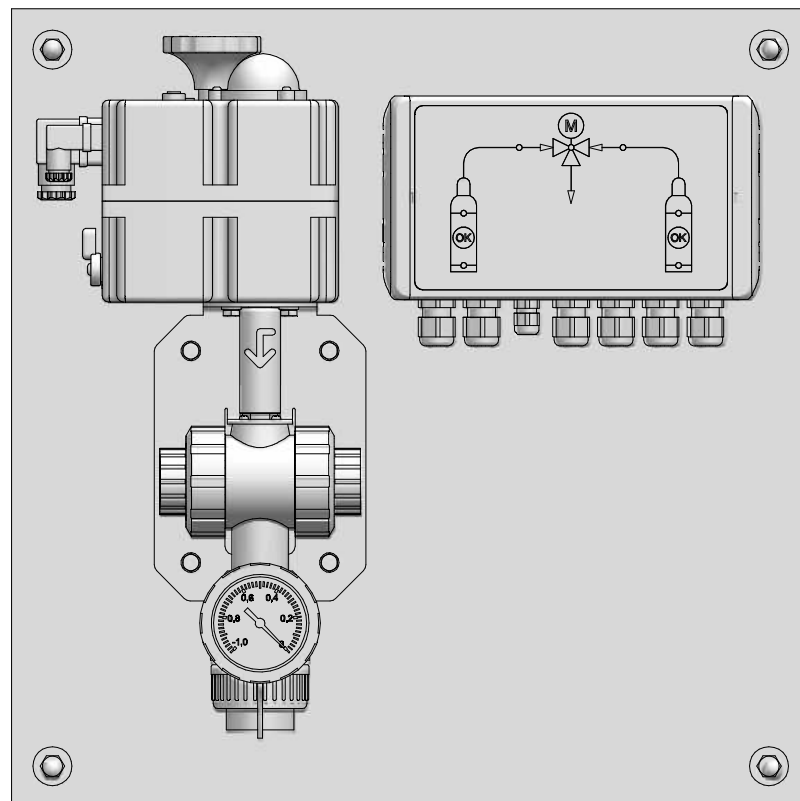


# Chlorine gas changeover unit **C 7523** Operating instructions



Read the operating manual!

The user is responsible for installation and operation related mistakes!



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# 1 Notes for the Reader

This operating manual contains information and behaviour rules for the safe and designated operation of the device.

Observe the following principles:

- Read the entire operating manual prior to starting-up the device.
- Ensure that everyone who works with or on the device has read the operating manual and follows it.
- Maintain the operating manual throughout the service life of the device.
- Pass the operating manual on to any subsequent owner of the device.

## 1.1 General non-discrimination

In this operating manual, only the male gender is used where grammar allows gender allocation. The purpose of this is to make the text easy to read. Men and women are always referred to equally. We would like to ask female readers for understanding of this text simplification.

## 1.2 Explanation of the signal words

Different signal words in combination with warning signs are used in this operating manual. Signal words illustrate the gravity of possible injuries if the risk is ignored:

| Signal word | Meaning   |
|-------------|---|
| DANGER      | Refers to imminent danger. Ignoring this sign may lead to death or the most serious injuries.                                   |
| WARNING     | Refers to a potentially hazardous situation. Failure to follow this instruction may lead to death or severe injuries.           |
| CAUTION     | Refers to a potentially hazardous situation. Failure to follow this instruction may lead to minor injury or damage to property. |
| NOTE        | Refers to a danger which, if ignored, may lead to risk to the machine and its function.   |

Table 1: Explanation of the signal words

## 1.3 Explanation of the warning signs

Warning signs represent the type and source of a danger:





| Warning sign  | Type of danger                                       |
|---|--|
|  | General danger                                       |
|  | Danger from poisonous substances                     |
|  | Danger from electrical voltage                       |
|  | Danger of damage to machine or functional influences |

Table 2: Explanation of the warning signs

## 1.4 Identification of warnings

Warnings are intended to help you recognise risks and avoid negative consequences.

This is how warnings are identified:

| Warning sign  | SIGNAL WORD |
|---|-------------|
| <b>Description of danger.</b><br>Consequences if ignored.<br>⇨ The arrow signals a safety precaution to be taken to eliminate the danger. |             |

## 1.5 Instruction for action identification

This is how pre-conditions for action are identified:

- ✓ Pre-condition for action which must be met before taking action.
- ✘ A resource such as a tool or auxiliary materials required to perform the operating instructions.

This is how instructions for action are identified:


- ➔ Separate step with no follow-up action.
- 1. First step in a series of steps.
- 2. Second step in a series of steps.
  - ▶ Result of the above action.
- ✓ **Action completed, aim achieved.**


## 2 Safety


### 2.1 General warnings


The following warnings are intended to help you eliminate the dangers that can arise while handling the device. Risk prevention measures always apply regardless of any specific action.

Safety instructions warning against risks arising from specific activities or situations can be found in the respective sub-chapters.

|   |               |
|---|---------------|
|    | <b>DANGER</b> |
| <p><b>Danger to life from chlorine poisoning!</b></p> <p>Chlorine is poisonous. In severe cases, breathing in chlorine may lead to death. It irritates the eyes, the respiratory system and the skin.</p> <ul style="list-style-type: none"> <li>⇒ Use sufficient personal protective equipment.</li> <li>⇒ Use a respirator mask with gas filter type B that complies with EN 14387 during any work on the system.</li> <li>⇒ Always comply with the accident prevention regulations that apply at the place of use.</li> <li>⇒ Get rid of leaks without delay. You must get rid of even very minor leaks without delay. Together with the humidity, chlorine forms hydrochloric acid and corrosion results in rapidly increasing leakage.</li> <li>⇒ Use only chlorine-resistant seals.</li> <li>⇒ Only use seals once. Reusing them leads to leaks.</li> </ul> |               |

|   |               |
|---|---------------|
|    | <b>DANGER</b> |
| <p><b>Danger to life from missing safety device!</b></p> <p>Chlorinators without gas warning devices are an increased safety risk, since it is not possible to detect escaping chlorine gas in good time or at all.</p> <ul style="list-style-type: none"> <li>⇒ Install a gas warning device.</li> </ul> |               |

|  |                |
|--|----------------|
|   | <b>WARNING</b> |
| <p><b>Increased risk of accidents due to insufficient qualification of personnel!</b></p> <p>Chlorinators and their accessories must only be installed, operated and maintained by personnel with sufficient qualifications. Insufficient qualification will increase the risk of accidents.</p> <ul style="list-style-type: none"> <li>⇒ Ensure that all action is taken only by personnel with sufficient and corresponding qualifications.</li> <li>⇒ Prevent access to the system for unauthorised persons.</li> </ul> |                |

|  |             |
|--|-------------|
|   | <b>NOTE</b> |
| <p><b>Damage to the plant due to the formation of hydrochloric acid</b></p> <p>Chlorine gas is highly hygroscopic. This means that humidity enters the system at any open connection on devices or pipes, which results in the formation of hydrochloric acid and contamination. thus inevitably causing damage to the units.</p> <ul style="list-style-type: none"> <li>⇒ Keep all connections (including in the vacuum system and on all devices not currently in use) closed at all times.</li> </ul> |             |


### 2.2 Information about chlorine

Chlorine is a hazardous substance. The chemical element chlorine is a greenish-yellow, toxic gas with a pungent odour, which can be detected in the air at concentrations below 1 ppm (= 1 ml/m<sup>3</sup>).

Chlorine is 2.5 times heavier than air and accumulates at ground level.

Chlorine is extremely toxic for water organisms. The reason for the toxicity of chlorine is its extraordinary reactivity. It reacts with animal and vegetable tissue and thus destroys it.

Air with a chlorine gas content of 0.5 -1% leads to a quick death in mammals and humans, as it attacks the respiratory tract and the pulmonary alveolus (formation of hydrogen chloride or hydrochloric acid).

|  |             |
|--|-------------|
|   | <b>NOTE</b> |
| <p><b>Faults due to insufficient chlorine quality</b></p> <p>Impurities in the chlorine gas form deposits in devices and valves and can attack the components chemically. This can lead to malfunctions.</p> <ul style="list-style-type: none"> <li>⇒ Only use technically pure chlorine that meets the following requirements: <ul style="list-style-type: none"> <li>- Mass content of chlorine at least 99.5%</li> <li>- Water content max. 20 mg/kg</li> </ul> </li> </ul> <p>Chlorine that complies with EN 937 meets these requirements.</p> |             |

### 2.3 Hazards due to non-compliance with the safety instructions

Failure to follow the safety instructions may endanger not only persons, but also the environment and the device.

The specific consequences can be:

- failure of important functions of the device and of the corresponding system,
- failure of required maintenance and repair methods,
- danger to persons,
- danger to the environment caused by substances leaking from the system.

## 2.4 Working in a safety-conscious manner

Besides the safety instructions specified in this operating manual, further safety rules apply and must be followed:

- accident prevention regulations,
- safety and operating provisions,
- safety regulations on handling hazardous substances,
- environmental protection provisions,
- applicable standards and legislation.

## 2.5 Personal protective equipment

Based on the degree of risk posed by the dosing medium and the type of work you are carrying out, you must use corresponding protective equipment. Read the Accident Prevention Regulations and the Safety Data Sheets to the dosing media find out what protective equipment you need.

