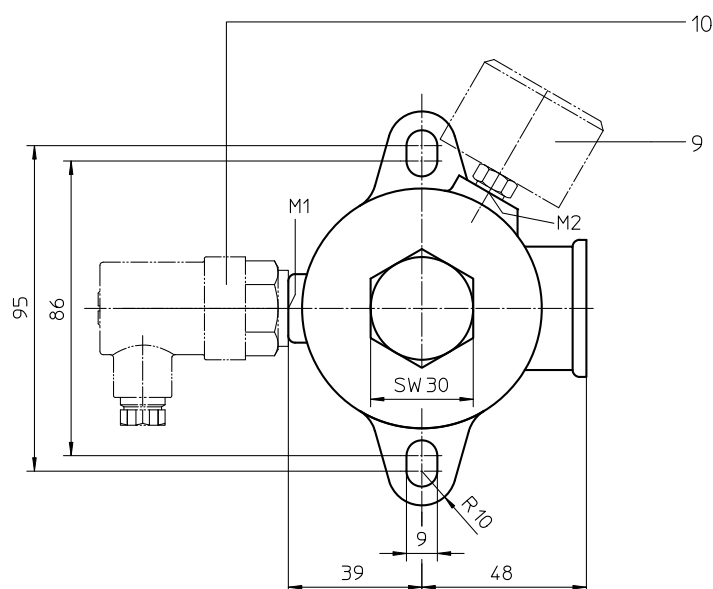
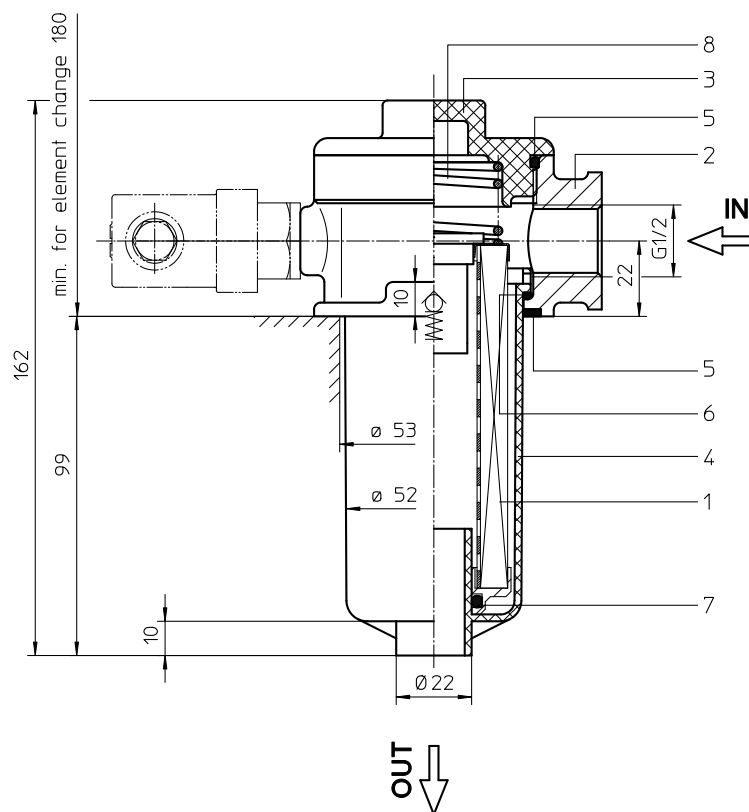


Series TEF 41

DN15 PN10



weight: approx. 0,8 kg

Dimensions: mm

Designs and performance values are subject to change.

Return Line Filter

Series TEF 41

DN15 PN10

Description:

Return-line filter series TEF 41 have a working pressure up to 10 bar. Pressure peaks will be absorbed by a sufficient margin of safety.

The TEF-filters are directly mounted to the reservoir and connected to the return-line.

The filter element consists of a 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 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.

Filters finer than 40 µm use the disposable elements made of paper or microglass. Filter elements as fine as 5 µm(c) are available; finer filter elements on request.

Eaton filter elements are known as stable elements which have excellent filtration capabilities and a high dirt retaining capacity, therefore having a long service life. Due to its practical design, the return-line filter is easy to service.

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.

When changing the filter element, a detachable connection between the filter head and the filter bowl prevents dirty oil from flowing into the tank.

1. Type index:

1.1. Complete filter: (ordering example)

TEF. 41. 10VG. 16. S. P. -. G. 3. -. E1. O												filter with by-pass valve
1	2	3	4	5	6	7	8	9	10	11	12	
TEF. 41. 10VG. 30. E. P. -. G. 3. -. E1. O												filter without by-pass valve
1	2	3	4	5	6	7	8	9	10	11	12	

- 1 **series:**
TEF = tank-mounted return-line-filter
- 2 **nominal size:** 41
- 3 **filter-material:**
80G, 40G, 25G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
10P paper (only with 01E.41)
- 4 **filter element collapse rating:**
16 = 01E.41 for Δp 16 bar (standard with by-pass valve)
30 = 01E.60 for Δp 30 bar (standard without by-pass valve)
- 5 **filter element design:**
S = with by-pass valve Δp 2,0 bar (01E.41)
E = without by-pass valve (01E.60)
- 6 **sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)
- 7 **filter element specification:**
- = standard
IS06 = for HFC applications, see sheet-no. 31601
- 8 **process connection:**
G = thread connection according to DIN 3852, T2
- 9 **process connection size:**
3 = G ½
- 10 **filter housing specification:**
- = standard
IS06 = for HFC applications, see sheet-no. 31605
- 11 **clogging indicator at M1:**
- = without
O = visual, see sheet-no. 1616
E1 = pressure switch, see sheet-no. 1616
E2 = pressure switch, see sheet-no. 1616
E5 = pressure switch, see sheet-no. 1616
- 12 **clogging indicator at M2:**
possible indicators see position 11 of the type index

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)

01E. 41. 10VG. 16. S. P. -							with by-pass valve
1	2	3	4	5	6	7	
01E. 60. 10VG. 30. E. P. -							without by-pass valve
1	2	3	4	5	6	7	

- 1 **series:**
01E. = filter element according to company standard
- 2 **nominal size:** 41, 60
- 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:	10 bar
opening pressure by-pass valve:	2,0 bar
process connection:	thread connection according to DIN 3852, T2
housing material:	Al-cast, glass fiber reinforced polyamide (screw plug, filter bowl)
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
volume tank:	0,2 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:

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

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

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

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

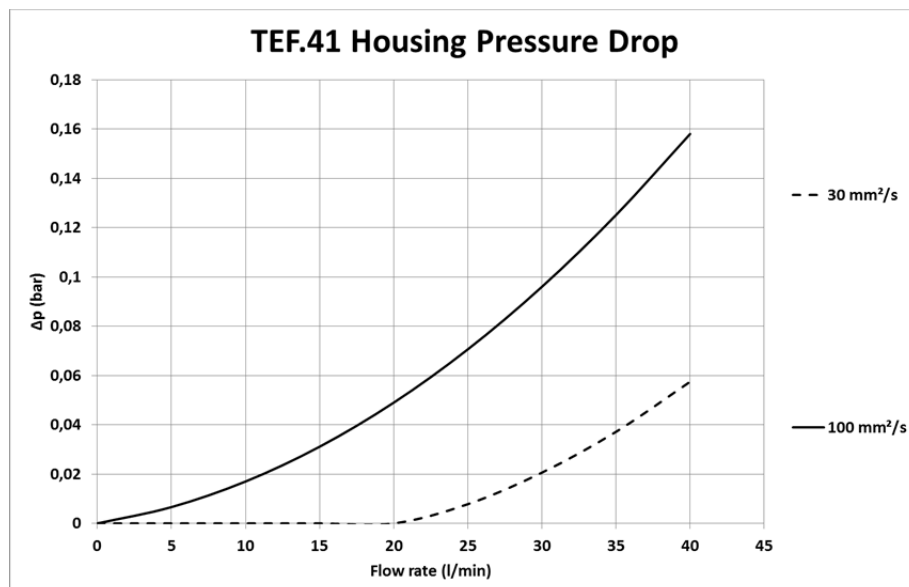
Material gradient coefficients (MSK) for filter elements

The material gradient coefficients in 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.

TEF	VG					G			P
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P
41 (without bypass)	5,438	3,775	2,417	2,104	1,438	0,1635	0,1526	0,1045	1,200
41 (with bypass)	5,438	3,775	2,417	2,104	1,438	0,1635	0,1526	0,1045	-

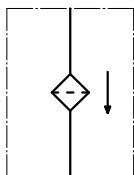
$\Delta p = f(Q)$ – characteristics according to ISO 3968

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.

