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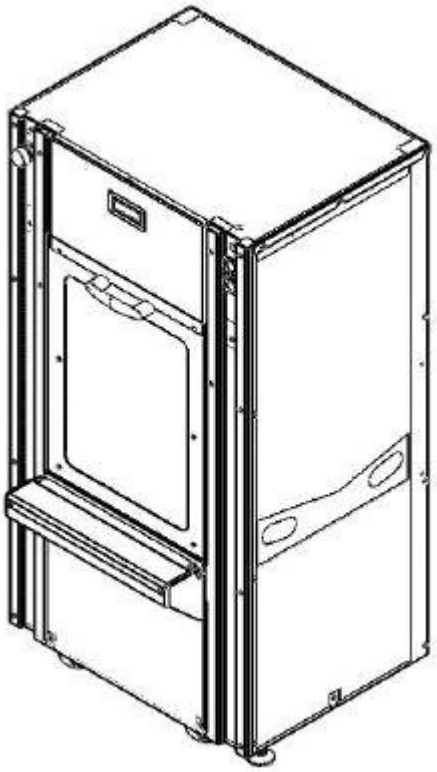
COROB™ EVOshake 500

Technical manual

V1.0 – RA (2018)



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Technical manual

Shaker

COROB™ EVOshake 500

Version 1.0 RA (01/2018)

If you require additional copies of this manual or further technical information about it, please write to:

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TABLE OF CONTENTS

1 GENERAL INFORMATION

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, firmware and hardware errors. The technical manual is divided into sections. The following topics are handled:

SECTION 1	GENERAL INFORMATION
SECTION 2	MECHANICAL SERVICE
SECTION 3	YEARLY MAINTENANCE
SECTION 4	CONTROL ELECTRONICS

SECTION 5 & 6	SET UP
SECTION 7	PROGRAMS
SECTION 8	HARDWARE ERRORS
SECTION 9	ERRORS MESSAGES

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
	**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

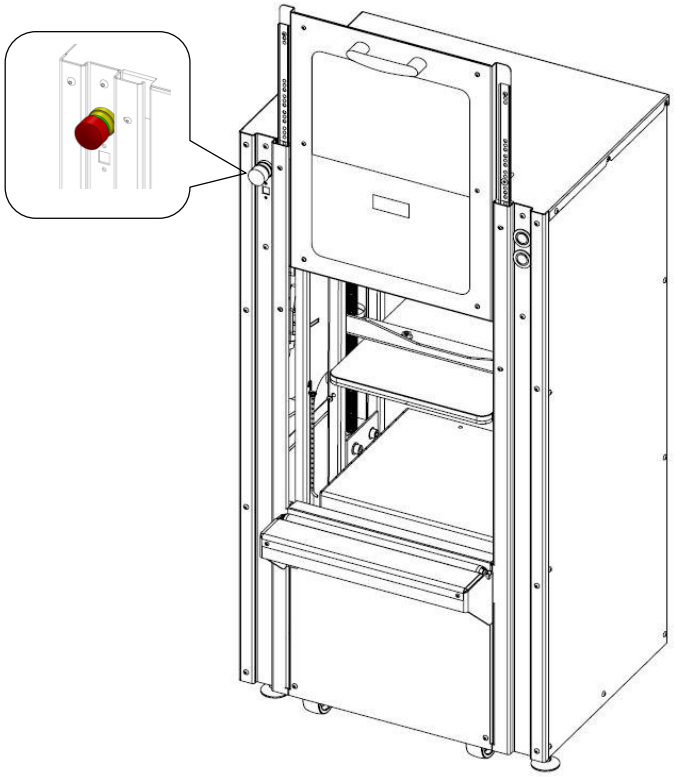
READ THE SAFETY WARNINGS CAREFULLY BEFORE INSTALLING AND OPERATING WITH THE MACHINE.

- **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 multi sockets 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.
- In the event of a sudden power outage, when power returns the machine will automatically be switched on
- 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.
- 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.
- **DO NOT OPERATE THE MACHINE WITH THE COVERS OPEN.**
- 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 paint/colorant package and on the Material Safety Data Sheet (MSDS) supplied by the manufacturer. When compulsory, wear personal protective equipment.
- **THE MACHINE MUST NOT BE USED IN 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** - 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.	/
	**Dorsal/lumbar injuries** - Handling heavy loads when moving the machine and loading cans on the shelf may cause injuries.	Do not exceed the weight limits stated by the current regulations in force. If necessary, use appropriate lifting equipment.	
	Risk of falling objects / crushing - When positioning a can on the shelf, there is a risk it may fall onto the operator.	Position the can so that the whole base rests on the shelf surface.	
	**Risk of crushing / entanglement** - The automatic movement of the door and of the plates may cause injuries.	The door opens upward. Keep enough free space. Do not put objects on top. Keep your hands away. Before performing any intervention, press Emergency stop button.	
	Risk of contusion - When fixing the handle holder, it may cause injuries.	Handle the holder firmly, take a good grip.	
	**Risk of explosion** - Fumes generated by the colorants used may cause an explosion.	Do not use the machine in 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** - Fumes generated by the colorants used may cause poisoning and/or sensitization during machine cleaning and disposal.	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.	Personal Protective Equipment as specified in MSDS.

1.6 Safety devices



1.7 Emergency stop

In case of a breakdown or dangerous conditions, press the emergency stop button (1).

Pressing this button causes all machine dangerous movements to be stopped, by cutting off power supply to all power circuits.

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 (the switch behind the machine and unplug the power supply cable from the wall socket outlet.

After eliminating the cause of the mail function or solved the dangerous condition, reset the button by turning the red mushroom-head button either clock or counter clockwise =>STOP button blinks red => Press STOP button => The PROG button blinks green and the door opens.

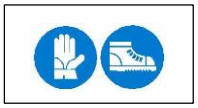
The use of the emergency stop button is to be considered as an emergency action exclusively, and not as a standard stop mode, in order to prevent machine deterioration.

