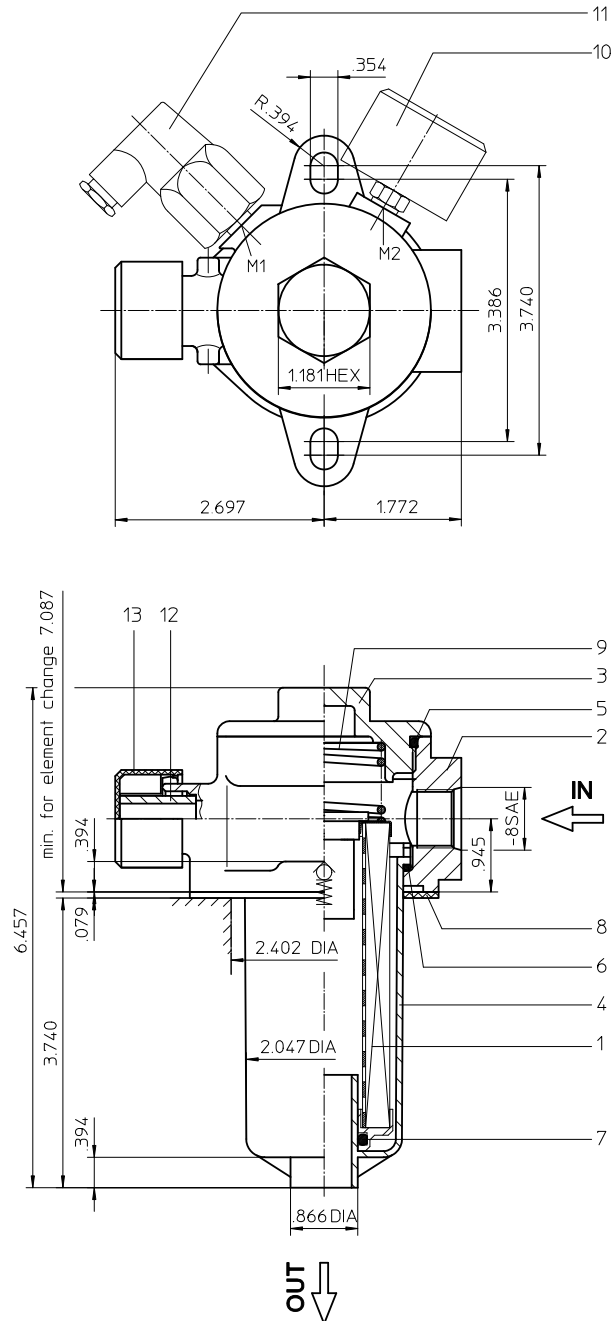


# Series TEFB 41

## 145 PSI



When selecting only one indicator, use connection M2.

Weight: approx. 2.0 lbs.

Dimensions: inches

Designs and performance values are subject to change.



Powering Business Worldwide

# Return Line Filter

## Series TEFB 41

### 145 PSI

#### Description:

Return-line filter series TEFB 41 have a working pressure up to 145 PSI.

The TEFB filters are directly mounted to the reservoir and connected to the return-line. No connection is needed for the built-in air filter. The air filter has a 10µm disposable element.

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.

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.

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 on request.

Eaton filter elements 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)

**TEFB.41.10VG.16.S.P.-.UG.3.-.E1.O**

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

**TEFB.41.10VG.30.E.P.-.UG.3.-.E1.O**

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

- 1 | **series:**  
TEFB = tank-mounted return-line-filter with breather filter
- 2 | **nominal size:** 41
- 3 | **filter-material and filter-fineness:**  
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 232 PSI (standard with by-pass valve)  
30 = 01E.60 for Δp 435 PSI (standard without by-pass valve)
- 5 | **filter element design:**  
S = with by-pass valve ( 01E.41) Δp 29 PSI  
E = without by-pass valve ( 01E.60)
- 6 | **sealing material:**  
P = Nitrile (NBR)  
V = Viton (FPM)
- 7 | **filter element specification:** (see catalog)  
- = standard  
VA = stainless steel  
IS06 = for HFC application, see sheet-no. 31601
- 8 | **process connection:**  
UG = thread connection
- 9 | **process connection size:**  
3 = - 8 SAE
- 10 | **filter housing specification:** (see catalog)  
- = 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.41.10VG.16.S.P.-**

