

Operating Instructions

Translation of original instructions

Vasto•Clamp 6-jaw chuck



59616
Item no.

Copyright:



LANG
TECHNIK

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Only use original spare parts. In the case of externally supplied parts, there is no guarantee that they have been designed and manufactured to withstand the stresses applied or to meet safety requirements.

The manufacturer provides a full warranty only and exclusively for the spare parts ordered from it.

The manufacturer is committed to improving its products. It reserves the right to make changes. This does not imply any obligation to make retrospective adjustments to the products already delivered.

General Terms and Conditions of Sale and Delivery:

Our General Terms and Conditions of Sale and Delivery shall apply as a matter of principle. These are available to the plant operator at the latest when the contract is concluded.

Warranty and liability claims for personal injury and property damage are excluded if they are caused by one or more of the following:

- Improper use
- Improper installation, commissioning, operation, or maintenance
- Operating the product in a defective state
- Inadequate monitoring of parts subject to wear and tear
- Failure to follow the instructions in the documentation
- Catastrophic events due to foreign bodies or force majeure

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1.1 UNIT

The chuck is designed to clamp round components. It operates according to the friction lock or form-closure clamping principle, depending on which add-on jaws are used.

Add-on clamping jaws (accessories)

The chuck can be set up as a 3-jaw chuck and as a 6-jaw chuck.

The add-on jaws (accessories) are latched into the base jaws without tools.

Different add-on jaws are available to match the form and type of material properties.



Fig. 1

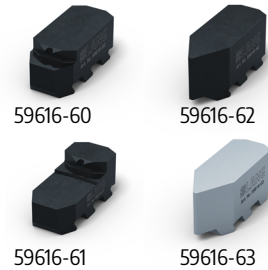


Fig. 2 (accessories)

List of the add-on jaws (accessories)

Art. No...	Material	Clamping type/range
59616-60	Hard steel (16MnCr5)	30 – 120 mm
59616-61	Hard steel (16MnCr5)	75 – 160 mm
59616-62	Mild steel (16MnCr5)	10 – 160 mm
59616-63	Aluminium (F50)	10 – 160 mm

Contours adapted to the workpiece can be milled out in the soft add-on jaws.

1.2 SCOPE OF DELIVERY

- Chuck with mounted base jaws (without add-on jaws)
- 4x screwed-in Quick•Point® 96 clamping studs (Fig. 3, Item 4)
- Hexagon socket A/F 8
- Operating instructions

1.3 MAINTENANCE AND REPAIR

In case of damage or faults, please contact LANG Technik GmbH directly.

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1.4 STRUCTURE

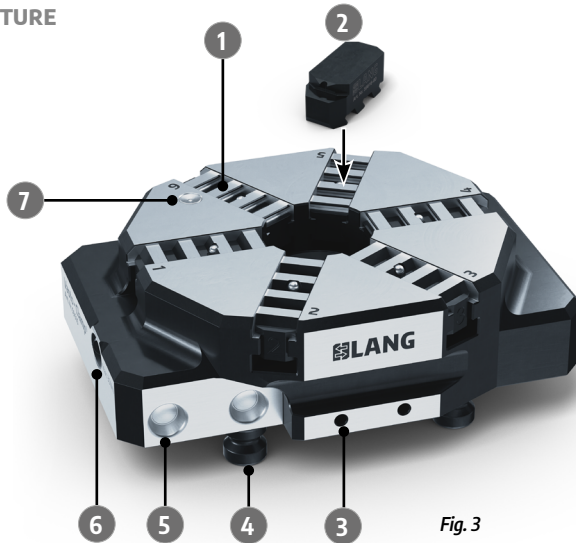


Fig. 3

Abbildungen/Beschreibung	
<p>1</p> <p>Set of 6 base jaws (with latching function)</p>	<p>4</p> <p>Clamping studs (4 ea.) for Quick-Point® zero point damping system</p>
<p>2</p> <p>Example of an add-on jaw (note: add-on jaw sets are accessories and are not included in the scope of supply)</p>	<p>5</p> <p>Interface for the RoboTrex 96 automation system</p>
<p>3</p> <p>Drain duct for metalworking fluid</p>	<p>6</p> <p>Worm shaft (drive for clamping the jaws, A/F 8)</p>
	<p>7</p> <p>Grease nipple</p>

1.5 AREAS OF APPLICATION

The product is intended to be used for industrial and industry-related applications. It is used within enclosed milling machines, machining centres and machine tools of a similar type and within the scope of its technical data (see “Technical data” section).

