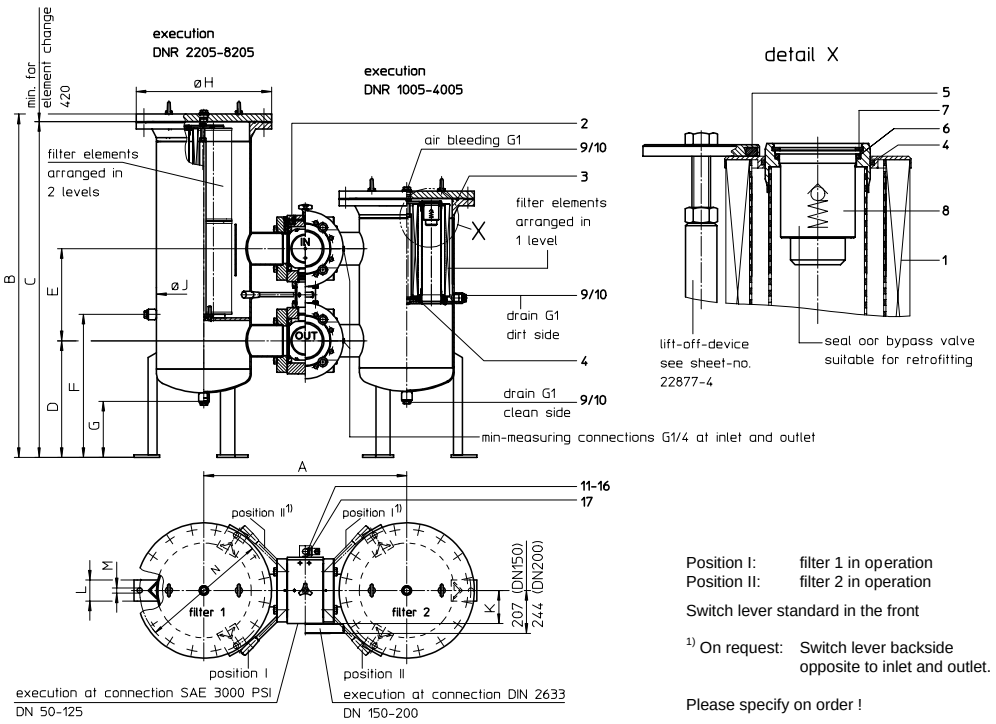
01	SERVICE:	LUBE OIL FILTER	
02	MANUFACTURER:	**INTERNORMEN**	
03	MODEL:	**DNR.3005.25G.10.B.P. - FD1.D.IS12. - .AE.70.0,8.P. - B**	
04	FLUID:	MINERAL OIL ISO VG 32	
05	VISCOSITY:	32 at 40°C	mm²/s
06	DESIGN CODE:	ASME VIII div.1	
07	DESIGN TEMPERATURE:	100	°C
08	NORMAL OPERATING PRESSURE:	3.2	Bar
09	MAX OPERATING PRESSURE:	16	Bar
10	FLOW RATE:	2100	Lt/min.
11	FLOW VELOCITY	1,98	m/s
12	MAX PRESS. LOSSES (CLEAN):	0,3	Bar
13	NOMINAL FILTRATION DEGREE:	25	µm
14	CARTRIDGE TYPE:	01.NR1000.25G.10.B.P.-	
15	CARTRIDGE Q.TY :	NR. 3 per filterside	
16	INLET SIZE:	DIN2633 DN150 PN16	
17	OUTLET SIZE:	DIN2633 DN150 PN16	
18	DRAIN SIZE:	1" G	
19	VENT SIZE:	1" G	
20	WEIGHT:	560	Kg
21	BODY MATERIAL:	STAINLESS STEEL	
22	SEALING MATERIAL:	NITRILE (NBR)	
23	CARTRIDGE MATERIAL:	STAINLESS STEEL	

NOTES: TAG: MBV25AT001, MBV25AT002

PRESSURE FILTER, change-over
Series DNR 1005-8205 DN 50-200 PN 16

Sheet No. **2141 E**



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

Switch lever standard in the front

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

Please specify on order !

