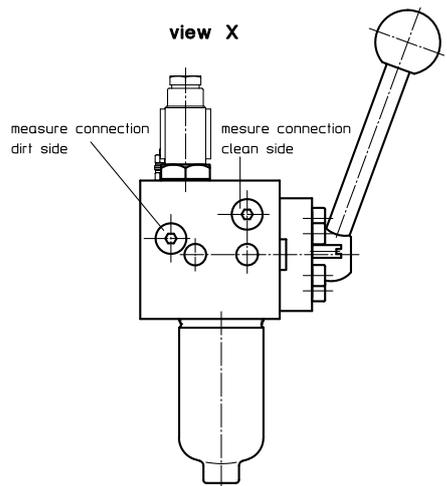
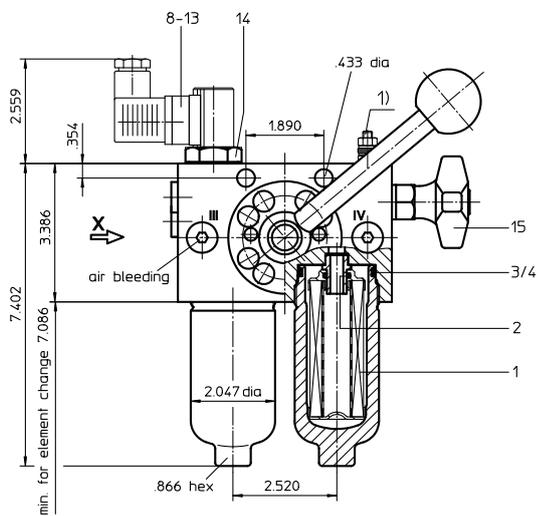
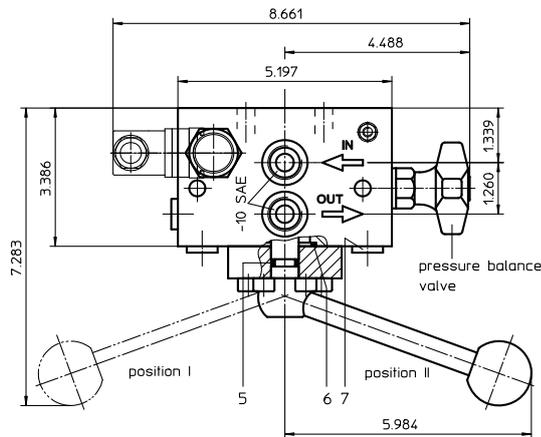


Series HDD 30 4568 PSI



Position. I: left filter-side in operation
 Position. II: right filter-side in operation
 Connection III and IV should be used to bleed filter or to relieve pressure.

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

Weight: approx. 17.6 lbs.

Dimensions: inches

Designs and performance values are subject to change.



Powering Business Worldwide

Pressure Filter

Series HDD 30

4568 PSI

Description:

Duplex pressure filter series HDD 30 with change-over valve have a working pressure up to 4568 PSI. Pressure peaks can be absorbed with a sufficient safety margin. Duplex filters can be serviced without interruption of operation.

The filter head has a three-way-change-over valve which diverts the flow from the dirty filter-side to the clean filter-side without interrupting operation of the filter. All filter housings have an integrated pressure balance valve to make main valve operation from one filter side to the other easier. Filter elements are available down to 5 $\mu\text{m}_{(c)}$. Finer filtration is available upon request.

Eaton filter elements are known for high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.

Eaton filter elements are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.

Eaton filter elements are available up to a pressure resistance of Δp 2320 PSI and a rupture strength of Δp 3625 PSI.

1. Type index:

1.1. Complete filter: (ordering example)

HDD. 30. 10VG. HR. E. P. -. UG. 3A. -. AE

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

- | | |
|----|--|
| 1 | series:
HDD = pressure filter, change over |
| 2 | nominal size: 30 |
| 3 | filter-material and filter-fineness:
25VG, 16VG, 10VG, 6VG, 3VG microglass |
| 4 | filter element collapse rating:
30 = Δp 435 PSI
HR = Δp 2320 PSI (rupture strength Δp 3625 PSI) |
| 5 | filter element design:
E = single-end open |
| 6 | sealing material:
P = Nitrile (NBR)
V = Viton (FPM) |
| 7 | filter element specification:
- = standard
VA = stainless steel |
| 8 | process connection:
UG = thread connection |
| 9 | process connection size:
3A = -10 SAE |
| 10 | filter housing specification:
- = standard |
| 11 | clogging indicator or clogging sensor:
- = without
AOR = visual, see sheet-no. 1606
AOC = visual, see sheet-no. 1606
AE = visual-electric, see sheet-no. 1615
VS5 = electronic, see sheet-no. 1619 |

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

1.2. Filter element: (ordering example)

01E. 30. 10VG. HR. E. P. -

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

- | | |
|---|---|
| 1 | series:
01E. = filter element according to company standard |
| 2 | nominal size: 30 |
| 3 | - 7 see type index-complete filter |

Accessories:

- gauge port- and bleeder connection, see sheet-no. 1650

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:	4568 PSI
test pressure:	6525 PSI
process connection:	thread connection
housing material:	EN-GJS-400-18-LT, C-steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
air bleeding and measure connections dirt side:	BSPP ¼
measure connections clean side:	BSPP ½

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

Pressure drop flow curves:

Filter calculation/sizing

The pressure drop of the assembly at a given flow rate Q is the sum of the housing Δp and the element Δp and is calculated as follows:

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

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

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

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

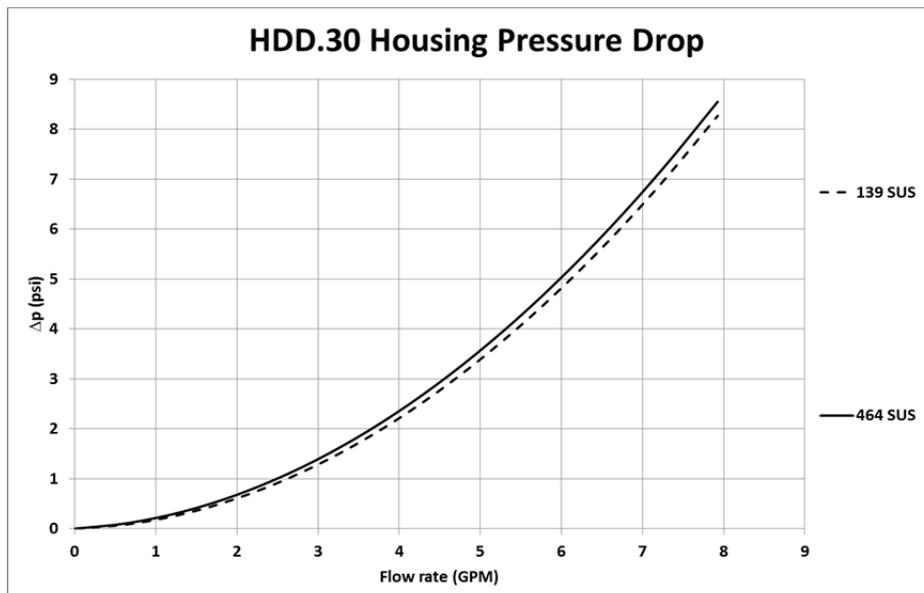
Material gradient coefficients (MSK) for filter elements

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.

HDD	VG				
	3VG	6VG	10VG	16VG	25VG
30	12.554	8.716	5.580	4.794	3.275

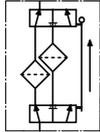
$\Delta p = f(Q)$ – characteristics according to ISO 3968

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.

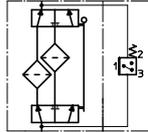


Symbols:

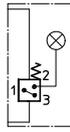
without indicator



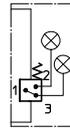
with electric indicator
AE 30 and AE 40



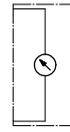
with visual-electric indicator
AE 50 and AE 62



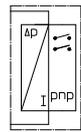
with visual-electric indicator
AE 70 and AE 80



with visual indicator
AOR/AOC



with electronic clogging sensor
VS5



Spare parts:

item	qty.	designation	dimension	article-no.	
1	2	filter element	01E.30...		
2	2	O-ring	12,37 x 2,62	304356 (NBR)	304396 (FPM)
3	2	O-ring	40 x 3	304389 (NBR)	304391 (FPM)
4	2	support ring	48 x 2,6 x 1	305391	
5	2	O-ring	10 x 3	307285 (NBR)	311019 (FPM)
6	2	O-ring	32 x 3	304368 (NBR)	311020 (FPM)
7	4	screw plug	1/4 BSPP	305003	
8	1	clogging indicator, visual	AOR or AOC	see sheet-no. 1606	
9	1	clogging indicator, visual-electric	AE	see sheet-no. 1615	
10	1	clogging sensor, electronic	VS5	see sheet-no. 1619	
11	1	O-ring	15 x 1,5	315357 (NBR)	315427 (FPM)
12	1	O-ring	22 x 2	304708 (NBR)	304721 (FPM)
13	1	O-ring	14 x 2	304342 (NBR)	304722 (FPM)
14	1	screw plug	20913-4	309817	
15	1	pressure balance valve	3/8"	305000	

item 14 execution only without clogging indicator or clogging sensor

Test methods:

Filter elements are tested according to the following ISO standards:

ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics
ISO 16889	Multi-pass method for evaluating filtration performance

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Brazil

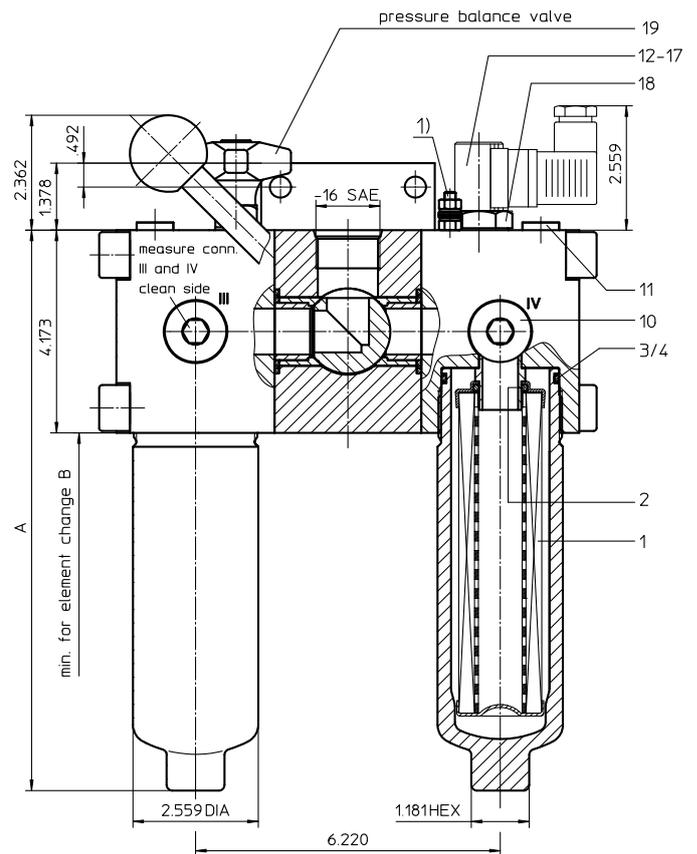
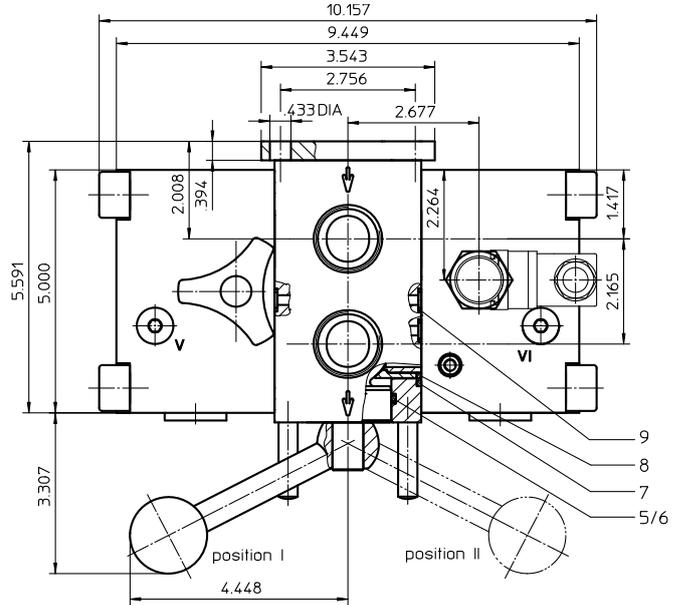
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Series HDD 61-151

