WAGNER

Translation of the Original Operating Manual

Hardware

MCS 1 Reciprocator Controller

Version 05 / 2013

CE

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1 GENERAL INFORMATION

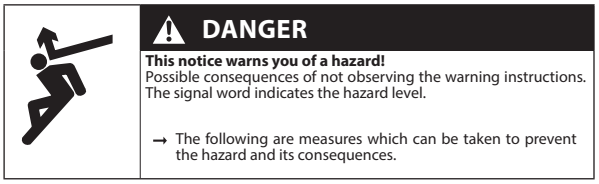
1.1 PREFACE

The operating manual contains information about safely operating, maintaining, cleaning and repairing the device.
The operating manual is part of the device and must be available to operating and service staff.
Operating and service staff should be instructed according to the safety instructions.
The device may only be operated in compliance with this operating manual.
This equipment can be dangerous if it is not operated according to the instructions in this operating manual.

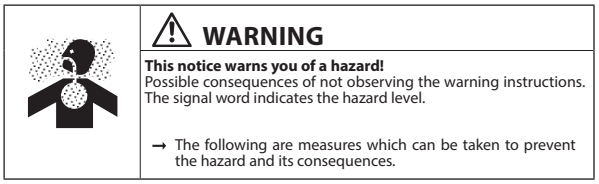
1.2 WARNINGS, NOTICES, AND SYMBOLS IN THIS OPERATING MANUAL

Warning instructions in this operating manual highlight particular dangers to users and to the device and state measures for avoiding the hazard. These warning instructions fall into the following categories:

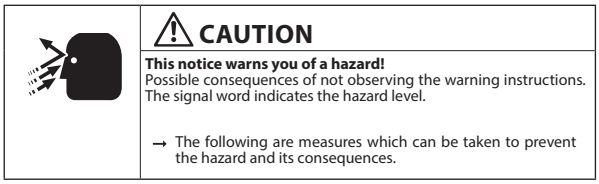
Danger - immediate risk of danger.
Non-observance will result in death or serious injury.



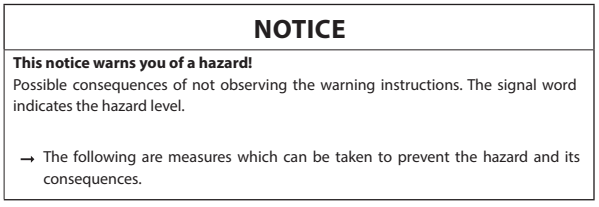
Warning - possible imminent danger.
Non-observance may result in death or serious injury.



Caution - a possibly hazardous situation.
Non-observance may result in minor injury.



Notice - a possibly hazardous situation.
Non-observance may result in material damage.



Note - provides information about particular characteristics and how to proceed.

This operating manual describes the assembly of an MCS 1 reciprocator controller (control cabinet, electrical connections and preparation for first commissioning).

1.3 LANGUAGES

The operating manual is available in the following languages:

German	2336501	English	2336503
French	2336505	Italian	2336506
Spanish	2336508	Russian	2336509
Chinese	2336510		

1.4 ABBREVIATIONS

HU	Sliding table
VU	Reciprocator
Stk	Number of pieces
Pos	Position
K	Marking in the spare parts lists
Order No.	Order number
ET	Spare part
B	Width
H	Height
T	Depth

2 CORRECT USE

2.1 DEVICE TYPE

Reciprocator controller

2.2 CORRECT USE

The MCS 1 control module serves to control a maximum of two HU 1 sliding tables and two VU 1 reciprocators for use in automatic powder coating systems.

2.3 USE IN AN EXPLOSION HAZARD AREA

The MCS 1 control module may not be used in explosion hazard areas (Zone 22).

2.4 SAFETY PARAMETERS

The controller is only suitable for the controlling of motion technique.
J. Wagner AG forbids any other use!
The controller may only be operated under the following conditions if:

- the operating staff have previously been trained on the basis of this operating manual,
- the safety regulations listed in this operating manual are observed,
- the operating, maintenance and repair notices in this operating manual are observed,
- and the statutory requirements and accident prevention regulations standards in the country of use are observed.

The reciprocator controller may only be used if all parameters are set and all measurements/ safety checks are carried out correctly.

2.5 PROCESSIBLE MATERIALS

- Types of powder which can be charged electrostatically
- Metallic powder

2.6 REASONABLY FORESEEABLE MISUSE

- Use of damp powder paint,
- Working with liquid coating materials,
- Incorrectly set values for coating parameters and
- Use of defective components and accessories.

2.7 RESIDUAL RISKS

Residual risks are risks which cannot be excluded even in the event of correct use.
If necessary, warning and prohibition signs at the relevant points of risk indicate residual risks.

Residual risk	Source	Consequences	Specific measures	Lifecycle phase
Skin contact with powder paints and cleaning agents	Handling powder paints and cleaning agents	Skin irritations, allergies	Wear protective clothing, Observe safety data sheets	Operation, maintenance, disassembly
Powder paint in air outside the defined working area	Painting outside the defined working area	Inhalation of substances hazardous to health	Observe work and operation instructions	Operation, maintenance

3 IDENTIFICATION

3.1 EXPLOSION PROTECTION IDENTIFICATION

The MCS 1 control module may not be used in explosion hazard areas (Zone 22).

4 GENERAL SAFETY INSTRUCTIONS

4.1 SAFETY INSTRUCTIONS FOR THE OPERATOR

→ Keep this operating manual at hand near the unit at all times.
→ Always follow local regulations concerning occupational safety and accident prevention.

4.1.1 ELECTRICAL DEVICES AND OPERATING EQUIPMENT

→ To be provided in accordance with the local safety requirements with regard to the operating mode and ambient influences.
→ May only be maintained by skilled electricians.
→ Must be operated in accordance with the safety regulations and electrotechnical regulations.
→ Must be repaired immediately in the event of problems.
→ Must be decommissioned if they pose a hazard.
→ Must be de-energized before work is commenced on active parts.
→ Secure the device against being switched back on without authorization. Inform staff about planned work.
→ Observe electrical safety regulations.

4.1.2 STAFF QUALIFICATIONS

→ Ensure that the device is operated and repaired only by trained persons.

4.1.3 SAFE WORK ENVIRONMENT

→ The floor in the working area must be electrostatically conductive (measurements according to EN 1081 and EN 61340-4-1).
→ The footwear worn by the operators must comply with the requirements of EN ISO 20344. The measured insulation resistance must not exceed 100 Megohms.
→ The protective clothing, including gloves, must comply with the requirements of EN ISO 1149-5. The measured insulation resistance must not exceed 100 Megohms.
→ The powder release must be electrically interlocked with the powder spray system's exhaust air equipment.
→ Excess coating material (overspray) must be collected up safely.
→ Ensure that there are no ignition sources such as naked flames, sparks, glowing wires, or hot surfaces in the vicinity. Do not smoke.
→ Provide sufficient numbers of suitable fire extinguishers and ensure that they are serviceable.
→ The operating company must ensure that the average concentration of powder paint in the air does not exceed 50% of the lower explosion limit (LEL = max. permitted concentration of powder to air). If no reliable LEL value is available, the average concentration must not exceed 10 g/m^3.

4.2 SAFETY INSTRUCTIONS FOR STAFF

→ Always follow the information in this manual, particularly the general safety instructions and the warning instructions.
→ Always follow local regulations concerning occupational safety and accident prevention.
→ Under no circumstances may people with pacemakers enter the area where the high-voltage field between the spray gun and the work piece to be coated builds up!

4.2.1 SAFE HANDLING OF WAGNER POWDER SPRAY DEVICES

→ Do not point spray guns at people.
→ Before all work on the device, in the event of work interruptions and functional faults:
- Switch off the energy/compressed air supply.
- Secure the spray gun against actuation.
- Relieve pressure on spray gun and device.
- By functional faults: Identify and remedy/rectify the problem according to the instructions in the "Fault Rectification" chapter.

4.2.2 GROUNDING THE DEVICE

The electrostatic charge may, in certain cases, give rise to electrostatic charges on the device. In the event of discharge, this may result in the formation of sparks or flames.
→ Ensure that the device is grounded before each coating process.
→ Ground the work pieces to be coated.
→ Ensure that all persons inside the working area are grounded, e.g. by wearing electrostatically conductive shoes.
→ The function of grounding cables must be checked regularly (see EN 60204).

4.2.3 MATERIAL HOSES

→ Only use an original Wagner powder hose.

4.2.4 CLEANING

→ Before starting any cleaning work, the high voltage must be switched off and secured against being inadvertently switched on.
→ Secure the device against being switched back on without authorization.
→ Liquid cleaning agents must not be used!
→ Only mobile industrial vacuum cleaners of design 1 (see EN 60335-2) may be used to remove dust deposits.

