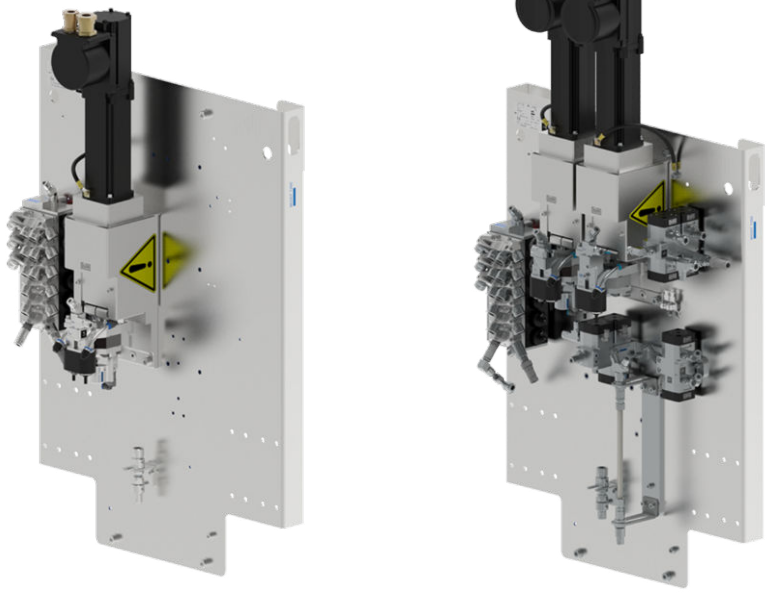
LEADING IN
PRODUCTION
EFFICIENCY



Fluidboard

Operation manual

MDR00017EN, V01

N13170001V

www.durr.com

Information about the document

This document describes the correct handling of the product.

- Read the document prior to every activity.
- Prepare the document for the application.
- Pass on the product only together with the complete documentation.
- Always follow safety instructions, handling instructions and specifications of every kind.
- Illustrations can deviate from the technical construction.

Validity range of the document

This document describes the following product:

N13170001V Fluidboard	

Applicable documents

MCU00001* - **Eco**AUC Switching and Control Cabinet

MRS00003* - Atomizer connection **Eco**Bell2

MRS00004* - Atomizer connection **Eco**Gun Low pressure

MRS00005* - Atomizer connection **Eco**Gun High pressure

- Operating Instructions for Robot Control
- Operating Instructions for Robot Mechanism
- Operating instructions of the Application Components
- Circuit diagram
- Process schematics
- Process descriptions for actuation of the application
- Parts catalog with data carrier

An asterisk (*) in the document number replaces the symbol of the language variant.

Hotline and Contact

If you have queries or would like technical information, please contact your dealer or sales partner.

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1 Product overview

1.1 Overview

1K Variant with Paint Pressure Control

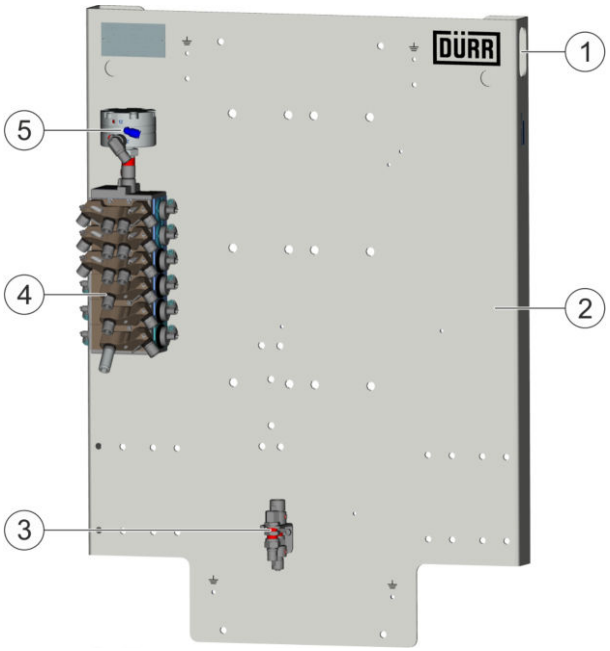

Fig. 1: Overview 1K Variant With Paint Pressure Regulation

1 Fastening Option for Transport
2 Assembly plate
3 Interface of hoses and recirculation
4 **Eco**MCC3 20 (Color Changer)
5 **Eco**Flow LPF (Paint pressure regulator)

1K variant with gear wheel pump

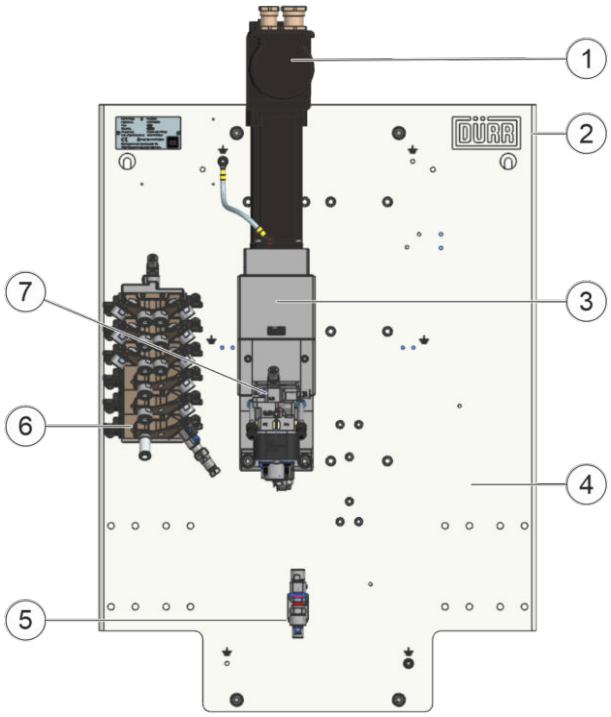

Fig. 2: Overview 1K Variant With Gear Wheel Pump

1 Digital Servo Motor
2 Fastening Option for Transport
3 Metering Unit
4 Assembly plate
5 Interface of hoses and recirculation
6 **Eco**MCC3 20 (Color Changer)
7 **Eco**Pump9 (Gear wheel pump)

2K variant

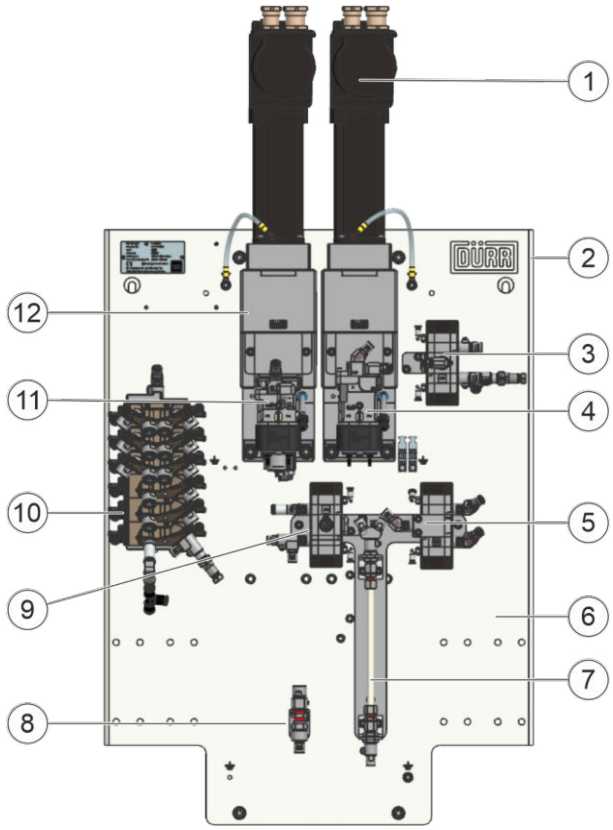

Fig. 3: Overview 2K variant

1 Digital Servo Motor
2 Fastening Option for Transport
3 **Eco**Valve7 (Control valve)
4 **Eco**Pump9 (Gear Wheel Pump for hardener)
5 **Eco**Valve7 (Control valve)
6 Assembly plate
7 Mixer
8 Interface of hoses and recirculation
9 **Eco**Valve7 (Control valve)
10 **Eco**MCC3 20 (Color Changer)
11 **Eco**Pump9 (Gear Wheel Pump for master lacquer)
12 Metering Unit

High Pressure Variant

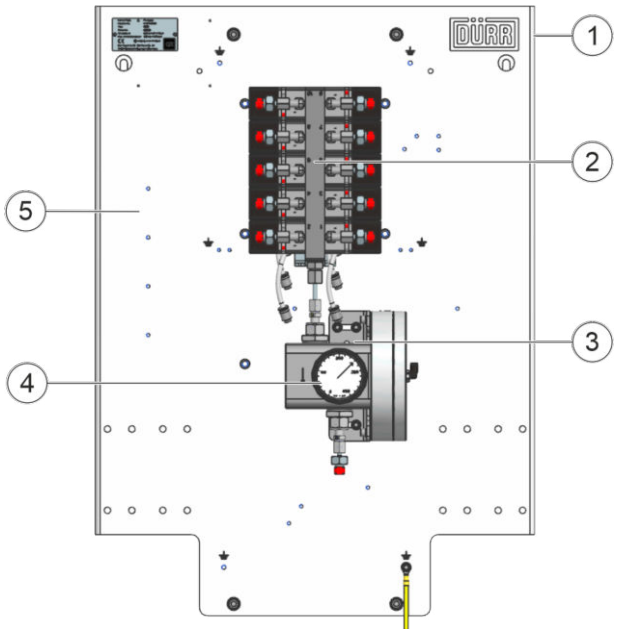

Fig. 4: Overview of high pressure variant

1 Fastening Option for Transport
2 **Eco**MCC3 200 (Color Changer)
3 **Eco**Flow HPF P 310 (Paint pressure controller)
4 Pressure gage
5 Assembly plate

1.2 Short description

The fluidboard is, depending on design, a part component of a low pressure painting or of a high pressure painting system. The painting system has a modular construction. Prepared fluid coating material is metered with the fluidboard (e.g. via a ring line system) and fed to an application unit. The components are mounted on an assembly plate. The color changer can change among a maximum of ten different color paints.

In the case of low pressure painting systems, the paint reaches the atomizer via an electrically driven gear wheel pump or a paint pressure controller. For 2 component paints, master lacquer and hardener are combined through control valves in a mixer element and then guided to the atomizer.

In the case of high pressure painting systems, paint pressure controllers are always used, which reduce the pressure of the paint coming from the color changer and guide it to the atomizer.

A higher level control guides the components on the fluidboard.

2 Safety

2.1 Presentation of Notes

The following notes can appear in this instruction:

DANGER!

High risk situation that can lead to serious injuries or death.

WARNING!

Medium risk situation that can lead to serious injuries or death.

CAUTION!

Low risk situations that can lead to minor injuries.

NOTICE!

Situations that can lead to material damage.

ENVIRONMENT!

Situations that can lead to environmental damage.

Additional information and recommendations.

2.2 Intended Use

The fluidboard is designed solely for metering low to medium viscosity fluid coating materials in industrial plants.

Operate the fluidboard only within the approved technical data 11 “Technical data” .

The fluidboard may be used under the following conditions:

- In explosive areas of Ex zones 1 and 2
- With flammable fluid coating materials of the explosion group IIA and their approved detergents and cleaning agents
- With non-flammable fluid coating materials and their approved detergents and purging agents

Wrong use low pressure variants

Application other than as intended invites risk of injury.

Examples of wrong use are:

- Use in high pressure area
- Use in an area without forced ventilation
- Use of unapproved materials, see safety data sheets
- Making conversions or changes on your own
- Use in Ex zone 0

Wrong use high pressure variants

Not using as intended entails danger to life.

Examples of wrong use are:

- Use in an area without forced ventilation
- Use of unapproved materials, see safety data sheets
- High voltage engineering for electrostatic coating
- Making conversions or changes on your own
- Use in Ex zone 0

Ex labelling

Ex II 2G Exh IIA T6 Gb X

II	-	Device group II: all areas except mining
2G	-	Device category 2 for gaseous ex-atmosphere
Exh	-	Ignition protection category
IIA	-	Explosion group IIA
T6	-	Temperature class
Gb	-	Device protection level EPL
X	-	The fluid board is configured for operation in an ambient temperature of 15°C to 40°C.

2.3 Residual risks

Explosions

Sparks, open flames and hot surfaces can cause explosions in explosive atmospheres. It can cause serious injuries or death.

- Before carrying out any work, make sure that there is no explosive atmosphere.
- Do not use sources of ignition and open light.
- Do not smoke.
- Ground the product.
- Observe all general safety instructions.
- Wear specified protective equipment.

Flammable coating materials and their detergents and cleaning agents can cause a fire or an explosion.

- Ensure that the flashpoint of the cleaning agent is at least 15K above the ambient temperature or clean Fluidboard at the cleaning areas with active technical ventilation, in painting booths, according to EN 16985.
- Note explosion group of the fluid.
- Follow the safety data sheet.
- Ensure that technical ventilation and fire protection equipment are in operation.
- Do not use sources of ignition and open light.
- Do not smoke.
- Ground the product.
- Wear specified protective equipment.

Danger from harmful or irritant substances

Serious injuries or death can result if you come into contact with dangerous fluids or steam.

- Fluidboard Check regularly for leakage. Observe local regulations and maintenance schedule.
- Ensure that the forced ventilation is operational.
- Follow the relevant safety data sheets.
- Wear specified protective equipment.

Noise

Disconnecting pressurized pneumatic lines creates loud noises. This might damage the hearing.

