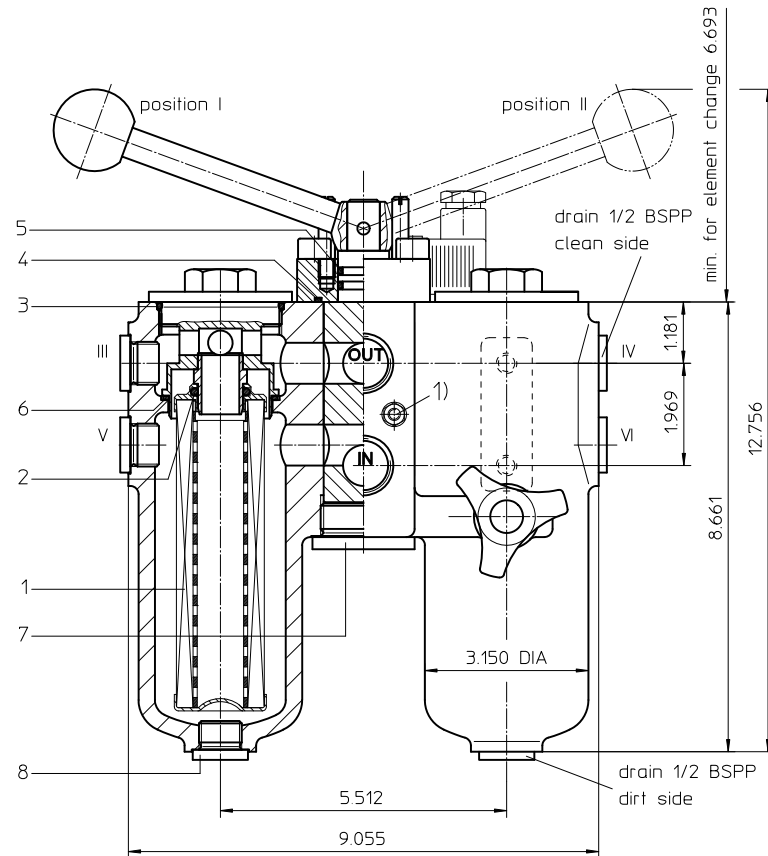
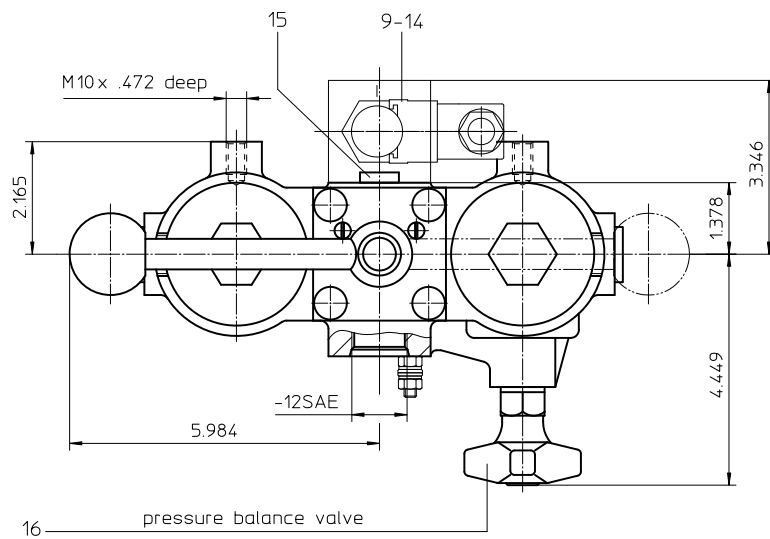


# Series DU 63

## 464 PSI



Position I: Left filter-side in operation  
 Position II: Right filter-side in operation

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

Measure connection III, IV: Air bleeding, pressure relief 1/2 BSPP - clean side  
 Measure connection V, VI: Air bleeding, pressure relief 1/2 BSPP - dirt side

Weight: approx. 33 lbs.

Dimensions: inches

Designs and performance values are subject to change.



Powering Business Worldwide

# Pressure Filter

## Series DU 63

### 464 PSI

#### Description:

Duplex filter series DU63 have a working pressure up to 464 PSI. Pressure peaks can be absorbed with a sufficient safety margin.

A rotary slide valve integrated in the middle of the housing makes it possible to switch from the dirty filter-side to the clean filter-side without interrupting operation. These filters can be installed as suction filters.

The filter element consists of star-shaped, pleated filter material, which is supported on the inside by a perforated core tube and is bonded to the end caps with a high-quality adhesive. The flow direction is from outside to inside.

For cleaning the mesh element or changing the microglass element, remove the cover and take out the element. The mesh elements are not guaranteed to maintain 100% performance after cleaning.

For filtration finer than 40 µm, use the disposable elements made of microglass. Filter elements as fine as 5 µm(c) are available; finer filter elements are available upon request.

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

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

The bypass valve is integrated in the filter cover. After reaching the bypass pressure setting, the bypass valve will send unfiltered partial flow around the filter.

Ship classifications available upon request.

#### Type index:

**Complete filter:** (ordering example)

<b>DU. 63. 10VG. 30. E. P. -. UG. 4. -. -. AE</b>
1   2   3   4   5   6   7   8   9   10   11   12

- 1 **series:**  
DU = pressure filter, change over
- 2 **nominal size:** 63
- 3 **filter-material and filter-fineness:**  
80G, 40G, 25G, 10G stainless steel wire mesh  
25VG, 16VG, 10VG, 6VG, 3VG microglass  
25API, 10API microglass according to API  
10P paper
- 4 **filter element collapse rating:**  
30 = Δp 435 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:**  
4 = -12 SAE
- 10 **filter housing specification:**  
- = standard
- 11 **internal valve:**  
- = without  
S1 = with bypass valve Δp 51 PSI
- 12 **clogging indicator or clogging sensor:**  
- = without  
AOR = visual-electric, see sheet-no.1606  
AOC = visual-electric, 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.

**Filter element:** (ordering example)

<b>01NL. 63. 10VG. 30. E. P. -</b>
1   2   3   4   5   6   7

- 1 **series:**  
01NL. = standard filter element according to DIN 24550, T3
- 2 **nominal size:** 63
- 3 - 7 see type index complete filter

#### Accessories:

- gauge port and bleeder connection, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1651

## 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:	464 PSI
test pressure:	900 PSI
process connection:	thread connection
housing material:	EN-GJS-400-18-LT
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measure connections:	BSPP ¼
drain- and bleeder connections:	BSPP ½
volume tank:	2x 0.17 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/)

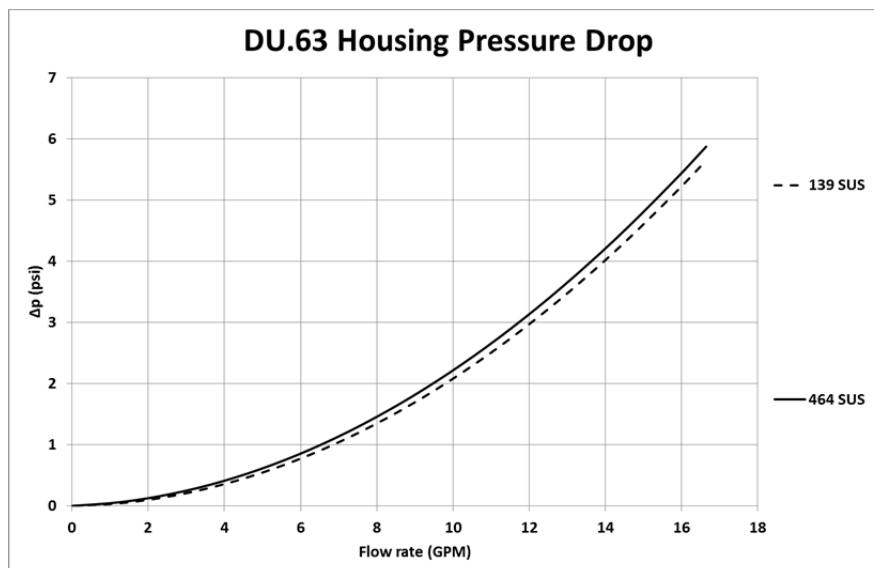
### Material gradient coefficients (MSK) for filter elements

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.

DU	VG					G			P	API	
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P	10API	25API
63	4.214	2.926	1.873	1.631	1.114	0.1131	0.1056	0.0723	0.946	0.993	0.455

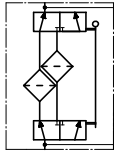
### $\Delta p = f(Q)$ – characteristics according to ISO 3968

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.

