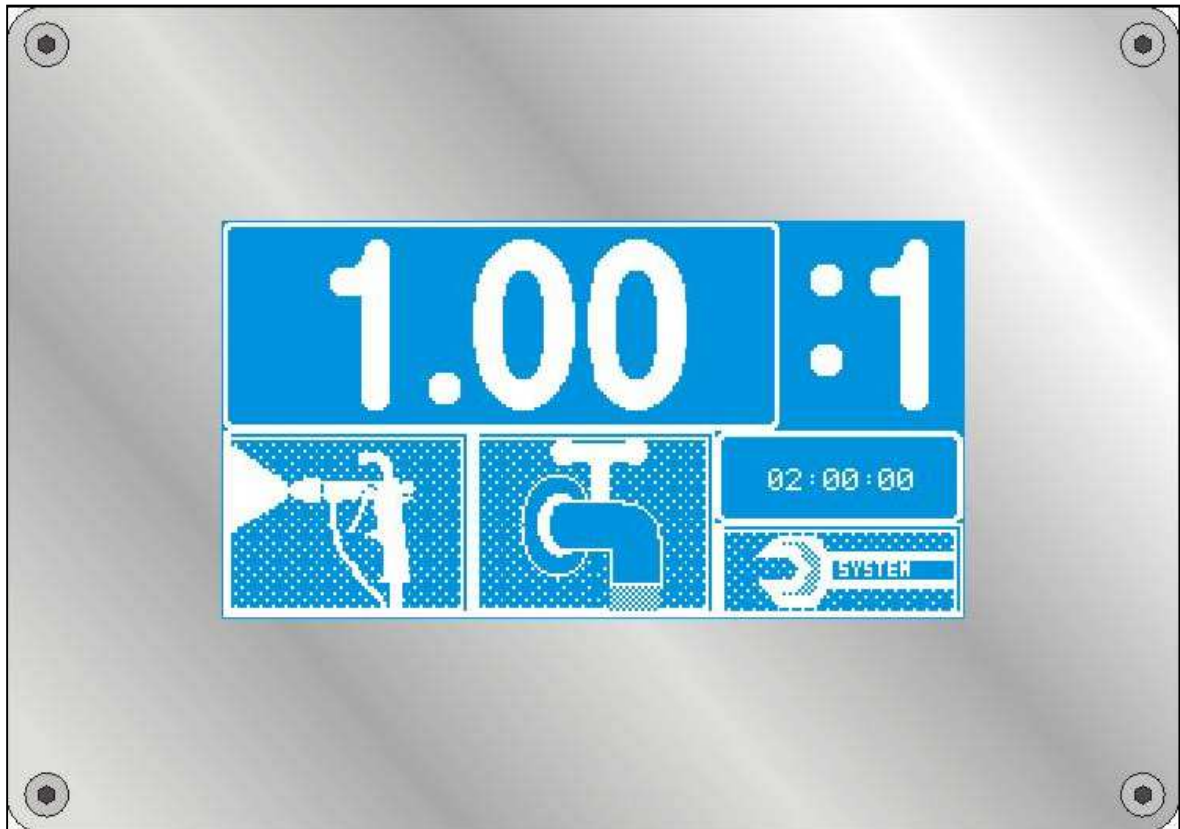


## Service Manual



## Electronic Mixing and Metering System for Paints and Lacquers

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# 1 Identification Data

## 1.1 Preface

Dear Customer,

May we congratulate you for having purchased this new Electronic Multi Component System.

Please be assured that design and manufacture of the system have been carried out according to state-of-the-art and with the intention of greatest possible user comfort, highest safety level, and selection of the best material.

May we point out that careful study and continued use of this manual will provide a better understanding of the equipment and process, resulting in more efficient operation, longer trouble-free service and faster, easier troubleshooting. Please make sure that this system must only be operated by adequately trained personnel. For your safety also refer to the service manuals of peripheral equipment, i.e. pumps, guns, and electrostatic equipment.

If you do have questions regarding the equipment, please contact us or our distributors. We will be pleased to help you.

## 1.2 Identification of the System

If you do have any questions regarding the product please note the exact type identification of the system. You will find it on the type plate of the system. This will help to identify the system regarding modification and equipment, so that we can offer qualified help to you.

## 1.3 Reference

You will find the following notes regarding component parts or structural components in this Service Manual:

Part (aa-xx)

„Part“ is describing the name of the component part or the structural component

„aa“ is listing the number of a depiction / drawing / illustration

„xx“ is listing the number of the component part or structural component in the drawing

## **1.4 Limited Warranty**

All BINKS equipment and spare parts are manufactured of the best materials, applying the most modern production procedure. Should you still have reason for a claim send the faulty part or the faulty component directly to BINKS or the distributor responsible for you. Please understand that we cannot accept any unfranked parcels. If your warranty claim is legitimate, we will refund shipment costs to you.

We will check, replace, or repair faulty component parts that fall within the warranty. The repair will be made in our house. If you wish the repair to be carried out at your site, you will be charged for any eventually arising travel costs.

If the warranty component in question, or other parts damaged by this component, were improperly installed, operated, or maintained, we will assume no responsibility for repair or replacement of the component or parts.

Excluded from the warranty are normal wear parts, i.e. gaskets, packings, and nozzles.

Warranty period will be twelve months at one-shift operation, respectively six months at two-shift and three-shift operation, starting from the date of initial operation, latest 30 (thirty) days after delivery. Any other agreements must be drawn up in writing.

## **1.5 Contact:**

### **Finishing Brands Germany GmbH**

Justus-von-Liebig-Strasse 31

63128 Dietzenbach / Germany

Tel: +49 (0) 6074-403-233

Fax: +49 (0) 6074-403-281

Email: [marketing-de@finishingbrands.eu](mailto:marketing-de@finishingbrands.eu)

Please contact us if you wish to have the name and address of our authorized distributors in Germany and abroad.



## 2 General

### 2.1 Notes

The safety precautions and safety standards of this section have been compiled for your safety and in your own interest. For safe operation it is necessary that the user reads and understands all of the technical and safety literature. The user must be familiar with the function of the installation and must be aware of the hazards and risks that may occur with pressurized pumps, hoses, and equipment.

### 2.2 General Safety Standards

- The following instructions provide the necessary information for the proper operation and preventive maintenance of the equipment. It is the customer's responsibility to have all operators and service personnel read and understand this manual. If you do have any doubt or problem, contact your superior or our representative.
- NEVER leave tools or other mechanical components in the system when it is in operation or when it shall be started.
- NEVER exceed the maximum pressure of the system. The maximum pressure of the system is defined by the component with the lowest pressure rating. You will find the maximum pressure of the system at the type plate.
- When replacing components ALWAYS exercise care that the new parts comply with the technical requirements regarding material and maximum pressure.
- ALWAYS ensure that the spray area is properly ventilated according to legal requirements.
- The equipment must ONLY be operated by authorized and adequately trained personnel who have read and understood local codes, appropriate legal requirements, and this service manual. The personnel must wear personal protection clothes and use appropriate tools during operation and maintenance.
- Before attempting any work ALWAYS make sure that the pressure is relieved from all air hoses and fluid hoses. Shut off pressure air supply to the system and relieve all pumps connected to the system.
- Before attempting any work at the electrical cabinet you must ALWAYS make sure that the cabinet is currentless. It is not sufficient that the main switch is in OFF position. You must interrupt the complete current supply to the cabinet.
- When working with high pressure spray equipment ensure that the guns are NEVER operated without protection against accidental contact. ALWAYS activate the safety locking lever when not using the gun, in order to prevent from unintended opening.
- When finishing maintenance and repair works replace ALL protection covers that have been removed from movable parts.
- The use of other than genuine spare parts and accessory parts will void warranty.
- After a long period of shutdown check ALL components for leakage and proper function.

- For proper and trouble free operation you **MUST** only use electrically conductive fluid lines which have to be grounded.
- The basic equipment will be delivered without EEx-Protection. Optionally EEx-Protection is available for Zone 2, Category 3 (for fluid part only). The EEx-Protection Version includes 5m connecting line between the fluid part and the control. Optionally a distance of up to 40m can be realized.

## **2.3 Chemical Reaction Hazard**

All fluid conducting parts of the system are made of stainless steel in order to avoid possible chemical reaction. However, in individual cases a chemical reaction might occur if aggressive or chemically active materials are being used, which might lead to dissolution or, in the worst case, to an explosion. If you want to use such materials contact the fluid manufacturer prior to operation in order to check the compatibility of the fluid with different kinds of stainless steel.

## **2.4 Fire and Explosion Hazard**

High flow rates of non conductive materials may lead to an electrostatic charging. This phenomenon frequently appears with airless systems because the flow rate is very high and the material will be sheared and burst off at a small gap. In order to avoid charging and spark discharge, all components must be electrically connected with each other and grounded. Use suitable clamps and clean the contact parts of spray mist, if necessary. Connect the clamps via suitable cable with sufficient mass potential (permanently installed tubes etc.). If an electrostatic charging occurs, check for proper grounding.

## **2.5 Toxic Solvents**

Toxic and harmful vapours may be set free by the spray and spray mist of paints and other materials. Follow all safety instructions of the manufacturer, keep to the relevant lower toxic limit values, and maintain adequate ventilation.

## **2.6 Injection Hazard**

- **DO NOT** allow anybody to come in contact with the tip of the spray gun.
- Never aim high pressure spray guns at any part of the body or at other persons.

- A high pressure stream produced by this equipment can pierce the skin and underlying tissues, leading to a serious injury. See a physician immediately and inform him or her about the penetrated material (see material data sheet). NEVER allow any part of the body to touch the fluid stream.

## **2.7 Hazard by Escaping Liquids**

Never modify the connections of the system without prior contact with a responsible person.

Regularly check the condition of hoses and connections. Take care that hoses are not crushed and bent below the allowed radius

Never overstrain hoses and connections by high mechanical load. Immediately replace damaged hoses!

Check all connections prior to operation.

Never try to stop or deflect leaking material with your hands or other parts of the body.

