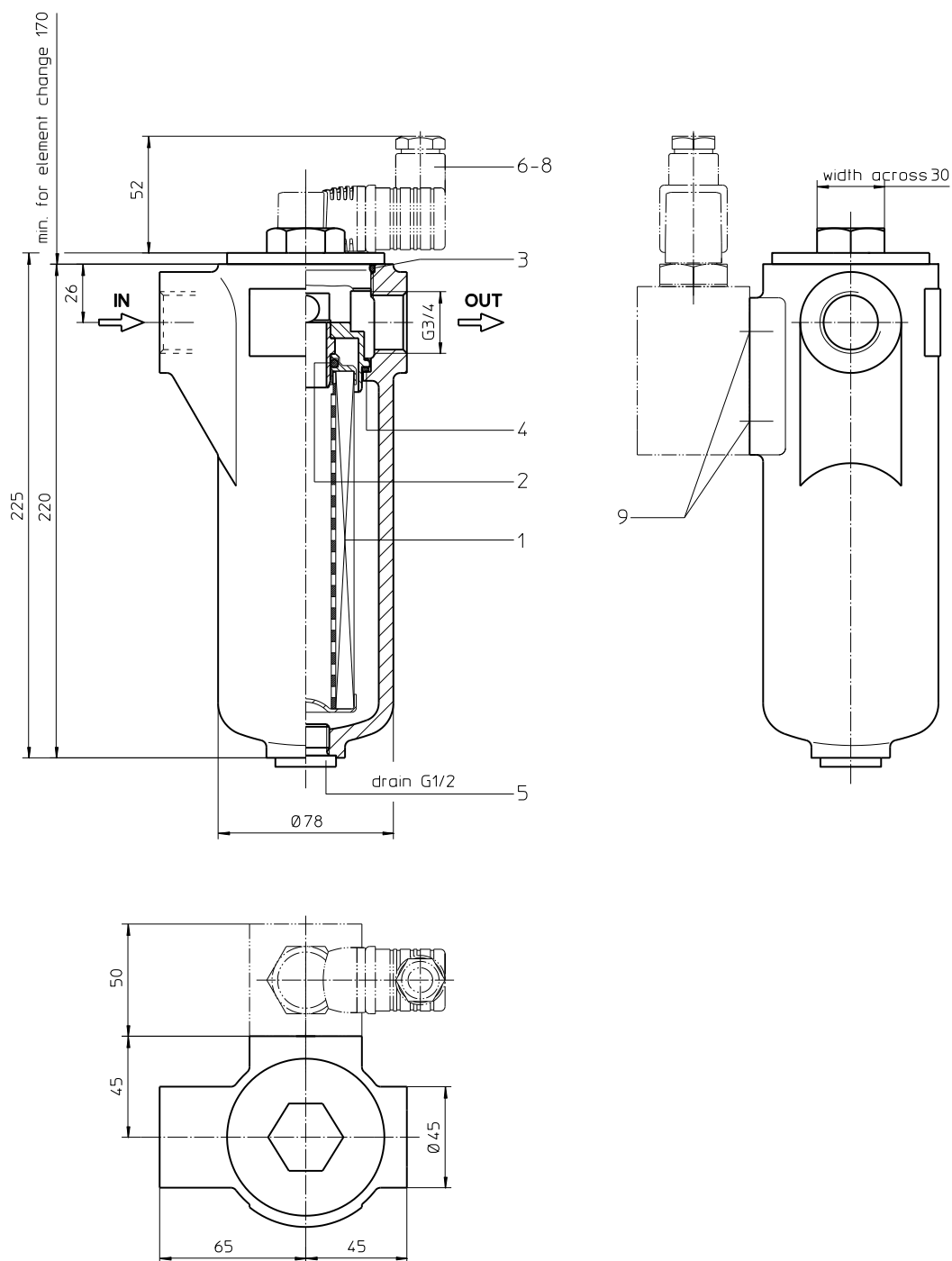


Series LF 63

DN20 PN25



Weight: approx. 2,5 kg

Dimensions: mm

Designs and performance values are subject to change.

Pressure Filter

Series LF 63

DN20 PN25

Description:

In-line filters of the type LF 63 are suitable for a working pressure up to 25 bar. Pressure peaks are absorbed with a sufficient margin of safety. It can be used as suction filter, pressure filter and return-line filter.

The filter element consists of star-shaped, pleated filter material, which is supported on the inside by a perforated core tube and is bonded to the end caps with a high-quality adhesive. The flow direction is from outside to inside.

For cleaning the stainless steel mesh element (see special leaflets 21070-4 and 39448-4) or changing the filter element, remove the cover and take out the element. The mesh elements are not guaranteed to maintain 100% performance after cleaning.

For filtration finer than 40 µm, use the disposable elements made of microglass. Filter elements as fine as 5 µm(c) are available; finer filter elements are available upon request.

Eaton filter elements are known for a high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.

Eaton filter can be used for petroleum-based fluids, HW emulsions, water glycols, most synthetic fluids and lubrication fluids. Consult factory for specific fluid applications.

The internal valve is integrated in the filter cover. After reaching the bypass pressure setting, the bypass valve will send unfiltered partial flow around the filter.

Ship classifications available upon request.

Type index:

Complete filter: (ordering example)

LF.	63.	10VG.	30.	E.	P.	-.	G.	4.	-.	-.	-.	AE
1	2	3	4	5	6	7	8	9	10	11	12	13

- 1 series:**
LF = in-line filter
- 2 nominal size:** 63
- 3 filter-material:**
130G, 80G, 40G, 25G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
25API, 10API microglass according to API
- 4 filter element collapse rating:**
30 = Δp 30 bar
- 5 filter element design:**
E = single end open
- 6 sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)
- 7 filter element specification:**
- = standard
VA = stainless steel
IS06 = for HFC application, see sheet-no. 31601
- 8 process connection:**
G = thread according to DIN 3852 T2
- 9 process connection size:**
4 = G ¾
- 10 filter housing specification:**
- = standard
- 11 pressure vessel specification:**
- = standard (PED 2014/68/EU)
- 12 internal valve:**
- = without
S1 = with bypass valve Δp 3,5 bar
- 13 clogging indicator or clogging sensor:**
- = without
AOR = visual, see sheet-no.1606
AOC = visual, see sheet-no.1606
AE = visual-electric, see sheet-no.1615
VS5 = electronic, see sheet-no.1619

To add an indicator/sensor to your filter, use the corresponding indicator data sheet to find the indicator details and add them to the filter assembly model code.

Filter element: (ordering example)

01NL.	63.	10VG.	30.	E.	P.	-
1	2	3	4	5	6	7

- 1 series:**
01NL = standard filter element according to DIN 24550, T3
- 2 nominal size:** 63
- 3 - 7** see type index complete filter

Technical data:

operating temperature:	-10 °C to +100 °C
operating medium:	mineral oil, other media on request
max. operating pressure:	25 bar
test pressure:	50 bar
process connection:	thread connection according to DIN 3852 T2
housing material:	aluminium-cast, steel (filter cover)
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measuring connections:	G ¼
drain connection:	G ½
volume tank:	0,7 l

Classified under the Pressure Equipment Directive 2014/68/EU for mineral oil (fluid group 2), Article 4, Para. 3.
Classified under ATEX Directive 2014/34/EU according to specific application (see questionnaire sheet-no. 34279-4).

Pressure drop flow curves:

Filter calculation/sizing

The pressure drop of the assembly at a given flow rate Q is the sum of the housing Δp and the element Δp and is calculated as follows:

$$\Delta p_{\text{assembly}} = \Delta p_{\text{housing}} + \Delta p_{\text{element}}$$
$$\Delta p_{\text{housing}} = (\text{see } \Delta p = f(Q) - \text{characteristics})$$

$$\Delta p_{\text{Element}} (\text{mbar}) = Q \left(\frac{\text{l}}{\text{min}} \right) \times \frac{\text{MSK} (\text{mbar})}{10} \left(\frac{\text{l}}{\text{min}} \right) \times v \left(\frac{\text{mm}^2}{\text{s}} \right) \times \frac{p}{0,876} \left(\frac{\text{kg}}{\text{dm}^3} \right)$$

For ease of calculation our Filter Selection tool is available online at
www.eatonpowersource.com/calculators/filtration/

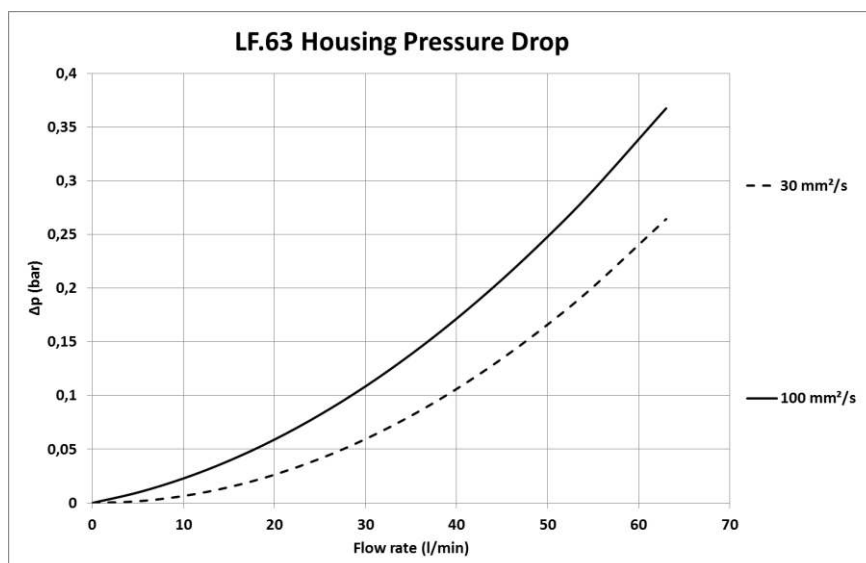
Material gradient coefficients (MSK) for filter elements

The material gradient coefficients in mbar/(l/min) apply to mineral oil (HLP) with a density of 0,876 kg/dm³ and a kinematic viscosity of 30 mm²/s (139 SUS). The pressure drop changes proportionally to the change in kinematic viscosity and density.