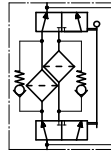


## Symbols:

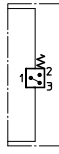
without indicator



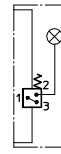
with by-pass valve



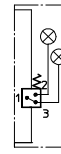
with electric indicator  
AE 30 and AE 40



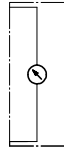
with visual-electric indicator  
AE 50 and AE 62



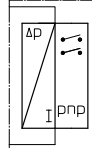
with visual-electric indicator  
AE 70 and AE 80



with visual indicator  
AOR/AOC



with electronic clogging sensor  
VS5



## Spare parts:

item	qty.	designation	dimension	article-no.	
1	2	filter element	01NL.63...		
2	2	O-ring	22 x 3,5	304341 (NBR)	304392 (FPM)
3	2	O-ring	56 x 3	305072 (NBR)	305322 (FPM)
4	1	O-ring	42,52 x 2,62	304352 (NBR)	304393 (FPM)
5	2	O-ring	18 x 3	304359 (NBR)	304399 (FPM)
6	2	O-ring	48 x 3	304357 (NBR)	304404 (FPM)
7	1	screw plug	1 ¼ BSPP	308530	
8	6	screw plug	½ BSPP	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	315357 (NBR)	315427 (FPM)
13	1	O-ring	22 x 2	304708 (NBR)	304721 (FPM)
14	3	O-ring	14 x 2	304342 (NBR)	304722 (FPM)
15	2	screw plug	¼ BSPP	305003	
16	1	pressure balance valve	3/8"	305000	

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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For more information, please

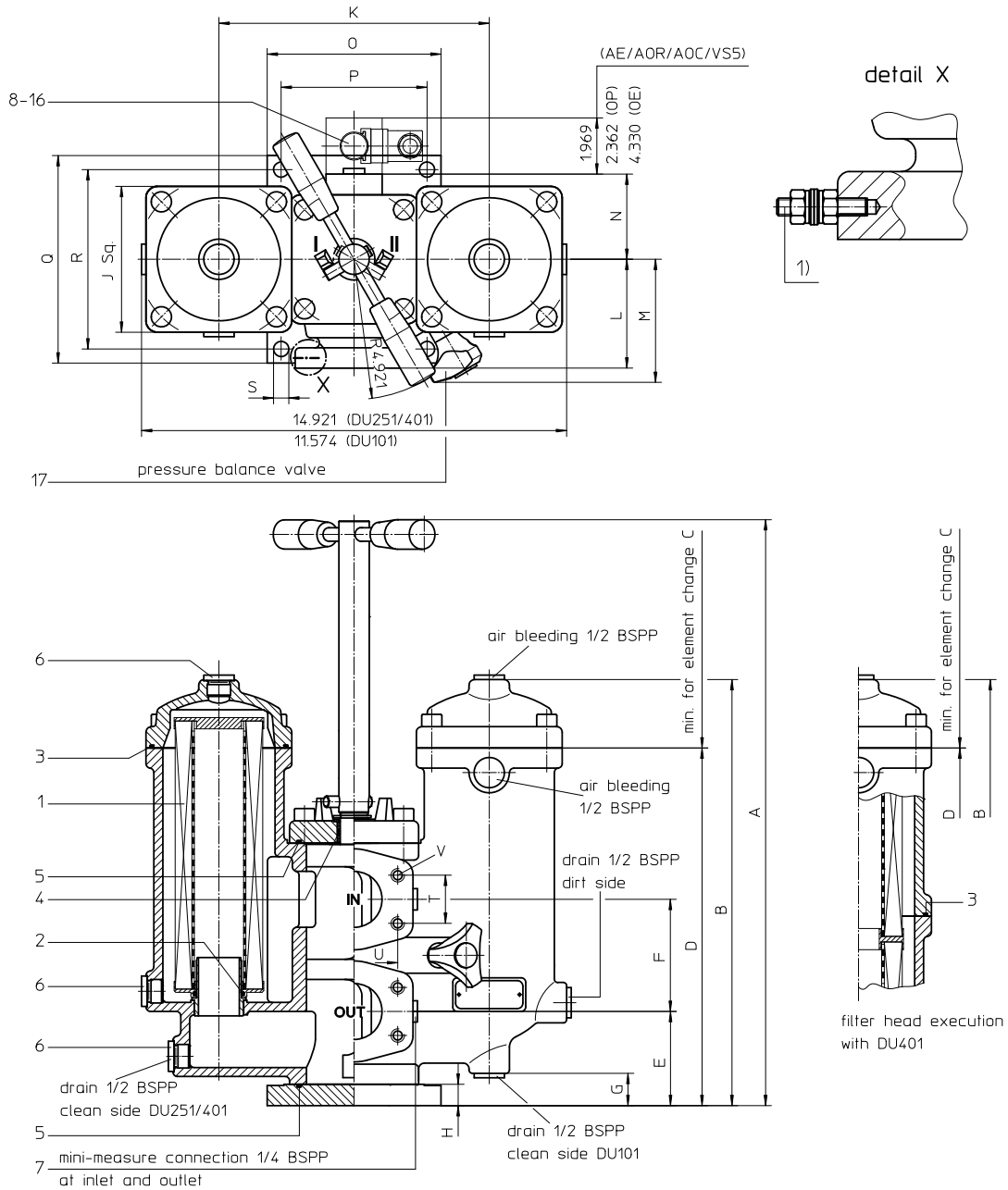
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# Series DU 101-401

## 464 PSI



Position I: Left filter-side in operation  
 Position II: Right filter-side in operation

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

### Dimensions:

type	SAE-connection	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	weight
DU 101	SAE 1 1/4 <sup>1)</sup>	18.23	12.20	8.27	10.43	2.17	3.15	.87	.63	3.74	7.09	2.36	3.94	1.96	5.51	4.53	5.51	4.53	.47	1.19	2.31	M10/.75 dp.	51 lbs.
DU 101	SAE 1 1/2 <sup>2)</sup>	20.55	14.97	10.23	12.56	3.31	3.94	-	.75	5.12	9.45	3.82	4.33	2.99	6.10	5.12	7.28	6.30	.53	1.69	3.10	M12/.71 dp.	88 lbs.
DU 251	SAE 2 <sup>2)</sup>	24.88	20.87	16.14	18.46	3.31	3.94	-	.75	5.12	9.45	3.82	4.33	2.99	6.10	5.12	7.28	6.30	.53	1.69	3.10	M12/.71 dp.	110 lbs.

<sup>1)</sup> by counter flange BFS.6.A.33,7x2,6.St.P.3000

<sup>2)</sup> by counter flange BFS.8.A.48,3x3,7.St.P.3000

Dimensions: inches



Powering Business Worldwide

Designs and performance values are subject to change.

# Pressure Filter

## Series DU 101-401

### 464 PSI

#### Description:

Duplex filter series DU 101-401 have a working pressure up to 464 PSI. Pressure peaks can be absorbed with a sufficient safety margin.

A three way changeover valve which is integrated in the middle of the housing makes it possible to switch from the dirty filter-side to the clean filter-side without interrupting operation. These filters can be installed as suction filters.

The filter element consists of star-shaped, pleated filter material, which is supported on the inside by a perforated core tube and is bonded to the end caps with a high-quality adhesive. The flow direction is from outside to inside.

For cleaning the mesh element or changing the microglass element, remove the cover and take out the element. The mesh elements are not guaranteed to maintain 100% performance after cleaning.

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

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

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

Ship classifications available upon request.

#### Type index:

**Complete filter:** (ordering example)

<b>DU. 251. 10VG. 30. E. P. -. FS. 8. -. -. AE</b>
1   2   3   4   5   6   7   8   9   10   11   12

- 1 | **series:**  
DU = pressure filter, change over
- 2 | **nominal size:** 101, 251, 401
- 3 | **filter-material and filter-fineness:**  
80G, 40G, 25G, 10G stainless steel wire mesh  
25VG, 16VG, 10VG, 6VG, 3VG microglass  
25API, 10API microglass according to API  
10P paper
- 4 | **filter element collapse rating:**  
16 = Δp 232 PSI (01N.100)  
30 = Δp 435 PSI (01NL.250/400)
- 5 | **filter element design:**  
E = single end open  
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:** (see catalog)  
- = standard  
VA = stainless steel  
IS06 = for HFC application, see sheet-no. 31601
- 8 | **process connection:**  
FS = SAE-flange 3000 PSI
- 9 | **process connection size:**  
6 = 1 ¼" (DU 101)  
8 = 2" (DU 251/401)
- 10 | **filter housing specification:** (see catalog)  
- = standard  
IS12 = for stainless steel ball valve, see sheet-no. 41028  
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217 (operating pressure max. 232 PSI)
- 11 | **internal valve:**  
- = without
- 12 | **clogging indicator or clogging sensor:**  
- = without  
AOR = visual-electric, see sheet-no.1606  
AOC = visual-electric, see sheet-no.1606  
AE = visual-electric, see sheet-no.1609  
OP = visual, see sheet-no.1628  
OE = visual-electric, see sheet-no.1628  
VS5 = electronic, see sheet-no.1641

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

**Filter element:** (ordering example)

<b>01NL. 250. 10VG. 30. E. P. -</b>
1   2   3   4   5   6   7

- 1 | **series:**  
01N. = standard filter element according to EATON specification  
01NL. = standard filter element according to DIN 24550, T3
- 2 | **Nominal size:** 100 (01N.), 250,400 (01NL.)
- 3 | - 7 | see type index for complete filter

#### Accessories:

- gauge port and bleeder connection, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1651
- SAE-counter flange, see sheet-no. 1652
- shut-off valve, see sheet-no. 1655

## 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:	464 PSI
max. operating pressure at IS20:	232 PSI
test pressure:	900 PSI
test pressure at IS20:	464 PSI
process connection:	SAE-flange 3000 PSI
housing material:	EN-GJS-400-18-LT
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measure connections:	BSPP ¼
drain- and bleeder connections:	BSPP ½
volume tank DU 101:	2x .23 Gal.
DU 251:	2x .66 Gal.
DU 401:	2x .97 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:

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

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

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

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

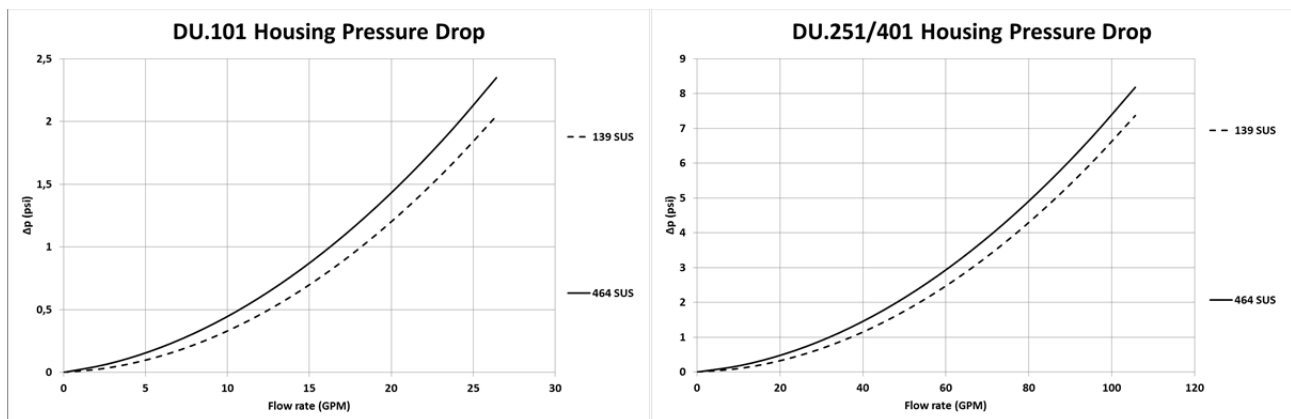
### Material gradient coefficients (MSK) for filter elements

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.