1.6 REQUIREMENT FOR FIXING ON A MACHINE TABLE

The chuck is supplied with 4 Quick•Point® clamping studs. This enables clamping in the zero-point clamping system of LANG Technik GmbH, which is mounted on the machine table of the machine tool. The following zero-point clamping systems of LANG Technik GmbH are suitable for this:

- Quick•Point® zero-point plate with 96 mm grid dimension (manual operation)
- RoboTrex 96 automation base tower (automated operation)

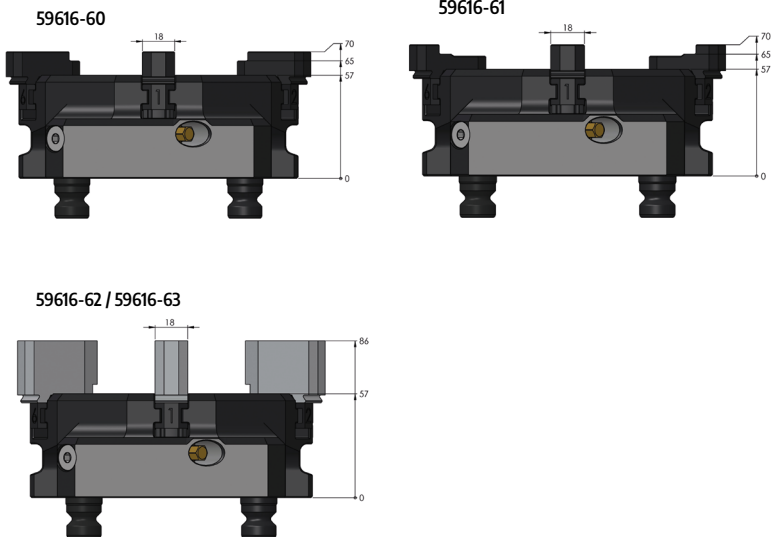
1.7 DESCRIPTION OF THE FUNCTION AND USE

The chuck can be used with automatic grippers in the machine tool (machining centre). Manual use is also possible.

In both cases, a further, suitable mounting system is necessary for fixing the chuck safely on the machine table. The Quick•Point® 96 zero-point clamping systems of LANG Technik GmbH are suitable.

- Automated application (batch production):
For example, for batch production. The workpiece is clamped in the chuck manually outside of the machine and is kept in a magazine. The chuck, including the clamped-in workpiece, is then removed from the magazine by an automatic gripper. The gripper positions the chuck in the zero-point clamping system in the metal cutting machine. An integrated interface in the chuck (see Item 5, Structure section) ensures secure gripping. After the machining the chuck together with the workpiece is placed back in the magazine automatically.
- Manual use (individual production):
The workpiece, as for batch production, is clamped in the chuck manually outside of the machine.
Unlike the automated application, in the manual application the metal cutting machine is loaded and unloaded by the operating personnel.
- Clamp workpieces:
The clamping mechanism for clamping/unclamping the workpieces is achieved by turning the worm shaft (see Fig. 3, Item 6).

1.8 ACCESSORIES ADD-ON JAWS



Art. No	Material	Clamping range
59616-60	Hard steel (16MnCr5)	30 – 120 mm
59616-61	Hard steel (16MnCr5)	75 – 160 mm
59616-62	Mild steel (16MnCr5)	10 – 160 mm
59616-63	Aluminium (F50)	10 – 160 mm

2.1 TORQUES OF THE MOUNTING SCREWS

Strength class	Standard	Thread / max. torque			
Thread	ISO 4762 DIN 912	M 5	M6	M8	M10
8.8		7	10	18	28,8
10.9		10,3 Nm	14,5 Nm	26,6 Nm	42,2 Nm
12.9		12 Nm	17 Nm	31,1 Nm	49,4 Nm

2.2 MAXIMUM TORQUE ON ACTUATION SCREW (WORM DRIVE)

Torque at wrench, on clamping on the worm shaft	30 Nm max.
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2.3 RESOURCES

