ProtoMat E34/E44

Basic reference to the detailed documentation

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Version: 1.0

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Translation of the German original document

General information

This document contains all information for the intended use of the system/product delivered. This document is intended for persons with basic knowledge of installation and operation of software-controlled systems. General knowledge of operational safety as well as basic knowledge of using PCs running Microsoft Windows® are required.

- Read this document and possibly associated safety data sheets carefully before first start-up and usage of the components.
- Observe the safety regulations as well as the regulations on operational health and safety and protection of the environment.
- Use the system/product only in a technically perfect condition.
- Observe all labels and safety signs on the system/product.
- Never remove the safety signs and replace or clean them if not readable anymore.
- Persons who install, operate, uninstall, or maintain our systems/products must not be under the influence of alcohol, other drugs, or medication that impairs the ability to react.
- Use only approved spare parts and accessories in order to prevent injuries due to unsuitable spare parts and accessories.
- Observe the technical data and ambient conditions specified in this document.

Validity

This document is part of the system/product and corresponds to the technical state at the time of publication. This document has always to be present at the system/product and has to be available to the operating personnel without restrictions, in a complete and legible form and at all times. If the operator changes, this document has to be handed over together with the system/product. The operator has to ensure that all safety measures specified in this document are observed.

The operating personnel must have read and understood this document before performing any task. A basic requirement for safe work is observance of all safety notes and steps. This document contains important information about the system/product that have to be observed when installing, first starting up, or maintaining the system/product. Its structure allows trained personnel to perform all tasks.

LPKF Laser & Electronics AG (abbreviated to **LPKF** in the following) reserves the right to make changes in respect to the content of this document. The figures in this document serve as basic understanding and can differ from the actual state of the system.

Structure of warning messages and safety notes

The safety notes and warning messages in this document identify hazards and risks and they are created in accordance with ANSI Z535.6-2011 and the standards series ISO 3864.

The warning messages are structured as follows:

- Warning sign (only for injuries)
- Signal word indicating the hazard class
- Type and source of the hazard
- Consequences of non-observance
- Measures to avoid the hazard

⚠ + SIGNAL WORD
Type and source of the hazard! Consequences of non-observance. ▶ Measures to avoid the hazard. ▶ Further measure(s) to avoid the hazard.

Warning messages can also be embedded in the format of the surrounding text in order to avoid a *visual disruption* in a sequence. In this case, they are distinguished as follows:

Type and source of the hazard!
▶ **Measure(s) to avoid the hazard.**

Warning messages are classified in hazard classes represented by the signal word. In the following, the warning messages are described in accordance to their hazard classes:

⚠ DANGER
Type and source of the hazard! This warning message indicates a hazard of high risk that causes death or serious injury if not avoided. ▶ Measure to avoid the hazard.

⚠ WARNING
Type and source of the hazard! This warning message indicates a hazard of medium risk that can cause death or serious injury if not avoided. ▶ Measure to avoid the hazard.

⚠ CAUTION

Type and source of the hazard!

This warning message indicates a hazard of low risk that can cause minor or moderate injury if not avoided.

▶ Measure to avoid the hazard.

NOTICE

Type and source of the hazard!

This warning message indicates a hazard that can lead to possible property damage.

▶ Measure to avoid the hazard.

Text styles

Various text attributes, notations, and text structures facilitate reading the document. The text attributes (highlightings) inside this document are defined as follows:

Attribute	Function
italic	highlights elements of the user interface and of control elements of the system
bold	highlights important information and keyboard input
`Courier New`	highlights file paths
`[ ]`	highlights elements of buttons on software user interfaces
`key`	highlights keys of the keyboard

Tasks or procedures that are described in steps are compiled to sequences in this document. A sequence consists of at least three components: objective, step, and result.

Component	Description
■	Indication of an objective. The sequence starts here.
1. 2. 3.	Indication of a sorted list of steps. The specified order must be observed.
□	Indication of an intermediate result that is followed by further steps or the result.
☑	Indication of the result. The sequence is finished.
▶	Indication of a single step.

Additional information

The following symbols are used to indicate additional information:

This note indicates especially useful information.

Advanced information

This advanced information indicates special knowledge.

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Limited liability

All data, notes and instructions in this document have been prepared with consideration to the statutory standards and regulations, the present state of technology, as well as our many years of knowledge and experience.

LPKF accepts no liability for damage due to:

- non-observance of this document
- improper use of the system/product
- employment of personnel that is not sufficiently qualified
- unauthorized modification
- technical changes
- unauthorized manipulation of the safety devices
- use of spare parts that are not approved by LPKF

The actual scope of delivery can deviate from the explanations and presentations given here, due to custom designs, the utilization of additional order options, or due to the most recent technical changes.

The responsibilities agreed in the delivery contract, the General Terms and Conditions as well as the delivery conditions of the manufacturer and the statutory regulations valid at the time of the conclusion of the contract are effective.

Warranty

Please note that the warranty is subject to the current regulations in combination with the current General Terms and Conditions.

All information and instructions in this document have been compiled in observance of current regulations and the current state of the art. Before working with the system/product, this document has to be read carefully. The manufacturer assumes no liability for damage and faults due to non-observance of this document.

LPKF Laser & Electronics AG provides a 12-months warranty if the following conditions are met:

- The warranty starts on delivery.
- The warranty covers defects in material or manufacture. During the warranty period, such defects are remedied without cost by replacement or rework of the defective parts. This service is provided by the LPKF Service.

For further information on wear parts refer to the chapter scope of delivery.