## **2.8 Emergency Shutdown**

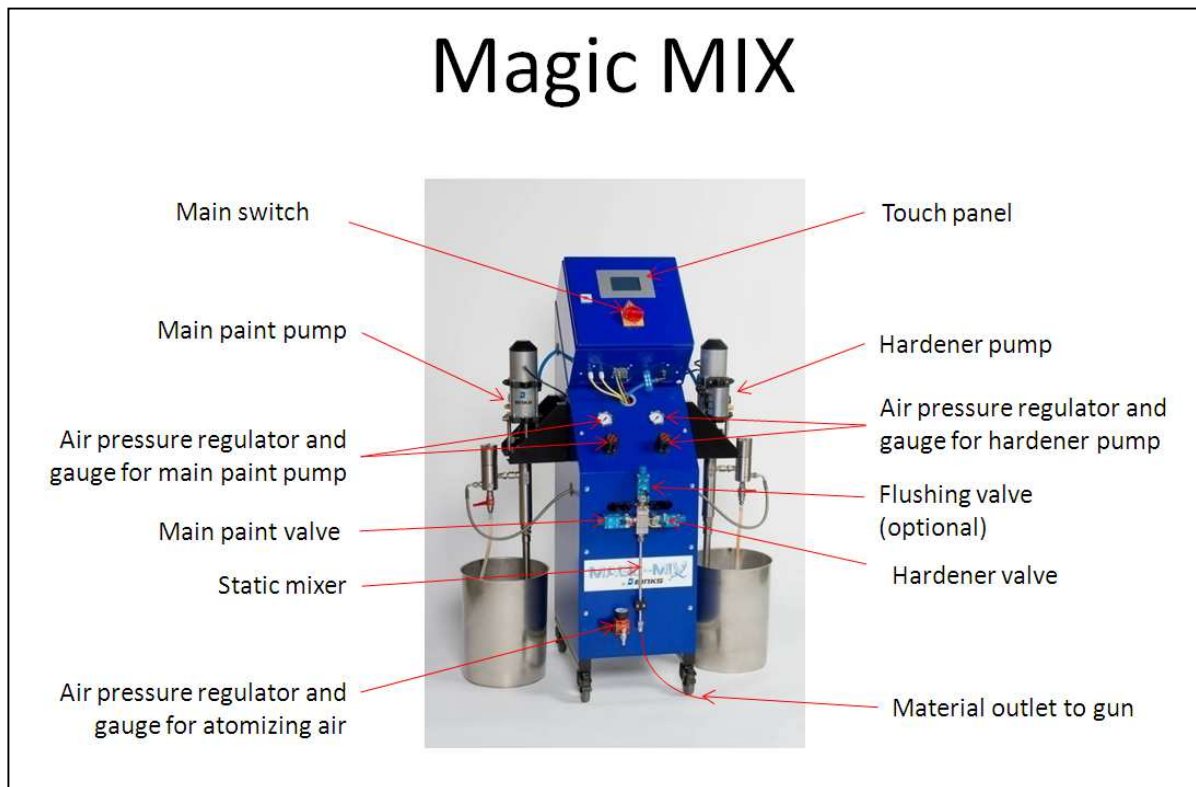
In case of an accident or a hazardous situation turn the main switch in OFF position. This will set all components of the panel currentless and will close all valves.

## **2.9 Residual Pressure**

Even after interruption of the air supply to the pumps, the lines fed by the pumps are still not depressurized, as pressure can only be relieved into one direction. In order to depressurize the complete system, open the spray gun and the relevant valves via the control device (if no relief device is installed at the pumps).

### 3 Description of the System

#### 3.1 Functional Characteristics

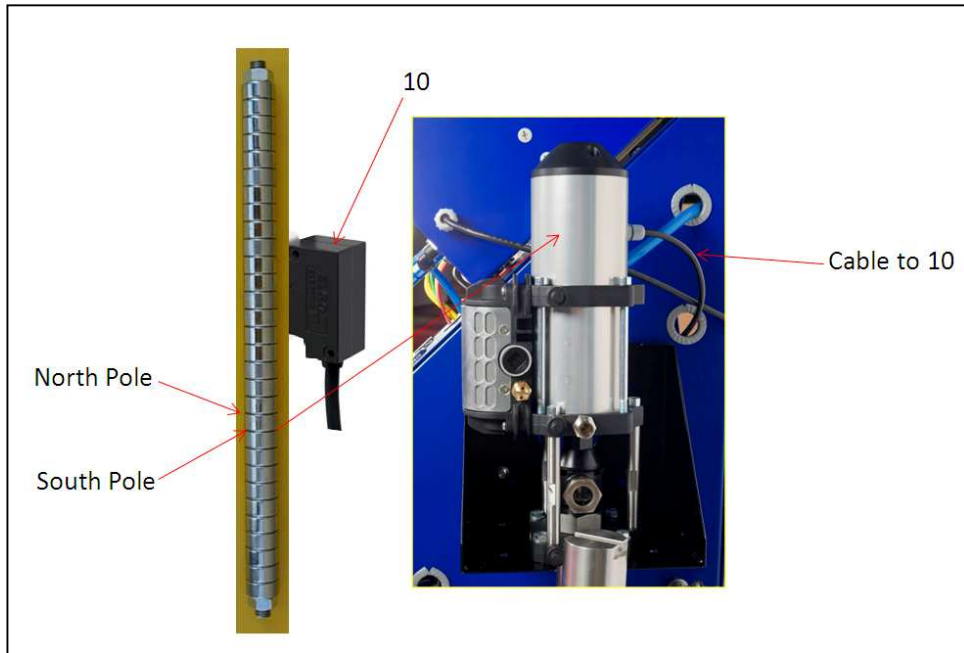


Description	Basic Unit	Option
Mixture Ratio	0,50:1 to 20,00:1	No
Pressure Range	3-250 bar (LP/HP)	No
Flow Rate (Per Pump)	1,5 l / min	2,5 l / min
Number of Fluid Valves	2 (1 Main Paint, 1 Hardener)	3 (1 Flushing) or 4 (2 Flushing)
Automatic Colour Change	no (1 Main Paint)	no
Serial Connection	RS 232,SUB-D, 9 PIN	no
Communication Installation Server	Touch-Screen, 240 x 128 Pixel	no
Remote Control	no	yes (Start, Stop, Flushing)
Level Control	yes	-
VOC Evaluation	yes	-
Number of Recipes	1	no
Principle of Mixing	Alternating injection of main paint and hardener	no
EEx-Protection (ATEX)	no	yes (Category 3, Zone 2)
Calibration Possibility	yes	-

The system is designed to meter two volume flows, in which the main component will be opened and the hardener will be injected on basis of the metered first volume flow according to the mixture ratio of the chosen recipe. During the period when the hardener valve is opened, the main paint valve will be closed. All parameters and tolerance values which are necessary for the calculation will be deposited in the system settings. In order to guarantee highest degree of safety, the function of the metering sensors will be controlled, and the installation will be shutdown if the demanded mixture ratio has not been achieved (e. g. insufficient material).

On the basis of the high precision of the mixing and the controlled and economic treatment with solvents and paint materials the electronic mixing and metering system is clearly superior to the mechanical metering system.

The system includes a length measuring technique metering the movement of the two piston pumps (paint and hardener). Depending on the size of the pumps, each sensor is sending a certain number of impulses per material flow to the PLC. The PLC counts these impulses and calculates the material consumption and the mixture ratio. The adjustment of the mixture ratio will be effected by the control of two solenoid valves which inject alternately paint and hardener.



### 3.2 Mixing

In order to obtain a good mixing degree after the confluence of main paint and hardener, a static mixer will be topped.



### **3.3 Material Supply**

Material supply will be made by the piston pumps of the MagicMix system. The basic design includes a piston pump for main paint and hardener. Optionally a third pump for flushing solvent can be used. For the low pressure installation this pump will be a diaphragm pump, whereas for the high pressure version it will be a piston pump (for further information regarding these pumps please see the service manual of the pumps).

## **4 Installation**

### **4.1 Transportation**

The system consists – depending on the design – of one or two modules which can be transported separate from each other. The transportation will be done on pallets. For the handling two persons are needed.

### **4.2 Storage**

If the system shall be stored, the control part must be protected against heat and humidity. In order to avoid condensation of water the system must not be exposed to high temperature changes, otherwise the system must be exposed to the new ambient temperature with flaps open for several hours prior to operation.

The fluid part is extensively resistant against external influence, however, for a long period of storage it should be filled with preservative oil in order to take care of the packings and to guarantee proper operation.

Operate the supply pumps according to the relevant service manuals of the pumps.

### **4.3 Installation**

Generally the industrial installations of Company Finishing Brands will be installed by our service technicians or service technicians of our representatives. This is to avoid faults at the very beginning caused by inadequate installation or operation.

If installation shall not be made by an Finishing Brands service technician, check the completeness and the correct function of all components of the scope of delivery.

For installation always take care of the usability of the system, the ambient conditions (e. g. EEx explosion proof), and the safety of the operators.

**ATTENTION:** The control cabinet cannot be located in the EEx area. If operation in the EEx area is necessary, a remote control panel is optionally available (functions are: Start, Stop, Flush).

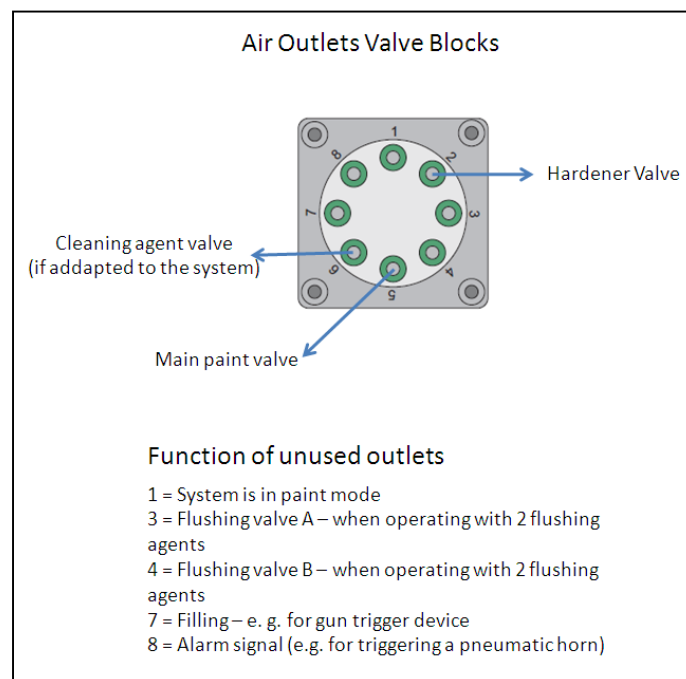
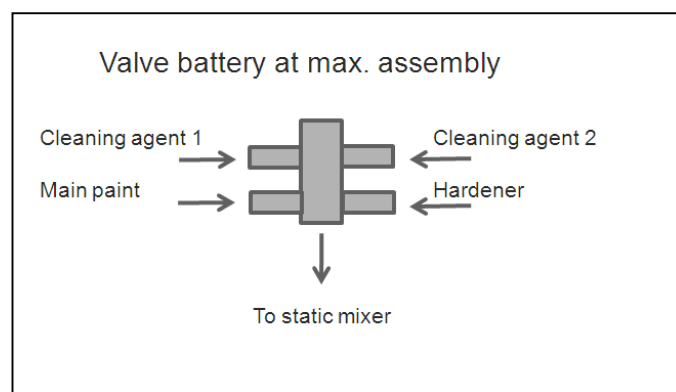


#### 4.4 Electric Connections

The system will be supplied via a central electric input at the control cabinet. Lead the three-core supply cable (minimum 0.75 mm<sup>2</sup>) to the terminal screws at the electrical control panel as defined in the wiring diagram.

