

filter, because otherwise the pre-coat might be damaged.

At the filter outlet, switch over from pre-run (valve A5) to beer or wort (valve A6) as soon as the pre-run is over.

(Flavour check, measurement of density or conductivity).

2.5.3. COUNTERPRESSURE

Depending on the CO₂ saturation, always filter under counterpressure in order to prevent the release of CO₂.

There must always be liquid visible in the sight-glasses.

2.5.4. IMPORTANT NOTES: Avoid pressure surges.

Do not interrupt filtration, or kieselguhr cake may fall off.

If an interruption is unavoidable, close outlet valve and keep pressure in the filter.

2.5.5. Filtering efficiency in kieselguhr filtration depends on the following factors:

- a) Determination of the most suitable kieselguhr type and mixture for pre-coating, depending on the filtrability of the unfiltered material and the nature or quantity of the stabilizers used (bentonites, silica gels).
- b) Careful and conscientious starting of the filter (deaeration).
- c) Observance of the optimum flow rate, 3.5 to 4 hl/m²h (see 2.5.1., page 8)
- d) Prevention of air entry into the filter and pressure surges.
- e) Perfect servicing and maintenance of all machines and equipment used for filtration.
- f) Important note on filtration with filter aids

The following table shows the capacity of one kieselguhr frame:

			LIQUID	KIESELGUHR	PEARLITES	
					A	B
			litres	kg	kg	kg
KIESELGUHR	FRAME		38.0	11.5	7.5	6.9

These quantities must by no means be exceeded, or there is a risk of deformation of the polished-metal plates and of the guide plates in the kieselguhr frame.

For safety reasons, deduct 10% from the values specified above.

The values given relate to the average trub content of the liquid to be filtered. If the trub content is unusually high, the quantity of filter aid per frame must be reduced accordingly.

The total capacity of a filter is calculated from the

number of kieselguhr frames x table value,
the two end frames with half the content counting as one frame.

2.6. END OF FILTRATION

Run water into the filter through the inlet valve (All) and keep a continuous check on the beer concentration at the filter outlet (A7) (density or conductivity measurement). When tail runnings appear, switch over valves (A5, A6) at the filter outlet. After the tail run is finished, switch off the water and let the filter run empty. Open all drain and bleeder valves for this purpose.

2.7. DISCHARGE OF USED KIESELGUHR (dry discharge)

Open the filter, see "Operation of electrical controls" (in Appendix), "Open filter" sequence 1 to 6.

For discharging the used kieselguhr, it is advisable to set up a kieselguhr discharge conveyor under the filter (see separate operating instructions and spare parts list, B/E 10205 Kieselguhr Discharge Conveyor).

Scrape off the used kieselguhr with plastic or wooden spatulas. The kieselguhr falls into the collecting trough and is then carried out by a screw and a slush pump.

Clean the folding sheets and frames by spraying them with water.

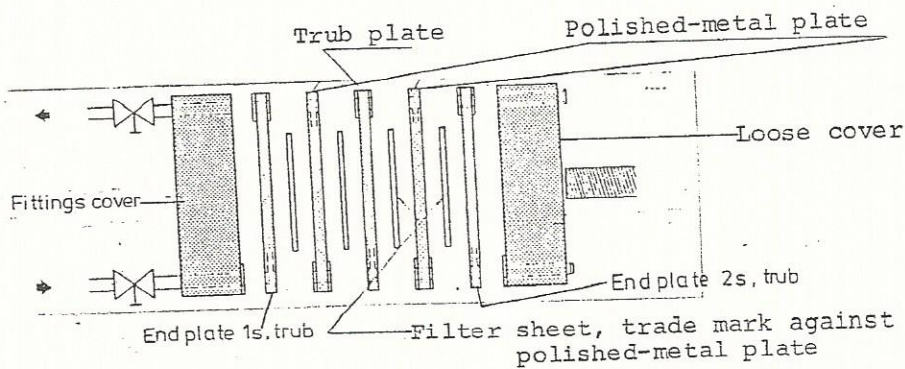
- 2.8. Afterwards, pre-press the set of plates as in (2.2.) and flush and sterilize the filter as in (2.3.).
- 2.9. Flushing with lye, see (4.), page .
3. SHEET FILTRATION
- 3.1. INSERTING THE FILTER PLATES AND SHEETS (See Appendix)

For clarifying and sterilizing filtration, insert the filter plates and sheets according to the following diagram.

WARNING: Do not use any damaged sheets!

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

The double sheet is hung over the polished-metal plate. It must not enter the eye seal. It is advisable to begin inserting the sheets at the fittings cover (A2).



- 3.2. Pre-pressing the plates
Switch on the hydraulic compression and go up to the initial pressure of 30 bar. For this see "Operation of electrical controls" in Appendix ("Close filter" sequence 1 to 3).
- 3.3. STERILIZING THE FILTER
To protect the rubber seals, the filter set must be compressed with an initial pressure of only 30 bar.
All pipes connected behind the filter must be sterilized at the same time. During flushing and sterilization, always run the filter with the rated output.
In contrast to kieselguhr filtration, in sheet filtration there are

on the fittings cover, inlet side, bottom (A33),
one angle valve, nom. dia. 40;
fittings cover, outlet side, bottom (A1),
one inclined-seat valve, nom. dia. 50 or 80;
loose cover, inlet side, bottom (A34),
one angle valve, nom. dia. 25;
loose cover, outlet side, bottom (A35),
one angle valve, nom. dia. 40.
Compare Data Sheet, page III.