4.2.5 HANDLING POWDER PAINTS

→ Take note of the processing regulations laid down by the manufacturer of the powder paint being used, when preparing or processing the powder.
→ Take note of the manufacturer's instructions and the relevant environmental protection regulations when disposing of powder paints.
→ Take the prescribed safety measures, in particular the wearing of safety glasses and safety clothing as well as the use of protective hand cream.
→ Use a mask or breathing apparatus if necessary.
→ To ensure sufficient protection of health and the environment, only operate the device in a powder booth or at a spray wall with activated ventilation (exhaust air).

4.3 PROTECTIVE AND MONITORING EQUIPMENT

⚠ WARNING

Protective and monitoring equipment!
Risk of injury and equipment damage.

→ Protective and monitoring equipment must not be removed, modified or rendered unusable.
→ Regularly check for perfect functioning.
→ If defects are detected on protective and monitoring equipment, the system must not be operated until these defects are remedied.

4.4 SAFETY FEATURES

Plates bearing information for the user have been attached to the work openings of the powder coating booth.
The plate size corresponds to the standard category Ø 100 mm; 3.94 inches.
The label plates, which must be attached, are shown below:

High-voltage!
In the control cabinet:
(25 mm; 0.98 inch)
voltage before main switch

Danger of crushing!

Explosive atmosphere!

Risk of tripping!

Forbidden for persons with a cardiac pacemaker!

Do not jump on the booth floor!
Danger of slipping!

Smoking, fire, and naked flames are prohibited!

Forbidden for unauthorized persons!

Wear electrostatically conductive footwear!

Follow the instructions in the operating manual!

5 DISCLAIMER

5.1 HARDWARE

Any amendments by the user or any third party to the structure of the control cabinet delivered by J. WAGNER GmbH, in particular in respect of the electric controller, require the written permission of J. WAGNER GmbH.

Any amendments, which were not permitted, immediately lead to the exclusion of all warranty, liability and guarantee claims by the manufacturer.

5.2 SOFTWARE

The production of software copies intended for sale or installation in the end user's proprietary systems or controllers intended for sale or for internal use requires the written permission of J. WAGNER GmbH.

Any amendments by the user or third parties of the software delivered by J. WAGNER GmbH, requires the written permission of J. WAGNER GmbH.

Any amendments, which were not permitted, immediately lead to the exclusion of all warranty, liability and guarantee claims by the manufacturer.

6 DESCRIPTION

6.1 FIELDS OF APPLICATION, CORRECT USE

The MCS 1 reciprocator controller is used in automatic powder coating systems. The controller controls:

- reciprocator settings and
- sliding table settings.

6.2 SCOPE OF DELIVERY

Quantity	Order No.	Designation
1		MCS 1 reciprocator controller
The standard equipment includes:		
1		Declaration of Conformity
1	2336501	Operating manual, German
1	see Chapter 1.3	Operating manual in local language

6.3 TECHNICAL DATA

6.3.1 CONTROL CABINET

Type:	MCS 1
Serial number:	see type plate
Year of construction:	see type plate
Voltage:	230 VAC
Frequency:	50-60 Hz
Input power:	2.5 kW
Fuse:	20 A characteristic curve C
Supply line:	At least 3 x 2.5 mm^2
Protection class:	IP 54
Dimensions:	
Width:	270 mm; 10.63 inches
Height:	135 mm; 5.31 inches
Depth:	300 mm; 11.81 inches
Weight:	
Ambient conditions:	
Operating temperature range	5 - 45 °C; 41 - 113 °F

6.3.2 INPUT SIGNALS

Pin	Connection
	Ground
N	Neutral conductor 230 VAC
1	not connected
2	not connected
3	Phase 230 VAC

6.3.3 OUTPUT SIGNAL

Pin	Connection
	Ground
N	Neutral conductor 230 VAC
1	+24 VDC
2	0 V
3	Phase

6.3.4 CANOPEN OUTPUTS

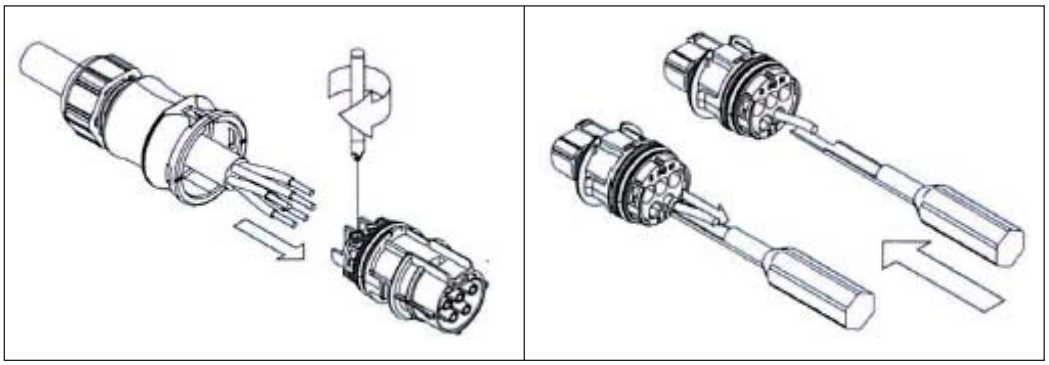
Pin	Connection
1	Shield
2	
3	GND
4	CAN-Hi
5	CAN-Lo

6.3.5 CANOPEN NODE

Nodes	Device
11	Sliding table 1
12	Sliding table 2
21	Reciprocator 1
22	Reciprocator 2
Baud rate	250 kBit/s

6.4 PLUG CONNECTOR ASSEMBLY INSTRUCTIONS

Connect the conductor | Disconnect the conductor



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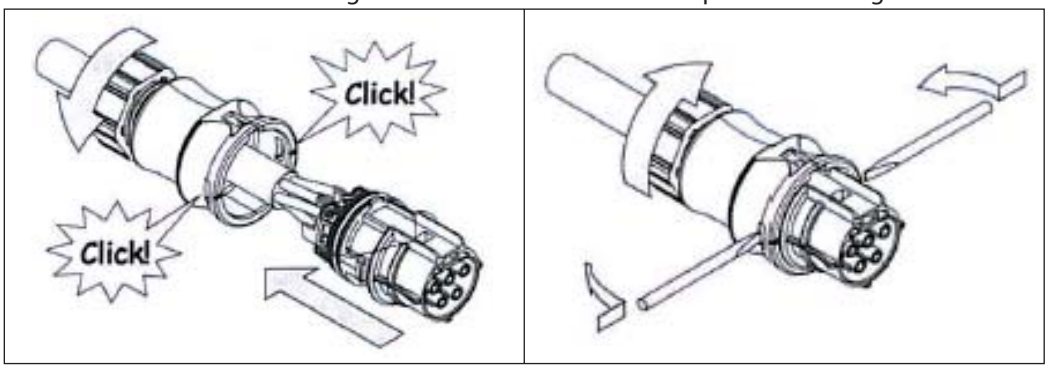
Close the housing | Open the housing



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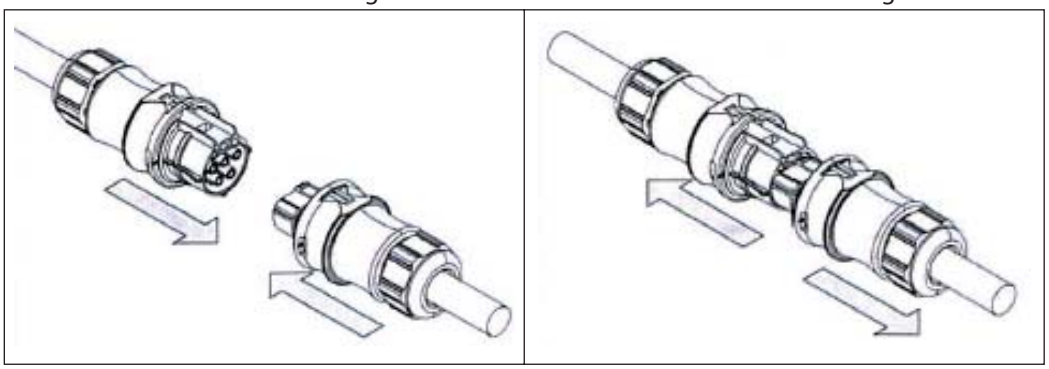
Interlock the housing | Release the housing



