OPERATOR

SLIDING-300/800

Installation and Operating Manual

CONTENTS

1. GENERAL INFORMATION

The Sliding-300/800 operators are intended for automation of sliding gates without a pass door.

It consists of a mechanical reducer in oil bath and an electric motor with a built-in control unit. The reducer and the motor have a common housing. The rack fixed on the gate transforms the rotational motion of the output sprocket into the linear motion of the gate.

An external control button is connected to the control unit.

The self-locking reducer ensures the gate is mechanically locked if the motor fails. If the power fails, you can open or close the gate by hand using an emergency manual release.

1.1. BASIC FUNCTIONS

- Automatic stop system ensures quick and safe stop of the motor in end positions.
- Electronic noncontact limit switches ensure stop of the gate in end positions.
- In case of power failure, the operator can be released with a lever, after that you can open or close the gate by hand using a chain.
- The operator can be operated from stationary button or remote control in the stepped mode (open-stop-close-stop).
- The control unit and motor-reducer is placed within operator's housing. The operator produces low noise and is equipped with heat protection.

1.2. TECHNICAL SPECIFICATIONS

Model	Sliding-300	Sliding-800
Supply voltage, V/Hz	220-240/50	
Capacity, W	130	250
Reduction ratio	1:32	
Rack, mm	M4×12.566	
Gear wheel	Z16	
Maximal moment, Nm	7,5	20
Thermal protection, °C	125	
Intensity, %	50	
Operating temperature range, °C	–40…+60	
Protection class	IP44	
Max gate weight, kg	280	800
Gate speed, m/min	9	12
Control unit	PCB-SL	
Limit switches	magnetic	
Current consumption	1 A	
Capacitor volume, mF	7	10

1.3. OPERATOR PACKAGE

When you receive your operator, unpack it and check that the operator is not damaged. If any damages are found, contact the operator supplier.

The operator components included in the standard package are listed in the following table.

No.	Description	Quantity
1	Sliding-300/800 electric operator with built-in control unit	1 pc
2	Limit switches (open/close)	1 pair
3	Mounting base for concreting	1 pc
4	Fastening set	1 set
5	Release keys	2 pcs
6	Key-switch	1 pc
7	Rack (1 m)	4 pcs
8	Safety photocells	1 pair
9	Signal lamp	1 pc

2. SAFETY INSTRUCTIONS

WARNING! IMPORTANT SAFETY INSTRUCTIONS! It is important for the safety of persons to follow safety instructions. Save these instructions.

- Follow all instructions since incorrect installation can lead to severe injury.
- The Sliding-300/800 operator is intended for automation of sliding gate. Do not use the operator for other than intended purposes.
- DoorHan shall not be held responsible in case of injury caused by misuse of the product.
- Prior to installation make sure that the gate moves smoothly.
- Installation must be performed in accordance with the standards EN12453 and EN 12445. For countries, which are not EC members, these requirements are to be met.
- Check if the gate conforms to the standards EN12604 and EN 12605 (see documentation accompanying the gate). For

countries, which are not EC members, the above mentioned requirements shall be met in order to obtain an appropriate safety level.

- Mechanical units of the gate shall conform to the standards EN12604 and EN 12605.
- Prior to installation, check that the location of operator installation is suitable by its climatic conditions to technical specifications of the operator.
- Do not install the operator in premises containing quick inflammable substances or other dangerous environments as it can cause explosion or fire.
- During assembly, installation and adjustment use tools specified in section “Tools” of this manual.When drilling holes, use protection for hands and eyes.
- The operator is not intended for installation at a height exceeding 2 500 mm.
- When performing operation at height, use a stable support.
- When drilling holes, use protection for hands and eyes.
- For fastening of the item, use hardware supplied with the operator or other analogous one.
- Disconnect the supply when cleaning or other maintenance is being carried out, if the appliance is automatically controlled.
- If the operator is installed on the gate with a wicket door an additional safety device should be used to prevent operator activation when the wicket door is open.
- It is highly recommended to use DoorHan optional equipment as the accessories produced by other manufacturers can damage the automated system.
- DoorHan is not responsible for unstable work of the automatic system when using safety devices and accessories, which are produced by other manufactures without agreement with DoorHan.
- Never leave the electric motor in released condition. This may cause uncontrolled movement of the gate leave and, consequently, its breakdown.
- Do not use the operator if it needs repair or adjustment as installation defects can cause injury.
- DoorHan shall not be held liable in case of improper installation of the item and damage arisen during operation.
- Since the operator does not have a power cord with a plug it shall be connected to the mains supply via automatic switch with a minimal distance of 3 mm between the neighboring contacts. It is recommended to use a 10 A double-pole circuit-breaker.
- Be sure there are no obstructions to gate travel.
- Do not make any changes in the automatic system not specified in this manual.
- Remove package of the item and dispose of it. Keep the package materials away from children.
- Always keep remote controls out of reach of children. Never permit children to operate or play with gate control push buttons or remote controls.
- No one should cross the pass of the moving door.
- The content of the manual shall not be basis for any claim.
- The manufacturer reserves the right to modify the design of the product described in this manual without preliminary notice.