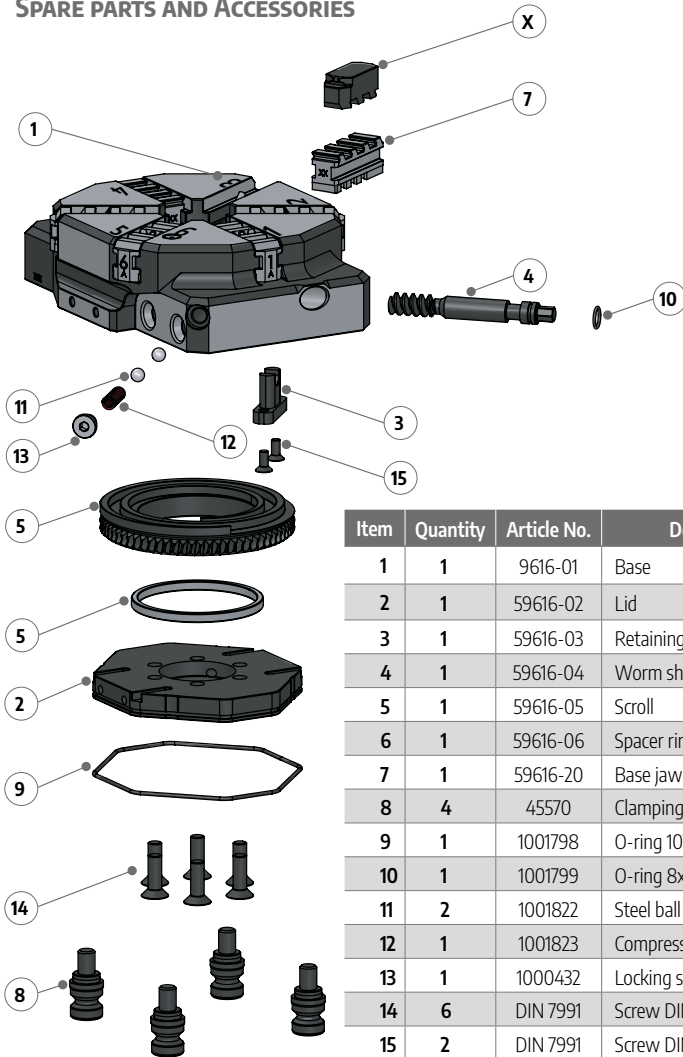
Grease: NLBI CI.2 K2K-30 DIN 51502

2.4 GENERAL DATA

Dimensions LxWxH	210 x 155 x 57 mm
Weight without add-on jaws	9,8 kg
Maximum speed	500 U/min.
Total clamping force	15 kN

Chuckable materials:	standard steel grades, cast metals and non-ferrous metals
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2.5 SPARE PARTS AND ACCESSORIES



Item	Quantity	Article No.	Description
1	1	9616-01	Base
2	1	59616-02	Lid
3	1	59616-03	Retaining bracket
4	1	59616-04	Worm shaft
5	1	59616-05	Scroll
6	1	59616-06	Spacer ring
7	1	59616-20	Base jaw set assembly
8	4	45570	Clamping stud set $\varnothing 20$
9	1	1001798	O-ring 107x2
10	1	1001799	O-ring 8x1,5
11	2	1001822	Steel ball DIN 5401 D8
12	1	1001823	Compression spring
13	1	1000432	Locking screw DIN 2353 1/8"
14	6	DIN 7991	Screw DIN 7991 M8x25
15	2	DIN 7991	Screw DIN 7991 M5x12
X	6	Accessories	See: "List of the add-on jaws"
9, 10, 11, 12			Maintenance kit
3, 4, 5, 9, 10, 11, 12			Set of spare parts

Fig. 4

3.1 MOUNTING / DISMANTLING ADD-ON JAWS AND GRIPPER JAWS

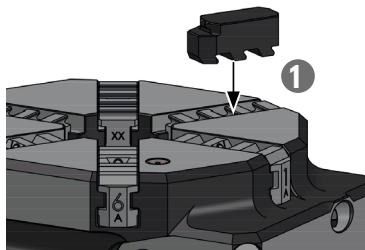


Fig. 5

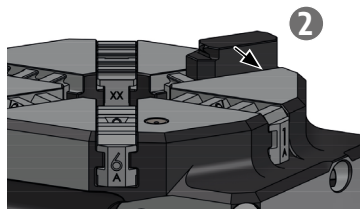


Fig. 6

Mounting add-on jaws

The add-on jaws are latched into the base jaws from above using pressure only; there is no need for tools thanks to the click system.

