

DESCRIPTION AND OPERATING INSTRUCTIONS

FOR THE DUPLEX FILTER

Contents:

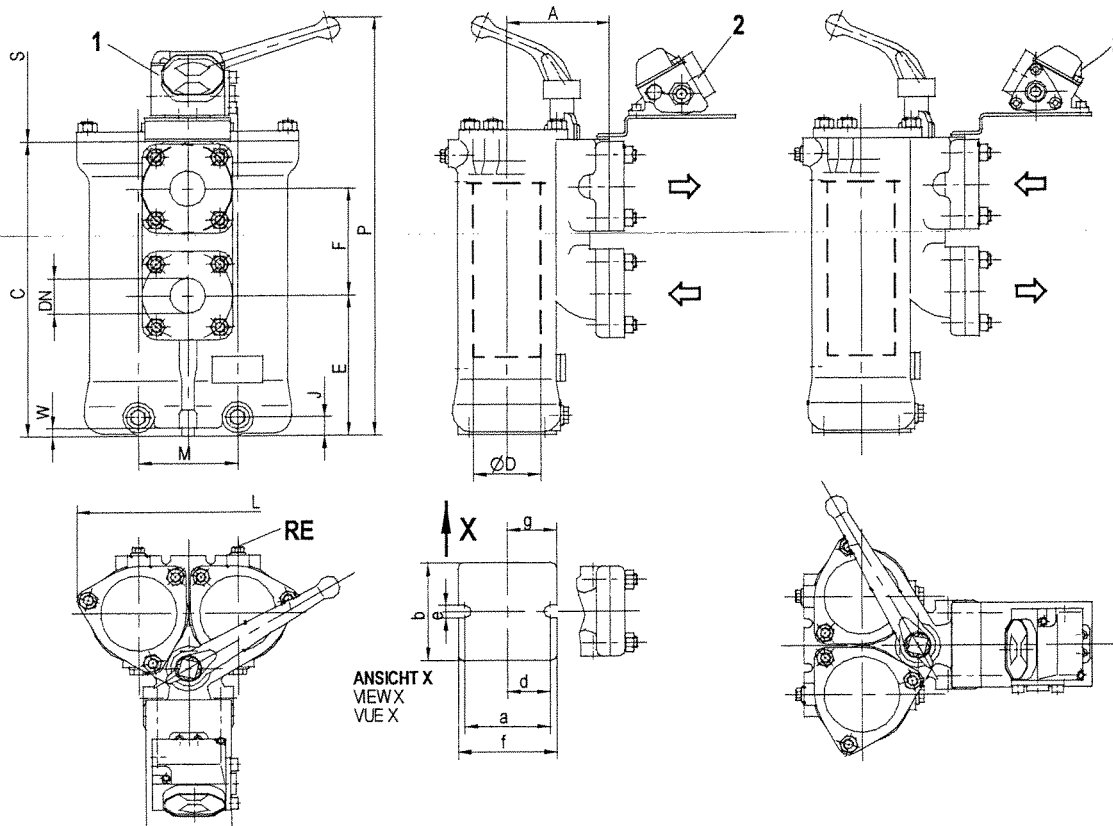
1. Type sheet
2. Spare parts drawing and spare parts list
3. Description and Operating Instructions for the duplex filter
4. Description and Operating Instructions for the filter element cleaning
5. Data Sheet for the Differential Pressure Indicator (to order)
6. Spare parts drawing for the Differential Pressure Indicator (to order)



BOLLFILTER

Protection Systems

Z45540
TYP2.04.5
24.09.2002



RE ENTLÜFTUNG G1/4
AIR ESCAPE G1/4
DESAERATION G1/4

RS ENTLERUNG G3/8
DRAIN G3/8
VIDANGE G3/8

GEHÄUSE GEGOSSEN
CASTED CASING
CORPS MOULÉ

FLANSCHANSCHLUSS:
FLANGED JOINT:
RACCORD A BRIDÈS:

AUF WUNSCH / ON REQUEST / SUR DEMANDE

- 1 DIFFERENZDRUCKANZEIGER (DDA)
DIFFERENCE PRESSURE INDICATOR
INDICATEUR DE DIFFERENCE DE PRESSION
- 2 DDA-ANBAU U. DURCHFLUSSRICHTUNG F. STERNSIEBE
DPI-INSTALLATION AND FLOW DIRECTION
FOR STAR-ELEMENT
IDP-ASSEMBLAGE ET DIRECTION DE PASSAGE
POUR PANIERS À ÉTOILE
- 3 DDA-ANBAU U. DURCHFLUSSRICHTUNG F. KORBSIEBE
DPI-INSTALLATION AND FLOW DIRECTION
FOR BASKET-ELEMENT
IDP-ASSEMBLAGE ET DIRECTION DE PASSAGE
POUR PANIERS À CORBEILLE
- S SIEBAUSBAU
FOR DISMOUNTING THE FILTER ELEMENT
DEMONTAGE DU PANIER

BETRIEBSÜBERDRUCK:
WORKING PRESSURE:
PRESSION DE SERVICE:

GEHÄUSE AUS EN-GJL-250
16 BAR BEI 200°C
CASING OF EN-GJL-250
16 BAR AT 200°C
CORPS EN EN-GJL-250
16 BAR À 200°C

GEHÄUSE AUS EN-GJS-400-15
25 BAR BEI 120°C
CASING OF EN-GJS-400-15
25 BAR AT 120°C
CORPS EN EN-GJS-400-15
25 BAR À 120°C

STIFTSCHRAUBE DIN939
STUD BOLT DIN939
BOULON DIN939

DN	K	m
25	80	M10
32	80	M10

SECHSKANTSCHRAUBE DIN931
SPANNER BOLT DIN931
VIS HEXAGONALE DIN931

DN	K	m
40	100	ø14
50	110	ø14
65	130	ø18
80	150	ø18

BESTELLBEISPIEL
ORDERING EXAMPLE
EXEMPLE DE COMMANDE

TYP

2.04.5

øG

90

Q

145

DN

32

ALLGEMEINTOLERANZEN DIN ISO 2768-V
TOLERANCE DIN ISO 2768-V
TOLERANCE DIN ISO 2768-V

øG	Q	DN		A	C	øD	E	F	J	L	M	~O	P	S	a	b	d	e	f	g	w	VOL. LITER	KG
		MIN.	MAX.																				
90	95	25	32	95	199	65	79	80	22	206	92	159	363	170	95	92		12	110		10	2X1	17
90	145	32	40	95	249	65	129	80	22	206	92	159	413	220	95	92		12	110		10	2X1	18
110	210	40	50	115	330	85	157	120	20	250	110	189	478	300	95	110		14	110		10	2X2	29
110	260	50	65	128	385	85	208	120	20	250	110	202	533	350	95	110		14	110		10	2X3	36
110	390	65	80	180	523	85	317	140	34	260	120	244	685	480	120	65	75	14	200	137	20	2X4	55
170	500	80	100	214	690	124	453	160	50	370	203	307	835	700	174	120	105	18	220	135	25	2X13	107

SUBJECT TO ALTERATIONS

DUPLEX FILTER

ÄNDERUNGEN VORBEHALTEN !

