

# DESKPOWER™ DB4/DL4 systems





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## **Preface**

We are delighted that you have chosen a product from LINAK A/S. LINAK systems are high-tech products based on many years of experience in the manufacture and development of actuators, electronic control boxes, controls and chargers. We are also constantly improving our products to meet customer requirements.

This User Manual will tell you how to install, use and maintain your LINAK DESKLINE® products.

We are sure that the DESKLINE products will give you many years of problem-free operation. Before our products leave the factory they undergo full function and quality testing. Should you nevertheless experience problems with your systems, you are always welcome to contact our service departments or service centres.

LINAK subsidiaries and distributors all over the world have authorised service centres, which are always ready to help you.

LINAK provides a warranty on all its products. This warranty, however, is subject to correct use in accordance with the specifications, maintenance being done correctly and any repairs being carried out at a service centre, which is authorised to repair LINAK products.

Changes in installation and use of LINAK systems can affect their operation and durability. Changes must therefore only be made by agreement with LINAK A/S and are made at your own risk.

**LINAK A/S**

## Safety instructions



Safe use of the system is possible only when the operating instructions are read completely and the instructions contained are strictly observed.

Failure to comply with instructions marked with the "NOTE" symbol may result in serious damage to the system or one of its components.



It is important for everyone who is to connect, install or use the systems to have the necessary information and access to this User Manual.



If there is visible damage on the product it must not be installed.

### **Before installation, de-installation or troubleshooting**

- Stop the DB4/DL4
- Switch off the power supply and pull out the mains plug.
- Relieve the DB4/DL4 of any loads, which may be released during the work.

### **Before start-up:**

- Make sure that the system has been installed as instructed in this User Manual.
- Make sure that the voltage at the control box is correct before the system is connected to the mains.
- System connection. The individual parts must be connected before the control box is connected to the mains. See the User Manual for LINAK actuators, if necessary.

### **During operation:**

- If the control box makes unusual noises or smells switch off the mains voltage immediately.
- Take care that the cables are not damaged.
- Unplug the mains cable on mobile equipment before it is moved.

## Repairs

In order to avoid the risk of malfunction, all DESKLINE® repairs must only be carried out by authorised LINAK workshops or repairers, as special tools must be used and special gaskets must be fitted. Lifting units under warranty must also be returned to authorised LINAK workshops.



**Warning!**

If any of the DESKLINE® products are opened, there will be a risk of subsequent malfunction.



**Warning!**

The DESKLINE® systems do not withstand to cutting oil.

---

## Manufacturer's declaration

**Implementation with regard to the Community  
legislation on machinery**

**Directive 98/37/EC attachment II B:**

LINAK A/S, subsidiaries or representatives,  
(see back cover)

prohibit that actuators are put into service  
until the machinery into which the actuator is to be  
incorporated has been declared in conformity with  
the provisions of all relevant Directives.

Bent Jensen  
LINAK A/S

## Misc. on the DESKLINE® DESKPOWER system

### Warranty

There is an 36 months' warranty on the DESKLINE products DB4/DL4, CBD4/CBD5, DP and DPA against manufacturing faults calculated from the production date of the individual products (see label). LINAK A/S' warranty is only valid in so far as the equipment has been used and maintained correctly and has not been tampered with. Furthermore the system must not be exposed to violent treatment. In the event of this, the warranty will be ineffective/invalid. For further details, please see LINAK A/S ordinary conditions of sale.

### Maintenance

Clean dust and dirt on the outside of the system, at appropriate intervals and inspect them for damage and breaks.

Inspect the connections, cables and plugs and check for correct functioning as well as fixing points.



**The cleaners and disinfectants must not be highly alkaline or acidic (pH value 6-8).**

## Description of the DESKLINE® DESKPOWER system

Each DESKLINE® DESKPOWER actuator/column is equipped with a motor and parallel/memory drive is ensured by means of software in the CBD4/CBD5 that also takes account of oblique load on the desk. Soft start and stop are also part of this software, which ensures a soft start and stop when adjusting the desk.

### Application of the DESKLINE® DESKPOWER system:

Irrespective of the load the **duty cycle 10% ~ 6 min./ hour or max. 2 min. at continuous use** stated in the data sheets, must **NOT** be exceeded as this will result in a superheating of the motor and control box. Exceeding the duty cycle will result in a dramatic reduction of the life of the system.

The DESKPOWER system range contains following products:

- 1 control box CBD4/CBD5
  - DB4 or DL4 (1 - 4)
  - 1 exchangeable mains cable
  - motor cables (1 - 4)
  - 1 DP1U (if memory function is required) DP1C/WDPL (if memory function and display is required) or 1 DPA/DP1K (Desk Panel without memory)
-



## Mounting guidelines for the DESKPOWER DB4 system

For detailed information on how to mount the DB4 please contact LINAK.

