Cyberbond

LINOP M 1500 / M 2000
Operating Instructions

Control Units
used for Dispensing
Cyberbond Adhesives

Manual

LINOP M 1500 / M 2000

Table of contents

General information on LINOP M 1500 and M 2000

The company Cyberbond GmbH will neither supervise the observance of this manual nor the conditions and methods of instalment, operation, use and maintenance of the electronic devices and their components. Thus, we do not bear responsibility, nor liability for loss, damages or other costs that arise from incorrect instalment and improper use or any other damages connected with this manual, installation or use.

The arrangement of information for this document is to the best of our knowledge and belief. However, as errors can occur despite all efforts and best intentions, we would be grateful for any suggestions on improving this manual.

LINOP M 1500 / M 2000

LINOP M 1500 / M 2000

1 Important introductory information

1.1 Difference and construction of LINOP M 1500 and M 2000

The microprocessor- and **electrically controlled LINOP M 2000** as well as the microprocessor- and **pneumatically controlled LINOP M 1500** are both the central part of the dosing systems for Cyberbond one-component reactive adhesives. For the use of UV- and light curing systems, some modifications with regards to translucent pipes and adapters will have to be made.

The control units are built in a way that small drops as well as lines of adhesives can be applied. They are almost maintenance-free.

1.2 The modular system: Unit, Pressure Pot, Dosing valve, Pulsing device

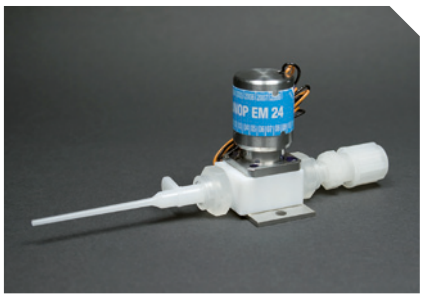
As basic parts of the modular system they can be combined with the following components:

- **Pressure Pot LINOP PP 505** is the reservoir for holding Cyberbond adhesives and includes the capacitive momentary switch (empty alarm) (we can also offer larger pressure pots upon request)
- **Dosing valves for LINOP**
  - · **LINOP EM 24** (electronically/magnetically controlled) for **LINOP M2000** and viscosities of up to 2.000 mPa*s
  - · **LINOP VCA** (cyanoacrylates) resp. **VAN** (Anaerobics and UV-adhesives) (both pneumatically controlled) for **LINOP M 1500** and viscosities up to 20.000 mPa*s
- **Pulsing device**
  - · **LINOP FOT** footswitch as a pulsing device
  - · **LINOP HG Pen electric** hand pen as a pulsing device

Therefore, a complete dosing unit must consist of the following components as minimum:

- **Control unit**
- **Pressure Pot with empty alarm**
- **Dosing valve**
- **Pulsing device (foot switch or hand pen, external signal generator)**


LINOP PP 505



LINOP EM 24 + Adaptor A1 (2x) and A2 + dosing tip


LINOP VCA


LINOP VAN


LINOP FOT


LINOP HG Pen electric

LINOP M 1500 / M 2000

2 Safety precautions and warning notice

- The unit must always be operated according to the manufacturer's instructions for use.
- The unit must be operated by, staff who have been trained and who are authorised. They must know the operating instructions and operate the unit accordingly.
- The operation manual must be kept in a safe place easily accessible to each user.
- Illegal changes and the use of spare parts as well as accessories that have not been sold or recommended by the manufacturer of this unit can cause fires, electric shocks and injuries. These measures lead to an exclusion of liability and the manufacturer assumes no liability.
- Basis for the guarantee of the manufacturer is the version of the warranty policy for the unit at the time of purchase. We assume no liability for unsuitable or an incorrect manual or automatic adjustment of parameters of the unit. We also assume no liability for an improper use of the unit.
- Repairs must be carried out by the manufacturer
- The user is responsible for placing and installing the dosing unit according to the approved technical regulations of the country or area concerned.

3 General information

3.1 Use

The LINOP M 1500 and M 2000 offer a control unit within a modular system for the exact dosing of reactive adhesives such as, cyanoacrylates, anaerobic adhesives and sealants, as well as UV light-curing products that are used in industry. In combination with a pressure pot and up to six dosing valves, the units are especially suitable for the dosing of exact and repeatable amounts of adhesives. The unit can either be placed autonomously (stand-alone option) as well as being integrated within a production line system, for instance with a PLC control.

LINOP M 1500 respectively M 2000 offers the possibility to connect a foot switch or an optional external signal and / or an optional external sensor, to one of the four I/O ports, in order to monitor the level of adhesive in the bottle (empty alarm).

The modular series of LINOP units consist of various devices with different functions and options for connections. The external looks of both the LINOP units do not differ greatly. Therefore please check which particular LINOP unit is to be used, before the equipment is put into operation.

3.2 Symbol information

The hazard and safety symbols used in this document are illustrated as follows. [see right column]

Attention!

Safety precaution for device:
Disregard can lead to material damage and affect the reliable functioning of the device.

Danger!

Safety precaution for health:
Disregard can lead to personal and material damage and affect the reliable functioning of the device.

Note!

Important information:
This symbol points to additional information that describes the instructions in a more detailed manner. This allows for a better understanding of the operating procedure of the device

LINOP M 1500 / M 2000

4 Product content

The following parts belong to the standard product content:

- **1 LINOP M 1500 / M 2000**
- **1 operating instructions for LINOP M 1500 / M 2000**

Please check the content of the packaging for any damage that may have been caused by improper transport or storage.

We recommend keeping the original packaging in case the product needs to be sent back for maintenance or repair.

In order to operate your LINOP M 1500 respectively M 2000 additional components may be necessary. These can be obtained from Cyberbond Europe GmbH upon request.

Dependent on the particular purchase order placed, the following components and/or accessories may be enclosed in the delivery contents, in separate packing units:

- Power supply unit Deutronic 24V / 3A (Type: ETC70-24)
- Mains cable with plug and IEC power connector (sw 3 x 0,75 mm², l = 2 m) (Various lengths and types available)
- Dosing valves (e.g. LINOP VCA or VAN)
- Footswitch
- And much more

Due to the wide range of variants the (optional) components can partly differ from each other in their versions. Please see information on your delivery note and check the relevant order.

Danger!

