

Instructions for Fitting, Operating and Maintenance

Gate operator

DX524

4Ddoors

GARAGE DOORS REDEFINED

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Subject to changes.

13 NOTES AND CONFORMITY

13.1 General safety instructions



CAUTION

To install gate correctly, read these instructions carefully. If installed wrongly or in case of incorrect working process, serious injury can be caused.

- Packaging materials (plastic, polystyrene, etc.) should not be stored in reach of children. If necessary please dispose properly.
- Please keep the manual.
- This product has been developed and produced for the use mentioned in these instructions only. Different use may be source to damage and risks.
- The producer refuses every liability for damages caused by improper or not intended use of the drive.
- **Conformity to EN-Standards:**
Mechanical elements: EN 12604 and EN 12605.
Installation: EN 132411.
Safety devices: EN 12978

For countries not being part of the European Union the above mentioned norms as well as the national legal directives must be respected.

- The producer rejects every responsibility for consequences, caused by non-professional production of closing mechanisms or by deformation caused during operation.
- Before every interference switch off power supply and prevent from being switched on again.
- Install an all-poles separating safety switch with a contact distance of at least 3mm before the power supply line. In addition install an error current safety switch using a trigger threshold of 0,03 A.
- Check if the grounding system was installed properly. All metallic parts must be grounded.
- Install all safety devices (e.g. light barrier, safety strips etc.) which avoid a person getting injured by jamming, cutting or being dragged along.
- We recommend at least one flashing device for every gate situation. In addition a warning sign should be installed in sight.



No pedestrians, prohibition sign

- The producer rejects every liability regarding safety and functioning of the installation site, if components of a different brand are used.
- For maintenance and repair only original parts may be used.
- No changes must be made to the components of the installation site without permission of the producer.

- Familiarize the operator of the installation with the correct handling of the installation. Explain the emergency unlocking in case of power failure and hand over the mounting instructions/ manual.
- No children or adults should stay near the installation when in operation.
- The radio controls and every other transmitter should be out of the reach of children to avoid an accidental activation of the gate.
- The passing through should only take place when gate does not move.
- The operator should not perform repairs or direct interferences himself, he is supposed to contact qualified professional staff.
- **Service:** Check functioning of gate, but especially functioning of safety devices (including push force of drive) and unlocking device at least twice a year.
- All procedures, not explicitly mentioned in this manual, are not valid.

13.2 Declaration of incorporation for an incomplete machine

Partly completed machinery as defined in the EC Directive 2006/42/EC is only intended to be incorporated into or assembled with other machinery or other partly completed machinery or equipment, thereby forming machinery to which this Directive applies. This is why this product must only be put into operation after it has been determined that the entire machine/system in which it will be installed corresponds with the guidelines of the EC Directive mentioned above.

After installation, the installer of the gate system must declare conformity to DIN EN 13241-1 in accordance with the scope of application.

Dear Customer,
Thank you for choosing this quality product from our company.

13.3 About these Instructions

- These instructions are original **translation** of an **operating instructions**, outlined in the EC Directive 2006/42/EC.
- Read through all of the instructions carefully, as they contain important information about the product.
- Pay attention to and follow the instructions provided, particularly the safety instructions and warnings.
- Please keep these instructions in a safe place and make sure that they are available to all users at all times.

13.4 Further applicable documents for customer/users

Please ensure that the following guides were ultimately delivered to the customer who uses the product:

- this guide / instructions
- Digital control board **MS1024** guide
- Hinged gate guide / instructions

13.5 Caution Indications



The general warning symbol indicates a danger that can lead to **injury** or **death**.

In the text, the general warning symbol will be used in connection with the caution levels described below. In the illustrated section, an additional instruction refers back to the explanation in the text.

	DANGER!
	Indicates a danger that leads directly to death or serious injuries.
	WARNING!
	Indicates a danger that can lead to death or serious injuries.
	CAUTION!
	Indicates a danger that can lead to minor or moderate injuries.
	ATTENTION!
	Indicates a danger that can lead to damage or destruction of the product.

14 SAFETY PRECAUTIONS

14.1 Intended use

The hinged gate operator is designed and intended exclusively for the operation of smooth-running hinged gates in the **domestic** and **commercial** sector. The maximum permissible gate size and maximum weight must not be exceeded. The gate must be easy to open and close by hand.

Please observe the manufacturer's specifications regarding the door and operator combination. Possible hazards as defined in EN 12604, EN 12445 and EN 12453 are prevented by the design itself and by carrying out installation in accordance with our guidelines. Gate systems used by the general public and equipped with a single protective device, e.g. force limit, may only be used when monitored.

14.2 Inappropriate use

The gate-operator is **not** designed for use with **larger heavy-weight** or **sluggish** gates or gates with an **ascending slope**.

14.3 Fitter qualification

Only correct fitting and maintenance in compliance with the instructions by a competent/specialist company or a competent/qualified person ensures safe and flawless operation of the system. According to EN 12635, a specialist is a person with suitable training, specialist knowledge and practical experience sufficient to correctly and safely fit, test, and maintain a gate system.

Work to be carried out (mounting, maintenance, repair and dismantling) by qualified service personal only! Should the hinged gate operator fail, a specialist must be immediately entrusted with its inspection / repair.

14.4 Important instructions for a safe installation

Any further processing must ensure that the national regulations governing the operation of electrical equipment are complied with.

14.4.1. After installation

The installer of the gate system must declare conformity to DIN EN 13241-1 in accordance with the scope of application.

14.5 Checking the gate / gate system

The design of the operator is **not** suitable **nor** intended for the opening and closing of heavy gates, i.e. gates that can no longer be opened or closed manually. Before installing the operator, it is therefore necessary to check the gate and make sure that it can also be easily moved by hand.

In addition, check the entire gate system (gate pivots, bearings and fastenings) for wear and possible damage. Check for signs of corrosion or fractures. The gate system may not be used if repair or adjustment work needs to be carried out. Always remember that a fault in the gate system or a misaligned gate can also cause severe injury.

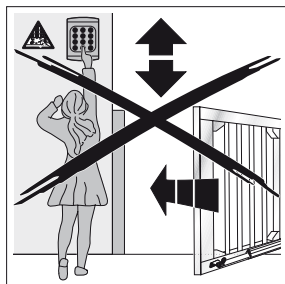
Note

Before installing the operator and in the interests of personal safety, make sure that any necessary repairs to the gate are carried out by a qualified service engineer.

14.6 Warnings



WARNING!



Danger of injury due to unexpected gate travel!

Incorrect assembly or handling of the operator may trigger unwanted gate travel that may result in persons or objects being trapped.

Follow all the instructions provided in this manual. Incorrectly attached control devices (e.g. buttons) may trigger unwanted gate travel. Persons or objects may be trapped as a result.

