



# TRYTON 112+ BARFEED

## Operations Manual



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



**IMPORTANT**  
**READ CAREFULLY BEFORE USE**  
**AND KEEP FOR FUTURE REFERENCE.**

Published: 11/2022

© LNS Sàrl 2022 – 9.112-01.01.EN – Original instructions – Printed in Switzerland



---

## TABLE OF CONTENTS

|          |  |           |
|----------|--|-----------|
| <b>1</b> | <b>GENERAL INFORMATION</b>                         | <b>8</b>  |
| 1.1      | ABOUT THESE OPERATING INSTRUCTIONS                 | 8         |
| 1.2      | OTHER APPLICABLE DOCUMENTS                         | 8         |
| 1.3      | DAMAGE DURING TRANSPORT                            | 8         |
| 1.4      | TARGET AUDIENCES                                   | 8         |
| 1.5      | COPYRIGHT  | 8         |
| 1.6      | NAMEPLATE  | 9         |
| <b>2</b> | <b>SAFETY INFORMATION</b>                          | <b>10</b> |
| 2.1      | PROPER USE   | 10        |
| 2.2      | LIMITATION OF LIABILITY                            | 10        |
| 2.3      | SYMBOLS AND WARNING LABELS                         | 11        |
| 2.4      | TERMS AND STANDARD SYMBOLS                         | 12        |
| 2.5      | PERSONNEL  | 13        |
| 2.6      | BASIC SAFETY REGULATIONS                           | 13        |
| 2.6.1    | MAINTENANCE OBLIGATION                             | 13        |
| 2.6.2    | MODIFICATIONS                                      | 13        |
| 2.6.3    | SAFETY DEVICES                                     | 13        |
| 2.7      | SAFETY REQUIREMENTS                                | 14        |
| 2.7.1    | OWNER'S OBLIGATIONS                                | 14        |
| 2.7.2    | REQUIREMENTS REGARDING PERSONNEL                   | 14        |
| 2.8      | SPECIFIC RISKS                                     | 15        |
| 2.8.1    | ELECTRICAL HAZARDS                                 | 15        |
| 2.8.2    | MECHANICAL HAZARDS                                 | 15        |
| 2.8.3    | RISK OF TRIPPING AND FALLING                       | 16        |
| 2.8.4    | RISK OF DAMAGE                                     | 16        |
| 2.9      | DANGER ZONES                                       | 17        |
| 2.10     | SAFETY DEVICES                                     | 18        |
| 2.11     | SAFETY SIGNS                                       | 19        |
| 2.12     | SAFETY ANALYSIS CONCERNING APPROPRIATE INTEGRATION | 20        |
| <b>3</b> | <b>MACHINE DESCRIPTION</b>                         | <b>21</b> |
| 3.1      | OVERVIEW OF MACHINE COMPONENTS                     | 21        |
| 3.2      | LOADING AND GUIDING SYSTEM                         | 22        |
| 3.2.1    | LAYOUT OF THE ELEMENTS                             | 22        |
| 3.3      | FEEDING SYSTEM                                     | 23        |
| 3.3.1    | LAYOUT OF THE ELEMENTS                             | 23        |
| 3.3.2    | PUSHER   | 23        |
| 3.3.3    | CONNECTOR  | 25        |
| 3.4      | MOBILE VICE  | 26        |
| 3.4.1    | LAYOUT OF THE ELEMENTS                             | 26        |
| 3.5      | LATERAL PIVOT RETRACTION SYSTEM (OPTIONAL)         | 27        |
| 3.5.1    | LAYOUT OF THE ELEMENTS                             | 27        |
| 3.6      | ELECTRICAL EQUIPMENT                               | 28        |
| 3.6.1    | LAYOUT OF THE ELEMENTS                             | 28        |
| 3.6.2    | STATIONARY CONTROL                                 | 29        |
| 3.7      | PNEUMATIC EQUIPMENT                                | 30        |
| 3.7.1    | LAYOUT OF THE ELEMENTS                             | 30        |
| 3.7.2    | AIR TREATMENT UNIT                                 | 31        |
| 3.8      | HYDRAULIC EQUIPMENT                                | 32        |
| 3.8.1    | LAYOUT OF THE ELEMENTS                             | 32        |
| 3.8.2    | HYDRAULIC BLOCK                                    | 33        |
| <b>4</b> | <b>TECHNICAL DATA</b>                              | <b>34</b> |
| 4.1      | TRYTON 112+ FOR CAM TYPE LATHES                    | 34        |
| 4.2      | TRYTON 112+ FOR CNC TYPE LATHES                    | 35        |
| 4.3      | BARREL - LOADING CAPACITY                          | 36        |

