

# DESKPOWER™ DB4/DL4 systems



To learn more about LINAK, please visit: WWW.LINAK.COM



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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

## Important information

Important information on LINAK<sup>®</sup> products can be found under the following headings:



Warning!

Failure to comply with these instructions may result in accidents involving serious personal injury.

Failing to follow these instructions can result in the product being damaged or being destroyed.

## 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.

Persons who do not have the necessary experience or knowledge of the product/ products must not use the product/ products. Besides, persons with reduced physical or mental abilities must not use the product/products, unless they are under surveillance or they have been thoroughly instructed in the use of the apparatus by a person who is responsible for the safety of these persons.

Moreover, children must be under surveillance to ensure that they do not play with the product.

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.



The appliance is not intended for use by young children or infirm persons without supervision.

Young children should be supervised to ensure that they do not play with the appliance.

## Before installation, reinstallation, 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.

### (continued)

• 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<sup>®</sup> 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<sup>®</sup> products are opened, there will be a risk of subsequent malfunction.

# Warning!

• The DESKLINE<sup>®</sup> systems do not withstand cutting oil.





DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY

LINAK A/S Smedevænget 8 DK - 6430 Nordborg

Name and address of the person authorized to compile the relevant technical documentation: John Kling, Group Headquarters, Guderup, DK-6430 Nordborg, email jkl@linak.com

Herewith declares that LINAK Actuators and Actuator Systems comply with the following parts of the Machinery Directive 2006/42/EC, ANNEX I, Essential health and safety requirements relating to the design and construction of machinery:

1.5.1 Electricity supply: Directive 2006/95/EC on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain votage limits. 15.10 Readiation, 15.11 External radiation: Directive 2004/108/EC on the approximation of the laws of

1.5.10 Radiation, 1.5.11 External radiation: Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

The relevant technical documentation is compiled in accordance with part B of Annex VII and that this documentation or part hereof will be transmitted by post or electronically to a reasoned request by the national authorities.

This partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of this Directive, where appropriate.

Date: 2010-01-01

Signature

John Elin

## Misc. on the DESKLINE® DESKPOWER system

## Warranty

There is a 36 months' warranty on the DESKLINE products against manufacturing faults 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.

## Service of double-insulated products:

Class II

A Class II or **double insulated** electrical appliance is one which has been designed in such a way that it does not require a safety connection to electrical earth (US: ground).

The basic requirement is that no single failure can result in dangerous voltage becoming exposed so that it might cause an electric shock and that this is achieved without relying on an earthed metal casing. This is usually achieved at least in part by having two layers of insulating material surrounding live parts or by using reinforced insulation.

There is no earthing/grounding means provided on the product, and no earthing/ grounding means is to be added to the product.

In Europe, a double insulated appliance must be labelled "Class II", "double insulated" or bear the double insulation symbol (a square inside another square). Servicing a double-insulated product requires extreme care and knowledge of the system, and is to be done only by qualified service personnel. Replacement parts for a double-insulated product must be identical to the parts they replace.



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

## Description of the DESKLINE® DESKPOWER system

Each DESKLINE<sup>®</sup> DESKPOWER actuator/column is equipped with a motor and parallel/memory drive is ensured by means of software in the CBD4/CBD5/CBD6 that also takes account of an 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/CBD6
- DB4 or DL4 (1 4)
- 1 exchangeable mains cable
- motor cables (1 4)
- 1 DP1U/DPF1M (if memory function is required) DP1C/WDPL/DPT/DPF1C (if memory function and display is required) or 1 DPA/DPB/DP1K/DP1V/DPFK/DPF1K (if only up/down is required.)

## Mounting guidelines for the DESKPOWER DB4 system

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

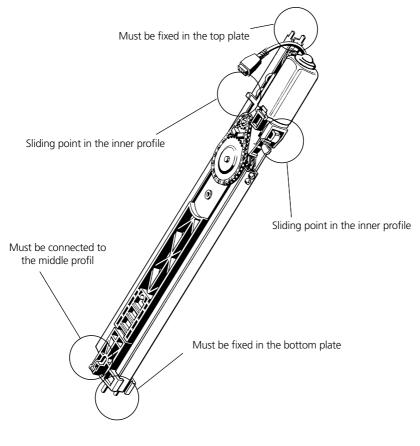


Figure 3 (DB4 fixing points)



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

- Side slides must be adapted so that the DB4 is parallel with the profiles and so that there is an easy slide fit between the 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 the 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 the conditions described in the DL4 section
- The DB4 is only meant for mounting in 3-part columns

