

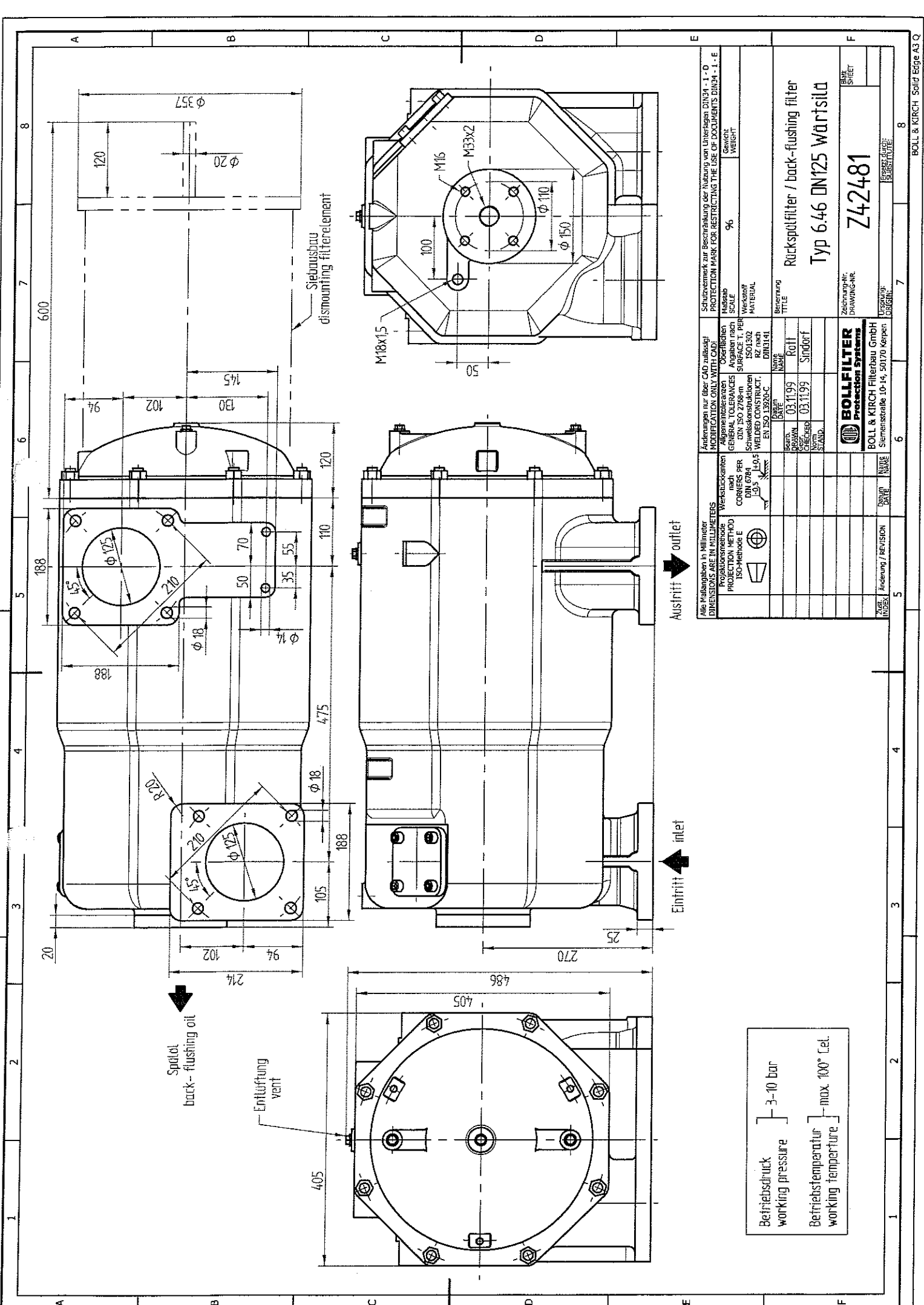
DESCRIPTION AND OPERATING INSTRUCTIONS FOR BACK-FLUSHING FILTER
TYPE 6.46

Order No.

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BOLL & KIRCH assumes no liability for any mistakes by improper use of the product.
We reserve the right to change this description without prior notice!



Betriebsdruck working pressure	3-10 bar
Betriebs temperatur working temperature	

Änderungen nur über CAD zulässig! MODIFICATIONS ONLY WITH CAD!			
Änderung / REVISION		DATE	
INDEX		NAME	
Schutzvermerk zur Beschränkung der Nutzung von Unterlagen DIN34 - 1 - 0 PROTECTION MARK FOR RESTRICTING THE USE OF DOCUMENTS DIN34 - 1 - E			
Skala / SCALE		96	
Material / MATERIAL		96	
Bezeichnung / TITLE		Rückspülfilter / back-flushing filter	
Typ / TYPE		Typ 6.46 DN125 wartsild	
Zachnung-Nr. / DRAWING-NR.		742481	
Blatt / SHEET		8	
Hersteller / MANUFACTURER		BOLLFILTER	
Zustand / STATUS		Siemensstraße 10-14, 50170 Kerpen.	
Gezeichnet / DRAWN		03.11.99	
Geprüft / CHECKED		03.11.99	
Gezeichnet / DRAWN		Roth	
Geprüft / CHECKED		Sindorf	

2. General notes on the automatic filter



The back-flushing Filter type 6.46 satisfies the safety standard for ships' main propulsion units. It is registered by GL, LRS and other ship classification bodies.

The back-flushing filter type 6.46 is suitable for filtering oils with a viscosity of max. 50 cSt. and an operating pressure of min. 3 bar to max. 10 bar.

The filter works with permanent back-flushing using its own process fluid; the back-flushed fluid is fed back into the circulation tank or the oil trough again.



No external power is required to operate the automatic filter.

The function of the automatic filter is to protect the bearings, journals and shafts in the engine from noxious impurities in the oil.

Treating the lubricating oil, i.e. removing the solids discharge, is carried out by a separator, a centrifuge, a bypass filter or the attached flushing oil treatment unit.

The filter can be mounted both vertically and horizontally directly on the engine or on the base frame.

In order to satisfy the different requirements of the engine manufacturers, the filter type 6.46 can be combined with a wide variety of engine attachments.

The filter type 6.46 mainly consists of the following:

- the housing with the inlet and outlet flanges
- the filter element with the appropriate number of filter candles, depending on the nominal width
- the excess pressure safety devices
- the downstream second filter stage [protective filter (8)]
- the entire flushing facility
- the gear unit including drive turbine.

The flushing oil treatment unit, which is installed at the customer's request, is fitted with a cartridge filter. The solids produced during continuous back-flushing are filtered out by the filter cartridge and the filtered oil is returned to the oil tank.



3. Installation of the filter

(see drawings Z39347 + Z39349)

Care must be taken during installation of the filter to ensure that clean pipes are connected to the filter inlet and the filter outlet without any strain.

The inlet and outlet of the filter are marked.

The flushing oil line is to be at least as large as specified in the information sheet.

This line is to be laid without any shut-off device but with a gradient and vented to prevent any build-up in the pipe.



A flushing oil treatment unit can be installed downstream, depending on the application. In this case please observe the separate description.

