LEADING IN PRODUCTION EFFICIENCY

EcoMCC 200
High-Pressure Color Changer

Operation manual

MCC00002EN, V02

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Translation of the original operation manual

MCC00002EN, V02

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 products:

N14100001 **Eco**MCC 200 2C D	
N14100002 **Eco**MCC 200 4C D	
N14100003 **Eco**MCC 200 6C D	
N14100004 **Eco**MCC 200 8C D	
N14100005 **Eco**MCC 200 10C D	
N14100006 **Eco**MCC 200 1C D	

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

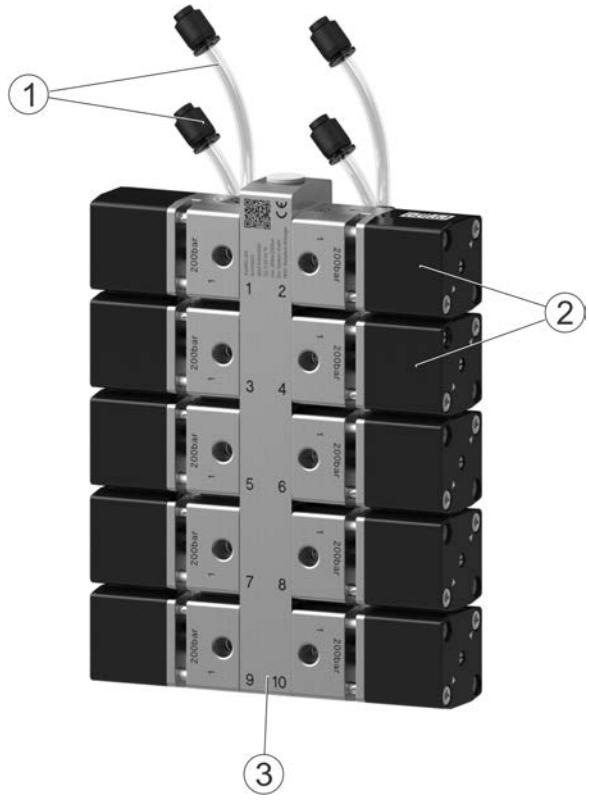

Fig. 1: Overview

1 Collecting pan
2 Valves
3 Connecter block

1.2 Short description

The color changer switches the color of the paint supplied to the atomizer in painting applications. The feed lines for the different colors run in a single channel. Valves are screwed in the connector block of the color changer. The valves control the flow of the individual colors.

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 color changer **Eco**MCC 200 is designed for the use in industrial paint applications in potentially explosive atmospheres. The color changer may only be used within the approved technical data and in areas conforming to the EX labeling ↳ 11 “Technical data”

Misuse

If used improperly, it can cause serious injuries.

Examples of wrong use are:

» Use in explosive areas Ex zone 0
» Unauthorized modification
» Executing maintenance work that has not been described

Ex labeling

Ex II 2G Ex h IIA T6 Gb X

II - Device group II: all areas except mining
2G - Device category 2 (for gaseous atmosphere)
h - Ignition protection category
IIA - Explosion group
T6 - Temperature class
Gb - Device category and device protection level: Gb (zone 1)
X - Restriction: The device is configured for operation in an ambient temperature of 15°C to 40°C.

The color changer is approved for areas with potentially explosive atmospheres. The color changer control unit must be approved for use in the EX zone or placed outside the EX zone.

2.3 Safety devices

The operator must install safety devices securing the operation in potentially explosive area and conforming to the health requirements and safety requirements according to EC Machinery Directive 2006/42/EC.

This could be, for example, the following safety devices for the complete system:

- Fire protection
- Entry protection
- Technical ventilation
- Emergency stop function

The painting booth must meet the requirements of EN 12215 “Coating plants - Spray booths for application of organic liquid coating materials - Safety requirements”.

The control must meet the requirements of Performance Level d of EN 13849-1 “Safety of machines - Safety-related parts of controls - Part 1: General Design Principles”.

More information is available in the German DGUV Information 209-046 “Lackierräume und -einrichtungen für flüssige Beschichtungsstoffe” and DGUV Information 209-052 “Elektrostatisches Beschichten”.

The following norms are applicable based on the coating material used:

- Flammable coating materials:
  - EN 50176 “Stationary electrostatic application equipment for flammable liquid coating material - Safety requirements”.
- Non-inflammable coating materials:
  - EN 50348 “Stationary electrostatic application equipment for non-flammable liquid coating material - Safety requirements”.

2.4 Installation schematic

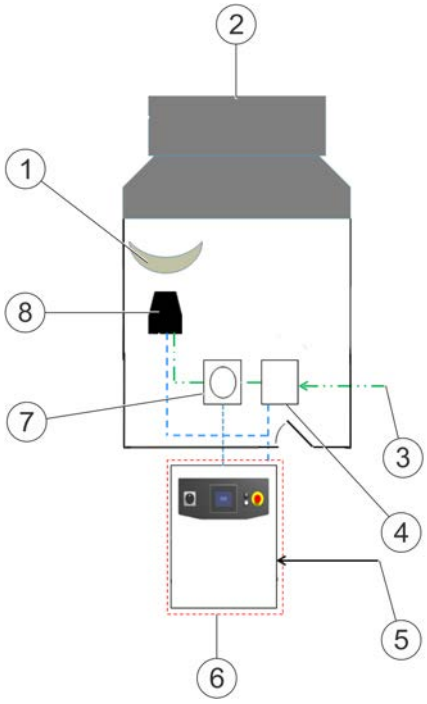

Fig. 2: Installation plan

	Cabin wall
	Medium
	Pneumatic system
	Drive
1	Work piece
2	Technical ventilation
3	Paint Supply
4	Color changer
5	Power and air supply
6	Switch and control cabinet
7	Measuring sensor
8	Atomizer

2.5 Safety signs

No special security markings are made on the color changer.

2.6 Residual risks

Fires

Fire hazard when handling flammable coating materials and cleaning agents.

