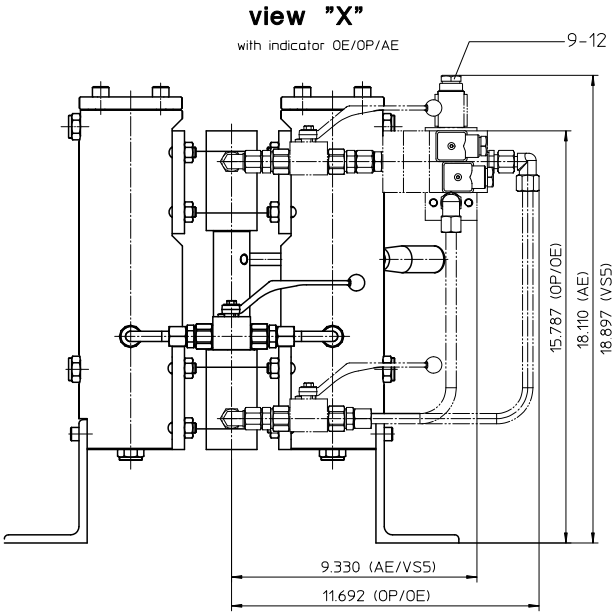
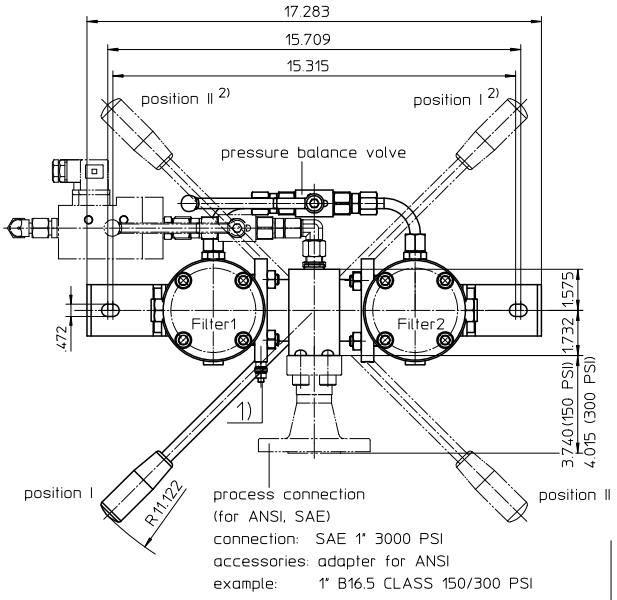
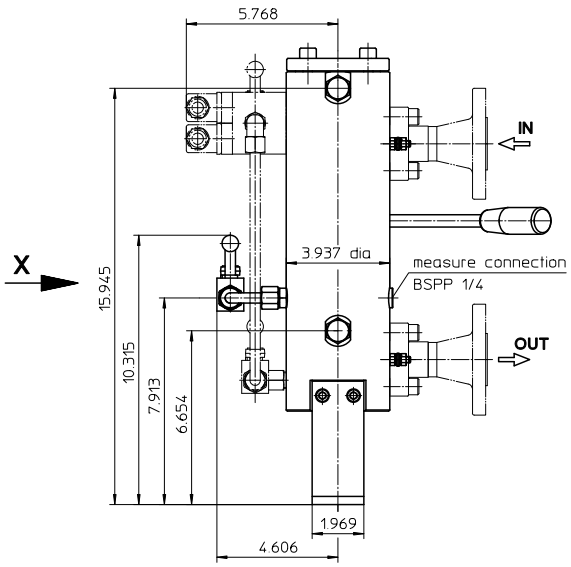
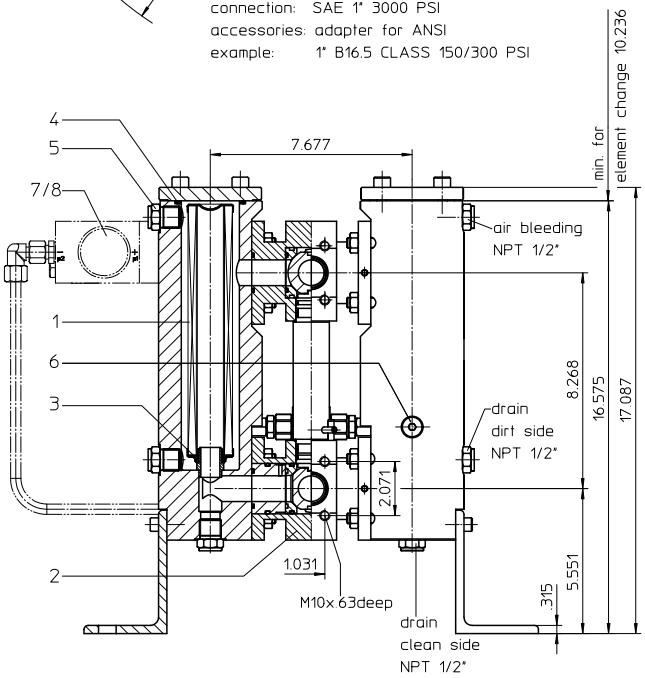
Series DA 103
NPS 1" CLASS 150-300 PSI









Switch lever standard in the front

2) On request: Switch lever backside opposite to inlet and outlet.

Please specify on order !

Position I: Filter 1 in operation
Position II: Filter 2 in operation

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

Weight: approx. 93 lbs.

Dimensions: inches

Designs and performance values are subject to change!

Pressure Filter, change over
Series DA 103
NPS 1" CLASS 150-300 PSI

Description:

Pressure filter series DA 103 have a working pressure up to 580 PSI. Pressure peaks can be absorbed with a sufficient safety margin.

A changeover 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.

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 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)

DA.	103.	10VG.	30.	E.	P.	-.	FA1.	5.	-.	IS21.	KH.	OE
1	2	3	4	5	6	7	8	9	10	11	12	13

1 **series:**
DA = pressure filter change-over, according to ASME-code

2 **nominal size:** 103

3 **filter material and grades of filter fineness (µm) :**
80G, 40G, 25G, 10G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
25API, 10API microglass according to API

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:**
- = standard, VA = stainless steel

8 **process connection:**
FS = flange SAE 3000 PSI
FA1 = flange ANSI CLASS 300 PSI, sealing surface Rz = 160 µm (not finer than 40 µm)
FA2 = flange ANSI CLASS 300 PSI, sealing surface Rz = 16 µm
FA11 = flange ANSI CLASS 150 PSI, sealing surface Rz = 160 µm (not finer than 40 µm)
FA12 = flange ANSI CLASS 150 PSI, sealing surface Rz = 16 µm

9 **process connection size:**
5 = 1"

10 **filter housing specification:**
- = standard
IS12 = internal parts of change-over armature stainless steel, see sheet-no. 41028

11 **specification pressure vessel:**
IS23 = ASME VIII Div.1 without U-stamp, see sheet-no. 55218
IS21 = ASME VIII Div.1 with U-stamp, see sheet-no. 43415

12 **shut-off :**
- = without
KH = with shut-off ball valve

13 **clogging indicator or clogging sensor:**
- = without
AE = visual-electrical, see sheet-no. 1615
OP = visual, see sheet-no. 1614
OE = visual-electrical, see sheet-no. 1614
VS5 = sensor, see sheet-no. 1619

To add an indicator/sensor 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.	100.	10VG.	30.	E.	P.	-
1	2	3	4	5	6	7

1 **series:**
01NL = filter element according to company standard

2 **nominal size:** 100

3 - 7 see type index-complete filter

Accessories:

- SAE-counter flanges, see sheet-no. 1652
- drain- and bleeder connection, see sheet-no. 1659
- adapter for ANSI-connection B16.5 CLASS 150/300 PSI, see sheet-no. 1658

Technical data:

temperature ranges	
- calculation temperature (pressure vessel):	+14°F to +212°F
- medium temperature:	+14°F to +176°F
- ambient temperature:	- 40°F to +140°F
- survival temperature:	- 40°F to +212°F (short-time)
operating medium:	mineral oil, other media on request
max. operating pressure housing:	580 PSI
test pressure acc. to PED 2014/68/EC:	1,43 x operating pressure = 827PSI
test pressure acc. to ASME VIII Div. 1:	1,3 x operating pressure = 754PSI
test pressure acc. to API 614, Chapter 1:	1,5 x operating pressure = 870PSI
connection system:	SAE-flange connection 3000 PSI or ANSI-flange B16.5 CLASS 150/300 PSI
housing material:	stainless steel, see sheet-no. 55050
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
bleeder connection :	NPT ½“
drain connection dirt side :	NPT ½“
drain connection clean side :	NPT ½“
volume tank:	2x 0.24 Gal.
operating pressure adapter flanges:	according to B16.5 CLASS 150 / 300 PSI

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:

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

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

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

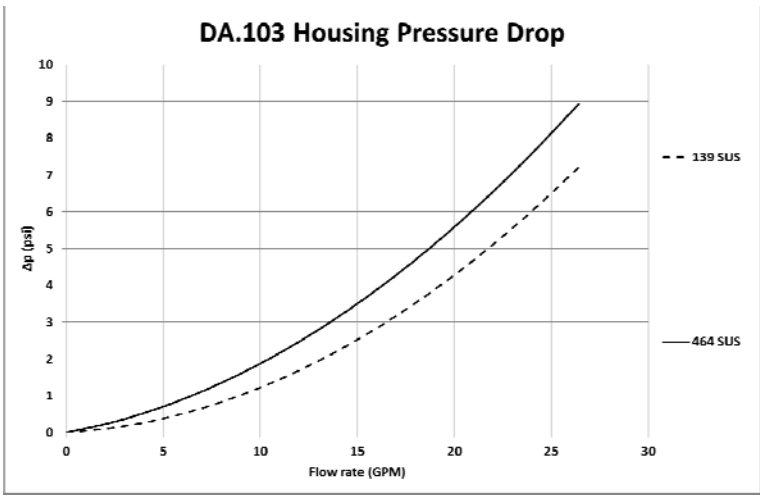
Material gradient coefficients (MSK) for filter elements

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.

DA	VG					G				API	
	3VG	6VG	10VG	16VG	25VG	10G	25G	40G	80G	10 API	25 API
103	2.640	1.833	1.173	1.021	0.698	0.0942	0.0699	0.0652	0.0447	0.625	0.286

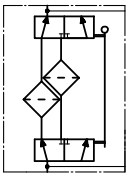
Δp=f(Q) – characteristic according ISO 3968

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.

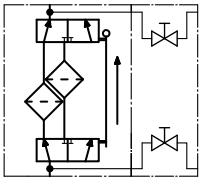


Symbols:

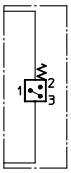
without indicator



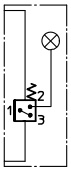
with
shut-off ball valve



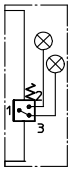
with electric
indicator
AE 30 and AE 40



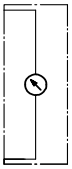
with visual-electric
indicator
AE 50 and AE 62



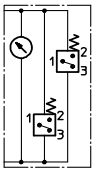
with visual-electric
indicator
AE 70 and AE 80



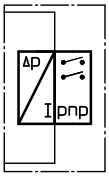
with visual
indicator
AOR/AOC/OP



with visual-electric
indicator
OE



with electronic
sensor
VS5



Spare parts:

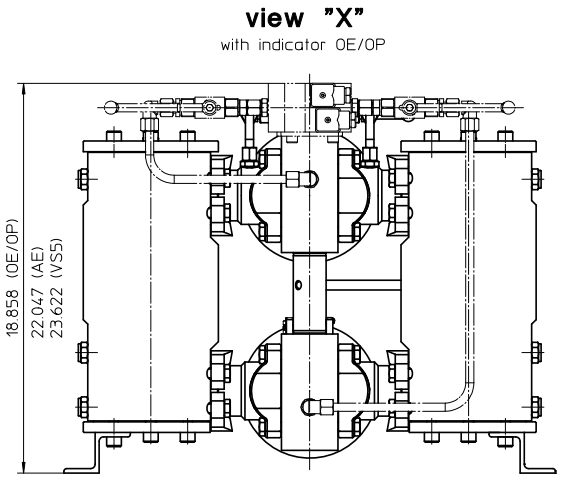
item	qty.	designation	dimension	article-no.	
1	2	filter element	01NL.100…		
2	4	gasket kit of changeover	1“	- (NBR)	- (FPM)
3	2	O-ring	22 x 3.5	304341 (NBR)	304392 (FPM)
4	4	O-ring	58.74 x 3.53	- (NBR)	346465 (FPM)
5	6	screw plug	NPT 1/2	307766	
6	2	screw plug	BSPP 1/4	305000	
7	1	clogging indicator, visual electric	OE	see sheet-no. 1614	
8	1	clogging indicator, visual	OP	see sheet-no. 1614	
9	1	clogging indicator, visual electric	AE	see sheet-no. 1615	
10	1	clogging sensor, elctronic	VS5	see sheet-no. 1619	
11	3	O-ring	14 x 2	304342 (NBR)	304722 (FPM)
12	1	O-ring	22 x 2	304708 (NBR)	304721 (FPM)

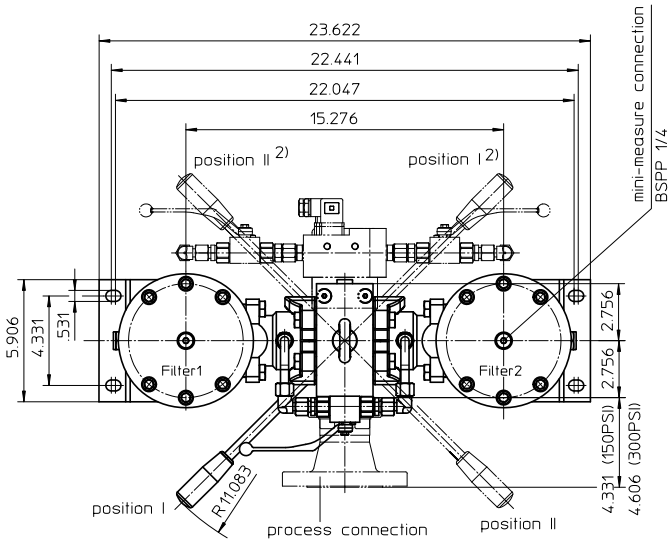
Test methods:

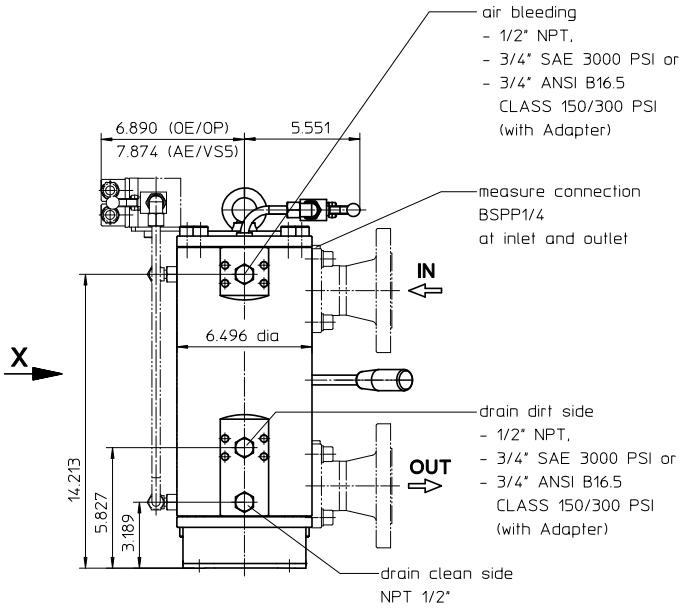
Filter elements are tested according to the following ISO standards:

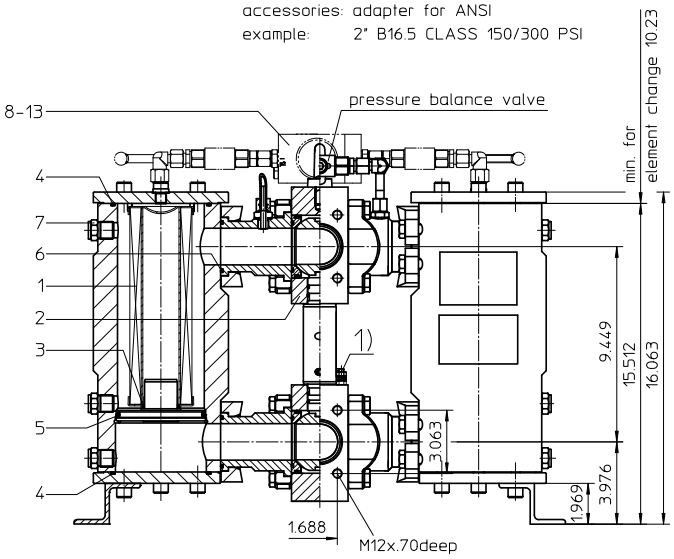
ISO 2941 Verification of collapse/burst resistance
ISO 2942 Verification of fabrication integrity
ISO 2943 Verification of material compatibility with fluids
ISO 3723 Method for end load test
ISO 3724 Verification of flow fatigue characteristics
ISO 3968 Evaluation of pressure drop versus flow characteristics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

Series DA 253
NPS 2" CLASS 150-300 PSI









Switch lever standard in the front

2) On request: Switch lever backside opposite to inlet and outlet.

Please specify on order !

Position I: Filter 1 in operation
Position II: Filter 2 in operation

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

Weight: approx. 287 lbs.

Dimensions: inches

Designs and performance values are subject to change!

Pressure Filter, change over
Series DA 253
NPS 2" CLASS 150-300 PSI

Description:

Pressure filter series DA 253 have a working pressure up to 580 PSI. Pressure peaks can be absorbed with a sufficient safety margin.

A changeover 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.

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 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)

DA.	253.	10VG.	30.	E.	P.	-.	FA1.	8.	-.	IS21.	KH.	OE
1	2	3	4	5	6	7	8	9	10	11	12	13

1 **series:**
DA = pressure filter change-over, according to ASME-code

2 **nominal size:** 253

3 **filter material and grades of filter fineness (µm) :**
80G, 40G, 25G. 10G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
25API, 10API microglass according to API

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:**
- = standard, VA = stainless steel

8 **process connection:**
FS = flange SAE 3000 PSI
FA1 = flange ANSI CLASS 300 PSI, sealing surface Rz = 160 µm (not finer than 40 µm)
FA2 = flange ANSI CLASS 300 PSI, sealing surface Rz = 16 µm
FA11 = flange ANSI CLASS 150 PSI, sealing surface Rz = 160 µm (not finer than 40 µm)
FA12 = flange ANSI CLASS 150 PSI, sealing surface Rz = 16 µm

9 **process connection size:**
8 = 2"

10 **filter housing specification:**
- = standard
IS12 = internal parts of change-over armature stainless steel, see sheet-no. 41028

11 **specification pressure vessel:**
IS23 = ASME VIII Div.1 without U-stamp, see sheet-no. 55218
IS21 = ASME VIII Div.1 with U-stamp, see sheet-no. 43415

12 **shut-off :**
- = without
KH = with shut-off ball valve

13 **clogging indicator or clogging sensor:**
- = without
AE = visual-electrical, see sheet-no. 1615
OP = visual, see sheet-no. 1614
OE = visual-electrical, see sheet-no. 1614
VS5 = sensor, see sheet-no. 1619

To add an indicator/sensor 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.	250.	10VG.	30.	E.	P.	-
1	2	3	4	5	6	7

1 **series:**
01NL = filter element according to company standard

2 **nominal size:** 250

3 - 7 see type index-complete filter

Accessories:

- SAE-counter flanges, see sheet-no. 1652
- drain- and bleeder connection, see sheet-no. 1659
- adapter for ANSI-connection B16.5 CLASS 150/300 PSI, see sheet-no. 1658

Technical data:

temperature ranges	
- calculation temperature (pressure vessel):	+14°F to +212°F
- medium temperature:	+14°F to +176°F
- ambient temperature:	- 40°F to +140°F
- survival temperature:	- 40°F to +212°F (short-time)
operating medium:	mineral oil, other media on request
max. operating pressure housing:	580 PSI
test pressure acc. to PED 2014/68/EC:	1,43 x operating pressure = 827PSI
test pressure acc. to ASME VIII Div. 1:	1,3 x operating pressure = 754PSI
test pressure acc. to API 614, Chapter 1:	1,5 x operating pressure = 870PSI
connection system:	SAE-flange connection 3000 PSI or ANSI-flange B16.5 CLASS 150/300 PSI
housing material:	steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
bleeder connection :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection dirt side :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection clean side :	NPT ½“
volume tank:	2x 0.79 Gal.
operating pressure adapter flanges:	according to B16.5 CLASS 150 / 300 PSI

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:

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

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

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

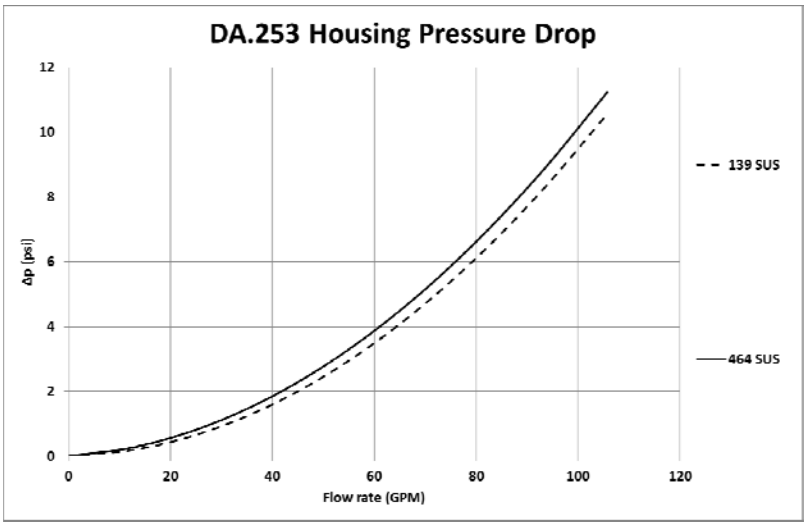
Material gradient coefficients (MSK) for filter elements

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.

