



# Operating and Safety Manual

## HA480 UL / HA680 UL



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# 1 About this manual

The manual shows the information necessary to:

- install the machine
- operate the machine
- 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 [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	02/2020	First edition
2.0	EVT	TB	05/2020	General updates and addition of knock-out plate
3.0	JM	TB	11/2023	Minor updates
4.0	TB	PA	07/2024	Liability updates

## 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.

**CAUTION:**

The use of controls or adjustments, or performance of procedures other than those specified herein may result in hazardous radiation exposure.

### 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 UL regulations. Any modification can result in not fulfilling the UL 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:

- To reduce the risk of electric shock or injury, 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.
- The machine must be used by a single, trained, operator. Unauthorized people who could reach or touch machine parts during operation must not be admitted in the nearby area.
- 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.
- Place the machine on a flat, horizontal floor.
- Install and connect the machine according to the instructions in this manual.
- Connect the machine to a grounded wall socket with proper grounding and protection of the electrical circuit (fuse and network system). See [6.6](#).
- Only connect the product to an outlet having the same configuration as the plug.
- Only use the power cord that is provided with the machine.
- This product is for use on a nominal 120-V circuit.
- Do not use extension cords or inadequately rated power cables.
- Do not use an adapter with this product.
- Make sure that the power cable is freely accessible.
- Do not place heavy 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 [5.5](#).

- Keep the machine in good condition.
  - Clean the machine at the intervals and when dirty, see 3.3.
  - 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. or Fluid Management Inc. spare parts.
- To avoid risk of fire or injury, unplug power before servicing.

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

## 2.2.2

### Machine-specific liability



**Note:** Liquids used in the machine such as colorant, (base) paint, spray and brush liquid, are hereafter referred to as 'liquids'.

This machine is designed to dispense liquids into a can in non-hazardous conditions. Manufacturers of laser products shall provide (or see to the provision of) user instructions or an operation manual that contains all relevant safety information including adequate instructions for assembly, maintenance and safe use and description of the classification limitations, if appropriate.

In addition to following the instructions below, please consult the health & safety officer of your liquid supplier and review all applicable product information and safety data sheets to fully understand the risks associated with the use of their products, including how risks of fire and explosion may arise during use.

- Personal harm should be avoided by strictly following the materials safety data sheets (MSDS) for liquids. Read and strictly comply with the safety data sheets for all liquids used in this machine.



#### **WARNING:**

- The use of flammable liquids or liquids that diffuse potential explosive vapours may present fire and explosion risks. The user is responsible for ensuring there is no build-up of explosive vapours both inside or around the machine.
- Liquids with a flash point equal to or below the Operating Temperature must not be used in this machine without properly managing environmental temperatures or ventilation.
- Risk of fire and personal injury if the temperature inside the machine when in use ("Operating Temperature") exceeds the flashpoint of the liquid being used.
- The user is responsible for ensuring that Operating Temperature never exceeds the flashpoint of the liquid in use, or, in the alternative, ensuring that there is no build-up of explosive vapors inside or around the machine.
- The Operating Temperature consists of the Ambient Temperature in the place of operation, plus an additional 15 °C / 27 °F generated by the machine when in use. The Ambient Temperature is determined by factors such as the temperature in the room or space where the machine is being operated, the amount of ventilation in and around the machine, or any other factors in your operating environment affecting temperature
- In the event Operating Temperature exceeds the flashpoint of the liquid in use, the user must take the following measures:


- reduce the Operating Temperature by taking steps including but not limited to (a) operating the machine in a room or environment with a lower temperature; (b) increasing ventilation in and around the machine; and/or (c) taking any other steps to reduce the Ambient Temperature; and/or
- select a different liquid with a flashpoint higher than the likely Operating Temperature.
- An operational and environmental assessment is recommended before using flammable liquids in the machine, taking into account all local circumstances including ventilation around the machine, room and machine operating temperature and room size.
- Product is NOT ATEX certified and should not be used in ATEX zone.

## 2.3 User qualification for installation




Only install the machine when you are a qualified service technician who is trained and certified by Fast & Fluid Management B.V. or Fluid Management Inc.

## 2.4 Certification




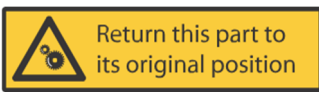



The machine is UL certified. This means that the machine complies with the essential requirements concerning safety. The directives that have been taken into consideration in the design are available on [www.fluidman.com](http://www.fluidman.com) and [www.fast-fluid.com](http://www.fast-fluid.com)

Logo	Certification	Website
	UL / C-UL	<a href="http://www.fast-fluid.com">www.fast-fluid.com</a> <a href="http://www.fluidman.com">www.fluidman.com</a>

## 2.5 Safety symbols on the machine



	Read the manual
	Rotating parts hazard
	Electrical hazard





	Pinch hazard for your hand
	Pinch hazard for your foot
	Can table switch up/down
	Return this parts to its original position
<div> <div> <b>WARNING</b> </div> <div>  <b>AVERTISSEMENT</b> </div> </div> <div> RISK OF FIRE OR EXPLOSION SEE OPERATING AND SAFETY MANUAL FOR PROPER UTILIZATION OF LIQUIDS IN DISPENSER </div> <div> RISQUE D'INCENDIE OU D'EXPLOSION CONSULTEZ LE MANUEL D'UTILISATION ET DE SÉCURITÉ POUR UNE UTILISATION APPROPRIÉE DES LIQUIDES DANS LE DISTRIBUTEUR </div>	Warning for safe use
<div> <div>  <b>NOTICE</b> </div> <div> <b>AVIS</b> </div> </div> <div> CLASS 1 LASER PRODUCT </div> <div> PRODUIT LASER DE CLASSE 1 </div>	Class 1 laser product
<div> <div>  <b>NOTICE</b> </div> <div> <b>AVIS</b> </div> </div> <div> COMPLIES WITH 21 CFR 1040.10 AND 1040.11 EXCEPT FOR CONFORMANCE WITH IEC 60825-1 ED.3. AS DESCRIBED IN LASER NOTICE NO. 56, DATED MAY 8, 2019 </div> <div> CONFORME À 21 CFR 1040.10 ET 1040.11, À L'EXCEPTION DES CONFORMITÉS AVEC IEC 60825-1 ED.3. COMME DÉCRIT DANS LA NOTICE LASER NO. 56 DU 8 MAI 2019 </div>	Compliance information

## 2.6

### Safety symbols in the manual

	<b>WARNING</b> Can cause personal injury
	<b>CAUTION</b> Can cause damage to the machine