Customer service

For technical information contact our LPKF Service:

Address LPKF Laser & Electronics AG
Service & Support Rapid Prototyping
Osteriede 7
30827 Garbsen
Germany

Phone + 49 5131 7095-1333

Fax + 49 5131 7095-90

Email support.rp@lpkf.com

Internet www.lpkf.com

In our continuous effort to improve our documentation we are asking you to give us your feedback if you notice any discrepancy when working with the system/product, or if you have any comments or suggestions for improvement.

At the moment of packaging, the system/product has been equipped with the latest software version and with the software and hardware documentation currently valid. By now, new versions of the documentation as well as new software versions might be available.

For all the latest news and updates visit the support area of our homepage: http://www.lpkf.com/support.

Contents

This document describes two systems that resemble each other. ProtoMat E34 and ProtoMat E44 are identically constructed, differing only in a few characteristics. The following always describes **the system**. For comprehensibility and practicability of the instruction steps, it does not matter which of the two systems is described. The characteristics that serve for differentiation are marked clearly in this document.

1 Scope of this basic reference

Please note that this basic reference does not replace the detailed documentation on the data medium.
Read the detailed documentation before working with the system.
Observe the information, instructions and safety instructions in the detailed documentation to ensure a safe and smooth operation of the system.

1.1 Overview of the supplied documentation

The following documentation is supplied in printed form:

Documentation	Explanation
Basic reference to the detailed documentation	Quick guide for first startup

Table 1: Overview of the printed documentation

The following documentation is supplied on the data medium:

Documentation	Explanation
Basic reference to the detailed documentation	Quick guide for first startup
User manual ProtoMat E34/E44	Documentation of the E34/E44
CircuitPro PM Compendium	Documentation of the software CircuitPro PM
How-to guide CircuitPro PM	First steps, practical tips and basics of the system software CircuitPro PM
Unpacking instructions	Instructions for unpacking the system

Table 2: Overview of the documentation on the data medium

2 Safety

This chapter provides an overview of all important safety aspects for protecting persons as well as for a safe and fault-free operation of the system/product. There are further warning messages in the sections of the individual lifecycle stages.

2.1 Basic hazards

Always comply with the warning messages listed here and in the individual sections of this documentation to reduce the risks of injuries and property damage and to avoid dangerous situations.

Mechanical hazards

⚠ WARNING

Risk of injury by moving components!

Moving components can cause serious injuries e.g. crushing injuries or cuts.

- ▶ Never grasp moving components when the system is operating.
- ▶ Observe the follow-up time of the spindle. Before doing any work in the processing area or on the processing head, ensure that no component is still moving.

⚠ CAUTION

Tripping hazard by hoses and cables!

Hoses and cables are routed to the system. If the hoses and cables are laid inappropriately they pose a tripping hazard for the operating personnel.

- ▶ Always ensure that the hoses and cables do not pose a tripping hazard.

Electrical hazards

⚠ DANGER

Danger to life by electrical shock!

Touching energized parts causes a direct danger to life by electrical shock. Damage to the insulation or damaged individual parts can be dangerous to life.

- ▶ All work on energized components of the system must be performed by a qualified electrician.
- ▶ If the insulation is damaged, switch off the power supply immediately and initiate the repair.
- ▶ De-energize all energized components of the system or equipment, before working with them. Ensure that the system or equipment is de-energized for the whole time of the task.
- ▶ Never bridge or deactivate fuses.
- ▶ Always keep moisture away from energized parts because it can cause a short circuit.

Thermal hazards

⚠ CAUTION

Burn hazard by hot surfaces!

During processing, some system components can heat up so much that direct contact can cause burns.

- ▶ Always wear your personal protective equipment.

Hazards by materials or substances

⚠ WARNING

Health hazard by faulty extraction!

When processing materials, gases or dusts hazardous to health can be produced.

- ▶ Ensure that the extraction system is switched on and is working properly.
- ▶ Observe the maintenance intervals of the extraction system.
- ▶ Check the connection to the system regularly.

2.2 Personnel requirements

This chapter contains information about the qualification of the personnel.

⚠ WARNING

Accident hazard due to insufficiently qualified personnel!

Insufficiently qualified personnel cannot assess the risks of using the system/product and put themselves and others in danger.

- ▶ Allow only qualified personnel to use the system/product.
- ▶ Keep insufficiently qualified personnel out of the working area.

The different tasks described in this document require different qualifications of the persons who are to perform these tasks.

If no personnel qualifications are listed in the individual chapters of this document, the operating personnel is intended to perform the tasks.

Only persons who can be expected to perform the tasks reliably are authorized to perform the tasks. Persons whose ability to react is impaired e.g. by drugs, alcohol, or medicine, are not authorized.

This document uses the following qualifications for persons for the different tasks.

Qualified electrician

A qualified electrician is able to perform work on electrical systems and to detect and avoid possible dangers on his/her own based on his/her professional training, know-how and experience as well as knowledge of the applicable standards and regulations.

The qualified electrician has been trained for the special field where he/she works and knows the relevant standards and regulations.

Maintenance personnel of the operator

Maintenance personnel are those persons who are designated by the operator to perform simple maintenance tasks (e.g. cleaning the system/product, removing parts from the system/product). The operator has to ensure that the personnel is suited for performing the work.

The maintenance personnel is able to perform his/her work and to detect and avoid possible dangers on his/her own based on his/her professional training, know-how and experience as well as knowledge of the applicable standards and regulations.

The maintenance personnel has been trained for the special field where he/she works and knows the relevant standards and regulations.

Service personnel

Service personnel are persons who are authorized by the manufacturer LPKF for servicing the system/product. These tasks may only be performed by the LPKF Service.

