R12-17...L120-11

Model: E25



Assembly and Operating Instructions

Tubular drives with crank handle activation for roller shutters

Important information for:

Fitters / • Electricians / • Users

Please forward accordingly!

These instructions must be kept safe for future reference.



Table of contents

General	3
Narranty	3
Safety instructions	4
Instructions for the user	4
Instructions for installation and commissioning	4
ntended use	
Drive version with angled plug	6
Assembly	7
Adjusting the limit positions with a rotary switch or a locking button	. 10
Deleting the limit positions with a rotary switch or a locking button	. 10
Setting the limit positions using the programming unit	. 11
Deleting the limit positions using the programming unit	. 12
Additional function offset lower limit position	. 13
Jsing the crank handle	
nformation for the electrician	. 14
Torque detection	. 14
Disposal	. 14
Maintenance	. 14
Technical data dia. 45	. 15
Technical data dia. 58	. 15
What to do if?	. 16
Sample wiring diagram	. 17
Declaration of conformity	. 18

General

These tubular drives are high-quality products with the following features:

- · Optimised for roller shutter operation
- · Convenient manual control in the event of power failure
- · Automatic detection of limit positions thanks to intelligent electronic system with stop systems
- Torque control in the up direction prevents damage to the roller shutter in the event of a frozen or blocked shutter
- · Drive puts the roller shutter curtain under low tensile load
- For plug-in connecting cable

Please follow these Assembly and Operating Instructions when installing and setting up the device.

The date of manufacture comes from the first four digits of the serial number.

The numbers 1 and 2 indicate the year and the numbers 3 and 4 indicate the calendar week.

Example: 34th calendar week in 2020

		Ser. No.:	2034XXXX
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Explanation of pictograms

<u>^i</u>	CAUTION	CAUTION indicates a hazardous situation which, if not avoided, could result in injury.
	ATTENTION	ATTENTION indicates measures that must be taken to avoid damage to property.
i		Denotes user tips and other useful information.

Warranty

Structural modifications and incorrect installation which are not in accordance with these and our other instructions can result in serious injuries, e.g., crushing of limbs. Therefore, structural modifications may only be carried out with our prior approval and strictly in accordance with our instructions, particularly the information contained in these Assembly and Operating Instructions. Any further processing of the products which does not comply with their intended use is not permitted.

The end product manufacturer and fitter have to ensure that all the relevant current statutory, official and, in particular, EMC regulations are adhered to during utilisation of our products, especially with regard to end product manufacture, installation and customer advice.



Safety instructions

The following safety instructions and warnings are intended to avert hazards and to prevent property damage and personal injury.

Instructions for the user

General information

- The drive must be disconnected from its power source during cleaning and maintenance and when replacing parts.
- All work, including maintenance and cleaning, on electrical installations as well as other system parts must always be performed by trained technicians, in particular qualified electricians.
- Children from the age of 8 years and persons with reduced physical, sensory or mental capabilities or lack of experience and/or knowledge may use these devices, provided they are supervised or have been instructed in the safe use of the device, and have understood the hazards involved. Children must not play with the device.
- Systems have to be checked regularly by authorised specialists for wear and damage.
- Always put damaged systems out of operation immediately until they are repaired by an authorised specialist.
- Do not operate equipment if people or objects are within the danger zone.
- Observe the danger zone of the equipment during operation.
- Ensure that there is adequate clearance (at least 40 cm) between moving parts and adjacent objects.



Caution

Safety instructions for avoiding serious injuries.

· Crushing or shearing points must be avoided or protected.

Instructions for installation and commissioning

General information

- Observe the safety instructions in EN 60335-2-97. Please note that this list of safety instructions is not
 exhaustive, since it would be impossible for the standard to include all sources of danger. For example,
 the design of the operated product, the way the drive works in the situation it is installed in or even the
 way the end product is mounted in the end user's place of use cannot be taken into consideration by
 the drive manufacturer.
 - If any questions or uncertainties regarding the safety instructions contained in the standard arise, please contact the manufacturer of the part or end product in question.
- All applicable standards and regulations for electrical installation must be complied with.
- All work, including maintenance and cleaning, on electrical installations as well as other system parts must always be performed by trained technicians, in particular qualified electricians.
- Only use spare parts, tools and accessory devices which have been approved by the drive manufacturer
 - Unapproved third-party products or modifications to the system and its accessories represent a risk to your safety and the safety of others. This means that the use of unapproved third-party products, or modifications which have not been agreed with or approved by us, are prohibited. We do not accept liability for damage or injury arising from such actions.
- Position switch with OFF presetting within sight of the driven product, but away from moving parts, at a height of over 1.5 m. This must not be publicly accessible.
- Permanently mounted control devices must be positioned where they can be seen.
- Rated torque and duty cycle must be suitable for the requirements of the driven product. Technical data rated torque and service life can be found on the type plate of the tubular drive.
- Hazardous moving parts of the drive must be installed at a height of over 2.5 m above floor level or any other surface from which the drive can be accessed.
- To ensure safe operation of the system after commissioning, the limit positions must be correctly set/ programmed in.
- Drives with a H05VV-F connecting cable may only be used indoors.
- Drives with a H05RR-F, S05RN-F or 05RN-F connecting cable may be used both indoors and outdoors.
- To connect the drive to the driven part, solely mechanical accessory components made by the drive manufacturer from the current product catalogue may be used. The components must be installed in accordance with the manufacturer's instructions.

- If the drive is used for shading solutions in a specially marked area (e.g., escape routes, hazard zones, safety areas), compliance with all applicable regulations and standards must be ensured.
- Once the drive has been installed, the fitter must mark the used tubular drive in the "Technical data" chapter and make a note of the installation position.



Caution

Safety instructions for avoiding serious injuries.

- When electrical or electronic equipment and units are operated, certain components, e.g., the power supply unit, are live. Physical injuries or damage to property can result in the event of unauthorised interventions or failure to heed warnings.
- Be careful when touching the tubular drive, as it heats up during operation for technical reasons.
- Before installation, shut down all lines and control devices that are not essential for operation.
- Crushing or shearing points must be avoided or protected.
- When installing the drive, all-pole disconnection from the mains with a contact gap of at least 3 mm per pole must be provided (EN 60335).
- If the mains connecting cable is damaged, it may only be replaced by the manufacturer. If the drive has a plug-in connecting cable, it must be replaced with the same type of mains connecting cable, which is available from the drive manufacturer.

Attention

Safety instructions for avoiding property damage.

- Ensure that there is adequate clearance between moving parts and adjacent objects.
- The drive must not be carried by the mains connecting cable.
- All latching connections and fastening screws on the brackets must be checked to ensure that they are secure.
- Ensure that nothing rubs against the tubular drive, such as shading solution attachments, screws, etc.
- The drive must be fitted horizontally.



Intended use

The type of tubular drive described in these instructions is intended solely for the operation of roller shutter systems with fixed stops in both limit positions using rigid shaft connectors. The crank handle is intended to be used for convenient manual operation **only in the event of a power failure**. Continuous operation or use of tools (e.g. drilling machines for activation of the crank handle) is prohibited as, after a certain amount of time, this leads to loss of manual function and with it the tubular drive.

For sun protection applications, please use only the types of tubular drive designed for this purpose.

This type of tubular drive is designed for use in single systems (one drive per barrel).

The tubular drive must not be used in potentially explosive areas.

The connecting cable is not suitable for transporting the drive. Always carry the drive by the housing tube.

Other applications, uses and modifications are not permitted in order to protect the safety of the users and others, since these actions can impair the system's safety and carry the risk of personal injury and property damage. The drive manufacturer does not accept liability for damages or injury arising from such actions.

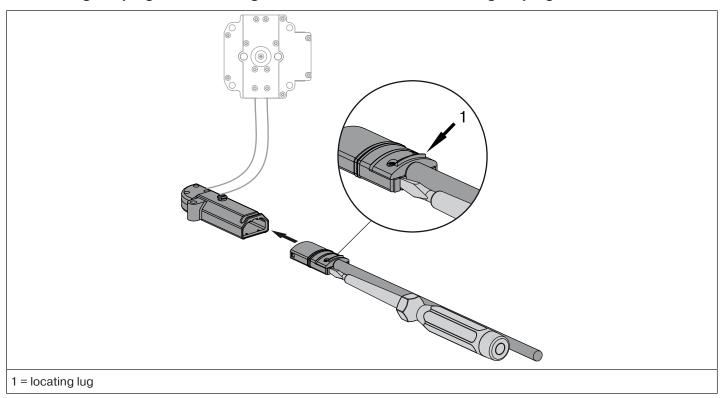
Always observe the information in these instructions when operating or repairing the system. The drive manufacturer does not accept liability for damage or injury resulting from improper usage.

Attention

In the lower limit position it must not be possible to bend between the lath and shaft connector or between the uppermost laths. Otherwise the joints could be subjected to too much stress and could become damaged.

Drive version with angled plug

Assembling the plug-in connecting cable for tubular drives with angled plug



Disassembling the plug-in connecting cable for tubular drives with angled plug

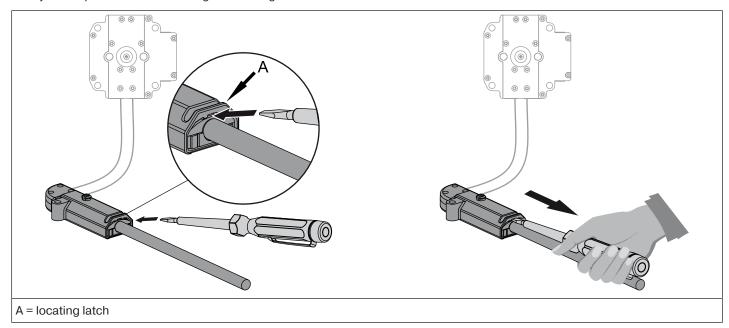


Caution

Prior to disassembly, the power supply to the connecting cable must be disconnected.

Insert a suitable flathead screwdriver right into the recess of the locating latch, so that the latch releases the locating lug from the plua.

Now you can pull out the connecting cable along with the flathead screwdriver.



Assembly

Assembling the drive

Attention

To connect the drive to the driven part, solely mechanical accessory components made by the drive manufacturer from the current product catalogue may be used.

Prior to mounting, the fitter must ensure that the masonry and the system being motorised are sufficiently robust (drive torque plus weight of the shading solution).



Caution

Electrical connections may only be carried out by a qualified electrician. Prior to assembly, the power supply must be disconnected and secured. Please give the enclosed connection information to the responsible electrical contractor.

Attention

The fastening elements (wall bracket) must be aligned and fixed so that tensions cannot occur when screwing the crank handle housing.



Calculate the space required at the side (M) by measuring the drive head (1) and wall bracket (2). The clear dimension of the box (X) minus the space required at the side (M) and idler (G) gives the length (L) of the barrel: L=X-M-G.

The space required at the side (M) varies depending on the combination of drive and wall bracket.

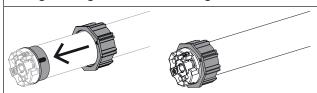
Then mount the wall bracket and idler. Ensure that the barrel is aligned at right angles to the wall and that sufficient axial play is allowed for the mounted system.

Attention

When using rigid shaft connectors, closed brackets must be fitted. The tubular drive presses the closed curtain down to make it difficult for people to reach under it or raise it. Only use curtains made of sufficiently strong material, such as aluminium, steel or wood. To prevent damage to the curtain it must run in guide tracks from top to bottom.

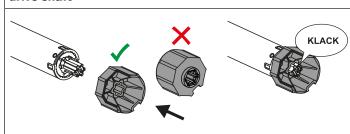
Assembling and disassembling the drive adapter

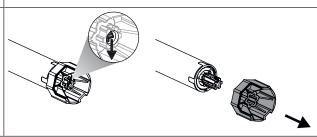
Fitting the ring onto the thrust ring



Assembling the drive adapter with safety catch on the drive shaft

Disassembling the drive adapter with safety catch on the drive shaft





Assembling and disassembling the drive adapter with drive adapter safety catch or screw connection



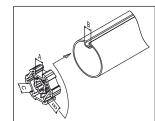


Assembling and disassembling the drive adapter with separate drive adapter safety catch



Assembling and disassembling the drive adapter with screw connection

Mounting the drive in the tube



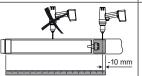
For profile shafts:

In the case of some drive adapters, tolerances of the groove widths in different barrels can be offset by rotating the drive adapter into a different groove recess. These groove recesses have different sizes and allow the drive to fit exactly.



For round shafts:

Measure the lug of the thrust ring (X, Y). Then notch the tube on the motor side, so the lug of the thrust ring can also be pushed into the shaft. There must be no play between the lug of the thrust ring and the shaft.



To ensure secure torque transmission for **round shafts**, we recommend screwing the drive adapter to the shaft (see the table below).

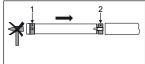
Attention! When drilling into the barrel, never drill near the tubular drive!

Size of drive	Drive adapter	Torque	Fastening screws
[mm]		max. [Nm]	(4 units)
dia. 35-dia. 45	All	Up to 50	Self-tapping screw
			dia. 4.8 x 9.5 mm
dia. 58	Aluminium drive adapter	Up to 120	Countersunk screw
			M8 x 16 mm
dia. 58	Diecast drive adapter	Up to 120	Self-tapping screw
			dia. 6.3 x 13 mm

We also recommend screwing the idler to the barrel.

Attention

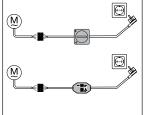
Do not hammer the tubular drive into the tube or drop it into the barrel! The curtain can only be secured using springs or rigid shaft connectors. We recommend at least three pieces per metre of barrel.



Assemble the tubular drive with the relevant ring (1) and drive adapter (2). If the ring has several grooves, select the groove which is a perfect fit and push the ring (1) onto the thrust ring.

Insert the tubular drive with the pre-assembled ring (1) and drive adapter (2) into the tube to achieve a form fit. Ensure that the ring and drive adapter are secure in the tube.

Mount the assembled unit comprising shaft, tubular drive and idler on the box and secure the drive with a splint or spring pin according to the type of wall bracket fixing.



Automatic setting of limit positions is possible, where a stop system is present on both sides, using the rotary switch set (Item no. 4901 001 158 0), a standard rotary switch or the programming unit for drives with electronic limit switching (Item no. 4935 200 011 0). All other functions can only be set via the programming unit.

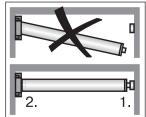
Connect the wires of the tubular drive to those of the same colour in the programming/operator control and switch on the power supply.

Check the direction of travel. If the direction of travel of the shading solution does not correspond to the operator control, swap the black and brown pigtail wires of the tubular drive.

Attention

The rotary switch and the programming unit are only designed for the commissioning, and not for continuous operation!

Position the barrel so that the roller shutter curtain can be attached with springs or fit the rigid shaft connectors in accordance with the manufacturer's instructions.



Mount the assembled unit comprising barrel, tubular drive and idler on the box as follows.

- 1. First insert the bearing pin into the idler (1.).
- 2. Then, mount the crank handle housing onto the respective fastening element using at least 2 M6 screws (2.).
- 3. Now secure the idler.



Lay the connecting cable

Lay the connecting cable up to the tubular drive, and fix. The connecting cable must not project into the winding chamber. The exterior antenna, if present, must not be shortened or damaged under any circumstances and must not project into the winding space. Cover any sharp edges.



Adjusting the limit positions with a rotary switch or a locking button

Intelligent installation management

Completion of installation following automatic setting of limit position "Stop"

Next time the "stop" limit position is travelled to, this position will be provisionally saved as the limit position. Once the limit position has been detected at this position 3 times in a row without any problems, it will be definitively saved. This normally takes place during regular operation.

Limit position status indicator

A brief stopping and restarting indicates that no limit position has been set in that direction of movement.

If the tubular drive switches off prematurely while opening or closing due to an obstruction, the obstruction can be cleared by reversing a short way and removing the obstruction. The desired limit position can then be set by opening/closing again. A reduced torque in the direction of travel only occurs after the upper limit position has been set. The distance from the upper stop is automatically cyclically checked and, if necessary, corrected.

			M)1x	Move 3x in succession to the permanent upper stop from a distance of > 300 mm without interruption.	
				The tubular drive confirms after the limit position has been approached three times. The limit position is then shifted approx. 10 mm before stopping.	
V	•	•	M)1x	Move $3x$ in succession to the permanent lower stop from a distance of $> 300 \text{ mm}$ without interruption.	
				The tubular drive confirms after the limit position has been approached three times. The limit position is then shifted approx. 20 mm before stopping.	
				► The limit positions are now set.	

Deleting the limit positions with a rotary switch or a locking button

The switching commands sequence must be carried out in quick succession.

Carry out the following deletion sequence without interruption between the individual drive commands:



The tubular drive acknowledges.

Both limit positions are deleted.

Setting the limit positions using the programming unit

Programming button → ◆Travel button Connect the wires of the tubular drive to those of the same colour in the programming unit for drives with electronic limit switching and switch on the power supply.

Attention

The programming unit is only designed for the commissioning, not for continuous opera-

Intelligent installation management

Completion of installation following automatic setting of limit position "Stop"

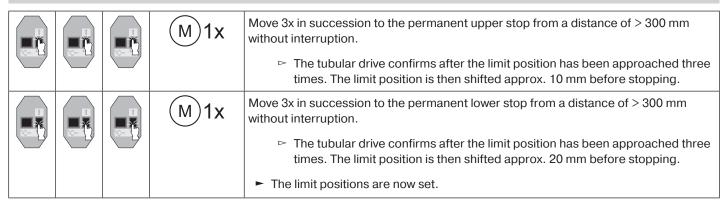
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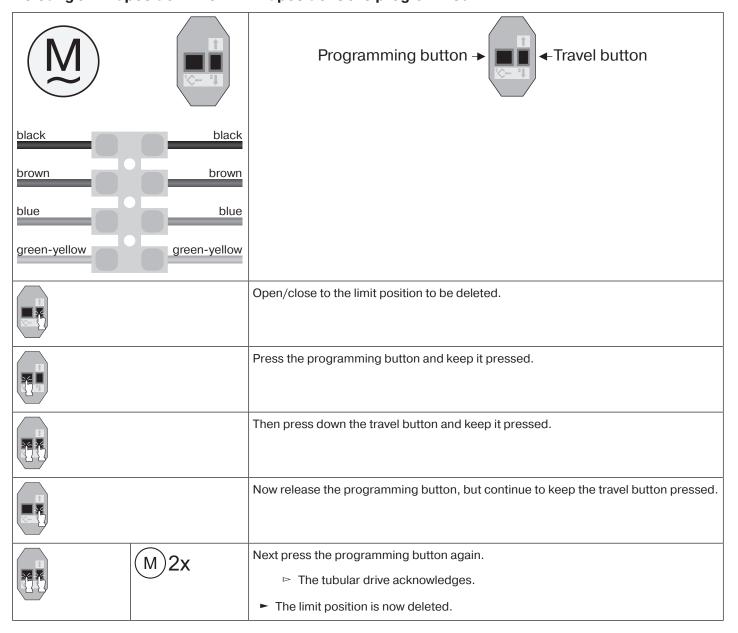
Deleting the limit positions using the programming unit



Connect the wires of the tubular drive to those of the same colour in the programming unit and switch on the power supply.

Please pause for 1 sec after the last drive command before beginning the deletion sequence. Also leave a pause of 1 sec between the individual steps of the deletion sequence.

Deleting a limit position when 2 limit positions are programmed



Deleting both limit positions

	Open/close the shading solution to a point between the limit positions.
	Press the programming button and keep it pressed.
	Then press down the travel button and keep it pressed.
	Now release the programming button, but continue to keep the travel button pressed.
M 2x	Next press the programming button again. ▷ The tubular drive acknowledges.
	► Both limit positions are deleted.

Additional function offset lower limit position

The lower limit position can be advanced in 20° steps up to 60° . After 60° the forward displacement starts again at 0° . Proceed as follows:

▼			Move to the lower limit position.			
Carry out the following sequence without interruption between the individual drive commands.						
▷ .	The tub	oular drive confirms.				
	$\overline{\mathbf{A}}$	V	(M) 1 v			
1 s	1 s	until STOP and hold ur	mtil (M)1x			

Using the crank handle



For problem-free assembly, use mechanical and electrical accessories made by the drive manufacturer which have been tested and which are suitable for use with these drives.

For 7 mm hexagonal tube and 6 mm square tube	The crank handle is to be used only in the event of a power failure. It must be ensured that the limit positions are not overrun. After using the crank handle, the limit positions must be referenced again. To do this, move in the opposite direction to the permanent stop to reference the limit positions again.
	Crank handle for closed models The crank handle for closed models can be used with roller shutters either with or without a roll-up system. The square bar is fixed to the shutter box. Here, it is important to ensure that the bar is mounted parallel to the guide in the crank handle housing.
	Crank handle for open models These crank handles can be used with roller shutters without roll-up systems. Insert the square bar into the guide in the crank handle housing and secure axially using a retaining washer or two set screws.

Information for the electrician

Use external conductor L1 to control the up and down direction. Other devices or consumers (lamps, relays, etc.) must not be directly connected to the drive connecting cables. For this purpose, the drives and additional devices must be decoupled by relay controls.

When installing the drive, all-pole disconnection from the mains with a contact gap of at least 3 mm per pole must be provided.

Attention

Only use mechanically or electrically locked switching elements with a marked zero position! This also applies when drives with electronic and mechanical limit switching are used in the same system. The changeover time for switching the running direction must be at least 0.5 s. The switch and control unit must not execute simultaneous UP and DOWN commands. Protect the electrical connections from damp.

Once you have finished wiring everything to the control unit, ALWAYS check the correct assignment of the drive running direction to the control buttons UP and DOWN, EXTEND and RETRACT.

If the drive is to be operated with devices which contain sources of interference, the electrician must ensure suitable interference suppression for the relevant devices.

Torque detection

A correctly installed tubular drive reacts to extraordinarily large increases in load during operation between the limit positions and thereby prevents an overload of the tubular drive.

Move to the opposite limit position to reference the limit positions again.

Disposal



The crossed-out bin symbol on the product indicates that the device is subject to mandatory disposal separate from household waste. This product must be handed over to a collection point for electrical and electronic equipment at the end of its service life. The packaging material must be disposed of properly.

Maintenance

These drives are maintenance-free.

Technical data dia. 45

Tubular drive	R12-17 R20-17 R30-17 R40-17			R40-17
Model	E25			
Туре	HK R			
Rated torque [Nm]	12	20	30	40
Output speed [rpm]	17	17	17	17
Limit switch range	64 revolutions			
Supply voltage	230 V AC / 50 Hz			
Connected load [W]	110 160 205 260			260
Rated current consumption [A]	0.50	0.75	0.90	1.15
Operating mode	S2 4 min			
Degree of protection	IP 44			
Min. tube inside diameter [mm]	47			
Emission sound pressure level [dB(A)]	€ 70			

Technical data dia. 58

Tubular drive	L60-11 L80-11 L120-11			
Model	E25			
Туре	HK R			
Rated torque [Nm]	60 80 120			
Output speed [rpm]	11 11 11			
Limit switch range	64 revolutions			
Supply voltage	230 V AC / 50 Hz			
Connected load [W]	265 310 435			
Rated current consumption [A]	1.20 1.40 1.90			
Operating mode	S2 4 min.			
Degree of protection	IP 44			
Min. tube inside diameter [mm]	60			
Emission sound pressure level [dB(A)]	≤ 70			

What to do if ...?

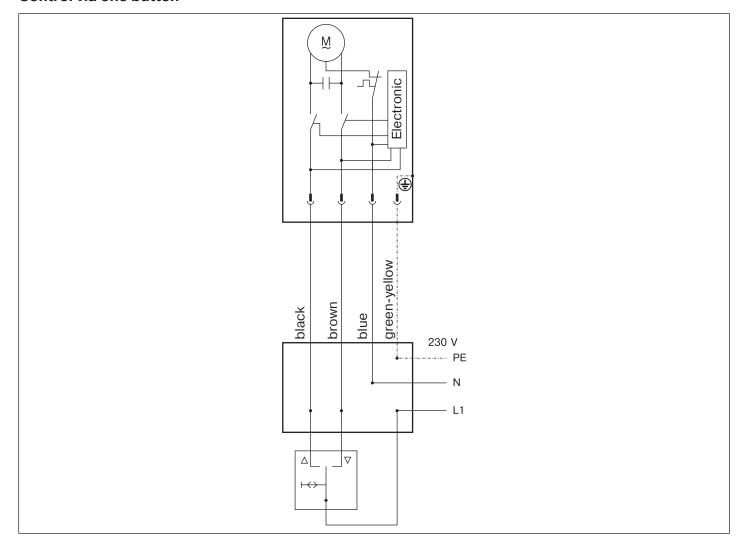
Problem	Remedy
The roller shutter curtain is raised unevenly or not at all.	Repair system; then re-program limit positions.
Tubular drive does not reach the set limit position.	Move to the opposite limit position to reference the limit positions again.
	Repair electrical installation; re-program limit positions.
	Check electrical installation; remove any external devices; reprogram limit positions.
	Stops have broken off or one or several attachments are broken. Repair system; reset tubular drive, then re-program limit positions.
Tubular drive stops arbitrarily; cannot be restarted in the same	Use a more powerful tubular drive.
direction.	Ensure that the system runs smoothly.
	Delete and reset the limit positions.
Tubular drive does not run in the right direction.	Tubular drive is overheated. The tubular drive is operational again after a few minutes.
	Tubular drive is faulty (does not work even after standing still for a long period of time). Replace the tubular drive.
	Clear and remove the blockage and set the drive in the direction required.
	Check the electrical connection.
During the programming run, the drive stops short of the limit position to be programmed.	For safety reasons, the drive reacts sensitively to sluggishness during the programming run, in order to prevent damage. Briefly run curtain DOWN and subsequently UP until you reach the upper limit position.

Sample wiring diagram



The assignment of the black and brown wires according to the direction of travel is dependent on how the drive is installed (mounted to the right or to the left).

Control via one button



Declaration of conformity

BECKER-ANTRIEBE GMBH Friedrich-Ebert-Str. 2 – 4 35764 Sinn, Germany



EU Declaration of Conformity

Document No.: 5100 310 005 0

We hereby declare that the following product series

Product designation: Tubular motor

Type designation: P3/30.., P4/16.., P4/17.., P5/16.., P5/30.., P5/20.., P9/16.., P13/9..,

R4/17.., R7/17.., R7/85.., R8/17.., R12/11.., R12/17.., R15/17.., R20/11.., R20/17.., R25/17.., R30/11.., R30/17.., R40/11..,

R40/17.., R50/3,5.., R50/11..,

L44/14.., L50/11.., L50/17.., L60/11.., L60/17.., L70/17.., L80/11..,

L80/17.., L100/11.., L120/11..

Version: C, EVO, M, HK, R, S, F, P, E, O, SMI, A0...Z9, mute, +

From serial number: from 232300001

complies with the applicable regulations of the following Directives:

Directive 2006/42/EC (MD) L157, 09.06.2006

Directive 2014/30/EU (EMC) L96, 29.03.2014

Directive 2011/65/EU (RoHS) L174, 01.07.2011

Furthermore, the safety objectives of the **Low Voltage Directive 2014/35/EU** as per Appendix I No.1.5.1 of Directive 2006/42/EC have been met.

Applied standards:

DIN EN 60335-1:2020 DIN EN 60335-2-97:2017

EN 61000-6-1:2019 EN 61000-6-3:2022

EN 14202:2004

Authorised party for the compilation of the technical documentation: Becker-Antriebe GmbH, Friedrich-Ebert-Str. 2 – 4, 35764 Sinn, Germany

This declaration of conformity was issued:

Sinn, 02.06.2023

Place, Date

Maik Wiegelmann, Management

This declaration certifies compliance with the Directives cited but does not represent any assurance of characteristics. The safety warnings in the supplied product documentation must be observed!

CE Antriebe M+E_ 5100 310 005 0 _de

Initial setup - tubular drive - Type E25

