



ALPHADRIVE

Assembly instructions

(Translation of the original installation instructions)

Foreword

Disclaimer and Exclusion of Liability

DewertOkin is not responsible for damage resulting from:

- failure to observe these instructions,
- changes made to this product which have not been approved by DewertOkin, or
- the use of replacement parts which have not been approved or manufactured by DewertOkin.

- ▶ We reserve the right to make unannounced technical changes in the course of our continual product improvement process!

Creation of a complete operating instruction manual for the entire end product

These instructions are only intended to be used by the end-product manufacturer. They should not be given to the operator of the end product. The factual information contained within may be used as a basis when creating the end-product manual.

The warning and danger notices are best suited for use in the end product's manual. However it is not sufficient to simply follow these notices. You should also carry out an internal risk assessment for your end product. This can then be used as the basis for the safety notices in your manual.

These installation instructions do not contain all information required to safely operate the end product. They only describe the installation and operation of the drive as partially completed machinery.

The instructions are intended for the technicians responsible for manufacturing an end product and not for the operators of the end product.

Notice for customers in EU nations

German Inspection Authority (TÜV) testing label

The construction of the ALPHADRIVE has been inspected by the German Inspection Authority (TÜV). The TÜV also monitors the production of the ALPHADRIVE. The official German TÜV label certifies this construction inspection and production monitoring.

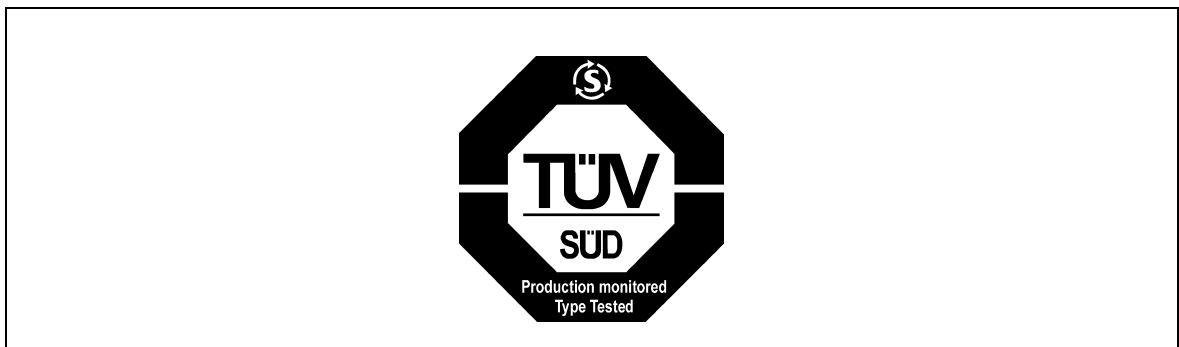


Figure 1 The TÜV label


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1. General information

These installation instructions must be followed closely in order to install this drive successfully and safely in the end product. These instructions are not an operating manual for the end product.

The assembly instructions help you to minimise danger and to increase the reliability and service life of the product.

	CAUTION
<p>The notices in these instructions must be followed! Following the guidelines during installation and connection procedures will help to minimize:</p> <ul style="list-style-type: none"> • the risk of accident and injury, and • damage to the drive system or the end product. 	

These installation instructions have been written with due care and attention. However, we cannot guarantee that the data, images and drawings are complete and correct nor do we accept any liability for the information contained therein, unless required by law.

Availability of this document

As manufacturer of the end product, you are obligated to comply with Machinery Directive 2006/42/EC. This directive stipulates that the installation instructions must be kept on file for governmental inspection purposes.

1.1 Safety notices within the installation instruction and the operating instructions for the entire machine

The manufacturer of the end product is only permitted to operate the ALPHADRIVE drive (by itself an incomplete machine)

- when the end product (for which the ALPHADRIVE drive is intended) is in compliance with all protective measures specified in the Machinery Directive 2006/42/EC, and
- when the manufacturer expressly declares the compliance of the end product.


The manufacturer of the end product must create a manual for the users of that product. The safety notices in the end-product manual must be written based on the end product's risk assessment.

1.2 Conventions used in this manual

Notices which do not relate to safety are indicated in these instructions with a triangle:

- ▶ Triangular notice symbol

Safety notice explanations

	CAUTION
Warning of a dangerous situation, risk of injury.	

ATTENTION	
Notice about a harmful situation, possible consequences: the product itself or surrounding objects could be damaged.	

2. Safety Instructions

2.1 Proper and Intended Usage

The ALPHADRIVE drive is meant to be installed in an end product.

- It provides motor adjustment capabilities for movable parts. It should be used in conjunction with suitable fitting brackets or mechanisms
- in the application areas (examples): Beds, chairs, tables.



CAUTION

Risk of accident

This drive should only be used for the applications described above. Any other form of usage is not permitted and can lead to accidents or destruction of the unit. Non-approved applications will lead immediately to the expiration of all guarantee and warranty claims on the part of the end-product manufacturer against the manufacturer.

Improper usage

Be sure to follow the notices below concerning improper usage. You should include them in your product manual in order to inform the users of your end product.

The ALPHADRIVE drive should not be used:

- in any environment where combustible or explosive gases or vapours (e.g., anaesthesiology) may be present,
- above the permissible tension and compression forces as indicated on the ratings plate,
- in any application that will be cleaned with an automated washing system,
- in a moist environment,
- outdoors.

The ALPHADRIVE drive can be used by children aged 8 years and above, as well as persons with reduced physical, sensory or mental capabilities or with lack of experience and knowledge when they are supervised or have been instructed in the safe use of the equipment and understand the dangers which can result. Children may not play with the device. Cleaning and user maintenance may not be carried out by children without supervision.

- ▶ You should only use spare parts which have been manufactured or approved by DewertOkin. Only these parts will guarantee a sufficient level of safety.

2.2 Selection and qualification of personnel

Installing the drive into the end product may only be carried out by specialist staff. You should only install this drive when you are qualified to do so. Otherwise, a properly qualified person should be found for this task.

2.3 Ratings plate

- ▶ The ratings plate shown is an example. The specifications for your drive may differ from this illustration.