---

|          |   |           |
|----------|---|-----------|
| <b>5</b> | <b>SYSTEM START-UP</b>                                  | <b>37</b> |
| 5.1      | TRANSPORT   | 37        |
| 5.2      | UNPACKING   | 37        |
| 5.3      | SCOPE OF DELIVERY                                       | 37        |
| 5.4      | LIFTING   | 38        |
| 5.5      | MOUNTING  | 40        |
| 5.5.1    | ALIGNMENT   | 40        |
| 5.6      | ANCHORING   | 42        |
| 5.7      | SETTING UP THE AIR INTAKE FOR THE PNEUMATIC SYSTEM      | 43        |
| 5.7.1    | CONNECTING THE COMPRESSED AIR                           | 43        |
| 5.7.2    | SETTING THE AIR PRESSURE                                | 44        |
| 5.8      | CONNECTION  | 44        |
| 5.9      | FACTORS AFFECTING PERFORMANCE                           | 45        |
| 5.9.1    | INSTALLATION  | 45        |
| 5.9.2    | CLEARANCE BETWEEN THE GUIDING CHANNEL AND THE BAR       | 45        |
| 5.9.3    | CLEARANCE BETWEEN THE SPINDLE AND THE BAR               | 45        |
| 5.9.4    | MATERIAL  | 45        |
| <b>6</b> | <b>ADJUSTMENTS BEFORE OPERATION</b>                     | <b>46</b> |
| 6.1      | BAR FEEDER ADJUSTMENTS                                  | 46        |
| 6.1.1    | LOADING THE BARREL                                      | 46        |
| 6.1.2    | CHANGING THE COLLET                                     | 48        |
| 6.1.3    | ADJUSTING THE MOBILE VICE                               | 49        |
| 6.1.4    | PIVOTING THE BAR FEEDER (OPTIONAL)                      | 51        |
| 6.1.5    | ADJUSTING THE FEED PRESSURE AND SPEED                   | 52        |
| 6.2      | LATHE ADJUSTMENTS                                       | 53        |
| 6.2.1    | CLAMPING DEVICE   | 53        |
| 6.3      | BAR FEEDER/LATHE CONNECTION                             | 54        |
| 6.3.1    | GUIDANCE TUBE   | 54        |
| 6.4      | TOP-CUT POSITION  | 55        |
| 6.4.1    | TOP-CUT POSITION FOR CNC-TYPE LATHES                    | 55        |
| 6.4.2    | TOP-CUT POSITION WITH TIMER LOADING FOR CAM-TYPE LATHES | 59        |
| 6.5      | END OF BAR  | 62        |
| 6.5.1    | DESCRIPTION   | 62        |
| 6.5.2    | ADJUSTMENT  | 63        |
| <b>7</b> | <b>OPERATION</b>  | <b>64</b> |
| 7.1      | SWITCHING ON/OFF  | 64        |
| 7.2      | REMOTE CONTROL  | 65        |
| 7.3      | DISPLAY   | 66        |
| 7.4      | ICONS   | 67        |
| 7.5      | KEYS  | 68        |
| 7.6      | EMERGENCY STOP  | 69        |
| 7.7      | OPERATION SETTINGS                                      | 70        |
| 7.7.1    | ACCESS  | 70        |
| 7.7.2    | PART  | 72        |
| 7.7.3    | POSITION  | 73        |
| 7.7.4    | CAMSHAFT  | 75        |
| 7.7.5    | MAINTENANCE   | 75        |
| 7.7.6    | LANGUAGE  | 77        |
| 7.7.7    | PART RECIPES  | 77        |
| 7.7.8    | SERVICE   | 80        |
| 7.7.9    | INFORMATION PAGE  | 81        |
| 7.7.10   | AUTOMATIC CYCLE   | 82        |
| 7.8      | MENU STRUCTURE  | 85        |
| 7.8.1    | INFORMATION   | 85        |
| 7.8.2    | LOGIN   | 85        |
| <b>8</b> | <b>MAINTENANCE</b>                                      | <b>86</b> |

