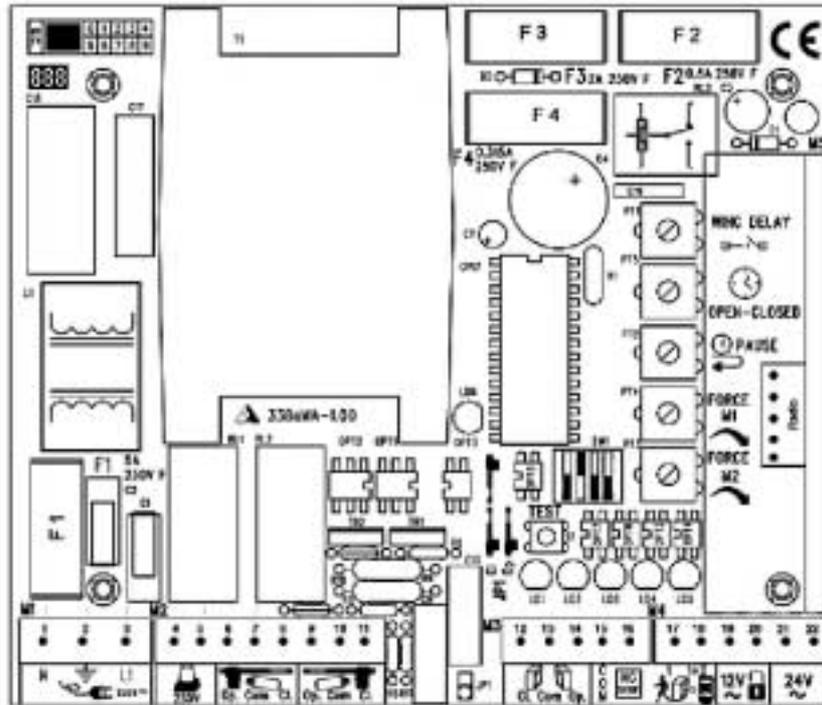


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ELECTRONIC CONTROL

The control board should be the last item to be connected, i.e. mounting the motors, laying the necessary cable and fitting light barriers or contact strips. If installation is to be performed in a permanent location, a means of disconnecting the equipment from the mains supply with a contact clearance of at least 3 mm is needed (master switch).

Please note: in these instructions, relay contacts are designated NC (*normal closed*) or NO (*normal open*).

- NC contacts are closed and open
- NO contacts are open and close

Humidity and water will destroy the control board. Always make sure that water, humidity and condensation cannot enter the control box. It is vitally important that all openings and cable glands are sealed so that they are watertight.

ELECTRICAL INSTALLATION

Installing the electronic control board: the motor control board is a microprocessor-controlled electronic appliance featuring state-of-the-art technology. It is equipped with all the connecting options and functions needed to guarantee safe operation. The control box incorporating the motor control board should be installed with the cable intakes pointing downwards. It should not be continuously exposed to direct sunlight. The electronic equipment enables the pull and push forces to be set with great accuracy. If installed and set correctly, the gate/door can be stopped manually. When in motion, the gate/door can be stopped at any time by operating the remote control, the push-button or the key-operated switch.

The gate/door wing must be fitted with a robust end stop for the 'OPEN' and 'CLOSED' positions as the gate/door drive has no limit switches.

Current distribution: the cable leading from the drive arm must be laid in a standard watertight distribution box. A permanently installed cable can be laid from the distribution box to the control unit. It is often possible to wire the drive, which is fixed beside the control unit directly to the box. Never install distribution boxes underground.

Generally speaking, the following minimum cable cross-sectional areas must be adhered to:

- 100-230Volt 1.5mm² or more
- 0-24Volt 0.5mm² or more

Tips: Bell wire is often problematic in practical use because it loses too much voltage if long lengths of wire are used.

Segregate the cables in cable trunking, i.e. motor cable and light barrier cable, especially in the case of key-operated switches and ON switches (from the house wiring system) to prevent interference where long lengths of cable are used.

OVERVIEW OF CONNECTIONS

Motors: connect the control unit exactly in accordance with the overview of connections. The gate/door wing, which opens first, must be motor 1 (M1) and when it first moves it must OPEN the gate/door. If it closes the gate/door, swap terminal 6 with terminal 8 or, in the case of motor 2 (M2), swap terminal 9 with terminal 11.

The capacitor supplied as standard must be installed between cables 6 and 8 and 9 and 11 (for space reasons, the capacitor can also be installed in a distribution box). Make sure that its terminals are properly connected and that there is a good electrical connection. The capacitor determines the force which the motor subsequently develops.

