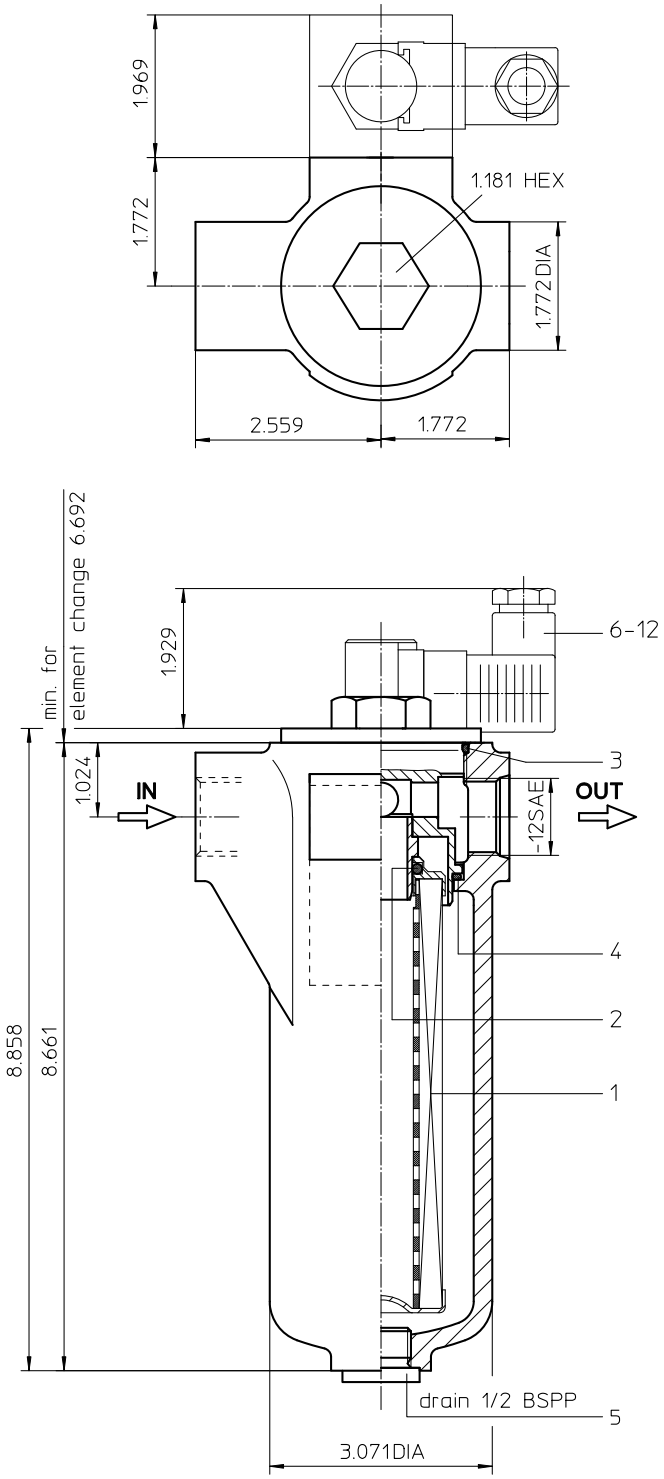
Series LF 63
363 PSI



Weight: approx. 4.40 lbs.
Dimensions: inches

Designs and performance values are subject to change.

Powering Business Worldwide

Pressure Filter
Series LF 63
363 PSI

Description:

In-line filter series LF 63 have a working pressure up to 363 PSI. Pressure peaks can be absorbed with a sufficient safety margin. The LF filter is mounted in-line. 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 mesh element or changing the glass fiber 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 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 elements are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.

The by-pass valve is integrated into the filter head. After reaching the by-pass pressure setting, the by-pass valve will send unfiltered partial flow around the filter.

Ship classifications available upon request.

1. Type index:

1.1. Complete filter: (ordering example)

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

1 **series:**
LF = In-line filter

2 **nominal size:** 63

3 **filter-material and filter-fineness:**
80G, 40G, 25G, 10G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass

4 **filter element collapse rating:**
30 = ∆p 435 PSI

5 **filter element design:**
E = single-end open

6 **sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)

7 **filter element specification:** (see catalog)
- = standard
VA = stainless steel
IS06 = for HFC applications, see sheet-no. 31601
IS07 = for oil/amonia mixtures (NH3), see sheet-no. 31602

8 **process connection:**
UG = thread connection

9 **process connection size:**
4 = -12 SAE

10 **filter housing specification:** (see catalog)
- = standard
IS06 = for HFC applications, see sheet-no. 31605

11 **internal valve:**
- = without
S1 = with by-pass valve ∆p 51 PSI

12 **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 to your filter, use the corresponding indicator data sheet to find the indicator details and add them to the filter assembly model code.

1.2. 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:

design temperature:	14 °F to +212 °F
operating temperature:	14 °F to +176 °F
operating medium	mineral oil, other media on request
max. operating pressure:	363 PSI
test pressure:	522 PSI
process connection:	thread connection
housing material:	aluminium-cast
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measure connections:	BSPP ¼
drain- and bleeder connections:	BSPP ½
volume tank:	.18 Gal.

Classified under the Pressure Equipment Directive 2014/68/EC for mineral oil (fluid group 2), Article 4, Para. 3.
Classified under ATEX Directive 2014/34/EC 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:

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

$$\Delta p_{element}\,(PSI) = Q\,(GPM)\ x\ \frac{MSK}{1000}\left(\frac{PSI}{GPM}\right) x\ \nu\,(SUS)\ x\ \frac{\rho}{0.876}\left(\frac{kg}{dm^3}\right)$$

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

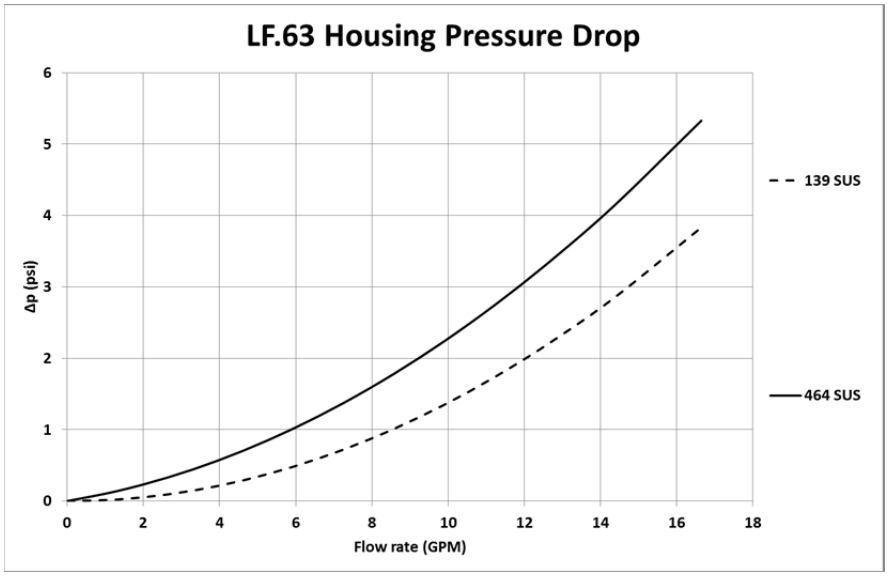
Material gradient coefficients (MSK) for filter elements

The material gradient coefficients in psi/gpm apply to mineral oil (HLP) with a density of 0.876 kg/dm³ and a kinematic viscosity of 139 SUS (30 mm²/s). The pressure drop changes proportionally to the change in kinematic viscosity and density.