#### 4.5 Pneumatic Connections

The system (standard version) will be supplied via a central air connection. The pressure must not exceed 8 bar! Please provide clean industrial air, proper filtration, and condensate separator. Use oil-free pressure air.



#### **4.6 Hydraulic Connections**

The fluid part must at least be supplied with main paint, hardener, and optionally flushing agent – depending on the number of components. The outlet of the static mixer must be connected to the gun with a suitable fluid hose (please refer to length and nominal pressure).

The hoses must be equipped with adequate hose connections according to the system. The threads must be in proper condition and must seal tightly under pressurized condition.

## 5 Operation of the System

### 5.1 General

#### 5.1.1 Starting the System

Turn on the system by turning the main switch into position „ON“. Only turn the system on if the control cabinet is closed (mains voltages). The opening of the control cabinet during „ON“ condition must only be carried out by qualified personnel.

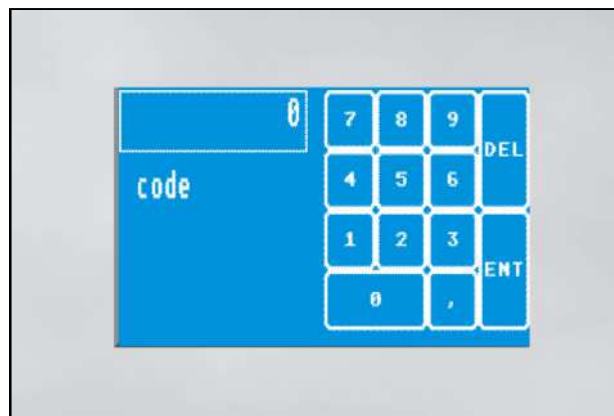
Generally it is not necessary to turn off the system. If the system is operating in the main menu and has been cleaned, the screen will independently turn off after an adjustable period of time (see system settings, value „Standby“).

Do not turn off the system in filled condition. The control of pot life will then not be possible, resulting in the danger of material hardening inside the system.

#### 5.1.2 Input of Numbers

To set the different parameters it is necessary to be able to enter numbers.

Generally this will be done by the input field shown below.



The value to be set is shown at the upper part on the left side. The value will be deleted by pressing the „DEL“ key (one decimal place each per key depression). The value will be entered into the system by pressing the number fields and by pressing the field „ENT“.

The name of the value (here „recipe“, i.e. recipe number) is described below the value.

## 5.2 Main Menu

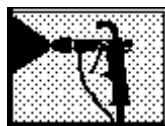
### 5.2.1 Input of Paint Data



By pressing the field „A: XXX“ (here „100“) you will be asked to enter the relative quantity of paint. Possible input values are all values between 0.00 to 200.00.

In the same way you will enter the value for hardener. For example, if you want to enter a mixing ratio of 4:1, you can do this by different methods which will all lead to the same result. Possible variances are 4.00: 1.00, but also 100.00 : 25.00.

By pressing the field „t = XX:XX:XX“ you can enter the pot life for the paint. This will be controlled during the spraying procedure and only be reset to the initial value after corresponding material removal. If the pot life will be exceeded without spraying or flushing, the system will give an alarm signal.



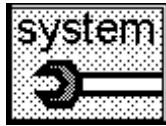
### 5.2.2 Start Spraying Procedure -

Press the icon „Spray“- the icon will activate the mixing procedure, provided that an active recipe has been chosen before.



### 5.2.3 Start Flushing Procedure -

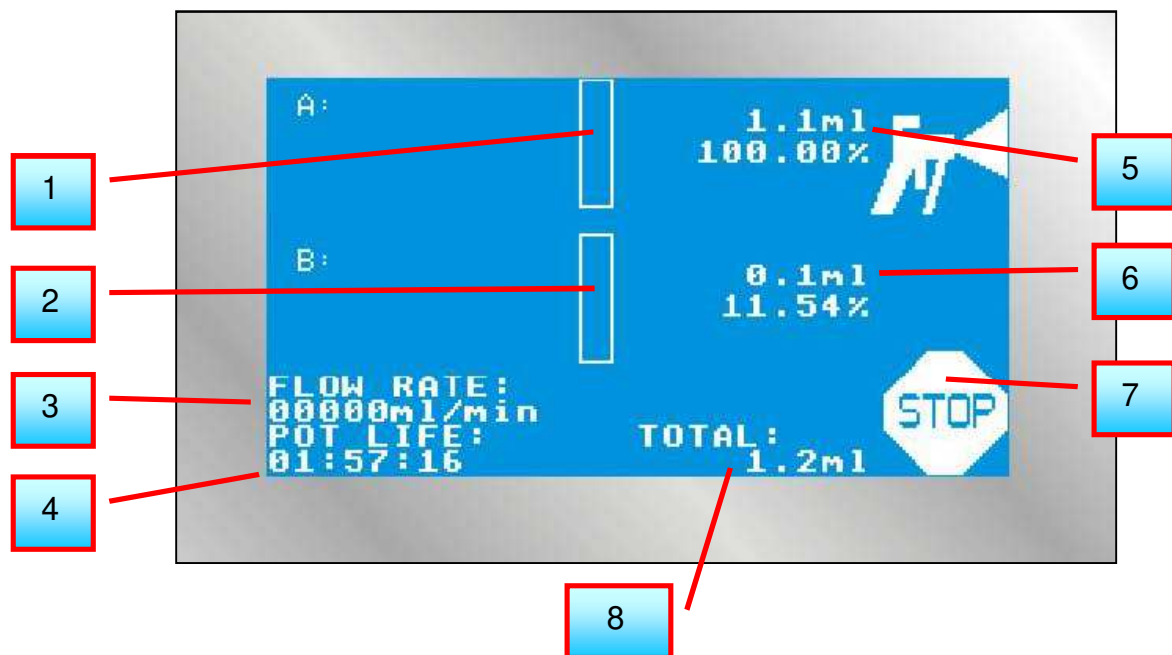
Press the icon „Flush“– the icon will activate the flushing procedure. However, only on condition that you have chosen a version with flushing pump. The flushing procedure may be repeated as often as you wish. If the icon is flashing, the system was not cleaned after the last mixing procedure, and the remaining pot life continues to count down.



### 5.2.4 Adjust Settings -

This icon will lead you to the system settings. Here you can change operating parameters and safety settings. Also you can read consumption data. According to the setting the different sections may eventually be entered via passwords only.

### 5.3 Painting / Mixing



**[1]** The bar at the left side will display the flow rate of the components. The higher the deflection of the bars, the higher is the flow rate. If the flow rate is displayed by a flat curve, a constant, calm flow is indicated. If the bars display great deflections, pulsations are indicated (e.g. pressure difference between the components too high).

**[2]** The bar for the incremental size (see system settings) displays the interval between the two last hardener injections. If the hardener valve remains in one position (permanently open because of lack of hardener, respectively permanently closed because of too much hardener), an alarm signal will be given. If the valve was opened once and closed once (i.e. the set mixture ratio has run twice), the bar will be reset. A general principle is: the lower the bar is, the better is the mixing, because the hardener valve is cycling faster.

**[3]** The display „FLOW RATE“: indicating the actual volume flow in ml/min.

**[4]** Remaining Pot Life. The basic pot life will be deposited in the recipe. If not sufficient material has been removed, the pot life will approach 0:00:00 and will release an alarm signal. In case you do not acknowledge this signal in good time (within 5 minutes) an automatic flushing procedure will be started. However, only on condition that you have chosen the version with flushing pump. **IMPORTANT:** in order to reset the pot life automatically, twice as much filling quantity of paint must be removed from the system, in order to guarantee a complete material exchange. Example: if the filling quantity is determined to be 200 ml and has been deposited in the system (system settings), the pot life will reset to the initial value after removal of 400 ml.

**[5]** Consumption in millilitres of the corresponding component.

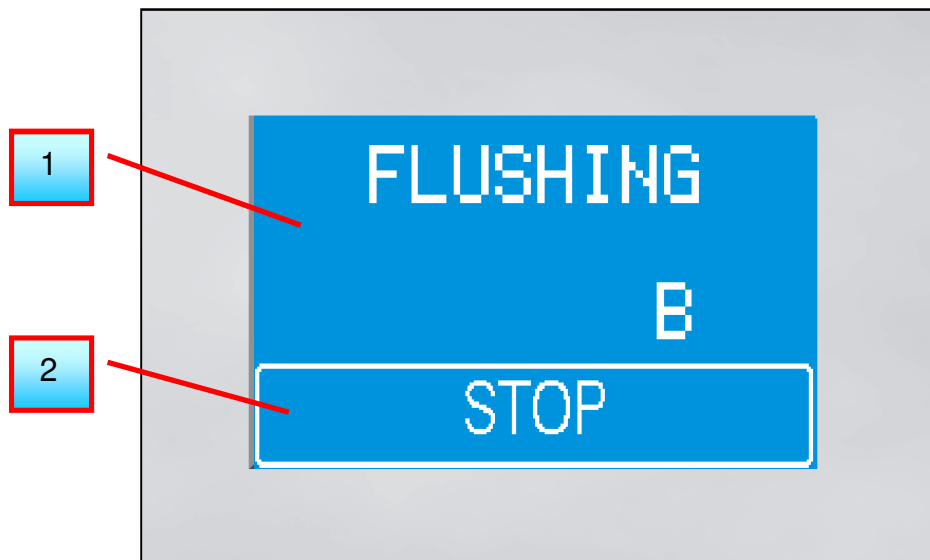
**[6].Actual Mixture Ratio in Percent.** The main component (the component with the greater portion) will always be determined with 100%, the metering component will be adjusted accordingly. For example if in the recipe side A will be adjusted for 4 portions and side B for 1 portion, side A will show 100%, whereas the metering value of side B will be around 25%.



