

OPERATING INSTRUCTIONS

(Original instructions)



MHM Flash Cures type:

QC 4646 MW, QC 4355 MW, QC 4661 MW,
QC 4669 MW, QC 4170 MW, QC 5069 MW,
QC 70100 MW, QC 8044 MW, QC 6080 MW,
QC 4646 HTL, QC 4355 HTL, QC 4661 HTL,
QC 4170 HTL, QC 70100 HTL

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Preface

Dear Customer,

congratulations and thank you for choosing the MHM Flash Cure. The Flash Cure is designed to provide the highest standards of performance and reliability during its guaranteed long operating life. Highly innovative and precise MHM technology provides a combination of the finest built quality along with optimal safety. We trust that these Operating Instructions will assist you in becoming familiar with the safe and efficient operation of the Flash Cure.

Important Note:

Due to our policy of continuous improvement, we reserve the right to change specifications without prior notice. Therefore, certain individual fittings and components may differ slightly from the model detailed in this document. For any further questions regarding your MHM Flash Cure, please contact the MHM service team.

Wishing you every success with your future production.

Machines Highest Mechatronic GmbH

Important Advice Regarding These Operating Instructions

These Operating Instructions form an integral part of the MHM Flash Cure and must be made available to all authorized personnel at all times. No particular sections or pages must be removed from these Operating Instructions, and any missing sections or pages should be replaced immediately, in particular with regard to section “*Safety Instructions*”.

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1. Introduction

The MHM Flash Cure is a microprocessor controlled unit, which uses carbon infrared emitters to rapidly cure plastisol or water based inks. The height of the unit above the pallet is adjustable and the heat output and drying time can be precisely controlled. In order to ensure a long emitter life the lamps in the zone or zones being used are operated from a pre-determined stand-by level and are switched from that level to the output level by the controller.

2. Safety Instructions

2.1. Description of Key Words and Symbols in the Operating Instructions



In these operating instructions classified key words and symbols are used to identify dangers and items that require special attention.

Symbol	Key word	Meaning
	DANGER	This symbol indicates possible risk for life.
	CAUTION	This symbol indicates danger of damage to property and/or environment.
	NOTE	This symbol indicates useful additional information and operating suggestions.

2.2. Qualification of Operating and Service Staff



The MHM Flash Cure is built in accordance to all appropriate safety regulations. Nevertheless, the Flash Cure must only be operated and maintained by suitably skilled staff. ‘Qualified personnel’ refers to people who are able to carry out the required procedures and be able to recognize as well as prevent potential risks, as a result of their training and experience. If casual workers are employed for assistance work they must be particularly informed regarding existing and potential dangers and instructed accordingly.

2.3. Safety Instructions for the Operating Staff

	<p>All cabinets and covers of the Flash Cure must always be kept closed. Open cabinets and covers are extremely dangerous as live electrical components are accessible.</p> <p>Mechanical or electrical failures must only be repaired by an MHM authorized / approved technician.</p>
	<p>Any modifications or changes to the dryer settings should only be carried out by an MHM authorized / approved technician.</p>

2.4. Additional Risks

Even though the MHM Flash Cure has been designed and built according to the most stringent safety criteria, as with all machinery we have to anticipate certain additional risks, which are detailed below:

Danger	Description	Behavior/Action
<p>Electrical threats: Indirect contact (in case of defect)</p> 	<p>Danger of life-threatening electrical shock by indirect contact with defective parts carrying voltage (in particular in case of defective insulation).</p>	<p>Switch off the machine with the main switch. Isolate the mains supply.</p>
<p>Hot surface</p> 	<p>Warning: Surfaces can get hot. Danger of burning.</p>	<p>Do not touch the lamps or reflector while the unit is in use or before it has cooled down after switching off.</p>

2.5. Other Valid Rules and Regulations

The customer must comply with all regulations applicable in the country where the machine is located.

3. Intended usage of the machine

The dryer is designed for use in screen printing machines to cure ink with heat.



Any other use of the dryer than described above may result in danger to persons or material damage and is therefore forbidden.

4. Data

This section details the Flash Cure technical specifications.



NOTE

NB: As our policy is one of continuous improvement, we reserve the right to change specifications without prior notice.

4.1. Serial Number and Year of Manufacture

Serial number and year of manufacture are indicated on the unit's type plate.

