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1 Scope of delivery

The chlorine gas changeover unit C 7522 is delivered as a ready-to-connect unit with or without a mounting plate (optional). 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
Flow rate with chlorine gas		up to 100 kg/h
Connections		PVC-screw connection DN25/Ø32
Voltage supply		110 ... 240 V AC
Power consumption	In standby	5 W
	During changeover	max. 100 W
Material in contact with the media		PVC, PTFE, silver, FPM
Pressure gauge	Measuring range	-1 ... 0 bar
	Accuracy	± 2.5 %
	Nominal size	Ø 63 mm
Load capacity of the relay contacts		max. 3 A / 250 V AC
Changeover time		max. 34 s
Operating pressure		-1 ... 0 bar
Protection class		IP 65
Permissible ambient temperature		0-60°C
Weight with mounting plate		approx. 9 kg

Table 1: Technical data

2.2 Dimensions

All dimensions in mm

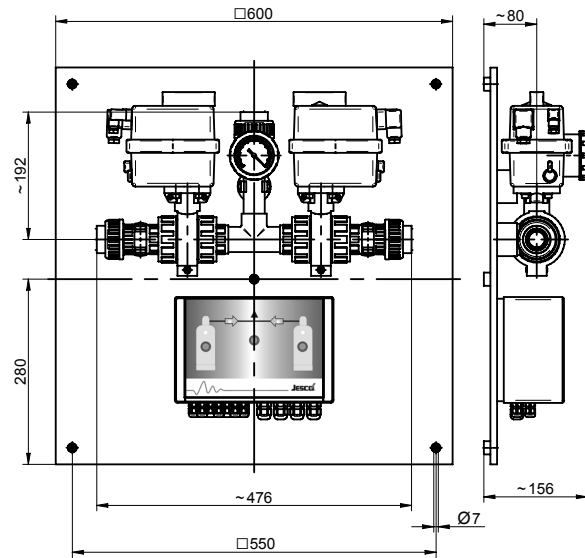


Fig. 1: Dimensions

2.3 Control box

2.3.1 Controls

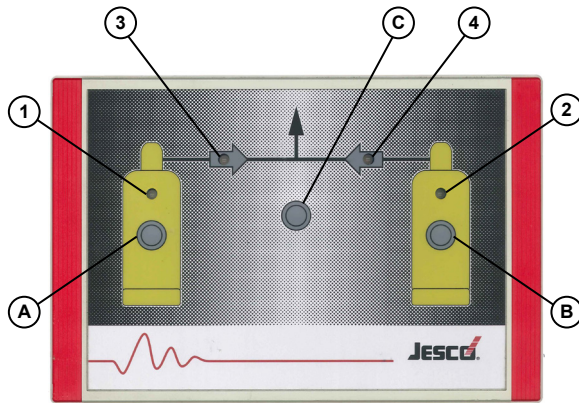


Fig. 2: Controls

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	Open both valves

Table 2: Functions of the controls

2.3.2 Functions

Automatic battery changeover

Should a chlorine supply battery run empty, the vacuum in the system will become stronger 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.

Residue discharge

A combination of an almost empty chlorine tank a high need for chlorine could lead to early changeover, as the pressure in the chlorine tank will sink. The residual emptying function periodically switches back to the supply battery notified as being empty and causes the consumption of the residue.

- Activate via jumper JP 5
- Waiting time before the return to the empty battery. 15 minutes
- max. time until residual emptying: 30 minutes

Residual emptying is only active if a supply battery is registered as being empty. Pressing the key in the cylinder symbol (key A or B) leads to notification of the empty battery as being full; the residual emptying function will be deactivated.

Manual changeover

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

Shock chlorination

This function ensures simultaneous removal from both supply batteries. This enables the dosing of large volumes of chlorine from relatively small supply batteries.

- Jumper JP3 must be open.

