QUICK LOAD SERVO 80+

Operating Instructions

For CNC machine tool peripherals,
it's *LNS*, then all the rest

IMPORTANT

READ CAREFULLY BEFORE USE
AND KEEP FOR FUTURE REFERENCE.

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1 GENERAL INFORMATION

1.1 ABOUT THESE OPERATING INSTRUCTIONS

These instructions explain how to use the bar feeder correctly as intended:

- They are part of the machine
- They apply to all models models mentioned

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

1.2 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 respective manufacturer's manual.

The bar feeder complies with the European standards that are specified in the declaration of conformity and incorporation.

1.3 DAMAGE DURING TRANSPORT

LNS is not liable for any damage that occurs during transport.
In the event of damage, contact the last carrier.

1.4 TARGET AUDIENCES

These instructions contain information for different audiences.

OPERATOR

Operators are authorized to:

- Use the machine for production
- Amend programs to produce parts
- Clean the machine
- Carry out certain maintenance tasks

ADMIN

Administrators (ADMIN) have the same rights as users, but in addition they are authorized to:

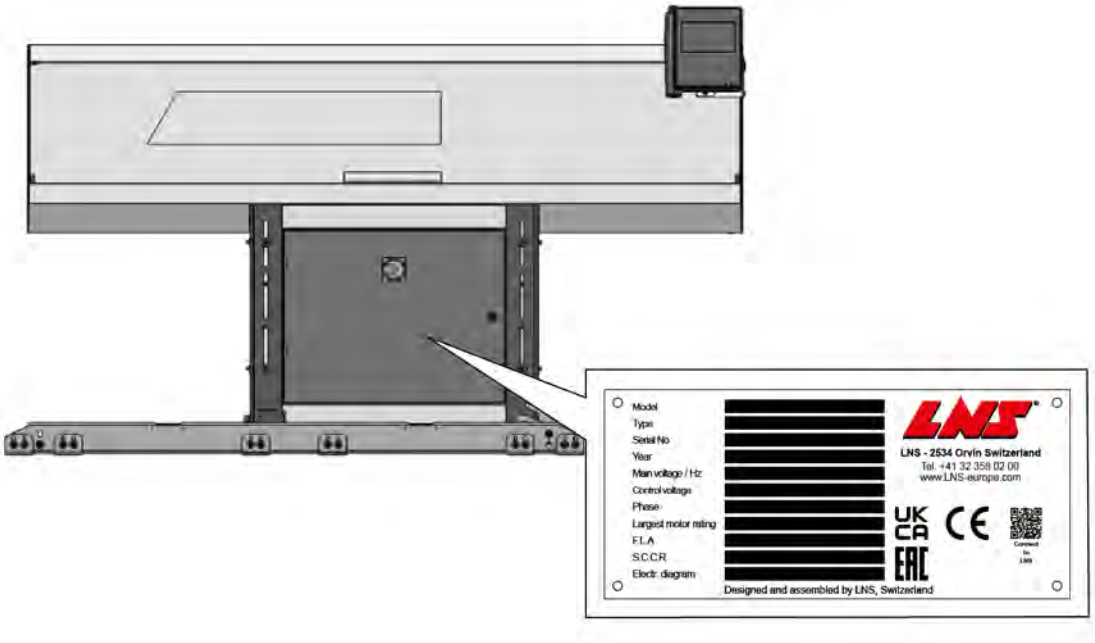
- Modify the machine's operating parameters
- Modify the machine's software
- Repair the machine
- Dispose of the machine

A service manual is delivered separately.

1.5 COPYRIGHTS

1.6 NAMEPLATE

The nameplate is located on the front of the bar feeder.



2 SAFETY INFORMATION

2.1 PROPER USE

The QLS 80+ is an automatic bar feeder for short bar stock designed for fixed headstock lathes. Any other use of the bar feeder is considered as unintended. LNS accepts no liability for any damage resulting from unintended use.

The QLS 80+ is an industrial machine to be operated in an industrial environment, indoors.

Adhere to these operating instructions to properly use the bar feeder.

2.2 LIMITATION OF LIABILITY

LNS and its subsidiaries cannot be held liable for the debts, losses, expenses, or damage incurred, or suffered, by the buyer of this product, or a third party, following an accident, incorrect use, or misuse, or stemming from modifications, repairs, or transformations not authorized by LNS.

LNS and its subsidiaries cannot be held responsible for damage and problems arising from the use of options and products other than LNS products, or products approved by LNS.

2.3 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 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 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 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 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 danger.

Information, comment

IMPORTANT

Type and source of danger!

Consequences of ignoring the warning.

What to do to avoid danger.

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

2.4 TERMS AND STANDARD SYMBOLS

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

General information

Electrocution

Crushing

Environmental damage

Property damage

Information, notes

→ Return

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

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

The following terms are used in the present operating instructions to indicate the position of an object in space (positioning): "left", "right", "front" and "rear" always refer to the position viewed in the direction of movement.

2.5 PERSONNEL

DANGER

Risk of death from operation of unqualified personnel!

Possible death or injuries from improper operation.

Keep unqualified persons out of the working area.

- Non-qualified personnel, children, and persons under the influence of alcohol or medication should not handle the equipment.
- The personnel must have knowledge of the safety instructions and the instructions for use. The safety instructions for the chip conveyor, as well as the CNC lathe, must be strictly observed.

2.6 BASIC SAFETY REGULATIONS

2.6.1 MAINTENANCE OBLIGATION

All given instructions regarding the maintenance of the bar feeder must be followed.

2.6.2 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.

2.6.3 SAFETY DEVICES

- Check the safety devices and the safety guards before every operation.
- Do not remove any safety covers while the bar feeder 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.

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 is not liable for any damage due to non-compliance with the documentation

2.7.1 OWNER'S OBLIGATIONS

To comply with:

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

2.7.2 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 bar feeder is operated by unqualified personnel or operated incorrectly, specific risks can arise.

2.8.1 ELECTRICAL HAZARDS

DANGER

Risk of death from electric shock!

Do not carry out any servicing on the interface or inside the electrical cabinet while the bar feeder or the lathe are powered on.

DANGER

Risk of death from electric shock!

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.

DANGER

Risk of death from electric shock!

Do not move the bar feeder while it is electrically powered on.

DANGER

Risk of death from electric shock!

Do not attempt to recharge the batteries of the PLC.

2.8.2 MECHANICAL HAZARDS

WARNING

Crushing and cutting hazard from moving components!

Do not grasp moving or rotating objects, or nearby elements.

WARNING

Crushing and cutting hazard from moving components!

Do not reach into the bar feeder while it is in operation.

WARNING

Crushing and cutting hazard from moving components!

Tie back long hair and do not wear loose garments or jewelry while operating.

2.8.3 RISK OF TRIPPING AND FALLING

WARNING

Risk of falling from lack of safety measures!

Keep the work area surrounding the bar feeder clear of objects and well lit.

WARNING

Risk of falling from lack of safety measures!

Keep the floor clean on a regular basis, the presence of oil on the ground could cause falls.

2.8.4 RISK OF DAMAGE

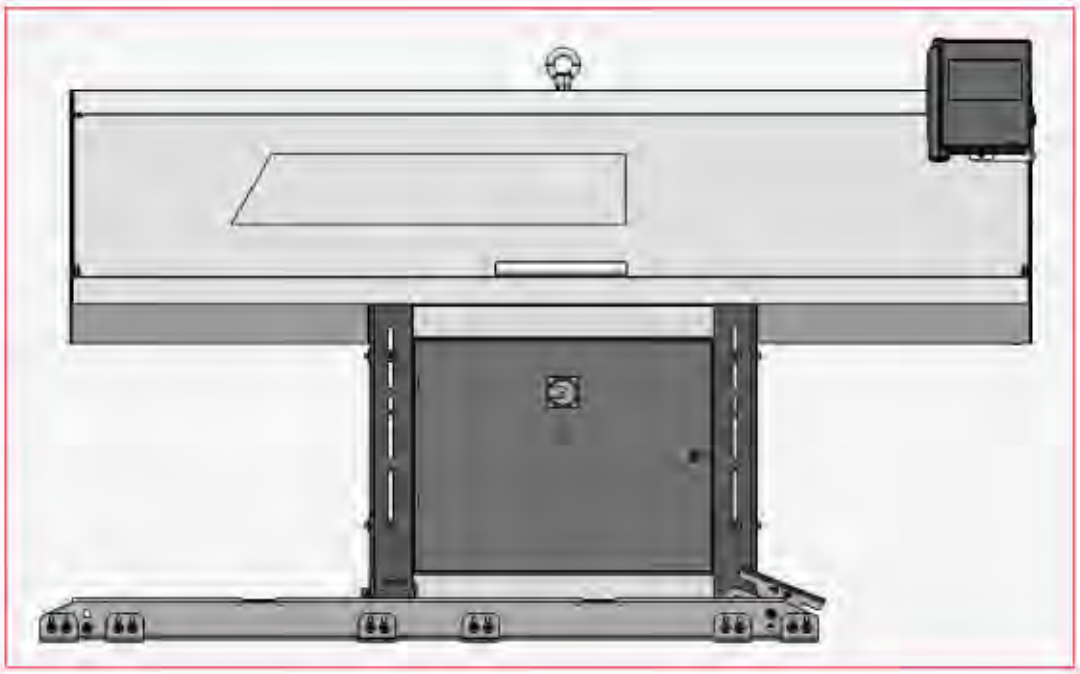
NOTICE

Risk of damage to the lathe or the bar feeder!

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

2.9 DANGER ZONES

The entire area surrounding the bar feeder is considered the danger zone.



Working range

During operation, adhere to the following:

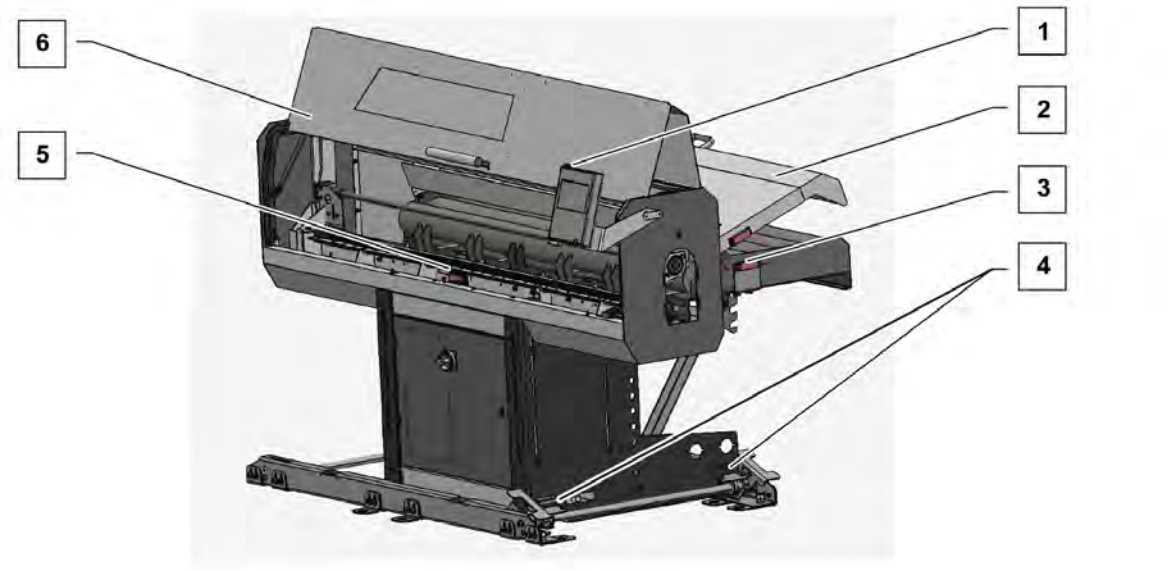
- Do not reach into the bar feeder when machine components are moving.
- Keep in mind the weight of the main access cover.
- Only qualified personnel can operate the bar feeder.

2.10 SAFETY DEVICES

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

Safety covers and devices make access to the moving parts of the bar feeder impossible. Safety switches keep the bar feeder from operating when these protections are open. The design of switches, and their integration on the bar feeder, makes their exclusion almost impossible.

LNS or its local representative may not be held responsible for possible accidents or property damage, whether caused directly or not, by any means whatsoever, if certain safety devices have not been included.

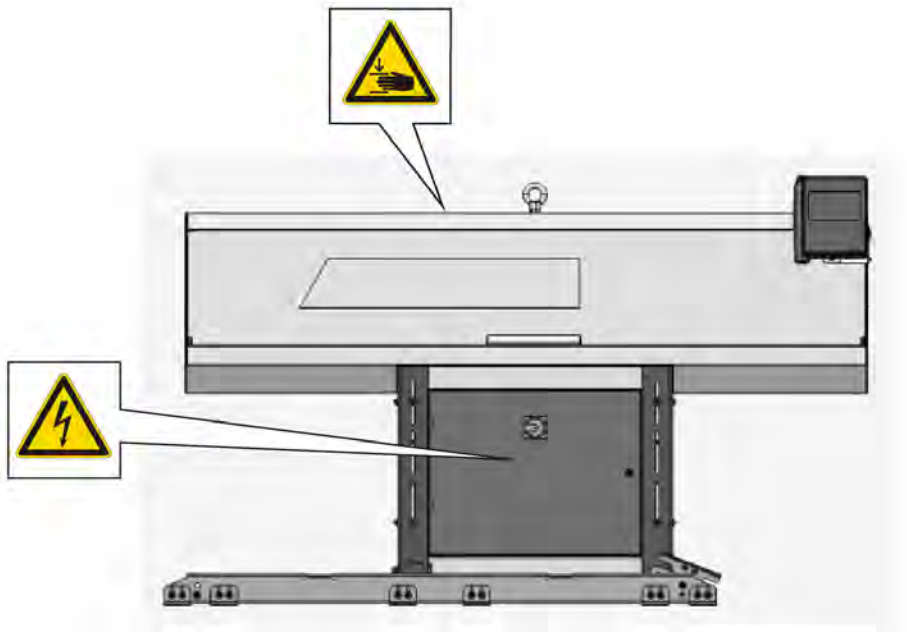


Designation	Description
1	Emergency stop button
2	Bar magazine protective cover
3	Safety switch of the bar magazine protective cover
4	Safety switches on the retraction device
5	Safety switch on the main access cover
6	Main access cover

2.11 SAFETY SIGNS

Safety signs mark hazard points on the bar feeder.

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 CONCERNING APPROPRIATE INTEGRATION

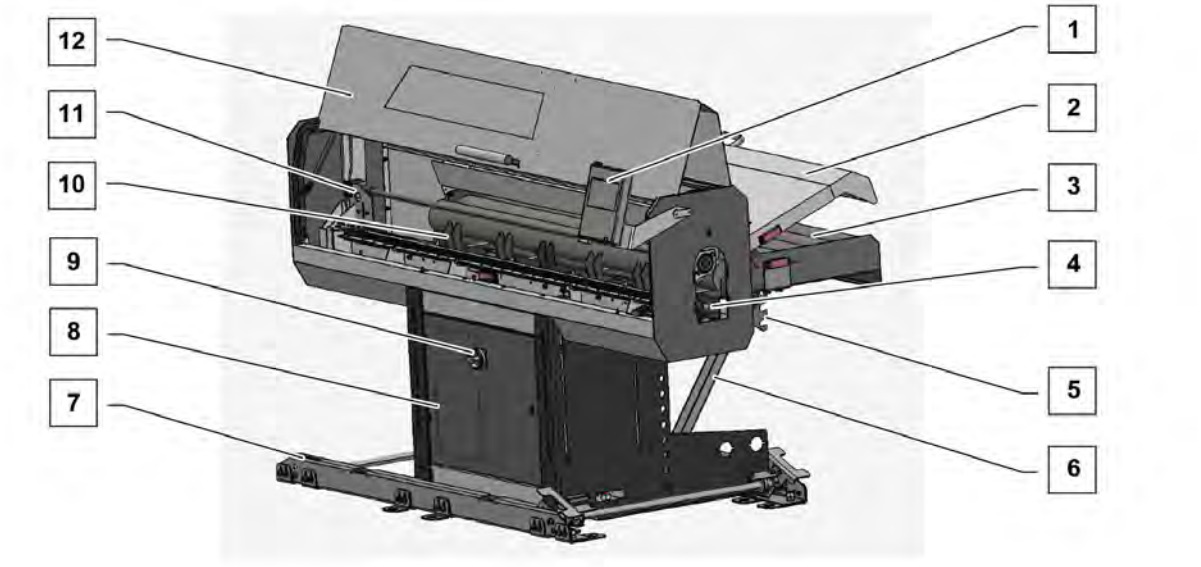
Before installing the machine, it is necessary to consider the following points:

- Consider safety strategies to reduce hazards to an acceptable level;
- Define the tasks required for applications to predict and assess the need of access and/or for the approach;
- Identify sources of hazards, including failures and failure modes associated with each task. Hazards may arise from:
  - machine in which the bar feeder is integrated,
  - its association with other equipment,
  - people's interaction with the machine.
- Evaluate and assess the risks associated by using the bar feeder:
  - programming risks
  - operation risks
  - risks of use
  - maintenance risks
- Choose methods of protection:
  - the use of protective devices
  - the introduction of signals
  - compliance with safe work procedures

3 MACHINE DESCRIPTION

As standard the QLS 80+ is available in 1.6 m version.

