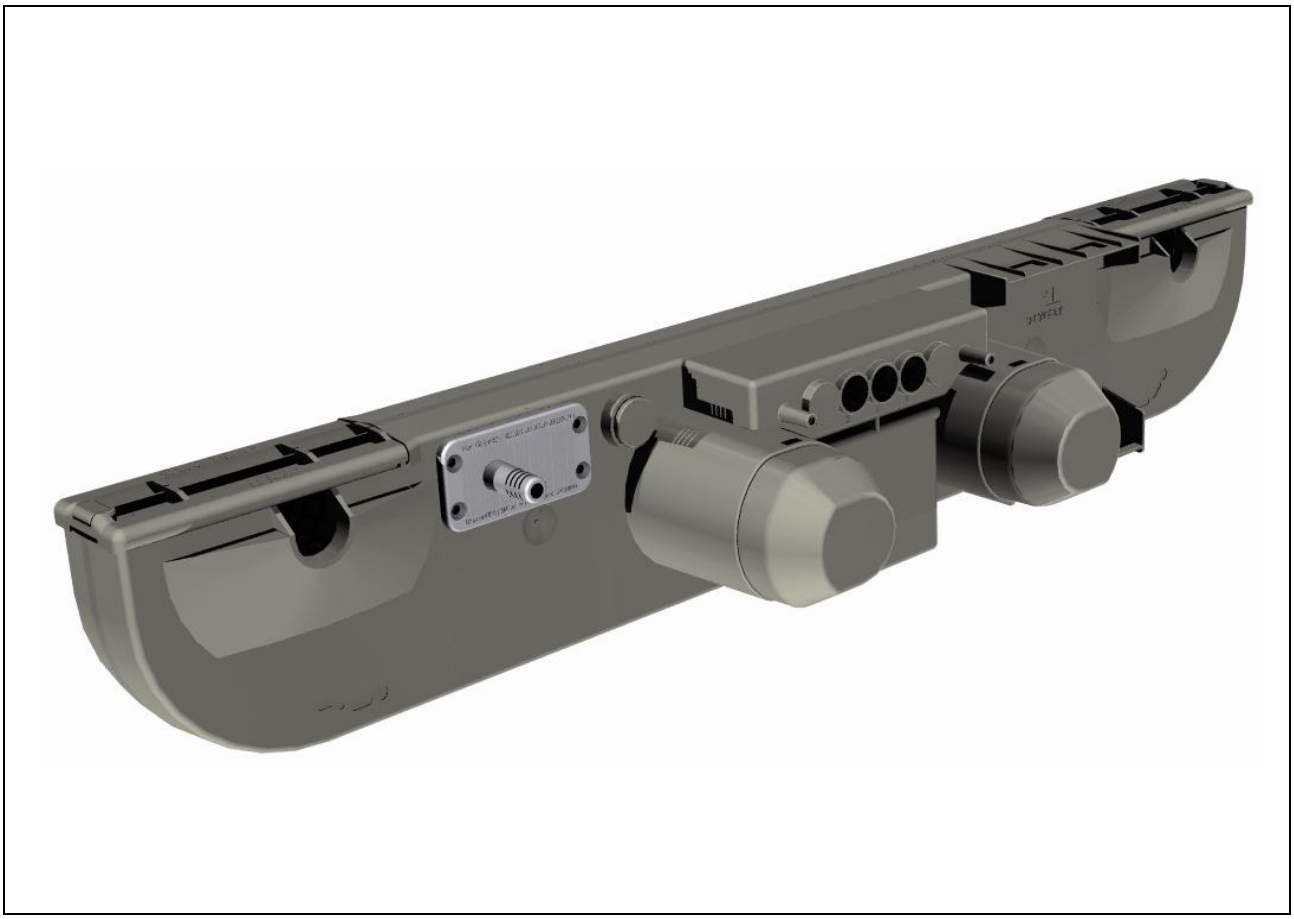
DEWERT OKIN

A Phoenix Mecano Company



DUOMAT 7

HOME / CARE / HOSP / CARE L / HOSP L

Installation Instructions

(Translation of original installation instructions)

Foreword

Revisions

Version	Date	Changes
(-)	12/09	First edition
(a)	02/10	Maintenance, software
(b)	02/11	Push force
(c)	06/12	Second edition
(d)	12/12	RoHS, Safety Instructions, Toggle

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.

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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 DUOMAT 7 has been inspected by the German Inspection Authority (TÜV). The TÜV also monitors the production of the DUOMAT 7. The official German TÜV label certifies this construction inspection and production monitoring.

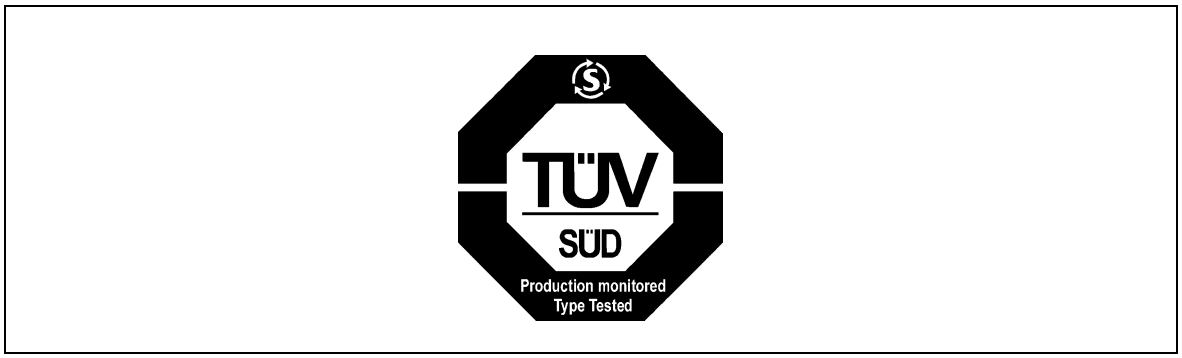


Figure 1 The TÜV label

Table of Contents

1. General

1.1 Configurations

The DUOMAT 7 double drive is run in several different configurations. The DUOMAT 7 name, as used here, also includes the MONOMAT, TRIOMAT und QUADROMAT configurations. The chapter "Combination Possibilities" includes information about the different device combinations available.

1.2 About these installation instructions

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, repair costs and down times. They will also help you to maximize the reliability and lifespan of the end product.

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 of the end product.

These installation instructions have been written with due care and attention. However, unless otherwise required by law, we do not guarantee that the data, images and drawings are accurate or complete nor do we accept liability for their contents.

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

1.3 Availability of this document

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

1.4 Conventions used

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

▶ Triangular notice symbol

Safety notice explanations

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in serious injury or death.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in serious injury or death.

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 DUOMAT 7 drive is meant to be installed in beds.

- It provides motor adjustment capabilities for movable reclining bed parts. It should be used in conjunction with suitable fittings and mechanics.
- It can be used in the household (HOME model).
- It can be used for care purposes (CARE model).
- It can be used in a hospital (HOSP model).

CAUTION

This drive should only be used for the applications described above. Any other application is not permitted and can lead to accidents or damage to 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 DewertOkin and DewertOkin.