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

**01E.60.10VG.30.E.P.-**

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:

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:	145 PSI
opening pressure by-pass valve:	29 PSI
process connection:	thread connection
housing material standard:	Al-cast, glass fiber reinforced polyamide
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
volume tank:	.05 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  $\Delta p$  and the element  $\Delta p$  and is calculated as follows:

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

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

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

For ease of calculation our Filter Selection tool is available online at [www.eatonpowersource.com/calculators/filtration/](http://www.eatonpowersource.com/calculators/filtration/)

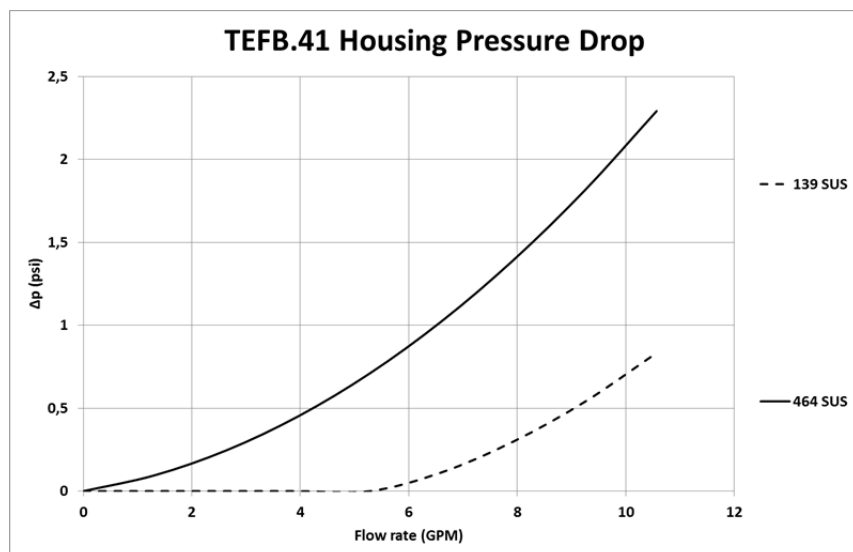
### Material gradient coefficients (MSK) for filter elements

The material gradient coefficients in psi/gpm apply to mineral oil (HLP) with a density of 0.876 kg/dm<sup>3</sup> and a kinematic viscosity of 139 SUS (30 mm<sup>2</sup>/s). The pressure drop changes proportionally to the change in kinematic viscosity and density.

TEFB	VG					G			P
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P
<b>41 (without bypass)</b>	6.748	4.685	2.999	2.577	1.760	0.2002	0.1868	0.1280	1.469
<b>41 (with bypass)</b>	6.748	4.685	2.999	2.577	1.760	0.2002	0.1868	0.1280	-

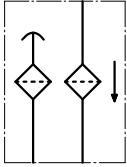
### $\Delta p = f(Q)$ – characteristics according to ISO 3968

The pressure drop characteristics apply to mineral oil (HLP) with a density of 0.876 kg/dm<sup>3</sup>. The pressure drop changes proportionally to the density.

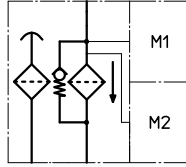


## Symbols:

without indicator



with by-pass valve



visual O



electrical  
contact maker  
E1



electrical  
contact breaker  
E5



electrical  
contact maker/breaker  
E2



## Spare parts:

item	qty.	designation	dimension	article-no.	
1	1	filter element with by-pass	01E.41...		
		filter element without by-pass	01E.60...		
2	1	filter head	TEFB 41 - 55	308751	
3	1	filter cover	M 60 x 2	303621	
4	1	filter bowl	TEF 41	306673	
5	1	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	gasket	.08 thick	303039	
9	1	spring	DA = 40	304982	
10	1	clogging indicator visual	O	301721	
11	1	clogging indicator electrical	alternatively E1, E2 or E5	see sheet-no. 1616	
12	1	filter element breather	01BFE.70	301865	
13	1	protection cap		305312	

