Colt Group

Installation, Operation and Maintenance Manual
1091 - Coltlite CL louvred window
2021 - 01
English

1 About this manual

Please take time to read this instruction manual thoroughly before using the product. Thank you.

This document forms an integral part of the product and needs to be retained for use at a later time. Its contents are important for anyone who uses, operates or maintains an Coltlite ventilator and a copy of it needs to be kept near to the control box.

1.1 Associated documents

The following documents also contain important information. If you don't have them, you can obtain them from your local Colt office:

- Spare Parts List
- Guide to the controls for the complete Colt Installation.

1.2 Explanation of safety symbols

This instruction manual contains important safety symbols. It is necessary to take of note of any safety notices in order to avoid damage to equipment and also to ensure that the Colt guarantee is maintained. In extreme situations non-observance of safety instructions can lead to injury and even death.

Symbols used in this manual:

⚠ **DANGER**	**indicates a hazardous situation which, if not avoided, will result in death or serious injury.**
⚠ **WARNING**	**indicates a hazardous situation which, if not avoided, could result in death or serious injury.**
⚠ **CAUTION**	**indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.**
NOTE	**Indicates a situation may arise where there may be property damage, or gives practical tips for installation, operation and maintenance.**

2 Using the Coltlite

2.1 How it works

A Coltlite natural ventilator is designed to provide inlet and extract ventilation. It can be installed either into glazed façades, or as a standard normal window into prepared openings. There are many different variants of glass louvre and frame. Coltlite is designed for vertical applications only.

Coltlite ventilators have centrally pivoting louvres. A Coltlite has centrally mounted, horizontally rotating louvres which are operated either by hand or motor. Levers located within the frame make the louvres move in a synchronous manner. The maximum opening angle of the louvres depends on which type of opening mechanism has been selected.

2.2 Acceptable applications

Coltlite louvred windows are principally used for smoke ventilation, air inlet and extract in the vertical position.

2.3 Improper use

Coltlite need to be used in accordance with their design purpose. In particular such ventilators are

- Not suitable for hanging objects off
- Not suitable for use as a ladder
- Not suitable for supporting a body's weight
- Not suitable for use in places where there is likely to be an explosion.
- Not suitable for use in extreme conditions (for instance where there is high condensation, very high temperature or corrosive substances within the air stream)
- Not suitable for use as a fall protection in railing areas

2.4 Operation

2.4.1 Conditions to ensure that the ventilator has a long life

The ventilator must be regularly cleaned and maintained in order to preserve a long life. Before commissioning check the correct installation of the louvre window. The main points are as follows:

- Check the louvres for damage in installation.
- Check that the unit is set at right angles (by measuring the diagonal dimension).
- Check that the unit is built in parallel to the opening.
  Check the measurements below, above and in the middle (tolerances +/- 1mm)
  Check the dimensions right, left and in the middle (tolerances +/- 1mm).
  Check the distance between the frames and the louvres.
  (This should be between 1.5 and 2.5mm parallel over the complete height of the unit.)
- Check the smooth running of the louvre window (do not disconnect the electric actuators).
- Check that the louvres operate simultaneously and close in an orderly fashion.
- Check that there are no obstacles in the way of the louvres.
- Maintain according to specification.

2.4.2 Notes for operation

Danger of finger trapping

When units automatically open or close, please note that pressure can reach up to 1500 Newtons for each actuator. This amount of pressure can cause injury if a finger gets trapped between two louvres or between a louvre and the frame.

Coltlite ventilators have centrally pivoting louvres. A Coltlite has centrally mounted, horizontally rotating louvres which are operated either by hand or motor. It is necessary to follow these points:

- Only allow authorised, trained people to operate Coltlite units.
- Ensure that a quarter-rotational movement is possible around the central axis of the louvres. All debris should be removed from the opening area of the louvres.
- The louvres should not be used to hang objects off. Do not use them as a ladder or to support a body's weight.
- If the glass is broken then the unit should not be used any more. Splinters must be removed carefully. Prepare yourself for potential risks and to be able to take necessary measures if there is an untoward event. Consult with a specialist contractor as soon as possible.
- The units should not be permanently cycled in case the motors be overloaded.
- Manual controls should only be used in the turning area which they have been designed for. Where there is any unusual resistance do not operate the unit and investigate the fault

NOTE	▸ The Coltlite louvres may only be moved with the drive installed (motor, pneumatic cylinder or lever). ▸ If the louvres are opened or closed manually, this may damage or destroy the components of the unit. ▸ Do not apply any external pressure onto the louvres.

3 Essential safety information

It is essential to take note of these basic warning signs. There are additional warnings given within other pages of this manual.

⚠ WARNING	**Injury as a result of the height of the installed ventilators** ▸ Persons working on the ventilator at height need to avoid the possibility of tools or building components dropping. If this is not observed, there can be fatal consequences. Those working at height should always observe all applicable health and safety regulations. Those who are installing or working on a Coltlite need to be qualified and trained suitably.
⚠ WARNING	**Risks related to unsuitable positioning of the ventilator** ▸ The wall needs to be prepared to bear the weight of a Coltlite ventilator, to avoid the possibility of the wall collapsing. If this is not observed, there can be fatal consequences. Prior to installation it is necessary to check that the wall is suitable to support the Coltlite unit. ▸ A Coltlite is designed to provide inlet and extract ventilation. Polluted air or exhaust gas can harm people within the building.
⚠ WARNING	**Risk of smoke entering the building** ▸ If the unit is not appropriately installed or commissioned, it is possible that the unit will not function as a smoke ventilator in the case of fire. ▸ This can lead to damage, injury or death. ▸ Smoke and heat ventilators need to be installed by trained personnel and also commissioned appropriately. If there are any functional errors, appropriate measures need to be taken to remedy them. Coltlite must be regularly inspected, maintained and if necessary, repaired.
⚠ WARNING	**Risk of electric shock or destruction of the drive due to moisture** ▸ The electric actuators must be protected from humidity during transport, storage, installation and operation.
⚠ CAUTION	**Unexpected opening or closing louvres** ▸ It is possible to trap a part of the body between the louvres if they opened or close unexpectedly whilst working on the ventilator. ▸ When working on a Coltlite it is necessary to ensure that the control system cannot be accessed and the ventilator cannot be opened or closed in an unexpected manner. It is also important to keep in mind that the smoke exhaust and ventilation function can open the NSHEV unexpectedly. Those who are installing or working on a Coltlite need to be qualified and trained suitably.

⚠ CAUTION	**Damage as a result of rain ingress through open louvres or damaged seals**
	▸ If a unit is left open when it rains or if seals are damaged, water can enter the building, Water can result in damage to property or injury to persons. ▸ Water is drained off the louvres when they close. However damaged seals or louvres need to be replaced in a timely fashion.

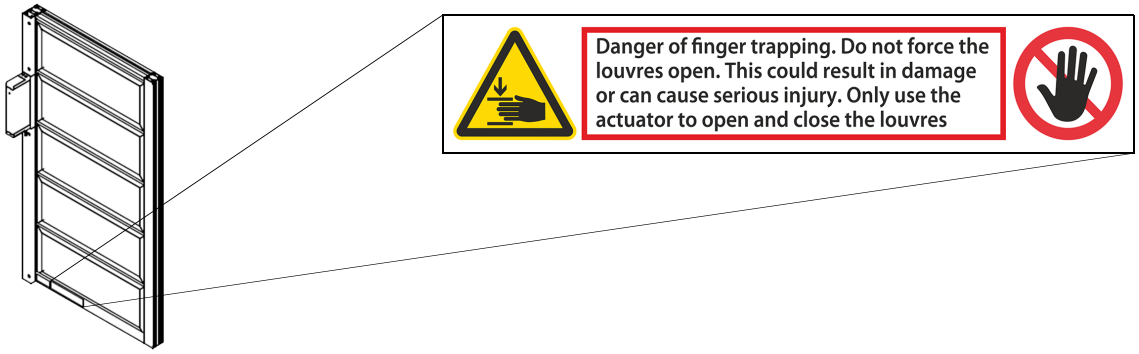
⚠ CAUTION	**Danger as a result of its high weight**
	▸ The accompanying documents show the unit weight. ▸ The unit's weight can lead to injury or damage if the unit is not correctly handled. ▸ If the unit is moved manually, sufficient numbers of people must be available. There is Health and Safety guidance which provides information on the correct handling, lifting and carrying of heavy weights.

Please note additional safety warnings within the following chapters of this manual.

4 Safety identification marks for the Coltlite louvred window

Take care to observe the warning labels attached to each of the ventilator.

The safety sticker is attached to the bottom of each unit.



5 Delivery

Included in the delivery is:

- A completely pre-assembled Coltlite
- Control panel (only when ordered)

Please make sure that the delivery is complete when unloading these components. Please report any damages or shortages within 2 working days.

6 Unit components

Louvred windows

Coltlite louvred windows comprise the following components:

- **Frame:** extruded aluminium profile as standard.
  - Non-thermally broken version:
  - Thermally broken version
- **Louvres:** make use of a surrounding aluminium profile. with the following infill materials:
  Coltlite CLT / CLN

  - Insulated glass 2- or 3-layer. thickness: 28mm
  - Composite panel, thickness: 28 mm

  Coltlite CLST

  - thermally broken profiles (thermal breaks only visible from the inside) with insulated double glazing

  Coltlite CLS and CLS45

  - Single glazing. thickness: 8mm, 10mm, 12mm

  Coltlite CLET

  - Louvres consisting of thermally broken aluminium profiles, 240 mm high

Controls: one or two actuators, designed in accordance with requirements.

- Manual operation using lever or worm gear
- Double action pneumatic cylinder
- 24 V electric motor
- 230 V electric motor

Control panel

The optional control panel is supplied separately. A description of how to use this control box is provided separately and these instructions are supplied with the control box.

Notes

The given values such as noise reduction (R_W-value), insulation (U value) or overall energy transmission (g-value) are generally based on either measured or test values which have been carried out in accordance with the respective norm.

This does also relate to markings applied to the product.

For varying sizes and combinations the values may change!

- The glass strength offered by the factory may only be considered as a recommendation. We cannot carry out project-specific engineering calculations relating to glass.
- The person ordering the material has to check if the inner glazing is to be implemented as laminated or float glass
- As is well known, float glass tends to break spontaneously if there are any nickel sulphide residues in it. So even with the most modern tests it is not possible to be 100% confident about the glass panes. There always remains an unavoidable residual risk.
- Condensation or ice on the glass surface facing the weather can temporarily form on insulating glass with very high thermal insulation under certain weather conditions,. This is a result of physical matters and represents no reason for complaint.

7 Technical data

A Coltlite is supplied with either pneumatic or electrical controls depending on the customer's requirements.

Energy supply for ventilators with pneumatic controls

- Day-to-day ventilation

Pneumatic connection:	6.0 to 10.0 bar
maximum operation pressure	60bar
Cylinder diameter:	32 mm
Stroke:	38 mm
Force at 6 bar:	480 N

- Smoke control ventilation

Primary source of energy:	Thermal release with CO_2 bottle
Volume of CO2:	Designed in accordance with the customer's requirements.
Reliability (RE):	1000

Secondary source of energy external minimum 6.0 bar. Please check with Colt for further information on this.

Energy supply for ventilators with electrical controls

- **Primary source of energy**: 24 Volt DC — One or two actuators per ventilator, designed in accordance with the customer's requirements.
- **Primary source of energy**: 230 Volt AC — One or two actuators per ventilator, designed in accordance with the customer's requirements.

Performance classes

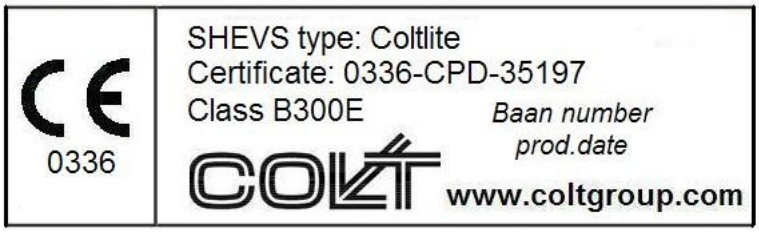
Wind load (WL Class):	Designed in accordance with the customer's requirements.
Endurance test	10.000 (operation cycles)
Dual purpose ventilator:	Certified for day to day ventilation
Operating temperature:	T(00) / T(-15)
Air permeability (EN 12207):	Designed in accordance with the customer's requirements.
Resistance to weather (EN 12208):	Designed in accordance with the customer's requirements.
Resistance to wind (EN 12210):	Designed in accordance with the customer's requirements.

Sound emissions

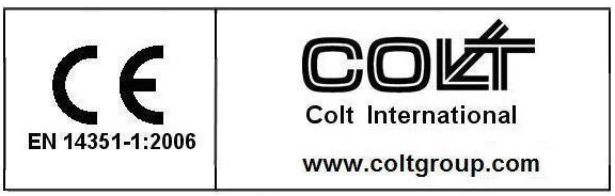
- In all operating modes the sound emission from the Coltlite unit as it opens or closes is less than 70dB(A).

PID label

- PID label for a smoke and heat ventilator (EN 12101-2)



- PID label for a day to day ventilation (EN 14351-1)



8 Transport and storage

Pay attention to all safety warnings.

On-site storage

A Coltlite must be stored in a clean, dry place and protected from possible mechanical damage. Please read this chapter carefully in advance and make the appropriate groups of people (fitters / construction manager) aware.

We point out that if these instructions are not heeded, Colt can accept no warranty claims.

8.1 Receipt of goods

8.1.1 Removal and interim storage

Coltlites are packed vertically in packing cases. They need to be off-loaded by suitable means, for instance, by using a forklift with sufficient support to match the weight of these units.

When a crane is to be used to unload Coltlite ventilators, it is necessary to make this clear on the order, so that an alternative kind of packaging is used.

The packing cases need to be brought down carefully to ground level. The boxes may not be stacked and have to be stored in a dry place! Where the packing cases are left on site there is the danger of condensate water entering the actuators. This has to be prevented by appropriate measures, because in otherwise the actuators can be damaged.

8.1.2 Damage in transit

The next step is to check for any damage. If there is any damage or loss this needs to be reported immediately to the transport company. If transported by train you also have to request a factual report from the railway company.

For damage that is observed only once the units have been unpacked:

1.) Keep the consignment as it was when it arrived.

2.) Inform Colt in writing preferably including photos about the reasons for the damage.

A damage note has to be written by Colt:

- When relating to a postal package within 24 hours.
- When delivered by road within 7 days.

Where the goods have been sent by post for which there is no clear reason for damage, the damage note is to be reported to the Post Office. The damaged goods are to be provided to the Post Office once a note of the damage has been made. The packaging material should be retained.

9 Installation

NOTE **Read through the following carefully and make it available for persons concerned (fixing team/construction supervisor).**

Liability

If these instructions are not followed, if the product is used outside of its intended use or is used improperly, the manufacturer will not provide any warranty for damage. Liability for damage to any component or injury to any person is excluded.

9.1 Before installation

Before any work is carried out, ensure that adequate access is available at the place of assembly. Take any appropriate safety precautions in accordance with local safety regulations. The location of the installation must be chosen so that there is sufficient space to inspect, maintain and repair the Coltlite ventilator.

Before installing a Coltlite ventilator, the designer needs to ensure that the cutting of a hole and the weight of the equipment does not unduly weaken the structure of the façade. Before beginning installation it is necessary to check the drawing and specifications to ensure that the nature and location of the installation are correct and conform to that drawing, including the layout of any power or air lines. Any variances need to be clarified with the customer before starting installation.

Always carry bigger ventilators (weight>50kg) with four persons. Check to ensure that all openings have been prepared in accordance with the assembly drawings so that they can accommodate the ventilators that have been ordered.

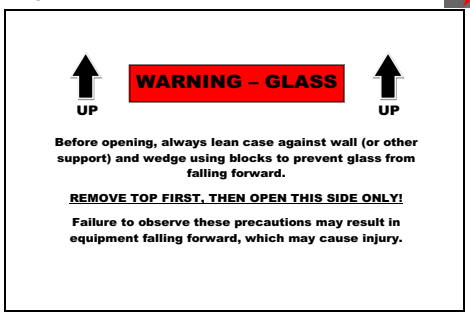
Only qualified personnel should install the units, since this is the best way to avoid damage caused by incorrect installation.

9.2 Installation

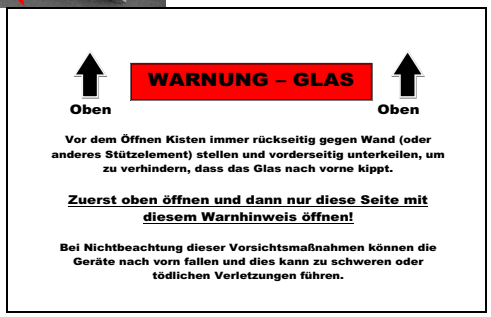
9.2.1 Unpacking

In order to unpack the ventilators in a safe way, it is necessary to place packing pieces underneath so that the packing case leans slightly backwards. The packing case can then be opened, but first check the label. The packaging materials can be disposed of in accordance with local regulations.

English version



German version.



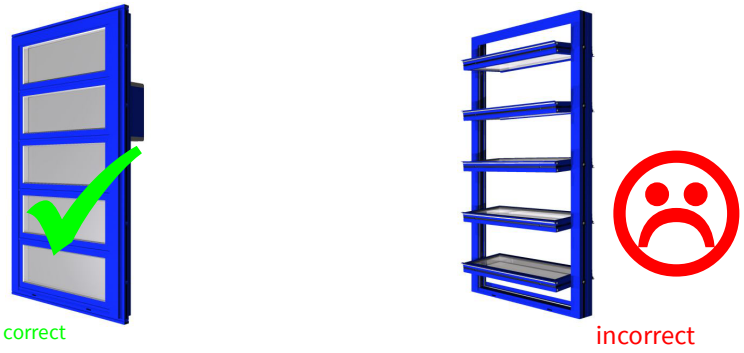
Always ensure that the equipment cannot fall over during storage, transport and installation. Failure to comply with this can result in serious injury or death.

9.2.2 Handling on site

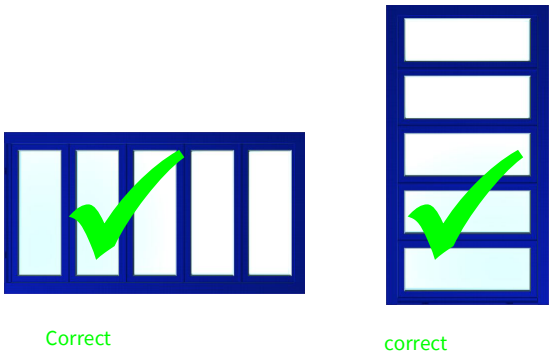
NOTE

- Ventilators should only be moved around on site if they are closed. The ventilators can be stored either on their ends or on their sides. Nothing should ever be done to disturb the right angle construction of the ventilator. Any force on it or else this could lead to mechanical failure or breakage of glass. The ventilators should never be placed on their corners or taken apart. Deflection, torsion or deformation of the louvred ventilator during transport or assembly can destroy the motor or the entire ventilator and must be avoided. Do not disassemble the Coltlite.

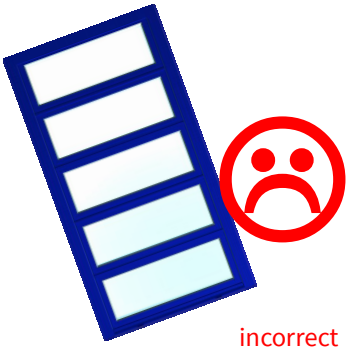
Transport the unit only if the louvres are closed.



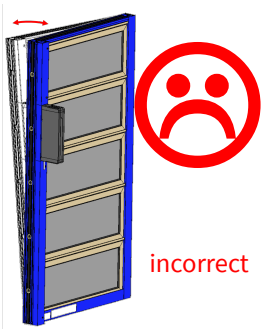
Only move Coltlites horizontally or vertically if the louvres have been closed.



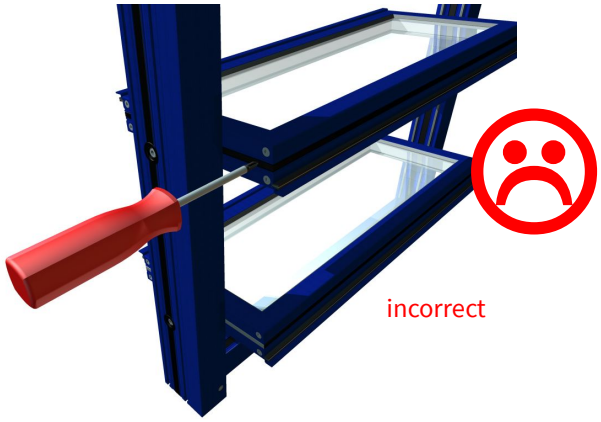
Do not move the ventilator onto its corners.



No twisting / torsion!



Do not disassemble a Coltlite.



9.3 Fixing the unit

Pay attention to all safety warnings.

Coltlite ventilators are supplied as completely assembled units. Once the sealant has been applied between the unit frame and the supporting framework, a Coltlite can be offered to and fixed into the framework.

9.3.1 Correct support

Before the ventilator is actually installed within the opening, it is necessary to check that it will fit into it, that is to say there is sufficient clearance around the ventilator.

So that the ventilator can function and keep weather out in a correct manner, the ventilator must be exactly aligned and wedged both horizontally and vertically. The ventilator needs to be exactly positioned and packing pieces set. These packing pieces have to be placed in the most important and correct places as shown in figures A and B. Packaging pieces need to be placed right underneath the vertical profiles and not in the middle in order to avoid these profiles bending, which could result in one of the louvres not being able to open. Figure C shows the necessary positioning of packing pieces for double units.

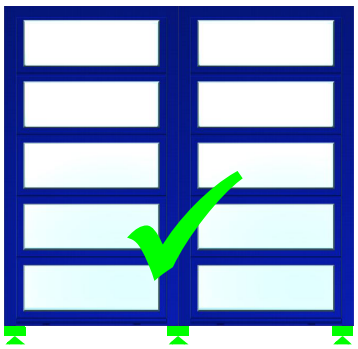
Figure A

correct

Figure B

incorrect

Figure C



correct

9.3.2 Aligning the Coltlite

The ventilator needs to be exactly vertical and horizontal with the vertical frames parallel to each other (Figure A). This is achieved by side mounted packing pieces. Once the unit has been fixed provisionally it is necessary to check that the angles and dimensions are correct.

Figure A

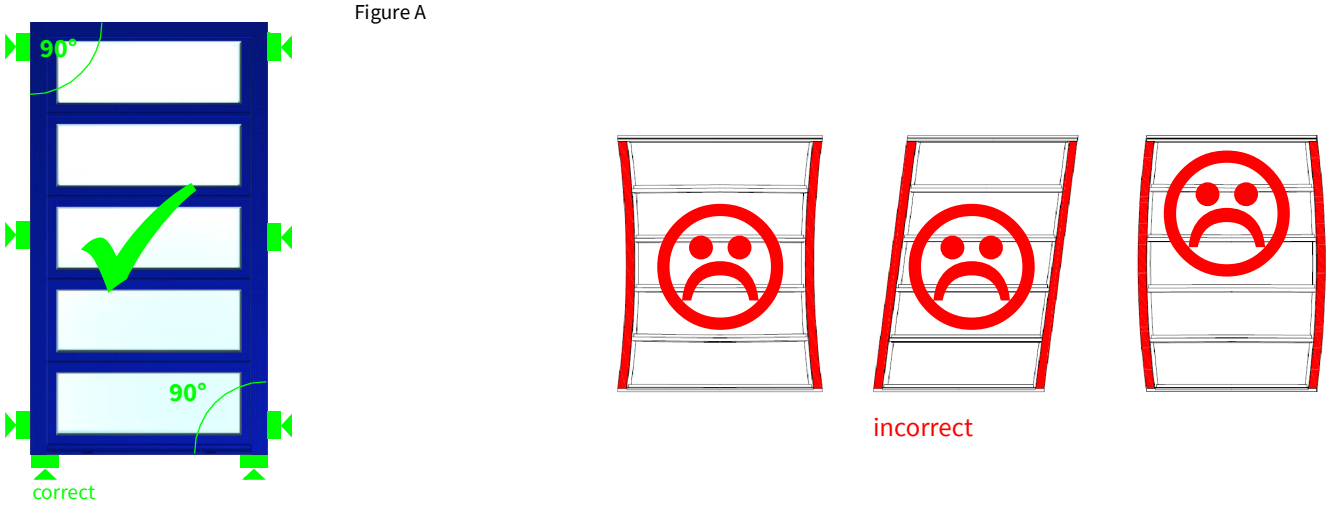
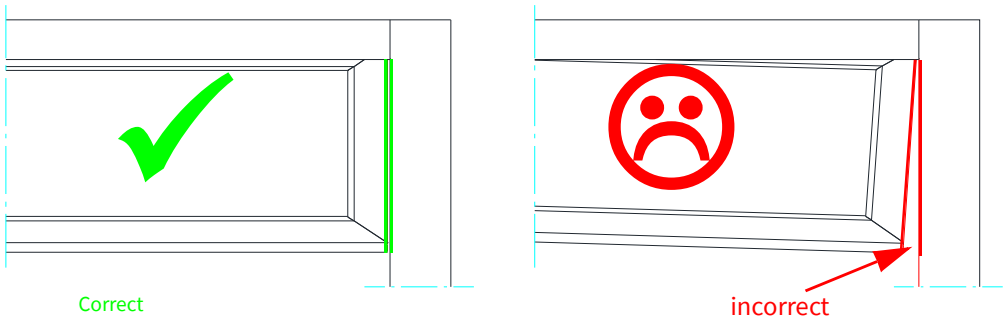


Figure B shows what impact an incorrect installation will have on the ability of the louvres to open. The individual louvres ought to be able to move about 1-2mm in the horizontal plane when open. Widths and heights need to be the same for every part of the unit.

Figure B



9.3.3 Fixing the unit

Fixing depends on the type of Coltlite CL.

	Type of Coltlite					
Type of fixing	**CLT**	**CLN**	**CLS**	**CLS45**	**CLST**	**CLET**
Fixing by screwing through frames	✓	✓	✓	✓	✓	✓
Fixing by using fixing brackets	✓	✓	✓	✓	✓	✓
Integrated adaptor profile - for installation into a curtain walling	✓	×	×	×	×	✓
Adaptor profile – for installation into curtain walling	×	✓	✓	✓	×	×
Fixing using a flange	×	×	×	×	×	✓
Special adaptor	✓	✓	✓	✓	✓	✓

Load transfer

The weight of a Coltlite CL is transferred through the load-bearing blocks during installation and usually only with non-split units (seechapter "9.3.1 Correct support").

The vertical frame profiles and vertically arranged fixings transfer all loads (e.g. wind loads and also dead weight).

The horizontal frame profiles do not transfer loads (once built-in). They allow an all-round and uninterrupted seal between the substructure and the frame profiles of the Coltlite CL.

9.3.3.1 Fixing by screwing through frames

No hammer plugs are allowed to be used.

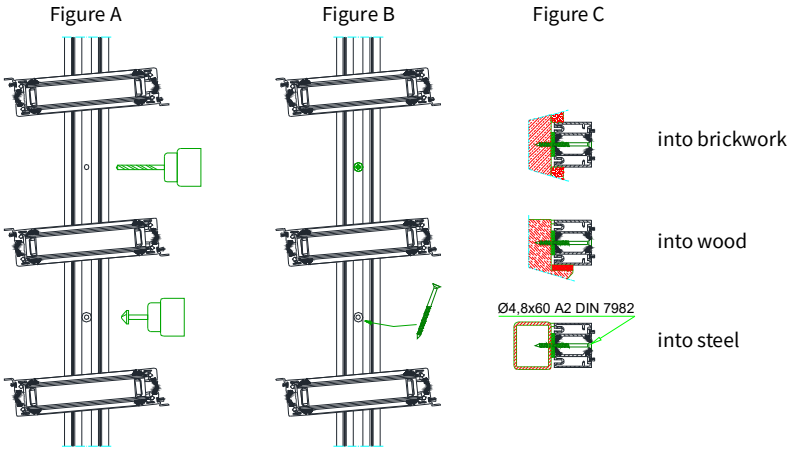
If hammer plugs or similar types of fixings are used, damage can arise.

Method of fixing:

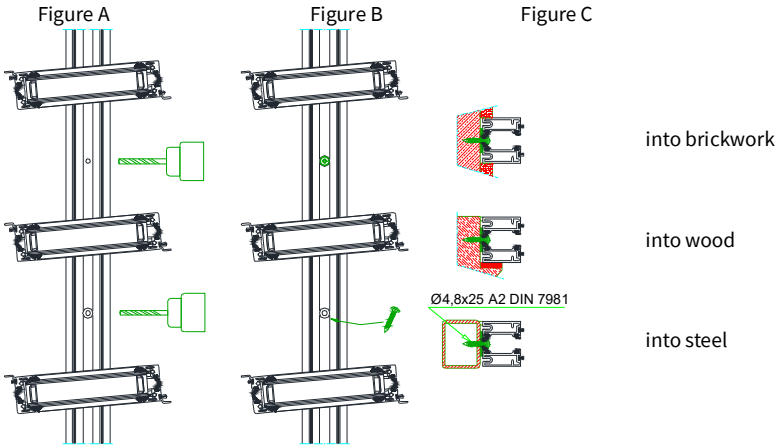
Start point: Bring the Coltlite to the opening with packing pieces fitted and secured it in a provisional position.

- Open the ventilator using the mechanisms (do not use your hands to apply pressure, otherwise this can lead to damage of the mechanisms) (Figure A).
- With CLT and CLST ventilators special care must be taken when fixing the frame because these screws are near to the plastic inserts. If pressure is to high the plastic inserts may break. The fixing centres for the fixings are at a maximum of 250mm.
- With Coltlite CLN, CLS and CLS45 units the maximum fixing centres are at 350mm.
- Bore the countersunk screws into the profile (Figure A).
- Drill through the ventilator frame (maximum drill size Ø 5mm), but be careful not to drill clear through the supporting construction (figure B).
- Use a Ø4.8mm countersunk screw to drill into the supporting structure (figure B). Where the unit is fitted into brickwork, the unit needs to be taken out once more in preparation for the fixings.
- Prepare the opening for the headed screws (diameter 4.8mm, figure B).
- Screw through with 4.8mm diameter stainless steel A2, Figure C but do not yet turn the screw.
- Tightly back-fill all the fixings between the louvred window and the wall (figure C) / This is necessary to prevent the frames coming apart.
- Screw the screws in.

Version with countersunk screws



Version with round head screws (not manufactured by Colt manufacturing)

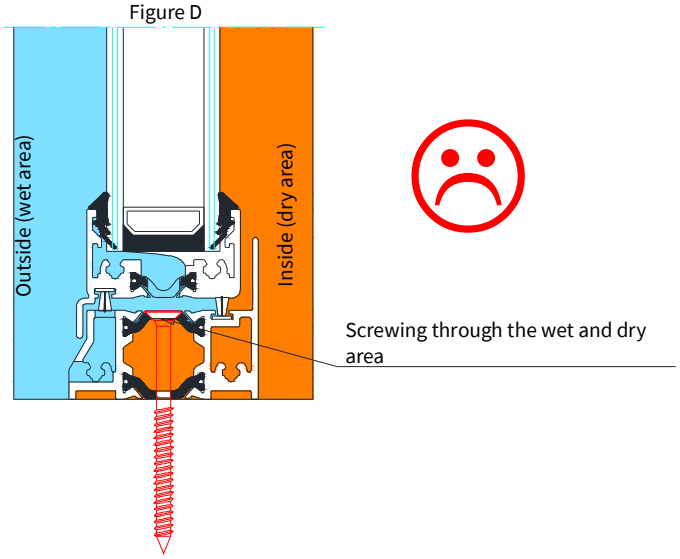


It is not recommended that you drill through the horizontal frame profile (Fig. D). This can lead to leakage as the drill passes through the wet and dry area.

Fig. D represents a typical cross-section of the lower frame profile showing the water-carrying area (marked in blue) and the dry area (marked in orange).

If necessary, a strap can be used instead of a screw (see chapter "9.3.3.2 Fixing by using fixing brackets").

Figure D



9.3.3.2 Fixing by using fixing brackets

This type of fixing is used when fixing to brickwork. Where not otherwise defined the plates need to have a dimension of 30 x 2 x 130mm with large holes for the fixings. The straps are arranged onto the vertical frame profiles at a distance of 40 - 70cm (depending on the wind load), and in the case of wider units (over 1m) a strap is placed on the horizontal frame profile (bottom and top) in addition. This strap serves only to stabilize the horizontal frame and is not used for the transfer of loads.

Preparations for fixing:

- Turn the fixing plates over through 90° to the inside and attach with two screws (Figure A). (Figure A)
- Have a plug ready (not included). Have the rawlplug ready. This type of fixing is not supplied by Colt and depends on the type of wall the ventilator is to be fixed to. The necessary distance from the edge depends on the type and size of the rawlplug.

Method of fixing:

Start point: Bring the Coltlite to the opening with packing pieces fitted and secured it in a provisional position.

- Drill a large hole through the bracket into the wall
- Anchor bolt installation in accordance with manufacturer's instructions
- Bring the plate to the screw-hole area, figure B, fix B and C.
- Tighten the screw.

Figure A

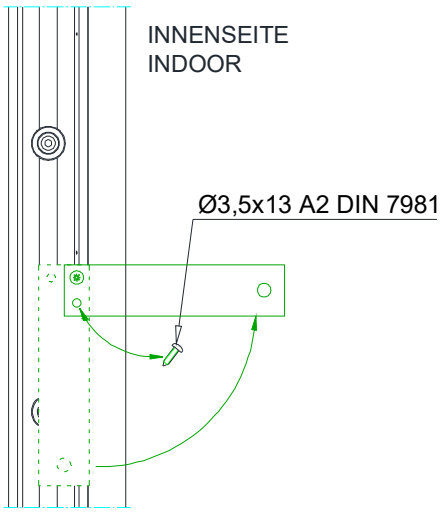


Figure B
(thermally broken frame)

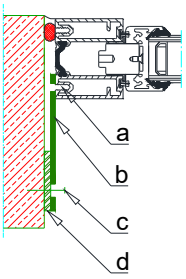
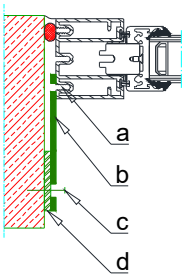


Figure C



Only for unit widths over 1m (or when needed)

Figure A_1

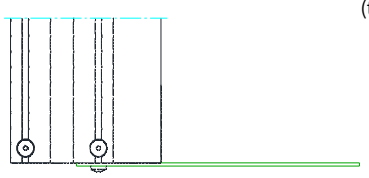


Figure B_1
(thermally broken frame)

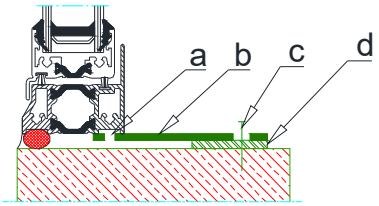
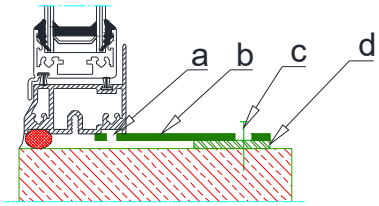


Figure C_1



These drawings show CLT (Figures A and B) and CLN units (Figure C).

Key:

a.) For each plate two flat headed screws Ø 3.5mm, stainless steel.

b.) Plate 30 x 2 x 130mm standard dimensions, stainless steel.

c.) Fixing (by others)

d.) Supporting piece (by others)

9.3.3.3 Installation into curtain walling

All Coltlites are suitable for installation into façades and most kinds of attachment options are allowed. This information should be provided on the order.

Preparations for fixing:

- Before the installation you need to compare the width of the curtain wall with the width of the ventilator (Figure A). If these are not the same dimensions then the seals may need to be changed (please refer to the supplier of the curtain walling). With the Coltlite CLT with integrated adaptor profile you can modify the width on site, as an alternative (Figure B). This is inserted after the existing EDPM seals have been removed. Possible depths are: 24, 26, 28, 30, 32, ... to 44mm.

Figure A

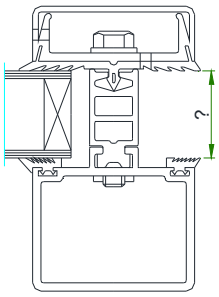
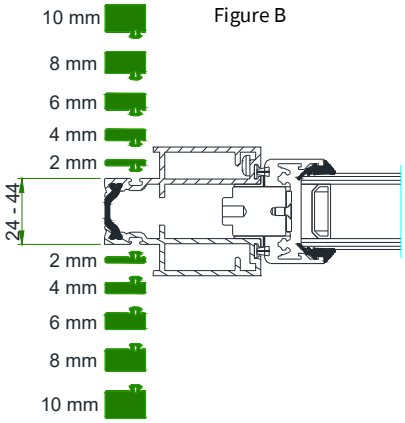


Figure B



Method of fixing:

Start point: bring the Coltlite to the opening with packing pieces fitted and secured in a provisional position.

- **Provisionally fix the unit into the wall.**
- If the adaptor piece cannot immediately be applied it may be necessary to do a provisional fixing. Provisional fixing in accordance with Figures C.1 and C.2, so long as the curtain walling system allows this.