» The color changer including fire safety must be integrated in a safety concept conforming to ↳ 2.3 “Safety devices”.
» Observe coating materials and cleaning agent safety data sheets.
» Observe the ban on smoking in the danger zone and nearby areas. Handling of open flames, fire and other ignition sources is forbidden.
» Observe all general safety instructions.

Hazardous substances

Contact with hazardous liquids or vapors can cause serious injury or death.
» The color changer must be integrated in a complete system safety concept including mechanical ventilation.
» Observe coating materials and cleaning agent safety data sheets.
» Wear specified protective equipment.

Media

Materials and control air are under high pressure and can cause serious injuries.
» Depressurize the system before any maintenance work and protect it against reconnection.
» Observe approved operating pressures ↳ 11 “Technical data”.

High voltage

In direct charging mode the color changer is under high voltage and can cause death or serious injuries by electrical shock and discharge.
» Ensure complete discharge by means of an grounding rod before touching the color changer.

2.7 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.

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

Mechanic
The mechanic is trained specifically for the field of work in which he works.
Furthermore, he has the following knowledge:
» Guidelines, 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

+ 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.

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

2.8 Personal protective equipment

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

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

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.

Safety boots
Protect feet from crushing, falling items and slipping.

3 Design and Function

3.1 Design

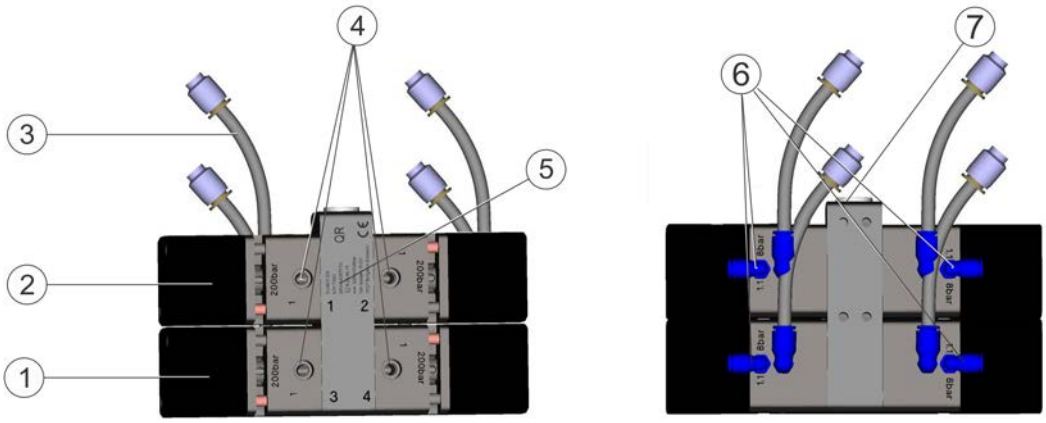

Fig. 3: Overview (example 4-way color changer)

1 Valve pair 2
2 Valve pair 1
3 Collecting pan
4 Material inlet
5 Type plate
6 Compressed air connection
7 Material outlet

The color changer consists on one connector block and at least 2 valves. The valve furthest from the material outlet (1) is connected to thinner to clean the color changer, the other valves are connected to the individual colors and binding agents. The valves are connected to the connector block using cap screws and sealed using sealing rings. The number of valves can be increased or decreased by replacing the connector block.

Versions

Color changers are available in five versions:
- Color changer with two valves (2-way color changer)
- Color changer with four valves (4-way color changer)
- Color changer with six valves (6-way color changer)
- Color changer with eight valves (8-way color changer)
- Color changer with ten valves (10-way color changer)

3.2 Valves

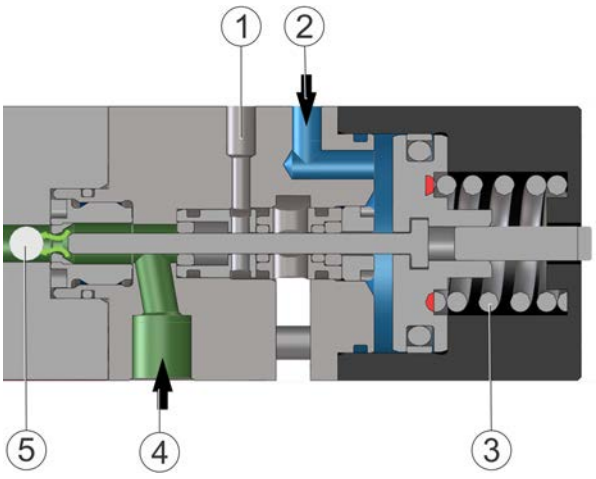

Fig. 4: Valve

2/2 directional control valves are used. Compressed air is fed to the valve via the control air connection (2). The compression spring (3) is pushed upwards and opens the valve. Material flows via the material inlet (4) through the valve and leaves the valve through the material outlet (5). A collecting pan can be added to the connection (1) to avoid hardening of the material in the valve.

3.3 Connections

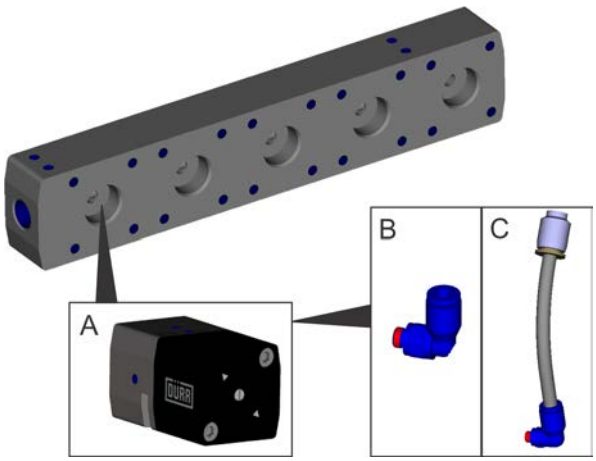

Fig. 5: Connections

The color changer is fitted with a threaded connection for media (paint, hardener and thinner) for each valve (A). The material hose is screwed onto the threaded connection. Valves (A) are screwed into the connector block of the color changer and use compressed air to control the material flow into the middle channel. Each valve receives a control air connection (B) and a collecting pan for the release agent (C).

