

# **DD11 S and DD21 S lifting columns**

## **Installation 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 SÜD Product Service) testing label

The construction of the lifting column has been inspected by the German TÜV SÜD Product Service Inspection Authority. TÜV SÜD Product Service also monitors the production of the lifting column. The official German TÜV SÜD Product Service certifies this construction inspection and production monitoring.



Figure 1 TÜV SÜD Product Service Safety Mark

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# 1. General Information

- The terms "lifting column" and "lifting columns" in the following text refer to the lifting columns DD11 S and DD21 S, unless a reference is made to a specific configuration.

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.

These instructions will help you to minimize danger. They will also help you to increase the reliability and lifespan of the device.



## CAUTION

The notices in these instructions must be followed! Following the guidelines during installation and connection procedures will help to minimize:

- 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 complete machine (the end product) is only permitted to operate the lifting column (by itself an incomplete machine)

- when the end product (for which the lifting column 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

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

- ▶ Triangular notice symbol

### Safety notice explanations



#### **CAUTION**

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

#### **NOTICE**

NOTICE is used to address practices which are not related to personal injury but may result in damage to the product or surroundings.

## 2. Safety notices

### 2.1 Proper and intended usage

The lifting column is intended to be installed in height-adjustable desks and office tables.

- It provides motor adjustment capabilities for movable tables. It should be used in conjunction with suitable mechanics,
- It should be used below the following load limits:
  - Self-locking: 700 N.



#### CAUTION

##### Risk of accident

This drive should only be used for the applications described above. Any other use is forbidden. Improper usage can lead to accidents or destruction of the unit. Such 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 lifting column must not be used:

- in any environment where combustible or explosive gases or vapours (e.g., anaesthesiology) may be present,
- for raising and lowering loads in industrial or technical applications,
- in a moist environment, or
- outdoors.

#### NOTICE

When installing and operating the lifting column, please note the following:

- Handle the lifting column with care!
- Do not drop the lifting column vertically to the ground.
- Do not tilt the lifting column sideways and let it fall to the ground.
- Do not subject the lifting column to lateral shock loads during the installation.

The lifting column can be used by children of 8 years and older, persons with reduced physical, sensory or mental capabilities, or persons with lack of experience or knowledge when they are supervised or instructed concerning the safe use of the device and when they understand the resulting risks. Do not allow children to play with this device. The cleaning and user maintenance must 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

This drive should only be installed into the end product by someone who has completed training in electronic motor assembly or has equivalent qualifications.

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 lifting column may differ from this illustration.

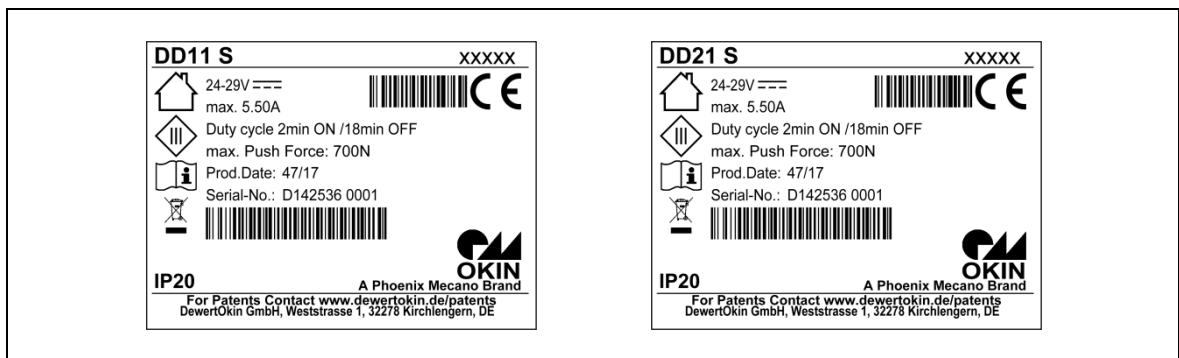


Figure 2 Rating plates (examples)

DD11 S DD21 S	Model name
xxxxx	Article number
24 – 29V	Input voltage
Max. 5.50A	Current consumption
Duty cycle: 2 min ON / 18 min OFF	Intermittent duty / power-on time
max. Push Force	Push force
Prod.date	Calendar week / year
Serial No.	Serial number for your drive
IP20	Protection degree
	Use in dry rooms only!
	Protection class: III
	Follow all special disposal instructions!
	Conformity mark



### 3. Description

The lifting column is an electrically driven motor that is responsible for moving the end product in a linear direction. The lifting column is operated with a control unit and keypad.

The different drive models vary according to their:

- DD11 S lifting column: single telescopic
- DD21 S lifting column: double telescopic
- output performance, or
- number of lifting columns in the end product.

