ALPHA 565

OPERATING INSTRUCTIONS

YOUR ONE-STOP-SHOP
FOR MACHINE-TOOL PERIPHERALS

DRAFT

IMPORTANT

READ CAREFULLY BEFORE USE
AND KEEP FOR FUTURE REFERENCE.

Published: 06/2024

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1 GENERAL INFORMATION

1.1 ABOUT THIS MANUAL

OPERATING INSTRUCTIONS

This manual describes some maintenance and setting procedures for the machine.

- It is part of the machine.
- It applies to all models mentioned.

If you encounter errors or would like improvements to be made, please contact the LNS after-sales service.

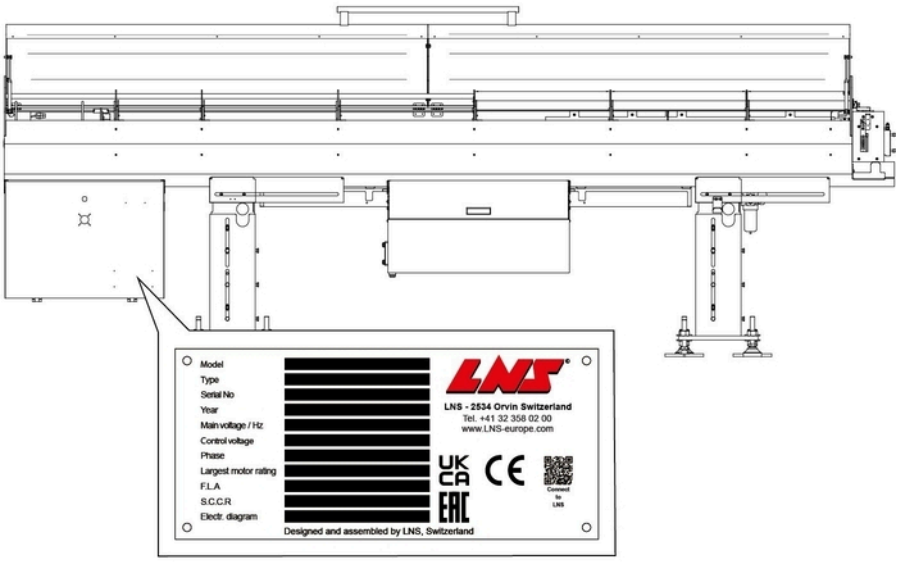
Illustrations in this manual are intended to facilitate basic understanding, and may differ from the actual design of your machine.

1.2 NAMEPLATE

It contains:

- Business name and full address of the manufacturer
- Conformity Marking: CE, UKCA, EAC
- QR Code: scanning it will take you to a registration page of LNS (my LNS portal)
- Country of origin

Location of the nameplate:



Designation	Description
Model	Model Number
Type	Machinery system type
Serial No	Serial number
Year	Year of manufacture: YYYY
Main Voltage / Hz	Incoming mains voltage
Control voltage	Controlled operational voltage, if any
Phase	1/3: SINGLE-PHASE SYSTEM/3-PHASE SYSTEM
Largest motor	Full load amperage also known as RATED AMPS
S.C.C.R.	Short Circuit Current Rating
Electr. diagram	Designation of electrical diagram

1.3 SYMBOLS AND WARNING LABELS

Warning labels and consequences in the event they are ignored.

DANGER

Type and source of danger!
Consequences of ignoring the warning.
⇨ What to do to avoid the danger.

Warning of immediate danger which, if ignored, will lead to death or severe physical injury.

WARNING

Type and source of danger!
Consequences of ignoring the warning.
⇨ What to do to avoid the danger.

Warning of potential danger which, if ignored, may lead to death or severe physical injury.

CAUTION

Type and source of danger!
Consequences of ignoring the warning.
⇨ What to do to avoid the danger.

Warning of a potentially dangerous situation which, if ignored, could lead to minor physical injury.

NOTICE

Type and source of danger!
Consequences of ignoring the warning.
⇨ What to do to avoid the danger.

Warning of a potentially dangerous situation which, if ignored, could lead to property damage.

INFO

Type and source of danger!
Consequences of ignoring the warning.
⇨ What to do to avoid the danger.

Information, comment

IMPORTANT

Type and source of danger!
Consequences of ignoring the warning.
⇨ What to do to avoid the danger.

Warning of danger which, if ignored, could lead to: environmental damage.

1.4 TERMS AND STANDARD SYMBOLS

The terms and standard symbols used in this manual are the following:

General information

Electrocution

Crushing

Environmental damage

Property damage

Information, notes

→ Refer to chapter...

1), 2) Instructions for individual actions in several steps

(1), (2) Drawing legend

Callouts:

to identify the product/component

to show movement/indicate the position

The drawings of the plates illustrated make no distinction between the different models.
They are applicable to all models covered in this manual.

The following terms are used in this operating manual to indicate the position of an object in space (positioning).

The terms “left”, “right”, “front” and “rear” always refer to the position viewed in the direction of movement.

1.5 OTHER APPLICABLE DOCUMENTS

The machine contains integrated components from other manufacturers.

For these purchased parts, the respective manufacturers have carried out a risk assessment and declared their parts to be in conformity with applicable European standards.

The correct use of these integrated components is described in the manuals from their respective manufacturers.

The machine complies with the European standards indicated in the declaration of conformity or incorporation.

1.6 DAMAGE DURING TRANSPORT

LNS is not liable for any damage during transport.

In case of damage, contact the last carrier.

1.7 TARGET AUDIENCES

USER

Users are authorized to:

- Clean the machine
- Carry out certain maintenance tasks

QUALIFIED PERSONNEL

Qualified personnel (also called authorized technicians) have the same access and permissions as users, but in addition they are authorized to:

- install the machine,
- maintenance work and repairs,
- work on electrical equipment,
- make sure that every person using the machine has first read and understood this manual.

1.8 COPYRIGHT

2 SAFETY INFORMATION

2.1 INTENDED USE

The ALPHA 565 is:

- An industrial machine to be operated in an industrial environment, indoors.
- An automatic bar feeder for long bars designed for sliding and fixed headstock lathes.
- Guiding elements with different high are available for this machine.

Any other use of the bar feeder is considered as unintended.

LNS accepts no liability for any damage resulting from unintended use.

Obey the instructions given in the present manual to correctly use the bar feeder.

2.2 LIMITATION OF LIABILITY

All information in this manual have been compiled in accordance with the latest technology and the applicable standards and regulations.

LNS is not liable for any damage resulting from:

- Damage during transport
- Non-compliance with this manual
- Unauthorized modifications to the machine
- Unintended use
- Use of unapproved spare parts
- Use of unqualified personnel

2.3 PERSONNEL

WARNING

Not sufficient qualifications of the personnel!
Possible injury to personnel and/or material damage.
The owner is responsible for ensuring the qualifications of the personnel.
⇨ Only approved personnel can work with the machine.

- Non-qualified personnel, children, and persons under the influence of alcohol or medication should not handle the machine.
- The personnel must fully know the safety instructions and this manual. Obey the safety instructions for this machine, as well as for the machine tool.
- Wearing loose clothing, long hair or jewelry may be dangerous.

2.4 RESPONSIBILITIES

NOTICE

Improper use of the machine!
Injuries to persons or material damages!
⇨ Obey the instructions in the manual.

LNS is not liable for any injuries to persons or material damages caused by improper use of the machine and failing to obey the instructions.

2.5 PERSONAL PROTECTIVE EQUIPMENT

Put on your personal protective equipment (work gloves, protective goggles) to minimize the risk of harm to your health.

CAUTION

Ignoring your industrial context may cause injury!

- ⇨ Put on protective shoes:
  - to protect against heavy falling objects
  - to protect against slipping on slippery surfaces
- ⇨ Put on work gloves: to protect against chemicals and sharp materials.
- ⇨ Put on protective clothing: to protect against contamination.

NOTICE

LNS is not liable for any accidents or material damage caused by non-compliance with the documentation and safety instructions.

2.6 BASIC SAFETY REGULATIONS

MAINTENANCE OBLIGATION

Obey the manufacturer's instructions regarding the maintenance of the bar feeder.

MODIFICATIONS

- Modifications of the bar feeder related to additions and alterations are prohibited.
- For the use and maintenance of the bar feeder, only use parts provided by or recommended by LNS.
- It is strictly prohibited to jump wire or remove circuit breakers, master switches, and especially safety switches.

SAFETY DEVICES

- Check the safety devices and the safety guards before every operation.
- Do not remove any safety covers while the machine or the lathe are under electrical power.
- If certain safety shields or safety covers are removed to conduct maintenance, they must be reinstalled as soon as the maintenance work is completed.
- If it is necessary to move the machine after it has been commissioned, LNS or its local representative must be contacted before any attempt to restart it.

EMERGENCY STOP BUTTON

- The emergency stop button is located on the remote control of the bar feeder. In a dangerous situation, the emergency stop button enables a safe shutdown of the bar feeder’s operation.

2.7 SAFETY REQUIREMENTS

NOTICE

⇨ The manufacturer accepts no responsibility for damage caused by failure to obey the instructions.

- Do not handle the equipment without knowledge of the safety instructions and the instructions for use. Obey the safety instructions for the machine and the connected machine tools.
- Do not remove any protective guards while power to the equipment or the machine is turned on.
- Never place your hands in the machine in operation.
- Do not work on the interface or in the electrical cabinet if the machine or connected machine tool is energized.
- Do not jump wire or remove circuit breakers, master switches, and safety switches.
- To guarantee the safety, performance, and warranty of your machine, use only original or manufacturer-approved spare parts for both operation and maintenance.
- For lifting and transport, only use the indicated points to avoid injury and material damage.

OWNER'S OBLIGATIONS

To comply with:

- Accident prevention laws
- National safety instructions
- Legal regulations concerning occupational safety and environmental protection

REQUIREMENTS REGARDING PERSONNEL

Only qualified personnel may:

- Install the machine
- Perform maintenance work and repairs
- Perform work on electrical equipment

2.8 SPECIFIC RISKS

If the machine is operated by unqualified personnel or operated incorrectly, specific risks can arise.

ELECTRICAL HAZARDS

DANGER

Electrical hazards!
Risk of electric shock!

- ⇨ Do not operate machine without a proper electrical ground/earth.
- ⇨ Always disconnect power to the machine before performing any service or maintenance. Work, including maintenance of motor and fan replacements, and on the electrical system, must only be performed by qualified personnel.
- ⇨ Do not operate the machine if its power cables are damaged or if any other damage to the machine is visible or suspected.
- ⇨ The supplied utility/mains power must match the power requirements listed on the machine's rating label.
- ⇨ In the case of a fault that may be electrical in origin, contact LNS or its local representative.

DANGER

Electrical hazards!
Risk of death from electric shock!

- ⇨ Do not carry out any servicing on the interface or inside the electrical cabinet while the machine tool is energized.
- ⇨ Do not place the machine in a damp area and make sure that water or oil does not come into contact with the electrical equipment.
- ⇨ Do not move the bar feeder while it is electrically powered on.
- ⇨ Do not attempt to recharge the batteries of the PLC.

MECHANICAL HAZARDS

WARNING

Moving parts
Crushing and cutting hazard from moving components!

- ⇨ Do not grasp moving parts or rotating object, or nearby elements.
- ⇨ Do not reach into the machine while it is in operation.
- ⇨ Before removing the covers, disconnect the electric supply.
- ⇨ Tie back long hair and do not wear loose garments or jewelry while operating.
- ⇨ Do not operate the machine without any cover after maintenance work.

RISK OF TRIPPING AND FALLING

WARNING

Tripping and falling danger!
Injury or damage from lack of safety measures

- ⇨ Keep the work area surrounding the bar feeder clear of objects and well lit.
- ⇨ Keep the floor clean on a regular basis, the presence of oil on the ground could cause falls.
- ⇨ Use correct access. (e.g., a ladder).

RISK OF DAMAGE

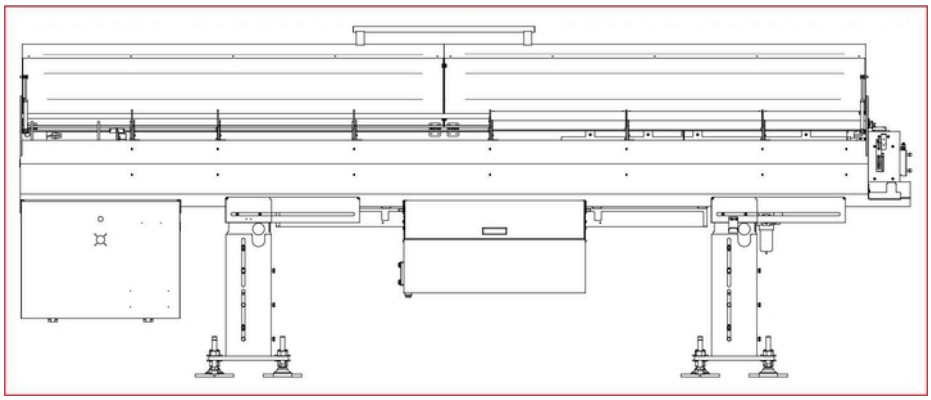
NOTICE

Risk of damage to the lathe of the bar feeder!

Respect the limitations given for the bar stock length and diameter.

2.9 DANGER ZONES

The entire area surrounding the machine is considered a danger zone.



During operation, adhere to the following:

- Do not reach into the machine when machine components are moving.
- Only qualified personnel can operate the machine.

2.10 SAFETY DEVICES

The bar feeder has been designed with a focus on maximum safety during its handling and complies with EC requirements.

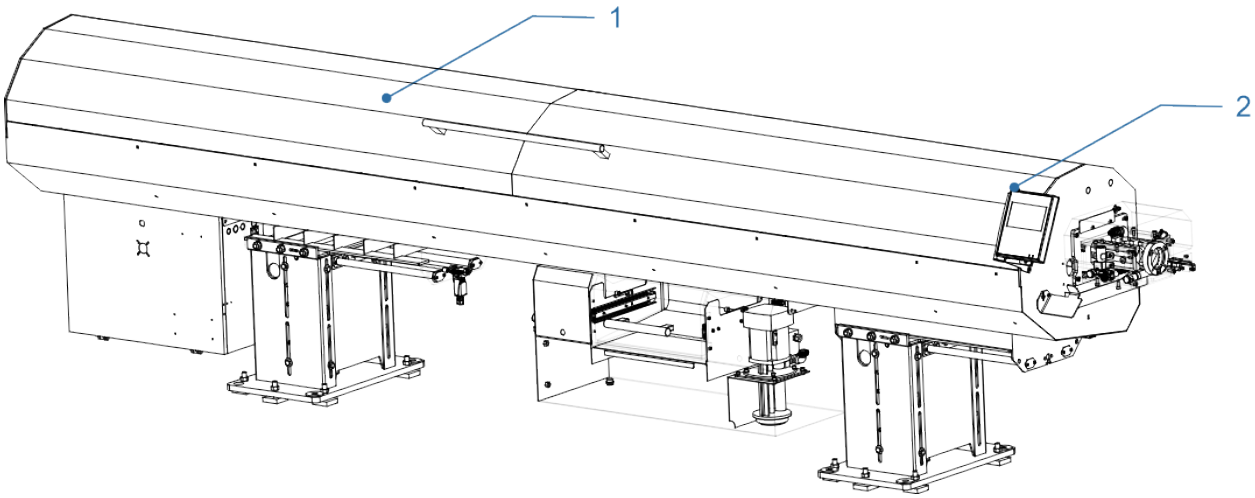
Safety covers and devices make access to the moving parts of the bar feeder impossible.
Keep the machine from operating when these protections are open.
Safety covers/components and safety electric components must remain functional.

LNS, or its local representative, may not be held responsible for accidents or property damage, if safety devices have been removed or disabled. The design of switches, and their integration on the bar feeder, makes their exclusion almost impossible.

WARNING

Moving parts may cause crushing or cuts.
Crushing and cutting hazards!

- ⇨ Disconnect the electrical plug before removing any covers and during maintenance.
- ⇨ Do not stand or place a part of the body inside the machine while it is operating, particularly when loading the bars!
- ⇨ The gas hinges of the main cover must be replaced if needed. Contact LNS or its local representative.
- ⇨ An appropriate waste bin for remnant parts must be used and perfectly adapted to the remnants' dimensions and usage conditions.

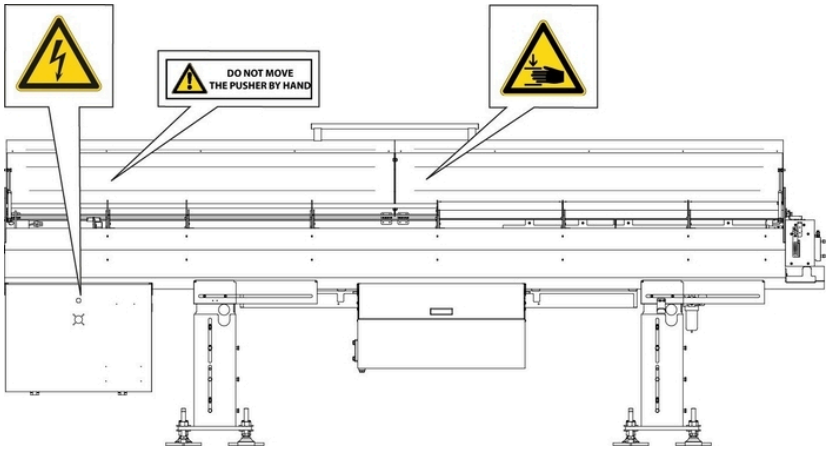


Position	Designation
1	Main access cover
2	Emergency stop button

2.11 SAFETY SIGNS

Safety signs mark hazard points on the machine.

The safety signs must always be kept clean and must not be covered.
If a safety sign is missing or damaged, replace it immediately.