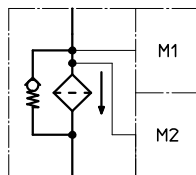


Symbols:

without indicator



with by-pass valve



visual O



electric
contact maker
E1



electric
contact breaker
E5



electric
contact maker/breaker
E2



Spare parts:

item	qty.	designation	dimension	article-no.	
1	1	filter element with by-pass	01.E41...		
	1	filter element without by-pass	01.E60...		
2	1	filter head	TEF 41 - 55	308646	
3	1	filter cover	M 60 x 2	303621	
4	1	filter bowl	TEF 41	306673	
5	2	O-ring	56 x 3	305072 (NBR)	305322 (FPM)
6	1	O-ring	50 x 2,5	305239 (NBR)	305321 (FPM)
7	1	O-ring	22 x 3,5	304341 (NBR)	304392 (FPM)
8	1	spring	DA = 40	304982	
9	1	clogging indicator visual	O	301721	
10	1	clogging indicator electric	E1, E2 or E5	see sheet-no. 1616	

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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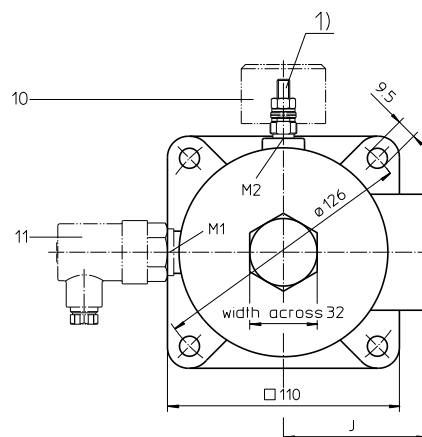
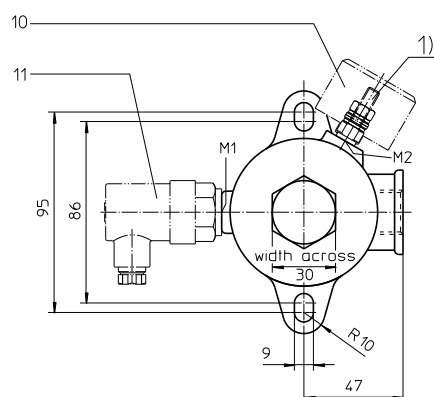
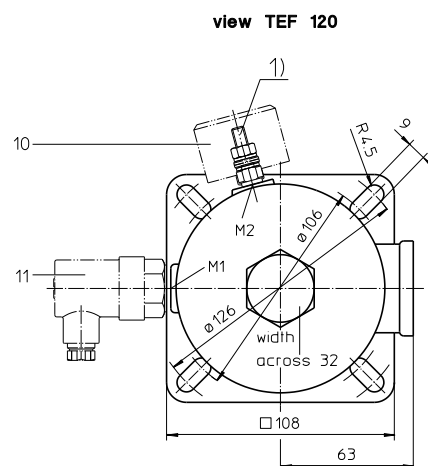
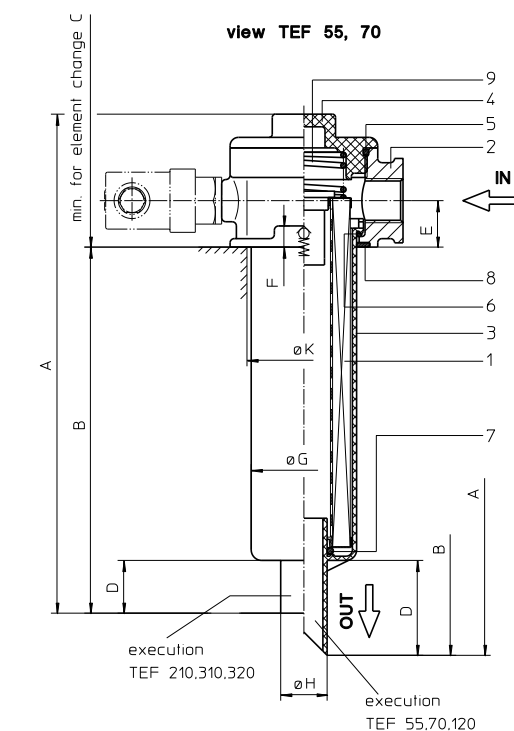
For more information, please

email us at filtration@eaton.com

or visit www.eaton.com/filtration

Series TEF 55-320

DN15-40 PN10



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

Dimensions:

type	connection	A	B	C	D	E	F	G	H	J	K	weight kg	volume tank
TEF 55	G 1/2	257	194	270	45	22	10	52	21	-	53	0,9	0,3 l
TEF 70	G 3/4	257	194	270	45	22	10	52	21	-	53	0,9	0,3 l
TEF 120	G 1	285	211	300	65	27	10	70	24	-	72 ⁺¹⁰	1,5	0,6 l
TEF 210	G 1 1/4	302	227	350	25	30	10	80	38	67	82 ⁺³	2,1	1,1 l
TEF 310	G 1 1/4	387	312	405	25	30	10	80	38	67	82 ⁺³	2,5	1,4 l
TEF 320	G 1 1/2	418	327	465	40	36	10	85	40	71	86 ⁺⁶	2,8	1,7 l

Dimensions: mm

Designs and performance values are subject to change.

Return Line Filter

Series TEF 55-320

DN15-40 PN10

Description:

Return-line filter series TEF 55-320 have a working pressure up to 10 bar. Pressure peaks will be absorbed by a sufficient margin of safety.

The TEF-filters are directly mounted to the reservoir and connected to the return-line.

The filter element consists of a 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 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.

Filters finer than 40 µm use the disposable elements made of paper or microglass. Filter elements as fine as 5 µm(c) are available; finer filter elements on request.

Eaton filter elements are known as stable elements which have excellent filtration capabilities and a high dirt retaining capacity, therefore having a long service life. Due to its practical design, the return-line filter is easy to service.

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.

When changing the filter element, a detachable connection between the filter head and the filter bowl prevents dirty oil from flowing into the tank.

1. Type index:

1.1. Complete filter: (ordering example)

TEF. 70. 10VG. 16. S. P. -. G. 4. -. E1. O. -

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

- 1 **series:**
TEF = tank-mounted return-line-filter
- 2 **nominal size:** 55, 70, 120, 210, 310, 320
- 3 **filter-material:**
80G, 40G, 25G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
10P paper
- 4 **filter element collapse rating:**
16 = Δp 16 bar
- 5 **filter element design:**
E = without by-pass valve
S = with by-pass valve Δp 2,0 bar
S1 = with by-pass valve Δp 3,5 bar
- 6 **sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)
- 7 **filter element specification:**
- = standard
IS06 = for HFC application, see sheet-no. 31601
- 8 **process connection:**
G = thread connection according to DIN 3852, T2
- 9 **process connection size:**
3 = G 1/2 TEF 55
4 = G 3/4 TEF 70
5 = G 1 TEF 120
6 = G 1 1/4 TEF 210/310
7 = G 1 1/2 TEF 320
- 10 **filter housing specification:**
- = standard
IS06 = for HFC application, see sheet-no. 31605
IS10 = for ATEX, see sheet-no. 68267
IS11 = for mining applications, see sheet-no. 40530 (TEF320)
- 11 **clogging indicator at M1:**
- = without
O = visual, see sheet-no. 1616
E1 = pressure switch, see sheet-no. 1616
E2 = pressure switch, see sheet-no. 1616
E5 = pressure switch, see sheet-no. 1616
PA = ground connection
- 12 **clogging indicator at M2:**
possible indicators see position 11 of the type index
- 13 **permanent magnet:**
- = without
M = with magnet

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)

01E. 70. 10VG. 16. S. P. -

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

- 1 **series:**
01E. = filter element according to company standard
- 2 **nominal size:** 70 (TEF55/70), 120 (TEF120),
210 (TEF210), 320 (TEF310/320)
- 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:	10 bar
opening pressure by-pass valve:	2,0 bar, 3,5 bar
process connection:	thread connection according to DIN 3852, T2
housing material standard:	filter head AL, screw plug / filter bowl glass fiber reinforced polyamide
housing material IS10, category 2 and 3:	filter head AL, screw plug / filter bowl carbon fiber reinforced polyamide
housing material IS11, category M2:	filter head GG, screw plug steel / filter bowl carbon fiber reinforced polyamide
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical

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:

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

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

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

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.

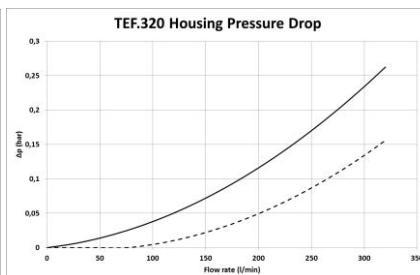
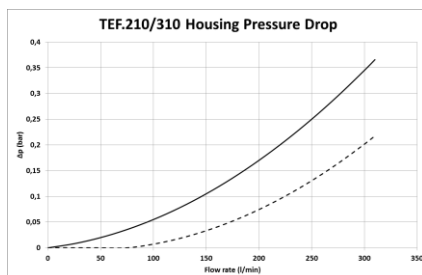
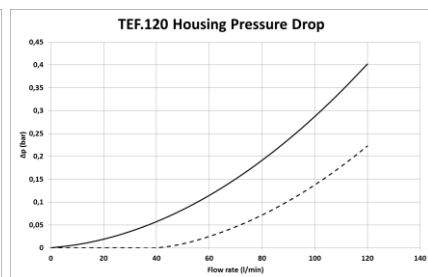
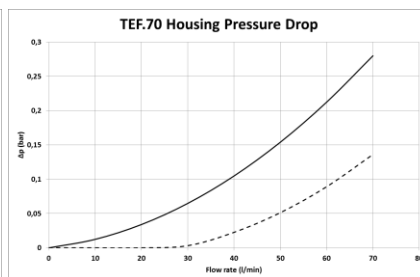
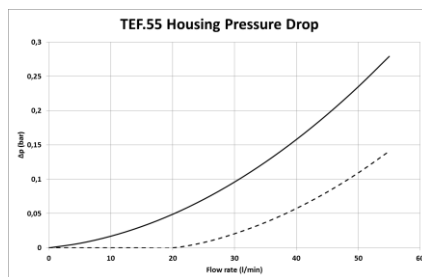
TEF	VG					G			P
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P
55	2,933	2,036	1,304	1,135	0,775	0,0977	0,0912	0,0625	0,651
70	2,933	2,036	1,304	1,135	0,775	0,0977	0,0912	0,0625	0,651
120	2,624	1,821	1,166	1,015	0,694	0,0934	0,0872	0,0597	0,564
210	1,327	0,922	0,590	0,514	0,351	0,0480	0,0448	0,0307	0,288
310	0,953	0,661	0,423	0,369	0,252	0,0275	0,0257	0,0176	0,206
320	0,953	0,661	0,423	0,369	0,252	0,0275	0,0257	0,0176	0,206

$\Delta p = f(Q)$ – 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.

