



Control unit ACCUCONTROL 4.5

ACCUCONTROL 4.5DC

Installation Instructions

(Translation of the original installation instructions)

Foreword

Document revision history

Version	Date
(e)	04/2016

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.

Usage in medical products

The *ACCUCONTROL* control unit is not a medical product. If used in a medical end product, you (the end manufacturer) are obliged to ensure compliance with EC directives and to ensure that other pertinent medical product regulations are maintained.

Table of contents

Foreword	3
Document revision history	3
Disclaimer and exclusion of liability	3
Manufacturer's address	3
Creation of a complete operating instruction manual for the entire end product	3
Usage in medical products	3
Notice for customers in EU nations	
Table of contents	5
1. General Information	7
1.1 Configurations	7
1.2 About these installation instructions	7
1.3 Conventions used	7
2. Safety notices	8
2.1 Proper and intended usage	8
2.2 Selection and qualification of personnel	9
2.3 Notice on safety during operations	9
2.4 Product labelling	10
3. Possible combinations	13
3.1 Connecting components	13
3.2 Overview of the components	14
3.3 IPROXX handset	15
4. Description	16
4.1 Components	16
5. Technical specifications	17
6. Installation	20
6.1 Safety notices to observe during installation	20
6.2 Installation procedure	21

7.	Operating notes	26
7.1	General information	26
7.2	Programming the over-current shutdown mechanism when commissioning the system	28
7.3	ACCU	29
7.4	Removing the ACCU from the CONTROL	31
7.5	Charging the ACCU AC 4.5 and ACCU AC 4.5DC	32
7.6	Control panel on the CONTROL	40
7.7	Buttons and indicators on the IPROXX handset (an example)	42
7.8	Emergency-stop switch	43
8.	Troubleshooting	44
9.	Maintenance	45
9.1	Maintenance	45
9.2	Cleaning and care	46
9.3	Maintenance and care	46
10.	Disposal	47
10.1	Packaging material	47
10.2	Components of the <i>ACCUCONTROL</i>	47
10.3	Batteries	47
	EU Declaration of Conformity	48
	Additional information	49

1. General Information



1.1 Configurations

Both ACCUCONTROL models (4.5 and 4.5DC) are referred to here by the name *AccuControl*, unless reference is being made to a model-specific feature. This also applies to the CONTROL 4.5 and CONTROL 4.5DC (both referred to by the name CONTROL) as well as ACCU 4.5 and ACCU 4.5DC (both referred to by the name ACCU). More information about the different device combinations can be found in the chapter "Possible combinations".

1.2 About these installation instructions

In order to install this *ACCUCONTROL* successfully and safely in the end product, these installation instructions must be observed. 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
	<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 <i>ACCUCONTROL</i> 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.



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



1.3 Conventions used


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

- Triangular notice symbol

Explanations of warning notices

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

	 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 *ACCUCONTROL* control unit is intended to be used as a control unit and battery-operated power supply for the appropriate DewertOkin drive systems in use



- for care purposes,
- or in hospitals.

	 CAUTION
	<p>The <i>ACCUCONTROL</i> 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.</p>

2.1.1 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.

	 WARNING
	<p>The <i>ACCUCONTROL</i> should not be used:</p> <ul style="list-style-type: none"> • in any environment where combustible or explosive gases or vapours (e.g., anaesthesiology) may be present, • in the proximity of open fires or other heat sources (such as furnaces, ovens or direct sunlight), • as a power source for toys or games, • in any application that will be cleaned with an automated washing system, • in a moist environment, or • outdoors.

	 CAUTION
	<p>The <i>ACCUCONTROL</i> may not be operated by</p> <ul style="list-style-type: none"> • by small children, • by frail or infirm persons without supervision, or • in the proximity of small children.

The *ACCUCONTROL* 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.

Using the drive systems in medical applications

This DewertOkin product complies 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 comply 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 Selection and qualification of personnel

This *ACCUCONTROL* 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 *ACCUCONTROL* when you are qualified to do so. Otherwise, a properly qualified person should be found for this task.

2.3 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 *ACCUCONTROL* in the end product.



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 Chapter "Installation").
- Safety fundamentals during the installation of the *ACCUCONTROL* and during cable and wire routing (refer to the "Electrical connection" section in the Chapter "Installation")
- Basic safety rules during operation (refer to the "Operating notes" Chapter).
- The creation of a manual for the end product which contains these and other safety rules.

2.3.1 Creating a user's manual


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.


2.3.2 Electrical safety

	 CAUTION
	<p>Be careful; there is a risk of electrical shock! Be sure to unplug the mains plug to the charging station or the PLUG-IN CHARGER before you begin assembly! Make sure that the mains plug or PLUG-IN CHARGER is accessible at all times.</p>

- The *ACCUCONTROL* must not be opened! Faulty or defective units may be sent to your customer representative for repairs.

2.3.3 Shutting down in an emergency



**CAUTION**

In an emergency, the control unit can be shut down by pressing the emergency-stop button. The emergency-stop button must always be accessible during operations so that it can be quickly pressed in an emergency.


2.4 Product labelling

2.4.1 Ratings plate (type label)

Each *ACCUCONTROL* has a ratings plate, which is divided into a section for the entire device, a section for the ACCU, and a section for the CONTROL. The following illustrations show where the specifications are located on the ratings plate.





- The ratings plate shown is an example; the specifications for your *ACCUCONTROL* may differ from this illustration.

ACCUCONTROL 4.5 BAS xxxxx


Contains 

ACCU AC 4.5DC yyyyy

CONTROL AC 4.5 BAS zzzzz


A Phoenix Mecano Brand
For Patents contact www.dewertokin.de/patents
DewertOkin GmbH, Weststrasse 1, 32278 Kirchlengern, DE

ACCUCONTROL 4.5DC BAS xxxxx

Contains 

ACCU AC 4.5DC yyyyy

CONTROL AC 4.5DC BAS zzzzz









A Phoenix Mecano Brand
For Patents contact www.dewertokin.de/patents
DewertOkin GmbH, Weststrasse 1, 32278 Kirchlengern, DE

Figure 2 *Ratings plate examples for the ACCUCONTROL 4.5 BAS and ACCUCONTROL 4.5 DC BAS*

ACCUCONTROL 4.5 BAS	Type designations
ACCUCONTROL 4.5DC BAS	
xxxxx	Article number ACCUCONTROL
yyyyy	Article number ACCU
zzzzz	Article number CONTROL
	Follow all special disposal instructions!
	Attention:
	Follow the special assembly instructions!

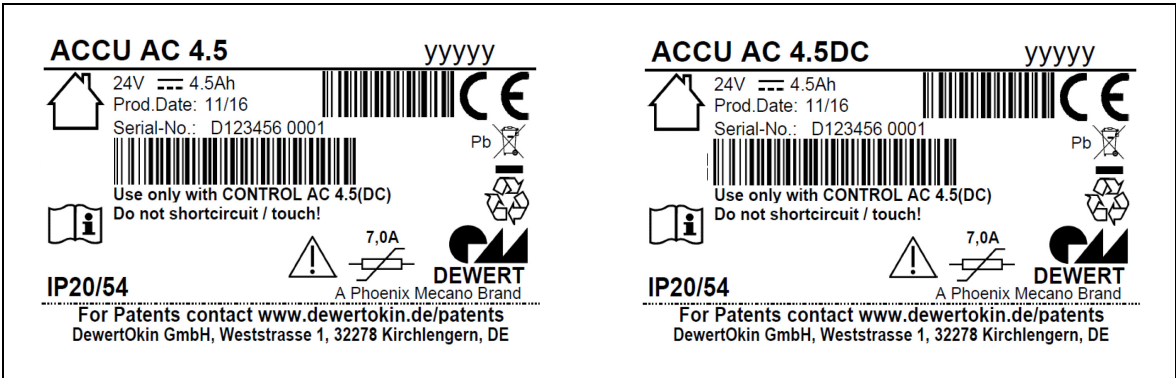









Figure 3 Ratings plate for the ACCU AC 4.5.5 and ACCU AC 4.5DC (examples)

ACCU AC 4.5	Type designations
ACCU AC 4.5DC	
yyyyyy	Article number
24V \equiv	Input voltage
4.5 Ah	Electrical charge
Prod.date	Calendar week / year
Serial No.	Serial number
IP20/54	Protection degree
	Use in dry rooms only!
	Follow all special disposal instructions!
	Conformity mark
	Follow the special assembly instructions!
	Attention:
	PolySwitch
	Follow the special disposal instructions for recycling!

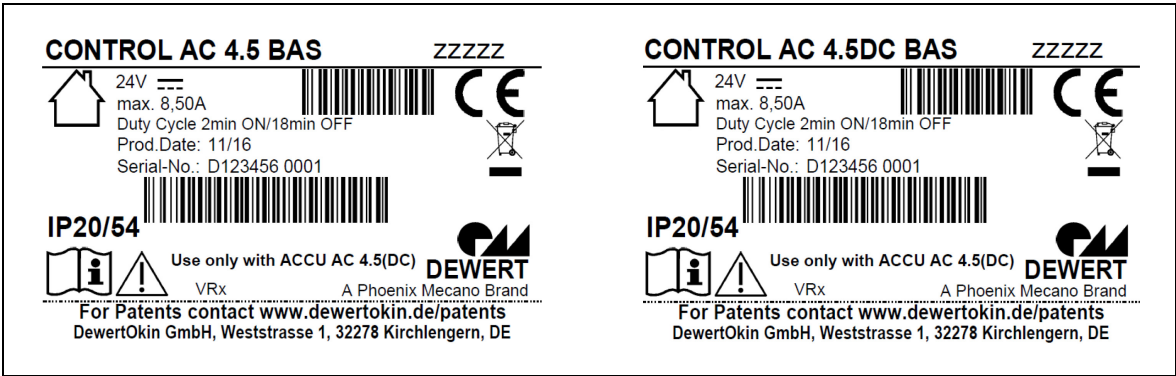








Figure 4 Ratings plate examples for the CONTROL AC 4.5 BAS and CONTROL AC 4.5DC BAS

CONTROL AC 4.5 BAS CONTROL AC 4.5DC BAS	Type designations
zzzzzz	Article number
24V ~	Input voltage
Max. 8.50A	Current consumption
Duty cycle: 2 min ON / 18 min OFF	Intermittent operations: 2 minutes / 18 minutes
Prod.date	Calendar week / year
Serial No.	Serial number
IP20/54	Protection degree
VRx	Software version
	Use in dry rooms only!
	Follow all special disposal instructions!
	Conformity mark
	Follow the special assembly instructions!
	Attention:

3. Possible combinations

	NOTICE
	<p>In the product name, DC stands for Direct Charging.</p> <p>The CONTROL AC 4.5DC may only be used with the ACCU AC 4.5DC.</p>

The *ACCUCONTROL* can be combined with various components. The following basic combinations are possible:

- A stroke drive and/or spreader drive connected to the *ACCUCONTROL*, and a handset,
- A stroke drive connected to the *ACCUCONTROL*, a charger connected with an adapter cable, and a handset,
- A stroke drive connected to the *ACCUCONTROL* and a spreader drive connected with a Y-cable, a charger and a handset.

Systems can be customized by combining the drive, *ACCUCONTROL*, charger and handset.

DewertOkin has separate system instruction manuals containing the additional information and instructions needed for these systems. You can also find more information at www.dewertokin.de.