Operating personnel

Operating personnel trained by the operator is able to perform his/her work and to detect and avoid possible dangers on his/her own based on the training performed by the operator, his/her professional training, and his/her know-how and experience.

The operating personnel has been trained by the operator for the special field where he/she works and knows the relevant standards and regulations.

2.3 Personal protective equipment

Personal protective equipment protects against health or safety risks when working with the system.

The individual sections of this manual each point out the personal protective equipment (PPE) that has to be worn during the different tasks of working on the system.

Description of the personal protective equipment

Protective glasses with side shields

The protective glasses with side shields serve for eye protection in case of flying debris and liquid splashes.

Respirator mask

Respirator masks protect against hazards from harmful substances in gases, vapors, and particles.

Safety shoes

Safety shoes protect the feet against crushing injuries, falling objects and from slipping on slippery surfaces.

Protective gloves

Protective gloves protect the hands against friction, abrasions, puncture hazards and deep cuts as well as when touching hot surfaces.

2.4 Intended use

The ProtoMat E34 has been specially designed for producing single-sided circuit board prototypes while the ProtoMat E44 has been designed for producing circuit board prototypes of up to four layers. Both systems can also be used to create signs and housing components.

The system is approved for the following processing procedures and materials:

Processing procedures

- Milling and drilling of single-sided and double-sided base material
- Milling and drilling of multi-layer material (**E44 only**)
- Milling of SMD solder paste stencils
- Engraving of signs or housing panels
- Drilling of plane materials

Materials

- GFRP and CFRP base material
- PTFE or ceramic-filled base material
- Plastics such as:
  - Polyoxymethylene
  - ABS copolymers
  - Necuron ®

Any other kind of usage is considered as not intended. The manufacturer is not liable for any damage resulting from this, the operator alone bears the risk. Part of the intended use is also to follow the instructions for safety, operation, and maintenance of the system that are described in this user manual.

In case of doubt contact the LPKF Service to receive more information on alternative materials or processing procedures.

▶ Only control the system with the system software that is included in the scope of delivery.

The system may only be operated with an extraction system that is sufficiently dimensioned and has an integrated HEPA filter.

▶ Only use qualified and approved extraction systems.

Contact the LPKF sales department or your local sales representative if you plan to use another extraction system.

Improper use

The system must not be used for processing highly combustible materials like e.g. paper or wood, sealed containers, hollow parts, textiles, or food.

Do not use the system with a different or modified software.

3 System description

The systems ProtoMat E34 and E44 are circuit board plotters for PCB processing without etchants. The systems structure single-sided or double-sided PCBs, drill holes for through-hole plating, route single PCBs from the base material and can engrave front panels for housings.

3.1 Technical data

Operating conditions

Data	Value	Unit
Temperature range (operation)	15 to 25	°C
Temperature range (storage, transport)	15 to 35	°C
Max. humidity, non-condensing	60	%
IP Code (IEC 60529) of the power supply unit	IP20	-
Service life	10	Years

Electrical data

Data	Value	Unit
Power supply	100 to 240	V
	50/60	Hz
Output power of the power supply unit	120	W

Mechanical data

Data	Value	Unit
Dimensions (width x height x depth)	370 x 300 x 450	mm
Weight (without packaging)	15	kg
Weight (with packaging)	20	kg

Process data

Data	Value	Unit
Rotation speed range	**E34:** up to 30 000 (variable) **E44:** up to 40 000 (variable)	min^{-1}
Travel speed	100 (diagonally)	mm/s
Drilling performance	100 strokes	min^{-1}
Collet	3.175 (1/8")	mm
Processing area with processing table (x/y/z)	229 x 305 x 5	mm
Resolution (x/y)	+/- 0.8 (0.04)	µm (mil)
Repeatability	+/- 5 (0.2)	µm (mil)
Accuracy using the reference-hole system	+/- 20 (0.8)	µm (mil)

Emissions

Data	Value	Unit
Sound pressure level LpA (EN ISO 3744)	< 70	dB (A)
Sound power level LwA (EN ISO 3744)	71 (without extraction system)	dB (A)
EMC emission class	A	-

3.2 Type label

The type label is located at the housing of the system. For information on identifying the system and the relevant equipment, specify the system model and the serial number on the type label when you contact the LPKF Service.

