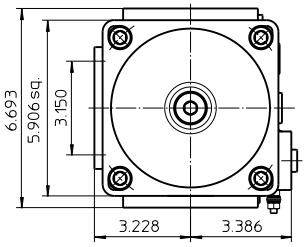
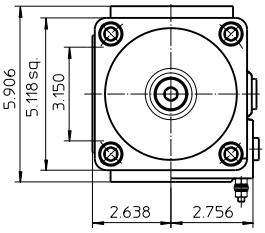
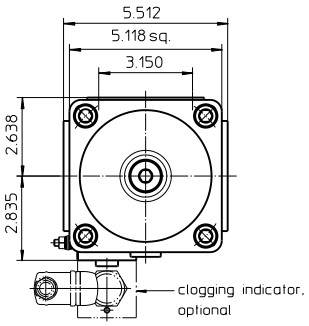
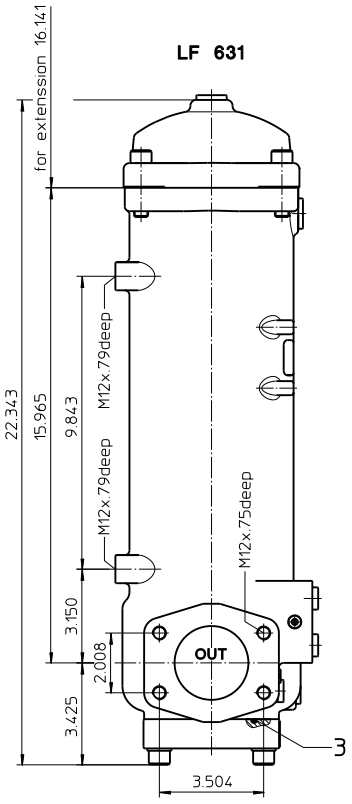
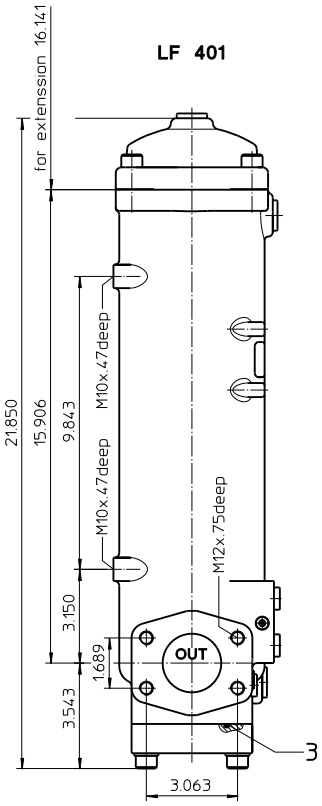
Series LF 251-631
464 PSI

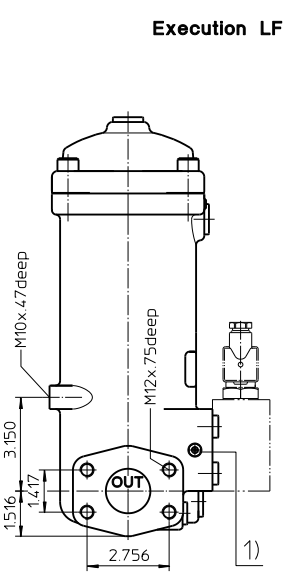


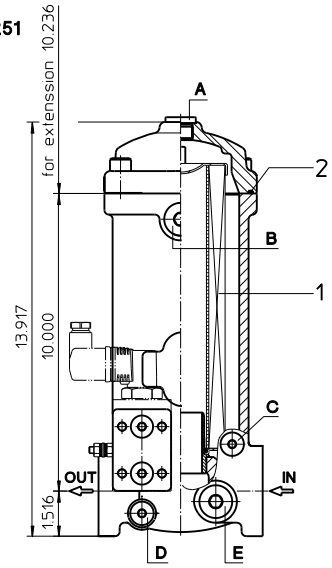












Assignment of connections and functions

A: air bleeding BSPP1/2
B: air bleeding BSPP1/2
C: mini-measuring connection BSPP1/4, dirt side
D: mini-measuring connection BSPP1/4, clean side
E: drain BSPP1/2, dirt side

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

Weight LF 251: approx. 31 lbs.
Weight LF 401: approx. 46 lbs.
Weight LF 631: approx. 64 lbs.

Dimensions: inches

Designs and performance values are subject to change.

