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Roller shutter drive RolTop/D+ M

1 Operating and installation instructions (translation)

Please keep these operating instructions for later use, to be available throughout the life of the product!

The German manual is the original version.

All other documents represent the language translations of the original text.

All rights in the case of a patent, utility model or ornamental design registration are reserved.

2 General for instructions

The content structure is based on the life cycles of the electric motor drive (hereinafter referred to as "Product").

The manufacturer reserves the right to make changes to the Specifications stated in these Operating Instructions at any time. These may, in individual cases, be different from the respective product version, however the functional information will not undergo significant changes or become invalid. The current version of the Specifications may be requested from the manufacturer at any time. No claims may be asserted against the manufacturer as a result of the preceding sentence. Deviations from text or picture statements are possible and depend on the technical development, features, and accessories of the products. Deviating information on special versions will be explained by the manufacturer in the sales documentation. Other information shall remain unaffected by these provisions.

2.1 Standards and Directives

During the design process, the basic health and safety requirements of the applicable laws, Standards and Directives were complied with. The safety is confirmed by the declaration of conformity (see "Declaration of Conformity"). All safety information in these Operating Instructions refer to the laws and regulations currently applicable in Germany. All instructions in the Operating Instructions shall be observed without limitation and at any time. Beside the safety instructions contained in these Operating Instructions, the provisions for accident prevention, environmental protection and occupational safety, which are applicable for the operating site, must be observed. Provisions and Standards for the safety rating can be found in the EC Declaration of Conformity

2.2 Intended use

The product is intended for use in façade engineering to drive electrically powered sun protection devices.

The determining factor for the drive is the elero drive computation program
www.elero.com/en/downloads-service

Further fields of application have to be arranged with the manufacturer, **elero** GmbH Antriebstechnik (see Address).

The operator will be solely responsible for damages resulting from improper use of the product. The manufacturer cannot be held liable for personal or material damages caused by misuse or procedural errors, and by improper operation and commissioning.

The product may be operated only by trained and authorized personnel under observance of all safety.

Only if used according to the specifications of these operating and installation instructions for the safe and proper use and safe operation of the product are guaranteed.

Intended use includes the observance and compliance with all safety instructions with regards to this operating manual and all applicable regulations, and professional associations of applicable laws for environmental protection. Intended use includes the observance of prescribed operating rules in these operating and installation instructions.

2.3 Foreseeable misuse

A use which deviates from the intended use stated by the manufacturer, **elero** GmbH Antriebstechnik (see "Address"), is deemed as foreseeable misuse.

2.4 Warranty and liability

Principally, the General Terms and Conditions of the manufacturer, **elero** GmbH Antriebstechnik (see "Address"), apply. The terms and conditions are part of the sales documents and handed over to the operator upon delivery. Liability claims for personal or material damages are excluded when they can be attributed to one or more of the following causes:

- Opening of the product by the customer
- Unintended use of the product
- Improper installation, commissioning, or operation of the product
- Structural modifications to the product without the written consent of the manufacturer
- Operation of the product with improperly installed connections, defective safety devices or improperly installed safeguards
- Non-observance of the safety provisions and instructions of these Operating Instructions
- Non-compliance with the technical data

2.5 Customer service of the manufacturer

The product should only be repaired by the manufacturer in case of a failure. The address for sending to customer service, see the chapter "Address".

If you have not purchased the product directly from elero, please contact the supplier of the product.

3 Safety

3.1 General safety instructions

These operating and installation instructions contain all the safety instructions that must be observed in order prevent and eliminate hazards in the handling of the product in the individual life cycles. The safe operation of the product can only be ensured when all given safety instructions are observed.

3.2 Layout of the safety guidelines

The safety instructions in this document are identified by hazard signs and safety symbols and are designed according to the SAFE principle. They contain information on the nature and source of the danger of possible consequences and to prevent the danger.

