Control 44/45

GB Instructions for Initial Operation and Wiring Scheme Manual

Control Unit for Door Operators – Industrial Use

Please keep these instructions for further reference.

Marantec

1. Contents

2. Meaning of symbols

Warning! Risk of personal injury!
There follow important safety advice which must be followed in order to prevent personal injuries!

Attention! Risk of material damage!
There follow important safety advice which must be followed in order to prevent material damage!

Operational check:
After connecting and programming most of the control elements, it is advisable to test the function of the control unit. Any fault can then be detected immediately and time is saved in trouble-shooting.

Advice / Tip

2. Meaning of symbols

Symbols of control unit, operator etc.:


On, mains voltage


Impulse


Malfunction


Open


Close

Power limit


Stop


External control elements


Electronic aerial


External photocell


Transmitter
(optosensor, photocell)


Receiver
(optosensor, photocell)


Closing edge safety device


RPM sensor


To control unit


Cable slack switch


Connection lead


Wicket door switch


Automatic timer


Lighting

3. Pictures to control unit Control 44 / Control 45

Overview of door and surrounding area:

A Control panel of control unit
B Connectons in control unit
C Connections in door operator
D Setting the reference point
E Site electric socket CEE-Standard 16A
F Connection to door leaf

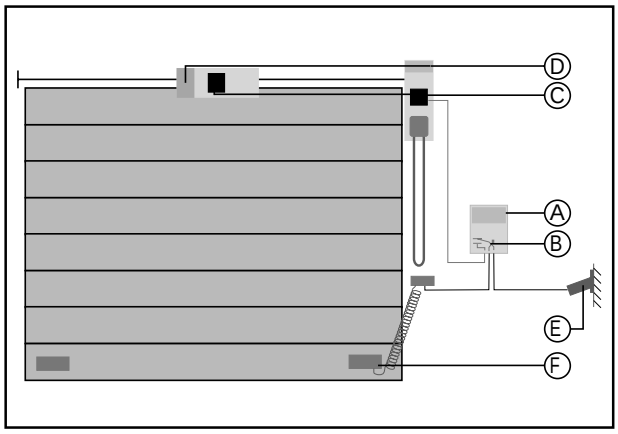


Fig. 1: Overview of door and surrounding area

Key switch:

0 red OFF
I blue ON

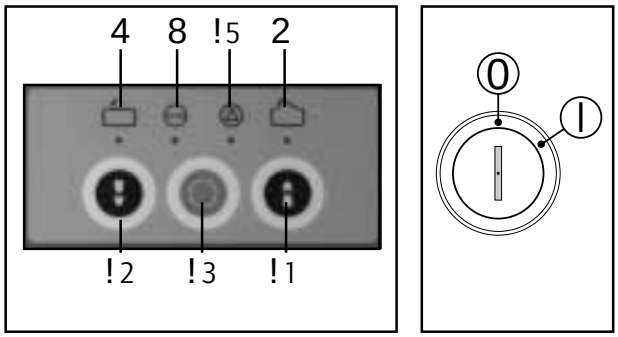


Fig. 2: Membrane keypad and key switch

LED's:

1. Photocell
2. Travel limit OPEN
3. Times for automatic timer
4. Travel limit CLOSE
5. Reference point
6. Malfunction
7. Impulse
8. Voltage
15. Closing edge safety device

Control elements:

10. PROGRAMMING button
11. OPEN button
12. CLOSE button
13. STOP button

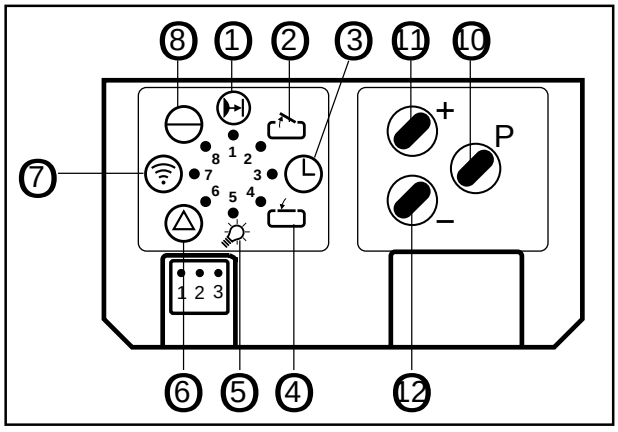


Fig. 3: Control panel of control unit

3. Pictures to control unit Control 44 / Control 45

Plug connections:

25. X30 Closing edge safety device
26. X20a Electronic aerial
27. X10 External control elements
28. X20 External photocell
29. X40 RPM sensor
31. X5 Keypad on cover
32. X8b Signal light relay
33. X8a Limit relay
35. X8d Relay for special functions

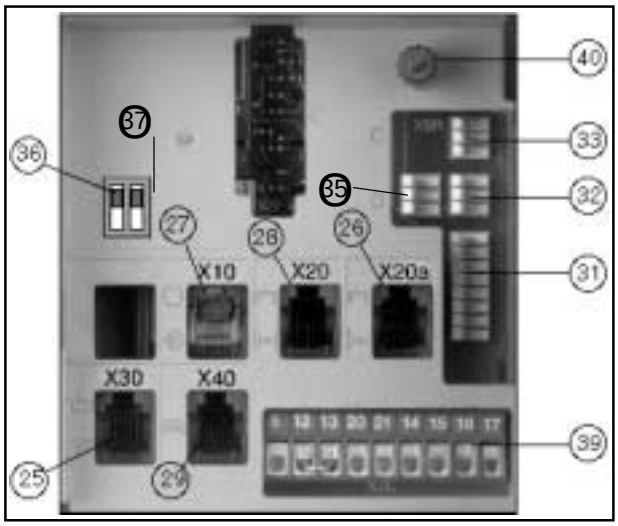


Fig. 4: Connections in control unit (extract)

Connecting terminals:

39. X2c External control elements

Programming buttons:

36. S20 Photocell function
37. S20a Photocell function

40. Operation tool

4. Important security notes

This control unit may only be connected and put into operation by qualified and suitable trained specialist personnel. For the purpose of this description qualified and suitable trained specialist personnel are persons who are adequately instructed or supervised by qualified electricians and are thus in a position to recognize the hazards that electricity can cause. Moreover, they must hold qualifications consistent with the work being carried out. This presupposes in particular

- knowledge of applicable electro-technological regulations,
- training in the use and maintenance of adequate safety equipment,
- first aid training.

Attention!
Before carrying out any cabling work, it is essential to disconnect the control unit from the mains supply.

- Observe local safety regulations!
- Always lay mains cable and control cable separately.
  Control voltage 24 V DC.

Attention!
Before putting the control unit into operation, it is essential to ensure, that there are no persons or objects within the door's aeria of operation, since a number of settings set the door in motion!

- All available emergency command devices must be tested prior to initial operation.
- The door operator must be installed with the door closed!
- After installation and initial operation, those persons or their representatives responsible for operating the door system must be shown how the door system works!
- No cables should be fed into the top of the control unit!
- For technical reasons, the first time the control unit is switched on, the door opens fully.

4. Important security notes

Attention!
Special note for installation according to protection category IP 65: At the very latest following initial operation, the cable with plug allowing connection to the mains must be replaced by a fixed direct mains connection. At the same time a mains isolator switch must be fitted.

Attention!
Non-compliance with this warning and safety instructions can lead to personal injury and material damage.

5. Initial operation of control unit Control 44 / Control 45

5.1 Connection control unit — door operator

• Connect control unit according to fig. 5 or 6.

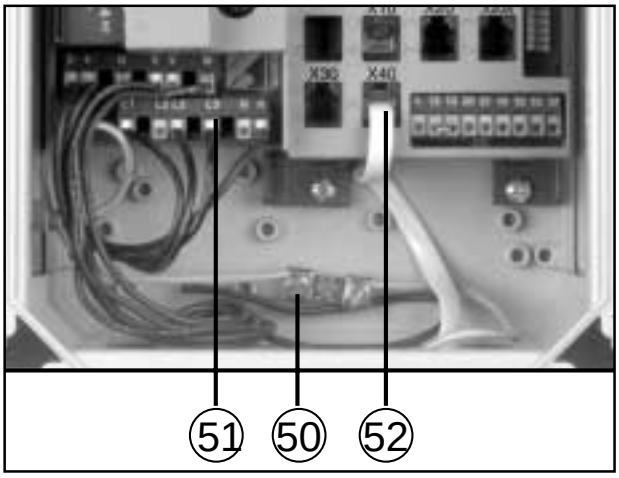


Fig. 5: Connections in control unit Control 44

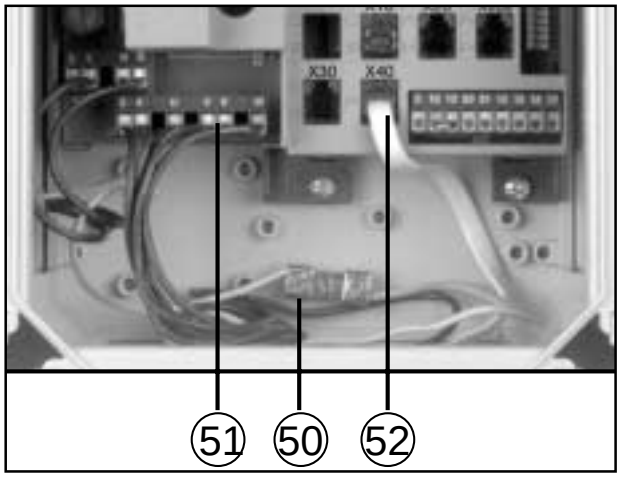
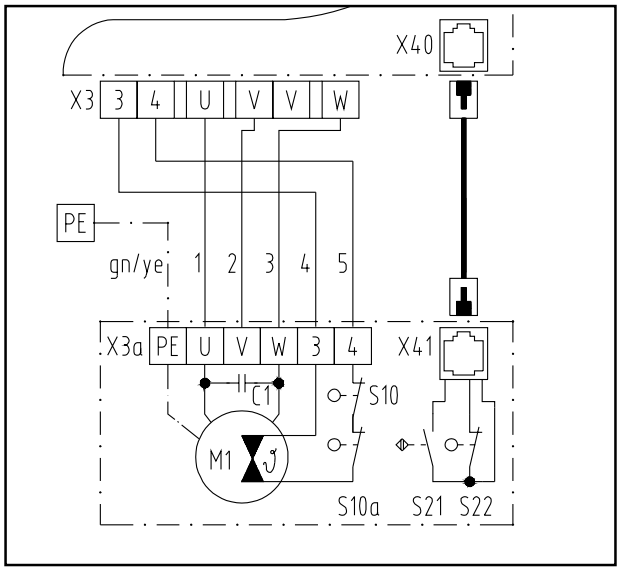
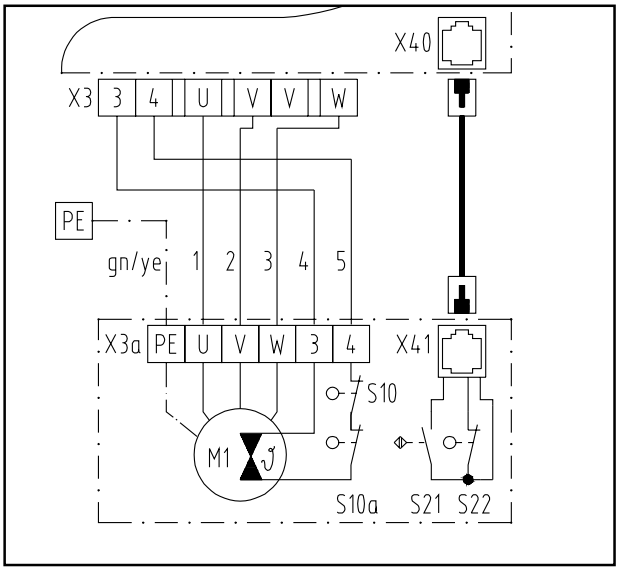


Fig. 6: Connections in control unit Control 45





Connections in control unit:

50. protective terminal
51. mains lead operator
52. RPM sensor socket

Legend wiring diagrams:

Connecting terminals:

X3	operator
X3a	motor

Plug connections:

X40	RPM sensor operator
X41	RPM sensor motor

5.1.1 Dynamic 121 – 128 / Dynamic 300

• Connect control unit to door operator according to fig. 7.