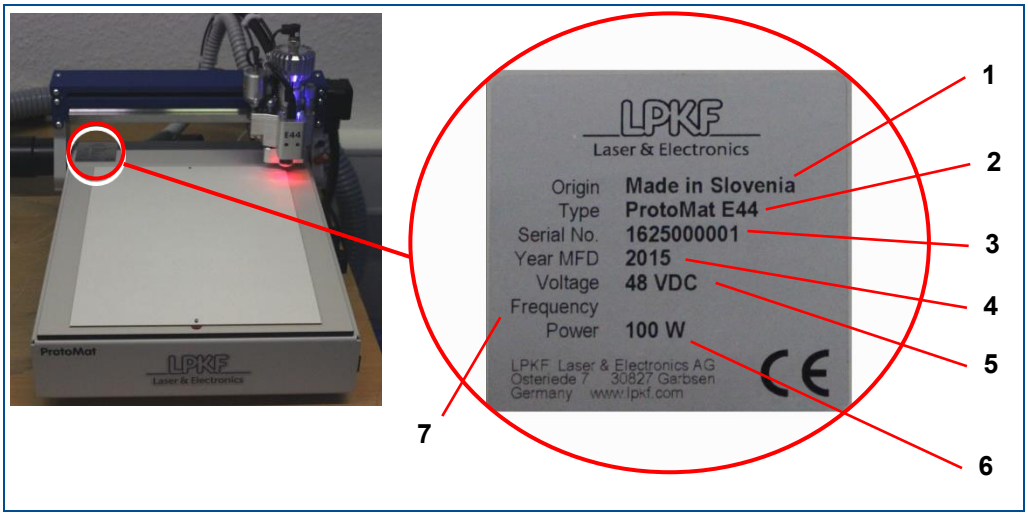
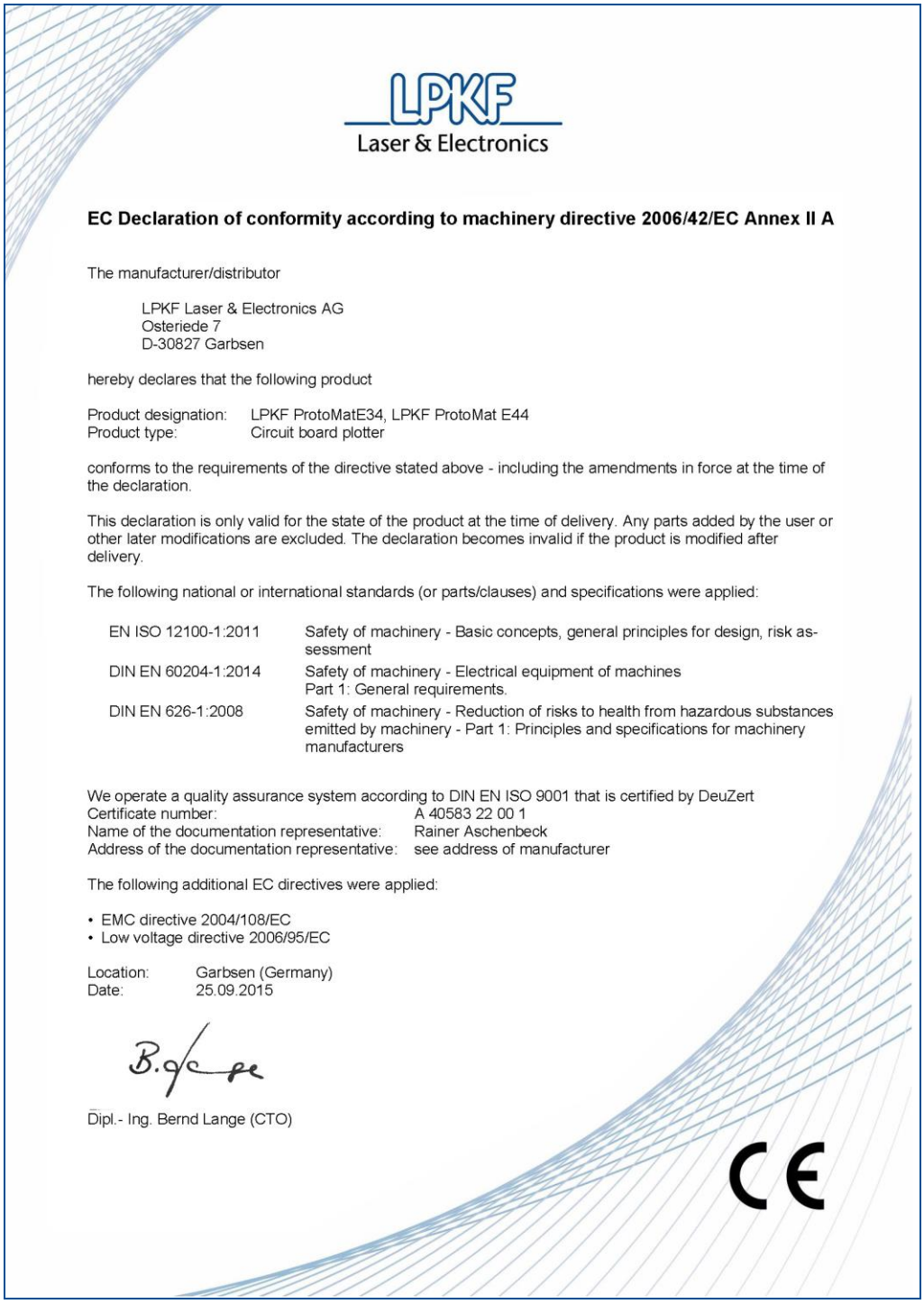


Fig. 1: Type label

1 Country of origin
2 System type
3 Serial number
4 Year of manufacture
5 Operating voltage
6 Power rating
7 Line frequency

3.3 EC Declaration of conformity



LPKF
Laser & Electronics

EC Declaration of conformity according to machinery directive 2006/42/EC Annex II A

The manufacturer/distributor

LPKF Laser & Electronics AG
Osteriede 7
D-30827 Garbsen

hereby declares that the following product

Product designation: LPKF ProtoMatE34, LPKF ProtoMat E44
Product type: Circuit board plotter

conforms to the requirements of the directive stated above - including the amendments in force at the time of the declaration.

This declaration is only valid for the state of the product at the time of delivery. Any parts added by the user or other later modifications are excluded. The declaration becomes invalid if the product is modified after delivery.

The following national or international standards (or parts/clauses) and specifications were applied:

EN ISO 12100-1:2011	Safety of machinery - Basic concepts, general principles for design, risk assessment
DIN EN 60204-1:2014	Safety of machinery - Electrical equipment of machines Part 1: General requirements.
DIN EN 626-1:2008	Safety of machinery - Reduction of risks to health from hazardous substances emitted by machinery - Part 1: Principles and specifications for machinery manufacturers

We operate a quality assurance system according to DIN EN ISO 9001 that is certified by DeuZert
Certificate number: A 40583 22 00 1
Name of the documentation representative: Rainer Aschenbeck
Address of the documentation representative: see address of manufacturer

The following additional EC directives were applied:

- EMC directive 2004/108/EC
- Low voltage directive 2006/95/EC

Location: Garbsen (Germany)
Date: 25.09.2015

Dipl.- Ing. Bernd Lange (CTO)

CE

Fig. 2: Declaration of conformity

4 Transport and storage

This chapter contains important information on transport, storage and packaging of the system.

