



FAST & FLUID MANAGEMENT

**SK450**

ENGLISH



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## SK450 Manual (EN)

### EU Declaration of Conformity

We,  
Fast & Fluid Management, the Netherlands  
A Unit of IDEX Corporation  
Hub van Doorneweg 31  
2171 KZ Sassenheim, the Netherlands

Declare that:

product: Automatic Shaker  
model: Skandex  
type: SK450

are in compliance with the following directives:

Machinery Directive 2006/42/EC  
Low Voltage Directive 2006/95/EEC  
Electromagnetic Compatibility Directive 2004/108/EEC

according to the following harmonized standards:

EN-ISO 12100-1, EN-ISO 12100-2, EN-ISO 13850 & EN-ISO 14121-1  
EN 60204-1 Schaltplan  
EN 61000-6-2, EN 61000-6-3, EN 61000-3-2 & EN 61000-3-3

Sassenheim, 01-06-2005



ir. F. Puijman  
Vice President Manufacturing  
Fast & Fluid Management, the Netherlands  
A Unit of IDEX Corporation



# Introduction & warranty

## Introduction

By selecting a Fast & Fluid Management shaker you have opted for a product which is the result of intensive research. Top-quality components, craftsmanship and a modern ergonomic design all serve to guarantee a long service life and a high degree of user friendliness.

The machine complies with Council Directives 89/392/EEC on machines, 89/336/EEC on electromagnetic compatibility, and 73/32/EEC on electrical equipment intended for use within given voltage limits, as enacted by the Council of Ministers of the European Community. The machine is furnished with a CE mark.

## Warranty

In these warranty conditions, 'F&FM' is understood to mean Fast & Fluid Management. The warranty conditions incorporated into F&FM's general conditions of sale are summarized as follows (for free general conditions you can contact F&FM).

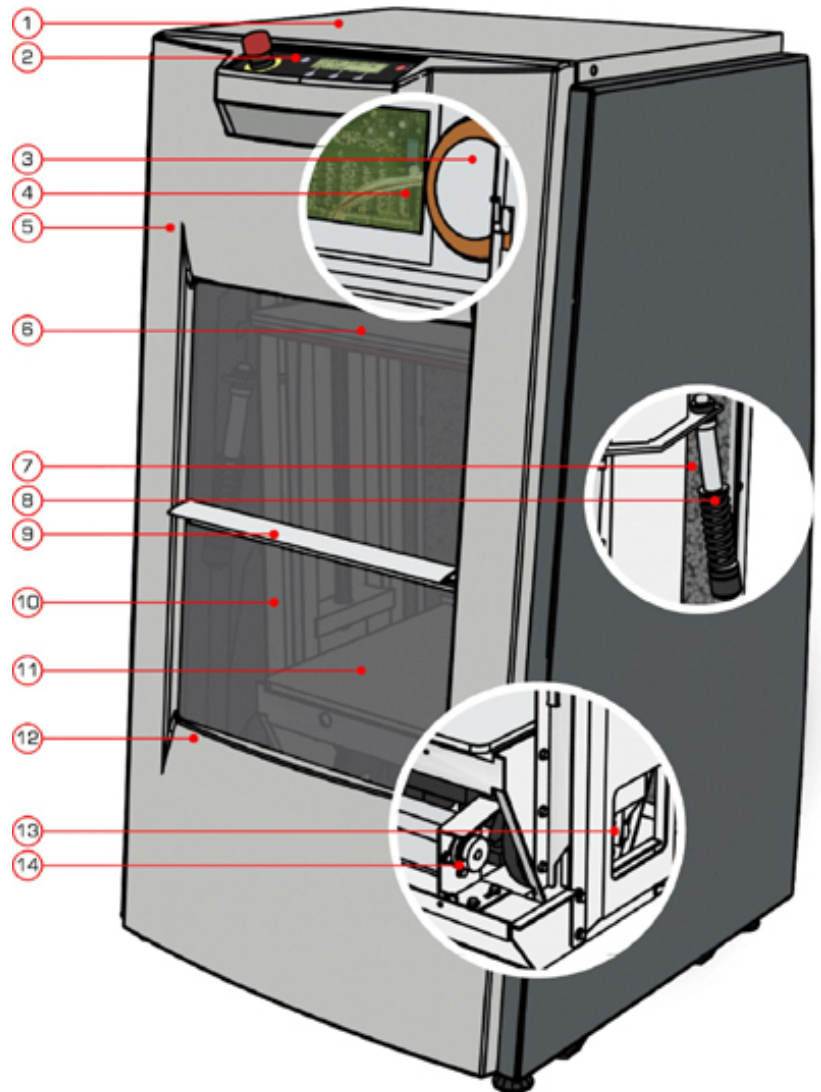
F&FM guarantees the proper operation of any goods which it supplies, for a period of one year, except where a breakdown is the result of normal wear and tear. The cost of any inspection activities carried out by F&FM, with the aim of establishing whether or not a breakdown is covered by the warranty will be reimbursed by the other party if it transpires that the breakdown is not covered by the warranty. If it transpires that a breakdown is covered by the warranty then F&FM will supply identical or equivalent goods under the conditions referred to in point 6 of the general conditions of sale. The warranty obligation described in this article only applies if the goods supplied by F&FM have been used in accordance with the manual. Time spent on warranty-related activities, including travel time, travel costs and accommodation costs, are charged at current rates.

