

Product Data Sheet

Water Separators FCA..WS.. (16, 50 bar)

Version: 1.6.0

Author: Manfred Loy

Date: 17.09.2019

Field of application

Type FCA-WS water separators are mainly designed for separating great amounts of liquids from compressed air flows (liquid separation), i.e. separating compressed air condensate generated in aftercoolers or refrigerant dryers. Larger solid contaminants are, of course, also separated during this process. **Flow direction is from outside to inside (code 'S')**.

Features

Type FCA filter housings are made from high-quality, corrosion-resistant aluminium, manufactured in a casting process (gravity casting). For surface finishing purposes and for increasing resistance all filter housings have to go through a chrome(VI)-free passivation process and are finished by an impact-proof and abrasion-proof powder coating which is provided on the outer side of the housing.

The filter housings comply with the requirements of the Pressure Equipment Directive 2014/68/EU, and some (depending on the model and pressure level) have the CE marking of this European directive.

Type EFST water separator inserts of filtration grade W consist of a stainless steel cyclone spinner attached to an end cap in the top part and a stainless steel rebound plate in the bottom part of the water separator insert. Highest attention was paid to the metal design so even great pulsations within the compressed air system cannot cause any harm to the water separator insert. Compressed air entering the separator housing is redirected by the water separator insert to a kind of cyclone flow. "Heavy" liquid contaminants within the compressed air are pushed against the inner wall of the housing this way (centrifugal forces), finally draining into the bottom of the housing by gravity while the compressed air, freed from a major part of liquid contaminants, is flowing towards to outlet in the middle of the housing. The rebound plate avoids contaminants, already separated and collected in the bottom part of the filter housing, re-entering the compressed air flow.

All the features mentioned above are a contribution to a water separator which has a high performance (water separation efficiency) and maximum operating safety (integrated metal design).



Product Data Sheet

Water Separators FCA..WS.. (16, 50 bar)



Specifications subject to change without notice

Date 17.09.2019

Latest version see www.fstweb.de

Basic data

Model	Nominal volume flow (VN) ^{*1}	Max. operating pressure ^{*2}	Min./Max. operating temperature
FCA30	50 m ³ /h	16/50 bar	+2°C - +65°C
FCA50	70 m ³ /h	16/50 bar	
FCA70 (identical to FCA50)	100 m ³ /h	16/50 bar	
FCA90	160 m ³ /h	16/50 bar	
FCA95	160 m ³ /h	16/50 bar	
FCA110 (identical to FCA95)	330 m ³ /h	16/50 bar	
FCA115	330 m ³ /h	16/50 bar	
FCA120	500 m ³ /h	16/50 bar	
FCA130 (identical to FCA120)	800 m ³ /h	16/50 bar	
FCA140	1,000 m ³ /h	16 bar	
FCA170 (identical to FCA140)	1,500 m ³ /h	16 bar	
FCA180	2,000 m ³ /h	16 bar	
FCA185	2,000 m ³ /h	16 bar	
FCA190 (identical to FCA185)	2,500 m ³ /h	16 bar	

*1 - refers to 1 bar(a) and 20°C at 7 bar operating pressure

*2 - 50 bar filter housing marked "50" in filter head

Purity classes according to ISO 8573-1

Contamination	
Solid particles ^{*3}	Class X
Water content ^{*3}	Class 7
Total oil content ^{*3}	Class X

*3 - typical result, on the assumption of suitable inlet concentrations as well as operating and marginal conditions.

Volume flow conversion factors

«F1» - Pressure (in bar)

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0.125	0.25	0.38	0.50	0.63	0.75	0.88	1.00	1.13	1.25	1.38	1.50	1.63	1.75	1.88	2.00	2.13
17	18	19	20	25	30	35	40	45	50							
2.24	2.35	2.45	2.6	3.1	3.6	4.0	4.4	4.7	5.1							

«F2» - Temperature (in °C)

2	5	10	15	20	25	30	35	40	45	50	55	60	65
1.07	1.05	1.04	1.02	1.00	0.98	0.97	0.95	0.94	0.92	0.91	0.89	0.88	0.87

Calculation of the converted volume flow

Converted volume flow VK	Nominal required volume flow VN _{min}
$VK = VN \times F1 \times F2$	$VN_{min} = VK / F1 / F2$

VK : Converted volume flow calculated for the operating conditions

VN_{min}: Nominal required volume flow calculated for the operating conditions, based on the volume flow at operating conditions

Product Data Sheet

Water Separators FCA..WS.. (16, 50 bar)



Specifications subject to change without notice

Date 17.09.2019

Latest version see www.fstweb.de

Maintenance rules

Pressure range	
All models	In the course of cleaning: checking for serious corrosion