3. Dimensions:

type	DN	A	B	C	D	E	F	G	H	J	K	L	M	N	weight kg	volume tank
DNR 1005	50	610	915	890	365	175	463	180	340	219	74	70	18	330	180	2x 22,5 l
	65	560	915	890	365	270	463				90				200	2x 22,5 l
	80	585	925	900	375	290	473				100				210	2x 23,0 l
	100	620	955	930	390	365	503				127				230	2x 24,0 l
DNR 2005	80	780	1105	1070	500	290	643	240	580	406	100	90	22	550	510	2x 94,0 l
	100	810	1105	1070	500	365	643				127				520	2x 94,0 l
	125	870	1145	1110	500	395	683				142				540	2x 99,0 l
	150	900	1195	1160	500	440	733				-				560	2x 105,0 l
DNR 3005	100	810	1105	1070	500	365	643	240	580	406	127	90	22	550	520	2x 94,0 l
	125	870	1145	1110	500	395	683				142				540	2x 99,0 l
	150	900	1195	1160	500	440	733				-				560	2x 105,0 l
	200	990	1345	1310	535	520	883				-				590	2x 121,0 l
DNR 4005	100	910	1165	1130	520	365	703	240	715	508	127	90	22	650	540	2x 152,0 l
	125	970	1165	1130	520	395	703				142				560	2x 152,0 l
	150	1040	1235	1200	530	440	773				-				580	2x 167,0 l
	200	1090	1375	1340	560	520	913				-				610	2x 193,0 l
DNR 2205	80	585	1325	1300	375	290	473	180	340	219	100	70	18	330	250	2x 36,0 l
	100	620	1355	1330	390	365	503				127				270	2x 37,0 l
	125	680	1375	1350	400	395	523				142				280	2x 38,0 l
	150	710	1405	1380	415	440	553				-				300	2x 40,0 l
DNR 4205	80	780	1475	1440	500	290	613	240	580	406	100	90	22	550	540	2x 137,0 l
	100	810	1475	1440	500	365	613				127				550	2x 137,0 l
	125	870	1475	1440	500	395	613				142				570	2x 137,0 l
	150	900	1505	1470	510	440	643				-				590	2x 141,0 l
	200	990	1535	1500	530	520	673				-				620	2x 145,0 l
DNR 6205	100	810	1475	1440	500	365	613	240	580	406	127	90	22	550	580	2x 137,0 l
	125	870	1475	1440	500	395	613				142				600	2x 137,0 l
	150	900	1475	1440	500	440	613				-				620	2x 137,0 l
	200	990	1535	1500	530	520	673				-				650	2x 145,0 l
DNR 8205	100	910	1495	1460	520	365	633	240	715	508	127	90	22	650	830	2x 218,0 l
	125	970	1495	1460	520	395	633				142				850	2x 218,0 l
	150	1040	1515	1480	530	440	653				-				870	2x 222,0 l
	200	1090	1575	1540	560	520	713				-				900	2x 233,0 l

EDV 01/05

1. Type index:

1.1. Complete filter: (oedering example)

DNR. 3005. 10VG. 10. B. P. -. FS. B. -. -. AE

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

1 **series:**
DNR = duplex filter with standard-return-line filter elements

2 **nominal size:** 1005, 2005, 3005, 4005 (1 level)
2205, 4205, 6205, 8205 (2 levels)

3 **filter-material and filter-fineness:**
80 G = 80 µm, 40 G = 40 µm, 25 G = 25 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 P = 25 µm, 10 P = 10 µm paper

4 **resistance of pressure difference for filter element:**
10 = Δp 10 bar

5 **filter element design:**
B = both sides open

6 **sealing material:**
P = Nitrile (NBR) ; V = Viton (FPM)

7 **filter element specification:** (see catalog)
- = standard ; VA = stainless steel ; IS06 = see sheet-no. 31601 ; IS07 = see sheet-no. 31602

8 **connection:**
FS = flange connection SAE 3000 PSI , only for DN 50-125
FD1 = flange connection DIN 2633, design C DIN 2526, only for DN 150-200
FD2 = flange connection DIN 2633, design E DIN 2526, only for DN 150-200