4.2. MHM part numbers

Name	MHM part number 3x 400V	MHM part number 3x 210V
QC 4646 MW	ZUB000030	ZUB000030-2
QC 4355 MW	ZUB000013	ZUB000013-2
QC 4661 MW	ZUB000015	ZUB000015-2
QC 4669 MW	ZUB000021	ZUB000021-2
QC 4170 MW	ZUB000017	ZUB000017-2
QC 5069 MW	ZUB000019	ZUB000019-2
QC 70100 MW	ZUB000023	ZUB000023-2
QC 8044 MW	ZUB000029	ZUB000029-2
QC 6080 MW	ZUB000028	ZUB000028-2
QC 4646 HTL	ZUB000025	ZUB000025-2
QC 4355 HTL	ZUB000012	ZUB000012-2
QC 4661 HTL	ZUB000014	ZUB000014-2
QC 4170 HTL	ZUB000016	ZUB000016-2
QC 70100 HTL	ZUB000022	ZUB000022-2

4.3. Dimensions

Name	Length	Width	Height
QC 4646 MW	850 mm	564 mm	315 mm
QC 4355 MW	685 mm	455 mm	278 mm
QC 4661 MW	755 mm	500 mm	277 mm
QC 4669 MW	855 mm	500 mm	278 mm
QC 4170 MW	740 mm	560 mm	250 mm
QC 5069 MW	852 mm	560 mm	250 mm
QC 70100 MW	1170 mm	730 mm	270 mm
QC 8044 MW	957 mm	463 mm	240 mm
QC 6080 MW	971 mm	633 mm	270 mm
QC 4646 HTL	850mm	564mm	315mm
QC 4355 HTL	685mm	455mm	278mm
QC 4661 HTL	755mm	500mm	277mm
QC 4170 HTL	740mm	560mm	250mm
QC 70100 HTL	1170mm	730mm	270mm

4.4. Specifications

Name	Drying surface	Fans	Lamps	Power at 3x 400V	Power at 3x 210V	Current at 3x 400V	Current at 3x 210V
QC 4646 MW	450*460 mm	1	6x MW3001	11,3 kW	9,4 kW	25,3 A	39,7 A
QC 4355 MW	426*540 mm	2	6x MW5001	12,7 kW	10,6 kW	19,2 A	30,1 A
QC 4661 MW	465*610 mm	2	6x MW7001	14,3 kW	11,9 kW	21,5 A	33,7 A
QC 4669 MW	465*690 mm	3	6x MW4001	14,3 kW	11,9 kW	21,7 A	33,9 A
QC 4170 MW	410*699 mm	2	9x MW3001	17,0 kW	14,2 kW	25,4 A	39,9 A
QC 5069 MW	499*690 mm	3	6x MW4001	14,3 kW	11,9 kW	21,7 A	33,9 A
QC 70100 MW	709*1000 mm	6	9x MW9001	38,1 kW	31,8 kW	56,7 A	89,2 A
QC 8044 MW	800*434 mm	2	6x MW6001	13,7 kW	11,4 kW	20,7 A	32,4 A
QC 6080 MW	605*800 mm	3	9x MW6003	13,9 kW	-	21,1 A	-
QC 4646 HTL	450*460 mm	1	6x HTL1701	9,9 kW	8,3 kW	14,7 A	23,2 A
QC 4355 HTL	426*540 mm	2	9x HTL1503	13,5 kW	11,3 kW	20,1 A	31,7 A
QC 4661 HTL	465*610 mm	2	9x HTL1500	13,5 kW	11,3 kW	20,1 A	31,7 A
QC 4170 HTL	410*699 mm	2	9x HTL1701	14,9 kW	12,4 kW	22,1 A	34,7 A
QC 70100 HTL	650*1121 mm	6	18x HTL2001	36,0 kW	30,0 kW	53,5 A	84,2 A

5. Installation



NOTE

Upon delivery of the MHM Flash Cure the consignment must be examined for external damage immediately. In the case of any damages, they must be documented and reported to Machines Highest Mechatronic GmbH within 24 hours.



CAUTION

Fragile spotlights! Handle the unit carefully.
Breakage due to improper handling is not covered by warranty.

