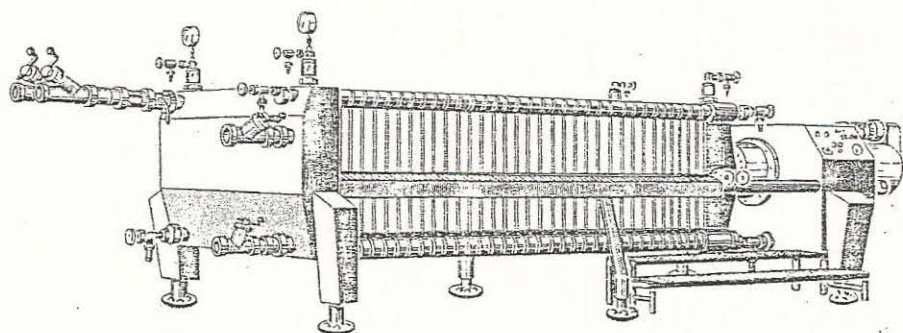




**URIM 100**

Kieselguhr and sheet filter



## Operating Instructions Spare Parts List

Applies to units from no. 60 136  
8/E 10 205 G/F 2-76-Engl.



SEITZ-WERKE GMBH  
Kreuznacher Maschinenfabrik, Filter- und Apparatebau  
D-6550 Bad Kreuznach Postfach 1049 · Planiger Straße 139-147  
Telefon (0671) 600-1 · Telex 4-2851 seitz d

Important information for the filtration with plastic plates, type NOVAL

The combination of Noval plates (plastic plates) with KG-frames (made of acid-resistant stainless steel) in on filter pack is forbidden.

In order to keep the plastic plates form stabile during the sterilization with hot water, we give you the following recommendations:

- a) In order to protect the rubber washers during sterilization of the filter and to enable an extension of the plastic plates, only tighten the filter pack with a pre-pressure of 20 bars.
- b) Never open the filter pack in a hot or warm condition and never tighten it with more than 20 bars. Never tighten the filter pack at first and cool it down with cold water then. This would have the consequence that the plastic plates could not return into the original form.
- c) Pile-up these plastic plates which have not been inserted into the filter, on a flat base, with sandwiched corrugated paperboard.

Do not remove warm plastic plates from the filter, but cool them at first down in the tightened position. Thus, a deformation can be avoided.

- d) Depending on the degree of contamination of the plastic plates remove the perforated plates and intensively clean the filter plates with a brush and warm water.
- e) The filter plates can be only used up to a max. operation pressure of 6 bars.

## operating instructions

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Continued overleaf

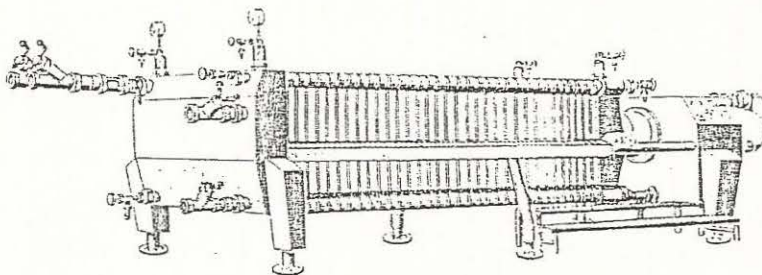
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## Kieselguhr and Sheet Filter

### Data Sheet T 10205/L 2-76-D



**APPLICATION** Sterilizable general-purpose filter for liquid filtration with kieselguhr or sterilizing sheets.

**TYPE** OF 100 V

Chassis size

Kieselguhr  
filtration  
(folding sheets)

Sheet  
filtration

100.	max. 29	50
150	max. 43	75
200	max. 57	100
250	max. 71	125
300	./.	150
350	./.	175

**SHEET SIZE** Folding sheets:

Kieselguhr sheets 0/400 Fa. = 1000 x 1982 mm )  
Seitz ster. and clar. sheets = 1000 x 2012 mm ) to Fs 6562

**FILTER AREA** 2 x 0.95 m<sup>2</sup> per sheet

**OPERATING  
PRESSURE** 8 bar max.

**DESIGN**

Stationary sheet filter with square filter elements in a vertical series arrangement. Hydraulic filter sheet compression with mechanical locking. Hydraulic system controlled from built-in electrical control panel. Switchgear contained in separate control box. Filter cover of pressure-resistant design (pressure element). Risers permanently built into the fittings cover and easily accessible for cleaning. Choice of fittings and connections.

If desired, a kieselguhr conveyor with screw conveyor and pump for discharging the used kieselguhr can be placed under the filter.

A catwalk on each side for operation.



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MATERIALS

Filter cover, traverse and support bars completely clad with acid-resistant stainless steel sheet.  
Hydraulic piston made of stainless steel (Cr-Ni-Mo).  
All liquid-carrying parts, filter plates and kieselguhr frames made of acid-resistant stainless steel.