3.1 OVERVIEW OF MACHINE COMPONENTS



Designation	Description
1	Remote control
2	Bar magazine protective cover
3	Bar magazine
4	Roller
5	Pusher storage hooks
6	Bar magazine fixation stands
7	Retraction device
8	Electrical cabinet
9	Main switch
10	Positioning stops
11	Slide
12	Main access cover

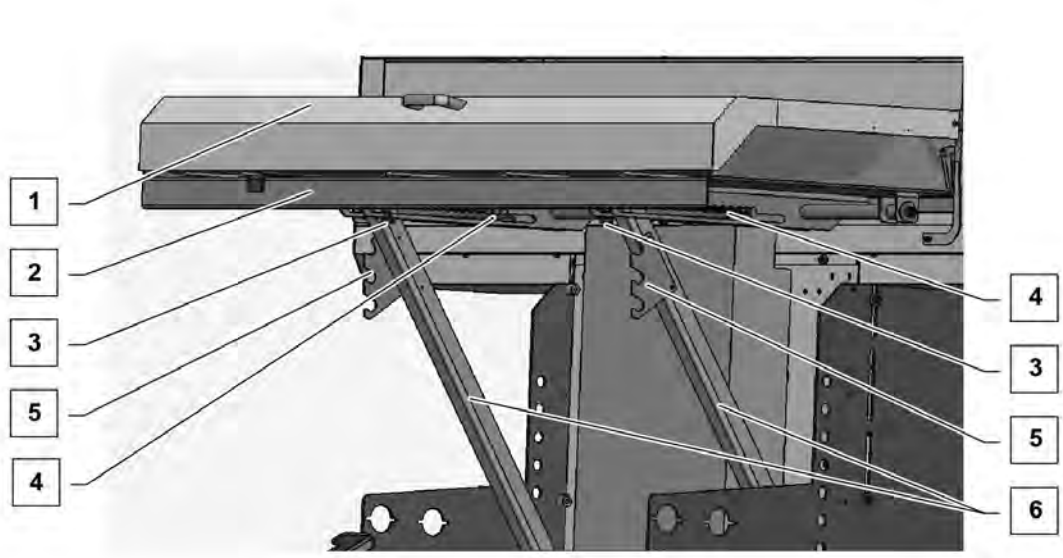
3.2 LOADING SYSTEM

Bars are loaded into the bar feeder from the bar magazine located at the back of the bar feeder.

The bar magazine can accommodate bars of different lengths (from 300 mm to 1600 mm). It is also equipped with a protective cover that prevents access to the bar magazine while the bar feeder is in operation.

If certain bars do not slide easily (for example profiled bars), the incline of the loading table can be increased. If bars with small diameters overlap onto one another, then the incline should be decreased.

3.2.1 LAYOUT OF THE ELEMENTS

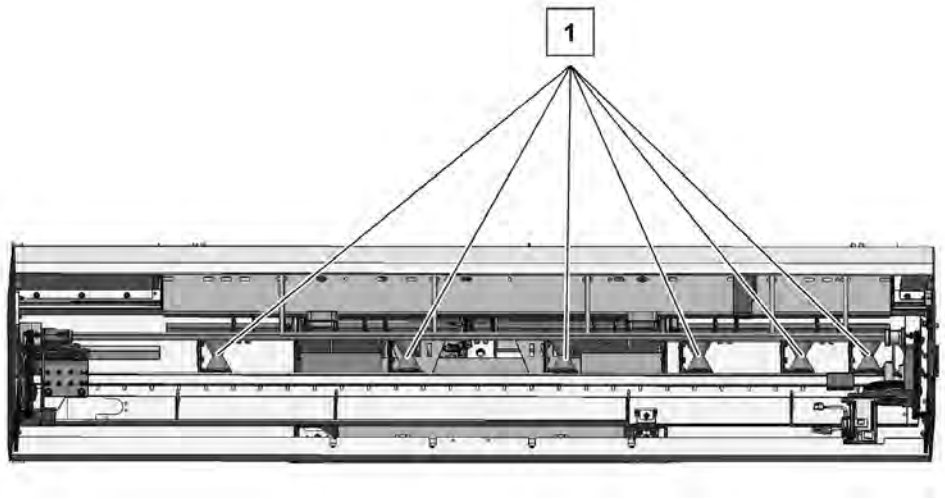


Designation	Description
1	Bar magazine protective cover
2	Bar magazine rack
3	Incline position screw
4	Incline positioning track
5	Pusher storage hook
6	Bar magazine fixation stand

3.3 GUIDING SYSTEM

When in operation, the bar is guided to the lathe by resting on the bar feeder rollers. The rollers can easily be removed and changed for different kinds of bar profiles (→ CHANGING THE ROLLERS on page 36).

3.3.1 LAYOUT OF THE ELEMENTS



Designation	Description
1	Rollers

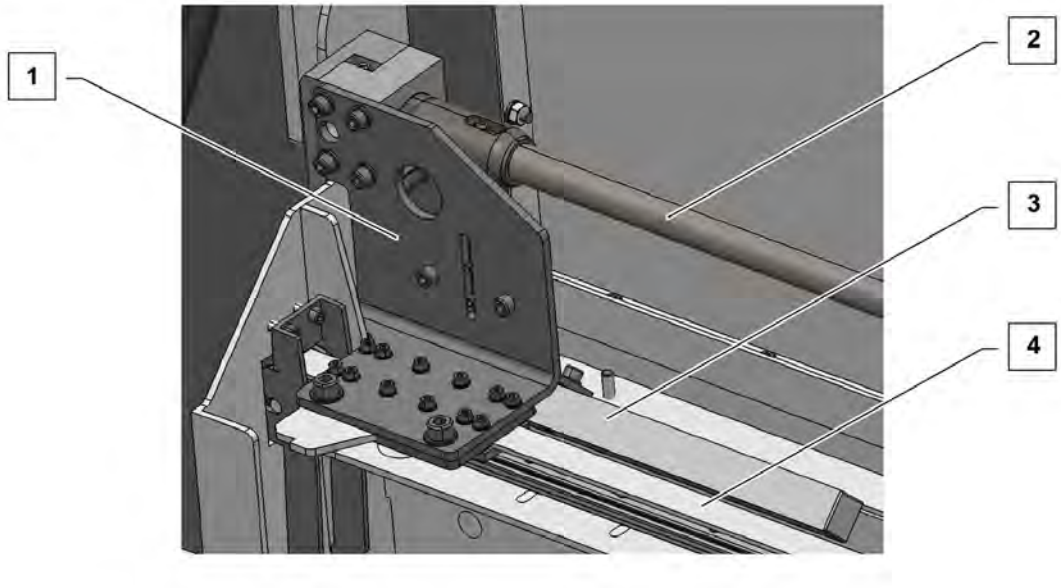
3.4 FEEDING SYSTEM

Through the toothed belt, the servo motor moves the slide to which the introducer is attached. The introducer in turn pushes the back of bar stock towards the lathe. When the bar is positioned in the spindle, the slide moves freely on the pusher which remains immobile. When the slide returns to the rest position, a piston locks the pusher to the slide.

INFO

For loading tubes, profiled bars or short bars, optional elements can be installed. Contact LNS or its local representative.

3.4.1 LAYOUT OF THE ELEMENTS



Designation	Description
1	Slide
2	Pusher
3	Introducer
4	Toothed belt

3.4.2 PUSHER

LAYOUT OF THE ELEMENTS

Designation	Description
1	Quick release tip
2	Pusher
3	Nose
4	Guide bushing

3.4.3 TOOTHED BELT

3.4.3.1 ADJUSTING THE TOOTHED BELT TENSION

Depending on the use of the machine, the toothed belt may need to be retentioned or replaced after a certain time. In this case, the remote control will display a message indicating that the toothed belt must be retentioned. If the tension of the toothed belt needs to be adjusted orreplaced, please contact your LNS service representative.

INFO

In operation, the toothed belt must always remain taut. If the toothed belt and the wheels are misaligned, the drive will lose its reference points. In this case, the drive's original reference points must be reloaded. If the toothed belt needs to be retentioned or replaced, contact your LNS service representative.

3.5 REMNANT EJECTION

The bar feeder calculates the remaining length of the bar being machined and starts the reloading cycle accordingly. The remnant length always depends on the part length and the clamping length of the machined bar. If the remaining material length is shorter than the part length and the clamping length, a new bar stock is loaded into the guiding system and the remnant is pushed out by the newly loaded bar and ejected into the part catcher of the lathe.

3.6 RETRACTION SYSTEM

The retraction system allows the bar feeder to be moved back and forth (longitudinally) or side to side (laterally) in order to facilitate certain tasks or access to certain parts.

Mounted onto four wheels, the bar feeder slides on two tracks that keep it aligned when it is in operational position. In this position, the bar feeder is fastened by two hooks. A safety switch impedes any handling of the retraction system as long as the bar feeder is not in operational position.

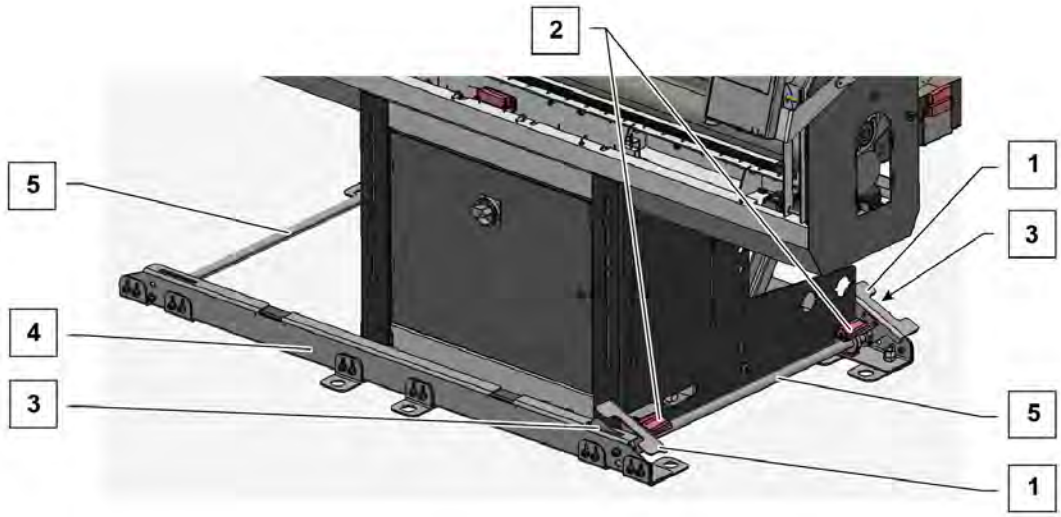
The retraction system is supplied partly or completely assembled. Bar feeders with longitudinal retraction are supplied with the retraction system fully assembled. Bar feeders with a retraction system for lateral movement require some assembly, see (→ MOUNTING THE RETRACTION SYSTEM FOR LATERAL RETRACTION on page 32)

NOTICE

Risk of damage due to the interface wiring!

Ensure that the interface wiring between the lathe and the bar feeder is long enough.

3.6.1 LAYOUT OF THE ELEMENTS



Designation	Description
1	Levers
2	Retraction system safety switches
3	Hooks
4	Tracks
5	Crossbeams

3.7 ELECTRICAL EQUIPMENT

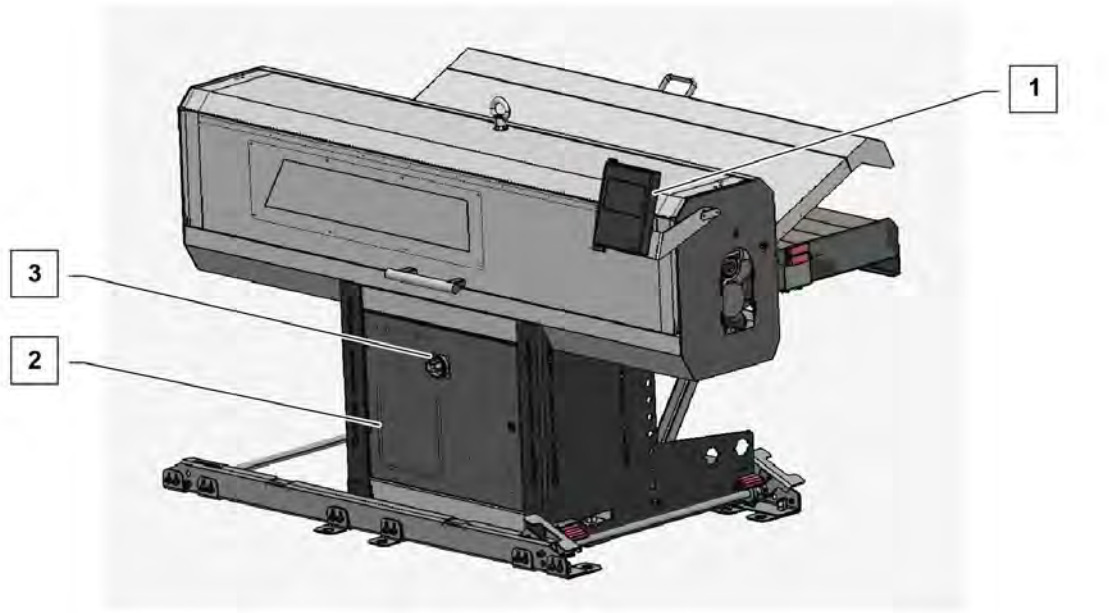
DANGER

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, please contact LNS or its local representative.

The electronic equipment of the bar feeder complies with the EN 60204-1 standards. The electrical elements and groups of elements that may require adjustments at some point are described here.

3.7.1 LAYOUT OF THE ELEMENTS



Designation	Component	Description
1	Remote control	Logical operation of the bar feeder
2	Electrical cabinet	Supplies the bar feeder with electricity
3	Main switch	Switches the bar feeder on/off

4 TECHNICAL DATA

Depending on the country and current standards, certain technical data such as supply voltage may vary. Please refer to the data sheet attached to the device.

	UNIT	1.6 m	2.0 m
Total weight	kg	407	
Total height	mm	1475	
Total length	mm	2038	
Total width	mm	1070	
Min Bar Ø	mm	6	
Max Bar Ø	mm	80	
Min bar length	mm	300	
Max bar length	mm	1600	
Magazine max load capacity	kg	520	
Max longitudinal retraction	mm	585	
Max lateral retraction	mm	585	
Min remnant length	mm	41	
Max remnant length	mm	69	
Loading time (new bar)	s	10-30	
Production changeover	s	15	
Main voltage	V	200-480	
Main frequency	Hz	50/60	
Maximum pushing force	N	756	
Noise emission	dBA		

5 SYSTEM STARTUP

5.1 TRANSPORT

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.

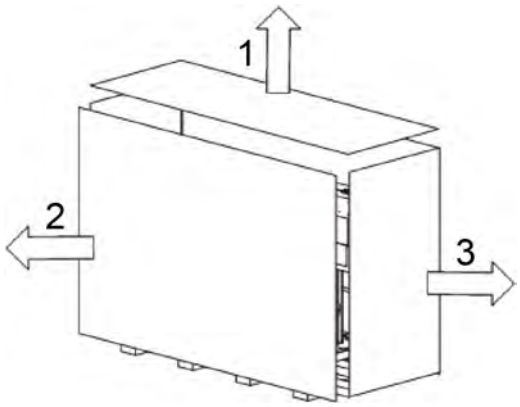
5.2 UNPACKING

The bar feeder may be delivered either on a pallet or packed in a wooden crate, according to customer requirements. Follow the unpacking and lifting instructions recommended below in order to prevent any injuries to people and damage to objects.

For practical and safety reasons, the bar feeder should be unpacked in a spacious and well-lit area.

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, the following items are delivered with the bar feeder:

- Pusher assembly
- Accessory box
- Documentation
- Remote control
- Diagrams
- Interface wiring sheet

5.4 LIFTING

WARNING

Heavy object. Danger associated with the hoist!

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.

WARNING

Heavy object. Hanging load hazard!

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.

NOTICE

Risk of damage to the lathe of the bar feeder!

Do not knock the bar feeder while moving it.

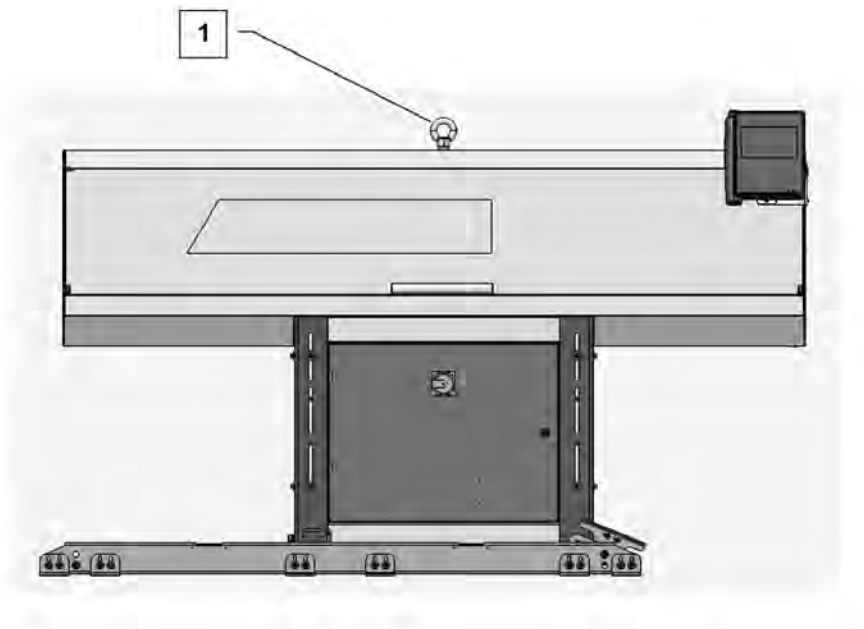
We advise customers to have the bar feeder assembled and installed by LNS or by a local LNS representative. We accept no liability for malfunctions attributable to an improper installation in which we were not involved.

The following accessories are required to lift the bar feeder:

- One hoisting strap (not supplied)
- One hoisting bar

Procedure:

1. Feed the hoisting straps through the ring of the hoisting bar (1).
2. Place the hoist vertically above the bar feeder.
3. Attach the hoisting straps to the hoist.
4. Raise the hoist to stretch out the hoisting straps.
5. Remove the screws attaching the bar feeder to the pallet during transport.
6. Lift the bar feeder and remove the pallet. Make sure that the bar feeder is balanced.
7. Move the bar feeder while ensuring that it remains horizontal.
8. Place the bar feeder as close as possible to the lathe behind it and in rough alignment with the lathe spindle. When placing the bar feeder, consider the lathe and bar feeder's fixed and mobile footprint.
9. Once placed, remove the hoisting straps and remove the hoisting bar by unscrewing it from the top.



5.5 BAR MAGAZINE ASSEMBLY

On leaving the factory, the bar magazine is pre-assembled to the bar feeder.
If you need to move the bar magazine backwards for any reason, contact LNS or its local representative.

5.5.1 MOVING THE BAR MAGAZINE

NOTICE

Contact LNS or its local representative so that an authorized technician can perform this operation.
Moving the bar magazine requires additional service settings to be changed.