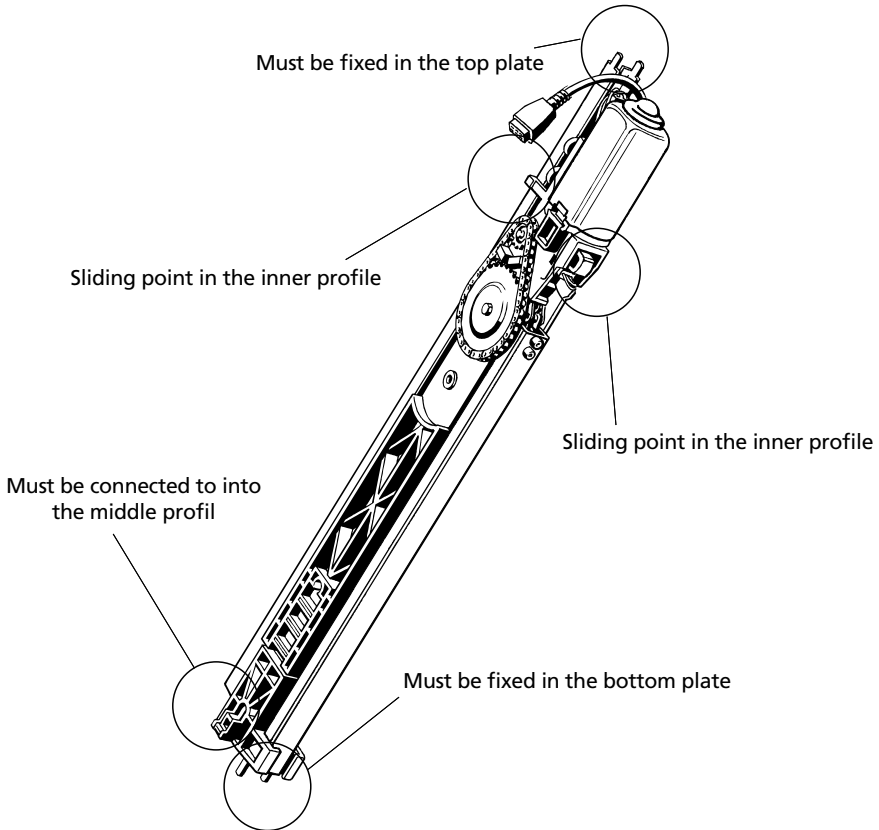


Figure 3  
(DB4 fixing points)



The guidances must be secured against rotation.



The DB4 must not be activated when it is not mounted in guidance due to the risk of squeezing.



We recommend to mount DB4 so that the upper rail is fastened to the side with the highest moment load.

- Side slides must be adapted so that DB4 is parallel with the profiles and so that there is an easy slide fit between DB4 and the inner profile
- Bugs must be twisted opposite each other in an angle of approx. 80%
- The friction in the guidance must be max. 150-200 N
- The weight of the top frame + the desktop must be larger than the total friction in the guidances
- Fastening of DB4 in the middle profile must be strong enough to manage the maximum friction on the middle profile
- Customer guidances must be built into the desk with regard to conditions described in the DL4 section

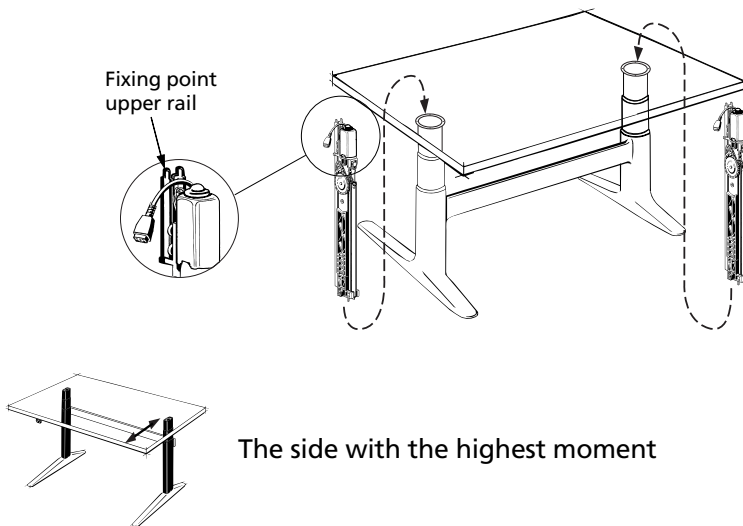


Figure 4  
(Example of how to mount the DB4 system)



LINAK recommends that the DESKLINE® DB4 system should be used in push applications.



Placement of a monitor directly above the columns may cause malfunction of the monitor. Magnets inside the motor may interrupt the picture on the monitor depending on the distance and type of monitor.

## Mounting guidelines for the DESKPOWER DL4 system

The mounting bracket for the crossbar is mounted on the largest profile. The cable is led out at the top of the small profile. This means that the column must always be mounted with the largest profile downwards.

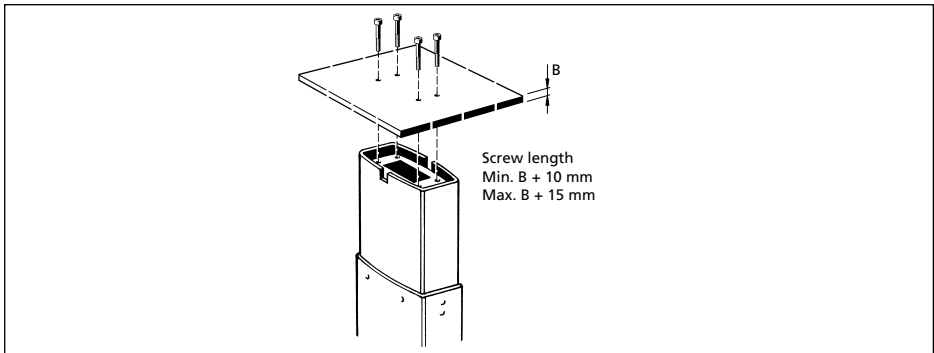


Figure 1



The mounting of the bottom part is analogue to the top part shown in Figure 1.

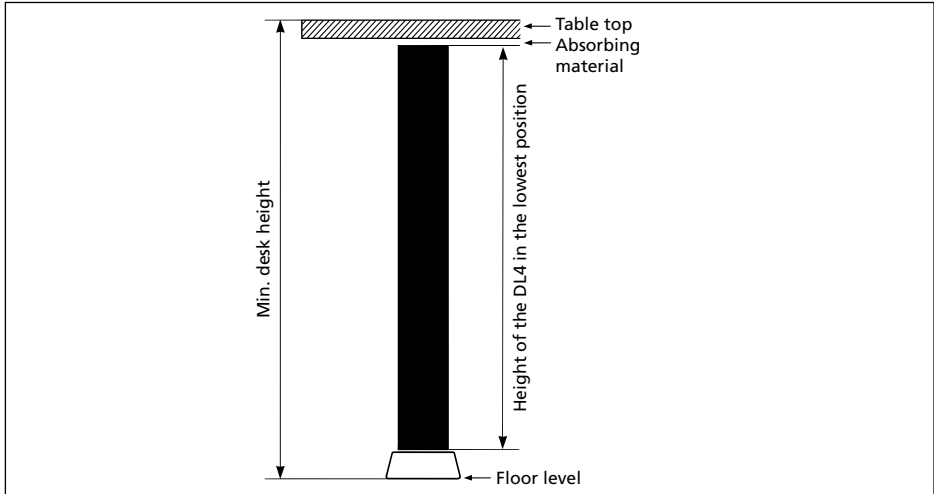


Figure 2

A suitable desk height in the lowest position can be obtained by mounting the lifting unit on a 6-8 mm bottom plate by means of 4 pcs. of M6 countersunk screws. We recommend you to use screws of min. quality 8.8. The thrust moment must not exceed 10 Nm in the top and bottom plate thread.