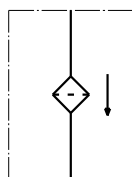
Viscosity key:

___ 30mm²/s ___ 100 mm²/s

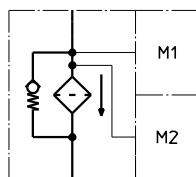


Symbols:

without indicator



with by-pass valve



visual O



electric
contact maker
E1



electric
contact breaker
E5



electric
contact maker/breaker
E2



Spare parts:

item	qty.	designation	dimension and article-no.					
			TEF 55	TEF 70	TEF 120	TEF 210	TEF 310	TEF 320
1	1	filter element	01E.70...		01E.120...	01E.210...	01E.320...	01E.320...
2	1	filter head						
3	1	filter bowl						
4	1	screw plug	M60 x 2		M82 x 2		M90 x 2	M100 x 2
5	1	O-ring	56 x 3 305072 (NBR) 305322 (FPM)		75 x 3 302215 (NBR) 304729 (FPM)		82 x 3 305191 (NBR) 305298 (FPM)	96 x 3 305292 (NBR) 305297 (FPM)
6	1	O-ring	50 x 2,5 305239 (NBR) 305321 (FPM)		68 x 4 303037 (NBR) 313046 (FPM)		75 x 3 302215 (NBR) 304729 (FPM)	82 x 3 305191 (NBR) 305298 (FPM)
7	1	O-ring	22 x 3 304387 (NBR) 304931 (FPM)		24 x 3 303038 (NBR) 304397 (FPM)		40 x 3 304389 (NBR) 304391 (FPM)	40 x 3 304389 (NBR) 304391 (FPM)
8	1	O-ring	56 x 3 305072 (NBR) 305322 (FPM)		86 x 3 305470 (NBR) 313047 (FPM)		88 x 3 304417 (NBR) 310266 (FPM)	96 x 3 305292 (NBR) 305297 (FPM)
9	1	spring	DA = 40 344920		DA = 52 302144		DA = 52 302144	DA = 52 305053
10	1	clogging indicator, visual	O 301721					
11	1	clogging indicator, electric	E1, E2 or E5 see sheet-no. 1616					

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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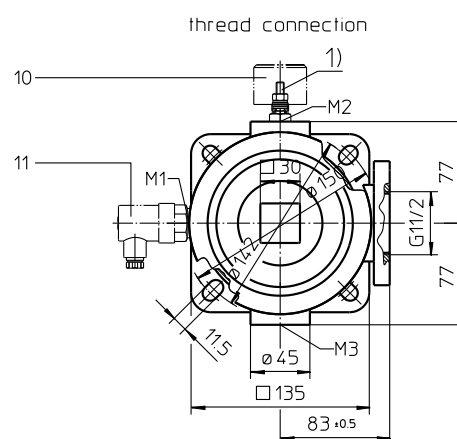
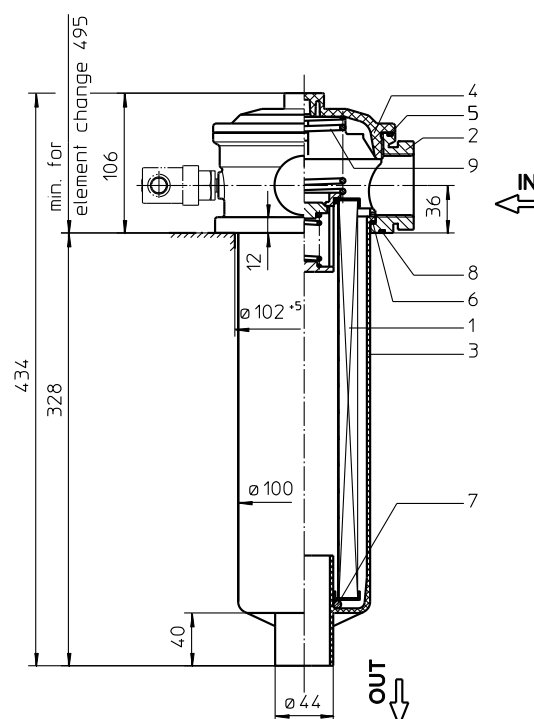
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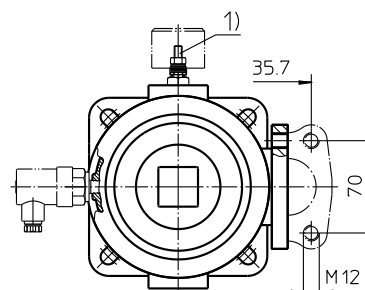
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Series TEF 426

DN40 PN10



SAE-connection



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

weight: approx. 2,6 kg

Dimensions: mm

Designs and performance values are subject to change!

Return Line Filter

Series TEF 426

DN40 PN10

Description:

Return-line filter series TEF 426 have a working pressure up to 10 bar. Pressure peaks will be absorbed by a sufficient margin of safety.

The TEF-filters are directly mounted to the reservoir and connected to the return-line.

The filter element consists of a 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 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.

Filters finer than 40 µm use the disposable elements made of paper or microglass. Filter elements as fine as 5 µm(c) are available; finer filter elements on request.

Eaton filter elements are known as stable elements which have excellent filtration capabilities and a high dirt retaining capacity, therefore having a long service life. Due to its practical design, the return-line filter is easy to service.

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.

When changing the filter element, a detachable connection between the filter head and the filter bowl prevents dirty oil from flowing into the tank.

1. Type index:

1.1. Complete filter: (ordering example)

TEF. 426. 10VG. 16. S. P. - . G. 7. - . E1. O. - . -

1	2	3	4	5	6	7	8	9	10	11	12	13	14
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- 1 series:**
TEF = tank-mounted return-line-filter
- 2 nominal size:** 426
- 3 filter-material:**
80G, 40G, 25G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
10P paper
- 4 filter element collapse rating:**
16 = Δp 16 bar
- 5 filter element design:**
E = without by-pass valve
S = with by-pass valve Δp 2,0 bar
S1 = with by-pass valve Δp 3,5 bar
- 6 sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)
- 7 filter element specification:**
- = standard
IS06 = for HFC applications, see sheet-no. 31601
- 8 process connection:**
G = thread connection according to DIN 3852, T2
FS = SAE-flange connection 3000 PSI
- 9 process connection size:**
7 = 1 1/2"
- 10 filter housing specification:**
- = standard
IS06 = for HFC applications, see sheet-no. 31605
IS10 = for ATEX, see sheet-no. 68267
IS11 = for mining applications, see sheet-no. 40530
- 11 clogging indicator at M1:**
- = without
O = visual, see sheet-no. 1616
E1 = pressure switch, see sheet-no. 1616
E2 = pressure switch, see sheet-no. 1616
E5 = pressure switch, see sheet-no. 1616
PA = ground connection
- 12 clogging indicator at M2:**
possible indicators see position 11 of the type index
- 13 clogging indicator at M3:**
possible indicators see position 11 of the type index
- 14 permanent magnet:**
- = without
M = with magnet

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)

01E. 425. 10VG. 16. S. P. -

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

- 1 series:**
01E. = filter element according to company standard
- 2 nominal size:** 425
- 3 - 7** see type index-complete filter

Accessories:

- SAE-counter flange, see sheet-no. 1652

Technical data:

operating temperature:	-10°C to +100°C
operating medium	mineral oil, other media on request
max. operating pressure:	10 bar
opening pressure by-pass valve:	2,0 bar; 3,5 bar
process connection:	thread connection or SAE-flange connection 3000 PSI
housing material standard:	filter head AL, screw plug / filter bowl glass fiber reinforced polyamide
housing material IS10, category 2 and 3:	filter head AL, screw plug / filter bowl carbon fiber reinforced polyamide
housing material IS11, category M2:	filter head GG, screw plug steel / filter bowl carbon fiber reinforced polyamide
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
volume tank:	2,5 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:

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

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

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

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

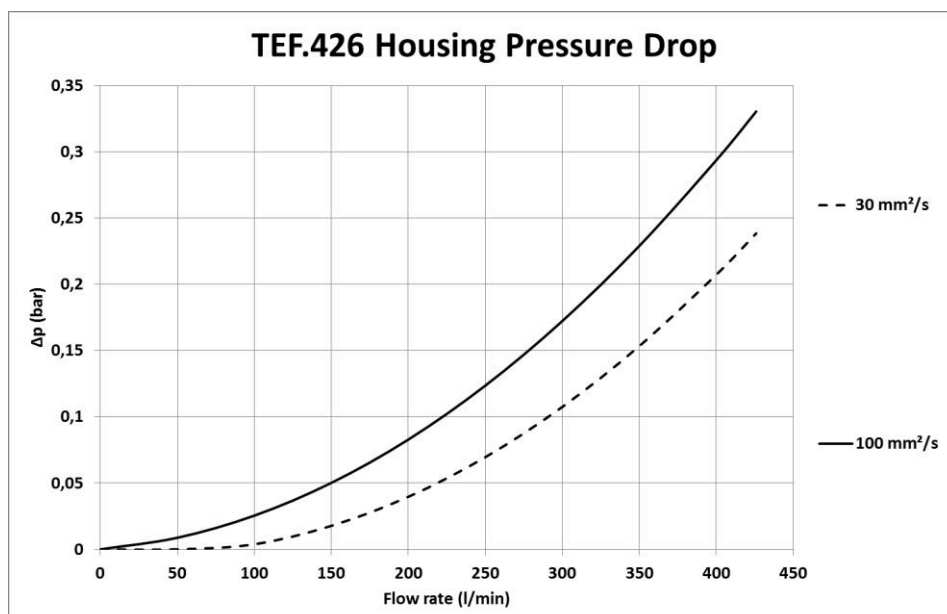
Material gradient coefficients (MSK) for filter elements

The material gradient coefficients in 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.

TEF	VG					G			P
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P
426	0,704	0,489	0,313	0,273	0,186	0,0220	0,0206	0,0141	0,149

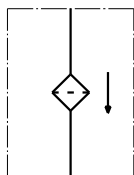
$\Delta p = f(Q)$ – characteristics according to ISO 3968

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.