Before carrying out any work:

- Switch off compressed air supply and secure personally against reconnection.
- Depressurize pneumatic lines.
- Wear specified protective equipment.

Leaking fluids and compressed air:

When working on the product, spurted material and leaking compressed air can cause irreversible damage to the eyes.

Before working on the product:

- Purge the system.
- Disconnect the system from compressed air and material supply system.
- Secure the system against being switched on again.
- Depressurize the lines.
- Wear eye protection.

2.4 Installation schematic

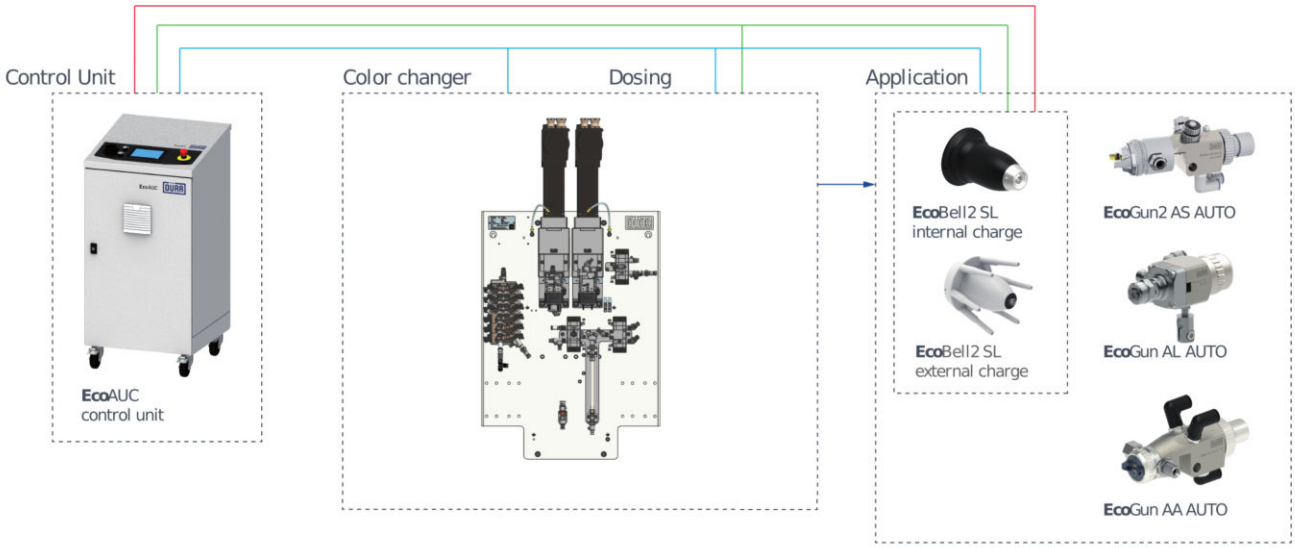

Fig. 5: Installation plan

2.5 Staff qualification

WARNING!

Inadequate qualification

Wrong estimation of dangers can cause serious injury or death.

- Only sufficiently qualified persons may execute all work.
- Some work requires additional qualification. Additional qualifications of specialized personnel are marked with a “+”.

This document is intended for qualified personnel in industry and craftmanship.

The following describes the different qualifications required for the work in this document. The required qualification is presented prior to the individual tasks in the appropriate chapters.

Cleaning staff

The cleaning staff receives regular instructions from the operator about the following contents:

- Using the product
- Handling cleaning tools
- Handling cleaning agents
- Technical Measures for occupational safety and health

Electrician

Electricians assemble, install, service and repair electrical systems in a professional manner.

Furthermore, electrical engineers have the following knowledge:

- Directives, Standards and Rules of Engineering
- Local conditions
- Electrical Systems and Their Loading Limits
- Technical Measures for occupational safety and health

Mechanic

The mechanic is trained specifically for the field of work in which he works.

Furthermore, he has the following knowledge:

- Directives, Standards and Rules of Engineering
- Local conditions
- Technical Measures for occupational safety and health

The mechanic is responsible for the following activities on equipment and components:

- Assembly
- Waiting
- Maintenance
- Disassembly

System operator

The system operator is trained specifically for the field of work in which he works.

The system operator has knowledge in the following specialized areas:

- System-specific process engineering
- Knowledge of the application processes regarding the application medium used
- Local technical measures for occupational safety and health

The system operator is responsible for the following tasks on equipment and components:

- Operate and monitor the system.
- Introduce measures in the event of faults.
- Clean the system.

+ additional qualification explosion protection

In addition to the knowledge of the various specialist fields, the mechanic has knowledge of regulations and safety measures when working in potentially explosive areas.

+ additional qualification for high pressure

In addition, the mechanic has knowledge of the regulations and safety measures for high pressure systems > 20bar.

+ additional qualification high tension technology

In addition to the knowledge of the various specialist fields, the mechanic has knowledge of the following specialist fields

- Painting process
- High voltage engineering for electrostatic coating

Dürr Systems offers special product training for
↳ “Hotline and Contact” .

2.6 Personal protective equipment

When working in explosive areas, the protective clothing, including gloves, must meet the requirements of EN 1149-5. Footwear must meet the requirements of ISO 20344 and IEC 61340-4-3. The volume resistivity must not exceed 100MΩ.

Wear the specified personal protective equipment when working. Provide the following personal protective equipment:

Anti-Static Safety Boots

Protect feet from crushing, falling items and slipping on slippery ground.

Moreover, anti-static safety boots reduce electrostatic charge by discharging the electrostatic charges.

Eye protection
Protects eyes from dust, paint drops and particles.

Face protection
Protect the face from dust, paint drops and particles flying around, such as ships and slivers.

Protective gloves
Protect the hands from:

- mechanical forces
- Thermal forces
- Chemical effects

Protective workwear
Tight fitting workwear with low tear strength, tight sleeves and no hanging parts.

Respirator mask
Protects from hazardous gases, vapors, dust and similar materials and media.

3 Design and Function

3.1 Operation

1K Variant with Paint Pressure Control

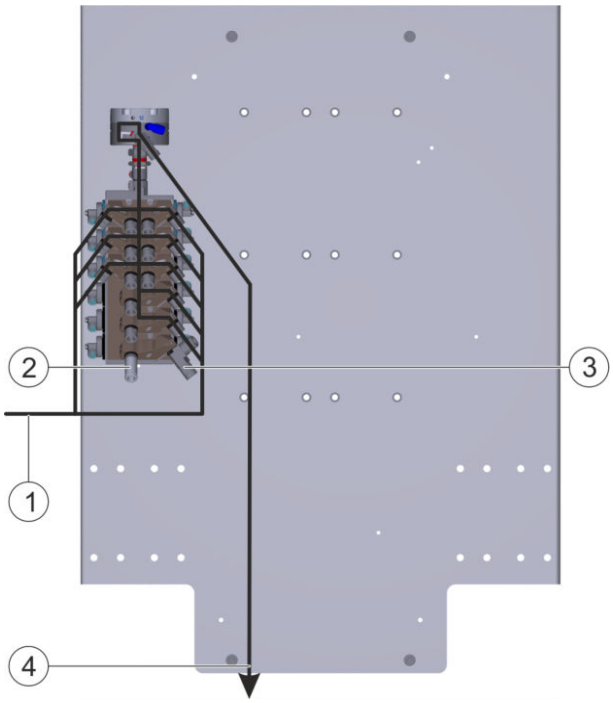

Fig. 6: Functioning 1K Variant With Paint Pressure Regulation

____ Paint
1 Paint from the external material supply
2 Pulsation air connection
3 Detergent connection
4 Supply line up to the atomizer

The operator must provide an external material supply, which provides continuous medium flow to the fluidboard at a sufficient and uniform pressure level. The paint moves from the external material supply system to the color changer via lines.

The color changer can change among a maximum of ten different color paints. From the color changer, the paint is conducted further to a paint pressure regulator. The paint pressure regulator reduces the pressure of the supply line to the required material pressure. From the paint pressure regulator, the paint is conducted further to the atomizer with uniform material pressure.

The application components are actuated via the Switch and control cabinet.

1K variant with gear wheel pump

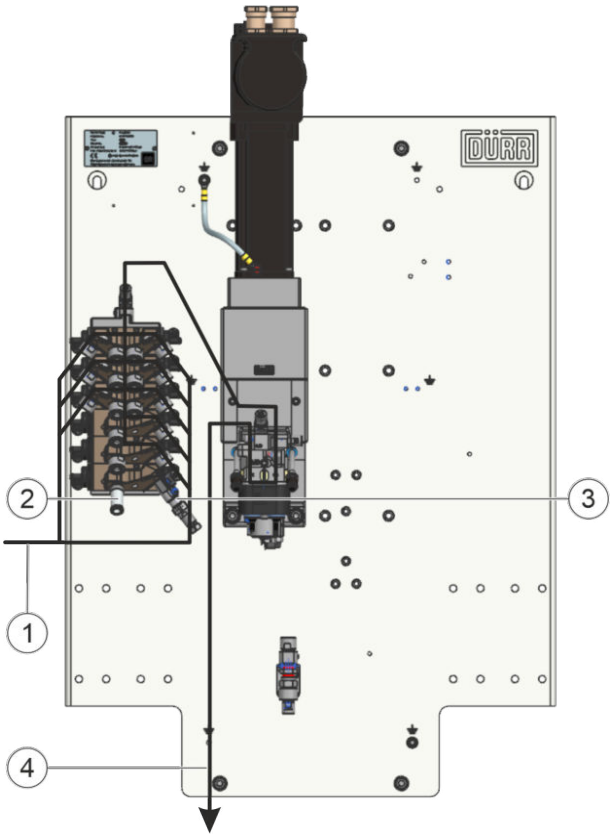

Fig. 7: Functioning 1K Variant With Gear Wheel Pump

____ Paint
1 Paint from the external material supply
2 Pulsation air connection
3 Detergent connection
4 Supply line up to the atomizer

The operator must provide an external material supply, which provides continuous medium flow to the fluidboard at a sufficient and uniform pressure level. The paint moves from the external material supply system to the color changer via lines.

The color changer can change among a maximum of ten different color paints. From the color changer, the paint is conducted further to a gear wheel pump. The gear wheel pump is for continuous metering of paints. A digital servo motor drives the gear wheel pump. The paint is conducted further from the gear wheel pump to the atomizer with uniform material pressure.

The application components are actuated via the Switch and control cabinet.

2K variant

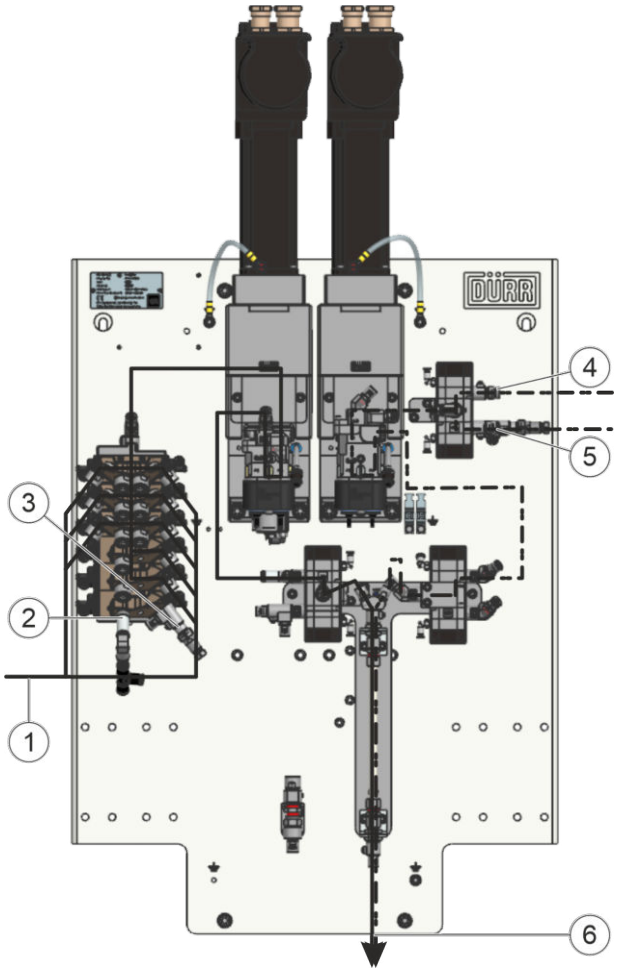

Fig. 8: Functioning 2K variant

____ Master lacquer
_ _ _ Hardener
1 Master lacquer from the external material supply
2 Pulsation air connection
3 Detergent connection
4 Hardener from the external material supply
5 Detergent from the external material supply
6 Supply line up to the atomizer

The operator must provide an external material supply, which provides continuous medium flow to the fluidboard at a sufficient and uniform pressure level. The master lacquer moves from the external material supply system to the color changer through lines.

The color changer can change amongst a maximum of ten paints of different colors. The paint coming from the color changer is guided onwards to a gear wheel pump. The gear wheel pump is for continuous metering of paints. A digital servo motor drives the gear wheel pump. The master lacquer travels from the gear wheel pump to the mixer via a disengaging valve.

The hardener moves from the external material supply system to the control valve through conduits. The hardener is guided to another gear wheel pump. The gear wheel pump is for continuous metering of paints. A digital servo motor drives the gear wheel pump. Pressure sensors record the operating pressures of the gear wheel pump. The pressure sensors are connected with the Switch and control cabinet. Crossing the defined pressure ranges brings the pump to a standstill. The hardener travels from the gear wheel pump to the mixer via a disengaging valve.

