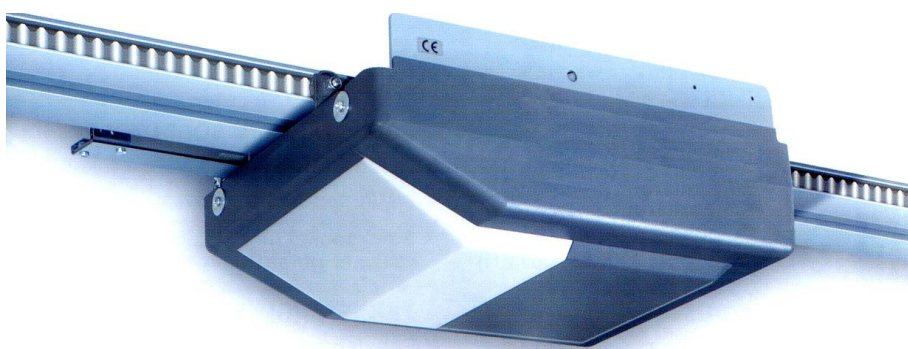




Installing and operating instructions

BPG082 - 152



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1. Technical Data

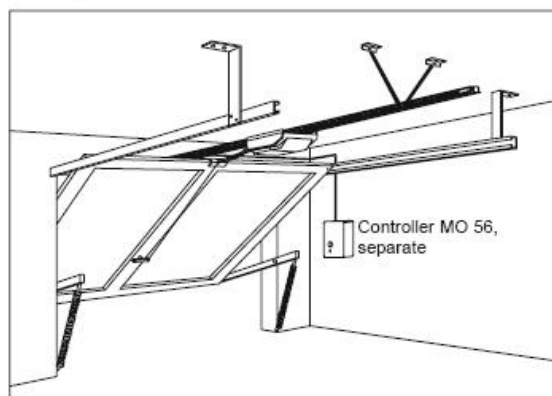
	MAXX 80ZA	MAAX 150ZA
Tractive Force	800 N	1500 N
Car park spaces (max.)	50	150
For one-piece overhead and sectional overhead doors	yes	
For sectional sliding doors *		
Required space above the door	38 mm, over 3000 mm door height 78 mm	
Maximum door width	4500 mm	6000 mm
Standard door height up to **	2600 mm	2600 mm
Optional height (with rail extension) **	3400 mm	3400 mm
Power supply	230V 50 Hz (Fine wire fuse 2 A in opener)	
Internal voltage	24 V = (Fine wire fuse 10 A in opener)	
Controller	MO 56	MO 56
Door contact	Yes	
Separate input from photo-cell	yes, photo-cell test (switchable)	
Contact strip evaluation	yes, evaluation separate	
Automatic closure	switchable, 0 - 300 s	
Warning before closing	switchable, 0 - 300 s	
Warning before opening	switchable, 0 or 4 s	
Output for traffic light	yes, red-/green traffic light, potential free contact, max. load 230 V / 120 W	
Impulse for lighting	3 min light, potential free contact, max. load 230 V / 500 W	
Partial opening	Yes, with remote transmitter	
Overall length	3290-4070 mm	3290-4070 mm
Net weight (ca.)	16 kg	20 kg

* Additional fittings required

** Applies only to one-piece overhead doors. For sectional doors with double horizontal guide rail deduct 275mm. For all other sectional doors deduct 375mm.

2. Installation examples

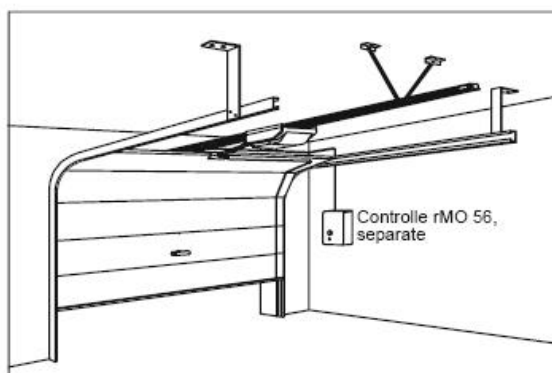
a) One-piece overhead doors



Door with a semi-circular opening movement.

This door operates with the standard connecting rod and door connecting angle iron.

b) Sectional overhead doors



Overhead door I

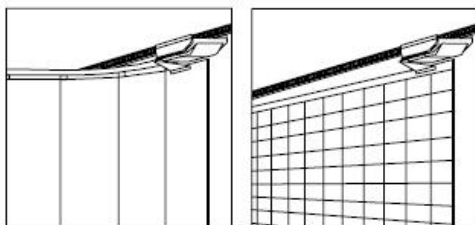
(The top guide wheel is at the top of the top segment and runs in a second guide rail).

