

Operating instructions

Ice cream making machine
SE863



Machine serial No. _____
Year of manufacture: _____
Date of issue: _____

Made in
Germany



The operating instructions is part of the machine
Store it in a safety place for future reference !

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1. Technical Data

1.1 Specific machine data

Machine designation:	Ice cream making machine
Machine type:	SE863
Circuit diagram No.	SE863-800-4005-1

1.2 Machine data, standard specification 400V, 50Hz

Voltage	[V]	400
Frequency	[Hz]	50
Output	[kW]	3,5
Mains fuse	[A]	16, slow-blow

Bowl capacity:	[liter's]	40
Ready-made ice cream per hour	[liter's]	40
Initial charge	[liter's]	2-5
Freezing time (dependent on icemix and firmness)	[min]	10

1.3 Machine data, non-standard specifications

See accompanying electrical circuit diagrams in Supplement A3

1.4 Principal dimensions

Height:	[mm]	1600
Width:	[mm]	550
Depth:	[mm]	870

(Supplement A1: dimensional diagram)

1.5 Weight

Weight of the SE863 ice cream making machine without accessories:	[kg]	395
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2 Safety

2.1 Symbols and instructions

2.1.1 Operating safety symbol



This symbol is placed alongside all the operating safety instructions in this manual which must be observed to prevent any risk to the life and limb of personnel. In such cases, follow the instructions without fail and proceed with the utmost care. Also pass on all the operating safety instructions to other users.

2.1.2 Caution symbol

CAUTION!

This symbol is placed alongside the instructions in this manual which must be observed without fail to ensure compliance with official guidelines, regulations and the correct sequence of operations, and to prevent damage, possibly irreparable, to the machine and other parts of the plant.

2.1.3 Information symbol



This symbol indicates helpful tips and other useful information.

2.2 Use of the machine as specified

The SE863 ice cream making machine is intended for the purpose of making ice cream. Mixtures must not cause any chemical reactions or give off substances which could endanger or harm human health.

Use of the machine for any other purpose will count as unspecified. BOKU Maschinenfabrik GmbH accepts no liability for any damage or loss arising in this way; the user alone bears the risk in such cases.

To ensure that the machine is operated in the specified manner, the following instructions must be observed without fail:

- Do not overfill the bowl. Observe the permitted quantities (Section 1.2).
- Do not pour mixtures into the bowl when hot (max. temperature 35 °C).
- Do not put any objects into the bowl when the mixing attachment is rotating.
- After freezing, remove the prepared ice cream immediately.

2.3 Operating safety instruction

2.3.1 General safety precautions

CAUTION!

Before using the machine for the first time, do read this manual through carefully, from beginning to end !

The following safety precautions, in particular, must be observed:

- Although the machine has been built in accordance with the current state of the art, it may give rise to potential hazards if it is improperly used by untrained personnel or for a purpose other than as specified (Section 2.2).
- These operating instructions must be carefully read, understood and observed by all those personnel responsible for the installation, commissioning, operation and maintenance of the machine. A thorough knowledge of the contents is a prerequisite for the avoidance of machine faults and troublefree operation. We accept no liability for damage or operating faults resulting from the non-observance of the operating instructions.
- Personnel may be put at risk by faults in the electrical installation, inexperienced use, inadequate maintenance and inspections or unauthorised technical modifications or conversions. At the same time, any of these will invalidate any guarantee and liability on the part of the manufacturer.
- If the machine develops faults which could adversely affect safety, e.g. damage to the EMERGENCY-STOP bar, the machine must be withdrawn from service immediately and not used again until it has been repaired. In such cases, notify your maintenance service accordingly.
- Repairs and maintenance operations are to be carried out at the specified intervals and only by qualified personnel. Only genuine BOKU spare parts may be used.
- Disconnect the mains power supply (withdraw the mains plug) before carrying out any repairs or maintenance work.
- The machine must not be operated other than with the manufacturer's original attachments supplied.
- Do not clean the bowl with excessively hot water (maximum water temperature 35 °C).
- Turn off the water supply on the completion of work.
- At room temperatures below 0 °C or if there is a risk of frost, drain off the cooling water (see Section 3.5).
- The complete set of technical documents for the machine should always be kept within easy reach.



BOKU Maschinenfabrik GmbH reserves the right to introduce technical modifications and improvements to the SE863 ice cream making machine without prior notice.

2.3.2 Safety features of the machine

1. **EMERGENCY-STOP bar:** In an emergency, this bar serves to operate the EMERGENCY-STOP button over the entire width of the machine, bringing it to a standstill.
2. **Plexiglas lid:** Prevents personnel from reaching into the bowl when the machine is running.



Never operate the machine if any item of safety equipment is damaged or has been removed or bypassed !

2.4 Noise emissions

The workplace-related noise level, measured in accordance with DIN EN ISO 11204 is:

$$L_{pAeq}=70dB(A)$$

2.5 Potential hazards

- Start the machine **only** with the Plexiglas lid closed.!
- Keep all parts of the body well away from the area swept by the ice making attachment. **Do not** reach into the bowl or place objects in the bowl when the machine is running, otherwise a risk of injury may arise from the rotating attachment or of damage (possibly irreparable) to the attachment and/or bowl or the machine itself.