4568 PSI



Position. I: left filter-side in operation
 Position. II: right filter-side in operation
 Connection V and VI should be used to bleed filter or to relieve pressure.

Dimensions:

type	HDD 61	HDD 91	HDD 151
connection	-16 SAE		
A	8.97	11.53	15.82
B	10.82	13.38	17.71
weight approx.	53 lbs.	55 lbs.	59 lbs.
volume tank	2x .08 Gal.	2x .10 Gal.	2x .16 Gal.

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

Dimensions: inches

Designs and performance values are subject to change.



Powering Business Worldwide

Pressure Filter

Series HDD 61-151

4568 PSI

Description:

Duplex pressure filter series HDD 61-151 with change-over valve have a working pressure up to 4568 PSI. Pressure peaks can be absorbed with a sufficient safety margin. Duplex filters can be serviced without interruption of operation.

The filter head has a three-way-change-over valve which diverts the flow from the dirty filter-side to the clean filter-side without interrupting operation of the filter. All filter housings have an integrated pressure balance valve to make main valve operation from one filter side to the other easier. Filter elements are available down to 5 $\mu\text{m}_{(0)}$. Finer filtration is available upon request.

Eaton filter elements are known for high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.

Eaton filter elements are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.

Eaton filter elements are available up to a pressure resistance of Δp 2320 PSI and a rupture strength of Δp 3625 PSI.

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

The reversing valve provides another level of protection for the filter element. The reverse flow will not be filtered.

1. Type index:

1.1. Complete filter: (ordering example)

HDD. 91. 10VG. HR. E. P. - UG. 5. - - AE

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

- | | |
|----|--|
| 1 | series:
HDD = pressure filter, change over |
| 2 | nominal size: 61, 91, 151 |
| 3 | filter-material and filter-fineness:
25VG, 16VG, 10VG, 6VG, 3VG microglass |
| 4 | filter element collapse rating:
30 = Δp 435 PSI
HR = Δp 2320 PSI (rupture strength Δp 3625 PSI) |
| 5 | filter element design:
E = single-end open |
| 6 | sealing material:
P = Nitrile (NBR)
V = Viton (FPM) |
| 7 | filter element specification: (see catalog)
- = standard
VA = stainless steel
IS06 = for HFC application, see sheet-no. 31601 |
| 8 | process connection:
UG = thread connection |
| 9 | process connection size:
5 = -16 SAE |
| 10 | filter housing specification: (see catalog)
- = standard
IS06 = for HFC applications, see sheet-no. 31605 |
| 11 | internal valve:
- = without
S1 = with by-pass valve Δp 51 PSI
S2 = with by-pass valve Δp 102 PSI
R = reversing valve, Q \leq 18.50 GPM |
| 12 | clogging indicator or clogging sensor:
- = without
AOR = visual, see sheet-no. 1606
AOC = visual, see sheet-no. 1606
AE = visual-electric, see sheet-no. 1615
VS5 = electronic, see sheet-no. 1619 |

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

1.2. Filter element: (ordering example)

01E. 90. 10VG. HR. E. P. -

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

- | | |
|---|---|
| 1 | series:
01E. = filter element according to company standard |
| 2 | nominal size: 60, 90, 150 |
| 3 | - 7 see type index-complete filter |

Accessories:

- gauge port- and bleeder connection, see sheet-no. 1650

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:	4538 PSI
test pressure:	6525 PSI
process connection:	thread connection
housing material:	C-steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
air bleeding and measure connections dirt side:	BSPP ¼
measure connections clean side:	BSPP ¼

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

Pressure drop flow curves:

Filter calculation/sizing

The pressure drop of the assembly at a given flow rate Q is the sum of the housing Δp and the element Δp and is calculated as follows:

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

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

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

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

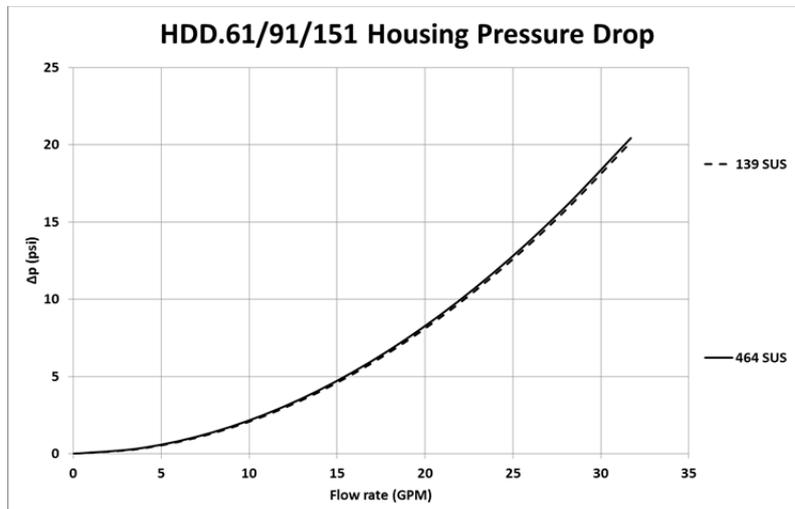
Material gradient coefficients (MSK) for filter elements

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.