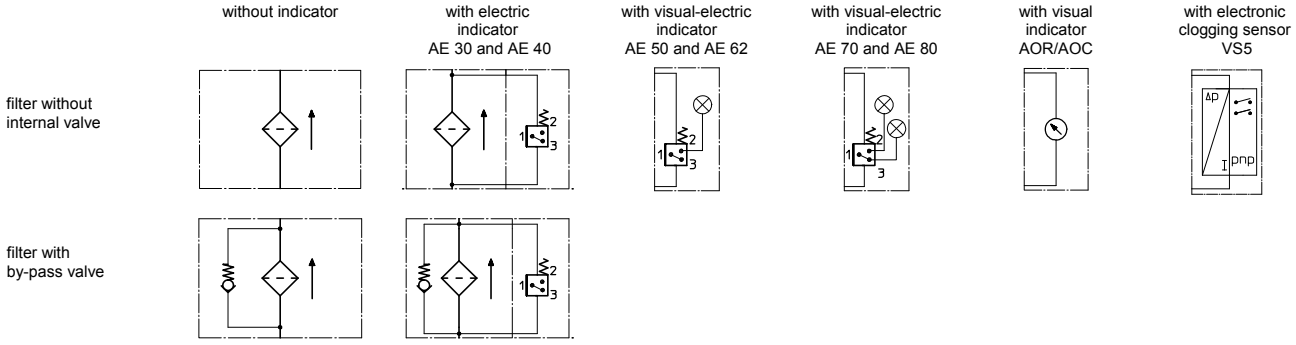
LF	VG					G		
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G
63	4.214	2.926	1.873	1.631	11.4	0.1131	0.1056	0.0723

Δp = 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.	
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	½ BSPP	304678	
6	1	clogging indicator, visual	AOR or AOC	see sheet-no. 1606	
7	1	clogging indicator, visual-electrical	AE	see sheet-no. 1615	
8	1	clogging sensor, electronical	VS5	see sheet-no. 1619	
9	1	O-ring	15 x 1,5	315357 (NBR)	315427 (FPM)
10	1	O-ring	22 x 2	304708 (NBR)	304721 (FPM)
11	1	O-ring	14 x 2	304342 (NBR)	304722 (FPM)
12	2	screw plug	$^{1}/_{8}$ BSPP	305496	

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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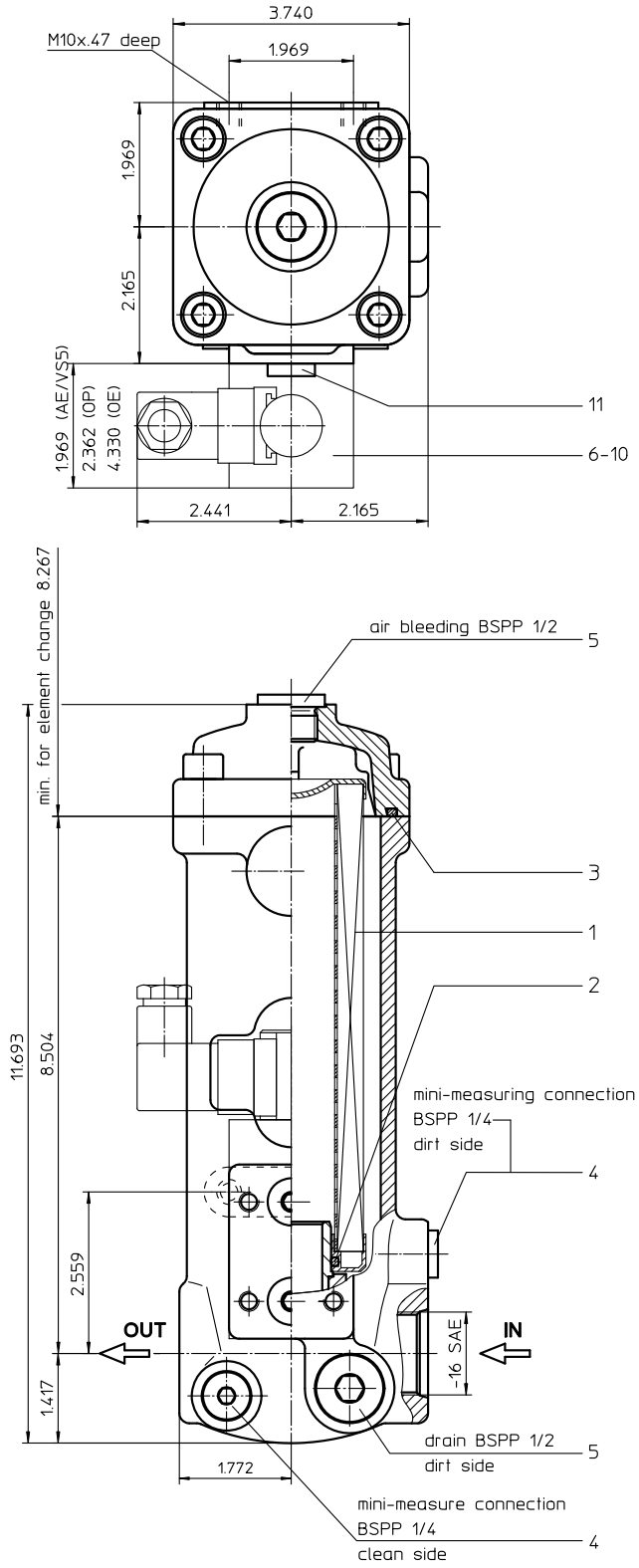
Powering Business Worldwide

Series LF 101
464 PSI



Weight: approx. 8.0 lbs.
Dimensions: inches

Designs and performance values are subject to change.

Powering Business Worldwide

Pressure Filter
Series LF 101
464 PSI

Description:

In-line filters series LF 101 have a working pressure up to 464 PSI. Pressure peaks can be absorbed with a sufficient safety margin. The LF filter is mounted in-line. 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 mesh element or changing the glass fiber 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 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 elements are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.

Ship classifications available upon request.