DU	VG					G			P	API	
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P	10API	25API
101	2.473	1.717	1.099	0.957	0.654	0.0651	0.0607	0.0416	0.504	0.582	0.266
251	1.140	0.792	0.507	0.441	0.301	0.0339	0.0316	0.0217	0.231	0.260	0.119
401	0.700	0.486	0.311	0.271	0.185	0.0207	0.0194	0.0133	0.121	0.159	0.073

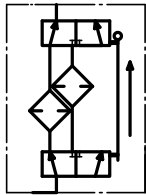
### $\Delta p = f(Q)$ – characteristics according to ISO 3968

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.

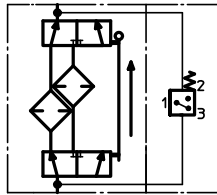


## Symbols:

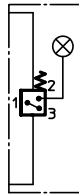
without indicator



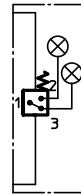
with electric indicator  
AE 30 and AE 40



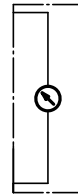
with visual-electric indicator  
AE 50 and AE 62



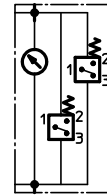
with visual-electric indicator  
AE 70 and AE 80



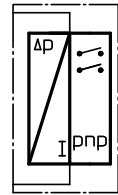
with visual indicator  
AOR/AOC/OP



with visual-electric indicator  
OE



with electronic sensor  
VS5



## Spare parts:

item	designation	qty.	dimension/article no. DU 101	qty.	dimension/article no. DU 251	qty.	dimension/article no. DU 401
1	filter element	2	01N.100...	2	01NL.250...	2	01NL.400...
2	O-ring	2	32 x 3,5 304378 (NBR) 304401 (FPM)	2	40 x 3 304389 (NBR) 304391 (FPM)	2	40 x 3 304389 (NBR) 304391 (FPM)
3	O-ring	2	76 x 4 305599 (NBR) 310291 (FPM)	2	115 x 3 303963 (NBR) 307762 (FPM)	4	115 x 3 303963 (NBR) 307762 (FPM)
4	O-ring	1	24 x 3 303038 (NBR) 304397 (FPM)	1	24 x 3 303038 (NBR) 304397 (FPM)	1	24 x 3 303038 (NBR) 304397 (FPM)
5	O-ring	2	60 x 2,5 305601 (NBR) 310267 (FPM)	2	95 x 3 305808 (NBR) 304828 (FPM)	2	95 x 3 305808 (NBR) 304828 (FPM)
6	screw plug	8			1/2 BSPP 304678		
7	screw plug	2			1/4 BSPP 305003		
8	clogging indicator, visual				AOR or AOC see sheet-no. 1606		
9	clogging indicator, visual	1			OP see sheet-no. 1628		
10	clogging indicator, visual-electric	1			OE see sheet-no. 1628		
11	clogging indicator, visual-electric	1			AE see sheet-no. 1609		
12	clogging sensor, electronic	1			VS5 see sheet-no. 1641		
13	O-ring	1			15 x 1,5 315537 (NBR) 315427 (FPM)		
14	O-ring	1			22 x 2 304708 (NBR) 304721 (FPM)		
15	O-ring	2			14 x 2 304342 (NBR) 304722 (FPM)		
16	screw plug	2			1/4 BSPP 305003		
17	pressure balance valve	1			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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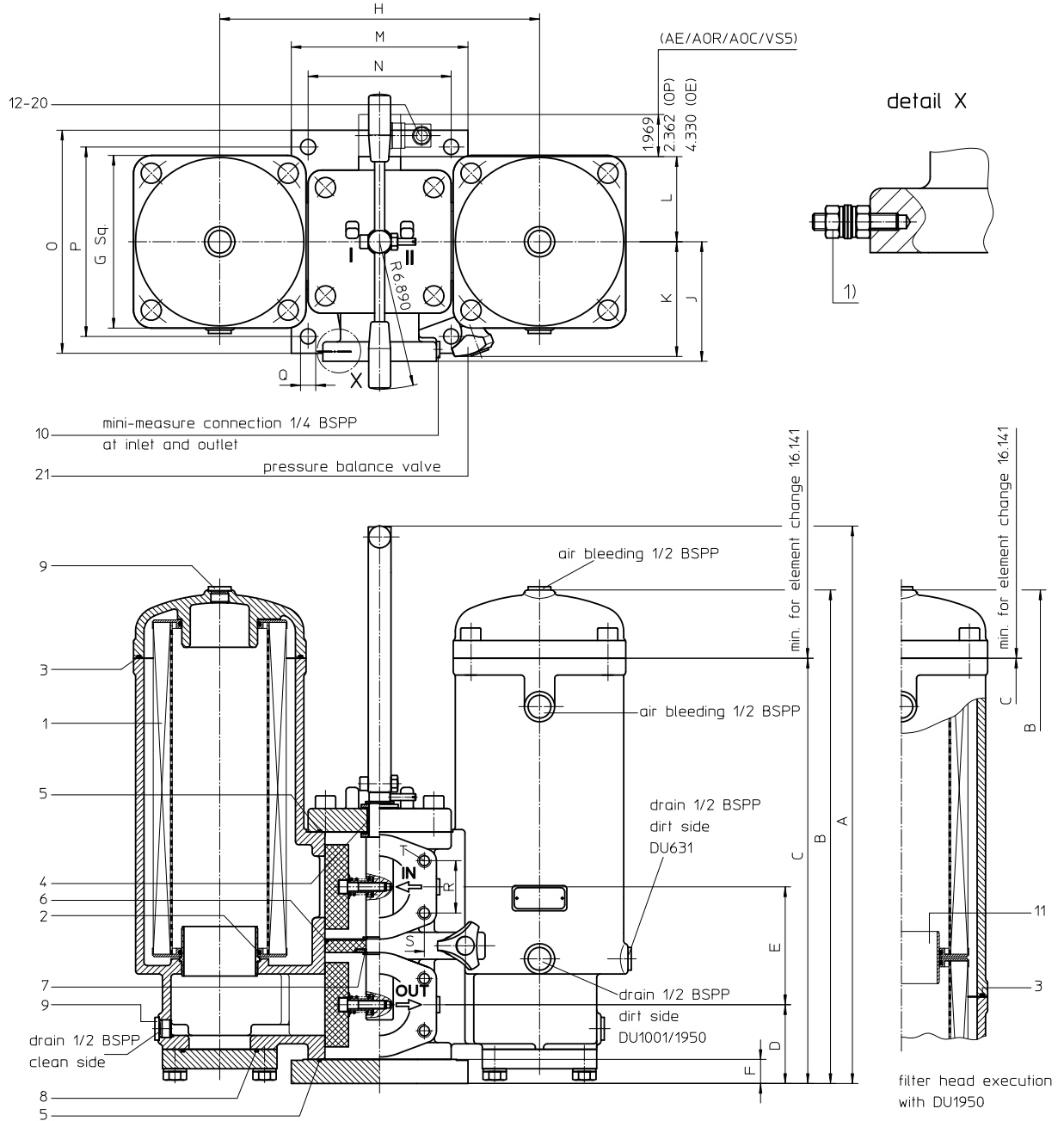
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# Series DU 631-1950

## 464 PSI



Position I: Left filter-side in operation  
 Position II: Right filter-side in operation

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

**Dimensions:**

type	SAE-connection	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	weight
DU 631	SAE 2 1/2"	27.28	22.36	19.56	4.33	4.52	.94	6.29	11.29	3.26	4.76	5.23	5.51	4.52	8.26	7.28	.53	2.00	3.50	M12, .71 dp.	198 lbs.
DU 1001	SAE 3"	28.22	23.07	19.88	3.68	5.51	1.12	8.07	14.96	3.97	5.39	5.94	8.26	6.69	10.43	8.85	.70	2.44	4.18	M16, .91 dp.	255 lbs.
DU 1950	SAE 3"	44.05	38.89	35.70	3.68	5.51	1.12	8.07	14.96	3.97	5.39	5.94	8.26	6.69	10.43	8.85	.70	2.44	4.18	M16, .91 dp.	374 lbs.

Dimensions: inches

Designs and performance values are subject to change.