5.5.2 MOVING THE LIMITER

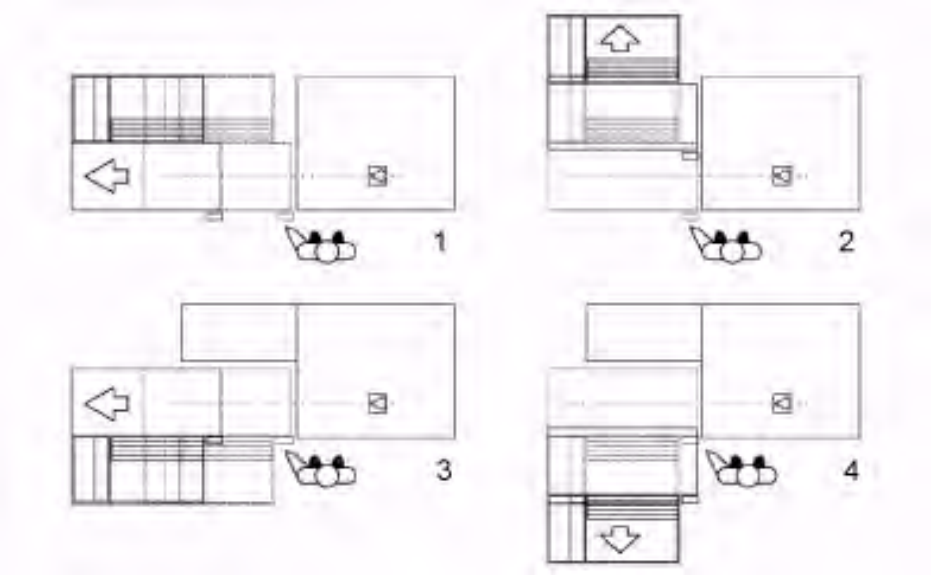
NOTICE

Contact LNS or its local representative so that an authorized technician can perform this operation.
Moving the limiter requires additional service settings to be changed.

5.6 RETRACTION SYSTEM ASSEMBLY

The retraction system allows the bar feeder to move longitudinally or laterally.

When the bar feeder is ordered with a longitudinal retraction system, it is already assembled and fixed to the machine. When a bar feeder is ordered with a lateral retraction system, the elements of the lateral retraction system are not assembled to the bar feeder upon delivery and must be mounted on site.



Designation	Description
1	Longitudinal retraction for left-rear loading
2	Lateral retraction for left-rear loading
3	Longitudinal retraction for left-front loading
4	Lateral retraction for left-front loading

5.6.1 MOUNTING THE RETRACTION SYSTEM FOR LATERAL RETRACTION

WARNING

Injury hazard or damage from unsecured heavy objects!

Before proceeding, make sure that the bar feeder is stable and preferably leveled. Caution must be take when placing the tracks under the bar feeder to avoid injury to persons and/or damage to the bar feeder. The bar feeder must be positioned as close as possible to the lathe lathe.

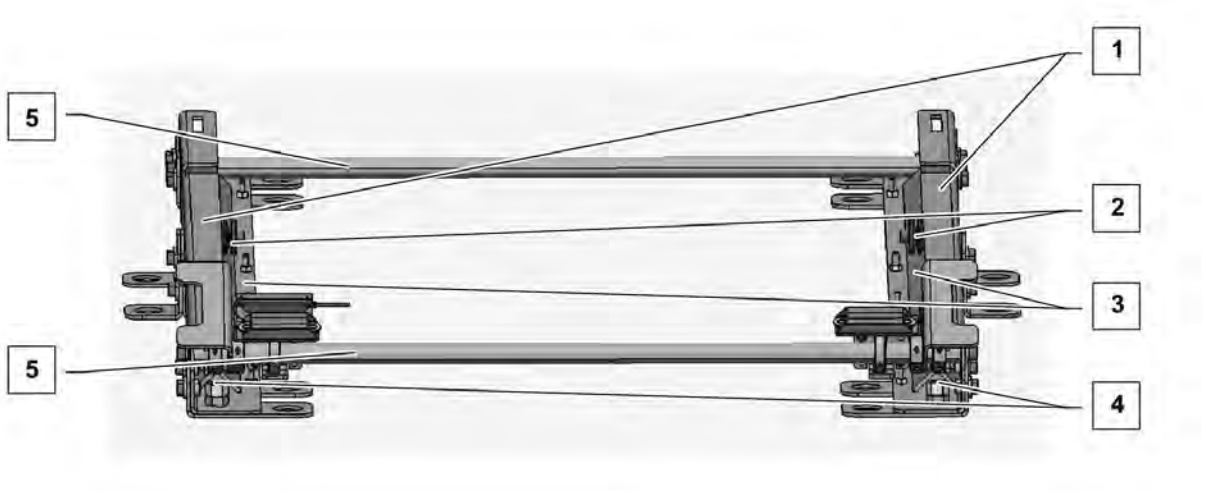
NOTICE

Risk of damage due to interface wiring!

Check that the interface wiring between the lathe and the bar feeder is long enough.

Procedure:

1. Bring the tracks together inwards to their respective sides of the bar feeder.
2. Put the sliding wheels (2) in front of the guiding rails (3).
3. Push the rails (1) into place on each side under the bar feeder.
4. Mount the crossbeams (5) against the rails (1).
5. Use the screws (4) to level the machine.
6. Tighten the lock nuts of the screws (4) used to level the bar feeder.
7. Attach the safety switch .
8. Align the bar feeder (→ ALIGNMENT on the facing page)



INFO

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

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

NOTICE

Risk of damage to the reduction unit!

During alignment, make sure that there is no reduction unit in the spindle.

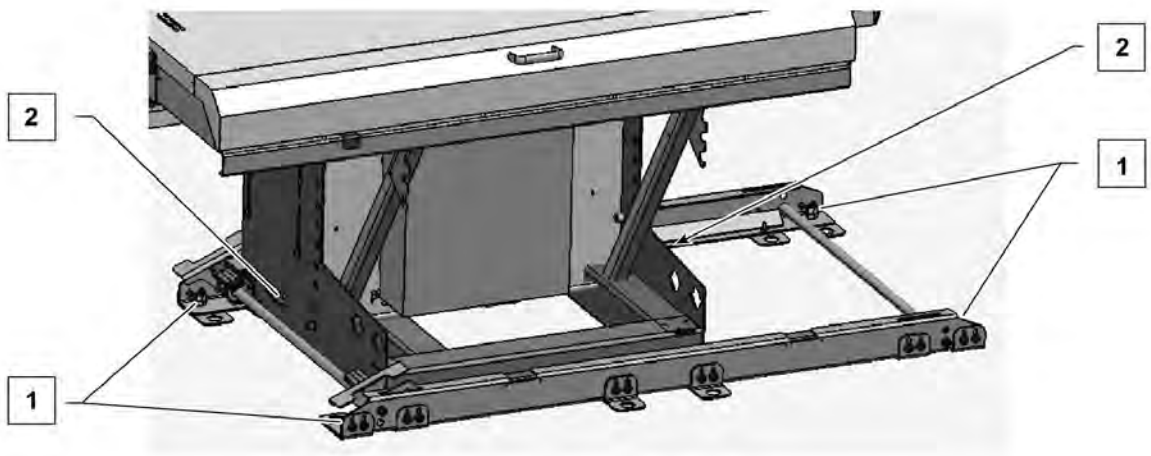
INFO

- Install the largest pusher to obtain perfect alignment.
- If a spindle liner is installed in the spindle, ensure that it is larger than the pusher.
- Ensure that the bar feeder is as straight as possible (±90°).
- The lengthwise level of the bar feeder should be adjusted on the lathe level. If the levels of the bar feeder and lathe do not match, the pusher may touch the inside of the spindle.

Once the bar feeder is in place, 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 level onto an even surface on the inside of the bar feeder.
2. Adjust the four screws (1) located on the feet of the bar feeder to adjust the level of the bar feeder Move the pusher in the direction of the lathe spindle.
3. If necessary, use the two screws (2) to adjust the height of the bar feeder until the pusher is centered in the spindle.
4. Shift the bar feeder to align it laterally (for example using a nylon hammer). If you do not have the needed material to perform this operation, please contact LNS or its local representative.
5. Move the pusher while monitoring its position in the spindle.
6. If the pusher deviates, readjust the level of the bar feeder by adjusting the screws.
7. When the alignment is considered satisfactory, lock all the screw nuts.



5.8 ANCHORING

Once the bar feeder is in place and perfectly aligned, it should be anchored to the ground to ensure stability. To accomplish this, four anchorage points (1) have been provided.

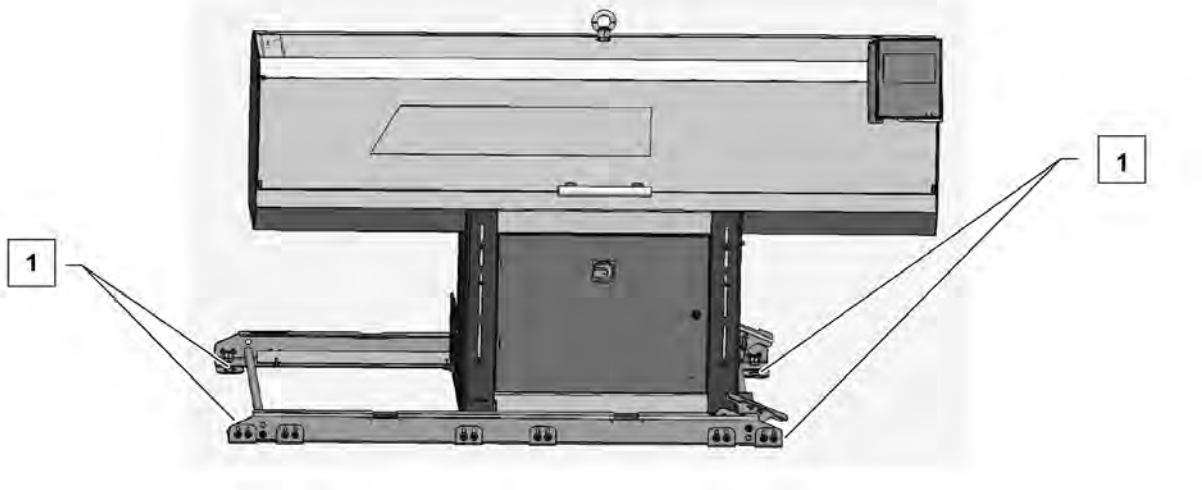
The anchorage bolts must be furnished by the client (Minimum M 10 x 100 mm).

INFO

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

Procedure:

1. Use an anchorage bolt at each anchorage point (1) to anchor the bar feeder to the ground.
2. Once the anchoring bolts are tightened, check the alignment again, and correct if necessary.



INFO

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

5.9 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.

6 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.

INFO

The bar feeder adjustment must be amended when the following settings change:

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

6.1 BAR FEEDER ADJUSTMENTS

6.1.1 ADJUSTING THE BAR MAGAZINE INCLINE

To facilitate the moving of the bars, the bar magazine table is equipped with a grate on which the bars are placed. If, however, certain bars (i.e. profiled bars) cannot slide properly, the slope can be increased via an axle located under the table. If, on the other hand, bars with small diameters overlap onto one another, then the slope can or must be reduced. To adjust the incline of the bar magazine follow the procedure bellow.

CAUTION

Risk of crushing!

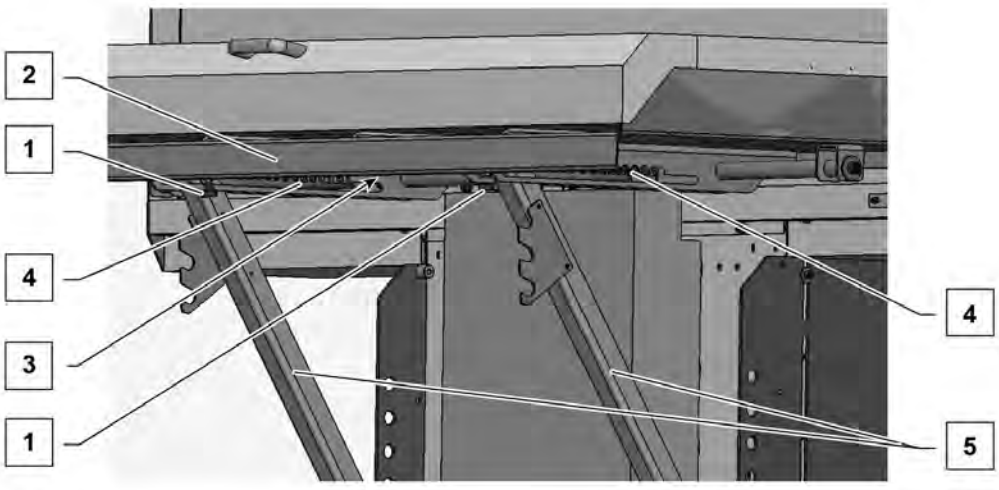
Handle the bar magazine protective cover with care to avoid crushing.
Do not introduce fingers/hands into the loading zone or under the loading magazine to avoid crushing.

Prerequisite:

- The bar feeder is in STOP mode.

Procedure:

1. Loosen the screws (1) which keep the positioning rod in place.
2. Lift up the loading rack (2).
3. Move the positioning rod (3), which is connected to the bar magazine fixation stands (5), to the desired position on the incline positioning tracks (4).
4. Tighten and secure the screws (1) to lock the positioning rod in place.



6.1.2 CHANGING THE ROLLERS

This bar feeder is equipped with quick-change rollers, which can be easily removed without any necessary equipment.

Prerequisite:

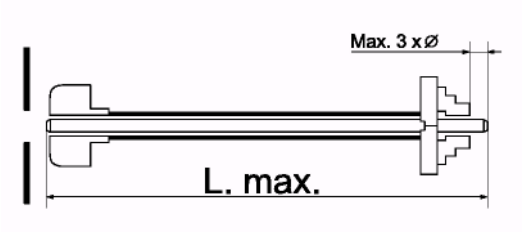
- The bar feeder is in STOP mode.

Procedure:

1. Press the function key F2 on the remote control.
   The bar feeder switches to manual mode.
2. Press the function key F3 to replace the pusher.
3. Press the function key F1 to confirm.
   The pusher moves to the correct position.
4. Open the main access cover.
5. Remove the pusher (→ REPLACING THE PUSHER on the facing page) and place it on the pusher storage hooks underneath the bar magazine.
6. To remove the rollers, simply pull them up and out of the bar feeder one at a time.
7. To insert the new rollers, place and push them each into the respective slots.
8. Put the pusher back into the machine (→ REPLACING THE PUSHER on the facing page)

6.1.3 ADJUSTING THE REAR LIMITER

The bar magazine can hold bars of different lengths at the same time. The maximum length (L.max.) that can be loaded is determined by the length of the lathe spindle. It is strictly forbidden to turn a bar that extends beyond the back of the spindle. The bar should not extend more than three times its diameter from the lathe's clamping device.



NOTICE

Contact LNS or its local representative so that an authorized technician can perform this operation.
This is because the maximum length (L. max.) must be entered in the service settings.

6.1.4 REPLACING THE PUSHER

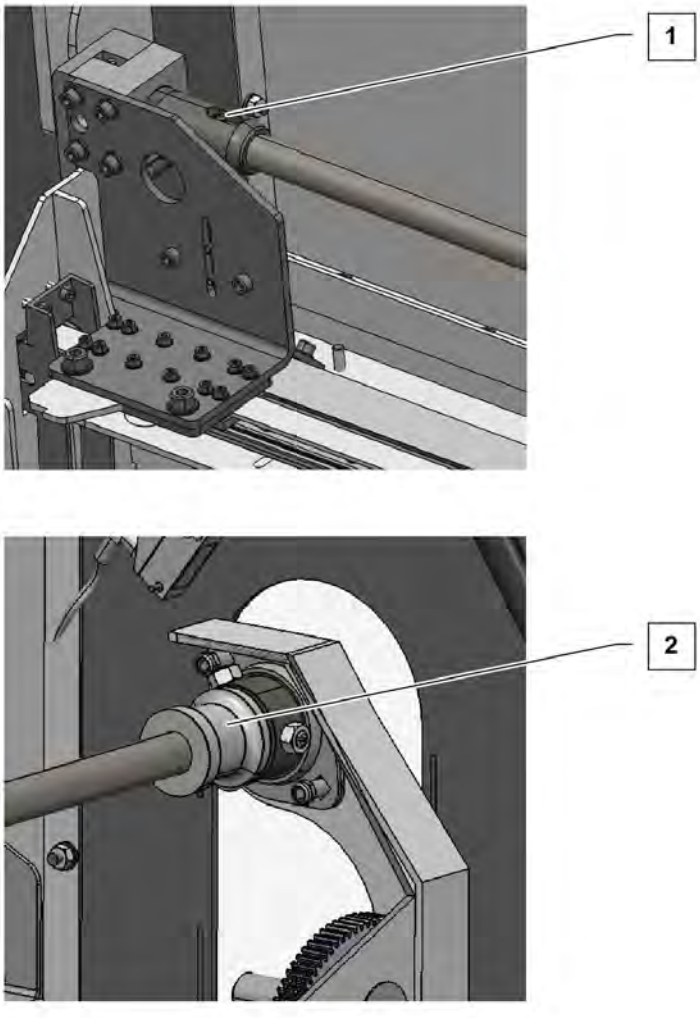
The bar feeder is equipped with a quick-change pusher. This allows an easy and fast changeover to a different pusher, without any necessary equipment.

Prerequisite:

- The bar feeder is in STOP mode.
- The slide is in the rest position at the back of the bar feeder as seen in the left image below.

Procedure:

1. Press the quick release button (1) at the end of the pusher to free it.
2. Remove the guide bushing (2) from its place at the other end of the pusher.
3. The pusher is now free on both sides. Lift out the pusher and the guide bushing.
4. Insert the new pusher into the front opening and insert the guide bushing.
5. At the other end of the pusher, press the quick release button and fix it back into place in the locked position.



6.1.5 RETRACTING THE BAR FEEDER

WARNING

Injury hazard from unsecured bar feeder!