- 1) Stroke drive: MEGAMAT P
- 2) Spreader drive: MEGAMAT MCZ, MEGAMAT XSZ
- 3) Handset: IPROXX, IPROXX 2
- 4) Charger: PLUG-IN CHARGER

3.1 Connecting components

Control unit	Handset
ACCUCONTROL 4.5(DC) BAS ¹⁾	IPROXX ^{® 3)} , IPROXX 2 ³⁾
ACCUCONTROL 4.5(DC) PRO ²⁾	

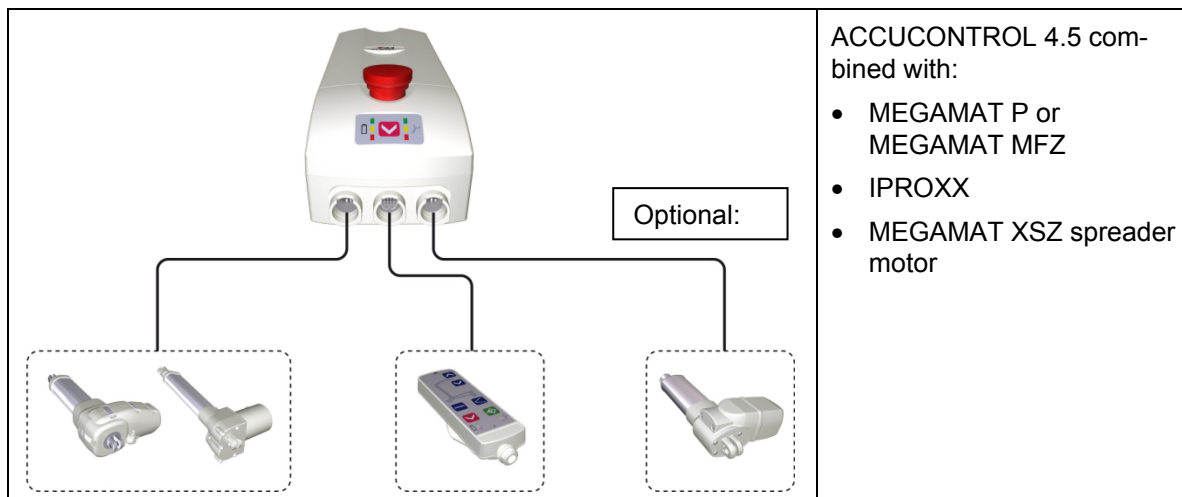
¹⁾ "Basic" model

²⁾ "Professional" model

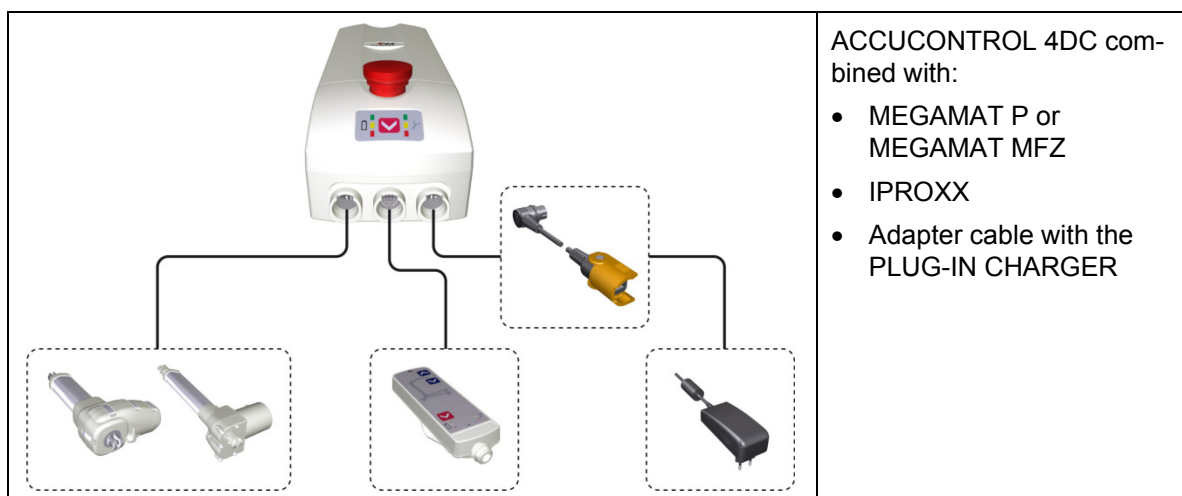
³⁾ Specially designed ACCUCONTROL: please contact your DewertOkin customer representative for more information.

3.2 Overview of the components

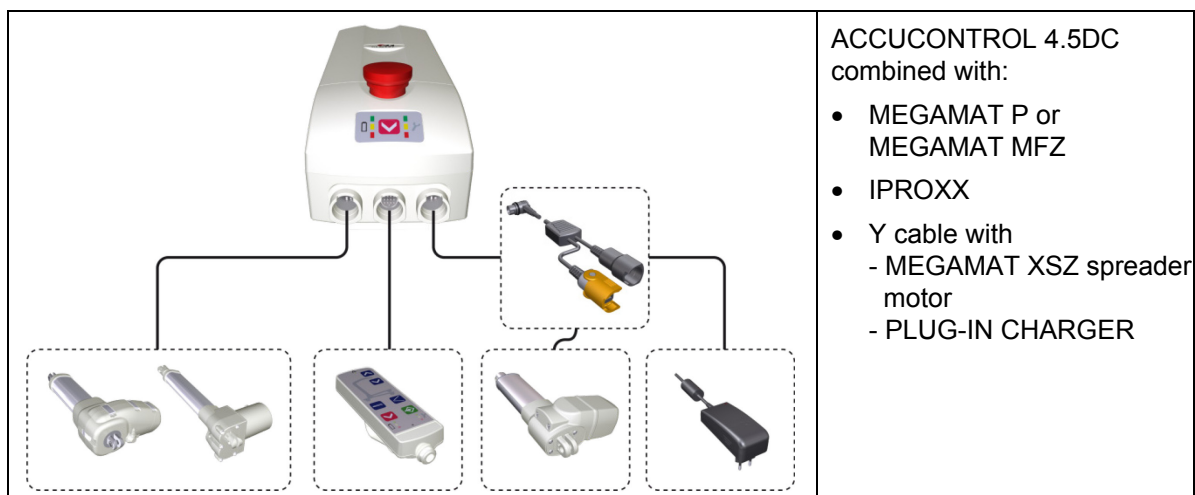
3.2.1 ACCUCONTROL 4.5 (with 1 or 2 motors)



3.2.2 ACCUCONTROL 4.5DC (with 1 motor)



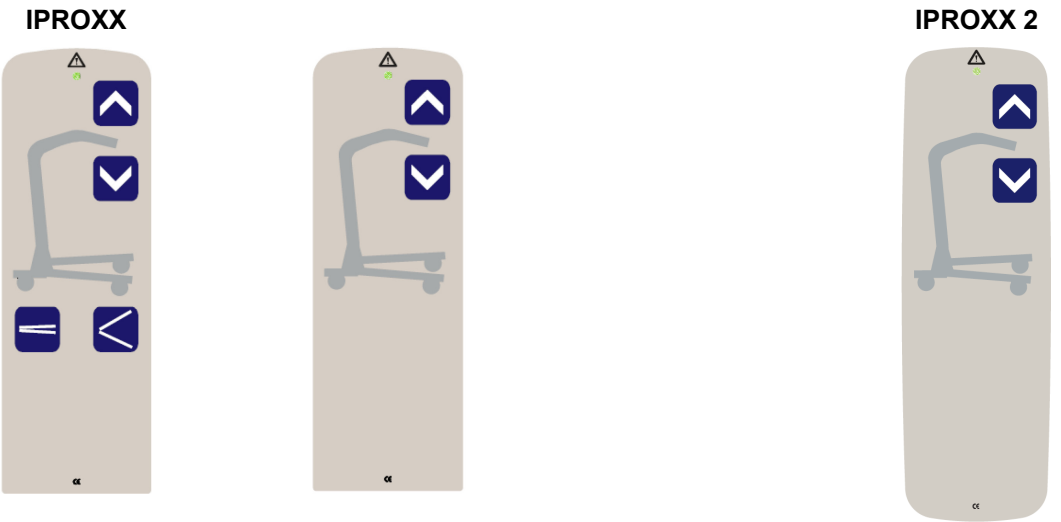
3.2.3 ACCUCONTROL 4.5DC (with 2 motors)



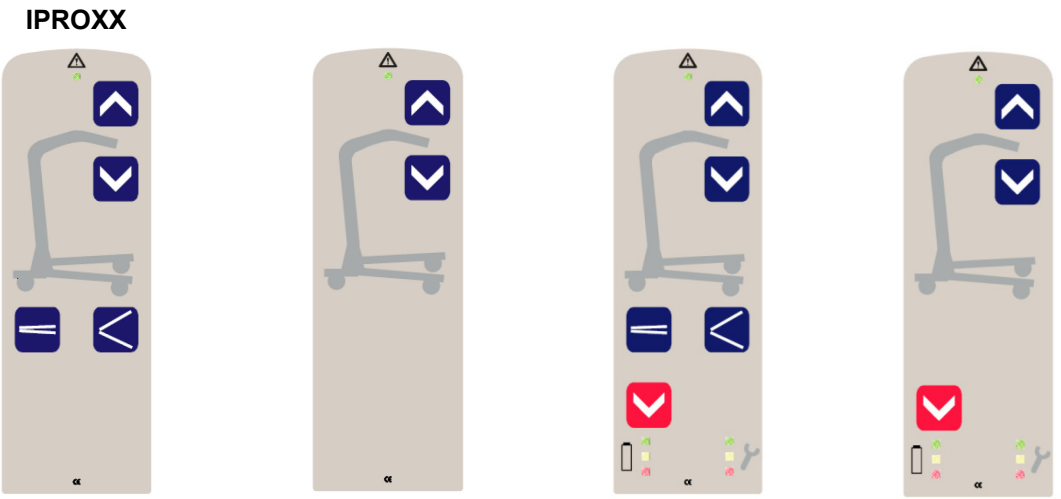
3.3 IPROXX handset

The following illustrations show the IPROXX handsets that can be used in the different models.

3.3.1 Models Basic



3.3.2 Professional model



4. Description

The *ACCUCONTROL* is used for supplying power to and controlling one or more DewertOkin drives.

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

4.1 Components

The *AccuControl* consists of the ACCU and CONTROL components, with connection ports for drives, the IPROXX handset and the PLUG-IN CHARGER. The MEGAMAT P, MEGAMAT MCZ, MEGAMAT XSZ and MEGAMAT MFZ drives can be connected to the *ACCUCONTROL*.

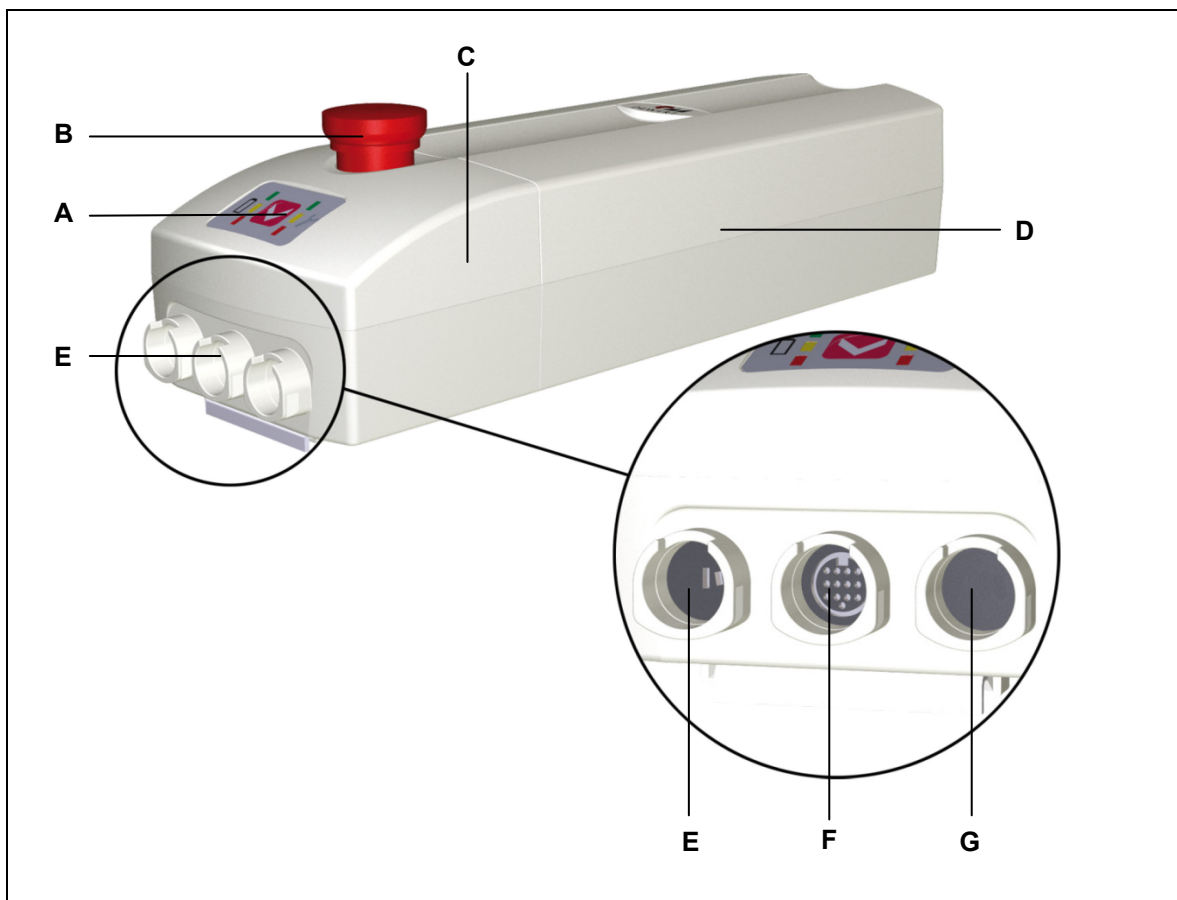


Figure 5 Components for the *ACCUCONTROL*

- | | |
|--|--|
| A Charge state/service display and reset button | B Emergency-stop switch |
| C CONTROL | D ACCU |
| E Connection socket for the drive | F Connection socket for the IPROXX handset |
| G CONTROL AC 4.5:
LSP socket for drive | or G CONTROL AC 4.5DC:
8-pole socket for
- adapter cable and charger,
- Y-cable with optional drive and
charger |