Powering Business Worldwide

# Pressure Filter

## Series DU 631-1950

### 464 PSI

#### Description:

Duplex filter series DU 631-1950 have a working pressure up to 464 PSI. Pressure peaks can be absorbed with a sufficient safety margin.

A three way changeover valve integrated in the middle of the housing makes it possible to switch from the dirty filter-side to the clean filter-side without interrupting operation. These filters can be installed as suction filters.

The filter element consists of star-shaped, pleated filter material, which is supported on the inside by a perforated core tube and is bonded to the end caps with a high-quality adhesive. The flow direction is from outside to inside.

For cleaning the mesh element or changing the microglass element, remove the cover and take out the element. The mesh elements are not guaranteed to maintain 100% performance after cleaning.

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

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

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

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

Ship classifications available upon request.

#### Type index:

**Complete filter:** (ordering example)

**DU. 631. 10VG. 30. E. P. -. FS. 9. -. -. AE**

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

- 1 series:**  
DU = pressure filter, change over
- 2 nominal size:** 631, 1001, 1950
- 3 filter-material and filter-fineness:**  
80G, 40G, 25G, 10G stainless steel wire mesh  
25VG, 16VG, 10VG, 6VG, 3VG microglass  
25API, 10API microglass according to API  
10P paper
- 4 filter element collapse rating:**  
30 = Δp 435 PSI (01NL.630)  
10 = Δp 146 PSI (01NR.1000/1001)
- 5 filter element design:**  
E = single end open (01NL.630)  
S = with bypass valve Δp 29 PSI (01NL.630)  
S1 = with bypass valve Δp 51 PSI (01NL.630)  
B = both sides open (01NR.1001)
- 6 sealing material:**  
P = Nitrile (NBR)  
V = Viton (FPM)
- 7 filter element specification:** (see catalog)  
- = standard  
VA = stainless steel  
IS06 = for HFC applications, see sheet-no. 31601  
IS07 = for oil/amonia mixtures (NH<sub>3</sub>), see sheet-no. 31602
- 8 process connection:**  
FS = SAE-flange 3000 PSI
- 9 process connection size:**  
9 = 2 1/2" (DU 631)  
A = 3" (DU 1001/1950)
- 10 filter housing specification:** (see catalog)  
- = standard  
IS06 = for HFC applications, see sheet-no. 31605  
IS12 = for stainless steel ball valve, see sheet-no. 41028  
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217 (operating pressure max. 232 PSI)
- 11 internal valve:**  
- = without  
S = with bypass valve Δp 29 PSI (DU 1001/1950)  
S1 = with bypass valve Δp 51 PSI (DU 1001/1950)
- 12 clogging indicator or clogging sensor:**  
- = without  
AOR = visual-electric, see sheet-no.1606  
AOC = visual-electric, see sheet-no.1606  
AE = visual-electric, see sheet-no.1609  
OP = visual, see sheet-no.1628  
OE = visual-electric, see sheet-no.1628  
VS5 = electronic, see sheet-no.1641

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

**Filter element:** (ordering example)

**01NL. 630. 10VG. 30. E. P. -**

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

- 1 series:**  
01NL. = standard filter element according to DIN 24550, T3  
01NR. = standard-return-line filter element according to DIN 24550, T4
- 2 nominal size:** 630 (01NL.), 1000 (01NR.)
- 3 - 7** see type index for complete filter

#### Accessories:

- gauge port and bleeder connection, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1651
- SAE-counter flange, see sheet-no. 1652
- shut-off valve, see sheet-no. 1655

## 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:	464 PSI
max. operating pressure at IS20:	232 PSI
test pressure:	900 PSI
test pressure at IS20:	464 PSI
process connection:	SAE-flange 3000 PSI
housing material:	EN-GJS-400-18-LT
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measure connections:	BSPP ¼
drain- and bleeder connections:	BSPP ½
volume tank DU 631:	2x 1.5 Gal.
DU 1001:	2x 3.4 Gal.
DU 1950:	2x 6.1 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/)

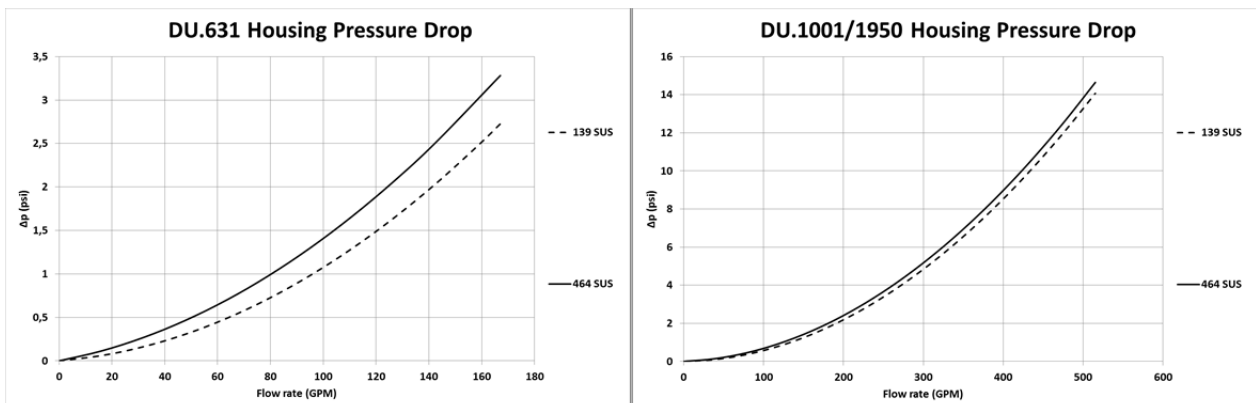
### Material gradient coefficients (MSK) for filter elements

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.

DU	VG					G			P	API	
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P	10API	25API
<b>631</b>	0.534	0.371	0.237	0.207	0.141	0.1735	0.1619	0.1109	0.112	0.121	0.056
<b>1001</b>	0.237	0.165	0.105	0.092	0.063	0.0061	0.0057	0.0039	0.051	0.053	0.024
<b>1950</b>	0.118	0.082	0.053	0.046	0.031	0.0030	0.0028	0.0019	0.026	0.027	0.012

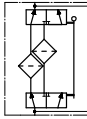
### $\Delta p = f(Q)$ – characteristics according to ISO 3968

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.

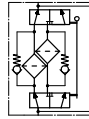


## Symbols:

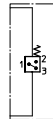
without indicator



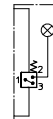
with by-pass valve



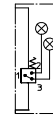
with electric indicator  
AE 30 and AE 40



with visual-electric indicator  
AE 50 and AE 62



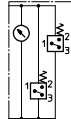
with visual-electric indicator  
AE 70 and AE 80



with visual indicator  
OP/AOR/AOC



with visual-electrical indicator  
OE



with electronic clogging sensor  
VS5



## Spare parts:

item	designation	qty.	dimension and article-no. DU 631	qty.	dimension and article-no. DU 1001	qty.	dimension and article-no. DU 1950	
1	filter element	2	01NL.630...	2	01NR.1000...	4	01NR.1000...	
2	O-ring	2	60 x 3,5 304377 (NBR) 304398 (FPM)	4	90 x 4 306941 (NBR) 307031 (FPM)	8	90 x 4 306941 (NBR) 307031 (FPM)	
3	O-ring	2	125 x 3 306025 (NBR) 307358 (FPM)	2	185 x 4 305593 (NBR) 306309 (FPM)	4	185 x 4 305593 (NBR) 306309 (FPM)	
4	O-ring	1	24 x 3		304038 (NBR)	304397 (FPM)		
5	O-ring	2	115 x 3	303963 (NBR)	307762 (FPM)	140 x 3	304604 (NBR) 307541 (FPM)	
6	O-ring	1	96 x 4	305190 (NBR)	308148 (FPM)	120 x 4	305300 (NBR) 307991 (FPM)	
7	O-ring	1	32 x 2,5	306843 (NBR)	308268 (FPM)	32 x 2,5	306843 (NBR) 308268 (FPM)	
8	O-ring	2	69,45 x 3,53 305868 (NBR) 307357 (FPM)			85,32 x 3,53 305590 (NBR) 306308 (FPM)		
9	screw plug	8	½ BSPP	304678	8	½ BSPP	304678	
10	screw plug	2			½ BSPP	305003	10	½ BSPP
11	connecting pipe	2			-			
12	clogging indicator, visual	1			AOR or AOC	see sheet-no. 1606		
13	clogging indicator, visual	1			OP	see sheet-no. 1628		
14	clogging indicator, visual-electric	1			OE	see sheet-no. 1628		
15	clogging indicator, visual-electric	1			AE	see sheet-no. 1609		
16	clogging sensor, electronic	1			VS5	see sheet-no. 1641		
17	O-ring	1	15 x 1,5	315357 (NBR)	315427 (FPM)			
18	O-ring	1	22 x 2	304708 (NBR)	304721 (FPM)			
19	O-ring	2	14 x 2	304342 (NBR)	304722 (FPM)			
20	screw plug	2			½ BSPP	305003		
21	pressure balance valve	1			3/8"	305000		