You will require the minimum of the following personal protective equipment:





| Personal protective equipment required   |                     |
|--|---------------------|
|   | Respirator mask     |
|  | Protective clothing |
|  | Safety shoes        |
|  | Protective gloves   |

Table 3: Personal protective equipment required

Wear the following personal protective equipment when performing the following tasks:

- Commissioning,
- All work on gas-bearing sections of the plant,
- Changing the chlorine tank,
- Shut-down,
- Maintenance work,
- Disposal.

## 2.6 Personnel qualification

Any personnel who work on the device must have appropriate special knowledge and skills.

Anybody who works on the device must meet the conditions below:

- attendance at all the training courses offered by the owner,
- sufficient qualification for the respective activity,
- training in how to handle the device,
- knowledge of safety equipment and the way this equipment functions,
- familiar with this operating manual,
- knowledge of fundamental regulations regarding health and safety and accident prevention.

All persons must generally have the following minimum qualification:

- training as specialists to carry out work on the device unsupervised,
- sufficient training that they can work on the device under the supervision and guidance of a trained specialist.

These operating instructions differentiate between these user groups:

### 2.6.1 Specialist staff

Thanks to their professional training, knowledge, experience and knowledge of the relevant specifications, specialist staff are able to perform the job allocated to them and recognise and/or eliminate any possible dangers by themselves.

### 2.6.2 Trained persons

Trained persons have received training from the operator about the tasks they are to perform and about the dangers stemming from improper behaviour.

Trained persons have attended all trainings offered by the operator.

## 2.7 Personnel tasks

In the table below, you can check what personnel qualifications are required for the respective tasks. Only people with appropriate qualifications are allowed to perform these tasks!

| Qualification    | Activities   |
|------------------|--|
| Specialist staff | <ul style="list-style-type: none"> <li>■ Transportation</li> <li>■ Assembly</li> <li>■ Hydraulic installations</li> <li>■ Commissioning</li> <li>■ Taking out of operation</li> <li>■ Fault rectification</li> <li>■ Maintenance</li> <li>■ Repairs</li> <li>■ Disposal</li> </ul> |
| Trained persons  | <ul style="list-style-type: none"> <li>■ Storage</li> <li>■ Control</li> </ul>   |

Table 4: Personnel qualification

## 3 Intended use

### 3.1 Notes on product warranty

Any non-designated use of the device can impair its function and the protection provided. This leads to invalidation of any warranty claims!

Please note that liability is on the side of the user in the following cases:

- The device is operated in a manner which is not consistent with these operating instructions, particularly safety instructions, handling instructions and the section "Intended Use".
- Information on usage and environment (see section 5 "Technical data" on page 9) is not adhered to.
- If people operate the device who are not adequately qualified to carry out their respective activities.
- No original spare parts or accessories of Lutz-Jesco GmbH are used.
- Unauthorised changes are made to the device.
- Maintenance and inspection intervals are not adhered to as required or not adhered to at all.
- The device is commissioned before it or the corresponding system has been correctly and completely installed.
- Safety equipment has been bridged, removed or made inoperative in any other way.

### 3.2 Intended purpose

Changeover unit C 7523 is intended exclusively for chlorinators using the vacuum process. It serves to switch between two vacuum supply batteries.

### 3.3 Prohibited dosing media

The device must not be used for the following media and substances:

- all media apart from gaseous chlorine
- not technically pure chlorine with a mass content of less than 99.5%

4 Product description

4.1 Scope of delivery

Please compare the delivery note with the scope of delivery. The following items are part of the scope of delivery:

- Motor ball valve
- Contact gauge
- Various hydraulic connections (optional)
- Wall holder
- Control with power plug
- Plastic wall panel (optional)
- Installation material for wall fixing
- Operating instructions

4.2 Design and function

Chlorine gas dosing systems in a water treatment system must be permanently ready for operation so that the water can be sufficiently disinfected at any point. This explains the fitting of the systems with two supply batteries - one side in operation, the other on stand-by. The vacuum chlorine changeover valve effects automatic switching between the two cylinders or drum batteries.

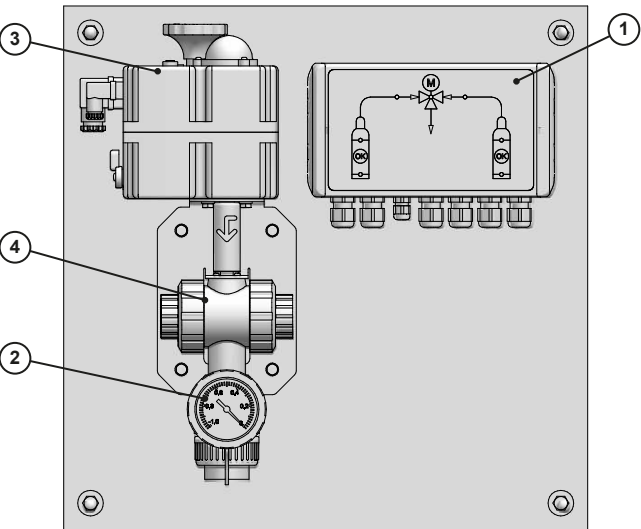


Fig. 1: Structure of the device

If the power supply from the operation battery ebbs, the vacuum generated by the injector will become stronger. The control (1) detects lack of chlorine through the contact vacuum gauge (2) and actuates the motor (3) on the 3-way ball valve (4).

The control signals the operating state with coloured LEDs in the flow chart. The most important operating signals are available for remote indication as relay contacts.

The "residue discharge" function enables the consumption of residue from incompletely-emptied tanks of a total vacuum battery. Working in set intervals, the changeover unit then switches to the battery registered as empty and removes the residue.

Manual changeover can be triggered by the push of a button. If there is a power failure, the changeover can be made mechanically by hand.

4.3 Rating plate

There is information on the equipment about safety or the product's way of functioning. The information must stay legible for the duration of the service life of the product.

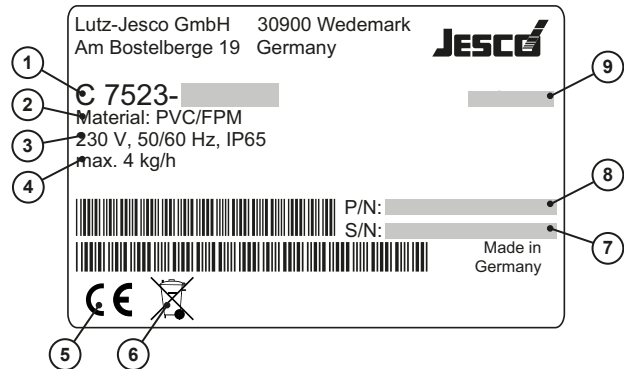


Fig. 2: Rating plate

| No. | Description  |
|-----|--|
| 1   | Product name   |
| 2   | Material   |
| 3   | Voltage supply   |
| 4   | Max. flow rate   |
| 5   | Label showing conformity with applicable European directives |
| 6   | WEEE label   |
| 7   | Serial number  |
| 8   | Part number  |
| 9   | Month / year of manufacture                                  |

Table 5: Rating plate



## 5 Technical data

| Description   |                        | Value                             |
|---|------------------------|-----------------------------------|
| Throughput  |                        | up to 80 kg/h Cl <sub>2</sub>     |
| Operating pressure  |                        | -1 ... 0 bar                      |
| Contact gauge   |                        | Ø63 mm, -1 ... 0 bar              |
| Setting range of the switching point on the contact gauge |                        | -0.9 ... -0.1 bar                 |
| Changeover time   |                        | approx. 22 s                      |
| Material in contact with the media                        |                        | PVC / FPM / Silver / coated brass |
| Further materials   |                        | Coated steel, PP, ABS             |
| Voltage supply  |                        | 115/230 V, 50/60 Hz               |
| Power consumption   | Normal mode            | max. 0.3 A                        |
|   | Switch-on current      | max. 17.5 A (peak)                |
| Load capacity of the relay                                |                        | max. 3 A / 250 V AC               |
| Weight  | Without mounting plate | approx. 5 kg                      |
|   | With mounting plate    | approx. 7 kg                      |
| Protection class  |                        | IP 65                             |
| Ambient temperature                                       |                        | 0 – 55 °C, avoid direct sunlight  |
| Air humidity  |                        | max. 95%, non condensing          |

Table 6: Technical data

| Product   | Hydraulic connections | Max. flow rate          |
|-----------|-----------------------|-------------------------|
| C7523-4K  | Hose 8/12 mm          | 4 kg/h Cl <sub>2</sub>  |
| C7523-10K | Hose 12/16 mm         | 10 kg/h Cl <sub>2</sub> |
| C7523-40K | Pipe DN25/Ø32         | 40 kg/h Cl <sub>2</sub> |
| C7523-80K | Pipe DN32/Ø40         | 80 kg/h Cl <sub>2</sub> |

Table 7: Maximum flow

6 Dimensions

All dimensions in millimetres (mm).