FITTINGS Inclined-seat piston valves = nom. dia. 100 or  
 nom. dia. 80  
 Type of connection: screw connection Rd 130 x 1/4"  
 or Rd 110 x 1/4"

CONNECTIONS See page III

CONNECTED LOAD 73 kW 220/380 V, 50 Hz, special version for  
 other voltage and frequency

OPERATING Please specify when ordering  
 VOLTAGE

#### SHEETS, PLATES AND FRAMES FOR KIESELGUHR FILTRATION

Chassis size	100	150	200	250	300	350	(quantity)
Max. No. of folding sheets	29	43	57	71	"	"	"
Filter plates	29	43	57	71	"	"	"
Kieselguhr frames	28	42	56	70	"	"	"
Kieselguhr end frames	2	2	2	2	"	"	"
Effective filter area	55	82	108	134	"	"	(m <sup>2</sup> max.)

#### SHEETS AND PLATES FOR SHEET FILTRATION

Chassis size	100	150	200	250	300	350	(quantity)
Max. No. of folding sheets	50	75	100	125	150	175	"
Filter plates	99	149	199	249	299	349	"
End plates	2	2	2	2	2	2	"
Effective filter area	95	142,5	190	237,5	285	332,5	(m <sup>2</sup> max.)

#### WEIGHT IN KILOGRAMS

Chassis size		100	150	200	250	300	350	
Empty weight	Sheet filter	8400	10000	11200	12600	13020	14377	with max. plates and fittings
	Kieselguhr filter	7200	8000	9000	9800	-	-	
Service weight	Sheet filter	9900	12200	14300	16000	16930	18934	with sheets and liquid
	Kieselguhr filter	8900	10600	12300	14000	-	-	
Support points	Sheet filter	4	6	8	8	10	10	
	Kieselguhr filter	4	6	8	8	-	-	
Load per leg	Sheet filter	3000	2300	2200	2500	2100	2000	
	Kieselguhr filter	2700	2200	2000	2400	-	-	

#### FILTER ELEMENTS

Filter elements	Size m <sup>2</sup>	Thickness mm	Weight kg	Capacity (approx.) l
-----------------	------------------------	-----------------	--------------	----------------------------

Filter plate	100	13	25	7
Endplate	100	13	25	7
Kieselguhr frame	100	40	23	38
End frame	100	25	22	24

Modifications	<p>New with index L because of:  Modification of fittings  arrangement.  Kieselguhr discharge conveyor  omitted.</p>	<p>New with index ... because of</p>
---------------	--	--------------------------------------



# Kieselguhr Filtration

Sight-glass with bleeder  
nom. dia. 15 and pressure  
gauge

Outlet nom. dia.  
80 or nom. dia.  
100

2 x single  
with sight-  
glass and sampling  
cock

Inlet nom. dia. 80 or  
nom. dia. 100

Drain nom. dia. 40

Water inlet  
nom. dia. 50 (for  
inlet/outlet nom.  
dia. 80)  
nom. dia. 80 (for inlet/outlet  
nom. dia. 100)

Sight-glass with  
bleeder nom. dia.  
15

Bleeder nom.  
dia. 25

Drain nom.  
dia. 25

Drain nom.  
dia. 40

Inlet and outlet nom. dia. 100 with round thread  
Rd 130 x 1/4" for continuation  
Threaded nozzle C 100 SN 172 associated pipe to SN 2981  
108 x 3.75 (for welding on)

(Fortsetz. S.9)

## Arrangement of Fittings Sheet Filtration

ORION OF 100 V

Sight-glass with bleeder  
nom. dia. 15 and  
pressure gauge

Outlet nom.  
dia. 80 or  
nom. dia. 100

2 x single with sight-  
glass and sampling  
cock

Inlet nom. dia. 80 or  
nom. dia. 100

Water inlet  
nom. dia. 50 (for  
inlet/outlet nom. dia.  
80) nom. dia. 80 (for  
inlet/outlet nom. dia. 100)

Drain nom. dia. 40

Sight-glass  
with bleeder  
nom. dia. 15

Bleeder nom. dia.  
25

Drain nom.  
dia. 40

Drain nom. dia. 25

Inlet and outlet nom. dia. 100 with round thread Rd 130 x 1/4"  
for continuation  
Threaded nozzle C 100 SN 172 associated pipe to SN 2981  
108 x 3.75 (for welding on) or  
inlet and outlet nom. dia. 80 with round thread Rd 110 x 1/4" for  
continuation  
Threaded nozzle C80 SN 172 associated pipe to SN 2981 86 x 3 (for  
welding on) with 1 reducer, inlet Fs 60895 - outlet 100/80 SN 182