item 20 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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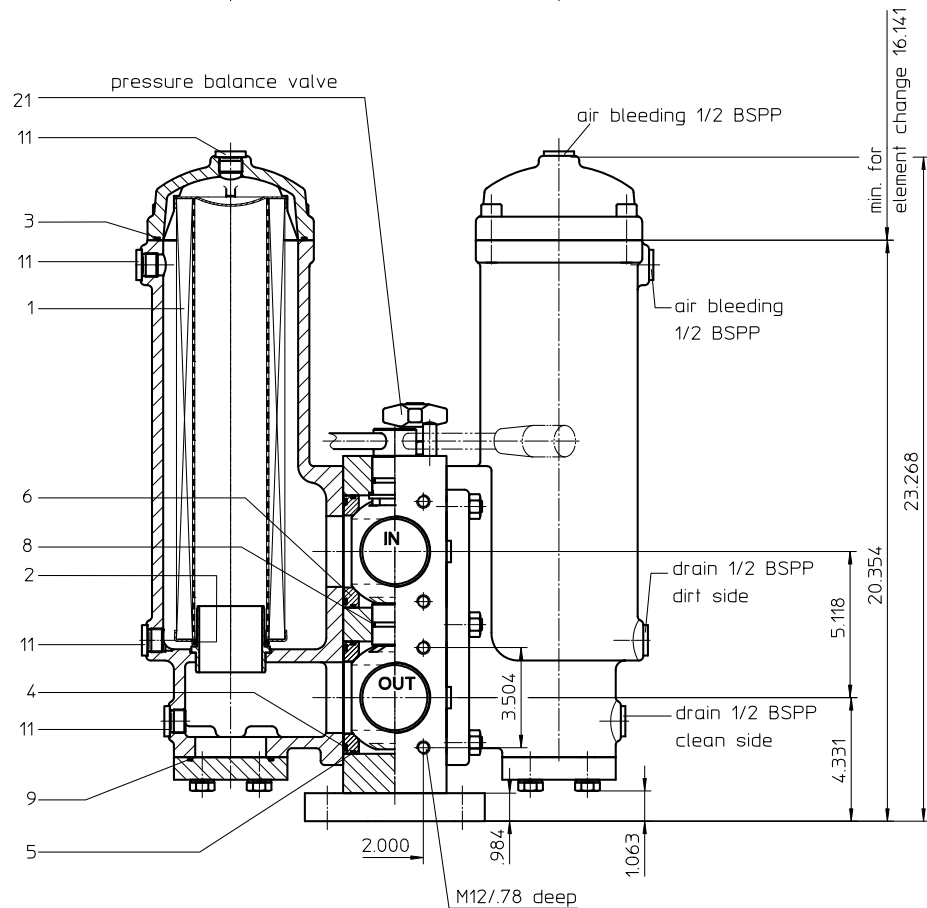
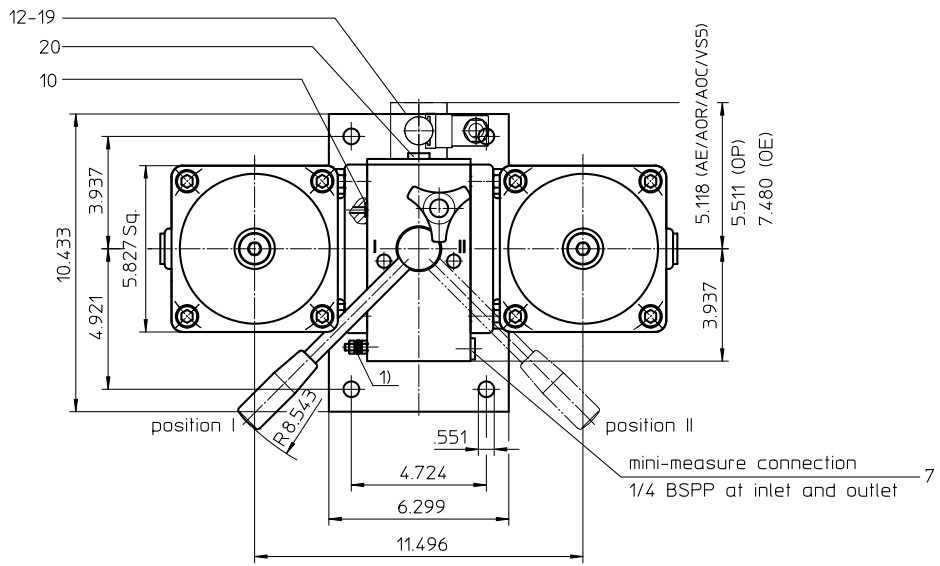
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# Series DU 635

## 464 PSI



Position I: Left filter-side in operation  
 Position II: Right filter-side in operation

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

Weight: approx. 200 lbs.

Dimensions: inches

Designs and performance values are subject to change.



Powering Business Worldwide

# Pressure Filter

## Series DU 635

### 464 PSI

#### Description:

Duplex filter series DU635 have a working pressure up to 464 PSI. Pressure peaks can be absorbed with a sufficient safety margin.

Change-over ball valve between the two filter housings makes it possible to switch from the dirty filter-side to the clean filter-side without interrupting operation. These filters can be installed as suction filters.

The filter element consists of star-shaped, pleated filter material, which is supported on the inside by a perforated core tube and is bonded to the end caps with a high-quality adhesive. The flow direction is from outside to inside.

For cleaning the mesh element or changing the microglass element, remove the cover and take out the element. The mesh elements are not guaranteed to maintain 100% performance after cleaning.

For filtration finer than 40 µm, use the disposable elements made of microglass. Filter elements as fine as 5 µm(c) are available; finer filter elements are available upon request.

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

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

Ship classifications available upon request.

#### Type index:

**Complete filter:** (ordering example)

**DU. 635. 10VG. 30. E. P. -. FS. 9. -. -. AE**

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

- 1 | **series:**  
DU = pressure filter, change over
- 2 | **nominal size:** 635
- 3 | **filter-material and filter-fineness:**  
80G, 40G, 25G, 10G stainless steel wire mesh  
25VG, 16VG, 10VG, 6VG, 3VG microglass  
25API, 10API microglass according to API  
10P paper
- 4 | **filter element collapse rating:**  
30 = Δp 435 PSI
- 5 | **filter element design:**  
E = single end open  
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:** (see catalog)  
- = standard  
VA = stainless steel  
IS06 = for HFC applications, see sheet-no. 31601  
IS07 = for oil/amonia mixtures (NH3), see sheet-no. 31602
- 8 | **process connection:**  
FS = SAE-flange 3000 PSI
- 9 | **process connection size:**  
9 = 2 1/2"
- 10 | **filter housing specification:** (see catalog)  
- = standard  
IS06 = for HFC applications, see sheet-no. 31605  
IS12 = for stainless steel ball valve, see sheet-no. 41028  
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217 (operating pressure max. 232 PSI)
- 11 | **internal valve:**  
- = without
- 12 | **clogging indicator or clogging sensor:**  
- = without  
AOR = visual-electric, see sheet-no.1606  
AOC = visual-electric, see sheet-no.1606  
AE = visual-electric, see sheet-no.1609  
OP = visual, see sheet-no.1628  
OE = visual-electric, see sheet-no.1628  
VS5 = electronic, see sheet-no.1641

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

**Filter element:** (ordering example)

**01NL. 630. 10VG. 30. E. P. -**

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

- 1 | **series:**  
01NL. = standard filter element according to DIN 24550, T3
- 2 | **nominal size:** 630
- 3 | - 7 | see type index complete filter

#### Accessories:

- gauge port and bleeder connection, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1651
- SAE-counter flange, see sheet-no. 1652
- shut-off valve, see sheet-no. 1655

## 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:	464 PSI
max. operating pressure at IS20:	232 PSI
test pressure:	900 PSI
test pressure at IS20:	464 PSI
process connection:	SAE-flange 3000 PSI
housing material:	EN-GJS-400-18-LT
switching housing material:	S355J2 + N
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measure connections:	BSPP ¼
drain- and bleeder connections:	BSPP ½
volume tank:	2x 1.5 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/)

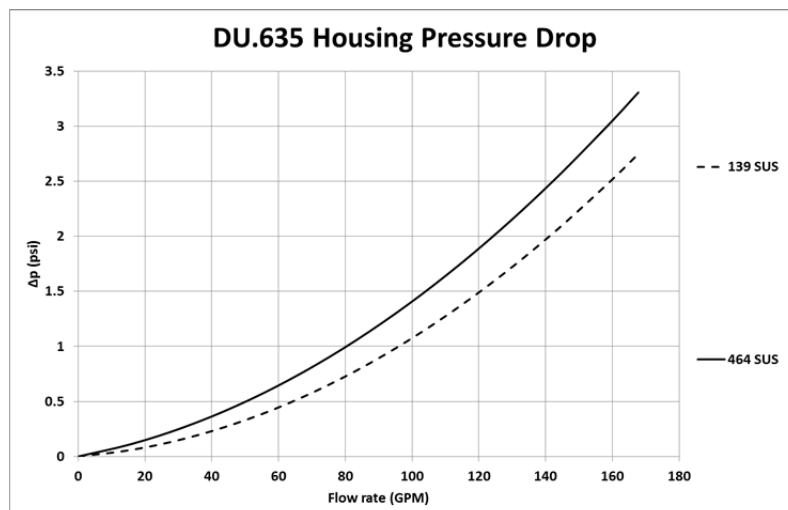
### Material gradient coefficients (MSK) for filter elements

The material gradient coefficients in psi/gpm apply to mineral oil (HLP) with a density of 0,876 kg/dm³ and a kinematic viscosity of 139 SUS (30 mm²/s). The pressure drop changes proportionally to the change in kinematic viscosity and density.

DU	VG					G			P	API	
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P	10API	25API
635	0.534	0.371	0.237	0.207	0.141	0.1735	0.1619	0.1109	0.112	0.121	0.056

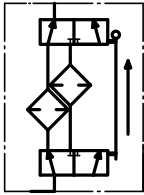
### $\Delta p = f(Q)$ – characteristics according to ISO 3968

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.