1. Type index:

1.1. Complete filter: (ordering example)

LF.	101.	10VG.	16.	E.	P.	-.	UG.	5.	-.	AE
1	2	3	4	5	6	7	8	9	10	11

1 **series:**
LF = In-line filter

2 **nominal size:** 101

3 **filter-material and filter-fineness:**
80G, 40G, 25G, 10G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
25API, 10API microglass according to API

4 **filter element collapse rating:**
16 = ∆p 232 PSI

5 **filter element design:**
E = single-end open
S = with by-pass valve ∆p 29 PSI
S1 = with by-pass valve ∆p 51 PSI

6 **sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)

7 **filter element specification:** (see catalog)
- = standard
VA = stainless steel
IS06 = for HFC applications, see sheet-no. 31601
IS07 = for oil/amonia mixtures (NH3), see sheet-no. 31602

8 **process connection:**
UG = thread connection

9 **process connection size:**
5 = -16 SAE

10 **filter housing specification:** (see catalog)
- = standard
IS06 = for HFC applications, see sheet-no. 31605

11 **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 to your filter, use the corresponding indicator data sheet to find the indicator details and add them to the filter assembly model code.

1.2. 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:

design temperature:	14 °F to +212 °F
operating temperature:	14 °F to +176 °F
operating medium	mineral oil, other media on request
max. operating pressure:	464 PSI
test pressure:	900 PSI
process connection:	thread connection
housing material:	aluminium-cast
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measure connections:	BSPP ¼
drain- and bleeder connections:	BSPP ½
volume tank:	.26 Gal.

Classified under the Pressure Equipment Directive 2014/68/EC for mineral oil (fluid group 2), Article 4, Para. 3.
Classified under ATEX Directive 2014/34/EC 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:

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

$$\Delta p_{element}\,(PSI) = Q\,(GPM)\ x\ \frac{MSK}{1000}\left(\frac{PSI}{GPM}\right) x\ \nu\,(SUS)\ x\ \frac{\rho}{0.876}\left(\frac{kg}{dm^3}\right)$$

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

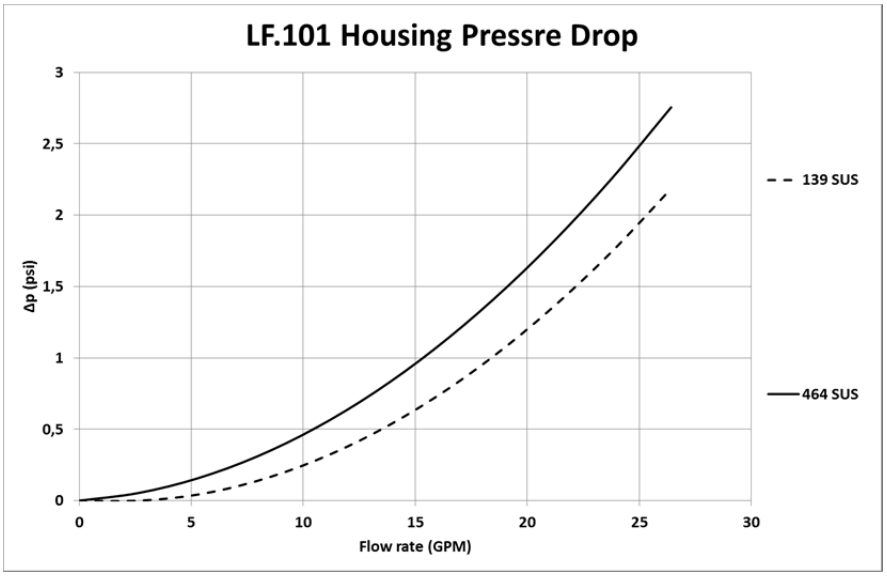
Material gradient coefficients (MSK) for filter elements

The material gradient coefficients in psi/gpm apply to mineral oil (HLP) with a density of 0.876 kg/dm³ and a kinematic viscosity of 139 SUS (30 mm²/s). The pressure drop changes proportionally to the change in kinematic viscosity and density.

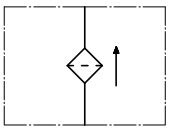
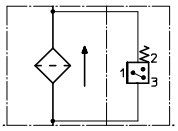
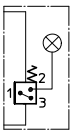
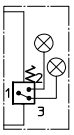
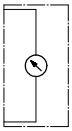
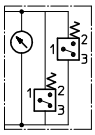
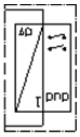
LF	VG					G		
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G
101	2.473	1.717	1.099	0.957	0.654	0.0651	0.0607	0.0416

Δp = 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 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 clogging 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	BSPP ¼	305003	
5	2	screw plug	BSPP ½	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 sensor, electronic	VS5	see sheet-no. 1641	
10	2	O-ring	14 x 2	304342 (NBR)	304722 (FPM)
11	2	screw plug	BSPP ¼	305003	

item 11 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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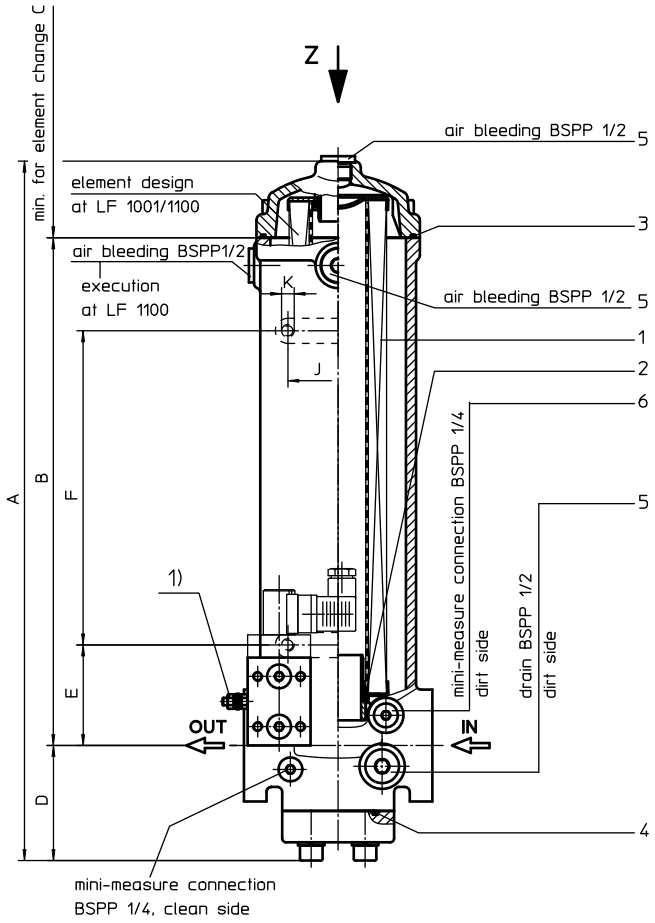
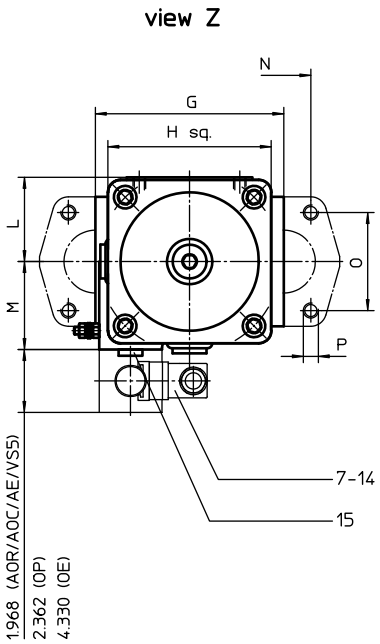
For more information, please email us at *filtration@eaton.com* or visit *www.eaton.com/filtration*

Series LF 251-1100
464 PSI





1) Connect the stand grounding tab to a suitable earth ground point.