## 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

### North America

44 Apple Street  
Tinton Falls, NJ 07724  
Toll Free: 800 656-3344  
(North America only)  
Tel: +1 732 212-4700

### Europe/Africa/Middle East

Auf der Heide 2  
53947 Nettersheim, Germany  
Tel: +49 2486 809-0

Friedensstraße 41  
68804 Altluisheim, Germany  
Tel: +49 6205 2094-0

An den Nahewiesen 24  
55450 Langenlonsheim, Germany  
Tel: +49 6704 204-0

### China

No. 3, Lane 280,  
Linhong Road  
Changning District, 200335  
Shanghai, P.R. China  
Tel: +86 21 5200-0099

### Singapore

4 Loyang Lane #04-01/02  
Singapore 508914  
Tel: +65 6825-1668

### Brazil

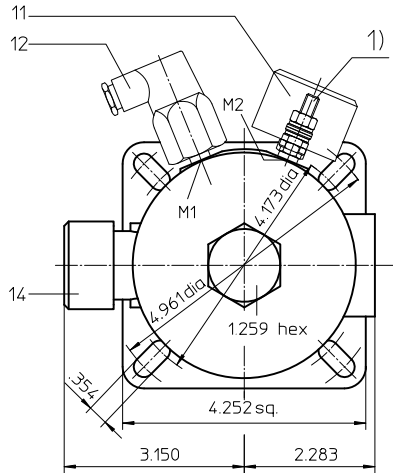
Av. Julia Gaioli, 474 – Bonsucesso  
07251-500 – Guarulhos, Brazil  
Tel: +55 11 2465-8822

For more information, please  
email us at [filtration@eaton.com](mailto:filtration@eaton.com)  
or visit [www.eaton.com/filtration](http://www.eaton.com/filtration)

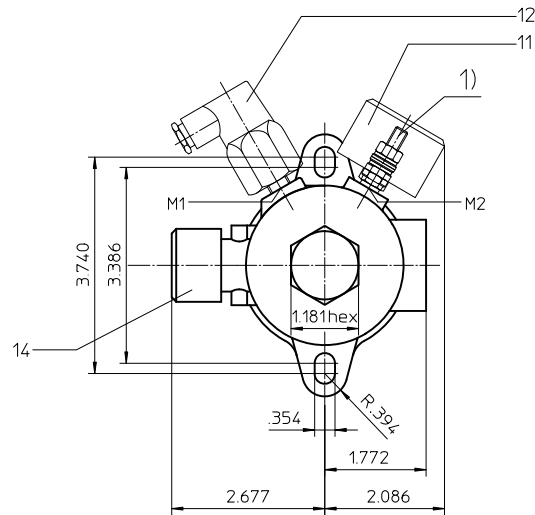
© 2015 Eaton. All rights reserved. All trademarks and registered trademarks are the property of their respective owners. All information and recommendations appearing in this brochure concerning the use of products described herein are based on tests believed to be reliable. However, it is the user's responsibility to determine the suitability for his own use of such products. Since the actual use by others is beyond our control, no guarantee, expressed or implied, is made by Eaton as to the effects of such use or the results to be obtained. Eaton assumes no liability arising out of the use by others of such products. Nor is the information herein to be construed as absolutely complete, since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations.