#### 3.1 Components

##### 3.1.1 DD11 S lifting column (single telescopic)

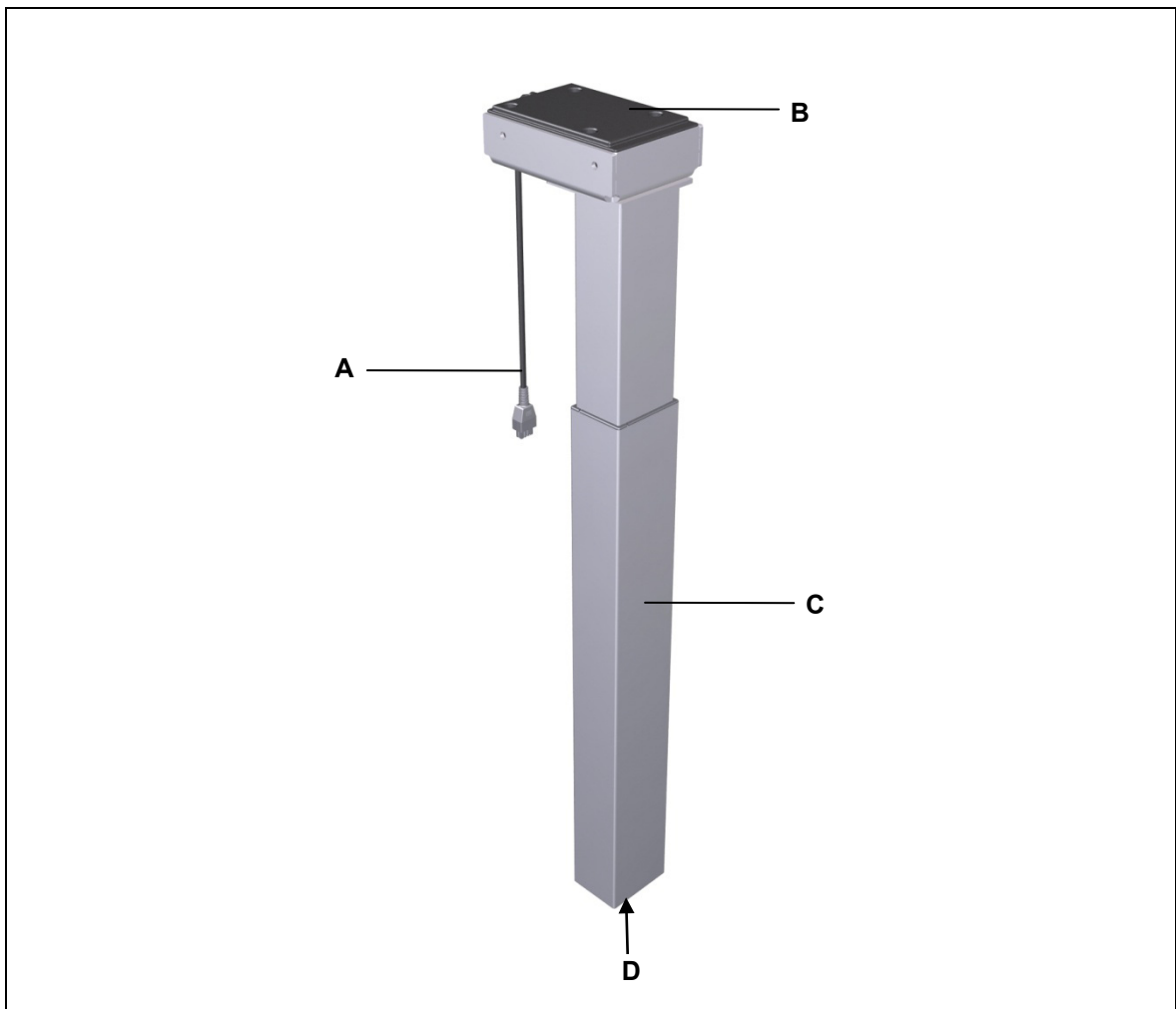


Figure 3 Major components of the DD11 S lifting column

- |   |                                     |
|---|-------------------------------------|
| <b>A</b> Connection cable                                 | <b>B</b> Head of the lifting column |
| <b>C</b> Outer column with one internal telescopic column | <b>D</b> Foot of the lifting column |

