ENGINEERING TOMORROW

Data sheet

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.

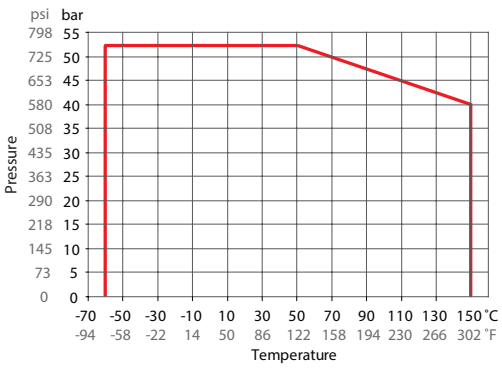
The design makes the strainer easy to install, and ensures quick strainer inspection and cleaning.

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 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



FIA SS DN15-DN65

Design

Connections
Available with the following connections:

- Butt-weld DIN (EN 10220)
  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.

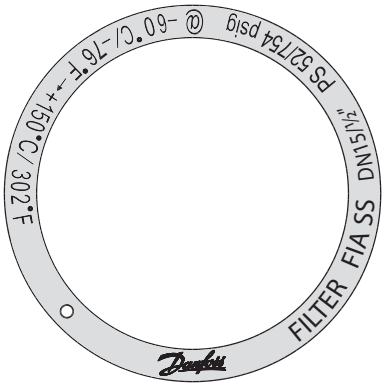
Installation/Maintenance
The strainer is designed to resist high internal pressures. However, the piping system in general should be designed to avoid liquid traps and reduce the risk of hydraulic pressure caused by thermal expansion.

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

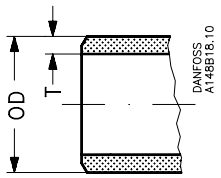
FIA SS		
Nominal bore	DN ≤ 25 (1 in.)	DN 32-65 mm ($1^1/_4$ - 2½ in.)
Classified for	Fluid group I	
Category	Article 3, paragraph 3	II

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



Size		OD	T
Butt-weld DIN (EN 10220)			
15	mm	21.3	2.3
$^1/_2$	in.	0.839	0.091
20	mm	26.9	2.3
$^3/_4$	in	1.059	0.091
25	mm	33.7	2.6
1	in.	1.327	0.103
32	mm	42.4	2.6
$1^1/_4$	in.	1.669	0.102
40	mm	48.3	2.6
$1^1/_2$	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

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 (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

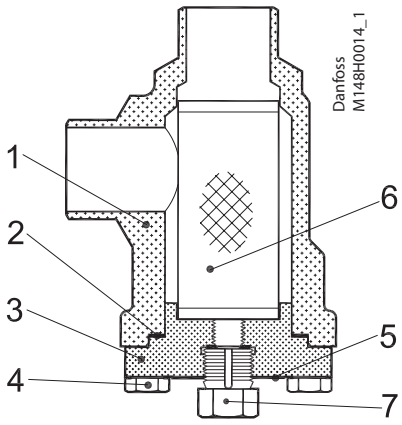
K_v values

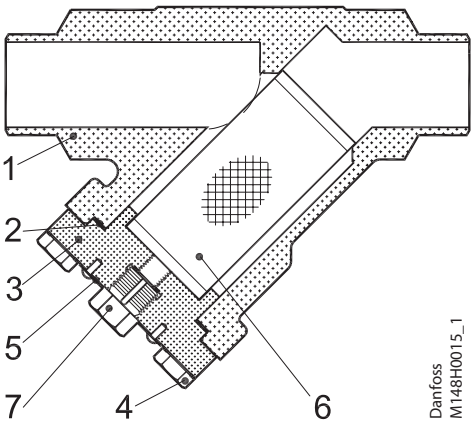
DN	**FIA SS angle - plain filter net**				**FIA SS angle - pleated filter net**		
	µ100	µ150	µ250	µ500	µ150	µ250	µ500
15	3.3	3.4	3.5	3.7	4.2		
20	6.9	7.1	7.3	7.7	8.8		
25	13.8	14.0	14.5	15.2	17.2	17.9	
32	23.0	23.8	24.7	25.5	29.2	30.5	
40	25.1	25.5	26.4	28.1	31.4	32.6	
50	45.1	45.9	47.6	50.2	56.7	58.8	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 ($^1/_2$ in. - 2½ in.)