**[7]** Press the  - key to finish the mixing procedure and to close all valves.

**[8]** Total Quantity of Removal. This total results from the addition of the two volume flows.

## 5.4 Flushing



**[1]** Alternating side „A“ and side „B“ are being displayed. If an automatic mixer head has been connected, the two flushing valves will open according to the display. If you have manual mixer heads with ball valves, the display will be of help to remind you to clean the two ball valves

**[2]** Press the „STOP“-key to break off the flushing procedure and to close all valves.  
WARNING: If the flushing procedure has been broken off, the system may be incompletely flushed.



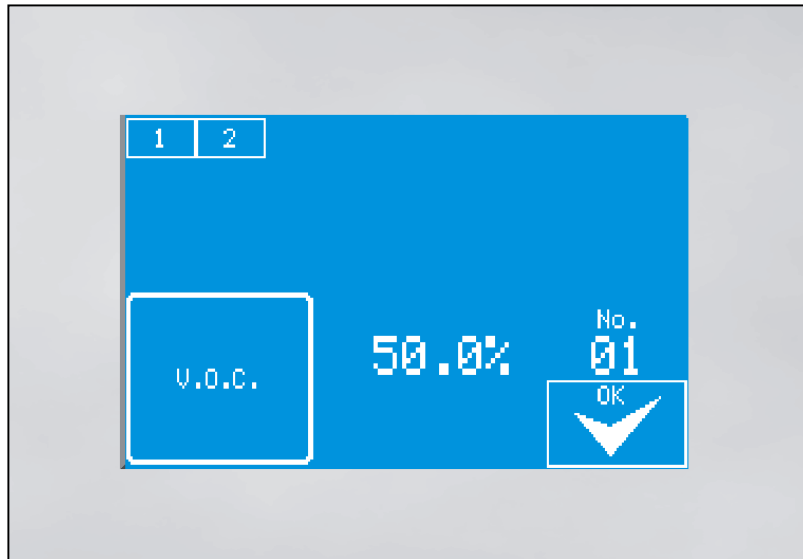
## 5.5 Settings



In the Tool Menu all system parameters can be set. All settings can influence the mixing result and should, therefore, be carried out by trained personnel or by service technicians only! There is also the possibility to protect all sub-menus by passwords and to inform only selected persons of these passwords. (See the chapter Security „Codes“).

V.O.C.

### 5.5.1 V.O.C.-Values

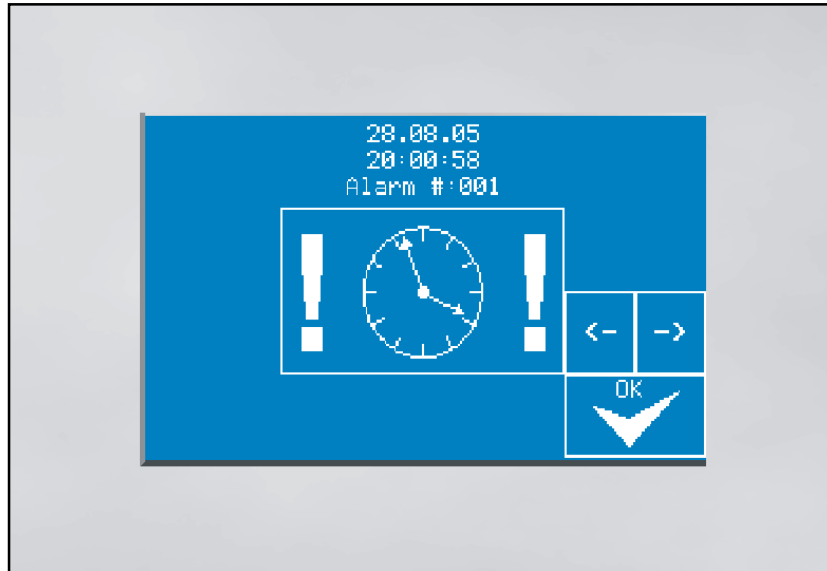


With the keys [1] and [2] you can chose the valve, respectively the component in order to set the VOC-value.

The VOC-value will be displayed in the middle (in %). By pressing the [V.O.C.]-key you can set this value for each valve separately. This value will be needed in order to calculate the VOC emission for your consumption reports and the reported material consumption.

## ALARM EVENTS

### 5.5.2 Alarm Signal Memory



The mixing system stores up to 100 alarm messages in order of occurrence.

You can scroll through the alarm history with the keys [←] and [→]. If more than 100 errors have been registered, the last 100 messages will still be available.

Each alarm message is listed showing date and time, as well as the reason for the alarm.

The significance of the alarm icons are explained in the Chapter “Troubleshooting”.



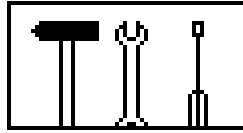
### 5.5.3 Security Codes

At state of delivery all menus are available without code input (input „0“). For security reasons all settings should be protected by passwords after installation and initial operation.

The set up of passwords will be carried out in the same manner as an eventually necessary adjustment of the codes.

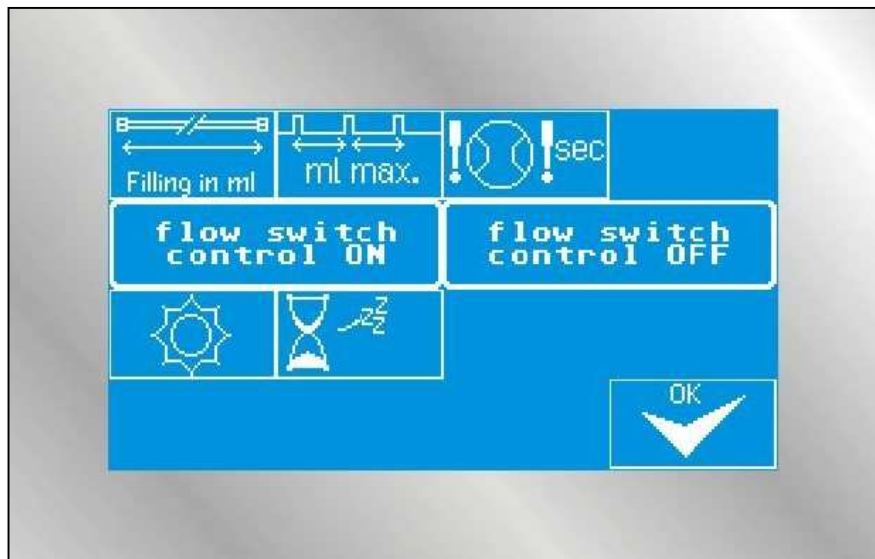
In order to set up a code you press the above shown key icon. You will be asked to enter the master code. For security reasons the master code is not part of this Service Manual. You will be informed about it by Finishing Brands / Binks separately. After having entered the master code you have to press the field, the menu of which you want to protect by a new password. The input mask “new code” will be displayed. Enter here your new secret number. The code will be stored automatically.

Should it happen that you forget or lose your entry code, you can also use this procedure in order to find out the deposited code. However, carefully keep the master code because this is an invariable part of the control software.

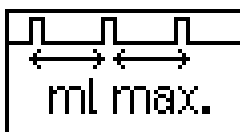


#### 5.5.4 System Settings

In system settings important and security relating settings for the operation of the system can be entered. The correct setting of these parameters is of great importance to the finish result and a trouble free operation of the system.



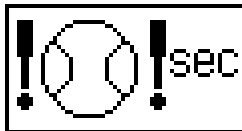
**Filling Quantity in ml:** On the one hand the filling quantity is important for the external signal „filling“, to which a signal light can be connected. This signal light indicates the operator that the filling procedure has not been finished. On the other hand the filling quantity is needed to control the pot life. After removal of twice as much filling quantity the pot life will be reset to initial value. Removal of twice as much filling quantity is necessary in order to prevent from mixing of already reacting material and fresh material in the system and in the hoses.



**Incremental Size:** The incremental size is necessary to control the accurate mixing of the materials. The deposited value indicates the maximum interval between two hardener metering injections in millilitres. **Important:** this value has no

influence on the quality of mixing! It only serves the control function. The system itself tries to meter the hardener in smallest possible injections. The cycle frequency of the valve depends on overpressure of the hardener, needle stroke of the metering valve, flow rate, viscosity, and many others.

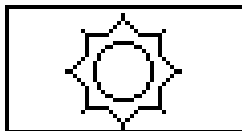
Generally the incremental size should be set up in such a way that mixing of the material in the mixer can just be carried out. An incremental size of 100 ml for a static mixer with filling volume of 20 ml may have the result that the material will not be mixed accurately, but that the system still operates without error signal.



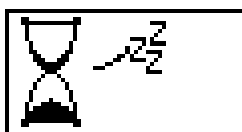
**Control of the Metering Cell (Optionally):** The value deposited here indicates how long the spray gun may be opened without a metering cell having to move. For manual installations the control of the gun opening is generally carried out by the air flow control which is integrated into the atomizing air. For automatic installations this signal can directly be given by an external control.

When the painter opens the gun, the material flow should start shortly afterwards and deliver the meter pulses of the pumps. As long as a movement will be recognized and impulses from the metering cells to the control of the mixing system are given, the control of the metering cells will be reset. If no meter pulses of the pump are being delivered, the system will give an alarm signal after the here deposited time.

The time should be in the range of 5 – 10 seconds in order to guarantee that no unmixed material can escape the gun. However, the time should not be chosen too short (less than 3 seconds) since the painter is using the gun sometimes to blow dust from the object.

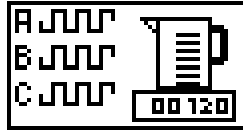


**Display Brightness:** Enter the value for the relative display brightness in percent (0 – 100%). Attention: If the value is too low you might not be able to read the display and will then not be able to increase the value!

