Series TEF 952
145 PSI

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

1) min. for element change without discharge pipe 22.04
min. for element change with discharge pipe 30.70

Weight: approx. 24 lbs.
Dimensions: inches

Designs and performance values are subject to change.
Return Line Filter
Series TEF 952
145 PSI

Description:

Return-line filter series TEF 952 have a working pressure up to 145 PSI. 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 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.

Type index:

Complete filter: (ordering example)

<table>
<thead>
<tr>
<th>TEF 952. 10VG. 10. S. P.</th>
<th>-</th>
<th>FS. A.</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1. O.</td>
<td>-</td>
<td>11</td>
<td>12</td>
</tr>
</tbody>
</table>

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 145 PSI

5) filter element design:
   E = without by-pass valve
   S = with by-pass valve Δp 29 PSI
   S1 = with by-pass valve Δp 51 PSI

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 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 application, 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)

<table>
<thead>
<tr>
<th>01E. 950. 10VG. 10. S. P.</th>
<th>-</th>
</tr>
</thead>
</table>
| 1) series:
   01E. = filter element according to company standard

2) nominal size: 950

3) see type index-complete filter

Accessories:
- SAE-counter flange, see sheet-no. 1652
Technical data:

operating temperature: 14 °F to +212 °F  
operating medium: mineral oil, other media on request  
max. operating pressure: 145 PSI  
opening pressure by-pass valve: 29 PSI, 51 PSI  
process connection: SAE-flange 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: 2.60 Gal

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

Pressure drop flow curves:

Filter calculation/sizing

The pressure drop of the assembly at a given flow rate Q is the sum of the housing \( \Delta p \) and the element \( \Delta p \) and is calculated as follows:

\[
\Delta p_{\text{assembly}} = \Delta p_{\text{housing}} + \Delta p_{\text{element}}
\]

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

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

For ease of calculation our Filter Selection tool is available online at [www.eatonpowersource.com/calculators/filtration/](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/dm³ and a kinematic viscosity of 139 SUS (30 mm²/s). The pressure drop changes proportionally to the change in kinematic viscosity and density.

<table>
<thead>
<tr>
<th>TEF</th>
<th>VG</th>
<th>G</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>3VG</td>
<td>0.364</td>
<td>0.253</td>
<td>0.162</td>
</tr>
</tbody>
</table>

\( \Delta p = f(Q) \) – 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:

<table>
<thead>
<tr>
<th>item</th>
<th>qty</th>
<th>designation</th>
<th>dimension</th>
<th>article-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>filter element</td>
<td></td>
<td>01.E950...</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>filter head</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>filter cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>filter bowl without discharge pipe</td>
<td>NG 950</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>filter bowl with discharge pipe</td>
<td>NG 990</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>O-ring 195 x 3.5</td>
<td>301831 (NBR)</td>
<td>306528 (FPM)</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>O-ring 170 x 6</td>
<td>304799 (NBR)</td>
<td>306529 (FPM)</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>O-ring 190 x 5</td>
<td>305432 (NBR)</td>
<td>310283 (FPM)</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>O-ring 78 x 10</td>
<td>305017 (NBR)</td>
<td>305552 (FPM)</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>clogging indicator visual</td>
<td>O</td>
<td>301721</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>clogging indicator electric</td>
<td>E1, E2 or E5</td>
<td></td>
</tr>
</tbody>
</table>

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

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

© 2019 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.