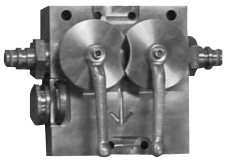
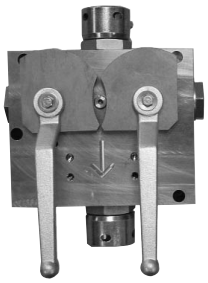
Coal Back Flush Filters/Strainers





Coal Back Flush Filter/Strainer

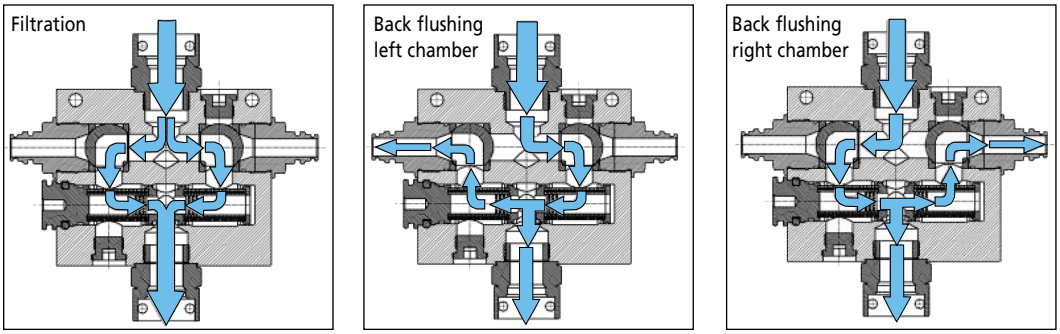
The back flushing high pressure CBF filter/strainer is an easy-to-operate back flushing filter/strainer for water-based fluids at operating pressures of up to 5000 psi (350 bar). The main application of this filter/strainer is to protect shield hydraulics in mining. However, other applications are possible, such as, in the rotary valve hydraulics of pumped storage hydrostations, paint filtration or the protection of high pressure nozzles. Three sizes are available and flow rates of up to 210 gpm (800 L/min) can be achieved.

The back flushing is carried out manually using switch levers. To some extent the filters/strainers can also be controlled electrohydraulically or purely hydraulically. Robust filter/strainer materials in stainless steel are available, such as slotted tube or multi-layered wire mesh.

Construction and Function

Sizes CBF-1 and CBF-2 consist of stainless steel housing blocks which can be mounted to the supporting structure by means of the bore holes in the corners of the housing.

On the CBF-4, just the filter head is designed as a housing block; in this version the elements are in two screw-in cylinder bowls. The inlet and outlet connections are opposite each other (inline model). The back flushing ports are on the side. Ensure connection of the back flushing lines to these ports is secure because of the high pressures. A slotted tube or a wire mesh element, which is divided into two filter chambers, is fitted in the filters/strainers CBF-1 and CBF-2, respectively. In the CBF-4 two divided elements are fitted. Each filter chamber or each element is back flushed manually by switching a ball valve.



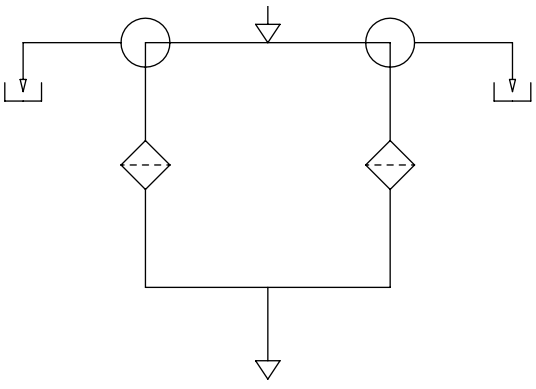
Filtration

The fluid to be filtered flows through both chambers of the filter element from the outside to the inside. The filtrate flows through a T-piece between the two element halves to the outside. Both switch levers indicate the direction of filtration.