3.3.1. STERILIZATION WITH HOT WATER

For sterilizing the sheet filter with hot water, three phases are necessary:

- 1) Warm flushing 2) Heating 3) Cooling

3.3.2. WARM FLUSHING OF FILTER 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 (A1) 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 valves (A8, A13, A20 and A24), these must be throttled until the warm water only trickles out of them and the valve (A12) must be opened. Open valves (A26, A34) as well. Valves (A26) and (A34) must be throttled until about 25% of the flushing water leaves via each valve here. The remaining 50% flows out through valve (A12). 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 warm water continue to flow for another 20 min.

3.3.3. STERILIZATION

Heating and sterilization (circulatory sterilization possible)

It is advisable to heat up immediately after flushing 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 3.3.2., valves do not need to be adjusted).

The internal pressure of the filter must not exceed 0.5 bar.

Now open all valves which are still closed so that the hot water can only just trickle out of them.

When hot water of at least 87°C flows out of valve (A34) at the bottom of the inlet side of the loose cover, turn off the supply. Close all fittings 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).

3.3.4. COOLING THE FILTER

Before subsequent filtration, the filter has to be cooled. Feed cold water (pre-cooled if possible) into the filter via inlet valve (A11), with 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. 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.

If a kieselguhr filter and a sheet filter are connected in series, the sheet filter can be cooled with the pre-coating water.

3.4. STERILIZATION WITH STEAM

If the filter is to be steam-sterilized, the steam supply pipe must be connected to valve (A21) at the top of the loose cover. Keep the steam pressure very low. If the steam pressure exceeds 0.5 bar, install a reducing valve in the steam supply pipe. The steam temperature of 115°C must not be exceeded.

Higher steam pressures (max. 0.5 bar) and temperatures (max. 115°C) damage filter sheets and seals and thus make them unserviceable.

Steaming must take at least 20 min. Afterwards, run water through the filter and deaerate it.

3.5. DEAERATION

After the filter has cooled, let the water continue running in order to deaerate the filter contents

slightly open.

Please note: During deaeration of the filter, keep the hydraulic compression at an initial pressure of 30 bar.

As soon as no more air bubbles are visible in the sight-glasses and in the water emerging on the top of the filter plate set, deaeration is completed.

Close all bleeder valves.

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

3.6. CLARIFYING FILTRATION

Compress the filter to the set final pressure (70 bar). See "Operation of electrical controls", "Close filter" sequence 1 to 4 in Appendix.

Depending on the CO₂ content of the beer, bring the filter to an initial pressure of 1-2 bar, and deaerate completely.

Apart from the valves for inlet (A11) and outlet (A5), all other valves are closed.

The beer entering the filter presses out the water present. As soon as beer arrives at the outlet (A5), change over from pre-run (valve A5) to beer (valve A6).

(Flavour check, measurement of density and conductivity).

Keep the hourly output of the filter constant throughout filtration. The pressure difference between the filter inlet and outlet slowly increases as filtration progresses but must not exceed 1.5 bar.

During filtration it is essential to avoid pressure surges and entry of air into the filter.

3.6.1. STERILIZING FILTRATION

For carrying out sterilizing filtration, the liquid to be sterilized must previously have been clarified. Pre-clarified liquid is obtained by pre-filtration with SEITZ clarification sheets or by kieselguhr filtration.

3.6.2. FILTRATION OF LIQUIDS CONTAINING CO₂

Depending on the CO₂ saturation, always filter under counterpressure to prevent the release of CO₂.

3.7. END OF FILTRATION

3.7.1. DISPLACEMENT BY WATER

Run water into the filter through inlet valve (A11) and continuously check the beer concentration at the filter outlet (A7) (density and conductivity measurement). When the tail runnings arrive, switch over the valves (A5, A6) at the filter outlet.

3.8. RELIEVING THE FILTER

After filtration has been completed, the filter compression must be relieved (do not open) for flushing and sterilization. See "Operation of electrical controls" "Open filter" sequence 1 to 4 in Appendix.

Then immediately apply the initial pressure of 30 bar to the filter. "Close filter" sequence 1 to 3.

Flush and sterilize the filter as in 3.3.

4. FLUSHING WITH LYE (before sheets are hung)

Depending on the degree of clogging, the filter should be flushed with lye solution and acid (at least once or twice a year) to clean it and remove beer scale (especially from filter plates and piping).

If possible, flush with a higher flow rate (twice the rating), but with no less than the filter rating.

- a) Fill the filter via valve (A11) with 2% caustic soda solution (NaOH) with a temperature of 50-70°C.
- b) Deaerate filter via valves (A8, A13, A20 and A24).
- c) Pump the lye around in the direction the beer flows for about 30 min. via the lye tank (time depends on degree of clogging).
- d) Drain filter via valves (A1, A34, A35 and A39), with the bleed valves (A8, A13, A20 and A24) open.
- e) Flush filter with water according to 2.3.2. for kieselguhr filtration and according to 3.3.2. for sheet filtration.
- f) Flush filter with 1% acid and re-flush thoroughly with cold water.
- g) Insert new filter sheets or supporting sheets (see Appendix).

n) Sterilize filter according to (2.3.) or (3.3.).

5. PISTON EXTENSION

The piston extension is used if filtration is to be carried out with a smaller set of plates or frames. It is fitted between the thrust piece on the piston head and the loose cover. For this, undo the plug connection and move the loose cover and the piston apart.

Insert the piston extension and secure at both ends with cotter pins. (Piston extension tables in Data Sheet, pages VI, VII).

Only one piston extension may be used at any one time (danger of buckling). If necessary the next longest extension should be used.

Piston extensions from 1000 to 1800 mm must be supported.

In special cases, the intermediate plate may be used (see page 18).

