

EN **RolloTube S-line DuoFern Tubular Motors**
Translation of the Original Operating and Assembly Manual

Applicable for the following series: RolloTube S-line DuoFern Small (SLDS) /Medium (SLDM)
Item numbers: 2340 06 75 / 2340 10 75 / 2360 10 75 / 2360 20 75 / 2360 30 75 / 2360 40 75 / 2360 50 75



Please note:

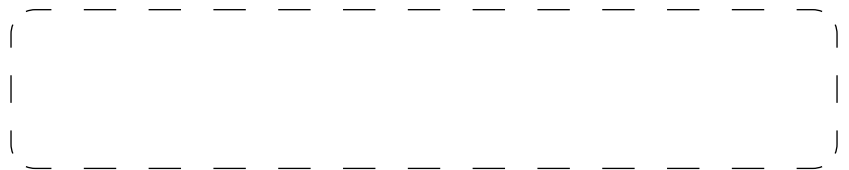
Site of installation:

.....

Serial number:

.....

Please stick the enclosed label showing the DuoFern radio code here:



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i 1. This manual...



- ...serves to describe the installation, electrical connection and operation of RADEMACHER tubular motors of the RolloTube S-line DuoFern Small and Medium series.
- Before you begin, please read this manual through completely and follow all the safety instructions and assembly instructions.
- This manual forms a component of the product. Please store the manual in an easily accessible place.

- When passing the tubular motor on to any future owners, this manual must be passed on as well.
- Damage resulting from non-compliance with these instructions and safety instructions will void the warranty and the guarantee. We assume no liability for any consequential damage.

i 2. Hazard symbols

The following hazard symbols are used in this manual:



Danger of fatal electric shock



Danger area / dangerous situation

i 2.1 Levels of danger and signal words

DANGER!

This hazard will lead to serious injury or death if not avoided.

WARNING!

This hazard may result in serious injury or death if not avoided.

CAUTION!

This hazard may result in minor or moderate injury if not avoided.

ATTENTION!

This hazard may lead to property damage.

i 2.2 Symbols and depictions used

Depiction / Description

1. Steps to be taken
- 2.

- Itemisation

- (1) List



Installation chapter



Chapter with settings and button operation



Further useful information



Please read the respective manual



Unauthorised handling or configuration



3. Safety instructions



Risk of fatal electric shock when touching electrical components.

- The electrical connection for the tubular motor and all work on the electrical systems may only be undertaken by an authorised qualified electrician and in accordance with the connection diagrams in these instructions, see page 21 to 23.
- Carry out all installation and connection work only in an isolated, de-energised state.



Risk of fatal electric shock when installed incorrectly in damp rooms.

- Especially observe DIN VDE 0100, parts 701 and 702 when installing in damp rooms. These regulations contain mandatory protective measures.



The use of defective equipment can lead to personal injury and damage to property (electric shocks, short circuiting).

- Never use defective or damaged devices.
- Check the drive and mains cable beforehand for damage.
- Should you discover damage to the equipment, please consult our customer service department.

According to DIN EN 13659, it is necessary to determine that the movement conditions for the shutters are maintained in accordance with EN 12045.

- The displacement must be of at least 40 mm on the lower edge in the rolled-out position with a force of 150 N in the upwards direction.
- In doing so, it must be ensured that the extending speed of the shutters for the final 0.4 m is less than 0.15 m/s.



There is also a risk of fatal injury from crushing resulting from uncontrolled starting of the drive.

- Never attempt to manually stop the motor/shutter in the event of uncontrolled movement.
- In such cases, switch off all power to the drive and take appropriate safety precautions to prevent unintentional switching on.
- Arrange to have the system checked by a skilled electrician.



Exceeding the maximum permissible running time (KB = transient operation) may overload the tubular motor.

- The maximum permissible running time for a run may not be exceeded when the equipment is in operation. For this reason, the tubular motor has a running time limit (KB = transient operation) of four minutes.
- If the running time limit is triggered, then the tubular motor must be left for at least 20 minutes to cool down.



Incorrect use leads to an increased risk of injury.

- Train all personnel to safely use the tubular motor.
- Do not allow children to play with the fixed controllers and keep remote controls away from children.
- Cleaning and user maintenance may not be carried out by children without supervision.

For roller shutters:

- Watch the roller shutter whilst carrying out the settings and keep other people away from the area to avoid injury in the event of sudden slippage of the shutter.
- Watch the moving roller shutter during operation and keep other people away from the area until the movement has been completed.
- Carry out all cleaning work on the roller shutter whilst the device is disconnected from the mains power.

For awning systems which can be operated out of sight of the operator:

- The awning may not be operated if work is being carried out nearby (e.g. windows being cleaned).

For automatically actuated awnings:

- Disconnect the awning from the power supply if work is being carried out nearby.



A lack of maintenance can lead to personal injury through damage to your tubular motor and roller shutter or awning system:

- Please check all of your roller shutter system components regularly for damage.
- Check regularly that the roller shutter system is functioning correctly.
- The shutter must not be damaged.
- Damaged components should be exchanged by a specialist roller shutter firm.

With awning systems:

- Check the awning regularly for poor balance or damaged lines and springs.
- Have damaged awnings repaired by a specialist awning firm.



Contact with the drive housing can cause burns.

- The tubular motor gets hot during operation. Allow the motor to cool down prior to undertaking any further work on the motor.
- Never touch the hot drive housing.

i 3.1 Intended use / operational conditions

Only use the tubular motors for opening and closing standard flat roller shutters and awnings.



The use of the wrong tubular motors or components can lead to property damage.



- The motor cable must therefore be fitted with a suitable empty tube up to the respective junction box under observation of local electrical regulations, if installed outside.
- Only use the manufacturer's original parts and accessories.
- Only use tubular motors which correspond to the local conditions in terms of their power. Incorrectly dimensioned tubular motors can lead to damage:
 - > An insufficiently dimensioned tubular motor can be damaged due to overloading.
 - > An excessively dimensioned tubular motor can, for example, cause damage to the roller shutter or roller shutter box in self-learning mode.
- Consult a specialist retailer when selecting a tubular motor and observe the corresponding tractive force specifications on our website: www.rademacher.de

Operating conditions

- A 230 V / 50 Hz power supply, together with a site-provided isolating device (fuse) must be permanently available for the electrical connection at the installation location.
- The roller shutter must run up and down smoothly. It should not jam.
- Installation and operation of the RolloTube S-line DuoFern is only permitted for those systems and devices where a malfunction in the transmitter or receiver would not cause a danger to personnel or property or where this risk is already covered by other safety equipment.



Radio systems which transmit on the same frequency can cause interference.

Operating conditions for the self-learning operation

- The roller shutter must be fitted with stoppers or an end-rail, see page 20.
- Otherwise, the end points must be set manually in the conventional way, see page 25 et seq.

i 3.2 Improper use

Using the RolloTube S-line DuoFern for purposes other than previously mentioned is impermissible.



Never use the tubular motor in systems with increased safety-relevant requirements or where there is an increased risk of accidents.

- Applications of this kind require additional safety equipment. Observe the respective statutory regulations for the installation of such systems.



Never use the tubular motor in continuous operation. Doing so will cause serious damage.



Never use the tubular motor for shutters with openings of ≥ 50 mm in diameter.



Never use the DuoFern radio system and its components for the remote control of appliances and systems with increased safety-relevant requirements or where there is an accident risk.

- Applications of this kind require additional safety equipment. Observe the respective statutory regulations for the installation of such systems.

i 3.3 Required expert knowledge of the installer

The installation, electrical connection and maintenance must be carried out by a qualified person with appropriate training or by a specialist roller shutter firm in accordance with the instructions in this manual.

Shutter

Roller shutter / Venetian blind or similar.

Blockage detection / Obstacle detection

Tubular motor safety features.

If the roller shutter is blocked or an obstacle is encountered, the tubular motor stops and automatically travels briefly in the opposite direction.

Shutter length compensation

Automatic adjustment of travel route during operation.

Blockage detection

The blockage detection is a safety function. The tubular motor stops if the roller shutter is blocked.

DIN EN 13659

"Shutters and external Venetian blinds - Performance requirements including safety."

This standard determines the performance requirements that externally attached shutters and blinds must fulfil. It also contains significant hazards with regard to the design, transportation, installation, operation and maintenance of these shutters and blinds.

DIN VDE 0100, Part 701 and 702

"Erection of low voltage installations - Part 7-701 and 7-702"

This standard defines the requirements for special installations or locations, rooms with a bath or shower / basin etc.

Torque monitoring

The torque monitoring protects the roller shutter and the complete system from being destroyed and people from being injured. It is also used to find the end points, amongst other things.

DuoFern

RADEMACHER radio technology for controlling compatible products.

End points

An end point is defined and set for each direction of travel of the roller shutter. Once this point has been reached, the tubular motor switches off and the roller shutter stops.

SmartHome Box

The RADEMACHER SmartHome Box is a central controller unit for RADEMACHER radio products.

Transient operation (KB)

Tubular motors are not designed for continuous operation. Transient operation defines the maximum permissible running time.

Magnetic ring

The magnetic ring (**18**) is located in the area of the drive head (**12**). It is driven by the winding shaft (**5**) and the adapter (**10**) and is used to find the end points, and monitor/control the shaft rotations in normal mode.

Configuration of KNX/EIB Venetian blind actuators

- KNX/EIB Venetian blind actuators are used to control electrically operated Venetian blinds, roller shutters etc.
- Some parameters must be set prior to commissioning in order to ensure trouble-free operation.