The following table defines the representation and description of hazard levels with possible personal injury, as used in this manual.




Symbol	Signal word	Meaning
	DANGER	Warns before an accident, which will result if instructions are not followed, which can lead to life-threatening, irreversible injury or death.
	WARNING	Warns before an accident, which can happen if the instructions are not followed, which can lead to serious, possibly fatal, irreversible injury or death.
	CAUTION	Warns before an accident, which can happen if the instructions are not followed, which may lead to minor reversible injury.

Fig. 1 Notation of personal injury

The following table describes the icons used in these operating instructions that are used for imaging of the dangerous situation in connection with the symbol of the threat level.


Symbol	Meaning
	Danger of electric voltage, electric shock: This symbol indicates a risk of electric shock.

Fig. 2 Notation-specific hazard

The following table defines the representation used in the operating instructions and description of situations where damage can occur to the product or refers to important facts, conditions, tips and information.



Symbol	Signal word	Meaning
	NOTE	This symbol warns of a possible property damage.
	Important:	This symbol points out important facts and conditions as well as to additional information in these operating and installation instructions. It also refers to certain statements that give additional information or help you perform a task easily.

Fig. 3 Notation of property damage as well as additional information

The following example represents the basic structure of a safety warning:

SIGNAL WORD

Type and source of danger

Explanation of the type and source of the danger

► Measures to prevent the danger.

3.3 Safety principles

The product is designed according to state of the art and recognized safety standards and is safe to operate. During the design process of the product, the basic health and safety requirements of the applicable laws, Standards and Directives were complied with. The safety of the product is confirmed by the EC declaration of conformity.

Any information relating to safety are based on the currently valid regulations of the European Union. In other countries, it must be ensured by the operator that the applicable laws and state regulations are complied with.

In addition to the safety instructions in this operating manual, the general regulations for accident prevention and environmental protection must be observed and adhered to.

The product is to be used only in technically flawless state as well as in accordance with the requirements, conscious of risk and in compliance with the operating instructions. The product is designed for use as described in chapter "Intended Use". In case of improper use, threats to life and limb of the user or third parties or damage to the product or other property may occur. Accidents or near accidents when using the product, resulting in personal injury and / or damage to the environment or has happened, shall be reported to the manufacturers directly and immediately.

All safety precautions listed in the operating instructions and on the product are to be observed. In addition to these safety instructions, the operator shall ensure that all national and international regulations in force in the country of use, as well as other binding regulations for occupational safety, accident prevention and environmental protection are met. All works on the product must be carried out by trained, safety related trained and authorized personnel.

The professionally qualified person must comply with all applicable standards and laws in the country of installation and inform their customers about the use and maintenance conditions of the product.

3.4 General operational regulations

- The operator is obliged to use the product only in proper and safe condition. He must ensure that in addition to the safety instructions in the operating manual, the general safety and accident prevention regulations, the requirements of DIN VDE 0100, and the rules of the environmental protection of the country of use are respected and adhered to.
- The operator is responsible for ensuring that all work is carried out with the product by trained, safety instructed and authorized personnel.
- The operator of the product or the personnel authorized by him is ultimately responsible for the accident-free operation.
- The operator is responsible for compliance with the technical specifications, particularly for the observance of the static and dynamic loads.
Ignoring the static loads can lead to loss of support or hold function.
- In terms of intended use of the operator environment-related (building side) has to provide a dry, not too hot environment under the influence of radiant heat. Variations must be agreed with the manufacturer.

3.5 Requirements for the personnel

- Any person who is assigned to work with the product must have read and understood the entire manual before performing the relevant work. This is true even if the person has already worked with such product or has been trained for it.