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
Waiting for supply 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
Residue discharge A supply battery is empty, automatic changeover. Residual amounts are removed periodically from the battery registered as empty. <ul style="list-style-type: none"> ■ Valve of the empty batteries open ■ Valve of the full batteries closed 	Empty cylinder: flashes yellow Full cylinder: illuminates green Arrow of the empty side: illuminates green Arrow of the full side: illuminates red	ON	OFF
All empty Both supply batteries are empty or the pressure gauge does not give a contact. <ul style="list-style-type: none"> ■ A valve is closed ■ A valve is open 	Both cylinders: illuminate red Valve closed: Arrow illuminates red Open valve: Arrow illuminates green	ON	ON
Gas alarm The input contact terminal 27/28 was closed. <ul style="list-style-type: none"> ■ Both valves are closed 	All: flash red	OFF	ON
Shock chlorination Key C was pressed. <ul style="list-style-type: none"> ■ Both valves are open. 	Both cylinders: flash green Both arrows: illuminate green	OFF	OFF
Fault 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
Jumper error 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

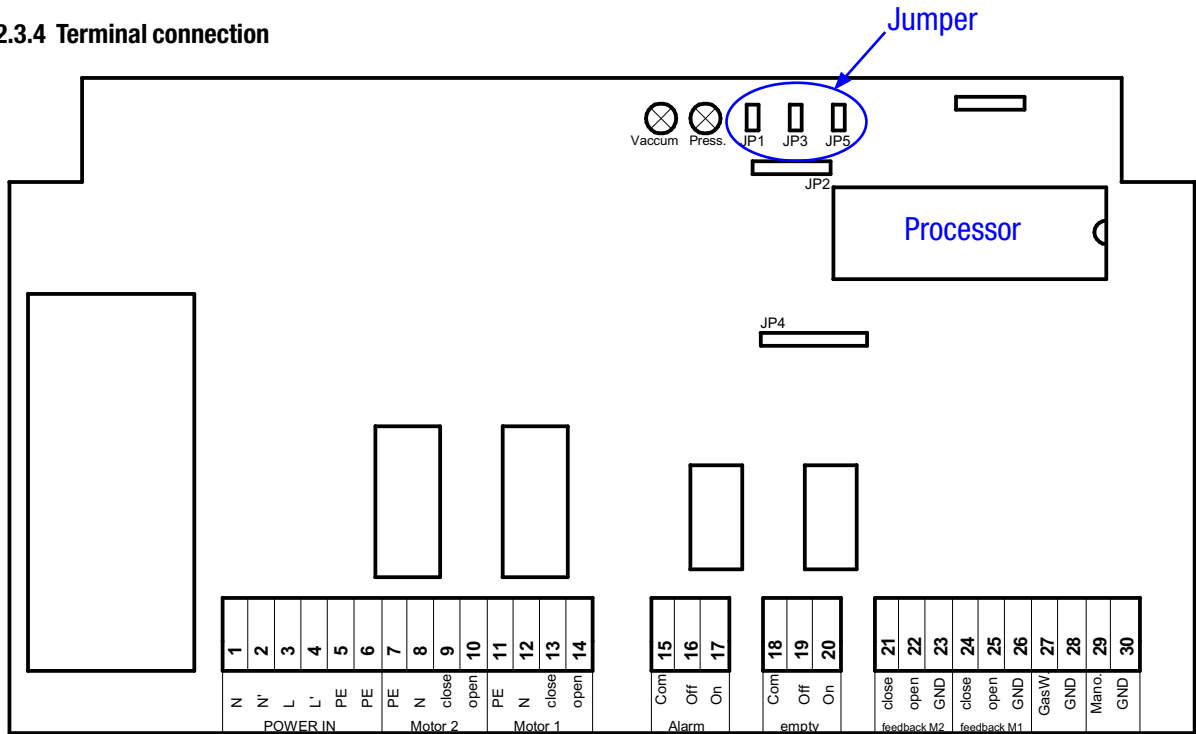


Fig. 3: Terminal connection

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 (delivery state)	Both motors activate at the same time.
		open	The reserve battery valve opens only after the valve of the active battery has closed.
JP 3	Pressure	closed	The software of a positive pressure changeover unit is activated. JP1 and JP5 must be open.
		open (delivery state)	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 vacuum chlorine gas chlorinator. Operation with positive pressure will result in the destruction of the changeover unit. Danger of accident!

Either a PVC pipe or a PE hose is used to connect the vacuum system to the changeover unit. When using a PVC pipe, ensure that it is installed free of stress in order to prevent line fractures or leaks at the connecting parts. When using a 8/12mm PE hose, use the adapter set 35793; when using a 12/16mm PE hose, use the adapter set 35794.

Caution!

