

## Content

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## 1 Scope of delivery

The chlorine gas changeover unit C 7520 is delivered either as a ready-to-connect unit with a mounting plate or an assembly kit for integration in the pipe line. When unpacking, please ensure that the installation material (included in the scope of delivery) for wall fixing is not lost.

## 2 Device description

### 2.1 Technical data

Description		Value
Throughput	Chlorine gas	up to 200 kg/h
	Fluid chlorine	up to 1400 kg/h
Connections depending on the device version	Threaded connection	External thread 1" NPT
	Flange connection	Flange DN25 / PN40 with key and slot according to EN1092 Inputs: Groove flange (Form D) Output: Tongue flange (Form C)
Voltage supply		100 ... 240 VAC
Power consumption	In standby	5 W
	During changeover	max. 100 W
Material in contact with the media		steel, Monel, stainless steel, PTFE, silver
Pressure gauge	Measuring range	0 ... 16 bar (vacuum resistant)
	Accuracy	± 2.5 %
	Nominal size	Ø 63 mm
Load capacity of the relay contacts		max. 3 A / 250 VAC
Changeover time		max. 25 s
Operating pressure		0 ... 16 bar
Protection class		IP 65
Permissible ambient temperature		0-60°C
Weight with mounting plate		approx. 17 kg

Table 1: Technical data

### 2.2 Dimensions

All dimensions in mm

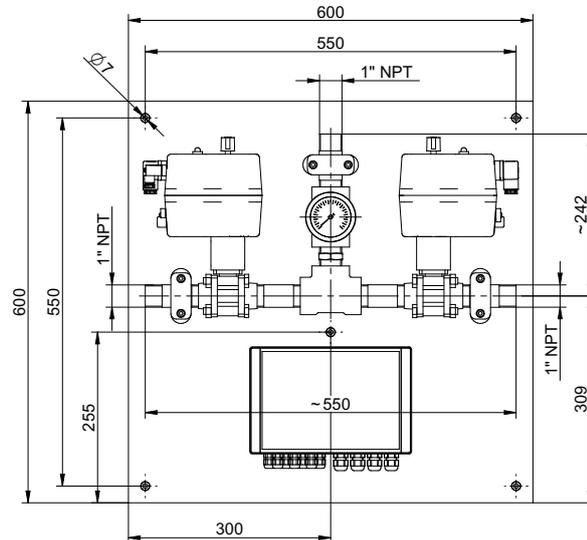


Fig. 1: Dimensions

## 2.3 Control box

### 2.3.1 Controls

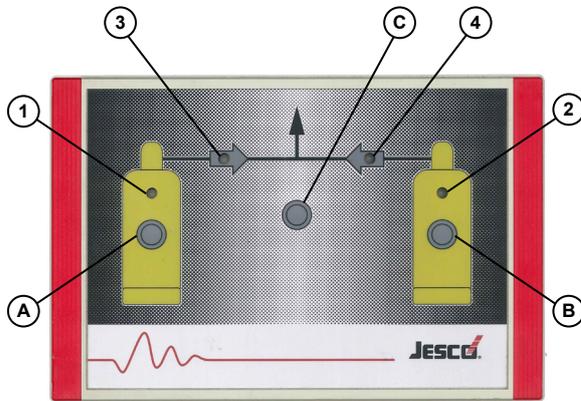


Fig. 2: Controls

No.	Type	Function
①	LED	green: Cylinder filled red: Cylinder empty
②	LED	
③	LED	green: Valve open yellow: Motor works red: Valve closed
④	LED	
A	Key	1. notify full cylinder ▶ LED switches to green
B	Key	2. switch manually
C	Key	Close both valves

Table 2: Functions of the controls

### 2.3.2 Functions

#### Automatic battery changeover

Should a chlorine supply battery run empty, the pressure in the system will fall and the contact pressure gauge will issue an electrical contact. The control changes the motor ball valves and ensures supply from the other supply battery. The empty supply battery is indicated by a red LED in the cylinder symbol.

After connecting the chlorine tank, the operator presses the key in the cylinder symbol. The LED will switch to green and if necessary, the device can switch back to this side.

#### Manual changeover

Manual changeover can be performed with the press of a key.