Safety precaution for health:
Should the product be damaged this may cause unsafe use. Therefore the product must not be used!

5 Installation

LINOP M 1500 respectively M 2000 is a tabletop unit and must be placed on a suitable work surface. Please pay attention to the following safety suggestions when installing the unit:

- Ensure the unit is placed on a safe, sturdy work surface and in a safe upright / standing position! The unit must be placed in a way so that it cannot drop or fall from the work surface.
- Only operate the unit when it is clearly not damaged in any way.
- Only operate the unit when all connections and accessories are not damaged.
- Do not operate the unit out in the open.
- Do not operate the unit in areas that have the potential for explosions!
- Avoid additional warming of the unit by sunlight or other sources of heat such as radiators etc. This ensures the safety and life expectancy of the unit.
- Connectors are not to be left slack, nor running along or over sharp corners, moving or hot / warm parts.
- Fix cables well to avoid a trip hazard and damage to the cables.

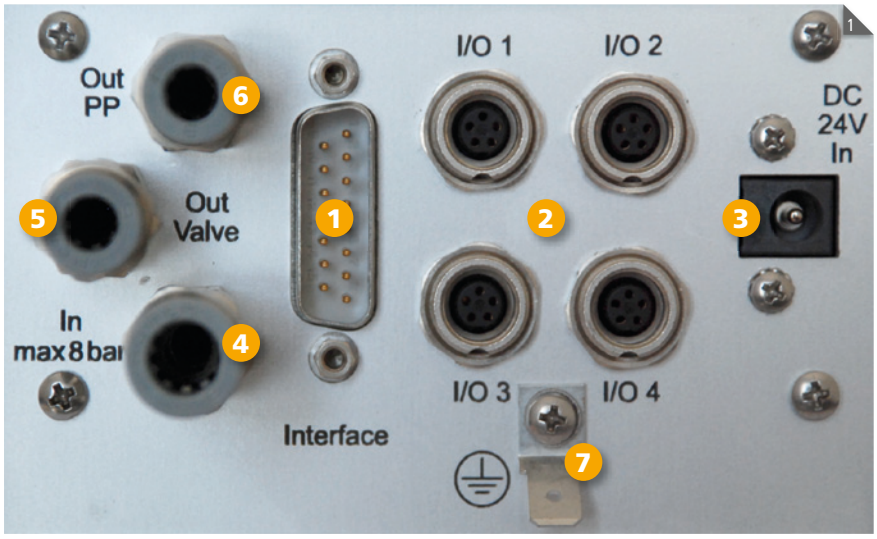
LINOP M 1500 / M 2000

When using the unit within a production line, please pay attention to the following:

- Pay attention to specifications of the interfaces in chapter 6 and 7.
- Bear in mind any interactions with other connected systems and controls.
- Create a common connecting potential by earthing the LINOP M 1500 respectively M 2000 and its surroundings.

For the assembly of accessories, please read the details in the respective documents enclosed. Due to the vast variety we are unable to give extra information on these in this manual.

6 Connections



Connections LINOP M 1500 / M 2000 (Rear view)

1. **Interface** for the remote control of the unit in a super coordinated system (externally controlled and supervised)
2. **[I/O 1 ... I/O 4]** 4 in and out ports for connecting up to 4 dosing valves (only M 2000), a foot switch, a sensor for monitoring adhesive level or a hand pen
3. **DC 24V In** Connecting plug for power supply
4. **In max 8 bar** Connection for incoming compressed air (max. 8 bar)
5. **Out Valve** Connection for dosing valve LINOP VCA or VAN (only for M 1500)
6. **Out PP** Exit for compressed air to pressure pot
7. **Potential equalisation conductor (PE)**

Attention!

Safety precaution for device:
When used in a production line system, the units must have an equalizer that needs to be earthed and fixed in the determined place (PE).

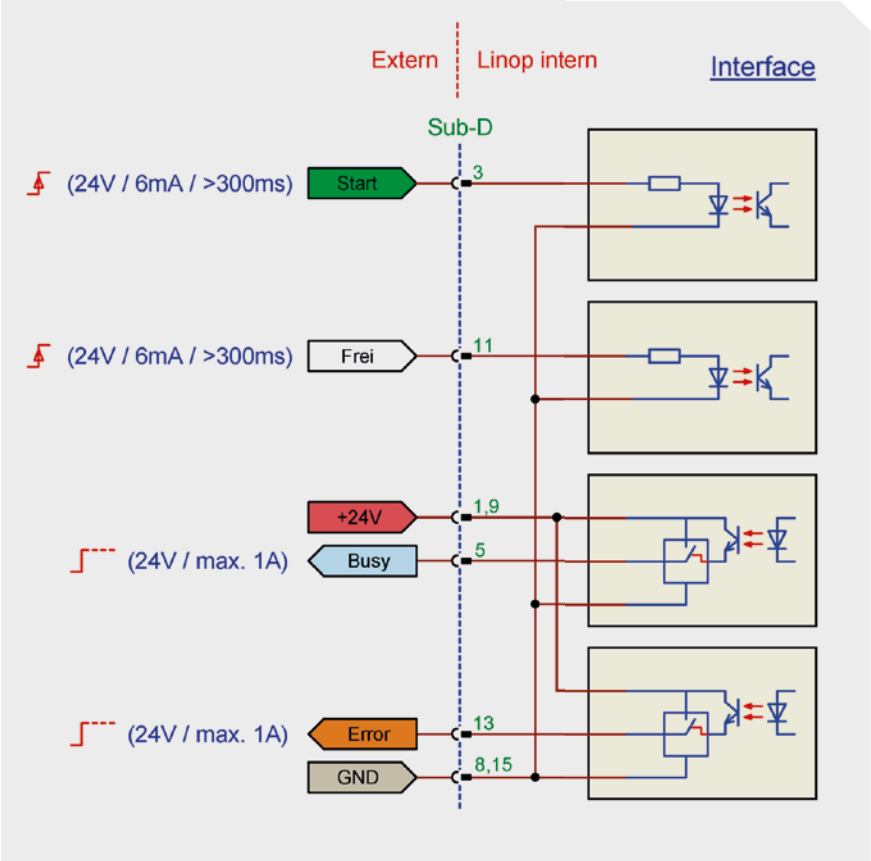
Note!

