9. If electrical equipment is included in the machine supply, it is to be mounted in compliance with the wiring diagrams.
See Section 8.- / WIRING DIAGRAM.

NOTE: If the machine type is B-LP, BLUE-TOP or BLUE-TOP-PLUS, a copy of the wiring diagrams is supplied in a box inside the cabinet.

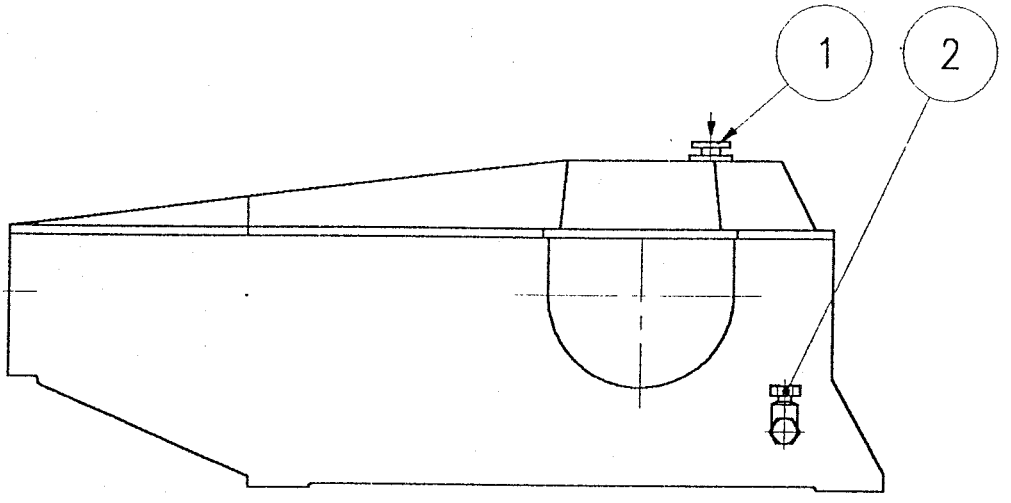
10. Fill the eccentric sump with oil.
For quantity, see Section 1.- / TECHNICAL DATA.

IMPORTANT!! ***ONLY*** oil types specified at the end of this section may be used.

In some countries the individual oil types may have other names, and it is, therefore, recommended that the oil supplier be contacted to ensure that the correct oil type is used.

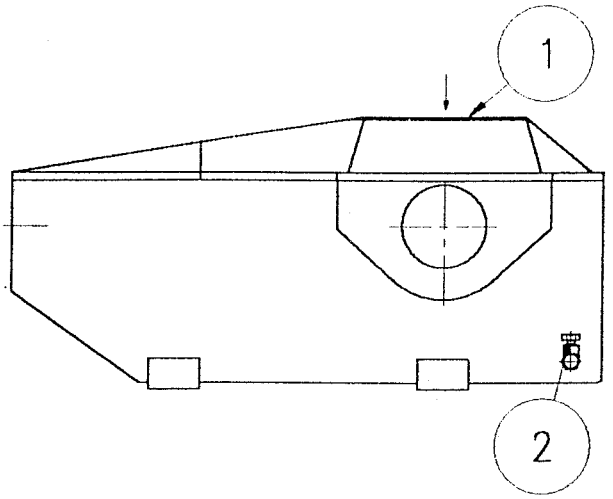
11. How to fill with oil depends on the size of the machine:

D.50 - .51 - .51H - .60 - .72



The air filter Pos.1 is removed and oil poured in. Oil drainage takes place through Pos.2.

D.79 - 79H - .80 - .80H - .90



Lid Pos.1 and splash guard are removed and oil poured in. Oil drainage takes place through Pos.2.

12. Check that the oil quantity is correct:

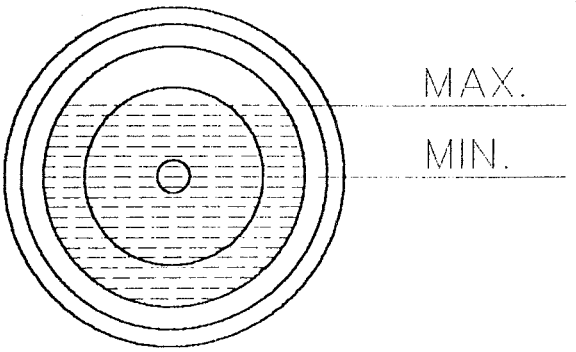
MACHINES WITH OIL DIPSTICK

Oil level should be between min. and max. on dipstick.

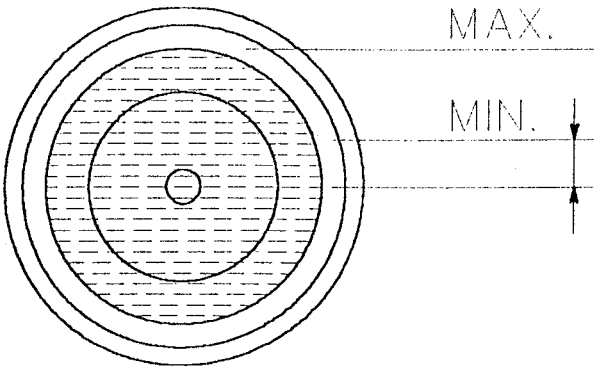
MACHINES WITH OIL-LEVEL GLASS

The oil level depends on the size of the machine:

D.50 - .51 - .60 - .72



D.51H - .79 - .79H - .80 - .80H



D.90

The oil level can be checked on the control panel. If the oil level control lamp is activated (shows red) during operation, the oil level is too low and it will be neccessary to top up the oil.

MACHINES WITH HYDRAULIC PRESSURE REGULATION

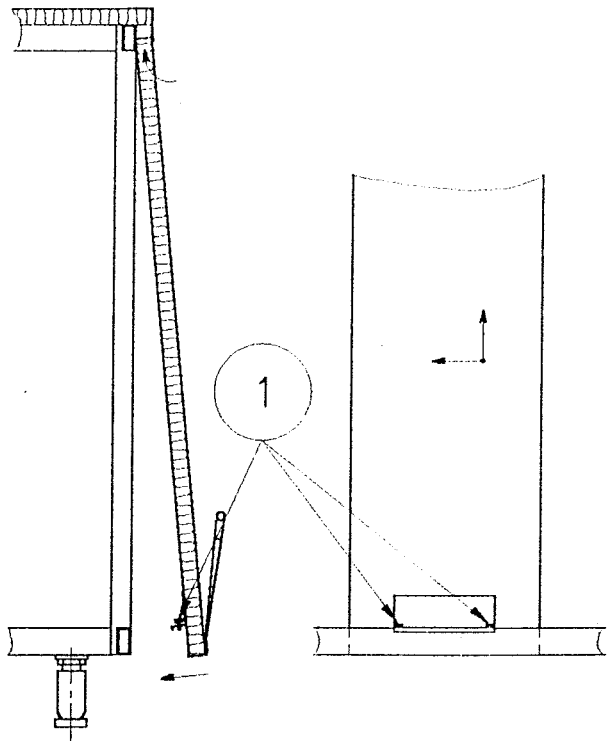
Filling of the hydraulic station with oil ***MUST*** take place through the filter. The oil-level glass must always be filled.
Volume, see Section 1.- / TECHNICAL DATA.

IMPORTANT!! ***ONLY*** oil types specified at the end of this section may be used.

MODEL BLUE-TOP-PLUS

All side and top panels for these models are supplied in a separate box.

When it has been checked that all parts of the machine are in complete order, the panels are removed from the box with caution and mounted on the frame.



1. The top panels are positioned and screwed on.
2. The side panels are mounted on the frame by means of a lifting hook.
3. The lifting hook is kept in the tool case.
4. An angle iron with two adjusting screws Pos.1 is mounted at the bottom of all side panels.

NOTE: The screws are supplied in a bag on the frame. All side panels are levelled by means of the adjusting screws Pos.1 until they are true to a plumb-line.

OIL TYPES

ALWAYS use one of the below oil types, or an equivalent type of oil that conforms to the below specification, for *Rannie's* machines:

First class industrial gear oil, viscosity 100-150 cSt, at 40°C,
or
First class motor oil API, classification SF/CC SAE 30-40

ECCENTRIC SUMP

BP	:	HLP 100	/	VANELLUS SAE 40
SHELL	:	TELLUS OIL S100	/	RIMULA SAE 40
TEXACO	:	MEROPA 100	/	URSATEX SAE 30
MOBIL	:	DTE 27		
CASTROL	:	HYSPIN AWS 100	/	RX SUPER 15W/40 or CRD 30

If a change is made to another oil type, the eccentric sump *MUST* be cleaned of all oil.

As regards the oil volume to be filled into the machine, reference is made to Section 1.- / TECHNICAL DATA.

HYDRAULIC SYSTEM

ALWAYS use one of the below oil types, or equivalent type, for the hydraulic pressure control:

BP	:	ENERGOL HLP 46	/	ENERGOL SHF 46
SHELL	:	TELLUS OIL 46	/	HYDROL DO 46
TEXACO	:	RANDO OIL HD 46	/	HYDRAULIC OIL HDW 46
MOBIL	:	DTE 25		
CASTROL	:	HYSPIN AWS 46	/	HYSPIN AWH 46 or VARIO HDX

For oil volume to be filled into the hydraulic system, see Section 1.- / TECHNICAL DATA.

STARTING THE MACHINE

Prior to starting the machine with a product charge, it MUST always be tested with water in the system.

IMPORTANT!! Before this trial-run it MUST be checked that the system contains water.

NOTE: Additionally, the following points will have to be inspected and checked before start:

1) Rotate the large belt pulley on the eccentric shaft by hand and listen for any jarring sounds.

   CHECK that the mounting screws have been TIGHTENED UP.

2) The necessary inlet pressure of cooling water (3-6 bar) must be present.

IMPORTANT!! 3) The manual or automatic pressure regulation in the homogenising system must ALWAYS leave the control system in the de-pressurized starting position.

4) The delivery side must NOT be shut off.

NOTE: This applies especially to machines without a homogenising bracket.

During the trial-start and trial-run with water in the machine, the following must be checked:

- That the belt pulley on the eccentric shaft rotates in the correct direction.
  The direction of rotation is marked by an arrow.

- That the correct inlet pressure is supplied to the machine.
  See Section 1.- / TECHNICAL DATA.

- For machines with a cabinet, model BLUE-TOP-PLUS, check the direction of rotation of the suction fan in the top cassette.
  The direction of rotation is marked by an arrow.

- That the eccentric sump contains the necessary amount of oil.
  Depending on the machine type, the oil level can be checked electrically or visually.

For procedure, see Section 4.- / OPERATION AND SERVICE, paragraph "Checking the oil level".

- That cooling water is supplied from both the cylinders and the eccentric sump. This can be checked visually in the cylinder sump into which cooling water from the eccentric sump is also fed. Depending on the machine type, the cooling water flow can be checked electrically or visually.

  For procedure, see Section 4.- / OPERATION AND SERVICE, paragraph "Checking the cooling water system".

If the machine has other electric equipment, it must be checked and tested. See Section 8.- / WIRING DIAGRAM.

OPERATION AND SERVICE

MODEL B-LP - BLUE-TOP - BLUE-TOP-PLUS

Regular inspection should be made during daily operation to avoid unnecessary breakdowns.

Commence daily operation of the machine by activating the switch "ON-MAIN-MOTOR".

NOTE: Pilot lamp "MAIN-MOTOR" lights during operation.

All signal lamps should be examined regularly to ensure that irregularities do not exist.

Air pockets may occur in the valve housing during starting of the machine, resulting in irregular operation. These air pockets MUST be removed before homogenising begins. Depending on the model, this can be done in one of the following ways:

MACHINES WITH RINSING VALVE

The rinsing valve is opened causing air and water to escape together. When water flows out in a regular jet, close the rinsing valve.

MACHINES WITHOUT RINSING VALVE

These machines have no venting facilities, and so the machine MUST operate until it reaches regular operation before homogenising is started.

CHECKING THE OIL LEVEL

Depending on the machine type, the oil level can be checked electrically or visually.

ELECTRICAL OIL LEVEL CONTROL

If "OIL-LEVEL" lamp lights during starting or operation, oil must be poured into the eccentric sump until the lamp is extinguished.

VISUAL OIL LEVEL CONTROL

Machines with an oil dipstick must be checked regularly to see that the oil level is between min. and max. If this is not so, refilling **MUST** take place.

CHECKING THE COOLING WATER SYSTEM

MACHINES WITH "WATER FLOW" CONTROL

Depending on the customer's wishes, some machines have a control unit for the flow of the cooling water to the cooling system.

This control unit "WATER FLOW" is connected either to a pilot lamp in front of the machine or to a control unit in the customer's control panel.

IMPORTANT!! If the "WATER FLOW" control indicates a fault, it should be examined **IMMEDIATELY**.