OVERVIEW OF CONNECTIONS

Description of terminal occupancy

	Mains cable connection:
Terminal 1	N (blue)
Terminal 2	PE (green/yellow)
Terminal 3	L1 - 230 V (black)
	Flashing lamp connection:
Terminal 4	N
Terminal 5	L1 (230V)
	Motor connections:
	First motor (M1):
Terminal 6	M1 direction of OPEN (brown/black) (+ capacitor)
Terminal 7	N (blue)
Terminal 8	M1 direction of CLOSED (black/brown) (+ capacitor)
	Second motor (M2):
Terminal 9	M2 direction of OPEN (black/brown) (+ capacitor)
Terminal 10	N (blue)
Terminal 11	M2 direction of CLOSED (brown/black) (+ capacitor)
	Infrared light barrier
Terminal 12	photocell (NC) active when closing
Terminal 13	COM
Terminal 14	photocell (NC) active when opening (without light barrier - jumper between 12, 13 & 14!)
	Description of terminal occupancy
	EMERGENCY STOP FUNCTION
Terminal 15	COM
Terminal 16	Stop (NC) with emergency stop switch jumper between 15 and 16
	Control line connection
Terminal 17	External push-button (NO) motor 1 (ped. function)
Terminal 15	COM
Terminal 18	External push-button (NO) motors 1+2
	Electric lock connection
Terminal 19	Distribution voltage 12 V AC
Terminal 20	Distribution voltage 12 V AC
	Connection for additional equipment & light barrier
Terminal 21	Distribution voltage 24 V AC (500 mA max.)
Terminal 22	Distribution voltage 24 V AC

DESCRIPTION OF JUMPER

JP1: MOTOR

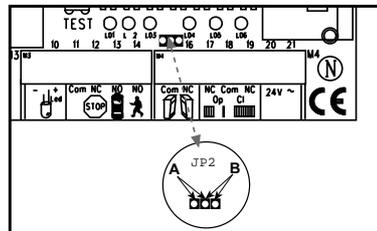
OPEN: (without jumper): only for single-wing gates (only motor 1 operating).

CLOSED: (with jumper): only for double-wing gates (motors 1 and 2 operating).

JP2: channel 2 radio receiver

If both learning channels are put together (A-side), the memory capacity of the radio receiver doubles in size. The gate can then only be fully opened. The "Pedestrian" function is no longer available. A-side: (optional) receiver channel 2 is connected up to receiver channel 1.

B-side: (standard) the two radio receiver channels work separately from one another.



SAFETY

FLASHING LAMP (OPTIONAL)

Usage of a flashing lamp is mandatory. It serves a safety-related purpose in that it warns persons in the vicinity of the gate/door that the given gate/door is moving. The flashing lamp is fixed using screws and wall plugs. The buried cable has to be run up to connect with the lamp. Generally speaking, it is installed at the highest possible point (on a pillar). Cross-sectional area: 0.75mm², 3-pole voltage: 230 Volt/AC.

INFRARED SENSOR (OPTIONAL)

The IR Sensor provides additional safety to the gate/door and must be used. Its point of installation depends on the design of the given gate/door. Generally speaking, the light barrier is fitted at around knee height, approx. 35 cm above ground level. IR Sensors comprise of a transmitter element and a receiver element, which must be located opposite one another. A screwdriver can be used to open the light barrier housing (plastic). The IR Sensor is fitted to the wall with small screws and wall plugs. Usage of a single set of IR Sensors is a minimum requirement; we recommend using two sets of IR Sensors (and other safety facilities if necessary).

It is possible to connect the IR Sensor as described below. Active when 'OPENING' (terminal 14) or active when 'CLOSING' (terminal 12). The instructions describe how to connect a single IR Sensor and therefore uses both fuse inputs, i.e. active in both directions. DIP switch 4 on the control unit controls the door wing's response if the light beam is interrupted while the gate/door is closing. An active IR Sensor (only) stops the gate/door or an active IR Sensor reverses the direction of the gate/door.

The transmitter element needs a 2-pole cable, the receiver element a 4-pole one. Cable cross-sectional area: 0.5mm² or more. Voltage: 12/24Volt AC/DC. Terminals (12-13-14) (22/23).

EMERGENCY STOP (OPTIONAL)

If a switch is connected, it can be used to stop or disable the installation. This immediately interrupts movement of the wing. Depending on the level of safety needed, the contact can also be connected on the gate/door to the IR Sensor's contacts. This immediately stops any wing movement.

DEAD MAN'S OPERATING MODE

In dead man's operating mode, a gate/door can be operated without safety facilities insofar as the operator has a clear view of it during the whole period of operation. There are 3 DIP switches located on the upper part of the control unit. Set DIP switch 2 to the ON position. The control unit only functions in this case if a signal can be continuously transmitted via the handset, key-operated switch or push-button. Any interruption in the signal causes the gate/door to stop and the next signal sent moves it in the opposite direction.

CONTROL LINES

It is possible to open only one gate/door or both gates/doors. This function is also possible when using the radio remote control. See initial setting of remote control. The test button on the control unit always switches on both motors. If the installation has overlapping wings, the wing delay must be set. Wings that do not overlap may not close simultaneously - risk of persons trapping themselves (see 'Description of Potentiometer' section).

INSTALLATION OF KEY-OPERATED SWITCH

Cable connections as per wiring plan.