- Install control devices at a height of at least 1.5 m (out of the reach of children).
- Fit permanently installed control devices (such as buttons) so that the entire area of travel of the gate is visible, but they are still away from moving parts.

Persons or objects may be trapped if the installed safety equipment fails.

- In accordance with BGR 232, install at least one clearly visible and easily accessible emergency command unit (emergency OFF) near the gate so the gate can be brought to a standstill in the case of danger.

15 WARRANTY

- We shall be exempt from our warranty obligations and product liability in the event that the customer carries out his own structural alterations or undertakes improper installation work or arranges for same to be carried out by others without our prior approval and contrary to the fitting guidelines we have provided.
- Moreover, we shall accept no responsibility for the inadvertent or negligent use of the operator and the accessories nor for improper maintenance of the gate and its counterbalance.

15.1 Warranty period

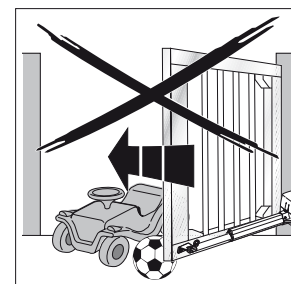
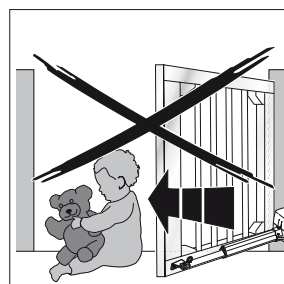
- In addition to the statutory warranty provided by the dealer in the sales contract, we grant the following warranty for parts from the date of purchase:
 - 2 years for the operator mechanics, motor, motor control, radio equipment, accessories.
 - There is no warranty on consumables (e.g. fuses, batteries, lamps).
 - Claims made under the warranty do not extend the warranty period. For replacement parts and repairs the warranty period is six months or at least the remainder of the warranty period.

15.2 Prerequisites

- A claim under this warranty is only valid for the country in which the equipment was bought. The product must have been purchased through our authorised distribution channels.



WARNING!



Danger of injury during gate travel!

Gate motion can lead to injuries or damage.

- Make sure that no children play within the gate area and no persons or objects are in the gate's travel range and between the gate and the operator mechanics.
- Operate the gate operator if you are within sight of the gate's area of travel and safety features are installed.
- Monitor the gate travel until the gate has reached the end-of-travel position.
- Drive or pass through remote control gate systems only if the gate stands still in its end-position GATE-OPEN!

- A claim under this warranty exists only for damage to the object of the contract itself. Reimbursement of expenditure for dismantling and fitting, testing of corresponding parts, as well as demands for lost profits and compensation for damages, are excluded from the warranty.
- The receipt of purchase substantiates your right to claim under the warranty.

15.3 Performance

- For the duration of the warranty we shall eliminate any product defects that are proven to be attributable to a material or manufacturing fault.
- We pledge to replace free of charge and at our discretion the defective goods with nondefective goods, to carry out repairs, or to grant a price reduction.

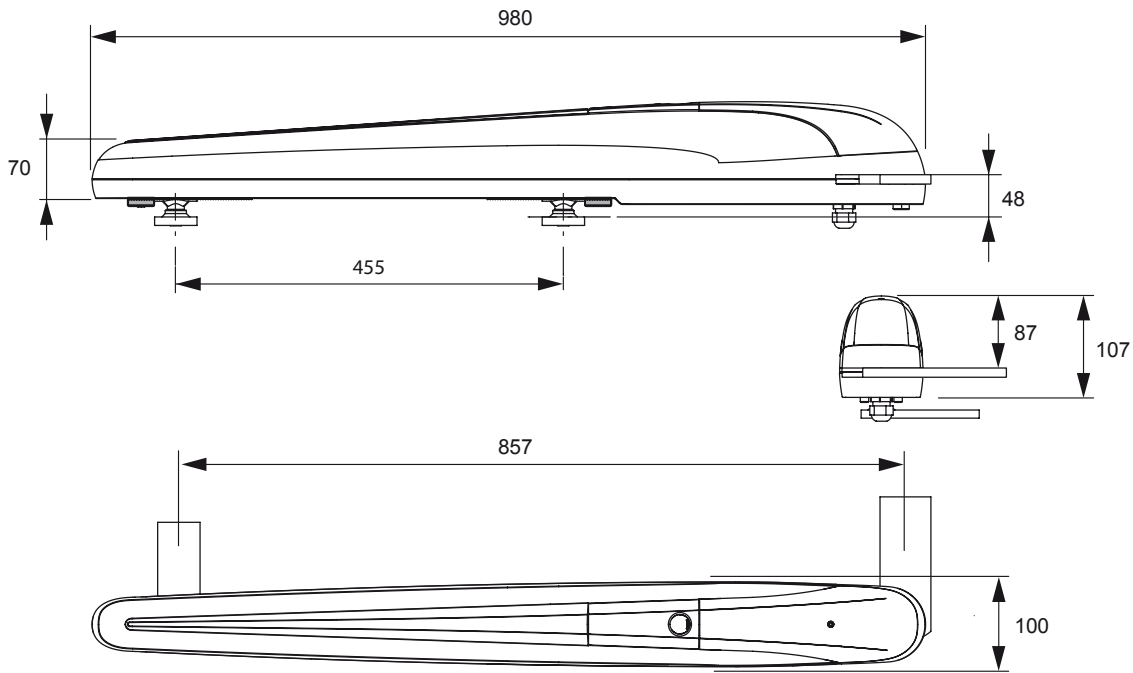
Damages caused by the following are excluded:

- improper fitting and connection
- improper initial start-up and operation
- external factors such as fire, water, abnormal environmental conditions
- mechanical damage caused by accidents, falls, impacts
- negligent or intentional destruction
- normal wear or deficient maintenance
- repairs conducted by unqualified persons
- use of non-original parts
- removal or defacing of the data label