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	• Digital Multimeter, to test Voltage, Resistance and Current values • Pressure transducer, to measure pressure values in the circuit	
 Other	• Laptop computer • Precision Scale, with 3 decimal digits • Picnometer, to measure specific weight of colorants	

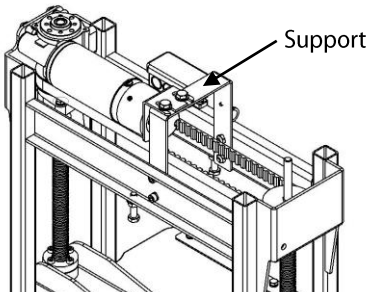
2 MECHANICAL INSTRUCTIONS



2.1 How to change the clamping motor

- Torx screwdriver Tx25
- 4mm Allen screw
- Screw driver for terminal block
- M8 Set wrench, 2 pcs

Instructions



1. Unplug the power supply cable from the socket outlet.
2. Remove the upper frame (5 x Allen screw)
3. Unfasten clamping motor wirings from junction box.
4. Unfasten the motor fastenings and remove old motor.
5. Set the new motor on the shaft (make sure that the wedge stays in position).
6. Fasten the motor => 4 x hex screws, use medium strength screw retainer *
7. Adjust the support to proper height and fasten the hex nuts. **
8. Fasten the motor to the support ***
9. Fasten the wirings.
10. Attach the upper frame.
11. Plug the power supply cable.
12. Run cleaning program of the EVOshake. The average torque value should be somewhere in 50-90.

* Make sure that the shaft is not vertically supported by gear of motor. In older models the motor fixing has long holes and you have to make sure, that the clearance between the motor and the axle shoulder is between 4.5-5mm.

** There is no adjustment in the support in older shakers. If this is the case, make sure that the motor is not subjected to force when fastening the support.

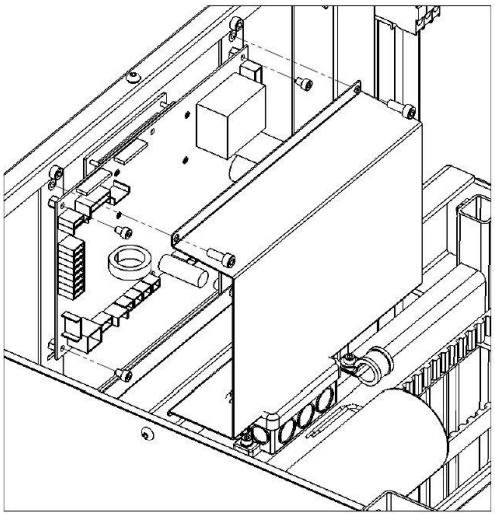
*** The support is missing from the first shakers. If the support is missing, you have to drill 6mm fixing holes and order the support with screws.

2.2 How to change the EMIX-board

- 3mm Allen screw
- 4mm Allen screw
- Torx screwdriver Tx25

Instructions

1. Unplug the power supply cable from the socket outlet.
2. Remove the upper frame (5 x Allen screw)
3. Remove the protection plate of the board (2 x Allen screw)
4. Disconnect the cables from the board.
5. Unsrew the Allen screws, 4 pcs.
6. Remove the board.



DETAIL A

2.3 How to remove the toothed belt

- 3mm Allen screw
- 4mm Allen screw
- Torx screwdriver Tx25
- 10mm set wrench
- 10mm ratchet wrench

Instructions

1. Drive the upper plate to the lower position.
2. Unplug the power supply cable from the socket outlet.
3. Remove the upper frame (5 x Allen screw)
4. Remove the side plates (2 x 9 x Allen screw)
5. Remove the clamping motor, see 2.1 How to change the clamping motor
6. Loosen the bearing screws (2 x 2 pcs)
7. Remove the belt.

Installing instructions

1. Put the bearing screws in position, do not tighten.
2. Put the motor in position and fasten the screws.
3. Tighten the bearing screws

When installing the toothed belt, the upper plate has to be aligned with the lower plate. Use for example two same height wood blocks between the plates.

2.4 How to remove the gearwheels

- 2.5mm Allen screw
- 3mm Allen screw
- Extractor

Instructions

1. Remove the clamping motor, see 2.1 How to change the clamping motor.
2. Remove the toothed belt, see 2.3 How to remove the toothed belt.
3. Remove the sleeve from the threaded axel opposite to the motor.
4. Remove the gearwheels with the extractor.

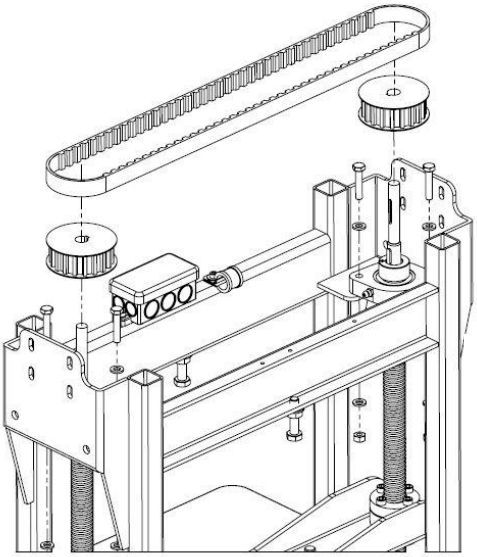
The gearwheels are attached to the axel with a wedge.

2.5 How to remove the Flange bearings

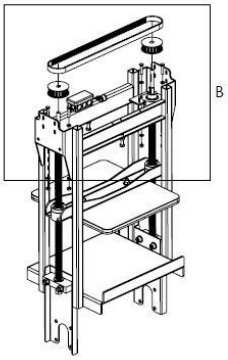
- 2.5mm Allen screw
- 3mm Allen screw
- 10mm set wrench
- 10mm ratchet wrench
- Extractor

Instructions

1. Drive the upper plate to the lower position.
2. Unplug the power supply cable from the socket outlet.
3. Remove the upper frame (5 x Allen screw)
4. Remove the side plates (2 x 9 x Allen screw)
5. Remove the clamping motor, see 2.1 How to change the clamping motor.
6. Remove the toothed belt.
7. Remove the gearwheels, see 2.4 How to remove the gearwheels.
8. Remove the screws from the bearings.
9. Remove the bearings.



Detail B
Scale 1:3



2.6 How to remove the gas spring

- 10mm set wrench
- 13mm ratchet wrench
- 10mm ratchet wrench

Instructions

1. Unplug the power supply cable from the socket outlet.
2. Remove the upper frame (5 x Allen screw).
3. Remove the left side plate (9 x Allen screw).

4. Disconnect the top end of the spring and hold the door at the same time so it doesn't fall.
5. Disconnect the lower end.

The spring continuously tends to come out from the cylinder.