3.1.2 DD21 S lifting column (double telescopic)

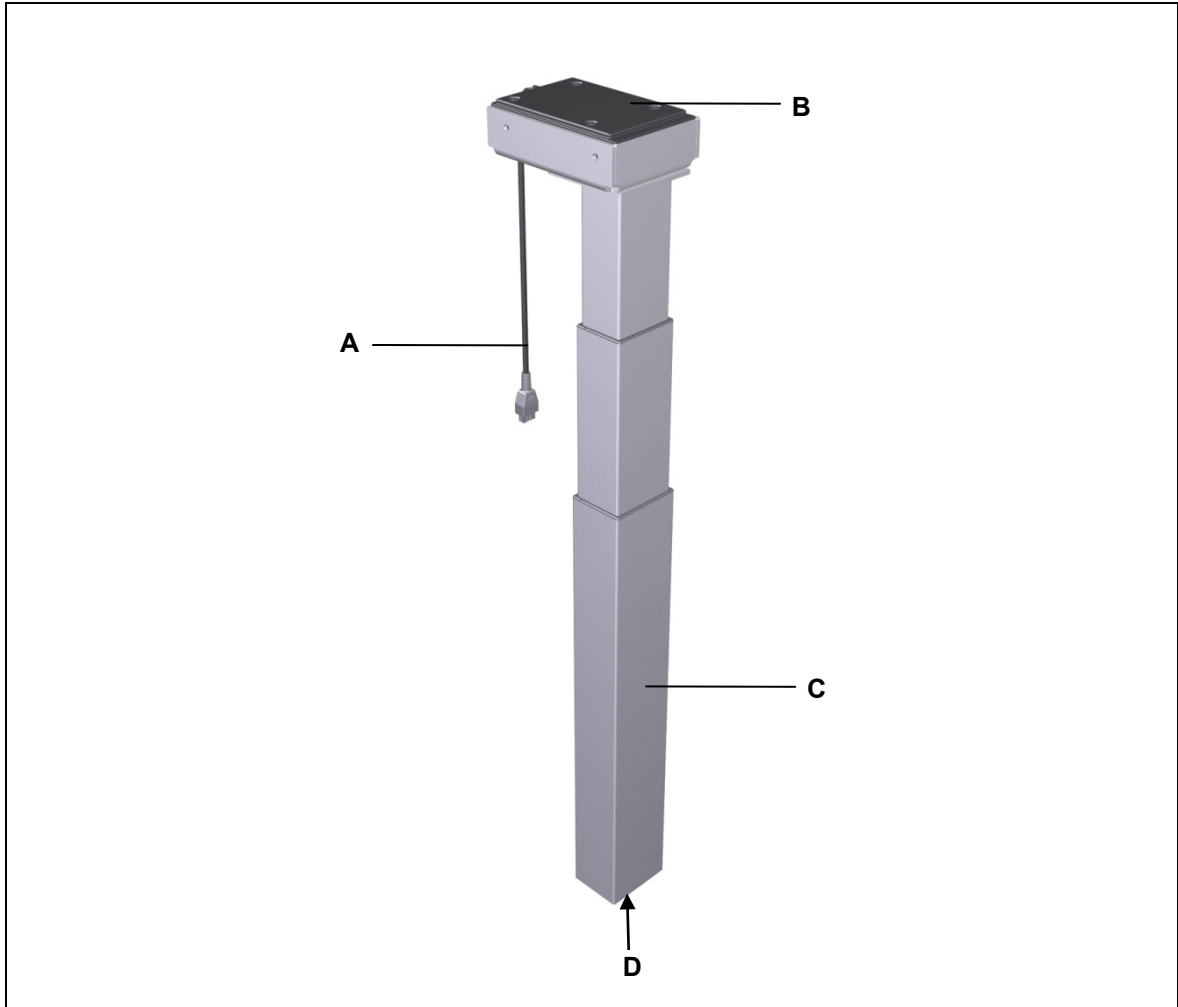


Figure 4 Major components of the DD21 S lifting column

- |  |                                     |
|--|-------------------------------------|
| <b>A</b> Connection cable                                  | <b>B</b> Head of the lifting column |
| <b>C</b> Outer column with two internal telescopic columns | <b>D</b> Foot of the lifting column |

## 4. Technical specifications

		DD11 S	DD21 S
Input voltage		24 V DC – 29 V DC	
Current consumption at rated load		Max. 5.50 A DC	
Permitted push force		Max. 700 N	
Self-locking		700 N	
Mode of operation <sup>1</sup> under max. rated load		Intermittent duty 2 min./18 min.	
Protection class		III	
Noise level		≤ 55 dB(A)	
Drive type		lifting column	
Protection degree		IP20	
Standard colours		RAL 9005, RAL 9006, RAL 9016	
Stroke		500 mm	650 mm
Length <sup>2</sup> x width x height (in mm)		645 x 108.6 x 155	565 x 108.6 x 155
Length <sup>3</sup> x width x height (in mm)		1145 x 108.6 x 155	1215 x 108.6 x 155
Column dimensions (in mm)	Exterior:	80 x 62	80 x 62
	Middle:	-	73 x 55
	Interior:	73 x 55	66 x 48
Weight		Approx. 7.9 kg	Approx. 9.1 kg
Cable length		1200 mm ± 10 mm	
<b>Ambient conditions for operation, storage and transport</b>			
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	

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

<sup>2)</sup> Length when retracted.

<sup>3)</sup> Length when fully extended.

### 4.1 Dimensions

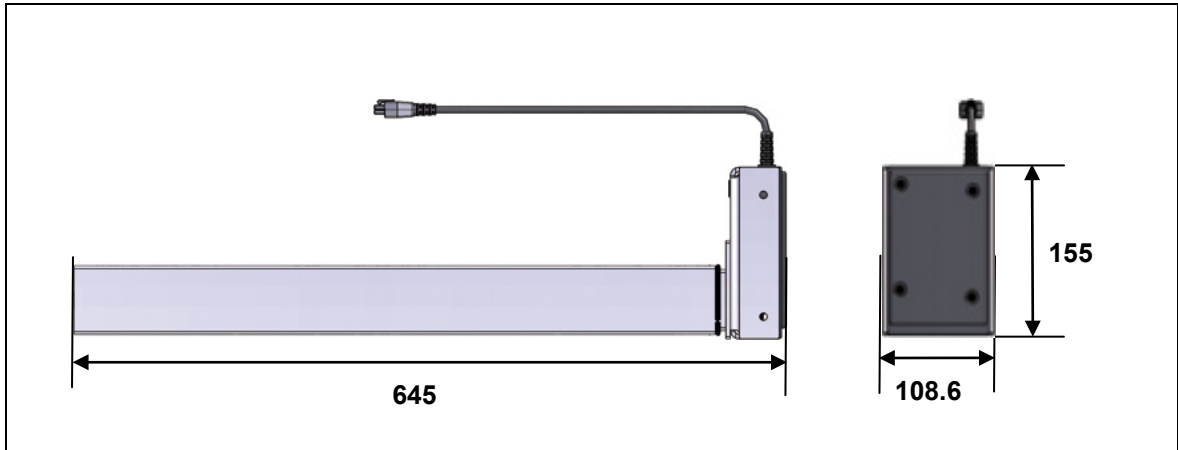


Figure 5 DD11 S lifting column (in mm)