The connections must be made carefully. Air will be sucked in to the line system at any leak point. Together, the moisture and the chlorine will result in the development of deposits, the valves will become soiled or damaged in the further course. In consequence, do not operate the device with open connections.

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.

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 has been set to c. -0.4 bar. The system could require that the injector suction output and the switching point of the pressure gauge be calibrated. 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 -0.1 to -0.5 bar.

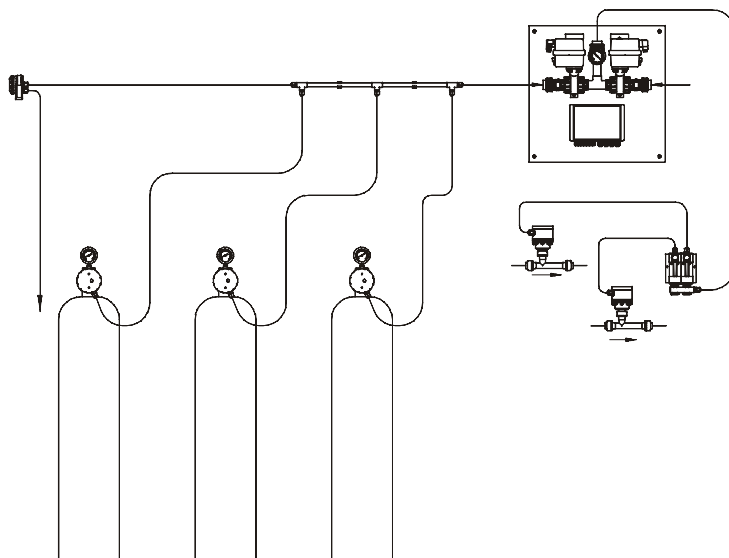


Fig. 4: Installation example

4 Operation

4.1 Normal mode

Automatic changeover

Should a chlorine supply battery run empty, the vacuum in the system will become stronger 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. If possible, all pipes and valves should 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 vacuum lines should 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.

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"> ■ Clean the device thoroughly ■ Leak test ■ Functional control
After 3 years	Major maintenance: <ul style="list-style-type: none"> ■ Replace all seals
After 5 years	<ul style="list-style-type: none"> ■ Replace the pressure gauge

Table 8: Maintenance intervals

6.2 Minor maintenance:

The device exterior is cleaned and is subject to a visual inspection for interior soiling. Check the state of the O-rings in the screw connections. Renew if necessary.

The pipe unions are then tightened hand-tight.

The union nuts on the ball valves must be tightened sensitively. If they are over-tightened, the ball valve will become difficult to manipulate. Check the movement of the ball valve by switching the motor to MAN and then moving the grip on the top of the motor.

Checking for leaks

Connect both chlorine supply batteries. Allow the injector to work until the pressure gauge on the changeover unit shows a minimum of -0.5 bar. Switch off the injector. The vacuum may not decline visibly within 5 minutes.

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 vacuum on the pressure gauge becomes stronger 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:

Renew all seals in the system:

- O-rings in the screw connection of the inputs and outputs
- Seals in the ball valve

If necessary, rub in silicone grease into all the seals.

Proceed in the same fashion as in the small maintenance.

