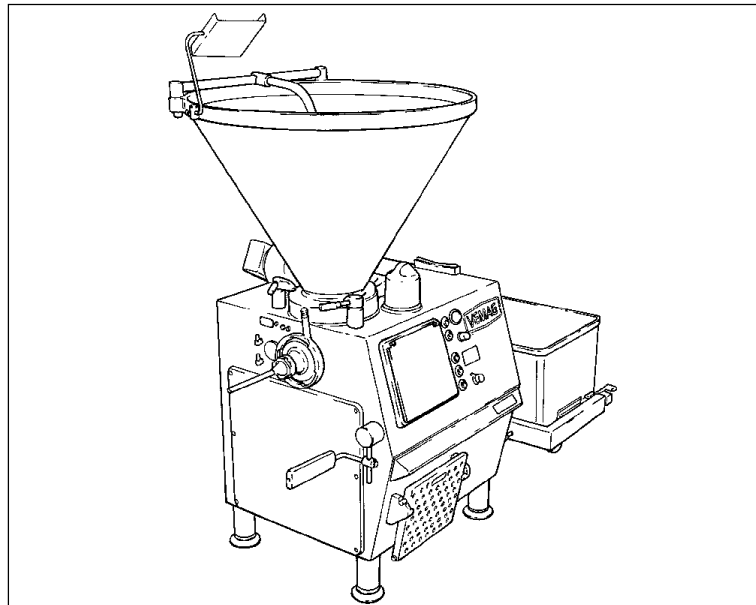


# Vacuum filler

ROBOT HP7C (from 146.0132)  
ROBOT HP10C (from 142.1543)  
ROBOT HP15C (from 143.1549)  
ROBOT HP17C (from 147.1552)

## Operating instructions



MASCHINENBAU GMBH

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## 0. Foreword

These operating instructions cover all the information required to operate the vacuum filler. Two versions of the machine are available:

- ROBOT HP7C / HP10C / HP15C / HP17C in the form of a portioning machine
- ROBOT HP7C / HP10C / HP15C / HP17C in the form of a portioning and linking machine

Operating and maintenance instructions for any attachments (optional) can be found in the appropriate separate operating instructions. Information on operating the portioning computer can be found in the appropriate user guide.

If you have any questions which cannot be answered by this manual, please contact VEMAG Customer Service at any time. Our staff will be pleased to hear your suggestions.

Read the safety instructions (Section 1) first, before starting up the machine. You must follow all safety instructions to prevent injury to people and damage to the machine.

You must follow all instructions on cleaning (Section 6) and maintenance (Section 7). This is the only way to ensure reliable operation, high performance and a long service life of your machine.





## 1. Safety instructions

### 1.1 Sphere of application

Two versions of the continuous vacuum filler are available:

- ROBOT HP7C / HP10C / HP15C / HP17C in the form of a portioning machine
- ROBOT HP7C / HP10C / HP15C / HP17C in the form of a portioning and linking machine

It can also be fitted with special attachments (optional).

### 1.2 Use in accordance with purpose

The ROBOT HP7C / HP10C / HP15C / HP17C continuous vacuum filler is designed and built for filling and portioning sausages in natural, collagen and cellulose casings. Standard sausage meats are suitable as the product for filling to make fresh sausage, salamis and boiled sausage. The filler can also be used for grinding and separating meat for processing. Other products may only be processed with the express agreement of VEMAG.

The vacuum filler may not be used in an explosive atmosphere.

Raw materials may be processed at a temperature of between -4 °C and + 50 °C.

The vacuum filler requires ambient temperatures between +0.5 °C and +25 °C.

The vacuum filler is designed for one operator. The operator must have been trained on site by VEMAG specialists or one of their representatives.

The vacuum filler may only be cleaned by trained cleaning staff.

The vacuum filler may only be serviced by trained maintenance staff (fitters or electricians).

The manufacturer's assembly, commissioning, operating and maintenance instructions must be followed to satisfy the conditions of "use in accordance with purpose".

The ROBOT HP7C / HP10C / HP15C / HP17C continuous vacuum filler is built in accordance with the state of the art and in the condition in which it is delivered complies with

- machinery directive 98/37/EC, Annex IIA
- low-voltage directive 79/23/EC
- EMC directive 89/336/EC.

European standard EN 12463 „Filling machines and attachments“, in particular, was applied.

Nevertheless, the machine may present residual hazards if it:

- is not used in accordance with purpose
- is not used in accordance with these operating instructions,
- is used by untrained staff
- is not carefully cleaned and maintained to specification.

### 1.3 Explanation of symbols

The following symbols appear in these operating instructions, indicating residual hazards when operating the machine or referring the reader to other important information.

**Danger!**

This warning symbol refers to important instructions which must be followed to prevent faulty operation which could pose a threat to human life or lead to injury.

---

**Warning!**

This warning symbol refers to important instructions which must be followed to prevent faulty operation which could result in damage to the machine or installation or which could jeopardise production.

---



This arrow symbol indicates additional information at another point in the manual or in other documentation.

## 1.4 General safety instructions

- Any person working on or with the machine must have read and understood these operating instructions, in particular the safety instructions.
- The machine may be used only by trained and authorised staff.
- Responsibilities during operation must be clearly assigned and observed.
- The machine may only be serviced by trained staff authorized to do so.
- The machine may only be used if it is in perfect working order. In the event of changes, such as loss of oil or unusual noises starting, the machine should be stopped immediately and your in-house maintenance department or VEMAG Customer Service informed.
- The machine may not be operated without the housing cover.
- Route mains cables and data cables (e.g. remote control cable) so as to avoid tripping hazards.
- Sockets which are not being used must be firmly sealed with the appropriate protective cap to prevent the penetration of moisture. Corrosion at the contacts can lead to switching errors.
- It is prohibited to remove, switch off or override safety devices. In the event of damage to safety devices, inform VEMAG Customer Service immediately.
- Warning signs on the machine may not be removed or painted over.
- Conversions, attachments and other modifications to the machine not approved by VEMAG are not permitted.
- In all cases, generally-applicable and in-house safety and accident prevention regulations apply in addition to these safety instructions.

## 1.5 Special safety instructions

**Danger!**

To prevent injury, switch off the machine before any work (assembly, dismantling, cleaning, maintenance, repair). Then switch off the main switch to disconnect the machine from the mains.

**Danger!**

To prevent injury in the area of the double screws, switch off the machine before undoing the locking nut. Then switch off the main switch to disconnect the machine from the mains. The filling horn holder or linking gear (optional) may only be fitted or removed with the machine switched off.

Before starting up the machine, always perform the following steps:

- Check that the machine is in proper condition. Leaking oil indicates leaks which must be eliminated immediately. In this case, inform your in-house maintenance department or VEMAG Customer Service immediately.
- Check that the safety devices on the hopper, step and filling horn holder are working properly.  
→ Section 5  
If you notice any damage, inform VEMAG Customer Service immediately.

**Danger!**

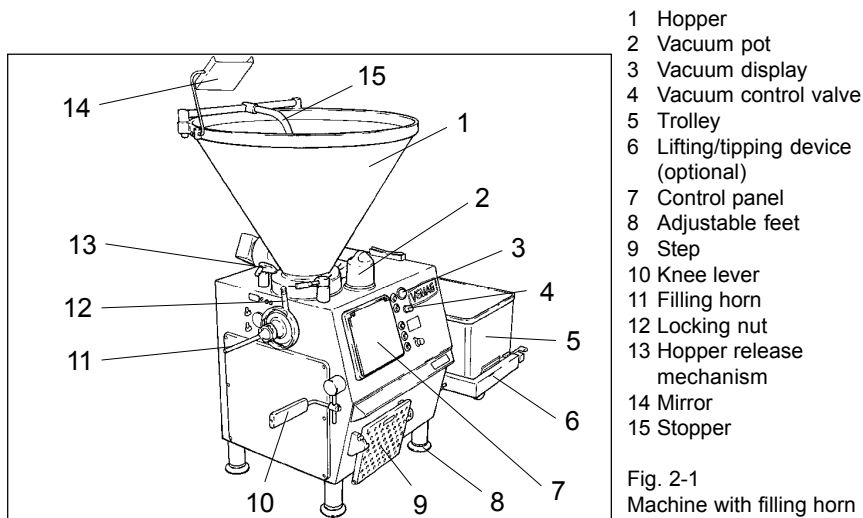
To prevent injury, switch off the machine before doing any work on the hopper. Then switch off the main switch to disconnect the machine from the mains. Do not climb onto the machine to check the hopper/hopper contents, use only the step provided. Under no circumstances use a ladder or other aid to get at the hopper of the machine.

**Danger!**

No-one may stand in the area of the lifting/tipping device (optional). Do not put any objects in this area. Only trolleys to DIN 9797 with a capacity of 200 l or 300 l are permitted.

## 2. Description

### 2.1 Overview ROBOT HP7C / HP10C / HP15C / HP17C



## 2.2 Brief description

### 2.2.1 Hopper

The filler is equipped with a hopper for pouring in product for filling. The hopper is fitted with a safety device which switches off the machine when the hopper is open. A mirror attached to the hopper allows the contents to be checked.



#### **Danger!**

To prevent injury, switch off the machine before doing any work on the hopper. Then switch off the main switch to disconnect the machine from the mains. Do not climb onto the machine to check the hopper/hopper contents or for cleaning and maintenance purposes, use only the step provided. Under no circumstances use a ladder or other aid to get at the hopper of the machine.

The hopper is fitted with cushioning as a partial counterweight to prevent the hopper falling shut under its own weight.

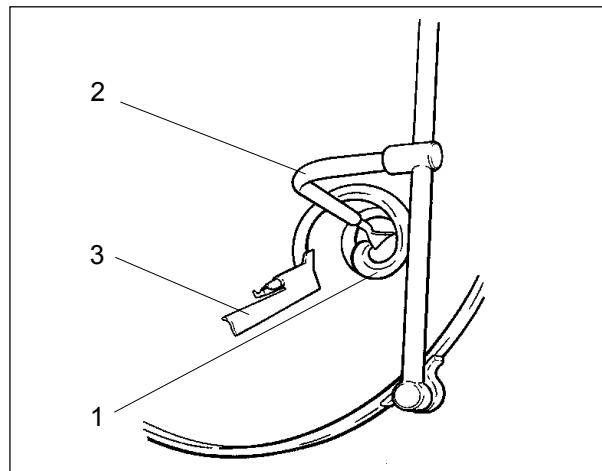


#### **Danger!**

Proceed especially carefully when opening and closing the hopper to prevent injury (risk of crushing). Grasp the hopper only at the flange to tip it over carefully. Do not open the hopper as long as the lifting and tipping device (optional) is in its top limit position.

### 2.2.2 Feed screw

The product is compressed in the hopper by the feed screw (1) and fed to the thread of the double screws with the aid of the vacuum. Spiral stopper (2) improves product feed. The scraper (3) attached to the feed screw completely empties the hopper. The scraper is easy to remove for cleaning.



- 1 Feed screw
- 2 Spiral stopper
- 3 Scraper

Fig. 2-2  
Feed screw

### 2.2.3 Double screws

The double screws ensure that the product is conveyed gently and evenly to the outlet. The same volume is conveyed with each rotation of the double screws, air being withdrawn from the product by the vacuum system. The double screws feed until completely empty. The speed of the double screws and thus the quantity of product portioned can be infinitely adjusted.

The product for filling can be portioned either continuously or in individual portions. If portioning individually, the number of double screw rotations is a measure of the weight of the individual portion. Individual portions can be linked in the pauses between individual portions.

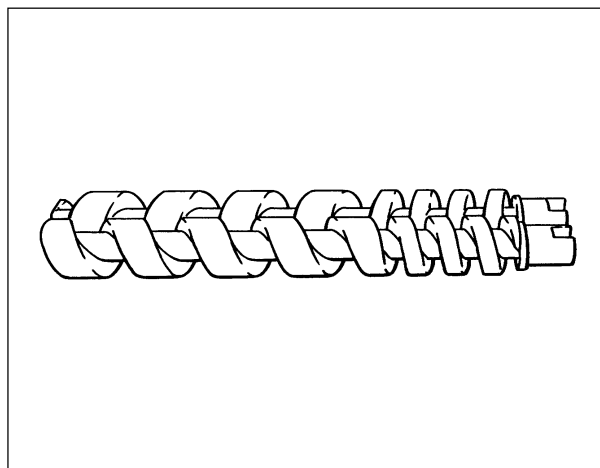
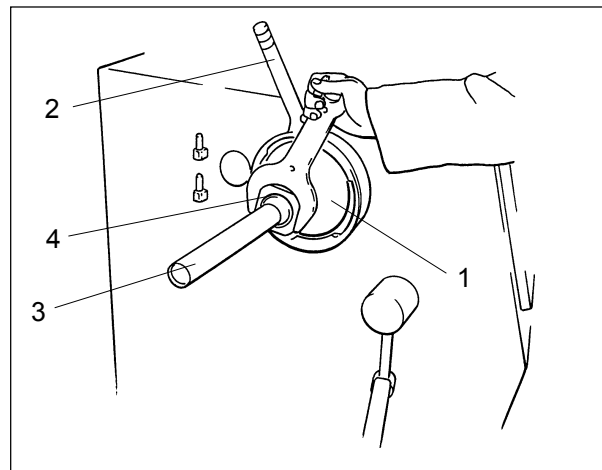


Fig. 2-3  
Double screws

### 2.2.4 Filling horn holder

The machine is fitted with a filling horn holder (1) at the outlet as standard and this is locked at the outlet by the locking nut (2). The filling horn (3) is attached to the filling horn holder with the aid of the filling horn nut (4). The product is ejected through the filling horn by the double screws.



- 1 Filling horn holder
- 2 Locking nut
- 3 Filling horn
- 4 Filling horn nut

Fig. 2-4  
Machine with filling horn holder

### 2.2.5 Linking gear (optional)

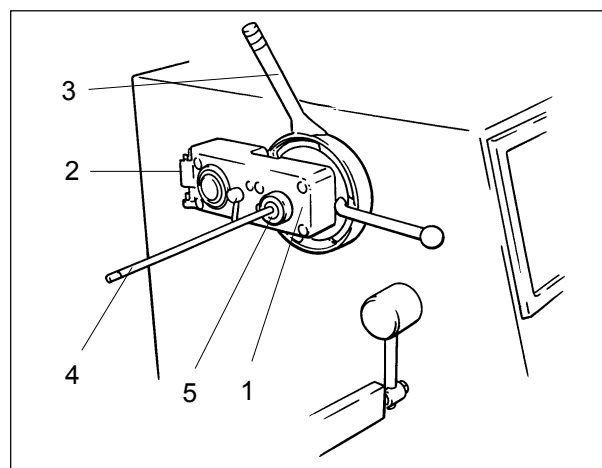
The linking gear (1) is attached to the housing of the machine with the aid of two bearing journals (2) and swivelled in front of the outlet. It is locked in position at the outlet with the locking nut (3) like the filling horn holder. The linking horn (4) is attached to the linking gear with the aid of linking nut (5).



#### **Danger!**

To prevent injury, do not use linking horns with sprung heads. Use only completely straight linking horns and check the selected linking horn with the relevant test program before production starts.

→ Portioning computer user guide



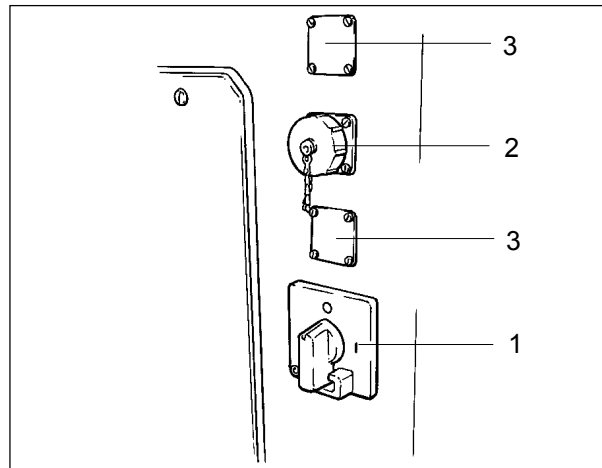
- 1 Linking gear
- 2 Bearing journals
- 3 Locking nut
- 4 Linking horn
- 5 Linking nut

Fig. 2-5  
Machine with linking gear (optional)

### 2.2.6 Controls

The main switch (1) which switches the power supply to the machine on and off can be found on the rear of the machine housing.

Attachments and additional devices (optional) can be connected to the power supply of the machine via equipment socket (2). Instead of blind covers (3), further sockets can be provided for supplementary equipment like coextrusion systems (optional), for example.



1 Main switch  
2 Equipment socket  
3 Blind cover

Fig. 2-6  
Controls



#### **Warning!**

Always seal off unused sockets with the appropriate protective cap to prevent moisture and dirt penetrating. Corrosion on the contacts can lead to switching faults.



The following controls are arranged on the control panel on the front of the machine next to the portioning computer:

- ON switch (1)
- OFF switch (2)
- UP key (3) for lifting/tipping device (optional)
- STOP key (4) for lifting/tipping device (optional)
- DOWN key (5) for lifting/tipping device (optional)
- Vacuum display (6)
- Vacuum control valve (7)
- Cleaning plug (8) for vacuum line

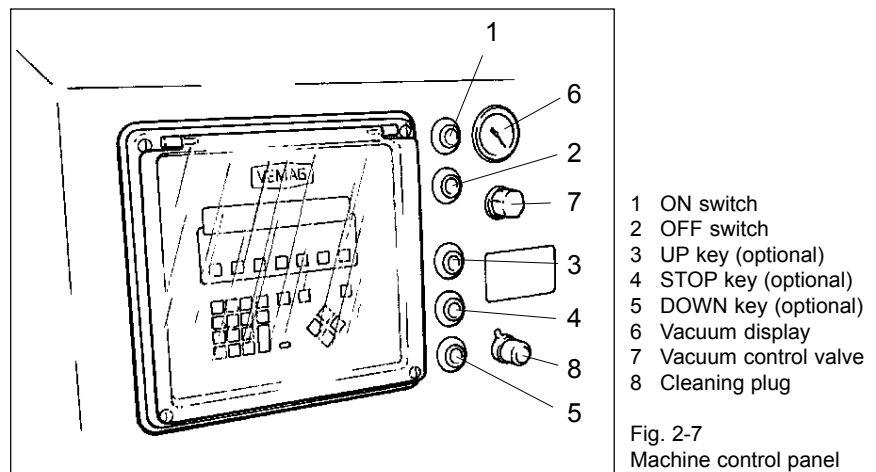


Fig. 2-7  
Machine control panel

### ON key

This key switches on the drive of the machine.

### OFF key

This key switches off the drive of the machine.

### UP key (optional)

This key raises the trolley hoist of the lifting/tipping device (optional). In the top end position above the hopper, the trolley is automatically tipped and emptied. After 30 seconds have elapsed, the trolley hoist can be lowered again using the DOWN key. If it is to be lowered before that, the STOP key has to be pressed first.

**STOP key (optional)**

This key stops the trolley hoist of the lifting/tipping device (optional).

**DOWN key (optional)**

This key lowers the trolley hoist of the lifting/tipping device (optional). The trolley hoist stops automatically as soon as the trolley is 500 mm above the ground. To move it into its bottom end position, the key must be pressed again and held down until the final position is reached.

**Danger!**

When lowering the lifting/tipping device, ensure that there is no-one in this area. Do not deposit any objects in this area.

**Vacuum display**

The vacuum set by the vacuum control valve can be read off in per cent (0 - 100 %) at the vacuum display.

**Vacuum control valve**

The desired vacuum for evacuating the product can be set using the vacuum control valve. Turning clockwise (+) increases the vacuum, turning anti-clockwise (-) reduces the vacuum.

The significance of the individual keys of the portioning computer is described in the relevant user guide.

→ Portioning computer user guide

### 2.2.7 Knee lever

The filling process is switched on and off using the knee lever. It can be adjusted to suit the height and location of the operator.

→ Section 4.9

### 2.2.8 Step

At the front of the machine is a step which allows the operator to fill the hopper or get at it for cleaning and maintenance purposes. The step is fitted with a safety device which switches off the filler as soon as the step is folded out.



---

#### **Danger!**

There is a risk of crushing when folding the step in and out. Proceed with extreme caution when folding the step in and out to prevent injury.

---

### 2.2.9 Adjustable feet

To compensate for uneven floors, the machine is fitted with adjustable feet. The height of the machine can be adjusted by up to 80 mm (outlet height 1,000 mm to 1,080 mm).