2.7 How to remove the lock

- 3mm Allen screw
- Torx screwdriver Tx25

Instructions

1. Make sure that the door is open.
2. Unplug the power supply cable from the socket outlet.
3. Remove the lower front panel: unscrew 4 screws and lift the panel.
4. Remove the screws from the left front side plate.
5. Carefully turn the front parts away from the shaker.
   Beware the wires in top of the machine.
6. Door lock: Remove the connectors from the micro switch and from the board.
7. Remove the lock (2 x Allen screw).

2.8 How to remove the upper plate

- 17mm ratchet wrench
- Torx screwdriver Tx25
- 6mm Allen screw

Instructions

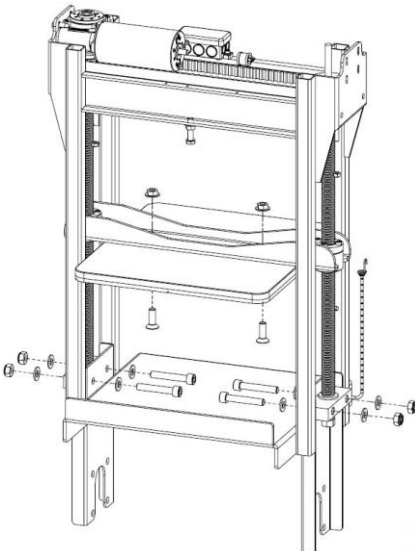
1. Drive the upper plate to the middle.
2. Unplug the power supply cable from the socket outlet.
3. Change the upper plate.

2.9 How to remove the threaded axels

- Torx screwdriver Tx25
- 17mm ratchet wrench

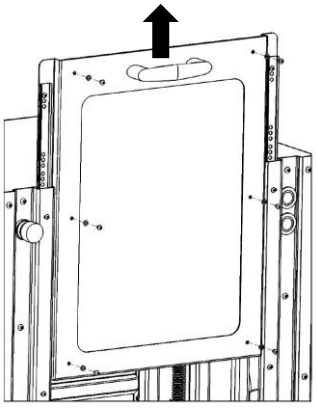
Instructions

1. Drive the upper plate to the lower position.
2. Unplug the power supply cable from the socket outlet.
3. Remove the upper frame (5 x Allen screw).
4. Remove the side plates (2 x 9 x Allen screw).
5. Remove the clamping motor, see 2.1 How to change the clamping motor.
6. Remove the toothed belt, see 2.3 How to remove the toothed belt.
7. Remove the gearwheels, see 2.4 How to remove the gearwheels
8. Loosen the locking nuts of the axel of the Flange bearings.
9. Remove the screws (4 pcs) from the lower end of the threaded axels.
10. Remove the axels from the bearings.



When installing the toothed belt, the upper plate has to be aligned with the lower plate. Use for example two same height wood blocks between the plates.

2.10 How to remove the door window (Plex)



- 2.5mm Allen screw / Torx screwdriver

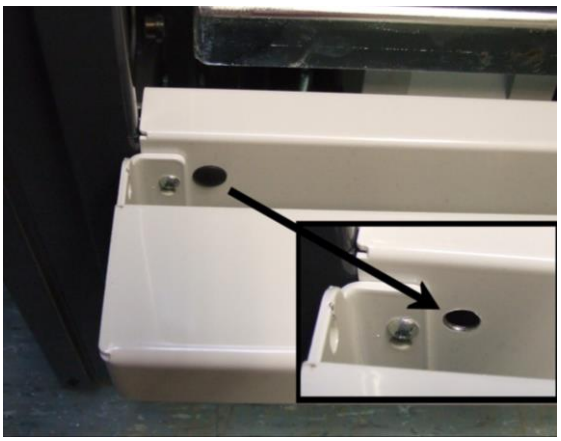
Instructions

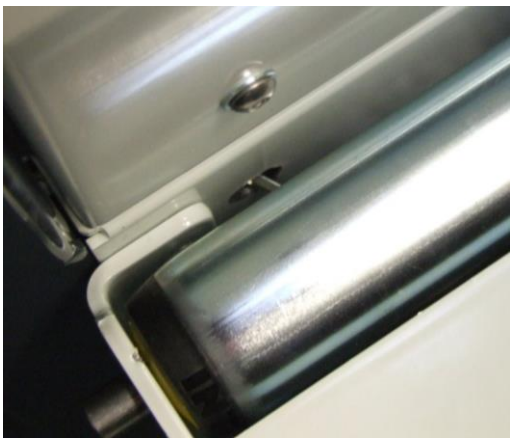
1. Remove six screws
2. Remove the window from above.

2.11 How to open the door manually

If the door still does not open, you can open it manually through the hole behind the shelf. This hole is covered with a plug. To open the door manually, do the following:

1. Press the emergency button.
2. Remove the plug.
3. Place a sharp tool, like a screwdriver, on the left side of the hole.
4. Move the tool sideways to the right and the door opens.
5. Release the emergency button and press the STOP button.





Sometimes it helps just lightly lift from the door handle.

3 YEARLY MAINTENANCE

- Check safety devices, door, door lock, safety switch, and e-button.
- Visual inspect and grease spindles and nuts, from front.
- Run cleaning prog to check resistance (std 50-70).
- Visual check Oscillating arms.
- Inspect and grease spring legs, from front.
- Visual inspect main belt, from front
- Grease inner and outer bearings on crankshaft, from front.
- Control clamping pressure by pressure device or manually with a can.
- Test run machine for vibrations and noice.

4 CONTROL ELECTRONICS

4.1 Introduction

The EVOshake 500 shaker confirms shaking sequences according to the programs that are loaded on the machine.

The mixing time, speed and clamping force are automatically determined by the can size. After the shaking, the door opens automatically.

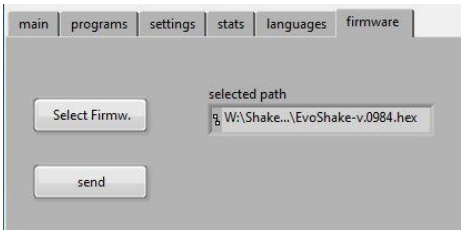
The shaker checks the condition of the spindles from time to time automatically.

Xilink helps the processor and executes speeding functions.