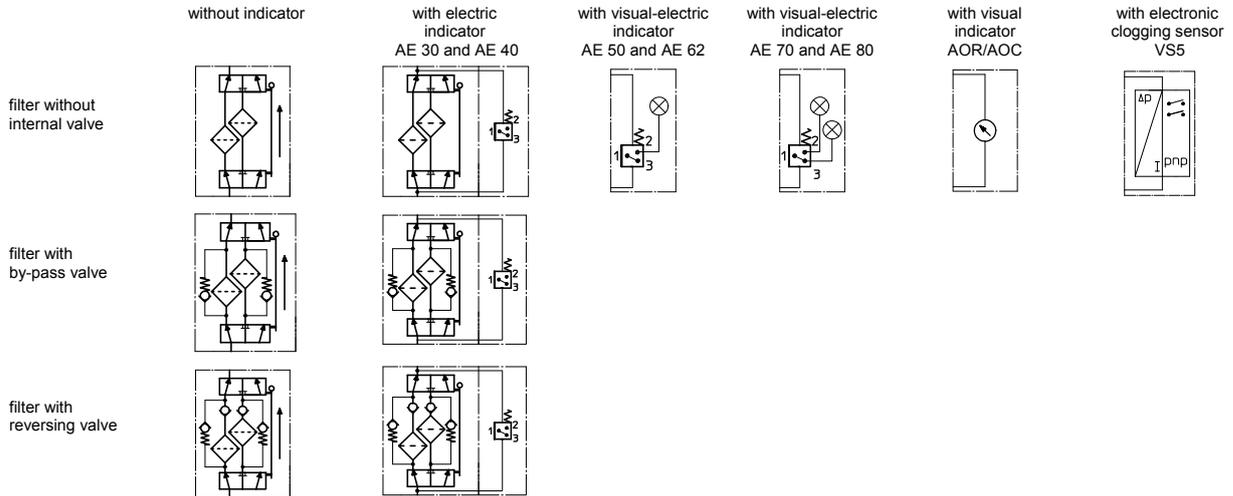
HDD	VG				
	3VG	6VG	10VG	16VG	25VG
61	6.748	4.685	2.999	2.577	1.760
91	4.059	2.818	1.804	1.550	1.059
151	2.422	1.681	1.076	0.925	0.632

$\Delta p = f(Q)$ – 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:



Spare parts:

item	qty.	designation	dimension			article-no.	
			HDD 61	HDD 91	HDD 151		
1	2	filter element	01E.60...	01E.90...	01E.150...		
2	2	O-ring		22 x 3,5		304341 (NBR)	304392 (FPM)
3	2	O-ring		54 x 3		304657 (NBR)	304720 (FPM)
4	2	support ring		61 x 2,6 x 1		304660	
5	3	O-ring		45 x 3		304991 (NBR)	304997 (FPM)
6	2	support ring		49,7 x 2,4 x 1		317709	
7	4	O-ring		38 x 3		304340 (NBR)	317013 (FPM)
8	4	O-ring		28 x 3		316778 (NBR)	318366 (FPM)
9	4	O-ring		8 x 2		310004 (NBR)	316530 (FPM)
10	2	screw plug		3/4 BSPP		308529	
11	2	screw plug		1/4 BSPP		305003	
12	1	clogging indicator, visual		AOR or AOC		see sheet-no. 1606	
13	1	clogging indicator, visual-electric		AE		see sheet-no. 1615	
14	1	clogging sensor, electronic		VS5		see sheet-no. 1619	
15	1	O-ring		15 x 1,5		315357 (NBR)	315427 (FPM)
16	1	O-ring		22 x 2		304708 (NBR)	304721 (FPM)
17	1	O-ring		14 x 2		304342 (NBR)	304722 (FPM)
18	1	screw plug		20913-4		309817	
19	1	pressure balance valve		3/8"		305000	

item 18 execution only without clogging indicator or clogging sensor

Test methods:

Filter elements are tested according to the following ISO standards:

ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics
ISO 16889	Multi-pass method for evaluating filtration performance

