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.

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

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

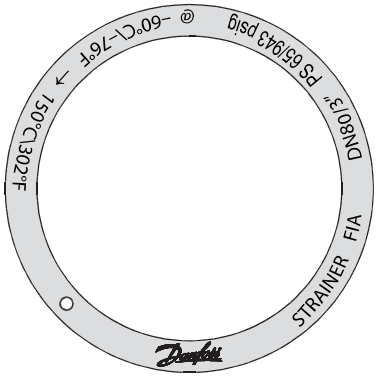
Strainer Insert
A filter grid and filter net of stainless steel ensure long element life. The filter net offers a very high degree of cleanability.

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

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

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		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
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)

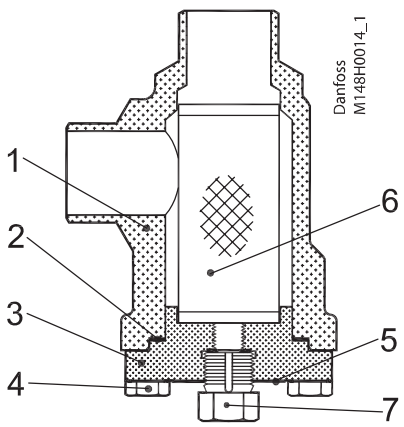
K_v values

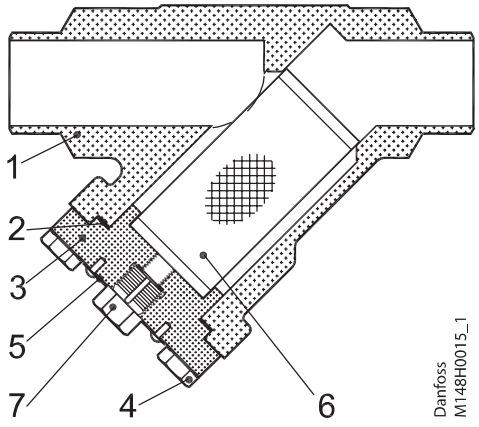
DN	FIA angle - plain filter net				FIA angle - pleated filter net		
	µ100	µ150	µ250	µ500	µ150	µ250	µ500
15	3.3	3.4	3.5	3.7	4.2		
20	6.9	7.1	7.3	7.7	8.8		
25	13.8	14.0	14.5	15.2	17.2	17.9	
32	23.0	23.8	24.7	25.5	29.2	30.5	
40	25.1	25.5	26.4	28.1	31.4	32.6	
50	45.1	45.9	47.6	50.2	56.7	58.8	62.0
65		56.1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

Material specification

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





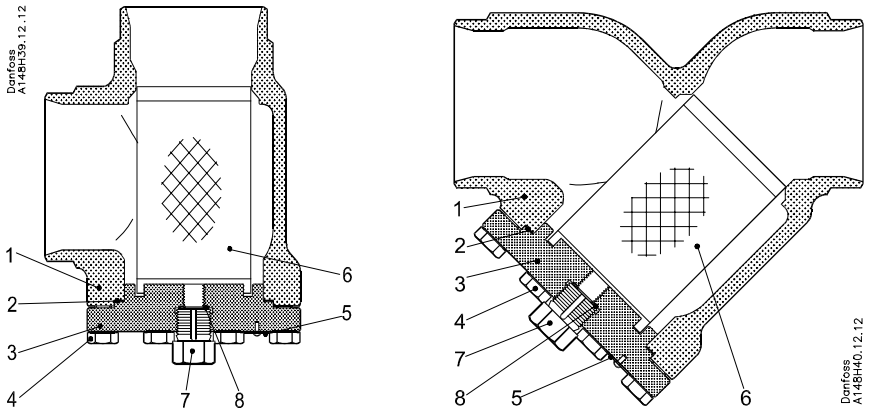
FIA 15-40 ($^1/_2$ in. - 1$^1/_2$ in.)

No.	Part	Material	DIN	ISO	ASTM
1	Housing	Steel	G20Mn5QT, 10213-3 --- 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	High temperature steel	42CrMo5 10269		A193
5	Marking label	Aluminium			
6	Strainer element	Stainless steel			
7	Pressure relief (screw)	Stainless steel			