Board	Description
EMIX	Processor board
Connector board	Supresses interferences

4.2 Firmware & Bootloader

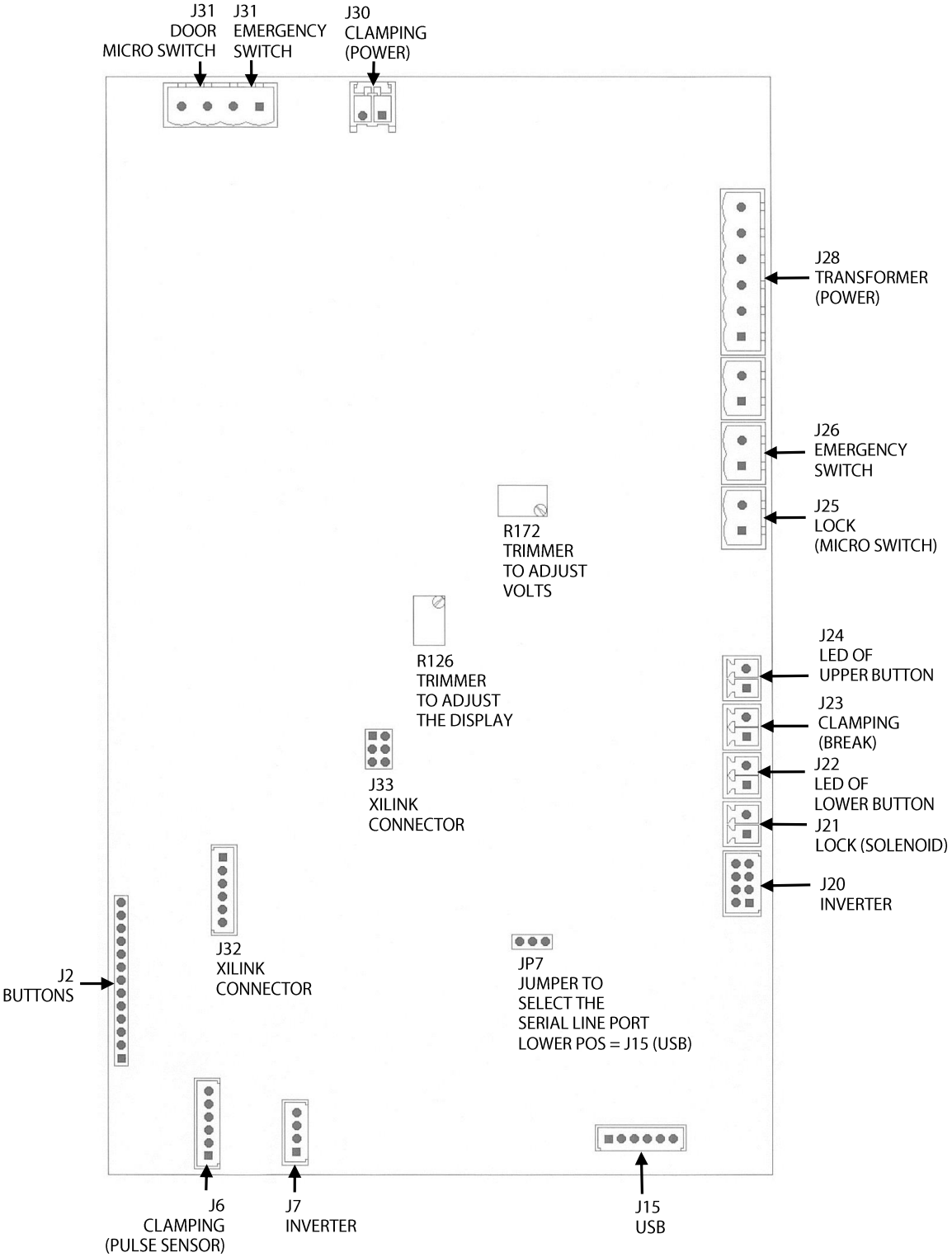
Both has been designed for EvoShake project.
Bootloader cannot be changed without programmer.
Firmware can be changed through configuration software.
FM version is named like: EvoShake-v0.xxx.hex



4.3 Technical information

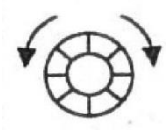
Power supply	Single-phase 220 - 240V ±5%
Power	50 Hz
Fuses	T 6.3 A
Max power consumption	800 W
Type	Vibrational
Clamping function	Automatic & self calibrated
Clamp force (kg)	Set by can size
Shake time	Set by can size
Shaking speed	Set by can size
Shaking direction	Bi-directional
Type of cans	Round / square / oval
Max can diameter	325 mm
Min height	50 mm
Max height	410 mm
Max can weight	40 kg
Multiple can handling	Yes
Loading height from floor	430 mm
Noise level	Machine noise emission: < 70dB (A)
Environment working conditions	Temperature: between 10°C and 40°C Relative humidity: 5% - 85%

4.4 EMIX-board layout



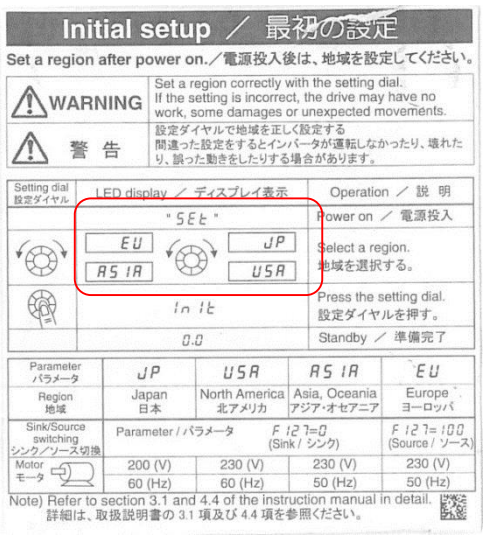
Connector	Description
J2	Buttons
J6	Clamping (pulse sensor)
J7	Inverter
J15	USB
J20	Inverter
J21	Lock (solenoid)
J22	Led of lower button
J23	Clamping (break)
J24	Led of upper button
J25	Lock (micro switch)
J26	Emergency switch
J28	Transformer (power)
J30	Clamping (power)
J31	Door micro switch
J31	Emergency switch
J32	XILINK (pulse sensor)
J33	XILINK connector
JP7	Jumper to select the serial line port Lower pos = J15 USB
R126	Trimmer to adjust the display
R172	Trimmer to adjust volts

4.5 Inverter Toshiba Tosvert: Parameter settings



The settings and parameters of Toshiba Tosvert-inverter are selected by turning the dial.

The settings are confirmed by pressing the dial.



When the inverter is turned on for the first time, a 'Set' blinks on the display.

1. Select EU by turning the dial.
2. Confirm the selection by pressing the middle of the dial.

⇨ numbers "0.0." are shown on the display.