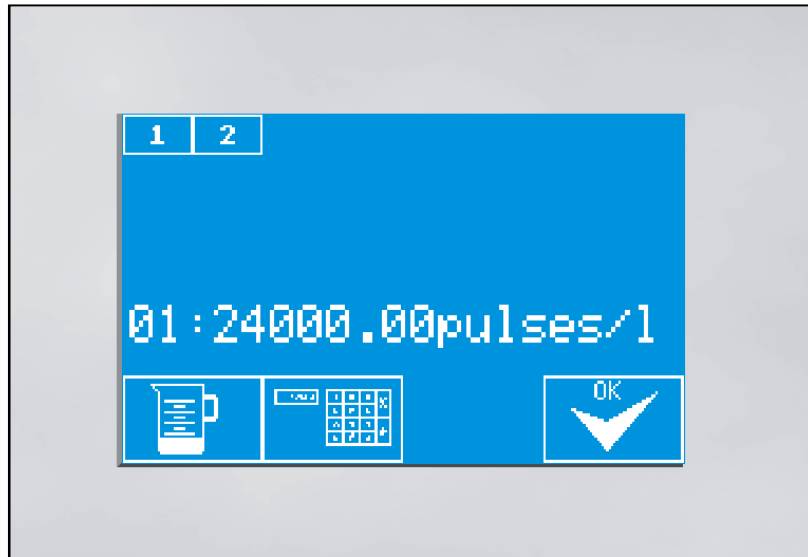


**Standby Time:** The standby time in seconds indicates after which period of time the display turns off in order to reach a longer service life of the lightning cathode. The system only switches into standby mode, if it is flushed and if it

is in the main menu (all valves closed). If the system is in standby mode, you just have to touch the screen to return into the main menu.



### 5.5.5 To Calibrate / To Adjust K-Factors




#### 5.5.5.1 Manual Adjustment of K-Factors

For quick operation of the system and for general control of functions it is generally sufficient to enter the construction wise determined K-factors of the voltmeters into the system. Generally these have been entered when the system is delivered.

To take account of the different physical characteristics of the fluids to be metered, an own K-factor can be entered for each valve and for each connected fluid. Metered at the same volumeter a solvent based paint of high viscosity will cause another K-factor than a cleaning thinner, or a water based paint.

Press the number fields (1 – 32) to read the deposited value. If you wish to change this value (e.g. after retrofit to another volumeter), you can do this by pressing the


number input icon: ()

#### 5.5.5.2 To Determine K-Factors

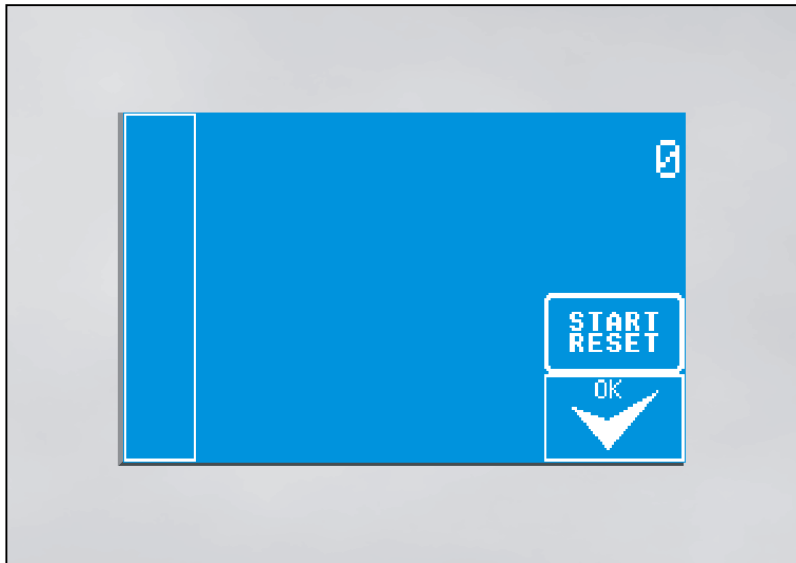
To increase the accuracy of the mixing system it is recommended to calibrate all fluids. Perform the following steps:

1. Chose component „1“ or component „2“, the one which shall be calibrated.

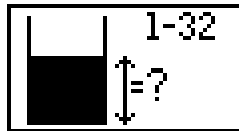


2. Press the icon with the metering cup: ()

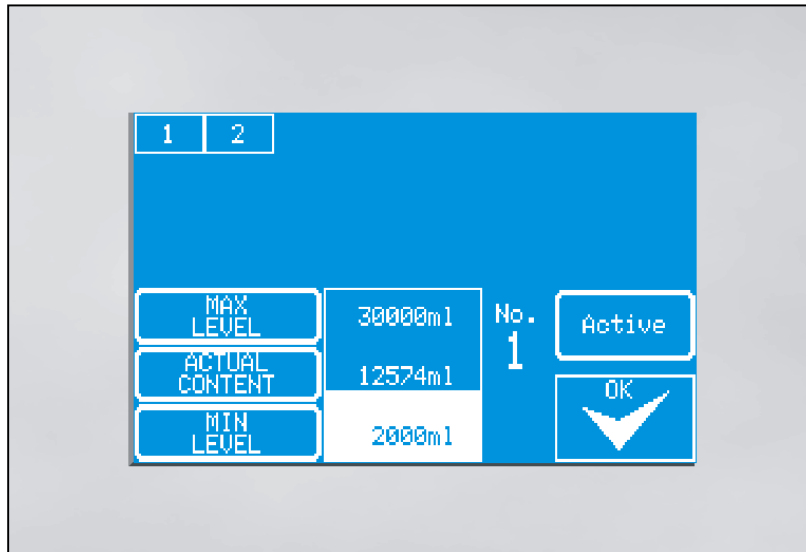
3. Carry out the metering:



- The bar on the left side indicates the flow rate. If the bar does not deflect upwards when removing material, you have either selected the wrong component, or the metering cell is mechanically blocked, respectively the length sensor of the piston pump is damaged, or the pump does not move itself.
- The number on the right side on top indicates the count of impulses. Open the spray gun at first and remove material. The pulse counter must now display an increasing value.
- With the „START / RESET“- key you can reset the pulse counter to Zero. Press the key after having filled the system with material, wait for some seconds without removing material, and then start the actual metering.
- Remove a readable quantity of material into a metering cup. Close the spray gun and wait for some seconds until the pulse counter has come to standstill.
- Finally press the „OK“- key. You will then be asked to enter the volume of the removed material.
- The resulting K-factor will be displayed and will then be entered into the system.



### 5.5.6 Container Control



The integrated container control serves the control of the container level without additional sensory mechanism. If a container shall be controlled, it is necessary to deposit into the menu its filling level prior to use.

Starting from the metered material consumption, the system can give an alarm signal if a defined minimum level is reached. This is to avoid no-load operation of the pumps resulting in faulty mixtures and failures.

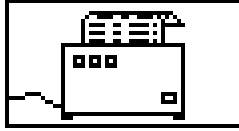
With the buttons [1] and [2] the container will be selected which shall be adjusted or controlled.

With the button [MAX LEVEL] the size of the container will be determined, which it had at state of delivery.

[ACTUAL CONTENT] displays the actual container level. Press the button to refill the container numerically or to enter any new level.

[MIN LEVEL] displays the minimum level. An alarm signal will be given if the level falls under this value. Press the button to adjust the level.

[ACTIVE] respectively [NOT ACTIVE] will display whether the control shall be activated. If the button is in [ACTIVE] mode, an alarm signal will be given. If the button is in [NOT ACTIVE] mode, the container level will be calculated, but the minimum level will be ignored.



### 5.5.7 Printer Configuration

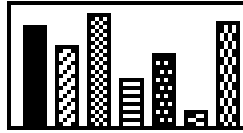


[UNIT ID] displays the name of the mixing system which appears on the prints. It is, therefore, possible to distinguish between the prints of different systems. The name can have up to 10 characters.

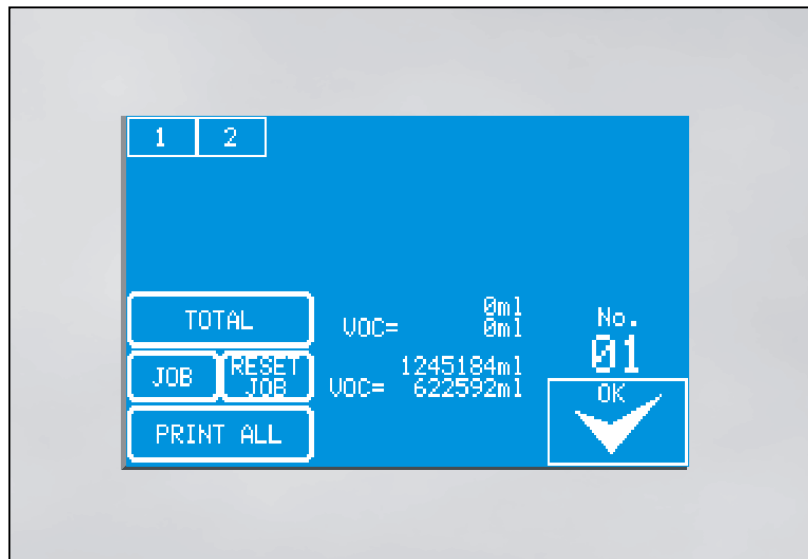
[PRINTING AFTER ...ml] displays the intervals when the process information shall be printed. In the above shown case a print would be started after every removal of one litre material.

[PRINTING AFTER ...sec] displays the time intervals when print shall be printed during the mixing procedure.

It is possible to activate the two print versions, but also only one or none of them. If no prints are wanted, set the values to „0“.



### 5.5.8 Reports



Use the keys [1] and [2] to select the valve, respectively the component of which you wish to read the consumption.

[TOTAL] displays the total consumption of the component since installation of the system. It is not possible to reset this value.

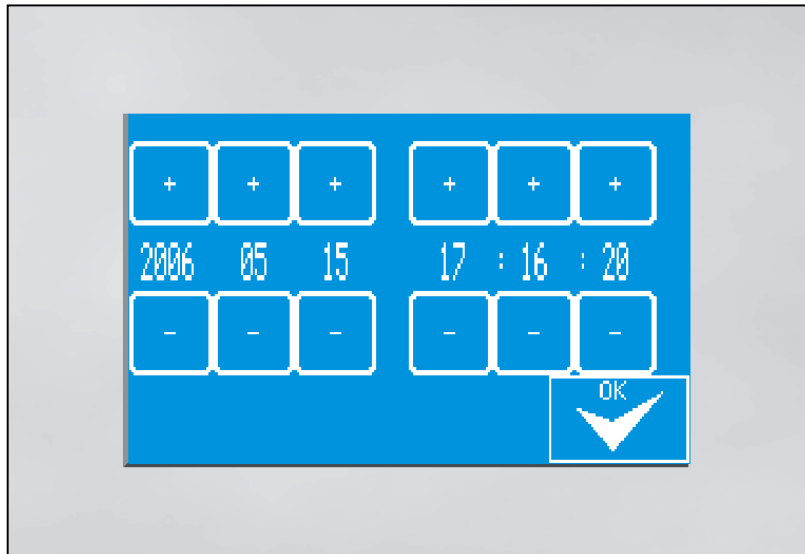
[JOB] displays the consumption since the last reset of this value. It is, therefore, possible to collect weekly consumption data. The operator can reset this value with the key [RESET JOB].