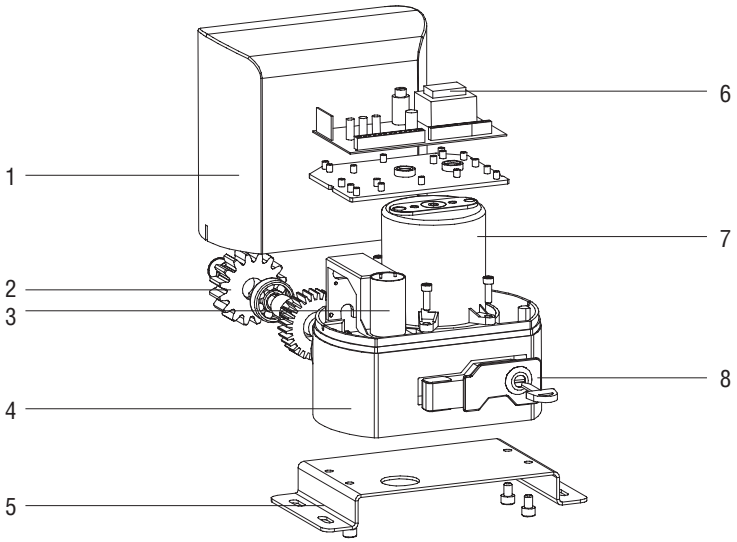
WARNING! For safe and correct operation of the operator put a stopper to limit the gate travel.

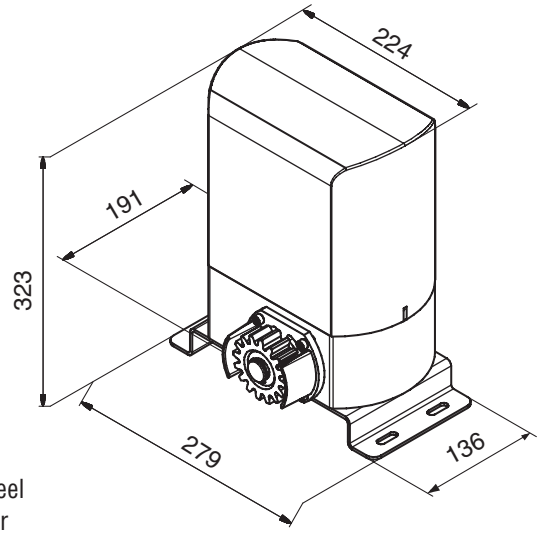
IMPORTANT! RISK OF INJURY!
Have a qualified technician lay the cables 220-240 V AC. The cables must be laid in protective corrugated tubes. Avoid contact of cables and moving parts of the gate. In case of supply cable damage, use the suitable type of the cable.

Materials needed for installation of the Sliding-300/800 operator and accessories (if available).

- Cable 2×0.5 mm^2 (photocell transmitter, stepped control button).
- Cabel 4×0.5 mm^2 (photocell receiver).
- Cable 3×1.5 mm^2 (power supply).
- The cables shall have isolation handling the required voltage.