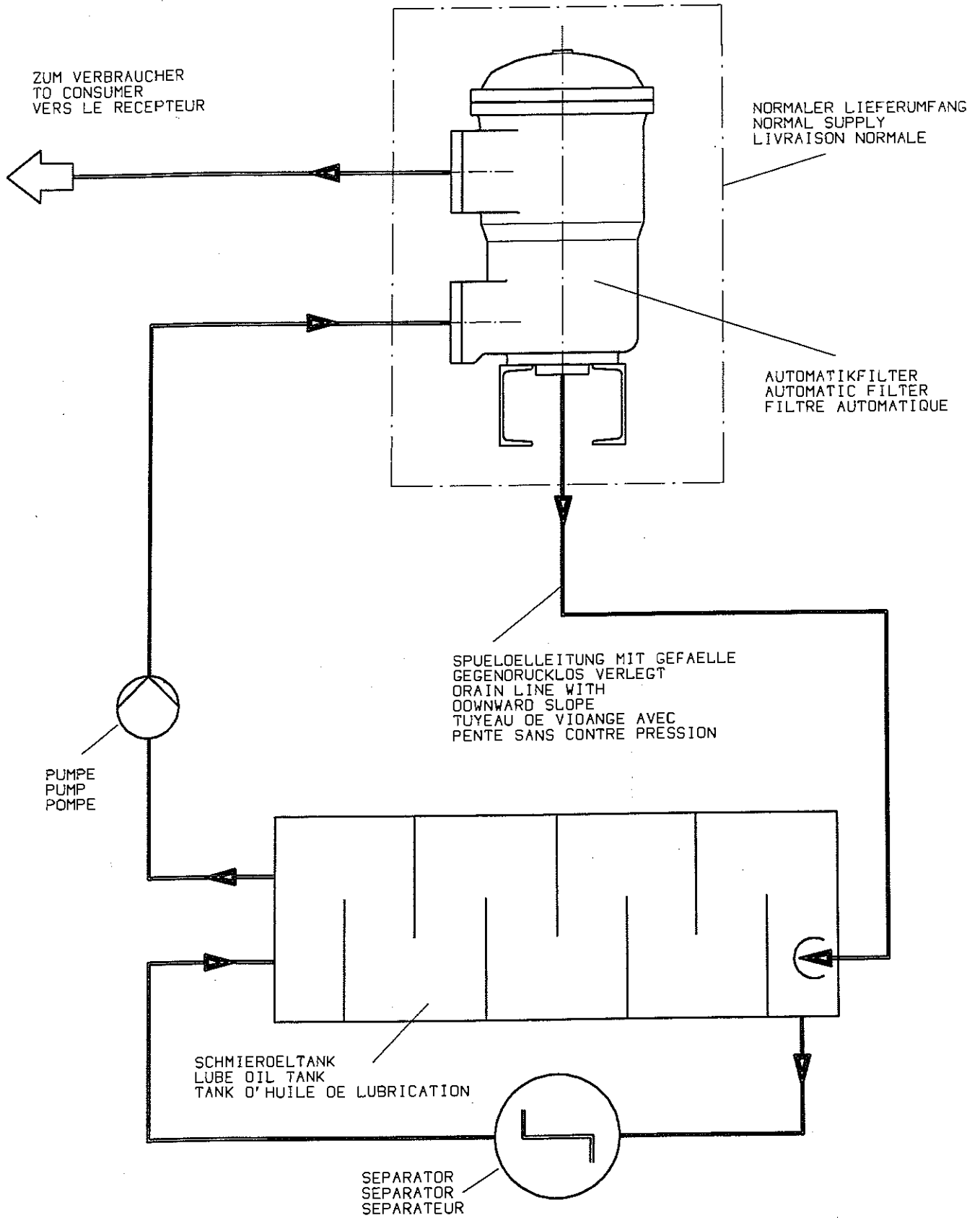
The potential-free contacts of the differential pressure indicator (24) installed (see "Differential pressure indicator, section 14) must be wired to monitor the degree of contamination of the filter elements (7) and the protective filter (8).



The filter housings are only designed for internal overpressure in accordance with the AD Information Sheets. Additional external forces and moments at the filter connection flanges are to be avoided (possibly by supporting the supply lines).



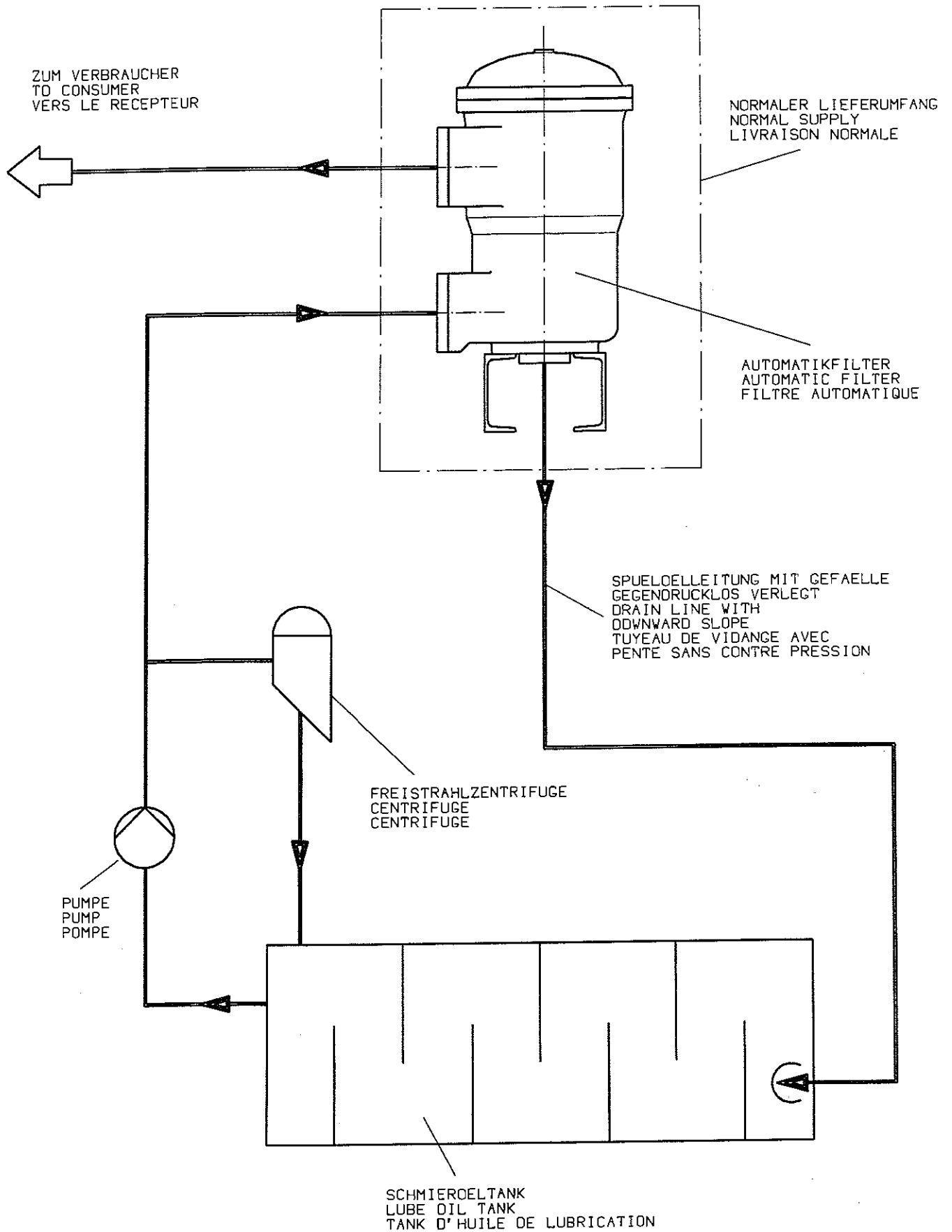
When installing the filters, make sure that any oil or fuel which leaks due to improper handling cannot result in a fire or injury.



