Twister evolution

Nr. 1822-0000 / 1822-1000

Bedienungsanleitung
Instruction manual • Mode d´emploi
Istruzioni d'uso • Instrucciones para el servicio
Инструкция по эксплуатации

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Twister evolution

No. 1822-0000 / 1822-1000

ENGLISH

1. Introduction

We are pleased with your decision to purchase a *Twister evolution* vacuum mixer.

Please read the following operating instructions carefully and observe the information they contain in order to ensure a long and trouble-free service life.

2. Application Area

The *Twister evolution* vacuum mixer is designed solely for homogeneous, bubble-free mixing of dental casting and modelling materials such as plasters, investments as well as silicones.

2.1 Ambient Conditions

(in accordance with DIN EN 61010)

The unit may only be operated:

- Indoors;
- Up to an altitude of 2,000 m above sea level;
- At an ambient temperature range between 5 - 40ºC [41 - 104ºF] *);
- At a maximum relative humidity of 80% at 31°C [87.8°F], dropping in a linear manner to 50% relative humidity at 40°C [104°F] *);
- With mains power where the voltage fluctuations do not exceed 10% of the nominal value;
- Under over-voltage category II conditions;
- Under contamination level 2 conditions.

*) Between 5 – 30°C [41 – 86°F], the unit can be operated at a relative humidity of up to 80%. At temperatures between 31 – 40°C [87.8 – 104°F], the humidity must decrease proportionally in order to ensure operational readiness (e.g., at 35°C [95°F] = 65% humidity; at 40°C [104°F] = 50% humidity). The unit may not be operated at temperatures above 40°C [104°F].

3. Safety Information

3.1 Symbology

The following symbols are employed in these instructions and on the unit itself:

Danger
This indicates a direct risk of injury.

Electrical current
This indicates a hazard due to electrical current.

Attention
Failure to observe the associated information can result in damage to the unit.

Note
This provides the operator with useful information to make working with the unit easier.

Only intended for indoor use.

Before opening the unit, disconnect it from the mains power supply by unplugging the power cord from the wall outlet.

Observe the operating instructions.

3.2 Hazard Information

- **The *Twister evolution* is an electric device and, as such, carries with it a certain inherent potential hazard.**
- **The unit may not be taken into service until any required alterations to comply with regionally specific power plug configurations have been made. Such alterations may only be performed by a qualified electrician.**
- **The unit may only be operated if the information on the nameplate conforms with the specifications of your local mains power supply.**
- **The unit may only be connected to a power outlet with proper grounding.**
- **Only intended for indoor use. The unit is only designed for dry applications and may not be operated or stored outdoors or under wet conditions.**
- **A damaged power cord must be immediately replaced.**
- **Repairs to the open unit may only be performed by specified specialist personnel.**
- **Disconnect the unit from the mains power supply before beginning any maintenance tasks.**
- **Manipulating the automatic bowl coupler and the intake opening can result in damage to the unit and personal injury.**
- **The unit may only be used to mix plaster, investment, and silicon.**
- **Never connect the paddle without the mixing bowl.**

3.3 Liability Exclusion

Renfert shall be absolved from all claims for damages or warranty if:

- **The product is employed for any purposes other than those cited in the operating instructions;**
- **The product is altered in any way other than those alterations described in the operating instructions;**
- **The product is repaired by other than an authorized facility or if any but Renfert OEM parts are employed;**
- **The product continues to be employed, despite obvious safety faults or damage;**
- **The product is subjected to mechanical impacts or is dropped.**

4. Installation

4.1 Wall Mounting

(with the included mounting set)

Please have the following on hand:

- pencil,
- drilling template,
- Philips head screwdriver,
- power drill
- 8 mm [0.3152 inch] drill bit - suitable for penetrating the intended wall material.

⚠ **Inspect the wall on which you intend mounting the unit to ensure that it is capable of bearing the unit's weight.**

1. Determine the optimum working height (Figure 1).
2. Align the drilling template and mark the drill holes (Figure 2).
3. Drill the required holes (using the 8 mm [0.3152 inch] drill bit >>> to a depth of at least 55 mm [2.167 inches]) + insert the dowels (Figure 3).
4. Screw the top screws into the dowels first >>> allowing the screw heads to protrude 9-10 mm [0.3546 – 0.394 inches] (Figure 4).
5. Mount the bottom mounting bracket (Figure 5).
6. Hang the unit on the wall (Figure 6).
7. Secure the unit with the knurled nut >>> Securely tighten the knurled nut (Figure 7).