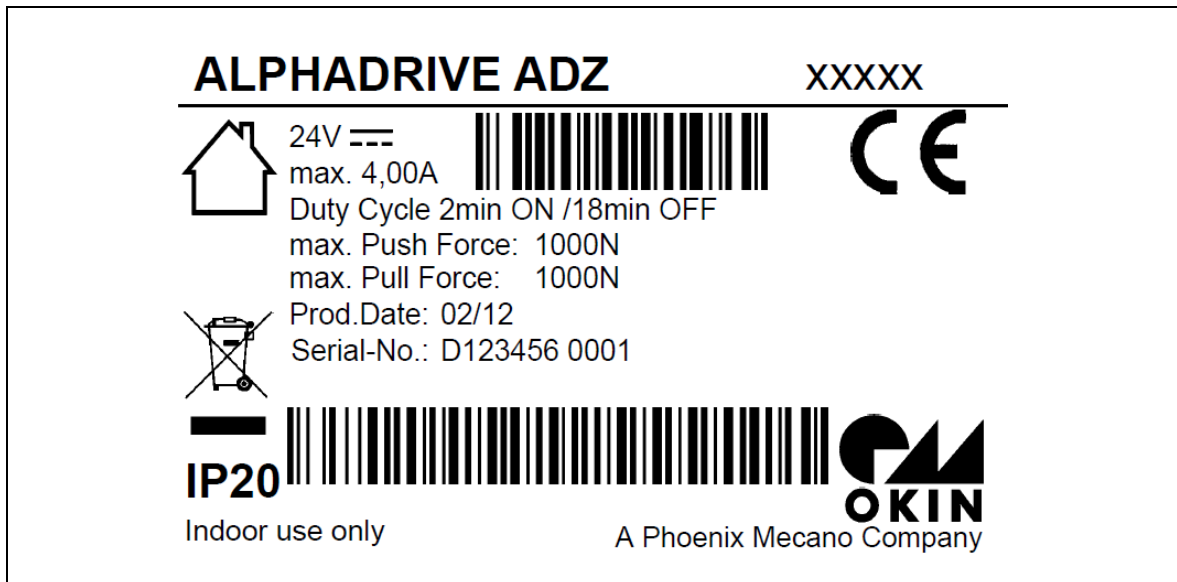





Figure 2 Ratings plate example

Ratings plate legend

ALPHADRIVE ADZ	Article type designation
xxxxx	Article number
24V AC	Input voltage
max. 4.00A	Current consumption
Duty cycle: 2 min ON /18 min OFF	Intermittent operations: 2 minutes on / 18 minutes rest time
max. Push Force	Push force
max. Pull Force	Pull force
Prod.date	Calendar week / year
Serial No.	Serial number for your drive
IP20	Protection category
	Use in dry rooms only!
	Follow all special disposal instructions!
	Mark of CE conformity

3. Device description

The ALPHADRIVE drive is an electrically driven motor that is responsible for moving the end product in a linear direction. This adjustment is created by the in and out movement of a stroke pipe. The ALPHADRIVE drive is operated using an Okin handset.

The variants differ (see chapter 4, Technical Specifications) in terms of:

- Work performance,
- Speed,
- Pushing and pulling forces,
- Fitting dimensions and stroke,
- Fastening of the stroke pipe (see section 3.1.2),
- Connection variants (see section 3.1.3).

3.1 Components

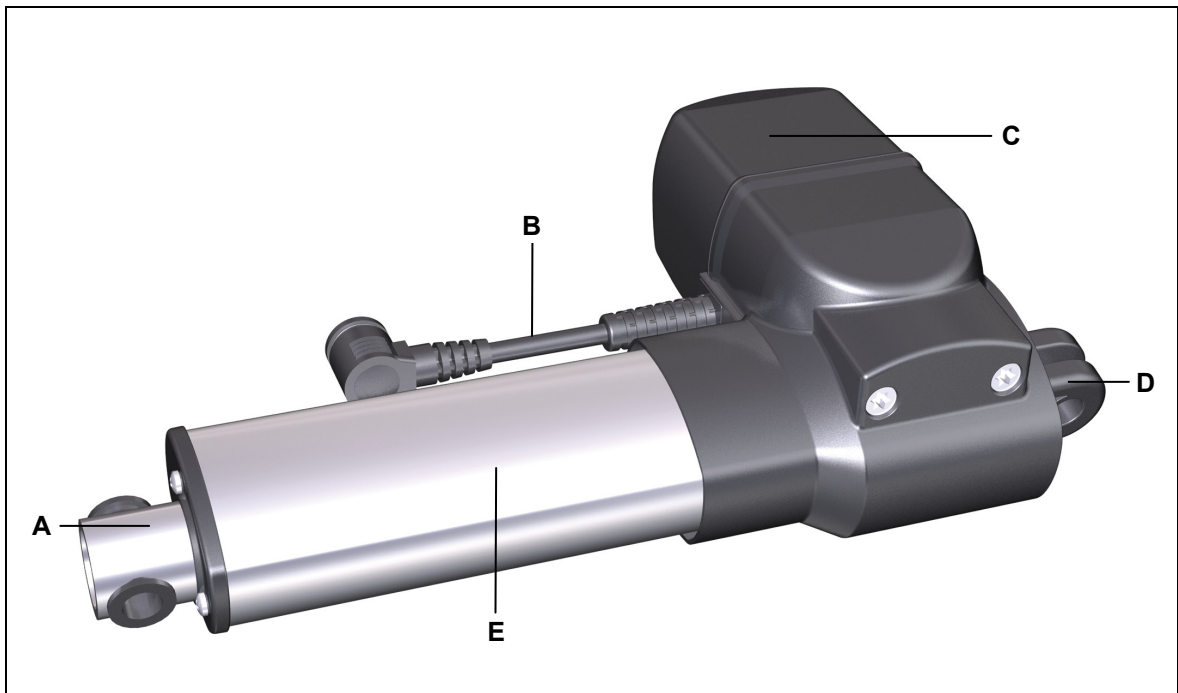


Figure 3 Main components of the ALPHADRIVE drive

- | | |
|------------------------------|--------------------------------|
| A Head of stroke pipe | B Electrical connection |
| C Motor housing | D Gear clevis |
| E Guidance profile | |