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

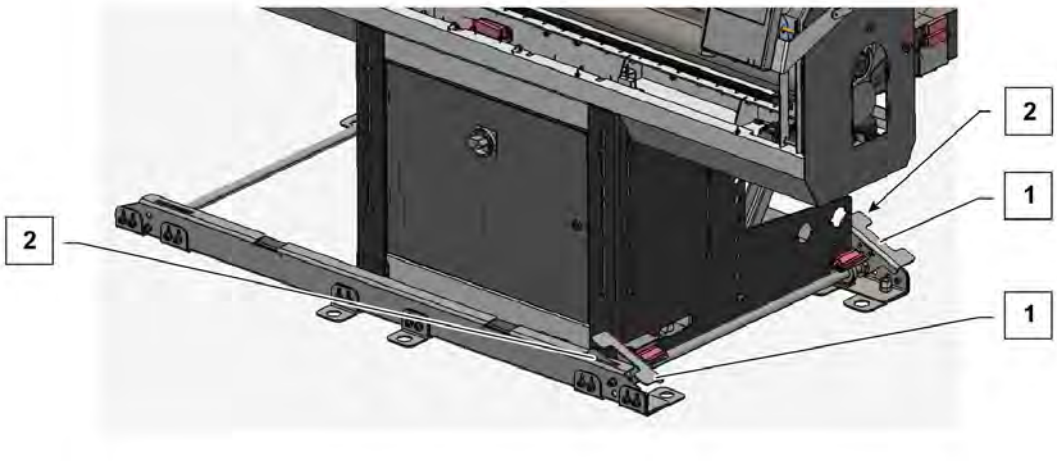
Read the safety instructions at the beginning of this document before handling the following devices. Make sure that the interface cables between the lathe and the bar feeder are long enough before handling the retraction system.

Prerequisite:

- The bar feeder is in STOP mode.

Procedure:

1. Disengage the two levers (1) to unlock the hooks (2).
2. Move the bar feeder to its new position.
3. Lock the hooks with the levers to lock the bar feeder in place.



6.1.6 LOADING BARS OF VARIABLE LENGTHS

CAUTION

Risk of crushing!

Handle the bar magazine protective cover with care to avoid crushing.
Do not introduce fingers/hands into the loading zone or under the loading magazine to avoid crushing.

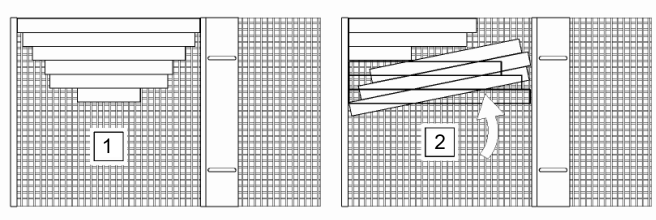
Bars of different lengths can be loaded onto the bar magazine and into the bar feeder, however they must be loaded in accordance to the following procedure in order to avoid problems in loading.

Prerequisite:

- The bar feeder is in STOP mode.

Procedure:

1. Open the bar magazine protection cover.
2. Place the bars on the magazine in order of decreasing length (1).
3. Center the bars between the limiters (1) so that they do not become crooked (2).
4. Close the bar magazine protection cover.
5. If necessary, adjust the incline of the bar magazine (→ ADJUSTING THE BAR MAGAZINE INCLINE on page 35)



6.1.7 LOADING BARS OF THE SAME LENGTH

CAUTION

Risk of crushing!

Handle the bar magazine protective cover with care to avoid crushing.
Do not introduce fingers/hands into the loading zone or under the loading magazine to avoid crushing.

Prerequisite:

- The bar feeder is in STOP mode.

Procedure:

1. Open the bar magazine protective cover.
2. Place a bar into the bar magazine touching the front limiter.
3. Position the rear limiter 1 mm behind the bar.
4. Roll the bar on the bar magazine to ensure that the rear limiter is parallel.
5. Tighten the screws of the rear limiter to fix it in place.
6. Close the bar magazine protective cover.
7. If necessary, adjust the incline of the bar magazine (→ ADJUSTING THE BAR MAGAZINE INCLINE on page 35)

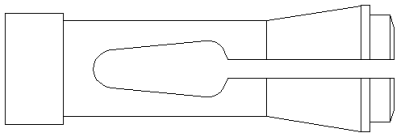
6.1.8 LOADING PROFILED BARS

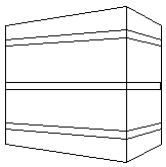
Depending on the profile of the bars to be loaded , adjustments and additional accessories may be required. Contact LNS or its local representative.

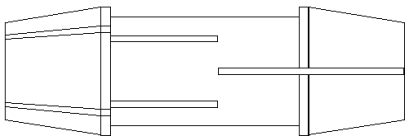
6.2 LATHE ADJUSTMENTS

6.2.1 CLAMPING DEVICE

COLLET

Single cone collet	Effectiveness: good to very good
The bar is gripped at about 350° over a length of 0.5 to 7 times its diameter.	

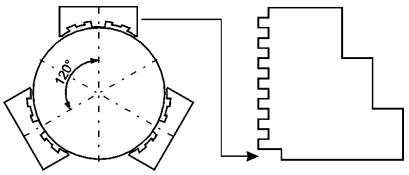
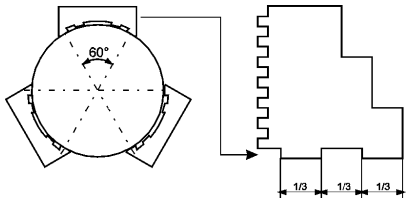
Biconical collet	Effectiveness: very good to excellent
The bar is gripped at 1 or 2 times 350° over a length of around 1.2 times the diameter.	

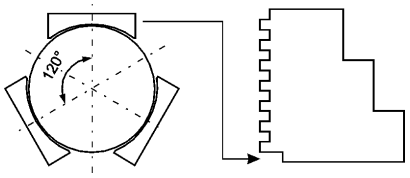
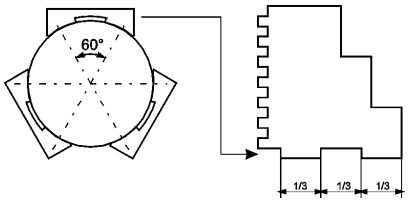
Double cone collet	Effectiveness: excellent
The double cone collet has the significant advantage of gripping the bar at two distant points of around 1.5 times the diameter with gripping of 2 times 350° over around 0.5 times the diameter.	

MANDREL

INFO

If the bar is not correctly fixed, the risk of vibrations significantly increases.

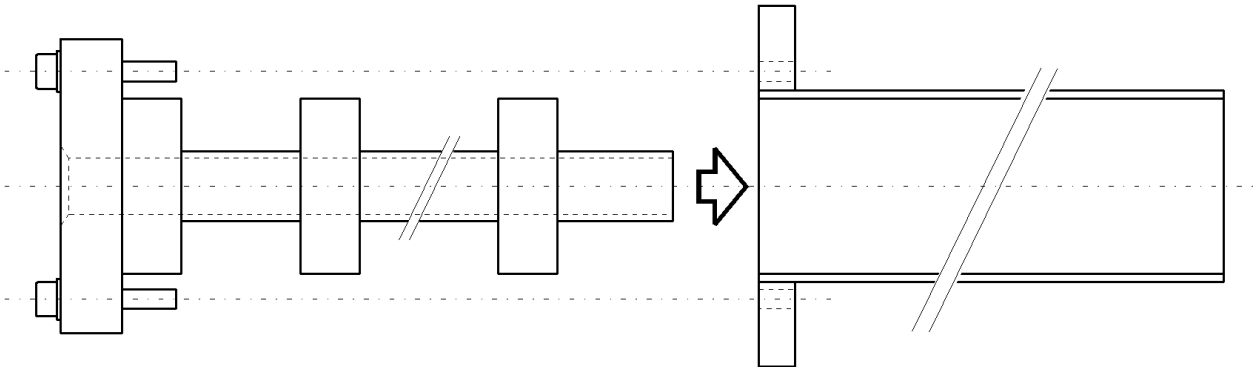
Hard jaws	
Incorrect: the radius of the jaws is larger than the radius of the bar. The jaws only touch at 3 points at 120°.	
Correct: release the center of the jaws so that there are 2 x 6 contact points at 60°.	

Soft jaws	
Incorrect: the radius of the jaws is larger than the radius of the bar. The jaws only touch at 3 points at 120°.	
Correct: release the center of the jaws so that there are 2 x 6 contact points at 60°.	

6.3 BAR FEEDER/LATHE CONNECTION

6.3.1 SPINDLE LINERS

The guidance quality is determined by the clearance between the boring of the spindle and the bar in rotation. The larger the clearance, the more vibrations there are.
Using a spindle liner reduces this clearance. Guiding is thus improved and it is much easier to insert the bar into the lathe chuck.



INFO

The inner diameter of the spindle liners must be chosen depending on:

- the diameter of the bar (Ø of the bar + 1 mm)
- the diameter must always be larger than that of the pusher

The spindle liners can be delivered upon request by LNS.

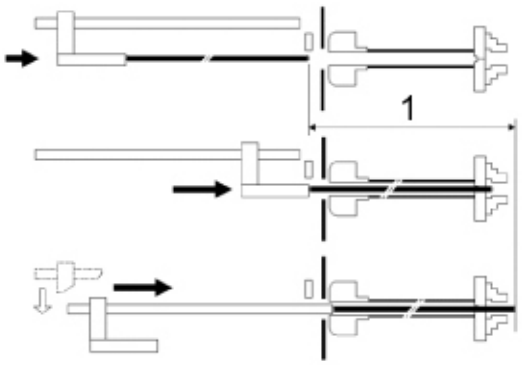
To insert and extract a spindle liner, move the bar feeder using the retraction device if needed (→ RETRACTION SYSTEM on page 25).

6.4 TOP-CUT POSITION

6.4.1 DESCRIPTION

At feed out, the bar is inserted into the spindle, then automatically positioned in the lathe's clamping device.

This positioning corresponds to a value (1) programmed by the operator, which is equivalent to the distance between the light sensor and the position of the bar stock in the clamping device of the lathe.



Thanks to this system, the adjustment is always the same irrespective of the length of the bars.

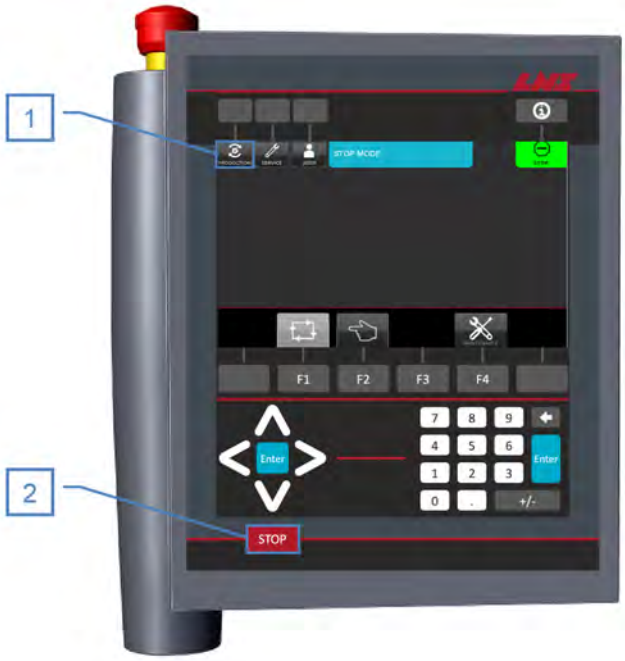
6.4.2 ADJUSTMENT

NOTICE

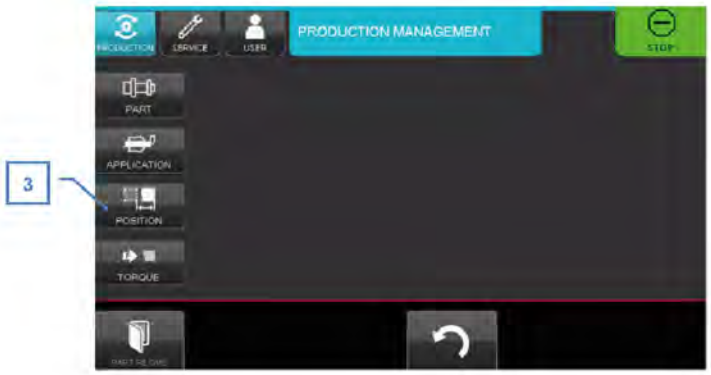
Risk of damage to the lathe!

Stop the lathe at the end of the part.
Put the bar feeder in STOP mode.

1. Press the STOP key (2).
2. Press the PRODUCTION key (1).



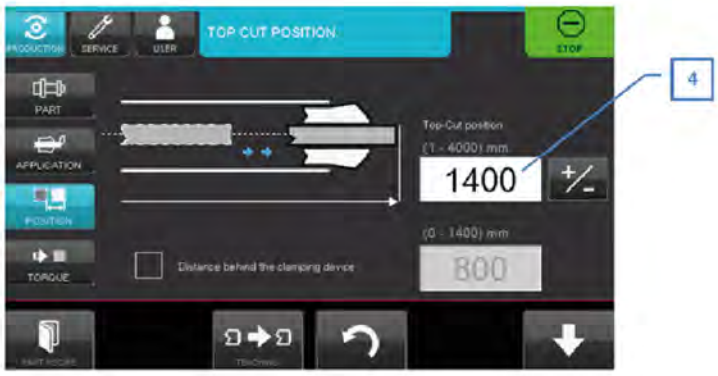
3. Press the POSITION key (3).



There are two options:

Use the keypad to enter the value directly

1. Press the field (4).



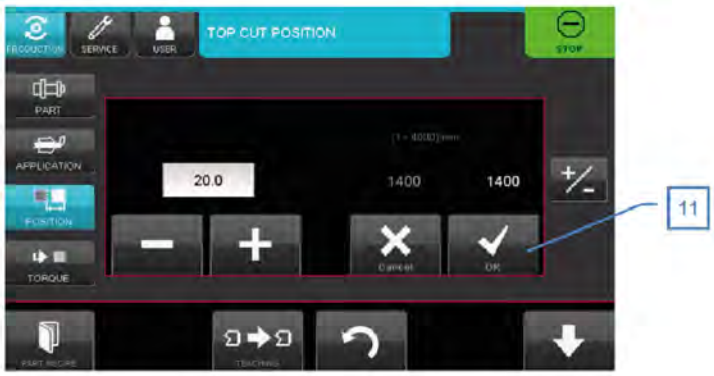
2. Use the keypad (5) to enter the new value.
3. Press the Enter key (6) to confirm the value.

Use the +/- key to enter the value by adding/substracting

1. Press the +/- key (7).

2. Enter the value to be added/subtracted in the field (8).
3. Press the key:
   (9) to add the value
   (10) to subtract the value
   When you press one of the keys, the value is immediately displayed on the right.

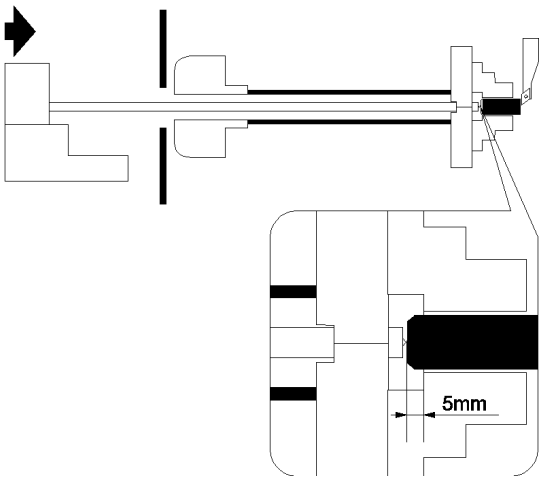
4. Press the OK key (11) to confirm.



6.5 END OF BAR

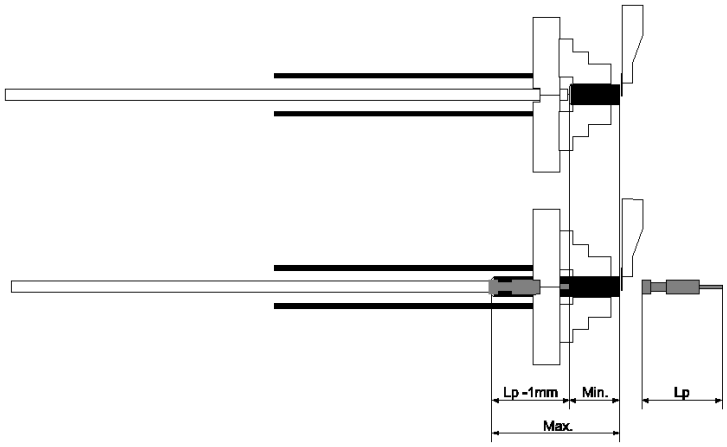
6.5.1 DESCRIPTION

The time when the bar feeder enters the loading cycle is determined by the position of the end of bar signal.



In principle, the end of bar signal position is set as close as possible behind the clamping device of the lathe (around 5 mm) so that the bar remnants are as short as possible.

Irrespective of the bar or part length, the end of bar signal position is always the same.



The length of the bar remnants can vary:

- The minimum bar remnant (min) is obtained when the pusher is behind the clamping device when the last part is being machined.
- The maximum bar remnant (max) is obtained when there is not quite enough bar stock to machine an additional part (Lp -1 mm).

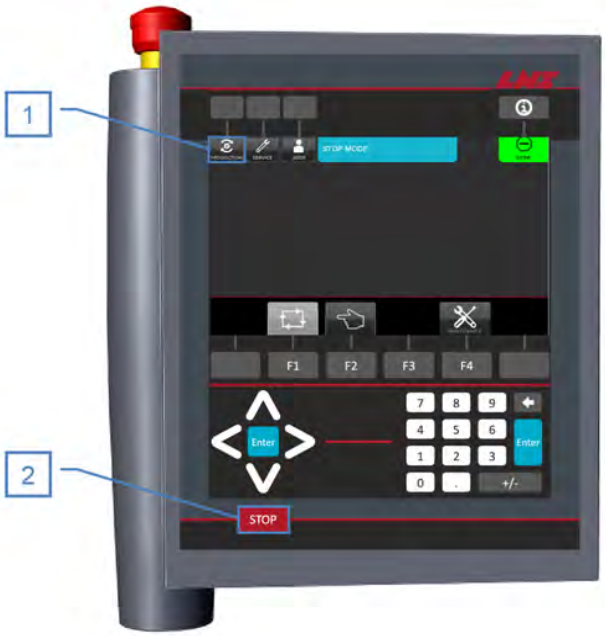
Maximum bar remnant = Lp - 1 mm + min

6.5.2 ADJUSTMENT

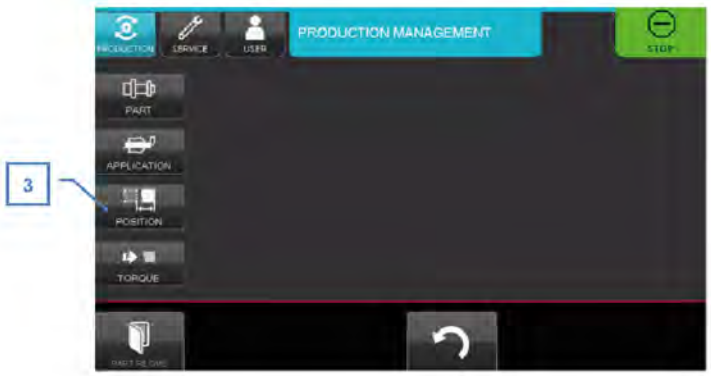
NOTICE

Risk of damaging the lathe!
Stop the lathe at the end of the part.
Put the bar feeder in STOP mode.