Adjustment of the regulation valve may often remedy the fault.

If the "WATER FLOW" control still indicates a fault in the system, the machine **MUST** be stopped and the fault located.

MACHINES WITHOUT "WATER FLOW" CONTROL

It must be checked visually, at regular intervals, that water flows continuously into the cylinder sump from, respectively:

a) Cooling of cylinders

b) Cooling water from eccentric sump.

IMPORTANT: If cooling water does not flow into the cylinder sump, the cause **MUST** be determined at once. If it takes some time to do so, the machine **MUST** be stopped and the fault located.

GENERAL CHECK

- That product does not flow out at cylinder pistons as this indicates defective cylinder packings.

- That oil does not flow out where the fixed piston passes through the crosshead cover.
  If so, the oil seal ring is defective.

- That oil does not flow out at the eccentric shaft where the large belt pulley is located.
  If so, the V-ring seal is defective.

- Regarding the interdependent values of homogenising pressure and main motor power input, it should be noted that these values must be constant, and in the event of major deviations the homogenising valve should be checked.

IMPORTANT: **HIGH PRESSURE MACHINES (HYPER)**

During production these machine operate under exceedingly high pressure and there is a danger, should there be a product leak, from the force of the escaping product.

Therefore, one must always use protective glasses when working around these machines during a production run.

FAULT LOCATION

MACHINES MODEL B-LP -BLUE-TOP - BLUE-TOP-PLUS

Faults in the machine may have many different causes, and it will always be necessary to look out for irregularities in the machine.

The below table shows what the cause may be if the machine does not start when "ON-MAIN-MOTOR" is pressed, or the irregularities which may cause a lamp to indicate a fault during operation.

The instructions are common to all machine types and give a list of the pilot lamps with which a machine may be equipped.

ALWAYS CHECK that control voltage is supplied to the machine.

A - STARTING, WHEN CONTROL VOLTAGE HAS BEEN CUT OFF:

Machine does not start	Cause
No light in "OIL-LEVEL"	- If LED on relay d5 on panel does not light, oil level in eccentric sump is too low.

B - STARTING, DAILY OPERATION

Machine does not start when "ON-MAIN-MOTOR" is pressed	Cause
No light in "OIL-FLOW"	- Too little oil flow in lubricating system. Oil pump has stopped for machine type D.90.
No light in "WATER-FLOW"	- Too little water flow in cooling system.
"AIR-TEMP" lights	- Too high temperature in cabinet.
"OIL-TEMP" lights	- Too high oil temperature in eccentric sump. (If temperature exceeds 65°C, machine does not start.)

If the above is in order, and machine still does not start - Emergency switch activated.

C - DURING OPERATION

Lamps which may indicate faults during operation	Cause
"OIL-FLOW" extinguished	- Too little oil flow in lubricating system. Oil pump has stopped for machine type D.90.
"WATER-FLOW" extinguished	- Too little water flow in cooling system.
"AIR-TEMP" lights	- Too high temperature in cabinet.
"OIL-TEMP" lights	- Too high temperature in eccentric sump. (If temperature exceeds 65°C, main motor stops automatically)
"OVERLOAD-OIL-PUMP" lights	- Thermal relay for oil pump has dropped out.
"OIL-LEVEL" lights	- Too little oil in eccentric sump.
"SAFETY-HIGH-PRESSURE" (Lamp on panel at relay)	- Too high pressure in system.

MACHINE WITH ROTARY FLASH

The lamp is activated as soon as a fault occurs in one of the above fields.

REMEMBER: If irregularities or jarring sounds occur during operation, the machine MUST be stopped and these irregularities and sounds localized and corrected before restarting the machine.

MAINTENANCE

AFTER THE FIRST 24 HOURS OF OPERATION

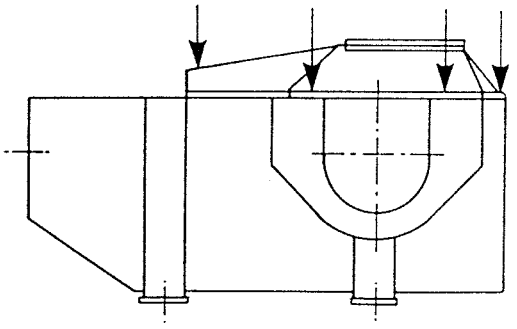
Check the V-belt tension. V-belts may only sag 15 mm per metre of free belt length. This check should then be made regularly.

AFTER THE FIRST 250 HOURS OF OPERATION

Change the oil in the eccentric sump. Before the new oil is added, the eccentric sump must be thoroughly cleaned with paraffin oil.

AFTER 1 MONTH OF OPERATION

Tighten screws in the cover of the eccentric sump (see drawing).



AFTER EVERY 250 HOURS OF OPERATION

1. If the machine has a homogenising bracket, the homogenising valve must be checked for wear. When the wear has reached such an extent that parts of the surface are damaged or the separate annular faces are worn through, the homogenising valve must be replaced.

2. See that water does not penetrate into the eccentric sump. This can be seen by the oil changing from a brownish to a yellowish colour.

AFTER EVERY 500 - 1000 HOURS OF OPERATION

1. Replace all valve springs. For dismounting and mounting of valve housing, see Section 6.5-.

2. Inspect valve seats. Contact faces must be without marks/traces of wear. Normally, small pits will form in the seat areas, but these do not impair the pump function unless their number is so high that they are interconnected.

   For renovation and grinding of seats, see Section 6.1-.

AFTER EVERY 2000 HOURS OF OPERATION

1. Change oil in eccentric sump.
   For oil type, see Section 2.00.

2. Before the new oil is added, the eccentric sump must be cleaned thoroughly with paraffin oil.

Besides the regular inspections and checks after the above periods, damage and destruction may occur in other places and require maintenance in the form of replacement of single parts. The cause of abnormal operation must always be found and remedied. If the cause can be attributed to the following fields:

Crosshead, piston and connecting rod	Section 6.2
Cylinder and piston	Section 6.3
Valve housing	Section 6.5
Homogenising bracket	Section 6.6

a description of dismounting and mounting for these parts of the machine is attached.

NOTE: Spare parts lists covering the separate fields of the machine are contained in Section 11.- / SPARE PARTS.

For machines equipped with PTFE O-rings please note:

1. Before mounting the PTFE O-rings in a U-recess, they must be heated to MAX. 150°C to facilitate the mounting.

2. Components with PTFE O-rings should be lubricated with Molycote grease before every mounting.

If problems arise outside the said fields, in connection with maintenance or during the daily operation, Rannie should be contacted.

MACHINES WITH HYDRAULIC CONTROL SYSTEM

AFTER 3000 HOURS OF OPERATION

Replace oil in hydraulic system with new clean oil. The oil change MUST be made with clean auxiliaries.

REMEMBER!! The filter cartridge should be replaced for the first time after 50 hours of operation. Then after every 6 months.

The filter screen should be replaced once a year.

Spare parts lists for the separate fields are contained in Section 11.- / SPARE PARTS.

If the cause lies outside the described areas, **Rannie** should be contacted.

MAINTENANCE

POPPET VALVE AND VALVE SEATS

THREE-PART VALVE HOUSING D.60 - .72 - .79 - .80 - .90 - 100.80

During inspection and maintenance of poppet valves in a three-part valve housing, a distinction is made between small and large wear marks.

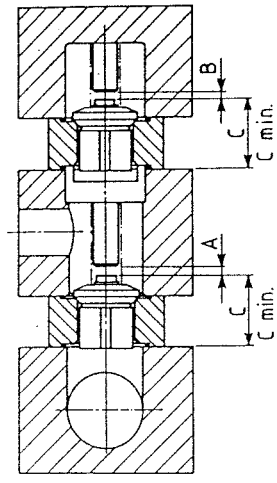
The following table contains a list of three-part types of valve housing, with details of poppet valve positions and lifts as well as dimensions specified for renovation.

NOTE: The numbers in the table apply to a new three-part valve housing. The table states a C-min. which is a machining measurement for renovation of the poppet valve.

IMPORTANT!! When the C-min is reached, the poppet valve **MUST NOT** be subjected to further grinding.
When the C-min. is reached the valve seat **CAN** be turned through 180° (if this has not been done already) and be used again.

RENOVATION OF POPPET VALVE

MACHINE TYPE	POPPET VALVE A	POPPET VALVE B	POPPET VALVE C	RENOVATION MEASUREMENT C-min.
D.60	2.25	2.25	58.4	57.0
D.72	3.75	3.75	58.4	57.0
D.79	4.65	4.95	62.4	61.0
D.80	9.65	4.95	62.4	61.0
D.90	9.65	4.95	62.4	61.0
100.80	12.00	10.00	63.3	62.0



REPAIR OF SMALL WEAR MARKS

Removed by match grinding.
See MATCH GRINDING.

REPAIR OF LARGE WEAR MARKS

If a poppet valve and a valve seat are heavily worn, and turning off is required, the following procedure must be adopted:

1. The poppet valve is turned off on the 45° conical surface until the surface is absolutely smooth and without wear marks.

2. The valve seat is turned off on the 45° conical surface until the surface is absolutely smooth and without wear marks.

NOTE: If the valve seat has been used on ONE SIDE ONLY, it can be turned through 180° and used again.

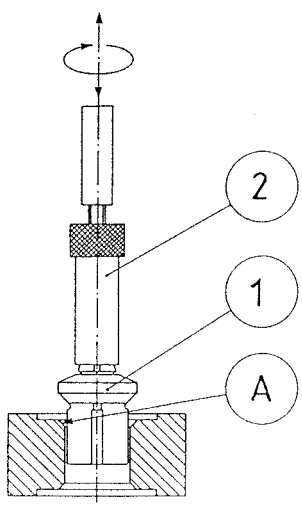
IMPORTANT!! When large wear marks are to be repaired, it must ALWAYS be ensured that the renovation measurement C-min. is maintained after the repair.

MATCH GRINDING

Match grinding of the poppet valves is carried out as follows:

1. A suitable amount of abrasive compound is placed on the valve seat contact face marked A (fine powdered Carborundum, grain size 180, suspended in acid-free oil).

2. Poppet valve Pos.1 is fixed in valve removing tool Pos.2. Valve removing tool is kept in tool case.



3. The poppet valve is lowered to the valve seat and turned gently clock-wise.

Match grinding is continued until the poppet valve and the valve seat have complete contact with the entire contact face.

REMEMBER!! Always clean the poppet valve and the valve seat of all traces of abrasive compound.

MAINTENANCE

CROSSHEAD, PISTON, AND CONNECTING ROD

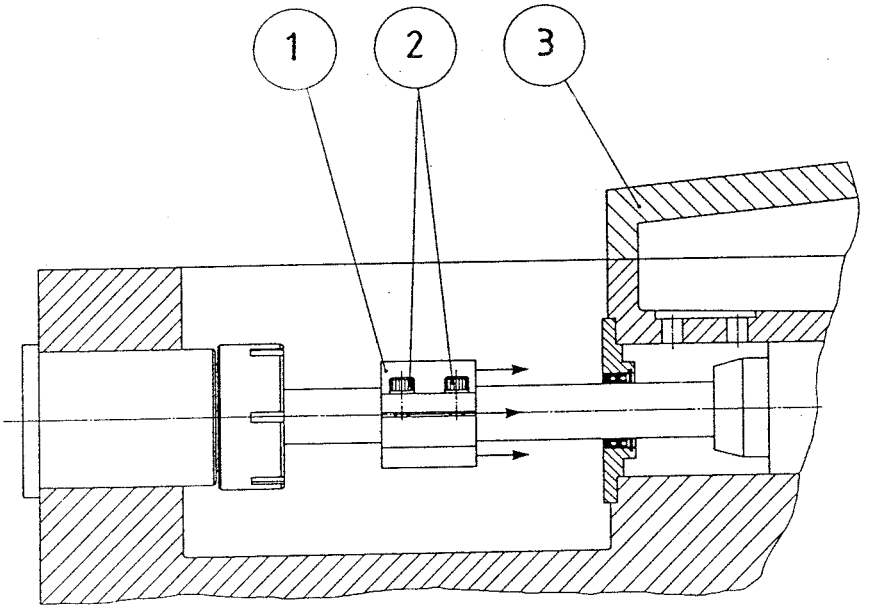
D.79 - .79H - .80 - .80H - .90

Dismounting is necessary for inspection and replacement of a fixed piston and oil seal ring.

REMEMBER!! Always check that the power supply from the main panel is switched off, and that the main fuses are removed.

DISMOUNTING

1. The eccentric shaft is turned by means of the V-belt drive of the machine so that piston coupling Pos.1 is in the rear position.