3.1.1 Stroke pipe variants

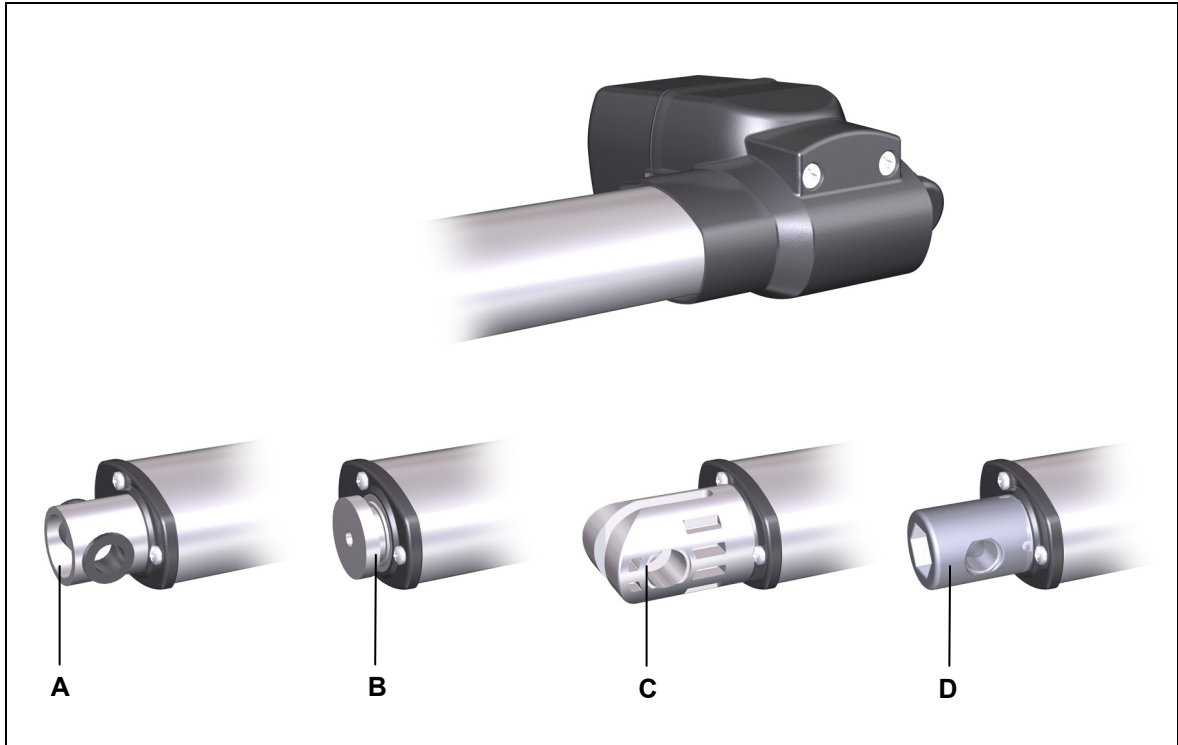


Figure 4 Stroke pipe head variants with the ALPHADRIVE drive

A Stroke pipe with hole

B Adapter

C Stroke pipe clevis (slot 5 mm)

D Stroke pipe head without slot

3.1.2 Mounting the stroke pipe

There are two types of stroke pipes available for different types of applications. The stroke pipe can be screwed onto the spindle screw or it can be mounted unattached. The drive only exerts pushing force when the stroke pipe is mounted loosely (unattached). The motions of the drives for these two variants are shown in the following illustrations.

- ▶ If the stroke pipe is unattached, then the end product must be designed to prevent the stroke pipe from coming out during operations. This can be accomplished by implementing a fixed end-stop mechanism (refer to the "Safety notices to observe during installation" in the "Installation" chapter).

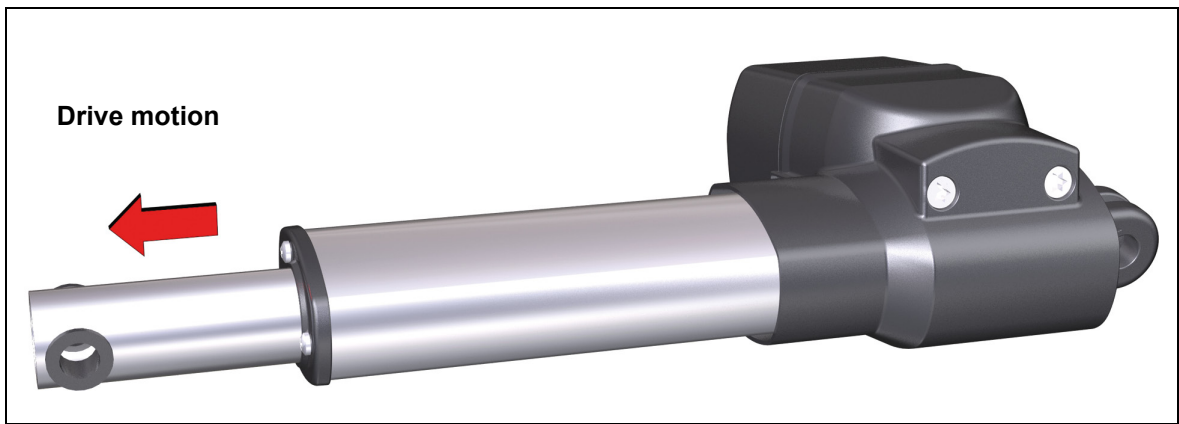


Figure 5 Loose fastening nut (stroke pipe not secured): only pushing forces

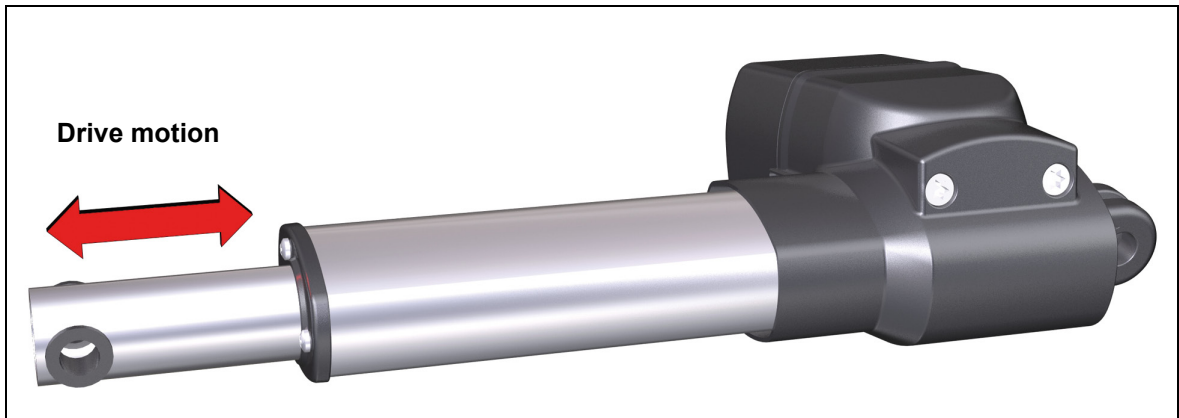


Figure 6 Fixed fastening nut = Stroke pipe screwed onto the spindle screw (attached): both pushing and pulling forces

3.1.3 Connection variants

There are different variants to connect the power to the ALPHADRIVE drive:

- LS plug,
- 5-pin plug,
- Motor control cable.