9 **connection size:**

filter-nominal size	DNR 1005	DNR 2005	DNR 3005	DNR 4005	DNR 2205	DNR 4205	DNR 6205	DNR 8205
connection size	8-9-A-B	A-B-C-D	B-C-D-E	B-C-D-E	A-B-C-D	A-B-C-D-E	B-C-D-E	B-C-D-E

8 = DN 50 ; 9 = DN 65 ; A = DN 80 ; B = DN 100 ; C = DN 125 ; D = DN 150 ; E = DN 200

10 **filter housing specification:** (see catalog)
- = standard
IS06 = see sheet-no. 31605

11 **internal valve:**
- = without
S1 = with by-pass valve 3,5 bar

12 **clogging indicator or clogging sensor:**
- = without; AE = visual-electrical, see sheet-no. 1609
OP = visual, see sheet-no. 1628; VS1 = electronical, see sheet-no. 1607
OE = visual-electrical, see sheet-no. 1628; VS2 = electronical, 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 **Nenngröße:** 1000

3 - 7 see type index-complete filter

2. Accessories:

- measure -and bleeder-connections, see sheet-no. 1650
- evacuation- and bleeder-connections, see sheet-no. 1651
- shut-off valve, see sheet-no. 1655
- couner flange, see sheet-no. 1652
- adaptor for flange DIN 2633 (DN 50-125) see sheet-no. 1657

Changes of measures and design are subject to alteration!

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fax +49 - (0)6205 - 2094-40 url www.internormen.com

4. Spare parts:

4.1. Depending on different series:

item	designation	qty.	dimension and article-no. DNR 1005	qty.	dimension and article-no. DNR 2005	qty.	dimension and article-no. DNR 3005	qty.	dimension and article-no. DNR 4005	qty.	dimension and article-no. DNR 2205	qty.	dimension and article-no. DNR 4205	qty.	dimension and article-no. DNR 6205	qty.	dimension and article-no. DNR 8205
1	filter element	2	01NR. 1000	4	01NR. 1000	6	01NR. 1000	8	01NR. 1000	4	01NR. 1000	8	01NR. 1000	12	01NR. 1000	16	01NR. 1000
2	change over [1] UKK	1	DN 50-100	1	DN 80-150	1	DN 100-200	1	DN 100-200	1	DN 80-150	1	DN 80-200	1	DN 100-200	1	DN 100-200
3	O-ring	2	225 x 5 308652 (NBR) 311473 (FPM)	2	429 x 6 308659 (NBR) 310273 (FPM)	2	429 x 6 308659 (NBR) 310273 (FPM)	2	516 x 6 301962 (NBR) 311474 (FPM)	2	225 x 5 308652 (NBR) 311473 (FPM)	2	429 x 6 308659 (NBR) 310273 (FPM)	2	429 x 6 308659 (NBR) 310273 (FPM)	2	516 x 6 301962 (NBR) 311474 (FPM)
4	O-ring	6	90 x 4 306941 (NBR) 307031 (FPM)	12	90 x 4 306941 (NBR) 307031 (FPM)	18	90 x 4 306941 (NBR) 307031 (FPM)	24	90 x 4 306941 (NBR) 307031 (FPM)	10	90 x 4 306941 (NBR) 307031 (FPM)	20	90 x 4 306941 (NBR) 307031 (FPM)	30	90 x 4 306941 (NBR) 307031 (FPM)	40	90 x 4 306941 (NBR) 307031 (FPM)
5	O-ring	-	-	2	78 x 10 305017 (NBR) 305552 (FPM)	2	78 x 10 305017 (NBR) 305552 (FPM)	2	78 x 10 305017 (NBR) 305552 (FPM)	2	78 x 10 305017 (NBR) 305552 (FPM)	2	78 x 10 305017 (NBR) 305552 (FPM)	2	78 x 10 305017 (NBR) 305552 (FPM)	2	170 x 10 308662 (NBR) 317149 (FPM)
6	O-ring	2	62 x 4 308045 (NBR) 311472 (FPM)	4	62 x 4 308045 (NBR) 311472 (FPM)	6	62 x 4 308045 (NBR) 311472 (FPM)	8	62 x 4 308045 (NBR) 311472 (FPM)	2	62 x 4 308045 (NBR) 311472 (FPM)	4	62 x 4 308045 (NBR) 311472 (FPM)	6	62 x 4 308045 (NBR) 311472 (FPM)	8	62 x 4 308045 (NBR) 311472 (FPM)
7	circlip	2	DIN 472-75x2,5 311471	4	DIN 472-75x2,5 311471	6	DIN 472-75x2,5 311471	8	DIN 472-75x2,5 311471	2	DIN 472-75x2,5 311471	4	DIN 472-75x2,5 311471	6	DIN 472-75x2,5 311471	8	DIN 472-75x2,5 311471
8	bypass valve	2	DN 50 311470	4	DN 50 311470	6	DN 50 311470	8	DN 50 311470	2	DN 50 311470	4	DN 50 311470	6	DN 50 311470	8	DN 50 311470
9	screw plug	6	G1 309732														
10	gasket	6	A 33 x 39 308257														