NOTICE

System damage by improper transport!

Improper transport can cause damage to the system.

- ▶ Transport the system cautiously to the place of installation.
- ▶ Observe the symbols on the packages.
- ▶ Remove the packaging only directly before system installation.

4.1 Transport inspection

Check the delivered goods immediately upon receipt for completeness and for transport damage.

If transport damage is evident, proceed as follows:

- ▶ Do not accept the delivery or only with reservations.
- ▶ Record the extent of damage on the transport documentation or on the delivery note of the transport company.
- ▶ Initiate a complaint.

4.2 Transporting the system

Prerequisites

- Safety shoes
- Protective gloves

Tools

- Unpacking instructions

Preparing the system for transport

1. Switch off the system before transport.
2. Disconnect all connections of the system.

In case of the ProtoMat E44, the camera connections have to be disconnected additionally.

3. Insert a tool or the dummy tool if no tool is in the collet.
4. Install the transport lock beneath the processing head.
5. For transport over longer distances, pack the system in its original packaging.

For transport over short distances, the transport lock does not have to be installed and the system does not have to be packed.

☑ The system has been prepared for transport.

▶ Follow the unpacking instructions attached to the packaging.

Removing the transport lock

1. Remove the foam pad beneath the processing head.
2. Store the foam pad in the box for a possible transport of the system.

☑ The transport lock has been removed.