Master lacquer and hardener run through the mixer and are thereby mixed with each other. From the mixer, the 2-component paint is conducted further to the atomizer.

The application components are actuated via the Switch and control cabinet.

High Pressure Variant

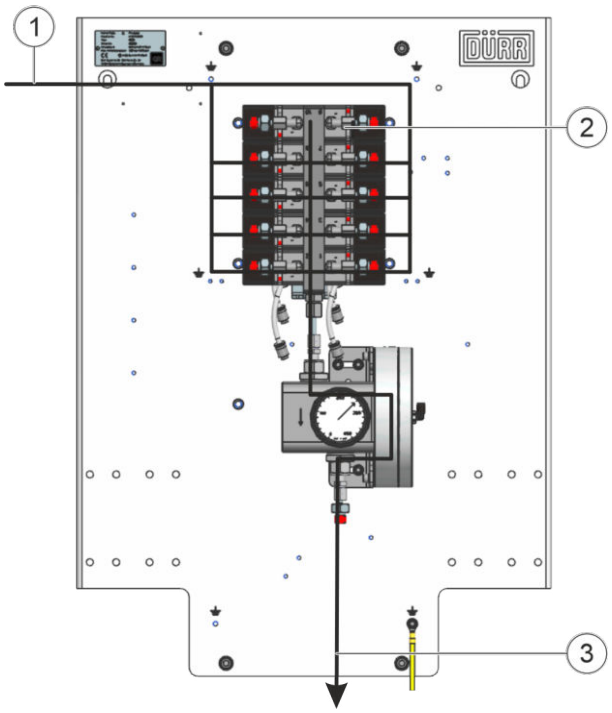

Fig. 9: High Pressure Variant Functioning

___ Paint
1 Paint from the external material supply
2 Detergent connection
3 Supply line up to the atomizer

The operator must provide an external material supply, which provides continuous medium flow to the fluidboard at a sufficient and uniform pressure level. The paint moves from the external material supply system to the color changer via lines.

The color changer can change among a maximum of ten different color paints. The paint coming from the color changer is guided onwards to a paint pressure regulator. The paint pressure regulator reduces the pressure of the supply line to the required material pressure. The material pressure is displayed on the pressure gage. From the paint pressure regulator, the paint is conducted further to the atomizer with uniform material pressure.

The application components are actuated via the Switch and control cabinet.

3.2 Original Servo Motor

Only 1K variant with gear wheel pump and 2K variant

Fig. 10: Digital Servomotor for Zone 1 ATEX 2G (Example)

The digital servo motor is connected to the Switch and control cabinet and is controlled via it. The connection is made via two plugs (1).
The servo motor drives the metering unit.

Optional: Drive motor with UL/FM approval
The drive motor with UL/FM approval has only one connector plug.

3.3 Gear unit axis 20

Only 1K variant with gear wheel pump and 2K variant

Fig. 11: Gear unit axis 20

The gear box unit GW 20 is the mechanical connections between the digital servo motor and the gear wheel pump. It transfers the kinetic energy of the motor to the gear wheel pump via gear box and clutch.

3.4 Gear wheel pump

Only 1K variant with gear wheel pump and 2K variant: Paint or master lacquer

The gear wheel pump is attached to the metering unit. The metering unit is the connection to the servo motor. The gear wheel pump is for continuous metering of paints. Internal soiling of the pump is removed by purging by means of a detergent.

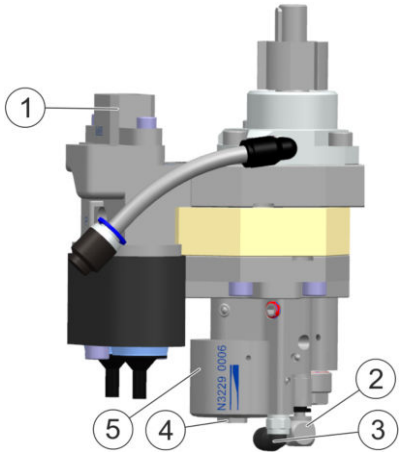

Fig. 12: Gear Wheel Pump Paint/ Master lacquer

Two material-bearing hoses are connected to the connection block (1). The gear wheel pump for the paint has a bypass block (5). The media can be quickly pressed into the atomizer via the bypass valve (4) on the bypass block (5). Control air is connected to the bypass valve (4) and V3/RFV3 valve (3). Detergent is guided into the pump block via the V3/RFV3 connection (2). The bypass valve (4) opens at pressures above 17 bar and pumps the paint stream without leakage into an internal circulation. The overpressure valve (4) protects the pump and its connections from damage.

Only 2K variant: Hardener

The gear wheel pump is attached to the metering unit. The metering unit is the connection to the servo motor. The gear wheel pump is for controlled metering of hardener. Internal soiling of the pump is removed by purging by means of a detergent.

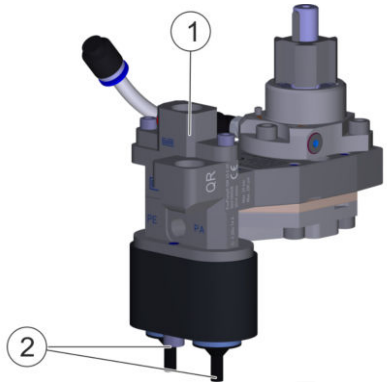

Fig. 13: Gear Wheel Pump for hardener

Two material-bearing hoses are connected to the connection block (1). Pressure sensors (2) record the operating pressures of the gear wheel pump for the hardener. The pressure sensors are connected with the Switch and control cabinet. Crossing the defined pressure ranges brings the pump to a standstill. The hardener travels from the gear wheel pump to the mixer via a disengaging valve.

3.5 Control Valves

Only 2K variant

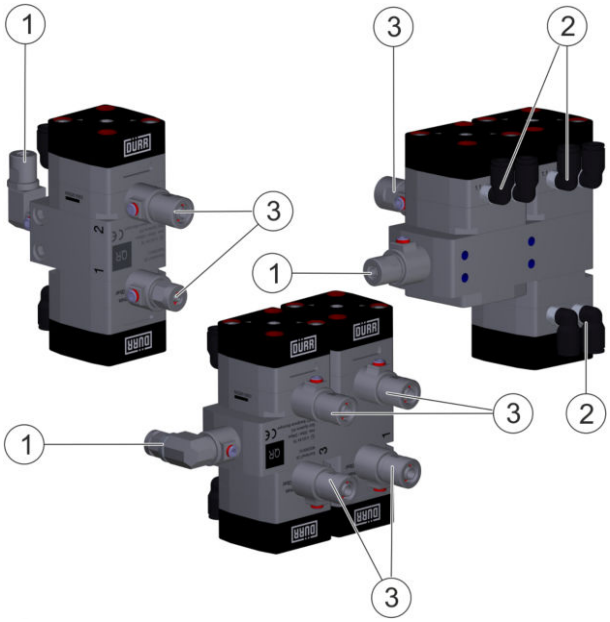

Fig. 14: Control Valves

The control valves combine connector block and diaphragm valves. The number of the diaphragm valves varies depending on design.

The control valves control the media supply to the components. The media reach the control valve via the material inlet (3). The control air is supplied via the control air connection (2). The media are guided to the components via the material outlet (1).

The control valve has a mechanical pressure release function. Above a pressure of 30 bar, the control valve has a self-opening function. This protects the material hoses from bursting.

The control valves are used for the hardener and the associated detergent as well as or the mixed area.

3.6 Paint pressure regulator

Only 1K variant with paint pressure control: EcoFlow HPF

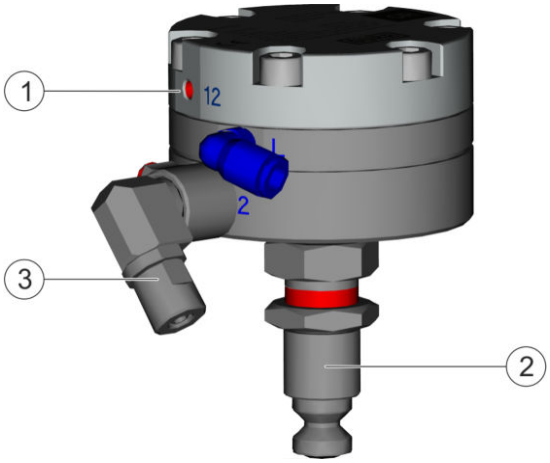

Fig. 15: Paint Pressure Regulator

The paint pressure regulator reduces the pressure of the supply line to the required material pressure. This is done by means of control air. The paint pressure regulator protects the other components from pressure surges and pulsations.

The media from the color changer reach the paint pressure regulator via the material inlet (2). The control air is supplied via the control air connection (1). The media are guided to the atomizer via the material outlet (3).

Only high pressure variant: EcoFlow HPF P

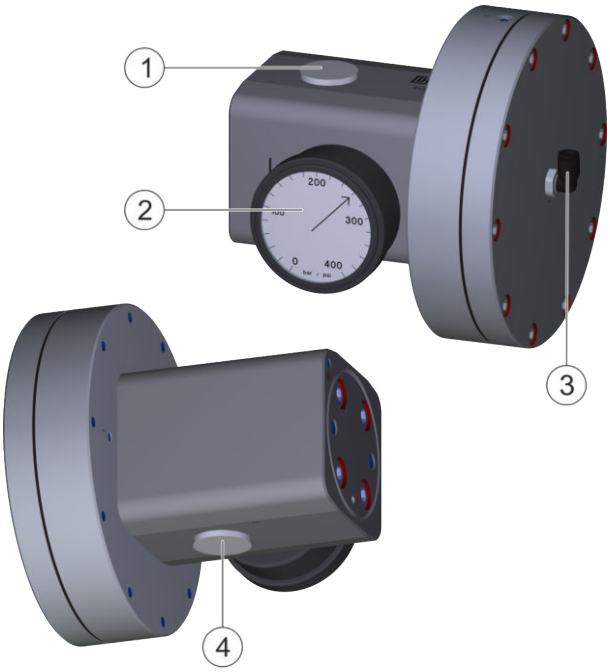

Fig. 16: Paint Pressure Regulator

The high pressure regulator reduces the pressure in the supply line to the required material pressure. This is done by means of control air. It protects the downstream devices from pressure surges and pulsations.

The media from the color changer reach the paint pressure regulator via the material inlet (1). The control air is supplied via the control air connection (3). The media are guided to the atomizer via the material outlet (4).

An optional pressure gage (2) displays the set material pressure.

3.7 Color changer

Only low pressure variants: EcoMCC3 20

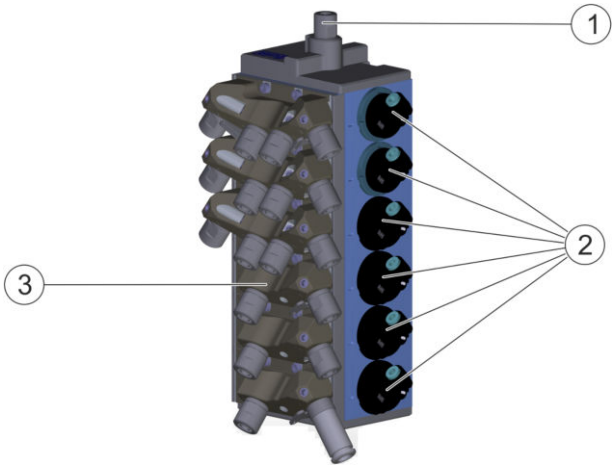

Fig. 17: Color changer

1 Material outlet
2 Control Air Valves
3 Connection blocks

Paint is connected to the color changer in multiple color shades as well as cleaning media through hoses. The operator or integrator must install the material supply. The paint reaches the paint channel through the respective valves. From the material outlet (1), the paint is further conducted to the atomizer via the gear wheel pump. The central channel is purged with detergent and pulsation air via the integrated purging valves.

The valves are actuated via the control cables from the Switch and control cabinet.

Only high pressure variant: EcoMCC3 200

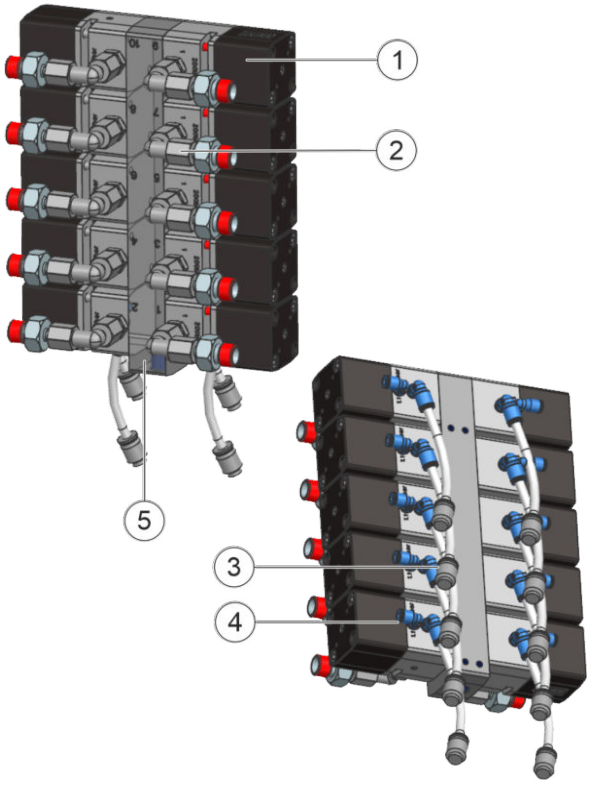

Fig. 18: Color changer

1 Valve
2 Material inlet
3 Collecting pan for the release agent
4 Control air connection
5 Material outlet

Paint is connected to the color changer in multiple color shades as well as cleaning media through hoses. The operator or integrator must install the material supply. The paint reaches the paint channel through the respective valves (1). From the material outlet (5), the paint is further conducted to the atomizer via the paint pressure regulator.
The valves are actuated via control air.

