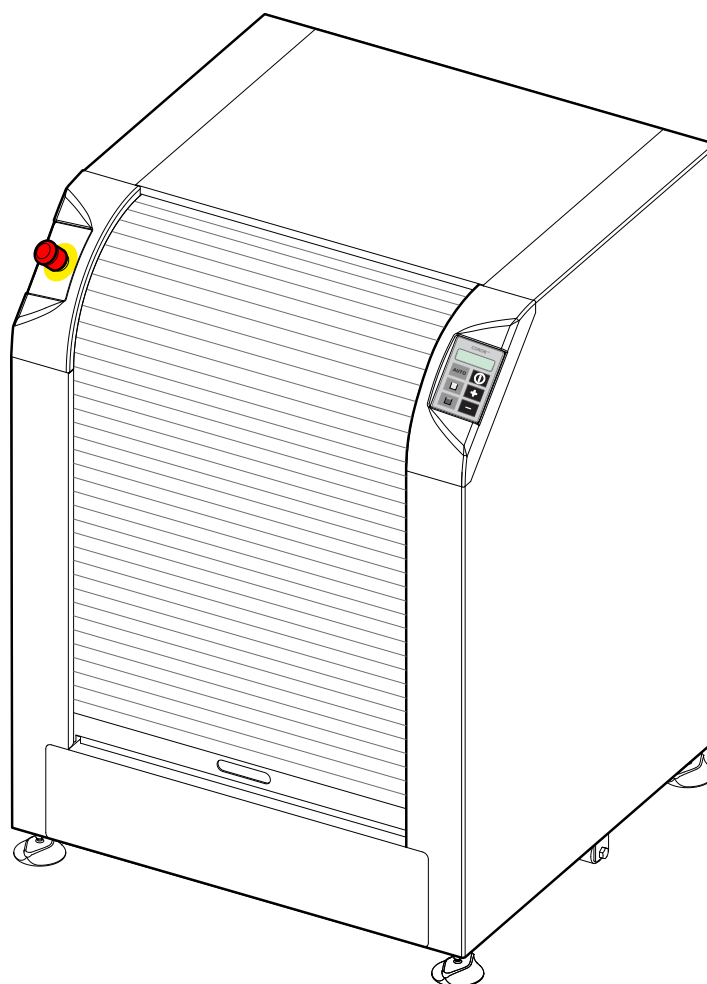

TECHNICAL MANUAL

COROB™ CLEVERmix 700

Gyroscopic Mixer with MINIEMIX Electronics



TECHNICAL MANUAL

Gyroscopic Mixer

COROB™ CLEVERmix 700

Version 1.0 - R0 (05/2017)

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Appendix: Electrical Technical File

GENERAL INFORMATION AND SAFETY



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1 GENERAL INFORMATION AND SAFETY

1.1 Purpose and structure of the manual

This manual, prepared by the manufacturer, contains technical information for the installation of the machine and provides technical documentation regarding machine electronics, mechanics, firmware and hardware errors. The technical manual is divided into sections. The following topics are handled:

SECTION 01	GENERAL INFORMATION AND SAFETY	SECTION 05	CONTROL PANEL AND CONFIGURATION
SECTION 02	INFORMATION AND TECHNICAL FEATURES	SECTION 06	HARDWARE ERRORS
SECTION 03	INSTALLATION	SECTION 07	MAINTENANCE
SECTION 04	CONTROL ELECTRONICS	SECTION 08	WIRING DIAGRAMS



Changes may have been made to the product to improve its performance after this technical manual was printed. Accordingly, the manufacturer does not warrant that the information contained in this manual is complete and accurate.

1.2 Intended user of this manual

The manual is aimed as a supportive tool to service providers with specific skills and technical competence (mechanical and electrical) and qualified as COROB Authorized Service Providers, trained by COROB in order to carry out installation, service and maintenance of COROB™ equipment. Therefore, the information contained in this manual shall be considered as a guideline only and must be supported by a COROB Technical Training and a formal authorization as COROB Authorized Service Provider. COROB recommends to follow the procedures described in this manual. Service interventions other than those stated and suggested herein are not recommendable and must be considered performed under the own responsibility of the Service Provider. COROB disclaims any liability for personal or property damages resulting from failure to observe the instructions given and safety guidelines provided in this manual.












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1.3 Symbols

The symbols used in this manual, in order to facilitate understanding and to highlight risky operations, are shown and described below.

Safety symbols		Equipment symbols	
	DANGER Indicates information or procedures that, if not strictly followed can cause serious injuries to the operator or damage to the machine.		MECHANICAL TOOLS Indicates that for the work to be done the use of tools is required.
	PROHIBITED Signals an action that is not allowed.		LIFTING EQUIPMENT Indicates that for the work to be done the use of lifting equipment is required.
	COMPULSORY Signals compulsory actions or procedures.		ELECTRICAL TOOLS Indicates that for the work to be done the use of electrical tools is required.
	NOTE Indicates important instructions referring to precautionary rules and/or measures to adopt.		MANAGEMENT COMPUTER Indicates that for the work to be done the use of the management computer is required.
	PERSONAL PROTECTIVE EQUIPMENT Indicates that personnel in charge of the operations described must wear the personal protective equipment indicated.		

1.4 General safety guidelines





















READ THE SAFETY WARNINGS CAREFULLY BEFORE INSTALLING AND OPERATING WITH THE MACHINE.

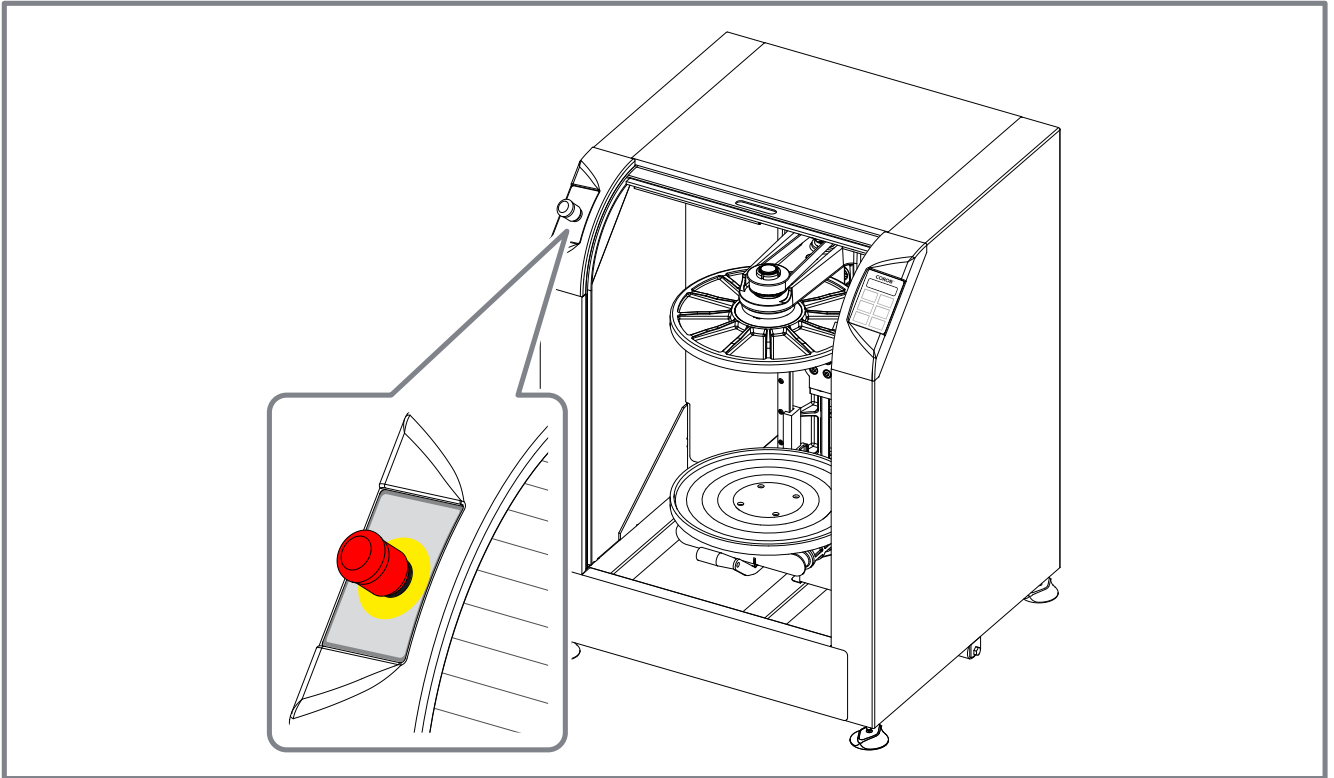
- **ALWAYS PLUG THE MACHINE INTO A SOCKET THAT ENSURES PROPER GROUNDING.** The line must be protected from overloads, short-circuits and direct contacts according to current accident prevention regulations. Incorrect grounding may lead to the risk of electrical shock.
- The machine must not be powered by a power source having specifications other than those listed on the identification plate.
- The machine is isolated from the power supply line when the power plug is disconnected; it must therefore be installed near an easily accessible mains socket outlet.
- Do not use extension cords to power the machine.
- Do not use multisockets to connect other equipment to the same socket that powers the machine. Make sure that the power supply of the equipment connected to the machine via serial port, like the computer, is equipotential (which has a single access point to earth) because potential differences cause interferences and/or damage to the serial ports.
- Periodically check the condition of the power supply cable; if it is damaged, replace it with a new cable supplied by the manufacturer.
- To prevent any risk of electrical shock or injuries, use the machine indoors only. It is prohibited to use the machine outdoors where it could be subjected to rain or high humidity.
- The machine must be used only for its intended purpose.
- Pay close attention to the signs on the machine.
- **It is strictly forbidden to use the machine without protections or with any safety devices present on the machine disabled, broken down, or removed. The panels must be kept closed at all times.**
- It is forbidden to use cans having characteristics other than those stated in this manual.
- It is forbidden to use the clamping movement of plates to close the can lid.
- It is forbidden to climb onto the bottom clamping plate and/or onto any other parts of the machine.
- It is forbidden to use the machine as a working surface; it is also prohibited to leave objects on the machine during while it's operating.
- Always unplug the power supply cable from the socket outlet before carrying out any maintenance operations.

- Prior to carrying out any repair intervention, adopt suitable safety measures in compliance with safety in the work place legislation in force and follow safety instructions.
- When prescribed, wear personal protective equipment.
- Do not carry out any interventions on the machine when it is electrically powered, unless otherwise indicated.
- After every repair intervention reassemble the guards.
- In the event of a breakdown on any of the electronic control equipment, replace the damaged equipment immediately; do not attempt to repair the breakdown.
- Use only original spare parts for replacement.
- Do not operate the broken down or damaged machine.
- The machine is suitable for use with tinting products in general. Scrupulously follow the safety precautions and the instructions for use given on the colorant package and on the Material Safety Data Sheet (MSDS) supplied by the manufacturer. When compulsory, wear personal protective equipment.
- **THE MACHINE IS NOT EXPLOSION-PROOF AND MUST NOT BE USED IN CLASSIFIED AREAS (AREAS AT RISK FOR EXPLOSION).**
- The substances that may be used on the machine—such as colorants, paints, solvents, lubricants and cleansers—may be hazardous to your health; handle, store and dispose of these substances in keeping with current regulations and the instructions provided with the product.

1.5 Residual risks

Risk		Preventive measure	P.P.E.
	Risk of electrocution - Risk of electrical shock if you power the machine from a socket not equipped with ground connection.	Power the machine through a grounded socket outlet.	\
	Risk of electrocution / burning - Risk of electrical shock if you access machine parts protected by panels without first cutting off electrical power.	The operator is not authorized to access the machine parts protected by panels. For the maintenance technician: before performing any maintenance intervention, shut off the machine and disconnect the power supply cable from the mains socket outlet. Wait for some minutes before touching the motor.	\
	Dorsal/lumbar injuries - Handling heavy loads when moving the machine and loading cans in the machine may cause injuries.	Do not exceed the weight limits stated by the current regulations in force (20 kg/44 lb for women, 25 kg/55 lb for men). Use appropriate lifting equipment or provide for two operators to carry out the task.	 
	Risk of slipping / falling - Improper use of the bottom clamping plate (for example, climbing on the plate to take items from high shelves above the machine) can cause injuries.	It is forbidden to climb onto the bottom clamping plate and/or onto any other parts of the machine.	\
	Risk of falling objects / crushing - When loading a can in the machine, there is a risk it may fall onto the operator. During machine operation, any objects left on the machine may fall onto the operator.	Position the can so that the whole base rests on the bottom clamping plate. Do not exceed the maximum weight allowed for the can or cans to be mixed. Do not use the machine as a working surface. Do not leave any objects on the machine during its operation.	 
	Risk of cuts - Risk of injuries and abrasions caused by sharp edges and end parts of the cans to be handled.	Wear appropriate personal protective equipment (cut-proof gloves). Do not use the machine with damaged cans or cans not sealed properly.	
	Risk of explosion - Fumes generated by the colorants used may cause an explosion.	Do not use the machine in classified areas (areas at risk for explosion). Avoid naked flames or material that may create sparks and cause a fire.	\
	Risk of poisoning and sensitization Eye and skin contacts and inhalation of vapors/powders caused by product spills from the can being broken. Fumes generated by the colorants used may cause poisoning and/or sensitization during machine cleaning and disposal operations.	Do not use the machine with damaged cans or cans not sealed properly. Read the warnings reported in the Material Safety Data Sheets of the colorants used. The MSDS must be provided by the colorant manufacturer. Keep the room suitably ventilated. Wear appropriate personal protective equipment (safety goggles, gloves and mask).	Personal Protective Equipment as specified in MSDS.
 	Risk of crushing / entanglement / dragging / abrasion / cutting - During extraordinary maintenance interventions.	Before carrying out any maintenance operations, you must turn off the machine and unplug the power supply cable from the mains socket outlet.	  
	Risk of burning due to contact with hot surfaces - During maintenance operations of the mixing motor.	During normal use, the machine mixing motor works in a non-continuous way, considering the paint can loading and unloading time. If operated at full charge, with the maximum load allowed (35 kg/77 lb) at highest ambient temperature value (40°C), there could be motor overheating risks. As a preventive measure, ALWAYS wait at least 30 minutes after the last working cycle has ended, before touching the mixing motor to carry out maintenance interventions. The motor is protected by a safety guard and cannot be reached by the machine operator normally.	

1.6 Safety devices



Emergency button

Red mushroom-head button.

Pressing the button causes the machine to stop immediately in emergency mode, ceasing all movements.

Once pressed, the button can be released by pulling it outward.

Door safety device

The machine is equipped with a **door safety device** that:

- prevents the mixing cycle to be started when the door is open
- keeps the door locked during mixing of the can

During the mixing cycle, the door can only be opened if the mixing mechanics is in vertical position, i.e. when the can is clamped or released. Opening the door in these cases causes all movements to be immediately stopped, for obvious safety reasons.

Door lock

As an optional device, a **door lock** system can be requested: it prevents door opening at any time of the cycle. With this option, it will not be possible to open the door, neither during plate closing (clamping of the can) nor during plate opening (release of the can).

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1.7 Emergency stop

In case of a breakdown or dangerous conditions, press the emergency stop button. Pressing this button, power is cut off to the entire machine and all movements are stopped.

The display will show a message that indicates the emergency stop condition. After eliminating the cause of the malfunction or solved the dangerous condition, reset the button by pulling it.



DANGER

The emergency button does not completely cut off power to the entire machine. The power supply unit box inside the machine still remains powered.



To completely remove power from the machine it is necessary to shut it off and unplug the power supply cable from the wall socket outlet.



The use of the emergency stop button is to be considered as an emergency action exclusively, and not as a standard stop mode, in order to prevent machine deterioration.

1.8 Tools

List of suggested tools required to operate with COROB™ equipment.

Description	Type	
All-purpose Toolbox	Complete with all frequently used tools:	
	Wrenches	6x7 - 8x9 - 10x11 - 12x13 - 14x15 - 16x17 - 18x19 - 20x22 - 21x23 - 24x27 - 25x28 - 30x32 (mm) - size 14 and 17 must be shortened
		Socket Wrenches: complete set
		Torque Wrench: 17 mm
		90° Hexagonal Wrench: 12-pcs set (from 2 to 10 mm)
		T-Shaped Hexagonal Wrench: 2 - 2.5 - 3 - 4 - 5 - 6 (mm)
	Pliers	Combination pliers, 180 mm
		Flat long nose pliers with straight jaws, 160 mm
		Box-joint adjustable pliers
		Pliers with straight nose for internal circlips (19 to 60 mm)
		Pliers with straight nose for external circlips (19 to 60 mm)
		Diagonal cutting nippers
	Screwdrivers	(-) for slot-head screws: 0.6x3.5x100 mm - 1x5.5x150 mm
		(+) for Phillips screws: 1x80 mm - 2x100 mm
		reversible (+) (-): 0.8x6x30 mm
Precision screwdrivers (+) (-): complete set		
Torx screwdriver T 15		
Scissors 130 mm - Utility Knife 165 mm - Hacksaw, small size - Half-round file, medium size - Tube cutter - Oiler 30 cc - Pocket tape ruler 2 m - Hammer 400 g - Rubber Hammer Ø 35 mm - Teflon® Tape		
 Electrical Tools	<ul style="list-style-type: none"> Digital Multimeter, to test Voltage, Resistance and Current values Loading cell, to check clamping force 	
 Other	<ul style="list-style-type: none"> Laptop computer 	

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2 INFORMATION AND TECHNICAL FEATURES

2.1 Description of the machine

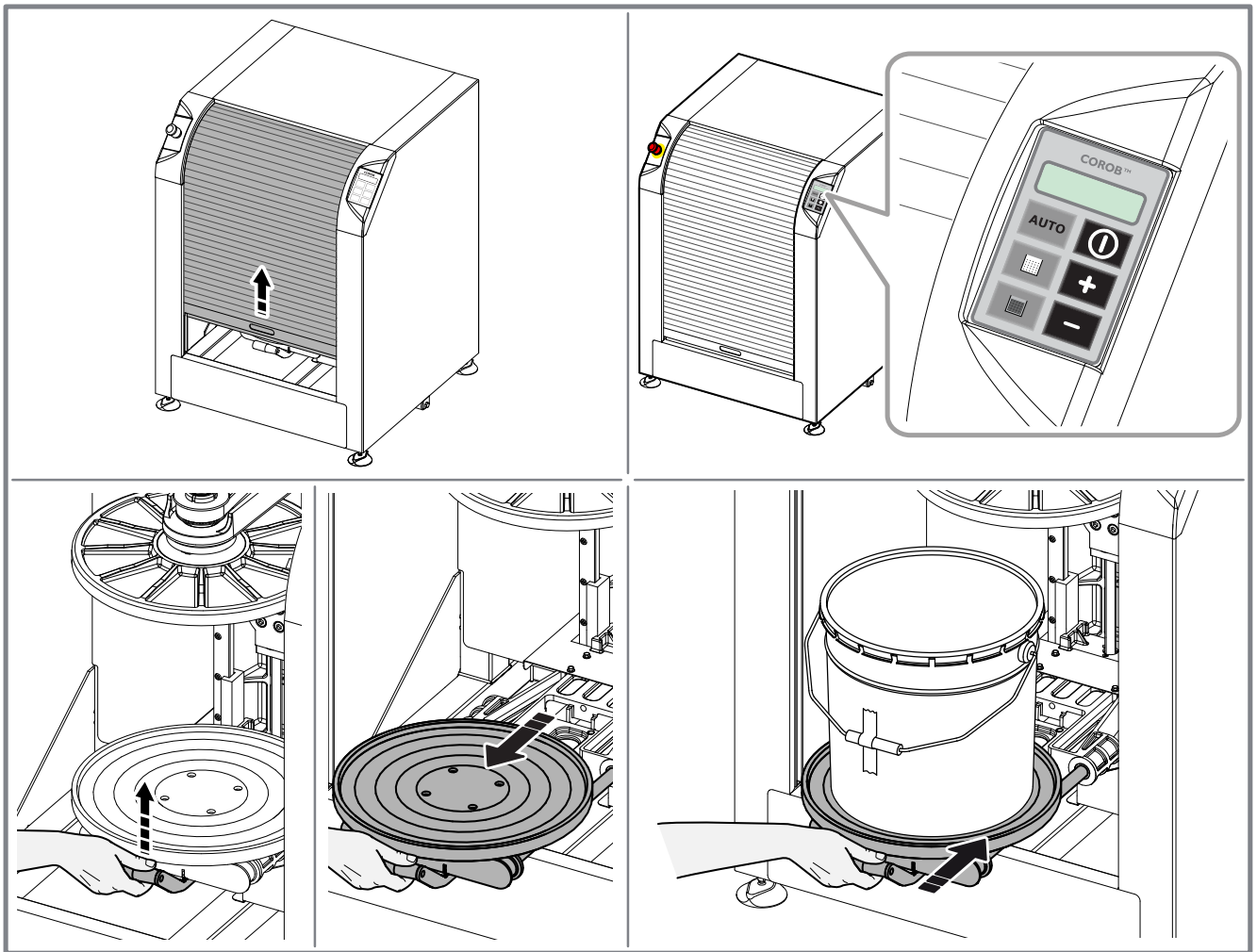
The gyroscopic mixer **COROB™ CLEVERmix 700** with automatic clamping system allows mixing of non-explosive paints contained into metal or plastic containers.