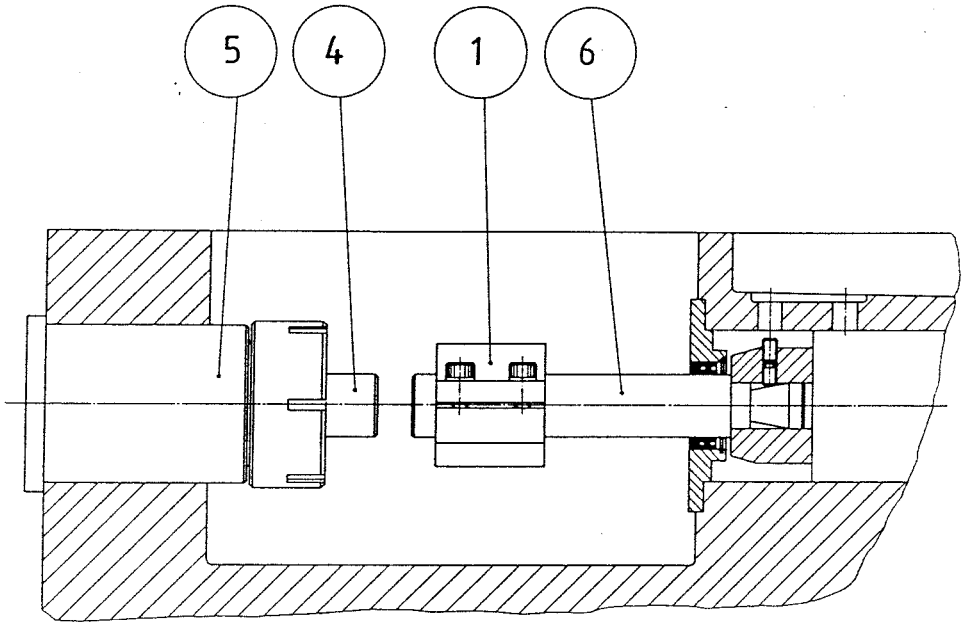
2. Remove cover Pos.3 over the eccentric sump.

3. Screws Pos.2 on piston coupling Pos.1 are unscrewed approximately 5 mm.

4. One screw Pos.2 on piston coupling Pos.1 is unscrewed completely, screwed into the centre threaded hole and then tightened so that the piston coupling is opened and remains loose.

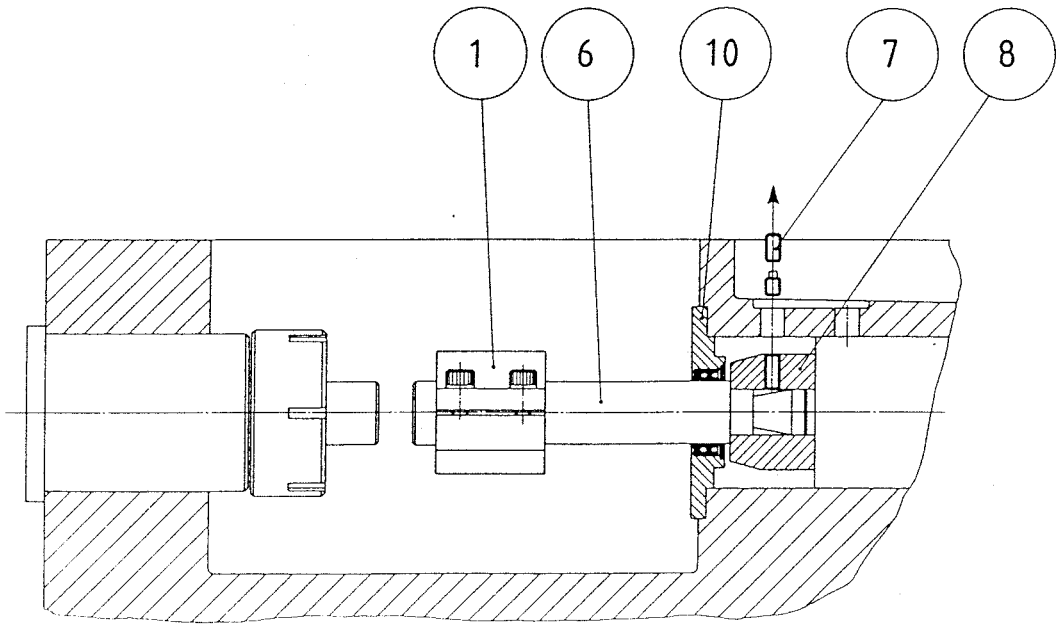
5. Piston Pos.4, in contact with the product, is pushed fully forward into cylinder Pos.5.

6. Piston coupling Pos.1 is secured to fixed piston Pos.6 by unscrewing screw Pos.2 in the centre threaded hole and tightening the other screw at the same time.



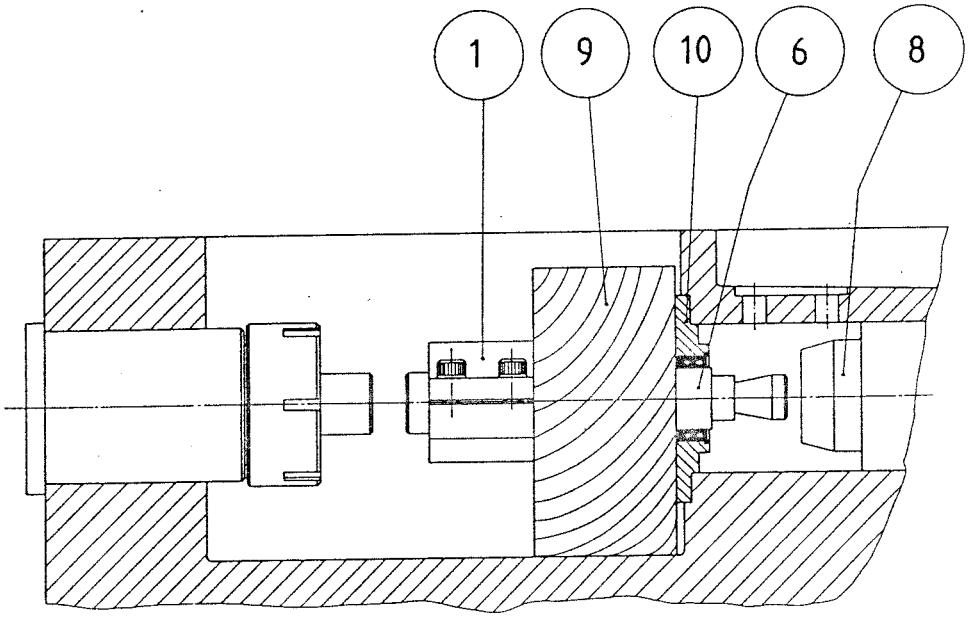
7. Fixed piston Pos.6 is moved to the front position by means of the V-belt drive of the machine.

8. Remove tightening screw Pos.7a securing hollow point screw Pos.7. Hollow point screw Pos.7, securing fixed piston Pos.6 to crosshead Pos.8, can then be removed.

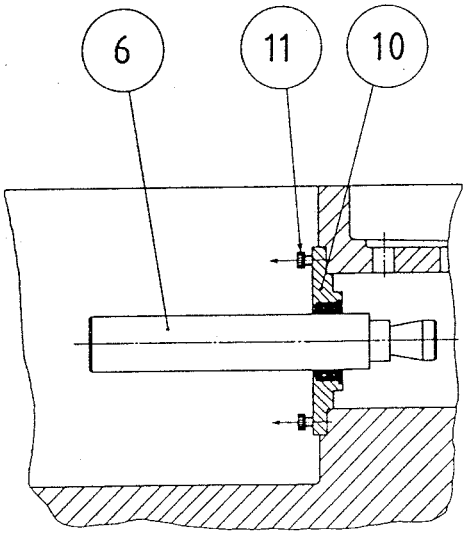


9. A wooden block Pos.9 (approximately 2 x 6 x 15 cm) is placed on both sides of fixed piston Pos.6, between piston coupling Pos.1 and crosshead cover Pos.10.

NOTE: If fixed piston Pos.6 of the machine is cylindrical without recess, piston coupling Pos.1 can be pushed up to crosshead cover Pos.10 and secured.

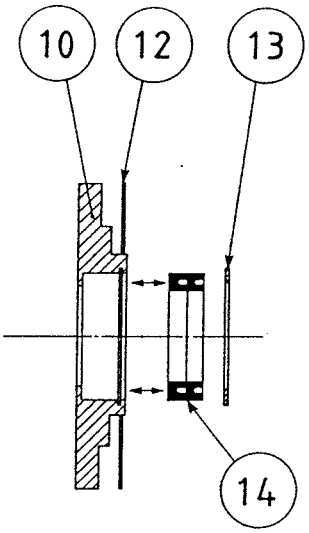


10. Crosshead Pos.8 is moved back by means of the V-belt drive of the machine so that fixed piston Pos.6 is extracted from crosshead Pos.8.



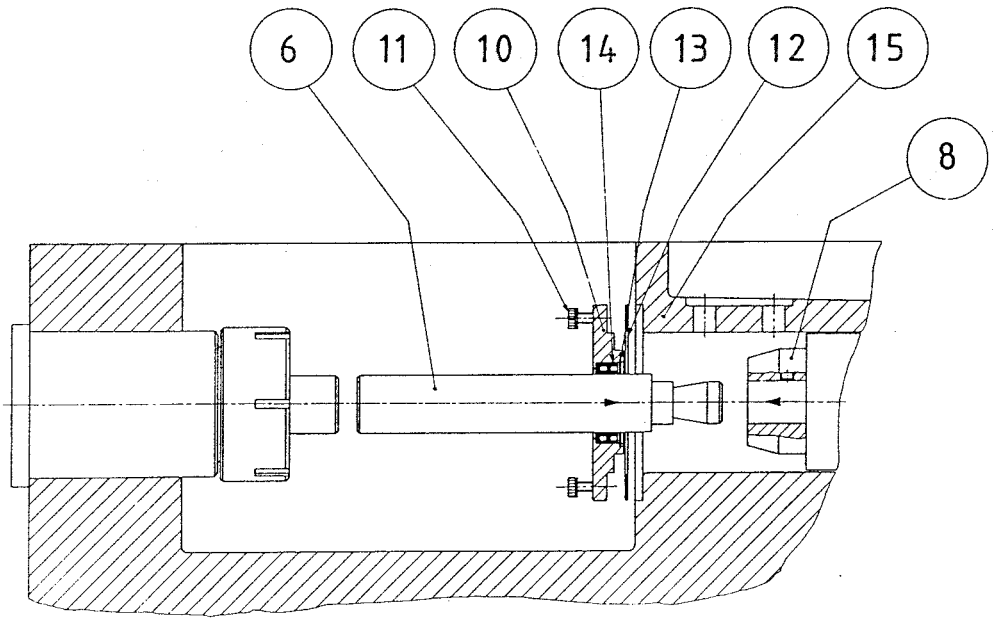
11. Crosshead cover Pos.10, with fixed piston Pos.6, is dismounted by unscrewing screws Pos.11 which are then screwed

into the two free threaded holes in the crosshead cover and tightened so that the crosshead cover is forced out.



12. Crosshead cover Pos.10 and fixed piston Pos.6 are removed for separation.

13. Packing Pos.12 is dismounted from crosshead cover Pos.10.



14. Locking ring Pos.13, if any, is removed.

15. Oil seal ring Pos.14 is forced out of crosshead cover Pos.10.

The individual component parts are examined for wear, and all damaged or worn parts are replaced.

MOUNTING

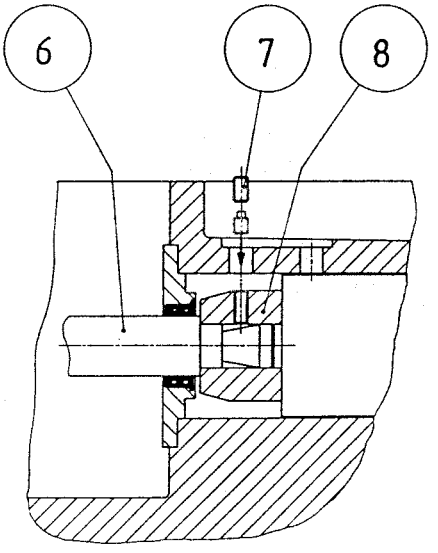
1. Oil seal ring Pos.14 is pressed into crosshead cover Pos.10.

   NOTE: Locking ring Pos.13, if any, is mounted.

   IMPORTANT!! The oil seal ring **MUST** be oiled before mounting.

   The oil seal ring **MUST** be absolutely straight in the crosshead cover in order to avoid leakage.

2. Crosshead cover Pos.10 and packing Pos.12 are mounted on fixed piston Pos.6 and placed in base frame Pos.15.



3. Crosshead Pos.8 is moved to the front position by means of the V-belt drive of the machine, and fixed piston Pos.6 is pushed into crosshead Pos.8.

4. Crosshead cover Pos.10 is secured to base frame Pos.15 by means of screws Pos.11.

   REMEMBER!! Check that fixed piston Pos.6 is bottomed completely in crosshead Pos.8.