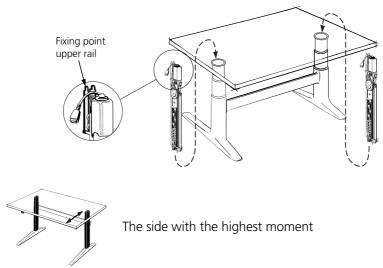


Figure 4 (Example of how to mount the DB4 system)



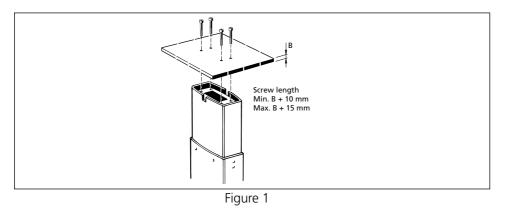
LINAK recommends that the  $\mathsf{DESKLINE}^{\circledast}$  DB4 system should be used in push applications.

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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.



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

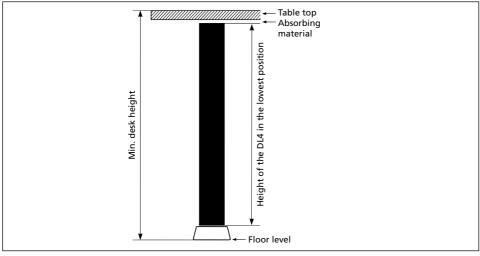


Figure 2

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 countersinked 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.

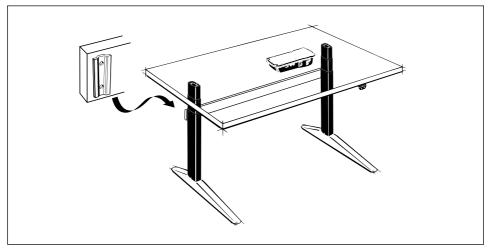


Figure 3

(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, somewhat larger than the profile between the motor and the tabletop.



The mounting screws on the DP, DPA, or DPB 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 give 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.

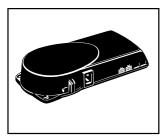
The bracket has to be fully welded in both ends not through the holes in the bracket (the bracket will bend). Do not mount extra brackets in a way that deforms the profiles.



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/CBD6

The control box is to be fastened with 4 screws (3 screws for CBD5 and CBD6) with a head diameter between  $\emptyset$  8 and  $\emptyset$  10 mm. Out of regard for the tension surface  $\emptyset$  10 mm is preferable due to lower surface tension. See drawing appendix for placing of mounting holes and the space the CBD takes up.







CBD4 - Control box

CBD5 - Control box

CBD6 - 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.

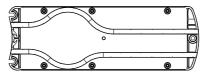
The plug must be visible when the CBD is mounted so that the supply to the CBD can be disconnected at replacement, if any.

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.

## CBD6 - bottom with cable grooves

The bottom of CBD6 is equipped with two cable grooves improving the cable management when mounting. The grooves can be used to bypass the CBD for both motorcables and the mains cable (EU version only) from one side to the other, giving a cleaner design.





Remember to lead the cables through the grooves before mounting the control box.

For mounting and operation of the desk panel, please see the separate user manual for desk panels.

## Electrical connection of the DB4/DL4 system:

The DESKPOWER system 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.

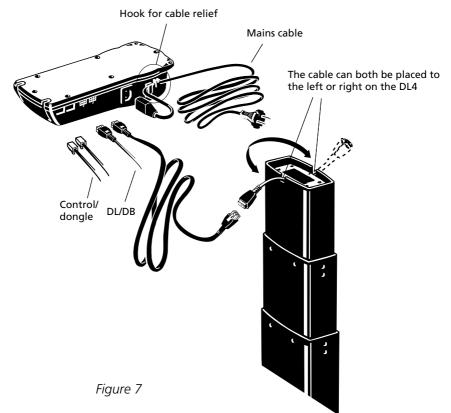
### CBD4/CBD5/CBD6 with earth

The CBD4/CBD5/CBD6 earth cable to be mounted on the desk construction (typically the top frame)in a way that ensures good electrical contact. The function of the earth cable is to earth the desk and ground static electricity. The earth connection does not protect other electrical products.



## CBD4/CBD5 with mains cut-off (non ZERO models)

If the power cable is damaged it has to be replaced by an authorised LINAK service centre to avoid any danger.