Figure C1 (thermally broken)

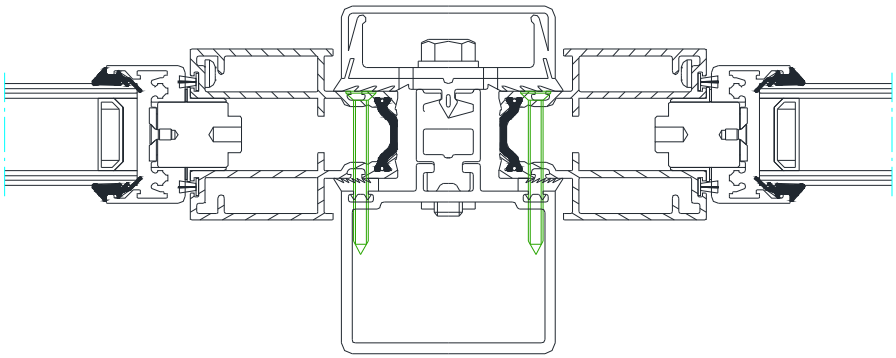
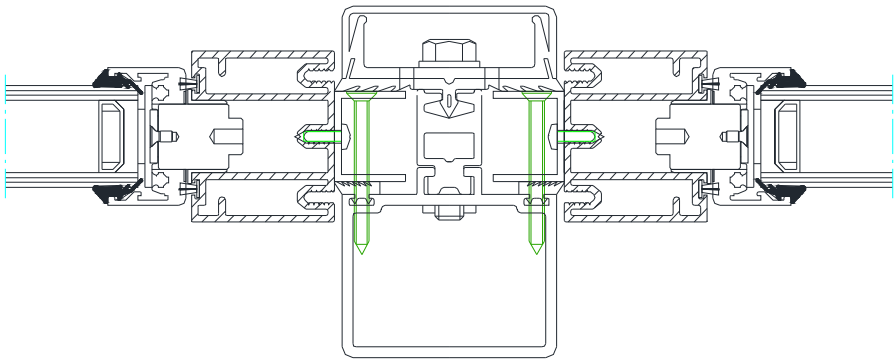


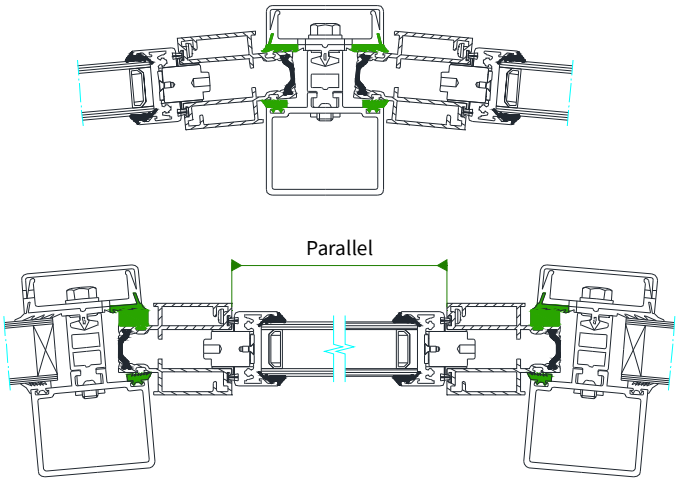
Figure C1 (not thermally broken)



- Screw in the terminal block as specified by the supplier of the cladding system and tighten it.

Fixing of units in mitred format

- Where units are installed in a mitred format, as shown below, it is necessary to support and pack the units so that the vertical profiles are parallel to each other.



9.3.3.4 Fixing using a flange

NOTE

- Flanges may only be used with CLET-type ventilators.
- Installation with a flange must not be combined with frame coupling or height-divided units.

Type	APBF
Description	Integrated adaptor profile with 70mm base flange
Finish:	As for the louvre window frame
Suitable for:	CLET
Max. ventilator size:	Max. ventilator size available as one undivided unit is 2000 x 2970mm.
Max. wind load	Permissible wind load of the ventilator, but not more than 2 kN/m². *)
Special construction	The geometry of the flange in the marked area can be adapted to the customer's requirements (in accordance with a drawing and after agreement with the factory)

*) Only if the installation instructions for "integrated adaptor profile with 70mm base flange" are adhered to.

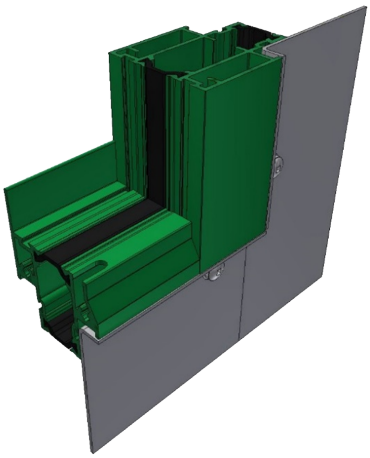
NOTE

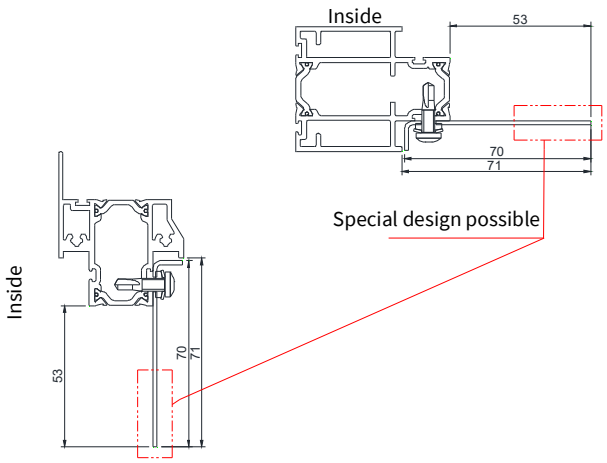
- Project-specific structural engineering calculations for fixing must still be taken into account.

CAUTION

Injury as a result of sharp edges

- Wear gloves during assembly and disassembly work.





Fixing and transfer of loads

A Coltlite CL with a "70mm base flange" has to be physically fastened all round, in such a way that the horizontal loads (for example wind loads and its own weight) are transmitted via the vertical flange (marked red on the picture B1) and via vertically arranged fixings.

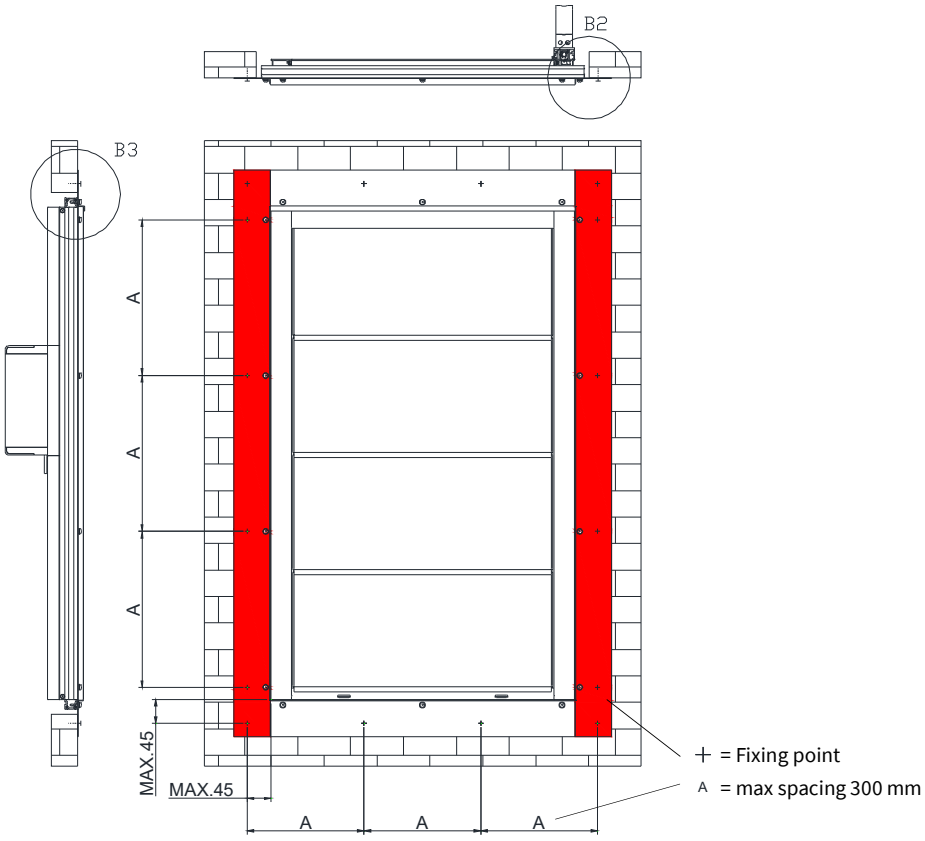
The horizontal flange does not absorb the weight or wind loads. It is used to attach the horizontal frame profiles and the seals.

The installation spacing must be as shown in Fig. B1, B2 and B3 (see below).

NOTE

- The fixings must be selected in accordance with the structural requirements of the project. Requirements of the area for fixing to as well as the edge spacing must be considered.

Fig. B1 Schematic representation



Sealing

The orange-marked area (Fig. B2 and Fig. B3) is intended as a dry area and should be protected by practical measures on site to prevent water entry. At the same time appropriate insulation (depending on the type of fixing and building) needs to be applied right round this flange.

Figure B2

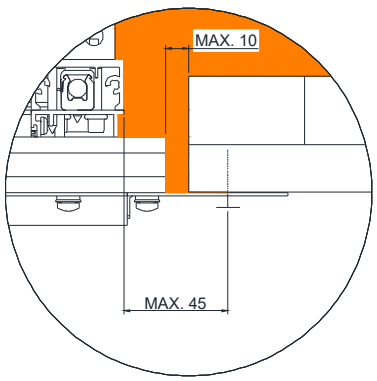
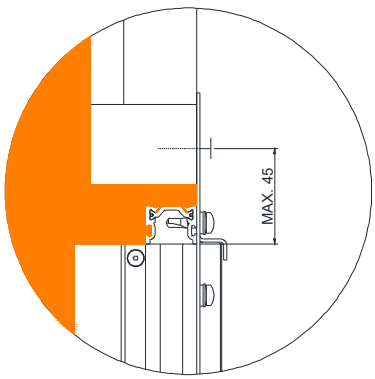


Figure B3



Because of the effect of loads (e.g. wind suction loads), the 70 mm base flange can be subject to deflection between the fixing positions (Fig. C1 and Fig. C2). The deflection is likely to be approx. 4 mm (the possible deflection of the supporting construction is not taken into account).

Fig. C1
Side view

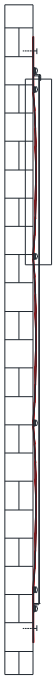
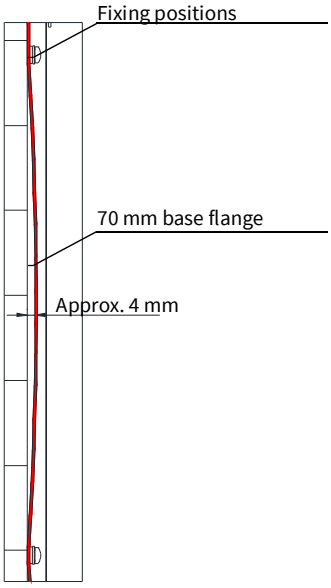


Figure C2



Method of fixing:

Start point: Bring the Coltlite frame to the opening with packing pieces fitted (see chapter "9.3.1 Correct support") and secure (see chapter "9.3.2 Aligning the Coltlite").

- Only attach the left or right vertical flange at first. Observe the maximum fixing distances (Fig. B1 and Fig. B2).
- Check the alignment of the unit and correct if necessary (see chapter "9.3.2 Aligning the Coltlite")
- Fasten the vertical flange on the other side. Observe the maximum fixing distances (Fig. B1 and Fig. B2).
- Unevenness in the wall must be compensated by appropriate measures. At the same time ensure that the Coltlite is in line with the wall and has not bent during assembly.
- Fasten the horizontal flanges. Observe the maximum fixing distances (Fig. B1 and Fig. B2).
- Check that the distance between louvres and frames on both sides is always the same. If this is not the case, correct the means of attachment.

9.3.4 Fixing of more than one unit

Where you are fixing one unit next to another, these need to be fixed through the vertical profile with a coupling piece. Only drill in the centre of the frame profiles.

Take care not to damage the seals.

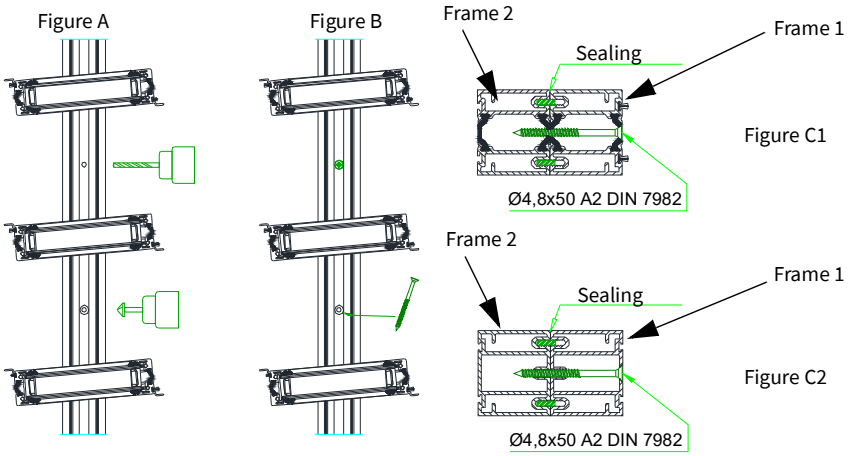
9.3.4.1 Order of assembly (standard units):

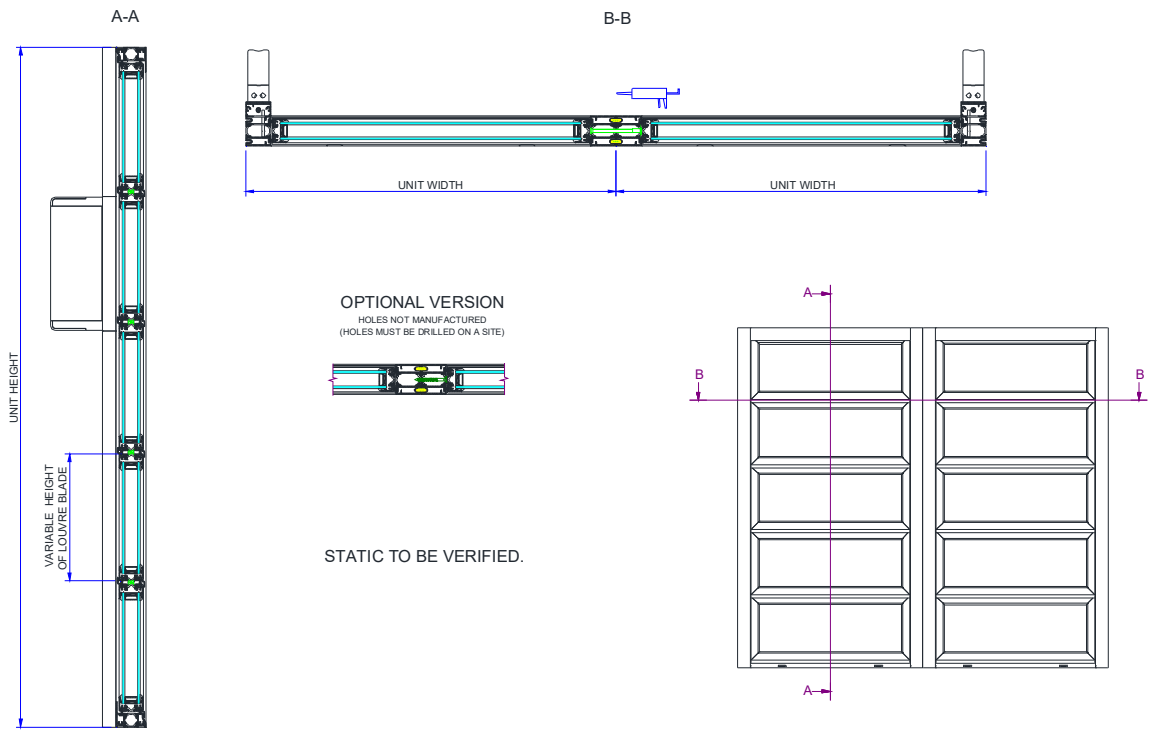
NOTE

- The type of power supply and the type of actuator need to match up.

Start point: Bring the Coltlite to the opening with packing pieces fitted and secure in a provisional position.

- Open the ventilator using the mechanisms (do not use your hands to apply pressure, otherwise this can lead to damage of the mechanisms) (Figure A).
- With CLT, CLET and CLST ventilators special care must be taken when fixing the frame because these screws are near to the plastic inserts which can be broken if excessive pressure is applied to them. If pressure is to high the plastic inserts may break. The fixing centres for the fixings are at a maximum of 250 mm.
- With Coltlite CLN, CLS and CLS45 units the maximum fixing centres are at 350 mm.
- Drill through both frames (frame 1 = 5mm / frame 2 = 4.2mm / Figures C1 and C2)
- Cut into bracket to accommodate a Ø4,8mm countersunk screw (Figure B).
- Screw in Ø 4.8mm stainless steel screws (see Figure C).
  Figure C1 = Coltlite thermally broken
  Figure C2 = Coltlite not thermally broken



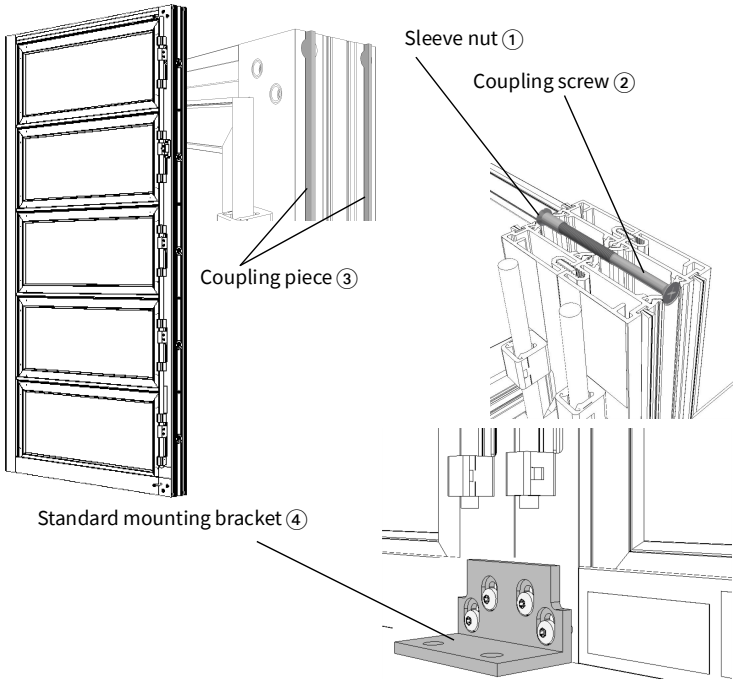


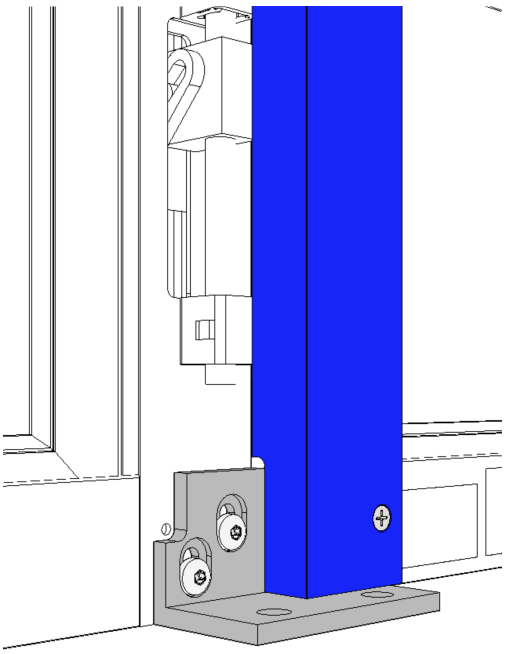
9.3.4.2 Order of assembly (one actuator for two units):

NOTE	▸ Where one central actuator is fitted to two units, this is the order in which the individual elements are installed into the opening in the building: 1. Install the single ventilator without drive (driven ventilator), 2. Install the single ventilator with drive (driving ventilator).

Start point: Wedge, align and secure the single driven ventilator (without drive) within the opening of the building.

- Slide the two supplied coupling pieces ③ into the two channels and seal on both sides (if necessary temporarily ensure that they do not fall out during assembly).
- Disassemble the lower and upper cover profile of the driving ventilator.
- Bring the driving ventilator (with drive) to the opening in the building, then wedge, align and secure it.
- Carefully open the driven single ventilator by hand (always turn two or more louvres at the same time).
- Open the driven ventilator using the actuator.
- Insert the supplied sleeve nuts ① into the existing holes in the frame of the driven ventilator.
- Couple the two ventilator frames using the supplied screws ②. With thermally broken ventilators special care must be taken to screw the frame because these screws are near to the plastic inserts which can be broken if excessive pressure is applied to them.
- Fix the centre post at the bottom and top using the fixings. If no custom fixings are required, use the supplied standard mounting brackets ④.
- Pre-assemble the standard mounting brackets ④ using the screws (M5x12) supplied, top and bottom.
- Use appropriate fixings (e.g. dowels or screws, which are not included) to fasten mounting brackets on the top and bottom.
- Properly re-assemble the lower and upper cover profile of the driving ventilator.
- Continue with the steps described inchapter "9.3.5 Assembly of one central actuator for two units".





9.3.5 Assembly of one central actuator for two units

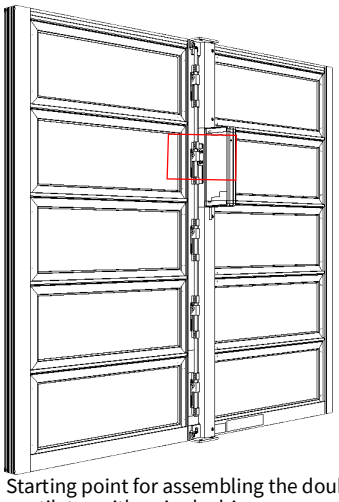
Method of fixing:

NOTE

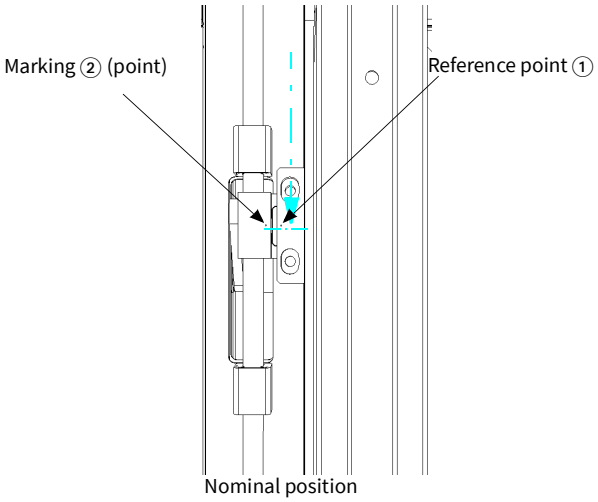
- The type of power supply and the type of actuator need to match up.
- Where one central actuator is fitted to two units, this is the order in which the individual elements are installed into the opening in the building:
  1. Install the single ventilator without drive (driven ventilator),
  2. Install the single ventilator with drive (driving ventilator).

Start point: The unit frames are wedged, aligned, coupled and fixed within the opening of the building.

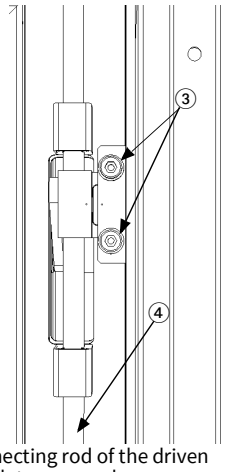
- By moving the louvres, bring the reference marking 1 alongside the reference marking 2 by moving the louvres (using the actuator).
- Screw in the supplied Allen screws 3 (M5 x 10) with washers 3.
- Secure the connecting rod 4 of the driven ventilator with the screws 3 provided.
- Perform a test run and check the closed position and the louvre alignment in the open position ⑤.
- If necessary, the connecting rod of the driven ventilator must be offset accordingly (with respect to the reference point) and secured again.
- Fix the cover profile properly.



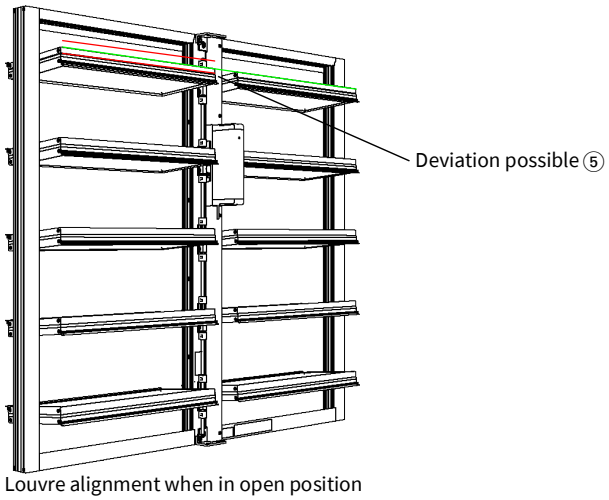
Starting point for assembling the double ventilator with a single drive



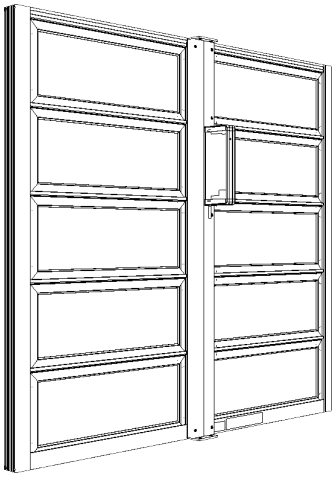
Nominal position



Connecting rod of the driven ventilator secured.



Louvre alignment when in open position



9.3.6 Installing units on top of each other

Where units are to be installed on top of one another, such units are provided separately so as to reduce transport costs and to reduce weight.

Method of fixing:

NOTE	▸ The cover profile for the drive side is supplied separately.

- Fix the bottom-most unit (figure A).
  (see chapter "9.3.1 Correct support", chapter "9.3.2 Aligning the Coltlite" and chapter "9.3.3 Fixing the unit").
- Apply silicone to the top surface (figure C).
- Bring the upper unit on top of to the lower ventilator. Pack out the upper unit and secure it. (figure D)
- Align and secure the upper ventilator (figure E)
  (see chapter "9.3.1 Correct support", chapter "9.3.2 Aligning the Coltlite" and chapter "9.3.3 Fixing the unit").

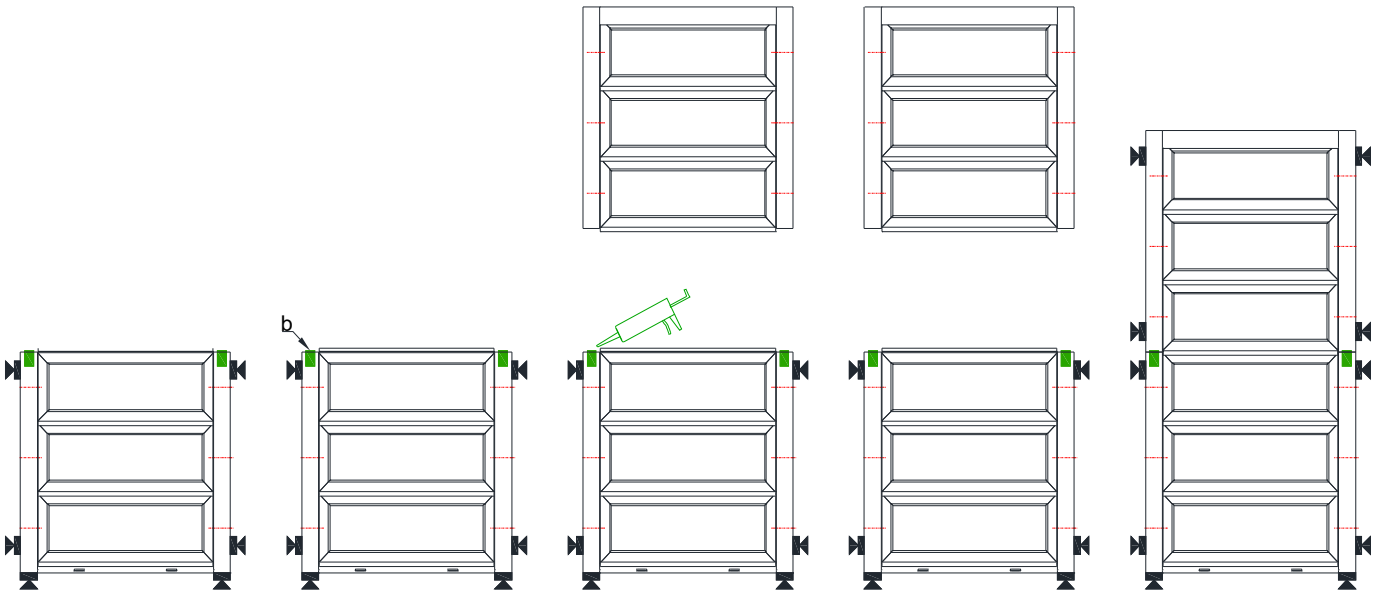
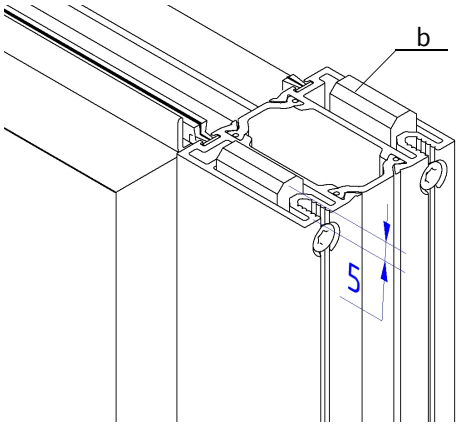


Figure A Figure B Figure C Figure D Figure E



Detail of fig. B to fig. D

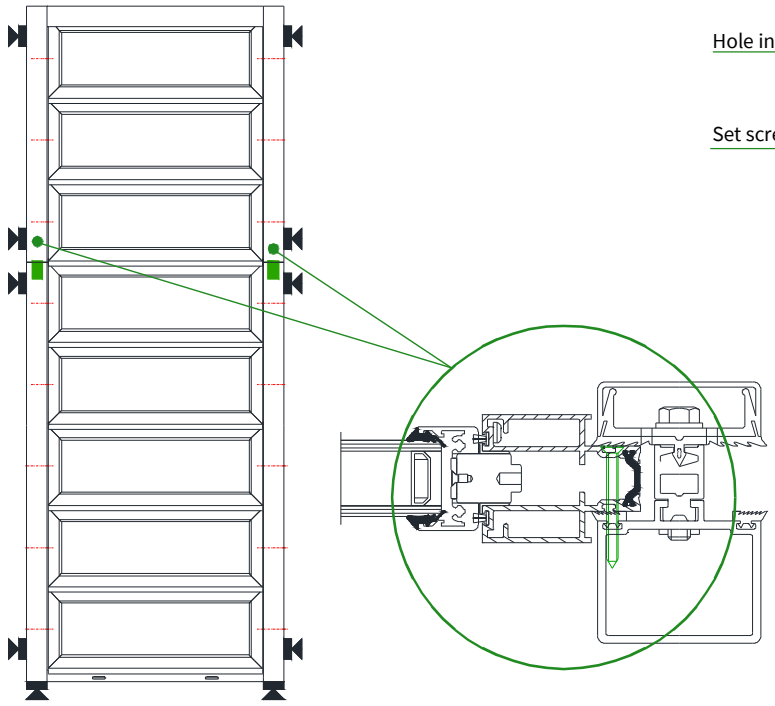


Figure F

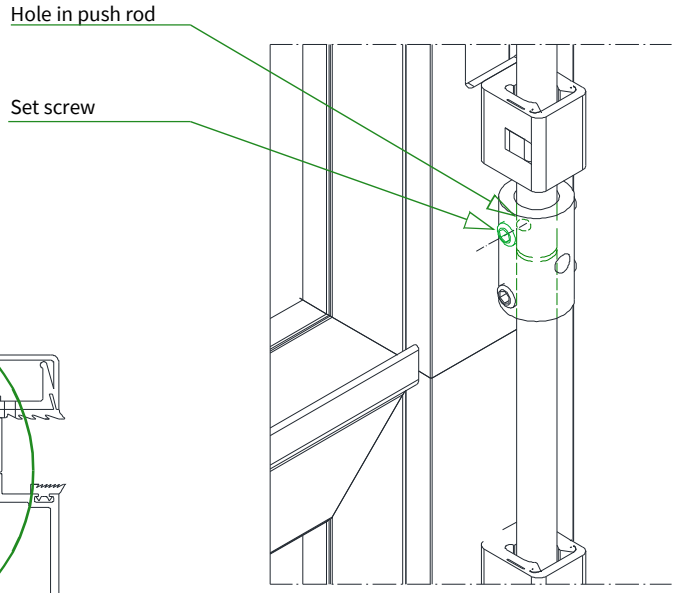


Figure G

- If the drive rod prevents the upper unit from being placed onto the lower one, it may be necessary to move the louvres of the lower unit in order to bring the drive rod into position.
- So, in order to make the lower unit work, check the wiring diagram in the operating instructions of the actuator and connect the drive to the power supply.
- Secure the upper unit (fig. F) to it so that when the lower louvres are moved by the push rod it cannot move about. Fix the unit underneath and on top on both sides.
- By making the actuator move, you can make the coupling piece move onto the upper drive rod.
- Tighten the set screw (fig. G).
- Remove the grub screws and drill holes into the push rod at the positions indicated by the grub screws. Make sure that the holes are drilled exactly at the marked positions. If the hole and set screw are incorrectly positioned, the louvres won't move in a synchronised fashion, and this can cause damage to the unit.
- Tighten the grub screws carefully.
- Perform the test carefully. If necessary reset the louvres or the drive.
- Attach the cover profile correctly.

9.3.7 Glazing for CLS ventilators

Ventilators are generally supplied without the glass fitted. This needs to be fitted on site from the inside of the building.

Method of fixing:

Start point: The frame is fixed into the opening.

- Open the unit (figure A.)
  (Only use the motor to do this. Manual operation can damage the ventilator)
- Spray the inner sides of the glass rubber (already installed at the factory) with glass cleaner (figure A).
- Sort the glass pieces and bring near to the frame
- Slide the glass into the glass holder and align the glass (figure B).
- Spray the loose fixing brackets with glass cleaner and apply (figure C).
- Push down on this bracket as far as you can until it engages (Details figure D1-3).
- Close louvre cautiously. Check whether the drive has reached its limit (limit switch) when the louvres are closed. If necessary adjust the limit switches.
- Align the glass holding profile: this should sit along the whole width of the unit at a distance of between 1.5 and 2.0mm, figure E.
- Carry out a test run. If necessary either adjust the limit switch of the drive and / or adjust the louvre positions.

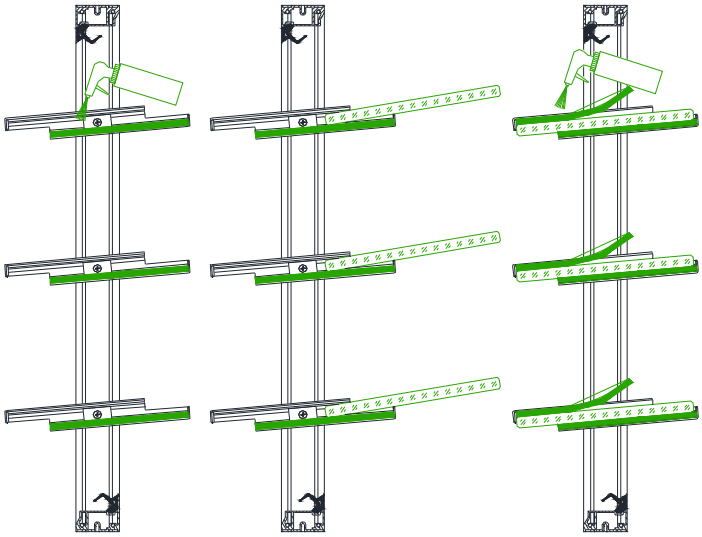


Figure A Figure B Figure C

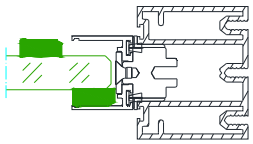


Figure D1

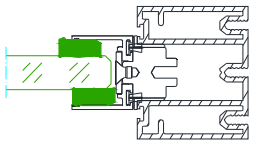


Figure D2

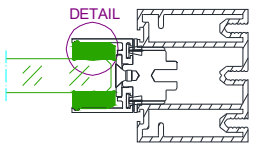


Figure D3

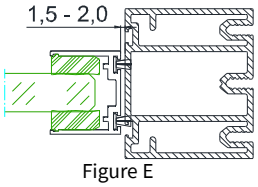
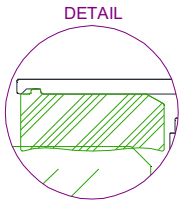
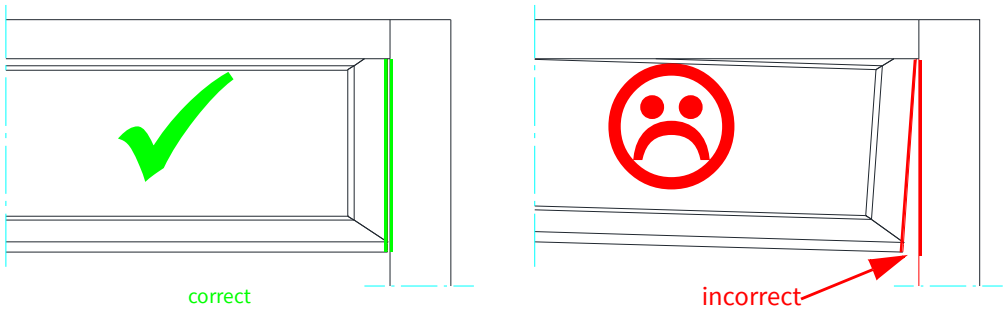


Figure E



Detail from figure D3

The gap must be parallel.



9.3.8 Testing before commissioning

(See chapter "10 Commissioning" Commissioning)

Readjust if louvres do not close in a consistent way.

To do so remove the cover strip of the drive rod.

Figure A

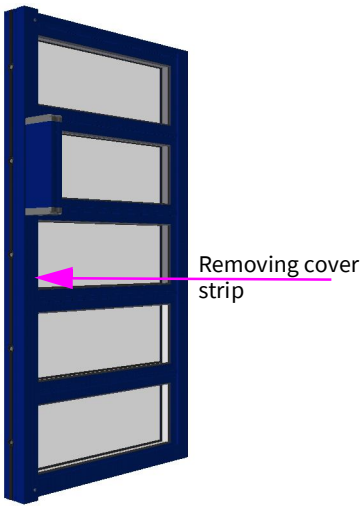
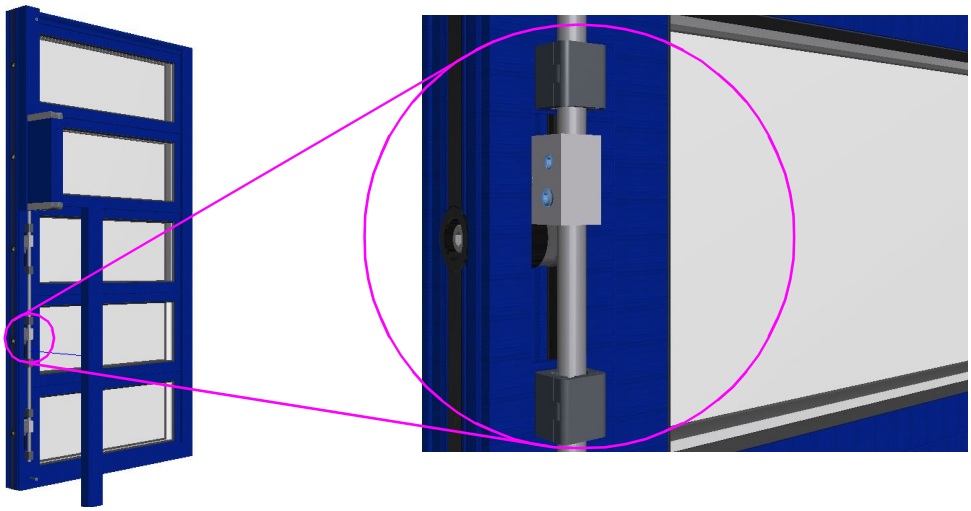
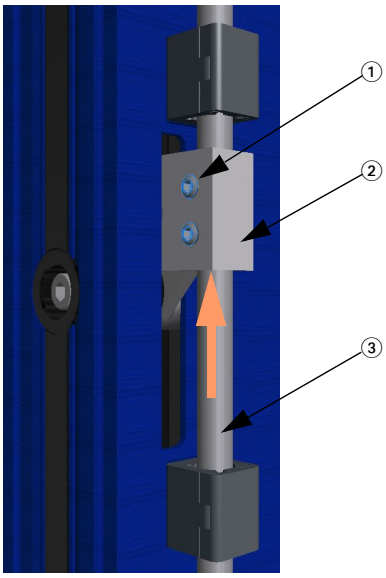


Figure B



To exactly adjust the ventilator it is necessary to close the flap again. For those louvres which are to be adjusted, unloose the cylinder screws ①.