DA	VG					G				API	
	3VG	6VG	10VG	16VG	25VG	10G	25G	40G	80G	10 API	25 API
253	1.140	0.792	0.507	0.441	0.301	0.0457	0.0339	0.0316	0.0217	0.260	0.119

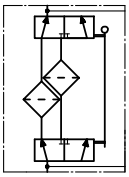
Δp=f(Q) – characteristic according ISO 3968

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.

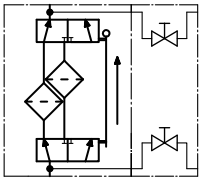


Symbols:

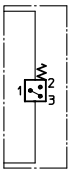
without indicator



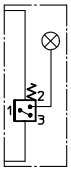
with
shut-off ball valve



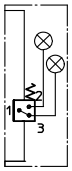
with electric
indicator
AE 30 and AE 40



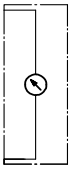
with visual-electric
indicator
AE 50 and AE 62



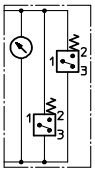
with visual-electric
indicator
AE 70 and AE 80



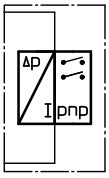
with visual
indicator
AOR/AOC/OP



with visual-electric
indicator
OE



with electronic
sensor
VS5



Spare parts:

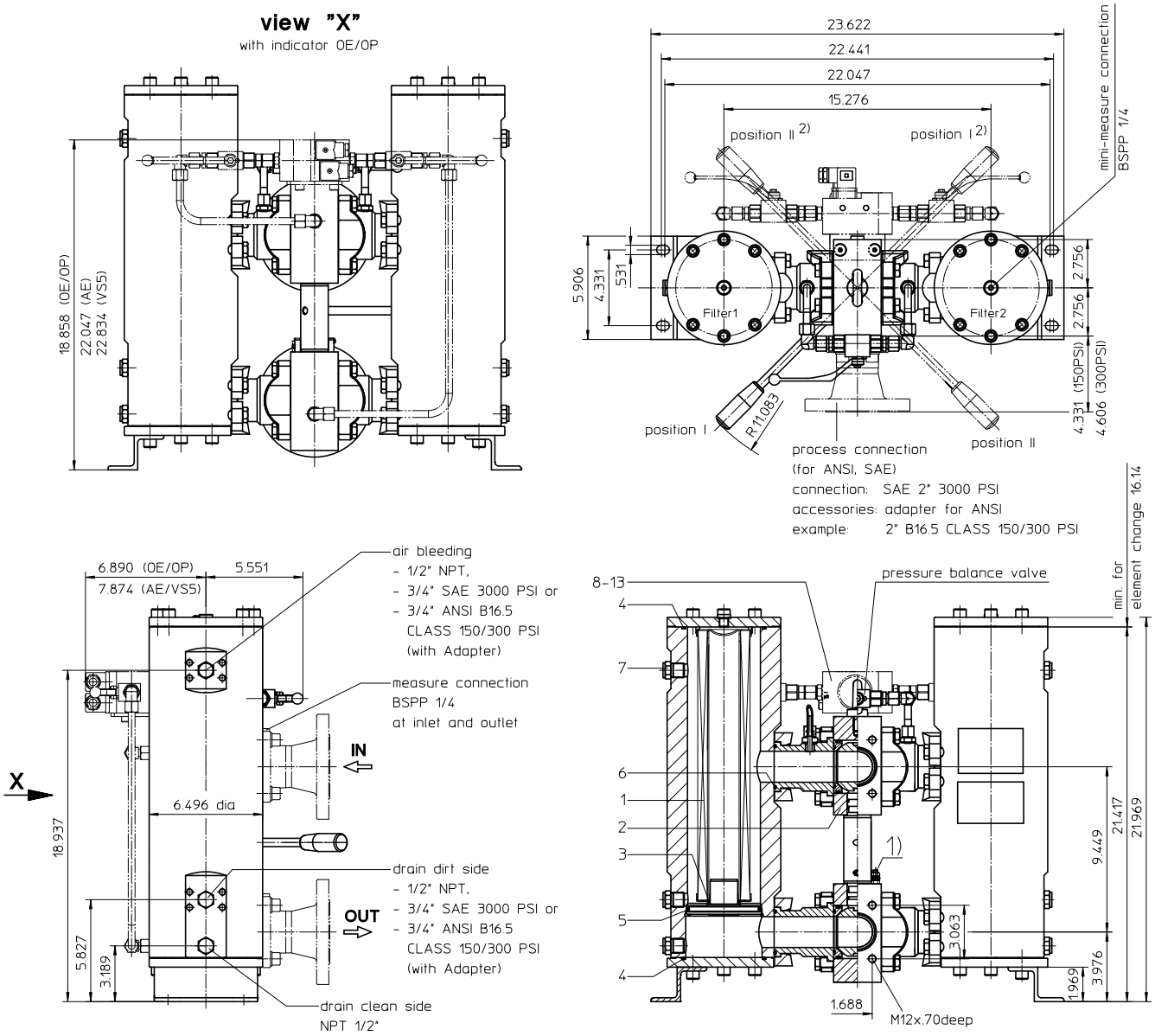
item	qty.	designation	dimension	article-no.	
1	2	filter element	01NL.250…		
2	4	gasket kit of changeover	2“	- (NBR)	- (FPM)
3	2	O-ring	40 x 3	304389 (NBR)	305482 (FPM)
4	4	O-ring	115 x 3.55	- (NBR)	346465 (FPM)
5	2	O-ring	100 x 5	327063 (NBR)	327064 (FPM)
6	4	O-ring	56.75 x 3.53	306035 (NBR)	310264 (FPM)
7	6	screw plug	NPT 1/2	307766	
8	1	clogging indicator, visual electric	OE	see sheet-no. 1614	
9	1	clogging indicator, visual	OP	see sheet-no. 1614	
10	1	clogging indicator, visual electric	AE	see sheet-no. 1615	
11	1	clogging sensor, elctronic	VS5	see sheet-no. 1619	
12	3	O-ring	14 x 2	304342 (NBR)	304722 (FPM)
13	1	O-ring	22 x 2	304708 (NBR)	304721 (FPM)

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

Series DA 403
NPS 2" CLASS 150-300 PSI



Switch lever standard in the front

2) On request: Switch lever backside opposite to inlet and outlet.

Please specify on order !

Position I: Filter 1 in operation
Position II: Filter 2 in operation

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

Weight: approx. 353 lbs.

Dimensions: inches

Designs and performance values are subject to change!

Pressure Filter, change over
Series DA 403
NPS 2" CLASS 150-300 PSI

Description:

Pressure filter series DA 403 have a working pressure up to 580 PSI. Pressure peaks can be absorbed with a sufficient safety margin.

A changeover 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.

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 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)

DA.	403.	10VG.	30.	E.	P.	-.	FA1.	8.	-.	IS21.	KH.	OE
1	2	3	4	5	6	7	8	9	10	11	12	13

1 **series:**
DA = pressure filter change-over, according to ASME-code

2 **nominal size:** 403

3 **filter material and grades of filter fineness (µm) :**
80G, 40G, 25G, 10G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
25API, 10API microglass according to API

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:**
- = standard, VA = stainless steel

8 **process connection:**
FS = flange SAE 3000 PSI
FA1 = flange ANSI CLASS 300 PSI, sealing surface Rz = 160 µm (not finer than 40 µm)
FA2 = flange ANSI CLASS 300 PSI, sealing surface Rz = 16 µm
FA11 = flange ANSI CLASS 150 PSI, sealing surface Rz = 160 µm (not finer than 40 µm)
FA12 = flange ANSI CLASS 150 PSI, sealing surface Rz = 16 µm

9 **process connection size:**
8 = 2"

10 **filter housing specification:**
- = standard
IS12 = internal parts of change-over armature stainless steel, see sheet-no. 41028

11 **specification pressure vessel:**
IS23 = ASME VIII Div.1 without U-stamp, see sheet-no. 55218
IS21 = ASME VIII Div.1 with U-stamp, see sheet-no. 43415

12 **shut-off :**
- = without
KH = with shut-off ball valve

13 **clogging indicator or clogging sensor:**
- = without
AE = visual-electrical, see sheet-no. 1615
OP = visual, see sheet-no. 1614
OE = visual-electrical, see sheet-no. 1614
VS5 = sensor, see sheet-no. 1619

To add an indicator/sensor 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.	400.	10VG.	30.	E.	P.	-
1	2	3	4	5	6	7

1 **series:**
01NL = filter element according to company standard

2 **nominal size:** 400

3 - 7 see type index-complete filter

Accessories:

- SAE-counter flanges, see sheet-no. 1652
- drain- and bleeder connection, see sheet-no. 1659
- adapter for ANSI-connection B16.5 CLASS 150/300 PSI, see sheet-no. 1658

Technical data:

temperature ranges	
- calculation temperature (pressure vessel):	+14°F to +212°F
- medium temperature:	+14°F to +176°F
- ambient temperature:	- 40°F to +140°F
- survival temperature:	- 40°F to +212°F (short-time)
operating medium:	mineral oil, other media on request
max. operating pressure housing:	580 PSI
test pressure acc. to PED 2014/68/EC:	1,43 x operating pressure = 827PSI
test pressure acc. to ASME VIII Div. 1:	1,3 x operating pressure = 754PSI
test pressure acc. to API 614, Chapter 1:	1,5 x operating pressure = 870PSI
connection system:	SAE-flange connection 3000 PSI or ANSI-flange B16.5 CLASS 150/300 PSI
housing material:	steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
bleeder connection :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection dirt side :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection clean side :	NPT ½“
volume tank:	2x 1.13 Gal.
operating pressure adapter flanges:	according to B16.5 CLASS 150 / 300 PSI

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:

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

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

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

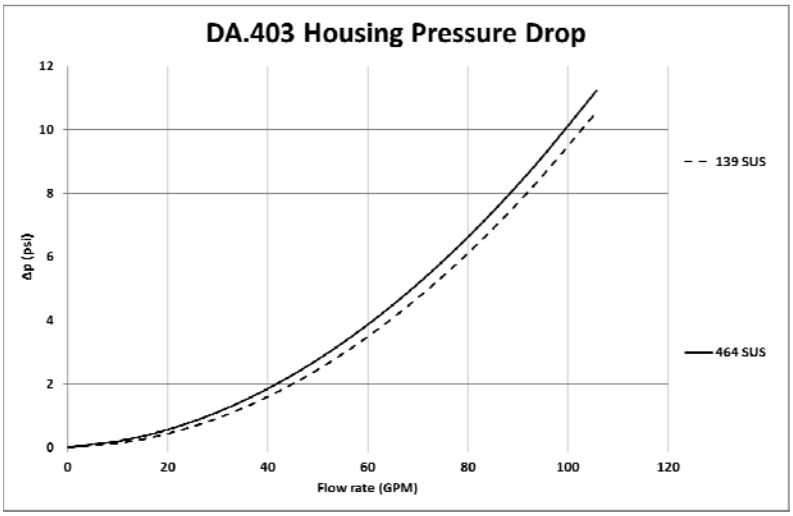
Material gradient coefficients (MSK) for filter elements

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.

DA	VG					G				API	
	3VG	6VG	10VG	16VG	25VG	10G	25G	40G	80G	10 API	25 API
403	0.700	0.486	0.311	0.271	0.185	0.0280	0.0207	0.0194	0.0133	0.159	0.073

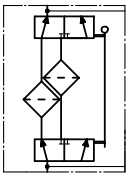
Δp=f(Q) – characteristic according ISO 3968

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.

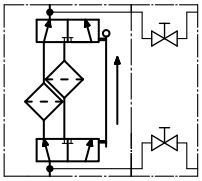


Symbols:

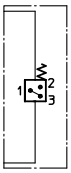
without indicator



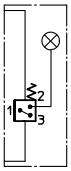
with
shut-off ball valve



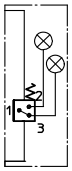
with electric
indicator
AE 30 and AE 40



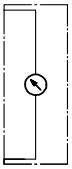
with visual-electric
indicator
AE 50 and AE 62



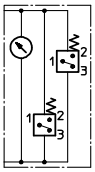
with visual-electric
indicator
AE 70 and AE 80



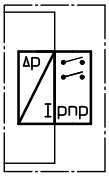
with visual
indicator
AOR/AOC/OP



with visual-electric
indicator
OE



with electronic
sensor
VS5



Spare parts:

item	qty.	designation	dimension	article-no.	
1	2	filter element	01NL.400…		
2	4	gasket kit of changeover	2“	- (NBR)	- (FPM)
3	2	O-ring	40 x 3	304389 (NBR)	305482 (FPM)
4	4	O-ring	115 x 3.55	- (NBR)	346465 (FPM)
5	2	O-ring	100 x 5	327063 (NBR)	327064 (FPM)
6	4	O-ring	56.75 x 3.53	306035 (NBR)	310264 (FPM)
7	6	screw plug	NPT 1/2	307766	
8	1	clogging indicator, visual electric	OE	see sheet-no. 1614	
9	1	clogging indicator, visual	OP	see sheet-no. 1614	
10	1	clogging indicator, visual electric	AE	see sheet-no. 1615	
11	1	clogging sensor, elctronic	VS5	see sheet-no. 1619	
12	3	O-ring	14 x 2	304342 (NBR)	304722 (FPM)
13	1	O-ring	22 x 2	304708 (NBR)	304721 (FPM)

Test methods:

Filter elements are tested according to the following ISO standards:

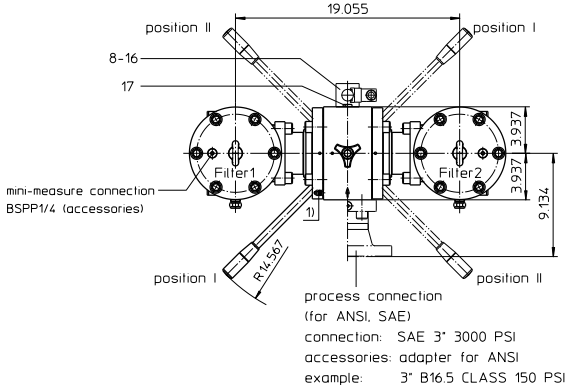
ISO 2941 Verification of collapse/burst resistance
ISO 2942 Verification of fabrication integrity
ISO 2943 Verification of material compatibility with fluids
ISO 3723 Method for end load test
ISO 3724 Verification of flow fatigue characteristics
ISO 3968 Evaluation of pressure drop versus flow characteristics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

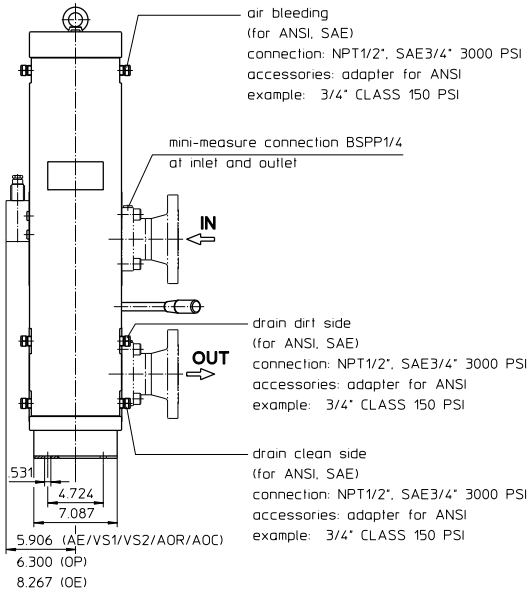
PRESSURE FILTER, change-over
Series DA 630-1000 NPS 3“ CLASS 300 PSI

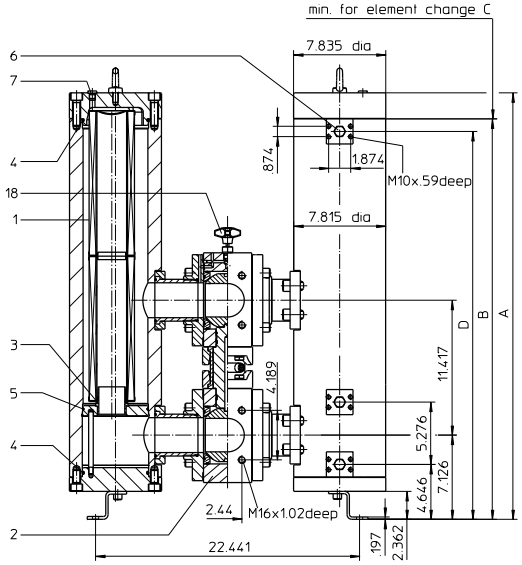
Sheet No. **2156 E**

[1] Connection for the potential equalisation at inlet and outlet, only for application in the explosive area.

Position I: Filter 1 in operation
Position II: Filter 2 in operation







2. Dimensions: inch

type	connection size	A	B	C	D	weight lbs.
DA 630	SAE 3“	27.04	24.84	16.14	23.77	approx. 639
DA 1000	SAE 3“	36.10	33.89	25.19	32.83	approx. 771

1. Type index:

1.1. Complete filter: (ordering example)

DA. 1000. 10VG. 30. E. P. -. FS. A. -. -. AE. AV. IS21. F. F

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

1 **series:**
DA = pressure filter change-over, according to ASME-code

2 **nominal size:** 630, 1000

3 **filter-material and filter- fineness:**
80 G = 80 µm, 40 G = 40 µm, 25 G = 25 µm, 10 G = 10 µm stainless steel wire mesh
25 VG = 20 $\mu m_{(c)}$, 16 VG = 15 $\mu m_{(c)}$, 10 VG = 10 $\mu m_{(c)}$, 6 VG = 7 $\mu m_{(c)}$, 3 VG = 5 $\mu m_{(c)}$ Interpor fleece (glass fiber)
25 API = 20 µm, 10 API = 10 µm Interpor fleece (glass fiber) according to API
10 P = 10 µm paper

4 **resistance of pressure difference for filter element:**
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:**
- = standard, VA = stainless steel

8 **process connection:**
FS = SAE-flange connection 3000 PSI
FA1 = ANSI-flange connection CLASS 300 PSI, sealing sealing surface rough grind 1600-3600 µin
FA2 = ANSI-flange connection CLASS 300 PSI, sealing surface rough grind < 640 µin

9 **process connection size:**
A = 3“

10 **filter housing specification:**
- = standard
IS12 = internal parts of change-over armature stainless steel, see sheet-no. 41028

11 **internal valve:**
- = without

12 **clogging indicator or clogging sensor:**
- = without, OP = visual, see sheet-no. 1628
AOR = visual, see sheet-no. 1606, OE = visual-electrical, see sheet-no. 1628
AOC = visual, see sheet-no. 1606, VS1 = electronical, see sheet-no. 1607
AE = visual-electrical, see sheet-no. 1609, VS2 = electronical, see sheet-no. 1608

13 **shut-off valve:**
- = without, AV = shut-off valve, see sheet-no. 1655

14 **specification pressure vessel:**
- = standard (PED 97/23/EC)
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217
IS21 = ASME VIII Div.1 with U-stamp, see sheet-no. 43415
IS23 = ASME VIII Div.1 without U-stamp, see sheet-no. 55218

15 **switch lever:**
F = toward IN/OUT, B = opposite IN/OUT

16 **air bleeding/drain:**
F = toward IN/OUT, B = opposite IN/OUT

1.2. Filter element: (ordering example)

01NL. 1000. 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, 1000

3 - 7 see type index complete filter

Changes of measures and design are subject to alteration!

EDV 08/12

3. Accessories:

- SAE-counter flanges, see sheet-no. 1652
- adapter for ANSI-connection B16.5 CLASS 300 PSI, see sheet-no. 1658
- measure- and bleeder-connections, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1659

4. Spare parts:

item	qty.	designation	dimension DA 630	dimension DA 1000	article-no.	
1	2	filter element	01NL. 630...	01NL.1000...		
2	1	change over UKK	3“			
3	2	O-ring	60 x 3,5		304377 (NBR)	304398 (FPM)
4	4	O-ring	135 x 4,75		326348 (NBR)	326349 (FPM)
5	2	O-ring	136,12 x 3,53		320162 (NBR)	320163 (FPM)
6	12	screw plug	NPT ½		307766	
7	2	screw plug	BSPP ¼		305003	
8	1	clogging indicator, visual	AOR or AOC		see sheet-no. 1606	
9	1	clogging indicator, visual-electrical	OP		see sheet-no. 1628	
10	1	clogging indicator, visual-electrical	OE		see sheet-no. 1628	
11	1	clogging indicator, visual-electrical	AE		see sheet-no. 1609	
12	1	clogging sensor, electronical	VS1		see sheet-no. 1607	
13	1	clogging sensor, electronical	VS2		see sheet-no. 1608	
14	1	O-ring	15 x 1,5		315357 (NBR)	315427 (FPM)
15	1	O-ring	22 x 2		304708 (NBR)	304721 (FPM)
16	2	O-ring	14 x 2		304342 (NBR)	304722 (FPM)
17	2	screw plug	BSPP ¼		305003	
18	1	pressure balance valve	3/8“		305000	

item 17 execution only with clogging indicator or clogging sensor

5. Description:

Pressure filters, change-over series DA 630-1000 are suitable for operating pressure up to 580 bar.
Pressure peaks can be absorbed with a sufficient margin o safety.
Change-over ball valve which, 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.
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 the inside.
These filters can be installed as suction filters.
For cleaning (see special leaflet 21070-4 and 34448-4) the mesh element respectively to change the glass fiber element remove the cover and take out the element.
Filter finer than 40 µm should use throw-away elements made of paper or Interpor fleece (glass fiber). Filter elements as fine as 5 $\mu m_{(c)}$ are available; finer filter elements on request.
Internormen Product Line filter elements are known as elements with a high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.
Internormen Product Line filter are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.
The inspection according to TÜV, according to ASME VIII Div.1 and the major „Shipyard Classification Societies“ D.N.V.; B.V.; G.L.; L.R.S.; R.I.N.A.; A.B.S. and others are possible. If inspection is required please indicate in your order.