5.1. USE OF PISTON EXTENSION (similar to operating instructions, section 5.)

When the 1000 mm and 1400 mm piston extensions are used, one piston support (Fs 51418) is required, and for the 1800 mm and 2200 mm extensions, two piston supports (Fs 51418) are needed in order

- a) to prevent buckling and
- b) to take the weight of the extension off the hydraulic piston.

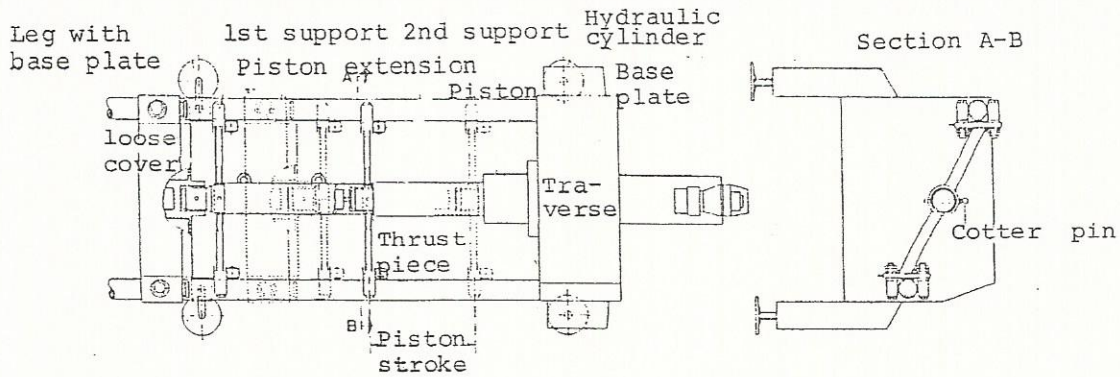
The support is mounted on rollers on the support bars and can be inserted or removed at any time without dismantling the support bars.

Installation of the support is carried out in the following order, with the hydraulic piston retracted:

- a) Insert piston support and push onto piston extension at the place provided.
- b) Move hydraulic piston out until piston support is in loose cover and on thrust piece of piston.
- c) Secure piston extension and support in position with cotter pins.

The support legs with base plates are fitted during assembly in accordance with the set size.

Filter with two piston extensions



6. PISTON STROKE LIMITER

If the hydraulic piston is moved out to its maximum extent - which can happen if there is no filter set in place or if it is too short - a limit switch in the hydraulic cylinder prevents the piston from locking.

The limit switch is triggered about 5 mm before the end position of the piston and interrupts the oil supply. When this has happened the piston can be retracted by pressing the red button.

7. FAULTS AND THEIR ELIMINATION

7.1. FILTER IS NOT LOCKED OR UNLOCKED

Cause:

Remedy:

a) Difference between closing and opening pressure too small (min. 20 bar).

Check fuses in control cabinet
Have pressure switch reset by SEITZ fitter.

b) Programme disturbed or interrupted.

Switch off main switch and run through whole programme again.

c) Cam stuck on cam in cam coupling on cylinder end.

Take off chain cover. Using square spanner, move coupling back until cams lie in gaps again. Lubricate all parts including chain.

d) Piston is stopped by piston stroke limiter.

Retract piston (press red button) and lengthen filter set by inserting plates or frames or install piston extension (see 4)

Cause:

Remedy:

- | | |
|---|---|
| a) Eye seal drips | Examine seal, replace if damaged. |
| b) Folding sheet hung on one side or not folded "edge-to-edge". | Insert folding sheet centrally and check fold. |
| c) Damaged sheets | Replace sheets |
| d) Eyes on filter plates or frames are tilted | Adjust eyes so that gaskets are evenly pressed. |
| e) Sealing strips on filter plates or frames are tilted | Replace filter plates or frames. |

8.

CARE OF FILTER PLATES

- a) Take out exhausted sheets immediately so that they do not dry against the plates.
- b) Carefully clean plates with a soft brush or spray nozzle; do not use any metal scrapers or similar tools.
- c) If the remains of sheets cannot be removed easily, immerse the plates in hot water and then brush off. In addition to brushing, scouring pads (like those for household use) can be used for cleaning.
- d) Depending on the degree of clogging of the perforated metal sheets, we recommend that the whole filter set be cleaned with lye solution at intervals of 2-3 months (e.g. caustic soda solution NaOH 1.5%, action time 3 to 4 hours at 80°C).
(see Flushing with Lye (4.), page 13).
- e) For thorough cleaning, the perforated metal sheets can be removed from filter plates made of acid-resistant stainless steel. This applies in particular to the filter plates used on the trub side. Cleaning like this is recommended at quarterly intervals and even before under extreme conditions of use.

Important notes:

- f) Make sure that all screws removed when taking off the perforated plates are replaced.

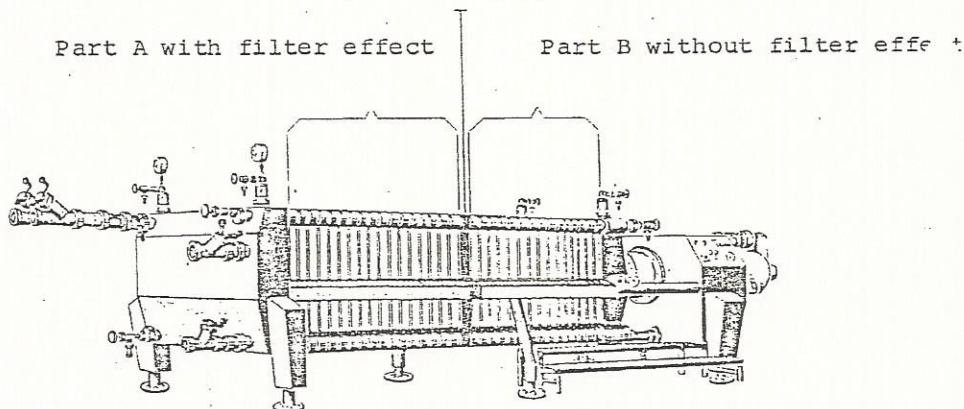
10. INTERMEDIATE PLATE

The intermediate plate is used for partitioning off a part of the filter set of any size, if it becomes uneconomical to use the whole filter because the batches are relatively small.