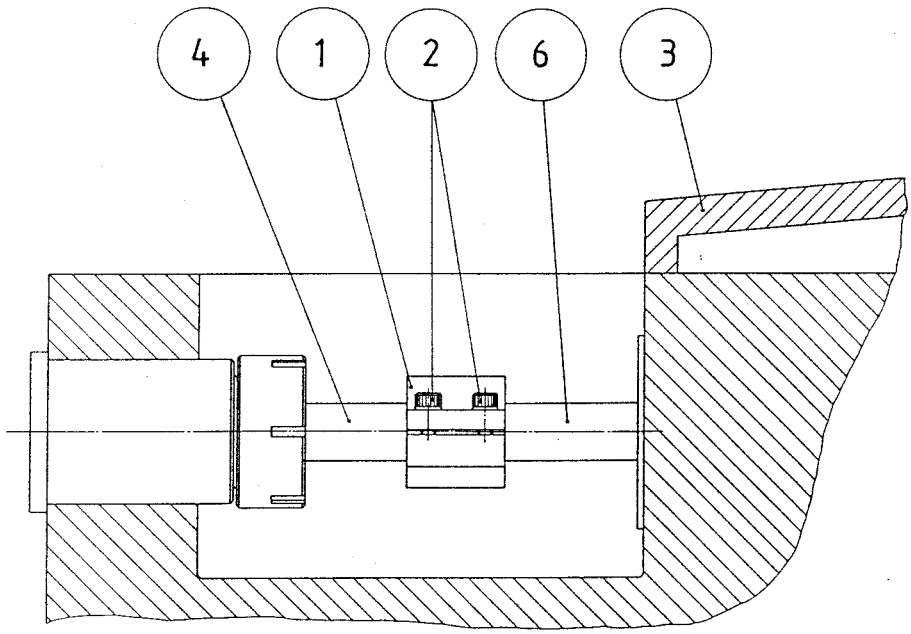
5. Insert and secure hollow point screw Pos.7 to crosshead Pos.8 so that fixed piston Pos.6 is secured to crosshead Pos.8.

   Tightening screw Pos.7a is mounted to secure hollow point screw Pos.7.

6. Cover Pos.3 is mounted over the eccentric sump.

7. Piston coupling Pos.1 is placed loosely on fixed piston Pos.6.

8. Piston Pos.4, in contact with the product, is moved up to fixed piston Pos.6, and piston coupling Pos.1 is placed over the joint between the two pistons.



NOTE: Some fixed pistons Pos.6 have a small groove showing where piston coupling Pos.1 is to be mounted.

9. The two screws Pos.2 on piston coupling Pos.1 are tightened.

MAINTENANCE

CYLINDER AND PISTON WITH A SINGLE U-RING/OPEN WATER COOLING

D.60 - .79 - 30.72 - 50.90 - 58.90 - 63.90

Dismounting of the piston is necessary for inspection and replacement of cylinder packing.

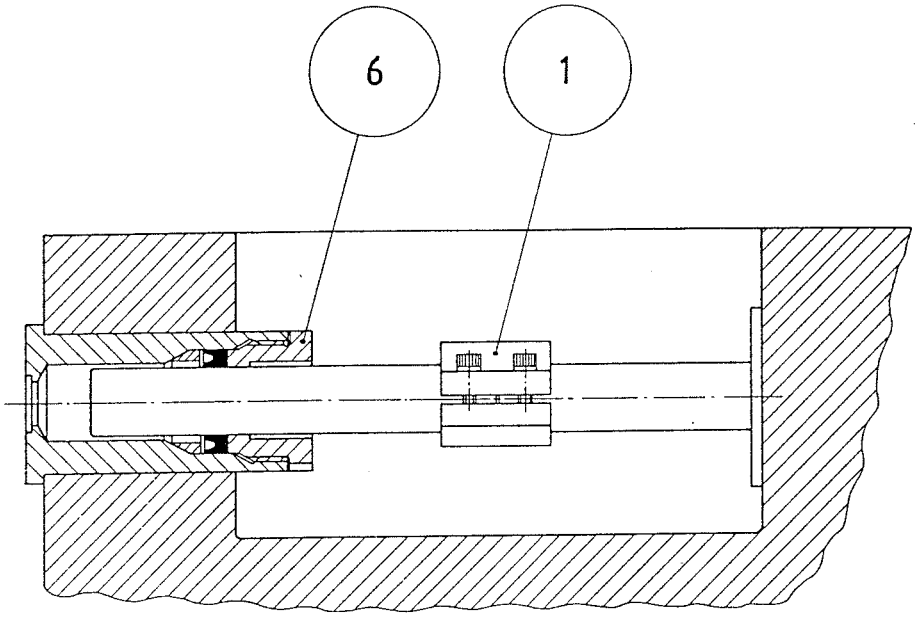
DISMOUNTING

REMEMBER!! Always check that the power supply from the main panel is switched off, and that the main fuses are removed.

IMPORTANT!! Dismount **only one** cylinder at a time.

1. Dismount the irrigation system for the cylinders.

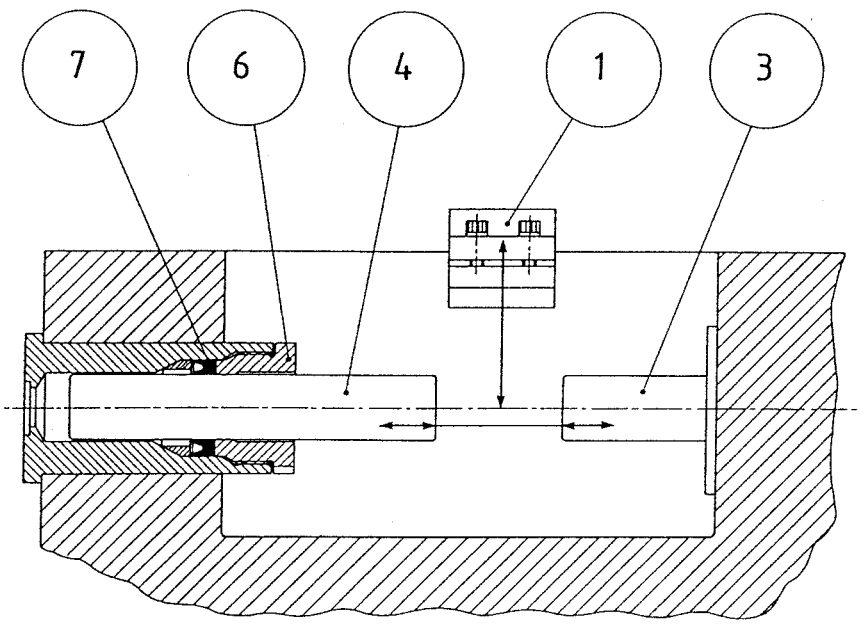
2. The eccentric shaft is turned by means of the V-belt drive of the machine so that piston coupling Pos.1 is in the front position.



3. Screws Pos.2 on piston coupling Pos.1 are unscrewed approximately 5 mm.

4. One screw on piston coupling Pos.1 is unscrewed completely, screwed into the centre threaded hole and then tightened so that the piston coupling is opened and remains loose.

5. The eccentric shaft is turned by means of the V-belt drive of the machine so that fixed piston Pos.3 is in the rear position.



6. Remove piston coupling Pos.1.

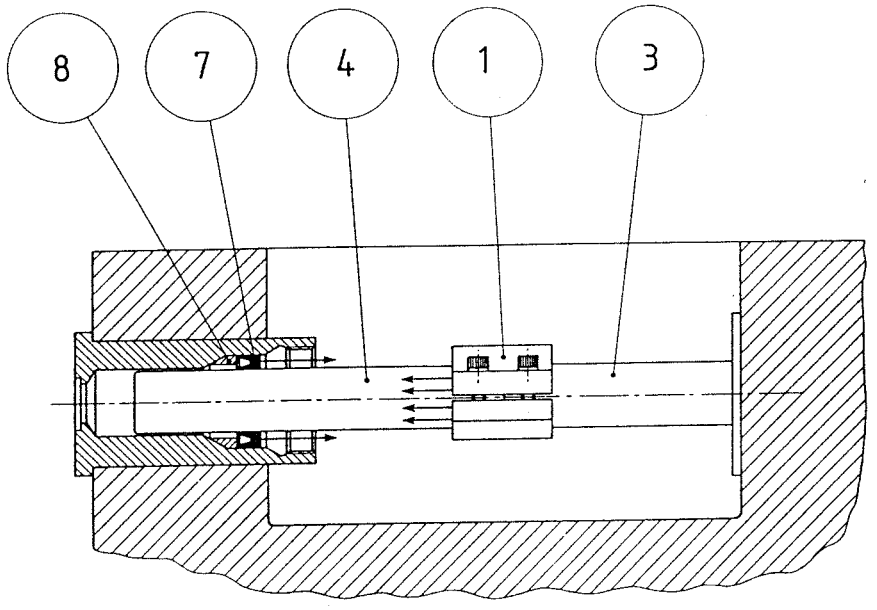
IMPORTANT!! If the machine is provided with ceramic pistons Pos.4, they must be handled with great care. Ceramic pistons **MUST NOT** be subjected to blows.

7. Remove packing ring Pos.6.

8. Extract loose piston Pos.4 from the cylinder. U-ring Pos.7 will often come out with the piston.

NOTE: If it is difficult to extract loose piston Pos.4 from the cylinder, it may be because the packing in the cylinder sticks. This state can be remedied by moving the homogenising valve in the homogenising bracket completely together. Packing ring Pos.6 must be dismounted. Loose piston Pos.4 is pulled back until it touches the fixed piston.

The eccentric shaft is turned by means of the V-belt drive of the machine so that the loose piston is moved into the cylinder. Because of the pressure thus created in the cylinder, the packing is pressed out.



9. If U-ring Pos.7 has not followed the loose piston, it can now be taken out together with neck ring Pos.8.

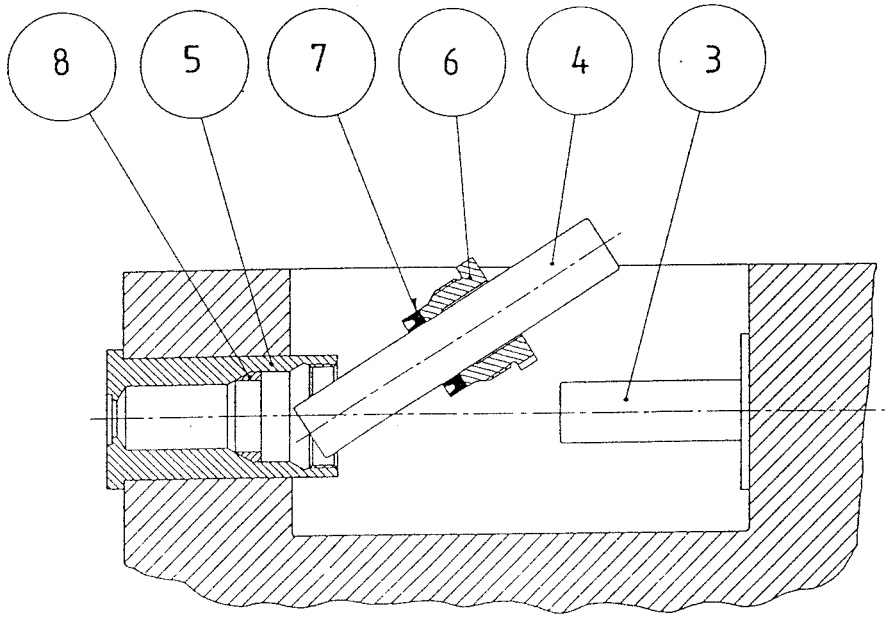
   The U-ring is examined for wear and replaced if necessary.

MOUNTING

REMEMBER!! Lubricate the cylinder thread with Molycote grease before mounting.

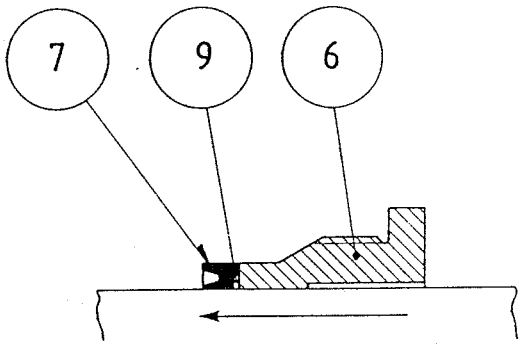
1. Fixed piston Pos.3 is moved to the rear position by means of the V-belt drive of the machine.