LF	VG					G			API	
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10API	25API
63	3,441	2,389	1,530	1,332	0,910	0,0924	0,0862	0,0591	1,085	0,568

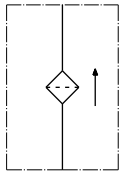
$\Delta p = f(Q)$ – characteristics according to ISO 3968

The pressure drop characteristics apply to mineral oil (HLP) with a density of 0,876 kg/dm³. The pressure drop changes proportionally to the density.

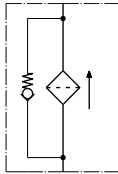


Symbols:

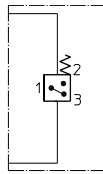
without indicator



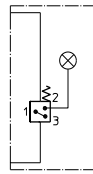
with
bypass valve



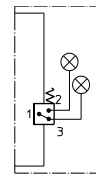
with electric
indicator
AE 30 and AE 40



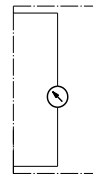
with visual-electric
indicator
AE 50 and AE 62



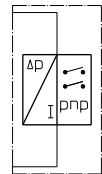
with visual-electric
indicator
AE 70 and AE 80



with visual
indicator
AOR/AOC



with electronic
sensor
VS5



Spare parts:

item	qty.	designation	dimension	article no.	
1	1	filter element	01NL.63...		
2	1	O-ring	22 x 3,5	304341 (NBR)	304392 (FPM)
3	1	O-ring	56 x 3	305072 (NBR)	305322 (FPM)
4	1	O-ring	48 x 3	304357 (NBR)	304404 (FPM)
5	1	screw plug	G 1/2	304678	
6	1	clogging indicator, visual	AOR or AOC	see sheet no. 1606	
7	1	clogging indicator, visual-electric	AE	see sheet no. 1615	
8	1	clogging indicator, electronic	VS5	see sheet no. 1619	
9	2	screw plug	G 1/8	305496	

item 9 execution only without clogging indicator or clogging sensor

Test methods:

Filter elements are tested according to the following ISO standards:

ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics
ISO 16889	Multi-pass method for evaluating filtration performance

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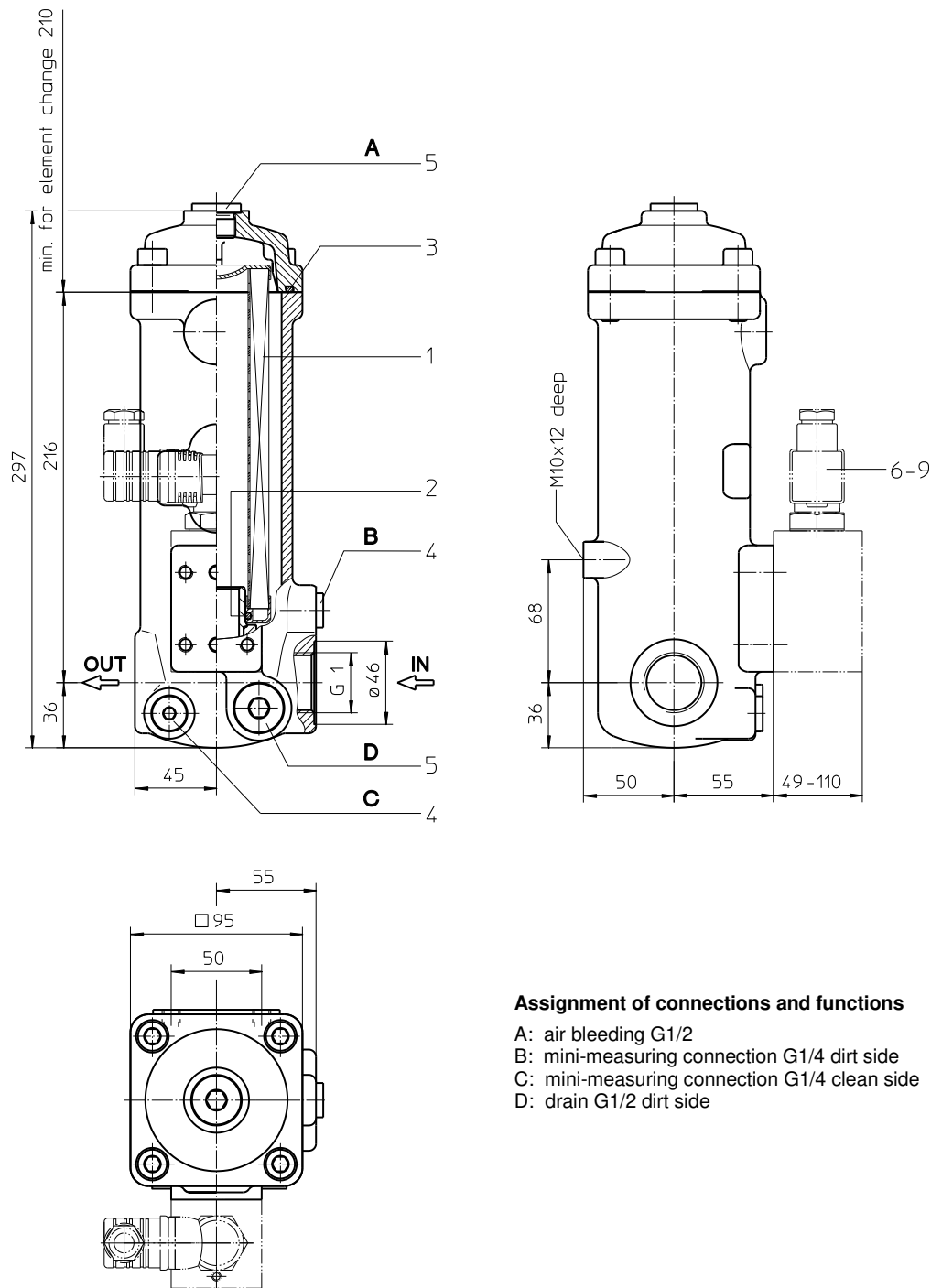
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Series LF 101
DN25 PN32



Weight: approx. 4 kg

Dimensions: mm

Designs and performance values are subject to change.

Pressure Filter

Series LF 101

DN25 PN32

Description:

In-line filters of the type LF 101 are suitable for a working pressure up to 32 bar. Pressure peaks are absorbed with a sufficient margin of safety. It can be used as suction filter, pressure filter and return-line filter.

The filter element consists of star-shaped, pleated filter material, which is supported on the inside by a perforated core tube and is bonded to the end caps with a high-quality adhesive. The flow direction is from outside to inside.

For cleaning the stainless steel mesh element (see special leaflets 21070-4 and 39448-4) or changing the filter element, remove the cover and take out the element. The mesh elements are not guaranteed to maintain 100% performance after cleaning.

For filtration finer than 40 µm, use the disposable elements made of microglass. Filter elements as fine as 5 µm(c) are available; finer filter elements are available upon request.

Eaton filter elements are known for a high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.

Eaton filter can be used for petroleum-based fluids, HW emulsions, water glycols, most synthetic fluids and lubrication fluids. Consult factory for specific fluid applications.

Ship classifications available upon request.

Type index:

Complete filter: (ordering example)

LF. 101. 10VG. 16. E. P. - . G. 5. - . - . - . AE

1	2	3	4	5	6	7	8	9	10	11	12	13
---	---	---	---	---	---	---	---	---	----	----	----	----

- 1 series:**
LF = in-line filter
- 2 nominal size:** 101
- 3 filter-material:**
130G, 80G, 40G, 25G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
25API, 10API microglass according to API
- 4 filter element collapse rating:**
16 = Δp 16 bar
- 5 filter element design:**
E = single end open
S = with bypass valve Δp 2,0 bar
S1 = with bypass valve Δp 3,5 bar
- 6 sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)
- 7 filter element specification:**
- = standard
VA = stainless steel
IS06 = for HFC application, see sheet-no. 31601
- 8 process connection:**
G = thread according to ISO 228
- 9 process connection size:**
5 = G1
- 10 filter housing specification:**
- = standard
- 11 pressure vessel specification:**
- = standard (PED 2014/68/EU)
- 12 internal valve:**
- = without
- 13 clogging indicator or clogging sensor:**
- = without
AE = visual-electric, see sheet-no.1609
OP = visual, see sheet-no.1628
OE = visual-electric, see sheet-no.1628
VS5 = electronic, see sheet-no.1641

To add an indicator/sensor to your filter, use the corresponding indicator data sheet to find the indicator details and add them to the filter assembly model code.

Filter element: (ordering example)

01N. 100. 10VG. 16. E. P. -

1	2	3	4	5	6	7
---	---	---	---	---	---	---

- 1 series:**
01N = filter element according to company standard
- 2 nominal size:** 100
- 3 - 7** see type index complete filter

Technical data:

operating temperature:	-10 °C to +100 °C
operating medium:	mineral oil, other media on request
max. operating pressure:	32 bar
test pressure:	64 bar
process connection:	thread connection according to ISO 228
housing material:	aluminium-cast
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measuring connections:	G 1/4
drain- and bleeder connections:	G 1/2
volume tank:	1,0 l

Classified under the Pressure Equipment Directive 2014/68/EU for mineral oil (fluid group 2), Article 4, Para. 3.
Classified under ATEX Directive 2014/34/EU according to specific application (see questionnaire sheet-no. 34279-4).

