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VariEco

Drive for roller shutters
and textile sun protection

1 Operating and installation instructions

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.

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 electrically powering roller shutters and textile sun protection.

The determining factor for the drive is the elero drive computation program (`http://elero.de/antriebsberechnung`).

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 authorized or trained 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

The general safety notes when using pipe drives can be found in the leaflet "Instructions on safety" that is enclosed with each drive"(leaflet item no. 138200001). 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.
	Danger of crushing and striking dead of persons: This symbol indicates dangers where the entire body or individual body parts can be crushed or injured.

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.
		Symbol for earthing in protection class I (protective ground system)

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.

4 Product description

The VariEco is an electromechanical tubular motor drive. It performs parallel axial movements.

❑ Commissioning of the VariEco with **elero** installation cable for comfortable setting.

5 Assembly

Observe the usual obligation to exercise care with technical products to minimise other risks.

⚠ WARNING

Danger of injury from incorrect assembly

Important safety instructions.

► Observe all assembly instructions, since incorrect assembly may cause severe injury.

⚠ 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).

► Activation duration and standby times of the drives must be observed.

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 safe operation, the end positions must be set / programmed.

► Training program of the manufacturer for specialist companies.

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 VariEco 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 VariEco from the original packaging.

► The drive must be installed in a position in which it is not sprinkled.

Damage to the application from incorrect assembly.

► Observe the notes in the documents of the manufacturers of applications and the accessories used.

Important

For best interaction of drive and application, the end positions must be set at the drive after installation of the VariEco.

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 make any necessary changes right away.

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 connection lines (at least 50 mm).

► Lay the connection line 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!

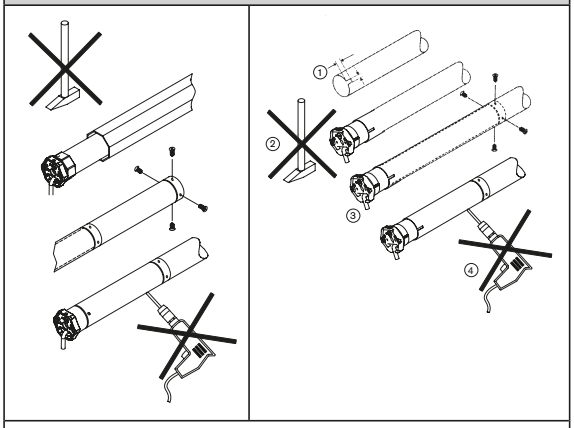
Damage or destruction of the drive by drilling.

► Never drill into the drive!

Damage or destruction of the drive by setting the end position to the mechanical stop.

► It is not permitted to adjust the end position to a mechanical stop.

Installation in profile tubes / installation in round tubes	
1	Insert drive with matching adapter and limit switch tappet ring in the profile pipe.
1a	Only when installing in the round tube: On round tubes, cut a slot in the end of the tubes on the drive side (width 4 mm, length 16 mm)!
1b	Push the drive into the round tube and place it so that the tappet wedge (the inner groove) fits into the intended cut-out.
2	Secure the counterpart support to prevent axial movement, e.g. screw or rivet on the idler.
3	Screw in the coupling (adapter) or rivet it (for round tube only). Secure the drive in the motor-bearing against axial movement,
4	Attach the roller shutter to the shaft. If the application can only be attached to a twisted winding shaft, switch on the drive in direction downwards until the drive switches off at the bottom end point (lower end of the running path reached).
The drive is connected to the profile tube/round tube.	

Installation in profile tube/round tube

The drive is connected to the profile tube/round tube.

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.

NOTES

Damage to the VariEco by faulty electrical connection.

► Before commissioning check the correct connection of the PE conductor.

Damage or destruction of VariEco 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 VariEco 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 VariEco, but away from any moving parts and amounting to about 1.5 m.

► The motor control must be interlocked in UP/DOWN direction. A reversing delay of 0.5 seconds must be ensured.

► Parallel switching of several VariEco drives is only possible with separating relay.

Damage to the application from incorrect running direction

► The assignment of the running direction UP/DOWN must be reviewed after the electrical connection has been established.

Adjustment of the end position at the drive.

► Any adjustment of the end positions that occurs indicates an electrical connection error. Readjustment of the end positions is not sufficient in this case, since the end positions are adjusted often. In this case, the drive needs to be replaced and the cause removed.

Important

Permanently installed control devices shall be clearly displayed.

Important

If the VariEco is used in locations that are not "dry rooms" (e.g. in the outdoor area, in wet rooms or if it is excluded that the roller shutter boxes are reliably protected from moisture by their construction or by roof protrusions and similar things), the drive must be installed with connection lines suitable for the installation situation or the connection lines must be protected by conduits. This also applies to protection from direct solar irradiation.