Important information:
The signals of the interface are completely isolated, electrically. In order to function the trip, voltage must be added externally!

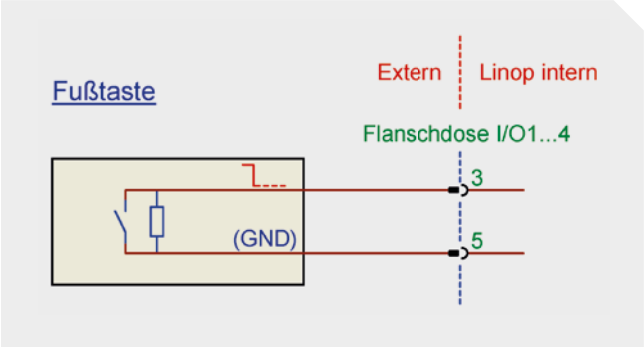
LINOP M 1500 / M 2000

7 Pin assignment

7.1 Pin assignment of the interface

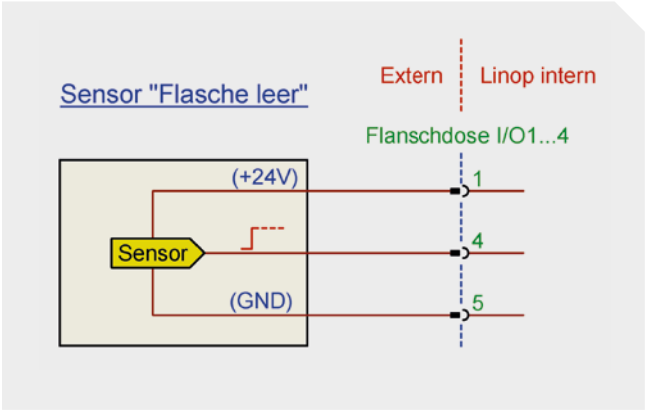


7.2 Pin assignment of the footswitch (LINOP FOT)

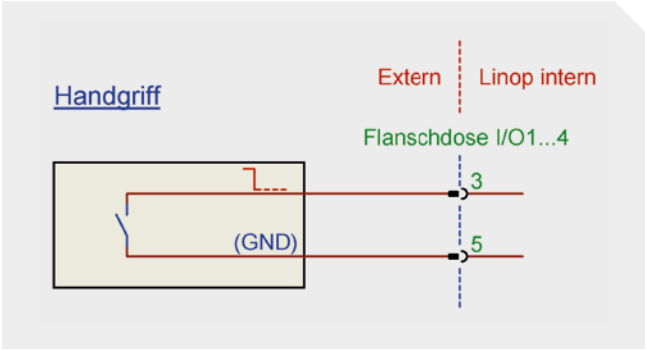


LINOP M 1500 / M 2000

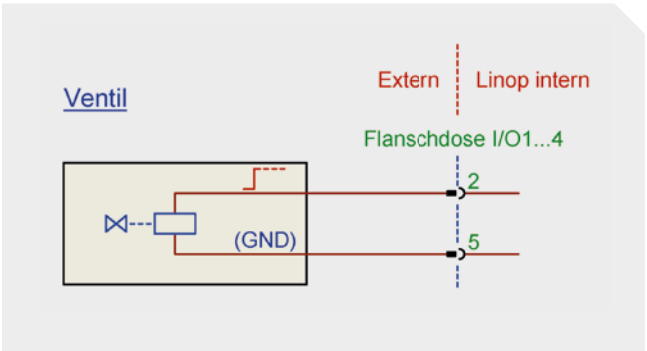
7.3 Pin assignment for the empty alarm (level momentary switch)



7.4 Pin assignment for the electric hand pen (LINOP HG Pen electric)



7.5 Pin assignment for the valve (only for LINOP M 2000)



LINOP M 1500 / M 2000

8 Operation

8.1 Operating- and display panel

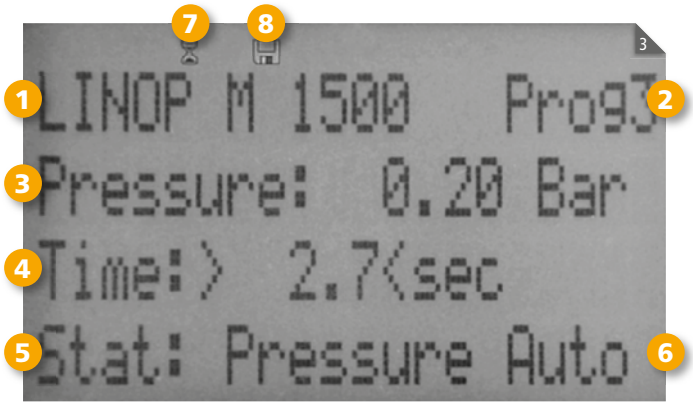
Operating- and display panel for LINOP M 1500 resp. M 2000 (Top view)

1. **Master switch**
2. **Programme buttons** P1 - P5
3. **Display**
4. **Cursors** to choose menu command
5. **Enter button** to determine chosen values
6. **[+] resp. [–] buttons** to change values
7. **Start button** to start dispense time

LINOP M 1500 / M 2000

8.2 Overview of display

After switching on the unit the introductory picture appears on the monitor showing the name and the software of the device for a couple of seconds. Then the display changes to the basic setting as you can see in picture 3 below.



Overview of display of LINOP M 1500 resp. M 2000

1	**Unit type**	(see picture above: LINOP M 1500)
2	**Prog3**	shows the present programme (see picture above: programme 3)
3	**Pressure**	display of outlet pressure (in bar)
4	**Time**	displays the chosen time to dispense adhesive
5	**Status**	shows the current status: **"OK"** or **"Pressure"** fault message when outlet pressure is too low **"Empty"** fault message when there is a short supply of adhesives (empty alarm*) **"Emp/Pres"** combined fault message of **"Pressure"** and **"Empty"**
6	**Operation type**	**"Auto"** or **"Cont"**
7	**Symbol hourglass**	(flashes during the dispense time)
8	**Symbol disk**	(flashes during saving)

The cursors >...< show the currently running but variable menu item.
Example [see above]: >2.7< sec means that the current dispense time of the programme can be changed.

*Only when an externally connected sensor for the monitoring of adhesive level is used.

Note!

Important information:
When running the unit on „Cont" mode the time setting can not be changed!