Pressure drop flow curves:

Filter calculation/sizing

The pressure drop of the assembly at a given flow rate Q is the sum of the housing Δp and the element Δp and is calculated as follows:

$$\Delta p_{\text{assembly}} = \Delta p_{\text{housing}} + \Delta p_{\text{element}}$$

$$\Delta p_{\text{housing}} = (\text{see } \Delta p = f(Q) - \text{characteristics})$$

$$\Delta p_{\text{Element}} (\text{mbar}) = Q \left(\frac{\text{l}}{\text{min}} \right) \times \frac{\text{MSK}}{10} \left(\frac{\text{mbar}}{\text{l/min}} \right) \times v \left(\frac{\text{mm}^2}{\text{s}} \right) \times \frac{p}{0,876} \left(\frac{\text{kg}}{\text{dm}^3} \right)$$

For ease of calculation our Filter Selection tool is available online at

www.eatonpowersource.com/calculators/filtration/

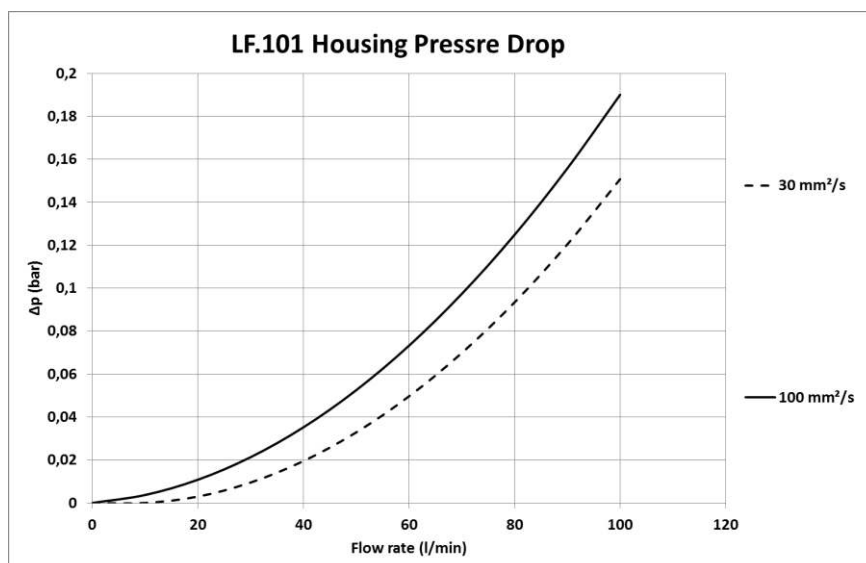
Material gradient coefficients (MSK) for filter elements

The material gradient coefficients in mbar/(l/min) apply to mineral oil (HLP) with a density of 0,876 kg/dm³ and a kinematic viscosity of 30 mm²/s (139 SUS). The pressure drop changes proportionally to the change in kinematic viscosity and density.

LF	VG					G			API	
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10API	25API
101	2,052	1,425	0,912	0,794	0,542	0,0717	0,0531	0,0496	0,475	0,217

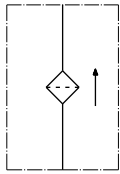
$\Delta p = f(Q)$ – characteristics according to ISO 3968

The pressure drop characteristics apply to mineral oil (HLP) with a density of 0,876 kg/dm³. The pressure drop changes proportionally to the density.

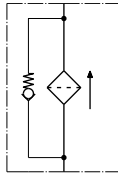


Symbols:

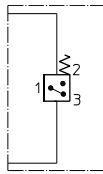
without indicator



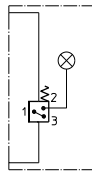
with
bypass valve



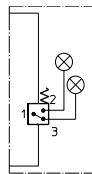
with electric
indicator
AE 30 and AE 40



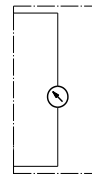
with visual-electric
indicator
AE 50 and AE 62



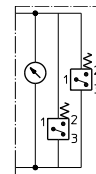
with visual-electric
indicator
AE 70 and AE 80



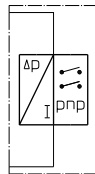
with visual
indicator
OP



with visual-electric
indicator
OE



with electronic
sensor
VS5



Spare parts:

item	qty.	designation	dimension	article no.	
1	1	filter element	01N.100...		
2	1	O-ring	32 x 3,5	304378 (NBR)	304401 (FPM)
3	1	O-ring	76 x 4	305599 (NBR)	310291 (FPM)
4	2	screw plug	G 1/4	305003	
5	2	screw plug	G 1/2	304678	
6	1	clogging indicator, visual	OP	see sheet no. 1628	
7	1	clogging indicator, visual-electric	OE	see sheet no. 1628	
8	1	clogging indicator, visual-electric	AE	see sheet no. 1609	
9	1	clogging indicator, electronic	VS 5	see sheet no. 1641	

Test methods:

Filter elements are tested according to the following ISO standards:

ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics
ISO 16889	Multi-pass method for evaluating filtration performance

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For more information, please

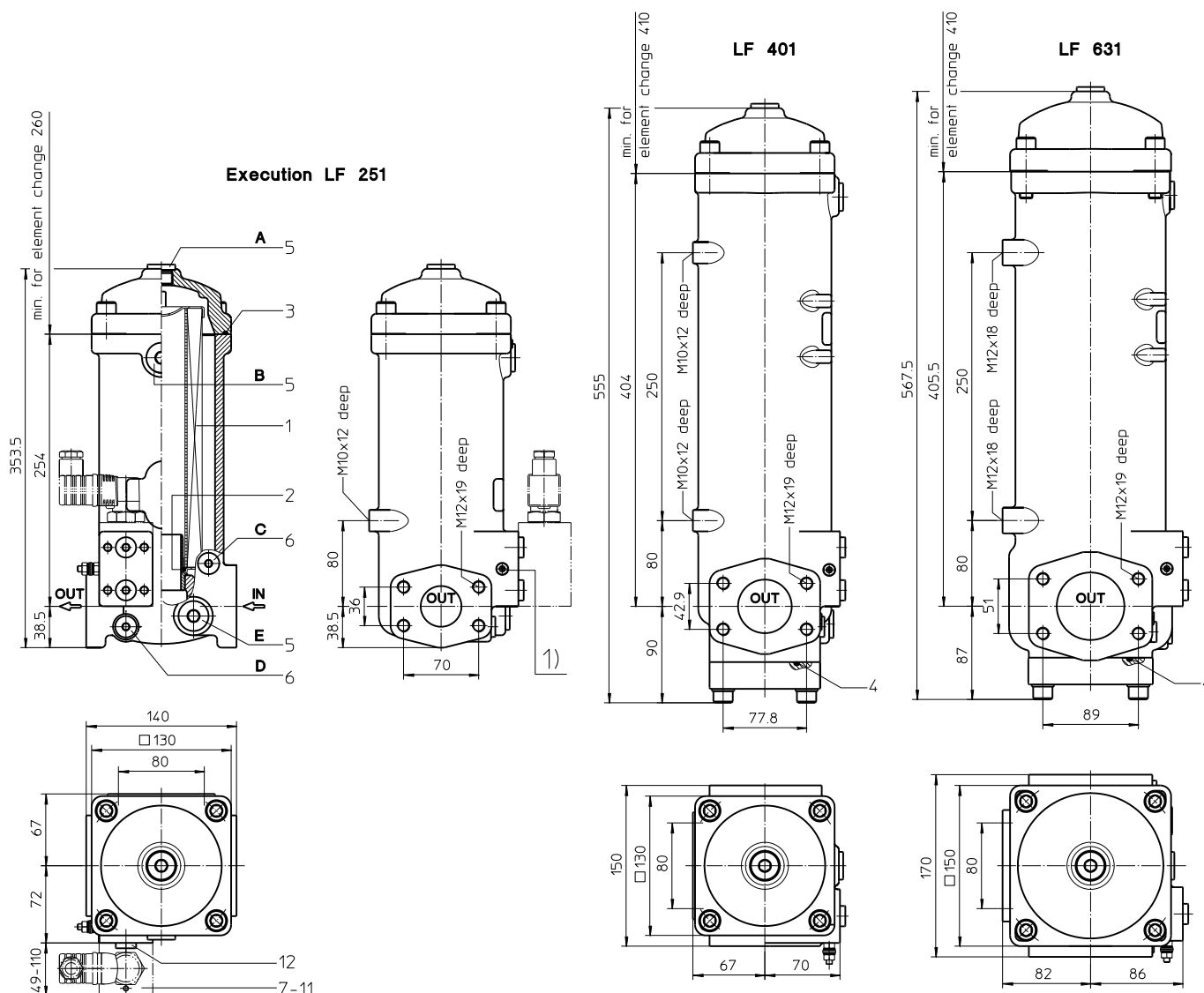
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Series LF 251-631

DN40-65 PN32



Assignment of connections and functions

- A: air bleeding G1/2
- B: air bleeding G1/2
- C: mini-measuring connection G1/4 dirt side
- D: mini-measuring connection G1/4 clean side
- E: drain G1/2 dirt side

- 1) Connection for the potential equalization, only for application in the explosive area.

Weight LF 251: approx. 14 kg
 Weight LF 401: approx. 21 kg
 Weight LF 631: approx. 29 kg

Dimensions: mm

Designs and performance values are subject to change.

Pressure Filter

Series LF 251-631

DN40-65 PN32

Description:

In-line filters of the type LF 251-631 are suitable for a working pressure up to 32 bar. Pressure peaks are absorbed with a sufficient margin of safety. It can be used as suction filter, pressure filter and return-line filter.

The filter element consists of star-shaped, pleated filter material, which is supported on the inside by a perforated core tube and is bonded to the end caps with a high-quality adhesive. The flow direction is from outside to inside.

For cleaning the stainless steel mesh element (see special leaflets 21070-4 and 39448-4) or changing the filter element, remove the cover and take out the element. The mesh elements are not guaranteed to maintain 100% performance after cleaning.

For filtration finer than 40 µm, use the disposable elements made of microglass. Filter elements as fine as 5 µm(c) are available; finer filter elements are available upon request.

Eaton filter elements are known for a high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.

Eaton filter can be used for petroleum-based fluids, HW emulsions, water glycols, most synthetic fluids and lubrication fluids. Consult factory for specific fluid applications.

