

# Manual

## Harbil HA480 / Harbil HA680



---

© **Fast & Fluid Management B.V.**

This manual or parts thereof may not be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, nor otherwise, without the prior written permission of Fast & Fluid Management B.V.

This manual could contain technical inaccuracies or typographical errors.

Fast & Fluid Management B.V. reserves the right to revise this manual from time to time in the contents thereof without the obligation of Fast & Fluid Management B.V. to notify any person of such revision or change.

Details and values given in this manual are average values and have been compiled with care. They are not binding, however, and Fast & Fluid Management B.V. disclaims any liability for damage or detriments suffered as a result of reliance on the information given herein or the use of products, processes or equipment to which this manual refers. No warranty is made that the use of the information or of the products, processes or equipment to which this manual refers will not infringe any third party's patents or rights. The information given does not release the user from making their own experiments and tests.

## Table of Contents

<b>1</b>	<b>About this manual.....</b>	<b>5</b>
1.1	How to work with the manual.....	5
1.2	Record of changes .....	5
<b>2</b>	<b>Safety .....</b>	<b>6</b>
2.1	Intended use.....	6
2.2	Liability.....	6
2.2.1	General liability .....	6
2.2.2	Machine-specific liability .....	7
2.3	User qualification for installation.....	7
2.4	CE certification .....	7
2.5	Safety symbols on the machine.....	8
2.6	Safety symbols in the manual.....	8
2.7	Disposal of the machine .....	9
<b>3</b>	<b>Operator manual .....</b>	<b>10</b>
3.1	Description.....	10
3.1.1	Overview of the machine .....	10
3.1.2	Overview of the controls.....	11
3.1.3	Overview of the machine (back).....	12
3.1.4	Overview of the display .....	13
3.1.5	Type plate: serial number.....	14
3.1.6	Type plate: details .....	14
3.2	Operation.....	14
3.2.1	General dispensing procedure .....	15
3.2.2	Place the can.....	15
3.2.3	Move up the can table .....	15
3.2.4	Move down the can table .....	16
3.3	Maintenance .....	16
3.3.1	General cleaning: after every dispensing operation .....	16
3.3.2	Cleaning of the brush container: daily .....	16
3.3.3	Cleaning of the switch plate: monthly .....	19
3.3.4	Refilling of a canister .....	19
3.3.5	Using the emergency stop switch.....	20
<b>4</b>	<b>Installation .....</b>	<b>21</b>
4.1	Unpack the machine.....	21
4.1.1	Remove the cardboard.....	21
4.1.2	Remove the transport brackets at the front .....	21
4.1.3	Remove the transport brackets at the rear .....	22
4.1.4	Remove the wooden beams.....	22
4.1.5	Remove the plastic protection on the canisters.....	22
4.1.6	Remove the plastic protection from the switchplate .....	23

---

4.2	Put the machine in position .....	23
4.2.1	Move the machine to the final location, with a ramp (optional) .....	23
4.2.2	Put the machine on the final location .....	24
4.2.3	Place the step .....	24
4.2.4	Turn the step .....	24
4.3	Install the computer .....	25
4.3.1	Open the back cover .....	25
4.3.2	Install the computer .....	25
4.4	Turning on the machine .....	25
4.5	First use .....	26
<b>5</b>	<b>Troubleshooting .....</b>	<b>27</b>
5.1	General troubleshooting procedure .....	27
5.2	Contact service .....	27
5.3	Audio signals .....	27
5.4	Error messages and other faults .....	28
5.5	Indicators on the display .....	29
<b>6</b>	<b>Technical data .....</b>	<b>30</b>
6.1	General specifications .....	30
6.2	Dimensions and mass .....	30
6.3	Ambient conditions .....	31
6.4	Noise level .....	31
6.5	Safety classifications .....	31
6.6	Electrical specifications .....	31
6.7	Electrical diagram .....	32

# 1 About this manual

The manual shows the information necessary to:

- install
- operate
- perform basic maintenance
- correct small problems.

The HA480, the HA680 and all their versions are referred to in the manual as the 'machine'.

This manual contains the original instructions. The original language of the manual is English. All other language versions are translations of the original instructions.

## 1.1 How to work with the manual

For the safe use of the machine, it is important:

- 1 To familiarize yourself with the structure and content.
- 2 To read the safety chapter in detail and make sure you understand all the instructions. See chapter § 2.
- 3 To carry out the actions completely and in the given sequence.

## 1.2 Record of changes

Edition	Editor	Check	Date	Description
1.0	EVT	TB	10/2016	First edition
2.0	EVT	TB	02/2018	New brush management system

## 2 Safety

**WARNING**

Read the manual before you install or use the machine. Failure to do so can result in personal injury, death or property damage.

### 2.1 Intended use

The machine is designed to dispense colorants into a can. Any other use of the machine is strictly forbidden.

### 2.2 Liability

#### 2.2.1 General liability

Our machines and accessories are fully compliant with the CE regulations. Any modification can result in not fulfilling the CE safety requirements and is therefore not allowed. Fast & Fluid Management B.V. will not accept any responsibility in case of modifications to machines and/or accessories.

Fast & Fluid Management B.V. is not liable if you do not follow the rules below:

- The machine is for indoors use only.
- This machine may only be used for commercial settings. The machine is not a household appliance.
- Observe all local safety regulations.
- Strictly obey the safety instructions in this manual.
- Mind the minimal requirement of the building structure of the load capacity of the floor.
- Place machine in a well-lit and well-ventilated room.
- Install and connect the machine according to the instructions in this manual.
- Connect the machine to a grounded wall socket.
- Do not use extension cords or inadequately rated power cables.
- Make sure that the power cable is freely accessible.
- Do not place objects on top of the machine.
- Keep lids, panels, and covers closed and in place whenever possible.
- Do not use a damaged machine. When you have doubts, contact your supplier. See § 5.2.
- Keep the machine in good condition.
  - Clean the machine at the intervals and when dirty.
  - Make sure that defective parts are immediately replaced.
- Remove spilled liquids immediately, and unplug the machine in case of large spillages (> 500mL).
- Replace parts only with original Fast & Fluid Management B.V. spare parts.

All maintenance beyond the scope of this manual must be carried out by a qualified service technician that Fast & Fluid Management B.V. has trained and certified.

### 2.2.2 Machine-specific liability

This machine is designed to dispense colorants containing flammable volatile solvents into a can under the following conditions:

- The place of operation cannot be an ATEX zone of any kind.
- Documentation on explosion protection must be compiled by the operator.
- The computer is not installed inside the machine.
- The brush container liquid has a flash point above 60 °C.
- The colorants comply with the specifications listed in chapter § 6.8.
- Materials safety data sheets (MSDS) instructions are strictly obeyed when handling all substances (colorants, (base) paint, cleaning liquids, and brush liquid) in and around the machine.
- The maximum amount of volatile organic (flammable) solvents contained in a single canister must be less than 8L.

