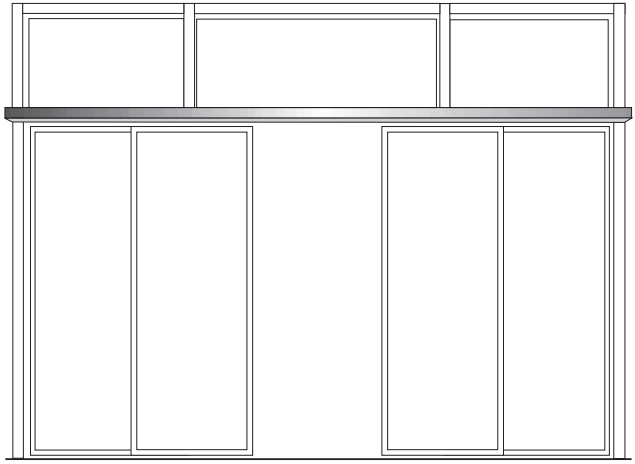


ECdrive T2 plus

Installation and Maintenance Manual

199968-00

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1 Symbols and their meaning

Warnings The warnings in this manual alert the user to possible material damage and personal injury.

X Always read and observe these warnings.
X Follow all steps marked with warning symbols and warning texts.

Warning symbol	Warning word	Meaning
	WARNING	Danger to persons. Non-compliance may result in death or serious injury.
	CAUTION	Danger to persons. Non-compliance may result in minor injury.
	CAUTION	Information to prevent material damage and to aid understanding or optimise work flows.

Other symbols and their meaning Important information and technical tips are highlighted to illustrate the correct procedure.

Symbol	Meaning
	Indicates 'important information'
	Indicates 'supplementary information'
▶	Symbol indicating an action: the relevant action must be carried out here. **X Where there are several actions, carry them out in the specified order.**

2 Product liability

Under the manufacturer's liability for its products as defined in the Product Liability Act, the operator must observe the information contained in this manual (product information, intended use, foreseeable misuse, product characteristics, product maintenance, and information and instruction obligations). If this is not observed, the manufacturer accepts no liability.

3 Safety notes

3.1 Intended use

The ECdrive T2 plus is only suitable for

à in dry interiors,
à automatic door systems with horizontally moving door leaves,
à at pedestrian entrances and in the interior areas of business premises and public buildings.

The ECdrive T2 plus must not be used as a drive unit for fire and smoke protection doors.
The ECdrive T2 plus must not be used on emergency escape and rescue route doors.

3.2 Safety notes

à Installation, maintenance and repair work must be carried out by authorised qualified personnel in accordance with the regulations.
à When carrying out safety checks, local regulations and rules must be observed.
à No liability is accepted for the consequences of unauthorised modifications made to the equipment by the user.
à No warranty is provided if the system is combined with components from other brands.
à For repairs and maintenance, only original spare parts may be used.
à The power connection must be made by a qualified electrician. Connect the power supply and check the earth conductor in accordance with VDE 0100 Part 610.
à Use a 10 A miniature circuit breaker on site as the isolating device for the power supply.
à Prevent unauthorised persons from operating the programming switch.
à In accordance with the Machinery Directive 2006/42/EC, a hazard analysis must be performed before commissioning the door system, and the door system must be marked in accordance with the CE Marking Directive 93/68/EEC.

à Observe the latest versions of regulations, standards and local rules, in particular
  à ASR A1.7 'Guideline on doors and gates'
  à DIN 18650 'Locks and building hardware - automatic door systems'

- à VDE 0100; Part 610 'Erection of low voltage installations'
- à Accident prevention regulations, in particular BGV A1 'General accident prevention regulations' and BGV A2 'Electrical equipment and production equipment'

3.3 Safe working

- à Unauthorised persons must be kept away from the work area.
- à Watch out for the swinging range of long components.
- à Do not carry out high-risk work alone (e.g. fitting the drive unit, cover or door leaf).
- à Secure the cover / drive unit trim against falling.
- à Only the cables specified in the cable drawing may be used. Shielding as shown in the wiring diagram.
- à Secure loose internal drive cables with cable ties.
- à Before working on the electrical equipment:
  - à Disconnect the drive unit from the 230 V mains and verify that it is de-energised.
  - à Disconnect the control unit from the 24 V battery.
  - à If an uninterruptible power supply (UPS) is used, the equipment is still live after disconnection from the mains.
- à In principle, insulated core end sleeves must be used for stranded wires.
- à Apply the safety labels to the glass door.
- à Risk of injury when the drive unit is open. Rotating parts can entangle hair, clothing, cables etc.!
- à Risk of personal injury at unguarded points where crushing, impact, shearing and entrapment may occur!
- à Glass splinters can cause personal injury!
- à Sharp edges on the drive unit can cause personal injury!
- à Moving parts during installation can cause personal injury!

3.4 Installation check Take protective measures to avoid the risk of crushing, impact, shearing and entrapment:

- à Check the function of the safety sensors and the displacement sensor.
- à Check the protective conductor connection of all accessible metal parts.
- à Carry out a safety analysis (hazard analysis).

3.5 Environmental protection

- à When disposing of the door system, separate the materials and recycle them.
- à Batteries and rechargeable batteries must not be disposed of with household waste.
- à When disposing of the door system and batteries/rechargeable batteries, the applicable legal regulations must be observed.

4 Overview

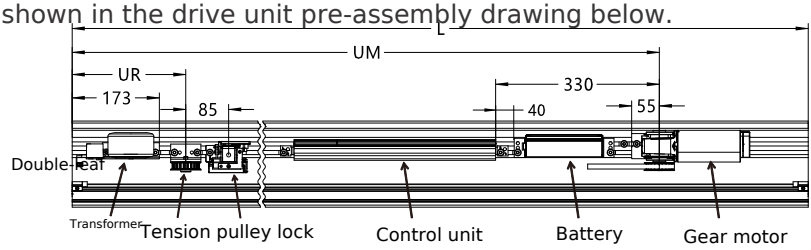
4.1 Tools and auxiliary materials

Tools	Dimensions
Tape measure	
Marker pen	
Torque wrench	
Hexagon socket keys	2 mm, 2.5 mm, 3 mm, 4 mm, 5 mm, 6 mm
Open-end spanners	8 mm, 10 mm, 13 mm, 15 mm
Screwdriver set	max. 6 mm
Ring spanners	T x 20
Face-side cutter	
Crimping pliers for electrical cables	
Wire strippers	
Multimeter	
Programming switch DCU1 (material no. 103940)	

4.2 Tightening torques Observe the torque specified in each installation step

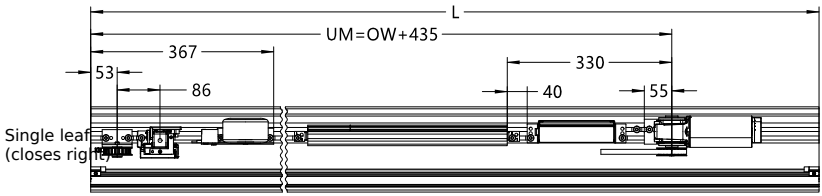
4.3 Parts and components See the general pre-assembly drawing for parts and components

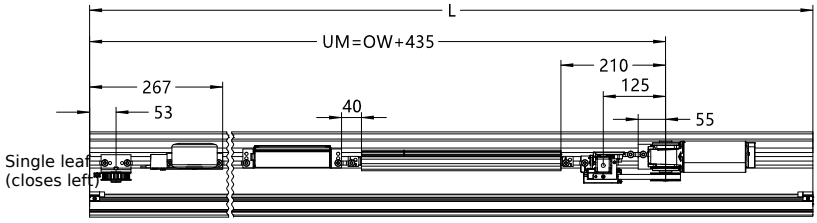
5 Pre-assembly The latest drive unit drawings are authoritative for carrying out pre-assembly. All parts must be identified and fitted as shown in the drive unit pre-assembly drawing below.



Double-leaf tech. data	(OW)[mm] ≥	(OW)[mm] <	Lmin[mm]	UR[mm]	UM[mm]	最大门重[kg]
	900	3000	2XOW+100	OW/2-205	1.5XOW+225	2X140

OW: opening width
Lmin: minimum rail length
UM: distance of the drive motor belt pulley centre from the left end of the shortest rail
UR: distance of the tension pulley centre from the left end of the shortest rail





	(OW)[mm]		Lmin[mm]	Max. door leaf weight [kg]
Single-leaf tech. data	≥	<		
	700	3000	2XOW+60	140

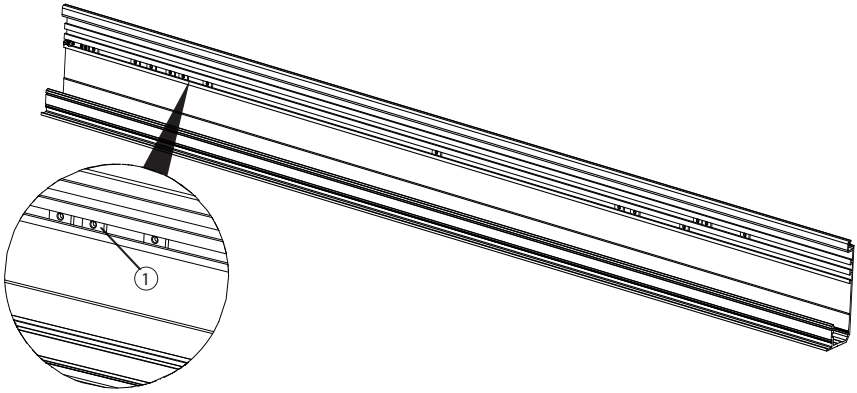
5.1 Cutting the rail to size

X Cut the profile to the required size.

5.2 Preparing the rail

X Slide the sliders (1) into the mounting groove as shown in the drive unit drawing.

X The number of sliders depends on the number of components and accessories.



6 Installation Preparing the installation site

6.1

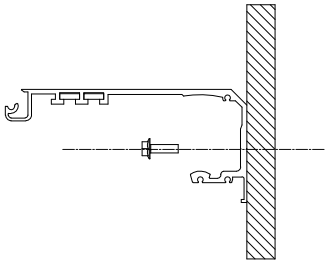
To ensure a professional installation, check the preparation of the installation site:
à Type and load capacity of the lintel or floor fixing
à Evenness of the mounting surface
à Cable drawing specifications

6.2 Working safely

X Keep unauthorised persons away from the work area.
X Always work with two people.
X Use a stepladder or step stool.
X Keep the inside of the rail clean.

6.3 Installation

6.3.1 Fitting the rail

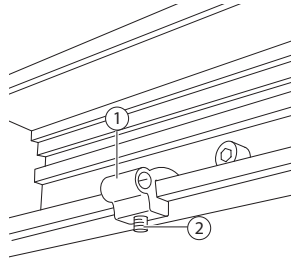


Note the structural height of the control components

X Drill the wall / rail according to the on-site conditions (see installation drawing).
X Hole spacing 400 mm; the last hole must be no more than 100 mm from the end of the rail.
X Prepare the cable ducts according to the on-site conditions.
X Screw on the rail.
For the jamb / bolt construction, note the shims (see installation drawing).
X Fit the light barrier profiles / sealing profiles according to the on-site conditions (see installation drawing).
X If necessary, fit the light barrier and secure it (see cable drawing).
X Press the sealing rubber into the sealing profile.
X Fit the infill profiles in the passage area or between the light barrier profiles (the lower edge is the passage height).

6.3.2 Fitting the buffers

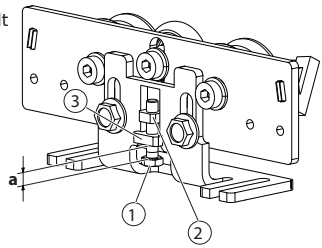
X Push the left and right buffers (1) onto the rail and pre-position them.
X Slightly tighten the threaded pin (2) with the hexagon socket key.
The exact position of the buffers is determined when the door leaf is fitted.



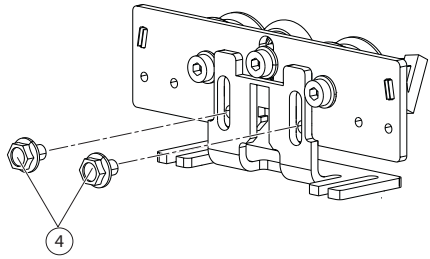
6.3.3 Fitting the roller set support angles to the door leaf

X Remove bolt (1) from bracket (2).

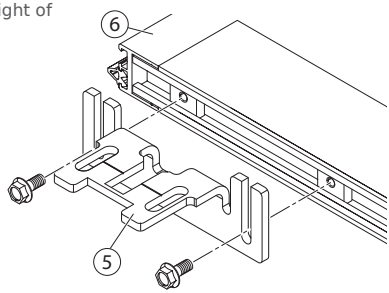
The distance a between the head of bolt (1) and the bolt bracket (3) must then be set.



X Unscrew the 2 bolts (4) and remove the support angle from the roller set carrier.



X Screw the support angle (5) onto the left and right of the door leaf (6) (tightening torque 15 Nm).

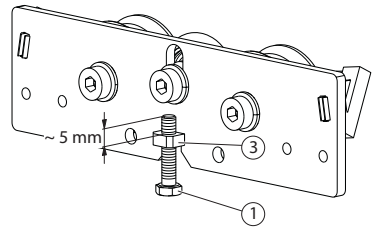


See the door leaf installation drawing for the position of the support angles.

6.3.4 Hanging the door leaf with the roller set carrier.

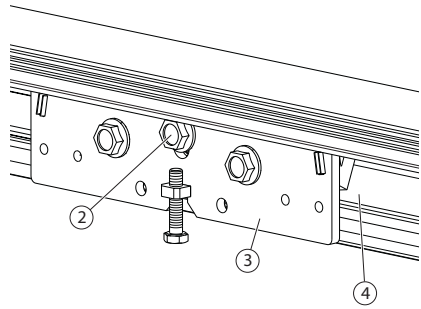
Securing the roller set carrier to the running track

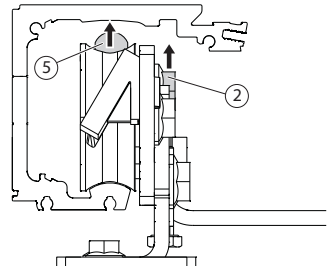
X Fit bolt (1) again using the bolt bracket (3).



X Place the double roller bracket (3) on the running track (4).
X Loosen the bolt (2) that secures the roller against twisting.
X Push the bolt (2) upwards until the roller (5) is close to above the running track.

X Tighten bolt (2).

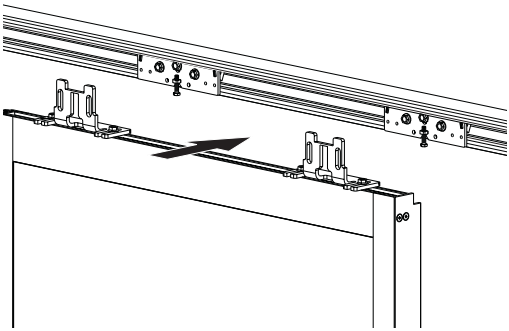




Fitting the door leaf

⚠ WARNING!
Risk of injury if the door leaf falls The door leaf is very heavy.

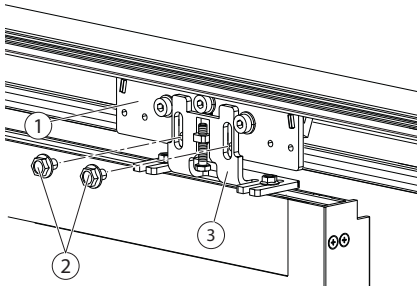
X At least 2 people are required to fit the door leaf.



X Fit the door leaf with the support angles onto the double roller carrier.

Tightening the door leaf

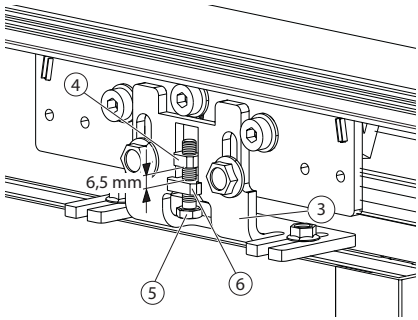
X Use the locking bolts Verbus-Ripp M8×10 (2) to screw the two door leaf support angles (3) to the double roller carrier (1).
X Tighten the locking bolt (2).



X Unscrew bolt (5) from bracket (4).

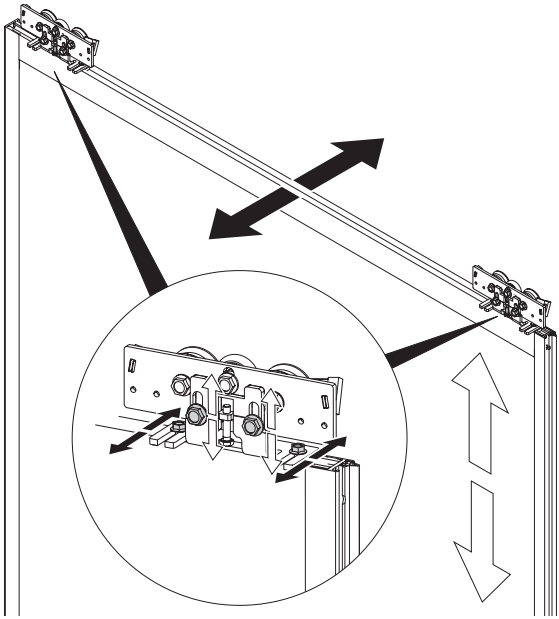
ℹ Make sure that the bracket (4) cannot fall.

X Screw bolt (5) into bracket (4) using the bolt bracket (6), until the bolt (5) makes contact with the support angle (3).
X A distance of 6.5 mm must be maintained between the bracket (4) and the bolt bracket (6).



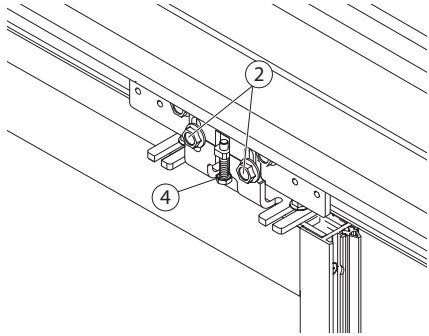
Aligning the door leaf

X Align the door leaf flush. Make sure the closing edges are at the same height and parallel.



X On the hexagon of the suspension bolt (4), set the height and parallel position of the door leaf.

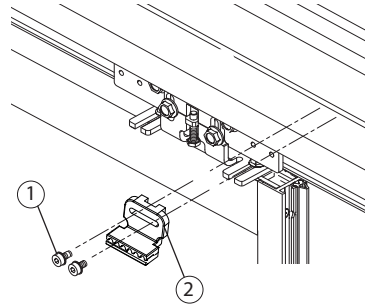
X Tighten the locking bolts Verbus-Ripp M8×10 (2) (tightening torque 24 Nm).



6.3.5 Fitting the synchroniser to the roller set

The synchroniser must not touch any obstacle along the entire travel path.

X Use 2 locking bolts M6×20 (1) Fit the synchroniser (2) onto the roller set (tightening torque 15 Nm).

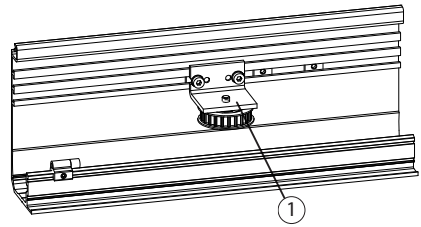


6.4 Fitting the drive unit components

à Observe the drive unit drawing for component positioning.
à Observe the tightening torques of the fastening bolts (see drive unit drawing).

6.4.1 Fitting the tension pulley

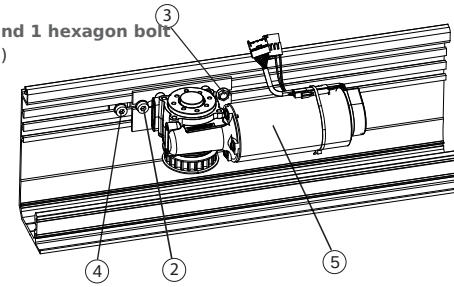
X Use 2 locking bolts M6×12 to fit the tension pulley (1) onto the inner slide of the rail (tightening torque 8 Nm)



6.4.2 Fitting the gear motor

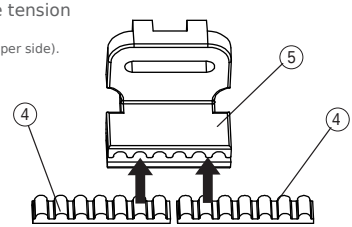
X Use 1 hexagon socket bolt M6×10 (2) and 1 hexagon bolt M6×10 (3) to pre-position the gear motor (5) into the outer slide of the rail.

X Pre-insert 1 hexagon socket bolt M6×10 (4) into the gear motor (5) side of the rail.

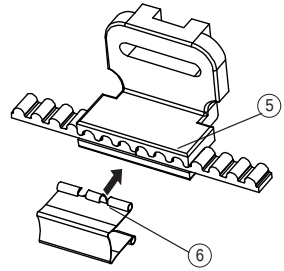


6.4.3 Fitting the toothed belt

X Loop the toothed belt around the motor pulley and the tension pulley, if necessary shortening the toothed belt.
X Place the end of the toothed belt (4) into the toothed belt lock (5) (3 teeth per side).



X Fit the toothed belt clamp (6) to the belt lock (5).



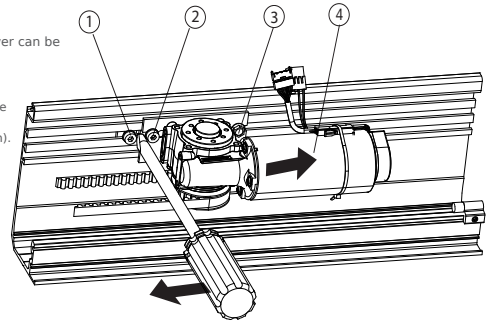
6.4.4 Tensioning the toothed belt

X The toothed belt must be clamped with a force of 300 N ±35 N (see drive unit drawing).

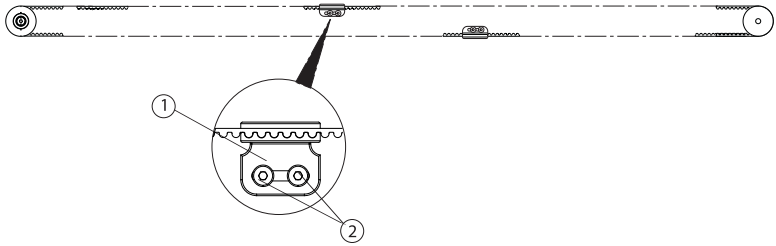
X Loosen the hexagon socket bolt M6×10 (2) and the M6×10 hexagon bolt (3).

X Push the motor (4) manually to the right.
X Open bolt (1) and push the slider so that a screwdriver can be inserted between the slider and the motor.

X Tighten bolt (1) (tightening torque 10 Nm).
X Push the screwdriver into the gap and lever it up until the toothed belt is tensioned.
X Tighten the 2 bolts (2) and (3) (tightening torque 15 Nm).



6.4.5 Setting the closing position of double-leaf systems



X Push the door leaf to the closed position.

X Fit the second belt lock; do not tighten bolt (2) yet.

X Fine-adjust the position in the slotted hole (1) in the direction of travel.

X After setting the exact closing position, tighten the bolts (2) (tightening torque 15 Nm).

6.4.6 Fitting the locking unit (optional)

The synchroniser must not strike the locking unit during operation.

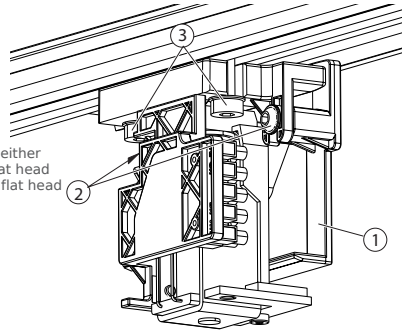
X Close the door leaf.

X Loosen bolt (3) on the locking device.
X Align the locking unit with the toothed belt. The locking pin must pass through the hole in the cover after fitting, so that it can lock and lock.

X If necessary, enlarge the drilled holes.

X Tighten bolt (3).
X Adjust the locking unit rail (1) so that the toothed belt neither touches nor has too much play. To do this, loosen the 2 flat head bolts (2), move the locking unit rail (1) and re-tighten the flat head bolts (2).

X Apply a little grease to the sliding surfaces.



X After fitting the toothed belt, check the switching point (click) of the locking unit feedback switch; if necessary, adjust the sensor strip by bending it again.

6.4.7 Fitting the locking unit alarm contact (optional)

X Remove the EJOT screws L = 12 mm from the locking unit feedback switch.

X Place the alarm contact switch on the feedback switch.

X Secure the two switches with EJOT screws L = 18 mm.

X Connect the cables

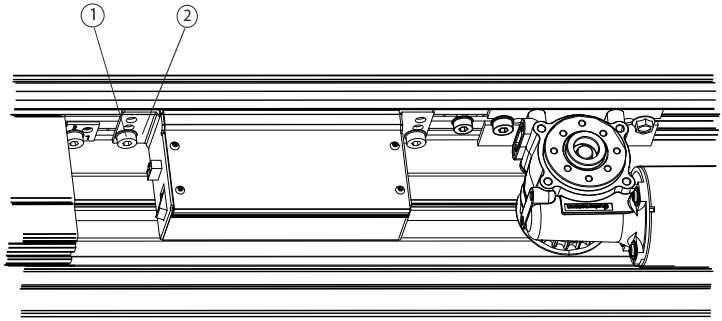
X Shorten the sensor strip of the alarm contact switch.

6.4.8 Fitting the battery (optional)

X **Fit the battery at a suitable position between the control unit and the motor.**

X Fix the battery bracket (2) to the rail with M6 screws (1).

When fitting the screws, use the inner holes of the battery bracket.



6.4.9 Fitting the control unit

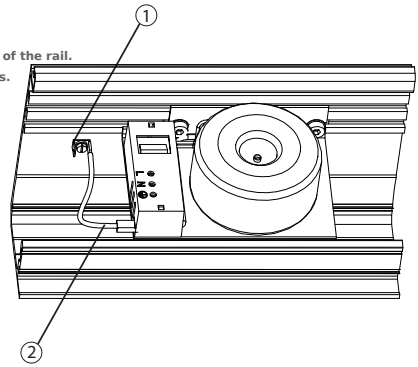
See the pre-assembly drawings in Section 5

6.4.10 Fitting the transformer

X **Drill suitable holes with a Ø3.5 diameter on the inside of the rail.**

X **Fix the double plug-in tab (1) to the rail with M4 screws.**

X Fit the transformer earth wire (2) to the double plug-in tab.



6.5 Commissioning

WARNING!
Risk of fatal injury from electric shock!

X **Electrical equipment (230 V) may only be connected and disconnected by qualified electricians.**

X **Connect the power supply and check the earth conductor in accordance with VDE 0100 Part 610.**

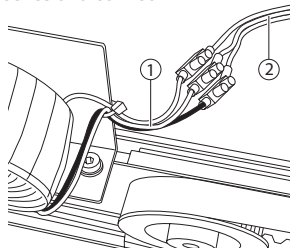
X **Insert the battery plug into the control system.**

X **Connect the drive unit to the 230 V mains (230 V AC ±10 %, 50/60 Hz) and switch on the main switch on the transformer.**

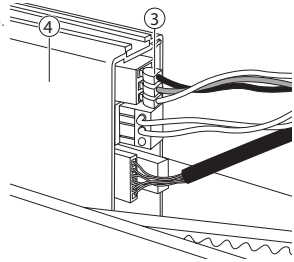
6.5.1 Connecting the transformer and control unit

Ensure the wiring is earthed!
Do not confuse the core wires!

X Insulate the three-core cable (2), fit insulated core end sleeves and connect with the cable (1) on the transformer (see wiring diagram).
X Route cable (2) to the control unit.

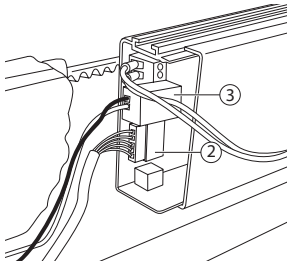


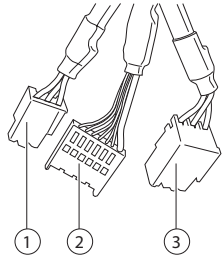
X If necessary, shorten cable (1) and insulate it.
X Fit insulated core end sleeves and connect to plug (3) (see wiring diagram).
X Connect plug (3) to the control unit (4).



6.5.2 Connecting the gear motor and control unit

X Route the encoder cable (2) and the motor connection cable (3) to the control unit.
X Insert the plug into the control system.

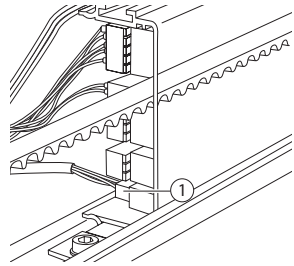




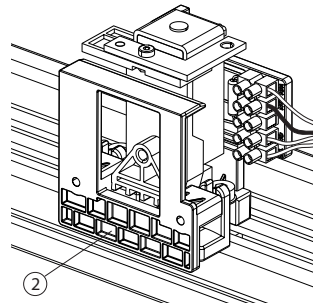
Do not insert the battery cable into the control system yet.
Connect the battery to the control system only during the production test and commissioning.
X Check whether the battery cable is long enough. If necessary, extend it with the battery extension cable (material no. 105311).
During maintenance work, disconnect the connection line from the battery to the control system!

6.5.3 Connecting the toothed belt locking device (optional) and the control unit

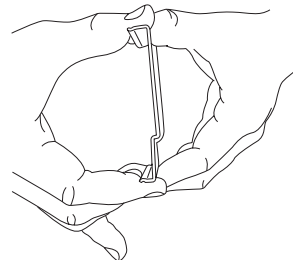
X Insert the locking unit cable (1) into the control system.
X Route the cable to the locking unit, cutting it to size if necessary, insulating it and fitting insulated core end sleeves.



X Connect the cable to the locking unit (see wiring diagram).
X Adjust the locking unit guide plate (2). In principle, narrow the toothed belt opening as far as possible without the toothed belt touching it.



X Place the cover (3) on the control unit and snap it in. The retaining force of the cover can be increased by slightly bending the cover.



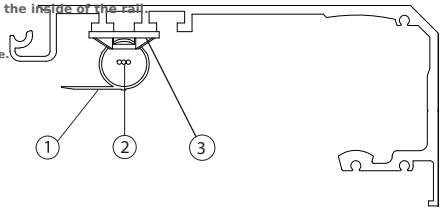
When fitting the cover, do not trap the cables.

6.5.4 Routing the fixed cables

Caution!
Cables can become disconnected!
X Route the cables so that no cables are within the range of moving parts.

X Stick the cable bracket (3) to a suitable position on the inside of the rail.

X Secure cable (2) with cable tie (1) and cut off the excess tie.



6.5.5 Fitting the safety devices

X Fit the displacement sensor.

For the electrical installation, see the wiring diagram.

6.5.6 Fitting switches / push-buttons For the electrical installation, see the wiring diagram.

6.5.7 Fitting the program switch For the electrical installation, see the wiring diagram.

6.6 Final work

X Check the component positions and tightening torques against the drawings.

X Carry out the production test.

X Fit the labels:

- à Name plate (enter the date of manufacture)
- à TÜV label

X Carry out the safety analysis.

X Enter the installed options in the safety analysis for the operator.

Components that are not fitted or that remain are to be completed on the building during final installation:

- à Plug-in fixing sleeves
- à Fit the accessory spacers to the profile
- à Programming switch
- à Labels for glass doors

6.7 Dismantling

WARNING!
Risk of fatal injury from electric shock!

X Electrical equipment (230 V) may only be connected and disconnected by qualified electricians.

X Connect the power supply and check the earth conductor in accordance with VDE 0100 Part 610.

WARNING!
Risk of injury if the cover swings!
X If the cover is longer than 4 m, use two people.

Dismantle in the reverse order of installation.

7 Care and maintenance Mechanical servicing

7.1

7.1.1 Checking the toothed belt tension

X Run the door,

When braking and accelerating, the toothed belt must not lift off or jump on the motor sprocket.

X If the toothed belt lifts or jumps, increase the toothed belt tension:

à Mark the motor position on the rail.

à Move the motor to the right in 1 mm steps.

7.1.2 Tensioning the toothed belt See Section 6.4.4.

7.2 Maintenance

specified T2 plus Maintenance work on this drive unit and on the ECdrive-FR must be carried out by qualified personnel:

à At least once a year or

à When the service display on the program switch lights up or flashes (see wiring diagram)

X Prepare the check documents and carry them out.

After completing maintenance work, always run the door in again.

Check point	Action	Note
Track	**X Check that it is clean.**	**X Clean the rail if necessary**
Roller carriage	**X Check the rollers for wear**	**X Remove any wear if necessary**
	X Check the brush	**X Remove the brush (see Section 8.1.2)** **X Replace the brush if necessary**
Bottom rail area	**X Check that the door operates without jamming**	**X Clean the bottom rail area if necessary**
Bottom rail area (brush)	**X Check for soiling and hardness**	**X Clean or replace if necessary**
Door leaf	**X Check that the door runs smoothly**	**X See Section 8.1.1.**
Toothed belt	**X Check for damage and wear**	**X Replace the toothed belt if necessary**
	X Check the tension	**X Tension the toothed belt if necessary** (see Section 6.4.4)
	X Check the toothed belt locking device (optional) for damage	**X Replace the toothed belt if necessary**
Toothed belt lock (optional)	**X Check the function**	**X If necessary, reposition the toothed belt locking device (optional)** (see Section 6.4.6)
Bolts	**X Check that it is secure**	**X If necessary, tighten the bolts (for the torque see the drive** drawing)
components and Peripheral devices	X Check that the function is correct	X Replace the component if necessary
Cable	X Check for damage and correct fixing	X Replace or secure the cable if necessary

8 Troubleshooting

⚠ WARNING!
Risk of fatal injury from electric shock!
X Electrical equipment (230 V) may only be connected and disconnected by qualified electricians.
X Connect the power supply and check the earth conductor in accordance with VDE 0100 Part 610.

⚠ Caution!
Risk of injury when the drive unit is open!
Rotating parts can entangle hair, clothing, cables and similar items.
X When working with the drive unit open, watch out for rotating parts.

⚠ Caution!
Risk of injury from impact and shearing!
X Secure the door leaf against unintentional movement.
X Pull out the battery.

8.1 Mechanical faults

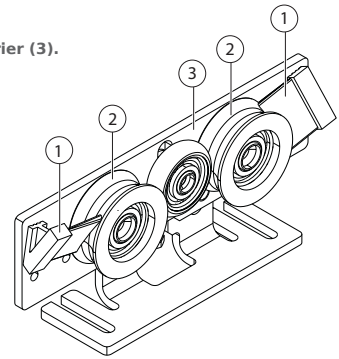
Cause	Remedy
Rail bent	**X Replace the rail.** **X Check the floor mounting.**
Door leaf difficult to move	**X Check the door leaf (see below).**
Roller set jammed or damaged, rollers highly worn	**X Check that the synchroniser sits squarely on the toothed belt.** **X Pass the toothed belt through in parallel.** **X Replace the roller set (see below).**
Toothed belt damaged	**X Replace the toothed belt.**
Component damaged	**X Replace the component (see below).**

8.1.1 Checking the door leaf

X Release the door leaf via the synchroniser on the toothed belt.
X Move the door leaf and check that it runs smoothly.
When the door leaf runs smoothly:
X Check the gear motor and replace it if necessary.

8.1.2 Replacing the brush strips of the roller set

X Secure the door leaf against falling.
X Loosen and tilt the door leaf.
X Pull the brush strip (1) out of the roller set carrier (3).
X Clean the rollers (2) and insert the new brush strip.
X Hang the door leaf again and set it.
X Lock the roller set.



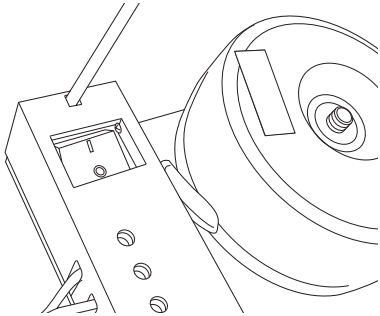
8.2 Electrical faults

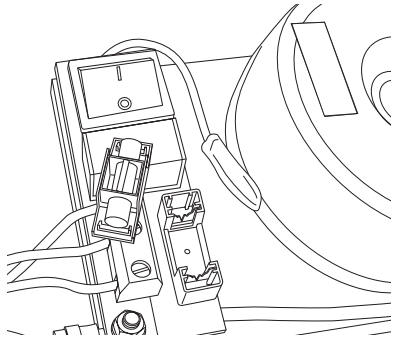
8.2.1 Fault messages of the control system

For the selection of faults and their meanings, see the wiring diagram.

8.2.2 Replacing the fuse in the transformer

WARNING!
Risk of fatal injury from electric shock!
X Before removing the thin cover, isolate the equipment from the 230 V mains on site.





Notes/笔记

Notes/笔记