#### Manual STOP

Both valves are closed with the press of a key.

- Both LEDs in the arrow illuminate red.
- Jumper JP3 must be closed.

#### Remote indication empty

As soon as at least of the the supply batteries has been notified as empty, the relay deactivates and notifies an empty tank. If both batteries are registered as empty, the alarm relay deactivates.

#### Close valves following a gas warning

The closure of both valves can be triggered via an electrical contact. The relay contact of a gas warning device is connected to terminal 27/28 to this end.

With an active input::

- close both valves.
- The alarm relay deactivates and triggers an alarm.
- All LEDs flash red.

#### RESET

The system restarts afresh after a voltage interruption. Both valves are closed and subject to an electrical test. The system then moves into the standard start position: left valve open.

**2.3.3 Special operating states**

Operating state	LED display:	Relays empty	Relay alarm
<b>Waiting for supply</b> A supply battery is empty, it was subject to automatic changeover, the operating pressure has yet to normalise (waiting time 2 minutes)	Empty side: cylinder and arrow illuminate red. Active side: cylinder flashes green, arrow illuminates green	ON	OFF
<b>All empty</b> Both supply batteries are empty or the pressure gauge does not give a contact. <ul style="list-style-type: none"> <li>■ A valve is closed</li> <li>■ A valve is open</li> </ul>	Both cylinders: illuminate red Valve closed: Arrow illuminates red Open valve: Arrow illuminates green	ON	ON
<b>Gas alarm</b> The input contact terminal 27/28 was closed. <ul style="list-style-type: none"> <li>■ Both valves are closed</li> </ul>	All: flash red	OFF	ON
<b>Manual STOP</b> Key C was pressed. <ul style="list-style-type: none"> <li>■ Both valves are closed</li> </ul>	Both arrows: illuminate red Both cylinders: corresponding state of the cylinder	ON/OFF	OFF
<b>Fault</b> Motor was switched to MAN, limit switch in the motor has been incorrectly adjusted or electrical connection between motor and control not OK.	All: flash red	OFF	ON
<b>Jumper error</b> The jumpers on the control were set to an impermissible combination.	All: Flashing clockwise.	OFF	OFF