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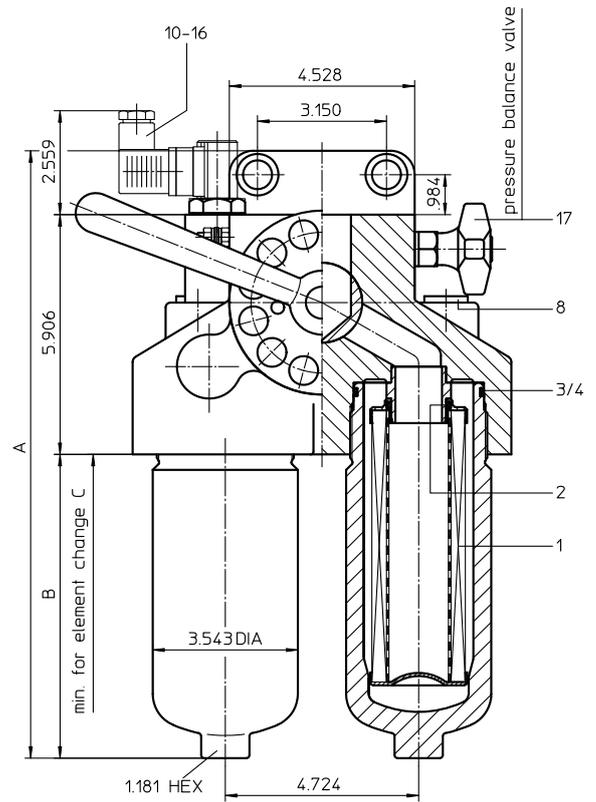
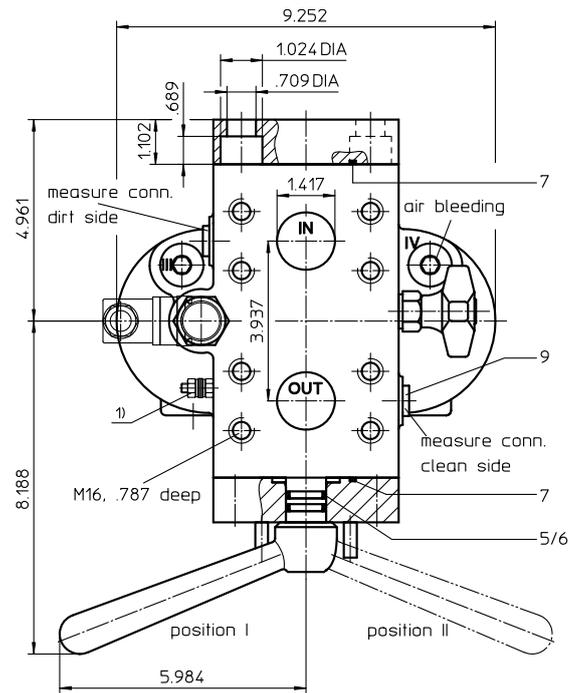
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Series HDD 170-450

4568 PSI



Position. I: left filter-side in operation
 Position. II: right filter-side in operation
 Connection III and IV should be used to bleed filter or to relieve pressure.

Dimensions:

type	HDD 170	HDD 240	HDD 360	HDD 450
connection	SAE 1 1/2"			
A	14.96	16.93	20.08	24.21
B	7.48	9.45	12.60	16.73
C	13.78	15.75	18.90	23.03
weight approx.	86 lbs.	90 lbs.	99 lbs.	110 lbs.
volume tank	2x .18 Gal.	2x .23 Gal.	2x .31 Gal.	2x .42 Gal.

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

Dimensions: inches

Designs and performance values are subject to change.



Powering Business Worldwide

Pressure Filter

Series HDD 170-450

4568 PSI

Description:

Duplex pressure filter series HDD 170-450 with change-over valve have a working pressure up to 4568 PSI. Pressure peaks can be absorbed with a sufficient safety margin. Duplex filters can be serviced without interruption of operation.

The filter head has a three-way-change-over valve which diverts the flow from the dirty filter-side to the clean filter-side without interrupting operation of the filter. All filter housings have an integrated pressure balance valve to make main valve operation from one filter side to the other easier. Filter elements are available down to 5 $\mu\text{m}_{(c)}$. Finer filtration is available upon request.

Eaton filter elements are known for high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.

Eaton filter elements are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.

Eaton filter elements are available up to a pressure resistance of Δp 2320 PSI and a rupture strength of Δp 3625 PSI.

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

The reversing valve provides another level of protection for the filter element. The reverse flow will not be filtered.

1. Type index:

1.1. Complete filter: (ordering example)

HDD. 170. 10VG. HR. E. P. - . FS. 7. - . - . AE

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

- | | |
|----|--|
| 1 | series:
HDD = pressure filter, change over |
| 2 | nominal size: 170, 240, 360, 450 |
| 3 | filter-material and filter-fineness:
25VG, 16VG, 10VG, 6VG, 3VG microglass |
| 4 | filter element collapse rating:
30 = Δp 435 PSI
HR = Δp 2320 PSI (rupture strength Δp 3625 PSI) |
| 5 | filter element design:
E = single-end open |
| 6 | sealing material:
P = Nitrile (NBR)
V = Viton (FPM) |
| 7 | filter element specification:
- = standard
VA = stainless steel |
| 8 | process connection:
FS = SAE-flange 6000 PSI |
| 9 | process connection size:
7 = 1 1/2" |
| 10 | filter housing specification:
- = standard |
| 11 | internal valve:
- = without
S1 = with by-pass valve Δp 51 PSI
S2 = with by-pass valve Δp 102 PSI
R = reversing valve, $Q \leq 55.75$ GPM |
| 12 | clogging indicator or clogging sensor:
- = without
AOR = visual, see sheet-no. 1606
AOC = visual, see sheet-no. 1606
AE = visual-electric, see sheet-no. 1615
VS5 = electronic, see sheet-no. 1619 |

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

1.2. Filter element: (ordering example)

01E. 170. 10VG. HR. E. P. -

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

- | | |
|---|---|
| 1 | series:
01E. = filter element according to company standard |
| 2 | nominal size: 170, 240, 360, 450 |
| 3 | - 7 see type index-complete filter |

Accessories:

- gauge port- and bleeder connection, see sheet-no. 1650

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:	4538 PSI
test pressure:	6525 PSI
process connection:	SAE-flange 6000 PSI
housing material:	EN-GJS-400-18-LT, C-steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
air bleeding connections:	BSPP ½
measure connections:	BSPP ¼

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

Pressure drop flow curves:

Filter calculation/sizing

The pressure drop of the assembly at a given flow rate Q is the sum of the housing Δp and the element Δp and is calculated as follows:

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

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

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

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

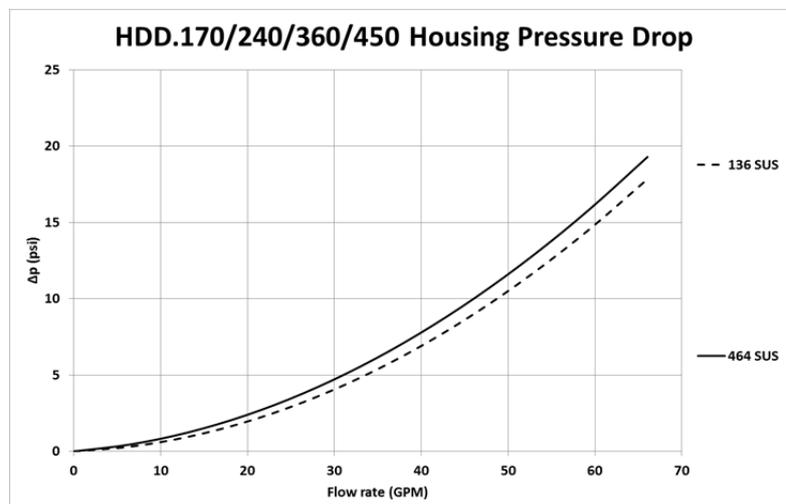
Material gradient coefficients (MSK) for filter elements

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.

