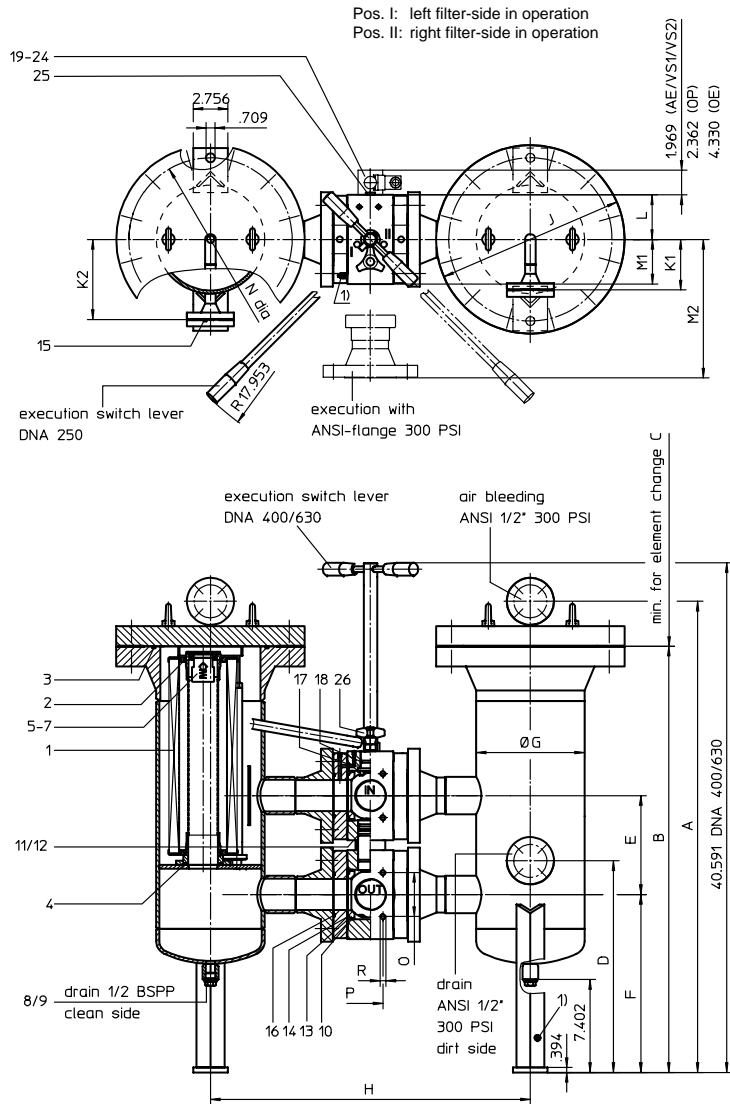


PRESSURE FILTER, change-over
Series DNA 250-630 232 PSI



1) connection for the potential equalisation at inlet and outlet resp. filter housing, only for application in the explosive area

3. Dimensions: inch

type	connection	A	B	C	D	E	F	G	H	J	K1	K2	L	M1	M2	N	O	P	R	weight lbs.	volume tank
DNA 250	2"	32.32	28.15	10.62	17.05	6.89	14.37	6.62	23.74	12.50	3.22	5.37	2.91	2.91	7.52	10.94	1.68	3.06	M12x.78 deep	491	2x 2.4 Gal
DNA 400	2 1/2"	33.34	29.76	10.62	18.58	7.87	14.17	8.62	25.47	15.00	4.01	6.37	3.54	3.54	8.58	12.99	2.07	3.50	M12x.86 deep	582	2x 4.5 Gal
DNA 630	2 1/2"	37.51	33.93	16.53	16.85	7.87	14.17	8.62	25.47	15.00	4.01	6.37	3.54	3.54	8.58	12.99	2.07	3.50	M12x.86 deep	600	2x 5.5 Gal