Dimensions:

type	LF 251	LF 401	LF 631	LF 1001	LF 1100
connection	SAE 1 ½“	SAE 2“	SAE 2 ½“	SAE 3“	SAE 5“
A	13.94	21.65	22.09	23.03	25.24
B	10.00	15.91	15.98	15.91	16.93
C	10.24	16.14	16.14	16.14	16.14
D	1.54	3.35	3.39	3.94	5.19
E	3.15	3.15	3.15	3.54	4.57
F	-	9.84	9.84	9.84	9.84
G	5.51	5.91	6.69	8.66	8.66
H	5.12	5.12	6.30	8.07	8.07
J	3.15	3.15	3.15	4.57	4.57
K	M10x.47 deep	M10x.47 deep	M12x.71 deep	M12x.71 deep	M12x.71 deep
L	2.64	2.64	3.23	4.17	4.17
M	2.83	2.76	3.39	4.17	4.17
N	1.40	1.68	2.00	2.44	3.62
O	2.75	3.06	3.50	4.19	6.00
P	M12x.74deep	M10x.74 deep	M12x.74 deep	M16x.94 deep	M16x.94 deep
weight	35 lbs.	55 lbs.	77 lbs.	99 lbs.	112 lbs.
volume tank	.63 Gal.	1.0 Gal.	1.4 Gal.	3,0 Gal.	3,0 Gal.

Dimensions: inches

Designs and performance values are subject to change.

Pressure Filter
Series LF 251-1100
464 PSI

Description:

In-line filter series LF 251-1100 have a working pressure up to 464 PSI. Pressure peaks can be absorbed with a sufficient safety margin. The LF filter is mounted in-line. 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 mesh element or changing the glass fiber 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 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 elements are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.

The by-pass valve is integrated into the filter head. After reaching the by-pass pressure setting, the by-pass valve will send unfiltered partial flow around the filter.

Ship classifications available upon request.

1. Type index:

1.1. 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

1 **series:**
LF = In-line filter

2 **nominal size:** 251, 401, 631, 1001, 1100

3 **filter-material and filter-fineness:**
80G, 40G, 25G, 10G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
25API, 10API microglass according to API

4 **filter element collapse rating:**
10 = ∆p 145 PSI (01NR.1000)
30 = ∆p 435 PSI (01NL.250-630)

5 **filter element design:**
E = single-end open
B = both sides open (01NR.1000)
S = with by-pass valve ∆p 29 PSI
S1 = with by-pass valve ∆p 51 PSI

6 **sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)

7 **filter element specification:** (see catalog)
- = standard
VA = stainless steel
IS06 = for HFC applications, see sheet-no. 31601
IS07 = for oil/ammonia mixtures (NH3), see sheet-no. 31602

8 **process connection:**
FS = SAE-flange 3000 PSI

9 **process connection size:**
7 = 1 ½“ (LF251)
8 = 2“ (LF401)
9 = 2 ½“ (LF631)
A = 3“ (LF1001)
C = 5“ (LF1100)

10 **filter housing specification:** (see catalog)
- = standard
IS06 = for HFC applications, see sheet-no. 31605
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217 (operating pressure max. 232 PSI)

11 **internal valve:**
- = without
S = with by-pass valve ∆p 29 PSI (LF1001/1100)
S1 = with by-pass valve ∆p 51 PSI (LF1001/1100)

12 **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 to your filter, use the corresponding indicator data sheet to find the indicator details and add them to the filter assembly model code.

1.2. Filter element: (ordering example)

01NL.	401.	10VG.	30.	E.	P.	-
1	2	3	4	5	6	7

1 **series:**
01NL. = standard filter element according to DIN 24550, T3
01NR. = standard return line filter element according to DIN 24550, T4

2 **nominal size:** 250, 400, 630 (01NL.), 1000 (01NR.)

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 flange, see sheet-no. 1652

Technical data:

design temperature:	14 °F to +212 °F
operating temperature:	14 °F to +176 °F
operating medium	mineral oil, other media on request
max. operating pressure:	464 PSI
max. operating pressure at IS20:	232 PSI
test pressure:	900 PSI
test pressure at IS20:	464 PSI
process connection:	SAE-flange 3000 PSI
housing material:	EN-GJS-400-18-LT
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measure connections:	BSPP ¼
drain- and bleeder connections:	BSPP ½

Classified under the Pressure Equipment Directive 2014/68/EC for mineral oil (fluid group 2), Article 4, Para. 3.
Classified under ATEX Directive 2014/34/EC 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:

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

$$\Delta p_{element}\,(PSI) = Q\ (GPM)\ x\ \frac{MSK}{1000}\left(\frac{PSI}{GPM}\right) x\ \nu\,(SUS)\ x\ \frac{\rho}{0.876}\left(\frac{kg}{dm^3}\right)$$

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

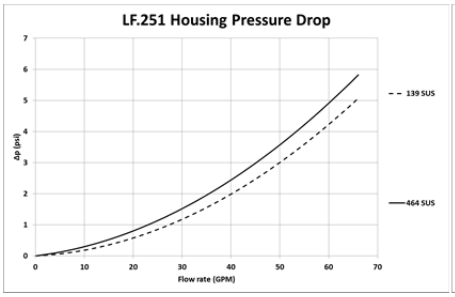
Material gradient coefficients (MSK) for filter elements

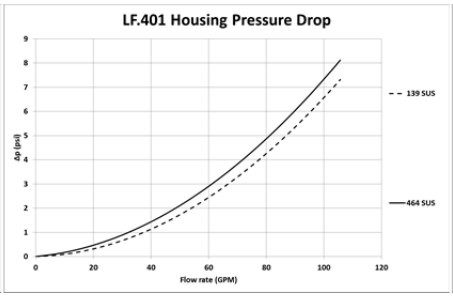
The material gradient coefficients in psi/gpm apply to mineral oil (HLP) with a density of 0.876 kg/dm³ and a kinematic viscosity of 139 SUS (30 mm²/s). The pressure drop changes proportionally to the change in kinematic viscosity and density.