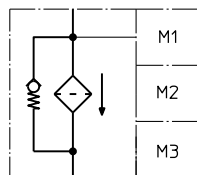


Symbols:

without indicator



with by-pass valve



visual O



electric
contact maker
E1



electric
contact breaker
E5



electric
contact maker/breaker
E2



Spare parts:

item	qty.	designation	dimension	article-no.	
1	1	filter element	01.E425...		
2	1	filter head			
3	1	filter bowl	NG 426		
4	1	screw plug	M 120 x 3		
5	1	O-ring	128 x 3	304602 (NBR)	308140 (FPM)
6	1	O-ring	98 x 4	301914 (NBR)	304765 (FPM)
7	1	O-ring	44 x 6	302222 (NBR)	304384 (FPM)
8	1	O-ring	115 x 3	303963 (NBR)	307762 (FPM)
9	1	spring	DA = 63,5	304983	
10	1	clogging indicator visual	O	301721	
11	1	clogging indicator electric	E1, E2 or E5	see sheet-no.1616	

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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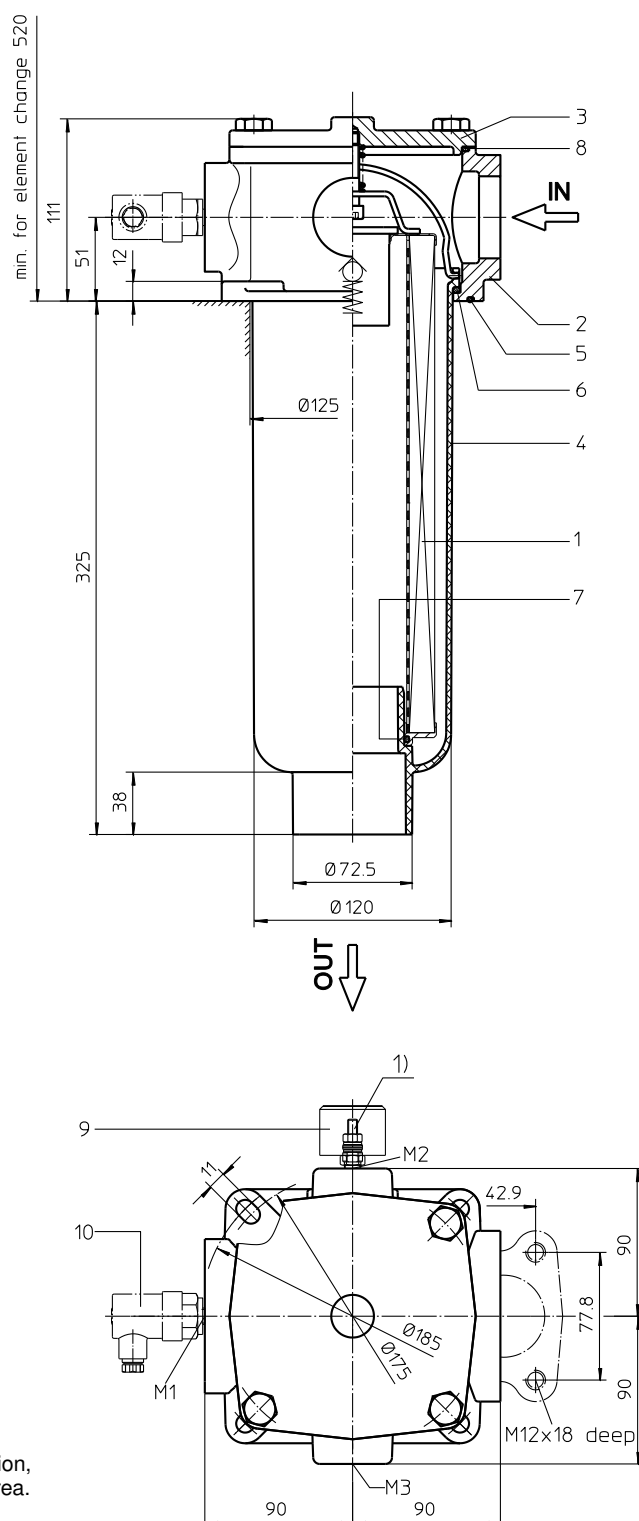
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Series TEF 625

DN50 PN10



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

weight: approx. 4,5 kg

Dimensions: mm

Designs and performance values are subject to change!

Return Line Filter

Series TEF 625

DN50 PN10

Description:

Return-line filter series TEF 625 have a working pressure up to 10 bar. Pressure peaks will be absorbed by a sufficient margin of safety.

The TEF-filters are directly mounted to the reservoir and connected to the return-line.

The filter element consists of a 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 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.

Filters finer than 40 µm use the disposable elements made of paper or microglass. Filter elements as fine as 5 µm(c) are available; finer filter elements on request.

Eaton filter elements are known as stable elements which have excellent filtration capabilities and a high dirt retaining capacity, therefore having a long service life. Due to its practical design, the return-line filter is easy to service.

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.

When changing the filter element, a detachable connection between the filter head and the filter bowl prevents dirty oil from flowing into the tank.

1. Type index:

1.1. Complete filter: (ordering example)

TEF. 625. 10VG. 16. S. P. -. FS. 8. -. E1. O. -

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

- 1 **series:**
TEF = tank-mounted return-line-filter
- 2 **nominal size:** 625
- 3 **filter-material:**
80G, 40G, 25G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
10P paper
- 4 **filter element collapse rating:**
16 = Δp 16 bar
- 5 **filter element design:**
E = without by-pass valve
S = with by-pass valve Δp 2,0 bar
S1 = with by-pass valve Δp 3,5 bar
- 6 **sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)
- 7 **filter element specification:**
- = standard
IS06 = for HFC applications, see sheet-no. 31601
- 8 **process connection:**
FS = SAE-flange connection 3000 PSI
- 9 **process connection size:**
8 = 2"
- 10 **filter housing specification:**
- = standard
IS06 = for HFC applications, see sheet-no. 31605
IS10 = for ATEX, see sheet-no. 68267
IS11 = for mining applications, see sheet-no. 40530
- 11 **clogging indicator at M1:**
- = without
O = visual, see sheet-no. 1616
E1 = pressure switch, see sheet-no. 1616
E2 = pressure switch, see sheet-no. 1616
E5 = pressure switch, see sheet-no. 1616
PA = ground connection
- 12 **clogging indicator at M2:**
possible indicators see position 11 of the type index
- 13 **clogging indicator at M3:**
possible indicators see position 11 of the type index

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)

01E. 631. 10VG. 16. S. P. -

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

- 1 **series:**
01E. = filter element according to company standard
- 2 **nominal size:** 631
- 3 - 7 see type index-complete filter

Accessories:

- SAE-counter flange, see sheet-no. 1652

Technical data:

operating temperature:	-10°C to +100°C
operating medium	mineral oil, other media on request
max. operating pressure:	10 bar
opening pressure by-pass valve:	2,0 bar; 3,5 bar
process connection:	SAE-flange connection 3000 PSI
housing material standard:	filter head and cover AL, / filter bowl glass fiber reinforced polyamide
housing material IS10, category 2 and 3:	filter head and cover AL, / filter bowl carbon fiber reinforced polyamide
housing material IS11, category M2:	filter head and cover GG, / filter bowl carbon fiber reinforced polyamide
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
volume tank:	3,7 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:

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

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

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

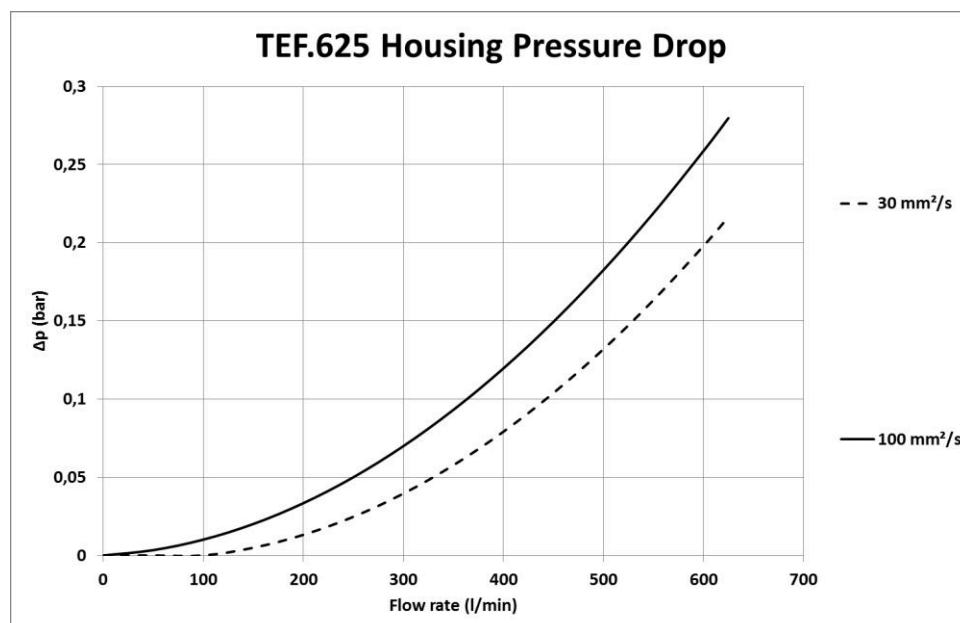
Material gradient coefficients (MSK) for filter elements

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.

TEF	VG					G			P
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P
625	0,533	0,370	0,237	0,206	0,141	0,0193	0,0180	0,0123	0,116

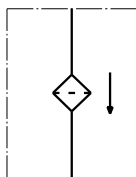
$\Delta p = f(Q)$ – characteristics according to ISO 3968

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.