SCHEMA INSTALLATION

EINBAUSCHEMA ZUM TYP 6.46
MIT SEPARATOR

SCHEMA D'INSTALLATION



SCHEMA INSTALLATION

EINBAUSCHEMA ZUM TYP 6.46
MIT FREISTRRAHLZENTRIFUGE

SCHEMA D' INSTALLATION



4. Commissioning

- 4.1 Check to see whether all connections have been made properly.
- 4.2 Check to see whether the ball cocks in the control line to the differential pressure indicator are open.
- 4.3 The following must be observed before switching on the pump:
- Close shut-off device in the bypass line
 - Open shut-off device at the filter outlet
 - Only partially open the shut-off device at the filter inlet and, after switching on the pump (to prevent pressure surges), slowly open it fully.
- 4.4 If the pressure downstream of the filter is less than 2 bar, the shut-off device downstream of the filter is to be regulated until the appropriate operating pressure has built up.
- 4.5 The rotary motion of the flushing facility can now be seen at the visible shaft end in the filter cover.



If there is an inadmissible rise in the differential pressure during commissioning (with new plants poss. greater initial contamination) in spite of perfect back-flushing, a signal is emitted via the differential pressure indicator. The Filter must be taken out of service (open the bypass line and close the shut-off devices on the Filter). Dismantle the Filter element completely and clean the Filter candles individually (observe section 9 "Filter candle inspection and cleaning").

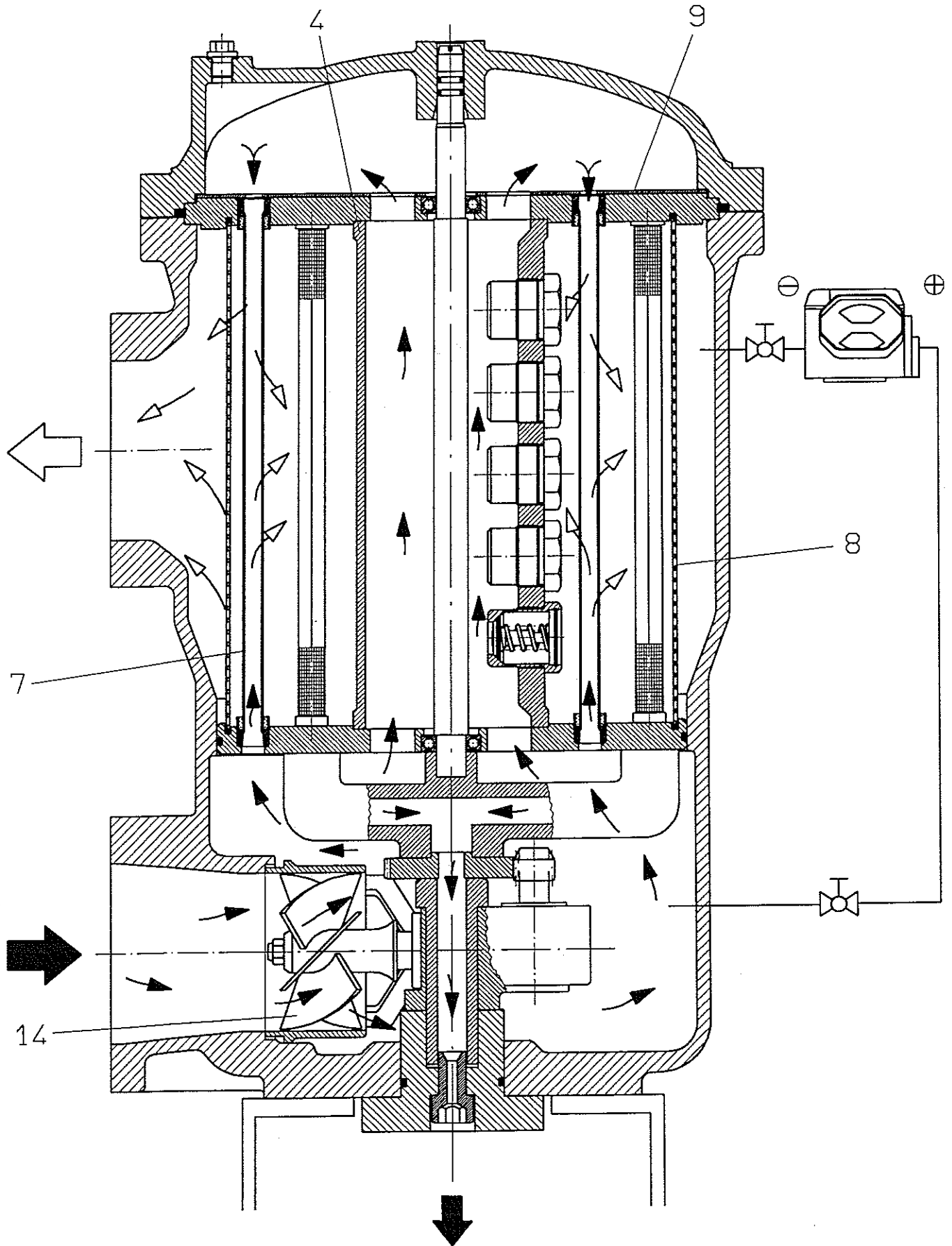


5. Filtration phase

(see drawing Z39293 sheet 1)

The fluid to be filtered passes through the inlet flange and turbine (14) to the bottom end of the filter candles (7); a partial stream of about 50% is passed through the central connection tube (4) to the top end of the filter candles (7). This means that the fluid flows through the filter candles (7) at both ends from the inside outwards and most of the dirt particles are retained in the inside of the filter candles (7).

The fluid filtered in this way now passes through the protective filter (8) to the filter outlet.



TYP 6.46 FILTRATIONS PHASE
FILTRATION-PHASE
PHASE DE FILTRATION



6. Back-flushing phase

(see drawing Z39293 sheet 2)



The back-flushing filter type 6.46 operates as a continuous flushing filter and does **not** require any external power to drive the back-flushing facility.

The flow energy drives the turbine (14) installed in the inlet flange. The high speed of the turbine (14) is reduced by the worm gear unit (13) and gear (15) to the lower speed required for turning the flushing arm (3).

The individual filter candles (7) are now connected successively to the atmosphere by means of the continuously rotating flushing arm (3), the flushing bush (17) and nozzle (21).



The pressure gradient thus produced (operating pressure to atmosphere) results in an extremely efficient cleaning action.