LINOP M 1500 / M 2000

8.3 Changing of values

In order to change certain parameter, please do as follows:

- Move the cursor with the help of the arrow keys to the chosen position.
- Press the [+] resp. [-] button to change the (pre-) fixed values.
  As soon as a saved value is being changed it will start flashing.
- Press the enter button to save chosen values. The new value will be saved and the flashing will stop.

Note!

Important information:
Moving the cursors whilst they are flashing will restore the original value. Ensure that the chosen value is actually saved!

8.4 Operating modes

LINOP M 1500 resp. M 2000 can either run in the operation mode “Auto” or “Cont” as follows:

8.4.1 Operating mode “Auto” (“automatic”)

When operating the unit in this mode the dosing time is pre-defined. However, it can be changed. The dosing time can be operated manually or can be finished prematurely.

After switching on the system the display will show the current remaining dispense time and the hourglass in the upper part of the display starts flashing. Pressing the start button or the foot switch before the end of the dispense time, the programme is interrupted. The stored object time re-appears on the display.

After the regular dispense time has ended the fixed dispense time re-appears on the display and the device remains in the basic position.

Attention!

Safety precaution for device:
Der Druckbehälter steht unter Druck, sobald das Gerät eingeschaltet ist!

Note!

Important information:
When operating the unit in the interface mode the dispense time can be started but not be interrupted!

8.4.2 Operating mode “Cont” (“continuous”)

When operating in the cont mode the dosing time is not pre-fixed. The duration of the flow of adhesive is controlled by continually pressing the start button the footswitch or respectively a signal via the interface.

When the dosing time is started either by pressing the start button or the foot switch (keep them pressed!) or via the interface, the display continuously shows the elapsed time since start; the hourglass in the upper part of the display starts blinking.

Releasing the start button or the foot-switch or if the signal of the interface is absent, the dispense time finishes automatically. The display shows the elapsed dispensing time in seconds.

Pressing and holding the start button or the foot switch or placing a start signal for the interface AGAIN will start up the dosing time; the recording of the dispense time starts again with 0 seconds.

LINOP M 1500 / M 2000

8.5 Programme memory

The required configuration can be stored in one of the five memories by keeping the key pressed for some time. During the storing process the disk symbol flashes on the upper edge.

As soon as the storage process has been successfully finished, a short signal can be heard and the disk symbol disappears. The current programme is shown on the display [1st upper line, right-hand side; see chapter 7.2.1 "LINOP M 1500 resp. M 2000"]

To retrieve contents of the memory please press the relevant programme button for a short period only.

Note!

Important information:
After the last alteration all determined values are stored automatically after approx 3 seconds in a further memory. If the device is switched off and on again, the last used values are saved.

8.6 Supervision of output pressure

In case the achieved output pressure (for the pressure tank) is below 10% compared to the fixed value the following will occur:

The display shows the status "Pressure" [see chapter ...] **and an acoustic warning signal can be heard twice.**

As soon as the initial pressure reaches the determined values the signal "Pressure" will go out.

Parallel to the report "Pressure" on the display, the exit „Error" of the Interfaces (PIN 13) [see chapter ...] switches to the determined potential. The alarm relating to loss of pressure, can be passed on to the externally connected devices and informs the operator that there is insufficient air pressure to dispense the adhesive.

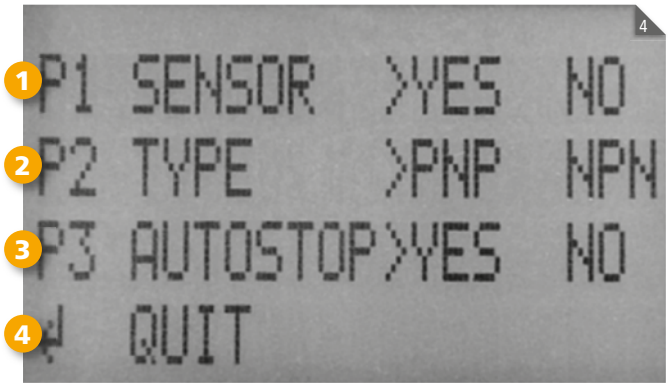
8.7 Empty alarm (configuration of level sensor)

The device reports with an "empty alarm" the low level of the adhesive in the bottle, before the flow of adhesive is interrupted. For this the instalment of an optional externally connected sensor is necessary.

Should such a sensor be connected to a LINOP M 1500 resp. M 2000 it must be defined in a separate configuration menu as follows:

The device must be switched off (master switch off!). First press the start button and keep it pressed while you switch the unit on again. A menu for the configuration of the sensor appears. The single options and settings can be called up using the programme buttons and can be altered [see next page].

LINOP M 1500 / M 2000



The menu for the configuration of the adhesive level sensor (empty alarm)

1	**SENSOR**	determines if a sensor is connected >YES< or not >NO<
2	**TYPE**	determines the connected type of sensor >PNP< or >NPN<
3	**AUTOSTOP**	>YES< determines to end the programme automatically when there is an empty alarm and a restart is not possible. Just the >Empty< sign appears to signal the status.
4	**QUIT**	Exit out of the configuration menu by pressing the Enter-button

If the level of the adhesive is below a certain minimum mark, the warning “Empty” is shown on the display [see chapter ...]. Additionally an acoustic warning signal can be heard. The current dispense time will not be interrupted. Dependent on the configuration of the sensor >AUTOSTOP< the device can be re-started manually or after the filling up of adhesive.

9 Faults / Malfunctioning

Before searching for faults of the device, please check all possible errors of connected peripherals and especially all connected leads.

Fault: The operating unit and the display are lit but the device cannot be started.
Repair: Check the configuration of the sensor for the filling level [see chapter ...]

Fault: The sensor for the filling level does not function.
Repair: Check the configuration of the sensor for the filling level [see chapter ...]

Fault: Starting the unit via interface is not possible.
Repair: Check the connectors of the interface. Ensure a supply of 24V towards the unit as there has to be a galvanic separation between the LINOP control unit and the external control [see chapter ...]

Fault: The “Error” alarm via the interface does not function
Repair: Check the connectors of the interface. Ensure a supply of 24V towards the unit as there has to be a galvanic separation between the LINOP control unit and the external control [see chapter ...]

LINOP M 1500 / M 2000

10 Maintenance

The device is maintenance free.

