

Operating Instructions

Translation of the original instructions

EN

Makro·Grip® Ultra Makro·Grip® Ultra Clamping



Imprint

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Copyright:
LANG Technik GmbH
Albstraße 1–6
Germany
D-73271 Holzmaden

MACHINE TOOL SOLUTIONS LTD.
8Automatic Rd. Unit C-6 Brampton, Ontario L6S 5N4
Canada Tel: 905-790-8640 Toll free: 1-877-687-7253 Fax: 905-790-3740
www.machinetoolsolutions.ca

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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 clamping system is also called the "product".

- Only use the product if you have read and understood these operating instructions in full! This also applies to the instructions of the machines/clamping devices in which the product is used.
- 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

2.1 Intended use

The product is suitable for single part or multiple clamping of cubic, round or asymmetrical workpieces.

The product is fixed on the machine table solely using the fixing systems of LANG Technik GmbH intended for this purpose.

- For clamping workpieces made of steel, cast metal, non-ferrous metal and plastic.
- For machining them in enclosed milling machines, machining centres and similar types of machine tools.

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, the workpiece and the machine tool can cause significant danger due to uncontrolled machine behaviour. For example, due to tools and workpieces flying off in all directions.

- The product may only be used within the scope of its technical data. Particular attention must be paid to compliance with the actuation screw torques noted on the products.
- Modifications or alterations to the product are not allowed. Configurations only within the defined scope, see Section 6 "Notes and Data for Setting Up". Only use the approved original spare parts and accessories of LANG Technik GmbH, see Section 5 Parts Overview.
- The product must not be exposed to high centrifugal force cause by rotation, for example, such as the force produced within the machining area of the turning.

2.3 Operating personnel requirements

The owner/operating company undertakes:

- To allow only trained, skilled personnel (with metalworking training) or CNC millers, aged 18 or over, 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 ensure the safety of third persons, the product and the machine tool (machining centre) at all times.
- To read the operating instructions, the safety section and the warnings and, with their signature, confirm that they have understood them.
- 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 the function of the machine tool / the machining centre and their safety and emergency devices and can control them safely.
- The operating personnel must pay full attention to the work with the machine tool / the machining centre and the product.
- Work with this product with continuous 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 clamped 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.

Storage



CAUTION Eye injuries possible.

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



- Wear goggles.



ATTENTION Grease can cause allergic skin reactions.

- Wear protective gloves.

Before placing in storage, remove all liquids, e.g. coolants. Either blow out the clamping device with compressed air or put it down so that the liquids can drain.

- Collect the discharging liquids and dispose of properly according to the legal requirements.
- Store the product in a dry place. Humidity 5–85%.
- Place the product in a safe, stable position and near the floor.

2.8 Disposal

All components of the product are made of steel/aluminium and can be disposed of as scrap metal.

3 Product Description

3.1 General product description

The Makro-Grip® Ultra is a modular clamping system based on the LANG Quick-Point clamping plate.

The system offers numerous options for clamping components for further machining.

- It is suitable for single part or multiple clamping of cubic, round or asymmetrical components.
- Thanks to the expandability of the individual clamping modules, the Makro-Grip® Ultra is able to hold 810 mm long components.
- It can be changed easily and quickly: Due to different system heights, individually extendable clamping ranges, exchangeable clamping jaw types and useful add-on modules.

As the system is modular and can be configured in many ways, in the instructions we describe it on the basis of the available 410M Base Set.

3.2 Areas of application

- Mouldmaking
- Plate clamping
- Jigmaking
- Large components
- Components susceptible to deformation

3.3 Scope of supply

The 410M Base Set contains:

- 2 x bases
- 4x Quick-Point® clamping studs, per base body
- 1x threaded spindle
- 2 x centring plates
- 1x Quick-Point® cover plug remover
- 2 x connection plates (only for base length 610 mm and 810 mm in the base set)

The base set does not contain different clamping jaws, depending on the requirement. Various clamping jaws, accessories and individual parts are available from LANG Technik GmbH. We will also be pleased to provide you with product catalogues and technical information.