The safety of the machine is based on the fact that air inside the machine is constantly refreshed by a fan and that there is air pressure inside the machine that prevents flammable or explosive vapours entering the machine. When in doubt about the ventilation, do not use the machine and consult your service hotline.

It is highly recommended to connect the ventilation air intake on the back of the machine with a source of fresh air from outside, or another well-ventilated space.

Please consult the health & safety officer of your paint supplier and/or colorant supplier on how to safely handle (base) paints, colorants, and cleaning substances in and around the machine and to avoid the emergence of hazardous situations like personal harm or the risk for fire and explosion.

## 2.3 User qualification for installation

Only install the machine if you have written permission from the supplier of the machine.

## 2.4 CE certification

The machine is CE certified. This means that the machine complies with the essential requirements concerning safety. The directives that have been taken into consideration in the design are available on [www.fast-fluid.com](http://www.fast-fluid.com).

## 2.5 Safety symbols on the machine



Rotating parts hazard



Pinch hazard for your hand



Read the manual



Pinch hazard for your foot



Electrical hazard



Can table switch up/down



Instruction

## 2.6 Safety symbols in the manual



**WARNING**  
Can cause personal injury.



**WARNING**  
Pinch hazard for your foot.



**CAUTION**  
Can cause damage to the machine.



**Note**  
Shows further information.



## 2.7 Disposal of the machine

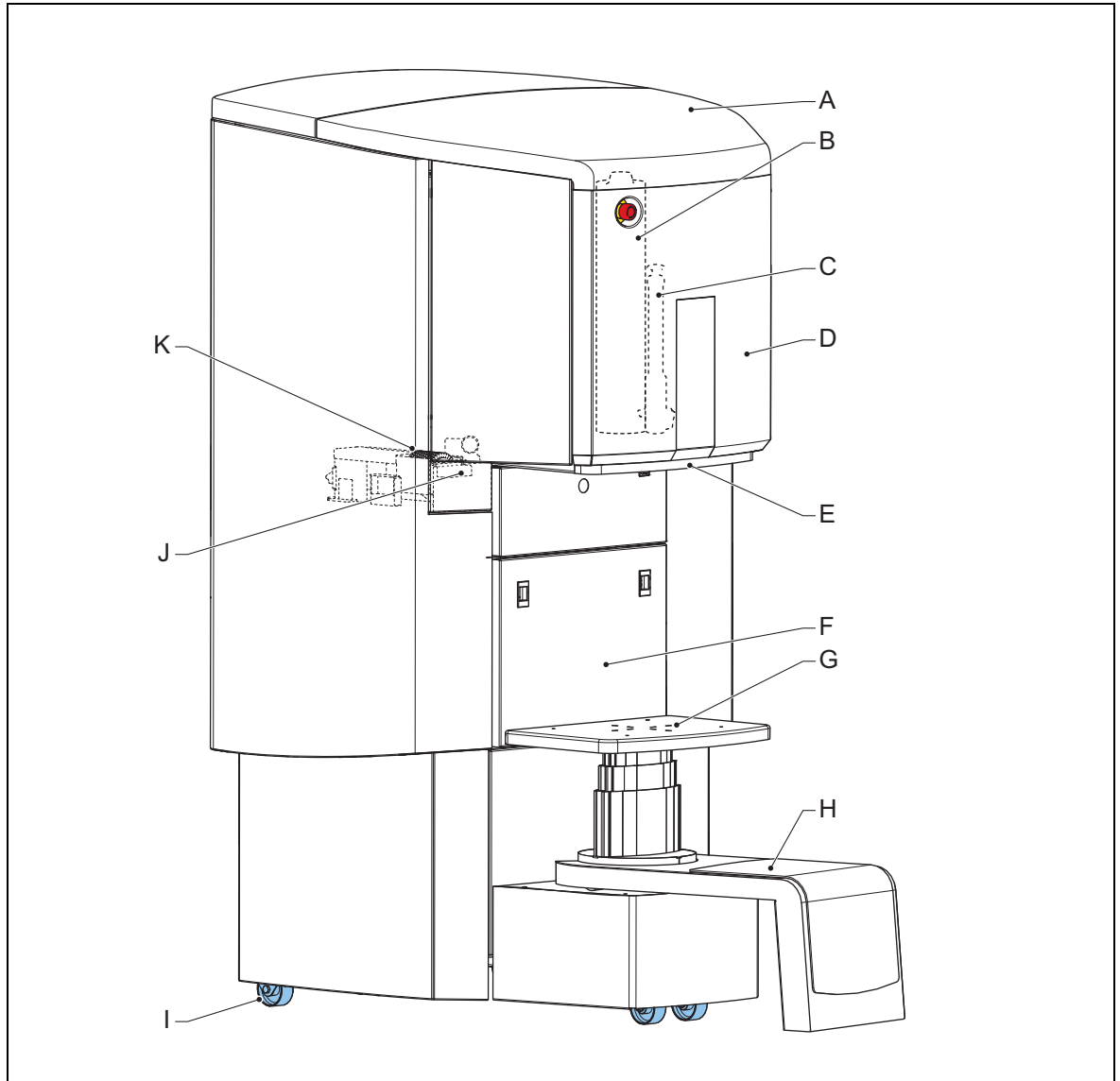
1. Sort the machine, the accessories and the packaging for environmentally friendly recycling.
2. Do not dispose of the machine into domestic waste. Dispose of the machine according to local regulations.
3. Dispose of the canisters as chemical waste, according to the local regulations.