[1] UKK DN50 see sheet-no. 32655-4, UKK DN125 see sheet-no. 32659-4,
UKK DN65 see sheet-no. 32656-4, UKK DN150 see sheet-no. 32435-4,
UKK DN80 see sheet-no. 32714-4, UKK DN200 see sheet-no. 32661-4
UKK DN100 see sheet-no. 32658-4,

4.2. Independing on the series:

item	qty.	designation	dimension	article-no.	
11	1	clogging indicator, visual	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	2	O-ring	14 x 2	304342 (NBR)	304722 (FPM)
17	2	screw plug	G ¼	308310	

5. Description:

Duplex filters of the series DNR 1005-8205 are suitable for a working pressure up to 16 bar.
Pressure peaks can be absorbed with a sufficient margin of safety.
Change-over ball valve between the two filter housings makes it possible to switch from the dirty filter-side to the clean filter-side without interruting operat ion.
The filters can be installed as suction filter, pressure filter or return-line filter.
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. Filter finer than 40 microns should use throuw-away elements made of Interpor fleece (glass fibre). Filter elements as fine as 5 microns $_{(c)}$ 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 mayor „Shipyard Classification Societies“ D.N.V.; B.V.; G.L.; L.R.S.; R.I.N.A.; A.B.S.; P.R.S.;USS.R.S. and others are possible.

6. Technical data:

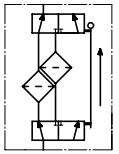
temperature range:	- 10°C to + 80°C (for a short time + 100°C)
operating medium:	mineral oil, other media on request
max. operating pressure:	16 bar
test pressure:	20,8 bar
connection system:	SAE-flange connection 3000 PSI or flange connection DIN 2633, 16 bar
housing material:	C-steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
mini-measuring connection:	G ¼

Classified under the Pressure Vessel 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).

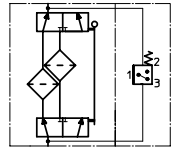
E 2141 E

7. Symbols:

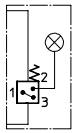
without indicator



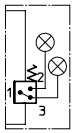
with electrical indicator AE 30 and AE 40



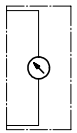
with visual - electrical indicator AE 50 and AE 60



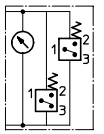
with visual - electrical indicator AE 70 and AE 80



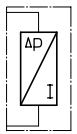
with visual indicator OP



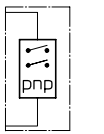
with visual - electrical indicator OE

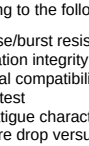


with electronical clogging sensor VS1



with electronical clogging sensor VS2





8. Pressure drop flow curves:

Precise flow rates see ‘INF-Expert-System Filter’, respectively Δp-curves; depending on filter fin eness 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

Manual and maintenance instructions

for INTERNORMEN-Pressure filter, change-over
DNR, DNA, DNL, EDNR, EDNA, EDNL

This manual is effective for all filters of the type series DNR 405-635, DNR 630, DNR 1001-8201, DNR 1005-8205, DNA 250-2050, DNL 630, EDNR 1050, EDNA and EDNL 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.
The pressure filters listed above are intended for the filtering of liquid media.