## Initialisation of the DESKLINE DB4/DL4 parallel systems

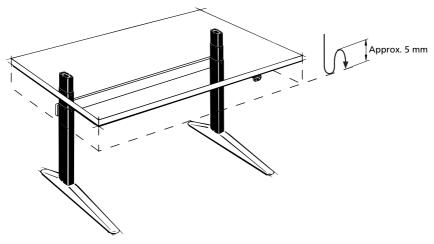
The DESKPOWER system is initialised by pressing the down button once or twice and holding it down until the DB4/DL4 runs into end stop. It will then automatically run approx. 5 mm out again and hereafter slowly run in again. Only release the down button when the movement has completely stopped.



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

It is sometimes necessary to press the down button twice to start the initialisation, this is because the system can be in different modes when the initialisation 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 initialised again.

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



The CBD5 and CBD6 can control the DB4 and the DL4 in 2 parallel while the CBD4 can control the DB4 and the DL4 in 2, 3, and 4 parallel so that the desk is always kept horisontal.

## Anti-Collision<sup>™</sup> (only for DL4, DL6, DL9, and DL11)

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/CBD6 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 downward 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 1000 msec 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

## **Disposal of LINAK's products**

As LINAK's customers often ask us how our products can be disposed of or scrapped we have prepared this guidance that enables a classification to different waste fractions for recycling or combustion.

### Guidance

We recommend that our products be disassembled as much as possible and divided into different waste groups for recycling or combustion.

For example, waste can be sorted into metals, plastics, cable scrap, combustible material, and recoverable resources.

Some of these main groups can be further divided into subgroups; e.g. metal can be divided into steel/aluminium/copper and plastic can be divided into ABS/PA/PE/PP.

As an example, the table below breaks down the different components in LINAK products to various recycling groups:

Product	Components	Recycling group
Columns/ Actuator :	Spindle and motor Plastic housing Cable PCB boards	Scrap Plastic recycling or combustion Cable scrap or combustion Electronics scrap
Control Box :	PCB boards Plastic housing Cable Transformer	Electronics scrap Plastic recycling or combustion Cable scrap or combustion Metal scrap
Handset/ Control :	Plastic housing Cable PCB board	Plastic recycling or combustion Cable scrap or combustion Electronics scrap

By now almost all our casted plastic parts are supplied with an interior code for plastic type and fibre contents, if any.

### Main groups of disposal

Product main groups	Metal Scrap	Cable scrap	Electronics scrap	Plastic recycling or combustin	Comments
DB4	Х	Х	Х	Х	
DL4	Х	Х	Х	Х	
CBD4/CBD5/ CBD6	Х	Х	Х	Х	
DPXX		Х	Х	Х	
WDPL		Х	Х	Х	

## **Disposal of batteries.**

"Details regarding safe disposal of used and leaking batteries:

Batteries should be disposed in accordance with appropriate federal, state and local regulations. LINAK recommends that used or leaking batteries are disposed through local recycling system. Please do not throw used or leaking batteries in normal household waste or in nature. This will cause damage to the environment.

### How to deal with leaking batteries.

Leaking batteries should be disposed as described above.

If leaking batteries are discovered in the product the batteries must be removed at once to minimise damage to the product. If leaking batteries are left in the product it might become defect.

It is recommended to use plastic gloves when handeling leaking batteries. The contents of a leaking batteries can cause chemical burns and respiratory irritation.

If exposed to the contents of a leaking battery, please wash with soap and water. If irritation persists, please seek medical attention. In case of eye contact, please flush eyes thoroughly with water for 15 minutes and seek medical attention."



### Label for CBD4



Label for CBD5



### Label for CBD6

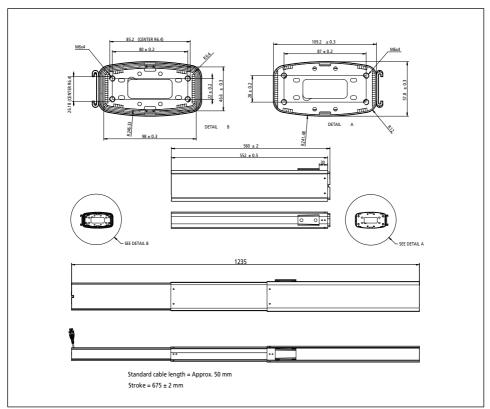


UNAK® C. WE IMPROVE YOUR LIFE DESIGNED IN DENMARK	
Item : CBD6P00020A-009	
Date : 11.01.31	
U In : 230 V ~, 50Hz	
Pin: 375 W tested	
U Out : 12-24 V ===	
Op. : 10%, Max. 2min./18min.	
S.W. P/N.: 0077432 Ver.1.22	
DOUBLE INSULATED - WHEN SERVICING USE ONLY	
IDENTICAL REPLACEMENT PARTS	
NOT TO BE OPENED BY UNAUTHORIZED PERSONNEL	
P.O. 123456 ASSEMBLED IN EU 01	