The design is the same as that of kieselguhr end frames, except that the eyeholes are closed.

Material: acid-resistant stainless steel, rubber seals.

INTERMEDIATE PLATE



INSERTION OF INTERMEDIATE PLATE

At any position in the filter set a trub plate is removed and the intermediate plate inserted in its place.

	Remove	Insert
Kieselguhr filtration	1 kieselguhr frame FS 51014	1 intermediate plate FS51090
Sheet filtration	1 trub filter plate FS 50937	1 intermediate plate FS 51089

METHOD OF OPERATION

The intermediate plate divides the filter set into a filtering part A

and

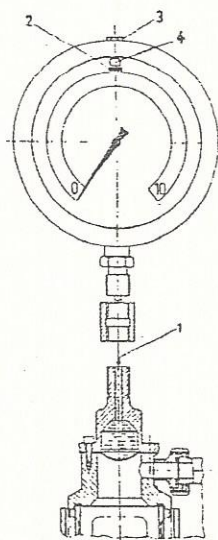
a non-filtering part B.

- g) When working on the filter plates and frames, protect the sealing strips from damage and avoid bending the eyes.
- h) Check monthly that countersunk screws are firmly in position (they are subject to pressure and temperature variations and can become loose).
- i) When screws are lost, replace them with the screws specified in our spare parts list (group 2) only.

9.

GLYCERIN FILLING AND GLYCERIN FACING OF PRESSURE GAUGES

For reasons of sterility, the pressure gauges do not come into direct contact with the material under filtration, but there is an elastic diaphragm between the two with a facing of glycerin. Accurate pressure transmission takes place only if the facing is completely filled with chemically pure glycerin.



The facing is filled at the factory before the filters are despatched, at point (1) in the drawing. If the pressure indication of the gauge is inaccurate, the glycerin filling must be checked and replenished if necessary. Damaged sealing diaphragms must be replaced. Insert the diaphragm with the dome downwards. When refilling make sure again that the diaphragm dome faces downwards.

For filling or refilling, remove the pressure gauge from the screw connection and pour in chemically pure glycerin from a pipette until it overflows. Wait for air bubbles to rise and refill to overflowing. Only then replace pressure gauge and screw down tightly.

The pressure gauge is largely filled with glycerin. Above the scale an air bubble (4) is visible. Its liquid level must lie over the scale approximately in the region of the balancing slot (2).

If the liquid level drops, the pressure gauge must be refilled with chemically pure glycerin. For this, remove the hexagon head screw (3) on top of the casing after first cleaning all dust off it. This hexagon head screw must be treated very carefully as it contains a pressure-relief valve.

Both parts of the set must be fully fitted with sheets and seals. The sheets in part B do not become used up since they do not come into contact with beer.

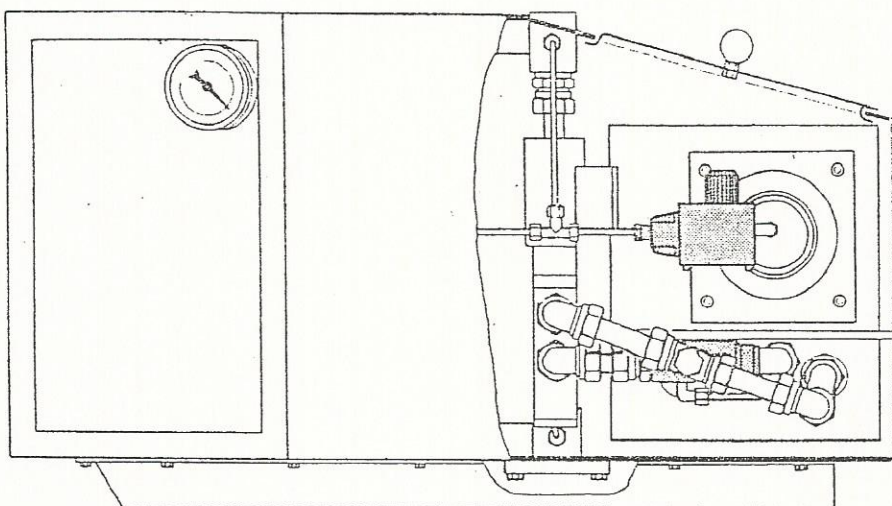
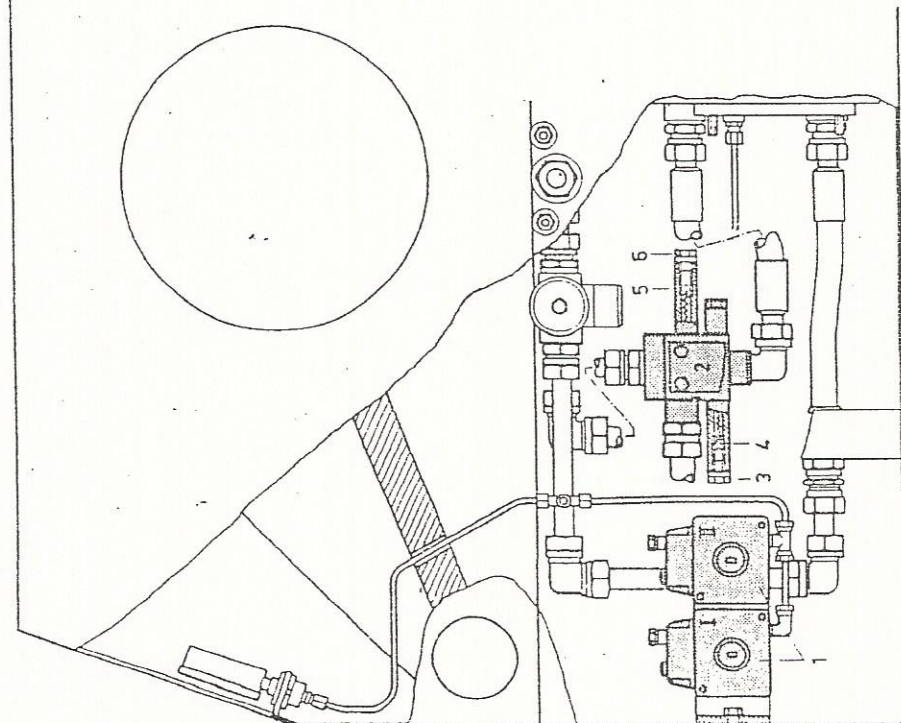
Both parts must always be filled and emptied in a parallel fashion, i.e. during all operations in which part A is filled, part B must be full of water. This is necessary in order to have a pressure equilibrium for the intermediate plate. The pressure balance is ensured by small openings in the otherwise closed eyes of the intermediate plate. Since these openings are only on one side of the plate, no circulation can take place in part B. Only drip losses are compensated and, as mentioned before, the pressure balance is produced (pressure in part B is always the same as the inlet pressure of part A).