# Series TEFB 55-120 145 PSI

view TEFB 120

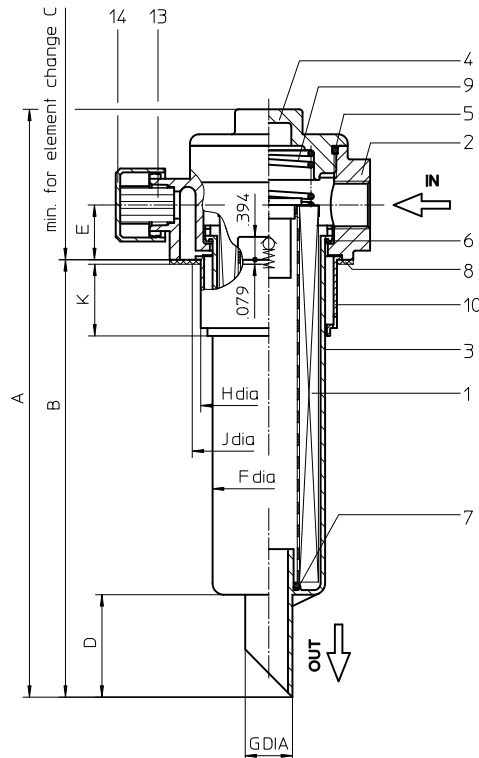


views TEFB 55/70



### Dimensions:

type	TEFB 55	TEFB 70	TEFB 120
connection	- 8 SAE	-12 SAE	-16 SAE
A	10.24	10.24	11.42
B	7.56	7.56	8.27
C	10.63	10.63	11.81
D	1.77	1.77	2.56
E	.94	.94	1.18
F	2.05	2.05	2.76
G	.87	.87	.94
H	2.38	2.38	3.09
J	2.40	2.40	3.11
K	1.25	1.25	1.65
weight	2.20 lbs.	2.20 lbs.	3.30 lbs.
volume tank	.08 Gal.	.08 Gal.	.15 Gal.



When selecting only one indicator, use connection M2.

- 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

# Return Line Filter

## Series TEFB 55-120

### 145 PSI

#### Description:

Return-line filter series TEFB 55-120 have a working pressure up to 145 PSI.

The TEFB filters are directly mounted to the reservoir and connected to the return-line. No connection is needed for the built-in air filter. The air filter has a 10µm disposable element.

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.

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.

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 on request.

Eaton filter elements 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)

**TEFB. 120. 10VG. 16. S. P. -. UG. 5. -. E1. O. 1**

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

- |    |   |
|----|---|
| 1  | <b>series:</b><br>TEFB = tank-mounted return-line-filter with breather filter   |
| 2  | <b>nominal size:</b> 55, 70, 120  |
| 3  | <b>filter-material and filter-fineness:</b><br>80G, 40G, 25G stainless steel wire mesh<br>25VG, 16VG, 10VG, 6VG, 3VG microglass<br>10P paper  |
| 4  | <b>filter element collapse rating:</b><br>16 = Δp 232 PSI   |
| 5  | <b>filter element design:</b><br>E = without by-pass valve<br>S = with by-pass valve Δp 29 PSI  |
| 6  | <b>sealing material:</b><br>P = Nitrile (NBR)<br>V = Viton (FPM)  |
| 7  | <b>filter element specification: (see catalog)</b><br>- = standard<br>VA = stainless steel<br>IS06 = for HFC application, see sheet-no. 31601   |
| 8  | <b>process connection:</b><br>UG = thread connection  |
| 9  | <b>process connection size:</b><br>3 = - 8 SAE (TEFB 55)<br>4 = -12 SAE (TEFB 70)<br>5 = -16 SAE (TEFB 120)   |
| 10 | <b>filter housing specification: (see catalog)</b><br>- = standard<br>IS06 = for HFC application, see sheet-no. 31605<br>IS11 = for filter head and filter cover, see sheet-no. 40530   |
| 11 | <b>clogging indicator at M1:</b><br>- = without<br>O = visual, see sheet-no. 1616<br>E1 = pressure switch, see sheet-no. 1616<br>E2 = pressure switch, see sheet-no. 1616<br>E5 = pressure switch, see sheet-no. 1616<br>PA = ground connection |
| 12 | <b>clogging indicator at M2:</b><br>possible indicators see position 11 of the type index   |
| 13 | <b>oil separator:</b><br>- = without<br>1 = with oil separator  |