ELECTRICAL LOCK (OPTIONAL)

An electrical lock can be connected to terminals 19 - 20. Output voltage: 12 V AC. See 'DIP Switch Settings' section too!

DESCRIPTION OF DIP SWITCHES

The DIP switches control the general functions of the installation:

- Automatic closing or default
- Dead man's operating mode
- Electric lock function
- Response of light barrier

DIP switch 1	ON	Automatic closing
	OFF	Default
DIP switch 2	ON	Dead man's operating mode
	OFF	Default
DIP switch 3	ON	Electric lock function
	OFF	Default
DIP switch 4	ON	Light barrier (for closing) stops the gate/door
	OFF	Default light barrier (for closing) opens the gate/door

DESCRIPTION OF POTENTIOMETER

- **Force M1 Force M2:**

Adjust the force with which the door operates for each wing separately. The rotary potentiometer is used to make fine gate/door adjustments.

Should the force generated by the moving wing at its closing edge exceed 400 N, additional safety features (IR sensors, contact strips) must be fitted. Any safety features fitted must comply with the appropriate standards (Europe: EN60335-1). See 'Safety Rules' section too.

- **PAUSE**

This function is only active if DIP switch 1 is set to ON. It adjusts the time for which the gate/door is kept open before it closes again. Adjustable: 8-200 seconds.

- **OPEN-CLOSED**

Adjust the maximum running time of the wings. Set the running time to approx. 30% and then test. Correct adjustment is obtained when the drive continues to run (hum) against the end stop for 3-5 seconds each time in one complete cycle. This is necessary because the required running time is affected by external influences and it must be ensured that the end position is reliably reached (wind, temperature, changes in ground conditions). This is why end stops in the OPEN and CLOSE directions are stipulated as being mandatory.

Adjustable: 7-60 seconds

- **WING DELAY**

Controls the wing delay in the case of installations with overlapping wings. Wing M1 opens first and closes last. A delay must always be set in order to make sure that no one can trap themselves between two closing wings.

Adjustable: 0-35 seconds

DESCRIPTION OF LEDES

LED 1	red	Monitors the light barrier for door closing. LED ON = OK
LED 2	red	Monitors the light barrier for door opening LED ON = OK
LED 3	yellow	Monitors the emergency stop contact ON=OK
LED 4	green	Indicates signals from key-operated switches, push-buttons or radio. Single-wing gate/door opening function ON = signal present.
LED 5	green	Indicates signals from key-operated switches, push-buttons or radio. Both-wing gate/door opening function ON = signal present.
LED 6	red	Flashes slowly = OK Flashes quickly = check all connections to the motors, capacitor, flashing lamp and remove any humidity from terminals.

DESCRIPTION OF FUSES

F1	5,0A	Main fuse: Protects the entire control unit and the motors. Never replace this fuse by one with a higher rating.
F2	0,5A	Secondary fuse for 24 V output.
F3	2,0A	Secondary fuse for electric lock 12 V output. Please bear in mind the power requirement of the electric lock you use.
F4	0,315A	Secondary fuse for logic circuitry: push-buttons, emergency stop, light barrier, receiver.

TEACHING THE REMOTE CONTROL

Up to 15 remote controls can be programmed on each self-learn channel. In the case of large installations it is advisable for organizational reasons, to use an external receiver or a key-operated switch or a code lock, which should be installed at the entrance. The radio receiver plugs in on the side and has two small self-learn buttons.

The radio remote control is licensed by the Post + Telecommunication Office and costs nothing to operate. It works on the basis of a private security code (approx. 3.5 billion code options) that is pre-programmed via computer. Your gate/door drive can thus only be activated by a correspondingly coded handset. The range obtained depends on the given local environment. The receiver element of the motor control has an integrated self-learn function. It can be set to the handset's pre-programmed code by pressing the self-learn push-button.

The control unit has two self-learn channels and is therefore able to open or close one gate/door or both gates/doors simultaneously via appropriate operation of the handset. Should, for instance, channel 1 (2) receive the handset's remote control code, only one wing will be opened. If you teach the remote control on channel 2 (1), you will be able to open both wings via the appropriate push-button. To memorize the code all you need do is press the button of your choice on the handset and keep it depressed while, at the same time, briefly pressing the self-learn button on the electronic unit with the other hand. Repeat this procedure for all other transmitters.

DELETION OF REMOTE CONTROL CODE

Press the appropriate self-learn button (1 or 2) on the receiver control board for *approx. 10 seconds* until the self-learn LED extinguishes. The codes previously 'learned' allocated to the given self-learn button have thus been deleted.

REPROGRAMMING

For reprogramming purposes, the coding procedure mentioned above should be repeated for all the remote controls in use and/or their appropriate operating buttons.

The radio remote control's range varies according to the given local environment. Keep the push-button on the handset depressed until such time (approx. 2 seconds) as the gate/door is seen to move.

Your radio remote control is digitally coded, i.e. accidental operation of the gate/door drive is more or less impossible.