2.6 What to do in an emergency

In an emergency, operate the EMERGENCY-STOP switch by means of the EMERGENCY-STOP bar !

3. Installation and commissioning

3.1 Installation

- Push the machine into the desired position with the aid of the casters mounted to its feet.
- Set up the machine on a flat, solid floor of sufficient load bearing capacity.
- Tighten the two front adjusters (2) evenly, until the front castor is clear of the floor.

CAUTION!

Do not tighten the adjusters excessively, otherwise the bowl will not have the required inclination.

- The machine dimensions will be found in Appendix A1 (dimensional data).

3.2 Water connections

Use the water hoses (R1/2") supplied for water supply and drainage purposes (connecting sockets are located under the machine at the rear). The water supply hose also incorporates a filter. When replacing this hose, reinstall the filter without fail.

When connecting the hoses, observe the direction of flow without fail, i.e.

- **Water supply:** Screw coupling with **blue** marking.
- **Water drainage:** Screw coupling with **red** marking.



Hose connection: R3/4"

CAUTION!

Turn off the water supply on the completion of work.

3.3 Electrical connection

- Connect the power supply (insert (Euro-plug)).



- A fixed connection to the power supply and any other electrical work must only be carried out by a qualified electrician.
 - Observe DIN and VDE regulations or their equivalents in the country of use.
 - Check that the local mains electricity supply complies with the machine data.
- The following fuses are required in the electrical connection to the machine:
Standard configuration (400V/50Hz): 16 A, slow-blow
Special configurations: See circuit diagram in appendix A3

3.4 Filling the cooling medium

The closed circuit is filled with R404A coolant by the factory before dispatch. The brine based ANTIFROGEN L cooling transfer medium is supplied in a 10.5 litre canister. This is to be mixed with 9.5 litres of water and the 20-litre mixture poured into the aperture between the bowl and the outer coil container with the aid of a funnel. To do this, pull the

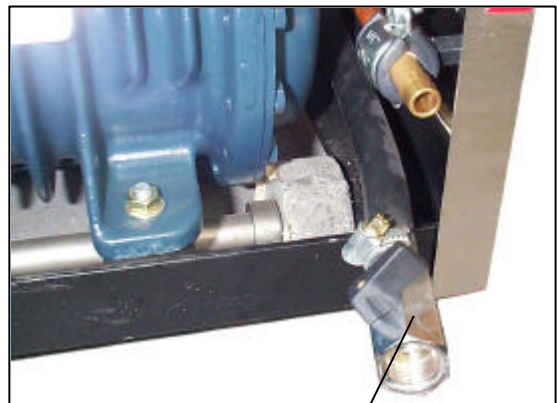
ring insert (see Section 5.9, No. 26) upwards out of the retaining pins, push it forward slightly and place it on the tabletop. Check the cooling medium level with the bowl in place; the maximum level should reach the red mark and cover the copper coil, but should remain below the overflow opening. To stabilise the cooling medium level when the machine is running, cover the aperture by installing a plastic hose in the form of a ring.

Place the overflow tank supplied (1) for the ANTIFROGEN cooling medium under the machine in the position marked.



1

2



3

If required, the cooling medium can be drained off from the rear of the machine by means of a hose with a shutoff valve (3).

3.5 Preparations for use

- Fill cooling medium (Section 3.4).
- Establish the water connections (Section 3.2) and open the water tap.
- Establish the power supply (Section 3.3)
- Set the main switch to position „1“ (see Section 4.1, No. 4)

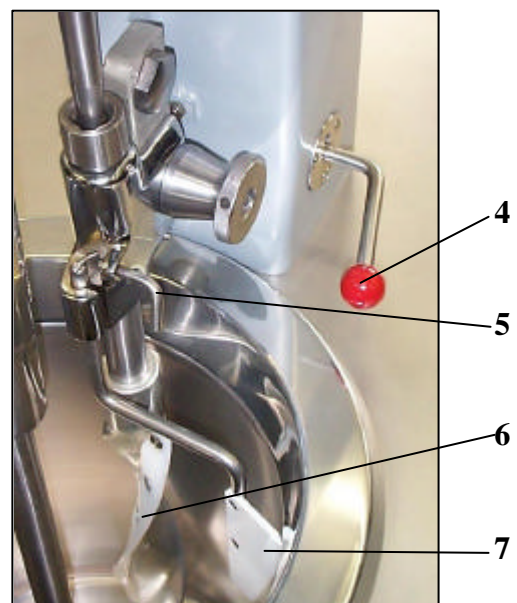
CAUTION!

Use the main switch only for maintenance work.

- Clamp the mixer attachment (6) to the rear against the side of the bowl by tilting lever (4).
- Press the scraper (7) against the side of the bowl by means of the tommy screw (5).

CAUTION!

Clamp the mixer attachment before positioning the scraper, otherwise the latter will become bent.



4

5

6

7

- The machine is now ready for use.