→ Section 3.2

### 2.2.10 Lifting/tipping device (optional)

The lifting/tipping device is designed for trolleys with a capacity of 200 l or 300 l.



### 3. Installation and commissioning

#### 3.1 Transporting the machine

The machine may only be transported using suitable lifting trucks or fork-lift trucks with a capacity of at least 1,500 kg. If at all possible, move the fork-lift/lifting truck under the machine from the outlet side.

**Danger!**

Never tilt the machine when transporting it and when setting it up, always keep it horizontal. This prevents the machine tipping over. When transporting the machine, it is essential to observe its centre of gravity.

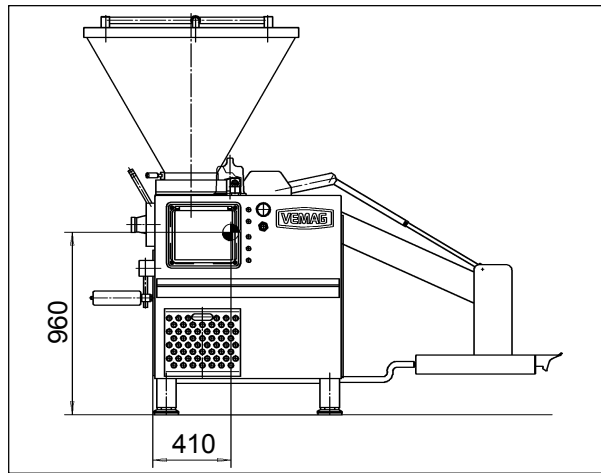


Fig. 3-1  
Centre of gravity of the machine

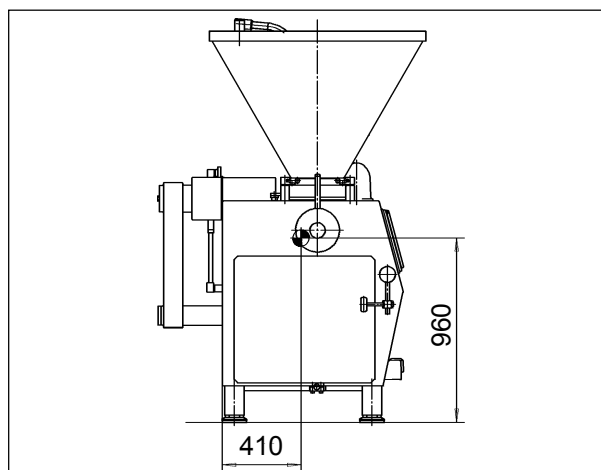
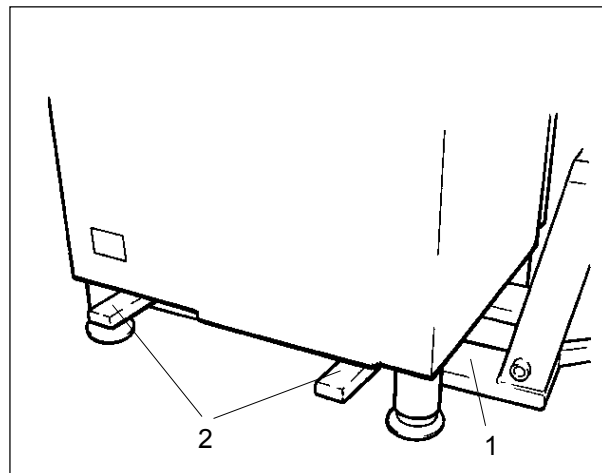


Fig. 3-2  
Centre of gravity of the machine

- Drive the lifting truck / fork-lift truck in under the machine so that fork (1) is located precisely centrally between the feet.

**Warning!**

Place planks (2) between the fork and the machine to prevent the machine slipping during transportation. You must ensure that the fork and the planks are pushed right under the machine so that the connection cable and the fan in the base-plate are not damaged by the fork.



1 Fork  
2 Plank

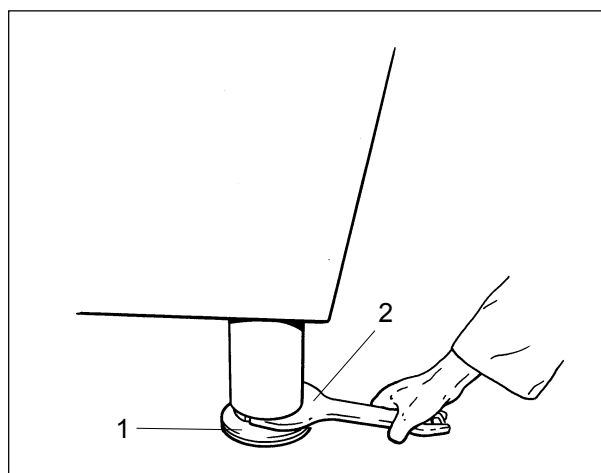
Fig. 3-3  
Transporting the machine

### 3.2 Setting up the machine

The machine must stand firmly on all four feet at all times and be as level as possible. There may only be a slight inclination (max. 2°) in the direction of the outlet side to encourage water to drain off after cleaning. The feet (1) can be adjusted using universal spanner (2). If necessary, the adjustable feet must be used to compensate for any unevenness in the floor until the machine is absolutely level.

The outlet height of the machine is 1,000 mm as standard. It can be increased by up to 80 mm with the aid of the adjustable feet.

- Unscrew feet: height of outlet is increased
- Screw in feet: height of outlet is decreased



- 1 Adjustable foot
- 2 Universal spanner

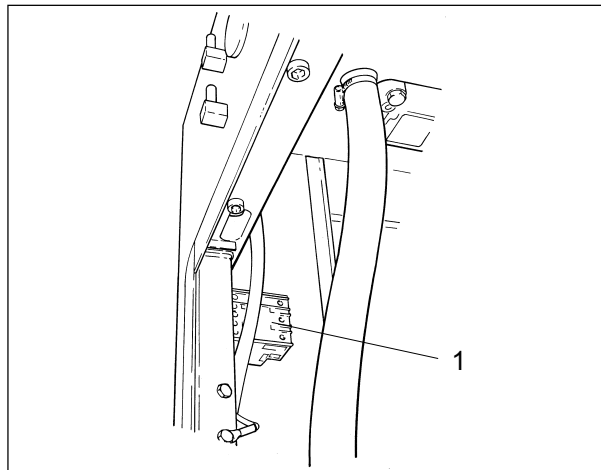
Fig. 3-4  
Setting up the machine

### 3.3 Electrical connection

**Danger!**

To prevent injury (electric shock), the electrical connection may be made only by authorised specialist staff or specialist companies.

- Inside the machine housing, connect the machine to the main switch (1) of the machine using four-core cable with 3 x phase and 1 x earth wire. There is a cable conduit in the base-plate. For correct connection values  
→ Section 9



1 Main switch

Fig. 3-5  
Electrical connection



### 3.4 Checking direction of rotation

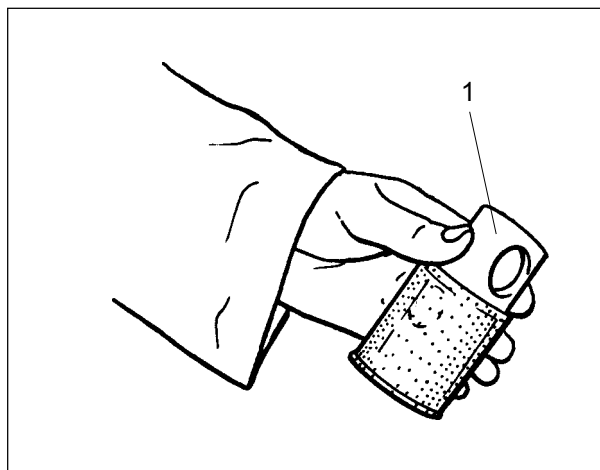
**Warning!**

To avoid damage to the machine, the machine may not be operated for more than 10 seconds in the wrong direction of rotation.

This is why it is essential to check whether the individual phases of the alternating current supply have been connected according to specification after the machine has been electrically connected; if the phases have been switched, the motors start up in the wrong direction of rotation.

To check the direction of rotation, proceed as follows:

- Remove vacuum pot.
- Take hold of the float valve on valve body (1) and pull it horizontally off the vacuum line.



1 Valve body

Fig. 3-6  
Float valve

**Warning!**

Do not take hold of the float valve at the bottom at the screen to avoid tilting when pulling off the valve.

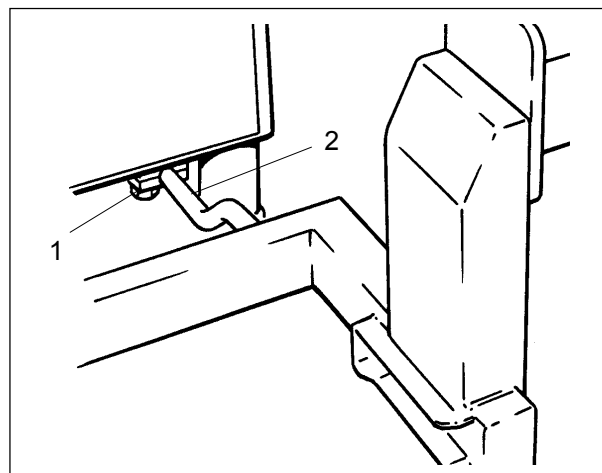
- Switch on the machine and check whether air is being drawn in by the vacuum line. If air is being drawn in, the motors are running in the correct direction of rotation. If no air is drawn in, the motors are running in the incorrect direction of rotation.
- In this case, stop the machine immediately and have the alternating current supply connected in correct phase by authorised specialist staff or a specialist company.
- Repeat the check on direction of rotation if appropriate.
- Put the float valve back on the vacuum line.
- Put the vacuum pot back on.

### 3.5 Levelling the lifting/tipping device (optional)

The trolley hoist of the lifting/tipping device is set at the factory with the feet of the machine screwed in and on a level floor (outlet height 1,000 mm). If the feet of the machine are screwed out to adjust height or level the machine in the horizontal plane, the stop parts on the lifting/tipping device will have to be reset to obtain the correct height for the trolley.

Adjust the lifting/tipping device as follows:

- Make the machine absolutely level using the adjustable feet.  
→ Section 3.2
- Undo the four mounting bolts (1) for the stop bar (2) of the trolley hoist and push the bar right in.

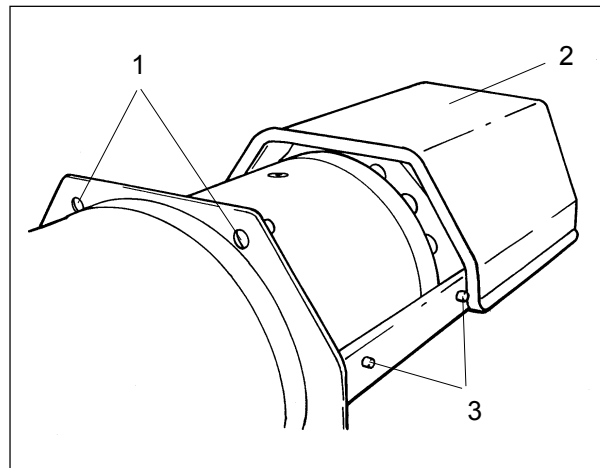


1 Mounting bolts  
2 Stop bar

Fig. 3-7  
Stop

- Switch on the machine and move the arm of the lifting/tipping device to the vertical end position using the UP key.

- Undo the two top mounting bolts (1) on the back of drive hood (2) and tap the bolts to release the drive hood. Push the hood and its seal in the direction of the operator side until the pins (3) release the guide grooves and lift it off.



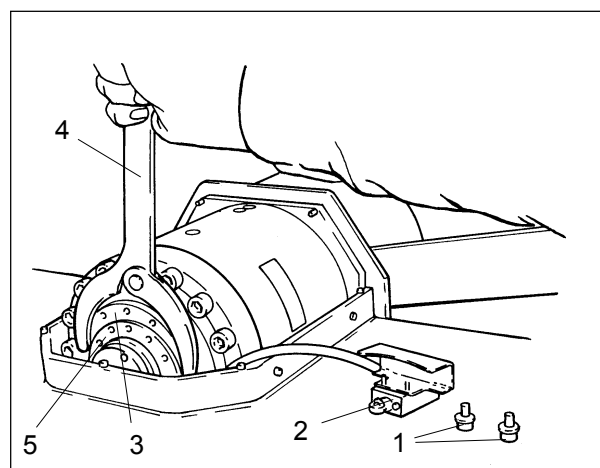
- 1 Mounting bolts
- 2 Drive hood
- 3 Pins

Fig. 3-8  
Drive hood

- Undo the mounting screws (1) of switch (2) and put it down on the machine housing.
- Undo the guard ring (3) with the face spanner (4).
- Use the setting ring (5) to set the desired angle of rotation. One turn of the setting ring adjusts the angle of rotation by  $2.7^\circ$ . This corresponds to an adjustment in the height of the trolley hoist of approx. 50 mm. The gap between the floor and the edge of the trolley guide on the trolley hoist needs to be approx. 237 mm.

Turn clockwise: trolley hoist moves up

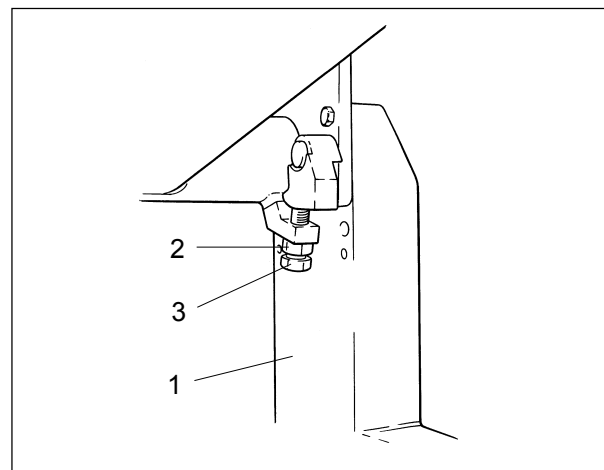
Turn anti-clockwise: trolley hoist moves down



- 1 Mounting screws
- 2 Switch
- 3 Guard ring
- 4 Face spanner
- 5 Setting ring

Fig. 3-9  
Setting trolley hoist

- Move the arm of the lifting/tipping device into the bottom end position using the DOWN key. Push a trolley into the trolley hoist to check the correct height of the trolley hoist and repeat setting if necessary.
- If the trolley hoist is set to the right height, lock the setting ring again with the guard ring. Attach the switch again.
- Lightly grease the contact surfaces of the seals of the drive hood and put the hood back on. Then tighten up the mounting bolts again.
- The trolley hoist (1) must be absolutely level to ensure that the trolley moves in and is locked in position securely. To do so, undo the guard nut (2) with the universal spanner and adjust stop screw (3).
- Screw in screw: locking lever of trolley hoist moves down
- Screw out screw: locking lever of trolley hoist moves up



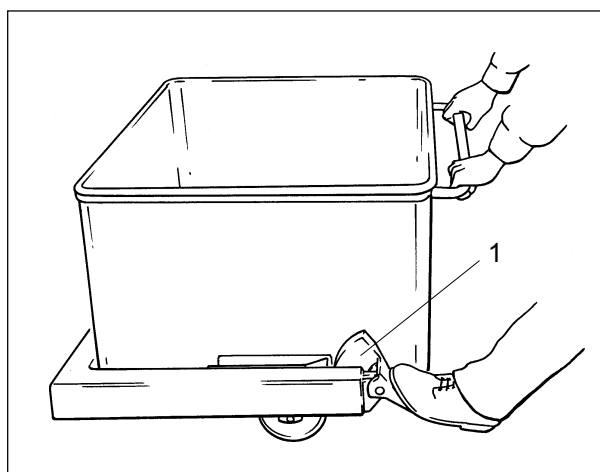
- 1 Trolley hoist
- 2 Guard nut
- 3 Stop screw

Fig. 3-10  
Levelling the trolley hoist

- Check that the trolley hoist is level using a spirit level, and push a trolley right into the trolley hoist.

**Warning!**

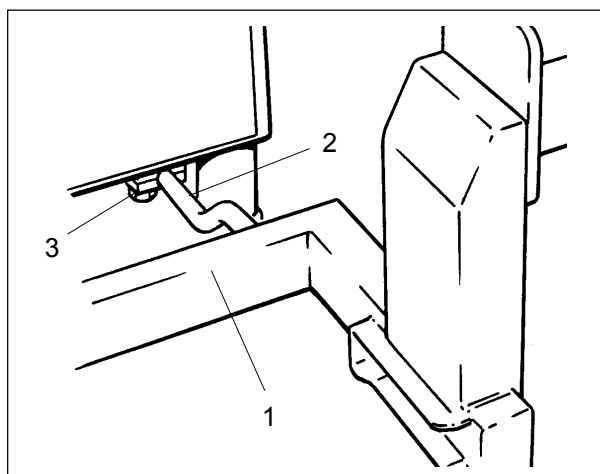
Check whether the locking lever (1) is properly locked and is holding the trolley securely in the trolley hoist.



1 Locking lever

Fig. 3-11  
Locking the trolley in position

- Then lock the stop screw with the guard nut again.
- If the trolley hoist (1) is correctly level, pull the stop bar (2) out far enough for the gap between the bar and the trolley hoist to be 5 mm and tighten up the four mounting bolts (3) again.



1 Trolley hoist  
2 Stop bar  
3 Mounting bolts

Fig. 3-12  
Setting the stop



## 4. Setting up

### 4.1 General information

- To set up the machine, select a double screw housing, the double screws to suit the product to be processed and the required accessories.



#### **Danger!**

To prevent injury, switch off the machine before setting up. Then switch off the main switch to disconnect the machine from the mains.

### 4.2 Fitting the double screw housing

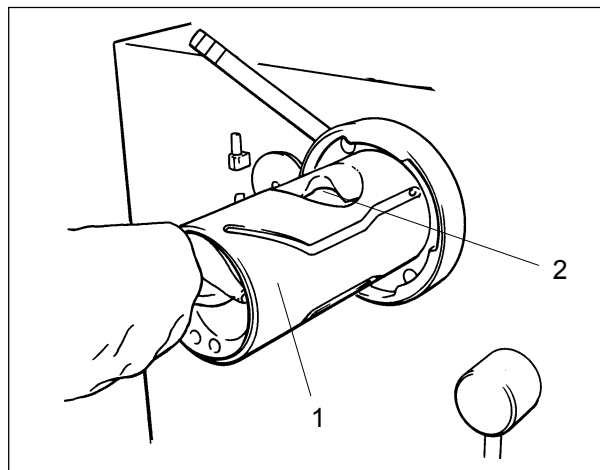


#### **Danger!**

There is a risk of crushing when fitting and removing the double screw housing and the double screws. To prevent injury, proceed extremely carefully when fitting and dismantling these parts.

The machine is fitted with an all-in-one or a two-part double screw housing.

- All-in-one double screw housing:  
push double screw housing (1) right into the feed cylinder of the machine. Inlet bore (2) for product and vacuum should face upwards.

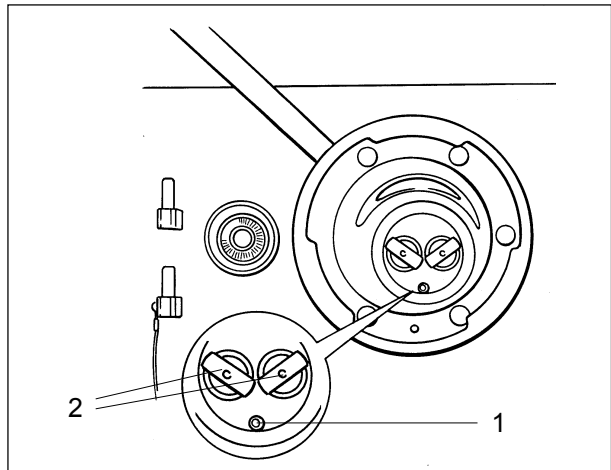


- 1 Double screw housing
- 2 Inlet bore

Fig. 4-1  
Installing double screw housing

- Two-part double screw housing:  
first push the rear, longer part of the housing with the inlet bore for product and vacuum upwards right into the feed cylinder of the machine. Then push the front, shorter part of the housing into the feed cylinder up to the stop.