- Before starting any activities, the staff must be made familiar with the dangers when handling the product.
- Any personnel who have been assigned to work with the product must not have a physical disability, the attention and judgement must not be temporarily or permanently restricted (e.g due to fatigue).
- The handling of the product and all assembly, disassembly and cleaning work by minors or persons who are impaired by alcohol, drugs or medication influence, is not permitted.
- Staff must accordingly wear the necessary work and this work environment suitable personal protective equipment.
- Do not allow children to play with stationary controls, keep remote controls away from children.
- Watch the moving shutter and keep people until the shutter is fully closed.

3.6 Safety instructions for technical condition

- The product should be checked for damage and proper condition before installation.
- The operator is required to operate the product in a proper and safe condition. The technical condition must satisfy legal requirements that were valid for mentioned on the nameplate production date.
- If danger to persons or changes are recognized in operating performance, the product must be immediately taken out of service and the incident is reported to the operator.
- No changes to the product, additions or modifications should be performed without prior approval of the manufacturer.
- The plant is (if applicable) to be checked often for defective balance or any signs of wear or damaged cables and springs.

3.7 Safety instructions for transport, assembly, installation

The respective transport company is responsible for transportation of the product. The following safety requirements must be observed during transportation, assembly and installation of the product:

- When transporting the product is to be secured in accordance with the provisions of the transportation aid used.
- Only hoists and slings must be used for transportation, which are dimensioned so that they can take safe loading, unloading and installing of the product occurring forces.
- As a stop-and lifting points only defined for the points on the pallet and the product may be used.
- Are working under the raised parts or equipment required, they must be secured with suitable devices to prevent falling. Work equipment for lifting loads must prevent the load from accidentally shifting or dropping in free fall or being hooked unattended.
- Staying under suspended loads is prohibited.
- A protective helmet should be worn during loading and unloading with suitable lifting gear.
- Assembly and installation work must always be performed only by qualified and trained personnel.
- The rated torque and rated duration must be compatible with the characteristics of the driven member ("Hanging").

- ❑ With the RolTop/D+ Type M is the smallest inner pipe diameter for the winding shaft 47 mm.
- ❑ Access to the drive must be possible through a freely accessible and always with little effort to open access panel, which should be sufficiently large.

3.8 Safety instructions for operation

- ❑ The user of the product is required to satisfy themselves prior to the first use of the safe and proper condition of the product.
- ❑ That is necessary also during the operation of the product at regular time intervals which can be specified by the operator.

3.9 Safety instructions for electrical installation

- ❑ All work on the electrical system of the plant may only be used by qualified electricians in accordance with the applicable rules and regulations of the trade association, to be made in particular as per the requirements of DIN VDE 0100. Furthermore, the national law of the country of use are to be observed.
- ❑ In case of defects, such as loose connections or defective or damaged cables to the system, the product must not be put into operation.
- ❑ Prior to inspection, assembly and disassembly, the system (roller shutter, roller blind) is disconnected from the mains.
- ❑ All electrical connections, safety devices, fuses, etc. must be properly installed, connected and grounded.
- ❑ The provided power connection must be designed as specified in the wiring diagram (voltage, voltage level).
- ❑ A line protection switch (circuit breaker) is sufficient to separate the plant from the grid (and if only one phase and zero is used).
- ❑ If a fixed (permanently installed) drive is not equipped with a power cord with a plug or with other means for disconnection from the mains, which at each pole a contact opening under the conditions of overvoltage category III (according to IEC 60664-1) for full separation, as a disconnecting device must be installed in the fixed wiring according to the regulations.
- ❑ The mains connection cable for drives with a rubber hose, (abbreviation 60245 IEC 53) may be replaced only with the same line type.
- ❑ For drives where after installation the access to unprotected moving parts is possible, the following applies: Moving parts of the drive must be mounted more than 2.5 meters above the ground (or any other level which provides access to the drive).

4 Product description

The RolTop/D+ M is an electromechanical tubular motor drive. It performs parallel axial movements.