For directions on operating the SE863 ice cream making machine, see Section 4.

3.6 Direction of rotation

CAUTION!

Check the direction of rotation of the motor before using the machine.!

- Bring the machine to operational condition (Section 3.6).
- Switch on the mixer with the rotary switch (Section 4.4).
- The bowl must turn anticlockwise (refer to red arrow on machine).
- Operate the "OFF" pushbutton for the mixer.

CAUTION!

If the bowl rotates in the wrong direction, call in an electrician to reverse the polarity of the connecting lead to the machine !

i

Once it has been established that the motor is rotating in the correct direction, it need not be changed again.

3.7 Laying up the machine for the winter

CAUTION!

At room temperatures below 0 °C or if there is a risk of frost, any cooling water remaining in the machine must be drained.

- Remove the water supply and drainage hoses.
- Open the ball valve (9).
- Drain off cooling water.
- If necessary, install a ½" ware hose at socket (8).
- The water will run out of its own accord.
- Close the ball valve.



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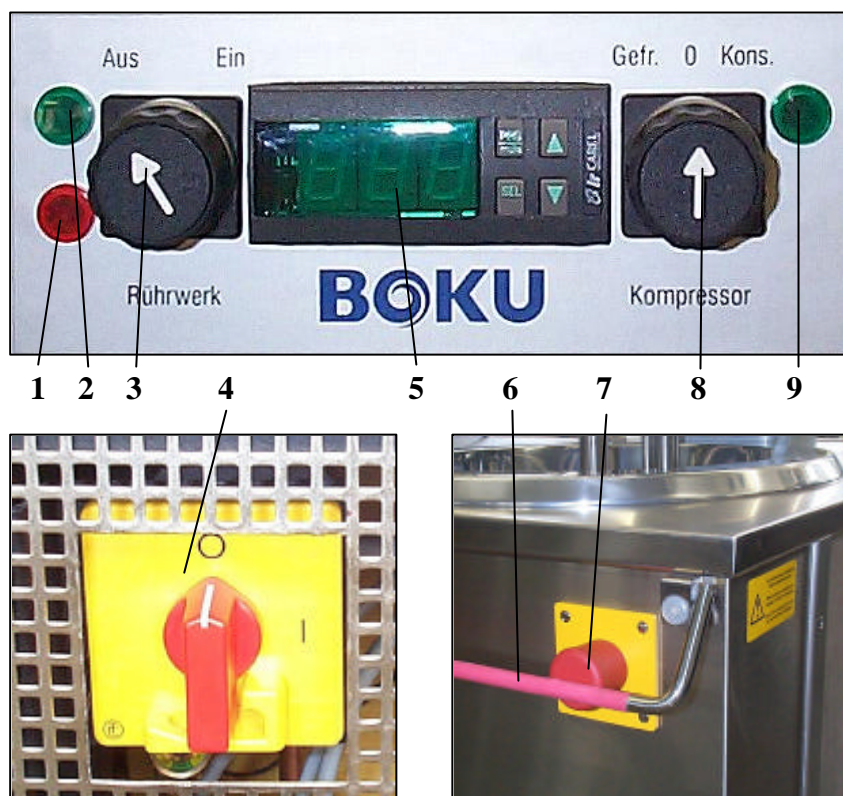
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4. Operation



- Do not start the machine unless the bowl lid is closed !
- Keep parts of the body well away from the area swept by the mixer attachment !
- Do not reach into the bowl when the machine is running !
- In an emergency, operate the **EMERGENCY-STOP** switch !

4.1 Control panel



4.2 Main switch

Turn the **main switch** (4) at the rear of the machine to position "1". The machine is now ready for use.

CAUTION!

Set the main switch to position "0" only for maintenance work.

The reason for this is that switching off the machine by means of the main switch shuts down the compressor. Subsequent cleaning of the bowl with hot water may cause the pressure in the compressor to rise and damage it beyond repair.

4.3 Switching off in an emergency

In an emergency, operate the **EMERGENCY-STOP** switch (7) by means of the **switch bar** (6). This will bring the mixer motor to a standstill.



Check the machine for potential hazards.

Pull the **EMERGENCY-STOP** switch (7) to reset it.

4.4 Switching the mixer motor on/off

Switch the mixer motor on/off by way of the **rotary switch** (3). When the motor is running, the **green indicator lamp** is lit (2).

4.5 Cold setting regulator

The **IR32Z0 cold setting regulator** (5) is used to control the temperatures for freezing and conserving. The regulator is preset for the production of ice cream by the factory before dispatch as shown in table below:

Parameters:		Preset value:	Remarks:
Freezing	St1	-24 °C	Ice cream ready, temp. approx.: -10°C
Conserving	St2	+5,0 °C	Average ice cream temp.: +5°C

CAUTION!

It is strongly recommended not to change these preset temperatures.

To change the settings of the cold setting regulator (5) for freezing/conserving:

- Press the **SEL** button for 1 second.
- Set the temperature for freezing St1 with the - + buttons.
- Press the **SEL** button again.
- Set the temperature for conservation St2 with the - + buttons.
- Press the **SEL** button again.
- The present temperature will now be displayed.

