
Universal Machines

UMM/SK 80 E - II

UM/HC 80 E

Operating Instructions

Do not switch on machine unless you are conversant with operating instructions!

Stephan Universal Machines

are manufactured in series and **each one** is tested for performance, reliability and safety.

Test data and performance certificates concerning your particular machine have been recorded to provide retrospective information regarding its building and testing.

In case of questions or when re-ordering, please quote the following information:

 Stephan			
A. STEPHAN u. SÖHNE HAMELN			
Type	kW	A	Baujahr
Motor	PS	Per/s	Betriebsdr. bar
Nr.	U/min	cos φ	Druckraum ltr.
Masch. Nr.	V	D-Mot. P 33 E	Temp. max. °C
Made in Western Germany			

Stephan Universal Machines

as described on the following pages are the result of careful design and are built in accordance with standard engineering practice.

The electrical equipment conforms to VDE 0113, the motor design complies with VDE 0530, and the machine conforms to German Safety Regulations.

All component parts which come into contact with food are manufactured from high-quality stainless steel or other approved materials.

For after-sales service, our technicians are available to answer any queries concerning the operation and maintenance of the equipment.

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	Page
1. Technical Data	4
2. Dimensions	5
3. Illustration	6
4. Description of Machine	8
5. Installation and Commissioning	10
6. Trial Run and Cleaning	11
7. Operating Instructions	12
8. Steam Preparation Station	17
9. Technical Inspection, Maintenance, Service	18
10. Excerpt from the German Safety Regulations	20
11. Spare Parts List / Important Spare Parts and Parts Subject to Wear	21
11.1 Support Group	22-23
11.2 Bowl Group	24-25
11.3 Lid Group	25-29
11.4 Inserts and Accessories Group	30-31
11.5 Motor Group	32-33
11.6 Control Panel Group (without Program Control)	34-35
11.7 Control Panel Group (with Program Control)	36-37
11.8 Accessories	38-39
11.9 Solid Separator Group	40

For specific data of your machine, please refer to the nameplate shown on the inside front cover of this manual (this is identical with the data on the actual nameplate fitted to the motor cover).

1. Technical Data

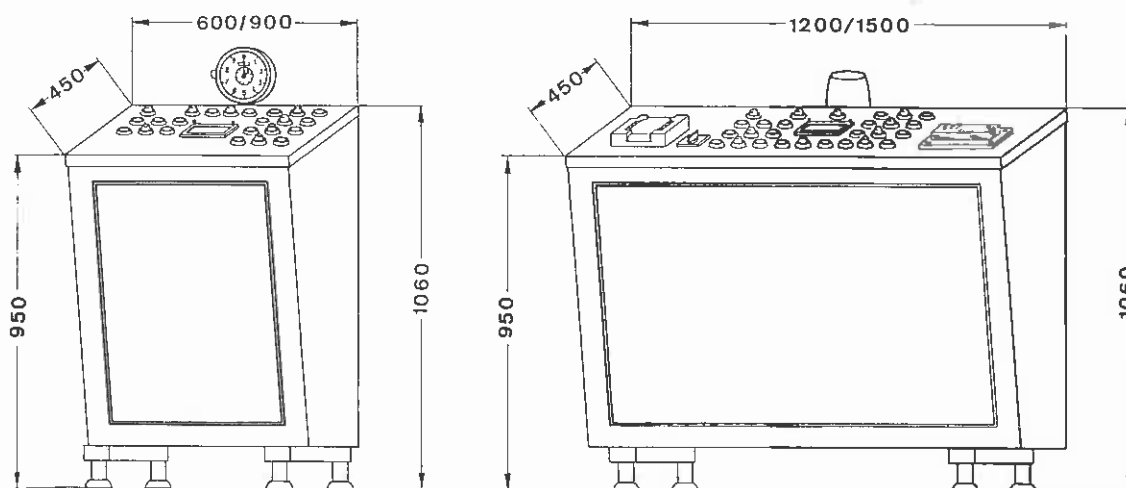
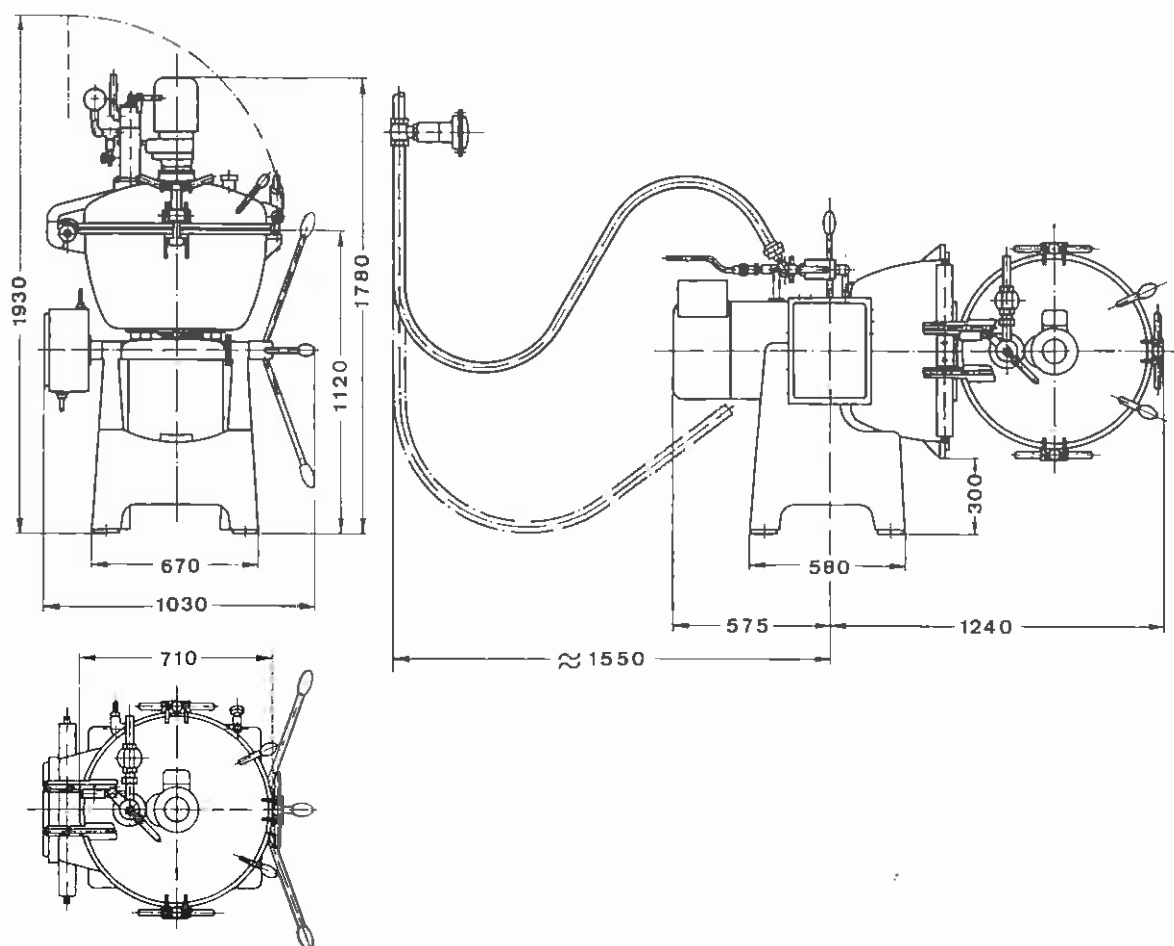
UMM/SK 80 E-II and UM/HC 80 E

Bowl capacity	approx. l	80	Fuses at 380 or 440 V (delayed action)	approx. A	80
Width x depth x height without control panel	approx. cm	103x95x178	Fuses at 200 or 220 V (delayed action)	approx. A	125
Weight: Machine net/gross*	approx. kg	590/790	Water tubing (max. permissible pressure 6,0 bar)		3/4 "
Control panel net/gross*	approx. kg	115/160	Steam tubing (max. permissible pressure 4,0 bar)		3/4 "
Case dimensions, seaworthy, Machine	approx. cm	185x130x130	Steam consumption per hour at about 3,5 bar	approx. kg	120
Control panel	approx. cm	150x106x60	at about 1,5 bar	approx. kg	60
Output per hour (depending on material)	approx. kg	600	Max. direct heating value	approx. °C	127
Motor output			Max. double jacket working pressure	approx. bar	2
n = 1500/3000 min ⁻¹ at 50 Hz	approx. kW	18,5/22	Vacuum pump with motor	approx. kW	1,1
1750/3500 min ⁻¹ at 60 Hz	approx. kW	18,5/22	Air intake at 80 % vacuum	approx. m ³ /h	13
or			Max. air pressure	approx. bar	10
n = 1500/3000 min ⁻¹ at 50 Hz	approx. kW	15/18,5			
1750/3500 min ⁻¹ at 60 Hz	approx. kW	15/18,5			
or					
n = 750/1500 min ⁻¹ at 50 Hz	approx. kW	10/17			
875/1750 min ⁻¹ at 60 Hz	approx. kW	10/17			
Motor output of mixing baffle					
n = 920/26,6 min ⁻¹ at 50 Hz	approx. kW	1,1			
1100/32 min ⁻¹ at 60 Hz	approx. kW	1,1			

* for seaworthy packing

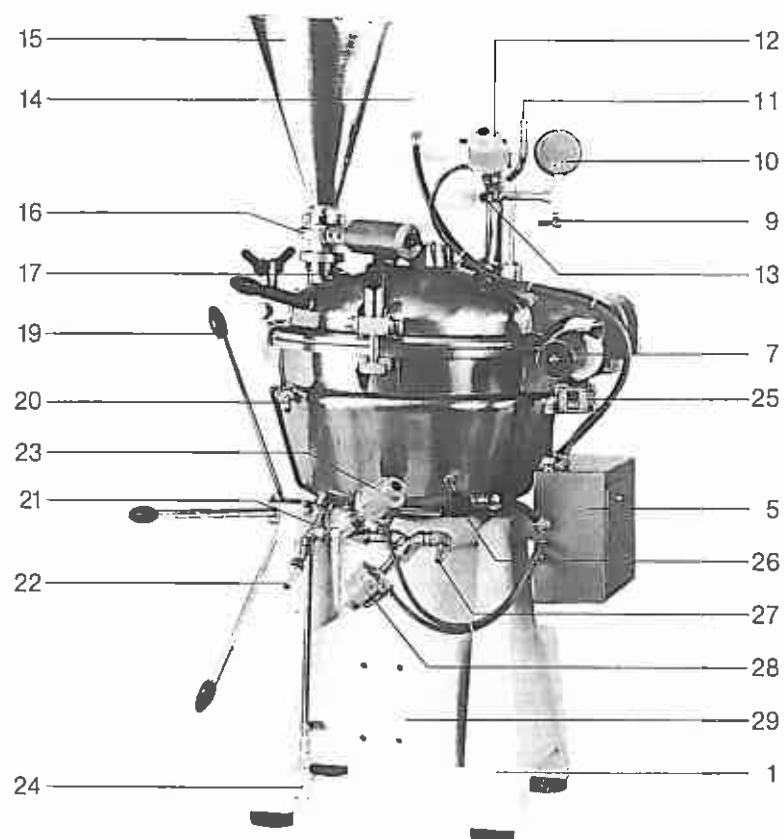
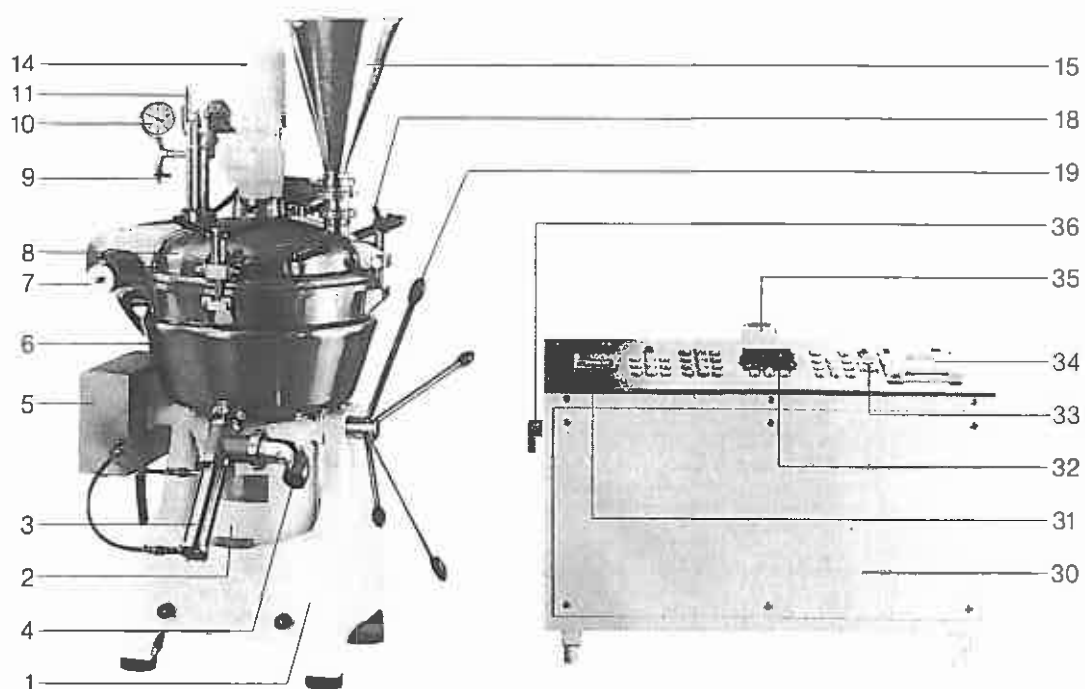
Technical modifications reserved

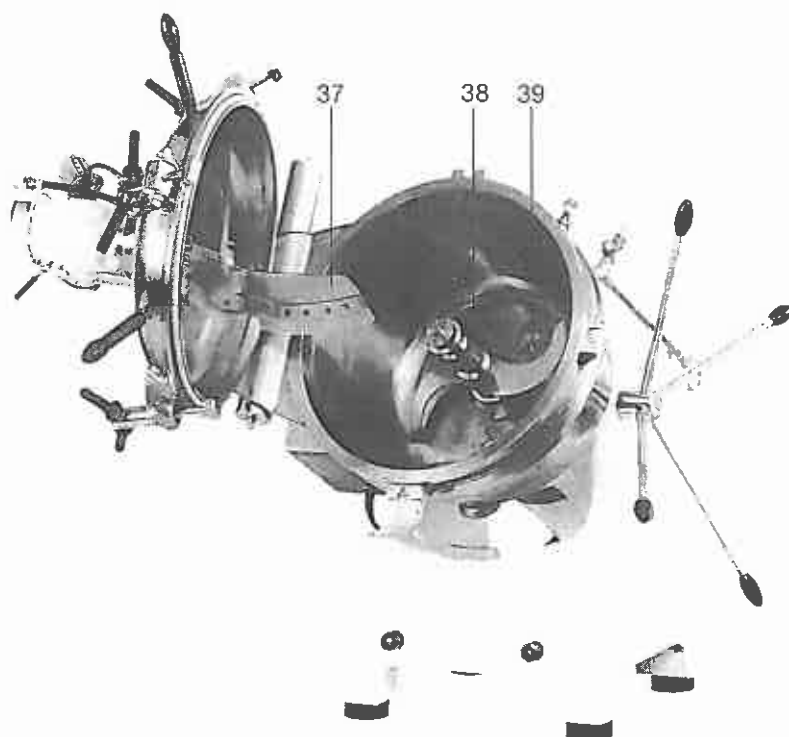
2. Dimensions



Dimensions in mm – changes in dimensions reserved

3. Illustration





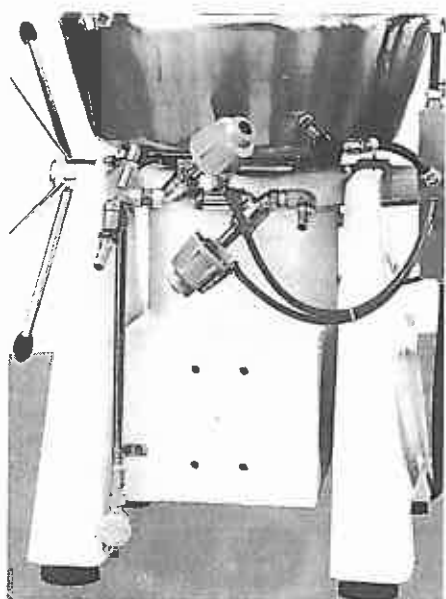
- | | |
|---|--|
| 1. Support | 21. Water connection – double jacket cooling
or
Condensate drain – double jacket heating |
| 2. Motor | 22. Steam connection |
| 3. Discharge valve, pneumatic, stainless steel | 23. Steam valve, pneumatic |
| 4. Discharge tube, 90° elbow | 24. Condensate drain |
| 5. Terminal box | 25. Safety switch – lid |
| 6. Bowl with double jacket | 26. Probe for electronic temperature measurement |
| 7. Lid hinge – torsion spring | 27. Dosing water connection |
| 8. Lid | 28. Dosing water valve, pneumatic |
| 9. Manual bleeder cock | 29. Counterweight |
| 10. Mano-vacuummeter | 30. Control panel |
| 11. Overpressure safety valve | 31. Watermeter impulse counter |
| 12. Vacuum valve, pneumatic | 32. Thermometer – remote temperature indicator |
| 13. Vacuum connection | 33. Selector switch "manual/automatic" |
| 14. Mixing baffle gear motor | 34. Program control |
| 15. Dosing funnel | 35. Cylindrical piston water counter |
| 16. Disc valve, pneumatic | 36. Main switch |
| 17. Dosing connection | 37. Mixing baffle |
| 18. Lid lock handle | 38. Processing insert |
| 19. Locking lever – bowl | 39. Steam non-return valve |
| 20. Water discharge – double jacket cooling
or
Steam connection – double jacket heating | |

4. Description of Machine

The UMM/SK 80 E-II and UM/HC 80 E Universal Machines are designed in accordance with the latest state of food processing technology. The bowl, the lid and the processing inserts are made of high-quality stainless steel.