Back Flushing

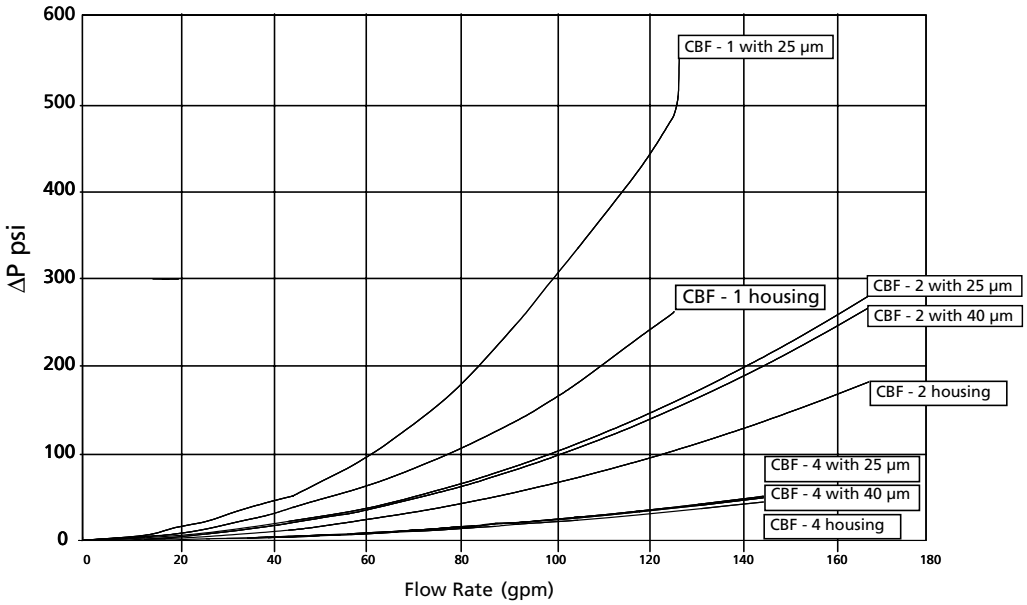
Both filter chambers are back flushed one after the other using their own filtrate when the relevant lever is switched. When back flushing, the flow is reversed into the relevant element segment and removes the contamination from the surface. During the back flushing process, filtration continues via the other half of the element. The flushing time should be 1 to 2 seconds per element half.

In order to prevent both filter chambers being flushed at the same time, the change-over lever is fitted with a rotating lock mechanism. This prevents any interruption to the flow of filtered fluid as a result of incorrect operation.



Circuit Diagram

Filter/Strainer Calculation / Sizing



- For slotted tube filter inserts of 100 µm and 200 µm, the pressure drop curves apply, similar to the 25 µm and 40 µm wire mesh.
- When using 50 µm slotted tube filter inserts, 30% more pressure drop must be added to the valid curves.
- Please take into account the lower permissible differential pressure of the elements when using slotted tube elements.

In order to be able to size the filter/strainer correctly, the following design data should be available:

- Flow rate
- Materials
- Required filtration rating
- Type of contamination
- Operating temperature – must be below the boiling point of the medium
- Type of medium
- Viscosity
- Particulate loading in the fluid
- Operating pressure
- Integration of the CBF in the whole system

Filter sizes 1 and 2 are designed as a back-up filter/strainer for low levels of solid particle contamination. Due to the greater filter area, the CBF-4 is also suitable for higher particle concentrations. As with all back flushing filters/strainers, fibers and sticky substances cause problems when back flushing with the filter/strainer, too.

Use the flow rate curves for water and emulsion applications to calcuate the filter/strainer. The initial pressure drop for clean elements can be selected between 2 and 72 psi (0.1 and 4 bar) depending on the operating pressure and level of contamination.