3.8 Mixer

Only 2K variant

Fig. 19: Mixer

The mixer is placed on the assembly plate with a holding fixture. The mixer has two material inlets (1). The master lacquer is supplied through a material inlet, hardener through the other material inlet. Master lacquer and hardener run through the mixer line with a static mixer and are thereby mixed with each other.
From the material outlet (2), the 2-component paint is conducted further to the paint robot.

3.9 Hoses

Low Pressure Variants

Use	Material
Material hose transparent	PFA
Compressed air hose	PA

All material-bearing hoses on the fluidboard are manufactured transparent, from the PFA material. Dürr Systems recommends that the further continuing hoses from operator side should also be transparent and made from PFA material.

High Pressure Variant

Use	Material
Material hose transparent	PA, steel braiding brass plated, polyurethane
Compressed air hose	PA

4 Transport, scope of supply and storage

4.1 Unpacking

DANGER!

Electrostatically charged plastic films and foils in potentially explosive areas

The foil and the product can charge electrostatically at the time of the unpacking. Electrostatic discharge can cause sparks that in explosive atmosphere can cause a fire or an explosion. Serious injury and death could be the consequence.

- Unpack product outside Ex zones.
- Discharge the product.
- Dispose packaging outside of the Ex zone in accordance with the regulation or store properly for a later return.

4.2 Scope of delivery

Inspect delivery on receipt for completeness and integrity.

Report defects immediately ↳ “Hotline and Contact” .

Low Pressure Variants

Depending on the variant, following components are included in the scope of supply:

- Fluidboard, pre-assembled:
  - Assembly plate
  - Digital Servomotor (optional)
  - Metering unit (optional)
  - Gear wheel pump (optional)
  - Control Valves (optional)
  - Paint pressure regulator (optional)
  - Color changer
  - Mixer (optional)
- Clutch for metering unit (optional)
- Cable set for digital servo motor (optional)

High Pressure Variant

The scope of supply includes the following components:

- Fluidboard, pre-assembled:
  - Assembly plate
  - Paint Pressure Regulator
  - Color changer
  - Pressure gage

4.3 Handling of packaging material

ENVIRONMENT!

Incorrect disposal

Incorrectly disposed packaging material can damage environment.

- Dispose of material no longer required in an environment-friendly manner.
- Observe local disposal specifications.

4.4 Transport

WARNING!

Lifting heavy loads

Lifting heavy loads could cause back injuries, crushing or compression. Serious injuries can be the consequence.

- Lift heavy loads only by using suitable hoists.

NOTICE!

Incorrect Transport

Incorrect Transport can cause property damage.

- Protect Fluidboard from moisture.
- Protect Fluidboard from vibrations.
- Transport temperature: -40°C to 60°C (short-term)

Note the following points during Transport:

- Disconnect fluidboard from material feed, compressed air supply and detergent supply.
- Disassemble grounding.
- Transport fluidboard on a pallet. Secure fluidboard on the fastening facilities using a clamping belt.
- Transport fluidboard only by using suitable lifting equipment.
- Ensure that the transport path is free from barriers.

4.5 Storage

Storage provisions:

- Do not store outdoors.
- Fluidboard only store when in a clean and dry condition.
- Store in a dust-free place.
- Do not expose to aggressive media.
- Protect from solar radiation.
- Avoid mechanical vibrations.
- Temperature: 10°C to 40°C
- Relative humidity: 35% to 90%

5 Assembly

5.1 Safety recommendations

WARNING!

Hoses whipping around

If hoses under pressure come off loose, the hoses can lash around and cause injuries.

- Check that the hose connections are seated tightly.
- Check hoses for damage.
- Do not reach for lashing hoses.
- Before carrying out any work:
  - Disconnect the compressed air supply and secure it personalized from being switched on again.
  - Depressurize hoses.

WARNING!

Danger from harmful or irritant substances

Serious injuries or death can result if you come into contact with dangerous fluids or steam.

- Follow the relevant safety data sheets.
- Wear specified protective equipment.

Only for low pressure variants

WARNING!

Escaping material and compressed air

Escaping material under pressure can cause serious injuries.

Before carrying out any work:

- Disconnect the system, in which fluidboard is installed, from compressed air and material supply.
- Secure system personalized from being switched on again.
- Depressurize the lines.

Only for High Pressure Variant

WARNING!

Material escaping under pressure

Material leaking under high pressure can penetrate the body. Even if the injury looks like a harmless cut wound, the penetrating material leads to amputation, serious injuries can cause death.

- Do not try to seal leakages using body parts, gloves or towels.
- If there are injuries, seek medical attention immediately.

Before working on the product:

- Switch off compressed air and material supply of the main system and secure personally against switching on again.
- Depressurize the lines.

5.2 Requirements for the Installation point

Low Pressure Variants

- Spray booths according to EN 16985
- Material supply can be set between 6 and 20 bar.
- Detergent supply can be set between 4 and 20 bar.
- Ensure continuous supply at constant pressures.
- Compressed air supply can be interrupted and secured against reconnecting.
- Technical ventilation
- Ground connection provided by client
- For wall mounting: Wall, screws and dowels have sufficient load capacity for the weight of the fluidboard ↳ 11 “Technical data” .
- At the time of assembly on mobile columns: flat and firm ground
- At the time of assembly on mobile columns: Do not exceed the maximum angle of tilt 25°.

High Pressure Variant

- Spray booths according to EN 16985
- Material supply can be set between 0 and 200 bar.
- Detergent supply can be set between 0 and 200 bar.
- Ensure continuous supply at constant pressures.
- Compressed air supply can be interrupted and secured against reconnecting.
- Technical ventilation
- Ground connection provided by client
- For wall mounting: Wall, screws and dowels have sufficient load capacity for the weight of the fluidboard ↳ 11 “Technical data” .
- At the time of assembly on mobile columns: flat and firm ground
- At the time of assembly on mobile columns: Do not exceed the maximum angle of tilt 25°.

5.3 Assembly

WARNING!

Lifting heavy loads

Lifting heavy loads could cause back injuries, crushing or compression. Serious injuries can be the consequence.

- Lift heavy loads only by using suitable hoists.

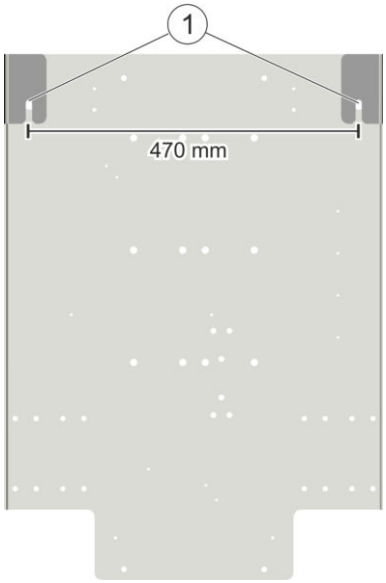

Fig. 20: Assembly Plate Rear Side

Personnel:

- Mechanic

Protective equipment:

- Eye protection
- Protective workwear
- Protective gloves
- Anti-Static Safety Boots

1. Mark the drill holes.
   Provide sufficient distance to the ground, so that the bend radii of the hose lines are maintained.
2. Drill holes. Insert screws in the bore holes.

   Use dowel, depending on the wall finish.

3. Push both slots (1) of the assembly plate over the screws. Check firm seat.

Assembly pedestal

If there is no suitable wall, the assembly plate can also be placed on an assembly frame ↳ 12.2 “Accessories” .

The assembly frame can be ordered optionally.

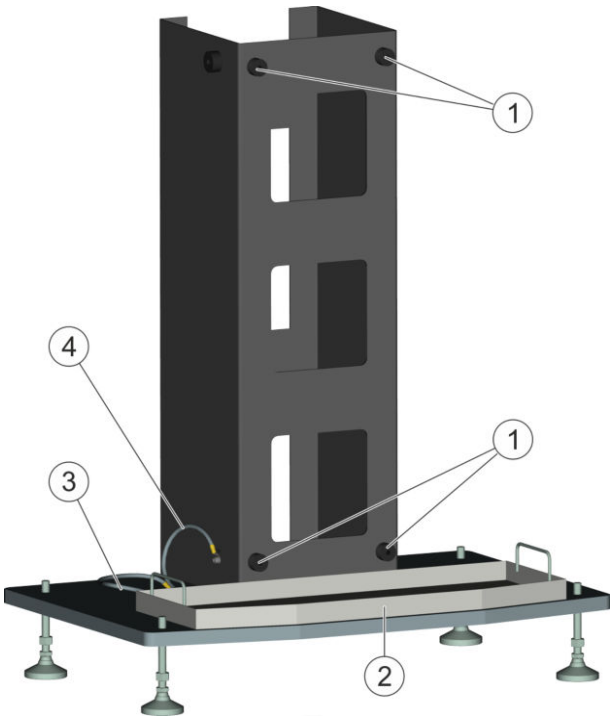

Fig. 21: Assembly Frame Construction

1 Fastening Options for Fluidboard
2 Collecting tray
3 Ground cable collecting tray
4 Ground cable frame

5.4 Grounding Fluidboard

The fluidboard must be grounded after assembly and before commissioning.

In the case of external charging, potential equalization is additionally needed between the fluidboard and the atomizer.

Low Pressure Variants

Personnel:

- Electrician
- + additional qualification explosion protection
- + additional qualification high tension technology

Protective equipment:

- Eye protection
- Protective workwear
- Protective gloves
- Anti-Static Safety Boots

Grounding Servo Motor

Valid for 1K variant with gear wheel pump and 2K variant

When dispatching, the ground cable from the servo motor is pre-assembled on the fluidboard.

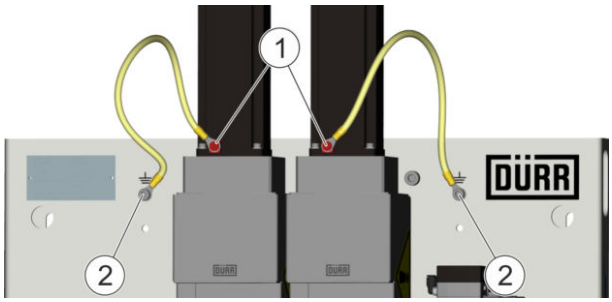

Fig. 22: Grounding Servo Motor (Example 2K Variant)

1 Attaching the ground cable to the motor
2 Grounding hole on the fluidboard

1. Check whether the grounding cable is correctly mounted on the servo motor and the fluidboard.
2. If the servo motor has been replaced, assemble ground cable to the servo motor and the fluidboard in a professional manner.

Grounding Fluidboard

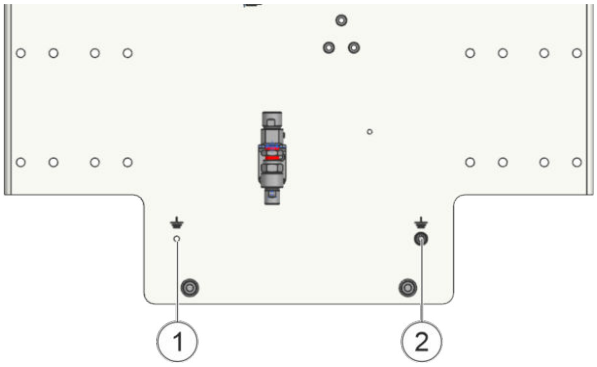

Fig. 23: Grounding Fluidboard (Example 1K Variant)

3. Mount grounding cable on the grounding bore (1) of the fluidboard.

   The ground cable is not included in the scope of supply.

4. Guide grounding cable from the fluidboard to the grounding point. Mount grounding cable on the grounding point.

Potential Equalization (Atomizer with external charging)

5. Mount the potential equalization cable on the bore (2).
6. Guide potential equalization cable from the fluidboard to the atomizer. Mount potential equalization cable on the atomizer.
   ⇨ The fluidboard is grounded.

High Pressure Variant

Personnel:

- Electrician
- + additional qualification explosion protection
- + additional qualification for high pressure
- + additional qualification high tension technology

Protective equipment:

- Face protection
- Protective workwear
- Protective gloves
- Anti-Static Safety Boots

Grounding Fluidboard

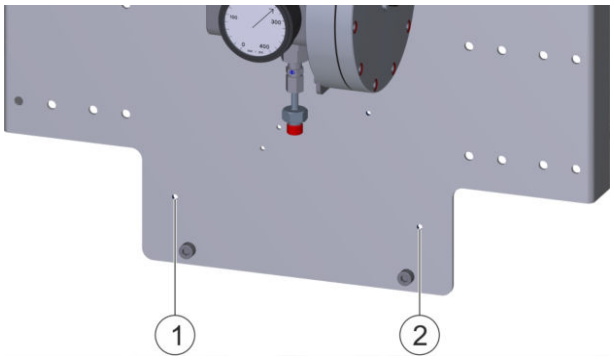

Fig. 24: Grounding Fluidboard

1. Mount grounding cable on the grounding bore (1) of the fluidboard.

   The ground cable is not included in the scope of supply.

2. Guide grounding cable from the fluidboard to the grounding point. Mount grounding cable on the grounding point.

Potential Equalization (Atomizer with external charging)

3. Mount the potential equalization cable on the bore (2).
4. Guide potential equalization cable from the fluidboard to the atomizer. Mount potential equalization cable on the atomizer.
   ⇨ The fluidboard is grounded.