For practical operation of the filter with the intermediate plate, the operating instructions for the standard filter B 10205 apply, but it is advisable to connect a second water supply line for filling the filter at part B of the set. Connect at the loose cover, on the trub side at the bottom. Regulation is to be carried out in accordance with the division of the filter set in such a way that sections A and B are approximately equally filled. At the same time, open all bleeder valves on parts A and B. After filling, bleeder valves in non-filtering part remain closed.

After completion of filling, close all valves on B-side. The water thus trapped in no longer takes part in circulation. Sterilization of part B is not necessary as a rule. If, however, it should be required, sterilize parts A and B separately.

SETTING THE PRESSURE SWITCH AND PRESSURE-LIMITING VALVE IN INSTRUMENT COMPARTMENT OF TRAVERSE

63



11. INSTRUCTIONS FOR TESTING THE HYDRAULIC SYSTEM

ORION 100

To be carried out when commissioning and after a general overhaul

See "Operation of the electrical circuit" in the Appendix

1. Remove the chain from the geared motor.
2. Fill the oil tank with SPINASSO 34 up to about the middle of the top oil-level sight-glass.
WARNING: Fill oil through the fine filter insert.
3. Turn the selector switch (3) to the "close filter" position (arrow points to the left).
 - 3.1 Press push-button (4) several times briefly until oil foam emerges from the rear vent (under the geared motor).
 - 3.2 Extend the piston about $\frac{1}{4}$ m.
 - 3.3 Loosen the rear venting screw and briefly press the red mushroom-type emergency return push-button (6) several times until oil emerges without air bubbles at the rear vent. Tighten the screw.
 - 3.4 Move the piston to and fro several times without pressure build-up.
Extend with the black push-button (4) and return with the red emergency return push-button (6).
4. Adjustment of hydraulic switchgear and safety devices in the instrument compartment on the traverse (see Fig. B).
 - 4.1 Set the two-stage valve (B2).
 - 4.1.1 Insert sheets in the filter.
WARNING: Do not close the filter without plates, seals and sheets.

4.1.2 Set pressure-limiting valve for low pressure:

- a) Turn setting knob of pressure switches I and II right down to the 160 bar mark.
- b) Set selector switch (3) to "close filter", press push-button (4).
- c) Note the point of change-over from low to high pressure on the pressure gauge. This point is where the rapid rise of the pressure gauge pointer slows down.
The change-over must occur at 30^{+5} bar.
- d) In the case of deviations:

Withdraw the screw plug (B3) on the pressure-limiting valve for low pressure. Using a screwdriver and keeping button (4) pressed, tighten the locking screw (B4)

if the pressure is too low,
loosen the locking screw (B4)
if the pressure is too high.

Press the emergency return button (6) until the pressure drops.

Re-start with button (4) and check the new change-over point.
If necessary, re-set several times as described above.

4.1.3 Set pressure-limiting valve for high pressure

Loosening of the seal and adjustments must be carried out only by SEITZ fitters.

- a) Press button (4) and thus increase the pressure beyond the change-over point. Pressure must remain at 150 ± 10 bar.
- b) In the case of deviations:

Withdraw the screw plug (B6) on the pressure-limiting valve for high pressure. Using a screwdriver and keeping button (4) pressed,

tighten locking screw (B5) if the
pressure is too low,
loosen the locking screw (B5) if
the pressure is too high,

until the required pressure of 150 ± 10 bar is reached.
Re-insert and tighten the screw plugs (B3, 6).

- 4.2 Set pressure switch II (BII) for contact pressure limitation.

LOCKING

Turn setting knob on pressure switch II to the "110 bar" mark (80 bar in the case of sheet filtration).

Set selector switch (3) to "close filter". Press emergency return button (6) until pressure of 100 bar (70 bar with sheet filtration) is reached.

Turn the setting knob slowly anti-clockwise until the central indicator light (5) on the control desk in the traverse glows and the geared motor starts. The geared motor rotates anti-clockwise.

The geared motor is switched off by pressing the limit switch on the lower sprocket wheel.