It is suitable to handle cans of different size and shape. With specially profiled clamping plates available for installation upon request, the machine can also handle square cans. The machine is also capable to mix more than one can simultaneously.

The bottom pull-out plate makes it easy and fast to load and unload cans.

The mixing cycle always ends with the can in vertical position and the clamping plates fully open.

The machine is equipped with a sliding door.



2.2 Standard control panel configuration

The machine features a membrane keyboard that allows to carry out a fully automatic mixing cycle (**AUTO** key) or choose among pre-set mixing cycles).

The adjusting keys **+** and **-** allow to manually vary the pre-set mixing time.

Display

The display shows the name of the mixing program selected, as well as the messages concerning the actions undertaken by the machine during the automatic mixing cycle. The display lights up at machine start-up.

16 - INFORMATION AND TECHNICAL FEATURES

AUTO key (automatic program)

Key that allows you to select a fully automatic cycle. The mixing parameters are calculated based on can height.

Key to start / stop the cycle

This key allows to start the mixing cycle of a can. If pressed during machine operation, the cycle stops.

Key to select pre-set programs

Keys that allows you to select pre-set automatic mixing programs. They can be customized with text or a graphical representation of the customer's products.

Adjusting keys

Keys that allow you to modify the mixing time.

 **For more information on control panel functions and configuration, refer to chapter 5.**

2.3 Performance and features

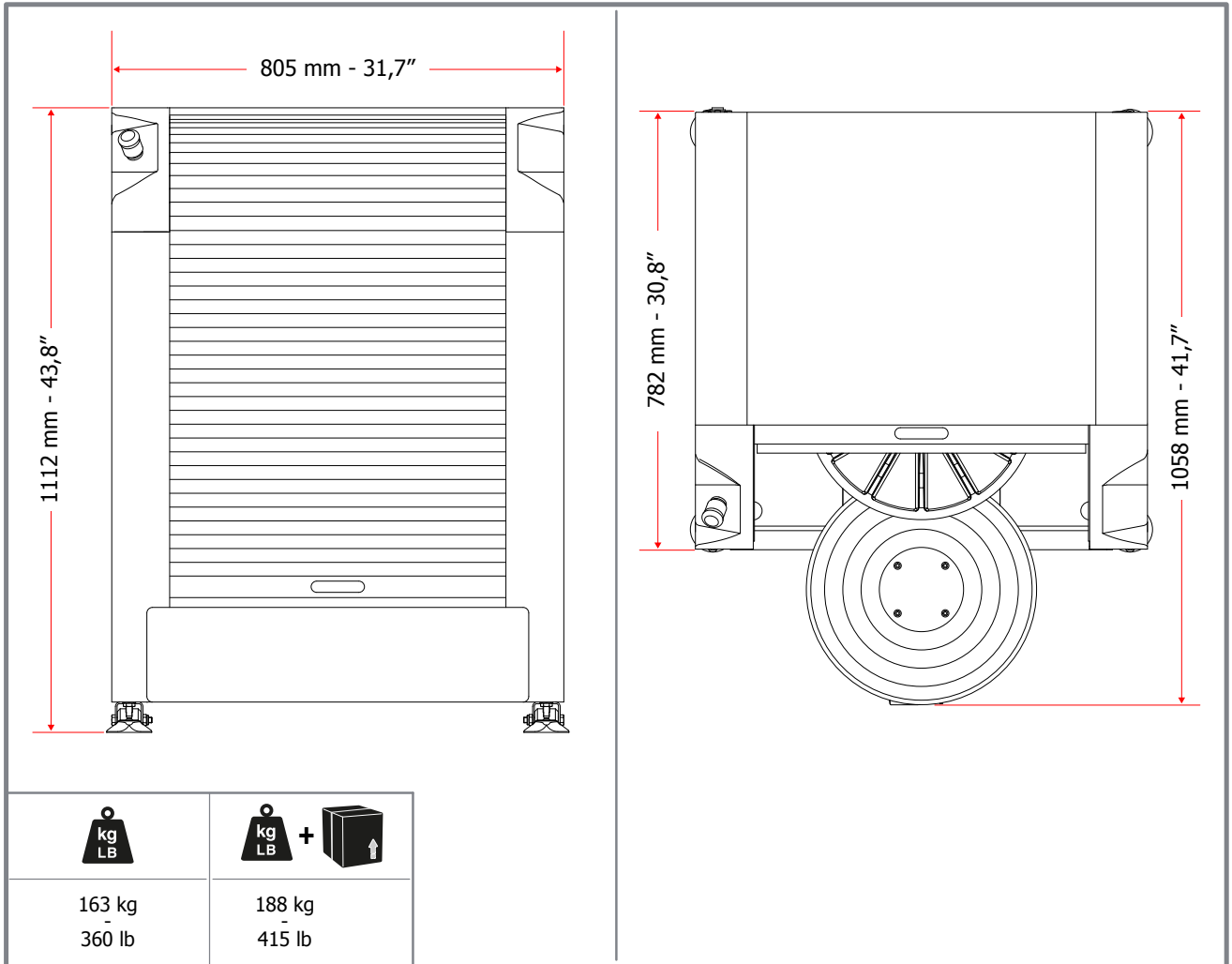
Mixing speed	Automatic (based on can size) or pre-set (customized cycles)
Mixing time	can be customized, manual set from 30 seconds to 20 minutes (up to 40 minutes with tech configuration)
Clamping	Automatic (based on can size) or pre-set (customized cycles)
Working cycle	intermittent: periodic duty cycle max. 70%
Direction of rotation of the mixing mechanics	bi-directional
Type of can	round - square - oval
Maximum can weight	35 kg / 77 lb
Minimum can height	100 mm
Maximum can height	400 mm (lower if can centering holder is present on bottom plate)
Maximum can diameter	390 mm

2.4 Technical data

Power supply	Single-phase 200 - 240 V~ ± 10% Single-phase 100 - 110 - 127 V~ ± 10% optional with autotransformer
Frequency	50/60 Hz
Fuses	F 10 A
Max power absorbed	1050 W
Mixing motor power	0.75 HP (0.55 kW)
Noise level (*)	Level of equivalent acoustic pressure: < 70 dB (A)
Environment working conditions	Temperature: between 10°C (50°F) and 40°C (104°F) Relative humidity: between 5% and 85%, without condensation

(*) Value measured in laboratory and documented by the corresponding test report available at the manufacturer's. Operating conditions: machine normal working cycle, under simulated load conditions.

2.5 Dimensions and weight



Adjusting height of the antivibration feet from 0" to 0.79" (0 to 25 mm).

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INSTALLATION

3

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3 INSTALLATION

3.1 Requirements of the installation site

Environment requirements for the site where the machine is to be used:

- Clean and dust-free.
- With level and stable floor.
- Fitted with a grounded power supply socket.
- Equipped with sufficient lighting to ensure good visibility from every point of the machine (light value not lower than 500 Lux).
- Ventilated to prevent the concentration of harmful fumes.
- Temperature between 10 °C (50 °F) and 40 °C (104 °F) and relative humidity between 5% and 85%, without condensation.



WARNING

The environment working conditions are strictly related to the type of colorants used (ask for information from the paint manufacturer). The requirements indicated above are valid for the machine only.

Do not place the machine near heat sources or in direct sunlight. Also humidity sources should be avoided. The machine must be used indoors only.

Environment conditions outside the values indicated may cause serious damage to the machine, especially the electronic equipment.



READ CAREFULLY THE GENERAL SAFETY GUIDELINES REPORTED IN SECTION 1.

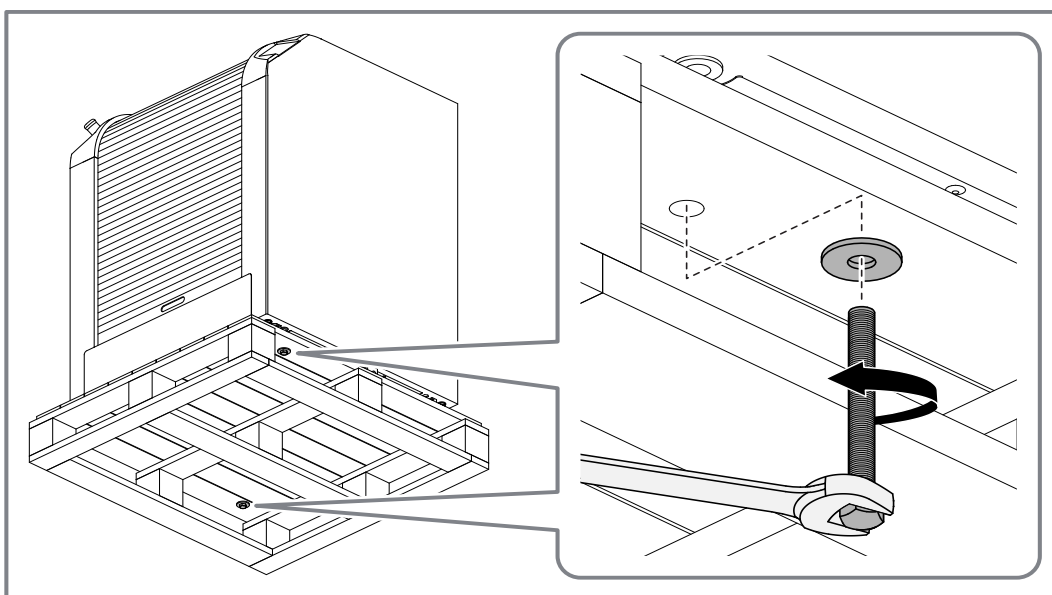
Personnel in charge of these operations must wear the following personal protective equipment.



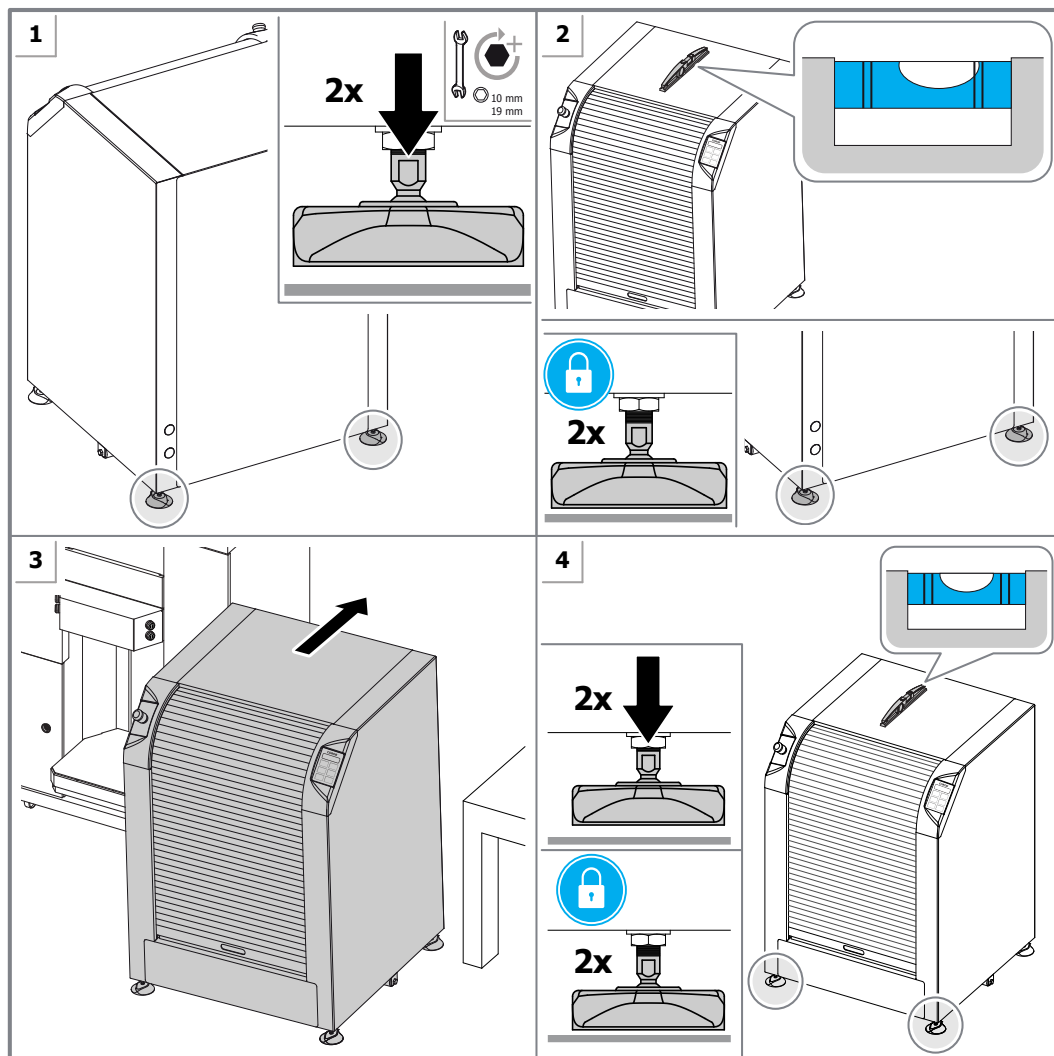
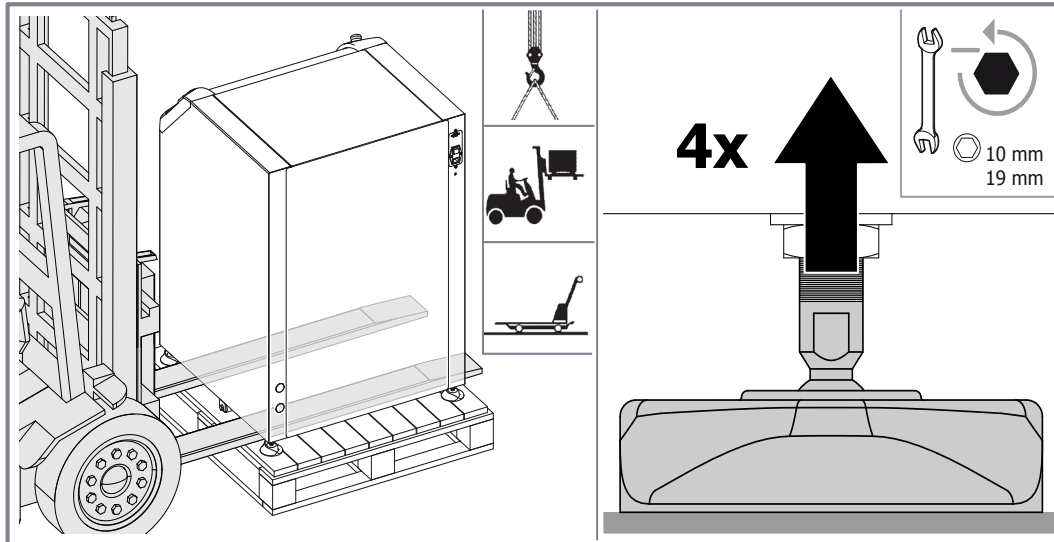
3.2 Unpacking and positioning

Unpack and position the machine as described in the user's manual present on the machine.

		1 x 19 mm	To remove the mounting screws
		1 x 10 mm	To adjust the support feet
		1 x 19 mm	



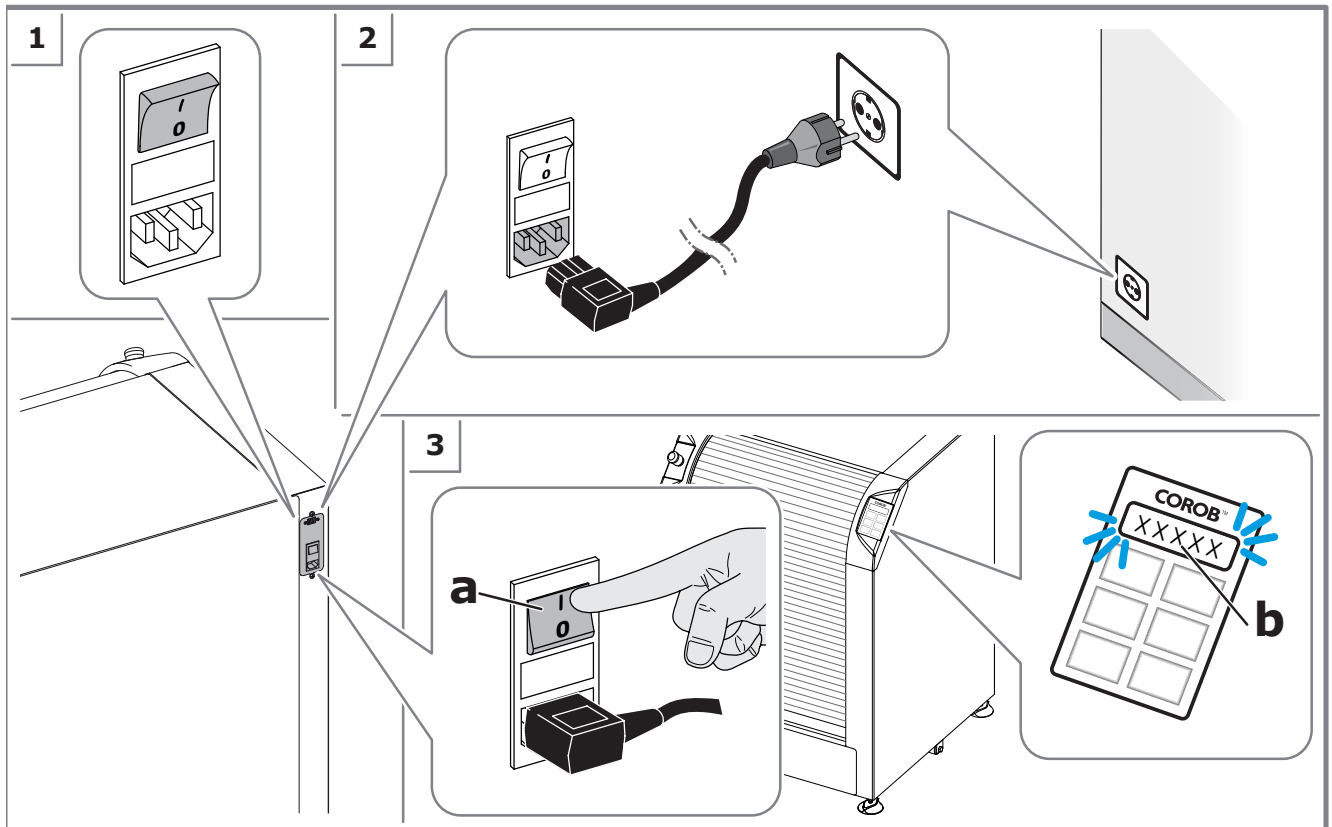
22 - INSTALLATION



WARNING

The machine must be perfectly level in order to operate properly and prevent from vibrating during the mixing cycle.