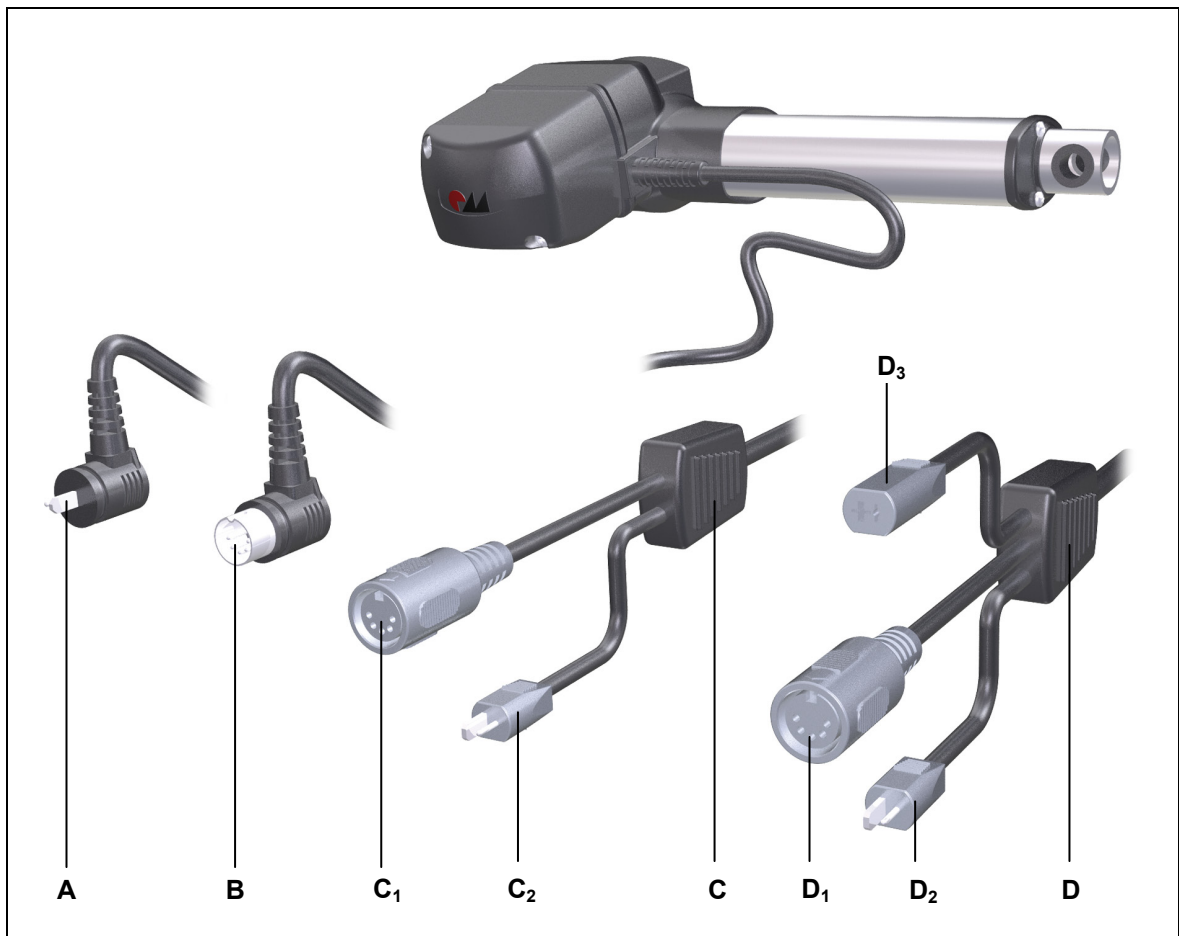


Figure 7 Variants of plug and cable for the different types of ALPHADRIVE drives

A LS plug for ALPHADRIVE ADZ

B 5-pin plug for ALPHADRIVE ADZ

C Motor control cable for ALPHADRIVE AD1

D Motor control cable for ALPHADRIVE AD2

C₁ Handset connection

D₁ Handset connection

C₂ Power supply connection

D₂ Power supply connection

D₃ Connection for an additional slave drive

4. Technical specifications

Input voltage	24 V DC - 29 V DC
Current consumption at rated load	Max. 4.0 A, depending on version (refer to the ratings plate on the drive)
Permitted push force	Max. 3000 N, depending on version (refer to the ratings plate on the drive)
Permitted pull force	Max. 3000 N, depending on version (refer to the ratings plate on the drive)
Mode of operation ¹ under max. rated load	Intermittent duty 2 min./18 min.
Protection class	III
Noise level	≤ 65 dB(A)
Drive type	Single drive
Load type	Push / pull
Adjustment speed ²	Up to 30 mm/second, depending on the version
Protection category	IP20
Hub	< 350 mm
Colour	black
Dimensions and weight	
Length x width x height	Min. 155.5 mm x 146 mm x 62 mm
Weight	Approx. 1.5 kg, depending on version
Ambient conditions for operation, storage and transport	
Transport / storage temperature	From -20 °C to +50 °C From -4 °F to +122 °F
Operating temperature	From +10 °C to +40 °C From +50 °F to +104 °F
Relative humidity	From 30% to 75%
Air pressure	From 800 hPa to 1060 hPa
Height	< 2000 m

¹⁾ Mode of operation: intermittent duty 2 min./18 min. This means that after the unit is operated with its rated load for up to two minutes it must then be paused for 18 minutes. The system can malfunction if this pause is not observed!

²⁾ Adjustment speed: the speed at which the clevis can move under no load (the speed varies depending on the load).