With total consumption and with job consumption also the consumption of the component and its VOC content is listed. The relative VOC content in percent can be set in the VOC Menu.

Press the key [PRINT ALL] in order to print the consumption values of all components, as far as the optionally available printer is connected.

SET  
CLOCK

### 5.5.9 Set Clock



Press the key [SET CLOCK] in order to set the internal clock of the system. The clock has a movement reserve of approximately 10 – 14 days. The clock is necessary to print reports and to store alarm messages.

To change values you press the keys [+] / [-]. To store the change you press the key [OK].

## **6 Preventive Maintenance**

### **6.1 Cleaning and Maintenance of the Fluid Part**

Protect the fluid part from spray mist. In case it is necessary to clean the external part with thinner, the power of the system must be turned off because the metering sensors of the standard version are not EEx-proof.

Generally the system must be cleaned by a complete flushing procedure after end of operation or during a long spray interval, in order to avoid hardening of the paint material in the system.

→ See 5.2.3 Chapter „Start Flushing Procedure“

#### **6.1.1 Cleaning of Hoses and Tubes**

If the flushing procedures have been carried out properly, special cleaning of hoses and tubes is not necessary. However, if reactions have occurred inside the system, replacement is recommendable in order to avoid that solid particles come off and enter into the system gradually.

Clean the spray gun as usual at the end of work (nozzle, air cap, etc.).

#### **6.1.2 Maintenance of Valves**

If a colour change valve has not been used for a long period it is recommendable to disassemble the colour supply unit and to flush the valve. Otherwise solid particles might settle inside the valve.

In case the valves do not work properly, or in case air or fluid leaks occur, the seals must be replaced. As the hardener valves are activated more frequently, a regular control of the valves is absolutely necessary. It is recommended to service the valves in regular intervals.

You will find further details in Annex 9.2.

### **6.2 Cleaning of Control Module /Touch Screen**

Just clean the control module with a soft cleaning agent. There are no internal components or assembly groups which need cleaning or maintenance.

Do not clean the touch-screen-display with solvents. If you expect high grade contamination of the display, you might use a self-sticking transparent protection foil which can easily be exchanged.

## 7 Pumps

### 7.1 Purpose of Use

**BINKS Piston Pumps are exclusively designed to deliver and apply spray material. They serve as feed pumps to deliver the following materials:**

- Water soluble paints and lacquers.
- Solvent based paints and lacquers.
- Filling material and primer.
- Micaceous iron ore (with restriction, see below).
- Zinc dust paints.
- Epoxy and Polyurethane lacquers.
- Oil.
- Liquid plastic.
- Water based under seal materials.
- Solvent-free spray material or spray material with small portion of solvent.
- Please refer to the data sheet and safety instructions of the paint manufacturers.



Avoid the application of abrasive and grained spray material. Application of this material might lead to early wear of valves and packings of the fluid pump and of the spray gun nozzle.



The following application modes are not allowed:

- Delivery of acid and corroding fluids
- Delivery of material with a temperature higher than 40°C
- Location of the unit in non-frost-proof area
- Operation in dry condition

## **WARNING!**

**Fill in Stripping Agent prior to Initial Operation:**

FOR WATER SOLUBLE PAINT: 0114-014871  
FOR SOLVENT BASED PAINT: 0114-009433

Depending on the MagicMix version, the following pumps are available:

### **High Pressure**

#### Variant 1:

MX4/32 (1 off Pump for Hardener and 1 off Pump for Main Paint)

Optionally:

MX4/32 (1 off Flushing Pump)

#### Variant 2:

MX12/31 (1 off Pump for Hardener and 1 off Pump for Main Paint)

Optionally:

MX4/32 (1 off Flushing Pump)

### **Low Pressure**

MX4/32 (1 off Pump for Hardener and 1 off Pump for Main Paint)

Optionally:

DVP 510 (1 off Flushing Pump)

**For more detailed information please refer to the Pump Service Manuals**

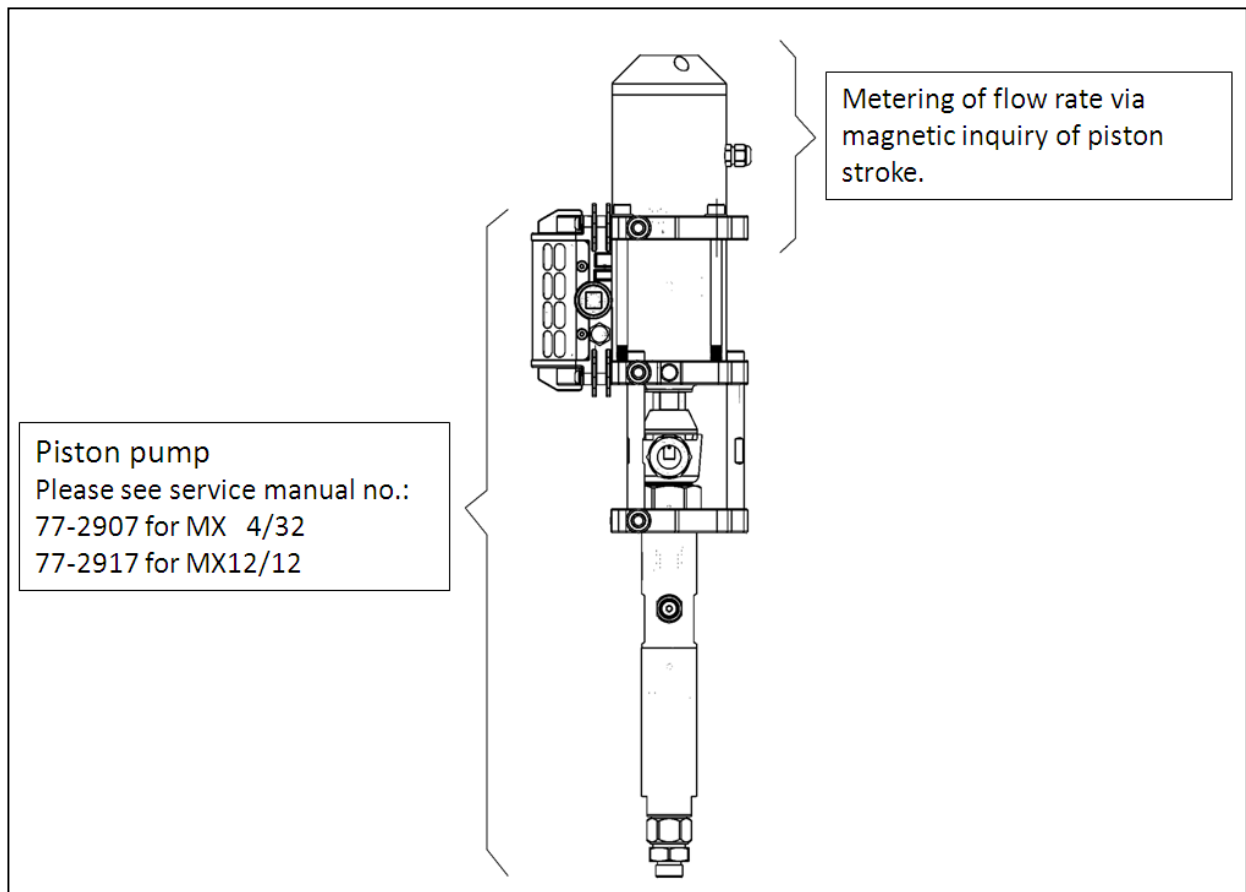
In order to guarantee reproducibility, different mixing ratios of components A and B may be stored in one recipe.

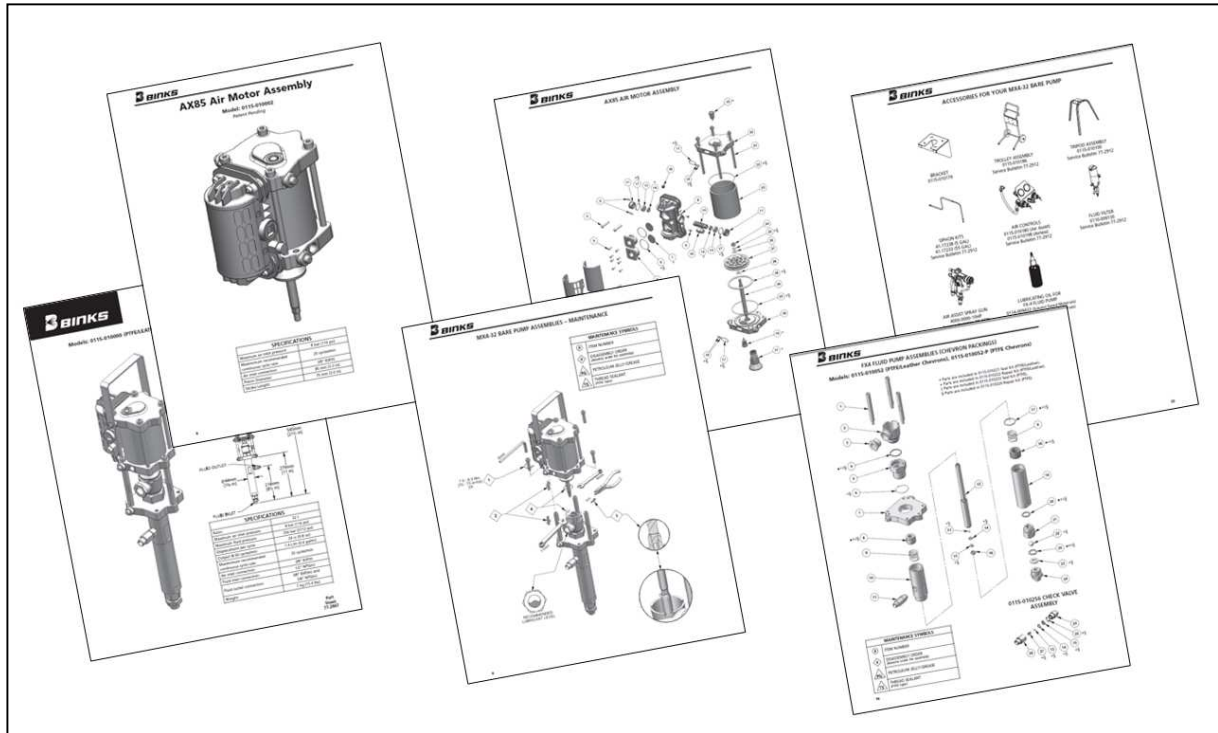
The metering of flow rate will be effected by magnetic inquiry of piston stroke.  
The consumption of each component will be controlled and stored permanently.