1. Type index:

1.1. Complete filter: (ordering example)

DNA. 630. 10VG. 10. B. P. -. FS. 9. -. -. AE

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

- 1 series:
DNA = pressure filter, change-over according to ASME - code
- 2 nominal size: 250, 400, 630
- 3 filter-material and filter-finness:
80 G = 80 µm, 40 G = 40 µm, 25 G = 25 µm stainless steel wire mesh
25 VG = 20 µm_(c), 16 VG = 15 µm_(c), 10 VG = 10 µm_(c), 6 VG = 7 µm_(c), 3 VG = 5 µm_(c) Interpor fleece (glass fiber)
- 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 connection:
FS = SAE-flange connection 3000 PSI
FA = ANSI-flange connection 300 PSI
- 9 connection size:
8 = 2" (DNA 250)
9 = 2 1/2" (DNA 400/630)
- 10 filter housing specification:
- = standard
- 11 internal valve:
- = without
S1 = with by-pass valve Δp 51 PSI S2 = with by-pass valve Δp 102 PSI
- 12 clogging indicator or clogging sensor:
- = without
AE = visual-electrical, see sheet-no. 1609
OP = visual, see sheet-no. 1628 VS1 = electrical, see sheet-no. 1607
OE = visual-electrical, see sheet-no. 1628 VS2 = electrical, see sheet-no. 1608

1.2. Filter element: (ordering example)

01NR. 630. 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: 250, 400, 630
- 3 - 7 see type index-complete filter

2. Accessories:

- shut-off valve see sheet-no. 1655
- SAE-counter-flange see sheet-no. 1652
- adaptor for ANSI-flange 300 PSI see sheet-no. 1658

Changes of measures and design are subject to alteration!



4. Spare parts:

item	designation	qty.	dimension and article-no. DNA 250	dimension and article-no. DNA 400	dimension and article-no. DNA 630
1	filter element	2	01NR. 250	01NR. 400	01NR. 630
2	O-ring	4	52 x 3 314206 (NBR) 316698 (FPM)	70 x 4 306253 (NBR) 310280 (FPM)	
3	O-ring	2	170 x 6 304799 (NBR) 306529 (FPM)	225 x 5 308652 (NBR) 311473 (FPM)	
4	O-ring	2	47,22 x 3,53 305078 (NBR) 310269 (FPM)	68 x 5 304376 (NBR) 304394 (FPM)	
5	by-pass valve	2	¾"	1 ¼"	
6	O-ring	2	28 x 3 316778 (NBR) 318366 (FPM)	45 x 3 304991 (NBR) 304997 (FPM)	
7	circlip	1	DIN 472-38x1,5 311921	DIN 472-57x5 317668	
8	screw plug	2	½ BSPP 309730	½ BSPP 309730	
9	gasket	2	A 22 x 27 305564	A 22 x 27 305564	
10	O-ring	4	76 x 4 305599 (NBR) 310291 (FPM)	95 x 3 305808 (NBR) 304828 (FPM)	
11	O-ring	3	98 x 4 301914 (NBR) 304765 (FPM)	45 x 3 304991 (NBR) 304997 (FPM)	
12	support ring	3	103,4 x 97 x 5 318551	-	
12	gasket	4	2" 318549	2 ½" 317651	
14	O-ring	4	56 x 3 305072 (NBR) 305322 (FPM)	85 x 4 305685 (NBR) 310285 (FPM)	
15	O-ring	4	22 x 3 304387 (NBR) 304931 (FPM)	22 x 3 304387 (NBR) 304931 (FPM)	
16	O-ring	4	63 x 3,5 311189 (NBR) 311592 (FPM)	82 x 3,5 304403 (NBR) 308745 (FPM)	
17	O-ring	4	-	8 x 2 310004 (NBR) 316530 (FPM)	
18	O-ring	4	-	34 x 3,5 304338 (NBR) 304730 (FPM)	
19	clogging indicator, visual-electrical	1		OE see sheet-no. 1628	
20	clogging indicator, visual	1		OP see sheet-no. 1628	
21	clogging indicator, visual-electrical	1		AE see sheet-no. 1609	
22	clogging sensor, electronical	1		VS1 see sheet-no. 1607	
23	clogging sensor, electronical	1		VS2 see sheet-no. 1608	
24	O-ring	2	14 x 2 304342 (NBR) 304722 (FPM)		
25	screw plug	2	½ BSPP	305003	
26	pressure balance valve	1			

Item 25 execution only without clogging indicator or clogging sensor

5. Description:

Pressure filters, change-over series DNA 250-630 are suitable for operating pressure up to 232 PSI. Pressure peaks can be absorbed with a sufficient margin of 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 consist 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.