3. OPERATOR UNIT

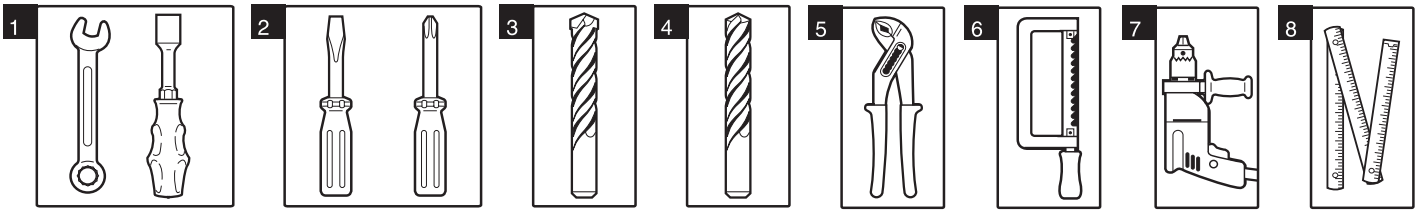




1. Cover
2. Gear wheel
3. Capacitor
4. Reducer housing
5. Operator fastenings
6. Control unit
7. Stator
8. Release

4. INSTALLATION

4.1. TOOLS



1. Set of spanners
2. Set of cross and straight-blade screwdrivers
3. Set of drill bits for metal
4. Set of drill bits for concrete
5. Pliers
6. Hacksaw for metal
7. Electric drill
8. Tape measure (folding rule)

4.2. OPERATOR INSTALLATION

Following the instructions below is critical to safe and satisfactory operation of the operator.

- Be sure that construction of the gate allows its automation.
- Be sure that the ground is solid and stable enough to install the mounting base of the operator.
- There shall be no pipes or electrical cables in the pit area.
- If the motor does not have protection from passing-by vehicles, install the suitable guard to prevent from accidental impacts.
- Be sure that effective earth connection is possible.

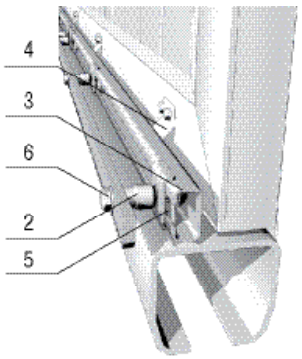
1. Place the operator on the base and moving it set the necessary space between the operator's gear wheel and the gate. Fix the operator.
2. Release the operator.
3. Run the protective tubes or corrugated tubes through the holes in the base.
4. Secure the racks to the gate strictly horizontally (see p. 4.3 or 4.4).
5. Set the required gap (~2 mm) between the racks and the gear wheel of the operator. The gear wheel and the racks shall be toothed along the whole width.
6. Move the gate and make sure that the rack does not press the gear wheel and does not dislocate. Fix other sections of the racks.
7. Open the gate and install the opening limit switch (see p. 4.5).

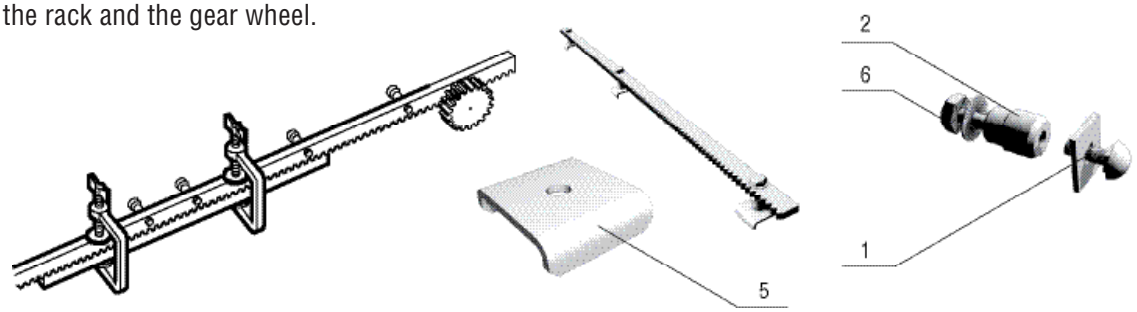
8. Close the gate and install the closing limit switch (see p. 4.5).
9. Couple the operator.
10. Adjust the control unit (see pp. 5.2 and 5.3).
11. Run up the operator to make sure that the operator functions normally.
12. If necessary, adjust the limit switches.

4.3. INSTALLATION OF THE RACK ON A DOORHAN GATE

In case of installing the operator on the DoorHan sliding gate, the rack installation steps are as follows.