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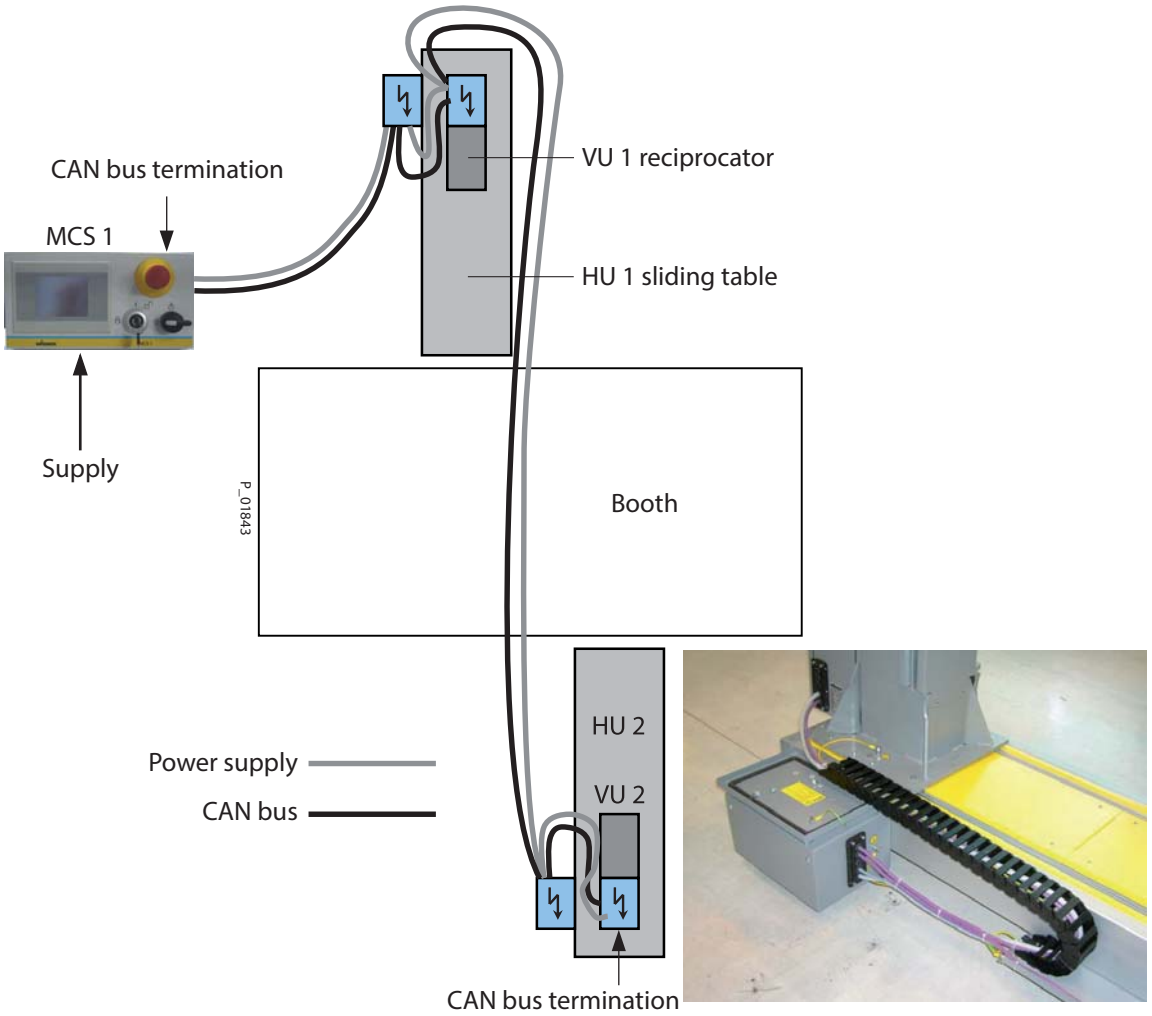
7 SYSTEM ASSEMBLY

7.1 ELECTRICAL CONNECTION MCS 1 STAND ALONE



7.2 MCS 1 CONTROL UNIT

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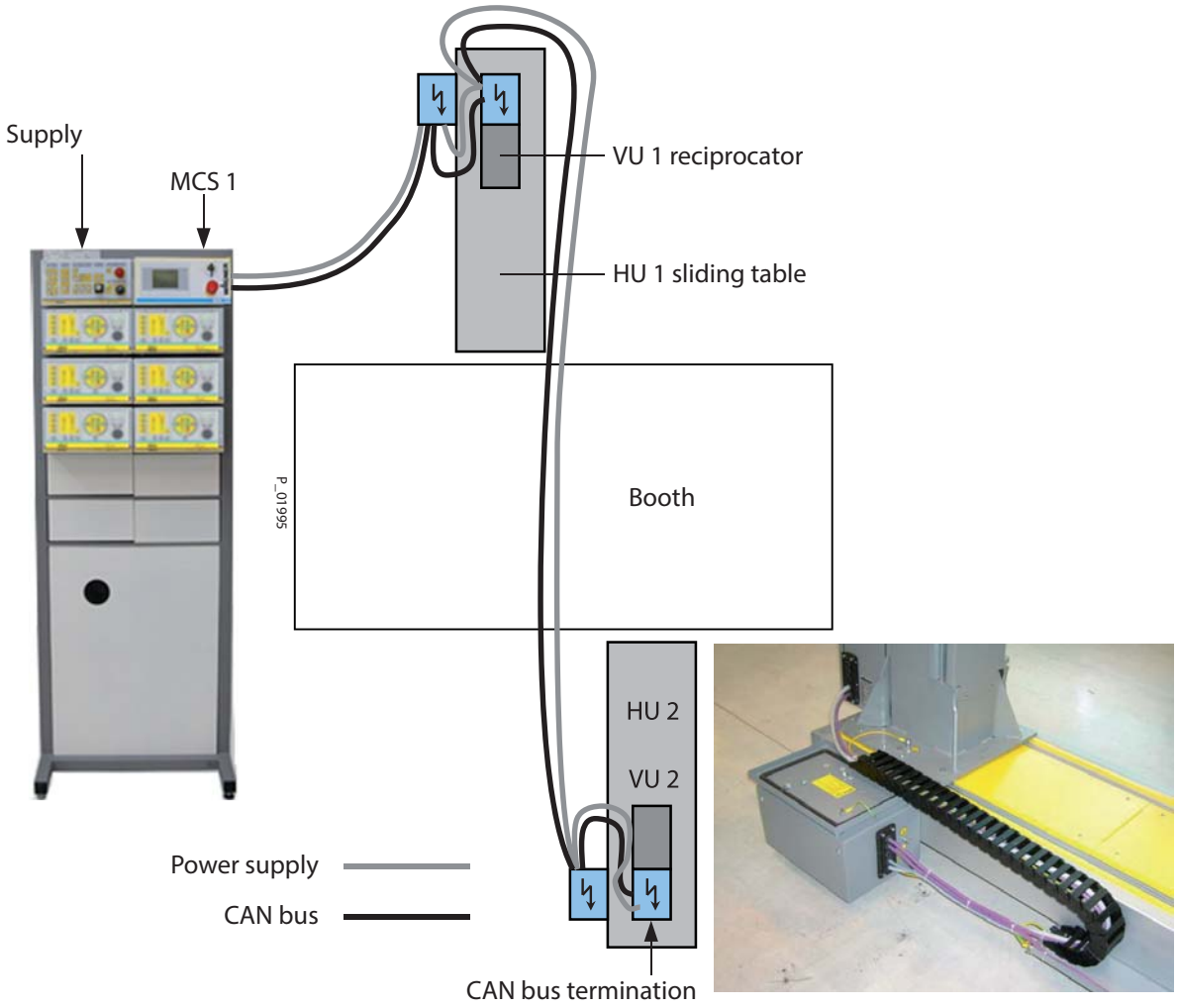
Front view:

- 4" color touch screen
- EMERGENCY stop button
- ON/OFF switch
- Key switch

Rear

- Electrical connection
- Voltage output for motion equipment
- CAN-Bus connection
- Interlocking connections

7.3 PRIMATECH CCM ELECTRICAL CONNECTION



8 ASSEMBLY

8.1 TRAINING THE ASSEMBLY STAFF

⚠ WARNING

Incorrect installation/operation!
Risk of injury and equipment damage.

- → The assembly staff must have all of the technical skills to safely undertake commissioning.
- → The assembly staff must be familiar with the provisions of European standards DIN EN 50050-2 and DIN EN 50177.
- → When assembling and for all work, read and follow the operating manual and safety regulations for the additionally required system components.

8.2 STORAGE CONDITIONS

Until the point of assembly, the control components must be stored in a dry location, free from vibrations and with a minimum of dust. The control components gun must be stored in closed rooms.
The air temperature at the storage location must be between 5 - 45 °C; 41 - 113 °F.
The relative air humidity at the storage location must not exceed 75%.

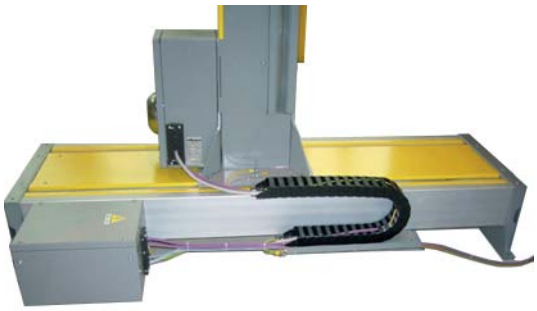
8.3 ASSEMBLY CONDITIONS

The air temperature at the installation site must be between 5 - 45 °C; 41 - 113 °F.
Depending on the powder paint used, the maximum permissible ambient temperature for reliable operation can be significantly below +40 °C; 104 °F.
The relative air humidity at the assembly location must not exceed 75%.