2. Neck ring Pos.8 is mounted in cylinder.

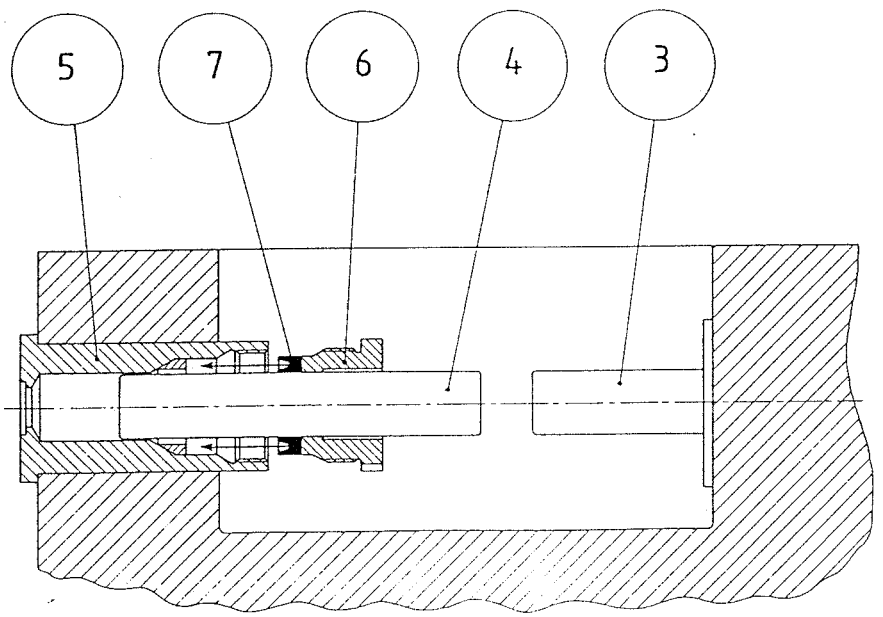


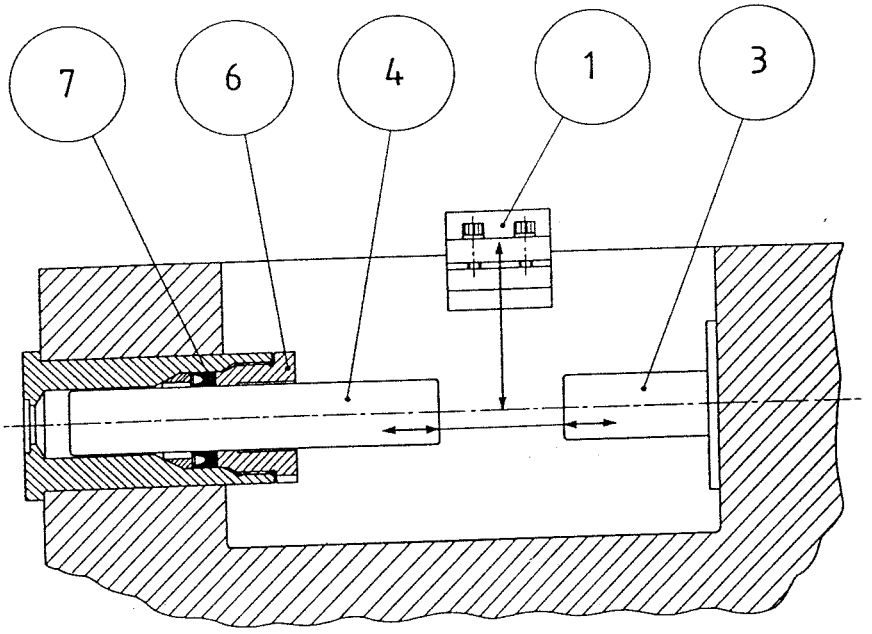
3. U-ring Pos.7 is placed together with packing ring Pos.6 on loose piston Pos.4 and moved into cylinder Pos.5.

REMEMBER!! If U-ring Pos.7 has a back ring Pos.9, it **MUST** be ensured that it is placed correctly in U-ring Pos.7 and that the U-ring turns correctly.



4. U-ring Pos.7 is pressed into position in cylinder Pos.5 by tightening packing ring Pos.6.





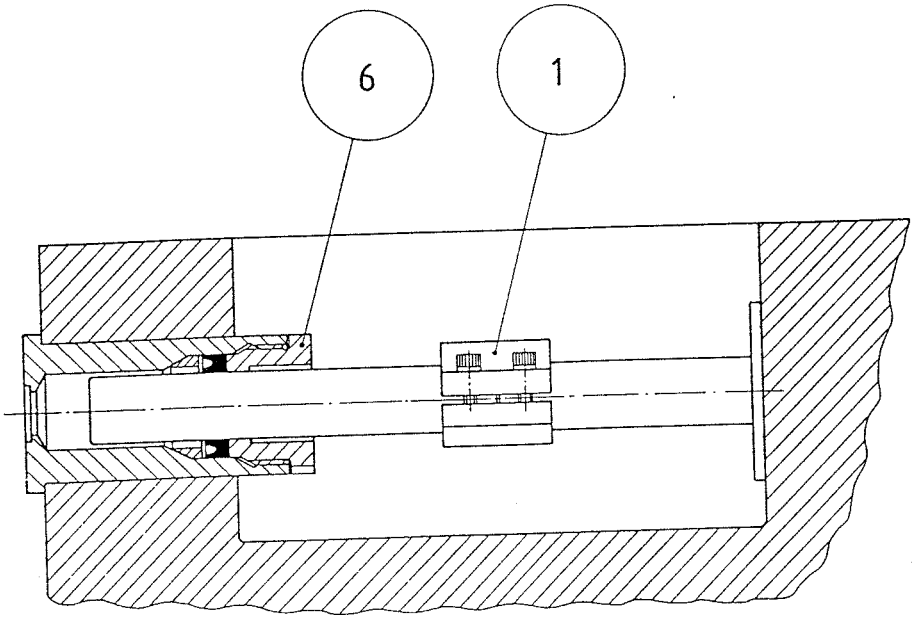
5. Piston coupling Pos.1 is placed on fixed piston Pos.3.

6. Fixed piston Pos.3 is moved to the front position by means of the V-belt drive of the machine until in contact with loose piston Pos.4.

REMEMBER!!

- that loose piston Pos.4 and fixed piston Pos.3 must be in contact before piston coupling Pos.1 is tightened.

- that piston coupling Pos.1 is placed at the marked groove, if any, on fixed piston Pos.3 before piston coupling Pos.1 is tightened.



7. Piston coupling Pos.1 is tightened.

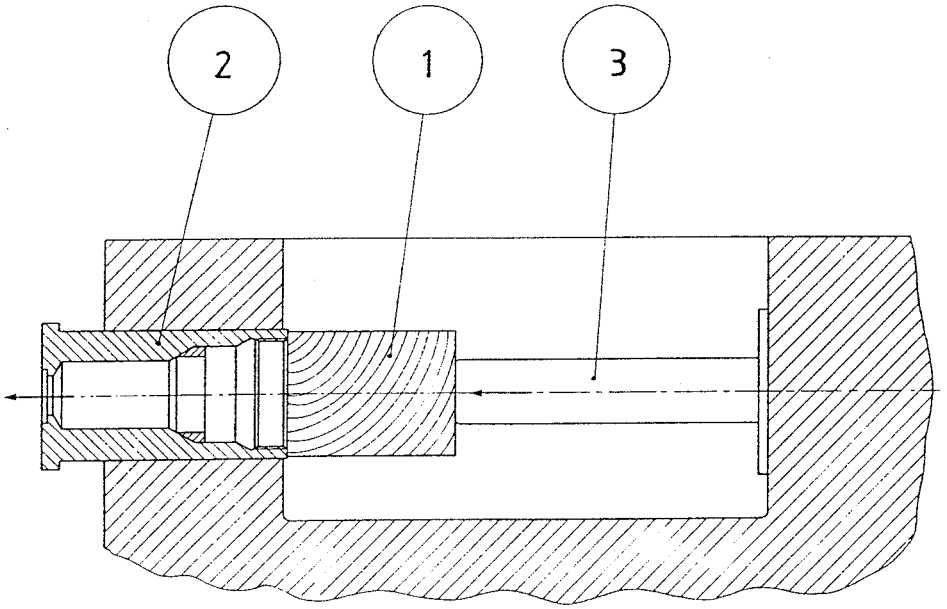
8. Packing ring Pos.6 is prevented from WORKING LOOSE by striking a rubber hammer against the shank of the hook spanner.

9. Mount the irrigation system for the cylinders.

DISMOUNTING OF CYLINDER

If it is necessary to dismount the cylinder proper from the base frame, the loose piston and the valve housing must be dismounted first.

1. Place a wooden block Pos.1, with the same diameter as the cylinder, between cylinder Pos.2 and fixed piston Pos.3.



2. The eccentric shaft is turned by means of the V-belt drive of the machine so that the piston is moved to the front position, and the cylinder is then pressed out.

3. The cylinder can be taken out through the front of the base frame.

MOUNTING OF CYLINDER

1. The cylinder is placed in the base frame.

2. The valve housing is mounted carefully on the studs in the base frame.

3. Tighten the box nuts.

MAINTENANCE

THREE-PART VALVE HOUSING WITH POPPET VALVES

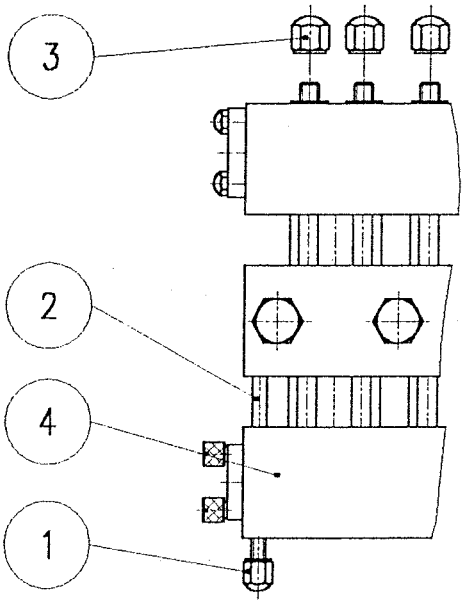
D.60 - .70 - .79 - .80 - .90

The valve housing must be dismounted for inspection and maintenance of poppet valves and valve seats.

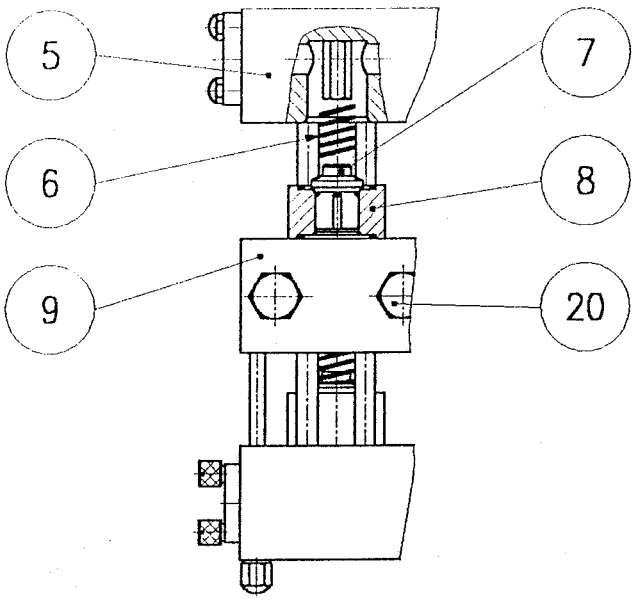
DISMOUNTING

REMEMBER!! Always check that the power supply from the main panel is switched off and that the main fuses are removed.

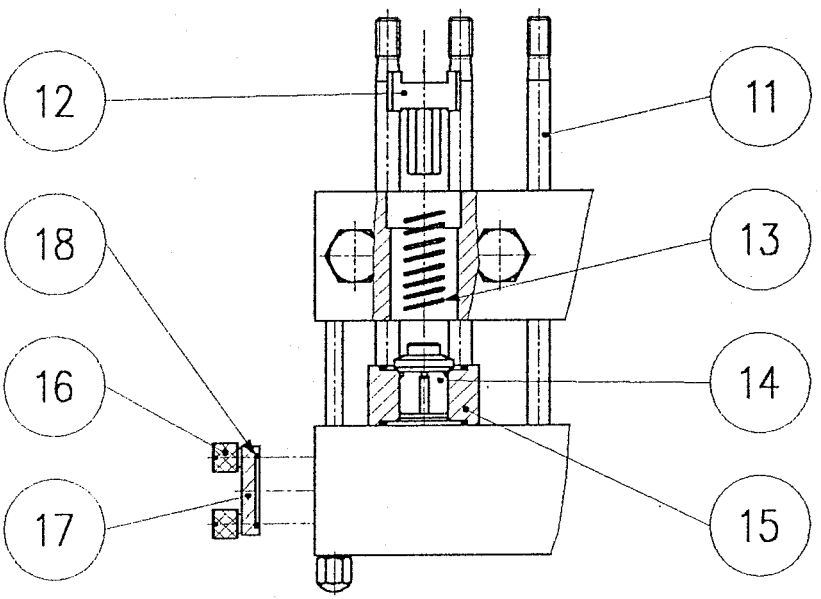
1. Box nuts Pos.1 are screwed down 10 mm on studs Pos.2.
2. Box nuts Pos.3 are unscrewed so that bottom part Pos.4 of valve housing rests on box nuts Pos.1.