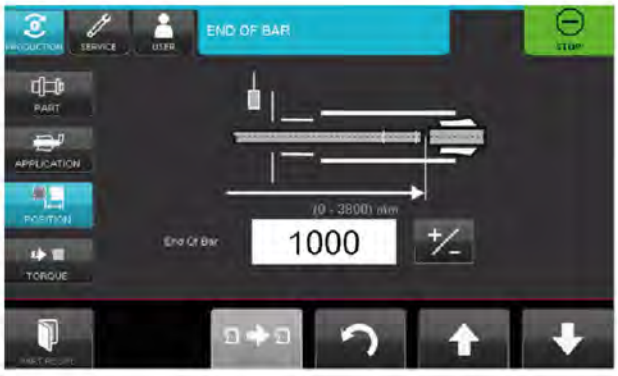
1. Press the STOP key (2).
2. Press the PRODUCTION key (1).



3. Press the POSITION key.



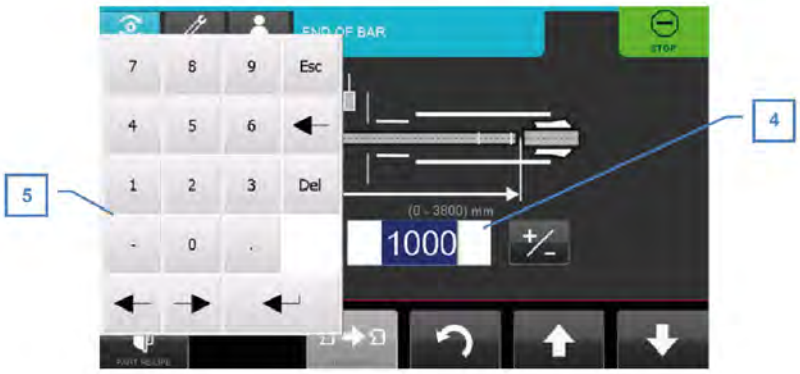
4. Press the downwards-arrow key on the bottom right.
   The following screen appears:



There are two options:

Use the keypad to enter the value directly

1. Press the field (4).
2. Use the keypad (5) to enter the new value.
3. Press the Enter key to confirm the value.



Use the +/- key to enter the value by adding/substracting

1. Press the +/- key (6).

2. Enter the value to be added/subtracted in the field (7).
3. Press the key:
   (8) to add the value
   (10) to subtract the value
   When you press one of the keys, the value is immediately displayed on the right.
4. Press the OK key (9) to confirm.

7 OPERATION

NOTICE

Risk of damage to the lathe or bar feeder!
Do not open the main access cover during operation.

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

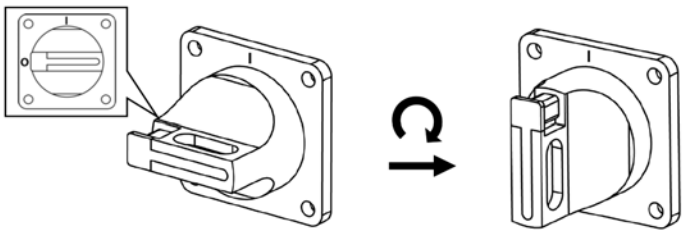
DANGER

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.

Main switch

Switch on:

1. Turn (1) the main switch clockwise to the I- position (on).



Switch off:

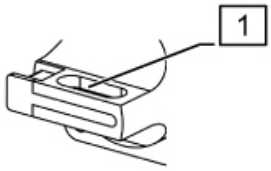
1. Turn the switch counterclockwise to the O-position (off).

INFO

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

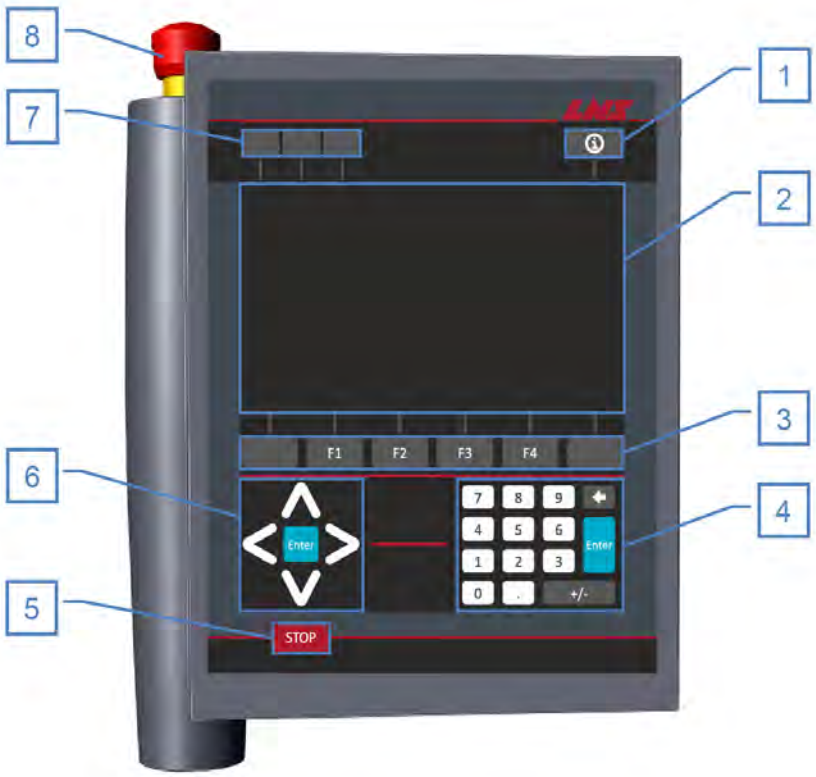
Lock the main switch in off-position:

1. Push the main switch and insert a padlock into the opening (1).
2. Close the padlock.



7.2 REMOTE CONTROL

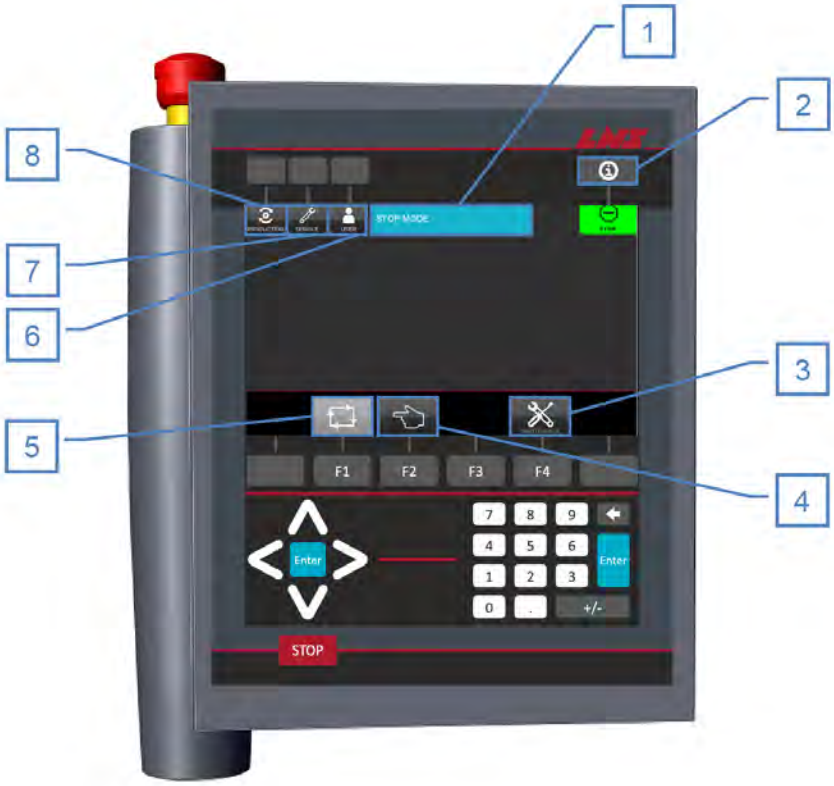
The screen on the remote control continuously shows the status of the bar feeder and its production. This allows the function, diagnostics, and error signals to be checked or analyzed at any time.
The latest error messages are stored in a register and can be called up to establish the diagnostics.



Designation	Description
1	Information key
2	Screen
3	Function keys
4	Keypad
5	STOP key
6	Direction keys
7	Function keys
8	Emergency stop button

7.3 DISPLAY

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



Designation	Description
1	Current status or mode
2	More information
3	Maintenance
4	Manual mode
5	Auto mode
6	User login
7	Service menu
8	Production menu

7.4 ICONS

Icon	Meaning	Icon	Meaning
	Referencing position		Start the bar lift
	Change to automatic mode		Validate
	Stop after one bar		Cancel
	Change to manual mode		Recpies
	Forwards (the image can be inverted depending on the bar feed-out side)		Maintenance
	Backwards (the image can be inverted depending on the bar feed-out side)		Position teaching
	Exiting function		In top-cut-position (Top-Cut)
	Previous page		Progress speed - Normal/Quick
	Next page		Toggle page

7.5 KEYS

WARNING

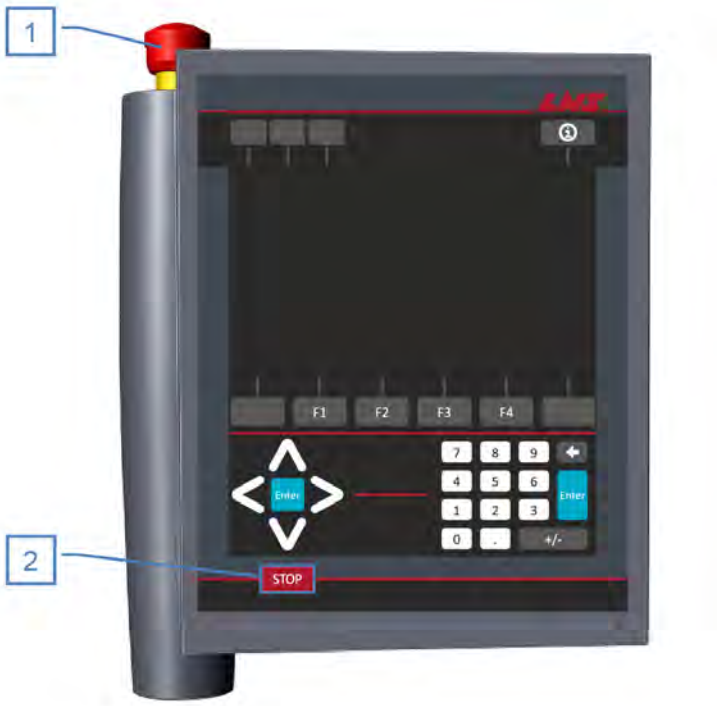
Emergency stop. Use the emergency stop button!

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.

	**STOP key** The STOP key is used to interrupt the sequence under way. **Important: the automatic cycle of the lathe must first be interrupted.** The STOP key can be pressed to exit setting mode, regardless of the level reached, and return to the work screen.
	**Function keys** The multi-function keys are located right below the screen. The function attributed to them is indicated on the display by icons. As the operator advances through the handling operations, the functions of the buttons are automatically reassigned.
	**Info key** The info key is used to display information about the software version, the firmware version, and the status of the inputs and outputs of the system.

7.6 EMERGENCY STOP

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



To activate the emergency stop button:

1. Press firmly on the emergency stop button (1).

- The AL01 alarm appears on the HMI.
- The operation of the bar feeder is interrupted.

To deactivate the emergency stop button:

1. Turn the emergency stop button (1) counterclockwise until it returns to its original position.
2. Press the STOP key (2).

- The AL01 alarm is cleared.
- The operation of the bar feeder restarts.

7.7 OPERATION SETTINGS

NOTICE

Damage to lathe or bar feeder from incorrect settings!

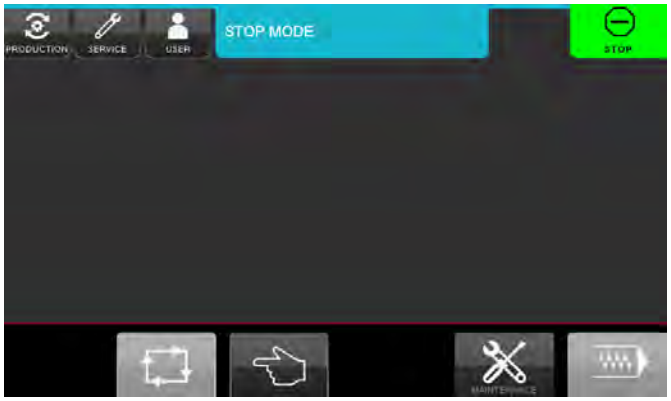
The operation settings are the most commonly modified settings for controlling the bar feeder when it is in automatic mode.
Read this section before making any changes.

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.

7.7.1 ACCESS

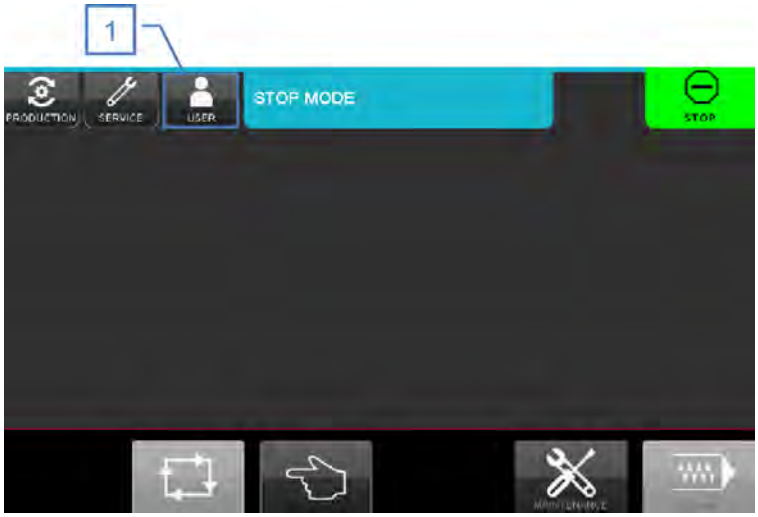
1. Turn the bar feeder on with the main switch.
   The welcome screen appears.



INFO

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

2. Press the USER key (1).



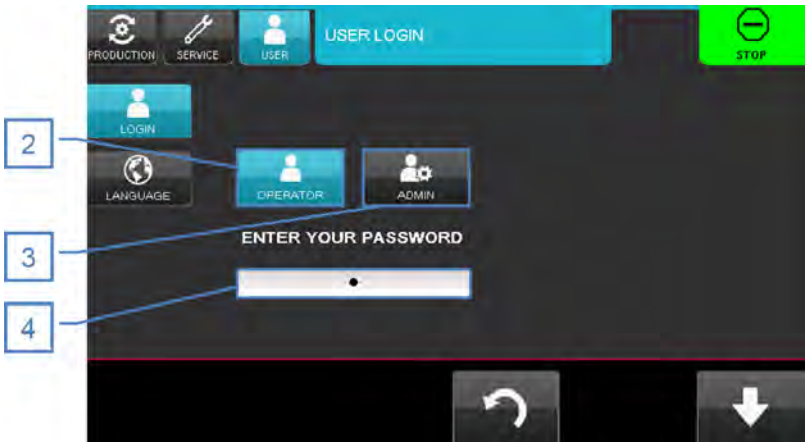
To log in as:

OPERATOR

3. Press the OPERATOR key (2).

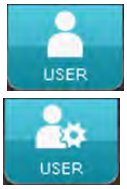
ADMIN

3. Press the ADMIN key (3).
4. Enter your password (4).



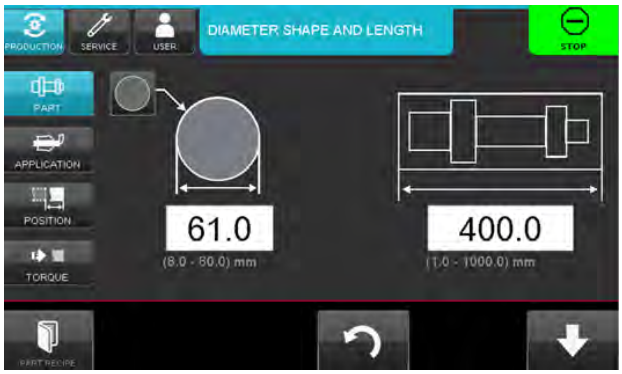
INFO

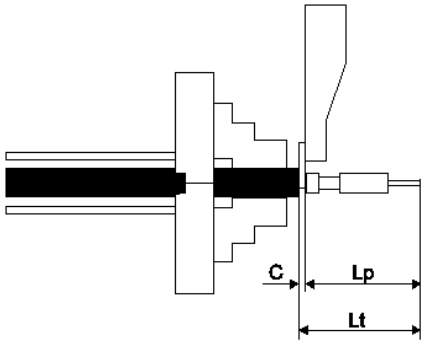
The USER key (1) indicates who is logged in.



7.7.2 PART (STANDARD)

Shape and diameter of the bar, length of the part, variable face-off distance





Enter the diameter, shape and length of the bar stock according to the bar stock currently loaded.

Shape of the bar

Round bar:

- External diameter

Hexagonal/square bar:

- Size on flat sides
- Size on pointed sides

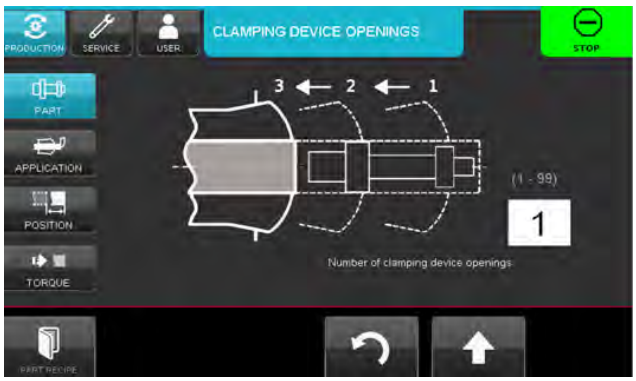
During the bar feed-out cycle, the bar feeder repeatedly (50 times) tries to insert the bar into the lathe collet or mandrel. The precision of positioning is also ensured by means of a procedure that was expressly developed for profiled bars.