8.4 ASSEMBLY OF THE CONTROL UNIT

The control unit can be mounted in a rack or on an individual holder.

8.5 CONNECTIONS BETWEEN THE CONTROL UNIT AND MOTION TECHNIQUE



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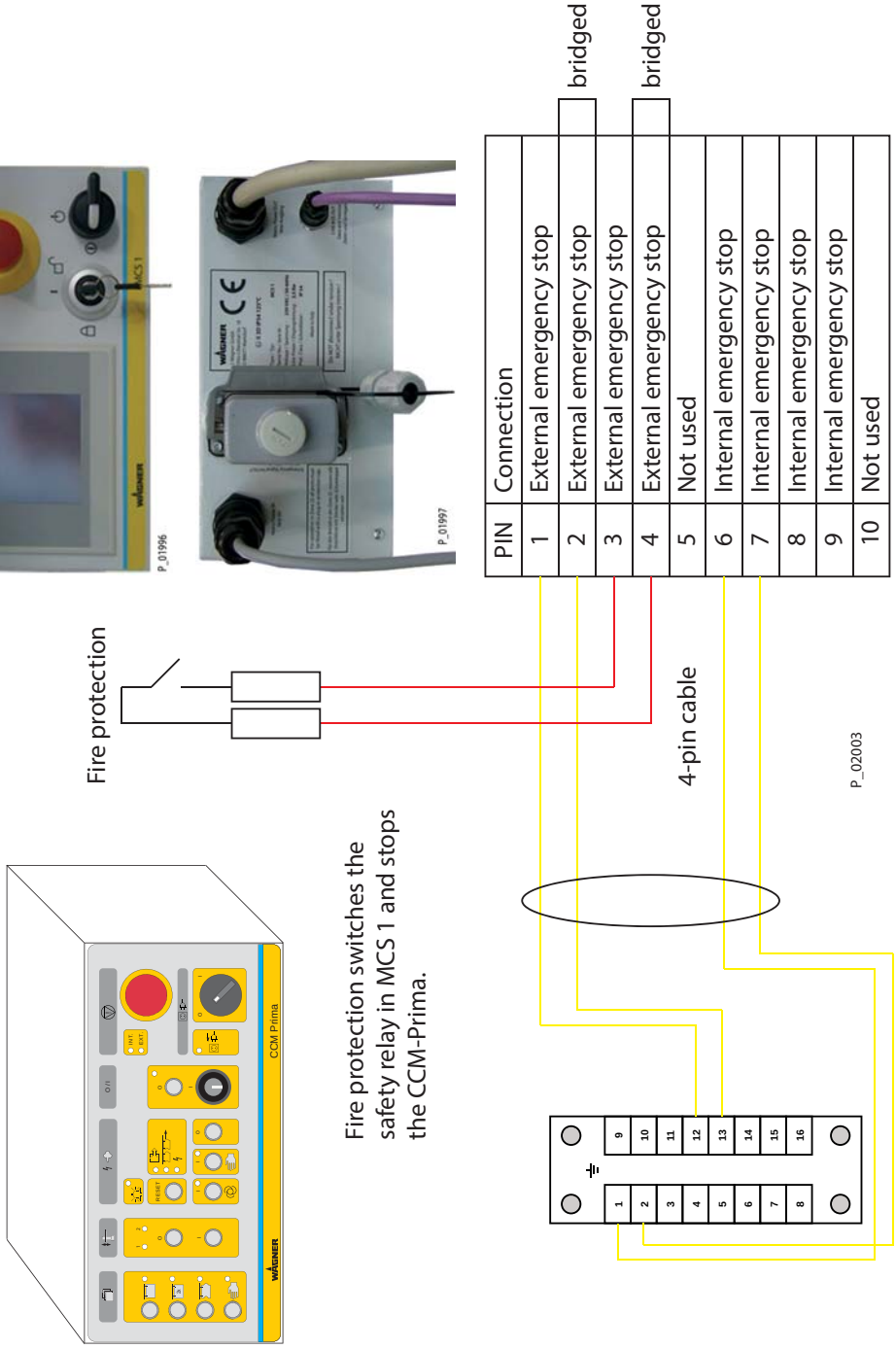
Cable laying:
When using an electric sliding table, the supply first takes place in the sliding table's switch box.
Then the electric cable and bus cable are looped through.

P_02002

All connection cables are designed with plugs on both sides.

8.6 INTERLOCKING BETWEEN CCM-PRIMA AND MCS 1

Both emergency stop switches interrupt the power supply and stop the connected device.
The 4-pin cable in included in the MCS 1 scope of delivery.



8.7 GROUNDING

DANGER

No Grounding!
Risk of explosion and risk of electric shock.

→ Electrostatic control units and the associated spray equipment may only be connected to mains supplies with a protective conductor connection (PE conductor)!

WARNING

Heavy paint mist if grounding is insufficient!
Danger of poisoning.
Insufficient paint application quality.

→ Ground all device components.
→ Ground the work pieces to be coated.

For security reasons the system must be properly grounded.
Wagner recommends the use of a copper cable of at least 16 mm^2 with sufficient mechanical resistance for connection to the system ground.
It is important for system's safety and to achieve an optimum coating, that all system components such as work pieces, conveyors, color supply, control unit and booth are perfectly grounded.

A poorly grounded work piece causes:

- dangerous electric charging of the work piece,
- very bad wrap around,
- uneven coating and
- back-spray to the spray gun, i.e. contamination.

Prerequisites for perfect grounding and coating are:

- clean suspension of the work piece to be coated,
- grounding of spraying booth, conveyor system and suspension on site in accordance with the operating manual or the manufacturer's information and
- grounding of all conductive parts within the working area.
- The grounding resistance of the work piece may not exceed 1 MΩ (megohm). (Resistance to ground measured at 500 V or 1,000 V).
- The footwear worn by the operators must comply with the requirements of EN ISO 20344. The measured insulation resistance must not exceed 100 MΩ (megohms).

- The protective clothing, including gloves, must comply with the requirements of EN ISO 1149-5. The measured insulation resistance must not exceed 100 MΩ (megohms).

Sparks between conveyor, conveyor hooks (hangers) and work piece can occur if electric contact points between conveyor, conveyor hooks (hangers) and work piece are not sufficiently cleaned and therefore the work pieces are not sufficiently grounded!
These sparks can cause severe radio frequency interference (electro-magnetic compatibility = EMC).

9 COMMISSIONING

9.1 TRAINING COMMISSIONING STAFF

⚠ WARNING

Incorrect installation/operation!
Risk of injury and equipment damage.

→ The commissioning staff must have the technical skills to safely undertake commissioning.
→ The commissioning staff must be familiar with the provisions of the European standards DIN EN 50050-2 and DIN EN 50177.
→ When putting into commissioning and for all work, read and follow the operating manual and safety regulations for the additionally required system components.

9.2 SAFETY INSTRUCTIONS

⚠ WARNING

Incorrect operation!
Risk of injury and equipment damage.

→ If contact with powder materials or cleaning agents causes skin irritation, appropriate precautionary measures must be taken, e.g. wearing protective clothing.
→ The footwear worn by commissioning staff must comply with EN ISO 20344. The measured insulation resistance must not exceed 100 megohms.
→ The protective clothing, including gloves, must comply with EN ISO 1149-5. The measured insulation resistance must not exceed 100 megohms.

9.3 COMMISSIONING

1. Transport the sliding table or roller base and reciprocators to the assembly area.
2. Mount the reciprocators on the roller base or sliding table.
3. Set mechanical stops on the sliding table and measure the resulting maximum displacement.
   The determined values must be entered as parameters in the MCS 1 controller.
4. Mount the guns according to the desired gun assembly.
5. Set the reciprocators' mechanical stops and measure the resulting maximum stroke.
   The determined values must be entered as parameters in the MCS 1 controller.
6. Move the reciprocator and lifting slide by hand into all possible positions in order to ensure that there are no collisions.
7. If a sliding table is used, screw the reciprocator's floor plate to the sliding table's toothed belt carrier.
8. Connect all cables to MCS 1 and loop them from MCS 1 to the individual devices.
9. Set the following parameters on the frequency converter of all devices:
   Address, baud rate on
   Set the terminating resistor on the CAN-bus loop's last device.
10. Connect the power supply to MCS 1 and, if available, to CCM-Prima.
11. Switch on the main switch on MCS 1.
    The operating system is loaded and the start screen appears after approx. 15 seconds.
12. Check if the electrical devices are displayed on the screen.
    If this is not the case, check the cabling and inverter parameters (see step 9).
13. Ensure that no other persons work on the device and the that traveling distance is open.
14. Switch on key switch.
    The reciprocators and sliding tables carry out a reference travel.
15. Call up the parameters menu on MCS 1:
    User = User entry
    Password = User entry
16. Set the desired language.
17. Enter the values for the maximum displacement and the maximum stroke.
18. Set the remaining parameters.