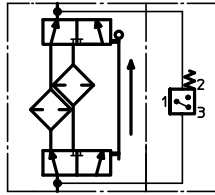


## Symbols:

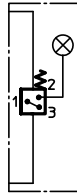
without indicator



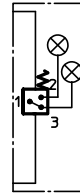
with electric indicator  
AE 30 and AE 40



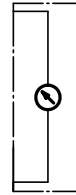
with visual-electric indicator  
AE 50 and AE 62



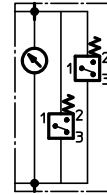
with visual-electric indicator  
AE 70 and AE 80



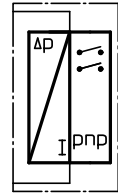
with visual indicator  
AOR/AOC/OP



with visual-electric indicator  
OE



with electronic sensor  
VS5



## Spare parts:

item	qty.	designation	dimension	article-no.	
1	2	filter element	01NL.630...		
2	2	O-ring	60 x 3,5	304377 (NBR)	304398 (FPM)
3	2	O-ring	125 x 3	306025 (NBR)	307358 (FPM)
4	4	O-ring	85 x 4	305685 (NBR)	310285 (FPM)
5	4	O-ring	95 x 3	305808 (NBR)	304828 (FPM)
6	4	gasket		317651	
7	2	screw plug	¼ BSPP	305003	
8	2	O-ring	32 x 3	304368 (NBR)	311020 (FPM)
9	2	O-ring	69,45 x 3,53	305868 (NBR)	307357 (FPM)
10	4	O-ring	8 x 2	310004 (NBR)	316530 (FPM)
11	8	screw plug	½ BSPP	304678	
12	1	clogging indicator, visual	AOR or AOC	see sheet no. 1606	
13	1	clogging indicator, visual	OP	see sheet no. 1628	
14	1	clogging indicator, visual-electric	OE	see sheet no. 1628	
15	1	clogging indicator, visual-electric	AE	see sheet no. 1609	
16	1	clogging sensor, electronic	VS5	see sheet no. 1641	
17	1	O-ring	15 x 1,5	315357 (NBR)	315427 (FPM)
18	1	O-ring	22 x 2	304708 (NBR)	304721 (FPM)
19	2	O-ring	14 x2	304342 (NBR)	304722 (FPM)
20	2	screw plug	¼ BSPP	305003	
21	1	pressure balance valve	3/8"	305000	

item 20 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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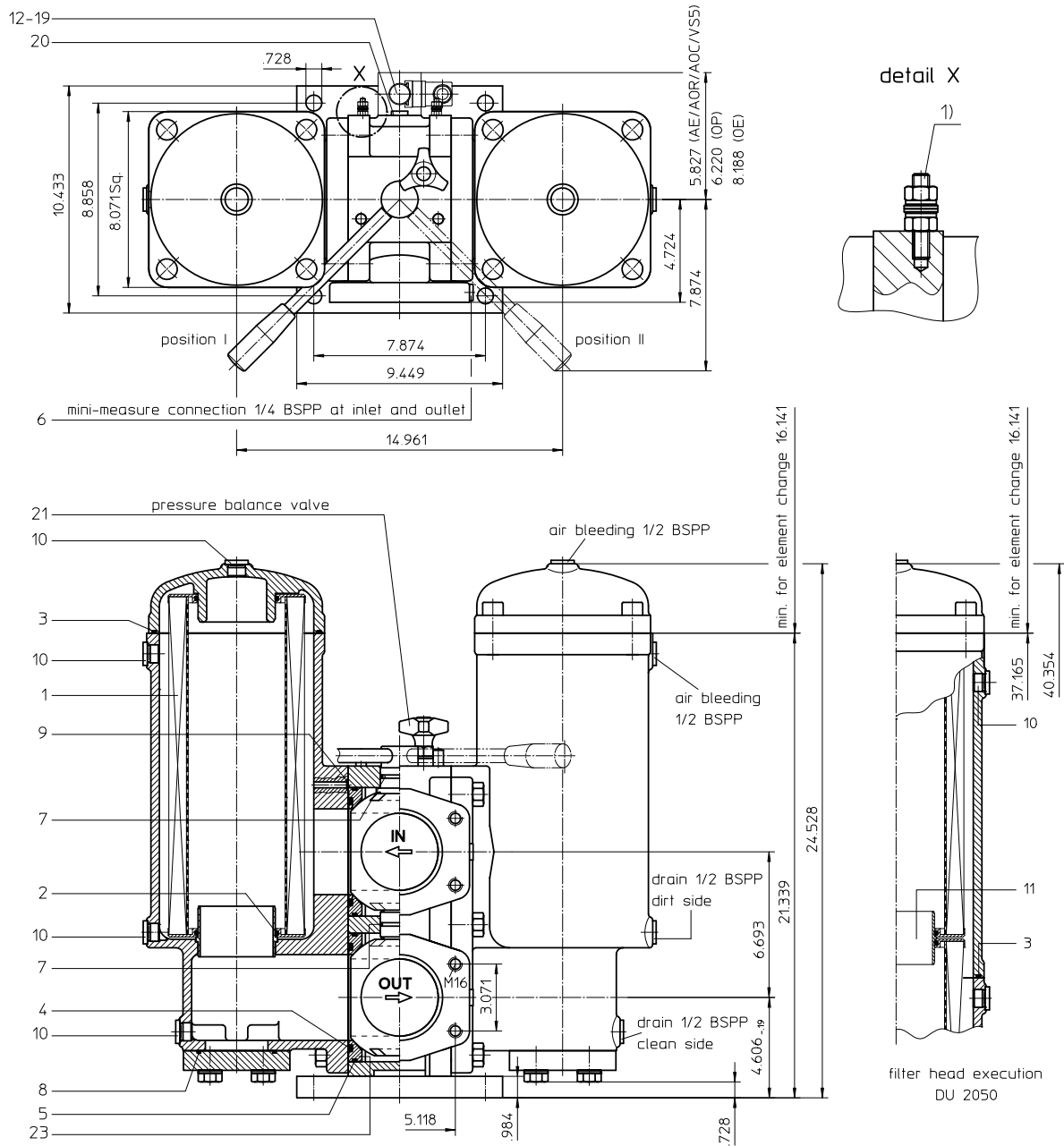
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# Series DU 1050-2050 464 PSI



Position I: Left filter-side in operation  
Position II: Right filter-side in operation

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

**Dimensions:**

type	connection	SAE-connection size	weight
DU 1050	SAE 3" <sup>1)</sup>	SAE 4" 3000 PSI	330 lbs.
DU 1050	SAE 4"	SAE 4" 3000 PSI	330 lbs.
DU 2050	SAE 3" <sup>1)</sup>	SAE 4" 3000 PSI	440 lbs.
DU 2050	SAE 4"	SAE 4" 3000 PSI	440 lbs.

<sup>1)</sup> with reducing flange BFS.B.E.88,9x3,2.St.P.3000 / V (Viton) can be used instead P (Nitrile)

Dimensions: inches

Designs and performance values are subject to change.



Powering Business Worldwide

# Pressure Filter

## Series DU1050-2050

### 464 PSI

#### Description:

Duplex filter series DU1050-2050 have a working pressure up to 464 PSI. Pressure peaks can be absorbed with a sufficient safety margin.

A changeover ball valve between the housings makes it possible to switch from the dirty filter-side to the clean filter-side without interrupting operation. These filters can be installed as suction filters..

The filter element consists of star-shaped, pleated filter material, which is supported on the inside by a perforated core tube and is bonded to the end caps with a high-quality adhesive. The flow direction is from outside to inside.

For cleaning the mesh element or changing the microglass element, remove the cover and take out the element. The mesh elements are not guaranteed to maintain 100% performance after cleaning.

For filtration finer than 40 µm, use the disposable elements made of microglass. Filter elements as fine as 5 µm(c) are available; finer filter elements are available upon request.

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

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

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

Ship classifications available upon request..

#### Type index:

**Complete filter:** (ordering example)

<b>DU.</b>	<b>1005.</b>	<b>10VG.</b>	<b>10.</b>	<b>B.</b>	<b>P.</b>	<b>-.</b>	<b>FS.</b>	<b>B.</b>	<b>-.</b>	<b>-.</b>	<b>AE</b>
1	2	3	4	5	6	7	8	9	10	11	12

1 | **series:**

DU = pressure filter, change over

2 | **nominal size:** 1050, 2050

3 | **filter-material and filter-fineness:**

80G, 40G, 25G, 10G stainless steel wire mesh  
25VG, 16VG, 10VG, 6VG, 3VG microglass  
25API, 10API microglass according to API  
10P paper

4 | **filter element collapse rating:**

10 = Δp 145 PSI

5 | **filter element design:**

B = both sides open

6 | **sealing material:**

P = Nitrile (NBR)  
V = Viton (FPM)

7 | **filter element specification:** (see catalog)

- = standard  
VA = stainless steel  
IS06 = for HFC applications, see sheet-no. 31601  
IS07 = for oil/amonia mixtures (NH<sub>3</sub>), see sheet-no. 31602

8 | **process connection:**

FS = SAE-flange 3000 PSI

9 | **process connection size:**

B = 4"

10 | **filter housing specification:** (see catalog)

- = standard  
IS06 = for HFC applications, see sheet-no. 31605  
IS12 = for stainless steel ball valve, see sheet-no. 41028  
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217 (operating pressure max. 232 PSI)

11 | **internal valve:**

- = without  
S = with bypass valve Δp 29 PSI  
S1 = with bypass valve Δp 51 PSI

12 | **clogging indicator or clogging sensor:**

- = without  
AOR = visual-electric, see sheet-no.1606  
AOC = visual-electric, see sheet-no.1606  
AE = visual-electric, see sheet-no.1609  
OP = visual, see sheet-no.1628  
OE = visual-electric, see sheet-no.1628  
VS5 = electronic, see sheet-no.1641