This door operates with the standard connecting rod and door connecting joint.

Overhead door II

(The top guide wheel is approx. 1/3 below the top of the top segment). This door requires the optional overhead door connecting kit.

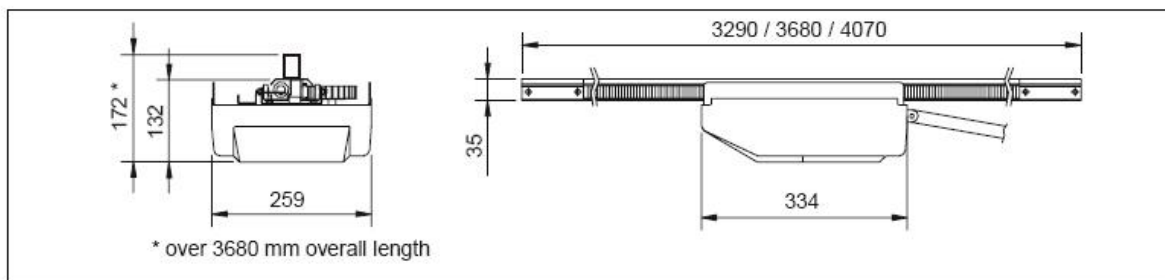
c) Sectional sliding doors



Sectional sliding door

This door requires the optional fitting for sliding doors.

3. Measurements

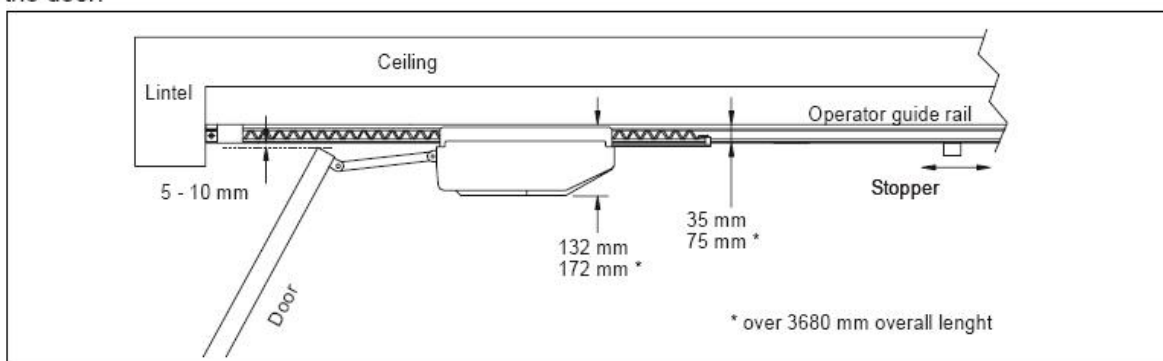


4. Installation

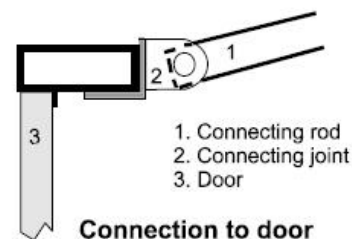


Important: Openers should be connected to the mains with an easily accessible main switch! Mechanical stopper for open and closed position required!

- Check that the door can be easily opened and closed manually. Alter the tension of the springs if necessary and oil moving parts. Either remove the latches, or block them in the opened position.
- The guide rail must be at least 5 mm higher than the highest point reached by the door during opening, and requires 40 mm (80 mm) between this point and the ceiling.
- Mark the point on the lintel directly above the middle of the door.
- Open the door and mark the point on the ceiling directly above the middle of the top edge of the door.
- These marked points must be used to align the guide rail so that it runs parallel to the movement of the door.



- Open the door and mark the highest point the door reaches during opening/closing. Transfer this mark (e.g. with a water level) to the lintel. The lower side of the opener guide rail must be at least 5 mm higher than this point.
- Screw the mounting brackets of the guide rail onto the lintel. You can now raise the rear end of the guide rail until it is horizontal and secure it with the ceiling mounting assembly.
- Screw the connecting joint of the opener onto the top edge of the door and fit the connecting rod.



Connection to door

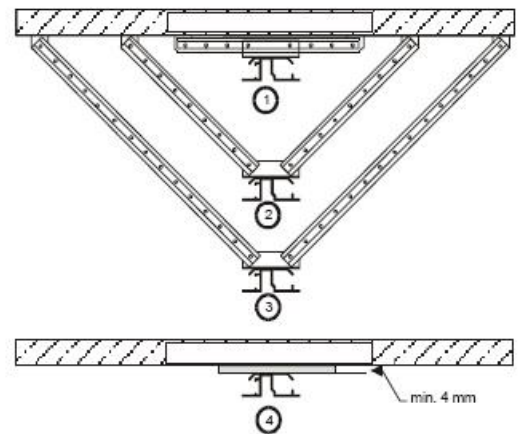
4.1. Ceiling mounting

Connect the guide rail to the lintel, as low as possible but leaving at least 5 mm between the top edge of the door and the guide rail. The following are all views from the door into the garage.