You must now gently press with your hand completely onto the louvres which are to be set up, mount the bracket ② on the push rod ③, push upwards (ideally tighten using an object such as a screwdriver) and then tighten the cylinder screws ① on the bracket ② tightly. To do so, connect the drive with help of the respective circuit diagram to an appropriate power supply (only by authorized electricians) and power in and power out at least once.

Should the ventilator open or close incorrectly, it is necessary to work out the reason for this. Do the same with mechanical drives as well.

The louvres of Coltlite ventilators should only be moved by the use of their in-built lever systems. If you apply force against the louvres contrary to force of the motor mechanisms you can damage the mechanisms. In that instance, complete air and water tightness can no longer be assured.

Keep obstacles clear of the opening blades. There should be no resistance against them, whether this be through the positioning of a cable between the louvre blades or some other foreign object.

9.4 Connection of the TCA-VV-1.02 thermal release

⚠ WARNING	**Risk caused by smoke damage**
	▸ If the thermal ventilation valve is either incorrectly fitted or incorrectly commissioned, it can fail. ▸ If this happens, there can be damage to property or even death. ▸ Smoke and heat ventilators need to be installed by trained personnel and also commissioned appropriately.

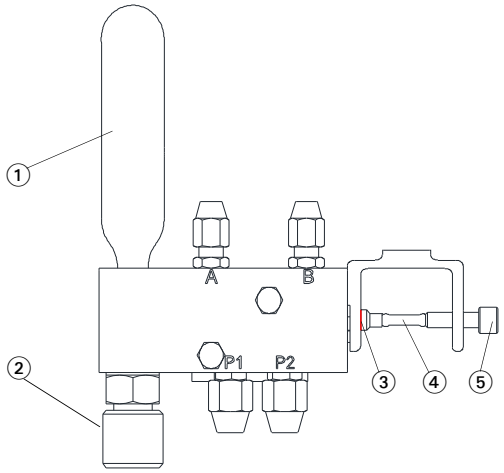
The thermal release is pre-installed onto the inside of the unit (in addition the internal supply lines are pre-installed), onto ventilators which are not electrically controlled.

1.) In accordance with the connection diagram, connect the air supply lines (min. 6 bar pressure) to the thermal ventilation valve. Connect the supply for “ventilator open” at the **P1** port. Connect the supply for “ventilator closed” at the **P2** port.

2.) Attach the glass ampoule ④ between the bolt ⑤ and side valve ③ and tighten. The red markings on the actuating valve ③ should not be visible. Tighten the main screw ②.

Note:
The glass ampoule ④ needs to be checked for leaks before use. Escaping fluid indicates a leak. Always align the end of the glass ampoule with the adjusting screw ⑤ then fitting it.

3.) Screw in the CO_2 bottle ①.



① CO_2 bottle
② Clamp screw
③ Valve slider
④ Glass ampoule
⑤ Adjusting screw
A Open pipe Ø 6 mm
B Close pipe Ø 6 mm
P1 Air supply open Ø 8 mm
P2 Air supply close Ø 8 mm

9.5 Connecting the source of energy

Pay attention to all safety warnings.

Depending on the type selected, Coltlite ventilators can either be controlled either pneumatically or electrically. The connection details are:

- Pneumatic connection: Minimum 6 bar
- Electrical connection: 24 volt DC (direct current) or 230 volt AC (alternating current)

Before connecting any supply it is essential to make sure that electric and pneumatic supply lines are turned off.

9.5.1 Electrical connection

WARNING

Danger through electrocution

- Danger of electrocution and death.
- Ensure that electrical supplies are always switched off before working on electrical components. Work on electrical components is only to be carried by qualified personnel.

Actuators are equipped with electrical cables, or are connected with plug-in connectors.. Wire to on site distribution boxes

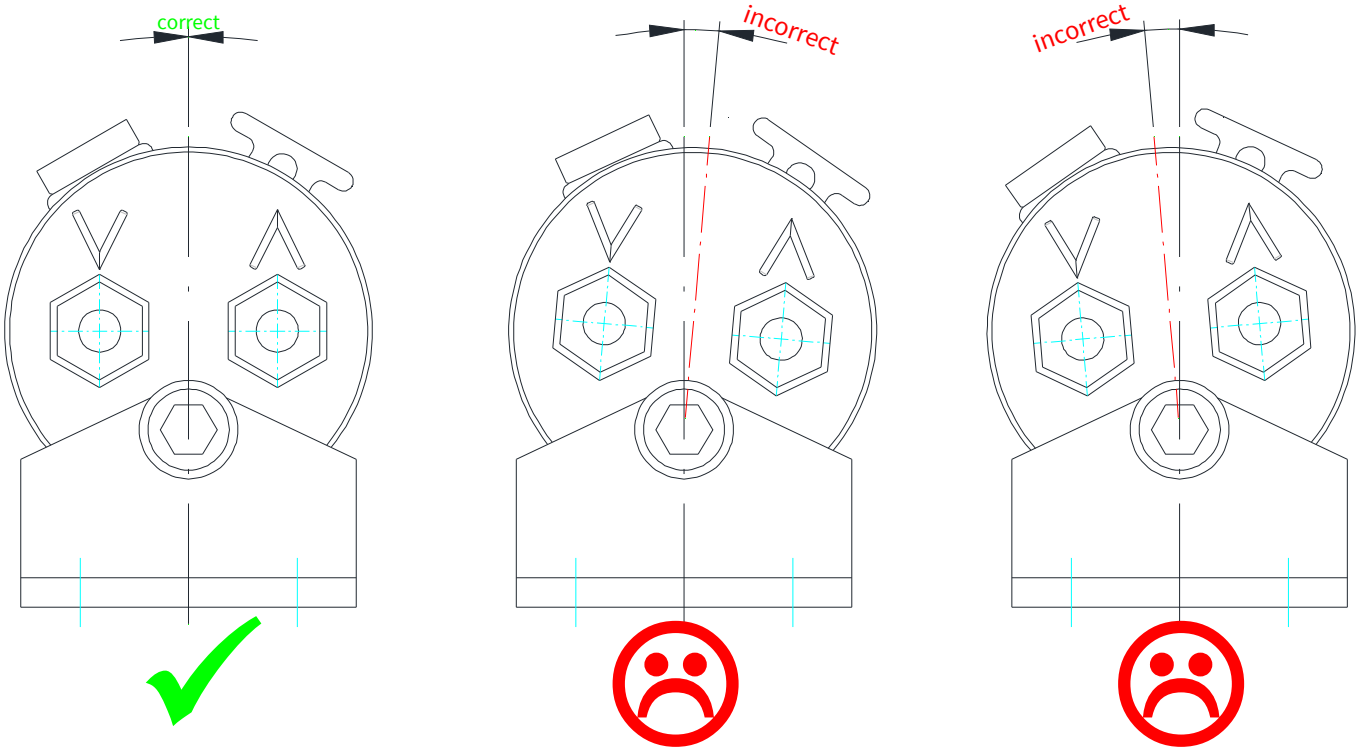
9.5.2 Pneumatic connections

Pneumatic connections need to be made from the ventilator to the pneumatic energy supply of the building by trained personnel.

NOTE

The cylinders are to be connected expertly.

- When tightening the connections, use a second open-end wrench to prevent damage to or twisting of the cylinder or its fastening.



10 Commissioning

NOTE **Before carrying out commissioning, complete a risk assessment according to the Machinery Directive 2006/42 EC. Without such a document, powered Coltlite CL ventilators cannot be commissioned.**

After a correct installation, it is necessary to make a functional test.

During commissioning pay attention to all safety warnings.

If there is a long period between the delivery and commissioning of a Coltlite ventilator, it is necessary to carry out a basic inspection and perhaps also a maintenance procedure before commissioning.

In particular, it may be necessary to lubricate pneumatic cylinders or electric motors. With regards to service and maintenance, please read the associated chapter of this manual. This also applies to those situations where units have been taken out of service for a long time and then need to be put back into service.

Before commissioning check the correct installation of the louvre window.

The main points are as follows:

- Check the louvres for damage in installation.
- Check that the unit is set at right angles (by measuring the diagonal dimension).
- Check that the unit is installed parallel to the opening.
- Check the measurements below, above and in the middle (tolerances +/- 1mm)
- Check the dimensions right, left and in the middle (tolerances +/- 1mm).
- Check the distance between the frames and the louvres.
  (This should be between 1.5 and 2.5mm over the complete height of the unit.)
- Check the smooth running of the louvre window (do not disconnect the electric actuators).
- Check that the louvres operate simultaneously and close in an orderly fashion.

Check that there are no obstacles in the way of the louvres.

10.1 Setting parameters

Readjust if louvres should not close in a consistent way.

To do so remove the cover strip of the drive rod.

Figure A

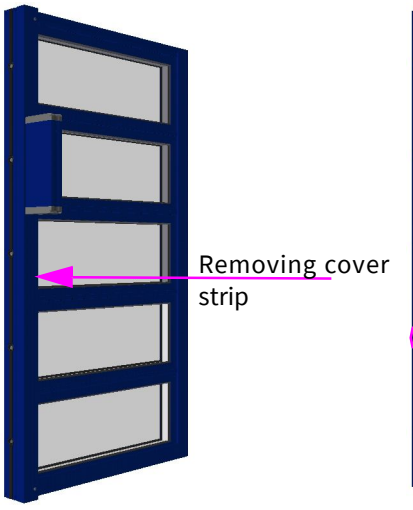
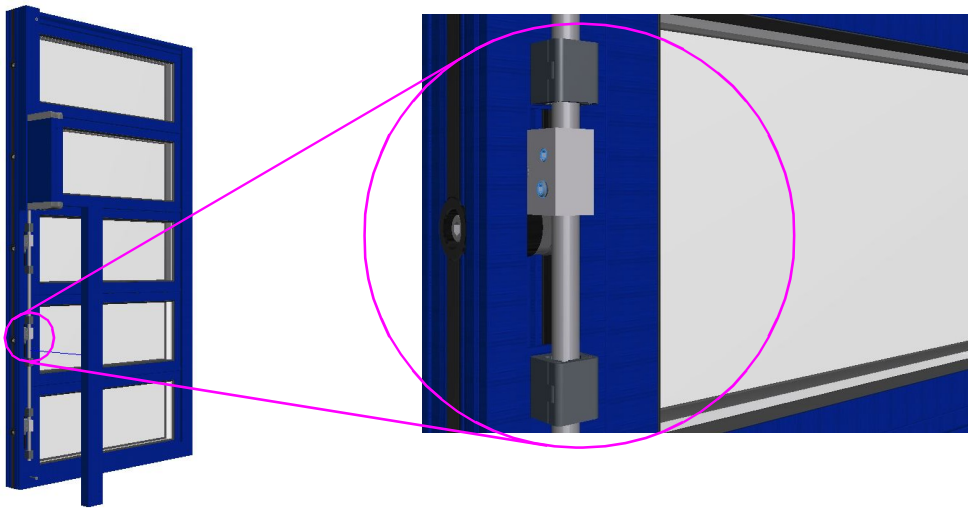
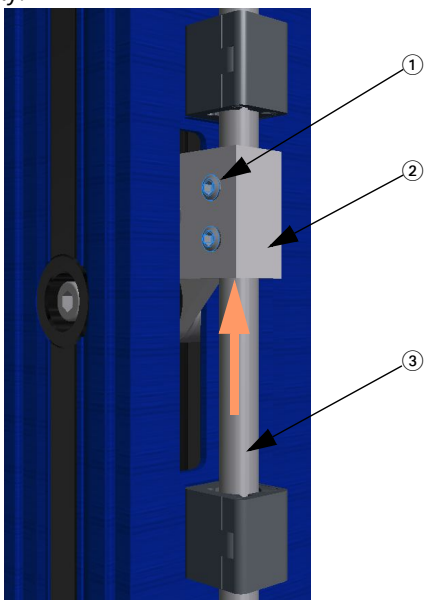


Figure B



To exactly adjust the ventilator it is necessary to close the flap again. For those louvres which are to be adjusted, unloose the cylinder screws ①.

You must now gently press with your hand completely onto the louvres which are to be set up, mount the bracket ② on the push rod ③, push upwards (ideally tighten using an object such as a screwdriver) and then tighten the cylinder screws ① on the bracket ② tightly.



As regards the drive with the help of the respective circuit diagram (see Appendix 7, drive data sheets), connect to the appropriate power supply (only by authorized electricians) and power in and power out at least once.

Should this window open or close incorrectly, it is necessary to work out the reason for this. Do the same with mechanical drives also.

The louvres of Coltlite ventilators should only be moved by the use of their in-built lever systems. If you apply force against the louvres contrary to force of the motor mechanisms you can damage the mechanisms. In that instance, complete air and water tightness can no longer be assured.

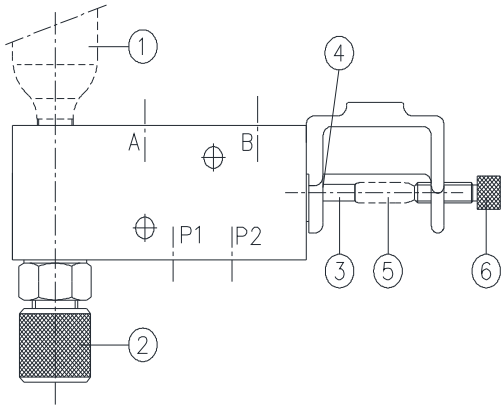
Keep obstacles clear of the opening blades. There should be no resistance against them, whether this be through the positioning of a cable between the louvre blades or some other foreign object.

10.2 Checks of thermal releases

Pneumatically controlled units require a functional check to ensure that the primary energy supply is correctly supplying the thermal ventilation valve (type TCA-VV-1.02).

It is important to ensure that all units open and close freely in accordance with .

10.2.1 Functional check of a TCA-VV-1.02



① CO_2 bottle
② Clamp screw
③ Clamp bolt
④ Red marked ring
⑤ Glass ampoule
⑥ Adjusting screw
A Outlet cylinder “OPEN”, Ø 6 mm
B Outlet cylinder “CLOSED”, Ø 6 mm
P1 Inlet cylinder “OPEN”, Ø 8 mm
P2 Inlet cylinder “CLOSED”, Ø 8 mm

1.) Destroy the glass ampoule ⑤ either by heating it or by hitting it.
2.) Remove pressure from the unit at the control panel or fireman’s switch.
3.) Unscrew the tensioning screw ② until it stops.
4.) Unscrew the CO_2 bottle ①.
5.) Remove glass residue from the destroyed glass ampoule ⑤ from the adjusting screw ⑥, or slide valve ③.
6.) Push in the valve ③ until it stops.

Note: The red marked ring should no longer be visible.

7.) See chapter "9.4 Connection of the TCA-VV-1.02 thermal release" for information about the installation of a new glass ampoule⑤.
8.) Tighten the clamp screw ② to its end position.
9.) Install a new CO_2 bottle ① until it is tight.
10.) Set the position for day to day ventilation at the control panel for the ventilator to open.
11.) See installation instructions for installation of a new glass ampoule.

11 Operation

Pay attention to all safety warnings when operating the system.

Coltlites are controlled in accordance with the Controls Instructions which are provided with the control panel.

11.1 Notes for operation

Coltlite ventilators have centrally pivoting louvres. A Coltlite has centrally mounted, horizontally rotating louvres which are operated either by hand or motor.

It is necessary to follow these points:

- Only allow authorised, trained people to operate such a NSHEV.
- Ensure that a quarter-rotational movement is possible around the central axis of the louvres. All debris should be removed from the opening area of the louvres.
- The louvres should not be used to hang objects off. Do not use it as a ladder or to support a body's weight.
- If the glass is broken then the unit should not be used any more. Splinters must be removed carefully. Prepare yourself for potential risks and to be able to take necessary measures if there is an untoward event. Consult with a specialist contractor as soon as possible.
- The unit should not be permanently cycled open and closed in case the motors be overloaded.
- Manual controls should only be used in the turning area which they have been designed for. Where there is any unusual resistance the manual control should no longer be used and the fault investigated.

⚠ WARNING	**Risk of electric shock or destruction of the drive due to moisture**
	▸ The electric actuators must be protected from humidity during transport, stocking, installation and operation.

12 Inspection, maintenance and repair

12.1 Inspection

During inspection pay attention to all safety warnings.

Inspection is to be carried out regularly every 12 months together with a service and it should include the following activities:

- Check the manual controls at the control panel. Ensure that the indicators reflect what is actually going on at the unit.
- Inspect fire detectors.
- Check that control and release mechanisms, whether they be pneumatic or electric, work satisfactorily. Such elements should not be prevented from moving freely.
- Check the ventilator opening. It should be free from obstruction, and grilles should not be allowed to become dirty. All components must be complete.
- Ensure that all sources of energy are available and are not defective.
- Check louvres for damage.
- Check seals for damage.

Where necessary carry out repairs to avoid any further damage and possible danger.

12.2 Maintenance

A Coltlite is largely maintenance free. To ensure it operates smoothly, the following points should be observed:

During maintenance pay attention to all safety warnings.

Coltlite is low in maintenance.

The following steps are to be carried out regularly every twelve months:

If the NSHEV is situated in a particularly heavily contaminated or dusty area, the service intervals should be reduced. See also DIN 18232-2 / EN-12101.

When necessary switch the controls into automatic mode for smoke control function.

We recommend that you take out a service contract, either with a specialist company or with the supplier.

To ensure it operates smoothly, the following points should be observed:

- Clean all the elements regularly, especially seals and brush seals.
  Intact seals are the basic pre-condition for tight louvre windows. Although all seal materials are UV weather resistant, it is useful to check if there is some wear and tear (due to frequent use, improper cleaning or old age).
- The smooth operation of the window is to be regularly checked and the movable parts must be lubricated. This must be done every 1,000 cycles or at the latest once a year.
- In order to maintain the guarantee from the paint supplier it is necessary to completely clean the external surfaces in accordance their instructions at least twice a year.
- Lubricate all moving parts (bearings, levers and bushes) with an acid free permanent lubricant. It is vital to remove the cover plate in order to achieve this.
- A single tuning (readjustment) of the louvres can be carried out on the bases of chapter "9.3.8 Testing before commissioning".
- With mechanical actuators (levers, gears, opening mechanisms, etc.), review the setup of any remotely operating units annually before any poor weather and if necessary adjust them..
- Where pneumatic controls are used, there is the additional requirement to take care of compressed air lines, compressors, filters and so on.
- Pneumatic cylinders and electric motors have a permanent lubricant. Only apply additional lubricant if there are squeaks or other noises.

For units with smoke and heat ventilation

- Check over functionality of the complete smoke control system. Do this by:
  - Changing the control positions in the control panel.
  - Activating any automatic smoke control system
- Check that the smoke vent opens completely. Any moving parts should be checked and if necessary, cleaned (for instance fire detectors).
- Check the source of energy, whether this be electric or pneumatic. If CO_2 bottles are used, check these bottles work properly. Make sure that any battery power is up to capacity and operates if the mains supply is interrupted.
- Maintain the thermal releases (if available) in accordance with chapter "10.2 Checks of thermal releases".

Once these steps have been carried out set the whole system back into normal use. Document the tests and maintenance procedures in a log book.

12.3 Cleaning and care

Coltlite ventilators which are built into the façade are exposed to the weather and pollution and are therefore become dirty. In order to maintain a good appearance as well as their good functioning, it is necessary to professionally clean and maintain these windows in accordance with the maintenance instructions.

In these instructions we have limited ourselves to the principal points for optimum cleaning and care:

- Use clean water, do not use detergents with a pH-value less than 5 or greater than 8.
- Do not use steam cleaners or pressure cleaners.
- Only use soft cloths or sponges.
- Where ventilators are colour-coated, do not allow the surface temperature of 25°C to be exceeded while cleaning them (detergent may also have a maximum operating temperature of 25°C).
- Do not use detergents containing scrubbing materials or emery paper.
- Do not use any acidic or highly alkaline cleaning or wetting agents.
- Do not use organic solvents, esters, ketones, alcohol, aromatics, glycol ether, or halogen hydrocarbons or similar.
- Do not use detergents of unknown composition.
- For those surfaces previously coated, carry out a sample application on a concealed area to ensure that the paint has not been mechanically or chemically attacked.
- To clean the brush seals, open the window and apply a dry scrubbing brush. For very stubborn dirt, you should moisten the brush with water or use a neutral cleaner.

Detailed descriptions of cleaning procedures for aluminium components are available from:

- Aluminium Zentrale e.V., Königsallee 30, 40212 Duesseldorf, Germany (bulletin A5)
- GUETEGEMEINSCHAFT FUER DIE REINIGUNG VON METALLFASSADEN e.V. (GRM), Marientorgraben 13, 90402 Nuernberg
- American Architectural Manufacturers Association, USA (AAMA 610-1979 Cleaning Procedures).
- Regulations and instructions of the respective powder manufacturer.
  for example download area @ httpwww.Tiger-coatings.com

12.4 Refurbishment and repair

Whilst making repairs, pay attention to all safety warnings.

Only use original equipment manufactured parts when making repairs.

Necessary repairs may be carried out either by Colt authorized specialist companies or Colt. In special cases it may be necessary to make temporary repairs.

For repair or refurbishment work, only Colt original spare parts are to be used. Check in advance which parts are required.

Consider whether repairs are necessary by inspection if:

- Profiles, bars or control components are deformed.
- Louvre blades which when operated by an actuator do not run evenly.
- The electric drive is not responding. (It is suggested that the electric supply and possibly the control system are checked by a qualified electrician (including wind sensors, rain sensors, smoke control systems etc.)).
- Louvre blades are dislodged from their position. Secure the louvre blade and do not allow it to move.
- The control bars installed onto the frame are damaged or not in their correct positions.

13 Decommissioning, disassembly and disposal

13.1 Decommissioning

During de-commissioning pay attention to all safety warnings.

Before starting on the decommissioning it is necessary to remove all sources of energy, whether they are pneumatic or electric.

Avoid switching on power unintentionally.

⚠ WARNING	**Danger of electrocution**
	▸ Danger of electrocution and death. Ensure that electrical supplies are always switched off before working on electrical components. Such work is only to be carried by qualified personnel.

For taking electrically controlled ventilators out of service

1.) For electrically powered ventilators, remove the emergency battery if present.

2.) Remove the cabling pipework from the unit.

Store the batteries until you can dispose of them correctly.

Decommissioning of pneumatic controlled devices

1.) With pneumatic ventilators take out the CO_2 bottle.

2.) Take out the CO_2 bottle from the control panel.

3.) Remove the pneumatic pipework from the unit.

Store the CO_2 bottles until you can dispose them correctly.

Decommissioning day to day ventilators

1.) Remove the cabling or pneumatic pipework from the unit.

13.2 Disassembly

During disassembly pay attention to all safety warnings.

⚠ WARNING	**Danger of electrocution**
	▸ For disassembly make sure that the decommissioning step has been completed.

Disassembly takes place in two steps:

1.) Loosen the screws securing the Coltlite unit to the substructure.

2.) Remove the Coltlite unit from the supporting construction and take it to a suitable position away.

3.) Remove the Coltlite unit with suitable and approved lifting devices.
It is recommended that larger units (where the weight is more than 50 kg) are always picked up by at least four people.

13.3 Disposal

Those who are disposing Coltlite units should wear the appropriate protective gear. This also includes protective gloves and spectacles.

The primary sources of energy (batteries, CO2 bottles) need to be disposed of in accordance with local regulations.

Colt can take care of this for you. Actuators and EPDM seals also need to be disposed of in accordance with local regulations.

The disposal of Coltlite units requires no special protective measures, since the they are made of stainless steel, aluminium, silicone, TPE, EPDM, PA 66 (thermal separation material) and glass. These materials are not hazardous.

The disposal of these materials is to be done in accordance with local requirements.

13.3.1 Disposal of materials/dangerous substances

Colt units include the use of stainless steel aluminium silicone EPDM seals and glass. These materials are not hazardous. The disposal of these materials is to be done in accordance with local requirements.

14 Service and Guarantee

Please contact your Colt local office.
www.coltgroup.com

15 Appendix

15.1 LS 1400 (24V)actuator data sheet

GRÖNINGER Antriebstechnik

Betriebsanleitung
LS 1400 24 V DC
Originalbetriebsanleitung

Inhaltsverzeichnis

Allgemeines

Grundlegende Informationen
Diese Montage- und Betriebsanleitung ist Bestandteil des Produkts.

Der Antrieb LS 1400 darf ausschließlich für das Öffnen und Schließen an Fenstern verwendet werden.

Bitte lesen Sie die Anleitung sorgfältig durch und ***beachten Sie insbesondere die kursiv gedruckten Sicherheitshinweise***, bevor Sie mit der Montage, Wartung oder Nutzung beginnen. Bitte bewahren Sie die Anleitung während der gesamten Lebensdauer des Antriebes auf!

Die Antriebe entsprechen dem zur Zeit der Auslieferung aktuellen Stand der Technik. Dies betrifft Leistungsfähigkeit, Material, Funktionsweise und den sicheren Betrieb der Fensterantriebe. Um die sichere Montage und Installation zu gewährleisten, ist jedoch unbedingt sachkundiges und sicherheitsbewusstes Verhalten der Monteure und Installateure erforderlich.

Instruction Manual
LS 1400 24 V DC
Original Instruction Manual

Table of Contents

General Information

Fundamental Information
This assembly and operating manual is a component of the product.

The drive LS 1400 may be used exclusively for the opening and closing of windows.

Please read this manual carefully and ***pay particular attention to the safety instructions printed in italics*** before proceeding with the assembly, maintenance or use of the drive. Please keep the manual at your disposal throughout the drive's lifespan.

The drives comply with the state-of-the-art technology prevailing at the time of delivery. This applies to the performance, material, functionality and safe operation of the drives. The competent and safety-conscious conduct of the assemblers and installers is essential in order to ensure the safe assembly and installation of the drives.

GRÖNINGER
Antriebstechnik

Sicherheitshinweise

Der Antrieb LS 1400 ist ausschließlich für das Öffnen und Schließen von Fenstern vorgesehen.

Beachten Sie bei der Montage und Bedienung:

Montage und Inbetriebnahme dürfen nur durch geeignetes Fachpersonal vorgenommen werden!

Beachten Sie alle geltenden Bestimmungen wie z.B.
- Unfallverhütungsvorschriften UVV
- VDE Bestimmungen,
- DIN- und EN-Normen
- Arbeitsschutzvorschriften usw.

Verwenden Sie den Antrieb nur in technisch einwandfreiem Zustand, bestimmungsgemäß, sicherheits- und gefahrenbewusst unter Beachtung der Montage- und Betriebsanleitung.

Beachten Sie, dass vor und bei der Montage sowie der Demontage der Fenstermotoren das jeweilige Fenster gegen unbeabsichtigtes Zuschlagen oder Abkippen gesichert sein muss.

Quetsch- und Klemmgefahr der Finger:

Das Fenster schließt automatisch. Bei der Montage und Bedienung nicht in den Fensterfalz und die bewegende Abtriebswelle greifen. Beim Schließen und Öffnen stoppt der Antrieb über die Endabschaltung. Die entsprechende Druckkraft entnehmen Sie bitte den technischen Daten. Diese reicht aus, um bei Unachtsamkeit Gliedmaßen zu verletzen.

Achtung: Berücksichtigen Sie immer eventuelle Lasten (Windlast, Schneelast) auf dem Fenster, damit jederzeit eine einwandfreie Funktionsweise der Fensterantriebe gewährleistet ist.

Safety Instructions

The drive LS 1400 is intended to be used solely for the opening and closing of windows.

Please bear in mind during assembly and operation:

Assembly and initial operation may only be carried out by qualified professionals!

Pay regard to all applicable regulations, e.g.
- Accident prevention regulations
- VDE Regulations
- DIN- and EN-Norms
- Occupational safety regulations etc.

Only use the drive if in a technically immaculate condition, in accordance with the applicable regulations, in a safety- and danger-conscious manner and in strict accordance with the assembly and operating manual.

Please note that during the assembly and disassembly of the drive, the respective window must be secured to prevent it from unintentionally tilting or slamming shut.

Crushing and Pinch Point Hazard for Fingers:

The window closes automatically. During assembly and operation, do not reach into the window rebate and the moving output shaft. The limiting switch stops the drive during opening and closing. Please refer to the technical data section for the corresponding compressive force values. This is enough to result in injured limbs due to carelessness.

Caution: In order to ensure the flawless functionality of the drives at any time, always take potential loads (e.g. caused by snow or wind) into consideration that may rest on the window.

Montage

-mechanisch

Die Montage darf ausschließlich von geschultem Fachpersonal durchgeführt werden.

Entfernen Sie die beiden stirnseitigen Abdeckungen aus Kunststoff, indem Sie diese nach oben wegziehen.
Befestigen Sie den Antrieb mit den dafür vorgesehenen Anschraubbohrungen (4x) mit M5

Assembly

-mechanical

The assembly may only be carried out by trained professionals.

Remove the plastic covers on the front and rear of the drive by pulling them off in an upwards direction.
Fasten the drive using the designated screw drill holes (4x) with an M5 or woodscrew up to d=5mm.
Fit the drive onto the window in such a way that it is

GRÖNINGER Antriebstechnik

bzw. Holzschrauben bis d=5mm.
Montieren Sie den Antrieb am Fenster so, dass er jederzeit zugänglich ist, um den Antrieb gegebenenfalls austauschen zu können.
Für die Kraftübertragung auf das Fenster gibt es zwei Möglichkeiten:
1.) M8- Gewindestange wird stirnseitig in die Spindelmutter eingeschraubt. z.B. für Oberlichtscheren. Entfernen Sie hierzu eine der beiden stirnseitigen Abdeckstopfen und schrauben Sie eine M8- Gewindestange in die Spindelmutter fest ein.
2.) Zwei Nuten mit 5mm auf Unterseite des Antriebs. Diese Abtriebsmöglichkeit ist abhängig von der jeweiligen Fensterkonstruktion und wird oft für Lamellenfenster verwendet.

Für die Montage und den Anschluss der Antriebe ist zu beachten:

- *Die erforderlichen Leistungsdaten (siehe „Technische Daten“) dürfen weder überschritten noch unterschritten werden.*
- *Die in den Maßzeichnungen angegebenen Werte sind beim Einbau des Antriebs einzuhalten.*
- *Prüfen Sie, ob Ihre Anlage die nötigen technischen und elektrischen Vorraussetzungen erfüllt.*
- *Beachten Sie immer alle landesüblichen Bestimmungen für elektrische Steuerungsanlagen sowie alle anderen landesüblichen Bestimmungen.*
- *Prüfen Sie immer, ob Ihre Anlage den gültigen Bestimmungen entspricht.*
  Besondere Beachtung finden dabei:
  - *Querschnitt des Fensters*
  - *Öffnungszeit/ -geschwindigkeit*
  - *Temperaturbeständigkeit von Kabel und Fensterantrieb*
  - *Querschnitte der Kabel in der Steuerungsanlage*

Fenster und Fensterrahmen müssen für die Belastung durch Druck- und Zugkraft des Fensterantriebs ausgelegt sein.

Gefahren bei der Montage
Die Gewährleistung für einen sicheren Betrieb hängt von der Einhaltung der Sicherheitsvorschriften seitens der Monteure ab. Handhabung und Montage bestimmter Teile und Komponenten in ungeeigneter Art und Weise kann unter ungünstigen Bedingungen zu Verletzungen führen.

Verletzungsgefahr durch unsachgemäße Handhabung! Körperverletzung durch Quetschen, Scheren, Schneiden, Stoßen!

accessible at any given time, and can be exchanged if necessary.
Two possibilities exist for the transmission of force onto the window:
1.) M8-threaded rod is screwed into the spindle nut on the frontal side e.g. for fanlight openers. In order to do this, remove one of the frontal cover plugs and tightly screw an M8-threaded rod into the spindle nut.
2.) Two grooves of 5mm on the bottom of the drive. This output possibility depends on the specific window construction in question and is often used for louvre windows.

For the assembly and installation of the drives, please bear the following in mind:

- *The required performance values (please see “Technical Data”) may be neither exceeded nor undershot.*
- *The values indicated on the dimension sheet are to be complied with during the installation of the drive.*
- *Be sure to verify whether your facility meets the necessary technical and electric requirements.*
- *Always respect all country specific regulations for electric governance systems as well as all other country specific regulations.*
- *Always verify whether your facility meets the relevant requirements.*
  Pay special attention to the:
  - *Cross-section of the window*
  - *Opening time/speed*
  - *Temperature resistance of the cables and drive*
  - *Cross-section of the cables in the governance system*

The window and window frame must be constructed according to the strain caused by the compressive and tractive force of the drive.

Danger during assembly
The warranty for the safe operation is dependent on the assemblers’ compliance with the safety regulations. The handling and assembly of certain parts and components in an inappropriate manner may lead to injuries under unfavourable circumstances.

Risk of injury through improper handling! Potential injury through crushing, shearing, cutting, impact!

- *Follow the general construction and safety instructions for handling and assembly.*
- *Use suitable assembly and transport facilities.*

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- *Die allgemeinen Errichtungs- und Sicherheitsvorschriften zur Handhabung und Montage beachten.*
- *Geeignete Montage- und Transporteinrichtungen verwenden.*
- *Einklemmungen und Quetschungen durch geeignete Vorkehrungen vorbeugen.*
- *Nur dafür geeignetes Werkzeug verwenden.*
- *Hebeeinrichtungen und Werkzeug fachgerecht einsetzen.*
- *Wenn erforderlich, geeignete Schutzausstattungen (z.B. Schutzbrille, Sicherheitsschuhe) benutzen.*

Nicht unter hängenden Lasten aufhalten.

-elektrisch

Achtung: Den Antrieb generell mit 24V DC Schutzkleinspannung betreiben. Den Antrieb niemals an 230V anschließen.

Die elektrische Installation darf nur von Elektrofachpersonal unter Beachtung der Sicherheitsbestimmungen vorgenommen werden. Die Anschlussleitungen dürfen weder auf Zug, Verdrehung, Quetschung noch auf Abscherung belastet werden.

Falls noch nicht geschehen, entfernen Sie die beiden stirnseitigen Kunststoffabdeckungen, indem Sie diese nach oben wegziehen.

Schließen Sie den Antrieb gemäß Anschlussplan an. Den genauen Anschlussplan finden Sie am Ende dieser Anleitung. Befestigen Sie das Anschlusskabel unbedingt mit der dafür vorgesehenen Zugentlastung!

Der Antrieb ist für die Innenmontage geeignet und sollte grundsätzlich mit einem Regensensor betrieben werden.

Setzten Sie nach der Montage die stirnseitigen Abdeckungen wieder auf.

Inbetriebnahme

Überprüfen Sie vor der ersten Inbetriebnahme, ob der Antrieb sachgemäß am Objekt befestigt wurde (siehe Montage mechanisch und elektrisch) und der elektrische Anschluss gemäß den oben genannten Bestimmungen ausgeführt wurde.

Achten Sie dabei auf die elektrische Zuleitung und prüfen Sie diese auf eventuelle Beschädigungen. Lassen Sie die Zuleitung gegebenenfalls von einer

- *Prevent incarceration and crushing through suitable precautions.*
- *Only use suitable tools.*
- *Use lifting equipment and tools properly.*
- *Use appropriate safety equipment (e.g. safety goggles, safety shoes) when necessary.*
- *Do not stop beneath hanging loads.*

-electric

Caution: Generally operate the drive with 24V DC safety extra-low voltage. Never connect the drive to 230V.

The electric installation may only be carried out by professional electricians while following the safety regulations. The connection cables may not be put under the strain of twisting, crushing or shearing off.

In case it has not yet been done, remove the two plastic covers at the front and rear of the drive by pulling them off in an upward direction.

Connect the drive according to the connection diagram. The detailed connection diagram is located at the end of this manual. It is crucial that the connection cable is fastened using the designated strain relief.

The drive is suitable for interior mounting and should principally operate with a rain-sensor.

After assembly, be sure to place the front and rear covers back onto the drive.

Initial Operation

Before putting the drive into operation for the first time, please verify whether the drive has been properly fixed onto the respective object (please see Assembly- mechanical and electric) and whether the electric connection was carried out in accordance with the requirements listed above.

Pay attention to the electric supply cables and inspect these for potential damage. If necessary,

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Elektrofachkraft austauschen.

Sind die oben genannten Anforderungen erfüllt, können die beiden Endschalter eingestellt werden. Die Endschalter werden durch Drehen mit einem Schraubendreher an den stirnseitigen Stellschrauben verstellt (Drehrichtung siehe Anschlussplan). Die Endschalter müssen so eingestellt werden, dass die Fenstermechanik und der Antrieb nicht auf Block belastet wird.
Der Antrieb besitzt einen internen PTC-Widerstand, der bei Erreichen einer hohen Motortemperatur den Antrieb abschaltet. Dies stellt eine Schutzmaßnahme des 24VDC- Motors dar, die mechanische Beschädigungen nicht ausschließt.

Bei der Hubeinstellung durch die Endschalter ist darauf zu achten, dass der jeweilige Endschalter richtig abschaltet. Dann erlischt die Kotrollleuchte. Die Kontrollleuchte darf in den Endpositionen nicht aufleuchten!

Prüfen Sie vor der Inbetriebnahme ob die beiden Endschalter sachgemäß eingestellt sind, um Beschädigungen der Beschlags- oder Fensterkonstruktion zu vermeiden!
Sind beide Endschalter eingestellt, müssen Sie einen ersten Probelauf durchführen.

Betrieb

Die Nennlast wird nur bei Nennspannung erreicht. Eine Unterschreitung reduziert die Nennlast!