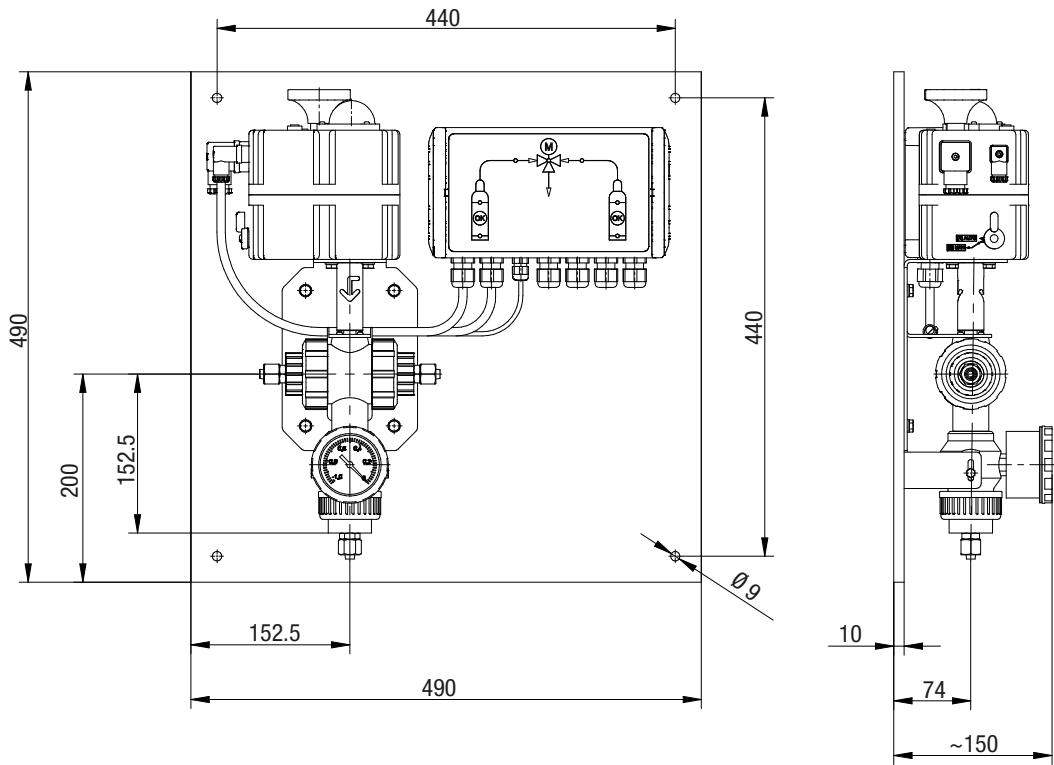


Fig. 3: Dimensioned drawing C 7523 on mounting plate

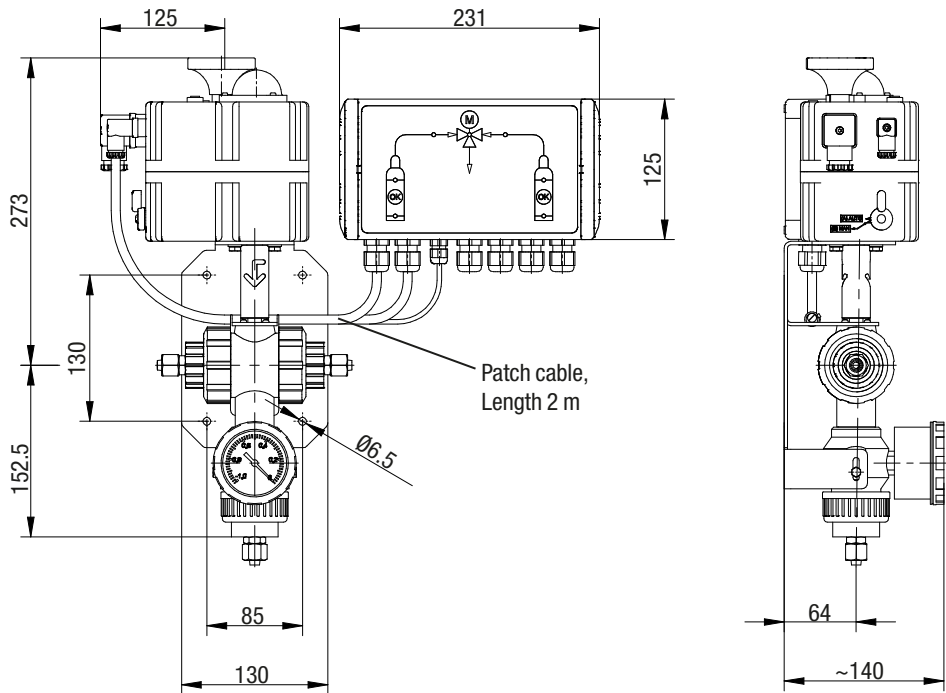


Fig. 4: Dimensioned drawing C 7523 as assembly kit

## 7 Installation



### NOTE

#### Damage to the system due to incorrect installation

The failure to observe installation instructions (e.g. use of unsuitable tools, incorrect torque) can damage the system parts.

⇒ Use suitable tools.

⇒ Note the specified torque.

### 7.1 Installation location

The changeover unit is fitted in the room of the chlorine supply.

The room must fulfil the following requirements:

- secured against access by unauthorised persons,
- protected against weather conditions,
- frost-free,
- permitted ambient temperature maintained (see Section 5 "Technical data" on page 9),
- room of sufficient size to allow trouble-free assembly as well as inspection and maintenance of the device at all times,
- an electrical connection is given,
- the room must comply with the locally valid prescriptions.

### 7.2 Installing the device

Install the device on a vertical even wall. The control should be mounted at approx. eye-level.

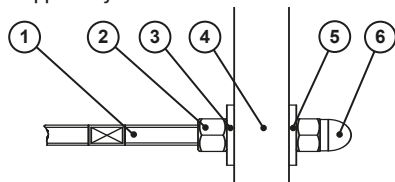


Fig. 5: Attaching the wall plate

Precondition for action:

- ✓ A flat wall.
- ✓ The mounting material is suitable for the wall.

Resources required:

- ✂ Water level
- ✂ Drill
- ✂ 2 open-end spanners SW13

Perform the following working steps:

1. Hold the device against the wall and align it horizontally. The mounting position is shown in section 7.5 "Installation examples" on page 14.
2. Mark the mounting point on the wall.
3. Drill in the marked holes and insert the rawlplug.
4. Screw in the stair bolts (1) into the rawlplug until the wooden thread seals with the wall surface.
5. Place a nut (2) and washer (3) on every screw.
6. Push the wall plate (4) onto the hanger bolts.
7. Place a washer (5) and a cap nut (6) on every screw.

8. Adjust the nuts (2 + 6) so that the wall plate is held evenly and without tension.

9. Tighten the nuts.

✓ The device is fitted on the wall.

### 7.3 Hydraulic installations

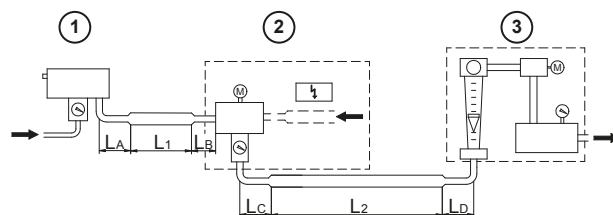
PVC-U pipes or PE hoses are used as conduits. If the line is to supply multiple consumers, the line should be calculated for the total of the consumption volume.

The following nominal widths are recommended for the vacuum line (pressure loss max. 25 bar, calculated at 0.9 bar (a) with 4x90° angles):

| Chlorine | Line between the vacuum regulator and dosing device |       |       |       |       |       |
|----------|---|-------|-------|-------|-------|-------|
|          | 5 m   | 10 m  | 20 m  | 30 m  | 50 m  | 100 m |
| 1 kg/hr  | DN 8  | DN 8  | DN 8  | DN 8  | DN 8  | DN 12 |
| 2 kg/hr  | DN 8  | DN 8  | DN 8  | DN 12 | DN 12 | DN 12 |
| 4 kg/hr  | DN 8  | DN 12 | DN 12 | DN 12 | DN 12 | DN 15 |
| 10 kg/hr | DN 12   | DN 12 | DN 15 | DN 15 | DN 20 | DN 20 |
| 15 kg/hr | DN 12   | DN 15 | DN 20 | DN 20 | DN 20 | DN 25 |
| 25 kg/hr | DN 15   | DN 20 | DN 20 | DN 25 | DN 25 | DN 32 |
| 40 kg/hr | DN 20   | DN 25 | DN 25 | DN 25 | DN 32 | DN 32 |
| 60 kg/hr | DN 25   | DN 25 | DN 32 | DN 32 | DN 32 | DN 40 |
| 80 kg/hr | DN 32   | DN 32 | DN 32 | DN 32 | DN 40 | DN 50 |

Table 8: Max. flow rate

Where necessary, a large distance can be installed in a large nominal width and a connection in the nominal width of the device can be selected for shorter sections shortly before and after the device.



| Item            | Meaning   |
|-----------------|---|
| 1               | Vacuum regulator  |
| 2               | Vacuum changeover unit  |
| 3               | Dosing device   |
| $L_A \dots L_D$ | Lines connected to the device each with approx. 0.5m in the connection nominal width  |
| $L_1 + L_2$     | Large distances in a larger nominal width<br>The total of $L_1$ and $L_2$ should not exceed the max. length indicated in Tab. 8 |

Table 9: Long vacuum line

### 7.3.1 Establish the hose connection

Precondition for action:

- ✓ The device is fitted on the wall.
- ✓ The transport protection on the connection has been removed.