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

Material specification

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



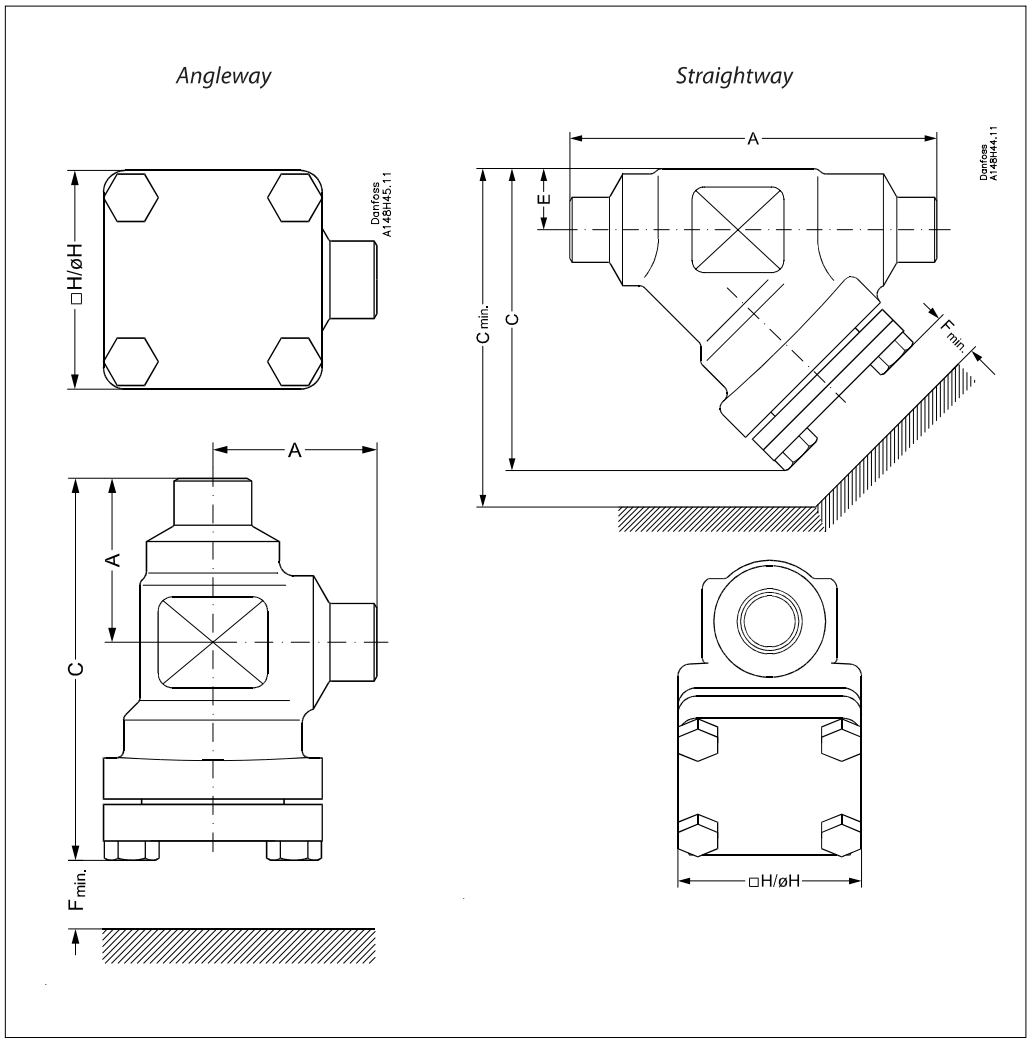
FIA 50-200 (2 in. - 8 in.)

No.	Part	Material	DIN	ISO	ASTM
1	Housing	Steel	G20Mn5QT, 10213-3 --- 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	High temperature steel	42CrMo5 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

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

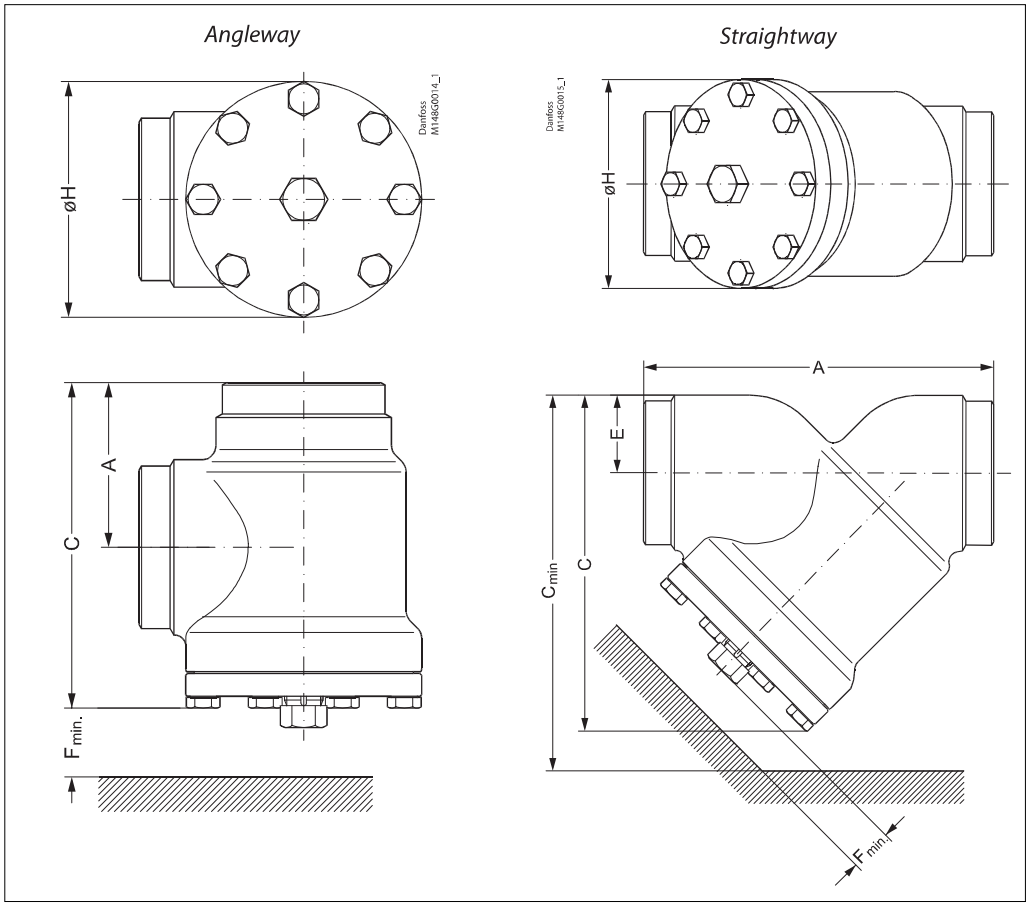
Straightway

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

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

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

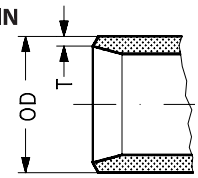
Straightway

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

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

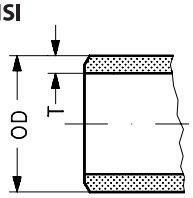
Connections

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

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

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**