Connections in door operator:

53. Protective terminal
54. Mains lead
55. RPM sensor plug

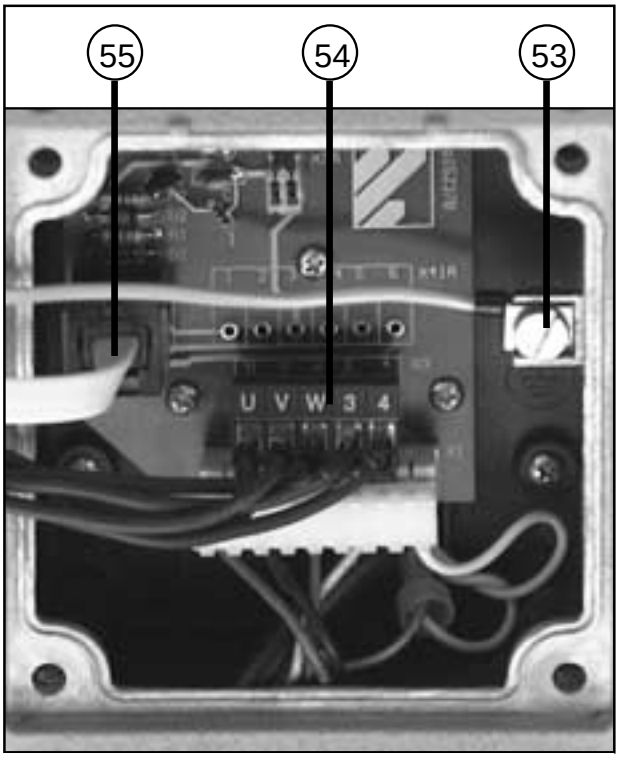


Fig. 7: Connections in door operator

5.1.2 Dynamic 3-101 - 3-108

• Connect control unit to door operator according to fig. 8.

Connections in door operator:

53. Protective terminal
54. Mains lead
55. RPM sensor plug

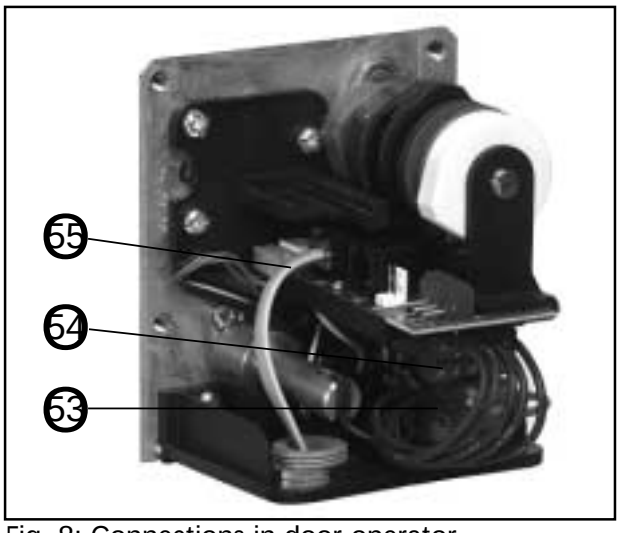


Fig. 8: Connections in door operator

5. Initial operation of control unit Control 44 / Control 45

Attention!
The control units Control 44 / Control 45 feature a static current circuit. If this static current circuit is interrupted, power operation of the door is no longer possible. Elements within this static current circuit are e.g. the cable slack switch, the wicket door switch and cable safety switch. If these elements are not available, insert enclosed short-circuit plug into socket X30.

5.2 Connection control unit — door leaf

Attention!
If you want to put a door system with **closing edge safety devic**e into operation, please pass on according to wiring diagram mentionned on page 29 insted of wiring diragram mentionned below. For following operational check the optosensor (transmitter and receiver) may not be connected.

Connection of cable slack device (only Dynamic 121 - 128)
• Connect system cable to socket **X30** (25) in control unit.

5. Initial operation of control unit Control 44 / Control 45

Legend:

Switches (system plugs):

S5		Wicket door switch
S6		Cable slack switch
S7		Night lock

Switches (terminal screw connections):

S5a	*	Wicket door switch
S6a	*	Cable slack switch
S6b	*	Cable safety device

Plug connections:

X30		Closing edge safety device (in control unit)
X71A		Wicket door contact
X71B		Cable slack switch
X71C		Night lock
X73		Connection cable
X74	♦	Optosensor transmitter

Terminal blocks:

X2c	Static current circuit (in control unit)
X7C	Coiled cable
X7H	Static current circuit
X7L	Cable slack switch

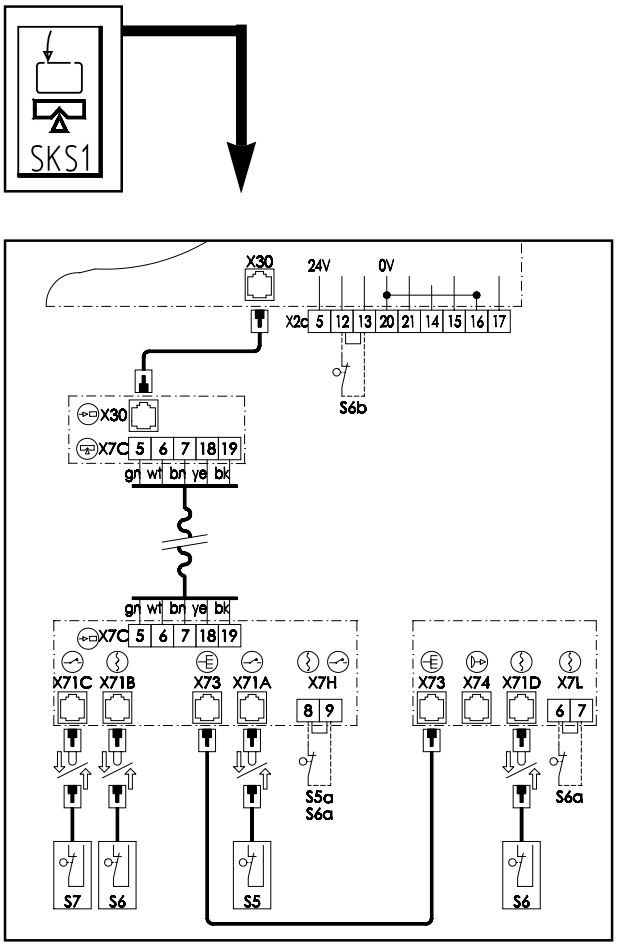


Fig. 9: Wiring diagram

* If connected, the short-circuit bridge must be removed

♦ If available

- Insert the control unit mains plug into a site electric socket in accordance with CEE standard 16 A.
- Check that the power supply at this socket corresponds to the voltage indicated on the rating plate of the control unit and also that its protection category complies with the local regulations.
- If the control unit is to be connected directly to the mains, a mains isolator switch will have to be installed.

Advice:
For Control 44:
Make sure that the field rotates clockwise.

5. Initial operation of control unit Control 44 / Control 45

Operational check
Mains connection and cabling of operator:

Attention!
With the following settings it is important to ensure that the door is **never** allowed to open or close fully. Halt the door at least 50 cm before it reaches its mechanical travel limits by pressing the STOP button (13).

- Half open the door by hand.
- Swith ON at the mains.
  - The VOLTAGE control light (8) should light up.
    -> if not, look up section 'no voltage' in the test instructions.

- Press the OPEN button (11).
  - The door should open.
    -> If the door doesn't move: look up section 'no reaction on IMPULSE' in the test instructions

Operational check
Safety circuit:

- Actuate each safety element separately.
  - Power operation of the door should now no longer be possible.
    -> If this is not the case, check the electrical connection of the respective safety element.

- Disconnect from mains supply.

5.3 Setting the reference point

5.3.1 Dynamic 121 - 128 und Dynamic 300

Dynamic 121 - 128:
Move the door by hand to CLOSE position.
Dynamic 300:
Mount boom in CLOSE position.

- Open transparent cover on door operator.
- Unlock the switching spindle by moving the red no-load lever (19) to the front and by pushing the inner door link disk (20) in direction of spindle (see fig. 10).
- Turn the knurled wheel (21) clockwise until the carriage (22) is approx. 5 mm before the chamfered end of the switching spindle (see fig. 10).
- Re-lock the door link disk and secure it by a hearable engaging of the no-load lever.

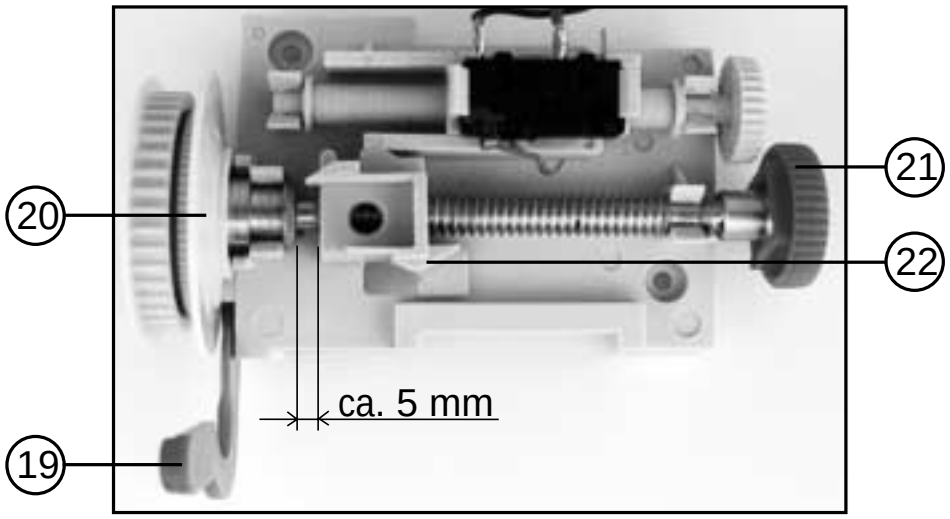


Fig. 10: Setting the reference point (door is closed)

- Now the door has to be opened fully by hand.

5. Initial operation of control unit Control 44 / Control 45

- Now turn with the small knurled wheel (23) the adjusting spindle, until the reference point switch (24) is actuated by the carriage (22) (see fig. 11).
- Then turn the small knurled wheel (23) 1 – 2 rounds counterclockwise.

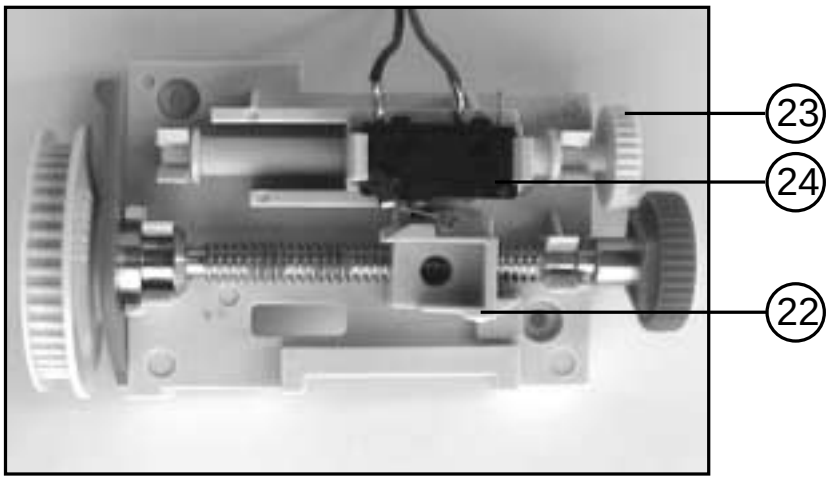


Fig. 11: Setting the reference point (door is opened)

- Close the transparent cover again.
- Move the door, power-operated, to the set travel limit CLOSED.