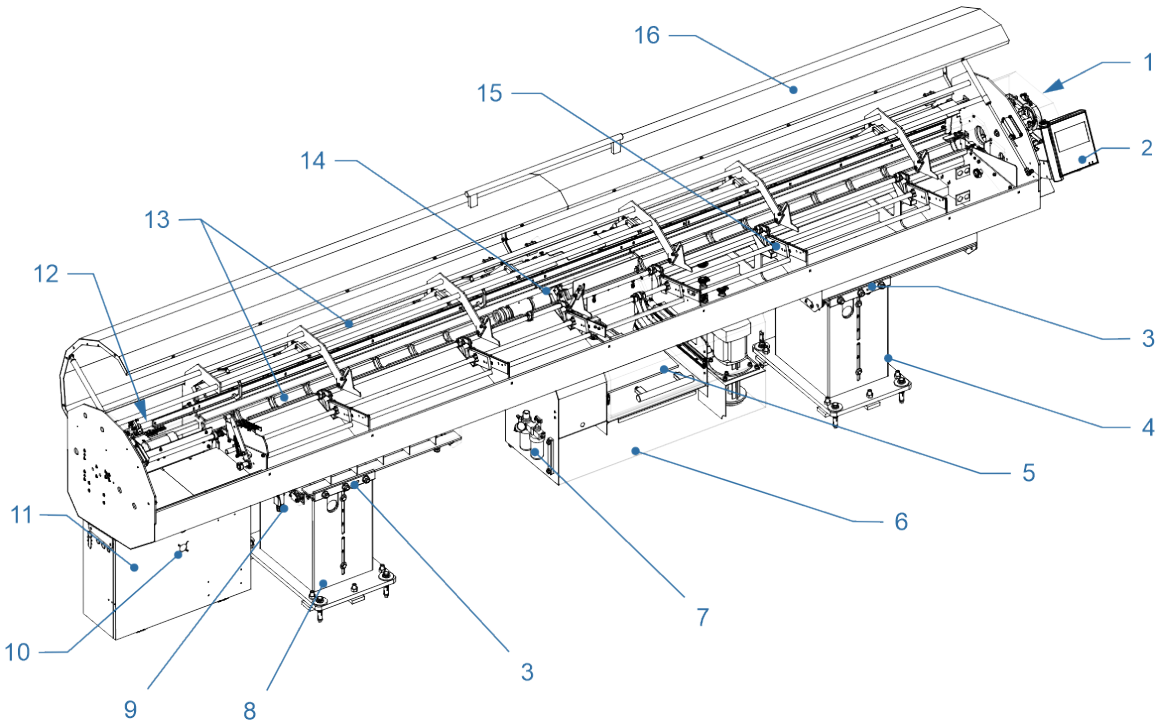
2.12 SAFETY ANALYSIS FOR CORRECT INTEGRATION

Before installing the machine, consider the following points:

- Consider safety strategies that reduce risks to an acceptable level
- Define the tasks required for the applications in order to evaluate access requirements and/or the approach.
- Identify sources of hazards, including breakdowns and failure modes associated with each task. Risks can come from:
  - the machine with which the equipment is integrated
  - its association with other equipment
- Evaluate and assess the risks associated with using the machine:
  - programming risks
  - operation risks
  - risks of use
  - maintenance risks
- Choose the protection methods:
  - using safety devices
  - introducing signals
  - compliance with safe work procedure

3 MACHINE DESCRIPTION

3.1 OVERVIEW



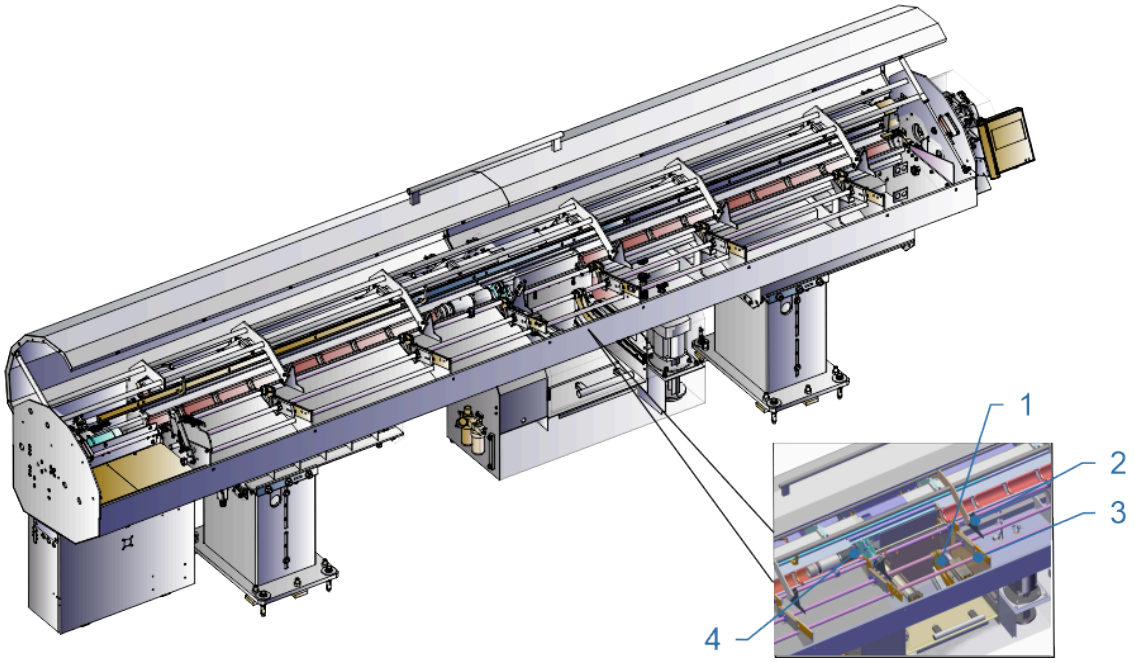
Position	Designation
1	Front rest
2	Remote control
3	Locations of (x2)→RETRACTION SYSTEM
4	Front stand
5	Remnant box
6	Hydraulic tank
7	→AIR TREATMENT UNIT
8	Rear stand
9	Retraction switch, optional: one or two position(s)
10	Main switch location
11	Electrical cabinet
12	Pusher
13	Locations of the guiding elements →GUIDING SYSTEM
14	Vice (Remnant device)
15	Loading rack
16	Main access cover. Two possible positions: opened/closed

3.2 LOADING SYSTEM

WARNING

Crushing hazard from moving components!
Please read the safety information provided at the beginning of this manual before handling the following devices.

LOADING SYSTEM



Position	Designation
1	Cylinder
2	Diameter limiter
3	Loading ramp
4	Loading lever

The loading system consists of a bar magazine in the form of a loading ramp and an air-actuated bar selection system. The loading system serves to store bars and load them individually into the guiding system.

In order to load the bars smoothly, the loading system must be properly set up according to the bar diameter.

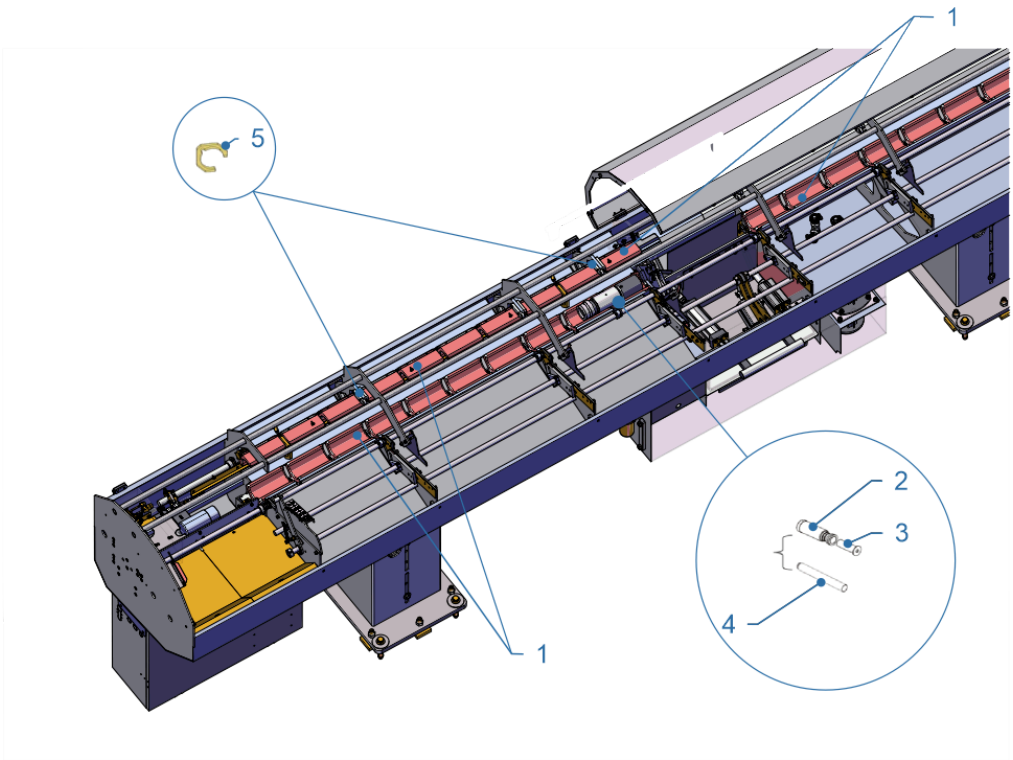
3.3 GUIDING SYSTEM

The guiding elements can be opened or closed on the remote control under manual mode.
The cover seals the guiding elements between the remnant vice and the top cut measuring device. The pusher assembly (5) and bar stock are then completely located inside.
The hydraulic oil is injected into the space between the guiding elements and pusher/bar stock.
For the selection of the guiding element set, please refer to the spare parts catalog.
For instructions on how to change the guiding elements → CHANGING THE GUIDING ELEMENTS.

NOTICE

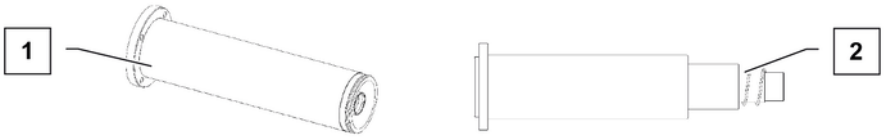
Performance loss due to vibrations.

⇨ For best performance, keep a 1 mm gap between the bar stock and guiding elements. The bigger the gap, the more vibration will occur.



Position	Designation
1	Guiding elements: upper and lower
2	Telescopic tube (for Swiss type of lathe)
3	Telescopic tube bushing (for Swiss type of lathe)
4	Front tube (for fixed type of lathe)
5	Hooks to hold the pusher → GUIDING SET

FRONT TUBE/TELESCOPIC TUBE



Position	Designation
1	Front tube
2	Telescopic tube

The front tube and telescopic tube function as an extension of the guiding elements, guiding the bar stock between the bar feeder and the lathe and serving as protection.
The front tube has a fixed length and is designed specifically for fixed type of lathes.
The telescopic tube can extend and retract. It is designed specifically for Swiss type of lathes.

3.4 FEEDING SYSTEM

The feeding system consists of the pusher assembly and belt transmission device. Driven by the servo motor, the feeding system moves the pusher forward and backward to achieve the following functions:

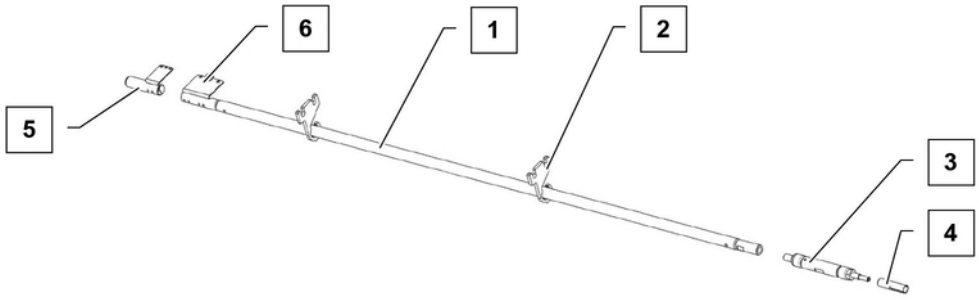
- Bar insertion
- Bar feeding and moving
- Remnant retraction

INFO

Performance loss due to vibrations!

For best performance, keep a 1 mm gap between the guiding system and the pusher.

PUSHER ASSEMBLY



Position	Designation
1	Pusher
2	Pusher hook
3	Rotating sleeve
4	Collet and adapter
5	Loading finger
6	Flag

The pusher assembly is composed of the loading finger and the pusher. They are carried by a belt. The loading finger, which is always connected to the belt mainly serves to move the bar to the insertion position.

The pusher controls the bar movement either inside the bar feeder or lathe spindle.

When the pusher support is open: the pusher is not connected to the belt.
When the pusher support is closed: the pusher is connected to the belt.

In order to produce the shortest remnant possible, the pusher tip must be able to reach the rear end of the lathe chuck.

For the selection of the pusher set, please refer to the spare parts catalog of the machine.

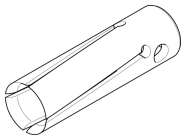
ROTATING SLEEVE

The rotating sleeve is mounted on the tip of the pusher and connects the static part (pusher) to the rotating part (collet). Therefore, both ends of the bar rotate at the same speed.
Because of its function, the rotating sleeve is the most critical component for the bar feeder performance. A poorly working rotating sleeve could result in vibrations and loud operating noises. To keep the bar feeder running at its best performance, it is strongly recommended to inspect the rotating sleeve regularly.

COLLET

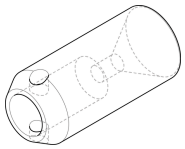
The collet is connected to the rotating sleeve mounted on the tip of the pusher. When the lathe spindle is rotating, the bar is secured by the lathe chuck and the collet.
To ensure that the bar is secured well during machining, the collet must be selected according to the bar dimension.

Standard type



The standard collet is a cylinder with flexible jaws that clamp the tip of the bar. Each collet matches a specific bar dimension only.
To ensure that the bar is held securely during machining, the collet must be selected according to the bar dimension.

Chuck cone



The chuck cone collet supports the tip of the bar with a corn-shaped recess instead of clamping it.
This enables to fit the bar and guiding elements closer together.

When this type of collet is selected, the service parameter must be set up accordingly.

ADAPTER

Adapters may be needed to connect the collet to the rotating sleeve.

3.5 FRONT REST

Located at the front of the bar feeder, the front rest stabilizes the guiding of the rotating bar before entering the lathe.

This front rest is electric, and the adjustment is automatic.

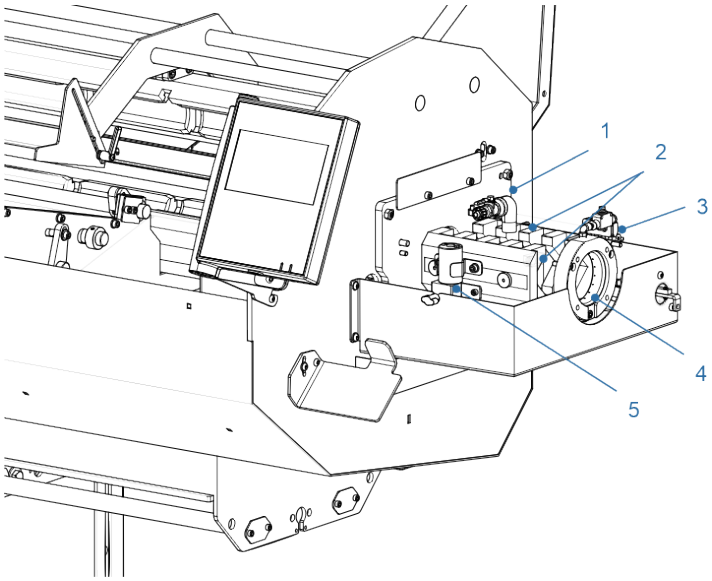
The front rest can be in closed or open position:

- Closed position: holding and guiding the bar
- Open position: holding and guiding the pusher

The closed and open positions are automatically set up by entering the pusher and bar stock diameter in the parameters.

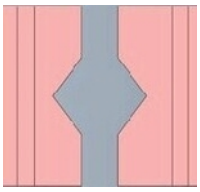
Each time the guiding system is opened, the front rest searches for its referencing position.

Front rest without its cover

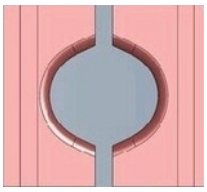


Position	Designation
1	Pulsed air inlet
2	Guiding channels
3	Oil connector
4	Air blast
5	Motor

V-TYPE BLOCK
for round bar



O-TYPE BLOCK
for hexagonal and square bar



V- and O-type blocks on the front rest are designed for different bar stocks. For information on changing the blocks, see → ADJUSTING THE FRONT REST

3.6 RETRACTION SYSTEM

WARNING

It is strictly prohibited to use the retraction system before the bar feeder is anchored to the ground. Please read the safety instructions provided at the beginning of this manual before handling the following devices.

DANGER

Before handling the retraction mechanism, check to see that the interface cables between the lathe and the bar feeder are long enough.

Prerequisite

- Bar feeder in MAN or STOP mode
- No bar between the bar feeder and the lathe
- Pusher inside the bar feeder
- The area around the bar feeder must be clear

To facilitate maintenance tasks, the bar feeder can be equipped with a retraction system which allows moving the bar feeder back and forth.

The rigidity of the retraction system guarantees perfect alignment when the bar feeder is in working position.

A safety switch prevents any handling until the bar feeder is in operational position.

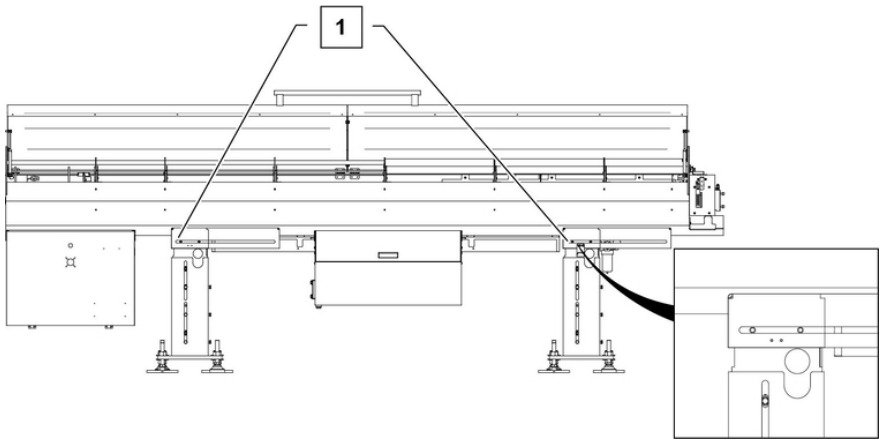
WARNING

Injury hazard from unsecured bar feeder!