In contrast to the above, F&FM will not be held to any warranty obligation if:

1. Repairs have been carried out, or attempted, by the other party or a third party, unless F&FM had previously declined to repair the goods for a fair price;
2. F&FM demonstrates that the defect did not emerge during testing;
3. The other party fails to inform F&FM of the defect immediately, if possible either by letter and/or by fax, providing full, accurate details and/or has failed to comply fully with F&FM's instructions;
4. The other party has failed to use or treat the goods properly or in accordance with F&FM's instructions;
5. The damage has been caused by incidents, beyond F&FM's supervision, which have occurred either during transport or installation.

## Main SK450 components

1. Top lid
2. Interface & Emergency stop button
3. Transformer
4. Power Board
5. Removable front panel
6. Clamping plate
7. Sound reduction kit
8. Super strut – suspension
9. Door handle
10. Shaker frame
11. Can table
12. Can mounting rim
13. Excenter axle
14. Shaker motor & driving belt



# Safety instructions

## General safety instructions



Attention! Before installing the equipment and setting it in operation, please read the instructions carefully. This is safer both for yourself and prevents unnecessary damage to the machine.

The manufacturer accepts no liability if the instructions below are not followed:

1. If a machine has been damaged (during transport, for example), do not attempt to set it in operation. When in doubt, first contact either your supplier or the F&FM service department.
2. The equipment should be positioned and connected up in strict accordance with the installation instructions.
3. All local safety regulations and ordinances should be observed.
4. The machine may be connected only to a 230V/16A/50Hz or 110V/25A/60HZ earthed wall socket installed in accordance with the regulations.
5. Users should see to it that the machine is kept in good condition. Defective components should be replaced.
6. In order to prevent physical injury, the doors should be closed and the paneling fitted during normal use.
7. All service activities (other than routine maintenance and adjustments) may only be carried out by qualified technicians. See to it that the mains lead is always kept unplugged while repairs are being carried out.

## Specific safety instructions in this manual



Attention! Failure to remove the frame lock correctly can result in severe damage to your SK450 when in operation. Please take care!



Attention! To prevent damage, the SK450 may only be connected to either 220V/16A/50Hz or 110V/25A/60Hz/50Hz power grids.



Attention! Only use the emergency stop button in case of a true emergency. After pressing the emergency stop, wait at least 15 seconds before unlocking it (turn clockwise). The SK450 will then reset and unclamp the container.

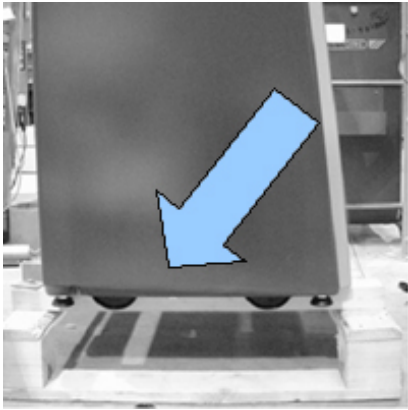


Attention! MOVING PARTS CAN CAUSE INJURY. Always turn off power (e.g. by pressing emergency stop) before accessing moving parts.