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

The filter is supplied and delivered ready to be installed. The fitting 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 fitting of the filter has to be carried out in the way that the least possible transmission of tensible forces on the filter housing and the change-over valve is given. The connection of the pipework has to be made with flanges for pipework.
Ensure upon assembling that

- no dirt and no impurities of foreign fluids penetrate the filter
- the connections for input and output are correctly connected to the pipe system
- the pipe system is connected with the filter; as stress-free as possible
- the extension to demount and the accessibility to the service elements is guaranteed

Filter with electrical respectively electronical clogging indicators have to be installed according to the unit specific conditions and according to the technical parameters of the corresponding data sheets.

3. Commissioning

Before commissioning the completeness of the filter (filter elements and seals) and the cleanness have to be controlled.
Air bleeding of the controlled filter has to be carried out to the following instructions:

- The positioning pin of the selector shaft has to be located in the middle position
- Opening of the air-bleed screws or air-bleed connections (air-bleed connections according to data sheet 1651 and connection of suitable airbleeding tubes with collecting pan for the flow out of the operating fluid
- Connection of the unit volume flow (reduced volume flow; from 10 to 50 l/min) until bubble-free operating fluid flows out of both airbleeding tubes
- Disconnection of the unit volume flow
- Remove the airbleeding tubes and close the air-bleed bore holes or air-bleed connections (air-bleed connections according to data sheet 1651)
- Connection to the required filter side at the positioning pin of the selector shaft

The positioning pin of the selector shaft shows always in direction to the operating filter side.

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4. Change of Elements

The changing of the filter elements is necessary when reaching the unit specific pressure difference respectively reaching the maximum pressure difference given by the clogging indicator. If there is no unit specific definition, the change of the elements should be done at a maximum of Δp 6 bar.
This has to be carried out as follows:

- Opening of the pressure balance valve
- Switching over the positioning pin from the operating side through the other side
- Closing the pressure balance valve
- Connect the air-bleed and the drain plug of filter side to be maintained with suitable pipes and place a collecting pan for the operating fluid flowing out
- Opening of the air-bleed and drain plugs of the filter side to be maintained until no more operating fluid flows out
- Release of the screws of the lid of the filter side to be maintained and remove the filter lid
- Remove the retaining plate for the filter elements
- Remove the filter elements
  At filters which are equipped with a fit-up fixture, first unscrew the screw M16 from the fit-up fixture, then remove the fixing panel. By screwing in the t-screw into the screw bore of the fit-up fixture the filter elements are drawn out of the absorption tube, until they can easily be taken by hand.
- Cleaning of the filter housing. Pay attention, that no dirt and no cleaning fluid get to the clean side (that means through the open centering pivot into the filter elements)
- Replace the new or the cleaned filter elements
  At the filters with fit-up fixture the fixing panel has to be put in and pull hand tight with the hex head screw M16; starting moment 10 to 15 Nm
- Fix the filter lid onto the filter housing and tighten the screw plugs. The screw have to be tightened over cross and have to be tightened again after the first pressure load
- Closing of the drain plugs
- Opening of the pressure balance valve until bubble-free operating fluid flows out of the air-bleed connection
- Close the pressure balance valve and the air-bleeder

Now, the serviced filter side is ready for operation.
In general take care about the absolute cleanness during the changing of elements. No dirt respectively no impurities should penetrate the filter. The new elements should be taken out of their packing shortly before they are replaced in the filter housing because of mechanical damage.
During the changing of elements control the seals and their quality. Damaged seals have to be replaced by new ones.
Concerning the bolted connection at the filter lids the following turning moments are prescribed.

M16	M20	M24	M27	M30	M33
80 +/-8 Nm	160 +/-15 Nm	250 +/-25 Nm	400 +/-40 Nm	600 +/-60 Nm	700 +/-70 Nm

5. Cleaning of the Filter Element

Filter elements with filter materials such as glass fibre (VG) or paper (P) are not cleanable. They have to be replaced after the dirt retention capacity has been reached. Filter elements with filter materials such a wire mesh (G) are cleanable and could be used again.
The cleaning of the filter elements has to be carried out according to the cleaning specification for INTERNORMEN-Filter elements (metal), shett-no. 21070-4 and 39448-4.