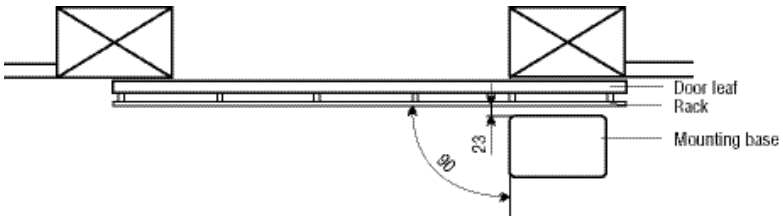
1. Place the C-profile on the shield fastening brackets (4) and fix it using tapping screws.
2. Insert a bolt with semi-round head and embedded plate (1) in the C-profile.
3. Place the clamp (5) on the C-profile so that the bolt (1) goes into the hole in the clamp.
4. Screw the bushing (2) on the bolt but not tighten it. The bushing (2) must press the clamp (5) to the C-profile (3).
5. Position the fastening unit you made opposite the hole in the rack.
6. Repeat Procedures 2–5 for other fastening units. The total quantity of fastening units shall be the same as the quantity of holes in the racks.
7. Fix the racks on the fastening units using bolts (6).
8. Level the teeth of all section elements using a free rack.
9. Tighten the fastening units.
10. Move the gate by hand and make sure that when the gate moves, all the rack elements do not leave the operator's gear wheel.
11. Never weld the racks to the bushings or one to another.
12. To ensure proper toothing of the rack and the gear wheel, set a ~2 mm gap between the operator's gear wheel and the rack.
13. Check that the gate reaches mechanical stops and moves without friction.
14. Do not grease the rack and the gear wheel.

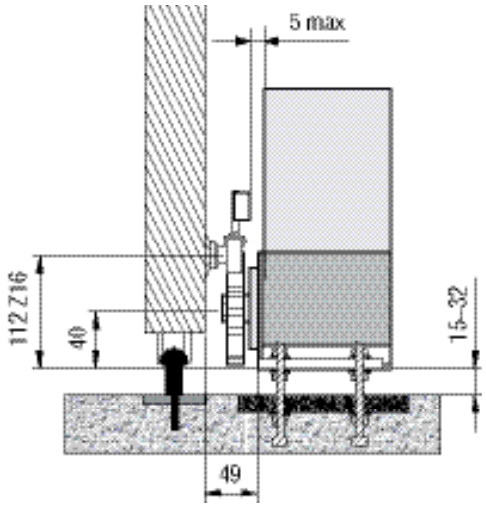




4.4. INSTALLATION OF THE RACK ON A GATE OF ANOTHER MANUFACTURER

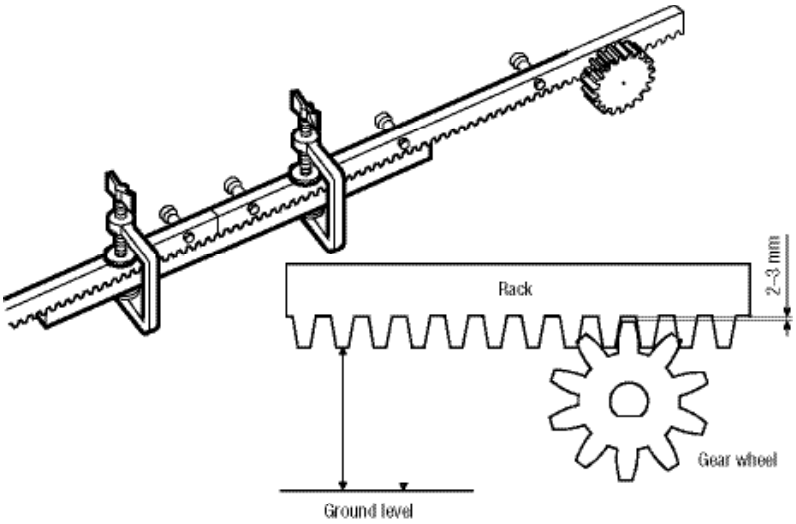
1. Manually move the gate leaf in an end position.
2. Put the first part of the rack on the gear wheel and place the bushing between the rack and the gate so that they match the upper part of the slot.
3. Mark the drilling point on the gate. Drill a hole 6.5 mm and thread it using the tap M8. Screw in the bolt.
4. Manually move the leaf so that the rack keeps its position on the gear wheel. Then repeat Step 3.
5. Place another rack element close to the previous. Level the teeth of these two elements using a free rack. Manually move the gate and do all procedures as for the first element. Repeat as many times as needed to overlap the whole gate with the racks.