## 3 Operator manual

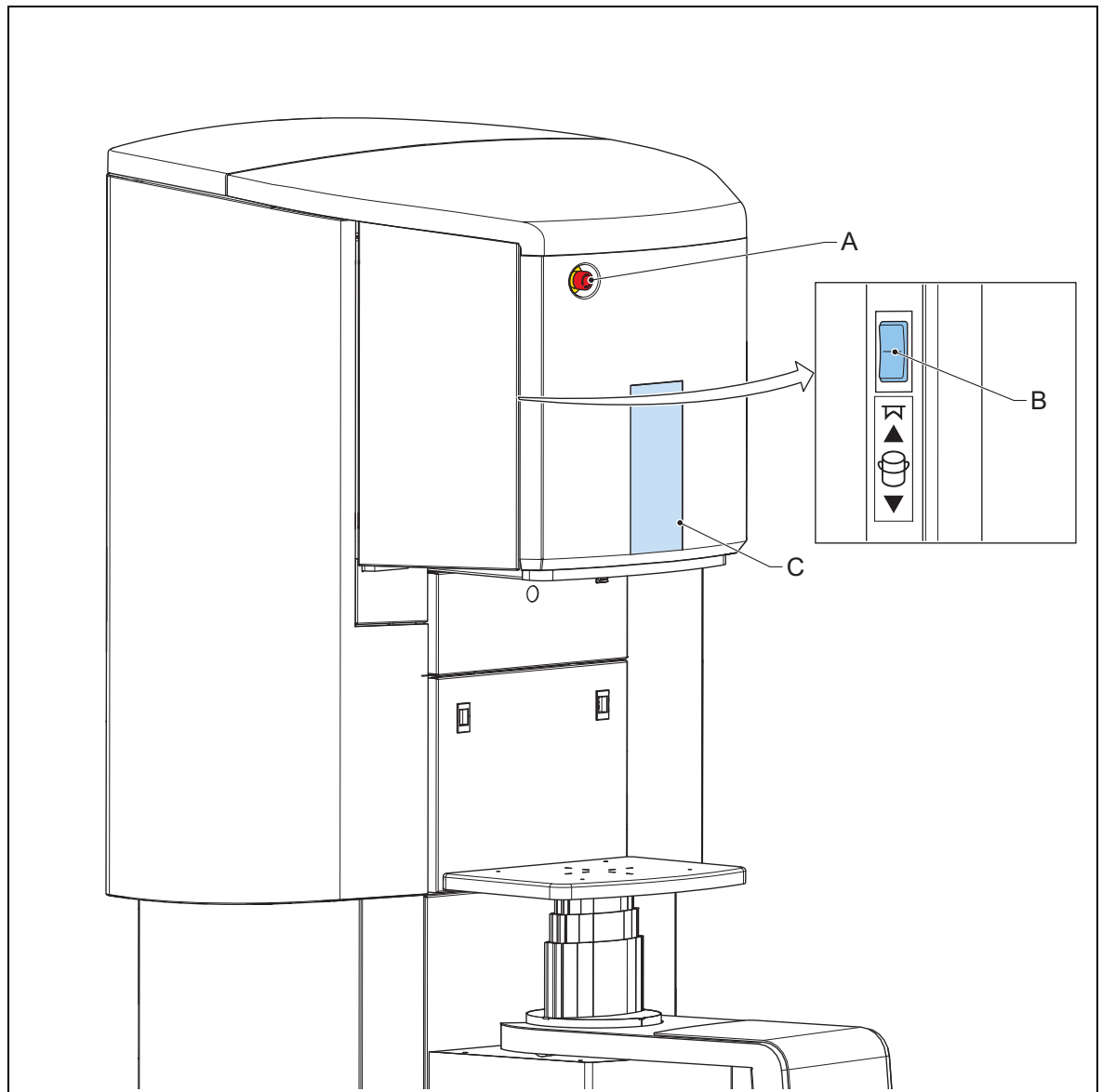
### 3.1 Description

#### 3.1.1 Overview of the machine



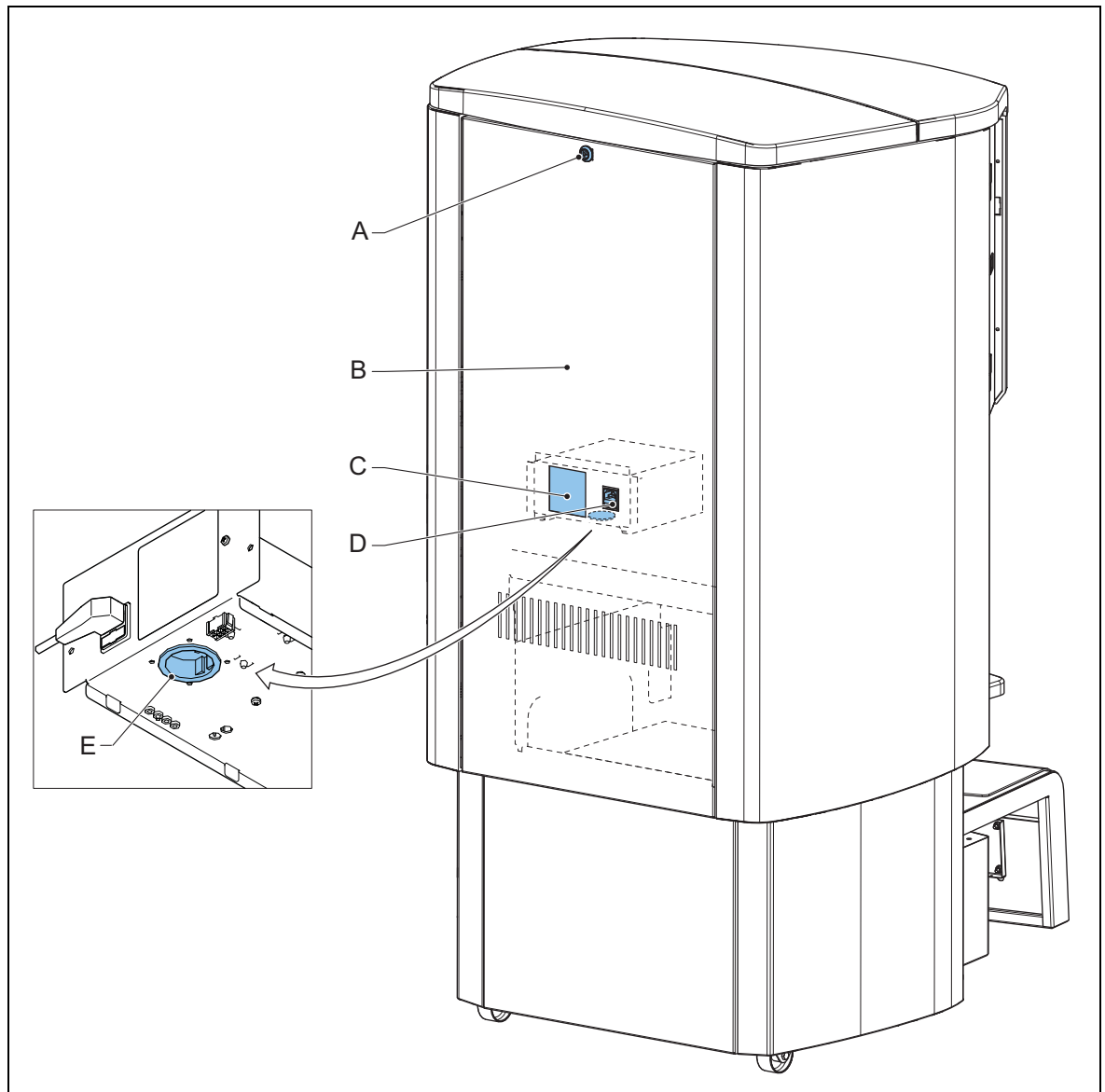
- |                            |   |
|----------------------------|---|
| <b>A:</b> Top cover        | <b>G:</b> Can table   |
| <b>B:</b> Canister         | <b>H:</b> Step  |
| <b>C:</b> Pump with nozzle | <b>I:</b> Wheels  |
| <b>D:</b> Front cover      | <b>J:</b> Brush container   |
| <b>E:</b> Switch plate     | <b>K:</b> Brush monitor system (option in HA480, standard feature in HA680) |
| <b>F:</b> Computer cover   |   |