3.4 Connection types

The color changer is suitable for “tap line” connection.

If the color changer is operated in “circulation” mode, the circulation line must be screwed into the material inlet via a T or L fitting.

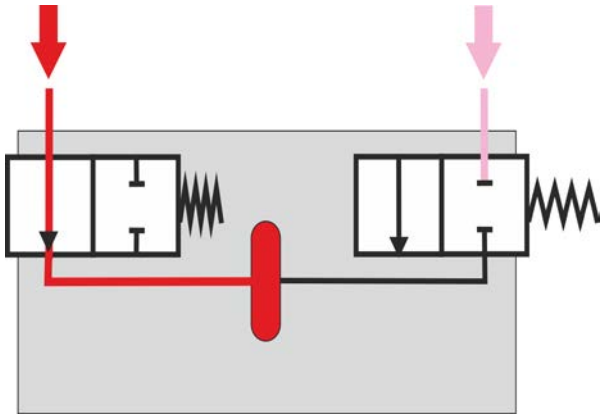

Fig. 6: Tap line operation for 2-channel color changer

On a color changer in tap line operation, at least two feed lines are connected to a single, common channel. The flow is controlled by 2/2 directional valves.

4 Transport, scope of supply and storage

4.1 Transport

NOTICE!

Property damage due to improper transport

Improper transport of the color changer may cause damage.

– Protect the color changer from shock.
– Protect the color changer from moisture.
– Protect the color changer from vibration.

4.2 Packaging

Unpacking

1. Check the packaging for damage.
   ⇨ Immediately notify the customer service of any damage.
2. **DANGER!**

   Danger of explosion from static charges on plastic film and foils

   Remove all plastic wrapping from the color changer before entering potentially explosive atmospheres.

3. **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. Check the unwrapped color changer for damage.
   ⇨ Immediately notify the customer service of any damage.
5. Transport the color changer to the assembly location.

Packing

Initial situation:
» Hoses, connections and valves are disassembled.
  » ↳ 8.3.1.1 “Disassembly of hoses and components”
  » ↳ 8.3.1.2 “Disassembling hoses, connections and valves”
» Color changer is cleaned ↳ 7.2 “Cleaning”.

1. Pack the color changer in its original packaging.

   If the original packaging is lost or damaged, the new packaging for storage or transport must ensure the following:
   – Protection from dirt and dust
   – Protection from moisture
   – Protection from vibration and shocks

4.3 Storage

Storage of Replacement Parts

The same storage provision as for the color changer apply to the replacement parts.

Ambient Conditions

1. Observe the following environmental conditions for the storage of the color changer:
   » Relative humidity: 35% – 90%
   » Ambient temperature: 15°C to 40°C°°
   » Protect from dust and dirt.
   » Protect from direct sun light.
   » Protect from vibrations.
   » Protect from pressure loads.
   » Observe the packaging instructions.
2. Insert plastic plugs into the threaded connections.
   ⇨ Protect the inside of the color changer from dirt.

5 Assembly

5.1 Assembly of the color changer

DANGER!

Explosive atmosphere

The product is installed in potentially explosive atmospheres. Disregarding the safety regulations of there areas may cause death due to explosion.
– Stop the system before carrying out any work.
– Disconnect the system from compressed air and material supply system.
– Secure the system against being switched on again.
– Relieve the lines.
– Check for an explosive atmosphere prior to entering into a potentially explosive area.
– Integrate product in a safety concept. Pay attention to the details in ↳ 2.3 “Safety devices”.
– Observe all general safety instructions for handling the total system.

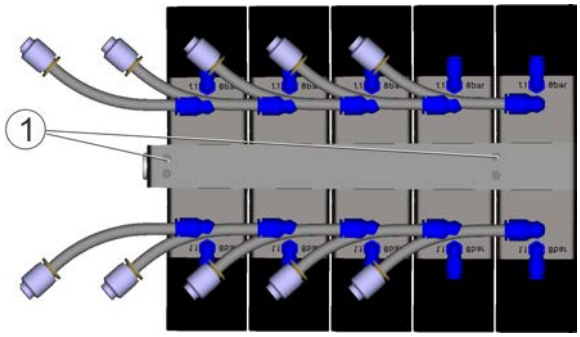

Fig. 7: Install color changer

The color changer is attached via four threads (1) on the back of the connector block.

5.2 Connecting the color changer

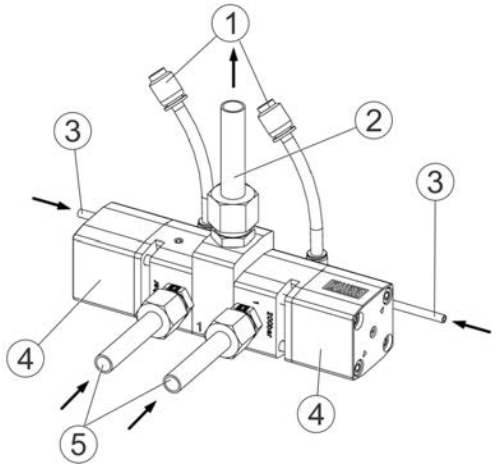

Fig. 8: Assembly drawing

Personnel:

» Mechanic

1. Screw the control air supply (3) in the control air connection of the color changer valve (4).
2. Connect a suitable material hose to the material inlet (5). ↳ 11 “Technical data”
3. Connect a suitable material hose to the material outlet (2). ↳ 11 “Technical data”
4. Screw a collection pan (1) into the color changer valve (4) if required.

Connect hoses

NOTICE!

Damage due to wrong traverse of hoses

Improper routing of the hoses can cause damage and lead to production loss.