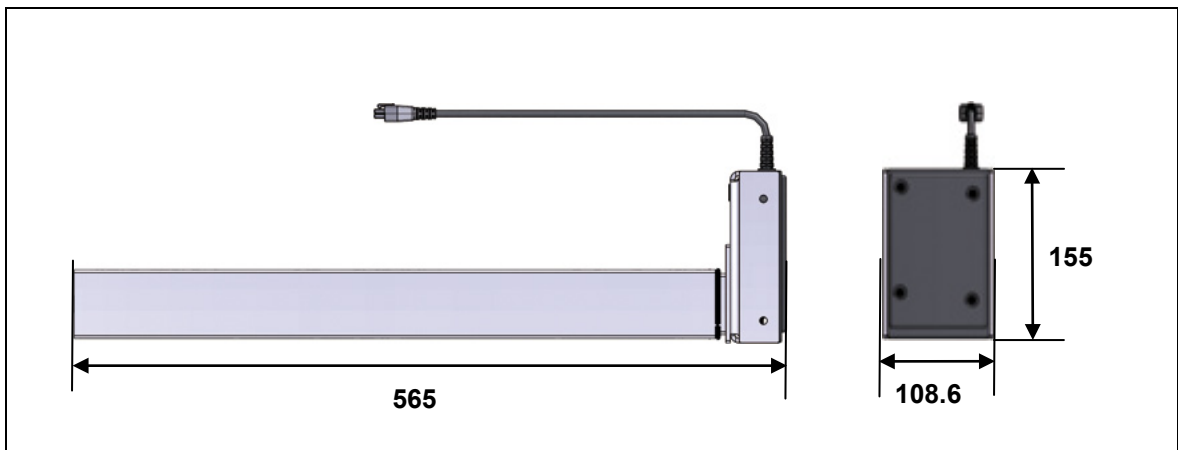


Figure 6 DD21 S lifting column (in mm)

## 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 the lifting columns.

#### Avoiding electrical faults

Be sure to consider the length of the power cord when designing the dimensions for your end product in order to minimize the associated risks.

#### Electrical connection



#### CAUTION

#### Danger of pinching/crushing injuries!

The electrical components may be connected or disconnected only when the mains power and the battery plug (when present) are disconnected. This ensures that uncontrolled movements cannot be triggered.

#### 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, and
- the cables cannot be damaged in any way.

Fasten all cables using sufficient strain relief and kink prevention methods.

#### Avoiding fatigue fractures

- Install the lifting column in the end product so that it is properly aligned. This will help prevent shear stress.
- Do not position the lifting column 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 lifting column's direction will create shear stress and could lead to a fatigue fracture.

#### Avoiding a pinching hazard

When designing your product, you should take the lifting column's adjustment movement into account with passive safety mechanisms and with the appropriate safety notices in your operating instructions.

- Installation methods for ensuring passive safety: Install the lifting column so that none of the positions where shear and pinch hazards exist are accessible externally.

► Make sure that your operating instructions inform the user of these safety points.

## 5.2 Installation procedure

Before installing the lifting column, make sure that you are observing all of the safety notices found in the "Safety notices to observe during installation" section.

### 5.2.1 Mounting the table base

- Use M6 cylinder head screws (with strength grade 8.8), as shown in Figure 7. The tightening torque must not exceed 10 Nm.