## 3.1.2 Overview of the controls



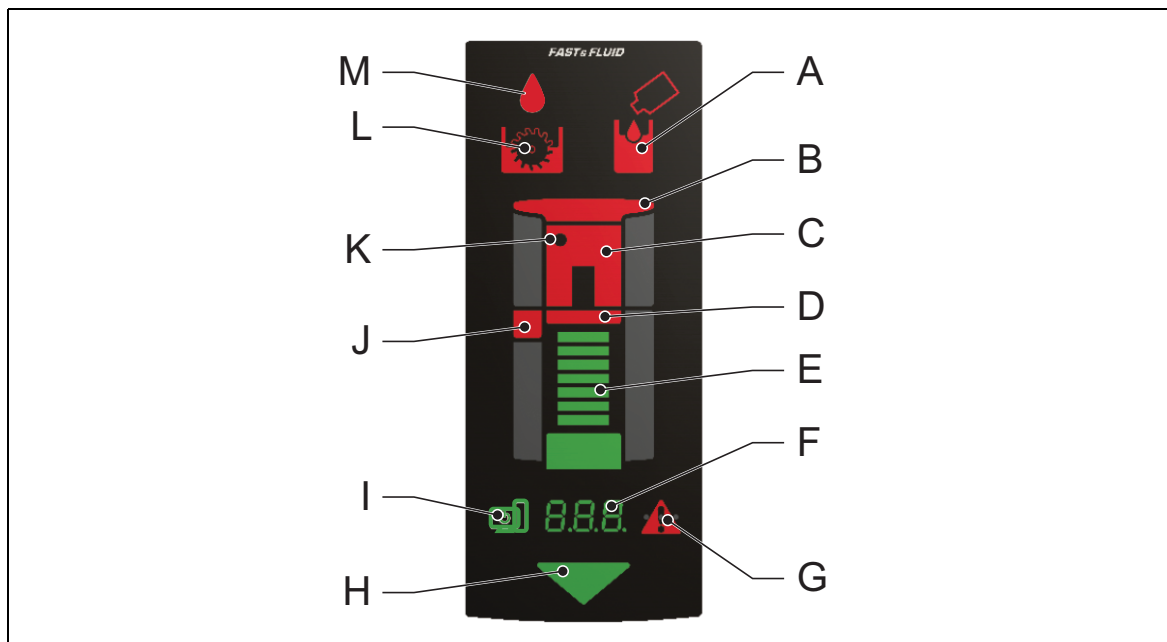
- A:** Emergency stop switch  
**B:** Can table switch  
**C:** Display with indicators and keys

## 3.1.3 Overview of the machine (back)



- A: Lock
- B: Back cover
- C: Type plate
- D: Net entry
- E: Power socket

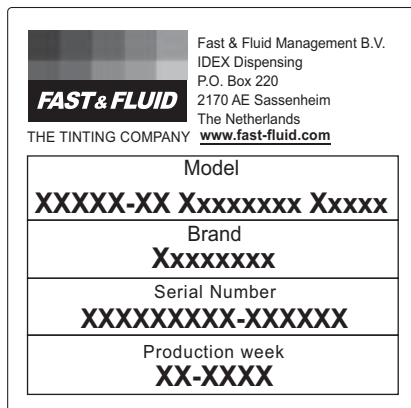
## 3.1.4 Overview of the display



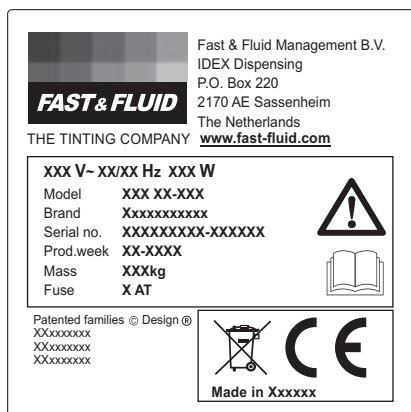
- |  |                                      |
|--|--------------------------------------|
| <b>A:</b> Canister refill indicator                | <b>H:</b> Can indicator              |
| <b>B:</b> Top cover open indicator                 | <b>I:</b> Computer switch key        |
| <b>C:</b> Front cover open indicator               | <b>J:</b> Brush is missing indicator |
| <b>D:</b> Switch plate is missing indicator        | <b>K:</b> Emergency stop indicator   |
| <b>E:</b> Dispense progress bar                    | <b>L:</b> Brush refill indicator     |
| <b>F:</b> Error / counter display                  | <b>M:</b> Brush monitor indicator    |
| <b>G:</b> Error indicator and Error / function key |                                      |

Item	Function
Indicator	When the indicator is on, it shows the status of the item or problem. See § 5.5 for possible causes and solutions.
Dispense progress bar	The progress bar shows <ul style="list-style-type: none"> <li>- The progress of the dispense operation (of the last 30 seconds)</li> <li>- The progress of the startup of the computer when you push and hold the computer switch key</li> </ul>
Error / counter display	The display shows: <ul style="list-style-type: none"> <li>- The error codes</li> <li>- The software version</li> <li>- The seconds that remain for the dispense operation</li> </ul> <p>See § 5.4 for a description of the error codes and the possible causes and solutions.</p>
Error key	When you push the error key, the error display shows the error code.
Function key	When you push the function key, the counter display shows the software version.
Computer switch key	When you push and hold the computer switch key, the computer is set in the on or off position. Wait until the progress bar is full to finish the operation.

### 3.1.5 Type plate: serial number



### 3.1.6 Type plate: details



## 3.2 Operation



#### WARNING

Only push the emergency stop switch in the case of a safety emergency.

Make sure that the problem is solved before you reset the emergency stop switch.

When you reset the emergency stop switch, the machine restarts automatically. When the machine is operational, you hear 'beep beep'.



#### CAUTION

Do not remove the power from the machine. The machine must stir the colorants periodically.

**Note**

The computer switch only turns the computer on and off.

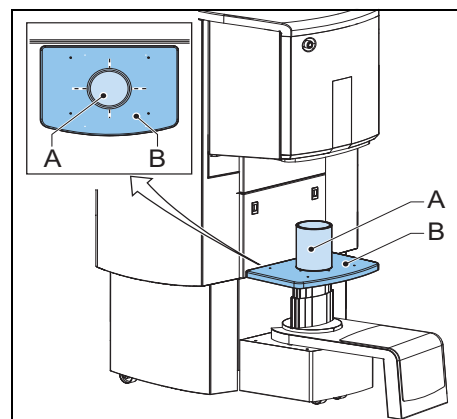
**3.2.1 General dispensing procedure**

For all the software instructions: see the software documentation.