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

**Filter element:** (ordering example)

<b>01NR.</b>	<b>1000.</b>	<b>10VG.</b>	<b>10.</b>	<b>B.</b>	<b>P.</b>	<b>-</b>
1	2	3	4	5	6	7

1 | **series:**

01NR. = standard-return-line filter element according to DIN 24550, T4

2 | **nominal size:** 1000

3 | **- 7** | see type index complete filter

#### Accessories:

- gauge port- and bleeder connection, see sheet-no. 1650
- evacuation- and bleeder connection, see sheet-no. 1651
- SAE-counter flange, see sheet-no. 1652
- shut-off valve, see sheet-no. 1655

## 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:	464 PSI
max. operating pressure at IS20:	232 PSI
test pressure:	900 PSI
test pressure at IS20:	464 PSI
process connection:	SAE-flange 3000 PSI
housing material:	EN-GJS-400-18-LT
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measure connections:	BSPP ¼
drain- and bleeder connections:	BSPP ½
volume tank DU 1050:	2x 3.6 Gal.
DU 2050:	2x 6.3 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/)

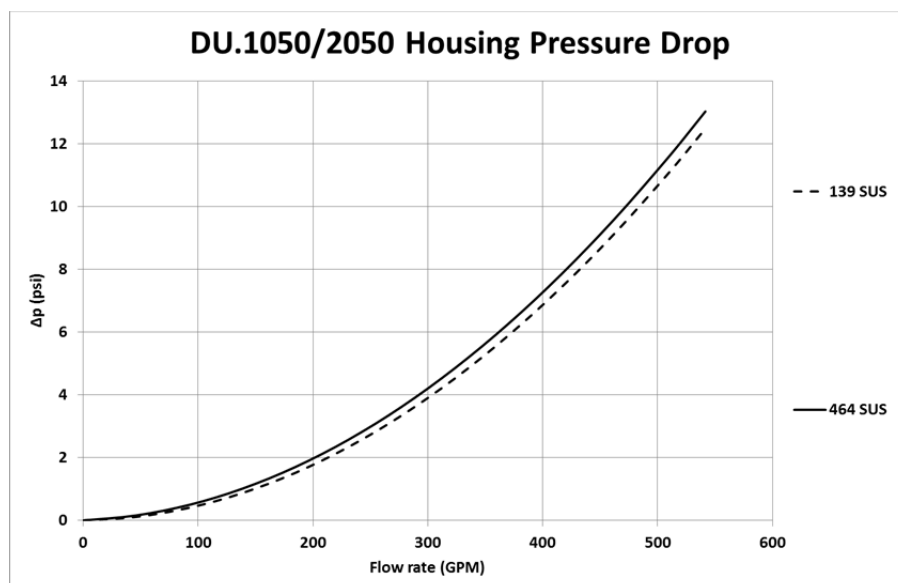
### Material gradient coefficients (MSK) for filter elements

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.

DU	VG					G			P	API	
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P	10API	25API
1050	0.237	0.165	0.105	0.092	0.063	0.0061	0.0057	0.0039	0.051	0.053	0.024
2050	0.118	0.082	0.053	0.046	0.031	0.0030	0.0028	0.0019	0.026	0.027	0.012

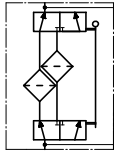
### $\Delta p = f(Q)$ – characteristics according to ISO 3968

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.

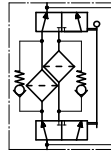


## Symbols:

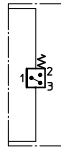
without indicator



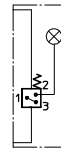
with by-pass valve



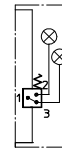
with electric indicator  
AE 30 and AE 40



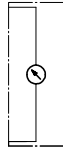
with visual-electric indicator  
AE 50 and AE 62



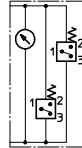
with visual-electric indicator  
AE 70 and AE 80



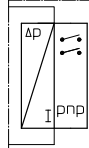
with visual indicator  
OP/AOR/AOC



with visual-electrical indicator  
OE



with electronic clogging sensor  
VS5



## Spare parts:

item	designation	qty.	dimension and article-no. DU 1050			qty.	dimension and article-no. DU 2050		
1	filter element	2	01NR.1000...			4	01NR.1000...		
2	O-ring	4	90 x 4	306941 (NBR)	307031 (FPM)	8	90 x 4	306941 (NBR)	307031 (FPM)
3	O-ring	2	185 x 4	305593 (NBR)	306309 (FPM)	4	185 x 4	305593 (NBR)	306309 (FPM)
4	O-ring	4	114 x 6	314419 (NBR)	316531 (FPM)	4	114 x 6	314419 (NBR)	316531 (FPM)
5	O-ring	4	140 x 4	305145 (NBR)	305201 (FPM)	4	140 x 4	305145 (NBR)	305201 (FPM)
6	screw plug	2	1/4 BSPP	305003		2	1/4 BSPP	305003	
7	O-ring	2	38 x 3	304340 (NBR)	317013 (FPM)	2	38 x 3	304340 (NBR)	317013 (FPM)
8	O-ring	2	85,32 x 3,53	305590 (NBR)	306308 (FPM)	2	85,32 x 3,53	305590 (NBR)	306308 (FPM)
9	O-ring	4	8 x 2	310004 (NBR)	316530 (FPM)	4	8 x 2	310004 (NBR)	316530 (FPM)
10	screw plug	8	1/2 BSPP	304678		10	1/2 BSPP	304678	
11	slip coupling	-	-			2	3,543 dia		
12	clogging indicator visual	1	AOR or AOC	see sheet-no. 1606					
13	clogging indicator visual	1	OP	see sheet-no. 1628					
14	clogging indicator visual-electric	1	OE	see sheet-no. 1628					
15	clogging indicator visual-electric	1	AE	see sheet-no. 1609					
16	clogging sensor electronic	1	VS5	see sheet-no. 1641					
17	O-ring	1	15 x 1,5	315357 (NBR)		315427 (FPM)			
18	O-ring	1	22 x 2	304708 (NBR)		304721 (FPM)			
19	O-ring	2	14 x 2	304342 (NBR)		304722 (FPM)			
20	screw plug	2	1/4 BSPP	305003					
21	pressure balance valve	1	3/8"	305000					
22	gasket	4	DN 90	312275					

item 20 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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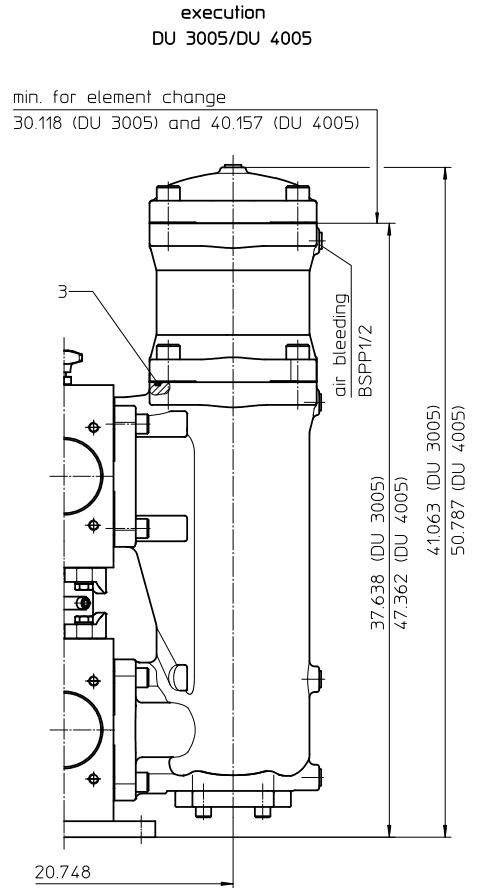
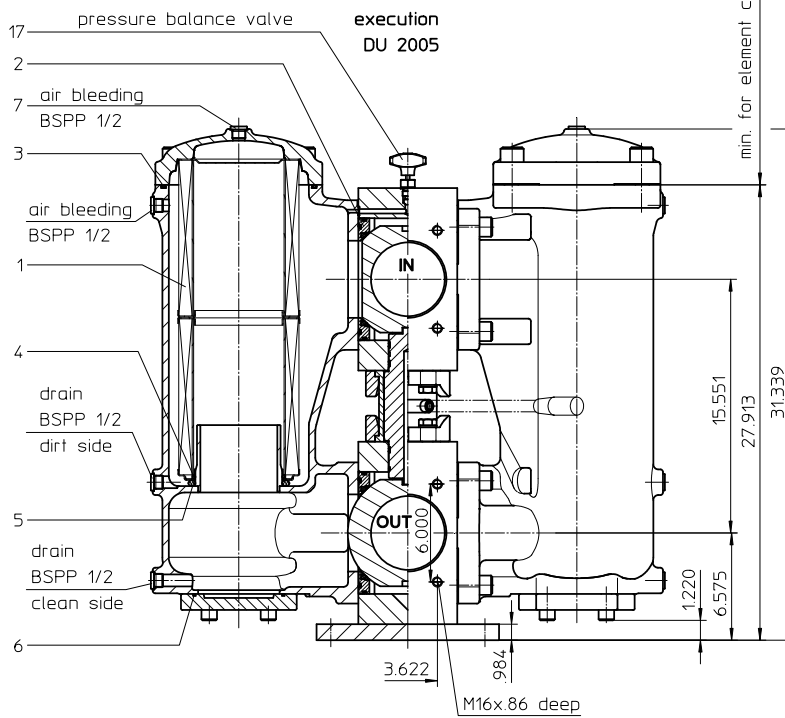
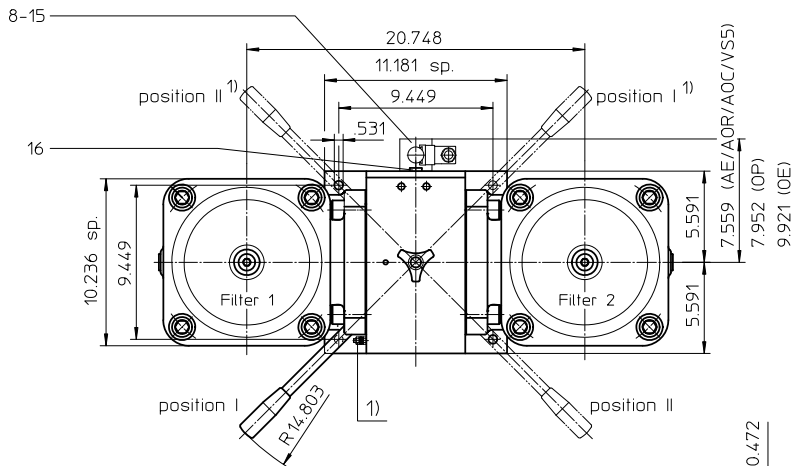
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# Series DU 2005-4005