Resources required:

- ✂ Sharp knife

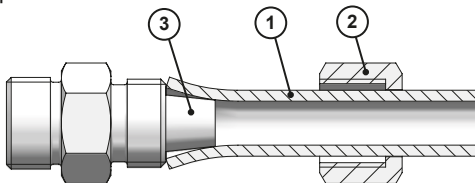


Fig. 6: Establish the hose connection

Perform the following working steps:

1. Cut the hose (1) at a right angles.
2. Slide the union nut (2) onto the hose.
3. Slide the hose end onto the cone of the hose connection (3).
4. Tighten the union nut by hand.
5. Fix the hose to the wall.

- ✓ **Hose connected fitted.**

### 7.3.2 Make the PVC adhesive bond.

Precondition for action:

- ✓ The device is fitted on the wall.
- ✓ The vacuum line is fixed with sufficient pipe clamps and meets the connection in an un-tensioned state.
- ✓ All parts are clean and dry.
- ✓ The transport protection on the connection has been removed.

Resources required:

- ✂ Pipe cutter
- ✂ File or chamfer tool
- ✂ PVC adhesive and cleaning agent
- ✂ Non-fuzzing paper towels

Perform the following working steps:

1. Cut the PVC pipe at right angles. Make a chamfer on the pipe exterior (approx. 3 mm x 20°).
2. Clean the pipe and the bushing with the cleaning agent recommended by the manufacturer of the adhesive.
3. Glue the pipe in the connection. Follow the instructions on the PVC adhesive.

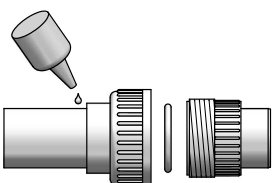


Fig. 7: Make the PVC adhesive bond.

4. Mount the connection on the device. Ensure that the O-ring is fitted.
5. Tighten the union nut by hand.
6. Allow the bond to harden for at least 3 hours prior to the leak test.

- ✓ **PVC seal connection made.**

## 7.4 Electrical installation



**DANGER**

### Mortal danger from electric shock!

Improperly installed or damaged components in the electronics installation can cause injury.

- ⇒ Ensure that all work on the electrical installation is performed by a qualified electrician.
- ⇒ Ensure that all work on the electrical installation is performed in a de-energised state.
- ⇒ Ensure that the power supply is secured with a fault current protective circuit.
- ⇒ Replace damaged cables or components without delay.

### Open the control housing

Resources required:

- ✂ Flat-bladed screwdriver, size 3

Perform the following working steps:

1. Hold the screwdriver in the right-hand clearance on the front of the housing.
2. Move the screwdriver grip towards the lid of the housing until the hinge part disconnects from the adjustment lock.
3. Pivot the housing lid to the left.

- ✓ **Housing opened.**

### Close the control housing

Perform the following working steps:

1. Pivot the housing lid towards the housing floor.
2. Pivot the hinge part towards the lid until it snaps in audibly.
3. Press against the hinge part with your hand until it locks audibly in place.

- ✓ **Housing closed.**

## Terminal plan

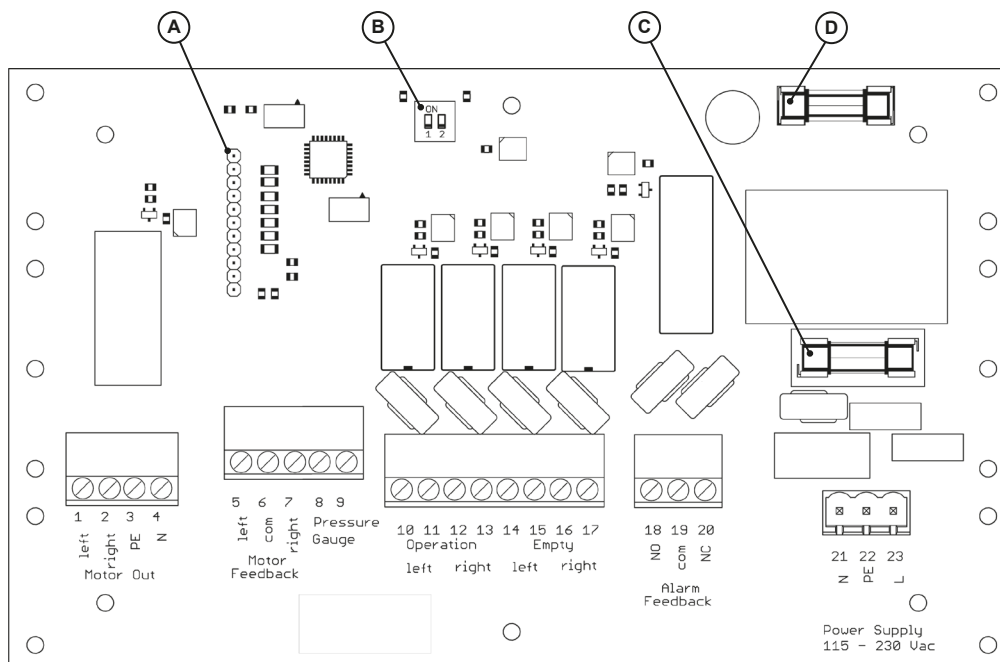


Fig. 8: Control circuit board

| Position | Description                    |
|----------|--------------------------------|
| A        | Connector for the ribbon cable |
| B        | Switch SW1/SW2                 |
| C        | Microfuse 3.15 A (T)           |
| D        | Reserve fuse                   |

Table 10: Elements of the circuit board

| Switch | Function          | Switch downwards             | Switch upwards   |
|--------|-------------------|------------------------------|--|
| SW1    | Residue discharge | OFF (delivery state)         | ON   |
| SW2    | Service switch    | Normal mode (delivery state) | Diagnosis (only for the factory customer services dept.) |

Table 11: Functions of the switch SW1/SW2

| Terminal | Function                    |
|----------|-----------------------------|
| 1        | L Left-hand rotation phase  |
| 2        | L Right-hand rotation phase |
| 3        | PE Protective conductor     |
| 4        | N Neutral conductor         |

Table 12: Terminal connection

| Terminal | Function  |
|----------|---|
| 5        | Left  |
| 6        | com   |
| 7        | Right   |
| 8        | +   |
| 9        | -   |
| 10       | Relay operating output on left (NO, max. 3 A/250 V AC)        |
| 11       |   |
| 12       | Relay operating output on right (NO, max. 3 A / 250 V AC)     |
| 13       |   |
| 14       | Relay output on left battery empty (NO, max. 3 A / 250 V AC)  |
| 15       |   |
| 16       | Relay output on right battery empty (NO, max. 3 A / 250 V AC) |
| 17       |   |
| 18       | NO  |
| 19       | com   |
| 20       | NC  |
| 21       | N Neutral conductor   |
| 22       | PE Protective conductor                                       |
| 23       | L Phase   |

Table 12: Terminal connection

Motor connection

In its delivery state, the motor of the ball valve is connected in accordance with the following plan.

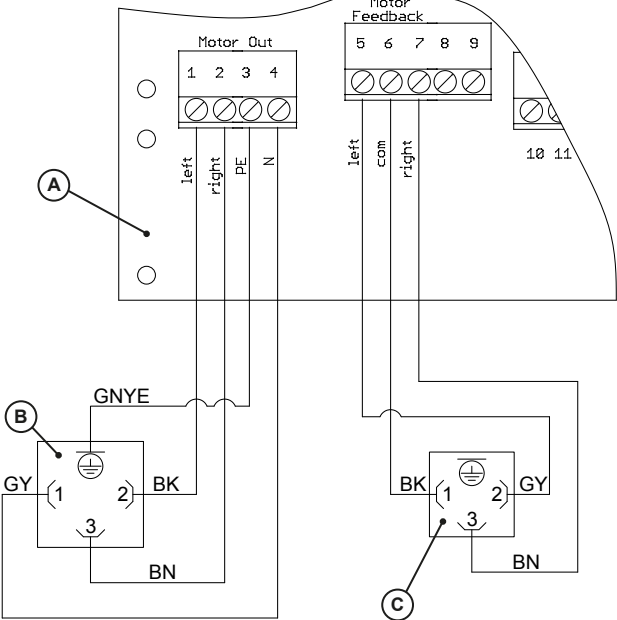


Fig. 9: Motor connection

| Position | Description             |
|----------|-------------------------|
| A        | Control circuit board   |
| B        | Large plug on the motor |
| C        | Small plug on the motor |

Table 13: Motor connection

7.5 Installation examples

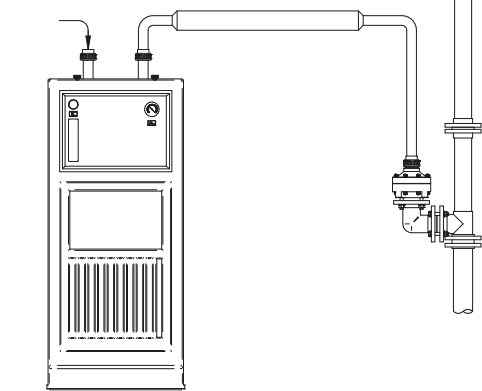


Fig. 10: Installation example

| Item | Description                      |
|------|----------------------------------|
| 1    | Dosing device                    |
| 2    | Reaction section (L = DN x 10)   |
| 3    | Injector non-return valve C 3101 |
| 4    | Angle piece                      |
| 5    | Injector                         |
| 6    | Reaction section (L = DN x 5)    |

Table 14: Components

7.6 Installation with bypass

The volume to be removed from a supply battery is limited by the number of pressure tanks connected. To prevent the unnecessary connection of too many pressure tanks, in the majority of cases, the supply battery is designed for normal operation. Such installations are fitted with a bypass valve for higher volumes required at short notice (e.g. a shock chlorination). It is thus possible to extract from both supply batteries simultaneously.