5. Technical specifications

CONTROL AC 4.5DC¹⁾ / CONTROL AC 4.5 BAS and PRO models	
Input voltage	24 V DC
Input current for the "BAS" model	Max. 7.0 A DC
Input current for the "PRO" model	Max. 8.5 A DC
Mode of operations ²⁾	Intermittent duty 2 min./18 min.
Permitted power consumption	Max. 8.5 A DC
Power limit (over-current shutdown)	Adjustable to 8.5 A DC
Audible alarm threshold	21 V DC
Shutdown threshold discharge	17 V DC

ACCU AC 4.5DC¹⁾ / ACCU AC 4.5	
Rated voltage	24 V DC
Capacity	4.5 Ah
Fuse	7.0 A (PolySwitch)
Battery type	Lead rechargeable battery (Pb)
Self-discharging	After approx. 6 months
Charging time	Approx. 8 hours

ACCUCONTROL 4.5DC¹⁾ / ACCUCONTROL 4.5	
Protection degree ³⁾	IP54

¹⁾ **DC** = Direct Charging

²⁾ 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!

³⁾ The degree of protection (IP54) is only met when the "ACCU" battery unit is properly plugged into the "CONTROL" control unit.

Dimensions and weight	
Length x width x height	
ACCUCONTROL	368 mm x 120 mm x 107 mm
CONTROL without mounting rail	120.6 mm x 120 mm x 107.6 mm
ACCU	272.2 mm x 120 mm x 89.9 mm
Weight	
ACCUCONTROL	Approx. 4.8 kg
CONTROL without mounting rail	Approx. 700 g
ACCU	Approx. 4.1 kg

PLUG-IN CHARGER PB 4.5	
Input voltage	100 V / 110 V / 230 V / 240 V AC, 50/60 Hz
Charging voltage (nominal)	24 V DC
Charging current	Approx. 750 mA
Discharge current	Approx. 25 mA

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

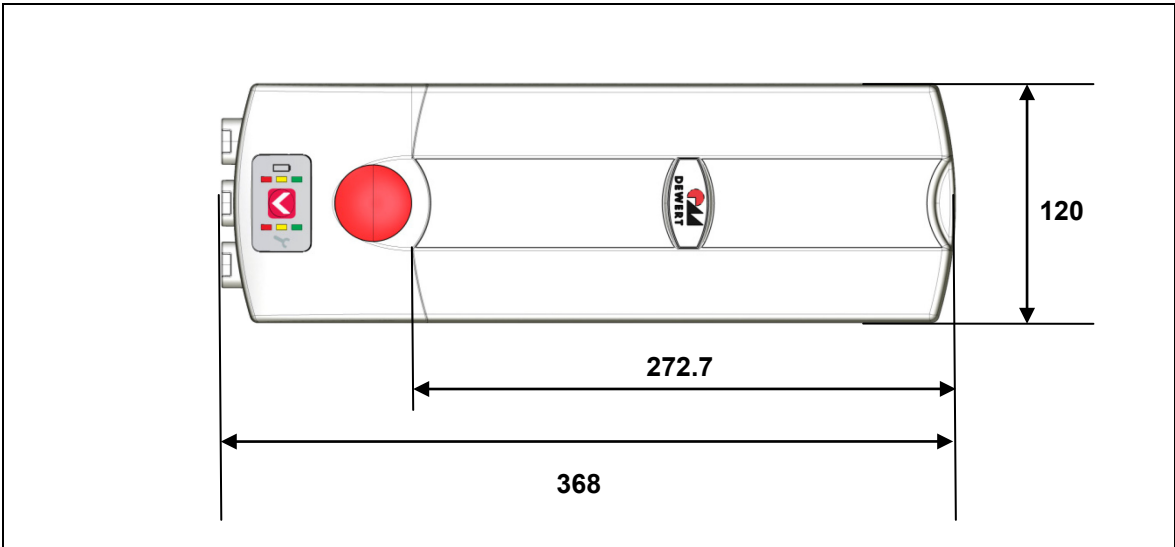


Figure 6 Dimensions of the ACCUCONTROL, top view (in mm)

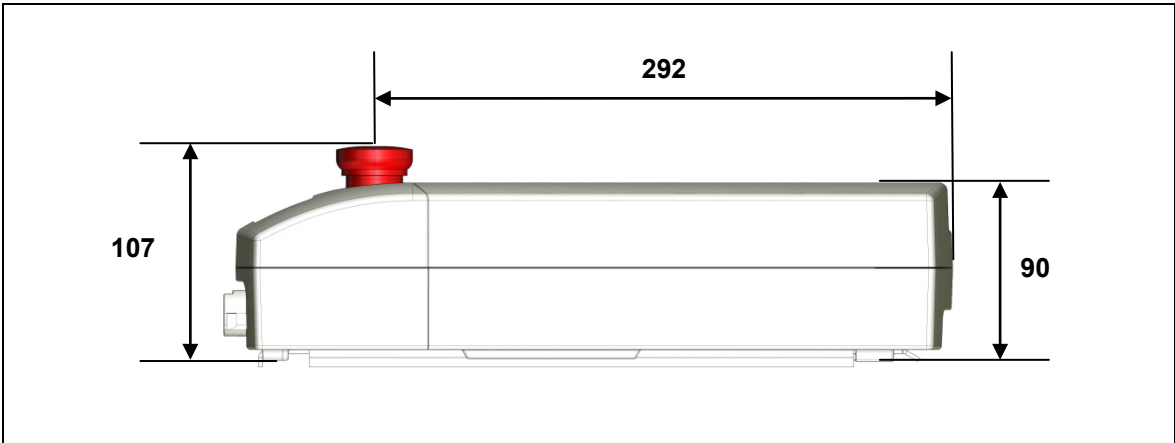



Figure 7 Dimensions of the ACCUCONTROL, side view (in mm)

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 ACCUCONTROL in the end product.

6.1.1 Pause interval for the ACCU

	NOTICE
	<p>The following pause times for the ACCU must be observed. The unit must not be in operation for at least 1 hour:</p> <ul style="list-style-type: none">• before commissioning,• before removal and• before changing the battery.

6.1.2 Avoiding electrical faults

The PLUG-IN CHARGER PB 4.5 has a connecting cable. When sizing your end product, remember that the connecting cable must never be squashed (e.g. by moving over it) during operations.

6.1.3 Ensuring operational reliability during installation

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

6.2 Installation procedure

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

6.2.1 Installation and dismounting for the control unit

The *ACCUCONTROL* can be bolted to the end product by using two suitable bolts in the two mounting points on the mounting rail. The *ACCUCONTROL* should be mounted so that it lies flat against its supporting base. In the end product, no mechanical forces (such as torsion) should be put on the *ACCUCONTROL* or its housing. Such forces could lead to damage (such as cracks) in the housing.

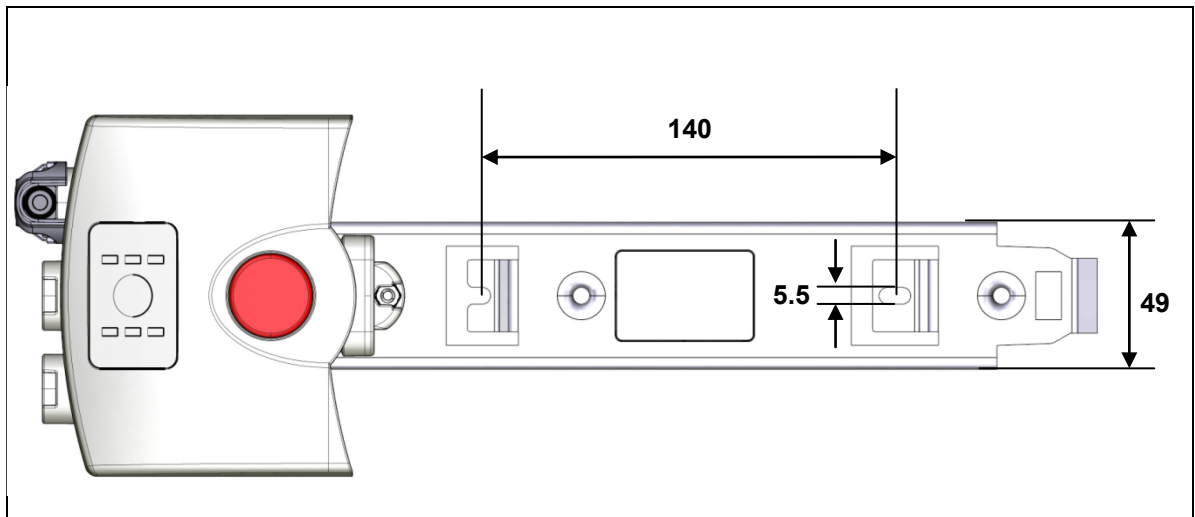


Figure 8 Mounting points on the ACCUCONTROL's mounting rail (in mm)

6.2.2 Installing the CONTROL mounting rail on the patient lifter

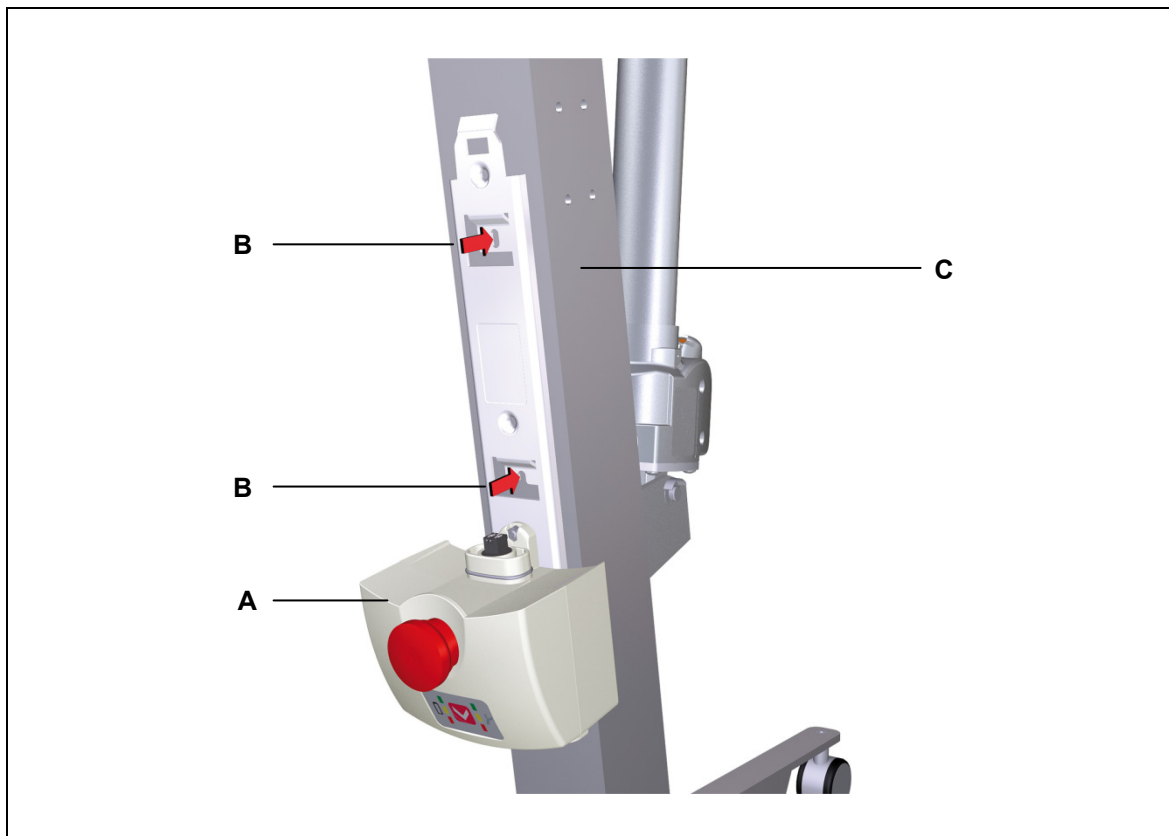


Figure 9 Installing on the patient lifter

A CONTROL

B Mounting points

C patient lifter

Proceed as described below when installing the *ACCUCONTROL* on the patient lifter:



NOTICE

There must be enough available space to mount the unit!