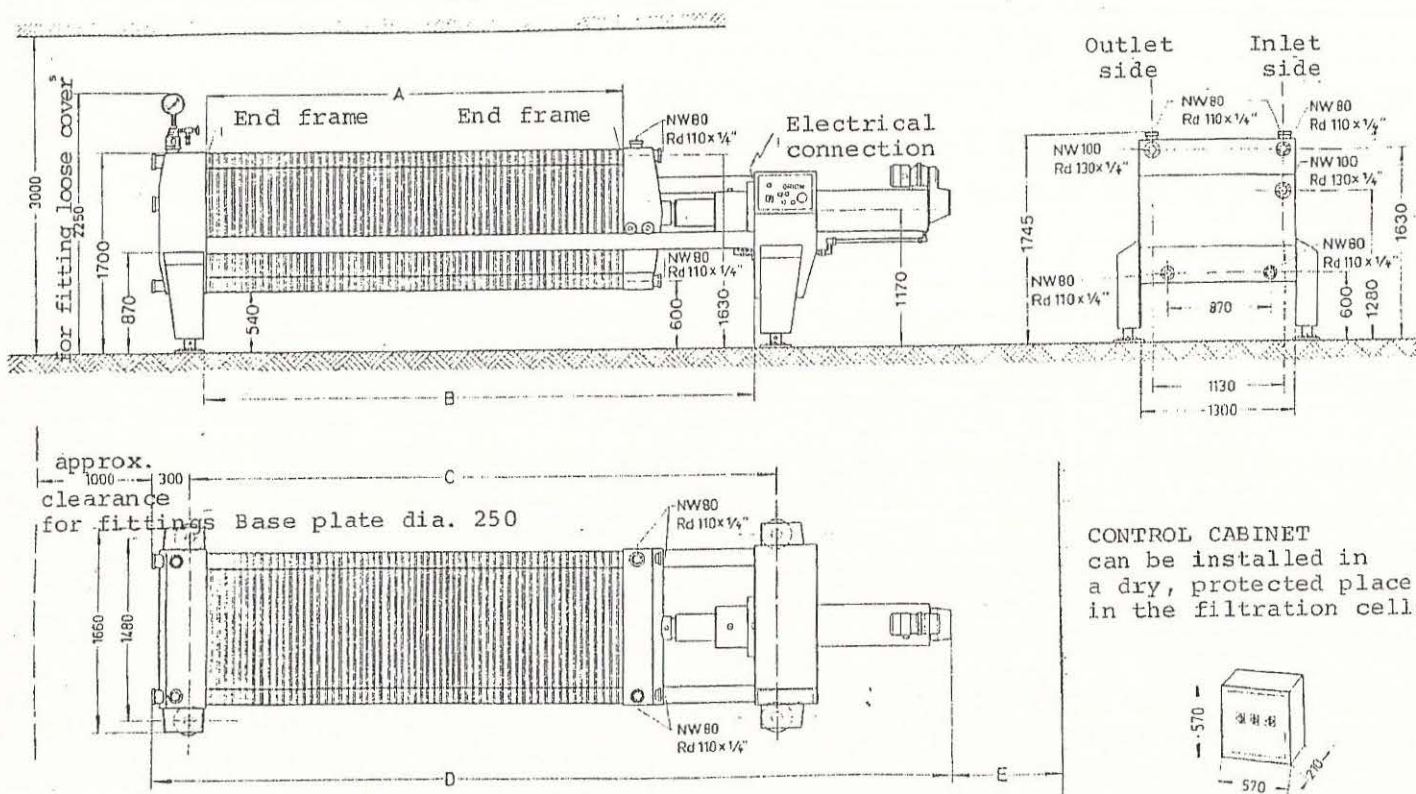
or

Inlet and outlet nom. dia. 80 with round thread Rd 110 x 1/4"  
for continuation

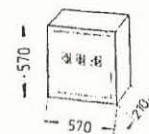
Threaded nozzle C 80 SN 172 associated pipe to  
SN 2981 86 x 3 (for welding on) with 1 reducer, inlet  
Fs 60895 - outlet 100/80 SN 182

## DIMENSIONS

## ORION® OF 100 V



CONTROL CABINET  
can be installed in  
a dry, protected place  
in the filtration cellar