INITIAL OPERATION

Proceed carefully and deliberately. Do not rush the process of making the basic settings. It may take up to 30 minutes to complete initial settings. If applicable get help from a second person so that changes on the control unit can be made more easily (power OFF or ON).

1. Connect the control unit including the safety inputs.
2. Check the LEDs.
3. Move the gate/door to a half-opened position and engage it, then press the test button. Both wings must then open. If one wing closes instead of opening, the terminals on the given wing's motor have been connected incorrectly and the motor cables for the relevant motor must be swapped round (see connections). The cables to which the capacitor is also connected are the ones that need to be swapped round. They determine the direction in which the motors run. Then repeat the entire process until both wings open when they first move. Important, always switch the power off to do this.
4. If both wings open when they first move once the control unit has been connected, proceed as follows.
5. Interrupt the power supply to the control unit and reconnect it after a few seconds. Close both gate/door wings manually and engage both wings.
6. Adjust all the potentiometers to 30% and make sure that DIP switch 1 is set to OFF (down).
7. Then use the test button to switch on the control unit and observe what happens. Close the gate/door again by using the test button WITHOUT having made any adjustments to the settings. If the gate/door does not close completely by itself, release the drive and close it manually after switching off the control unit.
8. Then adjust the potentiometer to a different (higher) value in line with the value suggested by practical experience from trial operation (e.g. increase running time, correct force, wing delay). Then make a second trial and repeat the procedure above closing the gate/door first with the test button before making any further settings.
9. Once all settings have been made, check that the light barriers, push-buttons, flashing lamp, handset, accessories etc. function correctly. If you require automatic closing, modify the setting of the DIP switches and adjust the potentiometer for a pause.
10. Show anyone who has to deal with the gate/door how the gate/door moves, how the safety functions operate and how the drive can be actuated manually.

Declaration of Conformity

Control unit forCB1
is in conformity to the applicable sections of
StandardsEN300220-3, EN55014, EN61000-3,
.....ETS 300 683, EN60555, & EN60335-1
per the provisions & all amendments of
EU Directives73/23/EEC, 89/336/EEC

Declaration of Incorporation

Control unit CB1 meets, when installed and maintained according to all the manufacturer's instructions, the provisions of EU Directive 89/392/EEC and all amendments.

I, the undersigned, hereby declare that the equipment specified above and any accessory listed in the manual conforms to the above Directives and Standards