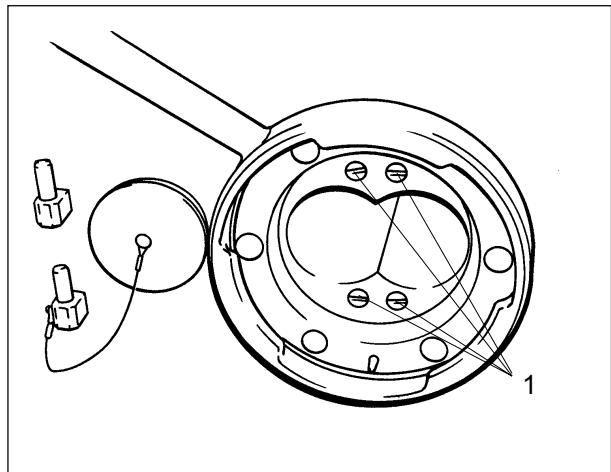
A pin (1) under the coupling pins (2) in the feed cylinder centres the double screw housing which has the appropriate bore on its end face. The rear part of the housing of the two-part double screw housing likewise has a centring pin for centring the front part of the housing.



1 Centring pin  
2 Coupling pins

Fig. 4-2  
Centring the double screw housing

- To prevent air bubbles in the product, the air relief bores of the double screw housing should be adjusted to suit the product using the setting screws (1). The air relief bores are closed when the screw slots are horizontal. If the screw slots are vertical with the screws tightened right up, the air relief bores are open.



1 Setting screws

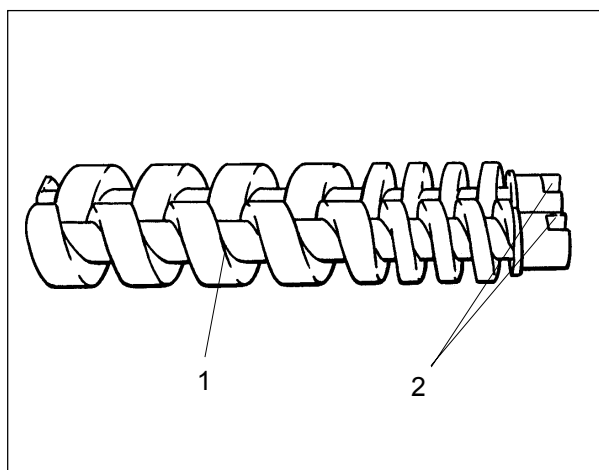
Fig. 4-3  
Setting the air relief bores

- The product weight set should be compared with the weight actually filled at the start of production.



### 4.3 Fitting the double screws

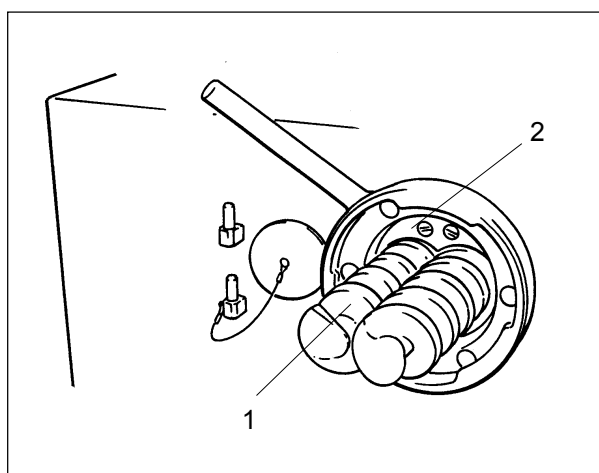
- Position the double screws (1) so that the screw marked left ("links") is on the left-hand side and the front faces are flush.
- Bring the slots of coupling claws (2) into the correct position in relation to the coupling pins in the feed cylinder by turning the double screws in opposite directions.



- 1 Double screws
- 2 Slots

Fig. 4-4  
Lining up the double screws

- Push double screws (1) into double screw housing (2) up to the stop. The double screws are properly engaged if the end faces of the double screws and housing are flush.

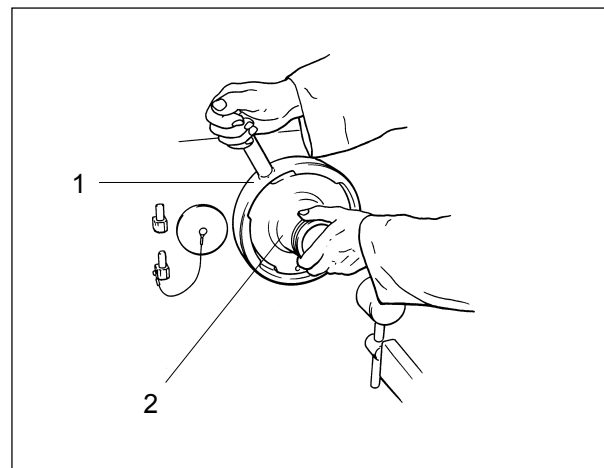


- 1 Double screws
- 2 Double screw housing

Fig. 4-5  
Installation of double screws

#### 4.4 Fitting the filling horn

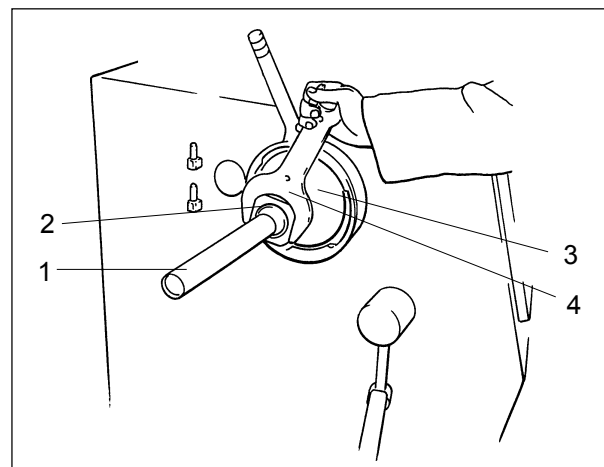
- Adjust locking nut (1) so that the handle is between the 10 and 11 o'clock position and insert filling horn holder (2).
- Turn locknut (1) clockwise to lock the filling horn holder. The handle should now be approximately vertical.



- 1 Locking nut
- 2 Filling horn holder

Fig. 4-6  
Locking the filling horn holder

- Select a filling horn with the largest possible diameter related to the size of the casing.
- Use the filling horn nut (2) on the filling horn holder (3) to attach the filling horn (1). Use the appropriate universal spanner (4).



- 1 Filling horn
- 2 Filling horn nut
- 3 Filling horn holder
- 4 Universal spanner

Fig. 4-7  
Fitting the filling horn

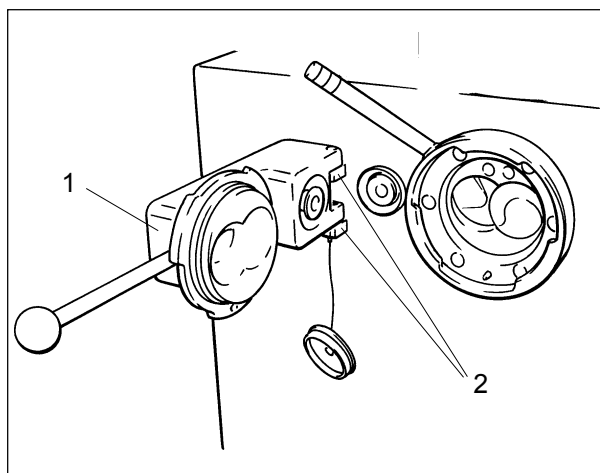
#### 4.5 Locking the linking gear (optional)



##### **Danger!**

There is a risk of crushing when swivelling the linking gear in and out. To prevent injury, proceed extremely carefully when fitting and dismantling the part.

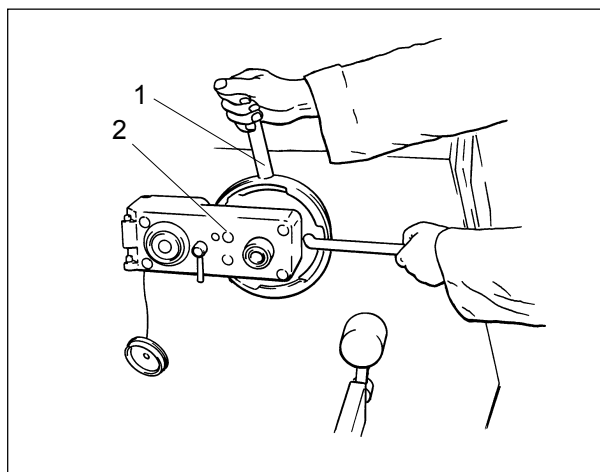
- Attach linking gear (1) to the outlet side of the machine with the aid of the two bearing journals (2).



- 1 Linking gear
- 2 Bearing journals

Fig. 4-8  
Fitting the linking gear  
(optional)

- Adjust locking nut (1) so that the handle is between the 10 and 11 o'clock position and swing linking gear (2) in front of the outlet.
- Turn the locking nut clockwise to lock the linking gear. The handle should now be approximately vertical.

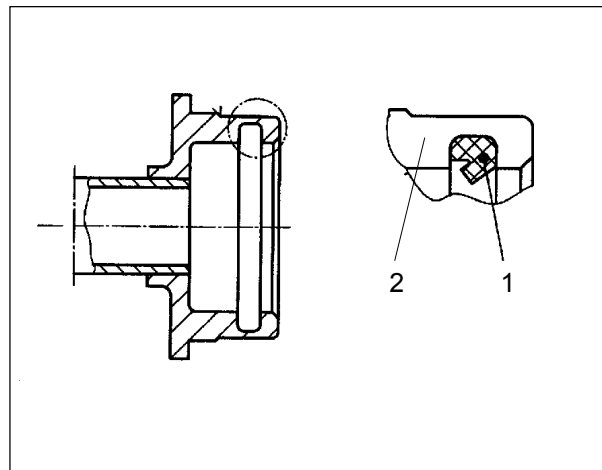


- 1 Locking nut
- 2 Linking gear

Fig. 4-9  
Locking the linking gear  
(optional)

#### 4.6 Fitting the linking horn (optional)

- Use a linking horn with the largest possible diameter and shortest possible length related to the size of the casing.
- Fit lip seal (1) in linking horn (2) so that the lug of the lip seal is pointing forwards.



- Grease the seal of the linking horn before fitting it to prevent friction problems.

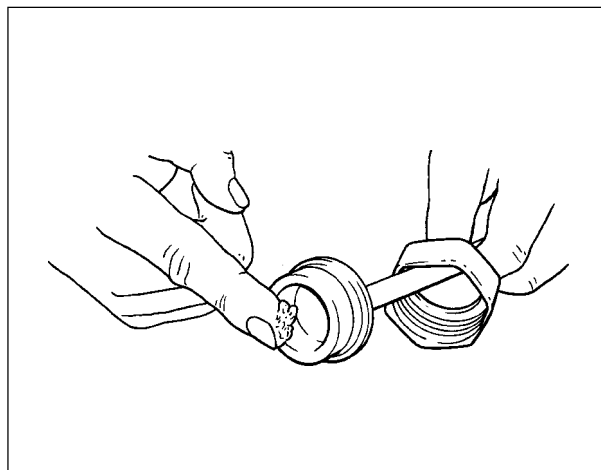
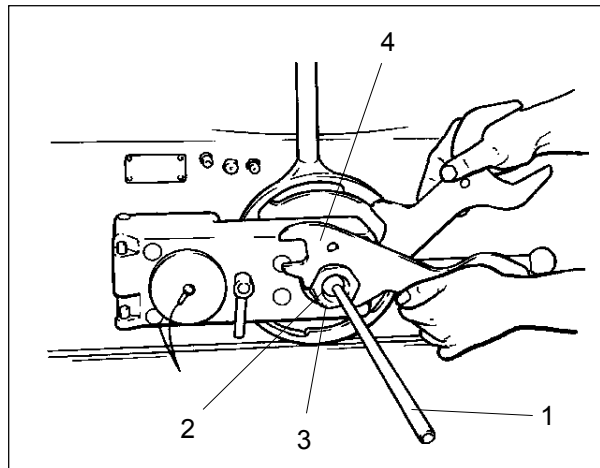


Fig. 4-11  
Greasing the linking horn

- Insert linking horn (1) into linking head (2) and tighten linking nut (3) using universal spanner (4). Hold the linking head steady with the second universal spanner as you do so.



- 1 Linking horn
- 2 Linking head
- 3 Linking nut
- 4 Universal spanner

Fig. 4-12  
Fitting the linking horn

**Warning!**

The linking head has a left-hand thread.

- To tighten: turn anti-clockwise
- To loosen: turn clockwise

**Warning!**

When processing very fine product (e.g. cooked sausage meat) a filler cone can be inserted in the linking gear to optimise the particle definition of the end-product.

→ Linking gear spare parts catalogue

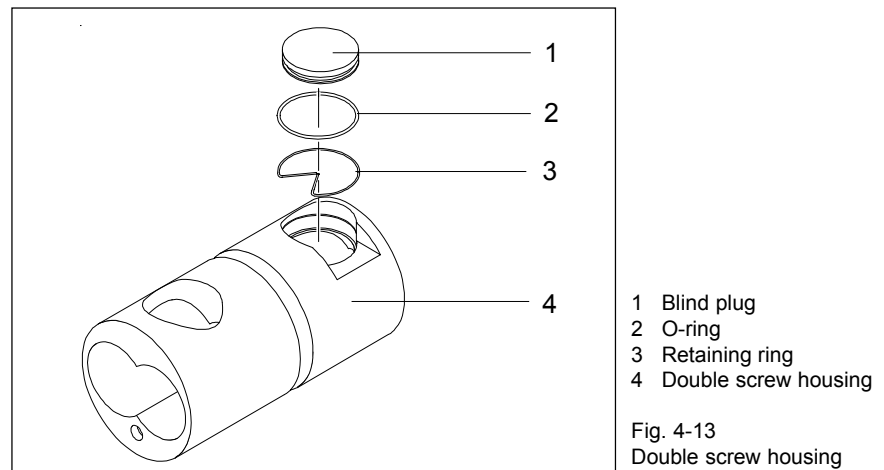
## 4.7 Setting the vacuum

### 4.7.1 Filling raw and cooked sausage

- Set the maximum vacuum for filling raw and cooked sausage.

### 4.7.2 Filling liquid product (e.g. liver sausage)

- Put blind plug (1) together with O-ring (2) and retaining ring (3) in the rear opening of double screw housing (4).



#### Warning!

Before processing any liquid product, check whether the blind plug is located in the double screw housing. If the blind plug is not present, the vacuum pump may be destroyed. If the vacuum pump takes in product or water as a consequence of a missing or incorrectly fitted blind plug, it is essential to proceed as follows to prevent damage to or destruction of the vacuum pump:

- Stop the machine immediately.
- Clean the air filter in the intake line
- Change the oil in the vacuum pump.

→ Section 7

## 4.8 Fitting the scraper

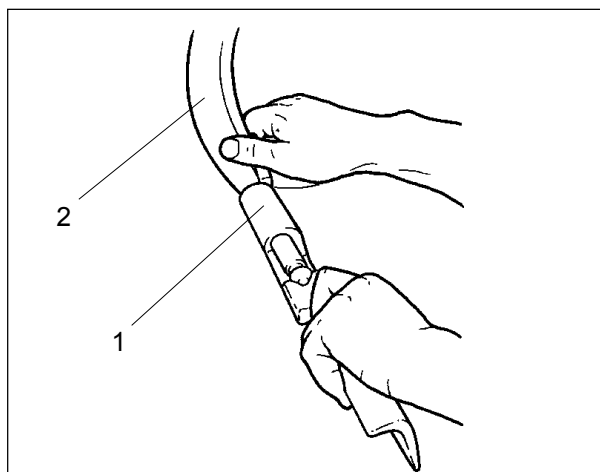
A scraper can be fitted to the hopper for product which sticks to the wall of the hopper. The scraper must be used when processing raw sausage.



### **Danger!**

There is a risk of crushing when fitting and removing the scraper. To prevent injury, proceed extremely carefully when fitting and dismantling the part.

- Put the scraper (1) on the locking pin (2) of the feed screw and make sure it engages.



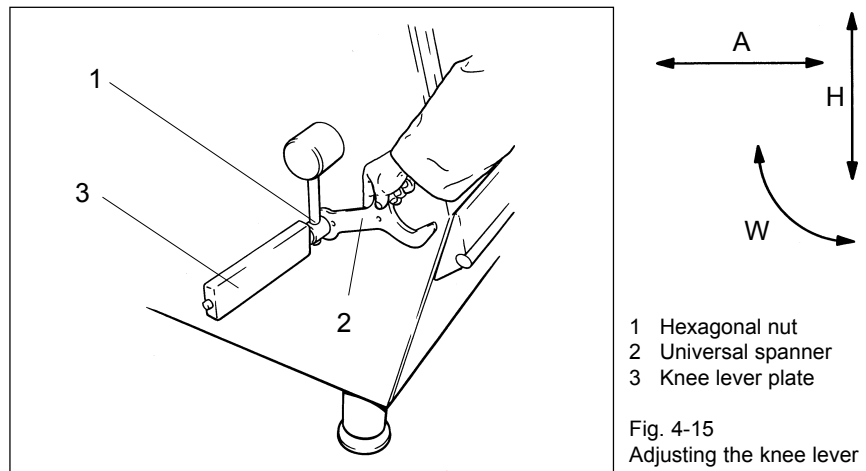
- 1 Scraper
- 2 Locking pin

Fig. 4-14  
Fitting the scraper

### 4.9 Adjusting the knee lever

The knee lever can be adjusted in terms of height (H), angle (W) and projection (A) to suit the height and location of the operator.

- Undo the hexagonal nut (1) using the universal spanner (2).
- Adjust the knee lever to the desired height (H) and angle (W).
- Tighten up the hexagonal nut again.
- Move the knee lever plate (3) along the lever shaft until the desired projection (A) is reached. The plate can be taken off the lever shaft altogether if required.





## 5. Operation

### 5.1 Working with the machine

To start production with the machine, proceed as follows:

- Set up the machine for the product to be filled  
→ Section 4
- Switch on the main switch of the machine.
- Press the ON switch on the machine control panel.



#### **Danger!**

You must check that any safety devices fitted to the hopper and the step are working properly.

- Unlock the hopper and tip it open.
- Fold out the step.
- Remove the filling horn holder.

In each of the cases described, the machine must switch off automatically. If the machine does not switch off, work may not continue with the machine. In this case, inform VEMAG Customer Service immediately.

- Pull on a casing suitable for the product to be filled.
- Push the trolley containing product into the trolley hoist of the lifting/ tipping device up to the stop. The locking lever must lock and hold the trolley securely in the trolley hoist.
- Press the UP key of the lifting/tipping device to move the trolley over the hopper with the trolley hoist. The trolley is automatically emptied into the hopper.

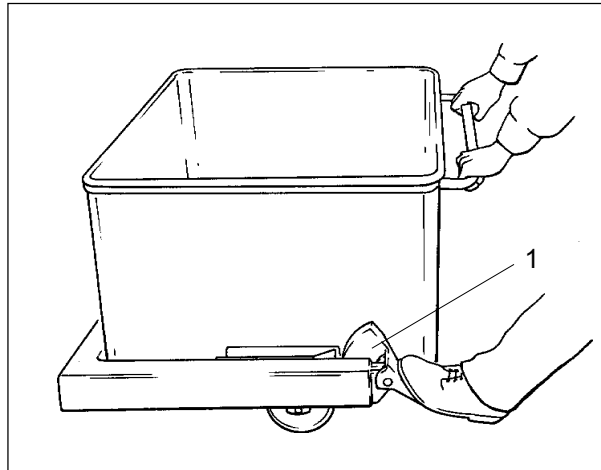


#### **Danger!**

Make sure that there is no-one in the area of the lifting/tipping device during operation and that no objects have been deposited there.

- Press the DOWN key to lower the trolley again. The trolley hoist stays approx. 500 mm above the floor. Press the DOWN key again and keep it depressed until the trolley has reached the floor.

- Unlock the locking lever (1) with your foot and pull the trolley out of the trolley hoist.



1 Locking lever

Fig. 5-1  
Trolley

- If you want to use the machine to link, test the relevant linking horn for concentricity with the aid of the respective program.  
→ Portioning computer user guide
- Use the portioning computer to select a filling program and check whether the double screws are correctly selected in the portioning computer.  
→ Portioning computer user guide
- Set the vacuum required for the product to be filled at the vacuum reducing valve. Put the blind plug in the double screw housing if necessary.  
→ Section 4



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**Warning!**

You must interrupt the filling process and check the seals of the double screw drive if vacuum level falls uncontrollably during production.

→ Sections 6 and 7

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- At the start, allow the machine to run at a slow speed (max. 20 %) until product escapes at the outlet.