Ship classifications available upon request.

Type index:

Complete filter: (ordering example)

LF. 401. 10VG. 30. E. P. -. FS. 8. -. -. -. AE

1	2	3	4	5	6	7	8	9	10	11	12	13
---	---	---	---	---	---	---	---	---	----	----	----	----

- 1 **series:**
LF = in-line filter
- 2 **nominal size:** 251, 401, 631
- 3 **filter-material:**
130G, 80G, 40G, 25G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
25API, 10API microglass according to API
- 4 **filter element collapse rating:**
30 = Δp 30 bar
- 5 **filter element design:**
E = single end open
S = with bypass valve Δp 2,0 bar
S1 = with bypass valve Δp 3,5 bar
- 6 **sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)
- 7 **filter element specification:**
- = standard
VA = stainless steel
IS06 = for HFC application, see sheet-no. 31601
- 8 **process connection:**
FS = SAE-flange connection 3000 PSI
- 9 **process connection size:**
7 = 1 ½" (LF 251)
8 = 2" (LF 401)
9 = 2 ½" (LF 631)
- 10 **filter housing specification:**
- = standard
- 11 **pressure vessel specification:**
- = standard (PED 2014/68/EU)
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217 (max. operating pressure 16 bar)
- 12 **internal valve:**
- = without
- 13 **clogging indicator or clogging sensor:**
- = without
AOR = visual, see sheet-no.1606
AOC = visual, see sheet-no.1606
AE = visual-electric, see sheet-no.1609
OP = visual, see sheet-no.1628
OE = visual-electric, see sheet-no.1628
VS5 = electronic, see sheet-no.1641

To add an indicator/sensor to your filter, use the corresponding indicator data sheet to find the indicator details and add them to the filter assembly model code.

Filter element: (ordering example)

01NL. 400. 10VG. 30. E. P. -

1	2	3	4	5	6	7
---	---	---	---	---	---	---

- 1 **series:**
01NL = standard filter element according to DIN 24550, T3
- 2 **nominal size:** 250, 400, 630
- 3 - 7 see type index complete filter

Accessories:

- gauge port and bleeder connection, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1651
- SAE-counter flanges, see sheet-no. 1652

Technical data:

operating temperature:	-10 °C to +100 °C
operating medium:	mineral oil, other media on request
max. operating pressure:	32 bar
test pressure:	64 bar
max. operating pressure with IS20:	16 bar
test pressure with IS20:	32 bar
process connection:	SAE-flange connection 3000 PSI
housing material:	EN-GJS-400-18-LT
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measuring connections:	G ¼
drain- and bleeder connections:	G ½
volume tank LF 251:	2,4 l
LF 401:	3,6 l
LF 631:	5,3 l

Classified under the Pressure Equipment Directive 2014/68/EU for mineral oil (fluid group 2), Article 4, Para. 3.
Classified under ATEX Directive 2014/34/EU according to specific application (see questionnaire sheet-no. 34279-4).

Pressure drop flow curves:

Filter calculation/sizing

The pressure drop of the assembly at a given flow rate Q is the sum of the housing Δp and the element Δp and is calculated as follows:

$$\Delta p_{\text{assembly}} = \Delta p_{\text{housing}} + \Delta p_{\text{element}}$$

$$\Delta p_{\text{housing}} = (\text{see } \Delta p = f(Q) - \text{characteristics})$$

$$\Delta p_{\text{Element}} (\text{mbar}) = Q \left(\frac{\text{l}}{\text{min}} \right) \times \frac{\text{MSK} \left(\frac{\text{mbar}}{\text{l/min}} \right)}{10} \times v \left(\frac{\text{mm}^2}{\text{s}} \right) \times \frac{p}{0,876} \left(\frac{\text{kg}}{\text{dm}^3} \right)$$

For ease of calculation our Filter Selection tool is available online at

www.eatonpowersource.com/calculators/filtration/

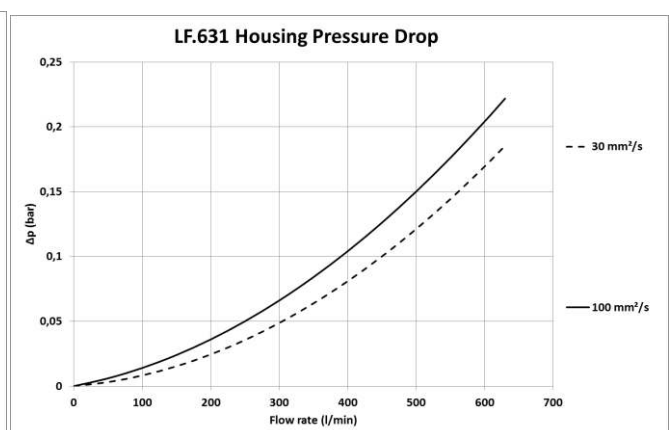
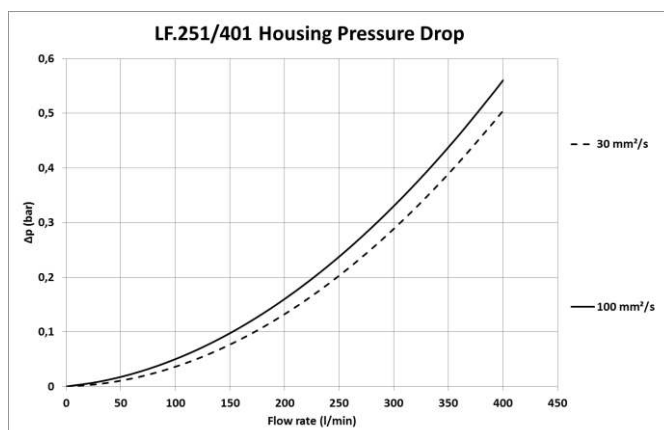
Material gradient coefficients (MSK) for filter elements

The material gradient coefficients in mbar/(l/min) apply to mineral oil (HLP) with a density of 0,876 kg/dm³ and a kinematic viscosity of 30 mm²/s (139 SUS). The pressure drop changes proportionally to the change in kinematic viscosity and density.

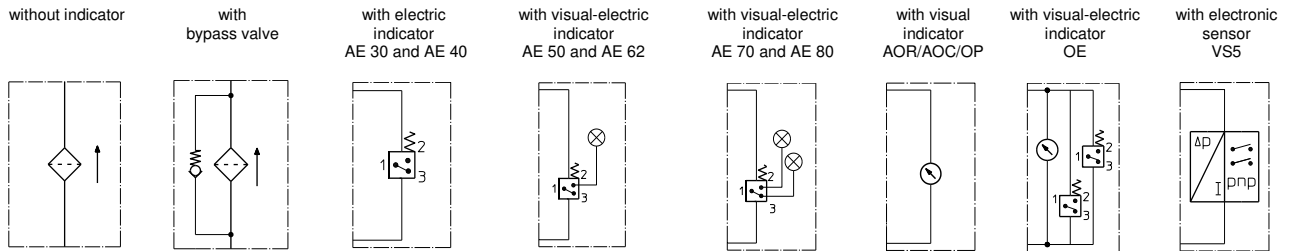
LF	VG					G				API	
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	130G	10API	25API
251	0,931	0,646	0,414	0,360	0,246	0,0277	0,0258	0,0177	0,0131	0,212	0,097
401	0,571	0,397	0,254	0,221	0,151	0,0169	0,0158	0,0108	0,0080	0,130	0,059
631	0,436	0,303	0,194	0,169	0,115	0,0142	0,0132	0,0091	0,0067	0,099	0,045

$\Delta p = f(Q)$ – characteristics according to ISO 3968

The pressure drop characteristics apply to mineral oil (HLP) with a density of 0,876 kg/dm³. The pressure drop changes proportionally to the density.



Symbols:



Spare parts:

item	designation	qty.	dimension and article no. LF 251	qty.	dimension and article no. LF 401	qty.	dimension and article no. LF 631
1	filter element	1	01NL.250...	1	01NL.400...	1	01NL.630...
2	O-ring	1	40 x 3 304389 (NBR) 304391 (FPM)	1	40 x 3 304389 (NBR) 304391 (FPM)	1	60 x 3,5 304377 (NBR) 304398 (FPM)
3	O-ring	1	115 x 3 303963 (NBR) 307762 (FPM)	1	115 x 3 303963 (NBR) 307762 (FPM)	1	125 x 3 306025 (NBR) 307358 (FPM)
4	O-ring (LF 401/631)	-	-	1	56,75 x 3,53 306035 (NBR) 310264 (FPM)	1	69,45 x 3,53 305868 (NBR) 307357 (FPM)
5	screw plug	3	G 1/2 304678	3	G 1/2 304678	3	G 1/2 304678
6	screw plug	2	G 1/4 305003				
7	clogging indicator, visual		AOR or AOC see sheet no. 1606				
8	clogging indicator, visual	1	OP see sheet no. 1628				
9	clogging indicator, visual-electric	1	OE see sheet no. 1628				
10	clogging indicator, visual-electric	1	AE see sheet no. 1609				
11	clogging indicator, electronic	1	VS 5 see sheet no. 1641				
12	screw plug	2	G 1/4 305003				

item 12 execution only without clogging indicator or clogging sensor

Test methods:

Filter elements are tested according to the following ISO standards:

ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics
ISO 16889	Multi-pass method for evaluating filtration performance