Removing the dummy tool from the collet

1. Apply the insertion tool (**2**) to the dummy tool in the collet (**1**).

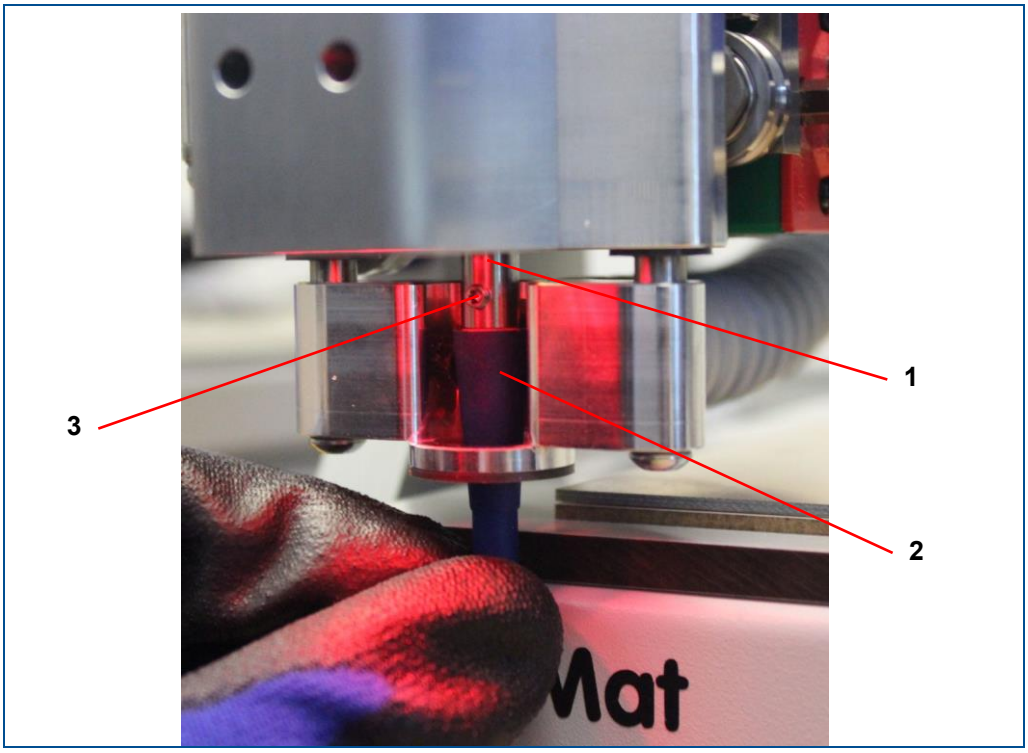


Fig. 3: Applying the insertion tool

1 Collet
2 Insertion tool
3 Locking screw

2. Use the screwdriver in the delivery to loosen the locking screw (**3**) of the collet (**1**).

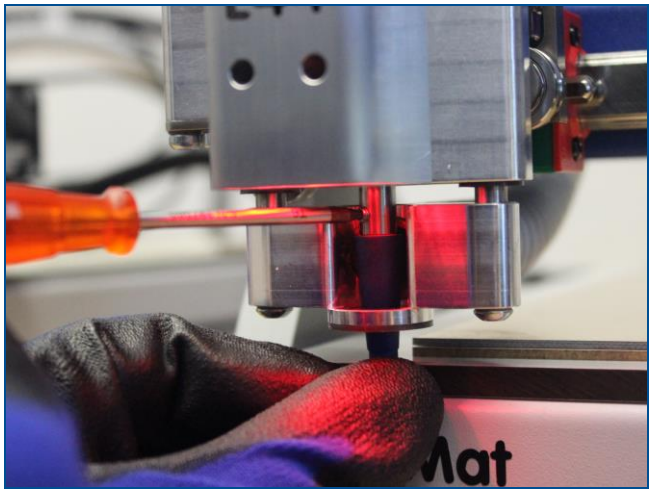


Fig. 4: Loosening the locking screw

3. Pull the insertion tool (**2**) with the dummy tool downwards out of the collet.

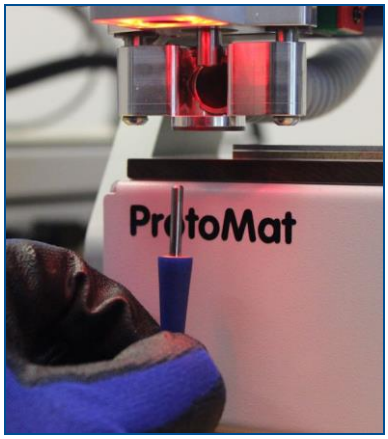


Fig. 5: Extracting the dummy tool

4. Remove the dummy tool from the insertion tool.

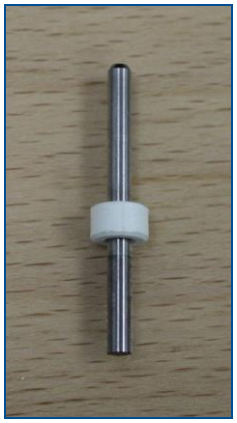


Fig. 6: Dummy tool

☑ The dummy tool has been removed from the collet.

4.3 Storage

- Store the system in its original packaging according to the symbols on the packaging.
- Store the packages under the following conditions:
  - Do not store outdoors.
  - Store dry and dust-free.
  - Do not expose to aggressive substances.
  - Protect against sunlight.
  - Storage temperature: 15 °C - 35 °C
  - Relative air humidity: 60 % max, non-condensing.
  - If storing for more than 3 months, check the general condition of all components and the packaging on a regular basis.

When putting the system out of operation and into storage over a longer period, ensure that the storage room is clean, almost dust-free, and has a sufficient loadbearing capacity.

4.4 Packaging

The packaging is chosen according to the transport conditions.

The packaging is to protect the system from transport damage, corrosion, and other kinds of damage until installation.

- Keep the packaging in its original form.
- Only remove the packaging just before installation.

4.4.1 Handling packaging material

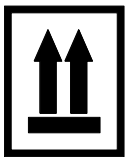
- Dispose of the packaging material according to the current laws and local regulations.

NOTICE
Environmental hazard by wrong disposal of packaging! Wrong disposal of packaging material can cause environmental hazards. ▶ Dispose of the packaging material environmentally friendly. ▶ Observe the local disposal regulations and hire a specialized company for the disposal, if necessary.

The system may only be shipped in the original packaging of LPKF. Contact the LPKF Service if you need the packaging.

4.4.2 Symbols on the packaging

Observe the following symbols on the packaging when transporting the system:



Top
The arrowheads of the symbol indicate the top side of the package. These always have to point upwards, otherwise, the contents could be damaged.

Keep dry
Protect packages against moisture and keep them dry.

Fragile
Identifies packages with fragile or sensitive contents. Handle the package with care, do not drop, and do not subject it to shocks.

5 First startup

This chapter contains important information on first startup of the system.

5.1 Safety

Observe the following safety instructions for the first startup of the system:

⚠ WARNING

Accident hazard due to insufficiently qualified personnel!

Insufficiently qualified personnel cannot assess the risks of using the system and put themselves and others in danger.

- ▶ Allow only qualified personnel to use the system.
- ▶ Keep insufficiently qualified personnel out of the working area.

⚠ CAUTION

Tripping hazard by hoses and cables!

Hoses and cables are routed to the system. If the hoses and cables are laid inappropriately they pose a tripping hazard for the operating personnel.

- ▶ Always ensure that the hoses and cables do not pose a tripping hazard.

NOTICE

Property damage by moisture during transport/storage!

When transporting or storing the system, moisture can cause damage to the system.

- ▶ Ensure that there is no moisture in the system.
- ▶ Before first startup of the system wait approx. 24 hours to allow the system to acclimatize.

5.2 Requirements of the place of installation

Before installing the system, the following requirements of the place of installation have to be ensured.

5.2.1 Climatic conditions

The following climate conditions have to be ensured for operating the system:

Climatic conditions	
Temperature range	15 °C to 25 °C
Humidity	max. 60 % non-condensing

Table 3: Climatic conditions

5.2.2 Minimum required space

System dimensions

- Width 370 mm
- Depth 450 mm
- Height 300 mm

Minimum required space for operation and maintenance

- Width 1 800 mm
- Depth 1 100 mm
- Height 1 820 mm

The area marked in red in the following figure is the safety zone. It must not be blocked by objects. The area marked in blue is the workspace for maintenance and must not be blocked. In front of the system, at least 400 mm of space should be available for operation and movement.