Betrieb mit einem „Totmanntaster“
Bei Betrieb mit einer „Totmannschaltung“ (Tipp-Taster) muss eine Bestromung bis zum Ende des Schließvorgangs erfolgen.

Wartung

Verwenden Sie keinesfalls Laugen oder Säuren zum Reinigen.

Alle 1000 Öffnungszyklen müssen folgende Prüfungen durchgeführt werden:
- Prüfen Sie, ob alle Schrauben fest angezogen sind, bzw. ziehen Sie diese ggfs. nach.
- Führen Sie eine Sichtkontrolle auf Beschädigung und Verschleiß aller Bauteile durch und tauschen diese ggfs. aus.
- Kontrollieren Sie die korrekte Einstellung der Endschalter.

have a professional electrician exchange the supply cables.

If the requirements listed above have been met, the two limiting switches may be adjusted. The limiting switches are adjusted by turning the frontal setting screws using a screwdriver (refer to connection diagram for turning direction). The limiting switches must be adjusted in such a way that the window mechanics and the drive are not strained to block. The drive has an internal PTC- resistor. When reaching a high motor temperature, the drive switches off. This is an overload protection for the 24VDC- Motor, which does not exclude mechanical damages.

During the stroke adjustment through the limiting switches, make sure that the respective limiting switch has switched off correctly. If this is the case, the control lamp will switch off. The control lamp may not switch on in the final positions.

Before commencing with the initial operation, verify whether the two limiting switches have been adjusted correctly in order to avoid damage being caused to the fitting or window construction! Once both limiting switches have been adjusted, you must conduct a first trial run.

Operation

The nominal load is only reached under the nominal voltage. Falling under the nominal voltage reduces the nominal load.

Operation with a “dead man’s push button”
During operation with a “dead man’s switch”, current feeding must take place until the end of the closing process.

Maintenance

Under no circumstances should alkaline or acidic solutions be used for cleaning purposes.

The following tests need to be carried out after every 1000 opening-cycles:
- Inspect whether all screws are tightly fastened and retighten them if necessary.
- Visually inspect all components for any signs of damage or wearing out, and replace these if necessary.
- Ensure that the limiting switches are set correctly.

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Mindestens einmal pro Jahr eine Sichtprüfung des Netzkabels vornehmen. Es darf weder beschädigt sein, noch dürfen sonstige Anzeichen von Verschleiß oder Defekten vorhanden sein. Unterbrechen Sie die Strom- und Spannungsversorgung des Motors während den Reinigungs- und Wartungsarbeiten.

Störungen beheben
Falls der Antrieb stehen bleibt, lassen Sie bitte die elektrische Versorgung durch eine Elektrofachkraft überprüfen.

Tauschen Sie bei nicht von Fachleuten behebbaren Störungen den defekten Antrieb aus und lassen ihn vom Herstellerwerk reparieren.

At least once a year, conduct a visual inspection of the power cable. It may not be damaged, nor may any signs of wearing out or faults exist. Discontinue the current and power supply of the motor during the cleaning and maintenance process.

Rectifying disturbances
In case the drive stops running, please have a professional electrician examine the electricity supply.

If the disturbances cannot be rectified by qualified professionals, replace the faulty drive and have the manufacturer repair it.

Einbauerklärung

Hiermit erklären wir (Gröninger Antriebstechnik GmbH & Co. KG; Alte Str. 9; D-72631 Aichtal) dass die unvollständige Maschine Fensterantrieb **LS 1400** alle grundlegenden Anforderungen der Richtlinie 2006/42/EG des europäischen Parlament und des Rates vom 17.05.2006 über Maschinen und zur Änderung der Richtlinien 95/16/EG (Neufassung) erfüllt. Darüber hinaus entspricht die unvollständige Maschine der elektromagnetischen Verträglichkeit gemäß der Richtlinie 2014/30/EU des europäischen Parlaments und des Rates vom 26.02.2014 zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten über die elektromagnetische Verträglichkeit und zur Aufhebung der Richtlinie 89/336/EWG und es wird die Richtlinie 2014/35/EU des europäischen Parlaments und des Rates vom 26.02.2014 zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten betreffend der elektrischen Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen für elektrische Betriebsmittel eingehalten.
Bevollmächtigt, die relevanten technischen Unterlagen zusammen zu stellen, ist Herr Matthias Gröninger.

Die speziellen technischen Unterlagen gemäß Anhang VII B der Richtlinie 2006/42/EG wurden ordnungsgemäß erstellt.
Wir verpflichten uns, staatlichen Stellen auf

Declaration of Incorporation

We (Gröninger Antriebstechnik GmbH & Co. KG; Alte Str. 9; D-72631 Aichtal) hereby declare that the incomplete machine window-drive **LS 1400** fulfils all the fundamental requirements of the guideline 2006/42/EG of the European Parliament and Council of the 17.05.2006 about machines and for the annulment of the guidelines 95/16/EG (revised version). Furthermore, the incomplete machine corresponds with the electromagnetic compliance in accordance with the guideline 2014/30/EU of the European Parliament and Council of the 26.02.2014 for the alignment of the legislation of the member states concerning the electromagnetic compliance and for the annulment of the guidelines 89/336/EWG and the guideline 2014/35/EU of the European Parliament and Council of the 26.02.2016 for the alignment of the legislation of the member states concerning the electrical equipment to be used within certain voltage limits for electrical equipment were complied with.
Mr. Matthias Gröninger is authorised to compile the relevant technical documents.

The special technical documents according to attachment VII B of the guideline 2006/42/EG have been compiled in accordance with the regulations. Upon justified request, we pledge to provide state authorities with the special documents for the incomplete machine described above. The conveyance of the documents will be carried out as requested by the state authority.

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begründetes Verlangen die speziellen Unterlagen zu der oben bezeichneten unvollständigen Maschine zu übermitteln. Die Übermittlung erfolgt in der Weise, wie sie von der staatlichen Stelle verlangt wird.
Die Inbetriebnahme der unvollständigen Maschine ist erst dann zulässig, wenn gegebenenfalls festgestellt wurde, dass die Maschine, in die die unvollständige Maschine eingebaut werden soll, den Bestimmungen der Richtlinie 2006/42/EG entspricht.

Starting the operation of the incomplete machine is only permitted once it has been established that the machine into which the incomplete machine is to be incorporated, fulfils the regulations of the guideline 2006/42/EG.

Aichtal, 25.05.2018; Gröninger, Matthias,
Ort, Datum Name, Vorname

Geschäftsführer der Gröninger Antriebstechnik Gmbh & Co. KG; Alte Str. 9, D-72631 Aichtal

Aichtal, 25.05.2018; Gröninger, Matthias,
Location, Date Surname, Name

Managing Director of Gröninger Antriebstechnik Gmbh & Co. KG; Alte Str. 9, D-72631 Aichtal

Technische Daten / Technical Data

Versorgung Stromaufnahme Leistungsaufnahme Einschaltdauer	Supply Current consumption Power input Duty ratio	24 V DC ± 10 % 1,2 A 29 W ED 30% (180s ON / 420s OFF)
Druckkraft bei 24 V DC Zugkraft bei 24 V DC (an M8- Gewindestange)	Compressive force at24 V DC Tractive force at 24 V DC (at M8- threaded rod)	1400 N 1400 N
Hublänge	Stroke lentgth	Max. 70 mm
Laufzeit AUF / ZU	Running time OPEN / CLOSE	Ca.1,2 mm/s bei / at 1400N
Schutzart Temperaturbereich Überlastschutz	Protection type Temperature range Overload protection	IP 20 -15°C +50°C PTC- Widerstand / PTC- resistor
Anschluss Gehäuse	Connection Casing	Anschlußstecker / Connector Aluminium, Kunststoff / Aluminium, Plastic
Abmessungen (B x H x L)	Dimensions (w x h x l)	32.5 x 81.5 x 210mm

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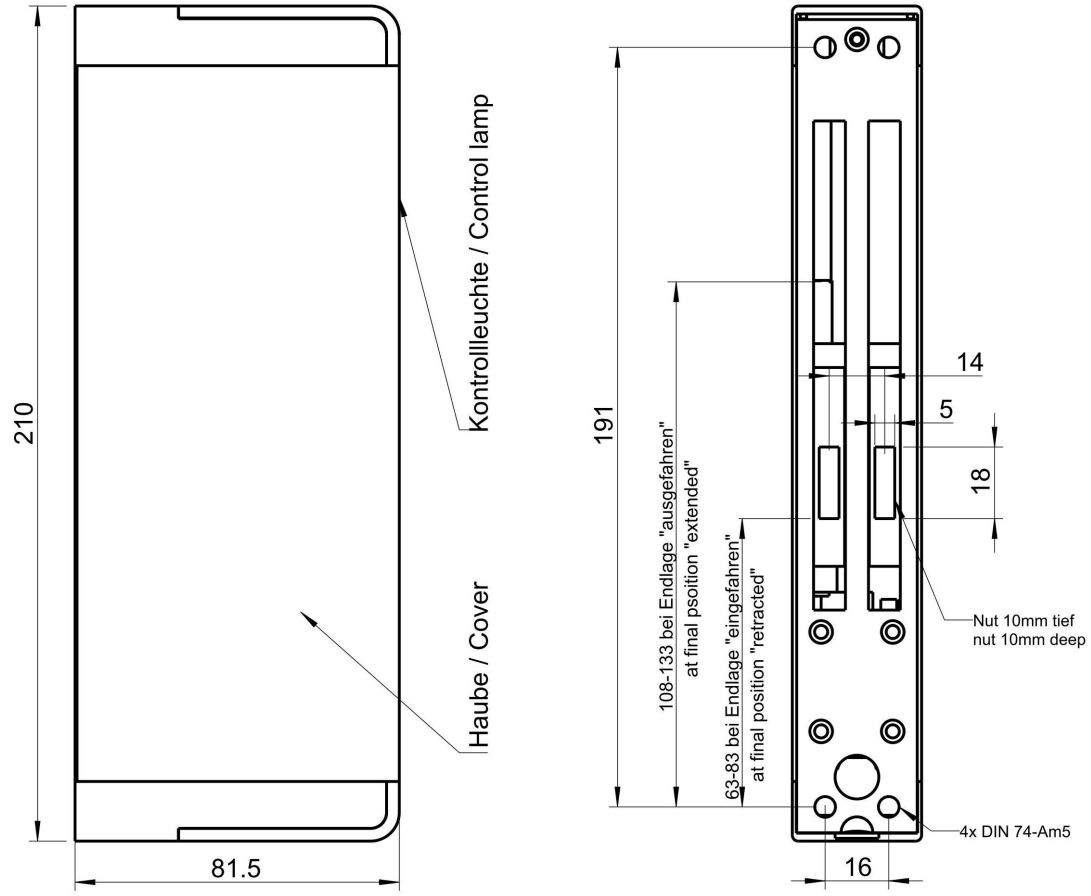
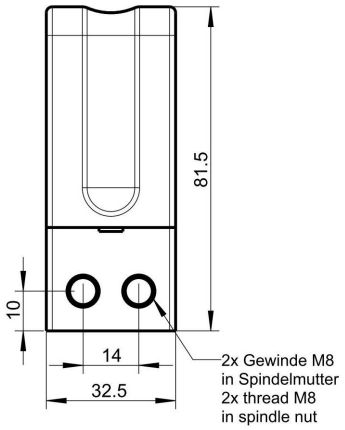
Massblatt / Dimension Sheet



Bei Extremstellungen der Endschalter (63,83,108,133mm) Haube abnehmen, um festzustellen wann die maximale Stellung erreicht ist.

Please remove the cover when adjusting extreme positions of the switches (68,83,108,133mm), in order to recognize when the maximum positions is reached.



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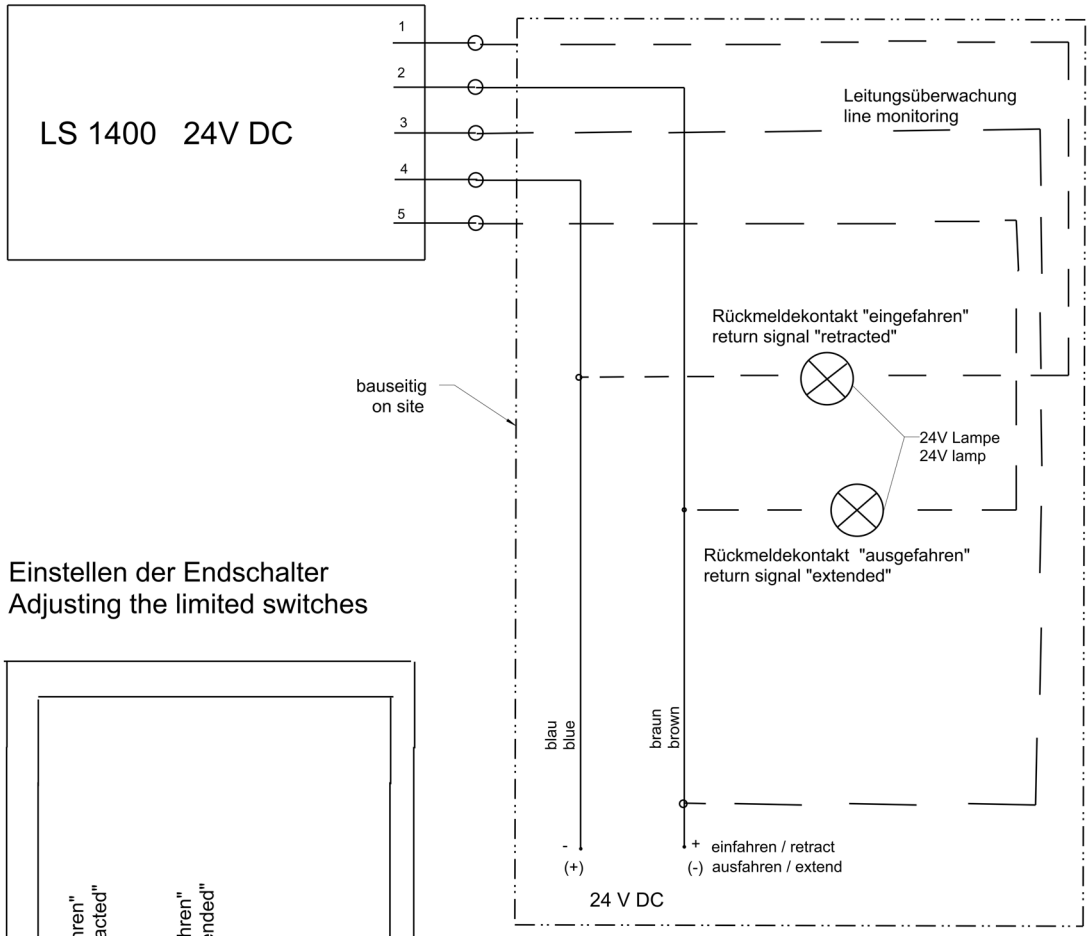
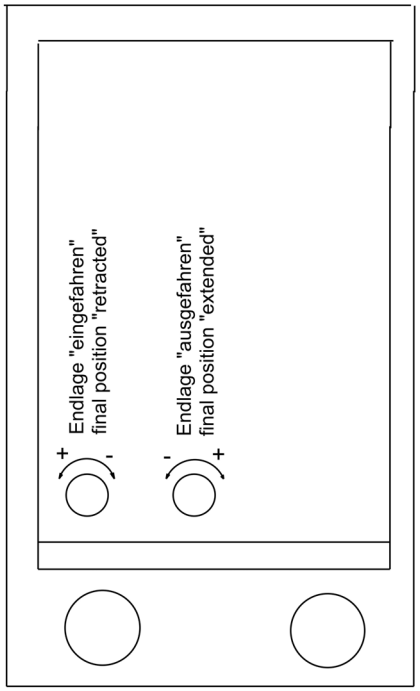
Anschlussplan / Connection Diagram



Einstellen der Endschalter
Adjusting the limited switches



Den Antrieb generell mit 24V DC Schutzkleinspannung betreiben!
Niemals an 230 V AC Stromversorgung anschließen!
Generally operate the drive with 24V DC safety extra-low voltage.
Never connect the drive to 230 V AC!

Bei der Hubeinstellung durch die Endschalter ist
darauf zu achten, dass der jeweilige Endschalter
richtig abschaltet. Dann erlischt die Betriebsanzeige!
Kontrollleuchte darf in den Endpositionen nicht aufleuchten!
Die Einstellungen sind durch einen Probelauf zu überprüfen!

During the stroke adjustment through the limiting switches,
make sure that the respective limiting switch has switched
off correctly. If this is the case, the control lamp will switch off.
The control lamp may not switch on in the final positions.
The adjustments must be controlled by a trial run!

15.2 LS 1400 (230V)actuator data sheet

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Betriebsanleitung
LS 1400 230 V AC
Originalbetriebsanleitung

Inhaltsverzeichnis

Allgemeines

Grundlegende Informationen
Diese Montage- und Betriebsanleitung ist Bestandteil des Produkts.

Der Antrieb LS 1400 darf ausschließlich für das Öffnen und Schließen an Fenstern verwendet werden.

Bitte lesen Sie die Anleitung sorgfältig durch und ***beachten Sie insbesondere die kursiv gedruckten Sicherheitshinweise***, bevor Sie mit der Montage, Wartung oder Nutzung beginnen. Bitte bewahren Sie die Anleitung während der gesamten Lebensdauer des Antriebes auf!

Die Antriebe entsprechen dem zur Zeit der Auslieferung aktuellen Stand der Technik. Dies betrifft Leistungsfähigkeit, Material, Funktionsweise und den sicheren Betrieb der Fensterantriebe. Um die sichere Montage und Installation zu gewährleisten, ist jedoch unbedingt sachkundiges und sicherheitsbewusstes Verhalten der Monteure und Installateure erforderlich.

Instruction Manual
LS 1400 230 V AC
Original Instruction Manual

Table of Contents

General Information

Fundamental Information
This assembly and operating manual is a component of the product.

The drive LS 1400 may be used exclusively for the opening and closing of windows.

Please read this manual carefully and ***pay particular attention to the safety instructions printed in italics*** before proceeding with the assembly, maintenance or use of the drive. Please keep the manual at your disposal throughout the drive's lifespan.

The drives comply with the state-of-the-art technology prevailing at the time of delivery. This applies to the performance, material, functionality and safe operation of the drives. The competent and safety-conscious conduct of the assemblers and installers is essential in order to ensure the safe assembly and installation of the drives.

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Sicherheitshinweise

Der Antrieb LS 1400 ist ausschließlich für das Öffnen und Schließen von Fenstern vorgesehen.

Beachten Sie bei der Montage und Bedienung:

Montage und Inbetriebnahme dürfen nur durch geeignetes Fachpersonal vorgenommen werden!

Beachten Sie alle geltenden Bestimmungen wie z.B.
- Unfallverhütungsvorschriften UVV
- VDE Bestimmungen,
- DIN- und EN-Normen
- Arbeitsschutzvorschriften usw.

Verwenden Sie den Antrieb nur in technisch einwandfreiem Zustand, bestimmungsgemäß, sicherheits- und gefahrenbewusst unter Beachtung der Montage- und Betriebsanleitung.

Beachten Sie, dass vor und bei der Montage sowie der Demontage der Fenstermotoren das jeweilige Fenster gegen unbeabsichtigtes Zuschlagen oder Abkippen gesichert sein muss.

Quetsch- und Klemmgefahr der Finger:

Das Fenster schließt automatisch. Bei der Montage und Bedienung nicht in den Fensterfalz und die bewegende Abtriebswelle greifen. Beim Schließen und Öffnen stoppt der Antrieb über die Endabschaltung. Die entsprechende Druckkraft entnehmen Sie bitte den technischen Daten. Diese reicht aus, um bei Unachtsamkeit Gliedmaßen zu verletzen.

Achtung: Berücksichtigen Sie immer eventuelle Lasten (Windlast, Schneelast) auf dem Fenster, damit jederzeit eine einwandfreie Funktionsweise der Fensterantriebe gewährleistet ist.

Safety Instructions

The drive LS 1400 is intended to be used solely for the opening and closing of windows.

Please bear in mind during assembly and operation:

Assembly and initial operation may only be carried out by qualified professionals!

Pay regard to all applicable regulations, e.g.
- Accident prevention regulations
- VDE Regulations
- DIN- and EN-Norms
- Occupational safety regulations etc.

Only use the drive if in a technically immaculate condition, in accordance with the applicable regulations, in a safety- and danger-conscious manner and in strict accordance with the assembly and operating manual.

Please note that during the assembly and disassembly of the drive, the respective window must be secured to prevent it from unintentionally tilting or slamming shut.

Crushing and Pinch Point Hazard for Fingers:

The window closes automatically. During assembly and operation, do not reach into the window rebate and the moving output shaft. The limiting switch stops the drive during opening and closing. Please refer to the technical data section for the corresponding compressive force values. This is enough to result in injured limbs due to carelessness.

Caution: In order to ensure the flawless functionality of the drives at any time, always take potential loads (e.g. caused by snow or wind) into consideration that may rest on the window.

Montage

-mechanisch

Die Montage darf ausschließlich von geschultem Fachpersonal durchgeführt werden.

Entfernen Sie die beiden stirnseitigen Abdeckungen aus Kunststoff, indem Sie diese nach oben wegziehen.
Befestigen Sie den Antrieb mit den dafür vorgesehenen Anschraubbohrungen (4x) mit M5

Assembly

-mechanical

The assembly may only be carried out by trained professionals.

Remove the plastic covers on the front and rear of the drive by pulling them off in an upwards direction.
Fasten the drive using the designated screw drill holes (4x) with an M5 or woodscrew up to d=5mm.

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bzw. Holzschrauben bis d=5mm.
Montieren Sie den Antrieb am Fenster so, dass er jederzeit zugänglich ist, um den Antrieb gegebenenfalls austauschen zu können.
Für die Kraftübertragung auf das Fenster gibt es zwei Möglichkeiten:
1.) M8- Gewindestange wird stirnseitig in die Spindelmutter eingeschraubt. z.B. für Oberlichtscheren. Entfernen Sie hierzu eine der beiden stirnseitigen Abdeckstopfen und schrauben Sie eine M8- Gewindestange in die Spindelmutter fest ein.
2.)Zwei Nuten mit 5mm auf Unterseite des Antriebs. Diese Abtriebsmöglichkeit ist abhängig von der jeweiligen Fensterkonstruktion und wird oft für Lamellenfenster verwendet.

Für die Montage und den Anschluss der Antriebe ist zu beachten:
- *Die erforderlichen Leistungsdaten (siehe „Technische Daten“) dürfen weder überschritten noch unterschritten werden.*
- *Die in den Maßzeichnungen angegebenen Werte sind beim Einbau des Antriebs einzuhalten.*
- *Prüfen Sie, ob Ihre Anlage die nötigen technischen und elektrischen Vorraussetzungen erfüllt.*
- *Beachten Sie immer alle landesüblichen Bestimmungen für elektrische Steuerungsanlagen sowie alle anderen landesüblichen Bestimmungen.*
- *Prüfen Sie immer, ob Ihre Anlage den gültigen Bestimmungen entspricht.*
  Besondere Beachtung finden dabei:
  - *Querschnitt des Fensters*
  - *Öffnungszeit/ -geschwindigkeit*
  - *Temperaturbeständigkeit von Kabel und Fensterantrieb*
  - *Querschnitte der Kabel in der Steuerungsanlage*

Fenster und Fensterrahmen müssen für die Belastung durch Druck- und Zugkraft des Fensterantriebs ausgelegt sein.

Gefahren bei der Montage
Die Gewährleistung für einen sicheren Betrieb hängt von der Einhaltung der Sicherheitsvorschriften seitens der Monteure ab. Handhabung und Montage bestimmter Teile und Komponenten in ungeeigneter Art und Weise kann unter ungünstigen Bedingungen zu Verletzungen führen.
Verletzungsgefahr durch unsachgemäße Handhabung! Körperverletzung durch Quetschen, Scheren, Schneiden, Stoßen!
- *Die allgemeinen Errichtungs- und*

Fit the drive onto the window in such a way that it is accessible at any given time and can be exchanged if necessary.
Two possibilities exist for the transmission of force onto the window:
1.) M8-threaded rod is screwed into the spindle nut on the frontal side e.g. for fanlight openers. In order to do this, remove one of the frontal cover plugs and tightly screw an M8-threaded rod into the spindle nut.
2.) Two grooves of 5mm on the bottom of the drive. This output possibility depends on the specific window construction in question and is often used for louvre windows.

For the assembly and installation of the drives, please bear the following in mind:
- *The required performance values (please see “Technical Data”) may be neither exceeded nor undershot.*
- *The values indicated on the dimension sheet are to be complied with during the installation of the drive.*
- *Be sure to verify whether your facility meets the necessary technical and electric requirements.*
- *Always respect all country specific regulations for electric governance systems as well as all other country specific regulations.*
- *Always verify whether your facility meets the relevant requirements.*
  Pay special attention to the:
  - *Cross-section of the window*
  - *Opening time/speed*
  - *Temperature resistance of the cables and drive*
  - *Cross-section of the cables in the governance system*

The window and window frame must be constructed according to the strain caused by the compressive and tractive force of the drive.

Danger during assembly
The warranty for the safe operation is dependent on the assemblers’ compliance with the safety regulations. The handling and assembly of certain parts and components in an inappropriate manner may lead to injuries under unfavourable circumstances.
Risk of injury through improper handling! Potential injury through crushing, shearing, cutting, impact! Follow the general construction and safety instructions for handling and assembly.
- *Use suitable assembly and transport facilities.*
- *Prevent incarceration and crushing through*

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Sicherheitsvorschriften zur Handhabung und Montage beachten.
- *Geeignete Montage- und Transporteinrichtungen verwenden.*
- *Einklemmungen und Quetschungen durch geeignete Vorkehrungen vorbeugen.*
- *Nur dafür geeignetes Werkzeug verwenden.*
- *Hebeeinrichtungen und Werkzeug fachgerecht einsetzen.*
- *Wenn erforderlich, geeignete Schutzausstattungen (z.B. Schutzbrille, Sicherheitsschuhe) benutzen.*
- *Nicht unter hängenden Lasten aufhalten.*

suitable precautions.
- *Only use suitable tools.*
- *Use lifting equipment and tools properly.*
- *Use appropriate safety equipment (e.g. safety goggles, safety shoes) when necessary.*
- *Do not stop beneath hanging loads.*

-elektrisch

Achtung:
Den Antrieb nur mit 230 VAC betreiben.

Die elektrische Installation darf nur von Elektrofachpersonal unter Beachtung der Sicherheitsbestimmungen vorgenommen werden. Die Anschlussleitungen dürfen weder auf Zug, Verdrehung, Quetschung noch auf Abscherung belastet werden.

Falls noch nicht geschehen, entfernen Sie die Sicherungsschraube M3 an der stirnseitigen Kunststoffabdeckung auf der Seite des elektrischen Anschlusses. Entfernen Sie die Abdeckungen, indem Sie diese nach oben wegziehen.

Schließen Sie den Antrieb gemäß Anschlussplan an. Den genauen Anschlussplan finden Sie am Ende dieser Anleitung. Befestigen Sie das Anschlusskabel unbedingt mit der dafür vorgesehenen Zugentlastung!

Sollte während der Montage des Antriebs das Schutzleiterkabel von der Haube entfernt worden sein, oder falls der Antrieb mit separater Haube ausgeliefert wurde, muss das Schutzleiterkabel wieder mit der Haube elektrisch leitend verbunden werden. Es muss geprüft und protokolliert werden, dass der Widerstand zwischen Haube und Klemme 5 (PE) max. 1Ω entspricht gemäß DIN VDE 0100-600. Je nach Einbauort, sind weitere länderspezifische Vorschriften zu beachten!

Der Antrieb ist für die Innenmontage geeignet und sollte grundsätzlich mit einem Regensensor betrieben werden.

Setzten Sie nach der Montage die stirnseitigen Abdeckungen auf. Schrauben Sie auf der

-electric

Caution:
Only operate the drive with 230 VAC.

The electric installation may only be carried out by professional electricians while following the safety regulations. The connection cables may not be put under the strain of twisting, crushing or shearing off.

In case it has not yet been done, remove the safety screw M3 on the frontal plastic cover on the side of the electric connection. Remove the plastic covers by pulling them off in an upward direction.

Connect the drive according to the connection diagram. The detailed connection diagram is located at the end of this manual. It is crucial that the connection cable is fastened using the designated strain relief.

In case of disconnecting the ground wire from the cover during mounting the drive or in case of separate delivery of the cover and the drive, the ground wire must be connected electrically conducting. It must be tested and recorded that the electrical resistance between the cover and terminal 5 (PE) is max. 1Ω according DIN VDE 0100-600. According to the place of installation, further country-specific regulations must be observed.

The drive is suitable for interior mounting and should principally operate with a rain-sensor.

After assembly, be sure to place the front and rear covers back onto the drive. It is essential that you screw the safety screw M3 back into the plastic cover on the side of the electric connection. Do this until the screw is even with the surface of the cover.

elektrischen Anschlussseite unbedingt die Sicherungsschraube M3 wieder in die Kunststoffabdeckung ein, bis die Sicherungsschraube eben mit der Oberfläche der Abdeckung ist!

Inbetriebnahme

Überprüfen Sie vor der ersten Inbetriebnahme, ob der Antrieb sachgemäß am Objekt befestigt wurde (siehe Montage mechanisch und elektrisch) und der elektrische Anschluss gemäß den oben genannten Bestimmungen ausgeführt wurde.

Achten Sie dabei auf die elektrische Zuleitung und prüfen Sie diese auf eventuelle Beschädigungen. Lassen Sie die Zuleitung gegebenenfalls von einer Elektrofachkraft austauschen.

Sind die oben genannten Anforderungen erfüllt, können die beiden Endschalter eingestellt werden. Die Endschalter werden durch Drehen mit einem Schraubendreher an den stirnseitigen Stellschrauben verstellt (Drehrichtung siehe Anschlussplan). Die Endschalter müssen so eingestellt werden, dass die Fenstermechanik und der Antrieb nicht auf Block belastet wird.
Der Antrieb besitzt einen internen Thermoschalter, der bei Erreichen einer hohen Motortemperatur den Antrieb abschaltet. Dies stellt eine Schutzmaßnahme des 230VAC- Motors dar, die mechanische Beschädigungen nicht ausschließt.

Bei der Hubeinstellung durch die Endschalter ist darauf zu achten, dass der jeweilige Endschalter richtig abschaltet. Dann erlischt die Kontrollleuchte. Die Kontrollleuchte darf in den Endpositionen nicht aufleuchten!

Prüfen Sie vor der Inbetriebnahme ob die beiden Endschalter sachgemäß eingestellt sind, um Beschädigungen der Beschlags- oder Fensterkonstruktion zu vermeiden!
Sind beide Endschalter eingestellt, müssen Sie einen ersten Probelauf durchführen.

Betrieb

Die Nennlast wird nur bei Nennspannung erreicht. Eine Unterschreitung reduziert die Nennlast!

Betrieb mit einem „Totmanntaster“
Bei Betrieb mit einer „Totmannschaltung“ (Tipp-Taster) muss eine Bestromung bis zum Ende des Schließvorgangs erfolgen.

Initial Operation

Before putting the drive into operation for the first time, please verify whether the drive has been properly fixed onto the respective object (please see Assembly- mechanical and electric) and whether the electric connection was carried out in accordance with the requirements listed above.

Pay attention to the electric supply cables and inspect these for potential damage. If necessary, have a professional electrician exchange the supply cables

If the requirements listed above have been met, the two limiting switches may be adjusted. The limiting switches are adjusted by turning the frontal setting screws using a screwdriver (refer to connection diagram for turning direction). The limiting switches must be adjusted in such a way that the window mechanics and the drive are not strained to block. The drive has an internal thermal switch. When reaching a high motor temperature, the drive switches off. This is a overload protection for the 230VAC- Motor, which does not exclude mechanical damages.

During the stroke adjustment through the limiting switches, make sure that the respective limiting switch has switched off correctly. If this is the case, the control lamp will switch off. The control lamp may not switch on in the final positions.

Before commencing with the initial operation, verify whether the two limiting switches have been adjusted correctly in order to avoid damage being caused to the fitting or window construction! Once both limiting switches have been adjusted, you must conduct a first trial run.

Operation

The nominal load is only reached under the nominal voltage. Falling under the nominal voltage reduces the nominal load.

Operation with a “dead man’s push button”
During operation with a “dead man’s switch”, current feeding must take place until the end of the closing process.

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Wartung

Verwenden Sie keinesfalls Laugen oder Säuren zum Reinigen.

Alle 1000 Öffnungszyklen müssen folgende Prüfungen durchgeführt werden:
- Prüfen Sie, ob alle Schrauben fest angezogen sind, bzw. ziehen Sie diese ggfs. nach.
- Führen Sie eine Sichtkontrolle auf Beschädigung und Verschleiß aller Bauteile durch und tauschen diese ggfs. aus.
- Kontrollieren Sie die korrekte Einstellung der Endschalter.

Mindestens einmal pro Jahr eine Sichtprüfung des Netzkabels vornehmen. Es darf weder beschädigt sein, noch dürfen sonstige Anzeichen von Verschleiß oder Defekten vorhanden sein. Unterbrechen Sie die Strom- und Spannungsversorgung des Motors während den Reinigungs- und Wartungsarbeiten.

Störungen beheben
Falls der Antrieb stehen bleibt, lassen Sie bitte die elektrische Versorgung durch eine Elektrofachkraft überprüfen.

Tauschen Sie bei nicht von Fachleuten behebbaren Störungen den defekten Antrieb aus und lassen ihn vom Herstellerwerk reparieren.

Maintenance

Under no circumstances should alkaline or acidic solutions be used for cleaning purposes.

The following tests need to be carried out after every 1000 opening-cycles:
- Inspect whether all screws are tightly fastened and retighten them if necessary.
- Visually inspect all components for any signs of damage or wearing out, and replace these if necessary.
- Ensure that the limiting switches are set correctly.

At least once a year, conduct a visual inspection of the power cable. It may not be damaged, nor may any signs of wearing out or faults exist. Discontinue the current and power supply of the motor during the cleaning and maintenance process.

Rectifying disturbances
In case the drive stops running, please have a professional electrician examine the electricity supply.

If the disturbances cannot be rectified by qualified professionals, replace the faulty drive and have the manufacturer repair it.

Einbauerklärung

Hiermit erklären wir (Gröninger Antriebstechnik GmbH & Co. KG; Alte Str. 9; D-72631 Aichtal) dass die unvollständige Maschine Fensterantrieb **LS 1400** alle grundlegenden Anforderungen der Richtlinie 2006/42/EG des europäischen Parlament und des Rates vom 17.05.2006 über Maschinen und zur Änderung der Richtlinien 95/16/EG (Neufassung) erfüllt Darüber hinaus entspricht die unvollständige Maschine der elektromagnetischen Verträglichkeit gemäß der Richtlinie 2014/30/EU des europäischen Parlaments und des Rates vom 26.02.2014 zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten über die elektromagnetische Verträglichkeit und zur Aufhebung der Richtlinie 89/336/EWG und es wird die Richtlinie 2014/35/EU des europäischen Parlaments und des Rates vom 26.02.2014 zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten betreffend der elektrischen Betriebsmittel zur Verwendung

Declaration of Incorporation

We (Gröninger Antriebstechnik GmbH & Co. KG; Alte Str. 9; D-72631 Aichtal) hereby declare that the incomplete machine window-drive **LS 1400** fulfils all the fundamental requirements of the guideline 2006/42/EG of the European Parliament and Council of the 17.05.2006 about machines and for the annulment of the guidelines 95/16/EG (revised version). Furthermore, the incomplete machine corresponds with the electromagnetic compliance in accordance with the guideline 2014/30/EU of the European Parliament and Council of the 26.02.2014 for the alignment of the legislation of the member states concerning the electromagnetic compliance and for the annulment of the guidelines 89/336/EWG and the guideline 2014/35/EU of the European Parliament and Council of the 26.02.2014 for the alignment of the legislation of the member states concerning the electrical equipment to be used within certain voltage limits for electrical equipment were complied with.

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innerhalb bestimmter Spannungsgrenzen für elektrische Betriebsmittel eingehalten.
Bevollmächtigt, die relevanten technischen Unterlagen zusammen zu stellen, ist Herr Matthias Gröninger.

Die speziellen technischen Unterlagen gemäß Anhang VII B der Richtlinie 2006/42/EG wurden ordnungsgemäß erstellt.
Wir verpflichten uns, staatlichen Stellen auf begründetes Verlangen die speziellen Unterlagen zu der oben bezeichneten unvollständigen Maschine zu übermitteln. Die Übermittlung erfolgt in der Weise, wie sie von der staatlichen Stelle verlangt wird.
Die Inbetriebnahme der unvollständigen Maschine ist erst dann zulässig, wenn gegebenenfalls festgestellt wurde, dass die Maschine, in die die unvollständige Maschine eingebaut werden soll, den Bestimmungen der Richtlinie 2006/42/EG entspricht.

Aichtal, 25.05.2018; Gröninger, Matthias,
Ort, Datum Name, Vorname

Geschäftsführer der Gröninger Antriebstechnik Gmbh & Co. KG; Alte Str. 9, D-72631 Aichtal

Mr. Matthias Gröninger is authorised to compile the relevant technical documents.

The special technical documents according to attachment VII B of the guideline 2006/42/EG have been compiled in accordance with the regulations.
Upon justified request, we pledge to provide state authorities with the special documents for the incomplete machine described above. The conveyance of the documents will be carried out as requested by the state authority.
Starting the operation of the incomplete machine is only permitted once it has been established that the machine into which the incomplete machine is to be incorporated, fulfils the regulations of the guideline 2006/42/EG.