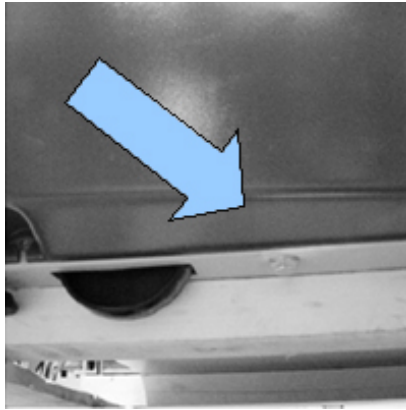


# Installation

## Step 1 - Unpack the machine and unlock the frame lock



Remove box and plastic foil. Note the frame lock bolts on either side of the machine.



Remove both bolts with a size 17 fork wrench.

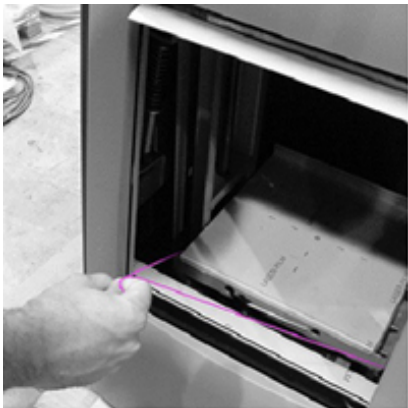


By removing the bolts, the frame lock's wooden block is released.

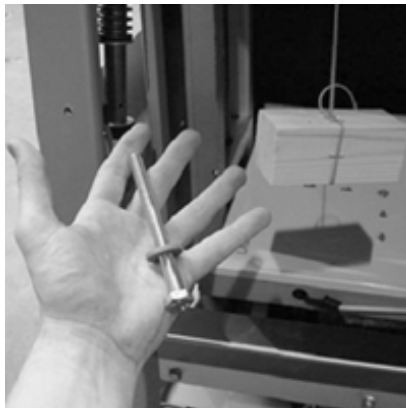


Be careful not to damage the body and surfaces of your SK450 with any tools while unpacking it. Take care not to accidentally close the door before finishing installation, as it can then only be unlocked from User Menu U2.

## Step 2 - Remove the frame lock



Pull out cord to remove frame lock's loose parts.



Ensure all loose parts have been removed – two bolts and two wooden blocks.



Connect the SK450 to the power mains before closing the door.

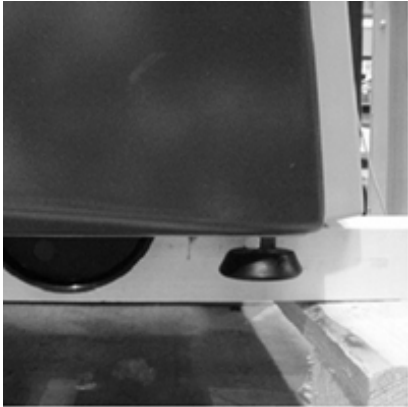


Attention! Failure to remove the frame lock correctly can result in severe damage to your SK450 when in operation. Please take care!



Please take care to store the frame lock for later use, it is essential for correct transportation.

### Step 3 - Detach shaker from its transport skid



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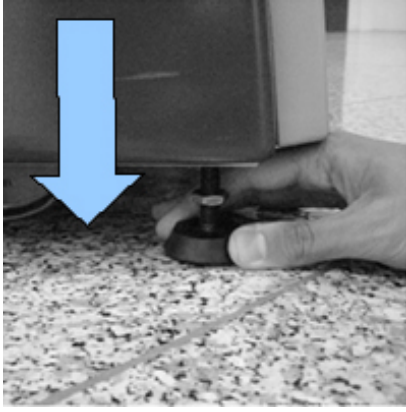
Pull out cord to remove frame lock's loose parts.

Ensure all loose parts have been removed – two bolts and two wooden blocks.



For optimal mixing results and silent operation it is essential to correctly level the machine and lock the adjustable feet.

## Step 4 - Place the machine in its final operational position



Lower the adjustable feet far enough to lift the machine off its wheels.

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Take care to correctly level the machine (by turning the adjustable feet).

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Lock all adjustable feet by tightening the their separate bolts.