3.3 Electrical connection and start-up



At machine start, the display lights up. The firmware bootloader version is displayed shortly, and the first configured cycle is displayed ready for execution.

3.3.1 Machine information

Turn ON the machine with the emergency button pressed to display following information:

- Application Firmware version
- Bootloader Firmware version
- MINIMIX board dipswitch configuration
- Number of cycles executed
- Machine total working time (seconds)
- Number of rotations executed
- Machine status [EMERGENCY]
- Company information [e.g. manufacturing date, machine serial number, configuration file code, and so on]
- Last machine alarms detected

Information is displayed in automatic sequence. To scroll through the single pieces of information manually, use the (+) and (-) keys on the control panel.

By pressing the (+) and (-) keys also the last detected machine errors are shown.

Symbol (!) indicates planned maintenance to be carried out.

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CONTROL ELECTRONICS

4

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4 CONTROL ELECTRONICS

4.1 Introduction

COROB™ MINIEMIX control electronics improves machine performance and facilitates service operations.

COROB™ CLEVERmix 700 can be controlled and configured using the program CorobMIX, which allows to:

- load the project file from the machine
- modify the project transfer the project file back to the machine

The following performance can be defined for each of the machines included in the project:

- configuration of the general operating parameters for the devices with which the machine is equipped
- definition of the cycles in terms of duration, speed and clamping force
- definition of the machine cycles, to establish which of the cycles created must be effectively available on the machine
- definition of cycle groups, necessary so that one or more machine cycles can be assigned to a key on the machine keyboard
- configuration of the machine keys

The definition of mixing cycles implemented according to the type of product to be mixed and the configuration of the machine keys allow the best possible use to be made of mixer's potential in accordance with the specific requirements of the customer.

CorobMIX is the tool to use for updating the machine firmware and it also allows the management of the messages shown on the display of the machine keyboard.

With its diagnostic and monitoring functions, CorobMIX also allows continuous checking of the functions and status of the machine, facilitating the maintenance operations carried out by technical support personnel.

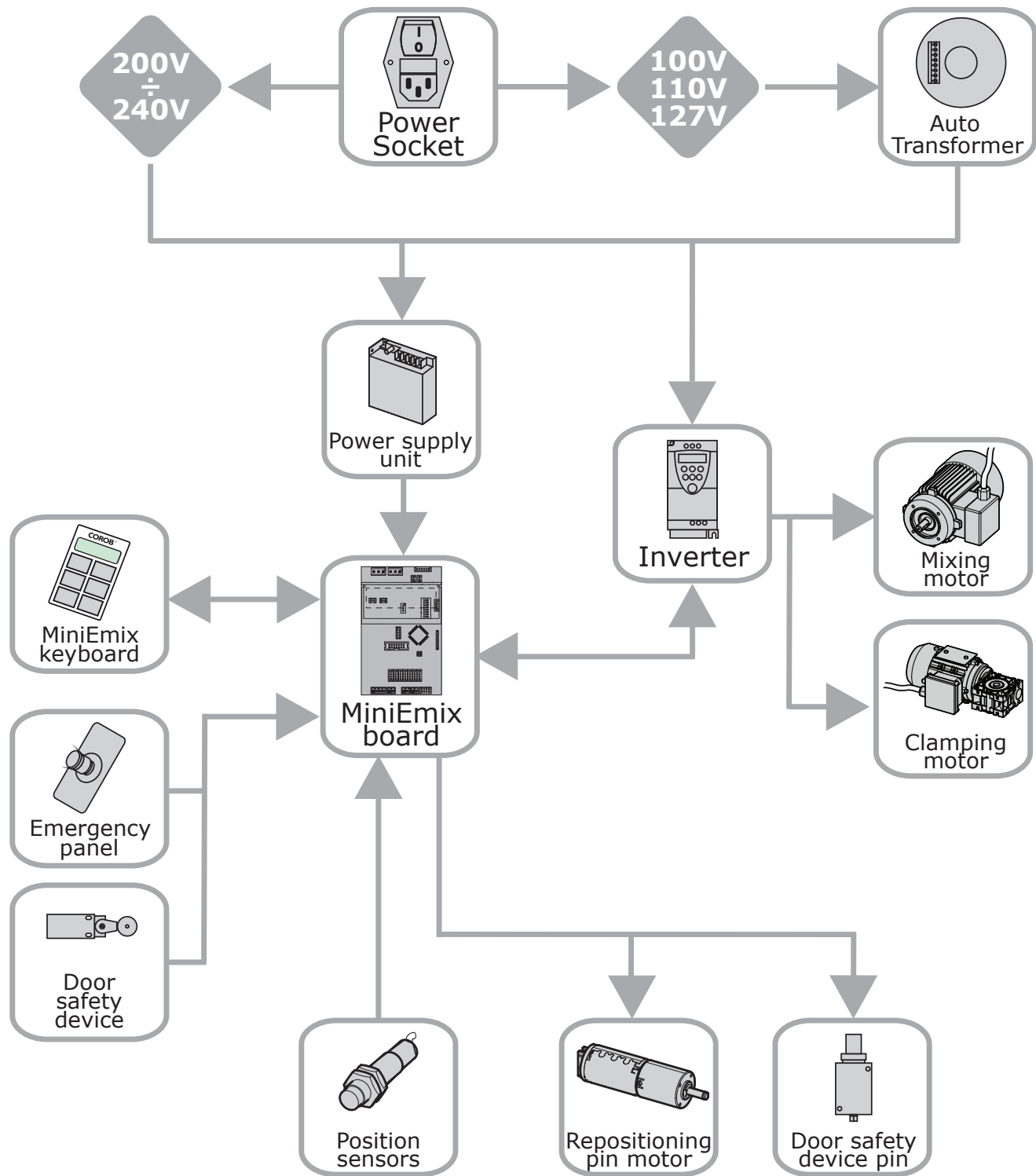
For detailed instructions on how to install and use the program CorobMIX refer to the corresponding user's manual.

4.2 MINIEMIX board position

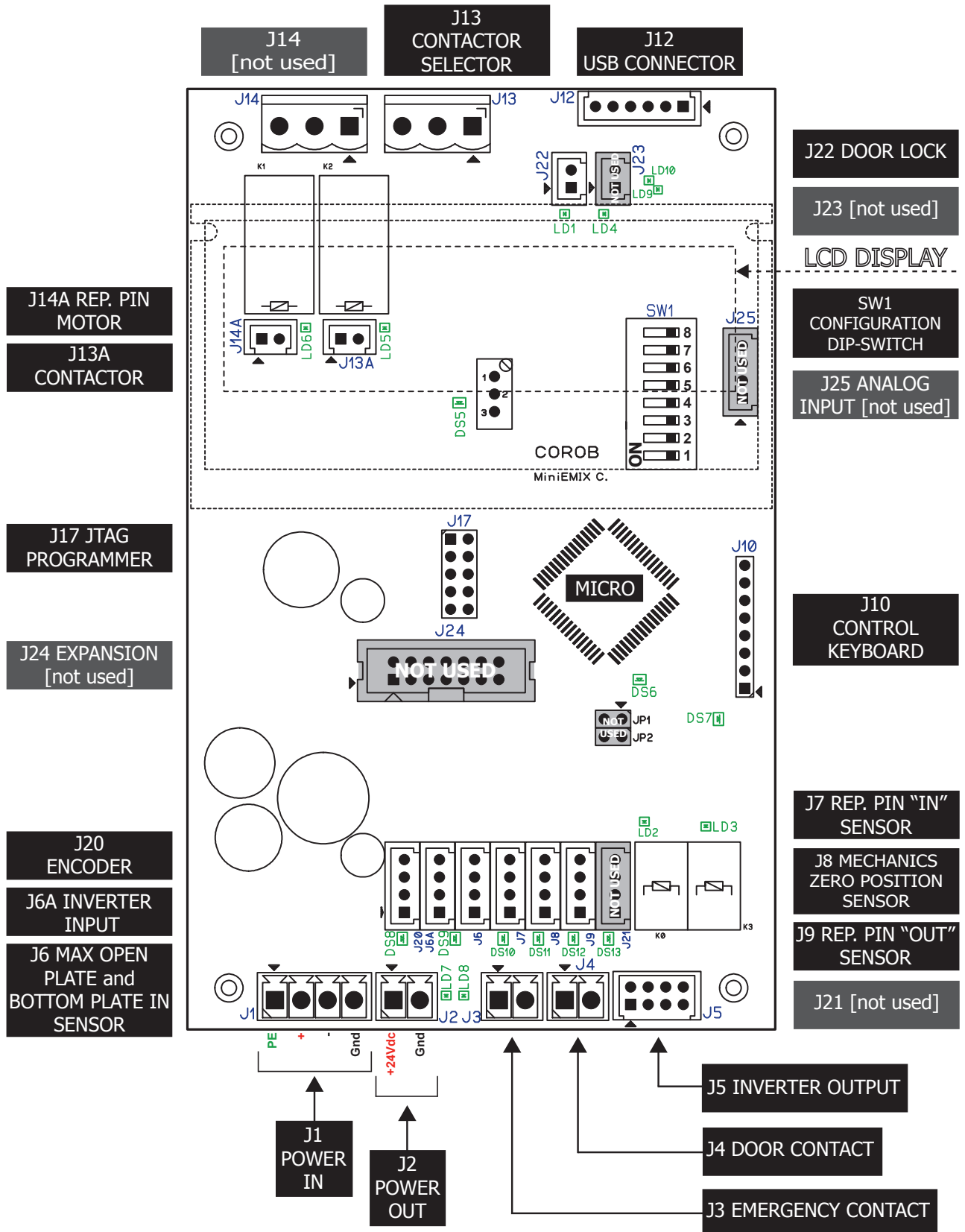


4.3 Power supply voltage distribution

The following schematics shows how power voltage is distributed along the different machine electronic components and control devices.



4.4 MINIEMIX board layout



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4.4.1 Connectors

CONNECTOR	TYPE	DESCRIPTION
J1	INPUT	POWER IN
J2	OUTPUT	POWER OUT
J3	INPUT	EMERGENCY CONTACT
J4	INPUT	DOOR CONTACT
J5	OUTPUT	INVERTER OUTPUT
J6A	INPUT	INVERTER INPUT
J6	INPUT	MAX OPEN PLATE AND BOTTOM PLATE "IN" SENSOR
J7	INPUT	REPOSITIONING PIN "IN" SENSOR
J8	INPUT	MECHANICS ZERO POSITION SENSOR
J9	INPUT	REPOSITIONING PIN "OUT" SENSOR
J10	INPUT	CONTROL KEYBOARD
J12	INPUT / OUTPUT	USB CONNECTOR
J13	OUTPUT	CONTACTOR SELECTOR
J13A	OUTPUT	CONTACTOR
J14	OUTPUT	NOT USED
J14A	OUTPUT	REPOSITIONING PIN MOTOR
J17	--	JTAG PROGRAMMER [RESERVED]
J20	--	ENCODER SENSOR
J21	--	NOT USED
J22	OUTPUT	DOOR LOCK
J23	--	NOT USED
J24	--	ESPANSION (NOT USED)
J25	--	ANALOG INPUT (NOT USED)

4.4.2 LEDs

LED	STATUS	DESCRIPTION	REFERENCE COMPONENT
LD1	ON [green]	Door lock output is active	Door lock (optional)
LD2	ON [green]	Inverter reverse command	Inverter
LD3	ON [green]	Inverter run command	Inverter
LD4	---	<i>[not used]</i>	Re. J23 <i>[not used]</i>
LD5	ON [green]	Contact selector is active	Re. J13A
LD6	ON [green]	Repositioning pin motor is active	Vertical repositioning pin motor
LD7	ON [green]	Machine normal operation (not in emergency condition)	Re. J3
LD8	ON [green]	Door is closed	Door / Re. J4
LD9	ON [green]	Data are received via USB (RX)	USB connection / Re. J12
LD10	ON [green]	Data are transmitted via USB (TX)	USB connection / Re. J12
DS5	ON [green]	+5V present	
DS6	ON [green]	Micro-controller operation	Micro-controller
DS7	ON [green]	+10V present	
DS8	ON [green]	Encoder sensor is reading the wheel	Encoder sensor / Re. J20
DS9	ON [green]		Inverter / Plate max open sensor / Re. J6 - J6A
DS10	ON [green]		Vertical repositioning pin / Re. J7
DS11	ON [green]		Mechanics zero pos. sensor / Re. J8
DS12	ON [green]		Vertical repositioning pin / Re. J9
DS13	---	<i>[not used]</i>	Re. J21 <i>[not used]</i>

4.4.3 Dipswitch settings

SW1	
	8 ON: DOWNLOAD FIRMWARE MODE
	7 ON: INITIALIZATION OF FACTORY SETTINGS AT MACHINE START (RE-LOADING DEFAULT CONFIG.)
	6 ON: ALLOW NEW CONFIGURATION WRITING FROM COROBMIX
	5 ON: SKIP CYCLE PHASES (IF THIS OPTION IS ACTIVE IN THE COROBMIX CONFIGURATION)
	4 MACHINE MODEL SELECTION [DEFAULT: OFF]
	3 MACHINE MODEL SELECTION [DEFAULT: OFF]
	2 MACHINE MODEL SELECTION [DEFAULT: OFF]
	1 MACHINE ENCODER PRESENCE (OFF: encoder present) (ON: encoder not present)

CONTROL PANEL AND CONFIGURATION

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5 CONTROL PANEL AND CONFIGURATION

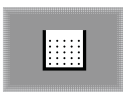
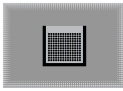




5.1 Control panel functions

The control panel is made up of a membrane keyboard with 6 configurable keys and a display.

The display shows the name of the mixing program selected, as well as the messages concerning the actions undertaken by the machine during the automatic mixing cycle. The display lights up at machine start-up.

The graphical appearance of the function keys can be customized and the presence of the different keys changes based on machine configuration.

The functions that can be configured are:

Function name	Graphics (examples)	Description
NO FUNCTION		The key is not enabled.
GROUP OF CYCLES	  	<p>The key is programmed with one or more mixing cycles.</p> <p>The cycles can be scrolled and selected by pressing the key in sequence.</p> <p>After selecting the cycle (meaning when the cycle details are shown in the display), it can be started directly by holding down the key.</p> <p>Pressing again the key, will also stop the mixing cycle.</p> <p>Clamping plates will fully re-open (only with encoder, they could partially re-open if configured)</p> <p>Also the AUTO key is a 'group of cycles' key.</p>
START		<p>Key to start the mixing cycle selected.</p> <p>The cycle must have been selected with a 'group of cycles' key (the cycle details are shown in the display) or defined in manual mode in order to be started.</p> <p>If no new selection is made, the last executed cycle is started.</p>
STOP		<p>Key to stop the mixing cycle in progress.</p> <p>Clamping plates will fully open.</p>
START/STOP		<p>Key to start/stop the mixing cycle.</p> <p>The cycle must have been selected or defined in manual mode in order to be started.</p> <p>If no new selection is made, the last executed cycle is started.</p> <p>Pressing again the key, will also stop the mixing cycle and clamping plates will fully open.</p>
PLATES OPENING		<p>Key to open the clamping plates manually.</p> <p>Opening is only enabled when the door is closed and is active only when the "plates opening at cycle end" function is disabled (see CorobMIX manual)</p>
INCREASE		Key to increase the value of the parameter selected.
DECREASE		Key to decrease the value of the parameter selected.
MODE		<p>Key to enter manual operating mode. By pressing this key again, you can return to the automatic mode</p> <p>This key allows to access manual edit mode for the following mixing parameters:</p> <ul style="list-style-type: none"> • mixing time (from 00:45 to 09:45 min) • clamping force (from 150 to 300 kg) • mixing speed (from 50 to 200 rpm) • mixing type (→→ / →← / ←← / ←→)

5.2 Machine parameters configuration



WARNING

Changing machine parameters and modifying machine configuration is a delicate operation that should be done by expert and authorized technicians.

Parameters and functions that can be changed are those defined with CorobMIX during machine configuration.



Therefore, some of the parameters explained below may not be available or their configuration blocked, if the CorobMIX configuration file or dipswitch settings prevent this possibility.

The parameters can be set to a fixed value or to AUTO. AUTO means that the actual value of the parameter is chosen automatically based on the height of the can to be mixed, according to the can height detected during clamping stage.

The parameters of the AUTO function determine the limits of the automatic selection of clamping force, mixing speed and mixing time, based on can height detected.