9.3.1 SETTING UP THE FREQUENCY CONVERTER

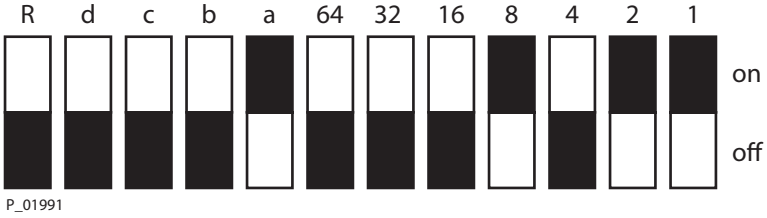
The node-ID has to be set on both the sliding tables' frequency converter and on the reciprocators' frequency converter.
The setting takes place via the DIP switch 1-64.

Setting sliding table 1: Adress 11 (DIP switch 1, 2 ,4 ON)
Setting sliding table 2: Adress 12 (DIP switch 3, 4 ON)

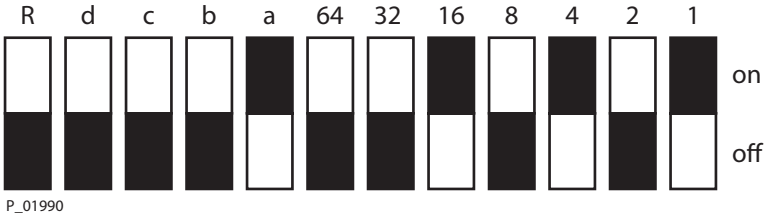
Further reciprocators will be consecutively numbered (13, 14; ...).

Setting reciprocator 1: Adress 21 (DIP switch 1,3,5 ON)
Setting reciprocator 2: Adress 22 (DIP switch 2, 3, 5 ON)

Further reciprocators will be consecutively numbered (23, 24; ...).



Address: 11
Baud rate: 250
Terminating resistor: OFF



Address: 21
Baud rate: 250
Terminating resistor: OFF

The baud rate can be set with switches a to d.
The value is set to 250 KB (switch a ON) in the factory.

On the last device of the CAN loop, switch R has to be set to ON.

10. OPERATION

10.1 TRAINING THE OPERATING STAFF

⚠ WARNING

Incorrect operation!
Risk of injury and equipment damage.

→ The operating staff must be qualified to operate the entire system.
→ Before work commences, the operating staff must receive appropriate training.
→ The operating staff must be familiar with the provisions of European standards DIN EN 50050-2 and DIN EN 50177.

10.2 SAFETY INSTRUCTIONS

⚠ WARNING

Incorrect operation!
Risk of injury and equipment damage.

→ If contact with powder materials or cleaning agents causes skin irritation, appropriate precautionary measures must be taken, e.g. wearing protective clothing.
→ The footwear worn by operating staff must comply with EN ISO 20344. The measured insulation resistance must not exceed 100 megohms.
→ The protective clothing, including gloves, must comply with EN ISO 1149-5. The measured insulation resistance must not exceed 100 megohms.

10.3 SWITCHING THE CONTROLLER ON AND OFF

P_02004

Procedure:

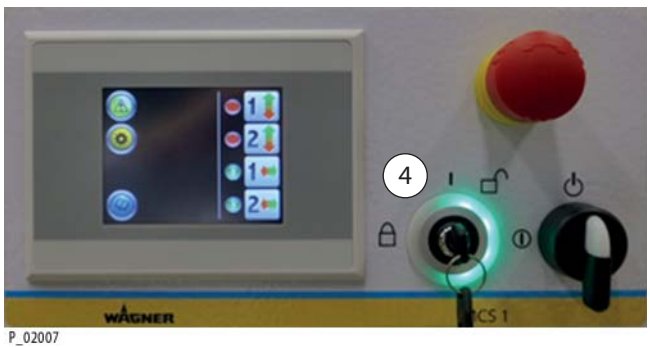
1. Release the emergency stop button.

P_02005

2. Switch the main switch on by turning it clockwise.
   - The system is started.

P_02006

3. In the main menu, the following are displayed:
   - Functions
   - Installed devices
   - Status of the devices



P_02007

4. Switch the key switch on:
   - Device release
   - Devices' movement status indicator

10.4 OPERATING THE TOUCH SCREEN


P_02008

Only touch the touch screen with your fingers or with a touch pen.
Don't use any sharp or metallic objects!

P_02009

To activate a function, gently press on the corresponding symbol.
To change a numerical value, gently press the corresponding numerical value.
A an input field, into which the desired value can be entered, appears.

P_02010

Enter the desired value and confirm with RET.
The menu can be left without any changes being made by using the ESC button.
Possible minimum and maximum values are displayed underneath the input field.

10.5 MAIN MENU

10.5.1 FAULT DISPLAY


No fault


Fault detected

P_02040

10.5.2 SLIDING TABLE STATUS DISPLAY


red = fault


green = manual mode


green = recipe mode


blue = reference travel


yellow = device inactive (secured)

10.5.3 RECIPROCATOR STATUS DISPLAY


red = fault


green = device running


red = device idle


blue = reference travel


yellow = device inactive (secured)

10.6 TURNING THE VU RECIPROCATOR ON AND OFF

P_02011

Procedure:

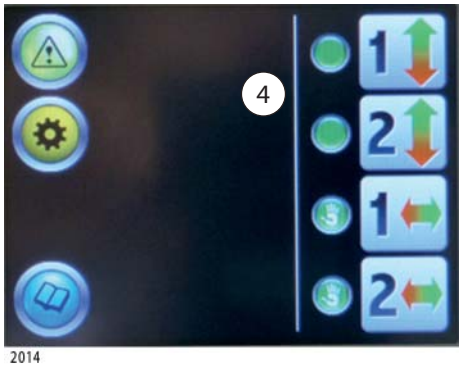
1. Select the reciprocator.

P_02012

2. Turn the reciprocator on or off by pressing the on/off button.

P_02013

3. The on/off button changes color according to the state of activation.
   Orange = turn off
   Green = turn on



2014

4. In the main menu, the operating status is signalized by colored light points.


Red = fault


Red = device idle

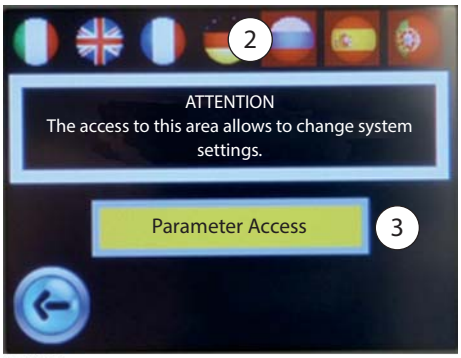

Green = device running

10.7 SETTING THE DISPLAY LANGUAGE AND THE MACHINE PARAMETERS

P_02015

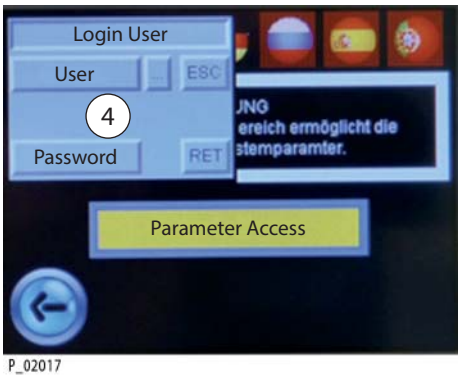
Procedure:

1. Call up the machine parameters menu.



P_02016

2. Call up the desired language by pressing the corresponding flag icon.
3. Press the "parameter access" button.



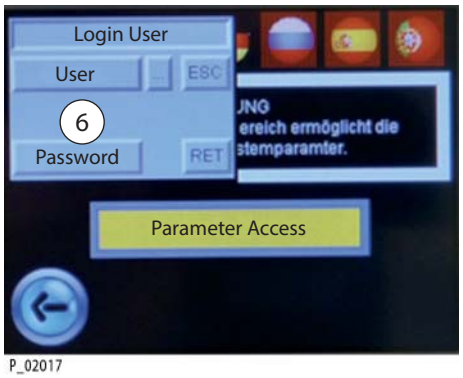
P_02017

4. Touch button "user" or small field.

P_02018

5. Enter the user name on the keyboard or select it with the "< >" available user button.

   Confirm the selection with the "RET" button.