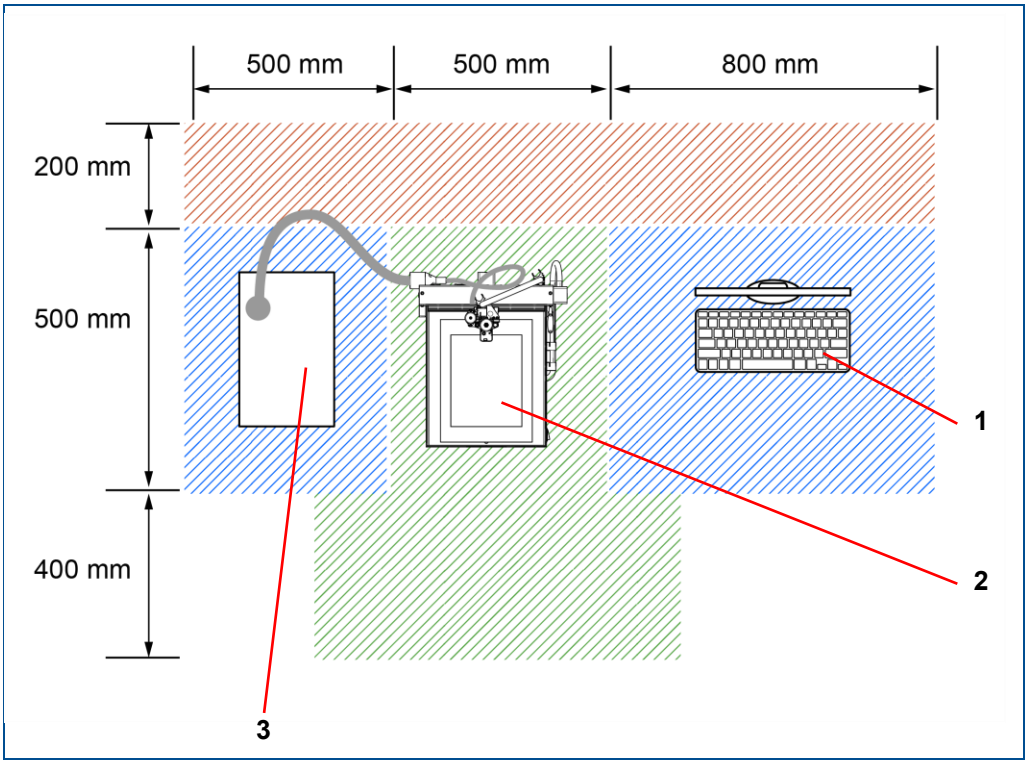


Fig. 7: Minimum required space

1 PC (recommended position for desk and PC)
2 System
3 Extraction system

5.2.3 Workplace of the operating personnel

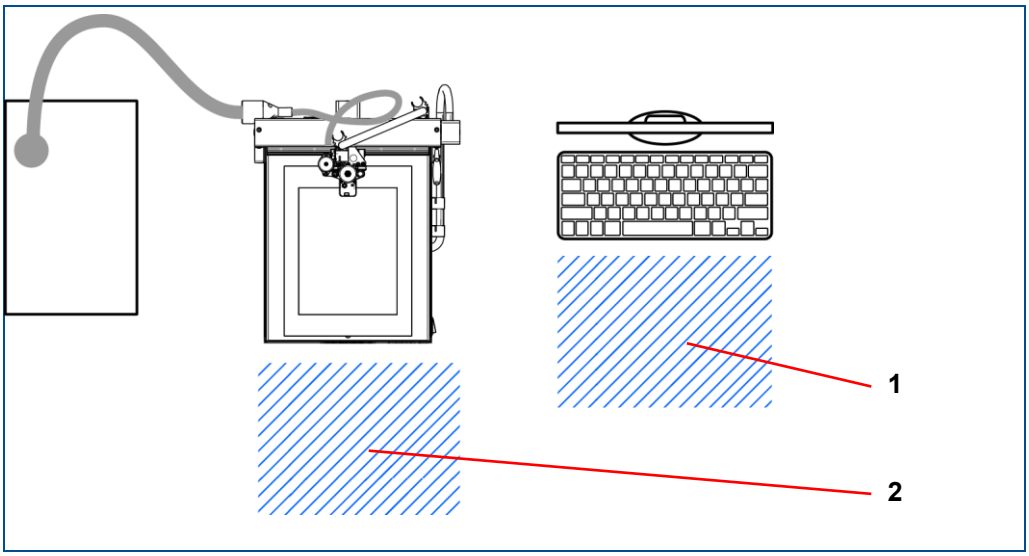


Fig. 8: Workplace of the operating personnel

1 System work station **2** PC work station

The system is designed exclusively for operation by a single person. The system is operated according to its intended use at the following work stations:

- **System work station**

  The system work station is used for loading and unloading the system.
- **PC work station**

  The PC work station is used for monitoring the production and for controlling the system.

5.2.4 Floor

The floor has to be leveled and antistatic and has to have a sufficient load-bearing capacity for the total weight of the system (**15 kg**).

⚠ WARNING

Risk of injury by loss of stability!

Loss of stability due to an improper floor or missing locks can cause uncontrollable movement or tipping of the system. This can cause serious injuries.

▶ Ensure that the floor has a sufficient load-bearing capacity for the system and is even.

5.2.5 Connections provided by the customer

The following connections must be available for first startup:

Electrical data

Data	Value	Unit
Power supply	110/230	V
	50/60	Hz

5.3 Preparations

Before the system is installed, you have to consider and ensure the following:

- A suitable extraction system has to be provided. LPKF recommends using the **JetStream iSeries AX079-25** extraction system. This is optionally available at LPKF.
- A PC has to be provided by the customer. For detailed information on system requirements refer to the user manual of CircuitPro PM.
- Provide sufficient space at the place of installation.
- Ensure tidiness and cleanliness at the place of installation.
- Provide the connection materials (hoses, tubes, cables etc.).
- The room has to be clean and almost dust-free.