The following parameters can be changed directly from the machine control panel, without needing to use CorobMIX program:

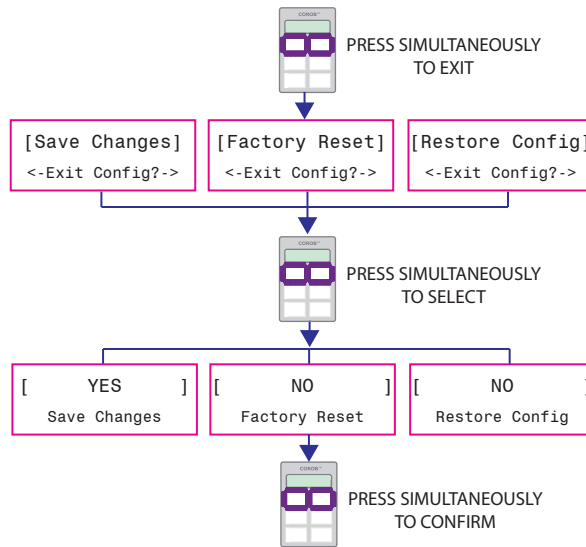
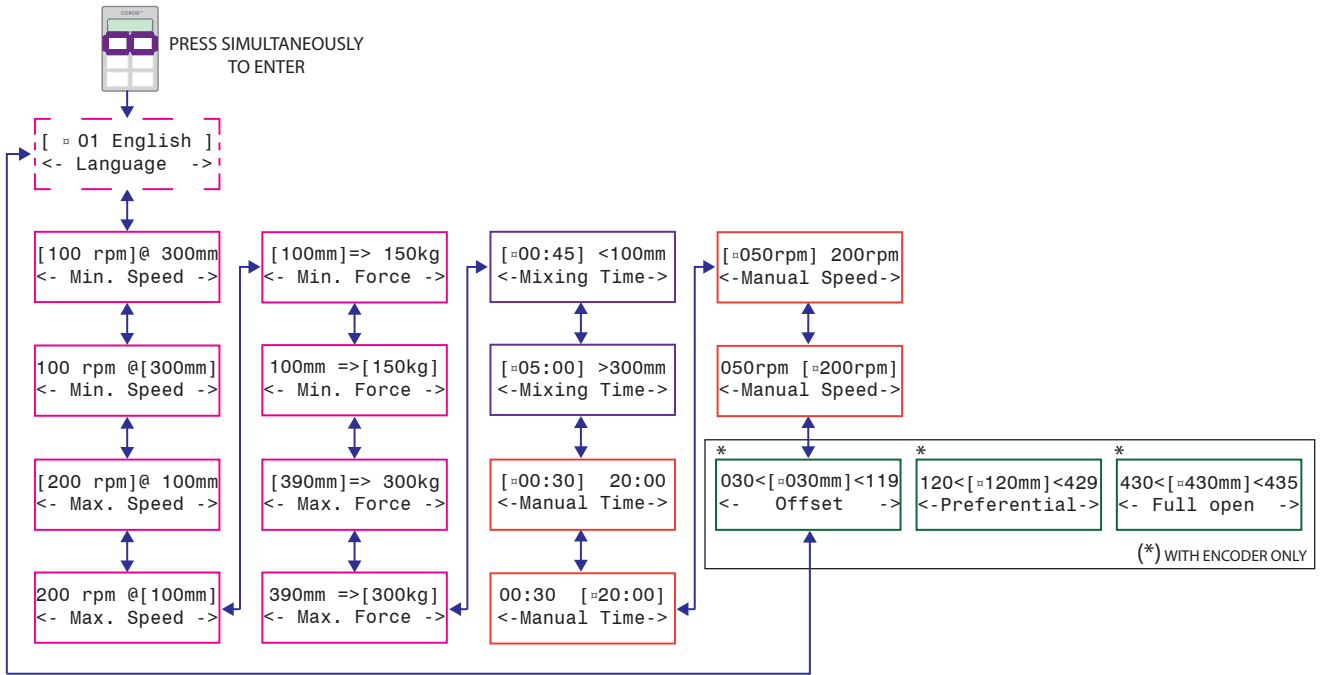
Language of display messages	chapter 5.2.4
Mixing Speed Limits in automatic mode	chapter 5.2.8
Mixing Time Limits in automatic mode	chapter 5.2.9
Clamping force adjustment	chapter 5.2.10
Mixing Speed Limits in manual mode	chapter 5.2.11
Mixing Time Limits in manual mode	chapter 5.2.12
Partial plate opening [only when machine is equipped with Encoder]	chapter 5.2.13

Furthermore it is also possible to:

- Restore machine configuration (chapter 5.2.14)
- Reset machine to factory configuration (chapter 5.2.15)

5.2.1 Parameter grid

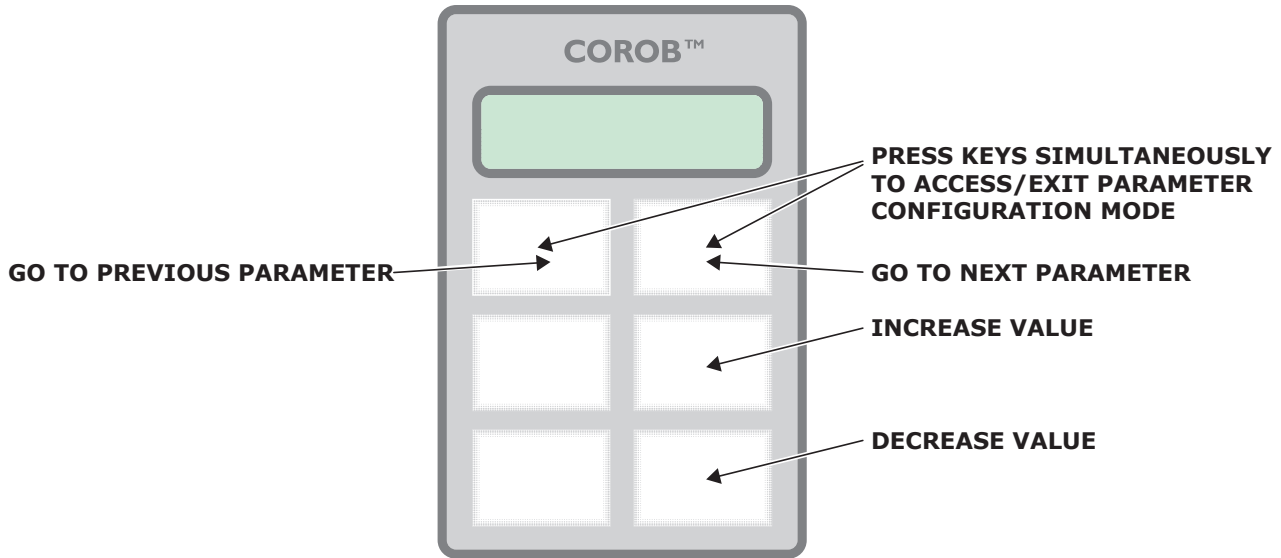
The following scheme shows an example of the parameter grid that can be configured. Values may change based on machine configuration and also some parameters may not be configured, but depend on machine configuration.



5.2.2 Control panel keys

The control panel keyboard can be fully configured, this means that function keys indicated in chapter 5.1 may not be positioned in the same place and may change based on customer's personalization.

There is however a fixed physical position for the keys used in parameter configuration mode.



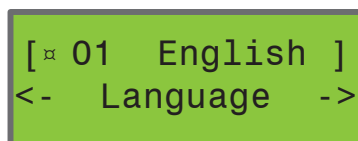
The configuration procedure works on a copy of the mixer configuration which is stored in the board memory; the procedure can be cancelled at any time or accepted at the end of the procedure, to make it final and to have it saved in the board memory.

5.2.3 Entering parameter edit mode

1. Turn OFF the machine, using the main switch at the back.
2. Press the emergency stop button.
3. Turn ON the machine, using the main switch at the back. The display scrolls a set of machine information.
4. Press and hold down the two upper keys until you read the message "Release the keys".
5. Release the upper keys: the display will show the first parameter that can be configured, that is to say, Language.

5.2.4 Language

Machine firmware flash memory includes a number of translation languages for display messages and alarms, each identified with a number code (01, 02, etc.). 01 English is the default language.



Also using the CorobMIX software, it is possible to send and receive display messages files (View menu > Machine display messages) The code 00 indicates a custom language that has been downloaded using CorobMIX.

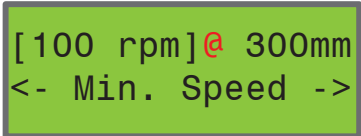
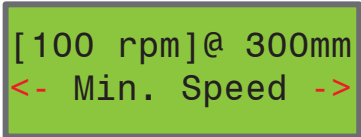

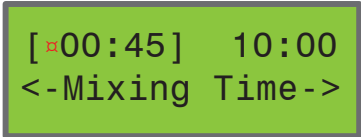
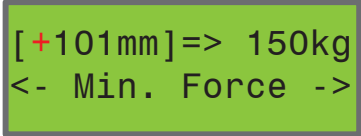
Language change via the control keyboard has immediate effect and does not need machine re-initialization. Only when you do not confirm parameter change at the end of the configuration procedure, the default language is restored.

5.2.5 Editing parameters

There are no time limitations as regards duration of the parameter configuration procedure.

The configuration can be executed in the desired language, selected from among those available at the beginning of the procedure.

Use the two upper keys to scroll through the parameters.

<p>The first line of the display shows the parameter value. Where two parameters are present in the first line, it means they are a couple of values, connected by the @ symbol. The active parameter is included in square brackets (for example: [100 rpm]).</p> <p>The second line of the display shows the parameter name, included in the symbols <- and ->.</p> <p>To select the parameter use the GO TO PREVIOUS and GO TO NEXT upper keys.</p> <p>To change parameter value use the the INCREASE (+) and DECREASE (-) keys.</p> <p>For some values, the value may be incremented or decremented by a certain quantity and not by single values.</p> <p>Changing the parameter value has immediate effect and there is no need for further confirmation. The change will be saved as final only at the end of the procedure (see below).</p>	<p>Example:</p>  
<p>If there is a default for the parameter selected, this is highlighted by the symbol  before the value.</p> <p>If the value set is higher or lower than the default, symbols + and - appear next to the value.</p>	<p>Example:</p>  

5.2.6 Exit without saving



TO QUIT EDIT PROCEDURE WITHOUT SAVING CHANGES MADE:

- Release the emergency stop button. The message "CONFIGURATION NOT SAVED" appears.
- or
- Turn OFF the machine. When started again, the original parameters will be reloaded.

5.2.7 Save & Exit



TO QUIT EDIT PROCEDURE AND SAVE CHANGES MADE:

1. Press and hold down the two upper keys. The message "Exit Config?" appears.
2. Choose "Save Changes".
3. Press and hold down the two upper keys to select.
4. The message "YES Save Changes" appears.
5. Press and hold down the two upper keys to confirm.

The message "WRITING... OK" appears to indicate that the parameters are being written in the board memory.

At the end of the procedure, the machine will execute a RESTART MACHINE process. This is a board hardware reset process, where the machine is turned automatically OFF and back ON in a fast sequence.

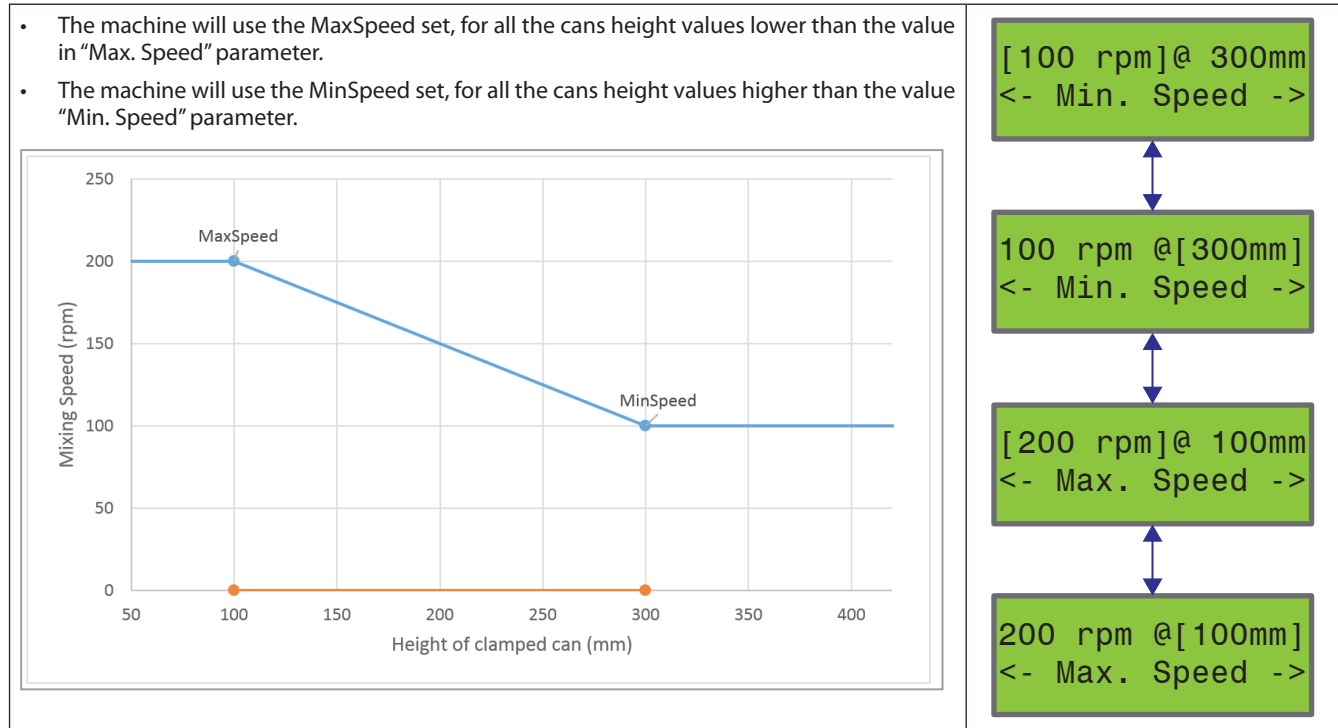
Bring the machine back to normal working conditions by releasing the emergency button.

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5.2.8 Mixing speed (AUTO)

PARAMETERS TO SET MINIMUM AND MAXIMUM SPEED VALUES FOR AUTO MODE

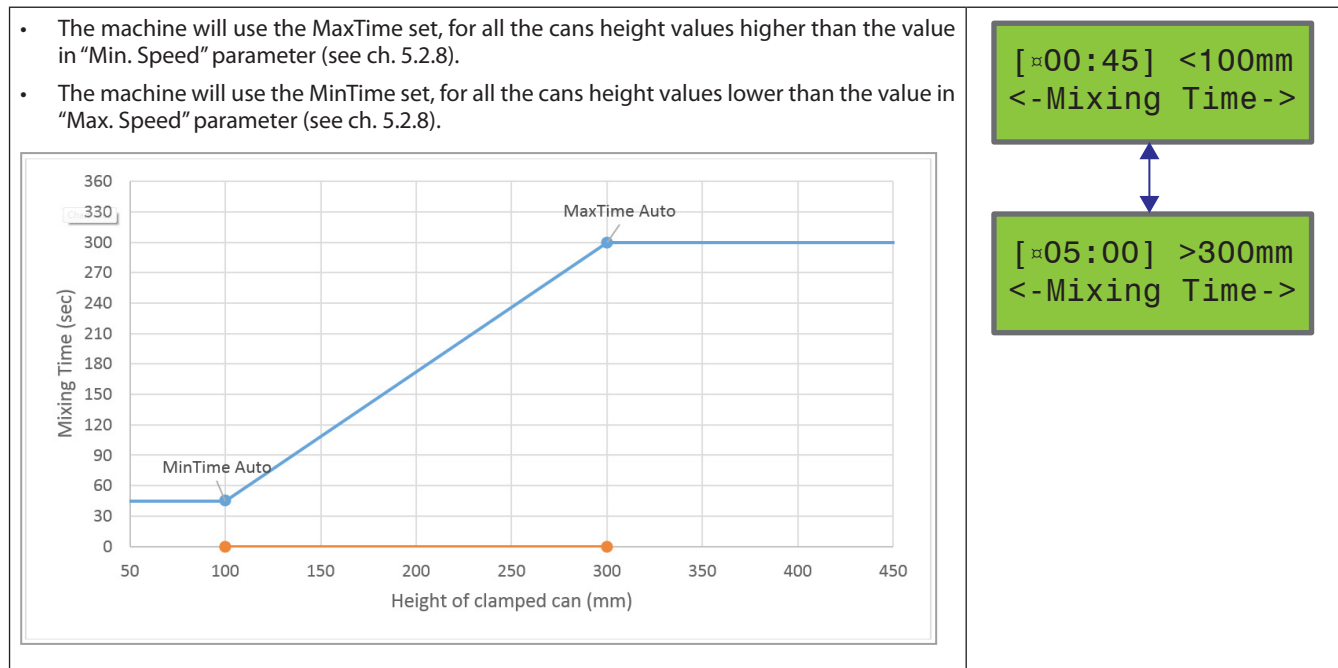
During the cycles that require automatic calculation of mixing speed based on can height, the machine uses the relation of the following chart.



5.2.9 Mixing time (AUTO)

PARAMETERS TO SET MINIMUM AND MAXIMUM MIXING TIME VALUES FOR AUTO MODE

During the cycles that require automatic calculation of mixing time based on can height, the machine uses the relation of the following chart.

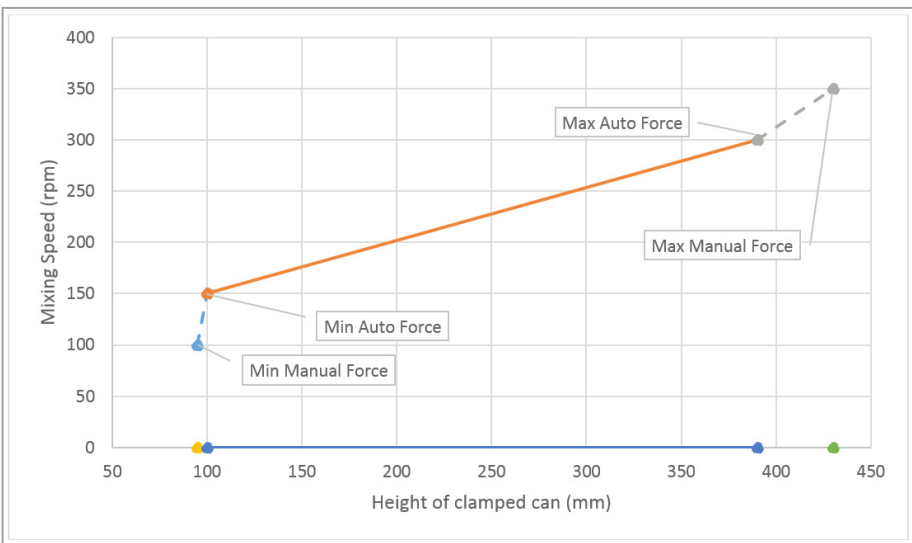


5.2.10 Clamping force adjustment (AUTO)

PARAMETERS TO SET MINIMUM AND MAXIMUM CLAMPING FORCE VALUES FOR AUTO MODE

During the cycles that require automatic calculation of clamping force based on can height, the machine uses the relation of the following chart.

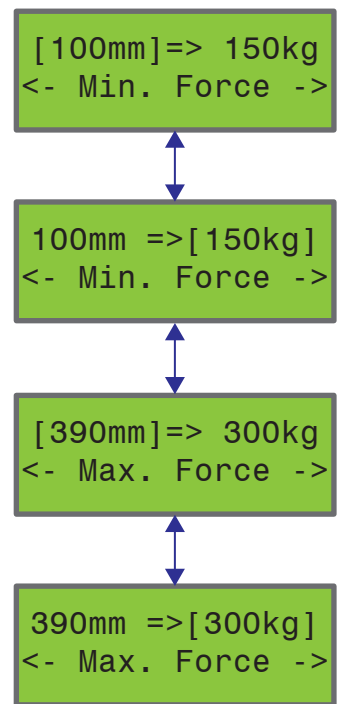
- The machine will use a certain clamping speed so as to apply the MinForce, if the can height value is equal to the value in "Min. Force" parameter.
- The machine will use another clamping speed so as to apply the MaxForce, if the can height value is equal to the value in "Max. Force" parameter.
- For intermediate heights, a force included between MinForce and MaxForce will be used, proportioned to the can height.
- For heights greater than MaxForce, the value defined with CorobMIX as upper limit will be taken into account.
- For heights smaller than MinForce, the value defined with CorobMIX as lower limit will be taken into account.
- To help configuration of the clamping force value, the force is recalculated automatically while changing the height, until the min and max CorobMIX limits are reached.



NOTE:

Min Manual Force and **Max Manual Force** define the limit of the clamping force in manual mode.

Min Auto Force and **Max Auto Force** are used when force is defined by can height.



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5.2.11 Mixing speed limits (MANUAL)

PARAMETERS TO SET MINIMUM AND MAXIMUM SPEED VALUES FOR MANUAL MODE

If the **MODE** key is present and the MANUAL MIXING MODE is configured, it is possible to set the mixing speed limits that can be programmed manually using the **MODE**, **INCREMENT (+)** and **DECREMENT (-)** keys on the control panel.

This means that the speed in MANUAL mode can be set to a range (MinSpeed Manual - MaxSpeed manual) different than the one set for the AUTO operating mode (it uses "Min. Speed" and "Max. Speed" parameters, see above).

[\square 050rpm] 200rpm
<- Manual Speed ->



050rpm [\square 200rpm]
<- Manual Speed ->

5.2.12 Mixing time limits (MANUAL)

PARAMETERS TO SET MINIMUM AND MAXIMUM MIXING TIME VALUES FOR MANUAL MODE

Even if the MODE key is not present and the MANUAL MIXING MODE is not configured, it is always possible to manually change the duration of pre-set cycles or AUTO cycles, using the **INCREMENT (+)** and **DECREMENT (-)** keys on the control panel.

In this case, the time limits when manually changing duration can have a different range than the one set for the AUTO mode, and are totally independent from can height.

