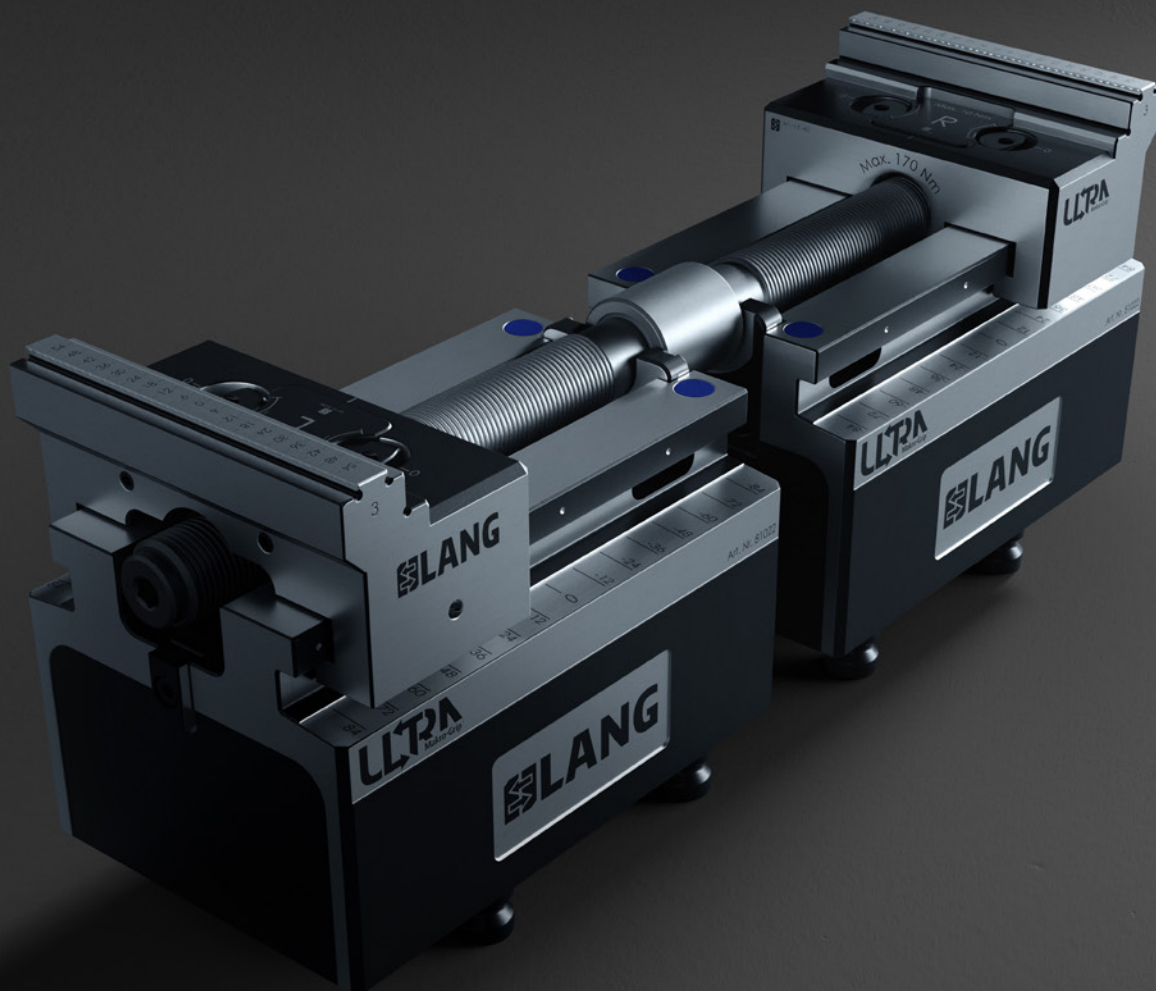




MAKRO·GRIP® ULTRA



- 68 Makro-Grip® Ultra **Base Set**
- 69 Makro-Grip® Ultra **Jaws and Individual Components**
- 83 Makro-Grip® Ultra **Stamping Units**



simple.
gripping.
bigger.

Workholding in new dimensions

Makro·Grip® Ultra convinces with:

MODULARITY

PRECISION

SIMPLE OPERATION

The quite new product line Makro·Grip® Ultra offers various clamping possibilities and can be changed quickly and easily at the same time. Thanks to the expandability of its modules Makro·Grip® Ultra is capable of clamping parts of 810 mm length and beyond safely. With its size it pushes the LANG workholding to new heights. Different system heights, individually expandable clamping ranges, interchangeable clamping jaw types and useful accessories – Through its wide range of possible configurations Makro·Grip® Ultra covers any imaginable clamping application and is particularly suited for mould making and clamping flat and large components.

Benefits of Makro·Grip® Ultra:



Set-up and changeover within seconds



Low-vibration and distortion-free clamping



Clamping of asymmetrical parts



All-around machining without changing over the clamping system



Integration of automated machining processes without removing the clamping system



Simple cleaning and maintenance

The clamping system at a glance

1 Makro-Grip® Ultra Clamping Jaw

The Makro-Grip® Ultra clamping jaw which is made from solid material is available in two different types (jaw width 125 mm), either with a clamping depth of 3 mm or 5 mm. The clamping jaw has the same serration as regular Makro-Grip® 5-Axis Vises and grips the workpiece by form-fit. This way highest holding forces can be accomplished, gently and virtually wear-free. Additionally LANG offers a hardened jaw without serration but with a plain clamping step (clamping depth 16 mm) which is making use of the Avanti dovetail technology. This means that also regular Avanti top jaws can be mounted, in order to clamp parts that are not prismatic. More information about the different jaw types can be found on pages 69 and 73.

2 Base Body

The case-hardened, robust base body with integrated zero-point interface impresses with its simplicity, however it offers some technical refinements. Available are two different lengths, each in three different heights. Clamping ranges of 410, 610 and 810 mm are realized when putting them together in different compositions. The base bodies are positioned so accurately that you almost do not notice the transition from one base to the other when sliding the clamping jaws over the rails. Thanks to the exact spindle seat an exceptionally high centering accuracy is achieved. Different centering plates mounted to the inner ends of the base bodies allow for clamping parts either centrically or, in combination with a center jaw, multiple parts can be clamped. The base bodies also have a practical snap-in function which makes it easier to locate the jaws.