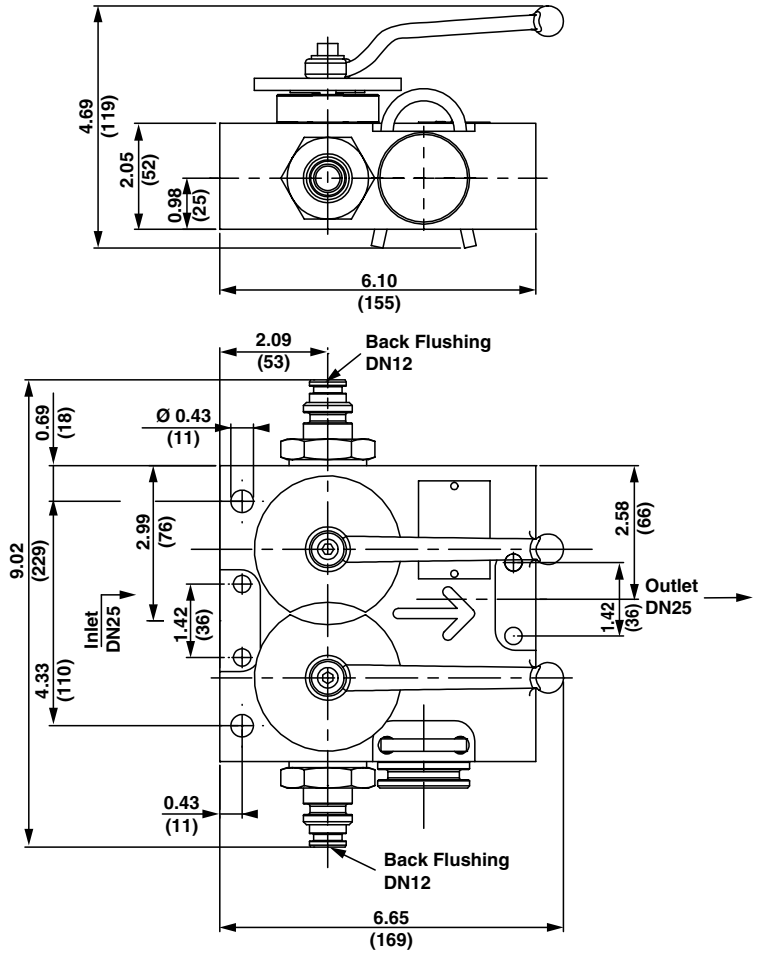
The shield hydraulics in coal mining represent a special case.

For this application, initial differential pressures of up to 360 psi (25 bar) are usual.

Coal Back Flush Filters/Strainers

CBF1

105 gpm
400 L/min



NOTES:
1. Metric dimensions in ( ).
2. Drawings may change without notice. Contact Factory for certified drawings.

Specifications

Max. Flow Rate:	105 gpm (400 L/min)
Max. Operating Pressure:	5000 psi (350 bar)
Control Pressure:	2200-5000 psi (150-350 bar)
Max. Differential Pressure:	5000 psi (350 bar)
Max. Operating Temperature:	194°F (90°C)
Weight:	18.7 lbs. (8.5 kg)
Housing Volume:	0.06 gallons (0.25 L)
Back Flush Line Connection:	Steck O DN 12
Control Pressure Connection:	not available
Filtration Area:	7.75 in^2 (50 cm^2)

Coal Back Flush Filters/Strainers

How to Build a Valid Model Number for a Schroeder CBF1:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
CBF	1						

Example: *NOTE: One option per box*

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	
CBF	1	N1	S	0	N	1	1C	= **CBF1N1S0N11C**

BOX 1

Filter Series
CBF

BOX 2

Size (flow)
1 = 105 gpm (400 L/min)

BOX 3

Connection		
S25	=	Steck O (staple lock) DN25
S50	=	Steck O (staple lock) DN50
G1	=	1" female G thread
M25	=	25 mm female metric thread
M50	=	50 mm female metric thread
N1	=	1" female NPT
N2	=	2" female NPT

BOX 4

Material		
S	=	Stainless Steel (5000 psi)
C	=	Stainless Steel/Brass Combination

BOX 5

Gauges	
0	= No gauge

BOX 6

Seal Material		
N	=	NBR
V	=	Viton

BOX 7

Controls		
1	=	Manual

BOX 8

Element Micron Rating		
25	=	25 micron wire mesh
40	=	40 micron wire mesh
50	=	50 micron slotted tube
60	=	60 micron wire mesh
1C	=	100 micron slotted tube
2C	=	200 micron slotted tube