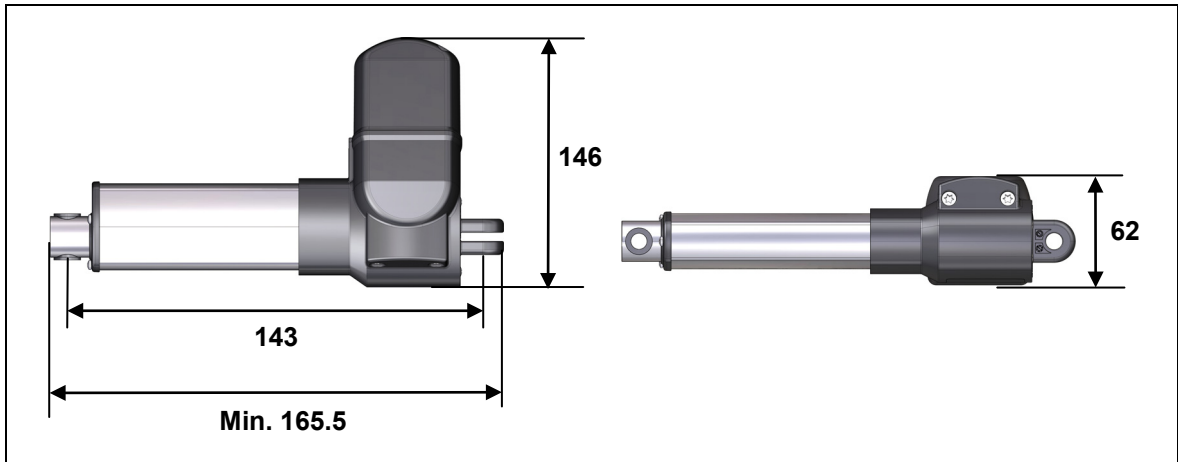


Figure 8 Dimensions of ALPHADRIVE drive stroke pipe with hole (in mm)
Minimum installation dimension: 143 mm

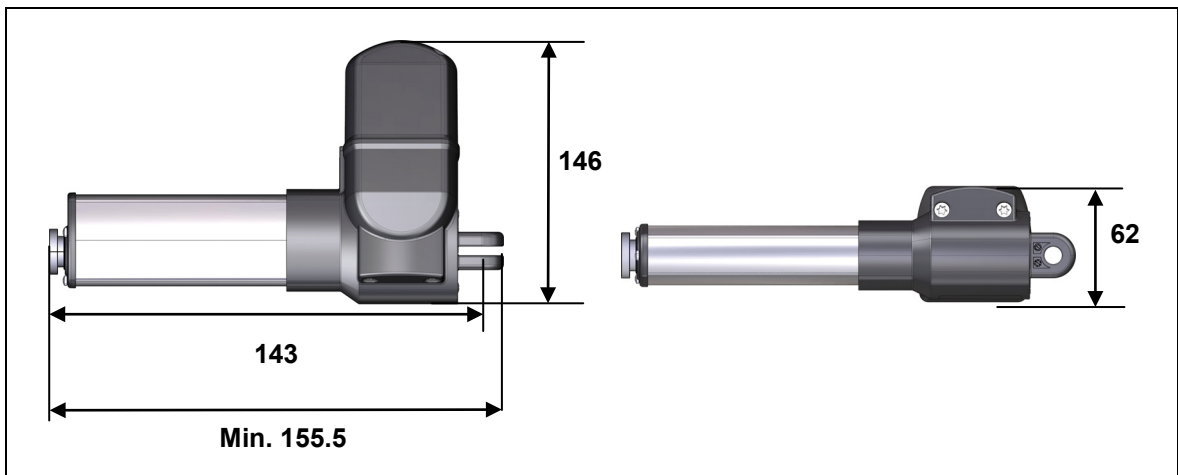


Figure 9 Dimensions of ALPHADRIVE drive with adapter (in mm)
Minimum installation dimension: 143 mm

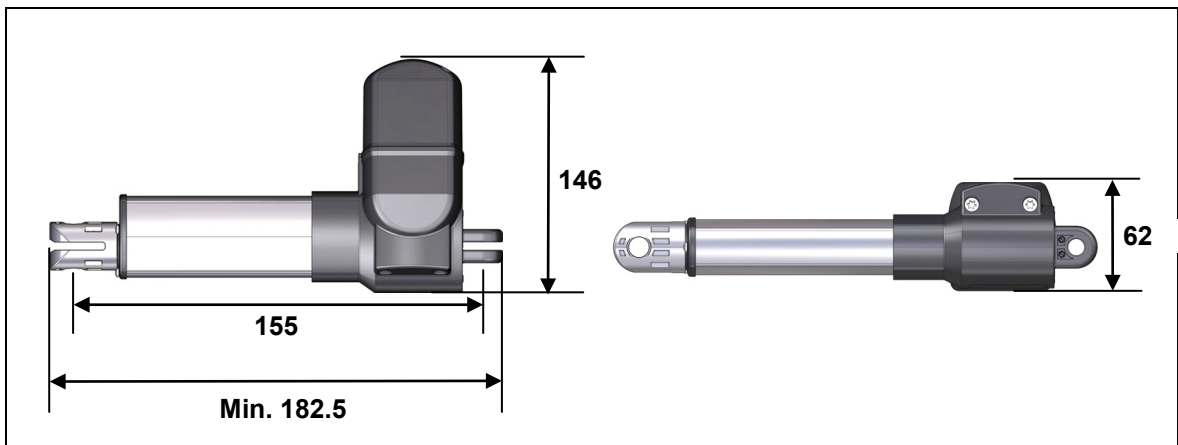


Figure 10 Dimensions of ALPHADRIVE drive stroke pipe clevis (slot 5 mm)
(in mm), Minimum installation dimension: 155 mm

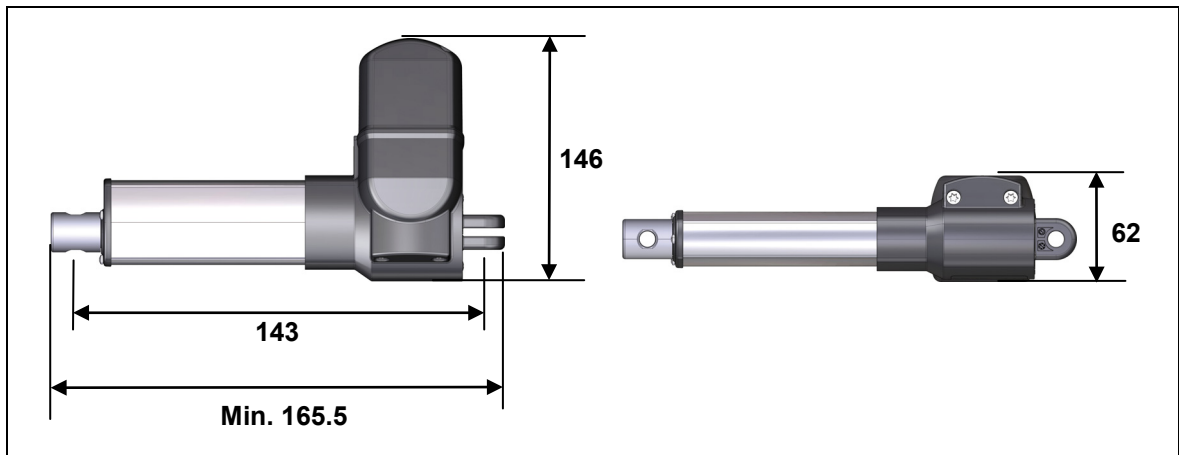


Figure 11 Dimensions of ALPHADRIVE drive stroke pipe without slot (in mm)
Minimum installation dimension: 143 mm