5

3 Threaded Cap

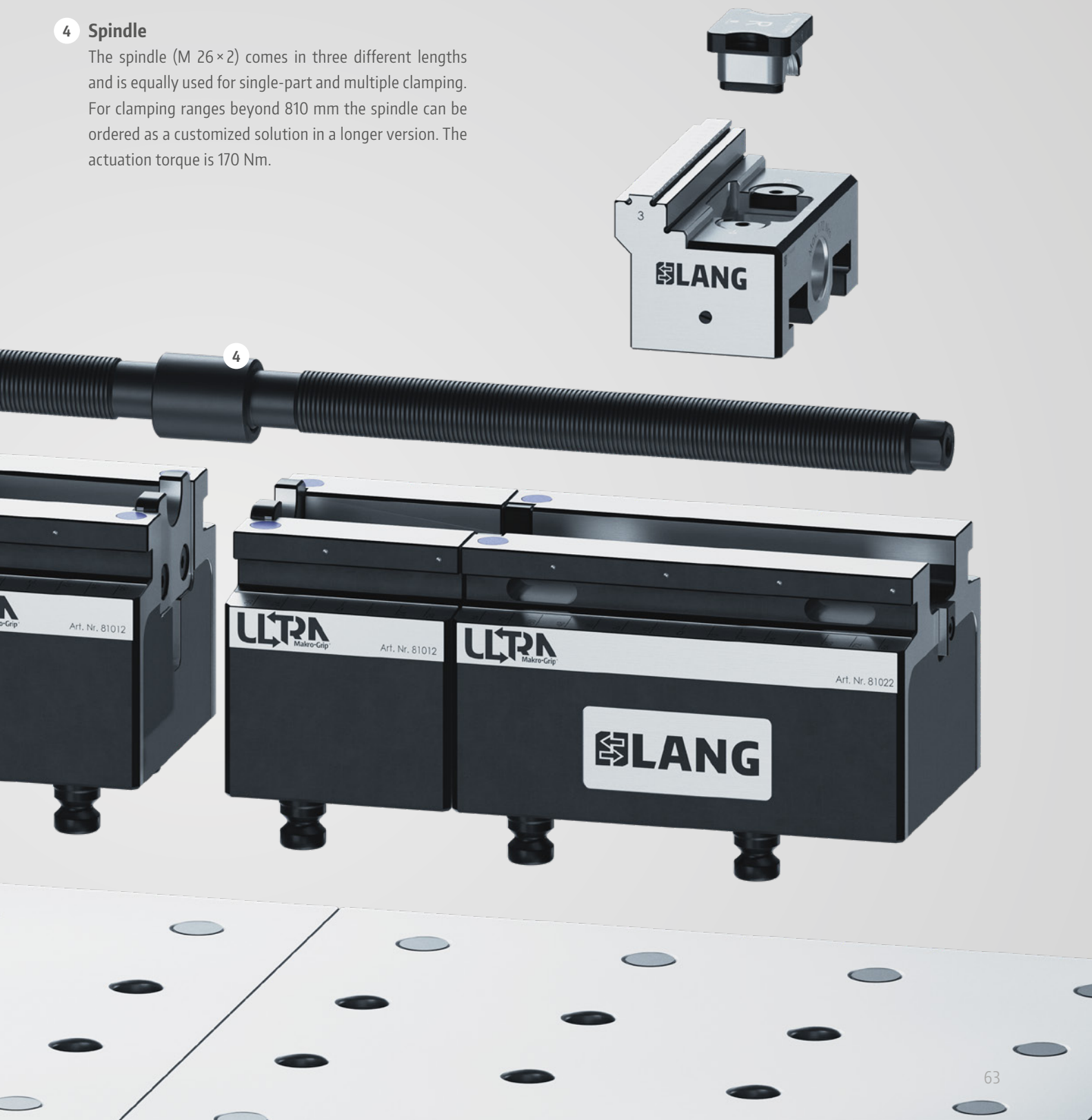
Each clamping jaw is individually secured by a threaded cap and thus can be moved independently from other clamping jaws. Removing the threaded cap with a magnet allows the clamping jaw's position to be shifted quickly without actuating the spindle.

4 Spindle

The spindle (M 26×2) comes in three different lengths and is equally used for single-part and multiple clamping. For clamping ranges beyond 810 mm the spindle can be ordered as a customized solution in a longer version. The actuation torque is 170 Nm.

5 Quick-Point® Zero-Point Clamping System

The interface between Makro-Grip® Ultra and the machine table is the ultra-precise Quick-Point® zero-point clamping system. Depending on requirements and workpiece size, its 96 mm grid allows supplementary base bodies to be placed next to each other and connected with each other.





Raw Part Clamping with serrated Makro-Grip® Ultra jaws

The Makro-Grip® stamping and workholding technology, which has been tried and tested for years, also shows its unique advantages in the clamping of large parts. Moulds, plates and all kinds of components from 40 to 810 mm in length and beyond are pre-stamped and then held by form-fit in the Makro-Grip® clamping jaws at only 3 or 5 mm clamping depth. The workpiece is held reliably with the highest holding forces at relatively low actuation torque, which leads to precise results, especially for deformation-sensitive and flat material.

Clamping long components across several Makro-Grip® Ultra units

Not only nearly unlimited in clamping range, but also highly adaptable and modular. Makro-Grip® Ultra can be assembled flexibly using a variety of clamping jaws, base bodies and spindles. The modularity and high centering accuracy of the Makro-Grip® Ultra clamping elements, coupled with the precision and flexibility of the Quick-Point® zero-point clamping system, guarantee ideal clamping of long parts.