LANG Technik GmbH
Albstraße 1-6
D-73271 Holzmaden
Phone: +49 7023 9585-0

Fax: +49 7023 9585-100
Internet: www.lang-technik.de
General email: info@lang-technik.de
Sales email: sales@lang-technik.de

4 Mounting the Vice

Note: Pay attention to cleanliness in all assembly steps. Particularly in the sliding, clamping and bearing areas.

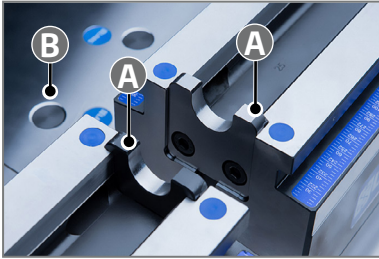


Fig. 1



Fig. 2



Fig. 3

- Fig. 3: Push the clamping jaws (D) into the guides (E) from the outside. For fast adjustment of the required clamping jaw position, they have an integrated snap-in function as an orientation aid, with which a resistance can be felt every 48 mm.

4.1 Setting up procedure for centric single clamping



CAUTION Risk of injury
Risk of crushing due to manually moved clamping devices.

- Secure the machine in which the product is installed to prevent it from starting up.



- Always familiarise yourself with the function and safety instructions of the clamping device on which the vice is mounted. In this case it is the "Quick-Point® 96, Zero-Point Clamping System".



- Do not grip between the clamping jaws. Wear safety gloves.



WARNING Risk of injury!
Incorrect workholding can cause parts of the tool or workpiece to be ejected into the surroundings and cause severe injuries.

- The components of the spindle are adjusted to each other and do not need dismantling.
- Do not mix up the centring plates. Refer to the Notes and Data for Setting Up section.

Note: A setup example based on the Makro-Grip® Ultra 410M Base Set is shown.
The "Quick-Point® 96, Multi Plate" illustrated in Fig.1 Item B) is not included in the set.

- Fig. 1: Insert both centring plates (A) in the base body (see also Section 5 Item 4a), press down and screw tight (Allen key A/F 5, 12 Nm). **In the case of the flat bodies (height "S" 45 mm), the procedure must take place in the clamped state on a "Quick-Point® 96 Zero-Point Plate".**
- Fig. 2: Position the base body on the "Quick-Point® 96, Zero-Point Clamping System" (B) and clamp tightly. Use steel cover plugs to close off unused mounting holes (Fig. 1, Item B)
- Fig. 2: Insert the spindle (C) between the centring plate.

4 Mounting the Vice

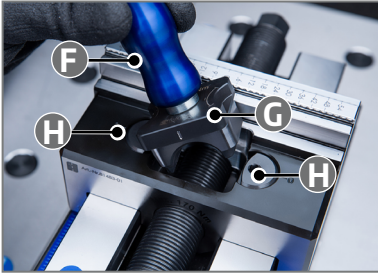


Fig. 4

Fig. 4:

Insert the threaded cap (G). If the threaded cap is inserted in the same locking position on both sides, the clamping jaws are centred automatically.

Pay attention to left and right-hand thread. To this end, there are marks on the threaded caps (G) and on the sleeve of the spindle (Fig. 5 Item I), **L** for left-hand thread and **R** for right-hand thread (see Section 5 Item 12).

Finally, secure the two threaded caps with the actuation screws by approx. a half-turn to 10 Nm.

The magnetic handle (F) is useful inserting, but is also very handy, especially for removing caps.

Ready.



Fig. 5

4.2 Changing the clamping jaw position quickly

To move the position of the jaws, undo the actuation screws (Fig.4 Item H) and remove the threaded cap with the help of the magnetic handle (F). If necessary, when lifting out, a slotted screwdriver inserted into the notch provided can help to remove the cap.