5. Installation

5.1 Safety notices to observe during installation

Basic safety rules must be followed in order to ensure that the end product can be continually operated in a safe manner. These rules must be observed while using the end product and while installing drives into the end product.

Avoiding fatigue fractures

- Install the drive in the end product so that it is properly aligned. This will help prevent shear stress.
- Do not position the drive at a slanted angle when installing it in the end product. A slanted angle between the intended direction of movement of the end product and the drive's direction will create shear stress and could lead to a fatigue fracture.
- Be sure to install the drive so that it can always move freely in all operative states.
- You should never screw the stroke pipe into the drive.

Avoiding an overrun of the stop point with the end product

- ▶ Please ensure that your end product contains mechanical end stops. These will limit the drive movement and significantly increase operational safety. DewertOkin therefore recommends that you build such mechanical end stops into your end product.

Be sure that your operating instructions inform the user of these points.

5.2 Installation procedure

- ▶ The fitted mounts on the end product should have elongated slots so that the installed position can be adjusted.

5.2.1 An example installation

a) Stroke pipe clevis / Stroke pipe head

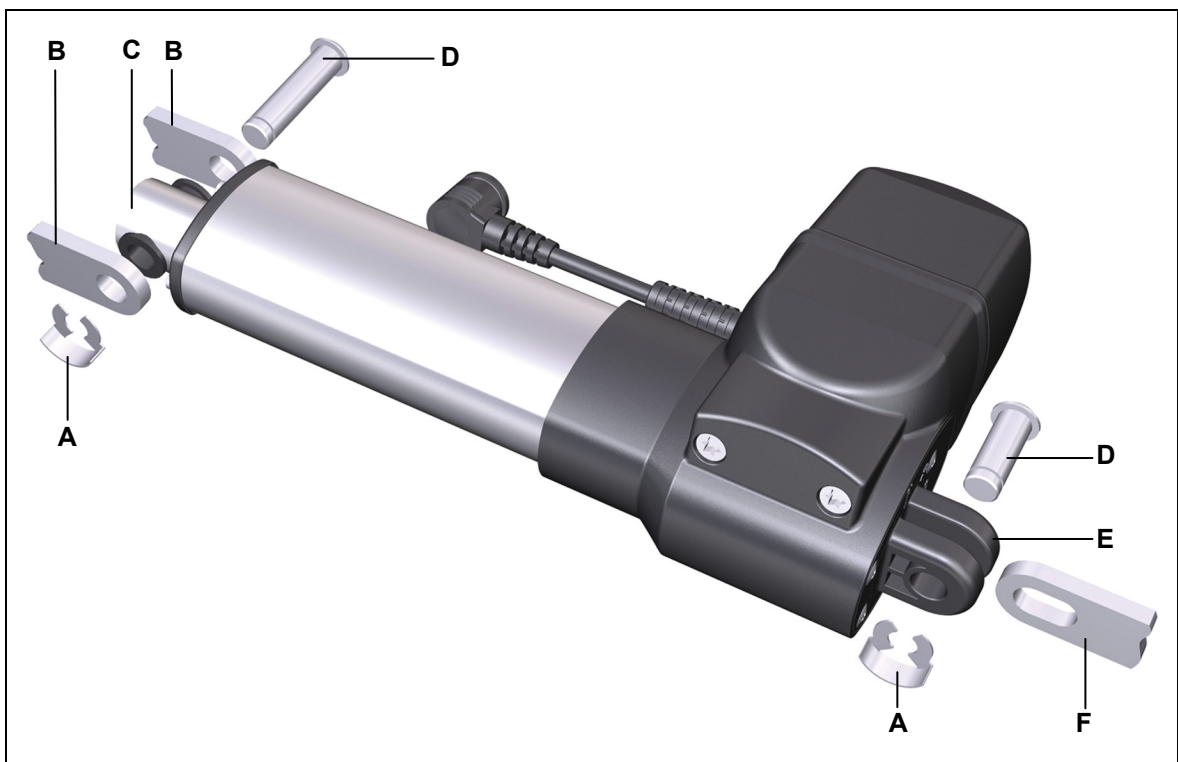


Figure 12 Installing the drive (example)

- | | |
|---|--|
| <p>A Safety clip</p> <p>C Head of stroke pipe</p> <p>E Gear clevis</p> | <p>B Fittings for securing the drive (on the stroke pipe side)</p> <p>D Mounting bolt</p> <p>F Bracket for securing the drive (on the motor side)</p> |
|---|--|

In the following example, installation of the ALPHADRIVE drive into the end product is shown using mounting bolts.

► Certain details may change as a result of technical changes.

- 1 Push the drive's gear clevis (E) onto the bracket (F).
- 2 Insert the mounting bolt (D) into the bracket (F).
- 3 Secure the mounting bolt (D) with the safety clip (A).