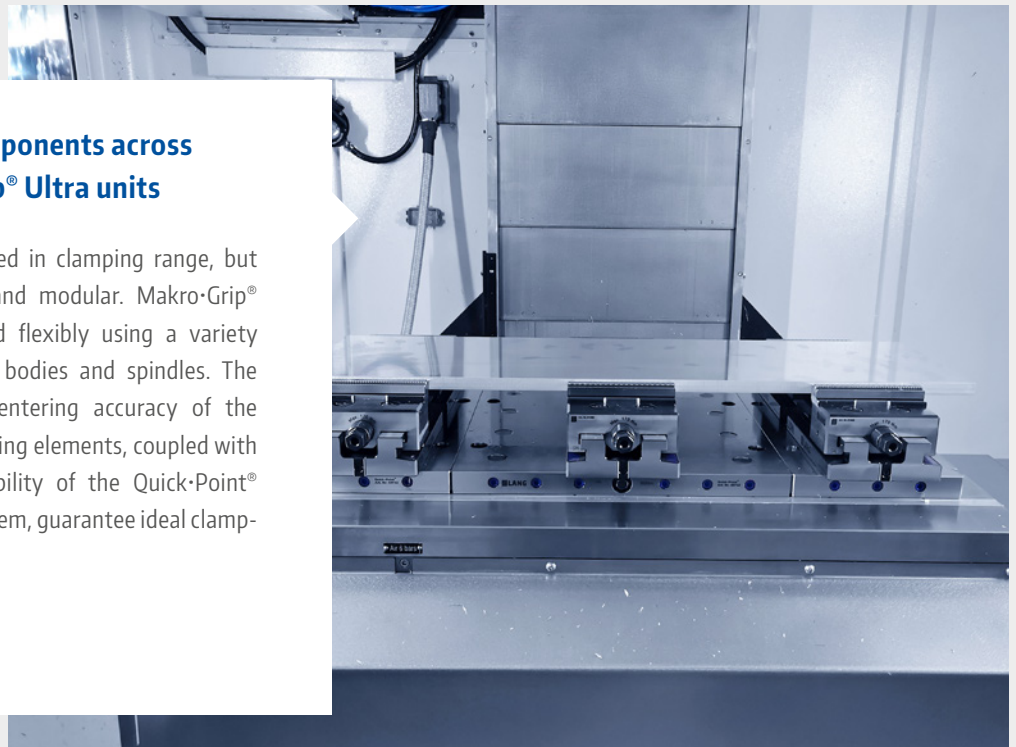
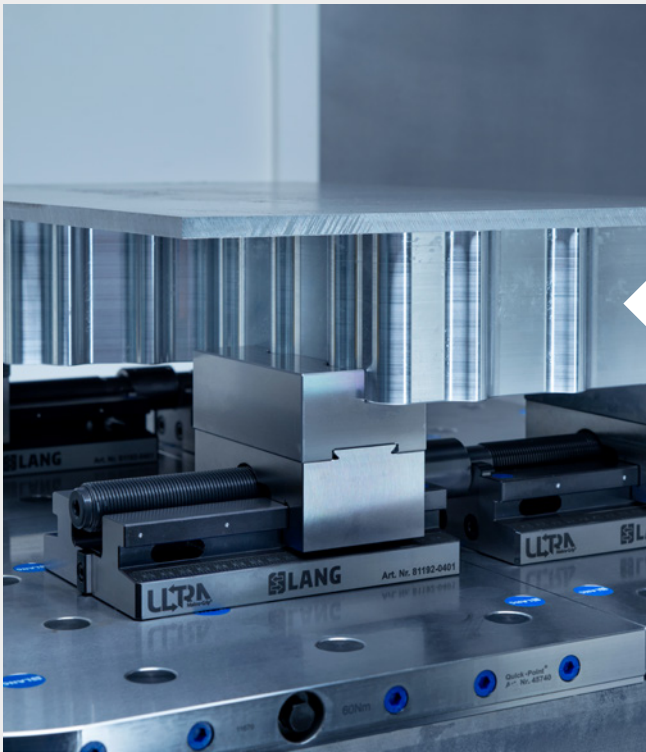


Image: ifm electronic gmbh

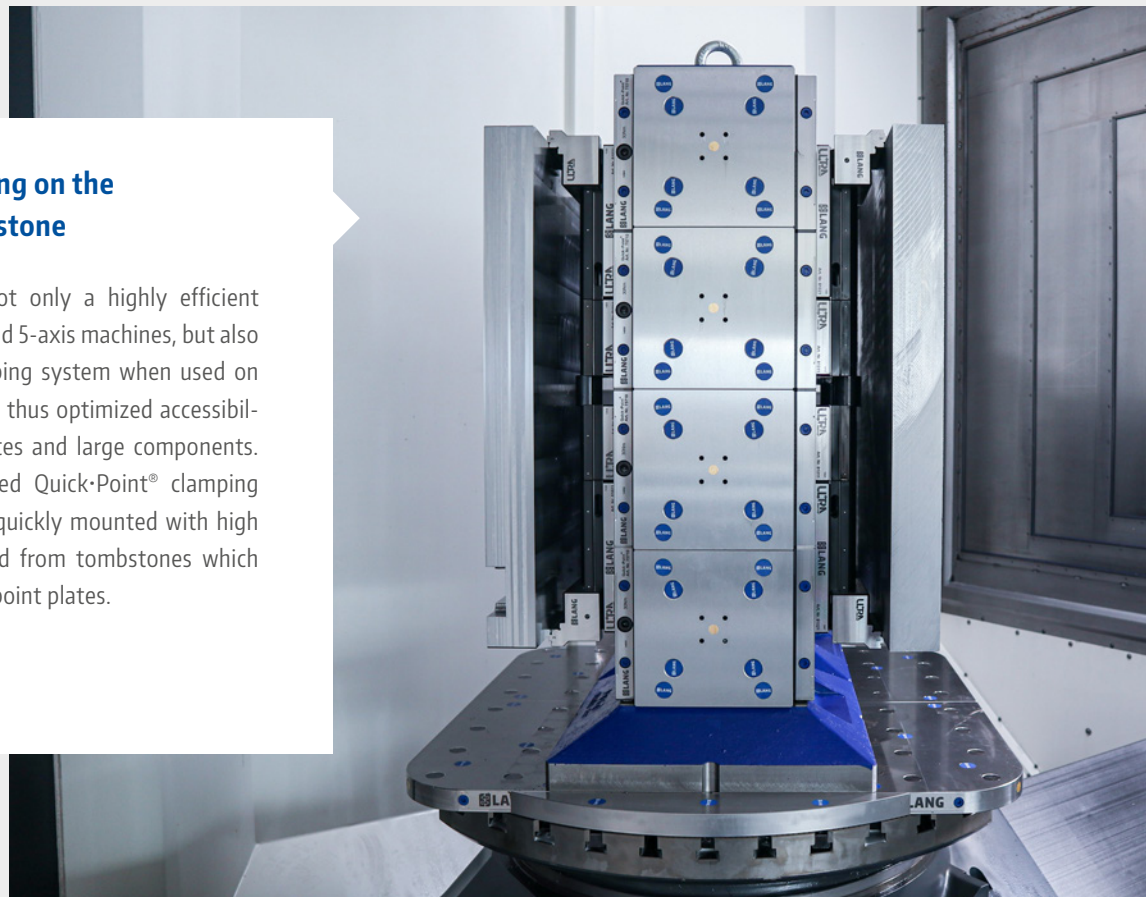


2nd operation / rear-face machining using contour jaws

Even with geometrically unshaped components, Makro-Grip® Ultra offers a simple but efficient solution: Since the jaws are independently adjustable towards the center, asymmetrical clamping configurations can be realised quickly and easily. This reduces set-up for the second operation to a minimum. The quick and precise adjustment of the jaws is ensured by a removable threaded cap and a scale on the base body.

Large plate clamping on the Quick-Tower tombstone

Makro-Grip® Ultra is not only a highly efficient clamping option for 3- and 5-axis machines, but also offers a low-build clamping system when used on horizontal machines and thus optimized accessibility when machining plates and large components. Thanks to the integrated Quick-Point® clamping studs, the vises can be quickly mounted with high repeatability or removed from tombstones which are equipped with zero-point plates.





Modularity

The modularity and small number of components, as well as the consistent Quick·Point® 96 zero-point grid allow to change the clamping setup immediately. Adding base bodies to increase the clamping range, a complete exchange of base bodies to alter the system height and changing jaw types can be done in a few simple steps without special tools.



Easy setting and cleaning

Just as quickly as it is set up, Makro-Grip® Ultra can be disassembled. Clamping jaws and spindles are removed easily which simplifies cleaning and maintenance after and in between machining processes. Clamping tasks that are performed with other fixtures are possible even without having to remove the Makro-Grip® Ultra system. Accessibility still remains and the risk of swarf clogging is low.



