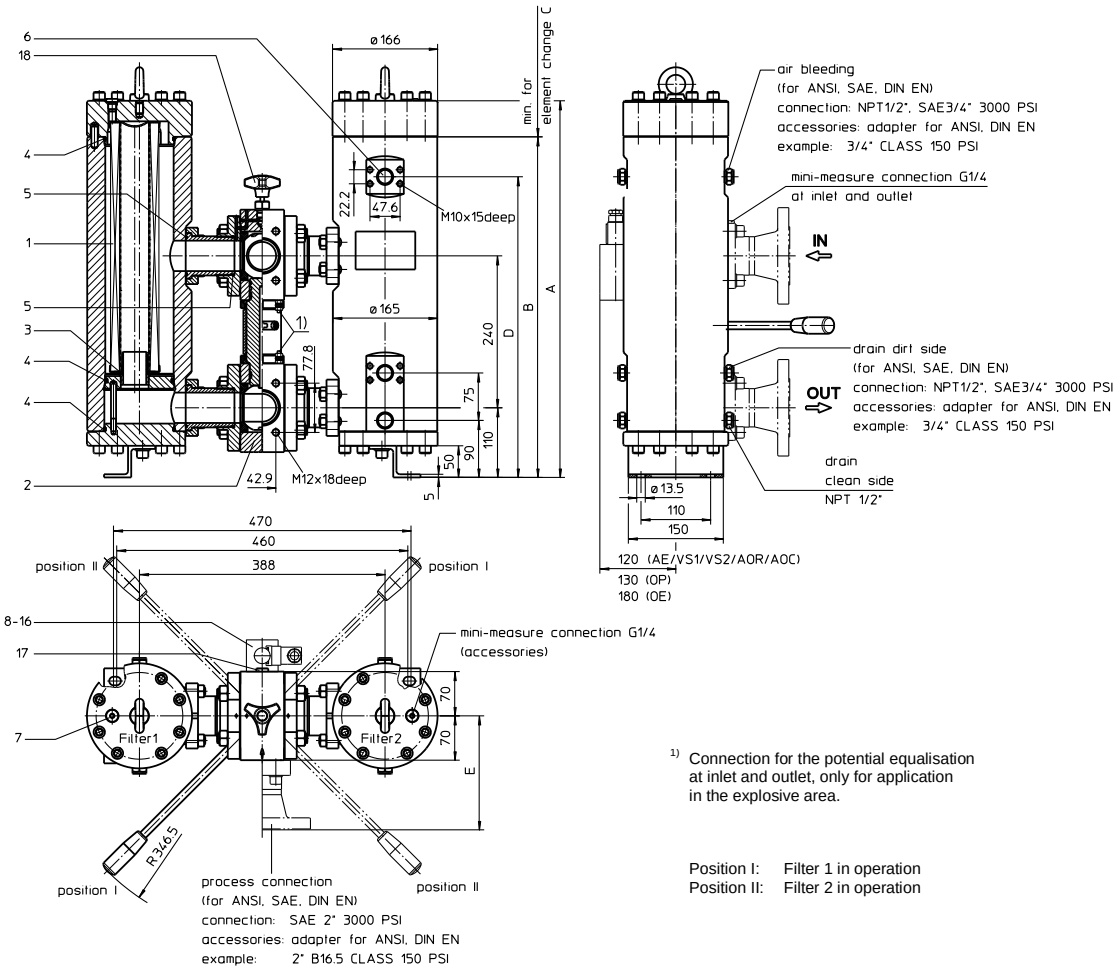
PRESSURE FILTER, change-over
Series DA 251-401 NPS 2“ CLASS 150 PSI

Sheet No. **2164 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

2. Dimensions:

type	connection	A	B	C	D	E	weight kg
DA 251	SAE 2“	455	398	260	365	-	ca. 130
	ANSI 2“					180	
	DIN EN 2“					162	
	ANSI 1 ½“					179	
	DIN EN 1 ½“					159	
DA 401	SAE 2“	595	538	410	475	-	ca. 160
	ANSI 2“					180	
	DIN EN 2“					162	
	ANSI 1 ½“					179	
	DIN EN 1 ½“					159	