– Observe the minimum bend radius.
– Do not place hoses over sharp edges.
– Do not step on the hoses.
– Do not run hoses through small metal pipes.

Personnel:

» Mechanic

1. Use only pre-assembled hoses tested for the pressure range.

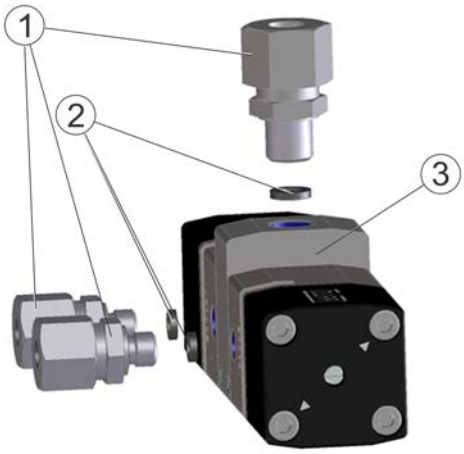

Fig. 9: Assemble hoses

2. Use suitable screw connections (1) (minimum PN250).

   Use assembly paste to avoid welding. ↳ 11.7 “Operating and auxiliary materials”

3. Insert sealing rings (2) into the color changer.
4. Tighten the screw connections (1).
   » Tightening torque 1/4": 20Nm
   » Tightening torque 1/8": 20Nm
5. Insert hoses into screw connections (1).

6 Operation

6.1 Commissioning

WARNING!

Escaping material

If material escapes under high pressure, it 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 commissioning, check system for leakages.
– Put the system into operation only if the connections are made professionally.

Personnel:

» Mechanic

Requirements:

» Color changer is assembled.
  » 5.1 “Assembly of the color changer”
» Valves and hoses are connected.
  » 5.2 “Connecting the color changer”
» Operating pressures are set.
  » 11 “Technical data”

1. Initiate a rinsing process via the parent control system.
   ⇨ The system is rinsed.
2. Fill paint into the system via the parent control system.

Before operating the color changer after longer downtimes or repairs steps 1. and 2. must be carried out.

6.2 Checks

Checks must be carried out on the color changer after commissioning and in weekly intervals.

Personnel:

» Mechanic

Requirements:

» System is switched off and secured against restart.
» No explosive atmosphere is present in potentially explosive zones.
» Technical ventilation is switched on.

1. Check cleanliness of color changer.
   ⇨ Clean color changer if contaminated (7.2 “Cleaning”).

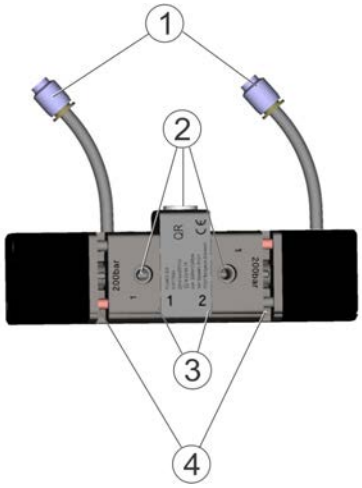

Fig. 10: Points for checking

2. Check following spots for tightness:
   » Hose connection on material inlet and outlet (2)
   » Connection of valve and connector block (3)
   » Leakage gap in valve (4)
   » Connection of release agent collecting tray (1) if installed

6.3 Rinsing

Rinsing program

The color changer can be purged via the parent control system.

The duration of the purging program depends on the installation, operating pressures and the media used.

Test the purging program with the paint in use.

Construction

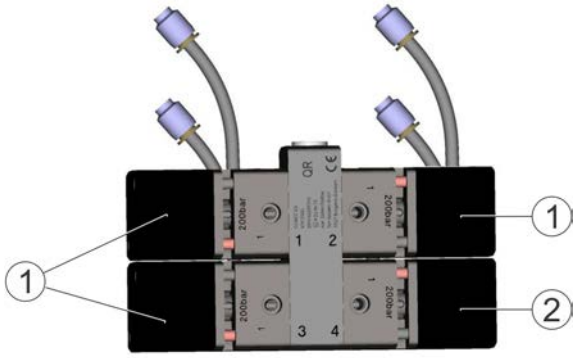

Fig. 11: Rinse

1 Paint valve
2 Thinner valve

The valve furthest from the material outlet (2) is connected to thinner. The parent control system opens the thinner valve and atomizer to purge the color changer with thinner.

Start purging program

Only apply pulsation air when using low viscosity paints and a pressure range with a maximum of 10bar to purge the color changer. The pulsation air is not strong enough to push the paint out of the color changer when using high viscosity paints.

Pressure of pulsation air must be 0.5bar lower than thinner pressure.

The purging program is started via the parent control system.

Program schedule:

» Old paint is pushed out of the color changer.
» Color changer is purged with thinner and pulsation air, if applicable.
» Main needle is opened and nozzle is purged.
» Atomizer is purged using the purging program and then dried, if applicable.
» Purging the color changer is complete and the color changer is ready for use again.

If the color changer is not completely purged after the first run, repeat the purging program until the desired outcome is achieved.

7 Cleaning

7.1 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.
– 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 5K above the ambient temperature.
  » Technical ventilation is operational.

WARNING!

Danger to health from harmful or irritant substances

Contact with hazardous liquids or vapors, can result in serious injury or death.

– Ensure that the forced ventilation is operational.
– Follow safety data sheets.
– Wear specified protective clothing.

NOTICE!

Unsuitable cleaning agents

Unsuitable detergents can cause material damage.

– Only use cleaning agents approved by the material manufacturer.
– Follow safety data sheets.

NOTICE!

Damage due to unsuitable cleaning tools

Unsuitable cleaning tools can damage the surface of the color changer.

– Only use cloths, soft brushes and paintbrushes.
– Do not use any thinner spray guns.
– Do not use high pressure for cleaning agents.
– Do not use abrasive cleaning tools.
– Do not clean in an ultrasound bath.