## 464 PSI



Position I: Left filter-side in operation  
 Position II: Right filter-side in operation

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

Weight DU 2005: approx. 750 lbs.  
 Weight DU 3005: approx. 886 lbs.  
 Weight DU 4005: approx. 961 lbs.

Dimensions: inches

# Pressure Filter

## Series DU2005-4005

### 464 PSI

#### Description:

Duplex filter series DU 2005-4005 have a working pressure up to 464 PSI. Pressure peaks can be absorbed with a sufficient safety margin.

A changeover ball valve between the housings makes it possible to switch from the dirty filter-side to the clean filter-side without interrupting operation. These filters can be installed as suction filters.

The filter element consists of star-shaped, pleated filter material, which is supported on the inside by a perforated core tube and is bonded to the end caps with a high-quality adhesive. The flow direction is from outside to inside.

For cleaning the mesh element or changing the microglass element, remove the cover and take out the element. The mesh elements are not guaranteed to maintain 100% performance after cleaning.

For filtration finer than 40 µm, use the disposable elements made of microglass. Filter elements as fine as 5 µm(c) are available; finer filter elements are available upon request.

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

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

Ship classifications available upon request.

#### Type index:

**Complete filter:** (ordering example)

<b>DU.</b>	<b>2005.</b>	<b>10VG.</b>	<b>10.</b>	<b>E.</b>	<b>P.</b>	<b>-.</b>	<b>FS.</b>	<b>C.</b>	<b>-.</b>	<b>AE</b>
1	2	3	4	5	6	7	8	9	10	11

- 1 series:**  
DU = pressure filter, change over
- 2 nominal size:** 2005, 3005, 4005
- 3 filter-material and filter-fineness:**  
80G, 40G, 25G, 10G stainless steel wire mesh  
25VG, 16VG, 10VG, 6VG, 3VG microglass  
25API, 10API microglass according to API  
10P paper
- 4 filter element collapse rating:**  
10 = Δp 145 PSI
- 5 filter element design:**  
E = without by-pass  
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:** (see catalog)  
- = standard  
VA = stainless steel  
IS06 = for HFC applications, see sheet-no. 31601
- 8 process connection:**  
FS = SAE-flange 3000 PSI
- 9 process connection size:**  
C = 5"
- 10 filter housing specification:** (see catalog)  
- = standard  
IS06 = for HFC applications, see sheet-no. 31605  
IS12 = for stainless ball valve, see sheet-no. 41028  
IS20 = ASME VIII Div.1 with ASME equivalent material,  
see sheet-no. 55217 (operating pressure max. 232 PSI)
- 11 clogging indicator or clogging sensor:**  
- = without  
AOR = visual-electric, see sheet-no.1606  
AOC = visual-electric, see sheet-no.1606  
AE = visual-electric, see sheet-no.1609  
OP = visual, see sheet-no.1628  
OE = visual-electric, see sheet-no.1628  
VS5 = electronic, see sheet-no.1641

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

**Filter element:** (ordering example)

<b>01E.</b>	<b>2001.</b>	<b>10VG.</b>	<b>10.</b>	<b>E.</b>	<b>P.</b>	<b>-</b>
1	2	3	4	5	6	7

- 1 series:**  
01E. = filter element according to company standard
- 2 nominal size:** 2001, 3001, 4001
- 3 - 7** see type index complete filter

#### Accessories:

- gauge port- and bleeder connection, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1651
- SAE-counter flange, see sheet-no. 1652
- shut-off valve, see sheet-no. 1655

## 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:	464 PSI
max. operating pressure at IS20:	232 PSI
test pressure:	900 PSI
test pressure at IS20:	464 PSI
process connection:	SAE-flange 3000 PSI
housing material:	EN-GJS-400-18-LT
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measure connections:	BSPP ¼
drain- and bleeder connections:	BSPP ½
volume tank DU 2005:	2x 8 Gal.
DU 3005:	2x 10 Gal.
DU 4005:	2x 12 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/)

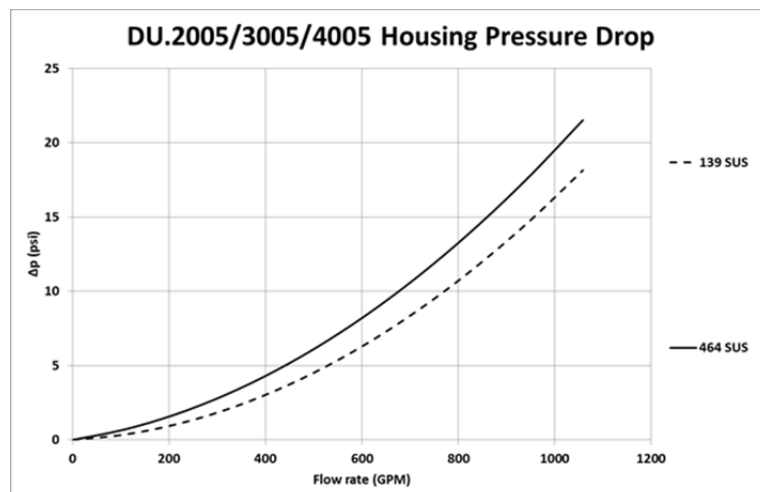
### Material gradient coefficients (MSK) for filter elements

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.

DU	VG					G			P	API	
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P	10API	25API
2005	0.177	0.123	0.079	0.068	0.047	0.0059	0.0055	0.0038	0.041	0.040	0.018
3005	0.118	0.082	0.052	0.046	0.031	0.0040	0.0037	0.0025	0.027	0.027	0.012
4005	0.088	0.061	0.039	0.034	0.023	0.0030	0.0028	0.0019	0.020	0.020	0.009

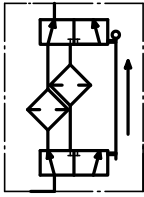
### $\Delta p = f(Q)$ – characteristics according to ISO 3968

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.

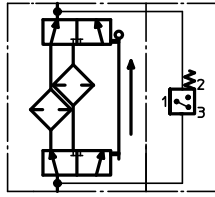


## Symbols:

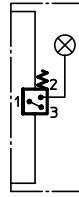
without indicator



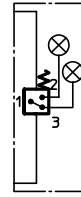
with electric indicator  
AE 30 and AE 40



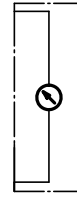
with visual-electric indicator  
AE 50 and AE 62



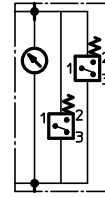
with visual-electric indicator  
AE 70 and AE 80



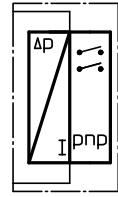
with visual indicator  
AOR/AOC/OP



with visual-electric indicator  
OE



with electronic sensor  
VS5



## Spare parts:

item	qty.	designation	dimension and article-no. DU 2005	dimension and article-no. DU 3005	dimension and article-no. DU 4005
1	2	filter element	01E.2001...	01E.3001...	01E.4001...
2	1	gasket kit of change over	5"		
3	2	O-ring (DU 2005)	240 x 5		
	4	O-ring (DU 3005/4005)			
4	2	O-ring	135 x 10	306016 (NBR)	307045 (FPM)
5	2	O-ring	125 x 10	304388 (NBR)	306006 (FPM)
6	2	O-ring	136,12 x 3,53	320162 (NBR)	320163 (FPM)
7	8	screw plug (DU 2005)	BSPP 1/4		
	10	screw plug (DU 3005/4005)	304678		
8	1	clogging indicator visual	AOR or AOC	see seet-no. 1606	
9	1	clogging indicator visual-electric	OE	see seet-no. 1628	
10	1	clogging indicator visual	OP	see seet-no. 1628	
11	1	clogging indicator visual-electric	AE	see seet-no. 1609	
12	1	clogging sensor electronic	VS5	see seet-no. 1641	
13	1	O-ring	15 x 1,5	315357 (NBR)	315427 (FPM)
14	1	O-ring	22 x 2	304708 (NBR)	304721 (FPM)
15	2	O-ring	14 x 2	304342 (NBR)	304722 (FPM)
16	2	screw plug	BSPP 1/4	305003	
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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