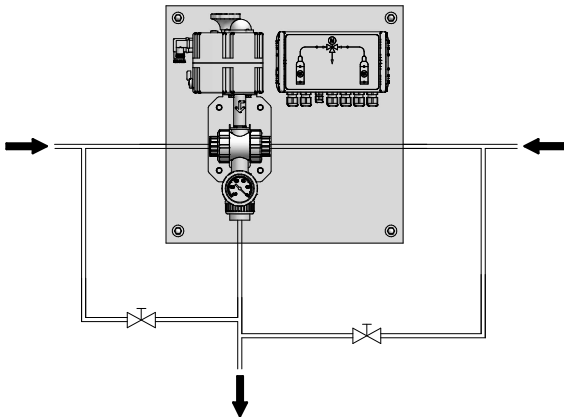


Fig. 11: Installation with bypass valves

If the dosing system is also to be operated whilst maintenance is performed on the changeover unit, 5 manual valves are required in the pipe line.

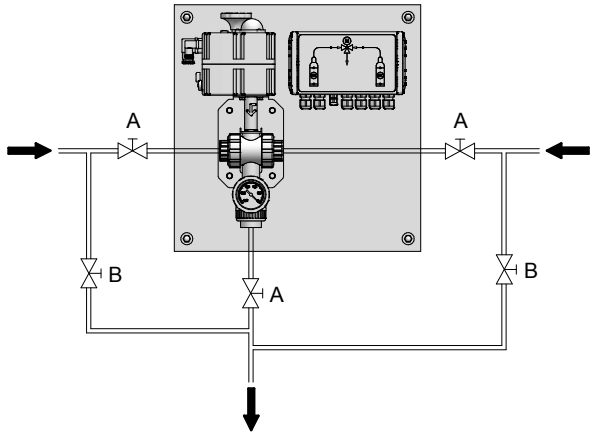


Fig. 12: Installation with 5 service valves

| Check valve | In normal operation | During service   |
|-------------|---------------------|------------------|
| A           | Open                | Closed           |
| B           | Closed              | Manual switching |

Table 15: Function of the service valves








## 8 Commissioning

### 8.1 Checking the vacuum system



**NOTE**

**Operating faults through leakages in the vacuum system**

Small leaks in the vacuum system will not be recognised in normal operation, since no chlorine escapes. Air will enter the system with moisture. The moisture can combine with the chlorine to create deposits and operating malfunctions.

With the injector switched off, there may be a slight chlorine smell.


- ⇒ Check the vacuum system.
- ⇒ Ensure that all action is taken only by personnel with sufficient and corresponding qualifications.

Precondition for action:


- ✓ The vacuum system is fully assembled.
- ✓ All the open connections of the vacuum system were closed.
- ✓ The injector is ready for operation.

Perform the following working steps:


1. Interrupt the voltage supply of the changeover unit.

 The position of the ball valve is adjusted manually during the check. Error messages are generated if the voltage supply is activated.

2. Switch the selection lever on the motor of the changeover unit to MAN (= manual operation)
3. Turn the grip on the motor in such a way that the left supply battery is connected.
4. Interrupt the chlorine supply from the connected supply battery. To do so, either connect the tank valve of a valve in the supply line to the vacuum regulator.
5. Open the valve on the dosing device to adjust the dosing quantity.
6. Switch on the injector and wait until the vacuum pressure gauge displays at least -0.5 bar.

 A number of dosing devices contain a valve which protects the injector against too strong a vacuum. If this valve is set e.g. to 0.4 underpressure, a negative pressure of 0.5 bar cannot be reached during the leak test.

7. Switch off the injector.
    - ▶ The vacuum must stay unchanged for at least five minutes.
  8. If the vacuum collapses quickly, eliminate the leak and repeat the check on the vacuum system.
  9. Turn the grip on the motor in such a way that the right supply battery is connected. Repeat steps 4-8.
- ✓ **Vacuum system checked.**



**NOTE**

**Damage of the gauge**

The search for leaks in the vacuum system often uses compressed air or nitrogen with a slight positive pressure as the leak point can then be recognised using a soapy solution. This test damages the contact gauge.

⇒ Dismantle the contact gauge before checking the vacuum system with positive pressure.

### 8.2 Turning on the device

Precondition for action:

- ✓ The device is fully assembled.
- ✓ The leak test was performed.

Perform the following working steps:

1. Switch on the voltage supply.
  2. Ensure that the selection lever on the motor is set to AUTO.
- The motor moves automatically to the operating position last set.
- ✓ **Device switched on.**

### 8.3 Adjusting the switch point

It is rare that the switch point of the contact gauge needs to be adjusted. Possible reasons for this could include:

- Very weak performance of the injector.
- Dosing device with restrictor valve for the vacuum.

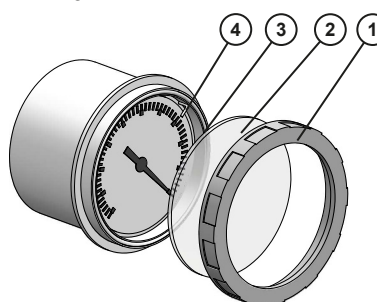


Fig. 15: Adjusting the switch point

Perform the following working steps:

1. Remove the transparent cover (2) from the contact vacuum gauge. To do so, unscrew the outside ring (1) from the device. Observe the seal (3).
  2. Move the red marking (4) on the desired switch point.
  3. Refit the transparent lid and tighten the ring nut by hand. Ensure the correct position of the seal.
- ✓ **Switch point of the contact gauge adjusted.**

9 Operation

9.1 Controls

9.1.1 Operator controls of the control unit

All operating states are displayed on the control.

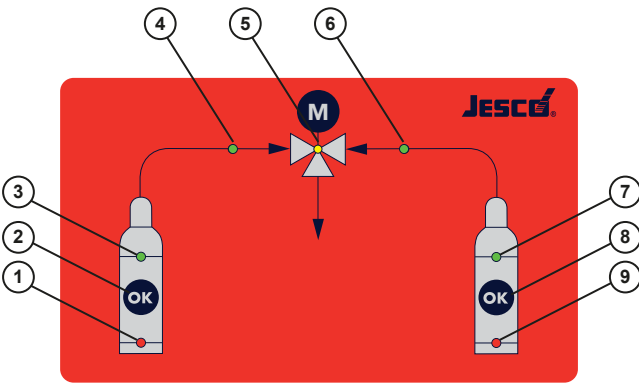


Fig. 16: Control elements

| Position | Description | Meaning   |
|----------|-------------|---|
| 1        | LED red     | Left battery empty  |
| 2        | Key         | Acknowledge the cylinder change left and switch left manually   |
| 3        | LED green   | Left battery full   |
| 4        | LED green   | Operation left battery  |
| 5        | LED yellow  | Motor works   |
| 6        | LED green   | Operation right battery   |
| 7        | LED green   | Right battery full  |
| 8        | Key         | Acknowledge the cylinder change right and switch right manually |
| 9        | LED red     | Right battery empty   |

Table 18: Control elements

9.1.2 Motor operating elements

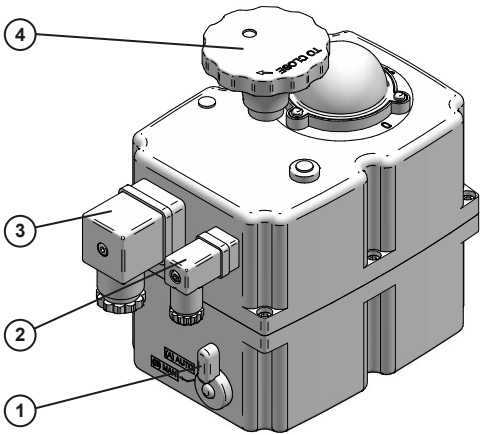


Fig. 17: Motor operating elements

| Position | Description    | Meaning   |                     |
|----------|----------------|---|---------------------|
| 1        | Selector lever | MAN   | Manual operation    |
|          |                | AUTO  | Automatic operation |
| 2        | Plug small     | Position switch   |                     |
| 3        | Plug large     | Voltage supply  |                     |
| 4        | Hand lever     | Manual operation, if the selector lever (1) is set to MAN |                     |

Table 19: Motor operating elements

9.2 Operating modes

9.2.1 Automatic operation

| Control element                 | Position |
|---------------------------------|----------|
| Switch SW2 on the circuit board | OFF      |
| Selector lever on the motor     | AUTO     |

Table 20: Set automatic operation

When in automatic operation, the changeover unit reacts to the switching status of the contact gauge. When receiving notification that the current supply battery is empty, the changeover unit changes to the standby battery.