7.2 Cleaning

Personnel:

» Cleaning staff

Protective equipment:

» Eye protection
» Protective gloves
» Respirator mask
» Protective workwear

Requirements:

» System is switched off and secured against restart.
» No explosive atmosphere is present in potentially explosive zones.
» Technical ventilation is switched on.

1. **DANGER!**

   Electrostatic charge due to cleaning of plastic surfaces with a dry cloth

   Use approved cleaning agents to wet cloths without plastic fibers or brushes.

2. **NOTICE!**

   Damage due to improper cleaning

   Use a wetted cloth to wipe residual material off of the color changer.

3. Use a wetted cloth to wipe residual material off of the screw connections.

8 Maintenance

8.1 Safety notes

WARNING!

Unsuitable tools in hazardous areas.

Tools that do not have Ex permission can generate sparks and cause a fire or an explosion. Serious injuries or death can result.

– If possible, carry out cleaning and maintenance work outside the Ex zones.
– For activities within the Ex zone, use tools with the corresponding Ex labeling.

WARNING!

Risk of injury due to escaping material and compressed air

Escaping compressed material can cause serious injury.

Before carrying out any work:

– Disconnect the system, in which the color changer is installed, from compressed air and material supply.
– Secure the system against being switched on again.
– Depressurize the lines.

WARNING!

Danger to health from harmful or irritant substances

Contact with hazardous liquids or vapors, can result in serious injury or death.

– Ensure that the forced ventilation is operational.
– Follow safety data sheets.
– Wear specified protective clothing.

WARNING!

Risk of injury from unsuitable replacement parts in explosive areas.

Replacement parts not compliant with the specifications of the ATEX guidelines can cause explosions in an explosive atmosphere. Serious injuries and death can be the consequence.

– Use exclusively original replacement parts.

NOTICE!

Damage due to improper maintenance work

Carrying out maintenance work that is not described in this instructions manual can result in errors in assembly and cause material damage.

– Only carry out work mentioned in this instructions manual.

8.2 Maintenance schedule

If a maintenance assistant is used in the system visualizer, the maintenance intervals of the maintenance assistant are valid.

Interval	Maintenance work
monthly	Clean color changer. ↳ 7.2 “Cleaning”
	Check tightness. ↳ 6.2 “Checks”
	Check release agent. ↳ 8.4.3 “Checking release agent”
After 2 million switch cycles	Replace valve. ↳ 8.3 “Dismantling”
At every disassembly of the color changer	Check components. ↳ 6.2 “Checks”

8.3 Dismantling

8.3.1 Dismantling

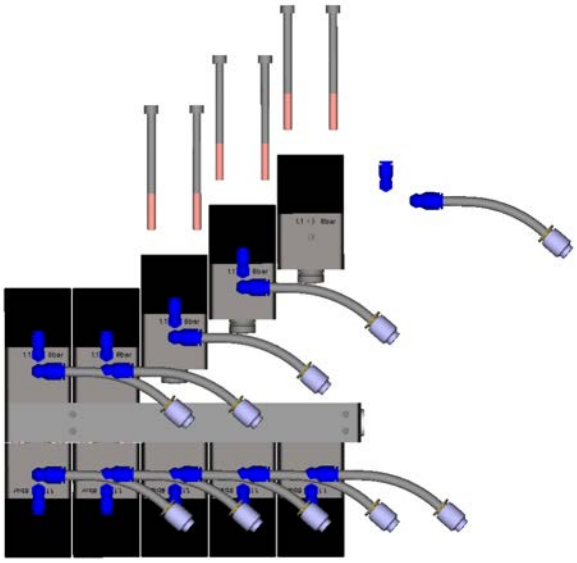

Fig. 12: Exploded view

Maintenance work is split into the following steps:

- ↳ 7.2 “Cleaning”
- ↳ 8.3.1.1 “Disassembly of hoses and components”
- ↳ 8.3.1.2 “Disassembling hoses, connections and valves”
- ↳ 8.3.1.3 “Cleaning and checking components”
- ↳ 8.4.1 “Assemble valve”
- ↳ 8.4.2 “Pouring in release agent”
- ↳ 8.4.3 “Checking release agent”
- ↳ 8.4.4 “Assembly of valve on the color changer”

The color changer can be installed in or near the painting booth. All maintenance work on the color changer, which include replacing components, must be carried out in a workshop.

8.3.1.1 Disassembly of hoses and components

⚠ 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:

– Disconnect the system, in which the product is installed, from compressed air and material supply.
– Secure the system against being switched on again.
– Depressurize the lines.

Personnel:

» Mechanic

Protective equipment:

» Protective gloves

Requirements:

» System is switched off and secured against restart.
» System has been purged.
» No explosive atmosphere is present in potentially explosive zones.

Disassemble hoses

1. Loosen cap nut.
2. Pull off hose.
3. Remove control air push-in fitting from valve.

8.3.1.2 Disassembling hoses, connections and valves

Personnel:

» Mechanic

Requirements:

» Color changer is dismounted from the system. ↳ 5 “Assembly”
» Hoses are disassembled.
» System has been purged.

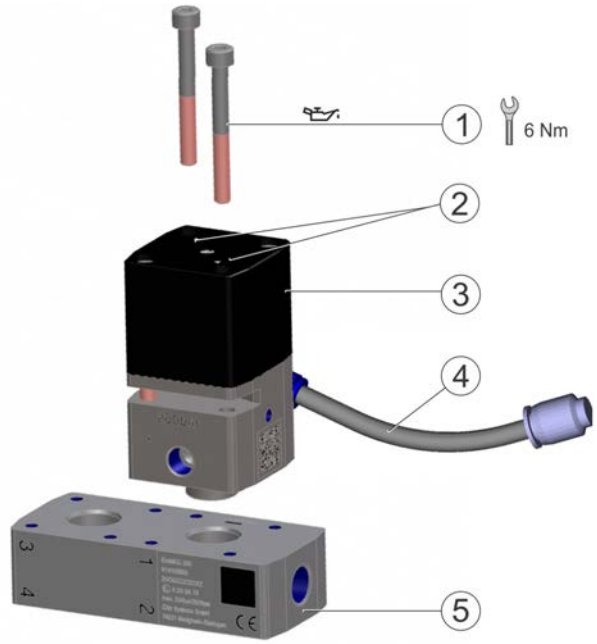

Fig. 13: Disassembly

1. Loosen screw connections from valve.
2. Unscrew the cap screws (1) indicated by an arrow (2) from the valve housing (3).
3. Remove valve housing (3) from connector block (5).
4. Unscrew release agent collection tray (4) from the valve housing (3).