Quick jaw adjustment

By removing the threaded cap with a magnetic handle the position of the clamping jaws can be changed in no time without actuating the spindle. Despite their high accuracy of fit the clamping jaws glide smoothly over the guide surface. The threaded cap is kept in place by two extremely resilient hexagon screws (5 mm) which are opened/locked with half a turn.

Scale and snap-in function

For a quick adjustment into the desired position the clamping jaws feature an integrated snap-in function as an orientation aid where the operator feel resistance every 48 mm. Each base body also has a scale which provides a visual aid when positioning the clamping jaws.



Makro·Grip® Ultra Base Set

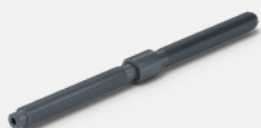


BASE SET

ITEM NO.	DESCRIPTION	HEIGHT	SPINDLE LENGTH	CLAMPING RANGE	WEIGHT
81400	Base Set 410 S	45 mm	441 mm	40 – 410 mm	12.8 kg
81415	Base Set 410 M	109 mm	441 mm	40 – 410 mm	26.0 kg
81423	Base Set 410 L	189 mm	441 mm	40 – 410 mm	43.2 kg
81600	Base Set 610 S	45 mm	617 mm	40 – 610 mm	19.1 kg
81615	Base Set 610 M	109 mm	617 mm	40 – 610 mm	40.1 kg
81623	Base Set 610 L	189 mm	617 mm	40 – 610 mm	66.9 kg
81800	Base Set 810 S	45 mm	825 mm	40 – 810 mm	25.3 kg
81815	Base Set 810 M	109 mm	825 mm	40 – 810 mm	51.7 kg
81823	Base Set 810 L	189 mm	825 mm	40 – 810 mm	85.7 kg

The model shown has the item no. 81415.

A Base Set consists of the base body and the following components:



1x Spindle Unit
Item No. 81004 / 81006 / 81008



2x Centering Plates
Item No. 81010



Quick-Point® Clamping Studs
Item No. 45570



**1x Quick-Point®
Cover Plug Remover**
Item No. 45000-30



**1x Wrench
Internal Hexagon size 5 mm**
Item No. 45505



**1x Wrench
External Hexagon size 19 mm**
Item No. 45519

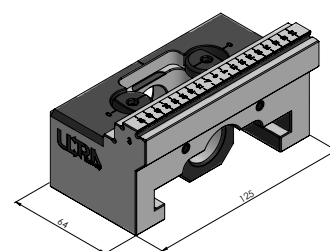
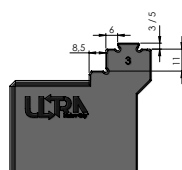
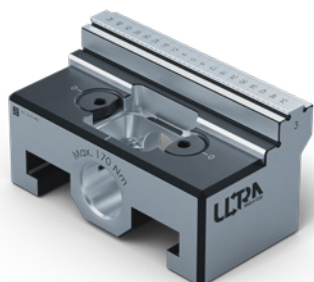
Additionally included in the Base Sets 610 and 810:



2 x Connection Plates
Item No. 81015

Clamping Jaws for Base Sets

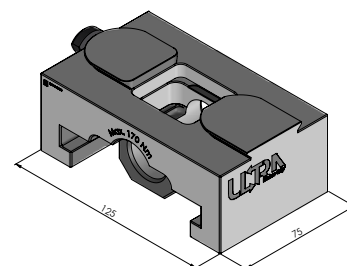
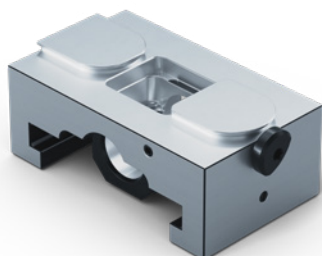
Depending on requirements, either clamping jaws with the Makro-Grip® serration or base jaws with the Avanti technology can be used on the Makro-Grip® Ultra Base Set. Various types of top jaws are also available for the base jaws, which can be found on page 71. Both clamping and base jaws each require a threaded cap with which they are secured on the threaded spindle.



MAKRO-GRIP® ULTRA 125, SERRATED CLAMPING JAW, STEEL (HARDENED)

ITEM NO.	CLAMPING DEPTH	CLAMPING BY	WEIGHT
81483	3 mm	form-fit	2.2 kg
81485	5 mm	form-fit	2.2 kg

Selling unit: 1 piece. For each clamping unit 2 pieces are required.
The specified weight relates to 1 piece.



BASE JAW AVANTI 125, STEEL (HARDENED)

ITEM NO.	APPLICATION	WEIGHT
81440	As a base for regular Avanti top jaws and Avanti top jaws with plain clamping step	2.2 kg

Selling unit: 1 piece. The specified weight relates to 1 piece.
The specified weight relates to 1 piece. Suitable top jaws can be found on page 71.



THREADED CAP

ITEM NO.	DESCRIPTION	WEIGHT	QUANTITY
81080	Threaded cap, right	0.2 kg	1 piece
81090	Threaded cap, left	0.2 kg	1 piece

For each clamping unit 1 left and 1 right threaded cap is required.

Makro·Grip® Ultra Base Plates

If it is not absolutely necessary to remove the Makro·Grip® Ultra clamping system from the machine table and thus use a zero-point clamping system, Makro·Grip® Ultra can also be used without it. For this purpose, base plates made of non-hardened steel are available, which are attached to the Makro·Grip® Ultra base plates from below using M 10 cylinder head screws and firmly mounted on the machine table. By their fixation in the grooves of the machine table, the base plates can be flexibly moved in the x-direction, allowing the distance to an neighboring clamping unit to be reduced or increased.

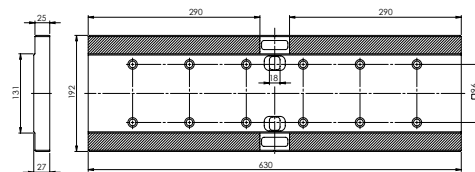


MAKRO·GRIP® ULTRA BASE PLATE 410

ITEM NO.	FOR BASE SETS	DIMENSIONS	WEIGHT
81411	81400, 81415, 81423	430 x 192 x 27 mm	17.1 kg

Scope of delivery: 1x Base Plate, 8x bushings, 8x cylinder head screws M 10 x 30.

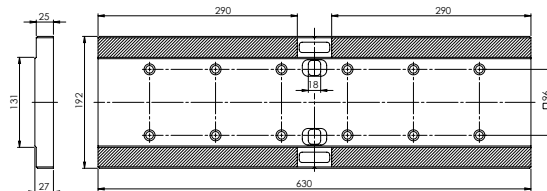
Tip: Can also be used for other LANG vises with base body width 125 mm or zero-point spacing 96 mm!