1. Open the cover.
2. Press once the MODE-button.
3. Choose the parameter by turning and pressing the dial.
4. Choose the correct value by turning the dial and confirm by pressing.

NOTE! How to set parameters that start with F: "F---" shows on the display => press the dial => choose the parameter, for example F204 => confirm => set the value and confirm.

When you have set all the parameters, press MODE-button until the display shows "0.0." => the inverter is ready for use.

Default settings

Title	Function	Inverter Parameters Description	Setting
*CM0d	Command mode selection	0: Terminal board – 1: Operator panel	0
*FM0d	Frequency setting mode selection	0: Terminal board – 1: Operator panel – 2: Internal Potentiometer – 3: Serial communication – 4: Terminal board/internal volume switching	0
*ACC	Acceleration time 1 (s)	Acceleration time	0,1
*dEC	Deceleration time 1 (s)	Deceleration time	1,0
*FH	Maximum frequency (Hz)	Maximum frequency	70
*UL	Upper limit frequency (Hz)	Upper limit frequency	70
*Pt	V/f control mode selection	0 (1, 2):V/f – 3: Sensorless vector control	3
*tHr	Motor thermal protection level 1 (%)	Level of current thermal protection of motor. Set the motor rated value. The parameter is expressed in percentage with respect to the nominal current supplied by the inverter (4A for 1HP inverter – 7.6 for 2HP inverter).	84
F100	Low-speed signal output frequency (Hz)	Frequency threshold based on which the output relay is switched.	0
*F105	Priority Selection		0
*F132	Output terminal selection 2 (FL)	FLA, B, C function. This function is used to output a variety of signals to external devices from the inverter. With the contact output terminal function, you can select from multiple output terminal functions.	4
*F204	V1 point 2 frequency (Hz)	Maximum frequency that can be set in the 0-10V analog input, with voltage at the maximum value.	50,5
*F300	Supply voltage correction	PWM carrier frequency	5
*F307	Supply voltage correction		3
*** F400	Auto-tuning	Set vector control, automatic torque boost, and energy saving and auto-tuning individually.	2
** F415	Motor rated current	Set the current value as mentioned in the motor nameplate.	3,5
** F417	Motor rated speed	Set the RPM value as mentioned in the motor nameplate.	1400

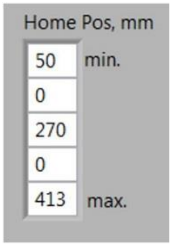
5 STANDARD SET UP

5.1 Shipment mode NOT IN USE

- Language
  Board can have maximum five standard languages

- Prefered Height

  Home position of shelf, largest normal can plus 30mm.
  Can be set to 51-413mm
  Shaker can also handle multiple home positions.
  The default max open is 270mm.

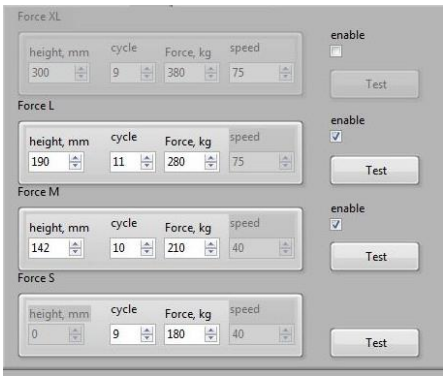


- Start by door
  Defines if door shall be used as start button (ON) or not (OFF). If not, PROG button acts as start button.
  ON is a default setting.

When you install the EVOshake and put on the power for the first time, the display shows the Bootloader version and then says Unclamp max
=> close the door => the EVOshake defines the max open position according to settings above.

5.2 Different programs

5.2.1 Auto mode



- Shaker is divided into four different zones: S, M, L, (XL). Three of them are in normal use.
- Zones can be disabled.
- For each zone clamping pressure and cycle can be set.
- In auto mode and machine is shaking user can add shaking time by pushing PROG button. Each push prolongs shaking 20 seconds. Time is always added to the longest part of the cycle.

Auto mode default settings:

PROG	CAN HEIGHT	CAN SIZE	CAN DESCRIPTION	SHAKING TIME AND SPEED			
AUTO MODE	< 142 mm	S	Small	5s	292rpm	55s	599rpm
	142 – 190 mm	M	Medium	10s	292rpm	70s	584rpm
	> 190 mm	L	Large	10s	292rpm	90s	584rpm

5.2.2 Prog 1-9

Additional programs can be added. These can be set with fixed clamping force or auto force.
Normal default programs and their functions are following:

Program	Function	
Auto Mode	Clamping force and time are selected automatically	
1 min	Shaking time: 60s	Speed: 10s 270 rpm + 50s 599 rpm
2 min	Shaking time: 120s	Speed: 10s 270rpm + 110s 595 rpm
3 min	Shaking time: 180s	Speed: 10s 270rpm + 170s 584 rpm

5.2.3 Unclamp max

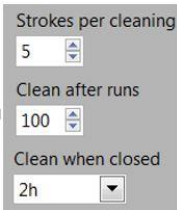
- Lifts the upper plate to max open position, default height is 270mm.
- Same thing can be done by holding STOP button pressed and close door.

5.2.4 Close door

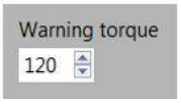
- Program allows door to be closed without action
- Same thing can be done by holding PROG button pressed and close door.

5.2.5 Cleaning

- Machine runs defined amount of full strokes. Display shows live actual resistance in spindles (50-70 std). After cleaning the program display shows max/min/avg values.
- There are three cases where the program proposes cleaning
    1. Machine has exceeded a defined number of shaking cycles. After can has been released and door opens display switches to cleaning. Can be overruled but will be proposed until done.



    2. The resistance in the spindles has exceeded the defined limit. Display shows, *High torque!* , and cleaning is proposed.



    3. Door has been closed, like in the end of the day, and the *Clean when closed* is enabled (see Settings => General) then cleaning will take place if number of cycles has exceeded 50% of threshold. Door will remain closed after cleaning.

5.3 Special menu

To reach menu press emergency button in. Keep both PROG & STOP pushed and release emergency button. After 2 seconds menu appears.

Toggle up and down in menu with PROG & STOP. Select setting by pushing stop button in for 2 seconds. Toggle with PROG/STOP. Save by pushing STOP button in for 2 seconds.

Leave menu by pushing PROG button in for 2 seconds.