This prevents the pumping element “running dry”. When filling hot products, wait about 1 minute to start production. This ensures that all machine parts which come into contact with the product are heated to product temperature.

- Operate the knee lever to start the filling process.

When production is finished, proceed as follows:

- Press the OFF key on the machine control panel.
- Switch off the main switch of the machine.
- Clean the machine in accordance with the instructions in the cleaning schedule.  
→ Section 6
- Take the appropriate maintenance measures if necessary.  
→ Section 7

## 5.2 Working with provisional drive

Should the portioning computer of the machine fail, it is possible to continue operating the machine using provisional drive.

- Press the OFF key on the machine control panel.
- Switch off the main switch of the machine.
- Pull the trolley out of the trolley hoist of the lifting/tipping device and dismantle the right-hand machine cover.
- Switch on the provisional drive switch on the rear of the electrical control panel (rocker switch).
- Re-fit the right-hand machine cover.
- Switch the main switch of the machine back on.
- Press the ON key on the machine control panel.
- Press the knee lever  
The message "PROVISIONAL DRIVE" appears in the display of the portioning computer. In this mode, you can straight-fill at approximately 50% of nominal speed or run the hopper empty.
- Inform VEMAG Customer Service.

## 6. Cleaning

### 6.1 General information

The machine and any attachments and additional devices (optional) must be cleaned daily.



#### **Danger!**

To prevent injury, take the following measures before cleaning.

- Press the OFF key on the machine control panel.
- Switch off the main switch of the machine to disconnect it from the mains.
- Disconnect any attachments or additional devices (optional) from the mains and remove the devices.  
→ Attachment operating instructions



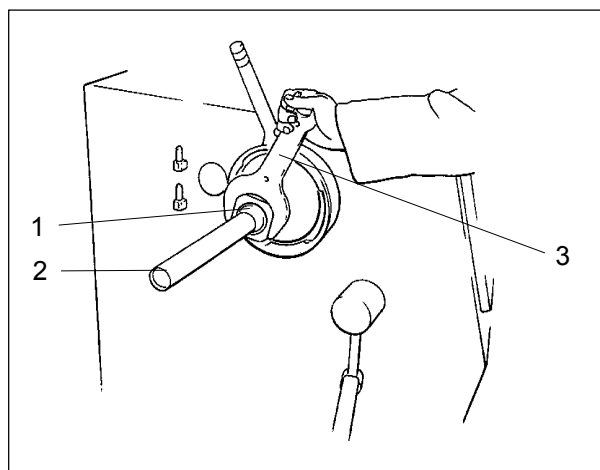
#### **Danger!**

The linking gear can heat up at extremely high speeds (risk of burns). To prevent injury, proceed extremely carefully when fitting and dismantling the part.

### 6.2 Removing parts to be cleaned

#### 6.2.1 Filling horn and filling horn holder

- Undo filling horn nut (1) and remove filling horn (2). To do so, use universal spanner (3).



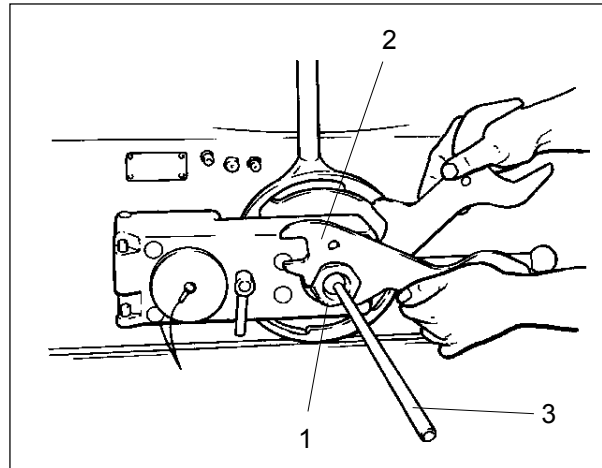
- 1 Filling horn nut
- 2 Filling horn
- 3 Universal spanner

Fig. 6-1  
Removing filling horn

- Undo the locking nut with the handle anticlockwise until the bayonet lugs come free and remove the filling horn holder.

### 6.2.2 Linking horn (optional)

- Undo linking nut (1) with the universal spanner (2) and remove linking horn (3). Hold the linking head steady with the second universal spanner as you do so.



- 1 Linking nut
- 2 Universal spanner
- 3 Linking horn

Fig. 6-2  
Removing the linking horn  
(optional)



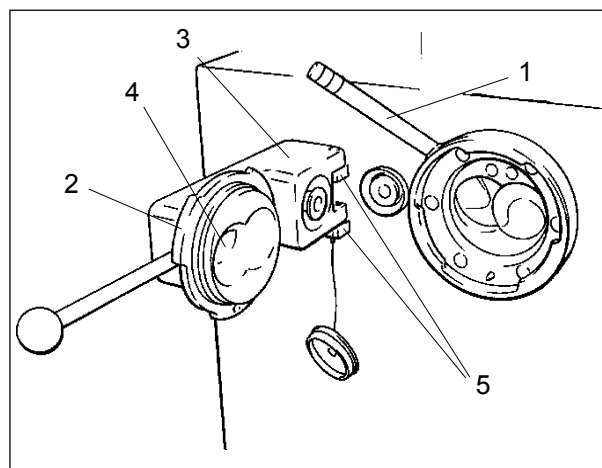
#### Warning!

The linking head has a left-hand thread.

- To tighten up: turn anti-clockwise.
- To undo: turn clockwise.

### 6.2.3 Linking gear (optional)

- Undo locking nut (1) with the handle anticlockwise until the bayonet lugs (2) come free.
- Swing linking gear (3) to the side.
- Remove filler cone (4) from the linking gear if present. To do so, use the appropriate ejector.
- Lift the linking gear off the bearing journals (5) on the machine housing.

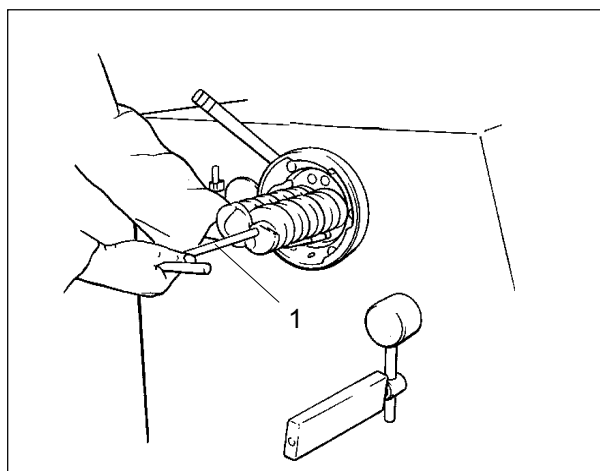


- 1 Locking nut
- 2 Bayonet lugs
- 3 Linking gear
- 4 Filler cone
- 5 Bearing journals

Fig. 6-3  
Removing the linking gear  
(optional)

### 6.2.4 Double screws

- Screw the screw extractor (1) into the threaded bore of the right-hand double screw and pull the double screws out of the double screw housing, holding the screws steady with the other hand.

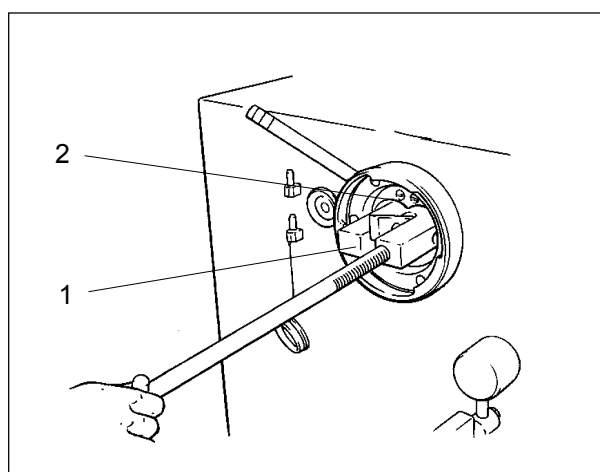


1 Screw extractor

Fig. 6-4  
Removing double screws

### 6.2.5 Double screw housing

- Pull the all-in-one double screw housing/two parts of the housing of the two-part double screw housing right out of the feed cylinder by hand, holding the housing steady with the other hand.
- If the double screw housing cannot be pulled out by hand, push the extraction device (1) into housing (2).



1 Extraction device  
2 Double screw housing

Fig. 6-5  
Inserting the extraction  
device

- Twist the spindle in far enough for the extraction device to catch and pull the double screw housing a little way out of the feed cylinder.

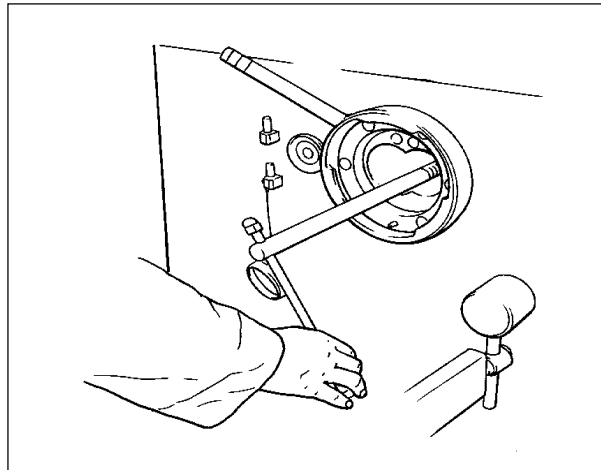
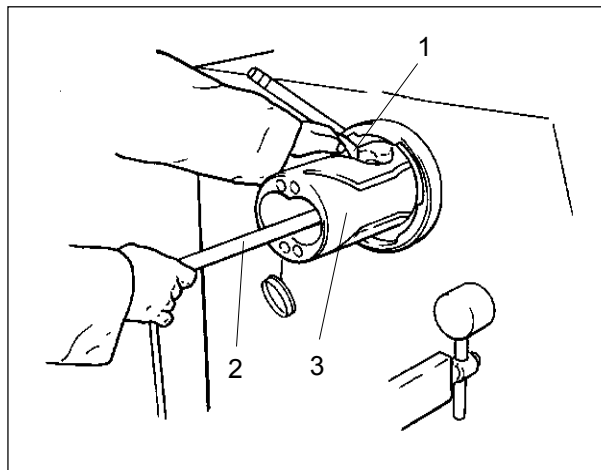


Fig. 6-6  
Extraction device  
catching

- Push down the catch in the inlet bore (1) and pull the extraction device (2) out of the double screw housing (3).



1 Catch  
2 Extraction device  
3 Double screw housing

Fig. 6-7  
Removing the extraction  
device

**Warning!**

Proceed carefully when removing the extraction device and be sure to hold the double screw housing/relevant part of the housing steady with the other hand to avoid dropping it.



- Pull the double screw housing/relevant part of the housing right out of the feed cylinder by hand, holding the housing steady with the other hand.

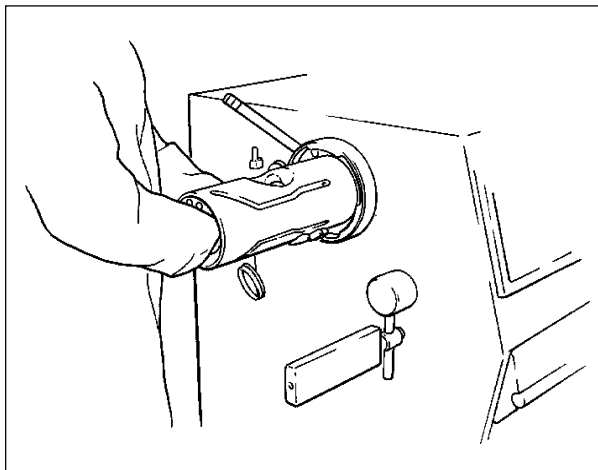


Fig. 6-8  
Removing the double  
screw housing

- Then check the rear seal in the feed cylinder for traces of oil.



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**Warning!**

You must check the seals of the double screw drive for traces of oil before cleaning. If traces of oil are present, the double screw drive must be overhauled or replaced. In this case inform VEMAG Customer Service.

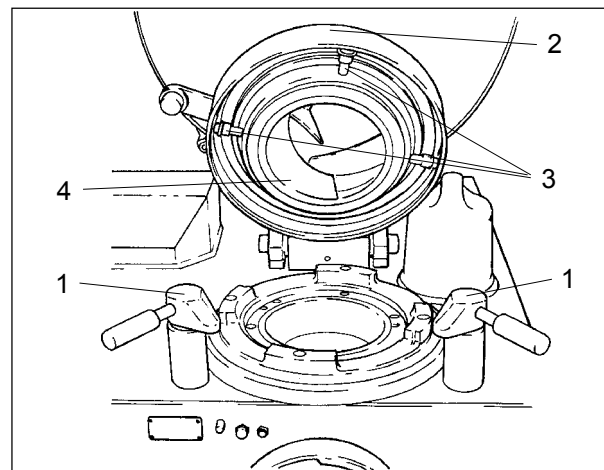
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## 6.2.6 Hopper

**Danger!**

There is a risk of crushing when fitting/removing the feed screw. To prevent injury, proceed extremely carefully when fitting and dismantling the part.

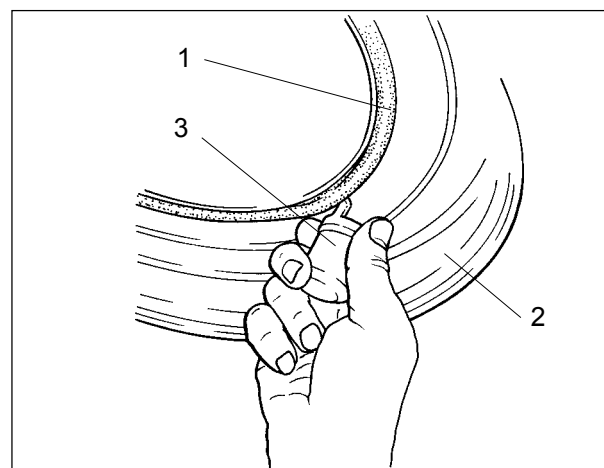
- Unlock the two locking levers (1) on the hopper housing and carefully tip the hopper backwards. Hold the hopper firmly by flange (2) as you do so.
- Remove the scraper in the hopper (if present).
- Push back the three sliding sleeves (3) in the hopper flange, holding the feed screw (4) steady with the other hand. Carefully twist the feed screw out of the hopper flange.



- 1 Locking levers
- 2 Flange
- 3 Sliding sleeves
- 4 Feed screw

Fig. 6-9  
Hopper

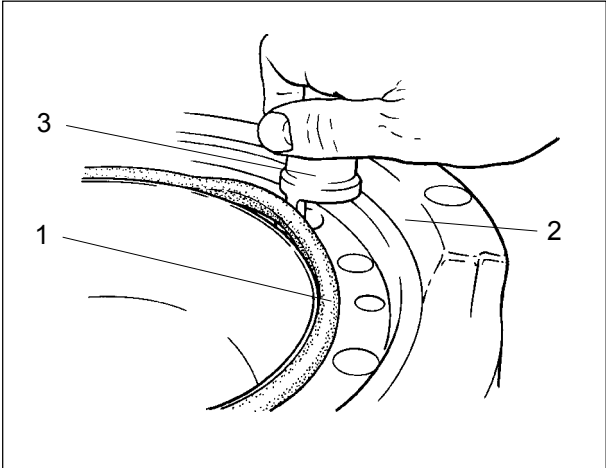
- Remove the sealing ring (1) from the hopper flange (2). Use the appropriate tool at the cleaning plug (3) to do this.



- 1 Sealing ring
- 2 Hopper flange
- 3 Cleaning plug

Fig. 6-10  
Feed unit seal

- Remove the sealing ring (1) from the hopper insert (2). Use the appropriate tool at the cleaning plug (3) to do this.

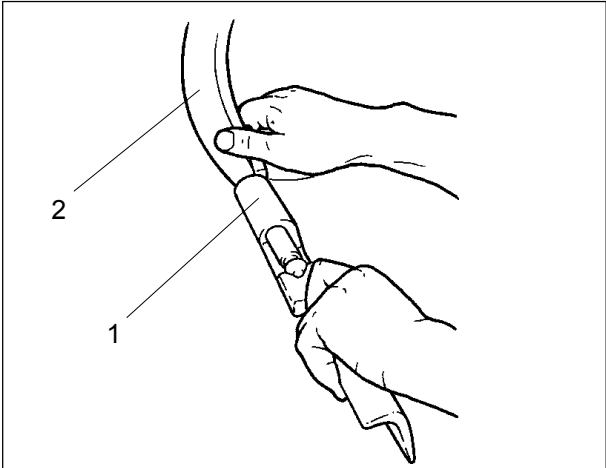


- 1 Sealing ring
- 2 Hopper insert
- 3 Cleaning plug

Fig. 6-11  
Feed unit seal

**6.2.7 Scraper**

- Pull scraper (1) off retaining bolt (2) of the feed screw.

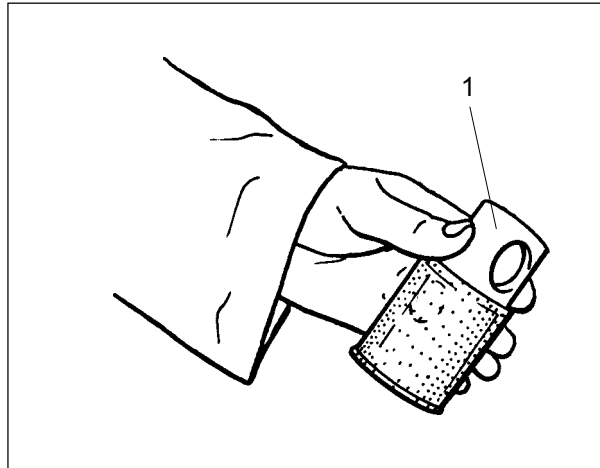


- 1 Scraper
- 2 Retaining bolt

Fig. 6-12  
Dismantling the scraper

### 6.2.8 Vacuum system

- Remove the vacuum pot.
- Take hold of the float valve on the valve body (1) and pull it off the intake pipe of the vacuum line in a horizontal direction.



1 Valve body

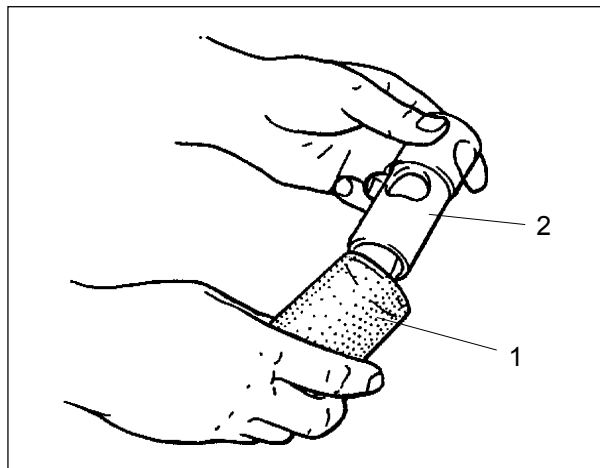
Fig. 6-13  
Float valve



#### **Warning!**

Do not take hold of the float valve at the bottom on the screen when pulling it off to avoid it tilting.

- Then pull the screen (1) off valve body (2).



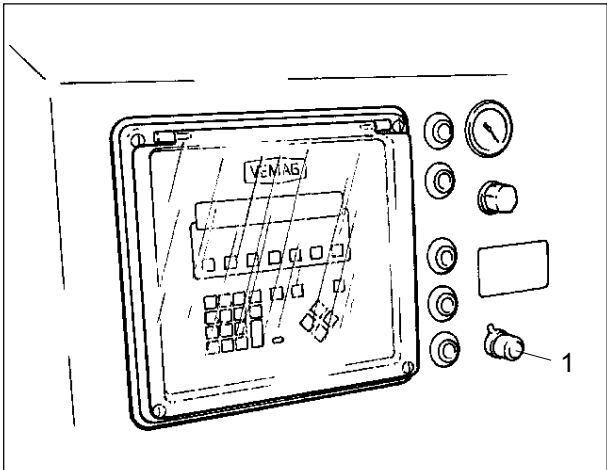
1 Screen  
2 Valve body

Fig. 6-14  
Float valve



**Warning!**  
Before cleaning, you must plug the cleaning plug onto the intake pipe of the vacuum line to protect the vacuum pump.

The cleaning plug (1) is located on the front of the machine.