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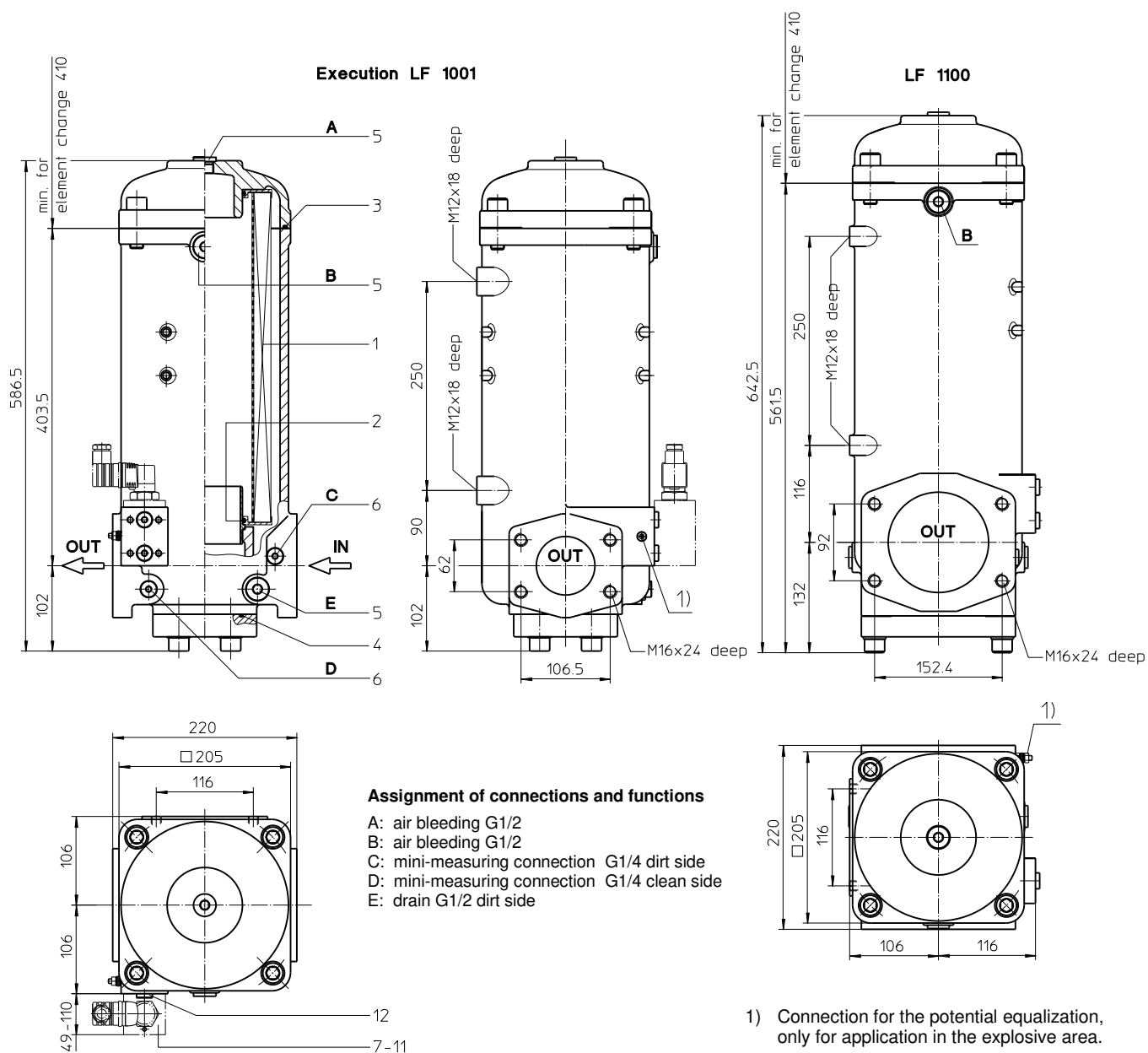
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Series LF 1001-1100

DN80-125 PN32



Weight LF 1001: approx. 47 kg
Weight LF 1100: approx. 57 kg

Dimensions: mm

Designs and performance values are subject to change.

Pressure Filter

Series LF 1001-1100

DN80-125 PN32

Description:

In-line filters of the type LF 1001-1100 are suitable for a working pressure up to 32 bar. Pressure peaks are absorbed with a sufficient margin of safety. It can be used as suction filter, pressure filter and return-line filter.

The filter element consists of star-shaped, pleated filter material, which is supported on the inside by a perforated core tube and is bonded to the end caps with a high-quality adhesive. The flow direction is from outside to inside.

For cleaning the stainless steel mesh element (see special leaflets 21070-4 and 39448-4) or changing the filter element, remove the cover and take out the element. The mesh elements are not guaranteed to maintain 100% performance after cleaning.

For filtration finer than 40 µm, use the disposable elements made of microglass. Filter elements as fine as 5 µm(c) are available; finer filter elements are available upon request.

Eaton filter elements are known for a high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.

Eaton filter can be used for petroleum-based fluids, HW emulsions, water glycols, most synthetic fluids and lubrication fluids. Consult factory for specific fluid applications.

The internal valves are integrated in the filter cover. After reaching the bypass pressure setting, the bypass valve will send unfiltered partial flow around the filter.

Ship classifications available upon request.

Type index:

Complete filter: (ordering example)

LF.	1001.	10VG.	10.	B.	P.	-.	FS.	A.	-.	-.	-.	AE
1	2	3	4	5	6	7	8	9	10	11	12	13

- 1 series:**
LF = in-line filter
- 2 nominal size:** 1001, 1100
- 3 filter-material:**
130G, 80G, 40G, 25G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
25API, 10API microglass according to API
- 4 filter element collapse rating:**
10 = Δp 10 bar
- 5 filter element design:**
B = both sides open
- 6 sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)
- 7 filter element specification:**
- = standard
VA = stainless steel
IS06 = for HFC application, see sheet-no. 31601
- 8 process connection:**
FS = SAE-flange connection 3000 PSI
- 9 process connection size:**
A = 3" (LF 1001)
C = 5" (LF 1100)
- 10 filter housing specification:**
- = standard
- 11 pressure vessel specification:**
- = standard (PED 2014/68/EU)
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217 (max. operating pressure 16 bar)
- 12 internal valve:**
- = without
S = with bypass valve Δp 2,0 bar
S1 = with bypass valve Δp 3,5 bar
- 13 clogging indicator or clogging sensor:**
- = without
AOR = visual, see sheet-no.1606
AOC = visual, see sheet-no.1606
AE = visual-electric, see sheet-no.1609
OP = visual, see sheet-no.1628
OE = visual-electric, see sheet-no.1628
VS5 = electronic, see sheet-no.1641

To add an indicator/sensor to your filter, use the corresponding indicator data sheet to find the indicator details and add them to the filter assembly model code.

Filter element: (ordering example)

01NR.	1000.	10VG.	10.	B.	P.	-
1	2	3	4	5	6	7

- 1 series:**
01NR = standard-return-line filter element according to DIN 24550, T4
- 2 nominal size:** 1000
- 3 - 7** see type index complete filter

Accessories:

- gauge port and bleeder connection, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1651
- SAE-counter flanges, see sheet-no. 1652

Technical data:

operating temperature:	-10 °C to +100 °C
operating medium:	mineral oil, other media on request
max. operating pressure:	32 bar
test pressure:	64 bar
max. operating pressure with IS20:	16 bar
test pressure with IS20:	32 bar
process connection:	SAE-flange connection 3000 PSI
housing material:	EN-GJS-400-18-LT
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measuring connections:	G ¼
drain- and bleeder connections:	G ½
volume tank LF 1001/1100:	11,5 l

Classified under the Pressure Equipment Directive 2014/68/EU for mineral oil (fluid group 2), Article 4, Para. 3.
Classified under ATEX Directive 2014/34/EU according to specific application (see questionnaire sheet-no. 34279-4).

Pressure drop flow curves:

Filter calculation/sizing

The pressure drop of the assembly at a given flow rate Q is the sum of the housing Δp and the element Δp and is calculated as follows:

$$\Delta p_{\text{assembly}} = \Delta p_{\text{housing}} + \Delta p_{\text{element}}$$

$$\Delta p_{\text{housing}} = (\text{see } \Delta p = f(Q) - \text{characteristics})$$

$$\Delta p_{\text{Element}} (\text{mbar}) = Q \left(\frac{\text{l}}{\text{min}} \right) \times \frac{\text{MSK}}{10} \left(\frac{\text{mbar}}{\text{l/min}} \right) \times v \left(\frac{\text{mm}^2}{\text{s}} \right) \times \frac{p}{0,876} \left(\frac{\text{kg}}{\text{dm}^3} \right)$$

For ease of calculation our Filter Selection tool is available online at

www.eatonpowersource.com/calculators/filtration/

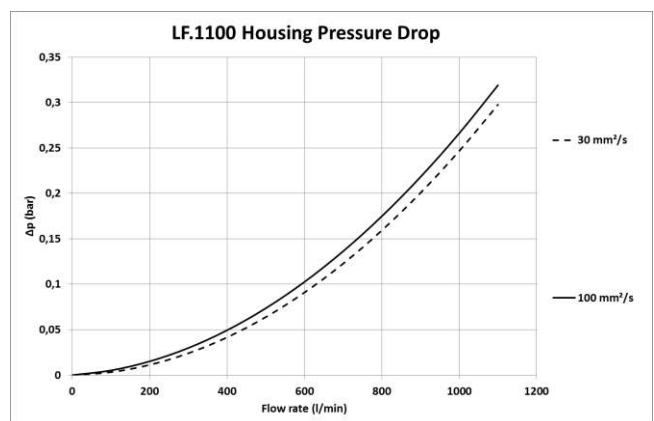
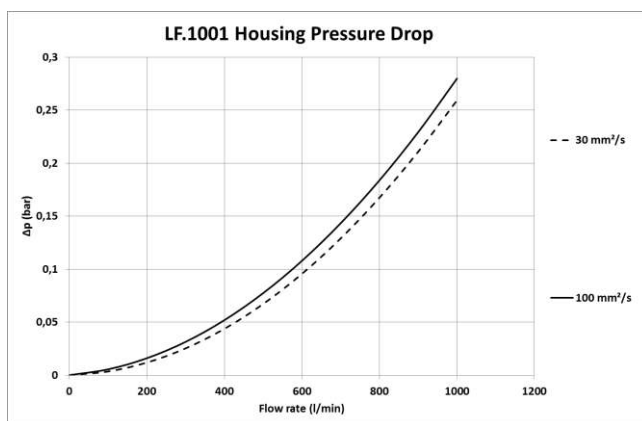
Material gradient coefficients (MSK) for filter elements

The material gradient coefficients in mbar/(l/min) apply to mineral oil (HLP) with a density of 0,876 kg/dm³ and a kinematic viscosity of 30 mm²/s (139 SUS). The pressure drop changes proportionally to the change in kinematic viscosity and density.