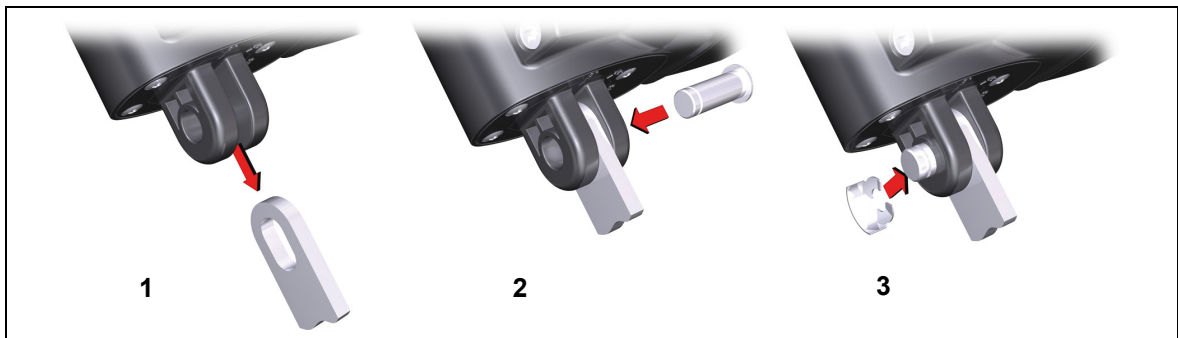


Figure 13 Assembly steps on the gear clevis (example)

ATTENTION

You should never screw the stroke pipe into the drive. A stroke pipe that has been screwed into the drive can result in fatigue fractures.

- 4 if the stroke pipe clevis (C) does not align exactly with the gear clevis (E), the stroke pipe may be unscrewed out of the drive by no more than a half turn.

ATTENTION

The stroke pipe may only be turned one half rotation out of the drive. Do not rotate the stroke pipe further out. An over-rotation can lead to unsafe operations.

- 5 Attach the stroke pipe (C) using a mounting bolt (D) to the fitting (B).
- 6 Secure the mounting bolt (D) with the safety clip (A).
- 7 You can now make the electrical connection of the drive (see 5.2.2).

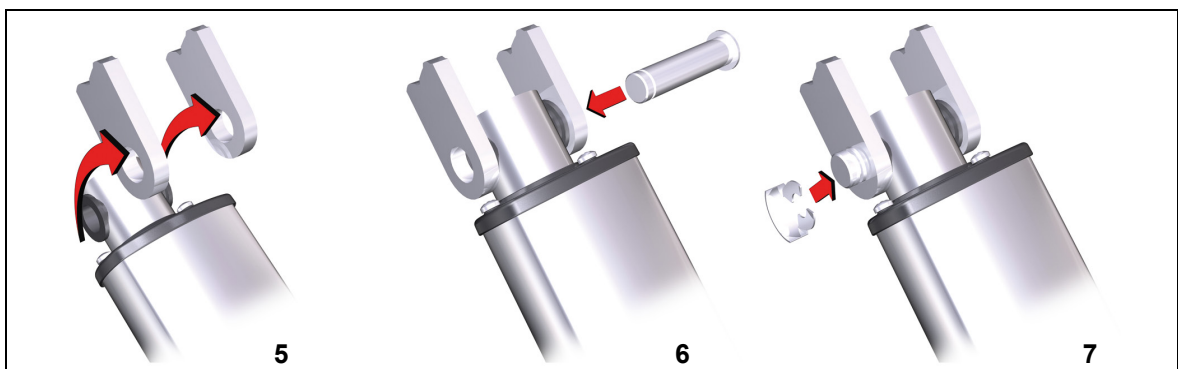


Figure 14 Assembly steps on the stroke pipe head (example)

b) Adapter

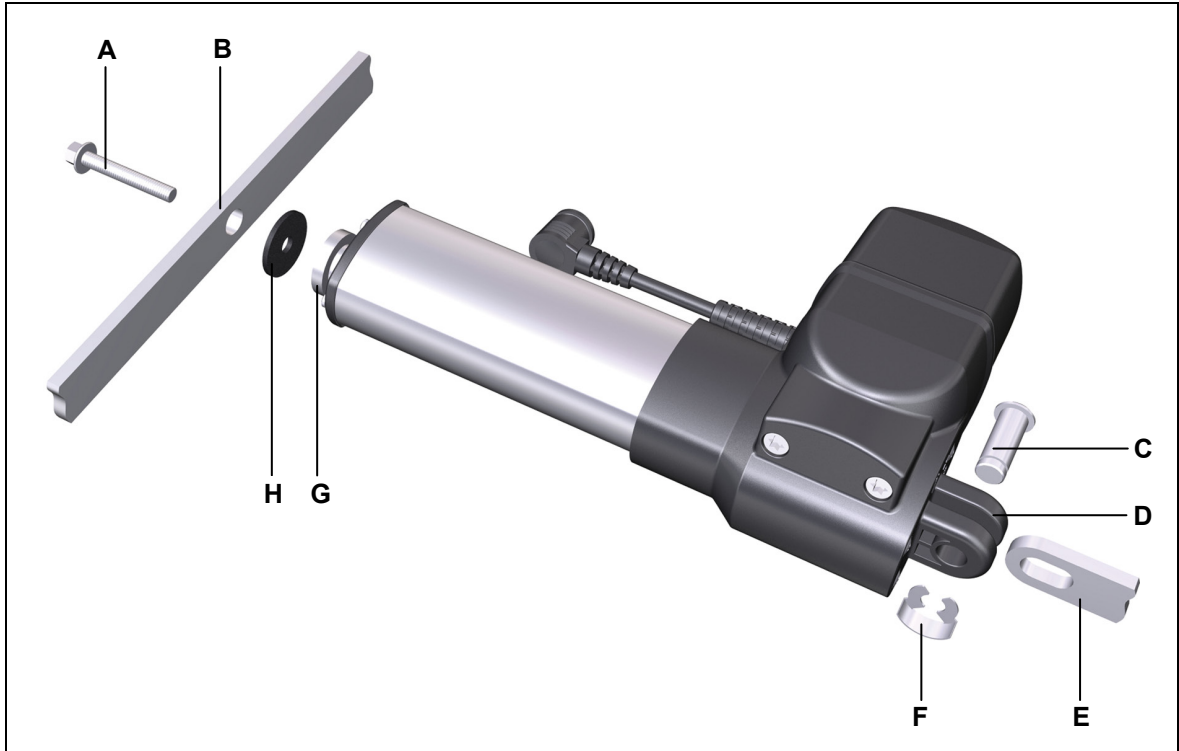


Figure 15 Installing the drive (example)

- | | |
|---|--|
| A Mounting screws (M6) | B Bracket (for stroke pipe side) |
| C Mounting bolt | D Gear clevis |
| E Bracket for securing the drive (on the motor side) | F Safety clip |
| G Adapter | H Dampening rubber (optional, with thickness of 2 mm) |

In the following example, installation of the ALPHADRIVE drive with an adapter into the end product is shown.