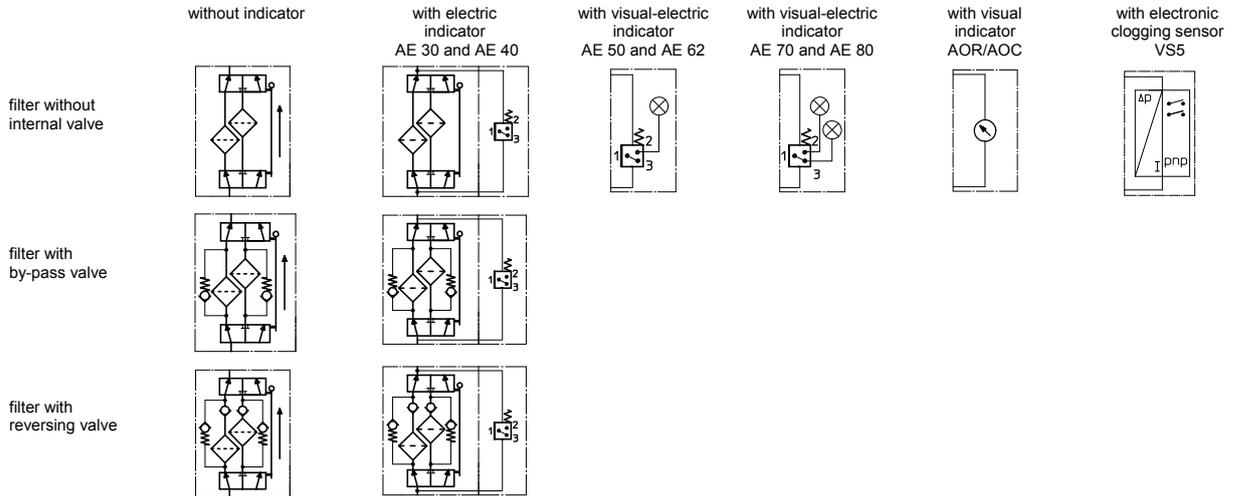
HDD	VG				
	3VG	6VG	10VG	16VG	25VG
170	2.714	1.884	1.206	1.036	0.708
240	2.092	1.452	0.930	0.799	0.546
360	1.530	1.062	0.680	0.584	0.399
450	1.126	0.782	0.500	0.430	0.294

$\Delta p = f(Q)$ – 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:



Spare parts:

item	qty.	designation	dimension				article-no.	
			HDD 170 01E.170...	HDD 240 01E.240...	HDD 360 01E.360...	HDD 450 01E.450...		
1	2	filter element						
2	2	O-ring		34 x 3,5			304338 (NBR)	304730 (FPM)
3	2	O-ring		75 x 3			302215 (NBR)	304729 (FPM)
4	2	support ring		81 x 2,6 x 1			304581	
5	2	O-ring		18 x 3			304359 (NBR)	304399 (FPM)
6	2	support ring		25 x 2,5 x 0,5			311311	
7	2	O-ring		56 x 3			305072 (NBR)	305322 (FPM)
8	2	screw plug		½ BSPP			304678	
9	2	screw plug		¼ BSPP			305003	
10	1	clogging indicator visual		AOR or AOC			see sheet-no. 1606	
11	1	clogging indicator visual-electric		AE			see sheet-no. 1615	
12	1	clogging sensor electronic		VS 5			see sheet-no. 1619	
13	1	O-ring		15 x 1,5			315357 (NBR)	315427 (FPM)
14	1	O-ring		22 x 2			304708 (NBR)	304721 (FPM)
15	1	O-ring		14 x 2			304342 (NBR)	304722 (FPM)
16	1	screw plug		20913-4			309817	
17	1	pressure balance valve		3/8"			305000	

item 16 execution only without clogging indicator or clogging sensor

Test methods:

Filter elements are tested according to the following ISO standards:

ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics
ISO 16889	Multi-pass method for evaluating filtration performance

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For more information, please