6. Technical data:

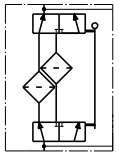
temperature ranges	
- calculation temperature (pressure vessel):	+14°F to +212°F
- medium temperature:	+14°F to +176°F
- ambient temperature:	- 40°F to +140°F
- survival temperature:	- 40°F to +212°F (short-time)
operating medium:	mineral oil, other media on request
max. operating pressure:	580 PSI
test pressure acc. to PED 97/23/EC:	1,43 x operating pressure = 827 PSI
test pressure acc. to ASME VIII Div. 1:	1,3 x operating pressure = 754 PSI
test pressure acc. to API 614, Chapter 1:	1,5 x operating pressure = 870 PSI
connection system:	SAE-flange connection 3000 PSI
housing material:	steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
bleeder connection :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection dirt side :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection clean side :	NPT ½“ and SAE ¾“ 3000 PSI
volume tank DA 630:	2x 2.19 Gal.
DA 1000:	2x 3.11 Gal.
operating pressure adapter flanges:	according to B16.5 CLASS 300 PSI

Classified under the Pressure Equipment Directive 97/23/EC for mineral oil (fluid group 2), Article 3, Para. 3.
Classified under ATEX Directive 94/9/EC according to specific application (see questionnaire sheet-no. 34279-4)

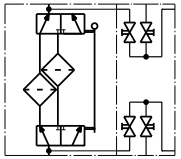
US 2156 E

7. Symbols:

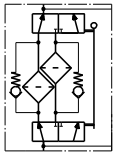
without indicator



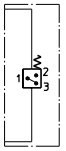
with shut-off valve



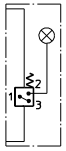
with by-pass valve



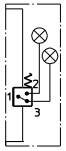
with electrical indicator AE 30 and AE 40



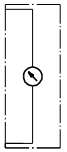
with visual-electrical indicator AE 50 and AE 62



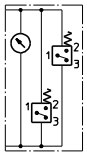
with visual-electrical indicator AE 70 and AE 80



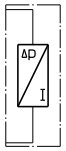
with visual indicator AOR/AOC/OP



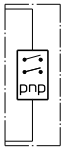
with visual-electrical indicator OE



with electronical sensor VS1



with electronical sensor VS2



8. Pressure drop flow curves:

Precise flow rates see ‘Interactive Product Specifier’, respectively Δp- curves; depending on filter fineness and viscosity.

9. Test methods:

Filter elements are tested according to the following ISO standards:

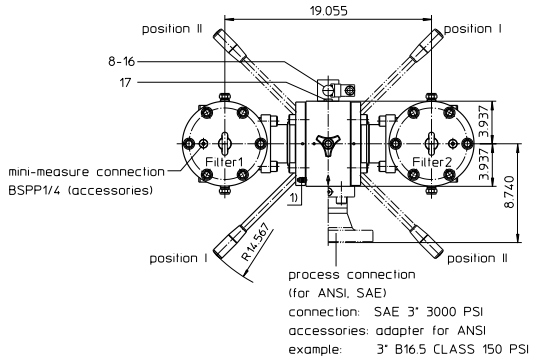
ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics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

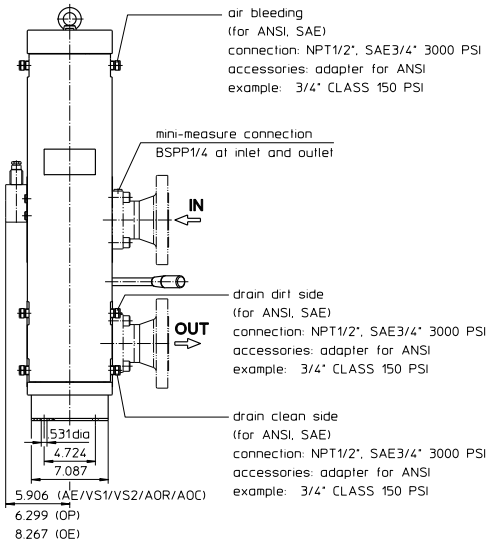
PRESSURE FILTER, change-over
Series DA 631-1001 NPS 3“ CLASS 150 PSI

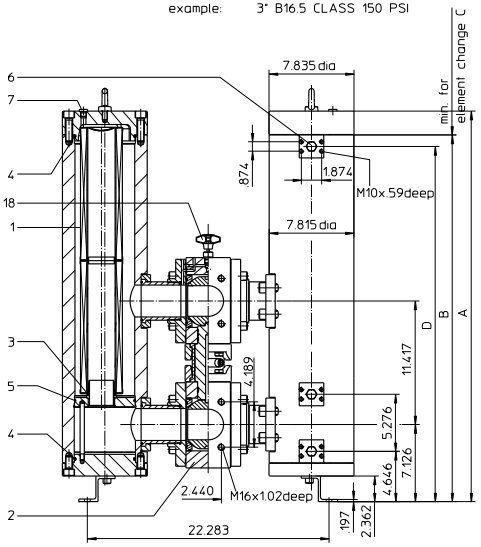
Sheet No. **2165 D**

[1] Connection for the potential equalisation at inlet and outlet, only for application in the explosive area.

Position I: Filter 1 in operation
Position II: Filter 2 in operation







1. Type index:

1.1. Complete filter: (ordering example)

DA. 1001. 10VG. 30. E. P. -. FS. A. -. -. AE. AV. IS21. F. F

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |

1 **series:**
DA = pressure filter change-over, according to ASME-code

2 **nominal size:** 631, 1001

3 **filter-material and filter- fineness:**
80 G = 80 µm, 40 G = 40 µm, 25 G = 25 µm, 10 G = 10 µm stainless steel wire mesh
25 VG = 20 $\mu m_{(c)}$, 16 VG = 15 $\mu m_{(c)}$, 10 VG = 10 $\mu m_{(c)}$, 6 VG = 7 $\mu m_{(c)}$, 3 VG = 5 $\mu m_{(c)}$ Interpor fleece (glass fiber)
25 API = 20 µm, 10 API = 10 µm Interpor fleece (glass fiber) according to API
10 P = 10 µm paper

4 **resistance of pressure difference for filter element:**
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:**
- = standard, VA = stainless steel

8 **process connection:**
FS = SAE-flange connection 3000 PSI
FA11 = ANSI-flange connection CLASS 150 PSI, sealing sealing surface rough grind 1600-3600 µin
FA12 = ANSI-flange connection CLASS 150 PSI, sealing surface rough grind < 640 µin

9 **process connection size:**
A = 3“

10 **filter housing specification:**
- = standard
IS12 = internal parts of change-over armature stainless steel, see sheet-no. 41028

11 **internal valve:**
- = without

12 **clogging indicator or clogging sensor:**
- = without, OP = visual, see sheet-no. 1628
AOR = visual, see sheet-no. 1606, OE = visual-electrical, see sheet-no. 1628
AOC = visual, see sheet-no. 1606, VS1 = electronical, see sheet-no. 1607
AE = visual-electrical, see sheet-no. 1609, VS2 = electronical, see sheet-no. 1608

13 **shut-off valve:**
- = without, AV = shut-off valve, see sheet-no. 1655

14 **specification pressure vessel:**
- = standard (PED 97/23/EC)
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217
IS21 = ASME VIII Div.1 with U-stamp, see sheet-no. 43415
IS23 = ASME VIII Div.1 without U-stamp, see sheet-no. 55218

15 **switch lever:**
F = toward IN/OUT, B = opposite IN/OUT

16 **air bleeding/drain:**
F = toward IN/OUT, B = opposite IN/OUT

1.2. Filter element: (ordering example)

01NL. 1000. 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, 1000

3 - 7 see type index complete filter

2. Dimensions: inch

type	connection size	A	B	C	D	weight lbs.
DA 631	SAE or ANSI 3“	27.04	24.84	16.14	23.77	approx. 639
DA 1001	SAE or ANSI 3“	36.10	33.89	25.19	32.83	approx. 771

Changes of measures and design are subject to alteration!

3. Accessories:

- SAE-counter flanges, see sheet-no. 1652
- adapter for ANSI-connection B16.5 CLASS 150 PSI, see sheet-no. 1658
- measure- and bleeder-connections, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1659

4. Spare parts:

item	qty.	designation	dimension DA 631	dimension DA 1001	article-no.	
1	2	filter element	01NL.630	01NL.1000		
2	1	change over UKK	3“			
3	2	O-ring	60 x 3,5		304377 (NBR)	304398 (FPM)
4	4	O-ring	135 x 4,75		326348 (NBR)	326349 (FPM)
5	2	O-ring	136,12 x 3,53		320162 (NBR)	320163 (FPM)
6	12	screw plug	NPT ½		307766	
7	2	screw plug	BSPP ¼		305003	
8	1	clogging indicator, visual	AOR or AOC		see sheet-no. 1606	
9	1	clogging indicator, visual-electrical	OP		see sheet-no. 1628	
10	1	clogging indicator, visual-electrical	OE		see sheet-no. 1628	
11	1	clogging indicator, visual-electrical	AE		see sheet-no. 1609	
12	1	clogging sensor, electronical	VS1		see sheet-no. 1607	
13	1	clogging sensor, electronical	VS2		see sheet-no. 1608	
14	1	O-ring	15 x 1,5		315357 (NBR)	315427 (FPM)
15	1	O-ring	22 x 2		304708 (NBR)	304721 (FPM)
16	2	O-ring	14 x 2		304342 (NBR)	304722 (FPM)
17	2	screw plug	BSPP ¼		305003	
18	1	pressure balance valve	3/8“		305000	

item 17 execution only with clogging indicator or clogging sensor

5. Description:

Pressure filters, change-over series DA 631-1001 are suitable for operating pressure up to 580 PSI
Pressure peaks can be absorbed with a sufficient margin o safety.
Change-over ball valve which, 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.
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 the inside.
These filters can be installed as suction filters.
For cleaning (see special leaflet 21070-4 and 34448-4) the mesh element respectively to change the glass fiber element remove the cover and take out the element.
Filter finer than 40 µm should use throw-away elements made of paper or Interpor fleece (glass fiber). Filter elements as fine as 5 $\mu m_{(c)}$ are available; finer filter elements on request.
Internormen Product Line filter elements are known as elements with a high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.
Internormen Product Line filter are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.
The inspection according to TÜV, according to ASME VIII Div.1 and the major „Shipyard Classification Societies“ D.N.V.; B.V.; G.L.; L.R.S.; R.I.N.A.; A.B.S. and others are possible. If inspection is required please indicate in your order.

6. Technical data:

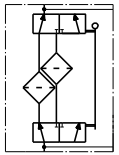
temperature ranges	
- calculation temperature (pressure vessel):	+14°F to +212°F
- medium temperature:	+14°F to +176°F
- ambient temperature:	- 40°F to +140°F
- survival temperature:	- 40°F to +212°F (short-time)
operating medium:	mineral oil, other media on request
max. operating pressure:	580 PSI
test pressure acc. to PED 97/23/EC:	1,43 x operating pressure = 827 PSI
test pressure acc. to ASME VIII Div. 1:	1,3 x operating pressure = 754 PSI
test pressure acc. to API 614, Chapter 1:	1,5 x operating pressure = 870 PSI
connection system:	SAE-flange connection 3000 PSI
housing material:	steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
bleeder connection :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection dirt side :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection clean side :	NPT ½“
volume tank DA 631:	2x 2.20 Gal.
DA 1001:	2x 3.12 Gal.
operating pressure adapter flanges:	according to B16.5 CLASS 150 PSI

Classified under the Pressure Equipment Directive 97/23/EC for mineral oil (fluid group 2), Article 3, Para. 3.
Classified under ATEX Directive 94/9/EC according to specific application (see questionnaire sheet-no. 34279-4)

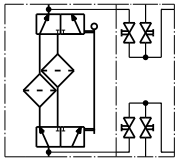
US 2165 D

7. Symbols:

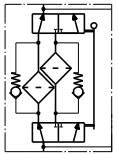
without indicator



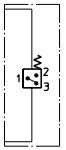
with shut-off valve



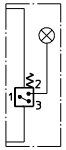
with by-pass valve



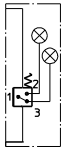
with electrical indicator AE 30 and AE 40



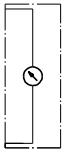
with visual-electrical indicator AE 50 and AE 62



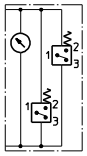
with visual-electrical indicator AE 70 and AE 80



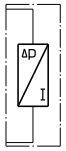
with visual indicator AOR/AOC/OP



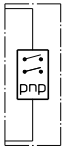
with visual-electrical indicator OE



with electronical sensor VS1



with electronical sensor VS2



8. Pressure drop flow curves:

Precise flow rates see ‘Interactive product Specifier’, respectively Δp- curves; depending on filter fineness and viscosity.

9. Test methods:

Filter elements are tested according to the following ISO standards:

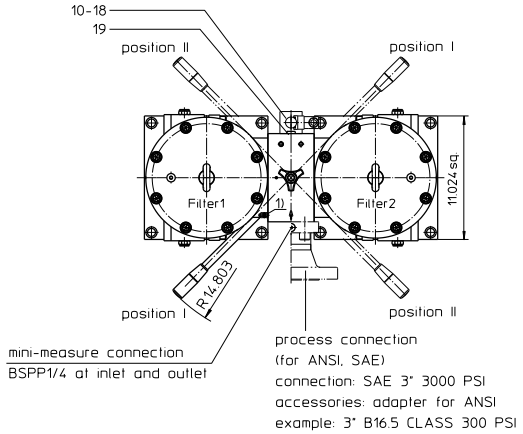
ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics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

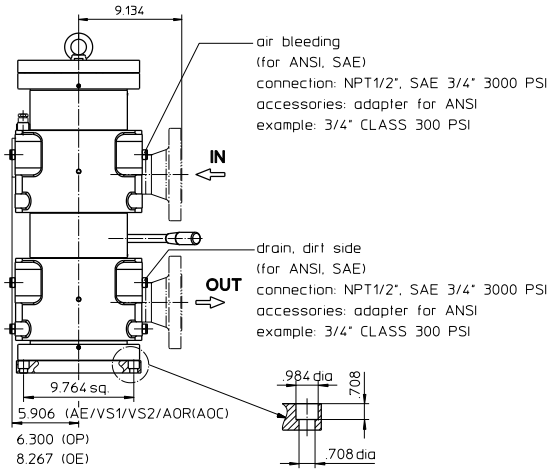
PRESSURE FILTER, change-over
Series DA 1004 NPS 3“ CLASS 300 PSI

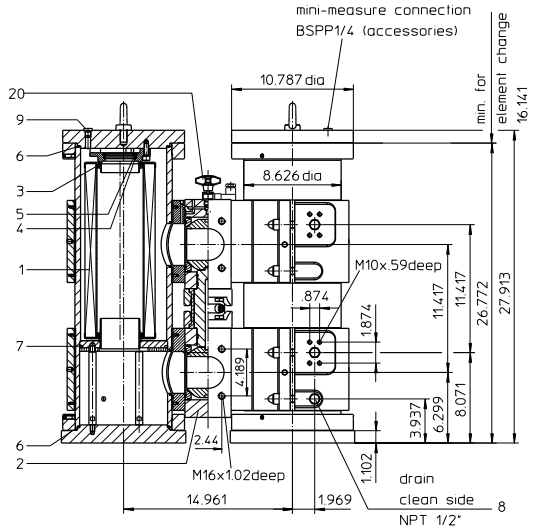
Sheet No. **2185 C**

1) Connection for the potential equalisation at inlet and outlet, only for application in the explosive area.

Position I: Filter 1 in operation
Position II: Filter 2 in operation







1. Type index:

1.1. Complete filter: (ordering example)

DA. 1004. 10VG. 10. B. P. -. FS. A. -. -. AE. AV. IS21. F. F

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

1 **series:**
DA = pressure filter change-over, according to ASME-code

2 **nominal size:** 1004

3 **filter-material and filter- fineness:**
80 G = 80 µm, 40 G = 40 µm, 25 G = 25 µm, 10 G = 10 µm stainless steel wire mesh
25 VG = 20 $\mu m_{(c)}$, 16 VG = 15 $\mu m_{(c)}$, 10 VG = 10 $\mu m_{(c)}$, 6 VG = 7 $\mu m_{(c)}$, 3 VG = 5 $\mu m_{(c)}$ Interpor fleece (glass fiber)
25 API = 20 µm, 10 API = 10 µm Interpor fleece (glass fiber) according to API
10 P = 10 µm paper

4 **resistance of pressure difference for filter element:**
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:**
- = standard, VA = stainless steel

8 **process connection:**
FS = SAE-flange connection 3000 PSI
FA1 = ANSI-flange connection CLASS 300 PSI, sealing surface rough grind 1600-3600 µin
FA2 = ANSI-flange connection CLASS 300 PSI, sealing surface rough grind < 640 µin

9 **process connection size:**
A = 3“

10 **filter housing specification:**
- = standard
IS12 = internal parts of change-over armature stainless steel, see sheet-no. 41028

11 **internal valve:**
- = without, S1 = with by-pass valve Δp 51 PSI

12 **clogging indicator or clogging sensor:**
- = without, OP = visual, see sheet-no. 1628
AOR = visual, see sheet-no. 1606, OE = visual-electrical, see sheet-no. 1628
AOC = visual, see sheet-no. 1606, VS1 = electronical, see sheet-no. 1607
AE = visual-electrical, see sheet-no. 1609, VS2 = electronical, see sheet-no. 1608

13 **shut-off valve:**
- = without, AV = shut-off valve, see sheet-no. 1655

14 **specification pressure vessel:**
- = standard (PED 97/23/EC)
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217
IS21 = ASME VIII Div.1 with U-stamp, see sheet-no. 43415
IS23 = ASME VIII Div.1 without U-stamp, see sheet-no. 55218

15 **switch lever:**
F = toward IN/OUT, B = opposite IN/OUT

16 **air bleeding/drain:**
F = toward IN/OUT, B = opposite IN/OUT

1.2. Filter element: (ordering example)

01NR. 1000. 10VG. 10. B. P. -

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

weight: approx. 816 lbs.

Changes of measures and design are subject to alteration!

EDV 08/12

2. Accessories:

- SAE-counter flanges, see sheet-no. 1652
- adapter for ANSI-connection B16.5 CLASS 300 PSI, see sheet-no. 1658
- measure- and bleeder-connections, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1659

3. Spare parts:

item	qty.	designation	dimension	article-no.	
1	2	filter element	01NR.1000 ...		
2	1	change over UKK	3“		
3	4	O-ring	90 x 4	306941 (NBR)	307031 (FPM)
4	2	O-ring	62 x 4	308045 (NBR)	311472 (FPM)
5	2	circlip	DIN472-75x2,5-ST	311471	
6	4	O-ring	200 x 4	334555 (NBR)	334554 (FPM)
7	2	O-ring	185 x 6	335381 (NBR)	335306 (FPM)
8	12	screw plug	NPT ½	307766	
9	2	screw plug	BSPP ¼	305003	
10	1	clogging indicator, visual	AOR or AOC	see sheet-no. 1606	
11	1	clogging indicator, visual-electrical	OP	see sheet-no. 1628	
12	1	clogging indicator, visual-electrical	OE	see sheet-no. 1628	
13	1	clogging indicator, visual-electrical	AE	see sheet-no. 1609	
14	1	clogging sensor, electronical	VS1	see sheet-no. 1607	
15	1	clogging sensor, electronical	VS2	see sheet-no. 1608	
16	1	O-ring	15 x 1,5	315357 (NBR)	315427 (FPM)
17	1	O-ring	22 x 2	304708 (NBR)	304721 (FPM)
18	2	O-ring	14 x 2	304342 (NBR)	304722 (FPM)
19	2	screw plug	BSPP ¼	305003	
20	1	pressure balance valve	3/8“	305000	

item 19 execution only with clogging indicator or clogging sensor

4. Description:

Pressure filters, change-over series DA 1004 are suitable for operating pressure up to 580 PSI.
Pressure peaks can be absorbed with a sufficient margin o safety.
Change-over ball valve which, 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.
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 the inside.
These filters can be installed as suction filters.
For cleaning (see special leaflet 21070-4 and 34448-4) the mesh element respectively to change the glass fiber element remove the cover and take out the element.
Filter finer than 40 µm should use throw-away elements made of paper or Interpor fleece (glass fiber). Filter elements as fine as 5 $\mu m_{(c)}$ are available; finer filter elements on request.
Internormen Product Line filter elements are known as elements with a high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.
Internormen Product Line filter are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.
The inspection according to TÜV, according to ASME VIII Div.1 and the major „Shipyard Classification Societies“ D.N.V.; B.V.; G.L.; L.R.S.; R.I.N.A.; A.B.S. and others are possible. If inspection is required please indicate in your order.

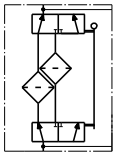
5. Technical data:

temperature ranges	
- calculation temperature (pressure vessel):	+14°F to +212°F
- medium temperature:	+14°F to +176°F
- ambient temperature:	- 40°F to +140°F
- survival temperature:	- 40°F to +212°F (short-time)
operating medium:	mineral oil, other media on request
max. operating pressure:	580 PSI
test pressure acc. to PED 97/23/EC:	1,43 x operating pressure = 827 PSI
test pressure acc. to ASME VIII Div. 1:	1,3 x operating pressure = 754 PSI
test pressure acc. to API 614, Chapter 1:	1,5 x operating pressure = 870 PSI
connection system:	SAE-flange connection 3000 PSI
housing material:	steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
bleeder connection :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection dirt side :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection clean side :	NPT ½“
volume tank :	2x 5.02 Gal.
operating pressure adapter flanges:	according to B16.5 CLASS 300 PSI

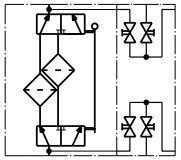
Classified under the Pressure Equipment Directive 97/23/EC for mineral oil (fluid group 2), Article 3, Para. 3.
Classified under ATEX Directive 94/9/EC according to specific application (see questionnaire sheet-no. 34279-4)

6. Symbols:

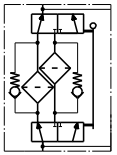
without indicator



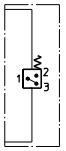
with shut-off valve



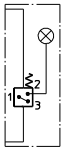
with by-pass valve



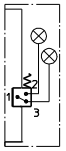
with electrical indicator AE 30 and AE 40



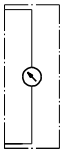
with visual-electrical indicator AE 50 and AE 62



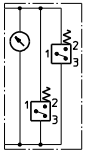
with visual-electrical indicator AE 70 and AE 80



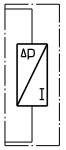
with visual indicator AOR/AOC/OP



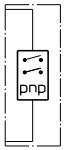
with visual-electrical indicator OE



with electronical sensor VS1



with electronical sensor VS2



7. Pressure drop flow curves:

Precise flow rates see ‘Interactive Product Specifier’, respectively Δp- curves; depending on filter fineness and viscosity.