4.2 Benchtop Units

1. Position the stand on a level surface (Figure 8).
2. Hang the unit in the stand (Figure 9).
3. Secure the unit with the knurled nut >>> Securely tighten the knurled nut (Figure 10).

The stand is not part of the standard delivery and must be ordered as an optional accessory (refer to the "Accessories" section).

5. Operating Elements

(Figure 11 + 12)

A Vacuum display
B Mixing parameters display (e.g., speed, mixing time, etc.), refer to Table 5.1
C Program number indicator
D Programming key, "P"
E Parameter setting keys
F Control knob
G On/Off switch
H Power cord
J Unit fuse
K Motor fuse
L Bowl detection pin
M Vacuum filter

5.1 Key Symbols / Adjustment Ranges

Mixing parameters	Key symbol	Adjustment range	Factory setting
Premix, plaster		0:00 / 0:15 / 0:20 / 0:25	0:00
Premix, investment		0:00 / 0:15 / 0:20 / 0:25	0:00
Pre-vacuum		0:00 - 1:00 min.	0:00
Speed		150 – 450 1/min.	350
Mixing time		0:00 - 5:00 min.	0:30
Interval (*) (direction change)		0:00 - 0:30 min.	0:00
Post-vacuum		0:00 - 1:00 min.	0:00

(*) Interval:
The time period after which the current direction of mixing is reversed. This only applies if the mixing time is longer than the interval.

6. Commissioning / Operation

1. Connect the unit to the wall outlet (Figure 13).
2. Switch the unit on (Figure 14).

Your *Twister evolution* is now operational.

6.1 Mixing Process

⚠ **When mixing investment material, please always observe the manufacturer's material safety data sheets (health-hazardous dust emissions).**

⚠ **Do not fill the mixing bowl beyond the maximum fill mark. The maximum fill mark applies to powders and liquids in their unmixed states.**

Attempting to mix small quantities in large bowls will result in inadequate mixing.

Tip:
Only mix the same type of material in a given bowl. Residue form previous mixing processes can have a negative influence (e.g., silicon fails to harden, etc.).
We recommend a separate bowl for each type of material (plaster, investment, silicon).

1. Select an appropriate size mixing bowl.
2. Using a spatula, lightly mix the materials together (Figure 15) or use the premix function (refer to Sec. 7.4).
3. Install the appropriate paddle (Figure 16).

Make sure the bowl rim (Figure 17a) and cover rim (Figure 17b) are clean!

4. Select the desired program:
   - Press the programming key, "P" (Figure 18). The LED below the programming key goes on.
   - Select the desired program by turning the control knob (Figure 19).
5. Couple the mixing bowl to the unit (Figure 20). Do not release the bowl until it stays in place by itself!

The motor should start automatically and run briefly when the bowl is inserted. The unit is equipped with an automatic coupling aid that locks the paddle to the motor shaft when the bowl is inserted.

6. The vacuum pump starts automatically.
7. Once the minimum vacuum has been achieved (the unit beeps), the mixing program begins automatically.
8. The unit beeps once the mixing program has been completed.
9. To remove the mixing bowl, press the control knob (Figure 21). The bowl will be released in a few seconds.

Hold the bowl!

6.2 Interrupting the Mixing Process

The mixing process can be cancelled at any time prior to its normal end.

1. Stop the mixing process:
   >>> Press the control button once (Figure 21).
2. Remove the bowl:
   >>> Press the control knob again (Figure 21). The bowl will be released in a few seconds.

Hold the bowl!

6.3 Adjustment During the Mixing Process

- During the mixing process, all mixing parameters can be displayed on display B by briefly pressing the associated parameter key (E) (Figure 22) (refer also to Sec. 7.2).
- All mixing parameters can be also changed during the mixing process.
  After pressing the desired parameter key, the associated LED goes on. While the LED remains on, you can change the selected parameter by turning control knob F (refer also to Sec. 7.3).

Any changes made to the mixing parameters during the mixing process will only apply to the current cycle and cannot be permanently saved. Refer to Chapter 7 for instructions on how to change and save mixing parameters.