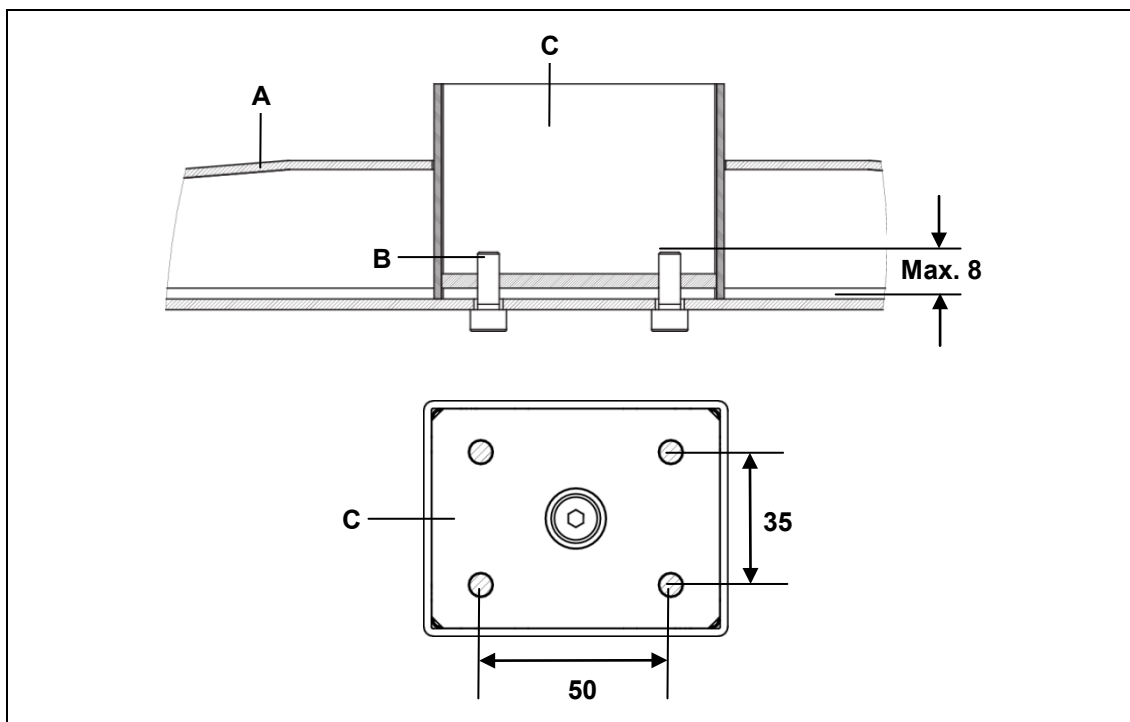


Figure 7 Mounting the table base (for variant A) (in mm)

**A** Base plate

**B** M6 cylinder head screw (8.8)

**C** Foot of the lifting column

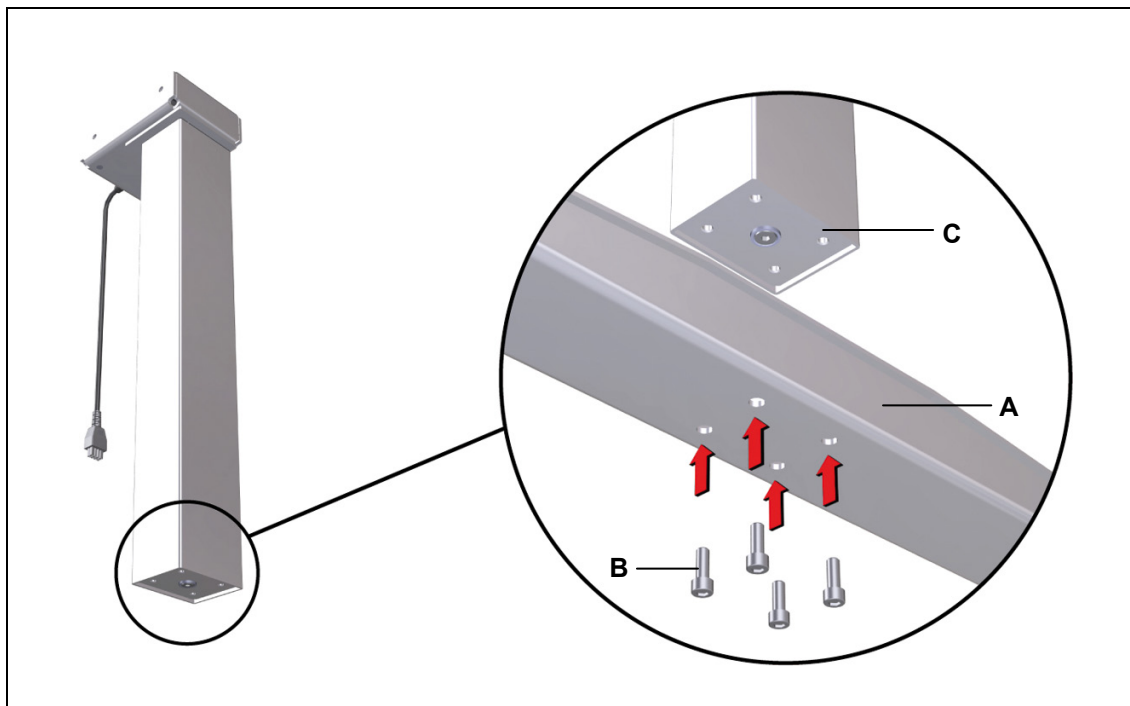


Figure 8 Example: Mounting the table base

**A** Base plate

**B** M6 cylinder head screw (8.8)

**C** Foot of the lifting column

- 1 Use four screws to attach the table base to the foot end of the lifting column, as shown in Figure 8 (the maximum tightening torque is 10 Nm). The mounting dimensions are shown in Figure 7.
- 2 Repeat step 1 with all other lifting columns.

**5.2.2 Mounting the table base (for variant D)**

- ▶ Use M6 countersunk screws (with strength grade 8.8), as shown in Figure 9. The tightening torque must not exceed 10 Nm.