11 Appendix

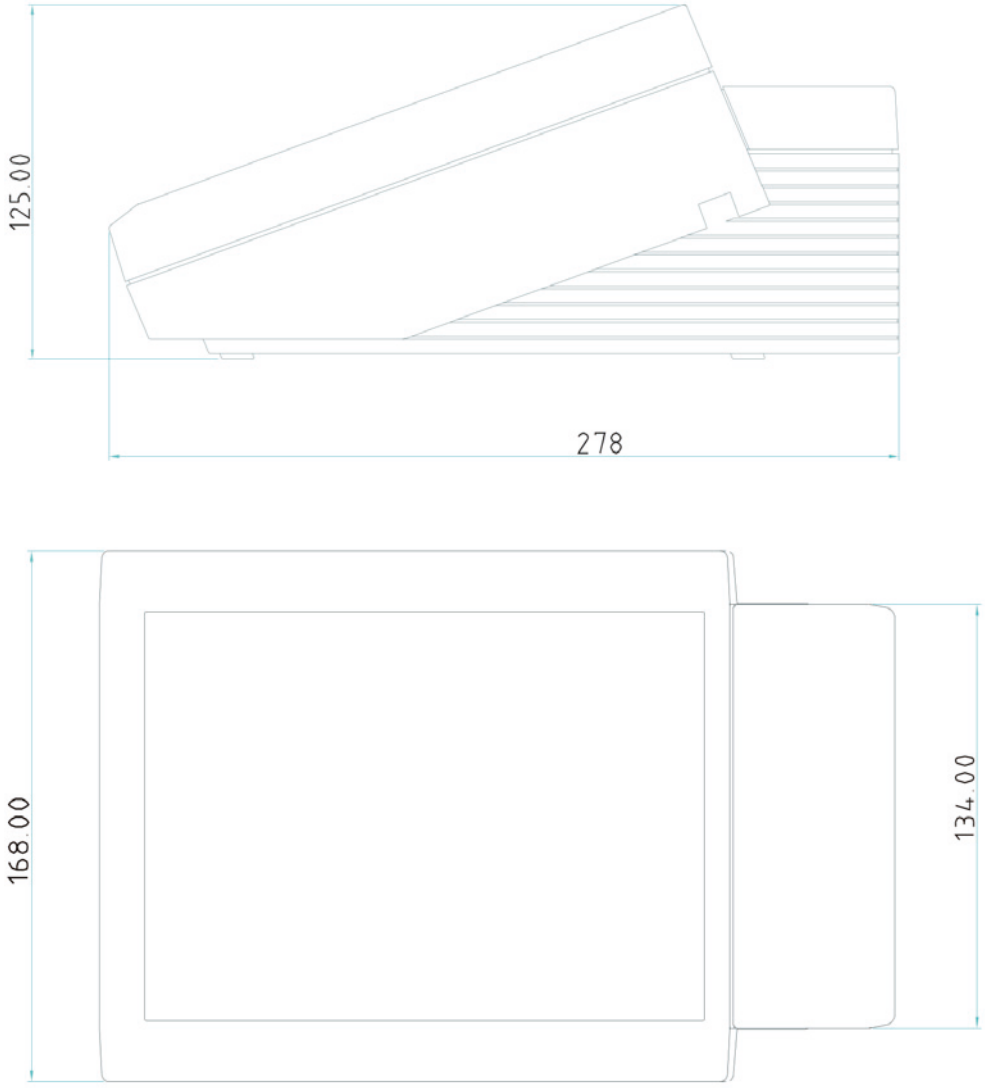
11.1 Technical data

Technical data LINOP M 1500 and M 2000		
Dimensions (WxHxD)	168 x 125 x 278 mm (without flexible arm)	
Material of cabinet	Plastic ABS, UL classification: UL 94 HB	
Colour	RAL 9002 grey / white	
Weight	ca. 2,2 kg	
Type of protection	IP31	
Voltage	24 Volt / DC	
Electricity	max. 3 Ampere	
Working temperature	+10 °C to +50 °C	
Storage temperature	–20 °C to +60 °C	
Relative humidity:	10 % to 90 %, not condensed	
Incoming compressed air	max. 8 bar	
Pressure margin	M 1500: 0,00 to 3,00 bar	
Pressure margin	M 2000: 0,00 to 2,00 bar	
Time setting for dispensing	0,01 to 99,99 Sec. (in steps of 0,01 sec.)	
Empty alarm	by capacitive sensing device PNP or NPN	
Interfaces	DC 24V In	Potential plug 2,0 mm inside
	Interface	D-Sub 15-pol. pin
	I/0 1 ... I/O 4	Binder Series 712 socket
	In max 8 bar	8 mm hose coupling
	Out PP	6 mm hose coupling
	Out Valve	6 mm hose coupling
	PE	6,3 mm plug

LINOP M 1500 / M 2000

11.2 Measurements

[All dimensions in mm]



LINOP M 1500 / M 2000

12 Valves for LINOP M 1500

LINOP VCA

LINOP VCA

- Cyanoacrylates
- “golden metal ring“
- no suck-back effect
- Item Number: 20100

LINOP VAN

LINOP VAN

- Anaerobic and UV adhesives
- “blue metal ring“
- suck-back effect
- Item Number: 20200

The pneumatically controlled dosing valves – VCA (cyanoacrylate; golden metal ring) and VAN (Anaerobic and UV; blue resp. green metal ring) are especially designed for the application of one-component reactive adhesives. The valve opens by the impact of the pneumatic cylinder with compressed air of at least 4 bar. After switching off the control air, the valve closes by the pressure of the spring in the flow direction. Inside the valve there is a PTFE membrane that shields the adhesive from the metal pieces of the pneumatic cylinder. The body of the valve and all other parts that may come into contact with the product are made of PTFE. This prevents curing inside the valve chamber.

The valves are especially suitable for higher viscosities of 1,000 mPa*s and more. A maximum viscosity of approx 20,000 mPa*s may be dispensed.

Difference:

The VAN valve offers a slight suck-back effect, to avoid dripping. However, this is not the case with the VCA version, as the suck-back effect would also draw air or humidity into the valve. This could provoke a premature polymerisation of the CA inside the valve.