## 9.2.2 All empty

If both batteries are empty, the valve on the battery last used remains stationary.

| Signal                   | Empty battery | Used battery |
|--------------------------|---------------|--------------|
| LED battery empty (red)  | Flashes       | Flashes      |
| Relays empty             | ON            | ON           |
| LED battery full (green) | OFF           | OFF          |
| Operation LED (green)    | OFF           | ON           |
| Relays operation         | OFF           | ON           |
| Relays malfunction       | ON            |              |

Table 21: State of the control during "Everything empty"

The notification of 2 empty batteries is issued with two minutes delay; installations with very long vacuum lines can experience a delay in the issue of the OK notification from the contact gauge. The green LED flashes in the newly-connected cylinder during the waiting time.

## 9.2.3 Residue discharge

Residue discharge is an optional function in automatic operation.

| Control element                 | Position |
|---------------------------------|----------|
| Switch SW1 on the circuit board | ON       |

Table 22: Setting residue discharge

Total vacuum batteries can experience changeover even when not all of the chlorine tanks of the battery are empty. This is due to the strong cooling of the tanks following the extraction of too large a quantity of chlorine.

With active residue discharge, the changeover unit switches to the supply battery notified as empty from which the residual quantity is removed. This is performed in a 15 minute rhythm. Changing the cylinder and pressing the "OK" button ends the residue discharge.

| Signal                   | Empty battery | Used battery |
|--------------------------|---------------|--------------|
| LED battery empty (red)  | ON            | OFF          |
| Relays empty             | ON            | OFF          |
| LED battery full (green) | Flashes       | ON           |
| Operation LED (green)    | ON            | OFF          |
| Relays operation         | ON            | OFF          |
| Relays malfunction       | OFF           |              |

Table 23: State of the control during "Residue discharge"

## 9.2.4 Manual operation

| Control element             | Position |
|-----------------------------|----------|
| Selector lever on the motor | MAN      |

Table 24: Setting residue discharge

The ball valve on the hand grip of the motor is activated in manual operation. The motor no longer follows the signals of the control. This can lead to fault messages during manual operation.

| Signal             | Condition |
|--------------------|-----------|
| LED valve          | Flashes   |
| Relays malfunction | ON        |

Table 25: Malfunction state of the control with MAN

## 9.3 Disposal



### NOTE

#### Do not dispose of the device in household waste!

Do not dispose of electrical appliances with household waste.

- ⇒ Dispose of the unit and its packaging material in accordance with local laws and regulations.
- ⇒ Dispose of different materials separately and recycle them.
- ⇒ Before disposing of the old equipment, you must clean off the remaining chlorine by rinsing it with nitrogen or air.
- ⇒ Devices returned to the manufacturer must be sent risk-free and with a declaration of no objection (see page 29).

## 10 Shutdown

### 10.1 Short-term shutdown

Perform the following working steps:

1. Close the chlorine tank valves.
2. Use the injector to suck off the remaining chlorine.
3. Switch off the injector.



**Chlorinator shut down for the short term.**

### 10.2 Long-term shutdown

Perform the following working steps:

1. Close the chlorine tank valves.
2. Use the injector to suck off the remaining chlorine.
3. Run the chlorinator for approximately five minutes with nitrogen or dry compressed air.
4. Switch off the injector.
5. Close all the open connections to protect the lines and devices from humidity and dirt.



**Chlorinator shut down for the long term.**

The device remains in the installation location during the operating pause. All connections remain closed. The voltage supply should remain active so that condensate is unable to gather in the control.

Ensure ideal storage conditions where possible:

- the storage place must be cold, dry, dust-free and generously ventilated,
- temperatures between +2 °C and +40 °C.
- Relative air humidity must not exceed 90 %.



If it has been out of use for a long period, we recommend performing a little maintenance before starting up (see "maintenance intervals" on page 21).

## 11 Maintenance

DANGER

**Mortal danger from electric shock!**

Live parts can inflict fatal injuries.

- ⇒ Before carrying out any maintenance work, always disconnect the device from the power supply.
- ⇒ Secure the system to prevent it from being switched on by accident.

DANGER

**Danger to life from chlorine poisoning!**

Do not carry out maintenance or any other work on the chlorinator until the system has been decommissioned and all of the chlorine gas has been removed from the lines. The failure to follow this instruction presents a significant risk of injury.

- ⇒ Prior to any maintenance work, prepare the system in accordance with section 11.3 "Preparing the system for maintenance" on page 21.
- ⇒ Use a breathing apparatus with gas filter type B that complies with EN 14387 when dismantling the device.

NOTE

**Damage to the system due to corrosion**

Water in chlorine carrying system components combines with chlorine to form hydrochloric acid and leads to corrosion.

- ⇒ After maintenance work is complete, remove all water residues from the system before placing it into operation.

### 11.1 Maintenance intervals

To avoid hazardous incidents, chlorinators must be regularly maintained. This table gives you an overview of maintenance work and the intervals at which you must carry it out. The next few sections provide instructions for carrying out this work.

| Interval      | Maintenance   |
|---------------|---|
| After 1 year  | Minor maintenance: <ul style="list-style-type: none"> <li>■ Cleaning the device</li> <li>■ Change the connection seals</li> <li>■ Functional control</li> </ul> |
| After 3 years | Major maintenance: <ul style="list-style-type: none"> <li>■ Cleaning the device</li> <li>■ Replace all elastomers</li> <li>■ Functional control</li> </ul>      |
| After 5 years | <ul style="list-style-type: none"> <li>■ Replace the contact gauge</li> </ul>   |

Table 26: Maintenance intervals



In some cases, regional regulations may require shorter maintenance intervals. Maintenance intervals depend only on how frequently the equipment is used. Chemical wear of rubber parts, for example, begins with the initial medium contact and continues irrespective of the usage.

Maintenance sets are listed in chapter 13 "Spare parts" on page 26.

### 11.2 Maintenance accessories

| Description   |
|---|
| Silicone grease, medium viscosity 35 g for application to seals |
| Plastic tools for dismantling O-rings                           |

Table 27: Maintenance accessories

### 11.3 Preparing the system for maintenance

Perform the following working steps:

1. Close the chlorine tank valves.
2. Use the injector to suck off the remaining chlorine.
3. Run the chlorinator for approximately five minutes with nitrogen or dry compressed air.
4. Switch off the injector.

✓ The system is prepared for maintenance.

### 11.4 Minor maintenance

Precondition for action:

- ✓ The system has been prepared for maintenance (see chapter 12.3).
- ✓ New connection seals are available.

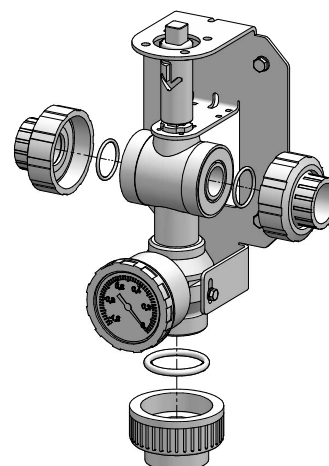


Fig. 18: Connection seals

Perform the following working steps:

1. Loosen the union nuts and remove the three connections. Remove the O-rings with a blunt tool.
2. Clean the sealing surfaces with a soft cloth.
3. Check the display of the contact gauge. At atmospheric pressure, it must display approx. zero. Otherwise, it needs to be cleaned.
4. Look into the interior of the ball valve. Should soiling be visible, the ball valve requires cleaning from inside.
5. Switch the motor to MAN and move the ball valve on the hand lever. It must revolve evenly around 180° with slight resistance. Otherwise, it will be necessary to perform maintenance on the ball valve. Switch the motor to AUTO.
6. Fit the new O-rings and the connections. The union nuts are tightened by hand.

✓ **Small maintenance performed.**

### 11.5 Cleaning the contact gauge



#### NOTE

#### Damage to pressure gauges

Pressure gauges are measurement devices which are adjusted by specialists when manufactured. Pressure gauges that have been disassembled must be tested and readjusted by the manufacturer.

- ⇒ Do not dismantle pressure gauges.
- ⇒ Pressure gauges are highly complicated which cannot be emptied entirely.
- ⇒ Do not allow any soiling to enter the pressure gauge.
- ⇒ Do not allow any water to enter the pressure gauge.

The maintenance on the pressure gauge restricts itself to a visual check and the cleaning of the connection.

Precondition for action:

- ✓ The system has been prepared for maintenance (see 12.3).
- ✓ The changeover unit is free of stress.