	<b>Note</b> Shows further information
	<b>WARNING</b> Pinch hazard for your foot

## 2.7

### Disposal of the machine

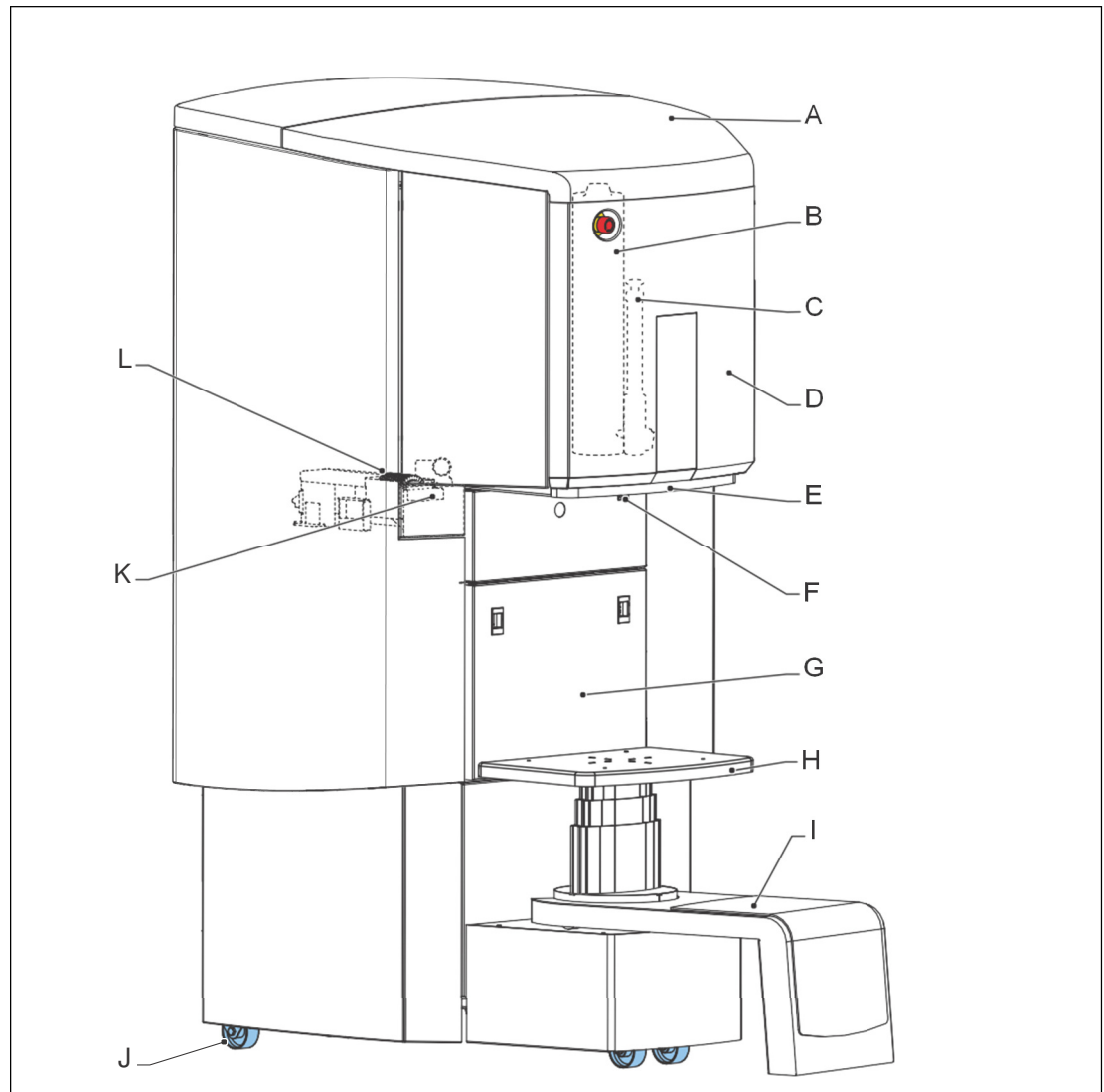
1. Sort the machine, the accessories and the packaging for environmentally friendly recycling.
2. Do not dispose of the machine into domestic waste. Dispose of the machine according to local regulations.
3. Dispose of the canisters as chemical waste, according to the local regulations.