Aichtal, 25.05.2018; Gröninger, Matthias,
Loaction, Date Surname, Name

Managing director of Gröninger Antriebstechnik GmbH & Co. KG; Alte Str. 9, D-72631 Aichtal

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Technische Daten / Technical Data

Versorgung Stromaufnahme Leistungsaufnahme Einschatldauer	Supply Current consumption Power input Duty ratio	230 V AC ± 10 %; 50Hz 0,4 A 90 W ED 25% (150s ON / 450s OFF)
Druckkraft bei 230 V AC Zugkraft bei 230 V AC (an M8- Gewindestange)	Compressive force at230 V AC Tractive force at 230 V AC (at M8- threaded rod)	1400 N 1400 N
Hublänge	Stroke lentgth	Max. 70 mm
Laufzeit AUF / ZU	Running time OPEN / CLOSE	Ca.1,2 mm/s bei / at 1400N
Schutzart Temperaturbereich Überlastschutz	Protection type Temperature range Overload protection	IP 20 -15°C +70°C Thermoschalter / Thermal switch
Anschluss Gehäuse	Connection Casing	Anschlußstecker / Connector Aluminium, Kunststoff / Aluminium, Plastic
Abmessungen (B x H x L)	Dimensions (w x h x l)	32.5 x 81.5 x 210mm

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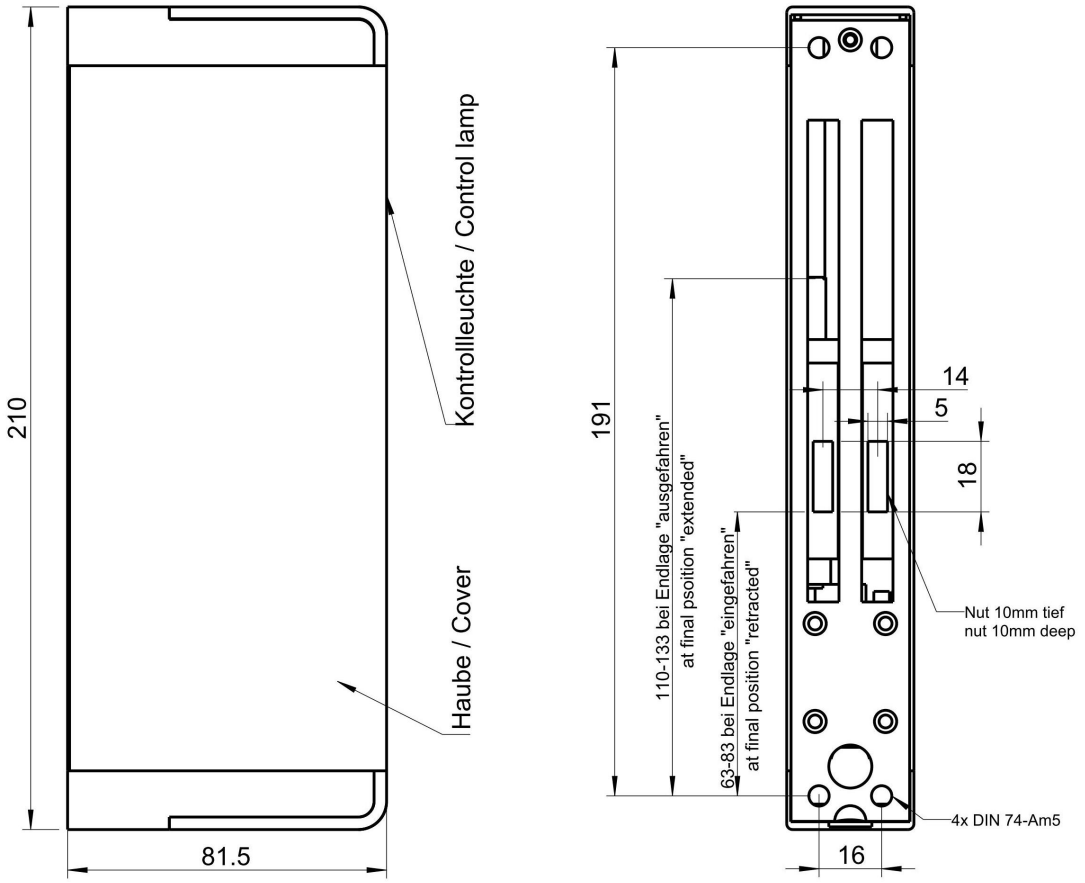
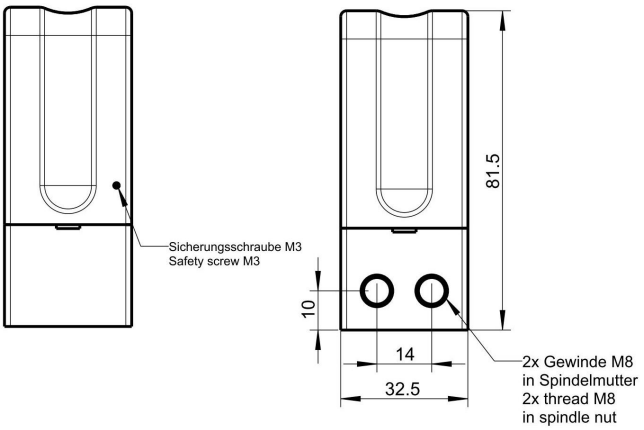
Massblatt / Dimension Sheet



Bei Extremstellungen der Endschalter (63,83,110,113mm) Haube abnehmen, um festzustellen wann die maximale Stellung erreicht ist.

Please remove the cover when adjusting extreme positions of the limiting switches (63,83,110,133mm), in order to recognize when the maximum position is reached.



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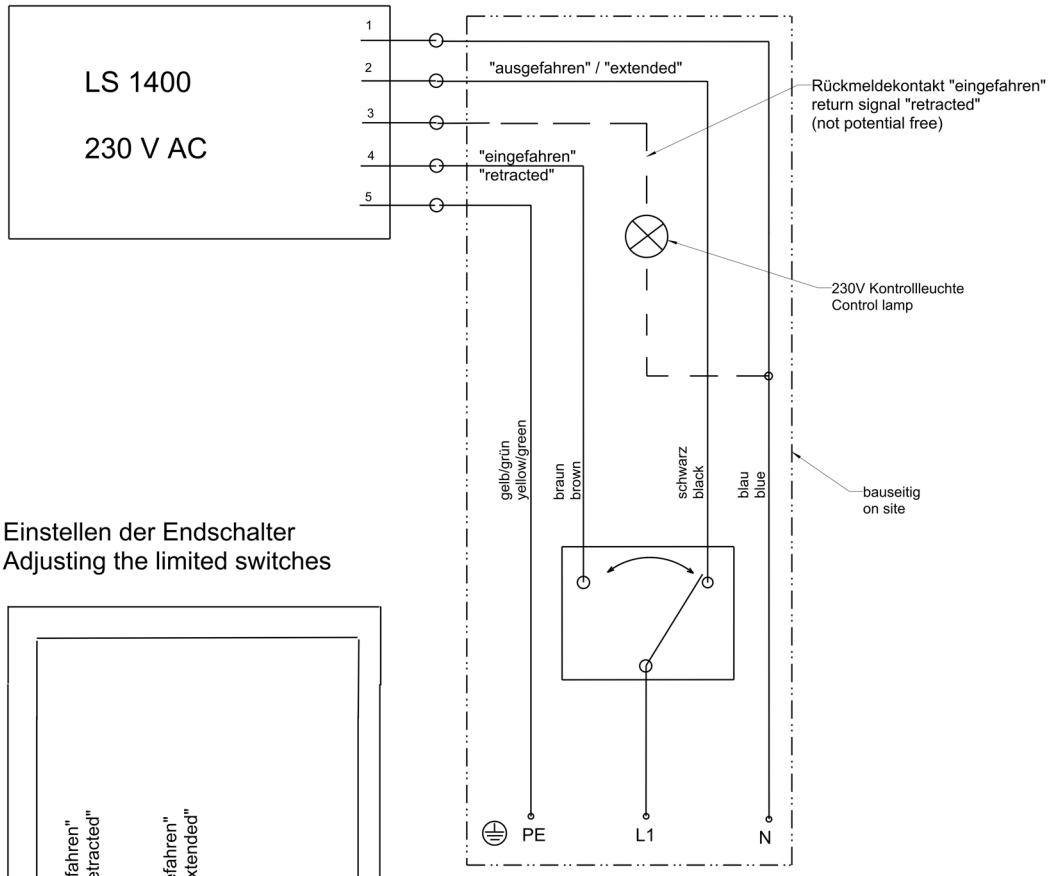
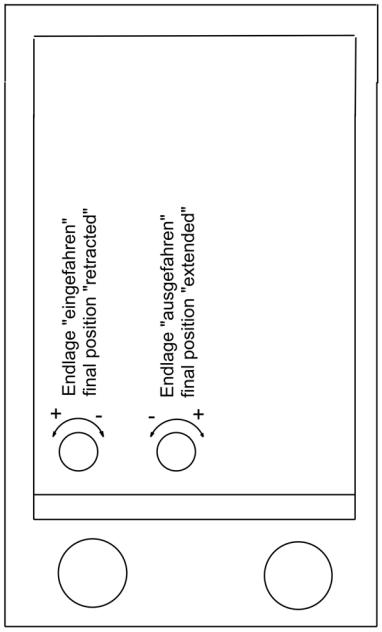
Anschlussplan / Connection Diagram



Einstellen der Endschalter
Adjusting the limited switches



Bei der Hubeinstellung durch die Endschalter ist darauf zu achten, dass der jeweilige Endschalter richtig abschaltet. Dann erlischt die Betriebsanzeige! Kontrollleuchte darf in den Endpositionen nicht aufleuchten. Die Einstellungen sind durch einen Probelauf zu überprüfen!

During the stroke adjustment through the limiting switches, make sure that the respective limiting switch has switched off correctly. If this is the case, the control lamp will switch off. The control lamp may not switch on in the final positions. The adjustments must be controlled by a trial run.

15.3 LS 1500 (24V)actuator data sheet

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Betriebsanleitung
ML 1500 24 V DC
Originalbetriebsanleitung

Instruction Manual
ML 1500 24 V DC
Original Instruction Manual

Inhaltsverzeichnis

Table of Contents

Allgemeines

Grundlegende Informationen
Diese Montage- und Betriebsanleitung ist Bestandteil des Produkts.

Der Antrieb ML 1500 darf ausschließlich für das Öffnen und Schließen an Fenstern verwendet werden.
An Sonderfenstern sind Anbauvarianten möglich.

Bitte lesen Sie die Anleitung sorgfältig durch und ***beachten Sie insbesondere die kursiv gedruckten Sicherheitshinweise***, bevor Sie mit der Montage, Wartung oder Nutzung beginnen. Bitte bewahren Sie die Anleitung während der gesamten Lebensdauer des Antriebes auf!

Die Antriebe entsprechen dem zur Zeit der Auslieferung aktuellen Stand der Technik. Dies betrifft Leistungsfähigkeit, Material, Funktionsweise und den sicheren Betrieb der Fensterantriebe. Um die sichere Montage und Installation zu gewährleisten, ist jedoch unbedingt sachkundiges und sicherheitsbewusstes Verhalten der Monteure und Installateure erforderlich.

General Information

Fundamental Information
This assembly and operating manual is a component of the product.

The drive ML 1500 may be used exclusively for the opening and closing of windows.
The possibility of customised versions exists for non-standard windows.

Please read this manual carefully and ***pay particular attention to the safety instructions printed in italics*** before proceeding with the assembly, maintenance or use of the drive.
Please keep the manual at your disposal throughout the drive's lifespan.

The drives comply with the state-of-the-art technology prevailing at the time of delivery. This applies to the performance, material, functionality and safe operation of the drives. The competent and safety-conscious conduct of the assemblers and installers is essential in order to ensure the safe assembly and installation of the drives.

GRÖNINGER Antriebstechnik

Sicherheitshinweise

Der Antrieb ML 1500 ist ausschließlich für das Öffnen und Schließen von Fenstern vorgesehen.

Beachten Sie bei der Montage und Bedienung:

Montage und Inbetriebnahme dürfen nur durch geeignetes Fachpersonal vorgenommen werden!

Beachten Sie alle geltenden Bestimmungen wie z.B.
- Unfallverhütungsvorschriften UVV
- VDE Bestimmungen,
- DIN- und EN-Normen
- Arbeitsschutzvorschriften usw.

Verwenden Sie den Antrieb nur in technisch einwandfreiem Zustand, bestimmungsgemäß, sicherheits- und gefahrenbewusst unter Beachtung der Montage- und Betriebsanleitung.

Beachten Sie, dass vor und bei der Montage sowie der Demontage der Fenstermotoren das jeweilige Fenster gegen unbeabsichtigtes Zuschlagen oder Abkippen gesichert sein muss.

Quetsch- und Klemmgefahr der Finger:

Das Fenster schließt automatisch. Bei der Montage und Bedienung nicht in den Fensterfalz und die bewegende Abtriebswelle greifen. Beim Schließen und Öffnen stoppt der Antrieb über die Endabschaltung. Die entsprechende Druckkraft entnehmen Sie bitte den technischen Daten. Diese reicht aus, um bei Unachtsamkeit Gliedmaßen zu verletzen.

Achtung: Berücksichtigen Sie immer eventuelle Lasten (Windlast, Schneelast) auf dem Fenster, damit jederzeit eine einwandfreie Funktionsweise der Fensterantriebe gewährleistet ist.

Montage

-mechanisch

Die Montage darf ausschließlich von geschultem Fachpersonal durchgeführt werden.

Montieren Sie den Antrieb am Fenster so, dass er jederzeit zugänglich ist, um den Antrieb gegebenenfalls austauschen zu können. Er muss fest an den dafür vorgesehenen Befestigungspunkten (Anschraublaschen) mit dem Fenster verbunden sein. Dies sind vier

Safety Instructions

The drive ML 1500 is intended to be used solely for the opening and closing of windows.

During assembly and operation, please bear in mind that:

Assembly and initial operation may only be carried out by qualified professionals!

Pay regard to all applicable regulations, e.g.
- Accident prevention regulations
- VDE Regulations
- DIN- and EN-Norms
- Occupational safety regulations etc.

Only use the drive if in a technically immaculate condition, in accordance with the applicable regulations, in a safety- and danger-conscious manner and in strict accordance with the assembly and operating manual.

Please note that during the assembly and disassembly of the drive, the respective window must be secured to prevent it from unintentionally tilting or slamming shut.

Crushing and Pinch Point Hazard for Fingers:

The window closes automatically. During assembly and operation, do not reach into the window rebate and the moving output shaft. The limiting switch stops the drive during opening and closing. Please refer to the technical data section for the corresponding compressive force values. This is enough to result in injured limbs due to carelessness.

Caution: In order to ensure the flawless functionality of the drives at any time, always take potential loads (e.g. caused by snow or wind) into consideration that may rest on the window.

Assembly

-mechanical

The assembly may only be carried out by trained professionals.

Fit the drive onto the window in such a way that it is accessible at any given time, and can be exchanged if necessary. It must be securely connected to the window using the designated fastening-points (mounting brackets). These are four screw drill holes

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Anschraubbohrungen für M5 bzw. Holzschraube bis d=5mm.
Für die Kraftübertragung auf das Fenster gibt es mehrere Möglichkeiten:

- M8- Gewindestange wird stirnseitig in die Spindelmutter eingeschraubt. z.B. für Oberlichtscheren
- 2x Nuten mit 5mm auf Unterseite des Antriebs

Für die Montage und den Anschluss der Antriebe ist zu beachten:

- *Die erforderlichen Leistungsdaten (siehe „Technische Daten“) dürfen weder überschritten noch unterschritten werden.*
- *Die in den Maßzeichnungen angegebenen Werte sind beim Einbau des Antriebs einzuhalten.*
- *Prüfen Sie, ob Ihre Anlage die nötigen technischen und elektrischen Vorraussetzungen erfüllt.*
- *Beachten Sie immer alle landesüblichen Bestimmungen für elektrische Steuerungsanlagen sowie alle anderen landesüblichen Bestimmungen.*
- *Prüfen Sie immer, ob Ihre Anlage den gültigen Bestimmungen entspricht.*
  Besondere Beachtung finden dabei:
  - *Querschnitt des Fensters*
  - *Öffnungszeit/ -geschwindigkeit*
  - *Temperaturbeständigkeit von Kabel und Fensterantrieb*
  - *Querschnitte der Kabel in der Steuerungsanlage*

Fenster und Fensterrahmen müssen für die Belastung durch Druck- und Zugkraft des Fensterantriebs ausgelegt sein.

Gefahren bei der Montage

Die Gewährleistung für einen sicheren Betrieb hängt von der Einhaltung der Sicherheitsvorschriften seitens der Monteure ab. Handhabung und Montage bestimmter Teile und Komponenten in ungeeigneter Art und Weise kann unter ungünstigen Bedingungen zu Verletzungen führen.

Verletzungsgefahr durch unsachgemäße Handhabung! Körperverletzung durch Quetschen, Scheren, Schneiden, Stoßen!

- *Die allgemeinen Errichtungs- und Sicherheitsvorschriften zur Handhabung und Montage beachten.*
- *Geeignete Montage- und Transporteinrichtungen verwenden.*
- *Einklemmungen und Quetschungen durch geeignete Vorkehrungen vorbeugen.*

for an M5 or a woodscrew up to d=5mm.
Multiple possibilities exist for the transmission of force onto the window:

- M8-threaded rod is screwed into the spindle nut on the front side e.g. for fanlight openers
- 2x grooves of 5mm on the bottom of the drive

For the assembly and installation of the drives, please bear the following in mind:

- *The required performance values (please see “Technical Data”) may be neither exceeded nor undershot.*
- *The values indicated on the dimension sheet are to be complied with during the installation of the drive.*
- *Be sure to verify whether your facility meets the necessary technical and electric requirements.*
- *Always respect all country specific regulations for electric governance systems as well as all other country specific regulations.*
- *Always verify whether your facility meets the relevant requirements.*
  Pay special attention to the:
  - *Cross-section of the window*
  - *Opening time/speed*
  - *Temperature resistance of the cables and drive*
  - *Cross-section of the cables in the governance system*

The window and window frame must be constructed according to the strain caused by the compressive and tractive force of the drive.

Danger during assembly

The warranty for the safe operation is dependent on the assemblers’ compliance with the safety regulations. The handling and assembly of certain parts and components in an inappropriate manner may lead to injuries under unfavourable circumstances.

Risk of injury through improper handling! Potential injury through crushing, shearing, cutting, impact!

- *Follow the general construction and safety instructions for handling and assembly.*
- *Use suitable assembly and transport facilities.*
- *Prevent incarceration and crushing through suitable precautions.*
- *Only use suitable tools.*
- *Use lifting equipment and tools properly.*
- *Use appropriate safety equipment (e.g. safety goggles, safety shoes) when necessary.*

- *Nur dafür geeignetes Werkzeug verwenden.*
- *Hebeeinrichtungen und Werkzeug fachgerecht einsetzen.*
- *Wenn erforderlich, geeignete Schutzausstattungen (z.B. Schutzbrille, Sicherheitsschuhe) benutzen.*

-elektrisch

Achtung: Den Antrieb generell mit 24V DC Schutzkleinspannung betreiben. Den Antrieb niemals an 230V AC anschließen.

Die elektrische Installation darf nur von Elektrofachpersonal unter Beachtung der Sicherheitsbestimmungen vorgenommen werden. Die Anschlussleitungen dürfen weder auf Zug, Verdrehung, Quetschung noch auf Abscherung belastet werden.

Den genauen Anschlussplan finden Sie am Ende dieser Anleitung.

Der Antrieb ist für die Innenmontage in trockenen Räumen geeignet. Je nach Umgebung sind ggfs. weitere Schutzmaßnahmen erforderlich (z.B. Regensensor, zusätzliche Haube).

Inbetriebnahme

Bitte überprüfen Sie vor der ersten Inbetriebnahme, ob der Antrieb sachgemäß am Objekt befestigt wurde (siehe Montage mechanisch und elektrisch) und der elektrische Anschluss gemäß den oben genannten Bestimmungen ausgeführt wurde.

Achten Sie dabei auf die elektrische Zuleitung und prüfen Sie diese auf eventuelle Beschädigungen. Lassen Sie die Zuleitung gegebenenfalls von einer Elektrofachkraft austauschen.

Sind die oben genannten Anforderungen erfüllt, können die beiden Endschalter eingestellt werden. Die Endschalter werden durch Drehen mit einem Schraubenzieher an den stirnseitigen Stellschrauben eingestellt. Die Endschalter müssen so eingestellt werden, dass die Fenstermechanik und der Antrieb nicht auf Block belastet werden. Sie erkennen korrekt eingestellte Endschalter an folgenden Merkmalen:

- die jeweilige stirnseitige Stellschraube bewegt sich beim Erreichen der Endlage
- ein akustisches Klicken ist leise hörbar

-electric

Caution: Generally operate the drive with 24V DC safety extra-low voltage. Never connect the drive to 230V AC.

The electric installation may only be carried out by professional electricians while following the safety regulations. The connection cables may not be put under the strain of twisting, crushing or shearing off.

The detailed connection diagram is located at the end of this manual.

The drive is suitable for interior mounting in dry rooms. Depending on the environment of the drive, other precautions must be done (e.g. rain-sensor, additional cover).

Initial Operation

Before putting the drive into operation for the first time, please verify whether the drive has been properly fixed onto the respective object (please see Assembly- mechanical and electric) and whether the electric connection was carried out in accordance with the requirements listed above.

Pay attention to the electric supply cables and inspect these for potential damage. If necessary, have a professional electrician exchange the supply cables.

If the requirements listed above have been met, the two limiting switches may be adjusted. The limiting switches are adjusted by turning the frontal setting screws using a screwdriver. The limiting switches must be adjusted in such a way that the window mechanics and the drive are not strained to block. Correctly adjusted limiting switches can be identified using the following criteria:

- The frontal setting screws move once they have reached their final position.
- A silent acoustic click can be heard.
- The electric current consumption is

- die elektrische Stromaufnahme des Antriebs verringert sich auf die Stand-By-Leistung

Besonderheit bei Option Klemmschutz:
Der Antrieb bleibt in den Endlagen stehen, auch wenn an der entsprechenden Stellschraube einige Umdrehungen gemacht werden. Daher muss vor dem Verstellen der Stellschraube die Spindelmutter einige Millimeter von der Endlage (Endschalter) weggefahren werden.
Als Richtwert gilt: 1 Umdrehung an der Stellschraube entspricht ca. 0,7mm Weg an der Spindelmutter.

Prüfen Sie vor der Inbetriebnahme ob die beiden Endschalter sachgemäß eingestellt sind, um Beschädigungen der Beschlags- oder Fensterkonstruktion zu vermeiden! Die Endschalter sollten so eingestellt sein, dass die Fenstermechanik nicht auf Block belastet wird.

Sind die Endschalter eingestellt, können Sie einen ersten Probelauf durchführen.

Bei optionalen Funktionen wie beispielsweise dem Einklemmschutz, müssen zusätzliche Referenzfahrten durchgeführt werden. Beachten Sie gegebenenfalls hierzu die Hinweise im Kapitel Betrieb.

Betrieb

Die Nennlast wird nur bei Nennspannung erreicht. Eine Unterschreitung reduziert die Nennlast!

Integrierter Klemmschutz für Lamellenfenster (optional)

Der Klemmschutz für Lamellenfenster vermindert die Quetschgefahr an der Hauptschließkante.

Wird vom Antrieb eine harte Blockade zwischen den Endschaltern erkannt, so reversiert die interne Elektronik automatisch den Antrieb. Danach wiederholt der Antrieb den Schließversuch nach einer Verweilzeit von ca. 2 Sekunden. Wenn weiterhin eine Blockade vorliegt, reversiert der Antrieb erneut und schaltet dann endgültig ab (Störung). Durch einen Polaritätswechsel der Spannungsversorgung wird diese Abschaltung zurückgesetzt.

Je nach Geometrie und Mechanik des Lamellenfensters ergeben sich unterschiedliche Abschaltkräfte an den

reduced to the Stand-By-Power.

Exception at option anti- trap:
The drive stays in the limiting position, even if the respective setting screw is turned several times. That is why the spindle nut has to be driven away from the limiting position (limiting switch) for some millimetres, before adjusting the setting screw.
An approximate value is: 1 rotation of the setting screw is ca. 0,7mm distance at the spindle nut.

Before starting the operation of the drive, please verify whether the limiting switches have been adjusted properly in order to prevent any damage to the fitting or window construction! The limiting switches should be adjusted in such a way that the window mechanics are not strained to block.

Once the limiting switches have been adjusted, you may carry out your first test run.

In the case of optional functions such as the anti-trap protection, additional reference runs must be carried out. In this case please refer to the “Operation” chapter for further instructions.

Operation

The nominal load is only reached under the nominal voltage. Falling under the nominal voltage reduces the nominal load.

Integrated anti-trap protection for louvre windows (optional)

The anti-trap protection for louvre windows reduces the danger of crushing at the main closing edge.

If the drive recognises a hard blockade between the the limiting switches, the internal electronics will automatically reverse the drive. After a duration of approximately 2 seconds, the drive repeatedly attempts to close the window. If the blockade still exists, the drive reverses again and finally switches off (disturbance). A polarity reversal of the power supply resets the switched off drive.

The geometry and the mechanics of different louvre windows lead to different clamping forces on the closing edges.
During the initial operation, it must be examined

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Schließkanten. Bei der Inbetriebnahme muss geprüft werden, ob die jeweils geforderte Klemmkraft unterschritten wird. Je nach geforderter Norm sind ggfs. zusätzliche Maßnahmen zu treffen z.B. Überwachung der Nebenschließkanten mit Kontaktleisten oder ähnliches.

Wichtig: Der Einklemmschutz lässt schleichende Kraftveränderungen zu (Sommer zu Winter, Verschleiß…).

Betrieb mit einem „Totmanntaster“
Bei Betrieb mit einer „Totmannschaltung“ (Tipp-Taster) muss eine Bestromung bis zum Ende des Schließvorgangs erfolgen.

Potentialfreie Kontakte (optional)
Im Antrieb integrierte Relais schließen beim Erreichen einer Endlage einen potenzialfreien Kontakt. Für jede Endlage steht ein separater Kontakt zur Verfügung. Dieser Kontakt bleibt gesetzt, so lange die Versorgungsspannung anliegt. Bei Unterbrechung und Rückkehr der Spannung wird der Kontakt erneut gesetzt. Durch Umpolen wird die Meldung komplett zurückgenommen.
Es handelt sich um einen reinen Signalausgang, an dem keine Verbraucher angeschlossen werden dürfen (max. Schaltleistung: 0,5A bei 60VDC).
Bei einer Blockade des Klemmschutzes, werden die Rückmelderelais abwechselnd ein- und ausgeschaltet, um den Fehler anzuzeigen.

Pegeleingang
Zwischenpositionen können mit Hilfe eines externen Spannungspegels von 0-10V angefahren werden. Der Eingangswiderstand beträgt 2,35kΩ. Bei der Bestellung müssen folgende Angaben gemacht werden:

- Hublänge
- Startpunkt Hub
- Position 0V

ML1500 S
Diese Version hat eine langsame Laufgeschwindigkeit von 0,7mm/s. In dieser Version sind die Optionen Klemmschutz und Pegeleingang nicht möglich.

whether the clamping force is below the required limit.
If applicable, additional measures must be realised depending on the requested norm e.g. monitoring the side closing edge with contact strips or similar.

Important: The anti-trap protection tolerates subtle changes in force (e.g. summer to winter, wear etc.).

Operation with a “dead man’s push button”
During operation with a “dead man’s switch”, current feeding must take place until the end of the closing process.

Potential-free contacts (optional)
Relays are integrated into the drive, which create a potential-free contact upon reaching their end position. A separate contact is available at each end position. This contact remains active as long as the supply voltage contact does. The contact is reactivated upon interruption and return of the voltage. The signal is withdrawn completely through a reversal of polarity.
It is a signal output, which is not made for electric loads (max. switching power: 0,5A at 60VDC).
If the anti- trap protection recognises a blockade, the relays are switched on and off, in order to show the error.

Level input
Incline positions can be approached by using an external voltage level of 0-10V. The input resistance is 2,35kΩ. Before the order of a drive, the following items must be specified:

- stroke length
- starting point of the stroke
- position 0V

ML1500 S
This version has a slow running speed of 0,7mm/s. The options anti-trap protection and level input are not available in this version.

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Wartung

Verwenden Sie keinesfalls Laugen oder Säuren zum Reinigen.

Alle 1000 Öffnungszyklen müssen folgende Prüfungen durchgeführt werden:
- Prüfen Sie, ob alle Schrauben fest angezogen sind, bzw. ziehen Sie diese ggfs. nach.
- Führen Sie eine Sichtkontrolle auf Beschädigung und Verschleiß aller Bauteile durch und tauschen diese ggfs. aus.
- Kontrollieren Sie die korrekte Einstellung der Endschalter.

Prüfen Sie mindestens einmal im Jahr, ob die stirnseitige Kabelverschraubung richtig angezogen ist, welche als Zugentlastung dient und führen Sie eine Sichtprüfung des Netzkabels durch. Es darf weder beschädigt sein, noch dürfen sonstige Anzeichen von Verschleiß oder Defekten vorhanden sein.
Unterbrechen Sie die Strom- und Spannungsversorgung des Motors während den Reinigungs- und Wartungsarbeiten.

Störungen beheben
Falls der Antrieb stehen bleibt, lassen Sie bitte die elektrische Versorgung durch eine Elektrofachkraft überprüfen.

Tauschen Sie bei nicht von Fachleuten behebbaren Störungen den defekten Antrieb aus und lassen ihn vom Herstellerwerk reparieren.

Maintenance

Under no circumstances should alkaline or acidic solutions be used for cleaning purposes.

The following tests need to be carried out after every 1000 opening-cycles:
- Inspect whether all screws are tightly fastened and retighten them if necessary.
- Visually inspect all components for any signs of damage or wearing out, and replace these if necessary.
- Ensure that the limiting switches are set correctly.

At least once a year, verify whether the frontal cable gland - which has strain relief purposes - is securely fastened and conduct a visual inspection of the power cable. The power cable may not be damaged, nor may any signs of wearing out or faults exist. Discontinue the current and power supply of the motor during the cleaning and maintenance process.

Rectifying disturbances
In case the drive stops running, please have a qualified electrician examine the electricity supply.

If the disturbances cannot be rectified by qualified professionals, replace the faulty drive and allow the manufacturer to repair it.

Einbauerklärung

Hiermit erklären wir (Gröninger Antriebstechnik GmbH & Co. KG; Alte Str. 9; D-72631 Aichtal) dass die unvollständige Maschine Fensterantrieb **ML 1500** alle grundlegenden Anforderungen der Richtlinie 2006/42/EG des europäischen Parlament und des Rates vom 17.05.2006 über Maschinen und zur Änderung der Richtlinien 95/16/EG (Neufassung) erfüllt. Darüber hinaus entspricht die unvollständige Maschine der elektromagnetischen Verträglichkeit gemäß der Richtlinie 2004/108/EG des europäischen Parlaments und des Rates vom 15.12.2004 zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten über die elektromagnetische Verträglichkeit und zur Aufhebung der Richtlinie 89/336/EWG und es wird die Richtlinie 2006/95/EG des europäischen Parlaments und des Rates vom 12.12.2006 zur Angleichung der

Declaration of Incorporation

We (Gröninger Antriebstechnik GmbH & Co. KG; Alte Str. 9; D-72631 Aichtal) hereby declare that the incomplete machine window-drive **ML 1500** fulfils all the fundamental requirements of the guideline 2006/42/EG of the European Parliament and Council of the 17.05.2006 about machines and for the annulment of the guidelines 95/16/EG (revised version). Furthermore, the incomplete machine corresponds with the electromagnetic compliance in accordance with the guideline 2004/108/EG of the European Parliament and Council of the 15.12.2004 for the alignment of the legislation of the member states concerning the electromagnetic compliance and for the annulment of the guidelines 89/336/EWG and the guideline 2006/95/EG of the European Parliament and Council of the 12.12.2006 for the alignment of the legislation of the member states concerning the electrical equipment to be used

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Rechtsvorschriften der Mitgliedsstaaten betreffend der elektrischen Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen für elektrische Betriebsmittel eingehalten. Bevollmächtigt, die relevanten technischen Unterlagen zusammen zu stellen, ist Herr Matthias Gröninger.

Die speziellen technischen Unterlagen gemäß Anhang VII B der Richtlinie 2006/42/EG wurden ordnungsgemäß erstellt.
Wir verpflichten uns, staatlichen Stellen auf begründetes Verlangen die speziellen Unterlagen zu der oben bezeichneten unvollständigen Maschine zu übermitteln. Die Übermittlung erfolgt in der Weise, wie sie von der staatlichen Stelle verlangt wird.
Die Inbetriebnahme der unvollständigen Maschine ist erst dann zulässig, wenn gegebenenfalls festgestellt wurde, dass die Maschine, in die die unvollständige Maschine eingebaut werden soll, den Bestimmungen der Richtlinie 2006/42/EG entspricht.

Aichtal, 29.08.14; Gröninger, Matthias,
Ort, Datum Name, Vorname

Geschäftsführer der Gröninger Antriebstechnik Gmbh & Co. KG; Alte Str. 9, D-72631 Aichtal

within certain voltage limits for electrical equipment were complied with.
Mr. Matthias Gröninger is authorised to compile the relevant technical documents.

The special technical documents according to attachment VII B of the guideline 2006/42/EG have been compiled in accordance with the regulations.
Upon justified request, we pledge to provide state authorities with the special documents for the incomplete machine described above. The conveyance of the documents will be carried out as requested by the state authority.
Starting the operation of the incomplete machine is only permitted once it has been established that the machine into which the incomplete machine is to be incorporated, fulfils the regulations of the guideline 2006/42/EG.

Aichtal, 29.08.14; Gröninger, Matthias,
Loaction, Date Surname, Name

Managing director of Gröninger Antriebstechnik GmbH & Co. KG; Alte Str. 9, D-72631 Aichtal

GRÖNINGER Antriebstechnik

Technische Daten / Technical Data

Versorgung ML1500 standard Versorgung ML1500 AT Versorgung ML1500 S* Restwelligkeit Einschaltdauer	Supply ML1500 standard Supply ML1500 AT Supply ML1500 S* Residual ripple Duty ratio	24V DC -10% +10%; ca. 1,2A 24V DC -10% +40%; ca. 1,2A 24V DC -15% +40%; ca. 0,7A 2,4Vp-p ED 30% (180s ON / 420s OFF)
Druckkraft bei 24 V DC Zugkraft bei 24 V DC (an M8- Gewindestange)	Compressive force at 24 V DC Tractive force at 24 V DC (at M8- threaded rod)	1500 N 1500 N
Hublänge standard Sonderhübe	Stroke length standard Special strokes	70 mm auf Anfrage / on request
Laufgeschwindigkeit bei 1.500N	Running speed at 1.500N	ca. 1,6 mm/s
Laufgeschwindigkeit Leerlauf	Running speed no load	ca. 2,0 mm/s
Laufgeschwindigkeit ML1500 S* Leerlauf und bei 1.500N	Running speed ML1500 S* no load and at 1.500N	0,7 mm/s
Schutzart	Protection type	Standard: IP20 Option: IP54 in senkrechter Einbaulage; Kabelausgang oben Option: IP54 in vertical installation position; cable output at top IP20 und IP54 nur für trockene Räume IP20 and IP54 only for dry rooms
Temperaturbereich	Temperatur range	-15°C +60°C in trockener Umgebung in dry environment
Anschluss Gehäuse	Connection Casing	2,5m PVC- Kabel / 2,5m PVC- cable Aluminium
Abmessungen (B x H x L)	Dimensions (w x h x l)	30 x 35 x min. 494 mm bei 70mm Hub with 70mm stroke

* Option Klemmschutz und Option Pegeleingang nicht möglich bei ML1500 S

* option anti-trap and option level-input not available with ML1500 S

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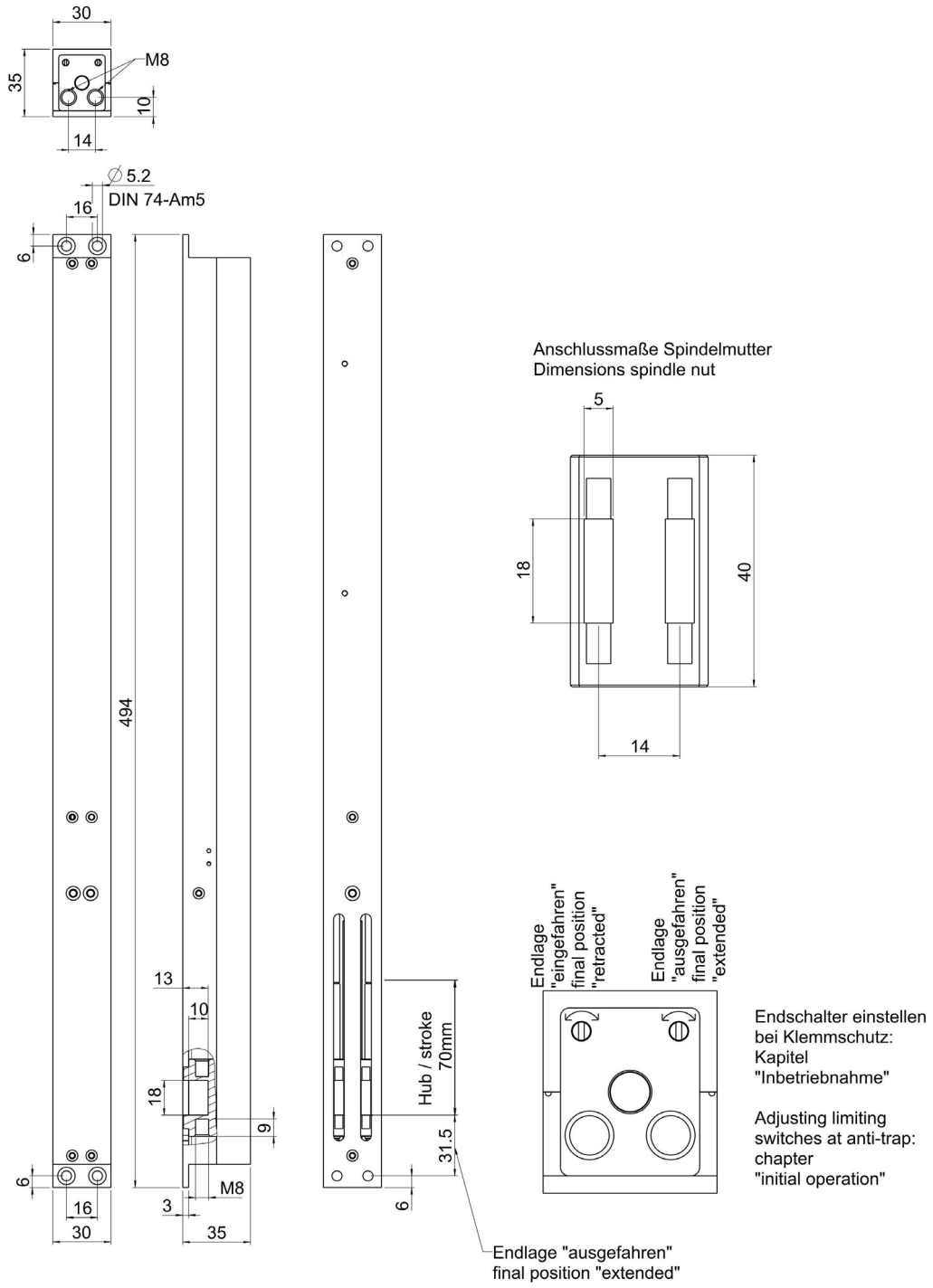
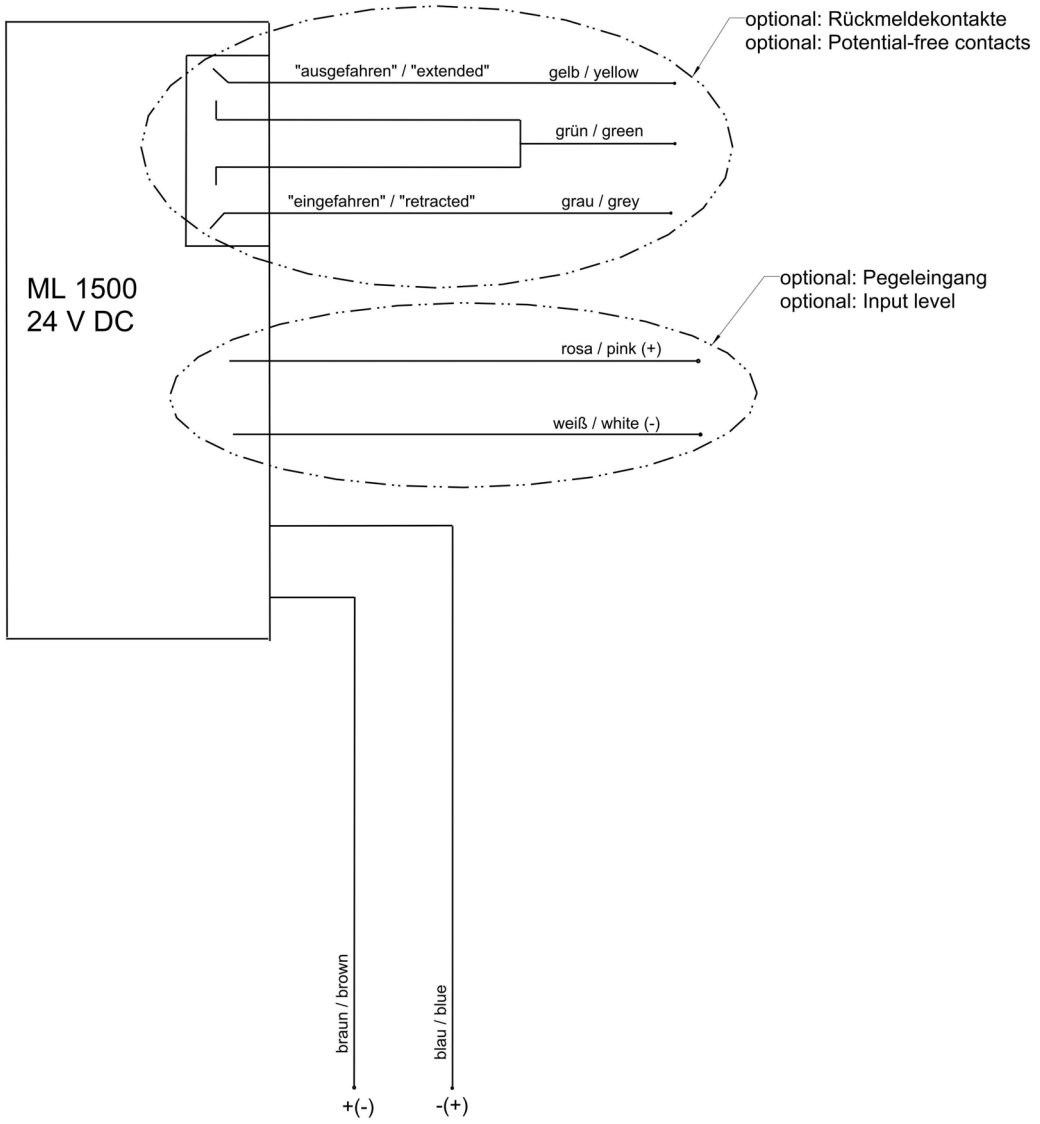
Massblatt / Dimension Sheet



GRÖNINGER Antriebstechnik

Anschlussplan / Connection Diagram



Spannungsversorgung / power supply

Den Antrieb generell mit 24V DC Schutzkleinspannung betreiben!
Niemals an 230V Stromversorgung anschließen!
Generally operate the drive with 24V DC safety extra-low voltage.
Never connect the drive to 230V AC!