Resources required:

- ✂ PTFE strip
- ✂ Cotton swabs

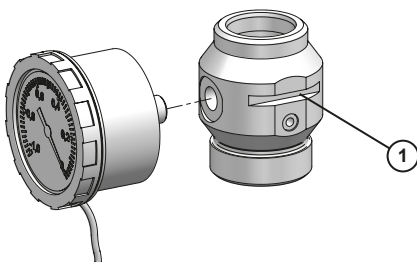


Fig. 19: Remove the pressure gauge

Perform the following working steps:

1. Separate the pressure gauge cable from the control and pull it out of the cable guide (1).
2. Unscrew the pressure gauge from the pressure gauge connection. Remove the PTFE strip from the thread.
3. Check the input of the pressure gauge for contamination. Remove the contamination with isopropyl alcohol. At the same time, hold the pressure gauge with the connection facing downwards so that soiling cannot fall into the device. Do not use a pointed tool, so that the protective film on the plate spring is not destroyed.
4. If the pressure gauge is not immediately reconnected, seal the connection airtight.
5. Fit the pressure gauge with approx. 5 long PTFE strips.
6. Return the cable to the control and reconnect it.

✓ **Contact gauge cleaned.**

### 11.6 Maintenance on the ball valve

Precondition for action:

- ✓ The system has been prepared for maintenance.
- ✓ The changeover unit is free of stress.

Resources required:

- ✂ Ball valve grip (part of the maintenance set)
- ✂ Silicone grease

Perform the following working steps:

1. Note the switching position of the ball valve.
2. Remove the four screws below on the motor. Remove the motor from the wall console.
3. Remove the four screws above on the ball valve.
4. Remove the two screws from the side on the pressure gauge connection.
5. Remove the ball valve and the pressure gauge connection from the wall console.
6. Disconnect the ball valve and the pressure gauge connection.
7. Dismantle the ball valve. The screw-in fitting (2) has a left-hand thread and the hand lever (12+13) is used as a tool.

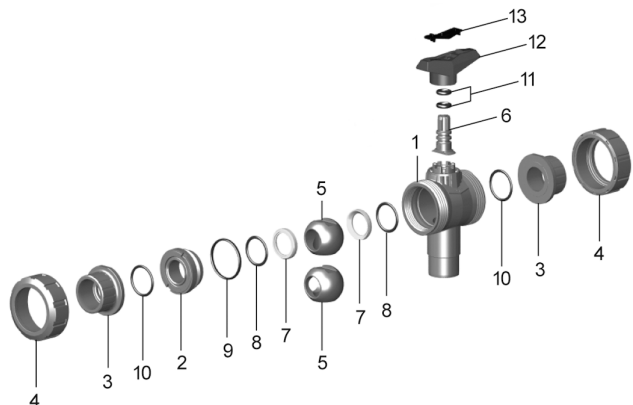


Fig. 20: Individual parts of the ball valve

8. Clean all components of the ball valve e.g. with warm water or isopropyl alcohol. Allow all components to dry well.
9. Fit the ball valve with new elastomer. Both of the seals are lightly rubbed with silicone grease.



The ball in the ball valve can be fitted in a mirror inverted fashion. Set the coupling to the control rod to check. The arrow on the coupling points the correct position of the ball.

10. Pull the screw-in part (2) sensitively. The control rod (6) must be rotatable with a little resistance.
11. Remove the O-ring from the pressure gauge connection using a plastic tool. Clean the pressure gauge connection and insert a new O-ring. Silicone grease is rubbed in to the O-ring.
12. Slide the pressure gauge connection onto output of the ball valve connection with a rotating movement.
13. Fit the assembly in the wall console. Slide the pressure gauge cable through the slot in the pressure gauge connection. Pull the 4 screws above on the ball valve sensitively.
14. Insert the coupling piece between the ball valve and motor on the control rod of the ball valve. It will only fit in a single direction.
15. Turn the ball valve into the same position which it had before the maintenance.
16. Install the servomotor.

✓ **Maintenance performed on the ball valve.**

## 11.7 Functional control

Precondition for action:

✓ The changeover unit is ready for operation.

Perform the following working steps:

1. Switch the selector switch on the motor to AUTO
2. Switch on the voltage supply.
3. Quit all fault messages by pressing the OK button repeatedly until both cylinders signal green.
4. Remove the screw cap on the pressure gauge.
5. Simulate empty supply batteries: Carefully move the pressure gauge pointer in an anti-clockwise direction past the red marking and allow it to turn in the starting position.
6. In this way, check the display in all operating situations and if necessary, the position of connected notification equipment.
7. Then fit the screw cap on the pressure gauge and tighten it carefully by hand. Ensure the correct position of the seal.

✓ **Functional check performed.**

## 11.8 Finishing maintenance

Perform the following working steps:

1. Make a note of the date and scope of the maintenance performed.
2. Attach a sticker displaying the maintenance date to the device.
3. Fit the connections to the device.
4. Close the control.
5. Pull all the cable screw connections to the control.
6. To restart the system, follow the instructions given in chapter 9 "Start-up" on page 18.

✓ **Maintenance completed.**

## 12 Troubleshooting

All possible errors are listed in this table.

| Problem   | Possible cause  | Remedy  |
|---|---|---|
| The changeover unit does not change even though the battery connected is empty and a full battery has been connected to the other side. | After connecting the new chlorine tank, the OK button in the cylinder symbol was not pressed.   | The OK button in the cylinder symbol must be pressed after changing the cylinder. The display changes from red to green.  |
|   | The voltage supply has been interrupted. All LEDs are off.  | Reactivate the voltage supply.  |
| The changeover unit changes during normal operation, even though the chlorine tanks are still full.                                     | The "residual emptying" function is active. Recognisable on the illumination pattern of the LEDs. The LED of the empty cylinder flashes green.  | No fault has occurred.<br>If this is desired, deactivate residue discharge on switch SW1.   |
|   | The maximum supply volume from the battery was exceeded. <ul style="list-style-type: none"> <li>■ Insufficient chlorine tanks connected</li> <li>■ Not all tank valves were opened.</li> <li>■ Short-term strongly increased extraction due to shock chlorination</li> <li>■ A number of tanks are already empty</li> </ul> | <ul style="list-style-type: none"> <li>■ Connect sufficient chlorine tanks and open the valves</li> <li>■ For shock chlorination, take from both batteries at the same time (see section 7.6 "Installation with bypass" on page 14)</li> <li>■ Should the tanks be emptied at differing rates, arrange for the adjustment of the vacuum regulator and activate the residue discharge function.</li> </ul> |
| The yellow LED valve symbol flashes   | <ul style="list-style-type: none"> <li>■ The switch on the motor is set to MAN.</li> <li>■ A cable connection between motor and control has been interrupted.</li> <li>■ The position switches in the motors are misaligned.</li> </ul>   | <ul style="list-style-type: none"> <li>■ Move the switch on the motor to AUTO. Press an OK button.</li> <li>■ Check whether plugs on the motor are loose.</li> </ul> <p>If you do not experience any success: inform service.</p>   |
| A number of LEDs flash simultaneously   | The control is in test operation because switch SW2 is set to ON.   | Switch SW2 to OFF.  |
| The operating display on the control is mirror inverse to the hydraulic function.   | The switch direction was changed during maintenance. Either the ball in the ball valve is fitted back to front or the motor was inserted 180° incorrectly.  | Check whether the arrow on the coupling matches the switching function of the ball valve.<br>Repeat the fitting of the maintenance and check its correct alignment.   |