1 Cleaning plug  
Fig. 6-15  
Cleaning plug

### 6.3 Cleaning the machine

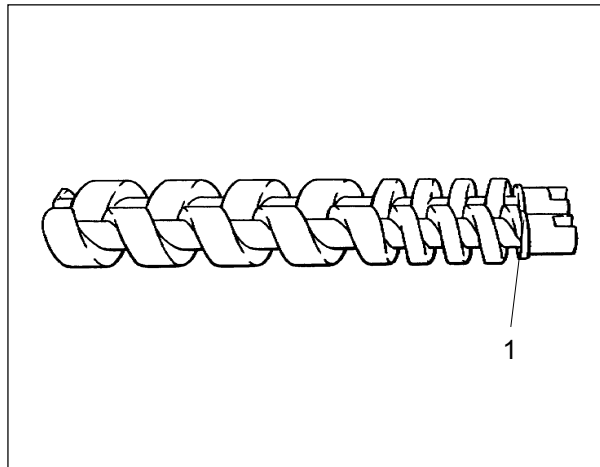
Clean the machine housing, the hopper, the feed screw, the linking gear (optional) and all the parts which have been removed thoroughly with hot water and a brush and then dry them. The machine is suitable for cleaning with low-pressure cleaning equipment (max. 25 bar).

**Warning!**

Never aim the jet of water directly at the double screw drive, the sealing elements and the machine control panel when using low-pressure cleaning equipment and keep the nozzle at the distance from the surface of the machine specified for the cleaning equipment.

In addition to the instructions in the cleaning schedule, generally-applicable and product-specific hygiene regulations should be followed.

When cleaning the double screws, pay particular attention to the joints between the screw and the coupling claw (1).



1 Joint

Fig. 6-16  
Double screws

## 6.4 Cleaning schedule

All details refer to single-shift operation.

Cleaning task	Cleaning agent	Process	Equipment	Notes
<b>Rough cleaning, removal of product residues (if necessary, remove small parts first)</b>		<ul style="list-style-type: none"> <li>by hand, mechanically</li> </ul>	plastic spatula, scraper (Schlesinger)	Begin as soon as production finishes
<b>Thorough initial rinse</b>	water	<ul style="list-style-type: none"> <li>water jet max. 25 bar, temperature max. 60 °C, depending on fat softening point</li> </ul>	low-pressure equipment, hose	Clean small parts at the same time
<b>Visual check of cleanliness</b>		<ul style="list-style-type: none"> <li>visual</li> </ul>		
<b>Alkaline cleaning</b>	free of activated chlorine, alkaline, concentration depending on degree of contamination – as low as possible – and in accordance with manufacturer's instructions	<ul style="list-style-type: none"> <li>foam or clean by hand, leave to act for approx. 15 minutes</li> </ul>	low-pressure foam equipment (max. 25 bar), hand spray, brush, bowl	Carry out daily, clean small parts at the same time
<b>or:</b>				
<b>Acid cleaning to remove lime deposits</b>	free of activated chlorine, acid, concentration depending on degree of contamination – as low as possible – and in accordance with manufacturer's instructions	<ul style="list-style-type: none"> <li>foam or clean by hand, leave to act for approx. 15 minutes</li> </ul>	low-pressure foam equipment (max. 25 bar), hand spray, brush, bowl	Frequency as required
<b>Rinse</b>	drinking water	<ul style="list-style-type: none"> <li>water jet max. 25 bar, temperature 50 to 60 °C</li> </ul>	low-pressure equipment (max. 25 bar), hose	Whole machine and small parts
<b>Visual check of cleanliness</b>		<ul style="list-style-type: none"> <li>visual</li> </ul>		Pay special attention to feed system, small parts
<b>Disinfect (after all the cleaning measures in the room have been completed)</b>	disinfectant free of activated chlorine, concentration as low as possible and in accordance with the manufacturer's instructions	<ul style="list-style-type: none"> <li>spray, foam, leave to act in accordance with manufacturer's instructions</li> </ul>	low pressure equipment (max. 25 bar), hand spray	Whole system and small parts
<b>Rinse off</b>	drinking water	<ul style="list-style-type: none"> <li>water jet max. 25 bar</li> </ul>	low-pressure equipment (max. 25 bar), hose	Rinse off in accordance with Meat Hygiene Order, Appendix 2, II, 4
<b>Dry and oil</b>	oil which is safe for food use	<ul style="list-style-type: none"> <li>spray</li> </ul>	hand spray	Particularly feed system

## 6.5 Lubrication and assembly

- Thoroughly lubricate all dismantled, cleaned and dried parts (apart from vacuum system parts) with a corrosion-inhibiting oil which is safe for food use.  
→ Section 9
- Refit the dismantled parts after cleaning and lubrication.

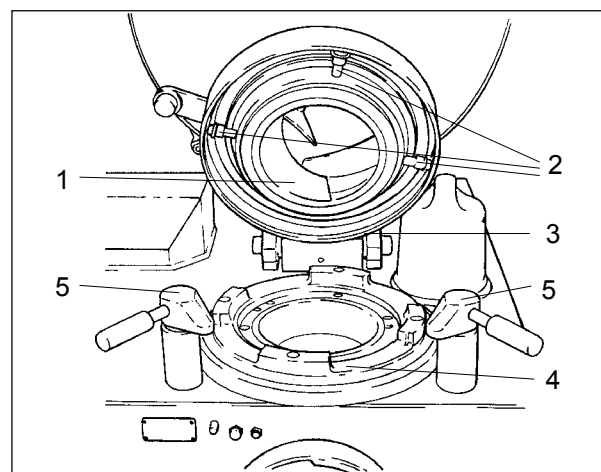


### Warning!

Parts which have been removed should be left overnight and not re-fitted until the shift starts the next morning.

### 6.5.1 Hopper

- Carefully press the sealing rings into the appropriate grooves in the hopper flange and hopper insert. Fit the sealing rings without greasing them.  
→ Section 6.2.6
- Lubricate the sealing rings and the sliding ring in the hopper flange by hand before the feed screw is fitted. Use a grease for this which has been approved for contact with foodstuffs.  
→ Sections 7 and 9
- Guide the feed screw (1) into the hopper so that the three sliding sleeves (2) are located behind the shoulder (3) of the hopper flange.
- Push the sliding sleeves outward so that they engage behind the shoulder, holding the feed screw steady with the other hand.
- Turn the feed screw so that the sliding sleeves can latch in the recesses of the catch ring (4).
- Close the hopper and lock the two locking levers (5) on the hopper housing.



- 1 Feed screw
- 2 Sliding sleeves
- 3 Shoulder
- 4 Catch ring
- 5 Locking lever

Fig. 6-17  
Hopper



## 7. Maintenance

### 7.1 General information

Apart from daily cleaning, the filler needs very little maintenance. For your peace of mind, we recommend that you take out a service contract whereby VEMAG Customer Service carries out all the maintenance work due.

The information below describes the maintenance work to be performed by the owner of the machine. The types and quantities of lubricants required are listed in the appendix. Notes on spare parts required can be found in the spare parts catalogue.

→ Section 9 and spare parts catalogue



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#### **Danger!**

To prevent injury, switch off the machine before any maintenance work. Then switch off the main switch to disconnect the machine from the mains. The machine has to be switched on for the feed unit drive to be lubricated.

---

The relevant cover of the machine housing has to be removed to allow internal components of the drive system to be serviced.

- Undo the appropriate assembly screws with a screwdriver.
- Remove housing cover
- Carry out the necessary maintenance work according to the maintenance schedule.  
→ Section 7.4
- Clean the contact surfaces of the cover seals and lubricate lightly before re-fitting.
- Put housing cover back on.

Regularly check the hydraulic system of the machine, including all pipe and hose lines, for damage or leaks. Inform VEMAG Customer Service if you find damage or leaks.



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#### **Warning!**

DIN 20066 states that the service life of hose lines should not exceed six years. For this reason, you should have the hose lines of the hydraulic system checked by VEMAG Customer Service after six years to avoid leaks.

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#### **Warning!**

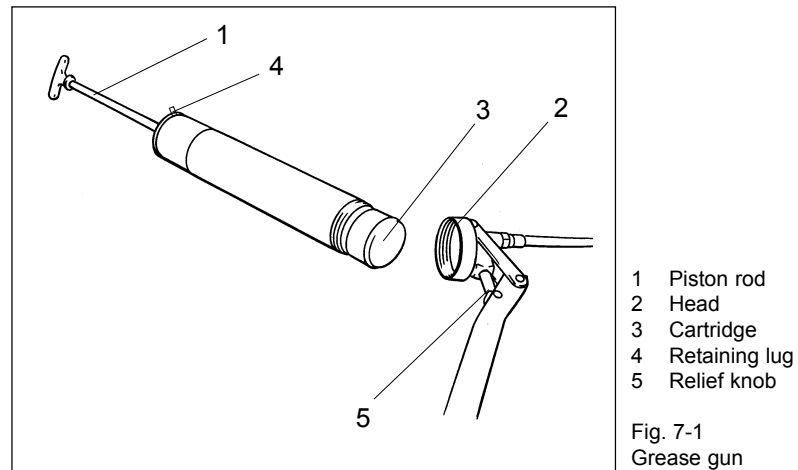
Used oil and other substances should be disposed of in accordance with the relevant environmental protection regulations in force.

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## 7.2 Grease gun

The cartridges for the grease gun supplied are replaced as follows:

- Pull piston rod (1) back firmly to the stop.
- Unscrew the head of the grease gun (2) and pull out the empty cartridge.
- Remove the cap of the new cartridge and insert fully into the grease gun with this open end first.
- Either cut off the base of the cartridge (3) completely with a knife or pierce a hole in it.
- Screw the head of the grease gun back on and push the piston rod back in, pressing down the small retaining lug (4).
- If no grease emerges after a number of pump strokes, vent the grease gun by pressing the relief knob (5) whilst pumping.



## 7.3 First-time maintenance work

Perform the following maintenance work for the first time after the intervals given. After that, these measures should be effected in accordance with the maintenance schedule.

→ Section 7.4

- |                             |  |
|-----------------------------|--|
| after 500 operating hours:  | change hydraulic oil and filter cartridge of hydraulic drive |
| after 1000 operating hours: | change transmission oil of double screw drive.               |

## 7.4 Maintenance schedule

All information relates to single-shift operation. The portioning computer shows the number of operating hours reached in each case. All the maintenance tasks included under one operating hours heading should be performed. In the case of monthly maintenance (160 hours), it follows that all daily and weekly maintenance work due should also be performed.

The jobs listed in the maintenance schedule are described in detail in the following sections.

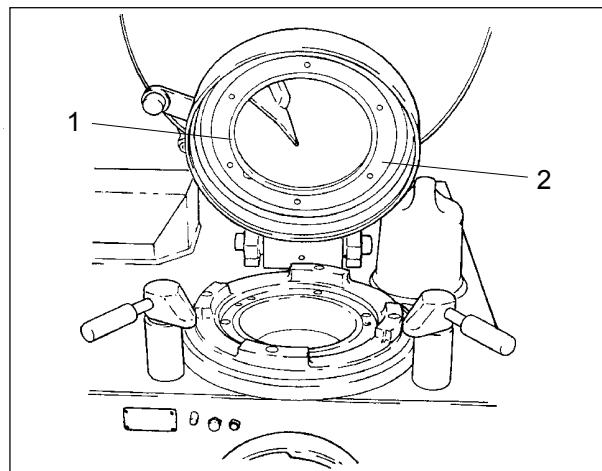
Maintenance interval	Operating hours	Machine part	Maintenance work
<b>daily</b>	8	Feed unit seals	<ul style="list-style-type: none"> <li>Lubricate sliding ring and seals by hand every time they are cleaned. Use only high-performance grease which is safe for food use.</li> </ul>
<b>weekly</b>	20	Feed unit drive	<ul style="list-style-type: none"> <li>Lubricate drive and bearing 2x a week with the feed unit running slowly. Use only high-performance grease which is safe for food use and resistant to cleaning agents and disinfectants.</li> </ul>
	40	Vacuum pump	<ul style="list-style-type: none"> <li>Check air filter in the intake line to the vacuum pump for contamination. Clean filter cartridge of air filter or replace if severely contaminated.</li> <li>Check oil level.</li> </ul>
<b>monthly</b>	160	Hydraulic drive	<ul style="list-style-type: none"> <li>Check oil level.</li> </ul>
	160	Double screw drive	<ul style="list-style-type: none"> <li>Check oil level.</li> <li>Check seals.</li> </ul>
<b>quarterly</b>	500	Vacuum pump	<ul style="list-style-type: none"> <li>Change oil.</li> <li>Clean screens of vacuum pump.</li> <li>Clean gas ballast valve (only if pump housing very dirty).</li> </ul>
<b>six-monthly</b>	1000	Feed unit seals	<ul style="list-style-type: none"> <li>Have seals checked by VEMAG Customer Service.</li> </ul>
<b>annually</b>	2000	Hydraulic drive	<ul style="list-style-type: none"> <li>Change oil and replace filter cartridge.</li> </ul>
	2000	Feed unit drive and feed unit seals	<ul style="list-style-type: none"> <li>Have parts checked by VEMAG Customer Service and have feed unit seals changed.</li> </ul>
	2000	Vacuum pump	<ul style="list-style-type: none"> <li>Replace air de-oiling element.</li> </ul>
<b>biennially</b>	4000	Double screw drive	<ul style="list-style-type: none"> <li>Change oil.</li> </ul>

## 7.5 Daily maintenance

### 7.5.1 Feed unit seals (lubrication)

The feed unit seals must be lubricated daily every time they are cleaned. Use only high-performance grease which is safe for food use.

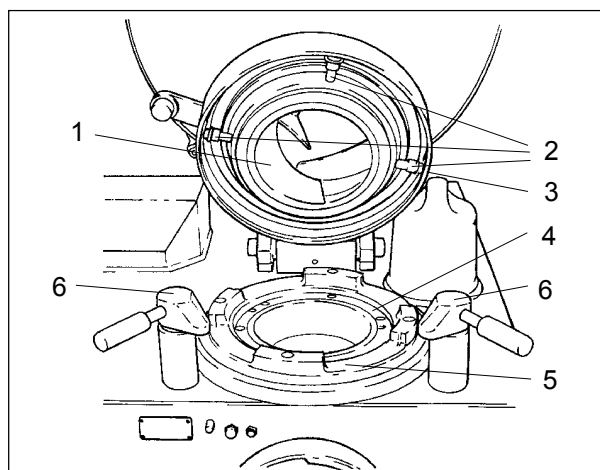
- Carefully press the sealing ring into the appropriate groove in the hopper flange. Fit the sealing ring without greasing it.  
→ Section 6.2.6
- Lubricate the sealing ring (1) and the sliding ring (2) in the hopper flange by hand before the feed screw is fitted.



- 1 Sealing ring
- 2 Sliding ring

Fig. 7-2  
Lubricating the feed unit seals

- Guide the feed screw (1) into the hopper in such a way that the three sliding sleeves (2) are located behind the shoulder (3) of the hopper flange.
- Push the sliding sleeves outwards so that they engage behind the shoulder, holding the feed screw steady with the other hand.
- Carefully press the sealing ring into the appropriate groove in the hopper insert. Fit the sealing ring without greasing it.  
→ Section 6.2.6
- Lubricate the sealing ring (4) in the hopper insert by hand.
- Turn the feed screw so that the sliding sleeves can engage in the recesses of the catch ring (5).
- Close the hopper and lock the two locking levers (6) on the hopper housing.



- 1 Feed screw
- 2 Sliding sleeves
- 3 Shoulder
- 4 Sealing ring
- 5 Catch ring
- 6 Locking levers

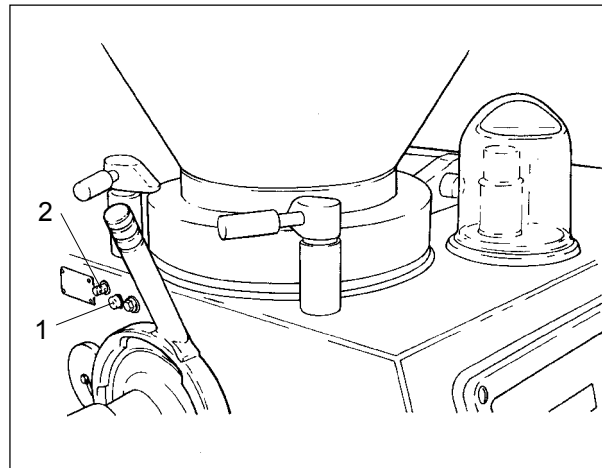
Fig. 7-3  
Lubricating the feed unit seals

## 7.6 Weekly maintenance

### 7.6.1 Feed unit drive (lubrication)

The feed unit drive and the bearing must be lubricated twice a week with the feed unit running slowly until grease escapes at the relief bore at the outlet side of the machine. Use only high-performance grease which is safe for food use and which is resistant to cleaning agents and disinfectants.

- To do so, connect the grease gun supplied to the left-hand lubricating nipple (1) at the outlet side of the machine and pump several full strokes with the feed unit running until clean grease escapes from relief bore (2).
- Then remove the grease which has escaped.

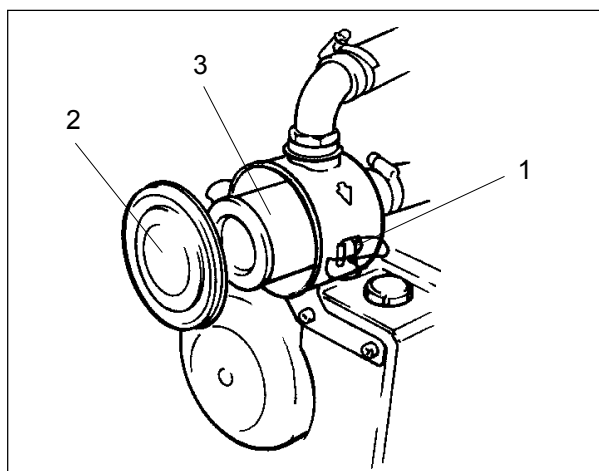


- If no grease at all escapes at the relief bore, inform VEMAG Customer Service and have the drive/bearing checked.

### 7.6.2 Vacuum pump (air filter and oil level)

An air filter is located in the intake line to the vacuum pump and this needs to be cleaned weekly.

- Remove the housing cover next to the main switch on the rear of the machine.
- Open the two locking clips (1) of the air filter and remove the filter cover (2).
- Clean the filter cartridge (3) by blowing it out. If it is severely contaminated, the filter cartridge must be replaced.



- 1 Locking clips
- 2 Filter cover
- 3 Filter cartridge

Fig. 7-5  
Air filter of intake line

- Insert the filter cartridge and fix the filter cover in position.

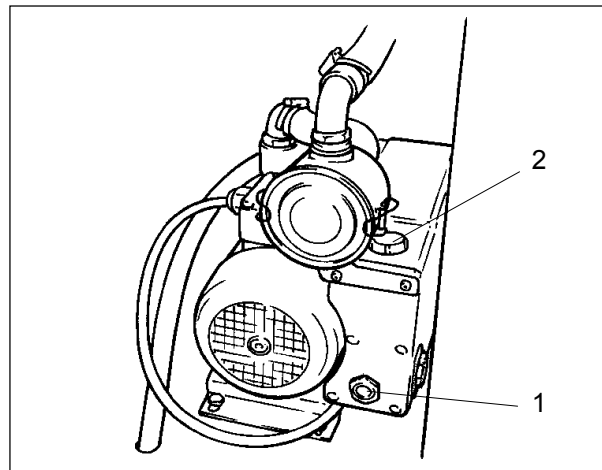
The vacuum pump has a closed oil circuit. The oil reservoir is integral to the pump housing. There is a sight glass on each side of the pump for checking the oil level. The oil should reach at least the centre of the sight glass.



### Danger!

To prevent injury (burns) do not carry out the following work with the pump still warm from operation, but wait until the pump has cooled down.

- Check the oil level of the vacuum pump in one of the sight glasses (1) on either side of the pump and, if required, replenish oil through the filling opening (2).



- 1 Sight glass
- 2 Filling opening

Fig. 7-6  
Oil level of vacuum pump

- Re-fit the housing cover.

Replenish only with clean oil and clean the pump housing before replenishing to avoid contaminating the oil.

If the oil level in the sight glass is too high, water has accumulated in the oil reservoir. This can occur if the machine is operated for only brief periods or water has entered the intake line during cleaning. In this case, change the oil.