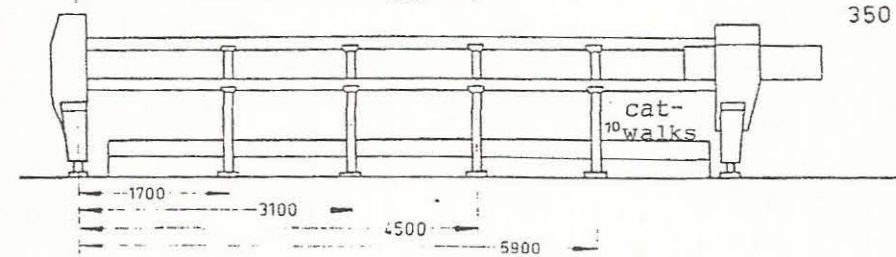
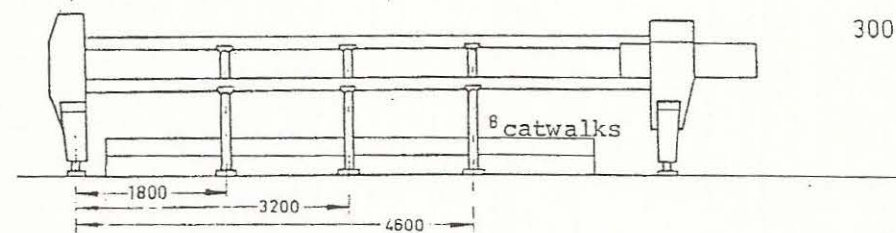
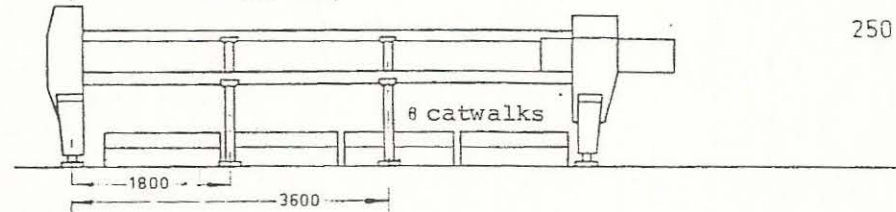
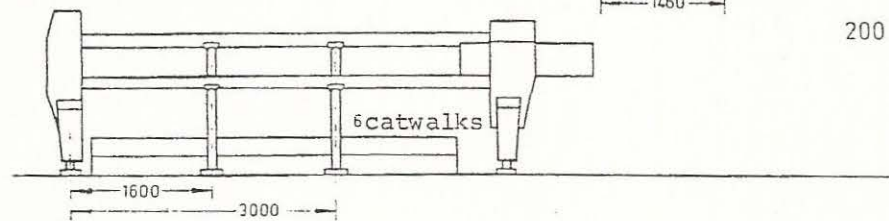
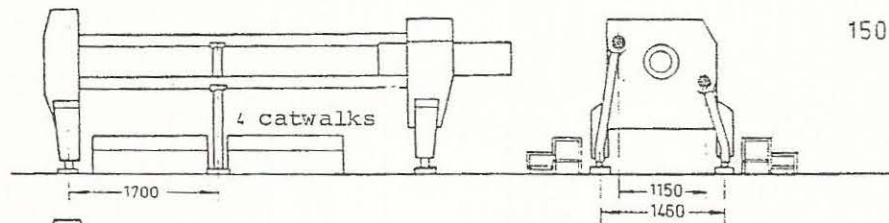
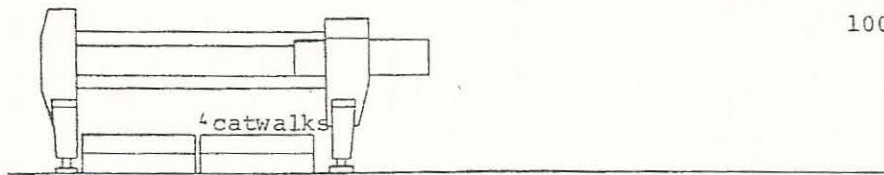


CHASSIS SIZE	100	150	200	250	300	350	
DIMENSION A =	2000	2900	3800	4700	5600	6500	mm
DIMENSION B =	2800	3700	4600	5500	6400	7300	mm
DIMENSION C =	3115	4015	4915	5815	6715	7615	mm
DIMENSION D =	4900	5800	6700	7600	8500	9400	mm
DIMENSION E =	1550	1550	1550	1550	2240	2240	mm

(NW = nom. dia.)