Notes to rack installation

1. Make sure that when the gate moves the racks do not leave the gear wheel.
2. Do not weld the racks to the bushing or one to another.
3. In order to enable proper toothing of the rack and the gear wheel, lower the operator by ~2 mm.
4. Check that the gate reaches mechanical stops and moves without friction.
5. Do not grease the rack and the gear wheel.

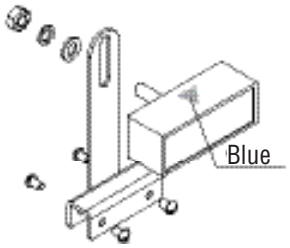


4.5. INSTALLATION OF LIMIT SWITCH PLATES

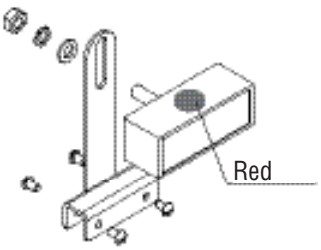
The Sliding-300/800 operator is equipped with ferreed contacts (magnetically operated sealed switches) which response for move of the magnet fastened to the rack and produce the command for gate stop.

Install the end magnets in the following order.

1. Unblock the operator (see p. 7).
2. Move the gate by hand in open position leaving 2–5 cm before the mechanical stop.
3. Move the open limit switch magnet (red round sticker) along the rack in the direction of gate opening till the magnetically operated sealed switch is off (a corresponding LED will go off on the control board). Move the magnet another 20–30 mm and fix it to the rack.
4. Move the gate in closed position leaving 2–5 cm before the mechanical stop.
5. Move the close limit switch magnet (blue triangular sticker) along the rack in the direction of gate closing till the magnetically operated sealed switches is off (a corresponding LED will go off on the control board). Move the magnet another 20–30 mm and fix it to the rack.
6. Move the gate in the middle position and block the operator (see p. 7).
7. To ensure proper operation of the system, leave at least 20 mm between the gate and the mechanical stop in the end opened and the end closed positions of the gate.
8. Run several full operation cycles and check for proper installation of the limit switches. The operator must stop when reaching the limit switch and at that the respective LED must go off. Sw2 is a LED of the close switch. Sw1 is a LED of the open switch.
9. The distance from the limit switch to the magnet of the limit switch must not exceed 5 mm.