Tip: before locking the adjustable feet, start a mixing cycle with a small load (<5kg). While the SK450 runs, check if all four feet are firmly in contact with the floor and then lock them.

## Step 5 - Electrical connection



Connect the power cable to the socket at the rear of the machine.

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Ensure the emergency stop is unlocked (turn clockwise).



Attention! To prevent damage, the SK450 may only be connected to either 220V/16A/50Hz or 110V/25A/60Hz/50Hz power grids.

# Operation

## A - First time operation



Attention! Before operating your SK450 for the first time, please ensure the frame lock was correctly removed ([Click here to see](#))

### Step 1 - SK450 power management



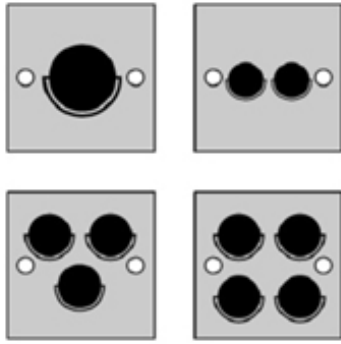
Turn the emergency stop clockwise to unlock: the screen displays the startup actions and 'ready' message.

Unlock the emergency stop button on the front of the machine by turning clockwise. The machine is automatically switched on when the power connector at the rear of the shaker is plugged into a 220V or 110V wall socket. Please be aware that the SK450 is fitted with a sleeping timer as standard. This means that after approximately 15 minutes the machine will enter a stand-by modus automatically. The display will then show the Fast & Fluid Management logo. To awake the machine from its sleeping modus, press any of the interface buttons, the normal interface will then reappear. Please note that during normal operation there should be no reason ever to take the power off the machine. In case the shaker must be switched off (e.g. for maintenance) there is only one way of achieving this: unplug the power connector at the back of the machine.



Attention! To prevent damage, the SK450 may only be connected to either 220V/16A/50Hz or 110V/25A/60Hz power grids.

## Step 2 - Correct placement of cans and other containers



Place one or more containers at gravitational center of the can table, between the spindles.

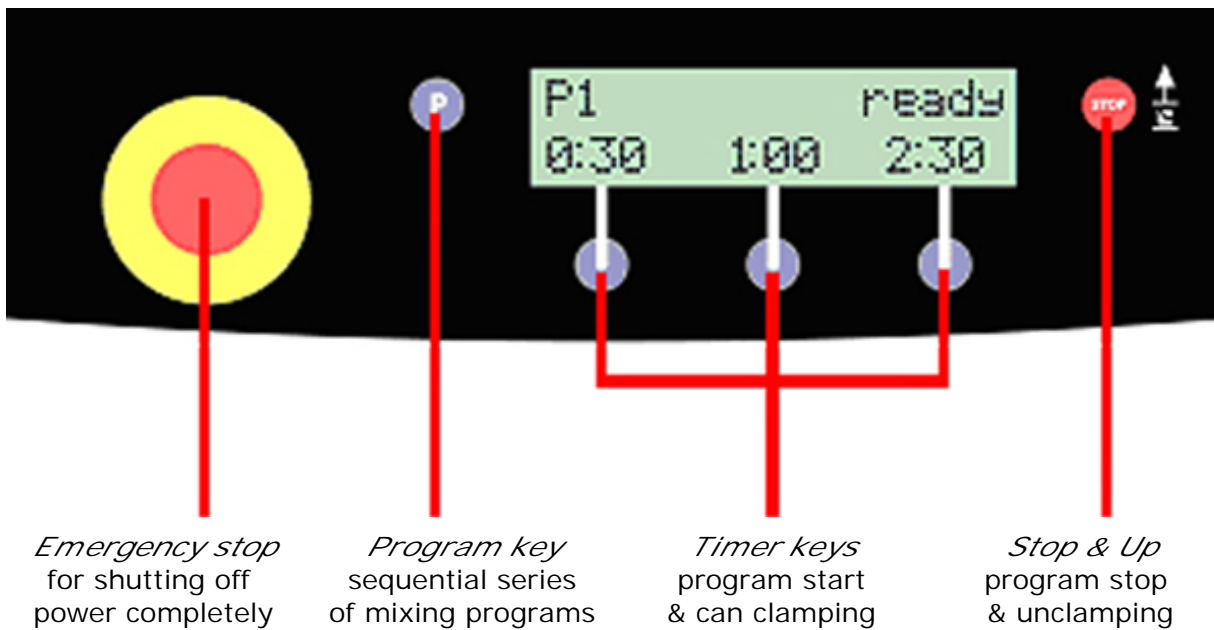


Place filler disc on lid to prevent displacement during operation.