---

|           |                                       |           |
|-----------|---------------------------------------|-----------|
| 8.1       | INSPECTIONS .....                     | 86        |
| 8.1.1     | INTERVALS .....                       | 86        |
| 8.2       | HYDRAULIC TANK MAINTENANCE .....      | 87        |
| 8.3       | CLEANING .....                        | 89        |
| 8.3.1     | BAR FEEDER .....                      | 89        |
| 8.3.2     | BARS .....                            | 89        |
| 8.4       | BATTERIES .....                       | 90        |
| <b>9</b>  | <b>DISPOSAL .....</b>                 | <b>91</b> |
| <b>10</b> | <b>ALARMS .....</b>                   | <b>92</b> |
| 10.1      | PLC ALARMS .....                      | 92        |
| <b>11</b> | <b>APPENDICES .....</b>               | <b>99</b> |
| 11.1      | DIMENSIONAL DRAWINGS .....            | 99        |
| 11.1.1    | TRYTON 112+ FOR CNC TYPE LATHES ..... | 99        |
| 11.1.2    | TRYTON 112+ FOR CAM TYPE LATHES ..... | 100       |
| 11.2      | GLOSSARY .....                        | 101       |
| 11.3      | SPARE PARTS CATALOG .....             | 102       |
| 11.4      | AFTER-SALES SERVICE .....             | 103       |
| 11.5      | EC DECLARATION OF CONFORMITY .....    | 104       |

# 1 GENERAL INFORMATION

## 1.1 ABOUT THESE OPERATING INSTRUCTIONS

These instructions describe the intended use of the bar feeder :

- They are part of the machine
- They apply to all 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 instructions from their respective manufacturers.

The bar feeder complies with the European standards indicated in the declaration of conformity or 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 operators, 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.