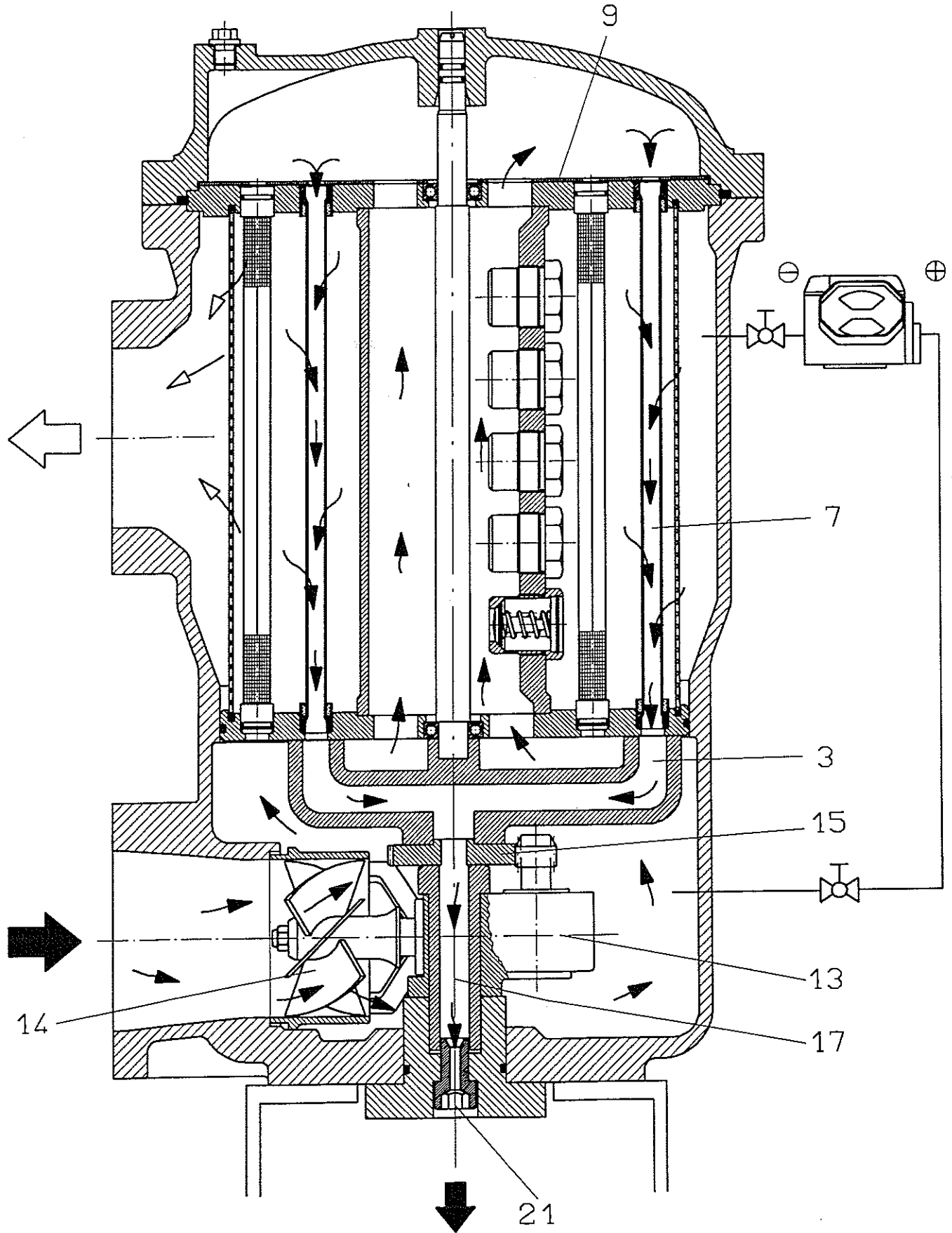
The unfiltered fluid passes through the optimally designed bores of the top cover plate (9) into the individual filter candles (7) from above. The resultant turbulent stream in the longitudinal direction of the filter candles (7) (cross-flow back-flushing) and the counter-flow back-flushing through the filter candles (7) result in a particularly effective and lasting back-flushing action.



Counter flow back-flushing:

The lower pressure in the interior of the filter candles (7) during the back-flushing operation (connected with the atmosphere) and the higher pressure (operating pressure) outside the filter candles (7) produce a counter-flow through the mesh from the clean filter side through the dirty filter side to the atmosphere.

This newly developed cross-flow back-flushing feature in conjunction with the time-tested counter-flow back-flushing principle means that the pressure drop at the filter remains constant for a longer period.



TYP 6.46

RUECKSPUELPHASE
BACK-FLUSHING-PHASE
PHASE DE DECOLMATAGE
PAR CONTRE-COURANT



7. Functioning of the overflow valves

(see drawing Z39293 sheet 3)

Should for any reason the filter candles (7) (first filter stage) no longer be adequately cleaned, the overflow valves (19) are opened at a differential pressure of 2 bar upwards and some of the fluid is filtered through the protective filter (8) (second filter stage).

However, before this situation arises, the installed differential pressure indicator (24) emits a differential pressure warning (first contact). The cause must now be localised and remedied.

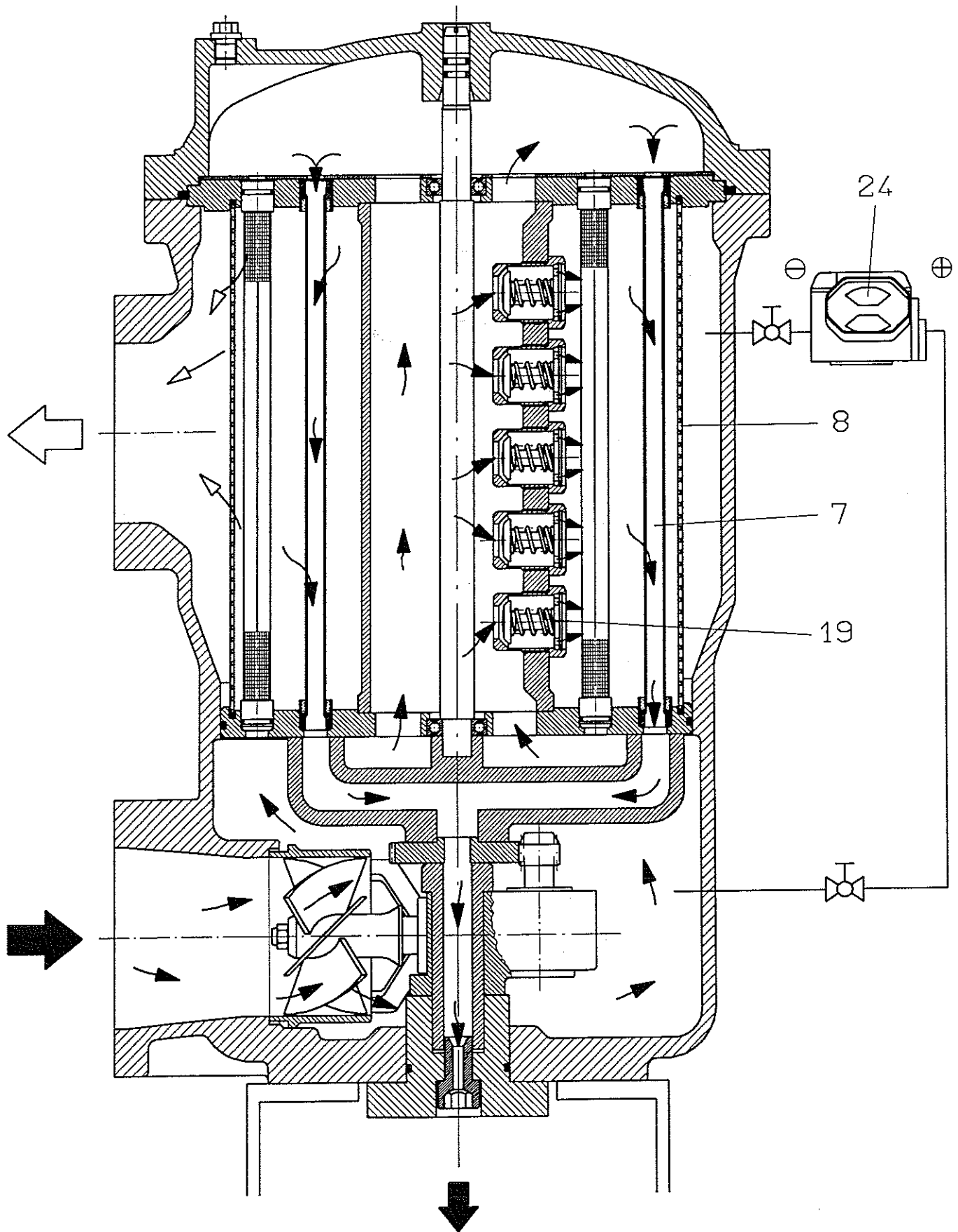
If this warning is not heeded, an alarm is emitted by the second contact of the differential pressure indicator (24).