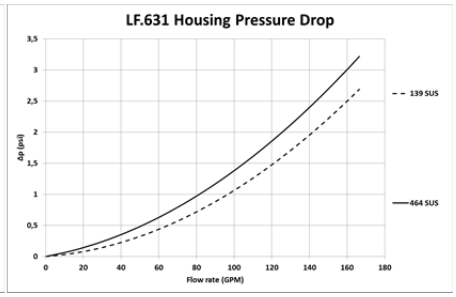
LF	VG					G			API	
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10API	25API
251	1.14	0.646	0.414	0.360	0.246	0.0277	0.0258	0.0177	0.212	0.097
401	0.700	0.397	0.254	0.221	0.151	0.0169	0.0158	0.0108	0.130	0.059
631	0.534	0.303	0.194	0.169	0.115	0.1417	0.1322	0.0906	0.099	0.045
1001	0.237	0.165	0.105	0.092	0.063	0.0061	0.0057	0.0039	0.053	0.024
1100	0.237	0.165	0.105	0.092	0.063	0.0061	0.0057	0.0039	0.053	0.024

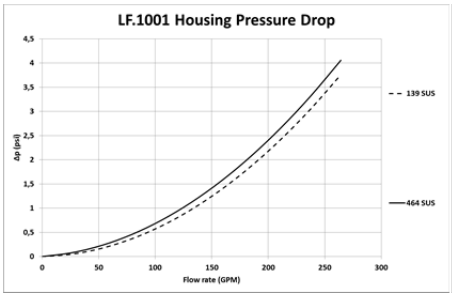
Δp = f(Q) – characteristics according to ISO 3968

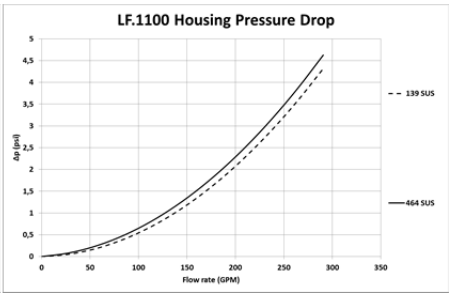
The pressure drop characteristics apply to mineral oil (HLP) with a density of 0,876 kg/dm³. The pressure drop changes proportionally to the density.



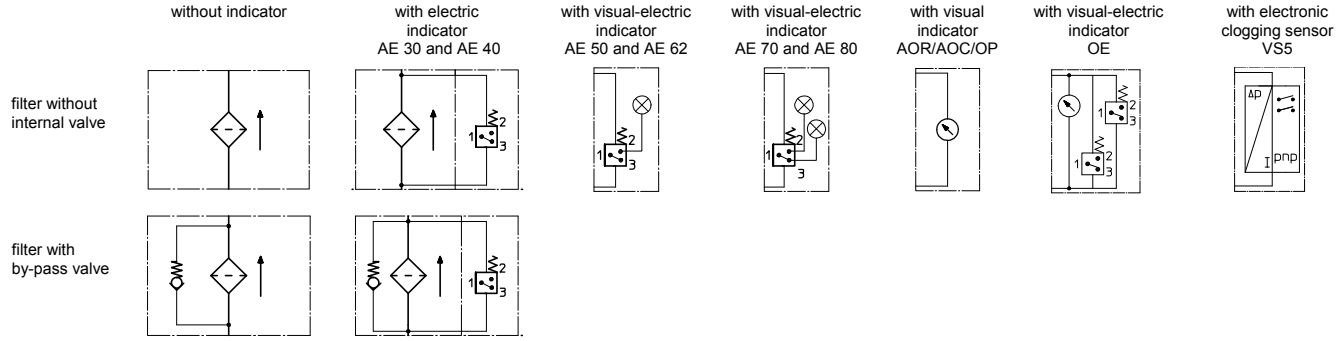








Symbols:



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	qty.	dimension and article-no. LF 1001/1100
1	filter element	1	01NL.250…	1	01NL 400…	1	01NL 630…	1	01NR.1000…
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)	1	90 x 4 306941 (NBR) 307031 (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)	1	185 x 4 305593 (NBR) 306309 (FPM)
4	O-ring (LF 401-1001)	-	-	1	56,75 x 3,53 306035 (NBR) 310264 (FPM)	1	69,45 x 3,53 305868 (NBR) 307357 (FPM)	1	85,32 x 3,53 305590 (NBR) 306308 (FPM)
	O-ring (LF 1100)	-	-	-	-	-	-	1	136,12 x 3,53 320162 (NBR) 320163 (FPM)
5	screw plug	3	BSPP ½ 304678	3	BSPP ½ 304678	3	BSPP ½ 304678	3	BSPP ½ 304678
6	screw plug	2	BSPP ¼ 305003						
7	clogging indicator, visual	1	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 sensor, electronic	1	VS5				see sheet-no. 1641		
12	O-ring	1	15 x 1,5 315357 (NBR) 315427 (FPM)						
13	O-ring	1	22 x 2 304708 (NBR) 304721 (FPM)						
14	O-ring	2	14 x 2 304342 (NBR) 304722 (FPM)						
15	screw plug	2	BSPP ¼ 305003						

item 15 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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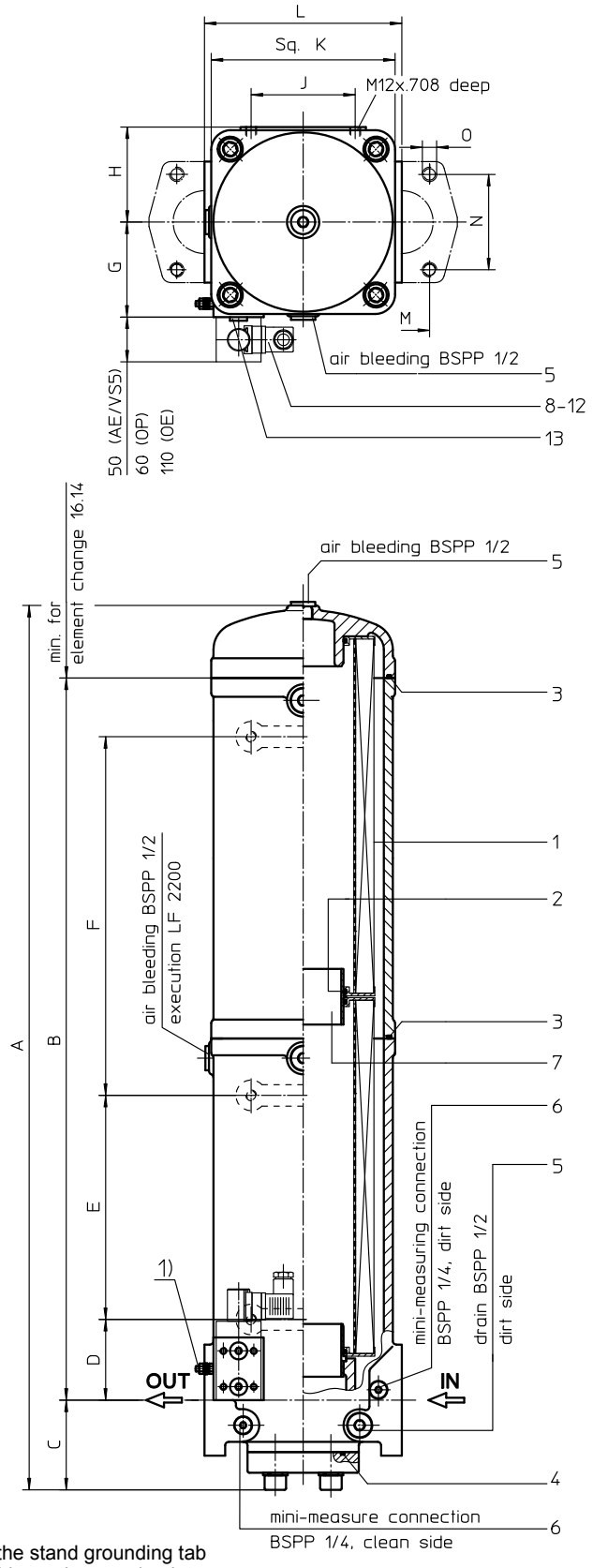
Powering Business Worldwide