3. Top part Pos.5 of the valve housing is lifted away cautiously and delivery valve spring Pos.6 can be removed.
4. Poppet valve Pos.7 on the delivery side and valve seat Pos.8 are removed for inspection.



5. A stud setter is used to loosen and remove one of the foremost studs Pos.11 at each valve on the suction side.
   Stud setter is kept in tool case.



6. Valve stop Pos.12 and suction valve spring Pos.13 are removed from intermediate part Pos.9 of the valve housing.

7. Poppet valve Pos.14 on the suction side and valve seat Pos.15 are removed for inspection.

8. Thumb screws Pos.16 are unscrewed, and flange Pos.17 and O-ring Pos.18 are removed for cleaning of the suction duct.

NOTE: *FOR INSPECTION AND MAINTENANCE OF POPPET VALVE AND VALVE SEATS, SEE SECTION 6.12.*

9. Intermediate part Pos.9 of the valve housing is removed from the base frame by unscrewing box nuts Pos.20. Intermediate part Pos.9 is then lifted carefully over the studs in the base frame.

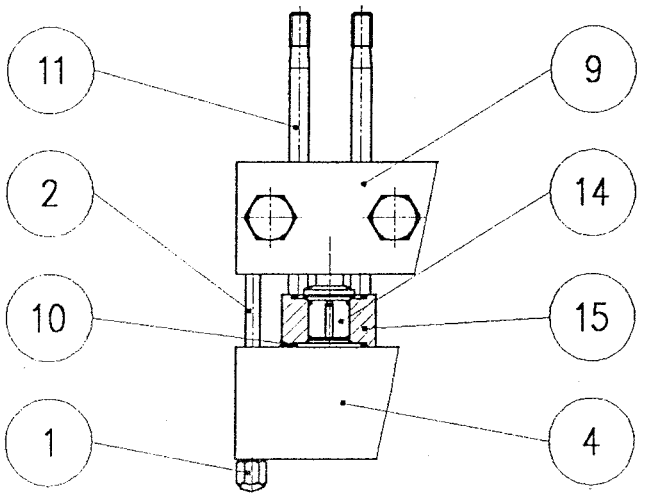
MOUNTING

REMEMBER!! All O-rings ***MUST*** be replaced before mounting.

Mounting of the valve housing is best done on a table. The following assembly instructions are based on this.

1. The dismounted studs Pos.11 are screwed into bottom part Pos.4 of the valve housing and tightened by means of the stud setter.

2. Poppet valve Pos.14 on the suction side is mounted in valve seat Pos.15 together with O-rings Pos.10 and placed on bottom part Pos.4 of the valve housing.



3. Intermediate part Pos.9 of the valve housing and studs Pos.2 are lowered carefully on studs Pos.11 and placed on valve seat Pos.15.

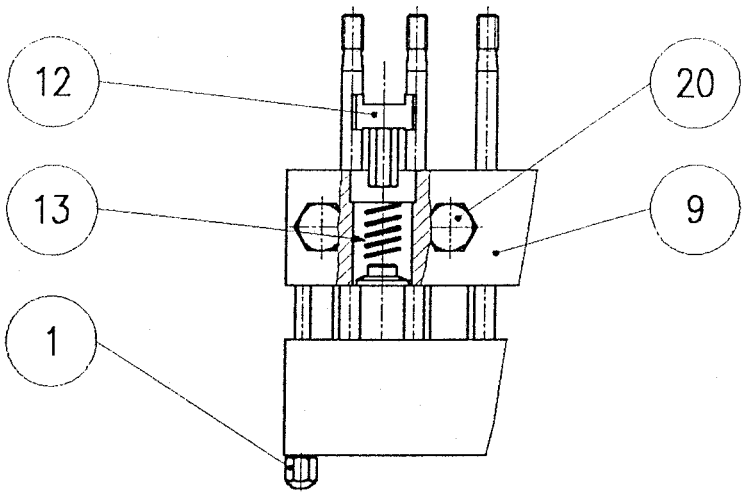
4. The valve seat with poppet valve is fixed between intermediate part Pos.9 and bottom part Pos.4 of the valve housing by means of box nuts Pos.1 which are tightened on studs Pos.2.

5. Suction valve spring Pos.13 is secured on the small recess on valve stop Pos.12.

6. Valve stop Pos.12, secured on the recess, is mounted in intermediate part Pos.9 of the valve housing.

   NOTE: Valve stop Pos.12 may consist of two parts screwed together.

   REMEMBER!! Check before mounting that valve stop Pos.12 is screwed completely together. The parts are prevented from working loose with *LOCKTITE* - activator 764 and adhesive 326.

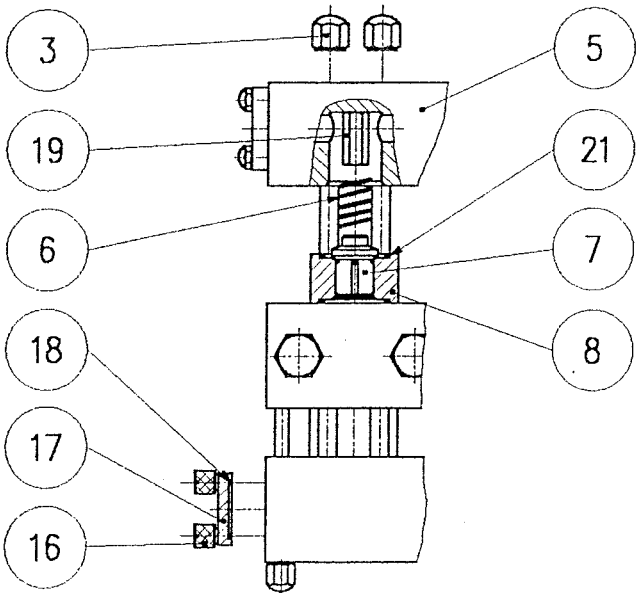


7. Poppet valve Pos.7 on the delivery side is mounted in valve seat Pos.8, together with O-ring Pos.21, and placed on intermediate part Pos.9 of the valve housing.

8. Valve stop Pos.19 is mounted in top part Pos.5 of the valve housing with a pipe wrench.
Pipe wrench is kept in tool case.

REMEMBER!! Check before mounting that valve stop Pos.19 is secured to the top part Pos.5 of the valve housing. The valve stop is prevented from working loose with *LOCKTITE* - activator 764 and adhesive 326.

9. Delivery valve spring Pos.6 is secured on the small recess on valve stop Pos.19.



10. Top part Pos.5 of the valve housing, with the valve stop and the delivery valve spring, is lifted carefully into position on delivery valve seat Pos.8.

IMPORTANT!! Delivery valve spring Pos.6 must not move or get caught during mounting of top part Pos.5.

11. Box nuts Pos.3 are screwen on and tightened.

    IMPORTANT!! If part assembly drawing for THREE-PART VALVE HOUSING, Section 11.-, states a torque for box nuts Pos.3 this ***MUST*** be observed.

12. Box nuts Pos.1 are re-tightened.

13. Flange Pos.17 with O-ring Pos.18 is fixed by means of thumb screws Pos.16.

14. The complete valve housing is lifted carefully over the studs in the base frame and secured by means of box nuts Pos.20.

    IMPORTANT!! If part assembly drawing for THREE-PART VALVE HOUSING, Section 11.-, states a torque for box nuts Pos.20, this ***MUST*** be observed.

MAINTENANCE

HOMOGENISING BRACKET WITH MANUAL CONTROL

STAGE I

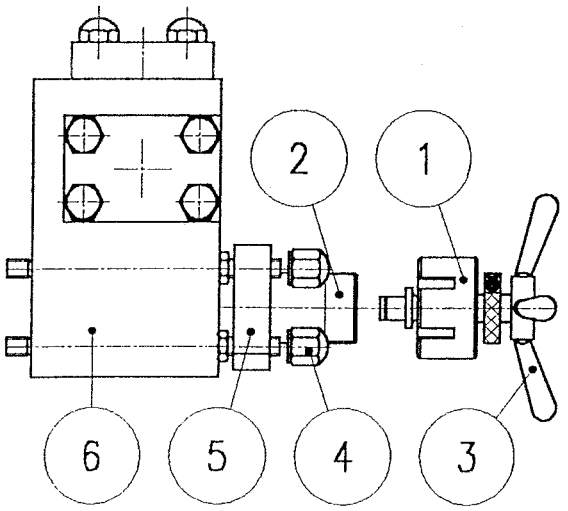
50.72 - D.79 - .79H - .90

The homogenising bracket must be dismounted for inspection and maintenance of the homogenising valve.

DISMOUNTING

REMEMBER!! Always check that the power supply from the main panel is switched off and that the main fuses are removed.

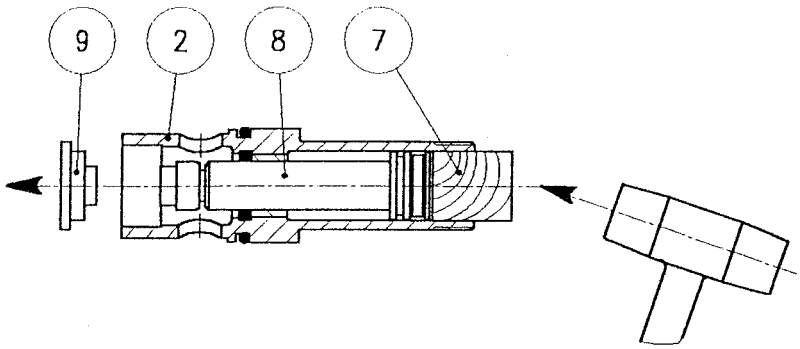
1. Union nut Pos.1 is slackened back with a hook spanner and unscrewed from guide Pos.2 together with handle Pos.3.
   Hook spanner is kept in tool case.



2. Box nuts Pos.4 are unscrewed and flange Pos.5 can then be removed.
3. Guide Pos.2 with the homogenising valve can be extracted from homogenising bracket Pos.6 by hand.

NOTE: To check the homogenising valve it has to be removed from guide Pos.2.

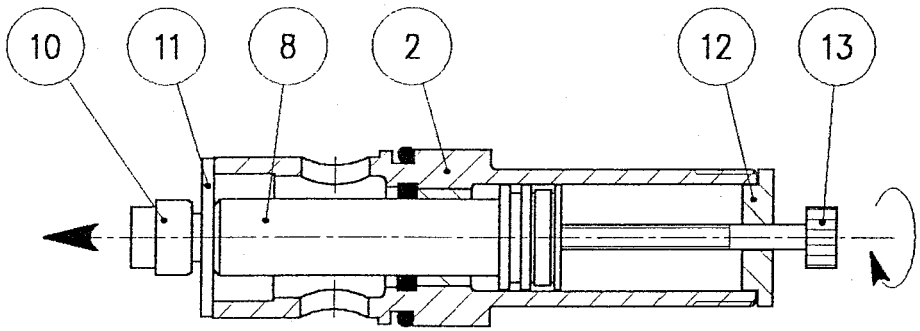
1. A small wooden block Pos.7 is placed on spindle Pos.8 in guide Pos.2.
2. Light blows with a rubber hammer against the wooden block make it possible to push bottom part Pos.9 of the homogenising valve out of guide Pos.2.



TYPE 50.72 - D.79

1. Spindle Pos.8 is pushed through guide Pos.2 so that top part Pos.10 of the homogenising valve projects from guide Pos.2.

2. Puller disc Pos.11 is inserted between top part Pos.10 of the homogenising valve and guide Pos.2. Puller disc is kept in tool case.

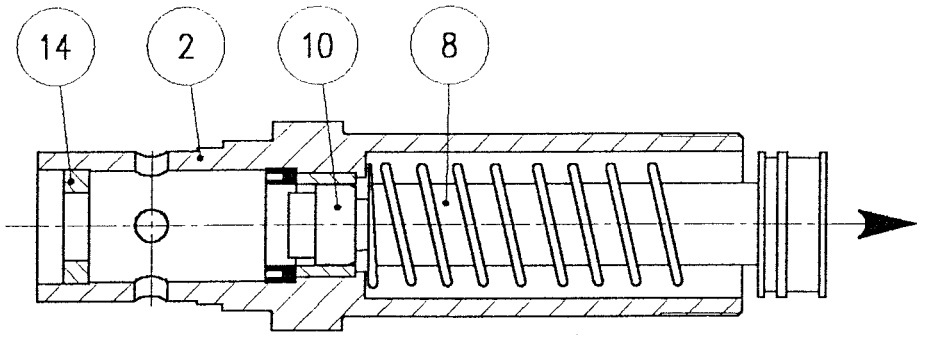


3. Disc Pos.12 is inserted in guide Pos.2 together with Allen screw Pos.13 which is screwed into spindle Pos.8.
   Disc and Allen screw are kept in tool case.