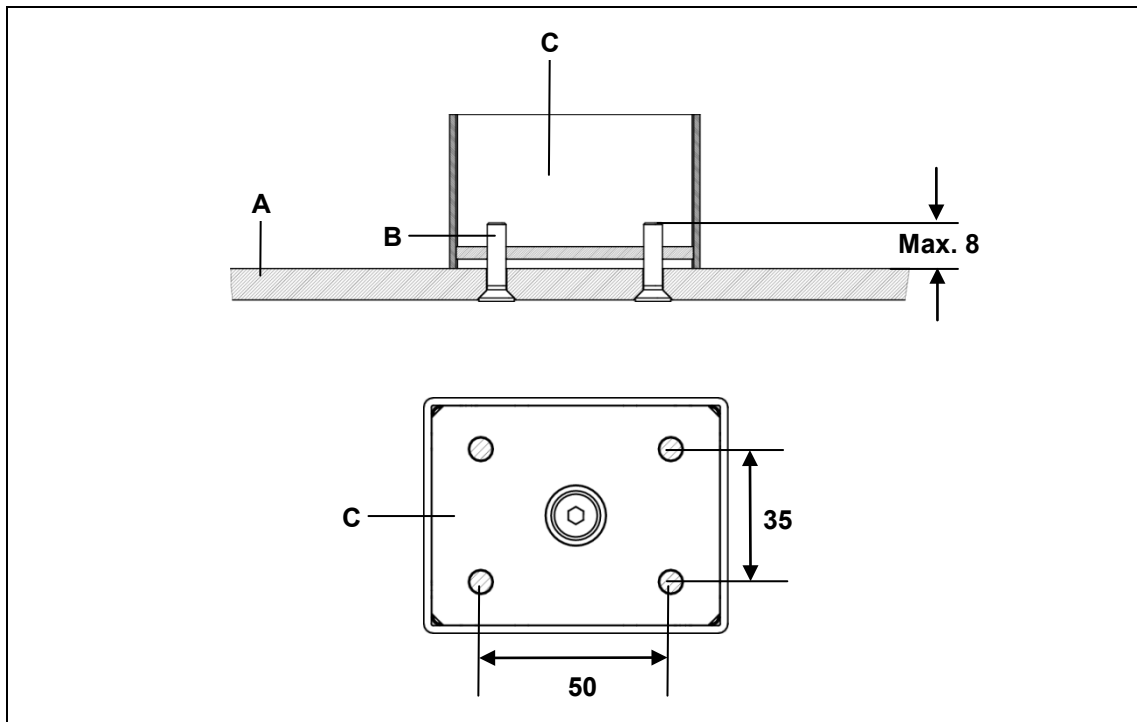


Figure 9 Example: Mounting the table base (for variant D): (in mm)

**A** Base plate

**B** M6 countersunk screws (8.8)

**C** Foot of the lifting column



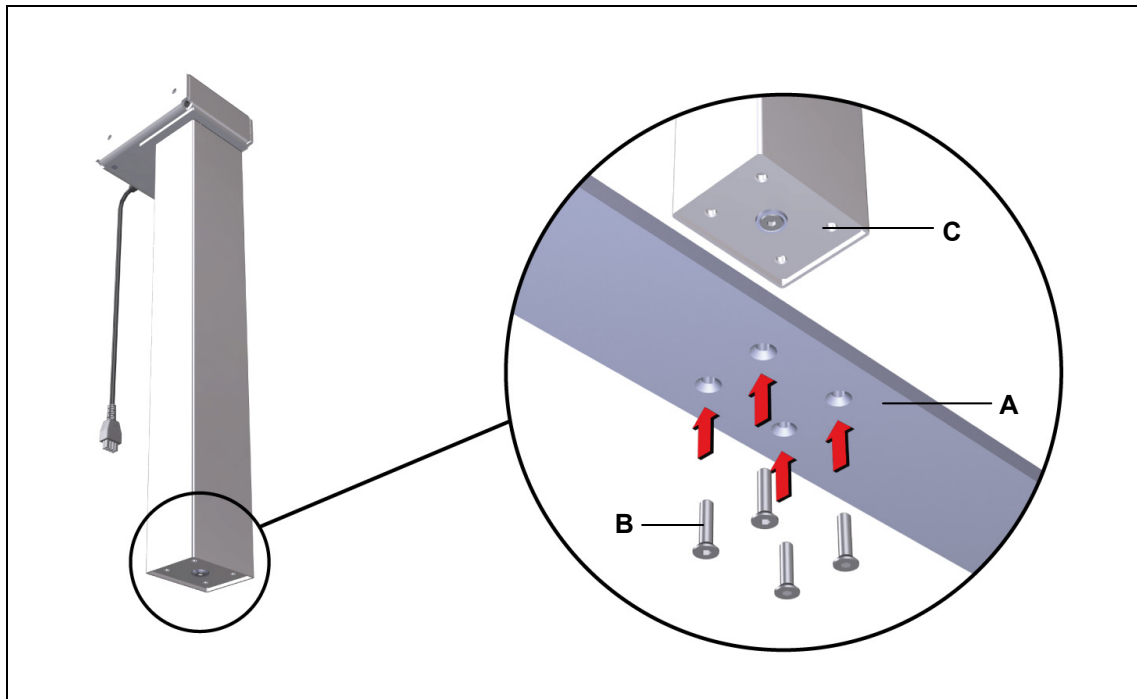


Figure 10 Example: Mounting the table base (for variant D)

**A** Base plate

**B** M6 countersunk screws (8.8)

**C** Foot of the lifting column

- 1 Use four screws to attach the table base to the foot end of the lifting column, as shown in Figure 10 (the maximum tightening torque is 10 Nm). The mounting dimensions are shown in Figure 9.
- 2 Repeat step 1 with all other lifting columns.