Improper usage

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

WARNING

The DUOMAT 7 drive should not be used:

- in any environment where combustible or explosive gases or vapors (e.g., anaesthesiology) may be present,
- in a moist environment,
- outdoors,
- in any application that will be cleaned with an automated washing system,
- for raising and lowering loads in industrial applications.

CAUTION

The DUOMAT 7 drive may not be operated:

- by small children,
- by frail or infirmed persons without supervision, or
- in the proximity of small children.

CAUTION

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

Optional battery-operated reset function

CAUTION

The battery-operated reset function is not a safety system and does not avert danger.

DewertOkin does not guarantee that the drive will function in the event of a power outage.

If the end-product manufacturer chooses to guarantee the functionality of the end product during a power outage, then the end-product manufacturer is responsible for arranging a mechanism to ensure this functionality.

Using the drive systems in medical applications

This DewertOkin product is in compliance with the safety requirements found in IEC 60601-1.

We strongly recommend that the end product (including all its components) which you are manufacturing for a medical application should also be in compliance with the safety requirements found in IEC 60601-1.

You should make sure that the mechanical movement of the motor in your end product poses no risk of injury. Conduct a risk analysis for the end product for this purpose. You should also include safety notices in the instructions for the end product and technical safeguards in your product to eliminate any risk.

2.2 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 DUOMAT 7 drive (by itself an incomplete machine)

- when the end product (for which the DUOMAT 7 drive is intended) is in compliance with all protective measures specified in the Machinery Directive 2006/42/EG, and
- when the manufacturer expressly declares the compliance of the end product.

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

2.3 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.

2.4 Notice on safety during operations

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 drive.

These rules and safety measures can be categorized as follows:

- Construction measures before the installation (refer to the "Ensuring operational reliability during installation" section in the chapter "Installation").
- Safety fundamentals during the drive installation and during cable and wire routing (refer to the "Safety notices to observe during installation" section in the chapter "Installation").
- Using the drive in intermittent duty (refer to the "General notices" section in the chapter "Notices for Operation").
- Basic safety rules during operation (refer to the chapter "Notices for Operation").
- The creation of a manual for the end product which contains these and other safety rules.

Creating a user's manual

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

2.5 Product identification

2.5.1 Ratings plate (type label)

A ratings plate on each drive specifies the exact name and serial number of the drive. It also states the technical specifications valid for that particular drive. In particular, you will find the maximum push force here. The following illustration shows where the specifications are located on the drive's ratings plate.

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

Figure 2 Ratings plate example

TRIO/QUAD 7 CARE	Model name
64792	Article number
230V ~ 50/60Hz	Input voltage and frequency
max. 1,25A	Current consumption (1.25 amps)
AB (Intermit.Operation) 2min/18min	Intermittent operation: 2 minutes / 18 minutes
max. Druckkraft (Force)	Push force
Baujahr (Prod.Date)	Calendar week / year
Seriennr.(Serial-No.)	Serial number for your drive
	Use in dry rooms only!
	Protection class II
	Application part: Type B
IP44	Protection category
Hub (stroke)	Stroke (head / foot)
Vx.xx	Software version (optional)
	Follow all special disposal instructions!

3. Combination Possibilities

The DUOMAT 7 double drive can be combined for use with other single or double drives. The following basic combinations are possible:

- a DUOMAT 7 with a handset or hand-held remote control,
- a DUOMAT 7 as the main drive and a single drive used as a slave drive with a handset or hand-held remote control,
- a DUOMAT 7 as the main drive and a single drive used as a slave drive with a handset or hand-held remote control.

Systems can be customized by combining drives with the handset or hand-held remote control and control units as needed. The system components must be connected in a specific order.

DewertOkin has separate system instruction manuals containing all information and instructions needed for these systems.

▶ Only a DewertOkin device should be used to control the drive since they have already been verified to work together.

3.1 Layout of system connections

Refer to the sticker on the drive for details about layout and positioning of the connections. The sticker is located under the sockets. It indicates the proper type of connections for the drive. The actual connection layout depends on the specifications of the particular system. An example system shown in Figure 3 shows the location of this sticker.

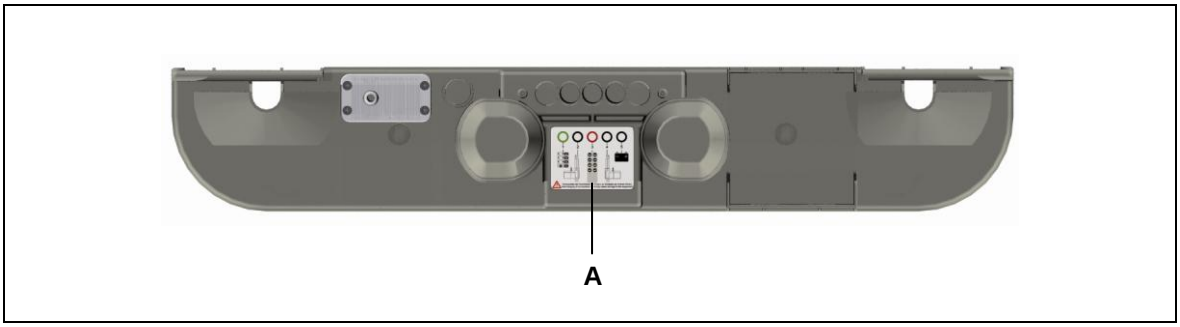


Figure 3 An illustration of where the connection layout sticker is positioned on the drive

A Layout of connections

	NOTICE
	Only connect the components according to the specifications found on the drive sticker. Any other arrangement of connections may damage the drive.

4. Description of Drive

The DUOMAT 7 drive is an electrically driven motor that is responsible for moving the end product in a linear direction. The head and foot sections of a bed can be adjusted depending on the drive options. The drive is controlled by means of a handset or hand-held remote control.

The different drive models vary according to according to the:

- motor power,
- number of motors,
- model with optional reset function,
- model with optional mains cut-off mechanism.

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

▶ The "Combination Possibilities" Chapter describes the different possible combinations of drives and handsets/hand-held remote controls. You can also ask your supplier or dealer for additional information.

4.1 Drive components

The main components of the DUOMAT 7 drive are the motor and the adjustment motion mechanism. This mechanism is housed under the shutters. The shutters must be opened in order to mount the drive to the end product. The brackets fastened to the end product are then inserted into these openings. The DUOMAT 7 drive may also be equipped with a rechargeable battery.