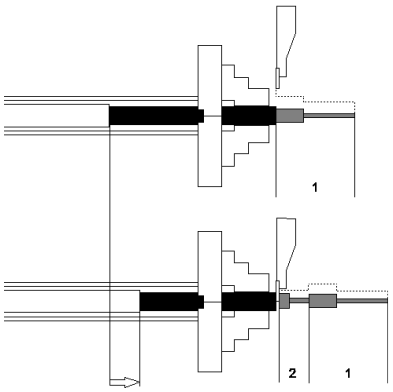
Total feed-out length

The total feed-out length (**Lt**) includes:

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

Number of times clamping device opens per part





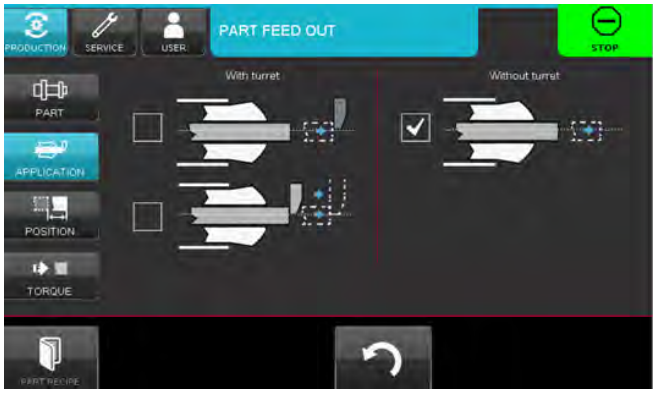
When machining a part requires the collet to open several times (for example a long piece or rework of the part on the second spindle), interface conflicts can occur during feed out.

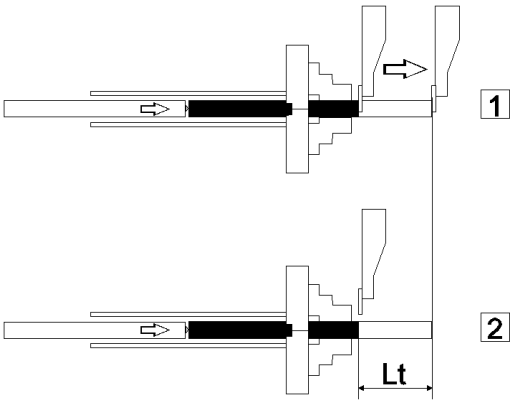
It is therefore important to enter on the HMI the number of times that the collet must open to machine a part.

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.

7.7.3 APPLICATION

Part feed out with/without a turret





Part feed out with a turret

This setting makes it possible to set the lathe as the part feed out controller. In this case, a special loop must be provided in its program.

Additional setting:

a. The turret waits in position:
   The turret moves to the bar stock arrival point and waits for the bar feeder to push the bar stock to it.
b. The turret accompanies the feed out:
   The turret moves to the end of the bar stock; the bar feeder starts feeding and pushes the bar stock against the turret. The turret then moves to the bar stock arrival point with the bar feeder still pressing the bar stock against the turret.

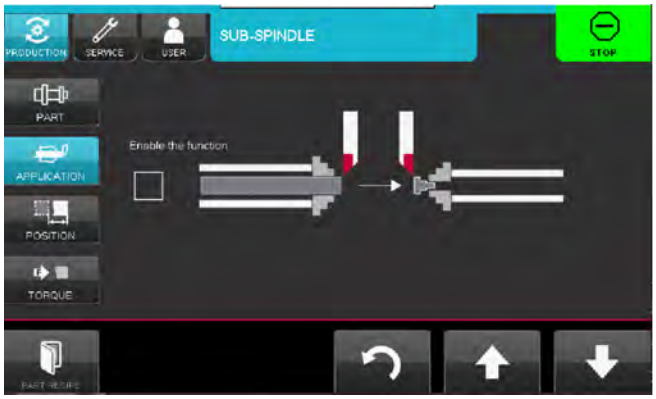
Feed out without a turret

The bar feeder feeds the part. When the collet opens, the pusher moves the bar from the value entered in the setting “total part feed-out length.” The bar feeder cannot feed the part if the manufacturing program provides for the collet to open several times.

Release of the turret with the “M” function

This setting deactivates the release of the turret using an “M” function if it is not present in the lathe interface. In this case, a delay can be used to start the release.

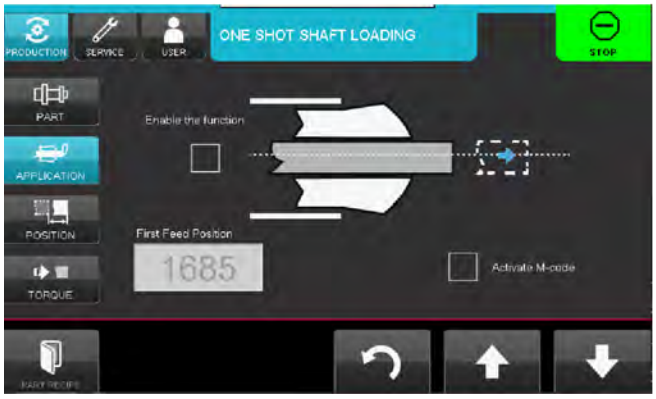
Part feed out by the counter spindle



This setting is mainly used on twin spindle lathes when the counter spindle does the part feeding.

In this case, the pusher does not follow the bar stock, but the bar feeder can calculate the time of the bar end signal using known variables, namely the length of the bar, the total feed-out length, the number of collet openings, and the minimum bar remnant length.

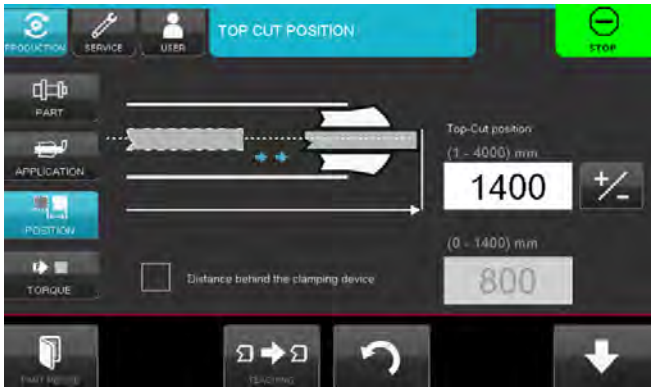
Part loading with the extended introducer



When this operation mode is selected, the pusher is not used. Loading is performed by a special extended introducer. When the movable crosshead is in the low position, the manual functions are deactivated. The end of bar position does not require any particular adjustment for this type of work.

7.7.4 POSITIONS

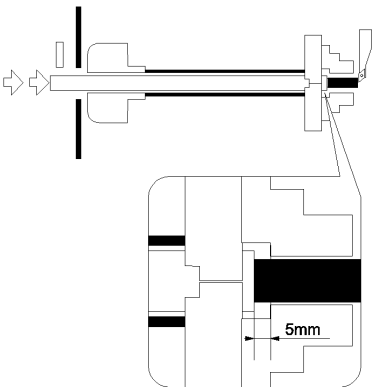
Top-cut position



At feed out, the bar is entered into the spindle then automatically positioned in the clamping device of the lathe.

This positioning corresponds to a value (Z) programmed by the operator, which is equivalent to the distance between the light sensor and the position of the bar stock in the clamping device of the lathe.
Thanks to this system, the adjustment is always the same irrespective of the length of the bars.

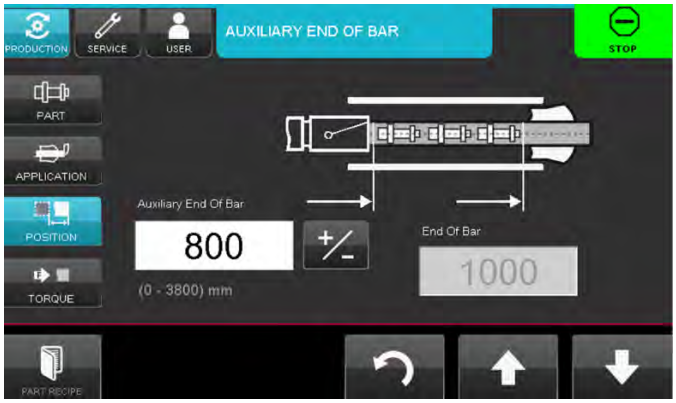
End of bar signal position

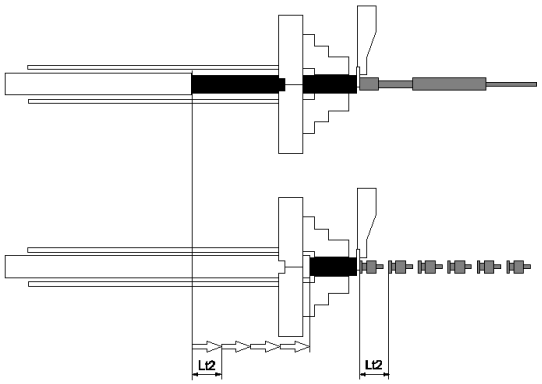


The time at which the bar feeder enters the loading cycle is determined by the position of the end of bar signal.

In principle, the end of bar position is set as close as possible behind the clamping device of the lathe (around 5 mm) so that bar remnants are as short as possible.
Irrespective of the bar or part length, the end of bar signal position is always the same. Nevertheless, certain specific cases may require a different end of bar signal adjustment.

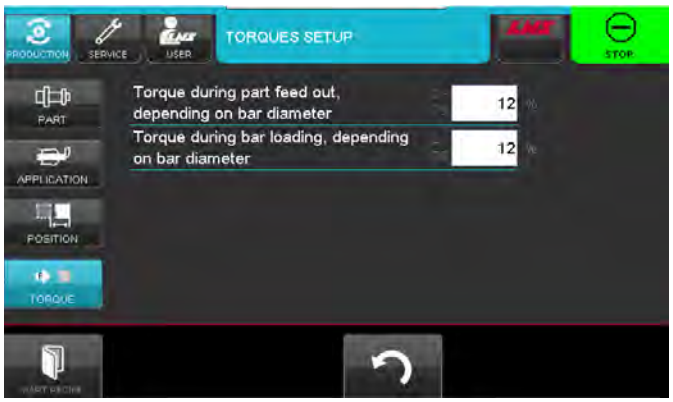
Auxiliary end of bar signal position





Depending on the lathe and the options it has, the auxiliary bar end signal may be used in several ways. For example, to open an additional guiding front rest installed behind the lathe spindle. The adjustment is the same as for the bar end signal.

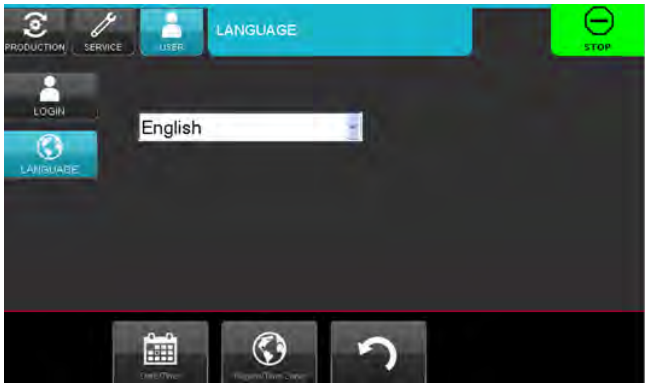
7.7.5 TORQUE



Torque adjusted depending on the diameter for part feed-out (%)
Depending on the diameter of the bar, the bar feeder suggests an appropriate pushing torque. If they wish the operator can modify this torque. When the bar stock to be loaded has a specific high weight, the torque must be significant. The inverse is true if the specific weight of the bars is low.

Torque adjusted depending on the diameter of the bar stock in quick operation (%)
The same principle applies for the part feed out torque, this time applied in quick operation.

7.7.6 LANGUAGE



The language menu enables the user to choose the HMI language of the bar feeder.

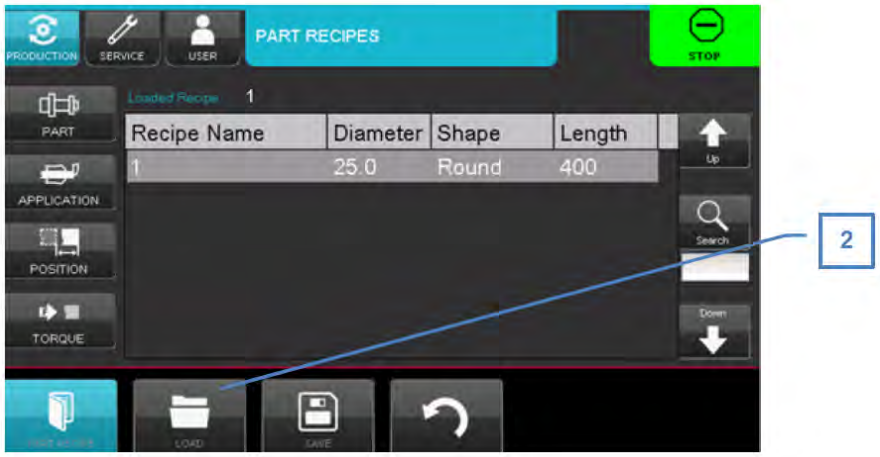
INFO

The bar feeder does not necessarily have to be in the STOP position to select the language.

7.7.7 PART RECIPES

The main screen of the part recipe displays the current status of the library.
The recipe that is currently used is indicated in the “Loaded recipe” field (1).

Loading a part



This screen makes it possible to call and load settings for a part that is in the library to the part settings.

1. Select the part recipe by selecting the line that you want.

- The recipe is highlighted.

2. Press the LOAD key (2).

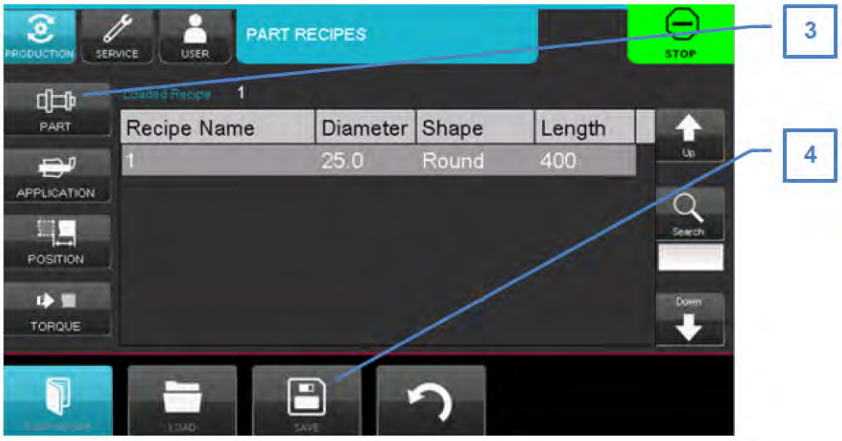
- The recipe is loaded.

Adding a part/saving a part

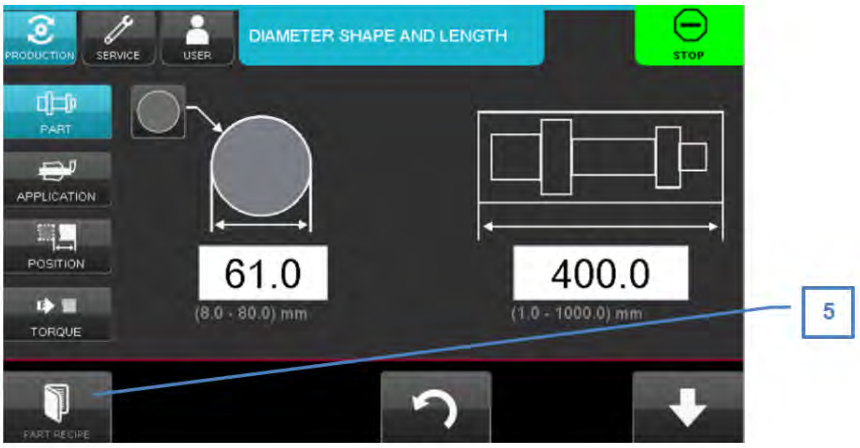
This screen makes it possible to add a new part to the library by saving all the current settings.

To add a part:

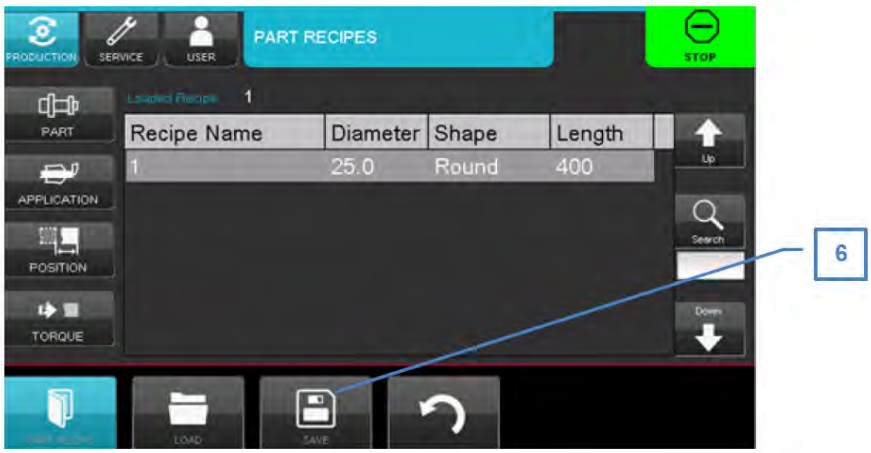
1. Load the part recipe.
2. Press the SAVE key (4).
   Press the PART key (3) to make the changes to the part settings.



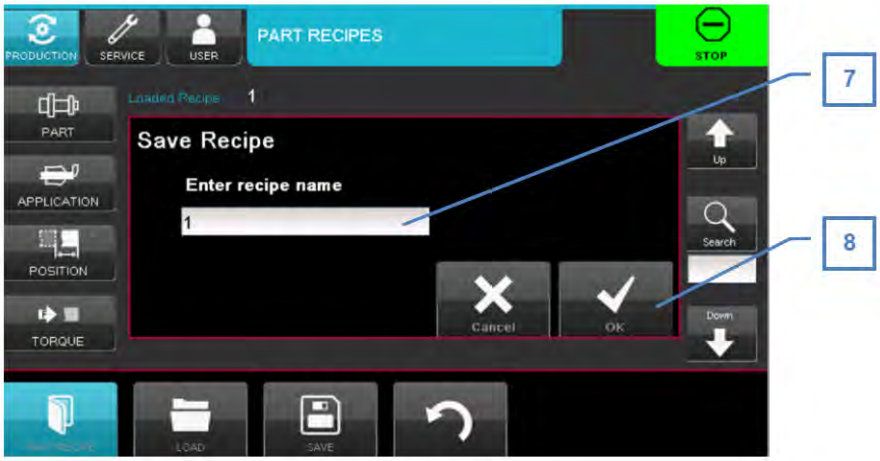
3. Press the PART RECIPE key (5).