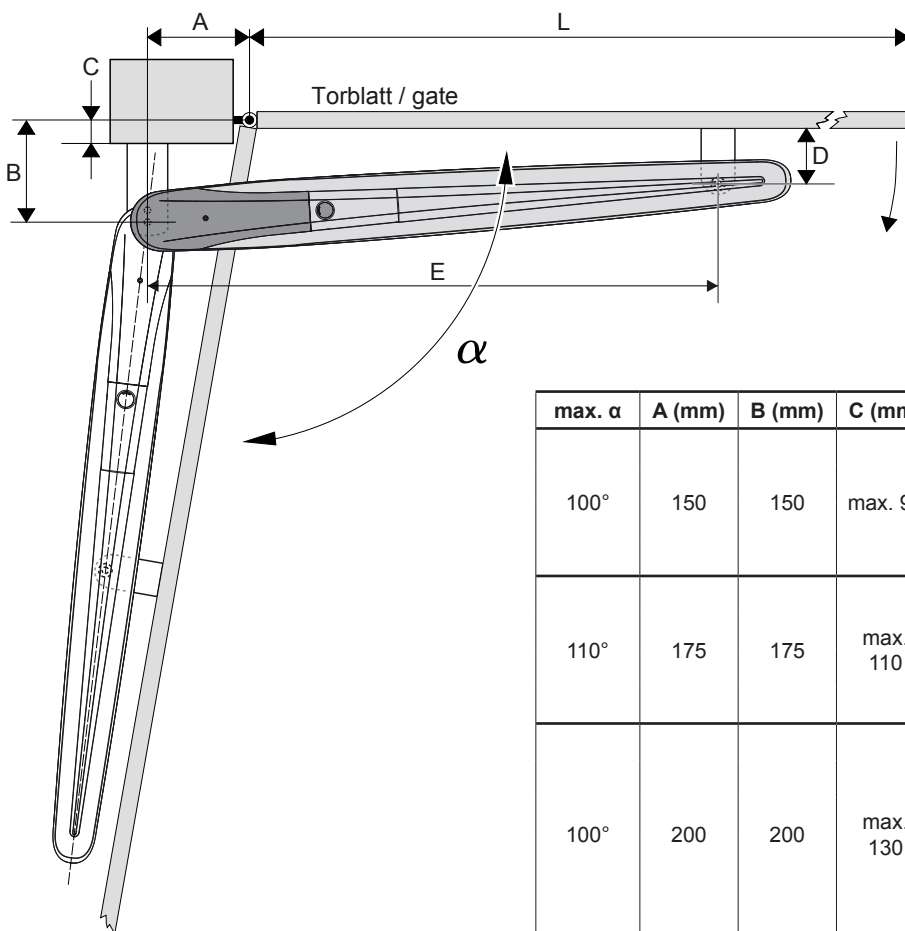
Replaced parts become our property.

16 DRAWINGS

1



01 Dimensions of housing



02 dimensions of gate operator

max. α	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	t / 90°	L (m)	max. kg
100°	150	150	max. 90	82	845	25 s	2,0	450
							2,5	400
							3,0	350
							3,5	300
110°	175	175	max. 110	97,5	855	30 s	2,5	400
							3,0	350
							3,5	350
							4,0	300
100°	200	200	max. 130	118,5	850	34 s	2,5	500
							3,0	450
							3,5	400
							4,0	400
							4,5	350
90°	225	225	max. 150	139	852	38 s	2,5	500
							3,0	450
							3,5	450
							4,0	400
							4,5	400
							5,0	400

17 PREPARATION FOR INSTALLATION



WARNING!

Danger of injury due to damaged components!

A fault in the gate system or an incorrectly aligned gate may lead to serious injuries!

- Do not use the gate system if repair or adjustment work must be conducted!
- In addition, check the entire gate system (gate pivots, bearings, springs and fastenings) for wear and possible damage.
- Check for the presence of rust, corrosion, and cracks.
- For your own safety, only have a specialist conduct maintenance and repair work!

Before installing the operator and in the interests of personal safety, make sure that any necessary repairs to the gate system are carried out by a qualified specialist. Only correct fitting and maintenance in compliance with the instructions by a specialist company or qualified person ensures safe and flawless operation of the system. The specialist carrying out the work must ensure that installation is conducted in compliance with the prevailing national job safety rules and regulations and those governing the operation of electrical equipment. The relevant national directives must be observed. Potential hazards are avoided by construction and fitting according to our guidelines.

- Prior to fitting, deactivate or completely disassemble any mechanical locks not needed for power operation of the gate. This includes in particular any locking mechanisms connected with the gate lock.
- In addition, check that the gate is in a flawless mechanical condition, so that it can be easily operated manually and opens and closes properly (EN 12604).

Note

Check all safety and protective functions monthly.
Sicherheits und Schutzfunktionen einmal im Monat auf ihre Funktion prüfen. Vorhandene Fehler bzw. Mängel müssen sofort behoben werden!

Instruct all persons who use the gate system on the proper and safe use of the hinged gate operator. Demonstrate and test the mechanical release as well as the safety return.



WARNING!

Danger of injury during gate travel.

Risk of injury on hand/fingers; do not touch/hold any edges of the gate while the gate is moving. If people or objects are in the area around the gate while the gate is in motion, this can lead to injuries or damage.

Unsuitable fixing material.

Use of unsuitable fixing material may mean that the operator is insecurely attached and could come loose.

- The fitter must check that the fitting materials supplied are suitable for the purpose and the intended fitting location.

17.1 Install the gate operator

Note

Values given in picture „02 dimensions of gate operator“ on page 18 are valid for gates with a max. height of 1.5 m only.

For higher gates, the width of the leafs must be smaller or choose the higher mounting-size (A and B-value).

For gates with ascending slope (max. 5%), the max. width of the leafs is 4.0 m.

Mechanical limit stops for end-positions gate CLOSE and OPEN should be mounted!

Use an electronic key lock at gate-CLOSED, if gates with leafs >2.5 metres are used.



CAUTION!

Dirt

Drilling dust and chippings from drilling work can lead to malfunctions.

- Cover the operator during drilling work.

17.1.1. Establishing the mounting dimensions

Always observe the mounting dimension, see „02 dimensions of gate operator“ on page 18.

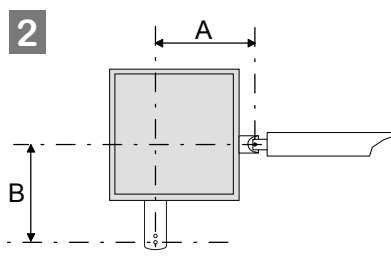
Ensure before mounting, the gate operator is free of any obstacles (values C).

A and B-values have a direct influence on gate operation, these values must be observed.

Note

Selecting an unnecessarily large opening angle α will impair gate travel performance.

Maybe the post needs shortening/extension for a good gate performance.

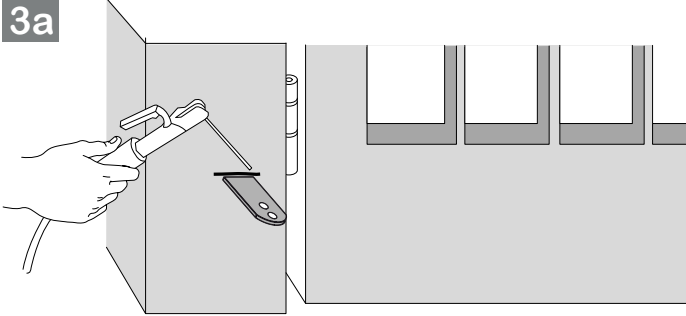


2 dimensions at the post

17.1.2. Fix gate-tarnish to post

Fix gate-tarnish to the post with the established dimensions.