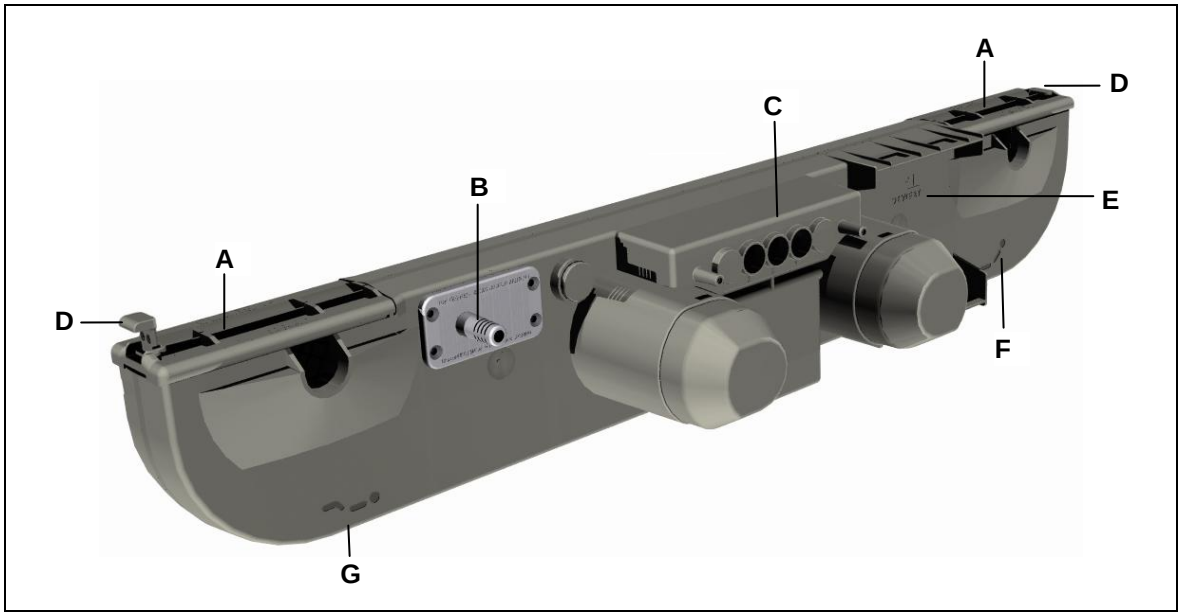


Figure 4 Main components of the DUOMAT 7 double drive

A Shutters
B Electrical connection
C Connections
D Optional snap-in locking device
E Battery compartment for optional battery
F Symbol for head end of bed
G Symbol for foot end of bed

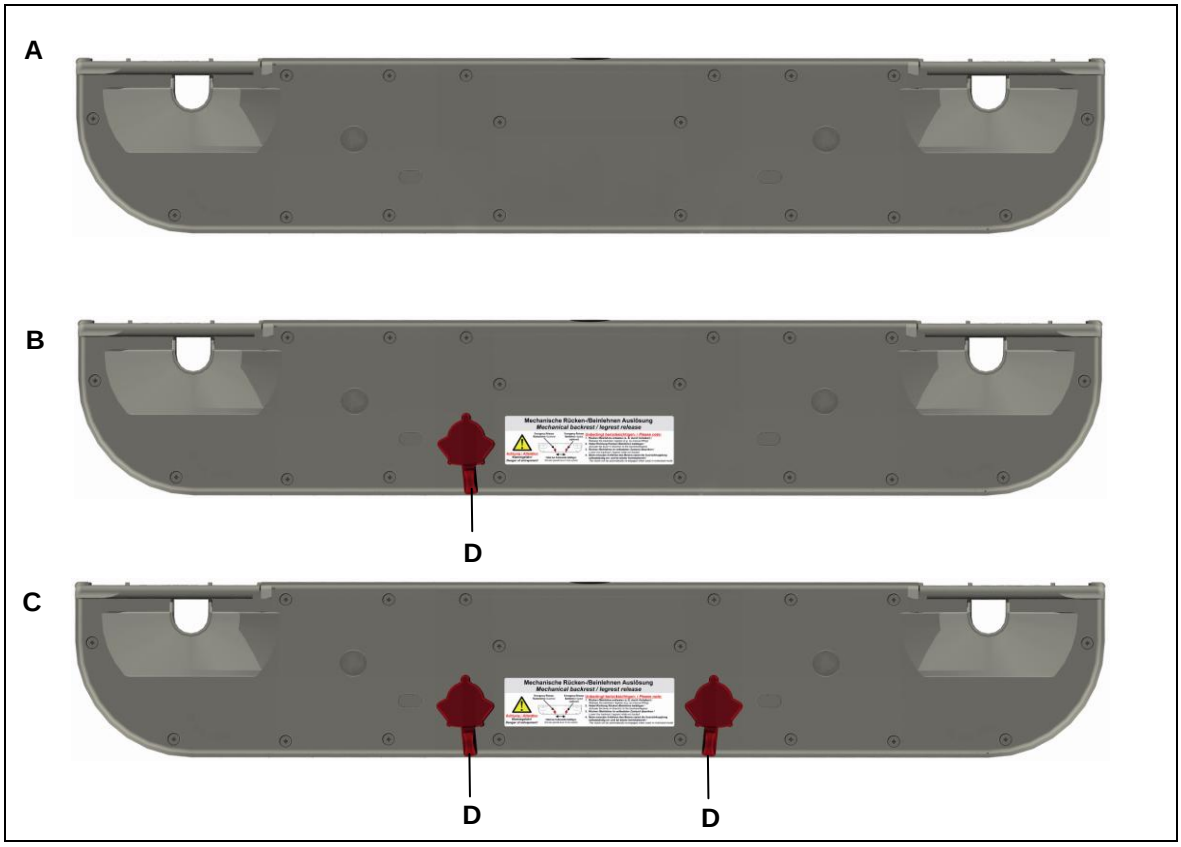


Figure 5 Back side of the DUOMAT 7 double drive

A DUOMAT 7 without mechanical reset function

B DUOMAT 7 with mechanical reset function (on back section)

C DUOMAT 7 with mechanical reset function (on back and leg sections)

D Lever for operating the mechanical reset function

4.1.1 Optional rechargeable battery (AG7 battery)

The DUOMAT 7 with rechargeable battery features an electrical reset function for the moveable reclining section of the bed. This function operates independently of the mains power supply.

⚠	**⚠ CAUTION**
	The battery-operated reset function is not a safety system and does not avert danger. It should not be used to adjust the bed in emergencies!

5. Technical Specifications

Connection to mains	100 / 110 / 115 / 120 / 230 / 240 V AC, 50/60 Hz (refer to the ratings plate on drive)
Current consumption under rated load	0.63 A AC – 3.15 A AC, depending on mains connection and load (refer to the ratings plate on drive)
Permitted push force	max. 7000 N (total on both sides)
Mode of operation[1] under max. rated load	Intermittent duty 2 min./18 min.
Protection classification	II or III (refer to the drive's ratings plate)
Noise level	≤ 65 dB(A)
Fuse	T 0.63 - T 3.15 A, depending on mains power connection (refer to the drive's ratings plate)
Current consumption of all drives[2]	max. 7.5 A DC (refer to the drive's ratings plate)
Drive type	Double drive
Drive options	MONOMAT, DUOMAT, TRIOMAT, QUADROMAT
Protection category	IP44
Stroke distance[3]	87, 69 (standard)
Colors	Refer to sales brochure
Length x width	750 mm x 175 mm 750 mm x 190 mm (with mechanical reset option)
Axle gap distance	581 mm
Weight	approx. 6.3 kg (without optional battery)
Ambient conditions for operation, storage and transport	
Ambient room temperature for storage and transport	from -20 °C to +50 °C from -4 °F to +122 °F
Ambient room temperature for operation	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
Altitude	< 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 unit can malfunction if this pause is not observed!