[\square 00:30] 20:00
<- Manual Time ->



00:30 [\square 20:00]
<- Manual Time ->

5.2.13 Clamping plate re-opening

*
030 < [\square 030mm] < 119
<- Offset ->

*
120 < [\square 120mm] < 429
<- Preferential ->

*
430 < [\square 430mm] < 435
<- Full open ->

(*) WITH ENCODER ONLY



These parameters can only be configured when the ENCODER is present on the machine (dipswitch 1 = OFF).

They define 3 plates re-opening modes after the mixing cycle has terminated:

1. **Partial** re-opening of a specified value (**Offset**) (typically ranging from 30 to 119 mm) with respect to the height of the can clamped.
2. **Partial** re-opening to a **preferential** plates height (the opening distance between plates is the one specified, typically ranging from 120 to 429 mm).
3. **Full** re-opening, meaning that plates open at their maximum height (typically ranging from 430 to 435 mm) [value set in: CorobMIX | Machine operating data | Encoder section | Value *Maximum height (mm)*]

If partial re-opening is configured, the machine after a set number of cycles, executes a full plate opening and then a partial re-opening again: this allows to search for the encoder zero value by reading the plate max open sensor, and correct any faults in reading the encoder values.

When plates are opened partially, the operator can also open them fully by simply pressing the STOP or START/STOP key.

When a cycle is stopped with one of the group of cycles keys, the configured partial re-opening is done (this can be useful in a machine configuration where you want to execute partial re-opening, but no dedicated "plate open" key is present).

5.2.14 Restore configuration

This option restores the last **customer configuration** that was loaded at machine factory-production. This configuration was loaded with CorobMIX program and with dipswitch 6 = ON on MINIEMIX board.

Select this option in case you have made local changes to parameters and you wish to get back to the original configuration. Note that all local changes will be lost.

5.2.15 Factory reset

This option restores the **default machine configuration** that was loaded at machine factory-production. This configuration was loaded with CorobMIX program and with dipswitch 7 = ON on MINIEMIX board and can in any time be recovered to check basic machine functions if the customer configuration is lost.

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HARDWARE ERRORS

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6 HARDWARE ERRORS

6.1 Introduction

The COROB™ CLEVERmix 700 MINIEMIX Electronics manages the display of messages relating to actions performed by the machine during the mixing cycle, as well as alarms that refer to machine error conditions or faults.

Messages and error codes are displayed on the 16-chrs LCD display.

The CorobMIX software as well allows monitoring of the alarms and status of the machine. Refer to the CorobMIX user's manual to know how to connect to the machine and display machine alarms.

6.2 Errors and warning messages

WHEN AN ERROR MESSAGE APPEARS, AFTER SOLVING THE FAULT, YOU NEED TO RESET THE MACHINE AND CLEAR THE ERROR AS FOLLOWS:

1. **PRESS AND RELEASE THE EMERGENCY STOP BUTTON.**
2. **PRESS THE START  KEY TO BRING MACHINE IN THE INITIAL WORKING CONDITIONS.**




WARNING

BEFORE PRESSING THE START BUTTON AND REPOSITION THE MECHANICS, IT IS SUGGESTED TO OPEN THE DOOR (IF POSSIBLE) AND CHECK THE CONDITION OF THE PAINT CAN: IF IT IS NOT PROPERLY CLAMPED, REMOVE IT BEFORE CARRYING OUT REPOSITIONING.

PAY SPECIAL CARE WHEN TAKING ACTIONS WITH THE MACHINE ON AND SAFETY GUARDS REMOVED.

Errors 0001 - 0004 - 0008 - 0018 - 0019 are warning messages and do not require machine reset.

CODE	MESSAGE ON DISPLAY	EXPLANATION	POSSIBLE SOLUTION
0000	EMERGENCY	EMERGENCY MESSAGE The red emergency stop button has been pressed.	<ol style="list-style-type: none"> 1. Release the emergency stop button. 2. Press START key to bring machine in the initial conditions.
0001	CLOSE THE DOOR	WARNING MESSAGE The door is open. The alarm is displayed every time you try to start a mixing cycle.	<ol style="list-style-type: none"> 1. Close the door.
0004	PUSH PLATE IN	WARNING MESSAGE The bottom clamping plate is pulled out or the sensor connected to J6 detecting the insertion of the bottom plate is not obscured.	<ol style="list-style-type: none"> 1. Push the bottom clamping plate back into its locking position.
0018	CAN TOO BIG	WARNING MESSAGE <ul style="list-style-type: none"> • The can is too big or <ul style="list-style-type: none"> • Fault on the clamping control sensors (J6A is activated too soon) <p><i>FOLLOWING THIS ERROR CONDITION, THE MACHINE AUTOMATICALLY OPENS THE CLAMPING PLATES.</i></p>	<ol style="list-style-type: none"> 1. Check you have loaded a suitable can. 2. Clean the clamping screws. 3. Check J6A sensor cable and inverter output.

CODE	MESSAGE ON DISPLAY	EXPLANATION	POSSIBLE SOLUTION
0019	CAN TOO SMALL	<p>WARNING MESSAGE</p> <ul style="list-style-type: none"> The can is too small or absent <p>or</p> <ul style="list-style-type: none"> Fault on the clamping motor/plate position sensors <p><i>FOLLOWING THIS ERROR CONDITION, THE MACHINE AUTOMATICALLY OPENS THE CLAMPING PLATES.</i></p>	<ol style="list-style-type: none"> Check you have loaded a suitable can (check that the height of the can you have loaded is not smaller than the minimum height allowed). Check you have loaded a can. Check J6A sensor cable and inverter output.
0008	INIT. CONDITION	<p>WARNING MESSAGE</p> <p>The machine is not in the correct starting condition for correct operation, that is to say:</p> <ul style="list-style-type: none"> mixing mechanics in vertical position repositioning pin inserted plates fully open <p>This happens commonly after an emergency stop or a power outage.</p>	<ol style="list-style-type: none"> The mixing mechanics needs to be repositioned: press the start  key.
0005	DECLAMPING FAULT	<p>Error in plate opening movement.</p> <p>Sensors J6 and J6A are wrongly obscured during the opening movement.</p>	<ol style="list-style-type: none"> Check correct adjustment or operation of the sensors. Check correct operation of the clamping motor. Check contactor selector J13. Check inverter status or errors during motor operation.
0006	CLAMPING FAULT	<p>Error in plate closing movement.</p> <ul style="list-style-type: none"> sensor J6 is not free at the beginning of the clamping movement <p>or</p> <ul style="list-style-type: none"> sensor J6A has not been activated within the maximum clamping time expected 	<ol style="list-style-type: none"> Check correct adjustment or operation of the sensors. Check correct operation of the clamping motor. Check inverter status or errors during motor operation.
0009	REP.TIME ELAPSED	<p>The machine has not correctly terminated the mixing mechanics repositioning process (timeout has elapsed).</p>	<ol style="list-style-type: none"> Check the condition of the repositioning pin mechanics and motor. Check inverter settings.
0011	PIN MOTOR ERROR	<p>The repositioning pin motor is blocked or sensors are faulty.</p>	<ol style="list-style-type: none"> Check correct adjustment or operation of the repositioning pin sensors. Check connection of J7 and J9. Check the power supply cable of the repositioning pin motor and connector J14. Check if DS5, DS6, DS7 LEDs are on. Replace repositioning pin motor.
0012	CLAMP MOTOR ERR	<p>Generic alarm on the clamping motor.</p>	<ol style="list-style-type: none"> Check correct adjustment or operation of the sensor. Check correct operation of the clamping motor. Check contactor selector J13. Check inverter status or errors during motor operation.

CODE	MESSAGE ON DISPLAY	EXPLANATION	POSSIBLE SOLUTION
0015	POWER. OUT/RANGE	The input voltage to the electronic board is out of range.	<ol style="list-style-type: none"> 1. Check J1 connection. 2. Check for the correct input voltage coming from the power supply unit (at least 20Vac or 22Vdc) (J1, pins 2-3).
0016	ALR16	During machine operation, input signals received are not consistent (e.g. J7 and J9 signals are both detected)	Check sensors.
0017	ELECTRONIC FAULT	Generic alarm on the electronic board, at machine power on.	Replace the electronic board.
0020	ROTATION TIMEOUT	During mechanics rotation, sensor J8 (mechanics zero position sensor) did not activate (timeout has elapsed).	<ol style="list-style-type: none"> 1. Check if LD7 and LD8 are ON while motor runs. 2. Check connection of J5 and J8. 3. Check if there is some mechanical reason that slows down rotation. 4. Check inverter status or errors during motor operation.
0021	CONFIG ERROR	Machine configuration generic error.	<ol style="list-style-type: none"> 1. Check correct configuration of the machine with CorobMIX.
0024	REPOSIT. PIN OUT	<p>The alarm is displayed at cycle start only.</p> <p>The repositioning pin is not inserted correctly in its housing.</p> <p>The pin could be worn or the sensors detecting pin position not well adjusted or broken.</p>	<ol style="list-style-type: none"> 1. Check the repositioning pin sensors (J7 active - J9 not active). 2. Check if the pin moves smoothly and makes a full stroke; if necessary, lubricate.
0025	CAN NOT CENTERED	The can to be mixed is not correctly positioned in the center of the bottom clamping plate.	<ol style="list-style-type: none"> 1. Place the can in the center of the bottom clamping plate. 2. Check clamping mechanics vertical position sensor (J8).
0026	DOOR MOV. FAULT	The door closed sensor (J4) detects the door open during mixing cycle.	<ol style="list-style-type: none"> 1. Check J4 sensor.

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MAINTENANCE

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7 MAINTENANCE

7.1 Introduction

This chapter contains information for the extraordinary and preventive maintenance and the replacement of the main machine components, as well as the fundamental criteria to operate safely.



WARNING

**MOST INTERVENTIONS MUST BE MADE WITH MACHINE OFF AND DISCONNECTED FROM POWER MAINS.
SHOULD SOME INTERVENTIONS BE MADE WITH THE MACHINE POWERED AND/OR SAFETY GUARDS REMOVED,
PAY SPECIAL CARE AND ATTENTION.**

ALWAYS PUT YOUR SAFETY FIRST.

NEVER USE A SOLVENT-BASED CLEANING PRODUCT OR ABRASIVE POWDER.

DO NOT USE WATER JETS OR STEAM TO CLEAN THE INTERIOR OF THE MACHINE.

Personal Protective Equipment



7.2 Technical intervention check-list

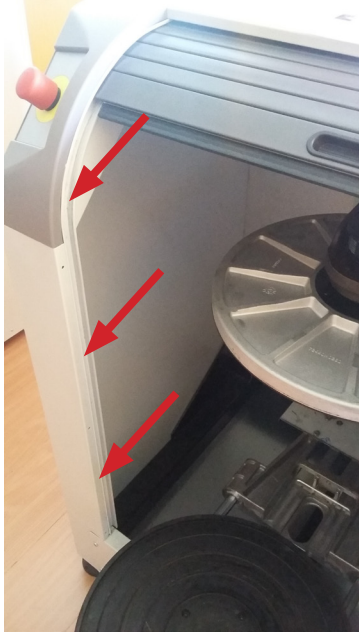
Following is a suggested check list, for inspections and lubrications to carry out during machine service intervention.

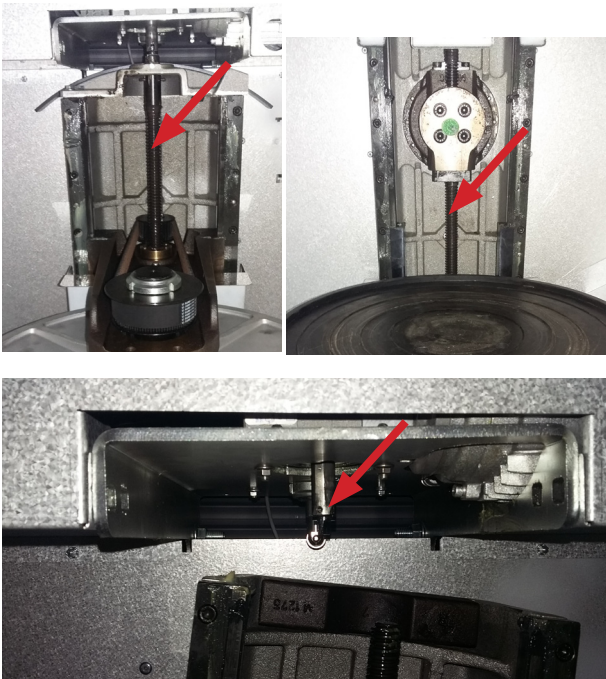
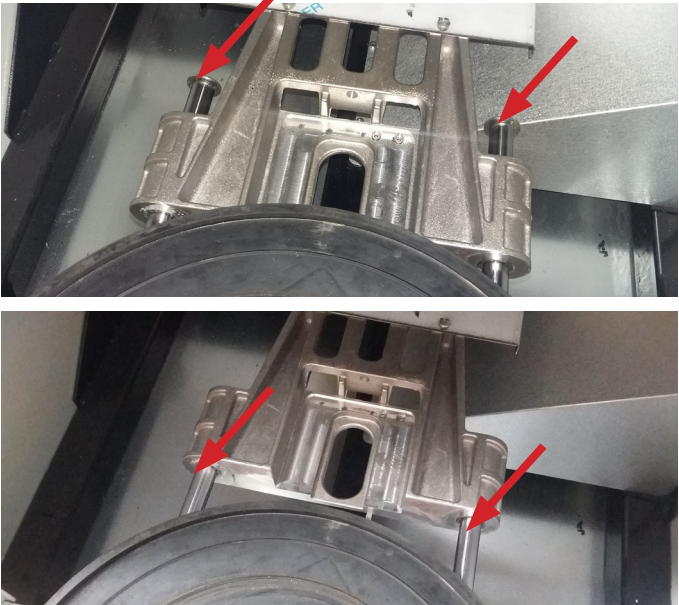
- ✓ Machine general inspection and cleaning:
 - NEVER USE A SOLVENT-BASED CLEANING PRODUCT OR ABRASIVE POWDER.
 - DO NOT USE WATER JETS OR STEAM TO CLEAN THE INTERIOR OF THE MACHINE.
 - We recommend a general cleaning of coverings, panels and control devices of the machine, to remove dirt, dust and any stains, using a soft and dry cloth, or slightly moistened with a mild cleansing solution.
 - In the event of paint leaks inside the machine, clean immediately using a moistened cloth or a spatula.
 - Waste liquids are collected in the bottom plate and can be drained through the holes provided, by slightly tilting the machine.
- ✓ Clean and grease the guides of the shutter door (chapter 7.5)
- ✓ Check and clean the guides of the pull-out bottom plate (chapter 7.3)
- ✓ Clean and lubricate the upper and lower clamping screws (chapter 7.3)
- ✓ Lubricate the mixing mechanics stop pin and roller (chapter 7.3)
- ✓ Check correct tension of mixing motor drive belt (chapter 7.6.2)

7.3 Lubrication points

1	Door guides (both sides)	3	Clamping plate screws (upper and lower sections)
2	Clamping group reducer shaft	4	Pull-out bottom plate guides

Lubricant type suggested: OKS 422 - Universal Grease for Long-Life Lubrication (DIN 51 502: KPHC2R-40)

<p>1</p> 	<p>2</p> 
<p>Slide door multiple times to evenly spread the lubricant.</p>	


<p>3</p> 	<p>4</p> 
<p>Slide bottom clamping plate multiple times to evenly spread the lubricant.</p>	
<p>Carefully clean and grease the two clamping screws (upper and lower) from one end to the other, specially greasing the top and bottom parts of the screws. Carry out one or more mixing cycles to allow the clamping plates to close and then open so to evenly spread the lubricant.</p> <p>Start a mixing cycle and press the emergency button. Open the door and lubricate the roller.</p>	

7.4 Guards and panels disassembly

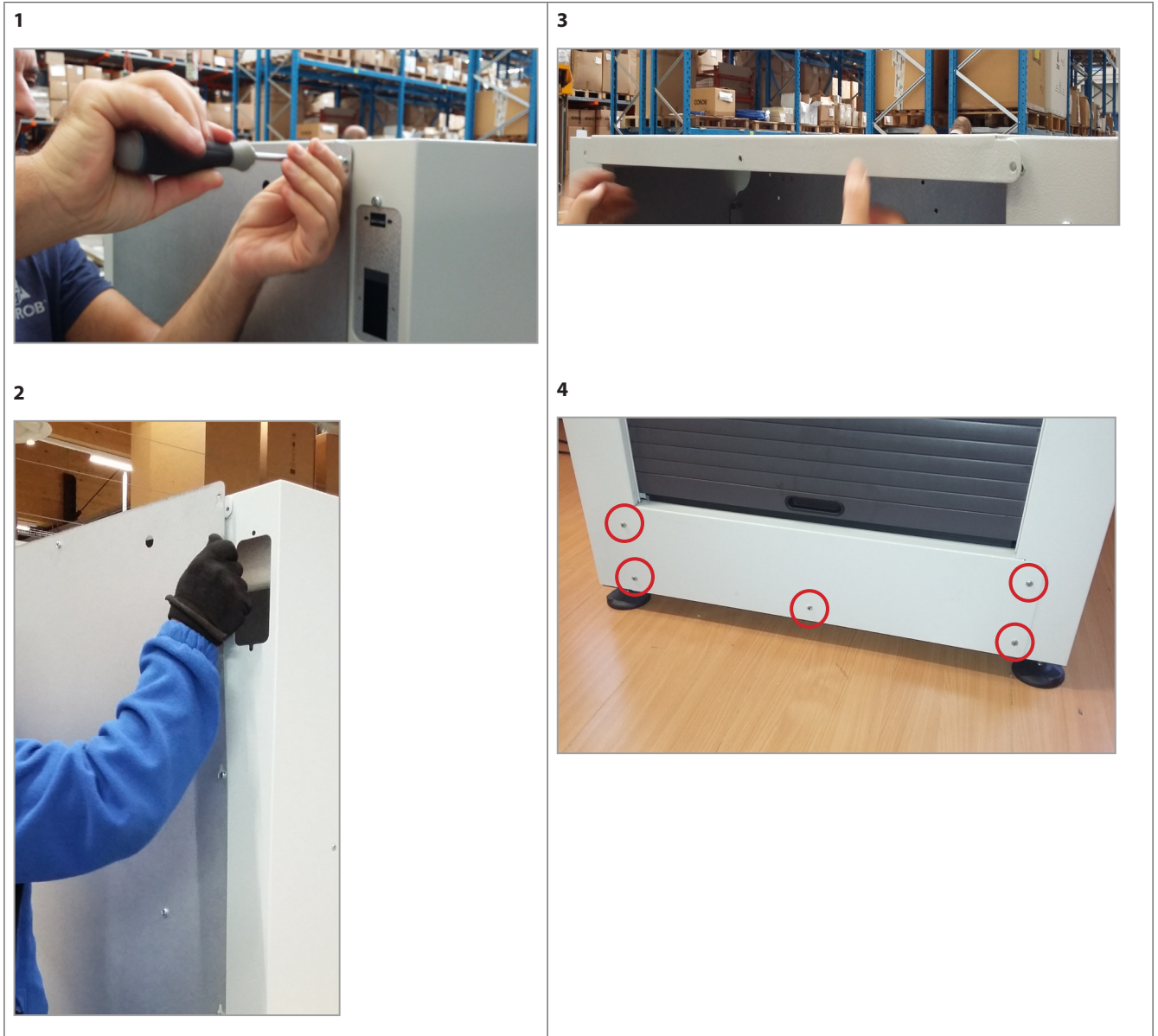
Tools



1. Remove the 2 x SCREWS M5x12 present on the sides of the upper side of the REAR PANEL.
2. Loosen the remaining 7 x SCREWS M5x12 (do not take them off) and remove the REAR PANEL.
3. Remove UPPER COVER.