6. Pressure Difference Measuring

In case of filters installed with clogging indicators a permanent measuring of the pressure difference takes place. The indication corresponds to the kind of clogging indicators; either visual or visual and electrical respectively electronical.
Additionally can of the filters DNR 1001-8201, DNR 1005-8205, EDNR 1001-8201 and EDNR 1005-8205 the measuring connections G ¼“ could be installed on the selector shaft to be used for external pressure gauges.
Recommended are the measuring connections according to data sheet 1650.

7. Service

The service will be performed by

INTERNORMEN Technology GmbH
Friedensstr. 41
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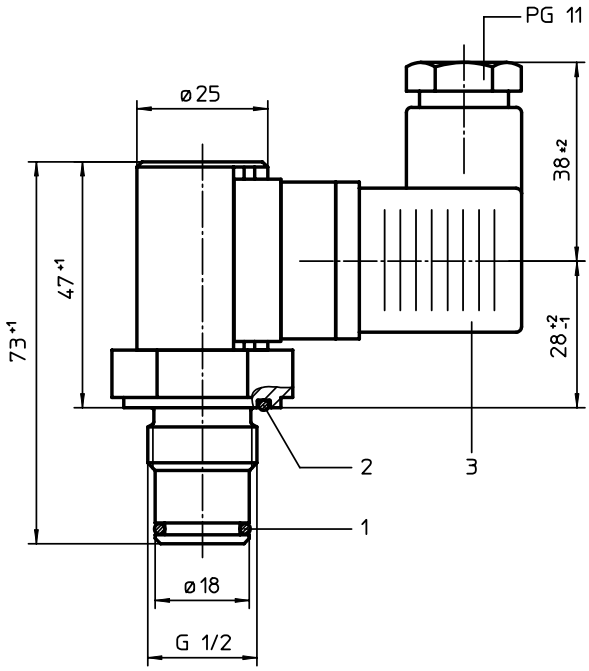
Special questions about the operation of the filter will also be answered within this area.
Spare parts respectively wearing parts have to be ordered according to the spare part list of the filter-data-sheet.

CLOGGING INDICATOR
Series AE (visual-electrical, thread execution)

Sheet No.
1615 E



1. Clogging indicator AE

1.1. Type index: (ordering example)

AE. 30. 1,5. P. -. -

1	2	3	4	5	6

1 **series:**
AE = clogging indicator, visual-electrical

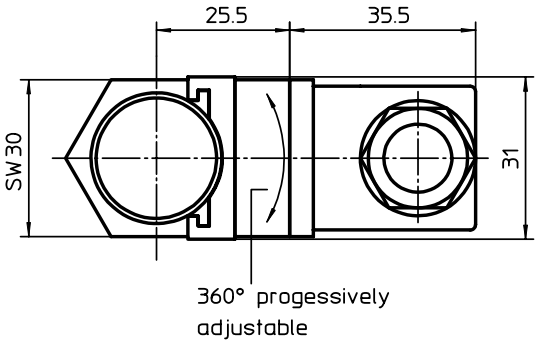
2 **version:**
30-80 = see table below

3 **indicator-pressure difference:** Δp-nominal
1,5 = 1,5 bar
2,5 = 2,5 bar
5,0 = 5,0 bar

4 **sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)

5 **material:**
- = standard
VA = stainless steel

6 **execution:**
- = standard



2. Technical data:

temperature range:	-10°C to +80°C (for a short time +100°C)
max. operating pressure:	420 bar
max. pressure difference:	160 bar
installation position:	vertical

Clogging indicator AE with redundant switches,
see data sheet-no. 40968-4

version	luminous indication	contact	voltage	max. rupturing capacity (resistive load)	max. switching current (resistive load)	connection protection
30	-	contact maker and contact breaker	..... 175V DC ..... 125V AC	3 VA 3 Watt	0,25 A 0,25 A	line adapter DIN 43650-A/PG11
40	-		..... 175V DC ..... 230V AC	20 VA 10 Watt	1,0 A 0,5 A	
50	1x LG [1]		120V DC 120V AC	3 VA 3 Watt	0,03 A with 120V DC 0,03 A with 120V AC	DIN 14050-IP 65
61	1x LG		230V AC	10 Watt	0,04 A with 230V AC	
70	2x LED [2]		24V DC	3 VA	0,08 A with 24V DC	
80	2x LED		24V DC	20 VA	0,75 A with 24V DC	

[1] LG = glow lamp
[2] LED = light emitting diode

Changes of measures and design are subject to alteration!