All applicable standards and provisions must be observed for the electrical installation.

When connecting the drive to a control, the operating instructions of the control must be observed.

► Only perform connecting work with the power turned off.

5.3 Connection example VariEco 230 V / 50 Hz

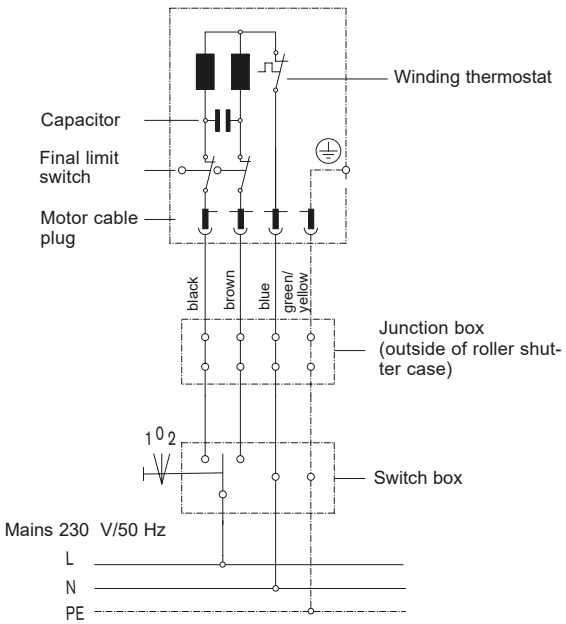


Fig. 4 Circuit diagram VariEco with 230 V / 50 Hz

5.4 Commissioning

WARNING

Danger of injury from powered parts moving faster than 150 mm/s (application) at VariEco S1,5/70 speed 70 (1/min).

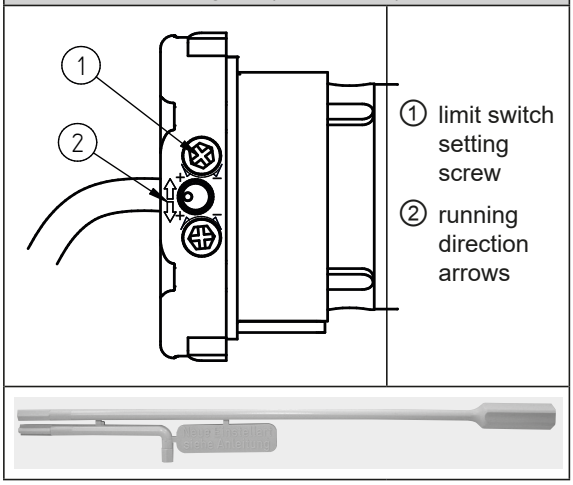
Crushing and striking dead of persons possible.

Standard DIN EN 60335-2-103, part 20.108, is the basis for impact on an obstacle. It is recommended to limit the forces by using a catching protection system with sensors or by switches with off-presettings.

- ► The speed of the driven part must be determined by the operator depending on the diameter of the winding shaft .
- ► Always observed the product and safety documentation of the application supplier.

5.5 Setting the end positions

Limit switch: Setting screws
Actuate with setting aid (131163801)



To actuate the limit switch setting screws, use the setting aid or a Phillips-tip or hexagon socket tool, but never a power screwdriver.

- ► 6 turns of one of the two limit switch settings crews "UP" and "DOWN" cause 1 turn of the winding shaft (motor shaft).
- ► The maximum limit switch range between the upper and lower end positions is 32 turns of the motor shaft.
- ► The assignment of the upper or lower limit switch setting screw to the upper or lower end position results from the respective installation situation (right-hand or left-hand installation) with the corresponding assignment of the electrical connections for the running direction.
- ► Turn one limit switch setting screw from - (minus) to + (plus) to increase the running path of the application.
- ► Turn one limit switch setting screw from + (plus) to - (minus) to reduce the running path of the application.

Setting the upper end position (general setting and fine adjustment)	
1	Switch on the drive in direction downwards until the drive switches off at the bottom end point (lower end of the running path reached)..
2	Attach the application to the winding shaft.
3	Let the drive run up by pushing the UP button until it switches off at the upper end point (for small windows, stop first by pushing the switch if necessary.
4	Turn the limit switch setting screw "Top" in the + (plus) direction or - (minus) direction until you have reached the final end position.
5	Adjust the upper end position setting with enough play.
6	Perform a test run and repeat fine adjustment if necessary.
The upper end position has been set.	

Setting the lower end position (general setting and fine adjustment)	
1	Switch on the drive in direction downwards until the drive switches off at the bottom end point (lower end of the running path reached)..
2	Turn the limit switch setting screw "Bottom" in the + (plus) direction or - (minus) direction until you have reached the final end position.
3	Perform a test run and repeat fine adjustment if necessary.
The lower end position has been set.	