5.5 Connecting Control Cable

Servomotor

Valid for 1K variant with gear wheel pump and 2K variant

Personnel:

- Electrician
- + additional qualification explosion protection
- + additional qualification high tension technology

Protective equipment:

- Protective gloves

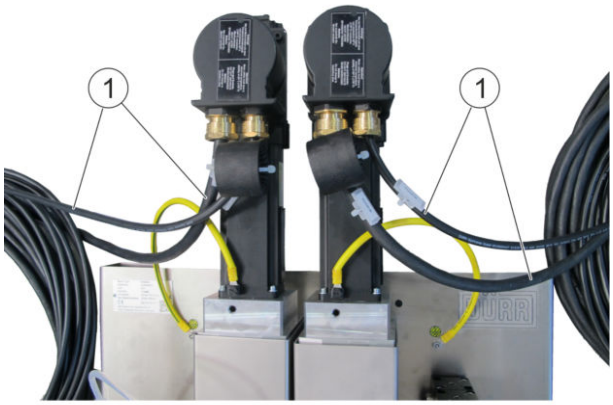

Fig. 25: Control Connections Servo Motor (Example 2K Variant)

1. Guide cables (1) from the digital servo motor to the Switch and control cabinet.
2. Connect cable set to the control.
   ⇨ Follow the circuit diagram ↳ “Applicable documents” .

Gear wheel pump

Valid for 2K variant

Personnel:
- Electrician
- + additional qualification explosion protection
- + additional qualification high tension technology

Protective equipment:
- Protective gloves

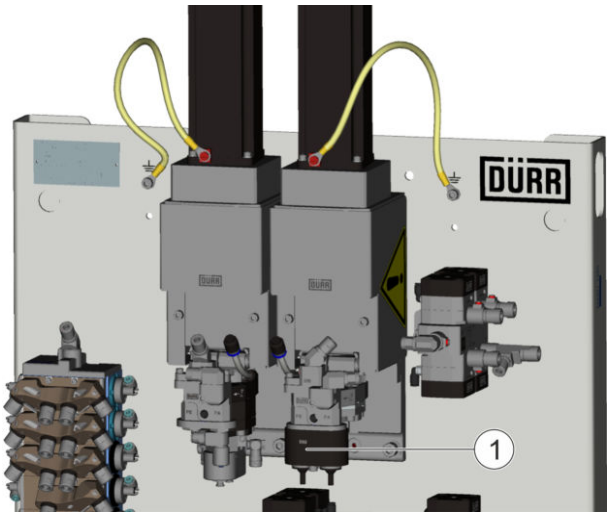

Fig. 26: Control Connections for Gear Wheel Pump

1. Guide pre-assembled control cables (1) from the pressure sensors to the Switch and control cabinet.
2. Connect control cable to the control system.
   - Follow the circuit diagram ↳ “Applicable documents” .

5.6 Connect compressed air supply

1K Variant with Paint Pressure Control

WARNING!

Sparks due to electrostatic discharge

If control air lines are routed in bundles, there could be sparking due to electrostatic discharges. In an explosive atmosphere, these sparks can prove to be the source of ignition for an explosion. Serious injury and death could be the consequence.
- Route control air cables only in bundles with diameter smaller than 30mm.

Personnel:
- Electrician
- + additional qualification high tension technology

Protective equipment:
- Protective workwear
- Eye protection
- Protective gloves
- Anti-Static Safety Boots

Requirements:
- Compressed air supply is switched off and secured against being switched on again.
- Lines are depressurized.

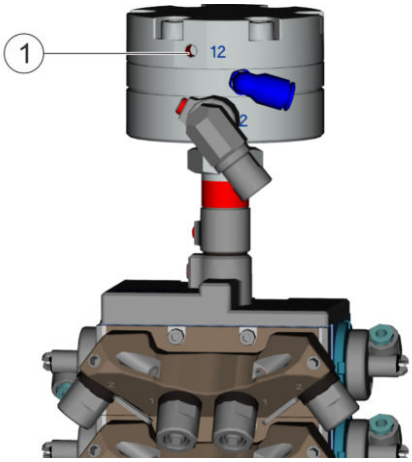

Fig. 27: Control Air Connection Paint Pressure Regulator

1. Connect control air hose to the control air connecting (1).

The control air connections are pre-assembled on the color changer.

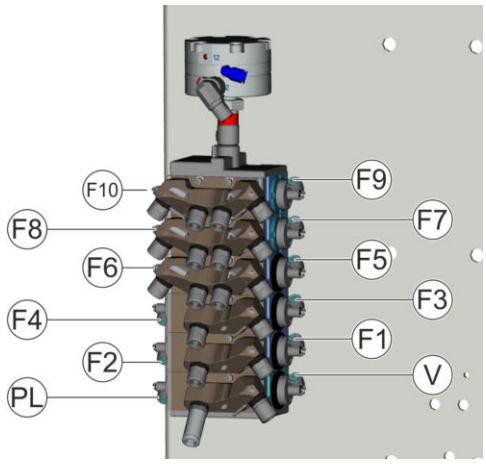

Fig. 28: Control Air Connections (Example with 10 Colors)

F1 – F10 Control air lines for paints
PL Control air supply for pulsation air
V Control air supply for detergent

2. Guide control air cables from the paint pressure regulator and from color changer to the Switch and control cabinet.
3. Connect control air supply lines to the control system.
   - Follow the circuit diagram ↳ “Applicable documents” .

1K variant with gear wheel pump

WARNING!

Sparks due to electrostatic discharge

If control air lines are routed in bundles, there could be sparking due to electrostatic discharges. In an explosive atmosphere, these sparks can prove to be the source of ignition for an explosion. Serious injury and death could be the consequence.

- Route control air cables only in bundles with diameter smaller than 30mm.

Personnel:

- Electrician
- + additional qualification high tension technology

Protective equipment:

- Protective workwear
- Eye protection
- Protective gloves
- Anti-Static Safety Boots

Requirements:

- Compressed air supply is switched off and secured against being switched on again.
- Lines are depressurized.

The control air connections are pre-assembled on the color changer and the gear wheel pump.

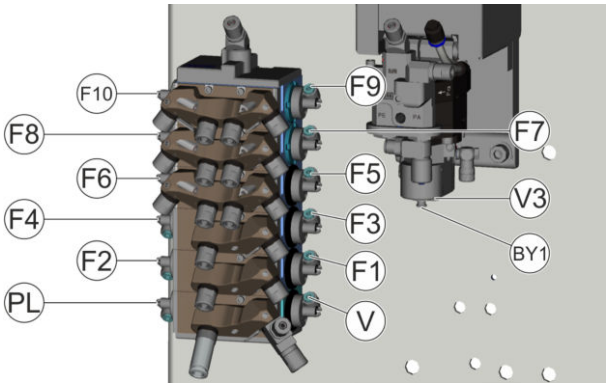

Fig. 29: Control Air Connections (Example with 10 Colors)

F1 – F10 Control air lines for paints
PL Control air supply for pulsation air
V Control air supply for detergent
V3 RFV3 valve gear wheel pump
BY1 Bypass valve gear wheel pump

1. Guide control air cables from color changer and the dosingl pump to the Switch and control cabinet.
2. Connect control air supply lines to the control system.
   - Follow the circuit diagram ↳ “Applicable documents” .

2K variant

WARNING!

Sparks due to electrostatic discharge

If control air lines are routed in bundles, there could be sparking due to electrostatic discharges. In an explosive atmosphere, these sparks can prove to be the source of ignition for an explosion. Serious injury and death could be the consequence.

- Route control air cables only in bundles with diameter smaller than 30mm.

Personnel:
- Electrician
- + additional qualification high tension technology

Protective equipment:
- Eye protection
- Protective workwear
- Protective gloves
- Anti-Static Safety Boots

Requirements:
- Compressed air supply is switched off and secured against being switched on again.
- Lines are depressurized.

The control air connections are pre-assembled on the color changer, the control valves and the gear wheel pump.

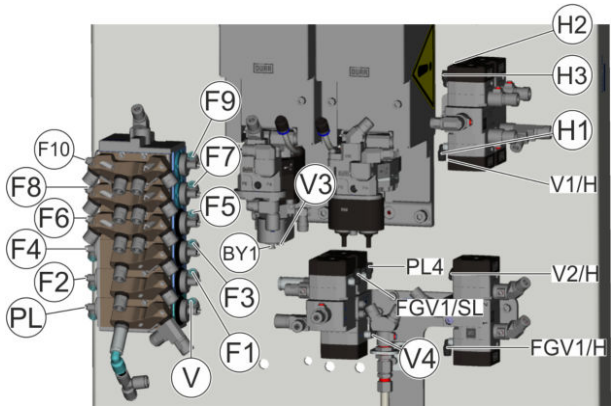

Fig. 30: Control Air Connections 2K Variant

BY1	Bypass valve gear wheel pump
F1 – F10	Control air lines for paints
FGV1/H	Control air intake control valve
FGV1/SL	Control air intake control valve
H1 – H3	Control air intake control valve
PL	Control air supply for pulsation air
PL4	Control air intake control valve
V	Control air supply for detergent
V1/H	Control air intake control valve
V2/H	Control air intake control valve
V3	RFV3 valve gear wheel pump
V4	Control air intake control valve

1. Guide control air cables from color changer, the control valves and dosing pump to the Switch and control cabinet.
2. Connect control air supply lines to the control system.
   - Follow the circuit diagram ↳ “Applicable documents” .

High Pressure Variant

WARNING!

Sparks due to electrostatic discharge

If control air lines are routed in bundles, there could be sparking due to electrostatic discharges. In an explosive atmosphere, these sparks can prove to be the source of ignition for an explosion. Serious injury and death could be the consequence.
- Route control air cables only in bundles with diameter smaller than 30mm.

Personnel:
- Electrician
- + additional qualification for high pressure
- + additional qualification high tension technology

Protective equipment:
- Face protection
- Protective workwear
- Protective gloves
- Anti-Static Safety Boots

Requirements:
- Compressed air supply is switched off and secured against being switched on again.
- Lines are depressurized.

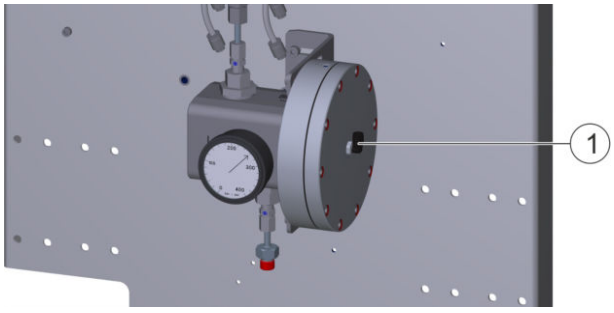

Fig. 31: Control Air Connection Paint Pressure Regulator

1. Connect control air line to the control air connection (1).

The control air connections are pre-assembled on the color changer.

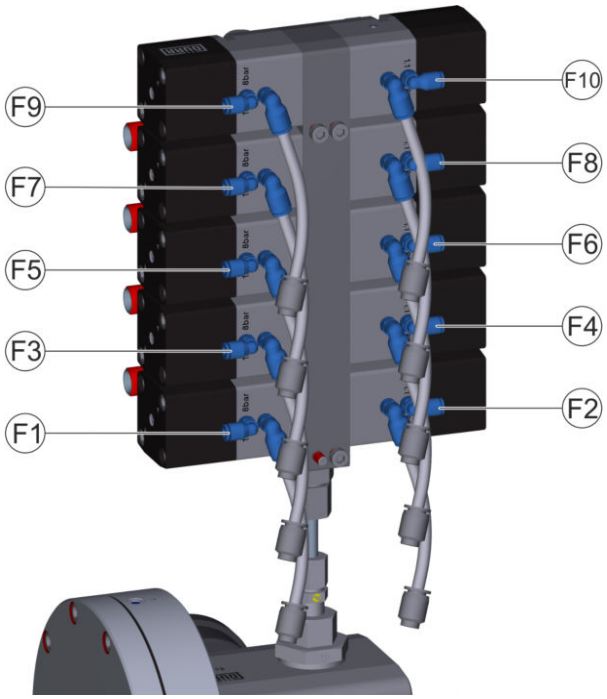

Fig. 32: Control Air Connections to the Color Changer

F1 – F10 Control air lines for paints and detergent

2. Guide control air cable from the color changer to the Switch and control cabinet.
3. Connect control air supply lines to the control system.
   - Follow the circuit diagram ↳ “Applicable documents” .

5.7 Connecting the material supply

1K Variant with Paint Pressure Control

WARNING!

Sparks due to electrostatic discharge

If material lines are routed in bundles, there could be sparking due to electrostatic discharges. In an explosive atmosphere, these sparks can prove to be the source of ignition for an explosion. Serious injury and death could be the consequence.

- Route control air cables only in bundles with diameter smaller than 30 mm.

The hoses for the material supply system are not in the scope of supply. Dürr Systems recommends transparent hoses of the PFA material.

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Eye protection
- Protective workwear
- Protective gloves
- Anti-Static Safety Boots

Requirements:

- Material supply system is switched off and secured against reconnection.
- Lines are depressurized.

The assembly of the connections is described below taking color changer as an example. The assembly of the hoses for the material supply system is the same as for the other connections.