4. Press the SAVE key (6).



5. Enter the name of the recipe into the field (7).
6. Press the OK button (8) to confirm.



INFO

Entering and confirming an existing name will delete the existing data!

The previous settings will be deleted.

Use another name before confirming the save.

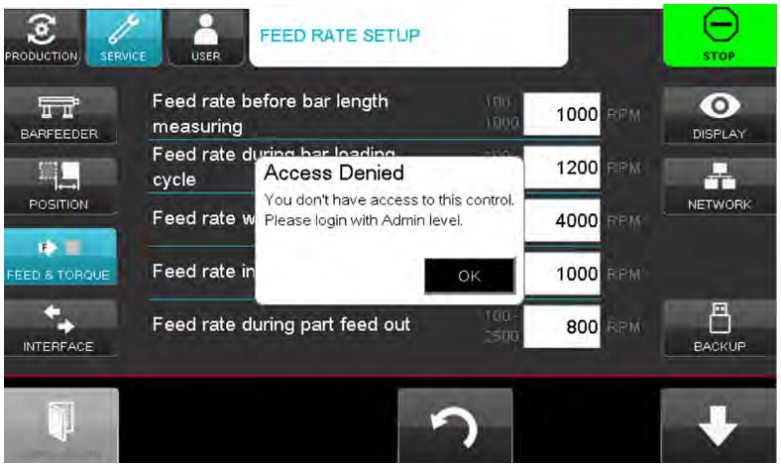
7.7.8 SERVICE

The service settings make it possible to:

- Configure the bar feeder in its environment.
- Adapt the interface that connects it to the lathe.

INFO

Changing the service settings can damage the machine and create operator safety issues.
Therefore, these settings can only be accessed by an ADMIN.
Only an LNS (or certified) technician is authorized to change them.
Details of these settings are described separately in the 🕮*Maintenance Manual*.



7.7.9 INFORMATION PAGE

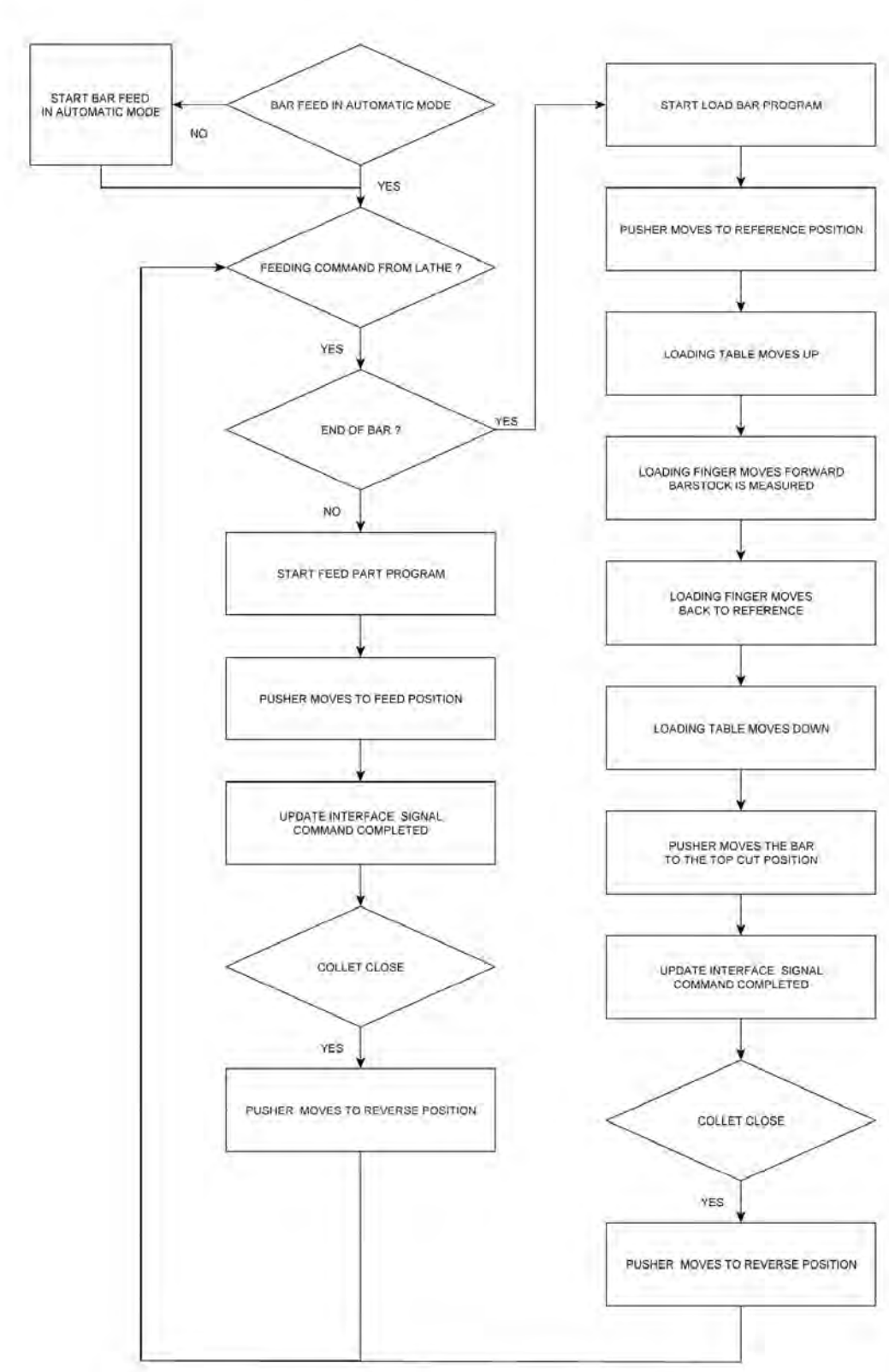
1. Press the INFO key (1) to display the options available on the information page.

INFO

To facilitate navigation, you can view the diagram designed for this purpose (→ INFORMATION on page 68).

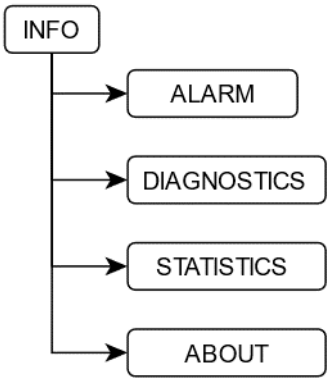
7.7.10 AUTOMATIC CYCLE

7.7.10.1 SEQUENCE DIAGRAM

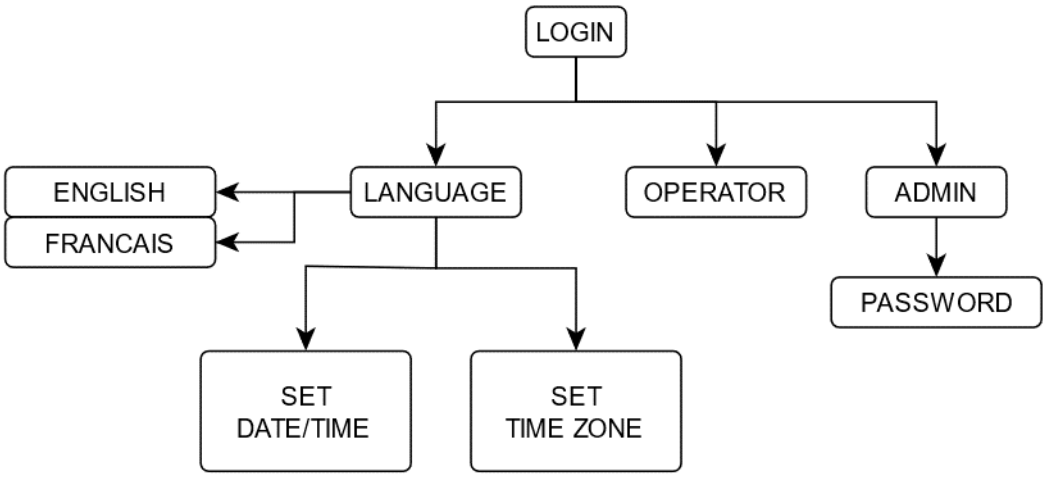


7.8 MENU STRUCTURE

7.8.1 INFORMATION

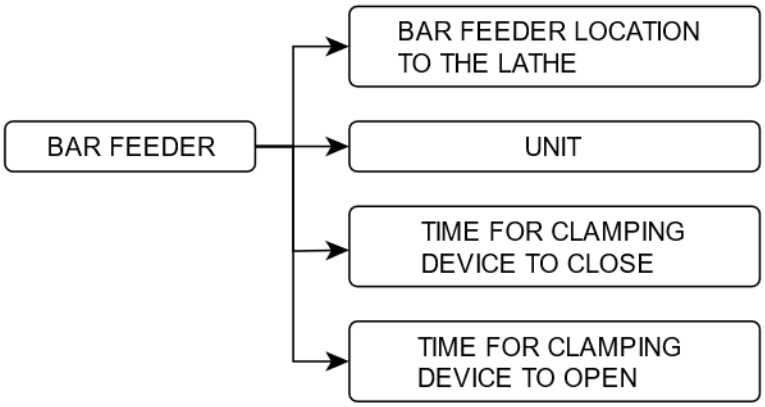


7.8.2 LOGIN

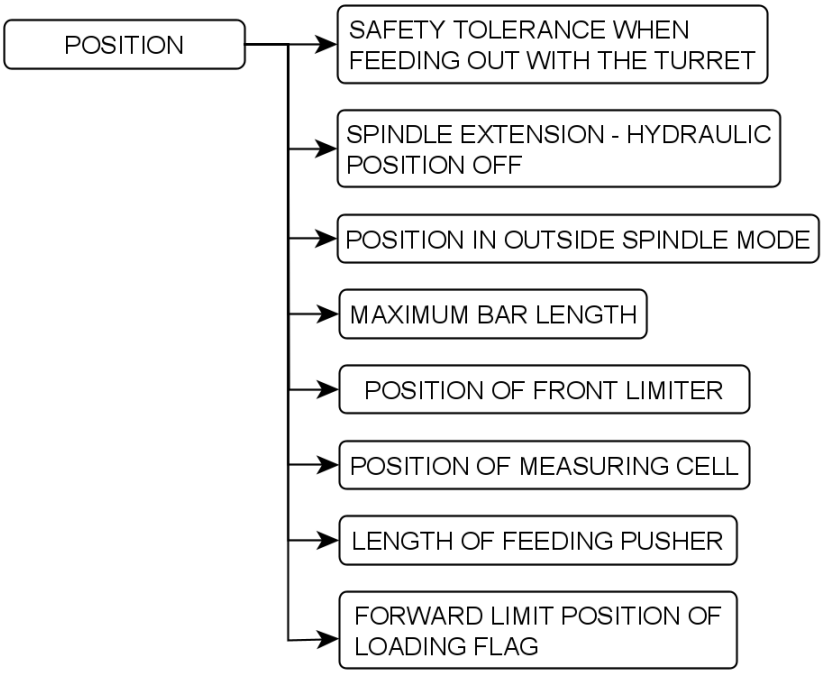


7.8.3 SERVICE

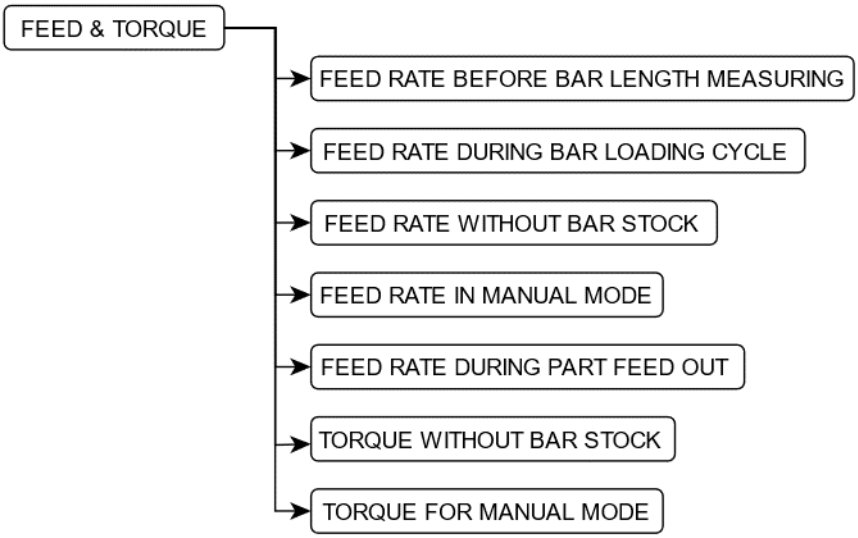
BAR FEEDER



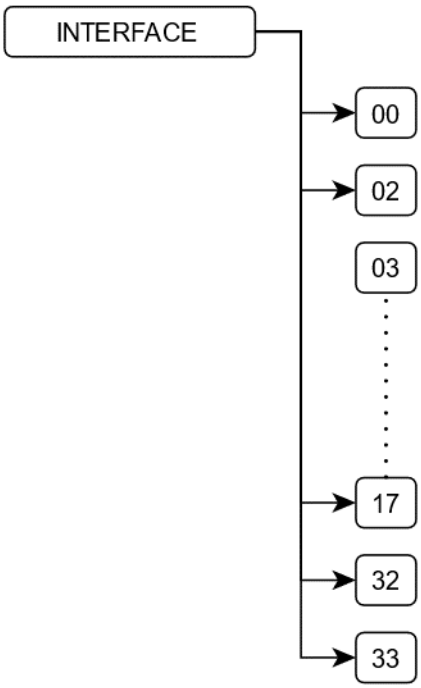
POSITION



FEED RATE/TORQUE



INTERFACE



8 MAINTENANCE

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

WARNING

Risk of injury due to moving parts!

Crushing hazard.

Stop the machine before carrying out any maintenance work.

8.1 INSPECTIONS

8.1.1 MAINTENANCE INTERVALS

Component	Maintenance operation	Every day	Every week	Every month	Every six months	Every year
Bar feeder	Clean the sensors.			X		
Bar feeder	Clean the bar feeder.					X
Bar feeder	Check the tension of the toothed belt.				X	
Emergency stop button	Check that the component is working properly.	X				

INFO

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

8.2 CLEANING

NOTICE

Risk of machine disruption from lack of cleanliness!
Clean the bar feeder regularly.

8.2.1 BAR FEEDER

To clean the bar feeder, use a soft cloth and a regular detergent. However, make sure that the rollers and parts made of synthetic materials do not come into contact with these corrosive 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.

CAUTION

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.

8.2.2 BARS

It is important to clean the bars, even briefly, before loading them onto the bar magazine. Excessive dirt can form a deposit at the base of the bar feeder, which can impede the functioning of the bar feeder.

9 DISPOSAL

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

IMPORTANT

Harmful to the environment!

Improper disposal of the machine may result in serious environmental damage.

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.

10 ALARMS

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.

10.1 PLC ALARMS

AL00 – NO PLC SOFTWARE!

Description

Only the PLC Boot software is installed.

Solutions

1. Load the correct PLC application software.

AL01 – SAFETY LINE OPEN!

Description

The emergency stop has been activated on the bar feeder and the lathe. This alarm is generated every time the emergency line is open.

Solutions

1. Check the emergency stop button condition on the bar feeder and on the lathe.
2. Check the wiring according to the wiring diagram.
3. Check the PLC connection.

AL02 – MAIN ACCESS COVER OPEN!

Description

The controller does not detect the entry (X11 – SQ11) of the safety sensor of the main access cover. This alarm is generated when the main access cover of the bar feeder is open, exposing moving mechanical parts

Solutions

1. Close the main access cover.
2. Check the sensor SQ11.

AL03 – PROTECTION GRID OPEN!

Description

The PLC is not detecting the safety detector input (I3 – SQ11) on the protection grid. This problem is generated when the grid is open, exposing automated mechanical parts.

Solutions

1. Close the protection grid.
2. Check the SQ11 switch.

AL04 – BAR FEEDER NOT IN WORKING POSITION!

Description
The controller does not detect the entry (X10 – SQ10) of the safety sensor on the retraction device. The problem arises when the device has not been put back in the working position.

Solutions

1. Check the bar feeder position.
2. Check the switch SQ10.

AL06 – AIR PRESSURE FAILURE!

Description
The controller does not detect the entry (X27 – SP1). The problem arises whenever the air pressure is lower than 3 bar or 45 psi.

Solutions

1. Check the air level (min. 3 bar, max. 6 bar).
2. Adjust the pressure switch SP1.
3. Replace the pressure switch SP1.

AL07 – PLC ERROR :{0}!

Description
The controller has generated an internal error.

Solutions

1. Press the STOP button.
2. Re-start the machine.

AL12 – FAILURE WHILE LOADING TABLE MOVING UP!

Description
A mechanical blockage is preventing the movable crosshead from moving up.

Solutions

1. Check that no mechanical obstruction is preventing the loading table from moving up.

AL13 – FAILURE SWITCH SQ1!

Description
The PLC is not detecting the input (I8 – SQ1).

Solutions

1. Check the switch SQ1.

AL14 – FAILURE SWITCH SQ2!

Description
The PLC is not detecting the input (I9 – SQ2).

Solutions

1. Check the switch SQ2 .

AL15 – FAILURE WHILE LOADING TABLE MOVING DOWN!

Description
A mechanical blockage is preventing the movable crosshead from moving down.

Solutions

1. Check that no mechanical obstruction is preventing the loading table from moving down

AL16 – FAILURE SWITCH SQ3!

Description
The controller does not detect the entry (X2 – SQ3).

Solutions

1. Check the sensor SQ3.

AL17 – FAILURE SWITCH SQ4 OR MOTOR M2!

Description
The controller does not detect the entry (X3 – SQ4).

Solutions

1. Check the sensor SQ4.
2. Check the motor M2.

AL18 – FAILURE GUIDING CHANNEL 1

Description
The guiding channel 1 can not open or close.

Solutions

1. Check the SQ17 sensor.
2. Check the cylinder.
3. Check the pneumatic valve YV06

AL19 – SWITCH SQ01 STILL ACTIVATED!