8. Test methods:

Filter elements are tested according to the following ISO standards:

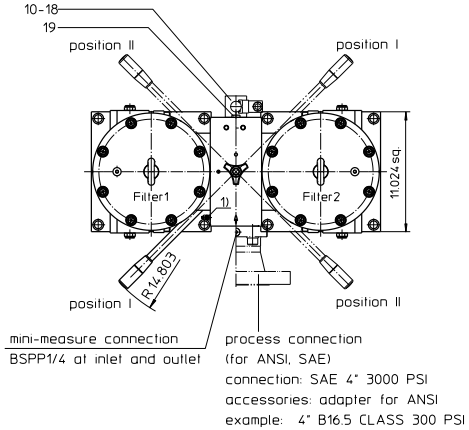
ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics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

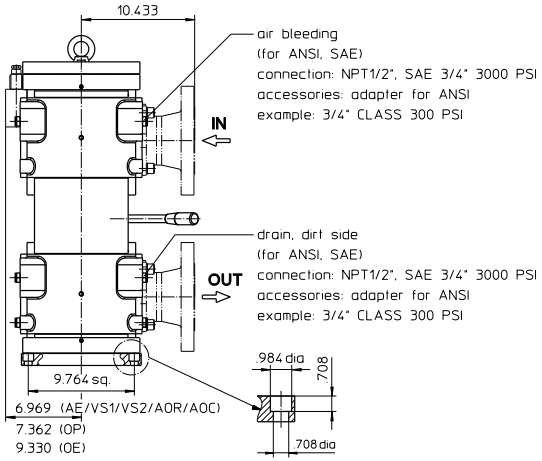
PRESSURE FILTER, change-over
Series DA 1005 NPS 4“ CLASS 300 PSI

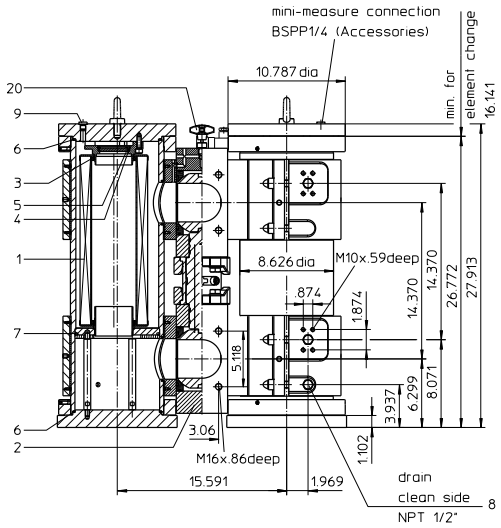
Sheet No. **2186 C**

1) Connection for the potential equalisation at inlet and outlet, only for application in the explosive area.

Position I: Filter 1 in operation
Position II: Filter 2 in operation







1. Type index:

1.1. Complete filter: (ordering example)

DA. 1005. 10VG. 10. B. P. -. FS. B. -. -. AE. AV. IS21. F. F

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

1 **series:**
DA = pressure filter change-over, according to ASME-code

2 **nominal size:** 1005

3 **filter-material and filter- fineness:**
80 G = 80 µm, 40 G = 40 µm, 25 G = 25 µm, 10 G = 10 µm stainless steel wire mesh
25 VG = 20 $\mu m_{(c)}$, 16 VG = 15 $\mu m_{(c)}$, 10 VG = 10 $\mu m_{(c)}$, 6 VG = 7 $\mu m_{(c)}$, 3 VG = 5 $\mu m_{(c)}$ Interpor fleece (glass fiber)
25 API = 20 µm, 10 API = 10 µm Interpor fleece (glass fiber) according to API
10 P = 10 µm paper

4 **resistance of pressure difference for filter element:**
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:**
- = standard, VA = stainless steel

8 **process connection:**
FS = SAE-flange connection 3000 PSI
FA1 = ANSI-flange connection CLASS 300 PSI, sealing surface rough grind 1600-3600 µin
FA2 = ANSI-flange connection CLASS 300 PSI, sealing surface rough grind < 640 µin

9 **process connection size:**
B = 4“

10 **filter housing specification:**
- = standard
IS12 = internal parts of change-over armature stainless steel, see sheet-no. 41028

11 **internal valve:**
- = without, S1 = with by-pass valve Δp 51 PSI

12 **clogging indicator or clogging sensor:**
- = without, OP = visual, see sheet-no. 1628
AOR = visual, see sheet-no. 1606, OE = visual-electrical, see sheet-no. 1628
AOC = visual, see sheet-no. 1606, VS1 = electronical, see sheet-no. 1607
AE = visual-electrical, see sheet-no. 1609, VS2 = electronical, see sheet-no. 1608

13 **shut-off valve:**
- = without, AV = shut-off valve, see sheet-no. 1655

14 **specification pressure vessel:**
- = standard (PED 97/23/EC)
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217
IS21 = ASME VIII Div.1 with U-stamp, see sheet-no. 43415
IS23 = ASME VIII Div.1 without U-stamp, see sheet-no. 55218

15 **switch lever:**
F = toward IN/OUT, B = opposite IN/OUT

16 **air bleeding/drain:**
F = toward IN/OUT, B = opposite IN/OUT

1.2. Filter element: (ordering example)

01NR. 1000. 10VG. 10. B. P. -

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

weight: approx. 915 lbs.

Changes of measures and design are subject to alteration!

EDV 08/11

2. Accessories:

- SAE-counter flanges, see sheet-no. 1652
- adapter for ANSI-connection B16.5 CLASS 300 PSI, see sheet-no. 1658
- measure- and bleeder-connections, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1659

3. Spare parts:

item	qty.	designation	dimension	article-no.	
1	2	filter element	01NR.1000 ...		
2	1	change over UKK	4“		
3	4	O-ring	90 x 4	306941 (NBR)	307031 (FPM)
4	2	O-ring	62 x 4	308045 (NBR)	311472 (FPM)
5	2	circlip	DIN472-75x2,5-ST	311471	
6	4	O-ring	200 x 4	334555 (NBR)	334554 (FPM)
7	2	O-ring	185 x 6	335381 (NBR)	335306 (FPM)
8	12	screw plug	NPT ½	307766	
9	2	screw plug	BSPP ¼	305003	
10	1	clogging indicator, visual	AOR or AOC	see sheet-no. 1606	
11	1	clogging indicator, visual-electrical	OP	see sheet-no. 1628	
12	1	clogging indicator, visual-electrical	OE	see sheet-no. 1628	
13	1	clogging indicator, visual-electrical	AE	see sheet-no. 1609	
14	1	clogging sensor, electronical	VS1	see sheet-no. 1607	
15	1	clogging sensor, electronical	VS2	see sheet-no. 1608	
16	1	O-ring	15 x 1,5	315357 (NBR)	315427 (FPM)
17	1	O-ring	22 x 2	304708 (NBR)	304721 (FPM)
18	2	O-ring	14 x 2	304342 (NBR)	304722 (FPM)
19	2	screw plug	BSPP ¼	305003	
20	1	pressure balance valve	3/8“	305000	

item 19 execution only with clogging indicator or clogging sensor

4. Description:

Pressure filters, change-over series DA 1005 are suitable for operating pressure up to 580 PSI.
Pressure peaks can be absorbed with a sufficient margin o safety.
Change-over ball valve which, 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.
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 the inside.
These filters can be installed as suction filters.
For cleaning (see special leaflet 21070-4 and 34448-4) the mesh element respectively to change the glass fiber element remove the cover and take out the element.
Filter finer than 40 µm should use throw-away elements made of paper or Interpor fleece (glass fiber). Filter elements as fine as 5 $\mu m_{(c)}$ are available; finer filter elements on request.
Internormen Product Line filter elements are known as elements with a high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.
Internormen Product Line filter are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.
The inspection according to TÜV, according to ASME VIII Div.1 and the major „Shipyard Classification Societies“ D.N.V.; B.V.; G.L.; L.R.S.; R.I.N.A.; A.B.S. and others are possible. If inspection is required please indicate in your order.

5. Technical data:

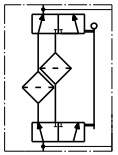
temperature ranges	
- calculation temperature (pressure vessel):	+14°F to +212°F
- medium temperature:	+14°F to +176°F
- ambient temperature:	- 40°F to +140°F
- survival temperature:	- 40°F to +212°F (short-time)
operating medium:	mineral oil, other media on request
max. operating pressure:	580 PSI
test pressure acc. to PED 97/23/EC:	1,43 x operating pressure = 827 PSI
test pressure acc. to ASME VIII Div. 1:	1,3 x operating pressure = 754 PSI
test pressure acc. to API 614, Chapter 1:	1,5 x operating pressure = 870 PSI
connection system:	SAE-flange connection 3000 PSI
housing material:	steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
bleeder connection :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection dirt side :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection clean side :	NPT ½“
volume tank :	2x 5.02 Gal.
operating pressure adapter flanges:	according to B16.5 CLASS 300 PSI

Classified under the Pressure Equipment Directive 97/23/EC for mineral oil (fluid group 2), Article 3, Para. 3.
Classified under ATEX Directive 94/9/EC according to specific application (see questionnaire sheet-no. 34279-4)

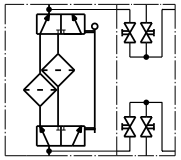
US 2186 C

6. Symbols:

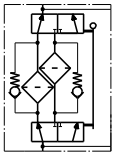
without indicator



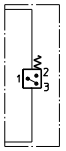
with shut-off valve



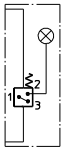
with by-pass valve



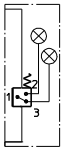
with electrical indicator AE 30 and AE 40



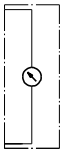
with visual-electrical indicator AE 50 and AE 62



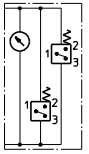
with visual-electrical indicator AE 70 and AE 80



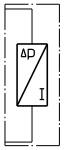
with visual indicator AOR/AOC/OP



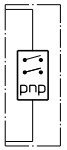
with visual-electrical indicator OE



with electronical sensor VS1



with electronical sensor VS2



7. Pressure drop flow curves:

Precise flow rates see ‘Interactive Product Specifier’, respectively Δp- curves; depending on filter fineness and viscosity.

8. Test methods:

Filter elements are tested according to the following ISO standards:

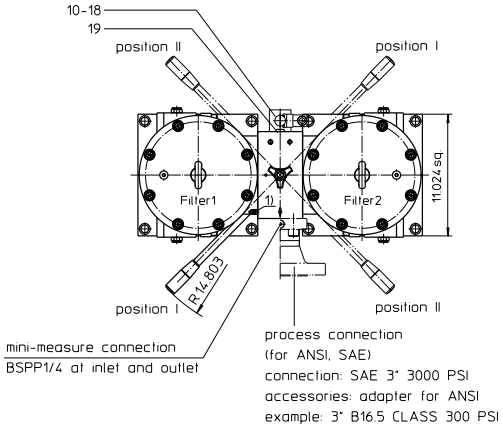
ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics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

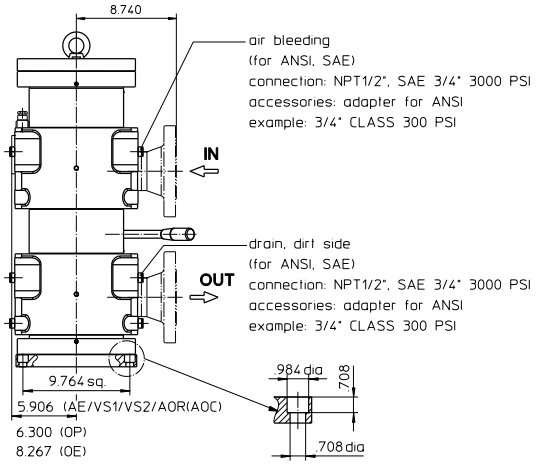
PRESSURE FILTER, change-over
Series DA 1014 NPS 3“ CLASS 150 PSI

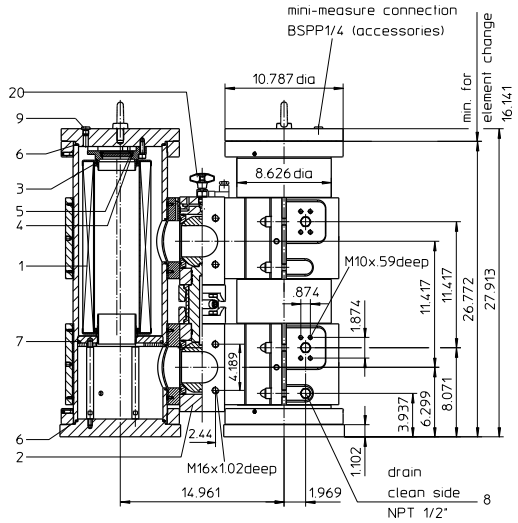
Sheet No. **2180 C**

[1] Connection for the potential equalisation at inlet and outlet, only for application in the explosive area.

Position I: Filter 1 in operation
Position II: Filter 2 in operation







1. Type index:

1.1. Complete filter: (ordering example)

DA. 1014. 10VG. 10. B. P. -. FS. A. -. -. AE. AV. IS21. F. F

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

1 **series:**
DA = pressure filter change-over, according to ASME-code

2 **nominal size:** 1014

3 **filter-material and filter- fineness:**
80 G = 80 µm, 40 G = 40 µm, 25 G = 25 µm, 10 G = 10 µm stainless steel wire mesh
25 VG = 20 $\mu m_{(c)}$, 16 VG = 15 $\mu m_{(c)}$, 10 VG = 10 $\mu m_{(c)}$, 6 VG = 7 $\mu m_{(c)}$, 3 VG = 5 $\mu m_{(c)}$ Interpor fleece (glass fiber)
25 API = 20 µm, 10 API = 10 µm Interpor fleece (glass fiber) according to API
10 P = 10 µm paper

4 **resistance of pressure difference for filter element:**
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:**
- = standard, VA = stainless steel

8 **process connection:**
FS = SAE-flange connection 3000 PSI
FA11 = ANSI-flange connection CLASS 150 PSI, sealing surface rough grind 1600-3600 µin
FA12 = ANSI-flange connection CLASS 150 PSI, sealing surface rough grind < 640 µin

9 **process connection size:**
A = 3“

10 **filter housing specification:**
- = standard
IS12 = internal parts of change-over armature stainless steel, see sheet-no. 41028

11 **internal valve:**
- = without, S1 = with by-pass valve Δp 51 PSI

12 **clogging indicator or clogging sensor:**
- = without, OP = visual, see sheet-no. 1628
AOR = visual, see sheet-no. 1606, OE = visual-electrical, see sheet-no. 1628
AOC = visual, see sheet-no. 1606, VS1 = electronical, see sheet-no. 1607
AE = visual-electrical, see sheet-no. 1609, VS2 = electronical, see sheet-no. 1608

13 **shut-off valve:**
- = without, AV = shut-off valve, see sheet-no. 1655

14 **specification pressure vessel:**
- = standard (PED 97/23/EC)
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217
IS21 = ASME VIII Div.1 with U-stamp, see sheet-no. 43415
IS23 = ASME VIII Div.1 without U-stamp, see sheet-no. 55218

15 **switch lever:**
F = toward IN/OUT, B = opposite IN/OUT

16 **air bleeding/drain:**
F = toward IN/OUT, B = opposite IN/OUT

1.2. Filter element: (ordering example)

01NR. 1000. 10VG. 10. B. P. -

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

weight: approx. 816 lbs.

Changes of measures and design are subject to alteration!

EDV 08/12

2. Accessories:

- SAE-counter flanges, see sheet-no. 1652
- adapter for ANSI-connection B16.5 CLASS 150 PSI, see sheet-no. 1658
- measure- and bleeder-connections, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1659

3. Spare parts:

item	qty.	designation	dimension	article-no.	
1	2	filter element	01NR.1000 ...		
2	1	change over UKK	3“		
3	4	O-ring	90 x 4	306941 (NBR)	307031 (FPM)
4	2	O-ring	62 x 4	308045 (NBR)	311472 (FPM)
5	2	circlip	DIN472-75x2,5-ST	311471	
6	4	O-ring	200 x 4	334555 (NBR)	334554 (FPM)
7	2	O-ring	185 x 6	335381 (NBR)	335306 (FPM)
8	12	screw plug	NPT ½	307766	
9	2	screw plug	BSPP ¼	305003	
10	1	clogging indicator, visual	AOR or AOC	see sheet-no. 1606	
11	1	clogging indicator, visual-electrical	OP	see sheet-no. 1628	
12	1	clogging indicator, visual-electrical	OE	see sheet-no. 1628	
13	1	clogging indicator, visual-electrical	AE	see sheet-no. 1609	
14	1	clogging sensor, electronical	VS1	see sheet-no. 1607	
15	1	clogging sensor, electronical	VS2	see sheet-no. 1608	
16	1	O-ring	15 x 1,5	315357 (NBR)	315427 (FPM)
17	1	O-ring	22 x 2	304708 (NBR)	304721 (FPM)
18	2	O-ring	14 x 2	304342 (NBR)	304722 (FPM)
19	2	screw plug	BSPP ¼	305003	
20	1	pressure balance valve	3/8“	305000	

item 19 execution only with clogging indicator or clogging sensor

4. Description:

Pressure filters, change-over series DA 1014 are suitable for operating pressure up to 580 PSI.
Pressure peaks can be absorbed with a sufficient margin o safety.
Change-over ball valve which, 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.
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 the inside.
These filters can be installed as suction filters.
For cleaning (see special leaflet 21070-4 and 34448-4) the mesh element respectively to change the glass fiber element remove the cover and take out the element.
Filter finer than 40 µm should use throw-away elements made of paper or Interpor fleece (glass fiber). Filter elements as fine as 5 $\mu m_{(c)}$ are available; finer filter elements on request.
Internormen Product Line filter elements are known as elements with a high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.
Internormen Product Line filter are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.
The inspection according to TÜV, according to ASME VIII Div.1 and the major „Shipyard Classification Societies“ D.N.V.; B.V.; G.L.; L.R.S.; R.I.N.A.; A.B.S. and others are possible. If inspection is required please indicate in your order.

5. Technical data:

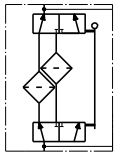
temperature ranges	
- calculation temperature (pressure vessel):	+14°F to +212°F
- medium temperature:	+14°F to +176°F
- ambient temperature:	- 40°F to +140°F
- survival temperature:	- 40°F to +212°F (short-time)
operating medium:	mineral oil, other media on request
max. operating pressure:	580 PSI
test pressure acc. to PED 97/23/EC:	1,43 x operating pressure = 827 PSI
test pressure acc. to ASME VIII Div. 1:	1,3 x operating pressure = 754 PSI
test pressure acc. to API 614, Chapter 1:	1,5 x operating pressure = 870 PSI
connection system:	SAE-flange connection 3000 PSI
housing material:	steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
bleeder connection :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection dirt side :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection clean side :	NPT ½“
volume tank :	2x 5.02 Gal.
operating pressure adapter flanges:	according to B16.5 CLASS 150 PSI

Classified under the Pressure Equipment Directive 97/23/EC for mineral oil (fluid group 2), Article 3, Para. 3.
Classified under ATEX Directive 94/9/EC according to specific application (see questionnaire sheet-no. 34279-4)

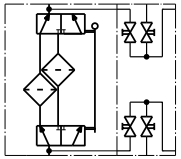
US 2180 C

6. Symbols:

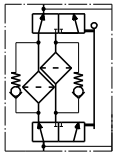
without indicator



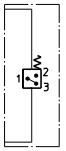
with shut-off valve



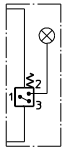
with by-pass valve



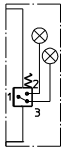
with electrical indicator AE 30 and AE 40



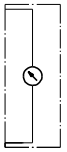
with visual-electrical indicator AE 50 and AE 62



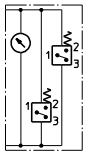
with visual-electrical indicator AE 70 and AE 80



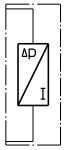
with visual indicator AOR/AOC/OP



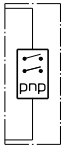
with visual-electrical indicator OE



with electronical sensor VS1



with electronical sensor VS2



7. Pressure drop flow curves:

Precise flow rates see ‘Interactive Product Specifier’, respectively Δp- curves; depending on filter fineness and viscosity.