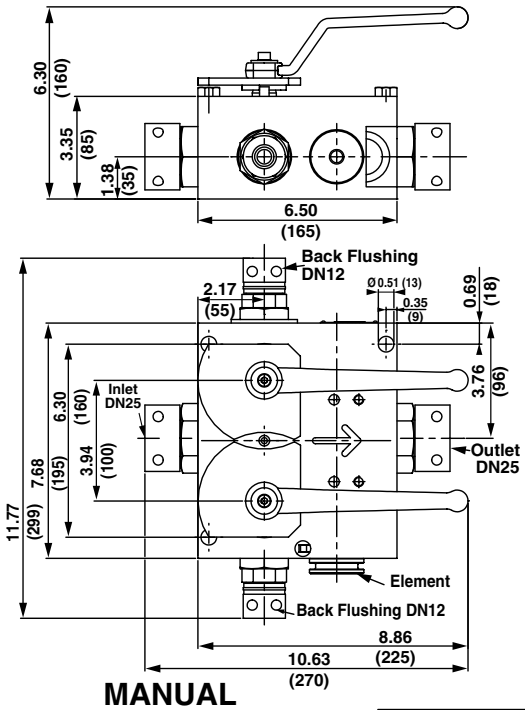
*Shaded selections are preferred order codes that designate shorter lead times.

Filter Model Number Selection

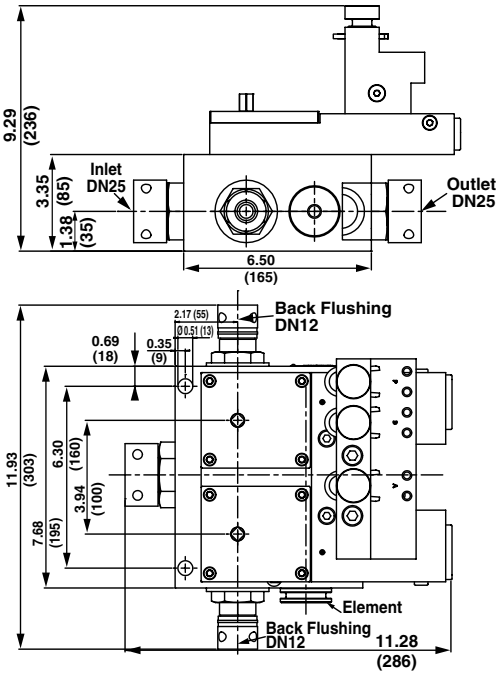
Coal Back Flush Filters/Strainers

CBF2

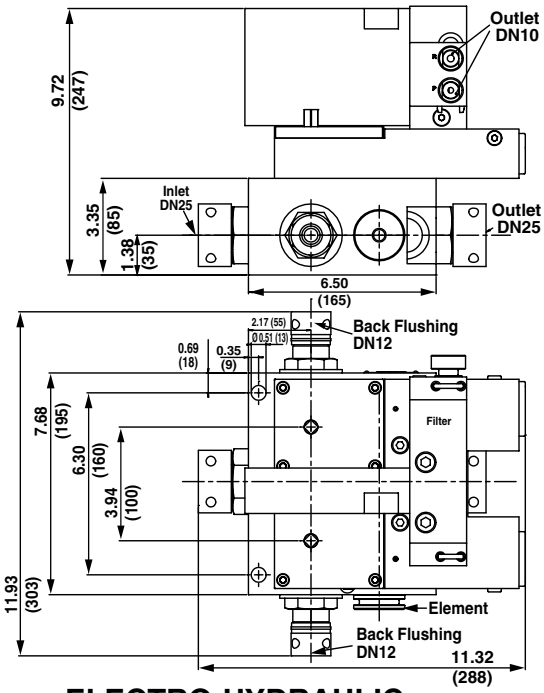
159 gpm
600 L/min



MANUAL



HYDRAULIC



ELECTRO-HYDRAULIC

NOTES:
1. Metric dimensions in ( ).
2. Drawings may change without notice. Contact Factory for certified drawings.