Chamberlain GmbH
D-66793 Saarwellingen
January, 2003

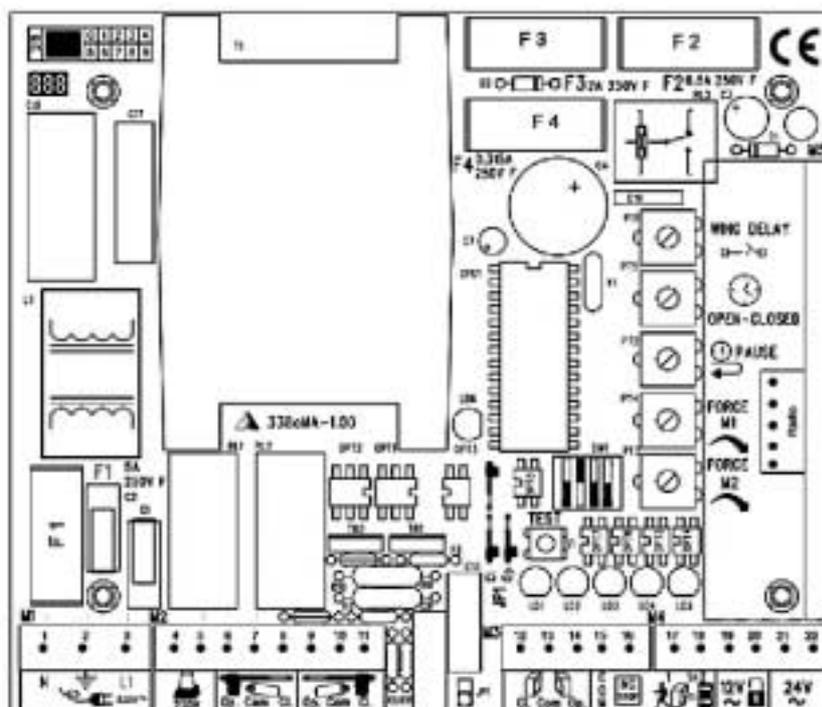


Colin B. Willmott
Colin B. Willmott
Chief Engineer