2) No more than two drives may be operated at rated load simultaneously!

3) Other stroke distances are available on request.

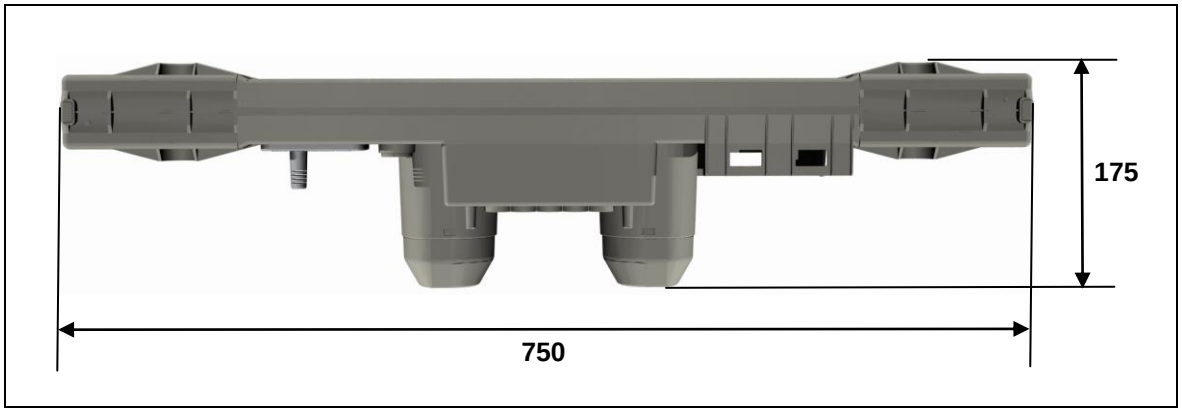


Figure 6 Dimensions of DUOMAT 7 drive (in mm)

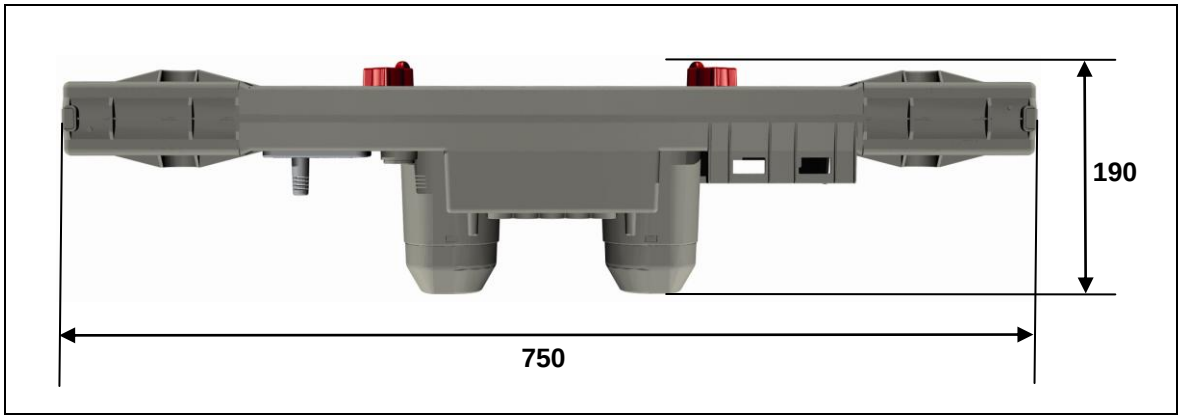


Figure 7 Dimensions of DUOMAT 7 drive (with mechanical reset option) (in mm)

6. Installation

6.1 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 drive.

6.1.1 Ensuring operational reliability during installation

The safety and reliability of the end product containing the DewertOkin drive can be ensured by using the proper construction methods described below.

Avoiding fatigue fractures

CAUTION

Drives that are incorrectly installed can undergo fatigue fractures which then create a risk of injury.

- 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.

Avoiding a pinching hazard

CAUTION

When designing your end product, you should take the drive 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 DUOMAT 7 drive so that none of the positions where shear and pinch hazards exist are accessible externally.

When preparing safety notices for the operator, make sure that your operating instructions inform the user of these points.

6.2 Installation procedure

6.2.1 An example installation

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

CAUTION

Optional rechargeable battery

- Disconnect the battery plug from the socket before installation. The battery is connected when the drive is delivered. The battery must be unplugged to ensure that the drive does not accidentally activate.

NOTICE

Take care not to damage the battery cable while unpacking the drive. The battery does have a residual charge.

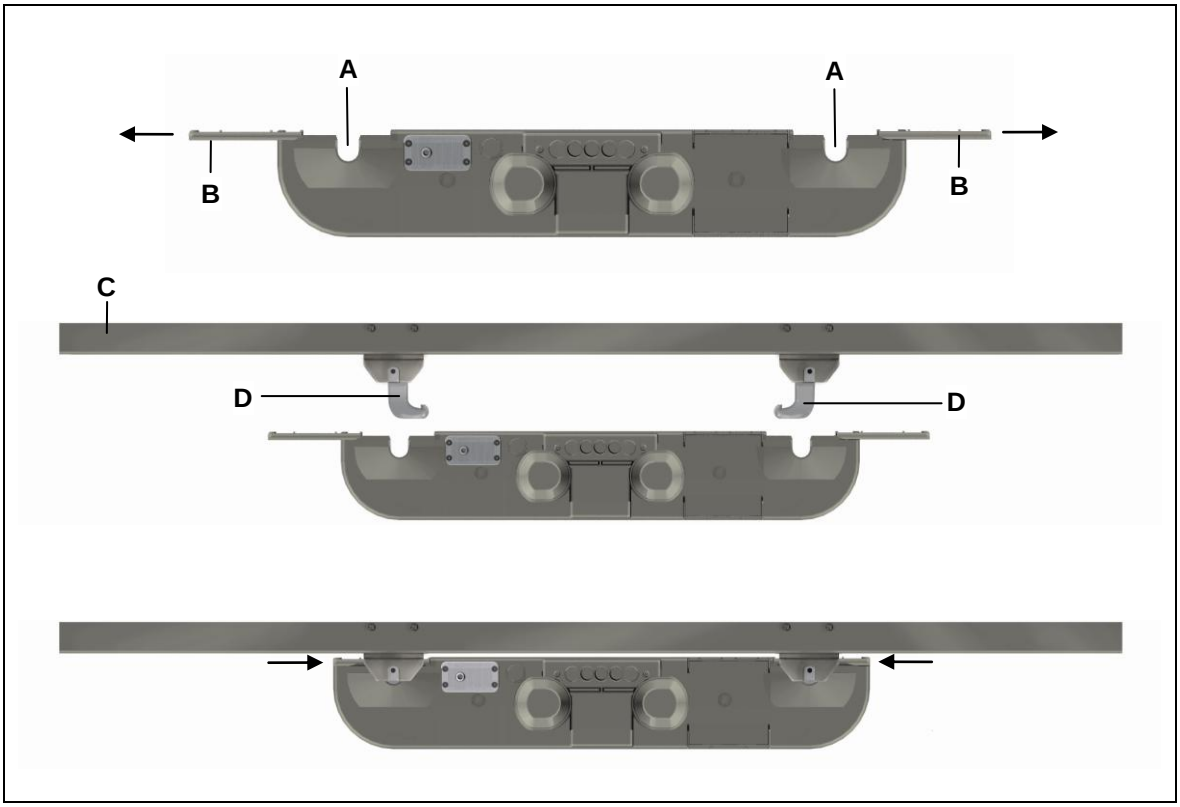


Figure 8 Installing the double drive

A Fitting mounts
B Shutters
C End product (bed)
D Brackets

	**CAUTION** Electrical components should be connected or disconnected only when the mains power cord and the battery plug (when present) are unplugged.