→ Section 7.8.1

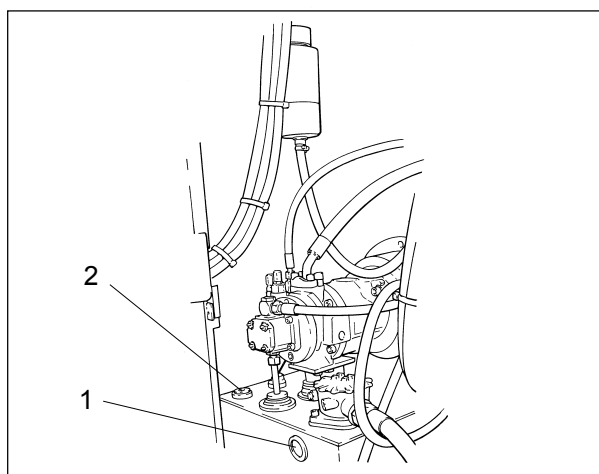


## 7.7 Monthly maintenance

### 7.7.1 Hydraulic drive (oil level)

The tank is underneath the hydraulic drive. There is a sight glass for checking oil level on the front of the tank. The oil should come at least to the centre of the sight glass.

- Remove the housing cover over the stop bar for the trolley hoist on the right-hand side of the machine.
- Check the oil level of the hydraulic drive using the sight glass provided in the tank (1) and if necessary replenish oil through the filling opening (2).



- 1 Sight glass
- 2 Filling opening

Fig. 7-7  
Oil level of hydraulic drive

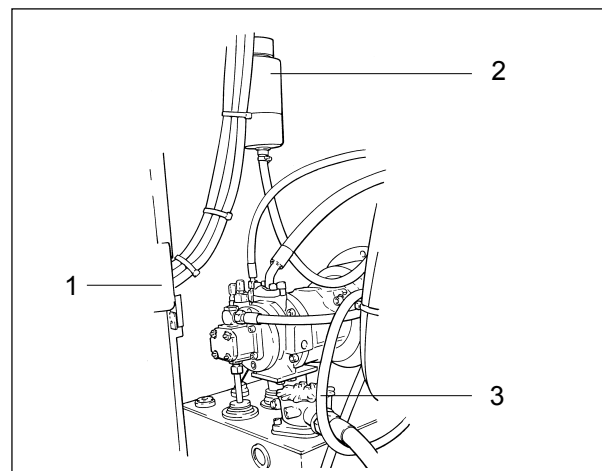
- Re-fit the housing cover.

Considerable or continuous lack of oil indicates a leak which must be eliminated.

### 7.7.2 Double screw drive (oil level and seals)

The oil expansion reservoir of the double screw drive and its cover are attached in a bracket and connected to the double screw drive by a hose. The oil should come up at least to the marking on the reservoir.

- Remove the housing cover over the stop bar for the trolley hoist on the right-hand side of the machine.
- Undo the retaining screw and swivel out the electrical case (1).
- Check the oil level of the double screw drive at the expansion reservoir (2) and replenish with oil if necessary.
- To do so, unscrew the cover of the expansion reservoir, holding the reservoir steady in the other hand, and take it out of its bracket. You must hold the reservoir upright so that no oil escapes. The connecting hose to the double screw drive is long enough to enable filling to take place outside the machine housing.
- After replenishing the oil, replace the expansion reservoir in its bracket and check filling level.
- Check whether oil is present in coiled relief hose (3) for the seals of the double screw drive shafts. If this should be the case, the seals of the double screw drive must be replaced, otherwise there is a risk of oil getting into the double screws.



- 1 Electrical case
- 2 Expansion reservoir
- 3 Relief hose

Fig. 7-8  
Oil level of double screw drive

- Attach the electrical case and re-fit the housing cover.



#### Warning!

Inform VEMAG Customer Service immediately if there is oil in the relief hose. The seals of the double screw drive must be replaced before production is resumed.

## 7.8 Quarterly maintenance

### 7.8.1 Vacuum pump (oil change, screens, gas ballast valve)

**Danger!**

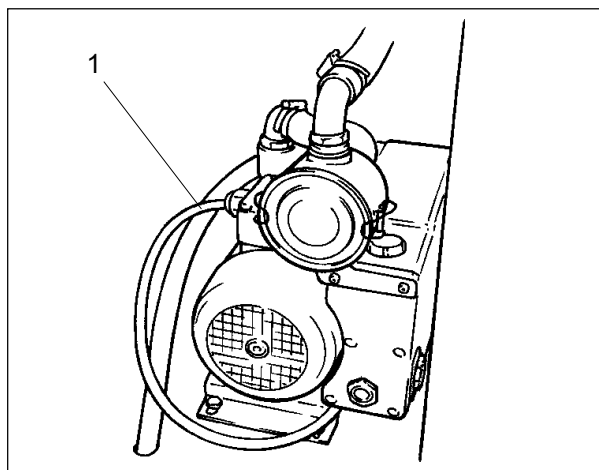
To prevent injury (burns) do not carry out the following work with the pump still warm from operation, but wait until the pump has cooled down.

Perform maintenance tasks on the vacuum pump in the following sequence:

- drain oil
- clean screen on the intake air side
- clean screens on the deoiler side
- clean screens for pipelines (intake and back-suction)
- top up oil
- clean gas ballast valve

The vacuum pump has to be removed to allow these maintenance tasks to be performed.

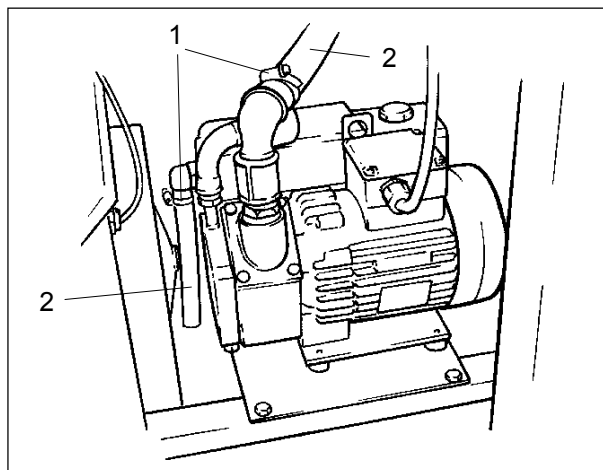
- Remove the housing cover on the left-hand side of the machine (outlet side).
- Disconnect connecting cable (1).



1 Connecting cable

Fig. 7-9  
Removing the vacuum pump

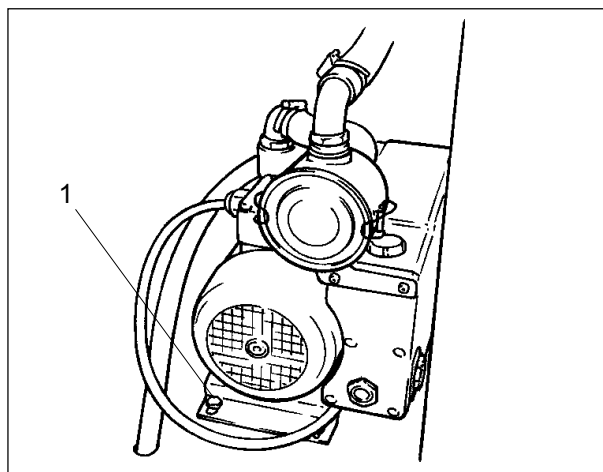
- Undo the two hose clamps (1) and pull off the two hoses (2).



- 1 Hose clamp
- 2 Hose

Fig. 7-10  
Removing the vacuum pump

- Undo the two assembly bolts (1) used to fix the vacuum pump to the base plate.



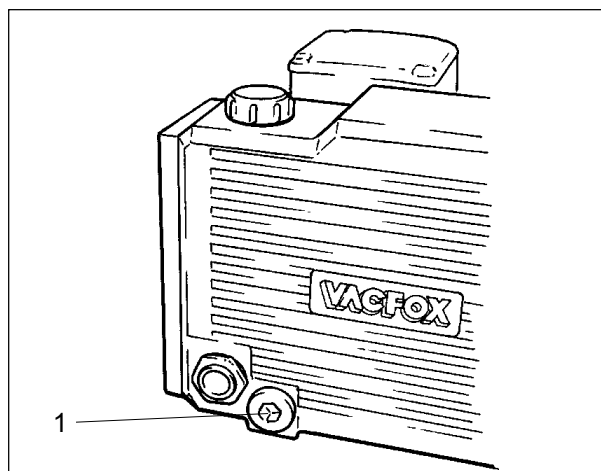
- 1 Assembly bolt

Fig. 7-11  
Removing the vacuum pump

- Lift the vacuum pump forwards out of the machine.

There is a drain screw on the side of the pump housing for draining off used oil.

- Put the vacuum pump down so that a suitable container can be placed under drain screw (1).
- Undo the drain screw and drain off the used oil. Then tighten the drain screw back up.

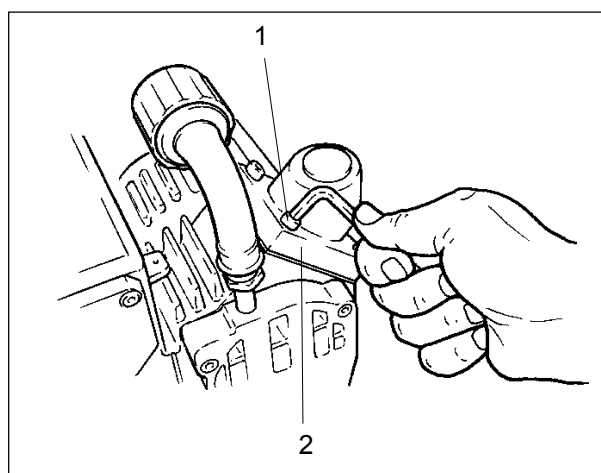


1 Drain screw

Fig. 7-12  
Draining oil out of the  
vacuum pump

There is a screen in the angled flange of the intake air side which needs to be checked for contamination and cleaned.

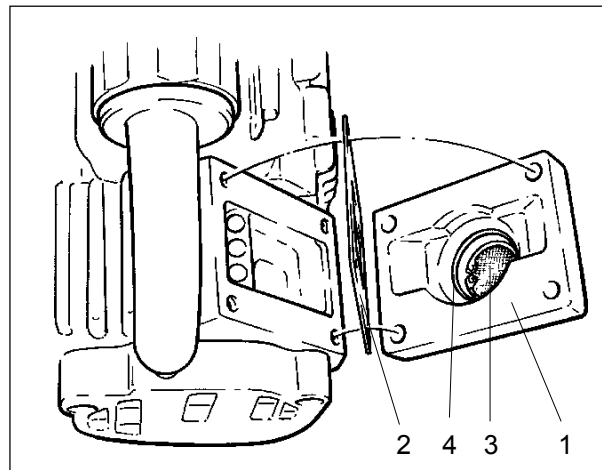
- Undo the four assembly bolts (1) of angled flange (2).



1 Assembly bolt  
2 Angled flange

Fig. 7-13  
Removing the angled  
flange (intake air side)

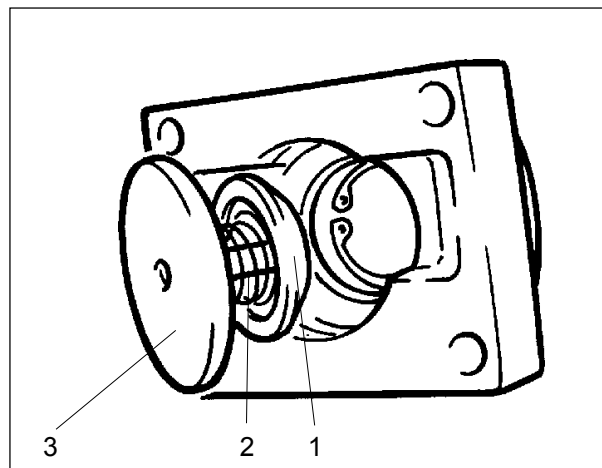
- Remove angled flange (1) and seal (2).
- Take the valve guide, compression spring and valve disc out of the angled flange.
- Clean screen (3) by blowing it out. If it is severely contaminated, replace it.
- Replace O-ring (4).



- 1 Angled flange
- 2 Seal
- 3 Screen
- 4 O-ring

Fig. 7-14  
Cleaning the screen  
(intake air side)

- Replace valve disc (1), compression spring (2) and valve guide (3) in the angled flange.



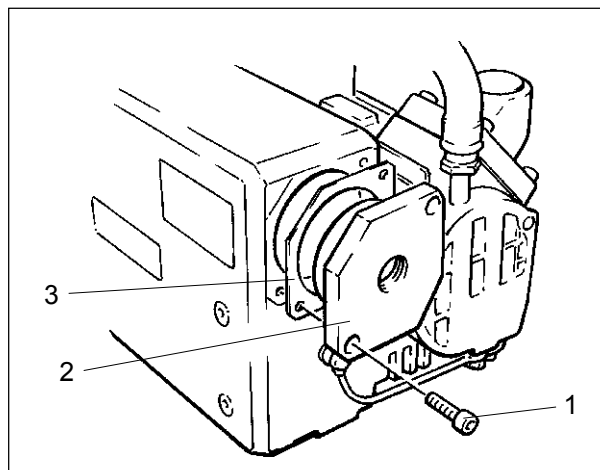
- 1 Valve disc
- 2 Compression spring
- 3 Valve guide

Fig. 7-15  
Assembling the angled  
flange (intake air side)

- Fit the angled flange together with a new seal.

There are two screens in the blow-out cover of the deoiler side which have to be checked for contamination and cleaned.

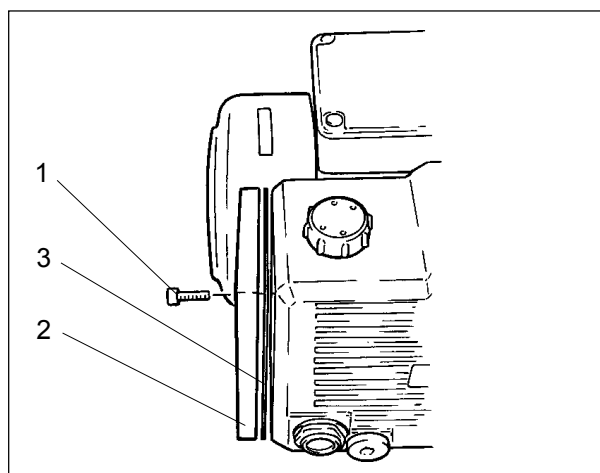
- Undo the two assembly bolts (1) and remove blow-out cover (2) and seal (3).
- Clean the screens by blowing them out. If they are severely contaminated, replace them.



- 1 Assembly bolt
- 2 Blow-out cover
- 3 Seal

Fig. 7-16  
Removing the blow-out  
cover (deoiler side)

- Undo the six assembly bolts (1) and remove front cover (2) and seal (3).

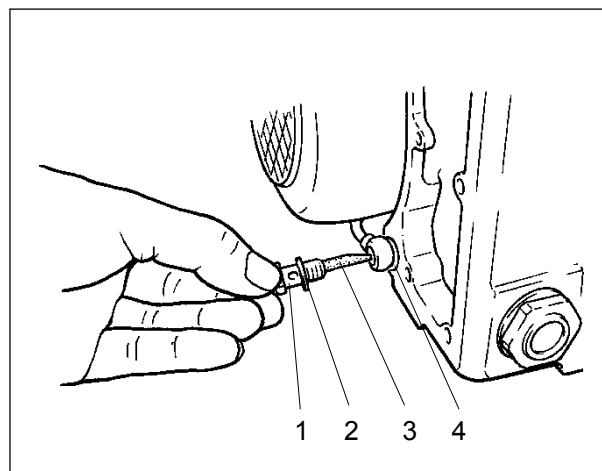


- 1 Assembly bolt
- 2 Cover
- 3 Seal

Fig. 7-17  
Removing the cover  
(deoiler housing)

There are two intake screens in the deoiler housing of the vacuum pump (intake and back-suction). The intake screens need to be checked for contamination and cleaned.

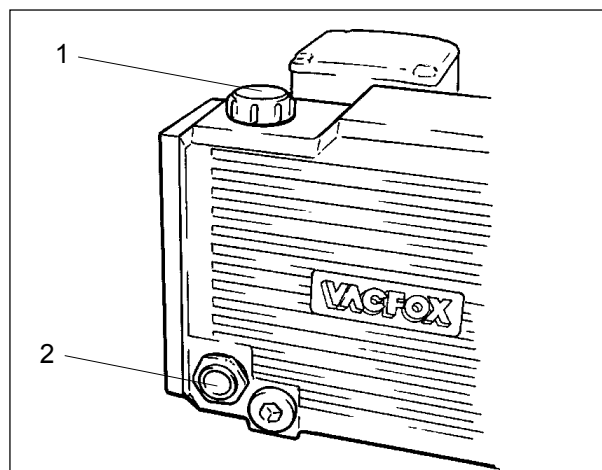
- Undo banjo bolt (1) on each side of the deoiler housing and take it out of the opening together with sealing ring (2) and intake screen (3).
- Clean the intake screens by blowing them out. If they are severely contaminated, replace them.
- When assembling, ensure that second sealing ring (4) is fitted between the housing and the connection.



- 1 Banjo bolt
- 2 Sealing ring
- 3 Intake screen
- 4 Sealing ring

Fig. 7-18  
Cleaning the intake screens

- Fit the blow-out cover and the front cover of the deoiler housing with a new seal each.
- Fill the oil reservoir with oil through filler neck (1) to at least half way up sight glass (2).



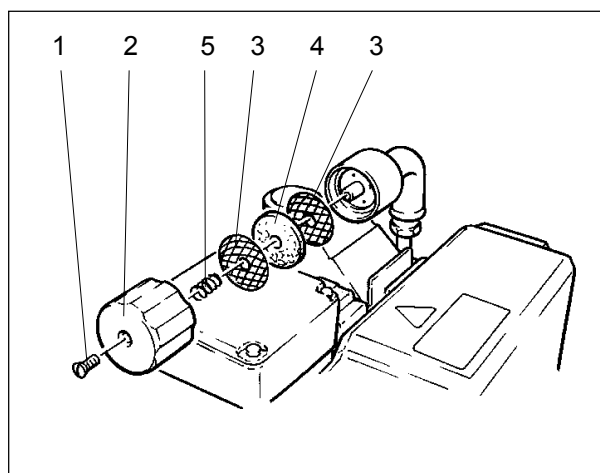
- 1 Filler neck
- 2 Sight glass

Fig. 7-19  
Changing the oil in the vacuum pump



If the pump housing is very dirty, the gas ballast valve of the vacuum pump will need to be cleaned.

- Undo screw (1) and take off cap (2).
- Take out the screens (3) and the nonwoven (4) with spring (5).
- Clean the filter elements by blowing them out.



- 1 Screw
- 2 Cap
- 3 Screen
- 4 Nonwoven
- 5 Spring

Fig. 7-20  
Gas ballast valve of  
vacuum pump

- Re-fit the components in reverse sequence after cleaning.
- Put the vacuum pump back in the machine and tighten the two assembly bolts in the base plate back up.
- Reattach the connecting cable and the hoses.
- Re-fit the housing cover.

## **7.9 Six-monthly maintenance**

### **7.9.1 Feed unit seals**

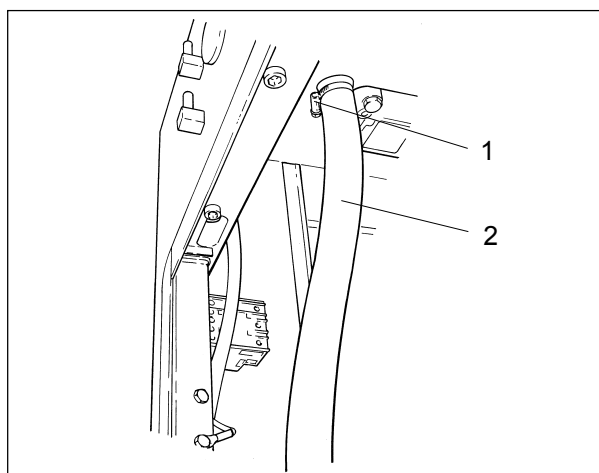
- Have the feed unit seals checked by VEMAG Customer Service.

## 7.10 Annual maintenance

### 7.10.1 Hydraulic drive (oil change and filter cartridge)

To change the hydraulic oil, the oil reservoir for the hydraulic drive is fitted with a drain hose, the free end of which is secured to a blind connector by a jubilee clip.