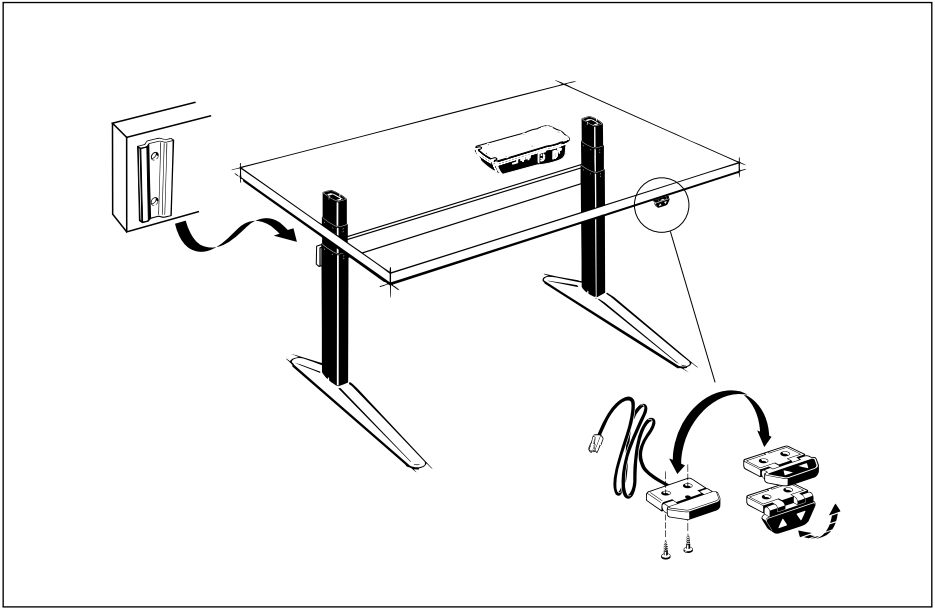


Figure 3  
(Example of how to mount a 2 parallel DESKLINE®  
DESKPOWER DB4/DL4 system)



LINAK recommends that the DESKLINE® DESKPOWER DL4 system should be used in push applications.



Placement of a monitor directly above the motor may cause malfunction of the monitor. Magnets inside the motor may interrupt the picture on the monitor depending on the distance and type of monitor. If this is the case the problem may be solved by placing an iron plate/tube or another magnetic material, some what larger than the profil between the motor and the tabletop.



The mounting screws on the DP or DPA must be fastened with a max. torque of 1 Nm.



The DL4 is mounted with a conical dovetail bracket (female). On the crossbar the counterpart of this bracket must be mounted (male). This bracket can be ordered at LINAK.

When mounting the bracket onto the crossbar you must be careful to mount the brackets perpendicular to the crossbar and that the centre distance of the bracket fits exactly with the centre distance of the legs in the top frame bore of the desk (oblong holes in the top frame gives adjustable centre distance).

When the crossbar is mounted onto the legs it must be tightly fixed with a plastic hammer to obtain the maximum stability.

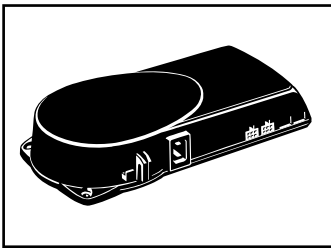
The bracket has to be fully welded in both ends not through the holes in the bracket (the bracket will bend). Do not mount extra brackets in a way that deforms the profiles.



When designing the desk/top frame and placing the control box you have to choose a design/a placement that ensures there is no risk of squeezing at the crossbar.

## Mounting guidelines CBD4/CBD5

The control box is to be fastened with 4 screws (3 screws for CBD5) with a head diameter between  $\varnothing 8$  and  $\varnothing 10$  mm. Out of regard for the tension surface  $\varnothing 10$  mm is preferable. See drawing appendix for placing of mounting holes and the space the CBD takes up.



*CBD4 - Control box*



*CBD5 - Control box*

The CBD must not be packed in heat insulating material, but must be placed so that it can emit waste heat into the surroundings. There are no ventilation holes to consider, the CBD emits heat through the surface.







The plug must be visible when the CBD is mounted so that the supply to the CBD can be disconnected at replacement, if any.

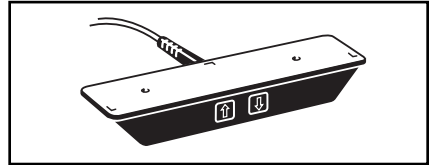
The mounting screws on the control box must be fastened with a max. torque of 1 Nm.

The mounting surface to which the control box is attached should have a surface evenness of better than  $\pm 0.5$  mm.

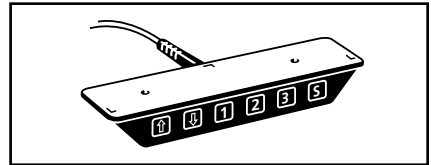
## Operation of the DP

The Desk Panel is used to operate the DESKLINE® system. The DP is available in 3 versions DPXK/DPA for single/parallel drive without memory and DP1U for single/ parallel drive with memory (3 memory positions). The two arrow buttons are used for single/ parallel drive and the last four buttons for memory drive.

-  Desk up
-  Desk down
-  Memory 1
-  Memory 2
-  Memory 3
-  Store memory



*DP1K - Desk Panel*



*DP1U - Desk Panel*





**Single/parallel drive**  

The arrow buttons start the DL4/DB4. The function is only activated when holding down the button.

**Memory drive**   

Memory 1, 2 and 3 start a memory drive, the channel(s) drive to a pre-programmed position.

**Store memory** 







- Push 
- Within two sec. push either  ,  or 

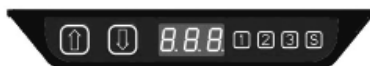
## Operation of the DP1C

DP1C can not be used on CBD4 with mains cut-off.