Fig 1 and 2 Installation with the standard ceiling mounting kit.

Fig 3 Installation with the optional ceiling mounting extension kit.

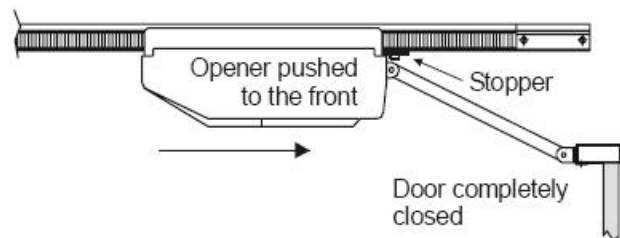
Fig 4 Mounting on the ceiling (but leaving at least 4 mm between ceiling and guide rail).



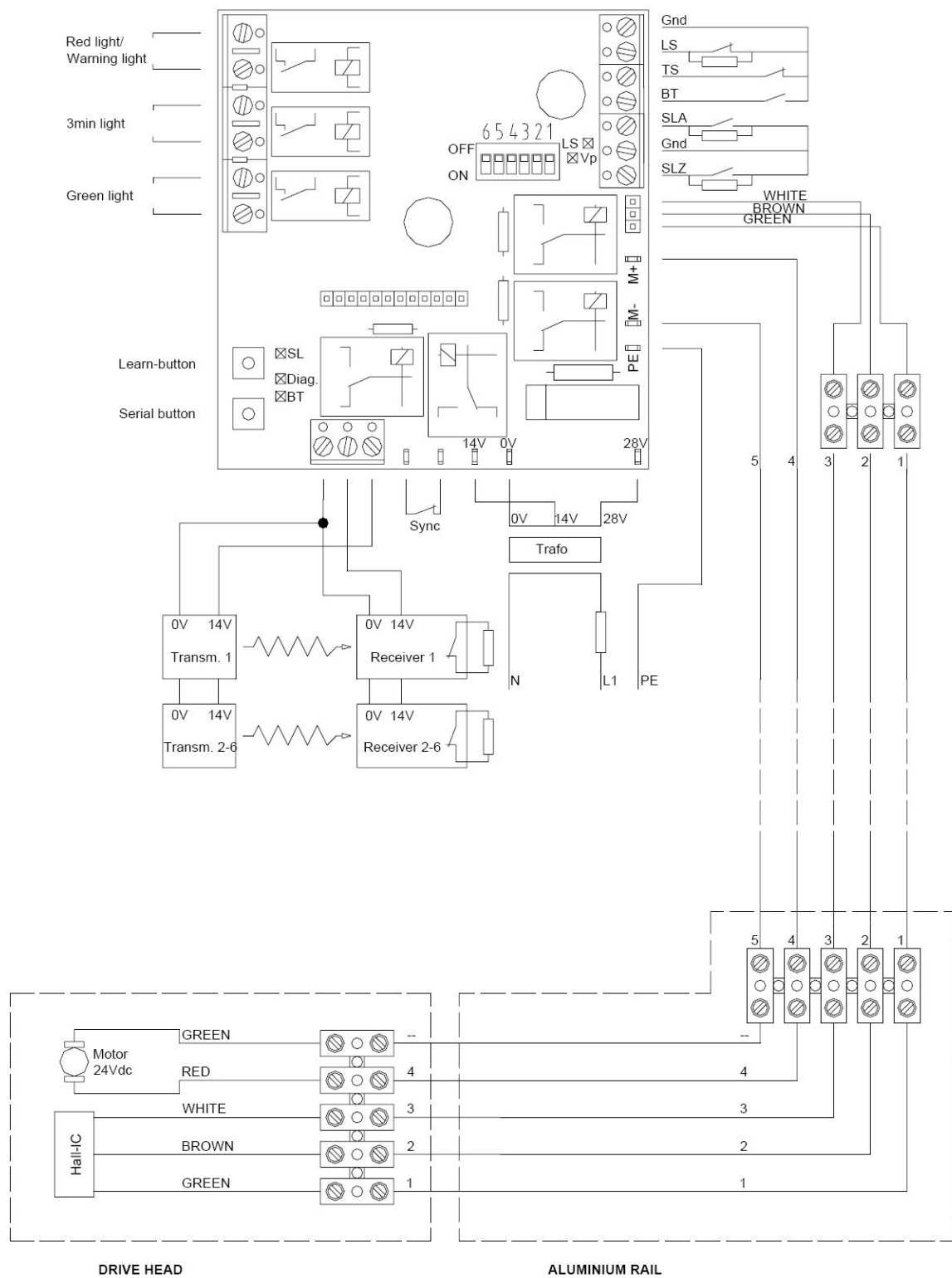
4.2. Stopper for overhead doors

Mount the door opener.