The clamping jaws can now be easily and quickly moved into the required position.

4.3 Setup procedure for compensating multiple clamping

The setup procedure is the same as for centric single clamping as described in section 4.1. – please read the procedure and also follow the safety instructions. **The decisive difference** lies in the use of other (compensating) centring plates. Use Item 4b for compensating multiple clamping (see Section 5 Parts Overview and Section 6). The centring plates for **compensating multiple clamping differ structurally and visually due to a round cut recess**, which allows the threaded spindle additional clearance (max. 4 mm) for different size components.

Please also note the instructions and information in Section 6.



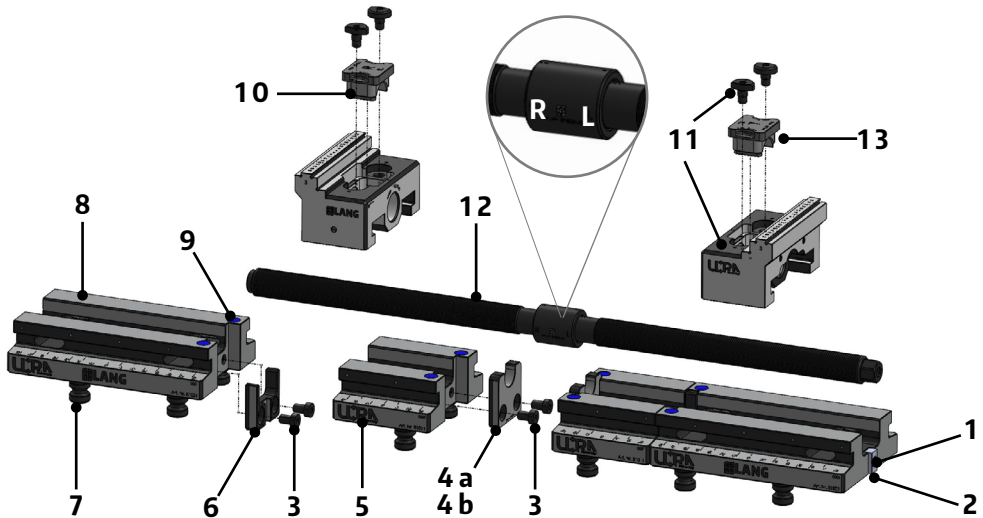
Fig. 6

5 Example Installation with Parts Overview

The exploded view is of a setup example, consisting of:

- Makro-Grip® Ultra “Base Set 610 S” with system height “S” and 610 mm clamping range.
- 2x “Makro-Grip® serrated clamping jaws”.

Further details of numerous possible combinations can be found in the product catalogues, brochures and on the website or ask LANG Technik GmbH directly.



Item	Quantity	Article No.	Description
1	1	KT1000392	Hex socket head cap screw DIN 912 M5x12 (A/F 4)
2	1	KT1001929	Flat slot nut
3	2 + 2	KT1001930	Hex socket head cap screw, low head DIN 7984 M8x12 (A/F 5)
4a	1	81010	Centring plate, centring, for single clamping
4b	1	81040	Centring plate, compensating, for multiple clamping (use for compensating multiple clamping only! See also Section 4.3 and 6)
5	1	81011	Short base body (L 96 mm) incl. 2x Item 7
6	1	81015	Connection plate
7	4	45570	Clamping stud set $\varnothing 20$
8	1	81021	Long base body (L 192 mm) incl. 4x Item 7
9	20	81500	Plastic cover
10	1	81080	Threaded cap for right-hand thread
11	1	81483	Makro Grip clamping jaw with 2x clamping screws
12	1	81040	Threaded spindle 617 mm long (do not dismantle!)
13	13	81090	Threaded cap for left-hand thread

All base bodies include Items 1 and 2 and the required number of Item 7.