## 3 Operator manual

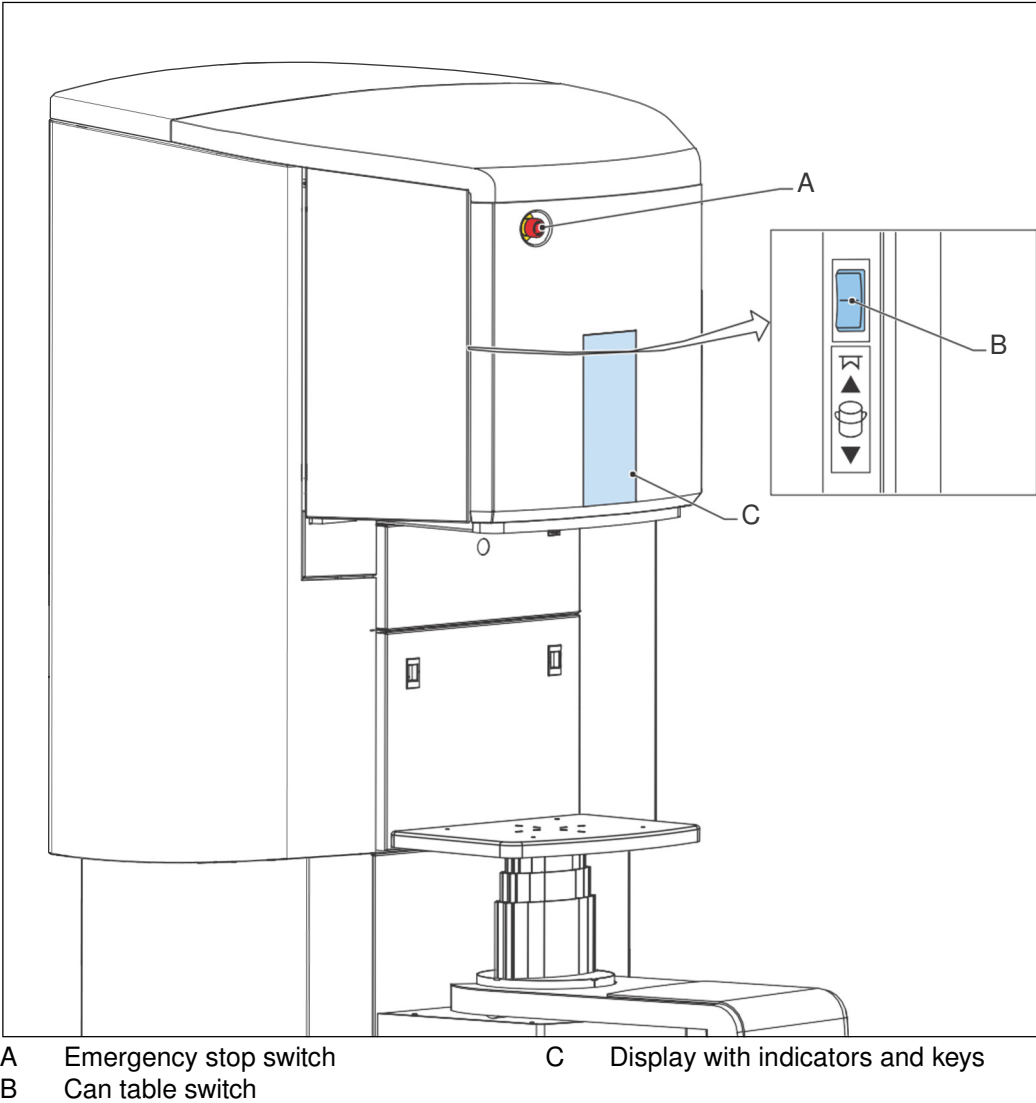
### 3.1 Description

#### 3.1.1 Overview of the machine

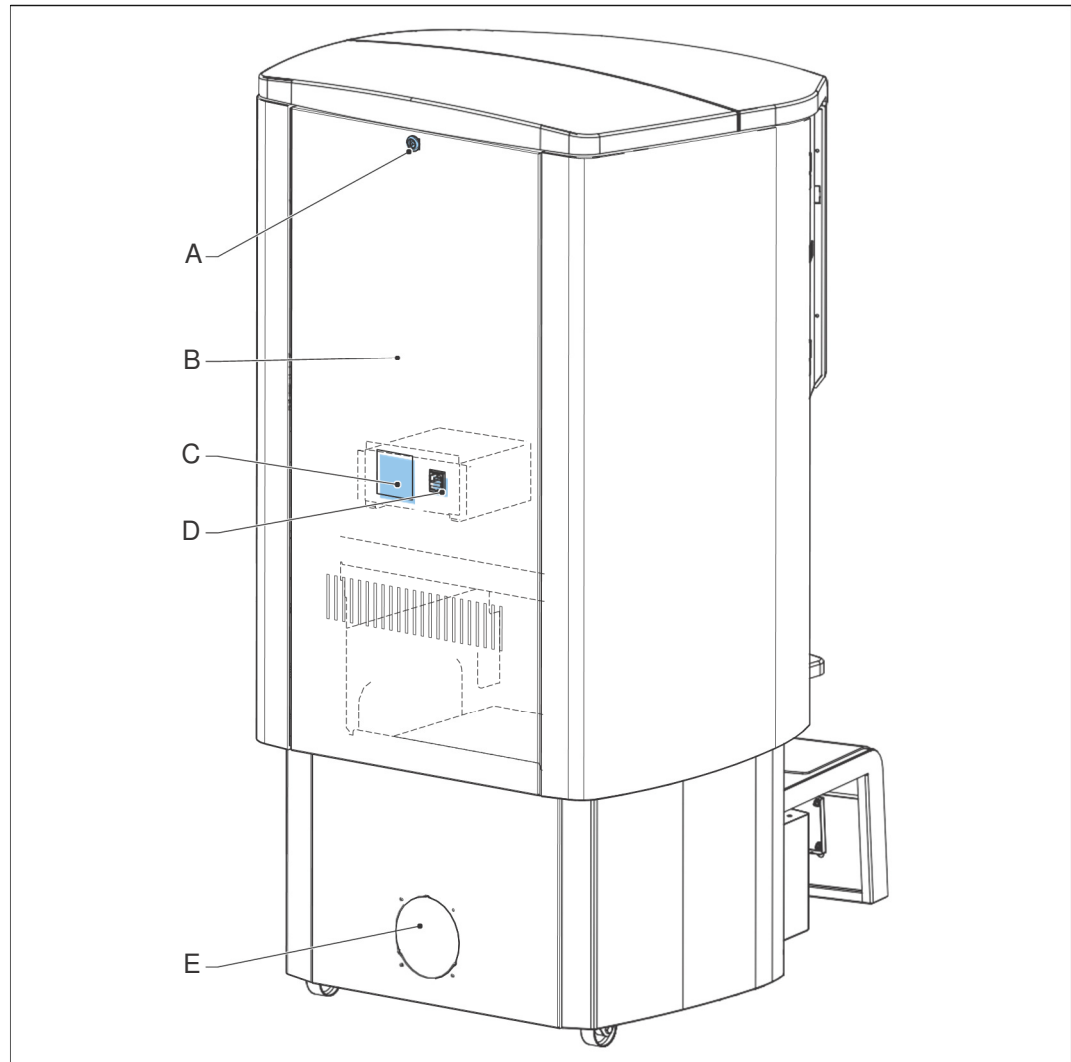


- |   |                                 |   |   |
|---|---------------------------------|---|---|
| A | Top cover                       | G | Computer cover  |
| B | Canister                        | H | Can table   |
| C | Pump with nozzle                | I | Step  |
| D | Front cover             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