The support carries the motor with the flange-mounted bowl which is tiltable. The tilt position can be locked easily by a locking lever.

4.1 Bowl



Connections for steam and water with pneumatic valves.
Probe for electronic temperature measurement. Condensate drain.

The bowl constitutes the processing area of the machine. After having opened the lid, both loading and discharging can easily be done. For discharge, the machine axis is tilted.

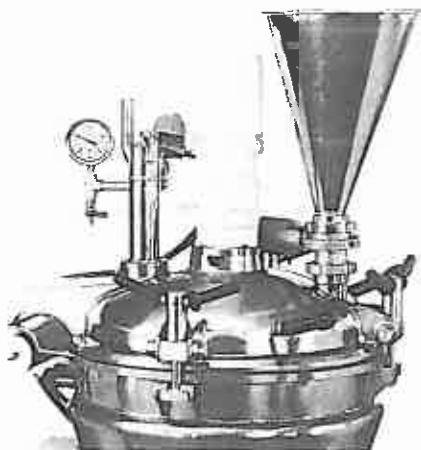
With liquid products, discharge can be done via a pneumatic bowl discharge valve. The appropriate screw connection is provided.

With three jet nozzles in the bowl bottom, steam or the required water quantity directly reaches the product to be processed.

The feeler for the electronic temperature measurement is installed in the most effective area.

For indirect cooling or heating, the bowl is provided with a compression-proof double jacket.

4.2 Lid



Dosing funnel with pneumatic disc valve on dosing opening NW 65.
Pneumatic vacuum valve, safety valve, mano-vacuummeter, manual bleeder cock.

The lid weight is carried by a compensating torsion spring. Bowl and lid are locked by three rapid locks. In this condition, the machine is pressure-proof and vacuum-tight.

The mixing baffle shaft is guided through the lid into the bowl. Vacuum connection and fittings are provided on top of the lid.

A maximum of three dosings openings can be provided on top of the lid. Apart from the connection of loading tubes, they can be used for mounting a dosing funnel with pneumatic disc valve.

With machine type UM/HC 80 E a solid separator with integrated overpressure valve, disc valve NW 65 and condenser connecting piece is mounted instead of the overpressure valve.

Attention!

The lid safety switch at the bowl below the lid torsion spring interrupts all processing functions with an opened lid.

4.3 Mixing Baffle Gear Motor

The gear motor is mounted on top of the lid and drives the mixing baffle with its splined shaft. The baffle is slipped onto the shaft and secured by a disc, spring washer and a socket head screw.

4.4 Main Motor

The flange-mounted main motor is situated directly below the bowl. The shaft of high-quality stainless steel protruding into the bowl drives the processing inserts.

The processing inserts can easily be removed from the shaft.

Avoid using force which could result in a distortion of the motor shaft.

The motor shaft can also be damaged if tools or other items are accidentally left inside the machine when the main motor is switched on.

For weight compensation between bowl and main motor, the motor shell is equipped with a counterweight.

4.5 Processing Inserts



narrow
wave-cut knife

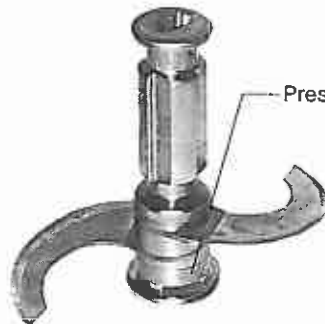
The inserts are the results of many years of experience. Every detail has been tested in numerous trials resulting in constant improvements. They are made of high-quality stainless steel and their shape and size are tailored to the motor output, the shape of the bowl and the processes to be made.

For mincing and mixing processes, the cutting insert is used whereas for mere mixing purposes, the mixing insert is available.

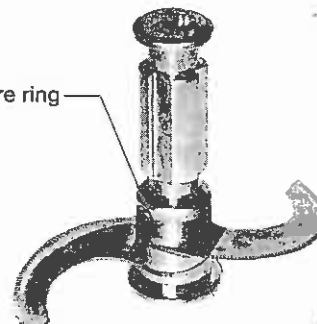
The shape of the processing insert causes a suction with rapid rotation thus forcing the product towards the bottom of the bowl. The product has to pass the rotating processing insert, is caught by it and thus processed.

Due to the constant top pressure, the product is pressed to the sides of the bowl bottom, rises upwards along the bowl wall and is guided back to the processing insert again. The circulation of the product is supported by the mixing baffle which cleans the walls of bowl and lid with a plastic scraper.

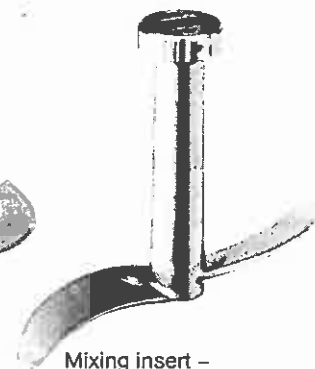
For the UM/HC 80 E models, a special mixing baffle was developed which carries additional stirrers (round or flat) and thus allows an increased product mixture.



Cutting insert
– high position



Cutting insert
– low position



Mixing insert –
homogeneous product mixture
with high degree of turbulence

The cutting insert complete consists of the knife shaft, the slant rings, the knives, the lock nut with centrifugal wings and an additional pressure ring.

The fixed angled position of the knives is achieved with slant rings consecutively numbered from top to bottom which are mounted in the proper order.

The knives have to be inserted with their oblique ground section pointing to the bottom of the bowl in order to create the vortex mixing and high turbulence mixing of the ingredients.

For various processes or in the case of lower product quantities, the pair of knives has to be lowered. This is done by altering the position of the pressure ring (see above illustration).

The mixing insert is used when fruit products are to be mixed into yogurt or milk protein products.

4.6 Fittings

The fittings are mounted on the machine and are ready for immediate operation. Maintenance of these parts is not required. In case of disturbances, these parts can easily be replaced. Maintenance-free steam return valves installed in the bottom of the bowl prevent a return of the product into the valves. A condensate drain installed directly in front of the steam valve operates automatically and prevents the condensate from flowing into the bowl.

The safety valve mounted onto the lid is set by the factory in such a way that the pressure inside the bowl will not exceed 1,5 bar. The alteration of the valve's blowing-off pressure is prevented by a lead seal.

For cleaning, the entire safety valve can be screwed off without opening the lead seal.

Removal of the lead seal will void our warranty!

4.7 Electrical Equipment

The electrical equipment corresponds to the German VDE regulations 0113.

The control panel as well as the machine are readily wired. The feed line to the control panel and the line between control panel and main motor have to be installed by a local electrician in accordance with the enclosed circuit diagram. The control and pneumatic feed lines as well as the line to the mixing baffle motor are however part of the Universal Machine supply range.

**Feed line at 200 or 220 V = 4 x 16 mm² Cu
at 380 or 440 V = 4 x 6 mm² Cu**

Control can be made manually via push buttons or automatically via a program control. With manual operation, the functions of the switch contacts to be set at the temperature indicator are maintained.

The left contact of the temperature indicator automatical closes the vacuum valve and thus switches off the vacuum pump connected in series to it. The setting of this contact should not exceed 70 °C in order to avoid the product to be sucked into the vacuum tubing.

This applies for the UMM/SK 80 E-II model.

With the UM/HC 80 E model, the left contact is effective only in connection with the program control. The card stopping during vacuum cooling is started again by the contact when the cooling temperature set has been reached and switches off the vacuum pump when continuing. Vacuum cooling is possible to a lower limit of 50 °C.

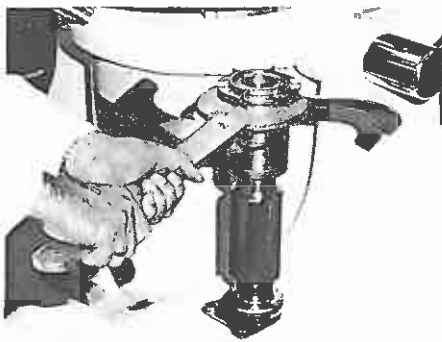
The right contact at the temperature indicator automatically switches off the steam inlet. The setting of this contact must not exceed a maximum of 127 °C. Switching on of the steam valve is possible only after the temperature falls short of the value set.

5. Installation and Commissioning

Installation, training, and commissioning is made by one of our experts. Usually several days are required for proper training and start-up. Helpers and hoists will be made available by the customer.

Due to its weight and the relatively vibrationless run, the Universal Machine need not be fixed to the ground. After having connected all supply lines, the following processes are checked with the machine empty and without water and steam inlet. The processing insert should be removed from the machine.

- Check for the **clockwise** rotation of the main motor shaft as is shown by the arrow on the motor bearing shield. This check should be made for both speeds.
The lid has to be kept close!
The direction of rotation can be checked by observing the splash plate below the bottom of the bowl.
- Check for the **counterclockwise** rotation of the mixing baffle. The rotation can be checked by observing below the gear motor mounting flange.
- Check for the direction of rotation of the vacuum pump motor. The arrow indicates the correct direction. In case of wrong direction, change two phases on the appropriate connections in the control panel.



Mounting of the knives – **right-hand thread**

- d. Check whether the vacuum valve as well as the steam and water valves correspond to the indications at the control panel.
- e. Vacuum inspection: Fill machine with about 30 l of water, lock bowl lid and switch on vacuum pump. With a vacuum of about 50 %, switch off vacuum pump and switch on main motor as well as mixing baffle motor. With the machine in operation, the vacuum may drop by a maximum of 6 % within 5 minutes.
- f. Place cutting insert upside down onto tool carrier and tighten nut on the bottom of the insert with the wrench supplied.

The seat of the knives must be absolutely tight!

6. Trial Run and Cleaning

Together with the trial run, the first thorough cleaning is made.

Place cutting insert onto motor shaft and tighten knurled nut with wrench and holding pin supplied.

Fill about 60 litres of cold water via the dosing device into bowl and add a neutral cleaning disinfectant.

- a. Close lid and lock it.
- b. Switch mixing baffle on to "mixing baffle I".
- c. Switch main motor on to "main motor slow".
- d. Switch on vacuum by actuating "vacuum I".
- e. Switch on steam valve via "steam valve I".

The increase in water temperature is automatically indicated. With about 70 °C, close steam valve and let machine operate for another few minutes in order to ensure thorough cleaning.

Switching off of the machine is done in reverse order.

After the termination of the trial run, depressurize machine by actuating the bleeder valve. Check for a pressureless condition with the vacuum manometer prior to opening the lid.

Empty machine via bowl valve or by tilting bowl and flush with clear water.

After loosening knurled nut, remove processing insert from motor shaft clean bore with a bottle brush.

Clean varnished machine parts with a sponge and mild soap suds.

The machine is water-proof for thorough cleaning.

Attention!

The motor protection complies with IP 44.

The motor must not be hosed down with water or any other cleaning agent.

Injection of water especially into the air cooling device of the motor is prohibited.

Damages resulting from such treatment will not be covered by guarantee.



Locking of processing insert

Attention, left-hand thread

7. Operating Instructions

There are a great number of applications for this machine and it would go beyond this manual to mention all of them. We therefore restrict the description to the following procedures:

- 7.1 Thermic treatment of curds, fresh cheese and pulpy milk products
- 7.2 Pasteurizing of yogurt with fruit addition
- 7.3 Production of processed cheese with 95 to 115 °C
- 7.4 Subsequent adding of recipe ingredients
- 7.5 Direct cooling
- 7.6 Indirect cooling
- 7.7 Production of fine liver sausage
- 7.8 Production of coarse liver sausage
- 7.9 Production of raw marzipan
- 7.10 Production of 80 % mayonnaise
- 7.11 Production of 50 % salad mayonnaise

For further instructions, please get in touch with our specialists.

Processing speed I, $n = 1500$ or $1750/\text{min}$

Processing speed II, $n = 3000$ or $3500/\text{min}$

7.1 Thermic treatment of curds, fresh cheese and milk products

1. Fill all ingredients into machine.
Maximum total quantity: 70 kg.
The raw materials can be filled in manually or – with suitable machine outfit – via dosing devices of the machine.
2. Close lid and lock it. Close bleeder valve.
3. Switch on main motor. Processing speed I.
4. Switch on mixing baffle motor.
5. Switch on vacuum pump and open vacuum valve.
6. Open steam valve, **steam pressure 1 to 1,5 bar.**
7. At about 55 °C, the left switch contact in the temperature indicator switches off vacuum pump and closes vacuum valve.
8. As soon as about 65 °C is reached, the steam valve is closed by the right switch contact.
The desired switching temperatures can be set at the front of the indicator.
9. After closing of the steam valve, both motors are switched off.
10. The temperature holding period starts and lasts for 30 to 60 seconds.
11. Vacuummeter shows no excess pressure, but slight vacuum.
12. After termination of temperature holding period set, open bleeder valve and check pressure compensation at vacuummeter.
13. Machine can be emptied now.

7.2 Pasteurizing of yogurt with fruit addition

The production procedure is the same as described under item 7.1 with the following changes:

Vacuum operation is stopped at between 65 and 70 °C.

The steam valve is closed at a pasteurizing temperature range of between 85 and 95 °C.

After termination of temperature holding period, indirect cooling via the double jacket can be made.

Despite thermic treatment and pasteurizing, the following facts are important to be observed:

The way of cooling as well as the sort of packages used are of great importance for shelf-life.

Contact and reinfections as well as bad closing of packages can shorten shelf-life.

7.3 Production of Processed Cheese with 95 to 115 °C

– Grinding, Blending and Cooking –

1. Fill raw cheese and all other ingredients into machine. Maximum total quantity: 40 to 50 kg.
Maximum weight per piece: 2 kg.
2. Close lid and lock it. Close bleeder valve.
3. Switch main motor to processing speed I.
4. Switch on mixing baffle motor.

Operational time of main motor:

about 30 sec. with processing speed I

about 90 to 120 sec. with processing speed II

5. Switch main motor over to processing speed I.
6. Switch on vacuum pump and open vacuum valve.
7. Open steam valve, steam pressure 3 to 3.5 bar.
8. Switch off vacuum with about 70 °C via left contact of temperature indicator.
9. Close steam valve at 95 to 115 °C via right contact.
10. Inject recipe water through cylindrical piston water counter into heated product (direct cooling) and flush the remaining water in the tube with a short steam injection into the cheese.