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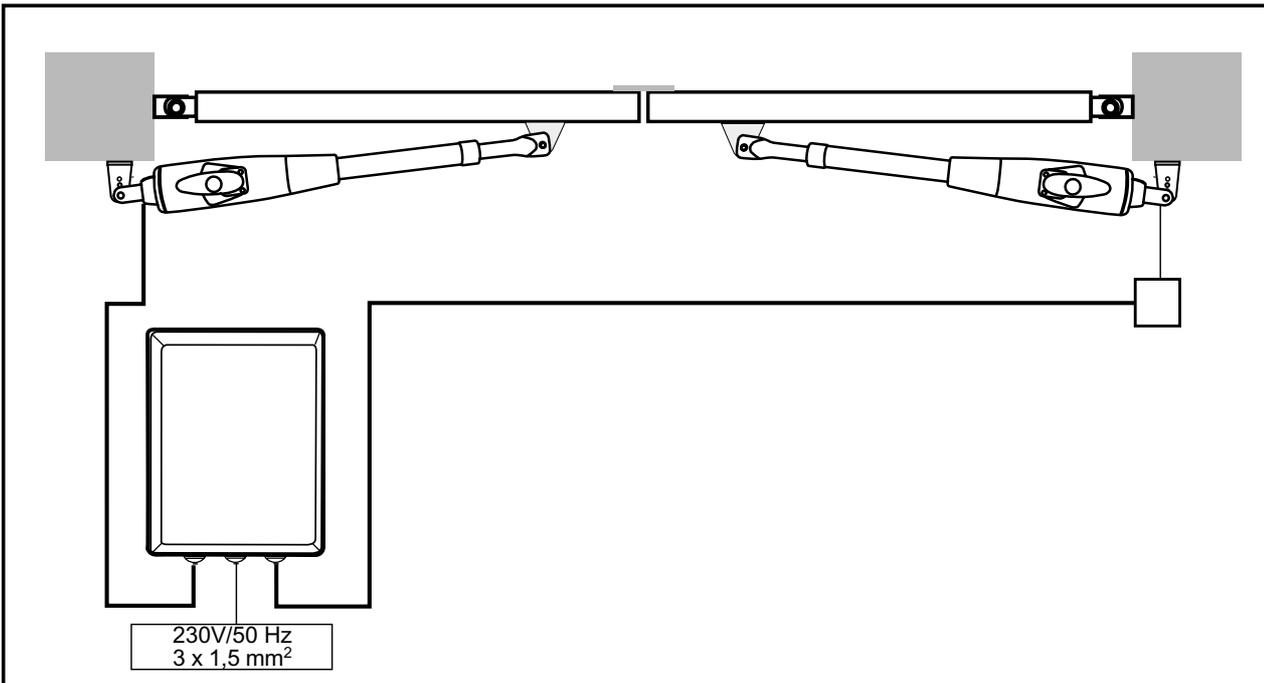
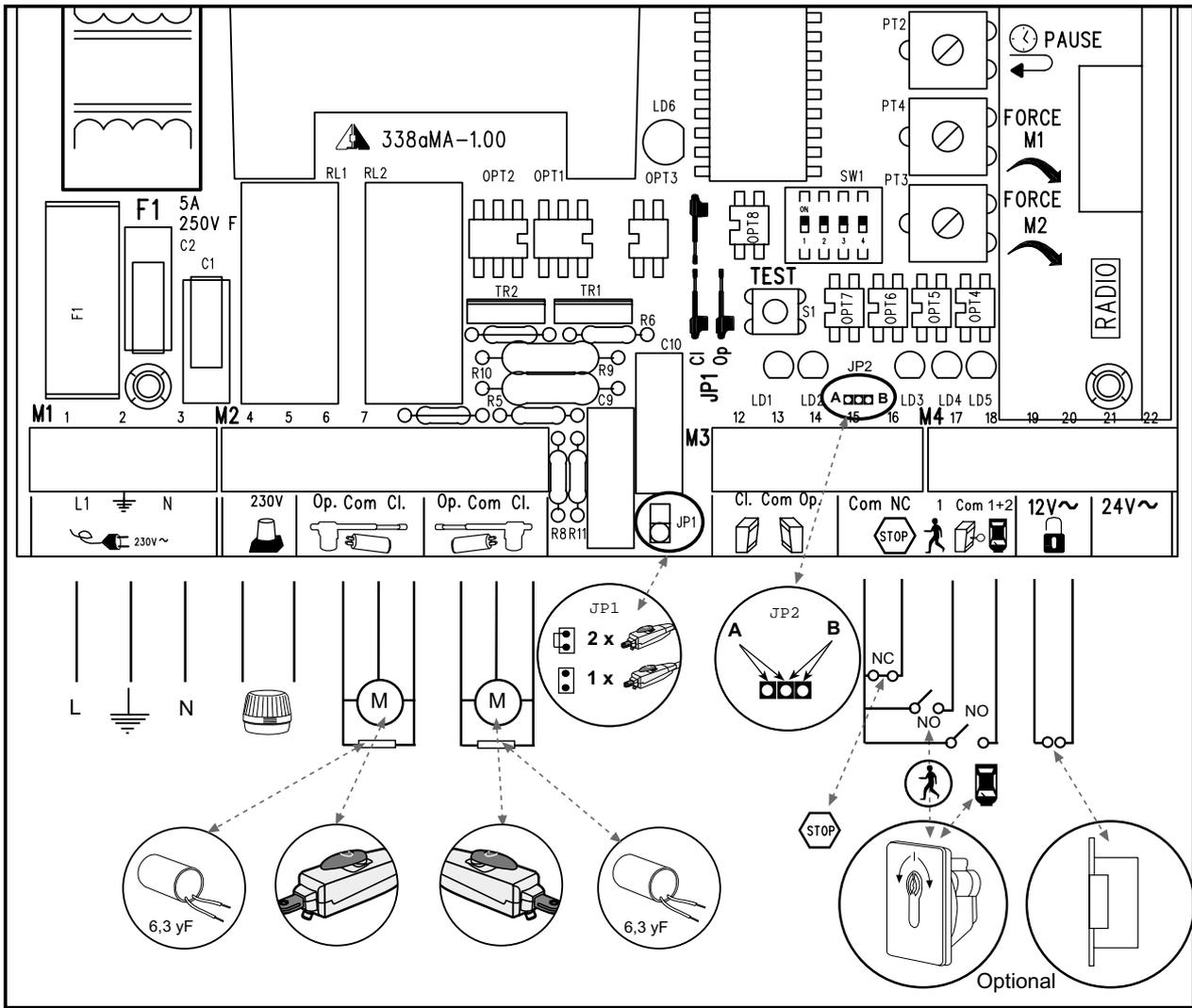