Use the hook to fixate the can handle. When mixing more than one can, use adhesive tape.

## Step 3 - SK450 Control interface



Various user settings are available in the User Mode menu.

## B - Operating the SK450

### Step 1 - Place can, choose program and start program



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Place the container in the can table center, place filler disc and attach hook to container handle.

Close door. If your SK450 is fitted with an electric door, skip this step as it will close automatically later.

Choose correct program and press desired timing button. Clamping and mixing will now start.



Attention! The mixing program will not start unless the door is closed.

### Step 2 - Program ends or is interrupted, remove can



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To interrupt the mixing program, press the stop button. Use the emergency stop only in case of calamity.

When the program finishes or is interrupted with the stop button, the SK450 will unclamp automatically.

Open door and remove container. If your SK450 is fitted with an electric door, it will open automatically.

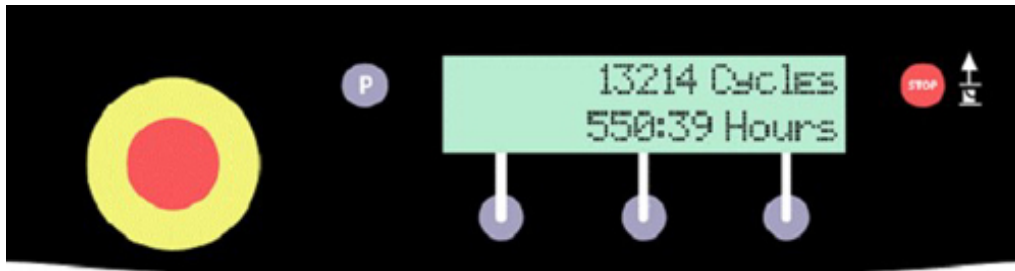


Attention! Only use the emergency stop button in case of a true emergency. After pressing the emergency stop, wait at least 15 seconds before unlocking it (turn clockwise). The SK450 will then reset and unclamp the container.



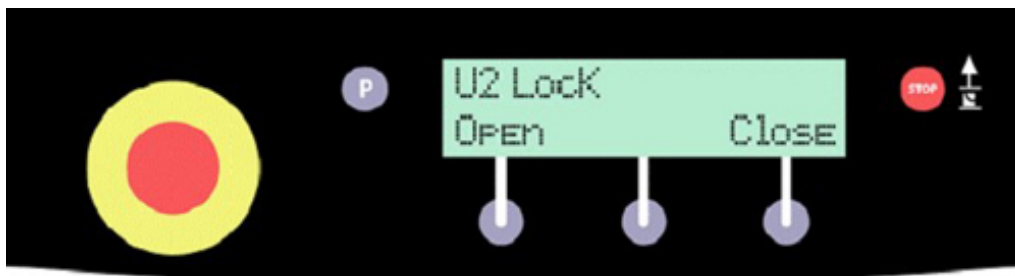
## C - User presets for the SK450

Certain SK450 software presets can be adjusted using the interface screen and buttons. To enter the User Mode menu, press the emergency stop button and then unlock it while simultaneously keeping the program button (P) pressed.



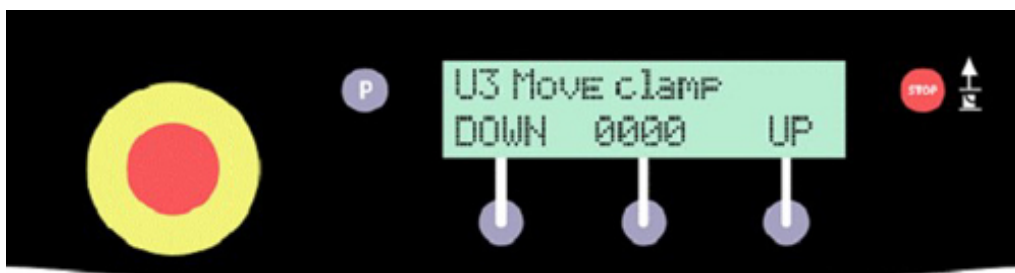
Upon entering the User Mode menu, a screen will appear showing your SK450's life in mixing cycles and total hours. Press the program button to run through the different user menu's.