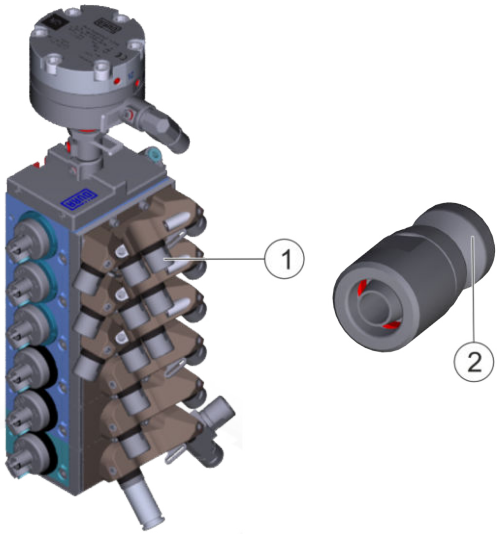

Fig. 33: Color Changer Material Connections

1. Remove threaded pin on the material inlet (1) of the color changer.
2. Remove plug connection (2) from the material inlet (1) of the color changer.

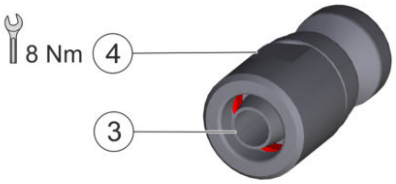

Fig. 34: Plug connection

3. Remove cap nut (4) from the nipple (3).
4. Lightly grease the thread of the cap nut (4).
5. Guide hose through the cap nut (4).
6. Push hose with the straight cut edge on the nipple of the plug connections (3) up to the mechanical stop.
7. Hand-tighten cap nut (4).
8. Tighten cap nut (4) with an Allen key.
   - Respect tightening torque.
   ⇨ The cap nut (4) jams the hose and seals it.
9. Insert plug connection (2) into the material inlet (1) of the color changer.

Fig. 35: Plug Connections Seal

10. Check correct seat of the seal ring (5).
11. Fix plug connection (2) with threaded pin.

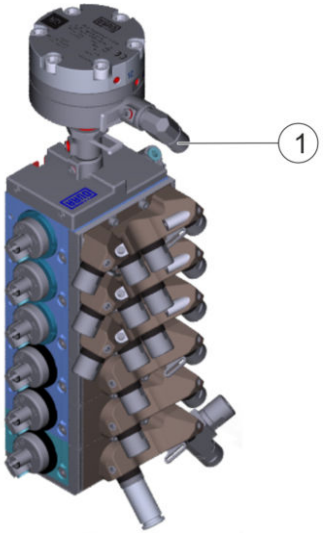

Fig. 36: Material Hose Paint Pressure Regulator

12. Connect hose to material outlet (1) of the paint pressure regulator.
13. Connect hose to the atomizer.
    Observe operating instructions on “Atomizer connection” ↳ “Applicable documents” .

1K variant with gear wheel pump

WARNING!

Sparks due to electrostatic discharge

If material lines are routed in bundles, there could be sparking due to electrostatic discharges. In an explosive atmosphere, these sparks can prove to be the source of ignition for an explosion. Serious injury and death could be the consequence.

- Route control air cables only in bundles with diameter smaller than 30 mm.

The hoses for the material supply system are not in the scope of supply. Dürr Systems recommends transparent hoses of the PFA material.

Personnel:
- Mechanic
- + additional qualification explosion protection

Protective equipment:
- Eye protection
- Protective workwear
- Protective gloves
- Anti-Static Safety Boots

Requirements:
- Material supply system is switched off and secured against reconnection.
- Lines are depressurized.

The assembly of the connections is described below taking color changer as an example. The assembly of the hoses for the material supply system is the same as for the other connections.

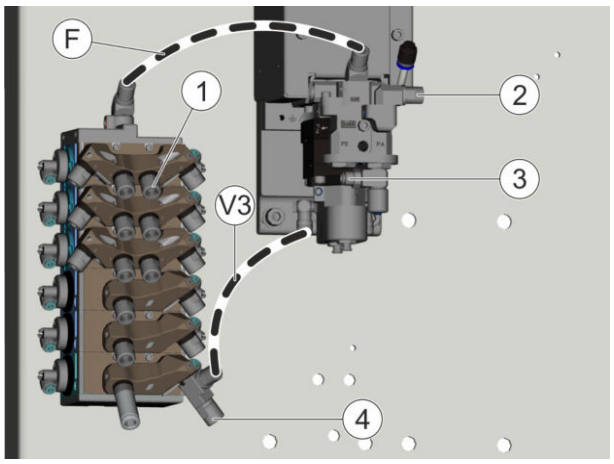

Fig. 37: Material Connections 1K Variant with Gear Wheel Pump

F Paint hose from color changer to gear wheel pump (pre-assembled)
V3 Detergent hose from color changer to gear wheel pump (pre-assembled)
1 Color changer material inlet
2 Paint outlet gear wheel pump
3 Overpressure valve connection
4 Detergent connection

1. Check pre-assembled hoses for correct seat.
2. Connect hoses to the plug-in connections (1) to (4).

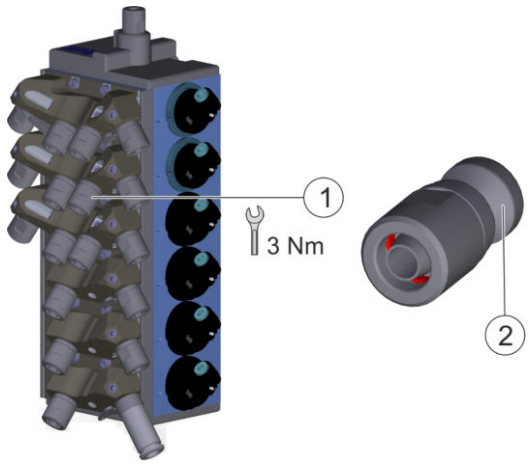

Fig. 38: Color Changer Material Connection

3. Remove threaded pin on the material inlet (1) of the color changer.
4. Remove plug connection (2) from the material inlet (1) of the color changer.

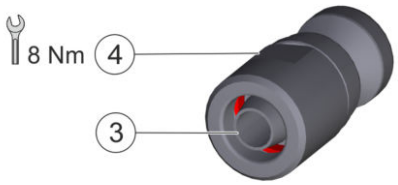

Fig. 39: Plug connection

5. Remove cap nut (4) from the nipple (3).
6. Lightly grease the thread of the cap nut (4).
7. Guide hose through the cap nut (4).
8. Push hose with the straight cut edge on the nipple of the plug connections (3) up to the mechanical stop.
9. Hand-tighten cap nut (4).
10. Tighten cap nut (4) with an Allen key.
    - Respect tightening torque.
    - ⇨ The cap nut (4) jams the hose and seals it.
11. Insert plug connection (2) into the material inlet (1) of the color changer.

Fig. 40: Plug Connections Seal

12. Check correct seat of the seal ring (5).
13. Fix plug connection (2) with threaded pin.
    - Respect tightening torque.

2K variant

WARNING!

Sparks due to electrostatic discharge

If material lines are routed in bundles, there could be sparking due to electrostatic discharges. In an explosive atmosphere, these sparks can prove to be the source of ignition for an explosion. Serious injury and death could be the consequence.

- Route control air cables only in bundles with diameter smaller than 30 mm.

The hoses for the material supply system are not in the scope of supply. Dürr Systems recommends transparent hoses of the PFA material.

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Eye protection
- Protective workwear
- Protective gloves
- Anti-Static Safety Boots

Requirements:

- Material supply system is switched off and secured against reconnection.
- Lines are depressurized.

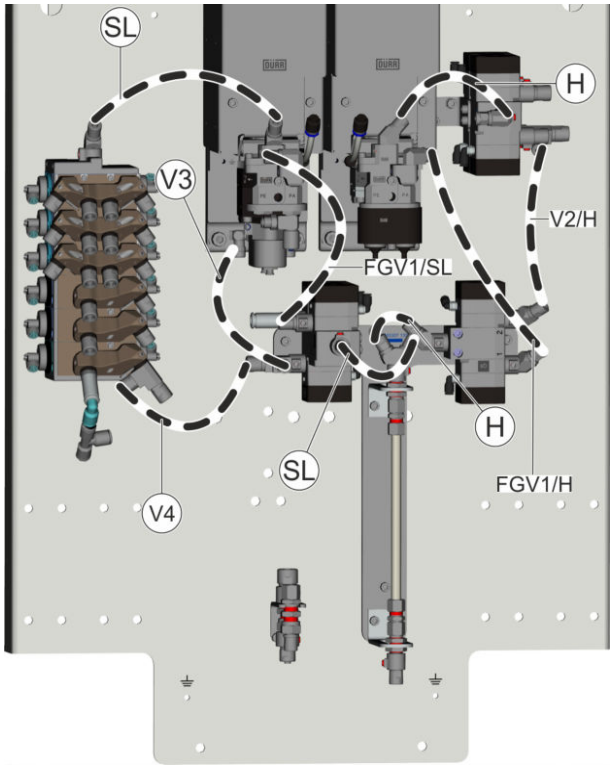

Fig. 41: Pre-mounted material connections 2K variant

H	Hardener hose from control valve to hardener pump
H	Hardener hose from control valve to mixer
SL	Paint hose from color changer to painting pump
SL	Paint hose from control valve to mixer
V3	Detergent hose from control valve to gear wheel pump (pre-assembled)
V4	Detergent hose from color changer to control valve (pre-assembled)
FGV1/SL	Paint hose from paint pump to control valve
FGV1/H	Hardener hose from hardener pump to control valve

1. Check pre-assembled hoses for correct seat.

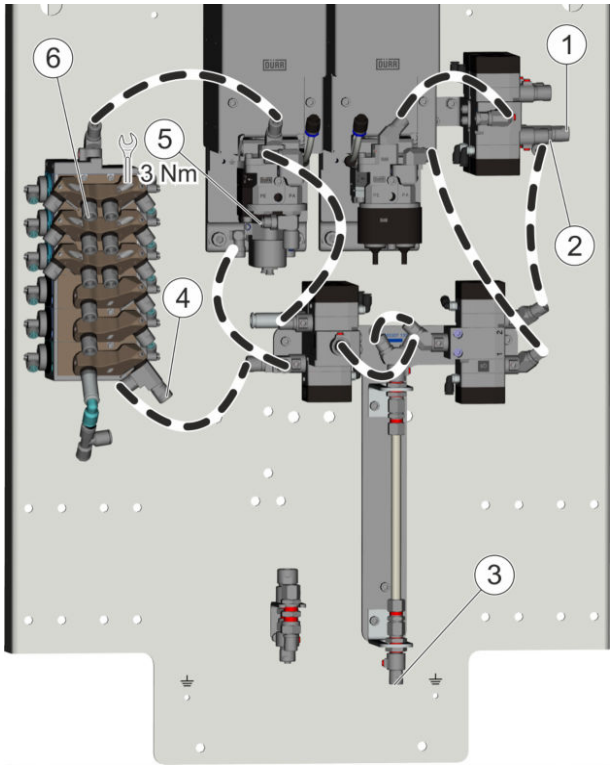

Fig. 42: Material Connections 2K Variant

1 Hardener inlet
2 Detergent connection
3 Material outlet mixer
4 Detergent connection
5 Return Overpressure Valve Gear Wheel Pump
6 Color changer material inlet

2. Connect hoses to the plug-in connections (1) to (6).

> The assembly of the connections is described below taking color changer as an example. The assembly of the hoses for the material supply system is the same as for the other connections.

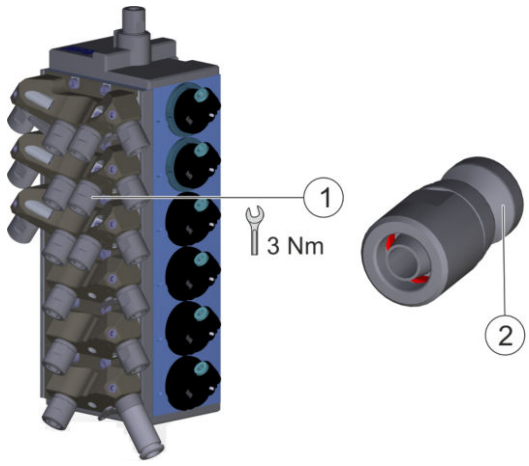

Fig. 43: Color Changer Material Connection

3. Remove threaded pin on the material inlet (1) of the color changer.
4. Remove plug connection (2) from the material inlet (1) of the color changer.

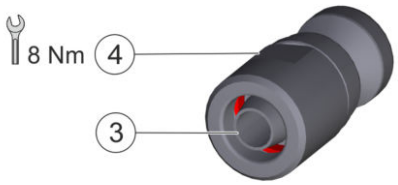

Fig. 44: Plug connection

5. Remove cap nut (4) from the nipple (3).
6. Lightly grease the thread of the cap nut (4).
7. Guide hose through the cap nut (4).
8. Push hose with the straight cut edge on the nipple of the plug connections (3) up to the mechanical stop.
9. Hand-tighten cap nut (4).
10. Tighten cap nut (4) with an Allen key.
    - Respect tightening torque.
    - ⇨ The cap nut (4) jams the hose and seals it.
11. Insert plug connection (2) into the material inlet (1) of the color changer.

Fig. 45: Plug Connections Seal

12. Check correct seat of the seal ring (5).
13. Fix plug connection (2) with threaded pin.
    - Respect tightening torque.

High Pressure Variant

WARNING!

Sparks due to electrostatic discharge

If material lines are routed in bundles, there could be sparking due to electrostatic discharges. In an explosive atmosphere, these sparks can prove to be the source of ignition for an explosion. Serious injury and death could be the consequence.

- Route control air cables only in bundles with diameter smaller than 30 mm.