1 Move your product into a position where it is supporting no load.

	**CAUTION** 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 or crushing or injury.

2 Remove the shield cover (refer to Figure 11Figure 11) and disconnect the battery (when present).

	**CAUTION** For the optional rechargeable battery: pull the battery cable out of the socket on the DUOMAT 7 drive. The "Electrical connection" section contains more information about taking out the rechargeable battery.

3 Pull out the optional snap-in locking device (refer to Figure 5) until it reaches the end stop.

4 Pull out the snapped-in shutters (B) far enough so that the slots (A) are opened up to receive the brackets (D).

5 Align the DUOMAT 7 next to your product. The slots for the head and foot sides must be properly aligned with the correct brackets on your product (refer to the symbols on the DUOMAT 7 as described in Figure 4).

6 Push the drive in so that the brackets (A) fit into the slots (D).

7 Close the shutters (B) by snapping them back in. The DUOMAT 7 is connected to your product when the shutters are snapped in.

8 Close the optional locking device by pressing it down (refer to Figure 4).

9 Reconnect all additional components such as slave drives, handset or battery (refer to section 3.1 "Layout of system connections").

10 Close off the unused sockets using dummy plugs. The dummy plugs ensure that the sockets are properly protected against any splashed water.

11 Attach the shield cover (as shown in Figure 11). More information is available in the "Connecting a rechargeable battery" section of this document.

12 Connect the mains power plug.

6.2.2 Electrical connection

CAUTION

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

WARNING

Only personnel with the following training are qualified to work on the power cord or to replace the power cord:

- someone who has completed training in electronic motor assembly or,
- someone with equivalent qualifications, or
- someone who has successfully completed the appropriate DewertOkin training program.

You should only work on the power cord when you are qualified to do so. Otherwise, a properly qualified person should be found for this task.

Changing the primary fuses

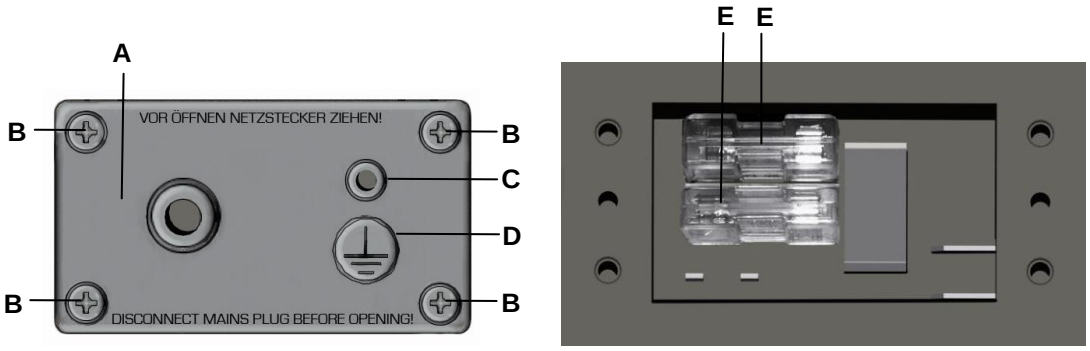


Figure 9 Changing the primary fuses

A Cover for mains junction compartment
B Screws
C Optional grounding bolt
D Ground symbol
E Primary fuse

1. Unplug the mains power plug and the battery plug (when present)!
2. Unscrew the screws (B) on the mains junction box cover (A).
3. Pull the cover (A) gently off of the housing. Be careful not to damage the gasket seal when removing the cover.
4. Replace any blown fuse (E).

NOTICE

Make sure that you replace the mains junction box cover properly and that the gasket seal remains intact. Check the seal for damage before replacing the cover.

5 Put the cover (A) with intact gasket seal back on the drive housing.

6 Tighten the screws (B) on the mains junction box cover (A).

Connecting a grounding lug to the optional grounding bolt

The optional grounding bolt (protection class I) can be used to connect the end product with the grounding conductor on the mains power supply (refer to Figure 9). The grounding bolt is labelled with a ground symbol on the mains junction box cover.

▶ A connecting ground wire is not included in the delivery of the drive.

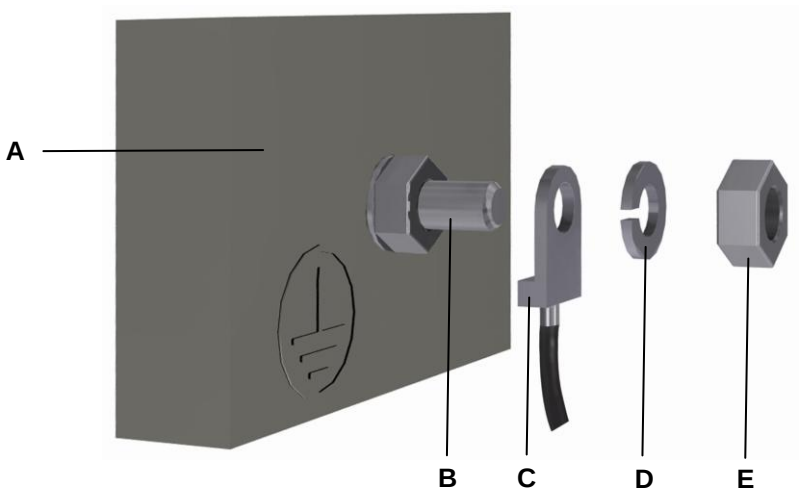


Figure 10 Installing the ground bolt

A Mains junction box cover (partial section)
B Grounding bolt
C Grounding lug
D Locknut washer
E Hexagon nut