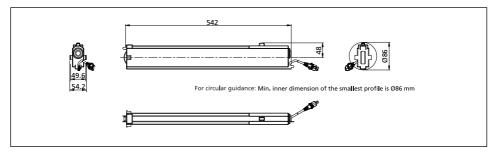
## **DRAWING APPENDIX**

## DESKLINE® DESKPOWER DB4/DL4 System:

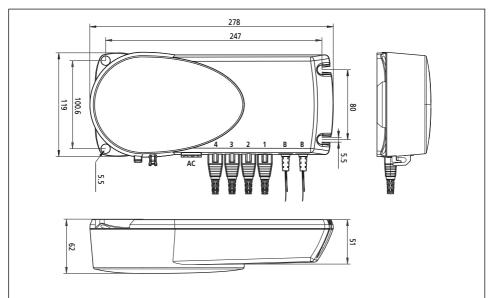
DL4



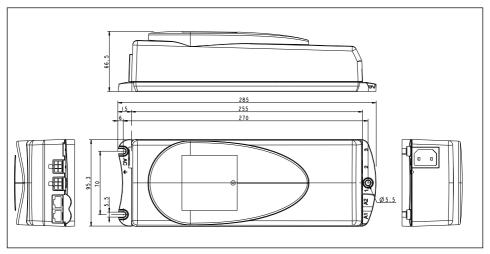
DB4

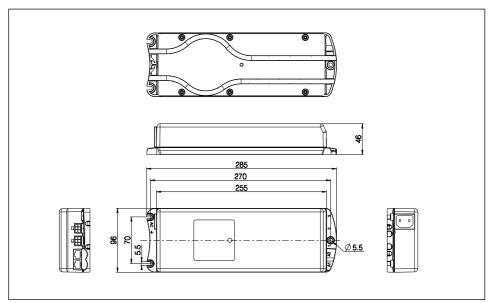


## CBD4



## CBD5







#### DECLARATION OF CONFORMITY

LINAK A/S Smedevænget 8 DK - 6430 Nordborg

hereby declares that LINAK Actuator System composed of

Control Box(s)	CBD4, CBD5, CBD6	
And		
Linear Actuator(s)	31xxxH-xxxxx50S, DB4, DB5, DB6, DB7, DB9, DB14, DB16	and / or
Lifting Column(s)	DL2, DL4, DL5, DL6, DL7, DL8, DL9, DL10, DL11, DL14, DL15, DL16	
And		
Desk Panel(s)	DP1C, DP1K, DPT, DPB, DPF, DP8K, DP1L, DP1V, DPA, DPH, WDPL1	and / or
Handset(s)	HB2xxF2+00003	
	C Directive: 2004/108/EC according to following standards: EN 61000-6-3 2001, EN 55022:1998+A2 Class B,	
and complies with Lo EN 60335-1:2002+A1	w Voltage Directive 2006/95/EC according to the standard: +A11+A12+A2	
and complies with Ma EN 13849-1:2006 SR	chinery Directive 2006/42/EC according to the standard. P/CS Cat. B, PL = b and SRESW PL = b	
G2709		
And Controls:	RF-transmitter: HB1XRFXXXX and/or	
	RF-transmitter: HB2XRFXXXX and/or RF-receiver: RFRL	
EN 300220-2:2006, E	dio equipment and Telecommunications terminal equipment Directive 1999/5// N 61000-6-1:207. EN 61000-6-3:2007. :2004-A11:2004-A12:2006-A2:2006-A13:2008, EN 62311:2008	EC:
Nordborg, 2011-03-2	î.	
2	ohn kling	
LIN	AK A/S	
Ce	n Kling, B.Sc.E.E. tification and Regulatory Affairs	
Au	thorized to compile the relevant technical documentation	

### LINAK APPLICATION POLICY

**Original Declaration** 

The purpose of the application policy is to define areas of responsibilities in relation to applying a LINAK product defined as hardware, software, technical advice, etc. related to an existing or new customer application.

LINAK products as defined above are applicable for a wide range of applications within the Medical, Furniture, Desk and Industry areas. Yet, LINAK cannot know all the conditions under which LINAK products will be installed, used, and operated, as each individual application is unique.

The suitability and functionality of the LINAK product and its performance under varying conditions (application, vibration, load, humidity, temperature, frequency, etc.) can only be verified by testing, and shall ultimately be the responsibility of the LINAK customer using any LINAK product.

LINAK shall be responsible solely that the LINAK products comply with the specifications set out by LINAK and it shall be the responsibility of the LINAK customer to ensure that the specific LINAK product can be used for the application in question.

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