**5.2.3 Mounting the table frame**

- ▶ Use M8 bolts (with strength grade 8.8), as shown in Figure 11. The tightening torque must not exceed 20 Nm.

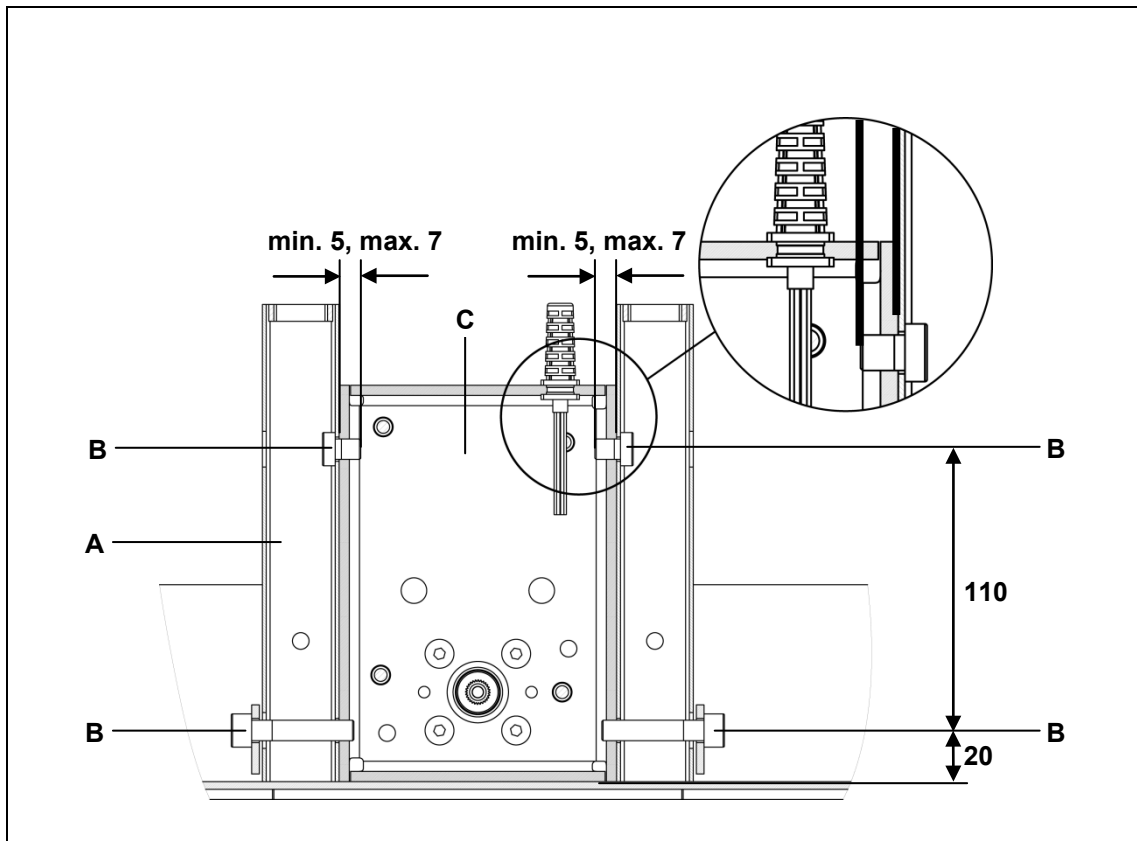


Figure 11 Example: Mounting the table frame (dimensions in mm)