- Push the disengaged head of the opener as close to the door opening as possible.
- Push the door so that it is properly closed.
- Fit the stopper so that it presses against the front edge of the opener.
- The opener switches off at this point during closure due to current surge.



5. Controller MO 56



The controller MO 56 is located in a separate housing. When using radio remote control, the controller should be mounted as close as possible to the gate. The cables must be inserted from below. The cable to the motor should have at least the following cross section: 1.5mm² up to a cable length of 20m

5.1. Input terminals MO 56

Terminal	Contact	Function
BT	n.o.	Serial button. The function of BT is depending of the status of the operation mode automatic closure (DIP 1) - with automatic closure: BT opens or restarts the "stay open time". - without automatic closure: BT offers the sequence open – stop – close - stop.
TS	n.c.	Stop contact When TS is active, the gate cannot be operated.
LS	n.c.	Photocell contact. The function of LS is depending of the status of the operation mode photocell (DIP 5). When LS is active, the gate cannot be operated or the gate opens immediately.
Masse		Ground for BT, TS and LS.
Sync	n.c.	Connection for the switch "emergency release". When opener is released, this contact has to be opened using the NOT-AUS-switch. The controller is switched off, After re-engaging the gate opener, the controller has to be switched on using the NOT-AUS-switch (closing the contact).
Radio		Socket for radio remote receiver EKX10F.
SLZ SLA		Safety contact strip, separate for open (SLA) and close (SLZ) with 8,2 kOhm resistor. Two evaluation units with testing are integrated.
IMP		Incremental pulses from motor
PE		Earth
0V, 14V, 28V		From the transformer

5.2. Output terminals MO 56

Terminal	Function
14Vac for LS-transmitter	Supply for the photocell transmitter. Performs necessary supply interruption during LS test.
14Vac for LS-receiver	Supply for the photocell receiver.
0Vac	Common for photocell transmitter and receiver.
Motor + Motor -	Motor connector, for motor types: 1x 404.885, 2x 404.885
Light	3min. Light. Potential free contact. Maximum load 230V/500W.
Green traffic light	Green is on when gate is completely open. Potential free contact. Maximum load 230V/120W.
Red traffic light / Warn light	Red is off, when the gate is completely open or when it is completely closed. Red is on during movements, during warning times and when gate stops in between. Potential free contact. Maximum load 230V/120W.

5.3. Indication lights on the MO 56

LED name	Colour	Function
BT	Green	On, when contact BT is closed.
LS	Green	On, when at least one photocell contact (LS) is open.
SL	Red	On, when SLA or SLZ safety edge is pressed.
Vp	Yellow	On, when power supply is present.
Diag/Funk	Yellow	Diagnosis display and display for radio receiver.

6. Operation modes MO 56 (DIP switches)

Alter only when power supply is switched off
After each alteration push the LT-button

6.1. Automatic closure (S1)

When automatic closure is active, the stored pause time starts to elapse, every time the gate has reached the position completely open. When the stored time has elapsed, the gate will close automatically. If the gate is completely open and a stop command is given (TS), the function automatic closure is blocked. Automatic closure will be activated again and the pause time will start new, when button BT or radio transmitter is used.

When the gate is completely open and LS is active, the gate will stay open even after the pause time has elapsed. LS prevent the gate from closing, but the pause time is not extended. If LS is not active any more and the pause time has elapsed already, the gate will close immediately.

S1 off: Automatic closure is off
S1 on: If gate is completely open, it will close automatically after the stored pause time has elapsed. (choose from 0 up to 300 s, default 30 s)

6.2. Warning prior to opening (S2)

When warning prior opening is activated, the open command will start the warning light first. The gate will open after the warning time has elapsed.

S2 off: no warning prior to opening
S2 on: 4 s warning time prior to opening is active

6.3. Warning prior to closing (S3)

When warning prior to closing is activated, the close command will start the warning light first. The gate will close after the stored warning time has elapsed.

S3 off: no warning prior to closing
S3 on: warning time prior to closing is active (choose from 0 up to 300 s, default 5 s)

6.4. Photocell test (S4)

Photocell may be tested prior to every movement of the gate where the observation through photocell is active.

S4 off: Photocell test is off
S4 on: Prior to every movement the photocells are tested. The gate can only move when photocells are without malfunction.

Caution: The number of photocells has to be stored before using the test.

6.5. Photocell function (S5)

You may choose between two functions.