Table 28: Troubleshooting





## 13 Spare parts

### 13.1 Spare parts

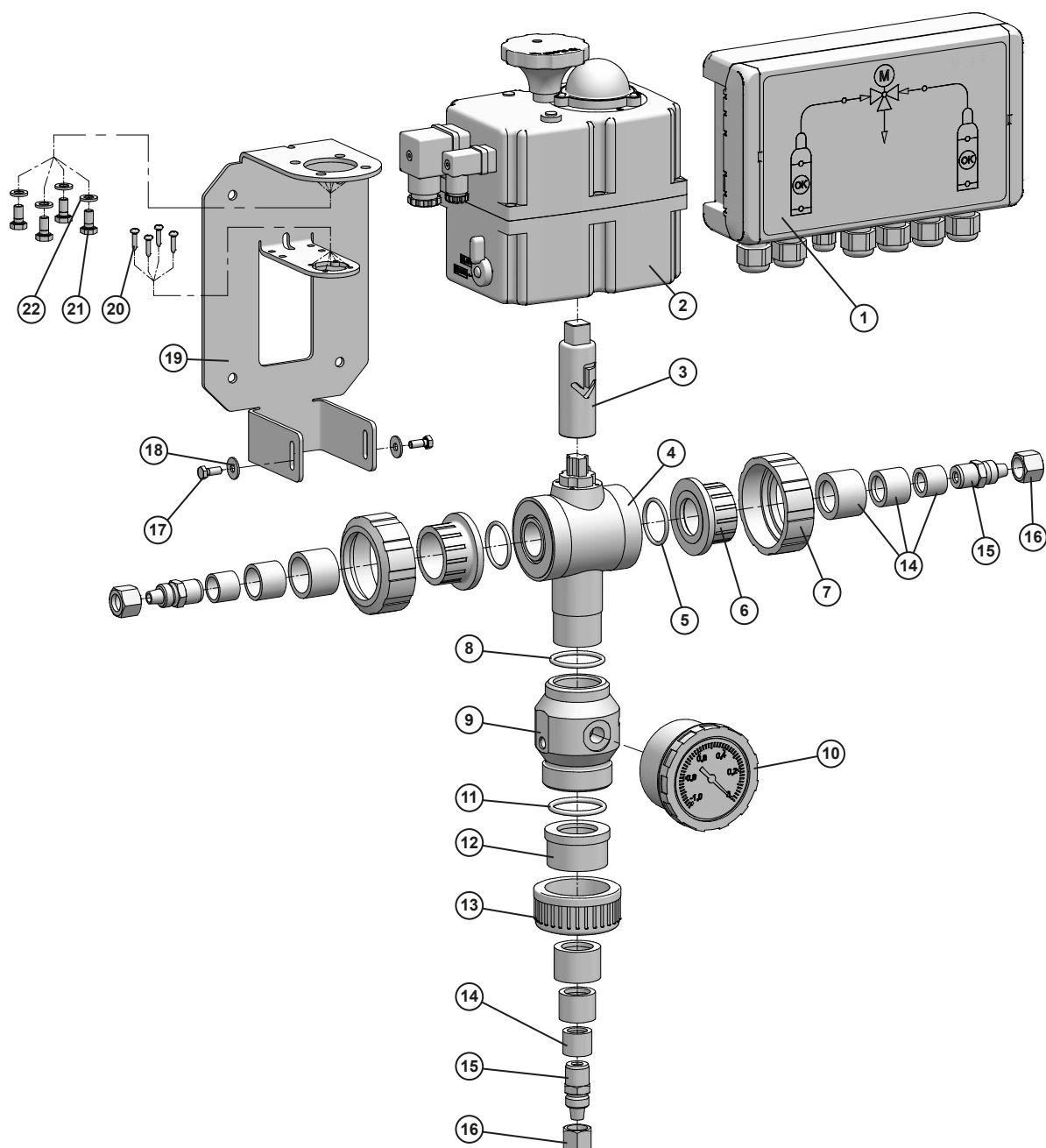


Fig. 21: Exploded view of C 7523

## 13.2 Maintenance sets

| Position | Quantity | Description               | Info             |
|----------|----------|---------------------------|------------------|
| 1        | 1        | Control complete          |                  |
|          |          | Circuit board             |                  |
| 2        | 1        | Motor                     |                  |
| 3        | 1        | Coupling                  |                  |
| 4        | 1        | Ball Valve                | Includes 5, 6, 7 |
| 5*       | 2        | O-ring                    |                  |
| 6        | 2        | Flange bushing            |                  |
| 7        | 2        | Union nut                 |                  |
| 8*       | 1        | O-ring                    |                  |
| 9        | 1        | Pressure gauge connection | G ¼ interior     |
| 10       | 1        | Contact pressure gauge    | G ¼ exterior     |
| 11*      | 1        | O-ring                    |                  |
| 12       | 1        | Flange bushing            |                  |
| 13       | 1        | Union nut                 |                  |
| 14       | 3        | Reduction                 | Ø32a-Ø25i        |
|          |          |                           | Ø25a-Ø20i        |
|          |          |                           | Ø20i-Ø16i        |
| 15       | 3        | Hose connection           | for Ø8/12 hose   |
|          |          |                           | for Ø12/16 hose  |
| 16       | 3        | Union nut                 | for Ø8/12 hose   |
|          |          |                           | for Ø12/16 hose  |
| 17       | 2        | Screw                     | M5x10            |
| 18       | 2        | Washer                    | Ø5               |
| 19       | 1        | Installation bracket      |                  |
| 20*      | 4        | Sheet metal screw         |                  |
| 21       | 4        | Screw                     | M6x12            |
| 22       | 4        | Washer                    | Ø6               |

Table 29: Individual parts for C 7523

All of the parts marked with an \* are included in the maintenance set.

| Part                                       | Content   |
|--|---|
| Small maintenance kit (for annual service) | <ul style="list-style-type: none"> <li>■ Connection seals (items 5, 8, 11)</li> </ul>   |
| Large maintenance set (after 3 years)      | <ul style="list-style-type: none"> <li>■ Small maintenance set</li> <li>■ All internal elastomer seals of the ball valve</li> <li>■ Ball valve grip as tool</li> <li>■ Screws</li> <li>■ PTFE strip</li> <li>■ Silicone grease</li> </ul> |

Table 30: Maintenance sets

## 14 EU Declaration of Conformity



### (DE) EU-Konformitätserklärung

Hiermit erklären wir, dass das nachfolgend bezeichnete Gerät aufgrund seiner Konzipierung und Bauart sowie in der von uns in Verkehr gebrachten Ausführung den einschlägigen grundlegenden Sicherheits- und Gesundheitsanforderungen der aufgeführten EU-Richtlinien entspricht. Bei einer nicht mit uns abgestimmten Änderung am Gerät verliert diese Erklärung ihre Gültigkeit.

### (EN) EU Declaration of Conformity

We hereby certify that the device described in the following complies with the relevant fundamental safety and sanitary requirements and the listed EU regulations due to the concept and design of the version sold by us.

If the device is modified without our consent, this declaration loses its validity.

### (FR) Déclaration de conformité UE

Nous déclarons sous notre propre responsabilité que le produit ci-dessous mentionné répond aux exigences essentielles de sécurité et de santé des directives UE énumérées aussi bien sur le plan de sa conception et de son type de construction que du modèle que nous avons mis en circulation.

Cette déclaration perdra sa validité en cas d'une modification effectuée sur le produit sans notre accord explicite.

### (ES) Declaración de conformidad UE

Por la presente declaramos que, dados la concepción y los aspectos constructivos del modelo puesto por nosotros en circulación, el aparato mencionado a continuación cumple con los requisitos sanitarios y de seguridad vigentes de las directivas de la U.E. citadas a continuación.

Esta declaración será invalidada por cambios en el aparato realizados sin nuestro consentimiento.

### (PT) Declaração de conformidade UE

Declaramos pelo presente documento que o equipamento a seguir descrito, devido à sua concepção e ao tipo de construção daí resultante, bem como a versão por nós lançada no mercado, cumpre as exigências básicas aplicáveis de segurança e de saúde das directivas CE indicadas.

A presente declaração perde a sua validade em caso de alteração ao equipamento não autorizada por nós.

### Bezeichnung des Gerätes:

Chlorgasumschalter

### Description of the unit:

Chlorine gas change over

### Désignation du matériel:

Commutation du chlore

### Descripción de la mercancía:

Conmutador de cloro

### Designação do aparelho:

Comutador de cloro

### Typ:

C 7523

### Type:

### EU-Richtlinien:

2006/42/EG

### EU directives:

2014/35/EU

Die Schutzziele der Niederspannungsrichtlinie 2014/35/EU wurden gemäß Anhang I, Nr. 1.5.1 der Maschinenrichtlinie 2006/42/EG eingehalten.

The protective aims of the Low Voltage Directive 214/35/EU were adhered to in accordance with Annex I, No. 1.5.1 of the Machinery Directive 2006/42/EC.

### Harmonisierte Normen:

### Harmonized standards:

DIN EN ISO 12100:2011-03

DIN EN 61000-6-4:2011-09

DIN EN 61000-6-2:2016-05

### Dokumentationsbevollmächtigter:

### Authorized person for documentation:

Lutz-Jesco GmbH

Heinz Lutz  
Geschäftsführer / Chief Executive Officer  
Lutz-Jesco GmbH  
Wedemark, 01.03.2018

Lutz-Jesco GmbH  
Am Bostelberge 19  
30900 Wedemark  
Germany

## 15 Declaration of no objection

### Declaration of no objection

Please fill out a separate form for each appliance!

We forward the following device for repairs:

Device and device type: ..... Part-no.: .....

Order No.: ..... Date of delivery: .....

Reason for repair: .....

.....

.....

#### Dosing medium

Description: ..... Irritating: ☐ Yes ☐ No

Properties: ..... Corrosive: ☐ Yes ☐ No

We hereby certify, that the product has been cleaned thoroughly inside and outside before returning, that it is free from hazardous material (i.e. chemical, biological, toxic, flammable, and radioactive material) and that the lubricant has been drained.

If the manufacturer finds it necessary to carry out further cleaning work, we accept the charge will be made to us.

We assure that the aforementioned information is correct and complete and that the unit is dispatched according to the legal requirements.

Company / address: ..... Phone: .....

..... Fax: .....

..... Email: .....

Customer No.: ..... Contact person: .....

Date, Signature: .....

## 16 Warranty claim

### Warranty claim

Please copy and send it back with the unit!

If the device breaks down within the period of warranty, please return it in a cleaned condition with the complete warranty claim.

#### Sender

Company: ..... Phone: ..... Date: .....

Address: .....

Contact person: .....

Manufacturer order no.: ..... Date of delivery: .....

Device type: ..... Serial number: .....

Nominal capacity / nominal pressure: .....

Description of fault:.....

.....

.....

.....

.....

.....

.....

.....

.....

#### Service conditions of the device

Point of use / system designation:.....

.....

Accessories used (suction line etc.):.....

.....

.....

.....

Commissioning (date): .....

Duty period (approx. operating hours): .....

Please describe the specific installation and enclose a simple drawing or picture of the chemical feed system, showing materials of construction, diameters, lengths and heights of suction and discharge lines.