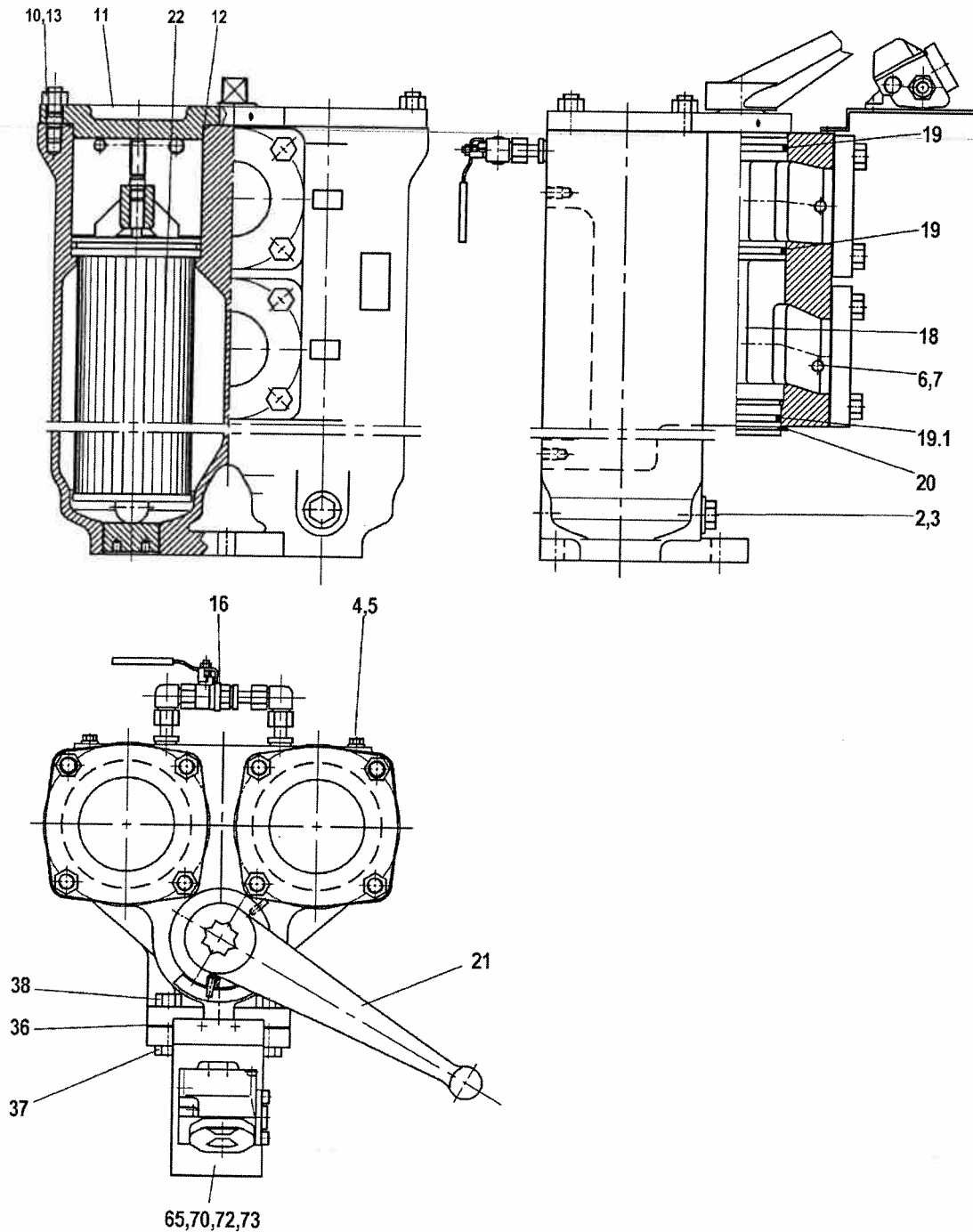
DOPPELFILTER 2.04.5

MODIFICATIONS RÉSERVÉES

FILTRE DOUBLE



Z32899
TYP2.04.5
27.04.2000



SPARE PART LIST

ERSATZTEILLISTE TYP 2.04.5 DN65-80

LIST DES PIÉCES
DE RECHANGE
Bl. 1 / 3



ERSATZTEILLISTE TYP 2.04.5

SPARE PART LIST

LISTE DES PIECES DE RECHANGE

Typenschlüssel:

2.04.5. =Doppelfilter

G . =Gehäusedurchmesser

Q . = Filtereinsatzlänge

DN . = Anschlußflansche

duplex filter

cabin diameter

length of the filter element

connection flanges

Filtre double

diamètre du corps

longueur du panier

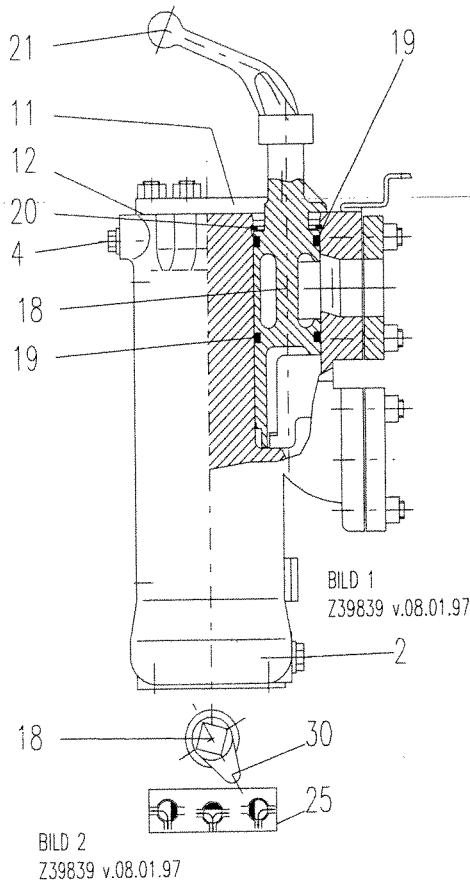
brides désirées

Pos Nr.	Bezeichnung Designation Designation	DN 25	St.	DN 32	St.	DN 40	St.	DN 50	St.	DN 65	St.	DN 80	St.
2	Verschlußschraube screw plug vis	2000188	2	2000188	2	2000188	2	2000188	2	2000188	2	2000188	2
3	Dichtung gasket joint	3270003	2	3270003	2	3270003	2	3270003	2	3270003	2	3270003	2
4	Verschlußschraube screw plug vis	2002885	2	2002885	2	2002885	2	2002885	2	2002885	2	2002885	2
5	Dichtung gasket joint	3270002	2	3270002	2	3270002	2	3270002	2	3270002	2	3270002	2
6	Verschlußschraube screw plug vis	2002885	2	2002885	2	2002885	2	2002885	2	2002885	2	2002885	2
7	Dichtung gasket joint	3270002	2	3270002	2	3270002	2	3270002	2	3270002	2	3270002	2
10	Stiftschraube bolt vis	2000002	6	2000002	6	2000004	6	2000004	6	2000004	6	2000007	6
11	Deckel cover couvercle	Z26002	2	Z26002	2	Z25721	2	Z25721	2	Z25721	2	Z31610	2
12	O-Ring (Viton) O-Ring O-Ring (Perbunan)	3030742 3040102	2	3030742 3040102	2	3035046 3042329	2	3035046 3042329	2	3035046 3042329	2	3030367 3040107	2
13	Mutter nut ecrou	2100005	6	2100005	6	2100006	6	2100006	6	2100006	6	2100007	6
16	Kugelhahn ball valve vannes à boisseau sphérique	G 1/4 —	1	G 1/4	1	G 1/4	1	G 1/4	1	G 3/8	1	G 3/8	1
18	Küken cock vanne à boisseau	Z25998	1	Z25998	1	Z25889	1	Z25735	1	Z31309	1	Z31612	1
19	O-Ring (Viton) O-Ring O-Ring (Perbunan)	3030172 3040158	2	3030172 3040158	2	3030466 3040501	2	3031849 3040117	2	3030175 3040119 3030174	2	3030075 3040121 3030177	2
19.1	O-Ring (Viton) O-Ring O-Ring (Perbunan)	----- -----		----- -----		----- -----		----- -----		3040180	1	3031277	1
20	Sicherungsring circlip ring circlip extérieure	2201921	1	2201921	1	2209026	1	2205389	1	2205119	1	2205119	1
21	Hahnschlüssel plug key clef du robinet	WN 48.2	1	WN 48.2	1	WN 48.2	1	WN 48.2	1	WN 48.2	1	WN 48.2	1
22	Siebeinsatz sieve element élément filtrant	Fabr.Nr. Filtertyp		Fabr.No. Filtertype		Fabr.No. Type de Filtre		Fabr.Nr. Filtertyp		Fabr.No. Filtertype		Fabr.No. Type de Filtre	