6.4 Replace the pressure gauge

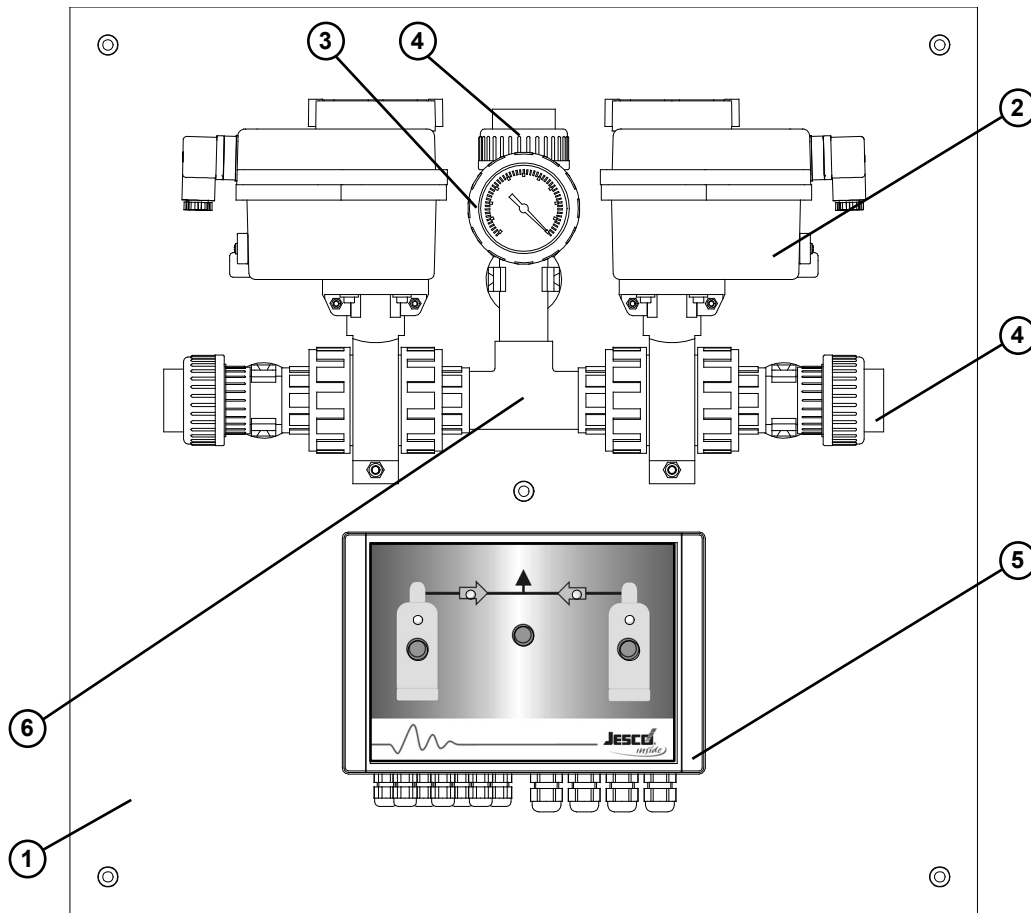
1. Remove the pressure gauge cable from the control and remove it from the cable conduit. Unscrew the pressure gauge from the connecting piece.
2. Clean the internal thread on the PVC connection piece
3. Fit the new pressure gauge with approx. 5 long PTFE strips. Lay the cable to the control and connect 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 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 yellow.	<p>No fault has occurred.</p> <ul style="list-style-type: none"> ■ Press the RESET key after changing the tank. See the functional description residual emptying in 2.3.2. ■ Deactivate the residual emptying function if necessary. See 2.3 5 "Setting the jumper"
	<p>The maximum supply volume from the battery was exceeded. Possible causes:</p> <ul style="list-style-type: none"> ■ Insufficient chlorine tanks connected ■ Not all tank valves were opened. ■ Short-term strongly increased extraction due to shock chlorination ■ A number of tanks are already empty 	<ul style="list-style-type: none"> ■ Connect sufficient chlorine tanks and open the valves ■ Remove simultaneously from both tank batteries for a shock chlorination ■ Should the tanks be emptied at differing rates, arrange for the adjustment of the vacuum regulator and activate the residual emptying function.
	The switching point on the contact pressure gauge has been adjusted incorrectly.	See 3.3 "Adjusting the contact pressure gauge"
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

Vacuum chlorine changeover C 7522



Position	Qty	Description	Order-No.	
1	1	Base plate	PP, 600x600 mm	35787
	1	Mounting kit for base plate	A4	34439
2	2	Actuator drive	85-240V, AC/DC, 90°	88813
	1	Tool for setting the limit switches		W00037
	2	Replacement ball valve	PVC/FPM DN25	22400028
	1	IC-gripper (for processor exchange)		79804
	2	Ball valve complete	85-240V, AC/DC PVC/FPM DN25	22400030
3	1	Contact pressure gauge	Ø63, G ¼ axial	24087556
4	3	O-Ring	FPM, Ø32,9x3,53	80077
5	1	Control unit complete	100-240V, 50-60Hz	22400012
	1	Processor (programmed)		79583
6	1	T-piece with connectors for ball valves and vacuum gauge including pipe union at the outlet	DN25	41045
		Maintenance set for C7522 (after 3 years) 2x maintenance set ball valve All O-Rings		41216