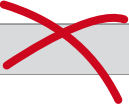
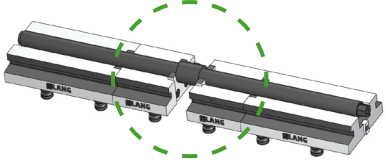

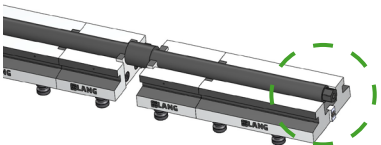
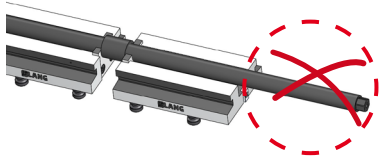
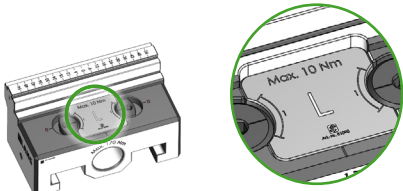
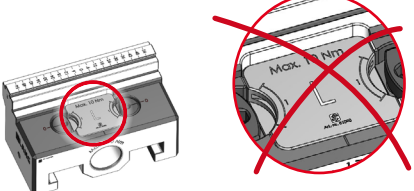
6 Notes and Data for Setting Up

6.1 Combining correctly in the system



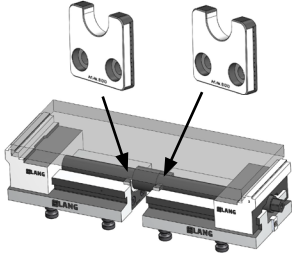

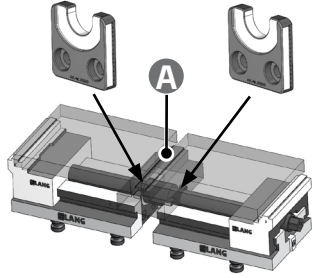



WARNING Damage to property or risk of injury! If the workholding is defective, parts of the tool or workpiece can be ejected into the surroundings and cause slight to moderate injuries.

→ Note the instructions in the "Right/Wrong table"

Right 	Wrong 
	
<p>Always place the short base in the middle. In this way, the clamping forces are distributed optimally.</p>	
	
<p>Always use the correct spindle so that it does not protrude above the base body.</p>	<p>Protruding parts increase the likelihood of collisions during machining.</p>
	
<p>After inserting the threaded cap, the clamping screws must be tightened (10 Nm) (see also Item 11, in Section 5).</p>	<p>Check the position of the actuation screws. In this figure they are not yet tightened.</p>

6 Notes and Data for Setting Up

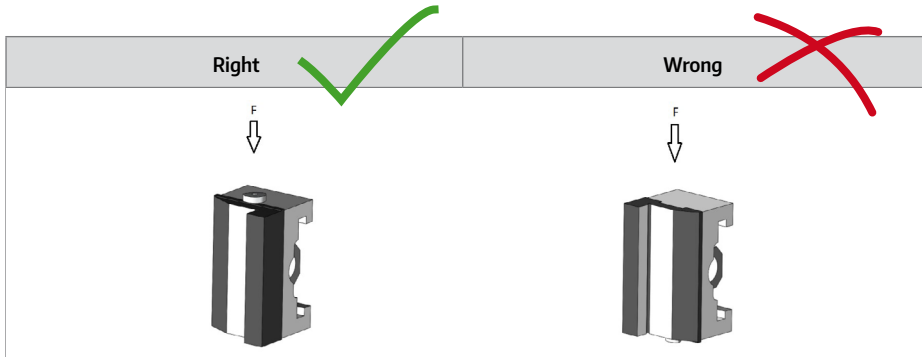
Right 	Wrong 
<p>Centric centring plate 2x Art. No. 81010</p> 	<p>Compensating centring plate Art. No. 81040</p> 
<p>Example of centric single part clamping: The two centring plates Art. Nr. 81010 from the base set fix the spindle axially.</p>	<p>The compensating centring plate (Art. No. 81040) may not be used here. With this type of clamping (centric single part clamping), this would lead to uncentred clamping.</p>
<p>Compensating centring plate 2x Art. No. 81040</p> 	<p>Centric centring plate Art. No. 81010</p> 
<p>Example of compensated multiple clamping: The two centring plates (Art. No. 81040 Accessories) can be used to clamp two workpieces simultaneously, even if their lengths differ by up to 4 mm. The condition for this type of clamping is a middle jaw securely mounted on the bases (Position A). For example, Art. No. 81483-TG, 81485-TG (accessories).</p>	