Installation and Operating Instructions for the BOLL-Duplex Filter Type 2.04.5

General:



The switchable duplex filter type 2.04.5 comprises two filter housings which are connected in parallel through a two-stage change-over housing. The filter housings are designed to meet current regulations in respect of pressure rating. The filter elements are adequately protected to cope with the differential pressures which occur in the filter, details of which are given on the filter mounted instruction plates. These pressures are 1,2 bar for star-form elements and 0,8 bar for basket-type elements.

Duplex filters are installed in cases where regeneration of contaminated filter elements must be carried out without shutting down the equipment or plant. The change-over housing, which contains a segment-type rotating valve, allows shock pressure-free change over, because as one chamber is closed the other

chamber is opened the same amount, in otherwords, both filter chambers can be put into operation at the same time whenever the need arises (see Picture 2 - Valve Position Indicator). The undesired closing of both chambers is prevented by a stop, i.e. by the constructional design of the change-over housing.

Installation:

The filter housings must not be over-stressed when tightening the filter assembly onto its base or mounting. This also applies to the pipe connections. It is also important to make sure that the direction of liquid flow through the filter is compatible with the filter elements installed in the filter. The flow direction is marked on the filter assembly, usually on the flanges.



According to the AD Information Sheets, the filter housings are only rated for internal overpressure. Additional external forces and moments at the connection flanges of the filter are to be avoided (possibly support feed lines).



I. Segment Valve Operation

The segment valve (18) is operated by the lever (21). The lever moves through an angle of 144°. The travel stops of the lever are located inside the change-over housing.

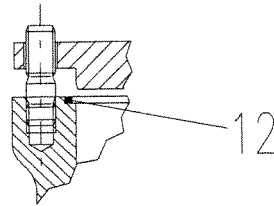
A cam, which is cast integral with the neck of the segment valve extension, moves over the valve position indicator plate (25) to indicate to the operator the position of the segment valve (see Picture 2).

1. Changing over filter chambers:
 - 1.1 Slacken the air vent plug (4) of the cleaned filter chamber.
 - 1.2 Turn the lever (21) to move the position indicator cam from position "1" to position "2" (see Picture 2). In this position the segment valve opens a port to allow liquid to flow in and fill the cleaned chamber. As soon as the liquid flows free of air bubbles from the vent plug (4), close the vent plug.
2. Preparing the Filter for Operation
 - 2.1 Position the lever (21) in the middle position - both filter chambers in operation.
 - 2.2 Open both filter chamber vent plugs.
 - 2.3 Start and slowly run the plant or equipment.
 - 2.4 As soon as liquid flows from the vent plugs free of air bubbles, close the vent plugs.
 - 2.5 Operate the lever to close one of the filter chambers; whilst the other filter chamber takes over filtration of the liquid, the other (closed) filter chamber remains in reserve until, due to contamination, the maximum preset differential pressure is reached. At a differential pressure of 1,2 bar allowed for starform elements or 0,8 bar allowed for basket-type elements, the reserve or cleaned filter chamber is to be put into operation as follows:
 - 2.6 Momentarily open the vent plug (4) of the reserve chamber and check to make sure that this chamber is full.
 - 2.7 Change over the filters as described under paragraph 1.
 - 2.8 Open the vent plug (4) of the closed filter chamber to relieve any pressure in this chamber. It will now be possible to check whether the segment valve (18) has in fact closed the inlet port to this chamber.

Note that a complete sealing of a segment type valve is not possible. By opening the sludge discharge plug (2), any liquid that has leaked passed the segment valve during cleaning can be drained off.
 - 2.9 Remove the filter cover (11) from the closed (shutoff) filter chamber.
 - 2.10 Open the sludge discharge plug (2) and drain down the liquid until the liquid level is below the seat of the element. Remove the filter element from the filter housing.
 - 2.11 Clean the filter element (see the Operating Instructions for cleaning the element).
 - 2.12 Replace the cleaned element into the filter housing. Make sure the seal of the element is not damaged before replacing the element!