### Description

The DP1C is equipped with display and memory and is compatible with CBD4 (Advanced, software 077402 ver. 1.66). The DP1 is only available as a 1-channel version for operation of the parallel channels up and down. The actual height of the desk is shown in the display. The display is of the LED type with a yellow light and 10 mm high digits.

-  Desk up
-  Desk down
-  Memory 1
-  Memory 2
-  Memory 3
-  Store memory



### Normal operation:

To run the table up or down, press the UP or DOWN button, and keep it pressed until the table reaches the desired height. The display will count up or down while running, and after stop it will continually show the current height of the table.

### Changing between cm and inches:

Keep the S button pressed for 3 sec. and the reading will change from the current setting. The default setting is inches.

### Store a memory position:

Press the "store" button the display will flash "S" for 3 sec. Within the 3 sec. press memory button 1, 2 or 3. The display will acknowledge by showing S1, S2 or S3 for 1 sec. To abort a store sequence press the UP or DOWN button while the "S" is flashing, or wait the 3 sec. until the display automatically returns to show the height of the table.

### Drive to a stored position:

Press memory button 1, 2 or 3. The display will flash "GO1", "GO2" or "GO3" for 3 sec. Within the 3 sec. press the UP or DOWN button and keep it pressed until the table stops in the stored position. Both the Up and the Down button will activate memory drive. Although e.g. the memory position is higher than the actual height, it will drive upwards when you press the Down button.

*continued....*

**Drive to a stored position:**

While running to a memory position the display will show GO1, GO2 or GO3, and when it stops in the stored position, the height of the table will be shown. Releasing the UP or DOWN button will abort the memory drive. The display will show the height of the table.

**Adjust the display to show the correct height:**

It may be necessary to adjust the display due to different thicknesses of table-tops etc, when the DP is delivered from the factory. The DP will show 62 cm or 24.5 inches (default setting) height of the table. At the same time press the "Store" button and step UP or DOWN, until the display shows the correct height.

Following errors can be displayed. Errors only displayed when a key is pressed.

Error no.	Description
E01	The desk have unknown position and need to be initialized.
E02	Overload upwards has occurred.
E03	Overload downwards has occurred.
E16	Illegal keys pressed.

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**Operation of the WDPL**

**The batteries:**

Wired WDPL: Install 3 x 1.5 V batteries type AA. The batteries are used as a backup of the clock function if the CBD is disconnected from the mains.

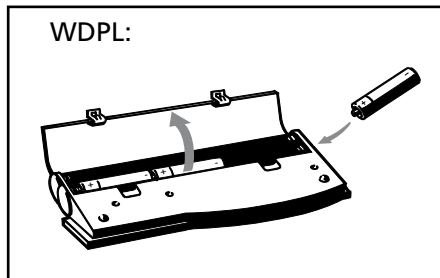


Figure 9



When the batteries are mounted the display will show the clock function in hh:mm. The clock has to be adjusted. **See adjusting the clock on page 19.**

The WDPL will also work without batteries because it will be powered by the control box.

The WDPL will also work on a CBD4/CBD5 with mains cut off. The clock will only be shown if you have battery back-up.

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The cable from the WDPL is connected to the control box under your table:

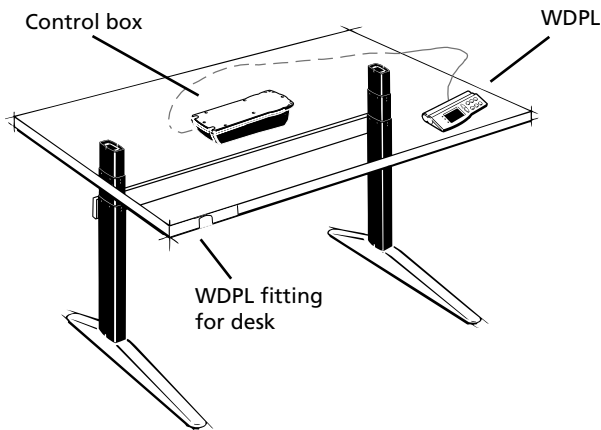
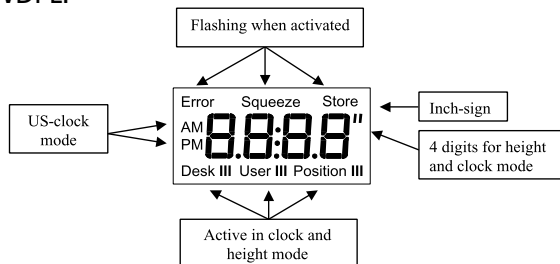


Figure 11




















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Display layout - WDPL:



## Calibrating the WDPL

For the WDPL to function correctly you have to calibrate your system. This has to be done before using the WDPL. You only have to do this once.







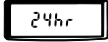
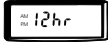
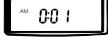
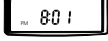
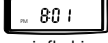
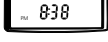
Action:	Display view:
<p>1. Switch between [cm] and [inch]. Press and hold  and then press .</p> <p>2. Measure the height from desk to floor. If only one desk is connected, - go to point 4.</p> <p>3. Press  and then press ,  or  to select desk. If only one desk is connected it is not possible to select Desk II or III.</p> <p>4. Press and hold  and then press  or  to adjust the height in the display. Example: The display will switch from e.g. 68 to 69, 70, 71 etc. when  is pressed and held and then  is pressed. and e.g. 68 to 67, 66 etc. when  is pressed and held and then  is pressed.</p> <p>5. When the wanted height is shown in the display press and hold  and then . The reference height of the desk will now be stored in the control box. When the reference height is stored the digits will be switched off for 1 sec. and back on again.</p>	<p> Desk I User I</p> <p> Desk I User I</p> <p> Desk I User I</p> <p> Desk I User I</p>

If the buttons are not activated for 15 sec. the clock function will appear in the display.

It is not necessary to repeat calibration when changing batteries.