Series LF 1950-2200
464 PSI



Dimensions:

type	LF1950	LF2200
connection	SAE 3“	SAE 5“
A	38.86	41.10
B	31.73	32.75
C	3.94	5.12
D	3.54	4.57
E	9.84	9.84
F	15.75	15.75
G	4.17	4.17
H	4.17	4.17
J	4.57	4.57
K	8.07 sq.	8.07 sq.
L	8.66	8.66
M	2.44	3.62
N	4.19	6.00
O	M16x .94 deep	M16x .94 deep
weight	150 lbs.	163 lbs.
volume tank	5.7 Gal.	5.8 Gal.

1) Connect the stand grounding tab to a suitable earth ground point.

Dimensions: inches

Designs and performance values are subject to change.

Powering Business Worldwide

Pressure Filter
Series LF 1950-2200
464 PSI

Description:

In-line filter series LF 1950-2200 have a working pressure up to 464 PSI. Pressure peaks can be absorbed with a sufficient safety margin. The LF filter is mounted in-line. 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 mesh element or changing the glass fiber 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 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 elements are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.

The by-pass valve is integrated into the filter head. After reaching the by-pass pressure setting, the by-pass valve will send unfiltered partial flow around the filter.

Ship classifications available upon request.

1. Type index:

1.1. 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

1 **series:**
LF = In-line filter

2 **nominal size:** 1950, 2200

3 **filter-material and filter-fineness:**
80G, 40G, 25G, 10G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
25API, 10API microglass according to API

4 **filter element collapse rating:**
10 = ∆p 145 PSI

5 **filter element design:**
B = both sides open

6 **sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)

7 **filter element specification:** (see catalog)
- = standard
VA = stainless steel
IS06 = for HPC applications, see sheet-no. 31601
IS07 = for oil/ammonia mixtures (NH3), see sheet-no. 31602

8 **process connection:**
FS = SAE-flange 3000 PSI

9 **process connection size:**
A = 3“ (LF1950)
C = 5“ (LF2200)

10 **filter housing specification:** (see catalog)
- = standard
IS06 = for HFC application, see sheet-no. 31605
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217 (operating pressure max. 232 PSI)

11 **internal valve:**
- = without
S = with by-pass valve ∆p 29 PSI
S1 = with by-pass valve ∆p 51 PSI

12 **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 to your filter, use the corresponding indicator data sheet to find the indicator details and add them to the filter assembly model code.

1.2. Filter element: (ordering example)

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

1 **series:**
01NR. = standard returen 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 flange, see sheet-no. 1652

Technical data:

design temperature:	14 °F to +212 °F
operating temperature:	14 °F to +176 °F
operating medium	mineral oil, other media on request
max. operating pressure:	464 PSI
max. operating pressure at IS20:	232 PSI
test pressure:	900 PSI
test pressure at IS20:	464 PSI
process connection:	SAE-flange 3000 PSI
housing material:	EN-GJS-400-18-LT
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measure connections:	BSPP ¼
drain- and bleeder connections:	BSPP ½

Classified under the Pressure Equipment Directive 2014/68/EC for mineral oil (fluid group 2), Article 4, Para. 3.
Classified under ATEX Directive 2014/34/EC 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 ∆p and the element ∆p and is calculated as follows:

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

$$\Delta p_{element}\,(PSI) = Q\ (GPM)\ x\ \frac{MSK}{1000}\left(\frac{PSI}{GPM}\right) x\ \nu\,(SUS)\ x\ \frac{\rho}{0.876}\left(\frac{kg}{dm^3}\right)$$

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

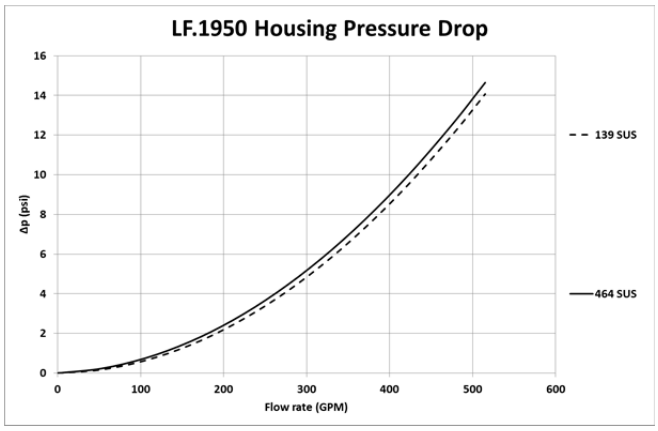
Material gradient coefficients (MSK) for filter elements

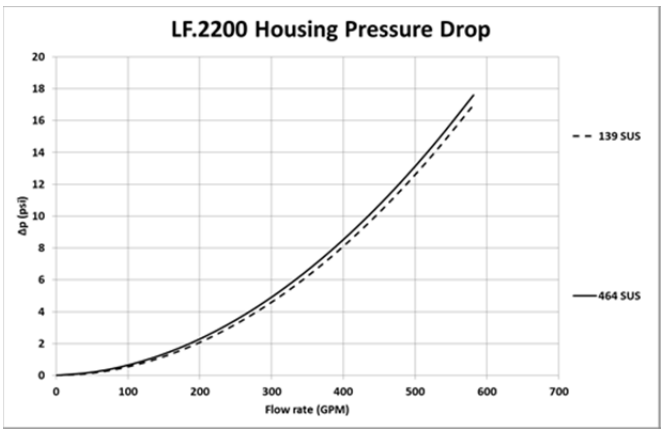
The material gradient coefficients in psi/gpm apply to mineral oil (HLP) with a density of 0.876 kg/dm³ and a kinematic viscosity of 139 SUS (30 mm²/s). The pressure drop changes proportionally to the change in kinematic viscosity and density.