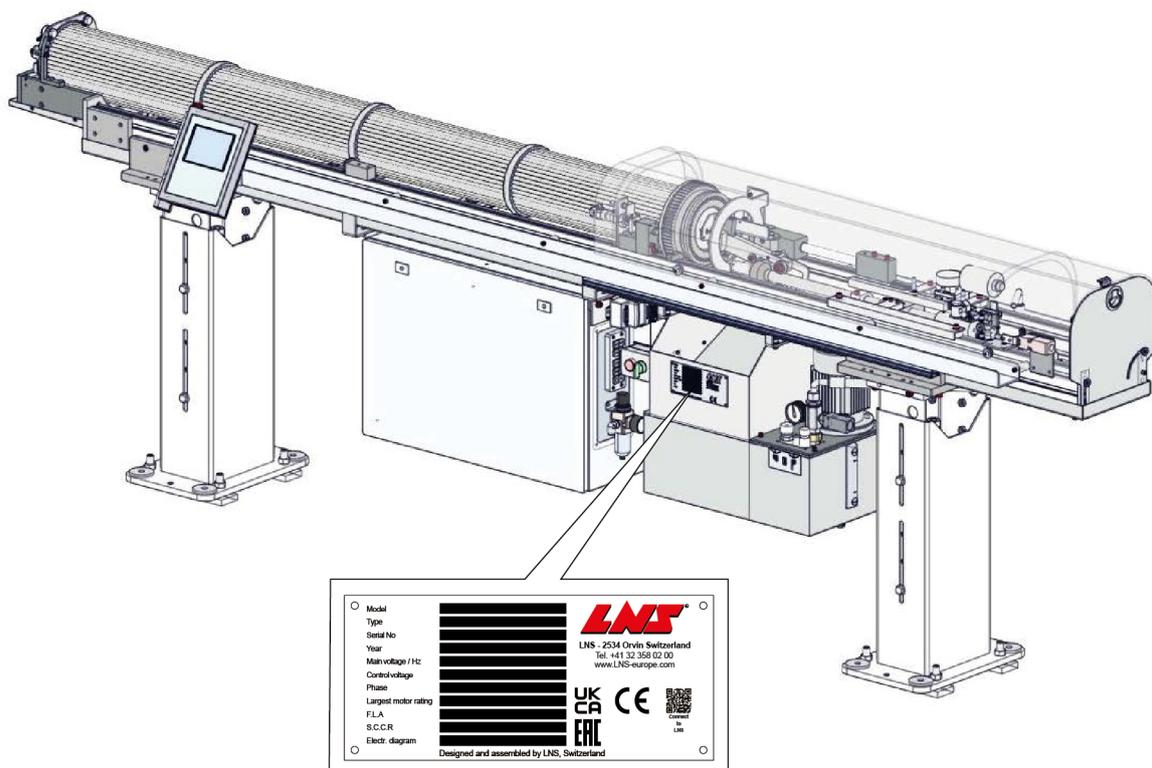
## 1.5 COPYRIGHT

Reproduction, recording or transmission of this document, in whole or in part, in any form or by any means whatsoever, whether mechanical, photographic, audio or other, is prohibited without the express written authorization of LNS.

The names of the products indicated in this document are registered trademarks.

## 1.6 NAMEPLATE

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



## **2 SAFETY INFORMATION**

### **2.1 PROPER USE**

The Tryton 112+ is an automatic bar feeder for long bar stocks designed for fixed and sliding 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 Tryton 112+ 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 view from the operator's position facing the control panel.

---

## 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 bar feeder, 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.

### 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



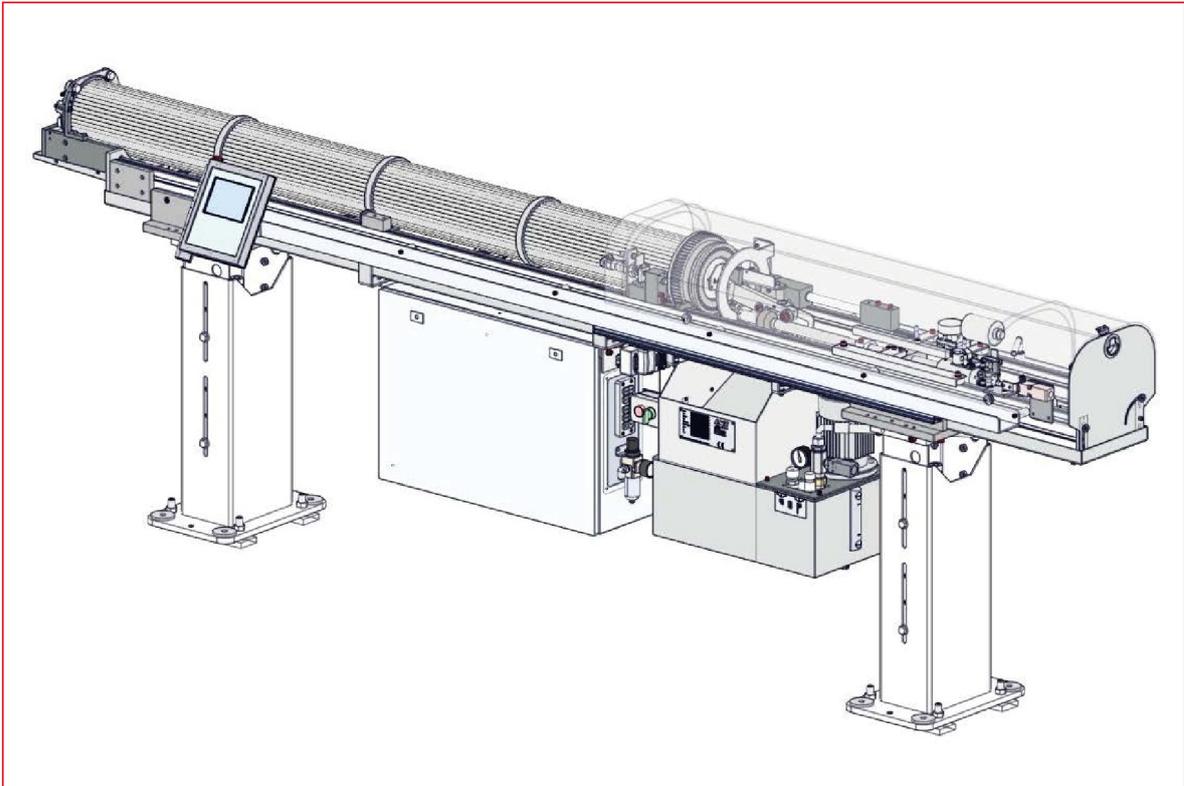
**Risk of damage to the lathe or the bar feeder!**