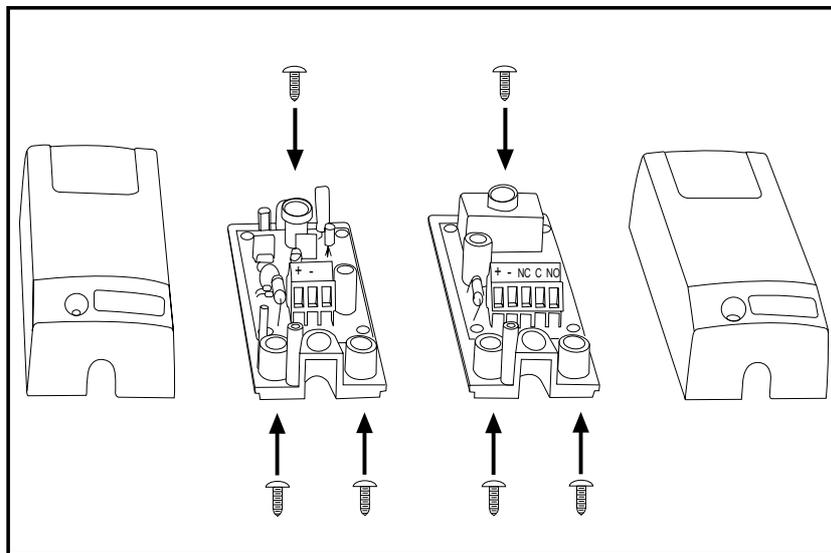
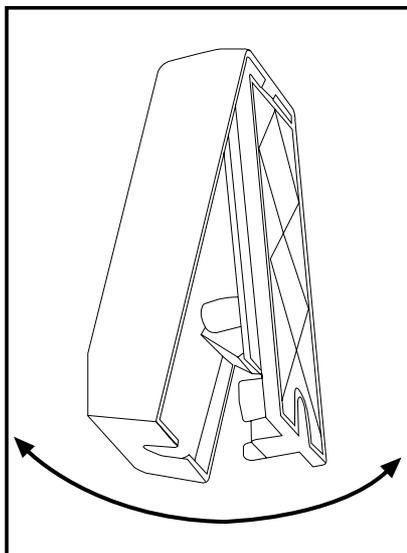
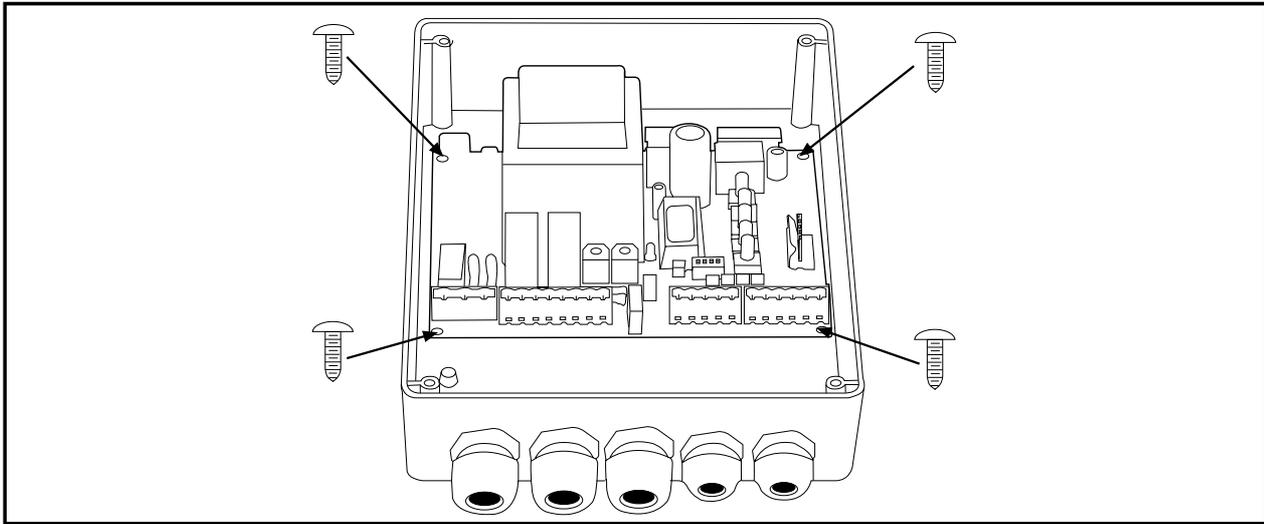
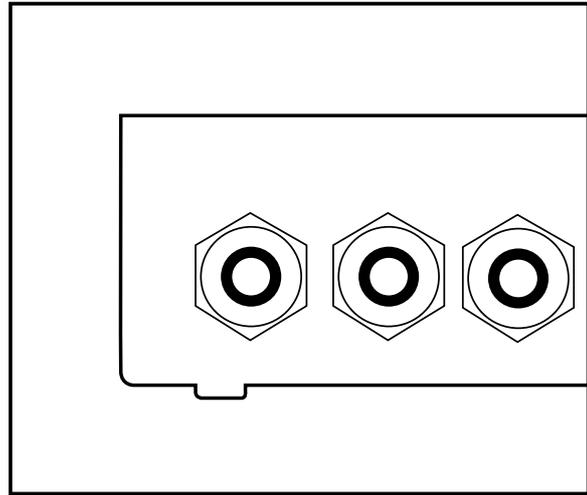
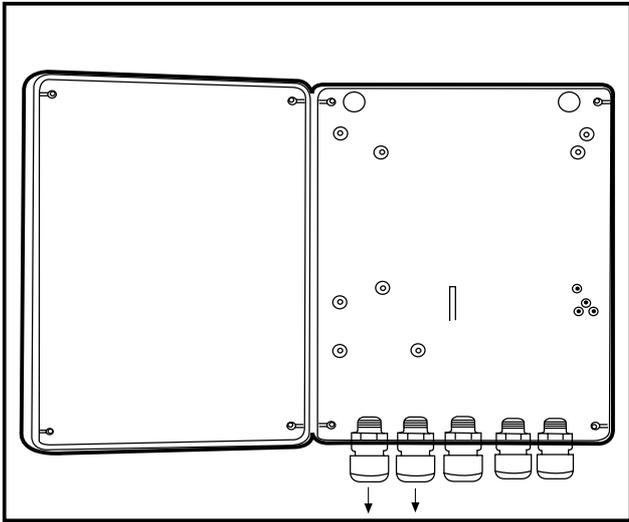
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Optional = 4x