Specifications

Max. Flow Rate:	160 gpm (600 L/min)
Max. Operating Pressure:	5000 psi (350 bar)
Control Pressure:	2200-5000 psi (150-350 bar)
Max. Differential Pressure:	5000 psi (350 bar)
Max. Operating Temperature:	194°F (90°C)
Weight:	Stainless Steel: 45 lbs. (20.5 kg) Brass: 84 lbs. (38 kg)
Housing Volume:	0.11 gallons (0.42 L)
Back Flush Line Connection:	Steck O DN 12
Control Pressure Connection:	Steck O DN 10
Filtration Area:	12.4 in² (80 cm²)

Coal Back Flush Filters/Strainers

How to Build a Valid Model Number for a Schroeder CBF2:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
CBF –	2 –		–		–		–		–		–	

Example: *NOTE: One option per box*

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	
CBF –	2 –	N1 –	S –	0 –	N –	1 –	1C	= **CBF2N1S0N11C**

BOX 1

Filter Series
CBF

BOX 2

Size (flow)
2 = 160 gpm (600 L/min)

BOX 3

Connection
S25 = Steck O (staple lock) DN25
S50 = Steck O (staple lock) DN50
G1 = 1" female G thread
M25 = 25 mm female metric thread
M50 = 50 mm female metric thread
N1 = 1" female NPT
N2 = 2" female NPT

BOX 4

Material
S = Stainless Steel (5000 psi)
C = Stainless Steel/Brass Combination

BOX 5

Gauges
0 = No gauge

BOX 6

Seal Material
N = NBR
V = Viton

BOX 7

Controls
1 = Manual
2 = Hydraulic
3 = Electric/Hydraulic

BOX 8

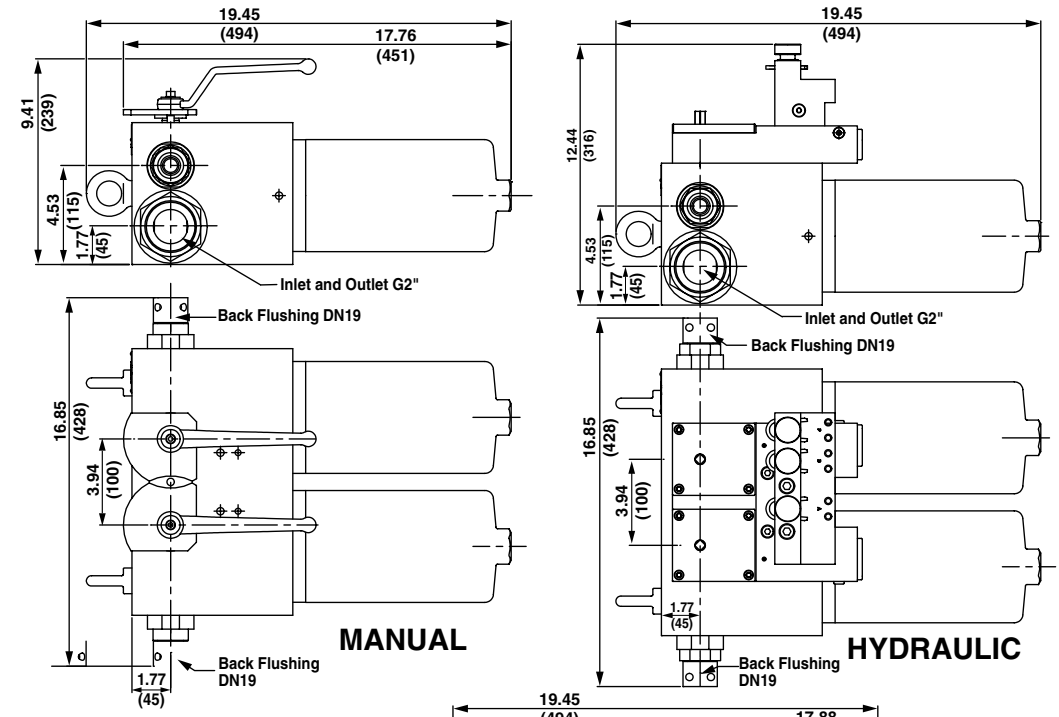
Element Micron Rating
25 = 25 micron wire mesh
40 = 40 micron wire mesh
50 = 50 micron slotted tube
60 = 60 micron wire mesh
1C = 100 micron slotted tube
2C = 200 micron slotted tube