3.1.2 Overview of the controls



### 3.1.3 Overview of the machine (back)

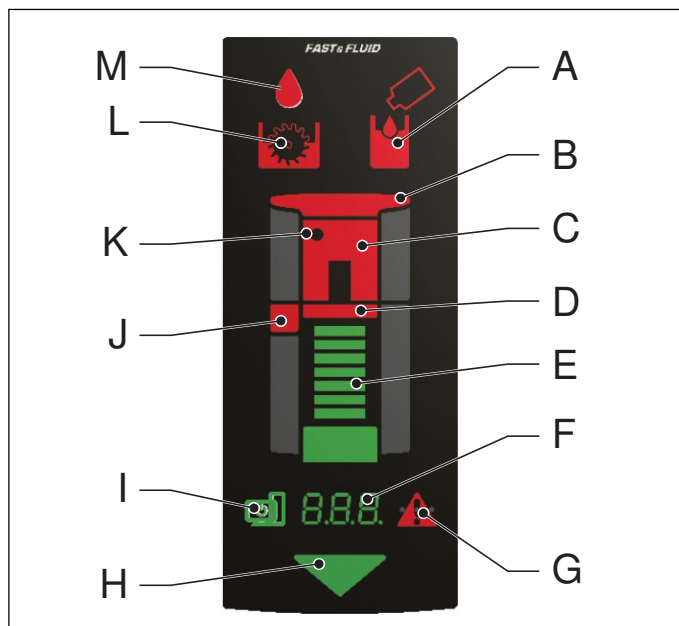


A Lock  
B Back cover  
C Type plate

D Net entry  
E Knock-out plate for ventilation interface

## 3.1.4

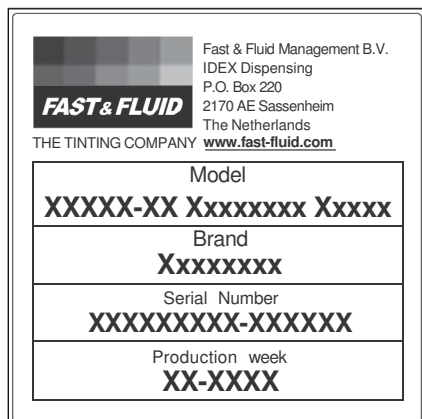
## Overview of the display



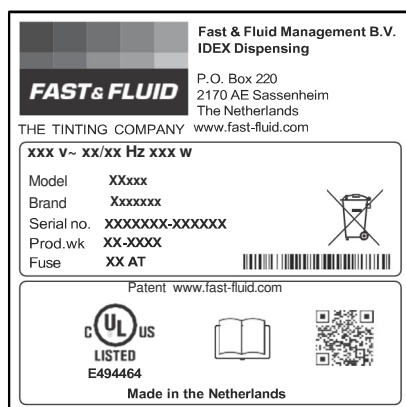
- |   |  |   |                            |
|---|--|---|----------------------------|
| A | Canister refill indicator                | H | Can indicator              |
| B | Top cover open indicator                 | I | Computer switch key        |
| C | Front cover open indicator               | J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

Item	Function
Indicator	When the indicator is on, it shows the status of the item or problem. See <a href="#">5.4</a> 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> See <a href="#">5.3</a> for a description of the error codes and the possible causes and solutions.
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 two 'beeps'.



#### 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.

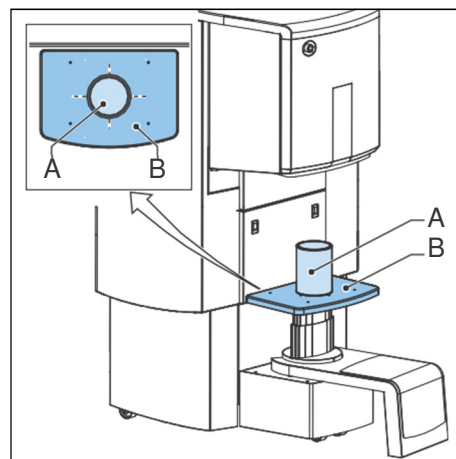
1. Place the can. See 3.2.2.
2. Move the can table up. See 3.2.3.

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

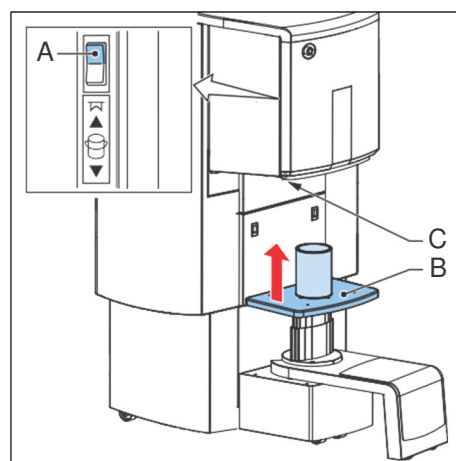
1. Place the can (A) at the centre of the mark (B) on the can table.



### 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.

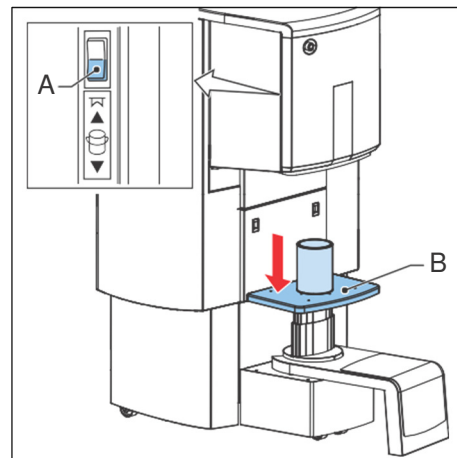




### 3.2.4

#### 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.

**WARNING:**

Do not clean the drip plate and the brush during a dispense job.

**CAUTION:**

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

#### 3.3.2

#### Cleaning of the brush container: daily

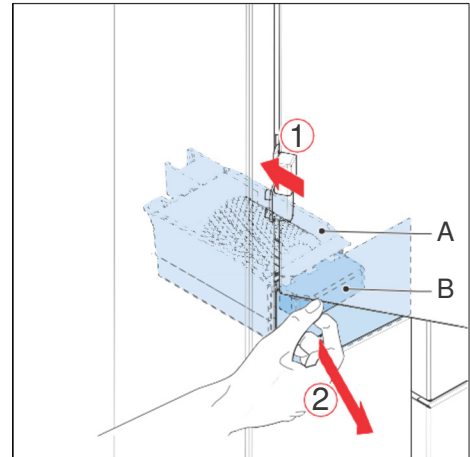
**CAUTION:**

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

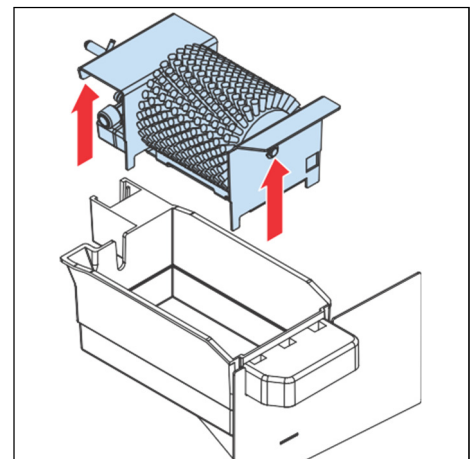
**Note:**

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

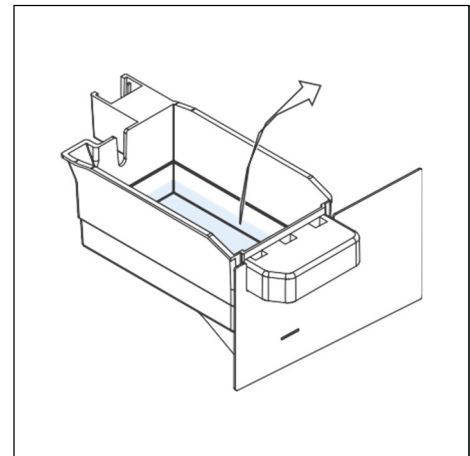
1. Remove the brush container.
  - a. Push the front side of the brush container until the brush container is unlocked.
  - b. Remove the brush container (A). *Use the handle (B).*