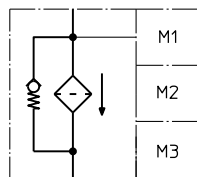


Symbols:

without indicator



with by-pass valve



visual O



electric
contact maker
E1



electric
contact breaker
E5



electric
contact maker/breaker
E2



Spare parts:

item	qty.	designation	dimension	article-no.	
1	1	filter element	01.E631...		
2	1	filter head			
3	1	filter cover			
4	1	filter bowl	NG 625		
5	1	O-ring	140 x 3	304602 (NBR)	308140 (FPM)
6	1	O-ring	120 x 4	301914 (NBR)	304765 (FPM)
7	1	O-ring	63 x 3,5	302222 (NBR)	304384 (FPM)
8	1	O-ring	135 x 3,5	303963 (NBR)	307762 (FPM)
9	1	clogging indicator, visual	O	301721	
10	1	clogging indicator electric	E1, E2 or E5	see sheet-no. 1616	

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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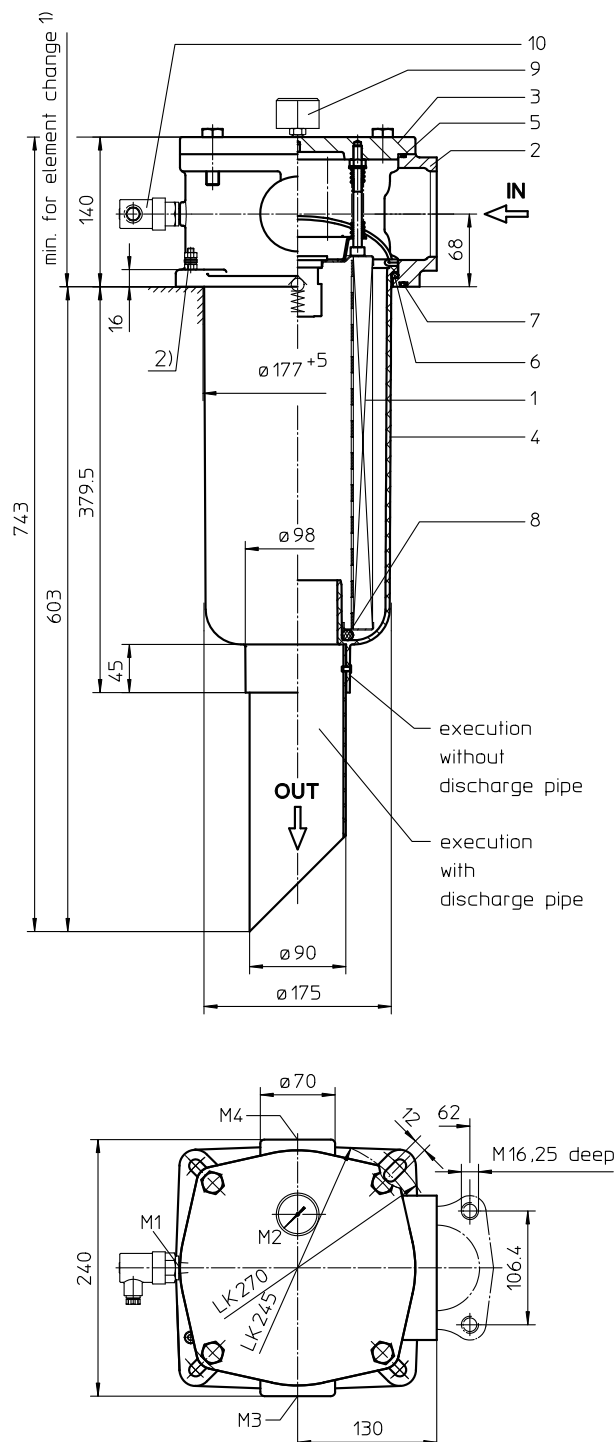
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Series TEF 952

DN80 PN10

- 1) min. for element change without discharge pipe 560
min. for element change with discharge pipe 780



weight: approx. 11 kg

Dimensions: mm

Designs and performance values are subject to change.

Return Line Filter

Series TEF 952

DN80 PN10

Description:

Return-line filter series TEF 952 have a working pressure up to 10 bar. Pressure peaks will be absorbed by a sufficient margin of safety.

The TEF-filters are directly mounted to the reservoir and connected to the return-line.

The filter element consists of a 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 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.

Filters finer than 40 µm use the disposable elements made of paper or microglass. Filter elements as fine as 5 µm(c) are available; finer filter elements on request.

Eaton filter elements are known as stable elements which have excellent filtration capabilities and a high dirt retaining capacity, therefore having a long service life. Due to its practical design, the return-line filter is easy to service.

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.

When changing the filter element, a detachable connection between the filter head and the filter bowl prevents dirty oil from flowing into the tank.

1. Type index:

1.1. Complete filter: (ordering example)

TEF. 952. 10VG. 10. S. P. - FS. A. -

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

E1. O. - - -

11	12	13	14	15
----	----	----	----	----

- 1 series:**
TEF = tank-mounted return-line-filter
- 2 nominal size:** 952
- 3 filter-material:**
80G, 40G, 25G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
10P paper
- 4 filter element collapse rating:**
10 = Δp 10 bar
- 5 filter element design:**
E = without by-pass valve
S = with by-pass valve Δp 2,0 bar
S1 = with by-pass valve Δp 3,5 bar
- 6 sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)
- 7 filter element specification:**
- = standard
IS06 = for HFC application, see sheet-no. 31601
- 8 process connection:**
FS = SAE-flange connection 3000 PSI
- 9 process connection size:**
A = 3"
- 10 filter housing specification:**
- = standard
IS06 = for HFC application, see sheet-no. 31605
IS10 = for ATEX, see sheet-no. 68267
IS11 = for mining applications, see sheet-no. 40530
- 11 clogging indicator at M1:**
- = without
O = visual, see sheet-no. 1616
E1 = pressure switch, see sheet-no. 1616
E2 = pressure switch, see sheet-no. 1616
E5 = pressure switch, see sheet-no. 1616
PA = ground connection
- 12 clogging indicator at M2:**
possible indicators see position 11 of the type index
- 13 clogging indicator at M3:**
possible indicators see position 11 of the type index
- 14 clogging indicator at M4:**
possible indicators see position 11 of the type index
- 15 discharge pipe:**
- = without
1 = with discharge pipe

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)

01E. 950. 10VG. 10. S. P. -

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

- 1 series:**
01E. = filter element according to company standard
- 2 nominal size:** 950
- 3 - 7** see type index-complete filter

Accessories:

- SAE-counter flange, see sheet-no. 1652

Technical data:

operating temperature:	-10°C to +100°C
operating medium	mineral oil, other media on request
max. operating pressure:	10 bar
opening pressure by-pass valve:	2,0 bar
process connection:	SAE-flange connection 3000 PSI
housing material standard:	filter head and cover AL, / filter bowl glass fiber reinforced polyamide
housing material IS10, category 2 and 3:	filter head and cover AL, / filter bowl carbon fiber reinforced polyamide
housing material IS11, category M2:	filter head and cover GG, / filter bowl carbon fiber reinforced polyamide
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
volume tank:	10 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:

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

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

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

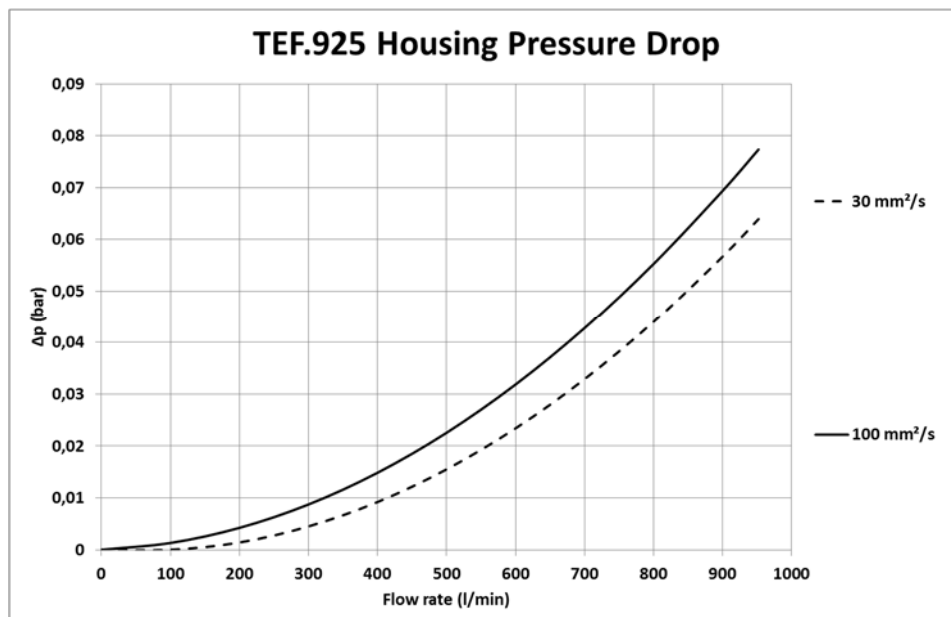
Material gradient coefficients (MSK) for filter elements

The material gradient coefficients in 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.

TEF	VG					G			P
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P
952	0,302	0,210	0,134	0,117	0,080	0,0146	0,0137	0,0094	0,062

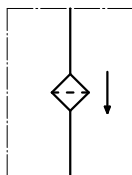
$\Delta p = f(Q)$ – characteristics according to ISO 3968

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.