The filter may only be operated in this emergency condition for a short time (opened overflow valves and differential pressure warning). Prolonged operation in this mode can result in damage to downstream components.



The overflow valves are closed under normal operating conditions, even during start-up at lower fluid temperatures.



TYP 6.46 WIRKUNGSWEISE UEBERSTROEMVENTIL
FUNCTION SPILL VALVE
FONCTIONNEMENT SOUPAPES ANTIREFOULEUSES



8. Maintenance

Section 9 - Filter candle inspection and cleaning - must also be observed.

Even with automatic filters inspections and maintenance must be performed at regular intervals.

It is extremely important to remember that in spite of constant back-flushing the mesh may become clogged over the course of time, depending on the quality of the fluid and whether a bypass treatment unit installed.

In order to maintain trouble-free operation, the following aspects are to be observed during maintenance:

- 8.1 The filter must be switched off for all maintenance work.
- 8.2 Check filter and connections for leaks.
- 8.3 Conduct visual inspection of all filter candles (7) once a year.



Should a higher differential pressure occur beforehand, all the filter candles (7) and the protective filter (8) must be checked and, if necessary, cleaned.

Observe section 9 "filter candle inspection and cleaning".



A highly contaminated protective filter (8) is a sign of prolonged operation with defective or clogged filter candles (7) and thus (from a differential pressure of 2 bar upwards) opened overflow valves (19).

It is imperative to check these components.



- 8.4 Check the ease of movement of the worm gear unit (13), the turbine (14) including gear (15) with flushing arm (3).



To this end the cover (34) or the screw plug (34) must be removed. Now check the ease of movement with a suitable spanner (on the hexagon of the worm gear unit).
If movement is sluggish, refer to section "Sources of faults and their remedy".

- 8.5 It is recommended to replace the filter candles (7) after 2 years.



Longer use is also possible if the filter candles are checked carefully (7).

- 8.6 Replace the dyn. loaded seals (66) as and when required.
It is advisable to replace all static seals during an overhaul.



9. Filter candle inspection and cleaning

(see drawing Z39293 sheet 2)

- 9.1 Open bypass line.
- 9.2 Close shut-off devices at the filter inlet and outlet.
- 9.3 Now drain the filter from the drain screw.
- 9.4 Pull the entire filter element incl. flushing arm (3) and gear (15) out of the housing.



Make sure that the exposed gear (15) is not damaged.

- 9.5 Remove the upper cover plate (9).
- 9.6 The filter candles (7) can now be pushed out from below or pulled out from above.
- 9.7 Place the filter candles (7) in the cold cleaner BOLL CLEAN 2000, max. soaking time 24 hours.
- 9.8 After immersing the filter candles (7), clean them from the outside inwards using high pressure.



It must be ensured that the filter candles are cleaned at a pressure of max. 60 bar and at a minimum distance of the cleaning nozzle of 20 cm. Otherwise, damage to the mesh is possible.



In our experience it is only possible to achieve an almost 100 % cleaning effect by hand with the high-pressure cleaning unit type 5.04 using BOLL CLEAN 2000.
Refer to the separate description "Filter cleaning unit type 5.04".



- 9.9 Before the filter candles (7) are installed, they must be visually inspected and damaged candles replaced with new ones.



Defective filter candles (7) must not be used again.



Before installation of the entire filter element, the ease of motion of the flushing facility must be checked.
The flushing arm (3) must not grind against the bottom filter plate (5).

- 9.10 Now push the entire filter element into the housing.

By slightly turning the flushing shaft (10), the gear (15) is forced into the drive pinion of the gear unit (13).



Now re-assemble the filter in the reverse sequence to that described under points 9.1 - 9.9.



10. Technical information BOLL CLEAN 2000

Solvent-free cold cleaner

Product description

BOLL CLEAN 2000 is a liquid cleaning and degreasing agent for a wide range of applications. It can be used for virtually all cleaning and degreasing work.

BOLL CLEAN 2000 is miscible with any water - even sea water.

BOLL CLEAN 2000 cleans quickly and thoroughly and is extremely economical. Even mixed with water in concentration ranges of 1:50, it exhibits good cleaning and degreasing properties. When BOLL CLEAN 2000 is used, no safety precautions are needed. BOLL CLEAN 2000 exhibits these outstanding properties without having the disadvantages of solvent cleaners.

BOLL CLEAN 2000 is non-flammable

does not need to be identified

does not have a pungent smell

is a non-irritant

is physiologically safe

is biodegradable

Federal Office of the Environment Reg. No. 04860019

BOLL CLEAN 2000 can become cold or hot during storage but can be readily used again at normal temperature.

Field of application

BOLL CLEAN 2000 is suitable for cleaning and degreasing all metals, plastics, highly adhesive paints etc. It removes oil, wax, grease, rust and numerous other kinds of dirt.

BOLL CLEAN 2000 is used, for example, in the automobile, engine, aviation, oil (for drilling equipment), food and drinks, and metalworking industries, in overhauling and machine workshops, shipping, diesel and electric locomotives, and in electricity works for cleaning the generators.



Mesh contaminated with heavy oil

Filters contaminated with heavy oil must be soaked in a commercially available solvent. After being soaked, the filters are cleaned in the BOLL & KIRCH cleaning unit type 5.04 with BOLL CLEAN 2000 and a high-pressure pump.

Instructions for use

The use of BOLL CLEAN 2000 does not involve any specific cleaning method. BOLL CLEAN 2000 can be employed in an immersion bath, in a spraying plant, in a steam jet cleaner or using a manual application process with a cloth, brush or sponge, depending on the circumstances.

It can be used either cold or warm.

BOLL CLEAN 2000 is miscible with water - even sea water.