- ❑ Elero cable assembly is not required to start up the RolTop/D+ M. The **elero** assembly cable serves if necessary only for the deletion of the end positions and/or for restoring the delivery status..
- ❑ Sunblind with free ride
- ❑ The RolTop/D+ M requires top and bottom fixed anchor points. This is how an Automatic recognition and learning of the end positions (self-learning) works.
- ❑ Automatic correction of the final position, for example by installing a window sill.

- ▶ The use of rigid shaft connectors and plugs stop or angle strips or covert attacks is a prerequisite.
- ▶ The height of the curtain is adjusted so that the push-up protection operates correctly.
- ▶ For this purpose observe the requirements of the roller shutter manufacturer.
- The variant-dependent values of your RolTop/D+ M can be removed from the type label.
- The different versions of the RolTop/D+ M contain different types of brake systems depending on size and torque. The result may yield different performance eg regarding access to end positions.

5 Assembly



CAUTION

Personal injury from hot surfaces.

Drive heats up during operation, the drive housing can be hot. Possible burning of the skin.

- ▶ Wear personal protective equipment (gloves).

Triggered by a possible material errors may occur or impact shock and injury due to a gearbox break, bud break or a clutch defect.

- ▶ Suitable materials are to be used for the construction as well as perform a sampling inspection by double load test according to DIN EN 60335-2-97.

Risk of injury due to impact or shock caused by not properly mounted or latched motor bearings. Hazards caused by insufficient stability or stability and stored energy (gravity).

- ▶ Selection of engine bearing torque specifications.
- ▶ Drive must be backed up with all attached backup devices.
- ▶ Check for proper latching on engine mounts and correct tightening torques.



WARNING

Danger of injury due to electric current.



Electric shock possible.

- ▶ Electrical work can only be performed by an authorized electrician.

Danger of injury due to electric current.



Hazardous possibly by parts that have become live in the error state.

- ▶ Electrical connection is described in the operating and installation instructions included cable bushing.



CAUTION

Risk of injury due to malfunctions due to improper installation.

Drive over-winds and possibly destroys parts of application.

- ▶ For a safe operation, the end positions must be set / programmed.
- ▶ Training program of the manufacturer for specialists.

Note



Loss of power supply, termination of machine parts and other malfunctions.

- ▶ For safe operation, no false mount must be made and the end position settings must be carried out during commissioning.



Damage to the RolTop/D+ M due to moisture penetration.

- ▶ For devices with protection class IP44, the ends of all cables or connectors must be protected against the ingress of moisture. This measure must be implemented immediately after removal of the RolTop/D+ M from the original packaging.
- ▶ The drive may only be installed so that it is not irrigated.

Important



In the delivery status (factory setting), the RolTop/D+ M in commissioning mode.

- ▶ After successful mounting the drive must be driven altogether 3 times into the upper and 3 times into the lower end position. The drive must be switched off each time automatically.
- Programming the end positions is not subject to mandatory pattern, i.e. first, the upper end position, and then the lower end position can be activated, or vice versa. Also an alternate training of the end positions is possible.
- During the learning phase, the drive moves with reduced torque in the end positions.

If the entire learning process is complete,

- the drive moves at reduced speed into the end positions (except RolTop/D+ M30).
- relieved the drive at the end positions.

The sunblind is adjusted only after a complete and uninterrupted access and exit to the blind.

5.1 Mechanical fastening

Important preliminary consideration:

The working space around the built-in drive is usually very small. Therefore, before the mechanical installation provide an overview of the implementation of the electrical connection (see Section 5.2) and take any necessary.

Note



Damage to the electrical wiring by squeezing or tensile loading.

- ▶ Route all electrical cables so that they are not subjected to crushing or tensile load.
- ▶ Note the bending radius of the cables (at least 50 mm).
- ▶ Lay the connection cable in a loop downwards to prevent water running into the drive.



Damage to the drive by the action of impact forces.

- ▶ Insert the drive into the shaft, never thrust the drive into the shaft or smash onto the drive!
- ▶ Never allow the drive to fall!