If the recipe water is not sufficient for a cooling down to at least 95 °C, indirect cooling via the double jacket has additionally to be made. Water inlet and discharge from double jacket are made automatically.

11. Switch off both motors.
12. Vacuummeter shows: no excess pressure but slight vacuum.
13. Open bleeder valve and check for pressure equalization.
14. Open machine and empty it.

7.4 Subsequent adding of recipe ingredients

7.4.1 Without dosing funnel

The adding of special additions such as ham, mushrooms, crabs etc. can be made according to the following procedure:

1. After termination of melting process, open lid after pressure equalization.
2. Manually add additions to melted cheese.
3. Close lid and lock it.
4. Switch on mixing baffle motor.
5. Let main motor run for 1 to 2 seconds with processing speed I.
6. Switch off mixing baffle motor.
7. Open machine and empty it.

If additions are to become finer, operation period can be extended to a few seconds.

7.4.2 With dosing funnel

If machine is equipped with dosing funnel, the opening and closing of lid described under item 7.4.1 need not be done.

Procedure:

1. Fill dosing funnel with additions.
2. Via push button "funnel valve open", the funnel's contents is transported into machine.
3. Via push button "funnel valve closed", the dosing funnel is closed again.
4. Switch on mixing baffle motor.
5. Let main motor run for 1 to 2 seconds with processing speed I.
6. Switch off mixing baffle motor.
7. Open machine and empty it.

7.5 Direct Cooling

In order to cool down the ultra-hot product by shock, cold tap water is added directly to the product via nozzles at the bottom of the bowl.

For this purpose, the water quantity prescribed by the recipe can be used for cooling.

The water pressure should at least be 2 bar.

Depending on the machine model, the following dosing procedures can be applied:

1. Indicated liquid dosing

Input and stopping water injection is made manually via push button. The quantity can be checked at the cylindrical piston water counter.

2. Liquid dosing with preselection device

The preselected water quantity flow is actuated after pushing push button "water valve".

Automatic switching off is made as soon as selected water quantity is reached.

The liquid adding can be made automatically with program control if provided.

After cooling water addition, a short steam injection has to be actuated in order to remove the remaining water from the nozzle feed lines.

During the cooling period and for another 15 seconds or so, main motor and mixing baffle motor remain switched on in order to incorporate the water into the product.

If the cooling effect of the recipe water is not sufficient, additional cooling in indirect manner is possible.

7.6 Indirect Cooling

Indirect cooling (double jacket) is used where no water is to be added to the product or where a slow cooling is required.

For this purpose, water as cold as possible has to flow through the double jacket.

Control of double jacket cooling is made manually via push button "double jacket cooling". The cooling period can be chosen freely. Temperature decrease is read off the temperature indicator.

With program controlled machines, double jacket cooling is made via program cards. The appropriate cooling period has to be determined in advance and is integrated in the program as a fixed cooling period.

During cooling, the mixing baffle has to be in constant operation and product circulation is supported by the main motor operating in intervals.

7.7 Production of fine liver sausage

according to the Stephan LP Process

1. Fill a maximum total quantity of about 50 kg of bacon, cheeks and rinds into machine.
2. Close lid and lock it.
3. Close bleeder valve.
4. Switch on main motor (processing speed I) and mixing baffle motor.
5. Open steam valve, **steam pressure 3 to 3.5 bar**.
6. With 85 °C, close steam valve, switch off mixing baffle motor and open bleeder valve.
7. After pressure equalization, check at vacuummeter, unlock lid and open machine.
8. Fill the whole (not prechopped) cold liver (about 0 °C), spice and thickening agent into machine.
9. Close lid and lock it.
10. Switch on main motor (speed I) and mixing baffle motor and let them run for a period of between 30 and 120 seconds depending on the desired degree of fineness, mixture and emulsification.
11. Switch off machine and empty it.

The processing period described under item "10" can be reduced considerably if the product is subsequently processed in the Microcut. The desired degree of fineness with the Microcut is achieved by choosing the appropriate cutting slit.

7.8 Production of coarse liver sausage

according to the Stephan LP Process

1. Fill a maximum total quantity of about 50 kg of bacon, cheeks and rind pulp into machine.
2. Close lid and lock it.
3. Close bleeder valve.
4. Switch on main motor (speed I) and mixing baffle motor.
5. Switch off main motor after a period of about 15 sec.
6. Open steam valve, **steam pressure 3 to 3.5 bar**.
7. With about 85 °C, close steam valve and switch off mixing baffle motor. The temperature holding period starts. If necessary, heat up indirectly.
8. After termination of the temperature holding period set, open bleeder valve and check pressure equalization with vacuummeter.
9. Unlock lid and open machine.
10. Add the whole (not prechopped) cold liver (about 0 °C), spice as well as thickening agent.
11. Close lid and lock it.
12. Switch on mixing baffle motor and let it run for about 120 seconds. During this period, switch on main motor four or five times for 15 seconds each.
13. Switch off machine and empty it.

7.9 Production of raw marzipan

1. Heat bowl with double jacket heating to about 70 °C.
2. Fill all raw materials into machine.
Maximum total quantity: 60 kg.
3. Close lid and lock it.
4. Open bleeder valve.
5. Switch on main motor. Processing speed I.
6. Switch on mixing baffle motor.
7. Depending on the desired roasting temperature, heat with direct steam injection to between 80 and 95 °C.
8. Switch over main motor to processing speed II.
Running period 4 to 10 minutes depending on the desired degree of fineness.
9. Open valves for separate ventilation.
10. Switch on vacuum pump and condenser cooling (vacuum cooling).
11. Close bleeder valve.
12. In accordance with the temperature, close the valves for separate ventilation one after the other.
13. At about 65 °C, switch main motor to processing speed I for about 3 seconds.
14. Stop vacuum cooling at about 50 to 55 °C.
15. Open bleeder valve.
16. Circulate marzipan with the main motor two times for about 2 seconds at an interval of about 30 seconds.
17. Switch off mixing baffle motor one minute after having opened bleeder valve.
18. Open machine and empty it.

7.10 Production of 80 % mayonnaise

1. Fill all ingredients with the exception of **salad oil** and **vinegar** into machine.
2. Close lid and lock it.
3. Switch on main motor (speed I) and mixing baffle motor.
4. After a mixing period of about 30 seconds, fill into dosing opening in lid the salad oil and then the vinegar into the running machine.
5. Depending on the consistency, emulsify optionally for 30 to 60 seconds with processing speeds I or II.
6. Switch off machine and empty it.

7.11 Production of 50 % salad mayonnaise

1. Fill ingredients such as starch, stabilizers, spices, and water into machine.
2. Close lid and lock it.
3. Close bleeder valve.
4. Switch on main motor (processing speed I) and mixing baffle motor and mix for about 30 seconds.
5. Switch on vacuum pump and open vacuum valve.
6. Open steam valve, **steam pressure 1 to 1.5 bar**.
7. At about 60 °C, the left contact in the temperature indicator switches off the vacuum pump and closes the vacuum valve.
8. At about 95 °C, the right switch contact closes the steam valve.
9. Switch off main motor.
10. Open valves for separate ventilation while running mixing baffle.
11. Switch on vacuum pump and condenser cooling.
12. Switch on indirect cooling (double jacket).
13. Corresponding to the temperature, close both valves for separate ventilation one after the other.
14. Switch off vacuum pump and condenser cooling at about 50 to 60 °C.
15. Switch on main motor, processing speed II.
16. Fill egg yolk via dosing funnel into machine and close funnel valve.
17. Switch on vacuum pump and switch it off again with a 30 % vacuum.
18. Add salad oil and vinegar via dosing valve.
19. Depending on the consistency, let motor run on processing speed II for about 30 to 60 seconds.
20. Switch off double jacket cooling, main motor and mixing baffle motor, open bleeder valve.
21. Open machine and empty it.

8. Steam Preparation Station

For direct steam heating, saturated steam of drinking quality is required containing little residual moisture.

Guiding values for steam connection:

Steam generating capacity:	2.5 kg steam/min
Steam initial pressure:	6 to 8 bar
Steam pressure:	3.5 bar at machine connection
Steam feed line:	¾" ≙ NW 20

In most cases, the following measures have to be taken:

- Dehumidifying with a condensate collector (cyclone) which is automatically dewatered by a condensate trap. For quick draining, a hand cock can be provided.
- Pressure regulation with a pressure reducer with superposed filtering screen.

If steam preparer supplies physiologically perfect steam, no further measures need to be taken. If this is not the case – i. e., hydrazine addition in the boiler water – then an **activated charcoal filter** with condensate collector has to be added.

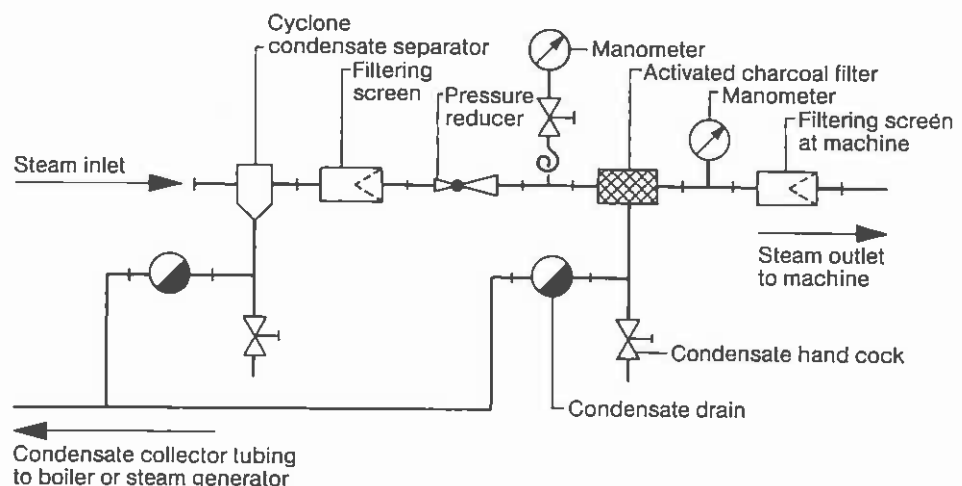
The **pressure difference in front and after** this filter should range between about 0.2 and 0.6 bar. If the pressure difference becomes higher than about 0.6 bar, this is caused by a heavy contamination of the filter. In this case, a filter cleaning according to the following procedure is required:

Unscrew lid in pressureless condition (see § 33 on page 20) and take out insert with filter cartridges. Take filter cartridges out of their holder and clean each of them. Carefully wash contamination off the outer jacket with a soft brush and clear water.

If cleaning does not lead to the desired result, the filter cartridges have to be exchanged by new ones.

When installing again, care must be taken that the screws of the lid are tightened uniformly and only to such extent as is required for sealing.

Broken and thus damaged filter cartridges have to be replaced by new ones. A break can be detected by the fact that the pressure difference normally traceable in **front and beyond** the filter has vanished.



9. Technical Inspection, Maintenance, Service

The Stephan Universal Machine has been designed with a view to practical aspects.

As the machine incorporates very few moving parts, a minimum of maintenance is required.

For the bowl bearing in the casting support and for the lid bearing in the lid axis, there is a total of four lubricating nipples. These bearings are lubricated in large intervals with a roller bearing grease and the surplus grease pressed outside is wiped off.

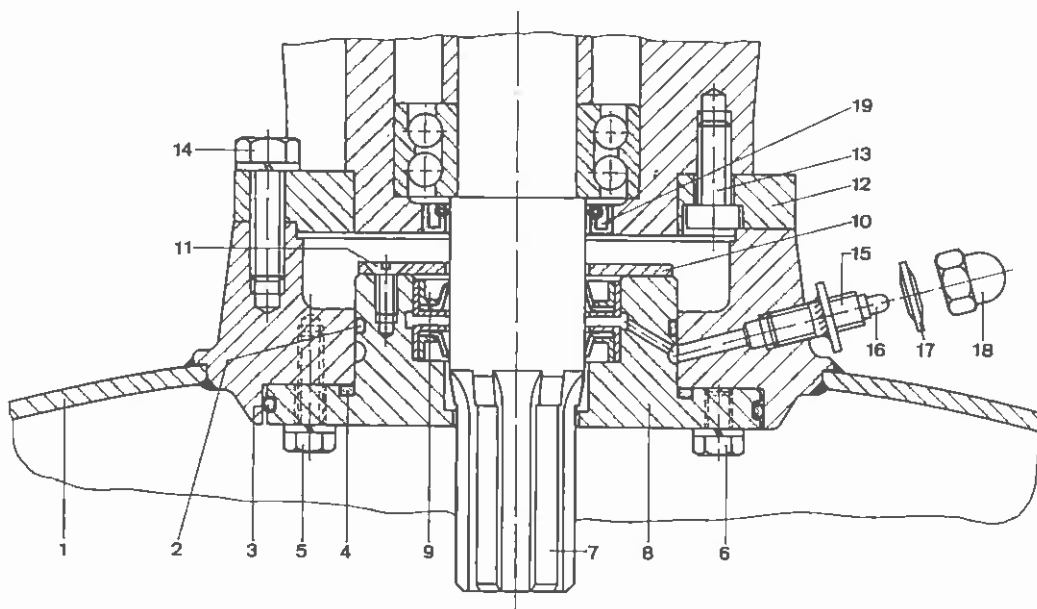
As the machine can operate under vacuum or excess pressure, the shaft sealings must always be in excellent condition.

Maintenance of these special seals is restricted to lubrication once a week with about 0.25 cm³ lubricant applied onto each lubricating point with the grease gun. This grease amount corresponds to about half the stroke height of the "G 60" grease gun supplied. The use of a physiologically unobjectionable special lubricant "**Klüber Lubrication Nontrop PLB EL**" or equivalent is recommended.

Damaged seals have to be replaced by new ones. At the same time, the guiding sleeve on the motor shaft has to be cleaned carefully. If major traces of wear are detected it has to be replaced.

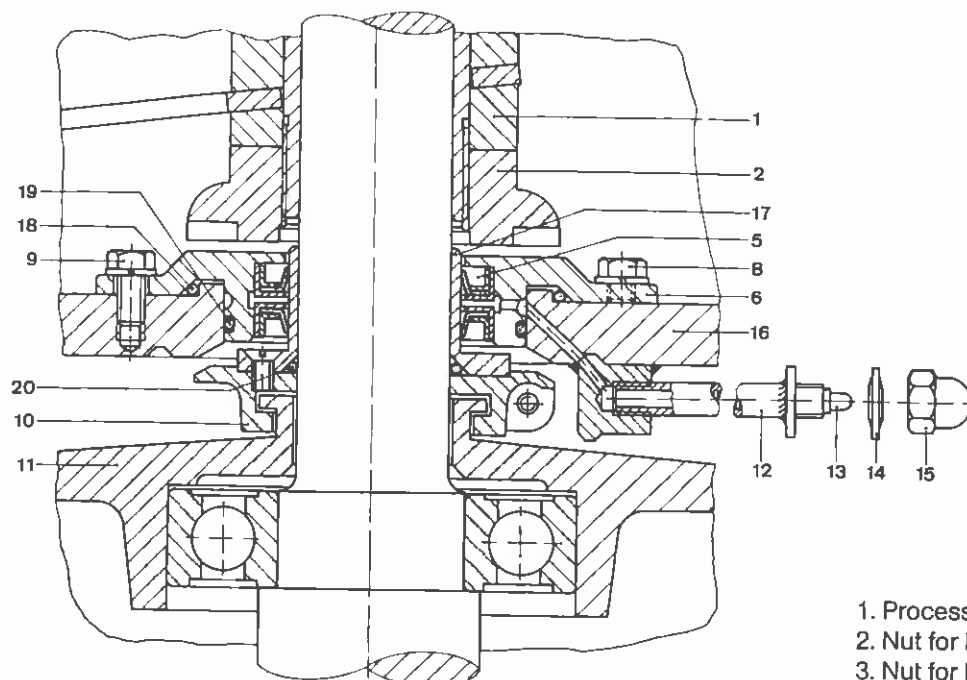
When mounting again, care must be taken that the guiding sleeve is sealed against the motor shaft with a liquid sealing agent withstanding temperatures of up to 130 °C.