2. Remove the brush from the brush container.



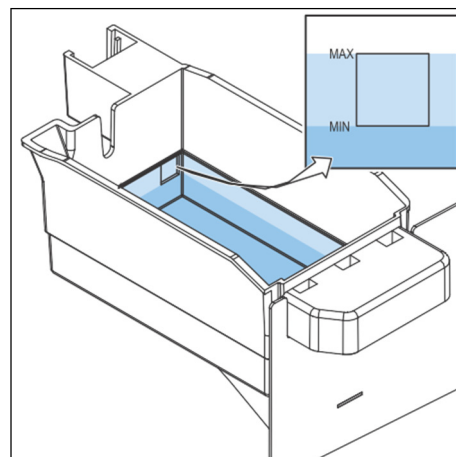
3. Remove the liquid from the brush container.  
For the disposal of the liquid, follow the local regulations.



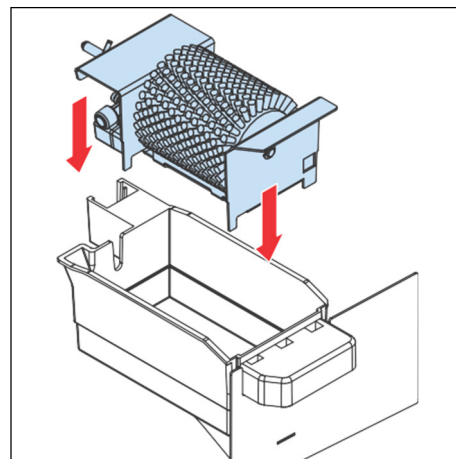
4. Fill the brush container with the liquid that your paint supplier indicates.  
The level of the liquid must be between the “MIN” and “MAX” mark.

**WARNING:**

See [2.2.2](#) for liquids being used in the machine.



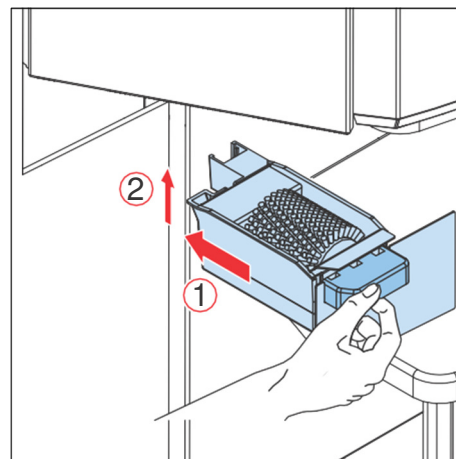
5. Put back the brush into the brush container.



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

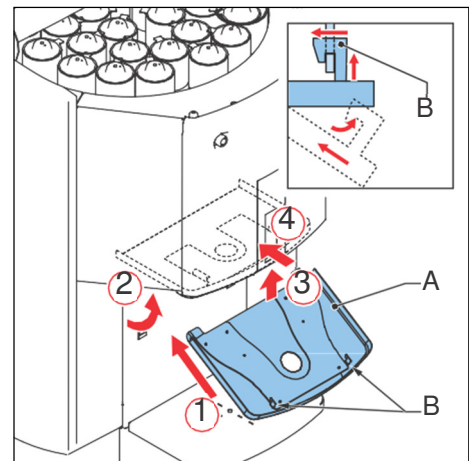
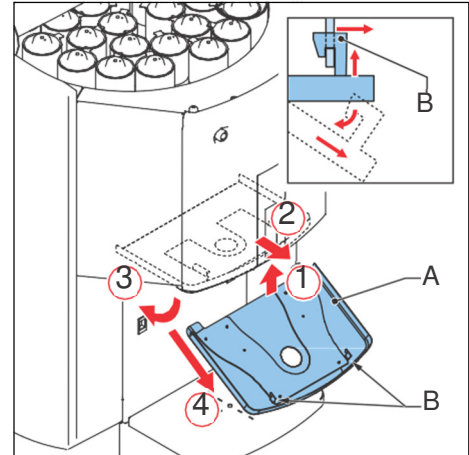
**Note:**

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

1. Remove the switch plate.
  - a. Push the switch plate (A) 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.
2. Clean the switch plate.  
*Use a cleaning cloth with a non-organic cleaning liquid.*
3. Put back the switch plate.
  - a. Slide in the switch plate (A) 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.
- See 2.2.2 for liquids being used in the machine.

#### 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.



#### Note:

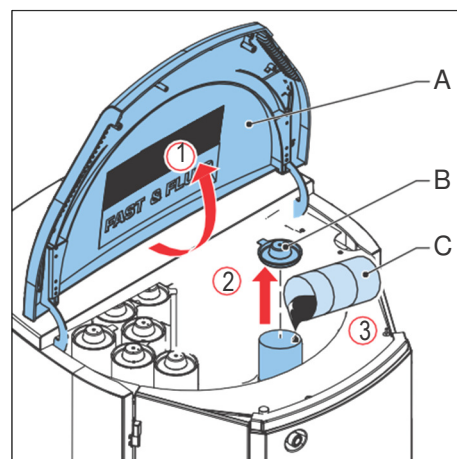
The fill canister command of the dispense software controls the motor of the turntable. The turntable turns the empty canister to the front.

2. Open the top cover (A).
3. Remove the lid of the canister (B).
4. Add the correct colorant (C). Do not spill.

**CAUTION:**

- Do not fill the canister to the brim. Leave at least 2.5 cm (1 inch) unfilled.
- Do not pour the colorant on the agitator.

5. Place the lid back on the canister.
6. Close the front door.

**3.3.5****Using the emergency stop switch**

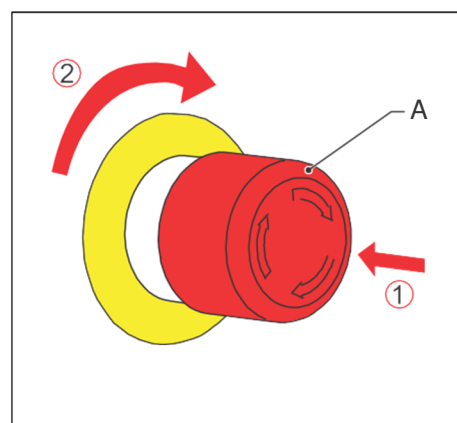
1. Push the emergency stop switch (A). The machine stops immediately.