- 1 Mark both mounting points on the patient lifter.
- 2 Attach the mounting rail (along with CONTROL) to the patient lifter (use the corresponding bolts or nuts).
- 3 Slide the ACCU on the mounting rail (as shown in Figure 10) until it clicks into place. The housing guide tabs (**D**) must enclose the mounting rail to ensure a tight fit.
- 4 Pull gently on the lead battery to make sure that the ACCU is properly seated on the mounting rail.

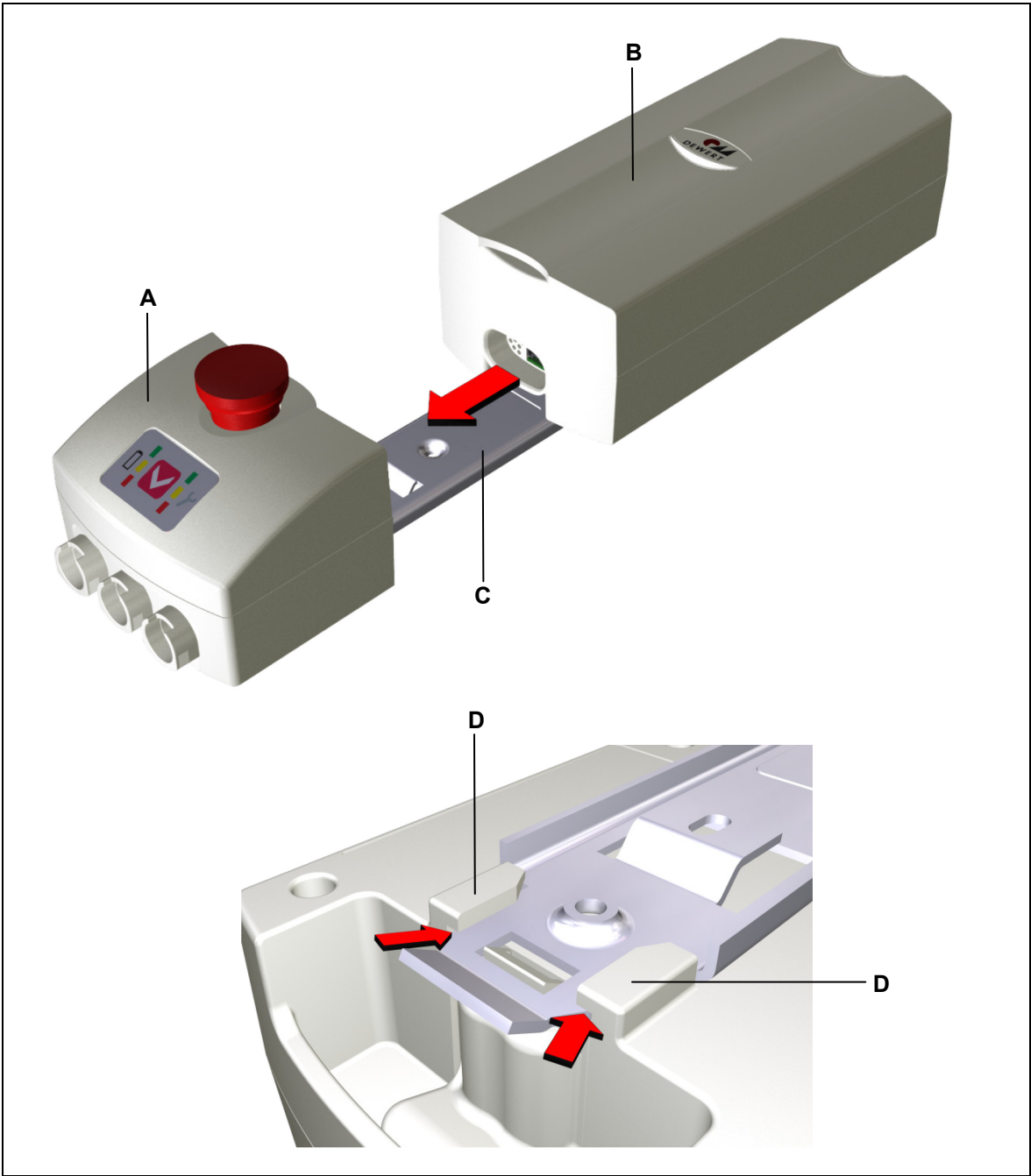


Figure 10 Inserting the ACCU in the CONTROL

A CONTROL

B ACCU

C Mounting rail

D Housing guide tabs



Figure 11 ACCUCONTROL on the patient lifter

A ACCUCONTROL

B Patient lifter

C Drive

6.2.3 Electrical connection

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 (especially the connecting cables) to the end product using sufficient kink prevention methods. Be sure that the design of the end product prevents the connecting cables from coming into contact with the floor during transport.



Connecting the components

When connecting the components:

- Be sure to connect all components (the drives, handsets, etc.).
- Make sure that unused slots are sealed with dummy plugs; this ensures that the IP54 level of protection is maintained. IP54 protection only exists when the ACCU and the CONTROL are properly connected to each other.

6.2.4 Removing the ACCUCONTROL from the patient lifter



- 1 Move the patient lifter into a position where it is subject to no load.
- 2 Disconnect the connecting cable from the CONTROL.
- 3 Remove the ACCU.

	 CAUTION You should only connect and disconnect the cables when they are completely disconnected from any live current!
---	--

- 4 Loosen the screws on the mounting rail.
- 5 Remove the CONTROL from the patient lifter.

7. Operating notes



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 assembly and operation of the *ACCUCONTROL* 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 information



- ▶ Only components that have been approved from DewertOkin should be connected to the *ACCUCONTROL*; only approved components have been verified to work together. Ask your customer representative for more information.

Emergency-stop switch

	 CAUTION
	The emergency-stop switch must be accessible for all operational situations.

Inspecting before the initial commissioning and after external impacts


Heavy mechanical impacts (which may occur during transport or by dropped objects) can sometimes result in electrical malfunctions.

	 CAUTION
	<p>In order to improve the operational reliability, take the following steps before the initial commissioning and after any extreme mechanical loads:</p> <p>Check if the housing is damaged. If the housing shows signs of damage or if the device heats up excessively,</p> <ul style="list-style-type: none"> • immediately press the emergency-stop switch. • Unplug the ACCU from the CONTROL and take the drive system out of service.



Power-on time / intermittent operations

The *ACCUCONTROL* 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. Extreme overheating can cause a malfunction.

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

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



Avoiding electrical risks

	 CAUTION
Make sure that no live (current-carrying) parts of the drive system and power supply can be touched. In particular, be sure that unused power and control unit connections are covered adequately.	

Deep-discharge protection



The drive system is completely deactivated whenever the voltage of the ACCU has reached the shutdown threshold level. This deep discharge monitor protects the rechargeable battery from damages that could result when the discharge warning is ignored. The reset button on the control unit or handset (as described in sections 7.6 and 7.6.1) can be used once for lowering.

Emergency shut off of a connected drive or control unit


	 CAUTION
In an emergency, disconnect the PLUG-IN CHARGER from the power supply (pull out the PLUG-IN CHARGER from the socket). This power outlet must be accessible at all times during operation so that the cable can be unplugged. Or disconnect the drive's connecting cable from the CONTROL to shut it down. Remove the ACCU from the CONTROL.	

Avoiding cable damage

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

	 CAUTION
The cables (particularly the connecting cable) should not be run over. In order to prevent injuries or damage to the <i>ACCUCONTROL</i> , no mechanical strain should be placed on the cables.	

7.2 Programming the over-current shutdown mechanism when commissioning the system

NOTICE	
	<ul style="list-style-type: none"> • This programming must be carried out by the manufacturer of the end product. Do not forward the following description of action on to the end user. • Program the CONTROL before its initial commissioning or after it has been serviced!

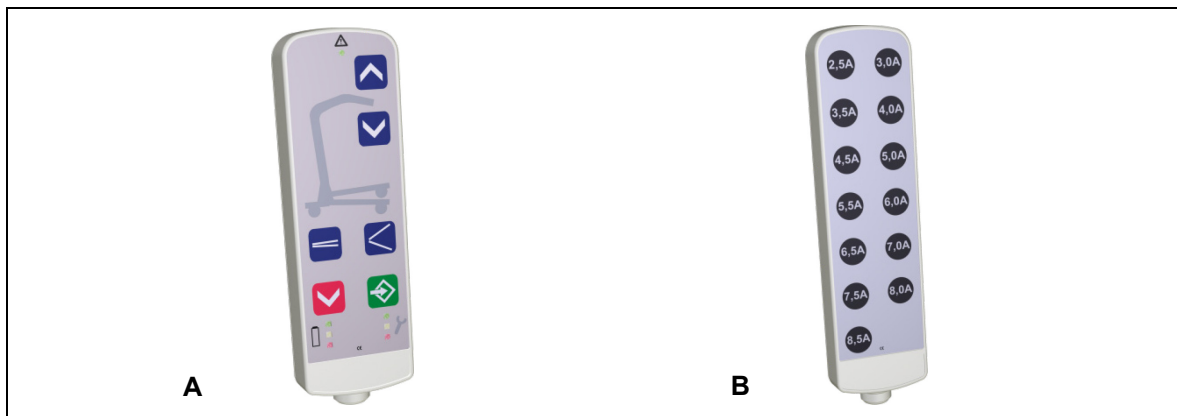



Figure 12 Variants of the handset

A IPROXX handset

B Programmer handset for the over-current detection

a) Option 1: On the IPROXX handset

- 1 Attach an object to your end product (e.g. the patient lifter) that represents a specific overload.
- 2 Connect the IPROXX handset (**A**) to the *ACCUCONTROL*.
- 3 Press the button  on the IPROXX handset (**A**). The stroke drive moves automatically as long as the button is held down. The over-current shutdown mechanism is programmed in this way.
- 4 A beep tone signals that this process has been completed.


b) Option 2: On the programmer handset for the over-current detection

- 1 Use your test system to determine the values for the over-current shutdown. The programmer handset (**B**) has buttons which specify the different current values for the over-current shutdown. All controllers in this series can be programmed with one touch to the specified value.
- 2 Connect the programmer handset to the *ACCUCONTROL*.
- 3 Press (and hold down for at least 3 seconds) the button on the programmer handset that corresponds to the determined value. The *ACCUCONTROL* is then automatically programmed.
 - ▶ Depending on your actual system, the completed programming is confirmed by an acoustic signal and/or an illuminated red service LED (as shown in Figure 22) on the *ACCUCONTROL*.
 - ▶ If the programmed value for the over-current shutdown is reached or exceeded during operations, then the over-current shutdown mechanism triggers and the drives cannot be run. You should then reduce the load or move the drives down.

7.3 ACCU

7.3.1 General safety instructions for the ACCU

- Do not open or destroy the ACCU.
- The ACCU should only be charged as shown in Figure 16, Figure 18 and Figure 21 (pages 34, 36 and 39).
- Do not expose the ACCU to heat or to an open flame. Avoid storage in direct sunlight.
- If the batteries leak and you contact the leaked fluid, wash with plenty of water and seek medical attention immediately.
- Only use the ACCU for its originally intended purpose.
- Do not store the ACCU within reach of children.
- Do not throw the ACCU into fire or open it. Do not solder or weld on the ACCU.