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. 120. 10VG. 16. S. P. -**

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

- |   |   |
|---|---|
| 1 | <b>series:</b><br>01E. = filter element according to company standard |
| 2 | <b>nominal size:</b> 70, 120  |
| 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:	145 PSI
opening pressure by-pass valve:	29 PSI
process connection:	thread connection
housing material standard:	filter head AL, filter cover / filter bowl glass fibre reinforced polyamide
housing material IS11, category M2:	filter head GG, filter cover steel / filter bowl carbon fibre reinforced polyamide
housing material IS11, category 2:	filter head AL, filter cover / filter bowl carbon fibre reinforced polyamide
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical

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  $\Delta p$  and the element  $\Delta p$  and is calculated as follows:

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

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

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

For ease of calculation our Filter Selection tool is available online at [www.eatonpowersource.com/calculators/filtration/](http://www.eatonpowersource.com/calculators/filtration/)

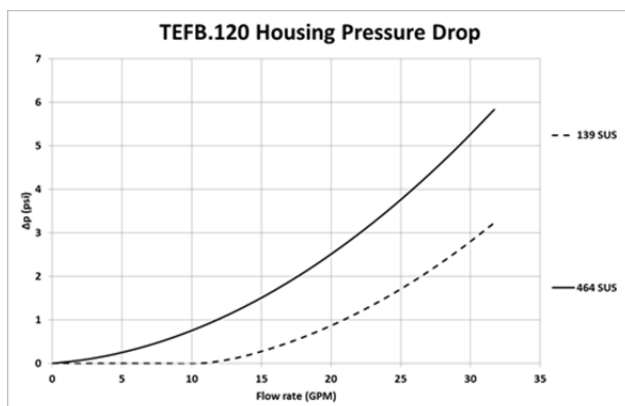
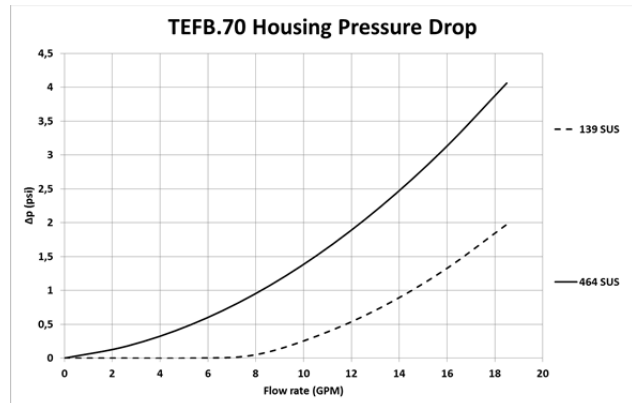
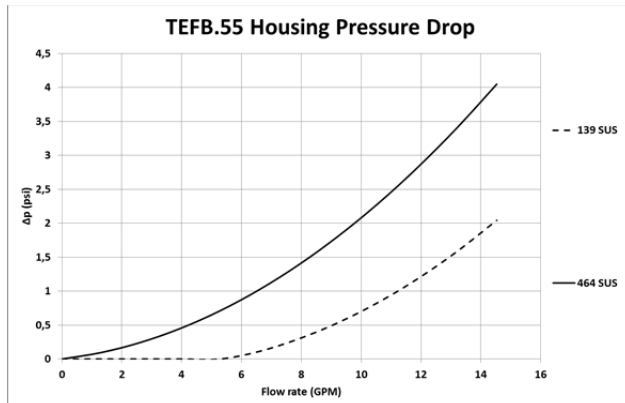
### Material gradient coefficients (MSK) for filter elements

The material gradient coefficients in psi/gpm apply to mineral oil (HLP) with a density of 0.876 kg/dm<sup>3</sup> and a kinematic viscosity of 139 SUS (30 mm<sup>2</sup>/s). The pressure drop changes proportionally to the change in kinematic viscosity and density.

TEFB	VG					G			P
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P
55	3.535	2.454	1.571	1.368	0.935	0.1196	0.1117	0.0765	0.797
70	3.535	2.454	1.571	1.368	0.935	0.1196	0.1117	0.0765	0.797
120	3.162	2.195	1.405	1.224	0.836	0.1144	0.1068	0.0731	0.690

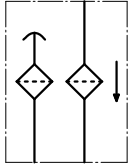
### $\Delta p = f(Q)$ – characteristics according to ISO 3968

The pressure drop characteristics apply to mineral oil (HLP) with a density of 0.876 kg/dm<sup>3</sup>. The pressure drop changes proportionally to the density.

