

# Operating Instructions

Translation of the original instructions

## Makro•Grip® Ultra Stamping System



Art. No.  
83420  
83630  
83810

## Imprint

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Changes to the product: If changes are made to the product by the customer the guarantee is cancelled. No changes may be made to the product without the prior approval of the manufacturer.

Use original spare parts only. If third-party parts are used, there is no guarantee that they have been designed and produced for the necessary loads and stresses, and safety requirements.  
The manufacturer provides the full guarantee only and exclusively for spare parts ordered from them.

The manufacturer endeavours to improve their products. They reserve the right to make changes. There is no associated obligation to subsequently adjust already delivered products.

General terms and conditions of sale and delivery:  
Our general terms and conditions of sale and delivery apply. These are available to the owner/operating company for the conclusion of the contract at the latest.

Warranty and liability claims for personal injuries and damage to property are excluded if they are due to one or several of the following causes:

- Improper use
- Improper installation, commissioning, operation and maintenance
- Operating the product in a defective condition
- Poor monitoring of parts that are subject to wear
- Disregard of the instructions and information in the documentation
- Disasters caused by the effect of foreign bodies and force majeure

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# 1 About these Operating Instructions

The instructions contain important information for safe and proper handling of the product.



**Keep these instructions for later reference**

In these instructions, the Makro-Grip® Ultra stamping system is also called the "Product".

- Only use the product if you have read and understood these operating instructions in full!
- The instructions are part of the product and must be kept accessible to the personnel at all times.
- Product damage and defects must be reported to the owner/operating company immediately and repaired by skilled personnel without delay, in order to limit the extent of the damage and to ensure that there are no negative effects on the safety of the user and of the product.

## 1.1 The design of the warnings

Note and follow the safety instructions and hazard warnings. This is a basic requirement for safe use of the product. The various notes and instructions are identified by corresponding symbols. The design of the warnings, etc. are explained briefly in the following:



**DANGER** The signal word "DANGER!" indicates an impending hazard with high level of risk. If it is not prevented it can cause direct death or severe physical injury.

➔ This arrow indicates the appropriate action to avert the impending hazard.



**WARNING** The signal word "WARNING!" indicates an impending hazard, which can potentially result in severe physical injury or death if it is not prevented.

➔ This arrow indicates the appropriate action to avert the impending hazard.



**CAUTION** The signal word "CAUTION!" indicates an impending hazard, which can result in a slight or moderate physical injury or damage to property if it is not prevented.

➔ This arrow indicates the appropriate action to avert the impending hazard.



**NOTE** The "Note" pictogram gives you tips and recommendations for use and handling of the device.



**SAFETY** Furthermore, other specific pictograms and hazard symbols are used in the relevant places in these operating instructions (as an example here: wear gloves).

## 2 Safety Instructions

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### 2.1 Intended use

The product is solely intended to be used to stamp suitable workpieces (see "Workpiece limitation" section) by means of hydraulic pressure. For material hardness up to 35 HRC with standard jaws, and even up to 45 HRC with high-end stamping jaws (included in the scope of supply). Any further use is deemed to be improper use.

- Workpieces made of steel, cast metal, non-ferrous metal and plastic can be stamped,
- in order to clamp them in the clamping devices of Lang Technik GmbH intended for this purpose.

Any further use is deemed to be improper use. The manufacturer is not liable for any resulting damage.

### 2.2 Improper use



**CAUTION** In case of improper use, the product can cause significant danger due to uncontrolled machine behaviour. For example, due to breaking off tools and workpieces.

- The product may only be used within the scope of its technical data. The hydraulic pressure ranges in particular must be complied with for stamping.
- Modifications or alterations to the product are not allowed. Configurations only in the defined scope, insofar as they are described in these instructions. Only use the approved original spare parts and accessories of LANG Technik GmbH.

### 2.3 Operating personnel requirements

The owner/operating company undertakes:

- To only allow trained, skilled personnel (with metalworking training), e.g. CNC millers to work with the product.
- To clearly define the responsibilities of the personnel with regard to installation, starting up, operation, maintenance and repair.
- To allow personnel to be instructed only to work with the product under the supervision of an experienced skilled person (metal subject) or a CNC operator.