4.6 Freezing

To switch on the compressor, turn the **selector switch** (8) anticlockwise to the 'Gefr' (Freeze) position. The **green indicator lamp** (9) on the right will light up.

After a brief preliminary cooling period, pour in the ice cream mixture and switch on the mixer motor. When the temperature indicated by the **cool setting regulator** (5) reaches -24 °C, the finished ice cream (temperature approx. 10 °C) can be removed. The machine will now go into the „Pump-Down“ mode and will switch off automatically.

CAUTION!

After a freezing process, remove the finished ice cream immediately or switch to the conservation setting (Section 4.7).

4.7 Conservation

With the **selector switch** (8) in the 'Kons' (conserve) position, the empty bowl will remain free of germs at +5 °C after the ice cream has been removed or for a short period until the next batch of ice cream mixture is introduced without immediate re-freezing. The **green indicator lamp** (9) on the right will light up.

4.8 Faults

1. Fault warning lamp lights up:

- If the motor is overloaded, the circuit breaker for the mixer motor or compressor motor will trip.
- The **red warning lamp** (1) will light up.
- After 30-40 seconds the red lamp will go out.
- Resume operations.

2. Fault not indicated by warning lamp:

- Fault: machine will not start.
- The red warning light (1) does not light up !



Disconnect the mains plug !

- Check the control circuit fuse and replace if necessary (see Section 5.11).
- Reconnect the mains plug.
- Resume operations.

5. Maintenance / Repairs

5.1 Notes

- When carrying out any maintenance or repair operations, observe the **safety instructions** given in **Section 2**.



Before carrying out any **maintenance or repair operations**, set the main switch from '1' to '0' and disconnect the mains plug or press the EMERGENCY-STOP switch !

CAUTION!

Do not switch off the machine by the main switch for **cleaning operations**, otherwise the compressor will be shut down. If the bowl is then cleaned, this may cause excessive pressure in the compressor, possibly damaging it beyond repair.

- Operating faults resulting from inadequate or inexperienced maintenance can give rise to costly repairs and machine stoppages on the SE863. Regular maintenance and inspections are therefore essential.
- The operating safety and service life of the machine depend, among other things, on its being properly maintained.
- The maintenance and inspection of the machine must be carried out by an authorised person or specialist firm.
- For claims under the guarantee or of any other type (e.g. product liability) to be considered, evidence that maintenance and inspection have been carried out in accordance with the following instructions must be furnished by the plant operator for every 12-month period following the acquisition of the machine.

5.2 Maintenance schedule

The following schedule specifies the maintenance intervals for the normal operation of the SE863.

What ?	When ?	Who ?	How ?
Cleaning of the machine	Daily	Operator	Section 5.3
Lubrication			
Mixer bearing	Every two weeks	Operator	Section 5.4.3
Clamping lever flanged bearing	Every two weeks	Operator	Section 5.4.4
Mixer attachment adjustment	As required	Operator	Section 5.7
V-belt tension check	1-2 operating hours after installation of a new V-belt or every 6 months	Qualified technician	Section 5.8
Machine inspection	Yearly	Qualified technician	Section 5.12

5.3 Cleaning

- To clean the body of the machine and control panel, wipe over with lukewarm water or a weak soapy solution. Do not use any sharp objects or scouring cleaning agents or solvents.
- Clean the bowl and mixing attachments with warm water daily, immediately after the freezing process.

CAUTION!

Do not clean with **HOT** water ® max. temperature 35 °C.

- Clean the filter in the water supply hose once or twice a year.

5.4 Lubrication**5.4.1 Notes**

- Careful lubrication of the SE863 is essential to ensure trouble-free operation.
- Lubrication processes and related operations must be carried out with the machine at a standstill.
- Lubrication is to be carried out in accordance with the intervals specified in the maintenance schedule (see Section 5.2) and with the lubricants specified below.

5.4.2 Gearbox

The gearbox in the machine head is filled with gearbox oil by the factory before dispatch.

5.4.3 Mixing attachment bearing

Lubricate the **mixing attachment bearing** every 2 weeks through **aperture** (1) with four drops of oil of a type which is resistant to and compatible with food-stuffs.

5.4.4 Clamping lever flanged bearing

Lubricate the clamping lever flanged bearing every 2 weeks through **aperture** (2).