2x Aktiv



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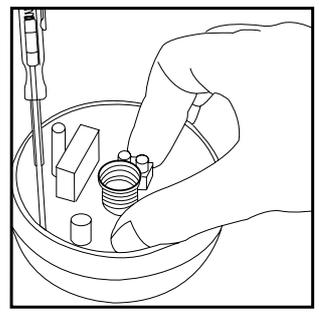
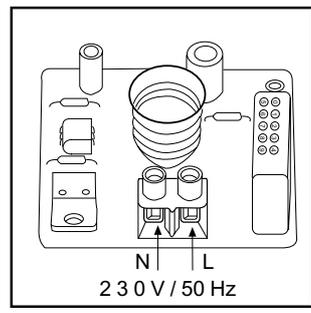
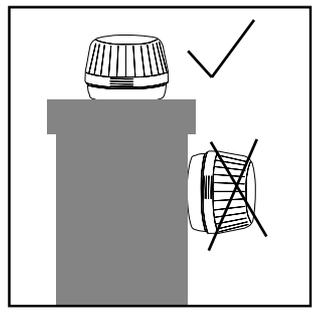
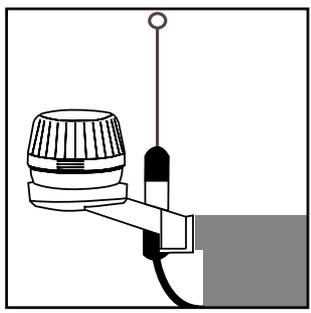
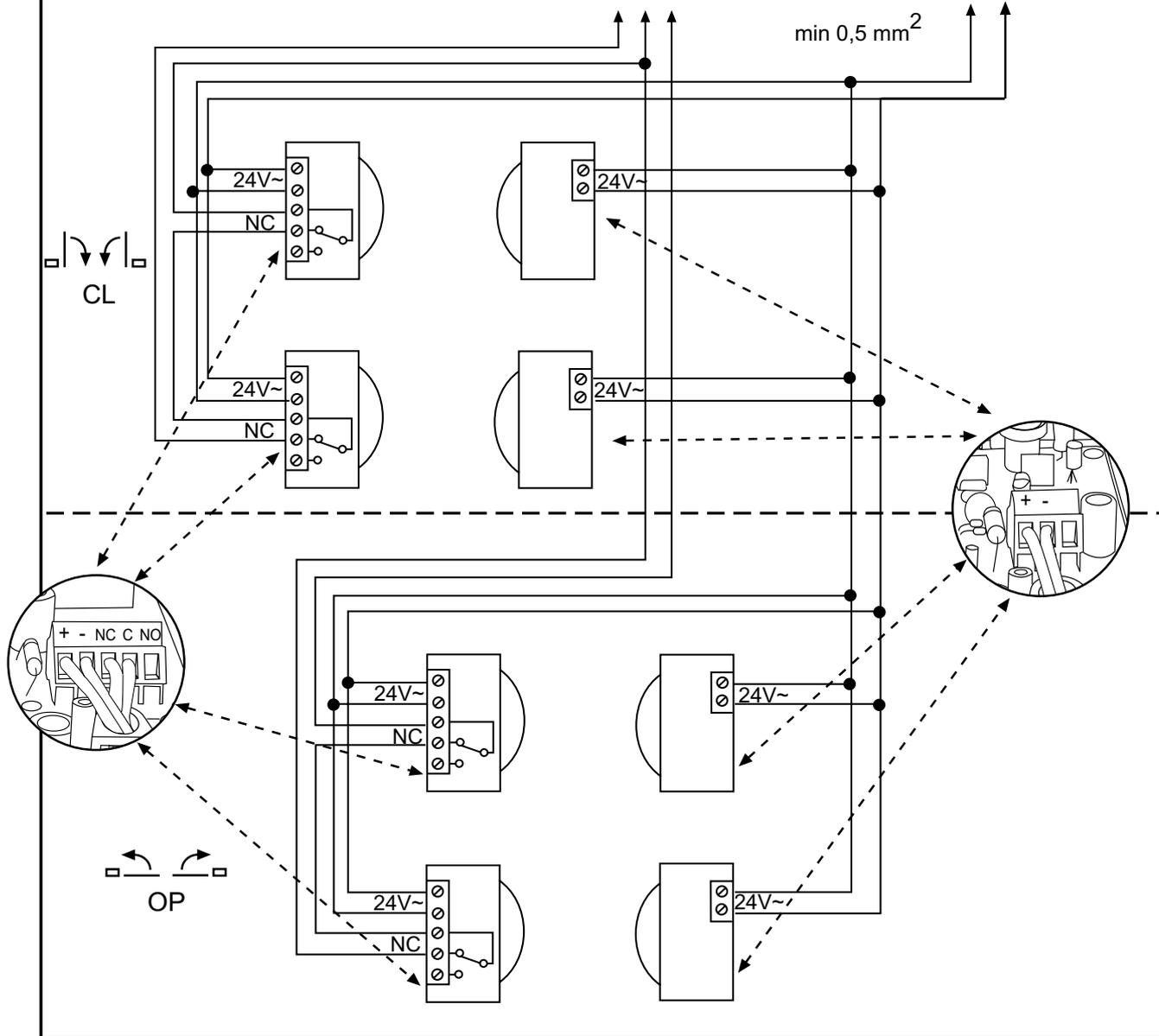


2x Aktiv



L1	N	230V	Op. Com Cl.	Op. Com Cl.		Cl. Com Op.	Com NC	1 Com 1+2	12V~	24V~											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22

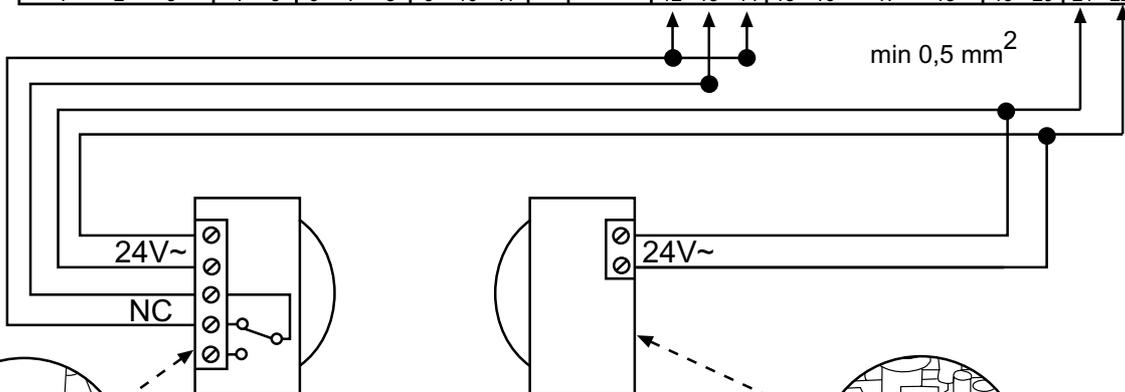
min 0,5 mm²



Standart = 1x



Aktiv +



Optional = 2x



Aktiv +