5.6 Checking the end positions

Allow the drive to run alternately in both directions until the limit switch switches off.

The electrical deactivation at the top and bottom must be reached before the end position of the mechanical running path of the application has been reached.

Persistent running "against block" comes with the danger of damage or destruction of the drive and/or application.

A change to a top or bottom end position is possible at any time with the limit switch setting screws.

6 Troubleshooting

Problem / Error	Possible cause	Cure Remedy
• The drive does not switch off via the limit switch • Drive not responding	• Limit switch ring is not being driven • Limit switch is not adjusted	• Lock limit switch ring
• Drive not responding	• Wrong connection • The thermostat has triggered	• Readjust connection • Allow drive to cool down (minimum 15 minutes)

7 Maintenance

The VariEco 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 Manufacturer's address

elero GmbH Antriebstechnik Maybachstr. 30 73278 Schlierbach Deutschland / Germany	 Phone: +49 7021 9539-0 Fax: +49 7021 9539-212 info@elero.de www.elero.com

Please visit our website if you require a contact outside Germany.

10 Disassembly and disposal

Dispose of the packaging according to current regulations.

Dispose the product after previous use in accordance with applicable regulations. Disposal is partially subject to statutory provisions. The goods to be disposed of must only be delivered to authorised acceptance points.

Environmental information

No unnecessary packaging was used. The packaging can be easily divided into three material types: Cardboard (box), Styrofoam (padding) and polyethylene (bag, foam material protective foil).

The device is made up of materials that can be reused if it is disassembled by a specialist operation. Please observe the local provisions on disposal of packaging material and old devices.

Always expect additional danger that does not occur in operation during disassembly.

WARNING

Danger of injury due to electric current.

Electric shock possible.

- ► Physically disconnect power supply lines and discharge energy storage. Wait for at least 5 minutes after deactivation for the motor to cool down and the capacitors to lose their voltage.
- ► Use suitable, tested and stable climbing aids when performing disassembly work above body height.
- ► All work at the electrical system must only be performed by the staff described in the chapter "Safety instructions for electrical installation".

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.

CAUTION

Environmental damage at incorrect disposal

- ► Electronic scrap and electronic components are subject to the hazardous waste rules and must only be disposed of by approved specialist operation.
- ► 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 Notes on the EU declaration of conformity

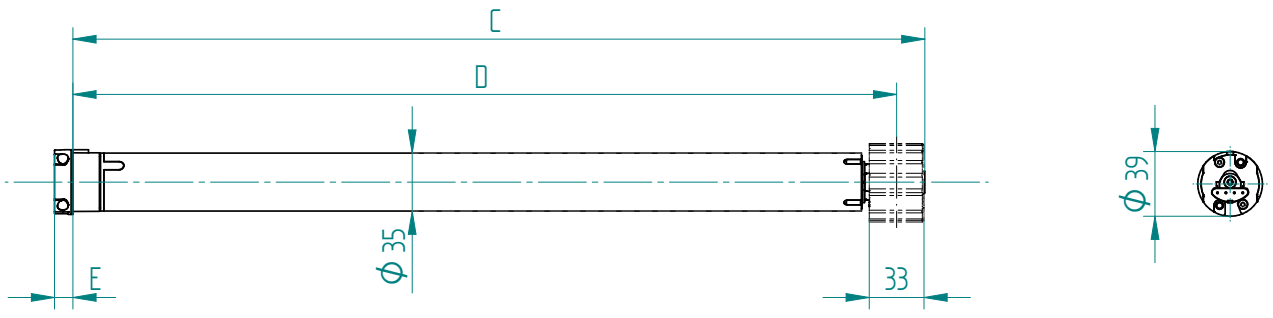
elero GmbH hereby declares that the pipe drive VariEco complies with the basic prerequisites and the other relevant provisions of the EU directives. The complete declaration of conformity can be found in the download area of our website *www.elero.com/en/downloads-service/*

12 Technical data and dimensions

The indicated technical data are subject to tolerances (according to the respective applicable standards).