LF	VG					G			API	
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10API	25API
1950	0.118	0.082	0.053	0.046	0.031	0.0030	0.0028	0.0019	0.027	0.012
2200	0.118	0.082	0.053	0.046	0.031	0.0030	0.0028	0.0019	0.027	0.012

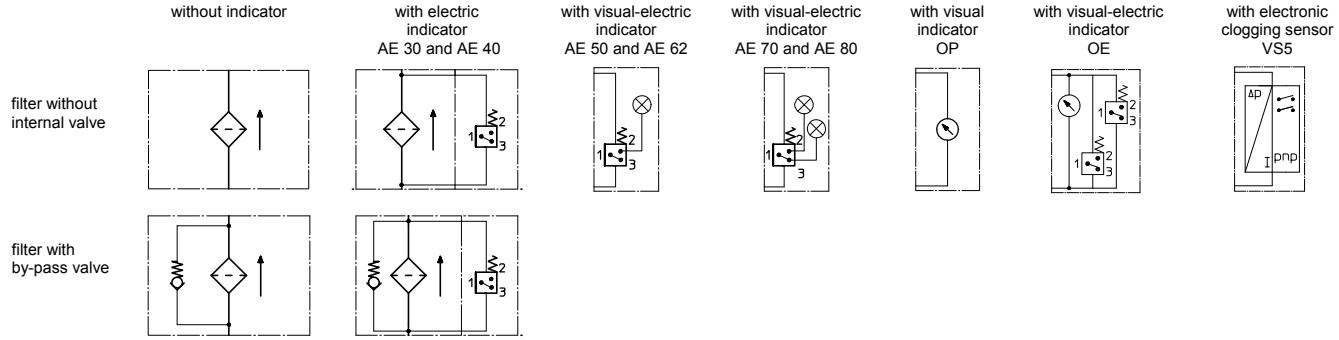
∆p = f(Q) – characteristics according to ISO 3968

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.	
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 LF 1950	85,32 x 3,53	305590 (NBR)	306308 (FPM)
	1	O-ring LF 2200	136,12 x 3,53	320162 (NBR)	320163 (FPM)
5	4	screw plug	½ BSPP	304678	
6	2	screw plug	¼ BSPP	305003	
7	1	connecting pipe	21689-4	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	VS5	see sheet-no. 1641	
12	2	O-ring	14 x 2	304342 (NBR)	304722 (FPM)
13	2	screw plug	¼ BSPP	305003	

item 13 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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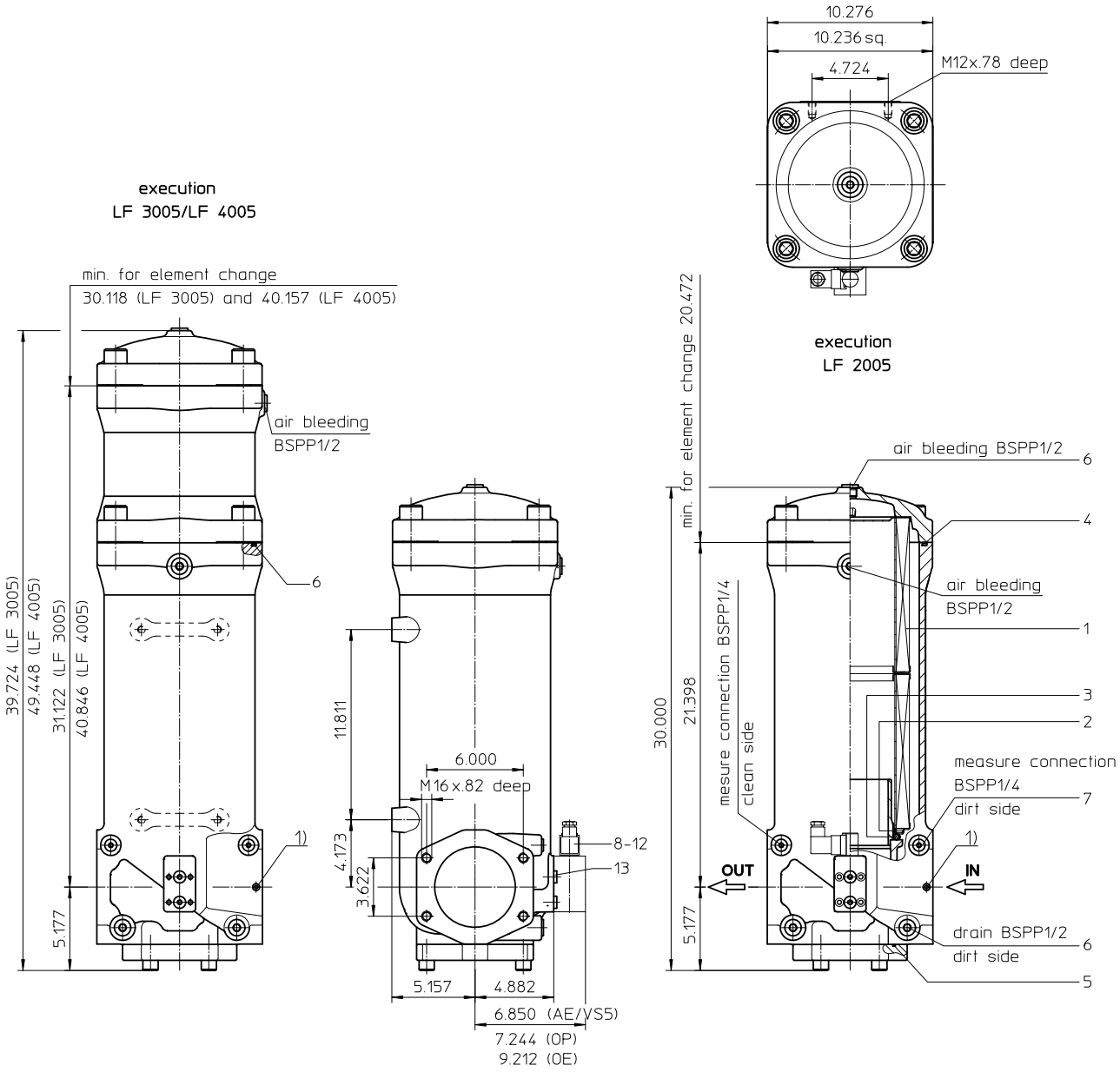
Powering Business Worldwide

Series LF 2005-4005
464 PSI



1) Connect the stand grounding tab to a suitable earth ground point.

Weight LF 2005: approx. 392 lbs.
Weight LF 3005: approx. 545 lbs.
Weight LF 4005: approx. 626 lbs.

Dimensions: inches

Designs and performance values are subject to change.

Powering Business Worldwide

Pressure Filter
Series LF 2005-4005
464 PSI

Description:

In-line filter series LF 2005-4005 have a working pressure up to 464 PSI. Pressure peaks can be absorbed with a sufficient safety margin. The LF filter is mounted in-line. 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 mesh element or changing the glass fiber 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 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 elements are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.

The by-pass valve is integrated into the filter head. After reaching the by-pass pressure setting, the by-pass valve will send unfiltered partial flow around the filter.