7. Programming

The *Twister evolution* allows mixing parameters to be saved to 10 programmes (0 – 9).
Mixing parameters can be permanently saved under a programme number, or they can simply be changed and applied to the next mixing process.
When the unit is at rest, display C shows the currently selected programme, while display B indicates the mixing time (the LED under the "Mixing time" parameter key is on)

7.1 Programme Selection

1. Press programming key "P" (Figure 18). The LED under the programming key goes on for approx. 6 seconds.
   - While this LED is on a programme can be selected.
2. Select the desired programme (0 - 9) by turning the control knob (Figure 19).
3. The selected programme is active once the LED under programming key "P" goes out. This happens when:
   - The control knob is not turned for a period of longer than approx. 6 seconds;
   - One of the parameter keys, E, is pressed;

- The mixing process is started by coupling the bowl.

When a programme is selected, the associated mixing time is shown on display B.

7.2 Displaying Mixing Parameters

The mixing parameters of the currently selected programme can be displayed at any time (refer to Sec. 7.1 for instructions on how to select a programme).

Displaying the parameters:

- Press the desired parameter key (Figure 22).
- The LED under the parameter key goes on.
- The parameter value continues to be shown on display B for approx. 6 sec. Or until another key is pressed.

When setting a programme, the LED under the parameter keys will remain on for approx. 2 seconds if the value for the associated parameter is not equal to zero.

7.3 Setting / Saving Mixing Parameters

Only the mixing parameters of the currently selected programme can be changed and saved (refer to Sec. 7.1 for instructions on how to select a programme).

1. Changing and permanently saving a selected parameter:
   - Press the desired parameter key (Figure 22).
   - The LED under the parameter key goes on for approx. 6 seconds. The value can be changed and saved while the LED is on.
   - Adjust the value by turning the control knob (Figure 23).
   - Press the parameter key again (Figure 24) until the audible indicator sounds (after approx. 1 second). This indicates that the new value has been permanently saved.
2. Changing and temporarily saving a selected parameter:
   - If changed values are not permanently saved as described in item 1 above, they apply only to the next mixing process.
   - Once this process has been completed, the previously programmed values will again apply.

Any parameters, which are changed during the mixing process, also only apply to the current cycle. At the end of this cycle, the previously programmed values will again apply.

7.4 Premix Function

The *Twister evolution* offers the option of selecting one of two premixing functions:

- Premix function for plaster (Figure 26 a);
- Premix function for investment materials (Figure 26 b).

The premixing process for both functions lasts no more than approx. 25 seconds.

Depending on the amount and type of mixture in question, a good mixing result can also be obtained from a shorter premixing process.

You can set the premix time as follows:

- Display: 0:00 Premixing deactivated
- Display: 0:15 15 sec. premixing
- Display: 0:20 20 sec. premixing
- Display: 0:25 25 sec. premixing

Your selection is shown on display B.

Only one of the two premix functions can be activated at any given time. When one function is activated, the other is automatically deactivated.

Activating and changing the premixing function is performed in the same way as changing any other mixing parameter.

The LED under the associated premix function going on indicates which premix function is activated in conjunction with a given programme.

To deactivate the premix function:

- Select a premix function (by pressing one of the premix keys);
- Turn the control knob until the display reads 0:00.

Selection and saving is performed in the same way as changing a parameter, by:

- Pressing one of the premix keys (Figure 26 a or b);
- Adjusting the value with the aid of the control knob (Figure 19);
- Saving the changed value by again pressing the premix key until the audible signal sounds.

Just as is the case for any other parameter, the premixing time can also be changed during the mixing process.

However, the premixing time can only be changed in 5 second intervals to achieve a total premixing time of:

- 15 seconds, or;
- 20 seconds, or;
- 25 seconds (maximum).

Just as is the case for the other mixing parameters, these changes only apply to the current mixing process. The previously programmed values will again apply to the subsequent mixing process.

7.5 Resetting the Parameters

Upon delivery, all programmes contain exactly the same values for all parameters (refer to the table in Sec. 5.1 for a list of the factory settings).

To reset all parameters and all programmes to their factory settings:

1. Switch the unit off;
2. Press and hold down programming key “P”;
3. Switch the unit back on (while continuing to press programming key “P”);
4. Continue to press programming key “P” until the audible signal goes off (after approx. 3 seconds).