S5 off: LS is used during opening and during closing.
When obstacle is detected, the gate stops. After obstacle is gone, the gate opens.
S5 on: LS is used during closing only.
When obstacle is detected, the gate stops and opens immediately.

6.6. Timing or impulse logic (S6)

S6 on: Controller works as impulse logic (max. 60000 pulses per opening). Pulse cable from motor to controller is needed.

7. Safety functions MO 56

7.1. Stop contact

When contact TS is open (LED is on) no gate movement is possible. Using TS during a gate movement stops the gate immediately. The automatic closure is blocked when TS is being used.

7.2. Force detection

During the learn mode the controller analyses and stores the required forces to open and close the gate. In the operation mode the actual force is compared with the stored force value. If the actual force is higher than the stored value plus a certain extra, the logic commands a stop and a short distance reversal (for 1s) to free the obstacle.

7.3. Running time control

If the gate doesn't reach the end position closed at the (impulse) calculated position, the motor will continue to run for maximal 30s. The pulse counter is set to zero at the new position.

7.4. Safety contact strips

When safety edge SLZ during closing or safety edge SLA during opening reports an obstacle (LED SL is on), the controller performs stop and short distance reversal.

When the gate is still standing and a safety edge reports an obstacle, the gate can not move in the direction of the appropriate edge.

Before a movement the appropriate safety edge is tested. An artificial signal is created and the evaluation module is checked.

Note: See chapter operation in emergency mode.

7.5. Photocell

Two photocell functions are possible. They are selected with DIP 5.

7.6. Photocell test

Prior to every gate movement a photocell test may be performed.

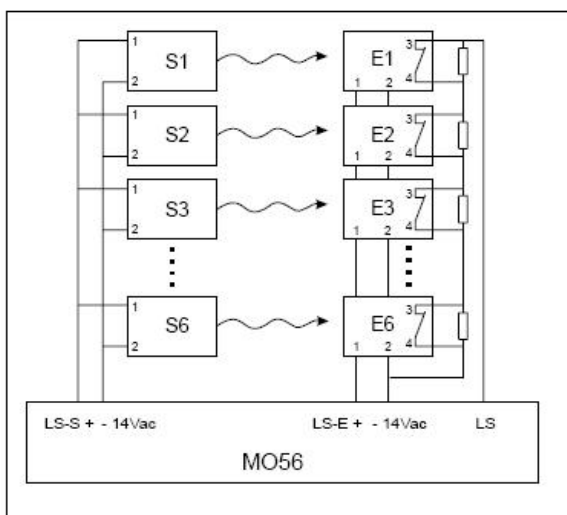
The test consists of two phases. During the first phase the supply of the transmitters is switched off. The controller expects within the next 2.5 s that the receiver reports an obstacle.

During the second phase the supply of the transmitter is switched on again. The controller expects the receiver to report no obstacle any more. Only after this procedure the gate can move.

If an error occurs in the first phase, the photocell (receiver) is damaged. The gate will not move. An error message is given through the Diag. LED (flashes 1 time).

If an error occurs in the second phase, the controller interprets this as a real obstacle. The gate will not move. No error message is given.

You may connect and test up to 6 pairs of photocells with the controller MO56. Therefore add all n.c. relay contacts of the receivers in serial. Parallel to each relay contact you must add a **1 k Ω** resistor (Resistors are needed only when photocell test is used).



The MO 56 must learn how many photocells are connected to it. Activate the test by setting DIP 4 to ON and run the learning of the running time. After this please check every single photocell for proper function.

7.7. Traffic lights

The controller offers potential free outputs for a green traffic light and a red traffic light (warning light).

The green light is on, when gate is completely open.

The red / warning light is on during movements, during warning times and when gate stops in between.

The red / warning is off, when the gate is completely open or when it is completely closed.

8. Learn mode MO 56

The logic must learn the following parameter during the installation:

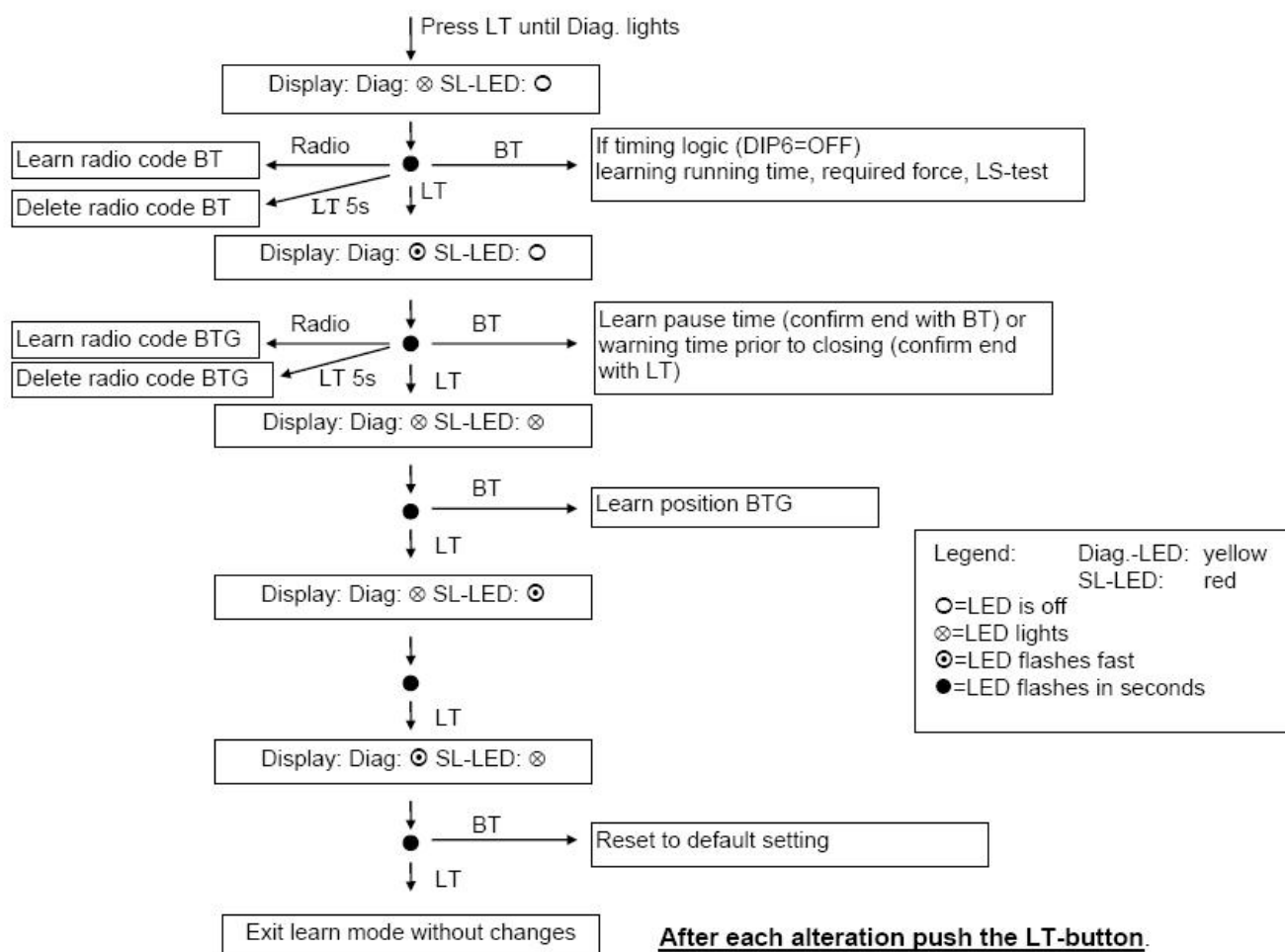
- Running time for opening and closing (Gate must be completely open when starting procedure)
- Required force for opening and closing
- If photocell test is needed, how many photocell are connected

In addition you may alter the default values of the following parameter:

- Position for partial opening (BTG)
- Pause time for automatic closure (0 to 300 s, default 30 s)
- Warning time prior to closing (0 to 300 s, default 5 s)
- Radio codes for BT and BTG (default: BT = -+-+--+-, BTG = no code)

You may use the learn button (LERN) and the LED's Diag and SL for programming.

Learn menu



8.1. Learning the running time, the required force and the reference value for photocell-testing

NOTE: Stopper "GATE OPEN" and Stopper "GATE CLOSED" must be present.

- a) Select running time control: DIP 6 = ON (pulse contact control)
- b) Press the LERN button until DIAG.-LED lights. Press the BT button once to activate learning of running time. **Use the BT button to move the gate in dead man's operation towards position OPEN(or gate is already open), but not against the stopper GATE OPEN (distance approx. 5cm).**
- c) Press the LERN button again. The gate closes by itself until it reaches the end position CLOSED and stops through lack of impulse. The running is determined (impulse counting)
The gate opens by itself until it reaches the end position OPEN. The running time for opening is determined.
The gate closes by itself until it reaches the end position CLOSED again. The required force for closing is determined.
If photocell-testing is activated, a test is conducted and the reference value for the photocell-testing is stored.
Now the learning function is completed and the controller returns to normal operation mode.
Note: Position for partial opening (BTG) and force reserve are set to default.

8.2. Learning the radio code for BT

- a) Press the LERN button until Diag LED turns on (approx. 3 s).
- b) Press the appropriate button on the radio transmitter. Receiver and controller receive the code and store it as BT code. After this procedure the controller returns to normal operation mode by itself.