The Flash Cure may be installed into either an empty station or a print station. The Flash Cure must be powered by a separate supply, which must correspond to the technical data of the unit. To control the unit the dryer must be connected with the dryer connector of the printing machine.



DANGER

Risk of electric shock! Avoid any contact with live components. Please observe the general safety regulations for electrical connections when connecting the mains supply to the MHM Flash Cure. It is important that a qualified electrician should make all connections.

5.1. Ambient Conditions

For the electrical equipment on the MHM Flash Cure, ambient conditions according to standard IEC 60204 “Electrical Equipment of Industrial Machines” should be observed.

The following points should be observed in order to achieve efficient running and an optimum level of production with the MHM Flash Cure:

1. The premises, where the unit is to be operated, must be kept clean, dry and well-aired.
2. The ambient temperature must not fall below +5° C or exceed +45° C.
3. Relative air humidity must not exceed 80 %.
4. The mains supply must not exceed or fall below a tolerance of +/- 5 % of the required voltage for the MHM Flash Cure. If this voltage stability cannot be guaranteed, the customer must install a constant-voltage regulator to protect the unit against such fluctuations.
5. Electricity supply should be sufficient with adequate fuse protection.
6. Maximum installation altitude is 2000m above sea level.

5.2. Electrical requirements

The MHM Flash Cure must be connected to a suitable power supply. The permissible voltage can be read on the type plate. An incorrect voltage will damage the device and result in loss of warranty.

The voltage will be either:

- 3x 400 V => 3 Phase + N + PE or
- 3x 210 V => 3 Phase + PE



When connecting to 3x 400 V the NEUTRAL MUST be connected.
When connecting to 3x 210 V the NEUTRAL is NOT connected.

The frequency must be 50 Hz or 60 Hz. The values for voltage and frequency must be within $\pm 5\%$.

5.3. Start signal

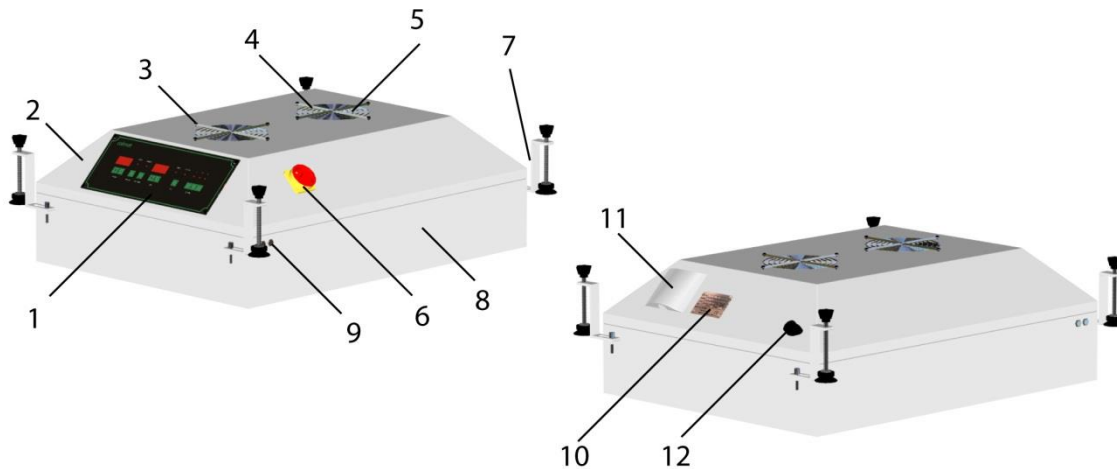
The MHM flash cure may be connected to the screen printing machine with the cable supplied or to a footswitch, micro-switch, photocell or proximity switches, if so specified, via the connection socket on the rear of the machine.

5.4. Height adjustment

Using the screws in the brackets on the side of the Flash Cure the height can be adjusted. As an initial setting a distance of 35-40 mm (1½ - 2ins) between the pallet and the lamps is recommended.