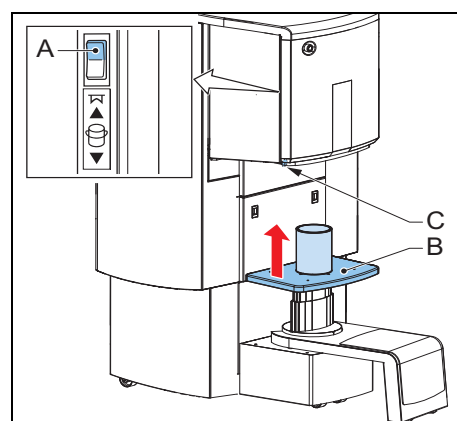
1. Place the can. See § 3.2.2.
2. Move the can table up. See § 3.2.3.
3. Choose the recipe and dispense. See the software documentation.
4. Move the can table down. See § 3.2.4.
5. Remove the can.

**3.2.2 Place the can**

1. Place the can (A) at the centre of the mark (B) on the can table.

**3.2.3 Move up the can table**

1. Push and hold the upper part of the can table switch (A). *The can table (B) moves up and stops when the can is in front of the can sensor (C).*
2. After the can table stops, release the can table switch.

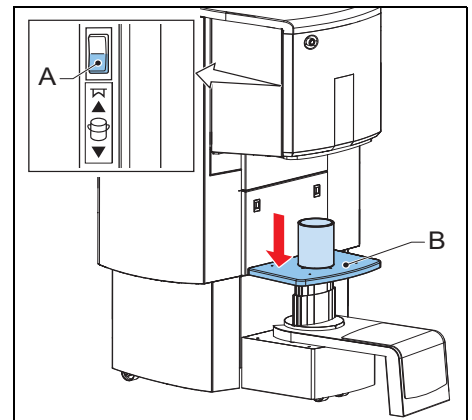


### 3.2.4 Move down the can table

1. Push and hold the lower part of the can table switch (A). *The can table (B) moves down.*
2. When you can remove the can, release the can table switch. If you hold the can table switch, the can table moves down to a halt.

**WARNING**

Do not put your foot below the can table.



## 3.3 Maintenance

### 3.3.1 General cleaning: after every dispensing operation

1. Clean the machine with a cloth and remove all spilled colorant or other liquid.

**CAUTION**

Do not use cleaning agents based on organic solvents to clean painted or plastic parts of the machine.

### 3.3.2 Cleaning of the brush container: daily

**CAUTION**

If you do not clean these items daily, severe pollution will occur.

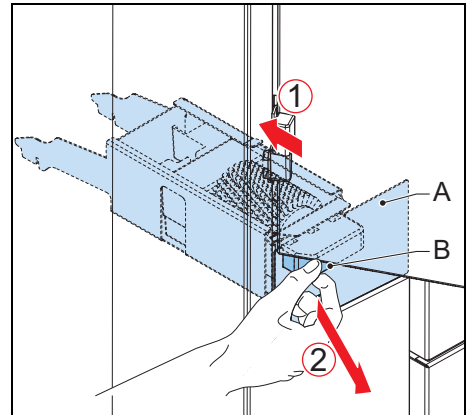
**Note**

The brush monitor system that senses the fluid level in the brush container is an option in HA480 and a standard feature in HA680.

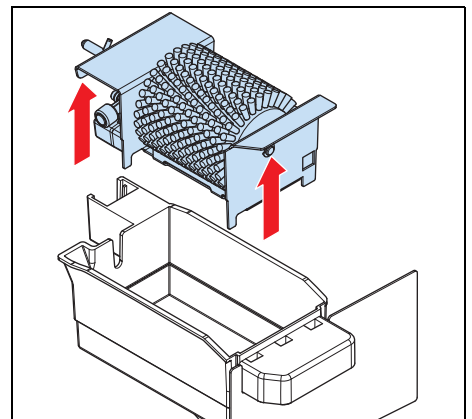


**Remove the brush container**

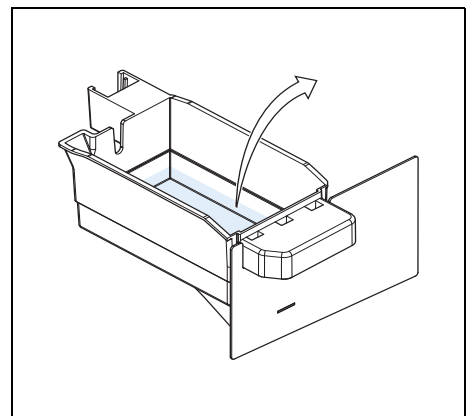
1. Push the front side of the brush container until the brush container is unlocked.
2. Remove the brush container (A). Use the handle (B).

**Remove the brush**

1. Remove the brush from the brush container.

**Clean the brush container**

1. Remove the liquid from the brush container. For the disposal of the liquid, follow the local regulations.

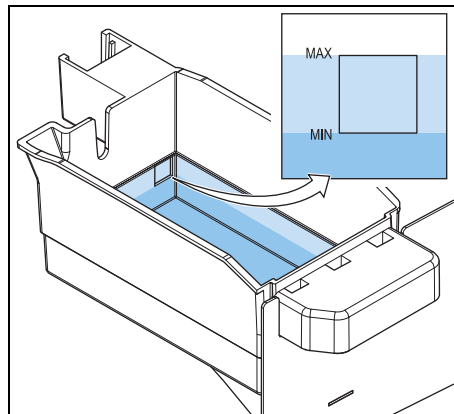


**Fill the brush container**

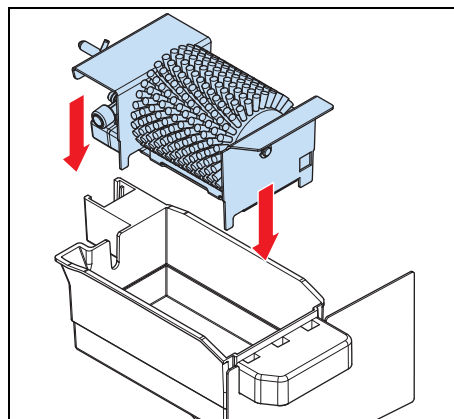
1. Fill the brush container with the liquid that your paint supplier indicates. The level of the liquid must be between the "MIN" and "MAX" mark. *Use the liquid that your paint supplier indicates.*

**WARNING**

Do not put flammable liquids in the brush container.

**Put back the brush**

1. Put back the brush into the brush container.

**Put back the brush container**

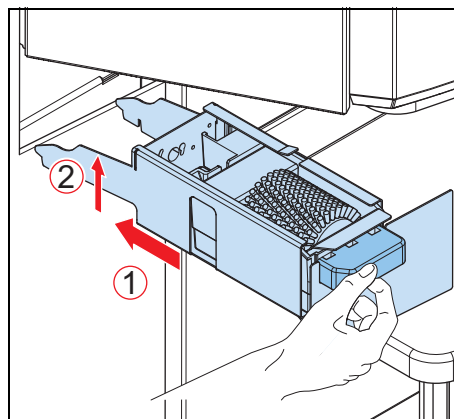
1. Put back the brush container.
2. Push the front side of the brush container further in the machine until the brush container is locked.

**Note**

When you release the handle of the brush container, the brush container moves slightly forward into place.