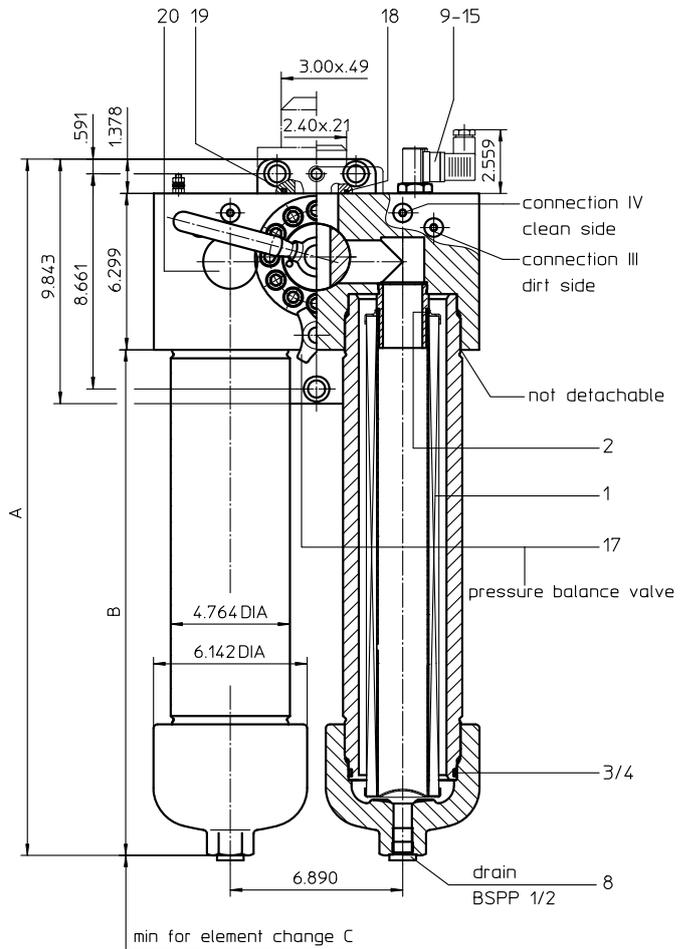
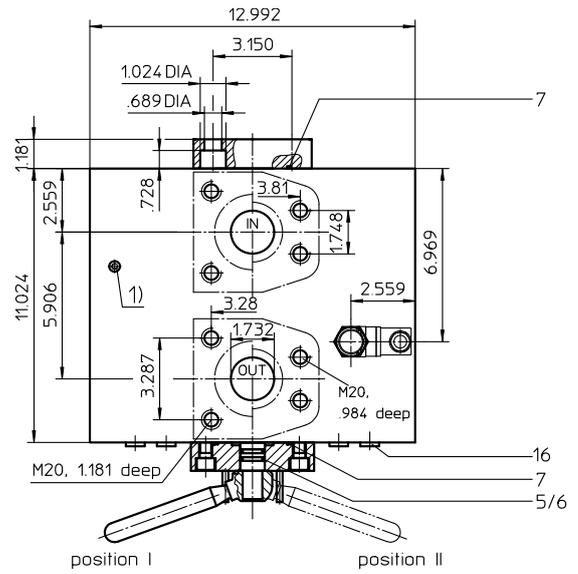
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or visit www.eaton.com/filtration

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Series HDD 601-1351

4568 PSI



Position. I: left filter-side in operation
 Position. II: right filter-side in operation
 Connection III and IV should be used to bleed filter or to relieve pressure.

Dimensions:

type	HDD 601	HDD 901	HDD 1351
connection	SAE 2"		
A	22.32	28.22	37.99
B	14.65	20.55	30.30
C	12.20	18.11	27.95
weight approx.	315 lbs.	330 lbs.	356 lbs.
volume tank	2x .55 Gal.	2x .82 Gal.	2x 1.21 Gal.

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

Dimensions: inches

Designs and performance values are subject to change.



Powering Business Worldwide

Pressure Filter

Series HDD 601-1351

4568 PSI

Description:

Duplex pressure filter series HDD 601-1351 with change-over valve have a working pressure up to 4568 PSI. Pressure peaks can be absorbed with a sufficient safety margin. Duplex filters can be serviced without interruption of operation.

The filter head has a three-way-change-over valve which diverts the flow from the dirty filter-side to the clean filter-side without interrupting operation of the filter. All filter housings have an integrated pressure balance valve to make main valve operation from one filter side to the other easier. Filter elements are available down to 5 $\mu\text{m}_{(c)}$. Finer filtration is available upon request.

Eaton filter elements are known for high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.

Eaton filter elements are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.

Eaton filter elements are available up to a pressure resistance of Δp 2320 PSI and a rupture strength of Δp 3625 PSI.

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

The reversing valve provides another level of protection for the filter element. The reverse flow will not be filtered.

1. Type index:

1.1. Complete filter: (ordering example)

HDD. 901. 10VG. HR. E. P. -, FS. 8. -, -, AE

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

- | | |
|----|--|
| 1 | series:
HDD = pressure filter, change over |
| 2 | nominal size: 601, 901, 1351 |
| 3 | filter-material and filter-fineness:
80G, 40G, 25G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass |
| 4 | filter element collapse rating:
30 = Δp 435 PSI
HR = Δp 2320 PSI (rupture strength Δp 3625 PSI) |
| 5 | filter element design:
E = single-end open |
| 6 | sealing material:
P = Nitrile (NBR)
V = Viton (FPM) |
| 7 | filter element specification:
- = standard
VA = stainless steel |
| 8 | process connection:
FS = SAE-flange 6000 PSI (standard)
FV = AVIT-flange 4640 PSI (special design) |
| 9 | process connection size:
8 = 2" |
| 10 | filter housing specification:
- = standard |
| 11 | internal valve:
- = without
S1 = with by-pass valve Δp 51 PSI
S2 = with by-pass valve Δp 102 PSI
R = reversing valve, $Q \leq 122.94$ GPM |
| 12 | clogging indicator or clogging sensor:
- = without
AOR = visual, see sheet-no. 1606
AOC = visual, see sheet-no. 1606
AE = visual-electric, see sheet-no. 1615
VS5 = electronic, see sheet-no. 1619 |

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

1.2. Filter element: (ordering example)

01E. 900. 10VG. HR. E. P. -

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

- | | |
|---|---|
| 1 | series:
01E. = filter element according to company standard |
| 2 | nominal size: 600, 900, 1350 |
| 3 | - 7 see type index-complete filter |

Accessories:

- gauge port- and bleeder connection, see sheet-no. 1650
- SAE-counter flange, see sheet-no. 1652
- AVIT-counter flange, see sheet-no. 1654

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:	4538 PSI
test pressure:	6525 PSI
process connection:	SAE-flange 6000 PSI (standard) or AVIT-flange 4640 PSI (special design)
housing material:	EN-GJS-400-18-LT, C-steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
air bleeding connections:	BSPP ¼
measure connections:	BSPP ¼