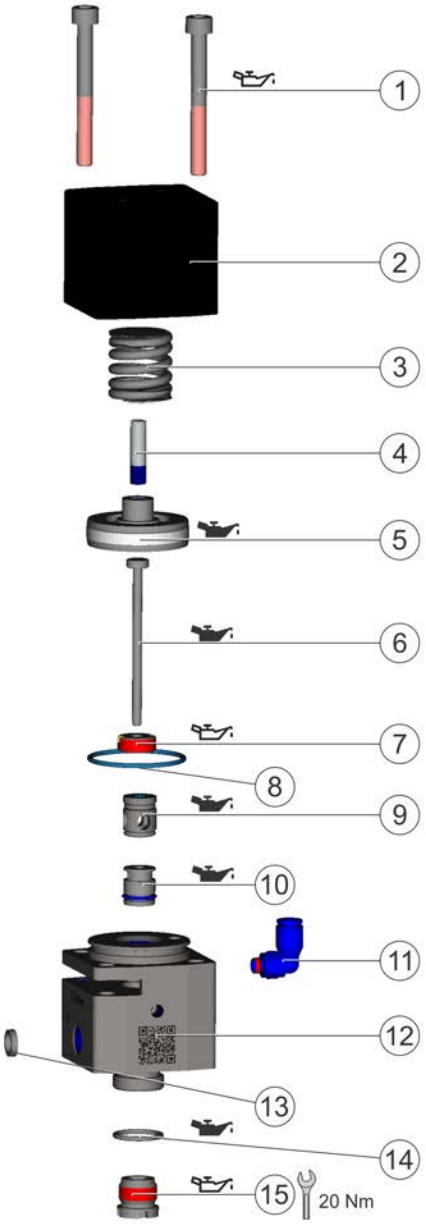

Fig. 14: Exploded view - valve

Molykote TP-42 Paste
Klüber Syntheso GLEP 1

1. Unscrew cylinder screws (1) from the valve lid (2).
2. Remove valve cap (2).
3. Remove compression spring (3) and pre-assembled needle/piston assembly (4, 5, 6) from the valve housing (12).
4. Pull out needle (6) out of the keyhole connection of the piston assembly (4, 5).
   » Push needle (6) down and pull it out.
5. Unscrew sealing screw (7) with the auxiliary tool W02020019 ↳ 12.3 “Accessories” from the valve housing (12).
6. Remove sealing ring (8), piston bushing (9) and sealing gland (10) from the valve housing (12).
7. Remove needle seat (15) from the valve housing (12) using the auxiliary tool W02020275 ↳ 12.3 “Accessories”.
8. Remove O-ring (14) from the valve housing (12).
9. Remove sealing ring (13) from the valve housing (12).

8.3.1.3 Cleaning and checking components

NOTICE!

Damage due to unsuitable cleaning tools

Unsuitable cleaning tools can damage the surface of the color changer.

– Only use cloths, soft brushes and paintbrushes.
– Do not use any thinner spray guns.
– Do not use high pressure for cleaning agents.
– Do not use abrasive cleaning tools.
– Do not clean in an ultrasound bath.

8.4 Assembly

8.4.1 Assemble valve

Lubricate threads and seals before assembly.

Personnel:

» Mechanic

Protective equipment:

» Safety boots

1. Grease needle seat (15) and screw it in to the valve housing (12) using the auxiliary tool W02020275. ↳ 12.3 “Accessories”
   » Tightening torque: 20Nm
2. Grease sealing gland (10) and piston bushing (9) and insert into the valve housing (12).

3. Grease sealing screw (7), place on valve housing and tighten using the assembly tool W02020019 until flush. 12.3 “Accessories”
4. Insert needle (6) into the keyhole connection of the pre-assembled piston assembly (4, 5) and pull to the middle.
5. Grease needle/piston assembly (4, 5, 6) and insert into the valve housing (12).

   Observe the pre-assembled needle/ piston assembly for correct fit and make sure it is not damaged.
   Assembly is easier when the piston sealing is still warm.
6. Grease new O-ring (8) and insert into the valve housing (12).
7. Place compression spring (3) on piston (5).
8. Place valve lid (2) on piston (5) and fasten it to the valve housing (12) with cylinder screws (1).
9. Screw control air connection (11) in valve housing (12).
10. Insert new sealing ring (13) into the valve housing (12).
11. Grease new O-ring (14) and insert into the valve housing (12).

8.4.2 Pouring in release agent

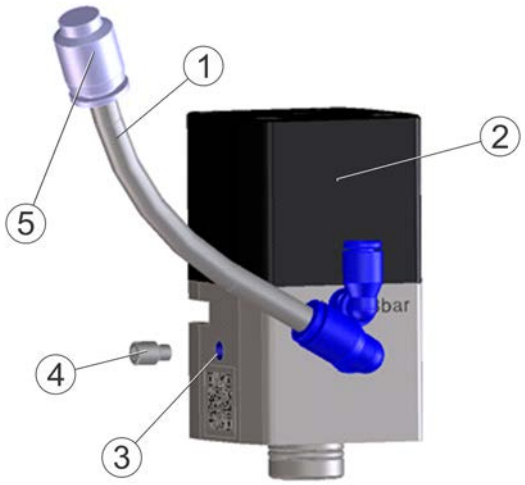

Fig. 15: Pouring in release agent

Personnel:

» Mechanic

Protective equipment:

» Safety boots

1. Unscrew threaded pin (4) from the ventilation bore (3) in the valve housing (2).
2. Pull off cap (5) from release agent collecting tray (1).
3. Pour release agent into release agent collecting tray (1) until it flows out of the ventilation bore (3).
4. Screw threaded pin (4) into the ventilation bore (3).
   » Tightening torque: 4 Nm

8.4.3 Checking release agent

The fill level can be read on the release agent collecting tray.