- 4.3 Pressure switch I (BI) for release pressure limitation.

UNLOCKING

Turn setting knob on pressure switch I to the "130 bar" mark (to 100 bar for sheet filtration).

Set selector switch (3) to "open filter". Press push-button (4) until pressure of 120 bar (90 bar for sheet filtration) is reached.

Turn setting knob slowly anti-clockwise until the central indicator light (5) on the control desk in the traverse glows and the geared motor starts. The geared motor rotates clockwise.

Lock the cylinder locks on pressure switches I and II and remove the key.

5. SETTING AND CHECKING THE LIMIT SWITCH (see Fig. D)

The play between the roller in the limit switch and the running surface on the sprocket wheel must be $0.2^{+0.2}_{-0.2}$ mm. Adjust by pushing the limit switch in the slots. Turn selector switch (3) to "close filter". Press button (4) until central indicator light glows. Geared motor runs.

For checking the limit switch, now move the roller shaft by hand. After 1 to 2 mm the geared motor must switch off.

6. Lay chain (D3) in position and run through all operations several times, with filter equipped with plates, sheets and seals.

If the limit switch cuts out before the piston is locked, the initial stress of the cup springs must be increased by tightening nut (D1). If this does not achieve the desired result, the spindle must be checked for freedom.

Take out filter plates, move piston right out and check whether piston stroke limit switch is working. This limit switch must interrupt the oil feed before the piston reaches its end position and is switched off by the pressure switch. The switch point is about 5 mm before the piston end point. Check the remaining working length of the piston:

approx. 1260 mm for chassis size 100 to 250;

approx. 1800 mm for chassis size 300 to 350.

Check the oil level with piston retracted; oil must come up to the middle of the top oil-level sight-glass.

Refill if necessary (see page 14).

Oil filled at factory: SPINESSO 34 (Esso).

7.

MAINTENANCE OF HYDRAULICS

Maintenance of the hydraulic system is confined to checking the oil level in the tank and lubricating the cam coupling.

The oil level must never drop below the bottom sight-glass when the piston is moved out. If necessary, top up with oil of the same type. Spinesso 34 (Esso) hydraulic oil is filled at the factory. First change after 6 months, further changes every two years.

Remove drain screw on bottom of traverse, catch used oil in a container, flush oil container with about 5-10 l fresh oil.

Clean drain screw and screw in.

Fill with fresh oil through fine filter insert with hydraulic piston retracted, until oil reaches middle of top oil-level sight-glass.

Oil quantity: 150 litres for chassis size 100 to 250
200 litres for chassis size 300 to 350