P_02017

Procedure:

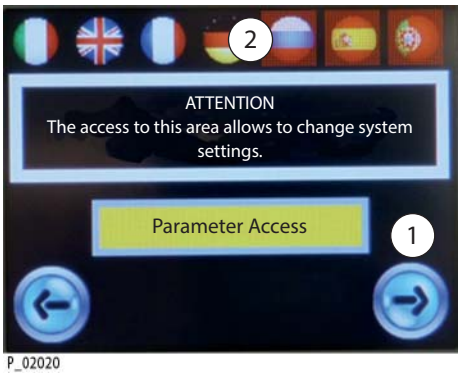
6. Press the "password" button.

P_02019

7. Enter the password and confirm it with the "RET" button.

   Password for "user" = user

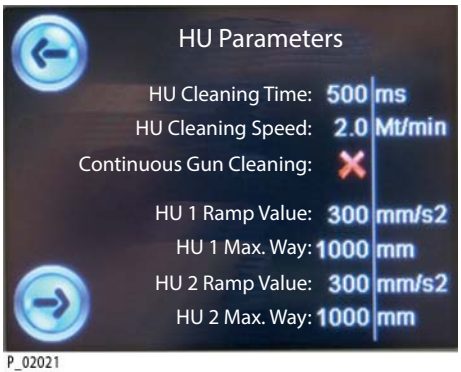
10.8 SETTING THE DISPLAY LANGUAGE AND THE MACHINE PARAMETERS



P_02020

Procedure:

1. Call up the movement parameters menu with the "->" button.



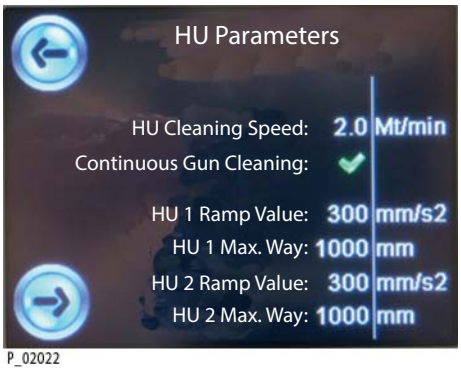
P_02021

Pulse/Pause (HU Cleaning Time): pulsed blowing off of the gun during the cleaning movement

(Recommendation)

Cleaning speed = speed during blowing off

Option: Continuous blowing off of the gun (Continuous Gun Cleaning).

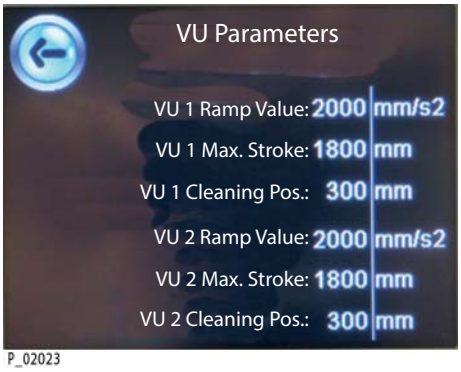


P_02022

Ramp = sliding table's acceleration and deceleration parameters during positioning

Maximum way = the maximum possible route measured during installation

A fault message is generated by setting too high of a value.



P_02023

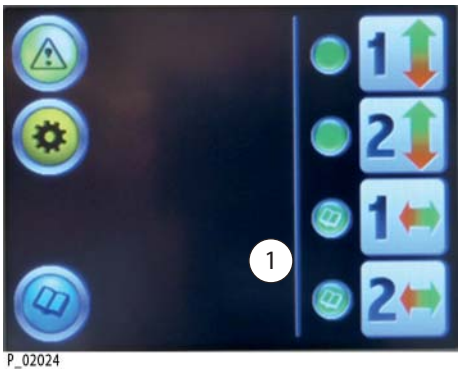
Ramp = reciprocators' acceleration and deceleration parameters in the reversal points

Maximum stroke = maximum stroke measured during the installation

Maximum way = the maximum possible route measured during installation

Cleaning position = height position of the guns in the cleaning mode, also used as the home position after a reference travel

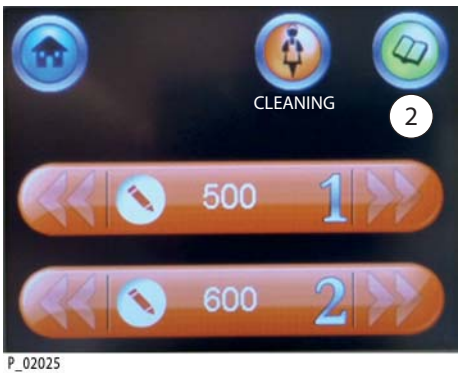
10.9 CHANGE THE CURRENT POSITION OF THE SLIDING TABLE



P_02024

Procedure:

1. Select the desired sliding table in the main menu.



P_02025

2. Change into manual operation by actuating the "recipe" button.

P_02026

3. Change the position of the sliding table by pressing the arrow button "<<" or ">>".

   The position change takes place immediately.

10.10 CHANGE THE CURRENT MOVEMENT PARAMETERS OF THE RECIPROCATORS

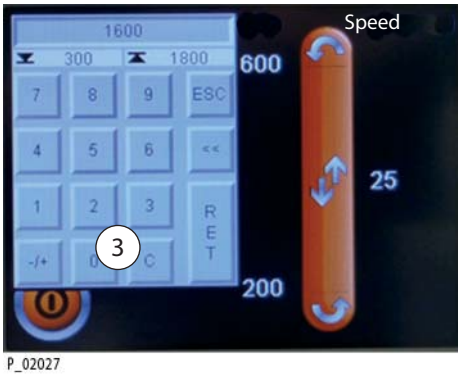
P_02024

Procedure:

1. Select the desired reciprocator in the main menu.

P_02013

2. Press the numerical value to be changed.



P_02027

3. Enter the new value and confirm with the "RET" button.

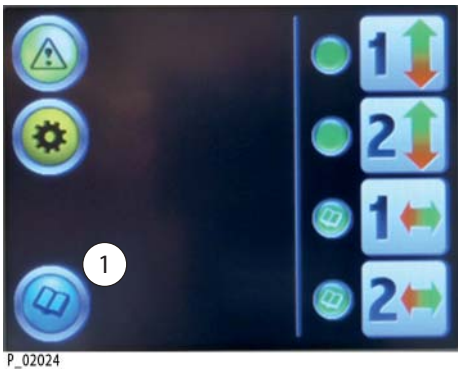
   The minimum and maximum limit values can be seen underneath the input field.

P_02028

4. Optional:

   Change by pressing the red/blue graph bar in the multi speed or single speed mode, and enter the desired value.

10.11 LOAD RECIPE



P_02024

Procedure:

1. Call up the recipe menu in the main menu.

P_02029

2. Call up the selection menu with the "load" button.

P_02030

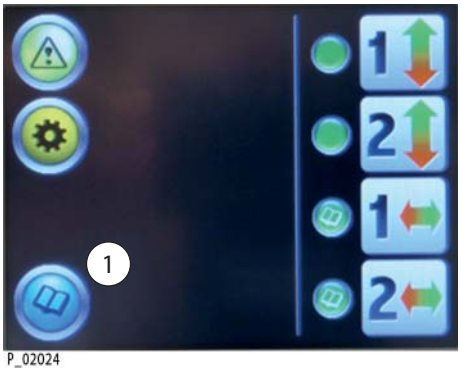
3. Select the desired recipe with the "+" and "-" buttons.

P_02031

4. Load the selected recipe by pressing the "folder" button.

   The recipe parameters are immediately active and the movement devices adjust to the new parameters.

10.12 SAVING THE RECIPE



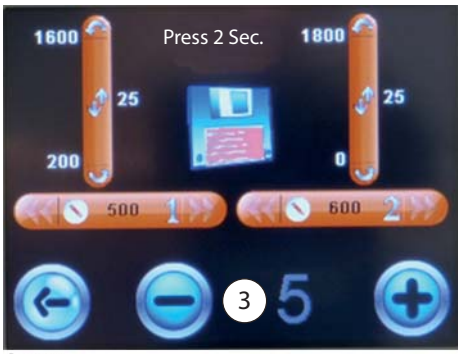
P_02024

Procedure:

1. Call up the recipe menu in the main menu.

P_02029

2. Press the "save" button to change to the selection menu.



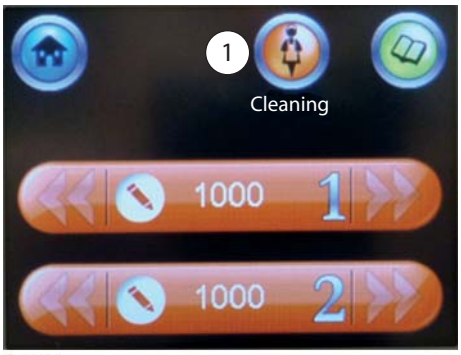
P_02032

3. Select the desired recipe number with the "+" and "-" buttons.

   Save the parameters by pressing the "folder" button.

   The reciprocator and sliding table's currently set values are saved.