Personnel:

- Mechanic
- + additional qualification explosion protection
- + additional qualification for high pressure

Protective equipment:

- Face protection
- Protective workwear
- Protective gloves
- Anti-Static Safety Boots

Requirements:

- Material supply system is switched off and secured against reconnection.
- Lines are depressurized.

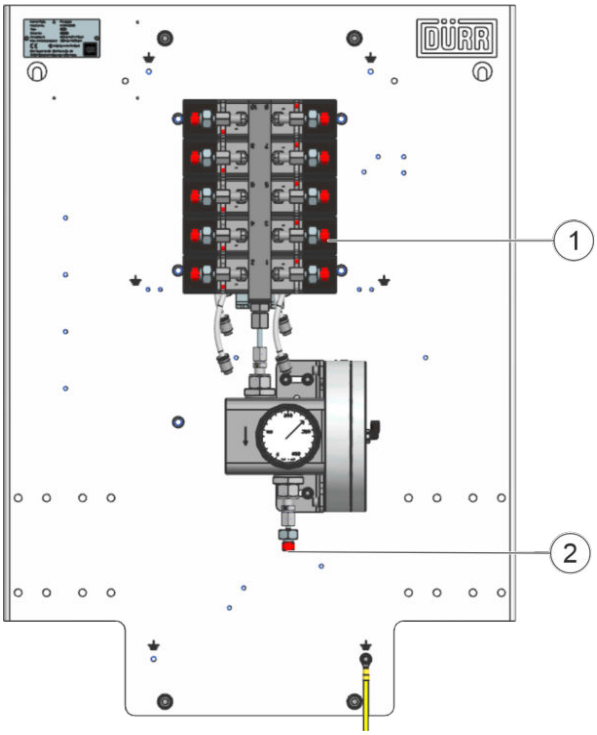

Fig. 46: Fluidboard High Pressure

1. Connect hoses to the material inlets (1) of the color changer.
2. Connect hose to material outlet (2) of the paint pressure regulator.
3. Connect hose to the atomizer.
   Observe operating instructions on “Atomizer connection” ↳ “Applicable documents” .

5.8 Assemble the coupling.

Valid for 1K variant with gear wheel pump and 2K variant

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Eye protection
- Protective workwear
- Protective gloves
- Anti-Static Safety Boots

Requirements:

- Drive of the servo motors is switched off and secured against being switched on again.
- All media-bearing components are depressurized.

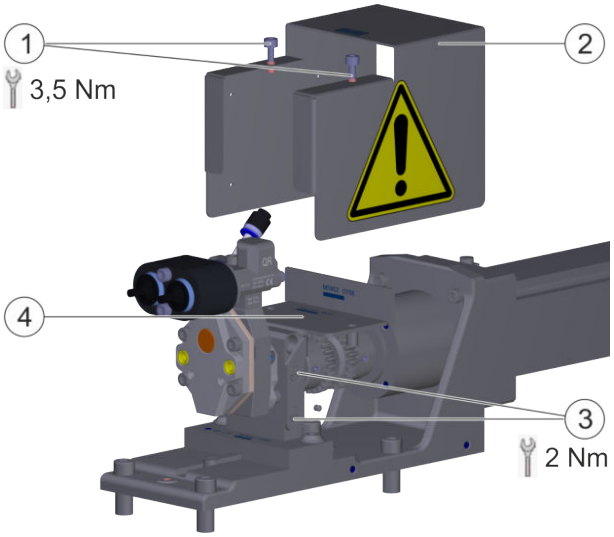

Fig. 47: Disassembling the housing

1. Loosen screws (1).
2. Remove housing (2).
3. Loosen screws (3).
4. Remove stainless steel plate (4).

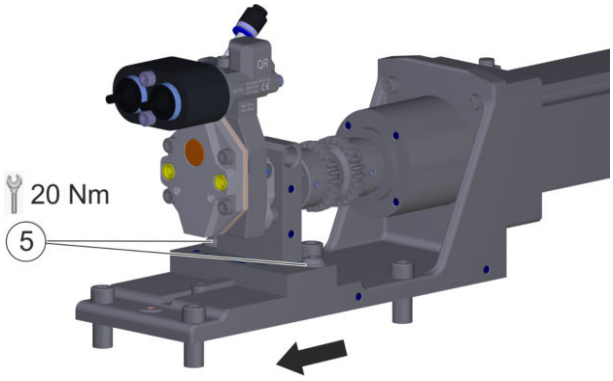

Fig. 48: Displace the gear wheel pump support bracket

5. Loosen screws (5).
6. Push gear wheel pump support bracket in the direction of the arrow.

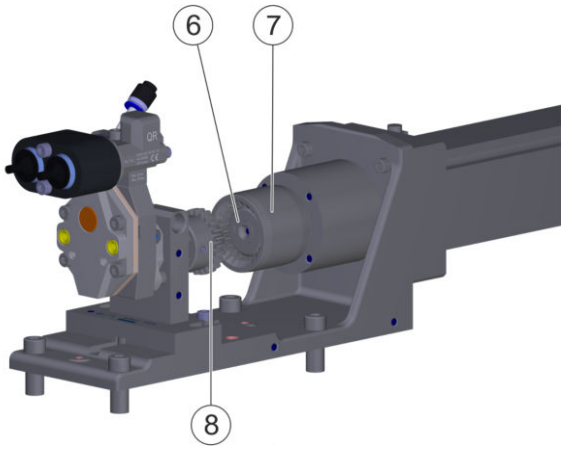

Fig. 49: Inserting clutch

7. Push clutch housing (7) on the clutch half of the gear box (6).
8. Push gear wheel pump position in the direction of the clutch housing (7), until the clutch half of the gear wheel pump (8) fits in the clutch housing (7). You may need to turn the gear wheel pump (8), until the teeth are aligned.
9. Tighten screws (5).
   - Respect tightening torque.
10. Fit stainless steel plate (4). Tighten with screws (3).
    - Respect tightening torque.
11. Fit housing (2). Tighten with screws (1).
    - Observe the tightening torque.

6 Commissioning

The fluid board is put into operation with the Switch and control cabinet.

For further information, refer to operating instructions of the control system and the individual components ↳ “Applicable documents” .

Low Pressure Variants

Personnel:

- System operator
- + additional qualification explosion protection
- + additional qualification high tension technology

Requirements:

- All connecting lines are correctly assembled.

Variant with Paint Pressure Control

1. Adjust pressure at the paint pressure regulator.

Variants with Gear Wheel Pump

2. At the time of commissioning, do not exceed the maximum allowable torque and the maximum allowable rotational speed of the gear wheel pump and of the drive components.

   Adjust pressure on the pressure pot or the material supply system.

High Pressure Variant

Personnel:

- System operator
- + additional qualification explosion protection
- + additional qualification for high pressure
- + additional qualification high tension technology

Requirements:

- All connecting lines are correctly assembled.

1. Adjust pressure at the paint pressure regulator.

7 Operation

7.1 Safety recommendations

WARNING!

Danger of explosion due to sources of ignition in an explosive atmosphere.

Sparks, open flames and hot surfaces can cause explosions in explosive atmospheres. Serious injury and death could be the consequence.

- Do not use any sources of ignition and no open light in the work area.
- Ensure that the forced ventilation is operational.
- Do not smoke.
- Ground Fluidboard.
- Wear suitable protective equipment.

WARNING!

Use of wrong hose types

The use of unapproved hose types can cause damage to personal injury and property damage.

- The hose materials are process-dependent.
- Only use approved hose types.

WARNING!

Sparks due to electrostatic discharge

If the grounding cable is removed during operation, it can cause electrostatic induction. Electrostatic discharge can cause sparks that in explosive atmosphere can cause a fire or an explosion. Serious injury and death could be the consequence.

- Do not remove grounding cable during operation.

7.2 General notes

The Switch and control cabinet controls the fluid board. Manual intervention by the operator is not allowed in the production operation.

Checks

During operation, observe the following points:

- Operating noises: Unusual noises during operation can signify damage or wear.
- Temperature: Check operating temperature ↳ 11 “Technical data” .
- Grounding: Check grounding location.
- Cleanliness: Ensure there are no material residues and other contaminants.
- Damage: Check components, connections and lines for damage.
- Tightness: Check tightness of the components, connections and cables.

Perform more precise checks during down time, if you notice unusual or noticeable noises.

7.3 Purging

The purging program is started via the control unit ↳ “Applicable documents” .

Follow operating instructions for the individual components ↳ “Applicable documents” .

8 Cleaning and maintenance

8.1 Safety recommendations

DANGER!

Unsuitable cleaning agents and cleaning tools

Using the unsuitable cleaning agents can create a potentially explosive mixture. Tools can be potential ignition sources.

- Do not use sparking tools, e.g. steel brushes or introduce ignition sources.
- Use a special wooden tool to clean notches and grooves.
- Do not use any thinner spray guns.
- Do not rub off with dry cloth (electrostatic charge).
- Ensure that the flashpoint of the cleaning agent is at least 15K above the ambient temperature or clean Fluidboard at the cleaning areas with active technical ventilation, in painting booths, according to EN 16985.

WARNING!

Danger from harmful or irritant substances

Serious injuries or death can result if you come into contact with dangerous fluids or steam.

- Fluidboard Check regularly for leakage. Observe local regulations and maintenance schedule.
- Ensure that the forced ventilation is operational.
- Follow the relevant safety data sheets.
- Wear specified protective equipment.
- Avoid contact (e.g. with eyes, skin).

WARNING!

Unsuitable spare parts in explosive areas

Spare parts not compliant with the specifications of the ATEX directives can cause explosions in an explosive atmosphere. Serious injury and death could be the consequence.

- Use exclusively original spare parts.

NOTICE!

Material damage due to unsuitable rinsing agent

If the rinsing agent reacts chemically with the components or the material, components get damaged.

- Use only the rinsing agents that are compatible with the components and the material.
- Refer to safety data sheet of material manufacturer.

NOTICE!

Unsuitable Cleaning Tools

Unsuitable cleaning tools can cause damage.

- Only use cloths, soft brushes and paintbrushes.
- Do not use abrasive cleaning tools.
- Do not use compressed air for cleaning.
- Do not use any thinner spray guns.
- Do not use high pressure for cleaning agents.

Only for low pressure variants

WARNING!

Escaping material and compressed air

Escaping material under pressure can cause serious injuries.

Before carrying out any work:

- Disconnect the system, in which fluidboard is installed, from compressed air and material supply.
- Secure system personalized from being switched on again.
- Depressurize the lines.

Only for High Pressure Variant

WARNING!

Material escaping under pressure

Material leaking under high pressure can penetrate the body. Even if the injury looks like a harmless cut wound, the penetrating material leads to amputation, serious injuries can cause death.

- Do not try to seal leakages using body parts, gloves or towels.
- If there are injuries, seek medical attention immediately.

Before working on the product:

- Switch off compressed air and material supply of the main system and secure personally against switching on again.
- Depressurize the lines.

8.2 Cleaning

Low Pressure Variants

Personnel:

- Cleaning staff

Protective equipment:

- Eye protection
- Protective workwear
- Protective gloves
- Respirator mask
- Anti-Static Safety Boots

High Pressure Variant

Personnel:

- Cleaning staff

Protective equipment:

- Face protection
- Protective workwear
- Protective gloves
- Respirator mask
- Anti-Static Safety Boots

Variant-dependent

Requirements:

- Material feed is switched off and secured against being switched on again.
- Compressed air supply is switched off and secured against reconnection.
- System is depressurized.
- Fluidboard is grounded 5.4 “Grounding Fluidboard” .
- There is no explosive atmosphere present in potentially explosive zones.
- Technical ventilation is switched on.

1. Wet some pieces of cloth with cleaning agent.
2. Damp wiping down for applications and assembly plates.

8.3 Maintenance schedule

For maintenance work of the individual components, refer to ↳ “Applicable documents” .

Interval	Maintenance work
Daily	Clean fluidboard ↳ 8.2 “Cleaning” .
	Check connections for tightness.
	Check lines for tightness.
Weekly	Check overpressure valve of the gear wheel pump; refer to the operating instructions of the gear wheel pump.
	Check paint layer of the assembly frame.
6 weeks to 3 months	Ingredients of the paint material get deposited in the mixer. Adjust the maintenance interval to the paint material used. ▪ Replace mixer before it gets clogged ↳ 8.4 “Replacing mixer” .
Every 3 years	Check grounding. Measure grounding resistance.
6 years after the date of manufacture	Replacement

8.4 Replacing mixer

NOTICE!

Clogged mixer

Ingredients of the paint material get deposited in the mixer. If the mixer is not replaced at the proper time, the mixer can choke up. This can result material damage to the components of the fluidboard.

- Suitably adapt maintenance interval of the mixer to the paint material used.
- Replace mixer before it gets clogged.

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Eye protection
- Protective gloves
- Anti-Static Safety Boots
- Protective workwear

Requirements:

- System is purged downstream of the color changer.
- System is purged for hardener downstream of the control valve.

1. Switch off material supply system. Secure against reconnection.
2. Depressurize the lines.
3. Shut down the power supply. Secure against reconnection.