1 Unscrew the nut (E) and pull the washer (D) off of the grounding bolt (B).

2 Put the grounding lug (C) onto the grounding bolt (B) as show in Figure 10.

3 Put the washer (D) back on.

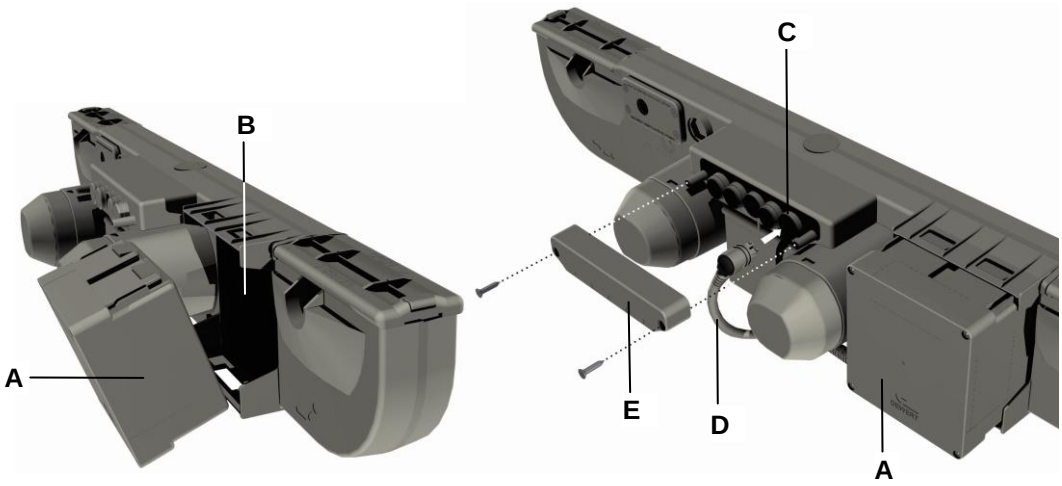
4 Tighten the nut (E) back onto the grounding bolt. It should not be possible to loosen the nut with your hand.

Optional rechargeable battery (AG7 battery)

CAUTION

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

Connecting the rechargeable battery (AG7 battery)



Inserting the battery Battery electrical connection

Figure 11 Battery connection for the DUOMAT 7

A Battery
B Battery compartment for optional battery
C Battery socket
D Battery cable
E Shield cover

1 First place the battery in the lower part of the compartment (B). Then push the battery into the upper part of the compartment until the tabs on the battery snap in.

2 Remove the shield cover (E) and the dummy plug on the battery socket (C) (when present).

3 Connect the battery cable (D) to the battery socket (C).

4 Put the shield cover (E) back on. Tighten the two screws on the cover as shown in Figure 11.

Taking out the rechargeable battery (AG7 battery)

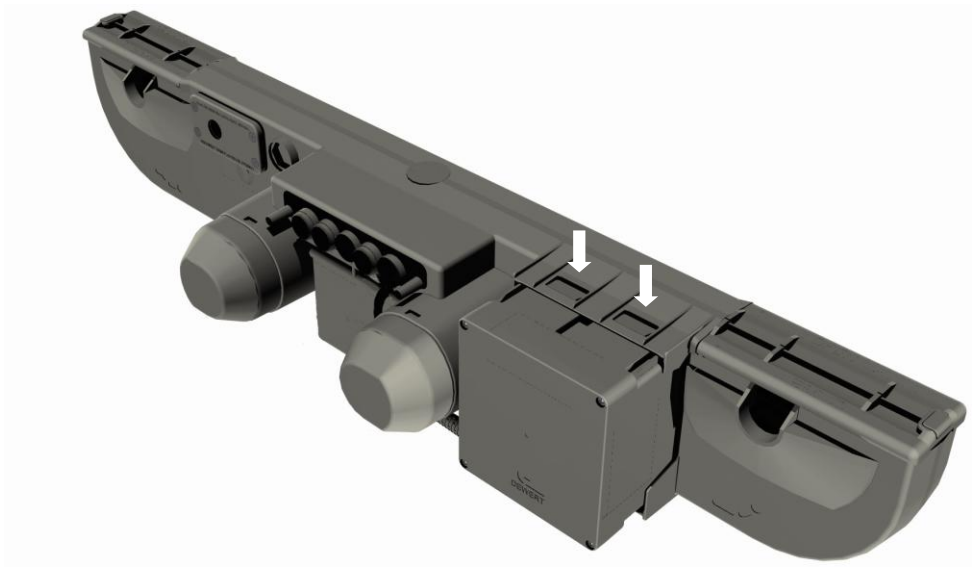


Figure 12 Taking out the battery

1 Remove the shield cover (E) as shown in Figure 11. Disconnect the battery cable from the socket (C).

2 Take the battery out of the DUOMAT 7 battery compartment as shown in Figure 12. Press both battery tabs in until the battery can be pulled out of the compartment.

3 Put the dummy plug back on the battery socket (C).

4 Put the shield cover (E) back on. Tighten the two screws on the cover as shown in Figure 11.

Routing 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 (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.

6.2.3 Dismantling

CAUTION

Work on electrical components should be carried out only when the mains power and battery plugs (when present) are unplugged.

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

1 Move your product into a position where it is supporting no load.

CAUTION

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 or crushing or injury.

2 Unplug the mains power plug and the battery plug (when present)!

3 Remove the screws on the shield cover and take off the shield cover (if present).

4 Disconnect all additional components such as slave drives, handset or battery from their sockets.

NOTICE

Be sure to support the drive's weight while you open the shutters to release it.

5 Pull out strongly on the shutters. (The optional locking device must first be opened before opening the shutters.)

6 Pull out the DUOMAT 7 far enough so that the brackets are out of the slots. The DUOMAT 7 is now unattached and can be removed.

7 Push the shutters back onto the DUOMAT 7 so that they are not lost during transportation.

7. Notices for Operation

The factual information contained within may be used when you are creating the end-product manual. The 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 a partially assembled piece of machinery.

CAUTION

When creating the operating instructions, remember that the installation instructions are intended for qualified specialists and are not for typical users of the end product.

7.1 General notices

▶ Only a DewertOkin device should be used to control the drive since they have already been verified to work together.

Power-on time / intermittent operations

The DUOMAT 7 drive 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). This protects the drive from overheating. In an extreme case, overheating can lead to a malfunction.

▶ The ratings plate on the drive specifies the maximum power-on time and the required pause intervals.

Avoiding toggle operations

You should avoid switching from one direction of travel to the opposite direction without first stopping the motor. – Make sure that you pause between motions! A pause (motor stop time) can be activated using the operating element or handset.

NOTICE

You should always avoid a quick change ("toggle") of directions.

Shutting off the drive

CAUTION

Pull out the power plug in order to shut off the drive. The power plug must always be accessible during operations so that emergency shutoff is possible.

Avoiding cable damage

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

	**CAUTION** The cables (particularly the mains cable) should not be run over. In order to prevent injuries or drive damage, no mechanical strain should be placed on the cables.

7.2 Notice for operating with optional configuration

7.2.1 Optional rechargeable battery (AG7 battery)

The DUOMAT 7 with rechargeable battery features an electrical reset function for the moveable reclining section of the bed. This function operates independently of the mains power supply.