Concentration for cleaning mesh: 1:2.5

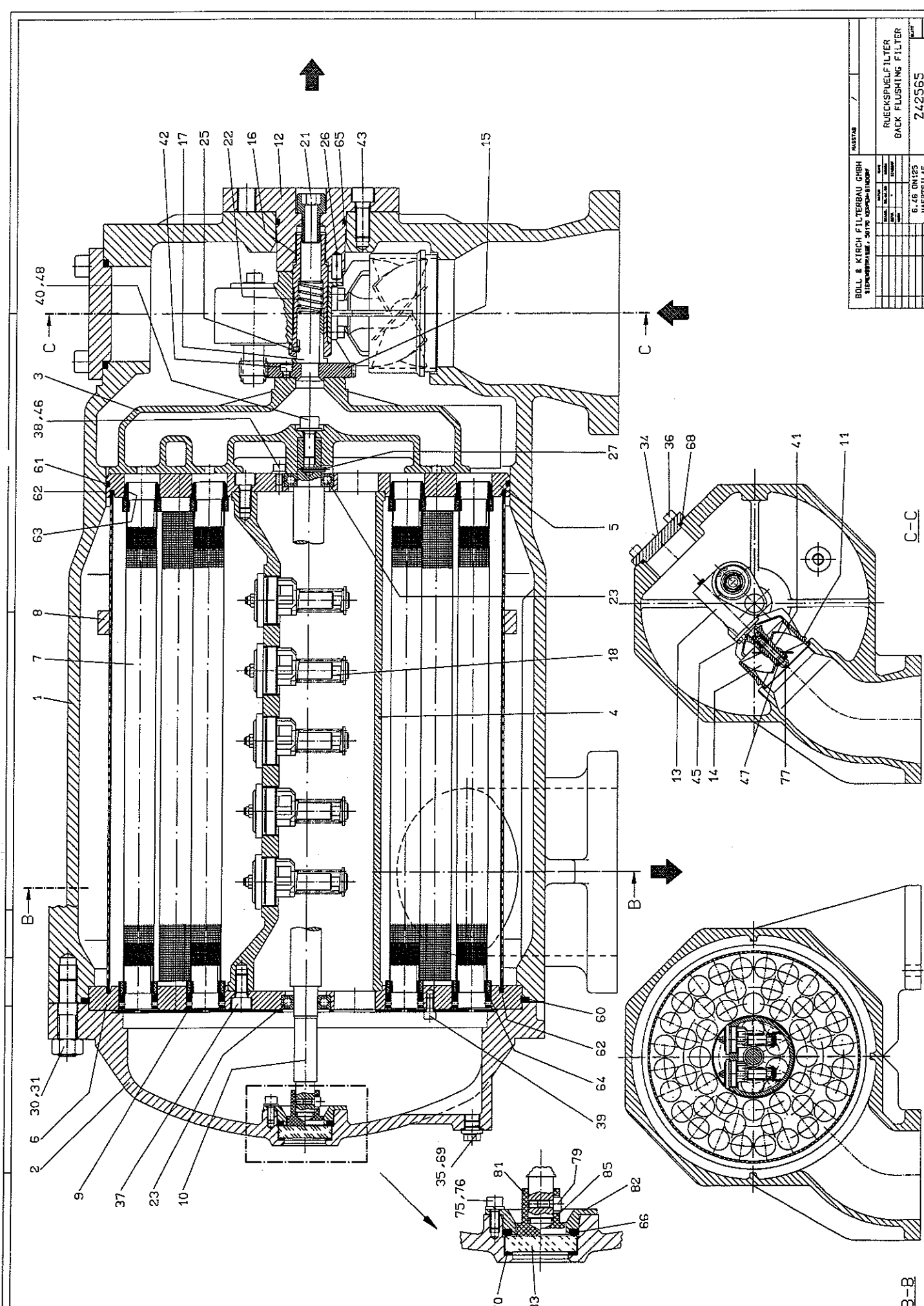
Temperature: up to max. 60°C

The concentration depends on the type and thickness of the adhering material to be removed. When used in a concentration of 1:30 and more, rinsing is not necessary. No visible film remains on the surface.



11. Sources of faults and their remedy

Fault	Cause	<u>Reasons and remedy</u>
Δp rises —	- Viscosity too high	- Wait for normal operating conditions
	- High volume of dirt	- Check bypass treatment unit for operability
	- Filter candles clogged	- Clean candles
	- Flushing volume too low	- Check flow control device in outlet and sludge discharge line for clogging
	- Shaft end does not turn	- <u>Turbine jammed</u> - Remove parts jammed between turbine and wall
		- <u>Gear unit defective</u> - Check for ease of movement (as per section 8 "Maintenance") Replace gear unit if necessary
		- <u>Flushing arm (3) jammed</u> , Remove any foreign matter
		- <u>Operating pressure < 2 bar</u>
		- Run for prolonged period at higher pressure 5-6 bar and thus eliminate the blockage
		- <u>Oil quantity too low</u> / Increase oil quantity



FABRIKANT		7	
BOLL & KIRCH FILTERBAU GMBH STERNENWEG 3170 KÖRPER-ELDORF			
ARTIKEL-NR.	ZEICHEN-NR.	STÜCK-NR.	STÜCK-NR.
RUECKSPUELFILTER BACK FLUSHING FILTER			
742565			
6-76 UN 125 MERTSILUE			
DATE	BY	CHECKED	DATE

B-B

C-C



BOLLFILTER

Protection Systems

UNTERLAGE LIST-NO	VERS	STUECKLISTE PARTS-LIST	DATUM DATE	BLATT PAGE
19041	01		19.12.00	1
ZPOS IDENTNR IDENTITY		BENENNUNG-NENNMASS-NORM DESIGNATION-DIMENSIONS-STANDARD		MENGE ME QUANTITY ME
0000 0629041		6.46 NW125 RUECKSP. 19041 BACK FLUSHING FILTER		1.000 ST
.....				
		ZUSAMMENSTELLUNG : Z42565 ASSEMBLY DRAWING		
		MASSBLATT : Z42481 DIMENSION PAGE		
		AUSLEGUNGSUEBERDRUCK: 10 BAR / 100 GRD C DESIGN PRESSURE		
.....				

0001 6522534	276	GEHAEUSE HOUSING		1.000 ST
0002 6022215	277	DECKEL COVER		1.000 ST
0003 6551247	278	SPUELARM FLUSHING CANAL		1.000 ST
0004 5151255	279	VERBINDUNGSROHR JOINING TUBE		1.000 ST
0005 5152004	280	SIEBPLATTE (UNTEN) SIEVE PLATE		1.000 ST
0006 5152005	281	SIEBPLATTE (OBEN) SIEVE PLATE		1.000 ST
0007 1345456	282	FILTERKERZE FILTER ELEMENT		48.000 ST
0008 5701008	283	SCHUTZSIEB SIEVE		1.000 ST
0008 7108806	284	LOCHBLECHZUSCHNITT PLATE BLANK		1.000 ST
0009 5109912	285	ABDECKPLATTE PLATE		1.000 ST
0010 5300219	286	SPUELARMWELLE FLUSHING CANAL SHAFT		1.000 ST
0011 6853849		TURBINENGEHAEUSE TURBINE HOUSING		1.000 ST
0012 5302368		FLANSCHBEFESTIGUNG FLANGE FASTENING		1.000 ST
				/ 2