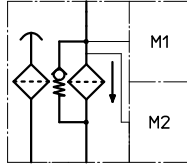


## Symbols:

without indicator



with by-pass valve



visual O



electrical  
contact maker  
E1



electrical  
contact breaker  
E5



electrical  
contact maker/breaker  
E2



## Spare parts:

item	qty.	designation	dimension and article-no.		
			TEFB 55	TEFB 70	TEFB 120
1	1	filter element	01E.70...		01E.120...
2	1	filter head	308751	308752	308648
3	1	filter bowl	304595		303041
4	1	screw plug	M 60 x 2		M 82 x 2
5	1	O-ring	56 x 3 305072 (NBR) 305322 (FPM)		75 x 3 302215 (NBR) 304729 (FPM)
6	1	O-ring	50 x 2,5 305239 (NBR) 305321 (FPM)		68 x 4 303037 (NBR) 313046 (FPM)
7	1	O-ring	22 x 3 304387 (NBR) 314733 (FPM)		24 x 3 303038 (NBR) 304397 (FPM)
8	1	gasket ( filter without oil separator )	.08 thick 307706		.12 thick 303039
	1	gasket ( filter with oil separator )	.08 thick 306786		.12 thick 303039
9	1	spring	DA = 40 304982		DA = 52 302144
10	1	oil separator	304544		310261
11	1	clogging indicator visual	O 301721		
12	1	clogging indicator electric	alternatively E1, E2 or E5 see sheet-no. 1616		
13	1	filter element breather	01BFE.70		01BFE.120
			301865		301866
14	1	protection cap	305312		303048

## 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

### North America

44 Apple Street  
Tinton Falls, NJ 07724  
Toll Free: 800 656-3344  
(North America only)  
Tel: +1 732 212-4700

### Europe/Africa/Middle East

Auf der Heide 2  
53947 Nettersheim, Germany  
Tel: +49 2486 809-0

Friedensstraße 41  
68804 Altlußheim, Germany  
Tel: +49 6205 2094-0

An den Nahewiesen 24  
55450 Langerlonsheim, Germany  
Tel: +49 6704 204-0

### China

No. 3, Lane 280,  
Linhong Road  
Changning District, 200335  
Shanghai, P.R. China  
Tel: +86 21 5200-0099

### Singapore

4 Loyang Lane #04-01/02  
Singapore 508914  
Tel: +65 6825-1668

### Brazil

Av. Julia Gaioli, 474 – Bonsucesso  
07251-500 – Guarulhos, Brazil  
Tel: +55 11 2465-8822

For more information, please  
email us at [filtration@eaton.com](mailto:filtration@eaton.com)  
or visit [www.eaton.com/filtration](http://www.eaton.com/filtration)

© 2015 Eaton. All rights reserved. All trademarks and registered trademarks are the property of their respective owners. All information and recommendations appearing in this brochure concerning the use of products described herein are based on tests believed to be reliable. However, it is the user's responsibility to determine the suitability for his own use of such products. Since the actual use by others is beyond our control, no guarantee, expressed or implied, is made by Eaton as to the effects of such use or the results to be obtained. Eaton assumes no liability arising out of the use by others of such products. Nor is the information herein to be construed as absolutely complete, since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations.





# Return Line Filter

## Series TEFB 210-310

### 145 PSI

#### Description:

Return-line filter series TEFB 210-310 have a working pressure up to 145 PSI.

The TEFB filters are directly mounted to the reservoir and connected to the return-line. No connection is needed for the built-in air filter. The air filter has a 10µm disposable element.

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.

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.

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 on request.