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

Pressure drop flow curves:

Filter calculation/sizing

The pressure drop of the assembly at a given flow rate Q is the sum of the housing Δp and the element Δp and is calculated as follows:

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

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

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

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

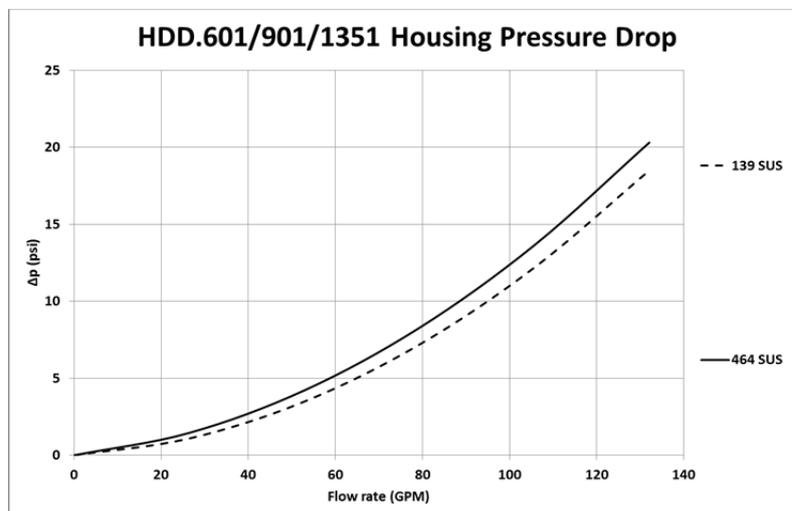
Material gradient coefficients (MSK) for filter elements

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.

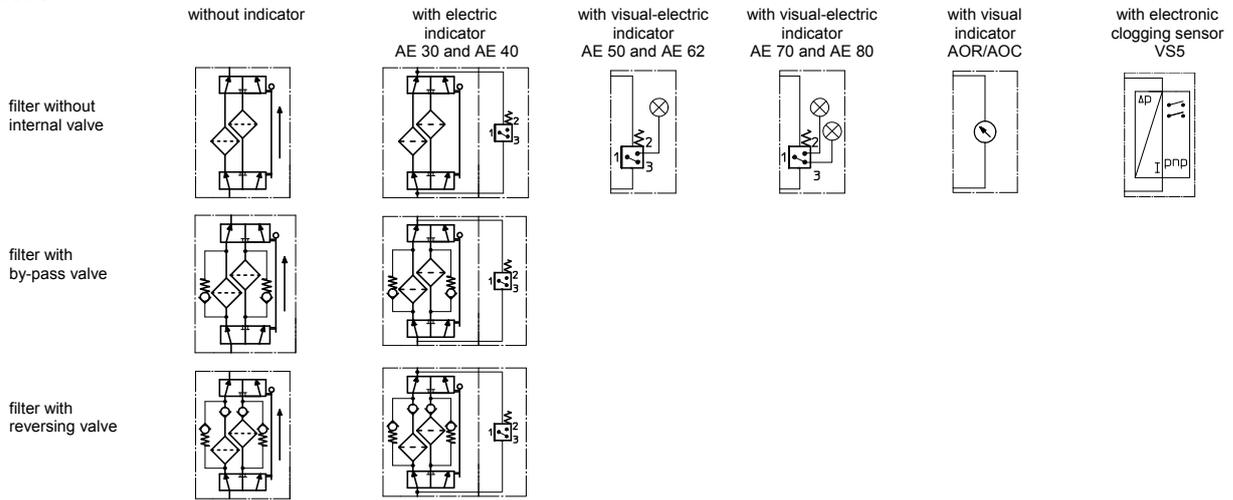
HDD	VG					G		
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G
601	0.963	0.669	0.428	0.368	0.251	0.0303	0.0282	0.0193
901	0.668	0.464	0.297	0.225	0.174	0.0189	0.0177	0.0121
1351	0.417	0.290	0.185	0.185	0.109	0.0122	0.0114	0.0078

$\Delta p = f(Q)$ – 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:



Spare parts:

item	qty.	designation	dimension			article-no.	
			HDD 601 01E.600...	HDD 901 01E.900...	HDD 1351 01E.1350...		
1	2	filter element		48 x 3			
2	2	O-ring		98 x 4		304357 (NBR)	304404 (FPM)
3	2	O-ring		110 x 3,5 x 2		301914 (NBR)	304765 (FPM)
4	2	support ring		18 x 3			304802
5	2	O-ring		25 x 2,5 x 0,5		304359 (NBR)	304399 (FPM)
6	2	support ring		71 x 3			311311
7	2	O-ring		1/2 BSPP		306451 (NBR)	306897 (FPM)
8	2	screw plug					304678
9	1	clogging indicator, visual		AOR or AOC			see sheet no. 1606
10	1	clogging indicator, visual-electric		AE			see sheet no. 1615
11	1	clogging sensor, electronic		VS5			see sheet no. 1619
12	1	O-ring		15 x 1,5		315457 (NBR)	315427 (FPM)
13	1	O-ring		22 x 2		304708 (NBR)	304721 (FPM)
14	1	O-ring		14 x 2		304342 (NBR)	304722 (FPM)
15	1	screw plug		20913-4			309817
16	4	screw plug		1/4 BSPP			305003
17	1	pressure balance valve		3/8"			305000
18	1	O-ring (only with counter flange SAE)		56,75 x 3,53		306035 (NBR)	310264 (FPM)
19	1	O-ring (only with counter flange AVIT)		61 x 5			
20	8	screw plug		1 1/2 BSPP			311475

item 15 execution only without clogging indicator or clogging sensor

Test methods:

Filter elements are tested according to the following ISO standards:

ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics
ISO 16889	Multi-pass method for evaluating filtration performance

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