	NOTICE
	<p>The following pause times for the ACCU must be observed. The unit must not be in operation for at least 1 hour:</p> <ul style="list-style-type: none"> • before commissioning, • before removal and • before changing the battery.

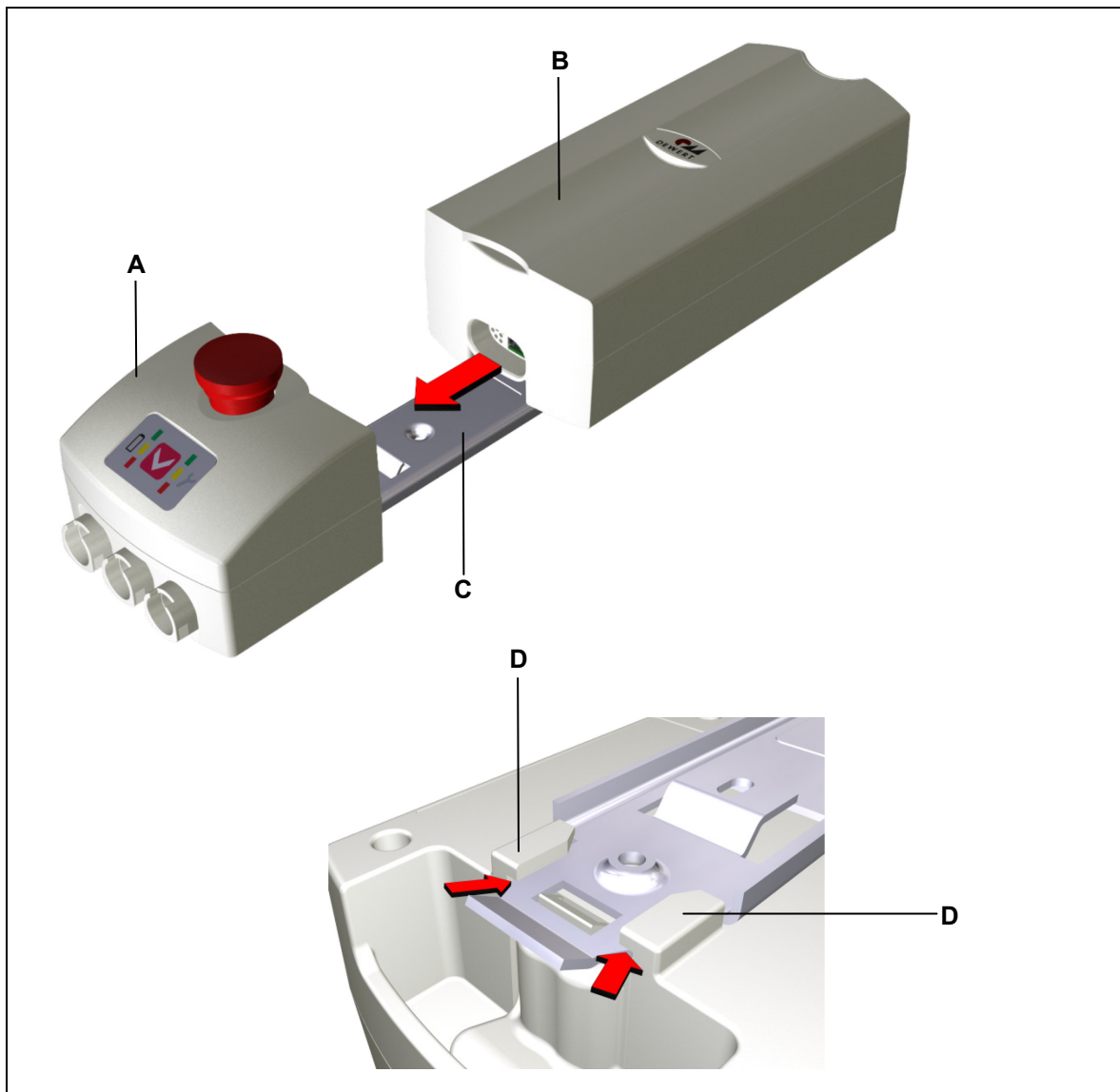


Figure 13 Inserting the ACCU in the CONTROL

A CONTROL

B ACCU

C Mounting rail

D Housing guide tabs

- 1 The ACCU should not be used for at least 1 hour before changing the battery.
- 2 Slide the ACCU on the mounting rail (as shown in Figure 13) until it clicks into place. The housing guide tabs (**D**) must enclose the mounting rail to ensure a tight fit.
- 3 Pull gently on the lead battery to make sure that the ACCU is properly seated on the mounting rail.

7.4 Removing the ACCU from the CONTROL

- 1 Move the patient lifter into its starting position.
- 2 Press the emergency-stop button and remove all plugs from the sockets of the CONTROL.



Figure 14 Releasing the ACCU

A patient lifter

B ACCU

C Mounting rail

D Release lever

- 3 Grasp the ACCU's handle and press down on the release lever (**D** in Figure 14).
- 4 Remove the ACCU from the mounting rail.

7.5 Charging the ACCU AC 4.5 and ACCU AC 4.5DC

The ACCU AC 4.5 and the ACCU AC 4.5DC are charged with the PLUG-IN CHARGER PB 4.5. Charging can be carried out as follows:

	Charging directly on the ACCU (Figure 17, page 35)	Charging with the charging station (Figure 20, page 38)	Charging at the end product (Figure 21, page 39)	
			Adapter cable	Y-cable
ACCU AC 4.5	X	X		
ACCU AC 4.5DC	X	X	X	X

NOTICE

Use the PLUG-IN CHARGER PB 4.5 to charge the ACCU. They have been verified to work properly together.

Note the following information when charging:



- Charge the ACCU completely (for at least 10 hours) before first use. The built-in batteries achieve their full capacity only after 5 to 10 discharge cycles.
- The ACCU's ventilation holes should **not** be covered during the charging (see **B** in Figure 15).
- The ACCU should not rest upside down while charging (see Figure 18 on page 36).
- Allow the ACCU to rest for about 1 hour after charging it; this will prolong its life-span.
- Depending on your model, the battery charge status is displayed on either the handset or on the *ACCUCONTROL* control unit.

7.5.1 Charging directly on the ACCU using the PLUG-IN CHARGER PB 4.5

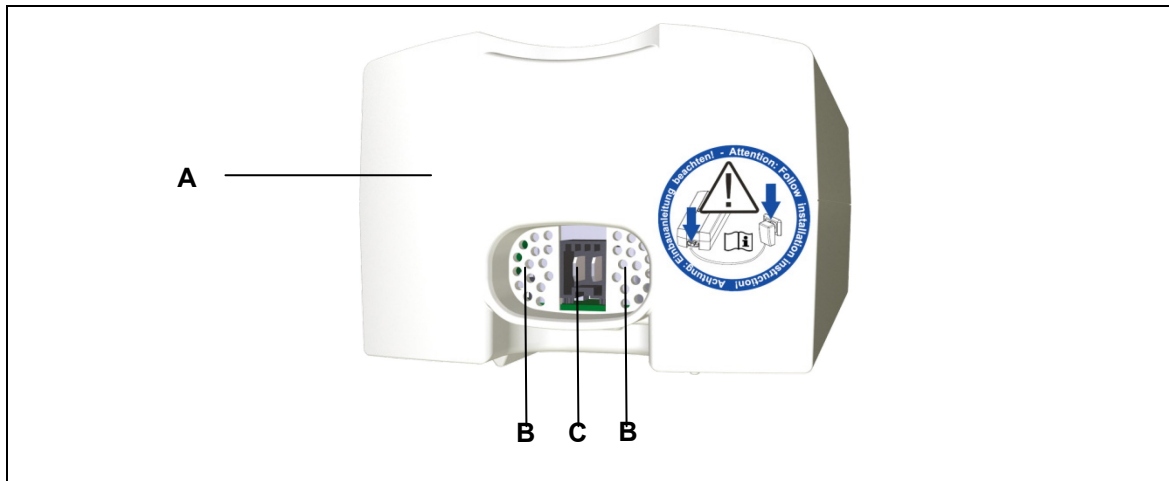




Figure 15 Connection ports and ventilation holes on the ACCU


A ACCU

B Ventilation holes in the ACCU

C Connection sockets for the PLUG-IN CHARGER
PB 4.5

- 1 The ACCU should not be used for at least 1 hour before it is removed from the mounting rail.
- 2 Remove the ACCU from the mounting rail (as described in section 7.4).

	 CAUTION
	<p>Follow these safety instructions when charging or operating the ACCU:</p> <ul style="list-style-type: none"> • Do not plug the mains plug from the PLUG-IN CHARGER PB 4.5 in the electrical contacts (C) of the ACCU (this would cause a short circuit). • The ACCU must not be short-circuited! • The electrical contacts must not be touched or bridged!

	NOTICE
	<p>Make sure that the ACCU is in the correct position while charging. The ACCU may only be loaded when it is resting on its base (as shown in Figure 16).</p> <p>Do not place the ACCU upside down during charging.</p>