Close limit switch



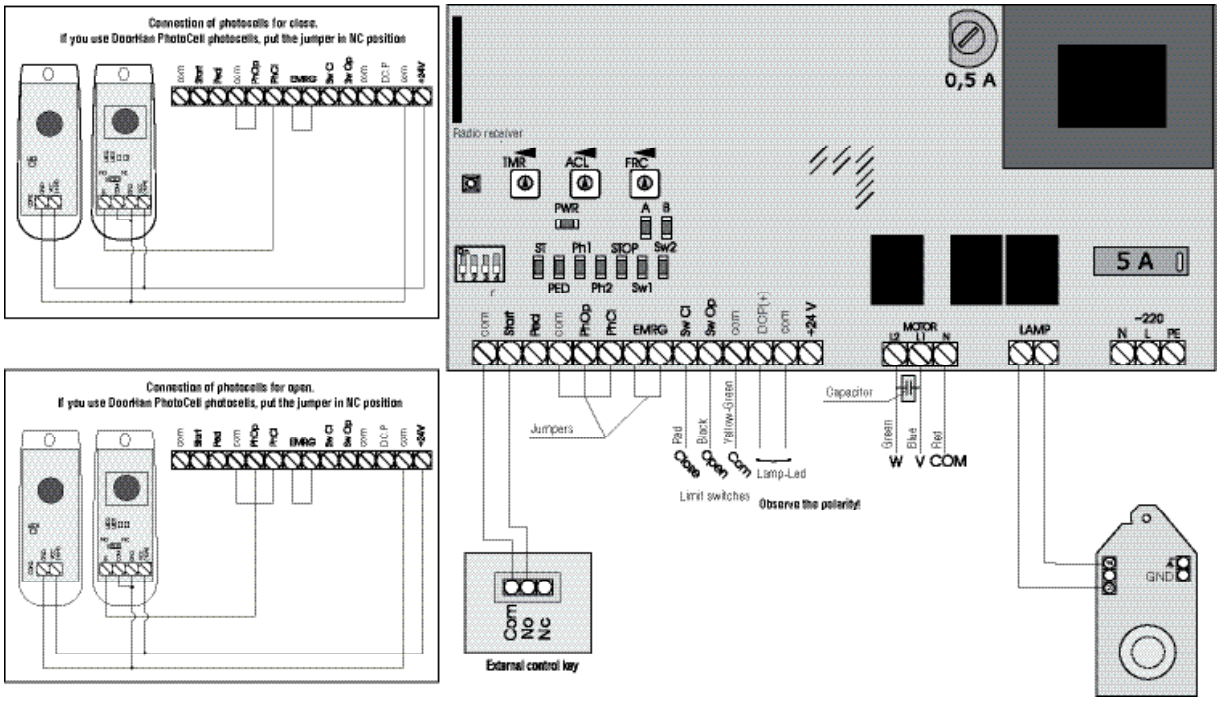
Open limit switch

WARNING! After you adjust the end positions, make sure that the limit switches work as they should, after their actuation the respective indicator on the control board must go out. If the indicator lamp does not go out, repeat the adjustment.

5. ELECTRICAL CONNECTIONS

5.1. CONTROL UNIT WIRING DIAGRAM

WARNING! Turn off the power supply before beginning work with control board. The power cables must be laid separate from signal cables. To reduce induced noises, use cables with screened armature. Cable wires must be protected from contact with rough and sharp parts.



5.2. DESCRIPTION OF THE CONTROL UNIT ELEMENTS

Control unit elements

TR1	Transformer
J1	Connector for quick connection of radio receiver
DIP	Group of DIP-switches
FUSE	High voltage part fuse
FUSE2	Low voltage part fuse
TIMER W	Time regulator of the gate reverse movement after the limit switch was activated
AUTO CL	Regulator of pause before automatic close
FORCE	Pulling force regulator

Control unit connectors

~220 (N, L, PE)	Supply voltage
Motor (N, L1,L2)	Connector for motor connection
Lamp	Connector for connection of signal lamp (see the diagram)
—	Negative contact of power supply for accessories (24 V) 600 mA
+24V	Positive contact of power supply for accessories (24 V) 600 mA
Sw Op	Control contact of open limit switch
Sw Cl	Control contact of close limit switch
EMRG	Pair of emergency stop contacts (NC)
Ph Op	Control contact of open photocells (NC)
Ph Cl	Control contact of close photocells (NC)
Ped	Close command (DIP2 is on) (NO)
Start	Open or stepped control command (NO)

Control unit LEDs

Indicator	Function	Glows	Does not glow
PWR	Motor supply voltage	**Yes**	No
A (red)	Add remote control code	Yes	**No**
B (green)	Emergency conditions	Yes	**No**
ST	START command	**Yes**	No
PED	PED command	**Yes**	No
Ph1	Closing photocells	**Not actuated**	Actuated
Ph2	Opening photocells	**Not actuated**	Actuated
STOP	STOP command	**Yes**	No
Sw1	Closing limit switch	**Closed**	Actuated
Sw2	Opening limit switch	**Closed**	Actuated

State of the light diodes when the gate is stationary in the middle position is shown in bold.

Electrical connectors

1. **~220 (N, L, PE)** — Connector on the control unit used for connection to supply voltage unit.

PE — earth connection

N — power supply (neutral)

L — power supply (phase)

2. **MOTOR (N, L1, L2)** — Connector on the control unit used for connection to electric motor unit. Make sure that the motor is connected as shown in the electric diagram.

3. **LAMP** — Connector used for connection of signal lamp 230 V max 40 W. It works during any movement of the gate leaf. The lamp blinking period is 0.5–1 second.

Low voltage contacts used for accessories

1. **START** — Full open command (NO)

Closing of contacts of the device connected to this terminal will cause actuation of control unit for full open and/or close of the gate (the exact logic depends on position of DIP1 switch).

DIP1 — off. The commands are produced in the Open-Stop-Close-Stop cycle mode.

DIP1 — on. The commands are produced in the Open-Close-Stop-Open mode (there will be no stop at the moment of move).

Control unit will take the Start command in ~1–2 sec after its previous receipt on the input.

If you need to connect several devices, connect the normally opened (NO) contacts of these devices parallel.