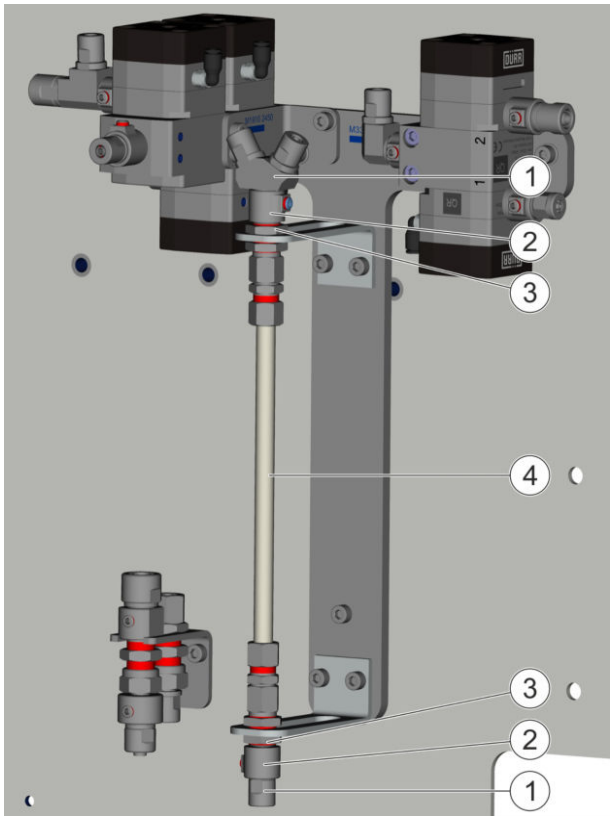

Fig. 50: Mixer Disassembly

4. Loosen threaded pin on the screw connections (1) for the paint.
   ⇨ Remove paint screw connections (1) with material hoses on both sides of the mixer (4).
5. Unscrew screw-in plug connections (2) from the mixer (4).
6. Unscrew hexagonal nuts (3).
7. Remove mixer (4).
8. Remove all other seals, nuts and screw connections from the mixer (4).

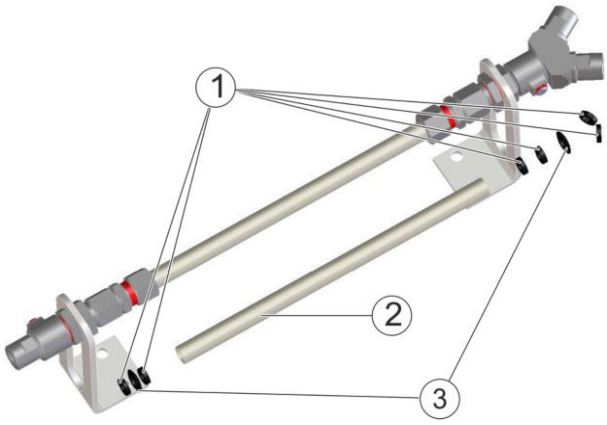

Fig. 51: Mixer Assembly

1 Sealing ring M08010175
2 Mixer tube
3 Sealing ring M08010498

9. **NOTICE!**

   Leakage due to used sealing rings

   Use new sealing rings exclusively.

   Assemble new mixer in reverse sequence.

9 Faults

9.1 Safety recommendations

WARNING!

Unsuitable spare parts in explosive areas

Spare parts not compliant with the specifications of the ATEX directives can cause explosions in an explosive atmosphere. Serious injury and death could be the consequence.

- Use exclusively original spare parts.

WARNING!

Danger from harmful or irritant substances

Serious injuries or death can result if you come into contact with dangerous fluids or steam.

- Fluidboard Check regularly for leakage. Observe local regulations and maintenance schedule.
- Ensure that the forced ventilation is operational.
- Follow the relevant safety data sheets.
- Wear specified protective equipment.
- Avoid contact (e.g. with eyes, skin).

Only for low pressure variant

WARNING!

Escaping material and compressed air

Escaping material under pressure can cause serious injuries.

Before carrying out any work:

- Disconnect the system, in which fluidboard is installed, from compressed air and material supply.
- Secure system personalized from being switched on again.
- Depressurize the lines.

Only for High Pressure Variant

WARNING!

Material escaping under pressure

Material leaking under high pressure can penetrate the body. Even if the injury looks like a harmless cut wound, the penetrating material leads to amputation, serious injuries can cause death.

- Do not try to seal leakages using body parts, gloves or towels.
- If there are injuries, seek medical attention immediately.

Before working on the product:

- Switch off compressed air and material supply of the main system and secure personally against switching on again.
- Depressurize the lines.

9.2 Behavior during faults

If faults occur:

- Purge system completely from the material supply side.
- Switch off material supply system. Secure against reconnection.
- Switch off compressed air supply. Secure against reconnection.
- Switch off mains disconnecting device on the maintenance unit in the AUC control cabinet.
  Secure against reconnection.
- Depressurize the lines.
- Follow the defects table to correct the fault.

If it is not possible to rectify the fault, ↳ “Hotline and Contact” .

9.3 Defects table

Fault description	Cause	Remedy
Fluidboard is not purged.	No rinsing agent supply available	Ensure that fluidboard is supplied rinsing agent.
Material leaks out from the line.	Line is defective.	Replace line.
Leakage on the components	Seals worn out	Replace seals Follow operating instructions of the components ↳ “Applicable documents” .
Paint not fed.	Valves of the color changer are defective.	Replace valves. Follow operating instructions for the color changer ↳ “Applicable documents”
	Control valve does not open.	Disconnect control air supply.
	Gear wheel pump does not pump.	Check supply line to the pump. If necessary, replace.
	Lines are clogged.	Check the lines. If necessary, replace lines.
Only 2K variant Paint has hardened in the mixer.	Pot time has not been observed.	Replace mixer ↳ 8.4 “Replacing mixer” .

For faults in the assembled components, see Operating instructions of the product ↳ “Applicable documents” .

If one of the assembled components is defective, disassemble the component for the repair or replace it ↳ 9.4 “Disassembly of components.” .

9.4 Disassembly of components.

Low Pressure Variants

Personnel:

- Mechanic
- + additional qualification explosion protection

Protective equipment:

- Eye protection
- Protective workwear
- Protective gloves
- Anti-Static Safety Boots

High Pressure Variant

Personnel:

- Mechanic
- + additional qualification explosion protection
- + additional qualification for high pressure

Protective equipment:

- Face protection
- Protective workwear
- Protective gloves
- Anti-Static Safety Boots

Variant-dependent

Requirements:

- Fluidboard is cleaned ↳ 8.2 “Cleaning” .
- Fluidboard has been disconnected from material supply system.
- Fluidboard has been disconnected from the compressed air supply.
- Fluidboard is disconnected from the detergent supply.
- Lines are depressurized.

1. Release hose connections of the component.
2. Disassemble component from the assembly plate.
3. Eliminate fault on the component or replace defective component by a new one.

9.5 Assembling Component

Low Pressure Variants

Personnel:
- Mechanic
- + additional qualification explosion protection

Protective equipment:
- Eye protection
- Protective workwear
- Protective gloves
- Anti-Static Safety Boots

High Pressure Variant

Personnel:
- Mechanic
- + additional qualification explosion protection
- + additional qualification for high pressure

Protective equipment:
- Face protection
- Protective workwear
- Protective gloves
- Anti-Static Safety Boots

Variant-dependent

Requirements:
- Fluidboard has been disconnected from material supply system.
- Fluidboard has been disconnected from the compressed air supply.
- Fluidboard is disconnected from the detergent supply.
- Lines are depressurized.

1. Assemble component with screws on the assembly plate.
2. Assemble hose connections on the component.

10 Disassembly and Disposal

10.1 Safety recommendations

Low Pressure Variants

WARNING!

Escaping material and compressed air

Escaping material under pressure can cause serious injuries.

Before carrying out any work:
- Disconnect the system, in which fluidboard is installed, from compressed air and material supply.
- Secure system personalized from being switched on again.
- Depressurize the lines.

High Pressure Variant

WARNING!

Material escaping under pressure

Material leaking under high pressure can penetrate the body. Even if the injury looks like a harmless cut wound, the penetrating material leads to amputation, serious injuries can cause death.
- Do not try to seal leakages using body parts, gloves or towels.
- If there are injuries, seek medical attention immediately.

Before working on the product:
- Switch off compressed air and material supply of the main system and secure personally against switching on again.
- Depressurize the lines.

10.2 Disassembly

Low Pressure Variants

Personnel:
- Mechanic
- + additional qualification explosion protection

Protective equipment:
- Protective workwear
- Eye protection
- Protective gloves
- Anti-Static Safety Boots

High Pressure Variant

Personnel:

- Mechanic
- + additional qualification explosion protection
- + additional qualification for high pressure

Protective equipment:

- Protective workwear
- Face protection
- Protective gloves
- Anti-Static Safety Boots

Variant-dependent

Requirements:

- Fluidboard is cleaned 8.2 “Cleaning” .
- Fluidboard is rinsed.
- Fluidboard has been disconnected from material supply system.
- Fluidboard has been disconnected from the compressed air supply.
- Fluidboard is disconnected from the detergent supply.
- Lines are depressurized.

1. Disassemble lines.
2. Disassemble assembly plate.
3. Disassemble components from the assembly plate.

10.3 Disposal

ENVIRONMENT!

Improper waste disposal

Improper waste disposal threatens the environment and prevents re-use and recycling.

- Clean components before their disposal.
- Always dispose of components in accordance with their characteristics.
  11.5 “Materials used”
- Collect leaked out utilities and auxiliaries completely.
- Dispose of work equipment soaked in coating materials or operating substances according to the disposal provisions in force.
- Dispose of utilities and auxiliaries according to the disposal provisions in force.
- In case of doubt, refer to the local disposal authorities.

11 Technical data

11.1 Dimensions and weight

Assembly plate	Value
Height	750 mm
Width	540 mm
Depth	30 mm
Weight (1K variant with paint pressure control)	15 kg
Weight (1K Variant With Gear Wheel Pump)	24 kg
Weight (2K variant)	38 kg
Weight (High Pressure Variant)	29 kg

11.2 Operating conditions

Detail	Value
Booth temperature	23 °C ± 5 K
Relative humidity	65 % ± 5 %
Storage temperature	10 to 40 °C

11.3 Operating values

Low Pressure Variants

Detail	Value
Material pressure, min.	6bar
Material pressure, max.	12bar
Max. air pressure	8bar
Material temperature, min.	20°C
Material temperature, max.	25°C

High Pressure Variant

Detail	Value
Material pressure, max.	200bar
Max. air pressure	8bar
Material temperature, min.	20°C
Material temperature, max.	25°C

11.4 Compressed air quality

- Purity classes in accordance with ISO 8573-1: 1:4:1
- Limitations for purity class 4 (pressure dew point max.):
  - ≤ -3°C at 7bar absolute
  - ≤ +1°C at 9bar absolute
  - ≤ +3°C at 11bar absolute

11.5 Materials used

Component	Material
Assembly plate	1.4301
Mixer	PFA Hose Mixing element POM

For materials used for assembled components, see Operating instructions of the product ↳ “Applicable documents” .

11.6 Material specification

Material

Suitable Material:

- Flammable fluid coating materials of the explosion group IIA and their approved cleaning agents
- Non-flammable fluid coating materials and their approved detergents

Low Pressure Variants	
Detail	**Value**
Material viscosity, min.	50 mPas
Material viscosity, max.	180 mPas

High Pressure Variant	
Detail	**Value**
Material viscosity, min.	40 mPas
Material viscosity, max.	250 mPas

12 Spare parts and accessories

12.1 Spare parts

For spare parts of the individual components, refer to operating instructions of the applications ↳ “Applicable documents” .

1K Variant with Paint Pressure Control

Denomination	Material number
Color Changer **Eco**MCC3 20	N14800002V
Paint pressure regulator **Eco**Flow LPF	N26010101

1K variant with gear wheel pump

Denomination	Material number
Digital Servo Motor ATEX Approver	N23150203
Digital Servo Motor UL Approval	N23150067
Metering Unit GW 20 Without Drive, EC	N10190001
Gear wheel pump **Eco**Pump9 GW 20	N24190001V
Color Changer **Eco**MCC3 20	N14800002V

2K variant

Denomination	Material number
Digital Servo Motor ATEX Approver	N23150203
Digital Servo Motor UL Approval	N23150067
Metering Unit GW 20 Without Drive, EC	N10190001
Control Valve EcoValve7 20 4C	N32350012
Gear wheel pump EcoPump9 GW 20	N24190001V
Control Valve EcoValve7 20 2C	N32350011
Mixer complete with support bracket	N32500026
Repair kit for Mixer N32500026	N34960017
Control Valve EcoValve7 20 3C	N32350014
Color Changer **Eco**MCC3 20	N14800002V
Gear wheel pump **Eco**Pump9 GW 20	N24190001V

High Pressure Variant

Denomination	Material number
Paint pressure regulator **Eco**Flow HPF	N26230003
Pressure gage, 0 – 400 bar G1/2"	W07010302
Color Changer **Eco**MCC 200 2C D	N14100001
Color Changer **Eco**MCC 200 4C D	N14100002
Color Changer **Eco**MCC 200 6C D	N14100003
Color Changer **Eco**MCC 200 8C D	N14100004
Color Changer **Eco**MCC 200 10C D	N14100005
Color Changer **Eco**MCC 200 1C D	N14100006

12.2 Accessories

Denomination	Material number
Assembly pedestal	M65860101

12.3 Order

WARNING!

Unsuitable spare parts in explosive areas

Spare parts not compliant with the specifications of the ATEX directives can cause explosions in an explosive atmosphere. Serious injury and death could be the consequence.

- Use exclusively original spare parts.

WARNING!

Unsuitable spare parts

Spare parts of third-party suppliers may possibly not be able to hold the loads. Serious injury and death could be the consequence.

- Use exclusively original spare parts.

Ordering spare parts, tools and accessories as well as information on products that are listed without order number ↳ “Hotline and Contact” .

13 INDEX

LEADING IN
PRODUCTION
EFFICIENCY

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Translation of the original operation manual
MDR00017EN, V01