- 2.13 Replace the filter cover (11). The vent plug is to be left open at this stage. Make sure that the cover seal (12) and its seat are clean and in a good condition, if necessary, renew the seal (12).



It is recommended to wet the recess for the O-ring (12) in the Filter housing with Vaseline to make it more difficult for the O-ring to move..

BILD 4

Z39839 v.08.01.97

- 2.14 Move the lever (21) from position "1" to position "2" - the cleaned filter chamber will now be refilled and vented of air.
- 2.15 Close the vent plug - the filter chamber is now in an operational-ready condition.

3. Maintenance

Maintenance of the duplex filter extends to an inspection and eventual replacement of the sealing elements and screens. If the filter assembly shows signs of corrosion, then it should be reconditioned or renewed as necessary.

The filtering of cooling water and other certain types of operating mediums can lead to formation of harmful deposits on the surfaces of the components in the change-over housing, it is therefore advisable to operate the change-over mechanism at regular intervals to avoid seizure of the segment valve.

Removing and Replacing the Segment valve (18)

- 3.1 Open both filter chamber vent plugs (4) to depressurize the filter chambers.
- 3.2 Drain both filter chambers.
- 3.3 Using circlip pliers (DIN 5256C - Securing Borings), remove the circlip (20) from the groove.
- 3.4 By rotating and at the same time lifting the segment valve (18), remove the valve from the change-over housing.
- 3.5 Detach the O-rings (19).
- 3.6 Thoroughly clean the segment valve and examine the valve for damage. Remove any traces of scoring by polishing the valve with a suitable, fine carborundum paste. Examine the valve bore in the change-over housing and if necessary treat in the same manner.
- 3.7 Lightly oil the O-rings (19) and then refit them in the grooves of the segment valve. It is recommended to renew these O-rings as, due to hardening and compression they lose a certain amount of elasticity.
- 3.8 Carefully insert the segment valve (18) into the top of the change-over housing and, by pressing down and rotating the valve at the same time, push the valve into the housing.
- 3.9 Position the indicator cam to point to the centre position on the valve position indicator plate (see Picture 2).
- 3.10 Now push the segment valve further down into the bore until the groove for the circlip (20) becomes visible.
- 3.11 Refit the circlip (29) in the groove.
- 3.12 Check the segment valve for ease of operation.
- 3.13 Prepare the filter assembly for operation as described in paragraph 2.

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

Cleaning star pleated elements and replacing disposable cartridges with radial sealing

The filter elements are to be cleaned whenever the admissible differential pressure has built up (suction filter 0.5 bar; pressure filter 0.8 bar).

With disposable cartridges it is necessary to replace the cartridge at a Δp of max. 2 bar.



Disposable cartridges are not regenerable!

1. Isolate filter vessel from the liquid circuit (see operating instructions for simplex or duplex filters).
2. Depressurise the filter vessel by opening the venting plug and removing the housing cover after undoing the cover screws.
3. Open the drain in filter bottom and drain liquid.
4. Pull the filter element or disposable cartridge with the handle (124) out of the housing. Push the handle (124) over the recess in the filter ring (1). Remove handle to facilitate cleaning. A magnetic rod (130) can be attached to the filter bracket (124).