LINOP M 1500 / M 2000

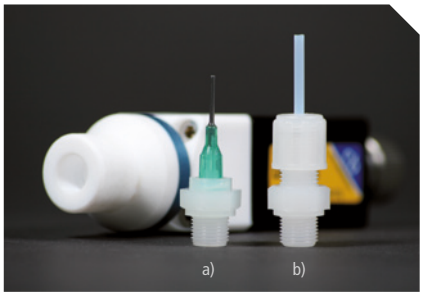
12.1 Technical data for the valves LINOP VCA and VAN

Technical data LINOP VCA and VAN	
Compressed air	4 – 6 bar
Product pressure	0,1 – 3 bar
Parts in contact with the product	PTFE
Shortest open- and closing times	0,02 sec.
Adapter thread	M10 x 1
Overall length	ca. 130 mm
Width without screw connection	ca. 30 mm

12.2 Adapter for the valves LINOP VCA and VAN

LINOP AA

- LINOP adapter
  for product tube
- side entrance
- 6/4 oder 8/6 mm tube
- Item Number: 20194, 20195,
  20196, 20197



a) LINOP AD VAC LL / b) LINOP TC

- a) LINOP Luer Lock adapter
  for connection of dosing tips
- Item Number: 20150, 20151

- b) LINOP tube connector
  for 2.5, 4 oder 6 mm product tube
- Item Number: 20152, 20154,
  20155, 20156, 20157

LINOP M 1500 / M 2000

13 Valves for LINOP M 2000

LINOP EM 24

LINOP EM 24 Valve

- Cyanoacrylates
- up to ca. 2.000 mPa*s
- Item Number: 30100, 30150

LINOP EM 24 R

LINOP EM 24 R Valve

- Cyanoacrylates
- up to ca. 2.000 mPa*s
- Knurled screw for fine adjustment
- Item Number: 30200, 30250

The valves LINOP EM 24 and LINOP EM 24 R (knurled screw) are membrane valves based on PTFE and are very popular for dispensing cyanoacrylates. There are many reasons for their popularity. On the one hand the valves are very small and light and they are pre-destined for use in product assembly lines. The contact is exclusively electronic and there are no problems in connecting these valves electrically. On the other hand, even the smallest amounts of adhesives (0,005g) can be applied with these valves. When in use, these valves can reach 1 million cycles of operation, with the appropriate handling. The maximum viscosity that can be conveyed is approx 2,000 mPa*s.

The standard valve is the EM 24 as it has been factory-adjusted. The EM 24 R valve allows an additional fine adjustment by the operator.

13.1 Technical data for the valves LINOP EM 24 and EM 24 R

Technical data LINOP EM 24 and EM 24 R	
Product pressure	0,01 – 2,00 bar
Parts in contact with the product	PTFE
Voltage	20 – 30 V DC
Insulation class	IP 00
Shortest open- and closing times	0,05 sec to 0,10 sec
Overall length	ca. 48 mm
Width without screw connection	ca. 33 mm
Weight	ca. 72 g incl. adapter

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13.2 Adapter for the valves LINOP EM 24 and EM 24 R

LINOP Luer Lock adapter

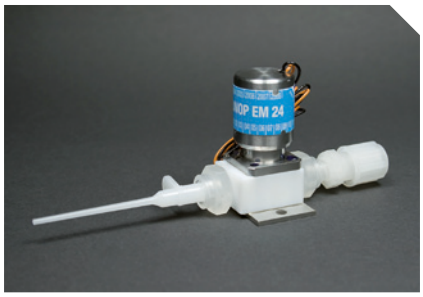
- LINOP EM 24 Luer Lock adapter for valve
- entry / exit
- Item Number: 30190, 30191(black)

LINOP adapter for tube

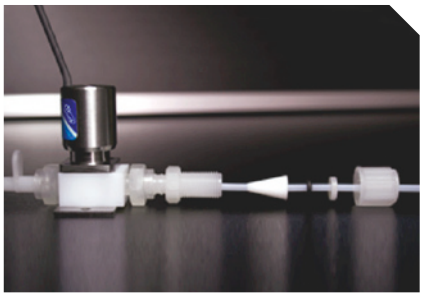
- LINOP EM 24 adapter for product tube
- 4 or 6 mm
- Item Number: 60450, 60451, 60650, 60651

LINOP adapter for tube

- LINOP EM 24 adapter for product tube
- 2,5 mm
- Item Number: 60250



LINOP EM 24 + adapter + dosing tip



LINOP EM 24 + View of parts in the adaptor

Hinweis!

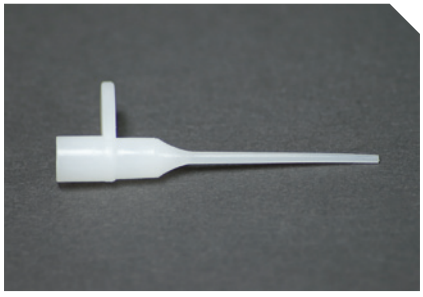
Wichtige Information:
The luerlock adaptor is screwed into the core chamber. Ensuring the adaptor fits well is very important. Do not over-tighten! Teflon is soft and can be damaged. When in mechanical use, for example with a robot arm, please be aware of the space for traction or fit a traction relief device.

LINOP M 1500 / M 2000

14 LINOP dosing tips for LINOP valves

LINOP dosing tips

white, transparent
(Luer-Lock plastic)



LINOP DT plastic dosing tips Luer Lock

- LINOP DT „0“
- LINOP DT „0,5“
- LINOP DT „1“
- LINOP DT „0“ UV

coloured
(Luer-Lock metal)

LINOP DS metal dosing tips Luer Lock

- LINOP DS 1“ – 0,68 mm (brown) Ø 0,68 mm; length 1“
- LINOP DS 0.5“ – 1,37 mm (orange) Ø 1,3 mm; length ½“
- LINOP DS 0.5“ – 0,58 mm (rose) Ø 0,58 mm; length ½“

15 LINOP pressure pot and adapter for tubes

LINOP PP 505

- Item Number: 50100

LINOP adapter

- LINOP adapter
  for pressure pot
- 2.5, 4, 6 or 8 mm tubes
- Item Number: 50192, 50194,
  50196, 50198

LINOP PP 505

- Adjustment of the empty alarm
- Item Number: 50150

LINOP M 1500 / M 2000

16 LINOP pulsing device

Pulsing devices can either be the LINOP FOT Footswitch
or the LINOP HG Electrical Hand Pen or an external PLC control.