The system MagicMix of Binks can be used for the following application procedures:



- Low Pressure
- Airless
- AirCombi
- Electrostatic Application (HP & LP) for Solvent Based Paint




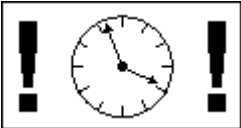






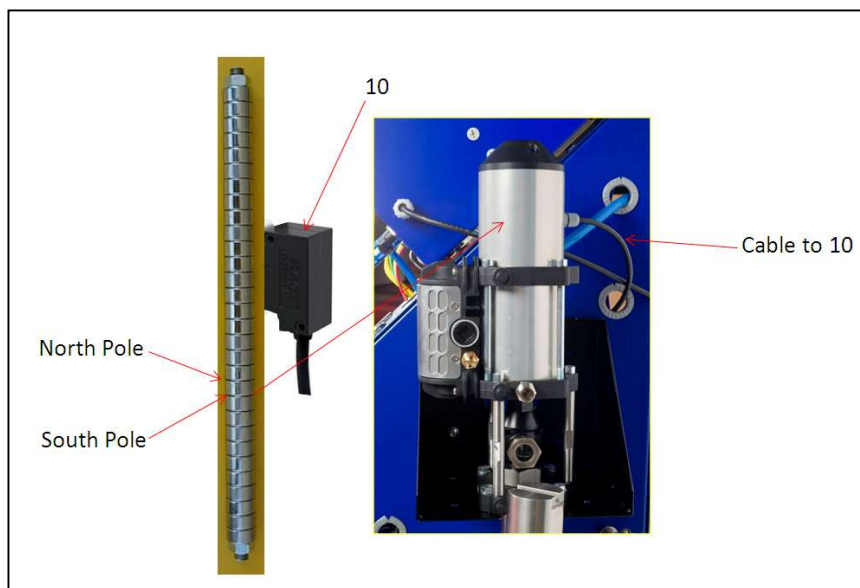
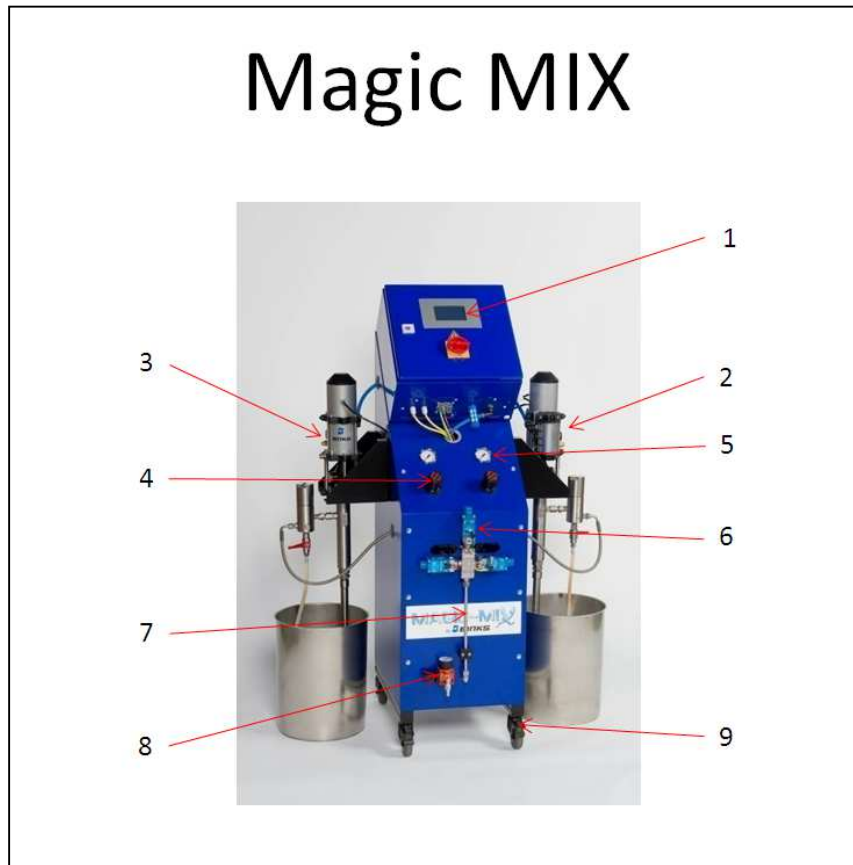
## 8 Troubleshooting

General Problem	Possible Cause	Solution
Alarm Message:  	Atomizing air is open, but does not spray	Increase activating time for metering cell control  Do not open atomizing air unnecessarily
	Tip clogged (no fluid flow when gun is open)	Clean tip, replace if necessary
	Lack of material	Check material supply system on side A (empty container?)
	Defective feed pump	Check proper functioning of pump. (Refer to pump service manual)
	Defective sensor	Contact service technician. Replace metering cell
	Cable rupture, or cable wrongly connected	Meter cable, replace if necessary
Alarm Message:  	Atomizing air is open, but does not spray	Increase activating time for metering cell control  Do not open atomizing air unnecessarily.
	Hardener pressure too low	Adjust hardener pressure according to pressure of main paint + 10%
	Tip clogged (no fluid flow when gun is open)	Clean tip, replace if necessary
	Lack of material	Check material supply system on side B (empty container?) (Alternatively side C)
	Defective feed pump	Check proper functioning of pump. (Refer to pump service manual)
	Defective sensors	Contact service technician. Replace metering cell
	Cable rupture, or cable wrongly connected	Meter cable, replace if necessary

General Problem	Possible Cause	Solution
Alarm Message!   	Difference of pressure too high (injections too large)	Slowly reduce hardener pressure. Reduce needle stroke at metering valve.
	Uneven operation of feed pumps	Check pumps, clean and replace packings if necessary
	Selected incremental size too small	Adapt incremental size within the given possibilities
	Flow rate too high (for example by filling without spray tip)	Adapt incremental size within the given possibilities  Use tip for filling
	Lack of material. Pump is going down in down stroke	Finish mixing procedure. Fill pump again
Alarm Message! 	System has not been flushed in good time	Start flushing procedure
	Not sufficient material removed from the system within pot life period	Start flushing procedure

## 9 Spare Parts Lists

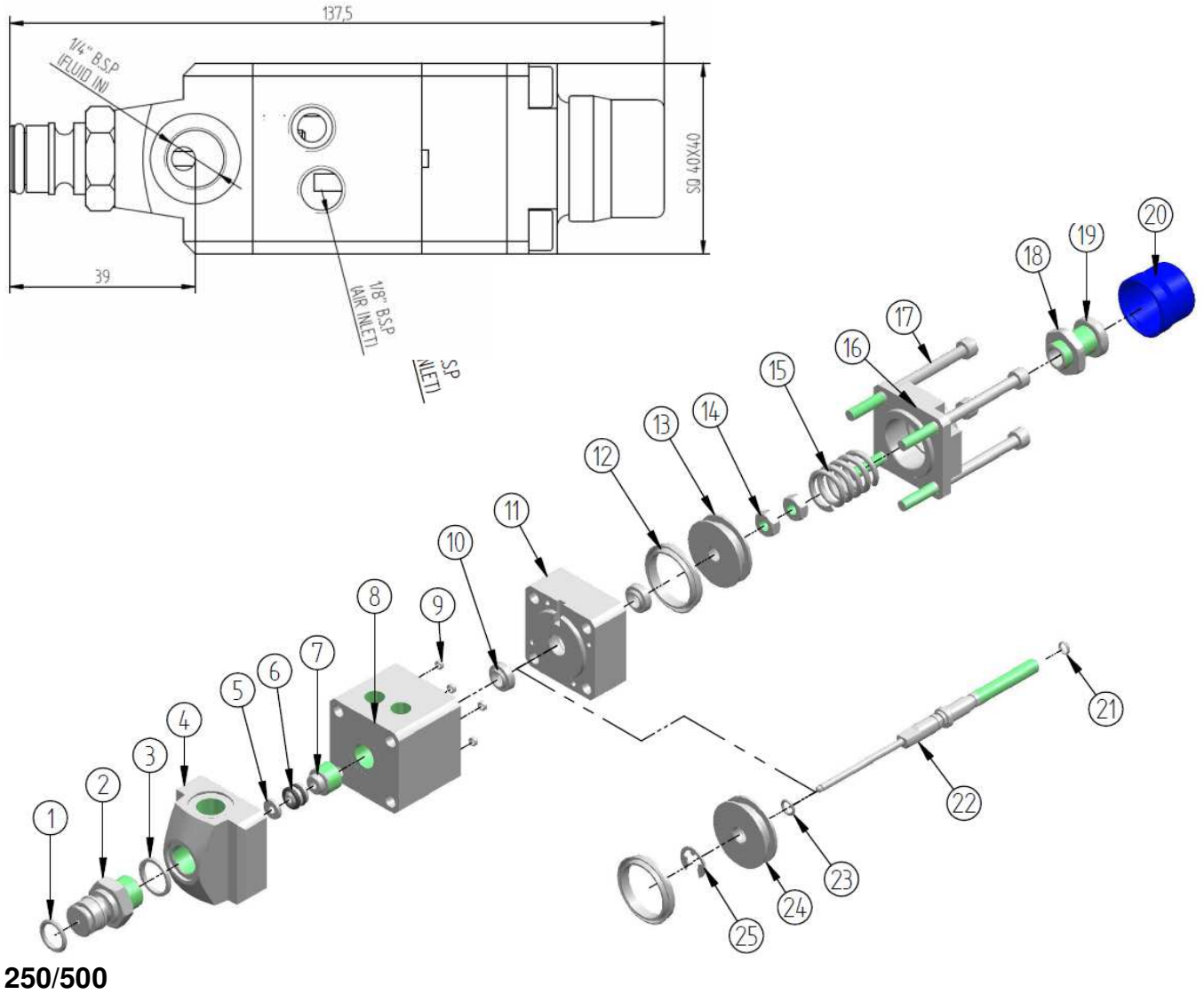
### 9.1 Spare Parts and General Options



Ref. No.	Description	Part No.
1	Touch Screen Magic Mix	2K-5209
2	Hardener Pump	Chapter 7
3	Fluid Pump	Chapter 7
4	Pressure Regulator 0 -10 bar	2K-5204
5	Gauge D50 1-8 bar	2K-5205
6	Valve OCV 250/ 500	2K-5101
7	Static Mixer 12x2	2K-5206
8	Material Pressure Regulator	2K-5107
9	Cart incl. 4 Rolls for Magic Mix	2K-5935
10	Solenoid Valve incl. Cable	2K-5207
	Processor	2K-5210
	Flat Cable RS232	2K-5211
	Length Metering Sensors	2K-5212
	Transformer MDR-20	2K-5208
	Flushing Valve Kit, 1 Flushing Agent	2K-5105
	Flushing Valve Kit, 2 Flushing Agents	2K-5106