**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.

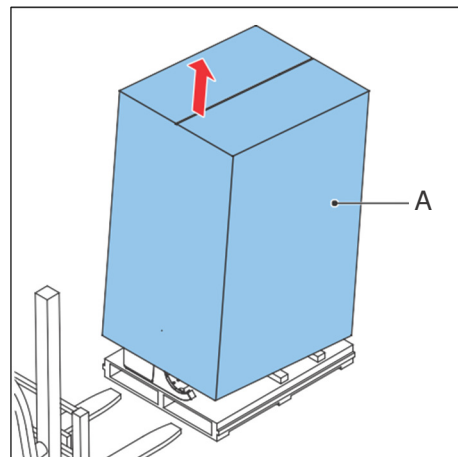
**Note:**

After the reset of the emergency stop switch, the machine is operational.

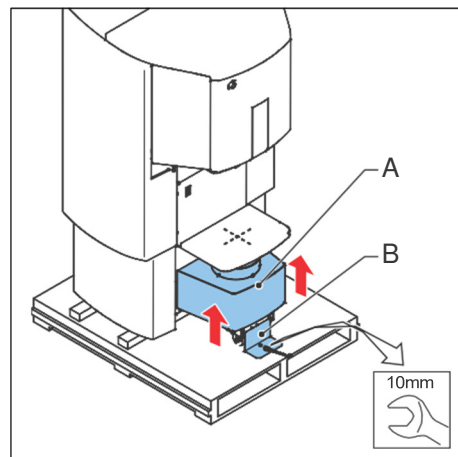
## 4 Installation

### 4.1 Unpack the machine

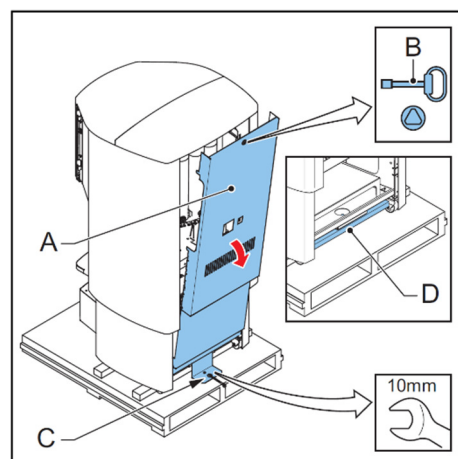
1. Remove the cardboard (A) and the plastic from the outside of the machine.



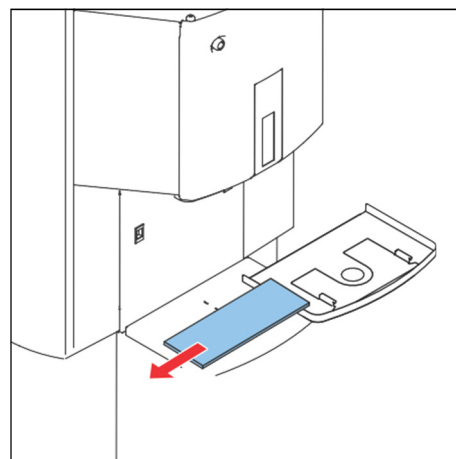
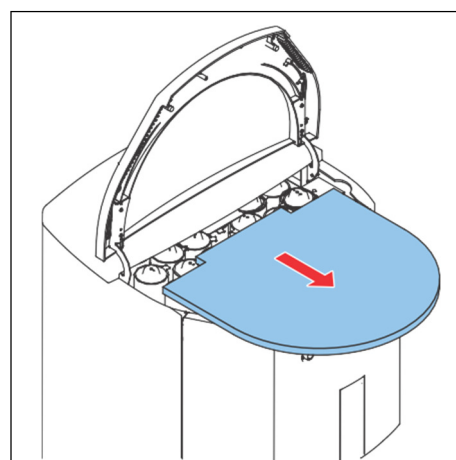
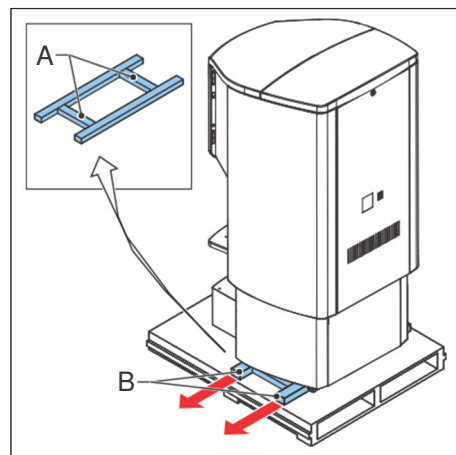
2. Remove the transport brackets at the front.
  - a. Lift the cover (A).
  - b. Unscrew the transport bracket (B) and remove it.



3. Remove the transport brackets at the rear.
  - a. Open the back cover (A).  
*Use the key (B).*
  - b. Remove the back cover.  
*Let the back cover move towards you. Then lift the cover.*
  - c. Unscrew the transport brackets (C) and (D) and remove them.



4. Remove the wooden beams.
  - a. Remove the wooden cross-beams (A).  
*They are connected with staples.*
  - b. Remove the wooden beams (B).
5. Remove the plastic protection on the canisters.
  - a. Remove the blue tape and open the top cover.
  - b. Remove the plastic protection.
6. Remove the plastic protection from the switch plate.
  - a. Remove the switch plate. See [3.3.3](#).
  - b. Remove the plastic protection from the switch plate.
  - c. Put back the switch plate. See [3.3.3](#).



## 4.2

### Put the machine in position

#### WARNING:



- Mind the minimum requirement of the load capacity of the floor. See [6.2](#).
- Do not use a forklift truck.

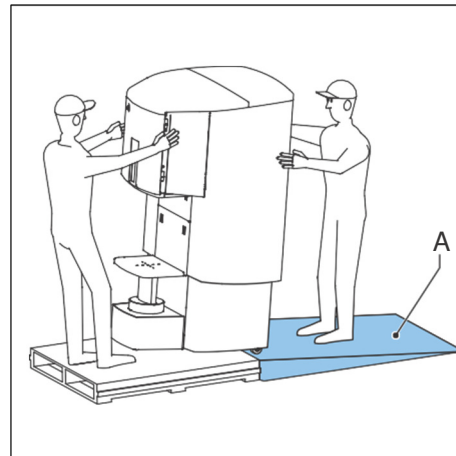
**Note:**

- Make sure that the final location is well-lit and well-ventilated.
- Make sure that the surface of the floor is horizontal.