Eaton filter elements 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)

**TEFB. 210. 10VG. 16. S. P. -. UG. 5. -. E1. O. 1**

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

- |    |   |
|----|---|
| 1  | <b>series:</b><br>TEFB = tank-mounted return-line-filter with breather filter   |
| 2  | <b>nominal size:</b> 310, 310   |
| 3  | <b>filter-material and filter-fineness:</b><br>80G, 40G, 25G stainless steel wire mesh<br>25VG, 16VG, 10VG, 6VG, 3VG microglass<br>10P paper  |
| 4  | <b>filter element collapse rating:</b><br>16 = Δp 232 PSI   |
| 5  | <b>filter element design:</b><br>E = without by-pass valve<br>S = with by-pass valve Δp 29 PSI  |
| 6  | <b>sealing material:</b><br>P = Nitrile (NBR)<br>V = Viton (FPM)  |
| 7  | <b>filter element specification: (see catalog)</b><br>- = standard<br>VA = stainless steel<br>IS06 = for HFC application, see sheet-no. 31601   |
| 8  | <b>process connection:</b><br>UG = thread connection  |
| 9  | <b>process connection size:</b><br>5 = -16 SAE  |
| 10 | <b>filter housing specification: (see catalog)</b><br>- = standard<br>IS06 = for HFC application, see sheet-no. 31605<br>IS11 = for filter head and filter cover, see sheet-no. 40530   |
| 11 | <b>clogging indicator at M1:</b><br>- = without<br>O = visual, see sheet-no. 1616<br>E1 = pressure switch, see sheet-no. 1616<br>E2 = pressure switch, see sheet-no. 1616<br>E5 = pressure switch, see sheet-no. 1616<br>PA = ground connection |
| 12 | <b>clogging indicator at M2:</b><br>possible indicators see position 11 of the type index   |
| 13 | <b>oil separator:</b><br>- = without<br>1 = with oil separator  |

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. 210. 10VG. 16. S. P. -**

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

- |   |   |
|---|---|
| 1 | <b>series:</b><br>01E. = filter element according to company standard |
| 2 | <b>nominal size:</b> 210, 320   |
| 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:	145 PSI
opening pressure by-pass valve:	29 PSI
process connection:	thread connection
housing material standard:	filter head AL, filter cover / filter bowl glass fibre reinforced polyamide
housing material IS11, category M2:	filter head GG, filter cover steel / filter bowl carbon fibre reinforced polyamide
housing material IS11, category 2:	filter head AL, filter cover / filter bowl carbon fibre reinforced polyamide
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical

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  $\Delta p$  and the element  $\Delta p$  and is calculated as follows:

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

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

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

For ease of calculation our Filter Selection tool is available online at [www.eatonpowersource.com/calculators/filtration/](http://www.eatonpowersource.com/calculators/filtration/)

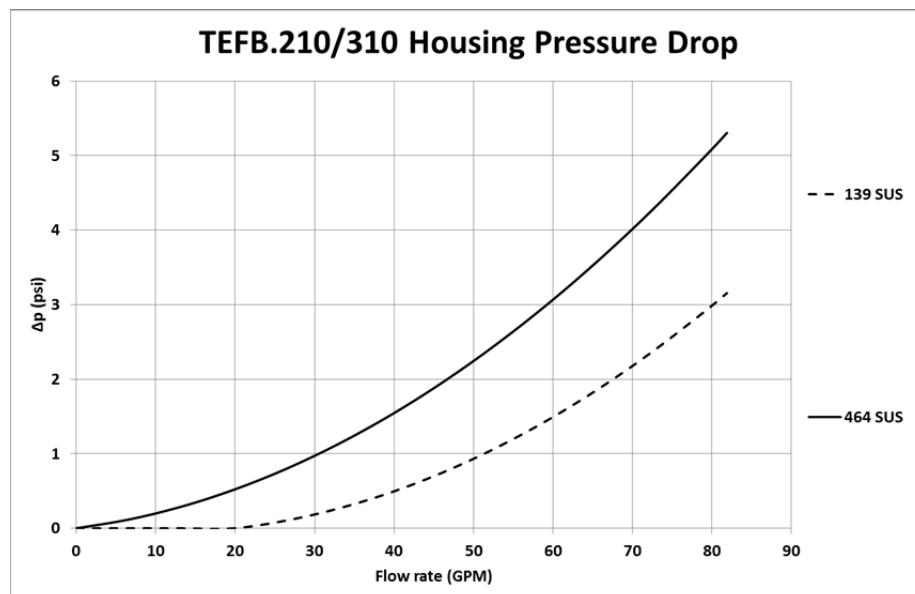
### Material gradient coefficients (MSK) for filter elements