5.3.2 Dynamic 3-101 - 3-108

1. Move the door by hand to ist mechanical OPEN travel limit.
2. Open housing cover on door operator.
3. Release the stop (grub screw J) of control cam (B).
4. Set control cam (B) in such way, the the reference point switch (G) is actuated as shown in fig. 12 (position H), (approx. 2 angular degrees from switch point).
5. Fix control cam (B) by screwing on grub screw (J).
6. Close the housing cover again.
7. Connect to mains and actuate button CLOSE DOOR (12).
   The door travels to the travel limit CLOSE, which is pre-set by factory

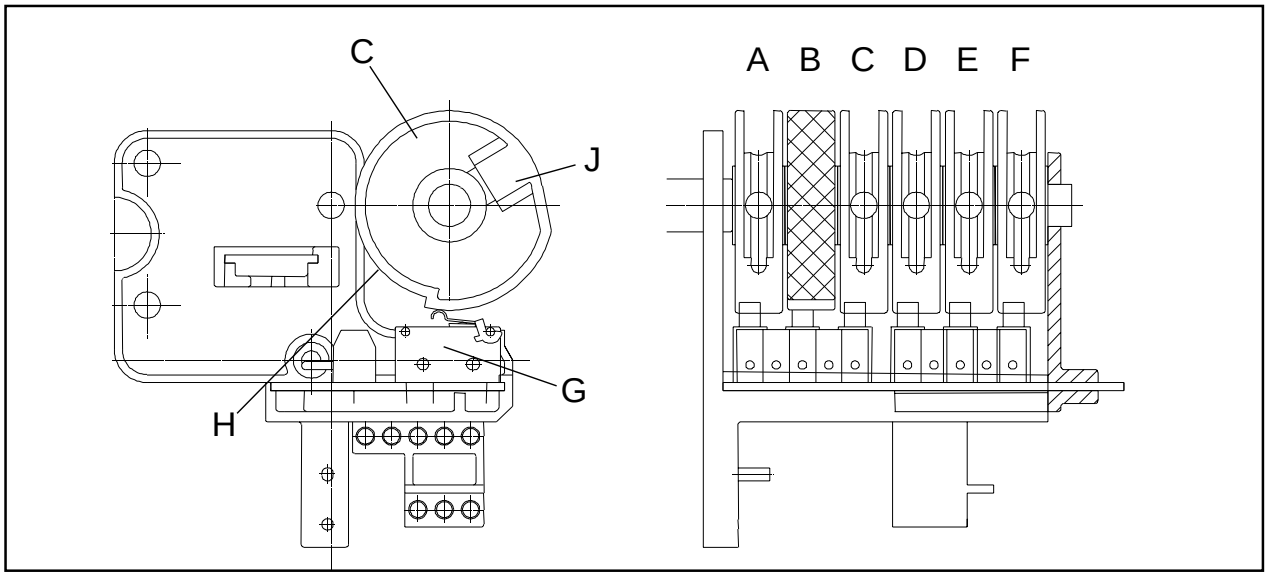


Fig. 12: Setting the reference point

6. Display functions and programming functions

6.1 Summary of display functions and programming possibilities

Display functions
After connecting to mains supply the control unit performs a self-check. (all control lights light up for approx. 2 sec.).
• See fig. 2 / page 5

Error messages
If control light MALFUNCTION (6) lights upt, after shortly pressing button j (10) the respective error number is indicated (LED's flash irregularly).
The error number is calculated by adding the flashing figures.
• See section 9, error numbers, page 43.

Programming of the operator's basic functions
Press button j (10) longer than 2 sec. The control unit changes from operating mode to programming mode of basic functions, LED 1 flashes. Release button j .

By pressing buttons h (11) or g (12) you can change settings in programming menu and save with button j . (If button j is actuated without change of settings by means of buttons h or g , the programming menu is skipped and the settings remain unchanged.) After last programming menu the programming of the operator's basic functions is completed, recognizable by all LED's going out in sequence 8 - 1.

Programming of extended operator functions
Press button j (10) longer than 10 sec. The control unit changes from operating mode to programming level for extended operator functions, LED 8 flashes quickly, all other LED's are glowing. Hold button j pressed and select by means of button h (11) or button g (12) the desired programming level (LED of level flashes quickly, all other LED's are glowing). Now button j may be released. The first programming menu of the desired level is selected (LED1 flashes, all other LED's are glowing). Changes of settings in programming menu are made by actuating button h or g and can be saved by pressing button j . (If button j is actuated without change of settings by means of buttons h or g , the programming menu is skipped and the settings remain unchanged.)

6. Display functions and programming functions

After the last programming menu the programming of the extended operator function is completed, recognizable by all LED's going out in sequence 8 - 1.

Advice for programming
The programmed data cannot be deleted, they are only overwritten.
If the control unit is in programming mode and neither programming button (h , g , j) is pressed within 30 sec. the programming is cancelled. The control unit returns to operating mode. The control light MALFUNCTION (6) flashes, by shortly pressing button j error number 7 is indicated (= programming cancelled).

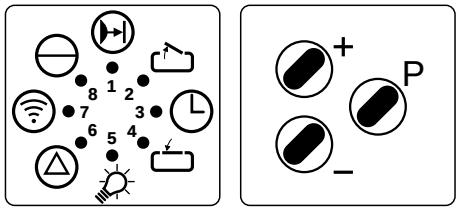
6. Display functions and programming functions

Explanation of the extended operator functions:

Programming level	Functions	Explanation
8. level Operating modes Table: see page 23.	- Press and hold OPEN.	The operator travels after start to travel limit OPEN.
	- Press and hold CLOSE.	The operator travels after start to travel limit CLOSE.
	- Impulse commands	A running operator may be stopped or not by command.
	- Direction commands (push button OPEN or CLOSE)	A running operator may be stopped or not by command.
	- Impulse function OPEN	Reversion or priority OPEN.
3. level Automatic timer Table: see page 24/25.	- OPEN time of door	Time, in which the door is open, before door closes automatically.
	- Warning time	Time period, in which signal light flashes, before door closes automatically.
	- Warning before start	Time period, in which signal light flashes, before door starts to move.
	- Premature closing after passing photocell	The door closes either after set open time or premature after passing photocell.
5. level Operator lighting / signal lights Table: see page 26/27.	- Lighting time	Lighting time of operator light after door travel.
	- Signal lights	The signal lights flash or glow at power operated movement of the door.
	- Lighting	The operator light flashes or glows during warning time.
6. levele Reversion modes Table: see page 28.	- Photocell OPEN	Adjustable for STOP, short or long reversion.
	- Photocell CLOSE	Adjustable for STOP, short or long reversion.
	- Closing edge safety device OPEN	Adjustable for STOP, short or long reversion.
	- Closing edge safety device CLOSE	Adjustable for STOP, short or long reversion.
	- Power limit OPEN	Adjustable for STOP, short or long reversion.
	- Power limit CLOSE	Adjustable for STOP, short or long reversion.

6.2 Programming of operator's basic functions

○ LED OFF
● LED ON
✳ flashing LED

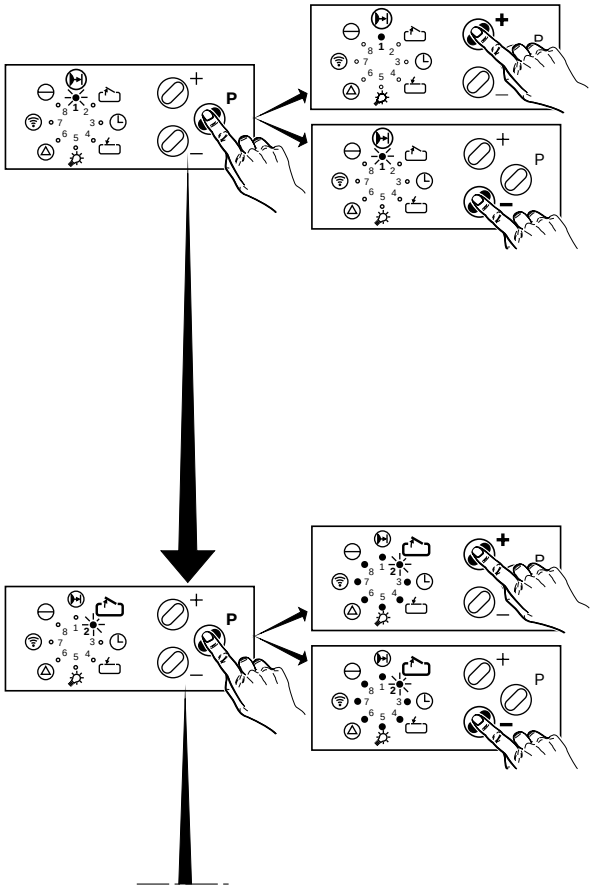


1. Programming of external photocell

Actuate button j for approx. 2 sec. until LED 1 flashes and all others are glowing.
By pressing buttons h or g the operation with external photocell is selected, LED 1 glows.
For connection and activation of external photocells please look up section 8.3, page 36.
Save by pressing button j .

2. Programming of OPEN travel limit

LED 2 flashes and all others are glowing. Travel door to travel limit OPEN by pressing button h or g (operator runs without press and hold) and save by pressing button j .



6. Display functions and programming functions

3. Programming of travel limit CLOSE

LED 4 flashes and all others are glowing.

Travel door to travel limit CLOSE by pressing button h or g (operator runs without press and hold) and save by pressing button j .

4. Programming of power limit OPEN

LED's 2 and 6 flash and all others are glowing.

Pressing buttons h or g to adjust the power limit in steps from 1 (most sensible value) to 16.

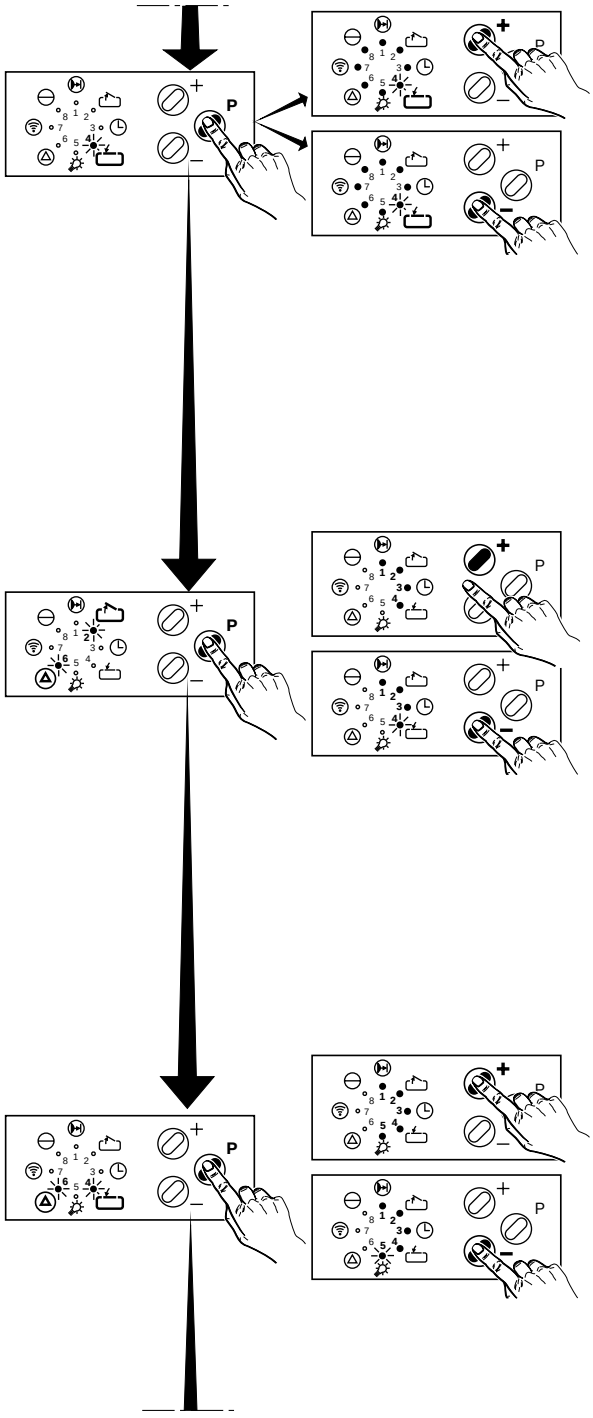
Save by pressing button j .