Table 3: Signals with special operating states

2.3.4 Terminal connection

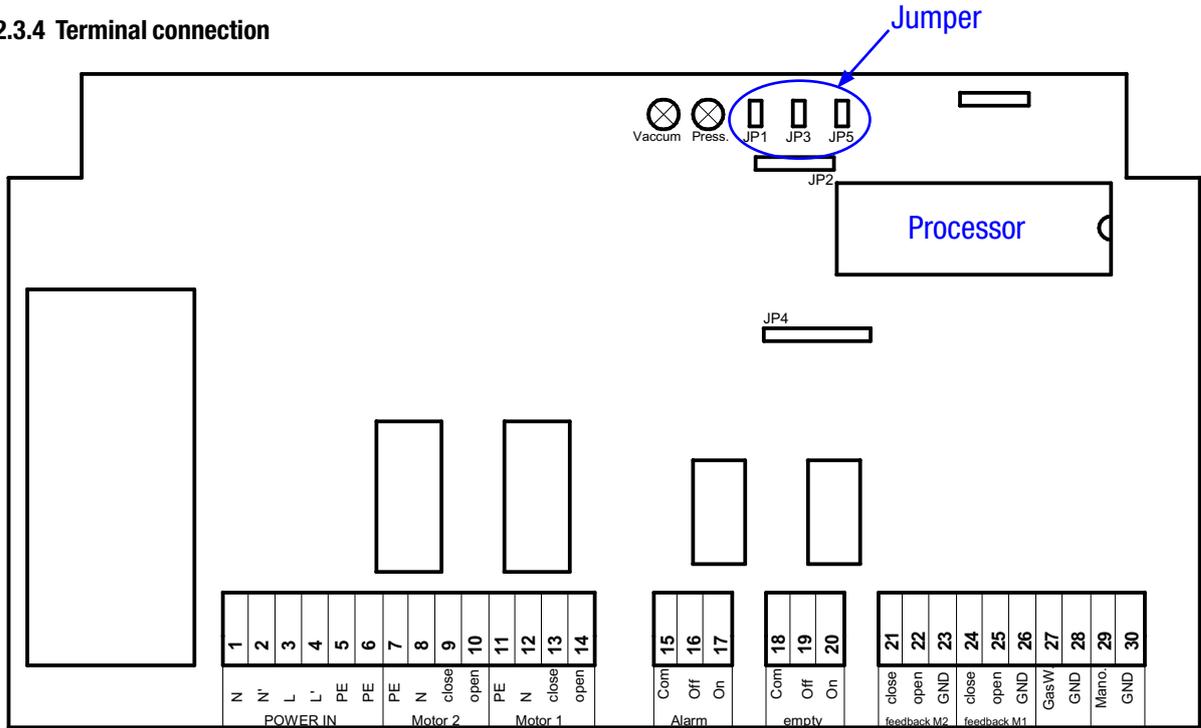


Fig. 3: Terminal connection

Terminal	Description	Function
1+2	N	Voltage supply input
3+4	L	
5+6	PE	
7	PE	Voltage supply for motor 2 (ball valve right)
8	N	
9	Close	
10	Open	
11	PE	Voltage supply for motor 1 (ball valve left)
12	N	
13	Close	
14	Open	
15	Com	Relay output "alarm" max. 3 A / 250 VAC NC (15-17 closed with power failure)
16	Off	
17	On	
18	Com	Relay output "empty" max. 3 A / 250 VAC NC (18-20 closed with power failure)
19	Off	
20	On	

Table 4: Terminal connection

Terminal	Description	Function
21	close	Position switch in motor 2 (ball valve right)
22	open	
23	GND	
24	close	Position switch in motor 1 (ball valve left)
25	open	
26	GND	
27	GasW.	Gas warning device input closed = alarm
28	GND	
29	Mano.	Contact pressure gauge switch closed = chlorine shortage
30	GND	

Table 4: Terminal connection

### 2.3.5 Jumper settings

The jumpers were set voltage-free. The change becomes active once the voltage supply has been switched on.

Jumper	Name	Position	Function
JP 1	fast	closed	Both motors activate at the same time.
		open (state of delivery)	The reserve battery valve opens only after the valve of the active battery has closed.
JP 3	pressure	closed (state of delivery)	The software of a positive pressure changeover unit is activated. JP1 and JP5 must be open.
		open	The software of a vacuum changeover unit is activated.
JP 5	rest evacuation	closed	Residual emptying activated
		open (delivery state)	Residual emptying deactivated

Table 5: Jumper

### 3 Installation

The pre-fitted chlorine gas changeover unit is fitted to the wall with the screws and washers included in the scope of delivery.

Devices without a wall plate are supported by the pipe line. The pipe line requires adequate support.

The location of installation must be easily-accessible to operating personnel in order to allow manual activation of the changeover unit where necessary. The changeover unit should not be subject to direct sunlight or any other similar bright direct light. This could obscure the operating displays.

#### 3.1 Hydraulic Installation

Caution!

Changeover is only suitable for use in a chlorinator system in positive pressure. The changeover unit is resistant against pure, dry chlorine (fluid or gaseous).

Caution!

The connections must be made carefully. Chlorine can also enter the atmosphere of the operation room from small leaks. It will combine with the air moisture to generate a corrosive air. The automatic chlorine cylinder changeover may only be operated with two connected chlorine gas batteries. If only one chlorine gas battery is connected, the non-utilised side must be closed tightly.

Perform the leak test with ammonia.

#### 3.2 Power connections

The electrical installation must be performed by a qualified electrician.

Ensure that the mains voltage corresponds with the values on the rating plate. Fuse the mains supply line in accordance with local specifications.

The changeover unit is ready for operation immediately after connection of the supply voltage. The motors need only be connected with devices without a mounting plate. The plugs are already fitted to the cables and are marked.

No.	Motor
1	Left valve
2	Right valve

Table 6: Number of the motors

Where required, the relay contacts for remote indication of the operating state can be connected. The assignment and function of the individual terminals can be taken from the terminal connection plan.

Every motor is equipped with an additional position switch for the remote indication of the operating state. It sends the positions OPEN and CLOSED. The terminal connection is pressed directly onto the motor.