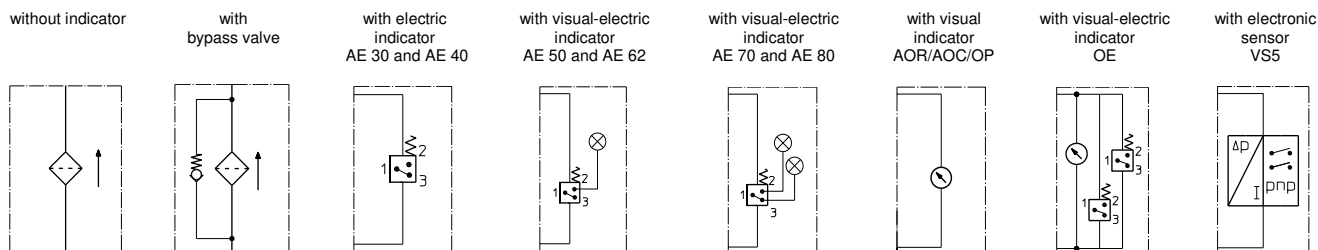
LF	VG					G				API	
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	130G	10API	25API
1001 / 1100	0,197	0,137	0,087	0,076	0,052	0,0050	0,0046	0,0032	0,0024	0,044	0,020

$\Delta p = f(Q)$ – characteristics according to ISO 3968

The pressure drop characteristics apply to mineral oil (HLP) with a density of 0,876 kg/dm³. The pressure drop changes proportionally to the density.



Symbols:



Spare parts:

item	qty.	designation	dimension		article no.	
			LF 1001	LF 1100		
1	1	filter element	01NR.1000...			
2	2	O-ring	90 x 4		306941 (NBR)	307031 (FPM)
3	1	O-ring	185 x 4		305593 (NBR)	306309 (FPM)
4	1	O-ring (LF1001)	85,32 x 3,53		305590 (NBR)	306308 (FPM)
	1	O-ring (LF1100)	136,12 x 3,53		320162 (NBR)	320163 (FPM)
5	3	screw plug	G 1/2		304678	
6	2	screw plug	G 1/4		305003	
7	1	clogging indicator, visual	AOR or AOC		see sheet no. 1606	
8	1	clogging indicator, visual	OP		see sheet no. 1628	
9	1	clogging indicator, visual-electric	OE		see sheet no. 1628	
10	1	clogging indicator, visual-electric	AE		see sheet no. 1609	
11	1	clogging sensor, electronic	VS 5		see sheet no. 1641	
12	2	screw plug	G 1/4		305003	

item 12 execution only without clogging indicator or clogging sensor

Test methods:

Filter elements are tested according to the following ISO standards:

ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics
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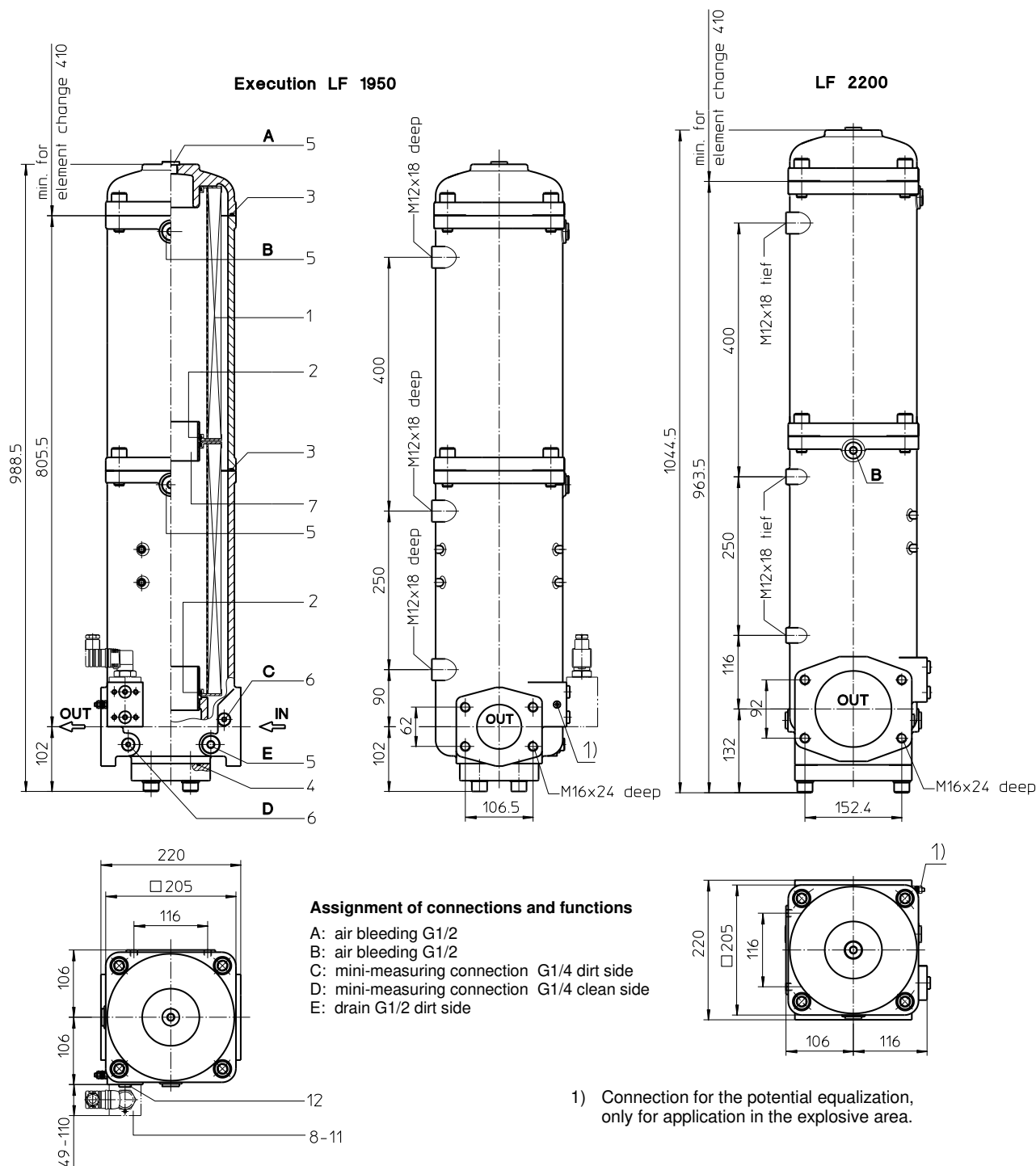
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Series LF 1950-2200

DN80-125 PN32



Weight LF 1950: approx. 74 kg
Weight LF 2200: approx. 84 kg

Dimensions: mm

Designs and performance values are subject to change.

Pressure Filter

Series LF 1950-2200

DN80-125 PN32

Description:

In-line filters of the type LF 1950-2200 are suitable for a working pressure up to 32 bar. Pressure peaks are absorbed with a sufficient margin of safety. It can be used as suction filter, pressure filter and return-line filter.

The filter element consists of star-shaped, pleated filter material, which is supported on the inside by a perforated core tube and is bonded to the end caps with a high-quality adhesive. The flow direction is from outside to inside.

For cleaning the stainless steel mesh element (see special leaflets 21070-4 and 39448-4) or changing the filter element, remove the cover and take out the element. The mesh elements are not guaranteed to maintain 100% performance after cleaning.

For filtration finer than 40 µm, use the disposable elements made of microglass. Filter elements as fine as 5 µm(c) are available; finer filter elements are available upon request.

Eaton filter elements are known for a high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.

Eaton filter can be used for petroleum-based fluids, HW emulsions, water glycols, most synthetic fluids and lubrication fluids. Consult factory for specific fluid applications.

The internal valves are integrated in the filter cover. After reaching the bypass pressure setting, the bypass valve will send unfiltered partial flow around the filter.

Ship classifications available upon request.

Type index:

Complete filter: (ordering example)

LF.	1950.	10VG.	10.	B.	P.	-.	FS.	A.	-.	-.	-.	AE
1	2	3	4	5	6	7	8	9	10	11	12	13

- 1 series:**
LF = in-line filter
- 2 nominal size:** 1950, 2200
- 3 filter-material:**
80G, 40G, 25G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
25API, 10API microglass according to API
- 4 filter element collapse rating:**
10 = Δp 10 bar
- 5 filter element design:**
B = both sides open
- 6 sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)
- 7 filter element specification:**
- = standard
VA = stainless steel
IS06 = for HFC application, see sheet-no. 31601
- 8 process connection:**
FS = SAE-flange connection 3000 PSI
- 9 process connection size:**
A = 3" (LF 1950)
C = 5" (LF 2200)
- 10 filter housing specification:**
- = standard
- 11 pressure vessel specification:**
- = standard (PED 2014/68/EU)
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217 (max. operating pressure 16 bar)
- 12 internal valve:**
- = without
S = with bypass valve Δp 2,0 bar
S1 = with bypass valve Δp 3,5 bar
- 13 clogging indicator or clogging sensor:**
- = without
AE = visual-electric, see sheet-no.1609
OP = visual, see sheet-no.1628
OE = visual-electric, see sheet-no.1628
VS5 = electronic, see sheet-no.1641

To add an indicator/sensor to your filter, use the corresponding indicator data sheet to find the indicator details and add them to the filter assembly model code.