8. Test methods:

Filter elements are tested according to the following ISO standards:

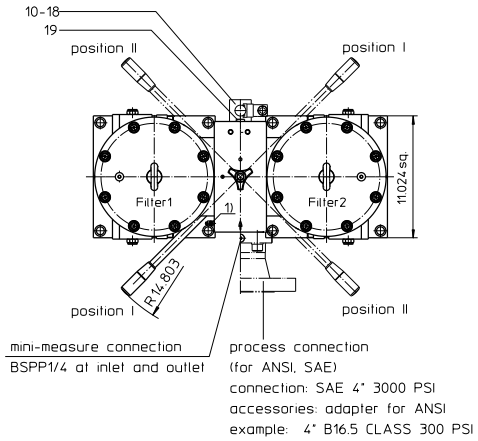
ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics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

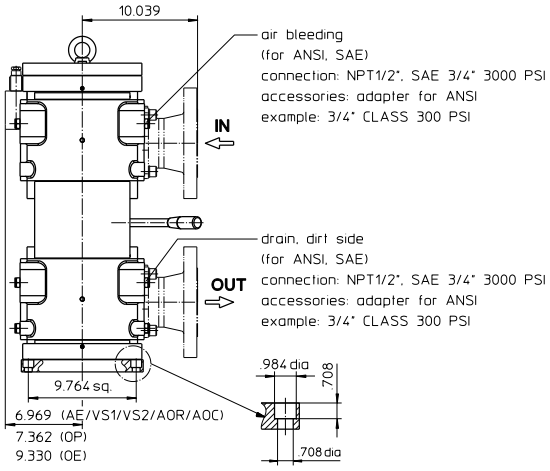
PRESSURE FILTER, change-over
Series DA 1015 NPS 4“ CLASS 150 PSI

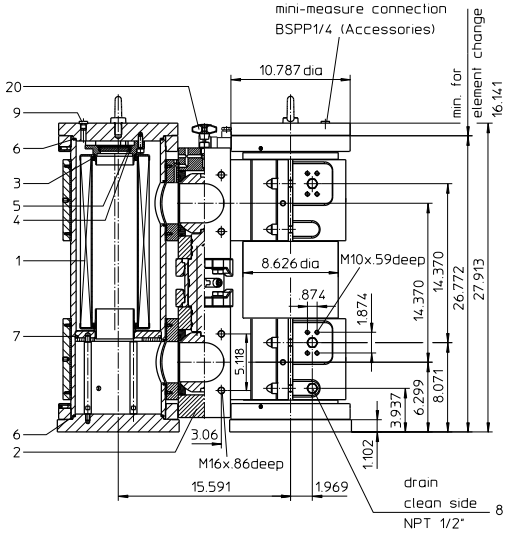
Sheet No.
2181 C

[1] Connection for the potential equalisation at inlet and outlet, only for application in the explosive area.

Position I: Filter 1 in operation
Position II: Filter 2 in operation







1. Type index:

1.1. Complete filter: (ordering example)

DA. 1015. 10VG. 10. B. P. -. FS. B. -. -. AE. AV. IS21. F. F

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

1 **series:**
DA = pressure filter change-over, according to ASME-code

2 **nominal size:** 1015

3 **filter-material and filter- fineness:**
80 G = 80 µm, 40 G = 40 µm, 25 G = 25 µm, 10 G = 10 µm stainless steel wire mesh
25 VG = 20 $\mu m_{(c)}$, 16 VG = 15 $\mu m_{(c)}$, 10 VG = 10 $\mu m_{(c)}$, 6 VG = 7 $\mu m_{(c)}$, 3 VG = 5 $\mu m_{(c)}$ Interpor fleece (glass fiber)
25 API = 20 µm, 10 API = 10 µm Interpor fleece (glass fiber) according to API
10 P = 10 µm paper

4 **resistance of pressure difference for filter element:**
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:**
- = standard, VA = stainless steel

8 **process connection:**
FS = SAE-flange connection 3000 PSI
FA11 = ANSI-flange connection CLASS 150 PSI, sealing surface rough grind 1600-3600 µin
FA12 = ANSI-flange connection CLASS 150 PSI, sealing surface rough grind < 640 µin

9 **process connection size:**
B = 4“

10 **filter housing specification:**
- = standard
IS12 = internal parts of change-over armature stainless steel, see sheet-no. 41028

11 **internal valve:**
- = without, S1 = with by-pass valve Δp 51 PSI

12 **clogging indicator or clogging sensor:**
- = without, OP = visual, see sheet-no. 1628
AOR = visual, see sheet-no. 1606, OE = visual-electrical, see sheet-no. 1628
AOC = visual, see sheet-no. 1606, VS1 = electronical, see sheet-no. 1607
AE = visual-electrical, see sheet-no. 1609, VS2 = electronical, see sheet-no. 1608

13 **shut-off valve:**
- = without, AV = shut-off valve, see sheet-no. 1655

14 **specification pressure vessel:**
- = standard (PED 97/23/EC)
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217
IS21 = ASME VIII Div.1 with U-stamp, see sheet-no. 43415
IS23 = ASME VIII Div.1 without U-stamp, see sheet-no. 55218

15 **switch lever:**
F = toward IN/OUT, B = opposite IN/OUT

16 **air bleeding/drain:**
F = toward IN/OUT, B = opposite IN/OUT

1.2. Filter element: (ordering example)

01NR. 1000. 10VG. 10. B. P. -

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

weight: approx. 915 lbs.

Changes of measures and design are subject to alteration!

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2. Accessories:

- SAE-counter flanges, see sheet-no. 1652
- adapter for ANSI-connection B16.5 CLASS 150 PSI, see sheet-no. 1658
- measure- and bleeder-connections, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1659

3. Spare parts:

item	qty.	designation	dimension	article-no.	
1	2	filter element	01NR.1000 ...		
2	1	change over UKK	4“		
3	4	O-ring	90 x 4	306941 (NBR)	307031 (FPM)
4	2	O-ring	62 x 4	308045 (NBR)	311472 (FPM)
5	2	circlip	DIN472-75x2,5-ST	311471	
6	4	O-ring	200 x 4	334555 (NBR)	334554 (FPM)
7	2	O-ring	185 x 6	335381 (NBR)	335306 (FPM)
8	12	screw plug	NPT ½	307766	
9	2	screw plug	BSPP ¼	305003	
10	1	clogging indicator, visual	AOR or AOC	see sheet-no. 1606	
11	1	clogging indicator, visual-electrical	OP	see sheet-no. 1628	
12	1	clogging indicator, visual-electrical	OE	see sheet-no. 1628	
13	1	clogging indicator, visual-electrical	AE	see sheet-no. 1609	
14	1	clogging sensor, electronical	VS1	see sheet-no. 1607	
15	1	clogging sensor, electronical	VS2	see sheet-no. 1608	
16	1	O-ring	15 x 1,5	315357 (NBR)	315427 (FPM)
17	1	O-ring	22 x 2	304708 (NBR)	304721 (FPM)
18	2	O-ring	14 x 2	304342 (NBR)	304722 (FPM)
19	2	screw plug	BSPP ¼	305003	
20	1	pressure balance valve	3/8“	305000	

item 19 execution only with clogging indicator or clogging sensor

4. Description:

Pressure filters, change-over series DA 1015 are suitable for operating pressure up to 580 PSI.
Pressure peaks can be absorbed with a sufficient margin o safety.
Change-over ball valve which, 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.
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 the inside.
These filters can be installed as suction filters.
For cleaning (see special leaflet 21070-4 and 34448-4) the mesh element respectively to change the glass fiber element remove the cover and take out the element.
Filter finer than 40 µm should use throw-away elements made of paper or Interpor fleece (glass fiber). Filter elements as fine as 5 $\mu m_{(c)}$ are available; finer filter elements on request.
Internormen Product Line filter elements are known as elements with a high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.
Internormen Product Line filter are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.
The inspection according to TÜV, according to ASME VIII Div.1 and the major „Shipyard Classification Societies“ D.N.V.; B.V.; G.L.; L.R.S.; R.I.N.A.; A.B.S. and others are possible. If inspection is required please indicate in your order.

5. Technical data:

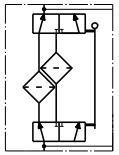
temperature ranges	
- calculation temperature (pressure vessel):	+14°F to +212°F
- medium temperature:	+14°F to +176°F
- ambient temperature:	- 40°F to +140°F
- survival temperature:	- 40°F to +212°F (short-time)
operating medium:	mineral oil, other media on request
max. operating pressure:	580 PSI
test pressure acc. to PED 97/23/EC:	1,43 x operating pressure = 827 PSI
test pressure acc. to ASME VIII Div. 1:	1,3 x operating pressure = 754 PSI
test pressure acc. to API 614, Chapter 1:	1,5 x operating pressure = 870 PSI
connection system:	SAE-flange connection 3000 PSI
housing material:	steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
bleeder connection :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection dirt side :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection clean side :	NPT ½“
volume tank :	2x 5.02 Gal.
operating pressure adapter flanges:	according to B16.5 CLASS 150 PSI

Classified under the Pressure Equipment Directive 97/23/EC for mineral oil (fluid group 2), Article 3, Para. 3.
Classified under ATEX Directive 94/9/EC according to specific application (see questionnaire sheet-no. 34279-4)

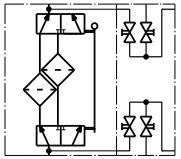
US 2181 C

6. Symbols:

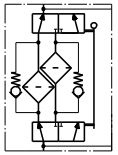
without indicator



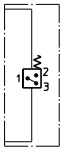
with shut-off valve



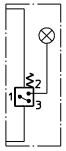
with by-pass valve



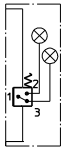
with electrical indicator AE 30 and AE 40



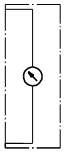
with visual-electrical indicator AE 50 and AE 62



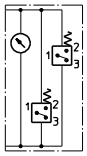
with visual-electrical indicator AE 70 and AE 80



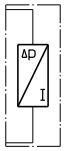
with visual indicator AOR/AOC/OP



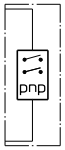
with visual-electrical indicator OE



with electronical sensor VS1



with electronical sensor VS2



7. Pressure drop flow curves:

Precise flow rates see ‘Interactive Product Specifier’, respectively Δp- curves; depending on filter fineness and viscosity.

8. Test methods:

Filter elements are tested according to the following ISO standards:

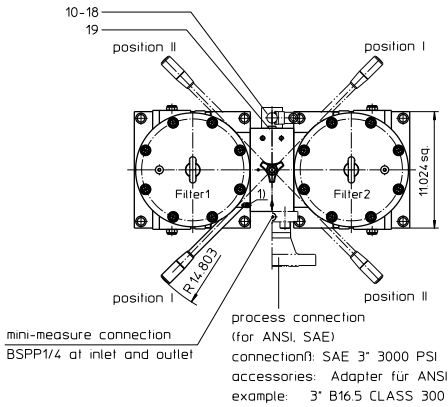
ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics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

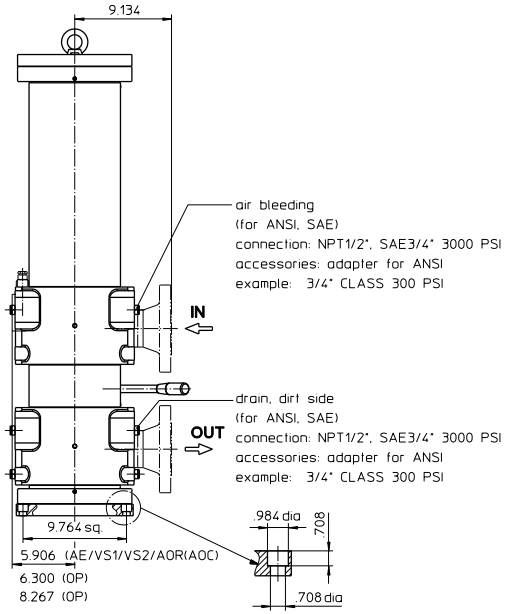
PRESSURE FILTER, change-over
Series DA 2204 NPS 3“ CLASS 300 PSI

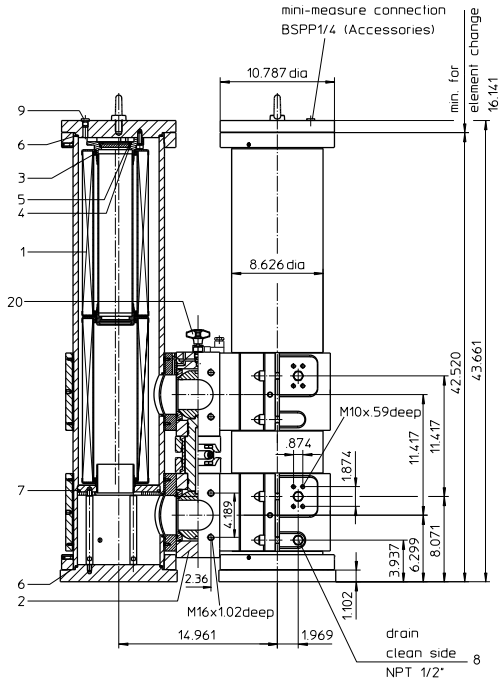
Sheet No. **2188 C**

[1] Connection for the potential equalisation at inlet and outlet, only for application in the explosive area.

Position I: Filter 1 in operation
Position II: Filter 2 in operation







1. Type index:

1.1. Complete filter: (ordering example)

DA. 2204. 10VG. 10. B. P. -. FS. A. -. -. AE. AV. IS21. F. F

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

1 **series:**
DA = pressure filter change-over, according to ASME-code

2 **nominal size:** 2204

3 **filter-material and filter- fineness:**
80 G = 80 µm, 40 G = 40 µm, 25 G = 25 µm, 10 G = 10 µm stainless steel wire mesh
25 VG = 20 $\mu m_{(c)}$, 16 VG = 15 $\mu m_{(c)}$, 10 VG = 10 $\mu m_{(c)}$, 6 VG = 7 $\mu m_{(c)}$, 3 VG = 5 $\mu m_{(c)}$ Interpor fleece (glass fiber)
25 API = 20 µm, 10 API = 10 µm Interpor fleece (glass fiber) according to API
10 P = 10 µm paper

4 **resistance of pressure difference for filter element:**
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:**
- = standard, VA = stainless steel

8 **process connection:**
FS = SAE-flange connection 3000 PSI
FA1 = ANSI-flange connection CLASS 300 PSI, sealing surface rough grind 1600-3600 µin
FA2 = ANSI-flange connection CLASS 300 PSI, sealing surface rough grind < 640 µin

9 **process connection size:**
A = 3“

10 **filter housing specification:**
- = standard
IS12 = internal parts of change-over armature stainless steel, see sheet-no. 41028

11 **internal valve:**
- = without; S1 = with by-pass valve Δp 51 PSI

12 **clogging indicator or clogging sensor:**
- = without, OP = visual, see sheet-no. 1628
AOR = visual, see sheet-no. 1606, OE = visual-electrical, see sheet-no. 1628
AOC = visual, see sheet-no. 1606, VS1 = electronical, see sheet-no. 1607
AE = visual-electrical, see sheet-no. 1609, VS2 = electronical, see sheet-no. 1608

13 **shut-off valve:**
- = without, AV = shut-off valve, see sheet-no. 1655

14 **specification pressure vessel:**
- = standard (PED 97/23/EC)
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217
IS21 = ASME VIII Div.1 with U-stamp, see sheet-no. 43415
IS23 = ASME VIII Div.1 without U-stamp, see sheet-no. 55218

15 **switch lever:**
F = toward IN/OUT, B = opposite IN/OUT

16 **air bleeding/drain:**
F = toward IN/OUT, B = opposite IN/OUT

1.2. Filter element: (ordering example)

01NR. 1000. 10VG. 10. B. P. -

1	2	3	4	5	6	7

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

2 **nominal size:** 1000, 1001

3 - 7 see type index complete filter

weight: approx. 1080 lbs.

Changes of measures and design are subject to alteration!

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2. Accessories:

- SAE-counter flanges, see sheet-no. 1652
- adapter for ANSI-connection B16.5 CLASS 300 PSI, see sheet-no. 1658
- measure- and bleeder-connections, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1659

3. Spare parts:

item	qty.	designation	dimension	article-no.	
1	4	filter element	01NR.1000 or 01NR.1001		
2	1	change over UKK	3“		
3	8	O-ring	90 x 4	306941 (NBR)	307031 (FPM)
4	2	O-ring	62 x 4	308045 (NBR)	311472 (FPM)
5	2	circlip	DIN472-75x2,5-ST	311471	
6	4	O-ring	200 x 4	334555 (NBR)	334554 (FPM)
7	2	O-ring	185 x 6	335381 (NBR)	335306 (FPM)
8	12	screw plug	NPT ½	307766	
9	2	screw plug	BSPP ¼	305003	
10	1	clogging indicator, visual	AOR or AOC	see sheet-no. 1606	
11	1	clogging indicator, visual-electrical	OP	see sheet-no. 1628	
12	1	clogging indicator, visual-electrical	OE	see sheet-no. 1628	
13	1	clogging indicator, visual-electrical	AE	see sheet-no. 1609	
14	1	clogging sensor, electronical	VS1	see sheet-no. 1607	
15	1	clogging sensor, electronical	VS2	see sheet-no. 1608	
16	1	O-ring	15 x 1,5	315357 (NBR)	315427 (FPM)
17	1	O-ring	22 x 2	304708 (NBR)	304721 (FPM)
18	2	O-ring	14 x 2	304342 (NBR)	304722 (FPM)
19	2	screw plug	BSPP ¼	305003	
20	1	pressure balance valve	3/8“	305000	

item 19 execution only with clogging indicator or clogging sensor

4. Description:

Pressure filters, change-over series DA 2204 are suitable for operating pressure up to 580 PSI.
Pressure peaks can be absorbed with a sufficient margin o safety.
Change-over ball valve which, 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.
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 the inside.
These filters can be installed as suction filters.
For cleaning (see special leaflet 21070-4 and 34448-4) the mesh element respectively to change the glass fiber element remove the cover and take out the element.
Filter finer than 40 µm should use throw-away elements made of paper or Interpor fleece (glass fiber). Filter elements as fine as 5 $\mu m_{(c)}$ are available; finer filter elements on request.
Internormen Product Line filter elements are known as elements with a high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.
Internormen Product Line filter are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.
The inspection according to TÜV, according to ASME VIII Div.1 and the major „Shipyard Classification Societies“ D.N.V.; B.V.; G.L.; L.R.S.; R.I.N.A.; A.B.S. and others are possible. If inspection is required please indicate in your order.

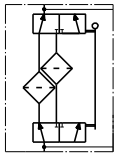
5. Technical data:

temperature ranges	
- calculation temperature (pressure vessel):	+14°F to +212°F
- medium temperature:	+14°F to +176°F
- ambient temperature:	- 40°F to +140°F
- survival temperature:	- 40°F to +212°F (short-time)
operating medium:	mineral oil, other media on request
max. operating pressure:	580 PSI
test pressure acc. to PED 97/23/EC:	1,43 x operating pressure = 827 PSI
test pressure acc. to ASME VIII Div. 1:	1,3 x operating pressure = 754 PSI
test pressure acc. to API 614, Chapter 1:	1,5 x operating pressure = 870 PSI
connection system:	SAE-flange connection 3000 PSI
housing material:	steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
bleeder connection :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection dirt side :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection clean side :	NPT ½“
volume tank :	2x 7.92 Gal.
operating pressure adapter flanges:	according to B16.5 CLASS 300 PSI

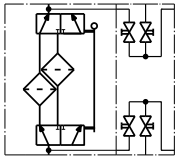
Classified under the Pressure Equipment Directive 97/23/EC for mineral oil (fluid group 2), Article 3, Para. 3.
Classified under ATEX Directive 94/9/EC according to specific application (see questionnaire sheet-no. 34279-4)

6. Symbols:

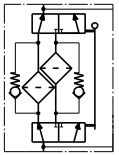
without indicator



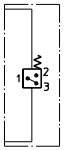
with shut-off valve



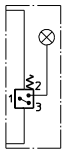
with by-pass valve



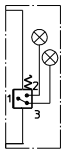
with electrical indicator AE 30 and AE 40



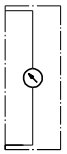
with visual-electrical indicator AE 50 and AE 62



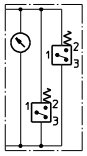
with visual-electrical indicator AE 70 and AE 80



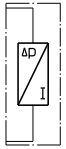
with visual indicator AOR/AOC/OP



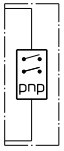
with visual-electrical indicator OE



with electronical sensor VS1



with electronical sensor VS2



7. Pressure drop flow curves:

Precise flow rates see ‘Interactive Product Specifier’, respectively Δp- curves; depending on filter fineness and viscosity.

8. Test methods:

Filter elements are tested according to the following ISO standards:

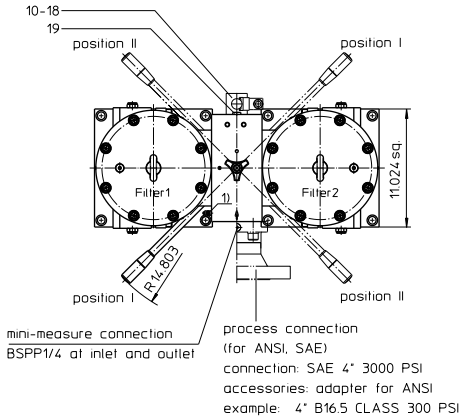
ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics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

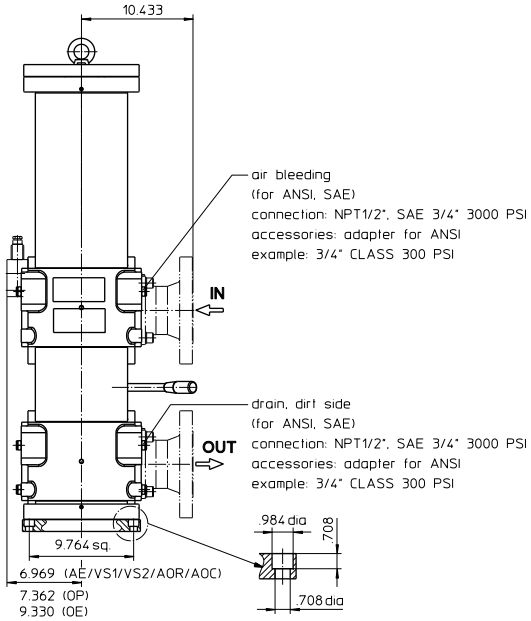
PRESSURE FILTER, change-over
Series DA 2205 NPS 4“ CLASS 300 PSI

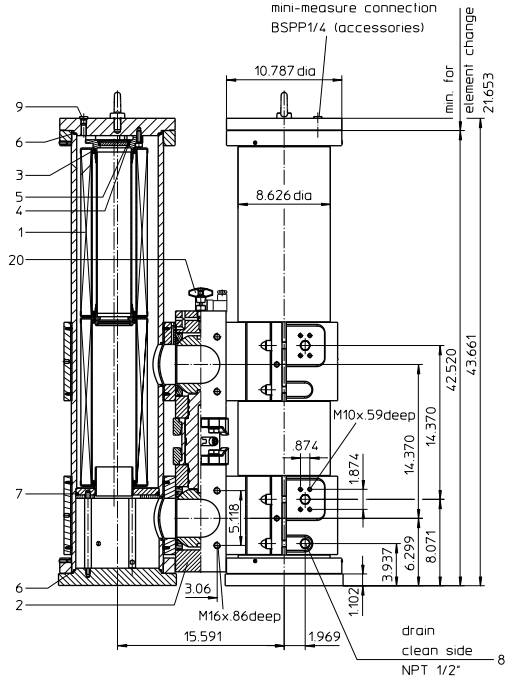
Sheet No. **2187 C**

[1)] Connection for the potential equalisation at inlet and outlet, only for application in the explosive area.