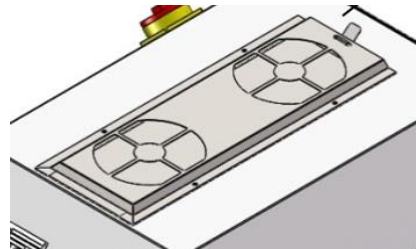
6. Design

6.1. Component description



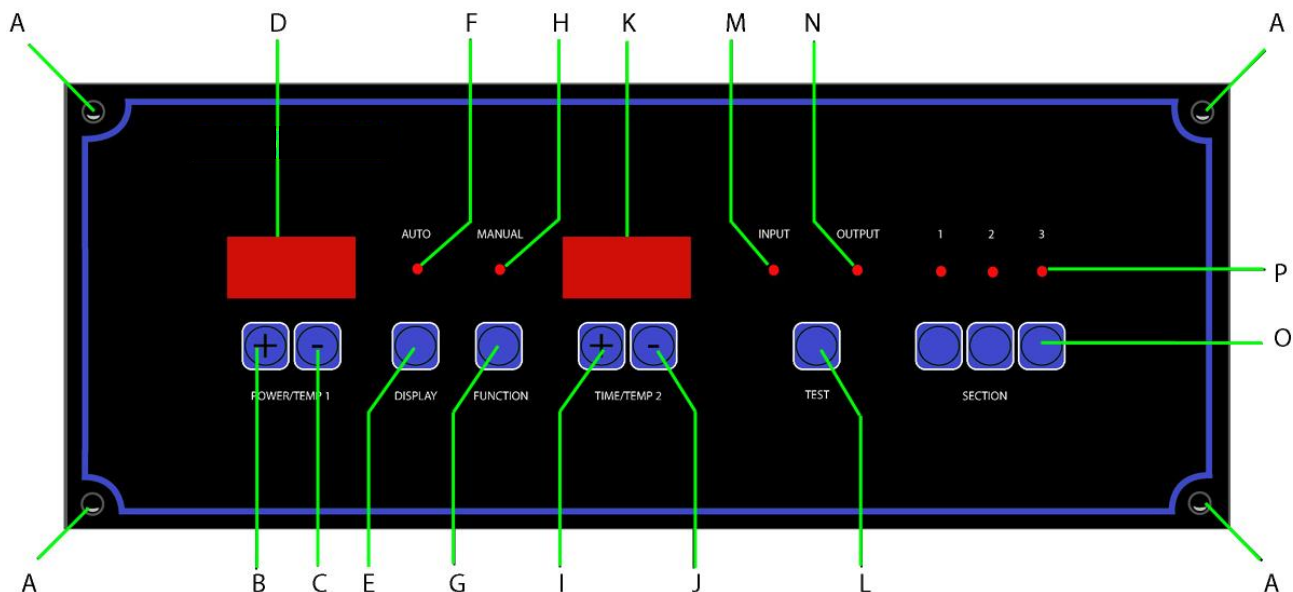
1. Control panel
2. Top cover
3. Screws for fan cover grill
4. Cover grill
5. Fan
6. Main switch
7. Height adjustable brackets
8. Main body
9. Top cover fixing screws
10. Identification and CE plate
11. Power supply
12. Connection socket for control cable from printing machine or switching device

Alternative filter frame:



Instead of the Cover grill a filter frame with easily removable filters can be mounted.

6.2. Control panel



- | | | |
|----|-----------------------------|--------------------------------------------------------------------------------|
| A. | Control panel fixing screws | |
| B. | Membrane Switch | ‘POWER/TEMP 1 +’: increases heat output |
| C. | Membrane Switch | ‘POWER/TEMP 1 -’: reduces heat output |
| D. | LED Display | Selected heat level |
| E. | Membrane Switch | ‘DISPLAY’: switches display between power and drying time or Temp 1 and Temp 2 |
| F. | LED | ‘AUT’: automatic mode selected |
| G. | Membrane Switch | ‘FUNCTION’: selects manual or automatic mode |
| H. | LED | ‘MAN’: manual mode selected |
| I. | Membrane Switch | ‘TIME/TEMP 2 +’: increases drying time |
| J. | Membrane Switch | ‘TIME/TEMP 2 -’: reduces drying time |
| K. | LED Display | Selected drying time |
| L. | Membrane Switch | ‘TEST’: manual start switch |
| M. | LED | ‘INPUT’ start signal active |
| N. | LED | ‘OUTPUT’ ready signal active |
| O. | Membrane Switch | Lamp zone selection switches |
| P. | LED's | Zone selected indicators |