## 2 Safety Instructions

All persons assigned to operate or use the product undertake:

- To always ensure the safety of third parties and of the product.
- To read and follow the operating instructions, the safety section and the warnings.
- To comply with the fundamental regulations regarding occupational safety and accident prevention, depending on the working environment.
- To use the product only if they are familiar with the function of the product itself as well as its safety and emergency devices and can control them safely.
- To pay full attention to the work and the product.
- To always work with this product with attention, in a controlled way and sensibly. Do not use the product if you are tired or are under the influence of drugs, alcohol or medication.

### 2.4 Personal protective equipment and safety of persons



- Personal protective equipment must be worn according to the guidelines and regulations of the German "Berufsgenossenschaft" (German institutions for statutory accident insurance and prevention) and the company's regulations (work clothing, as well as slip-resistant safety footwear, gloves, hair net, etc.). Ask your employer's safety representative for information.

### 2.5 Improper handling is ...

- ... if the product is operated without an appropriate safeguard.
- ... if it is used for purposes other than intended, for example, as a pressing or punching tool, as a toolholder, as a load carrying device or as lifting gear.
- ... the product is used in unplanned machines or for unplanned workpieces.
- ... if the specified technical data are exceeded during use of the product (see "Technical data" section).
- ... if workpieces are not stamped properly, with the specified clamping forces.
- ... if the product is not used in allowable working environment conditions.

Do not manipulate or change the product.

Check the product before each use to ensure that it functions properly. If the product does not function properly, it must be taken out of operation and clearly marked as defective. Never use the product before it has been properly repaired.

## 2 Safety Instructions

### 2.6 Working environment



**CAUTION** Risk of slipping and falling due to dirty surroundings (e.g. due to metalworking fluids or oil).



- Wear safety footwear with slip-resistant sole.
- Ensure that the working environment is clean.

### 2.7 Transport and storage

#### Transport



**CAUTION** Risk of injury due to the product falling during transport or attachment and dismantling (installation).



- Wear stable safety footwear, e.g. with steel toecap.  
Wear safety footwear with slip-resistant sole.
- Select the means of transport suitable for the size and weight of the product (see "Technical data" section)

#### Operation and storage



**CAUTION** Eye injuries possible.  
Risk of injury caused by compressed air and hydraulics in the form of grease, oil and other particles sprayed around.



- Wear goggles.



**ATTENTION** Grease and oil can cause allergic skin reactions.

- Wear protective gloves.

Before placing in storage, remove all liquids, e.g. hydraulic fluid or coolants. Either blow out/off the product parts with compressed air or put them down so that the liquids can drain out.

- Collect the discharging liquids and dispose of properly according to the legal requirements.
- Protect bright metal areas of the product against corrosion and store the product in a dry place. Humidity 5–85%.
- Place the product in a safe, stable position and near the floor.

## 3 Product Description

### 3.1 General product description

The system is supplied as a double stamping station with two stamping base bodies as a standard. The system can be equipped with additional stamping base bodies, which can be placed flexibly in the 96 mm grid on the T-slot plate. The stamping system is operated by a pushbutton. The stamping system or rather its stamping jaws are delivered with parallels for a workpiece clamped depth of 3 mm and 5 mm suitable for the clamping jaws of the Makro·Grip® Ultra.

### 3.2 Areas of application

- General parts machining
- Mouldmaking
- Plate clamping
- Jigmaking
- Large and small components
- Components susceptible to deformation

### 3.3 Scope of supply

The stamping system includes:

- Frame with baseplate
- Pneumatic-hydraulic power multiplier
- 2 stamping units with protection shields
- 2 pairs of high-end stamping jaws (High-End)
- 2 pairs of parallels of each type (3 mm + 5 mm)
- 4 screw-on feet

Spare parts and accessories are available from LANG Technik GmbH. We will also be pleased to provide you with product catalogues and technical information.

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## 4 Transport and Installation

### 4.1 Transport



**CAUTION** Risk of slipping and falling due to dirty surroundings (e.g. due to metalworking fluids or oil).  
Risk of crushing due to heavy objects.

- Note section 2.6 Working environment and 2.7 Transport.
- Use a suitable means of transport (pallet truck, forklift truck) to transport the product. Select the means of transport suitable for the size and weight of the product.