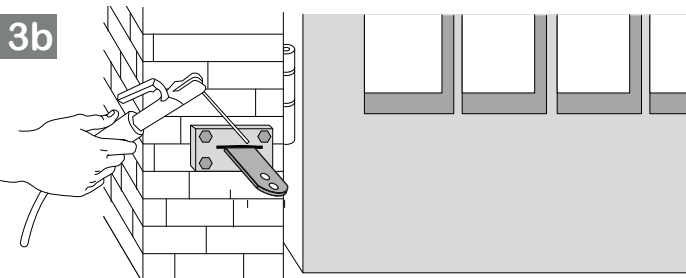
Steel-posts; weld the tarnish directly to the post.



3a weld tarnish to steel posts

Stone or concrete posts: the post tarnish should be fitted or welded to a large steel plate that is screwed onto and covers multiple bricks, see image 3b below.

An angle plate that goes around the edge of the post is also good for fitting. Ensure, the plugs used to fix the plate cannot come loose.



3b tarnish on a steel plate/stone posts

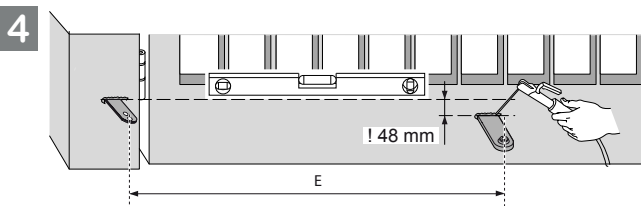
Observe the recommendations for plug hole edge distances. Turn the plugs so that the direction the plug spreads is parallel to the edge.

Adhesive bond anchors, which allow a grub screw to be glued into the brickwork free of tension, offer an even better hold.

Wooden posts; the gate hardware must be tightened using through-holes. Use large steel washers or, even better, a steel plate on the rear of the post to ensure that it cannot come loose.

17.1.3. Fix gate-tarnish to gate

- Fix (weld) tarnish to the gate-leaf with distance **E** (see table „2 dimensions at the post“ on page 19).
- Ensure the tarnish is fixed horizontal and stable at the gate leaf, 48 mm lower than the tarnish on the post.



4 gate tarnish, 48 mm lower

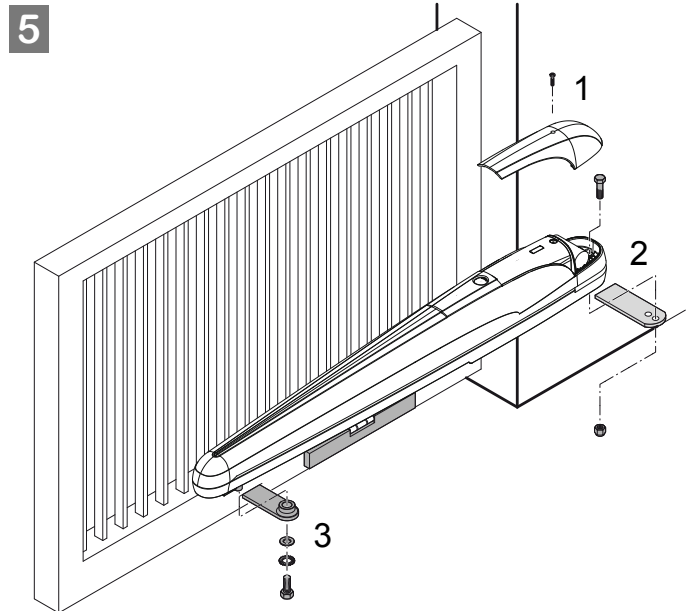
Depending on the mounting dimension, the gate tarnish should be extended/shortened to avoid, the rain conduit contacts the gate-leaf. Observe dimensions table „2 dimensions at the post“ on page 19.

Before mounting the operator, check the gate performance by moving the gate leaves into the endpositions by hand.

17.1.4. Mount operator motor

Pay attention that fitting is horizontal, stable and secure at both the post and gate leaf. If necessary, use other suitable connectors. Unsuitable connectors may not hold up to the forces resulting during opening and closing.

- Loose screw (1) and remove housing.
- Grease both bore holes (2, 3)
- Screw operator to the post using rear bore hole (2). This bolt is the rotation centre of the operator.
- Lock security nut.
- Screw operator to the gate leaf (3).



5 Fit the hinged gate operator



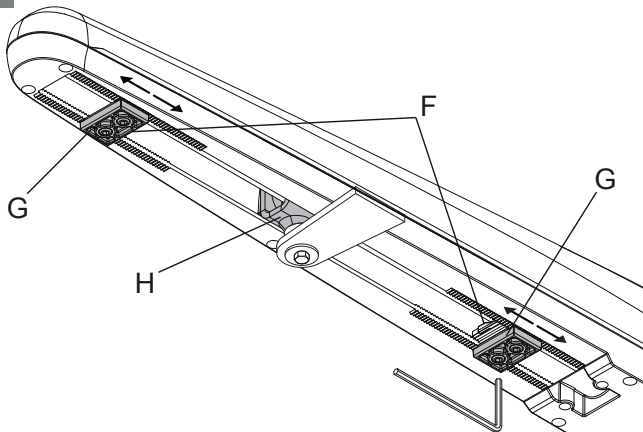
CAUTION!

Drilling dust and chippings from drilling work can lead to malfunctions.

- Cover the operator during drilling work.

17.2 Adjust end stops / limit switches

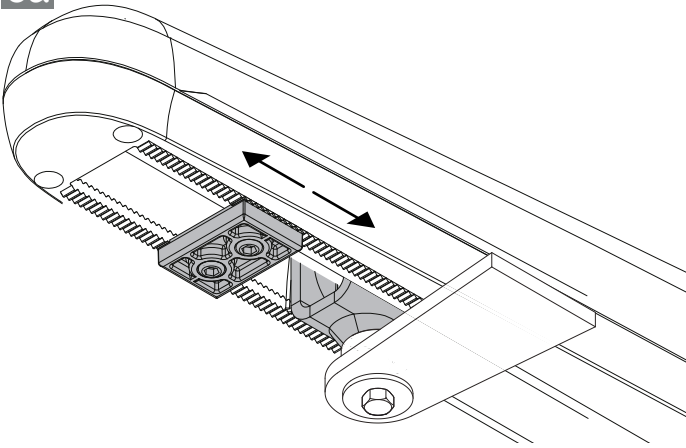
6



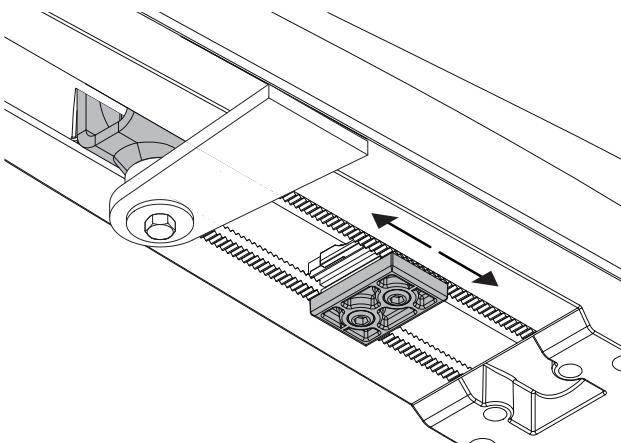
6 Limit switches / end stops

- Loosen both end-stops **G** (with limit switch **F**) using a **AF 5** hex key until they can be moved along the rail.