The design of the seals can be seen from the following illustration:



Lid Seal

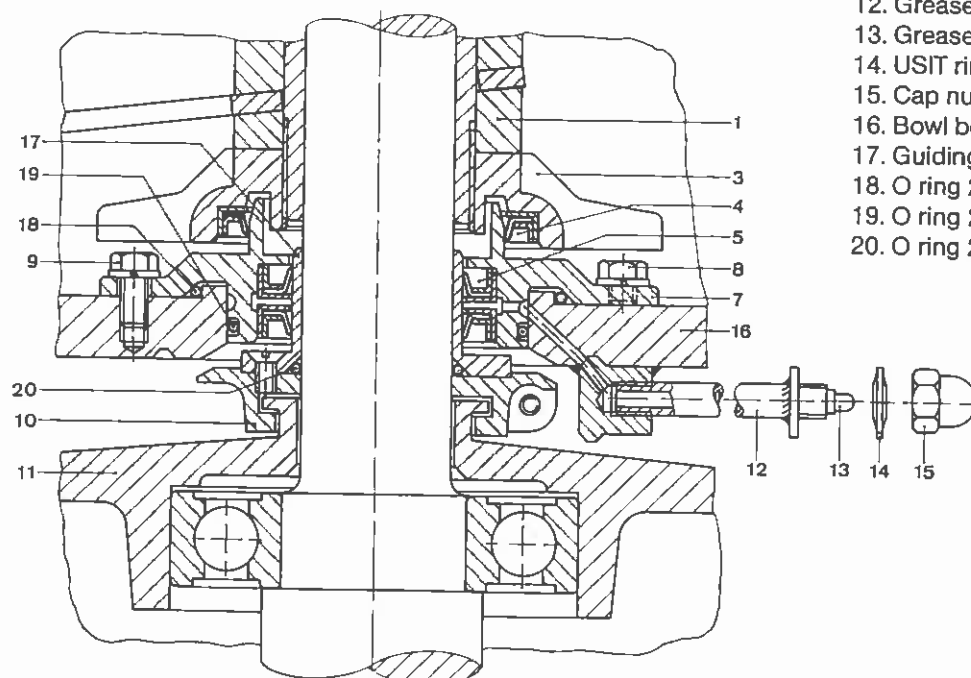
- | | |
|--------------------------------------|-----------------------------------|
| 1. Lid | 11. Countersunk screw |
| 2. O ring 2-153 | 12. Gear flange |
| 3. O ring 2-161 | 13. Socket head cap screw M 10x25 |
| 4. O ring 2-154 | 14. Hexagon screw M 10x35 |
| 5. Hexagon screw M 8x25 | 15. Grease feed tube |
| 6. Hexagon screw M 8x14 | 16. Grease ball nipple D 6 |
| 7. Mixing baffle gear shaft, splined | 17. USIT ring 10x18x1.5 |
| 8. Receiver ring | 18. Cap nut M 10 |
| 9. Garlock seal ring 40x60x10 | 19. Radial seal ring 40x55x10/7 |
| 10. Cover disc | |



Motor shaft seal

– standard construction –

1. Processing insert
2. Nut for knife shaft SKU 80.05-41
3. Nut for knife shaft SKU 80.05-43
4. Garlock seal ring 63x2168
5. Garlock seal ring 50x70x10
6. Receiver plate SKU 80.09-69
7. Receiver plate SKU 80.09-86
8. Hexagon screw M 8x8
9. Hexagon screw M 8x16
10. Splash plate SKU 80.06-14
11. Upper bearing shield A
12. Grease feed tube
13. Grease ball nipple D6
14. USIT ring 10x18x1.5
15. Cap nut M 10
16. Bowl bottom
17. Guiding sleeve SKU 80.06-15
18. O ring 2-243
19. O ring 2-236
20. O ring 2-132



Motor shaft seal

– special construction –

After assembly of the Garlock seals, a clearance of 2 mm between them has to be provided in order to facilitate later lubrication.

To maintain a high degree of confidence that the machine is ready to operate, we recommend a **service contract**. This will guarantee that all service work is done which has been shown to be necessary through our many years of experience. The scope of this work is determined in a service card which is the basis of such a contract.

10. Excerpt from the German Safety Regulations

Re: Pressure vessels

Duties of the Personnel

§ 30: The persons entrusted with the operation and maintenance of pressure vessels have the duty to observe the relevant rules and the operating instructions given by the employer.

Commissioning

§ 31: (1) Prior to commissioning of any pressure vessel, it has to be ensured that all locking and safety devices are connected to the pressure spaces effectively and freely.

(2) Seal surfaces have to be clean and in good condition. Locking openings have to be sealed carefully with the appropriate means.

(3) All screws provided are to be used when closing lids. They have to be tightened uniformly and with as little force as is sufficient for sealing. For tightening, the appropriate tools have to be used. The attachment of tubes on wrenches and the use of long rods with wing nuts or lever stoppers is not recommended.

(4) Damaged seals such as spent, chinky or bent screws, nuts which are broken or otherwise damaged, bent clamps or levers must not be used.

Maintenance during operation

§ 32: (1) During operation, the safety devices and especially meters for pressure and temperature are to be observed and checked as to their efficiency.

(2) Safety devices which might become ineffective have to be removed and checked at reasonable intervals to be determined in accordance with the operational conditions of the relevant pressure vessel.

(3) The maximum permissible operational pressure of the pressure vessel must not be exceeded. In case of excess pressure, the pressure has to be reduced with appropriate means as for instance by closing the pressure feed line, by switching off the heat source, by opening the blowing-off device.

(4) Manometers must be replaced by those ones having the same indication range and the same position of the hand for the maximum permissible operational pressure.

(5) The setting of safety valves must not be altered. They must not be loaded additionally, must not be blocked, not be switched off by installation of blind discs or made ineffective by any other means; the same applies to stand pipes.

Opening of a pressure vessel

§ 33: If pressure vessels are to be opened, the entrusted person has to make sure prior to loosening of the locks, that the vessel does not incorporate any excess pressure. For this purpose, the blowing-off device (test cock, relief valve) has to be opened even if manometer does not indicate any pressure. Then the lid which is still held by screws regularly distributed over the periphery has to be lifted slightly and loosened to such an extent that it no longer adheres to its seat. Only if it has been made sure by these means that there is no excess pressure left, the locks may be screwed off completely and the lid removed.

11. Spare Parts List

The shape, make and material of each part of your machine correspond to the present state of technology and guarantee utmost stability under working stress with utmost durability of the machine.

It is therefore most important that only original parts are used for subsequent equipment and replacement.

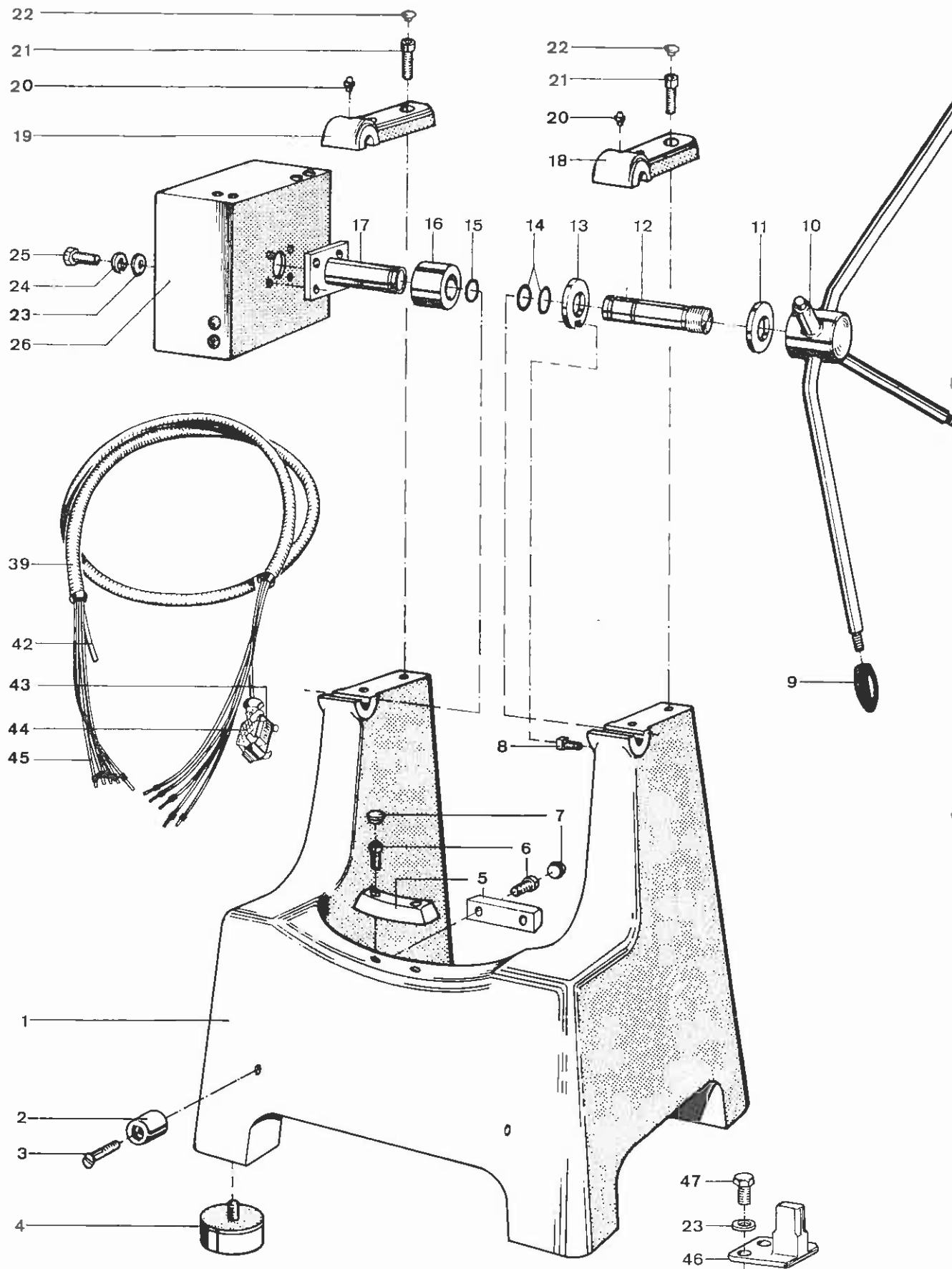
Please select from the following group lists the relevant parts and order them by stating the group and part numbers.

In case of an order for spare parts, specifications have to be made about model and number of the machine.

Important Spare Parts and Parts Subject to Wear

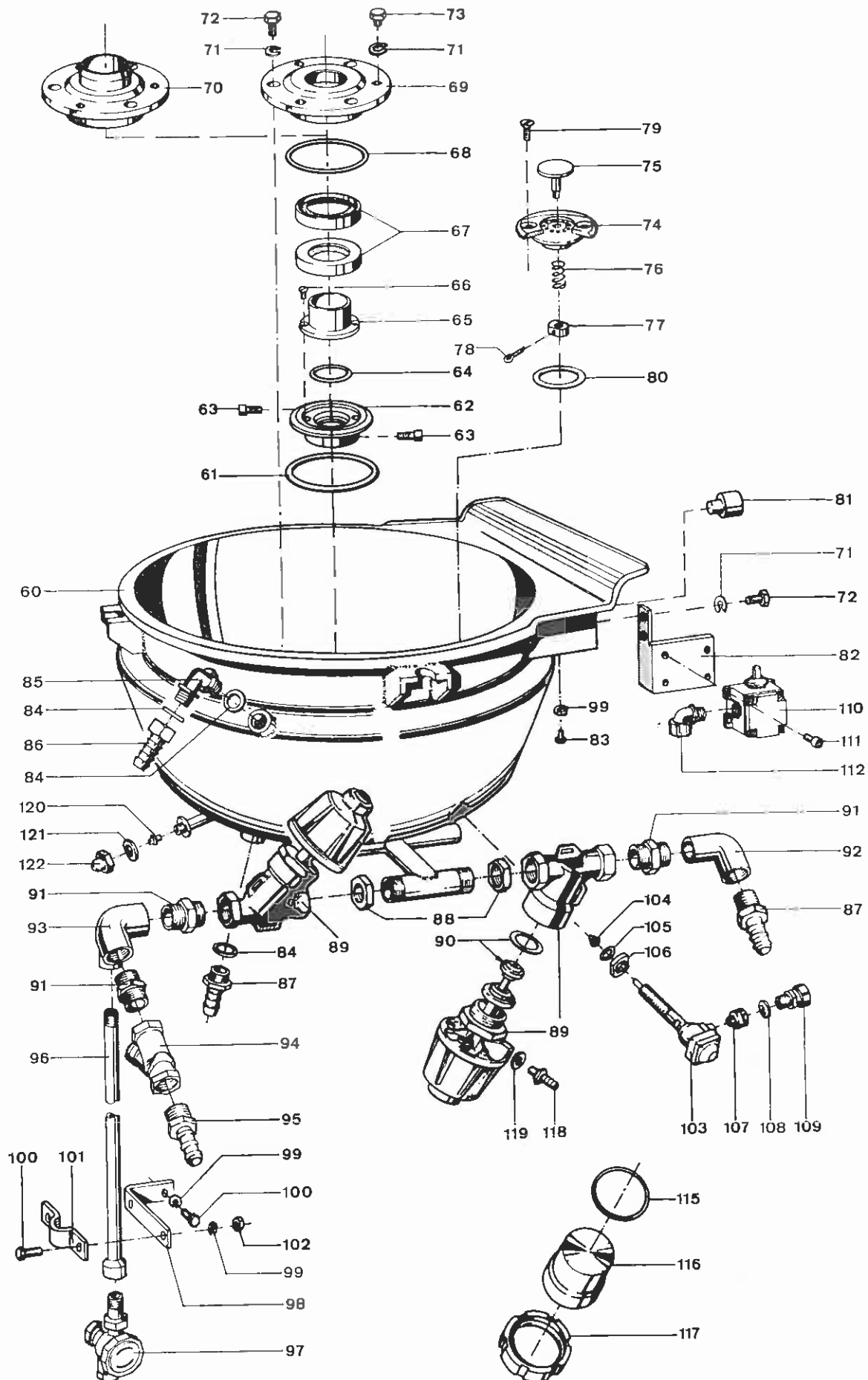
Designation	Group	Page	No.
Guiding sleeve	11.2	24/25	65
Garlock seal ring 40 x 60 x 10	11.3	26/27	148
Garlock seal ring 50 x 70 x 10	11.2	24/25	67
O ring 36 x 2	11.3	26/27	168
O ring 74 x 3	11.2	24/25	115
O ring 2 - 132	11.2	24/25	64
O ring 2 - 153	11.3	26/27	149
O ring 2 - 154	11.3	26/27	150
O ring 2 - 161	11.3	26/27	152
O ring 2 - 217	11.2	24/25	80
O ring 2 - 236	11.2	24/25	68
O ring 2 - 243	11.2	24/25	61
Lid seal	11.3	26/27	126
Set of seal for 2/2 way valve 514/20	11.2	24/25	89
Temperature probe	11.2	24/25	103
Scraper for mixing baffle	11.3	26/27	157
Torsion spring $\varnothing$ 16 for lid	11.3	28/29	231
Torsion spring $\varnothing$ 17 for lid	11.3	28/29	216
Knife	11.4	30/31	255
Transparent button shroud G-DTa	11.6	34/35	339
Filament bulb for indicator lamp BA 9s, 110-130 V, 2 W	11.6	34/35	343