Damage or destruction of the drive by drilling.

- ▶ Never drill into the drive!

Important



Attach the RolTop/D+ M only at the appropriate fasteners.

Permanently installed control devices shall be clearly displayed.

- The curtain must be fastened to the winding shaft.
- The profile tube must have enough distance to the motor tube.
- Look for an axial clearance (1-2 mm).

Installation in profile tubes

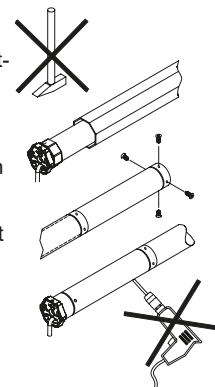
- Ⓐ Insert the drive with a suitable adapter and traction ring into the profile tube.

Lay the motor cable protected in order to prevent damage by the driven component.

- Ⓑ Secure the counter bearings against axial displacement, e.g. screw shaft spider or rivet.

Secure drive in axial storage!

- Ⓒ Secure hanging on the shaft!



5.2 Electrical connection



WARNING

Danger to life due to faulty electrical connection.



Electric shock possible.

- ▶ Before commissioning check the correct connection of the PE conductor.

NOTE



Damage to the RolTop/D+ M by faulty electrical connection.

- ▶ Before commissioning check the correct connection of the PE conductor.



Damage or destruction of RolTop/D+ M by the penetration of moisture.

- ▶ For units with protection class IP 44, the customer connection of the cable ends or connector (cable bushing) must also be carried out in accordance with protection class IP 44.



Damage or destruction of RolTop/D+ M for variants with 230 V AC 1 due to faulty control.

- ▶ Switch with OFF setting (Dead man) for drives must be installed within sight of the RolTop/D+ M, but away from any moving parts and amounting to about 1.5 m.

Important

For electric connection no transmission and retransmission of the access line or connector is required as a rule.

Depending upon used mounting plate and/or adapter plate it is necessary in particular with the RolTop/D+ M to remove this screwed plate before a cable exchange.

Connection only in free of tension status, in addition drive line without tension

- 1 Using a suitable screwdriver, press out the lock of the device connector to the line.
- 2 Disconnect the plug.
- 3 Insert connector until the latch engages.

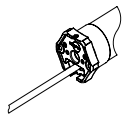
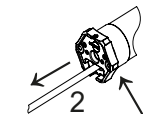
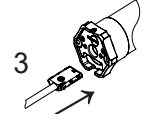
Removal and insertion of the device plug		
Delivery status	Remove plug	Insert plug
		

Fig. 4 Removal and insertion of the device plug

5.3 Connection example RolTop/D+ M 230V / 50Hz

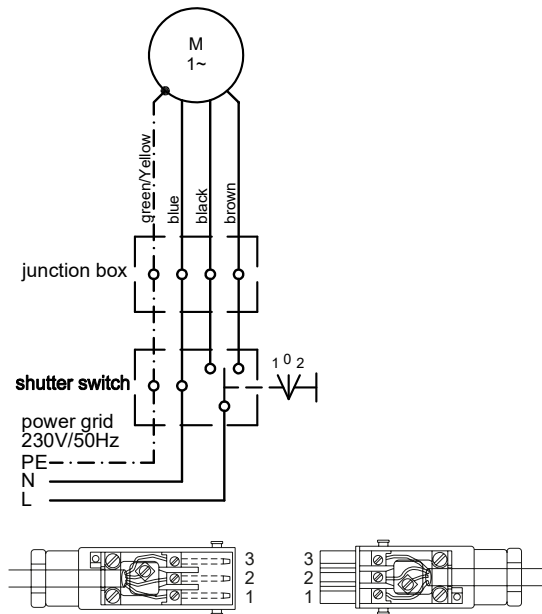


Fig. 5 Circuit diagram RolTop/D+ M 230 V / 50 Hz and wiring with delivery with Hirschmann plug STAS 3

Important



The motor control must be interlocked in up / down direction.