Filter finer than 40 µm should use throw-away elements made of paper or Interpor fleece (glass fiber). Filter elements as fine as 5 µm_(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.

Approvals according to TÜV, and the major „Shipyards Classification Societies“ D.N.V.; B.V.; G.L.; L.R.S.; R.I.N.A.; A.B.S. and others are possible.

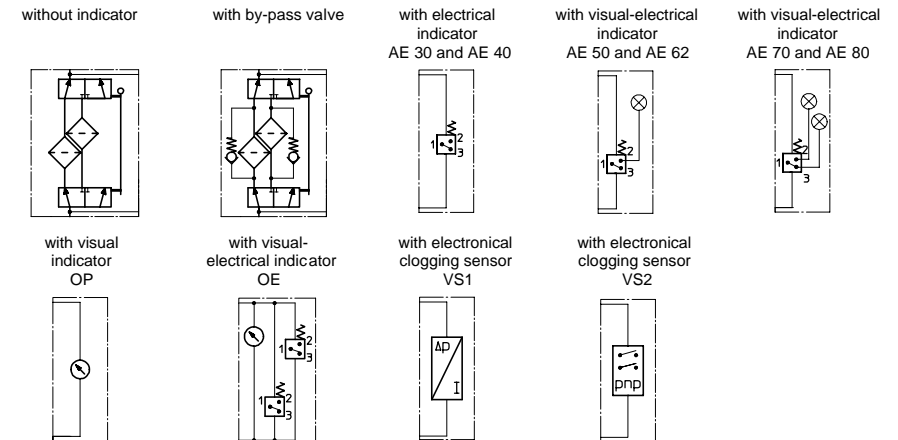
The internal valve is integrated in the filter. After reaching the opening pressure the by-pass valve causes that an unfiltered partial flow passes the filter.

6. Technical data:

temperature range:	+14°F to +176°F (for a short time +212°F)
operating medium:	mineral oil, other media on request
max. operating pressure:	232 PSI
test pressure:	348 PSI
connection system:	SAE-flange 3000 PSI or ANSI-flange 300 PSI
housing material:	C-steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
calculation according to:	ASME - code, sec. VIII / Div.1 - 1998; Add.98

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:



8. Pressure drop flow curves:

Precise flow rates see 'INT-Expert-System Filter', respectively Δp-curves; depending on filter fineness and viscosity.