Roller shutter box

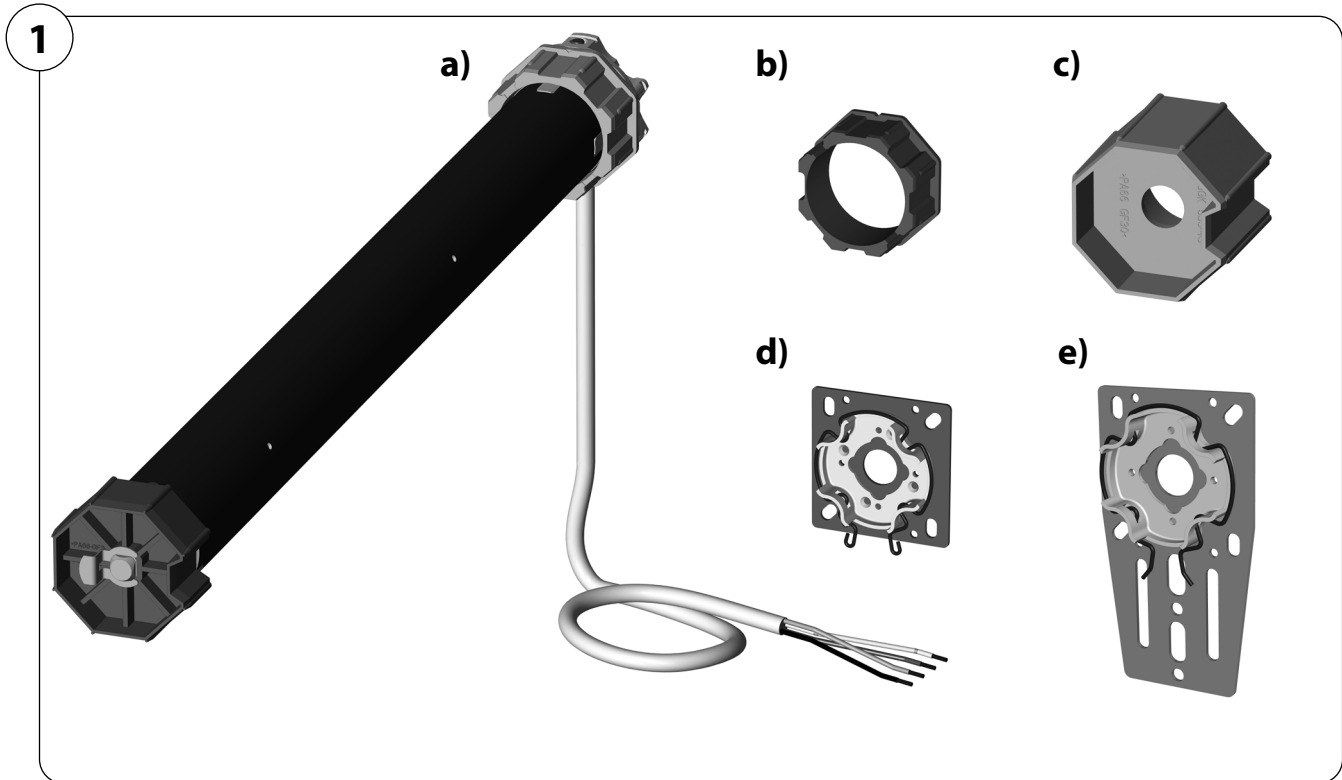
The tubular motor is installed in an existing or retrofitted roller shutter box above the window.

Universal setting cable

RADEMACHER accessory for the specialist roller shutter firm to set the end points.

Rigid shaft connector / Flexible ties

Assemblies aid to fasten the roller shutter to the winding shaft. A distinction is made between rigid shaft connectors or anti-raise mechanisms and flexible ties (made from metal).



Included in delivery

RolloTube S-line DuoFern	Small	Medium
(a) Tubular motor, including cable (2,5 m)	1 x	1 x
(b) Adapter	1 x	1 x
(c) Catch	1 x	1 x
(d) Click universal drive bearing	1 x	-
(e) Click-ready box support	-	1 x

Please note:

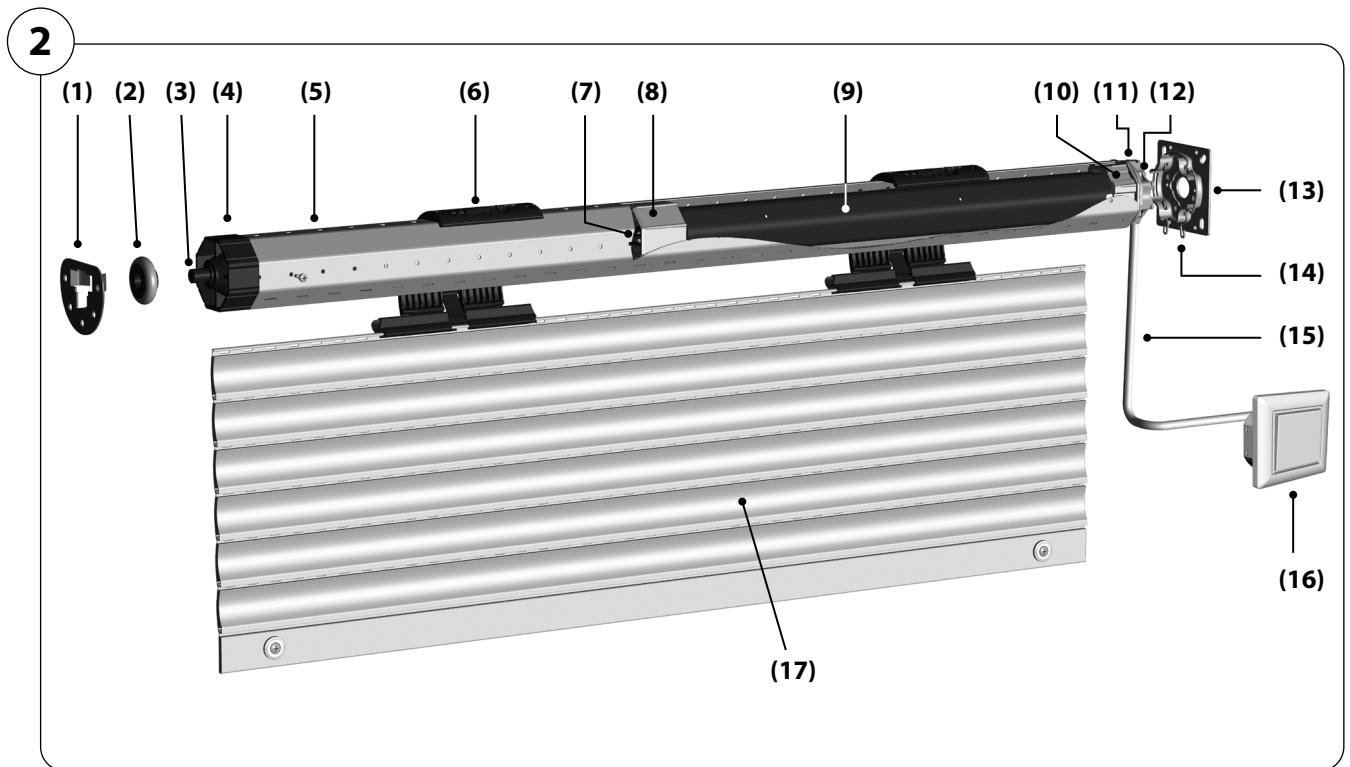
Customer-specific scope of delivery

After unpacking please check the following:

Check that the package contents match the scope of delivery listed on the package.

Check the details on the type plate

- Check the details for the motor type.
- Check that the voltage / frequency corresponds to the local mains conditions.



Key to the overall view

- (1) Counter bearing *
- (2) Ball bearing *
- (3) Axle pin on the roller capsule
- (4) Roller capsule *
- (5) Winding shaft *
- (6) Rigid shaft connectors or ties*
- (7) Retaining clip
- (8) Catch *
- (9) Tubular motor
- (10) Adapter *
- (11) Set button
- (12) Drive head
- (13) Click drive bearing *
- (14) Retaining spring *
- (15) Motor cable
- (16) Controller (e.g. external Roller shutter switch or button) *
- (17) Roller shutter



* The necessary accessories and all tubular motor controllers for this type of tubular motor incl. the technical information and manuals can be found on our website. www.rademacher.de

Only use RADEMACHER RolloTube S-line DuoFern tubular motors for opening and closing roller shutters and awnings.

The RolloTube S-line DuoFern tubular motors are self-learning motors with a smooth stop at both end positions. The end positions for the smooth stop are automatically learned during the first run cycles. This eliminates the need to set the end points or a teach-in run.

However of course, the end points can also be set manually see page 25.

The lower end point must be set manually when using it as an awning drive, see page 25.

The compact design and self-learning smooth stop ensure a quick and easy installation.

The RolloTube S-line DuoFern impresses in daily operation with blockage detection in both directions of travel, ensuring maximum safety and gentle operation.



The roller shutter must be equipped with stoppers or an end rail in order to use the RolloTube S-line DuoFern in self-learning mode, see page 19 / 20.

Use in the DuoFern network

As soon as you integrate your RolloTube S-Line DuoFern into a DuoFern radio network, you can set and make use of many different automatic functions using DuoFern controllers such as the RADEMACHER SmartHome Box or central operating unit.

DuoFern controllers and transmitters must be connected to the DuoFern network.

Overview of functions:

- Self-learning mode with a smooth stop at both end positions, see page 25.
- Torque monitoring
- Blockage detection in both directions of travel, including reversing function
- Obstacle detection include reversing function
- Shutter length compensation
- Quick and easy installation thanks to the short design
- Either one or both end points can be set manually as required. Also in combination with the self-learning mode.
- Jog mode when using a roller shutter button
- Operation using a roller shutter switch
- Controller with a 1-pole button
- Fly screen door protection
- DuoFern radio code for activating registering mode in combination with the SmartHome Box or DuoFern manual central operating unit.

6.1 Blockage detection function

The tubular motor stops and automatically shifts briefly in the opposite direction (reversing), in the event that the roller shutter is blocked by an obstacle in one of the two directions of travel (e.g. if a roller shutter is iced-up/jammed).



Moving a blocked (e.g. iced-up/jammed) roller shutter may overload and damage the tubular motor and roller shutter system.

- Do not move the iced-up/jammed roller shutter and rectify the fault or remove the obstacle.

Requirements for correct blockage detection:

- The roller shutter must always run vertically, easily and freely in the guide rails of the window.

i 6.2 Obstacle detection function

The tubular motor stops and automatically travels briefly in the opposite direction (reversing), in the event that the roller shutter hits an obstacle while closing.

Requirements for correct obstacle detection:

- The catch must be mounted with the freewheel mechanism (see fig. 8, page 15), original factory settings.
- The roller shutter must be mounted to the winding shaft with the ties or with the fixed shaft connector.

- The roller shutter must always run vertically, easily and freely in the guide rails of the window.
- Obstacle detection can be deactivated/activated via the SmartHome Box.

Information about multi-part systems



When using a tubular motor with obstacle detection in multi-part systems (several screens powered by a winding shaft), the obstacle detection may respond late or not at all.

i 6.3 Function of the shutter length compensation

The shutter length compensation is active subsequent to the automatic learning process for the upper end point. Afterwards, the tubular motor no longer runs to the upper end stop in order to protect the roller shutter.

For example, the ageing of roller shutters can cause the automatically learned runs to be changed over a period of time. In order to compensate for this, the tubular motor periodically runs automatically to the upper end stop (the cycle for this is set at the factory).

- The shutter length compensation operates automatically during normal operation, so that generally you will not notice it.
- If the upper end point is manually set, then the shutter length compensation is inactive.
- Shutter length compensation can be deactivated/activated via the SmartHome Box.

i 6.4 Functions if the catch has been mounted without the freewheel mechanism

The following conditions must be observed and followed if the catch has been mounted **without the freewheel mechanism**, see page 15.

Conditions for the correct function of the motor if the catch has been mounted without the freewheel mechanism:

- The obstacle detection is not active.
- **Self-learning operation only possible with rigid shaft connectors:**
 - > The roller shutter must be mounted to the winding shaft with rigid shaft connectors.
 - > The roller shutter must be fitted with stoppers or an end-rail, see page 19 / 20.
- **End point setting when using ties:**
 - > The lowest end point must be set manually.

i 6.5 Jog mode using a roller shutter button

The RolloTube S-line DuoFern can be controlled on site using a roller shutter button in jog mode.

By briefly tapping the up or down button the shutter will continue to move until it reaches the selected end point. Tapping the button or opposite direction once more causes the motor to stop. After longer pressing of the up or down button (longer than approx. 1 second) the motor stops when the button is released!

i 6.6 Operation using a roller shutter switch

The RolloTube S-line DuoFern can be controlled on site using a roller shutter switch.

By activating the up or down direction on the switch the shutter will continue to move until it reaches the selected end point. By deactivating the specified direction of travel the motor can be stopped at the desired position.

i 6.7 Jog mode using a 1-pole button

The RolloTube S-line DuoFern can also be controlled on site using a 1-pole button.

Activating the function

The function is deactivated in the factory settings; once the button has been connected, the function must first be activated at the tubular motor, see page 23.

The function can be deactivated again as required.

Switching sequence on the button

up / stop / down / stop etc.

i 6.8 Activating the fly screen door protection

In order to protect, for example, an outward-opening fly screen door you can also activate the 'Fly screen door protection' function.

The tubular motor stops and automatically moves briefly in the opposite direction (reversing) in the event that the roller shutter hits the fly screen door while closing.

Requirement for correct functionality:

The catch must be mounted with the freewheel mechanism (see fig. 8, page 15), original factory settings.

Activating the function via SmartHome Box

The function is deactivated in the factory settings and can be reactivated using SmartHome Box when required.

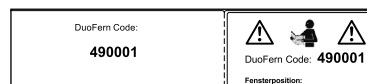
i 6.9 Activating log-on mode using the DuoFern radio code

The RolloTube S-line DuoFern can be set to log-on mode in combination with a SmartHome Box or a DuoFern manual central operating unit by entering its radio code, in order to activate other DuoFern devices (e.g. DuoFern manual transmitter).

Time window for activation via DuoFern radio code

After switching on the power supply, the radio code is active for a maximum of 2 hours. Once this time has elapsed, activation using the radio code is no longer possible. Briefly disconnect the RolloTube S-line DuoFern from the mains to reactivate the time window.

The DuoFern radio code can be found on the enclosed label



Example:



It is imperative that you store the enclosed label safely e.g. by fixing it to the cover sheet of these instructions.

This means that you will still be able to access log-on mode for the RolloTube S-line DuoFern without having to open the roller shutter system.



7. Important installation instructions

Preparation for installation

- Check that the voltage / frequency on the type plate corresponds to local mains conditions prior to installation.
- You must remove or deactivate all cables and equipment not required for operation of the equipment prior to installation of the tubular motor.
- Moving drive parts to be operated at a height under 2.5 m from the floor must be protected.
- If the tubular motor is to be controlled with a switch with a default OFF pre-setting, then the switch is to be positioned in the line of sight of the tubular motor and at a height of at least 1.5 m.
- The cover of the roller shutter box must be freely accessible and removable without damaging it.



- Never dismantle the stoppers from the final roller shutter slat. Otherwise the roller shutter may slip through into the roller shutter box and be damaged.



Risk of fatal injury from crushing in the event of operation without set end points.

- The end points must be set in order to ensure safe operation. In order to do so, please refer to the corresponding chapter in this manual on page 25.



Incorrect installation can lead to injuries (impact injuries and contusions).

- The motor can eject from the drive bearing in the event of incorrect installation/fastening. Fasten the tubular motor with the securing devices provided.



Installing the tubular motor at an angle can cause the tubular motor or roller shutter to be damaged. For example, a roller shutter wound at an angle can block the drive and cause damage.

- Always ensure that the tubular motors and bearings are mounted horizontally.
- Please ensure that the winding shaft (5) and the roller shutter (17) can move down easily and freely after installation is complete.
- The roller shutter (17) may not run over the bearing, the roller capsule (4) or the drive head (12) during operation.
- Ensure that the winding shaft (5) and the rigid shaft connectors (6) do not touch the drive (9). They may not rub against the tubular motor (9) during operation.



For automatically actuated awnings:

- A minimum gap of 0.4 m to other parts in the area must be maintained when the awning is fully extended.
- Awnings used in an awning system must maintain a minimum height of 1.8 m.



Incorrectly dimensioned drives and counter bearings can cause the roller shutter system to be damaged.

- Only use original bearings supplied by the manufacturer. Third-party drives and counter bearings must be selected in accordance with the torque specifications of the respective tubular motors.



7.1 Installation of the tubular motor

The following installation instructions apply to standard installation situations in combination with RADEMACHER tubular motors and accessories.

The drive head (12) of the motor can be installed on either the right or left side of the roller shutter box. These instructions depict the installation on the right-hand side.

Required minimum width for the roller shutter box:

Tubular motor type:	Small	Medium
Minimum width approx.:	56 cm	67 cm

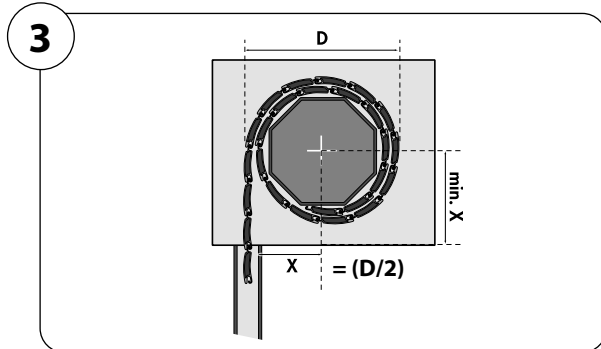


7.2 Mounting the bearings

ATTENTION!

A roller shutter wound at an angle can block the drive and cause damage.

- Always ensure that the bearings are mounted as horizontal as possible.



1. First determine the position of the drive (13) and counter bearing (1) in the roller shutter box.
2. Wind the roller shutter casing fully onto the winding shaft and measure the diameter [D] (see figure 3) in order to determine the position of the centre of the bearing to the guide rail.



When installed, the wound roller shutter must run vertically in the guide rail on the window.

3. Fasten the bearing in accordance with the bearing type and on-site conditions.
4. Mount the drive bearing (13) so that the set button (11) on the drive head will be easily accessible at a later stage and the motor cable (15) can be laid without kinking.



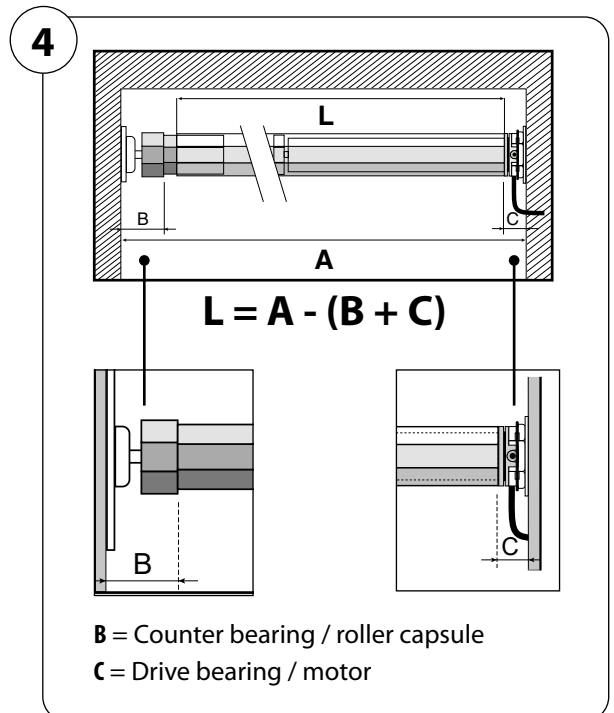
7.3 Determining the length of the winding shaft (5)

1. Measure the wall gap of the drive (13) and counter bearing (1) as shown.
2. Measure the roller shutter box and calculate the required shaft length [L].
3. Length of the winding shaft: $L = A - (B + C)$

Recommendation

Shorten L by approx. 5 mm more than calculated by the equation to ensure a sufficiently large space of 2 to 3 mm in the overall length when the roller capsule (4) is inserted.

4. Shorten the winding shaft (5) to the required size. Cut the shaft to size with a hacksaw at a right-angle. Remove the burrs from the shaft internally and externally with a file.



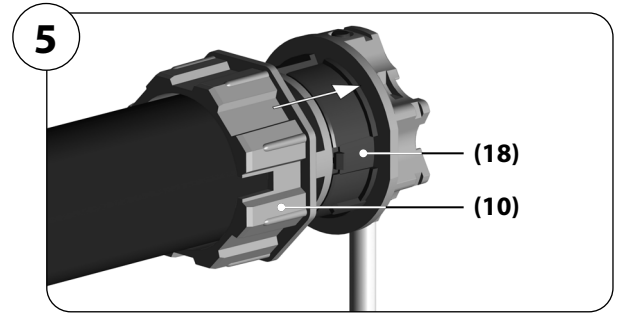


7.4 Mounting / dismantling the adapter (10)

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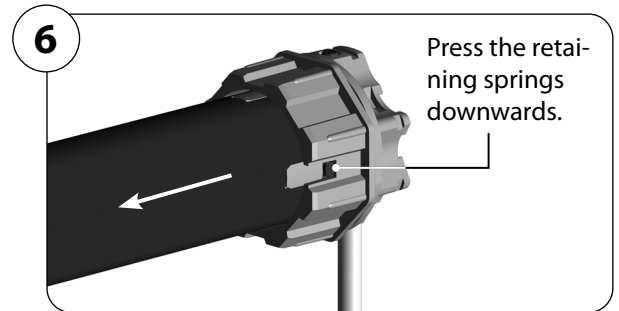
Mounting the adapter (10)

1. Slide the adapter (10) over the magnetic ring (18) on the drive head until it engages. In doing so, check the correct positioning of the groove in the adapter (10) (original factory settings).



Dismantling the adapter (10)

1. Press the two retaining springs on the magnetic ring (18) downwards and pull the adapter (10) off the magnetic ring (18).

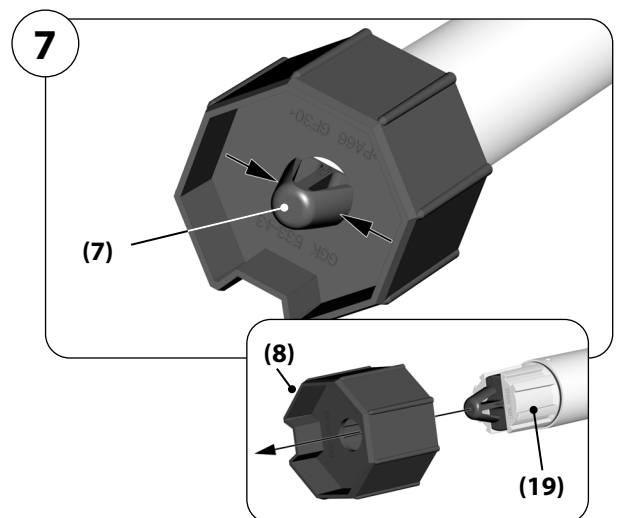


7.5 Dismantling the catch (8)

The catch (8) can be mounted with or without the freewheel mechanism.

- The factory pre-setting for the catch is "with the freewheel mechanism".
- The catch (8) must first be dismantled before changing the mounting mode.

1. Press the side parts of the retaining clip (7) together and pull the catch (8) off the drive adapter (19).





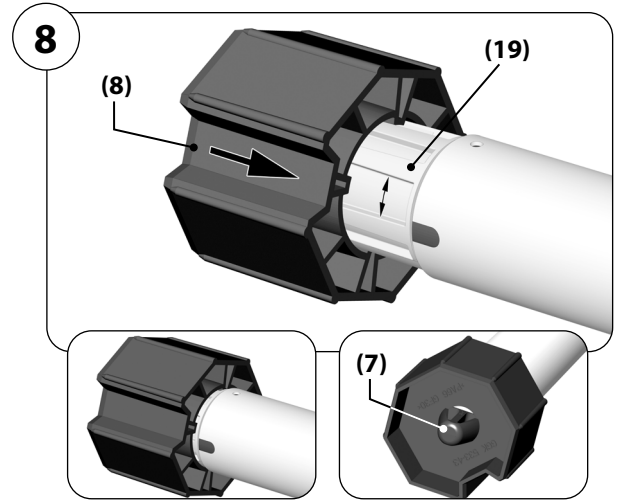
7.6 Mounting the catch (8) with the freewheel mechanism

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If the tubular motor is to be operated with the self-learning end point setting and obstacle detection, then the catch (8) must be mounted with the freewheel mechanism (**original factory settings**).

1. Slide the catch (8) onto the drive adapter (19) so that it can free-wheel and so that it engages behind the retaining clip (7).
Free-wheeling is given if the catch (8) can be easily turned back and forth.



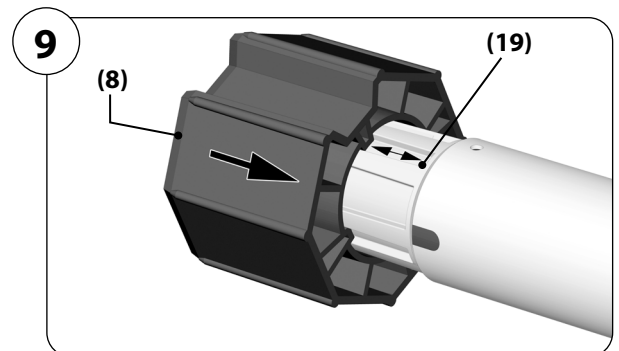
7.7 Mounting the catch (8) without the freewheel mechanism

i

If the catch (8) is mounted without the freewheel mechanism, then the tubular motor will work without obstacle detection. Rigid shaft connectors are then required for the self-learning detection of the lower end point.

It may be necessary to mount the catch (8) without the freewheel mechanism for very lightweight roller shutters or for roller shutters which do not drop easily, in order to avoid premature switch-off.

1. Slide the catch (8) onto the drive adapter (19) so that it cannot free-wheel and so that it engages behind the retaining clip (7).

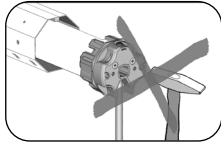




7.8 Sliding the tubular motor (9) into the winding shaft

EN

ATTENTION!



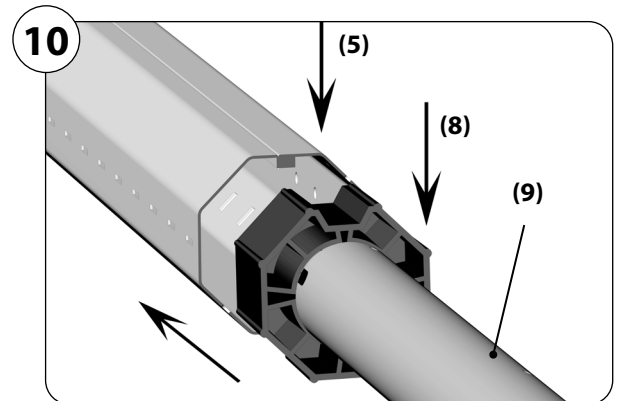
Inserting the tubular motor (9) forcibly into the winding shaft (5) will cause serious damage.

- ❑ Never knock the tubular motor (9) with force into the winding shaft (5).

1. First slide the catch (8) into the winding shaft (5).



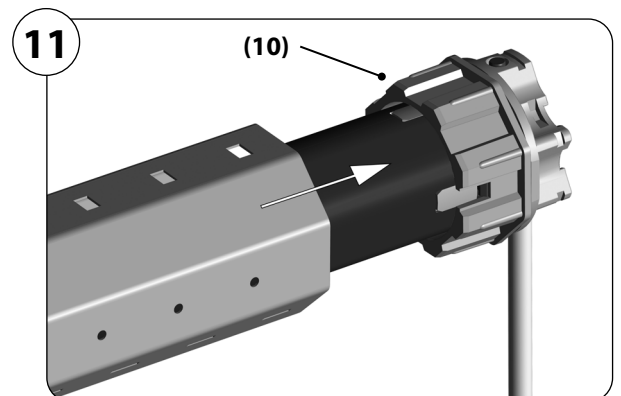
The motor (9) must have sufficient free space for winding shafts with internal felt.



2. Subsequently, press the winding shaft (5) fully onto the adapter (10).

ATTENTION!

- ❑ In doing so, ensure that the adapter (10) does not slip off the magnetic ring (18) on the drive head (12) during the assembly process. Otherwise malfunctions may occur, see page 29.
- ❑ The motor must always be pushed fully into the winding shaft. The length compensation or correction is set with the position of the roller capsule, see page 19.



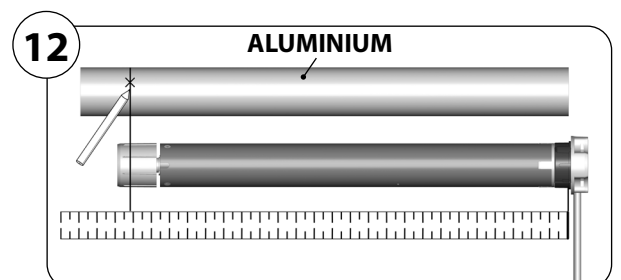
7.9 Preparation for use of the precision tubes



Please only use precision tubes made from aluminium.

- ❑ The following steps can be left out when using octagonal steel shafts.

1. Measure the distance between the adapter (10) and the rear third of the catch (8) and mark this distance on the precision tube.



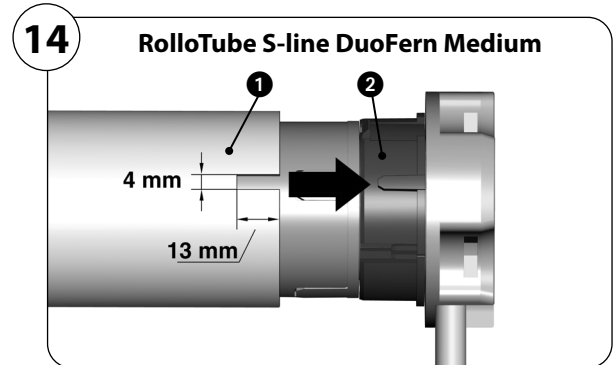
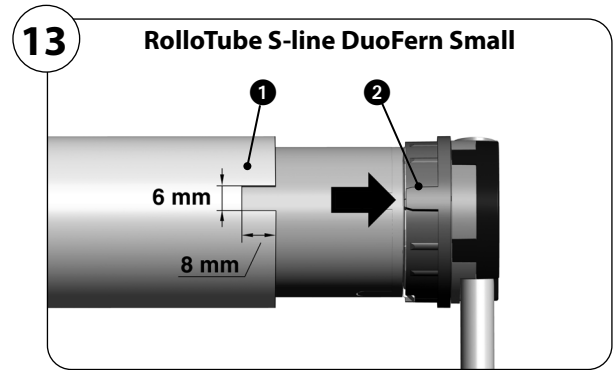


7.9 Preparation for use of the precision tubes

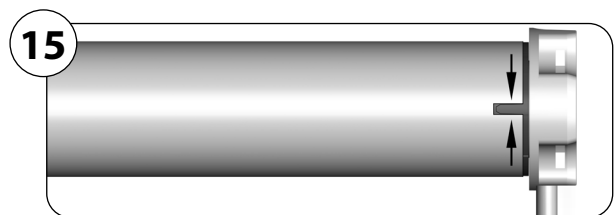
EN

2. Saw a groove in the end of the precision tube ① in order that the cam ② of the adapter (10) can be completely pressed into the tube.

- There may not be any play between the groove ① and the cam ②.
- The dimensions for the groove ① are dependent on the tubular motor type used, see figures.



3. Slide the tubular motor into the precision tube.



4. Mark the four fastening holes and subsequently drill them through the precision tube into the catch (8).

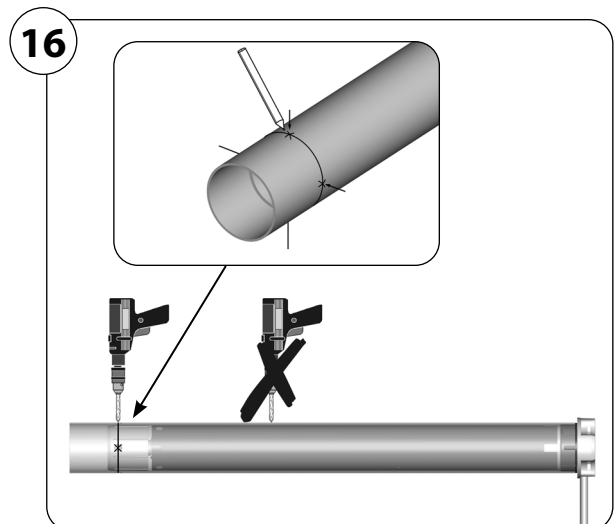
⚠ ATTENTION!

Drilling too deeply may break the freewheel mechanism.

- Never drill deeper than 10 mm into catch (8).

Drilling in the area of the drive causes serious damage.

- Never drill in the area of the drive (9).

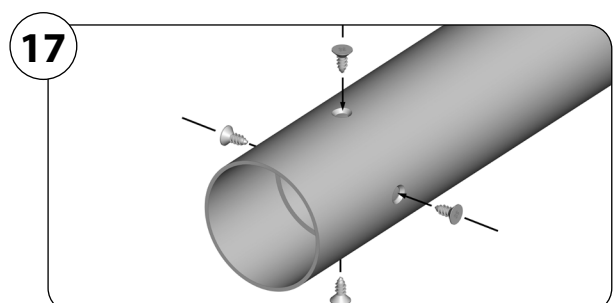


5. Screw or rivet the precision tube to the catch (8). Use four self-tapping sheet metal screws or four pop rivets for this.

⚠ ATTENTION!

Screws or rivets that are too long interfere with the freewheel mechanism.

- Do not use screws or rivets longer than 10 mm.

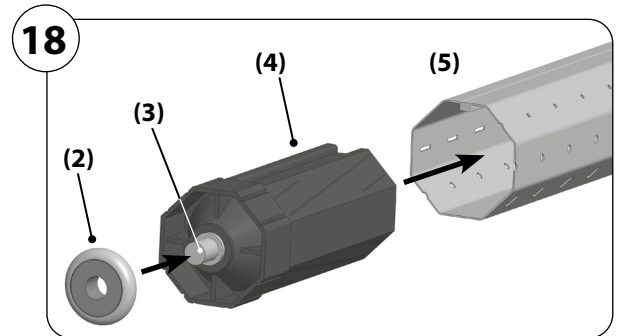




7.10 Mounting the roller capsule (4)

EN

1. Slide the roller capsule (4) into the winding shaft (5) and subsequently place the ball bearing (2) onto the axle pin (3) of the roller capsule.



7.11 Mounting the motor into the bearings

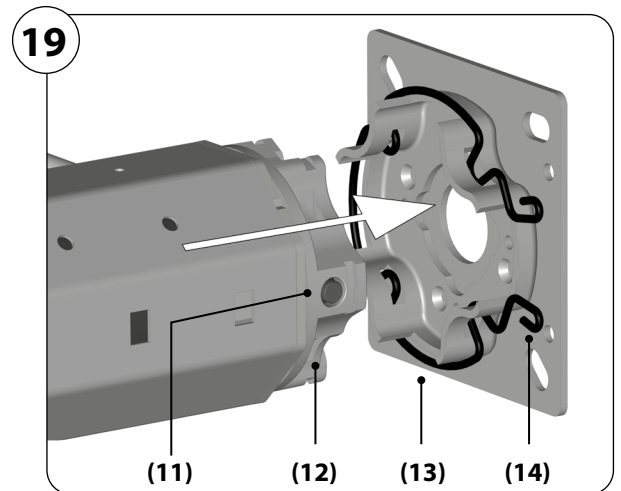
7.11.1 Mounting into the drive bearing as a click bearing (13)

1. Press the drive head (12) lightly into the click bearing (13) until it engages. The set button (11) must be easily accessible.



The tubular motors can be fitted into the click bearing (13) in 4 positions.

- The motors can be released from the click bearing (13) at any time by means of expanding the retaining spring (14).

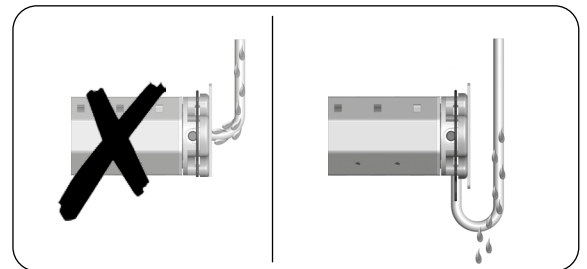


WARNING!



Risk of short-circuit resulting from water in the event of improper cabling.

- Never lay the motor cable (15) vertically upwards otherwise water may collect on the cable and run into the motor, leading to damage.
- Lay the cable in a loop. The loop will cause any water on the cable to collect at the lowest point, from where it can drain off.



7.11.2 Mounting in other drive bearing versions

Hook the drive head (12) into the corresponding drive bearing and secure, for example, with a cotter pin.



7.11 Mounting the motor into the bearings

EN

7.11.3 Mounting into the counter bearing (1)

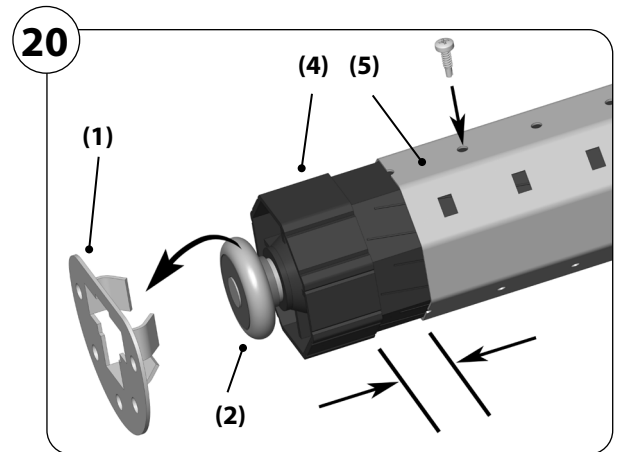
1. Insert the other end of the winding shaft (5) with the ball bearing (2) into the counter bearing (1).
2. In the event that you are using a different drive bearing than the RADEMACHER click bearing (13), you may need to secure the drive with a secondary cotter pin.
3. Correct any slight inaccuracies in size by means of sliding the roller capsule (4) in or out.



The roller capsule (4) must be inserted at least $\frac{2}{3}$ of its length into the winding shaft (5).

Make sure that there is sufficient space in the axle length to ensure ease of movement.

4. Finally, secure the roller capsule (4) with a screw.



7.12 Mounting the roller shutter (17)

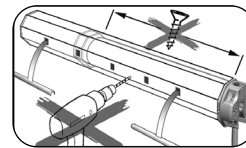
The roller shutter can be mounted with both rigid shaft connectors and ties.

⚠ ATTENTION!

The roller shutter may run into the roller shutter box in self-learning mode and be damaged without stoppers or an end rail.

- Always fit two stoppers or an end-rail to the roller shutter (17).

⚠ ATTENTION!



Drilling and inserting screws in the area of the drive will cause the drive to be damaged.

- Never drill or insert screws in the area of the drive (9) in order to secure the roller shutter (17).

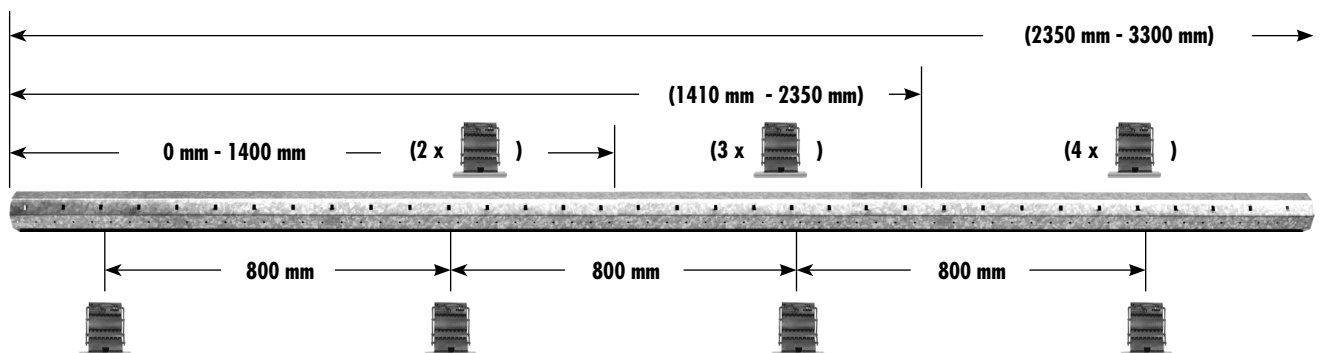
7.12.1 Mounting the roller shutter with rigid shaft connectors

Determine the number of rigid shaft connectors required



Mount at least two rigid shaft connectors per roller shutter on both ends of the corresponding octagonal shaft. The number of rigid shaft connectors may vary from the following recommendation, depending on the operating conditions.

Roller shutters width / minimum number:



Recommendation: Mount an additional rigid shaft connector every 800 mm.



7.12 Mounting the roller shutter (17)

1. Select the shaft connector type required of the correct length. *



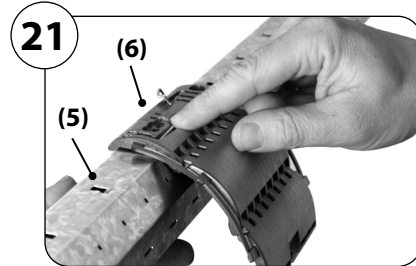
ATTENTION!

Incorrectly selected lengths can lead to malfunctions. *

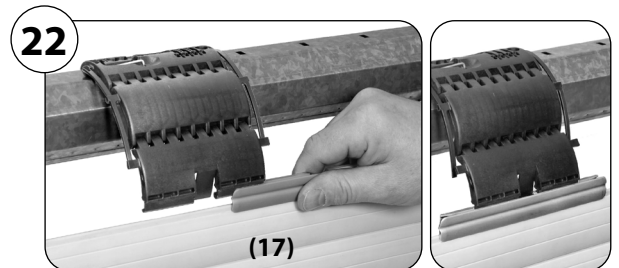
2. Mount the shaft connectors (6) at the winding shaft (5). *



* In order to do so, follow the information provided in the operating manual for shaft connectors.

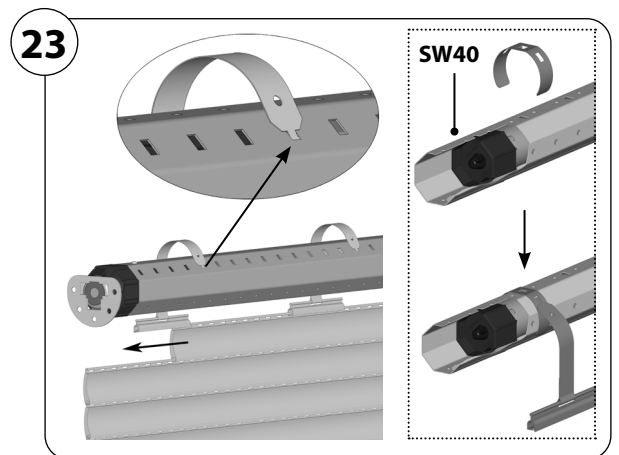


3. Slide the retainer profile for each shaft connector (6) onto the uppermost slat of the roller shutter (17).
4. Subsequently slide each retainer profile over a shaft connector (6).



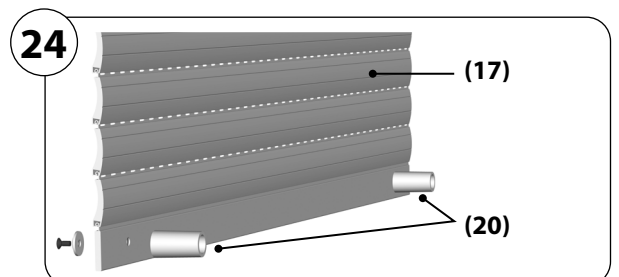
7.12.2 Mounting the roller shutter with ties

1. Slide the ties onto the uppermost slat of the roller shutter.
Place a tie every 40 cm into the rectangular holes of the winding shaft.
For **SW40 winding shafts** (with external groove), use suspension clamps in order to mount the ties.



7.12.3 Mounting roller shutter stoppers or an end rail

1. Finally, mount two roller shutter stoppers (20) or an end rail onto the lowermost slat or rail of the roller shutter (17).
Otherwise, the upper end point must be learned manually.





8. Safety instructions for the electrical connection

EN

DANGER!



Risk of fatal electric shock when touching electrical components.

- Carry out all installation and connection work only in an isolated, de-energised state.
- Disconnect all phases of the mains power lead and secure it to prevent any reconnection.
- Check that the system is de-energised.

Fixed-installation devices...

...must be equipped on the installation side with a circuit-breaker for each phase in accordance with DIN VDE 0700. Switches with a contact opening width of min. 3 mm can be used as circuit-breakers (e.g. power switch, power circuit breaker or residual-current-operated circuit-breaker).

WARNING!



Risk of short-circuit resulting from damaged cable.

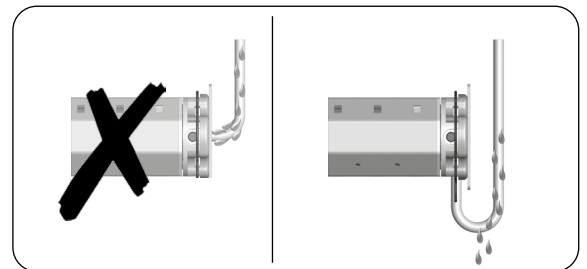
- Lay all cables in the roller shutter box so that they cannot be damaged by moving machinery.
- The mains connection for the drive may only be connected with the same conduction type. Consult customer services if necessary.

WARNING!



Risk of short-circuit resulting from water in the event of improper cabling.

- Never lay the motor cable (15) vertically upwards otherwise water may collect on the cable and run into the motor, leading to damage.
- Lay the cable in a loop. The loop will cause any water on the cable to collect at the lowest point, from where it can drain off.



8.1 Connecting the motor cable (15)

1. Connect the motor cable (15) according to the following wiring configuration.

Colour scale for the motor leads (15)

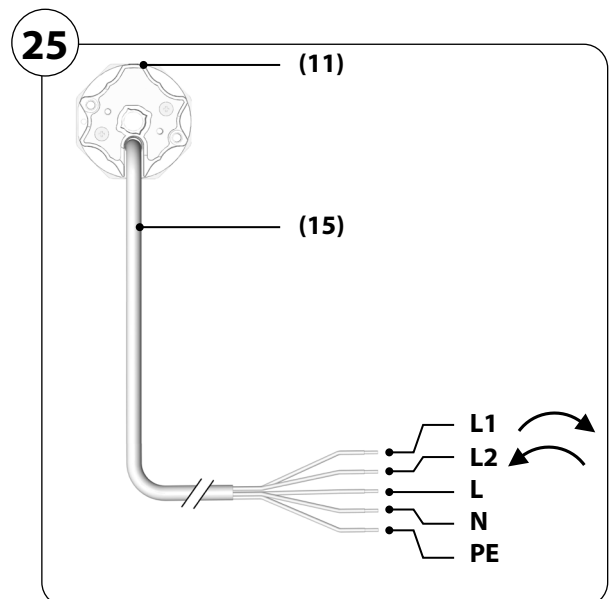
- L1 = (black) *
- L2 = (brown) *
- N = neutral terminal (blue)
- L = continuous phase (grey)
- PE = earth (green / yellow)
- 11 = Set button on tubular motor



* The actual direction of travel of the tubular motor and the roller shutter depends on the direction of installation and the wiring of the tubular motor.



Shortening the motor cable (15) can restrict the radio range. The antenna is also integrated in the motor cable.





8.2 Electrical connection of the tubular motor

EN

8.2.1 Controlling the tubular motor via radio

Legend:

(a) = Set button (11)

(b/d) = Socket box


(c) = Mains 230 V/50 Hz


Pin assignment:

(e) = PE green/yellow

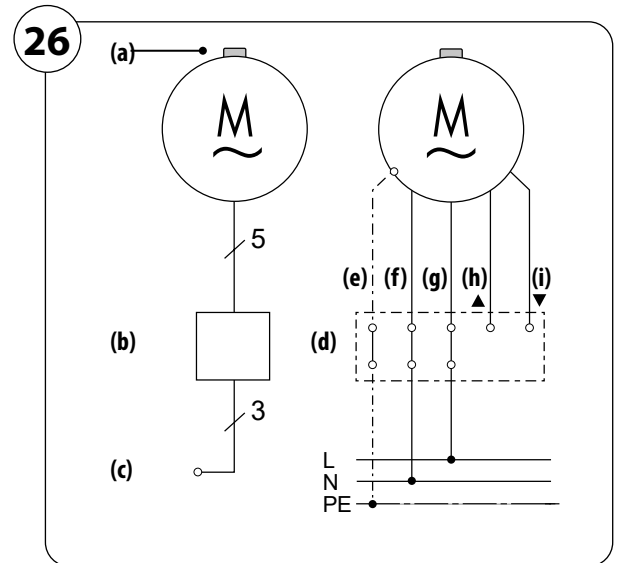
(f) = N blue

(g) = L grey (continuous phase)

(h) =  black (direction of travel 1) *

(i) =  brown (direction of travel 2) *

* The black and brown wires (direction of travel 1 and 2) are not required for radio operation and therefore not connected.



8.2.2 Controlling the tubular motor using a roller shutter switch or button

Legend:

(a) = Set button (11)

(b) = Roller shutter switch or button

(c) = Mains 230 V/50 Hz


(d) = Socket box


Pin assignment:

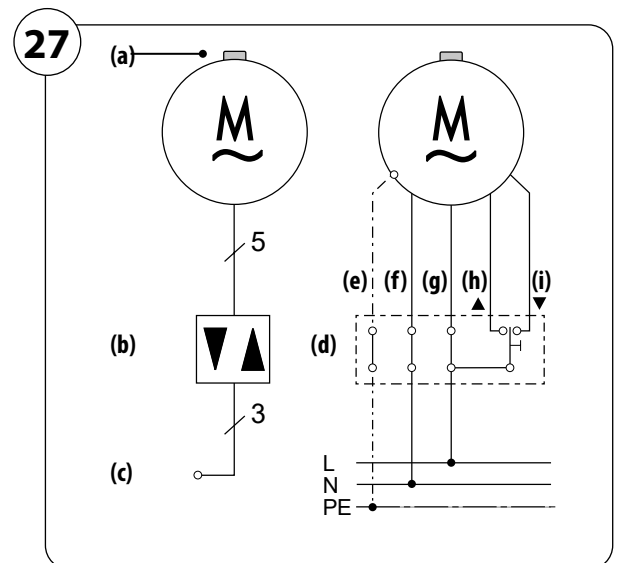
(e) = PE green/yellow

(f) = N blue

(g) = L grey (continuous phase)

(h) =  black (direction of travel 1) *

(i) =  brown (direction of travel 2) *



Example: Circuit layout with a roller shutter button



When using a switch, we recommend that the mains power to the motor is switched off (switch in zero position) after reaching the end points. This avoids the motor experiencing sources of interference or excess voltages.



8.2 Electrical connection of the tubular motor

EN

8.2.3 Controlling the tubular motor using a 1-pole button (closer)

Legend

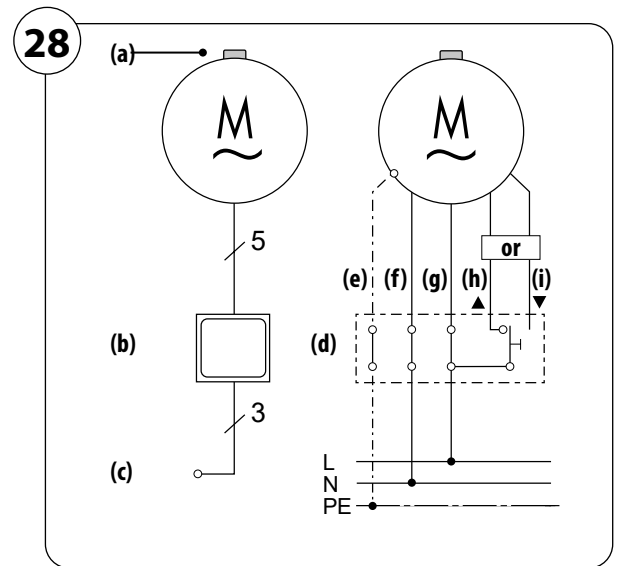
- (a) = Set button (11)
- (b) = 1-pole button
- (c) = Mains 230 V/50 Hz
- (d) = Socket box

Pin assignment

- (e) = PE green / yellow
- (f) = N blue
- (g) = L grey (continuous phase)
- (h) = black (direction of travel 1)
- (i) = brown (direction of travel 2)



Once the button has been connected the function must be activated on the RolloTube S-line DuoFern.



Activating the '1-pole button' function

1. Tap the button 4 x briefly and press and hold the 5th time.
2. The connected tubular motor will acknowledge this with a slight movement, and the function is activated.

The switching sequence is as follows:

up / stop / down / stop etc.

Deactivating the '1-pole button' function

Repeat the steps 1. and 2.

8.2.4 Parallel connection of several motors

It is possible to connect numerous RADEMACHER tubular motors in parallel. The number of motors to be connected in parallel is dependent on the capacity of the switchgear and circuit-breakers.



The end points must be set at each individual motor prior to parallel connection. Please refer to the respective operating manual.



It is not possible to control individual motors if the equipment is connected in parallel.

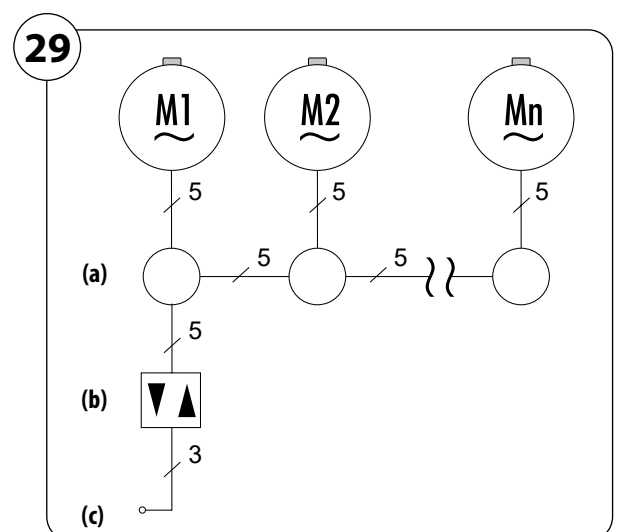
Parallel connection with Venetian blind switches or Venetian blind buttons

Up to five motors can be switched in parallel with RADEMACHER Venetian blind switches or Venetian blind buttons.

Parallel connection with RADEMACHER controllers (e.g. Troll Comfort)

Please refer to the technical specifications for the respective number of tubular motors that can be connected in parallel.

Installation example



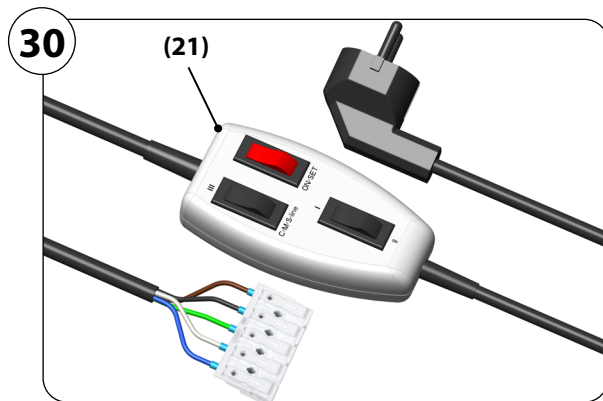
Legend

- (a) = Junction box
- (b) = Controller, e.g. 1-pole switch / button
- (c) = Mains 230 V / 50 Hz



8.3 Connection of the universal setting cable for manual end point setting

EN



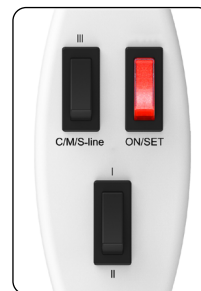
Pin assignment:

The connection is made with the same colours as the motor connecting cable of the RolloTube S-line DuoFern, see figure [25].

1. Open the terminal contacts by pressing the plungers and connect all of the wires of the motor cable (15) with the same colours and corresponding to their functions, see also figure [25].

Button assignment for RolloTube S-line DuoFern:

Button 2



Button 3

Button 1

Button 1 = direction of travel 1 / 2

Button 2 = set button

Button 3 = continuous phase



9. Self-learning mode with smooth stop



The RolloTube S-line DuoFern is delivered from the factory in self-learning mode with a smooth stop and can be put into operation immediately after the electrical connection.

ATTENTION!



The roller shutter may run into the roller shutter box in self-learning mode and be damaged without stoppers or an end rail.

- Always fit two stoppers or an end rail to the roller shutter (17), see page 19 / 20.
- Never dismantle the mechanical stoppers or the end rail from the final roller shutter slat.

1. Switch on the mains power supply.
The RolloTube S-line DuoFern is ready for operation immediately.
2.  |  Move the roller shutter up and down.
The end positions for the smooth stop are automatically learned during the first run cycles.
3. Subsequently check the direction of travel of the roller shutter, if the RolloTube S-line DuoFern is being operated using a switch or button.
Switch the lines for the rotation direction if the direction of travel is wrong, see connection diagrams [27 / 28] on pages 22 / 23.



10. Manual adjustment of end points

You can also adjust the end points manually if required:

- Manual adjustment of the upper and lower end point, e.g. during the initial installation.
- Manual adjustment of an end point in combination with the self-learning mode.

When using as an awning drive:

You must adjust the lower end point manually when using the RolloTube S-line DuoFern as an awning drive.

The upper end position can then be adjusted in self-learning mode.

Initial installation

For initial installation, the roller shutter engineer can carry out the end point setting with the help of the **set button (11)** on the motor or with a commercially available **universal setting cable (21)**.



In order to do so, follow the more detailed information provided in the operating manual of the respective accessories.

Subsequent modification of the end points with external controllers

If you want to subsequently modify the end points of your tubular motor, you can adjust these with your roller shutter controller (e.g. Troll Comfort).

WARNING!



Risk of fatal injury (electric shock) due to tearing off the motor cable (15).

- Ensure that the motor cable (15) is not taken up by the winding shaft (5) or torn off during the setting process.



Important conditions for adjusting the end points and for safe operation

- End points must be set in order to switch off the motor when they are reached for both directions of travel, up (□)/down (□).
- The tubular motor must be fully installed.
- There must be a suitably fixed limit (e.g. a window sill) in the area of the lower end point if the end point is to be set automatically.

CAUTION!

Risk of crushing injuries to the hand when working with the roller shutter box open.

- Never reach into the area of the winding shaft when the motor is running.

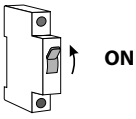




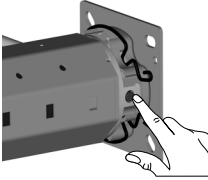
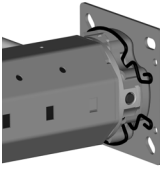
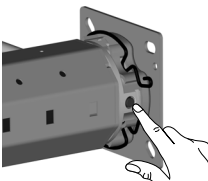

ATTENTION!

The roller shutter may be damaged in case of incorrect manual adjustment of the end points.

- Never dismantle the mechanical stoppers or the end rail from the final roller shutter slat.
- Do not allow the shutter to knock against the mechanical stoppers and maintain a safety gap of 2 - 3 cm.



10. Manual adjustment of end points

	With the set button on the tubular motor	With the universal setting cable
<p>1. First, switch on the mains power or continuous phase at the universal setting cable.</p>		 <p>ON/SET The LED on button 3 must light up continuously.</p>
<p>2. Move the roller shutters in the desired direction.</p> <p>Recommendation First in upright position.</p>		 <p>I Direction of travel 1 or II Direction of travel 2</p>
<p style="text-align: center;"> ATTENTION</p> <p>A combination of the endpoint adjustment with a DuoFern radio remote control can cause malfunctions.</p>		
<p>3. In addition press the set button on the tubular motor.</p>		<p>III press/tap twice briefly and press and hold the third time.</p>
<p>4. Release the button again as soon as the desired end point is reached.</p>		<p>III</p>
<p>5. You can correct the end point in small steps by briefly pressing the button.</p>		<p>III</p>
<p>6. Switch off the specified direction of travel after successfully setting the end points. Move the motor briefly in the opposite direction to save the end point.</p>	 <p>Set the Venetian blind switch to the neutral position and release the set button.</p>	<p>I II Set the rocker switch to the centre position.</p>
<p>7. Next, switch off the continuous phase at the universal setting cable.</p>		<p>ON/SET</p>



10. Manual adjustment of end points

Reset the original connection in accordance with the connection diagrams [26 to 28] on pages 22 / 23, if you have carried out the setting with the universal setting cable.



In the event that a malfunction occurs during the setting process, e.g. the tubular motor only runs for a single rotation even when you press and hold the set button, the adapter (10) may have slipped off the drive head (12).

- Check and, if necessary, correct the positioning of the adapter (10), see page 29.



10.1 Test run / modifying the end points

Test run

1. Subsequently check the direction of travel, if the RolloTube S-line DuoFern is being operated using a switch or button.
Switch the lines for the rotation direction if the direction of travel is incorrect, see connection diagram [27 / 28] on page 22 / 23 .
2. Check the settings and allow the roller shutter to run in both directions, until the end points switch off the motor.



ATTENTION!

The tubular motors are designed for transient operation (approx. 4 min.).

If this period is exceeded, or if the equipment is switched over frequently, then the motor may heat up and the thermal protection system will switch it off.

- In this case, allow the motor to cool down for 20 minutes.

Modifying the end points

Move the roller shutter back to the centre position and begin the process again.



11. Reloading the factory settings

Self-learning mode with a smooth stop is active again after loading the factory settings.

Notes for carrying out the setting

- Either use a new commercially available universal setting cable (21).
- The tubular motor may not be in operation.

Factory settings:

End points:	no end points stored
Self-learning mode with smooth stop:	activated
Blockage detection:	activated
Obstacle detection:	activated
Shutter length compensation:	activated
Jog mode using a 1-pole button:	deactivated
Fly screen door protection:	deactivated

When using the universal setting cable (21)

1. Button 3 - ON/SET

First, switch on the continuous phase.



2. Button 1 - switch on the desired direction of travel (I or II)

> while simultaneously (within one second) pressing and holding

Button 2 (set button), until the tubular motor confirms this by briefly running up and down (approx. 5 seconds).

After that the factory settings are loaded.

Subsequently:

- Release Button 2 (set button)
- Button 1 (I/II) in the middle position
- Switch off continuous phase - Button 3 (ON/SET)



3. Switch off the mains power supply and reset the original connection in accordance with the connection diagrams [26 to 28] on pages 22 / 23 if you have carried out the setting with the universal setting cable.

...the motor fails to start?**Possible cause:**

- The mains voltage is not available.

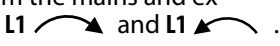
Solution:

- Check the power with a meter to ensure that the supply voltage (230 V) is available and check the wiring.
- Observe especially the information relating to impermissible connection types.

...the wiring is incorrect?**Possible cause:**

- The control lines are mixed up.

Solution:

- Disconnect the lead from the mains and exchange the wires for  .

...The tubular motor stops after a short period of time during the setting and test procedures?**Possible cause:**

- The adapter (10) may have slipped off the magnetic ring (18) on the drive head (12).

Solution:

- Check that the adapter (10) sits flush with the drive head (12) and is fully inserted into the winding shaft (5).
- Slide the adapter (10) back so that it is flush with the drive head (12) and slide the winding shaft (5) fully onto the adapter (10), see figures [5 / 11]. Re-adjust the end points if necessary, see page 25.

...The tubular motor stops between the two end points during normal operation?**Possible cause 1:**

- The roller capsule (4) may not be secured with a screw to the winding shaft (5) (see figure [20]), causing the winding shaft (5) to slip from the motor and the adapter (10) to come away from the magnetic ring (18).

Solution 1:

- Check for correct fitting of the roller capsule (4) and adapter (10). Use a self-locking bolt to secure the roller capsule (4) to the winding shaft (5) and remount the motor in accordance with the information on pages 12 - 19.

Possible cause 2:

- The thermal protection system has triggered.

Solution 2:

- Wait approx. 20 minutes until the motor has cooled down.

...The roller shutter stops during upward or downward travel?**Possible cause:**

- Iced-up/jammed roller shutter or obstacle on the guide rail.

Solution:

- Manually move the roller shutter a short distance in the respective opposite direction.
- Rectify the iced-up roller shutter or obstacle.

...The roller shutter judders /stops during downward travel although there is no obstacle?**Possible cause 1:**

- The roller shutter may be too light. It must run easily and have an appropriate drop weight.

Solution 1:


- Place weight on the lowest roller shutter slat (e.g. with a flat bar).

Possible cause 2:

- The winding shaft may be installed very tightly.

Solution 2:

- Loosen the roller capsule and insert it approx. 2-3 mm further into the winding shaft and fix the capsule again with a screw.

Motor series:		SLDS xx/xx PZ		SLDM xx/xx PZ					
Nominal torque:	Nm	6	10	10	20	30	40	50	
No-load speed	rpm	28	16	16	16	16	16	12	
Nominal voltage	V	230	230	230	230	230	230	230	
Frequency	Hz	50	50	50	50	50	50	50	
Nominal power	W	121	121	112	145	191	198	205	
Current consumption	A	0.53	0.53	0.49	0.64	0.83	0.86	0.89	
On-period (KB)	min.	4	4	4	4	4	4	4	
Number of wires		5	5	5	5	5	5	5	
Core cross section	mm ²	0.75	0.75	0.75	0.75	0.75	0.75	0.75	
Plug-in connecting cable	m	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
End switching range: (number of revolutions.)	rev.	112	64	64	64	64	64	48	
Insulation class		H	H	H	H	H	H	H	
Protection class		I	I	I	I	I	I	I	
Protection type in accordance with VDE 700		IP 44	IP 44	IP 44	IP 44	IP 44	IP 44	IP 44	
Motor length without bearing	mm	485	485	487	487	546	546	546	
Tube diameter	mm	35	35	45	45	45	45	45	
Sound pressure level (LpA)	dB(A)	≤ 70	≤ 70	≤ 70	≤ 70	≤ 70	≤ 70	≤ 70	
Transmission frequency	MHz	434.5	434.5	434.5	434.5	434.5	434.5	434.5	
Max. transmission power	mW	10	10	10	10	10	10	10	
Range approx.									
- indoors (depending on the building structure)	m	30	30	30	30	30	30	30	
- outdoors	m	100	100	100	100	100	100	100	
Number of parallel tubular motors that can be connected in parallel (when using RADEMACHER controllers, e.g. Troll Comfort)		3	3	2	2	2	2	2	

14. Configuration of KNX/EIB Venetian blind actuators for RADEMACHER tubular motors

In order to ensure trouble-free operation of RADEMACHER tubular motors with KNX/EIB Venetian blind actuators, the following parameters must be set prior to commissioning:

Transient operation

If possible, transient operation (slat adjustment) should be switched off.

e.g. **Mode for transient operation**
Time: = 0 ms

If transient operation cannot be deactivated from within the software application...

...then you must ensure that the time between transient operation and long-term operation on the key sensor is less than the time between transient operation and long-term operation on the actuator. This will ensure that transient switch-off of the actuator is prevented when holding the sensor key down.

Long-term operation

The motor **must** be switched off at the latest after 180 seconds.

e.g. **Basis for long-term operation**

Basis: = 2.1 s

Factor: = 86

= (2.1 s x 86 = 180.6 s)

CE DELTA DORE RADEMACHER GmbH hereby declares that the tubular motors in the RolloTube S-line DuoFern Small and Medium series comply with the Directives **2006/42/EC (Machinery Directive)** and **2014/53/EU (Radio Equipment Directive)**.

The full text of the EU declaration of conformity is included with the product and is kept on file by the manufacturer.

DELTA DORE RADEMACHER GmbH
Buschkamp 7
46414 Rhede (Germany)

Warranty terms and conditions

Information on our warranty conditions is enclosed separately with this product.



16. Logging DuoFern devices on/off

In order to control the RolloTube S-line DuoFern using the SmartHome Box or a DuoFern transmitter (e.g. DuoFern manual central operating unit), every DuoFern device must be connected to the RolloTube S-line DuoFern.

You can connect up to 20 DuoFern devices, e.g. SmartHome Box, DuoFern manual central operating unit, DuoFern manual transmitter Standard, etc. to the RolloTube S-line DuoFern.

There are different options for logging a DuoFern device on/off from the RolloTube S-line DuoFern:

- By pressing the set button on the tubular motor.
- By using a roller shutter switch or button.
- By using a radio code.



16.1 Logging a DuoFern device on/off using the set button

Requirement

The tubular motor must be stopped.

1. Switch on the mains power.



No direction of travel may be permanently energised by a roller shutter switch or button.

2. Activate log-on/off mode for the tubular motor by briefly pressing the set button (11).

The tubular motor confirms this by briefly travelling up and down.

3. Activate log-on/off mode on the DuoFern device.

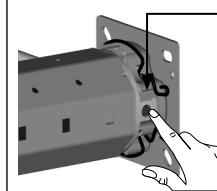
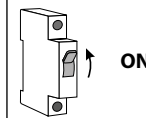


Please read the operating manual for the respective DuoFern device.


4. The tubular motor acknowledges successful log-on by starting up briefly.

5. Log the next DuoFern device on or off, or end the process.


With the set button on the tubular motor



set button (11)

 120 seconds
Log-on/off mode remains active for approx. 120 seconds.



 Pay attention to the time remaining until the device is logged-on or off.



16.2 Logging a DuoFern device on/off using a roller shutter switch/button or universal setting cable

Requirement

The tubular motor must be stopped.

1. Switch on the mains power.

2. Activate log-on/off mode for the tubular motor as follows.



120 seconds

Log-on/off mode remains active for approx. 120 seconds.

3. Activate log-on/off mode on the DuoFern device.



Please read the operating manual for the respective DuoFern device.

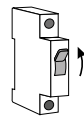
4. The tubular motor acknowledges a successful log-on/off by starting up briefly.

5. Log the next DuoFern device on or off, or end the process.

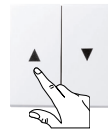
Using a roller shutter switch/button

With the universal setting cable

OR



ON



A desired direction of travel

Tap 2 x and press and hold the third time until the tubular motor starts up briefly.

Release/switch off the button again.



ON/SET

The LED on button 3 must light up continuously.



Direction of travel 1

or



Direction of travel 2

Switch on/off briefly 2 x and hold the third time until the tubular motor starts up briefly



Set the rocker switch to the centre position.



Pay attention to the time remaining until the DuoFern device is logged-on or off.

ON/SET

To terminate the operation switch off Button 3 (continuous phase.)



16.3 Activating log-on mode using the DuoFern radio code

The RolloTube S-line DuoFern can be set to log-on mode in combination with a SmartHome Box or a DuoFern manual central operating unit by entering its radio code, in order to activate other DuoFern devices (e.g. DuoFern manual transmitter).

Time window for activation via DuoFern radio code

After switching on the power supply, the radio code is active for a maximum of 2 hours. Once this time has elapsed, activation using the radio code is no longer possible. Briefly disconnect the RolloTube S-line DuoFern from the mains to reactivate the time window.

The DuoFern radio code can be found on the enclosed label



Example:



It is imperative that you store the enclosed label safely e.g. by fixing it to the cover sheet of these instructions.

This means that you will still be able to access log-on mode for the RolloTube S-line DuoFern without having to open the roller shutter system.