**5.5 Installing the mixing attachment**

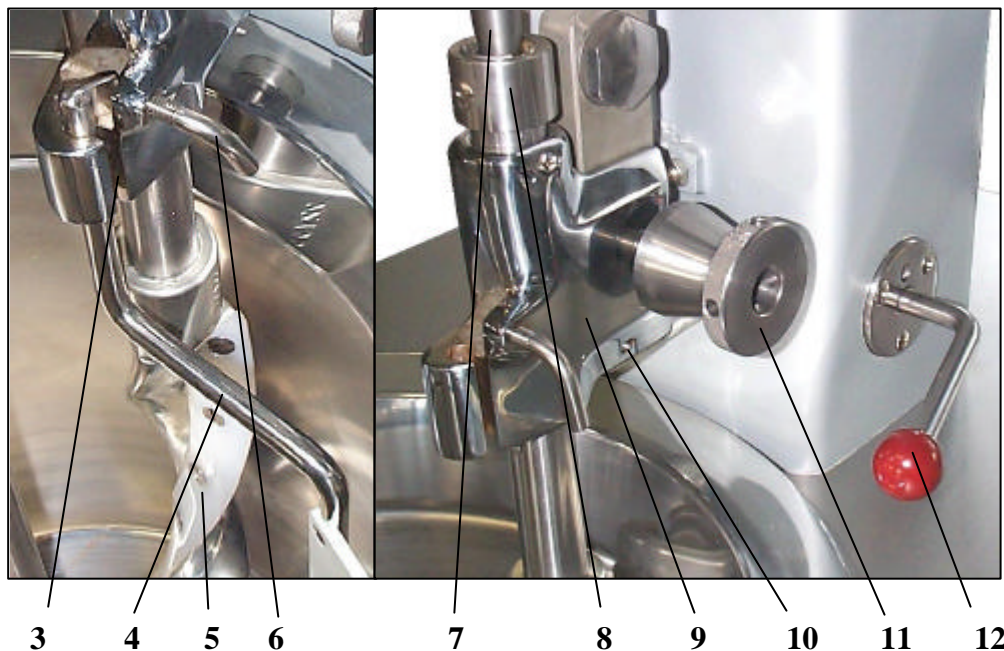
- Tilt the **clamping lever** (12) forward.
- Open the **clamping nut** (11) wide.
- Install the mixing attachment in the bowl.
- Connect the **mixing attachment shaft** (8) to the **ball joint shaft** (7).
- Insert the **mixing attachment bearing** (9) into the **retaining pin** (10).
- Tighten the **clamping nut** (11) securely with the socket wrench supplied.

5.6 Installing the scraper

- Push the **scraper** (4) through the **groove** (3).
- Press the scraper against the sidewall of bowl by means of **screw** (6).

CAUTION!

Do not press the scraper against the side of the bowl until the mixing attachment (5) is pressed on to the side of the bowl, otherwise the scraper will become bent.



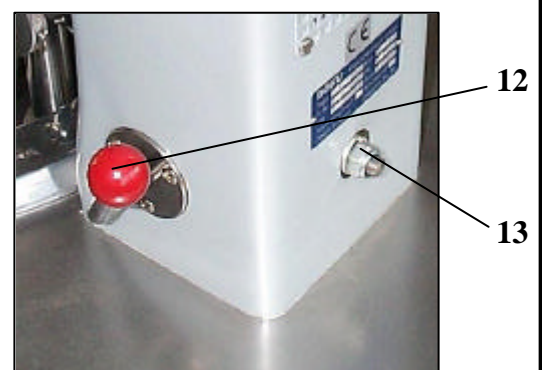
5.7 Adjusting the mixing attachment

Pushing the **lever** (12) to the rear clamps the attachment against the side of the bowl. When the coating of the attachment becomes worn, the pressure must be readjusted as follows:

- With a 19 mm wrench, adjust the **hexagon nut** (13) at the rear of the machine with 2-3 (max.) turns.

CAUTION!

The applied pressure must not be excessive, i.e. the intermediate spring must not be fully compressed.



5.8 V-belts

5.8.1 Notes

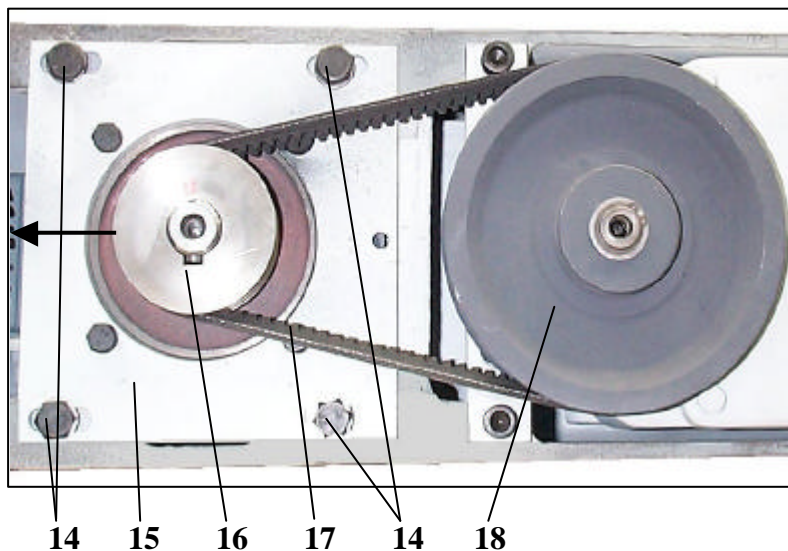
V-belt drives must be carefully tensioned. Insufficient tension will result in inefficient power transmission and premature wear from excessive slippage. Too much tension causes excessive stretching, leading to belt fractures, severe stress on the bearings and reduced efficiency.