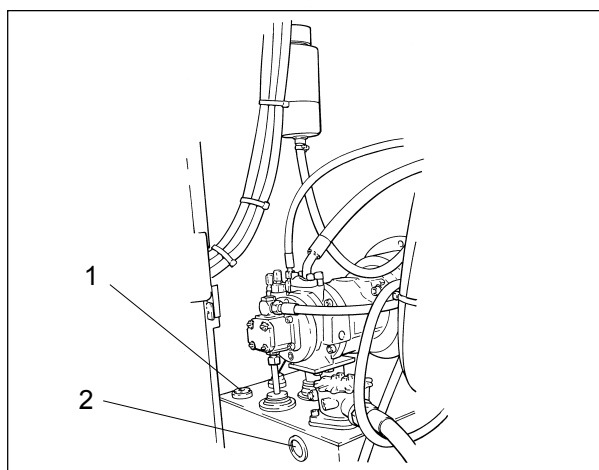
- Remove the housing cover above the stop bar for the trolley hoist on the right-hand side and on the outlet side of the machine.
- Undo the jubilee clip (1) and pull the drain hose (2) off the blind connector. Drain off the oil into a suitable container outside the machine.



1 Hose jubilee clip  
2 Drain hose

Fig. 7-21  
Draining the hydraulic oil

- Then plug the drain hose back onto the blind connector and secure it with the jubilee clip.
- Fill the tank with fresh oil through the filling opening (1) to rinse the tank and then drain this oil off again.
- Fill the tank with fresh oil through the filling opening to at least half-way up the sight glass (2).

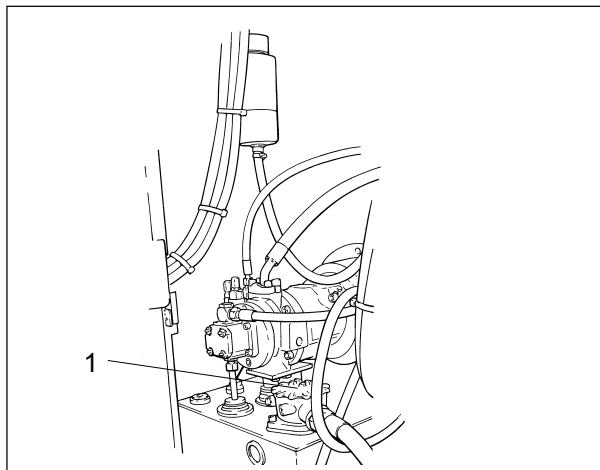


1 Filling opening  
2 Sight glass

Fig. 7-22  
Hydraulic drive oil change

A return filter with a filter cartridge which can be changed is located on the tank of the hydraulic drive.

- Remove the screw cap on the return filter (1) and replace the filter cartridge.



1 Return filter

Fig. 7-23  
Filter cartridge for return  
filter

- Then screw the screw cap back onto the filter
- Re-fit the housing cover.

#### 7.10.2 Feed unit drive and feed unit seals

- Have the feed unit checked by VEMAG Customer Service and the feed unit seals replaced.

### 7.10.3 Vacuum pump (air de-oiling element)

The vacuum pump air de-oiling element can become contaminated by particles of dirt in the air drawn in after a prolonged operating period. As it cannot be cleaned, the air de-oiling element has to be replaced.



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**Warning!**

The oil must be drained off before the air de-oiling element is replaced.

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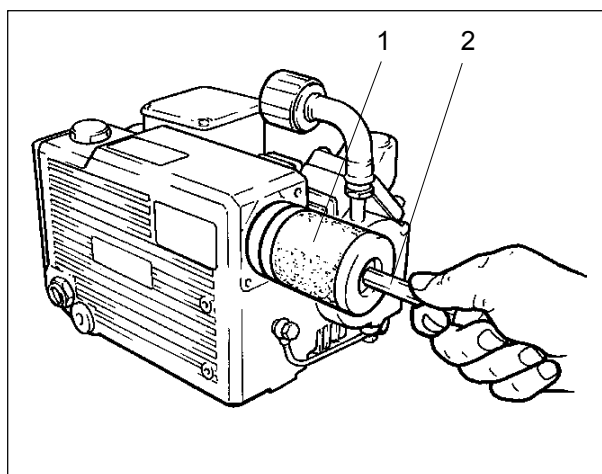
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**Danger!**

To prevent injury (burns) do not carry out the following work with the pump still warm from operation, but wait until the pump has cooled down.

---

- Lift the vacuum pump forwards out of the machine.  
→ Section 7.8.1
- Remove the blow-out cover and the seal.  
→ Section 7.8.1
- Undo air deoiler element (1) with the aid of Allen key (2) and pull it out.
- Replace the air deoiler element. Re-use the O-rings.



- 1 Air deoiler element
- 2 Allen key

Fig. 7-24  
Vacuum pump air de-oiling element

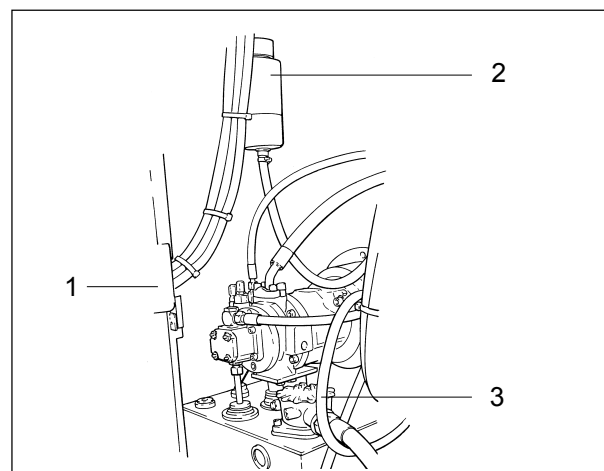
- Tighten the new air deoiler element hand-tight.

## 7.11 Biennial maintenance

### 7.11.1 Double screw drive (oil change)

The oil in the double screw drive should be changed every two years.

- Remove the housing cover above the stop bar for the trolley hoist on the right-hand side of the machine.
- Undo the retaining screw and swivel out the electrical case (1).
- Unscrew the cover of the expansion reservoir (2), holding the reservoir steady in the other hand, and take it out of its bracket. You must hold the reservoir upright so that no oil escapes. The connecting hose to the double screw drive is long enough to enable filling to take place outside the machine housing.
- Drain the used oil into a suitable container.
- Then fill the expansion reservoir with fresh oil and attach the expansion reservoir back in its bracket after replenishing it. Check the filling level. The oil should come at least to the marking on the reservoir.
- Check whether oil is present in coiled relief hose (3) for the seals of the double screw drive shafts. If this should be the case, the seals in the double screw drive must be replaced, otherwise there is a risk of oil getting into the double screws.



- 1 Electrical case
- 2 Expansion reservoir
- 3 Relief hose

Fig. 7-25  
Changing double screw  
drive oil

- Attach the electrical case and re-fit the housing cover.



#### **Warning!**

Inform VEMAG Customer Service immediately if there is oil in the relief hose. The seals of the double screw drive must be replaced before production is resumed.

## 8. Troubleshooting

### 8.1 General information

Any attachments or additional devices (optional) which may be present should be disconnected from the filling machine for troubleshooting purposes. The relevant safety instructions must be followed. Possible faults, causes and the measures you need to take to remedy them are listed below.

### 8.2 Troubleshooting table

Fault	Cause	Remedy
<b>Machine does not start; display shows "PLEASE START MACHINE".</b>	<ul style="list-style-type: none"> <li>• Step folded out.</li> <li>• Hopper open.</li> <li>• No filling horn holder.</li> </ul>	<ul style="list-style-type: none"> <li>• Source of fault shown in display. Check part displayed.</li> </ul>
<b>Main motor and vacuum motor not running.</b>	<ul style="list-style-type: none"> <li>• No mains voltage.</li> <li>• Main switch not on.</li> <li>• Filling horn holder not closed; hopper not closed; step not folded up.</li> <li>• Fuse F23/F24/F25 faulty.</li> <li>• Main drive overheated; fan on oil cooler not running.</li> <li>• Vacuum drive overheated; vacuum pump full of water.</li> </ul>	<ul style="list-style-type: none"> <li>• Have machine back-up fuse replaced by electrician.</li> <li>• Switch on main switch.</li> <li>• Make machine ready for operation; faults are shown in display.</li> <li>• Have fuses replaced by electrician.</li> <li>• Have fuse F30 replaced by electrician.</li> <li>• Check vacuum pump; fault is shown in display.</li> </ul>
<b>Main motor running, vacuum motor not running.</b>	<ul style="list-style-type: none"> <li>• Fuse F20/21/22 defective.</li> <li>• Contactor K2 defective.</li> </ul>	<ul style="list-style-type: none"> <li>• Have fuses replaced by electrician.</li> <li>• Have contactor replaced by electrician.</li> </ul>
<b>Main motor running, but double screw drive and feed unit drive not running.</b>	<ul style="list-style-type: none"> <li>• Fuse F50/F51 defective.</li> <li>• Knee lever switch incorrectly set or defective.</li> <li>• Fuse F2/F3/F4/F5/F6/F9 defective or fuse F33 on strip terminal defective.</li> <li>• Proportional amplifier, relief valve, power electronics or portioning computer defective.</li> <li>• Rotary transducer, drive belt for rotary transducer or wiring for rotary transducer defective.</li> </ul>	<ul style="list-style-type: none"> <li>• Have fuses on power unit replaced by electrician.</li> <li>• Have knee lever switch checked by electrician and, if necessary, adjusted or replaced.</li> <li>• Have fuses on power supply unit replaced by electrician, fault is shown in display.</li> <li>• Operate test keys 1 + 2 on the power electronics, check LED, replace defective part.</li> <li>• Check parts, replace defective part, fault is shown in display.</li> </ul>

<b>Fault</b>	<b>Cause</b>	<b>Remedy</b>
<b>Machine feeds continuously in portioning mode.</b>	<ul style="list-style-type: none"> <li>• Portioning computer or power electronics defective.</li> </ul>	<ul style="list-style-type: none"> <li>• Have parts replaced by electrician.</li> </ul>
<b>Display does not light up.</b>	<ul style="list-style-type: none"> <li>• Fuse F1/F8 defective.</li> <li>• Fuse F31/F32 defective.</li> <li>• Display, power supply or portioning computer component defective.</li> <li>• Plug connection X12 on portioning computer has come loose.</li> </ul>	<ul style="list-style-type: none"> <li>• Have fuse on power supply unit replaced by electrician.</li> <li>• Have fuse on strip terminal replaced by electrician.</li> <li>• Replace defective part.</li> <li>• Have plug connection checked by electrician.</li> </ul>
<b>Linking failed or unsatisfactory.</b>	<ul style="list-style-type: none"> <li>• Wiring defective, valve Y4.</li> <li>• Power component or portioning computer defective.</li> <li>• Fuse F10/F11/F12 defective.</li> <li>• Linking gear overloaded.</li> </ul>	<ul style="list-style-type: none"> <li>• Check wiring, voltage is shown by LED at the valve plug.</li> <li>• Operate test key 3 on the power electronics, check LED, replace defective part.</li> <li>• Have fuses replaced by electrician.</li> <li>• Fault is shown in display.</li> </ul>
<b>Vacuum level not reached, vacuum unstable.</b>	<ul style="list-style-type: none"> <li>• Leak in vacuum system.</li> <li>• Water or product residues in line to display.</li> <li>• Air de-oiling element contaminated.</li> <li>• Vacuum display defective.</li> </ul>	<ul style="list-style-type: none"> <li>• Check vacuum system.</li> <li>• Clean or replace line.</li> <li>• Replace air de-oiling element.</li> <li>• Replace vacuum display.</li> </ul>
<b>Lifting/tipping device (optional) not functioning.</b>	<ul style="list-style-type: none"> <li>• Valve is not actuated or is defective.</li> </ul>	<ul style="list-style-type: none"> <li>• Check valve, voltage is shown by LED below the valve plug.</li> </ul>
<b>Air trapped in product.</b>	<ul style="list-style-type: none"> <li>• Unsuitable or worn double screw.</li> <li>• Vacuum display fluctuating or too low.</li> <li>• Air relief bores in double screw housing blocked.</li> <li>• Too much air blended in.</li> <li>• Vacuum system blocked.</li> </ul>	<ul style="list-style-type: none"> <li>• Check double screws.</li> <li>• Check vacuum system for leaks, paying special attention to the double screw drive seal. If the vacuum display is fluctuating, the vacuum pump is taking in air. In this case, check the float in the valve.</li> <li>• Open air relief bore using the setting screws.</li> <li>• Use mixing speed during the final bowl-cutting phase.</li> <li>• Check complete vacuum system for free flow.</li> </ul>



Fault	Cause	Remedy
<b>Weight fluctuations.</b>	<ul style="list-style-type: none"> <li>• Unsuitable double screw.</li> <li>• Double screw and double screw housing worn.</li> <li>• Insufficient vacuum, vacuum unstable (vacuum display fluctuating).</li> <li>• Digital rotary transducer defective.</li> <li>• Deformed feed screw, wrong double screw set.</li> </ul>	<ul style="list-style-type: none"> <li>• Check double screw, use 48 mm double screw pitch for portioning small portions.</li> <li>• Measure double screw and double screw housing for wear with a feeler gauge. Air gap between screw and housing max. 0.5 mm.</li> <li>• Close air relief bores in double screw housing. Check vacuum system.</li> <li>• Replace digital rotary transducer.</li> <li>• Check feed screw. Gap between bottom edge of feed screw and top edge of housing must be 110 - 120 mm.</li> </ul>
<b>Display "OIL TEMPERATURE TOO HIGH".</b>	<ul style="list-style-type: none"> <li>• Fuse F30 or fan defective.</li> <li>• Air ducts contaminated.</li> </ul>	<ul style="list-style-type: none"> <li>• Have defective part replaced by electrician.</li> <li>• Clean air ducts.</li> </ul>
<b>Drop in output.</b>	<ul style="list-style-type: none"> <li>• Double screw and double screw housing worn.</li> <li>• Vacuum too low.</li> <li>• Deformed feed screw.</li> </ul>	<ul style="list-style-type: none"> <li>• Check double screw and double screw housing for wear. Measure air gap between double screw and double screw housing.</li> <li>• Check vacuum setting. The vacuum should be set so that there is no product in the vacuum pot.</li> <li>• Check feed screw. Gap between the bottom edge of the feed screw and the top edge of the housing must be 110 - 120 mm.</li> </ul>
<b>Raw sausage smears.</b>	<ul style="list-style-type: none"> <li>• Unsuitable double screw.</li> <li>• Insufficient vacuum, vacuum unstable (vacuum display fluctuating).</li> <li>• Product temperature too high.</li> </ul>	<ul style="list-style-type: none"> <li>• Select suitable double screw. Check product feed for lumps.</li> <li>• Check vacuum system.</li> <li>• Reduce product temperature.</li> </ul>



## **9. Appendix**

### **9.1 General information**

Below you will find the technical details relating to the machine and information about the lubricants to be used, about accessories and tools required.

Please give the machine number in the event of any query to VEMAG Customer Service or its agents. You will find this on the rating plate on the rear of the filler. It is also embossed on the machine frame.

**9.2 Technical data ROBOT HP7C / HP10C / HP15C / HP17C**

Filling output	HP7C:	up to 3,800 kg/h (depends on feed element)
	HP10C:	up to 5,800 kg/h (depends on feed element)
	HP15C:	up to 14,000 kg/h (depends on feed element)
	HP17C:	up to 6,000 kg/h (depends on feed element)
Portion size:	5 - 60,000 g adjustable in increments of 0.1 g or 1 g	
Portion speed:	> 700 portions/min. (depends on product, casing and portion size)	
Number of links:	0 - 10, infinitely adjustable	
Vacuum pump rating:	15 m <sup>3</sup> /h	
Hopper capacity:	250 l/350 l (optional)	
Height adjustable by:	80 mm (1,000 - 1,080 mm)	
Total weight including lifting/ tipping device (optional):	approx. 1,300 kg	
Noise emission:	< 75 dB (A)	
Total nominal output	HP7C:	9.5 kW at 50 Hz / 12 kW at 60 Hz
	HP10C:	13 kW at 50 Hz / 60 Hz
	HP15C:	17 kW at 50 Hz / 60 Hz
	HP17C:	17 kW at 50 Hz / 60 Hz
Main motor	HP7C:	7,5 kW at 50 Hz / 12 kW at 60 Hz
	HP10C:	11 kW at 50 Hz / 60 Hz
	HP15C:	15 kW at 50 Hz / 60 Hz
	HP17C:	15 kW at 50 Hz / 60 Hz

	<u>Mains voltage</u>	<u>Frequency</u>	<u>Nominal current</u>	<u>Back-up fuse</u>
HP7C/HP10C:	380 - 400 V	50 Hz	21 A	35 A
	220 - 230 V	50 Hz	36 A	63 A
	380 - 460 V	60 Hz	20 A	35 A
	220 - 265 V	60 Hz	35 A	63 A
HP15C/HP17C:	380 - 400 V	50 Hz	27 A	50 A
	220 - 230 V	50 Hz	47 A	80 A
	380 - 460 V	60 Hz	25 A	50 A
	220 - 265 V	60 Hz	46 A	80 A

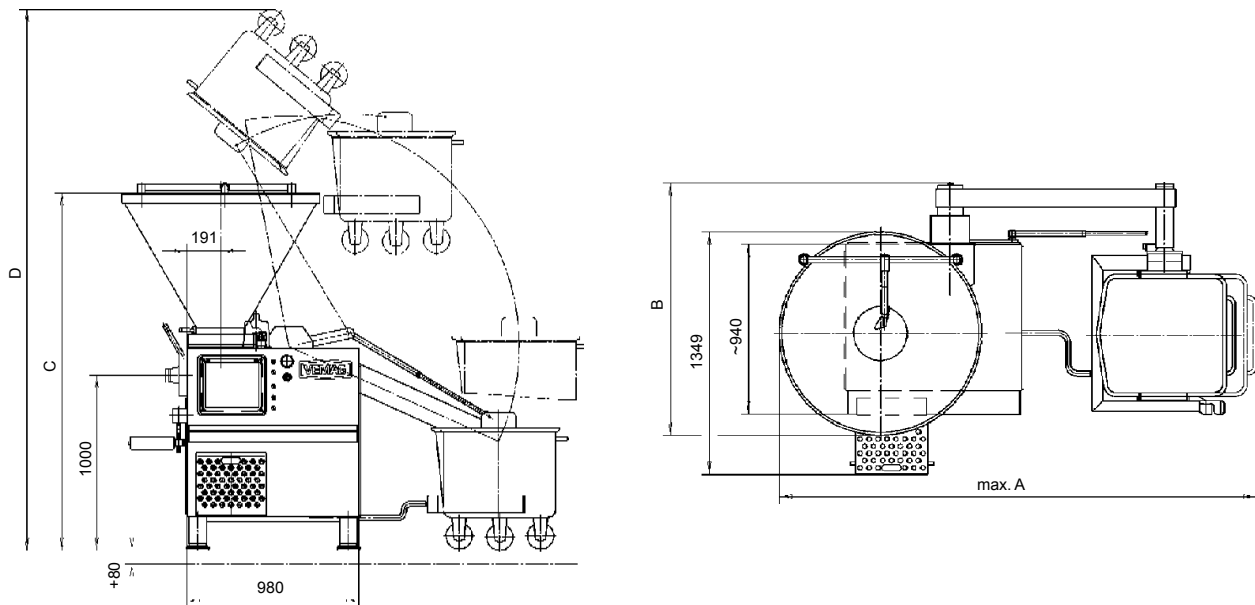
Electrical fittings: to DIN EN 60204-1

Protection (exterior): IP 65

Protection (interior): IP X3

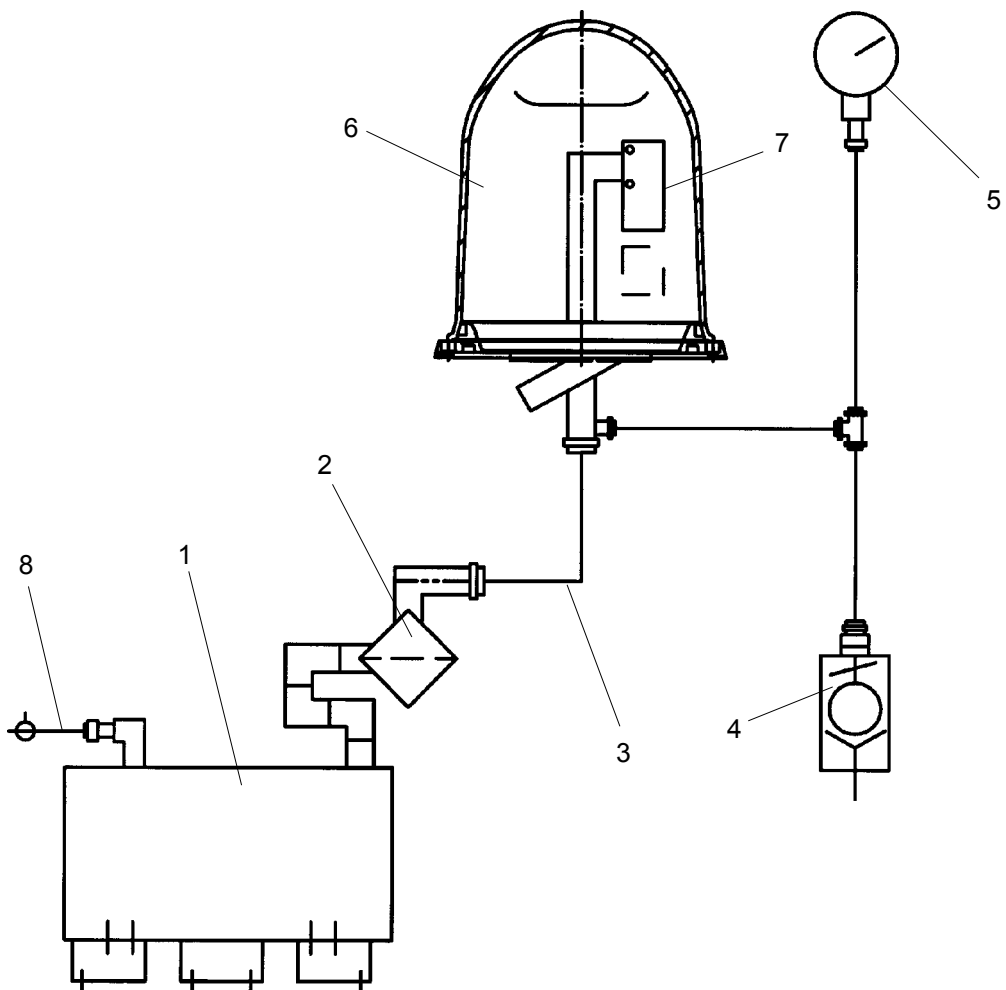
Type of mains connection for TNS mains equipment protection class I  
(earth wire)