### U2 - Lock or unlock door



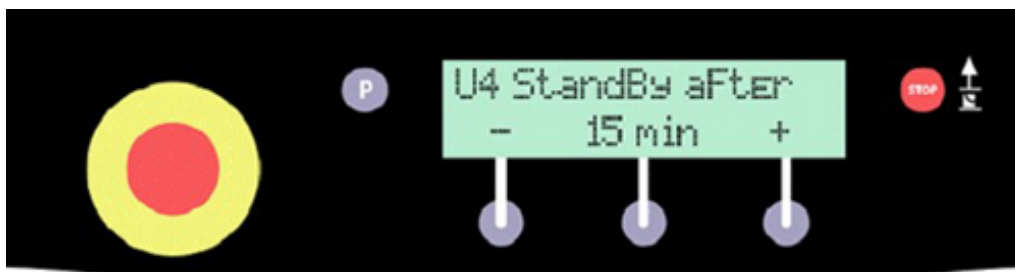
The U2 option is used to either lock or unlock the door manually. This may be necessary after a power failure or accidentally closing the door while the power is down.

### U3 - Move clamp plate



The U3 option is used to force the clamp plate to move either up or downwards. This may be necessary in case of the clamp plate jamming in its upper or lower position.

### U4 - Standby interval



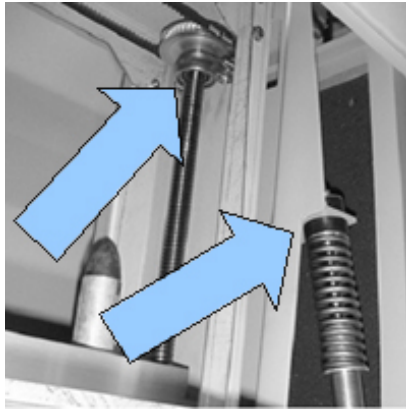
The U4 option is used to define the amount of time before entering standby modus.

## Maintenance

### Keep your SK450 clean and free of paint residue



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Remove all spilt paint from accessible parts (especially clamping plate spindles). Use diluted detergent only and Teflon spray only.

Though the SK450 is designed to be completely maintenance free, periodic greasing of moving parts will ensure it remains in top shape.



**Attention! MOVING PARTS CAN CAUSE INJURY. Always turn off power (e.g. by pressing emergency stop) before accessing moving parts.**



# Problem solving

## Introduction

Before calling your machine supplier or Service Department, please check whether you can solve the problem yourself. If you cannot, then call the Service Department for advice. Have the model number and serial number at hand (these can be found on the silver CE sticker at the back of the machine). Use the Problem Solving chart below to judge whether you can solve a problem yourself or whether you need to call in the Service Department. Use the Error chart for error messages from the software interface. The tool button (🌐) means you cannot solve the problem yourself and the Service Department must be called.

On no occasion remove side panels yourself, this may only be done by trained service personnel.



**Attention! MOVING PARTS CAN CAUSE INJURY. Always turn off power (e.g. by pressing emergency stop) before accessing moving parts.**

## Problem Solving

<i>Symptom</i>	<i>Cause</i>	<i>Action</i>
The display is blank, no reaction from machine after pressing buttons	No supply voltage present.	Check main power supply
	Emergency stop is active	Turn emergency stop clockwise
Main power supply is present but the machine does not work	Door of the machine is open	Close the door
	Emergency stop is active	Turn emergency stop clockwise
	Machine is overloaded	Unload (max 40 kg)
	Fuse blown	Shut power off and replace fuse
	Door switch is defective	Call service 🌐
	Key panel is defective	Call service 🌐
Extreme vibration when mixing	Circuit-board is defective	Call service 🌐
	Machine incorrectly loaded	Place load in can table center
	Machine is not level	Level the machine
	Adjustable feet set incorrectly	Adjust all feet so they support the machine properly and lock them into position.
Clamping plate goes down, then nothing happens	Suspension struts are defective	Call service 🌐
	Excenter driver motor is defective or a wire is broken	Call service 🌐
Clamping plate will not go down	Clamping plate jammed	Use interface user setting U4
	Fuse blown	Shut power off and replace fuse
Machine starts shaking before the container has been clamped	Too much spindle resistance	Clean the spindles and lubricate
	Clamping plate incorrectly set	Call service 🌐
Clamping plate goes down and back up again without mixing	Container is too low	Use taller container
	Container is too weak (crushed)	Use stronger container or adjust clamping force Call service 🌐