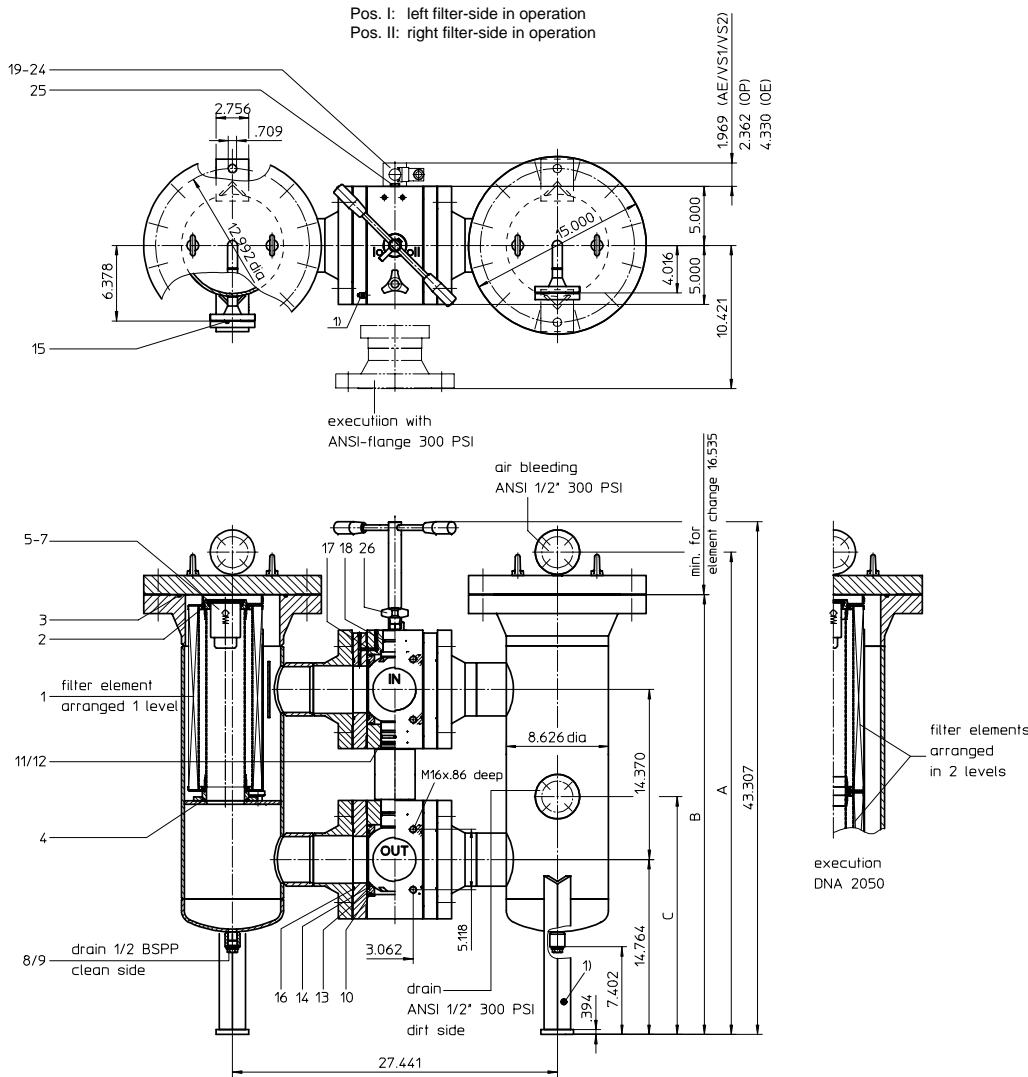
9. Test methods:

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 DNA 1050-2050

232 PSI

Sheet No.
2138 H



Pos. I: left filter-side in operation
 Pos. II: right filter-side in operation

execution with
 ANSI-flange 300 PSI

air bleeding
 ANSI 1/2" 300 PSI

execution
 DNA 2050

1) connection for the potential equalisation at inlet and outlet resp. filter housing, only for application in the explosive area

3. Dimensions: inch

type	connection	A	B	C	weight lbs.	volume tank
DNA 1050	4"	40.74	37.16	20.07	983	2x 6.5 Gal
DNA 2050	4"	54.76	51.18	18.38	1050	2x 9.5 Gal

1. Type index:

1.1. Complete filter: (ordering example)

DNA. 1050. 10VG. 10. B. P. -. FS. B. -. -. AE

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

- 1 series:
DNA = pressure filter, change-over according to ASME-code
- 2 nominal size: 1050, 2050
- 3 filter-material and filter-finesness:
80 G = 80 µm, 40 G = 40 µm, 25 G = 25 µm stainless steel wire mesh
25 VG = 20 µm_(c), 16 VG = 15 µm_(c), 10 VG = 10 µm_(c), 6 VG = 7 µm_(c), 3 VG = 5 µm_(c) Interpor fleece (glass fiber)
- 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 connection:
FS = SAE-flange connection 3000 PSI
FA = ANSI-flange connection 300 PSI
- 9 connection size:
B = 4"
- 10 filter housing specification:
- = standard
- 11 internal valve:
- = without
S1 = with by-pass valve Δp 51 PSI
S2 = with by-pass valve Δp 102 PSI
- 12 clogging indicator or clogging sensor:
- = without
AE = visual-electrical, see sheet-no. 1609
OP = visual, see sheet-no. 1628
OE = visual-electrical, see sheet-no. 1628
VS1 = electrical, see sheet-no. 1607
VS2 = electrical, see sheet-no. 1608

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

2. Accessories:

- shut-off valve, see sheet-no. 1655
- SAE-counter-flange, see sheet-no. 1652
- adaptor for ANSI-flange 300 PSI, see sheet-no. 1658

Changes of measures and design are subject to alteration!