**A** Table frame

**B** M8 bolts (8.8)

**C** Head of the lifting column

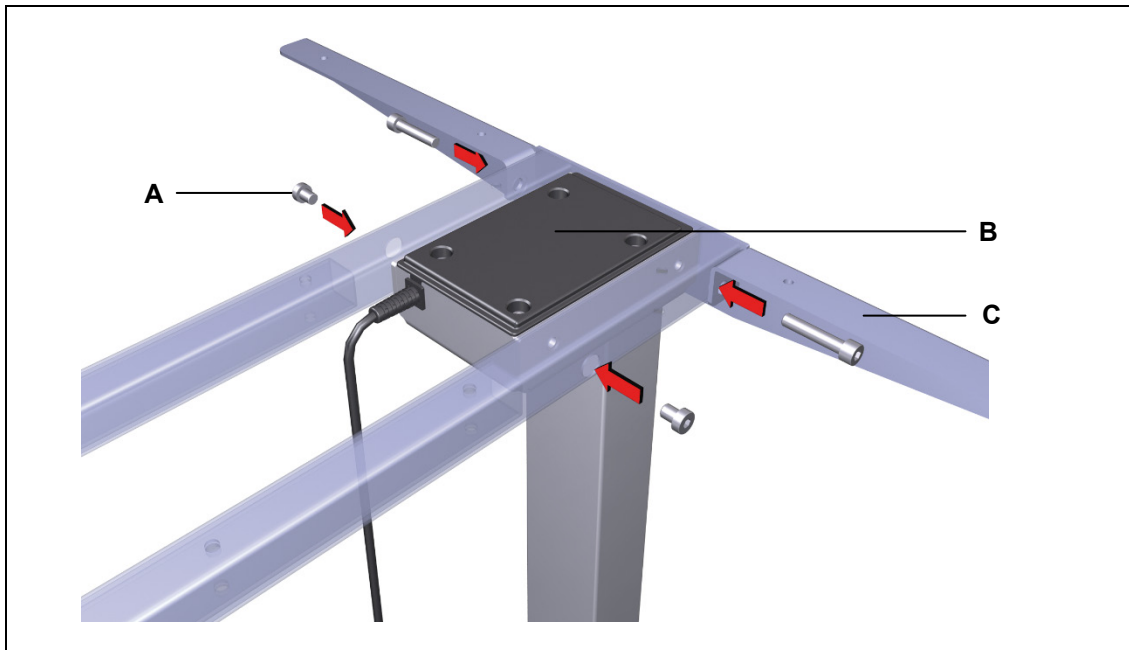


Figure 12 Example: Mounting the table frame

**A** M8 bolts (8.8)

**B** Head of the lifting column

**C** End product (e.g. a table frame)

- 1 Set the table frame so that the holes are over the lifting column. Use four screws to attach the table frame to the motor housing of the lifting column, as shown in Figure 12 (maximum tightening torque is 20 Nm). The mounting dimensions are shown in Figure 11.
- 2 Screw the other lifting columns to the table frame similarly.

#### 5.2.4 Dismantling



#### CAUTION

Work on electrical components should be conducted only when the mains power connection for the control unit is unplugged.

- 1 Move the table to the starting position, so that the lifting columns are fully retracted.
- 2 Pull out the control unit's mains power plug!
- 3 Remove all of the lifting columns' cables from the sockets of the control unit.
- 4 Remove all lifting columns from the table frame.

## 6. Notes for operation

These installation 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 components (as defined in the Machinery Directive as a "partially assembled piece of machinery").

- ▶ Use only the Smart or Concept control unit to control the lifting column. Only this equipment has been verified to work together properly.

### Load limits

During operation, the load on the lifting column must remain below the following load limits:

- Self-locking 700 N.

Be sure that your operating instructions inform the user about the risks from putting the lifting columns under excessive load.

### Avoiding electrical risks



#### CAUTION

Make sure that all live (current-carrying) parts of the drive system and power supply cannot be touched. In particular, be sure that unused power and control unit connections are covered adequately.

### Power-on time / intermittent operations

#### NOTICE

The lifting column has been designed for intermittent operations. Intermittent operation is an operational mode where the drive must pause after a specified maximum period of operation (power-on time). The drive can overheat when these pauses are not maintained.

The lifting column must operate with an intermittent duty of 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.

### Switching off the lifting column

Pull the power plug of the controller in order to shut down the lifting column! The power plug must always be accessible during operations so it is possible to shut off the lifting columns.

### Avoiding cable damage

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

#### NOTICE

The cables (in particular the electrical connection for the drive and the power supply cable for the drive system) must not be squashed or crushed. In order to prevent damage to the drive, no mechanical strain should be placed on the cables.

## 7. Maintenance and cleaning

### 7.1 Maintenance

- ▶ The lifting column requires no maintenance.

### 7.2 Cleaning

- ▶ Clean the lifting column as needed using a dry anti-static cloth.

**NOTICE**

- Be sure to unplug the power cord on the control unit or the cable connecting the lifting column before you begin cleaning!
- Clean the lifting columns using a dry antistatic cloth.
- Be sure that you do not damage the lifting column's connecting cables.

## 8. Disposal

### 8.1 Packaging material

The packaging material should be sorted into recyclable components and then disposed of in accordance with the appropriate national environmental regulations (in Germany according to the recycling law KrWG from 01.06.2012; internationally according to the EU Directive 2008/98/EC (Waste Framework Directive WFD as of 12.12.2008)).

### 8.2 Drive components

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

The disposal of the product is regulated in Germany by Elektro-G, internationally by the EU Directive 2011/65/EC (RoHS), or by any applicable national laws and regulations. (The product is not regulated by the EU Directive 2012/19/EC (WEEE).)



The lifting column should not be disposed of with normal household waste!

## Declaration of Incorporation/Installation

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 machines described below

**DD11 S**

**DD21 S**

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 in electronic form 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: Silvio Wauro,  
Address cited above.  
Tel: 05223 979-0



Kirchlengern, Germany. January 31, 2018

Dr.-Ing. Josef G. Groß  
Managing Director

## EU Declaration of Conformity

In compliance with Appendix IV of the EMC Directive 2014/30/EU

In compliance with Appendix IV of the LVD Directive 2014/35/EU

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 products

**DD11 S with OKIN-Drive System**

**DD21 S with OKIN-Drive System**

meets the requirements of the following EU directives:

**Electromagnetic Compatibility Directive 2014/30/EU**

**Low Voltage Directive 2014/35/EU**

**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/A11:2014
- EN 55014-1:2006/A2:2011
- EN 55014-2:1997/A2:2008
- EN 61000-3-2:2014
- EN 61000-3-3:2013
- EN 62233:2008

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



Kirchlengern, Germany. January 31, 2018

Dr.-Ing. Josef G. Groß  
Managing Director









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