Superfluous cable screw connections on the control must be sealed in order to maintain the protection class.

#### 3.3 Adjusting the contact pressure gauge

The factory settings of the pressure gauge switching contact have been set to c. 4 bar. The system could require calibration of the switching points. The front plate of the pressure gauge must be unscrewed to perform this task. The switching point is then adjusted by moving the red mark within the range 1 to 6 bar.

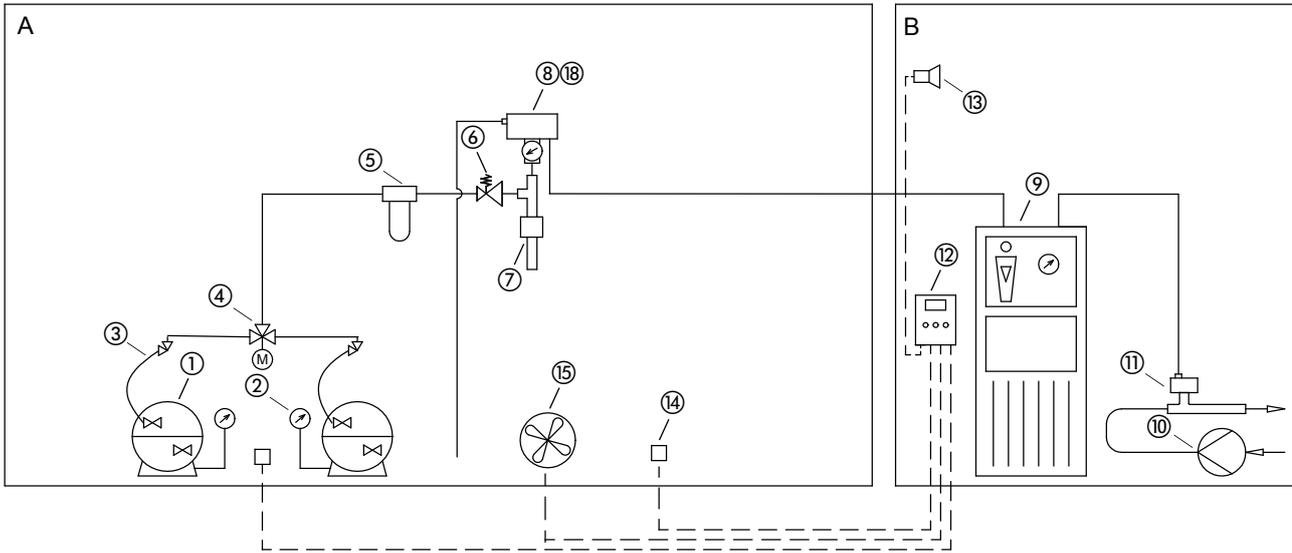


Fig. 5: Installation example

<b>A</b>	<b>Room for the chlorine supply</b>
1	Chlorine barrel
2	Chlorine barrel scale
3	Manifold
4	Changeover valve
5	Chlorine gas filter
6	Pressure reducing valve
7	Moisture eliminator with heating collar
8	Vacuum regulator
14	Gas sensor
15	Entrance port of the chlorine eliminator

<b>B</b>	<b>Dosing device room</b>
9	Dosing device
10	Motive water pump
11	Injector with non-return valve
12	Gas warning device
13	Horn

# Pressure chlorine changeover unit C 7520

## 4 Operation

### 4.1 Normal mode

#### Automatic changeover

Should a chlorine supply battery run empty, the pressure in the system will fall and the contact pressure gauge will issue an electrical contact. The control changes the motor ball valves and ensures supply from the other supply battery. The empty supply battery is indicated by a red LED in the cylinder symbol.

#### Waiting time

After changeover, the control undergoes a waiting time of c. 2 minutes, during which time the operating pressure has the opportunity to normalise. This waiting time is shown by the flashing of the green cylinder symbol.

#### RESET for a full chlorine tank

After connecting the full chlorine tank, the operator presses the key in the cylinder symbol. The LED will switch to green and if necessary, the device can automatically switch back to this side.

Further control functions are described in Chapter 2.3.2.