⇨ Do not use the retraction device before the bar feeder is anchored to the ground.

⇨ Make sure that the interface cables between the lathe and the bar feeder are long enough before handling the retraction device.

1 - RETRACTING THE BAR FEEDER (STANDARD)



Position	Designation
1	Screws of the retraction system

Procedure

1 Loosen the four screws (1) above the front side of the rear and front stand.
2 Pull the bar feeder backwards.
3 Perform the required maintenance task.

4 Move the bar feed system back in working/home position.
5 Tighten the four screws (1) again.
6 Check that the alignment is correct.

2 - POSITION RETRACTION OPTION

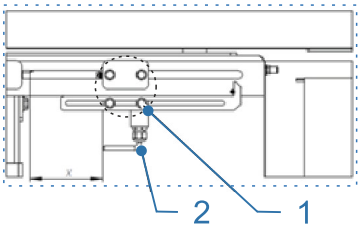
This option allows 2 bar feeder positions and must be installed when it is first commissioned.
The software saves the end of bar and top cut positions.
In the event of an upgrade, please contact your LNS after-sales service.

This retraction option:

- Allows the bar feeder to be moved forward in the direction of the lathe.
- Is useful if the bar feeder must be adapted to a lathe which has no guide bush. The bar feeder is to be connected to the spindle.

Control mechanism of the “2-position” retraction

The retraction position must be set initially using the adjustment screws (1) and the sensor (2).



3.7 ELECTRICAL EQUIPMENT

DANGER

Danger of death by electrocution!

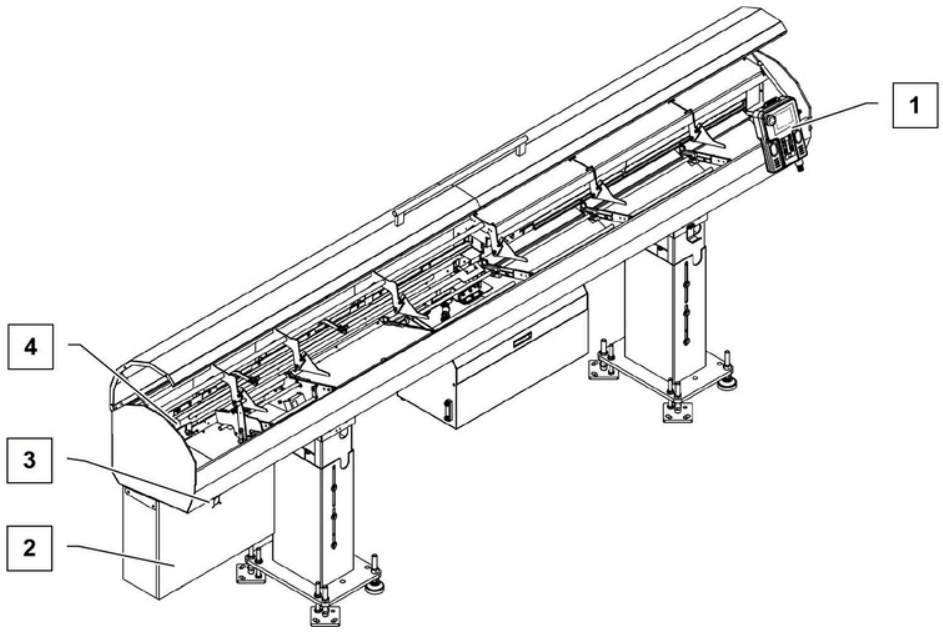
⇨ Work on the electrical system must only be performed by a qualified electrician.

⇨ In the case of a fault that may be electrical in origin, contact LNS or its local representative.

WARNING

Please read the safety instructions provided at the beginning of this manual before handling the following devices.

The electrical equipment of the bar feeder comply with the EN 60204–1 standards. The electrical elements and groups of elements that may require adjusting at some point are described here.

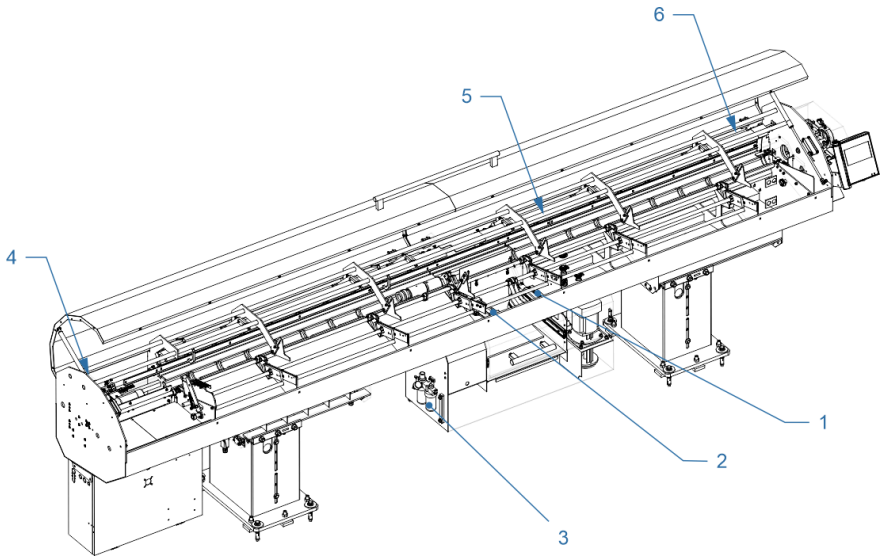


Position	Designation	Description
1	Remote control	Enables the operation of the bar feeder
2	Electrical cabinet	Supplies the bar feeder with electricity
3	Main switch	Switches the bar feeder on/off
4	Servo motor	Powers the servo drive, which controls the movement of the pusher

3.8 PNEUMATIC EQUIPMENT

The following automatic movements are activated by the pneumatic system:

- bar loading mechanism
- V-channel pivoting and locking
- Air blast



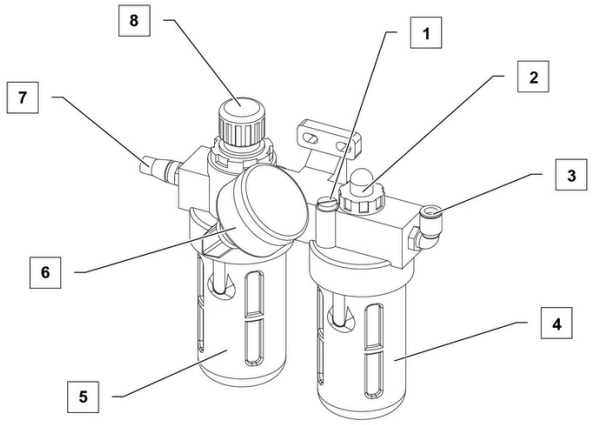
Position	Designation	Description
1	Pneumatic cylinder of bar loading	Activates the bar loading mechanism
2	Pneumatic cylinder of material clamping	Activates the remnant vice
3	Air treatment unit/Air blast (optional)	Filters, lubricates and regulates the air pressure
4	Pneumatic cylinder of guide channel	for locking the guide channel when it is closed
5	Pneumatic cylinder of guiding system opening/closing	Activates the opening/closing mechanism of the guiding system
6	Pneumatic cylinder of bar measuring	Activates the top cut measuring device

AIR TREATMENT UNIT

INFO

⇨ The air treatment unit does not under any circumstance replace a compressed air dryer!

The air treatment unit filters and regulates the compressed air before it enters the pneumatic system. The compressed air must be free from oil and water.



Position	Designation
1	Oil filler plug
2	Oil fogger
3	Regulated compressed air connection inlet (8 mm / G ¼" plug-in screw fitting)
4	Oil can
5	Water separator
6	Manometer
7	Compressed air inlet
8	Pressure regulator

For setting up the air intake for the pneumatic system, refer to CONNECTIONS/SETTING UP THE AIR INTAKE PNEUMATIC SYSTEM, sub-chapters:

- → CONNECTING THE COMPRESSED AIR
- → SETTING THE AIR PRESSURE

3.9 HYDRAULIC EQUIPMENT

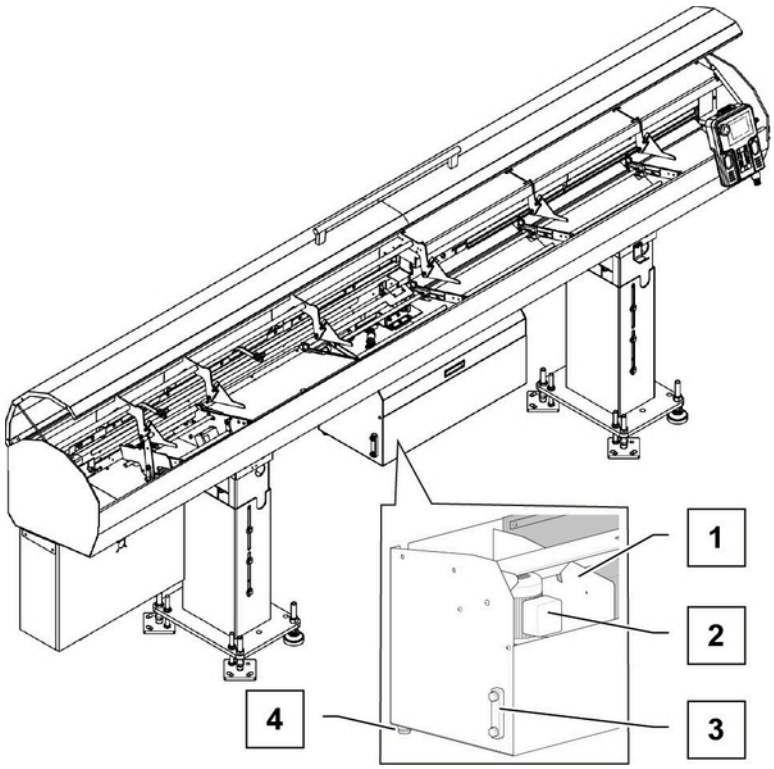
WARNING

Please read the safety instructions provided at the beginning of this manual before handling the following devices.

The hydraulic pump injects oil at 0.3 MPa into the shells. The functions of the hydraulic equipment are:

- To keep the bar positioned at the center of the assembled shells.
- To reduce friction between the running bar and the assembled shells.
- To absorb the vibration created during machining.

OVERVIEWOVERVIEW



Position	Designation
1	Hydraulic tank
2	Hydraulic pump
3	Oil level indicator
4	Drain plug

HYDRAULIC PUMP

The hydraulic pump powers on immediately when the following conditions are fulfilled:

- Bar feeder is in automatic mode.
- Guiding system is closed.
  A pressure switch detects the pressure at the outlet of the hydraulic pump.
  The hydraulic pump stops immediately when one of the following conditions is fulfilled:
  - Bar feeder is switched to manual mode.
  - Guiding system is opened.

REMNANT BOX

The remnant box stores remnants. The available capacity of the remnant box depends on the remnant diameters and lengths.→ MAINTENANCE/MAINTENANCE SCHEDULE and →EMPTYING THE REMNANT BOX

WARNING

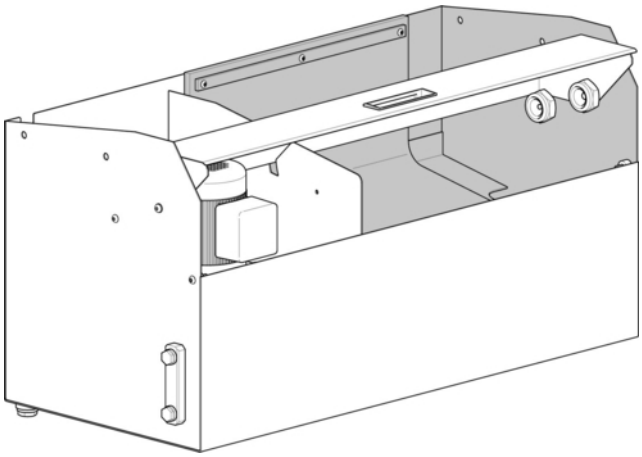
Crushing hazard!
Injury from falling remnants.
⇨ Only open the cover of the remnant box when the bar feeder is stopped.

NOTICE

Risk of material damage from overfilling!
⇨ Check and empty the remnant box regularly to prevent overfilling.

An overfilled remnant box might cause one of the following problems:

- The oil recycling is interrupted and oil spills out.
- The remnants lie in the remnant vice space and interrupt the next bar insertion.
- The remnant box becomes too heavy to be moved.



HYDRAULIC PRESSURE SWITCH

A pressure switch continuously monitors the hydraulic pressure. Whenever the hydraulic pressure is lower than the required value, an alarm is triggered, and the bar feeder will be interrupted with the next chuck opening.

3.10 ELECTRICAL EQUIPMENT

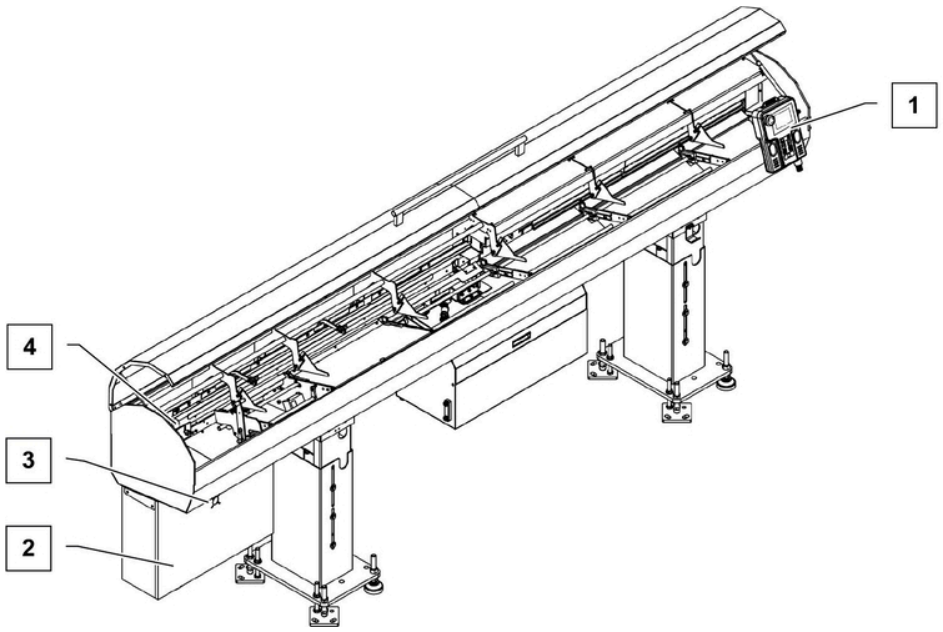
DANGER

Danger of death by electrocution!
⇨ Work on the electrical system must only be performed by a qualified electrician.
⇨ In the case of a fault that may be electrical in origin, contact LNS or its local representative.

WARNING

Please read the safety instructions provided at the beginning of this manual before handling the following devices.

The electrical equipment of the bar feeder comply with the EN 60204–1 standards. The electrical elements and groups of elements that may require adjusting at some point are described here.



Position	Designation	Description
1	Remote control	Enables the operation of the bar feeder
2	Electrical cabinet	Supplies the bar feeder with electricity
3	Main switch	Switches the bar feeder on/off
4	Servo motor	Powers the servo drive, which controls the movement of the pusher

4 TECHNICAL DATA

4.1 SPECIFICATIONS

Depending on the country and current standards, some technical data such as mains voltage may vary. Please refer to the data sheet attached to the machine.

Designation	Unit	4 m	3 m
Weight	(kg)	1050	850
Min. bar Ø	(mm)	3	5
Max. bar Ø	(mm)	42	67
Min. bar length	(mm)	750	
Max. bar length	(mm)	3300	4400
Bar magazine max. load capacity	(kg)	280	
Max. longitudinal retraction (optional)	(mm)	390	
Min. remnant length	(mm)	90	
Max. remnant length	(mm)	400	
Max. feed rate	(m/min)	71	
Loading time	(s)	10-30	
Max. pushing force	(N)	220	
Mains voltage	(V)	220	
Mains frequency	(Hz)	50/60	
Hydraulic oil (ISO 100)	(l)	35	
Pneumatic pressure	(MPa)	0.5	
	bar	5	
Air consumption (per loading cycle)		4.5	
Noise emission	(dBA)	68.4	

4.2 OPERATING CONDITIONS

Designation		Operating conditions
Ambient temperature	(°C)	5-40
Relative air humidity	(%)	30-98
Maximum installation height (altitude)	(m)	1000

5 FIRST OPERATION

DANGER

Please read the safety information provided at the beginning of this manual before handling.

5.1 TRANSPORT

Depending on the destination, the machine is usually fixed onto a pallet and wrapped in thermoplastic film.

All the shipping documents, including this manual, are also attached to the pallet.

To prevent injury or material damage, it is recommended to follow the instructions provided by LNS when unpacking or lifting, regardless of the type of packaging.

Please contact LNS for advice concerning packing if you want to relocate the machine.

WARNING

Risk of injury due to heavy parts!

⇨ Take into account the weight of the parts.

⇨ Use an appropriate materials-handling machine to lift and transport heavy parts.

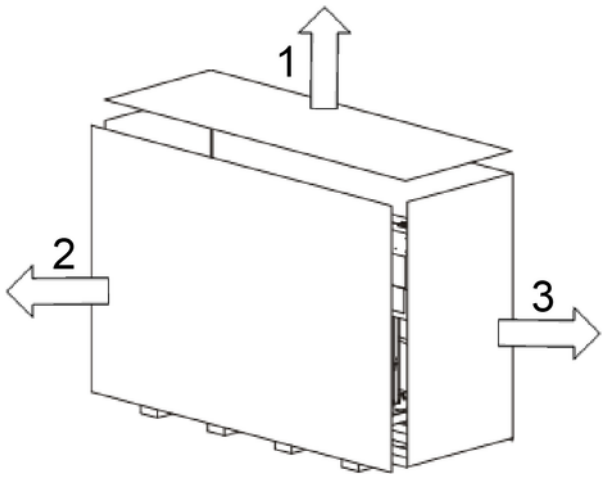
5.2 UNPACKING

The bar feeder may be delivered either on a pallet or packed in a wooden crate, according to customer requirement.