5.4 Parallel connection

Important



You can connect several parallel RolTop/D+ M. Note the maximum switching capacity of switching.

5.5 Commissioning

Important



The drive is in the delivery in commissioning mode.

Automatic programming of end limits

- The programming is done in the light of the end positions in Chapter 4 (product description) described prerequisites normally automatic (self-learning, without elero cable assembly).

Program end positions automatically	
1	Connecting the electrical system in accordance with Chapter 5.2.
2	Check operation: If necessary, replace or modify map the directional controls of the operation switch / tasters.
The drive switches off when reaching the (upper or lower) end stop automatically.	
The teaching is completed by further movements of the blinds.	

5.5.2 Manual setting of the end positions

- The connection of the elero cable assembly is only permitted for manual operation of the drive and delete the end positions.

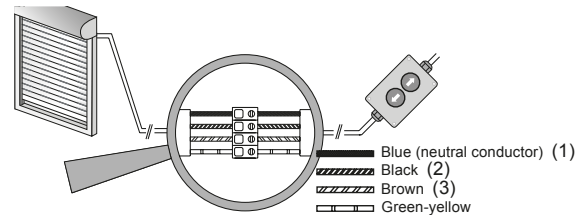


Fig. 6 Connection for cable assembly

Program end positions manually	
1	Press the [UP ▲] button. Move to the upper stop.
The drive switches off when reaching the end stop automatically.	
2	Press the [DOWN ▼] button till the shutter is shut down up to 30 cm.
3	Repeat 2 more times, start of the upper stop (as described in (1)).
4	Press the [DOWN ▼] button. Proceed to the lower stop.
The drive switches off when reaching the end stop automatically.	
5	Press the [UP ▲] button until the roller shutter is ascended about 30 cm.
6	Repeat 2 more times, start of the lower stop (as described in (4)).
The programming of the end positions is completed.	

After successful drive assembly the drive must be driven altogether 3 times into the upper end position and 3 times into the lower end position. The drive must stop automatically.

5.5.3 Changing / deleting the limit positions and deleting the discharge function

A change or deletion of a single end position is not possible. This is always done in pairs (upper and lower end position simultaneously).

By the deletion of the end positions and the adjustment of the optional discharge function is lost.

Changing / Deleting the end positions	
1	Connect the drive to the cable assembly and switch on the power supply.
2	Adjust the shutter with the cable assembly in a central position.
3	Simultaneously press both the [UP ▲] and the [DOWN ▼] buttons at the installation cables.
The drive runs up and down briefly.	
The deletion of the setting of end position is completed. The end positions can be programmed again.	

Changing / deleting the limit positions Method 2 only for types RolTop/D+ M	
1	Move the blind with built-in drive to a centre position. Move both direction buttons to the OFF position and wait 3 seconds.
2	Press the [UP ▲] button 5 times in quick succession; wait for the blind to move briefly in between.
3	Press the [DOWN ▼] button 5 times in quick succession; wait for the blind to move briefly in between. Press and hold for at least 1 second on the fifth time and there is no reaction.
The deletion of the end position setting is complete. The end positions can be programmed again.	

5.6 Specifications

A summary of the main technical parameters, see the separate overview "Technical Specifications".

6 Troubleshooting

Problem / Error	Possible cause	Cure Remedy
• Drive does not learn any end positions	• Drive has already been programmed to end position	• Move shutter to the central position, bring the drive to end position deletion in the delivery status
• Drive stops after a short ride	• Sluggish shutter • Undersized drive	• Check for ease of hanging or selection of the drive
• Drive not responding	• No mains voltage • Thermostat has tripped	• Check mains voltage • Allow drive to cool
• Drive starts only in one direction	• Connection error	• Check connection
• Drive does not stop due to obstacle	• Drive has not saved any cut-off values	• Drive must be moved from end stop to end stop at least 2 times without stopping

Fig. 7 Error search at the RolTop/D+ M

7 Repair

The RolTop/D+ M is maintenance free.