16.1 LINOP FOT footswitch

LINOP FOT

- The footswitch is equipped with a 3 pin plug
- Item Number: 40100

LINOP Hand Pen adapter

- LINOP adapter for product tube
- 2,5 or 4 mm
- Item Number: 40392, 40394

LINOP Hand Pen adapter

- LINOP adapter for product tube

16.2 LINOP HG Hand Pen electric

LINOP HG Hand Pen electric

- As an alternative the impulse can also be tripped by the electric pen
- Item Number: 40300

LINOP HG Hand Pen electric + adapter

- The adapter is installed in the Hand Pen and fixed in place by the knurled screw.
- Dosing tips are fixed at the front (Luer Lock)

LINOP HG Hand Pen electric + adapter + LINOP EM 24

- 4 mm
- Item Number: 60450

LINOP M 1500 / M 2000

17 Commissioning

First the pressure pot (LINOP PP 505) is to be prepared for the commissioning. The compressed air must be free of humidity and oil, as these will contaminate the adhesive and cause premature curing.

The 500 g round bottle fits directly into the pressure pot. For the oval bottle there is a positioning support to coordinate with the empty alarm / capacitive sensing device).

With the lid open, place the bottle of adhesive directly into the pressure pot. For commissioning we recommend using Cyberbond CB 9060 (D-Bonder), rather than using adhesive, as this will be easier to handle should there be any leaks or other faults with the newly installed system. Please be aware: CB 9060 (D-Bonder) dissolves plastic surfaces.

When used for the first time please ensure that the product pipe is long enough to reach the bottom of the adhesive container without bending too much. By disengaging the screw connection on the lid the length of product pipe can be adjusted accordingly. We suggest cutting the end of the product tube at an angle to allow easy running of the product. This also prevents the pipe from attaching itself to the bottom of the bottle. Check the pressure pot lid screw connection is tight before use. Finally, the pot can be closed using the quick release mechanisms.

The open end of the product pipe should be connected to the valve. First the adapter A1 is screwed into the valve housing and is tightened by hand. The body of the valve is made of Teflon so careful handling without using force is necessary.

The adapter A2 is fitted onto the pipe. Please be aware of the sequence of the adaptor gaskets. A connection to the Luer Lock can then be fitted. Now ensure the connection is tight. The tubing connection should not have any residual stress. This will help to avoid any un-intentional disengagement. Adapter A1 must be fitted onto the exit of the valve and a dosing needle installed where the adhesive is dispensed. For special configurations an optional pipe extension can be integrated.

The electrical supply can now be put on. The valve that is fixed on the flexible arm should already have power. In order to extract the adhesive the pressure pot must be connected with the control unit. The quick connect as well as the pressure pipe must be combined with the two connectors provided. We recommend installing the pot underneath the control unit.

Compressed air can now be provided to the unit. Air supply up to 8 bar can be used. The air pressure supply should not be less than 1 bar.

When filling the dosing unit, adhesive has to reach the dosing Tip, without creating air bubbles. For this reason the dispensing valve should be kept at least horizontal and the dosing tip outlet should be held vertically, pointing upwards. Beforehand, the switch should be turned to Auto/Cont to ensure a continuous flow of adhesive. The pressure value has to be relative to the viscosity and can be selected from the display [see tables].

Attention!

Safety precaution for device:
Do not pour the product directly into the pot

Attention!

Safety precaution for device:
Do not over tighten the adapter. Do not use force. Do not damage the thread.

Attention!

Safety precaution for device:
Nur gereiningte und in keinem Fall feuchte Druckluft verwenden!

LINOP M 1500 / M 2000

Initial extract power for activation

	viscosity 20 mPa*s	viscosity 100 mPa*s	viscosity 1.000 mPa*s
Initial extract power	0,4	0,6	1,2

The permanent impulse can now be started by either a) pressing the „Start“ button or b) by an externally connected pulsing device. For as long as the start button or pulsing device is pressed on, the valve will remain open; with the valve open the adhesive should be left to flow until all air bubbles are removed from the dosing system. It is very important that all of the air is removed, as any trapped air could lead to inaccuracies in dispensing and even provoke polymerisation. We recommend releasing a few gram of adhesive into an empty container so that all air is completely removed.

Attention!

Safety precaution for device:
Ensure all air is removed from the system before using the dispenser.

Important suggestions for use of the dosing system are as follows:

- Do not enclose air bubbles when changing dosing tip.
- Do not tilt the pressure pot.
- Dosing units are not to be transported when filled with adhesives.
- We recommend filling the unit with CB 9060 if the dispenser will not be used for long periods
- Do not disassemble dosing valves, as this could change the basic factory settings very much and one cannot ensure that sensitive parts are not damaged.
- Valves blocked with polymerized adhesive need to be sealed with suitable packaging, such as polyethylene foil or stoppers and be sent back to the manufacturer.
- For cleaning of valves, tubing, adapters, dosing tips etc. we recommend the use of CB9060 (flashpoint 109 °C).

18 Setting the required volume to dispense in combination with the device and the valve

Once all the air has been removed from the system and the adhesive is flowing bubble free the required dispense volume can be adjusted exactly.

Firstly, an approximate adjustment of the volume of adhesive required, can be achieved by use of the air pressure from the pressure pot; for finer adjustment, the opening times of the valves are more suitable.

The pressure of the pot must not be put on “0” because there is a high risk of the adhesive running back into the adhesive bottle pot; this would then cause air to be drawn into the dosing tip. The pressure pot should be installed in a lower position than the valve.

For guidance only: the application of one free falling drop of adhesive (ca. 20 mg) the following table can help. The viscosity of the adhesive, the temperature at the work place, the diameter and the length of the tubing, as well as the diameter of the dosing needle, will influence this value. Therefore, to achieve these values some trial and error may be required, in conjunction with fine adjustment of the dispensing system until the desired result is achieved. The following diagrams and tables are for guidance only.