5.4 Connecting the system

Once all preparations are concluded, the system is connected in the following order:

- Connecting the system with the extraction system
- Connecting the system with the PC via USB
- Connecting the camera to the USB port of the system (only **E44**)
- Connecting the system to the mains power supply

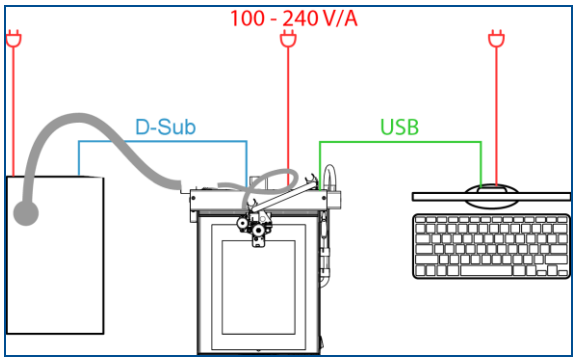


Fig. 9: Connecting the system

NOTICE

Property damage by improper startup of the extraction system!

Improper installation and startup can cause damage to the extraction system.

- ▶ Observe the minimum clearance around the extraction system defined by the manufacturer.
- ▶ Use only sockets with protective earth conductor for connecting.
- ▶ Do not use extension cables.
- ▶ Do not bend the extraction hose.
- ▶ Do not block the air flow.

Connecting the system with the extraction system

1. Check whether all required filters are installed. Install the filters if necessary.

For further information on filter maintenance refer to the manufacturer's manual.

2. Connect the hose of the extraction system to the extraction fitting of the system.

Fig. 10: Connecting the extraction system

3. Connect the hose to the air intake on the top of the extraction system.

☐ The extraction hose has been connected.

4. Plug the mains cable of the extraction system into a wall socket.

☐ The extraction system is connected to the mains power supply.

5. Plug the D-sub cable into the LPKF port.

Fig. 11: D-sub connector of the ProtoMat E34/E44

6. Plug the other end of the D-sub cable into the corresponding connector on the front of the extraction system.

Fig. 12: D-sub connector of the extraction system

☑ The system is connected to the extraction system.

Using a USB hub and/or extension cables can cause transmission problems. Connect the system directly with the PC.

Connecting the system to the PC via a USB cable

1. Plug the USB cable that is included in the delivery into the USB socket of the system.

Fig. 13: USB socket

2. Connect the system's USB cable with a free USB port of your PC.

☑ The system has been connected to the PC via a USB cable.

Connecting the system to the mains power supply

1. Plug the connector cable of the power supply unit into the power supply socket of the system.

Fig. 14: Power supply socket

2. Plug the mains cable of the power supply unit into a wall socket.

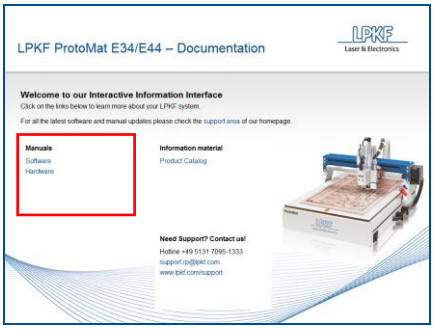
☑ The system has been connected to the mains power supply.

5.5 Reading the user manual

Once the system has been connected, read the documentation and install the system software.
The documentations and the system software are stored on the provided data media.

1

2



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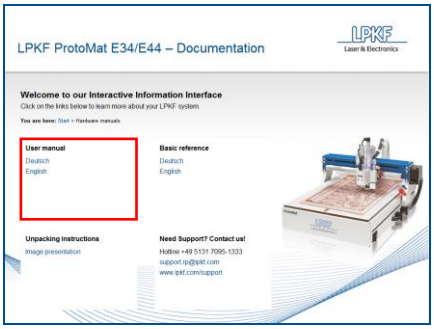

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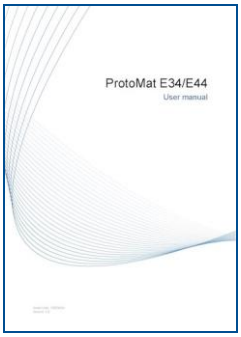

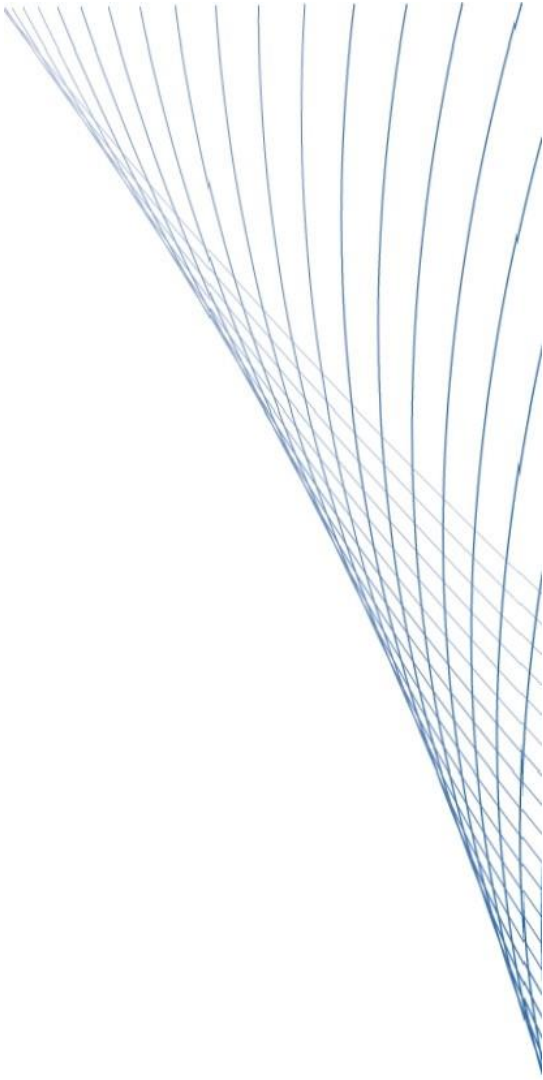

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