5. Programming of power limit CLOSE

LED's 4 and 6 flash and all others are glowing.

Pressing buttons h or g to adjust the power limit in steps from 1 (most sensible value) to 16.

Save by pressing button j .



6. Display functions and programming functions

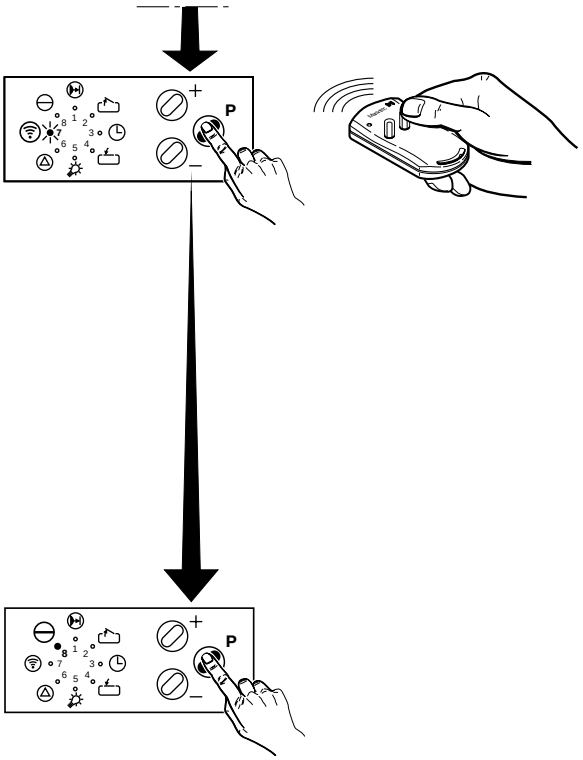
6. Programming of remote control

LED 7 flashes and all others are glowing.

For connection of electronic aerial see point 6.1, page 21.

Actuate the respective button of coded hand transmitter, until LED 7 flashes quickly and save by pressing button j .

Programming of operator's basic function is completed, recognizable by all LED's going out in sequence 8 - 1.



Attention!

Set the power limit to be as sensitive as possible!

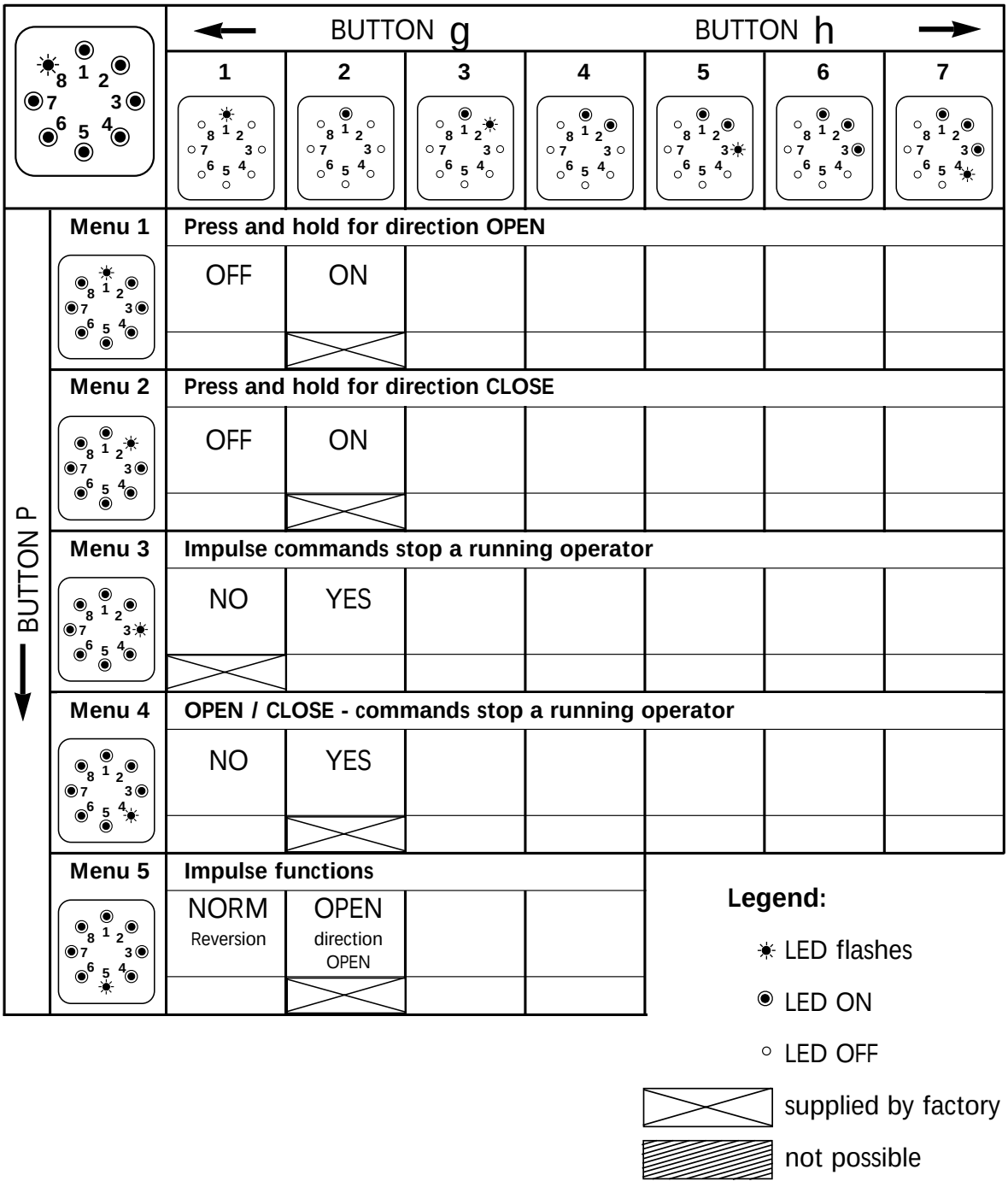
The effectivity of power limit has to be checked regularly.

*** Indication of steps:**

LED1 flashes	**=**	**step 1**
LED1 glows	**=**	**step 2**
LED 1 glows, LED 2 flashes	**=**	**step 3**
...		
LED's 1 to 8 glow	**=**	**step 16**

6.3 Programming of extended operator functions

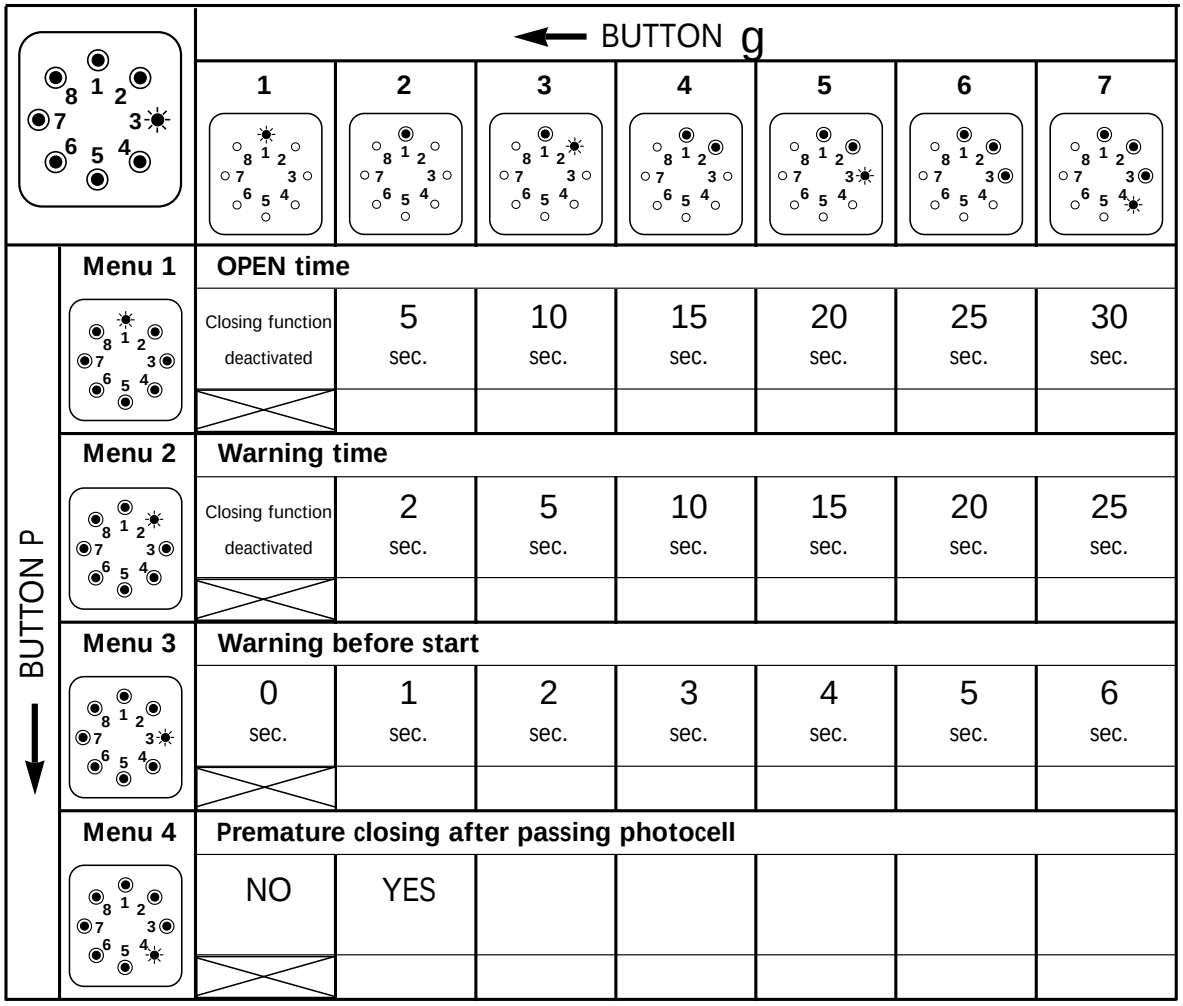
Level 8: Operation modes



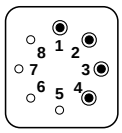
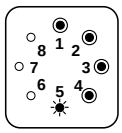
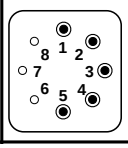
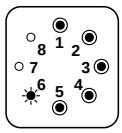
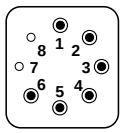
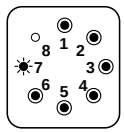
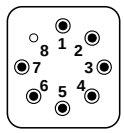
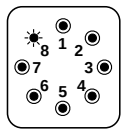
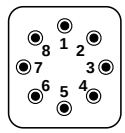
6. Display functions and programming functions

6.3 Programming of extended operator functions

Level 3: Automatic timer



6. Display functions and programming functions

BUTTON h →								
8	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
								
35 sec.	40 sec.	50 sec.	80 sec.	100 sec.	120 sec.	150 sec.	180 sec.	255 sec.
30 sec.	35 sec.	40 sec.	45 sec.	50 sec.	55 sec.	60 sec.	65 sec.	70 sec.
7 sec.								