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	Too much mechanical resistance	Clean the spindle and lubricate
Clamping plate will not go up after mixing	Clamping plate is jammed	Use interface user setting U4 If persistent, call service 🌐
Container unclamps while mixing	Container(s) not centered	Replace container(s) in gravitational centre.

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## Error codes

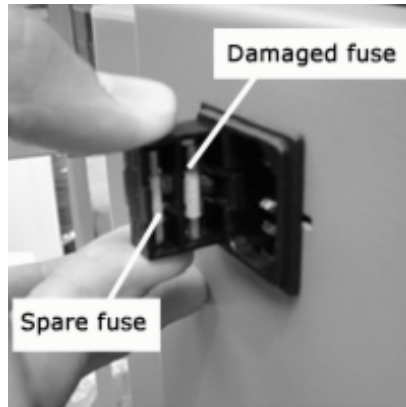
<i>Error</i>	<i>Cause</i>	<i>Action</i>
E01	Clamping motor power too low or bad electric wiring	Call service 🌐
E02	Preset minimal clamping pressure not reached	Call service 🌐
E03	Door opened during mixing or door switch defective	Keep door closed during mixing. If persistent, call service 🌐
E04 - E06	SK450 Mainboard 5V or 12V circuitry overload	Call service 🌐
E07	Clamping plate reached minimal position	Place (taller) can
E08	Can shrunk during mixing	Use less fragile can
E09	Component overload	Call service 🌐
E10	No pulses received from encoder	Call service 🌐
E12	T5 (turbo FET) of 100V power supply defective	Call service 🌐
E18	Clamping plate risen or loosened during mixing	Check can position
E20 - E33	SK450 Mainboard component overheat (> 90° Celsius)	Pause for cooling, check machine ventilation. If persistent, call service 🌐
E41	EEPROM read error	Allow reset to default settings. If persistent, call service 🌐
E71	SK450 Mainboard defective (T7 of T10)	Call service 🌐
E89	SK450 Mainboard defective (T8 of T9)	Call service 🌐
E99	Shake motor or wiring short circuit	Call service 🌐
E100	SK450 Mainboard defective (main motor power feed)	Call service 🌐
E101	Power supply from wall socket too high	Check mains. If persistent, call service 🌐
E102	Power supply from wall socket too low	Check mains. If persistent, call service 🌐

## Fuses

Replace fuse at rear of SK450.



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Remove mains connector and pull fuse tray outwards.

The inner fuse is the (damaged) one to replace, the outer is the spare to replace it with.

Dispose of the burnt fuse and in time, remember to get a new spare, type 5x20/T10A (slow). If problem persists, check mains for power surges.