### 4.2 Machine weight

Data without pallet and wooden crate:

Art. No.	Height (cm)	Width (cm)	Length (cm)	Weight (kg)
83420	82.35	61.6	68.0	450
83630	82.35	80.8	89.5	700
83810	82.35	100.0	108.0	1050

### 4.3 Installing

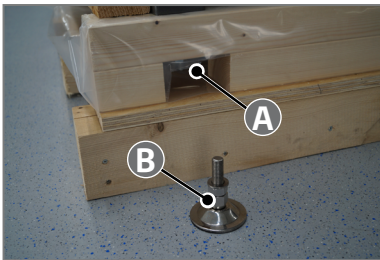


**CAUTION** Risk of crushing due to heavy loads. Risk of injury due to sharp edges or corners.



- Wear protective gloves

Choose a secured place for the installation in which external action is excluded and to which only the person doing the work has access.



The product is secured on the pallet by 4 hex. nuts. (A).

1. Remove nuts and threaded bolts.
2. Insert the 4 screw-in feet (B) supplied.
3. Check the condition of the floor and use a spirit level to balance out level differences (levelling).

## 5 Controls and Connections

The product is delivered to you in a ready to operate condition. The hydraulic system does not have to be vented.

1. Mount the protective screen (Item 1) on the fixed stamping jaws.
2. If necessary, mount the auxiliary endstop (Item 7) on the fixed jaws of the stamping station.

### 5.1 Overview of the elements

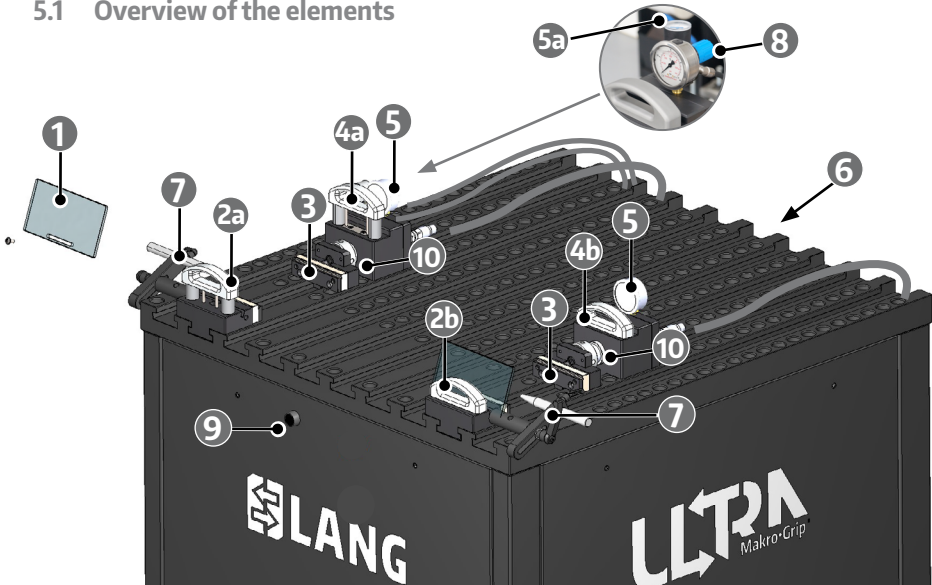


Fig. 1

Item	Quantity	Description
1	2	Protective screen
2a	1	Locking pin with handle, shown in unlocked position
2b	1	Locking pin with handle, shown in locked position
3	2	Adjustable stamping jaws, connected to hydraulic cylinder
4a	1	Locking pin with handle, shown in unlocked position
4b	1	Locking pin with handle, shown in locked position
5	2	Hydraulic pressure gauge, indicates the stamping pressure during stamping
5a	1	Pneumatic pressure gauge, indicates the preset pressure at the power multiplier
6	1	Connector for compressed air connection (inlet pressure 6-8 bar)
7	2	Adjustable workpiece endstop
8	1	Adjustable handwheel for the pneumatic pressure
9	1	Manual button at the workplace, triggers the stamping operation
10	2	Threaded spindle for fine adjustment of the adjustable stamping jaws (Item 3)

## 6 Commissioning / Operation

### 6.1 Adjusting to workpiece dimensions



**CAUTION** Injuries possible. There is a risk of crushing your fingers on locking the locking pins and on positioning (moving) the stamping jaws.