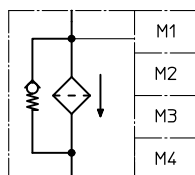


Symbols:

without indicator



with by-pass valve



visual O



electric
contact maker
E1



electric
contact breaker
E5



electric
contact maker/breaker
E2



Spare parts:

item	qty.	designation	dimension	article-no.	
1	1	filter element	01.E950...		
2	1	filter head			
3	1	filter cover			
4	1	filter bowl without discharge pipe	NG 950		
	1	filter bowl with discharge pipe	NG 950		
5	1	O-ring	195 x 3,5	301831 (NBR)	306528 (FPM)
6	1	O-ring	170 x 6	304799 (NBR)	306529 (FPM)
7	1	O-ring	190 x 5	305432 (NBR)	310283 (FPM)
8	1	O-ring	78 x 10	305017 (NBR)	305552 (FPM)
9	1	clogging indicator, visual	O	301721	
10	1	clogging indicator electric	E1, E2 or E5	see sheet-no. 1616	

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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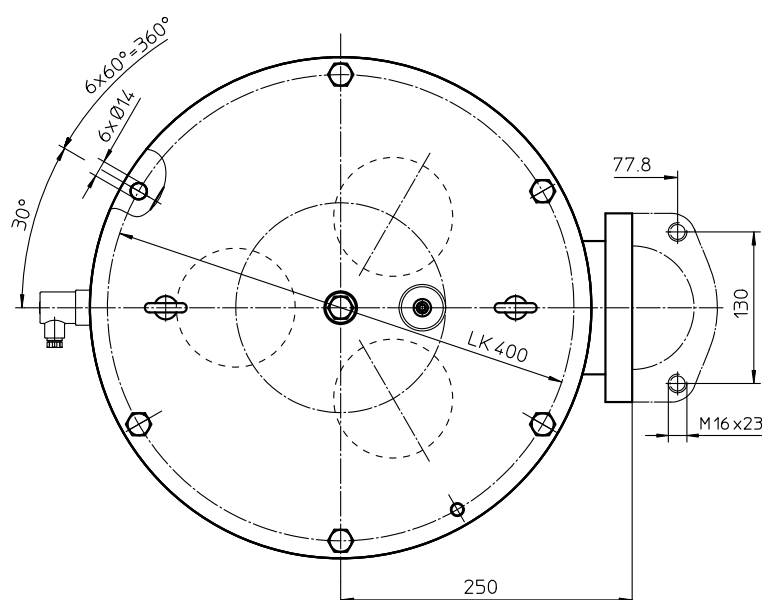
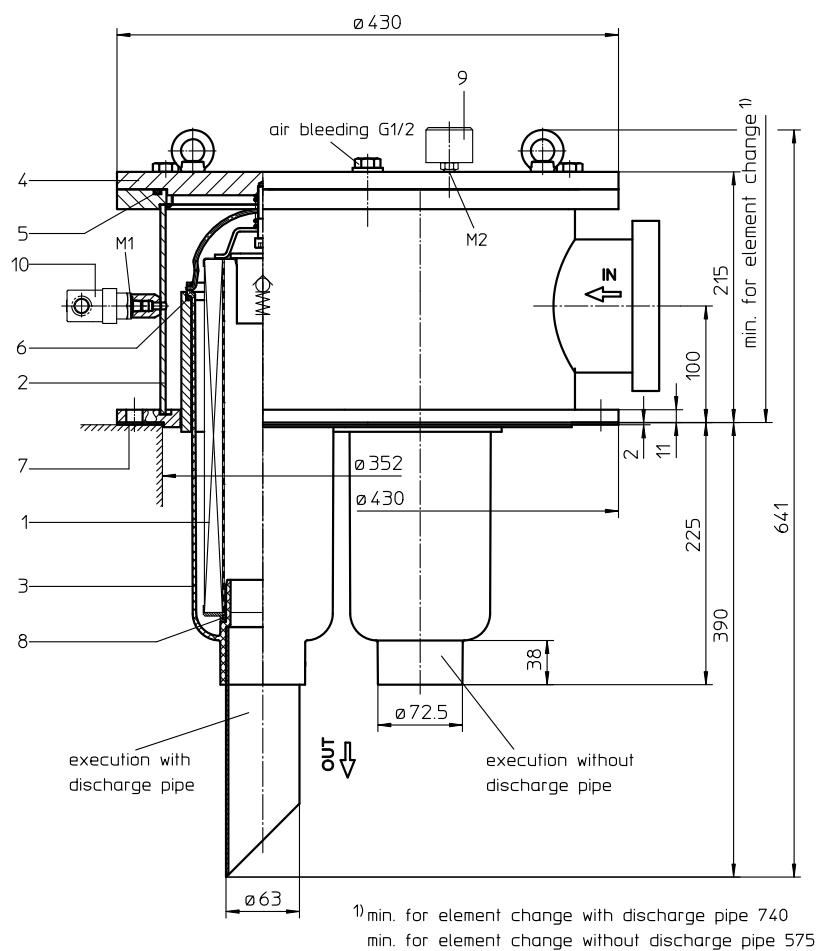
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Series TEF 1652

DN100 PN10



weight: approx. 63 kg

Dimensions: mm

Designs and performance values are subject to change.

Return Line Filter

Series TEF 1652

DN100 PN10

Description:

Return-line filter series TEF 1652 have a working pressure up to 10 bar. Pressure peaks will be absorbed by a sufficient margin of safety.

The TEF-filters are directly mounted to the reservoir and connected to the return-line.

The filter element consists of a 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 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.

Filters finer than 40 µm use the disposable elements made of paper or microglass. Filter elements as fine as 5 µm(c) are available; finer filter elements on request.

Eaton filter elements are known as stable elements which have excellent filtration capabilities and a high dirt retaining capacity, therefore having a long service life. Due to its practical design, the return-line filter is easy to service.

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.

When changing the filter element, a detachable connection between the filter head and the filter bowl prevents dirty oil from flowing into the tank.

1. Type index:

1.1. Complete filter: (ordering example)

TEF.	1652.	10VG.	16.	S.	P.	-.	FS.	B.	-.	E1.	O.	-
1	2	3	4	5	6	7	8	9	10	11	12	13

- 1 **series:**
TEF = tank-mounted return-line-filter
- 2 **nominal size:** 1652
- 3 **filter-material:**
80G, 40G, 25G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
10P paper
- 4 **filter element collapse rating:**
16 = Δp 16 bar
- 5 **filter element design:**
E = without by-pass valve
S = with by-pass valve Δp 2,0 bar
- 6 **sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)
- 7 **filter element specification:**
- = standard
IS06 = for HFC application, see sheet-no. 31601
- 8 **process connection:**
FS = SAE-flange connection 3000 PSI
- 9 **process connection size:**
B = 4"
- 10 **filter housing specification:**
- = standard
IS06 = for HFC application, see sheet-no. 31605
- 11 **clogging indicator at M1:**
- = without
O = visual, see sheet-no. 1616
E1 = pressure switch, see sheet-no. 1616
E2 = pressure switch, see sheet-no. 1616
E5 = pressure switch, see sheet-no. 1616
PA = ground connection
- 12 **clogging indicator at M2:**
possible indicators see position 11 of the type index
- 13 **discharge pipe:**
- = without
1 = with discharge pipe

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)

01E.	631.	10VG.	16.	S.	P.	-
1	2	3	4	5	6	7

- 1 **series:**
01E. = filter element according to company standard
- 2 **nominal size:** 631
- 3 - 7 see type index-complete filter

Accessories:

- SAE-counter flange, see sheet-no. 1652

Technical data:

operating temperature:	-10°C to +100°C
operating medium	mineral oil, other media on request
max. operating pressure:	10 bar
opening pressure by-pass valve:	2,0 bar
process connection:	SAE-flange connection 3000 PSI
housing material:	carbon steel, glass fiber reinforced polyamide (filter bowl)
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
volume tank:	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:

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

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

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

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

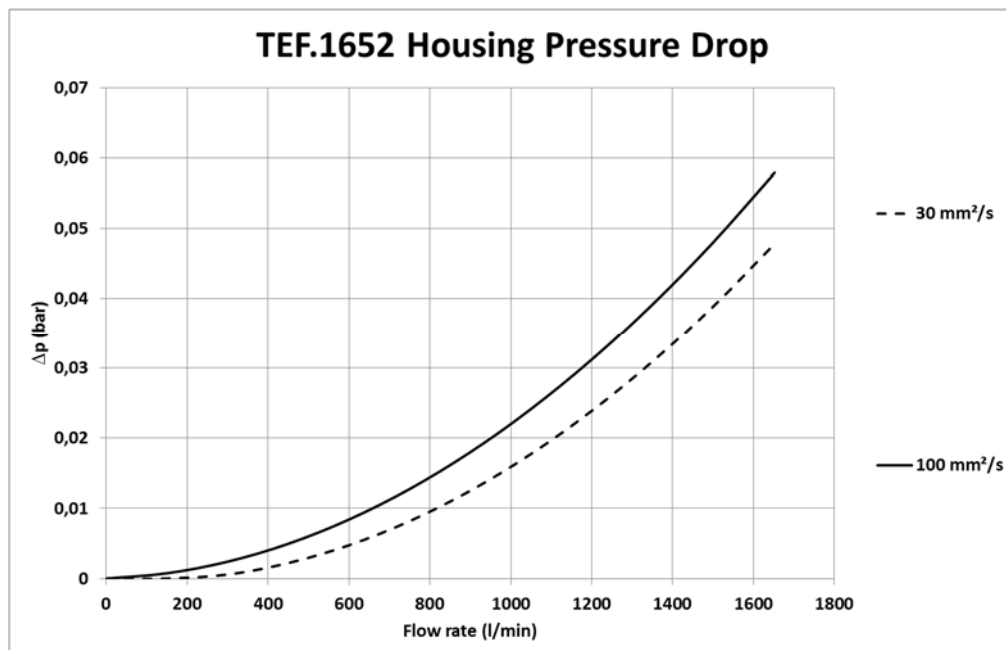
Material gradient coefficients (MSK) for filter elements

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.

TEF	VG					G			P
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P
1652	0,178	0,123	0,079	0,069	0,047	0,0064	0,0060	0,0041	0,039

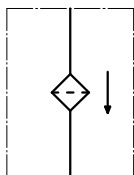
$\Delta p = f(Q)$ – characteristics according to ISO 3968

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.