8. Cleaning / Maintenance

The *Twister evolution* mixing unit is practically maintenance-free.

Nonetheless, the inlet filter and the seals should be cleaned regularly as part of a preventative maintenance programme.

8.1 Cleaning the Inlet Filter

1. Switch the unit off.
2. Unscrew the inlet filter (Figure 27).
3. Clean the filter in an ultrasonic bath (we recommend using GO-2011 plaster solvent, Art. No. 2011-0000).
4. Reinstall the inlet filter (Figure 27).

⚠ **Never operate the unit without the inlet filter!**

8.2 Seal Surfaces

The following seal surfaces must always be kept clean in order to ensure correct vacuum built up and the secure retention of the mixing bowl during the mixing process:

- Seal between the unit and the paddle (Figure 28a);
- Seal between the paddle and the bowl (Figure 28b).

Tip:
You should occasionally coat the rubber seals on the paddle with Vaseline. This will extend the seals' service life and ensures optimum vacuum force.

8.3 Replacing the Unit and Motor Fuse

1. Unplug the unit from the wall outlet (Figure 13).
2. Unscrew the fuse holder cover (Figure 29).
3. Remove the fuse and replace it (Figure 30). Refer to the "Technical Specifications" for the proper fuse ratings.

⚠ **Never use fuses with a higher current rating!**

4. Reinstall and close the fuse holder (Figure 29).

9. Spare Parts

Please refer to the enclosed spare parts list for the order numbers of spare parts and consumables.

10. Warranty

Provided the unit is properly used, Renfert warrants the *Twister evolution* for a **period of 3 years**.

Presentation of the original bill of sale is required for all warranty claims.

Components subject to natural wear (e.g., paddles, mixing bowls, and intake filters) are excluded from this warranty. The warranty is voided in case of improper use; failure to observe the operating, cleaning, maintenance, and connection instructions; in case of independent repairs or repairs by unauthorized personnel; if spare parts from other manufacturers are employed, or; in case of unusual influences or influences not in compliance with the utilization instructions. Warranty service shall not extend the original warranty.

11. Technical Specifications

Mains voltage:	230 V, 50-60 Hz 120 V, 50-60 Hz
Power consumption:	150 W
Speed:	150 to 450 1/min.
Unit fuse:	T 1.6 A (230 V) T 3.15 A (120 V)
Motor fuse:	T 8 A
Vacuum pump performance:	15 l/min.
Vacuum, max.:	approx. -870 mbar, corresponds to a bowl pressure of approx. 100 mbar
Dimensions (WxHxD):	140 x 325 x 230 mm [5,51 x 12,80 x 9,06 inches]
Weight:	8,1 kg, w./o. bowl

12. Standard Delivery

1	*Twister evolution* vacuum mixing unit
1	500 ml bowl, incl. paddle
1	Operating instructions
1	Spare parts list
1	Quick reference card
1	Drilling template
1	Fastening set

13. Delivery Versions

No. 1822-0000 *Twister evolution* 230 V / 50-60 Hz, incl. 500 ml-bowl with paddle

No. 1822-1000 *Twister evolution* 120 V / 50-60 Hz, incl. 500 ml-bowl with paddle

14. Accessories

No. 1821-0101 Stand for benchtop units, WxHxD: 230 x 680 x 290 mm [9.062 x 26.772 x 11.426 inches]

No. 1821-0200 Premix spatula

No. 1820-6500 Bowl, incl. paddle, 65 ml
No. 1820-6510 Paddle, 65 ml
No. 1820-6520 Bowl, 65 ml

No. 1820-0200 Bowl, incl. paddle, 200 ml
No. 1820-0210 Paddle, 200 ml
No. 1820-0220 Bowl, 200 ml

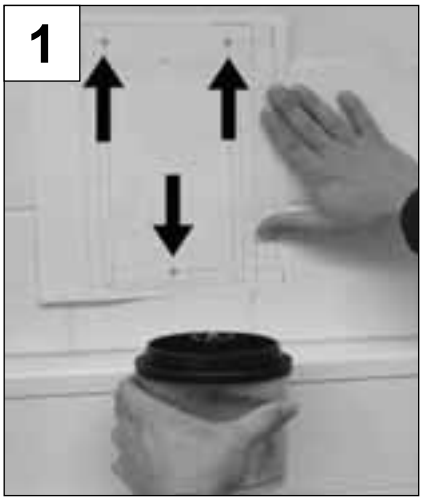
No. 1820-0500 Bowl, incl. paddle, 500 ml
No. 1820-0510 Paddle, 500 ml
No. 1820-0520 Bowl, 500 ml