10.13 AUTOMATIC CLEANING PROCESS "BLOWING OFF THE GUN"

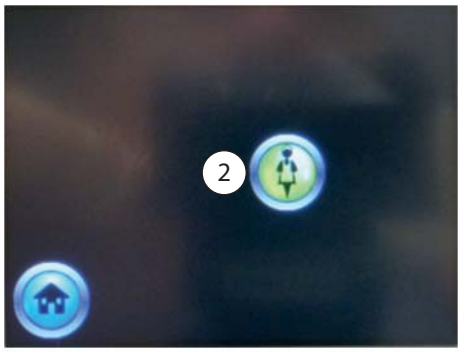


P_02033

Procedure:

1. Change from the main menu to the "sliding table" menu.

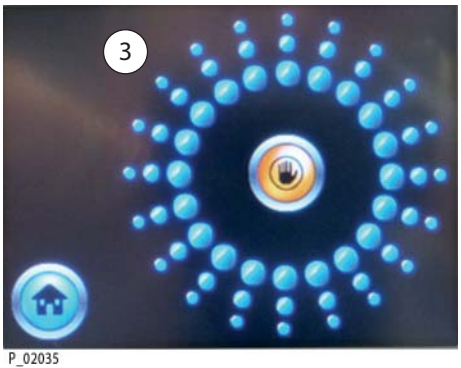
   Call up the cleaning menu by pressing the "cleaning" button.



P_02034

2. Start the cleaning cycle by pressing the "cleaning" button.

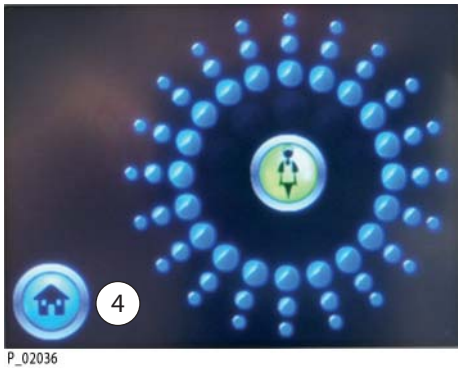
   Both sliding tables carry out the cleaning movement simultaneously.



P_02035

3. The cleaning process is signalized by lighting effects.

   The cleaning process can be stopped or interrupted by pressing the "hand" button if necessary.



P_02036

4. After the end of the cleaning cycle, it is possible to change back to the main menu or the process can be repeated.

10.14 FAULT MENU AND RECTIFICATION

P_02024

Fault status:


= no fault


= fault detected

P_02040

P_02037

List of faults:

Press the "confirm" button after the fault has been remedied.

P_02038

Converter device's detailed fault code

Further information is listed separately in the frequency converter's operating manual.

Press the "reset" button after remedying/ rectifying the fault.

11 CLEANING AND MAINTENANCE

11.1 CLEANING

11.1.1 CLEANING STAFF

Cleaning work should be regularly and carefully undertaken by qualified and trained staff. The staff must be familiar with the DIN EN 50050-2 and DIN EN 50177 provisions. They should be informed of specific hazards during their training.

The following hazards may arise during cleaning work:

- Health hazard from inhaling powder paint
- Use of unsuitable cleaning tools and aids

11.1.2 SAFETY INSTRUCTIONS

⚠ DANGER

Explosive powder/air mixes!
Danger to life and equipment damage.

→ Before starting cleaning or other manual work, the high-voltage must be shut down and locked to prevent it from being switched back on!
→ The spray gun must be separated from the high-voltage supply before any cleaning work is started!
→ Use only electrically conductive containers for cleaning liquids! Ground the containers!
→ Preference should be given to non-flammable cleaning fluids.
→ If flammable cleaning fluids are used, all parts carrying high-voltage must be discharged to a discharge energy of less than 0.24 mJ, once the high-voltage has been switched off, before they can be reached.
Most flammable solvents have an ignition energy of around 0.24 mJ or 60 nC.
→ The cleaning agent's flash point must be at least 15 K above the ambient temperature.
→ Only mobile industrial vacuum cleaners of design 1 (see EN 60335-2) may be used to remove dust deposits.

⚠ WARNING

Incorrect maintenance!
Risk of injury and equipment damage.

→ If contact with powder materials or cleaning agents causes skin irritation, appropriate precautionary measures must be taken, e.g. wearing protective clothing.
→ The footwear worn by operating staff must comply with EN ISO 20344. The measured insulation resistance must not exceed 100 megohms.
→ The protective clothing, including gloves, must comply with EN ISO 1149-5. The measured insulation resistance must not exceed 100 megohms.

11.1.3 CLEANING PROCEDURES

The cleaning intervals should be adapted by the operator depending on the level of use and if necessary the level of soiling.
In doubt, we recommend contacting J. Wagner AG's specialist personnel.
The valid health and safety specifications and the safety instructions provided in Chapter 4 must be adhered to for all cleaning work.

11.2 MAINTENANCE

11.2.1 MAINTENANCE STAFF

Maintenance work should be regularly and carefully undertaken by qualified and trained staff. They should be informed of specific hazards during their training.

The following hazards may arise during maintenance work:

- Health hazard from inhaling powder paint
- Use of unsuitable tools and aids

Once the maintenance work is complete, the device must be checked by a qualified person to ensure a reliable condition.

11.2.2 SAFETY INSTRUCTIONS

DANGER

Incorrect maintenance/repair!
Danger to life and equipment damage.

→ Repair or replacement of devices or parts of devices may only be performed outside the hazard area by specialist personnel.

DANGER

Incorrect maintenance/repair!
Risk of injury and equipment damage.

→ Have repairs and part replacements be carried out only by specially trained staff or a WAGNER service center.
→ Before all work on the device and in the event of work interruptions:
- Switch off the energy/compressed air supply.
- Decompress spray gun and device pressure.
- Secure the spray gun against actuation.
→ Observe the operating manual and service instructions at all times when carrying out work.

	**⚠ WARNING** **Incorrect maintenance!** Risk of injury and equipment damage. → If contact with powder materials or cleaning agents causes skin irritation, appropriate precautionary measures must be taken, e.g. wearing protective clothing. → The footwear worn by operating staff must comply with EN ISO 20344. The measured insulation resistance must not exceed 100 megohms. → The protective clothing, including gloves, must comply with EN ISO 1149-5. The measured insulation resistance must not exceed 100 megohms.

11.2.3 MAINTENANCE PROCEDURES

The maintenance intervals should be adapted by the operator depending on the level of use and if necessary the level of soiling.
In doubt, we recommend contacting J. Wagner AG's specialist personnel.
The valid health and safety specifications and safety instructions provided in Chapter 4 must be adhered to for all maintenance work.

Maintenance work	Point in time	
	per shift	weekly
Blow out gun and check for sintering	x	
Check gun settings	x	
Check gun discharge pressure	x	
Blow out powder hoses	x	
Check grounding		x
Check compressed air quality		x
Check gun voltage		x
Check powder hoses for bends and sintering		x

12 INSPECTIONS IN ACCORDANCE WITH DIN EN 50177: 2010

If the system is used for electrostatic coating with flammable coating powders, testing should be undertaken in accordance with DIN EN 50177: 2010-04 as per Table 3 and Table 4.

Section	Type of inspection	Requirements	Inspection by	Type of inspection	Inspection interval
1	Effectiveness of technical ventilation check	Effectiveness of technical ventilation check	TP/CP	ME Measurements of air flow speed / air quantities Check the differential pressure indicator.	continuously
2	Interlock between technical ventilation and high voltage, compressed air and coating material supply	The technical ventilation should be interlocked such that the high-voltage cannot be switched on while the technical ventilation is not working effectively.	CP	FI Test whether the system is safely stopped and the material supply, supply air and high-voltage are switched off when the ventilation is shut down.	annually
3	Parts carrying high-voltage outside the spray area	Parts carrying high-voltage outside the spray area must be routed such that discharges which put people at risk do not occur.	CP	FI Inspect and test (e.g. by measurement) whether all parts carrying high-voltage do not result in discharge which puts people at risk.	weekly

Key:

MA = Manufacturer
EM = Employer
CP = Capable person
FSE = Fire safety engineer
ELC = Electrician
TP = Trained person

FI = Function inspection
ME = Measurement
SI = Standard inspection
VI = Visual inspection
CI = Continuous inspection
TI = Technical inspection