### 4.2 Manual mode

The motor valve can be activated by hand if necessary (e.g. following a current output). To this end, the changeover lever on the motor is set to manual. The hand grip can then be turned freely. Automatic changeover is now no longer possible. Make sure to return to automatic operation. Turn the hand grip slightly when changing over to automatic operation until it locks in.

Label on the motor	Motor operating mode
MAN	Manual mode
AUTO	Automatic operation

Table 7: Motor operating mode

## 5 Shutdown

Chlorine gas is hygroscopic and together with the moisture, forms hydrochloric acid, which destroys the dosing device. As a result, all connections must be closed carefully upon shutdown of the chlorine gas dosing system.

All pipes and valves must be flushed with dry air or nitrogen.

We recommend storage of the device in a heated dry room after long operation interruptions.

When dismantling the device, the lines must be sealed airtight for the reasons outlined above.

Look out for condensate in the lines during reactivation. It may be necessary to blow them out with dry air or nitrogen.

## 6 Maintenance

### 6.1 Maintenance intervals

To avoid hazardous incidents, chlorinators must be regularly maintained. We recommend the following maintenance intervals:

Interval	Maintenance
After 1 year	Minor maintenance: <ul style="list-style-type: none"> <li>■ Leak test</li> <li>■ Functional control</li> </ul>
After 3 years	Major maintenance: <ul style="list-style-type: none"> <li>■ Replace all seals</li> </ul>
After 5 years	<ul style="list-style-type: none"> <li>■ Replace the pressure gauge</li> </ul>

Table 8: Maintenance intervals

### 6.2 Minor maintenance

The device exterior is cleaned and checked for any corrosion damage.

#### Checking for leaks

Even the smallest leakages of chlorine will attract moisture and result in the formation of hydrochloric acid. The leakage rate increases quickly due to corrosion. As a result, every leak must be remedied immediately.

Leaks are to be located with ammonia solution. Move an open cylinder with ammonia along the installation whilst the system is filled with chlorine pressure. Leakages become visible because the ammonia vapour for combines with the chlorine to form a white dust. In particular, pay attention to the following points:

- All locations on which corrosion is visible.
- Thread and flange connections
- Control rods of the ball valves

If necessary, the gland screws of the ball valves can be tightened. A description is available in the ball valve instructions.

#### Functional control

Operate the changeover unit in normal operation.

- Both chlorine supply batteries are connected
- Tank valves are opened
- One side of the changeover unit opened
- Injector switched on

Connect the tank valves of the active chlorine supply battery. The pressure on the pressure gauge falls and when the switching point has been reached, the ball valves change their switch position.

Open the tank valves and press the key in the cylinder symbol. The LED switched to green.

Connect the tank valves of the other supply battery. The device must switch back to the other supply side.

### 6.3 Major maintenance

Replace all seals on the ball valves. A description is available in the ball valve instructions.

Proceed in the same fashion as in the small maintenance.

### 6.4 Replace the pressure gauge

1. Disconnect the pressure gauge cable from the control. Unscrew the pressure gauge from the connecting piece. This requires some force, as it is stuck in.
2. Clean the internal thread on T-piece.
3. Glue in the new pressure gauge and allow the glue to harden for 24 hours. Lay the cable to the control and connect it. Pull all the cable screw connections to the control.
4. Adjust the contactor on the pressure gauge to the same value that was set on the pressure gauge.
5. Then perform a leak check and a function test as described under "minor maintenance".

## 7 Troubleshooting

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 RESET key in the cylinder symbol was not pressed.	The RESET key in the cylinder symbol must be pressed after changing the cylinder. The LED 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 tank is still full.	The maximum supply volume from the battery was exceeded. Possible causes: <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> </ul>	<ul style="list-style-type: none"> <li>■ Connect sufficient chlorine tanks and open the valves.</li> <li>■ Remove simultaneously from both tank batteries for a shock chlorination. Switch the motors on MAN previously.</li> </ul>
	The switching point on the contact pressure gauge has been adjusted incorrectly.	See 3.3 "Adjusting the contact pressure gauge".
The valves are not activated subsequently, rather simultaneously.	The jumpers in the control have not been connected correctly.	Adjust the jumpers to the delivery state. See chapter 2.3.5.
All LEDs flash red.	A motor has been switched to manual mode	Set both motors to AUTO Start a manual changeover by pressing the key in the cylinder symbol.
	A cable connection between the motor and control has been interrupted, the position switch in the motor has been adjusted incorrectly or a motor is defective.	Check whether the plugs on the motors are loose. If you do not experience any success: inform Lutz-Jesco service.
	The gas warning device contact (terminal 27/28) is closed.	Locate and redress the cause.
The control shows an unusual illumination or flashing pattern.	A particular operating state is given.	See tables in chapter 2.3.3.