	**CAUTION** The battery-operated reset function is not a safety system and does not avert danger.

If you have purchased the DUOMAT 7 with battery and battery-powered reset function, then you should note the following:

- Use the mains power cable to load the battery for at least 24 hours before first use. The battery-operated reset function is fully enabled only after the battery has been fully charged!
- Depending on the version, the battery is loaded in one of several methods:
  - automatically using electronics integrated into the DUOMAT 7 (for the CARE and HOSP models),
  - using a DewertOkin charger.
- The battery charge status is displayed on the handset for the CARE and HOSP models.
  - The battery is being loaded when the battery control light is blinking.
  - The battery is ready when the battery control light is continuously illuminated.
- In the CARE and HOSP models, a warning tone is issued when the battery charge is low. Shortly after the tone, the battery is switched off so that it cannot be damaged by a drain discharge.
- After you have used the battery-operated reset function, be sure to charge the battery until the ready signal is displayed (the battery control light stays illuminated). If the DUOMAT 7 is equipped with integrated load circuitry, then the battery will be automatically recharged.

▶ Follow the additional information found in the rechargeable battery information sheet (ID No. 45564).

7.2.2 Optional mains cut-off mechanism

The mains cut-off mechanism is responsible for isolating the drive automatically from the mains power supply when the drive is not moving. A switching component is used to isolate both poles of the power transformer from the mains power supply.

The mains cut-off mechanism allows power to the drive only after a button has been pressed on the handset to trigger drive motion.

▶ Do not use the integrated mains cut-off if you already use an in-house mains cut-off system.

WARNING

The mains cut-off is not a "central command device" in the sense used by the DIN VDE regulations. You should first completely disconnect the voltage supply from the drive system before conducting any type of work on a DewertOkin product which features a mains cut-off. First pull out the power plug. This guarantees that the system is safely shut off in compliance with the German DIN VDE 0105 and BGV A3 regulations.

7.2.3 Optional mechanical reset option

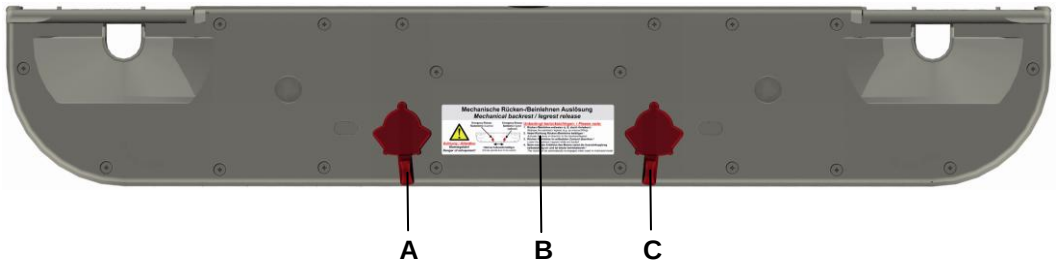


Figure 13 Back side of the DUOMAT 7 double drive, with mechanical reset function

A Lever for operating the mechanical reset function (on back section)

B Label for mechanical reset function

C Lever for operating the mechanical reset function (on leg section)

CAUTION

The mechanical reset function is not a safety system and does not avert danger. It should not be used to adjust the bed in emergencies!

If you have purchased the DUOMAT 7 with the mechanical reset function, then you should note the following:

- The mechanical reset function allows you to lower the back and leg sections of the bed in the event of a power outage.
- Take note of the information on the label located on the back of the double drive (refer to Figure 13).
- Take the load off the leg and back sections by lifting up on them.
- The mechanical reset is carried out by pushing on one of the levers. This allows the unencumbered leg or back section to recline. Continue to press on the lever until the back or leg section is completely lowered.
- Depending on the model, it may be possible for the leg or back sections to be lowered by gravity. If the leg or back sections do not fall down from their own weight, then you should apply gentle pressure to the end product to help it lower.
- After the mechanical reset function has been carried out, the clutch will engage automatically when the drive system is moved back into position. The drive system is then ready.

	NOTICE
	If you are installing the DUOMAT 7 with a mechanical reset function in your end product, then it is essential that you use mechanical end stops to limit the bottom end point motion. Mechanical damage to the drive system will result if end stops are not used.

7.2.4 Optional operating signals

An additional feature is available only for the CARE and HOSP models:

- an LED illuminates when buttons are pressed and
- a signal tone sounds when the button is released.

▶ The chapter "Troubleshooting" contains a description of error signals.

8. Troubleshooting

This chapter describes troubleshooting methods for fixing problems. If you experience an error that is not listed in this table, please contact your supplier.

CAUTION

Only qualified specialists who have received electrician training should carry out troubleshooting and repairs.

Problem	Possible cause	Remedy
The handset or drive system is not functioning.	There is no mains supply voltage.	Connect the mains power.
	The hand switch or drive system is defective.	Please contact your supplier or sales agent.
The drive is suddenly not capable of movement.	Possibly the thermal circuit breaker on the transformer has been triggered or is defective.	The drive system should be allowed to pause for 20 to 30 minutes.
	The thermal fuse on the transformer may have been triggered or may be defective.	Please contact your supplier or sales agent.
	The unit's fuse may have been triggered or may be broken.	Please contact your supplier or sales agent.
	There is no mains supply voltage.	Connect the mains power.
	A lead-in connection has been interrupted (mains power, hand switch or auxiliary drive)	Check the lead-in connections and re-seat the contacts if required.
The battery-operated reset is not functioning.	The battery is empty.	Charge the battery.
	The battery is not connected.	Connect the battery.
	The battery is defective.	Connect a new battery and dispose of the defective battery properly (refer to the Disposal Chapter).

Signal tone	Meaning	Measure / Action
Warning tone when the handset is used.	The battery is discharged and has switched off.	Recharge the battery completely.
A continuous alarm tone can be heard.*	The drive is broken.	Please contact your supplier or sales agent.

* The continuous alarm tone is only available in the CARE and HOSP models. It is not available in the CARE L or HOSP L models.

LED signal*	Meaning	Measure / Action
The LED on the handset does not illuminate when a button is pressed.	The drive is broken.	Please contact your supplier or sales agent.
The LED on the handset stays illuminated.	The drive is broken.	Please contact your supplier or sales agent.

* Only available in the CARE and HOSP models. Not available in the CARE L or HOSP L models.

9. Maintenance

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

9.1 Maintenance

Type of check	Explanation	Time interval
Check the function and safety of the electrical system.	A qualified electrician should carry out this inspection. (Refer to the "Electrical connection" section in the "Installation" chapter.)	Periodic inspections can be carried out at intervals based on the risk assessment which you conduct for your end product.
Look over the housing periodically for any signs of damage.	Check the housing for breaks or cracks. The IP protection will be impaired by any breakage or cracks.	At least every six months.
Look over the plug-in connections and electrical access points for signs of damage.	Check that all electrical cables and connections are firmly seated and correctly positioned.	At least every six months.
Look over the cables for any signs of damage.	Check the connecting cables for pinching or shearing. Also check the strain relief and kink protections mechanisms, in particular after any mechanical load.	At least every six months.
Periodic functional test of the end switches.	Move the drive to the end positions in order to test the end switches.	At least every six months.
Check periodically to see if the rechargeable battery is ready and operational.	If you can no longer move the drive in both directions with a fully charged battery, then you should replace the battery.	At least every four weeks.
A periodic check that the mechanical reset function is functioning properly.	Operate the reset lever in order to test the mechanical reset function. (Refer to the "Mechanical reset function option" section in the "Notices for Operation" Chapter.) If the mechanical reset function is not triggered then the drive is broken.	At least every six months.