- Do not grip between the clamping jaws.
- Do not grip between the locking pins.
- Wear protective gloves.



**For the rough adjustment:** All versions of the stamping vice have gradual stamping width adjustment. The pitch is 38 mm. Pull out the locking pins (Item 4) as far as necessary and move the housing into the required position. Push the locking pin back in. Ensure that they are pushed in up to the endstop, to prevent unwanted displacement.

**For the fine adjustment:** The fine adjustment of the movable jaw is made using the threaded spindle (Item 10). Insert the threaded spindle so that there is a **gap of 0.5 to 1 mm** between the workpiece and the movable stamping jaw.

### 6.2 Positioning the workpiece

- Use the scaling to position the workpiece in the middle between the stamping jaws. You can use the endstop mounted on the fixed stamping jaw to increase accuracy when positioning the workpiece. This auxiliary endstop ensures uniform positioning of the workpiece in the long-term.
- Use the large clamping lever to adjust the height and lengthwise alignment. Use the small clamping lever to align the side endstop with the scaling. Inserting the workpiece in the middle can also be achieved very roughly by setting half the workpiece width at the endstop (e.g. 50 for 100mm width).
- Push the part to be stamped onto the auxiliary endstop and ensure that the workpiece sits straight on the parallels of the stamping jaws.

### 6.3 The stamping operation

- The stamping force can be set continuously via the pneumatic inlet pressure by using the pneumatic pressure controller (Fig. 1, Item 8).
- The power multiplier generates a hydraulic pressure from it of 1 to 360 bar.
- The stamping pressure can be read off at the two hydraulic pressure gauges (Item 5).
- The stamping operation is started by pressing the manual button (Fig.1, Item 9). The stamping operation can be ended after a steady-state pressure has set-in in the system.

## 6 Commissioning / Operation

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### 6.4 Connecting the stamping system to the compressed air supply/switching on



**CAUTION** Eye injuries possible.

Risk of injury caused by compressed air and hydraulics in the form of grease, oil and other particles sprayed around.



→ Wear goggles.

Connect the stamping system to the compressed air (inlet pressure 6-8 bar). A hose connection (Fig. 1 Item 6). for a quick-release coupling is located at the back of the stamping station.

### 6.5 Disconnecting the stamping system from the compressed air supply/switching off

How to depressurise the stamping station and leave behind a safe workplace:

Set the pneumatic pressure at the adjusting handwheel (Item 8, Fig. 1) to 0 bar, and disconnect the compressed air connection with the quick-release coupling (Fig. 1 Item 6).

## 7 Notes and Data for Setting Up

### 7.1 Correctly setting and checking the stamping pressure



**CAUTION** Injuries possible. Risk of cuts. While working with the workpiece blanks there is a risk of injuring yourself on sharp edges.



→ Wear protective gloves while handling sharp-edged parts.



**CAUTION** Injuries possible. There is a risk of crushing your fingers during the stamping operation.



→ Do not grip between the clamping jaws.

→ Grip as near to the top as possible when loading and unloading the workpiece.

→ Wear protective gloves.



**CAUTION** Injury of the eyes possible due to splintering off/flying off parts. Always note the hardness grade of the materials, the material properties, the parallelism and the radius of the workpiece.



→ Read the "Workpiece limitations" section and comply with the requirements for the properties of the workpiece.



→ Do not stamp above 35 HRC (with special high-end stamping jaws up to 45 HRC). Stay behind the protective screen during the stamping operation.

The stamping pressure is set by turning the blue adjusting handwheel on the pressure controller (Fig. 1, Item 8).

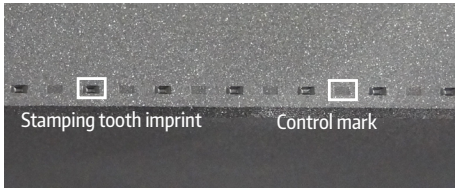
As it is not possible to give the stamping pressure of every single material type in combination with the respective workpiece width in tabular form, the stamping pressure of material type 16MnCr5 only is listed here by way of example.