11.1 Support Group



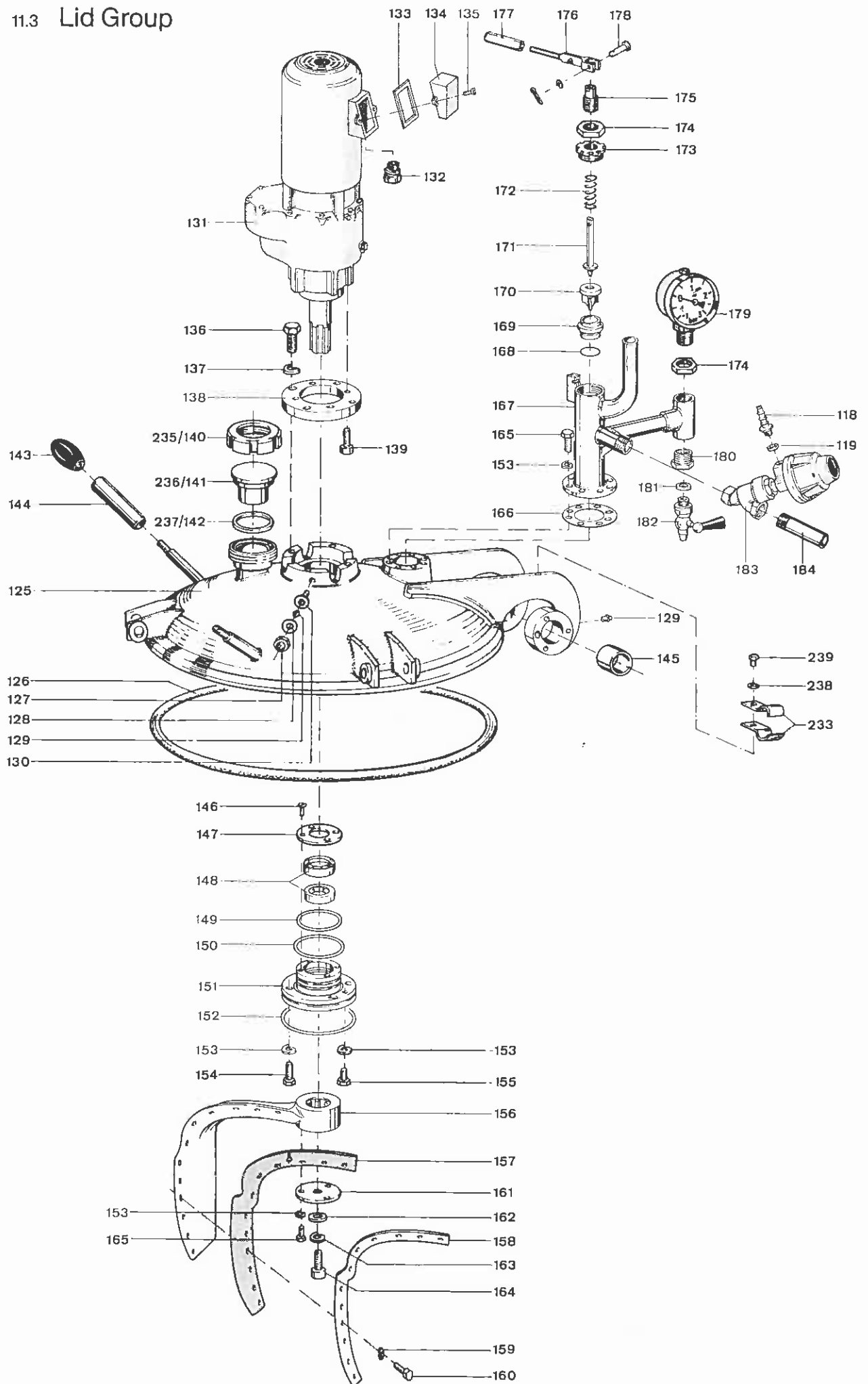
No.	Qty. per Group	Designation	Further Details for Ordering	
1	1	Support	SKU 80.01 - 01	
2	2	Rubber buffer $\varnothing$ 40 x 40	SKU 60.01 - 10 T1	
3	2	Countersunk screw	M 8 x 50 DIN 963	V2 A
4	4	Foot	$\varnothing$ 100 x 40	65° shore
5	2	Rubber buffer, light, complete	SKU 40.01 - 26	
6	4	Socket head cap screw	M 8 x 20 DIN 912	V2 A
7	4	Rubber stopper, light	SKU 40.01 - 28	
8	1	Square-head screw	M 10 x 20 DIN 479	V2 A
9	4	Machine handle	M 16 No. 0600	
10	1	Locking lever	SKU 80.01 - 05	
11	1	Washer	SKU 60.01 - 06	
12	1	Swivel bearing, right	SKU 60.01 - 04 T3	
13	1	Locking disc	SKU 60.01 - 07 T1	
14	2	O ring	35 x 2.5	
15	1	O ring	40 x 2.5	
16	1	Distance sleeve	SKU 60.13 - 04 T3	
17	1	Swivel bearing with flange	SKU 60.13 - 04 T1	
18	1	Bearing bushing, right	SKU 80.01 - 09	
19	1	Bearing bushing, left	SKU 80.01 - 08	
20	2	Grease nipple	D 6 DIN 3402	Ms
21	4	Socket head cap screw	M 12 x 40 DIN 912	V2 A
22	4	RIBE cap	SW 10	
23	6	Washer	10,5 DIN 125	V2 A
24	4	Spring washer	A 10 DIN 127	V2 A
25	4	Hexagon screw	M 10 x 25 DIN 933	V2 A
26	1	Terminal box with lid and mounting plate	SKU 80.26 - 05	
27	1	Mounting strip TS 32	290 lg.	not ill.
28	1	Elbow EWK 2	1993.6	not ill.
29	1	Earth terminal EK 16 380 or 440 V	3746.6	not ill.
	1	Earth terminal EK 35 200 or 220 V	3547.6	not ill.
30	6	Binding post SAK 16 380 or 440 V	2710.2	not ill.
		Binding post SAK 35 200 or 220 V	3035.2	not ill.
31	8	Binding post SAK 4	1283.2	not ill.
32	1	Parting plate TW 4 - 10	1301.2	not ill.
33	3	Earth terminal EK 1	2701.0	not ill.
34	2	Cable gland with cord grip PG 21 SKZ	380 or 440 V	not ill.
		Cable gland with cord grip PG 29 SKZ	200 or 220 V	not ill.
35	1	Anaconda threaded fitting, straight	1", No. 5334	not ill.
36	1	Anaconda threaded fitting, straight	$\frac{3}{8}$ ", No. 5331	not ill.
37	2	Anaconda threaded fitting 45°	$\frac{3}{8}$ ", No. 5334	not ill.
38	3	Appleton seal for No. 36 + 37	STG - 50/ $\frac{1}{2}$ "	not ill.
39	1	Anaconda tube with earthing sleeve	1" - 3.5 m	
40	-	Anaconda tube	$\frac{3}{8}$ ", length on request	not ill.
41	(3)*	Threaded fitting for pneumatic leads consisting of fitting CK $\frac{1}{8}$ " PK 4, bushing $\frac{1}{8}$ " x $\frac{1}{8}$ " QM and hose nozzle N - $\frac{1}{8}$ " P 6	$\frac{1}{8}$ "	not ill.
42	1	Control cable ÖJ 10 x 1,0 mm²		
43	1	Plug insert 10-channel	70.310.1040	
44	1	Upper part of housing, 10-channel	70.365.1028	
45	-	Pressure-proof hose	PL 4, length on request	
46	1	Tools receiver	SKU 60.01 - 09	
47	2	Hexagon screw	M 10 x 30 DIN 933	V2 A

11.2 Bowl Group



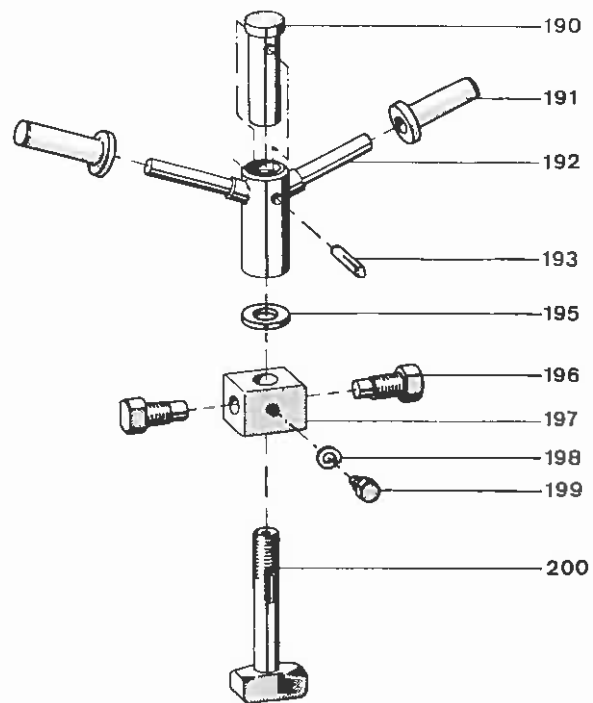
No.	Qty. per Group	Designation	Further Details for Ordering	
60	1	Bowl with water jacket	SKU 80.13 - 10	
		Bowl without water jacket	SKU 80.09 - 72	not ill.
61	1	O ring 2 - 243	104.37 x 111.43 x 3.53	
62	1	Splash plate	SKU 80.06 - 14	
63	2	Socket head screw	M 6 x 25 DIN 912	V2 A
64	1	O ring 2 - 132	44.12 x 49.36 x 2.62	
65	1	Guiding sleeve	SKU 80.06 - 15	
66	2	Countersunk screw	M 6 x 12 DIN 963	V2 A
67	2	Garlock seal	50 x 70 x 10	
68	1	O ring 2 - 236	82.14 x 89.20 x 3.53	
69	1	Receiver plate, standard construction	SKU 80.09 - 69	
70	1	Receiver plate, special construction	SKU 80.09 - 86	
71	8	Spring washer	A 8 DIN 127	V2 A
72	5	Hexagon screw	M 8 x 16 DIN 933	V2 A
73	3	Hexagon screw	M 8 x 8 DIN 933	V2 A
74	3	Valve seat	SKU 40.00 - 44	
75	3	Valve disc	SKU 40.00 - 45	
76	3	Pressure spring	SKU 80.09 - 54	
77	3	Nut	SKU 80.09 - 57	
78	3	Split pin	2 x 22 DIN 94	W.-No. 4571
79	6	Countersunk screw	M 8 x 20 DIN 963	W.-No. 4571
80	3	O ring 2 - 217	29.74 x 36.8 x 3.53	W.-No. 540-8
81	2	Rubber buffer	SKU 120.02 - 19	
82	1	Locking plate	SKU 80.09 - 21	
83	2	Hexagon screw	M 6 x 10 DIN 933	
84	3	Seal	¾" - Vulkanfiber	
85	1	Elbow	¾" x ¾" outside/outside	chr. plated
86	1	Hose nozzle	¾" inside	chr. plated
87	2	Hose nozzle	¾" outside P19	Ms
88	2	Hexagon nut	¾", No. 81205	V2 A
89	2	2/2 straight-way valve	¾" - 514/20 / 195 - 11 - 61	
90	(2)	Set of seal for No. 89	514/20	
91	3	Hexagon nipple	¾" x ¾", No. 81105	V2 A
92	1	Elbow No. 80705	¾" x ¾" inside/inside	V2 A
93	1	Branch piece	SKU 80.09 - 18	
94	1	Filtering screen	¾"	Ms
95	1	Hose nozzle ¾" x Ø 14.5	SKU 80.09 - 40	Ms
96	1	Outlet tube	SKU 80.09 - 20	V2 A
97	1	Condensate drain	½"	
98	1	Locking elbow	SKU 80.09 - 85	
99	5	Spring washer	A 6 DIN 127	V2 A
100	3	Hexagon screw	M 6 x 12 DIN 933	V2 A
101	1	Locking clip	SKU 80.26 - 27	
102	2	Hexagon nut	M 6 DIN 934	V2 A
103	1	Temperature probe	H 64.1 FN1/0 - 150 °C	
104	1	Sealing bushing	SKU 80.09 - 03	
105	1	O ring	14 x 3	
106	1	Nut	SKU 80.09 - 09	
107	1	Intermediate bushing	SKU 80.08 - 20	
108	1	Appleton seal	STG - 50/½"	
109	1	Anaconda threaded fitting, straight	¾" No. 5331	
110	1	Limit switch	D - U 11 ZW - IP 65	
111	4	Socket head cap screw	M 5 x 16 DIN 912	V2 A
112	1	Anaconda threaded fitting	½" - 90°, No. 2270	
113	1	Steam tube, flexible	¾" - NW 20 / 3000 lg.	not ill.
114	2	Hose clip	¾" - NW 20	not ill.
115	1	O ring	74 x 3	
116	1	Blind stopper	SKU 80.09 - 36	
117	1	Grooved nut F	NW 65 DIN 11851	
118	2	Hose nozzle	¼"	Ms
119	2	Fiber sealing ring	¼"	
120	1	Grease ball nipple	D6 DIN 3402	
121	1	USIT ring	10 x 18 x 1.5	
122	1	Cap nut	M 10 DIN 1587	V2 A