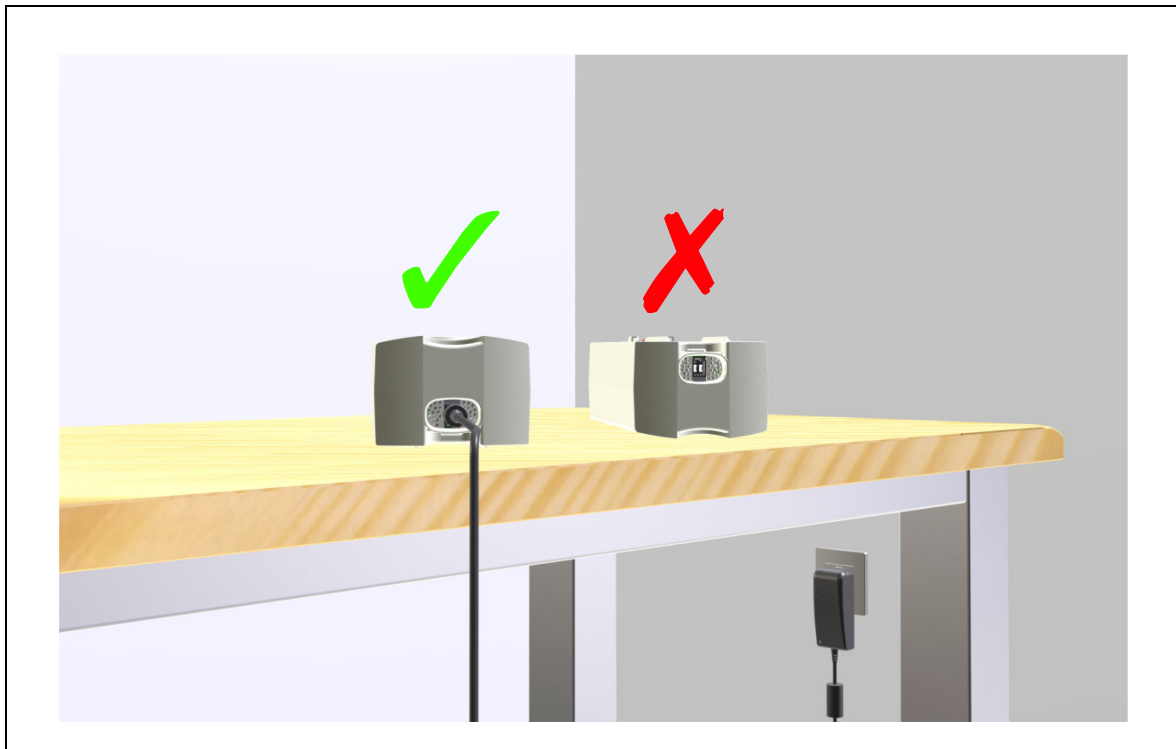


Figure 16 Charging position of the ACCU AC 4.5 and ACCU AC 4.5DC

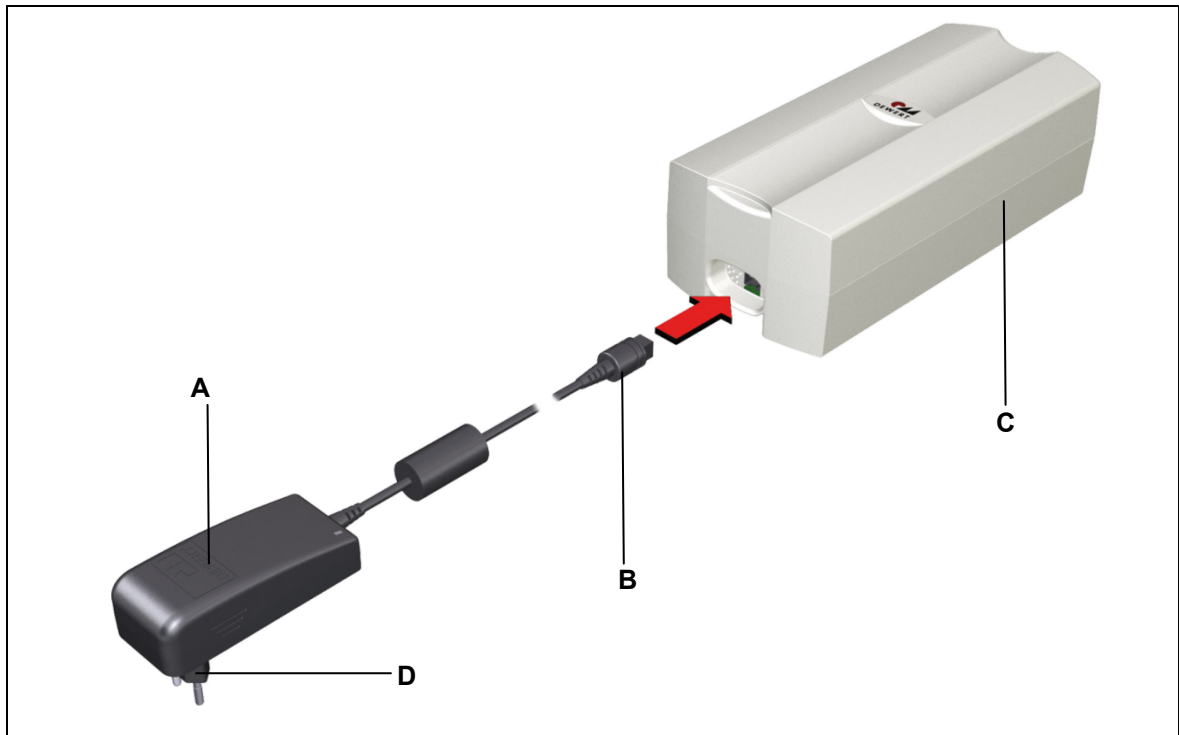



Figure 17 The ACCU AC 4.5 and the ACCU AC 4.5DC are charged directly with the PLUG-IN CHARGER PB 4.5.

- | | |
|---------------------------------------|--|
| A PLUG-IN CHARGER PB 4.5 | B Plug for the PLUG-IN CHARGER PB 4.5 |
| C ACCU AC 4.5 or ACCU AC 4.5DC | D Mains plug |

- 3** Connect the PLUG-IN CHARGER PB 4.5 to the ACCU (as shown in Figure 17).
- 4** Plug the PLUG-IN CHARGER PB 4.5 into the outlet. The charge level of the ACCU is indicated by the LED on the PLUG-IN CHARGER PB 4.5 as follows:
 - LED is flashing green: the ACCU is charging,
 - LED is steady green: the ACCU is fully charged.
- 5** When the LED on the PLUG-IN CHARGER PB 4.5 is steady green,
 - pull the PLUG-IN CHARGER PB 4.5 out of the outlet and
 - unplug the PLUG-IN CHARGER PB 4.5 cable from the ACCU.
- 6** The ACCU should not be used for at least 1 hour before changing the battery. Push the ACCU onto the mounting rail (as described in section 7.3).
- 7** Pull gently on the lead battery to make sure that the ACCU is properly seated on the mounting rail.
- 8** Allow the ACCU to rest for about 1 hour after charging it; this will prolong its lifespan.

7.5.2 Charging the ACCU AC 4.5 and ACCU AC 4.5DC at the charging station

- 1 The ACCU should not be used for at least 1 hour before it is removed from the mounting rail.
- 2 Remove the ACCU from the mounting rail (as described in section 7.4).

NOTICE	
	<p>Make sure that the ACCU is in the correct position while charging. When using the charging station, the ACCU may only be charged in an upright position (refer to Figure 18).</p> <p>The ACCU may not be upside down (in a horizontal position) while charging.</p>

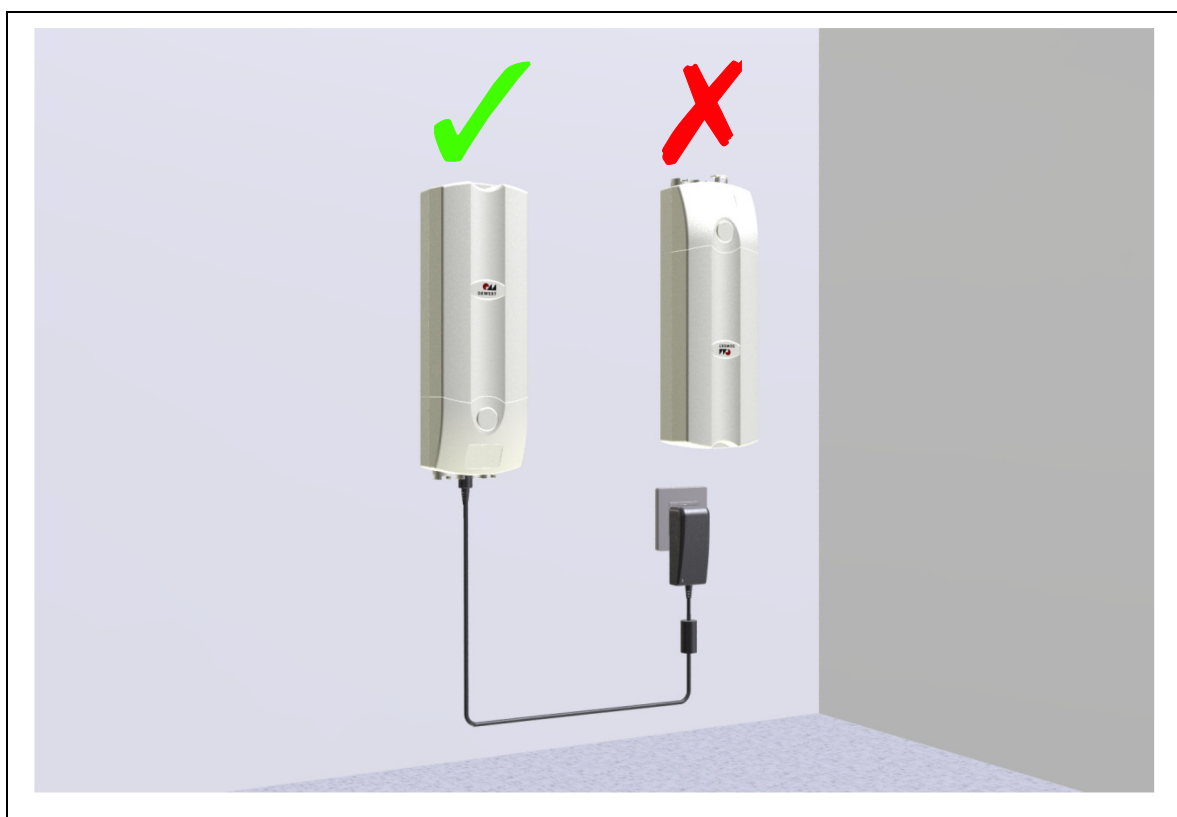


Figure 18 Charging position of the ACCU AC 4.5 and ACCU AC 4.5DC on the charger

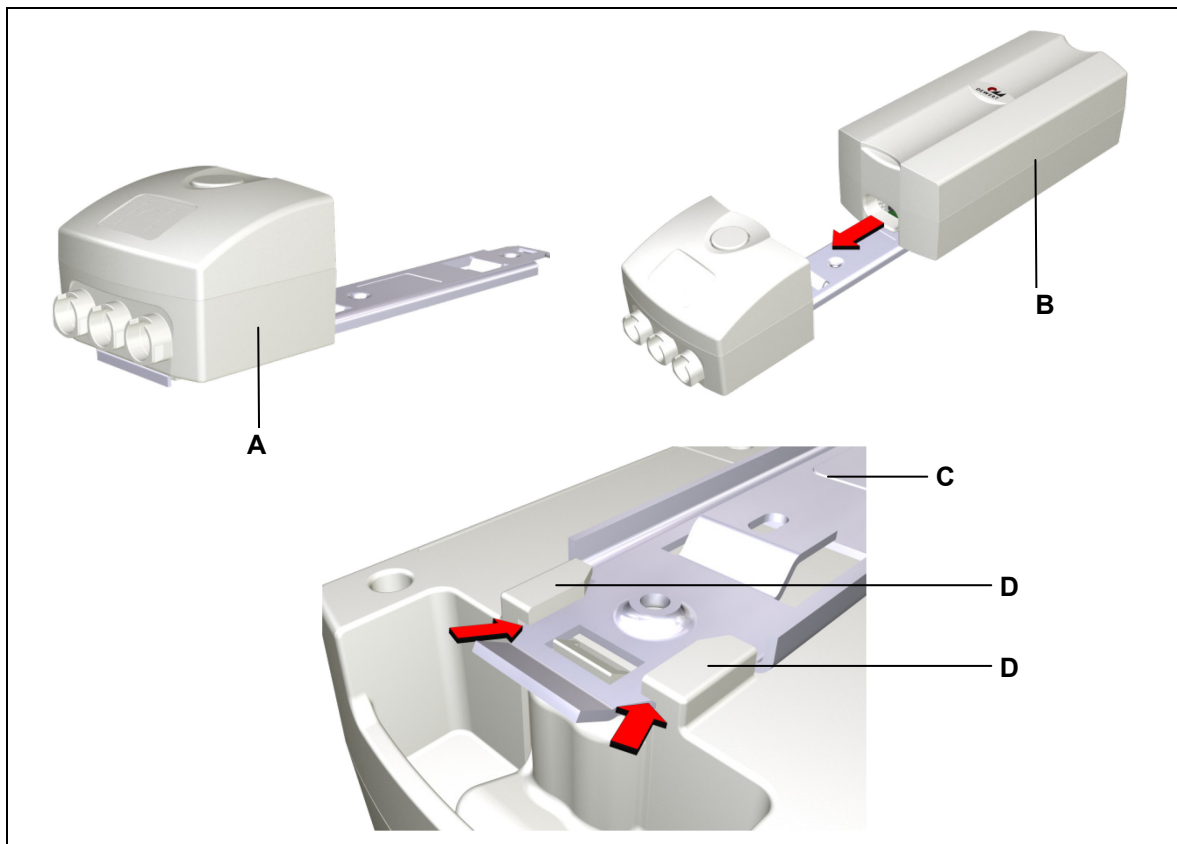


Figure 19 Inserting the ACCU AC 4.5 and ACCU AC 4.5DC in the charging station

A Charging station

B ACCU

C Mounting rail

D Housing guide tabs

- 3** Slide the ACCU on the charging station (as shown in Figure 19) until it clicks into place. The housing guide tabs must enclose the mounting rail to ensure a tight fit.
- 4** Pull gently on the lead battery to make sure that the ACCU is properly seated on the mounting rail.