The fill level of the release agent will lower during operation. Refill release agent, if required.

» Check the valve for leakages if level is decreasing increasing fast.

8.4.4 Assembly of valve on the color changer

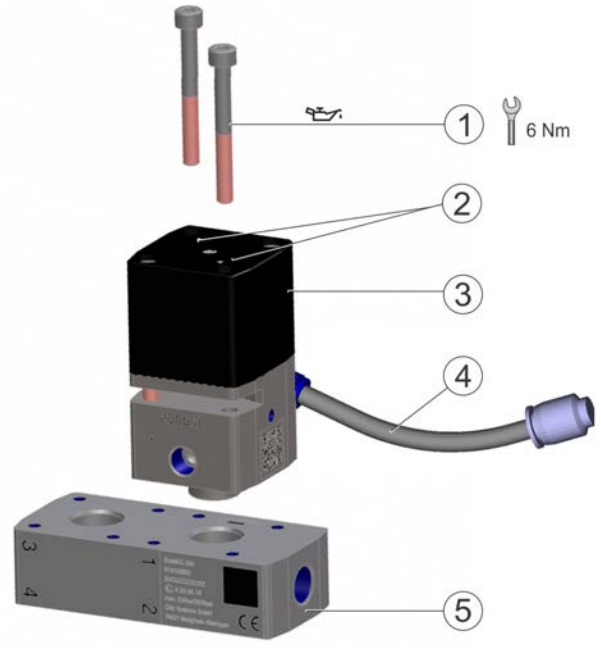

Fig. 16: Assembly

Personnel:

» Mechanic

Protective equipment:

» Safety boots

1. Lightly grease the pin on the valve housing (3) and onto connector block (5).
2. Use cap screws (1) to fasten valve housing (3) to connector block (5).
   » Tightening torque: 6Nm

Tighten cylinder screws crosswise to avoid distortion.

9 Faults

9.1 Defects table

Fault description	Cause	Remedy
Paint is not fed.	Valve is defective.	Replace valve. ↳ 8.3.1.2 “Disassembling hoses, connections and valves”
Leakage between valve and connector block	Tightening torque of valve is too low or valve is tightened on one side only.	Verify tightening torque. Tighten valve evenly. ↳ 8.4.4 “Assembly of valve on the color changer”
Paint residues dripping onto the color changer.	Hose connection or hose is damaged.	Replace damaged hose or hose connection. ↳ 5.2 “Connecting the color changer”
Paint or control air leakage on valve leakage gap	Piston seal is defective.	Replace piston seal. ↳ 8.3 “Dismantling”
	Needle seal is defective.	Replace needle seal. ↳ 8.3 “Dismantling”
Color carry-over	Needle or needle seat is defective.	Replace needle and needle seat. ↳ 8.3 “Dismantling”

10 Disassembly and Disposal

10.1 Disposal

Personnel:

» Mechanic

» + additional qualification explosion protection

Protective equipment:

» Protective gloves

Requirements

» System has been purged.

» Hoses, connections and valves of color changer are disassembled. ↳ 8.3.1.2 “Disassembling hoses, connections and valves”

» Color changer is disassembled. ↳ 8.3 “Dismantling”

1. **ENVIRONMENT!**

   Environmental pollution from paint and cleaning agent residue!

   Clean individual parts of the color changer ↳ 7.2 “Cleaning”.

2. Remove seals and dispose of them professionally.

3. Dispose color changer components professionally.

11 Technical data

11.1 Dimensions and weight

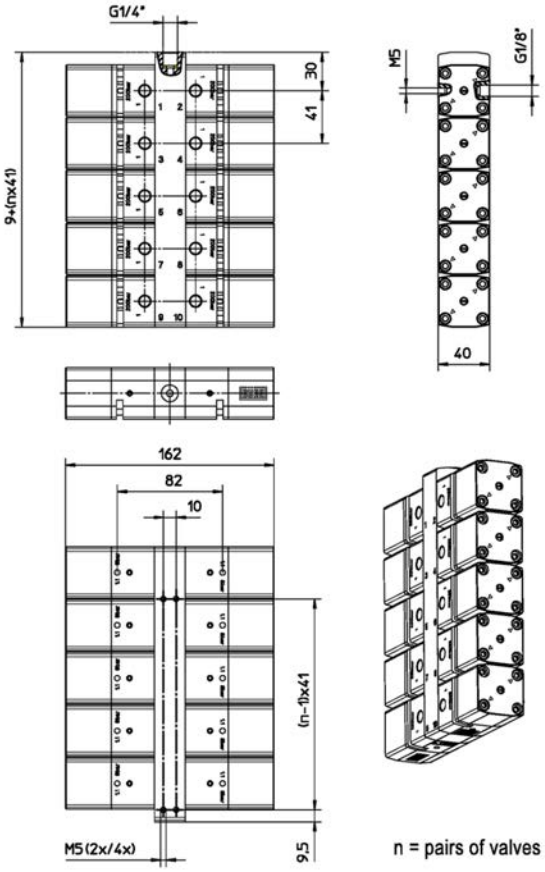

Fig. 17: Dimensions of color changer

Color changer

Detail		Value
Length	N14100001	50mm
	N14100002	91mm
	N14100003	132mm
	N14100004	173 mm
	N14100005	214mm
Height		40mm
Width		162mm
Weight	N14100001	1.5kg
	N14100002	3.5kg
	N14100003	5.4kg