11.3 Lid Group

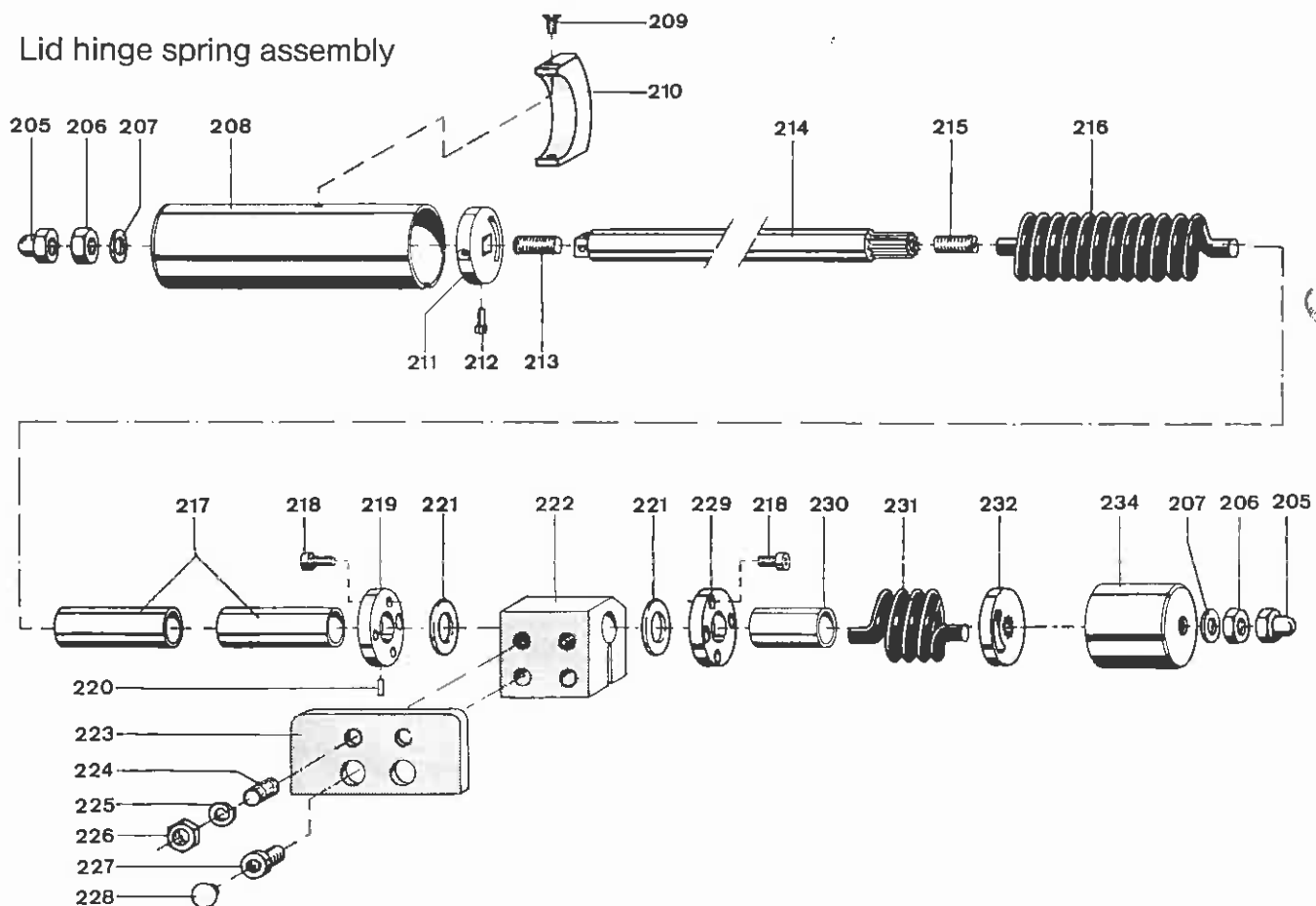


No.	Qty. per Group	Designation	Further Details for Ordering		
125	1	Lid without dosing aperture	SKU 80.10 - 42	not ill.	
		Lid with one dosing aperture	SKU 80.10 - 42	see ill.	
		Lid with two dosing apertures	SKU 80.10 - 42	not ill.	
		Lid with three dosing apertures	SKU 80.10 - 42	not ill.	
126	1	Lid seal SKU 80.10 - 63	Ø 574 x Ø 15.3 - 35° shore	silicone	
127	1	Cap nut	M 10 DIN 1587	V2 A	
128	1	USIT ring	10 x 18 x 1.5		
129	3	Grease ball nipple	D 6 DIN 3402		
130	1	Grease feed tube	SKU 80.10 - 62		
131	1	Gear motor 1.1 kW, complete	FZv 1 D 90 L 20 - 6 - 26,6 min ⁻¹		
132	1	Anaconda threaded fitting, straight	¾", No. 5331		
133	1	Seal for connecting box	FZv 1 D 90 L 20 - 6		
134	1	Connecting box lid	FZv 1 D 90 L 20 - 6		
135	2	Cheese head screw	M 5 x 20 DIN 84	V2 A	
136	4	Hexagon screw	M 10 x 35 DIN 933	V2 A	
137	4	Spring washer	B 10 DIN 127	V2 A	
138	1	Gear flange	SKU 120.03 - 50		
139	4	Socket head cap screw	M 10 x 25 DIN 6912	V2 A	
140	(1)	Grooved nut F	NW 65 DIN 11851		
141	(1)	Blind stopper	SKU 80.10 - 65 / NW 65		
142	(1)	Sealing ring G	NW 65 DIN 11851		
143	2	Machine handle	M 16 No. 0600		
144	2	Insulating sleeve	SKU 80.10 - 25		
145	2	Bearing bushing	SKU 120.03 - 12	Ms	
146	4	Countersunk screw	M 6 x 16 DIN 963	V2 A	
147	1	Cover disc	SKU 80.10 - 51		
148	2	Garlock seal ring	40 x 60 x 10		
149	1	O ring	2 - 153		
150	1	O ring	2 - 154		
151	1	Receiver ring	SKU 80.10 - 50		
152	1	O ring	2 - 161		
153	15	Spring washer	B 8 DIN 127	V2 A	
154	4	Hexagon screw	M 8 x 25 DIN 933	V2 A	
155	2	Hexagon screw	M 8 x 14 DIN 933	V2 A	
156	1	Mixing baffle	SKU 80.10 - 57		
157	1	Scraper	SKU 80.10 - 66	teflon	
	1	Scraper	SKU 80.10 - 66	polypropylene	
158	1	Holding strip for scraper	SKU 80.10 - 67		
159	12	Washer	6.4 DIN 125	V2 A	
160	12	Hexagon screw	M 6 x 20 DIN 933	V2 A	
161	1	Fastening plate	SKU 80.10 - 58		
162	1	Washer	13 DIN 125	V2 A	
163	1	Spring washer	B 12 DIN 127	V2 A	
164	1	Hexagon screw	M 12 x 35 DIN 933	V2 A	
165	11	Hexagon screw	M 8 x 20 DIN 933	V2 A	
166	1	Seal	SKU 80.08 - 28	Abil	
167	1	Vacuum connection	SKU 80.08 - 01		
168	1	O ring	36 x 2		
169	1	Valve seat	SKU 80.08 - 10		
170	1	Valve plate	SKU 80.08 - 05		
171	1	Valve bolt	SKU 80.08 - 11		
172	1	Pressure spring	SKU 80.08 - 08		
173	1	Threaded fitting	SKU 80.08 - 06		
174	2	Hexagon nut	½", No. 81204	V2 A	
175	1	Adjusting piece	SKU 80.08 - 07		
176	1	Valve lever	SKU 80.08 - 14		
177	1	Handle	SKU 80.08 - 17		
178	1	Bolt	5 x 22 x 18.5 DIN 1435		
179	1	AB vacuum-manometer	½" / 1,6 bar / 1 - 0 - 3		
180	1	Bushing	½" x ¾", No. 81703		
181	1	Fiber sealing	¾"		
182	1	Drain cock No. 462	¾"		
183	1	2/2 straight-way valve	¾" - 514 / 20 / 195 - 11 - 61		
184	1	Connection piece ¾"	SKU 80.08 - 09		

11.3 Lid Group Quick Fasteners

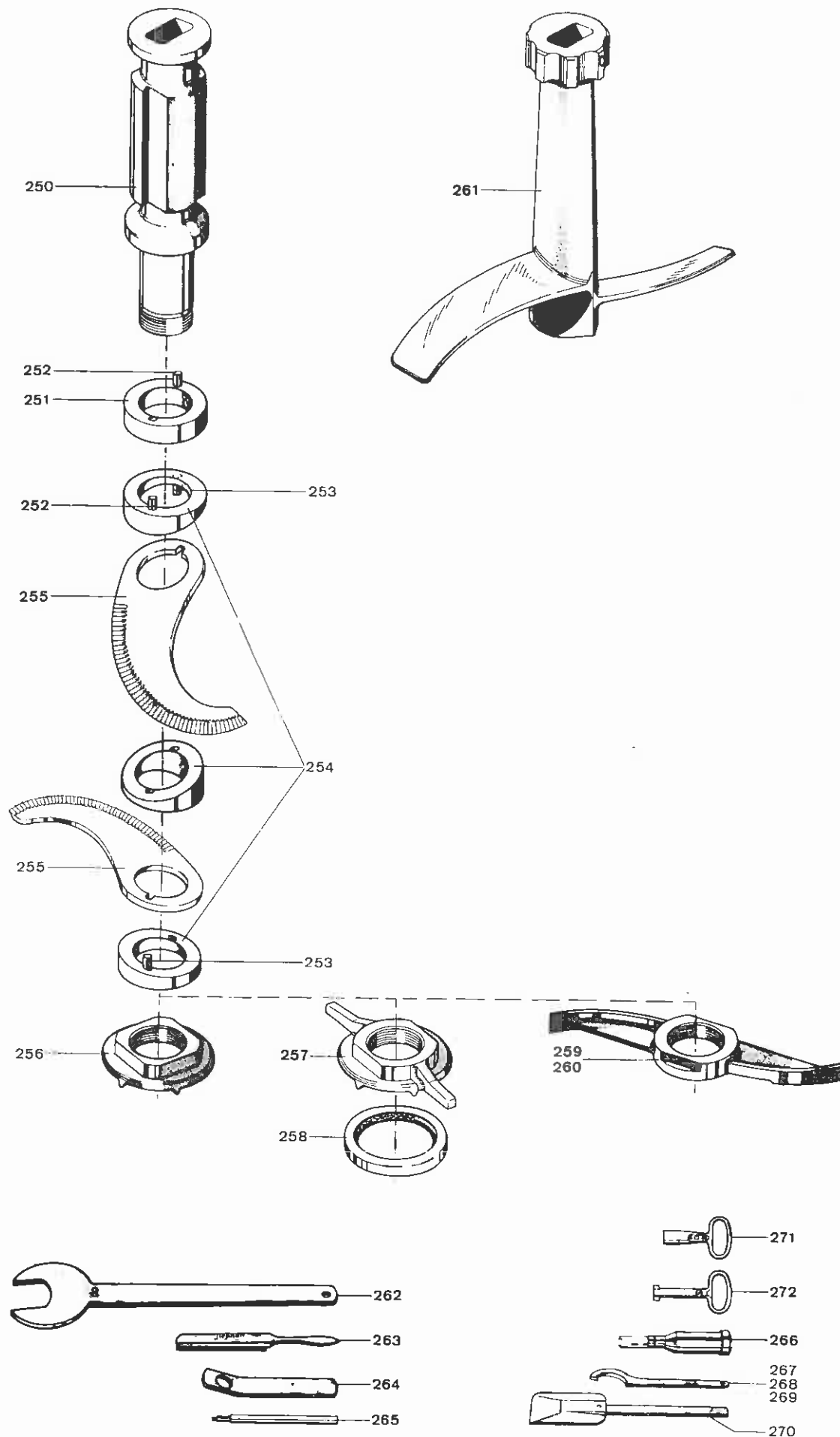


Lid hinge spring assembly



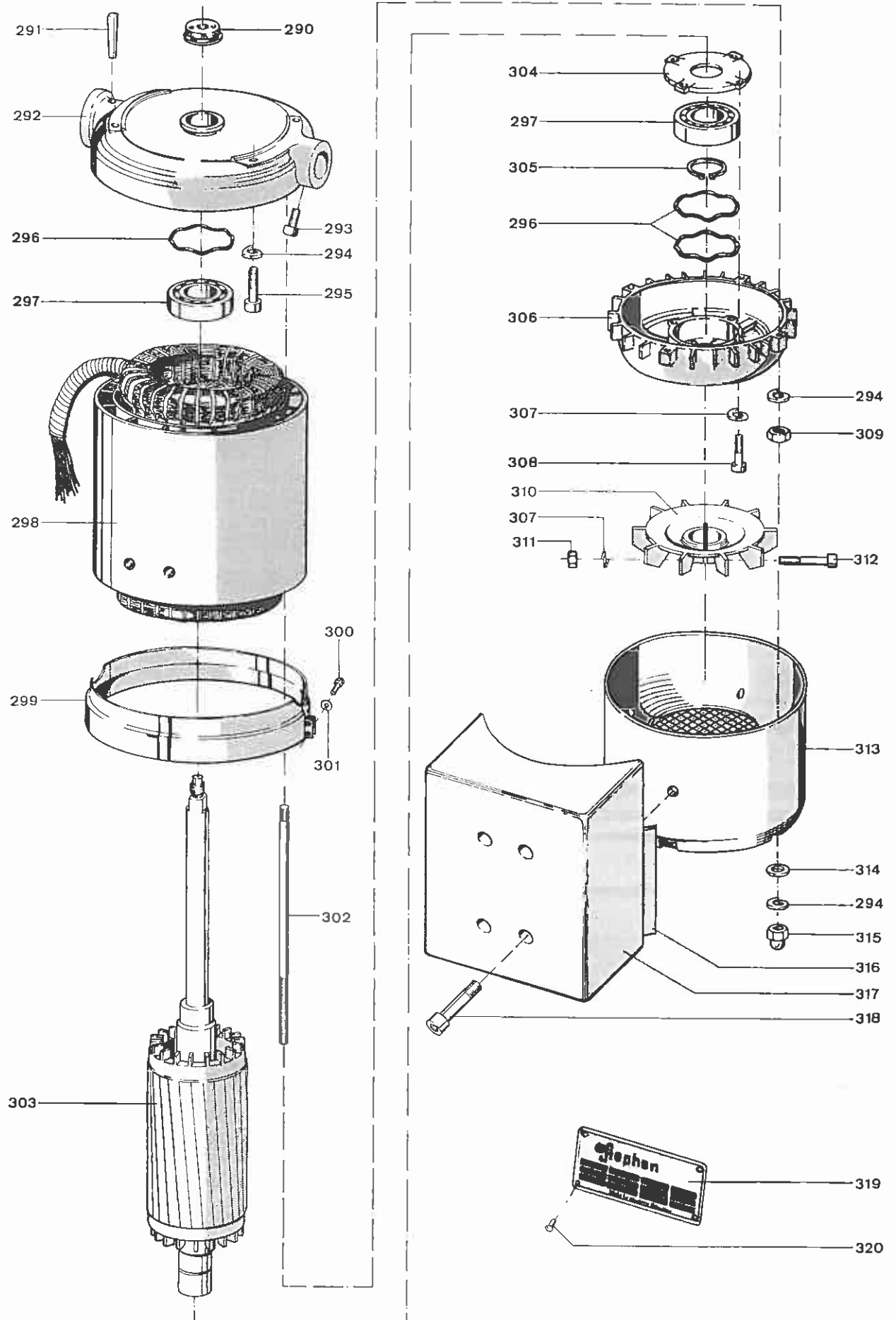
No.	Qty. per Group	Designation	Further Details for Ordering		
190	3	Threaded insert	SKU 80.10 - 17		Ms
191	6	Handle	SKU 80.10 - 18		
192	3	Locking handle	SKU 80.10 - 14		
193	3	Half length taper grooved dowel pin	8 x 45 DIN 1472		V2 A
194	(3)	Locking handle, complete consisting of Nos. 190 - 193	SKU 80.10 - 13		
195	3	Disc	SKU 80.10 - 19		Ms
196	6	Hinge bolt	SKU 80.10 - 21		
197	3	Hinge piece	SKU 80.10 - 22		
198	3	Spring washer	B 10 DIN 127		V2 A
199	3	Hexagon screw	M 10 x 16 DIN 561		V2 A
200	3	Locking bolt	SKU 80.10 - 20		
201					
202					
203					
204					
205	2	Cap nut	M 10 DIN 1587		V2 A
206	2	Hexagon nut	M 10 DIN 934		V2 A
207	2	Washer	10.5 DIN 125		V2 A
208	1	Sleeve, complete	SKU 120.15 - 24	chr. plated	
209	2	Countersunk screw	AM 6 x 10 DIN 963		V2 A
210	1	Switching segment	SKU 120.03 - 54		
211	1	Disc	SKU 120.02 - 40		
212	2	Socket head cap screw	M 6 x 20 DIN 912		V2 A
213	1	Headless setscrew	M 10 x 60 DIN 551		V2 A
214	1	Hinge shaft	SKU 80.09 - 77		
215	1	Headless setscrew	M 10 x 50 DIN 551		V2 A
216	1	Torsion spring $\varnothing 17$	SKU 120.02 - 68		
217	2	Tube	SKU 120.02 - 47		Ms
218	6	Socket head cap screw	M 8 x 20 DIN 912		V2 A
219	1	Flange	SKU 120.02 - 54		
220	1	Cylinder grooved pin	4 x 16 DIN 1473		V2 A
221	2	Washer	31 DIN 125		Ms
222	1	Clamping piece	SKU 120.02 - 50		
223	1	Holding plate	SKU 80.09 - 78		
224	2	Stud	M 16 x 60 DIN 938		V2 A
225	2	Spring washer	B 16 DIN 127		V2 A
226	2	Hexagon nut	M 16 DIN 934		V2 A
227	2	Socket head cap screw	M 16 x 70 DIN 912		V2 A
228	2	RIBE cap	SW 14		
229	1	Flange	SKU 120.02 - 42		
230	1	Tube	SKU 120.02 - 41		Ms
231	1	Torsion spring $\varnothing 16$	SKU 120.02 - 69		
232	1	Disc	SKU 120.02 - 39		
233	2	Distance clip	SKU 80.26 - 11		
234	1	Sleeve, complete	SKU 120.02 - 43		
235	(1)	Grooved nut F	NW 50 DIN 11851		
236	(1)	Blind stopper	SKU 40.15 - 29 / NW 50		
237	(1)	Sealing ring G	NW 50 DIN 11851		
238	1	Spring washer	B 6 DIN 127		V2 A
239	1	Hexagon screw	M 6 x 10 DIN 933		V2 A