No. 1820-0700 Bowl, incl. paddle, 700 ml
No. 1820-0710 Paddle, 700 ml
No. 1820-0720 Bowl, 700 ml

No. 1820-1001 Bowl, incl. paddle, 1000 ml
No. 1820-1010 Paddle, 1000 ml
No. 1820-1020 Bowl, 1000 ml

15. Error List

Error	Possible cause	Corrective action
ON/OFF switch fails to work.	• Unit not connected to the power outlet. • Unit fuse blown. • Faulty/damaged power cord.	• Check the power supply. • Replace the fuse (refer to Sec. 8.3). • Have the unit repaired.
Motor fails to start.	• Motor fuse blown. • Motor defective/damaged.	• Replace the fuse (refer to Sec. 8.3). • Have the unit repaired.
No or insufficient vacuum build-up. (“Err” shown on the display + audible signal)	• Inlet filter blocked. • Seal surfaces dirty. • Vacuum pump defective/ damaged. • Vent valve defective/damaged.	• Clean the filter (refer to Sec. 8.1). • Clean the seal surfaces (refer to Sec. 8.2). • Have the unit repaired. • Have the unit repaired.
Vacuum reduction/ venting too slow.	• Inlet filter blocked.	• Clean the filter (refer to Sec. 8.1).
Vacuum pump continuously on.	• Bowl detection pin jamming.	• Have the unit repaired..