Filter element: (ordering example)

01NR.	1000.	10VG.	10.	B.	P.	-
1	2	3	4	5	6	7

- 1 series:**
01NR = standard-return-line filter element according to DIN 24550, T4
- 2 nominal size:** 1000
- 3 - 7** see type index complete filter

Accessories:

- gauge port and bleeder connection, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1651
- SAE-counter flanges, see sheet-no. 1652

Technical data:

operating temperature:	-10 °C to +100 °C
operating medium:	mineral oil, other media on request
max. operating pressure:	32 bar
test pressure:	64 bar
max. operating pressure with IS20:	16 bar
test pressure with IS20:	32 bar
process connection:	SAE-flange connection 3000 PSI
housing material:	EN-GJS-400-18-LT
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measuring connections:	G 1/4
drain- and bleeder connections:	G 1/2
volume tank LF 1950/2200:	22 l

Classified under the Pressure Equipment Directive 2014/68/EU for mineral oil (fluid group 2), Article 4, Para. 3.
Classified under ATEX Directive 2014/34/EU according to specific application (see questionnaire sheet-no. 34279-4).

Pressure drop flow curves:

Filter calculation/sizing

The pressure drop of the assembly at a given flow rate Q is the sum of the housing Δp and the element Δp and is calculated as follows:

$$\Delta p_{\text{assembly}} = \Delta p_{\text{housing}} + \Delta p_{\text{element}}$$

$$\Delta p_{\text{housing}} = (\text{see } \Delta p = f(Q) - \text{characteristics})$$

$$\Delta p_{\text{Element}} (\text{mbar}) = Q \left(\frac{\text{l}}{\text{min}} \right) \times \frac{\text{MSK}}{10} \left(\frac{\text{mbar}}{\text{l/min}} \right) \times v \left(\frac{\text{mm}^2}{\text{s}} \right) \times \frac{p}{0,876} \left(\frac{\text{kg}}{\text{dm}^3} \right)$$

For ease of calculation our Filter Selection tool is available online at

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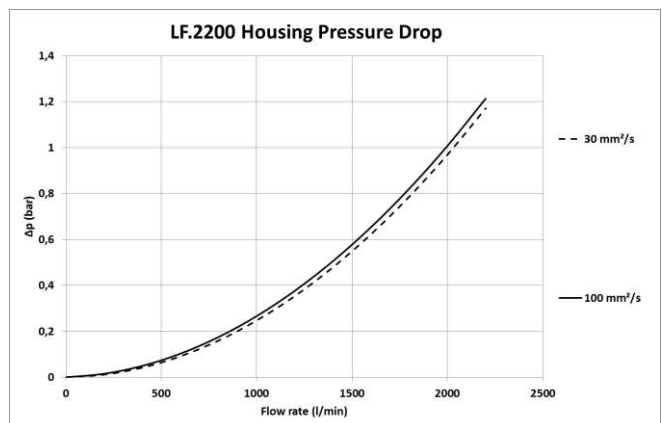
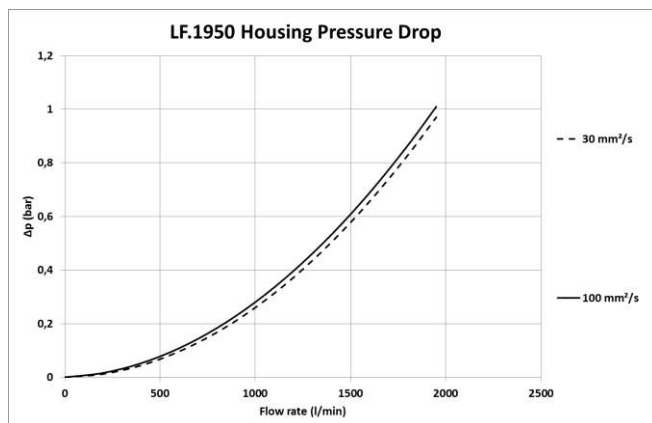
Material gradient coefficients (MSK) for filter elements

The material gradient coefficients in mbar/(l/min) apply to mineral oil (HLP) with a density of 0,876 kg/dm³ and a kinematic viscosity of 30 mm²/s (139 SUS). The pressure drop changes proportionally to the change in kinematic viscosity and density.

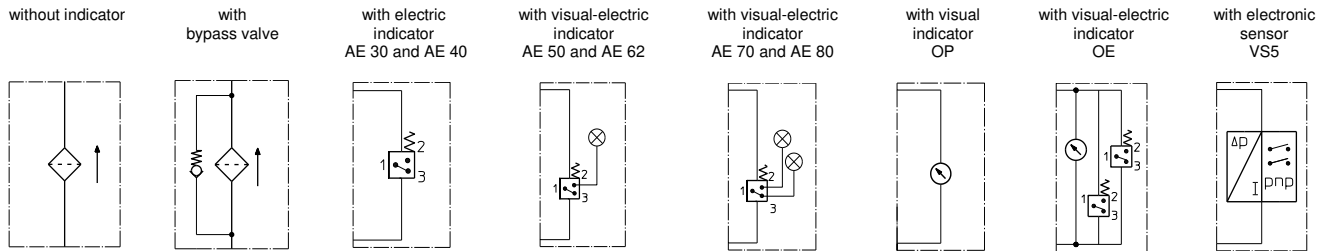
LF	VG					G			API	
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10API	25API
1950 / 2200	0,098	0,068	0,044	0,038	0,026	0,0034	0,0025	0,0023	0,022	0,010

$\Delta p = f(Q)$ – characteristics according to ISO 3968

The pressure drop characteristics apply to mineral oil (HLP) with a density of 0,876 kg/dm³. The pressure drop changes proportionally to the density.



Symbols:



Spare parts:

item	qty.	designation	dimension		article no.	
			LF 1950	LF 2200		
1	2	filter element	01NR.1000...			
2	4	O-ring	90 x 4		306941 (NBR)	307031 (FPM)
3	2	O-ring	185 x 4		305593 (NBR)	306309 (FPM)
4	1	O-ring (LF1950)	85,32 x 3,53		305590 (NBR)	306308 (FPM)
	1	O-ring (LF2200)	135,12 x 3,53		320162 (NBR)	320163 (FPM)
5	4	screw plug	G 1/2		304678	
6	2	screw plug	G 1/4		305003	
7	1	connecting tube	Ø 90		313233	
8	1	clogging indicator, visual	OP		see sheet no. 1628	
9	1	clogging indicator, visual-electric	OE		see sheet no. 1628	
10	1	clogging indicator, visual-electric	AE		see sheet no. 1609	
11	1	clogging sensor, electronic	VS 5		see sheet no. 1641	
12	2	screw plug	G 1/4		305003	

item 12 execution only without clogging indicator or clogging sensor

Test methods:

Filter elements are tested according to the following ISO standards:

ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics
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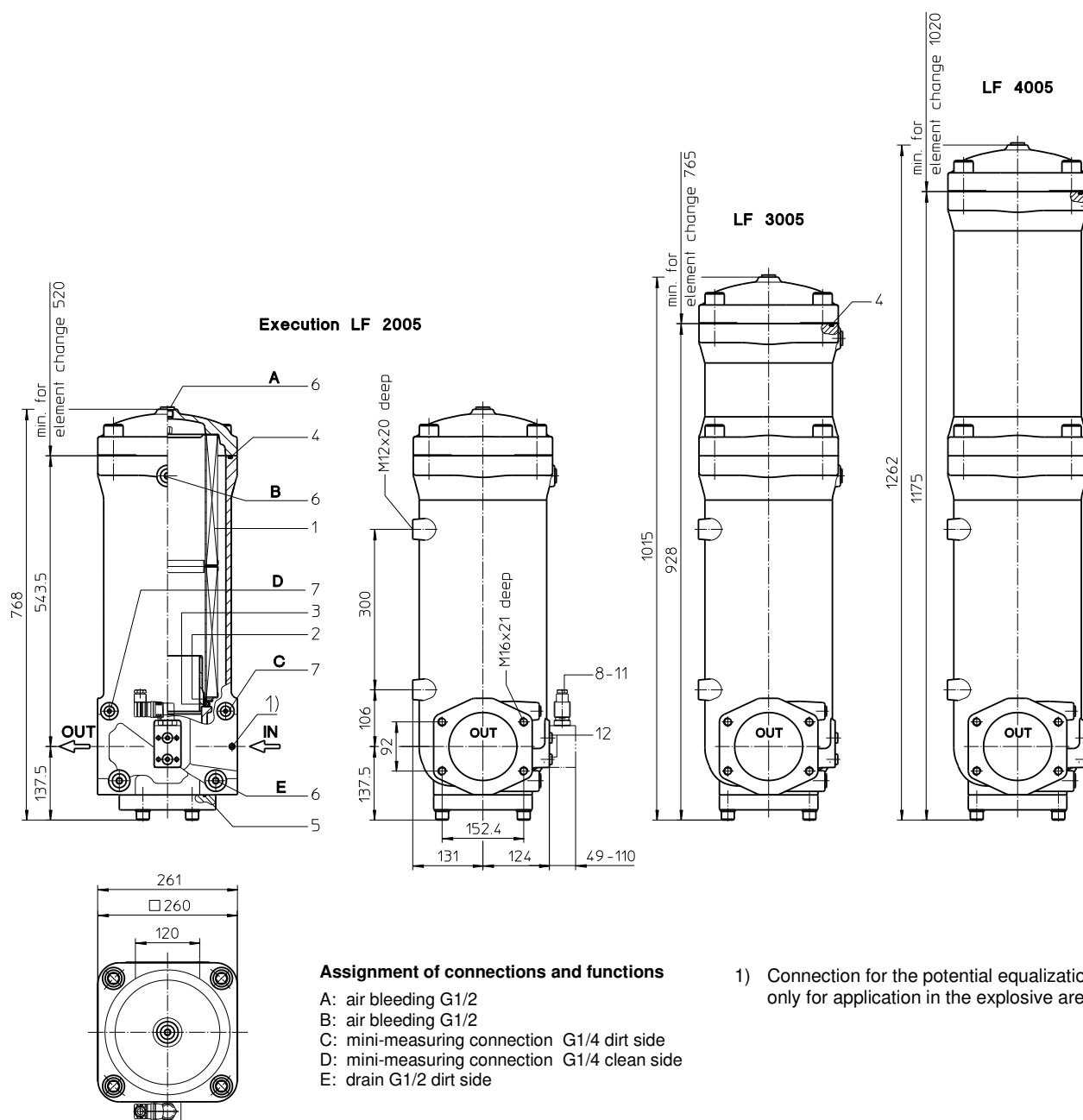
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Series LF 2005-4005

DN125 PN32



Weight LF 2005: approx. 81 kg
 Weight LF 3005: approx. 113 kg
 Weight LF 4005: approx. 129 kg

Dimensions: mm

Designs and performance values are subject to change.