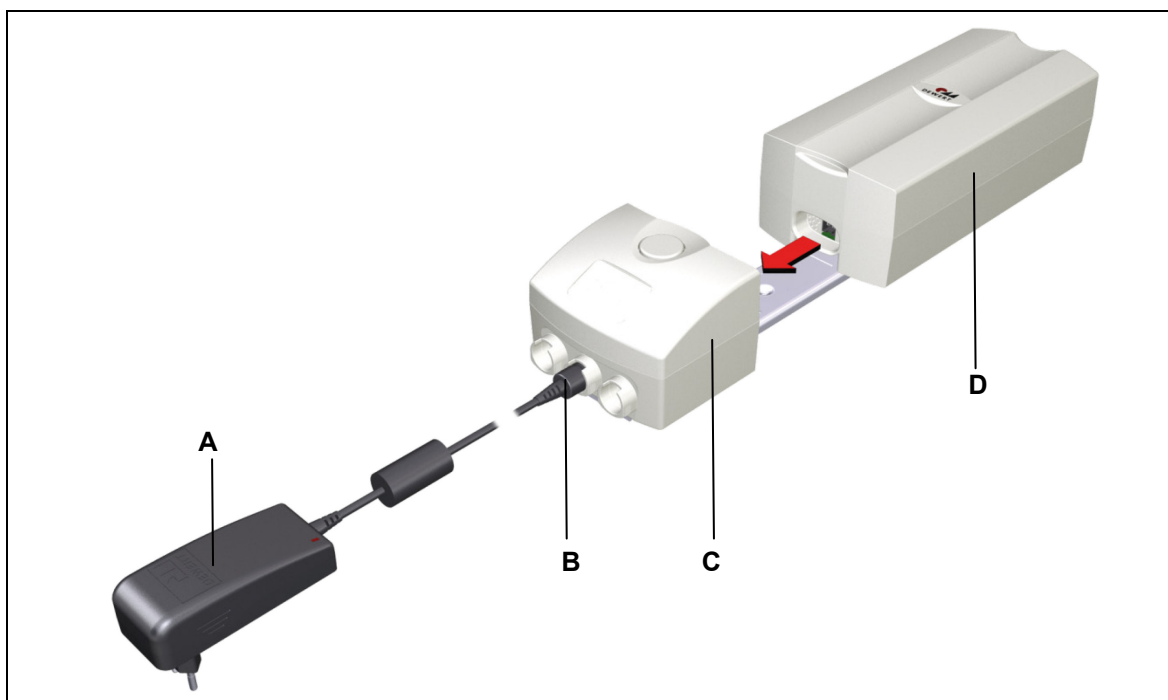


Figure 20 Charging the ACCU AC 4.5 and ACCU AC 4.5DC at the charging station

A PLUG-IN CHARGER PB 4.5

B Plug for the PLUG-IN CHARGER PB 4.5 at the charging station

C Charging station

D ACCU

- 5** Connect the PLUG-IN CHARGER PB 4.5 to the charging station (as shown in Figure 20).
- 6** Plug the PLUG-IN CHARGER PB 4.5 into the outlet. The charge level of the ACCU is indicated by the LED on the PLUG-IN CHARGER PB 4.5 as follows:
 - LED is flashing green: the ACCU is charging,
 - LED is steady green: the ACCU is fully charged.
- 7** When the LED on the PLUG-IN CHARGER PB 4.5 is steady green,
 - pull the PLUG-IN CHARGER PB 4.5 out of the outlet and
 - unplug the PLUG-IN CHARGER PB 4.5 cable from the charging station.
- 8** Take the ACCU out of the charging station's rails.
- 9** Push the ACCU onto the CONTROL's mounting rail (as described in section 7.3).
- 10** Pull gently on the lead battery to make sure that the ACCU is properly seated on the mounting rail.
- 11** Allow the ACCU to rest for about 1 hour after charging it; this will prolong its lifespan.

7.5.3 Charging the ACCU AC 4.5DC directly at the patient lifter

- ▶ The ACCU AC 4.5DC can only be charged with the CONTROL AC 4.5DC!
- ▶ No motion functions are possible during the charging!

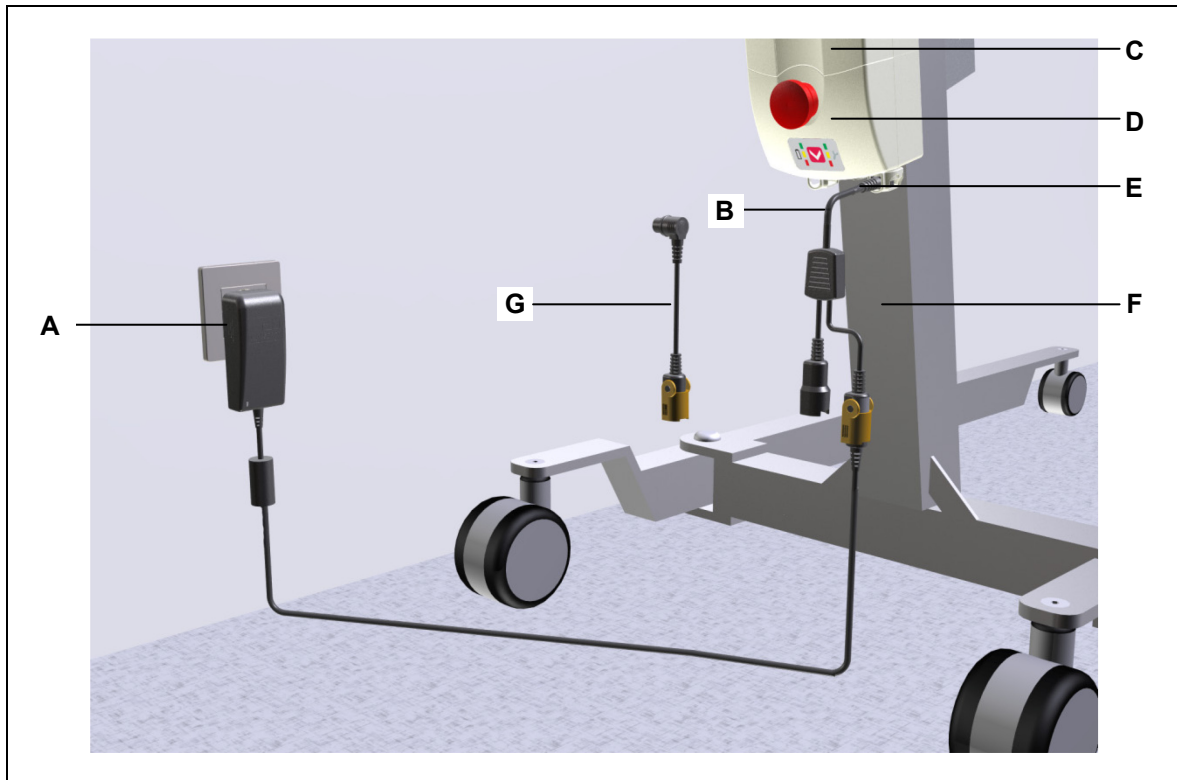


Figure 21 Charging the ACCU AC 4.5DC at the CONTROL AC 4.5DC

- | | |
|---|---|
| A PLUG-IN CHARGER PB 4.5 | B Y-cable (for system with 2 motors) |
| C ACCU AC 4.5DC | D CONTROL AC 4.5DC |
| E Connecting socket for the adapter cable or the Y-cable (refer to Figure 5) | F Patient lifter |
| G Adapter cable (for system with 1 motor) | |

- 1 Use the adapter cable or the Y-cable to connect the PLUG-IN CHARGER PB 4.5 to the CONTROL AC 4.5DC (as shown in Figure 21).
- 2 Plug the PLUG-IN CHARGER PB 4.5 into the outlet. The charge level of the ACCU AC 4.5DC is indicated by the LED on the PLUG-IN CHARGER PB 4.5 as follows:
 - LED is flashing green: the ACCU AC 4.5DC is charging,
 - LED is steady green: the ACCU AC 4.5DC is fully charged.
- 3 When the LED on the PLUG-IN CHARGER PB 4.5 is steady green,
 - pull the PLUG-IN CHARGER PB 4.5 out of the outlet and
 - unplug the PLUG-IN CHARGER PB 4.5 cable from the ACCU AC 4.5DC.
- 4 Allow the ACCU AC 4.5DC to rest for about 1 hour after charging it; this will prolong its lifespan.

7.6 Control panel on the CONTROL

The control panel on the CONTROL has a reset button and a display showing the charge state and a service indicator.

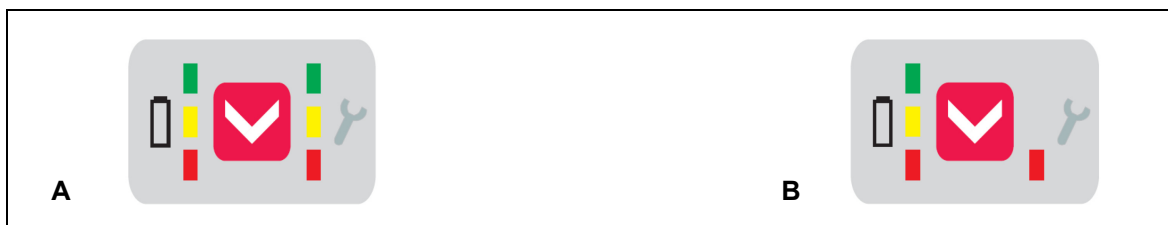


Figure 22 Control panel on the CONTROL

A Control panel on the CONTROL AC 4.5 PRO and the CONTROL AC 4.5DC PRO

B Control panel on the CONTROL AC 4.5 BAS and the CONTROL AC 4.5DC BAS

Display	Function	Button	Function	Display	Function
	Charge level indicator		Reset function ¹⁾		Service indicator

¹⁾ The button activates a separate circuit for lowering the main adjusting drive. This circumvents any protection mechanism in the CONTROL except for the emergency stop function.

Charge level indicator	Charging state of the ACCU	Measure / Action
Green	100% charged	
Green / yellow	Approx. 75% loaded	
Yellow	Approx. 50% loaded	
Yellow / red	Almost completely discharged	Recharge the battery promptly.
Red	Completely discharged	Charge the ACCU immediately or the life-span of the battery may be shortened. A red light and an audible signal indicate that a button has been pressed. One complete adjustment cycle is still possible.

Service indicator	Explanation for the service indicator
Green ²⁾	System has no error
Yellow ²⁾	System has no error
Red	Check the drive system. Possibilities: <ul style="list-style-type: none"> • Replace defective components³⁾ • Servicing at DewertOkin³⁾ • Maintenance by customer (refer to section 7.6.1)

²⁾ This service indicator is only for the CONTROL AC 4.5 Pro and CONTROL AC 4.5DC Pro available.


³⁾ Please contact your customer representative for more information.



7.6.1 Maintenance when red light at service display

If the service display is lit red, we recommend replacing or checking the following components:

Component		Measure / Action
1	DEWERT drive	<ul style="list-style-type: none"> Visual inspection of cables and connectors Visual inspection for housing damage Check electrical function
2	DEWERT handset	<ul style="list-style-type: none"> Visual inspection of cables and connectors Check electrical function
3	DEWERT charger PLUG-IN CHARGER PB 4.5	<ul style="list-style-type: none"> Visual inspection of cables and connectors Visual inspection for housing damage
4	DEWERT control unit CONTROL 4.5	<ul style="list-style-type: none"> Check the electrical emergency lowering function (by pressing the emergency lowering button) Check for proper function of emergency-stop switch Visual inspection for housing damage
5	DEWERT battery unit ACCU 4.5	<ul style="list-style-type: none"> Visual inspection for housing damage Replace old batteries after four years (Ratings plate indicated manufacture date: calendar week / year.) If the number of cycles is significantly reduced, replace the battery.
6	DEWERT components	<ul style="list-style-type: none"> Replace defective components

7.6.2 Resetting the service display

	NOTICE
	Reset the service display only after all of the maintenance measures (as listed in the table above) have been successfully carried out.

- To do this, simultaneously press both keys on the stroke drive (keys  and ) for approximately 10 seconds until the service display changes from red to green.

7.7 Buttons and indicators on the IPROXX handset (an example)

Custom IPROXX handsets can be delivered for use with the patient lifter. The IPROXX PRO model is used for the example below. (For the IPROXX BAS handset, there is no reset function, no over-current shutdown, and no service or battery charge indicators).