Product specific data

Specification	
Efficiency (max.)	99.9%

Materials

Component	
Housing	Aluminium (16 bar VDS no.: 233 ; 50 bar VDS no.: 239 heat treated)
Coatings	Inside and outside: Chrome(VI)-free thin-film passivation ; min. layer thickness 5µ Outside: 1-component power coating epoxide/polyester basis, layer thickness appr. 80 µ
Mounting parts, fittings	Brass, brass (nickel-plated), steel (galvanically zinc-plated)
Sealing materials	NBR, Teflon (FCA140-190)
Lubricants	Rivolta S.K.D. 4002 or similar
Cyclone spinner, rebound plate	Stainless steel 1.4301 (AISI 304, V2A)
Bonded joint	PU (polyurethane)
End caps	EFST30-140: PA6 (polyamide), 30% glass fibre ; EFST180: aluminium anodized
Sealing materials	NBR

Connections, dimensions and weight

16 bar

Model	Connection	Condensate Outlet	Height	Width	Depth	Weight
FCA30	G 3/8	G 1/2	183 mm	87 mm	80 mm	1.0 kg
FCA50	G 1/2	G 1/2	183 mm	87 mm	80 mm	1.0 kg
FCA70 (identical to FCA50)	G 1/2	G 1/2	183 mm	87 mm	80 mm	1.0 kg
FCA90	G 3/4	G 1/2	289 mm	130 mm	122 mm	3.9 kg
FCA95	G 1	G 1/2	289 mm	130 mm	122 mm	3.9 kg
FCA110 (identical to FCA95)	G 1	G 1/2	289 mm	130 mm	122 mm	3.9 kg
FCA115	G 1 1/2	G 1/2	289 mm	130 mm	122 mm	3.9 kg
FCA120	G 1 1/2	G 1/2	487 mm	130 mm	122 mm	4.7 kg
FCA130 (identical to FCA120)	G 1 1/2	G 1/2	487 mm	130 mm	122 mm	4.7 kg
FCA140	G 2	G 1/2	670 mm	164 mm	146 mm	7.8 kg
FCA170 (identical to FCA140)	G 2	G 1/2	670 mm	164 mm	146 mm	7.8 kg
FCA180	G 2 1/2	G 1/2	897 mm	250 mm	225 mm	22.9 kg
FCA185	G 3	G 1/2	897 mm	250 mm	225 mm	22.9 kg
FCA190 (identical to FCA185)	G 3	G 1/2	897 mm	250 mm	225 mm	22.9 kg

Product Data Sheet

Water Separators FCA..WS.. (16, 50 bar)



Specifications subject to change without notice

Date 17.09.2019

Latest version see www.fstweb.de

Connections, dimensions and weight continued

50 bar

Model	Connection	Condensate Outlet	Height	Width	Depth	Weight
FCA30	G 3/8	G 1/2	183 mm	87 mm	80 mm	1.0 kg
FCA50	G 1/2	G 1/2	183 mm	87 mm	80 mm	1.0 kg
FCA70 (identical to FCA50)	G 1/2	G 1/2	183 mm	87 mm	80 mm	1.0 kg
FCA90	G 3/4	G 1/2	289 mm	130 mm	122 mm	3.9 kg
FCA95	G 1	G 1/2	289 mm	130 mm	122 mm	3.9 kg
FCA110 (identical to FCA95)	G 1	G 1/2	289 mm	130 mm	122 mm	3.9 kg
FCA115	G 1 1/2	G 1/2	289 mm	130 mm	122 mm	3.9 kg
FCA120	G 1 1/2	G 1/2	487 mm	130 mm	122 mm	4.7 kg
FCA130 (identical to FCA120)	G 1 1/2	G 1/2	487 mm	130 mm	122 mm	4.7 kg

Classification according to Pressure Equipment Directive 2014/68/EU for group 2 fluids

Model	Volume	Category		Commissioning inspection*6		Routine inspection*6	
		16 bar	50 bar	16 bar	50 bar	16 bar	50 bar
FCA30	0.43 litres	---	---	---	---	---	---
FCA50	0.43 litres	---	---	---	---	---	---
FCA70 (identical to FCA50)	0.43 litres	---	---	---	---	---	---
FCA90	1.46 litres	---	I	---	AP*7	---	---
FCA95	1.46 litres	---	I	---	AP*7	---	---
FCA110 (identical to FCA95)	1.46 litres	---	I	---	AP*7	---	---
FCA115	1.46 litres	---	I	---	AP*7	---	---
FCA120	2.91 litres	---	I	---	AP*7	---	---
FCA130 (identical to FCA120)	2.91 litres	---	I	---	AP*7	---	---
FCA140	5.87 litres	I	---	AP*7	---	---	---
FCA170 (identical to FCA140)	5.87 litres	I	---	AP*7	---	---	---
FCA180	19.12 litres	II (>10)	---	NB*7	---	---	---
FCA185	19.12 litres	II (>10)	---	NB*7	---	---	---
FCA190 (identical to FCA185)	19.12 litres	II (>10)	---	NB*7	---	---	---

*6 - In Germany defined by the Ordinance on Industrial Safety and Health of September 27th, 2002 (BGBl. I p. 3777) §14 and §15

*7 - Authorised person (AP) or Notified Body (NB)

Other directives

Model	
All models	---