Obey the unpacking and lifting instructions below in order to prevent any injuries to people and damage to objects.

These instructions are stapled to the crate of the bar feeder.

If the bar feeder arrives in a crate, follow the steps below to unpack it:



1 Unscrew the top panel.
2 Remove the front panel.
3 Remove the sidewalls.

5.3 SCOPE OF DELIVERY

The scope of the delivery depends on the customer's order.

In general, you will find the following parts:

- Pusher and guiding elements
- Remote control
- Interface cable

- Diagrams
- Accessory box including documentation, tools etc.
- Lifting bars (optional)

5.4 LIFTING

WARNING

Heavy object!
Danger associated with the hoist and/or Hanging load hazard!

⇨ Make sure that the hoist or lift truck has the appropriate lifting capacity before handling the bar feeder.
⇨ Maintain a safe distance from the action radius of the hoist, the lift truck, or any other lifting and transportation equipment.
⇨ To avoid any harm to persons or damage to components, only use the indicated points to lift and move the bar feeder.

NOTICE

Risk of damage to the bar feeder!

⇨ If it is necessary to move the bar feeder after it has been commissioned, LNS or its local representative must be contacted before any attempt to restart it.
⇨ Do not knock the bar feeder while moving it.

NOTICE

Risk of damage to the lathe!

⇨ Do not knock the lathe while moving the bar feeder.

NOTICE

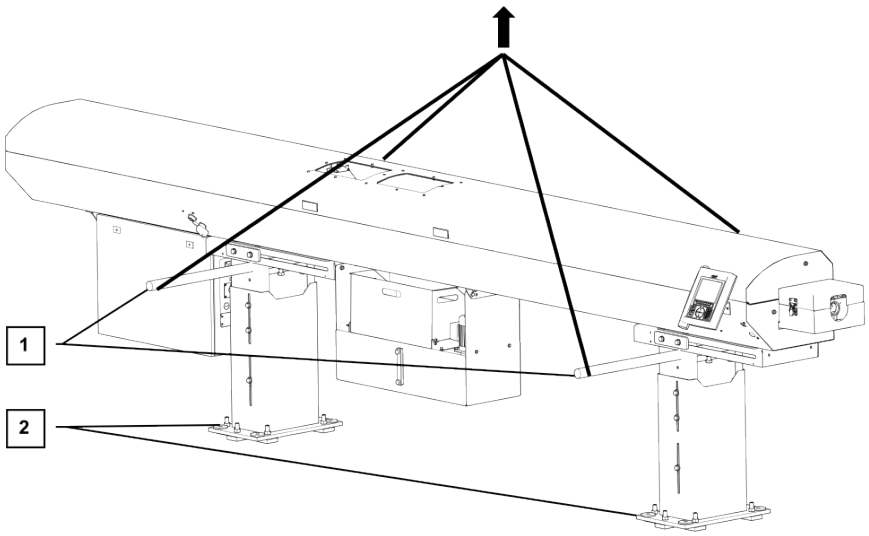
Risk of damage to the lathe/bar feeder!

⇨ The proper positioning of the bar feeder must be defined prior to lifting it in order to avoid problems and damage to the lathe/bar feeder. Before lifting, read the instructions in the positioning chapter.

We advise customers to have the bar feeder assembled and installed by LNS or its local representative. We accept no liability for malfunctions attributable to improper installation in which we were not involved.

The following accessories are required for lifting the bar feeder:

- Two carrying straps of 2 m in length (not supplied)
- Two carrying straps of 1.5 m in length (not supplied)
- Two bars



Procedure

1 Insert a bar (1) into the hole at the top of each stand.
2 Insert the bar from the front, ensuring that the bar protrudes from the front and the back of the stand.
3 Place the hoist vertically above the bar feeder.
4 Secure the straps at the ends of the bars (1).
5 Attach the straps to the hoist. Raise the hoist to tighten the straps.
6 Remove the screws (2) that attached the bar feeder to the pallet during transportation.
7 Lift the bar feeder and remove the pallet. Ensure that the bar feeder is stable and balanced.
8 Move the bar feeder, making sure it remains horizontal.
9 Lower bar feeder as closely as possible behind the lathe and approx. aligned with the spindle. When placing the bar feeder, pay attention to the fixed and variable space requirements for the lathe and bar feeder.

5.5 ALIGNMENT

WARNING

Injury hazard or damage from unsecured heavy object!

⇨ Before proceeding with the alignment of the bar feeder, make sure that the lathe is stable and preferably leveled.

⇨ The bar feeder must be positioned as close as possible to the lathe spindle.

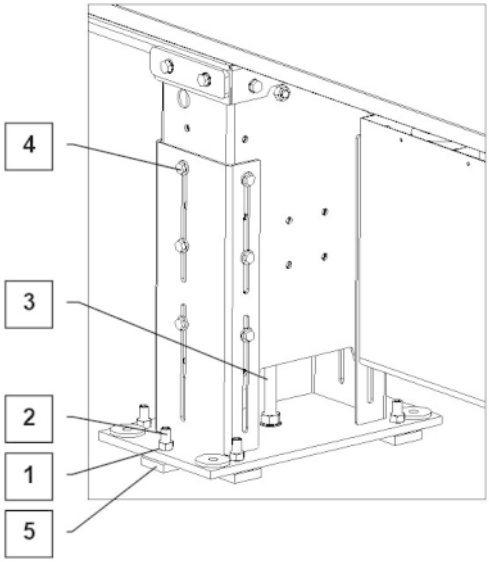
NOTICE

Risk of damage to the spindle liner!

⇨ During alignment, make sure that there is no spindle liner in the spindle.

⇨ Do not tighten the lock nuts of the leveling screws before the bar feeder is anchored to the ground.

After lifting the bar feeder, it can be aligned properly. The alignment may be carried out using an optical tool. If you do not have any alignment tools, please contact LNS or their local representative, so they may take care of the bar feeder installation.



Procedure

1 Place a plate (5) under each screw (2).
2 Loosen the nuts (1) of the screws (2) on each foot.
3 Make sure that the weight of the bar feeder is evenly distributed over the plates (5).
4 Loosen the screws (4).
5 Make sure that the threaded pins (3) of the front and rear stand are supported.
6 Open the guiding system and place a level crosswise on the lower part.
7 Adjust the screws (2) to set the lateral level of the bar feeder.
8 Adjust the nut on the threaded pins (3) to set the height of the bar feeder.
Normally, when the reference point is known, this adjustment is made at the factory.
9 Shift the bar feeder to align it laterally. If you do not have the needed material to perform this operation, please contact LNS or its local representative.
10 When the alignment is satisfactory, tighten all screws (4). Wait until after the anchoring of the bar feeder to tighten the lock nuts (4) of the screws (3).
11 Check the alignment and, if necessary, correct it with the screws (2).

5.6 ANCHORING

Once the bar feeder is in place and perfectly aligned, it should be anchored to the ground to ensure stability. Use anchorage bolts (1) to secure the bar feeder.

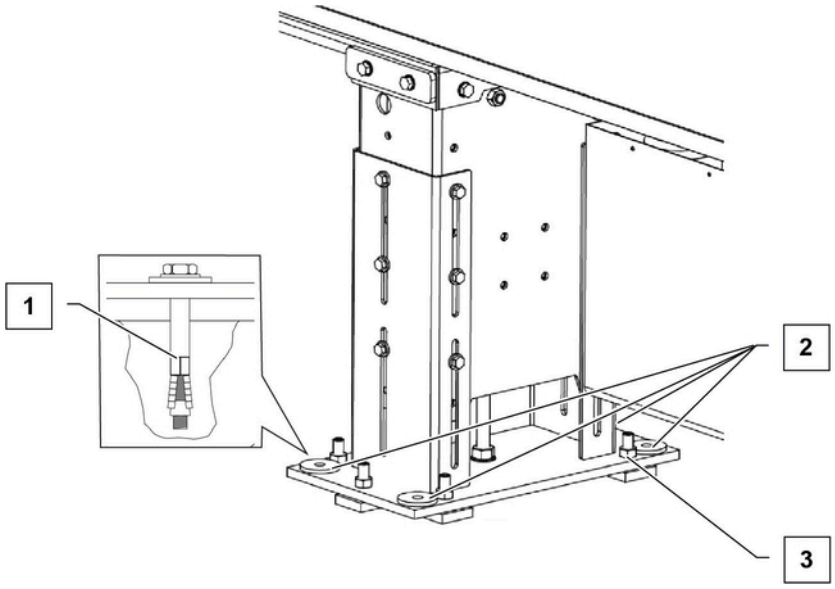
The customer must provide the anchorage bolts to secure the bar feeder.

INFO

⇨ Anchoring: Use heavy-duty anchors.
Minimum: M10 x 100

INFO

⇨ When the bar feeder has been fixed to the ground, check:
- the alignment of the safety switch,
- the safety key by moving the bar feeder and then bringing it to the operation position.



Prerequisite

Anchorage bolts for each anchorage point (1).

Procedure

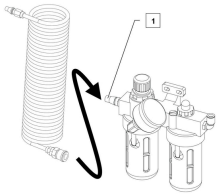
1 Tighten the anchorage bolts (1), at the anchorage points (2)
2 Check the alignment again, and correct if necessary.
3 Tighten the nuts of the screws (3).

5.7 CONNECTIONS

Once the bar feeder has been aligned and anchored to the ground:
1 Connect the compressed air to the air treatment unit.
2 Set the aire pressure

For the compressed air connection to the bar feeder, a hose with a pre-assembled quick coupling is supplied.

CONNECTING THE COMPRESSED AIR



Procedure
1 Make sure that the site's compressed air unit air pressure is not set above 0.8 MPa (8 bar).
2 Connect one end of the hose to the site's compressed air source.
3 Connect the other end of the hose to the air treatment unit inlet (1).

SETTING THE AIR PRESSURE

Procedure
1 Pull the air pressure regulator (1) up to unlock it.
2 Turn the air pressure regulator until the manometer indicates the correct value (0.5 MPa (5 bar)):
- To increase the air pressure, turn the air pressure regulator counterclockwise
- To decrease the air pressure, turn the air pressure regulator clockwise
3 Push the air pressure regulator down to lock it..

ELECTRICAL CONNECTION

Once the bar feeder has been aligned and fixed to the ground, it must be connected to the lathe interface. For this, please contact LNS or its local representative.

5.8 ADJUSTMENTS BEFORE OPERATION

This section covers the steps to take prior to production. This may include the configuration of the bar feeder, the machine tool, and the related adaptations and settings.

WARNING

Please read the safety instructions provided at the beginning of this manual before handling the following devices.

WARNING

Crushing and cutting hazard from moving components!

- ⇨ Do not grasp moving or rotating objects, or nearby elements.
- ⇨ Do not reach into the bar feeder while it is in operation.

WARNING

Risk of crushing from heavy objects!

- ⇨ Handle the loading and guiding systems and all of their components with care and caution to avoid injury.
- ⇨ Do not introduce fingers/hands into the loading zone, feeding or guiding system when the bar feeder is in operation.

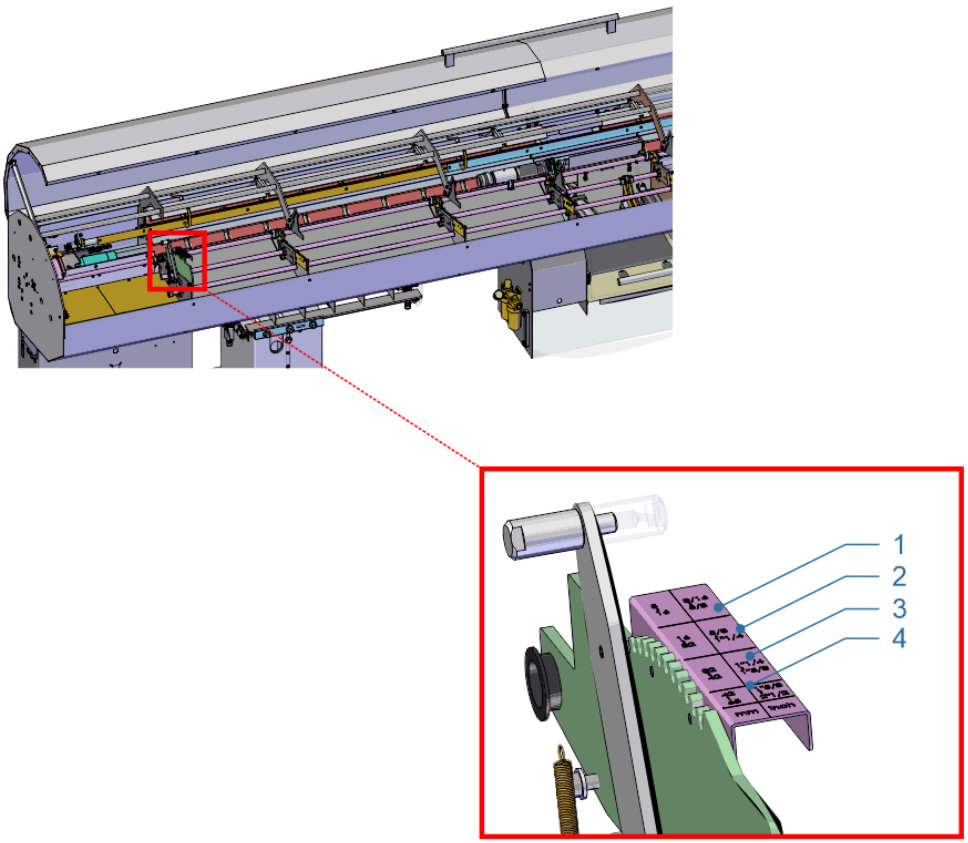
INFO

Bar feeder adjustments must be carried out when the following is changed:

- ⇨ Bar diameter
- ⇨ Bar profile
- ⇨ Length of the parts executed

5.8.1 ADJUSTING THE BAR DIAMETER

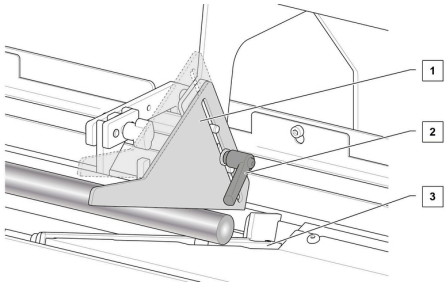
Round, hex and square bar shapes can be loaded into the bar feeder. The following bar diameters are allowable, grouped into three sections:



Section	Bar diameter range (mm)
1	5 – 16
2	16 – 32
3	32 – 42
4	42 - 65

5.8.2 ADJUSTING THE DIAMETER LIMITERS

When loading bars with small diameters into the bar feeder, the diameter limiters need to be adjusted. This prevents bars from rolling over each other.



Procedure

1 Place the bar on the loading ramp (3) under the diameter limiter (1).
2 Turn the knob (2) on the diameter limiter clockwise to loosen it.
3 Adjust the diameter limiter until there is space for only one bar under it.
4 Make sure that the space is not too narrow to prevent the bar from clamping.
5 Turn the knob (2) counterclockwise to tighten it again.
6 Repeat the steps 2 – 5 for each diameter limiter.

5.8.3 ADJUSTING THE FRONT REST

INFO

Risk of material damage from clamping!

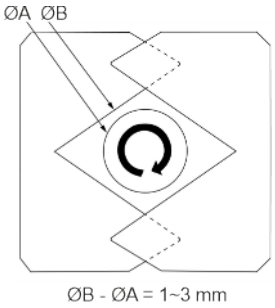
⇨ To avoid friction between the bar stock and the blocks of the front rest, the blocks should not clamp the bar stock. There should be a 1.5 ~ 3 mm gap between them.

⇨ For profiled bar stocks, the gap should be kept between the block's surface and the virtual circle formed by the bar stock corners.

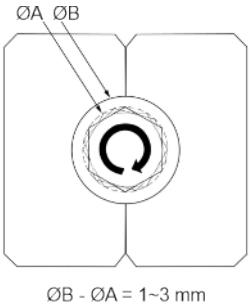
The front rest adjustment is **automatic from the remote provided the blocks are installed.**
For an overview of the function keys, see → FUNCTION KEYS.

CHOICE OF THE BLOCKS

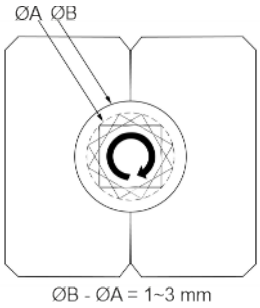
Round bar: V-type block



Hex bar: O-type block

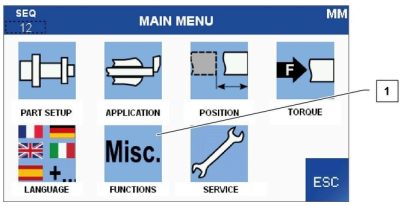


Square bar: O-type block

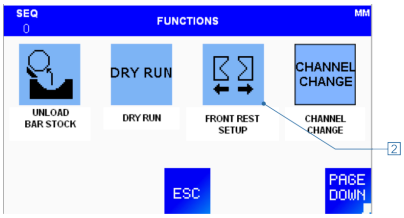


Procedure

1 Make sure that your front rest is equipped with the right blocks for your bars.
2 Press the STOP key.



3 Open the "MAIN MENU".
4 Select "FUNCTIONS" (1).



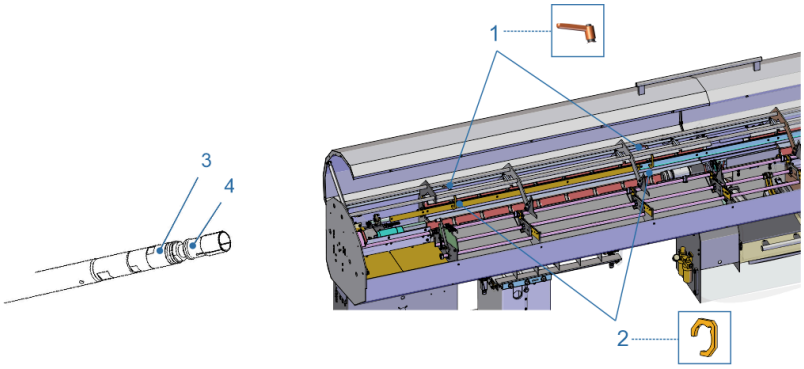
5 Select "FRONT REST SETUP"

5.8.4 CHANGING THE GUIDING SET/ELEMENTS

INFO

Material damage from wrong hook diameter! .