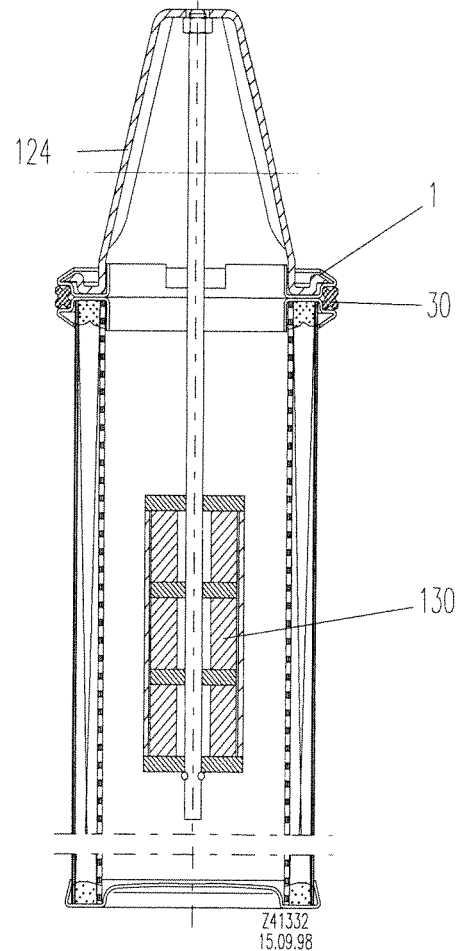
When a new star filter is supplied, the filter bracket (124) must be replaced together with the magnetic rod (130)

5. Place individual elements in a container with cleaning liquid "BOLL CLEAN 2000", allow to soak and then force "BOLL CLEAN 2000" through them from the inside outwards using a BOLL high-pressure cleaner type 5.04. Then repeat this process from the outside inwards.
6. Check fabric for clean state and damage by holding the filter element against a light source, e.g. a torch. Uniform light emission indicates that the fabric is cleaned well; repeat cleaning operation, if necessary.
7. Check seals (30) and provide them with a thin oil film to facilitate installation. Insert handle (124) back into the ring (1) and turn.
When replacing the disposable cartridges, it is vital to use the handle (124).
When changing disposable cartridges, make sure that the filter bracket sits correctly.



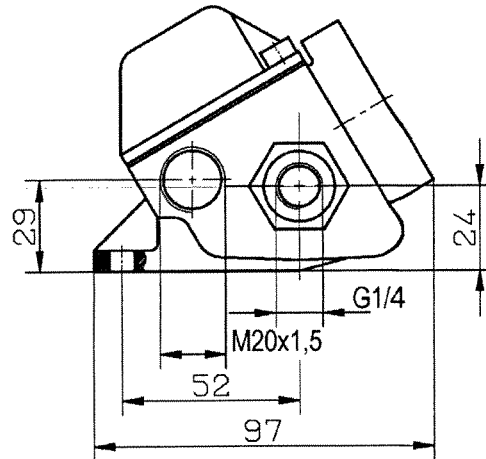
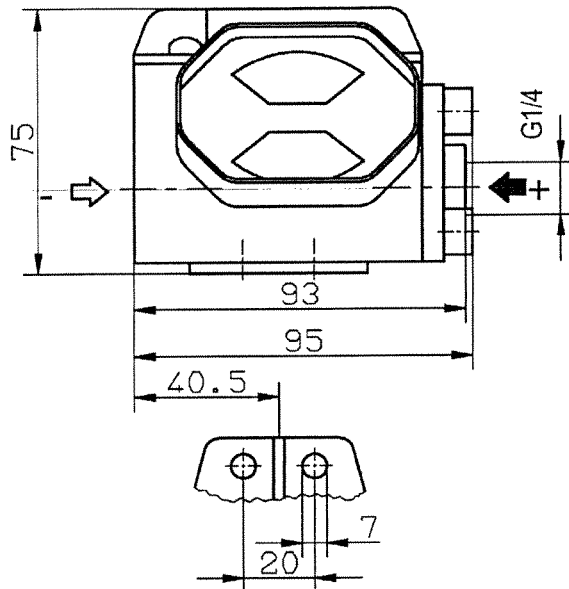
The handle (124) has to be installed to adjust the filter element or disposable cartridge and is therefore essential.

8. Bolt housing cover back onto filter vessel and close drain.
9. Fill the filter slowly and do not close vent until liquid emerges (also see operating instructions for simplex or duplex filters).