8.3. Deleting the radio code for BT

- a) Press the LERN button until Diag LED turns on (approx. 3 s). **Keep on pressing for another 5 s.**
- b) After those 5 s the SL-LED lights for 1 second. The radio code for BT is deleted.
After this procedure the controller returns to normal operation mode by itself.

8.4. Learning the radio code for BTG

- a) Press the LERN button until Diag LED turns on (approx. 3 s).
- b) Press the LERN button once more. The Diag LED flashes fast.
- c) Press the appropriate button on the radio transmitter. Receiver and controller receive the code and store it as BTG code. The SL-LED flashes to confirm. After this procedure the controller returns to normal operation mode by itself.

8.5. Deleting the radio code for BTG

- a) Press the LERN button until Diag LED turns on (approx. 3 s).
- b) Press the LERN button once more and **keep on pressing for another 5 s**. The Diag LED flashes fast.
- c) After those 5 s the Diag. and the SL-LED light for 1 second. The radio code for BTG is deleted.
After this procedure the controller returns to normal operation mode by itself.

8.6. Learning the pause time for automatic closure

- a) Press the LERN button until Diag LED turns on (approx. 3 s).
- b) Press the LERN button once more. The Diag LED flashes fast.
- c) Press the BT button. The Diag LED flashes in seconds. The time is being stored.
- d) When required time has elapsed, press the **BT button** again. The pause time is stored. After this procedure the controller returns to normal operation mode by itself.

8.7. Learning the warning time prior to closing

- a) Press the LERN button until Diag LED turns on (approx. 3 s).
- b) Press the LERN button once more. The Diag LED flashes fast.
 - c) Press the BT button. The Diag LED flashes in seconds. The time is being stored.
- d) When required time has elapsed, press the **LERN button**. The warning time is stored. After this procedure the controller returns to normal operation mode by itself.

8.8. Learning the BTG position

- a) Press the LERN button until Diag LED turns on (approx. 3 s).
- b) Press the LERN button twice. The Diag LED and SL-LED light.
- c) Press the BT button once to activate learning of BTG position. **Use the BT button to move the gate in dead man's operation towards the required position.**
- d) Press the LERN button. The gate closes and the BTG position is stored. After this procedure the controller returns to normal operation mode by itself.
Note: The running time must have been stored already.

8.9. Set all parameters back to default

- a) Press the LERN button until Diag LED turns on (approx. 3 s).
- b) Press the LERN four times. The Diag LED flashes fast and the SL-LED lights.
- c) Press the BT button once more and **keep on pressing**. The Diag and SL LED light.
- d) In addition press the LERN button once. All parameters are set to default. After this procedure the controller returns to normal operation mode by itself.

Note: The controller has to be programmed again now.

9. Control functions

9.1. Normal operation

No automatic closure - serial switching OPEN-STOP-CLOSE-STOP with BT button

With automatic closure – open or restart pause time with BT button

The second radio link has the function BTG (partial opening). If the gate doesn't stand in the BTG position, the door opens to the BTG position. If the gate stands in the BTG position, the door closes (there is no automatic closure from the BTG position).

9.2. Operation after power supply break / Emergency mode

When power is switched on, the position of the gate is not known to the controller. Therefore it is only possible to close the gate until the end position closed is found (gate is pressed against mechanical stopper). After the position closed is known, the controller changes into normal operation mode.

If a safety device has a malfunction, it is not possible to operate the gate in normal operation mode into the appropriate direction.

But it is possible to operate the gate in dead man (hold to run) operation using the BT button (external button fix to terminals BT, or BT button on the controller itself). To activate dead man operation, you press the BT button keep on pressing for 10 s. During this time the warning light will flash in periods of seconds.

Emergency mode is not possible using the radio remote control.

10. Error codes MO56

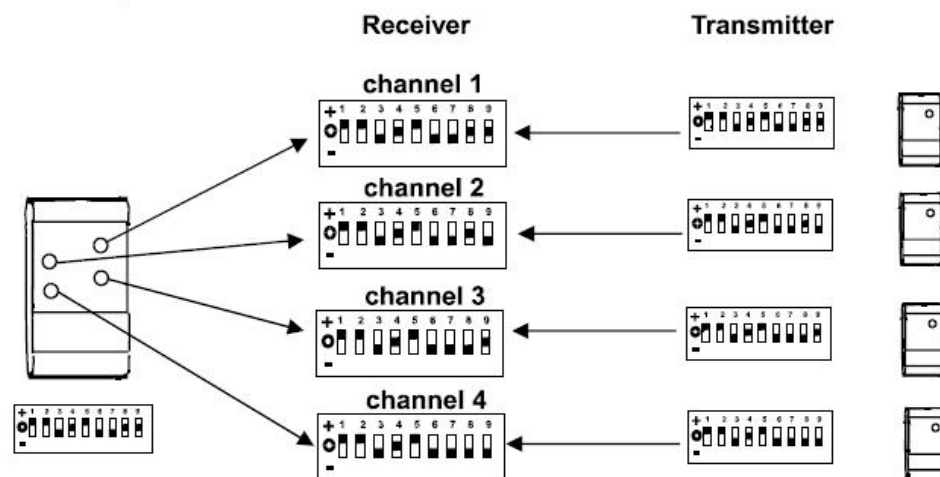
The controller displays certain error codes in case an error is detected. The code is given by the Diag LED. The Led is flashing several times, makes a break, and repeats flashing several times. To specify the code, please count how often the LED flashes between two breaks.