9.2 Cleaning and care

The DUOMAT 7 drive was designed so that it would be easy to clean. Its smooth surfaces can be conveniently cleaned.

NOTICE

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 unit could result.

1. Always disconnect the mains power plug before you start to clean the drive!
2. Clean the DUOMAT 7 drive with a moist cloth
3. Be sure that you do not damage the drive's connecting cable.

NOTICE

Do not use a cleanser that contains benzene, alcohol or similar solvents.

10. Disposal

The DUOMAT 7 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 DUOMAT 7 drive.

The disposal of the end product is regulated in Germany by Elektro-G, internationally by the EU Directive 2002/95/EC (RoHS, from 1 Jul. 2006) and Directive 2011/65/EU (RoHS, from 3 Jan. 2013), 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 DUOMAT 7 drive should not be disposed of with normal household waste!

The disposal of the rechargeable battery is regulated in the EU by the Battery Directive 2006/66/EG, in Germany by the BattG battery law of 25.6.2009, and internationally by any applicable national laws and regulations.

This battery should not be disposed of with normal household waste!

Declaration of incorporation

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

The manufacturer:
DewertOkin GmbH
Weststraße 1
32278 Kirchlengern
Germany

declares that the incomplete machine described below

DUOMAT 7

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

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 machine after you have confirmed that the end product (into which this drive 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 15 December, 2012

Sascha Koltzenburg
Head of R & D

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

DUOMAT 7

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
- EN 62233:2008

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

Kirchlengern, Germany on 15 December, 2012

Sascha Koltzenburg

Head of R & D

Additional Information

DUOMAT 7 drive system

The following standards and norms were used in the versions CARE and HOSP with at least IPX4, in accordance with EN 60601-1:1990+A1:1993+A2:1995
Medical electrical equipment:

EN60601-1, Main section 2	Environmental conditions
EN60601-1, Main section 3	Electrical shock protection
EN60601-1, Section 21	Mechanical attachment
EN60601-1, Main section 7	Overheating protection
EN60601-1, Main section 9	Improper operations and malfunctions
EN60601-1, Main section 10	Structural requirements
EN60601-1, Section 56.8	Power supply indicator is, however, not present
EN60601-2-38, Section 36	Electromagnetic compatibility
EN60601-1-2	Electromagnetic compatibility

For the CARE version, in accordance with EN1970:2000, "Beds for disabled persons", the following standards are used:

EN1970, Section 4 partially	Unintentional movement: Prevention by a locking device (e.g. control box, MEDIX SK CARE or IPROXX® Lowering the backrest by the use of a battery, or lowering the backrest using a mechanical release control unit with a keypad
EN1970, Section 5.5.8	Dimensions of the control unit
EN1970, Section 5.6	Operational forces for the electrical functions
EN1970, Section 5.7	Functional speeds (for adjusting the head and foot sections)
EN1970, Section 5.11	Electrical requirements of protection degree: only for IPX4
EN1970, Section 5.12	Electromagnetic compatibility

In accordance with EN60601-2-38:1996 +A1:2000 (electrically operated hospital beds), the following standards apply when using the HOSP version:

EN60601-2-38, Section 5.2	The classification of application parts
EN60601-2-38, Section 5.3	System protection category, only for >= IPX4
EN60601-2-38, Section 22.2.102	Locking device Control box, Supervisor, or IPROXX® SE
EN60601-2-38, Section 22.4.101	Control unit with button
EN60601-2-38, Section 36	Electromagnetic compatibility
EN60601-2-38, Section 52.4	Unintentional movement (locking device)
EN60601-2-38, Section 52.5	First fault (electrical): Prevented by means of a locking mechanism or IPROXX®
EN60601-2-38, Section 52.5.9	Component outages: Prevented by means of a locking device
EN60601-2-38, Section 52.5.101	Outages of electrical components
EN60601-2-38, Section 52.5.102	Inclination of the back section and the Trendelenburg during a power outage: Using a battery or by using a mechanical release
EN60601-2-38, Section 56.8	Lighting (not required)
EN60601-2-38, Section 57.3a	Power cord
EN60601-2-38, Section 57.3.101	Mains plug

The following standards and norms were used in the versions CARE and HOSP with at least IPX4, in accordance to the third Edition of EN 60601-1 and IEC 60601-1,
Medical electrical equipment (3E) (refer to the type label):

EN60601-1, Section 4	General requirements
EN60601-1, Section 6	Classification
EN60601-1, Section 7.1	Identification - General
EN60601-1, Section 7.2	Identification - Marking
EN60601-1, Section 8	Protection against electrical shock
EN60601-1, Section 11.1	Protection against excessive temperature
EN60601-1, Section 11.2	Fire prevention
EN60601-1, Section 11.3	Constructional requirements for fire enclosures
EN60601-1, Section 13	Hazardous situations and fault conditions
EN60601-1, Section 15.3	Mechanical strength
EN60601-1, Section 15.4	Components and general assembly
EN60601-1, Section 15.4.4	Replaced by EN60601-2-52, sectiont 201.15.4.4
EN60601-1, Section 16.6	Leakage currents
EN60601-1, Section 17	Electromagnetic compatibility

The following standards and norms were used in the version HOSP with at least IPX4, in accordance with EN 60601-2-52:2010, IEC 60601-2-52:2009 (Particular requirements for the safety and essential performance of medical beds, (3E) refer to the type label):

EN60601-2-52, Section 201.6.2	Protection against electrical shock: Protection class II
EN60601-2-52, Section 201.6.3	Control panel symbols (depending on model, customer requirements)
EN60601-2-52, Section 201.8.11.3.2	Power supply lead: only >= 2.5 m length Power supply lead: for example, EPR or similar
EN60601-2-52, Section 201.9.2.2.5	Continuous operations: Control unit only with button
EN60601-2-52, Section 201.9.2.3.1	Unintentional movement: Prevented by means of a locking mechanism (such as Control box, Supervisor, IPROXX® SE, IPROXX®, or Meditouch)
EN60601-2-52, Section 201.9.6.2.1	Noise level: <=65dB(A) (refer to EN60601-2-38)
EN60601-2-52, Section 201.11.1.1	Temperatures
EN60601-2-52, Section 201.11.6.5.101	Protection against water ingress: only for >= IPX4
EN60601-2-52, Section 201.11.8	Power outage: for example, battery usage, depending on version (customer requirement)
EN60601-2-52, Section 201.13.1.4	Special mechanical hazards: Prevented by means of a locking mechanism (such as Control box, Supervisor, IPROXX® SE, IPROXX®, or Meditouch)
EN60601-2-52, Section 201.15.3.4.1	Mechanical attachment – handset
EN60601-2-52, Section 201.15.4.4	Displays: Ready indicator is not required
EN60601-2-52, Section 201.17	Electromagnetic compatibility
EN60601-2-52, Section BB.3.3.3	Dimensions: vary according to the model (customer requirement)
EN60601-2-52, Section BB.3.4.1	Operating forces

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