC STR	**40**	1½	**148B7010**							
FIA SS 50 SOC STR	**50**	2	**148B7011**	**148H3157**	**148H3130**	**148H3138**	**148H3144**	**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**	**48H3450**

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. - 2½ in.)**
Classified for	Fluid group I	
Category	Article 4, paragraph 3	II

Table 22: Pressure Equipment Directive (PED)

CE	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.

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

ENGINEERING TOMORROW

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