Section	Type of inspection	Requirements	Inspection by	Type of inspection	Inspection interval
4	Effectiveness of grounding measures	All the system's conductive elements, such as floors, walls, ceilings, protective grating, transport devices, work pieces, powder containers, machines or construction parts etc. in the spray area, with the exception of parts which carry high-voltage during operation, must be connected to the grounding system. Parts of the booth must be grounded in accordance with EN 12215.	CP	VI/ME/CI Visual check of ground connections, perform function test on grounding switch, measurement of grounding resistors.	weekly
5	Measures to take if conductive components are insufficiently grounded	If sufficient grounding of conductive parts cannot be ensured, their discharge energy must not exceed the permissible value.	CP	ME/CI Measurement of discharge energy.	weekly
6	Resistance to ground of work piece's locating point	The resistance to ground of every work piece's locating point must not exceed 1 megohm (measurement voltage must be 1,000 V). The design of the work piece receiver must ensure that the adapters remain grounded during coating.	CP	ME/CI Measure resistance to ground (work piece receiver - ground potential) max. 1 MOhm @ 1,000 V.	weekly

Key:
MA = Manufacturer
EM = Employer
CP = Capable person
FSE = Fire safety engineer
ELC = Electrician
TP = Trained person

FI = Function inspection
ME = Measurement
SI = Standard inspection
VI = Visual inspection
CI = Continuous inspection
TI = Technical inspection

Section	Type of inspection	Requirements	Inspection by	Type of inspection	Inspection interval
7	Measures to take if the work pieces are insufficiently grounded	If sufficient work piece grounding in accordance with section 6 cannot be ensured, appropriate equipment, e.g. ionizers, must be used to discharge electric charges on the work piece. Such equipment must not exceed the permitted discharge energy of the spray systems with which it is used. In terms of permitted discharge energy, this equipment must be put through the same inspections as the powder spray systems used with it. The discharge equipment must be interlocked with the spray system such that the high-voltage is switched off and that coating cannot take place if the discharge equipment malfunctions.	CP	ME/FU/SÜ Measurement of discharge energy, check the monitoring equipment's test function by triggering it.	weekly
8	Effectiveness of the manually or automatically actuated fire extinguishing systems (room protection system)	Effectiveness of the manually or automatically actuated fire extinguishing systems (room protection system).	HE/BSB	FI Trigger fire extinguishing system, observe manufacturer's requirements.	6 months

Key:

MA = Manufacturer
EM = Employer
CP = Capable person
FSE = Fire safety engineer
ELC = Electrician
TP = Trained person

FI = Function inspection
ME = Measurement
SI = Standard inspection
VI = Visual inspection
CI = Continuous inspection
TI = Technical inspection

13 DISASSEMBLY AND DISPOSAL

13.1 DISASSEMBLY

⚠ WARNING

Incorrect disassembly!
Risk of injury and equipment damage.

→ Before starting disassembly:
- Switch off the energy/compressed air supply.
- Ensure that all system components are grounded.
- Secure system against being switched back on without authorization.

→ Observe the operating manual when carrying out all work.

We recommend having the Wagner system disassembled by Wagner or another specialist.

Before starting disassembly, all supply media (electricity, compressed air) must be disconnected at the connection points. All powder paint lines must be thoroughly emptied and then rinsed. Paint residues must be disposed of in line with statutory requirements.

Before starting disassembly, check whether the supply lines have actually been interrupted and have been depressurized and/or de-energized if necessary.

The empty system should be thoroughly cleaned. In particular fire loads such as unused paint in exhaust air pipes etc. should be removed to keep the risk of fire during disassembly as low as possible.

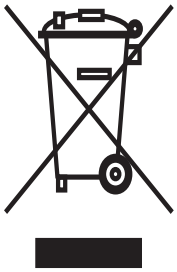
We recommend reporting to the public authorities the fact that systems with mandatory approval requirements are decommissioned.

Separate all materials encountered during disassembly as clearly as possible in line with statutory requirements. Take appropriate actions to ensure that no dangerous substances enter the system during disassembly. All waste produced must be separated and disposed of in line with local requirements.

Used materials are:

- Steel
- PVC plastics
- Cable

13.2 DISPOSAL



NOTICE

Do not dispose of used electrical equipment with household refuse!

In accordance with European Directive 2002/96/EC on the disposal of used electrical equipment and its implementation in national law, this product may not be disposed of with the household refuse, but must be recycled in an environmentally correct manner.

Wagner, or one of our dealers, will take back your used Wagner equipment and will dispose of it for you in an environmentally friendly way. Please contact one of our service points, one of our representatives or us directly to arrange this.

14 SPARE PARTS

14.1 HOW CAN SPARE PARTS BE ORDERED?

Always supply the following information to ensure delivery of the right spare part:

Order number, designation and quantity

The quantity does not have to be identical to the numbers in the "Stk" columns of the lists. This number merely indicates how many of the respective parts are used in each component.

The following information is also required to ensure smooth processing of your order:
- Billing address
- Delivery address
- Name of the person to be contacted in the event of any queries
- Type of delivery (normal mail, express delivery, air freight, courier etc.)

Identification in spare parts lists

Explanation of column "K" in the following spare parts lists.

◆ = Wearing parts
Note: No liability is assumed for wearing parts.

● = Not part of standard equipment, available, however, as special accessory.

	**⚠ WARNING** **Incorrect maintenance/repair!** Risk of injury and equipment damage. → Have repairs and part replacements be carried out by specially trained staff or a Wagner service center. → Before all work on the device and in the event of work interruptions: - Switch off the energy/compressed air supply. - Ensure that all system components are grounded. - Secure the unit against being switched back on without authorization. → Observe the operating and service instructions when carrying out all work.

14.2 SPARE PARTS RECOMMENDATION FOR THE CONTROL CABINET

15 EXTENDED OPERATING MANUAL

Depending on the system equipment, the following operating manuals are required to operate the entire system.

This extended operating manual includes:

- Give important information required for the connection and commissioning of the respective component.
- Give important information required for the use (e.g. change of color) of the respective component.
- The very important chapter "Maintenance and cleaning" for the relevant components.
- The description of troubleshooting and error correction for the respective components and
- a list of spare parts, wearing parts and accessories.

Operating manual	Order No.	Language
VU 1 reciprocator	2330731	German
	2330732	English
	2330733	French
	2330734	Italian
	2330735	Spanish
	2336466	Russian
HU 1 sliding table	2330736	German
	2330737	English
	2330738	French
	2330739	Italian
	2330740	Spanish
	2336468	Russian

16 WARRANTY AND CONFORMITY DECLARATIONS

16.1 IMPORTANT NOTES ON PRODUCT LIABILITY

As a result of an EC regulation effective from January 1, 1990, the manufacturer shall only be liable for his product if all parts originate from him or are approved by him, and if the devices are properly mounted, operated and maintained.
The manufacturer will not be held liable or will only be held partially liable if third-party accessories or spare parts have been used.
With genuine WAGNER accessories and spare parts, you have the guarantee that all safety regulations are complied with.

16.2 WARRANTY CLAIM

Full warranty is provided for this device:
We will at our discretion repair or replace free of charge all parts which within 24 months in single-shift, 12 months in 2-shift or 6 months in 3-shift operation from date of receipt by the purchaser are found to be wholly or substantially unusable due to causes prior to the sale, in particular faulty design, defective materials or poor workmanship.
The type of warranty provided is such that the device or individual components of the device are either replaced or repaired as we see fit. The resulting costs, in particular shipping charges, road tolls, labour and material costs will be borne by us except where these costs are increased due to the subsequent shipment of the device to a location other than the address of the purchaser.
We do not provide warranty for damage that has been caused or contributed to for the following reasons:
Unsuitable or improper use, faulty assembly or commissioning by the purchaser or a third party, normal wear, negligent handling, defective maintenance, unsuitable coating products, substitute materials and the influence of chemical, electrochemical or electrical agents, except when the damage is attributable to us.
Components that have not been manufactured by WAGNER are subject to the original warranty of the manufacturer.
Replacement of a component does not extend the period of warranty of the device.
The device should be inspected immediately upon receipt. To avoid losing the warranty, we or the supplier company are to be informed in writing about obvious faults within 14 days upon receipt of the device.
We reserve the right to have the warranty compliance met by a contracting company.
The services provided by this warranty are dependent on evidence being provided in the form of an invoice or delivery note. If the examination discovers that no warranty claim exists, the costs of repairs are charged to the purchaser.
It is clearly stipulated that this warranty claim does not represent any constraint on statutory regulations or regulations agreed to contractually in our general terms and conditions.

J. Wagner AG

16.3 CE DECLARATION OF CONFORMITY

Herewith we declare that the supplied version of

complies with the following provisions applying to it:

- 2006/95/EC (low-voltage guideline)
- 2004/108/EC (EMC Directive)

Applied standards, in particular:

- DIN EN 60204-1 (machine safety)
- DIN EN 60439-1 (low-voltage switchgear assemblies 2005-01)

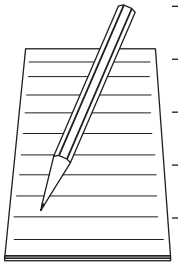
Applied national technical standards and specifications, in particular:

Identification:

CE

EC Certificate of Conformity
The CE certificate of conformity is enclosed with this product. If needed, further copies can be ordered through your WAGNER dealer by specifying the product name and serial number.

Order number:



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