**Note**

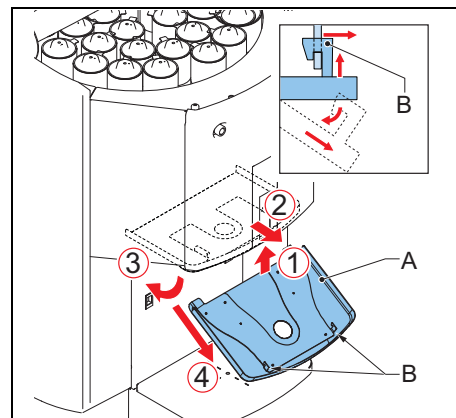
Make sure that the brush container is correctly put in its position, otherwise the machine does not function properly.



### 3.3.3 Cleaning of the switch plate: monthly

#### Remove the switch plate

1. Remove the switch plate (A).
  - a. Push the switch plate upward and then forward. *This way the hooks (B) are disconnected from the machine.*
  - b. Lower the switch plate.
  - c. Pull out the switch plate.

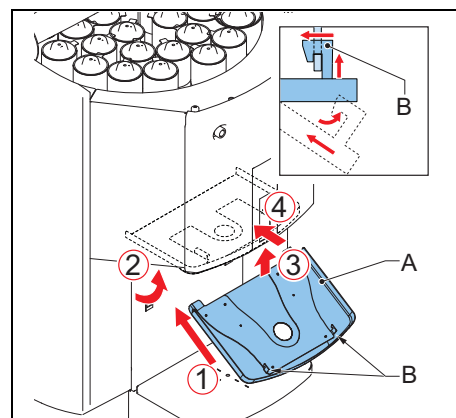


#### Clean the switch plate

1. Clean the switch plate. *Use a cleaning cloth with a non-organic cleaning liquid.*

#### Put back the switch plate

1. Put back the switch plate (A).
  - a. Slide in the switch plate at the back and lift it upward.
  - b. Make sure that the hooks (B) are connected to the machine.
  - c. Slide in the switch plate forward until it is locked to the machine.



### 3.3.4 Refilling of a canister



#### WARNING

Check the material safety data sheet (MSDS) of the colorants for the personal protection measures that are required for handling the colorant.



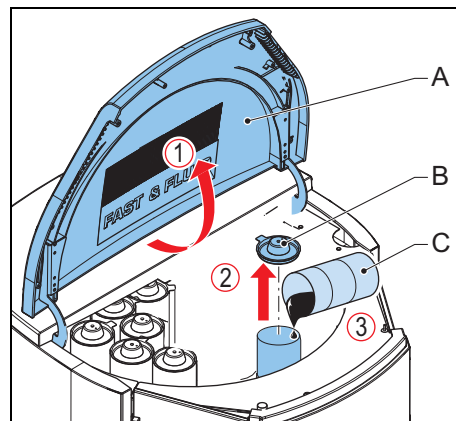
#### CAUTION

Make sure that the colorant level in the canister is correct. If a canister is empty, this can cause an inaccurate dispensing and/or a recipe fault.

**Note**

The software checks the level of colorant in each canister. The software on the machine shows when you need to refill a canister.

1. In the software, activate the fill canister option.
2. Open the top cover (A).
3. Remove the lid of the canister (B).
4. Add the colorant (C). Do not spill.



### 3.3.5 Using the emergency stop switch

1. Push the emergency stop switch (A). The machine stops immediately.

**CAUTION**

Only push the emergency stop switch in the case of a safety emergency. Do not use the emergency stop switch as an on/off function!

**Note**

The machine stays energized to keep the display in operation.

2. Solve the problem as quickly as possible.

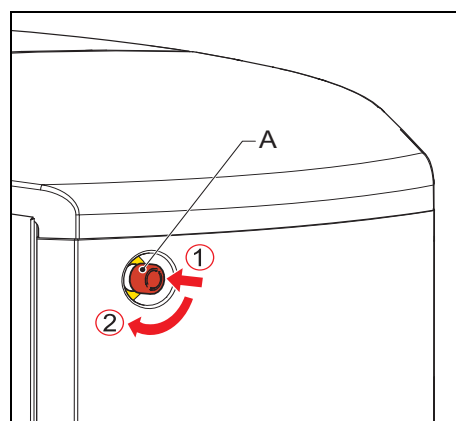
**CAUTION**

When the machine is shut down, the stirring mechanism, which is necessary to keep the colorant in optimal condition, is also shut down.

3. Reset the emergency stop switch by turning the emergency stop switch. The machine restarts automatically.

**Note**

After the reset, the machine is operational.

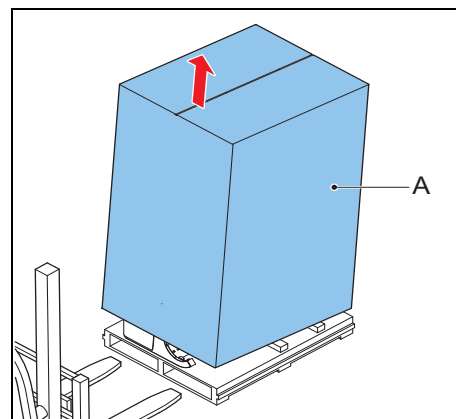


## 4 Installation

### 4.1 Unpack the machine

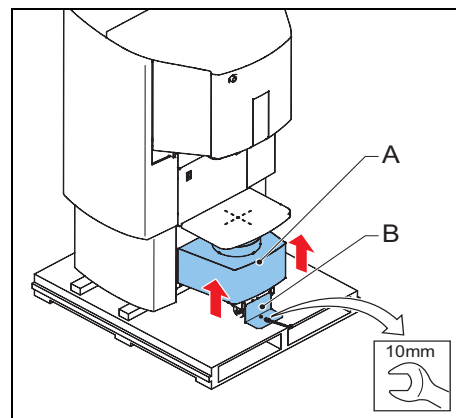
#### 4.1.1 Remove the cardboard

1. Remove the cardboard (A) and the plastic from the outside of the machine.



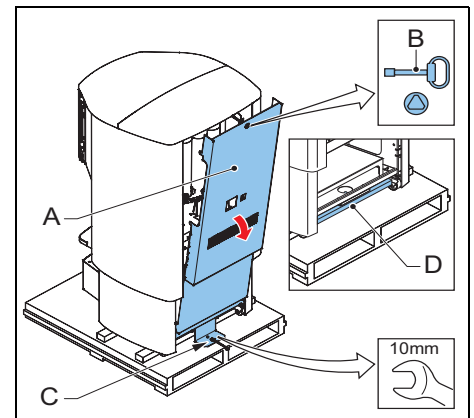
#### 4.1.2 Remove the transport brackets at the front