Incline Positions with an External Voltage Level for ML1500 (Optional)

Mode of Operation:

- An external voltage level of 0-10V percentually regulates the position of the drive.
- Intermediate positions can be reached continuously (without steps).
- The input resistance is 2,35kΩ.
- In order to avoid the constant movement of the drive due to small voltage-fluctuations, the drive saves the position last reached and a minimum voltage step must be exceeded in order to generate a new movement. The minimum voltage step equates to a travelling distance of approximately 3mm and is independent from the stroke. At 38mm stroke, the resulting minimum voltage step is approximately 0.8V. Numerical example: 10V/(38mm/3mm)=0.8V
- The stroke is programmed in the manufacturing plant and is set to 38mm. The subsequent adjustment of the limiting switches of approx. ±3mm is possible, provided the stroke of approx. 38mm is adhered to.
- 0V- Position: „final position extended“

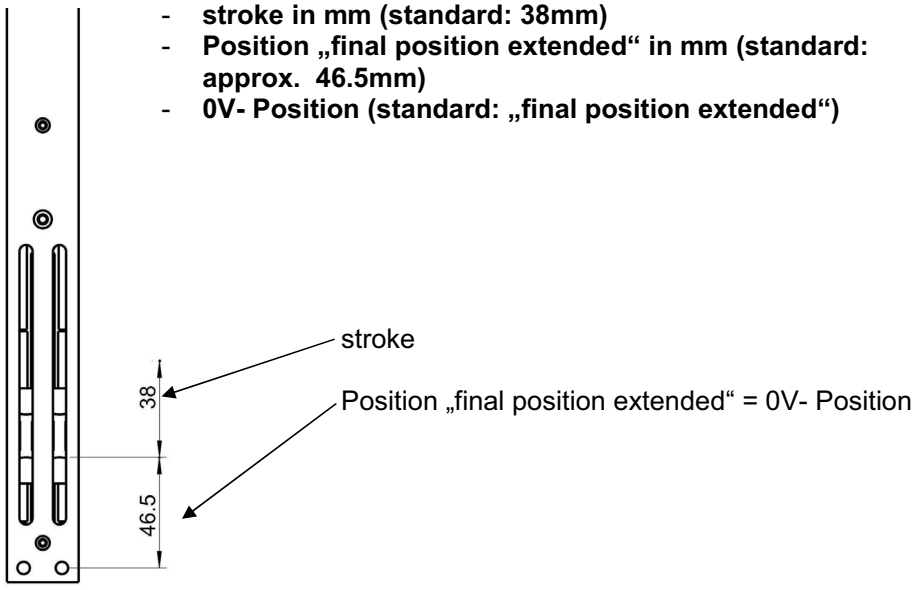
Further Options with a Programming Device:

- Subsequent Adjustment of the programmed stroke. This is necessary if the limiting switches have been adjusted in such a way that the actual stroke differs greatly from the original, programmed stroke. E.g.: programmed stroke = 38mm, actual stroke = 50mm → at 10V, drive only reaches 38mm and is still 12mm away from the final position → stroke needs to be programmed to 50mm.
- In case the limiting switches have been adjusted by more than approx. 3mm, the new position has to be confirmed using the programming device. This constitutes a safety function.
- Subsequent adjustment of the 0V-position to „final position retracted“

Please bear in mind that the level entrance is a customised solution.

When ordering, please specify the following values:

- **stroke in mm (standard: 38mm)**
- **Position „final position extended“ in mm (standard: approx. 46.5mm)**
- **0V- Position (standard: „final position extended“)**



Gröninger Antriebstechnik Version 10/2014

15.3.1 ML 1500(24V) — supplementary sheet SB

GRÖNINGER Antriebstechnik

ML1500 SB Ergänzung zu Betriebsanleitung ML1500 24 V DC

Originalbetriebsanleitung

Inhaltsverzeichnis

ML1500 SB Addition to Instruction Manual of ML 1500 24 V DC

Original Instruction Manual

Table of Contents

Funktionsweise ML1500 SB

Der Antrieb ML1500 SB kann entsprechend der technischen Daten im Außenbereich eingesetzt werden. Der Antrieb ML1500 SB hat keine Endschalter zur Hubeinstellung.

Endlage eingefahren
Bei der Endlage eingefahren fährt der Antrieb auf Block und schaltet ab. Die Abschaltkraft ist höher als die Nennkraft!
Die Fenstermechanik muss die Abschaltkräfte unter Berücksichtigung aller Einflussparameter aufnehmen. Hierzu gehört ggfs. auch das Festfrieren des Fensters.
Der Antrieb ist für eine weiche, gummiartige Blockade ausgelegt, wie z.B. an Fensterdichtungen. Die Position für die Endlage eingefahren ist ab Werk auf das Maß 100 eingestellt (siehe Massblatt). Die Blockade muss im Blockadebereich von 2,5mm erfolgen. Die Position für die Endlage eingefahren kann mit dem Programmiergerät verändert werden, sofern eine geeignete Blockade durch das Fenster verwendet werden soll.

Interner Gummidämpfer bei Endlage eingefahren
Der Antrieb besitzt einen internen Gummidämpfer bei der Endlage eingefahren. Dieser Gummidämpfer verhindert, dass die Bauteile innerhalb des Antriebs eine harte Blockade erzeugen.
Falls die Fenstermechanik nicht für eine dauerhafte Belastung auf Block ausgelegt ist oder keine weiche, gummiartige Blockade (Fensterdichtung) besitzt, so muss der interne Gummidämpfer als Abschaltpunkt genutzt werden.
In dem oben genannten Fall muss ggfs. eine mechanische Verstellmöglichkeit geschaffen werden, um die Endlage eingefahren einzustellen.

Endlage ausgefahren
Die Endlage ausgefahren ist 38mm von der Endlage eingefahren (Blockade- Position) entfernt. Nach Erreichen des Hubes von 38mm, schaltet der

Functionality ML1500 SB

The drive ML1500 SB can be used outdoor according to the technical data. The drive ML1500 SB has no limiting switches for the adjustment of the stroke.

Final position retracted
The drive switches off, when it is blocked at the final position retracted. The breaking force is higher than the rated force!
The window construction must be strong enough for the breaking force under the consideration of all influences. This includes e.g. also the freezing of the window.
The drive is constructed for soft, rubber-like blocks such as window sealings.
The final position retracted (factory settings) is adjusted on the dimension 100 (see dimension sheet). The block must be in the blocking area, which is 2,5mm. The final position retracted can be changed to another position by using the programming device, in case that another suitable block of the window shall be used.

Internal rubber-damper at final position retracted
The drive has an internal rubber-damper at final position retracted. This rubber-damper prevents internal parts in the drive of producing a hard block.
If the window construction is not made for a durable block or if there is no soft, rubber-like block (window sealing), then the internal rubber-damper must be used as switch-off point.
In the above-named case, an adjustment mechanism must be created in order to adjust the final position retracted.

Final position extended
The final position extended is 38mm away from the final position retracted (block position). The drive switches off after reaching stroke 38mm. This stroke can be adjusted with the programming

Antrieb ab. Dieser Hub kann mit Hilfe des Programmiergerätes verändert werden. Der maximale Hub von 68mm kann nur erreicht werden, wenn die Endlage eingefahren am internen Gummidämpfer liegt, da sonst der Antrieb seinen maximal möglichen Hub überschreitet und beschädigt wird.

Optionen
Keine Zusatzoptionen.

device. The maximal stroke of 68mm can only be reached, when the final position retracted is located at the internal rubber-damper. Otherwise the drive exceeds its maximal possible stroke and can be damaged.

Options
No additional options.

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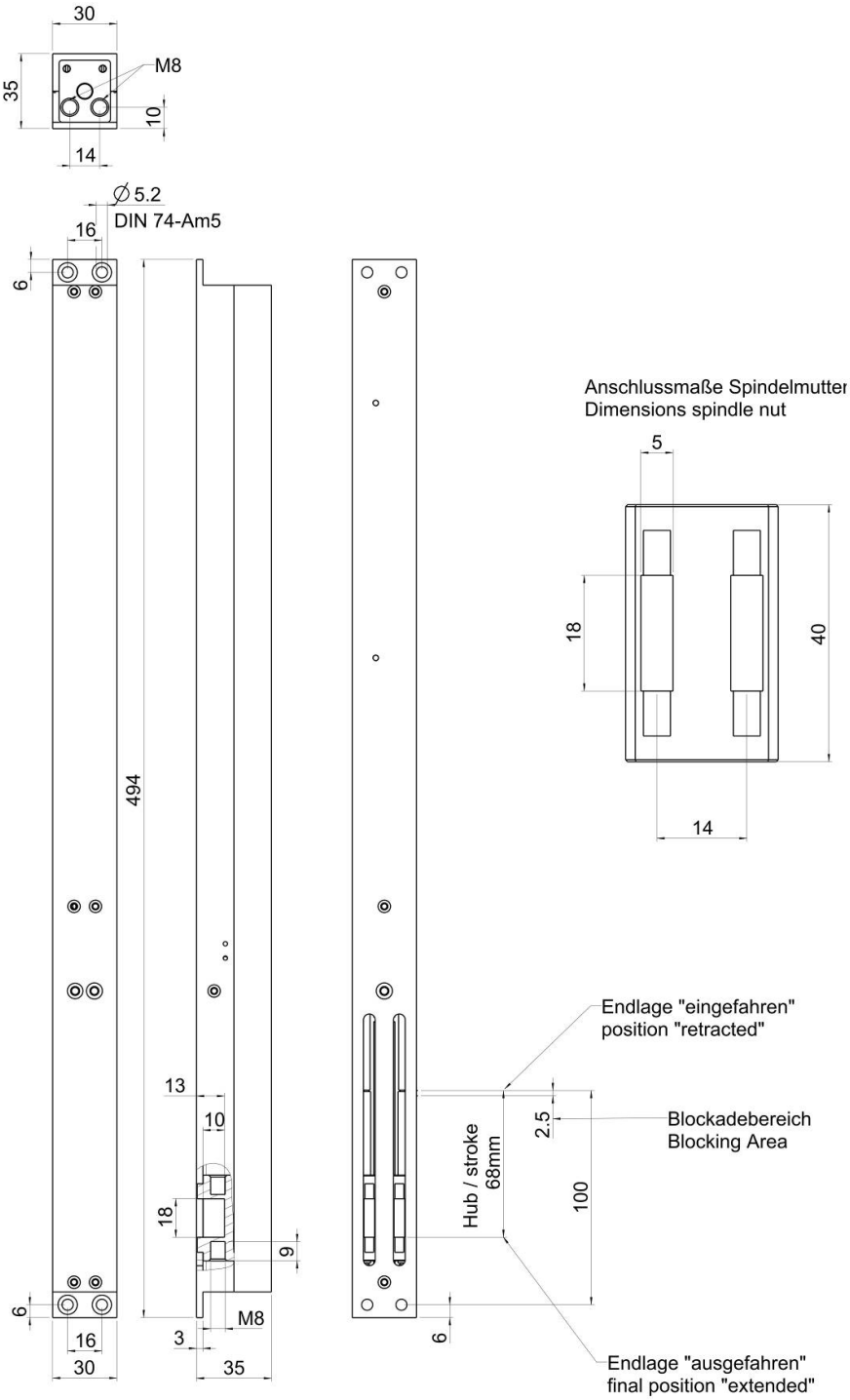
Antriebstechnik

Technische Daten ML1500-SB

Versorgung ML1500 SB Nennstromaufnahme Lastabschaltung Restwelligkeit Einschaltdauer	Supply ML1500 SB Nominal current Breaking current Residual ripple Duty ratio	24V DC -15% +40%; 0,7A 0,9A kurzzeitig / short-term max. 2,4Vp-p ED 30% (180s ON / 420s OFF)
Nennkraft Druck bei 24 V DC Nennkraft Zug bei 24 V DC (an M8- Gewindestange)	Rated pushing force at 24 V DC Rated pulling force at 24 V DC (at M8- threaded rod)	1000 N 1000 N
Hublänge	Stroke length	38 mm max. 68mm programmierbar / programmable
Endlage eingefahren	Final position retracted	Lastabschaltung Power cut-off
Endlage ausgefahren	Final position extended	Bei Erreichen Hub When stroke is reached
Laufgeschwindigkeit ML1500 SB Leerlauf und bei 1.000N	Running speed ML1500 SB no load and at 1.000N	0,7 mm/s
Schutzart	Protection type	IP65 in senkrechter Einbaulage; Kabelausgang oben mit Haube IP65 und Endkappen IP65 in vertical installation position; cable output at top with cover IP65 and end caps
Temperaturbereich	Temperatur range	-15°C +60°C
Korrosionsbeständigkeit gemäß Salzsprühnebeltest DIN EN 60068-2-52:1996-10	Corrosion resistance according salt spray test DIN EN 60068-2-52:1996-10	Schärfegrad 2, mit Haube IP65 und Endkappen Severity level 2, with cover IP65 and end caps
Anschluss Gehäuse	Connection Casing	2,5m PVC- Kabel UV- stabilisiert 2,5m PVC- cable UV- stabilised Aluminium
Rückmeldekontakte	Return signals	2x potentialfrei (max. 0,5A bei 60VDC) 2x potential-free (max. 0,5A at 60VDC)
Abmessungen (B x H x L)	Dimensions (w x h x l)	30 x 35 x 494 mm + Haube und Endkappen + cover and end caps
Bemerkung	Note	Die Abschaltkraft ist höher als die Nennkraft! The breaking force is higher than the rated force!

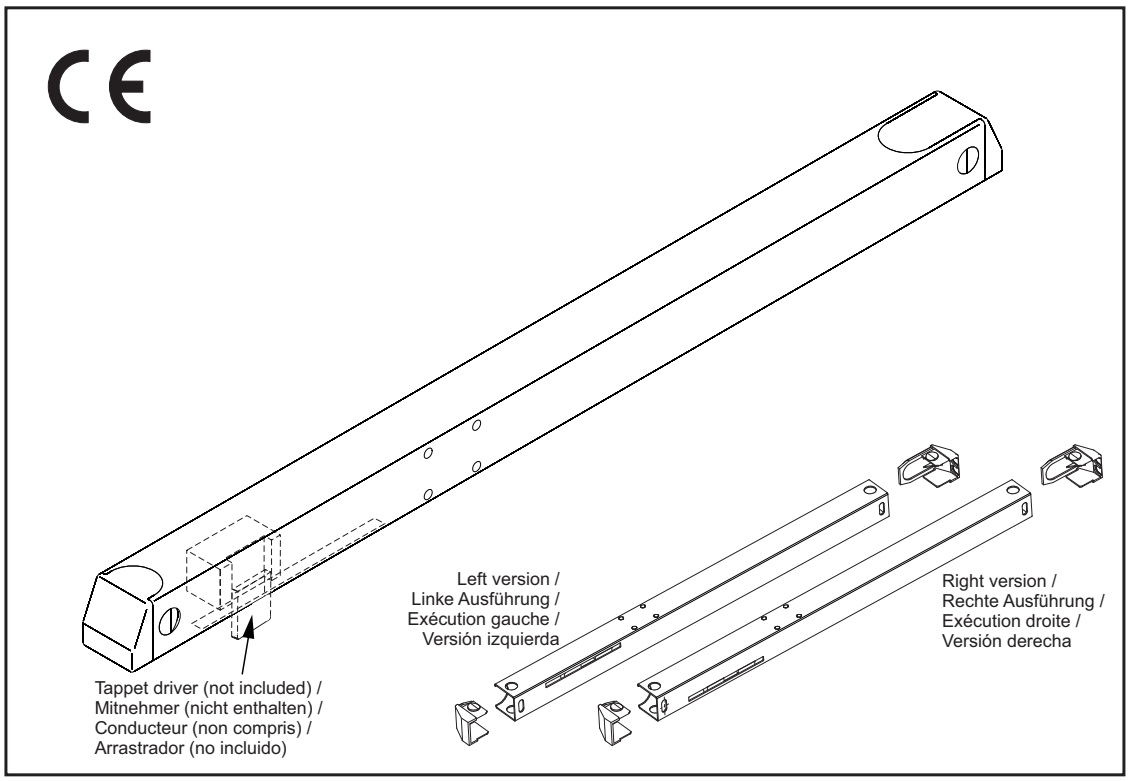
GRÖNINGER
Antriebstechnik

Massblatt / Dimension Sheet



15.4 LDCO 1000

LDCO 1000/038-L / LDCO 1000/038-R



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WARNING

Read all safety warnings, instructions, illustrations and specifications provided with this product. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury. Save all warnings and instructions for future reference.

Intended use

- Drive for electric opening and closing for Coltlite® louvre windows
- The louvre must be prepared by the louvre manufacturer for the application of the drive
- Operating voltage 24 V DC
- Usable for smoke extraction as well as daily ventilation
- Only for inside mounting

Safety notes

Safety extra low voltage 24 V DC!
Do not connect directly to the mains supply!
- Connection has to be carried out only by an authorized electrical specialist
- Danger of violent pressure in handaccessible area
- Keep away People from the operating area of the drive
- Keep away children from the control
- Use only in dry rooms
- Only for inside mounting.
  Use rain detector with danger of rain
- Just use unchanged original D+H parts

Observe enclosed red safety slip!

Performance Features

- Microprocessor controlled synchro electronics for a precise synchronous run of up to 2 drives (Tandem programming required by SCS software)
- Individually programmable (via software SCS)
- Protection system for the main closing edge

Extent of supply

Drive unit with 2,5 m silicone cable.

! IMPORTANT ! Safety Notes

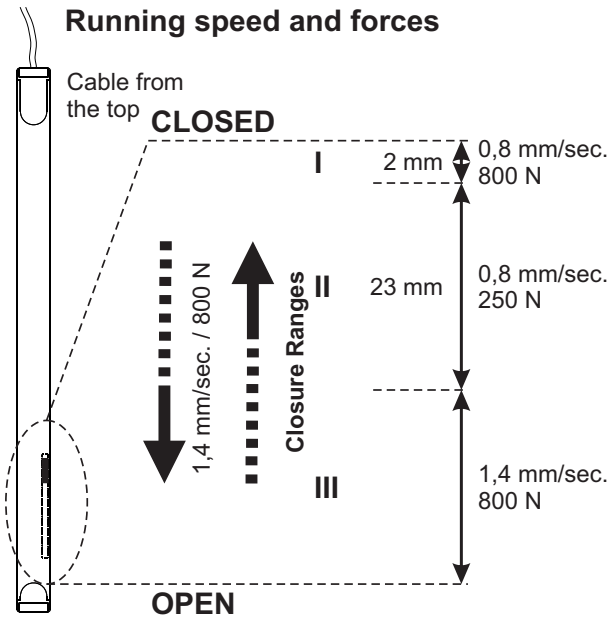
1. Mounting of the drive should be carried out by Colt International or an D+H distributor, whose qualification and experience is ensured by regular in-house training.
2. All wiring must be installed by a qualified electrican according to National Electrical Codes, NFPA 70.
3. For indoor use only. Use always rain detector with danger of rain (e.g. at domelights or roof windows).
4. Observe enclosed red safety slip!
5. Danger of violent pressure in handaccessible area.
6. The window operators have been evaluated for Residential or Light Duty Commercial Use only.
7. A suitable field wiring means should be provided in the end use application.
8. The mounting and routing of external wiring should be determined in the end product.
9. The mounting of each unit shall be evaluated in the end use.
10. The suitability of the leads for field wiring should be determined in the end-use application.
11. Suitability of strain relief means in conjunction with the flexible cord shall be evaluated in the end-use, if applicable.
12. The drive must be mounted a min of 8 feet above the floor or any access level.
13. The drives were not evaluated for entrapment protection since they are to be installed at least 8 feet above the floor. Where entrapment is a consideration, the need for additional tests and evaluation should be determined during the end product investigation.
14. The drive shall be connected to a Class 2 power supply.

For North America:
15. The Uniform Building Code Standard Vols. 1, 2 & 3 have to be observed.

Technical Data

Type	LDCO 1000/038
Power supply Nominal force * Nominal stroke * Running time (OPEN) Ingress protection	24 V DC / ±15% / 0.8 A 800 N (179.8 lbf) 38 mm ≤30 sec. IP 54
Lifetime Duty cycle Housing Temperature range Fire stability Additional functions *	>20 000 double strokes 30 %, With cycle time 10 minutes Stainless steel - PA 6, end caps -5 ... +75 °C (23 ... 167 °F) 30 min / 300 °C (572 °F) Closing edge protection activated, 2 stroke repeatings
* Programmable with SCS software	

Running speed and forces



Entrapment protection

(see N.13 of Safety Notes; p 2/16)

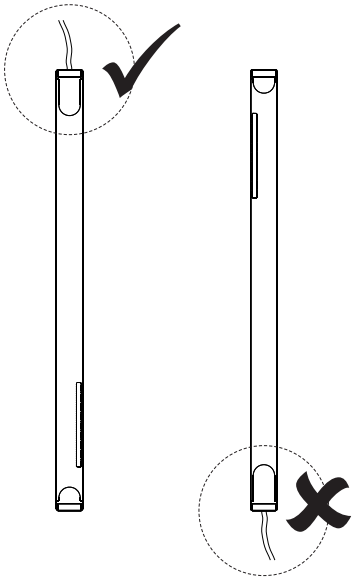
The drives were not evaluated for entrapment protection.

In "CLOSE" direction the drive has an active clamping protection for the main closing edge. With an overload in the closing range 3 and 2 the drive runs "OPEN" for 10 seconds, then drive "CLOSE" again. If after two attempts a closing is not possible, the drive remains in this position.
In addition, the drive has a passive clamping protection. The closing speed in closure Range 2 and 1 is reduced. The drives were not evaluated for entrapment protection.

Higher forces can occur on besides closing edges.
Danger of violent pressure in handaccessible area.

Mounting notes

- Cable entry must be carried out from the top
- The louvre must be prepared by the louvre manufacturer for the application of the drive



Starting

Do not run the drive without the tappet driver, otherwise the drive could be damaged.

A reference run must be carried out for the first starting and after exchange of one of the drives. In this process the drive will determine its zero point (Closed-position). This single event is called null balance.

- Connect drive
- Trigger drive in CLOSED-direction (independent on the position of louvres)

After an overload cutoff has been effected in running direction „CLOSED", the drive will have a new zero point. During the reference run, no obstacle must impair the running of the louvres.

The hand guard in arms's reach is deactivated during the reference run (danger of squeezing)!

Maintenance and cleaning

Maintenance work is only allowed when the device is in a de-energized condition! Inspection and maintenance has to be carried out according to D+H maintenance notes. Only original D+H spare parts may be used. Repair is to be carried out exclusively by D+H.
Wipe away debris or contamination with a dry, soft cloth.
Do not use cleaning agents or solvents.

Guarantee

You will get 2 years guarantee for all D+H products from date of verified handing over of the system up to maximal 3 years after date of delivery, when mounting and starting has been carried out by an authorized D+H-distributor.
D+H guarantee is expired, with connection of D+H components with external systems or with mixing of D+H products with parts of other manufacturers.

Declaration of Conformity CE

We declare under our sole responsibility that the product described under “Technical Data” is in conformity with the following directives:

2014/30/EU, 2014/35/EU

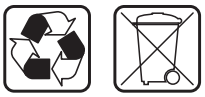
Technical file at:
D+H Mechatronic AG, D-22949 Ammersbek

Dirk Dingfelder
Member of the Board
24.02.2016

Maik Schmees
Authorized signatory, Technical Director

Disposal

Electrical devices, accessories, batteries and packaging should be sorted for environmental-friendly recycling. Do not dispose electrical devices and batteries into household waste!
Only for EC countries:
According the European Guideline 2012/19/EU for waste electrical and electronic equipment and its implementation into national right, electrcal devices that are no longer usable must be collected separately and disposed of in an environmentally correct manner.



WARNUNG

Lesen Sie alle Sicherheitshinweise, Anweisungen, Bebilderungen und technischen Daten, mit denen dieses Produkt versehen ist.
Versäumnisse bei der Einhaltung der nachfolgenden Anweisungen können elektrischen Schlag, Brand und/oder schwere Verletzungen verursachen.
Bewahren Sie alle Sicherheitshinweise und Anweisungen für die Zukunft auf.

Bestimmungsgemäße Verwendung

- Antrieb zum elektromotorischen Öffnen und Schließen von Coltlite® Lamellenfenstern
- Die Lamelle muss vom Lamellenhersteller für den Einsatz des Antriebes vorbereitet sein
- Betriebsspannung 24 V DC
- Einsetzbar für Öffnungen zur Rauchableitung sowie für täglichen Lüftungsbetrieb
- Nur für Innenmontage geeignet

Sicherheitshinweise

Sicherheitskleinspannung 24 V DC!
Nicht am Stromnetz direkt anschließen!
- Anschluss darf nur durch eine autorisierte Elektrofachkraft erfolgen
- Quetschgefahr im handzugänglichen Bereich
- Personen aus dem Fahrbereich des Antriebes fernhalten
- Kinder von der Steuerung fernhalten
- Nur in trockenen Räumen verwenden
- Nur für die Innenmontage geeignet
  Bei Gefahr durch Regen Regenmelder verwenden
- Nur unveränderte D+H-Originalteile verwenden

Beiliegenden roten Sicherheitszettel beachten!

Leistungsmerkmale

- Mikroprozessorgesteuerte Synchro-Elektronik für sicheren und präzisen Synchronlauf von bis zu 2 Antrieben (Tandem Programmierung durch SCS Software nötig)
- Individuell programmierbar über Software SCS
- Schutzsystem für die Hauptschließkante

Lieferumfang

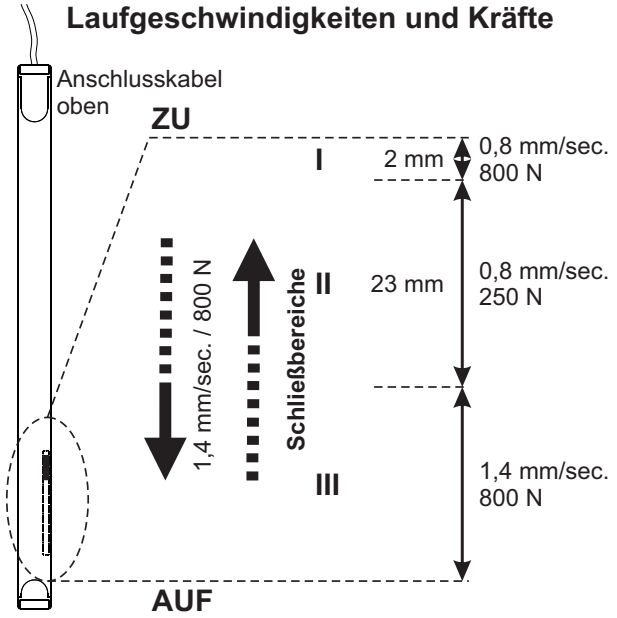
Antriebseinheit mit 2,5 m Silikonkabel.

Technische Daten

Typ	LDCO 1000/038
Versorgung Nenn-Kraft Nenn-Hublänge * Laufzeit (AUF) Schutzart	24 V DC / ±15% / 0,8 A 800 N 38 mm ≤ 30 sek. IP 54
Lebensdauer Einschaltdauer Gehäuse Temp. Bereich Temp. Standsicherheit Emissions-Schalldruckpegel Zusatzfunktionen *	>20 000 Doppelhübe 30 %, Bei Spielzeit 10 Min. Edelstahl -5 ... +75°C 30 min / 300°C LpA ≤ 70 dB(A) Schließkantenschutz aktiviert, 2 Wiederholungshübe

* Programmierbar mit Software SCS

Laufgeschwindigkeiten und Kräfte



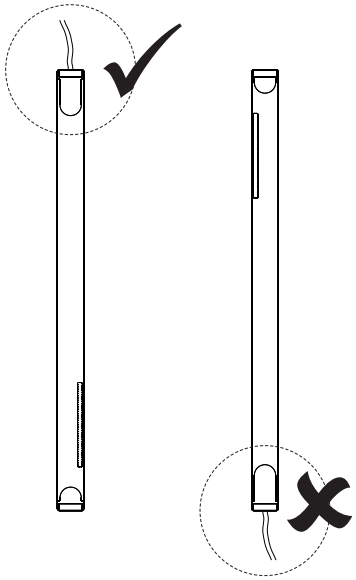
Schließkantenschutz

In Laufrichtung "ZU" verfügt der Antrieb über einen aktiven Schutz für die Hauptschließkante. Bei einer Überlast im Schließbereich 3 und 2 fährt der Antrieb für 10 Sekunden wieder "AUF". Danach fährt der Antrieb wieder "ZU". Sollte nach zwei Versuchen ein Einfahren nicht möglich sein, bleibt der Antrieb in dieser Stellung stehen.
Zusätzlich verfügt der Antrieb über einen passiven Schutz. Die Schließgeschwindigkeit wird im Schließbereich 2 und 1 reduziert.

An den Nebenschließkanten können deutlich höhere Kräfte auftreten.
Quetschgefahr im handzugänglichen Bereich.

Montagehinweise

- Die Kabelzuführung muss von oben erfolgen
- Die Lamelle muss vom Lamellenhersteller für den Einsatz des Antriebes vorbereitet sein



Inbetriebnahme

Der Antrieb darf **nicht ohne Mitnehmer** fahren, dieses kann sonst zu Schäden am Antrieb führen!

Zur Erstinbetriebnahme und nach Austausch eines Antriebes muss eine Referenzfahrt erfolgen. Hierbei ermittelt der Antrieb seinen Nullpunkt (Zu-Stellung). Dieser einmalige Vorgang wird Nullabgleich genannt.

- Antrieb anschließen
- Antrieb in ZU-Richtung ansteuern (unabhängig von der Stellung der Lamellen)

Nach erfolgter Überlastabschaltung in Laufrichtung "ZU" hat der Antrieb jetzt einen neuen Nullpunkt bekommen. Während der Referenzfahrt darf kein Hinderniss den Lauf der Lamellen beeinträchtigen.

Wärend der Referenzfahrt ist der Handschutz (Quetschgefahr) im Handeingreiffbereich deaktiviert!

Wartung und Reinigung

Wartungs- und Reinigungsarbeiten nur in spannungsfreien Zustand durchführen. Die Inspektion und Wartung hat gemäß den D+H-Wartungshinweisen zu erfolgen. Es dürfen nur original D+H-Ersatzteile verwendet werden. Eine Instandsetzung erfolgt ausschließlich durch D+H.
Wischen Sie Verschmutzungen mit einem trockenen, weichen Tuch ab.
Verwenden Sie keine Reinigungs- oder Lösemittel.

Garantie

Auf alle D+H-Artikel erhalten Sie 2 Jahre Garantie ab belegter Übergabe der Anlage bis max. 3 Jahre nach Auslieferungsdatum, wenn die Montage bzw. Inbetriebnahme durch einen von D+H autorisierten Service- und Vertriebspartner durchgeführt wurde.
Bei Anschluss von D+H-Komponenten an Fremdanlagen oder Vermischung von D+H-Produkten mit Teilen anderer Hersteller erlischt die D+H-Garantie.

Konformitätserklärung CE

Wir erklären in alleiniger Verantwortung, dass das unter „Technische Daten“ beschriebene Produkt mit den folgenden Richtlinien übereinstimmt:

2014/30/EU, 2014/35/EU

Technische Unterlagen bei:
D+H Mechatronic AG, D-22949 Ammersbek

Dirk Dingfelder
Vorstand
24.02.2016

Maik Schmees
Prokurist, Technischer Leiter

Entsorgung

Elektrogeräte, Zubehör, Batterien und Verpackungen sollen einer umweltgerechten Wiederverwertung zugeführt werden. Werfen Sie Elektrogeräte und Batterien nicht in den Hausmüll!
Nur für EU-Länder:
Gemäß der Europäischen Richtlinie 2012/19/EU über Elektro- und Elektronik-Altgeräte und ihrer Umsetzung in nationales Recht müssen nicht mehr gebrauchsfähige Elektrogeräte getrennt gesammelt und einer umweltgerechten Wiederverwertung zugeführt werden.

AVERTISSEMENT

Lire tous les avertissements de sécurité, les instructions, les illustrations et les spécifications fournis avec cet produit.
Ne pas suivre les instructions énumérées ci-dessous peut provoquer un choc électrique, un incendie et/ou une blessure sérieuse.
Conserver tous les avertissements et toutes les instructions pour pouvoir s'y reporter ultérieurement.

Utilisation conforme

- Moteur pour l'ouverture et la fermeture électromotorisées de fenêtres à lames Coltlite®
- Le châssis à lames doit avoir été préparé par son fabricant pour l'installation du moteur
- Tension de service 24 VDC
- Intégrable dans les ouvertures de systèmes d'extraction de fumées et utilisable pour la ventilation quotidienne de pièces
- Uniquement pour montage à l'intérieur

Consignes de sécurité

Très basse tension de sécurité 24 V DC !
Ne pas raccorder directement au secteur !
- Seul un électricien qualifié est autorisé à procéder au raccordement
- Risque d'écrasement des doigts dans la zone accessible par les mains
- Tenir les personnes à l'écart de la zone de mouvement de la motorisation
- Tenir les enfants à l'écart de la commande
- Uniquement placer la motorisation dans une pièce sèche
- Uniquement pour montage à l'intérieur
- Employer un capteur de pluie en cas de risques de pluie
- Uniquement utiliser des pièces d'origine D+H non modifiées
- Respecter la notice de montage du kit de console

Respecter les indications figurant sur l'étiquette de sécurité rouge fournie !

Caractéristiques

- Électronique de synchronisation pilotée par microprocesseur pour un fonctionnement synchronisé sûr et précis de 2 motorisations maximum (Tandem programmation requise par le logiciel SCS)
- Programmation individuelle à l'aide du logiciel SCS
- Système de sécurité sur l'arête de fermeture principale

Etendue de livraison

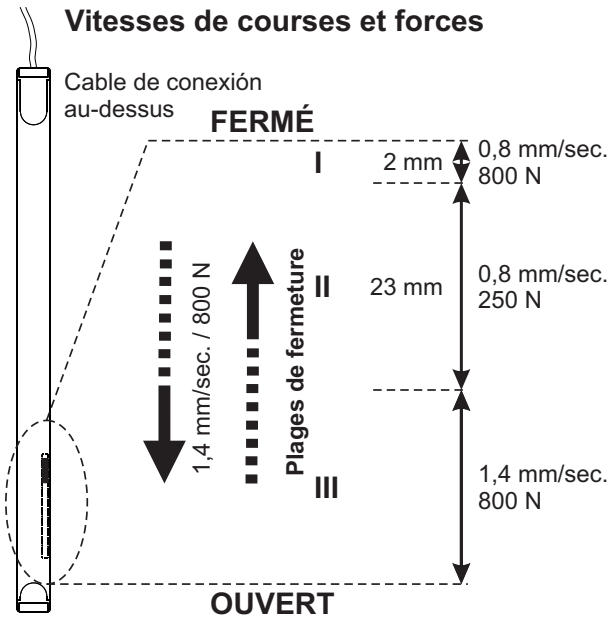
Motorisation avec câble silicone de 2,5 m.