4. Spare parts:

item	designation	qty.	dimension and article-no. DNA 1050	qty.	dimension and article-no. DNA 2050
1	filter element	2	01NR. 1000	4	01NR. 1000
2	O-ring	4	90 x 4 306941 (NBR) 307031 (FPM)	8	90 x 4 306941 (NBR) 307031 (FPM)
3	O-ring	2	225 x 5	308652 (NBR) 311473 (FPM)	
4	O-ring	2	90 x 4	306941 (NBR) 307031 (FPM)	
5	by-pass valve	2	DN 50	311470	
6	O-ring	2	62 x 4	308045 (NBR) 311472 (FPM)	
7	circlip	2	DIN 472-75x2,5	311471	
8	screw plug	2	½ BSPP	309730	
9	gasket	2	A 22 x 27	310476	
10	O-ring	4	140 x 4	305145 (NBR) 305201 (FPM)	
11	O-ring	3	54 x 3	304657 (NBR) 304720 (FPM)	
12	sliding ring	2	087 x 060 x 1,5	318100	
13	gasket	4	DN 90	312275	
14	O-ring	4	114 x 6	314419 (NBR) 316531 (FPM)	
15	O-ring	4	22 x 3	304387 (NBR) 304931 (FPM)	
16	O-ring	4	120 x 4	305300 (NBR) 307991 (FPM)	
17	O-ring	2	8 x 2	310004 (NBR) 316530 (FPM)	
18	O-ring	1	45 x 3	304991 (NBR) 304997 (FPM)	
19	clogging indicator visual-electrical	1	OE	see sheet-no. 1628	
20	clogging indicator visual	1	OP	see sheet-no. 1628	
21	clogging indicator visual-electrical	1	AE	see sheet-no. 1609	
22	clogging sensor electronical	1	VS1	see sheet-no. 1607	
23	clogging sensor electronical	1	VS2	see sheet-no. 1608	
24	O-ring	2	14 x 2	304342 (NBR) 304722 (FPM)	
25	screw plug	2	¼ BSPP	305003	
26	pressure balance valve	1			

Item 25 execution only without clogging indicator or clogging sensor

5. Description:

Pressure filters, change-over series DNA 1050-2050 are suitable for operating pressure up to 232 PSI. Pressure peaks can be absorbed with a sufficient margin of 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.

Filter finer than 40 µm should use throw-away elements made of paper or Interpor fleece (glass fiber). Filter elements as fine as 5 µm_(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.

Approvals according to TÜV, and the major „Shipyards Classification Societies“ D.N.V.; B.V.; G.L.; L.R.S.; R.I.N.A.; A.B.S. and others are possible.

The internal valve is integrated into the filter. After reaching the opening pressure the by-pass valve causes that an unfiltered partial flow passes the filter.

6. Technical data:

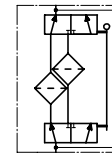
temperature range:
operating medium:
max. operating pressure:
test pressure:
connection system:
housing material:
sealing material:
installation position:
calculation according to:

+14°F to +176°F (for a short time +212°F)
mineral oil, other media on request
232 PSI
348 PSI
SAE-flange 3000 PSI or ANSI-flange 300 PSI
C-steel
Nitrile (NBR) or Viton (FPM), other materials on request
vertical
ASME-code, sec. VIII / div.1 - 1998; add.98

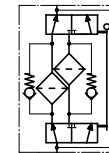
Classified under the Pressure Equipment Directive 97/23/EC for mineral oil (fluid group 2), Article 3, Para. 3.
Classified under ATEX Directive 94/9/EC according to specific application (see questionnaire sheet-no. 34279-4).

7. Symbols:

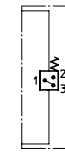
without indicator



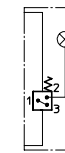
with by-pass valve



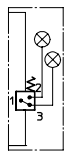
with electrical indicator
AE 30 and AE 40



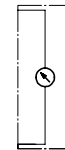
with visual-electrical indicator
AE 50 and AE 62



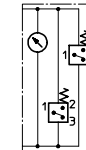
with visual-electrical indicator
AE 70 and AE 80



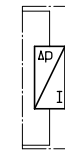
with visual indicator
OP



with visual-electrical indicator
OE



with electronical clogging sensor
VS1



with electronical clogging 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