Error code	Reason
1 flash (flashes non-stop)	DIP switch error 1. Operation mode has been changed. Confirm with button LERN. OR 2. The data in the EEPROM and the DIP switches are different. If the error remains (after 1. – conforming with button LERN) send the controller back to your dealer.
2 flashes	Photocell error. During the photocell test the transmitter was switched off, but the receiver didn't report an obstacle.
3 flashes	Safety edge error. During the test of safety edges an error had occurred.
4 flashes	The data in the EEPROM got lost. Try to program again. If the error remains, send the controller back to your dealer.
5 flashes	The EEPROM can't be programmed. Send the controller back to your dealer.
6 flashes	TS observation faulty. The controller has got a hardware fault in the redundant TS observation. Send the controller back to your dealer.
7 flashes	Relay faulty. One of the motor relays doesn't react. Send the controller back to your dealer.
8 flashes	Pulse creator (Hall IC) in the motor or cable between motor and controller faulty.
9 flashes	Measuring amplifier faulty. Send the controller back to your dealer.

11. Setting personal code of the K Type radio remote control

Example A) Receivers using the code switches on the logic board : MO 33, MO 43 or MO 542
or receivers with code switches used in conjunction with the logic boards : MO 32, MO 35, MO 42, MO 52Z2, MO 60 or MO 62

Follow the example in the diagram below.



Transmitter SK, SKX and SKI in conjunction with K Type receivers using code switches.

The switches 1 to 7 in transmitter and receiver must have the same settings. The switches 8 and 9 of the receiver allocate a channel appropriate to the button of the transmitter. The switches 8 and 9 in multi - channel must be set at 0.

The examples on the right in the diagram above show the allocation of a channel with a one - channel transmitter using the switches 8 and 9 as in the receiver.

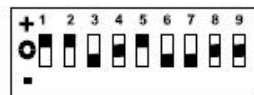
Example B) Receivers without code switches : Logic boards MO 34, MO 55, MO56 or MO63.

These receivers learn the code from the transmitter as described in the paragraph 'Learning personal code' (page 5) in these installation instructions.

Example C) Combination of examples A and B

A garage door opener with MO 56 and a swing gate opener with either MO 32 or MO 35.

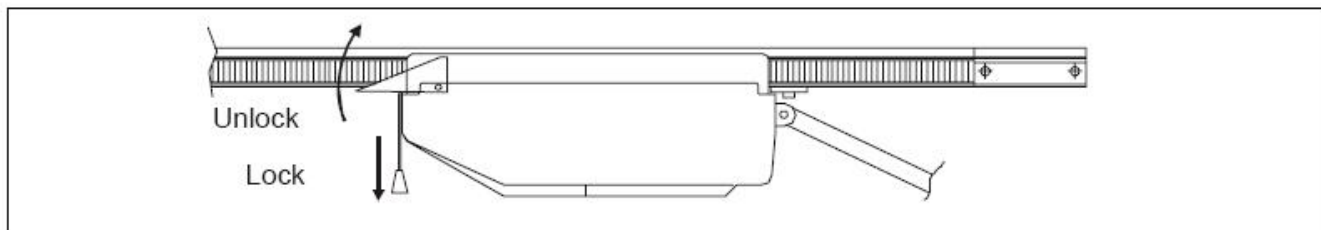
- 1.) Set the code of the transmitter and receiver for the swing gate opener as described above. Switches 1 to 7 have the same settings in both transmitter and receiver. The switches 8 and 9 set at 0.



The swing gate opener now receives signals from the first button of the transmitter.

- 2.) You can now allocate the second button to the garage door opener by going through the procedure described in the installation instructions for the garage door opener in the paragraph 'Learning personal code'.

12. emergency release



13. General Notes to Safety

These operating instructions must be available on site at all times. It should be read thoroughly by all persons who use, or service the appliances. Improper usage or servicing or ignoring the operating instructions can be a source of danger for persons, or result in material damage.