# Adjusting the clock

## Example:

Action:	Display view:
<p>1. Press the "clock button" using a ball pen. 24hr mode (European time mode) is default - can be changed to 12hr mode (US time mode)</p> <p>Changing time mode:</p> <p>Press  or </p> <p>(Press the "clock button" again to confirm "time mode" using a ball pen)</p> <p>2. Press  or  to adjust "hh"</p> <p>3. Press the "clock button" again to confirm "hh".</p> <p>4. Press  or  to adjust "mm"</p> <p>5. Press the clock button again to confirm "mm"</p>	<p> Flashing</p> <p> Flashing</p> <p> hh is flashing</p> <p> Switches to PM if hh &gt; 11</p> <p> mm is flashing</p> <p></p>

The clock is now activated.


















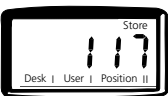
## Store a memory position

3 users can store 3 memory positions each. The connected desks (max. 3) are to be adjusted individually - one at a time.

### Quick setup:

On the back of the WDP you will find a quick guide for storing a memory position.

#### Example:

Action:	Display view:
<p>If only one desk is connected, - go to point 4.</p> <ol style="list-style-type: none"><li>1. Press </li><li>2. Press  ,  or  until the wanted desk is shown in the display.</li><li>3. Press </li><li>4. Press  ,  or  until the wanted user is shown in the display</li><li>5. Press  or  until the wanted height is obtained.</li><li>6. Press  and then  ,  or </li></ol>	<p><b>Display view:</b></p>  <p>Flashing</p>  <p>Flashing</p>  

The position is now stored in the control box.

To store a new memory position on the same desk go through points 3 to 6 again.










If the buttons are not activated for 15 sec. the clock function will appear in the display.

## Switch to a stored memory position

### Quick setup:

On the back of the WDP you will find a quick guide for storing a memory position.

### Example:

Action:	Display view:
<p>1. Press </p> <p>2. Press  ,  or  until the wanted user is shown in the display</p> <p>3. Press and hold  ,  or  until all desks have reached their memory position.</p> <p>The display will show the height of the moving desk for about 15. sec.</p>	<p><b>Display view:</b></p>  <p>Flashing</p>  <p>Position I is flashing - digits counting from 117 to 88. When the desk has reached the new height position I it will stop flashing.</p>

If the buttons are not activated for 15 sec. the clock function will appear in the display.

## Troubleshooting:

At errors the error code appears from the display - The "error" segment flashes (1 Hz).

<b>Error code</b>	<b>Description of the error</b>	<b>Trouble shooting</b>
E-01	Position lost	Initialise
E-02	Overload in upward direction	Remove heavy objects from the desk
E-03	Overload in downward direction	Remove objects that prevents downwards operation
E-16	Illegal push on key	Release all buttons and activate valid button / button combination
Flashing frame	No contact to the control box	Check that the control box is turned on. Check that the display is within the specified range.

## Electrical connection of the DB4/DL4 system:

The DESKPOWER systems is to be connected as shown on figure 7. Each DB4/ DL4 is to be connected to the sockets on the control box by means of the motor cables, which have an 6-pin plug in each end.



Finally the mains cable is to be mounted and power switched on. Please note that the control box must only be connected to the voltage stated on the label.

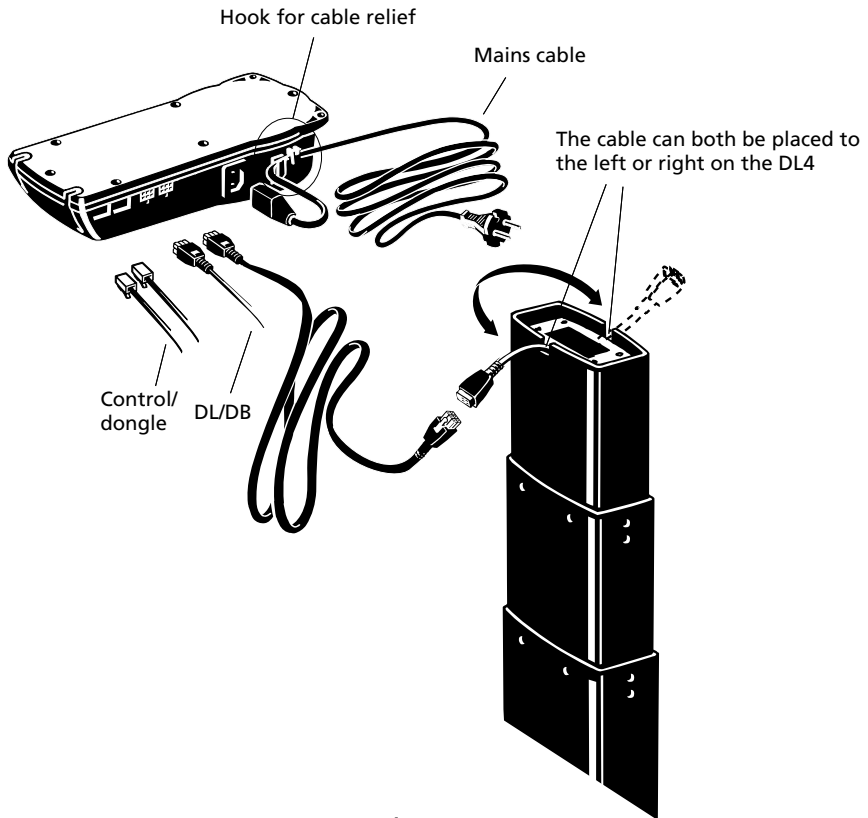


Figure 7

## Initialization of the DESKLINE DB4/DL4 parallel systems

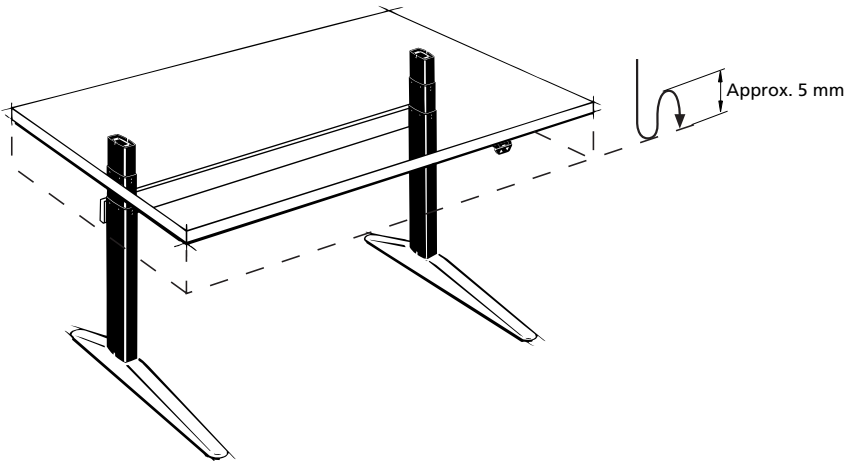
The DESKPOWER system is initialized by pressing the down button once or twice and holding it down until DB4/DL4 runs into end stop, it will then automatically run approx. 5 mm out again hereafter slowly running in again. Only release the down button when the movement has completely stopped.