Caractéristiques techniques

Type	LDCO 1000/038
Alimentation	24 V DC / ±15% / 0,8 A
Force nominale	800 N
Course nominale *	38 mm
Temps de parcours (OUVERT)	≤ 30 sec.
Degré de protection	IP 54
Durée de vie	>20 000 courses doubles
Durée d'enclenchement	30 %, Manoeuvres de 10 minutes
Corps	Acier inox
Classe de température	-5 ... +75°C
Résistance au feu	30 min / 300°C
Emission niveau de pression acoustique	LpA ≤ 70 dB(A)
Fonctions additionnelles *	Système anti-coincement activé, 2 courses de répétition

* Programmable avec le logiciel SCS

Vitesses de courses et forces



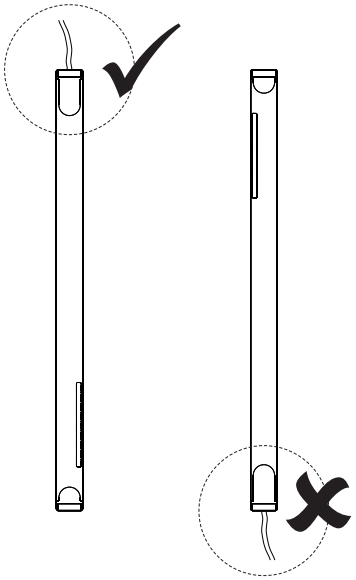
Système anti-coincement

Dans le sens « fermeture », la motorisation est équipée d'une protection active pour l'arête de fermeture principale. En cas de surcharge dans les plages de fermeture 3 et 2, le moteur fonctionne dans le sens « ouverture » pendant 10 secondes. Ensuite, il reprend la direction « fermeture ». Si la fermeture se révèle impossible après 2 tentatives, la motorisation restera dans cette position. La motorisation est en outre dotée d'une sécurité passive. La vitesse de fermeture diminue dans les plages de fermeture 2 et 1.

Les forces au niveau des arêtes de fermeture latérales peuvent être nettement plus élevées.
Risque d'écrasement des doigts dans la zone accessible par les mains.

Informations sur le montage

- Le passage du câble doit se faire par le haut
- Le châssis à lames doit avoir été préparé par son fabricant pour l'installation du moteur



Mise en service

Le moteur ne doit pas fonctionner **sans le conducteur**, ce qui pourrait sinon endommager le moteur !

Une course de référence doit être effectuée lors de la première mise en service et après le remplacement d'un moteur. Le moteur détermine alors son point zéro (position FERMÉ). Ce processus n'ayant lieu qu'une seule fois est appelé ajustement point zéro.

- Raccorder le moteur
- Piloter le moteur dans le sens FERMÉ (indépendamment de la position des lamelles)

Une fois la coupure de surcharge effectuée dans le sens « FERMÉ », le moteur a désormais un nouveau point zéro. Pendant la course de référence, aucun obstacle ne doit gêner le déplacement des lamelles.

Pendant la course de référence, le dispositif de protection des mains (danger d'écrasement) est désactivé dans la zone d'intervention manuelle !

Nettoyage et entretien

Avant toute intervention de maintenance, mettre l'installation hors tension! L'inspection et l'entretien doivent être effectués dans le respect des consignes de D+H. Seules des pièces de rechange D+H d'origine peuvent être employées.
En cas de présence de saletés, utiliser un chiffon doux et sec.
Ne pas utiliser de détergents ou de solvants.

Garantie

Tous les articles D+H sont garantis 2 ans dès la remise justifiée de l'installation et au plus pendant 3 ans après la date de la livraison si le montage ou la mise en service avait été entrepris(e) par un partenaire de service et de vente D+H autorisé.
Si vous raccordez les composants D+H à des installations étrangères ou panachez les produits D+H à des pièces d'autres constructeurs, le droit de garantie D+H devient caduque.

Déclaration de conformité CE

Nous déclarons sous notre propre responsabilité que le produit décrit sous Caractéristiques tech-niques est en conformité avec les réglementations suivants :

2014/30/EU, 2014/35/EU

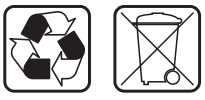
Dossier technique auprès de :
D+H Mechatronic AG, D-22949 Ammersbek

Dirk Dingfelder
Membre du directoire
24.02.2016

Maik Schmees
Fondé de pouvoir, Responsable technique

Elimination des déchets

Les appareil électrique, ainsi que leurs accessoires, batteries et emballages, doivent pouvoir suivre chacun une voie de recyclage appropriée. Ne jetez pas votre appareil électroportatif avec les ordures ménagères !
Seulement pour les pays de l'Union Européenne :
Conformément à la directive européenne 2012/19/EU relative aux déchets d'équipements électriques et électroniques et sa réalisation dans les lois nationales, les outils électroportatifs dont on ne peut plus se servir doivent être séparés et suivre une voie de recyclage appropriée.



ADVERTENCIA

Lea íntegramente las advertencias de peligro, las instrucciones, las ilustraciones y las especificaciones entregadas con esta produkto. En caso de no atenerse a las instrucciones siguientes, ello puede ocasionar una descarga eléctrica, un incendio y/o una lesión grave. Guardar todas las advertencias de peligro e instrucciones para futuras consultas.

Utilización reglamentaria

- Accionamiento para abrir y cerrar las ventanas de lamas Coltlite® mediante un motor eléctrico
- El fabricante de las lamas debe dejar la lama preparada para el uso del accionamiento
- Tensión de servicio 24 V DC
- Se puede utilizar en aperturas de extracción de humos así como para la ventilación natural diaria
- Adecuado únicamente para el montaje interior

Notas de seguridad

¡Muy baja tensión de seguridad 24 V DC!
¡No conectar directamente a la red eléctrica!
- La conexión deberá ser realizada únicamente por un técnico electricista
- Peligro de aplastamiento en la zona accesible a las manos
- Mantener a las personas alejadas del área de trabajo del accionamiento
- Mantener alejados a los niños de los dispositivos de control
- Usar solo en lugares secos
- Sólo es apropiado para el montaje interior. En casos de peligro por lluvia, deberán utilizarse sensores de lluvia
- Emplear únicamente piezas originales D+H no modificadas

¡Respetar las indicaciones de la hoja de serguridad adjunta!

Características

- Electrónica de sincronización controlada por microprocesador para un funcionamiento sincronizado seguro y preciso de un máximo de 2 motores (Tandem programación requerido por software SCS)
- Programación individual mediante el software SCS
- Proteccion systeme en canto principal de cierre

Extensión de suministro

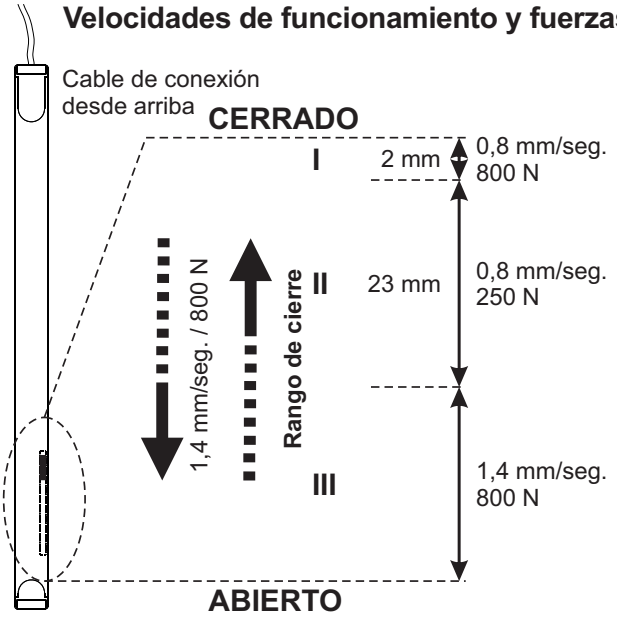
Motor con 2,5 m de cable de silicona.

Datos técnicos

Tipo	LDCO 1000/038
Alimentación Fuerza nominal Carrera nominal * Tiempo de marcha (ABIERTO) Protección	24 V DC / ±15% / 0,8 A 800 N 38 mm ≤ 30 seg. IP 54
Tiempo de vida Tiempo de funcionamiento Carcasa Temperatura Resistencia al fuego Nivel de presión acústica de emisión Funciones adicionales *	>20 000 dobles carreras 30 %, En ciclo de 10 minutos Acero inoxidable -5 ... +75°C 30 min / 300°C LpA ≤ 70 dB(A) Activada la proteccion en el borde al cerrar, Dos carreras de repetición

* Programable con el software SCS

Velocidades de funcionamiento y fuerzas



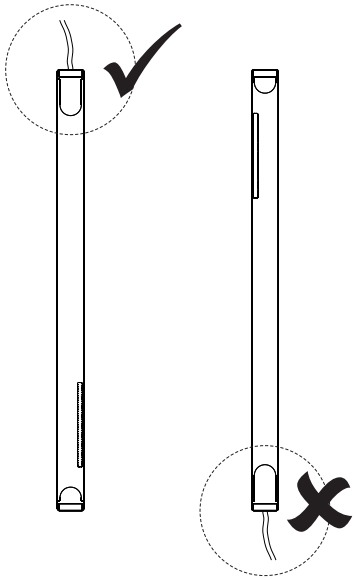
Protección en el borde al cerrar

En la dirección "CIERRE", el motor dispone de una protección activa del canto principal de cierre. En caso de darse una sobrecarga en el sector de cierre 3 y 2, el motor parará y funcionará durante 10 segundos en dirección opuesta. A continuación volverá a funcionar en dirección "CIERRE". Si después de dos intentos no ha sido posible cerrar, el motor se detendrá en esta posición.
Además, el motor dispone de una protección pasiva anti-pinzamiento. La velocidad de cierre se reduce a 5 mm/s en el rango de cierre 2 y 1.

En los cantos de cierre secundarios pueden darse fuerzas considerablemente más altas. Peligro de aplastamiento en el área accesible para las manos.

Instrucciones de montaje

- El cable debe entrar por arriba
- El fabricante de las lamas debe dejar la lama preparada para el uso del accionamiento



Puesta en marcha

El accionamiento **no se debe activar sin arrastrador**, pues podrían producirse daños en el accionamiento.

La primera vez que se vaya a poner en marcha el sistema, o tras sustituirse un accionamiento, se debe realizar un desplazamiento de referencia. Para ello, el accionamiento registra su punto cero (posición CERRADO). Este proceso, que se realiza una sola vez, se denomina ajuste a cero.

- Conectar el accionamiento
- Activar el accionamiento en dirección CERRADO (independientemente de la posición de las lamas)

Tras producirse la desconexión por sobrecarga en sentido de la marcha "CERRADO", el accionamiento obtiene un nuevo punto cero. Durante el desplazamiento de referencia no debe haber ningún obstáculo que afecte al desplazamiento de las lamas.

Durante el desplazamiento de referencia, la protección para las manos (peligro de aplastamiento) en la zona de actuación manual está desactivada.

Mantenimiento y limpieza

Realice siempre los trabajos de mantenimiento con la máquina desconectada de la red eléctrica. La inspección y el mantenimiento deben realizarse conforme a las instrucciones de mantenimiento de D+H. Únicamente se utilizarán piezas de recambio originales D+H. Los trabajos de reparación serán realizados exclusivamente por D+H. Elimine cualquier tipo de suciedad con un paño seco y suave.

Garantía

2 años de garantía para todos los productos D+H desde la fecha de su puesta en marcha, hasta un máximo de 3 años de la fecha de la entrega, siempre que el montaje y la puesta en marcha hayan sido realizados por un distributor autorizado de D+H.
La garantía de D+H expira, en el caso de conexión de componentes de D+H con otros equipos o cuando se mezclan los productos de D+H con los de otros fabricantes.

Declaración de conformidad CE

Declaramos bajo nuestra responsabilidad, que el producto descrito bajo “Datos técnicos” está en conformidad con las regulaciones:

2014/30/EU, 2014/35/EU

Expediente técnico en:
D+H Mechatronic AG, D-22949 Ammersbek

Dirk Dingfelder
Junta directiva
24.02.2016

Maik Schmees
Apoderado, Director técnicor

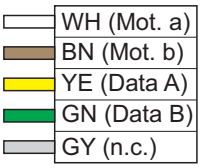
Eliminación

Recomendamos que los aparatos eléctricos, accesorios, Baterías y embalajes sean sometidos a un proceso de recuperación que respete el medio ambiente. ¡No arroje las herramientas eléctricas a la basura!
Sólo para los países de la UE:
Conforme a la Directriz Europea 2012/19/EU sobre aparatos eléctricos y electrónicos inservibles, tras su transposición en ley nacional, deberán acumularse por separado las herramientas eléctricas para ser sometidas a un reciclaje ecológico.

Pin Assigment / Aderbelegung Stecker / Brochage des fiches / Asignación de cables

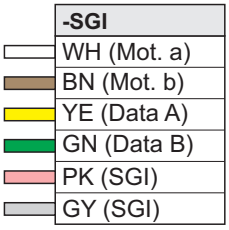
The connecting cable is directly connected to the drive and not changeable /
Das Anschlusskabel ist direkt mit dem Antrieb verbunden und nicht wechselbar. /
Le câble de raccordement est branché directement à la motorisation ; il n'est dès lors pas interchangeable. /
El cable de conexión está directamente conectado con al motor y no puede cambiarse.

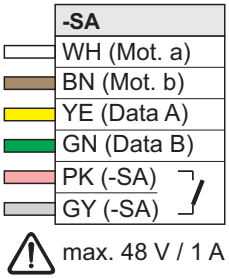
Standard / Estándar

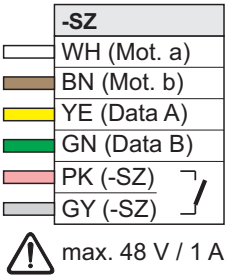


(WH)	white	/ weiss	/ blanc	/ blanco
(BN)	brown	/ braun	/ brun	/ marrón
(OG)	orange	/ orange	/ orange	/ naranja
(YE)	yellow	/ gelb	/ jaune	/ amarillo
(GN)	green	/ grün	/ vert	/ verde
(PK)	pink	/ rosa	/ rose	/ rosa
(GY)	grey	/ grau	/ gris	/ gris

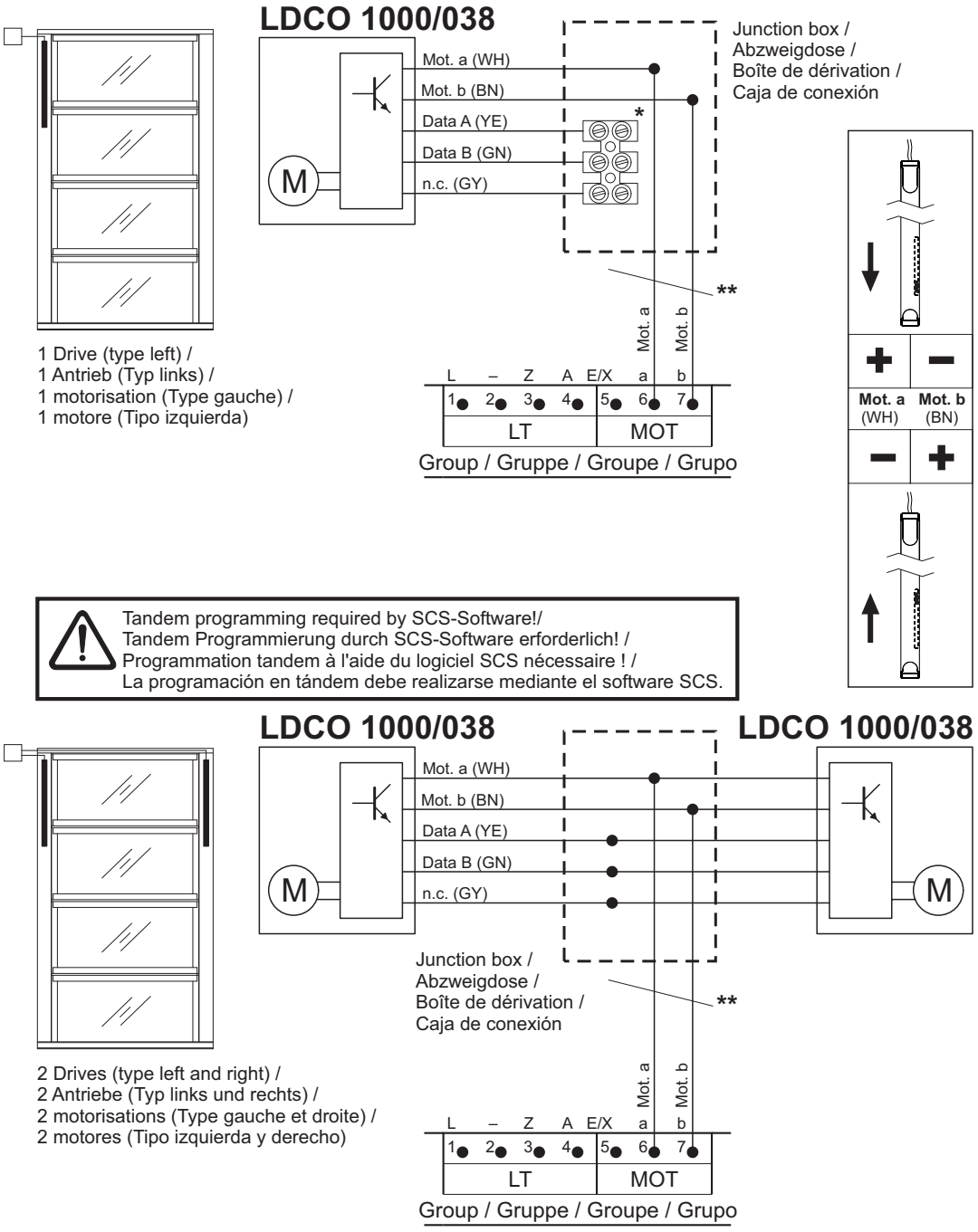
Optional signals / Optionale Meldungen / Signals optional / Señales opcional







Connection / Anschluss / Connexion / Conexión



Tandem programming required by SCS-Software!/
Tandem Programmierung durch SCS-Software erforderlich! /
Programmation tandem à l'aide du logiciel SCS nécessaire ! /
La programación en tándem debe realizarse mediante el software SCS.

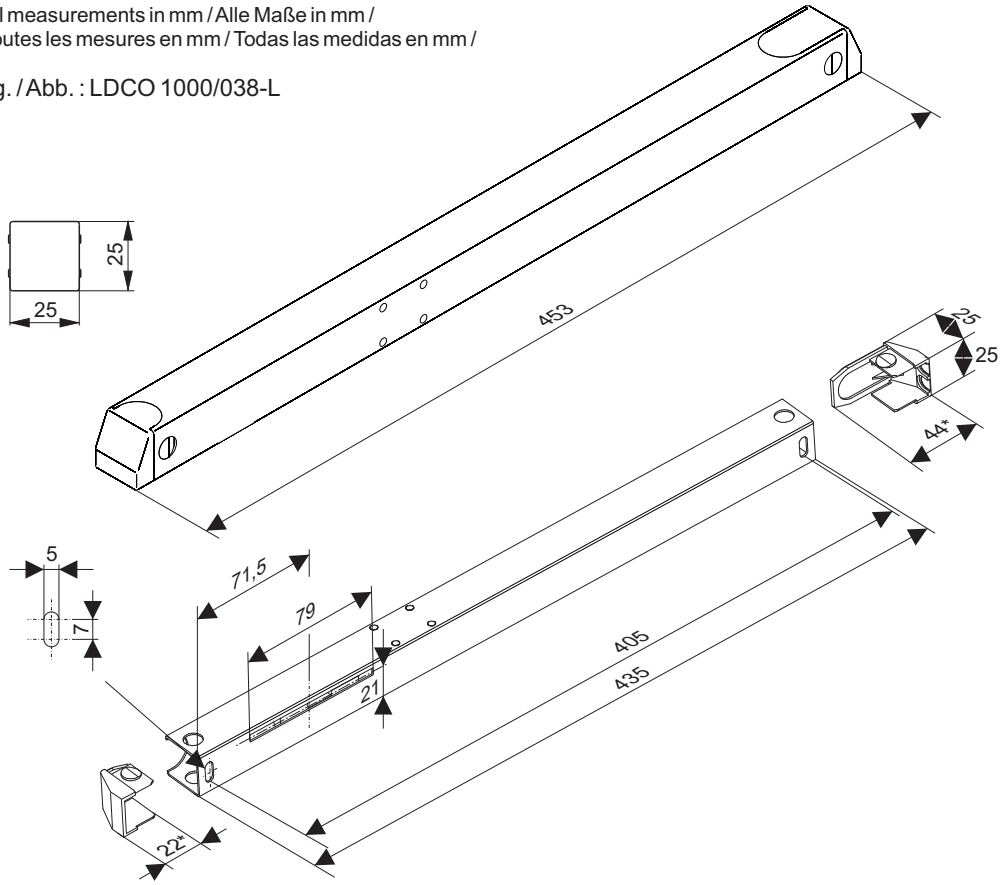
* Protect against short circuit / Gegen Kurzschluss sichern /
Protéger contre les courts-circuits / Proteger contra cortacircuitos

** Cable acc. to D+H table for layout of cables (see instructions for use of control panel) /
Kabel gemäß D+H Kabelverlegetabelle (Siehe Gebrauchsanleitung der Zentrale) /
Câble selon le tableau de pose de câbles D+H (cf. le mode d'emploi de la centrale) /
Cable de acuerdo con tabla D+H sobre cables (ver instrucciones de uso de los paneles de control)

Dimensions / Abmessungen / Dimensions / Dimensiones

All measurements in mm / Alle Maße in mm /
Toutes les mesures en mm / Todas las medidas en mm /

fig. / Abb. : LDCO 1000/038-L



* **Attention!** Please leave space for mounting/dismounting /
* **Achtung!** Freiraum für Montage/Demontage lassen /
* **Attention !** Laisser un espace libre pour le montage/démontage /
* **¡Atención!** Deje espacio libre para el montaje/desmontaje

D+H Mechatronic AG
Georg-Sasse-Str. 28-32
22949 Ammersbek, Germany

Tel.: +4940-605 65 239
Fax: +4940-605 65 254
E-Mail: info@dh-partner.com

www.dh-partner.com

99.826.21 2.0/09/18

15.5 Johnson Controls M9220-Bxx-1

M9210-AGx-1 / M9220-AGx-1 Floating Electric Spring Return Actuators
M9210-Bxx-1 / M9220-Bxx-1 ON/OFF Electric Spring Return Actuators
Installation Instructions

Part No. 14-88360-2358 Rev. B
Issue Date 03 2009

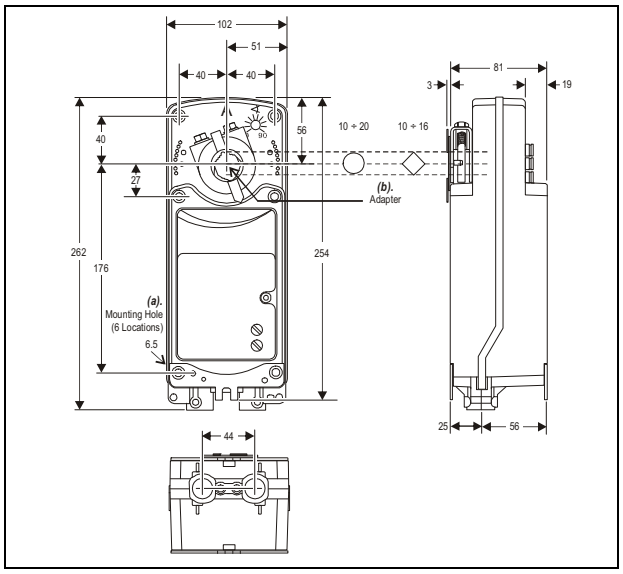


Figure 1: Dimensions in mm

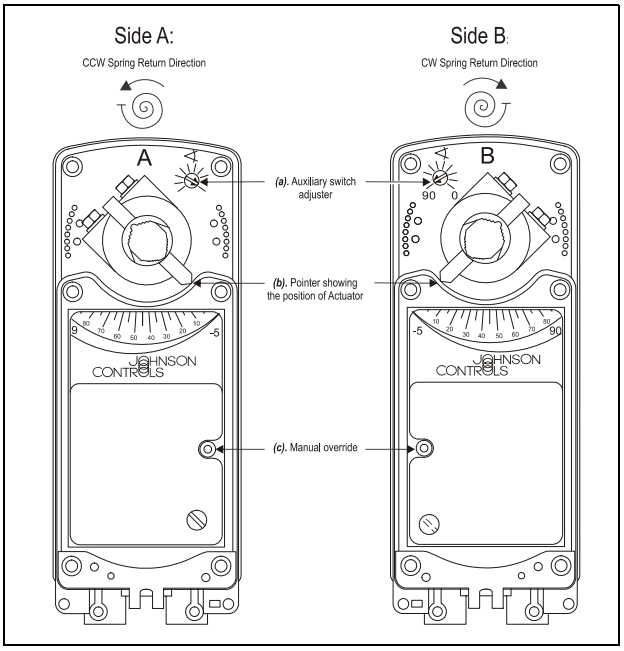


Figure 2: Side A and Side B of Actuator

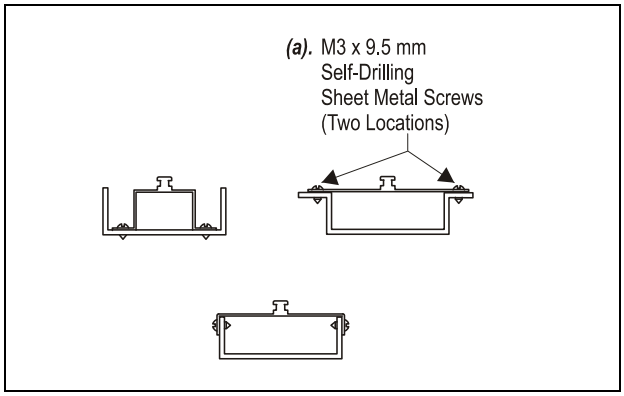


Figure 3: Fitting the Anti-rotation Bracket on the Damper Frame or Duct

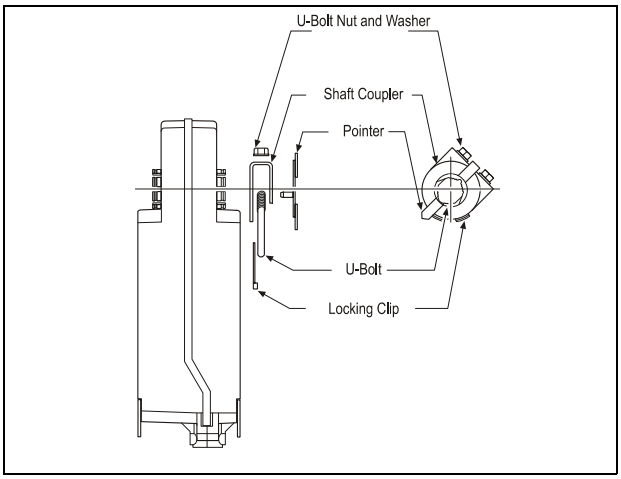


Figure 4: Changing the position of the Coupler

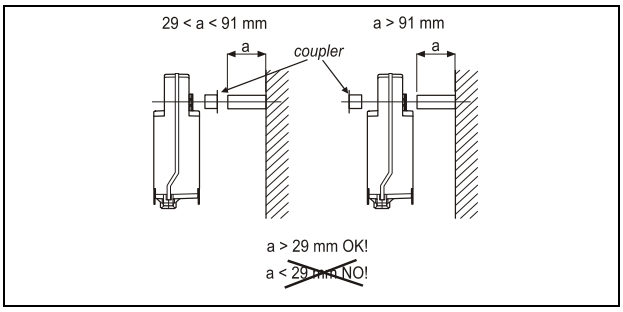


Figure 5: Allowed shaft lenght

Johnson Controls

Johnson Controls, Inc
Building Efficiency
Headquarters: Milwaukee, Wisconsin, USA
Branch Offices: Principal Cities World-wide

www.johnsoncontrols.com

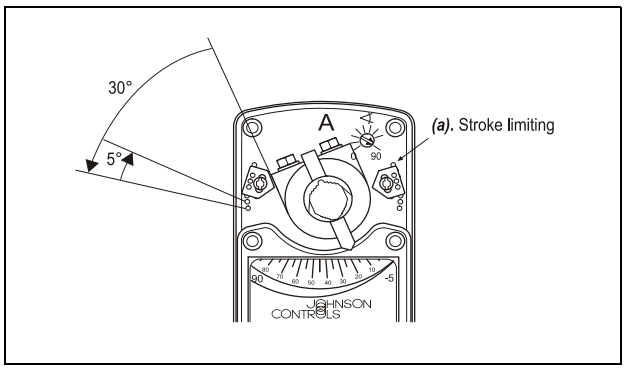


Figure 6: Angle of rotation limiting

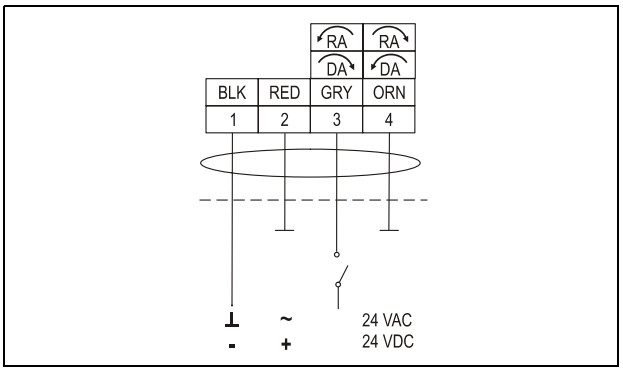


Figure 9: ON/OFF Control, Two Wire M92x0-AGx-1

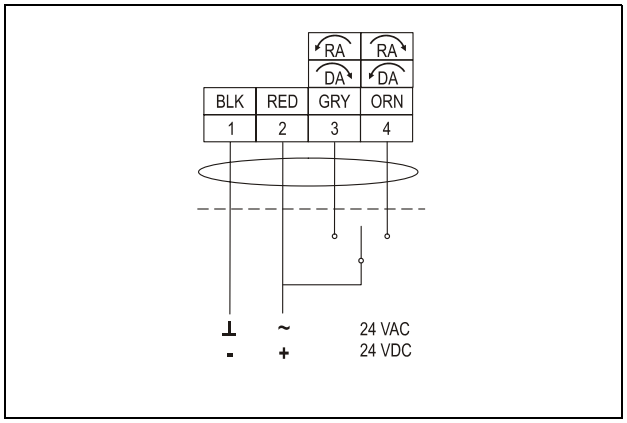


Figure 7: Floating Control, Four Wire M92x0-AGx-1

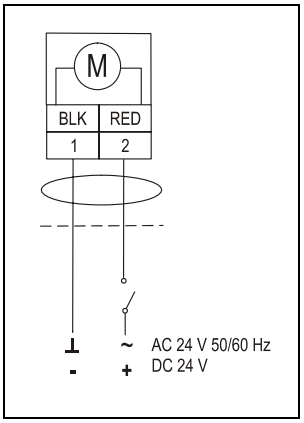


Figure 10: ON/OFF Control M92x0-BGx-1

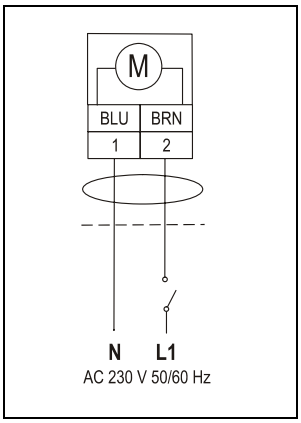


Figure 11: ON/OFF Control M92x0-BDx-1

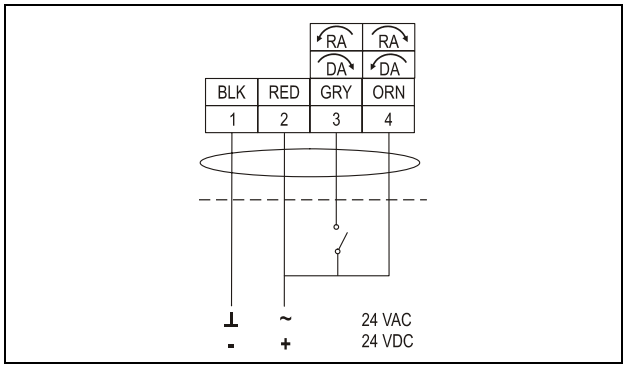


Figure 8: Open / Close, Single Wire Control M92x0-AGx-1

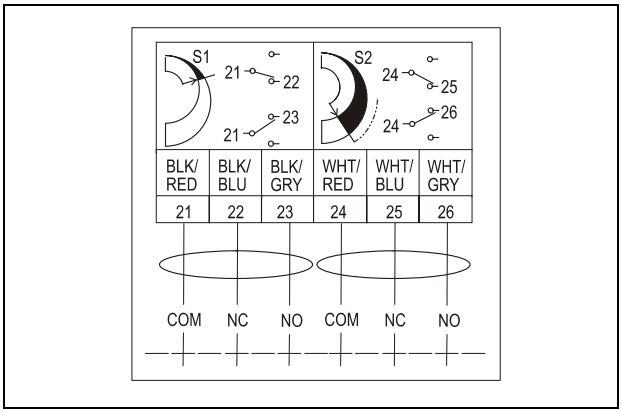


Figure 12: Auxiliary switch wiring diagram

English

This document is subject to change without notice

READ THIS INSTRUCTION SHEET AND THE SAFETY WARNINGS CAREFULLY BEFORE INSTALLING AND SAVE IT FOR FUTURE USE

General Features

The Floating and On/Off Electric Spring Return Actuators are direct-mount, spring, bidirectional actuators and do not require a damper linkage. The actuators are intended to be installed on an air damper in HVAC systems.

Figure 1: Dimensions in mm
(a). Mounting Hole (6 Locations)
(b). Adapter for:
Round spindles: Ø 10...20 mm / Square spindles: □ 10...20 mm

Figure 2: Side A and B of actuator
Side A: CCW Spring Return Direction
Side B: CW Spring Return Direction
(a). Auxiliary switch adjuster
(b). Pointer showing the position of Actuator
(c). Manual Override

IMPORTANT: When calculating the torque required to operate dampers, it is essential to take info account all the data supplied by the damper manufacturer.

Installation and adjustment

Figure 3: Fitting the Anti-rotation Bracket on the Damper Frame or Duct
(a). M3 x 9.5 mm. Self - Drilling Sheet Metal Screw (Two Locations)

Figure 4: Changing the position of the coupler

Figure 5: Allowed shaft lenght

Attach the actuator to the damper spindle by means of the adapter and secure the locking device with the screws provided.

WARNING: Do not install or use this Proportional Electric Spring Return Actuator in or near environments where corrosive substances or vapors could be present. Exposure of the electric actuator to corrosive environments may damage the internal components of the device, and will void the warranty.

Figure 6: Angle of rotation limiting
(a). Stroke limiting

The actuator is factory set for 90° rotation. Attaching a stroke limiting stop (optional M9220-603 Adjustable Stop Kit) in the farthest mounting position will reduces the rotation range of the actuator by 5°. Each progressive mounting position reduces the rotation range an additional 5° to a maximum of 30° in either end stop position.

Selecting the direction of rotation

Note: For CCW spring return direction, mount the actuator to the damper shaft so that Side A of the actuator is away from the damper as illustrated in Figure 2. To change the spring return direction to CW, mount the actuator to the damper shaft so that Side B of the actuator is away from the damper.

Wiring

WARNING: The electrical connections for the actuators must be executed in accordance with the relevant legal requirements. In order to avoid any personal injury or damage to the equipment or other property, always isolate the power supply before commencing any work on the electrical wiring. In order to avoid danger to property, it is important for the equipment to be used solely for which it is intended.

Wiring Diagrams

WARNING: The integrated circuits in the actuator are sensitive to static electricity. Take suitable precautions.

Figure 7: M92x0-AGx-1: Floating Control, Four wire
Figure 8: M92x0-AGx-1: Open / Close, Single Wire Control
Figure 9: M92x0-AGx-1: ON/OFF Control, Two Wire
Figure 10: M92x0-BGx-1: ON/OFF Control
Figure 11: M92x0-BDx-1: ON/OFF Control
Figure 12: Auxiliary Switch

Auxiliary Switches (xxC Model Only)

WARNING: Disconnect each of multiple power supplies before making electrical connections. More than one disconnect may be required to completely de-energize equipment. Contact with components carrying hazardous voltage can cause electric shock and may result in severe personal injury or death.

These models include two integral auxiliary switches, one fixed (S1) and one adjustable (S2), accessible on either face of the actuator *(as illustrated in Fig. 2).* The nominal factory setting for S1 Auxiliary Switch is 11° closing, and the nominal factory setting for S2 Auxiliary Switch is 81° opening (relative to a 0 to 90° rotation range).

The switch point of S2 Auxiliary Switch is independently and continuously adjustable from 25 to 95°.
Use the method in the following example for the most accurate positioning of S2 Auxiliary Switch.

1. Move the actuator to the full spring return position.
2. Rotate the switch adjuster until it points to the desired switch point.
3. Connect S2 Auxiliary Switch to a power source or an ohmmeter, and apply power to the actuator. The actuator moves to the fully open position and holds while power is applied.
4. Observe the switch point. If required, repeat Steps 2 and 3.

IMPORTANT: Use the Proportional Electric Spring Return Actuator only to control equipment under normal operating conditions. Where failure or malfunction of the electric actuator could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices such as supervisory or alarm system or safety or limit controls intended to warn of, or protect against, failure or malfunction on the electric actuator.

Setup and Adjustment

Direction of Action

The Actuators are factory set at DA, 90 degrees of travel. To reverse the rotation, either move the mode selection switch from Direct Acting (DA) to Reverse Acting (RA), or reverse the control input wiring to GRY 3 and ORN 4.

Tandem Operation

The tandem configuration provides twice (with two actuators) or triple (with three actuators) the running and spring return torque of a single actuator.
Two similar actuators can be mounted in tandem using the M9000-158 Tandem Mounting Kit operate together.
Use two or three actuators from the same model type for tandem operation.
Actuators used in the tandem configuration are wired in parallel.

Note: Manual override does not function after the actuators configured for tandem operation are mounted to a damper shaft.

Manual Override

Use only the supplied manual override crank to reposition the actuator hub when using the manual override feature.

1. De-energize the actuator.
2. Insert the hex end of the manual override crank into the manual override adjustment point on the face of the actuator.
3. Rotate the manual override crank in the direction indicated by the arrow on the label.
4. Rotate the manual override crank a half turn in the opposite direction to lock the actuator hub in place.
5. To unlock the actuator hub, rotate the manual override crank in the direction indicated by the arrow on the label. The actuator hub automatically unlocks when power is applied to the actuator, and returns the actuator to normal drive and spring return operation.