11.4 Inserts and Accessories Group



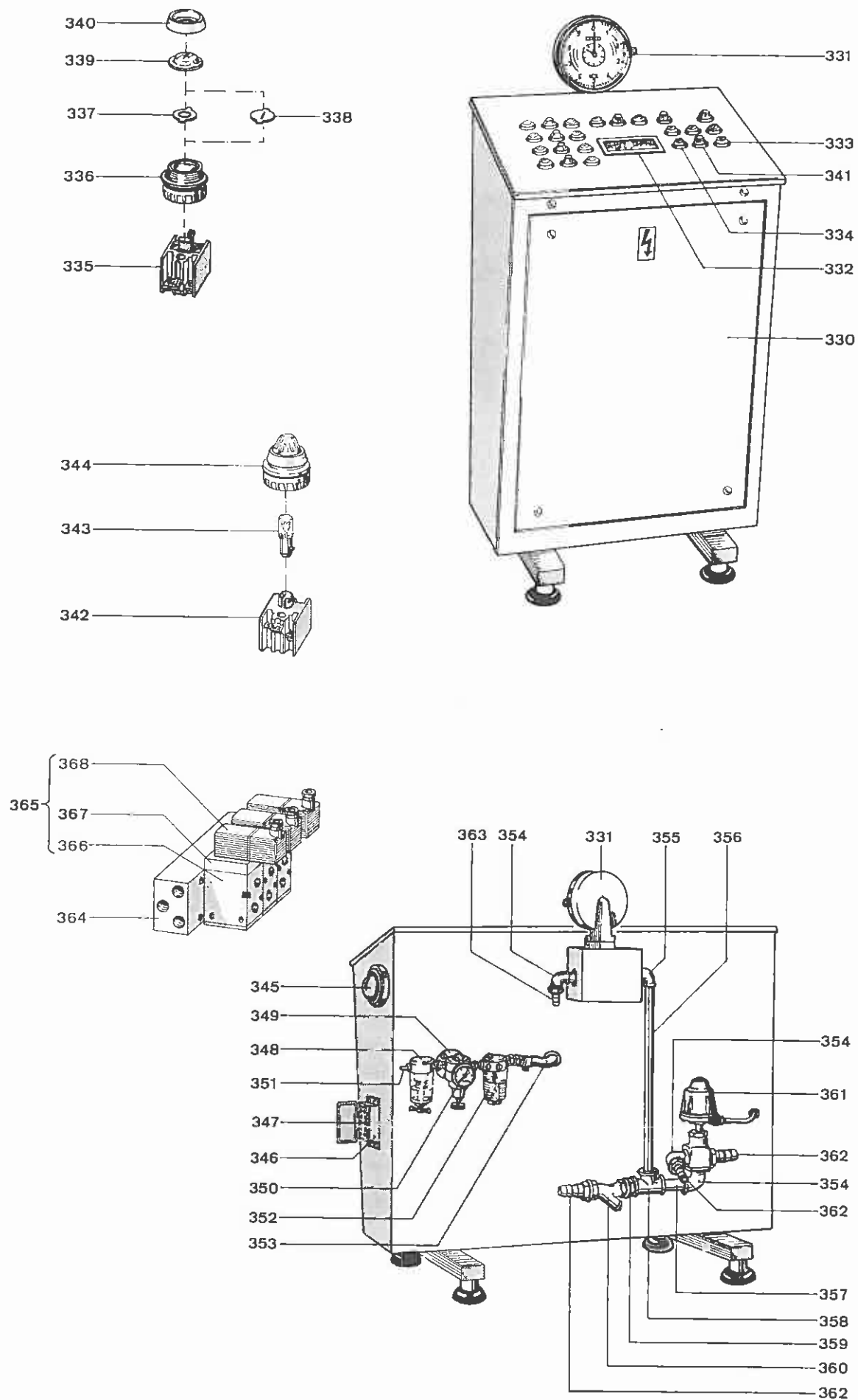
No.	Qty. per Group	Designation	Further Details for Ordering	
250	1	Knife shaft	SKU 80.05 - 40	
251	1	Pressure ring with connection pin	SKU 60.05 - 12	
252	2	Connection pin 8 x 25	SKU 60.05 - 17 T2	V2 A
253	2	Connection pin 8 x 35	SKU 60.05 - 17 T1	V2 A
254	1	Slant ring set complete for 2 knives with connection pins	SKU 60.05 - 09	
255	2	Narrow knives, thickness 8 mm	SKU 80.05 - 23	
256	1	Nut for knife shaft	SKU 80.05 - 41	V2 A
257	(1)	Nut for knife shaft, special version for special seal	SKU 80.05 - 43	V2 A
258	(1)	Garlock seal	63 x 2168	
259	(1)	Wing nut, 260 mm	SKU 60.05 - 19	special version
260	(1)	Wing nut, 340 mm	SKU 80.05 - 19	special version
261	(1)	Mixing insert	SKU 80.05 - 42	special version
262	1	Open-end wrench	SW 70 DIN 894	
263	1	Sharpening stone	150 x 20 x 10	
264	1	Pin wrench	SKU 60.06 - 09 T2	
265	1	Holding pin	SKU 60.06 - 09 T1	
266	1	Grease gun	G 60	
267	1	Hook spanner	HN 10 / NW 32	
268	1	Hook spanner	HN 14 / NW 50	
269	1	Hook spanner	HN 17 / NW 65	
270	1	Scraper	No. 2134	
271	1	Square pipe key	□ 8 - 33.2	
272	1	Double-web key	∅ 5 - 33.4	

11.5 Motor Group



No.	Qty. per Group	Designation	Further Details for Ordering	
290	1	Knurled nut, complete	SKU 60.06 - 05	V2 A
291	1	Taper pin	SKU 60.06 - 10 T1	
292	1	Bearing shield A	SK 8.3.01	
293	2	Square head screw	M 10 x 20 DIN 479	V2 A
294	12	Spring washer	B 12 DIN 127	V2 A
295	4	Socket head cap screw	M 12 x 50 DIN 912	V2 A
296	3	Ball bearing spring lock washer	6311	
297	2	Deep groove ball bearing	6311 - 2 Z	
298	1	Stator for 15/18.5 kW		
		1500/3000 min ⁻¹ at 50 Hz	FND 832 / 4 D	
		1750/3500 min ⁻¹ at 60 Hz		
		Stator for 18.5/22 kW		
		1500/3000 min ⁻¹ at 50 Hz	FND 842 / 4 D	
		1750/3500 min ⁻¹ at 60 Hz		
		Stator for 10/17 kW		
		750/1500 min ⁻¹ at 50 Hz	FND 844 / 8 D	
		875/1750 min ⁻¹ at 60 Hz		
299	1	Guard ring	SKU 60.06 - 07 / ø 350	
300	2	Cheese head screw	M 5 x 20 DIN 84	V2 A
301	2	Spring washer	B 5 DIN 127	V2 A
302	4	Threaded spindle for FND 832 / 4 D	SKU 80.06 - 09 / 520 lg.	V2 A
		Threaded spindle for FND 842 / 4 D	SKU 80.06 - 09 / 560 lg.	V2 A
		or FND 844 / 8 D		
303	1	Rotor for 15/18.5 kW		
		1500/3000 min ⁻¹ at 50 Hz	FND 832 / 4 D	
		1750/3500 min ⁻¹ at 60 Hz		
		Rotor for 18.5/22 kW		
		1500/3000 min ⁻¹ at 50 Hz	FND 842 / 4 D	
		1750/3500 min ⁻¹ at 60 Hz		
		Rotor for 10/17 kW		
		750/1500 min ⁻¹ at 50 Hz	FND 844 / 8 D	
		875/1750 min ⁻¹ at 60 Hz		
304	1	Special bearing cover	ND 8.9.01	
305	1	Seeger circlip ring	55 x 2 DIN 471	
306	1	Bearing shield B	ND 8.3.04	
307	6	Spring washer	B 8 DIN 127	
308	4	Socket head cap screw	M 8 x 45 DIN 912	
309	4	Hexagon nut	M 12 DIN 934	V2 A
310	1	Fan blade	ND 8.7.02	
311	2	Hexagon nut	M 8 DIN 934	
312	2	Socket head cap screw	M 8 x 80 DIN 912	
313	1	Fan housing	SKU 80.06 - 06	
314	4	Washer	13 DIN 125	V2 A
315	4	Cap nut	M 12 DIN 1587	V2 A
316	1	Rubber intermediate lay, 3 mm	for SKU 80.06 - 11	
317	1	Balance weight	SKU 80.06 - 11	
318	4	Socket head cap screw	M 10 x 100 DIN 912	V2 A
319	1	Type plate	SK 202	
320	4	Grooved drive stud	3 x 6 DIN 1476	
321	1	Motor complete, consisting of Nos. 291 - 320	FND 832 / 4 D - 15/18,5 kW	
		Motor complete, consisting of Nos. 291 - 320	FND 842 / 4 D - 18,5/22 kW	
		Motor complete, consisting of Nos. 291 - 320	FND 844 / 8 D - 10/17 kW	

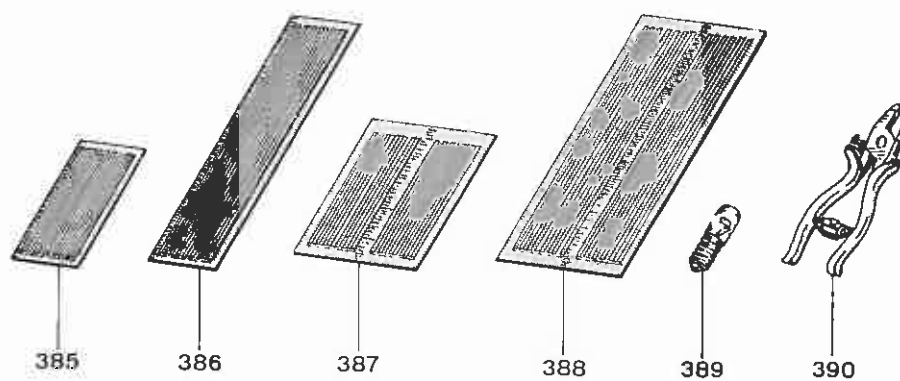
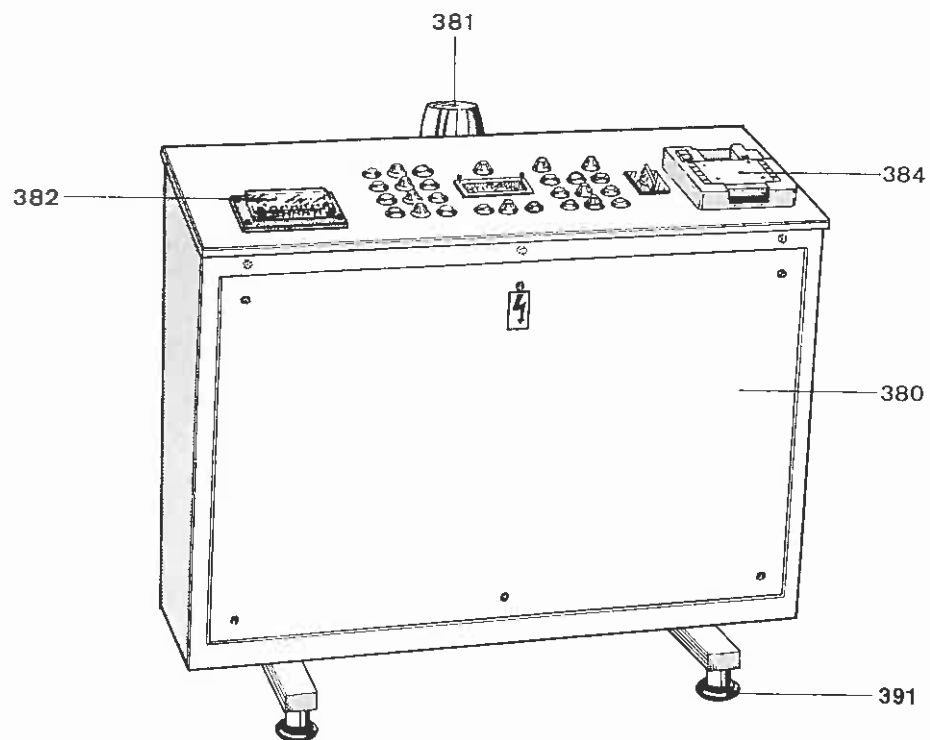
11.6 Control Panel Group (Without Program Control)



No.	Qty. per Group	Designation	Further Details for Ordering	
330	1	Control panel, width 600 mm, 380 or 440 V, with cylindrical piston water counter and 3/2-way water valve for manual control of machine		
	1	Control panel as above, but for 200 or 220 V		
	1	Control panel, width 900 mm, as described above, but with control for loading valve and feed devices		
	1	Control panel as above, but for 380 or 440 V		
331	1	Cylindrical piston water counter	VZTH - ZV 20 - R ¾"	
332	1	Temperature indicator	5563 N / B / NS / BS / 0 - 150 °C	
333	(x)*	Push button "I", complete	DTa - 12 / GR / K	
334	(x)*	Push button "0", complete	DTa - r / GR / K	
335	(x)*	Contact block	K - NA	
336	(x)*	Push button	DTa - x / GR - gr	
337	(x)*	Button plate "0" red	2 / 32 K	
338	(x)*	Button plate "I" green	12 / 78 K	
339	(x)*	Push button shroud with transparent insert	G - DTa	
340	(x)*	Front ring	R - gr - DTa	
341	(x)*	Indicator lamp, complete	La / Fa - gr	
342	(x)*	Bulb holder BA 9 s	Fa o GL	
343	(x)*	Filament bulb BA 9 s, 110 - 130 V, 2W	GL 130	
344	(x)*	Front lens, white, complete	La - ws - gr	
345	1	Main switch 63 A	T44 - 2 / ea / Sv b	
		Main switch 63 A	N6 - 63 - ea + ZS	
		Main switch 100 A	N6 - 100 ea + ZS	
		Main switch 160 A	N6 - 160 ea + ZS	
346	1	Lower part of housing	70.325.1028, 10-channel	
347	1	Bushing insert	70.300.1040, 10-channel	
348	1	Standard air preparing unit	WL 100 - 3 - R ¾"	
349	1	Fixing device for air preparing unit	11.120	
350	1	Manometer for air preparing unit	0 - 10 bar	
351	2	Hose nozzle N ¾" P 6	00.3608	
352	2	Reservoir tank, transparent, with large and small O - ring	280 cm³, No. 9273	
353	(x)*	Pressure-proof rubber tube P 6	length on request	
354	3	Elbow	¾" inside x ¾" outside	galv.
355	1	Elbow	¾" inside x ¾" inside	galv.
356	1	Tube nipple	¾", 600 lg.	galv.
357	1	Tube nipple	¾", 80 lg.	galv.
358	1	T piece	¾"	galv.
359	1	Hexagon nipple	¾" x ¾"	galv.
360	1	Filtering screen	¾"	Ms
361	1	3/2-way water valve with pneumatic control head	314 / 20 D 195 - 1/1	
362	3	Hose nozzle NW 25	¾" outside, No. 003613	Ms
363	1	Hose nozzle NW 25	¾" inside	chr.
364	1	Series connection plate for 2 - 8 stations	LV 571 2 A - LV 571 8 A	
365	(x)*	5/2-way magnetic valve consisting of Nos. 366 - 368	LV 5 EM 4 / 200 - 240 V 50 Hz or 220 - 240 V 60 Hz	
366	(x)*	Main valve	LV 5 EM 4	
367	(x)*	Pilot valve	LV 5 EM 4	
368	(x)*	Coil with plug type connection for LV 5 EM 4	200 - 240 V 50 Hz or 220 - 240 V 60 Hz	
369	(x)*	Blind flange for Series connection plate	LV 7 610 3A	not ill.
370	1	Perilex socket outlet for compressor	16 A, No. 1 DC 81	not ill.
371	1	Reversing contactor for main motor	DIL 2v - 22 / Z2 - 40 / Z2 - 40	not ill.
		Reversing contactor for main motor	DIL 2 - 22 / Z2 - 60 / Z2 - 80	not ill.
		Reversing contactor for main motor	DIL 3 - 22 / Z4 - 70 / Z4 - 70	not ill.
372	(x)*	Contactor with motor overload relay, 380 or 440 V	DIL 00 - 52 / Z0 - 3.7	not ill.
		Contactor with motor overload relay, 200 or 220 V	DIL 00 - 52 / Z0 - 6.7	not ill.
373	(x)*	Contactor relay, 3 make contacts + 1 break contact	DIL 00 L - 31 / c	not ill.
374	(x)*	Universal contactor, 5 make contacts + 2 break contacts	DIL 00 52 / c	not ill.
375	(x)*	Contactor relay, 6 make contacts + 2 break contacts	DIL 00 L62 / c	not ill.
376	1	Heating resistor	100 W "Dold"	not ill.