1. Lift the cover (A).
2. Unscrew the transport bracket (B) and remove it.

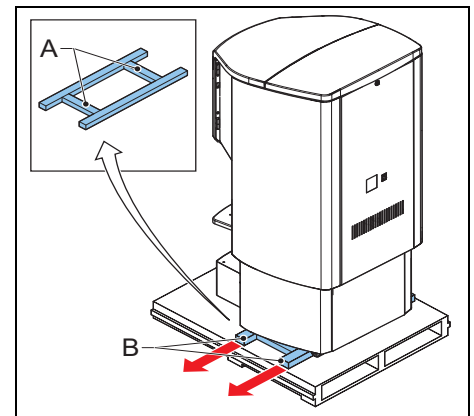


**4.1.3 Remove the transport brackets at the rear**

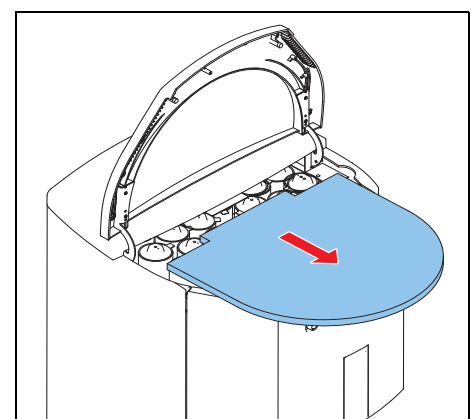
1. Open the back cover (A). *Use the key (B).*
2. Remove the back cover. *Let the back cover move towards you. Then lift the cover.*
3. Unscrew the transport brackets (C) and (D) and remove them.

**4.1.4 Remove the wooden beams**

1. Remove the wooden cross-beams (A). *They are connected with staples.*
2. Remove the wooden beams (B).

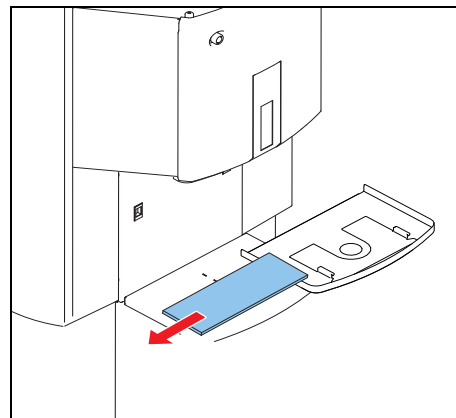
**4.1.5 Remove the plastic protection on the canisters**

1. Remove the blue tape and open the top cover.
2. Remove the plastic protection.



**4.1.6 Remove the plastic protection from the switchplate**

1. Remove the switchplate. See § 3.3.3.
2. Remove the plastic protection from the switchplate.
3. Put back the switchplate. See § 3.3.3.

**4.2 Put the machine in position****4.2.1 Move the machine to the final location, with a ramp (optional)****WARNING**

Mind the minimum requirement of the load capacity of the floor. See § 6.2.

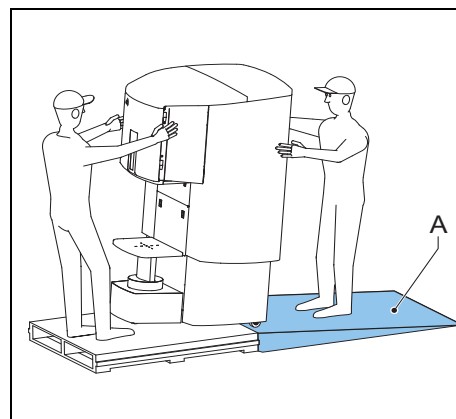
**Note**

Make sure that the final location is well-lit and well-ventilated.

1. Place the ramp (A).
2. Move the machine from the pallet on to the ground.
3. Move the machine to the final location.
4. Connect the power cable to the net entry.

**CAUTION**

Do not connect the power cable to the wall socket.

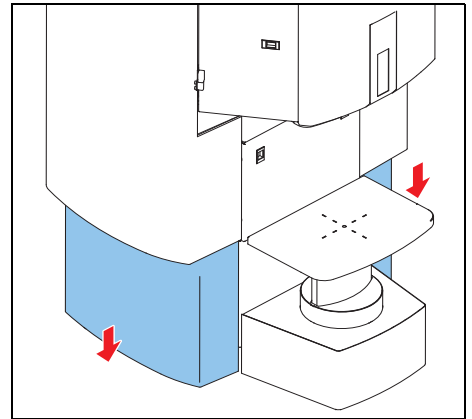


**4.2.2 Put the machine on the final location**

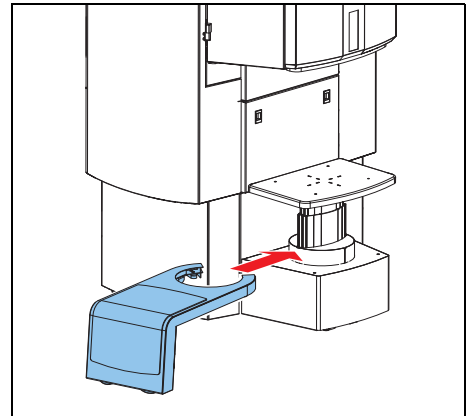
1. Slide down the side panel to hide the wheels.

**CAUTION**

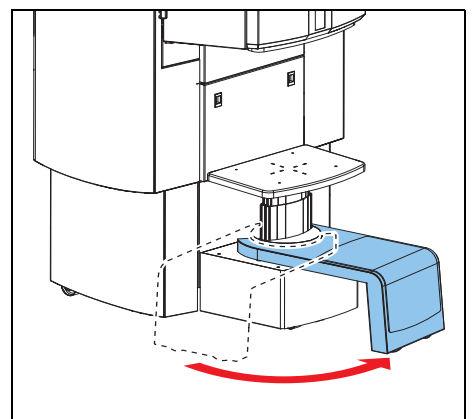
Do not remove the side panel to prevent damage.

**4.2.3 Place the step**

1. Place the step from the left side under the can table.

**4.2.4 Turn the step**

1. Turn the step to the front.

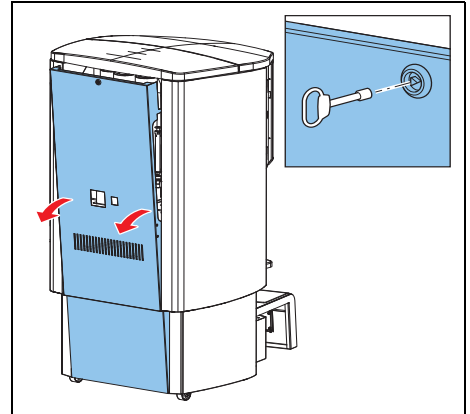




## 4.3 Install the computer

### 4.3.1 Open the back cover

1. Open the back cover. See § 4.1.3
2. Remove the back cover.



### 4.3.2 Install the computer

**Note**

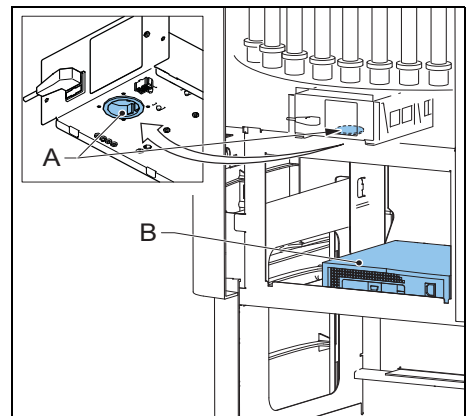
Usually, the computer already has the correct software and drivers installed. If not, see the instructions in the installation manuals of your software provider.