Position I: Filter 1 in operation
Position II: Filter 2 in operation







1. Type index:

1.1. Complete filter: (ordering example)

DA. 2205. 10VG. 10. B. P. -. FS. B. -. -. AE. AV. IS21. F. F

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

1 **series:**
DA = pressure filter change-over, according to ASME-code

2 **nominal size:** 2205

3 **filter-material and filter- fineness:**
80 G = 80 µm, 40 G = 40 µm, 25 G = 25 µm, 10 G = 10 µm stainless steel wire mesh
25 VG = 20 $\mu m_{(c)}$, 16 VG = 15 $\mu m_{(c)}$, 10 VG = 10 $\mu m_{(c)}$, 6 VG = 7 $\mu m_{(c)}$, 3 VG = 5 $\mu m_{(c)}$ Interpor fleece (glass fiber)
25 API = 20 µm, 10 API = 10 µm Interpor fleece (glass fiber) according to API
10 P = 10 µm paper

4 **resistance of pressure difference for filter element:**
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:**
- = standard, VA = stainless steel

8 **process connection:**
FS = SAE-flange connection 3000 PSI
FA1 = ANSI-flange connection CLASS 300 PSI, sealing surface rough grind 1600-3600 µin
FA2 = ANSI-flange connection CLASS 300 PSI, sealing surface rough grind < 640 µin

9 **process connection size:**
B = 4“

10 **filter housing specification:**
- = standard
IS12 = internal parts of change-over armature stainless steel, see sheet-no. 41028

11 **internal valve:**
- = without; S1 = with by-pass valve Δp 51 PSI

12 **clogging indicator or clogging sensor:**
- = without, OP = visual, see sheet-no. 1628
AOR = visual, see sheet-no. 1606, OE = visual-electrical, see sheet-no. 1628
AOC = visual, see sheet-no. 1606, VS1 = electronical, see sheet-no. 1607
AE = visual-electrical, see sheet-no. 1609, VS2 = electronical, see sheet-no. 1608

13 **shut-off valve:**
- = without, AV = shut-off valve, see sheet-no. 1655

14 **specification pressure vessel:**
- = standard (PED 97/23/EC)
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217
IS21 = ASME VIII Div.1 with U-stamp, see sheet-no. 43415
IS23 = ASME VIII Div.1 without U-stamp, see sheet-no. 55218

15 **switch lever:**
F = toward IN/OUT, B = opposite IN/OUT

16 **air bleeding/drain:**
F = toward IN/OUT, B = opposite IN/OUT

1.2. Filter element: (ordering example)

01NR. 1000. 10VG. 10. B. P. -

1	2	3	4	5	6	7

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

2 **nominal size:** 1000, 1001

3 - 7 see type index complete filter

weight: approx. 1102 lbs.

Changes of measures and design are subject to alteration!

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2. Accessories:

- SAE-counter flanges, see sheet-no. 1652
- adapter for ANSI-connection B16.5 CLASS 300 PSI, see sheet-no. 1658
- measure- and bleeder-connections, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1659

3. Spare parts:

item	qty.	designation	dimension	article-no.	
1	4	filter element	01NR.1000 or 01NR.1001		
2	1	change over UKK	4“		
3	8	O-ring	90 x 4	306941 (NBR)	307031 (FPM)
4	2	O-ring	62 x 4	311471	311472 (FPM)
5	2	circlip	DIN472-75x2,5-ST	318481	
6	4	O-ring	200 x 4	334555 (NBR)	334554 (FPM)
7	2	O-ring	185 x 6	335381 (NBR)	335306 (FPM)
8	12	screw plug	NPT ½	307766	
9	2	mini-measuring connection	MA.1.ST	305453	
10	1	clogging indicator, visual	AOR or AOC	see sheet-no. 1606	
11	1	clogging indicator, visual-electrical	OP	see sheet-no. 1628	
12	1	clogging indicator, visual-electrical	OE	see sheet-no. 1628	
13	1	clogging indicator, visual-electrical	AE	see sheet-no. 1609	
14	1	clogging sensor, electronical	VS1	see sheet-no. 1607	
15	1	clogging sensor, electronical	VS2	see sheet-no. 1608	
16	1	O-ring	15 x 1,5	315357 (NBR)	315427 (FPM)
17	1	O-ring	22 x 2	304708 (NBR)	304721 (FPM)
18	2	O-ring	14 x 2	304342 (NBR)	304722 (FPM)
19	2	screw plug	BSPP ¼	305003	
20	1	pressure balance valve	3/8“	305000	

item 19 execution only with clogging indicator or clogging sensor

4. Description:

Pressure filters, change-over series DA 2205 are suitable for operating pressure up to 580 PSI.
Pressure peaks can be absorbed with a sufficient margin o safety.
Change-over ball valve which, 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.
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 the inside.
These filters can be installed as suction filters.
For cleaning (see special leaflet 21070-4 and 34448-4) the mesh element respectively to change the glass fiber element remove the cover and take out the element.
Filter finer than 40 µm should use throw-away elements made of paper or Interpor fleece (glass fiber). Filter elements as fine as 5 $\mu m_{(c)}$ are available; finer filter elements on request.
Internormen Product Line filter elements are known as elements with a high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.
Internormen Product Line filter are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.
The inspection according to TÜV, according to ASME VIII Div.1 and the major „Shipyard Classification Societies“ D.N.V.; B.V.; G.L.; L.R.S.; R.I.N.A.; A.B.S. and others are possible. If inspection is required please indicate in your order.

5. Technical data:

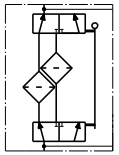
temperature ranges	
- calculation temperature (pressure vessel):	+14°F to +212°F
- medium temperature:	+14°F to +176°F
- ambient temperature:	- 40°F to +140°F
- survival temperature:	- 40°F to +212°F (short-time)
operating medium:	mineral oil, other media on request
max. operating pressure:	580 PSI
test pressure acc. to PED 97/23/EC:	1,43 x operating pressure = 827 PSI
test pressure acc. to ASME VIII Div. 1:	1,3 x operating pressure = 754 PSI
test pressure acc. to API 614, Chapter 1:	1,5 x operating pressure = 870 PSI
connection system:	SAE-flange connection 3000 PSI
housing material:	steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
bleeder connection :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection dirt side :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection clean side :	NPT ½“
volume tank :	2x 7.92 Gal.
operating pressure adapter flanges:	according to B16.5 CLASS 300 PSI

Classified under the Pressure Equipment Directive 97/23/EC for mineral oil (fluid group 2), Article 3, Para. 3.
Classified under ATEX Directive 94/9/EC according to specific application (see questionnaire sheet-no. 34279-4)

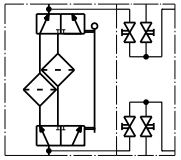
US 2187 C

6. Symbols:

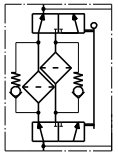
without indicator



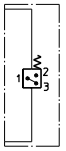
with shut-off valve



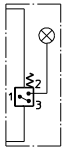
with by-pass valve



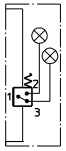
with electrical indicator AE 30 and AE 40



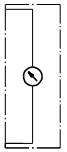
with visual-electrical indicator AE 50 and AE 62



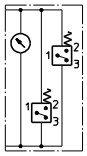
with visual-electrical indicator AE 70 and AE 80



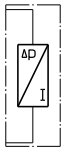
with visual indicator AOR/AOC/OP



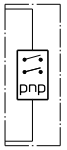
with visual-electrical indicator OE



with electronical sensor VS1



with electronical sensor VS2



7. Pressure drop flow curves:

Precise flow rates see ‘Internormen Product Specifier’, respectively Δp- curves; depending on filter fineness and viscosity.

8. Test methods:

Filter elements are tested according to the following ISO standards:

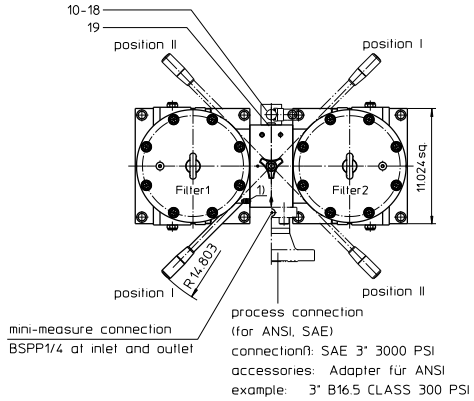
ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics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

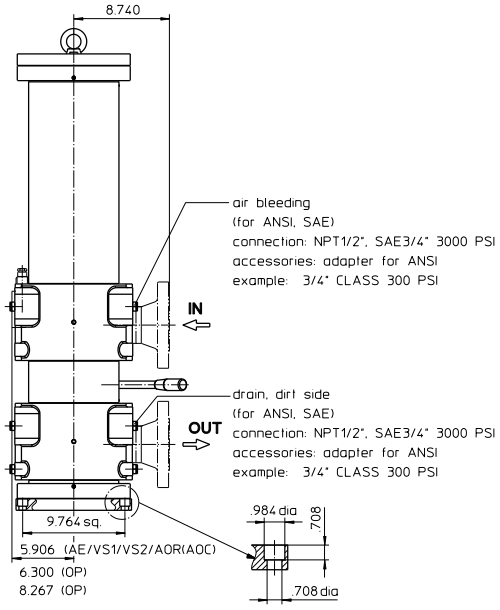
-PRESSURE FILTER, change-over
Series DA 2214 NPS 3“ CLASS 150 PSI

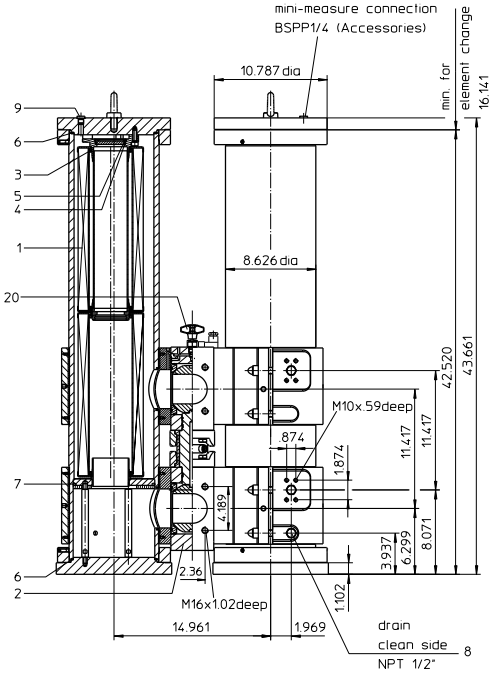
Sheet No. **2183 C**

[1] Connection for the potential equalisation at inlet and outlet, only for application in the explosive area.

Position I: Filter 1 in operation
Position II: Filter 2 in operation







1. Type index:

1.1. Complete filter: (ordering example)

DA. 2214. 10VG. 10. B. P. -. FS. A. -. -. AE. AV. IS21. F. F

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

1 **series:**
DA = pressure filter change-over, according to ASME-code

2 **nominal size:** 2214

3 **filter-material and filter- fineness:**
80 G = 80 µm, 40 G = 40 µm, 25 G = 25 µm, 10 G = 10 µm stainless steel wire mesh
25 VG = 20 $\mu m_{(c)}$, 16 VG = 15 $\mu m_{(c)}$, 10 VG = 10 $\mu m_{(c)}$, 6 VG = 7 $\mu m_{(c)}$, 3 VG = 5 $\mu m_{(c)}$ Interpor fleece (glass fiber)
25 API = 20 µm, 10 API = 10 µm Interpor fleece (glass fiber) according to API
10 P = 10 µm paper

4 **resistance of pressure difference for filter element:**
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:**
- = standard, VA = stainless steel

8 **process connection:**
FS = SAE-flange connection 3000 PSI
FA11 = ANSI-flange connection CLASS 150 PSI, sealing surface rough grind 1600-3600 µin
FA12 = ANSI-flange connection CLASS 150 PSI, sealing surface rough grind < 640 µin

9 **process connection size:**
A = 3“

10 **filter housing specification:**
- = standard
IS12 = internal parts of change-over armature stainless steel, see sheet-no. 41028

11 **internal valve:**
- = without; S1 = with by-pass valve Δp 51 PSI

12 **clogging indicator or clogging sensor:**
- = without, OP = visual, see sheet-no. 1628
AOR = visual, see sheet-no. 1606, OE = visual-electrical, see sheet-no. 1628
AOC = visual, see sheet-no. 1606, VS1 = electronical, see sheet-no. 1607
AE = visual-electrical, see sheet-no. 1609, VS2 = electronical, see sheet-no. 1608

13 **shut-off valve:**
- = without, AV = shut-off valve, see sheet-no. 1655

14 **specification pressure vessel:**
- = standard (PED 97/23/EC)
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217
IS21 = ASME VIII Div.1 with U-stamp, see sheet-no. 43415
IS23 = ASME VIII Div.1 without U-stamp, see sheet-no. 55218

15 **switch lever:**
F = toward IN/OUT, B = opposite IN/OUT

16 **air bleeding/drain:**
F = toward IN/OUT, B = opposite IN/OUT

1.2. Filter element: (ordering example)

01NR. 1000. 10VG. 10. B. P. -

1	2	3	4	5	6	7

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

2 **nominal size:** 1000, 1001

3 - 7 see type index complete filter

weight: approx. 1080 lbs.

Changes of measures and design are subject to alteration!

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2. Accessories:

- SAE-counter flanges, see sheet-no. 1652
- adapter for ANSI-connection B16.5 CLASS 150 PSI, see sheet-no. 1658
- measure- and bleeder-connections, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1659

3. Spare parts:

item	qty.	designation	dimension	article-no.	
1	4	filter element	01NR.1000 or 01NR.1001		
2	1	change over UKK	3“		
3	8	O-ring	90 x 4	306941 (NBR)	307031 (FPM)
4	2	O-ring	62 x 4	308045 (NBR)	311472 (FPM)
5	2	circlip	DIN472-75x2,5-ST	311471	
6	4	O-ring	200 x 4	334555 (NBR)	334554 (FPM)
7	2	O-ring	185 x 6	335381 (NBR)	335306 (FPM)
8	12	screw plug	NPT ½	307766	
9	2	screw plug	BSPP ¼	305003	
10	1	clogging indicator, visual	AOR or AOC	see sheet-no. 1606	
11	1	clogging indicator, visual-electrical	OP	see sheet-no. 1628	
12	1	clogging indicator, visual-electrical	OE	see sheet-no. 1628	
13	1	clogging indicator, visual-electrical	AE	see sheet-no. 1609	
14	1	clogging sensor, electronical	VS1	see sheet-no. 1607	
15	1	clogging sensor, electronical	VS2	see sheet-no. 1608	
16	1	O-ring	15 x 1,5	315357 (NBR)	315427 (FPM)
17	1	O-ring	22 x 2	304708 (NBR)	304721 (FPM)
18	2	O-ring	14 x 2	304342 (NBR)	304722 (FPM)
19	2	screw plug	BSPP ¼	305003	
20	1	pressure balance valve	3/8“	305000	

item 19 execution only with clogging indicator or clogging sensor

4. Description:

Pressure filters, change-over series DA 2214 are suitable for operating pressure up to 580 PSI.
Pressure peaks can be absorbed with a sufficient margin o safety.
Change-over ball valve which, 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.
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 the inside.
These filters can be installed as suction filters.
For cleaning (see special leaflet 21070-4 and 34448-4) the mesh element respectively to change the glass fiber element remove the cover and take out the element.
Filter finer than 40 µm should use throw-away elements made of paper or Interpor fleece (glass fiber). Filter elements as fine as 5 $\mu m_{(c)}$ are available; finer filter elements on request.
Internormen Product Line filter elements are known as elements with a high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.
Internormen Product Line filter are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.
The inspection according to TÜV, according to ASME VIII Div.1 and the major „Shipyard Classification Societies“ D.N.V.; B.V.; G.L.; L.R.S.; R.I.N.A.; A.B.S. and others are possible. If inspection is required please indicate in your order.

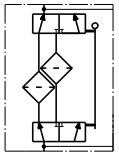
5. Technical data:

temperature ranges	
- calculation temperature (pressure vessel):	+14°F to +212°F
- medium temperature:	+14°F to +176°F
- ambient temperature:	- 40°F to +140°F
- survival temperature:	- 40°F to +212°F (short-time)
operating medium:	mineral oil, other media on request
max. operating pressure:	580 PSI
test pressure acc. to PED 97/23/EC:	1,43 x operating pressure = 827 PSI
test pressure acc. to ASME VIII Div. 1:	1,3 x operating pressure = 754 PSI
test pressure acc. to API 614, Chapter 1:	1,5 x operating pressure = 870 PSI
connection system:	SAE-flange connection 3000 PSI
housing material:	steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
bleeder connection :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection dirt side :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection clean side :	NPT ½“
volume tank :	2x 7.92 Gal.
operating pressure adapter flanges:	according to B16.5 CLASS 150 PSI

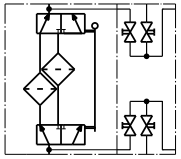
Classified under the Pressure Equipment Directive 97/23/EC for mineral oil (fluid group 2), Article 3, Para. 3.
Classified under ATEX Directive 94/9/EC according to specific application (see questionnaire sheet-no. 34279-4)

6. Symbols:

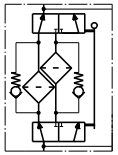
without indicator



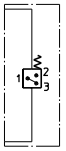
with shut-off valve



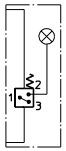
with by-pass valve



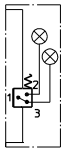
with electrical indicator AE 30 and AE 40



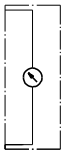
with visual-electrical indicator AE 50 and AE 62



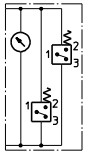
with visual-electrical indicator AE 70 and AE 80



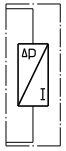
with visual indicator AOR/AOC/OP



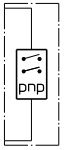
with visual-electrical indicator OE



with electronical sensor VS1



with electronical sensor VS2



7. Pressure drop flow curves:

Precise flow rates see ‘Interactive Product Specifier’, respectively Δp- curves; depending on filter fineness and viscosity.

8. Test methods:

Filter elements are tested according to the following ISO standards:

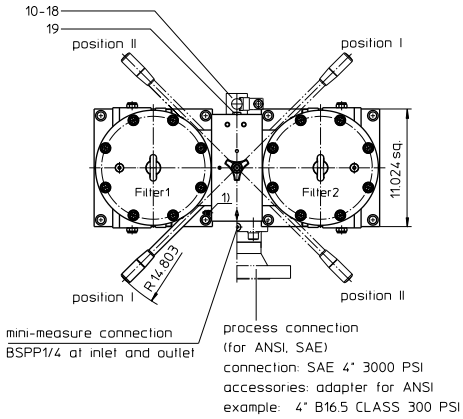
ISO 2941	Verification of collapse/burst resistance
ISO 2942	Verification of fabrication integrity
ISO 2943	Verification of material compatibility with fluids
ISO 3723	Method for end load test
ISO 3724	Verification of flow fatigue characteristics
ISO 3968	Evaluation of pressure drop versus flow characteristics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

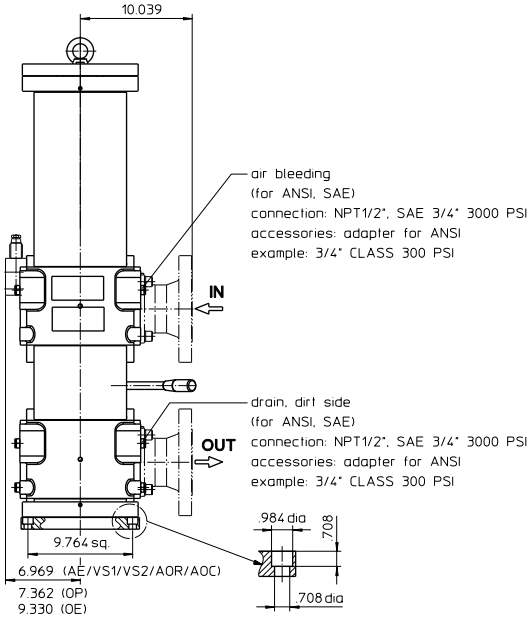
PRESSURE FILTER, change-over
Series DA 2215 NPS 4“ CLASS 150 PSI

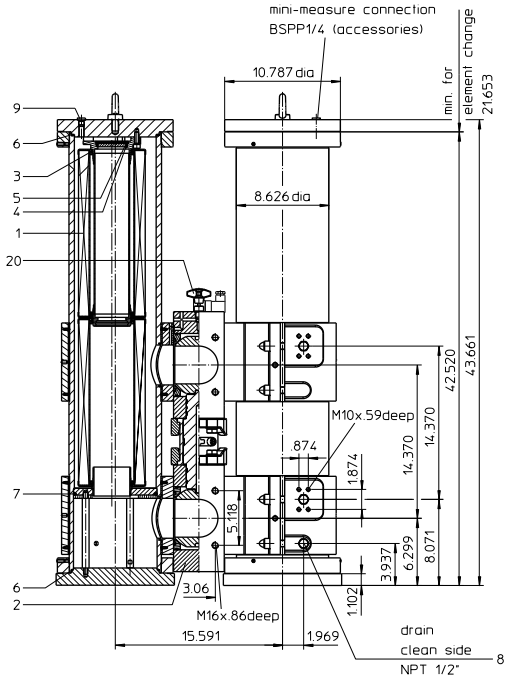
Sheet No.
2182 C

[1] Connection for the potential equalisation at inlet and outlet, only for application in the explosive area.