5.4 Clamping / Unclamping functions

If shelf gets stuck in up or down position, shelf can be forced in both direction.

1. Push emergency button in and close the door.
2. Push and hold PROG button and release e-button- Forces shelf up
3. Push and hold STOP button and release e-button- Forces shelf down
4. Movement stops as soon as PROG/STOP button is released.

This shall only be made by certified technician, movement is not controlled and fuse can be blown.

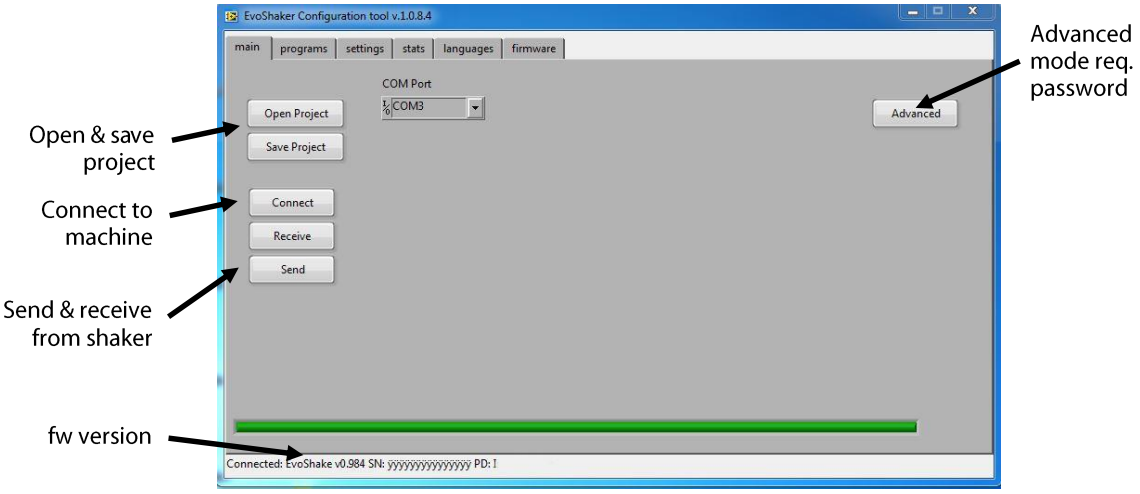
☞ *This shall only be made by certified technician, movement is not controlled and fuse can be blown.*

6 SETUP OF SHAKER

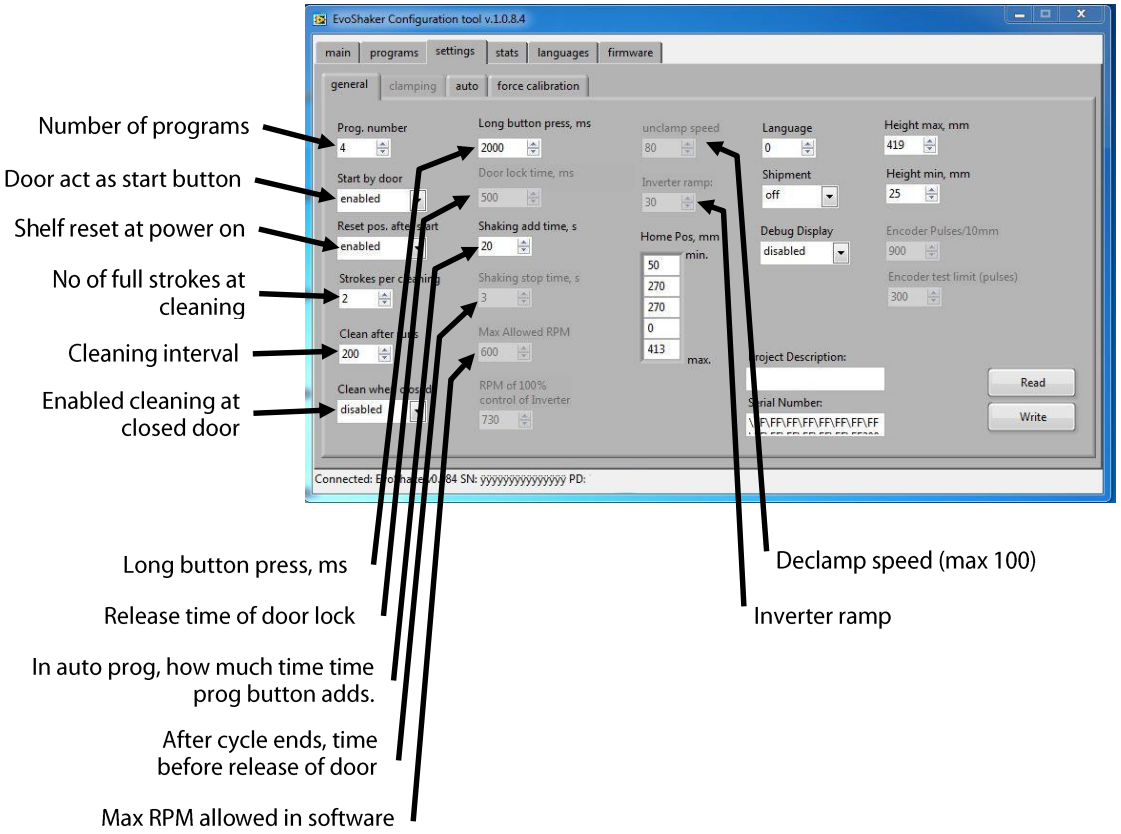
6.1 Configuration tool

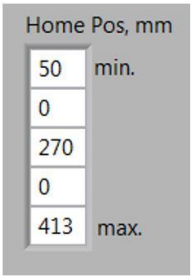
You can only configurate the firmware with the same version of the configuration tool.

fw v.0984 ⇔ Configuration tool v.1.0.8.4

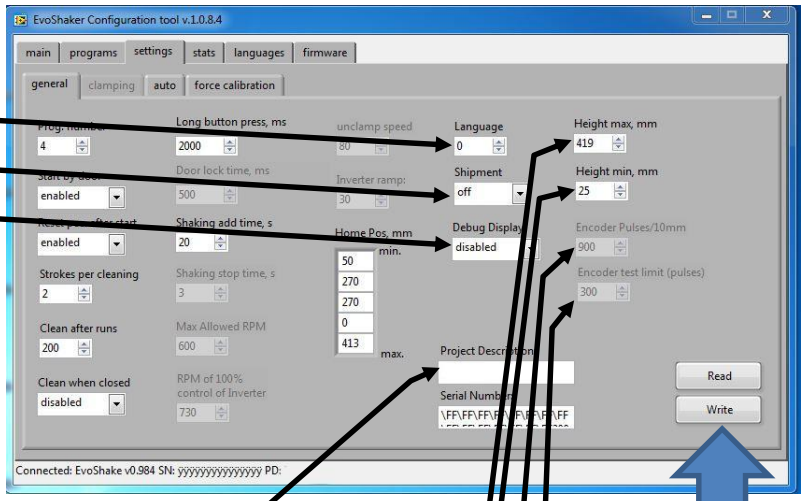


6.2 General settings





Min
0 means disabled
270 shelf stops at 270mm opening
0 means disabled
413 shelf stops before metal on metal



Languages no defined by file

Toggle shipment mode ON/OFF

Home position of shelf

Project description and serial number. Shows in display if started with e-button pressed.