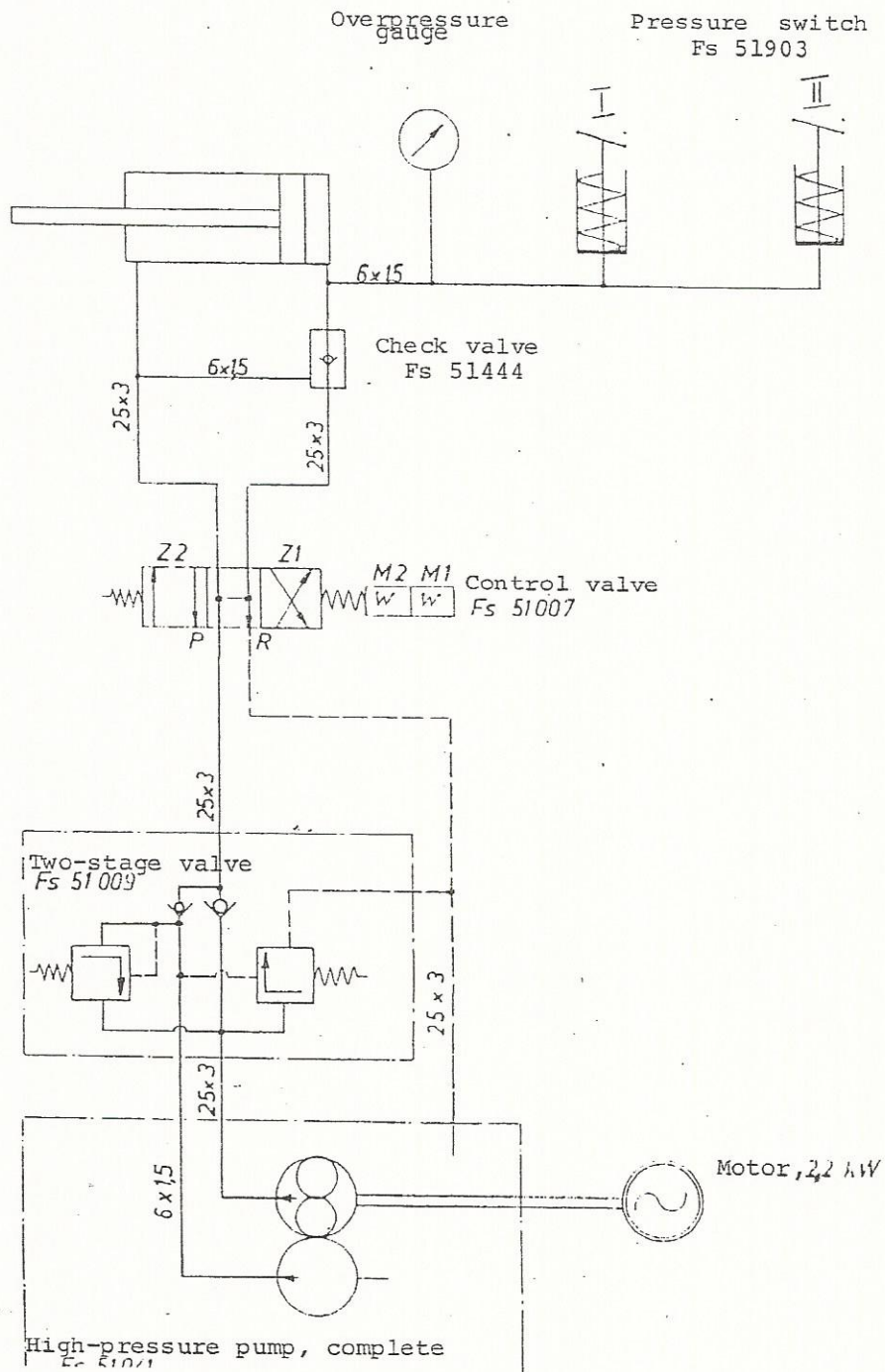
WARNING: Do not mix different oil types

Ensure great cleanliness, clean funnels and vessels with fresh oil or paraffin before they are used for filling the oil. No water must be allowed to enter the hydraulic system. Every 2 years change the grease filling in the locking drive of the geared motor (as specified on name-plate).