Pressure Filter

Series LF 2005-4005

DN125 PN32

Description:

In-line filters of the type LF 2005-4005 are suitable for a working pressure up to 32 bar. Pressure peaks are absorbed with a sufficient margin of safety. It can be used as suction filter, pressure filter and return-line filter.

The filter element consists of star-shaped, pleated filter material, which is supported on the inside by a perforated core tube and is bonded to the end caps with a high-quality adhesive. The flow direction is from outside to inside.

For cleaning the stainless steel mesh element (see special leaflets 21070-4 and 39448-4) or changing the filter element, remove the cover and take out the element. The mesh elements are not guaranteed to maintain 100% performance after cleaning.

For filtration finer than 40 µm, use the disposable elements made of microglass. Filter elements as fine as 5 µm(c) are available; finer filter elements are available upon request.

Eaton filter elements are known for a high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.

Eaton filter can be used for petroleum-based fluids, HW emulsions, water glycols, most synthetic fluids and lubrication fluids. Consult factory for specific fluid applications.

Ship classifications available upon request.

Type index:

Complete filter: (ordering example)

LF.	2005.	10VG.	10.	E.	P.	-.	FS.	C.	-.	-.	-.	AE
1	2	3	4	5	6	7	8	9	10	11	12	13

- 1 **series:**
LF = in-line filter
- 2 **nominal size:** 2005, 3005, 4005
- 3 **filter-material:**
80G, 40G, 25G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
25API, 10API microglass according to API
- 4 **filter element collapse rating:**
10 = Δp 10 bar
- 5 **filter element design:**
E = without bypass valve
S = with bypass valve Δp 2,0 bar
- 6 **sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)
- 7 **filter element specification:**
- = standard
VA = stainless steel
IS06 = for HFC application, see sheet-no. 31601
- 8 **process connection:**
FS = SAE-flange connection 3000 PSI
- 9 **process connection size:**
C = 5"
- 10 **filter housing specification:**
- = standard
- 11 **pressure vessel specification:**
- = standard (PED 2014/68/EU)
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217 (max. operating pressure 16 bar)
- 12 **internal valve:**
- = without
- 13 **clogging indicator or clogging sensor:**
- = without
AE = visual-electric, see sheet-no.1609
OP = visual, see sheet-no.1628
OE = visual-electric, see sheet-no.1628
VS5 = electronic, see sheet-no.1641

To add an indicator/sensor to your filter, use the corresponding indicator data sheet to find the indicator details and add them to the filter assembly model code.

Filter element: (ordering example)

01E.	2001.	10VG.	10.	E.	P.	-
1	2	3	4	5	6	7

- 1 **series:**
01E = filter element according to company standard
- 2 **nominal size:** 2001, 3001, 4001
- 3 - 7 see type index complete filter

Accessories:

- gauge port and bleeder connection, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1651
- SAE-counter flanges, see sheet-no. 1652

Technical data:

operating temperature:	-10 °C to +100 °C
operating medium:	mineral oil, other media on request
max. operating pressure:	32 bar
test pressure:	64 bar
max. operating pressure with IS20:	16 bar
test pressure with IS20:	32 bar
process connection:	SAE-flange connection 3000 PSI
housing material:	EN-GJS-400-18-LT
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measuring connections:	G ¼
drain- and bleeder connections:	G ½
volume tank LF 2005:	23 l
LF 3005:	32 l
LF 4005:	40 l

Classified under the Pressure Equipment Directive 2014/68/EU for mineral oil (fluid group 2), Article 4, Para. 3.
Classified under ATEX Directive 2014/34/EU according to specific application (see questionnaire sheet-no. 34279-4).

Pressure drop flow curves:

Filter calculation/sizing

The pressure drop of the assembly at a given flow rate Q is the sum of the housing Δp and the element Δp and is calculated as follows:

$$\Delta p_{\text{assembly}} = \Delta p_{\text{housing}} + \Delta p_{\text{element}}$$

$$\Delta p_{\text{housing}} = (\text{see } \Delta p = f(Q) - \text{characteristics})$$

$$\Delta p_{\text{Element}} (\text{mbar}) = Q \left(\frac{\text{l}}{\text{min}} \right) \times \frac{\text{MSK}}{10} \left(\frac{\text{mbar}}{\text{l/min}} \right) \times \nu \left(\frac{\text{mm}^2}{\text{s}} \right) \times \frac{p}{0,876} \left(\frac{\text{kg}}{\text{dm}^3} \right)$$

For ease of calculation our Filter Selection tool is available online at

www.eatonpowersource.com/calculators/filtration/

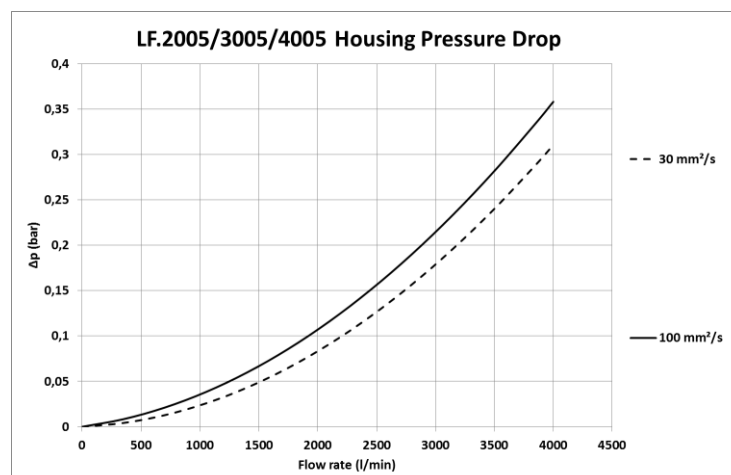
Material gradient coefficients (MSK) for filter elements

The material gradient coefficients in mbar/(l/min) apply to mineral oil (HLP) with a density of 0,876 kg/dm³ and a kinematic viscosity of 30 mm²/s (139 SUS). The pressure drop changes proportionally to the change in kinematic viscosity and density.

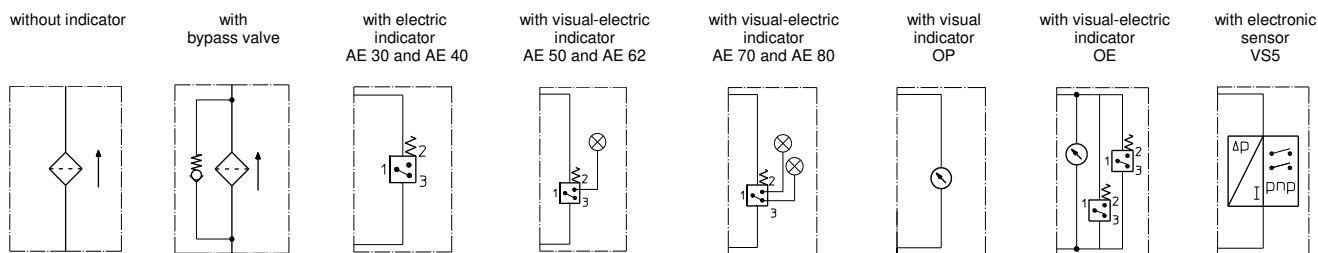
LF	VG					G			API	
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10API	25API
2005	0,147	0,102	0,065	0,057	0,039	0,0048	0,0045	0,0031	0,033	0,015
3005	0,098	0,068	0,043	0,038	0,026	0,0032	0,0030	0,0021	0,022	0,010
4005	0,073	0,051	0,033	0,028	0,019	0,0024	0,0023	0,0015	0,016	0,007

$\Delta p = f(Q)$ – characteristics according to ISO 3968

The pressure drop characteristics apply to mineral oil (HLP) with a density of 0,876 kg/dm³. The pressure drop changes proportionally to the density.



Symbols:



Spare parts:

item	qty.	designation	dimension			article no.	
			LF 2005	LF 3005	LF 4005		
1	1	filter element	01E.2001..	01E.3001...	01E.4001...		
2	1	O-ring		135 x 10		306016 (NBR)	307045 (FPM)
3	1	O-ring		125 x 10		304388 (NBR)	306006 (FPM)
4	1	O-ring (LF2005)		240 x 5		307592 (NBR)	328793 (FPM)
	2	O-ring (LF3005 / 4005)		240 x 5		307592 (NBR)	328793 (FPM)
5	1	O-ring		136,12 x 3,53		320162 (NBR)	320163 (FPM)
6	4	screw plug (LF2005)		G 1/2		304678	
	5	screw plug (LF3005 / 4005)		G 1/2		304678	
7	2	screw plug		G 1/4		305003	
8	1	clogging indicator, visual		OP		see sheet no. 1628	
9	1	clogging indicator, visual-electric		OE		see sheet no. 1628	
10	1	clogging indicator, visual-electric		AE		see sheet no. 1609	
11	1	clogging sensor, electronic		VS 5		see sheet no. 1641	
12	1	screw plug		G 1/4		305003	

item 12 execution only without clogging indicator or clogging sensor

Test methods:

Filter elements are tested according to the following ISO standards:

ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics
ISO 16889	Multi-pass method for evaluating filtration performance

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