Material type: 16MnCr5 (1.7131)		
Workpiece width	Material hardness	Stamping pressure
76 mm	under 35 HRC	100 bar
126 mm		140 bar

Do not rely on the reference values given! Start with a low stamping pressure and increase the value slowly. Before each new stamping series, perform a test stamping and assess the stamped contour visually.

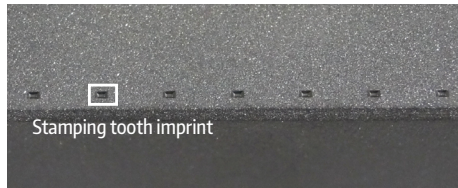
## 7.2 Evaluating the stamped pattern

After stamping a stamping contour (stamping pattern) made by the stamping teeth can be seen on the workpiece. On the basis of the stamping pattern with correct stamping:



This is what the pattern should look like for materials with hardness less than 35 HRC and with **“Standard” stamping jaws**.

The stamping contour with alternating stamping tooth imprints and control marks is clearly visible. The depth of the control marks should be around 0.1 mm. The depth of the stamping tooth imprints is around 0.25 mm.



This is what the pattern should look like for materials between 35 and 45 HRC, with **“High-End” stamping jaws** (included in the scope of supply).

For materials between 35 and 45 HRC the control mark must not be visible. The depth of the stamping tooth imprints is then around 0.15 mm.

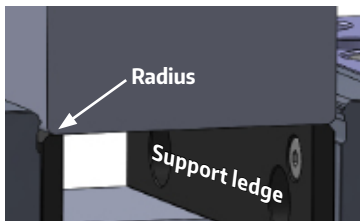
## 7.3 Workpiece limitations

The stamping station can stamp a large number of materials. It is not normally necessary to prepare or premachine the workpiece. Always note the hardness grade of the materials, the material properties, the parallelism and the radius of the workpiece.

### 7.3.1 Parallelism

The parallelism of the workpiece to be stamped may not exceed a deviation of 0.5 mm over the stamping length of 125 mm. Otherwise the workpiece must be premachined until sufficient parallelism is achieved.

### 7.3.2 Workpiece radius on the stamping surface



The maximum allowed radius on the stamping surface is: -

- When using 3 mm parallels (Art. No. 83111-03) **2 mm**.

- When using 5 mm parallels (Art. No. 83111-05) **4 mm**.

Only so is safe and reliable insertion of the stamping contour on the vertical surface ensured.

If your workpiece has a larger radius than the one given here, the stamping is not made on the vertical surface of the workpiece and is therefore not made correctly.

The parallel of the stamping jaw or the 3mm clamping depth of the Makro-Grip® 5-axis clamp can be modified by supplying a custom-made design. Ask your contact about this!

## 7 Notes and Data for Setting Up

### 7.3.3 Material properties

It is not possible to stamp all non-brittle materials. Excluded materials are, for example, graphite, composite fibre materials such as carbon, and some cast materials. Hollow and thin-walled workpieces are also not suitable for stamping, or a trial stamping must be carried out.

**Hardness grade of the materials:** The hardness grade of the material must correspond to the hardness properties of the stamping jaws. There are two types of stamping jaws: standard and high-end. The standard stamping jaws are suitable for materials up to 35 HRC. The high-end stamping jaws (accessory) are suitable for materials up to 45 HRC.

## 8 Technical Data

Art. No.	Height (cm)	Width (cm)	Length (cm)	Weight (kg)
83420	82.35	61.6	68.0	450
83630	82.35	80.8	89.5	700
83810	82.35	100.0	108.0	1050

Compressed air Inlet		Working hydraulic pressure	Hydraulic fluid HLP 32	
6-8 bar		1 to 360 bar	0.5 litre	

## 9 Disposal

Product	Material	Disposal
Housing, screws, nuts, etc.	Metal	Separation of the materials Submit for recycling by melting
Protective screen	Plastic	Submit for recycling
Hoses	Rubber, PVC, steel	Separation of the materials Submit for recycling
PE films	Plastic	Submit for recycling
Packaging material	Pallet wood	Submit for recycling
Hydraulic fluid	Mineral oil	In accordance with local regulations