- Place the add-on jaws on the middle of the base jaws.
- Latch into position by applying pressure from above. Movement direction from the inside to the outside.

The add-on jaws can be offset one notch inwards or outwards to utilise the full clamping range.

Three or six jaws can be used, depending on the application case.

Dismantling add-on jaws

Pull off in the direction of the middle of the jaw chuck, without any need for tools.

3.2 CLAMPING THE CHUCK ON THE MACHINE TABLE (SETTING-UP)



WARNING! Risk of injury! Moving machine elements can cause severe injuries during setting-up.

- Secure the machine in which the chuck is used to prevent it from starting up.



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

- Damage to the product must be corrected completely and properly by trained skilled personnel (with metalworking training) before starting up the machine.
- The product may only be installed by trained and instructed skilled personnel (e.g. CNC millers).
- If the jaw chuck has already been used, ensure that it is clean (no dirt, swarf).

NOTE Requirement for fixing on a machine table

You require a suitable clamping system to clamp the jaw chuck on a machine table. Regardless of whether the clamping is carried out manually or automatically.

The chuck is supplied with 4 mounted Quick•Point® clamping studs. The bolts enable zero-point clamping on the machine table of a machine tool/machining centre, only in conjunction with other fixing systems (optional accessories) of Lang Technik GmbH. For example:

- A Quick•Point® zero-point plate with 96 mm grid dimension (for manual operation).
 - A RoboTrex 96 automation base tower (for automatic operation).
- ➔ Familiarise yourself with its handling.

PROCEDURE FOR SETTING-UP FOR MANUAL PRODUCTION

1. Clean the mounting surfaces of the chuck and of the machine tool. They must be completely clean with neither dirt nor swarf.
2. Place the chuck in the zero-point clamping system or in an alternative mounting device in the machine tool.
3. Actuate the clamping mechanism of the zero-point clamping system or an alternative mounting device, as specified by the manufacturer.
4. The chuck is now ready for the workholder. See Operation section.

SET UP CHUCK PRELIMINARILY FOR AUTOMATED PRODUCTION (OPTIONAL)

The chuck can also be integrated in an automatic loading and unloading system. For example, in the RoboTrex 96 automation system of LANG Technik:

- In this system, several chucks can be kept in an automation trolley.
- The chucks can be equipped with workpieces directly in the automation trolley or elsewhere.
- A robot arm removes the equipped chuck with its gripper and loads the machine tool. After the machining has been completed the robot arm places the chuck back on the automation trolley.

4.1 CLAMPING A WORKPIECE

If the workholding is defective, parts of the product or workpiece can be ejected / fly out into the surroundings and cause severe injuries.

Before using the jaw chuck and before switching on the machine, check that the machine tool / machining centre is in proper working order.

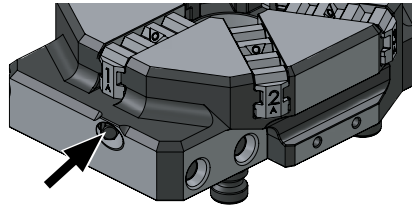
If the jaw chuck has already been used, ensure that it is not damaged and is clean (no dirt, swarf).

Damage to the jaw chuck must be corrected completely and properly by trained skilled personnel (with metalworking training) before starting up the machine.

Clamping

A workpiece can be clamped after all necessary precautions have been taken, as described in the "Install" section.

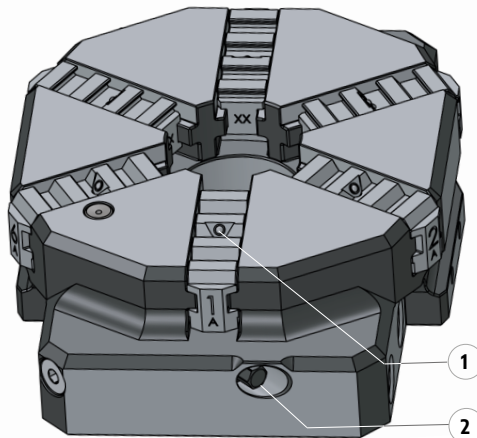
1. Check that the workpiece and all mounting surfaces are free from dirt and swarf.
2. Place the workpiece in the jaw chuck.
3. Clamp the workpiece finger-tight by turning the worm shaft (see Figure) clockwise using a hexagon socket spanner (A/F 8).