- 1 Push the drive's gear clevis (D) onto the bracket (E).
- 2 Insert the mounting bolt (C) into the bracket (E).
- 3 Secure the mounting bolt (C) with the safety clip (F).
- 4 Attach the adapter (G) and the damping rubber (H) using an M6 screw (A) to the bracket (B). Tighten the screw using a **maximum torque of 6 Nm!**
- 5 You can now make the electrical connection of the drive (see 5.2.2).

5.2.2 Electrical connection



CAUTION

Crush Hazard

Electrical components should only be connected or disconnected with the mains plug and battery plug (if fitted) removed so that no uncontrolled movement can be triggered.

- ▶ If the hand switch will be used to control two drives, you must first connect both drives electrically to each other (for example, over a control unit or double drive). Then you can connect the handset.

Routing the electrical cables

When routing the cables, be sure that:

- the cables cannot get jammed,
- no mechanical load (such as pulling, pushing or bending) will be put on the cables
or
- the cables cannot be damaged in any way.

Fasten all cables (especially the mains cable) to the end product using sufficient strain relief and kink prevention methods. Be sure that the design of the end product prevents the mains cable from coming into contact with the floor during transport.

ATTENTION

There is a delay after the supply voltage is applied before the device actually turns on. Wait at least 15 seconds before initial commissioning.

5.2.3 Dismantling



CAUTION

Crush Hazard

- Electrical components should only be connected or disconnected with the mains plug and battery plug (if fitted) removed so that no uncontrolled movement can be triggered.
- Be sure to carry out work on the drive in a position so that no loads are bearing on it. Only in this way can you be sure to avoid any risks of crushing or injury.

- 1 Move your product into a position where it is supporting no load.
- 2 If multiple drives are connected electrically they should be disconnected from each other.
- 3 Remove the security clips and the mounting bolt.

6. Instructions on use

The assembly instructions do not contain all information required for the safe operation of the end product. They only describe the installation and operation of the drive as a partially assembled piece of machinery (in accordance with the machinery directive: "incomplete machine").

Power-on time / intermittent operations

ATTENTION

The ALPHADRIVE drive has been designed for intermittent operations. Intermittent operation is an operational mode where the drive must pause for a period of time after a specified maximum period of operation (power-on time), otherwise damage may be caused to the product.

The ALPHADRIVE drive is used with intermittent duty 2 min./18 min. This means that after the unit is operated with its rated load for up to two minutes it must then be paused for 18 minutes.

Shutting off the drive

In order to shut off the drive, unplug the mains power plug and the battery plug (when present)! The power plug must always be accessible during operations so that emergency shut-off is possible.

Avoiding cable damage

Be sure that your operating instructions inform the user about the possible cable risks.

ATTENTION

The cables, particularly the electrical connection of the drive and the power supply connection of the drive system, must not be pinched. Avoid mechanical loads on all cables to prevent damage to the drive.

7. Maintenance and cleaning

7.1 Maintenance

- ▶ The ALPHADRIVE drive is maintenance-free.

7.2 Cleaning

- ▶ If required, clean the ALPHADRIVE drive with a dry cloth.

ATTENTION

- Always disconnect the mains power plug of the drive system (and the battery plug if present) before you start to clean the unit!
- Never clean the drive in an automated washing system or with a high-pressure cleaner. Do not allow fluids to penetrate the drive. Damage to the system could result.
- Do not use a cleanser that contains benzene, alcohol or similar solvents.
- Be sure that you do not damage the drive's connecting cable.

8. Disposal

8.1 Packaging material

The packaging material should be sorted into recyclable component parts and recycled or disposed of in accordance with the relevant environmental regulations in the respective country (in Germany according to the Recycling Act KrWG dated 1 June 2013, internationally the EU directive 2008/98/EC (Waste framework directive WFD dated 12 December 2008).

8.2 Drive components

The ALPHADRIVE drive consists of electronic components, cables and metal and plastic parts. You should observe all corresponding national and regional environmental regulations when disposing of the ALPHADRIVE drive.

The disposal of the end product is regulated in Germany by Elektro-G, internationally by the EU Directive 2011/65/EU (RoHS), or by any applicable national laws and regulations. (The end product is not regulated by the EU Directive 2002/96/EC (WEEE) and its amendment EU Directive 2003/108/EC.)



The ALPHADRIVE drive should not be disposed of with normal household waste!

Declaration of Incorporation

According to Appendix II of the EU Machinery Directive 2006/42/EC

The manufacturer:
DewertOkin GmbH
Weststraße 1
32278 Kirchlengern
Germany

declares that the incomplete machine described below

ALPHADRIVE

complies with the following basic requirements of the Machinery Directive (2006/42/EC):

Sections: 1.1.3; 1.3.3; 1.3.4; 1.3.7; 1.5.1; 1.5.2; 1.5.5; 1.5.6; 1.5.7; 1.5.8;
1.5.9; 1.5.10; 1.5.13; 1.6.3

You may only operate this incomplete machine after you have confirmed that the end product (into which this machine will be installed) complies with the Machinery Directive 2006/42/EC.

On request, the manufacturer is obliged to send the special documentation accompanying the partially completed machinery electronically to the appropriate national institution. The special technical documents corresponding to the machine have been created according to Appendix VII, part B.

The following person is responsible for the technical documentation: Hartmut Klimm,
Address cited above.
Tel.: 05223 979150

Kirchlengern, Germany on 20 September 2013



Dipl.-Ing. (FH) NT Walter R. Dobeslaw
Head of Development and Design Engineering

EU Declaration of Conformity

In compliance with Appendix IV of the EU EMC Directive 2004/108/EC

In compliance with Appendix III of the EU Low Voltage Directive 2006/95/EC

In compliance with Appendix VI of the EU RoHS Directive 2011/65/EU

The manufacturer:

DewertOkin GmbH

Weststraße 1

32278 Kirchlengern

Germany

declares that the following product

ALPHADRIVE with OKIN control unit

meets the requirements of the following EU directives:

Electromagnetic Compatibility Directive 2004/108/EC

Low Voltage Directive 2006/95/EC

RoHS Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

Applied standards:

- EN 60335-1: 2012
- EN 55014-1/A1:2009
- EN 55014-2/A2:2008
- EN 61000-3-2/A2:2009
- EN 61000-3-3:2008

This declaration of conformity is no longer valid if constructional changes are made which significantly change the product (i.e., which influence the technical specifications found in the instructions or the intended use)!

Kirchlengern, Germany on 20 September 2013



Dipl.-Ing. (FH) NT Walter R. Dobeslaw
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