To ensure that the drive power is being efficiently transmitted, the belt drive system must be inspected and serviced at regular intervals. The following points must be checked:

- The grooves in the belt pulleys must be free of rust, grease, oil, chemicals, contamination and damage.
- When replacing the worn-out V-belts of multiple groove belt pulleys, use only accurately measuring sets of belts of the same length. If a single belt fails, it must only be replaced by a complete set of new belts, since old and new belts cannot be used in combination, due to variations in stretching.
- After a new set of belts has been installed, the tension must be checked after a running-in period of 1-2 hours and retensioning carried out if necessary.
- Check V-belt tension at regular intervals and retension if necessary.

5.8.2 Retensioning V-belts

- Release **screw** (20) and remove the **machine cover** (19).
- Slightly loosen the **4 screws** (14) on the **motor cradle** (15).
- Push the motor cradle to the rear (in direction arrowed) and tension **V-belts** (17).
- Tighten **screws** (14).
- Replace **machine cover** (19) and secure with **screw** (20).



5.8.3 Replacing V-belts

- Release **screw** (20) and remove the **machine cover** (19).
- Slightly loosen four **screws** (14) on the **motor cradle** (15).
- Push the motor cradle with motor towards the **belt pulley** (18), relieving the tension on the **V-belts** (17).
- Remove **V-belts** (24).
- Install one set (2 units) new V-belts in the grooves in **belt pulleys** (16, 18) by hand, without using force.

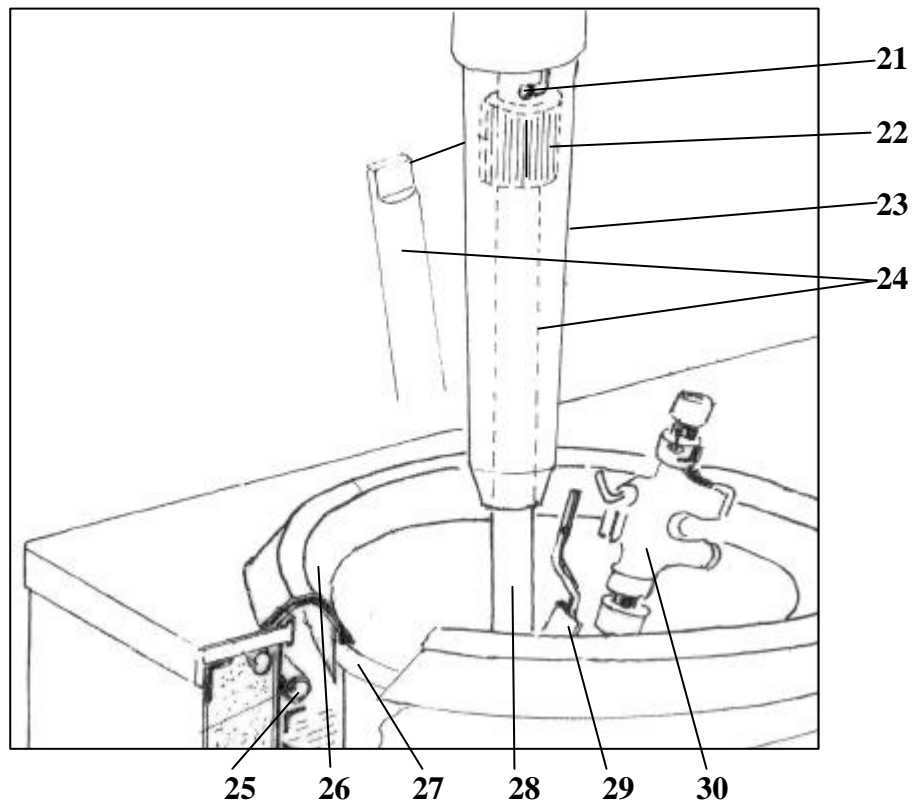
CAUTION!

Use only new V-belts of **XPZ profile** and an **inside length of 722 mm !**

- Tension the V-belts.
- Tighten **screws** (14).
- Reinstall **machine cover** (19) and secure with **screw** (20).

5.9 Bowl removal

- Remove the **mixing attachment** (30) and **scraper** (29) (Sections 5.5, 5.6).
- Loosen **protective sleeve** (23) from **bayonet fastener** (21) and lower into **bowl** (27).
- Pull **ring insert** (26) upwards out of the three retaining pins, push forward slightly and place it on tabletop.
- Remove **covering hose ring** (25) and place it alongside ring insert.
- Push up the **union sleeve** (22).
- Pull the **bowl shaft** (24) forward out of the drive slot.
- Grasp the **bowl** (27) by the **shaft** (28), lift it out of the bowl bearing and tilt it slightly to the left.
- Remove the ring insert from the flattened part, the covering hose and protective sleeve from the bowl shaft.
- Lift out the bowl entirely.
- Reassemble in the reverse order.



5.10 Control circuit fuse

The **control circuit fuse** (2A, slow-blow) is located in the switch box at the rear of the machine. Unscrew and remove the rear panel to gain access.