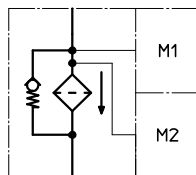


Symbols:

without indicator



with by-pass valve



visual O



electric
contact maker
E1



electric
contact breaker
E5



electric
contact maker/breaker
E2



Spare parts:

item	qty.	designation	dimension	article-no.	
1	3	filter element	01E.631...		
2	1	filter head ¹⁾			
3	3	filter bowl with discharge pipe ¹⁾			
	3	filter bowl without discharge pipe ¹⁾			
4	1	filter cover ¹⁾			
5	1	O-ring	355 x 5	314740 (NBR)	314739 (FPM)
6	3	O-ring	120 x 4	305300 (NBR)	307991 (FPM)
7	1	flat seal	430 x 350 x 2	313271 (NBR)	316659 (FPM)
8	3	O-ring	63 x 3,5	311189 (NBR)	311592 (FPM)
9	1	clogging indicator, visual	O	301721	
10	1	clogging indicator electric	E1, E2 or E5	see sheet-no. 1616	

1) in case of ordering these spare parts use the complete type index

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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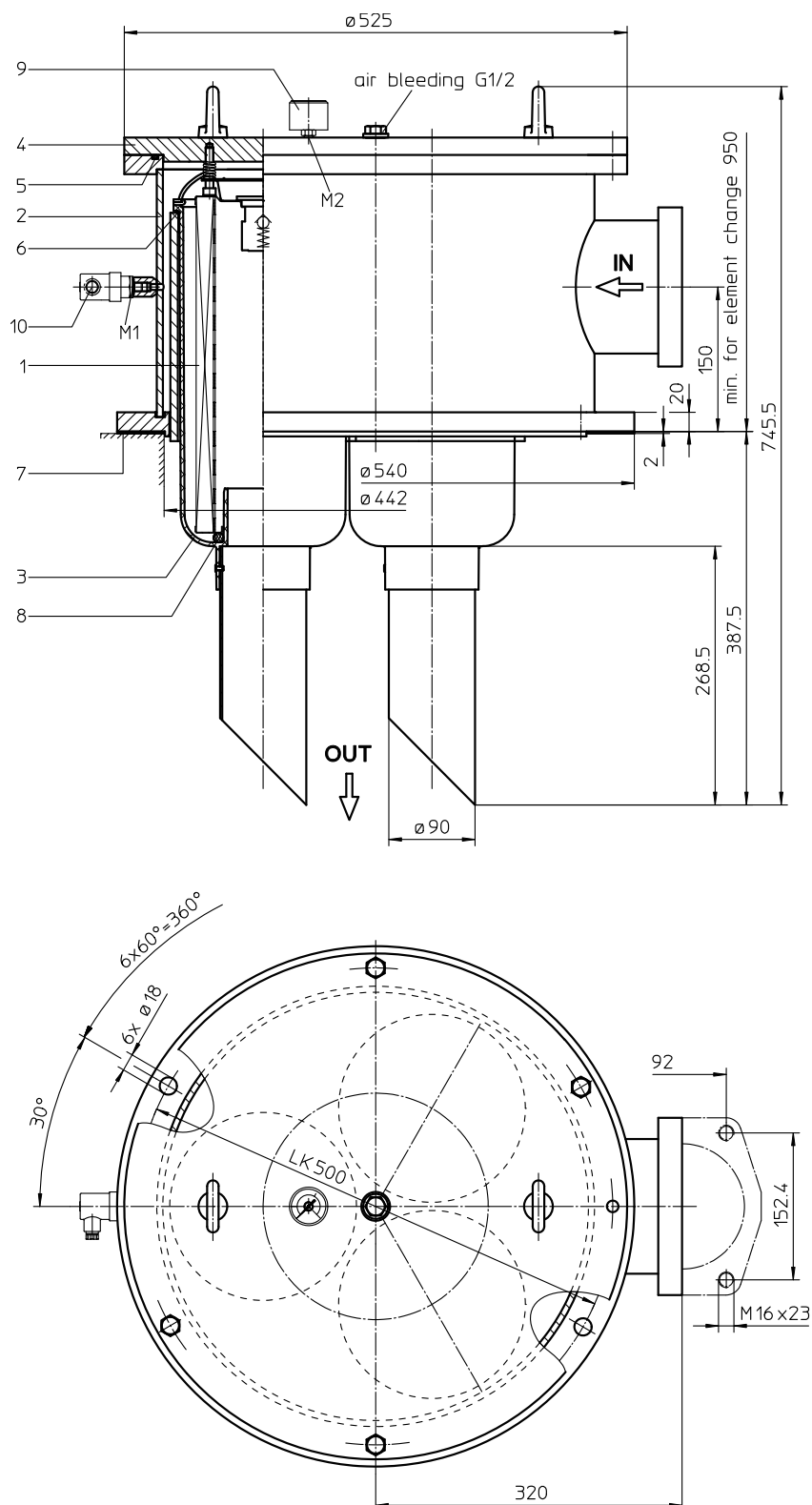
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Series TEF 2551

DN125 PN10



weight: approx. 134 kg

Dimensions: mm

Designs and performance values are subject to change.

Return Line Filter

Series TEF 2551

DN125 PN10

Description:

Return-line filter series TEF 2551 have a working pressure up to 10 bar. Pressure peaks will be absorbed by a sufficient margin of safety.

The TEF-filters are directly mounted to the reservoir and connected to the return-line.

The filter element consists of a 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 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.

Filters finer than 40 µm use the disposable elements made of paper or microglass. Filter elements as fine as 5 µm(c) are available; finer filter elements on request.

Eaton filter elements are known as stable elements which have excellent filtration capabilities and a high dirt retaining capacity, therefore having a long service life. Due to its practical design, the return-line filter is easy to service.

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.

When changing the filter element, a detachable connection between the filter head and the filter bowl prevents dirty oil from flowing into the tank.

1. Type index:

1.1. Complete filter: (ordering example)

TEF. 2551. 10VG. 10. S. P. - FS. C. - E1. O. -

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

- | | |
|----|---|
| 1 | series:
TEF = tank-mounted return-line-filter |
| 2 | nominal size: 2551 |
| 3 | filter-material:
80G, 40G, 25G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
10P paper |
| 4 | filter element collapse rating:
10 = Δp 10 bar |
| 5 | filter element design:
E = without by-pass valve
S = with by-pass valve Δp 2,0 bar |
| 6 | sealing material:
P = Nitrile (NBR)
V = Viton (FPM) |
| 7 | filter element specification:
- = standard
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
IS06 = for HFC application, see sheet-no. 31605 |
| 11 | clogging indicator at M1:
- = without
O = visual, see sheet-no. 1616
E1 = pressure switch, see sheet-no. 1616
E2 = pressure switch, see sheet-no. 1616
E5 = pressure switch, see sheet-no. 1616
PA = ground connection |
| 12 | clogging indicator at M2:
possible indicators see position 11 of the type index |
| 13 | discharge pipe:
- = without
1 = with discharge pipe |

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)

01E. 950. 10VG. 10. S. P. -

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

- | | |
|---|---|
| 1 | series:
01E. = filter element according to company standard |
| 2 | nominal size: 950 |
| 3 | - 7 see type index-complete filter |

Accessories:

- SAE-counter flange, see sheet-no. 1652

Technical data:

operating temperature:	-10°C to +100°C
operating medium	mineral oil, other media on request
max. operating pressure:	10 bar
opening pressure by-pass valve:	2,0 bar
process connection:	SAE-flange connection 3000 PSI
housing material:	carbon steel, glass fiber reinforced polyamide (filter bowl)
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
volume tank:	47 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:

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

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

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

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

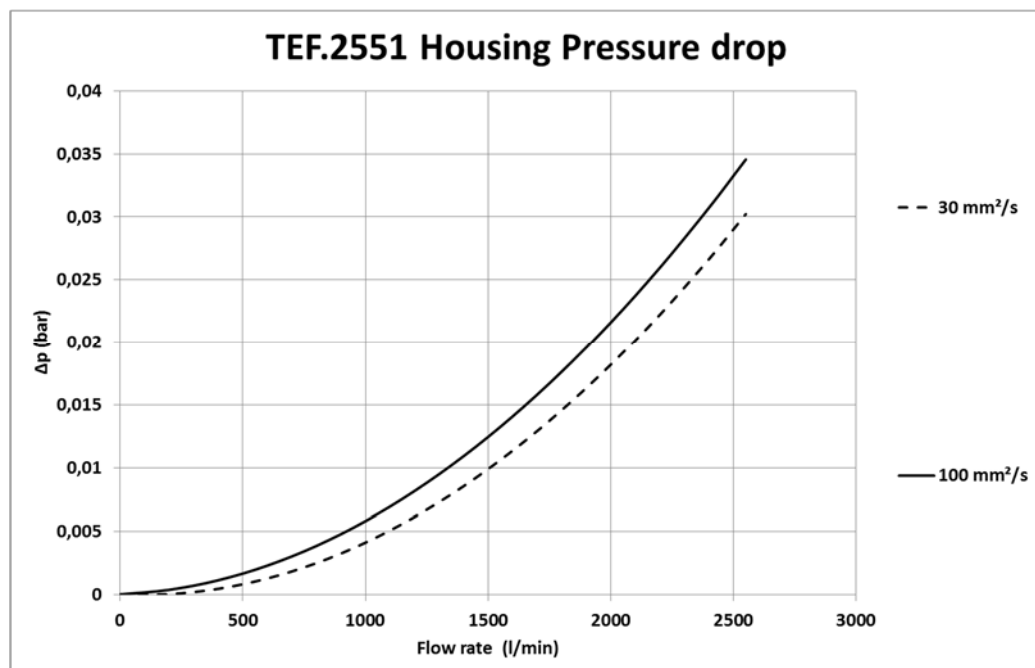
Material gradient coefficients (MSK) for filter elements

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.

TEF	VG					G			P
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P
2551	0,101	0,070	0,045	0,039	0,027	0,0043	0,004	0,0027	0,021

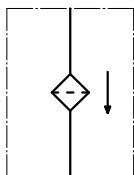
$\Delta p = f(Q)$ – characteristics according to ISO 3968

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.