8 Repair

If you have any questions, please refer to your specialised company. Please always state the following information:

- Item number and item designation on the nameplate
- Error type
- Previous and unusual events
- Surrounding circumstances
- Own assumption

9 Service/manufacturer's address

After installing the drive, the R+S mechatronics technician (roller shutter and sun protection mechatronics technician) must note the installed type of drive and the installation location in the installation and operating instructions.

Drive designation	Installation location (e.g. living room window 2)

If malfunctions occur despite proper handling or if the unit has been damaged, contact your contract partner.

elero GmbH Antriebstechnik Maybachstr. 30 73278 Schlierbach Deutschland / Germany	Phone: +49 7021 9539-0 Fax: +49 7021 9539-212 info.elero@niceforyou.com www.elero.com
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Should you require a point of contact for outside of Germany, please visit our website.

10 Disposal / scrapping

Dispose of the packaging according to current regulations.

Dispose the product after previous use in accordance with applicable regulations.

Scrapping

During the scrapping of the product, the international, national and regional-specific laws and regulations are to be complied with.



Please make sure to consider material recyclability, ease of dismantling, and separability of materials and components as well as environmental and health hazards during recycling and disposal.

Groups of materials such as plastics and metals of various kinds are sorted for recycling and disposal process.

Dispose electrical and electronic components

Disposal and recycling of electric and electronic components must comply with the applicable national laws and regulations.




11 EC Declaration of Conformity

elero GmbH hereby declares that this product corresponds to the applicable directives. The complete declaration of conformity can be found under www.elero.com/downloads-service/

12 Technical data and dimensions

The technical data specified is subject to tolerance factors (according to applicable standards) and refer to an ambient temperature of 20 °C.

12.1 RoITop/D+

Type	/D+ S5	/D+ S8	/D+ S12	/D+ M6	/D+ M10	/D+ M20	/D+ M30
Rated torque [Nm]	5	8	12	6	10	20	30
Rated speed [1/min]	17	17	17	14	14	14	14
Rated voltage [V]	1 ~ 230	1 ~ 230	1 ~ 230	1 ~ 230	230 - 240	1 ~ 230	1 ~ 230
Rated frequency [Hz]	50	50	50	50	50	50	50
Noiseless soft brake	■	■	-	■	■	■	-
Rated current [A]	0.55	0.55	0.73	0.52	0.60	0.90	0.90
Rated power consumption [W]	130	130	168	118	140	200	200
Shaft diameter [mm]	38	38	38	50	50	50	50
Degree of protection (IP-Code)	44	44	44	44	44	44	44
Limit switch range (revolutions)	40	40	40	40	40	40	40
Operating time (min S2)	5	4	4	4	5	4	4
Length C [mm]	534	534	534	446	466	526	516
Length D [mm]	517	517	517	429	449	509	499
Length E [mm] (elero head, round head, star head)	- 12 -	- 12 -	- 12 -	- 14 19	- 14 19	- 14 19	- 14 19
Weight [kg]	1,3	1,3	1,3	1,6	1,9	1,9	1,9
Ambient operating temperature [°C]	-20 to 60	-20 to 60	-20 to 60	-20 to 60	-20 to 60	-20 to 60	-20 to 60
Protection class I 	■	■	■	■	■	■	■
Conformity  	■, ■	■, ■	■, ■	■, ■	■, ■	■, ■	■, ■
Plug-in connecting cable [m]	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Article-no. (elero head SH star head)	30 237.0001	30 257.0001	30 817.0001	34 013.0002 39 013.0002	34 023.0002 39 023.0002	34 033.0002 39 033.0002	34 043.0002 39 043.0002