⇨ When replacing the pusher, make sure that the pusher hooks (2) with the according diameter are installed.

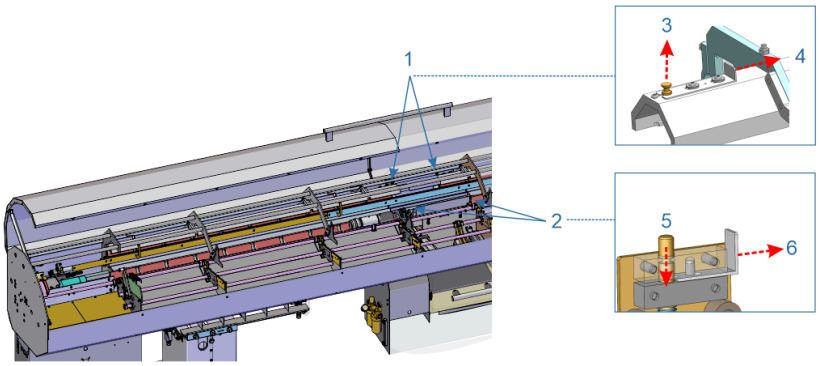


For an overview of the function keys, see → FUNCTION KEYS

Procedure

1 From the remote control, press the STOP key to switch the bar feeder into manual mode.
2 Press the “Close guiding elements” key.
3 Press the “Right arrow” or “Left arrow” key to move the pusher through the vice.
4 Press the “Opoen guiding elements” key.
5 Switch off the bar feeder.
6 Open the main access cover.
7 Lift the pusher and loading finger out of the guiding elements and place them onto the pusher hooks (2).
8 Remove and replace the guiding elements → CHANGING THE GUIDING ELEMENTS, next page.
9 Remove and replace the rotating sleeve (3) and collet (4) on the pusher.
10 Put the loading finger and the pusher back into the guiding elements.
11 Turn the clamp handles (1) next to the two pusher hooks (2) counterclockwise to loosen and remove them.
12 Install the new pusher hooks (2) and turn the clamp handles (1) clockwise to secure them.
13 Close the main access cover.
14 Switch on the bar feeder.
15 Press the “Close guiding elements” key.
16 Press the “Left arrow” key to move the pusher back to home position.
17 Change the guiding elements size setup under “Diameter and length setup” on the remote control.
18 Depending on the lathe type, replace the front/telescopic tube.

5.8.5 CHANGING THE GUIDING ELEMENTS



For an overview of the function keys, see → FUNCTION KEYS

Procedure

1 Perform steps 1 - 7 of the previous procedure for changing the guiding set → previous page.
2 Place one hand at the rear of the guiding elements and with the other hand:
For upper guiding elements (1)
° Lift the locking pin (3) up
° slide slider (4) over to lock pin in upper position

For lower guiding elements (2)
° Push the locking pin (5) down
° slide slider (6) to lock the pin in the lower position

3 Slide the guiding elements to the center of the bar feeder, so that they fall into the remnant box.
4 Place one hand at the other end of the guiding elements.
5 Slide the guiding elements to the center of the bar feeder, so that they fall into the remnant box.
6 Insert the new guiding elements individually at the center of the bar feeder.
7 To lock the guiding elements, push down the upper and lower pins (3)/(5) for locking with the slides (4) /(5)
8 Use the clamp handles and turn the clamp handles clockwise (→ previous chapter) to secure the guiding elements.

5.8.6 CHANGING THE ROTATING SLEEVE AND COLLET

For an overview of the function keys, see → FUNCTION KEYS

Procedure

1 Press the “Close guiding elements” key.
2 Move the pusher to home position.
3 Press the “Open guiding elements” key.
4 Press the emergency stop button.
5 Remove and replace the rotating sleeve and collet.
6 Turn the emergency stop button clockwise until it releases.
7 Press the STOP key.

6 OPERATION

DANGER

Please read the safety information provided at the beginning of this manual before handling.

NOTICE

Risk of damage to the lathe or bar feeder!

⇨ Do not open the main access cover during operation.

6.1 SWITCH ON OFF

The servo motor of the bar feeder is equipped with a built-in absolute encoder that continuously controls the position of the pusher.

When the bar feeder is switched off or there is a power failure, this position is stored by the PLC.

When powering on, the saved position value is immediately taken into account, thus avoiding any referencing position.

The PLC gives the operator only access to handling operations that can be performed.

1. Start the bar feeder.
2. Press the key (1) to move the pusher backwards to the rest position.
3. Press the key (2) to move the V-channel to the lowered position.

DANGER

Danger of death by electrocution!

⇨ Work on the electrical system must only be performed by a qualified electrician.

⇨ Always lock the electrical cabinet again after opening it.

⇨ In the case of a fault that may be electrical in origin, please contact LNS or its local representative.

NOTICE

The saved pusher position does not match the pusher's actual position. Risk of material damage from changing the pusher position when switched off!

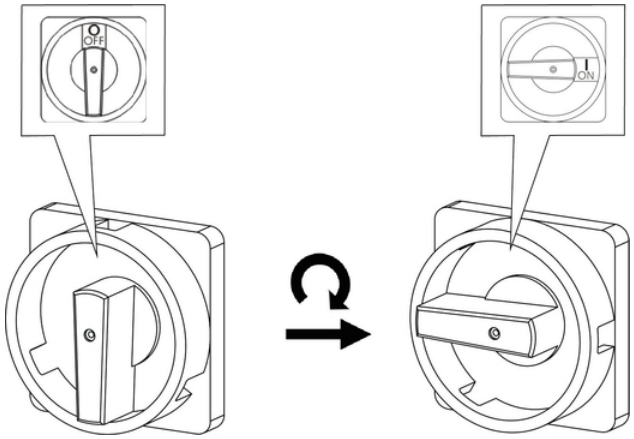
⇨ Do not change the pusher position when the bar feeder is switched off. In such a case, move the pusher back to the saved position.

⇨ Turn the bar feeder off and on again.

INFO

⇨ The main switch can be locked using a padlock.
It is then impossible to start the bar feeder.

MAIN SWITCH



Switch on: Turn the main switch on the electrical cabinet clockwise to the horizontal ON. position

Switch off: Turn the main switch counterclockwise to the vertical OFF position.

6.2 EMERGENCY STOP

DANGER

Emergency stop.
Use the emergency stop button!
- ° The STOP key is not an emergency stop button.

⇨ In an emergency, always use the emergency stop button located on the top of the remote control.

In an emergency, use the emergency stop button to interrupt the operation of the bar feeder.

DANGER

Danger of death by electrocution!
⇨ Work on the electrical system must only be performed by a qualified electrician.
⇨ Always lock the electrical cabinet again after opening it.
⇨ In the case of a fault that may be electrical in origin, please contact LNS or its local representative.

To activate the emergency stop button

1 Press firmly on the emergency stop button (1).
- ° The AL01 alarm appears on the remote control.
- ° The operation of the bar feeder is interrupted.

To deactivate the emergency stop button

1. Turn the emergency stop button (1) clockwise until it returns to its original position.
2. Press the STOP key (2).
   - ° The AL01 alarm is cleared.
   - ° The bar feeder can operate.

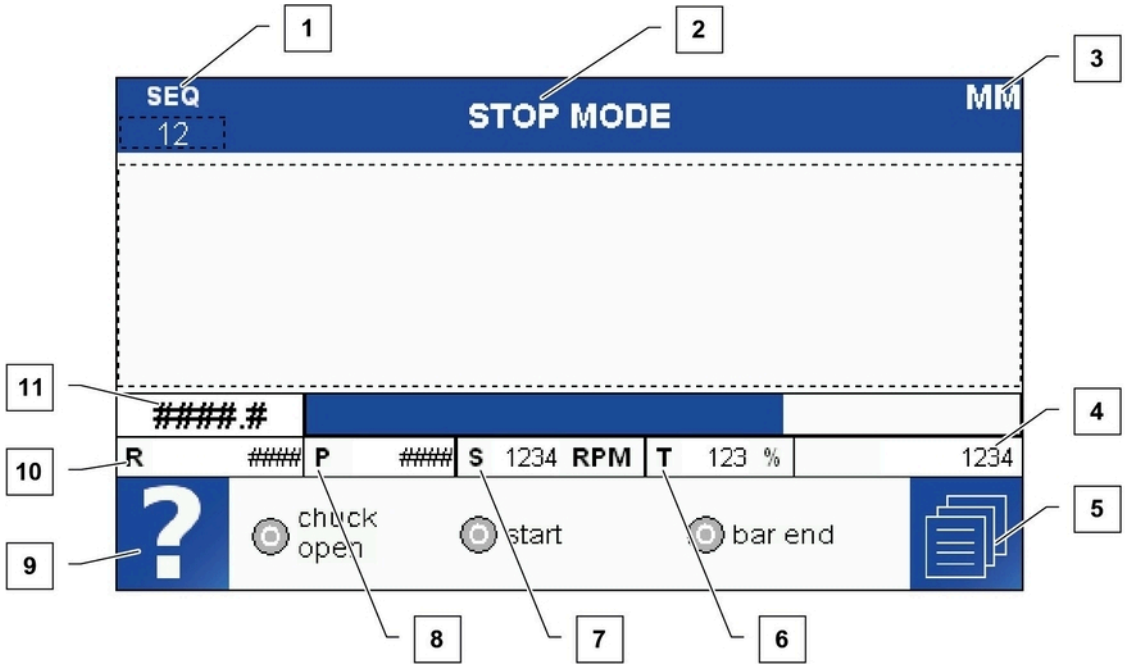
6.3 REMOTE CONTROL

The remote control offers indicating lights and keys to operate the bar feeder when it is in manual mode.

Position	Designation
1	Display
2	Function keys
3	Emergency stop button

6.3.1 DISPLAY

The touch screen provides the operator with all the information they need for both use and maintenance of the bar feeder.



Position	Designation
1	Working stage
2	Operating mode
3	Unit
4	Bar end times (cycle)
5	Parameters setting
6	Torque (%)
7	Speed (RPM)
8	Available machining pieces
9	Bar feed status
10	Rest length of the bar
11	Current position

6.3.2 FUNCTION KEYS

	**Emergency stop button** To switch off the operation of the bar feeder in a hazardous situation.
Auto ready  Auto start 	**Auto Ready/Auto Start** To switch the bar feeder to automatic mode. **Prerequisite** • The guiding elements are closed, or • The guiding elements are open and the pusher is in home position. **Procedure** 1. Press “Auto ready” key and then the “Auto start” key for 3 seconds.
	**STOP/Manual** • To switch the bar feeder to manual mode. In manual mode, the bar feeder can be operated using the function keys. • To reset the bar feeder after an emergency stop.
	**Pusher forward** To move the pusher forward (to the right). This function is only available when the bar feeder is in manual mode.
 + 	**Pusher forward slowly** To move the pusher forward at 10% of the normal speed. This function is only available when the bar feeder is in manual mode. **Procedure** 1. Press the Forward key and then the Backward key simultaneously.
	**Pusher backward** To move the pusher backward. This function is only available when the bar feeder is in manual mode.
 + 	**Pusher backward slowly** To move the pusher backward at 10% of the normal speed. This function is only available when the bar feeder is in manual mode. **Procedure** 1. Press the Backward key and then the Forward key simultaneously.
	**Open guiding elements** • To open the guiding elements automatically when the pusher is at home position and the bar feeder in manual mode. • To raise the pusher if it exceeds the position “1ST FEED LOADING FLAG POSITION” + 150 mm • To load a bar into the guiding elements . When the guiding elements are open, press the key again to set the measuring device in an upright position.
	**Close guiding elements** • To close the guiding elements when the pusher is below the first feed and the bar feeder is in manual mode. • To close the guiding elements when it was opened while the open chuck and the pusher were at a position exceeding PB02 + 150 mm.

6.4 AUTOMATIC/MANUAL OPERATION MODE

DANGER

Moving parts can crush and cut.
Crushing and cutting hazard!

⇨ Do not reach into the lathe chuck when the bar feeder is in automatic mode.
⇨ Disconnect the power plug and the compressed air supply before removing covers.
⇨ Do not open the clamping unit (collet or chuck) of the lathe manually when the bar feeder is in automatic mode.
⇨ Do not conduct any maintenance operation during machining.

NOTICE

Material damage hazard to the bar feeder and bar stock!

⇨ Before proceeding an automatic sequence, ensure that the bar feeder has been properly set up on pneumatics, hydraulics, electrics and mechanics according to the bar stock dimension and machining conditions.
⇨ If the parameter Top cut position = with turret:
  ° Do not switch the bar feeder to automatic mode if the lathe chick is open while there is no stopper in front of the chuck.
  ° Always switch the bar feeder to automatic mode before switching the lathe to automatic mode.

For an overview of the function keys, see → FUNCTION KEYS.

STARTING A NEW MACHINING

Prerequisite

- The lathe is not in automatic mode.
- The lathe chuck is open.
- The lathe stopper is positioned at the top cut position.

Procedure

1 Move the pusher to home position.
2 Make sure that the current pusher position is 0.
3 Press the “Open guiding elements” key to raise the pusher.
4 Press the “Open guiding elements” key to load a bar.
5 Switch the bar feeder into automatic mode with method A or B.

Method A
The lathe automatic sequence starts by accessing the sub-program of the top cut cycle. The program then starts the machining.

1 Press the “Auto ready” key and then the “Auto start” key for 3 seconds.
2 Close the lathe chuck.
3 Switch the lathe to automatic mode.

Method B 1
The bar moves to the top cut position in manual mode. The lathe automatic sequence is started from the main program.

1 Press the “Close guiding elements” key.
2 Press either the “Pusher forward” or “Pusher backward” key to move the bar to the top cut position.
3 Close the lathe chuck.
4 Move the bar to top cut position.
5 Open the lathe chuck.
6 Move the stopper to the part length setup position.
7 Move the bar forward until it touches the stopper.
8 Close the lathe chuck.
9 Retract the stopper.
10 Press the “Auto ready” key and then the “Auto start” key for 3 seconds.
11 Switch the lathe to automatic mode.

CONTINUING AN INTERRUPTED MACHINING

Prerequisite

- The lathe is not in automatic mode.
- The lathe chuck is open.
- The lathe stopper is positioned at the top cut position.
- The pusher is not in home position.
- The guiding shells are closed.

Procedure

1 Move the pusher forward in manual mode until the bar stock pushes against the stopper.
2 Close the lathe chuck.
3 Press the “Auto ready” key and then the “Auto start” key for 3 seconds.
4 Switch the lathe to automatic mode..

SWITCHING THE BAR FEEDER AND LATHE TO MANUAL MODE

When the lathe finishes a machining cycle and the last part is cut with the chuck closed, switch the bar feeder and lathe to manual mode.

Prerequisite

- The lathe is finished machining.
- The lathe is in automatic mode.
- The bar feeder is in automatic mode .

Procedure

1 Press the STOP key to switch the bar feeder to manual mode.
2 Switch the lathe to manual mode.
3 Open the lathe chuck.

6.5 OPERATION SETTINGS

NOTICE

Damage to lathe or bar feeder from incorrect settings!

⇨ The operation settings are the most commonly modified settings for controlling the bar feeder when it is in automatic mode.

⇨ Read this section before making any changes.

INFO

⇨ The images in this section are exemplary and may show slight deviations from the screen on the remote control.

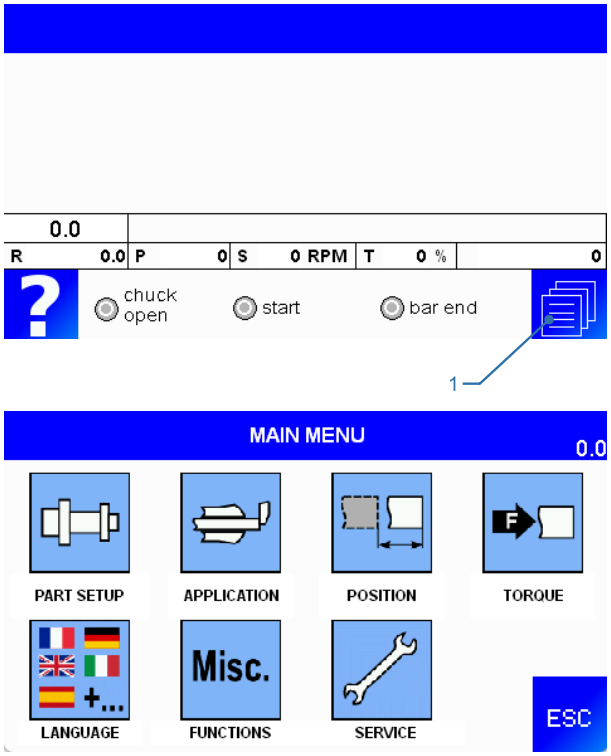
⇨ However, the described functions are the same.

6.5.1 ACCESS

INFO

⇨ You must log in before you can work with the bar feeder.