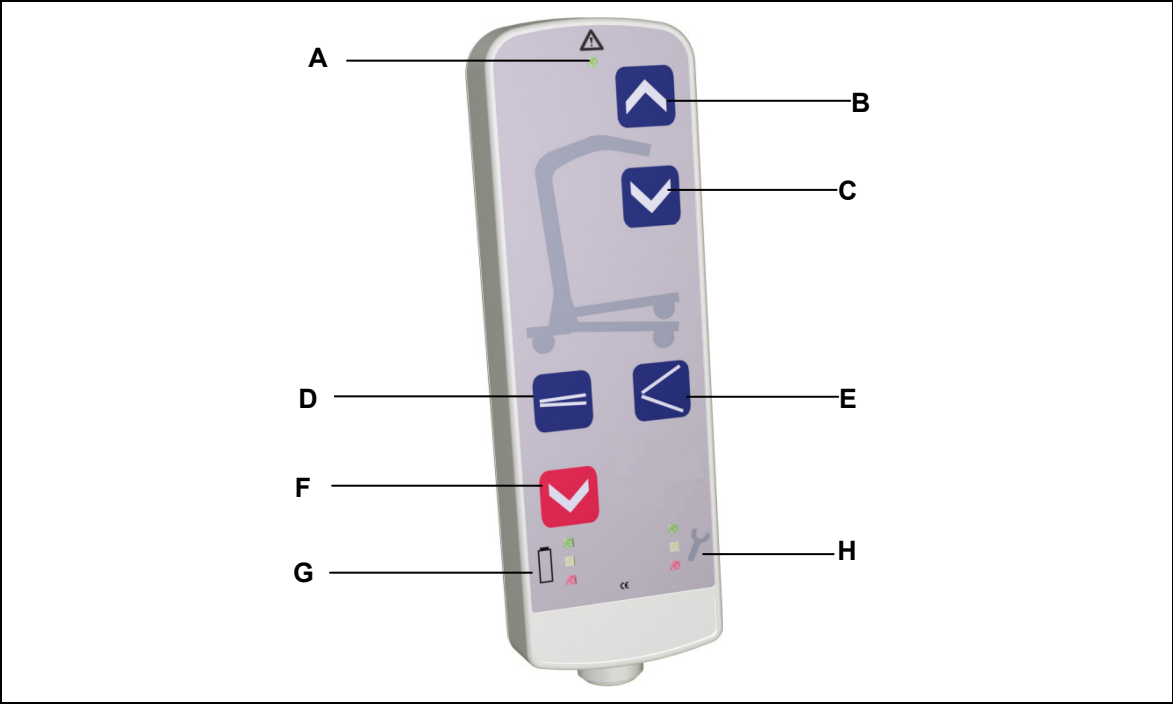


Figure 23 IPROXX PRO handset (an example)

- A** Function LED

C Lifting motor button: down

E Optional: Button: spread open








G Charge level indicator
- B** Lifting motor button: up

D Optional: Button: spread close

F Button: reset function

H Service indicator

► The function LED (**A**) illuminates whenever a button is pressed. If the green function LED lights up continuously or does not light up when a button is pressed, this indicates that there is an error.

Button	Function	Key / indicator	Function
	Up		Reset function
	Down		Charge level indicator
	Spread open		Service indicator
	Spread closed		

► Ask your customer representative for more information about other variants.

7.8 Emergency-stop switch

The emergency-stop switch deactivates all functionality.





Figure 24 Emergency-stop switch for the CONTROL AC 4.5 / CONTROL AC 4.5DC

A Emergency-stop switch

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 customer representative.

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

Problem	Possible cause	Solution
The drive, handset or control unit is not functioning.	The drive, handset or control unit is defective.	Please contact your customer representative.
	There is no battery voltage.	Make sure the ACCU is connected. Make sure the ACCU is fully charged.
	The emergency-stop button is pressed down.	Release the emergency-stop button.
	The charger is connected and charging.	Remove the charger.
The drive is suddenly not capable of movement.	The overheating protection or system protection has been triggered.	Remove the overload (change or remove the load). Allow the system to rest for 20 to 30 minutes with the mains power unplugged. If this does not resolve the problem, contact your customer representative.
	The unit's fuse may have been triggered.	Please contact your customer representative.
	The over-current circuit shut-down mechanism in the control unit has triggered.	Reduce the load on the patient lifter.
	A cable has been disconnected (to a drive or control keypad).	Check the cables and contacts and reinsert them, if required.
The function LED on the handset does not light up or lights continuously when a key is pressed.	There is an error in the control system.	Please contact your customer representative.
	End position has been reached.	Move drive from its end position.
	Drive load has been exceeded.	Take load off drives.
	Battery is fully discharged.	Connect the ACCU for charging.

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
Make sure that no drive movements are carried out during the charging process.	The inspection may only be carried out by qualified personnel!	At least every six months.
Check the electrical, safety and emergency-stop functionality.	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.	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 protection mechanisms, in particular after any mechanical load.	At least every six months.

9.2 Cleaning and care

The *ACCUCONTROL* is easy to clean. Its smooth surfaces simplify the cleaning process.

	NOTICE
	<p>Never clean the <i>ACCUCONTROL</i> in an automated washing system or with a high-pressure cleaner. Do not allow fluids to penetrate the lighting. Damage to the system could result.</p> <p>Do not use a cleanser that contains benzene, alcohol or similar solvents.</p>

- 1 Be sure to unplug the drive cable on the *ACCUCONTROL* before you begin cleaning it!
- 2 Clean the *ACCUCONTROL* with a moist cloth.
- 3 Be sure that you do not damage the connecting cables during the cleaning.

9.3 Maintenance and care

9.3.1 Maintenance information

- Plastic surfaces (such as the housing surface) should only be cleaned with a damp cloth.
- Charge the ACCU before using it. Always use the DEWERT PLUGIN CHARGER PB 4.5 (or the PLUG-IN CHARGER PB). The integrated charging circuit automatically ensures that the battery is optimally charged.
- After the unit has been in storage for a long time, it may be necessary to charge the battery more than once before the complete capacity is restored.
- The storage time should not be longer than six months at the recommended storage temperature. The battery should be charged again after this interval. At higher storage temperatures, the battery should be recharged more frequently. This will help to prevent a complete discharge of the battery, which would damage it irreparably.

9.3.2 Care instructions

The lead-acid batteries are maintenance-free. As with any rechargeable battery, the lifespan of the ACCU is limited. The actual lifespan is very dependent on the battery maintenance. In order to achieve the maximum lifespan for the battery, observe the battery level indicator and charge the batteries after any prolonged storage time (6 months storage should not be exceeded).

- Always keep the ACCU clean and dry. Do not short-circuit the ACCU. Store the ACCU so that the terminals cannot be shorted to each other or other metallic objects.
- The ACCU should not be exposed to mechanical vibrations.
- Only use the recommended charger.
- Do not use organic solvents (thinning solvents, alcohol, oil, rust inhibitors or surface-active agents such as chemical cleaners, etc.) on the ACCU.
- Retain the original documents for any future inquiries.
- The best battery capacity is achieved when the product is used at normal room temperatures (from 20°C to 25°C).
- The ACCU should not be submerged in water. It should be stored in a dry, cool place with a relative humidity of 50%.
- Only use the ACCU for its specified purpose.

10. Disposal

10.1 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)).

10.2 Components of the *ACCUCONTROL*

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

The disposal of the end product is regulated in Germany by Elektro-G, internationally by the EU Directive 2012/19/EC (WEEE), or by any applicable national laws and regulations.



The *CONTROL* should not be disposed of with normal household waste!

10.3 Batteries

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



The *ACCU* should not be disposed of with normal household waste!

EG-Konformitätserklärung

Nach Anhang IV der EMV-Richtlinie 2014/30/EU

Nach Anhang IV der EU-Niederspannungsrichtlinie 2014/35/EU

Nach Anhang VI der RoHS-Richtlinie 2011/65/EU
(inkl. Delegierte Richtlinie (EU) 2015/863)

Der Hersteller

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
(incl. Commission delegated Directive (EU) 2015/863)*

The manufacturer

DewertOkin GmbH
Weststraße 1
32278 Kirchlegern
Deutschland - Germany

erklärt hiermit, dass das Produkt

declares that the following product

ACCUCONTROL 4.5

ACCUCONTROL 4.5 DC

mit DewertOkin Antriebssystem / with DewertOkin drive system

die Anforderungen folgender EG-Richtlinien erfüllt:

meets the requirements of the following EU directives:

Richtlinie über elektromagnetische Verträglichkeit 2014/30/EU

Electromagnetic Compatibility Directive 2014/30/EU

Niederspannungsrichtlinie 2014/35/EU

Low Voltage Directive 2014/35/EU

DELEGIERTE RICHTLINIE (EU) 2015/863 DER KOMMISSION vom 31. März 2015 zur Änderung von Anhang II der Richtlinie 2011/65/EU des Europäischen Parlaments und des Rates hinsichtlich der Liste der Stoffe, die Beschränkungen unterliegen.

COMMISSION DELEGATED DIRECTIVE (EU) 2015/863 of 31 March 2015 amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council as regards the list of restricted substances.

Angewendete Normen

Applied standards:

- EN 60335-1:2012/A13:2017
- EN 55014-1:2006/A1:2009/A2:2011
- EN 55014-2:1997/A1:2001/A2:2008
- EN 61000-3-2:2014
- EN 61000-3-3:2013
- EN 62233:2008

Konstruktive Änderungen, die Auswirkungen auf die in der Montageanleitung angegebenen technischen Daten und den bestimmungsgemäßen Gebrauch haben, das Produkt also wesentlich verändern, machen diese Konformitätserklärung ungültig!

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



Kirchlegern, Germany 25 November 2019

Dr.-Ing. Josef G. Groß
Geschäftsführer / Managing Director

Additional information

The following standards have been applied for the patient lifter as used for transporting patients with handicaps – in accordance with ISO 10535:2006 "Medical electrical equipment":

ISO 10535, Section 4.3.1.24	Protection: min IPX4
ISO 10535, Section 4.3.1.17	Control with button
ISO 10535, Section 4.3.1.14	Easy-to-use controls
ISO 10535, Section 4.3.1.15	Control with lock switch / emergency-stop switch
ISO 10535, Section 4.3.1.16	Control with warn mechanism
ISO 10535, Section 4.3.1.23	Electromagnetic compatibility
ISO 10535, Section 4.3.1.18	Overload current switch-off

The following standards have applied for the models ACCUCONTROL 4.5 BAS, ACCUCONTROL 4.5DC BAS, ACCUCONTROL 4.5 PRO and ACCUCONTROL 4.5DC PRO with min IPX4 – in accordance with EN 60601-1:2006, 3rd edition and IEC 60601 "Medical electrical equipment":

EN 60601-1, Section 4	General requirements
EN 60601-1, Section 6	Classification
EN60601-1, Section 8	Protection against electrical danger
EN60601-1, Section 11.1	Overheating protection
EN60601-1, Section 11.2	Fire prevention
EN60601-1, Section 11.3	Design requirements for fire-resistant housing
EN60601-1, Section 13	Dangerous situations and error conditions
EN60601-1, Section 15.3	Mechanical attachment
EN60601-1, Section 15.4	Components and general construction
EN60601-1, Section 15.4.4	Replaced by EN 60601-2-52, section 201.15.4.4
EN60601-1, Section 16.6	Leakage current
EN60601-1, Section 17	Electromagnetic compatibility

The following standards have applied for the models ACCUCONTROL 4.5 BAS, ACCUCONTROL 4.5DC BAS, ACCUCONTROL 4.5 PRO and ACCUCONTROL 4.5DC PRO with min IPX4 – in accordance with EN 60601-2-52:2010 and IEC 60601-2-52:2009 "Particular requirements for the safety and essential performance of medical beds":

EN 60601-2-52, Section 201.7.6.3	Control keypad symbols (depending on the customer's requirements)
EN 60601-2-52, Section 201.9.2.2.5	Continuous operations: Control keypad, only with keys
EN 60601-2-52, Section 201.9.2.3.1	Unintentional movement: Prevented by means of a locking mechanism (such as IPROXX [®] /BAS, IPROXX [®] /PRO, IPROXX [®] 2/BAS or an emergency-stop switch)
EN 60601-2-52, Section 201.9.6.2.1	Noise level: ≤65dB(A) (refer to EN60601-2-38)
EN 60601-2-52, Section 201.11.1.1	Temperatures
EN 60601-2-52, Section 201.11.6.5.101	Protection against water ingress: only for ≥ IPX4
EN 60601-2-52, Section 201.11.8	Power outage: for example, battery usage, depending on version (customer requirement)
EN 60601-2-52, Section 201.13.1.4	Special mechanical risks: Prevented by means of a locking mechanism (such as IPROXX [®] /BAS, IPROXX [®] /PRO and IPROXX [®] 2/BAS)
EN 60601-2-52, Section 201.15.3.4.1	Mechanical attachment – handset
EN 60601-2-52, Section 201.15.4	Displays: Ready indicator is not required
EN 60601-2-52, Section 201.17	Electromagnetic compatibility
EN 60601-2-52, Section BB.3.3.3	Dimensions: vary according to the model (customer requirement)
EN 60601-2-52, Section BB.3.4.1	Operating forces

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