5.11 Refrigerating fittings

All the refrigerating fittings are adjusted by the factory before dispatch and are ready to operate. **R404A** (2.5 kg) is used as the refrigerant.



For refrigerating circuit diagram, see Appendix A2.

- **Adjustment of pressostat KP17W**

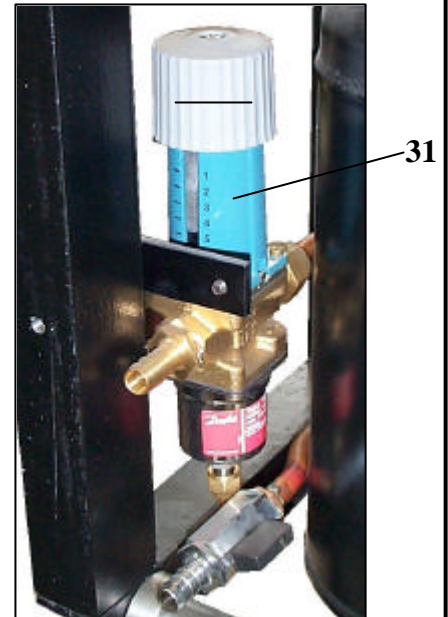
High pressure side is permanently adjusted to 24.5 bar = 54 °C (if the cooling systems fails or is not switched on and the pressure on the high pressure side exceeds the preset pressure, the pressostat will switch off the compressor automatically).

- ON at 1,6 bar (-21,5 °C)
- OFF at 0,2 bar (-29,5 °C)

- **Cooling water regulator**

The cooling water regulator (31) at the rear of the machine is adjusted for a working pressure of 16.5 bar.

The regulator is adjusted in such a way that the outgoing temperature of the water is approx. 38 °C (adjusting scale: **approx. 5**).