6a



6b



- Unlock operator, see picture 7a and 7b.
- Move gate carefully by hand into end-position gate open.
- Move end-stop „gate open“ towards actuator (H) until it strikes.
- Tight endstop „gate open“.
- Move gate carefully by hand into end-position gate closed.
- Move end-stop gate closed towards actuator (H) until it strikes.
- Tight endstop „gate closed“.

Note

Adjust limit switches precise to switch off when the gate reaches the external end stop position. This way, the gate will not „whip“ back!

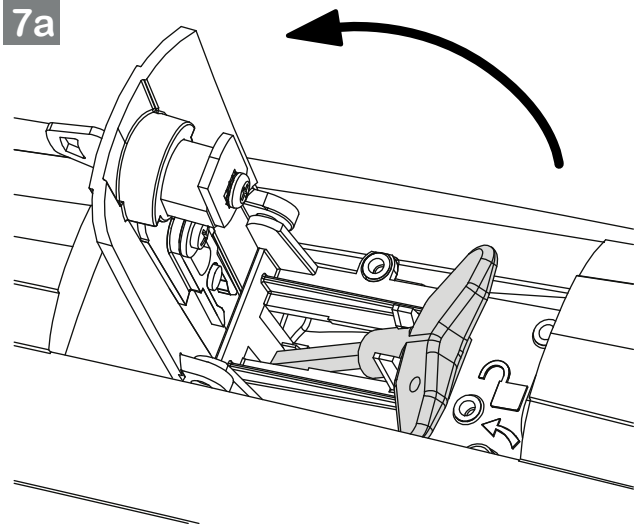


CAUTION!

Do **not** run the operator before mounted on the gate!

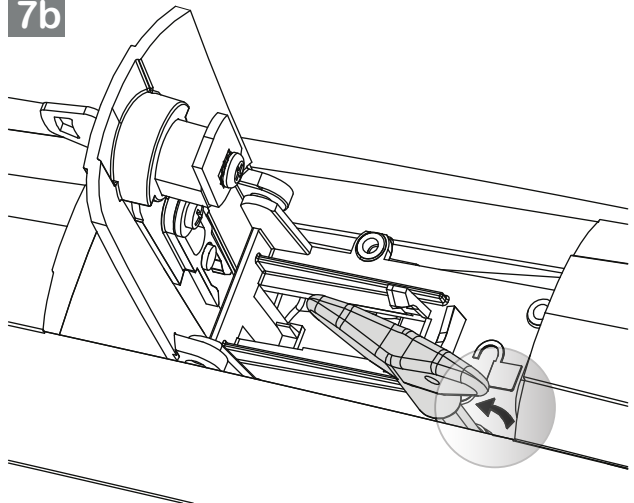
17.3 Unlock operator

7a



7a unlock operator: open housing with key

7b



7b unlock operator: turn hex key AF 6 counter-clockwise

Note

Check adjustment after the gate is completely installed. Open and close the gate several times. For smooth operation, a „fine-adjustment“ is suggested.

18 ELECTRICAL CONNECTION

18.1 Safety instructions

DANGER!

Mains voltage.
Contact with the mains voltage presents the danger of a deadly electric shock. For that reason, observe the following warnings under all circumstances:

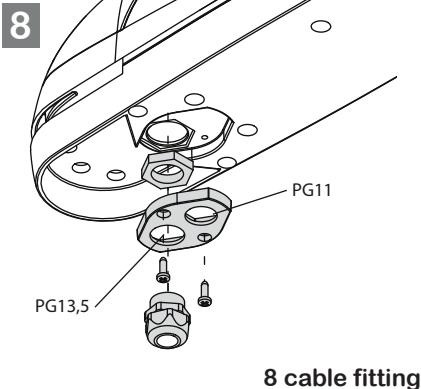
- Electrical connections only be made by a qualified electrician.
- On-site electrical installation must conform to applicable protective regulations (230/240 V AC, 50/60 Hz)!
- Ensure that the national regulations governing the operation of electrical equipment are complied with.
- Before undertaking any electrical work, disconnect the system from the mains supply and ensure that it cannot be inadvertently turned on.

ATTENTION

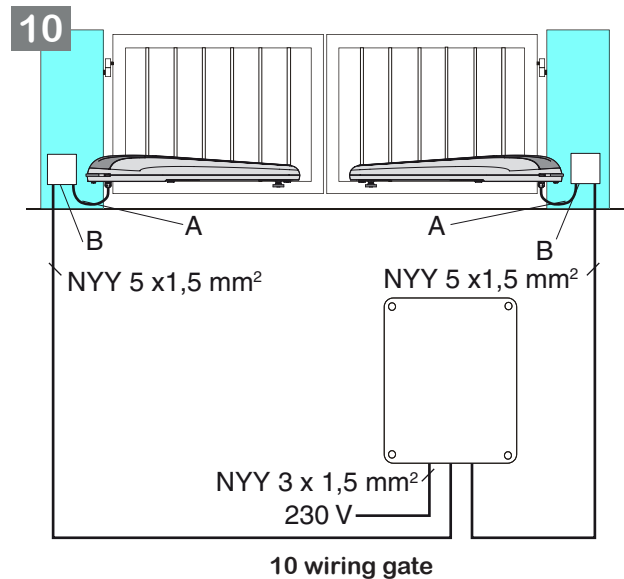
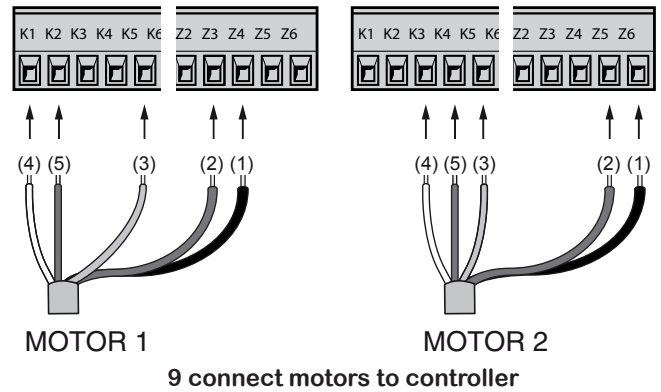
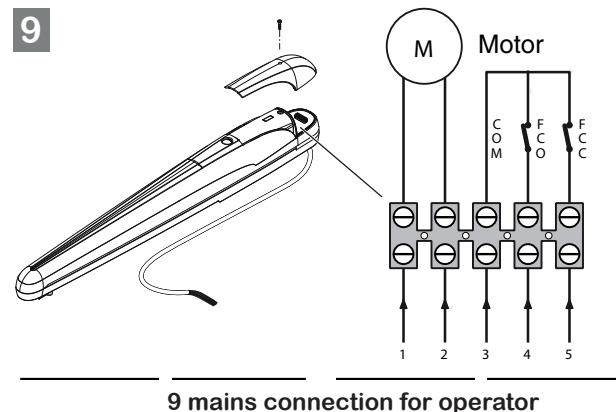
- External voltage on the connecting terminals of the control will destroy the electronics.
- Do not apply any mains voltage (230/240 V AC) to the connecting terminals of the control.

18.2 Connect motor / controller / mains

- Screw in supplied cable fitting.



- Connect operator with supplied motor cable, see picture 9 below.
- Use a cable junction box for every operator.
- Use NYY 5 x 2,5 mm² if the cable is longer than 10 m, max 20 m, see picture 10.



- A** flexible cable between motor
- B** cable junction box and cable box

Wiring for motor and end-switches (opener contact) are pre-wired at factory. Connect mains connection for operator to controller.

18.2.1. motor connections (picture 9):

- | | |
|---|-------------------|
| 1 | motor + |
| 2 | motor - |
| 3 | end-switch common |
| 4 | end-switch OPEN |
| 5 | end-switch CLOSE |

18.2.2. controller connections (picture 10):

- motor 1

clamp Z3	motor (connection 2)
clamp Z4	motor (connection 1)
clamp K5	end-switch common (connection 3)
clamp K1	end-switch OPEN (connection 4)
clamp K2	end-switch CLOSE (connection 5)
- motor 2

clamp Z5	Motor (connection 2)
clamp Z6	Motor (connection 1)
clamp K5	end-switch common (connection 3)
clamp K3	end-switch OPEN (connection 4)
clamp K4	end-switch CLOSE (connection 5)

Note

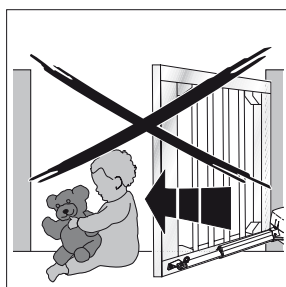
If the motors turns into the wrong way, change connections Z3/Z4 or Z5/Z6 with each other.

Install accessories after a trial-run with complete controller functionality, a control device and correct adjustment of end-switches.

19 HINGED GATE OPERATION



WARNING!



Danger of injury during gate travel!

If people or objects are in the area around the gate while the gate is in motion, this can lead to injuries or damage.

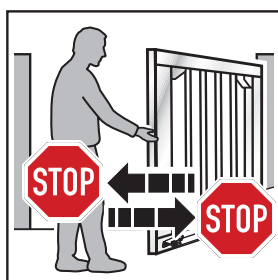
Make sure that:

- Children are not allowed to play near the gate system.
- Make sure that no persons or objects are in the gate's travel range.
- Make sure that no persons or objects are located between the gate and the operator mechanics.



- If the gate has only one safety feature, only operate the gate operator if you are within sight of the gate's area of travel.
- Monitor the gate travel until the gate has reached the end-of-travel position.
- Only drive or pass through remote control gate systems if the gate is in the OPEN end-of-travel position!

19.1 Function tests



Check the function of the mechanical release and safety reversal **monthly**.

- To check the safety reversal, stop the gate with both hands while it is closing. The gate system must stop and initiate a safety reversal.
- In the event of a failure of the safety reversal, a specialist must be commissioned immediately for the inspection and repair work.

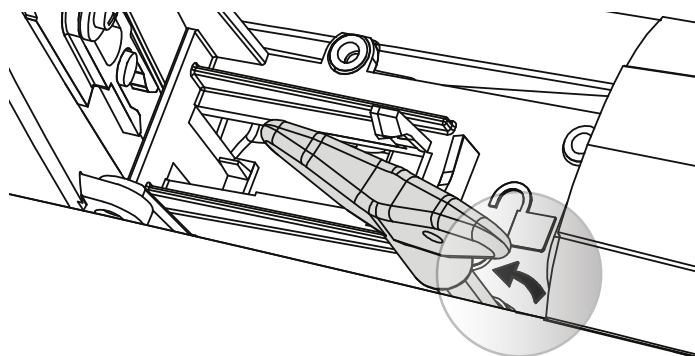
19.2 Instructing user

- Instruct all persons who use the gate system on the proper and safe use of the hinged gate operator.
- Demonstrate and test the mechanical release as well as the safety return.

19.3 Behaviour during a power failure

To open or close the hinged gate during a power failure, it must be disengaged from the operator, see „**Unlock operator**“ on page 21).

Key and wrench are supplied.



turn counter-clockwise



WARNING!

Danger of injury due to unexpected gate travel!

Unexpected gate travel can result if the gate system is inadvertently actuated by other persons.

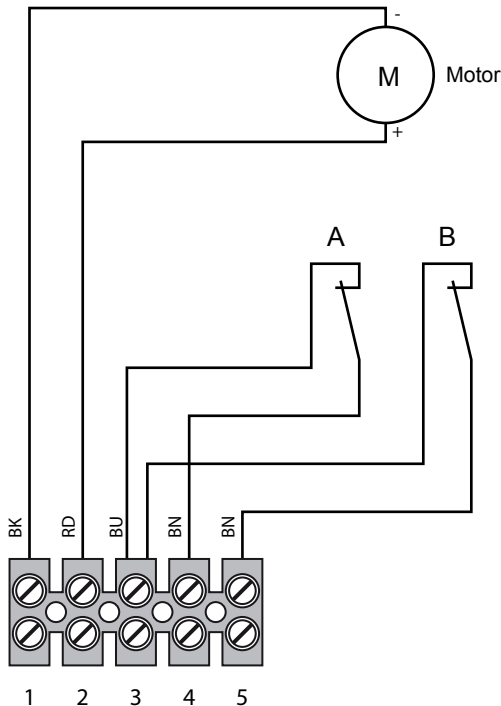
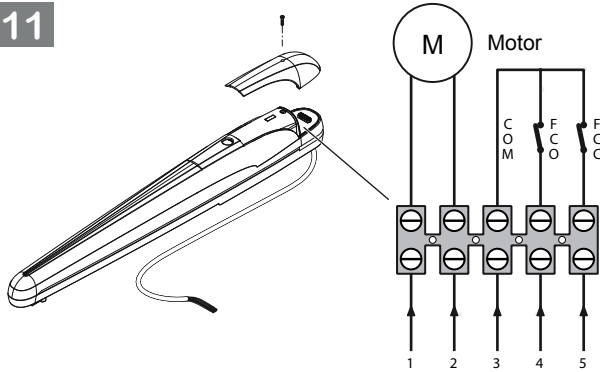
- Disconnect the mains plug when performing any work on the gate system.
- Safeguard the gate system against being switched on again without authorisation.

20 TECHNICAL DETAILS DX524

Motor voltage	24 VDC
Current consumption	6 A
Power	120 W
Duty rating	60 %
Max. torque	2000 Nm
Duration gate open/close	17 - 40 Sec. / 90°
Operating Temperature	- 20 °C...+ 60 °C
Weight	8.2 kg

20.1 Internal operator wiring

11



13 Internal operator wiring

A End-switch gate OPEN

B End-switch gate CLOSE

20.2 Abbreviations for colour identifying used

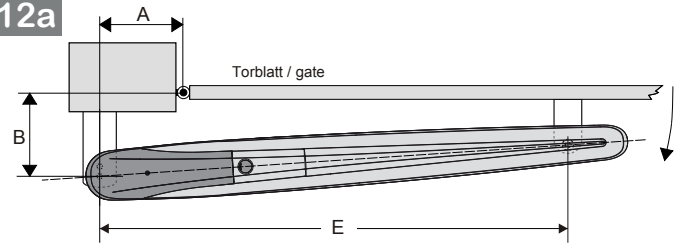
Abbreviations of the colours for identifying the cables, conductors and components comply with the international colour code according to IEC 757:

BK	black	RD	red
BN	brown	WH	white
GN	green	YE	yellow
BU	blue	GY	grey

21 SPECIAL INSTALLATIONS

21.1 Standard installation

12a

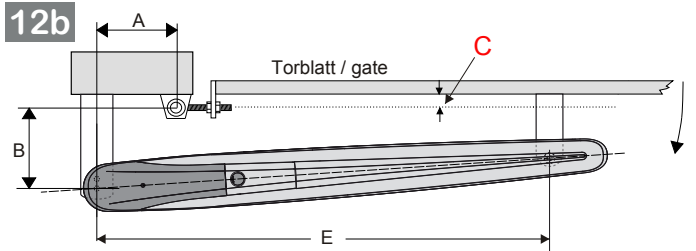


12a

- Dimension **A/B** (depending on gate width) between 150 and max. 225 mm, see picture „2 dimensions at the post“ on page 19.
- Fix operator at intersection point of A and B.

21.2 Gates with adjustable gate hanger

12b

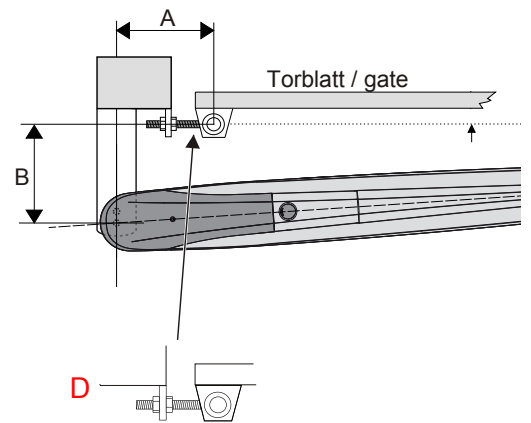
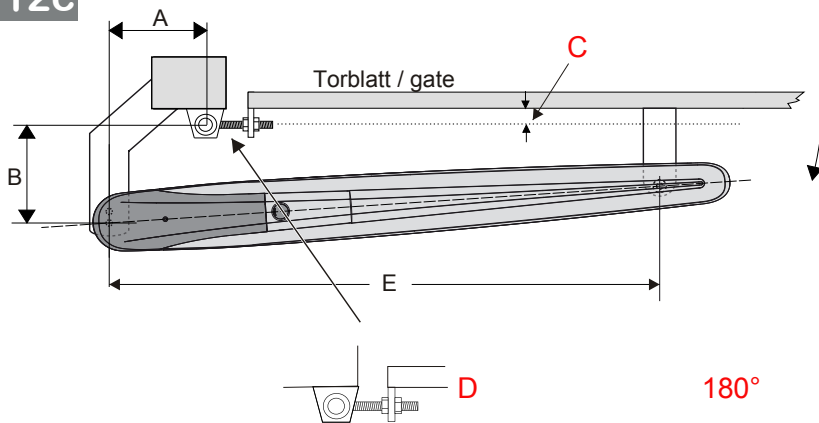


12b adjustable gate hangers

- Dimension **A/B** (depending on gate width) between 150 and max. 225 mm, see picture „2 dimensions at the post“ on page 19.
- Fix operator at intersection point of A and B.
- Extend gate tarnish by distance **C**.

21.3 Gates with adjustable gate hanger / small posts

12c

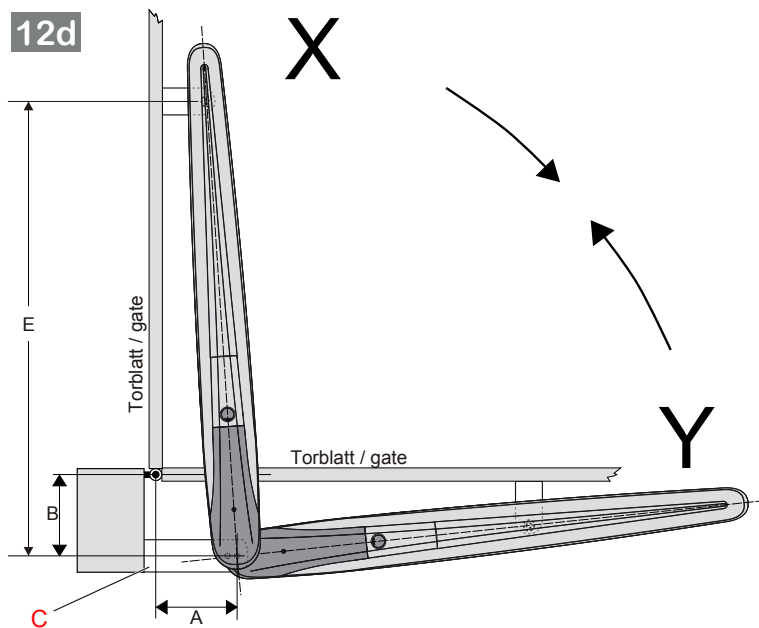


12c adjustable gate hanger / small posts

- Dimension **A/B** (depending on gate width) between 150 and max. 225 mm, see picture „**2 dimensions at the post**“ on page 19.
- Fix operator at intersection point of A and B.
- Extend gate tarnish by distance **C**.
- Turn tarnish by 180° in narrow environment (move intersection point away from post).

21.4 Gates swing to outside

12d



12d gates swing to outside

- Dimension **A/B** (depending on gate width) between 150 and max. 225 mm, see picture „**2 dimensions at the post**“ on page 19.
- Fix operator at intersection point of A and B.
- C = extension bracket

X = gate open (to the outside)
Y = gate closed

22 INSPECTION AND MAINTENANCE

- The gate operator is maintenance-free.
- In the interest of your own safety, we recommend having the gate system inspected and maintained by a qualified person in accordance with the manufacturer's specifications.



WARNING!

Danger of injury due to unexpected gate travel!

Unexpected gate travel can result during inspection and maintenance work if the gate system is inadvertently actuated by other persons.

- Disconnect the mains plug and, if applicable, the plug of the emergency battery when performing all work on the gate system.
- Safeguard the gate system against being switched on again without authorisation.

An inspection or necessary repairs may only be carried out by a qualified person. Contact your supplier for this purpose. A visual inspection may be carried out by the operator.

- Check all safety and protective functions monthly.
- Malfunctions and/or defects at hand must be rectified immediately.
- We would like to point out that any repairs not carried out properly or with due professionalism shall render the warranty null and void.

23 OPTIONAL ACCESSORIES

Optional accessories are not included in the scope of delivery. Loading of the operator by all electrical accessories: max. 500 mA.

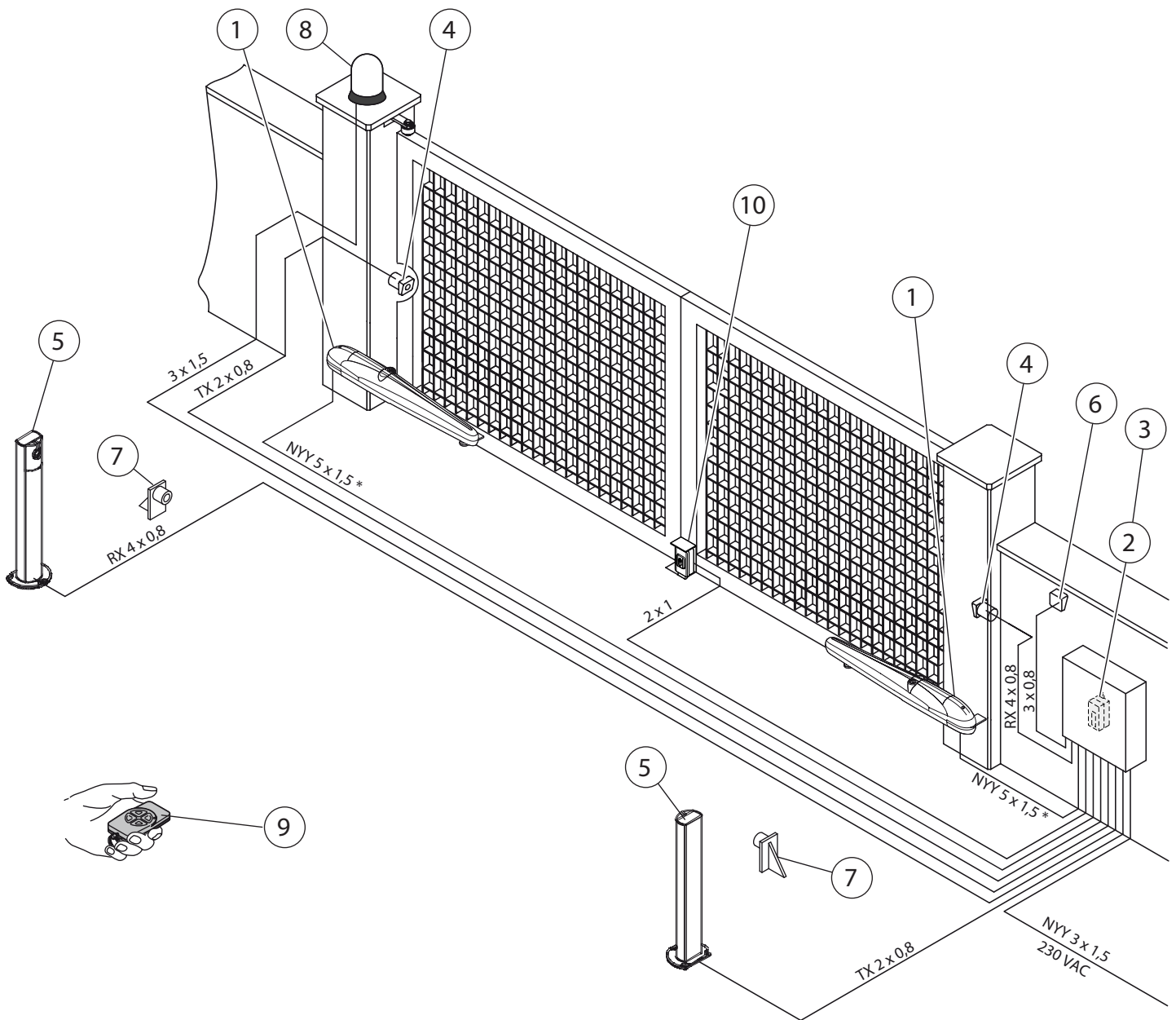
The following accessories are available:

- External radio receivers
- External impulse buttons (e.g. key switch)
- External code and transponder switches
- One-way photocell
- Warning lamps/warning lights
- Electric lock for post locking
- Electric lock for floor locking
- Stop plate
- Security contact-strip
- Spray-water protected junction box

24 DISMANTLING AND DISPOSAL

- When disassembling, observe the applicable regulations regarding occupational safety.
- Have a specialist dismantle the gate operator in the reverse order of these instructions and dispose of it properly.

26 CABLE LAYING - TRACK PLAN



Overview - Hinged gate operator DX524

- * NYY 5 x 1,5 mm² (< 10 m cable length)
 NYY 5 x 2,5 mm² (> 10 - max. 20 m cable length)

1	Hinged gate operator DX524	2	controller
3	radio receiver	4	photocell type 2 system, mounted outside
5	photocell type 1 system, mounted inside	6	key switch
7	mechanical end-stop gate OPEN	8	warning-/flashing light
9	hand transmitter	10	electronic key-lock mechanical end-stop gate CLOSE

4Ddoors

GARAGE DOORS REDEFINED

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DX524

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