MAKRO·GRIP® ULTRA BASE PLATE 610

ITEM NO.	FOR BASE SETS	DIMENSIONS	WEIGHT
81611	81600, 81615, 81623	630 x 192 x 27 mm	25.0 kg

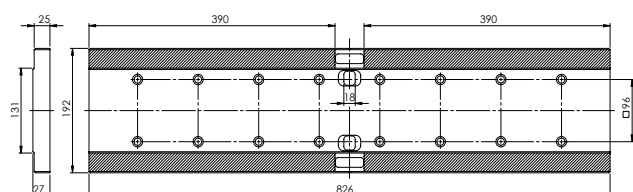
Scope of delivery: 2x Base Plates, 1x Connection Set, 12x bushings, 12x cylinder head screws M 10 x 30.



MAKRO·GRIP® ULTRA BASE PLATE 810

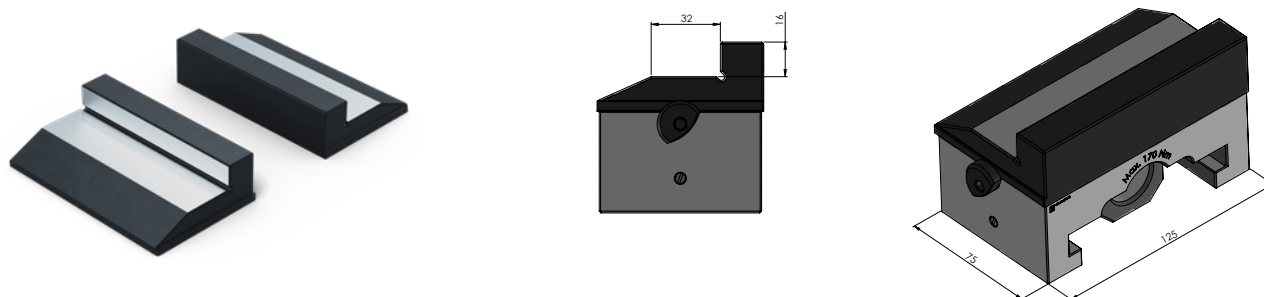
ITEM NO.	FOR BASE SETS	DIMENSIONS	WEIGHT
81811	81800, 81815, 81823	826 x 192 x 27 mm	32.9 kg

Scope of delivery: 2x Base Plates, 1x Connection Set, 16x bushings, 16x cylinder head screws M 10 x 30.



Top Jaws for Makro·Grip® Ultra Base Jaws

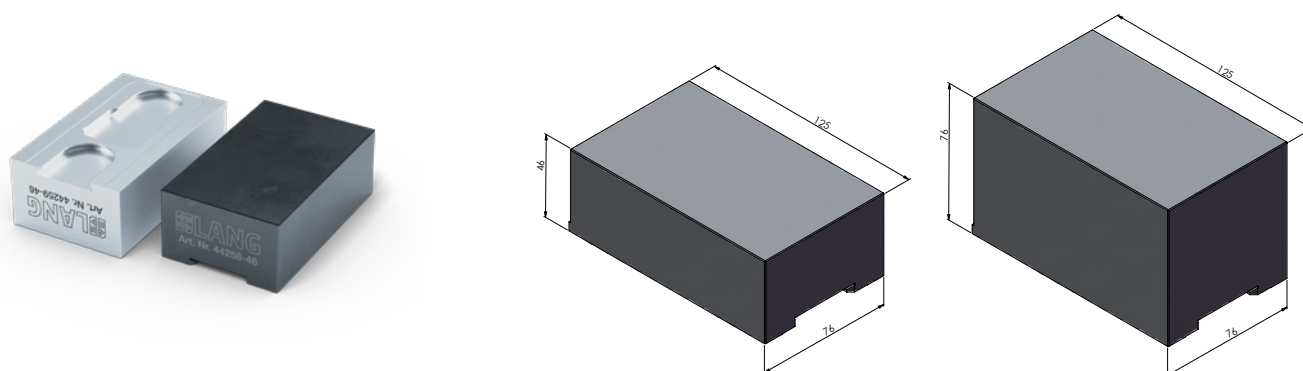
The top jaws shown are used in combination with the base jaws (item no. 81440) on page 69. They are used for smooth clamping of cubic components, of profiles and molds (single or multiple in each case).



AVANTI 125 TOP JAW WITH PLAIN CLAMPING STEP, STEEL (HARDENED)

ITEM NO.	CLAMPING DEPTH	CLAMPING BY	WEIGHT
81450	16 mm	friction	2.4 kg

Selling unit: 1 pair. The specified weight relates to 1 pair.



AVANTI 125 TOP JAW (SOFT)

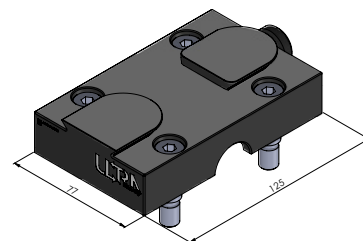
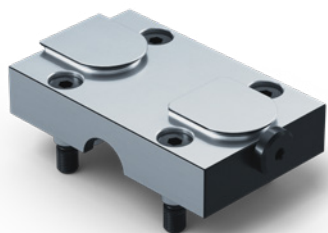
ITEM NO.	MATERIAL	HEIGHT	WEIGHT
44258-46	Steel (16 MnCr 5)	46 mm	3.3 kg
44258-76	Steel (16 MnCr 5)	76 mm	5.5 kg
44259-46	Aluminium (F50)	46 mm	1.2 kg
44259-76	Aluminium (F50)	76 mm	2.0 kg

Selling unit: 1 piece. The specified weight relates to 1 piece.

Note: This type of top jaw is the common version for the Avanti vise.

Clamping and support options for the center

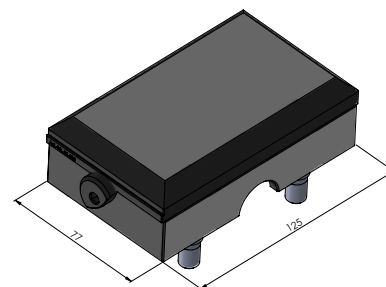
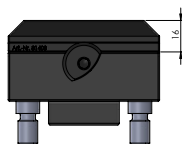
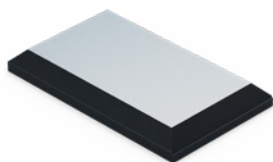
The center base jaw 125 type Avanti is used in combination with a support jaw as an additional support to reduce possible vibrations in the machining process and also as a basis for the center top jaw Avanti 125, as well as conventional Avanti top jaws. For form-fit multiple clamping, the Makro-Grip® 125 center jaw with serration is used.



CENTER BASE JAW AVANTI 125, STEEL (HARDENED)

ITEM NO.	APPLICATION	WEIGHT
81440-TG	As a base for support jaws or Avanti top jaws	1.8 kg

Selling unit: 1 piece. The specified weight relates to 1 piece.