4.2 I.D. CLAMPING (INNER DIAMETER CLAMPING)

To be able to realize inter diameter clamping, the base jaws must first be changed. For this purpose, you need item no. 59616-30 (Base jaws for inner diameter clamping). In this context, please read the section „mounting of base jaws“ hereafter.

FIGURE



REMOVAL OF BASE JAWS

Unscrew the worm shaft (Fig. 4.1) counterclockwise until all the base jaws no longer move. They can then be easily removed by hand.

MOUNTING OF BASE JAWS

The initial condition for this is a completely assembled jaw chuck without base jaws. The assembly of the base jaws starts with number ① (see illustration).

4. Position the jaw chuck so that you have the opening of the worm shaft directly in front of you.
5. Base jaw number ① is inserted into the nearest guide shaft and threaded into the face spiral. The numbering of the base jaw points outwards.



Turning the worm shaft clockwise causes the face spiral to turn counterclockwise.

6. Insert the other base jaws in the opposite direction (counterclockwise). See also numbering from 1 to 6 on the base jaws and the base body.



During the „threading process“, feel whether the face spiral has also gripped the base jaw by trying to push the base jaw slightly back and forth.

4.3 REGULAR WORK DURING OPERATION

- Carry out a regular visual check for dirt. If necessary, interrupt operation of the machine and clean the chuck or the machine (also refer to the “Maintenance” section).
- Also refer to the operating instructions of the machine tool.



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

- Damage to the product must be corrected completely and properly by trained skilled personnel (with metalworking training) before starting up the machine.
- The product may only be installed by trained and instructed skilled personnel (e.g. CNC millers).
- If the jaw chuck has already been used, ensure that it is not damaged and is clean (no dirt, swarf).

5.1 TESTING AND INSPECTION WORK

The condition of the load-bearing and moving parts must be checked each time before starting the machine. Damaged parts must be replaced with intact parts without delay.

5.2 LUBRICANT

Use the grease of LANG Technik GmbH:
NLBI CI.2 K2K-30 to DIN 51502 (refer to the “Technical data” section).

5.3 MAINTENANCE PLAN

Before each use of the product	Visual check of condition and function
During operation	Regular visual check for dirt
After each work operation	Manual or automatic cleaning

LUBRICATING INTERVALS

Dismantle, clean, grease	weekly	monthly	1/4-yearly	yearly
Base jaws (normal operation)		•		
Base jaws (for more difficult operation)	•			
Worm shaft		•		
Scroll and worm shaft (for more difficult operation)			•	
Scroll and worm shaft (for normal operation)				•
Regreasing via grease nipple, 2-3 strokes (Item 16, Fig. 6)			•	

5.4 RENEWING THE GREASE



Grease
The chuck is delivered already greased.

- The grease must be renewed at regular intervals to maintain the required clamping force. A table with the lubricating intervals is provided in the Maintenance plan section.
- The chuck is dismantled for greasing (see “Dismantling/mounting” section).

5.5 DISMANTLING / MOUNTING

Tools required:

- Hexagon socket A/F 8
- Reversible ratchet or cordless screwdriver (with adapter for 1/4 inch)
- Torque wrench up to at least 50 Nm
- Allen key A/F 3, A/F 5, A/F 8

5.6 INSTRUCTIONS FOR DISMANTLING / MOUNTING

DISMANTLE

1. Remove add-on jaws **X**.
2. Remove retaining bracket **3**: Remove the screws **15** first.
Then position two M6 screws in the drillhole of the retaining bracket to pull out the retaining bracket.
3. Unscrew the worm shaft **4**.
4. Remove the countersunk screws **14** and the lid **2**.
5. Clean the lid **2**, renew the O-ring **9** and grease thinly.
6. Remove scroll **5** and spacer ring **6**.
7. Push all base jaws **7** out of the guides.
8. Clean all individual parts to remove old grease and apply fresh grease with a brush.
At the same time, check all components for damage and wear. Damaged parts must be replaced.
9. Handle and dispose of the substances and materials used properly and according to the national regulations, particularly grease and solvents.