Paddle fails to turn.	• Motor fuse blown due to paddle overload.	• Clean the paddle and bowl. • Replace the fuse (refer to Sec. 8.3).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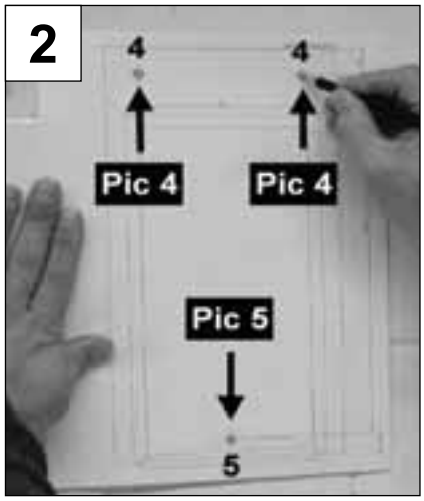
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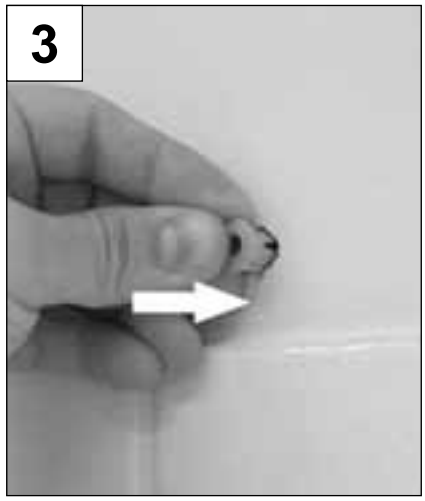
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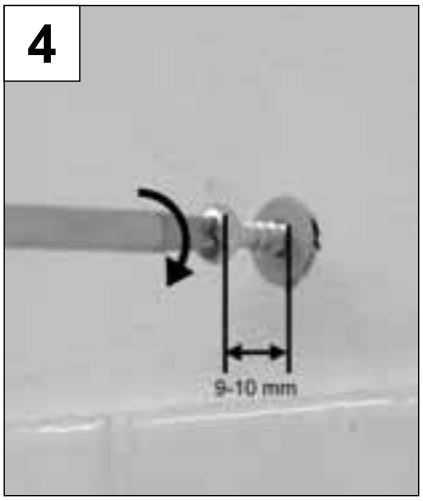
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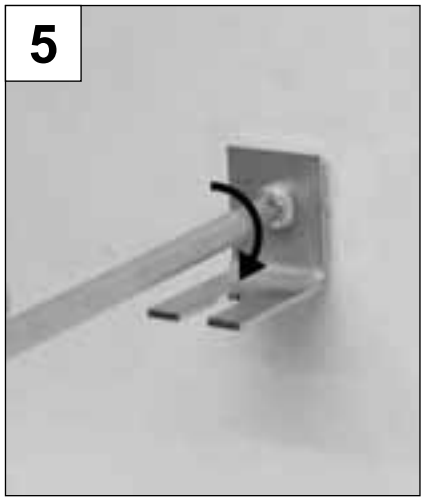
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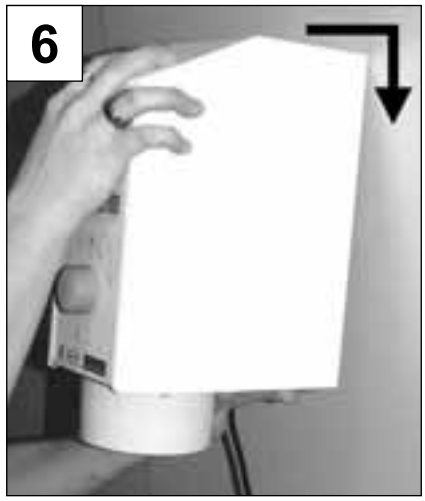
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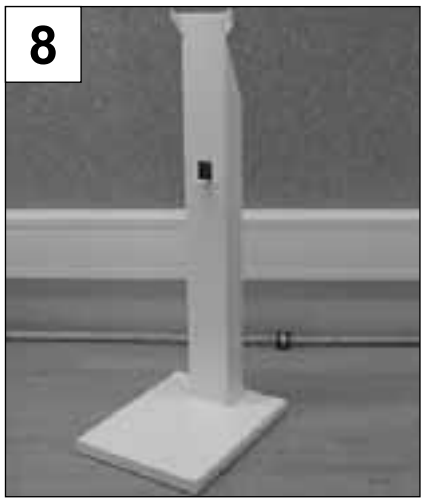
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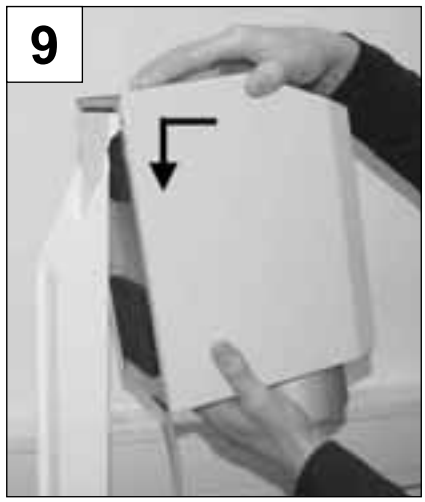
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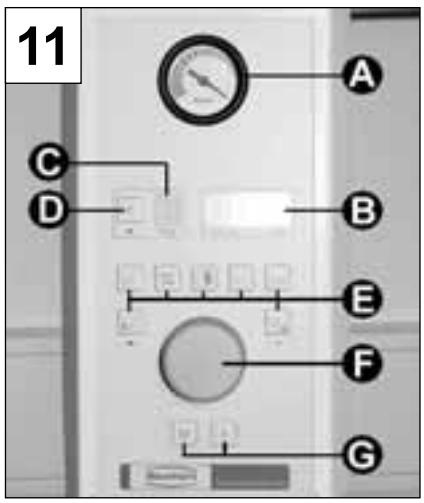
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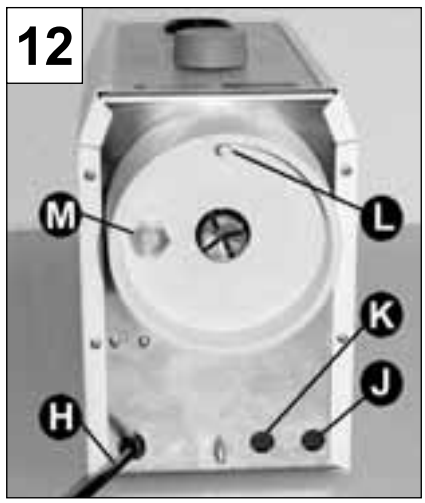
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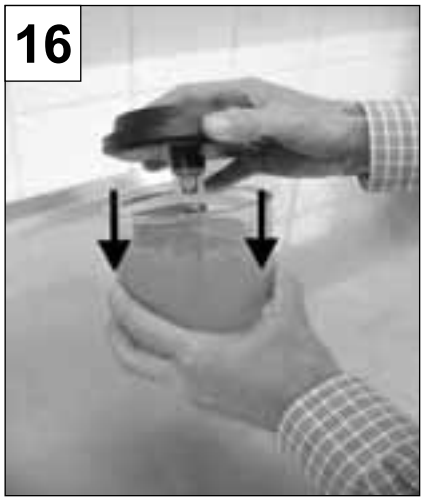