Ship classifications available upon request.

1. Type index:

1.1. Complete filter: (ordering example)

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

1 **series:**
LF = In-line filter

2 **nominal size:** 2005, 3005, 4005

3 **filter-material and filter-fineness:**
80G, 40G, 25G, 10G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
25API, 10API microglass according to API

4 **filter element collapse rating:**
10 = ∆p 145 PSI

5 **filter element design:**
E = without by-pass valve
S = with by-pass valve ∆p 29 PSI

6 **sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)

7 **filter element specification:** (see catalog)
- = standard
VA = stainless steel
IS06 = for HFC applications, see sheet-no. 31601

8 **process connection:**
FS = SAE-flange 3000 PSI

9 **process connection size:**
C = 5“

10 **filter housing specification:** (see catalog)
- = standard
IS06 = for HFC applications, see sheet-no. 31605
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217 (operating pressure max. 232 PSI

11 **internal valve:**
- = without
S = with by-pass valve ∆p 29 PSI
S1 = with by-pass valve ∆p 51 PSI

12 **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

1.2. 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

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 flange, see sheet-no. 1652

.

Technical data:

design temperature:	14 °F to +212 °F
operating temperature:	14 °F to +176 °F
operating medium	mineral oil, other media on request
max. operating pressure:	464 PSI
max. operating pressure at IS20:	232 PSI
test pressure:	900 PSI
test pressure at IS20:	464 PSI
process connection:	SAE-flange 3000 PSI
housing material:	EN-GJS-400-18-LT
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measure connections:	BSPP ¼
drain- and bleeder connections:	BSPP ½
volume tank LF 2005:	6 Gal.
LF 3005:	8 Gal.
LF 4005.	10 Gal.

Classified under the Pressure Equipment Directive 2014/68/EC for mineral oil (fluid group 2), Article 4, Para. 3.
Classified under ATEX Directive 2014/34/EC 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 ∆p and the element ∆p and is calculated as follows:

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

$$\Delta p_{element}\,(PSI) = Q\,(GPM)\ x\ \frac{MSK}{1000}\left(\frac{PSI}{GPM}\right) x\ \nu(SUS)\ x\ \frac{\rho}{0.876}\left(\frac{kg}{dm^3}\right)$$

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

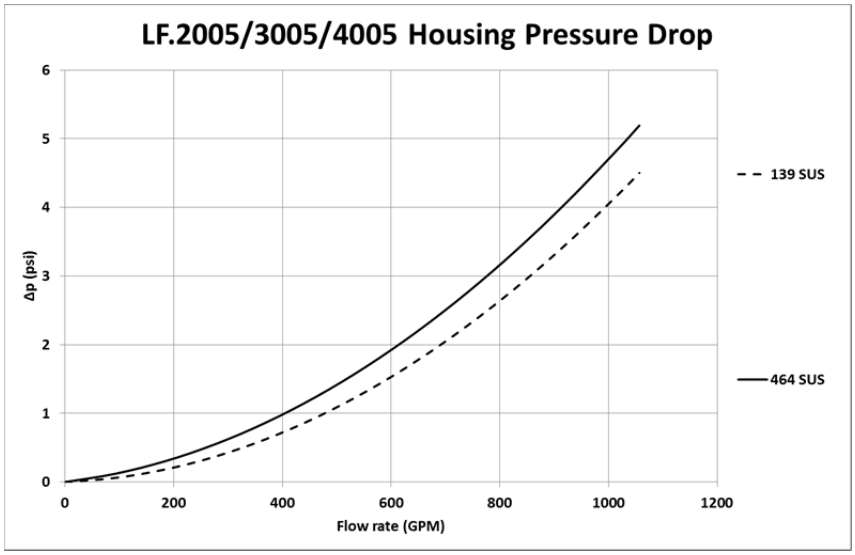
Material gradient coefficients (MSK) for filter elements

The material gradient coefficients in psi/gpm apply to mineral oil (HLP) with a density of 0.876 kg/dm³ and a kinematic viscosity of 139 SUS (30 mm²/s). The pressure drop changes proportionally to the change in kinematic viscosity and density.

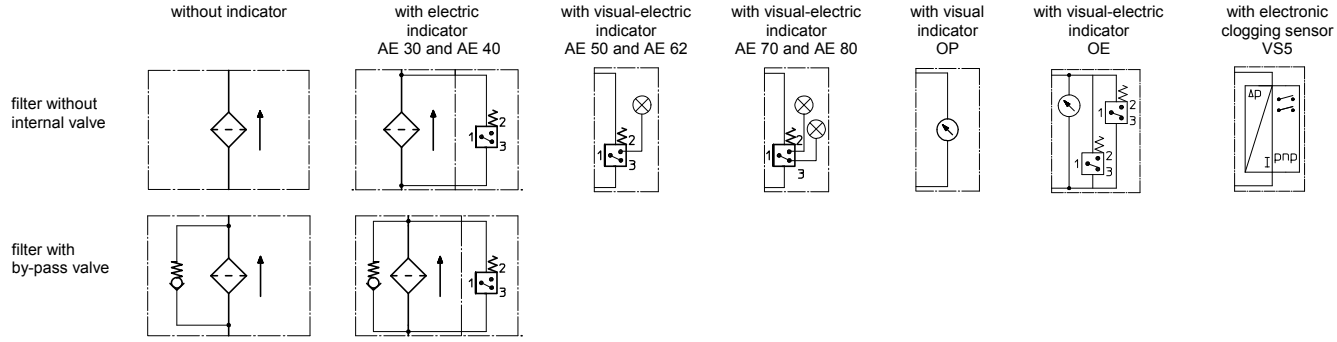
LF	VG					G			API	
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10API	25API
2005	0.177	0.123	0.079	0.068	0.047	0.0059	0.0055	0.0038	0.040	0.018
3005	0.118	0.082	0.052	0.046	0.031	0.0040	0.0037	0.0025	0.027	0.012
4005	0.088	0.061	0.039	0.034	0.023	0.0030	0.0028	0.0019	0.020	0.009

∆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 and article-no. LF 2005	dimension and article-no. LF 3005	dimension and article-no. 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 (LF 2005)	240 x 5	307592 (NBR) 328793 (FPM)	
	2	O-ring (LF 3005/4005)			
5	1	O-ring	136,12 x 3,53	320162 (NBR) 320163 (FPM)	
6	4	screw plug (LF 2005)	BSPP ½	304678	
	5	screw plug (LF 3005/4005)			
7	2	screw plug	BSPP ¼	305003	
8	1	clogging indicator visual-electric	OE	see seet-no. 1628	
9	1	clogging indicator visual	OP	see seet-no. 1628	
10	1	clogging indicator visual-electric	AE	see seet-no. 1609	
11	1	clogging sensor electronic	VS5	see seet-no. 1641	
12	2	O-ring	14 x 2	304342 (NBR) 304722 (FPM)	
13	2	screw plug	BSPP ¼	305003	

item 13 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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