Legend:

☀ LED flashes

◉ LED ON

○ LED OFF

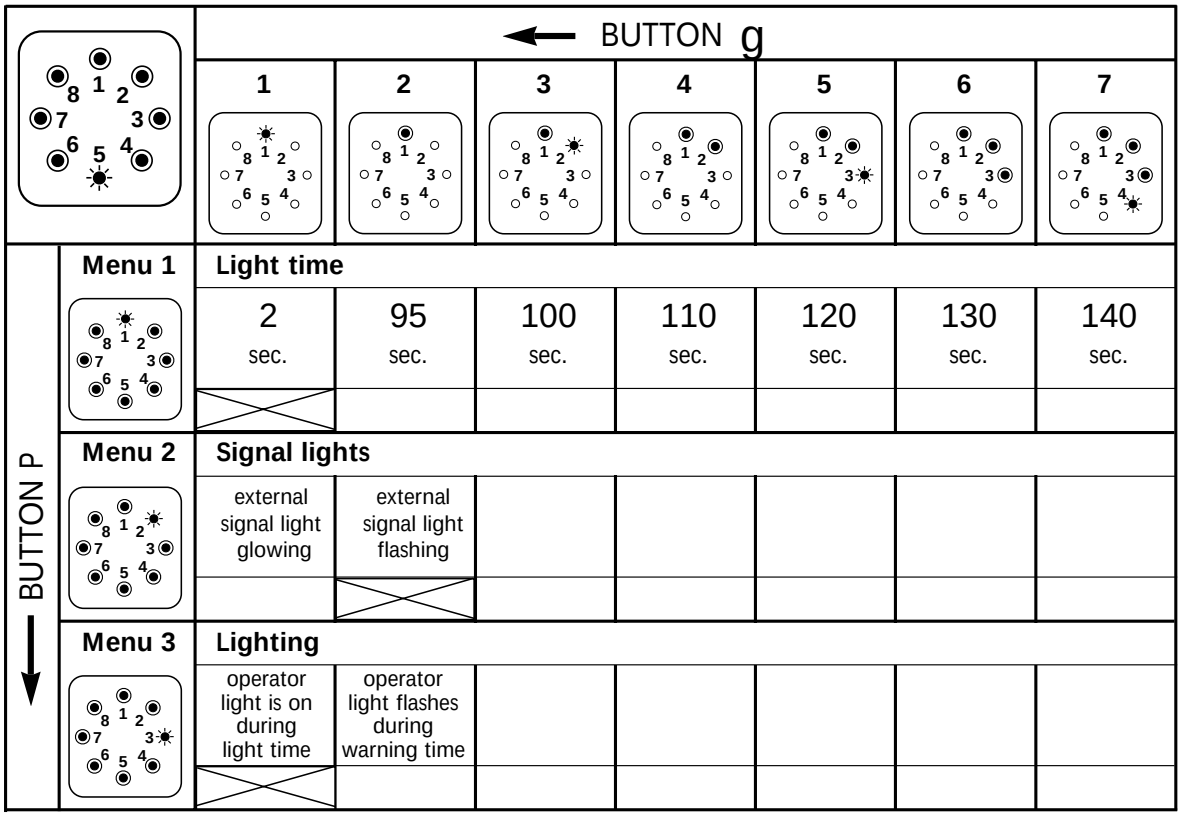
supplied by factory

not possible

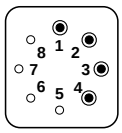
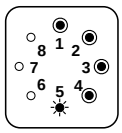
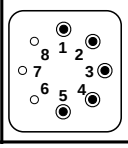
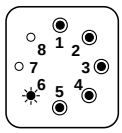
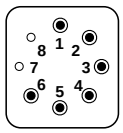
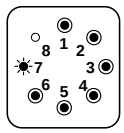
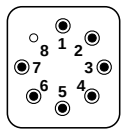
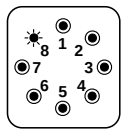
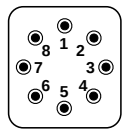
6. Display functions and programming functions

6.3 Programming of extended operator functions

Level 5: operator lighting / signal lights



6. Display functions and programming functions

BUTTON h →								
8	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
								
150 sec.	160 sec.	170 sec.	180 sec.	190 sec.	200 sec.	210 sec.	220 sec.	240 sec.

Legend:

☀ LED flashes

◉ LED ON

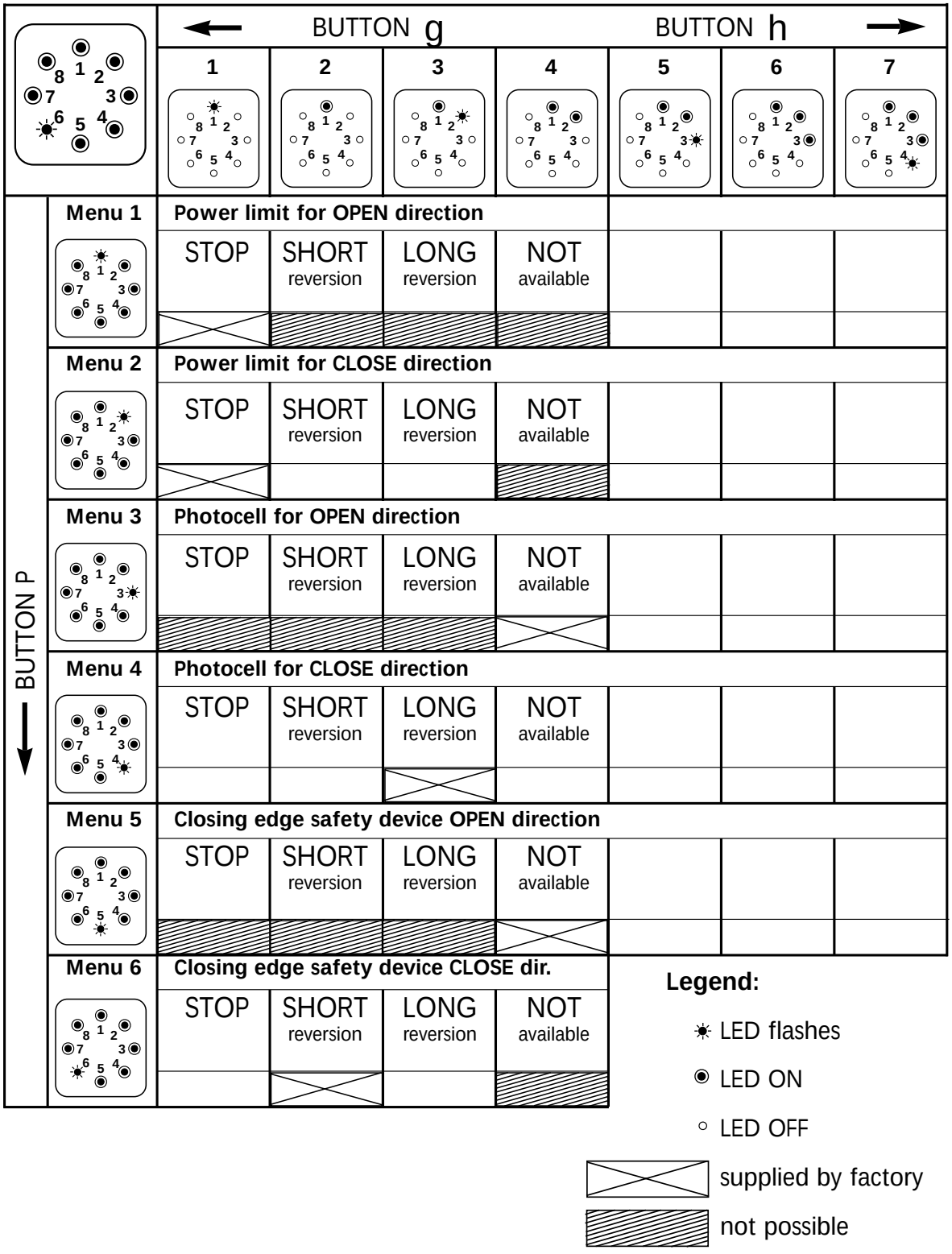
○ LED OFF

supplied by factory

not possible

6.3 Programming of extended operator functions

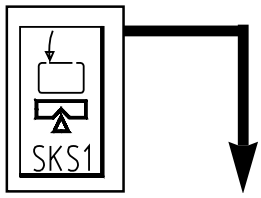
Level 6: Reversion modes



7. Connection of closing edge safety device

Function:
The closing edge safety device monitors the bottom door seal. If whilst closing the door meets with an obstruction, the closing edge safety device automatically halts the door and lifts it to clear the obstruction.

Connecting the closing edge safety device:
Insert the optosensors into the bottom door seal and connect them.



Legend:

Switches (system plugs):

S5		Wicket door switch
S6	+	Cable slack switch
S7		Night lock

Switches (screw terminals):

S5a	*	Wicket door switch
S6a	*+	Cable slack switch
S6b	*	Cable safety device

Plug connections:

X30		Closing edge safety device (in control unit)
X71A		Wicket door contact
X71B	+	Cable slack switch
X71C		Night lock
X71D		Cable slack switch
X72		Optosensor receiver
X73		Connection cable
X74		Optosensor transmitter

Terminal blocks:

X2c	Static current circuit (in control unit)
X7C	Coiled cable
X7H	Static current circuit
X7L	Cable slack switch

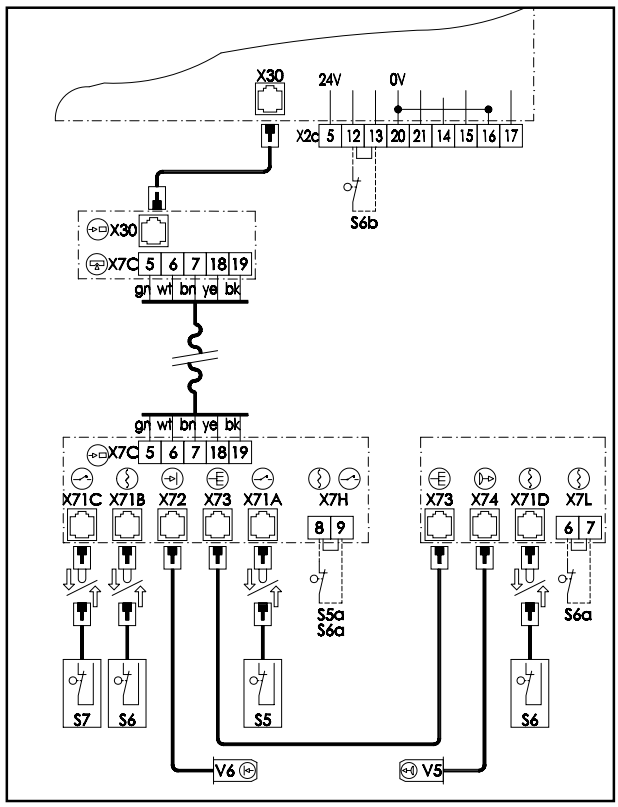


Fig. 13: Wiring diagram

Optosensors:

V5	Transmitter
V6	Receiver

* If connected, the short-circuit bridge must be removed
\+ only Dynamic 121 - 128

7. Connection of closing edge safety device

Displays on the optosensor circuit board:

GREEN LED:	Voltage
YELLOW LED	Static current circuit closed (should go out when cable slack or wicket door device actuated)
RED LED	Optosensor function indicator (should go out when light beam interrupted)

Operational check of the closing edge safety device:

- Switch on at the mains.
- Operate the door to arrive at its OPEN travel limit.
- Press the CLOSE button (12).
  - The door should close by press and release.
    -> If this is not the case, check the optosensor (see test instructions).
- Whilst the door is still closing, press the bottom door seal together.
  - The door should come to a halt, then rise a short distance.
    -> If this is not the case, check the optosensor (see test instrcutions).
- Switch off at the mains.

Operational check of the optosensors:

Attention!
The function of optosensors should be checked at least once a year in order to guarantee safe operation of the door system.

Test instructions:

- Interrupt the light path in the bottom door seal; this can be achieved by deforming the seal or by removing the transmitter or receiver bung.
- It should now not be possible to subsequently close the door by press and release.
- Make the light path in the bottom door seal clear again.
- It should now be possible again to close the door by press and release.

8. Connection and initial operation of the accessories

8.1 Remote control

Attention!
Please set your individual coding by means of the coding buttons on hand transmitter.

Connection of the electronic aerial

• Connect the electronic aerial to socket X20a (26) in the control unit.

Advice:
When installing, make sure that the aerial is properly aligned in order to achieve the best possible range. (Beware of the fact that metal parts have a shielding effect.)

Adapting the control unit to a hand transmitter

See 6.2, step 6. Programming of remote control page 22.
In case of power failure the coding remains stored.

Operational check:

• Operate the hand transmitter from a distance of approx. 15 m.
  - The door should now start to move.
    -> If this is not the case, see test instructions 'remote control'.

8. Connection and initial operation of the accessories

8.2 External control elements

External control elements can actuate various functions:

STOP: The operator can no longer be actuated, a moving door ist brought to a halt.

IMPULSE: The door opens (exception: if the door already has reached its travel limit OPEN, it then closes). A moving door cannot be stopped.