 Do not remove the screws completely.

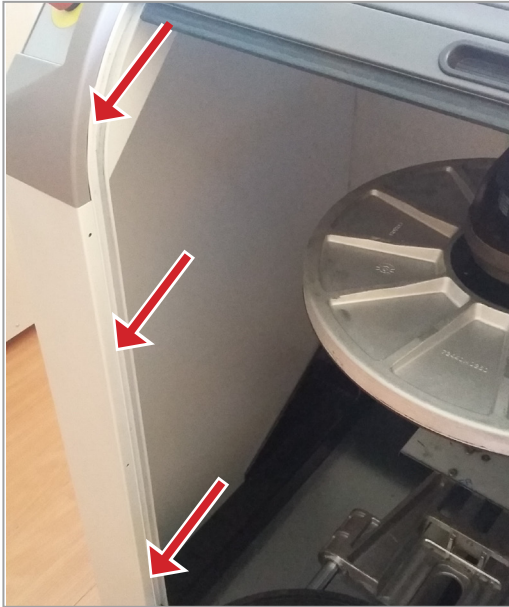
4. Remove the front bottom panel (5 screws).



7.5 Door

7.5.1 Cleaning and lubrication

1. Open the door, clean and lubricate the door sliding guides, left and right.
2. If necessary, remove the door (previous chapter) and clean/lubricate also the rear guides.
3. Open and close door multiple times to spread the lubricant until the door runs smoothly.



7.5.2 Disassembly and reassembly

1. Remove the front bottom panel (previous chapter).
2. Withdraw the shutter door from below.

To re-assemble the door, proceed in reverse order.



7.6 Mixing motor

Tools



7.6.1 Disassembly and replacement

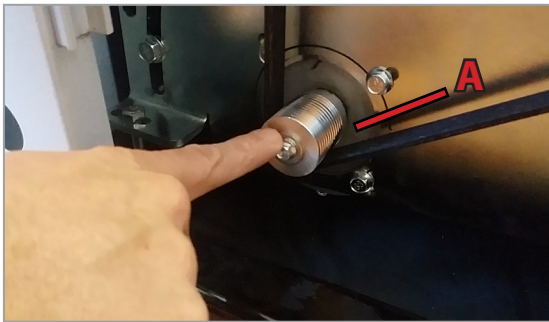


WARNING - DANGER

The machine is normally used in an intermittent working mode, meaning it usually works at 70% of its full capability, taking into account the paint can loading and unloading times. Life tests have also highlighted that there are no operating or reliability problems when the machine runs in continuous mode.

However, considering a possible max. environment working temperature of 40° C, IT IS REQUIRED TO WAIT FOR AT LEAST 30 MINUTES AFTER SHUTTING THE MACHINE OFF, BEFORE TAKING ACTIONS ON THE MIXING MOTOR.

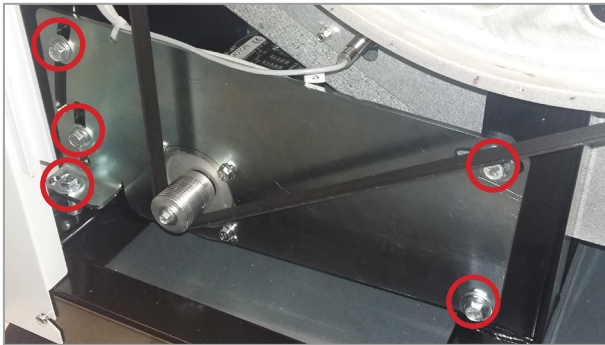
The motor is enclosed by a safety guard and cannot be directly reached in normal working conditions.



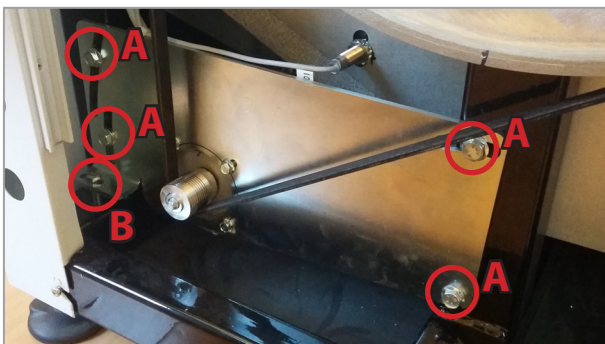
1. First of all, unscrew and remove motor pulley **A**.
2. Remove the drive belt (see nex chapter).
3. Remove the five screws of the motor plate and cut the plastic strap that holds cables together.
4. Take out the plate and the motor group.
5. Replace motor.
6. To reassemble, proceed in reverse order.



Remember to tighten the motor pulley at end of the procedure, only when the drive belt has been put back in position.



7.6.2 Belt replacement and tensioning

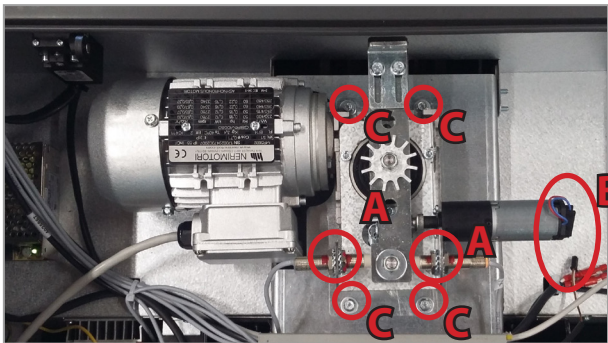
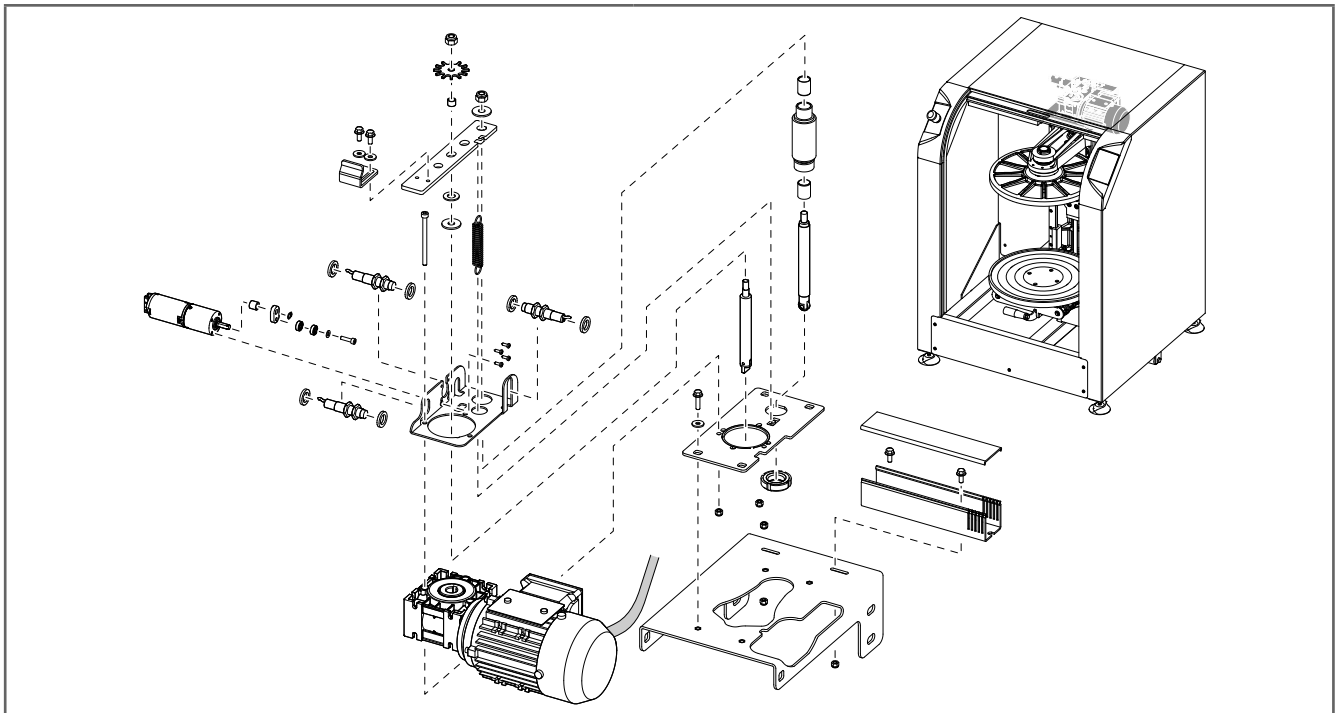


1. Loosen the four screws **A** that fasten the mixing motor plate.
2. Loosen screw **B** just as needed, until the drive belt is loosen and not in tension and can be removed.
3. Install new belt centrally on the pulley (leave 3 grooves on both sides of the belt).
4. Adjust belt tension, by tightening or loosing screw **B**.
5. When correct tension is reached, tighten the four screws **A**.

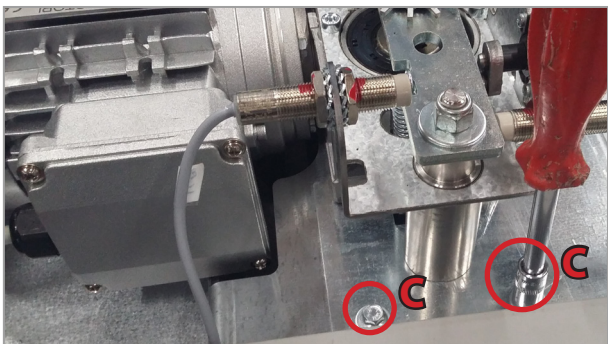
7.7 Clamping motor

Tools

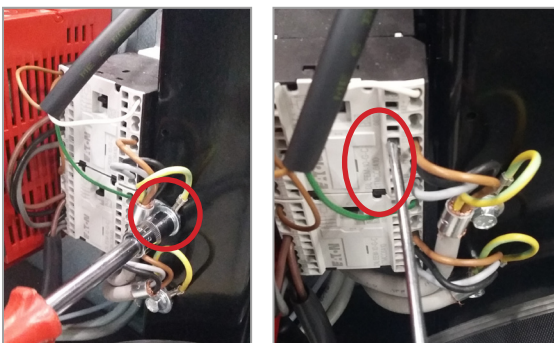
● Hex Head Key 8 mm



1. Disconnect sensors **A** and repositioning pin motor **B**.

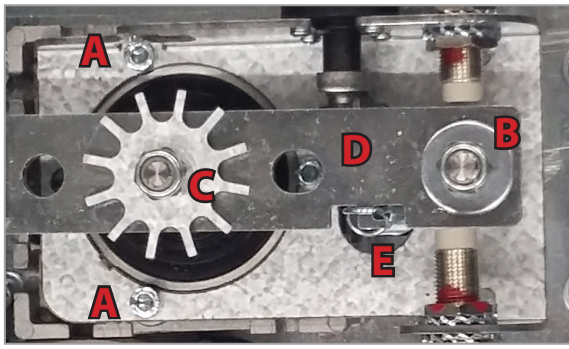


2. Remove the four screws **C** that hold the motor plate.

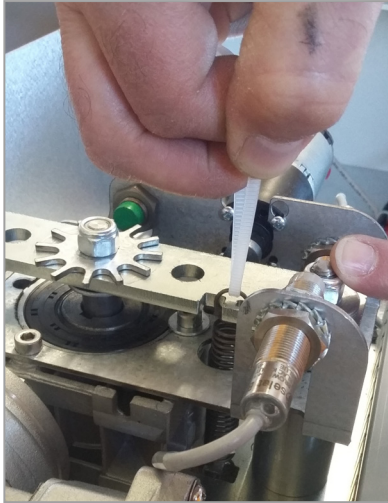


3. Disconnect only the wires from the contactor.

The clamping motor group is now free to be removed from the machine and put on a work bench.



4. Remove two screws **A**.
5. Remove shaft **B** and **C**.
6. Remove door lock lever **D** and the spring **E**.



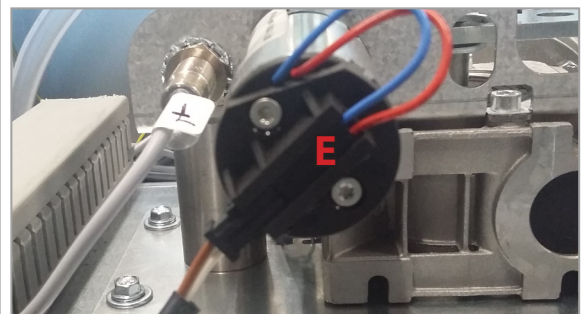
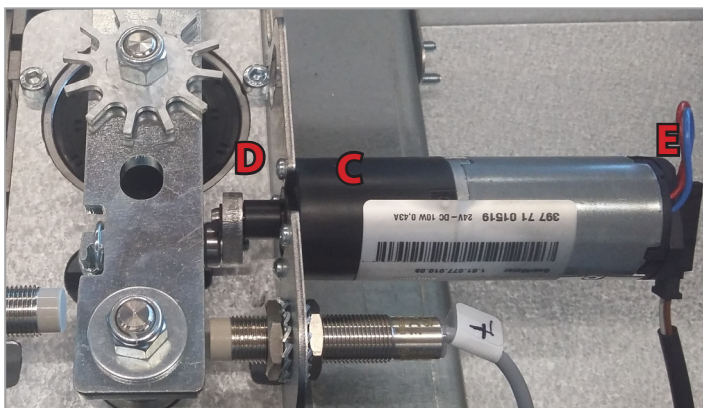
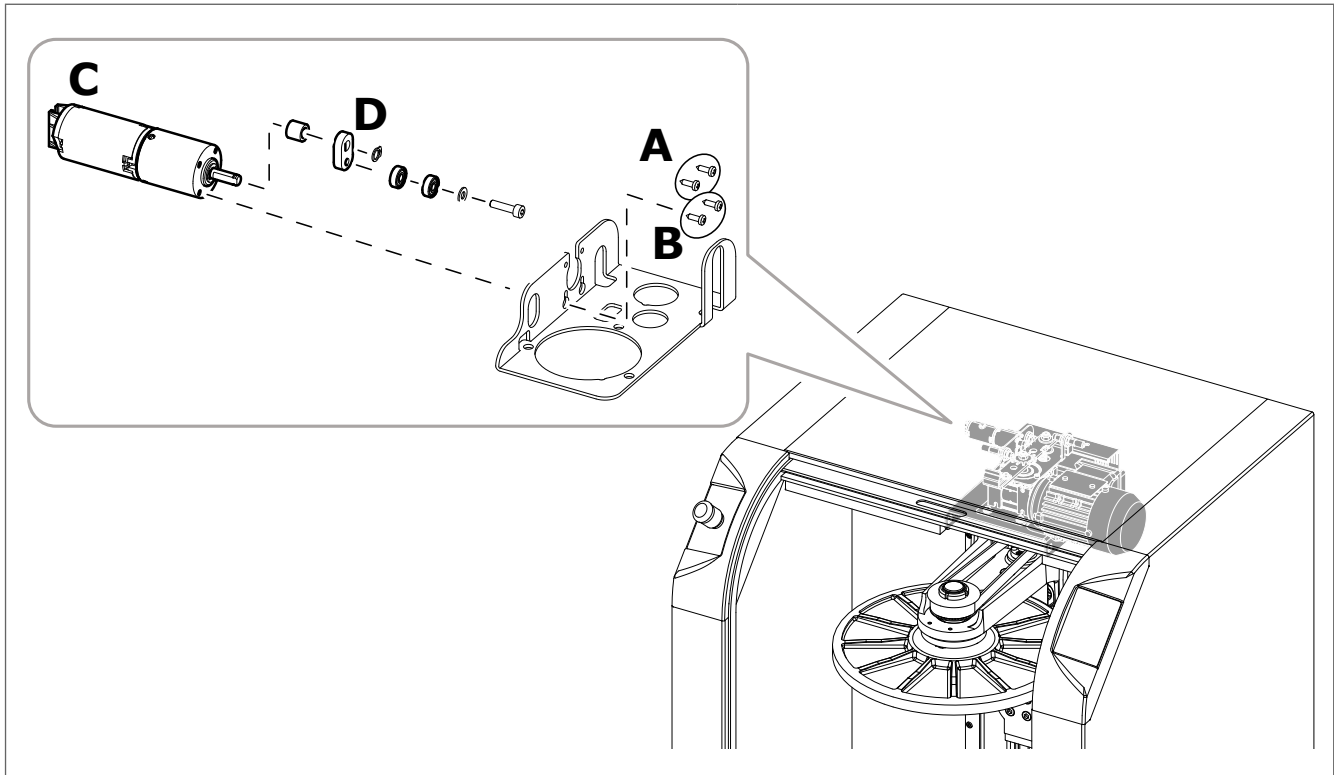
7. When reassembling the new clamping motor, use a plastic camp.

7.8 Repositioning pin motor

Tools



1. Unscrew the two upper screws **A**.
2. Loosen the two lower screws **B**.
3. Take off the motor **C** and cam **D** from its support.
4. Remove the two screws and take off the back cover **E**, with the wiring.
5. Install the new motor proceeding in reverse order. Pay special care to correctly mount the cam in the right vertical position.



7.9 Sensors

Tools

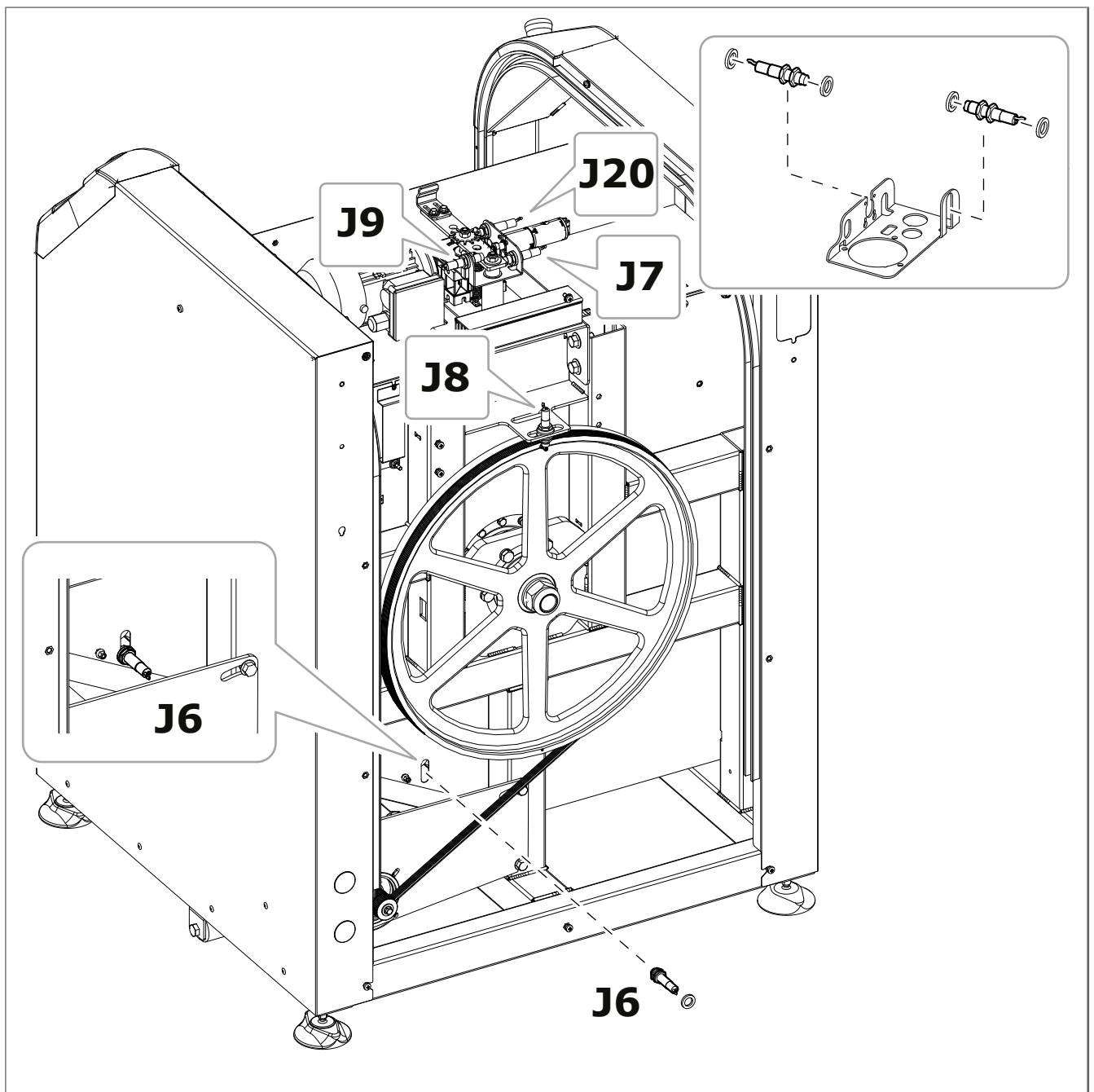


1. MAX OPEN PLATE AND BOTTOM PLATE "IN" SENSOR (**J6** on the board)
2. REPOSITIONING PIN "IN" SENSOR (**J7** on the board)
3. MECHANICS ZERO POSITION SENSOR (**J8** on the board)
4. REPOSITIONING PIN "OUT" SENSOR (**J9** on the board)
5. ENCODER SENSOR (**J20** on the board)

Cut the cable clips that fix the sensor cable and, using 2 wrenches, unscrew the sensor and take it off.