Pressure Filter
Series LF 251-631
464 PSI

Description:

In-line filters of the type LF 251-631 are suitable for a working pressure up to 464 PSI. 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, 1VG microglass
25API, 10API microglass according to API

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

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

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 232 PSI)

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:	+14 °F to +212 °F
operating medium:	mineral oil, other media on request
max. operating pressure:	464 PSI
test pressure:	900 PSI
max. operating pressure with IS20:	232 PSI
test pressure with IS20:	464 PSI
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:	BSPP ¼
drain- and bleeder connections:	BSPP ½
volume tank LF 251:	.63 Gal.
LF 401:	.95 Gal.
LF 631:	1.40 Gal.

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 ∆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.eaton.com/hydraulic-filter-evaluation

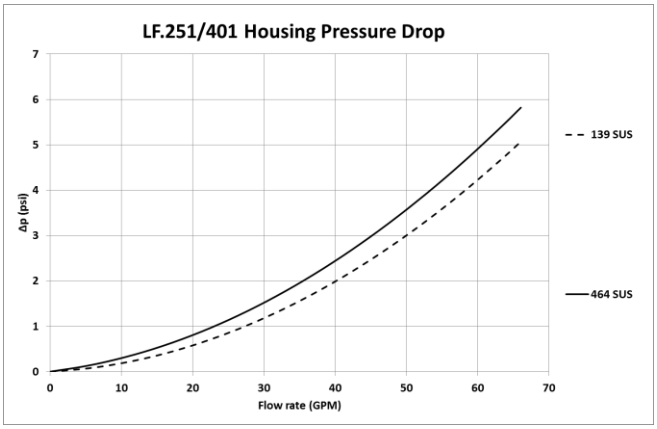
Material gradient coefficients (MSK) for filter elements

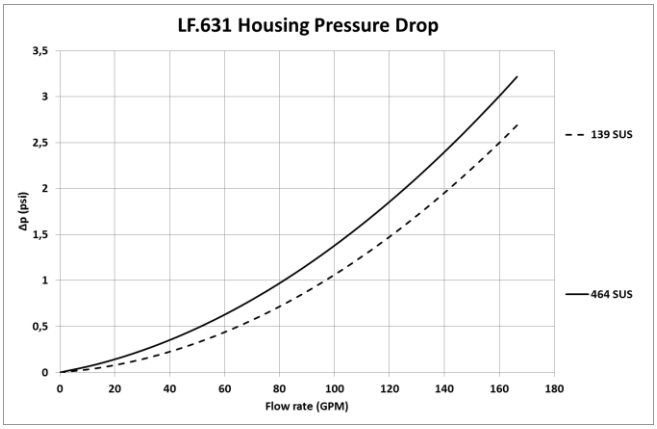
The material gradient coefficients in psi/gpm apply to mineral oil (HLP) with a density of 0.876 kg/dm³ and a kinematic viscosity of 139 SUS (30 mm²/s). The pressure drop changes proportionally to the change in kinematic viscosity and density.

LF	VG						G				API	
	1VG	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	130G	10API	25API
251	1.564	1.140	0.792	0.507	0.441	0.301	0.0339	0.0316	0.0217	0.0161	0.260	0.119
401	0.960	0.700	0.486	0.311	0.271	0.185	0.0207	0.0194	0.0133	0.0098	0.159	0.073
631	0.732	0.534	0.371	0.237	0.207	0.141	0.0173	0.0162	0.0111	0.0082	0.121	0.056

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

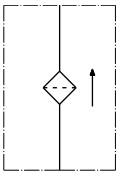
The pressure drop characteristics apply to mineral oil (HLP) with a density of 0.876 kg/dm³. The pressure drop changes proportionally to the density.



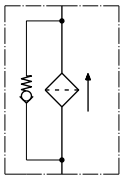


Symbols:

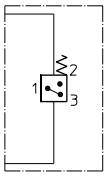
without indicator



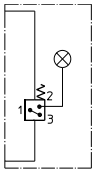
with bypass valve



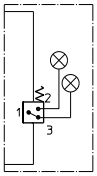
with electric indicator AE30 / AE40



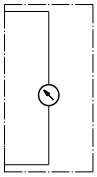
with visual-electric indicator AE50 / AE62



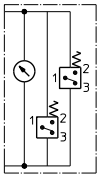
with visual-electric indicator AE70 / AE80 / AE90



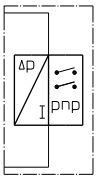
with visual indicator OP



with visual-electric indicator OE



with electronic sensor VS5



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	115 x 3 303963 (NBR) 307762 (FPM)	1	115 x 3 303963 (NBR) 307762 (FPM)	1	125 x 3 306025 (NBR) 307358 (FPM)
3	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)

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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