Detail		Value
	N14100004	7.1kg
	N14100005	8.9kg

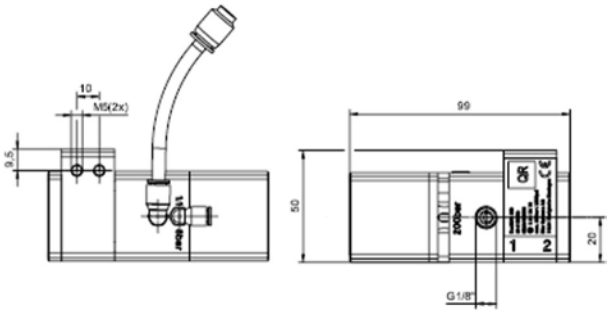

Fig. 18: Dimensions of shut-off valve

Stop valve N14100006

Detail	Value
Length	50mm
Height	40mm
Width	99mm
Weight	0.992kg

11.2 Material specification

Material

Suitable Material:
- » Water or solvent based paints
- » Cleaning agents and solvents
- » Main paint
- » 2k binding agent

Material specifications:
- » Vapor pressure max 0.5 bar above atmosphere
- » Ignition temperature > 50 °C
- » Max. temperature 40 °C, always 5 K below flashpoint

Viscosity

Detail	Value
Viscosity min.	30 mPa*s
Viscosity max.	1200 mPa*s

11.3 Operating values

Detail	Value
Media operating pressure	0–200 bar
Max. media operating pressure	200 bar
Operating temperature	15–40 °C
Control air operating pressure	5.5–8 bar
Volume per module on color change	1.5 ml
Switch time (for hose ∅: 4/6 mm, length: 1 m)	< 30 ms
Max. switching frequency	5 Hz
Mode of action	WWA
Surface impedance	≤ 10

11.4 Hose connections

Detail	Value
Material inlet	G 1/8"
Material outlet	G 1/4"
Air supply	M5

11.5 Compressed air quality

- » Purity classes according to 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

11.6 Materials used

Detail	Value
Valve	Stainless steel
Housing	Stainless steel
Parts in contact with material	Stainless steel

11.7 Operating and auxiliary materials

Indication	Value
Lubricant for seals	Klüber-Syntheso Glep 1
Mounting paste for screws	Molykote TP-42
Thread protection	Loctite 542

11.8 Characteristic curve of the outflow rate

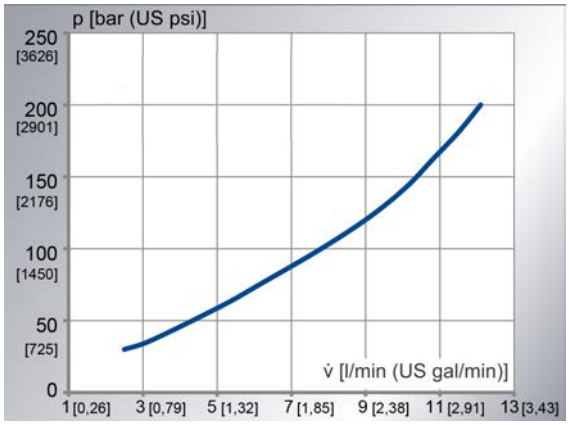

Fig. 19: Flow rate chart

- Material: Mobil DTE 24
- Viscosity: 41mPas
- Density: 0.871g/mL

11.9 Type plate

The type plate is attached to the connector block and features the following data:

- Product name
- Material number
- Year of manufacture
- Serial number
- Maximum material pressure
- Manufacturer
- ATEX marking

12 Replacement parts, tools and accessories

12.1 Spare part

Item numbers relate to the Fig. 13.

Item	Denomination	Quantity	Order number
1	Cylinder screw M5x70 DIN915	2	
2	Valve assembly 200bar G1/8" VA5	1	N32610001
-	Connector block 2x HD FW VA5	1	M01130223
4	Connector block 4x HD FW VA5	1	M01130224
-	Connector block 6x HD FW VA5	1	M01130225
-	Connector block 8x HD FW VA5	1	M01130226
-	Connector block 10x HD FW VA5	1	M01130227
-	Sealing ring d6.0 D11.5 s2 POM	1	M08010266

Item numbers relate to the Fig. 14.

Item	Denomination	Quantity	Order number
1	Cylinder screw M5x45	2	
3	Compression spring	1	M68010176
4	Shaft screw M5x20	1	
5	Piston Piston seal	1	Included in N14960004
6	Needle D3 L52.5	1	Included in N14960001
7	Sealing screw	1	M08160025
8	O-ring 28x1.5	1	M08030613

Item	Denomination	Quantity	Order number
9	Piston seal bushing O-ring 3x1.5 O-ring 7.5x1.5 Washer	1	Included in N14960002
10	Needle seal bushing Needle seal O-ring 7x1.5 Washer	1	Included in N14960003
11	Push-in fitting D4, M5	1	
13	Sealing ring d6.0 D11.5	1	M08010266
14	O-ring 13x1.5	1	M08030733
15	Needle seat M12x1 D13 L11.8	1	Included in N14960001

Item numbers relate to the Fig. 15.

Item	Denomination	Quantity	Order number
1	Hose 4x6	1	-
4	Threaded pin M5x8 DIN915	1	-
-	Push-in fitting D6 M5	1	

12.2 Tools

Fig. 20: Tool

Item	Denomination	Quantity	Material no.
1	Needle seat assembly tool	1	W02020275
2	Sealing gland assembly tool	1	W02020019

12.3 Accessories

Item	Description	Quantity	Material #
-	Plug D16 L15.5 VA5		M48010221

12.4 Order

WARNING!

Risk of injury from unsuitable replacement parts in explosive areas.

Replacement parts not compliant with the specifications of the ATEX guidelines can cause explosions in an explosive atmosphere. Serious injuries and death can be the consequence.

– Use exclusively original replacement parts.

WARNING!

Risk of injury from unsuitable replacement parts

Parts of third party suppliers may not bear the loads. Serious injuries and death can result.

– Only use original replacement parts.

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

13 INDEX

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Translation of the original operation manual

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