Description
The sensor SQ1 is still activated.

Solutions

1. Check the sensor SQ1.
2. Check the bar stock presence in front of the sensor.

AL21 – FAILURE SWITCH SQ5!

Description
The controller does not detect the entry (X4 – SQ5).

Solutions

1. Check the sensor SQ5.
2. Check the toothed belt tension.
3. Carry out homing.

AL22 – SIGNAL A2 INTERRUPTED!

Description
Signal A2 (automatic cycle) has been lost.

Solutions

1. Check the lathe <-> bar feeder connection.
2. Check the signal A2 wiring “lathe in automatic cycle”.
3. Check the part program in the lathe.

AL23 – LOADING TIME ELAPSED!

Description
The allotted time for reaching the position has elapsed.

Solutions

1. Remove the bar from the spindle.
2. Re-launch the cutting-off cycle.
3. Check the part settings.

AL24 – PART FEED OUT TIME ELAPSED!

Description
The allotted time for reaching the position has elapsed.

Solutions
Signal A1 missing

1. Check if there is a signal when the chuck is closed.
2. Check the wiring of the chuck signal.

AL25 – LATHE DID NOT START IN PRODUCTION CYCLE!

Description
The alarm “LATHE DID NOT START IN PRODUCTION CYCLE” is generated if the bar feeder does not receive the lathe chuck signal (X30 – A1) within a minute of having reached the top-cut position.

Solutions

1. Press the STOP button on the remote control to cancel the alarm.
2. Re-start the lathe and the bar feeder in an automatic cycle.

AL26 – CLAMPING DEVICE HAS CLOSED DURING PART FEED OUT!

Description
Signal A1 (lathe chuck) has been lost before the end of positioning

Solutions

1. Check the part program in the lathe.
2. Check the interface wiring.

AL29 – BAR STOCK NOT AGAINST CUT-OFF TOOL!

Description
The bar stock is not against the cut-off tool.

Solutions

1. Check the lathe clamping system.
2. Check the end of bar position.

AL35 – BAR STOCK MAGAZINE EMPTY!

Description
No bar has been detected in the bar feeder

Solutions

1. Check the presence of bars on the ramp.
2. Load new bars to continue with production.

AL36 – BAR STOCK DETECTED IN BAR FEED SIMULATION MODE!

Description
A bar has been detected in the bar feeder in simulation mode, which poses a danger.

Solutions

1. Check that there are no bars in the bar feeder.

AL37 – BAR STOCK POSITION CONTROL FAILURE!

Description
An obstacle is preventing the pusher from progressing.

Solutions

1. Look for a mechanical obstruction such as an incorrectly loaded bar, tools forgotten in the device, or an incompatibility between the dimensions of the pusher and the spindle liner.

AL38 – LATHE CHUCK OPENED DURING PRODUCTION CYCLE!

Description
Signal A1 (lathe chuck) has been detected at an inopportune moment.

Solutions

1. Check the part program in the lathe.

AL41 – SERVO COMMUNICATION FAILURE!

Description
There is a communication problem between the controller and the servo amplifier.

Solutions

1. Check the connection between the controller and the amplifier.
2. Check that the 24 V power supply is not fluctuating.

AL42 – ALARM SERVO AMPLIFIER!

Description
An alarm is generated on the servo amplifier in the electrical cabinet.

Solutions

1. Contact LNS or its local representative.

AL43 – AMPLIFIER BATTERY IS LOW!

Description
The servo amplifier battery is low.

Solutions

1. The state of charge of the amplifier battery is low. Replace the battery as soon as possible.
   Do not switch off the bar feeder until the battery has been replaced.

AL44 – SERVO DRIVE NOT READY!

Description
There is a communication problem between the controller and the servo amplifier.

Solutions

1. Check that the CN1B cable is correctly connected to the servo amplifier.
2. Check that the SOUND outlet on the controller is activated in manual or automatic mode.

AL45 – POSITIONING COULD NOT BE REACHED!

Description
An obstacle is preventing the pusher from progressing.

Solutions

1. Look for a mechanical obstruction such as an incorrectly loaded bar, tools forgotten in the device, or an incompatibility between the dimensions of the pusher and the spindle liner.

AL46 M-CODE PART BEGIN NOT IN SYNC!

Description
The parts counter and the number of chuck openings do not match.

Solutions

1. Check the part program in the lathe.
2. Check the number of chuck openings in the parts settings.

AL47 – SQ1 SENSOR ACTIVATED TOO SOON!

Description
The controller detects the entry (X1 – SQ1) before the safety distance has been reached when measuring the bar.

Solutions

1. Press the STOP button on the remote control to cancel the message.
2. Press the SERVICE button.
3. Press the POSITION button.
4. Search for the value corresponding to the text “MAX LENGTH OF BAR”.
5. This value cannot exceed that of the spindle length. Correct this value, if necessary.
6. Measure the bar to be loaded. This bar must not exceed the value entered above.

AL48 – A21 ABSENT!

Description
Loading or unloading cycle is interrupted due to the lathe signal A21 being missing.

Solutions

1. Switch on the signal A21 “lathe in function”.

AL49 – DEFAULT WITH TELESCOPIC PUSHER SYSTEM!

Description
The telescopic pusher system has caused an error.

Solutions

1. Contact LNS or its local representative.

AL50 – PART ID DOES NOT EXIST!

Description
An invalid part ID has been requested.

Solutions

1. Check the part ID. If necessary, create it before use.

AL51 – FAULT WITH LIFT SYSTEM!

Description
The bar lift is faulty.

Solutions

1. Check the sensors SQ7 and SQ8.
2. Check the lift motor.

AL52 – SERVO MOTOR REBOOT REQUESTED!

Description
The servo motor reboot has been requested.

Solutions

1. Contact LNS or its local representative.

AL53 – PUSHER SIGNAL MISSING!

Description
The pusher signal is missing.

Solutions

1. Contact LNS or its local representative.

AL55 – FEED PART TOO SHORT!

Description
The feed part is too short.

Solutions

1. Check the length of the bar.

AL56 – STOP AFTER A BAR!

Description
The operator has chosen to stop loading when the bar is changed.

AL57 – FILE STORAGE COMPLETE!

Description
The maximum number of stored parts has been reached.

Solutions

1. Delete parts in the library.

AL58 – INCORRECT PART CONFIGURATION!

Description
The part ID requested does not match the current settings.

Solutions

1. Check the diameter and shape of the bar.

AL59 – FILE READ ERROR!

Description
File cannot be read.

Solutions

1. Check the file (by loading the part). If it cannot be read, delete it and re-create it.

AL64 – PART LOADING FAULT!

Description
M-Code request setting deactivated.

Solutions

1. Check that the M-Code request is active.

AL66 – CUT OFF FEED FAULT!

Description
The values do not correspond to the specifications.

Solutions

1. Check if the value is greater than 0 mm, with a maximum of 50 mm.
2. Check if the value is shorter than the length of the remnant.
3. Check if the part ID in the library is within the range 9990 - 9999.

AL67 – ECONNECT COMMUNICATION FAULT!

Description
There is a communication problem between the lathe and the bar feeder.

Solutions

1. Please contact LNS.

AL80 – ECONNECT – NO RECIPE NAME!

Description
The recipe part name is empty in the eConnect register.

Solutions

1. Check the value loading register.

AL81 – ECONNECT – NO CORRESPONDING RECIPE!

Description
There is no corresponding recipe name in the part library.

Solutions

1. Check the recipe name in the eConnect register.
2. Check the library

AL82 – ECONNECT – DATABASE CONNECTION ERROR!

Description
Database System Error

Solutions

1. Contact LNS or its local representative.

AL83 – ECONNECT – RECIPE CHANGE FORBIDDEN!

Description
The recipe cannot be loaded for the following reason:

- The new recipe has a different diameter or shape as the current one.

- The machine is not in stop mode and in safe position.

Solutions

1. Change the diameter or the shape.
2. Put the barfeeder in stop mode and in safe position

AL84 – ECONNECT – NO COMMUNICATION WITH LATHE!

Description
The lathe Life-Bit is not functioning.

Solutions

1. Check communication between gateway and lathe controller.
2. Check lathe controller life bit configuration.

10.2 WARNINGS

WA00 – PLC INITIALISING!

Description
The PLC is initialising.

Solutions

1. Wait until the PLC is ready to work.

WA01 – UNDEFINED MACHINE TYPE!

Description
No machine type is selected and loaded in the HMI.

Solutions

1. Load the correct "Design" recipe.

WA02 – TABLE DIAMETER NOT CALIBRATED!

Description
The table diameter is not calibrated, no movement is possible.

Solutions

1. Contact LNS or its local representative.

WA03 – MAGAZINE EMPTY!

Description
No bar is detected in the magazine.

Solutions

1. Fill the magazine with new bars.

WA04 – SERVO REFERENCE NOT COMPLETED!

Description
The servo motor has lost his reference.

Solutions

1. Contact LNS or its local representative..

WA05 – SERVO BATTERY EMPTY!

Description
The servo battery is depleted.

Solutions

1. Replace the servo drive battery.

WA06 – PLC ERROR!

Description
PLC Device Communication Error

Solutions

1. Check the connection between the PLC and the servo drive.
2. Check the servo drive parameter.
3. Reset the servo drive parameter and set it again.

WA07 – DIAMETER CANNOT BE CHANGED!

Description
Request to change the diameter is impossible.

Solutions

1. Move the table down.
2. Press the stop button.

WA08 – FAILURE ON AIR PRESSURE!

Description
There is not enough air pressure for normal operation.

Solutions

1. Check the air pressure (min. 3 bar, max. 6 bar).
2. Set up the air pressure switch SP1.
3. Replace the air pressure switch SP1.

WA10 – BAR FEEDER IN SIMULATION MODE!

Description
In simulation mode: there is no signal sent to the lathe; the bar feeder cycles automatically without a bar.

Solutions

1. Go to the Service menu.
2. Go to the Mode page.
3. Select the Normal mode to start the production.

WA11 – LIFT EMPTY!

Description
There is no bar on the lift.

Solutions

1. Load anew bar onto lift.

WA12 – DOOR OF THE LATHE OPEN!

Description
The door of the lathe is open.

Solutions

1. Close the door of the lathe.
2. Check the interface

WA13 – LATHE/BAR FEEDER INTERFACE FORCED!

Description
Caution, the interface between the lathe and the bar feeder is manually forced.

Solutions

1. To disable the forcing, go to Information / Diagnostic / Interface page while in user admin.

WA32 – PLC COMMUNICATION LOST!

Description
No communication between the HMI and the PLC.

Solutions

1. Check the PLC status.
2. Check the PLC connection.
3. Check the HMI connection.
4. Check the wiring according to the electrical drawings.

WA33 – DATE/TIME NOT SET!

Description
Invalid date: date and time not set / the HMI battery is empty.

Solutions

1. Set the date and time in the “user” menu.
2. Change the HMI battery

WA37 – PLC IN STOP MODE!

Description
The PLC is in stop mode. No operation is possible.

Solutions

1. Set the PLC switch (RESET/STOP/RUN) in the RUN position.

WA38 – INCOMPATIBLE PLC/HMI SOFTWARE VERSIONS!

Description
The software version between the HMI and the PLC are not the same and not compatible.

Solutions

1. Update the PLC and/or HMI software.

WA39 – PLC/HMI CONFIGURATION MISMATCH (S/N)!

Description
The HMI has probably been connected to the wrong machine PLC.

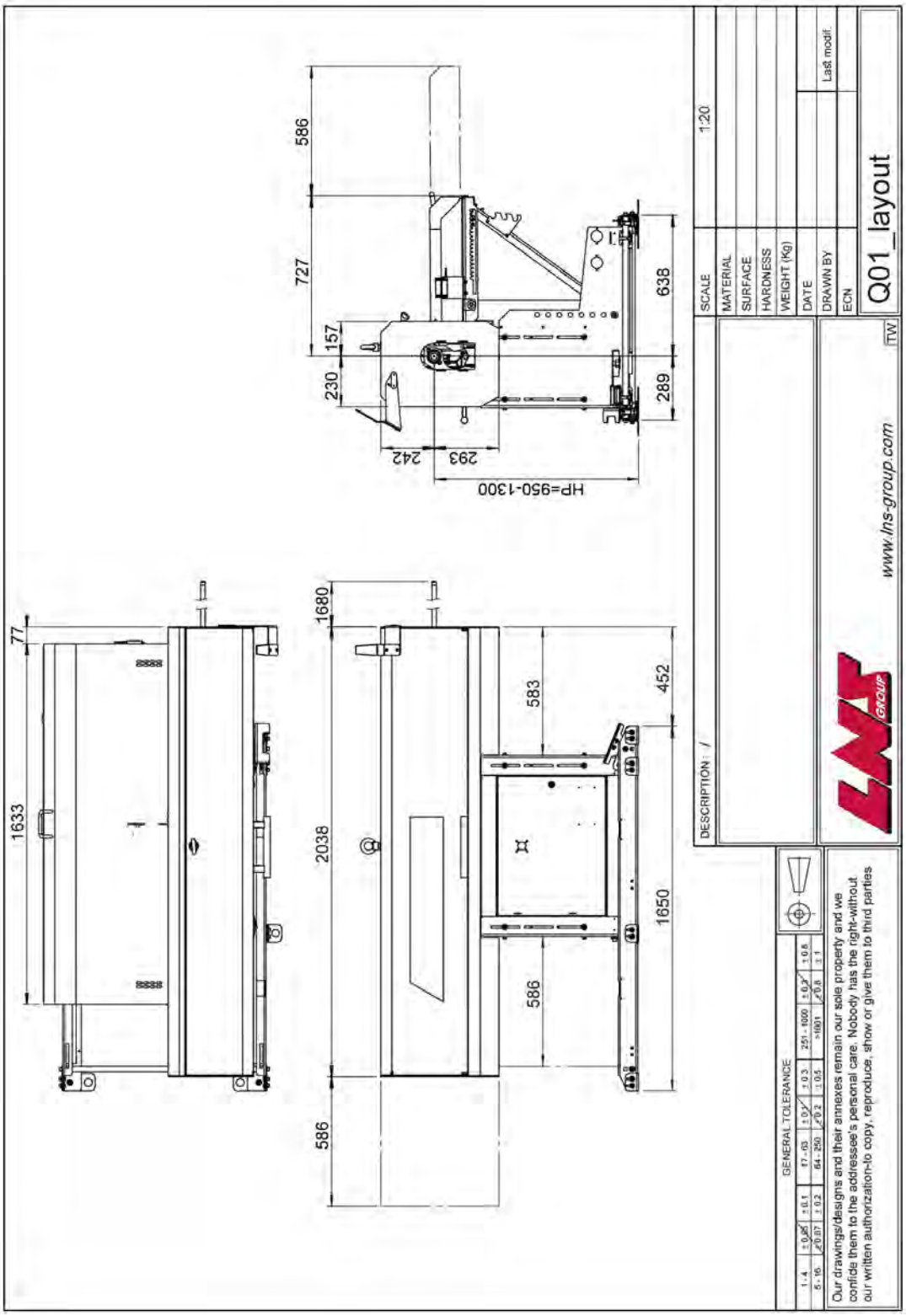
Solutions

1. Change the HMI hardware.
2. Restore the correct configuration (Service/Backup/RestoreAll)

11 APPENDICES

11.1 DIMENSIONAL DRAWINGS

11.1.1 1.6 M



11.2 GLOSSARY

Bearing	Machine component in which a shaft or other elements turn.
Collet	Secures the bar stock and connects it to the pusher.
Drive	Transforms electrical energy into mechanical energy.
Front rest	The last guide element in contact with the bar stock before the entrance of the lathe spindle. Stabilizes the bar movement.
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.
Pusher	Controls the movement of the bar stock inside the bar feeder and lathe spindle.
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).
Qualified personnel	Persons with technical knowledge or experience sufficient to enable them to avoid the dangers posed by electricity (engineers and technicians).

11.3 SPARE PARTS CATALOG

A spare parts catalog is available for this bar feeder. If the catalog is not among the technical documents provided with the machine, please contact LNS or its local representative for more information.

11.4 AFTER-SALES SERVICE

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11.5 EC DECLARATION OF CONFORMITY

EC DECLARATION OF CONFORMITY

According to Annex II 1 A of the Directive 2006/42/EC

We declare that the following machinery complies with the next directives:

- Machinery Directive: 2006/42/EC
- Low Voltage Directive: 2014/35/EU
- EMC Directive: 2014/30/EU

Manufacturer:	**LNS Taiwan Co., Ltd** **No. 133, Ln. 418, Sec. 3, Xinan Rd.,** **Wuri Dist., Taichung City 41469,** **Taiwan (R.O.C.**
Representative:	**LNS Sàrl** **Route de Frinvillier** **2534 Orvin** **Switzerland**
Compiling relevant technical information according to Annex VII Part A, MD 2006/42/EC:	**Plaseco** **Kurt De Pauw** **Route de Payerne 11** **CH-1752 Villars-sur-Glâne** **Switzerland**
Description of the machine:	Bar feeder
Type:	QLS 80+
Serial number:	

The machinery meets the following essential requirements applicable in accordance with Directive 2006/42/EC: 1.1.2, 1.1.3, 1.1.5, 1.1.6, 1.2.1, 1.2.2, 1.2.3, 1.2.4, 1.2.5, 1.2.6, 1.3.1, 1.3.2, 1.3.3, 1.3.4, 1.3.5, 1.3.6, 1.3.7, 1.3.8, 1.3.9, 1.4.1, 1.4.2, 1.4.3, 1.5.1, 1.5.3, 1.5.4, 1.5.8, 1.5.9, 1.6.1, 1.6.2, 1.6.3, 1.7.1, 1.7.2, 1.7.3, 1.7.4.

The following transposed harmonized standards have been used:

Concerning the Machinery Directive:
EN ISO 12100:2010; EN ISO 13855: 2010; EN ISO 13857:2019; EN ISO 14120:2015; EN ISO 13849-1:2015; EN ISO 13850:2015; EN ISO 14118:2018; EN ISO 14119:2013; EN ISO 4414: 2010; EN 60204-1: 2018

Concerning the Low Voltage Directive:
EN 61439-1:2019; EN 61439-2:2020; EN 61439-3:2019

Concerning the EMC Directive:
EN 61000-6-4:2020; EN 61000-6-2:2019

Place and date
Orvin, January 5th, 2022

(Seal and signature)
Katja Hiltbrunner
Export Manager