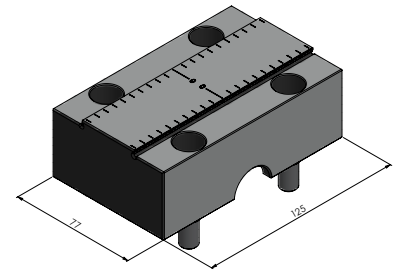
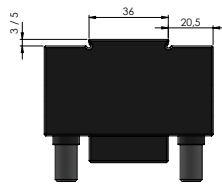
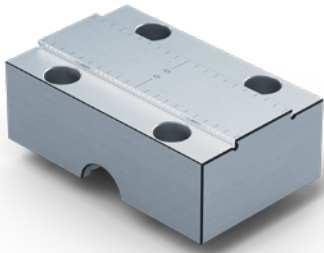


SUPPORT JAW, STEEL (SOFT)

ITEM NO.	FOR	APPLICATION	WEIGHT
81403	81483 / 81450	Single-part clamping by form-fit / friction	1.0 kg
81405	81485	Single-part clamping by form-fit / friction	0.9 kg

Selling unit: 1 piece. The specified weight relates to 1 piece.

NEW VERSION

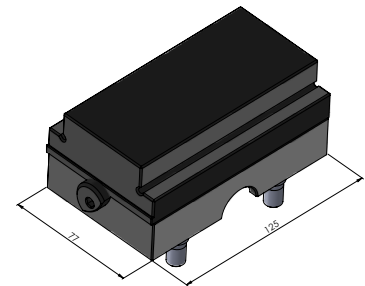
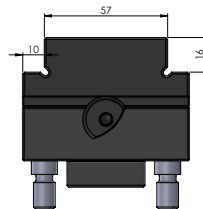
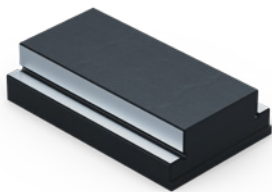


MAKRO·GRIP® ULTRA 125 SERRATED CENTER JAW, STEEL (HARDENED)

ITEM NO.	CLAMPING DEPTH	APPLICATION	WEIGHT
81483-TG	3 mm	Multiple clamping by form-fit	2.3 kg
81485-TG	5 mm	Multiple clamping by form-fit	2.3 kg

Selling unit: 1 piece. The specified weight relates to 1 piece.

The Center Jaw is screwed directly onto the base body and, depending on the variant, used with the Makro-Grip® clamping jaw with serration (item no. 81483 or 81485).



CENTER TOP JAW AVANTI 125 WITH PLAIN CLAMPING STEP, STEEL (HARDENED)

ITEM NO.	CLAMPING DEPTH	APPLICATION	WEIGHT
81450-TG	16 mm	Multiple clamping by friction	1.9 kg

Selling unit: 1 piece. The specified weight relates to 1 piece.

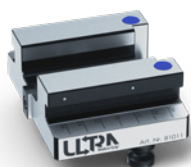
To be used in combination with the center base jaw 125 type Avanti (item no. 81440-TG).



Note: For multiple clamping with mounted center (base) jaw, it is necessary to replace the centering plates installed as standard in the base set with compensating centering plates (item no. 81040). Information on this can be found on p. 76.

Makro·Grip® Ultra Base Body

An individual base body is needed especially when an existing base set is to be expanded. For instance, if you want to go from a clamping range of 410 mm to 610 mm / 810 mm or beyond. With an individual base body Quick·Point® clamping studs are included (4 pcs. for long base bodies, 2 pcs. for short base bodies). Also included are a slot nut and the respective scaling. For stringing together individual base bodies, connection plates are required which can be found on page 76.



SHORT BASE, HEIGHT "S"

ITEM NO.	HEIGHT	LENGTH	WEIGHT
81011	45 mm	96 mm	2.7 kg



SHORT BASE, HEIGHT "M"

ITEM NO.	HEIGHT	LENGTH	WEIGHT
81012	109 mm	96 mm	6.6 kg



SHORT BASE, HEIGHT "L"

ITEM NO.	HEIGHT	LENGTH	WEIGHT
81013	189 mm	96 mm	11.6 kg



LONG BASE, HEIGHT "S"

ITEM NO.	HEIGHT	LENGTH	WEIGHT
81021	45 mm	192 mm	5.0 kg



LONG BASE, HEIGHT "M"

ITEM NO.	HEIGHT	LENGTH	WEIGHT
81022	109 mm	192 mm	11.9 kg



LONG BASE, HEIGHT "L"

ITEM NO.	HEIGHT	LENGTH	WEIGHT
81023	189 mm	192 mm	20.5 kg

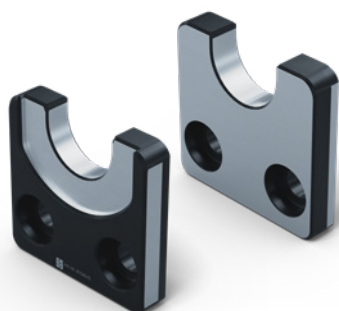
Makro·Grip® Ultra individual components



SPINDLE

ITEM NO.	DESCRIPTION	LENGTH	WEIGHT
81004	Spindle unit 410	441 mm	1.8 kg
81006	Spindle unit 610	617 mm	2.5 kg
81008	Spindle unit 810	825 mm	3.3 kg

The spindle (M 26 × 2) comes in three different lengths and is equally used for single-part and multiple clamping. For clamping ranges beyond 810 mm the spindle can be ordered as a customized solution in a longer version. The actuation torque is 170 Nm.



CENTERING PLATE

ITEM NO.	APPLICATION	QUANTITY
81010	Single-part clamping, concentric	1 pc.
81040	Multiple clamping, compensating	1 pc.

For each clamping unit 2 centering plates of the same kind are required. They are mounted to the inner ends of the base bodies and ensure an accurate positioning of the spindle. Two different versions are available for single-part and multiple clamping. The centering plate for multiple clamping has a recess which allows to clamp workpieces with a 4 mm variance in length.



CONNECTION PLATE

ITEM NO.	DESCRIPTION	QUANTITY
81015	Connection plate	1 pc.

Connection plates are already included in delivery of Base Sets. They are used for stringing together base bodies.



PLASTIC COVERS

ITEM NO.	DESCRIPTION	QUANTITY
81500	Plastic covers for base bodies	20 pcs.

To cover the bores on the upper guide surface of the base body, if center jaws are not mounted.



WRENCHES

ITEM NO.	FOR	WRENCH SIZE
45505	Internal hexagon	5 mm
45519	External hexagon	19 mm

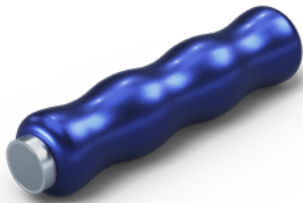
Wrenches for the initial clamping setting (external hexagon) and actuation of the threaded caps' screws (internal hexagon).



HEXAGON SOCKET

ITEM NO.	SQUARE DRIVE	WRENCH SIZE
45511	1/2"	19 mm

Hexagon socket for commercial torque wrenches.



QUICK-POINT® COVER PLUG REMOVER

ITEM NO.	DESCRIPTION
45000-30	Cover Plug Remover

Comfortable magnetic handle for removing threaded caps from the clamping jaws and steel plugs from the Quick-Point® plates.