If the button is released before the sequence is complete then the initialization is interrupted and must be started again from the beginning.

It is sometimes necessary to press the down button twice to start the initialization, this is because the system can be in different modes when the initialization starts. There will be a 1.25 sec. delay. If an error situation occurs at the end stop positions or DB4/DL4 are changed to another stroke length, then CBD4/CBD5 has to be initialized again.

The first two times the system run into the outwards end stop, it will automatically run approx. 3 mm back in inward direction.





## **Anti-Collision™ (only for DL4 + DL6)**

The function anti-collision is a new option for the standard CBD4/CBD5 advanced/ control box software version 1.66 and later. A system with anti-collision can limit material damages on a desk if a collision with a solid object should occur.

### **Enabling the anti-collision**

To enable the anti-collision function a little plug called a dongle must be mounted in one of the 2 control ports. The function is only active when the dongle is mounted. –If you remove the dongle again you disable the function.

### **Method of operation**

When the DL/DB's are running the CBD4/CBD5 monitors the current consumption on each channel using a special algorithm. If the current consumption on one channel is increased more than a predefined slope a collision is assumed and all channels are stopped immediately and all DL/DB's will start to run in the opposite direction (approx. 50 mm). This return drive is done automatically and continues with or without any control key pressed (for max. 2.5 sec.).

The anti-collision sensitivity is different in up and downwards direction. Upwards the force is approx. 20 kg. Downwards the load will be approx. 40 kg + the load on the DL/DB (the desk + what is on top of the desk). The 40 kg are needed to activate the anti-collision function.

### **Situations where the anti-collision does not work**

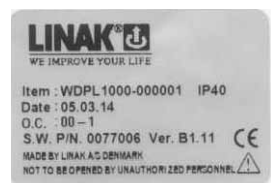
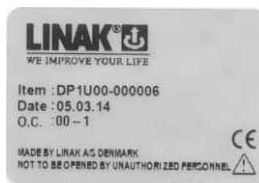
There are situations where the anti-collision will not be activated. These situations are:

- If the collision happens during the initialisation phase
- If the collision happens within the first 1000msec or after the control button has been released
- If the collision happens between the floor and the table and the load on the desk + the weight of the legs are lower than 40 kg
- If the collision happens over too long time, e.g. if the collision is with a soft object