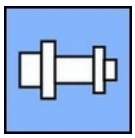
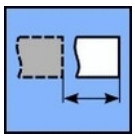
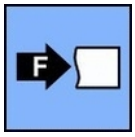
⇨ The bar feeder is in STOP MODE



1. Switch on the bar feeder.
2. Select the operation settings icon (1).
3. The **MAIN MENU**appears.

6.5.2 ICONS

INFO	
	⇨ You must log in before you can work with the bar feeder. ⇨ The bar feeder is in STOP MODE

	**PART** To define the parameters and values of the part, e.g.: • Bar shape (round, hex, square) • Bar diameter • Feeding length • Number of collet openings
	**APPLICATION** To set the working mode by selecting the desired application: • Feeding with turret • Feeding without turret • Dry run
	**POSITION** To access the current position values: • End of bar • Top cut position • Auxiliary end of bar
	**TORQUE** To access the current torque values: • Torque for bar loading • Torque for part feeding
	**LANGUAGE** To change the language on the display.
	**MISCELLANEOUS FUNCTIONS** To access further functions: • Referencing position • Timing on lathe's clamping device • Front rest setup
	**SERVICE** For LNS technicians to access maintenance settings and display masked parameters

6.5.3 PART SETUP

Total feed-out length

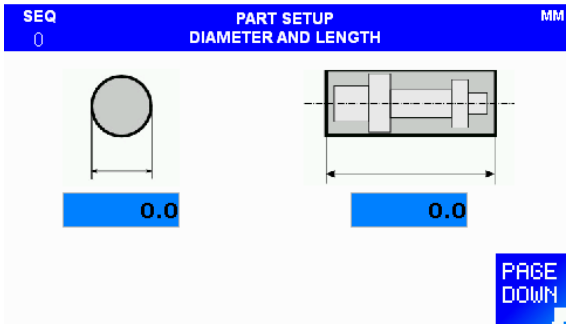
NOTICE

Changing the bar diameter affects the spindle reduction unit parameters.
Risk of material damage due to changed bar diameter!
⇨ When changing the bar diameter, also adapt the spindle reduction unit.

NOTICE

A too long bar extension can cause material damage.
Risk of material damage due to bar extension!
⇨ Without support, make sure that the bar does not extend more than its triple diameter beyond the lathe's clamping unit.

PART SETUP: DIAMETER AND LENGTH



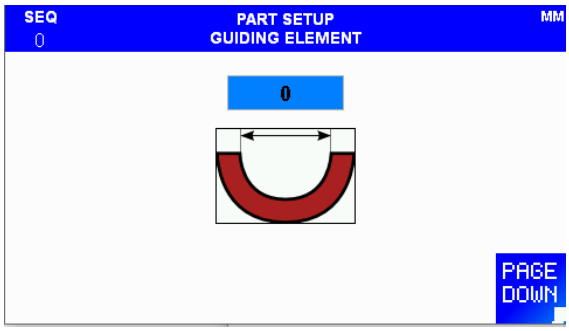
Bar diameter
This parameter sets the basic pushing force. Enter the diameter of the bar currently loaded.

Part length
The part length is the total feed-out length, which includes:

- the length of the part to be executed
- the thickness of the cut-off tool
- the thickness of the facing (not represented in the image, depends on the part program)

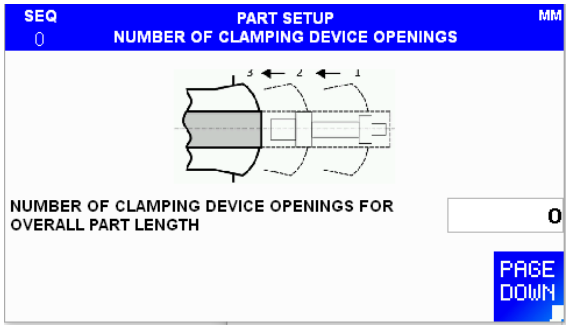
This parameter is used for the calculation of the BAR END position and timing of sending the CYCLE START signal.
Example: The part length is 100 mm and the thickness of the cut-off tool is 3 mm. The value to be entered here is 100 + 3 = 103.

PART SETUP: GUIDING ELEMENT



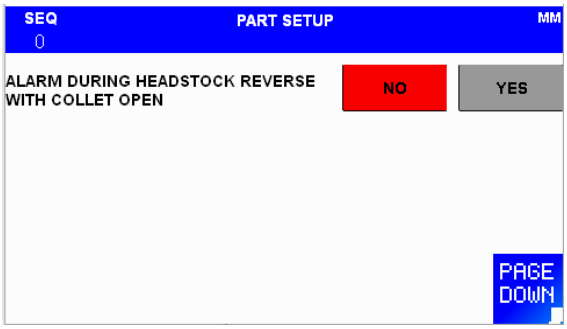
After a pusher changeover cycle, a diameter change of the guiding elements is always proposed. Enter the new diameter of the guiding elements.

PART SETUP: NUMBER OF CLAMPING DEVICE OPENINGS



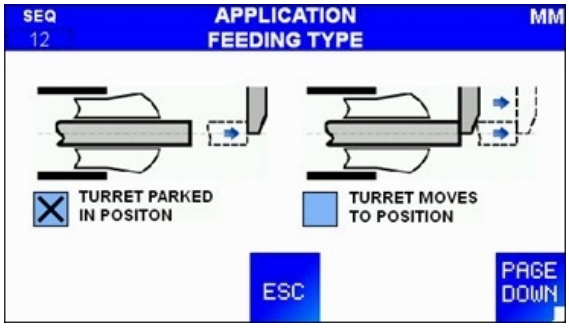
When machining a part requires the collet to open several times (for example a long piece or rework of the part on the second spindle), interface conflicts can occur during feed out.
It is therefore important to enter the number of times that the collet must open to machine a part.
The bar feeder only takes into account the first position for the same part. The following positions (if there are any) must be performed using the turret.

PART SETUP: ALARM MESSAGE



6.5.4 APPLICATION

APPLICATION: FEEDING TYPE

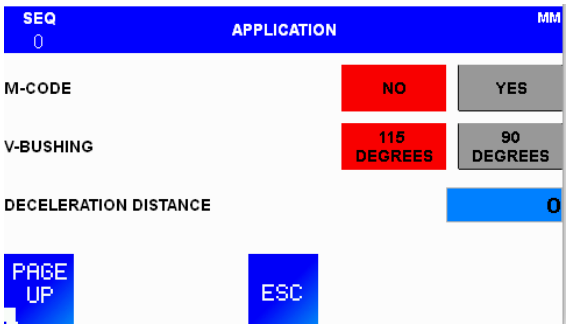


This parameter defines if the lathe turret waits in position or follows the bar stock displacement during feeding operation. Turret parked in position

Turret parked in position
The lathe turret moves one part length forward and waits until the bar stock touches it.

Turret moves to position
The lathe turret moves backward to the front tip of the bar stock and follows it to the part length position.

APPLICATION: M-CODE AND DECELERATION DISTANCE



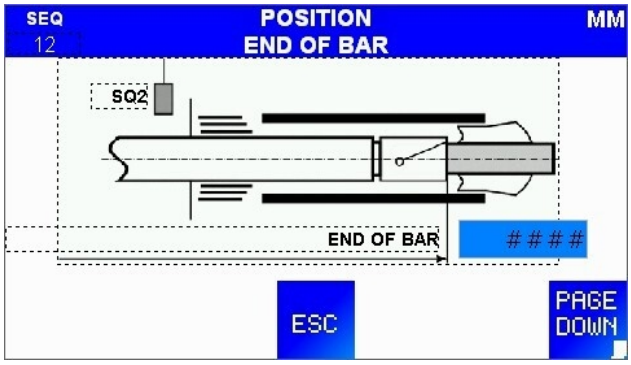
M-Code
During production, the lathe issues an M-Code signal (A4). The bar feeder will push the bar into position and emit a signal to reset the M-Code. The lathe will then be able to continue working.

v-BUSHING

DECELERATION DISTANCE
The distance at which the pusher must slow down before the stopper.

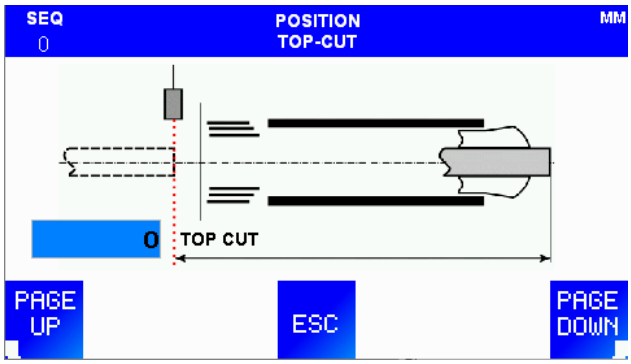
6.5.5 POSITIONS

POSITION: END OF BAR



This position is set to prevent the pusher from reaching inside the lathe chuck. It is set at about 10 mm behind the chuck jaws of the collet pads of the lathe. In the automatic cycle, a new bar will be loaded in the guiding elements.

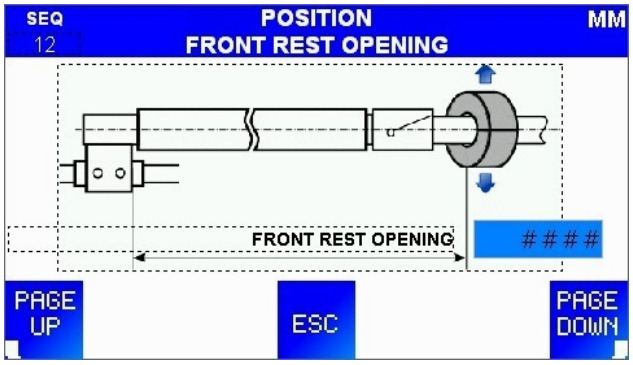
POSITION: TOP-CUT



Top cut
Top cut is the position of a newly loaded bar outside the front of the lathe chuck. The term top cut is a face off or cut off operation before starting a new production part after a new bar is loaded.
This position is measured by a sensor (bar measuring device). The value is independent from the bar length. It does not change unless the bar feeder is moved.
During automatic cycle, the bar measuring device flag is activated while the new bar is loading.

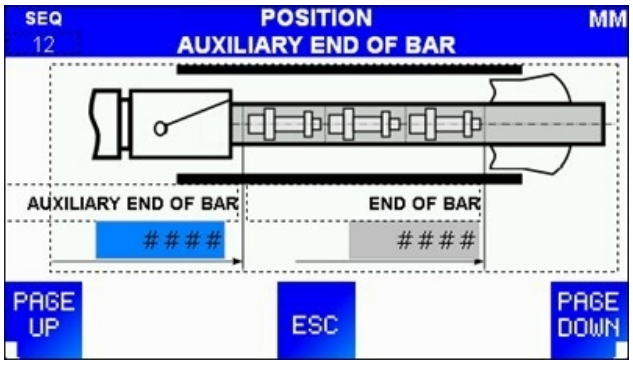
Top cut reference
The current bar tip position measured by a sensor for value reference.

POSITION: FRONT REST OPENING



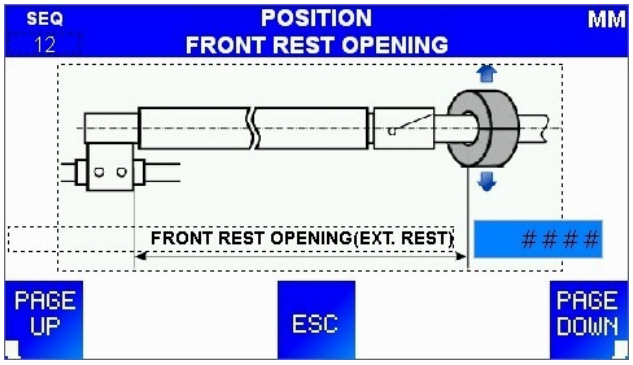
Define the pusher position when the front rest opens.

POSITION: AUXILIARY END OF BAR



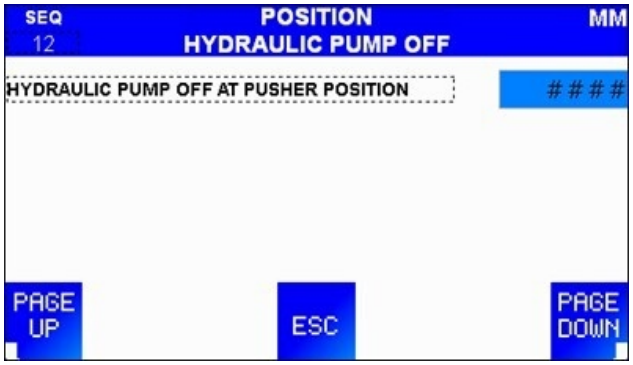
Define the collet position while in automatic mode, when the bar feeder is considered as end of bar.

POSITION: FRONT REST OPENING - SECOND FRONT REST



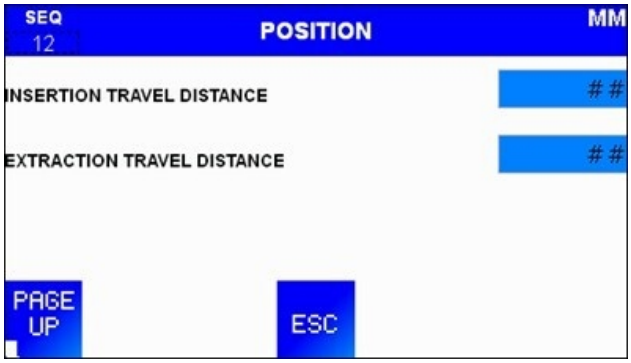
Define the pusher position when the second front rest opens.

POSITION: HYDRAULIC PUMP DEACTIVATION



Define the pusher position where hydraulic oil is not necessary anymore and the hydraulic pump is deactivated.

POSITION: INSERTION/EXTRACTION TRAVEL DISTANCE



INSERTION TRAVEL DISTANCE

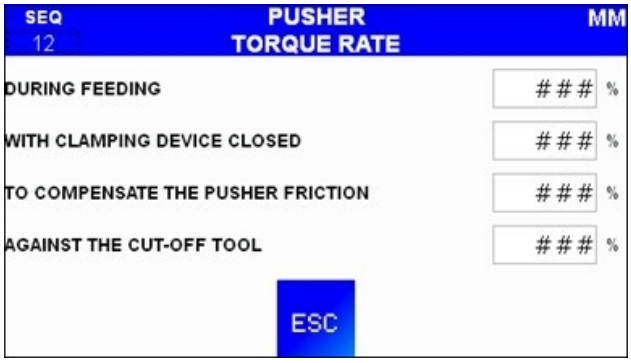
The distance of the pusher for the insertion of the bar into the pusher collet.

EXTRACTION TRAVEL DISTANCE

The distance of the pusher for the extraction of the bar from the pusher collet.

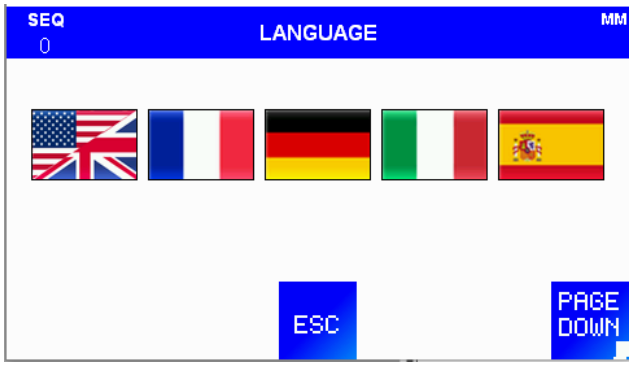
6.5.6 TORQUE

TORQUE RATE



Set the torque rates (%) at the different times during operation.

6.5.7 LANGUAGE



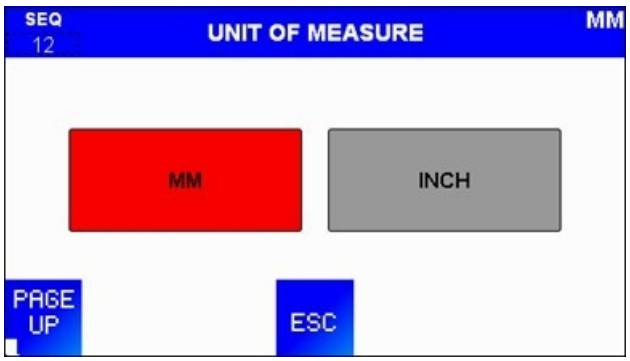
Choose the language to be used on the display.

6.5.8 UNIT OF MEASURE

INFO

⇨ The bar feeder does not necessarily have to be in the STOP position to select the unit of measure.

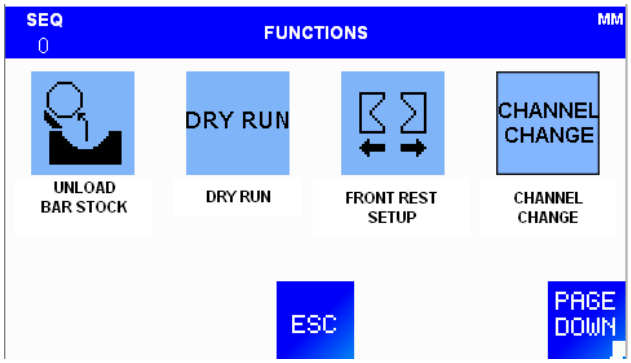
UNIT OF MEASURE



The unit of measurecan be configured according to the local needs.
Both systems are available: Metric (mm) and Imperial (inch).
Choose the unit of measure to be used on the display.

6.5.9 FUNCTIONS

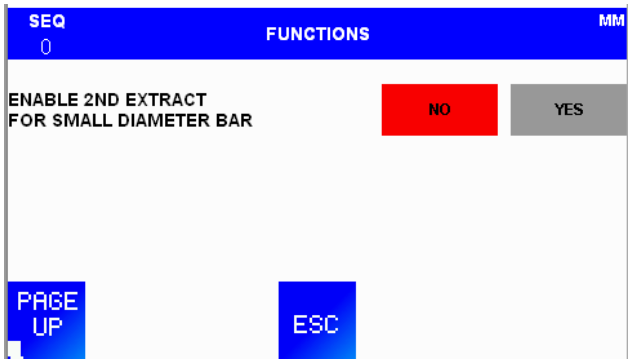
FUNCTIONS



The following setup functions are available:

- Unload bar stock
- Dry run
- Cylinder test
- Adjust second front rest

UNLOAD BAR STOCK



This function enables a second extract for small diameter bar.