OPEN: The door opens. A moving door is stopped. If the automatic timer is activated, the door opening phase is increased.

CLOSE: The door closes. A moving door is stopped. If the automatic timer is activated, the door opening phase is reduced.

8.2.1 External control elements with system plugs:

Examples for external control elements with system plugs:

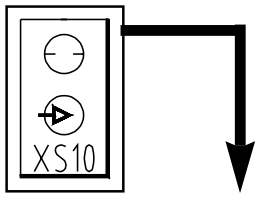
- Push button of Command range
- Code keypad Command 201
- Key switch Command 311 and 411

Connection of control elements:

Advice:
If several key switches or code keypads are connected, the coupling for plug system (for series connection) is required, Art.-No. 151 228.
Instructions for connecting several control elements are contained in the coupling's connection plan.

Attention!
Before connecting external control elements, the short-ciruit plug has to be withdrawn from socket **X10** (27) of control unit.

- The control elements with system plugs can now be connected to this socket.



Operational check:

- Operate the external control element.
  -> The desired function should be carried out.

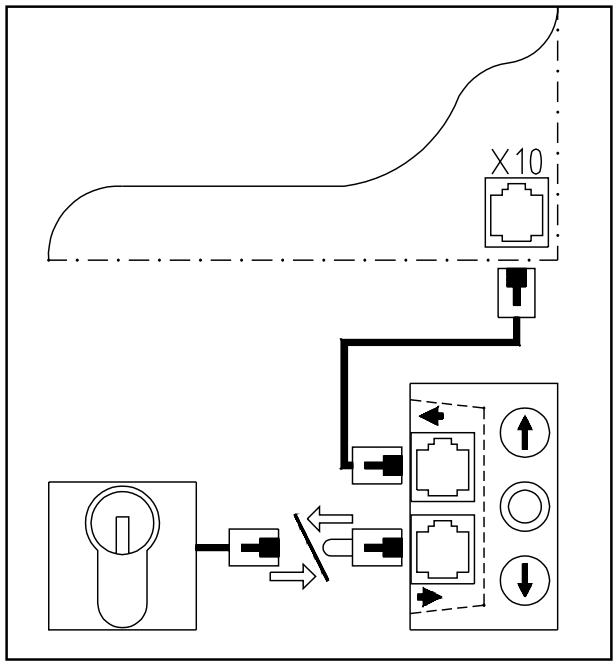


Fig. 14: Wiring diagram

8.2.2 Connection of external control elements without system plug

Examples for external control elements without system plug:

- Pull button Command 701
- Push button Command 601 and 602
- Code keypad Command 202

Connection of control elements

- Connect the control elements to connecting terminal X2c (39).

8. Connection and initial operation of the accessories

Connection plan: Control elements S2 and S4 stop a running operator:

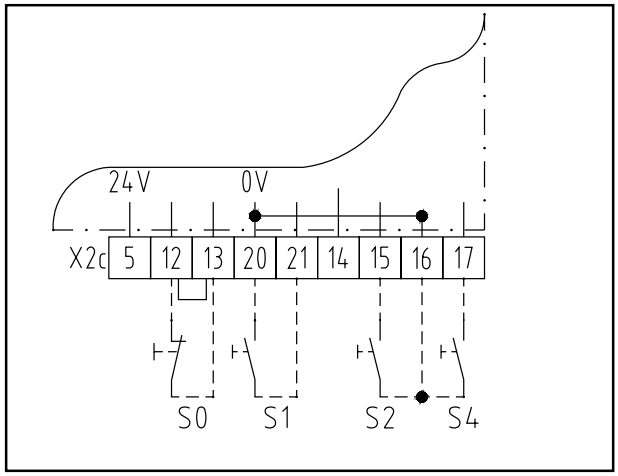


Fig. 15: Wiring diagram

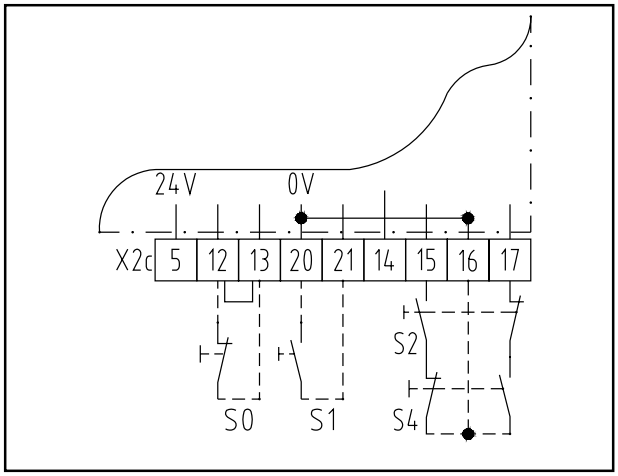


Fig. 16: Wiring diagram

Following functions are available at connecting terminal X2c:

S0 (STOP): Connection: terminals 12 and 13 (remove short-circuit plug)
Contact category: opener
Connection mode: several contacts have to be connected **in series**!

S1 (IMPULSE): Connection: terminals 20 and 21
Contact category: closer
Connection mode: several contacts have to be connected **parallelly**!

S2 (OPEN): Connection: terminals 16 and 15
Contact category: closer
Connection mode: several contacts have to be connected **parallelly**!

S4 (CLOSE): Connection: terminals 16 and 17
Contact category: closer
Connection mode: several contacts have to be connected **parallelly**!

8. Connection and initial operation of the accessories

Connection plan: Control elements S2 and S4 do not stop a running operator:

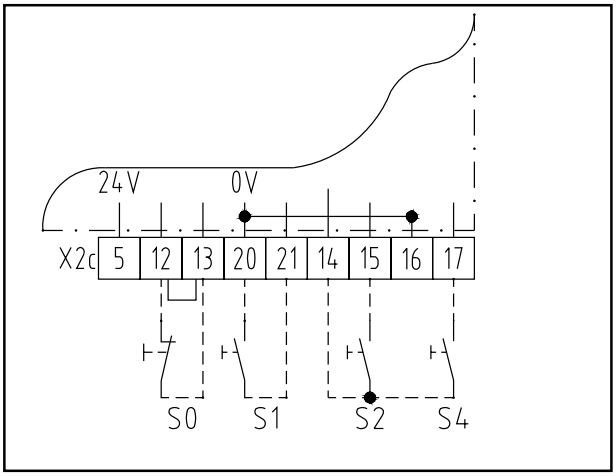


Fig. 17: Wiring diagram

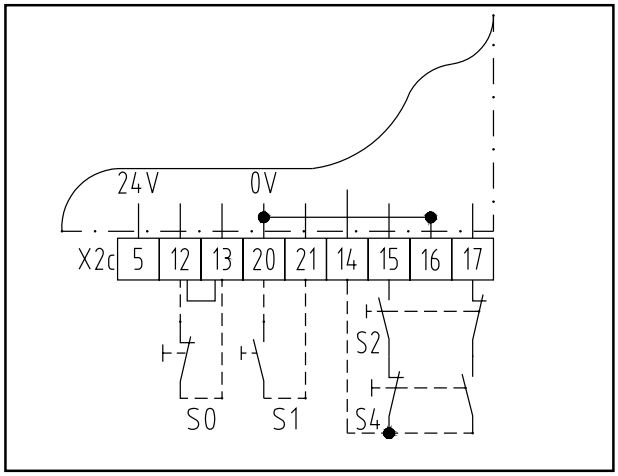


Fig. 18: Wiring diagram

Following functions are available at connecting terminal X2c:

S0 (STOP): Connection: terminals 12 and 13 (remove short-circuit plug)
Contact category: opener
Connection mode: several contacts have to be connected **in series**!

S1 (IMPULSE): Connection: terminals 20 and 21
Contact category: closer
Connection mode: several contacts have to be connected **parallelly**!

S2 (OPEN): Connection: terminals 14 and 15
Contact category: closer
Connection mode: several contacts have to be connected **parallelly**!

S4 (CLOSE): Connection: terminals 14 and 17
Contact category: closer
Connection mode: several contacts have to be connected **parallelly**!

Operational check:

- Operate the external control element.
  -> The desired function should be carried out.

8. Connection and initial operation of the accessories

8.3 Connection of external photocell

Function:
The external photocell monitors the passway of the door. If the door is closing and there is any obstruction in the passway during closing, the door opens fully again.
If the automatic timer is activated, the open door phase is increased by activation of the photocell.

Attention!
When the door is closed, the photocells are switched off.
To adjust the photocell, open door fully or partially.

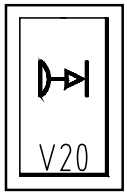
Connection of photocells:

Special 613, Art.-No. 153 550
Special 614, Art.-No. 152 675
Special 615, Art.-No. 152 703

- Turn programming switch S20 (36), which is on control circuit board, to OFF position (for this please open cover of control unit).
- Connect the photocell to socket X20 (28) in the control unit.
  Cabling of photocell is made as shown in fig. aside.
  More detailed information can be found in installation instruction of photocell.

8. Connection and initial operation of the accessories

Connection plan: photocell



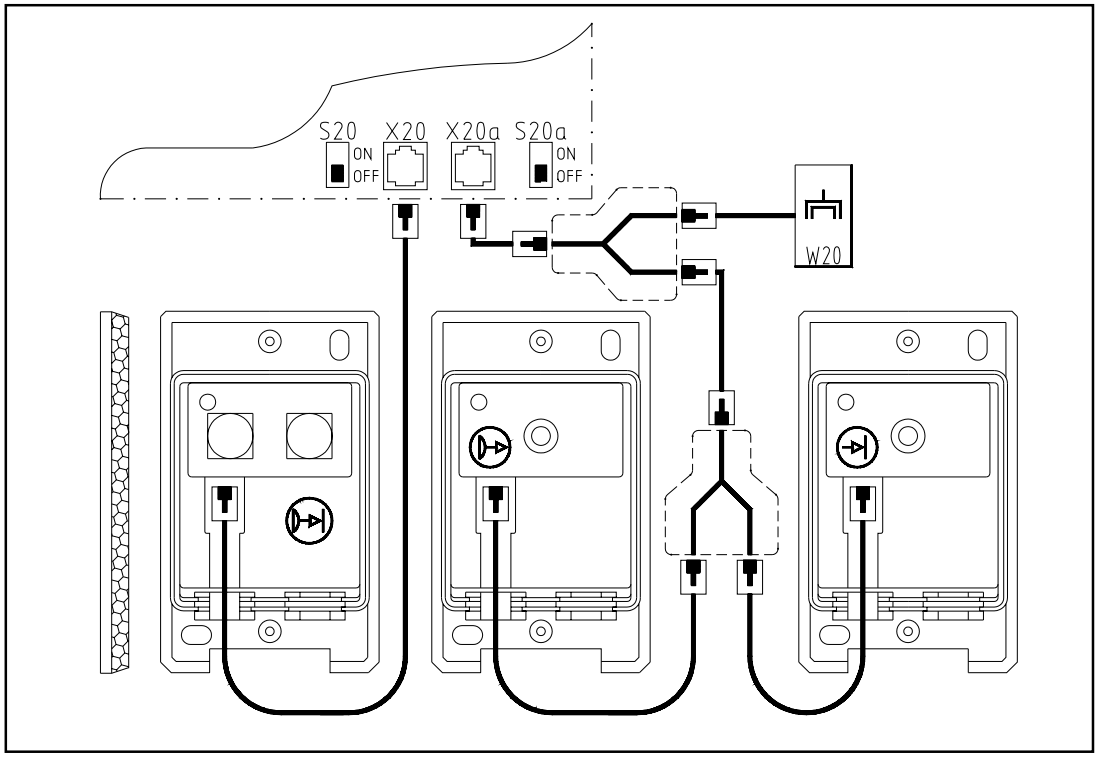


Fig. 19: Wiring diagram

Connection of a further photocell

Turn as well the second programming switch S20a (37), which is on control circuit board, to OFF position (for this please open cover of control unit).
The second photocell is connected to aerial socket X20a (26). In case there is already an aerial unit connected to this socket, then an adapter (coupling for plug system, 3-pin, Art.-No. 562 856) and a flat cable (Art.-No. 562 759) have to be connected according to above wiring diagram.