Arrangement of support legs and catwalks  
on ORION OF 100 V

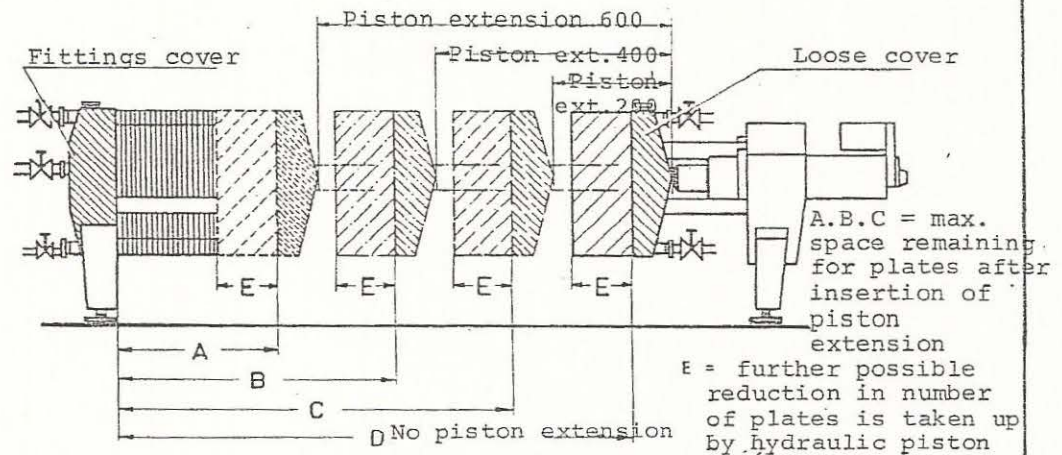
Chassis size  
100





# ORION OF 100 V

Number of plates when piston extensions used

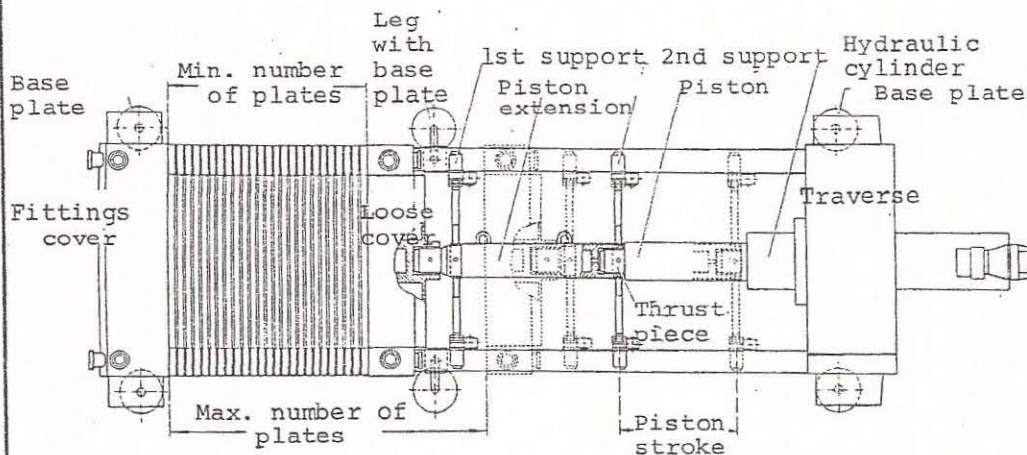


Chassis size and piston stroke	Length of piston extension in mm	SHEET FILTRATION		KIESELGUHR FILTRATION	
		The larger of the plate quantities given is the maximum after insertion of the piston extensions, or in the case of D without piston extension. The number of plates can be reduced to the minimum (E). Down to the minimum any number of polished-metal plates can be selected, and the same applies to trub plates or kieselguhr frames, the number here being 1 less than that of the polished-metal plates.			
		TRUE PLATE	POLISHED-METAL PLATE	KIESELGUHR FRAME	POLISHED-METAL PLATE
100	without	23...40	23...40	14...28	15...29
	200	22...45	23...46	11...26	12...27
	400	14...40	15...41	7...22	8...23
	1260 mm 600	7...35	8...36	3...19	4...20
150	without	60...74	61...75	31...42	32...43
	200	53...69	54...70	28...40	29...41
	400	46...64	47...65	24...36	25...37
	1260 mm 600	39...59	40...60	20...33	21...34
200	without	93...99	94...100	47...56	48...57
	200	86...93	87...94	44...54	45...55
	400	78...88	79...89	40...50	41...51
	1260 mm 600	71...82	72...83	36...46	37...47
250	without	121...124	122...125	64...70	65...71
	200	112	113	60...66	61...67
	400	105	106	56...63	57...64
	1260 mm 600			53...60	54...61
300	without	143...149	144...150		
	200	136...143	137...144		
	400	129...138	130...139		
	1800 mm 600	122...132	123...133		
350	without	173...174	174...175		
	200	166...169	167...170		
	400	160...164	161...165		
	1800 mm 600	153...157	154...158		



# ORION OF 100 V

Number of plates when piston extensions with supports used



Chassis size and piston stroke	Length of piston extension in mm	SHEET FILTRATION 1' KIESELGUHR FILTRATION			
		The larger of the plate quantities given is the maximum after insertion of the piston extension. By the stroke of the hydraulic piston the number of plates can be reduced to the minimum. Down to the minimum any number of polished-metal plates can be selected, and the same applies to trub plates or kieselguhr frames, the number here being 1 less than that of the polished-metal plates			
		TRUB PLATE	POLISHED-METAL KIESELGUHR	FRAME	POLISHED-METAL KIESELGUHR
100 1260 mm	1000	1...14	2...18	1...9	2...10
	1400	1...6	2...7	1...4	2...5
	1800				
	2200				
150 1260 mm	1000	31...44	32...45	15...24	16...25
	1400	15...31	16...32	7...17	8...18
	1800	18...29	19...30	1...11	2...12
	2200	1...9	2...10	1...5	2...6
200 1260 mm	1000	60...69	61...70	31...37	32...38
	1400	50...58	51...59	23...31	24...32
	1800	35...43	36...44	16...25	17...26
	2200	19...34	20...35	9...19	10...20
250 1260 mm	1000	90...94	91...95	47...51	48...52
	1400	79...83	80...84	40...45	41...46
	1800	65...68	66...69	32...39	33...40
	2200	50...59	51...60	25...35	26...34
300 1800 mm	1000	108...119	109...120		
	1400	95...108	96...109		
	1800	79...93	80...94		
	2200	64...84	65...85		
350 1800 mm	1000	138...144	139...145		
	1400	124...133	125...134		
	1800	109...118	110...119		





## FOREWORD

SEITZ-Werke request you to hand these operating instructions to the machine operators.

If the instructions are followed carefully, unnecessary damage will be avoided and the life of the filter prolonged.

It is therefore essential to read the operating instructions closely before commissioning the machine, in order to familiarize yourself with its operation and maintenance.

Our service fitters should be called in for overhauls and repairs wherever we have indicated that this work should be carried out by specialists only.

Attached to our operating instructions are spare parts lists, which will make it possible for you to give a precise description of wearing parts when ordering.