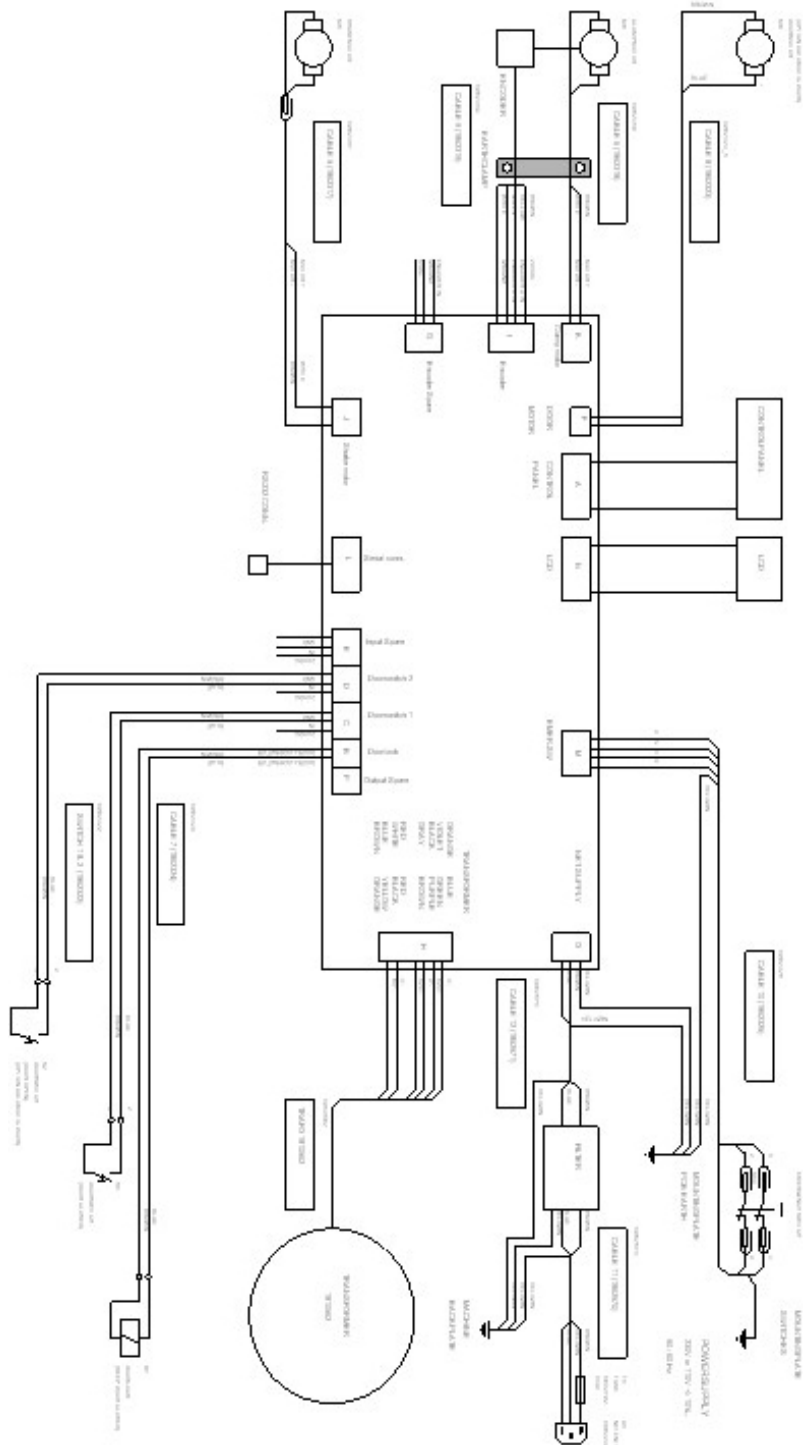
## Specifications

Maximum product weight	40 kg
Timer	electronic/programmable
Maximum product size (H x W x D)	45 x 35 x 35 cm
Minimum product height	7 cm
Clamping	automatic
Clamping pressure	variable
Product access	internal sliding door
Shaking speed	variable up to 720 rpm
Sliding table	option
Large can table	standard
Machine size (H x W x D)	116 x 72 x 61 cm
Machine weight (empty)	180 kg
Available colors available	side panels available in all (RAL) colors (middle section RAL7042)
Power input	750W
Power supply	230V/16A/50Hz or 110V/25A/60Hz/50Hz

CE approved & Patent applied.

Specifications subject to change without prior notice.

# Electrical wiring diagram



Sicherheitsanweisungen Betrieb

# Contributing to the Protection of the Environment

## Packaging Material

The packaging protects the machine against damage during transport. The packaging material was chosen based on its limited impact on the environment and its inherent possibilities for waste-disposal. The reuse of packaging material saves raw materials and produces less waste material. Generally speaking, your supplier will take the packaging off your hands.

## Discarding the Machine

Discarded equipment usually still consists of valuable materials. For this reason, do not simply throw your machine out with the oversized refuse, but ask your supplier whether he will take the machine back. If he will not, then enquire at your local government offices or ask a trader of raw materials what options there are for recycling the material (e.g. scrap processing, electrical components and plastic (see below for additional information)).



All red-coloured components are made of ABS. These components can be recycled.

Inside the red square pictured above (on the front of the dispenser) are electrical components that can be recycled.