BOLLFILTER

Protection Systems

UNTERLAGE LIST-NO	VERS	STUECKLISTE PARTS-LIST	DATUM DATE	BLATT PAGE
19041	01		19.12.00	2
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0013 2709131	207	SCHNECKENGETRIEBE AB GEAR		1.000 ST
0014 2784402	3	FLUEGEL MIT NABE TURBINE WING WITH WH		1.000 ST
0015 2705519	3	ZAHNRAD TOOTHED WHEEL		1.000 ST
0016 5300723	3	BEFESTIGUNGSBUCHSE BUSH		1.000 ST
0017 5060722	3	SPUELBUCHSE BUSH		1.000 ST
0018 0209130	208	UEBERSTROEMVENTIL 6.46 D=34 VALVE	19130	10.000 ST
0021 5004689	209	DUESE NOZZLE		1.000 ST
0022 2310058	3	DRUCKFEDER PRESSURE SPRING		1.000 ST
0023 2703600	290	RILLENKUGELLAGER DEEP GROOVE BALL BEA		2.000 ST
0025 2000257	3	ZYL.-SCHRAUBE SLOTTED CHEESE HEAD		1.000 ST
0026 2301130	3	STECKERBSTIFT PIN		1.000 ST
0027 2300010	3	SPANNSTIFT SPRING TYPE STRAIGHT		1.000 ST
0030 2002835	291	STIFTSCHRAUBE STUD BOLT		8.000 ST
0031 2100012	292	SECHSKANTMUTTER HEXAGON NUT		8.000 ST
0034 6402865	3	DECKEL COVER		1.000 ST
0035 2000187	3	VERSCHLUSSCHRAUBE HEXAGON HEAD SCREW P		2.000 ST
0036 2000155	3	ZYL.-SCHRAUBE HEXAGON SOCKET HEAD		4.000 ST
				/ 3



BOLLFILTER

Protection Systems

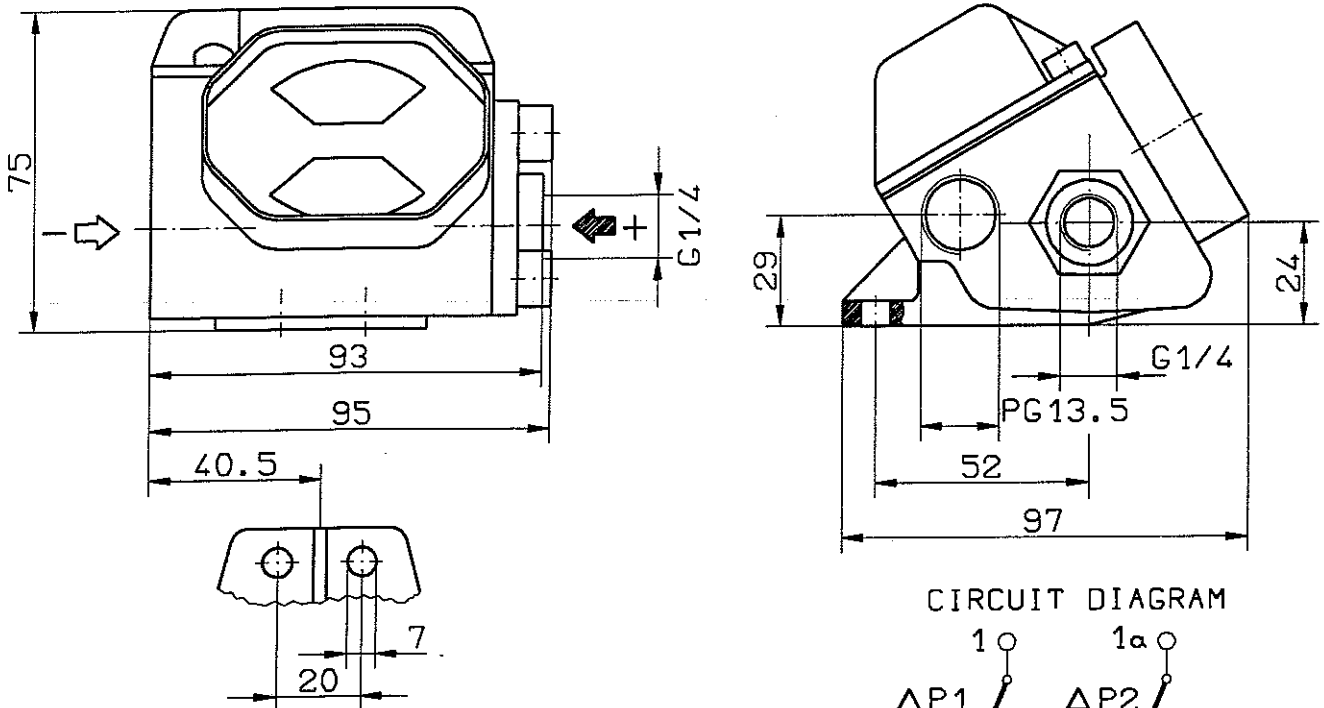
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0037 2000142 }		ZYL.-SCHRAUBE SLOTTED CHESSE HEAD		6.000 ST
0038 2000121 }		ZYL.-SCHRAUBE HEXAGON SOCKET HEAD		3.000 ST
0039 2000121 }		ZYL.-SCHRAUBE HEXAGON SOCKET HEAD		3.000 ST
0040 2000143 • 293		ZYL.-SCHRAUBE SLOTTED CHESSE HEAD		1.000 ST
0041 2003658 }		STIFTSCHRAUBE BOLT		1.000 ST
0042 2000122 }		ZYL.-SCHRAUBE HEXAGON SOCKET HEAD		2.000 ST
0043 2000155 }		ZYL.-SCHRAUBE HEXAGON SOCKET HEAD		4.000 ST
0045 2000121 }		ZYL.-SCHRAUBE HEXAGON SOCKET HEAD		3.000 ST
0046 2200005 • 294		SCHEIBE DISK		3.000 ST
0047 5008712 }		SCHEIBE DISC		1.000 ST
0048 2200007 }		SCHEIBE WASHER		1.000 ST
0060 3040710 • 295		O-RING GASKET		1.000 ST
0061 3040020 • 296		O-RING GASKET		1.000 ST
0062 3040020 • 296		O-RING GASKET		2.000 ST
0063 3040023 • 297		O-RING GASKET		48.000 ST
0064 3140003 • 298		RUNDSCHNURRING ROUND CORD RING		48.000 ST
0065 3031743 }		O-RING GASKET		1.000 ST
				/ 4



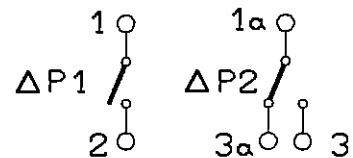
BOLLFILTER

Protection Systems

UNTERLAGE LIST-NO	VERS	STUECKLISTE PARTS-LIST	DATUM DATE	BLATT PAGE
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ZPOS IDENTNR IDENTITY	BENENNUNG-NENNMASS-NORM DESIGNATION-DIMENSIONS-STANDARD	MENGE ME QUANTITY ME		
0066 3040115	O-RING GASKET	1.000 ST		
0068 3041106	O-RING GASKET	1.000 ST		
0069 3270002	DICHTRING GASKET	2.000 ST		
0070 3348444	FLACHDICHTUNG GASKET	1.000 ST		
0075 2209799	FEDERRING SPRING RING	3.000 ST		
0076 2000122	ZYL.-SCHRAUBE HEXAGON SOCKET HEAD	3.000 ST		
0077 2100047	SECHSKANTMUTTER HEXAGON NUT	1.000 ST		
0079 2000115	ZYL.-SCHRAUBE HEXAGON SOCKET HEAD	1.000 ST		
0080 9400997	SCHILD "EIN/IN LABEL " IN "	1.000 ST		
0080 9407569	SCHILD "AUS/OU LABEL " OUT "	1.000 ST		
0080 9402913	TYPENSCHILD NAME PLATE	1.000 ST		
0081 3529686	ANZEIGEBUCHSE INDICATION BUSH	1.000 ST		
0082 5209684	SPANNRING TENSION RING	1.000 ST		
0083 4707080	SCHAUGLAS INSPECTION GLAS	1.000 ST		
0085 2311117	WELLENFEDER SPRING	1.000 ST		