Max open height mm

Min clamping height mm

Encoder pulses per 10mm, 900std

Encoder test 300, about 3mm diff. allowed in full stroke, 0=test disabled

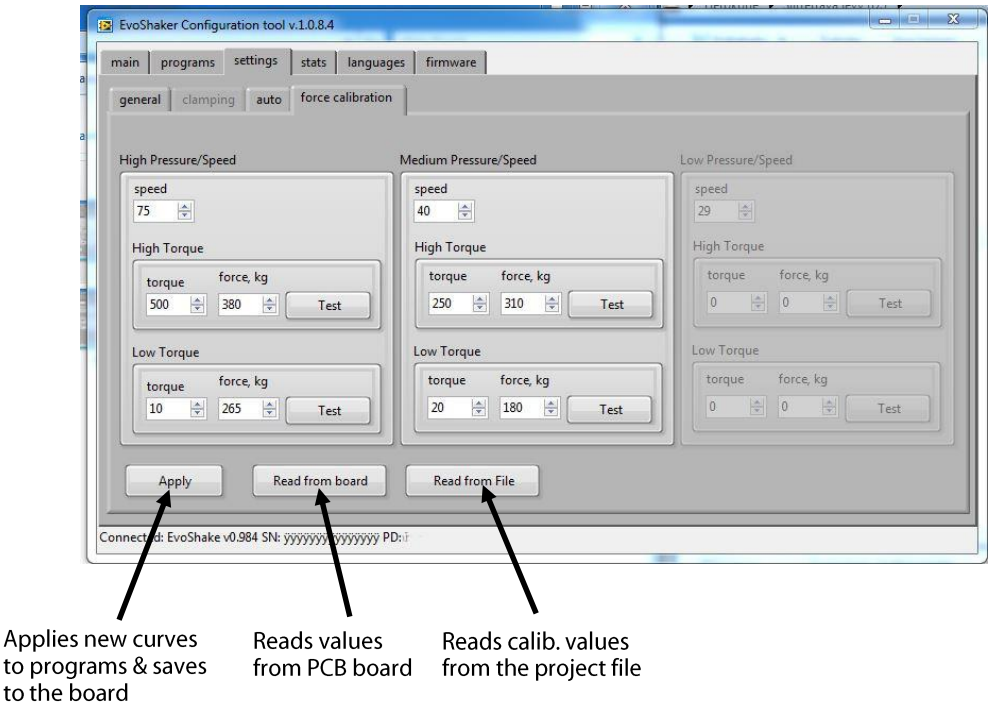
Read/Write from and to the board

7 CLAMPING FORCE CALIBRATION

To be able to clamp from 150-500kg of force the shaker is set to use max 3 different clamping speeds!
In normal mode 2 speeds is enough, then low is disabled.

When speed is changed, shelf needs to move 15mm before can detection, otherwise it makes a retry (30mm up, then clamps again). Normally this can always be avoided.

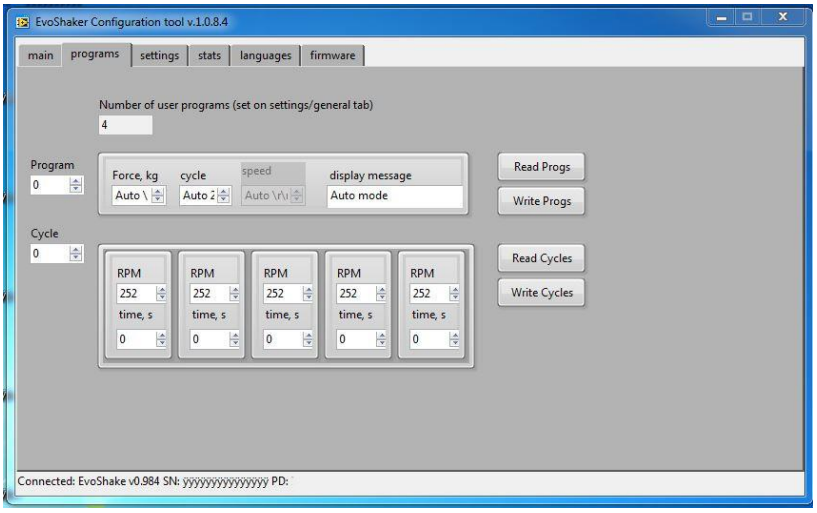
When calibrating the different curves (speeds) they need to overlap. (Program says no otherwise). When same force in kg exists in two curves, always the higher speed is chosen.
Normal setup, two speeds small & medium pots low speed and large pot high speed.



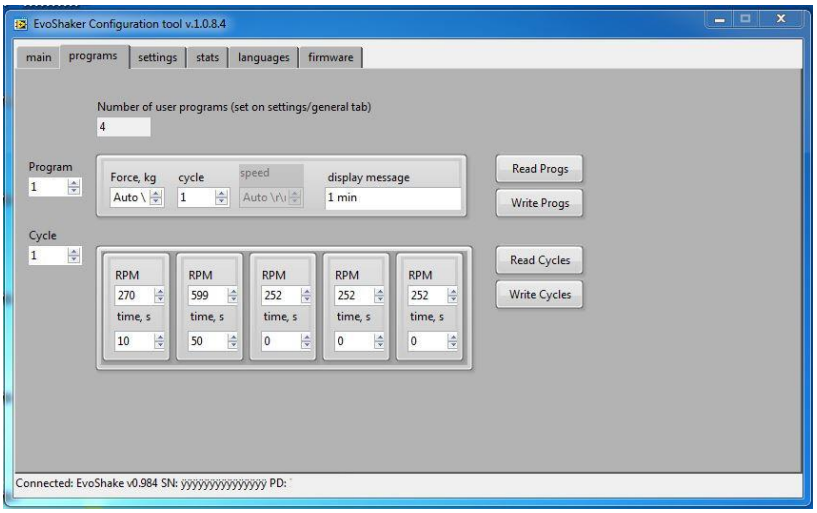
8 PROGRAMS

8.1 Cycle's

Program can be with manual or auto force, fixed or auto cycle.
If fixed, program is associated with a defined cycle.
Cycle 19 is reserved for factory test.



