INTELLIGENT DRIVES & CONTROLS FOR SHUTTERS AND AWNINGS

INSTALLATION & OPERATING INSTRUCTIONS

Instructions and notes for installation and operation

3T-MOTORS Shutter motors

with mechanical limit switches

Motor type 3T45-SD
(For shafts from 60 mm)
3T45-10SD

Motor type 3T35-SD
(For shafts from 40 mm)
3T35-10SD

Attention:
It is important for the safety of persons
to follow these instructions.
Keep these instructions for future reference.

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GUIDELINE

With this guide, you can determine the ideal torque in Newton meters (Nm) for the shutter motor.

DETERMINE WEIGHT ROLLER SHUTTER

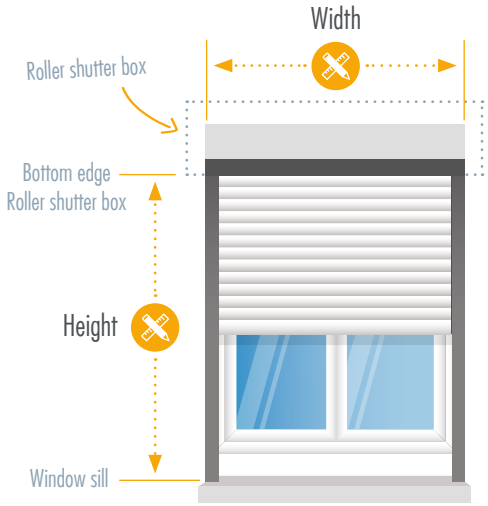
1.) Determine roller shutter area
(Height + 150 mm) x Width = Roller shutter area (m^2)

2.) Determine weight roller shutter material
Take approximate weights per m^2 of roller shutter area from the table.

3.) Determine weight roller shutter
Roller shutter area (m^2) x weight roller shutter material (m^2)

4.) Calculate required traction force
Friction losses must be taken into account (rail guidance) of approx. 10%!

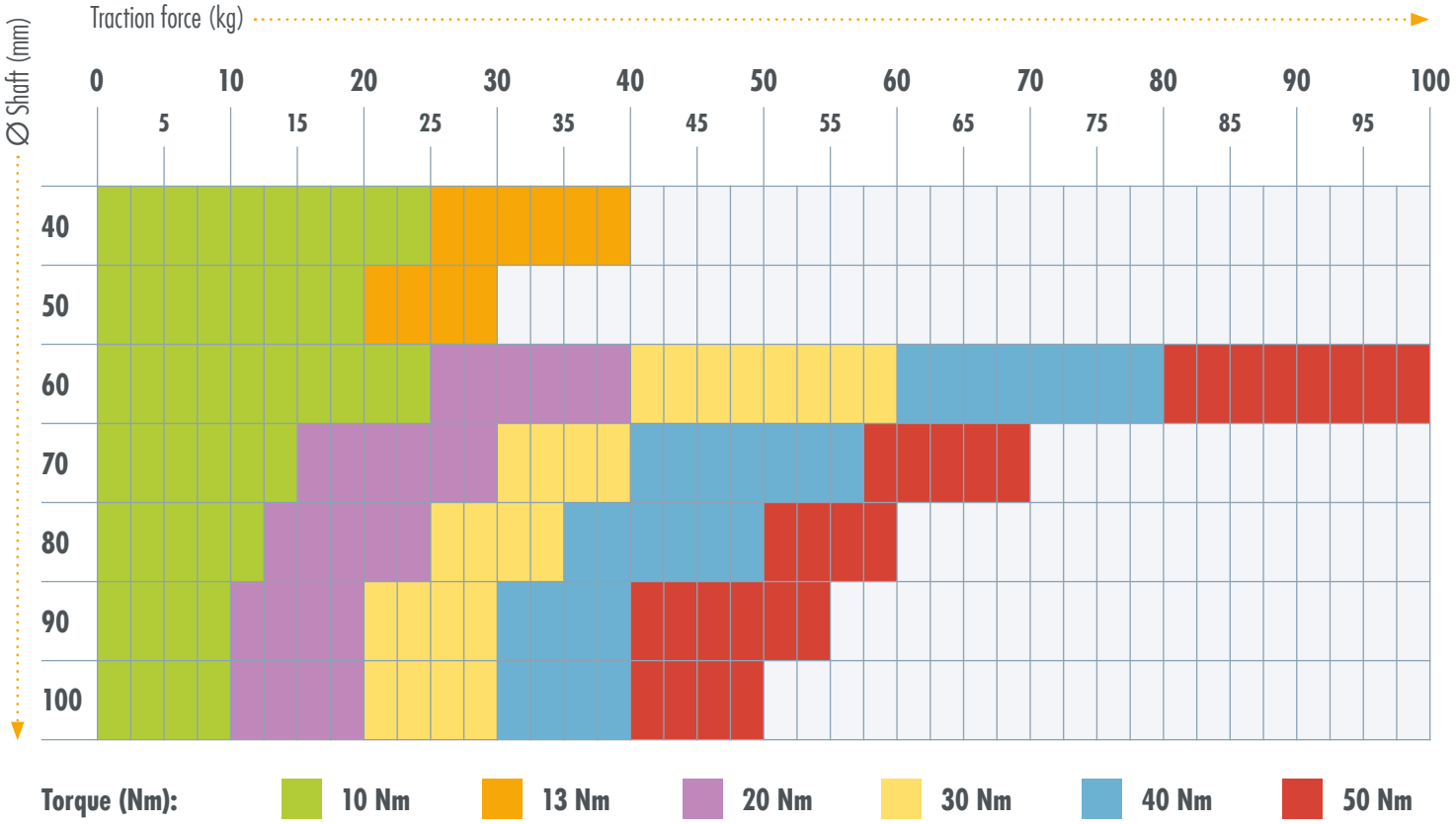
Material	kg / m^2
PVC	5
Aluminum Light	6
Aluminum Heavy	9
Steel	11
Wood	11



Roller shutter area (m^2) x Weight roller shutter material (m^2) = Weight roller shutter (kg) + 10% Friction losses = Required traction force (kg)

Example:
PVC-Roller shutter area 3,00 m^2 x Weight roller shutter material 5 kg = 15 kg Weight roller shutter + 10% Friction losses = 16,5 kg Required traction force

DETERMINE SHUTTER MOTOR TORQUE



SAFETY INSTRUCTIONS

Please read these important safety instructions before commissioning!
Incorrect installation can cause serious personal injury and damage to property.
The warranty claim expires in case of non-observance of this user information with all contained notes and regulations.
In case of non-observance of these instructions, the manufacturer or supplier shall not be liable for any personal injury or property damage incurred.

This symbol indicates danger due to electrical energy. Danger to persons and objects may arise if the associated information is not observed!

GENERAL SAFETY INSTRUCTIONS

- WARNING: Important safety instructions.
  Follow all instructions as incorrect installation may result in serious injury.
- WARNING: The drive must be disconnected from the power source during cleaning, maintenance and replacement of parts.
- Danger to life from electric shock when working on electrical equipment.
- The electrical connection, installation and commissioning of the receiver may only be carried out by qualified personnel.
- Before installing the drive, remove all unnecessary cables and disable all devices, that are not required for operation with power.
- The relevant regulations and guidelines must be followed without fail, to avoid damage to persons and objects.
- Observe safety instructions according to EN 60 335-2-97: The power supply cable of the drives must be laid internally.
- Installation according to DIN 18073: The roller shutter box cover must be easily accessible and removable.
- Installation according to EN 60335: Only switches / pushbuttons / switching devices with a minimum contact opening of 3 mm may be used, furthermore the up and down direction must be interlocked against each other.
- When installing in damp rooms, observe regulations (VDE 0100, part 701 and 702).
- Please never operate several motors via one switch / pushbutton, unless you are using cut-off relays or other controls that allow parallel operation.
- Do not use defective devices: Never use defective equipment.
  Periodically inspect the equipment for imbalance and signs of wear or damage to cables and suspension springs.
  Do not use equipment if repair or touch-up is necessary.
  There is a risk of personal injury and property damage due to electric shock or short circuit.
- Retain the instructions for future reference.

This symbol indicates information about general danger. Non-observance can mean danger to persons and objects!

IMPROPER USE

- Persons are to be instructed with the correct operation of the tubular motor.
- The roller shutter movement must be monitored in order not to endanger persons.
- Do not allow children to play with motor controls.
- Store the handheld transmitter in such a way that unintentional operation is prevented (e.g. by children playing).
- The device can be used by children aged 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge, if they have been given supervision and instruction concerning use of the appliance in a safe way and are aware of the hazards involved.
- Children are not allowed to play with the equipment.
- If the power supply cord of this device is damaged, it must be replaced by the manufacturer or its customer service or a similarly qualified person to prevent hazards.

This symbol indicates important information that can ensure safe and proper use of the device.

PROPER USE

- Use tubular motors only for automating shutters.
- Only use original components and original accessories from the manufacturer.
- The mains connection cable of the drives must be laid internally in the empty conduit up to the junction box.
  The local electrical regulations must be observed.
- For the electrical connection of the tubular motors, a 230 V / 50 Hz power connection with fuse must be available at the installation site.
- Inspect the installation frequently for imbalance and signs of wear or damage to cables and springs.
  Do not use if repairs or adjustments are required.

FUNCTION OVERVIEW

SCOPE OF DELIVERY – MOTOR TYPE 3T45-SD

1 Motor
2 Limit switch adapter
3 Shaft adapter
4 Connection cable 3 meters
5 Adjustment pin
6 Universal bearing & cotter pin
7 Bracket + cover cap bearing
8 Securing bracket
9 Manual

APPLICATION
Motorized shutters

SUITABLE FOR
8-sided Shafts from 60 mm

SCOPE OF DELIVERY – MOTOR TYPE 3T35-SD

1 Motor
2 Limit switch adapter
3 Shaft adapter
4 Connection cable 3 meters
5 Adjustment pin
6 Universal bearing & cotter pin
7 Clip bearing
8 Securing bracket
9 Manual

APPLICATION
Motorized shutters

SUITABLE FOR
8-sided Shafts from 40 mm

Technical data

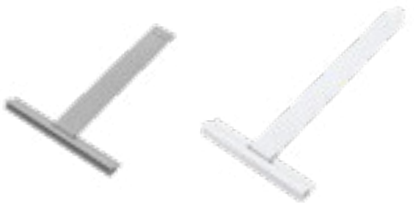
Motor type	3T45-10SD	3T35-10SD
Torque (Nm)	10	10
Traction power (kg)	25	25
Max. PVC shutter area (m^2)	4,5	5,25
Max. ALU shutter area (m^2)	3	4,2
Power (W)	112	121
Turn Speed (U/min)	15	17
Limit switch capacity (min)	16	17
Operating voltage (V AC)	230 V / 50 Hz	230 V / 50 Hz
L1 Total motor length (mm)	345	395
L2 Installation length (mm)	325	375
Connection line (m)	3	3
Max. Runtime (min)	4	4
Protection class	IP44	IP44
EAN	4260601760567	4260601760574

INSTALLATION NOTES

Before installation, all non-essential electrical wiring must be removed, all mechanisms that are not necessary for motorized operation must be deactivated.

- Do not expose the tubular motor to crushing, impact, falling or contact with any liquids. Do not punch holes in the entire length of the tube (motor casing) or attach screws to it.

- Please use suitable suspension springs to fasten the roller shutter curtain to the roller shutter shaft. You will find suitable suspension springs in our store under mounting accessories.



- Important for motor type 3T35-SD (SW40):
  It is essential to use mini suspension springs for motor operation. These special mini springs protrude only approx. 1 mm into the shaft. This allows the shaft to rotate freely. When using commercially available suspension springs the motor housing is left with grinding marks because the suspension pin protrudes too far into the roller shutter shaft, which leads to damage and destruction of the motor.

- For steel shafts with a width across flats of 40 mm (SW40), only use shafts with an external fold. Steel shafts with an internal fold will damage and destroy the motor.

Do not use 8-sided shaft SW40 with internal fold!

8-sided shaft SW40 with external fold

- Grinding marks of any kind on the motor housing will void the warranty.

- The inspection cover of the roller shutter box must be easily accessible and removable.

- We recommend using a tubular motor with a power 10% higher than the weight of the shutter, to compensate for the frictional resistance of the rail guide. > See Guideline / Determine torque (page 3)

- The motor is designed for short-time operation (4 min). It has an internal thermal circuit breaker which interrupts the power supply in the event of overheating, e.g. as a result of continuous operation. The cooling phase is min. 10 min, the thermal switch resets automatically. Regular operation is only possible after the the motor has cooled down completely.

INSTALLATION INSTRUCTIONS

Please note:

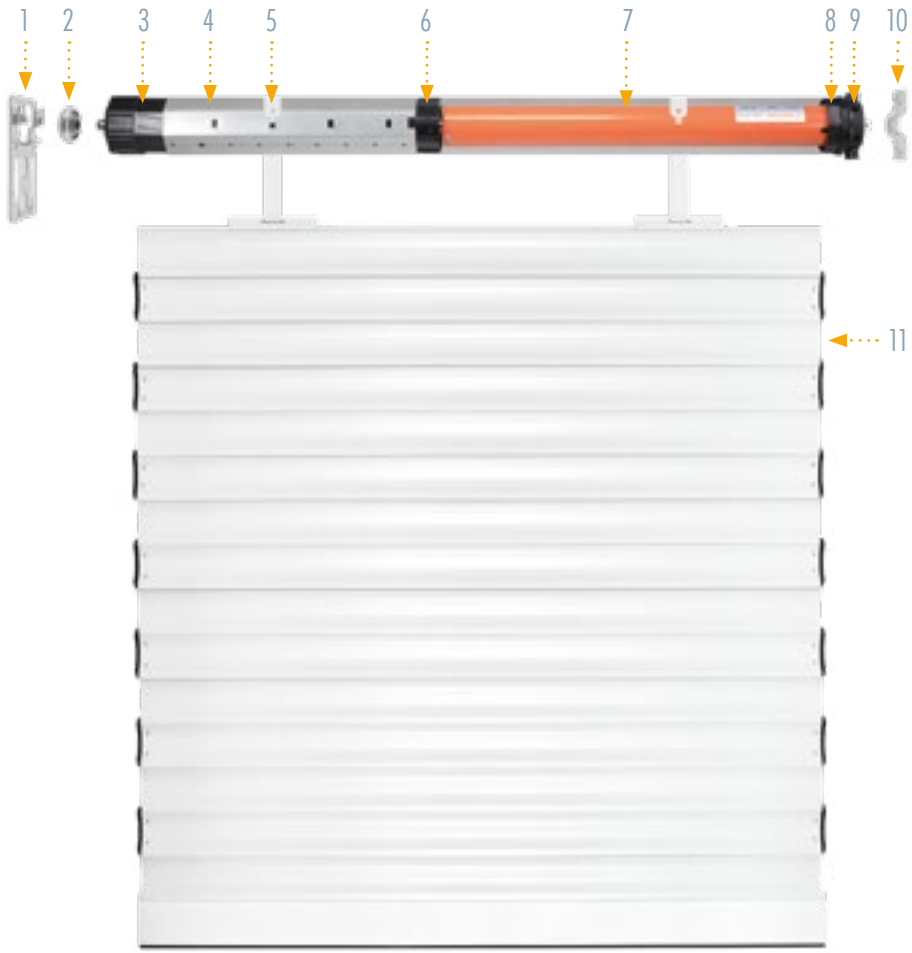
- The motor can be installed on the right-hand side as well as on the left-hand side.
  If the direction of rotation is reversed, please exchange the wires for the up and down direction.
- The setting of the end positions is only possible in the installed state (motor in shutter shaft).
- Never place screws in the area of the tube motor, as they will damage the motor.
- **Engine damage caused by improper use or unprofessional installation, lead directly to loss of warranty.**

INSTALLATION SHUTTER MOTOR

Installation situation

1 Counter bearing*
2 Ball bearing*
3 Roller capsule*
4 Shutter shaft*
5 Suspension spring*
6 Shaft adapter
7 Tubular motor
8 Limit switch adapter
10 Limit switches
10 Engine mount
11 Shutter curtain*

* Accessories; not included



1 Prepare power connection:

- The mains connection cable of the drive must be laid internally in the empty conduit up to the junction box.
  The local electrical regulations must be observed.

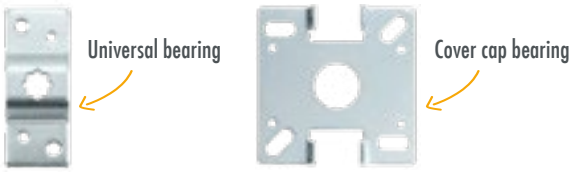
2 Select motor bearing:

- Two motor bearings are supplied: Universal bearing and bracket + cover cap bearing (3T45-SD) / clip bearing (3T35-SD).
- Use one of the two motor bearings depending on the installation situation.

INSTALLATION INSTRUCTIONS

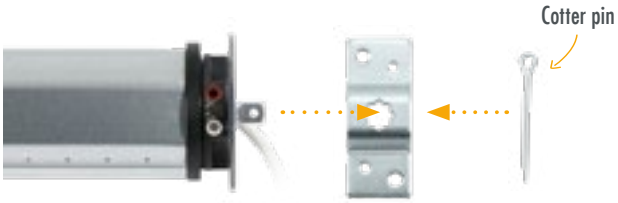
Motor type 3T45-SD

Installation with universal bearing or cover cap bearing



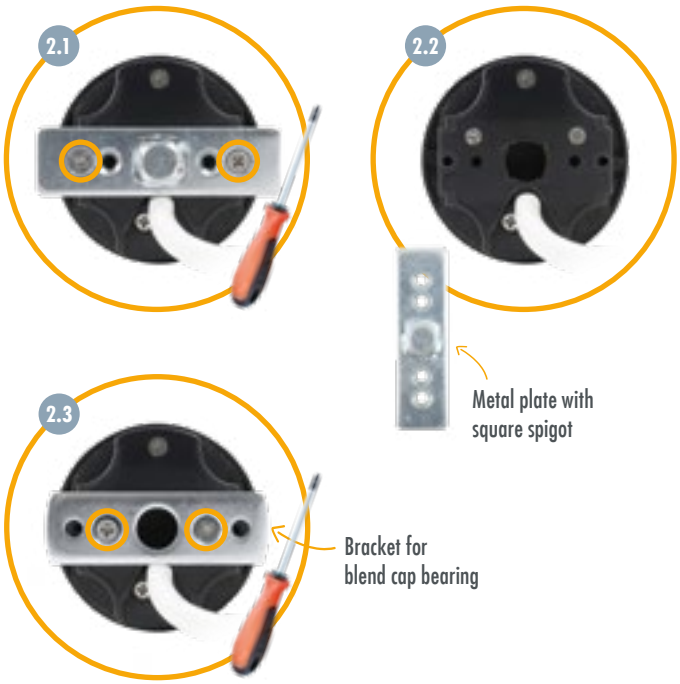
Installation with universal bearing:

- Push the motor with the square into the opening of the bearing and secure with cotter pin.

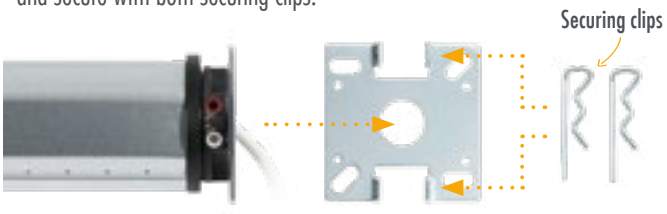


Installation with cover cap bearing:

- Remove screws from metal plate on motor head > fig. 2.1
- Remove metal plate with square spigot > fig. 2.2
- Fasten bracket for blend cap bearing > fig. 2.3



- Slide motor type 3T45-SD with bracket into cover cap bearing and secure with both securing clips.

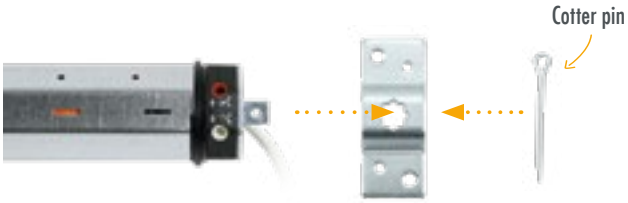


Motor type 3T35-SD

Installation with universal bearing or clip bearing

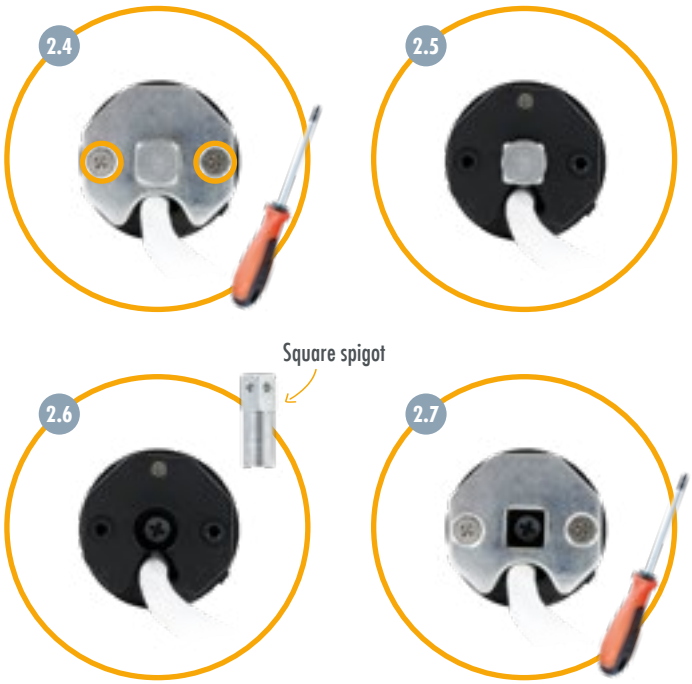
Installation with universal bearing:

- Push the motor with the square into the opening of the bearing and secure with cotter pin.



Installation with clip bearing:

- Remove screws from metal plate on motor head > fig. 2.4
- Remove metal plate > fig. 2.5
- Remove motor square spigot > fig. 2.6
- Reattach metal plate > fig. 2.7



- Engage motor type 3T35-SD without square spigot in clip bearing.

INSTALLATION INSTRUCTIONS

3 Remove shutter shaft:

- Lower the roller shutter.
- Open the cover of the roller shutter box.
- Release the suspension springs from the roller shutter shaft.
- Lift roller shutter shaft incl. ball bearing out of the holder.

4 Prepare motor for installation:

- Push limit switch adapter flush against motor head. > fig. 4.1 / 4.2
- Secure the shaft adapter with the supplied securing bracket. > fig. 4.3 / 4.4
- Push the motor into the roller shutter shaft without using force (never knock it in). The fold of the shaft must lie over the recess in the shaft adapter. > fig. 4.5 / 4.6
- Make sure that the roller shutter shaft is flush with the motor head limit switch adapter. > fig. 4.7 / 4.8

5 Mount bearings:

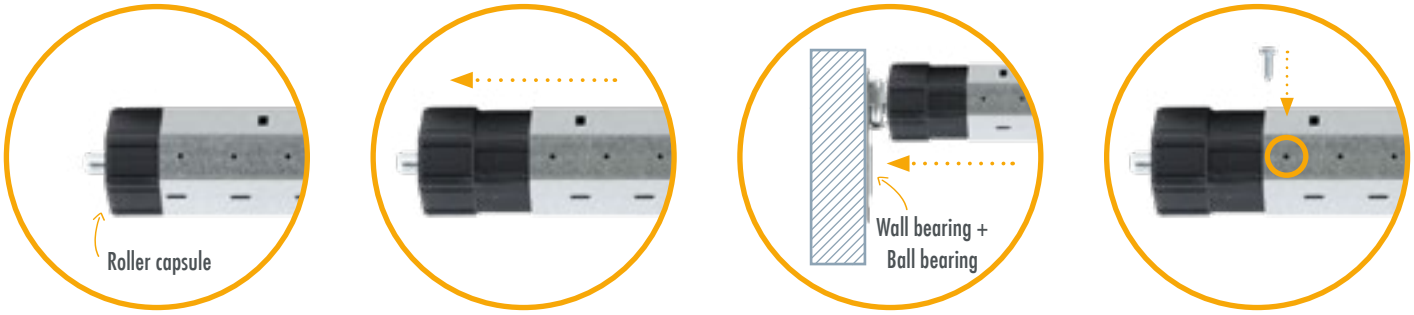
- Remove old wall bearing on motor side (left or right installation possible).
- Mount motor bearing at this point (2 mounting options: Universal bearing & cotter pin and cover cap bearing & securing clips / clip bearing).
- Please mount the bearings so that the limit switches are freely accessible.
- Make sure that the roller shutter motor with the shaft unit sits horizontally in the roller shutter box.

6 Mount motor with shaft unit:

- Insert the motor head (with the entire shaft unit) into the motor bearing and secure it with the supplied cotter pin or securing clips (Cover cap bearing).

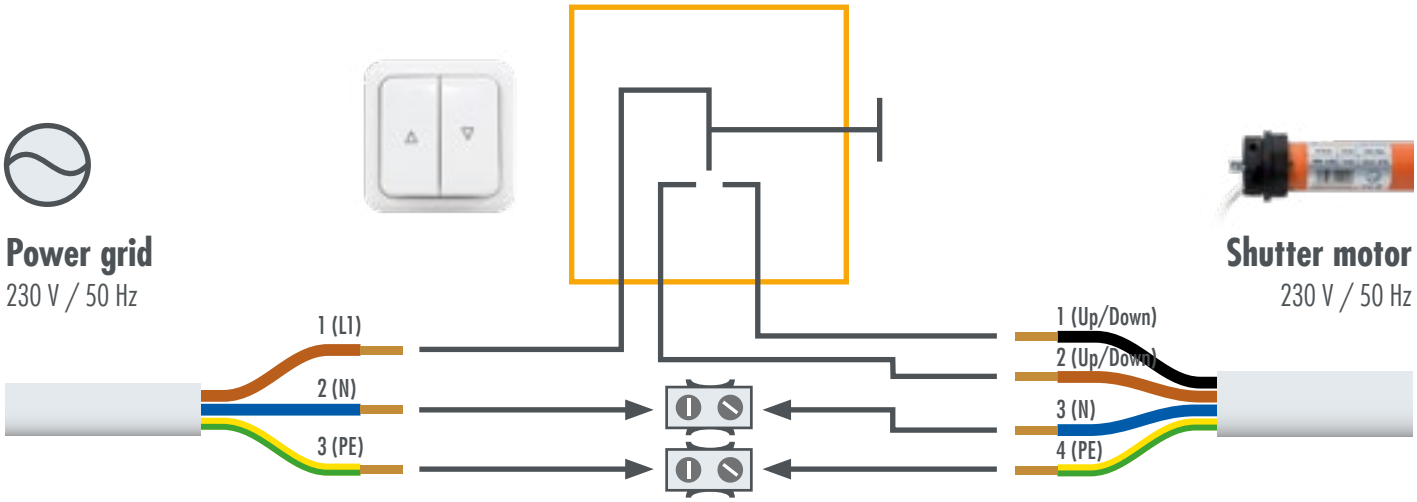
INSTALLATION INSTRUCTIONS

- On the opposite side of the motor, push the roller capsule out of the roller shutter shaft until it fits into the ball bearing inserted in the wall bearing.
- Fix roller capsule to roller shutter shaft with self-tapping screw. Position the screw at a punched hole. This prevents the screw from slipping.



7 Shutter motor wiring:

- Connect the roller shutter motor and switch (or timer) to the mains.
- The electrical connection of the roller shutter motor and control unit may only be carried out by qualified personnel.
- If the drive should run in the opposite direction after installation, the motor's upstream and downstream leads (brown + black) must be turned.



1) brown / black = L1 / Phase
2) blue = N Neutral conductor
3) green/yellow = PE Protective conductor

1) black = Departure or ascent
2) brown = Departure or ascent
3) blue = N Neutral conductor
4) green/yellow = PE Protective conductor

The connection diagram of time switches differs from this circuit diagram!
Please refer to the corresponding manual for the connection diagram.

INSTALLATION INSTRUCTIONS

8 Setting the end positions:

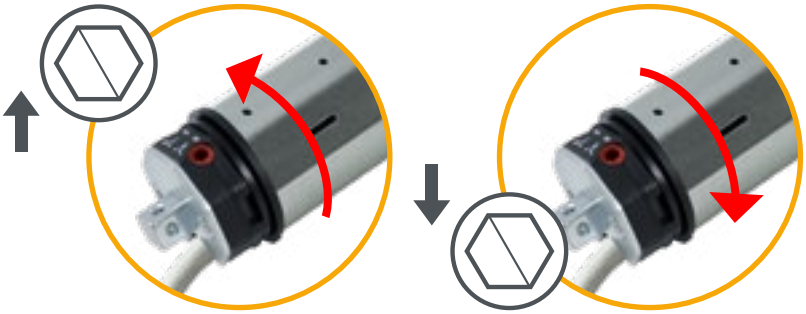
Explanation of the limit switch screws

There are 2 limit switch screws on the motor head. One limit switch screw is responsible for the upper end position, the other for the lower end position. The end positions can be adjusted by turning the limit switch screws with the adjustment pin.

Adjustment pin

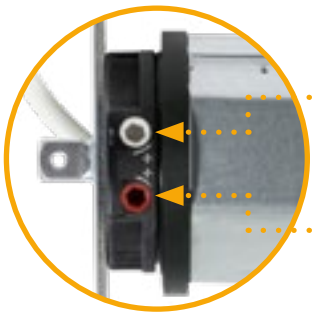
Motor type 3T45-SD

Motor type 3T35-SD



The straight up and down arrows (only motor type 3T35-SD) indicate the direction of rotation of the motor and shaft and thus show you for which end position the limit switch screw next to it is responsible. Depending on whether the direction of rotation leads to unrolling or rolling up of the roller shutter, the limit switch screw is responsible for the lower or upper end position (unrolling > lower end position, rolling up > upper end position).

The arrows with PLUS and MINUS apply to both limit switch screws and show you in which direction you must turn the adjusting pin to switch off the motor sooner or later. Turning the limit switch screw in the PLUS direction after switching off allows the motor to continue moving step by step in the corresponding direction. Turning the limit switch screw in the MINUS direction during travel causes the motor to switch off earlier.



Left installation

Limit switch screw white:
Lower end position

Limit switch screw red:
Upper end position

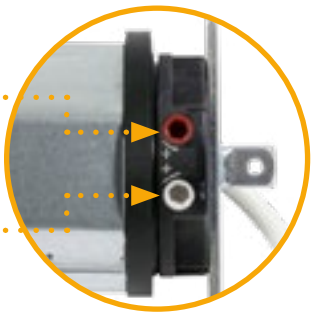
Motor type 3T45-SD

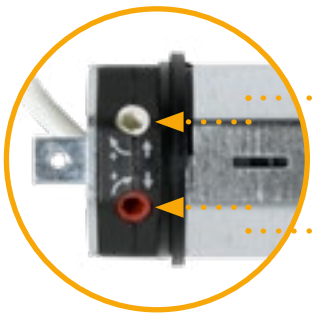
Direction of rotation
Limit switch screw

Right installation

Limit switch screw red:
Lower end position

Limit switch screw white:
Upper end position





Left installation

Limit switch screw white:
Lower end position

Limit switch screw red:
Upper end position

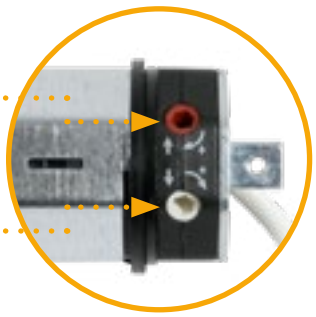
Motor type 3T35-SD

Direction of rotation
Limit switch screw

Right installation

Limit switch screw red:
Lower end position

Limit switch screw white:
Upper end position



INSTALLATION INSTRUCTIONS

Special case: Roller shutter rolls down in front of motor + shaft

If the roller shutter curtain rolls in front of the motor and shaft, the responsibilities of the limit switch screws for the upper and lower end positions are reversed. See illustration of left-right installation on page 11: upper end position > lower end position / lower end position > upper end position.

1. Setting the lower end position

- Do not fasten the roller shutter curtain!
  Detach all suspension springs from the roller shutter shaft!
- Move the motor + shaft in the downward direction until the lower limit switch-off occurs automatically and the motor stops.
- Move motor + shaft upwards.
  While the motor is moving upwards, turn the adjustment pin on the limit switch screw for the upper limit position in the MINUS direction (up to 100 turns, depending on the motor type) until the motor switches off after approx. 4 turns.
  This prevents the roller shutter from being pulled out of the guide rails when the upper end position is set.
- Move motor + shaft in downward direction to the lower end position until the motor stops automatically.
- If the shaft has to be turned a little to hook in the suspension springs, use the adjustment pin on the limit switch screw for the lower end position in the PLUS direction. This causes the motor to turn the shaft stepwise. The rectangular openings in the shaft for hooking in the suspension springs should point forward and be easily accessible.
- Hang the roller shutter curtain on the roller shutter shaft using the suspension springs.

2. Setting the upper end position

- Allow the motor + roller shutter to move upwards until the motor stops automatically at the previously set upper end position.
- To set the upper end position, turn the adjustment pin on the limit switch screw for the upper end position in the PLUS direction to raise the motor + roller shutter further. The upper end position should be that the roller shutter stops approx. 3 cm before the roller shutter box. Reason is the expansion of the roller shutter due to the temperature difference in summer and winter.
- After setting the end positions, lower and raise the motor + shutter to check the set end positions.

Adjustment pin is required

Note heat generation

The end position setting without shutter curtain load leads to more heat generation in the motor. This is normal behavior and does not result in damage to the motor. If the motor heats up too much, the thermal protection switch of the motor is automatically triggered. After a cooling phase of at least 10 minutes, the motor is ready for operation again.

INSTALLATION INSTRUCTIONS

MOUNTING INSTRUCTIONS FOR 3T-MOTORS MINI-TUBE MOTORS MOTOR TYPE 3T35-SD

Use proper suspension springs:

- To fasten the roller shutter curtain to the roller shutter shaft, please be sure to use suitable suspension springs for motor operation. These special mini suspension springs only protrude approx. 1 mm into the shaft. This allows the shaft to rotate freely. When commercially springs are used, there will be grinding marks on the motor housing because the suspension pin protudes too far into the roller shutter shaft, which leads to damage and destruction of the motor. In case of any kind of grinding marks on the motor housing, the warranty claim is void.

Suspension spring

Mini Suspension spring

Use correct roller shutter shaft with external fold:

- For steel shafts with a width across flats of 40 mm (SW40), only use shafts with an external fold. Steel shafts with an internal fold will damage and destroy the motor.

Do not use
8-sided shaft SW40
with internal fold!

8-sided shaft SW40
with external fold

Explanation:

- Avoid overstressing and resulting premature aging of the motor by using the correct suspension springs and the correct roller shutter shaft with external fold!

- Keep in mind that the motor housing has a diameter of 35 mm and the roller shutter shaft SW40 has an outer diameter of 40 mm. When using commercially available springs or roller shutter shafts with internal fold, the motor housing will be left with grinding marks, since the suspension pin or the fold protrude too far into the roller shutter shaft. Contrary to its intended use, the motor runs permanently against an overload and outside its characteristic data.

TROUBLESHOOTING

WHAT TO DO WHEN ...

... the motor does not run?
- Mains voltage is missing.
- Check correct connection of the control (switch or timer).

... the motor is running in the wrong direction?
- Swap the two wires for the direction of rotation (brown + black).

... the motor does not switch off at the set point?
- Check fit of limit switch adapter (must be flush with motor head and shutter shaft).
- Roller capsule is not fixed or roller shutter shaft is too short.
- Set limit switch screw correctly (see instructions):
  MINUS turning during travel shortens the travel distance; PLUS turning after switch-off extends the travel distance.

... the motor does not switch off at all?
- Engine was run in removed state (limit switches only work in installed state).
- Check fit of limit switch adapter (must be flush with motor head and shutter shaft).
- Limit switches are too far apart:
  - Determine limit switch screws according to explanation on page 11.
  - Do not fasten roller shutter armor!
  - Only allow the shutter shaft to be rotated by the motor.
  - While driving, turn the relevant limit switch screw in the MINUS direction (up to 100 turns depending on the motor type) until the motor switches off.
  - Then allow the roller shutter shaft to rotate in the opposite direction and turn the other limit switch screw in the MINUS direction until the motor switches off.
  - Repeat the entire process (Drive up turn MINUS / Drive down turn MINUS) until the motor switches off in both directions after 2 - 3 rotations.
  - Then allow the roller shutter shaft to rotate downwards until the limit switch is switched off. After switching off, if necessary, continue to move the motor by turning the relevant limit switch screw PLUS to position the holes for the suspension springs.

... the motor stops running after continuous operation?
- The thermal protection switch of the motor has tripped. After a cooling phase (min. 10 min.), the motor is ready for operation again.

... the motor turns in only one direction?
- Check correct connection of the control (switch or timer).
- Check the setting of the limit switches.

... the motor does not operate at the specified speed?
- Check roller shutter weight; if necessary, correct inclined installation of roller shutter shaft or Eliminate mechanical friction in the roller shutter box or rail guide.

EU Konformitätserklärung

Wir, die Firma

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Grete-Schickedanz-Straße 5
55545 Bad Kreuznach
Deutschland

erklären in alleiniger Verantwortung, dass das weiter unten genannte Produkt

Geräteart:	Rohrmotor mit mechanischen Endschaltern
Modell	Artikelnummer
3T35-10SD	332
3T45-10SD	331

die grundlegenden Anforderungen der aufgeführten EG/EU-Richtlinien erfüllt:

2014/35/EU	Niederspannungsrichtlinie
2014/30/EU	EMV-Richtlinie
2011/65/EU	RoHS-Richtlinie
2012/19/EU	WEEE-Richtlinie

angewandte Standards und Verordnungen*:*

EN 60335-1:2012/A15:2021
EN60335-2-97:2006/A12:2015
EN 55014-1:2021
EN55014-2:2021
EN IEC 61000-3-2:2019/A1:2021
EN 61000-3-3:2013/A2:2021

Bevollmächtigter zur Zusammenstellung der technischen Unterlagen:

Name, Position: Patrick El Hadj-Henni, Geschäftsführer

Bad Kreuznach, 06.03.2019
…… ……..
Datum Unterschrift

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