DRY RUN

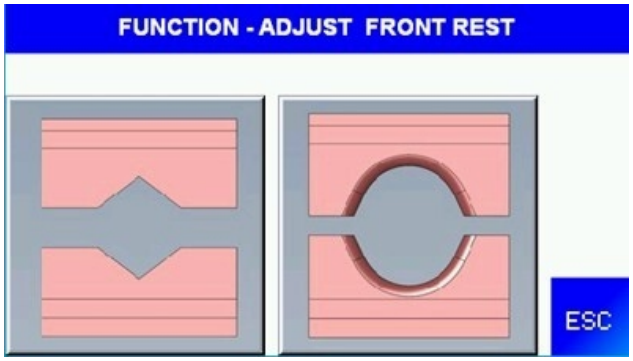
Prerequisite

- Bar feeder is in manual or stop mode.
- Pusher is at home position.
- Bar measuring device is ready.

Procedure

1 To switch the bar feeder into dry run mode, press “Dry run”. The interface signals from the lathe will be ignored.

ADJUST FRONT REST



To adjust the front rest in case of a bar diameter change.

7 MAINTENANCE

This chapter describes simple maintenance work that needs to be carried out on a regular basis. The maintenance work can be carried out by operating personnel.

DANGER

Electrical hazards!
Risk of death from electric shock!

- ⇨ Do not carry out any servicing on the interface or inside the electrical cabinet while the machine tool is energized.
- ⇨ Do not place the machine in a damp area and make sure that water or oil does not come into contact with the electrical equipment.
- ⇨ Do not move the bar feeder while it is electrically powered on.
- ⇨ Do not attempt to recharge the batteries of the PLC.

WARNING

Risk of injury from moving parts!
Crushing hazard.

- ⇨ Stop the machine before carrying out any maintenance work.

7.1 MAINTENANCE SCHEDULE

INFO

- ⇨ The maintenance intervals only serve as a guideline.
- ⇨ They must be adapted according to the application, environment and the air quality.

Component	Maintenance task	Daily	Weekly	Monthly	half-yearly	Yearly
Remnant box	Emptying the remnant box	X				
Emergency stop button	Check that the component is working properly.	X				
Battery	Check the condition of the component and replace it if necessary.					X
Pneumatic equipment	Check the operating pressure.	X				
Pneumatic equipment	• Check the water separator, → CHECKING THE WATER SEPARATOR. • Check the lubricator.		X			
Hydraulic equipment	Check the oil level in the hydraulic tank.		X			
Hydraulic equipment	Drain the hydraulic tank → DRAINING AND FILLING THE HYDRAULIC TANK.				X	
Bar feeder	Check the air treatment unit.		X			
Bar feeder	Clean the sensors.					
Bar feeder	Clean the bar feeder.			X		X
	Check that the component rotates without friction. If a defect is present, contact your local agent.				X	
	Check the belt drive tension and if it needs tightening, contact LNS or its local representative.				X	

7.2 DRAINING AND FILLING THE HYDRAULIC TANK

The bar feeder is supplied without oil.
The oil level must be at the fill level indicator mark H when the hydraulic pump is off.

For hydraulic oil quantities → TECHNICAL DATA

DANGER

Before any servicing inside your machine!

⇨ Check it is stopped.

⇨ Check the machine tool is not energized.

NOTICE

Used oil is a pollutant and must not be disposed of in drains or outdoors. Harmful to the environment!

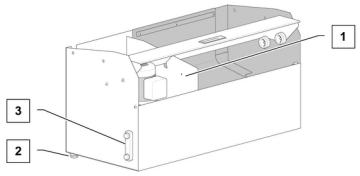
⇨ Bring used oil to a recycling center. Otherwise, have it recycled by an authorized local service.

The bar feeder is supplied without oil.
The oil level must be at the fill level indicator mark H when the hydraulic pump is off.

INFO

⇨ A thicker oil (ISO VG 150) may, in certain cases, produce better results when guiding profiled bars.

Hydraulic oil	Viscosity index (CST at 40 °C/104 °F)	Ø Bar (mm)
ISO VG 100	90.0 ~ 110	2 – 46



Follow the steps below to drain the hydraulic tank:

1. Turn the bar feeder off.
2. Make sure that most of the oil has returned to the hydraulic tank (1).
3. Place a container with sufficient capacity underneath the hydraulic tank (1).
4. Unscrew the drain plug (2). The oil drains into the container.

Follow the steps below to fill the hydraulic tank:

1. Turn the bar feeder off.
2. Make sure that most of the oil has returned to the hydraulic tank (1).
3. Pour the oil into the hydraulic tank (1) until it reaches the H-mark (3)

7.3 CLEANING

BAR FEEDER

NOTICE

Risk of machine disruption from lack of cleanliness!

⇨ Clean the bar feeder regularly.

⇨ Do not use solvents to clean the machine. These cleaning agents can cause corrosion.

Zone of the machine	
Exterior	Use a soft cloth and a detergent.
Interior	Use a cloth or brush.

NOTICE

At no time should solvents, such as acetone or thinners be used for cleaning the bar feeder. At no time should cleaning products come into contact with electrical components.

⇨ Bring used oil to a recycling center. Otherwise, have it recycled by an authorized local service..

To clean the outside of the bar feeder, use a soft cloth and a regular detergent. For the inside, use a cloth or a brush soaked in petrol or benzine. However, make sure that the rollers and parts made of synthetic materials do not come into contact with these products.

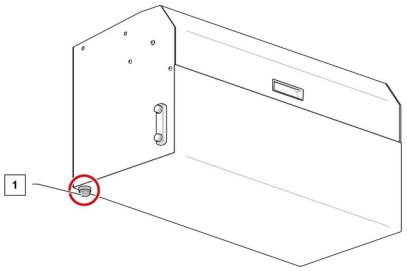
The use of compressed air for cleaning is not advisable, because particles could become lodged in sensitive areas and compromise the operation of the bar feeder.

HYDRAULIC TANK

With the continuous running of the bar feeder, the quality of the hydraulic oil worsens over time.
Cutting chips and sludge heap on the bottom of the hydraulic tank and are pumped into the hydraulic system.
Those substances damage the hydraulic pump, guiding elements as well as the bar surface. Therefore, it is recommended to drain and clean the hydraulic tank at least once every 6 months.

Drain the hydraulic tank before cleaning and fill it again afterwards.
To do so, obey the instructions → DRAINING AND FILLING THE HYDRAULIC TANK.

1. When the hydraulic tank is empty, wipe away the sludge inside it and the bar feeder.
2. Clean the drain plug.
3. Put a seal on the drain plug and screw it back in the hydraulic tank.



BARS

It is important to clean the bars, even briefly, before loading them onto the loading ramp. Excessive dirt can form a deposit at the base of the bar feeder, which can in turn slow the oil return.

7.4 CHECKING THE WATER SEPARATOR

DANGER

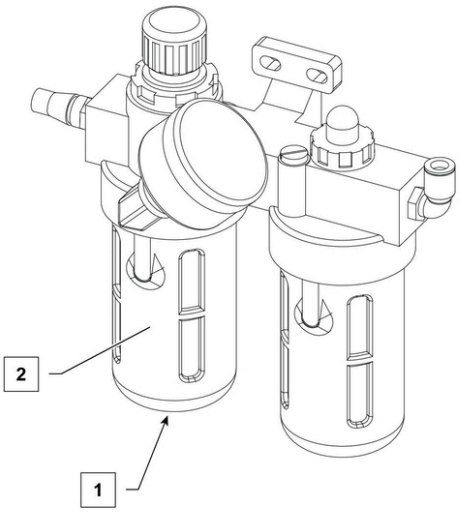
Before any servicing inside your machine!
⇨ Check it is stopped.
⇨ Check the machine tool is not energized.

The water separator is a measure of the quality of the compressed air. Quality compressed air must not form condensate in the water separator.
The water separator fitted to the air treatment drains condensation automatically when the compressed air is disengaged or disconnected from the air treatment unit. As soon as there is no air pressure in the system, a spring loaded drain plug drains off any accumulated condensation.

If compressed air is permanently connected to the bar feeder, manual draining is necessary once a week depending on the use of the bar feeder.

Procedure

1 Push the drain plug up to open it.
2 Drain the water separator.
3 Close the drain plug again.



7.5 CHECKING THE OIL LEVEL AND FLOW

The oil consumption depends on the bar feeder use. When the oil level drops below 30%, oil must be added to the system. For the best operating performance, the oil should drip from the oil drip nozzle (3) once every ten complete forward/backward movements of the pusher.

DANGER

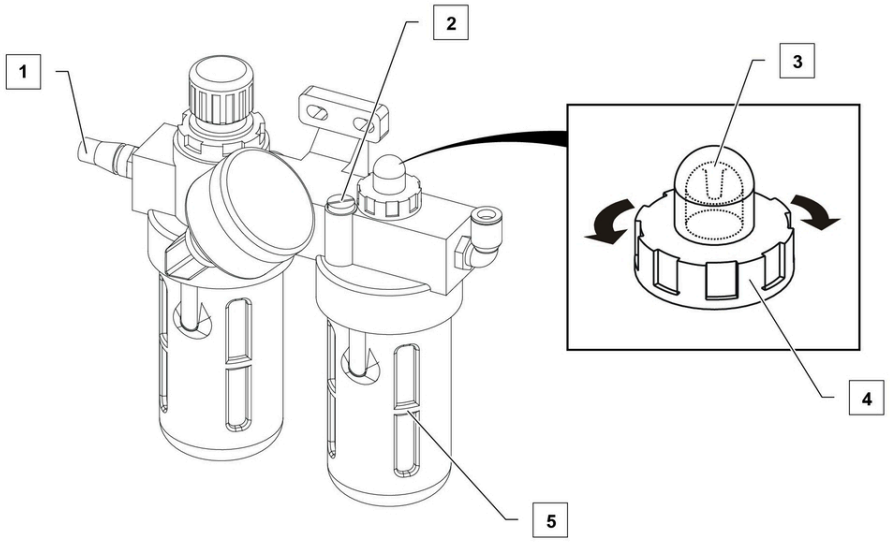
Before any servicing inside your machine!

⇨ Check it is stopped.

⇨ Check the machine tool is not energized.

INFO

Only use ISO VG 32 oil.



Procedure

1 Disconnect the compressed air hose from the compressed air inlet (1).
2 Remove the oil filler plug (2) and add oil to the level shown in the figure (5) - the center mark of the oil can.
3 Connect the compressed air hose to the compressed air inlet.
4 Adjust the oil flow.
To increase the oil flow: rotate the oil fogger knob (4) clockwise.
To decrease the oil flow: rotate the oil fogger knob (4) counterclockwise.

8 DISPOSAL

At the end of its service life, the machine will be permanently decommissioned and deposited at a recycling collection point.

IMPORTANT

Improper disposal of the machine can cause serious harm to the environment.
Harmful to the environment!

⇨ Drop off the machine at a recycling collection point.
⇨ Otherwise, have it recycled by an authorized local service.

Procedure

1. Clean the machine.
2. Allow the machine to air dry.
3. Lightly lubricate the moving parts.
4. Turn the machine on.
5. Empty the lubricant from the system.
6. Depressurize the pneumatic circuit.
7. Bring all components to the recycling point, sorted according to their materials.

9 TROUBLESHOOTING

DANGER

Electrical hazard!
Danger of death by electrocution.

⇨ Work on the electrical system must only be performed by a qualified electrician.

⇨ In the case of a fault that may be electrical in origin, please contact LNS or its local representative.

This chapter covers all the errors and warnings of the bar feeder. Whenever an error or warning message appears, follow the troubleshooting guide to check the problem. If you are not sure, do not hesitate to contact LNS or its local representative.

9.1 ALARMS

9.1.1 PLC ALARMS

AL01 – EMERGENCY STOP LINE OPEN!

Description	The emergency stop has been activated on the bar feeder and the lathe. This alarm is generated anytime the safety line open.
Solutions	1. Check if the emergency stop on the remote control is pressed. If yes, release the emergency stop. 2. Check if the emergency stop circuit on the lathe is open. If yes, clear all the lathe alarms. 3. Check if the circuit breaker has tripped. If yes, reset the circuit breaker. 4. If the alarm remains active, a sensor may be defective. Contact LNS or its local representative.

AL02 – MAIN ACCESS COVER OPEN!

Description	The main access cover on the bar feeder is open, exposing automated mechanical parts.
Solutions	1. Close the main access cover. 2. Check if the main access cover is blocked or bent. 3. If the alarm remains active, a sensor may be defective. Contact LNS or its local representative.

AL03 – BAR FEEDER RETRACTED OR NOT IN WORKING POSITION!

Description	This alarm only applies to bar feeders with an optional Z-axis retraction. The bar feeder is retracted.
Solutions	1 Move the bar feeder to its working position. 2 If the alarm remains active, a sensor may be defective or maladjusted. Contact LNS or its local representative.

AL04 – OIL PRESSURE FAILURE!

Description	The air pressure is not sufficient, below 3 bar or 45 psi.
Solutions	1 Check if the air pressure is too low (min. 3 bar). If yes, adjust it between 3 – 6 bar. 2 Adjust or replace the air pressure switch SP1. 3 If the alarm remains active, a sensor may be defective. Contact LNS or its local representative.

AL06 – GUIDING CHANNEL SWITCH FAILURE! (SQ3/SQ4)

Description	Two sensors in the guiding elements are simultaneously activated or deactivated.
Solutions	1 Contact LNS or its local representative.

AL07 – GUIDING CHANNEL OPEN FAILURE! (SQ3)

Description	The guiding elements is opening, but the machine does not signal it.
Solutions	1. Check if something is preventing the guiding elements from opening. 2. Check if the air pressure is too low (min. 3 bar). If yes, adjust it between 3 – 6 bar. 3. If the alarm remains active, there might be an issue with the sensors or the opening cylinder. Contact LNS or its local representative.

AL08 – GUIDING CHANNEL CLOSE FAILURE! (SQ4)

Description	The guiding elements is closing, but the machine does not signal it.
Solutions	1. Check if something is preventing the guiding elements from closing. 2. Check if the air pressure is too low (min. 3 bar). If yes, adjust it between 3 – 6 bar. 3. If the alarm remains active, there might be an issue with the sensors or the opening cylinder. Contact LNS or its local representative.

AL09 – MEASURING CELL FAILURE!

Description	The bar feeder is ready to feed the bar stock to the top cut position, but its position cannot be measured.
Solutions	1. Check if the bar stock or something else is interfering with the bar measuring device. 2. Check if the bar measuring device is defective. 3. If the alarm remains active, the servo motor encoder or a sensor may be defective or maladjusted. Contact LNS or its local representative.

AL10 – HOME POSITION SWITCH FAILURE! (SQ2)

Description	The pusher was moved to home position, but the machine does not signal it.
Solutions	1. Check if the pusher is physically at home position. 2. If the alarm remains active, the servo motor encoder or a sensor may be defective or maladjusted. Contact LNS or its local representative.

AL11 – LATHE DID NOT RESUME PRODUCTION CYCLE!

Description	The bar stock reaches the top cut position, but the lathe chuck does not close within 60 seconds.
Solutions	1. Check if the lathe receives a START signal from the bar feeder. 2. Check if the bar feeder receives a chuck signal. 3. If the alarm remains active, a sensor or cylinder may be defective or maladjusted. Contact LNS or its local representative.

AL12 – BAR LOADING TIME ELAPSED!

Description	The pusher cannot move the bar stock to the top cut position within 50 attempts.

AL12 – BAR LOADING TIME ELAPSED!

Solutions	1. Check if the bar feeder is aligned correctly. 2. Check if the size of the guiding elements and front tube are correct. 3. Check if the front tube is obstructed. 4. Check if the front rest is clamping the bar. 5. Check if the lathe spindle is obstructed. 6. Check if the lathe chuck is too tight due incorrect size. 7. Check if the lathe chuck is too tight due to burrs inside the chuck or at the bar end. 8. Check if the “TOP CUT POSITION” setup is incorrect. 9. Check if the bar measuring device is malfunctioning.

AL13 – PART FEED OUT TIME ELAPSED!

Description	Too much time passes after the lathe chuck sends a signal to feed out the bar stock.
Solutions	1. There might be an issue with the PLC interface. Contact LNS or its local representative.

AL14 – PART FEED OUT TOO LONG!

Description	The moving distance of the pusher, from the time the lathe chuck opens until it closes, is shorter than the part length - 5 mm.
Solutions	1. Check if the bar feeder is aligned correctly. 2. Check if the size of the guiding elements and front tube are correct. 3. Check if the front tube is constructed. 4. Check if the pusher is bent. 5. Check if the lathe spindle is obstructed. 6. Check if the front rest is clamping the bar. 7. Check if the lathe chuck is too tight due incorrect size. 8. Check if the lathe chuck is too tight due to burrs inside the chuck or on the bar. 9. Check if the timer for controlling if the chuck is open/closed is set up too short. 10. Check if the measuring device is defective or malfunctioning. 11. Check if the “End of bar” position is set up correctly.

AL16 – BAR STOCK MOVING DURING HEADSTOCK REVERSE!

Description	When the chuck opens during machining, a detection compares the current position of the pusher to its position while the chuck is open. This alarm is displayed, when the pusher retracts 4 mm or exceeds the “Too long collet open” setup.
Solutions	1. Check if the bar stock is disconnected from the pusher collet. 2. Check if the “Too long collet open” setup is incorrect. 3. Check if the transmission mechanism or the chain are broken. 4. Check if the bar measuring device is malfunctioning. 5. If the cut-off tool is used as a stopper, check if it is broke. 6. Check if the “End of bar” position is set up correctly.

AL17 – HEADSTOCK TRAVEL SHORTER THAN PART LENGTH! THE PUSHER MAY HAVE LOST THE BAR STOCK

Description	Note: To disable the function “Too short”, set the value to “0”. The bar feeder monitors the pusher moving distance from the time the chuck closes until it opens. This alarm is displayed if the distance is shorter than the “Too short” setup.

AL17 – HEADSTOCK TRAVEL SHORTER THAN PART LENGTH! THE PUSHER MAY HAVE LOST THE BAR STOCK

Solutions	1. Check if the bar feeder is aligned correctly. 2. Check if the lathe chuck is too tight due to incorrect size. 3. Check if the lathe chuck is too tight due to burrs inside the chuck or on the bar. 4. Check if the “Too short” setup on “PART SETUP” is incorrect. 5. Check if the “End of bar” position setup is incorrect. 6. Check the pusher length. 7. Check if the bar stock is disconnected from the pusher collet. 8. If the alarm remains active, a sensor or cylinder may be defective or maladjusted. Contact LNS or its local representative.