7. Operating the unit

7.1. Normal operation

1. Turn on mains switch 6. The fans will start and the control panel display will light up showing either the manufacturer's settings or the setting last used.
2. Select the appropriate heating zones by pressing one or more of the lamp zone selection switches. The LED's indicate when a zone has been selected.
3. The level at which the unit operates can be set between 1 and 10 by using the '+' or '-' 'POWER/TEMP1' switches. Between the flash operations the unit returns to the normal standby level awaiting the next input signal. The unit also has another unique feature in that after a predetermined number of minutes during which time no input signal is received the unit will switch to a low standby level to avoid overheating the pallets and this time can also be set by the user. For information regarding the setting of these levels please refer to the programming instructions on Page 9.
4. Dependent upon the last used mode either lamp 'AUT' (automatic) or lamp 'MAN' (manual) will light. To change the mode press the 'FUNCTION' switch.
5. The 'TIME/TEMP2' display shows the time in tenths of a second from 0.0 to 9.9 and in seconds from 10 to 99. To change the indicated time press either '+' or '-'. Keeping either switch pressed results in an increasingly rapid change of the display.
6. The power level and the drying time can also be adjusted while the flash cure is in operation. To alter the settings simply press the '+' or '-' membrane switches which are located below each display. The power and time displays will start to pulse and pressing the '+' or '-' switch will change the appropriate display. The new setting will take effect from the start of the next cycle.
7. When the automatic mode lamp is burning, the unit is controlled by input signals through the connection socket on the rear of the machine.
8. When the start signal is given by either the printing machine or external switch e.g. footswitch or photocell the unit will switch on and the Input lamp will light. When the 'TIME' display has counted down to zero the 'OUTPUT' lamp will light and the dryer will give a ready signal to the carousel and the time display will change to the pre-set time.
9. Using the function switch to select the 'MAN' mode the unit can then be operated by using the 'TEST' switch on the control panel.



NOTE

Pressing the 'TEST' switch at any time while the unit is operating in either the 'AUT' or 'MAN' mode will stop the countdown and return the unit to the normal standby state.

7.2. Overheat protection



Do not cover or obstruct the fans. This may result in loss of efficiency or reduction of lifetime.

When the temperature inside the unit rises above 70 °Celsius, the unit switches off automatically to protect the electronics. In this case, the temperature inside the controller will be shown in the 'POWER/TEMP1' display. While the unit cools down, make sure that the fans are working and the cover grill is not obstructed. Should the unit require cleaning, switch off and unplug the power cord.



Do not touch the lamps or reflector while the unit is in use or before it has cooled down after switching off.

When the unit has cooled down it may be restarted using the 'TEST' switch, which will return the unit to the standby position.

7.3. Programming the Flash Cure

The unit as delivered has the normal standby and maximum heat output levels as well as a low standby level and the time before this low level is activated pre-set.

The user may change any or all of these settings as follows:

Press and hold 'FUNCTION' button until display changes - approximately 5 seconds.

This set up program may be interrupted and the unit returned to normal operating mode at any time by pressing the 'TEST' button.

The manufacturer's settings are:

[S-d] [000] [P-H] [099] [P-L] [020] [P-d] [003] [d-d] [002]

























As soon as an input signal is received the unit will operate normally irrespective of whether it is in the normal or low level standby position.

While the unit is in the low level standby position the displays will display [PPP] and [ddd].



To switch off the low level standby setting the [d-d] time should be set to [000].

Operating Instruction MHM Flash Cures

SETTING	ACTION	POWER / TEMP 1 DISPLAY	TIME / TEMP 2 DISPLAY
Start delay setting	TO CHANGE THIS LEVEL PRESS TIME/TEMP 2 '+' OR '-' SWITCH PRESS 'FUNCTION' SWITCH	 	 
HIGH POWER LEVEL	TO CHANGE THIS LEVEL PRESS TIME/TEMP 2 '+' OR '-' SWITCH PRESS 'FUNCTION' SWITCH	 	 
NORMAL STANDBY LEVEL	TO CHANGE THIS LEVEL PRESS TIME/TEMP 2 '+' OR '-' SWITCH PRESS 'FUNCTION' SWITCH	 	 
LOW STANDBY LEVEL	TO CHANGE THIS LEVEL PRESS TIME/TEMP 2 '+' OR '-' SWITCH PRESS 'FUNCTION' SWITCH	 	 
DELAY IN MINUTES BEFORE LOW STANDBY LEVEL IS ACTIVATED	TO CHANGE DELAY TIME PRESS TIME/TEMP 2 '+' OR '-' SWITCH	 	 
	PRESS 'TEST' SWITCH TO RETURN TO NORMAL OPERATING MODE	 	 

Explanation of the controller settings.