C

Hydraulic circuit diagram for

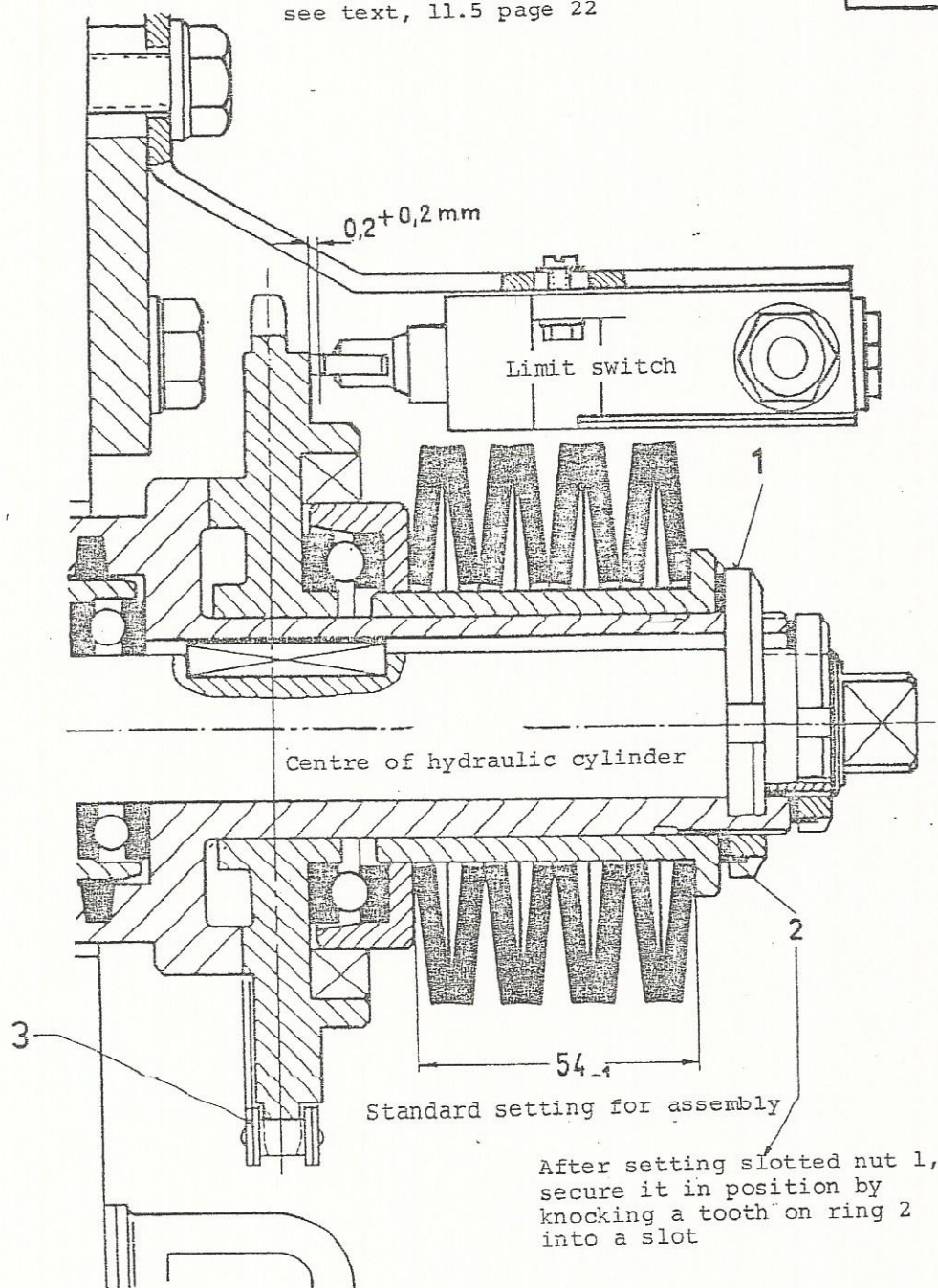
OF 100V



Setting the limit switch

see text, 11.5 page 22

D



APPENDIX

Contents

FILTRATION DIAGRAM

OPERATION CHART

OPERATION OF ELECTRICAL CONTROLS

INSERTION OF FILTER SHEETS

REMOVAL OF FILTER SHEETS

LUBRICANTS SELECTION CHART

ORION OF 100 V

FILTRATION DIAGRAM
SCHEMA DE FILTRATION
ESQUEMA DE FILTRACION

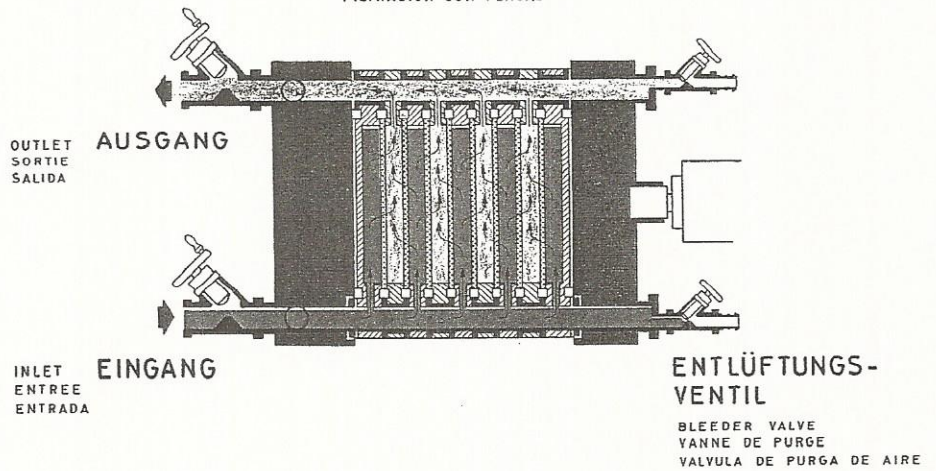
FILTRATIONS - SCHEMA

NORMAL - FILTRATION

NORMAL FILTRATION
FILTRATION NORMALE
FILTRACION NORMAL

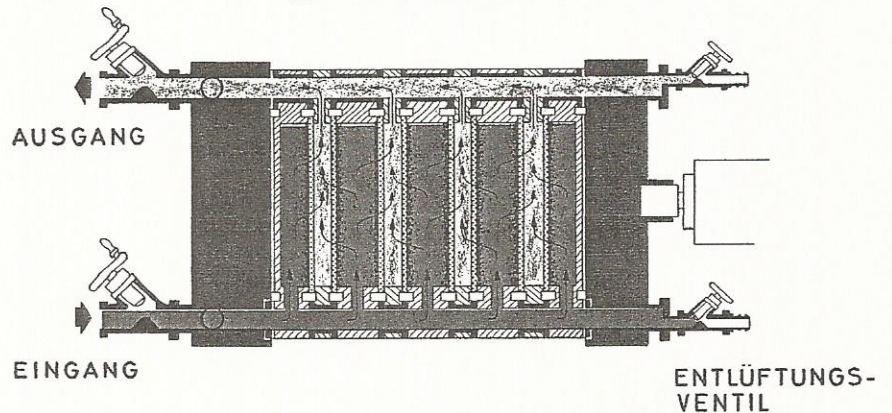
SCHICHTEN - FILTRATION

SHEET FILTRATION
FILTRATION SUR PLAQUES
FILTRACION CON PLACAS




KIESELGUR - FILTRATION

KIESELGUHR FILTRATION
FILTRATION AU KIESELGUHR
FILTRACION CON KIESELGUHR



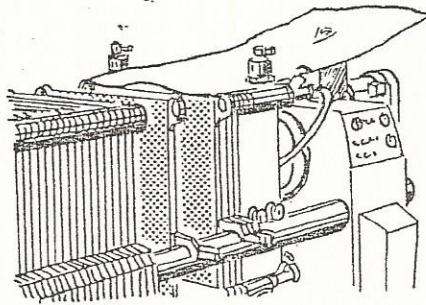
 FILTERSCHICHT
FILTER SHEET
PLAQUE FILTRANTE
PLACA FILTRANTE

 UNFILTRAT
UNFILTERED MATERIAL
PRODUIT NON-FILTRE
PRODUCTO SIN FILTRAR

 FILTRAT
FILTRATE
PRODUIT FILTRE
PRODUCTO FILTRADO

 KIESELGUR
KIESELGUHR

Fig. 1



Spread out sheet

INSERTION OF FILTER SHEETS

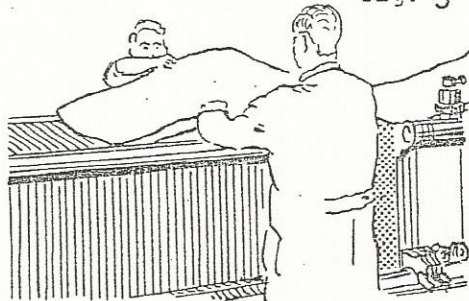
Fig. 2

TRADE MARK
INSIDE!



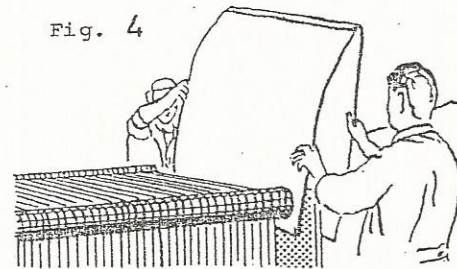
Fold sheet

Fig. 3



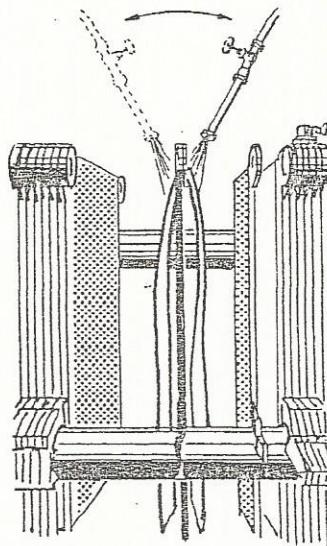
Lay sheet together

Fig. 4



Feed sheet in from above

Fig. 5



Insert sheet straight.
Wet sheet only for kieselguhr.
Dampen kieselguhr folded sheet
evenly with water.