MOUNTING

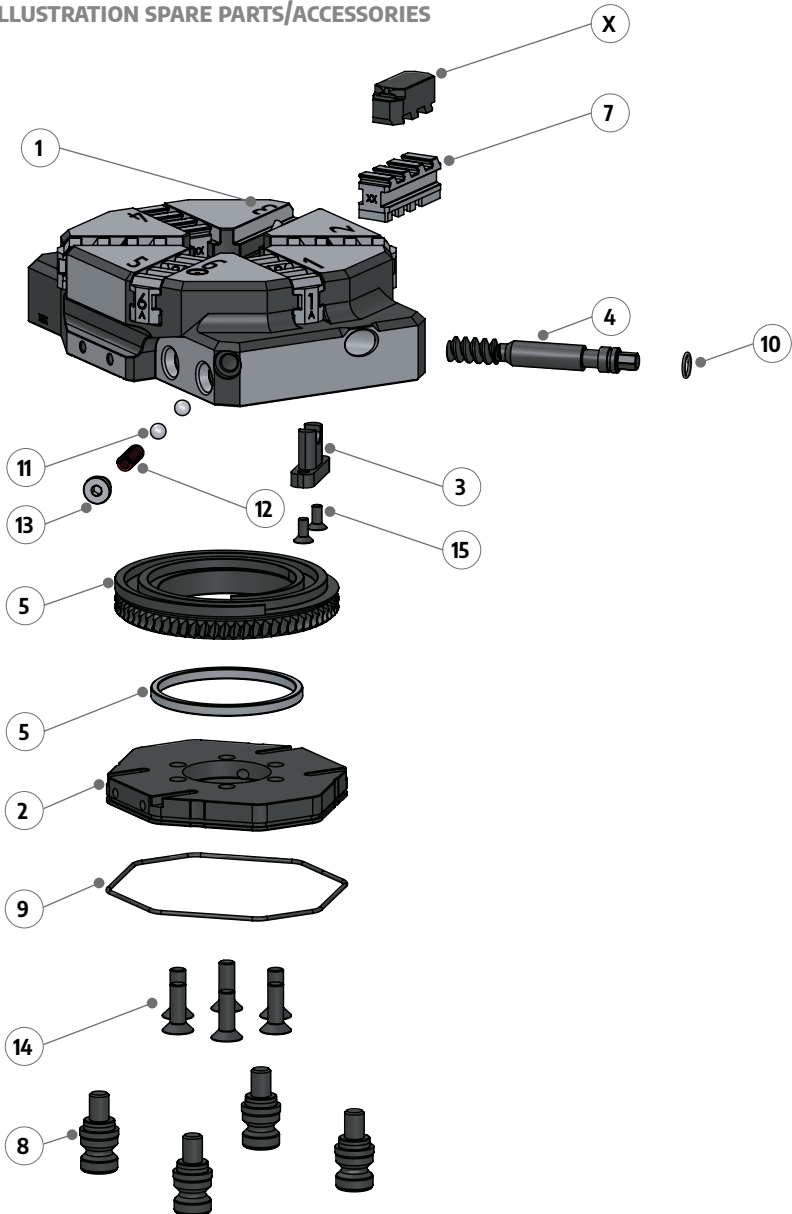
With one exception, the mounting is carried out in the reverse order to the dismantling. The exception is the insertion of the base jaws. The procedure is described in the "Inserting the base jaws" section.

5.7 INSERTING THE BASE JAWS

The initial condition is that all parts of the jaw chuck are mounted, except for the base jaws. We begin by mounting the base jaw with number 1.

1. Position the jaw chuck so that the opening of the worm shaft **4** is directly in front of you.
2. In the now nearest guide shaft **1**, insert the base jaw number 1 and "thread" into the scroll **5**. The numbering of the base jaw is facing outwards.
Note: Turning the worm shaft **4** clockwise causes the scroll **5** to move counterclockwise.
3. Insert the other base jaws counterclockwise. See also numbering from 1 to 6 on the base jaws and the base.
Note: During the "threading in process", feel whether the scroll has also covered the base jaws, by trying to move the base jaws slightly to and fro.

5.8 ILLUSTRATION SPARE PARTS/ACCESSORIES



6.1 MALFUNCTIONS/ERROR



After incorrect clamping device repair or replacement work, parts of the product or workpiece can be ejected / fly out into the surroundings and cause severe injuries.

- Repair and replacement work on the product may only be carried out by trained and instructed personnel, who have also been trained and instructed to operate the machine tool.
- Carry out the maintenance and care work outside of the machine tool. Before starting to uninstall/install, switch off the machine tool and secure the machine against switching on (refer to the operating instructions of the machine tool).
- After completing the maintenance and repair work, ensure that any safety devices removed from the machine tool have been re-installed (such as protective panelling, protective covers, ...).
- 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 product.