EDV 05/05

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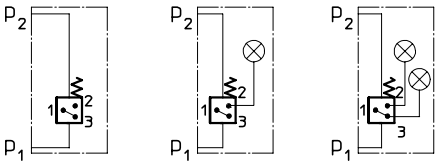
3. Spare parts:

item	qty.	designation	dimension	article-no.	type
1	1	O-ring	14 x 2	304342 (NBR)	AE version 30 - 80
				304722 (FPM)	
2	1	O-ring	22 x 2	304708 (NBR)	
				304721 (FPM)	
3	1	line adapter	DIN 43650-A	312492	AE version 30 and 40
	1	line adapter with LED 24V		315012	AE version 70 and 80
	1	line adapter with LG 120V		315010	AE version 50
	1	line adapter with LG 230V		315010	AE version 61

4. Symbols:

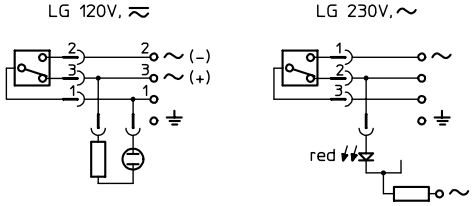
hydraulic-electrical symbol

version 30 and 40 | version 50 and 61 | version 70 and 80



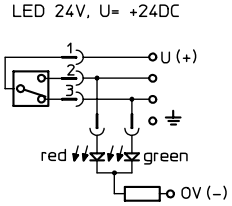
connection configuration for LG

version 50 | version 61



connection configuration for LED

version 70 and 80



p_1 = measure connection supply
p_2 = measure connection output

5. Description:

The AE 30 and AE 40 pollution indicators are electrical differential pressure indicators.
The AE 50 to AE 80 pollution indicators are combined optical and electrical differential pressure indicators. These differential pressure indicators can be fitted to all pressure filters $p \leq 420$ bar for which there is a corresponding assignment on the relevant dimension drawing. As the degree of pollution of the filter element rises, so the difference between the entry pressure p_1 and the exit pressure p_2 of the filter increases. Depending on this pressure difference and irrespective of the operating pressure, in the pollution indicators

- AE 30 and AE 40, two electrical signals (contact maker/contact breaker) are triggered
- AE 50 and AE 61, two electrical signals (contact maker/contact breaker) are triggered and one optical signal is formed
- AE 70 and AE 80, two electrical signals (contact maker/contact breaker) are triggered and two optical signals are formed.

A metering piston subjected to the entry and exit pressure moves against a metering spring according to the pressure differential. Depending on the path a permanent magnet integrated in the metering piston activates a reed contact (electromagnetic switch) and triggers the electrical signal. The electrical and optical indication is effected as a digital signal at the given switching pressure. Versions 50 to 80 of the pollution indicator are fitted with additional LED displays. The optical LED signal becomes visible according to the selected version in the translucent cover plate of the line box on the pollution indicator.
In the pollution indicators

- AE 50 and AE 61, the neon lamp signals that the filter element needs to be changed
- AE 70 and AE 80, the green LED signals the normal operating state (filter element not yet polluted to an unacceptable level), while the red LED signals that the filter element needs to be changed.

6. Operating instructions:

Normally filters are supplied with mounted clogging indicator. When retrofitting - the filter is to be discharged of the operating pressure.

- dismantling the screw plug out of the bare hole which is foreseen for the clogging indicator
- screw in the clogging inidcator into the bare hole (starting torque 125 Nm)

It is necessary to make sure the availability and the right positioning of sealing parts

- O-ring 22 x 2 and
- O-ring 14 x 2

as well as a dirt-free mounting. The electrical contacts are to be connected according to the graphical symbol shown on the type plate of the clogging indicator.

7. Maintenance:

The device is maintenance-free, however, note that no cleaning fluids and solvents get on the transparent cap of the optical indicator.