Start Delay (0 to 9,99 seconds)	When the Carousel sends the activation signal, the start delay will delay turning on the machine in order to prevent peak currents.
High Power Level (0 to 99%)	Output power level in high power mode.
Normal Standby Level (0 to 50%)	Output power level in low power mode.
Low Standby Level (0 to 50%)	If the machine does not receive an input signal for a prolonged period of time, the machine will switch to the low standby level in order to conserve energy.
Delay Activation Low Standby Level (0 to 99 minutes)	Amount of time without a received input signal before the machine switches to the low standby level.

7.4. Changing lamps



Safety precautions:

- Unplug all mains power to the flash cure dryer.
- If the flash cure was recently in operation ensure the unit has cooled down before attempting to change the lamps.
- The lamps are made of quartz glass and are therefore fragile –handle with care and avoid contact with the glass.



NOTE

Tools required: Slot screwdriver & crosshead screwdriver

How to replace a lamp:

1. Open the flash cure by removing the two black caps and unscrewing the M4 bolts and cap retainers on each side of the lid.
2. Lift the lid and locate in the hole in the lid. Support the lid with the rod that can be found in the front of the dryer. Note which cables are attached to the lamp to be changed, loosen the bolts that secure the wires into the ceramics on either end of the lamp. pull the bolts out of the ceramic and leave the cables loose.
3. Remove the lamp from underneath the unit by loosening the wing nuts at either end of the lamp. Hold it by the ceramics and ease it out of the lamp holders, now remove it from the dryer.
4. The lamps are installed in the dryer with tension springs at either end. Make sure that the replacement lamps are installed in the right orientation.
5. To install the replacement lamp, gently ease it into the holders. Guide the cables from either end of the lamp through the reflector. Tighten the wing nuts until the lamp is secure but take care not to over tighten them.
6. Place each cable end in the lamp ceramics. Secure them by tightening the screw holding them into each ceramic.
7. After any accidental skin contact with the glass or quartz lamp surface the lamp has to be degreased. To do this, gently clean the lamp with the provided cleaning cloth or other soft cloth moistened with Denatured Alcohol or Methylated Spirits.
8. Make sure that the ceramic ends of the lamp do not touch the housing and that the carbon element is horizontal.
9. Close the lid by the support rod and carefully lowering the lid. Secure the lid by re-inserting the cap retainers, M4 bolts and black caps.
10. Reattach the power cable and turn the unit on.



NOTE

If the lamp is thought to have failed under guarantee conditions, it should be returned in appropriate packaging to MHM or other appointed dealer for assessment.

8. Maintenance of the Flash Cure



Safety precautions:

- Unplug all mains power to the flash cure dryer.
- If the flash cure was recently in operation ensure the unit has cooled down before attempting to change the lamps.
- The lamps are made of quartz glass and are therefore fragile –handle with care and avoid contact with the glass.

Task	Frequency	Comment/Action
Grills and fans cleaning	Daily	Clean the grills and fans.
Weekly cleaning.	Weekly	Open the unit and remove all lint and dust from inside the unit and ensure that all the holes in the reflector are clean and unobstructed.
Lamp cleaning.	Monthly	Clean the lamps when they are cold with a cloth moistened with methylated spirits or denatured alcohol.



It is important when either cleaning or changing a lamp that the quartz is not touched by hands or fingers. If the lamps are touched then they must be cleaned before switching on.

9. Accessories

9.1. Temperature sensor

The temperature sensor is used to measure the temperature of the ink and to optimize the drying time.



9.2. Photocell

The photocell is used to start the Flash Cure after a print cycle when the printing machine does not deliver an appropriate start signal.



9.3. Footswitch

With the footswitch, a manual start signal can be generated.



10. Terms of the Guarantee

The terms of the guarantee are detailed in the General Terms and Conditions of Machines Highest Mechatronic GmbH.

11. Support, Customer Service and Hotline

In case of any problems or additional questions please turn to your appropriate service partner.