The application of one free falling drop of adhesive (ca. 20 mg)

	viscosity 20 mPa*s	viscosity 100 mPa*s	viscosity 1.000 mPa*s
Time	0,08	0,1	0,5
Pressure	0,08	0,1	0,8

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19 LINOP Item Numbers

LINOP Dosing and Curing Equipment

Dosing & Curing Units	LINOP M 600	10100
	LINOP M 1500	10200
	LINOP M 2000	10300
	LINOP U 400	10400
	power supply unit	10190
	cord for power supply unit (EU standard)	10191
	flexible arm	10192
	valve plate (to hold valve M 1500 / M 2000 & Cyberlite)	10193
	syringe plate (to hold 30 ml syringe / M 600)	10194
VCA and VAN Valves	LINOP VCA Valve for CA	20100
	LINOP VAN Valve for AN	20200
	adapters product flow into the valve	
	product adapter (rectangular) AA 4/6	20194
	product adapter (rectangular) AA 4/6 (for UV)	20195
	product adapter (rectangular) AA 6/8	20196
	product adapter (rectangular) AA 6/8 (for UV)	20197
	adapters product flow out of the valve	
	dosing tip adapter (Fine Thread (in) / Luer Lock (out)) 1/8	20150
	UV dosing tip adapter (Fine Thread (in) / Luer Lock (out)) 1/8	20151
	adapter as tube connector (Fine Thread (in)) 1/8-2,5 (for 2,5 mm tube)	20152
	adapter as tube connector (Fine Thread (in)) 1/8-4,0 (for 4 mm tube)	20154
	UV adapter as tube connector (Fine Thread (in)) 1/8-4,0 (for 4 mm tube)	20155
	adapter as tube connector (Fine Thread (in)) 1/8-6,0 (for 6 mm tube)	20156
	UV adapter as tube connector (Fine Thread (in)) 1/8-6,0 (for 6 mm tube)	20157
EM 24 Valves	EM 24 Valve with plug	30100
	EM 24 Valve without plug	30150
	EM 24 R Valve with plug	30200
	EM 24 R Valve without plug	30250
	adapters product flow into and out of the the valve	
	adapter Fine Thread (in) / Luer Lock male (out) (former A1)	30190
	UV adapter Fine Thread (in) / Luer Lock male (out) (former A4)	30191
Impuls Devices	electrical footswitch with plug (FOT)	40100
	Hand Pen	40200
	Hand Pen electric	40300
	adapter tube fixing hand pen for 2,5 mm tube	40392
	adapter tube fixing hand pen for 4,0 mm tube	40394
Druckbehälter	PP 505 Pressure Pot with air pressure nipple	50100
	empty alarm with plug	50150
	adapter for pressure pot lid / 1/4" for 2,5 product tube	50192
	adapter for pressure pot lid / 1/4" for 4 product tube	50194
	adapter for pressure pot lid / 1/4" for 6 product tube	50196
	adapter for pressure pot lid / 1/4" for 8 product tube	50198

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Tubes and Tube Connectors	product tube PTFE, 2,5 mm outside (per meter)	60200
	adapter as tube connection / Luer Lock for 2,5 mm tube	60250
	product tube PTFE, 4 mm outside (per meter)	60400
	adapter as tube connection / Luer Lock for 4 mm tube	60450
	UV product tube PTFE, 4 mm outside (per meter)	60401
	UV adapter as tube connection / Luer Lock 4 mm tube	60451
	product tube PTFE, 6 mm outside (per meter)	60600
	adapter tube connection / Luer Lock (former A2) for 6 mm tube	60650
	UV product tube PTFE, 6 mm outside (per meter)	60601
	UV adapter tube connection / Luer Lock for 6 mm tube	60651
	product tube PTFE, 8 mm outside (per meter)	60700
	UV product tube PTFE, 8 mm outside (per meter)	60701
	blue air supplying tube (per meter)	60800

Syringes for M 600	10 ml syringe black	70110
	30 ml syringe black	70130
	piston 10 ml syringe UV	70111
	piston 30 ml syringe UV	70131
	closure cap for 10 and 30 ml syringes)	70141
	Adapter for air supply to syringe 10 ml	70115
	Adapter for air supply to syringe 30 ml	70135
	Reducer from 30 to 10 ml syringe	70200

Cyberlites	electrical cord 0,46 m (with rectangular connector)	80190
	electrical cord 2,00 m (with straight connectors)	80192
	Cyberlite4 S	80200
	lens Block Cyberlite4 S	80250
	Splitter	80300
	liquide fibre light guide	80400
	block keeping light guide	80450
	Cyberflood 400 S	80600

Dosing Tips	Dosing Tips plastic (only DT 1 with Luer Lock)	
	10 pieces	DT „0“
	10 pieces	DT „0,5“
	10 pieces	DT „1“
	10 pieces	DT „0“ UV
	Dsing Tips metal, LL	
	10 pieces DS 1,0“ - 0,68 brown	DS 1,0“- 0,68
	10 pieces DS 0,5“ - 1,37 orange	DS 0,5“- 1,37
	10 pieces DS 0,5“ - 0,58 rose	DS 0,5“- 0,58

LINOP M 1500 / M 2000

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LINOP M 1200 / M 2000

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Exclusion of Liability

Cyberbond guarantees that LINOP Dispensing and Curing Equipment is fully operational when handled in an appropriate way and Cyberbond products are used. Nevertheless we refer to the Operation Instructions of each item, which can be downloaded from our Website (www.cyberbond.de).

In case of using other than Cyberbond goods for dispensing, cleaning or curing Cyberbond should be contacted beforehand, if this is suitable.

In case of installing LINOP equipment in a bigger production unit, Cyberbond can neither take any reliability for the functionality of the whole construction nor for the suitability of the LINOP equipment within this unit.

We recommend discussing all matters concerning LINOP equipment intensively with Cyberbond beforehand, in order to prove the suitability in each single case. Such a counselling interview should also be recorded in writing. If all this does not take place Cyberbond cannot take over any guaranty for functionality at all.

Cyberbond is working with price lists. These prices refer to the equipment alone. In case you wish support for the initial start-up or more advice after delivery, prices for this additional work have to be negotiated.

All given information, the data mentioned in this reference book, as well as particularly the recommendations for using LINOP equipment are based on our recent knowledge and experience. Due to the fact that the application possibilities are manifold and that the general working conditions are out of our influence, we strongly recommend doing sufficient tests in order to guarantee that LINOP equipment is suitable for the intended process. Except for wilful acts any liability based on such recommendations or any verbal advice is hereby expressly excluded.

Wunstorf, 30.05.2013

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