(x)* Quantity depending on demand

11.7 Control Panel Group
(With Program Control)

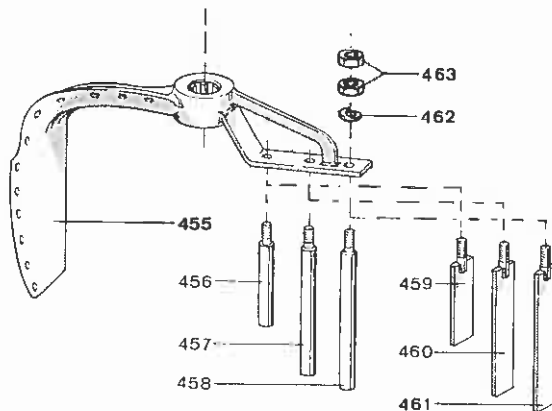
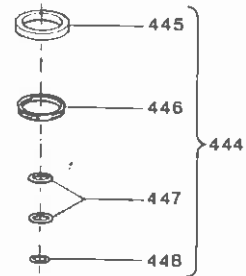
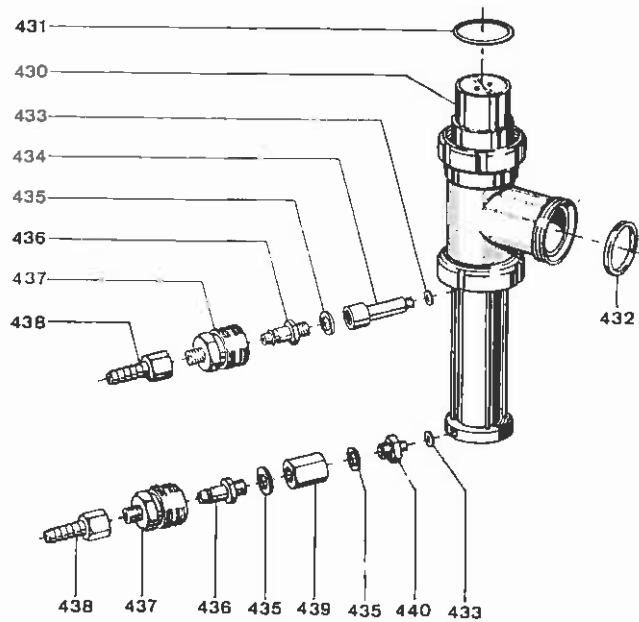
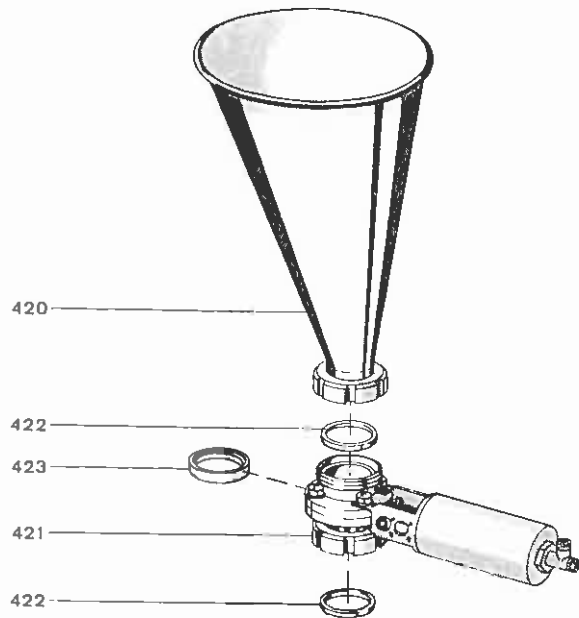


No.	Qty. per Group	Designation	Further Details for Ordering	
380	1	Control panel, width 1200 mm, 380 or 440 V, with cylindrical piston water counter, impulsive counter, 3/2-way water valve and 12-track punch card controller		
	1	Control panel as above, but for 200 or 220 V		
	1	Control panel, width 1500 mm, as described above, but with 24-track punch card controller		
	1	Control panel as described above, but for 380 or 440 V		
381	1	Cylindrical piston water counter	VZTH - KAe 20 - R 3/4"	
382	1	Remote impulse counter	FSW 219	
383	1	Control transformer for impulse counter	ET 50 - 220/36/24 V	not ill.
384	1	Punch card controller with 12 tracks, forward motion 5 min - return motion 48 s	S 27 VK 5 RS	
	1	Punch card controller with 12 tracks, forward motion 7.5 min - return motion 12 s	S 27 VK 7,5 RS	
	1	Punch card controller with 24 tracks, forward motion 7.5 min - return motion 12 s	S 274 VK 7,5 RS	
	1	Punch card controller with 24 tracks, forward motion 15 min - return motion 24 s	S 274 VK 15 RS	
385	(x)*	Punch card, 75 graduation marks 243 mm long, with 12 tracks	PK 12 K 75	
386	(x)*	Punch card, 150 graduation marks 480 mm long, with 12 tracks	PK 12 K 150	
387	(x)*	Punch card, 75 graduation marks 275 mm long, with 24 tracks	PK 24 K 75	
388	(x)*	Punch card, 150 graduation marks 480 mm long, with 24 tracks	PK 24 K 150	
389	(x)*	Glow lamp for punch card controller	T 6.8 15 - 03	
390	1	Special pliers for punch cards	PKZ / KZ 34	
391	4	Rubber foot	SKU 25.01 - 10	

Further control panel spare parts see page 35

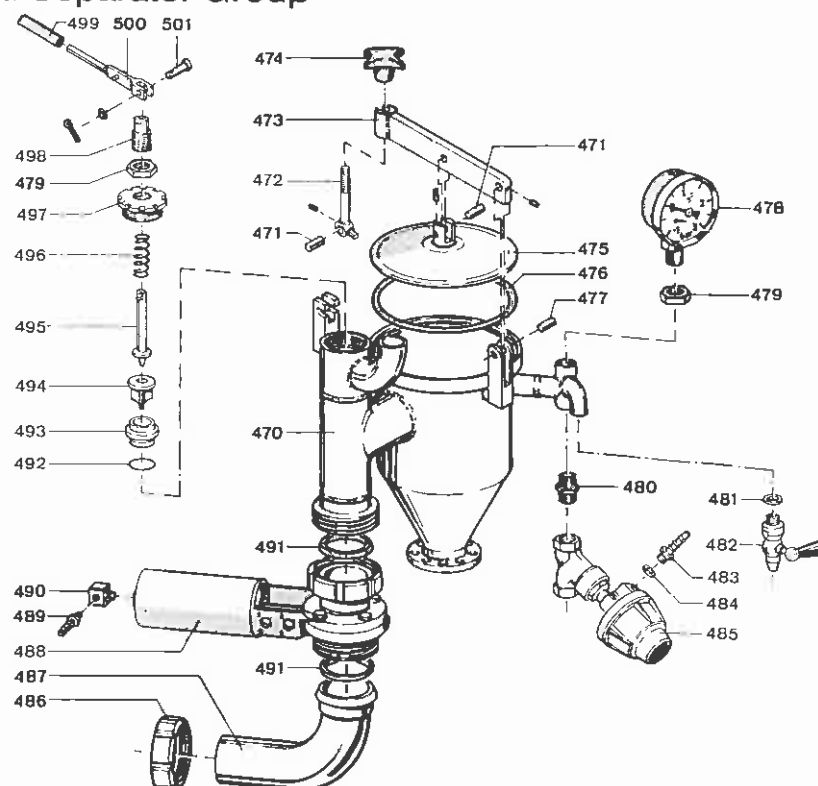
(x)* Quantity depending on demand

11.8 Accessories Optional Equipment



No.	Qty. per Group	Designation	Further Details for Ordering	
420	1	Dosing funnel, 15 ltr.	SKU 80.10 - 39	
421	1	Straight-way disc valve 25-79-500/17	SV 1 - FZ 1K, 2G, NW 65	
422	2	Sealing ring G	NW 65 DIN 11851	
423	1	Replacement seal	58 - 33 - 478 / 13	
424	1	Dosing funnel with straight-way disc valve and 2 sealing rings G		
425				
426				
427				
428				
429				
430	1	Pneumatically controlled bowl valve with tube discharge NW 65, O ring 74 x 3 and sealing ring G		
431	1	O ring	74 x 3	
432	1	Sealing ring G	NW 65 DIN 11851	
433	2	Fiber seal	1/8"	
434	1	Intermediate piece 1/8" x 1/4"	SKU 80.09 - 62	Ms
435	3	Fiber seal	1/4"	
436	2	Coupler plug	1/4" Ks 00 2154	Ms
437	2	Coupler socket	1/4" Kd 00 2143	Ms
438	2	Hose nozzle with union nut	C - 1/4" - P6	Ms
439	1	Hexagon bushing	1/4"	Al
440	1	Hexagon reducing nipple	1/8" x 1/4"	Al
441	1	Pressure-proof tube P6	0,45 m lg.	not ill.
442	1	Pressure-proof tube P6	0,55 m lg.	not ill.
443	4	Tube clip	No. 6207	V2 A
444	1	Replacement set of seals for No. 430 consisting of Nos. 445 - 448		
445	1	Teflon seal	68,6 x 52 x 10,2	
446	1	Seal	62 x 51 x 5,5	
447	2	O ring 12.37 x 17.61 x 2.62	2 - 112	
448	1	O ring 7.65 x 11.21 x 1.78	2 - 011	
449				
450				
451				
452				
453				
454				
455	1	Mixing baffle for stirrers	SKU 80.10 - 69 T1	
456	1*	Stirring rod, round, 135 lg.	SKU 80.10 - 69 T2	
457	1*	Stirring rod, round, 225 lg.	SKU 80.10 - 69 T3	
458	1*	Stirring rod, round, 245 lg.	SKU 80.10 - 69 T4	
459	1*	Stirring rod, flat, 135 lg.	SKU 80.10 - 69 T5	
460	1*	Stirring rod, flat, 225 lg.	SKU 80.10 - 69 T6	
461	1*	Stirring rod, flat, 245 lg.	SKU 80.10 - 69 T7	
462	3	Spring washer	B12 DIN 127	V2 A
463	6	Hexagon nut	M12 DIN 439	V2 A
464	1	Mixing baffle, complete with round stirring rods and Polypropylene scraper	SKU 80.10 - 69	
465	1	Mixing baffle, complete with round stirring rods and Teflon scraper	SKU 80.10 - 69	
466	1	Mixing baffle, complete with flat stirring rods and Polypropylene scraper	SKU 80.10 - 69	
467	1	Mixing baffle, complete with flat stirring rods and Teflon scraper	SKU 80.10 - 69	

11.9 Solid Separator Group



No.	Qty. per Group	Designation	Further Details for Ordering
470	1	Solid separator	SKU 80.08 - 52
471	2	Straight pin	10 m 6 x 28 DIN 7
472	1	Closing bolt	SKU 80.08 - 62
473	1	Closing bow	SKU 80.08 - 60
474	1	Star handle	M 12 DIN 6335
475	1	Lid	SKU 80.08 - 57
476	1	O ring 2 - 368	196.22 x 206.88 x 5.33
477	1	Straight pin	10 m 6 x 24 DIN 7
478	1	AB vacuum manometer	1/2" / 1.6 bar / 1 - 0 - 3
479	2	Hexagon nut	1/2", No. 81204
480	1	Hexagon nipple	1/2", No. 81104
481	1	Fiber sealing	3/8"
482	1	Drain cock No. 462	3/8"
483	1	Hose nozzle	1/4"
484	1	Fiber sealing	1/4"
485	1	2/2 straight-way valve	1/2" - 514 / 15 / 195 - 1
486	1	Grooved nut F	NW 65 DIN 11851
487	1	Condenser connecting piece NW 65	SKU 80.08 - 49
488	1	Straight-way disc valve 25 - 79 - 500 / 17	SV1 - FZ 1K, 2G, NW 65
489	1	Hose nozzle with fiber sealing	1/8"
490	1	Angle piece	G - 1/8" - a/i
491	2	Sealing ring G	NW 65 DIN 11851
492	1	O ring	36 x 2
493	1	Valve seat	SKU 80.08 - 10
494	1	Valve plate	SKU 80.08 - 05
495	1	Valve bolt	SKU 80.08 - 11
496	1	Pressure spring	SKU 80.08 - 08
497	1	Threaded fitting	SKU 80.08 - 06
498	1	Adjusting piece	SKU 80.08 - 07
499	1	Handle	SKU 80.08 - 17
500	1	Valve lever	SKU 80.08 - 14
501	1	Bolt	5 x 22 x 18.5 DIN 1435
502	1	Solid separator, complete consisting of Nos. 470 - 501	SKU 80.08 - 51

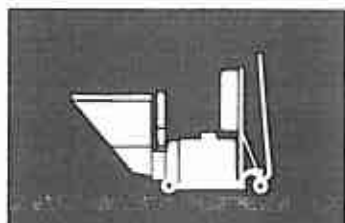
An Excerpt from the
Stephan Product Line

- General food industry
- Bakery trade
- Bread and pastry industry
- Production of delicacies
- Fish industry
- Meat industry
- Meat processing industry
- Communal feeding
- Hotels and feeding centres
- Dairy products industry
- Confectionery industry



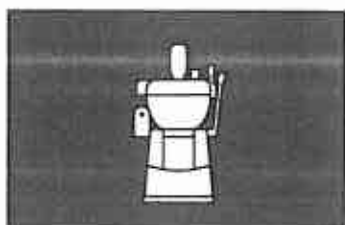
Microcut MCV 10 A to MCV 40 A

7,5 to 30 kW, vertical,
for cutting, homogenizing, emulsifying



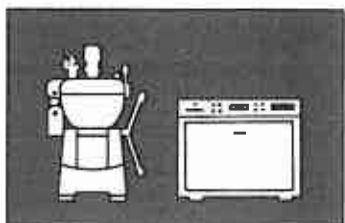
Microcut MCH 30 A and MCH 40 A Microcut MCH-D 30 A to MCH-D 100 A

22 to 132 kW, horizontal, single or
double cutting, for cutting,
homogenizing, emulsifying



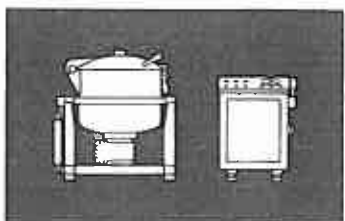
Universal Machines UM 12 to UM 130 E

Bowl capacity 12, 25, 40, 60, 80, 115 litres respectively.
Cutting, cutting, mixing,
emulsifying, kneading, stirring



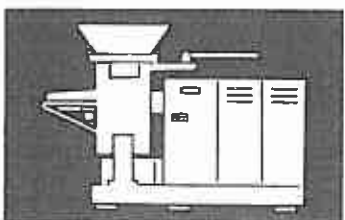
UMM/SK 25 to UMM/SK 130 E

Bowl capacity 25, 40, 80, 115 litres respectively.
Tailored for the dairy products industry.
Cutting, mixing, kneading, processing, evacuating, melting,
thermic treating, pasteurizing, sterilizing, emulsifying,
removing of moisture, cooling



Vacuum Mixer VM 100 and VM 300

Bowl capacity 100 and 300 litres respectively.
Mixing and tumbling under vacuum, preparation of meat,
deaeration of sausage emulsions, dry pickling



Combicut TC 200, TC 300, TC 400, TC 600, and TC 850; 30 to 230 kW

200 to 850 litres drum capacity for cutting or chopping
under vacuum, cutting, mixing, emulsifying, direct and
indirect heating, homogenizing, pasteurizing, thermic
treating, evacuating, rough-grinding, stirring, melting,
cooking, removing of moisture, cooling, kneading