## 9.2 Structural Components with Spare Parts

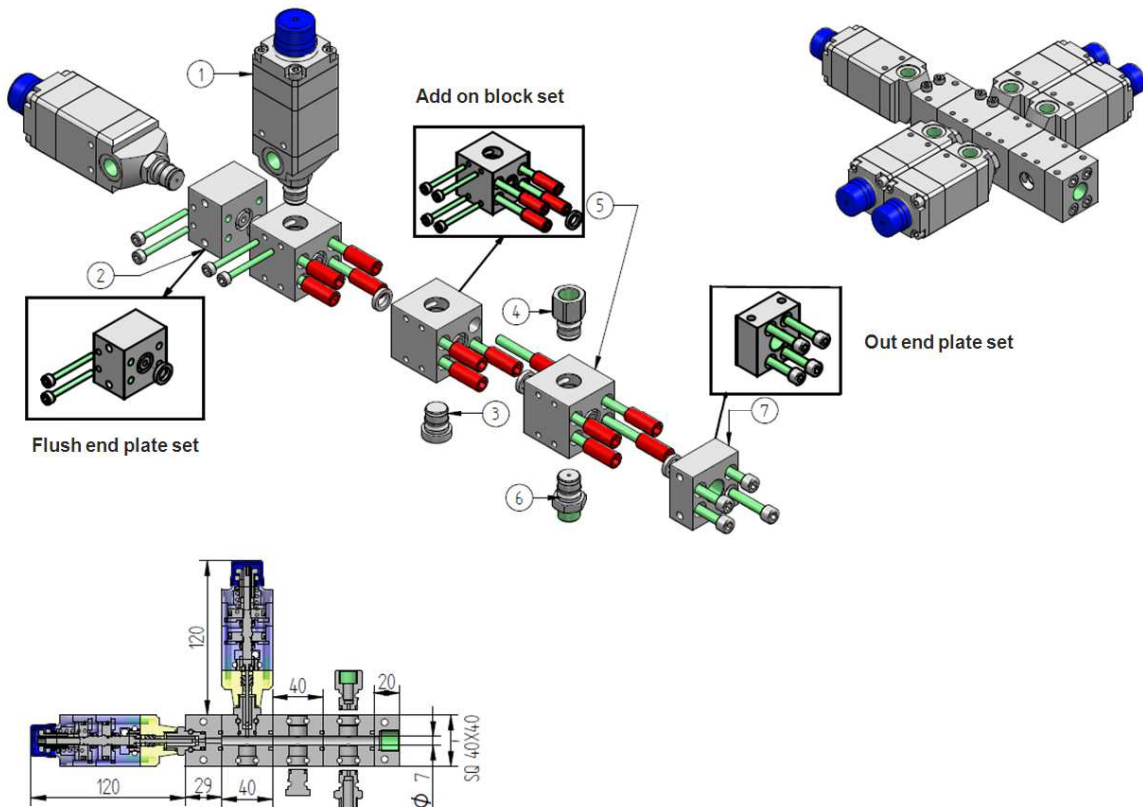
### 9.2.1 Fluid Valve CCV



Ref. No.	Description	Part No.	Qty.
<b>Valve CCV 250/500</b>			
		2K-5101	1
1	O Ring (Ø 10x2)	2K-5901	1
2	Valve Seat	2K-5902	1
3	Packing C/S 1,7x1,5	2K-5903	1
4	Front Valve Housing	2K-5904	1
5	Front Needle Packing	2K-5301	1
6	Needle Packing	2K-5302	1
7	Packing Spread	2K-5905	1

8	Piston Plate Housing 1	2K-5906	1
9	Packing	2K-5907	4
10	Air Seal	2K-5908	2
11	Piston Plate Housing 2	2K-5909	1
12	Piston Seal	2K-5910	2
13	Piston Plate 2	2K-5911	1
14	Nut (M6x1)	2K-5912	2
15	Spring	2K-5913	1
16	Spring Housing	2K-5914	1
17	Screw (M5x65)	2K-5915	4
18	Nut (M12x0,5)	2K-5916	1
19	Stopper	2K-5917	1
20	Valve Cap	2K-5918	1
21	O Ring 1	2K-5919	1
22	Needle	2K-5303	1
23	O Ring 2	2K-5920	1
24	Piston Place 1	2K-5921	1
24	Washer E6	2K-5922	1

### 9.2.2 Valve Attachment Block CCV 250/500

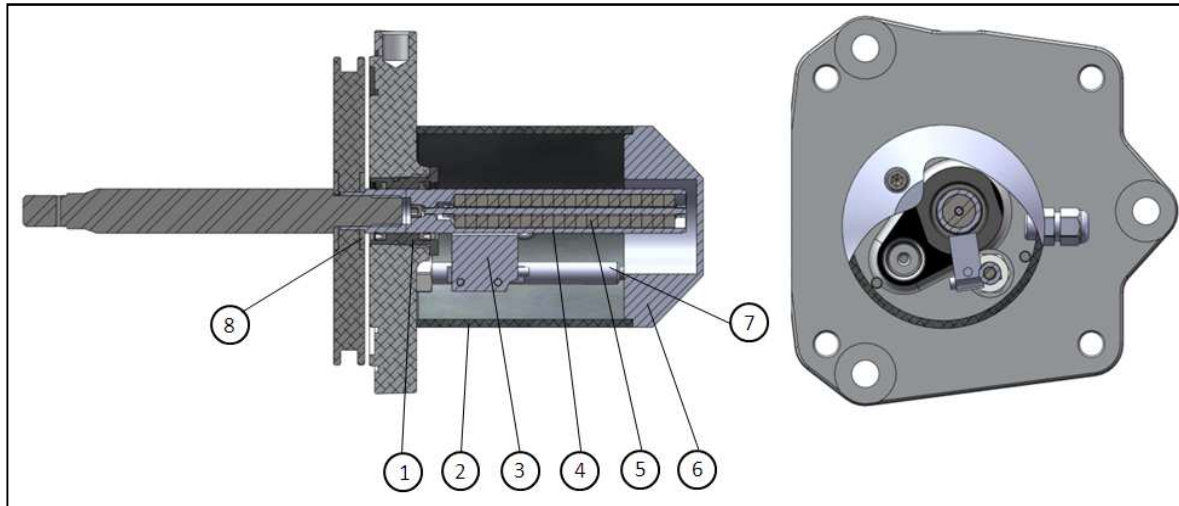




Ref. No.	Description	Part No.	Qty.
1	Valve Attachment Block for Valve OCV 250/ 500	2K-5101	1
2	Rear Plate Flushing Valve Assy.	2K-5102	1
2.1	Rear Plate	2K-5201	1
2.2	Screw M4x40	2K-5923	2
2.3	Washer (ID 10 x 1,5)	2K-5924	1
3	Screwed Connection with O Ring	2K-5925	1
4	Connector Fitting with O Ring	2K-5926	1
5	Add-On Block Assy.	2K-5103	1
5.1	Add-On Block	2K-5202	1
5.2	Screw M4x40	2K-5927	4
5.3	Washer (ID 10 x 1,5)	2K-5928	1
5.4	Screw (M6x57)	2K-5929	4
6	Screwed Connection with O Ring	2K-5930	1
7	Rear Plate Outlet Assy.	2K-5104	1
7.1	Rear Plate	2K-5203	1
7.2	Screw M6x30	2K-5931	4

### 9.2.3 Pumps

#### Spare Parts List for Magnetic Inquiry of Piston Stroke



Ref. No.	Qty.	Description	Part-No.	For Air Motor	
				AX 85	AX 140
1	1	Seal Housing Assy.	EXP-4212-402	x	
	1	Seal Housing Assy.	EXP-4212-404		x
2	1	Modified Cylinder 85 mm	0115-010613	x	x
3	1	Magnetic Signal Transmitter		x	x
4	1	Piston for Magnets Ø 12 mm	0115-010601	x	
	1	Piston for Magnets Ø 20 mm	0115-010618		x
5	20	Magnets Ø 10 x 5 mm	0115-010609	x	
	20	Magnets Ø 15 x 5 mm	0115-010617		x
6	1	Cylinder End Cap	0115-010606	x	x
7	2	Supporting Screwed Connection 85	0115-010603	x	
	2	Supporting Screwed Connection 140	0115-010621		x
8	1	Top Sealing Washer	0115-010607	x	
	1	Top Sealing Washer	0115-010620		x

## 10 Shut-Off the System

When the system shall be shut-off for some time, the following steps must be carried out:

1. Perform at least one complete flushing procedure, in order to remove mixed material from the system.
2. Depressurize all fluid supply systems.
3. Open all connected valves manually via the relevant menu, in order to relieve residual pressure.
4. Remove all supply hoses from the colour change valves.
5. Connect the flushing agent supply system to each valve in succession, open the valve manually and flush it via the gun or via a hose which is connected to the outlet.
6. Remove the flushing agent supply system.
7. Fill into each valve some millilitres of preservative agent and close it with a screw plug.
8. Remove the electric and pneumatic supply connections.
9. Store the system at a dry location.

## 11 Annex

### 11.1 Characteristics

#### General Characteristics:

System of protection of the control unit: IP 52

System of protection of the fluid part: IP 65

**Optionally:** EEx-proof for operation in Zone EEx-Class 1

Materials used for fluid contacting parts:

Stainless Steel, PTFE, Polyamide

**Special Characteristics:**

Depositable Parameters:	Mixture Ratio
	Pot Life
	Filling Quantity
	Tolerance
	Many Others

Storage of Consumption of all Components, incl. VOC-Calculation

Mixture Ratio: 0.5:1 – 20:1 (Volumetric Mixture Ratio)

**Hardware:**

Mixing Accuracy:	Exacter than 5% (according to calibration)
Volume Flow:	Depending on feed pump and viscosity 1.5 – 2.5 l/min (flow rate per pump)
Pressure Range:	3 - 250 bar (Low Pressure / High Pressure – depending on kind of pump)

**Dimensions (Without Pump):**

Height:	1600 mm (incl. set of rolls and stand post)
Width:	640 mm
Depth:	400 mm

**Personal Notes:**