1. Type index:

1.1. Complete filter: (ordering example)

DA. 401. 10VG. 30. E. P. -. FS. 8. -. -. 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:** 251, 401

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 fibre)
25 API = 20 µm, 10 API = 10 µm Interpor fleece (glass fibre) according to API
10 P = 10 µm paper

4 **resistance of pressure difference for filter element:**
30 = Δp 30 bar

5 **filter element design:**
E = single-end open, S = with by-pass valve Δp 2,0 bar, S1 = with by-pass valve Δp 3,5 bar

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 R_z = 160 µm (not finer than 40 µm)
FA12 = ANSI-flange connection CLASS 150 PSI, sealing surface R_z = 16 µm
FD1 = flange connection DIN EN 1092-1, design B1
FD2 = flange connection DIN EN 1092-1, design B2

9 **process connection size:**
7 = 1 ½“ (only with adapter), 8 = 2“

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. 400. 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:** 250, 400

3 - 7 see type index complete filter

Changes of measures and design are subject to alteration!

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3. Accessories:

- SAE-counter flanges, see sheet-no. 1652
- adapter for connection acc. to EN1092-1, see sheet-no. 1657
- 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 251	dimension DA 401	article-no.	
1	2	filter element	01NL. 250...	01NL. 400...		
2	1	change over UKK	DN 50			
3	2	O-ring	40 x 3		304389NBR)	305482FPM)
4	6	O-ring	100 x 5		327063 (NBR)	327064 (FPM)
5	8	O-ring	56 x 3		305072 (NBR)	305322 (FPM)
6	12	screw plug	NPT ½		307766	
7	2	screw plug	G 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	G ¼		305003	
18	1	pressure balance valve	DN 10		305000	

item 17 execution only with clogging indicator or clogging sensor

5. Description:

Pressure filters, change-over series DA 251-401 are suitable for operating pressure up to 40 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 fibre 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 fibre). Filter elements as fine as 5 $\mu m_{(c)}$ are available; finer filter elements on request.
INTERNORMEN-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-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.

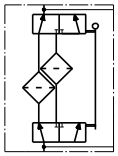
6. Technical data:

temperature ranges	
- calculation temperature (pressure vessel):	- 10°C to +100°C
- medium temperature:	- 10°C to +80°C
- ambient temperature:	- 40°C to +60°C
- survival temperature:	- 40°C to +100°C (short-time)
operating medium:	mineral oil, other media on request
max. operating pressure housing:	40 bar
test pressure acc. to PED 97/23/EC:	1,43 x operating pressure = 57 bar
test pressure acc. to ASME VIII Div. 1:	1,3 x operating pressure = 52 bar
test pressure acc. to API 614, Chapter 1:	1,5 x operating pressure = 60 bar
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 251:	2x 3,0 l
DA 401:	2x 4,3 l
operating pressure adapter flanges:	according to B16.5 CLASS 150 PSI / DIN EN 1092-1

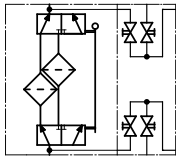
Classified under the Pressure Equipment Directive 97/23/EC for mineral oil (fluid group 2), Article 3, Para. 3.
Classified under ATEX Directive 94/9/EC according to specific application (see questionnaire sheet-no. 34279-4)

7. Symbols:

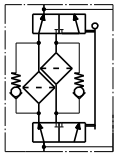
without indicator



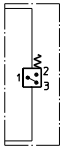
with shut-off valve



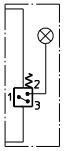
with by-pass valve



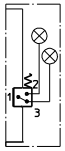
with electrical indicator
AE 30 and AE 40



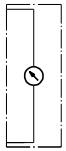
with visual-electrical indicator
AE 50 and AE 62



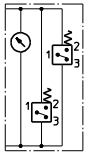
with visual-electrical indicator
AE 70 and AE 80



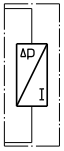
with visual indicator
AOR/AOC/OP



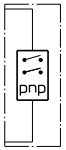
with visual-electrical indicator
OE



with electronical sensor
VS1



with electronical sensor
VS2



8. Pressure drop flow curves:

Precise flow rates see ‘INT-Expert-System Filter’, 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