AL18 – THE PUSHER LOST THE BAR STOCK WHILE MOVING TO HOME POSITION!

Description	While the pusher is moving to home position, the clamping device does not detect a bar stock.
Solutions	1. Check if the lathe chuck collet is too tight 2. Check if there are burrs on the remnant’s surface. 3. Check if the collet size matches with the bar stock. 4. If the alarm remains active, a sensor or cylinder may be defective or maladjusted. Contact LNS or its local representative.

AL19 – BAR STOCK INSERTION MALFUNCTION!

Description	This alarm is displayed in the different cases: • When the loading finger type is “Servo” and the pusher has failed at inserting a bar stock for 20 times. • When the loading finger type is “Mechanism” and the pusher has failed at inserting a bar stock once. • The clamping device does not detect a bar stock after the insertion procedure.
Solutions	1. Check if the collet size matches with the bar stock.

AL20 – BAR STOCK NOT EXTRACTED FROM THE COLLET!

Description	The bar stock remained in the clamping device after the bar extraction cycle.
Solutions	1. Check if the pusher collet fits the size of the bar stock. 2. Check if the bar end is clear of burrs. 3. Check if the clamping device is defective. 4. Check if the air pressure is too low. 5. If the alarm remains active, a sensor or cylinder may be defective or maladjusted. Contact LNS or its local representative.

AL21 – BAR STOCK LOST DURING PUSHER REVERSE!

Description	No bar stock is detected during FIRST FEED.
Solutions	1. Check if the bar magazine is empty. If yes, refill the bar magazine. 2. If the alarm remains active, a sensor or cylinder may be defective or maladjusted. Contact LNS or its local representative.

AL22 – BAR STOCK DETECTED IN SIMULATION MODE!

Description	The presence of a bar stock is detected while the bar feeder is in simulation mode.
Solutions	1. Check if there is material present in the bar feeder. If yes, remove the material. 2. If the alarm remains active, a sensor or cylinder may be defective or maladjusted. Contact LNS or its local representative.

AL24 – TOP CUT POSITIONING ERROR!

Description	This alarm is displayed in the following cases: • During the positioning of the bar in the insertion position, the front of the bar passes the top cut position. • During the positioning of the bar in the insertion position, the bar measuring device is activated mistakenly. • While the guiding elements closes, the bar measuring device is activated mistakenly. • While the bar is inserted, the bar measuring device is activated mistakenly. • While the bar is positioned to the top cut, the pusher keeps moving forward, exceeding the top cut position by 50 mm.
Solutions	1. Check if the top cut setup is correct. 2. Check if the bar measuring device is defective. 3. If the alarm remains active, a sensor may be defective or maladjusted. Contact LNS or its local representative.

AL26 – BAR FEEDER IS NOT IN AUTO MODE!

Description	The lathe is possibly in automatic mode, while the bar feeder is still in manual mode.
Solutions	1. Switch the bar feeder to automatic mode.

AL27 – COVER FAILURE DURING OPENING!

Description	After the guiding elements cover has opened, an opening sensor was not activated within 2 seconds.
Solutions	1. Check the guiding elements cover opening solenoid valve. 2. If the alarm remains active, a sensor or cylinder may be defective or maladjusted. Contact LNS or its local representative.

AL28 – COVER FAILURE DURING CLOSING!

Description	After the guiding elements cover has closed, a closing sensor was not activated within 2 seconds.
Solutions	1. Check the guiding elements cover closing solenoid valve. 2. If the alarm remains active, a sensor or cylinder may be defective or maladjusted. Contact LNS or its local representative.

AL30 – BOOSTER CLUTCH FAILURE DURING ENGAGEMENT!

Description	The pusher is not placed correctly at the right extraction position.
Solutions	1. Check if the loading finger (booster) is defective. 2. Check if the pusher is defective. 3. Press the STOP key on the remote control to clear the alarm.

AL31 – DAC ERROR!

Description	The DAC analog module board cannot communicate with PLC successfully.
Solutions	1. The DAC board might be defective. Contact LNS or its local representative.

AL32 – REMOTE I/O ERROR!

Description	The remote I/O board cannot communicate with the PLC successfully.
Solutions	1. The remote I/O board might be defective. Contact LNS or its local representative.

AL33 – PART FEED OUT TIME ELAPSED!

Description	Too much time passes after the lathe chuck sends a signal to feed out the bar stock.
Solutions	1. There might be an issue with the PLC interface. Contact LNS or its local representative.

AL34 – LOADING MOTOR FAILURE!

Description	After loading, the loading motor does not receive a signal from the guiding elements cover within 5 seconds.
Solutions	1. Check if the screws are blocked. 2. Press the STOP key on the remote control to clear the alarm. 3. If the alarm remains active, the loading motor or a sensor might be defective. Contact LNS or its local representative.

AL35 – BAR STOCK MOVING FORWARD WHILE CHUCK IS CLOSED!

Description	While the lathe chuck is closed, the moving distance of the pusher is too long.
Solutions	1. Check if the bar stock is separated from the pusher collet or if the collet is broken. 2. Check if the “PART FEEDING” setup is correct. 3. Check if the feeding mechanism is defective. 4. Check if the chain is broken. 5. Check if the lathe chuck is malfunctioning or the clamping force setup is incorrect. 6. Press the STOP key on the remote control to clear the alarm.

AL36 – NC ALARM!

Description	The lathe sends this alarm to the bar feeder during automatic mode.
Solutions	1. Some interface settings and signals need to be checked. Contact LNS or its local representative.

AL37 – SERVO DRIVE ALARM!

Description	The servo motor or the servo amplifier has a malfunction.
Solutions	1. Contact LNS or its local representative.

AL38 – MOTOR LOSES THE REFERENCE POINT!

Description	The pusher’s position is not detected correctly. The servo motor or a sensor might be defective.
Solutions	1. Contact LNS or its local representative.

AL39 – SERVO MOTOR POSITIONING ERROR!

Description	The servo motor has encountered unexpected resistance. The servo drive or the DAC module might be defective.
Solutions	1. Contact LNS or its local representative.

9.1.2 SERVO AMPLIFIER ALARMS

If an error is detected on the servo drive or servo motor, a corresponding code will be shown on the drive's display. This chapter contains a description of each alarm.

AL001 – OVERCURRENT

Description	The main circuit current is higher than the 1.5 multiple of the motor's max. current value.

AL002 – OVERVOLTAGE

Description	The main circuit voltage is above its maximum allowable value.

AL003 – UNDERVOLTAGE

Description	The main circuit voltage is below its specified min. value.

AL004 – MOTOR ERROR

Description	The power rating of the motor and the drive does not match.

AL005 – REGENARATION ERROR

Description	Error at the regeneration control.

AL006 – OVERLOAD

Description	The servo motor and the servo drive are overloaded.

AL007 – OVERSPEED

Description	The motor's control speed exceeds the normal speed limit.

AL008 – ABNORMAL PULSE CONTROL COMMAND

Description	The input frequency of the pulse command exceeds the limit of its allowable setting value.

AL009 – EXCESSIVE DEVIATION

Description	The position control value exceeds the limit of its allowable setting value.

AL010– RESERVE

Description	Reserve

AL011 – ENCODER ERROR

Description	The pulse signal is disturbed.

AL012 – ADJUSTMENT ERROR

Description	The value set during electrical adjustment exceeds the allowable limit.

AL013 – EMERGENCY STOP ACTIVATED

Description	The emergency stop button is activated.

AL014 – REVERSE LIMIT SWITCH ERROR

Description	The reverse limit switch is activated.

AL015 – FORWARD LIMIT SWITCH ERROR

Description	The forward limit switch is activated.

AL016 – IGBT TEMPERATURE ERROR

Description	The temperature of IGBT is too high.

AL017 – MEMORY ERROR

Description	Error at EE-PROM write-in and read-out.

AL018 – ENCODER OUTPUT ERROR

Description	The encoder output exceeds the rated output frequency.

AL019 – SERIAL COMMUNICATION ERROR

Description	Error at RS232/485 communication.

AL020 – SERIAL COMMUNICATION TIME

Description	RS232/485 communication time out.

AL021 – RESERVE

Description	Reserve

AL022 – INPUT POWER PHASE LOSS

Description	The loss of one phase of the input power.

AL023 – PRE-OVERLOAD WARNING

Description	The servo motor and drive are going to overload. This alarm will display before the AL06.

AL024 – ENCODER INITIAL MAGNETIC FIELD ERROR

Description	Error in the magnetic field of the encoder U, V, W signal.

AL025 – ENCODER INTERNAL ERROR

Description	Error in the internal memory of the encoder.

AL026 – ENCODER DATA ERROR

Description	An encoder data error has been detected three times.

AL027 – MOTOR INTERNAL ERROR

Description	Error in the setting value of the encoder.

AL028 – MOTOR INTERNAL ERROR!

Description	Error in the encoder U, V, W signals.

AL61 – FAILURE ON THE GUIDING BEARING 2!

Description	The sensor SQ19 is maladjusted or faulty.
Solutions	1. Check the sensor SQ19.

AL029 – MOTOR INTERNAL ERROR

Description	Error in the internal address of the encoder.

AL030 – MOTOR PROTECTION ERROR

Description	The setting value of P1-57 is reached after a period of time set by P1-58.

AL031 – U, V, W, GND WIRING ERROR

Description	Error in the wiring connections of U, V, W (for servo motor output) and GND (for grounding).

AL035 – MOTOR TEMPERATURE ERROR

Description	The motor temperature is above 105°C.

AL048 – EXCESSIVE ENCODER OUTPUT ERROR

Description	The encoder output errors, or output pulses exceed the hardware tolerance.

AL067 – MOTOR TEMPERATURE WARNING

Description	The motor temperature is above 85°C.

AL099 – DSP FIRMWARE UPGRADE

Description	The EE-PROM was not reset after the firmware version has been upgraded.
Solutions	1 Please contact LNS.

9.1.3 WARNINGS

Warning messages are designed to remind the operator of the bar feeder status. Under certain conditions, the following warning messages will be shown.

MOVE THE PUSHER TO THE HOME POSITION

Description	The pusher is at the wrong position.
Solutions	1. Manually return the pusher to its home position.

NO MOVEMENT ALLOWED WITH THE LATHE'S CLAMPING DEVICE CLOSED

Description	The lathe chuck is closed and the "Left arrow" or "Right arrow" key is invalid.
Solutions	1. Open the lathe chuck. 2. Check the INTERFACE00 setup related to the lathe chuck signal.

THE LATHE'S CLAMPING DEVICE MUST BE CLOSED PRIOR TO STARTING AUTOMATIC CYCLE

Description	The bar feeder is unable to start in automatic mode when the lathe chuck is open.
Solutions	1 Close the lathe chuck. 2 Check if the INTERFACE00 setup corresponds to the lathe chuck signal.

LATHE DOOR IS OPEN

Description	The lathe door is open. After receiving this signal, the servo motor stops operating.
Solutions	1 Close the lathe door.

MAIN ACCESS COVER IS OPEN

Description	The bar feeder is in manual mode, the main access cover is open, and the guiding elements closed.
Solutions	1 Manually close the main access cover.

THE LATHE'S CLAMPING DEVICE MUST BE OPENED PRIOR TO STARTING

Description	The bar feeder is unable to start in automatic mode because the guiding elements is opened, and the lathe chuck is closed.
Solutions	1. Press the "Open guiding elements" key.

BAR MEASURING STOP NOT READY (SQ1)

Description	The bar measuring device is not ready at the moment when the “Auto start” key is pressed.
Solutions	1. Press the “Open guiding elements” key.

LATHE IN MANUAL MODE

Description	The bar feeder is already switched to automatic mode, but it does not receive the lathe A2 (automatic cycle) signal.
Solutions	1. Switch the lathe to automatic mode. 2. If the A2 signal is not used, change the INTERFACE24 setup. 3. Check if the “INTERFACE45: AUTO signal” setup is correct.

BAR STOCK MAGAZINE EMPTY

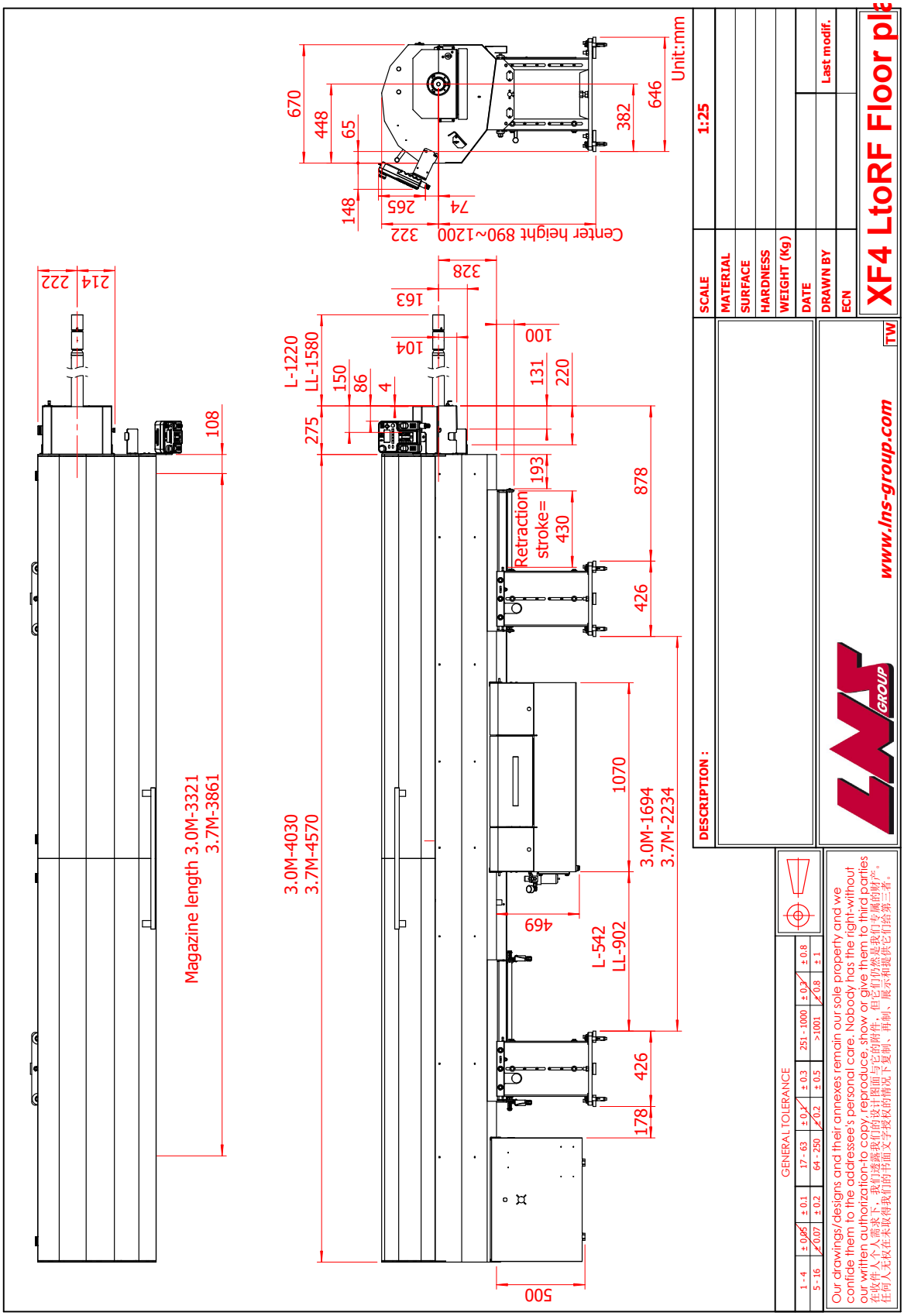
Description	No bar stock is in the bar stock magazine.
Solutions	1. Fill a new bar stock into the bar magazine.

CHECK SQ3 AND SQ5! AFTER THE COVER (SQ10, SQ11) IS CLOSED, PRESS THE BUTTONS “OPEN” OR “CLOSE” TO RESET MANUALLY

Description	Both the rise and fall detection sensors of the pusher (SQ3, SQ4) are activated at the same time.
Solutions	1. Check if there is any interference. 2. Close the cover. 3. Press the “Open guiding elements” or “Close guiding elements” key to force the bar feeder to activate..

10 APPENDICES

10.1 DIMENSIONAL DRAWINGS



XF4 LtoRF Floor plan.SLDDRW

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10.2 GLOSSARY

Bearing	Machine component in which a shaft or other elements turn.
Collet	Secures the bar stock and connects it to the pusher.
DAC	Digital-to-Analog Converter
Drive	Transforms electrical energy into mechanical energy.
EE-PROM	Electrically Erasable Programmable Read Only Memory
Front rest	The last guide element in contact with the bar stock before the entrance of the lathe spindle. Stabilizes the bar movement.
IGBT	Insulated Gate Bipolar Transistor
Informed persons	Persons sufficiently informed or supervised by qualified personnel to enable them to avoid the dangers posed by electricity (maintenance or operating staff).
Motor	Equipment transforming electrical energy into mechanical energy.
PLC	Programmable Logic Controller: Digital computer used for process automation. The PLC controls the machine's operation.
Pos.	About illustrations: Number of position.
Pusher	Controls the movement of the bar stock inside the bar feeder and lathe spindle.
Qualified personnel	Persons with technical knowledge or experience sufficient to enable them to avoid the dangers posed by electricity (engineers and technicians).
Remnant vice	Fixes the bar stock for insertion or retraction.
Rotating sleeve	Connects the pusher to the collet.
Shaft	Steel bar for supporting rotating elements or to transfer power.
SD card	Removable memory card (Secure Digital).

10.3 SPARE PARTS CATALOGUE

A spare parts catalogue is available for this machine.
The catalogue is among the technical documentation delivered with the machine.

10.4 AFTER-SALES SERVICE

For repairs or in case of problems with the machine, contact:

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Route de Frinvillier
2534 Orvin
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http://www.lns-europe.com/

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