6 Notes and Data for Setting Up



WARNING Risk of injury! If the workholding is defective, parts of the tool or workpiece can be ejected / fly out into the surroundings and cause severe injuries.

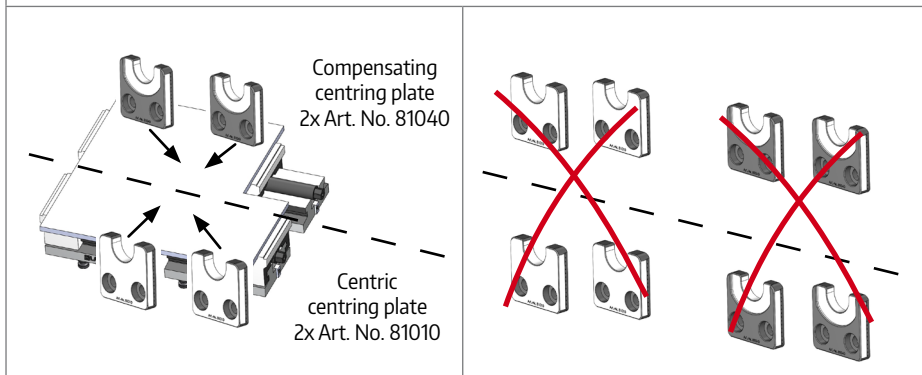
→ Follow the notes on correct clamping.



Clamping with Avanti jaws:

Where possible, release the tension in the clamping screw in the clamping jaws.

Mount the base jaws so that forces (gravity, cutting force) act on the "block" and not on the clamping screw.



In case of asymmetrical double clamping:

Always combine a centring clamping unit and a compensating clamping unit.

Note and follow Section 4 to mount the vice.

You are welcome to contact us if you are not sure about setting up, have any questions or need special configurations:

LANG Technik GmbH
Albstraße 1-6
D-73271 Holzmaden
Phone: +49 7023 9585-0

Fax: +49 7023 9585-100
Internet: www.lang-technik.de
General email: info@lang-technik.de
Sales email: sales@lang-technik.de

7 Disposal

Have the product recycled/recovered according to the regulations applicable in your country.

Recycling and recovery of materials is based on separation of the materials used. Dismantle the product, as far as possible without using special tools, and separate the individual components such as:

Component	Material	Disposal via
Base body	Steel	Scrap metal
Small parts	Steel	Scrap metal
Top jaws	Steel/aluminium	Scrap metal



ATTENTION Grease can cause allergic skin reactions.

→ Wear protective gloves.



WARNING Eye injuries possible

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



→ Wear goggles.

Before disposing of the product, remove all liquids such as lubricants and coolants. Either blow out the product with compressed air or put it down so that the liquids can drain.

1. Collect the liquids and dispose of them properly according to the legal requirements.
2. Dismantle any identifiable plastic or aluminium parts installed in or on the product and dispose of properly according to the legal regulations.
3. Dispose of the metal parts of the product as scrap metal.



MACHINE TOOL SOLUTIONS LTD.

8 Automatic Rd. Unit C-6 Brampton, Ontario L6S 5N4
Canada Tel: 905-790-8640

Toll free: 1-877-687-7253 Fax: 905-790-3740

info@machinetoolsolutions.ca

www.langworkholding.com