The numbers and letters given in the text are to be interpreted as follows:

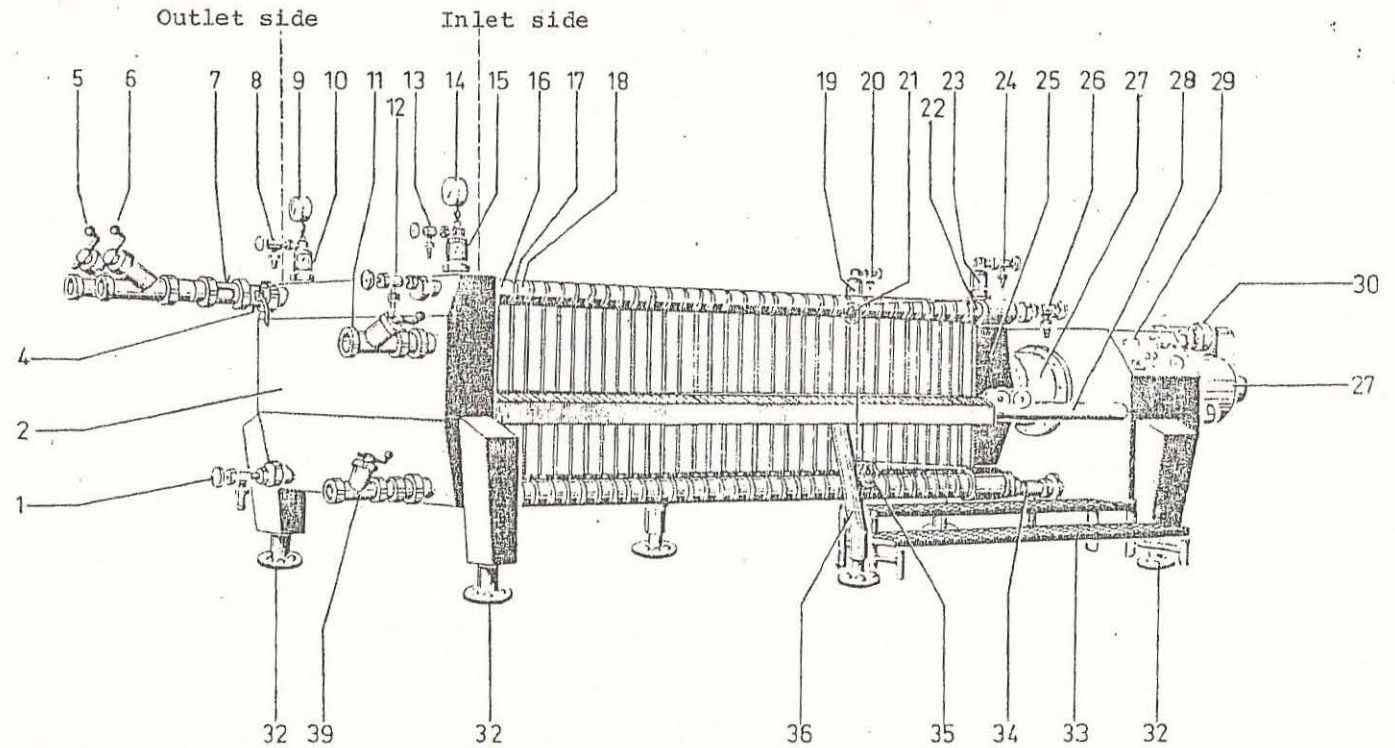
(Example) (5.3.1.) refers to a text section,  
(A26) to item 26 in general drawing A on page 2,  
(D3) to drawing D and item 3 therein.

Please note that these references may not be used when ordering spare parts since they bear no relationship to the number of the part in question.

GENERAL DRAWING

ORION<sup>®</sup> OF 100V

A





# KEY TO GENERAL DRAWING A

1. Drain valve* (only in kieselguhr filtration)		Outlet side
2. Fittings cover		
3.		
4. Sampling valve		Outlet side
5. Outlet valve	Prerun outlet	Outlet side
6. Outlet valve	Filtrate outlet	Outlet side
7. Flow sight-glass		Outlet side
8. Bleeder valve		Outlet side
9. Pressure gauge		Outlet side
10. Sight-glass		Outlet side
11. Inlet valve	Trub inlet	Inlet side
12. Bleeder valve		Inlet side
13. Bleeder valve		Inlet side
14. Pressure gauge		Inlet side
15. Sight-glass		Inlet side
16. Kieselguhr end frame (1 KG)	Trub	on fittings cov
17. Filter plate	Polished metal	
18. Kieselguhr frame	Trub	
19. Sight-glass		Outlet side
20. Bleeder valve		Outlet side
21. Bleeder valve		Outlet side
22. Kieselguhr end frame (2 KG)	. Trub	on loose cover
23. Sight-glass		Inlet side
24. Bleeder valve		Inlet side
25. Loose cover		
26. Bleeder valve		Inlet side
27. Hydraulic pressing cylinder		
28. Supporting bars		
29. Traverse with hydraulics		
30. Locking motor		
31.		
32. Cap-type base plate for filter		
33. Catwalk with grating		
34. Drain valve		Inlet side
35. Drain valve		Outlet side
36. Support leg for supporting bar		
37.		
38.		
39. Water inlet valve* (only in kieselguhr filtration)		Inlet side

\* If the sheet filter is flushed or sterilized from the outlet side, drain valve (A1) and water inlet valve (A39) are to be interchanged (see Data Sheet page III)

1. GENERAL

SEITZ ORION 100 V is a sterilizable filter for beer and wort with square filter elements, which can be used for clarifying, polishing and sterilizing filtration.