Auto proram

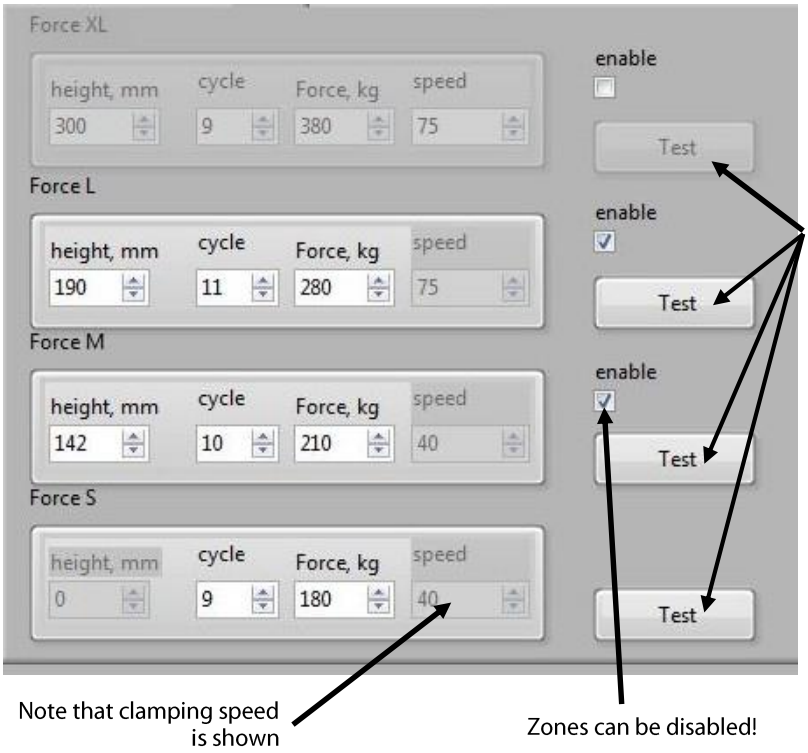


Fixed program

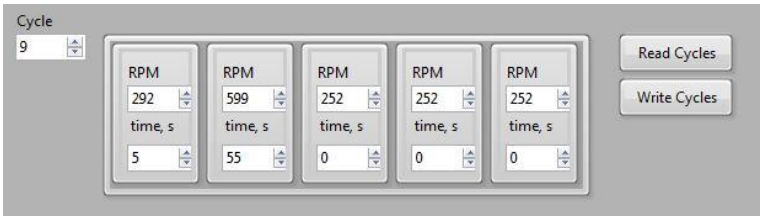
If you add a program, remember to increase the number of programs also on Settings => General => Prog. number

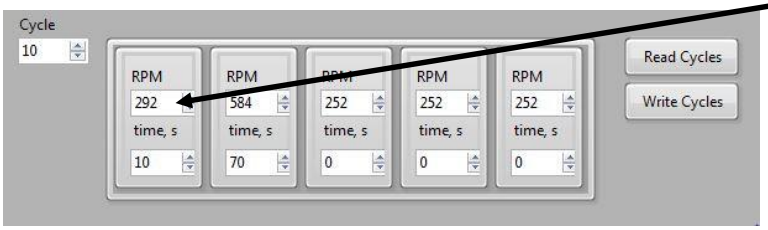
8.2 Auto program

Can be used when can sizes is well known.
Shaker is divided into four different, three of which are normally in use, zones for clamping pressure and choice of cycle.

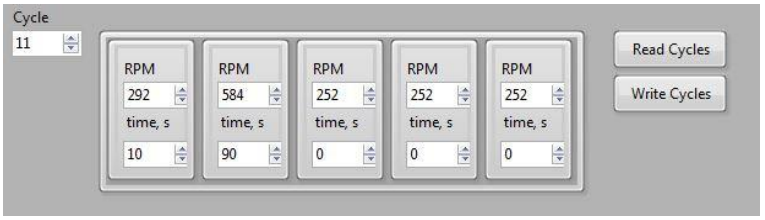


Cycles are defined.





Positive value normal movement from S/N U17S0017, before that the opposite



9 TROUBLESHOOTING AND ERROR MESSAGES

The door is locked and does not open normally

First try following steps to open the door:

1. Press the STOP button => you will hear clicking noise.
2. Sharply push the door down wards => the door opens.

If the door still does not open, you can open it manually through the hole behind the shelf. This hole is covered with a plug. To open the door manually, see 2.11 How to open the door manually.

ERROR MESSAGES

DESCRIPTION	EXPLANATION
Door open!	Door state detected as open during program execution
Door error	Door state detected as closed after unlock of door lock
Calc.check	Estimated by SW values of current or encoder speed don't match measured values. Something wrong with motor/motor control or encoder configuration. SW compare encoder speed with calculated value if motor current is low and current if current goes high and encoder speed drops down
High Torque!	High torque detected. Torque value goes higher then configured torque warning limit. In this case torque raise is relatively slow and don't exceed can detection limit. Otherwise "Check can" message shown.
Endcoder error!	No encoder signal when torque is low (below warning limit)
Inverter error!	Inverter feedback signal missing
Motor CPLD!	Clamping motor current limit detected by CPLD chip. Current limit configured in HW by JP4,JP5,JP6 (30A,19A, adjustable 14-30A)
Motor bridge!	Clamping motor bridge voltage drops down. Depending on motor direction left or right half of bridge voltage is checked
Emergency!	Emergency switch is pressed
Power Off	Power supply voltage drops are detected. SW saves position and waits for power down.

Also some error messages, which are not alarms:

Check can!	Can is detected trough torque raise but motor doesn't stop after specified distance (mm)
No can!	Can is not detected when position is minimum (home position 0)
Err: Reclamp	Second reclamping attempt was unsuccessful. Reclamping when can is detected in 15mm after start or after speed change