CIRCUIT DIAGRAM



SPECIFICATION:
PROTECTION CLASS: IP 65

ELECTR. DATA:	SWITCHING VOLTAGE V _∅ MAX. =	250	220
	FREQUENCY HZ MAX. =	0-60	0-60
	SWITCHING CURRENT A MAX. =	1	0.8
	MAKING AND/OR BREAKING CAPACITY W/VA MAX. =	60/60	40/60

MATERIAL : GD - ALUMINIUM
RATING : MAX. PRESSURE 100 BAR
MAX. TEMPERATURE 150°C

RANGES OF PRESSURE DIFFERENTIAL :	DELTA P = 0 - 0.5 BAR] TO BE SPECIFIED WHEN ORDERING
	0 - 0.8 BAR	
	0 - 1.2 BAR	
	0 - 2.0 BAR	
	0 - 3.0 BAR	

DESCRIPTION:

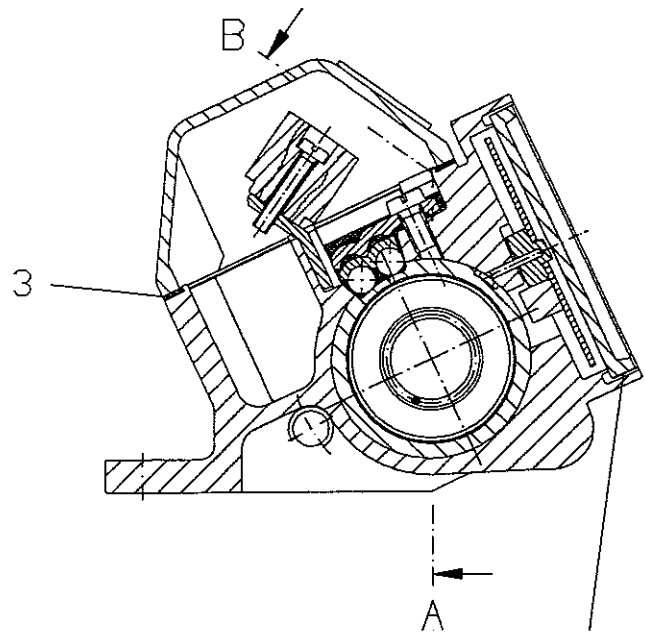
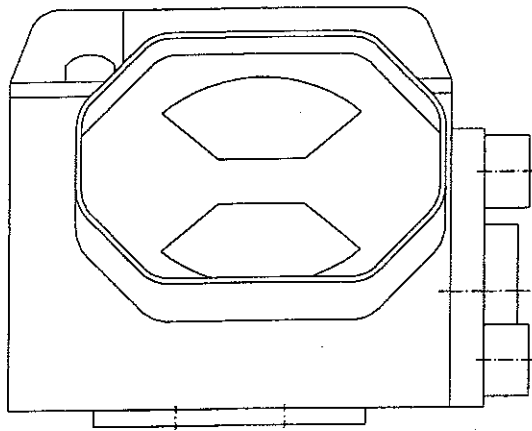
THE PURPOSE OF THIS DEVICE IS THE MEASUREMENT, AND VISUAL INDICATION OF THE DIFFERENCE IN PRESSURE BETWEEN TWO POINTS, AND THE ESTABLISHMENT OF AN ELECTRICAL CONTACT WHEN THE PRESSURE DIFFERENTIAL ATTAINS A SPECIFIED FIGURE.

METHOD OF OPERATION:

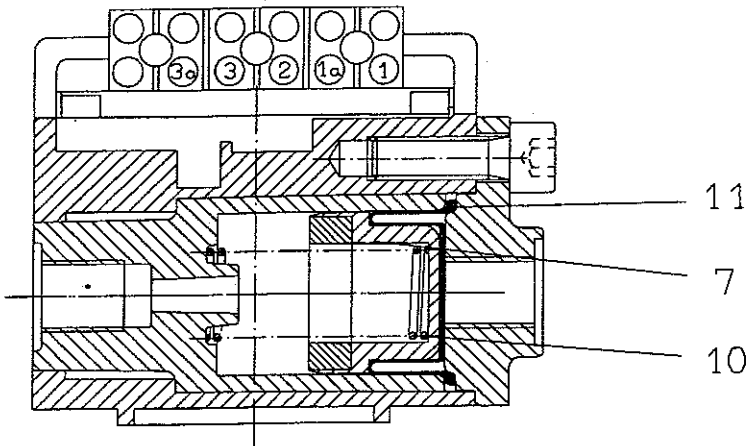
A PLUNGER SEALED BY A DIAPHRAGM SEPARATES THE SPACE UNDER PRESSURE INTO TWO CHAMBERS. A PRE-LOADED SPRING CAUSES THE PLUNGER TO TAKE UP ITS ZERO POSITION WHEN THE PRESSURE DIFFERENCE DELTA P IS ZERO. AS THE PRESSURE DIFFERENCE INCREASES (DELTA P > 0), THE PLUNGER IS FORCED TO MOVE AGAINST THE SPRING. AT THE SAME TIME, AN INDICATOR DISC IS MOVED MAGNETICALLY, AND THEREFORE VIRTUALLY WITHOUT FRICTION, AND THE TWO REED CONTACTS ARE ACTUATED.

THE RED SEGMENT OF THE INDICATOR DISC IS VISIBLE OVER A PRESSURE RANGE EQUAL TO APROX. 50-100% DELTA P. THE FIRST REED CONTACT IS ACTUATED AT 75% DELTA P1, AND THE SECOND AT 100% DELTA P2.

DIFFERENTIAL PRESSURE CONTACT INDICATOR



GEKLEBT
CEMENTED
COLLE



A - B

BEI BESTELLUNG ANGEBEN
TO BE MENTIONED IN CASE OF ORDER
A MENTIONNER LORS DE LA COMMANDE

AUFTR. NR. :
ORDER NO.
NO DE COMMANDE

TYP 4.36.2

11	ROLLMEMBRAN	DIAPHRAGM	DIAPHRAGME	
10	FEDER	SPRING	RESSORT	
7	KOLBEN	PISTON	PISTON	
3	DICHTUNG	GASKET	JOINT	
POS. NR.	BEZEICHNUNG	DESIGNATION	DÉSIGNATION	
SPARE PARTS DRAWING		ERSATZTEILZEICHNUNG ZUM TYP 4.36.2 UND 4.46.2		PLAN DES PIÈCES DE RECHANGE