Overview of the Base Set system heights with mounted clamping jaws

Base Set

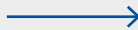
System height „S“



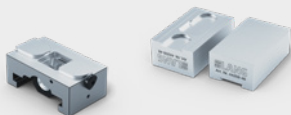
+ Clamping Jaw type
81483



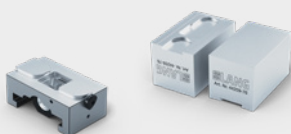
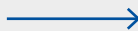
+ Clamping Jaw type
81485



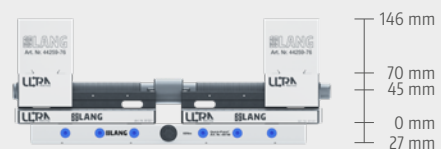
+ Clamping Jaw type
81440 + 81450



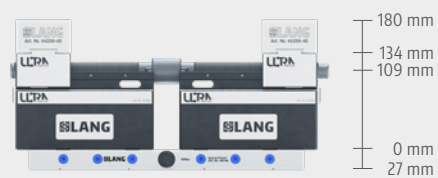
+ Clamping Jaw type
81440 + 44259-46



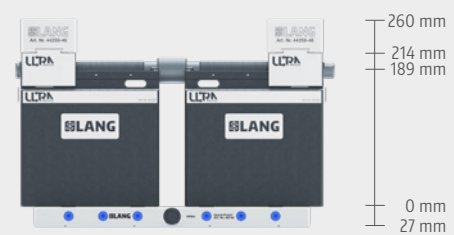
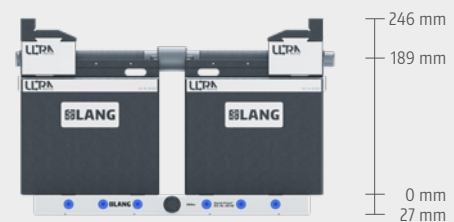
+ Clamping Jaw type
81440 + 44259-76



System height „M“



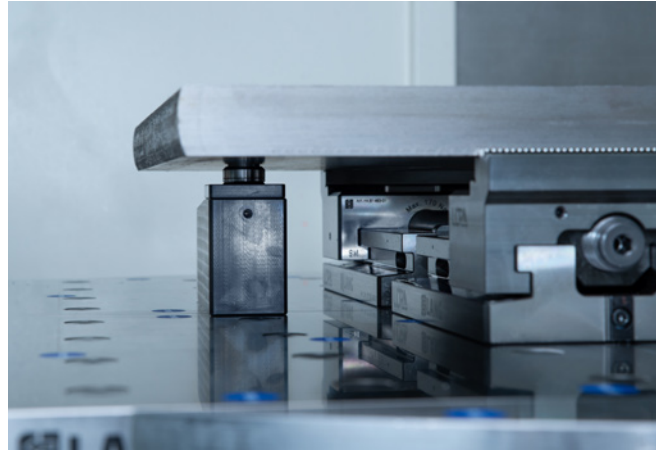
System height „L“



Makro·Grip® Ultra Hydro·Sup screw jack



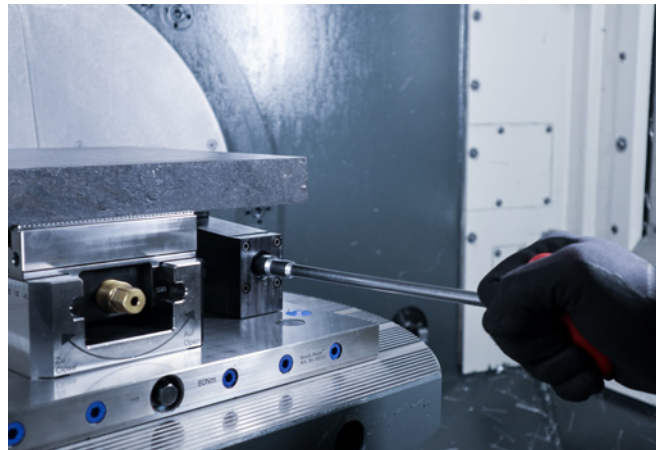
A specific hydraulic screw jack and spacers to match the respective height of the base bodies have a supporting effect on the clamping process which is particularly important with flat and wide material.



The screw jack which is actuated by a socket wrench adapts to the workpiece with its self-aligning support and reduces vibrations, which contributes to an increased surface quality.



Hydro·Sup is mounted and fixed like any other LANG workholding device with its clamping stud to the Quick·Point® zero-point clamping system.



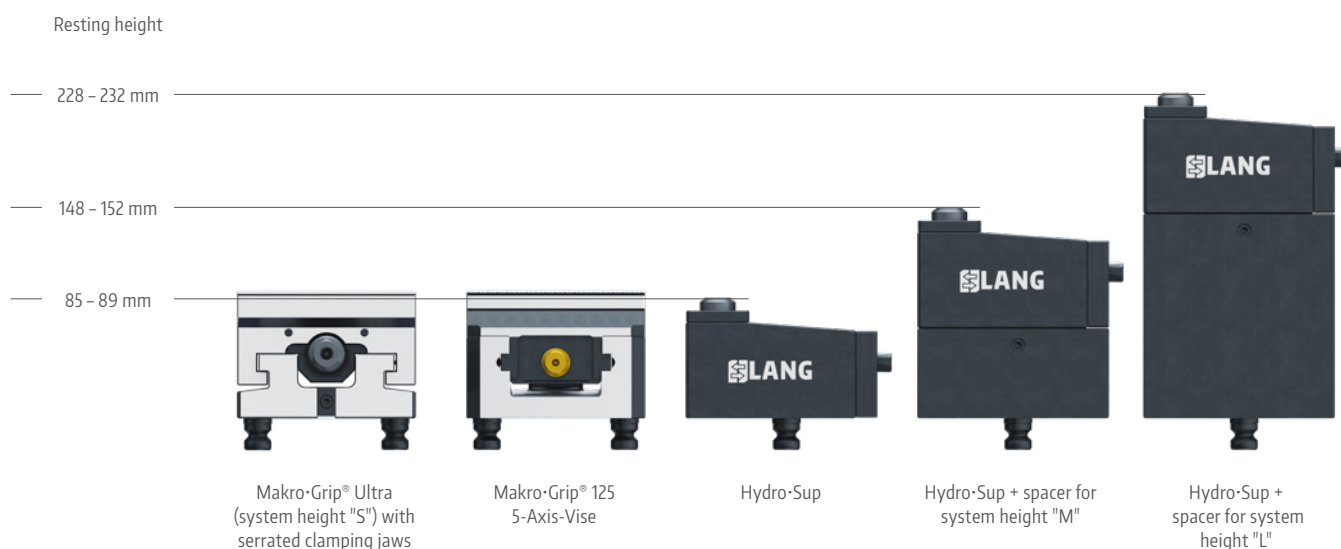
Due to its height of 86 mm the Hydro·Sup screw jack can also be used – without spacers – when clamping overhanging parts in a regular Makro·Grip® 5-Axis Vise 125.