Operational check:

- Operate the door to CLOSE.
- Interrupt the photocell's light beam.
  - The door must stop and then open again fully.
    -> If this is not the case, check position of programming switches S20 / S20a.

8.4 Travel limit signals (relay)

Function:
On reaching the OPEN / CLOSE travel limits, the corresponding relay connects.

Connection of the relay circuit board (Art. No. 153 044)

Advice:
If necessary, the control unit housing has to be completed by a small system housing with circuit board bearing (Art.-No. 153 220).

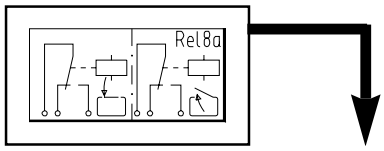
Attention!
Flat cable plugs have always to be plugged-in in such a way, that the cable is bent in direction edge of the circuit board.

- Connect relay circuit board and control unit by means of the attached flat cable.

Relay circuit board:	plug connection X4
Control unit:	plug connection X8a (33).

8. Connection and initial operation of the accessories

Detailed wiring diagram
Travel limit messages (relay):



Legend:

D1 control light door CLOSED
D2 control light door OPEN
H1 signal light door CLOSED
H2 signal light door OPEN
K1 relay door CLOSED
K2 relay door OPEN

Plug connections:
X4 relay connection
X8a travel limit relay (in control unit).

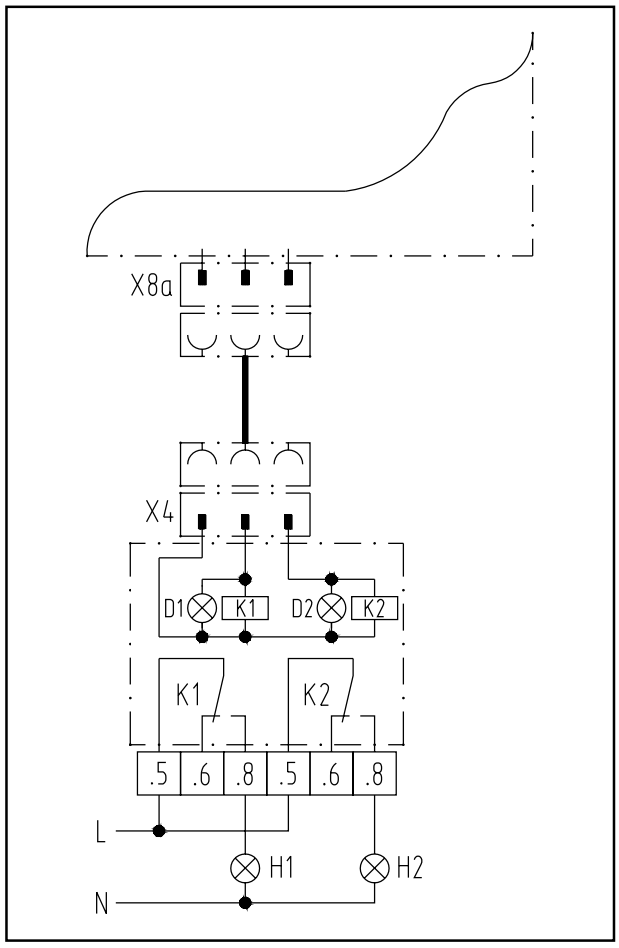


Fig. 20: Wiring diagram

8.5 Signal light connection for automatic timer

(Control 220, Art.-No. 152 814)

Function:

The signal lights flash during power operation of the door. When the automatic timer is activated, the signal lights are flashing additionnaly during warning time.

Connection of relay circuit board

Attention!

Flat cable plugs have always to be plugged-in in such a way, that the cable is bent in direction edge of the circuit board.

- Connect relay circuit board and control unit by means of the attached flat cable.

Relay circuit board:	plug connection X4a
Control unit:	plug connection X8b (32)

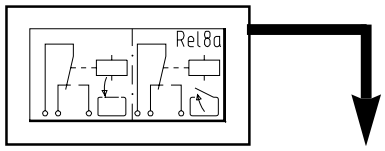
Programming of automatic timer

When automatic timer function is activated, an open door remains opened during the OPEN time and is closed automatically after warning time.

See section 6.3, level 3 Automatic timer, page 24.

8. Connection and initial operation of the accessories

Detailed wiring diagram
Signal lights relay:



Legend:

D40 control light SIGNAL LIGHTS
F5 fuse (max. 4 A)
H41 signal light DRIVE OUT (orange)
H43 signal light DRIVE IN (orange)
K40 relay SIGNAL LIGHTS

Plug connections:
X4a relay connection
X4b relay connection
X8b signal light relay
(in control unit)

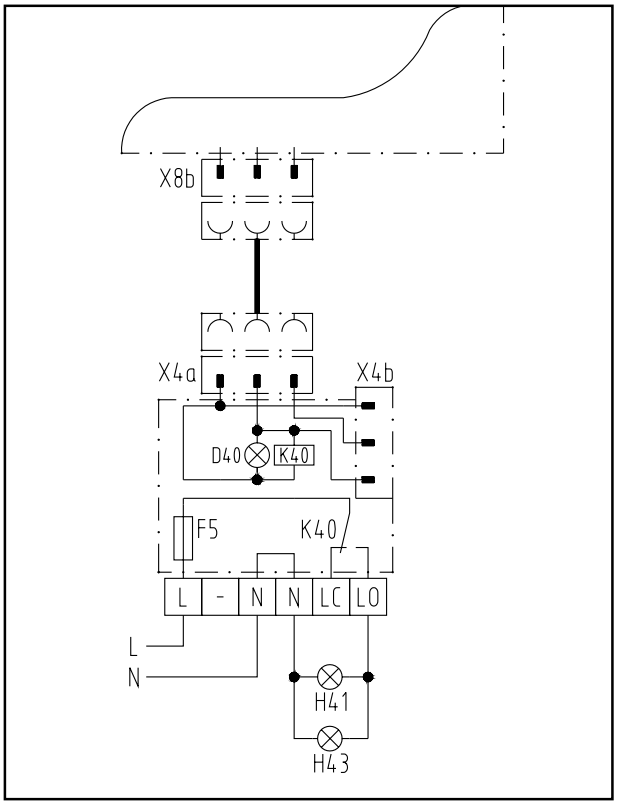


Fig. 21: Wiring diagram

8.6 Lighting (relay for special functions)

Function:
When starting the operator, the relay shortly connects (wipe impulse).

Connection of relay circuit board (Art.-No. 153 044)

Advice:
If necessary, the control unit housing has to be completed by a small system housing with circuit board bearing (Art.-No. 153 220).

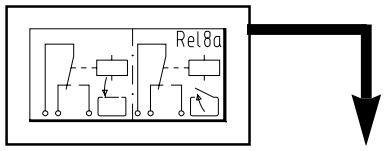
8. Connection and initial operation of the accessories

Attention!
Flat cable plugs have always to be plugged-in in such a way, that the cable is bent in direction edge of the circuit board.

• Connect relay circuit board and control unit by means of the attached flat cable.

Relay circuit board: plug connection X4
Control unit: plug connection X8d (35)

Detailed wiring diagram
Lighting (relay for special functions):



Legend:

K light automatic (on site)
K1 relay OPERATOR IN MOTION (wipe impulse)
K2 relay OPERATOR IN MOTION (wipe impulse)

Plug connections:
X4 relay connection
X8d relay for special functions (in control unit)

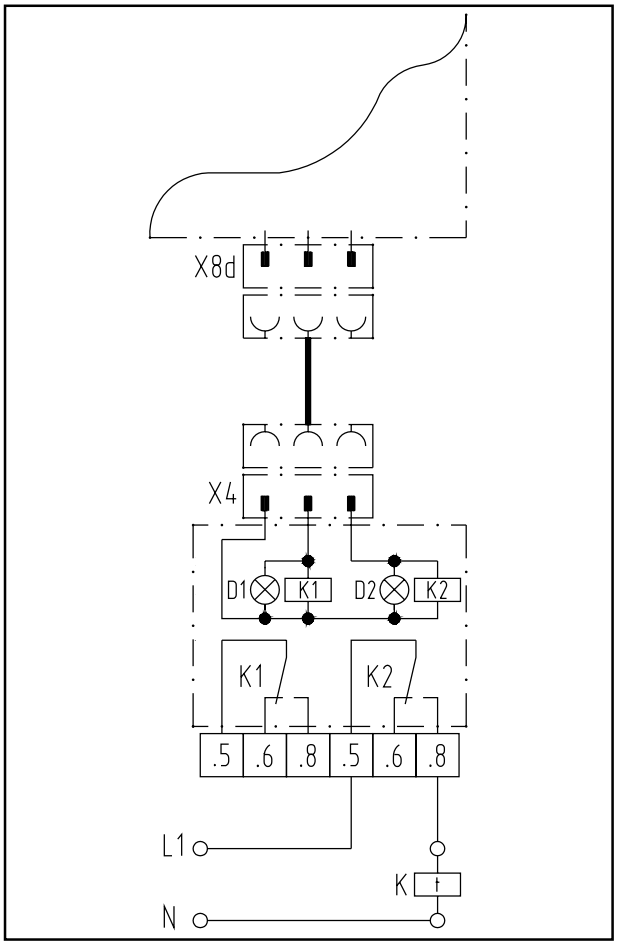


Fig. 22: Wiring diagram

9. Error numbers

- If control LED MALFUNCTION (6) is flashing, the referring error number is indicated on shortly pressing button j (10) - LED's are flashing irregularly.
- The error number is calculated by adding of the flashing figures.

Error characteristic	**Error number**	**LED flashing irregularly**
Photocell actuated	6	LED 6
Programming cancelled	7	LED 7
RPM sensor defective	9	LED 8 + 1
Power limit	10	LED 8 + 2
Excess travel stop	11	LED 8 + 3
Testing closing edge safety device not o.k.	13	LED 8 + 5
Testing photocell not o.k.	15	LED 8 + 7
Static current circuit interrupted	36	LED 1 - 8

10.1.1 Connecting plan of Control 44

(with door operator Dynamic)

Attention!
Observe local safety regulations! Always lay mains cables and control cables separately: Voltage 24 V DC.