Depending on the intended application, the filter can also be set up for kieselguhr, double and parallel filtration. (See separate operating instructions and spare parts list for double and parallel filtration ZL 425).

The filter consists of the fittings cover (A2) and the loose cover (A25), two supporting bars (A28), the traverse (A29) with built-in hydraulics and pressing cylinder (A27), and a set of plates and frames (A16-A18, A22) consisting of:

- a) filter plates (A17) and kieselguhr frames (A18) for kieselguhr filtration or
- b) filter plates (A17) for clarifying and sterilizing filtration

plus the necessary fittings.

Hydraulic pressing of the filter is carried out in two stages. In the first stage, the pressure is built up to 30 bar. Under this compression the filter is filled with water, bled, sterilized and pre-coated. Before filtration the pressure is increased to the set limit value. Once this has been reached, the hydraulic pump automatically switches off and the locking motor (A30) mounted on the cylinder (A27) starts up. This turns a threaded spindle (in cylinder A27) which props the piston against the machine chassis during filtration. The locking motor (A30) is then also automatically switched off.

The set of plates thus remains firmly compressed throughout the filtration period, whilst the hydraulic system is not under pressure during this time.

When the filter is being opened, pressure is built up once again to relieve the propping spindle. This pressure is about 20 bar above the closing pressure and, like this, is limited by a pressure switch.

After the pressure has been built up, the unlocking is switched on and the spindle automatically runs back

For safety reasons the push-button must remain pressed during all piston movements. (See Appendix, control panel, item 4).

The piston stops immediately if the push-button is released.

The red push-button (emergency return) is another safety device.  
(See Appendix, control panel, item 6).

When this button is pressed, the piston movements are immediately reversed, if the closing of the filter has to be interrupted.

If the emergency off button is pressed, all operations are interrupted.  
(See Appendix, control panel, item 1).

**WARNING:** Work must not be carried out on the filter while the piston is in motion. Do not do any cleaning or move any sheets.

## 1.1. INSTALLATION

1.1.1. The filter must be set up at the future filtration site with enough space to ensure perfect ease of operation.

Installation and commissioning are to be carried out by SEITZ specialists.

1.1.2. The staff who will be operating the filter must be present to help in installation and commissioning so as to familiarize themselves with the filter and its operation and maintenance.

### 1.1.3. ASSEMBLY

- a) Align the filter horizontally and vertically over the cap-type base plates (A32) as accurately as possible with a spirit level.
- b) Place the support legs (A36) (see Data Sheet page V) under the supporting bars (A28) and tighten lightly. The supporting bars must not sag.

### 1.1.4. ELECTRICAL INSTALLATION

- a) Connect up the power supply in accordance with the relevant VDE specifications and the local safety regulations.  
Total connected load 7.3 kW.
- b) Check that mains voltage and motor voltage coincide.
- c) Check the direction of rotation of the motors.



Pump motor: viewed towards the rotor, the motor revolves in a clockwise direction.

NOTE: Hydraulic piston does not move if the direction of rotation is wrong.

Remedy: exchange 2 phases in the pump motor.

Locking motor (A30) turns, viewed towards the sprocket wheel,

- a) anticlockwise during "filter closing";
- b) clockwise during "filter opening".

For further details, see pages 27 to 29.

#### 1.1.5. HYDRAULICS

Check liquid level in the tank. When the piston is extended, the liquid should not be below the lower sight-glass. Check the whole hydraulic system for leaks. Tighten leaky screw connections.

#### 1.2. CLEANING BEFORE COMMISSIONING

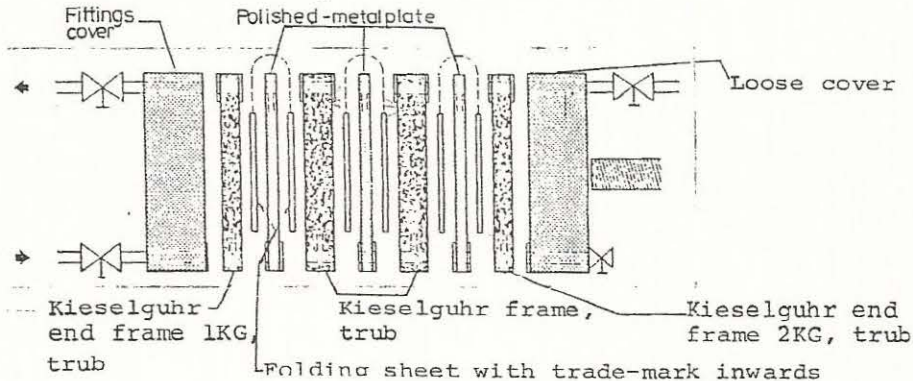
Clean filter plates and fittings with a brush and a weak lye solution made of standard commercial alkaline detergents (but not pure caustic soda).

NOTE: Before first insertion, brush gaskets with 1-2% NaOH and flush well with cold water.

(Then flush compressed set of plates and sterilize as in operating instructions).

#### 2. KIESELGUHR FILTRATION

For kieselguhr filtration the filter is fitted with kieselguhr frames (A18) and polished-metal filter plates (A17) in alternation, and on the fittings cover (A2) and the loose cover (A25) there is a trub end frame (A16 and A22 respectively), the closed side of which must be next to the respective cover.