POSSIBLE CAUSES OF ERRORS/FAULTS

Item	Article No.	Description	
Jaw jams in the guide.	Base jaws deformed, contact surface, add-on jaw not flat, dirty or damaged	Check, clean add-on jaws, replace if necessary	
	Run-out	Add-on jaws are not bored or ground correctly	Re-bore or grind add-on jaws
		Jaw inserted in wrong guideway	Insert jaw in guideway with matching marking
		Base jaws dirty or damaged	Clean or replace base jaws
	Jaw chuck damaged or worn	Send jaw chuck to the manufacturer (LANG Technik GmbH) for checking	
Clamping force drop	Short jaw stroke for large number of the same workpieces -> poor lubricant film	To build up the lubricant film and achieve the full clamping force, actuate the jaw chuck several times with full stroke without workpiece	
	Insufficient lubrication	Lubricate the jaw chuck. Check the lubricant, replace if necessary.	
	Dirt input into the jaw chuck	Contact the manufacturer (LANG Technik GmbH)	
	Jaw chuck function disrupted	Send jaw chuck to the manufacturer (LANG Technik GmbH) for checking and repair	

7.1 INTENDED USE

The plant operator is obliged to use the product properly, with due care and under appropriate conditions. No liability or claim for refund will be accepted following improper use.

- Only use the Vasto•Clamp 6-jaw chuck if you have read and understood the operating instructions in full! Including the instructions for the machine in which the product is used.
- The instructions are part of the product and must be kept accessible to the personnel at all times.

The Vasto•Clamp 6-jaw chuck is used to chuck (clamp) round workpieces ...

- solely in the clamping direction from the outside to the inside. The clamping forces of the clamping jaws must always act from the outside to the inside, in the centre of the chuck.
- made of standard steel grades, cast metal, and non-ferrous metal.
- in order to machine them on enclosed milling machines, machining centres and machine tools of a similar type and on rotary tables at up to 500 rpm.

7.2 PERSONNEL REQUIREMENTS

The plant operator commits to:

- only to allow trained, adult specialists (specialization in metal), e.g. CNC mill operators, to work with the product.
- to define the responsibilities of personnel for installation, commissioning, operation, maintenance, and repair clearly.
- only to allow trainees to work with the product under the supervision of an experienced specialist (metal specialist) or a CNC mill operator.

7.3 PROTECTIVE EQUIPMENT AND SAFETY

- Personal protective equipment must be worn in accordance with the guidelines and regulations of the professional association and the company (work clothing, non-slip safety shoes, gloves, hair net, etc.). Check with your employer's safety officer.
- Oil and Grease can cause allergic skin reactions. Wear protective gloves.
- Risk of injury caused by compressed air in the form of grease, oil or other particles sprayed around.



8.1 DISPOSAL ACCORDING TO DIRECTIVE (EU) 2018/851

For disposal, observe the country-specific disposal regulations.



LANG Technik products do not belong in household waste.
Failure to comply is an offense.



Accessories and packaging are recycled in an environmentally friendly manner.

Product	Material	Disposal
Base	Steel	Scrap metal
Small parts	Steel	Scrap metal
Add-on jaws (accessories)	Steel/aluminium	Scrap metal
O-rings	Nitrile rubber	Residual waste
Housing, screws, nuts etc.	Metal	Separation of materials Recycling by melting down
Protective screen	Plastic	Recycling
Hoses	Rubber, PVC, steel	Separation of materials Recycling
PE films	Plastic	Recycling
Packaging material	Pallet wood	Recycling
Hydraulic oil	Mineral oil	According to local regulations

9.1 SYMBOLS

Please pay attention to the following warning symbols	
	<i>Read all the operating instructions carefully before commissioning for the first time and keep it in a safe place for future use</i>
	<i>Please read and follow the technical and safety instructions</i>
	<i>The use of protective gloves made of tough, resistant material is recommended</i>
	<i>A helmet and safety goggles are recommended for personal safety</i>
	<i>To reduce the risk of eye injuries, wearing protective goggles as specified in EN 166 is recommended</i>
	<i>Safety footwear are part of the protective equipment</i>
	<i>Materials are recycled in an environmentally friendly manner</i>
	<i>Do not dispose of the material in household waste</i>



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