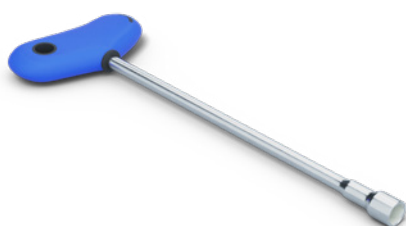
HYDRO-SUP SCREW JACK

ITEM NO.	DESCRIPTION	RESTING HEIGHT	WEIGHT
81586	Hydro-Sup hydraulic screw jack	85 – 89 mm	2.8 kg
81515	Spacer for system height "M"	148 – 152 mm	2.9 kg
81523	Spacer for system height "L"	228 – 232 mm	6.6 kg

The hydraulic screw jack Hydro-Sup helps to minimize vibrations during the machining process of overhanging workpieces. The height of 86 mm is identical to Makro-Grip® Ultra system height "S". With the addition of spacers system heights "M" and "L" can be matched.



The hydraulic screw jack with its spacers is suitable for all Makro-Grip® Ultra system heights. It can also be used with regular Makro-Grip® 5-Axis-Vises 125 in order to support overhanging workpieces.



HYDRO-SUP HEXAGON WRENCH

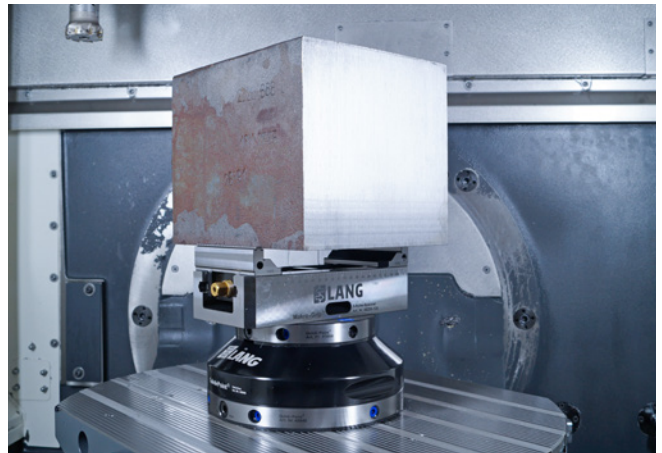
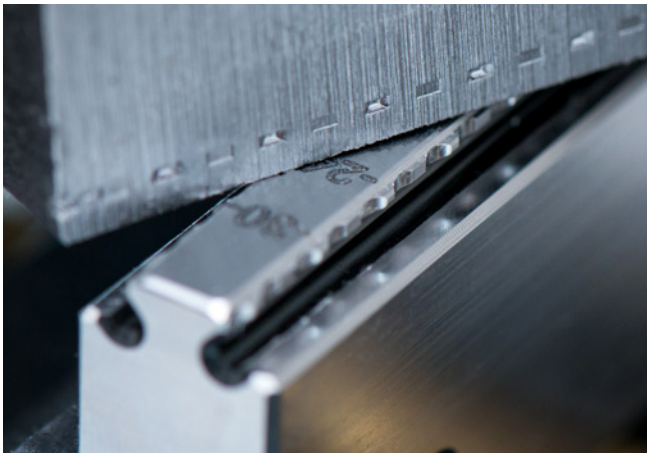
ITEM NO.	LENGTH	WRENCH SIZE
45512	230 mm	12 mm

For actuation of the Hydro-Sup screw jack.

Makro·Grip® Ultra Stamping Unit

ORIGINAL
MAKRO·GRIP

The Stamping Technology

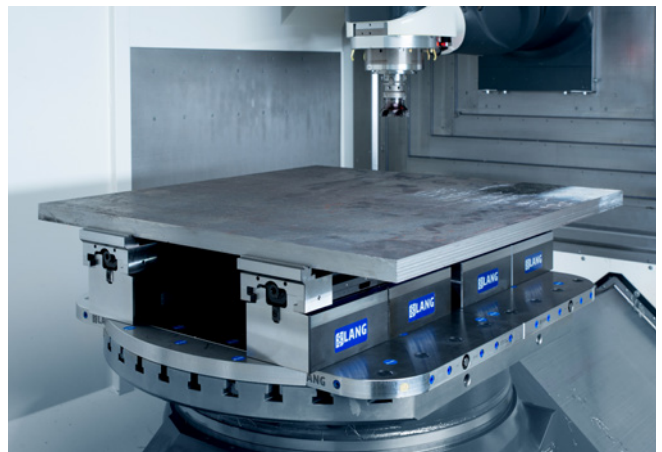


Form-Closure Technology refers to a technology in which the workpiece to be clamped is "pre-stamped" with a defined contour under high stamping pressure (up to 20 t) outside of the machine tool, before it is clamped in the clamping device. Due to the great

amount of advantages for the actual clamping process through pre-stamping the Makro·Grip® technology is considered a benchmark in the 5-sided machining of blanks and absolutely beneficial to automated manufacturing.

Why pre-stamp a workpiece?

The form-fit effect between the serration of the clamping jaws and stamping indentation guarantees highest holding forces and maximum process reliability at a very low clamping pressure. This practically eliminates any material deformation which is crucial to clamping flat and deformation-sensitive material and a key factor in achieving the desired milling quality. The stamping technology completes the Makro·Grip® Ultra system and raises the quality of plate and large part clamping to a new level.



Makro·Grip® Ultra stamping system

The Makro·Grip® Ultra stamping unit is available in two different sizes. Fundamentally they are identical, but differ in their base plate's size and number of grooves and locking holes.

The system is designed as a dual-stamping unit which can be placed flexibly in the 96 mm grid of the base plate. The stamping unit is operated conveniently via push button. Included in delivery are two different sets of parallels which match the clamping depth of the serrated Makro·Grip® Ultra clamping jaws (3 mm and 5 mm).



MAKRO·GRIP® ULTRA STAMPING UNIT

ITEM NO.	STAMPING JAW TYPE	BASE PLATE	MAX. STAMPING RANGE
83420-HE	High-End	680 × 612 mm	420 mm
83810-HE	High-End	1080 × 996 mm	810 mm

Scope of delivery:	– Frame with base plate	– Pneumatic-hydraulic power multiplier (1 – 360 bar)
	– 2 stamping units	– Scaled endstops and protection shields
	– 2 pairs of stamping jaws	– Push button for operation by hand
	– 2 pairs of each parallel type (3 mm + 5 mm)	– Gauging blocks for measuring the wear of the serration



MAKRO·GRIP® STAMPING JAWS

ITEM NO.	TYPE	FOR MATERIALS	QUANTITY
41112-06	High-End	up to 45 HRC	1 pair

Note: Stamping jaws are sold without parallels. These must be ordered separately.



MAKRO·GRIP® STAMPING JAW PARALLELS

ITEM NO.	CLAMPING DEPTH	QUANTITY
41111-0308	3 mm	1 pair
41111-0508	5 mm	1 pair