The material gradient coefficients in psi/gpm apply to mineral oil (HLP) with a density of 0.876 kg/dm<sup>3</sup> and a kinematic viscosity of 139 SUS (30 mm<sup>2</sup>/s). The pressure drop changes proportionally to the change in kinematic viscosity and density.

TEFB	VG					G			P
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P
210	1.600	1.111	0.711	0.619	0.423	0.0588	0.0549	0.0376	0.353
310	1.148	0.797	0.510	0.444	0.304	0.0337	0.0314	0.0215	0.253

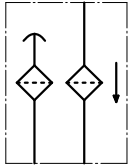
### $\Delta p = f(Q)$ – characteristics according to ISO 3968

The pressure drop characteristics apply to mineral oil (HLP) with a density of 0.876 kg/dm<sup>3</sup>. The pressure drop changes proportionally to the density.

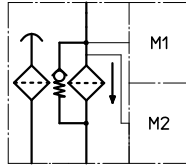


## Symbols:

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	
			TEFB 210	TEFB 310
1	1	filter element	01.E 210...	01E.320...
2	1	filter head	TNR 100 313952	
3	1	filter bowl	NG 210 304518	NG 310 305471
4	1	filter cover	M 92 x 3 317014	
5	1	O-ring	82 x 3,5 304403 (NBR) 308745 (FPM)	
6	1	O-ring	75 x 3 302215 (NBR) 304729 (FPM)	
7	1	O-ring	95 x 3 305808 (NBR) 304828 (FPM)	
8	1	O-ring	40 x 3 304991 (NBR) 304997 (FPM)	
9	1	spring	DA = 52 305053	
10	1	oil separator		
11	1	gasket (with execution oil separator)	.078 thick 325389	
12	1	filter element breather	01BFE. 120 301866	
13	1	protection cap	303048	
14	1	clip	303046	
15	1	clogging indicator electric	alternatively E1, E2 or E5 see sheet-no. 1616	
16	1	clogging indicator visual	O 301721	

## 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

### North America

44 Apple Street  
Tinton Falls, NJ 07724  
Toll Free: 800 656-3344  
(North America only)  
Tel: +1 732 212-4700

### Europe/Africa/Middle East

Auf der Heide 2  
53947 Nettersheim, Germany  
Tel: +49 2486 809-0

Friedensstraße 41  
68804 Altlöbheim, Germany  
Tel: +49 6205 2094-0

An den Nahewiesen 24  
55450 Langenlonsheim, Germany  
Tel: +49 6704 204-0

### China

No. 3, Lane 280,  
Linhong Road  
Changning District, 200335  
Shanghai, P.R. China  
Tel: +86 21 5200-0099

### Singapore

4 Loyang Lane #04-01/02  
Singapore 508914  
Tel: +65 6825-1668

### Brazil

Av. Julia Gaioli, 474 – Bonsucesso  
07251-500 – Guarulhos, Brazil  
Tel: +55 11 2465-8822

For more information, please

email us at [filtration@eaton.com](mailto:filtration@eaton.com)  
or visit [www.eaton.com/filtration](http://www.eaton.com/filtration)

© 2015 Eaton. All rights reserved. All trademarks and registered trademarks are the property of their respective owners. All information and recommendations appearing in this brochure concerning the use of products described herein are based on tests believed to be reliable. However, it is the user's responsibility to determine the suitability for his own use of such products. Since the actual use by others is beyond our control, no guarantee, expressed or implied, is made by Eaton as to the effects of such use or the results to be obtained. Eaton assumes no liability arising out of the use by others of such products. Nor is the information herein to be construed as absolutely complete, since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations.