P5...L120

Model: M04; M04s; M11

en **Assembly and Operating Instructions**

Roller shutter and sun protection drives with mechanical limit switch

Important information for:

・Fitters /・Electricians /・Users

Please forward accordingly!

These instructions must be kept safe for future reference.

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Table of contents

General

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

- For use with roller shutters
- For use with sunblinds
- Easy limit switch setting on the drive
- Compatible with all of the drive manufacturer's control units for roller shutters and sunblinds
- For plug-in connecting cable

Please observe these Assembly and Operating Instructions when installing and setting up the equipment.
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: 24th calendar week in 2012

Ser. No.:	1224XXXXX

Explanation of pictograms

	**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.
		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

- All work, including maintenance and cleaning, on electrical installations as well as other system parts must always be performed by authorised specialists, 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.
- Stop and disconnect the equipment from the mains power supply when maintenance and cleaning is being performed either on the system itself or in the immediate vicinity of it.
- 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 authorised specialists, 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 control devices within sight of the driven product, but away from moving parts, at a height of over 1.5 m.
- 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.

- Moving parts of drives must be installed at a height of over 2.5 m above floor level or any other surface from which access to the drive is gained.
- 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.

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 technological 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 drive mains connecting cable is damaged, 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.**

Intended use

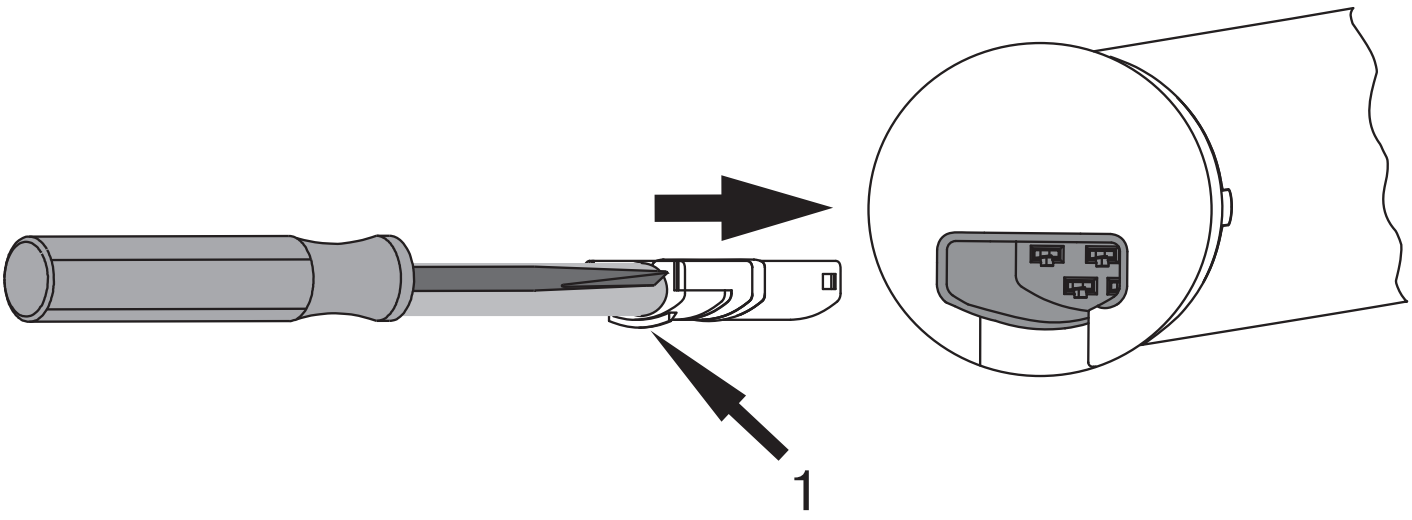
The type of tubular drive described in these instructions is intended solely for the operation of roller shutters and sun protection systems. We recommend using drives with more than 17 rpm only in sun protection systems (screens).
When mounting connection parts on the drive PXX/XX dia. 35 mm, only use screws EJOT Delta PT 40x12 WN 5454 Torx (9900 000 545 4).
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.

Assembling and disassembling the plug-in connecting cable

Assembling the plug-in connecting cable

Insert the **dead** connecting cable into the drive head until the locating lug clicks into place in the drive. If necessary, use a suitable flathead screwdriver to assist with insertion. Set the screwdriver into one of the two plug grooves provided for this purpose.
Check that the cable is properly engaged.

C-plug



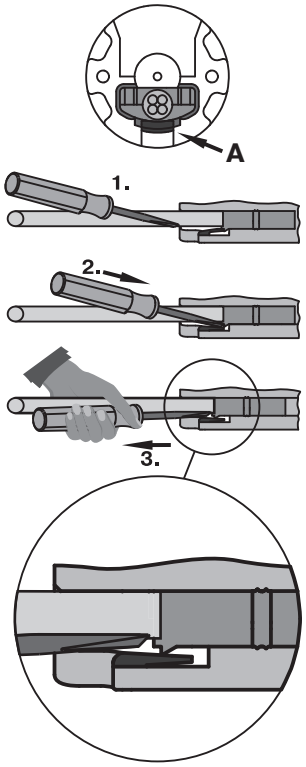
1 = locating lug

Disassembling the plug-in connecting cable for tubular drives dia. 35.

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

On drives with a diameter Ø35, insert a suitable flathead screwdriver between the locating lug and the snap-in pin, so that the snap-in pin releases the locating lug from the plug.

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

Ø35	*C-plug*
	
A = snap-in pin	

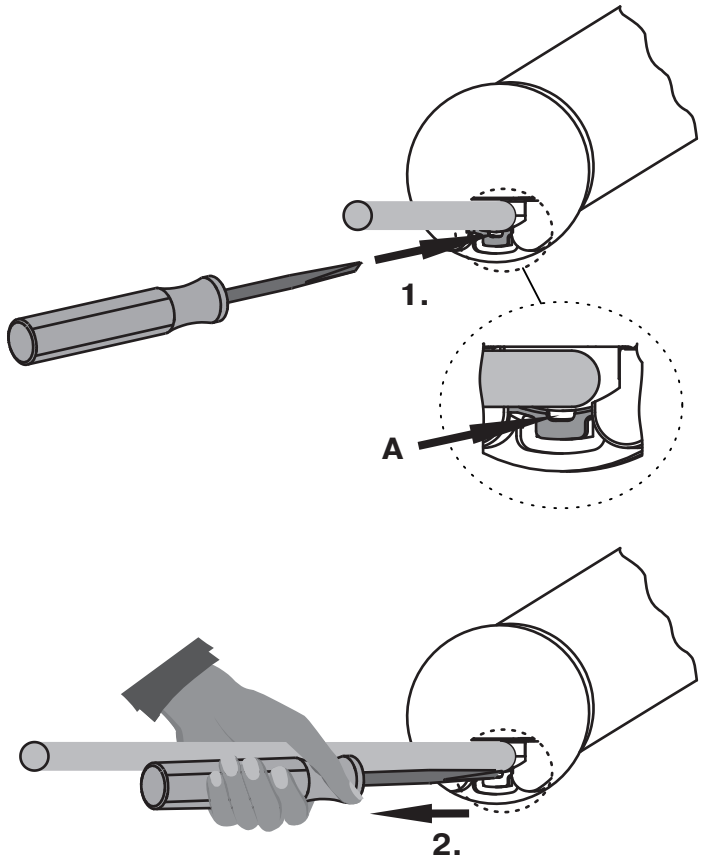
Disassembling the plug-in connecting cable for tubular drives dia. 45 and dia. 58

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

On drives with a diameter Ø45 or Ø58, insert a suitable flathead screwdriver right into the recess of the locating latch, so that the latch releases the locating lug from the plug.

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

dia. 45 and dia. 58	*C-plug*



A = locating latch

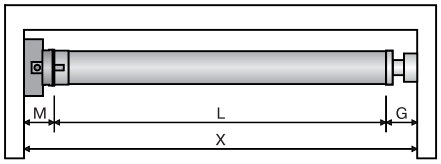
Installation

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.

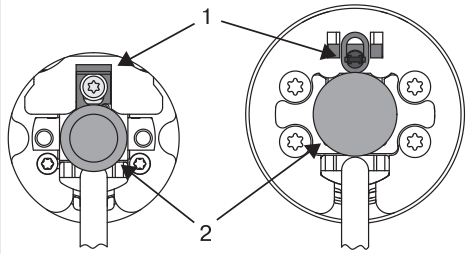


Calculate the space required at the side (M) by measuring the drive head and wall bracket. The clear dimension of the box (X) minus the space required at the side (M) and idler (G) gives the length (L) of the barrel: L=X-M-G.
The space required at the side (M) varies depending on the combination of drive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

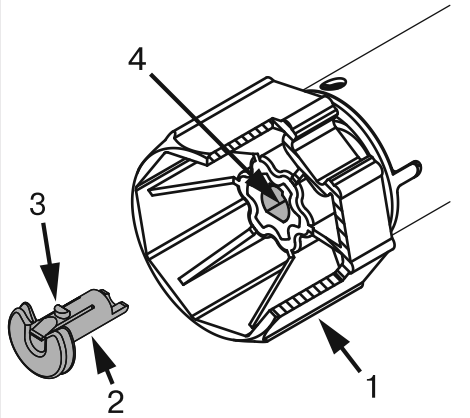
Attention
When using anti-lifting devices, closed brackets must be fitted. The tubular drive presses the closed curtain down to make it difficult for people to reach under it or raise it. Only use curtains made of sufficiently strong material, such as aluminium, steel or wood. To prevent damage to the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

Undoing the mounting pin



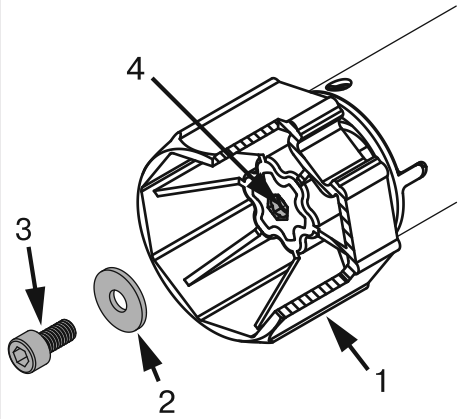
When pushed in, the mounting pin (2) locks automatically. To undo the mounting pin (2), push the tab washer (1) upwards and pull out the mounting pin (2).

Assembling the drive adapter with drive adapter safety catch



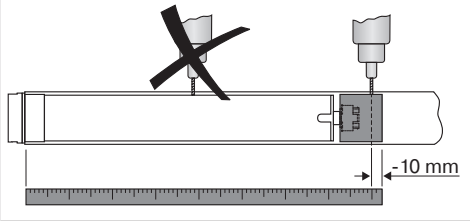
Put the drive adapter (1) onto the drive shaft of the tubular drive. You can see which way to insert the safety catch (2) from its shape. When inserting the drive adapter safety catch (2) into the hole (4), make sure that the locking lug (3) engages. You will hear a click. Check that the safety catch is securely in position by pulling on the drive adapter (1).

Assembling the drive adapter with screw connection



Put the drive adapter (1) onto the drive shaft of the tubular drive. For the assembly, use an M6 x 12 screw (3) with appropriate washer (2) and suitable screw retainer. Threaded hole (4)

Securing the drive against axial displacement



In order to secure the drive against axial displacement, we recommend screwing the drive adapter to the tube.

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

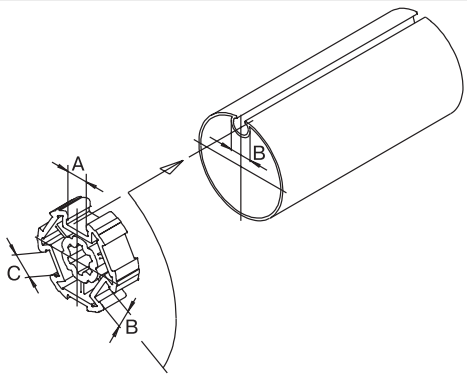
Fixing the drive adapter to the barrel dia. 35 and dia. 45 and dia. 58

Size of drive [mm]	Diameter of barrel [mm]	Torque max. [Nm]	Fastening screws for drive adapter (4 pc.)
dia. 35	40 mm plastic drive adapter	13	Self-tapping screw dia. 4.8 x 9.5 mm
dia. 45	50 - 70 mm plastic drive adapter	25	Self-tapping screw dia. 4.8 x 9.5 mm
dia. 45	50 - 85 mm plastic drive adapter for obstacle detection	40	Self-tapping screw dia. 4.8 x 9.5 mm
dia. 45	50 - 85 mm diecast drive adapter	50	Self-tapping screw dia. 4.8 x 9.5 mm
dia. 58	85 - 133 mm aluminium drive adapter	120	Countersunk screw M8 x 16 mm
dia. 58	63 - 120 mm diecast drive adapter	120	Self-tapping screw dia. 6.3 x 13 mm

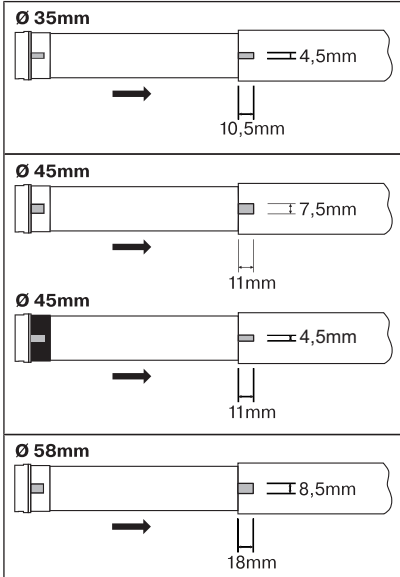
We also recommend screwing the idler to the barrel.

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 anti-lifting devices.

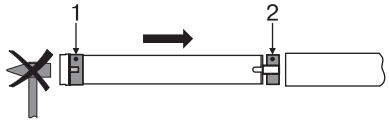
Mounting the drive in the tube



For profile tubes:
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.

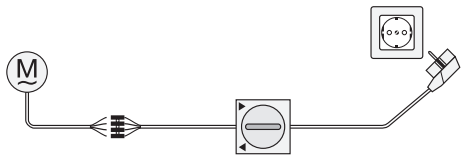


For round tubes:
First notch the tube on the motor side, so the lug of the thrust ring can also be pushed into the tube. There must be no play between the lug of the thrust ring and the tube.



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

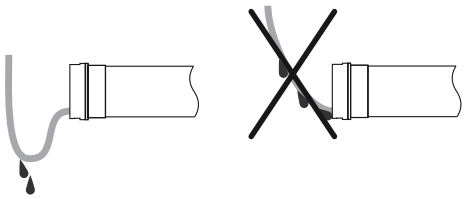
Mount the assembled unit comprising barrel, tubular drive and idler on the box and secure the drive with a split or spring pin according to the type of wall bracket fixing.



The drive can be operated either with the switch (Item no. 4901 001 158 0) or the operator control provided.
Connect the pigtail wires of the tubular drive to those of the same colour in the switch or 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.

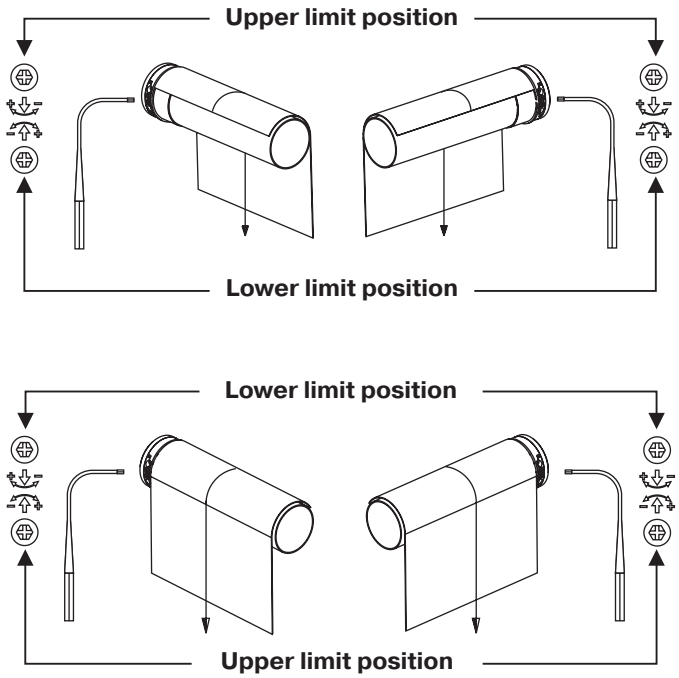
Attention
The switch is not suitable for continuous operation and has only been designed for start-up!

When using springs/anti-lifting devices, we recommend you use at least three; for longer tubes, use three springs/anti-lifting devices per metre of barrel.



Lay the connecting cable
Lay the connecting cable up to the tubular drive, and fix The connecting cable and any antennae must not project into the winding chamber. Cover any sharp edges.

Setting the limit positions



Setting the lower limit position

1. Before the shading solution is fixed to the barrel, let the drive run DOWN until it switches off automatically.
2. By adjusting the lower limit position, position the barrel to make it easy to fix the shading solution to the barrel.

Setting the upper limit position

Activate the UP switch. The drive rolls up the shading solution. Extend or reduce the range of travel by turning the corresponding set screw.

Note on roller shutter use
To make allowances for any changes in the length of the roller shutter, do not mount mechanical stops. Make sure that the individual laths cannot shift sideways.
During commissioning and subsequent use, ensure that the roller shutter curtain runs UP and DOWN smoothly and easily.

Test for proper functioning

As a final check, run the shading solution to the limit positions in both directions again.

Attention
The tubular drives are designed for short-time operation (for the operating mode, please see technical data). An inbuilt thermal protection switch prevents overheating of the tubular drive. During commissioning (long drop distance or long running time), the thermoswitch may trigger. The drive will switch off. After a short cooling-down period, the system is ready for operation again.
The drive does not achieve its full duty cycle until it has cooled to ambient temperature. Avoid a situation where the thermal protection switch cuts in repeatedly.

Information for the electrician

The tubular drives with mechanical limit switching must **not** be connected in parallel. The drive manufacturer offers a range of suitable controls for the simultaneous control of several drives.
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 (EN 60335).

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 must not execute simultaneous UP and DOWN commands. Protect the electrical connections from damp.
Once you have finished wiring everything to the control, ALWAYS check the right direction assignment of the drive 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.

Disposal

This product is made of various materials which must be disposed of properly. Find out about the applicable regulations on recycling or disposal for this product in your country.
The packaging material must be disposed of properly.

Maintenance

These drives are maintenance-free.

Technical data dia. 35

Model	P5-M04	P5-M04s	P9-M04	P13-M04
Type	P5/20C M	P5/30C M	P9/16C M	P13/9C M
Rated torque [Nm]	5	5	9	13
Output speed [rpm]	20	30	16	9
Limit switch range	38 revolutions			
Supply voltage	230 V AC / 50 Hz			
Connected load [W]	115	115	110	115
Rated current consumption [A]	0.47	0.47	0.47	0.47
Mode	S2 4 min			
Degree of protection	IP 44			
Min. tube inside diameter [mm]	37			
Emission sound pressure level [dB(A)]	⩽ 70			

Technical data dia. 45

Model	R8-M04	R12-M04 R12-M11	R20-M04 R20-M11
Type	R8/17C M	R12/17C M	R20/17C M
Rated torque [Nm]	8	12	20
Output speed [rpm]	17	17	17
Limit switch range	38 revolutions		
Supply voltage	230 V AC / 50 Hz		
Connected load [W]	100	110	160
Rated current consumption [A]	0.45	0.5	0.75
Mode	S2 4 min		
Degree of protection	IP 44		
Min. tube inside diameter [mm]	47		
Emission sound pressure level [dB(A)]	⩽ 70		

Model	R30-M04 R30-M11	R40-M04 R40-M11	R50-M04
Type	R30/17C M	R40/17C M	R50/11C M
Rated torque [Nm]	30	40	50
Output speed [rpm]	17	17	11
Limit switch range	38 revolutions		
Supply voltage	230 V AC / 50 Hz		
Connected load [W]	205	260	240
Rated current consumption [A]	0.90	1.15	1.10
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

Model	L50-M04	L50-M04	L60-M04	L60-M04
Type	L50/11C M	L50/17C M	L60/11C M	L60/17C M*
Rated torque [Nm]	50	50	60	60
Output speed [rpm]	11	17	11	17
Limit switch range	36 revolutions			
Supply voltage	230 V AC / 50 Hz			
Connected load [W]	235	315	265	380
Rated current consumption [A]	1.05	1.40	1.20	1.75
Operating mode	S2 4 min			
Degree of protection	IP 44			
Min. tube inside diameter [mm]	60			
Emission sound pressure level [dB(A)]	⩽ 70			

Model	L70-M04	L80-M04	L80-M04	L120-M04
Type	L70/17C M	L80/11C M	L80/17C M*	L120/11C M
Rated torque [Nm]	70	80	80	120
Output speed [rpm]	17	11	17	11
Limit switch range	36 revolutions			
Supply voltage	230 V AC / 50 Hz			
Connected load [W]	430	310	470	435
Rated current consumption [A]	1.90	1.40	2.10	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			

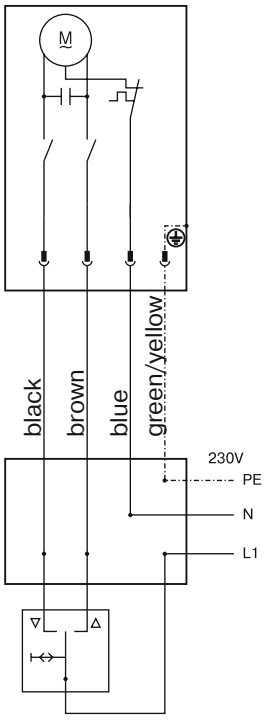
*) This tubular drive is not yet available.

What to do if…?

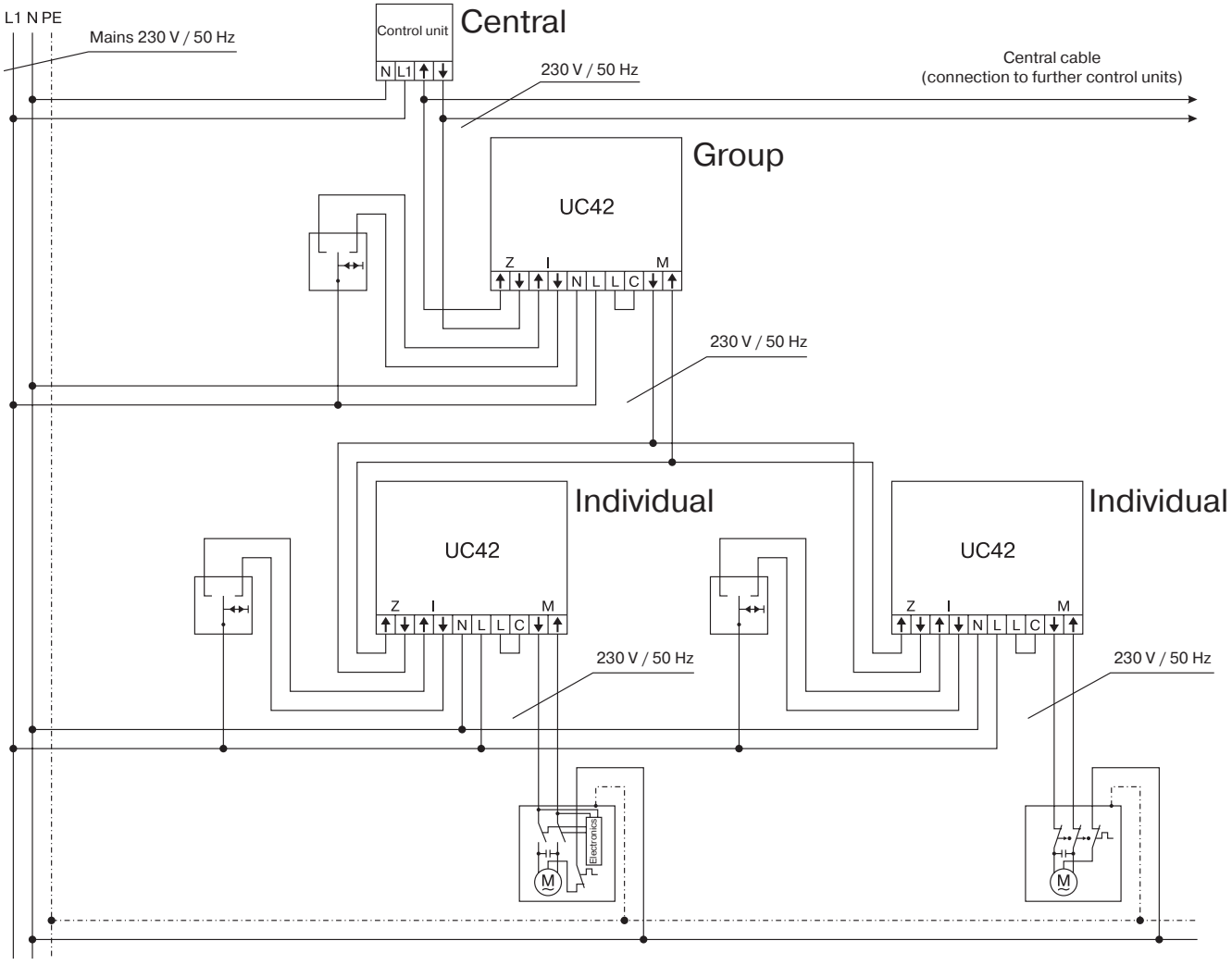
Problem	Cause	Remedy
The roller shutter curtain is raised unevenly or not at all.	1. One or more attachments have broken off. 2. Lath has broken off.	Repair system; then reset the limit positions.
Tubular drive stops arbitrarily; cannot be restarted in the same direction.	Roller shutter curtain keeps sticking; too much friction.	Repair system
Tubular drive does not run in the right direction.	Electrical connection faulty.	Check the electrical connection.

Sample wiring diagrams

Control via a single switch/button



Central, group and individual control using Centronic UnitControl UC42



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- Original -

EC Declaration of Conformity

Document No./Month . Year: **K001/02.15**

We hereby declare that the following product series

Product designation:	**Tubular motor**
Type designation:	**R4/17.., R8/17.., R12/17.., R15/17.., R20/17.., R25/17.., R30/17.., R40/17.., R50/11.., R40/17.. (37 Nm), R7/17.., P9/16.., P5/30.., P5/20.., P13/9.., P5/16.., P4/16.., P3/30.., L44/14.., L50/11.., L50/17.., L60/11.., L60/17.., L70/17.., L80/11.., L80/17.., L120/11..**
Version:	**C, M, HK, R, S, F, P, E, O, SMI, A0…Z9, mute, +**
From serial number:	from **150800001**

complies with the applicable regulations of the following Directives:

Machinery Directive (2006/42/EC)

Electromagnetic Compatibility (2004/108/EC)

Furthermore, the safety objectives of the **Low Voltage Directive 2006/95/EC** as per Appendix I No.1.5.1 of Directive 2006/42/EC have been met.

Applied harmonised standards:

EN 60335-1:2012
EN 60335-2-97:2010

EN 61000-6-1:2007
EN 61000-6-3:2007

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, 12.02.2015
Place, Date

D. Fuchs, 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!

2010 300 332 0g 11/08/2015

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