Position I: Filter 1 in operation
Position II: Filter 2 in operation







1. Type index:

1.1. Complete filter: (ordering example)

DA. 2215. 10VG. 10. B. P. -. FS. B. -. -. AE. AV. IS21. F. F

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

1 **series:**
DA = pressure filter change-over, according to ASME-code

2 **nominal size:** 2215

3 **filter-material and filter- fineness:**
80 G = 80 µm, 40 G = 40 µm, 25 G = 25 µm, 10 G = 10 µm stainless steel wire mesh
25 VG = 20 $\mu m_{(c)}$, 16 VG = 15 $\mu m_{(c)}$, 10 VG = 10 $\mu m_{(c)}$, 6 VG = 7 $\mu m_{(c)}$, 3 VG = 5 $\mu m_{(c)}$ Interpor fleece (glass fiber)
25 API = 20 µm, 10 API = 10 µm Interpor fleece (glass fiber) according to API
10 P = 10 µm paper

4 **resistance of pressure difference for filter element:**
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:**
- = standard, VA = stainless steel

8 **process connection:**
FS = SAE-flange connection 3000 PSI
FA11 = ANSI-flange connection CLASS 150 PSI, sealing surface rough grind 1600-3600 µin
FA12 = ANSI-flange connection CLASS 150 PSI, sealing surface rough grind < 640 µin

9 **process connection size:**
B = 4“

10 **filter housing specification:**
- = standard
IS12 = internal parts of change-over armature stainless steel, see sheet-no. 41028

11 **internal valve:**
- = without, S1 = with by-pass valve Δp 51 PSI

12 **clogging indicator or clogging sensor:**
- = without, OP = visual, see sheet-no. 1628
AOR = visual, see sheet-no. 1606, OE = visual-electrical, see sheet-no. 1628
AOC = visual, see sheet-no. 1606, VS1 = electronical, see sheet-no. 1607
AE = visual-electrical, see sheet-no. 1609, VS2 = electronical, see sheet-no. 1608

13 **shut-off valve:**
- = without, AV = shut-off valve, see sheet-no. 1655

14 **specification pressure vessel:**
- = standard (PED 97/23/EC)
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217
IS21 = ASME VIII Div.1 with U-stamp, see sheet-no. 43415
IS23 = ASME VIII Div.1 without U-stamp, see sheet-no. 55218

15 **switch lever:**
F = toward IN/OUT, B = opposite IN/OUT

16 **air bleeding/drain:**
F = toward IN/OUT, B = opposite IN/OUT

1.2. Filter element: (ordering example)

01NR. 1000. 10VG. 10. B. P. -

1	2	3	4	5	6	7

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

2 **nominal size:** 1000, 1001

3 - 7 see type index complete filter

weight: approx. 1102 lbs.

Changes of measures and design are subject to alteration!

EDV 08/12

2. Accessories:

- SAE-counter flanges, see sheet-no. 1652
- adapter for ANSI-connection B16.5 CLASS 150 PSI, see sheet-no. 1658
- measure- and bleeder-connections, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1659

3. Spare parts:

item	qty.	designation	dimension	article-no.	
1	4	filter element	01NR.1000 ...		
2	1	change over UKK	4“		
3	8	O-ring	90 x 4	306941 (NBR)	307031 (FPM)
4	2	O-ring	62 x 4	308045 (NBR)	311472 (FPM)
5	2	circlip	DIN472-75x2,5-ST	311471	
6	4	O-ring	200 x 4	334555 (NBR)	334554 (FPM)
7	2	O-ring	185 x 6	335381 (NBR)	335306 (FPM)
8	12	screw plug	NPT ½	307766	
9	2	screw plug	BSPP ¼	305003	
10	1	clogging indicator, visual	AOR or AOC	see sheet-no. 1606	
11	1	clogging indicator, visual-electrical	OP	see sheet-no. 1628	
12	1	clogging indicator, visual-electrical	OE	see sheet-no. 1628	
13	1	clogging indicator, visual-electrical	AE	see sheet-no. 1609	
14	1	clogging sensor, electronical	VS1	see sheet-no. 1607	
15	1	clogging sensor, electronical	VS2	see sheet-no. 1608	
16	1	O-ring	15 x 1,5	315357 (NBR)	315427 (FPM)
17	1	O-ring	22 x 2	304708 (NBR)	304721 (FPM)
18	2	O-ring	14 x 2	304342 (NBR)	304722 (FPM)
19	2	screw plug	BSPP ¼	305003	
20	1	pressure balance valve	3/8“	305000	

item 19 execution only with clogging indicator or clogging sensor

4. Description:

Pressure filters, change-over series DA 2215 are suitable for operating pressure up to 580 PSI.
Pressure peaks can be absorbed with a sufficient margin o safety.
Change-over ball valve which, 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.
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 the inside.
These filters can be installed as suction filters.
For cleaning (see special leaflet 21070-4 and 34448-4) the mesh element respectively to change the glass fiber element remove the cover and take out the element.
Filter finer than 40 µm should use throw-away elements made of paper or Interpor fleece (glass fiber). Filter elements as fine as 5 $\mu m_{(c)}$ are available; finer filter elements on request.
Internormen Product Line filter elements are known as elements with a high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.
Internormen Product Line filter are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.
The inspection according to TÜV, according to ASME VIII Div.1 and the major „Shipyard Classification Societies“ D.N.V.; B.V.; G.L.; L.R.S.; R.I.N.A.; A.B.S. and others are possible. If inspection is required please indicate in your order.

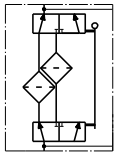
5. Technical data:

temperature ranges	
- calculation temperature (pressure vessel):	+14°F to +212°F
- medium temperature:	+14°F to +176°F
- ambient temperature:	- 40°F to +140°F
- survival temperature:	- 40°F to +212°F (short-time)
operating medium:	mineral oil, other media on request
max. operating pressure:	580 PSI
test pressure acc. to PED 97/23/EC:	1,43 x operating pressure = 827 PSI
test pressure acc. to ASME VIII Div. 1:	1,3 x operating pressure = 754 PSI
test pressure acc. to API 614, Chapter 1:	1,5 x operating pressure = 870 PSI
connection system:	SAE-flange connection 3000 PSI
housing material:	steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
bleeder connection :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection dirt side :	NPT ½“ and SAE ¾“ 3000 PSI
drain connection clean side :	NPT ½“
volume tank :	2x 7.92 Gal.
operating pressure adapter flanges:	according to B16.5 CLASS 150 PSI

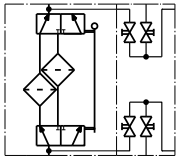
Classified under the Pressure Equipment Directive 97/23/EC for mineral oil (fluid group 2), Article 3, Para. 3.
Classified under ATEX Directive 94/9/EC according to specific application (see questionnaire sheet-no. 34279-4)

6. Symbols:

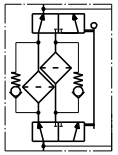
without indicator



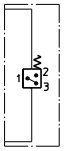
with shut-off valve



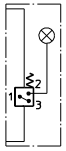
with by-pass valve



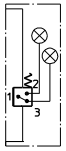
with electrical indicator AE 30 and AE 40



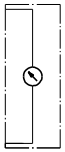
with visual-electrical indicator AE 50 and AE 62



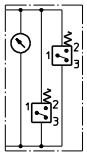
with visual-electrical indicator AE 70 and AE 80



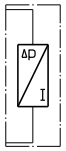
with visual indicator AOR/AOC/OP



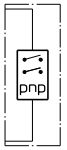
with visual-electrical indicator OE



with electronical sensor VS1



with electronical sensor VS2



7. Pressure drop flow curves:

Precise flow rates see ‘Interactive Product Specifier’, respectively Δp- curves; depending on filter fineness and viscosity.

8. 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

This manual contains operation and maintenance information for series DA/EDA 103, 253, 403, 633, 1003 and related specifications. For customer specific models, there are additional instructions on those data sheets. The pressure filters listed above are intended for the filtering of liquid media.

1. Safety instructions

WARNING: Avoid injury. Read and understand this manual before operating the filter. FAILURE TO FOLLOW THIS WARNING COULD LEAD TO DEATH, SEVERE INJURY, OR PROPERTY DAMAGE. Eaton does not assume liability for any damage that occurs to due misuse of equipment.

WARNING: This filter is a pressure vessel designed to operate under specific pressure, temperature, and other engineering parameters. Follow the operating conditions specified on each data sheet. Operating outside of these parameters can cause damage to important pressure holding parts and sealing. Pay special attention to excess pressure, temperature range, and operating fluid. The compatibility of filter components with the operating fluid should always be considered before operation. **USE OF INCOMPATIBLE MATERIALS COULD LEAD TO PRODUCT FAILURE, LEAKAGE, DEATH, SEVERE INJURY OR PROPERTY DAMAGE.**

WARNING: Always wear safety goggles and gloves when working on the filter. Under working conditions, the filter housing is pressurized. Do not try to loosen or remove any part of the filter or the filter housing during operation. The operating fluid could escape at high pressure and high temperatures. This does not apply to the offline vessel that is not under operation. **FAILURE TO FOLLOW THIS WARNING COULD LEAD TO DEATH, SEVERE INJURY, OR PROPERTY DAMAGE.**

WARNING: Leaking operating fluid can cause injury and burns. Equipment should be shut down and isolated from energy sources and other equipment before any inspection or servicing to prevent risk of shock or process fluid leakage. Do not open the filter housing until you make sure it is not pressurized. The filter surface may be hot and cause burns. When changing the filter, check the operating temperature before touching any surface during operation. If you come into contact with the operating fluid, please follow the safety instructions provided by the fluid manufacturer. **FAILURE TO FOLLOW THIS WARNING COULD LEAD TO DEATH, SEVERE INJURY, OR PROPERTY DAMAGE.**

To ensure proper fit and function, only use Eaton spare parts.

2. Installation

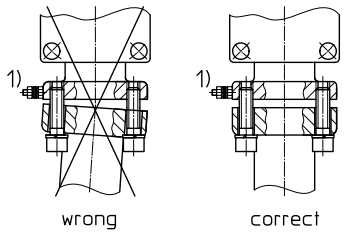
The filter is supplied and delivered ready to be installed. The mounting position of the filter is vertical. The filter has to be fitted with fastening screws in size and amount according to the corresponding fastening bore holes of the filter housings. The filter should be mounted to minimize tensile forces on the filter housing and change-over valve. The piping should be connected with flanges.

During installation ensure that:

- No dirt and no impurities of foreign fluids penetrate the filter.
- The connections for input and output are correctly attached to the pipe system.
- The pipe system is connected to the filter to minimize stress on the filter.
- Ensure the filter element is accessible for service and change out.

Clogging indicators should be installed according to the instructions on the unit specific data sheet and the instructions in this manual.

Fitting the counterflanges



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

When fastening the counter flanges, use the torque values in the table below. Ensure faces are parallel before fastening connections.

Type	DA/EDA 103	DA/EDA 253, 403	DA/EDA 633, 1003
Connection	1“ (DN25)	2“ (DN50)	3“ (DN80)
Torque Nm [lbf.-ft.]	10 ±2 [7 ±.08]	28 ±6 [21 ±.24]	71 ±15 [52 ±.56]

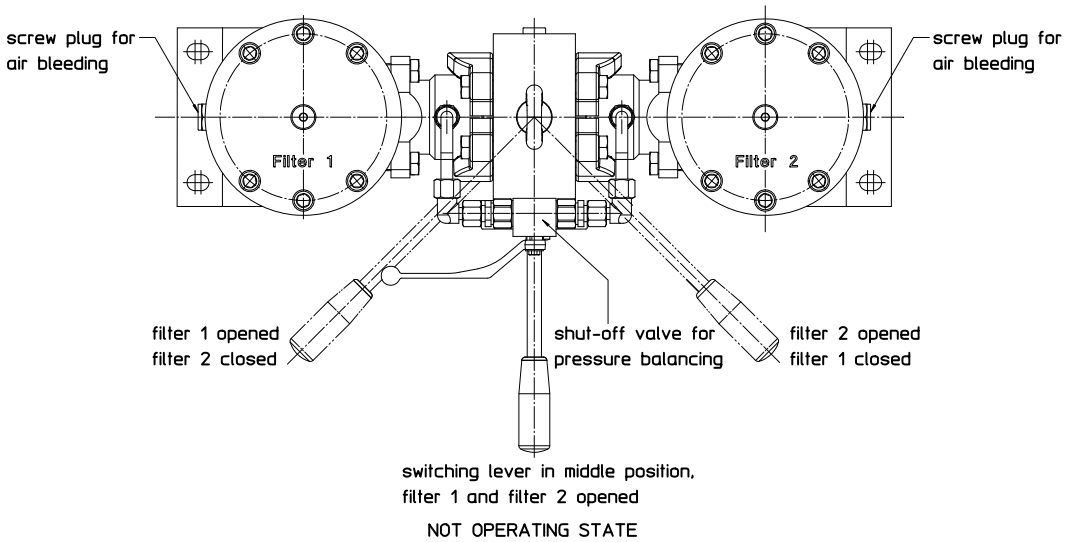
3. Commissioning

Ensure the filter installation is complete and the system is clean before commissioning. Follow these instructions to purge the filter before commissioning the system:

1. Before commissioning, ensure that the filter element and seals are clean and properly installed.
2. Place the switchgear lever in the middle position.
3. Fill both sides of the filter housing at the regular operating fluid flow.
4. Open the air bleed screws or connections. Connect tubes that lead to a drain pan (air-bleed connection information can be found on data sheet 1651).
5. Allow the operating fluid to drain (reduce volume flow from 10 to 50 l/min or 2.6 to 13.2 GPM until it is bubble-free and flows out of both air bleeding tubes.)
6. Shut off application flow.
7. Remove the air bleeding tubes and close the air-bleed bore holes or air-bleed connections.
8. Switch to the filter housing you would like to operate first by using the switch gear lever.
9. After finishing step 7, tighten the locking screws.

After following these instructions for commissioning, the serviced filter vessel is ready for operation.

DA/EDA 103-1003 (illustration can slightly differ for different sizes)



WARNING: Equipment should be shut down and isolated from energy sources and other equipment before any inspection or servicing to prevent risk of shock or process fluid leakage. Utilize proper application of PPE for the process conditions. **FAILURE TO FOLLOW THIS WARNING COULD LEAD TO DEATH, SEVERE INJURY, OR PROPERTY DAMAGE.**

4. Change of elements

Change the filter elements when the unit pressure differential on the clogging indicator reaches the maximum pressure differential specified for each unit on the data sheet. Do not allow the pressure differential to exceed 6 bar (87 psi) before replacing the elements. Follow these instructions to change the filter element without interrupting filter operation:

1. Open the pressure balance valve.
2. Move the switchgear lever from the operating vessel to the vessel you need to service. Switch gear instructions are located on a label on the filter vessel.
3. Close the pressure balance valve.
4. Open the air-bleed and the drain plug and connect with suitable hoses to a oil catch pan to drain the vessel (drain - connections acc. Document 1651).
5. Keep the air bleed and drain plug open until no more operating fluid drains out.
6. Loosen the screws of the lid on the vessel that needs servicing and remove the filter lid.
7. Remove the filter elements.
8. Clean the filter housing. Ensure that no dirt or cleaning fluid get into the clean side (center tube) of the filter element
9. Insert the clean filter element into the filter housing.
10. Place the filter lid back onto the filter housing and tighten the screw plugs. The screws need to be tightened in an X pattern. Recommended tightening torques listed in the table below:

Type	DA/EDA 103	DA/EDA 253, 403	DA/EDA 633, 1003
Screw	M10	M12	M16
Torque Nm [lbf.-ft.]	45..50 [33..37]	65..70 [48..52]	125..130 [92..96]

11. Close the drain plugs.
12. Open the pressure balance valve until operating fluid flows out of the air bleed connection without bubbles.
13. Close the pressure balance valve and air bleed connection.
14. Retighten the screws on the lid after the vessel was pressurized for the first time.

After following these instructions to change the filter element, the serviced filter vessel is ready for operation.

CAUTION: Ensure the absolute cleanliness of the filter element is maintained during the entire servicing period. No dirt or impurities should penetrate the filter. The new elements should remain packaged until they are installed to prevent contamination. While removing an element from the a recently out of operation filter housing, make sure the element is fully discharged from any voltage caused by static charging during operation with certain fluids

Do not damage element seals during servicing. All sealing have to be checked on a regular basis to avoid leakage and potential development of an explosive atmosphere. Any damaged seals will need to be replaced. Any damaged seals have to be replaced. **FAILURE TO FOLLOW THIS WARNING COULD LEAD TO DEATH, SEVERE INJURY, OR PROPERTY DAMAGE.**

5. Filter element cleaning

Microglass (VG) or paper (P) filter media CANNOT be cleaned and need to be replaced when it reaches the dirt holding capacity. Wire mesh (G) filter media can be cleaned and used again. Follow the cleaning specification for Eaton filter elements, sheet no. 21070-4 and 39448-4 to clean wire mesh filter media.

6. Pressure difference measuring

If the filter assembly includes a clogging indicator, the indicator will measure the pressure difference across the filter element. The method of pressure reading varies depending on the type of indicator installed. It can be a visual, visual-electric or electronic reading. Additionally, the G ¼" (BSPP ¼") connections from the switchgear can be used for external pressure gauges. Measuring connections are recommended on data sheet 1650.

7. Special applications

This filter can be used in the special applications listed below. Please follow the instructions if you are operating the filter in these environments.

Operation in explosive areas

WARNING: There are additional requirements for filters that are installed in explosive areas. Please follow the instructions on Eaton Document No. 41269. **FAILURE TO FOLLOW THIS WARNING COULD LEAD TO DEATH, SEVERE INJURY, OR PROPERTY DAMAGE.**

Flushing operation for machines with a higher flow rate

If flushing the filter is required before operating the equipment, follow Eaton Document No. 51354.

8. Service

For product technical support and service, please contact the local Eaton support team. All locations and contact information are listed below.

Order spare parts and wearing parts according to the spare parts list on the filter data sheet.

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

Europe/Africa/Middle East
Auf der Heide 2
53947 Nettersheim, Germany
Tel: +49 2486 809-0

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

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

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

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

Brazil
Rua Clark, 2061 - Macuco
13279-400 - Valinhos, Brazil
Tel: +55 11 3616-8400

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

Powering Business Worldwide

This manual is effective for all filters of the type DA/EDA 101, 251, 401, 631, 1001, 1014, 1015, 2214, 2215 and related specifications. It contains certain requirements and instructions which ensure unobjectionable operation of the filter. It can be completed with specific additional instructions by the operator himself if necessary.

1. Safety instructions

- Prior to operating the filter, manual and maintenance instructions have to be read carefully.
- Follow the instructions of this manual under any circumstances!
- The manufacturer does not assume liability for any damage, which occurs due to disregarding these instructions.
- If operations are carried out differently, the safety of the pressurized device can not be assured!
- Operating conditions given in the data sheet, especially excess pressure, temperature range and operating fluid, have to be followed unconditionally. Variation of these parameters can cause damage to important pressure holding parts and sealing. Also take in consideration the compatibility of filter components with the operating fluid.
- Under working conditions the filter housing is pressurized. Do not try to loosen or remove any part of the filter or the filter housing during operation. The operating fluid could escape at high pressure and high temperatures.
  This does not apply for parts of the decompressed or the turned off side of the filter (see „Maintenance“).
- Leaking operating fluid always bears the danger of injuries and burns!
- Do not open the filter housing until you made sure it is not pressurized any more!
- Touching parts of the filter may cause burning, depending on the operating temperature.
- When exchanging the filter keep in mind that it might have operating temperature. Danger of burning!
- Always wear safety goggles and gloves when working on the filter!
- If you come into contact with the operating fluid please follow the instructions of the fluid manufacturer!!
- Only use original spare parts.

For filters being used in hazardous locations the INTERNORMEN documentation N° 41269 "Supplementation of the Operating Manual for the use of filters in potential explosive areas.

2. Installation

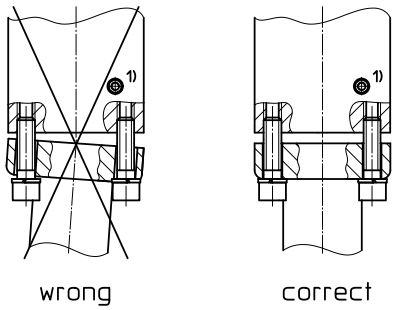
Note safety instructions!

When removing a new filter from its box it is ready for installation. It is placed on a level area and screwed to it.
Afterwards remove protective caps from connections and connect those to the present pipe work.

Appropriate pipe work (pipes, hoses) ensures that drain and air-bleed valves are connected to proper containers. For these purposes original INTERNORMEN drain and air-bleed valves can be used.

When installing the filter please make sure, that:
- sufficient fixation of the filter is assured
- the clogging indicator is accessible and can be checked easily
- the connections for draining and air-bleeding can be accessed easily
- there is enough room above the filter to remove and replace elements
- no dirt, particles, other contamination or fluids enter the filter
- both inlet and outlet of the filter are connected to the pipe work correctly
- counterflanges or screw joints of the pipe system and the filter have to be angled precisely and connected that same way (if counterflanges or pipe joints are canted or under tension switching filters can be aggravated and it might harm pressure tightness)

Fitting the counterflanges



1) connection for the potential equalisation, only for application in the explosive area

- the following torques have to be applied when fastening the counterflanges

Type	DA/EDA 101	DA/EDA 251, 401	DA/EDA 631, 1001, 1014, 2214	DA/EDA 1015, 2215
Connection	1“	2“	3“	4“
Moment [Nm]	10 ±2	28 ±6	71 ±15	100 ±25

- sufficient measures were taken to prevent corrosion.
- the filter is protected from other mechanical influences (such as impacts and hits).