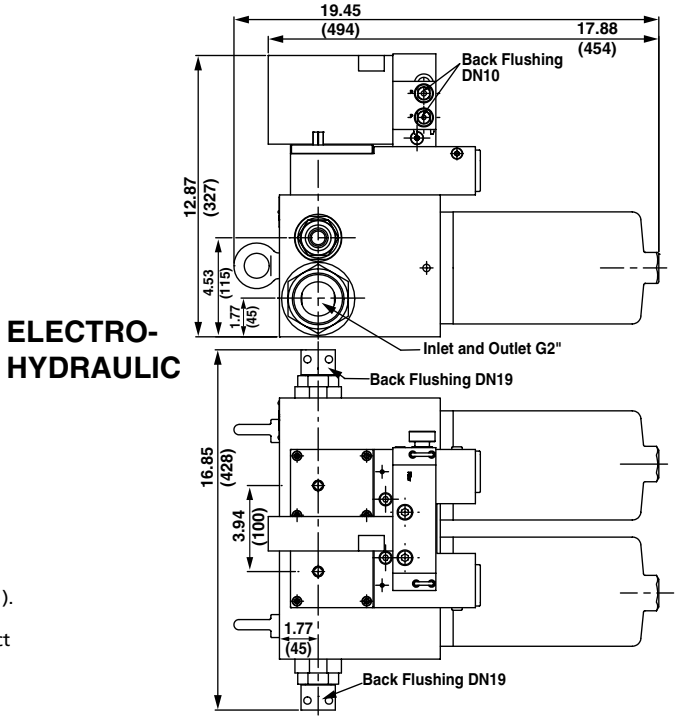
*Shaded selections are preferred order codes that designate shorter lead times.

Coal Back Flush Filters/Strainers

CBF4

210 gpm
800 L/min





NOTES:
1. Metric dimensions in ( ).
2. Drawings may change without notice. Contact Factory for certified drawings.

Specifications

Max. Flow Rate:	210 gpm (800 L/min)
Max. Operating Pressure:	Stainless Steel: 5000 psi (350 bar) Brass: 2900 psi (200 bar)
Control Pressure:	2200-5000 psi (150-350 bar)
Max. Differential Pressure:	5000 psi (350 bar)
Max. Operating Temperature:	194°F (90°C)
Weight:	Stainless Steel: 210 lbs. (95 kg) Brass: 247 lbs. (112 kg)
Housing Volume:	1.1 gallons (4.2 L)
Back Flush Line Connection:	Steck O DN 19
Control Pressure Connection:	Steck O DN 10
Filtration Area:	170 in^2 (1094 cm^2)

Coal Back Flush Filters/Strainers

How to Build a Valid Model Number for a Schroeder CBF2:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8
CBF	4						

Example: *NOTE: One option per box*

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	
CBF	4	N2	S	0	N	1	1C	= **CBF4N2S0N11C**

BOX 1

Filter Series
CBF

BOX 2

Size (flow)
4 = 210 gpm (800 L/min)

BOX 3

Connection	
S25	= Steck O (staple lock) DN25
S50	= Steck O (staple lock) DN50
G1	= 1" female G thread
M25	= 25 mm female metric thread
M50	= 50 mm female metric thread
N1	= 1" female NPT
N2	= 2" female NPT

BOX 4

Material	
S	= Stainless Steel (5000 psi)
B	= Brass (2900 psi max.)
C	= Stainless Steel/Brass Combination

BOX 5

Gauges	
0	= No gauge
1	= 2 pressure gauges (0-8700 psi)
2	= 2 pressure gauges (0-8700 psi) w/protective cover

BOX 6

Seal Material	
N	= NBR
V	= Viton

BOX 7

Controls	
1	= Manual
2	= Hydraulic
3	= Electric/Hydraulic

BOX 8

Element Micron Rating	
25	= 25 micron wire mesh
40	= 40 micron wire mesh
50	= 50 micron slotted tube
60	= 60 micron wire mesh
1C	= 100 micron slotted tube
2C	= 200 micron slotted tube

*Shaded selections are preferred order codes that designate shorter lead times.