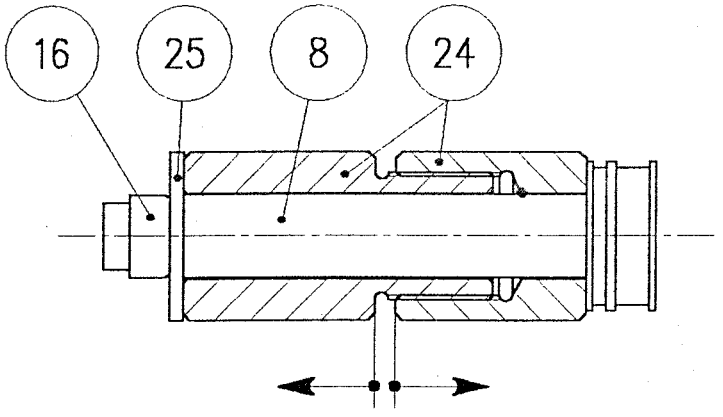
4. Tightening Allen screw Pos.13 pulls spindle Pos.8 backwards, and top part Pos.10 of the homogenising valve is pulled out of spindle Pos.8.

TYPE D.79H

1. Spindle Pos.8 is pushed through guide Pos.2 by exerting light pressure on top part Pos.10 of the homogenising valve.



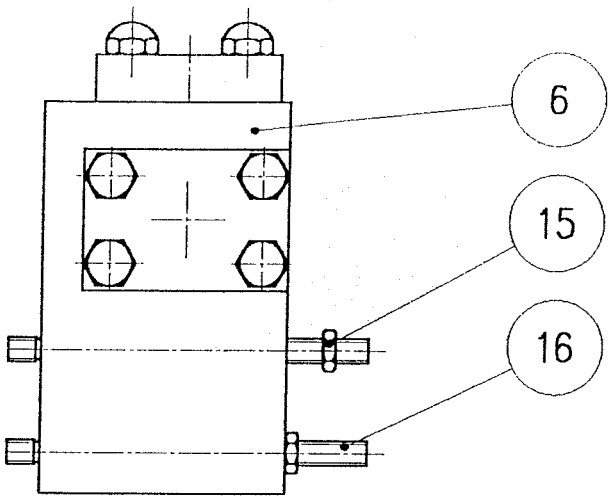
2. Impact ring Pos.14 is removed from guide Pos.2.
3. Puller Pos.24 is placed over spindle Pos.8.
4. Puller disc Pos.25 is inserted between spindle Pos.8 and top part Pos.10 of the homogenising valve.



5. Puller Pos.24 (2 hexagon headed bolts) is screwed apart so that top part Pos.10 of the homogenising valve is pushed out of spindle Pos.8.

If the homogenising bracket is to be removed from the valve housing, the following procedure is adopted:

1. Nuts Pos.15 are unscrewed and homogenising bracket Pos.6 can be removed.
2. Studs Pos.16 are unscrewed by means of a stud setter.
   Stud setter is kept in tool case.



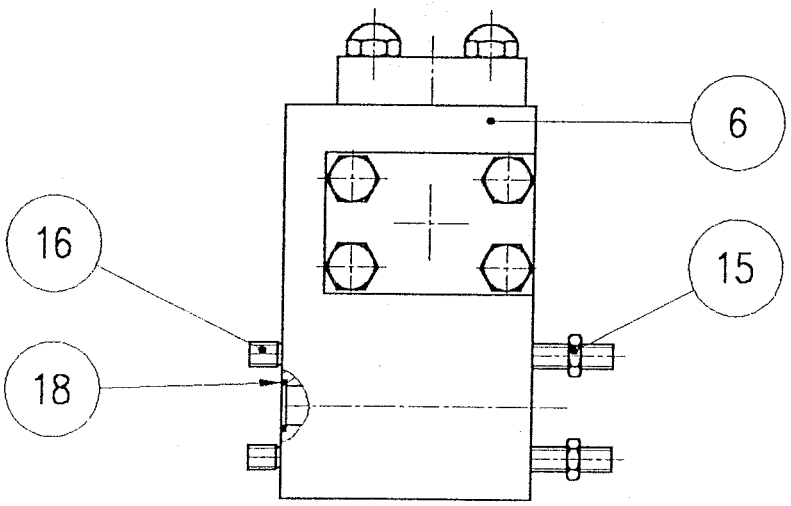
MOUNTING

REMEMBER!! *ALL* defective packings *MUST* be renewed before mounting.

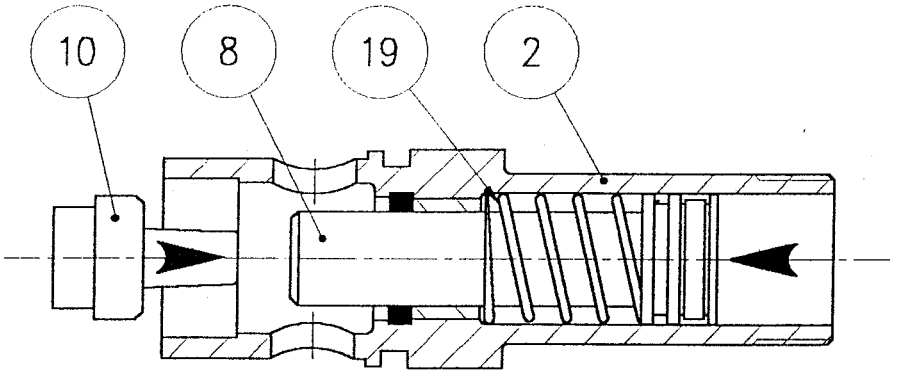
All packings are renewed **every time** the homogenising bracket is dismounted.

If the homogenising bracket has been removed from the valve housing, it has to be mounted first.

1. Studs Pos.16 are inserted and tightened with stud setter.



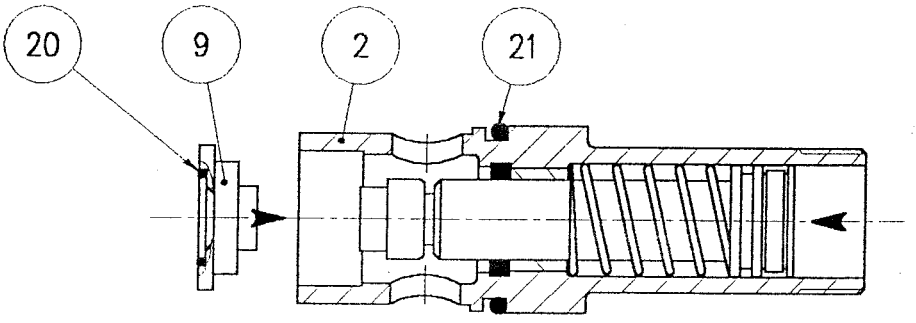
2. Homogenising bracket Pos.6, with O-ring Pos.18, is mounted and secured with nuts Pos.15.
3. Spring Pos.19 and spindle Pos.8 are inserted in guide Pos.2.
4. Spindle Pos.8 is pressed completely through guide Pos.2, and top part Pos.10 of the homogenising valve is secured in spindle Pos.8 by exerting light pressure.



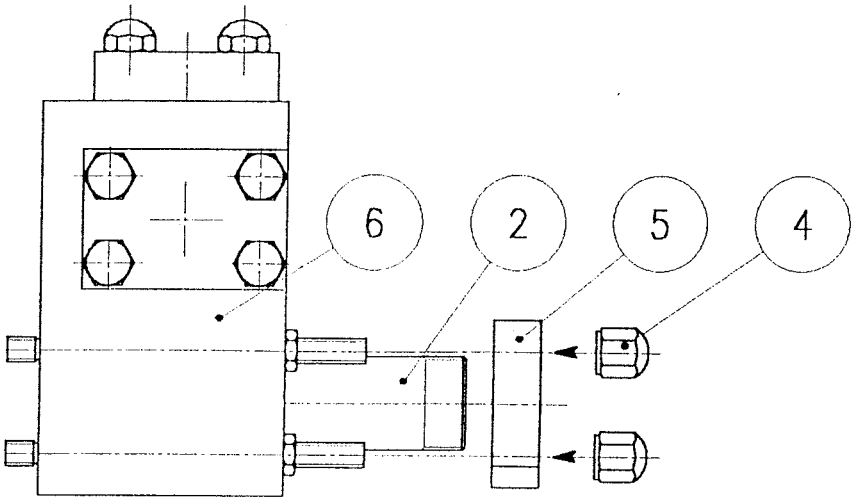
TYPE D.79H

Impact ring Pos 14 is mounted.

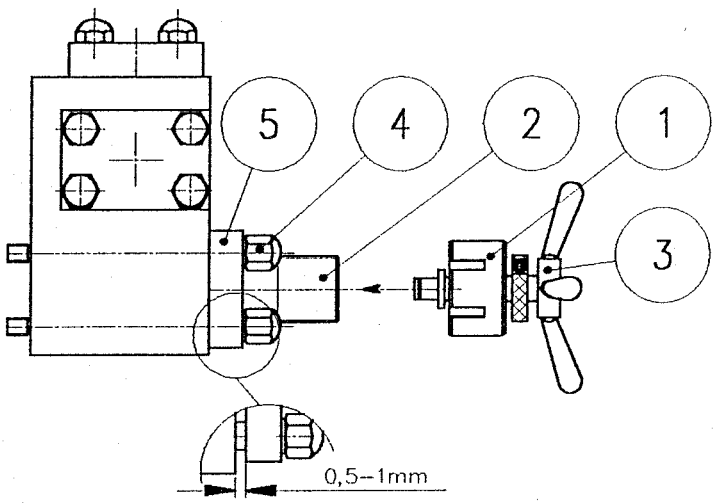
5. Bottom part Pos.9 of the homogenising valve is fixed in guide Pos.2 by exerting light pressure, and O-rings Pos.20 and Pos.21 are placed.



6. The assembled guide Pos.2 is bottomed by hand in homogenising bracket Pos.6.



7. Flange Pos.5 and box nuts Pos.4 are mounted.
8. Tighten box nuts Pos.4.



IMPORTANT!! When box nuts Pos.4 are tightened, it must be ensured that the slot between the flange and homogenising bracket is ***ALWAYS*** the same all the way round.

- there ***MUST ALWAYS*** be a slot in order to ensure the necessary tightening pressure between the homogenising valve and homogenising bracket.
- tightening of box nuts Pos.4 ***MUST*** be done diagonally until a uniform tightening torque is obtained.
- the slot ***MUST*** be from 0.5 - 1 mm.

NOTE: If part assembly drawing for HOMOGENISING BRACKET, Section 11.-, indicates a torque for box nuts Pos.4, this ***MUST*** be observed.

9. Union nut Pos.1, with handle Pos.3. is screwed on guide Pos.2 and tightened.
10. Union nut Pos.1 is prevented from WORKING LOOSE by striking a rubber hammer against the shank of the hook spanner.

CLEANING

The best possible result is obtained when the cleaning is started immediately after production is finished.

The machine **MUST** be completely relieved of pressure during the cleaning process, enabling the CIP pump to rinse out valve housing, etc.

NOTE: It is necessary that the detergent has a flow velocity of approx. 3 m/sec.

The cleaning process (CIP) must be adapted to the product, but could be as follows:

1. **PREWASHING** with hot water, approx. 40°C, for approx. 8 minutes.
2. **CIRCULATION** of hot detergent, approx. 75°C, e.g. 1% NAOH, for at least 20 min., whereafter the detergent is to be washed out.
3. **REWASHING** for approx. 5 minutes with hot water.
4. **DISINFECTION** with hot water, min. 90°C, or steam.
5. **DESCALING** on the inner surfaces is done by application of a diluted nitric acid solution, approx. 1% conc. Rewash with water for at least 10 minutes after the treatment.

If the machine is equipped with safety valve or rinsing valve, these are opened to brief passage of detergent and washing water.

IMPORTANT!! Any inlet filter mounted in the suction duct or before the machine **MUST** be inspected and cleaned regularly.