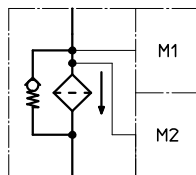


Symbols:

without indicator



with by-pass valve



visual O



electric
contact maker
E1



electric
contact breaker
E5



electric
contact maker/breaker
E2



Spare parts:

item	qty.	designation	dimension	article-no.	
1	3	filter element	01E.950...		
2	1	filter head ¹⁾			
3	3	filter bowl ¹⁾			
4	1	filter cover ¹⁾			
5	1	O-ring	455 x 5	314742 (NBR)	314741 (FPM)
6	3	O-ring	170 x 6	304799 (NBR)	306529 (FPM)
7	1	flat seal	540 x 441 x 2	313293 (NBR)	317461 (FPM)
8	3	O-ring	78 x 10	305017 (NBR)	305552 (FPM)
9	1	clogging indicator, visual	O	301721	
10	1	clogging indicator electric	E1, E2 oder E5	see sheet-no. 1616	

1) in case of ordering these spare parts use the complete type index

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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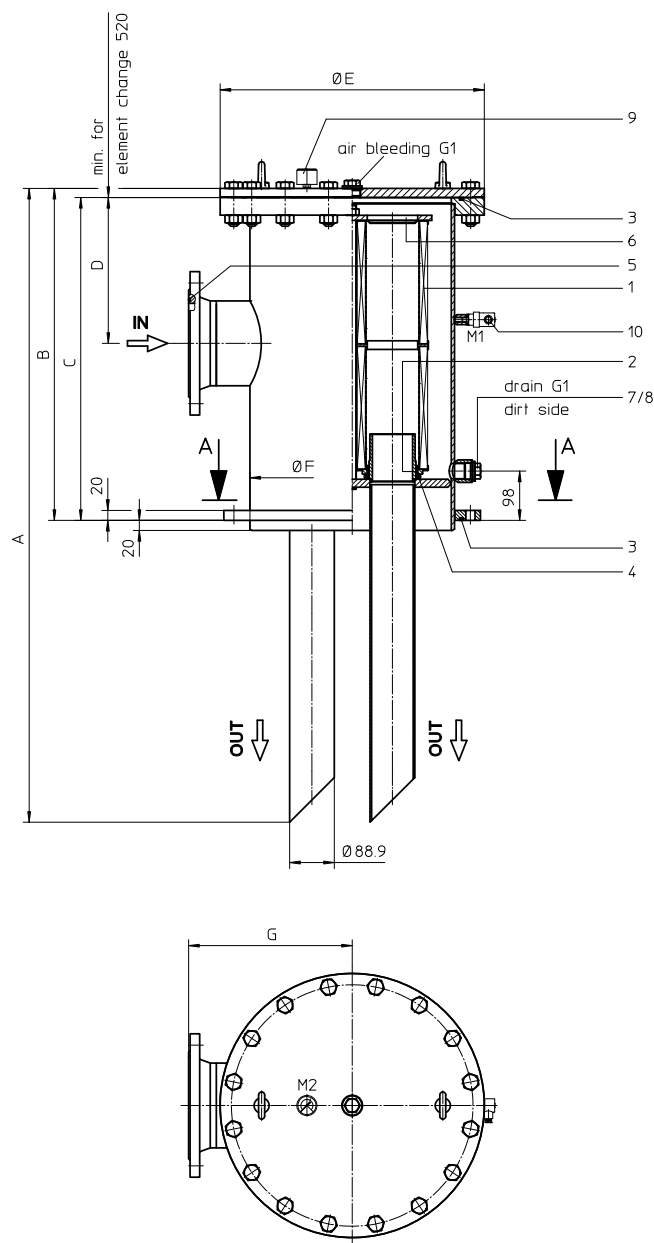
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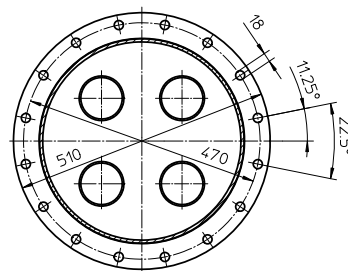
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Series TEF 4801-7201

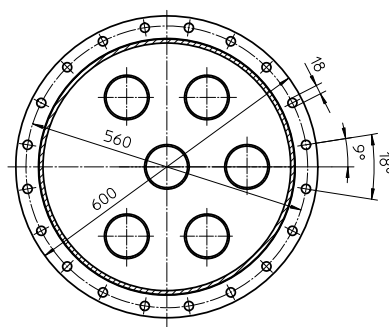
DN150-200 PN10



section A-A
TEF 4801



section A-A
TEF 7201



2. Dimensions:

type	connection	A	B	C	D	E	F	G	weight kg	Volume tank
TEF 4801	DN150	1260	660	642	290	525	406	325	175	75,0 l
TEF 7201	DN200	1264	664	642	280	615	508	400	252	117,0 l

Dimensions: mm

Designs and performance values are subject to change.

Return Line Filter

Series TEF 4801-7201

DN100-200 PN10

Description:

Return-line filter series TEF 4801-7201 have a working pressure up to 10 bar. Pressure peaks will be absorbed by a sufficient margin of safety.

The TEF-filters are directly mounted to the reservoir and connected to the return-line.

The filter element consists of a 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 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.

Filters finer than 40 µm use the disposable elements made of paper or microglass. Filter elements as fine as 5 µm(c) are available; finer filter elements on request.

Eaton filter elements are known as stable elements which have excellent filtration capabilities and a high dirt retaining capacity, therefore having a long service life. Due to its practical design, the return-line filter is easy to service.

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.

When changing the filter element, a detachable connection between the filter head and the filter bowl prevents dirty oil from flowing into the tank.

1. Type index:

1.1. Complete filter: (ordering example)

TEF.	4801.	10VG.	10.	S.	P.	-.	FD3.	D.	-.	E1.	O
1	2	3	4	5	6	7	8	9	10	11	12

- 1 **series:**
TEF = tank-mounted return-line-filter
- 2 **nominal size:** 4801, 7201
- 3 **filter-material:**
80G, 40G, 25G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
10P paper
- 4 **filter element collapse rating:**
10 = Δp 10 bar
- 5 **filter element design:**
E = without by-pass valve
S = with by-pass valve Δp 2,0 bar
- 6 **sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)
- 7 **filter element specification:**
- = standard
IS06 = for HFC application, see sheet-no. 31601
- 8 **process connection:**
FD3 = flange EN1092-1, PN16 with O-ring nut (TEF 4801)
FD13 = flange EN1092-1, PN10 with O-ring nut (TEF 7201)
- 9 **process connection size:**
D = DN150 (TEF 4801)
E = DN200 (TEF 7201)
- 10 **filter housing specification:**
- = standard
IS06 = for HFC application, see sheet-no. 31605
- 11 **clogging indicator at M1:**
- = without
O = visual, see sheet-no. 1616
E1 = pressure switch, see sheet-no. 1616
E2 = pressure switch, see sheet-no. 1616
E5 = pressure switch, see sheet-no. 1616
- 12 **clogging indicator at M2:**
possible indicators see position 11 of the type index

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)

01E.	1201.	10VG.	10.	S.	P.	-
1	2	3	4	5	6	7

- 1 **series:**
01E. = filter element according to company standard
- 2 **nominal size:** 1201
- 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:	10 bar
opening pressure by-pass valve:	2,0 bar
process connection:	flange EN1092-1, PN16 / PN10
housing material:	carbon steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical

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:

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

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

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

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

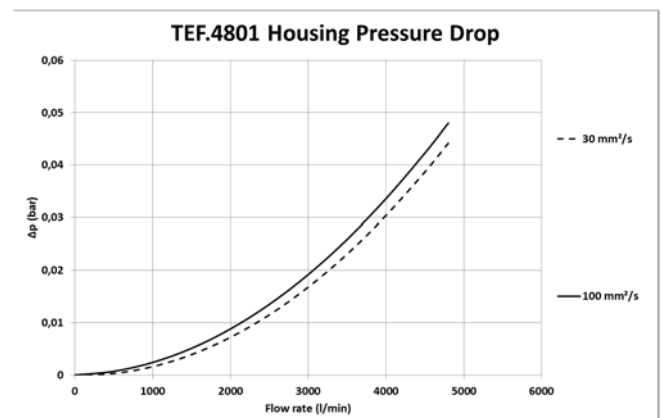
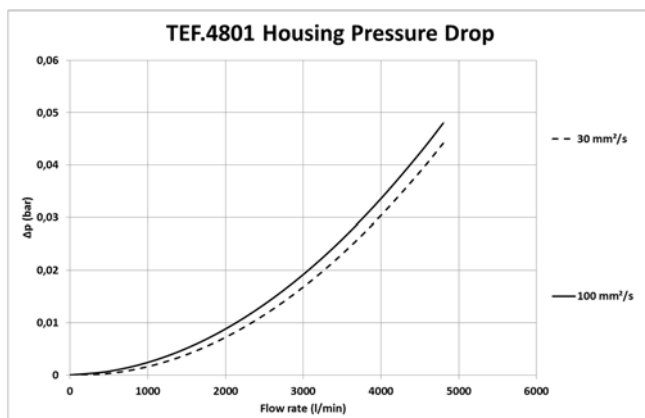
Material gradient coefficients (MSK) for filter elements

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.

TEF	VG					G			P
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P
4801	0,06	0,042	0,027	0,023	0,016	0,0019	0,0018	0,0012	0,013
7201	0,04	0,028	0,018	0,016	0,011	0,0013	0,0012	0,0008	0,008

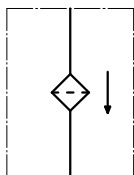
$\Delta p = f(Q)$ – characteristics according to ISO 3968

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.

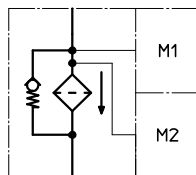


Symbols:

without indicator



with by-pass valve



visual O



electric
contact maker
E1



electric
contact breaker
E5



electric
contact maker/breaker
E2



Spare parts:

item	designation	qty.	dimension and article no. TEF 4801	qty.	dimension and article no. TEF 7201
1	filter element	4	01E.1201...	6	01E.1201...
2	O-ring	4	93 x 5 307588 (NBR) 307589 (FPM)	6	93 x 5 307588 (NBR) 307589 (FPM)
3	O-ring	2	429 x 6 308659 (NBR) 310273 (FPM)	2	516 x 6 301962 (NBR) 311474 (FPM)
4	O-ring	4	85 x 10 304386 (NBR) 304541 (FPM)	6	85 x 10 304386 (NBR) 304541 (FPM)
5	O-ring	1	170 x 4 306875 (NBR) 307987 (FPM)	1	225 x 5 308652 (NBR) 311473 (FPM)
6	pressure plate	1	319677	1	327718
7	screw plug	2	G 1 309732		
8	gasket	2	A 33 x 39 308257		
9	clogging indicator visual	1	O see sheet no.. 1616		
10	clogging indicator electric	1	E1, E2 or E5 see sheet no.. 1616		

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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