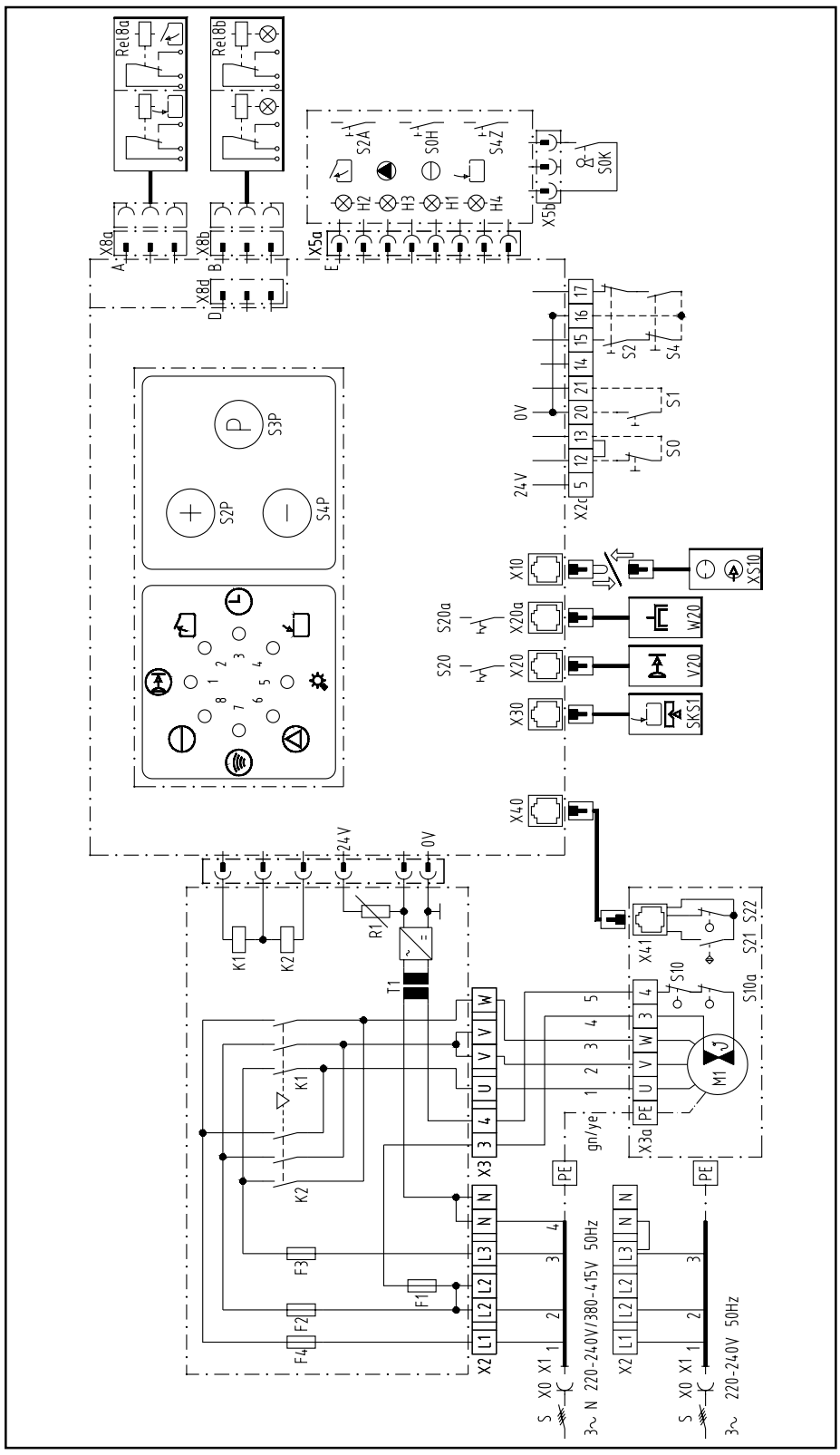


Fig. 23: Wiring diagram

Attention low voltage!
External voltage at the terminals X2c, X5 to X41 will completely destroy the electronics!

Legend:

Control lights:

H1		voltage
H2		door OPEN
H3		testing of closing edge safety device
H4		door CLOSED
K1		OPEN inversion relay
K2		CLOSE inversion relay
M1		Motor with thermal overload protection
R1		Short circuit protection
S	♦	Main switch
S0		STOP button
S0H		STOP button
S0K		Key button
S1	♦	IMPULSE button
S2	♦	OPEN button
S2A		OPEN button
S2P		OPEN test button
S3P		PROGRAMMING button
S4	♦	CLOSE button
S4P		CLOSE test button
S4Z		CLOSE button
S10	*	EMERGENCY MANUAL OPERATION switch
S10a	*	MAINTENANCE RELEASE switch
S20		programming button PHOTOCELL
S20a		programming button 2nd PHOTOCELL
S21		RPM sensor
S22		reference point sensor
T1		transformer
X0	+	mains electric socket
X1		mains lead with plug

Fuses:

F1	fuse (max. 125 mA)
F2-F4	main fuses (max. 6,3 A)

Connecting terminals:

X2	mains lead
X2c	command devices
X3	operator
X3a	motor

Plug connections:

X5	membrane keypad
X5a	key switch
X8a	travel limit relay
X8b	signal light relay
X8d	relay for special functions
X10	external control elements
X20	external photocell
X20a	electronic aerial
X30	closing edge safety device
X40	RPM sensor operator
X41	RPM sensor motor

Connection plans for accessories (detail):

Rel8a	relay TRAVEL LIMITS → (see page 38).
Rel8b	relay SIGNAL LIGHTS → (see page 40).
SKS1	closing edge safety device → (see page 29).
V20	external photocell → (see page 36).
W20	electronic aerial
XS10	external control elements → (see page 32).

\+ on site
♦ if available
* only Dynamic 121 - 128

10.1.2 Connecting plan of Control 45

(with door operator Dynamic)

Attention!
Observe local safety regulations! Always lay mains cables and control cables separately: Voltage 24 V DC.

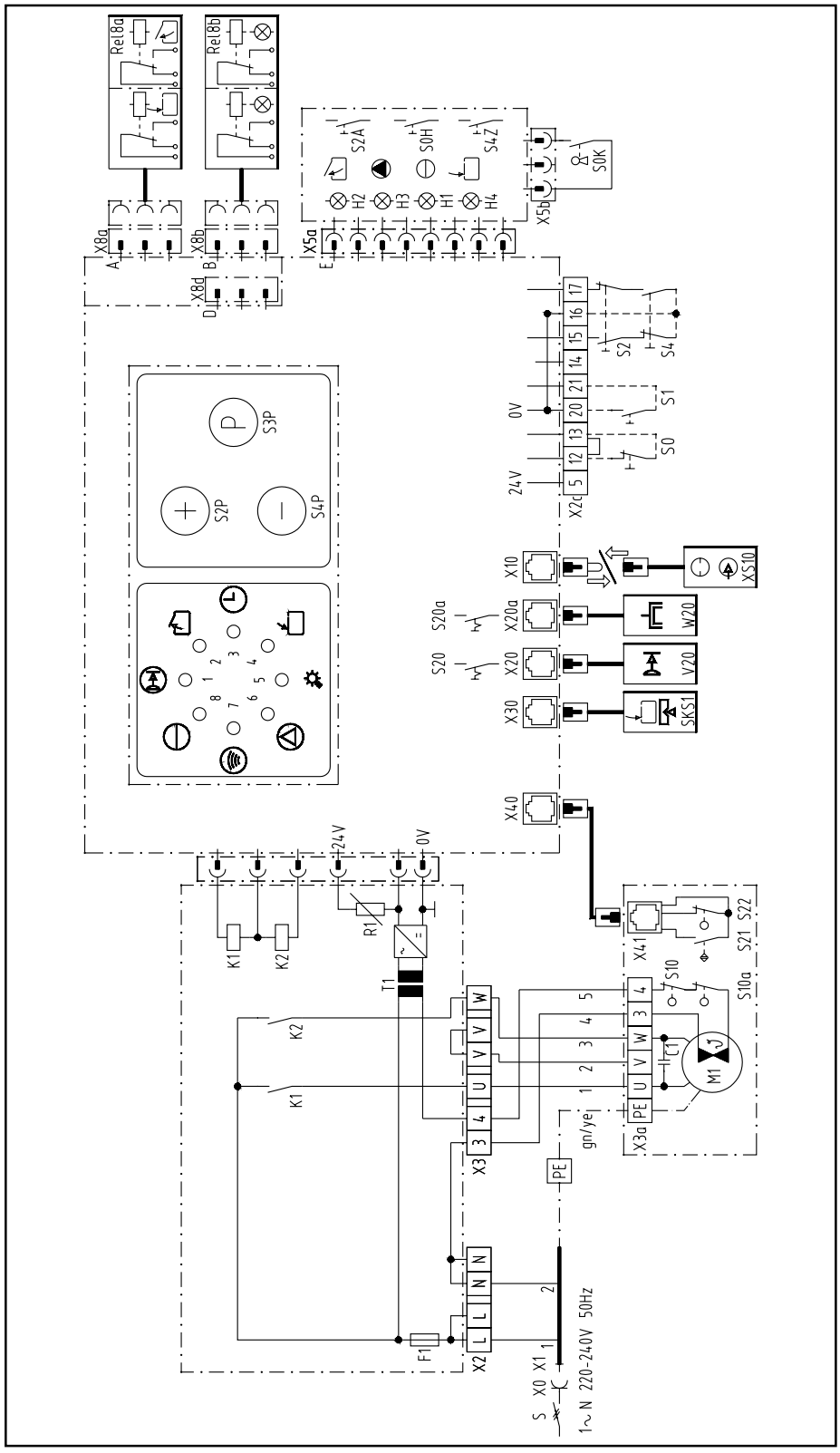


Fig. 24: Wiring diagram

Attention low voltage!
External voltage at the terminals X2c, X5 to X41 will completely destroy the electronics!

Legend:

Control lights:

H1		voltage
H2		door OPEN
H3		testing of closing edge safety device
H4		door CLOSED
C1		motor condenser
K1		OPEN inversion relay
K2		CLOSE inversion relay
M1		motor with thermal overload protection
R1		short circuit protection
S	♦	main switch
S0	♦	STOP button
S0H		STOP button
S0K		key button
S1	♦	IMPULSE button
S2	♦	OPEN button
S2A		OPEN button
S2P		OPEN test button
S3P		PROGRAMMING button
S4	♦	CLOSE button
S4P		CLOSE test button
S4Z		CLOSE button
S10	*	EMERGENCY MANUAL OPERATION switch
S10a	*	MAINTENANCE RELEASE switch
S20		programming button PHOTOCELL
S20a		programming button 2nd PHOTOCELL
S21		RPM sensor
S22		reference point sensor
T1		transformer
X0	+	mains electric socket
X1		mains lead with plug

Fuses:

F1	fuse (max. 6,3 A)

Connecting terminals:

X2	mains lead
X2c	command devices
X3	operator
X3a	motor

Plug connections:

X5	membrane keypad
X5a	key switch
X8a	travel limit relay
X8b	signal light relay
X8d	relay for special functions
X10	external control elements
X20	external photocell
X20a	electronic aerial
X30	closing edge safety device
X40	RPM sensor operator
X41	RPM sensor motor

Connection plans for accessories (detail):

Rel8a	relay TRAVEL LIMITS → (see page 38).
Rel8b	relay SIGNAL LIGHTS → (see page 40).
SKS1	closing edge safety device → (see page 29).
V20	external photocell → (see page 36).
W20	electronic aerial
XS10	external control elements → (see page 32).

\+ on site
♦ if available
* only Dynamic 121 - 128

10.2 Test instructions

Error	Error message	Cause for error
• No voltage	• Control light VOLTAGE does not light up.	• No voltage • Emergency hand chain not in home position. • Operator disengaged • Thermo overload protection in motor is active.
• No reaction after IMPULSE.	• Control light MALFUNCTION flashes. Error No. 36	• Control unit is locked (red mark) • Static current circuit (control elements) is interrupted • Static current circuit (door leaf) is interrupted
• Remote control	• Control light IMPULSE does not flash after given impulse on hand transmitter	• Electronic aerial not connected • Wrong programming of hand transmitter coding • Flat battery

10. Appendix

Remedies

- Check voltage.

- Check main fuses in electric distribution, fuse 4 amp. in control unit and mains plug connection.

- Return the emergency hand chain to the home position (see installation instruction of operator).

- Engage the maintenance or quick release.

- Allow the motor to cool down.

- Unlock the control unit (blue mark).

- Insert short-circuit plug or control element plug into socket X10.

- Connect stop button in terminals 12 and 13.

- Check cable slack, wicket door and cable safety switch.

- Connect aerial (s. page 31).

- Program new coding (see page 22).

- Insert new battery (9V, IEC 6F22 or 12V, A23).

10. Appendix

Error	Error message	Cause for error
• Power limit	• Control light MALFUNCTION flashes,error No. 10.	• Door operation too sluggish.
• Door can only be opended.	• Control light MALFUNCTION flashes,error No. 15.	• Programming switches S20 / S20a in position OFF, but no photocell is connected.
	• Control light REFERENCE POINT does not light up when passing the reference point.	• Wrong setting of reference point switch.
• Door can only be closed in dead man's mode.*	• Control light MALFUNCTION flashes,error No. 13.	• Optosensor not connected. • Coiled cable defective.
	• Red control light on optosensor circuit board does not light up.	• Optosensors are not in bottom door seal or defective. • Bottom door seal is deformed.
• Operator starts up then stops.	• Control light MALFUNCTION flashes,error No. 9.	• RPM sensor defective.
• No function	• Control lights 1 - 7 flash.	• Fault in control unit.

* if closing edge safety device is installed

10. Appendix

Remedies

- Have door system checked (greasing or similar).

- Turn programming switches S20 / S20a to ON position or connect photocell.

- Set reference point (see page 14).

- Install optosensor (see page 29).

- Check coiled cable and connections.

- Check installation of optosensors or replace them.

- Align bottom door seal or replace.

- Have operator checked.

- Have control unit checked.

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