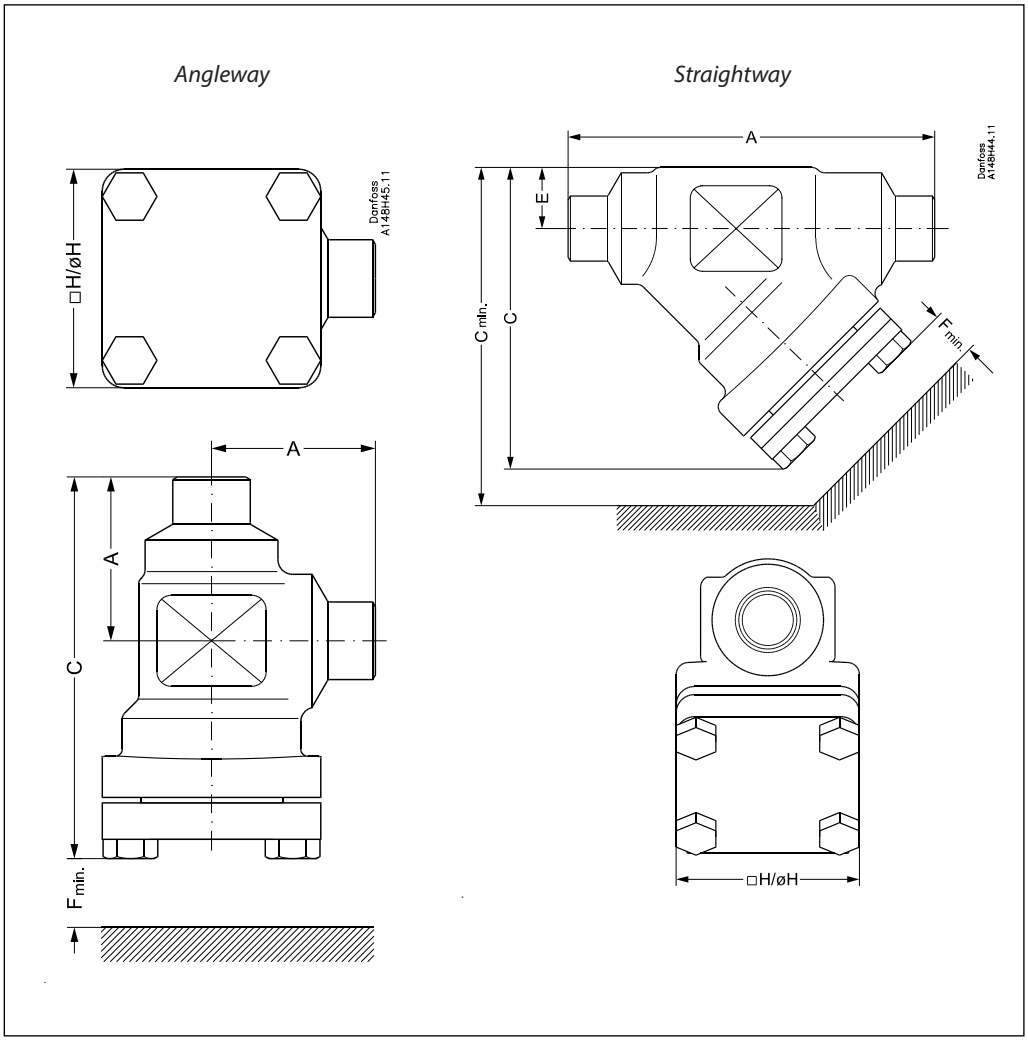


FIA SS 15-65 ($^1/_2$ in. - 2½ in.)

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)	Stainless steel			

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.	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.	2.17	5.20	2.76	3.74	3.7 lbs
FIA SS 50	mm	60	132	77	92	2.8 kg
(2")	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.	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.	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.	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.	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.	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		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
mm	in.									
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 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**

D = Butt-weld DIN

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**
Purge valve complete	FIA SS 50 - 65	**148B3745**
Blind nut with gasket		**148H3450**