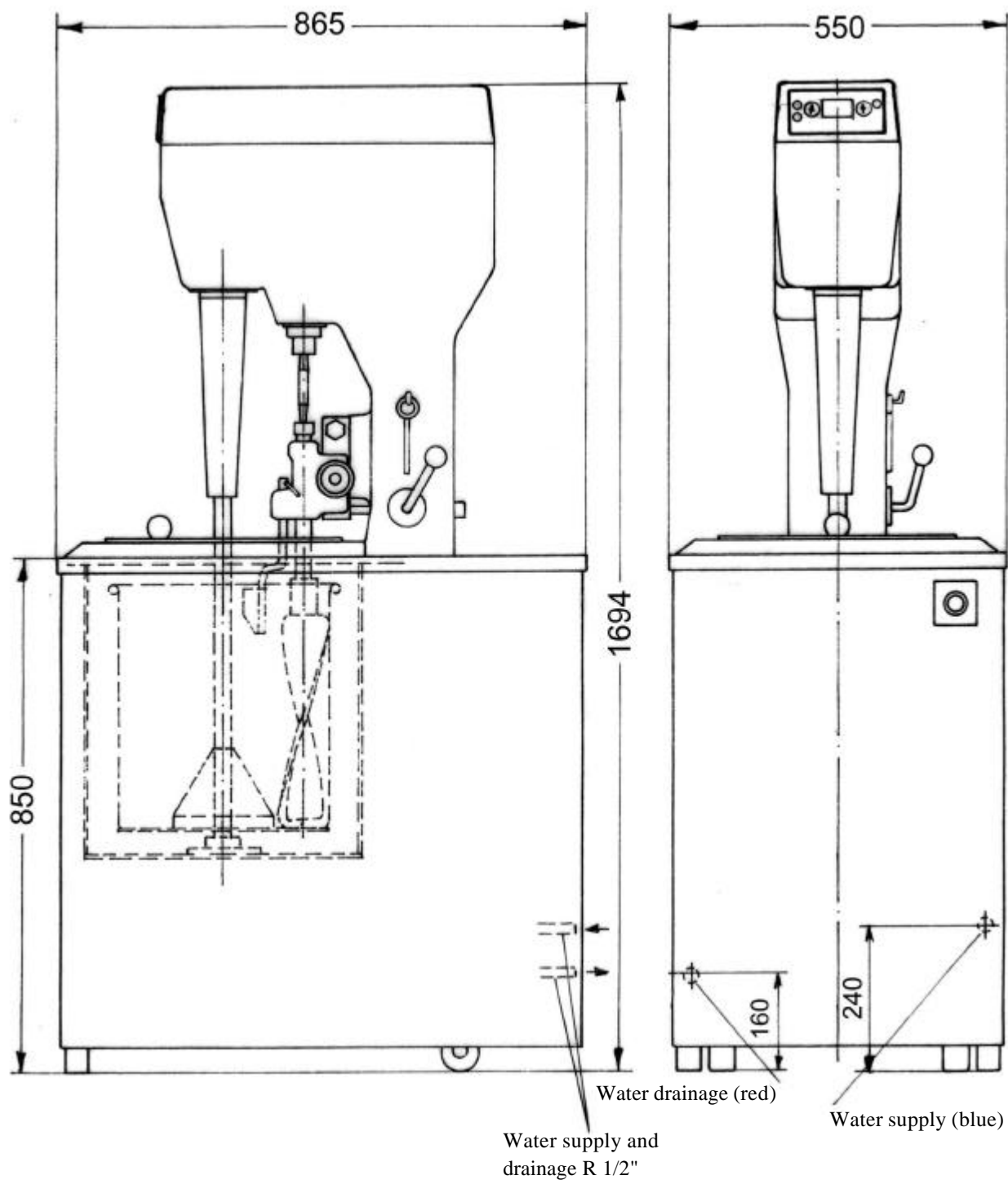


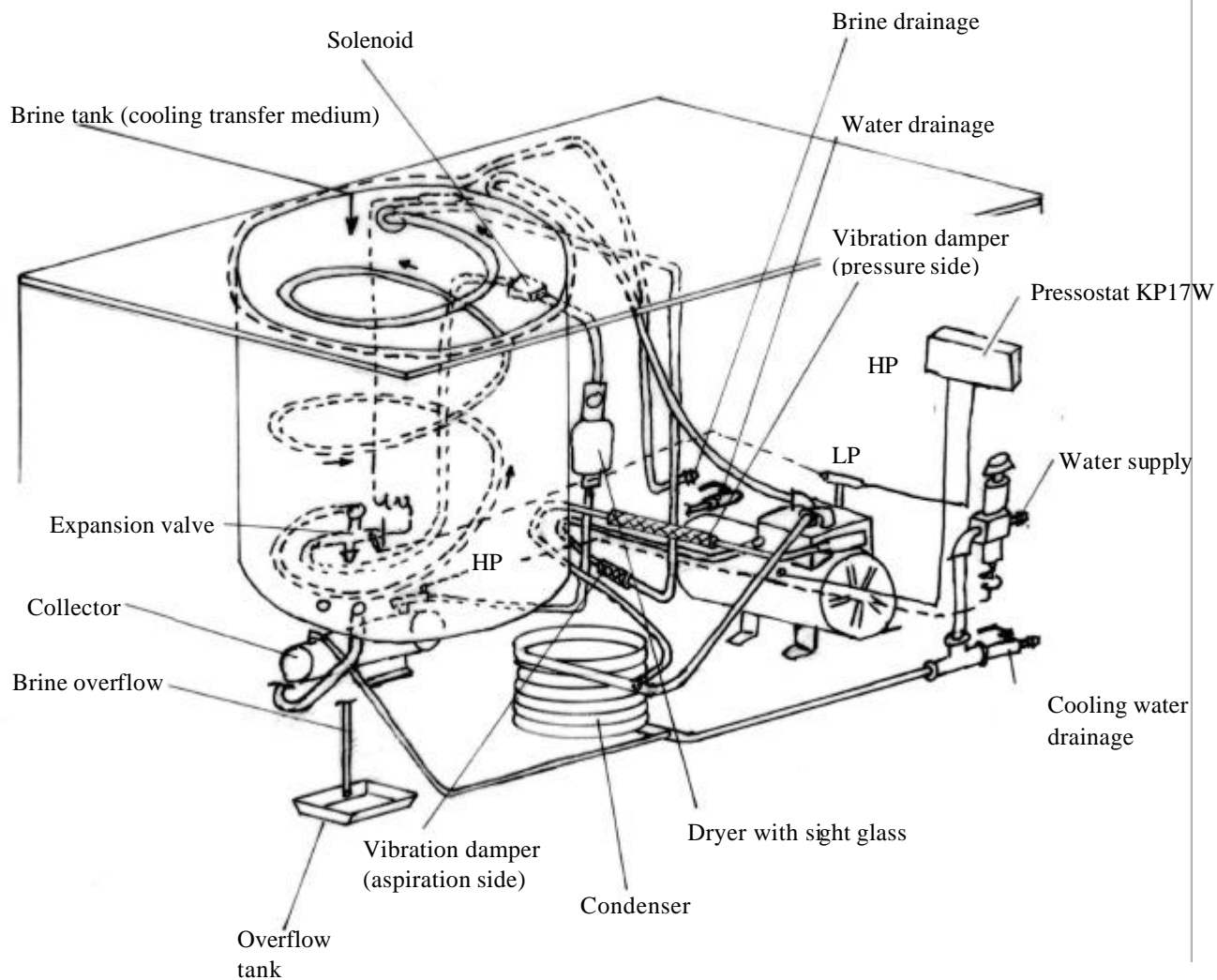
5.12 Regular inspections

An inspection of the entire machine must be carried out once a year, during which the following must be checked in addition to the items listed in the maintenance schedule (Section 5.2):

1. Electrical equipment
 - a) Inspect leads for damage and correct fixing
 - b) Check the protective earth conductor for damage and correct fixing
 - c) Function of switches, pushbuttons and EMERGENCY-STOP button.
2. Refrigerating equipment
 - a) Check lines for damage, leaks
 - b) Check items of equipment for damage, leaks
 - c) Check settings.
3. Check all the moving parts of the machine.

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A1 Dimensional diagram

A2 Refrigerating circuit diagram

A3 Electrical circuit diagrams