IMPORTANT: Applying excessive torque to the manual override or running the manual override with a power tool may damage the internal components of the actuator and cause premature failure. end of travel, the rotational resistance increases; do not force the actuator hub past this point.

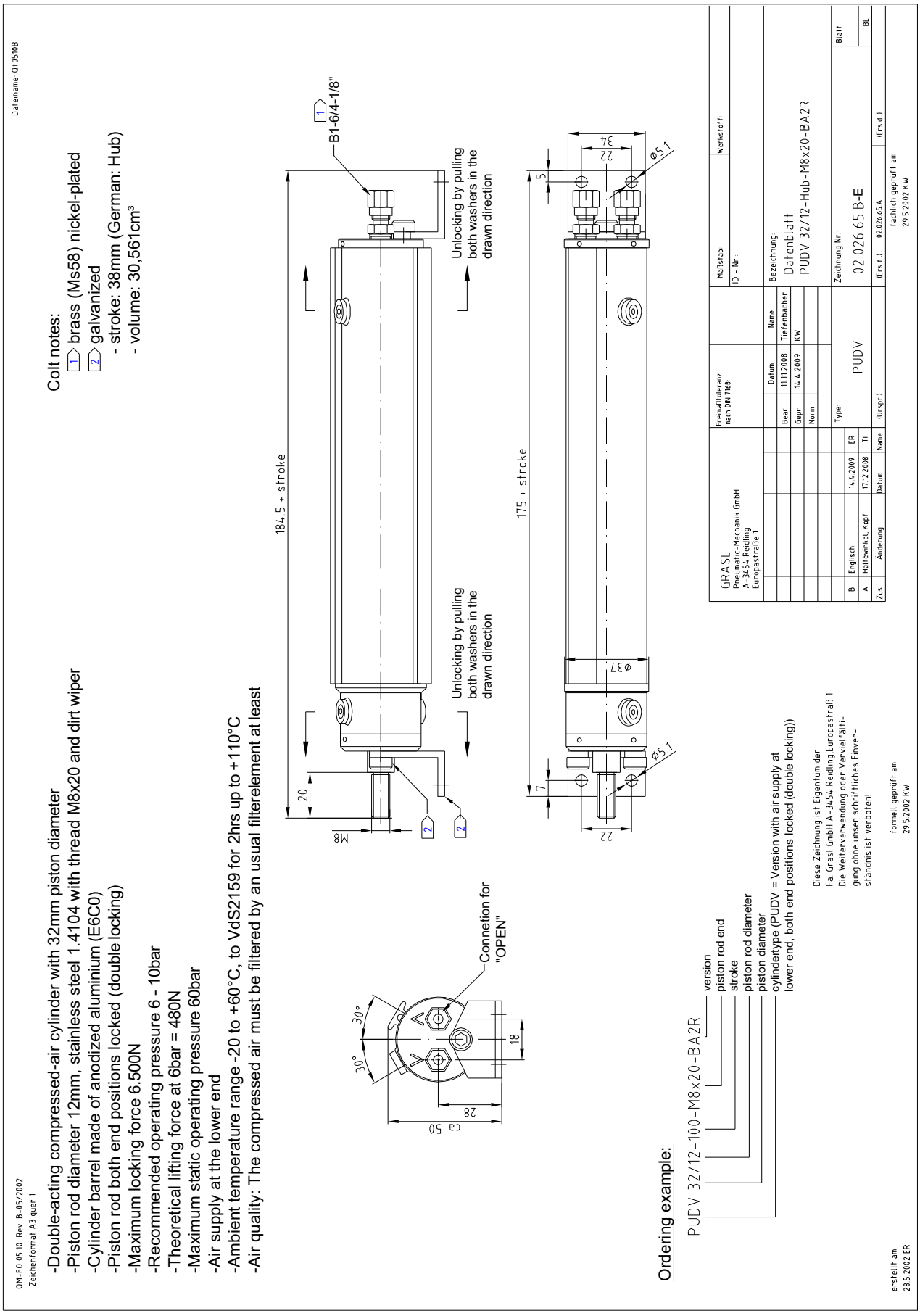
Ordering Codes

Codes	Descriptions
M9210-BGA-1	ON/OFF, 10 Nm, AC/DC 24 V
M9210-BGC-1	ON/OFF, 10 Nm, AC/DC 24 V, with 2 auxiliary switches
M9210-BDA-1	ON/OFF, 10 Nm, AC 230 V
M9210-BDC-1	ON/OFF, 10 Nm, AC 230 V, with 2 auxiliary switches
M9220-BGA-1	ON/OFF, 20 Nm, AC/DC 24 V
M9220-BGC-1	ON/OFF, 20 Nm, AC/DC 24 V, with 2 auxiliary switches
M9220-BDA-1	ON/OFF, 20 Nm, AC 230 V
M9220-BDC-1	ON/OFF, 20 Nm, AC 230 V, with 2 auxiliary switches
M9210-AGA-1	Floating, 10 Nm, AC/DC 24 V
M9210-AGC-1	Floating, 10 Nm, AC/DC 24 V, with 2 auxiliary switches
M9220-AGA-1	Floating, 20 Nm, AC/DC 24 V
M9220-AGC-1	Floating, 20 Nm, AC/DC 24 V, with 2 auxiliary switches

Technical Specifications

Product Codes	M9210-AGx-1	M9220-AGx-1	M9210-BGx-1	M9220-BGx-1	M9210-BDx-1	M9220-BDx-1
	Floating		ON/OFF			
Power Requirements	AC 24 V (AC 19.2 to 30 V) at 50/60 Hz Class 2 (North America) or SELV (Europe)		AC 24 V (AC 19.2 to 28.8 V) at 50/60 Hz Class 2 (North America) or SELV (Europe)		AC 230 V (AC 198 to 264 V) at 50/60 Hz	
- Running	9.6 VA	15.5 VA	26 VA		0.12 A	0.15 A
- Holding Position	6 VA	7.7 VA	9.3 VA		0.09 A	
	DC 24 V (DC 21.6 to 26.4 V), Class 2 (North America) or SELV (Europe)				---	
- Running	3.9 W	6.7 W	15.6 W	17.6 W	---	
- Holding Position	2.1 W	2.9 W	2.6 W	2.8 W	---	
Transformer Sizing Requirements						
- Minimum per Actuator	15 VA	20 VA	25 VA	---	25 VA	---
Input Signal / Adjustments	AC 19.2 V to 30 V at 50/60 Hz or DC 24 V ±10%, Class 2 (North America) or SELV (Europe), 500ms minimum pulse width		---	---	---	---
Auxiliary Switch Rating	Two Single-Pole, Double-Throw (SPDT), Double-Insulated Switches with Gold Flash Contacts: AC 24 V, 50 VA Pilot Duty; AC 120 V, 5.8 A Resistive, 1/4 hp, 275 VA Pilot Duty; AC 240 V, 5.0 A Resistive, 1/4 hp, 275 VA Pilot Duty					
Spring Return	Direction is Selectable with Mounting Position of Actuator: Side A, Actuator Face Away from Damper for CCW Spring Return; Side B, Actuator Face Away from Damper for CW Spring Return					
Running and Spring Return Torque	10 Nm	20 Nm for a Single Actuator; 40 Nm for Two Like Models Mounted in Tandem 60 Nm for Three Like Models Mounted in Tandem	10 Nm	20 Nm for a Single Actuator; 40 Nm for Two Like Models Mounted in Tandem	10 Nm	20 Nm for a Single Actuator; 40 Nm for Two Like Models Mounted in Tandem
Rotation Range	Optional M9210-603 Adjustable Stop Kit	Optional M9220-603 Adjustable Stop Kit	Optional M9210-603 Adjustable Stop Kit	Optional M9220-603 Adjustable Stop Kit	Optional M9210-603 Adjustable Stop Kit	Optional M9220-603 Adjustable Stop Kit
	Adjustable from 30 to 90° CW or CCW Mechanically Limited to 90°					
Rotation Time						
- Power On (Running)	150 Seconds for 0 to 10 Nm at All Operating Conditions	150 Seconds for 0 to 20 Nm at All Operating Conditions	24 to 57 Seconds for 0 to 10 Nm at All Operating Conditions	24 to 57 Seconds for 0 to 20 Nm at All Operating Conditions	24 to 57 Seconds for 0 to 10 Nm at All Operating Conditions	24 to 57 Seconds for 0 to 20 Nm at All Operating Conditions
	Independent of Load		35 Seconds Nominal at Full Rated Load			
- Power Off (Spring Returning)	26 Seconds for 0 to 10 Nm at Room Temperature	20 Seconds for 0 to 20 Nm at Room Temperature	11 to 15 Seconds for 0 to 10 Nm at Room Temperature 35 Seconds maximum for 0 to 10 Nm at -30° C 130 Seconds maximum for 0 to 10 Nm at -40° C	11 to 15 Seconds for 0 to 20 Nm at Room Temperature 35 Seconds maximum for 0 to 20 Nm at -30° C 130 Seconds maximum for 0 to 20 Nm at -40° C	11 to 15 Seconds for 0 to 10 Nm at Room Temperature 35 Seconds maximum for 0 to 10 Nm at -30° C 130 Seconds maximum for 0 to 10 Nm at -40° C	11 to 15 Seconds for 0 to 20 Nm at Room Temperature 35 Seconds maximum for 0 to 20 Nm at -30° C 130 Seconds maximum for 0 to 20 Nm at -40° C
Cycles	60,000 Full Stroke Cycles; 1,500,000 repositions					
Audible Noise Rating						
- Power On (Running)	<40 dBA at 1 m		<66 dBA at 1 m			
- Power On (Holding)	<20 dBA at 1 m		<18 dBA at 1 m			
- Power Off (Spring Returning)	<55 dBA at 1 m		<66 dBA at 1 m			
Electrical Connections (Actuator and Auxiliary Switches)	1.2 m Halogen-Free Cable with 18 AWG (0.75 mm^2) Wire Leads					
Conduit Connections	Integral Connectors for 10 mm Flexible Metal Conduit					
Mechanical Connections						
- Standard Shaft Clamp Included with Actuator	12 to 19 mm Diameter Round Shafts, or 10, 12, and 14 mm Square Shafts					
- Optional M9210-600 Jackshaft Coupler Kit	19 to 27 mm Diameter Round Shafts, or 16, 18, and 19 mm Square Shafts	---	19 to 27 mm Diameter Round Shafts, or 16, 18, and 19 mm Square Shafts	---	19 to 27 mm Diameter Round Shafts, or 16, 18, and 19 mm Square Shafts	---
- Optional M9220-600 Jackshaft Coupler Kit	---	19 to 27 mm Diameter Round Shafts, or 16, 18, and 19 mm Square Shafts	---	19 to 27 mm Diameter Round Shafts, or 16, 18, and 19 mm Square Shafts	---	19 to 27 mm Diameter Round Shafts, or 16, 18, and 19 mm Square Shafts
Aluminum Enclosure	NEMA 2 (IP54) for All Mounting Orientations					
Ambient Conditions						
- Operating	-40 to 55° C; 90% RH Maximum, Noncondensing					
- Storage	-65 to 85° C; 95% RH Maximum, Noncondensing					
Shipping Weight	2.9 kg				3.5 Kg	
Dimensions	See Figure 1					
Compliance						
- North America	UL Listed, File E27734, CCN XAPX (United States) and XAPX7 (Canada)					
- Europe	CE Mark, EMC directive 89/336/EEC (M92x0-xGA-1 Models) CE Mark, Low Voltage Directive 72/23/EEC (M92x0-BDA-1 and M92x0-xxC-1 Models)					
- Australia and New Zealand	C-Tick Mark, Australia/NZ Emissions Compliant (M92x0-xGx-1 and M92x0-BDx Models)					

15.6 PUD32-12-38 pneumatic cylinder data sheet



15.7 S08B-38 actuator data sheet

Dateiname: Q10510B

Technical description:

- Aluminium housing and aluminium thrust pipe anodised
- Internal interferance suppression according to EN55011
- Switching off in both end position through overload cutout
- Electronic overload emergency cutout
- Electric shunt connection possible (CAUTION: But not syncronised operation)
- Light grey silicone connection line 2x0,75mm², jacket 6mm diameter, standart length 2,5m, sepecial length on request
- Bore diameter of eye bolt on pushrod 6,1mm
- Bore diameter in housing base 6,1mm

Technical data Elektro-linear-drive S08B:

Designation	S08B	Unit
Rated voltage	24	VDC
Avaible strokes	200/300/350 400/500/550 600/750/1000	mm
No-load current	0.2	A
Rated current (full load)	0.8	A
Thrust and tensile force	650	N
Speed (full load)	6.1	mm
Speed (no load)	7.8	mm/s
Premissible ambient temperature	-20 - +60	°C
Max. permissible temperature to EN12101-2 attachment G	300° - 30min	°C
Protection class (DIN EN 60 529)	IP42 1)	
Operating mode according to DIN VDE 0530 Part 1 (at 20°C ambient temperature)	S2 2.5min	
Stability	3500	N

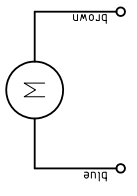
1) CAUTION: Not suitable for use in moist rooms or outdoor!

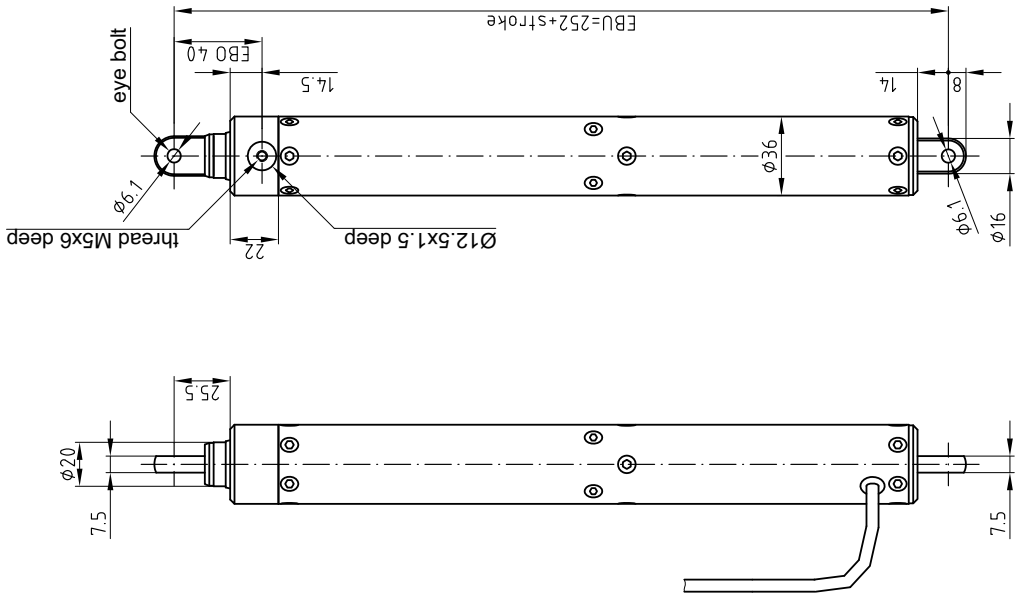
Order designation:

S08B - 350 - 6 - 2.5

- Lenght of connection cable [m]
- Bore diameter of eye bolt [mm]
- Stroke [mm]
- Motor type

Circuit diagram:





GRASL
Pneumatik-Mechanik GmbH
A-3454 Reidling
Europastraße 1

Freimaßtoleranz nach DIN 7168:

	Datum	Name
Bear:	23.03.2010	Simetzberger
Gepr:	19.06.2013	KW
Norm		

Maßstab: 1:1 Werkstoff:
ID - Nr.:

Bezeichnung:
Data sheet
Elektro - linear - actuator S08B

03	Max. zul. Temperatur	19.06.2013	SA	Type:	S08B
02	Version Polnisch	04.12.2012	SA		
01	Version Französisch	12.12.2011	SA		
Zus.	Änderung	Datum	Name	(Urspr.)	

Zeichnung Nr.: 07.044.DAT.00.03-E
Blatt
BL.
(Ers.f.) 07.044.DAT.00.02 (Ers.d.)

fachlich geprüft am
29.5.2002 KW

formell geprüft am
29.5.2002 KW

erstellt am
28.5.2002 ER

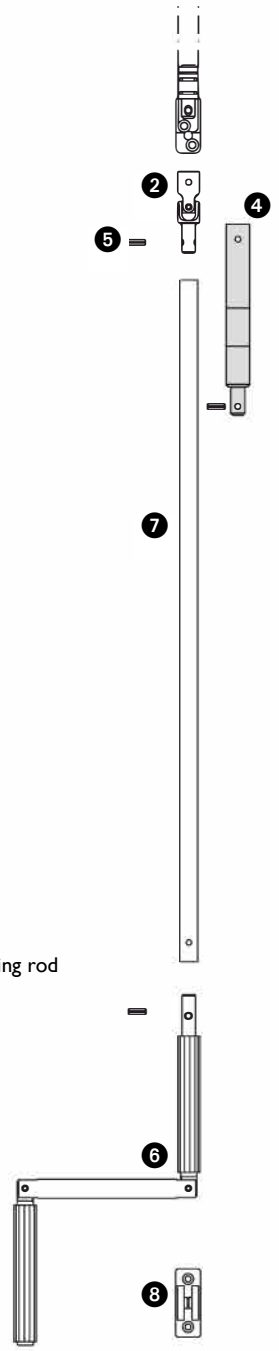
Diese Zeichnung ist Eigentum der Fa. Grasl GmbH A-3454 Reidling,Europastraß 1 Die Weiterverwendung oder Vervielfältigung ohne unser schriftliches Einverständnis ist verboten!

QM-FO 05.10 Rev. B-05/2002
Zeichenformat A3 quer 1

15.8 Manual drive

Type HCH

Fixed crank

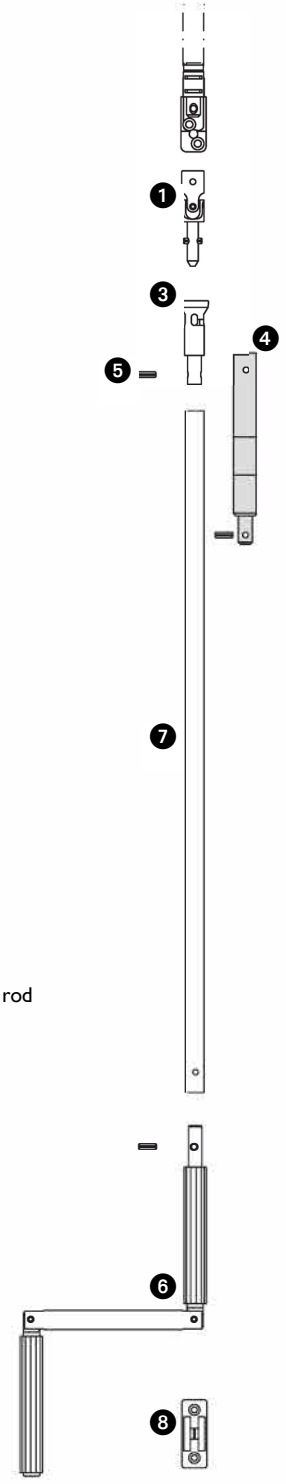


Components for fitting

② 10/16 universal joint
④ Friction clutch
⑤ Coiled spring pin (2 no.)
⑥ Crank handle
⑦ Aluminium tube for connecting rod
⑧ Spring clip

Type HCHD

Removable crank



Components for fitting

① 8/16 universal joint
③ Coupling shaft
④ Friction clutch
⑤ Coiled spring pin (2 no.)
⑥ Crank handle
⑦ Aluminium tube for connecting rod
⑧ Spring clip

15.9 Position switch

SIEMENS

Data sheet **3SE5232-0BC05**

Position switch Plastic enclosure according to EN 50047, 31 mm
Device connection 1 x (M20 x 1.5) 1 NO/1 NC slow-action contacts
Rounded plunger, Form B with Teflon plunger

Product brand name	SIRIUS
Manufacturer's article number	
• of the supplied basic switch	3SE5232-0BC05
• of the supplied switching contacts	3SE5000-0BA00
• of the supplied empty enclosure with cover	3SE5232-0AC05
Suitability for use safety switch	Yes

General technical data	
Product function	
• positive opening	Yes
Insulation voltage	
• rated value	400 V
Degree of pollution	class 3
Surge voltage resistance rated value	6 kV
Protection class IP	IP65
Shock resistance	
• acc. to IEC 60068-2-27	30 g / 11 ms
Vibration resistance	
• acc. to IEC 60068-2-6	0.35 mm/5g
Mechanical service life (switching cycles)	

• typical	15 000 000
Electrical endurance (switching cycles)	
• at AC-15 at 230 V typical	100 000
Electrical endurance (switching cycles) with contactor 3RH11, 3RT1016, 3RT1017, 3RT1024, 3RT1025, 3RT1026 typical	10 000 000
Electrical operating cycles in one hour with contactor 3RH11, 3RT1016, 3RT1017, 3RT1024, 3RT1025, 3RT1026	6 000
Thermal current	6 A
Material of the enclosure of the switch head	plastic
Continuous current of the C characteristic MCB	1 A; for a short-circuit current smaller than 400 A
Continuous current of the quick DIAZED fuse link	10 A; for a short-circuit current smaller than 400 A
Continuous current of the DIAZED fuse link gG	6 A
Active principle	mechanical
Repeat accuracy	0.05 mm
Minimum actuating force in activation direction	20 N
Length of the sensor	75.7 mm
Width of the sensor	31 mm
Design of the switching contact	mechanical
Operating frequency rated value	50 ... 60 Hz
Number of NC contacts for auxiliary contacts	1
Number of NO contacts for auxiliary contacts	1
Number of CO contacts for auxiliary contacts	1
Operating current at AC-15	
• at 24 V rated value	6 A
• at 125 V rated value	6 A
• at 230 V rated value	3 A
Operating current at DC-13	
• at 24 V rated value	3 A
• at 125 V rated value	0.55 A
• at 230 V rated value	0.27 A
Design of the interface for safety-related communication	without

Enclosure	
Design of the housing	block, narrow
Material of the enclosure	plastic
Coating of the enclosure	Other types
Design of the housing acc. to standard	Yes

Drive Head	
Design of the operating mechanism	Rounded plunger, Teflon plunger
Standard-compliant actuator head	EN 50047, design B
Shape of the switch head	rounded

Design of the switching function	positive opening
Circuit principle	slow-action contacts
Number of switching contacts safety-related	1

Connections/Terminals	
Type of electrical connection	screw-type terminals
Type of connectable conductor cross-sections	
• solid	1x (0.5 ... 1.5 mm²), 2x (0.5 ... 0.75 mm²)
• finely stranded with core end processing	1x (0.5 ... 1.5 mm²), 2x (0.5 ... 0.75 mm²)
• at AWG conductors solid	1x (20 ... 16), 2x (20 ... 18)
• at AWG conductors stranded	1x (20 ... 16), 2x (20 ... 18)

Mechanical data	
Cable entry type	1x (M20 x 1.5)

Communication/ Protocol	
Design of the interface	without

Ambient conditions	
Ambient temperature	
• during operation	-25 ... +85 °C
• during storage	-40 ... +90 °C
Explosion protection category for dust	none

Installation/ mounting/ dimensions	
Mounting position	any
Mounting type	screw fixing

Certificates/approvals

General Product Approval				Functional Safety/Safety of Machinery	Declaration of Conformity
CCC	CSA	UL	EAC	Type Examination Certificate	EG-Konf.

Test Certificates	other
Special Test Certificate	Confirmation

Further information

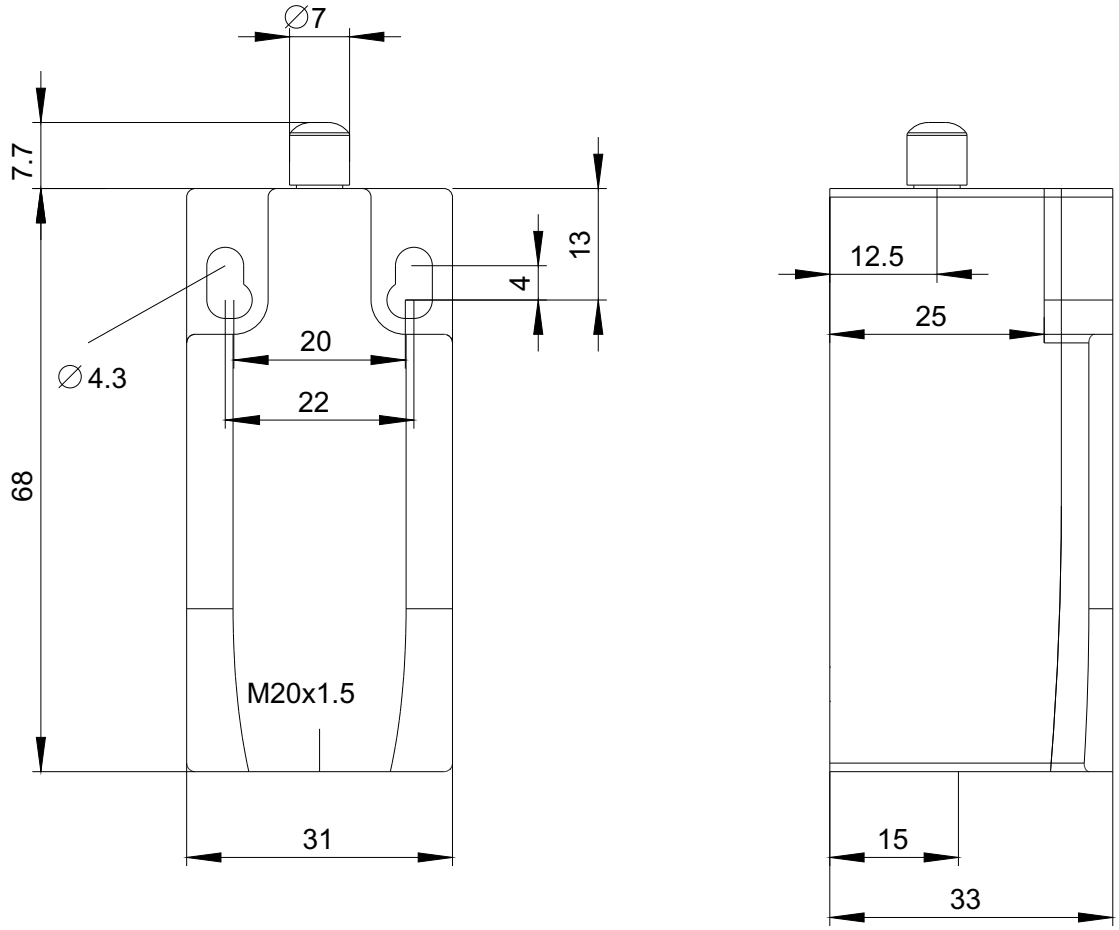
Information- and Downloadcenter (Catalogs, Brochures,…)
http://www.siemens.com/industrial-controls/catalogs

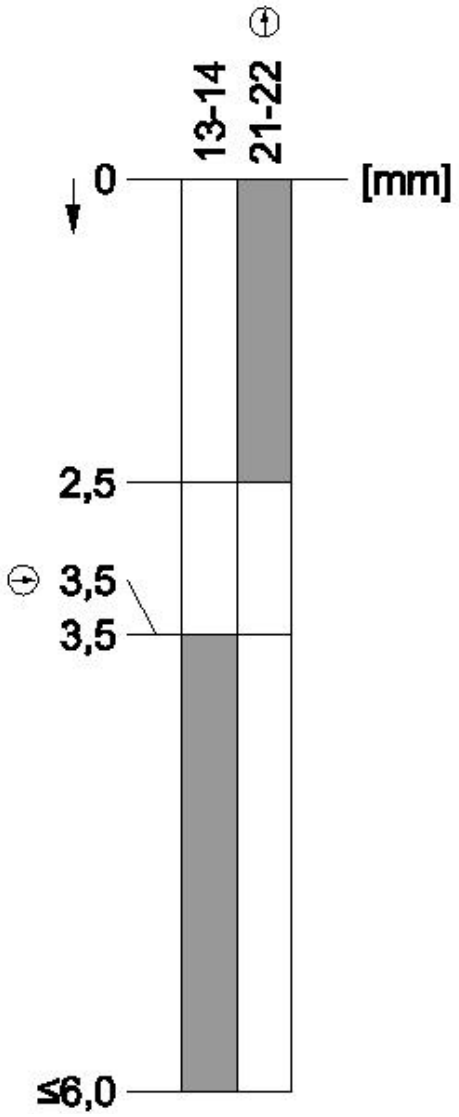
Industry Mall (Online ordering system)
https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3SE5232-0BC05

Cax online generator
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3SE5232-0BC05

Service&Support (Manuals, Certificates, Characteristics, FAQs,...)
https://support.industry.siemens.com/cs/ww/en/ps/3SE5232-0BC05

Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3SE5232-0BC05&lang=en





last modified: 03/27/2018

15.10 Magnet switch

COMUS Group

Part Number: MMPSA 240/30 (Alternate Part No: S1693 / S1692)
Proximity Switch - Reed Switch based
Rectangular - Normally Open Contacts - Suggested Magnet: MMPSM

PICTURE

✔RoHS Compliant

APPLICATIONS INCLUDE

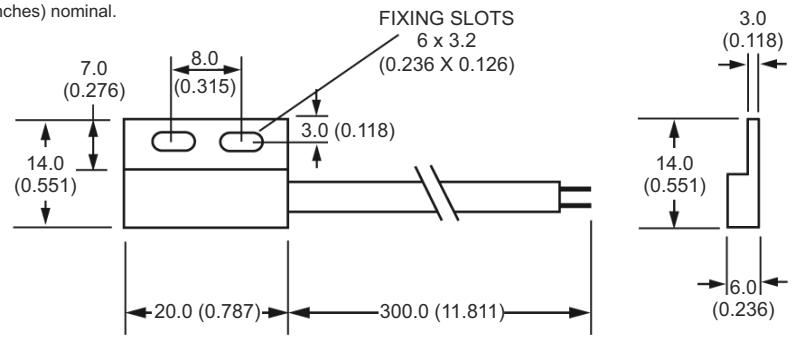
- Position and limit sensing
- Linear actuators
- Security system switch
- Door Switch

FEATURES

- Also available in all Black.
- White economy version available.
- Left **(MMPSA 240/30 LH)** and Right **(MMPSA 240/30 RH)** hand versions available.
- Custom cable lengths, strip lengths, cable types, terminations.
- If you do not see what you need, just ask, as there is a strong possibility we can do it !
- Device is intended to be mounted in an enclosure under UL recognition.

DIMENSIONS

Drawings not to scale.
All dimensions in mm (inches) nominal.



SPECIFICATION

Contact Form / Style	Normally Open
Switching Capacity (Resistive)	10 W/VA MAX
Switching Voltage	400 VAC MAX
Switching Current	0.5 A MAX
Carry Current	1.0 A MAX
Breakdown Voltage	600 VDC MIN
Contact Resistance	150 mOhms MAX
Switching Distance	10 mm MIN
Operating Temperature Range	-20°C +85°C
Storage Temperature	-25°C +90°C
Case Material	Blue Nylon 66
Cable	2 x Round 0.14mm^2 PVC covered Grey and insulated Brown/White

Phone: (1) 973 777 6900 **www.comus-intl.com** **Fax: (1) 973 777 8405**

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Rev: 1 - Date: Apr/21/2017 - Signature: BR

An ISO 9001 Certified Company

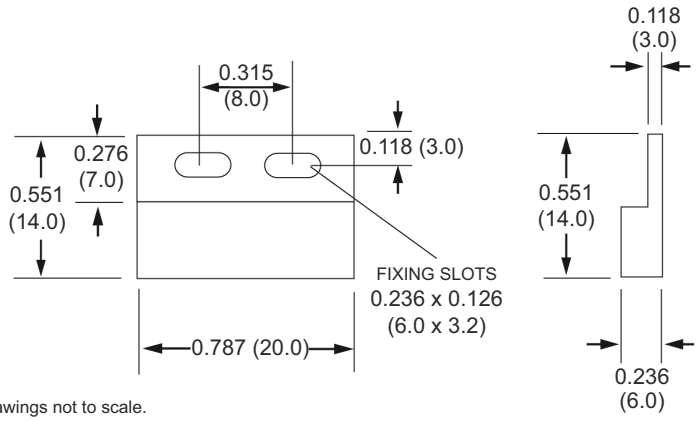
COMUS Group

Part Number: MMPSM (Alternate Part No: S1694)
Magnet - Cased
Product Data Sheet

PICTURE

✔RoHS Compliant

DIMENSIONS



Drawings not to scale.
All dimensions in inches (mm) nominal.

SPECIFICATION

Style	Rectangular
Length	0.787 in (20 mm)
Height	0.236 in (6 mm)
Width	0.551 in (14 mm)
Case Material	Nylon 66

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5 / 2015

An ISO 9001 Certified Company

15.11 Magnet switch (NF S)

P/STD/PSC42000/C/27/03/2019

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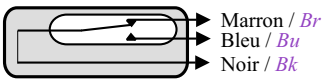
CAPTEUR DE PROXIMITE MAGNETIQUE

MAGNETIC PROXIMITY SENSOR

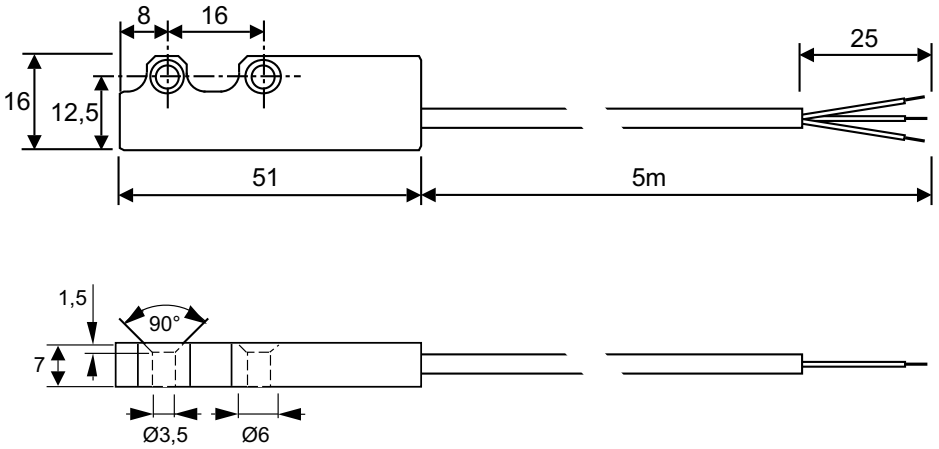
PSC42000

- **Contact inverseur (1NO + 1NF) /** *Change-over (1NO + 1NC)*
- **Commutation jusqu'à 300Vac /** *Switching up to 300Vac*
- **Commutation jusqu'à 3A /** *Switching up to 3A*
- **Bascule en présence d'aimant /** *Switch in the presence of magnet*
- **Fixation possible sur les 2 faces /** *Possible fixation on both side*
- **Sortie câble 5m /** *5m cable output*



(Hors présence d'aimant /
without the presence of magnet)

Dimensions / *Outlines* (mm)



Proud to serve you

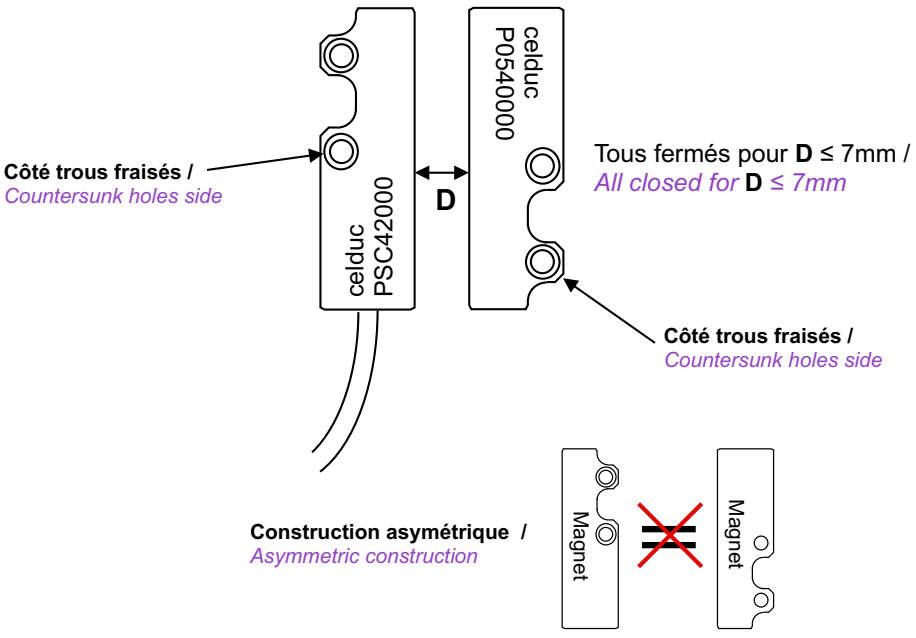
All technical caracteristics are subject to change without previous notice.
Caractéristiques sujettes à modifications sans préavis.

celduc® relais

Caractéristiques / *Characteristics*

Puissance maxi commutable / *Max. switching power*	**100W**
Tension maxi commutable / *Max. switching voltage*	**300 V_{AC}**
Courant maxi commutable / *Max. switching current*	**3 A**
Courant de travail / *Carrying current*	**4 A**
Tension typique de tenue entre lames / *Breakdown voltage*	**1000 V_{DC}**
Résistance de contact initiale (hors câble) / *Initial contact resistance (cable excepted)* **Conditions de test** / *Testing conditions*: **22Vdc - 1 A**	**≤ 100 mΩ**
Résistance d'isolement (min.) / *Insulation resistance (min.)*	**10^8 Ω**
Capacité / *Capacitance*	**2,3 pF**
Fréquence maxi. d'utilisation / *Max. frequency*	**100 Hz**
Temps de commutation / *Switching time* **- à l'action (max.)** / *operate time (max.)* **- au relachement (max.)** / *release time (max.)*	 **4,5 ms** **4,1 ms**
Température maxi. d'utilisation / *Max. operating temperature*	**-25 à +100 °C**
Température de stockage / *Storage temperature*	**-40 à +100 °C**
Chocs (1/2 onde - 11ms) / *Shocks (1/2 sine wave - 11ms)*	**50 g**
Vibrations (de 50 à 2000Hz) / *Vibrations (50 to 2000Hz)*	**35 g**
Section des conducteurs / *Wires section*	**3 x 0,22 mm² / 3 x 24AWG**
Type de câble / *Cable type*	**PVC - Øext 3,7mm**

Détection / *Detection*



afaq ISO 9001 Qualité AFNOR CERTIFICATION

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Colt Group

Installation, Operation and Maintenance Manual
1091 - Coltlite CL
2021 - 01
English

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