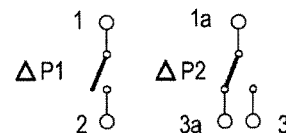




Z45550
TYP4.36.2
17.03.03



CIRCUIT DIAGRAM



SPECIFICATION:
PROTECTION CLASS: IP 65

ELECTR. DATA:	SWITCHING VOLTAGE	V \bar{e} MAX.=	250	220
	FREQUENCY	HZ MAX.=	0-60	0-60
	SWITCHING CURRENT	A MAX.=	1	0.8
	MAKING AND/OR BREAKING CAPACITY			
		WVA 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.

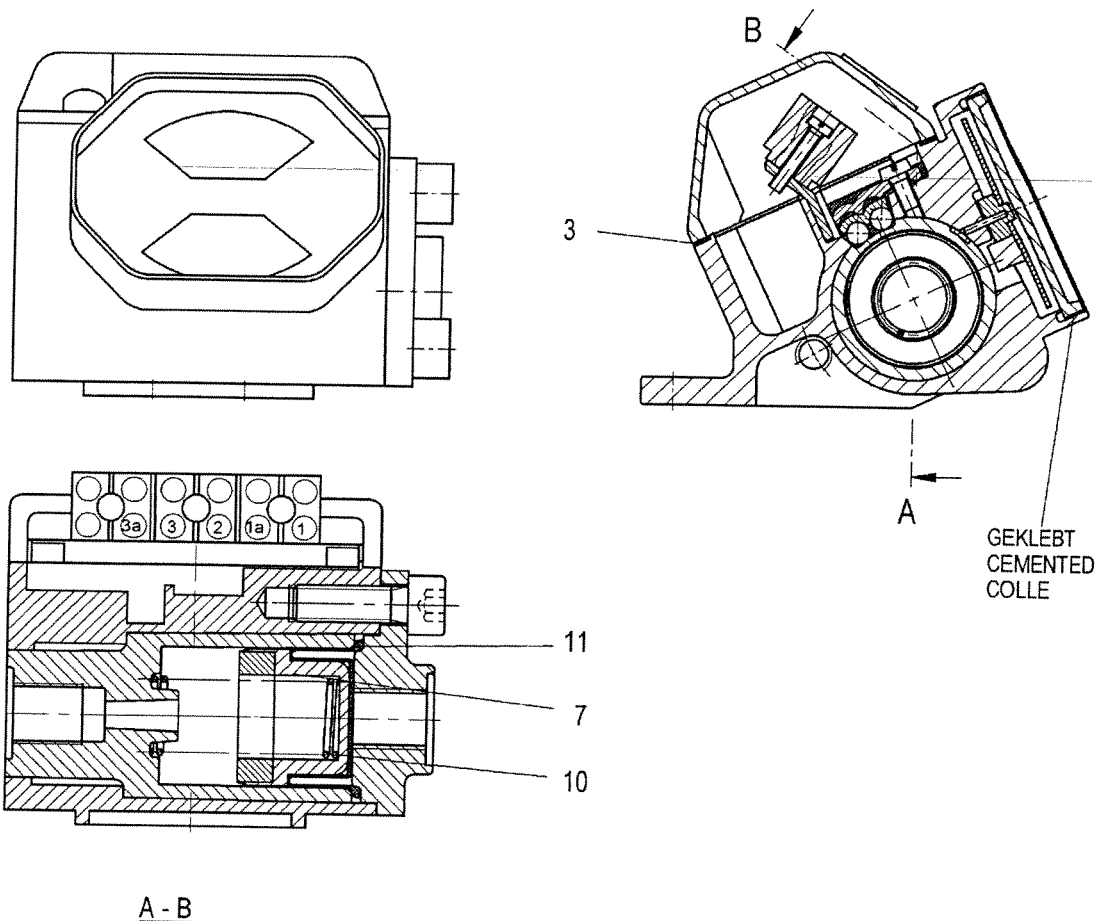
METHOD OF OPERATION:

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 TYPE 4.36.2

Z21434
TYP 4.36.2+4.46.2
11.02.94



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	DESIGNATION	

SPARE PARTS
DRAWING

ERSATZTEILZEICHNUNG
ZUM TYP 4.36.2 UND 4.46.2

PLAN DES PIECES
DE RECHANGE