After replacement, remember to adjust the new sensor position (from reading reference: min. distance 1 mm - max. distance 3 mm).

The proximity sensor 3 must be centered with the head of the reading reference screw on the pulley (distance: 1 mm)

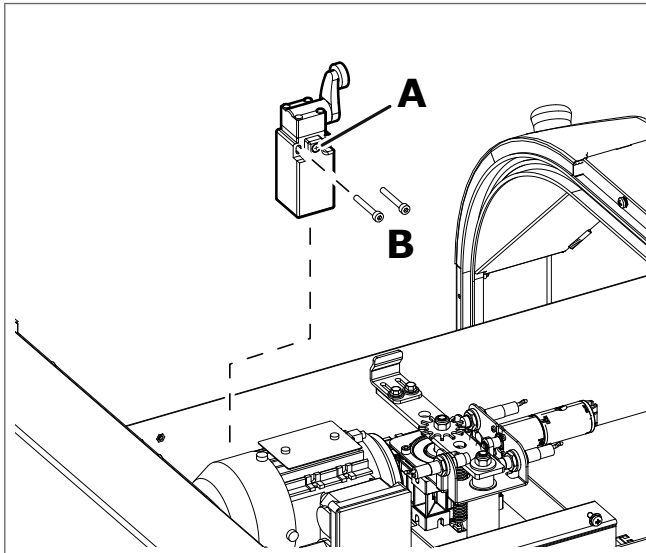


7.10 Door safety device

Tools

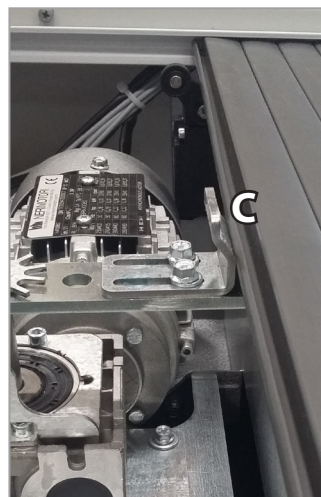
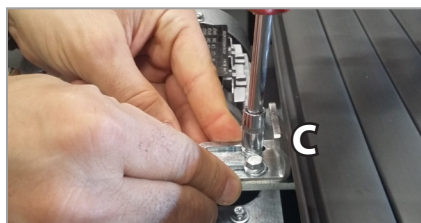
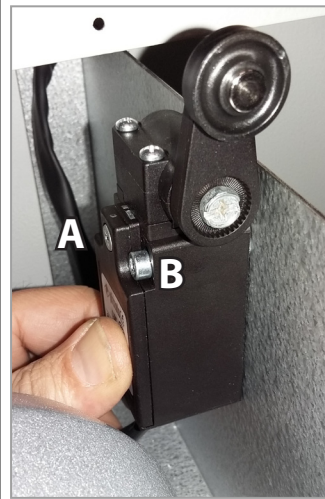
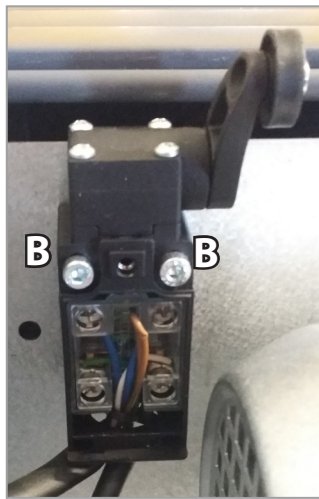
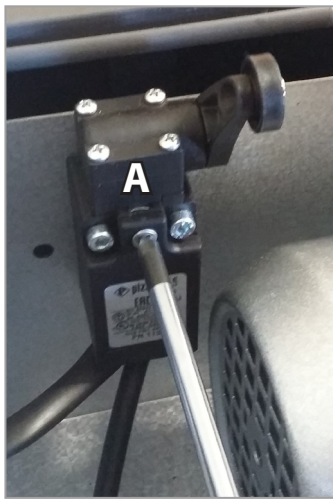


7.10.1 Disassembly / Assembly / Replacement



1. Remove the central screw **A** (cross screw) to open cover.
2. Disconnect cables.
3. Remove the two side screws **B** (hex screws) to take off the part.
4. Take the the new door safety device limit switch and connect the cables.
5. Fasten back with the two side screws **B**. if necessary adjust with the side screw until correct position is reached (see last picture).

If it is necessary to adjust the door lock lever, proceed as shown in figure below (**C**) by loosening the screws and sliding back and forth the lever end part.



7.11 Inverter

Tools



7.11.1 Disassembly / Assembly / Replacement

1. With a screwdriver, remove cover **A**.
2. Open cover **B**.
3. Disconnect cables **1 - 2 - 3**.
4. Remove screw **C**, and take off the inverter.
5. Install the new inverter.
6. Reconnect all cables and ground connections as originally.
7. Proceed with inverter programming with machine-specific settings (contact COROB SPA Italy).

yellow = ground

relay-cable (black - grey - brown)

BLUE	/	PINK		WHITE	BROWN		
FLA	FLB	FLC		CC	VI	P5	FM
OUT	IO	CC	F	R	S1	S1	P24
/	/	/	GREY	YELLOW	/	/	GREEN

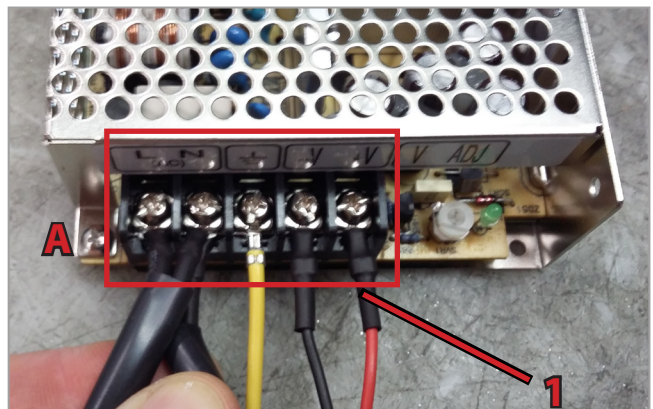
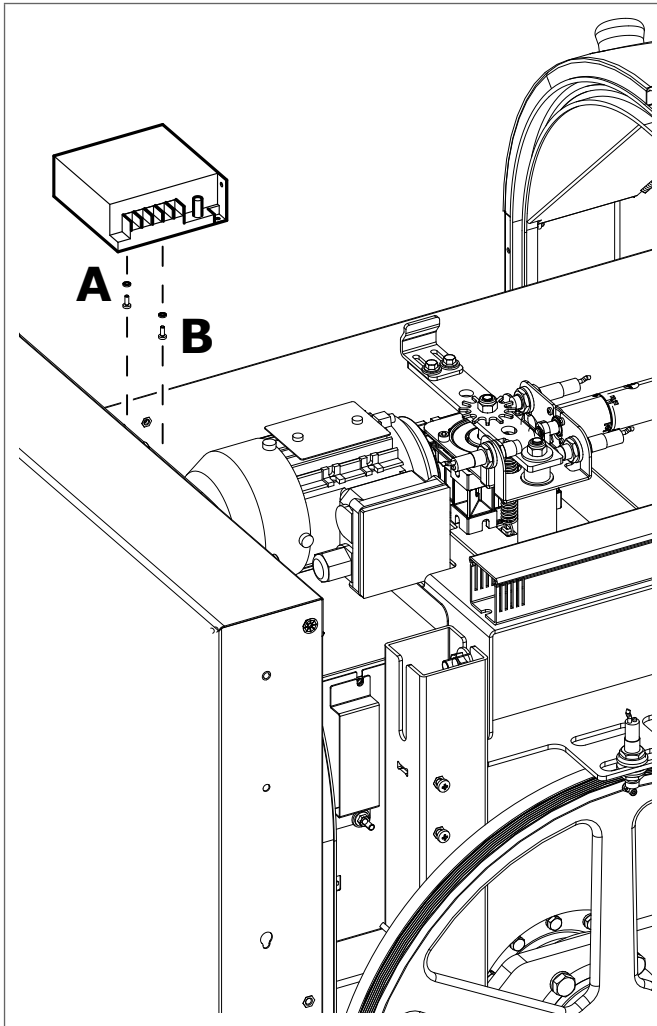
7.12 Power Supply Unit

Tools



7.12.1 Disassembly / Assembly / Replacement

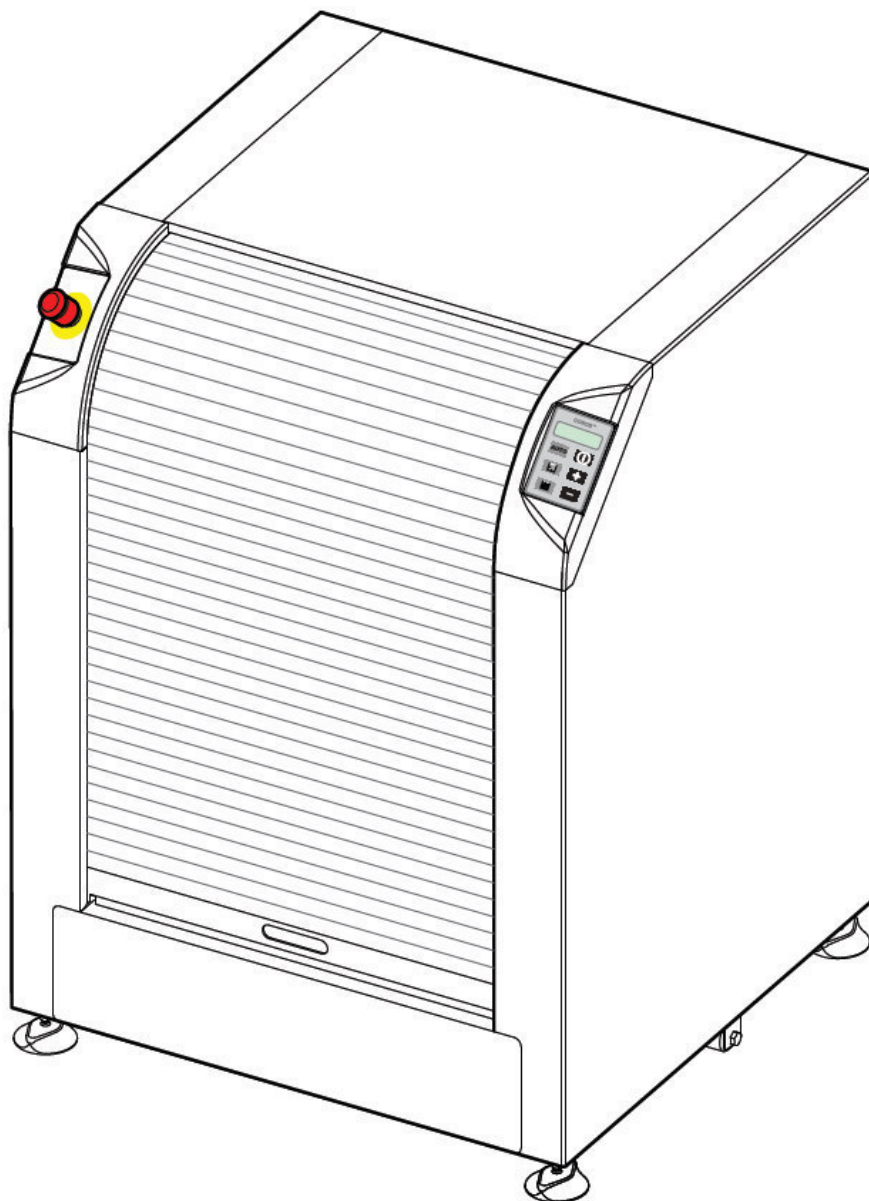
1. Disconnect power supply unit cables **1**.
2. Remove screw **A**, and the bottom screw **B** that hold the power supply unit to the plate.
3. Install the new power supply unit.
4. Reconnect all cables as originally.



TECHNICAL FILE

CLEVERmix 700

Gyroscopic mixer





GENERAL INFORMATION

Electrical data

Document number	10000018386AA
Revision date	May 2017
Corob code	403xxxx
Machine type	CLEVERmix 700 Gyroscopic mixer
Power supply	Single-phase 200 - 240 V~ ± 10% Single-phase 100 - 127 V~ ± 10% (optional*)
Frequency	50/60 Hz
Fuses	F 10 A
Maximum power absorbed	1050 W

* For 100/110/127Vac single-phase input voltage, you need to set the dedicated input of the autotransformer (1000VA).

ELECTRICAL TECHNICAL FILE

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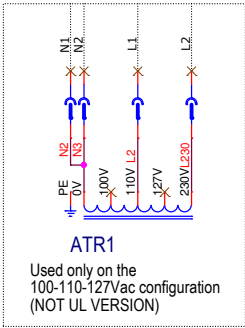
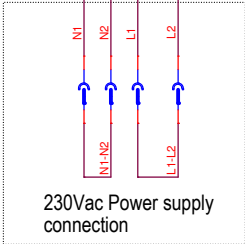
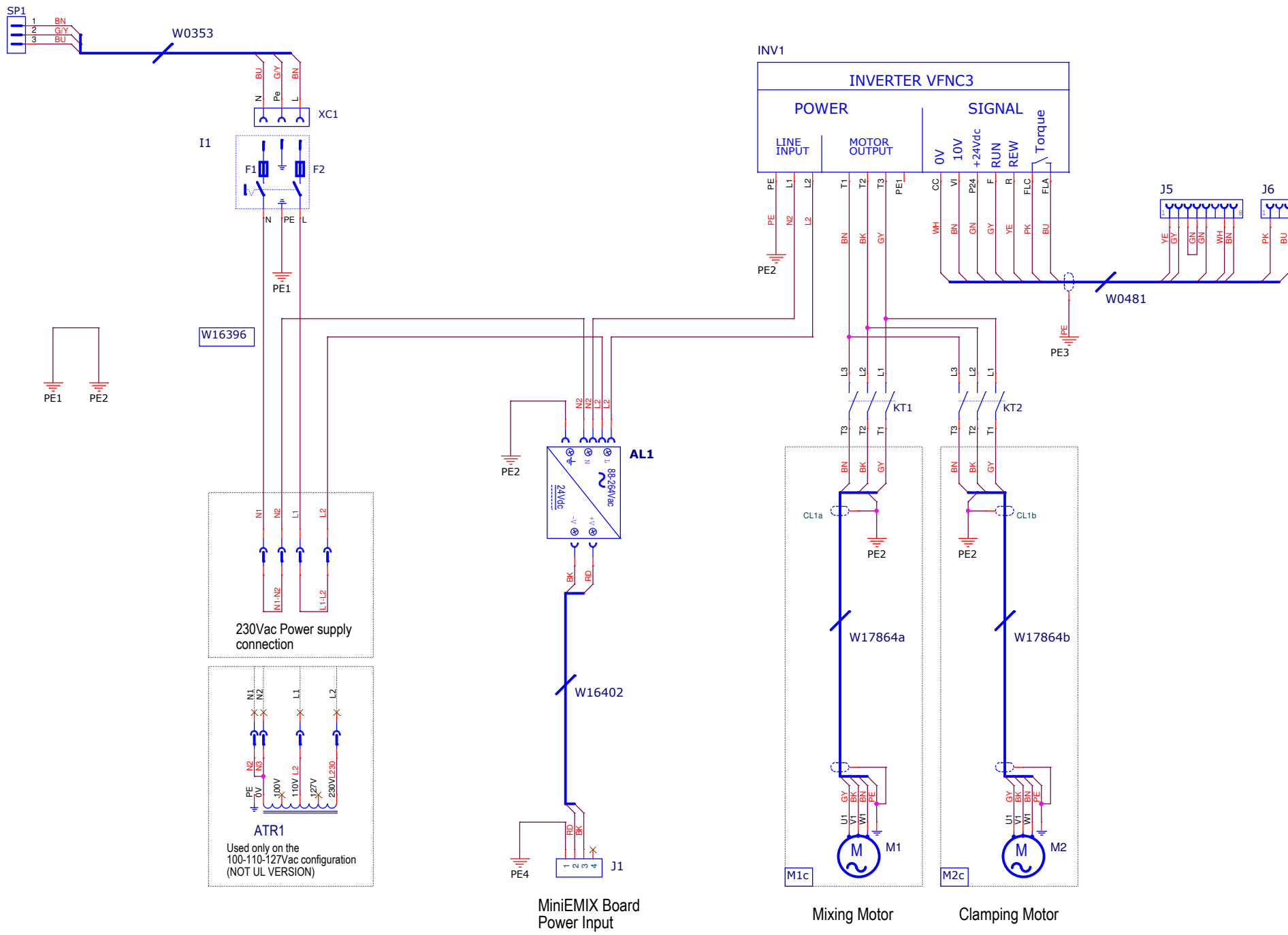
NOTE:

(1) NONE

SECTION

1

WIRING DIAGRAM

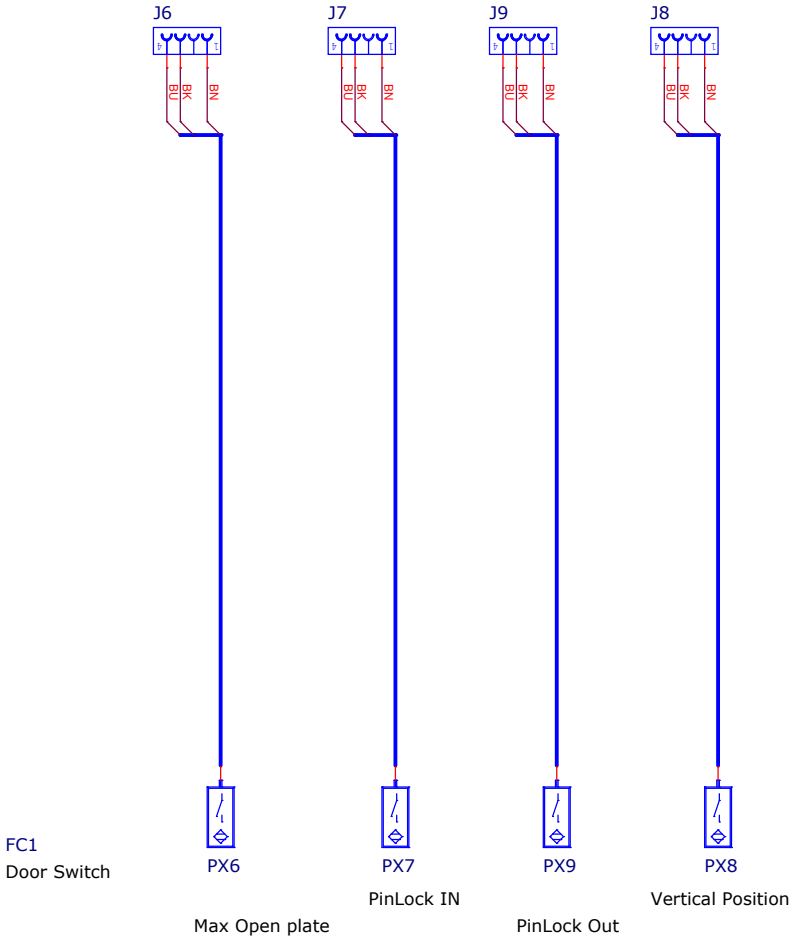
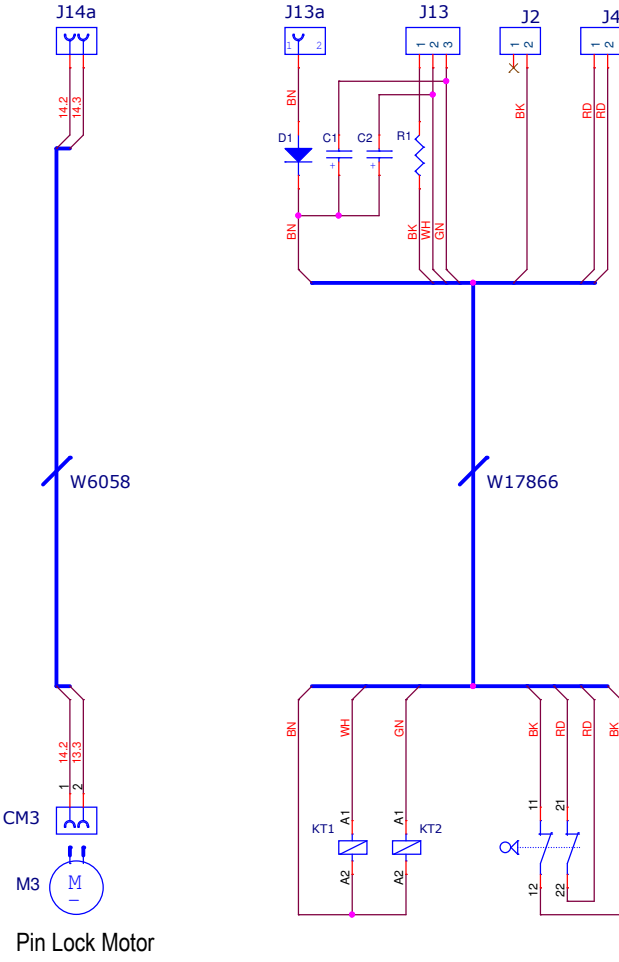
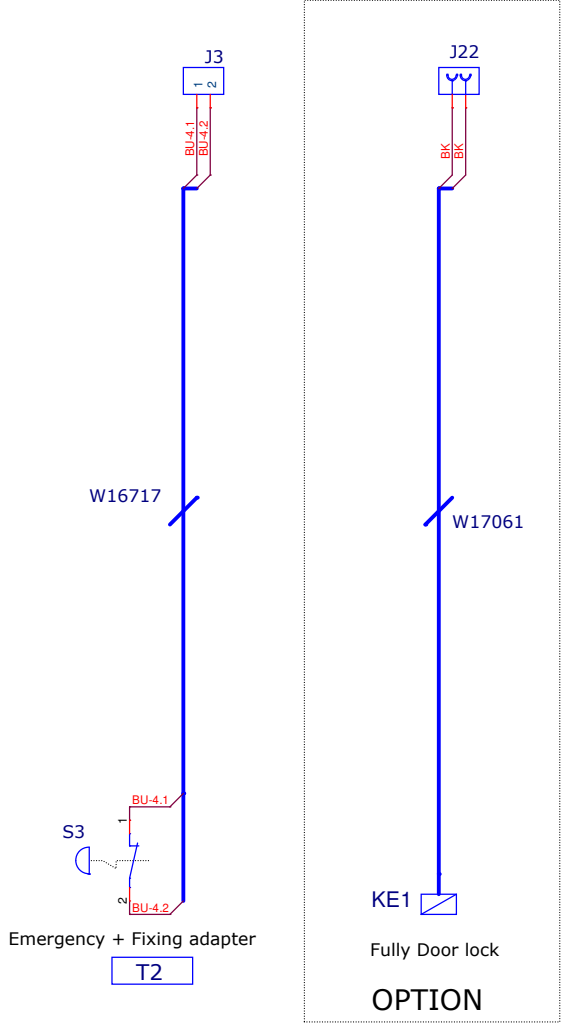
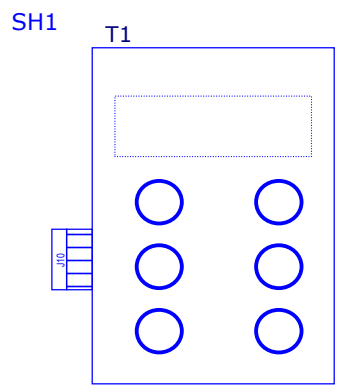
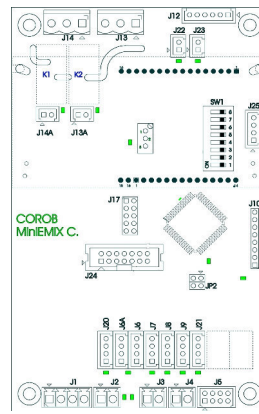
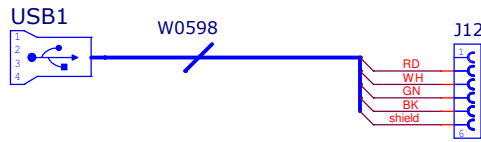


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Designer Fabrizio Benatti	Date: Friday, May 05, 2017	Size A3
Sheet 1 / 2	Code 10000018386	Rev AA



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		Sheet 2 / 2	Code 10000018386 10000018388	Rev AA		
Title Control circuit - CMX700 (MiniEMIX_C) - Dual Motor contactor			Document Number CMX700.DSN			

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Power Circuit - CMX700 - CE configuration (std 200-240V, option 100,110,127V)

CLEVERmix 700 10000018386 rev.AA Revised: May 2017

Bill Of Materials Machine Corob code:

Level	Reference	Qt.	Code	Description
1.1	W0353	1	4000316	Main Power Supply Cable
1.2	W16396	1	4037672	Power Supply Wiring
1.3	W16402	1	4037673	MiniEmix power supply cable
1.4	W17866	1	4039209	DOOR SWITCH CABLE CMX700 2°V
1.5	KT1, KT2	1	4039032	Power contactor (16A)
1.6	W0481	1	4000431	Inverter control Cable
1.7	W16717	1	4038102	Emergency button Cable
1.8	W6058	1	4025867	Stirring motor cable
1.9	W0598	1	209453	USB B Cable
1.10	AL1	1	4000295	50W switching Power supply (In. 88-264V - Out. 24Vdc)
1.11	INV1	1	4004570	0,4Kw Rhos Inverter motor speed control
1.12	SH1	1	4038943	MiniEmix_C1 board
1.13	T1	1	4000522	MiniEmix Matrix keyboard sticker
1.14	T2	1	4001661	Emergency sticker
1.15	M1c	1	4039067	MOTOR MR.71C.KW055.4P.B14.V230 + CABLE
2.15.1	M1	1	[4037651]	ASYN. 3ph MOTOR MR.71C.KW055.4P.B14.V230/400/50.8F
2.15.2	W17864a	2	[4039029]	CABLE MIXER MOTOR 2V
1.16	M2c	1	4039068	ASYNCHRONOUS TRIF. GEARMOTOR
2.16.1	M2	1	[4038152]	ASYNCHRONOUS TRIF. MR56 2P
2.16.2	RID1	1	[4005691]	GEARBOX SITI MI30 I=10 PAM 980
2.16.3	W17864b	2	[4039029]	CABLE MIXER MOTOR 2V
1.17	M3	1	4001504	GEARMOTOR AUTOCAP M300 PF
1.18	PX6, PX7, PX8, PX9	4	4004632	Proximity sensor for: Max Open, Pin IN, Pin OUT, Zero Position
1.19	KE1	1	4038463	EC CABLED SOLENOID CM40 24CC
1.20	ATR1	1	4035536	AUTOTRASF.TOROIDAL CE 1000VA 100-110-127

Note: - Differences from last release **10000016415AD**

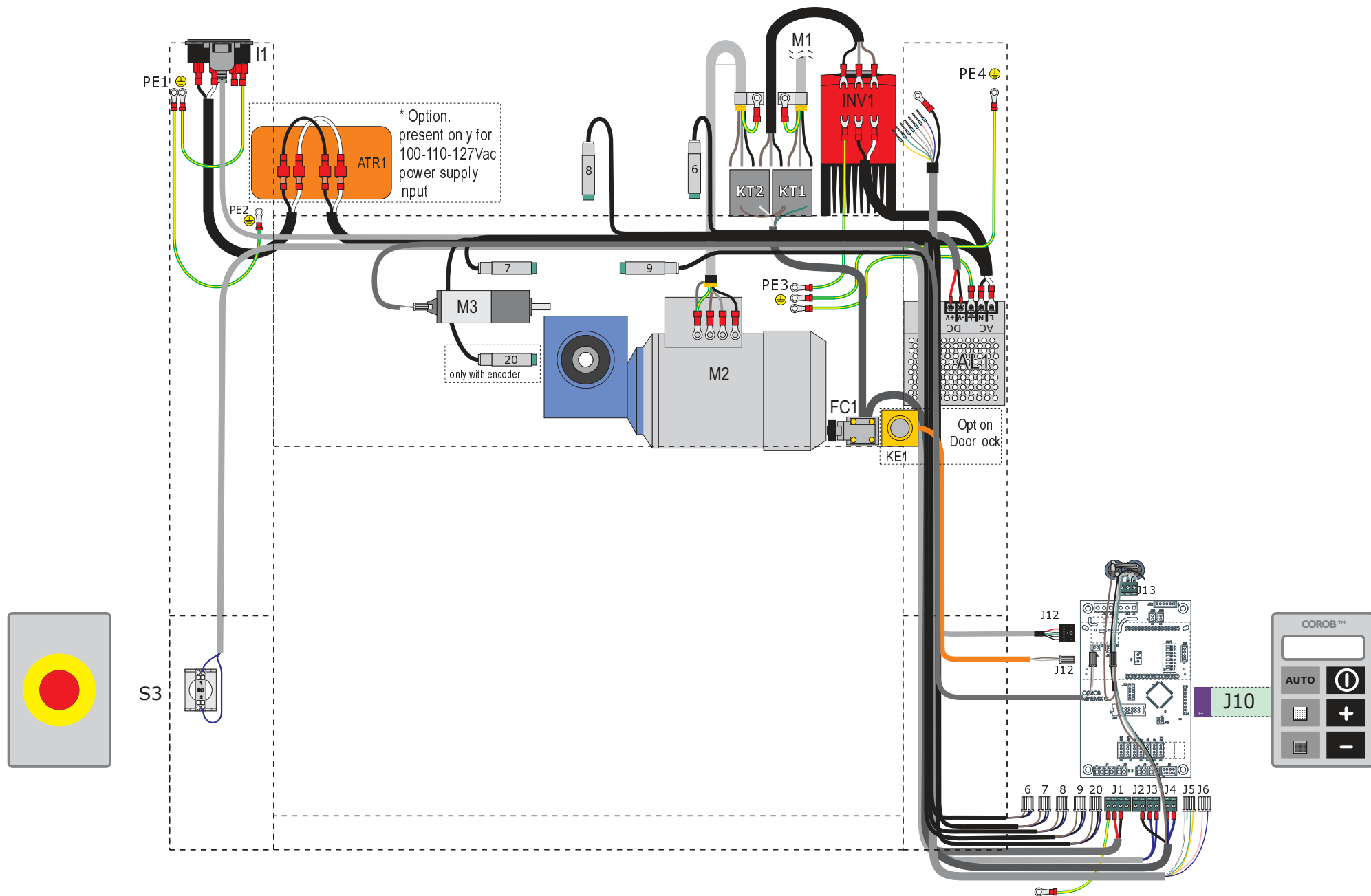
- Optional components

- Component to be installed only on CLEVERmix700 version 110V

SECTION

2

MIXER LAY-OUT



TOP VIEW

COROB™

File name: 10000018386AA - CABLE WIRING ASSY CMX700.cdr

DESCRIPTION
 CMX700 power control panel assembly - CE ver. 200-240Vac or (*)100-127Vac

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DESIGNER F. Benatti	DATE 03 May 2017	SCALE 1 : 5
PAGE 1	DRAWING NUMBER 10000018386	VER. AA
COROB CODE None		

SECTION

3

COMPONENTS SPECIFICATION

INVERTER SETTING

Title	Function	Set Val.
CMOd	Command mode selection	0
FMOd	Frequency setting mode selection	0
ACC	Acceleration time 1	0,1
DEC	Deceleration time 1	0,1
FH	Maximum frequency	100
UL	Upper limit frequency	100
Pt	V/F control mode selection	3
tHr	Motor electronic-thermal protection level 1	100
F105	Priority selection (Both F and R are ON)	0
F132	Output terminal selection 2 (FL)	28
F204	Frequency of VI input point 2	100
F300	PWM carrier frequency	4,0
F307	Supply voltage correction (output voltage limitation)	3
⁽²⁾ F400	Auto-tuning	2
⁽²⁾ F402	Automatic torque boost value	10,7
⁽¹⁾ F415	Motor rated current	2,6
F601	Stall prevention level 1	120 ⁽³⁾ [120-130]
F616	Over-torque detection level	85 ⁽⁴⁾ [75-100]
F618	Over-torque detection time	0,8
F713	Status monitor 3	7

Note: (1) Parameters to be configured based on the motor rated values.

(2) Set the parameter 400 at the value "2" only for the first start of the motor, the display shows the message "Auto-tuning" and automatically set the parameter 400 at "0". If the parameter 400 is still set at "2", this means that the procedure has failed. During the auto-tuning procedure the motor does not run.

The parameters in the "SET" column in boldface, have been modified compared to the file old revision.

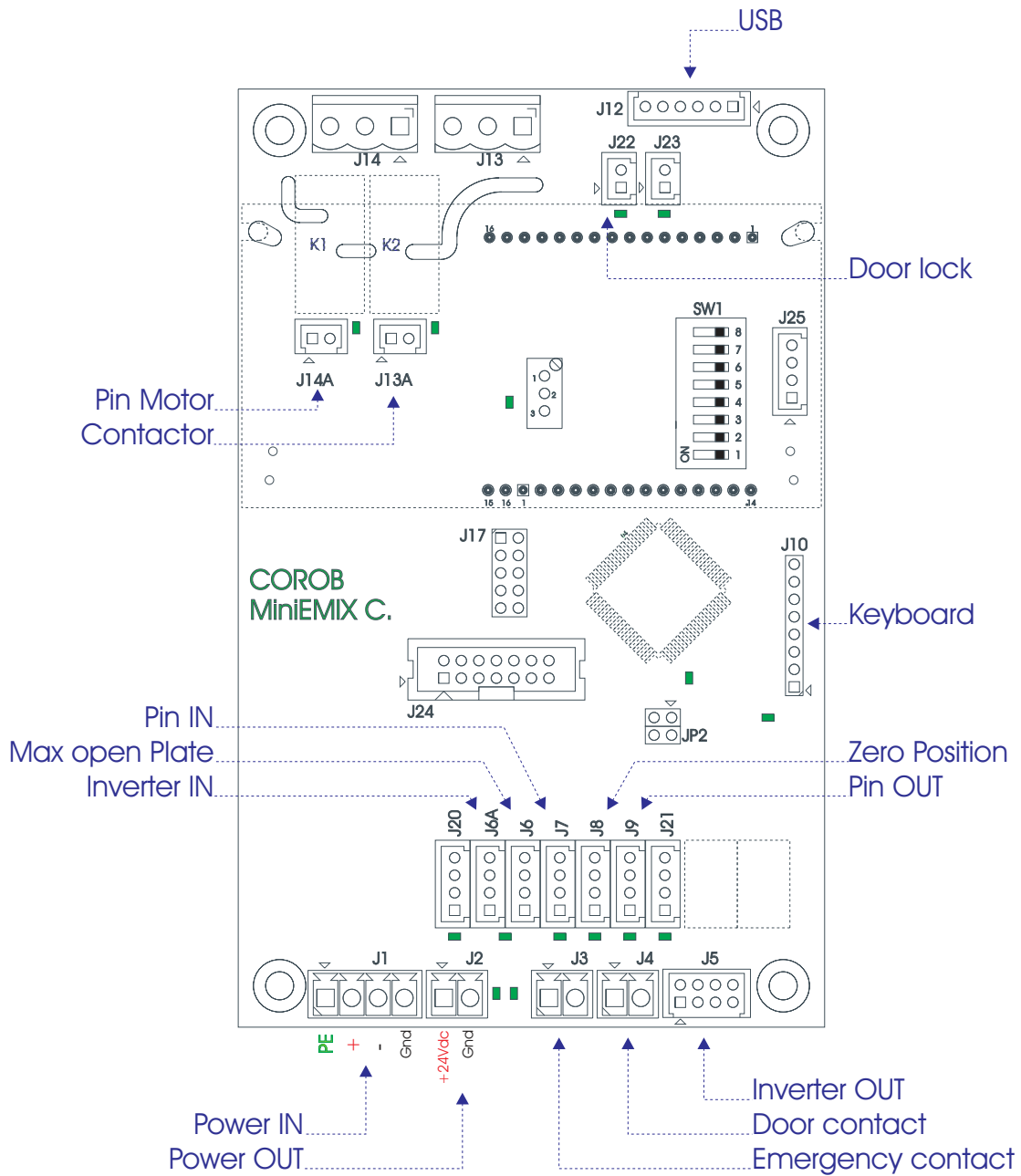
(3) The parameter sets the mixer power limit. Set to the min. value only in case of long cycle time or to the max. value when the cycle contains boost speed. For short boosts (<30sec) use 130. For long boosts (>30sec) use 120.


(4) The parameter can be changed, within the range, depending on the minimum clamping force requested (e.g.: 100kg=75 or 150Kg=100).

All the highlighted parameters are differ from the Toshiba default configuration (EU).

In case on the inverter display the message "SET" is blinking, turn the "setting dial" and select "EU" by pressing the center of the "setting dial" to determine the default parameters and the operation frequency is displayed (standby).

To initialize the inverter to the "Toshiba factory default settings", set the "tYP" parameter to "13". When "13" is set, "InIt" is displayed for a short time and then disappears. At this point, the situation is the same as described at the previous note.



ITEM	CPS CODE	DRAWING NO.	DESCRIPTION		
 File name: MINIEMIX_C_connector.cdr			DESIGNER	DATE	SCALE
			F. B.	26 MAY 2016	1 : 1
DESCRIPTION			PAGE	DRAWING NUMBER	VER.
MINIEMIX_C connector lay-out				10000016315	AB
				CPS. CODE	
				4038180	

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