**9.3 ROBOT HP7C / HP10C / HP15C / HP17C dimensional drawings**



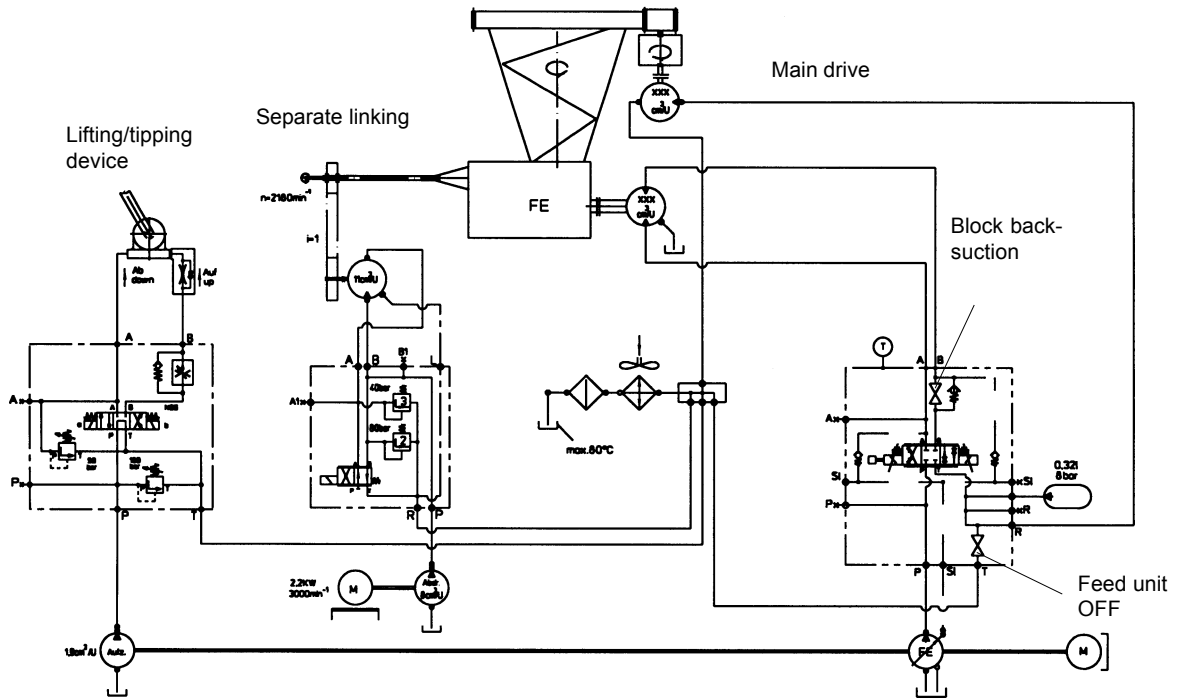
	250   hopper350	hopper
A	2505	2665
B	1340	1400
C	1935	2040
D	min. 2940 max. 2995	min. 3040 max. 3090

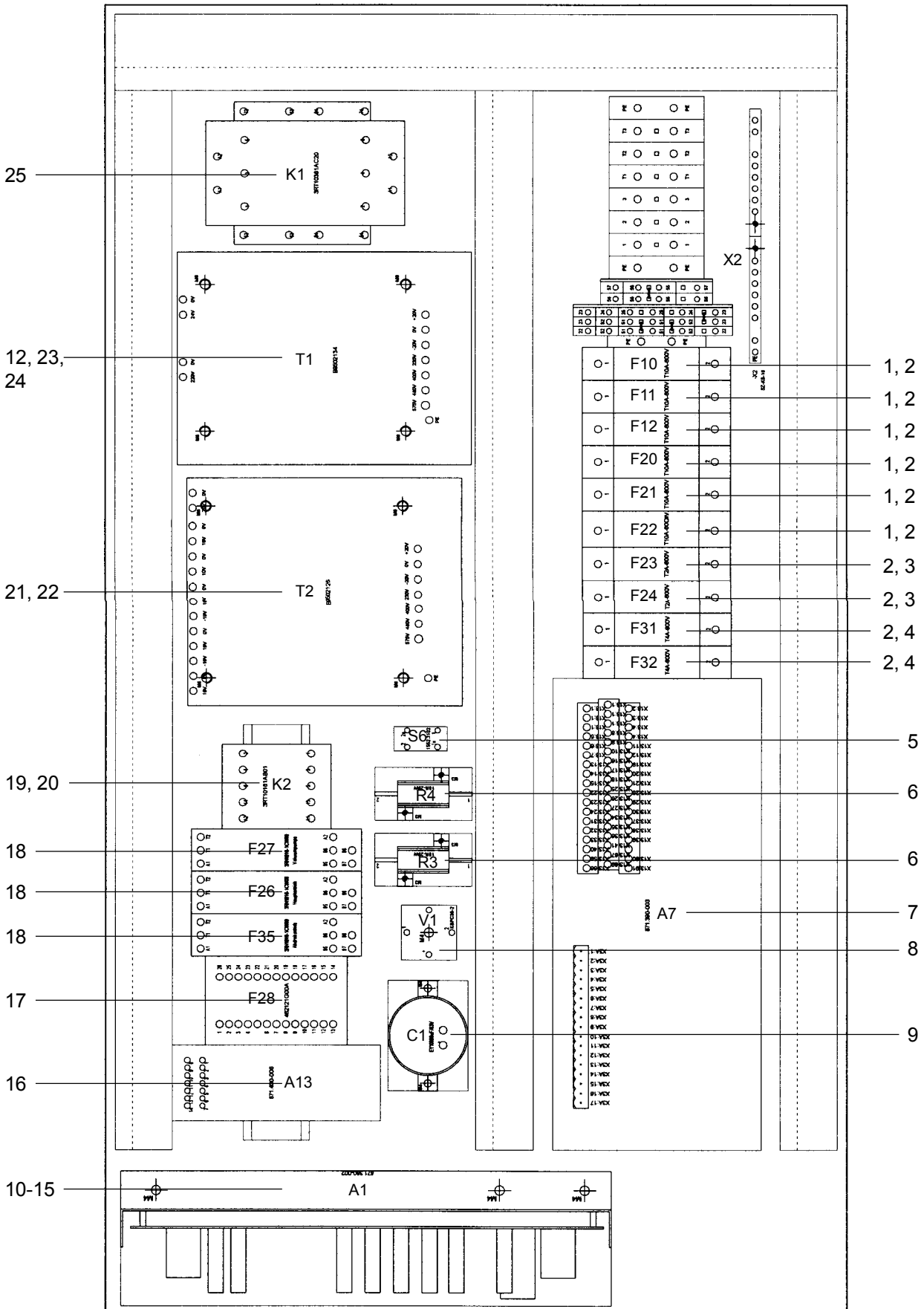
## 9.4 Vacuum system



- |   |                           |   |                  |
|---|---------------------------|---|------------------|
| 1 | Vacuum pump               | 5 | Vacuum display   |
| 2 | Air filter in intake line | 6 | Vacuum pot       |
| 3 | Intake line               | 7 | Float valve      |
| 4 | Vacuum control valve      | 8 | Exhaust air hose |

9.5 Hydraulics plan



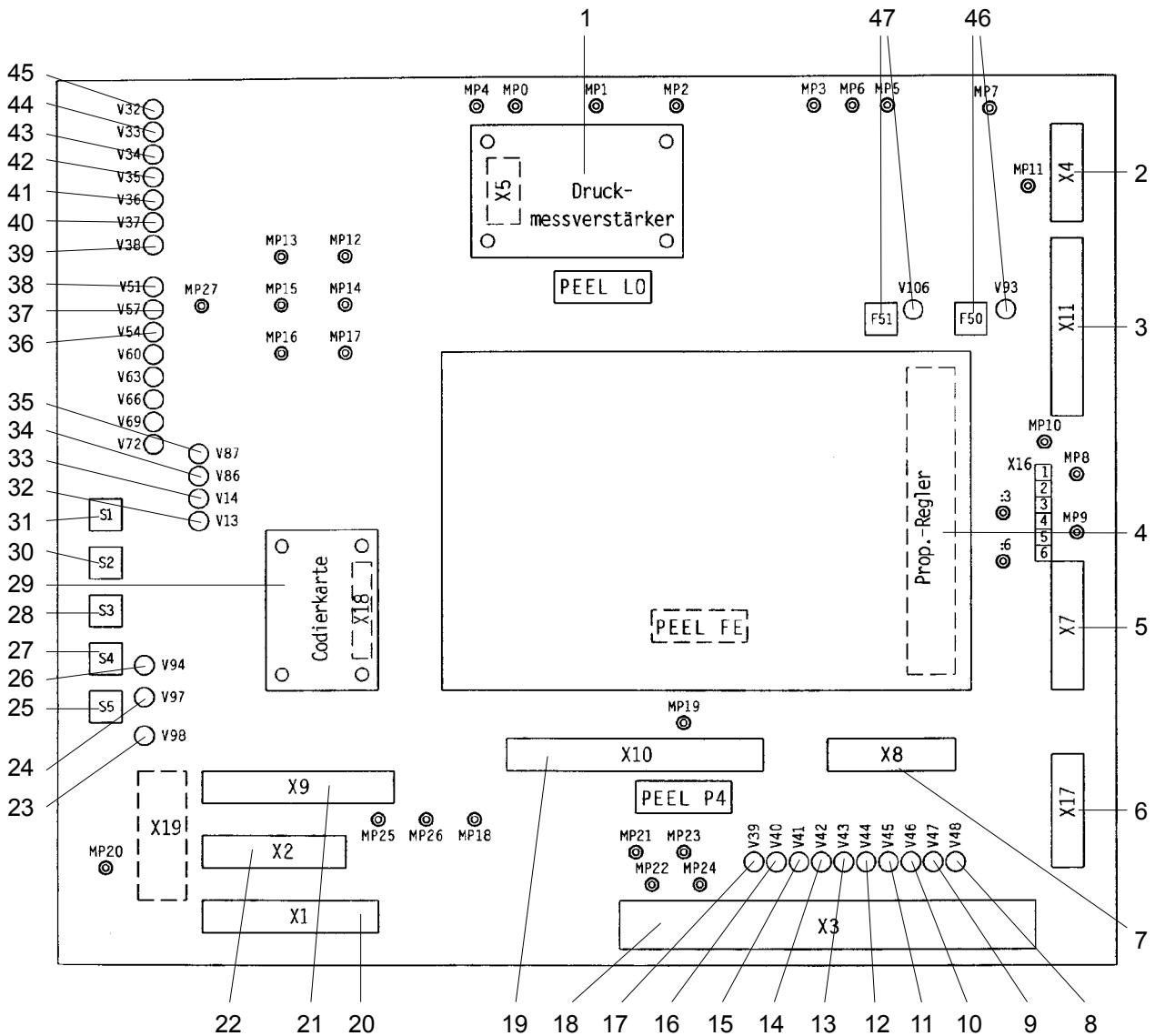




## 9.6 Electrical control panel

1	Fuse	F10-F12, F20-F22
2	Fuse holder	
3	Fuse	F23, F24
4	Fuse	F31, F32
5	Rocker switch for emergency operation	S6
6	Wire resistor	R3, R4
7	Terminal module compl.	A7
8	Bridge rectifier	V1
9	Capacitor	C1
10	Power supply compl.	A1
11	Fuse	
12	Fuse	
13	Fuse	
14	Fuse	
15	Fuse	
16	Hoist module	A13
17	Central unit	F28
18	Thermistor	F26, F27, F35
19	Main contactor	K2
20	RC element	
21	Transformer	T2
22	Fuse	
23	Transformer	T1
24	Fuse	
25	Main contactor	K1

9.7 Power electronics



- |  |   |
|--|---|
| 1 Pressure measuring amplifier           | 25 Test key: feed unit 80   |
| 2 Plug for pressure sensor               | 26 LED: feed unit 125   |
| 3 Plug for valves                        | 27 Test key: feed unit 125  |
| 4 Relief valve control                   | 28 Test key: linking  |
| 5 Plug for rotary transducer             | 29 Coding card  |
| 6 Plug for displacement transducer       | 30 Test key: back-suction   |
| 7 Plug strip terminal X8                 | 31 Test key: fill   |
| 8 LED: oil temperature monitor           | 32 LED: A-C remote control contact                                |
| 9 LED: main drive motor thermistor fuse  | 33 LED: filling horn holder                                       |
| 10 LED: vacuum motor thermistor fuse     | 34 LED: rotary transducer for filling direction                   |
| 11 LED: main contactor K1 (safety chain) | 35 LED: rotary transducer for pulses                              |
| 12 LED: supply voltage V +24V            | 36 LED: delayed portioning signal (coex) to remote control socket |
| 13 LED: supply voltage LE -15V           | 37 LED: linking or portioning signal to remote control socket     |
| 14 LED: supply voltage LE +15V           | 38 LED: portioning or clipping signal to remote control socket    |
| 15 LED: supply voltage PC -15V           | 39 LED: back-suction  |
| 16 LED: supply voltage PC +15V           | 40 LED: PC enabled  |
| 17 LED: supply voltage F +24V            | 41 LED: clip  |
| 18 Plug for voltage supply               | 42 LED: remote control  |
| 19 Plug for PC inputs                    | 43 LED: knee lever  |
| 20 Plug for remote control inputs        | 44 LED: link  |
| 21 Plug for PC outputs                   | 45 LED: portion   |
| 22 Plug for remote control outputs       | 46 Fuse for linking valve   |
| 23 LED: feed unit OFF                    | 47 Fuse for portioning valve                                      |
| 24 LED: feed unit 80                     |   |

## 9.8 Lubricants

### 9.8.1 Double screw drive

Type of oil:	transmission oil
Oil capacity:	approx. 3.2 l
Viscosity class:	ISO VG 100 to DIN 51519
Quality:	C-LP to DIN 51502
Example:	Shell Omala oil 100 (order no. 052.001.017)

### 9.8.2 Hydraulic drive

Type of oil:	hydraulic oil
Oil capacity:	approx. 40 l
Viscosity class:	ISO VG 46 to DIN 51519
Quality:	HLP to DIN 51524
Example:	Shell Tellus T46 (order no. 052.001.010)

### 9.8.3 Vacuum pump

Type of oil:	compressor oil
Oil capacity:	approx. 0.35 l
Viscosity class:	ISO VG 100 to DIN 51519
Quality:	VBL to DIN 51506
Example:	ARAL Motanol HV 100 (order no. 052.001.025)

### 9.8.4 Feed unit seals and feed unit drive

Type of grease:	high-performance grease which is safe for food use and resistant to cleaning agents and disinfectants
Example:	VEMAG special grease (order no. 052.008.026)

### 9.8.5 Individual parts

Type of oil:	white oil which is safe for food use and resistant to cleaning agents and disinfectants
Example:	VEMAG special oil (order no. 052.008.021)

## 9.9 Accessories

### 9.9.1 Double screw selection

The following double screws are recommended for setting up the filling machine as a function of the product to be processed.

Type of double screw	Application	Order no.
48/24-367HPZ	Portioning boiled sausage, up to 500 g	915.310.088
72/24-367HPZ	Portioning boiled sausage, > 500 g	916.310.088
48C-367HPZ 80/70	Portioning cooked sausage	942.338.000
48-367HPZ	Portioning salami without a grinder, up to 500 g	911.310.098
72-367HPZ	Portioning salami without a grinder, > 500 g	912.310.098
48C/72SC/48N-367HPZ	Portioning salami with a grinder, up to 500 g, grinding meat for processing, minced meat	942.378.639
66C/66SC/48N-367HPZ	Portioning salami with a grinder, > 500 g grinding meat for processing, minced meat	944.378.639
48C-367	Minced meat, for high-temperature applications (soups, sauces, processed curd cheese etc.)	942.378.009
72C/72SC/36N-367HPZ	for boiled ham, ground beef	945.348.720
112C/112SC/48N-452HPZ	for boiled ham, ground beef	947.448.930
24-367	for coextrusion applications, inner filling up to 50 g	910.310.088
48-367	for coextrusion applications, inner filling > 50 g, outer filling	911.310.098
48/72CSC/36-367	for bakery applications, white bread	915.370.088
72/72CSC/36-452	for bakery applications, wholegrain bread	916.420.088
72CSC/36-367	for bakery applications, mixed-grain and rye bread	916.370.088

### 9.9.2 Filling horn selection

The following filling horns are available for straight filling.

Horn dia. ø	Filling horns to DIN 9798	Filling horns with crowned outlet
8	901.100.080	-
9	901.100.090	-
10	901.100.100	-
12	901.100.120	-
13	901.100.130	-
14	901.100.140	-
15	901.100.150	-
16	901.100.160	901.500.160
18	901.100.180	901.500.180
20	901.100.200	901.500.200
22	901.100.220	901.500.220
24	901.100.240	901.500.240
28	901.100.280	901.500.280
30	901.100.300	901.500.300
35	901.100.350	901.500.350
40	901.100.400	901.500.400
45	901.100.450	-
50	901.100.500	-
55	901.100.550	-
60	901.100.600	-

### 9.9.3 Linking horns

The linking horn should be selected as a function of the casing holding device used. To select a suitable linking horn

→ Casing holding device / Length portioning device operating instructions

### 9.9.4 Miscellaneous accessories

Component	Use	Order no.
Filling horn holder	for 367 mm double screws	936.315.000
Filling horn holder	for 454 mm double screws	936.316.002
Filling horn nut	for attaching filling horn	930.100.017
Vacuum plug	vacuum opening	143.500.510
Cleaning plug	vacuum line intake pipe	142.300.600

**9.9.5 Tools**

The following tools are required for daily cleaning and for maintaining the machine.

<b>Tool</b>	<b>Use</b>	<b>Order no.</b>	<b>Scope of supply</b>
Grease gun	lubricating feed system	067.064.001	yes
Grease gun hose	lubricating feed system	067.064.002	yes
WAF 80/30/50 universal spanner	filling horn nut, adjustable feet, knee lever, linking head, trolley hoist	126.030.041	yes
WAF 13/17 double spanner	trolley hoist, mirror	069.120.131	yes
Face spanner	guard ring and setting ring on drive of lifting/tipping device (optional)	069.171.251	yes
Threaded screw extractor	double screws held at rear	110.930.010	yes
Hooked screw extractor	double screws held at front	110.930.111	-
Threaded screw extractor	double screws with tapering front	118.031.000	-
Extraction device	double screw housing	114.038.000	yes