1. Put the computer in the machine.
2. Connect the power cable of the computer to the power socket at the bottom of the power module (A).

**WARNING**

The maximum output of the socket is 1000 W.

3. Connect an USB cable between the computer and the power board (B).
4. Connect the keyboard, the mouse and the screen to the computer.



## 4.4 Turning on the machine

1. Connect the power cable to the wall socket. When the machine is operational, you hear two 'beeps'.
2. Make sure that the emergency stop switch is reset. See § 3.3.5.
3. Set the computer switch to 'ON'. *On the display, push and hold the computer switch key until the status bar is full.*

## 4.5 First use

1. Fill the brush container. See § 3.3.2.
2. Fill the canisters. See § 3.3.4.
3. Flush the pumps. Use the flush command in the software. See the software documentation.

## 5 Troubleshooting

### 5.1 General troubleshooting procedure

1. Try to solve the problem with the information in this manual.  
See § 5.3 and § 5.4.
2. If it is not possible to solve the problem with the information in this manual, contact service. See § 5.2.

### 5.2 Contact service

1. Find the type plate on the rear of the machine. See § 3.1.6.
2. Take a note of the model number and the serial number of the machine.
3. Contact your supplier or manufacturer.  
See [www.fast-fluid.com](http://www.fast-fluid.com).

### 5.3 Audio signals


**Note**

See the column *Possible solution* to solve the problem. When the problem persists, contact service. See § 5.2.

Problem	Possible cause	Solution
••• --- ••• SOS signal during the stirring.	The agitation motor is malfunctioning, a cable is broken or the power board is malfunctioning.	Contact service. See § 5.2.
••• --- ••• SOS signal during the rotation of the turning table.	The brush motor is malfunctioning.	Contact service. See § 5.2.
--- > 1 long interrupted beep (continuously 1 sec. on, 1 sec off)	Stirring function cannot start because the top cover is open.	Close the top cover.
—> 1 long uninterrupted beep	An error occurred.	See § 5.4.
•• 2 short beeps	The machine initializes.	-
----- Long interrupted beeps, flush sound	The machines starts its daily flush round	-

Problem	Possible cause	Solution
----- Long interrupted beeps, cleaning sound	The machine starts its daily cleaning rounds	-
• • • • Short interrupted beeps	Power supply fault occurs	Contact service. See § 5.2.
- - - A 1-second beep every minute	Fluid level in the brush container is too low (or the brush monitor sensor is activated)	Refill the brush container. See § 3.3.2.

## 5.4 Error messages and other faults



### Note

For all error messages on the computer: see the help topic in the dispense software.



### Note

See the column *Possible solution* to solve the problem. When the problem persists, contact service. See § 5.2.

Problem	Possible cause	Possible solution
Main power supply is present but the machine does not work.	The emergency stop switch is active.	Reset the emergency stop switch. See § 3.3.5.
	A fuse is broken.	Contact service. See § 5.2.
Display shows E01	The machine is not initialized.	Restart the machine.
Display shows E13	A turntable timeout occurred.	Restart the machine.
Display shows E33	A valve timeout occurred.	Restart the machine.
Display shows E43	A pump timeout occurred.	Restart the machine.
Display shows E47	The pump is blocked by the turntable	Restart the machine.
Display shows E49	The can is missing during the dispense process.	Place the can. See § 3.2.2. Then start the process again.
Display shows E84	The brush container is missing.	Put back the brush container. See § 3.3.2.
All other E - errors	-	Restart the machine.

## 5.5 Indicators on the display

Problem	Possible cause	Possible solution
The error indicator is on	See § 5.4.	See § 5.4.
Canister refill indicator is on	The canister is empty	Refill the canister. See § 3.3.4.
Top cover open indicator is on	The top cover is open.	Close the top cover.
Front cover open indicator is on	The front cover is open	Close the front cover.
Switch plate indicator is on	The switch plate is missing or not correctly connected to the machine.	Put back the switch plate. See § 3.3.3.
	The can touches the switch plate.	Move down the can table. See § 3.2.4.
Can indicator blinks and is red	The can is missing.	Place the can. See § 3.2.2.
Can indicator blinks and is green	The dispense process is finished.	Remove the can.
Brush is missing indicator is on	The brush container is missing.	Put back the brush container. See § 3.3.2.
Emergency stop indicator is on	The emergency stop switch is active.	Reset the emergency stop switch. See § 3.3.5.
Brush refill indicator blinks and the brush monitor indicator is on	The level of liquid is below the minimum level.	Refill the brush container. See § 3.3.2.

## 6 Technical data

### 6.1 General specifications

Parameter	Specification	
	HA480	HA680
Number of canisters (max.)	32	36
Dispensing	Sequential	
Pump type	Harbil piston pump	
Cleaning system	Automatic	
Materials used are suitable for	Water-, universal- and solvent-based colorants	
Canister sizes [L]	2, 3, 6, 10	2, 3, 6, 10, 20
Pump capacity [mL]	100, 300	
Maximum can height [cm]	42	
Can table dimensions [cm]	44 x 31	

### 6.2 Dimensions and mass

Parameter	Specification	
	HA480	HA680
Dimensions, height x width x depth [cm]	151 / 171 x 88 x 96	151 / 171 x 115 x 125
Packed dimensions, height x width x depth [cm]	193 x 117 x 98	193 x 148 x 126
Mass incl. packaging [kg]	± 275	± 425
Mass filled machine [kg]	± 450	± 860
Required load capacity of the floor [kg]	1800	3440

### 6.3 Ambient conditions

Parameter	Specification
Temperature [°C], operational	+10 to +40
Temperature [°C], out of operation	-25 to +55
Altitude above sea level [m], operational	-10 to 2000
Altitude above sea level [m], out of operation	-10 to 12000
Maximum relative humidity [RH], without condensation [%]	90

### 6.4 Noise level

Parameter	Specification
Maximum noise level [dB(A)]	< 65

### 6.5 Safety classifications

Parameter	Specification
IP (Ingress Protection) classification	32
EMC (ElectroMagnetic Compliancy) classification	Class B
Overvoltage category	Class II

### 6.6 Electrical specifications

Parameter	Specification
Dispenser power consumption, maximum [W]	500
PC socket, maximum [W]	1000
Maximum leakage current [mA]	3.5
Country specific net cables	European
Voltage [V]	110 / 230 ± 10%
Frequency [Hz]	50 / 60
Fuse specifications [A]	10

## 6.7 Electrical diagram