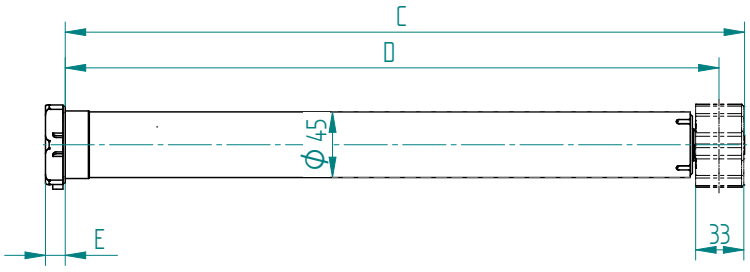
12.1 VariEco S

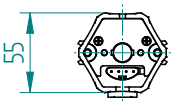
Type	VariEco S1,5/70	VariEco S3/30	VariEco S5/30	VariEco S5/30-FL	VariEco S8	VariEco S12-FL
Roller shutter	-	■	■	■	■	■
Textile sun protection	■	■	■	■	■	■
Noiseless soft brake	■	■	■	-	■	-
Rated voltage [V]	1 ~ 230	1 ~ 230	1 ~ 230	1 ~ 230	1 ~ 230	1 ~ 230
Rated frequency [Hz]	50	50	50	50	50	50
Rated torque [Nm]	1,5	3	3	5	8	12
Rated speed [1/min]	70	30	30	30	17	30
Rated current [A]	0,55	0,55	0,73	0,60	0,73	0,73
Rated power consumption [W]	130	130	168	140	168	168
Shaft diameter [mm]	38	38	38	38	38	38
Limit switch range (revolutions)	42	42	42	42	42	42
Ingress protection (IP-Code)	44	44	44	44	44	44
Insulation class	H	H	H	H	H	H
Operation duration (min S2)	5	5	4	4	4	4
Length C [mm]	534	534	534	514	534	534
Length D [mm]	517	517	517	497	517	517
Length E [mm]	11	11	11	11	11	11
Weight [kg]	1,3	1,3	1,2	1,2	1,2	1,4
Thermal operating condition [°C]	-20 ... 60	-20 ... 60	-20 ... 60	-20 ... 60	-20 ... 60	-20 ... 60
Protection class I	■	■	■	■	■	■
Conformity	■ | ■	■ | ■	■ | ■	■ | ■	■ | ■	■ | ■
Item Number	30 921.0101	30 911.0101	30 931.0101	30 843.0101	30 953.0101	30 863.0101



12.2 VariEco M

Type	VariEco M7/23	VariEco M10	VariEco M12/23	VariEco M20	VariEco M30	VariEco M40	VariEco M50
Roller shutter	■	■	■	■	■	■	■
Textile sun protection	■	■	■	■	■	■	■
Noiseless soft brake	■	■-	■	■	-	-	-
Rated voltage [V]	1 ~ 230	1 ~ 230	1 ~ 230	1 ~ 230	1 ~ 230	1 ~ 230	1 ~ 230
Rated frequency [Hz]	50	50	50	50	50	50	50
Rated torque [Nm]	7	10	12	20	30	40	50
Rated speed [1/min]	23	14	23	14	14	14	14
Rated current [A]	0,60	0,60	0,90	0,90	0,90	1,20	1,30
Rated power consumption [W]	140	140	200	200	200	270	300
Shaft diameter [mm]	50	50	50	50	50	50	50
Limit switch range (revolutions)	35	35	35	35	35	35	35
Ingress protection (IP-Code)	44	44	44	44	44	44	44
Operation duration (min S2)	5	5	5	4	5	5	4
Length C [mm]	537	477	537	537	527	557	557
Length D [mm]	520	460	520	520	510	540	540
Length E [mm]	14	14	14	14	14	14	14
Weight [kg]	1,9	1,9	1,9	1,9	2,3	2,6	2,6
Thermal operating condition [°C]	-20 ... 60	-20 ... 60	-20 ... 60	-20 ... 60	-20 ... 60	-20 ... 60	-20 ... 60
Protection class I	■	■	■	■	■	■	■
Conformity	■ | ■	■ | ■	■ | ■	■ | ■	■ | ■	■ | ■	■ | ■
Item number	349250101	349210101	349350101	349310101	349430101	349510101	349610101





12.3 VariEco L

Type	VariEco L40	VariEco L60	VariEco L80
Roller shutter	■	■	■
Textile sun protection	■	■	■
Noiseless soft brake	-	-	-
Rated voltage [V]	1 ~ 230	1 ~ 230	1 ~ 230
Rated frequency [Hz]	50	50	50
Rated torque [Nm]	40	60	80
Rated speed [1/min]	14	14	14
Rated current [A]	1,20	1,65	2,20
Rated power consumption [W]	280	380	490
Shaft diameter [mm]	63	63	63
Limit switch range (revolutions)	35	35	35
Ingress protection (IP-Code)	44	44	44
Operation duration (min S2)	4	4	4
Length C [mm]	527	586	586
Length D [mm]	510	569	569
Length E [mm]	14	14	14
Weight [kg]	3,3	3,4	3,4
Thermal operating condition [°C]	-20 ... 60	-20 ... 60	-20 ... 60
Protection class I	■	■	■
Item number	36 921.0101	36 931.0101	36 941.0101