3. Initial operation

3.1 Prior to initial operation

Prior to the initial operation of the system or the machine, which means prior to filling in any fluid, check the internal condition of the filter. Proceed as follows:

- Open the filter housing by removing the lit. Check the cleanness of the housing, the presence of an element, the sealing, etc.
- Close the housing tight

3.2 Filling and air-bleeding

Prior to the initial operation, the filter has to air-bleed as follows:

- Turn the switch of the filter to the middle position
- Fill both sides of the filter housing the regular operating fluid flow
- Open the screw plugs for air bleeding. Observe until bubble-free operating medium is emerging and no air bleeding noises can be he heard anymore
- Afterwards tighten the locking screws again
- Let the remaining air escape via the mini-measuring connection in the filter cap (DA/EDA 251-2215) – by using a H.P. hose (see page n° 1650). Hold end of the hose across a small container. Remove H.P. hose if there is no air emerging anymore

After this process you can direct the flow of the fluid, which is supposed to be filtered, to pass through either side of the filter. This is done simply by turning the lever or the switch. To recognize which side is operating at the moment, just note the following:

Illustration DA/EDA 101-1001

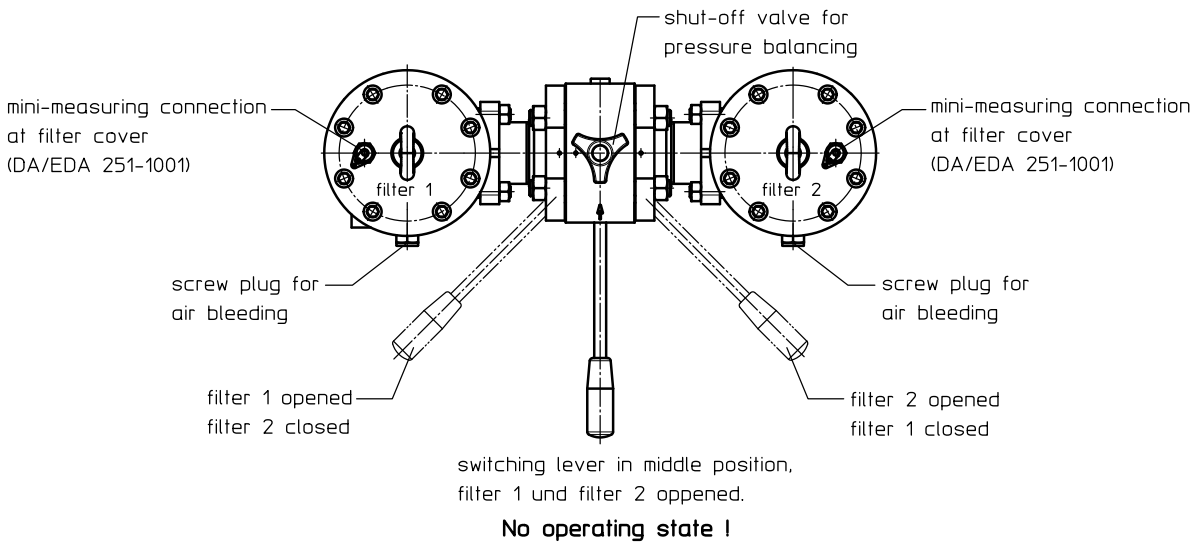
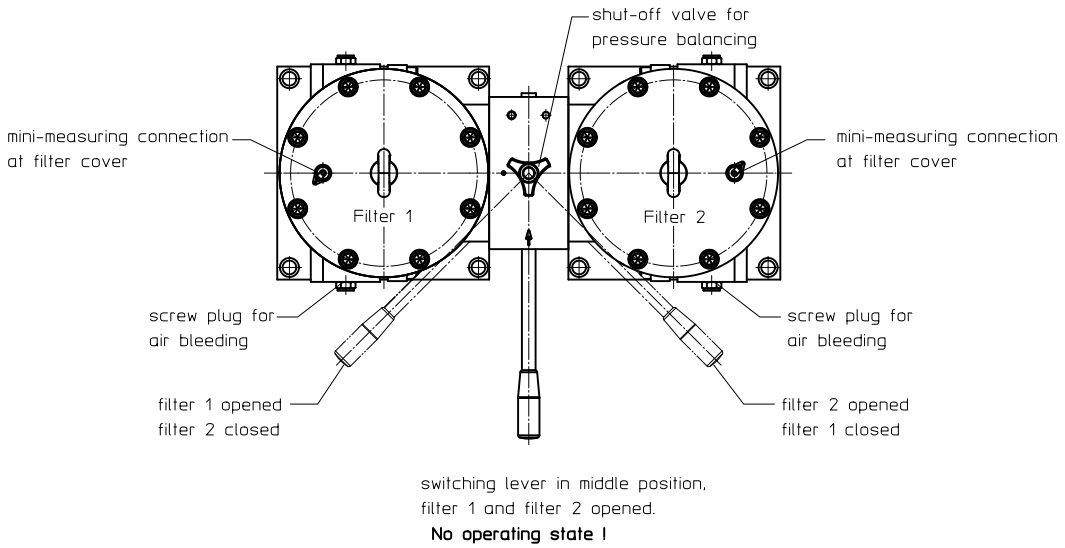


Illustration DA/EDA 1014-2215



4. Maintenance / Inspection

Also please note all particular site-related instructions for inspection.

Using filters equipped with clogging indicators it is necessary to exchange or clean the element if the signal “Clogged filter” is emitted (also note the data sheet or the instructions of the clogging indicators).
Contaminated elements have to be replaced as soon as possible! If a clogged element is not removed it may cause severe damage to the entire system!

Attention!

Always exchange elements with sealing. If a cleaned metal mesh element type „G“ is reused replace its sealing. The exact markings can be found in spare part lists for each element.

4.1 Replacing the filter element

Maintenance or the exchange of contaminated filter elements has to be performed as follows:

- Open the shut-off valve for pressure equalization.
- Switch the filter to the opposite side.
- Close the shut-off valve.
- Open the air-bleed valve of the discharged side of the housing in order to equalize the pressure with the surrounding atmosphere.
- Open the drain-valves to drain the filter
- Open the lit of the discharged side of the filter housing.
- Loosen and remove the element by light swaying and pulling.
- If necessary cover or close the adaptor end inside the housing and clean the entire inside.
- Close the drain valve and remove the cover of the adaptor end if present.
- Check the sealing of the filter lit and replace the O-ring if necessary.
- Take the replacing element, make sure the serial number matches the number of the old element, and insert it into the housing (prior check if the elements sealing are undamaged and tighten them)
- Mount filter cover; following tightness power had been fixed for the screw connections on the filter covers: M10 → 45...50 Nm, M12 → 65...70 Nm and M16 → 125...130 Nm
- finally perform the steps described in 3.2 “Filling and air-bleeding”

4.2 Cleaning the filter element

Metal mesh filter elements can be recycled after cleaning. This cleaning procedure can be performed based on the cleaning instructions for INTERNORMEN metal mesh filter elements on sheets no. 21070-4 and 39448-4.
When removing and reinserting the element please proceed as described in 4.1 “Replacing the filter element”.

The maintained side of the filter is now ready to operate at full strain again.

Attention!

Independent from a necessary change of the element, the switching armature has to be actuated at least once per three weeks in order to maintain full operatibility.

5. Service

The service will be performed by

EATON Technologies GmbH
Friedensstr. 41
D-68804 Altlussheim
Germany

phone: +49(0)6205-2094-0
fax: +49(0)6205-2094-40

Special questions about the operation of the filter will also be answered within this area.
Spare parts respectively wearing parts have to be ordered according to the spare part list of the filter-data-sheet.

This manual is effective for all filters of the type DA/EDA 100, 250, 400, 630, 1000, 1004, 1005, 2204, 2205 and related specifications. It contains certain requirements and instructions which ensure unobjectionable operation of the filter. It can be completed with specific additional instructions by the operator himself if necessary.

1. Safety instructions

- Prior to operating the filter, manual and maintenance instructions have to be read carefully.
- Follow the instructions of this manual under any circumstances!
- The manufacturer does not assume liability for any damage, which occurs due to disregarding these instructions.
- If operations are carried out differently, the safety of the pressurized device can not be assured!
- Operating conditions given in the data sheet, especially excess pressure, temperature range and operating fluid, have to be followed unconditionally. Variation of these parameters can cause damage to important pressure holding parts and sealing. Also take in consideration the compatibility of filter components with the operating fluid.
- Under working conditions the filter housing is pressurized. Do not try to loosen or remove any part of the filter or the filter housing during operation. The operating fluid could escape at high pressure and high temperatures.
  This does not apply for parts of the decompressed or the turned off side of the filter (see „Maintenance“).
- Leaking operating fluid always bears the danger of injuries and burns!
- Do not open the filter housing until you made sure it is not pressurized any more!
- Touching parts of the filter may cause burning, depending on the operating temperature.
- When exchanging the filter keep in mind that it might have operating temperature. Danger of burning!
- Always wear safety goggles and gloves when working on the filter!
- If you come into contact with the operating fluid please follow the instructions of the fluid manufacturer!!
- Only use original spare parts.

For filters being used in hazardous locations the INTERNORMEN documentation N° 41269 "Supplementation of the Operating Manual for the use of filters in potential explosive areas.

2. Installation

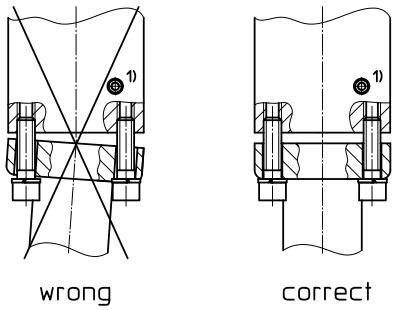
Note safety instructions!

When removing a new filter from its box it is ready for installation. It is placed on a level area and screwed to it.
Afterwards remove protective caps from connections and connect those to the present pipe work.

Appropriate pipe work (pipes, hoses) ensures that drain and air-bleed valves are connected to proper containers. For these purposes original INTERNORMEN drain and air-bleed valves can be used.

When installing the filter please make sure, that:
- sufficient fixation of the filter is assured
- the clogging indicator is accessible and can be checked easily
- the connections for draining and air-bleeding can be accessed easily
- there is enough room above the filter to remove and replace elements
- no dirt, particles, other contamination or fluids enter the filter
- both inlet and outlet of the filter are connected to the pipe work correctly
- counterflanges or screw joints of the pipe system and the filter have to be angled precisely and connected that same way (if counterflanges or pipe joints are canted or under tension switching filters can be aggravated and it might harm pressure tightness)

Fitting the counterflanges



1) connection for the potential equalisation, only for application in the explosive area

- the following torques have to be applied when fastening the counterflanges

Type	DA/EDA 100	DA/EDA 250, 400	DA/EDA 630, 1000, 1004, 2204	DA/EDA 1005, 2205
Connection	1“	2“	3“	4“
Moment [Nm]	10 ±2	28 ±6	71 ±15	100 ±25

- sufficient measures were taken to prevent corrosion.
- the filter is protected from other mechanical influences (such as impacts and hits).

3. Initial operation

3.1 Prior to initial operation

Prior to the initial operation of the system or the machine, which means prior to filling in any fluid, check the internal condition of the filter. Proceed as follows:

- Open the filter housing by removing the lit. Check the cleanness of the housing, the presence of an element, the sealing, etc.
- Close the housing tight

3.2 Filling and air-bleeding

Prior to the initial operation, the filter has to air-bleed as follows:

- Turn the switch of the filter to the middle position
- Fill both sides of the filter housing the regular operating fluid flow
- Open the screw plugs for air bleeding. Observe until bubble-free operating medium is emerging and no air bleeding noises can be he heard anymore
- Afterwards tighten the locking screws again
- Let the remaining air escape via the mini-measuring connection in the filter cap (DA/EDA 250-2205) – by using a H.P. hose (see page n° 1650). Hold end of the hose across a small container. Remove H.P. hose if there is no air emerging anymore

After this process you can direct the flow of the fluid, which is supposed to be filtered, to pass through either side of the filter. This is done simply by turning the lever or the switch. To recognize which side is operating at the moment, just note the following:

Illustration DA/EDA 100-1000

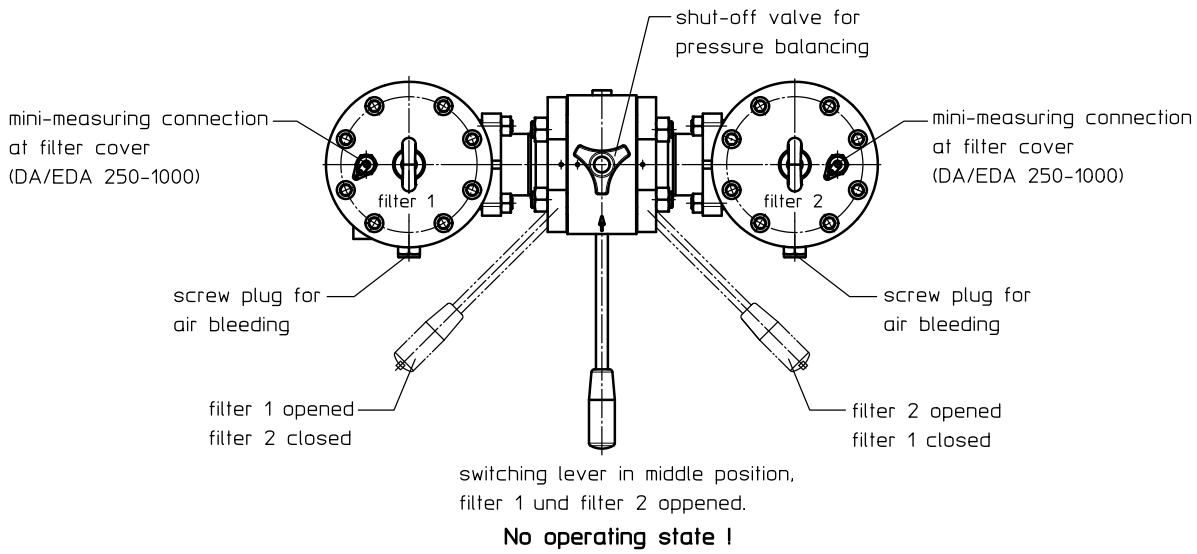
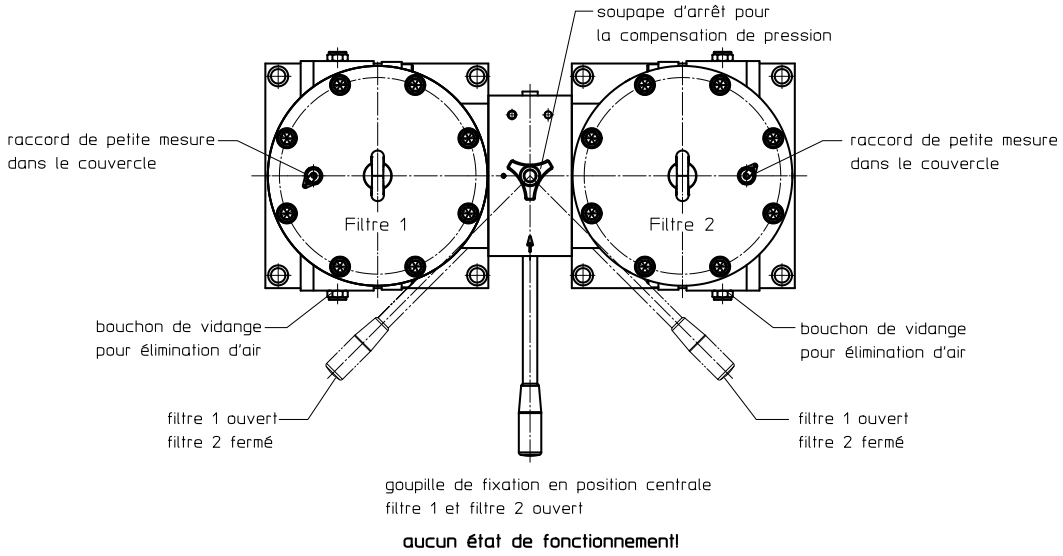


Illustration DA/EDA 1004-2205



4. Maintenance / Inspection

Also please note all particular site-related instructions for inspection.

Using filters equipped with clogging indicators it is necessary to exchange or clean the element if the signal “Clogged filter” is emitted (also note the data sheet or the instructions of the clogging indicators).
Contaminated elements have to be replaced as soon as possible! If a clogged element is not removed it may cause severe damage to the entire system!

Attention!

Always exchange elements with sealing. If a cleaned metal mesh element type „G“ is reused replace its sealing. The exact markings can be found in spare part lists for each element.

4.1 Replacing the filter element

Maintenance or the exchange of contaminated filter elements has to be performed as follows:

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- Switch the filter to the opposite side.
- Close the shut-off valve.
- Open the air-bleed valve of the discharged side of the housing in order to equalize the pressure with the surrounding atmosphere.
- Open the drain-valves to drain the filter
- Open the lit of the discharged side of the filter housing.
- Loosen and remove the element by light swaying and pulling.
- If necessary cover or close the adaptor end inside the housing and clean the entire inside.
- Close the drain valve and remove the cover of the adaptor end if present.
- Check the sealing of the filter lit and replace the O-ring if necessary.
- Take the replacing element, make sure the serial number matches the number of the old element, and insert it into the housing (prior check if the elements sealing are undamaged and tighten them)
- Mount filter cover; following tightness power had been fixed for the screw connections on the filter covers: M10 → 45...50 Nm, M12 → 65...70 Nm and M16 → 125...130 Nm
- finally perform the steps described in 3.2 “Filling and air-bleeding”

4.2 Cleaning the filter element

Metal mesh filter elements can be recycled after cleaning. This cleaning procedure can be performed based on the cleaning instructions for INTERNORMEN metal mesh filter elements on sheets no. 21070-4 and 39448-4.
When removing and reinserting the element please proceed as described in 4.1 “Replacing the filter element”.

The maintained side of the filter is now ready to operate at full strain again.

Attention!

Independent from a necessary change of the element, the switching armature has to be actuated at least once per three weeks in order to maintain full operatibility.

5. Service

The service will be performed by

EATON Technologies GmbH
Friedensstr. 41
D-68804 Altlussheim
Germany

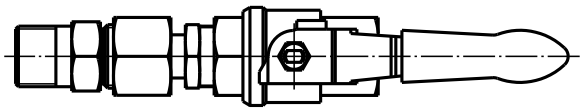
phone: +49(0)6205-2094-0
fax: +49(0)6205-2094-40

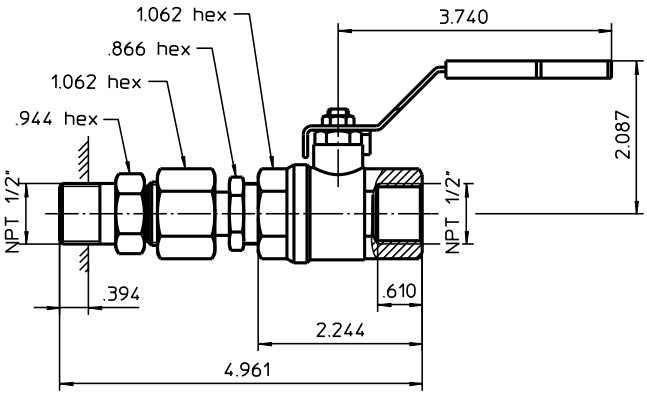
Special questions about the operation of the filter will also be answered within this area.
Spare parts respectively wearing parts have to be ordered according to the spare part list of the filter-data-sheet.

EVACUATION- and BLEEDER-CONNECTIONS
Series EE 914 PSI for DA/EDA filter

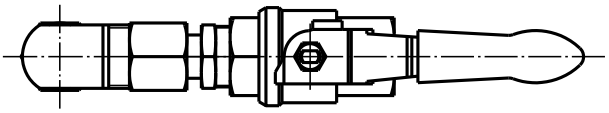
Sheet No.
1659 B

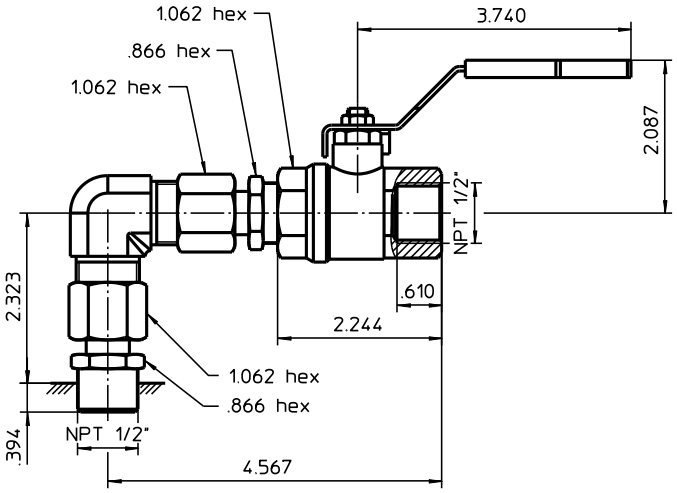
straight design





angle-design





1. Type index: (ordering example

EE. 63. NPT. 3. W. VA

1	2	3	4	5	6

1 **series:**
EE = evacuation- and bleeder-connection

2 **pressure range:**
63 = 914 PSI

3 **connection:**
NPT = thread acc. to ANSI B1.20.1

4 **connection size:**
3 = ½"

5 **design:**
G = straight design
W = angle design

6 **material:**
VA = stainless steel

2. Technical data:

temperature range:	+14°F to +80°F (for a short time + 212°F)
max. operating pressure:	914 PSI
installation position:	any
fluid:	mineral oils, lubricating oils, synthetic hydraulic fluids, emulsions

3. Description:

When maintaining and servicing filters the drain-plugs and air-bleed connections are used to drain and to bleed the fluid inside the filter. This applies to filters with a operating pressure of PN ≤ 914 PSI.
During operation of the filter, the connection has to remain closed.