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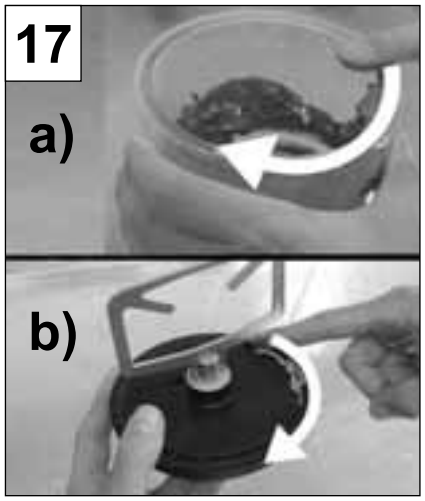

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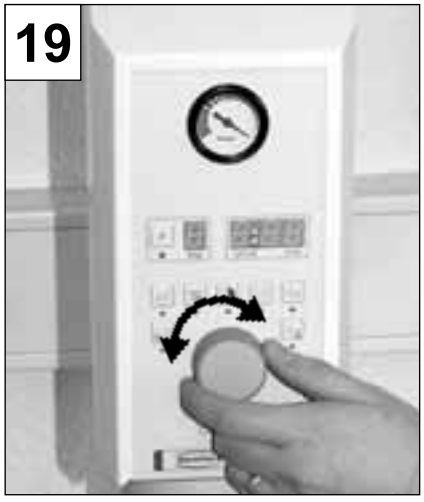

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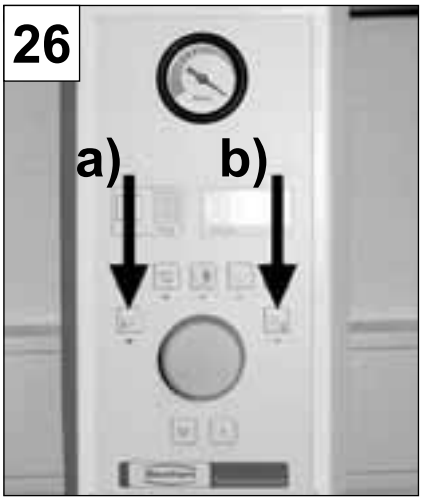

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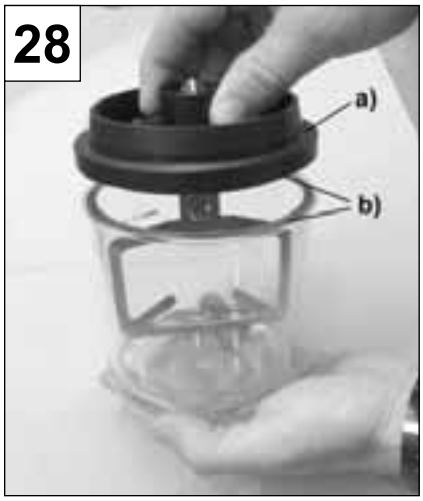

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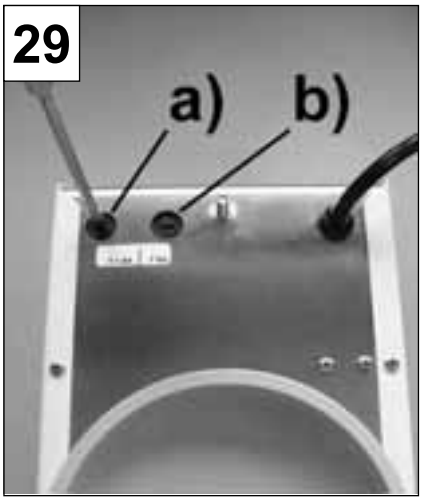

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