2. **Ped** — Pedestrian passage command (NO)

DIP2 — off. The Ped command allows you to open the gate by approximately 1 m. After the repeated command the gate will close. If the Ped command is followed by the Start command, control unit will give a command for full closing of the gate. When DIP2 is off the Ped command will open the closed gate by 1 m and will close the opened gate.

DIP2 — on. Individual control of the operator, meaning the Start command will open the gate and the Ped command will close the gate.

To connect several devices you should connect the normally opened (NO) contacts of these devices parallel.

3. **SW OP / SW CL** — Signals from limit switches.

Actuation (breaking of contacts) of SW OP/SW CL limit switches means that the gate leaf is in end open/closed position and must not move in this direction any more.

4. **Ph Cl** — Contacts for connection of closing safety devices (NC). Actuation of these devices will cause immediate reverse movement of the gate leaf until complete opening. Actuation of the devices connected to these terminals does not effect operation during opening of the gate.

If the sensors connected to these terminals are actuated when the gate is open, the gate won't close.

To connect several devices with NC contacts, connect them in series.

WARNING! If no devices are connected to these terminals, place a jumper between the contact terminals Ph CL and «–» (see the wiring diagram).

5. **Ph Op** — Contacts for connection of opening safety devices (NC). Actuation of the devices causes immediate stop. Actuation of the devices connected to these terminals does not effect the operation when the gate closes. If the gate is closed and sensors connected to these terminals are actuated, the gate will not open. To connect several devices with NC contacts, connect them in series.

WARNING! If no devices are connected to these terminals, place a jumper between the contact terminals Ph Op and «–» (see the wiring diagram).

6. **EMRG** — Contacts for connection of emergency stop devices (NC). These connections are used to protect the gate leaf when it opens and closes. Any operational logic of the control unit enables immediate stop of the gate after the signal from these devices was sent. If the gate were stationary and the sensors connected to these terminals wer actuated, the gate would not move. To connect several devices with NC contacts, connect them in series.

WARNING! If no devices are connected to these terminals, place a jumper between the contact terminals EMRG (see the wiring diagram).

7. **24 V DC** — output terminals on power supply transformer 24 V DC max load 600 mA.

WARNING! If you change position of DIP-switches or mechanical regulators, turn off and then turn on again the supply voltage of the operator. Otherwise the changes will not take effect.

5.3. DIP-SWITCHES

DIP1 — operation mode. The Start command have no effect during the gate opening (on/off) if DIP1 is in ON position.
DIP2 — individual control. If DIP2 is in ON position, you can realize individual control, i.e. the device connected to Start terminal sends an opening command and the device connected to Ped terminal sends a closing command (on/off).
DIP3 — operator's position relative to the gate opening. If DIP3 is in ON position, the operator is to the right of the opening. If DIP3 is in OFF position, the operator is to the left of the opening.
DIP4 — limit switch (DIP4 on/off — NO/NC).

Adjustment of DIP-switches

If you change the position of DIP-switches or mechanical regulators, turn off and then turn on the power of the operator. Otherwise the changes made won't take effect.

DIP-switch	DIP-switch function	DIP-switch position	Function realisation
DIP1	Operation mode — the gate stops after the START command has been sent	ON	No
		OFF	Yes
DIP2	Individual control — START command opens the gate, PED command closes the gate	OFF	No
		ON	Yes
DIP3	Position of the operator relative to the gate	ON	To the right
		OFF	To the left
DIP4	Type of limit switch contacts	ON	NO
		OFF	NC

5.4. MECHANICAL REGULATORS

TIMER W — time adjustment of the gate reverse movement after the limit switch was activated.
AUTO CI — adjustment of pause time before automatic closing of the gate. Pause time is 0–70 sec. Automatic closing function is off if the regulator is in the end left position.
FORCE — adjustment of operator's pulling force (setting of maximal consumption current). If the regulator is in the end right position, the operator force is maximal (not recommended).

Adjustment of mechanical regulators

Turn the corresponding regulator clockwise to encrease the setting. Turn the corresponding regulator counterclockwise to decrease the setting.

Automatic close is adjusted using the Auto CI regulator. For that you should set it in any position except the end left one. Turning the regulator right increases pause time before automatic close.