1. Move the machine to the final location, with a ramp (optional).
  - a. Place the ramp (A).
  - b. Move the machine from the pallet on to the ground.
  - c. Move the machine to the final location.
  - d. Connect the power cable to the net entry.

**CAUTION:**

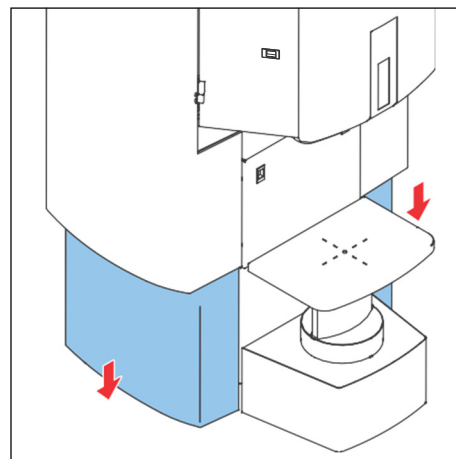
Do not connect the power cable to the wall socket.



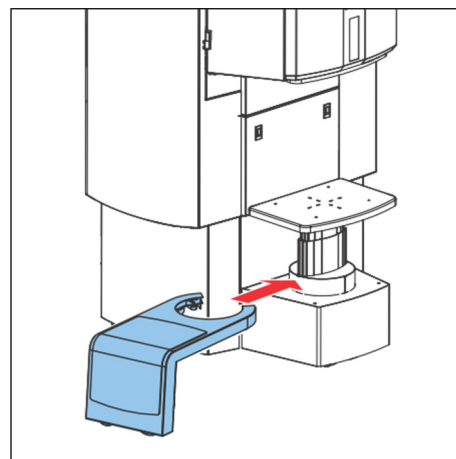
2. Put the machine on the final location.  
Slide down the side panel to hide the wheels.

**CAUTION:**

Do not remove the side panel to prevent damage.

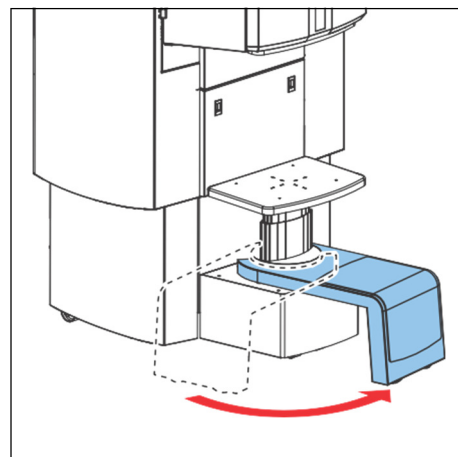


3. Place the step from the left side under the can table.





4. Turn the step to the front.



### 4.3 Grounding instructions

This product must be grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current. This product is equipped with a cord having a grounding wire with an appropriate grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.



**WARNING:**

Improper installation of the grounding plug may result in a risk of electric shock. When repair or replacement of the cord or plug is required, do not connect the grounding wire to either flat blade terminal. The wire with insulation having an outer surface that is green with or without yellow stripes is the grounding wire.

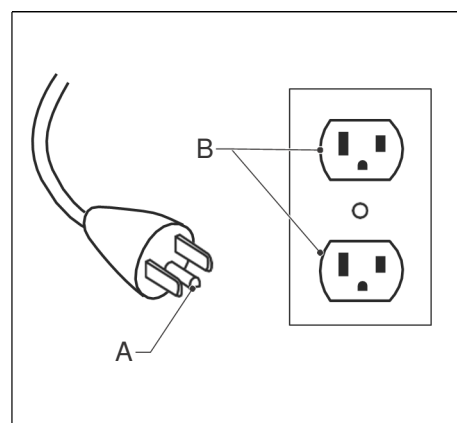
Check with a qualified electrician or serviceman when the grounding instructions are not completely understood, or when in doubt as to whether the product is properly grounded. Do not modify the plug provided; if it does not fit the outlet, have the proper outlet installed by a qualified electrician.



**CAUTION:**

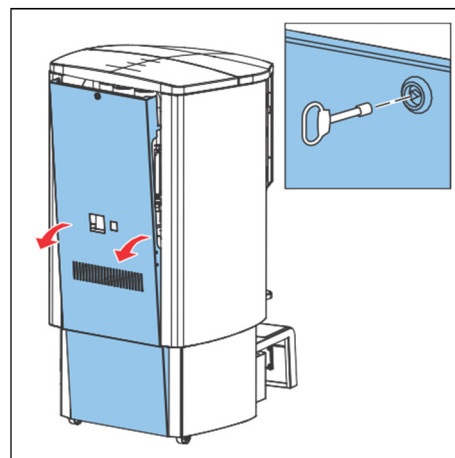
This product is for use on a nominal 120-V circuit and has a grounding plug similar to the plug illustrated in figure. Only connect the product to an outlet having the same configuration as the plug. Do not use an adapter with this product.

1. Connect the grounding plug (A) to the grounded wall socket (B).



## 4.4 Install the computer

1. Open the back cover. See [4.1](#).
2. Remove the back cover.

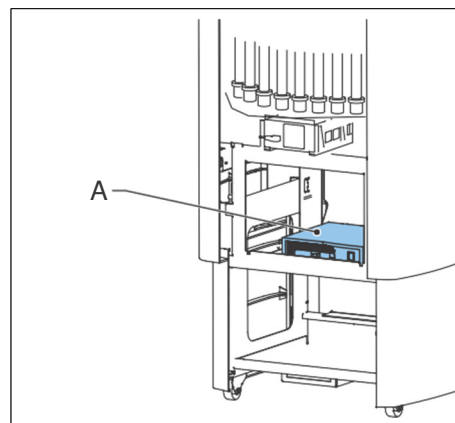


3. Install the computer.

**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.

- a. Put the computer (A) in the machine.
- b. Connect a USB cable between the computer and the power board.
- c. Connect the keyboard, the mouse and the screen to the computer.



## 4.5 Turning on the machine

1. Connect the power cable to the wall socket. When the machine is operational, you hear two 'beeps'.
2. Connect the computer to the wall socket.
3. Make sure that the emergency stop switch is reset. See [3.3.5](#).
4. Set the computer switch to 'ON'.

*On the display, push and hold the computer switch key until the status bar is full.*

## 4.6 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 [5.2](#), [5.3](#) and [5.4](#).
2. If it is not possible to solve the problem with the information in this manual, contact service. See [5.5](#).