WIRING DIAGRAM

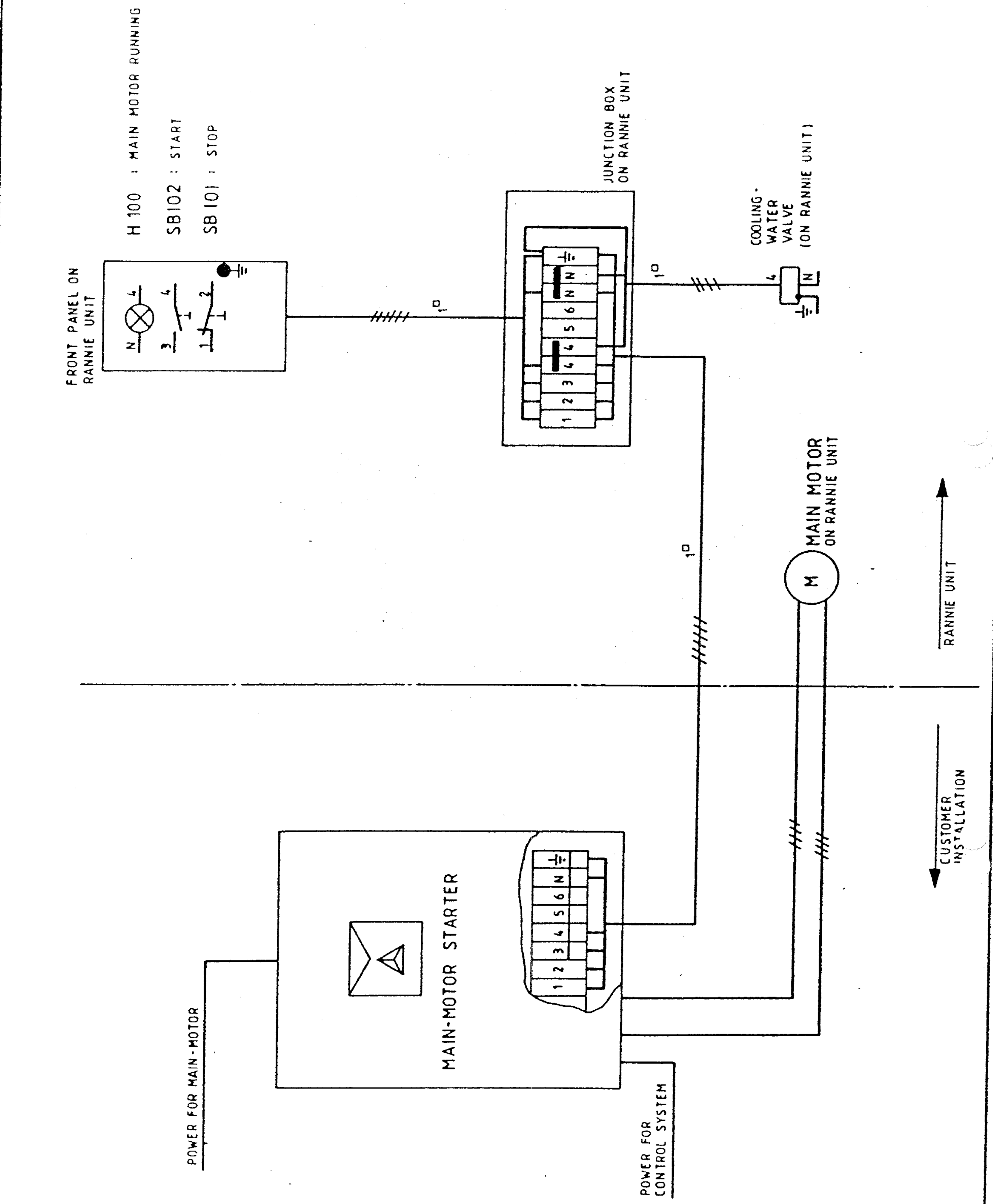
If the machine is equipped with a control box, a control panel or some other form of connection box, this section will describe such equipment, in the form of a wiring diagram and parts list showing the interconnections of the individual electrical components.

NOTE: The numbering of the guiding lines is not necessarily consecutive. Intervals in the numbers may occur on the individual wiring diagrams.

DRAWING NO
715152

COMPLETE WIRING DIAGRAMME

POS NO	ORDER NO	QUANTITY	DESCRIPTION
0001	001243	1,000	Connection box
0003	000789	1,000	Coil
0004	000791	1,000	Plug
0005	109190	1,000	Guard
0010	000299	1,000	Name plate
1001	001121	1,000	Pilot light lens
1002	001352	1,000	Pilot light body
1003	002373	1,000	Filament lamp
1011	001124	1,000	Pushbutton head
1012	001127	1,000	Pushbutton body
1021	001123	1,000	Pushbutton head
1022	001126	1,000	Adjusting knob body



Dato	Sign	Ændringer	RANNIE Maskinfabrikken Rannie A/S	Roholmsvej 8, Albertslund Danmark			Erstatter
			BT WITH START, STOP & PILOT LAMP		Dato	Sign	Nr
				Tegn	11-12-86	HSA	715152
			DIAGRAM	Kontr			
				Appr			Erstattet af

CONTROL SYSTEM

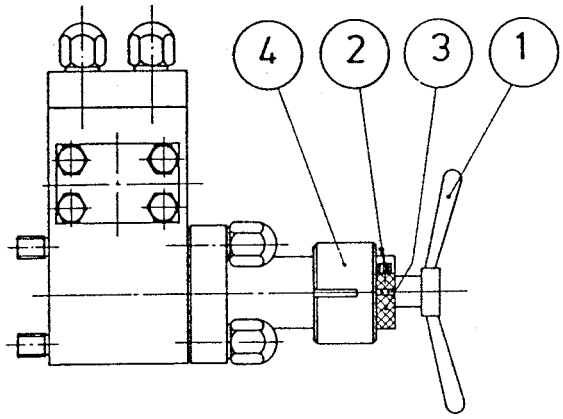
FOR I-STAGE WITH MANUAL OPERATION

The control system is operated manually by means of the pressure-control handle.

The following procedure must be adopted for starting and operation:

REMEMBER!! Always check before starting that pressure control handle Pos.1 is in rear position so as to establish free passage in the homogenising arrangement.

IMPORTANT!! Do not set the pressure control handle until the product is circulating through the machine.



1. Screw Pos.2 on stop ring Pos.3 is unscrewed and the stop ring is turned all the way back to pressure control handle Pos.1.

2. Pressure control handle Pos.1 is activated by turning it slowly until the required homogenising effect is reached.

MACHINES WITH RINSING VALVE

If the machine has a rinsing valve, air pockets may form in the system. The rinsing valve must be opened when half the specified homogenising pressure is reached and closed only when product is coming through the valve.

MACHINES WITHOUT RINSING VALVE

If the machine has no rinsing valve, the homogenising pressure must not be set until the machine runs smoothly.

3. When the required homogenising pressure is reached, stop ring Pos.3 is turned firmly against union nut Pos.4, and screw Pos.2 on the stop ring is tightened.

STARTING WITH PRESET HOMOGENISING PRESSURE

The homogenising pressure can be preset via the fixed stop ring Pos.3.

1. Pressure control handle Pos.1 MUST be run back to rear position before starting.

2. When the machine has started, and the product circulates through the machine, the preset homogenising pressure is reached by turning pressure control handle Pos.1 slowly, until stop ring Pos.3 fetch up against union nut Pos.4.

REMEMBER!! Also at this setting of the homogenising pressure it must be taken into consideration that there may be air in the system.

INTERRUPTION OF THE HOMOGENISING PROCESS

1. This is done by turning pressure control handle Pos.1 to rear position.

2. When pressure control handle Pos.1 has reached rear position, the machine can be stopped by activating the "MAIN-MOTOR" switch.

For **DISMOUNTING AND MOUNTING** of homogenising bracket, see Section 6.7-.

SPARE PARTS SUMMARY

This section contains parts lists and part assembly drawings of all components of the machine.

Section 1.- contains a layout drawing of the machine where all components are shown by a **POSITION NUMBER**.

The spare parts lists contained in this section have a **GROUP OF COMPONENTS NUMBER**. This number corresponds to a **POSITION NUMBER** on the layout drawing in Section 1.-.

NOTE: A six-figure number added to the **POSITION NUMBER** means, that two or more components have the same **POSITION NUMBER**. The six-figure number refers to a spare parts list. This spare parts lists belongs to the **GROUP OF COMPONENTS** corresponding to the **POSITION NUMBER** on the layout drawing in Section 1.-.

SPARE PARTS ORDERING

1. The layout drawing in Section 1.- shows the component and the corresponding **POSITION NUMBER**.

2. Section 11.- contains the equivalent spare parts list and part assembly drawing.

3. The spare parts list and the part assembly drawing contain the necessary information for ordering of spare parts.

IMPORTANT!! To order spare parts from Rannie, the following information **MUST ALWAYS** be given:

a. machine serial No.
(see Section 1.- - ORDER/SERIAL NO.)

b. description of component

c. order number of component

d. quantity required

See also schematic representation of spare parts ordering on page 3/3.

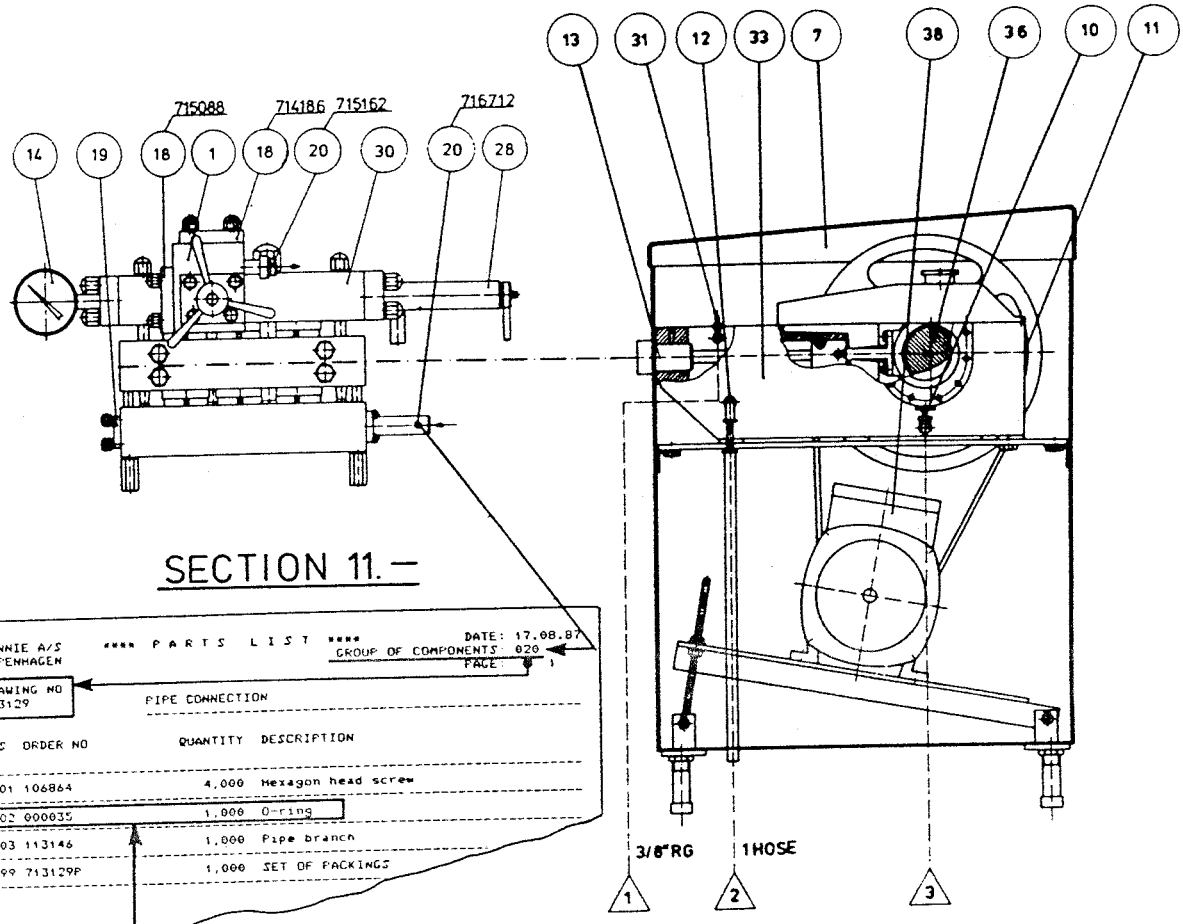
NOTE: If a complete set of packings is required for a certain component, an order should be issued for the **ORDER NUMBER** indicated against Pos. 0099 on the list of components.

The **ORDER NUMBER** is always ended by a P which also must be given when ordering.

Example: **713412P**

EXAMPLE OF SPARE PARTS ORDERING

SECTION 1.–



SECTION 11.–

RANNIE A/S COPENHAGEN **** PARTS LIST **** DATE: 17.08.87
GROUP OF COMPONENTS 020
PAGE 1

DRAWING NO 713129 — PIPE CONNECTION

POS NO	ORDER NO	QUANTITY	DESCRIPTION
0001	106864	4,000	Hexagon head screw
0002	000035	1,000	O-ring
0003	113146	1,000	Pipe branch
0099	713129P	1,000	SET OF PACKINGS