6. PROGRAMMING OF REMOTE CONTROLS

1. ***Memory cleaning.*** After power supply is on, hold down the “CODE” button for 10 seconds. The “A” indicator will glow for 10 seconds, then it will blink twice and go out to confirm that the codes have been erased.
2. ***Control’s code storing.*** To store the code of the remote control, press and hold down for 3 seconds the “CODE” button. The red “A” indicator will glow. Release the button. Select a button on the remote control, which you will use to control the unit and press it twice. The red “A” indicator will go out to confirm that the codes have been stored.
3. To add several remote controls, repeat the procedure of code storing for them. You can add 60 remote controls.
4. If no control commands are given, the system will automatically exit from the waiting mode in 10 seconds. Should the control unit disconnect from the mains, the programmed data will be stored.

7. RELEASE OPERATION

To release the operator, use the lever of the built-in release. After releasing you can open and close the gate by hand.

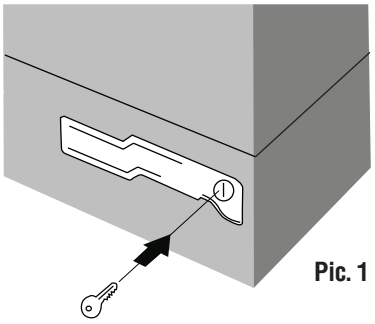
If you need to open the gate by hand in case of power failure or operator trouble, use the release.

1. Insert the key into the lock (Pic. 1).
2. Turn the key clockwise.
3. Without removing the key, open the release lever (Pic. 2).
4. Turn the key counterclockwise and remove the key from the lock.
5. Move the gate by hand.

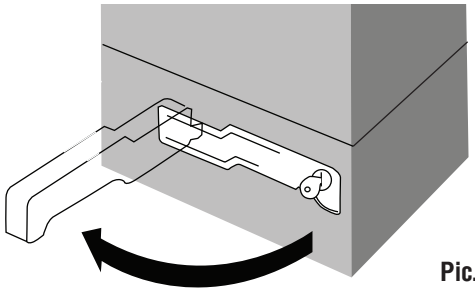
Return to normal operation of the system

To avoid the unprompted push when activating the gate, turn off the power supply of the system before blocking the operator.

1. Insert the key into the lock.
2. Turn the key counterclockwise.
3. Without taking out the key, close the release lever tightly.
4. Turn the key clockwise and remove the key from the lock.
5. Move the gate by hand until the operator is blocked.



Pic. 1



Pic. 2

8. MAINTENANCE

- The Sliding-300/800 automatic system does not require any special servicing.
- Repairs may be carried out only by a qualified technician trained and certified at an authorized DoorHan centre.
- Be sure that after completion of installation the installer has shown the user how to release the gate in case of emergency and has given instructions on proper operation and maintenance of the automated system.
- When carrying out maintenance, it is recommended to use DoorHan original spare parts.
- Carry out maintenance of the automatic system at least every six months.
- Regularly check if the gate moves smoothly when automatically operated.
- Regularly check if the extreme positions of the gate travel are properly adjusted and safety devices are in good working condition.
- In case of power failure the gate will stop. As soon as power supply is restored you can control the operator as usual.
- After expiration of life time, the item shall be delivered in a specialized disposal point!

- If you have lost this Manual, you may request for the duplicate copy to the following address: Kralovsky VRCH 2018, Kadan, 43201, Czech Republic, or by email: europe@doorhan.com.
- The producer (DoorHan) does not supervise the installation of operators, or carry out their maintenance, thus DoorHan cannot be held liable for safety of installation, operation and maintenance of the equipment.

9. TROUBLESHOOTING

Symptom	Possible reason	Solution
Operator does not run.	Power to the operator is turned off or cut.	Check that power to the operator is on.
	There is an obstacle to gate movement.	Remove the obstacle.
	Bad connection of electric wires.	Check wiring.
After use of release the gate does not move.	The operator is released.	Engage the operator.
Operator stops suddenly.	Operator's thermal protection activates.	Let the operator cool.
	Incorrect adjustment of limit switches or running time.	Adjust position of limit switches and running time.
Gate does not open/close completely.	Incorrect adjustment of limit switches.	Adjust limit switches.
	Force protection activates.	Adjust operator's force.

We very much appreciate that you have chosen the product manufactured by our company and believe that you will be satisfied with its quality.

For information on purchasing, distribution and servicing
contact DoorHan central office at:
Kralovsky VRCH 2018, Kadan,
43201, Czech Republic
Telephone: +420 474 319 111
E-mail: europe@doorhan.com
www.doorhan.cz