### 5.2 Audio signals



**Note:**

See the column *Possible solution* to solve the problem. When the problem persists, contact service. See [5.5](#).

Audio signal	Possible cause	Possible solution
... --- ... SOS signal during the stirring	The agitation motor is malfunctioning, a cable is broken, or the power board is malfunctioning.	Contact service. See <a href="#">5.5</a> .
---- > 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 <a href="#">5.3</a> .
.. 2 short beeps	The machine initializes.	-
----- Long interrupted beeps, flush sound	The machine starts its daily flush round.	-
----- Long interrupted beeps, cleaning sound	The machine starts its daily cleaning rounds.	-
.... Short interrupted beeps	Power supply fault occurs.	Contact service. See <a href="#">5.5</a> .
- - - 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 <a href="#">3.3.2</a> .

### 5.3 Error messages and other faults



**Note:**

- For all error messages on the computer: see the help topic in the dispense software.
- See the column *Possible solution* to solve the problem. When the problem persists, contact service. See [5.5](#).

Error message / fault	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 <a href="#">3.3.5</a> .
	A fuse is broken.	Contact service. See <a href="#">5.5</a> .
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 <a href="#">3.2.2</a> . Then start the process again.
Display shows E84	The brush container is missing.	Put back the brush container. See <a href="#">3.3.2</a> .
All other E - errors	-	Restart the machine.

## 5.4

### Indicators on the display

Indication	Possible cause	Possible solution
The error indicator is on	See <a href="#">5.3</a> .	See <a href="#">5.3</a> .
Canister refill indicator is on	The canister is empty.	Refill the canister. See <a href="#">3.3.4</a> .
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 <a href="#">3.3.3</a> .
	The can touches the switch plate.	Move down the can table. See <a href="#">3.2.4</a> .
Can indicator blinks and is red	The can is missing.	Place the can. See <a href="#">3.2.2</a> .
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 <a href="#">3.3.2</a> .
Emergency stop indicator is on	The emergency stop switch is active.	Reset the emergency stop switch. See <a href="#">3.3.5</a> .
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 <a href="#">3.3.2</a> .

## 5.5 Contact service

1. Find the type plate on the lower front side 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.fluidman.com](http://www.fluidman.com) (Fluid Management Inc., U.S.A.) or [www.fast-fluid.com](http://www.fast-fluid.com) (Fast & Fluid Management B.V., EMEA)

## 6 Technical data

### 6.1 General specifications

#### 6.1.1 General specifications (HA480)

Parameter	Specification	
	Metric standard	Imperial standard
Number of canisters (max.)	32	
Dispensing	Sequential	
Pump type	Harbil piston pump	
Cleaning system	Automatic	
Materials used are suitable for	Water-, universal- and solvent-based colorants	
Canister sizes [L - USgal]	2, 3, 6, 10	0.5, 0.8, 1.6, 2.7
Pump capacity [mL - fl oz]	60, 100, 300	2, 3, 10
Maximum can height [cm - in]	42	16.5
Can table dimensions [cm - in]	44 x 31	17.5 x 12.5

#### 6.1.2 General specifications (HA680)

Parameter	Specification	
	Metric standard	Imperial standard
Number of canisters (max.)	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 - USgal]	2, 3, 6, 10	0.5, 0.8, 1.6, 2.7, 5.3
Pump capacity [mL - fl oz]	60, 100, 300	2, 3, 10
Maximum can height [cm - in]	42	16.5
Can table dimensions [cm - in]	44 x 31	17.5 x 12.5

## 6.2 Dimensions and mass

### 6.2.1 Dimensions and mass (HA480)

Parameter	Specification	
	Metric standard	Imperial standard
Dimensions, height x width x depth [cm - in]	151 / 171 x 88 x 96	59.5 / 67.5 x 34.7 x 37.8
Packed dimensions, height x width x depth [cm - in]	193 x 117 x 98	76 x 46.1 x 38.6
Mass incl. packaging [kg - lbs]	± 275	± 606
Mass filled machine [kg - lbs]	± 450	± 992
Required load capacity of the floor [kg - lbs]	1800	3968

### 6.2.2 Dimensions and mass (HA680)

Parameter	Specification	
	Metric standard	Imperial standard
Dimensions, height x width x depth [cm - in]	151 / 171 x 115 x 125	59.5 / 67.5 x 45.3 x 49.2
Packed dimensions, height x width x depth [cm - in]	193 x 148 x 126	76 x 58.3 x 49.6
Mass incl. packaging [kg - lbs]	± 425	± 937
Mass filled machine [kg - lbs]	± 860	± 1896
Required load capacity of the floor [kg - lbs]	3440	7584

## 6.3 Ambient conditions



### WARNING:

Risk of fire and personal injury for failing to read and follow instructions in [2.2](#).



### Note:

This machine must be used or stored within the ambient temperature, altitude, and humidity ranges listed in the table below.

Parameter	Specification	
	Metric standard	Imperial standard
Ambient Temperature [°C-°F], when in use <sup>1</sup>	+10 to +35 <sup>2</sup>	+50 to +95 <sup>2</sup>
Ambient Temperature [°C-°F], when not in use <sup>1</sup>	-25 to +55	-13 to +131
Altitude above sea level [m - ft], operational	-10 to 2000	-33 to 6562

<sup>1</sup> As defined in [2.2.2](#).

<sup>2</sup> The maximum temperature must be at least 15 °C / 27 °F below the flash point of the colorant.

Parameter	Specification	
	Metric standard	Imperial standard
Altitude above sea level [m - ft], out of operation	-10 to 12000	-33 to 39370
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 (Electro Magnetic Compliancy) classification	Class B
Overvoltage category	Class II

## 6.6 Electrical specifications

Parameter	Specification
Dispenser power consumption, maximum [W]	500
Maximum leakage current [mA]	0.5
Country specific net cables	European / US
Voltage [V]	110 / 230 $\pm$ 10%
Frequency [Hz]	50 / 60
Fuse specifications [A] slow	10
Required line and safety protection	<ul style="list-style-type: none"> <li>16A fuse</li> <li>Network system TN, TT</li> </ul>
Short circuit current rating [A]	1720



## 6.7 Laser specifications

Parameter	Specification	
	Metric standard	Imperial standard
Laser power, output [mW]	≤ 5	
Class	1	
Wavelength [nm]	650	
Operating Voltage [V] DC	3 - 12	
Operating Temperature [°C / °F]	-20 to +40	-4 to +104

6.8 Electrical Diagram