Table 9: Troubleshooting

**8 Spare parts**

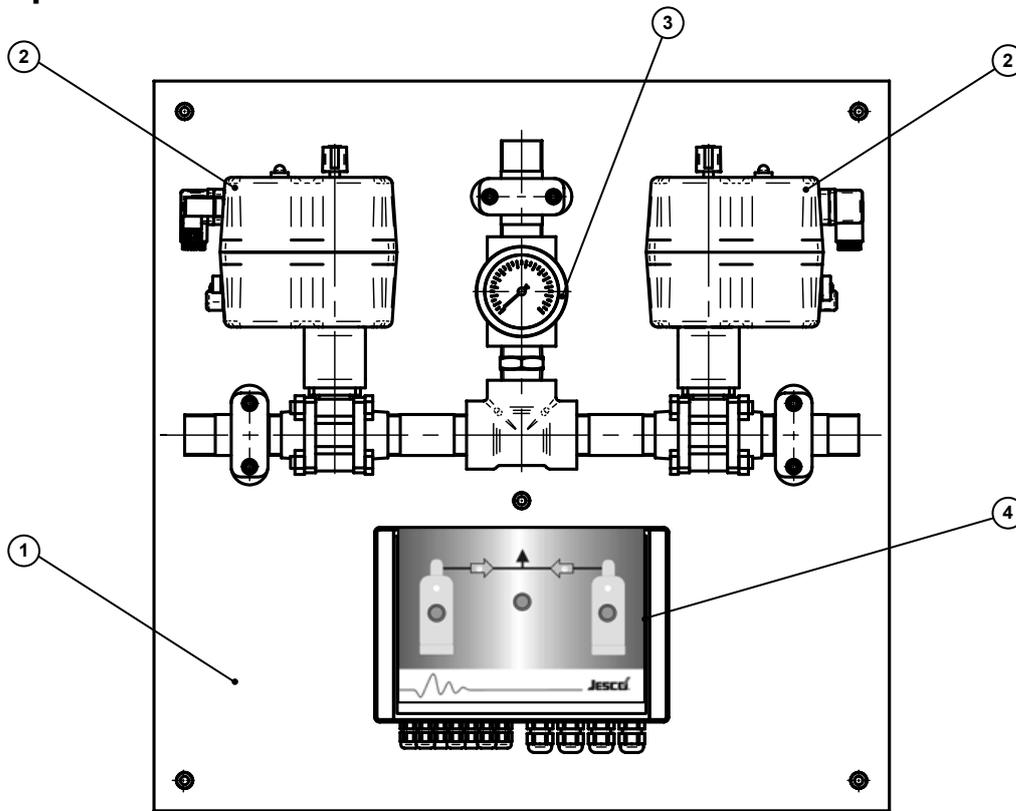


Fig. 4: General view

Position	Qty.	Description	Info	Order-No.
1	1	Baseplate	PP, 600x600 mm	35790
	1	Mounting kit for plate	A4	34439
2	2	Servomotor	85 - 240 V, AC/DC, 90°	88820
	1	Cam switches adjusting tools		W00037
	2	Replacement ball valve	Innengewinde 1" NPT Flansche DN 25 / PN 40	22300059 22300060
3	1	Contact pressure gauge	Ø63, G1/4 axial	24087653
			Ø100, G1/2 unten	24087342
4	1	Control unit complete	100 - 240 V, 50 - 60 Hz	22400012
	1	Processor (programmed)		79583
		IC-gripper (for processor exchange)		79804
		Maintenance set for C7520 (after 3 years) 2x maintenance set ball valve	from 08 / 2014 onwards	41218

Table 10: Spare parts