## Labels for CBD4 and CBD5



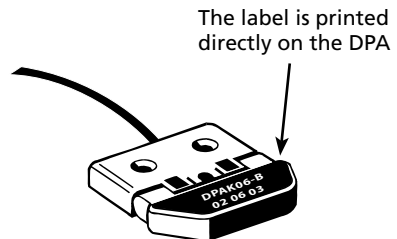
## Labels for DL4, DP and WDP



## Label for DB4



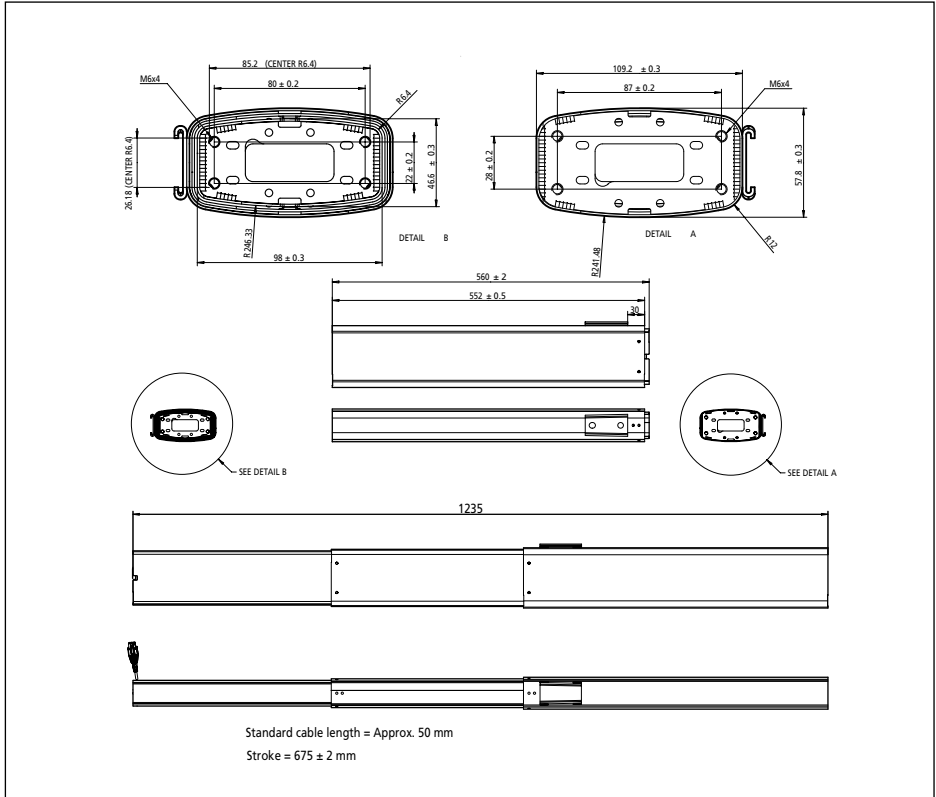
## Label for DPA



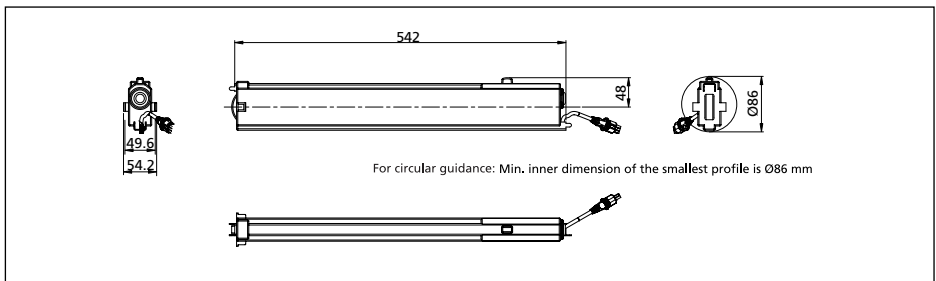
# DRAWING APPENDIX

## DESKLINE® DESKPOWER DB4/DL4 System:

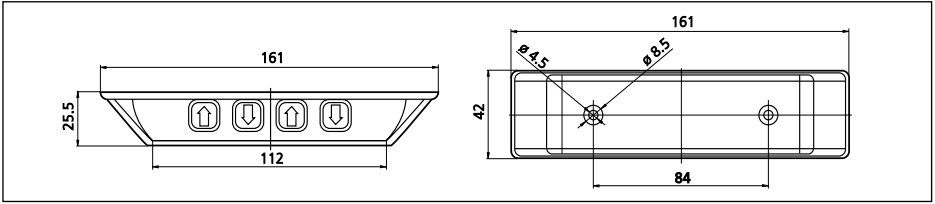
### DL4



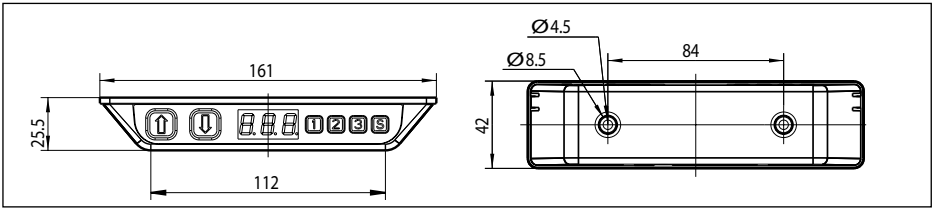
### DB4



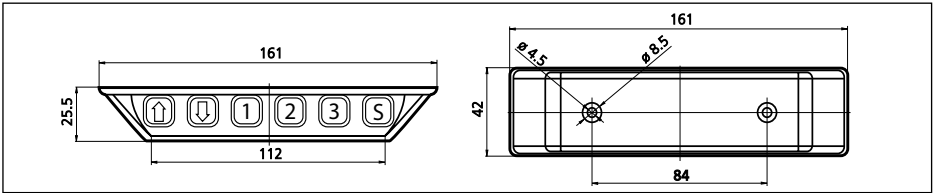
## DP Desk Panel



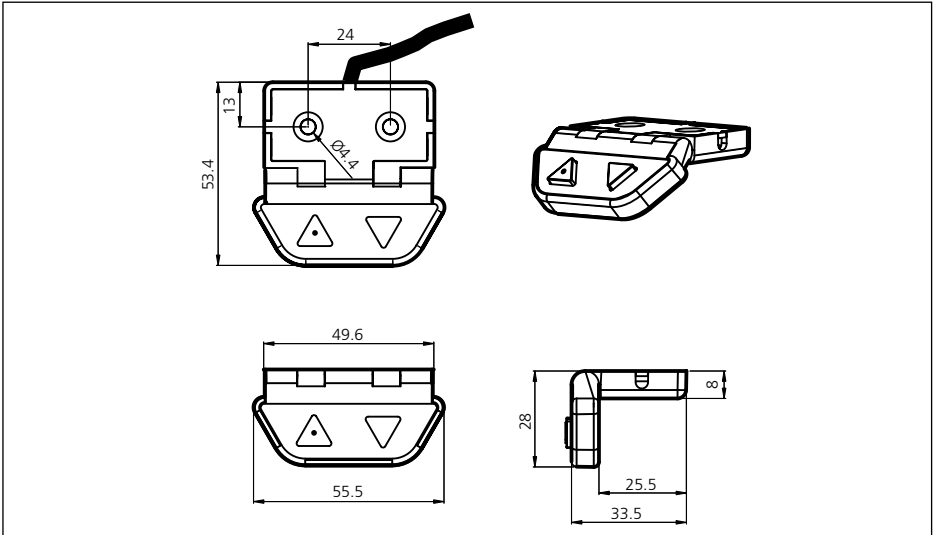
## DP1C Desk Panel



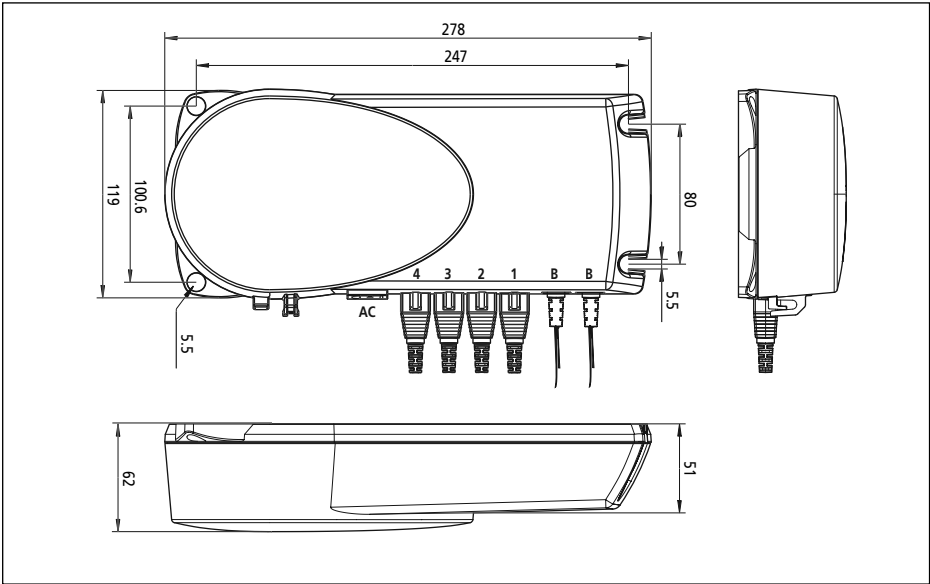
## DP1U Desk Panel



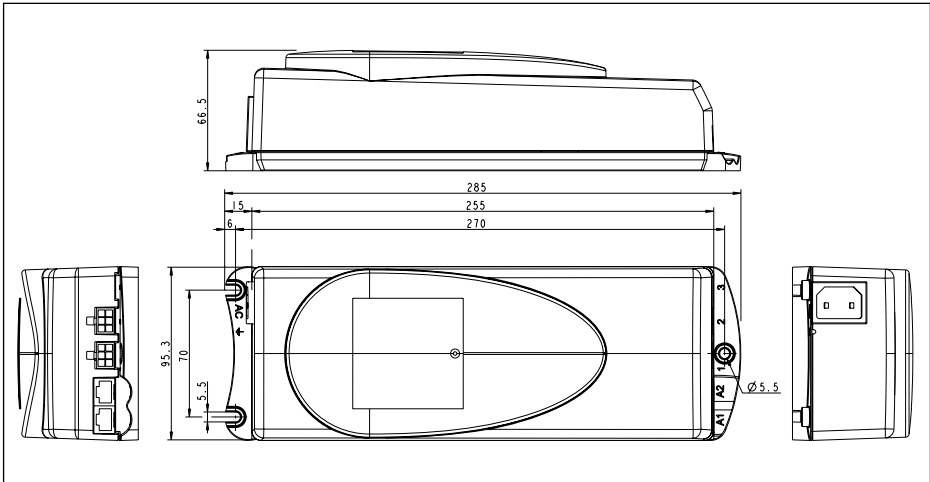
## DPA



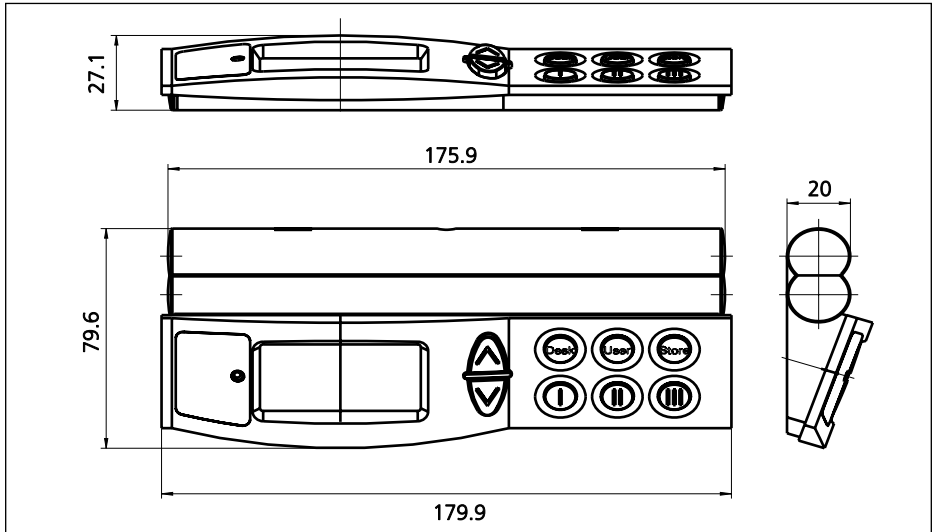
# CBD4



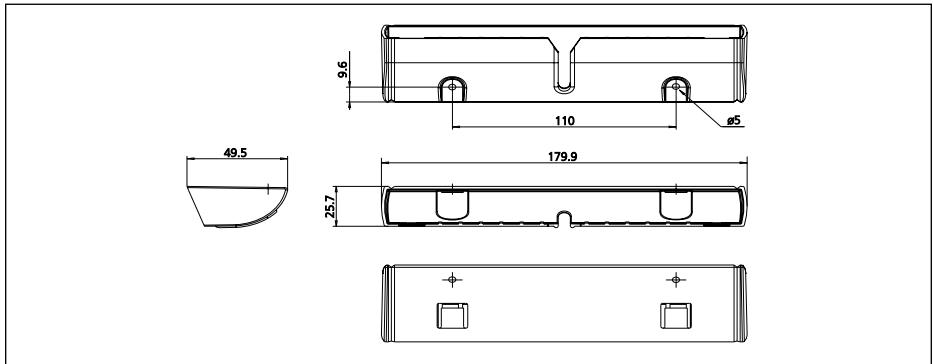
# CBD5



# WDP



## WDP fitting for desk:



# DECLARATION OF CONFORMITY

LINAK A/S  
Smedevænget 8  
DK - 6430 Nordborg

hereby declares that LINAK Actuator System composed of:

Control Box:  
CBD4xxxxxxx-xxx

Desklifts:  
DL4xxxxxxxxxx,  
DB4xxxxxxxxxx,  
DL5xxxxxxxxxx,  
DB5xxxxxxxxxx,  
DL6xxxxxxxxxx,  
DB6xxxxxxxxxx or  
DB7xxxxxxxxxx

Desk Panel/Display Panel:  
DPAK06 or  
DP1xxx-xxxxxx or  
WDPL1000-000001

Cables:  
0617100 (motorcable 1m) or  
0617200 (motorcable 2m) or  
0617250 (motorcable 2,5m) and  
0015562 (mainscable)

complies with the EMC-directive 89/336/EØF according to the standards EN61000-6-1:2001, EN61000-6-3:2001

and complies with Low Voltage Directive 73/23/EØF according to the standard EN60335-1:1994, A1:1996, A12:1996, A13:1998, A14:1998

Machinery Directive 98/37/EC Attachment IIB: LINAK A/S prohibit that the actuator system is put into service until the machinery into which the actuator system is to be incorporated has been declared in conformity with the provisions of all relevant directives

Date: 2004-09-27

Signature:



(Hans Schou Christensen)

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