2.1. INSERTING THE SHEETS (see Appendix)

Insert washable folding sheets 0/400 Fa. as shown in the diagram above.

WARNING: Do not use any damaged sheets!

Side bearing trade mark is always to be placed on the polished-metal side.

Fold the sheets accurately edge-to-edge.

The folding sheet is hung over the polished-metal plate (A17) and moistened very uniformly over its entire surface with a soft water-jet. The folding sheet must not enter the eye seals.

It is advisable to begin inserting the sheets at the fittings cover (A2).

2.2. PRE-PRESSING THE PLATES

Switch on the hydraulic compression and go up to the initial pressure of 30 bar. For this see drawings "Operation of electrical controls", "Closing filter" sequence 1 to 3 (in Appendix).

2.3. STERILIZING THE FILTER

In kieselguhr filtration, sterilization is carried out in the direction of filtration. To protect the seals, carry out all hot treatment phases only with the filter compressed. Hydraulic pressure 30 bar.

During flushing and sterilization always run the filter with at least the rated output. The associated supply lines must be adequately dimensioned. Sterilize all feed and drain pipes at the same time.

2.3.1. For sterilizing the kieselguhr filter with hot water, three phases are necessary:

1) Warm flushing      2) Heating      3) Cooling

2.3.2. WARM FLUSHING OF FOLDING SHEETS

Allow warm water at a temperature of 52°C min. to 55°C max. to flow into the filter via the water inlet valve (A39) with at least the filter rating. While this is being done, the valves (A8, A13, A20 and A24) are open. If the flushing water emerges at the bleeder valves (A8, A13, A20, A24) these must be throttled until the warm water only trickles out of them and the outlet valve (A5) must be opened. Open valves (A21, A35) as well. Valves (A21 and A35) must be throttled until about



25% of the flushing water leaves via each valve here. The remaining 50% flows out through the outlet valve (A5). All other valves remain closed.

The internal pressure of the filter should be about 0.5 bar. Afterwards it should be ensured once again that the filter is completely deaerated. From now on let the water continue to flow for another 20 min.

#### 2.3.3. STERILIZATION

Heating and sterilization

Connection on filter inlet side (A39)

(Circulatory sterilization possible)

It is advisable to heat up immediately after flushing (see 2.3.2.) so that use is made of the heat stored in the filter. Let hot water at a temperature of at least 90°C flow at the filter rating, with the same flow distribution as for flushing (see 2.3.2., valves do not need to be adjusted). Now open all valves which are still closed so that the hot water can only just trickle out of them.

When hot water with at least 87°C flows out of valve (A35) at the bottom of the outlet side of the loose cover, turn off the hot water supply. Close all valves on the inlet side except for bleeder valve (A13) and let the filter stand for 20 min. (this is the time required for achieving reliable sterility).

Avoid pressure surges!

If sterilization is carried out on the evening before filtration, the filter can be left hot (bleeder valve A13, on "Open trub" sight-glass) and water run through on the following day.

#### 2.4. COOLING AND DEAERATION OF THE FILTER

Before subsequent pre-coating, feed cold water (pre-cooled if possible) into the filter from inlet A11, with the bleeder valves (A8, A13, A20 and A24) slightly open and outlet valve (A5) open. Then throttle valve (A5) until the pressure gauges (A9, A14) indicate a pressure of 4 bar.

Please note: During deaeration of the filter it is essential that the filter plate set be compressed by the hydraulics at a pressure of no more than 30 bar.

Air escapes through the sheets between the plates and frames. As soon as no more air bubbles are visible in the sight-glasses and in the water emerging on the top of the filter, deaeration is completed.

During subsequent pre-coating, the filter is compressed to the set final pressure (100 bar): see "Operation of electrical controls", "Close filter" sequence 1 to 4 (in Appendix). Close all bleeder valves.

After deaeration, no air must enter the filter with water or beer and there must always be liquid visible in the sight-glasses.

## 2.5. FILTRATION

### 2.5.1. PRE-COATING

In order to prevent the folding sheets from becoming blocked up when filtration begins, they are pre-coated with kieselguhr.

- a) Mix the quantity of kieselguhr required for pre-coating ( $800$  to  $1000 \text{ g/m}^2$ ) with water in the kieselguhr dosing unit (mixing ratio approx. 1:4 to 1:8).
- b) Uniform pre-coating is attained if the pre-coating water flows out as follows:  
Fittings cover outlet valve (A5) approx. 50%  
Loose cover, top of outlet side, breather valve (A21) approx. 50%.
- c) Let water flow through the filter in the direction of beer flow at  $3.5$  to  $4 \text{ hl/m}^2 \text{ h}$ .
- d) Force the pre-coating mixture into the water flow via the pre-coating pump of the dosing unit and thus take it to the filter.
- e) During pre-coating, compress the filter to 1 bar and deaerate fully.
- f) After the pre-coat has been applied, switch off the pre-coating pump but allow the water to continue flowing at the same rate through the filter.

### 2.5.2. PRE-RUN

Before switching over to beer, allow the water to continue flowing. Switch on the dosing pump. When switching the filter to the liquid to be filtered, make sure that there are no pressure fluctuations in the