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:

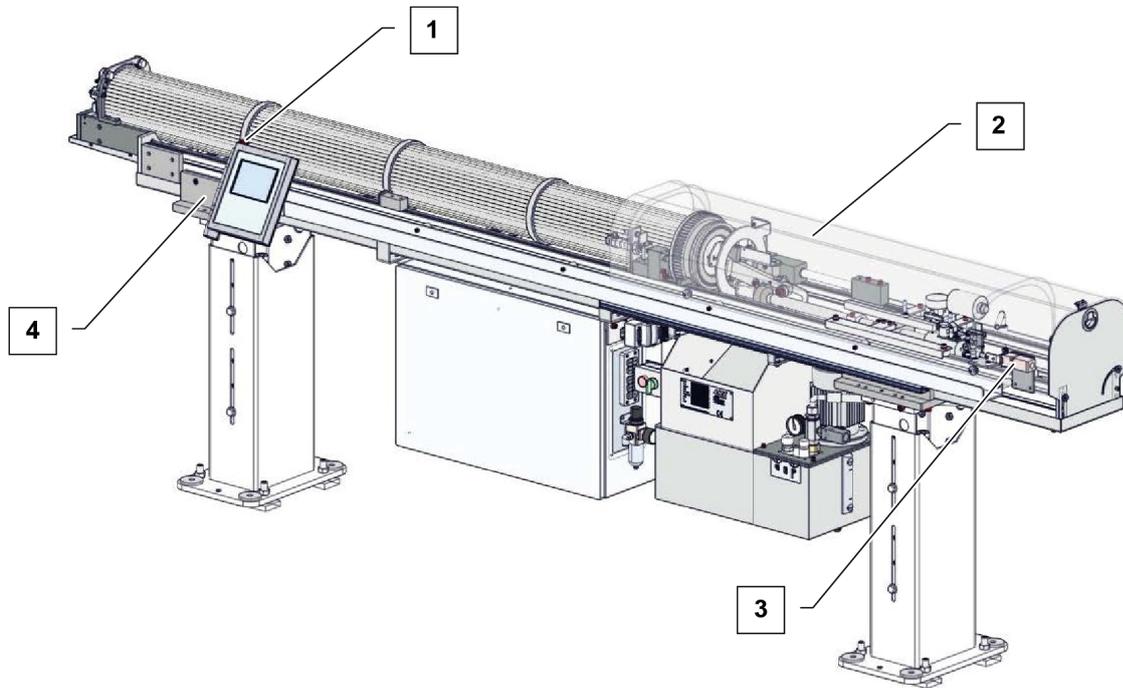
- Do not reach into the bar feeder when machine components are moving.
- Only qualified personnel can operate the bar feeder.

## 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.

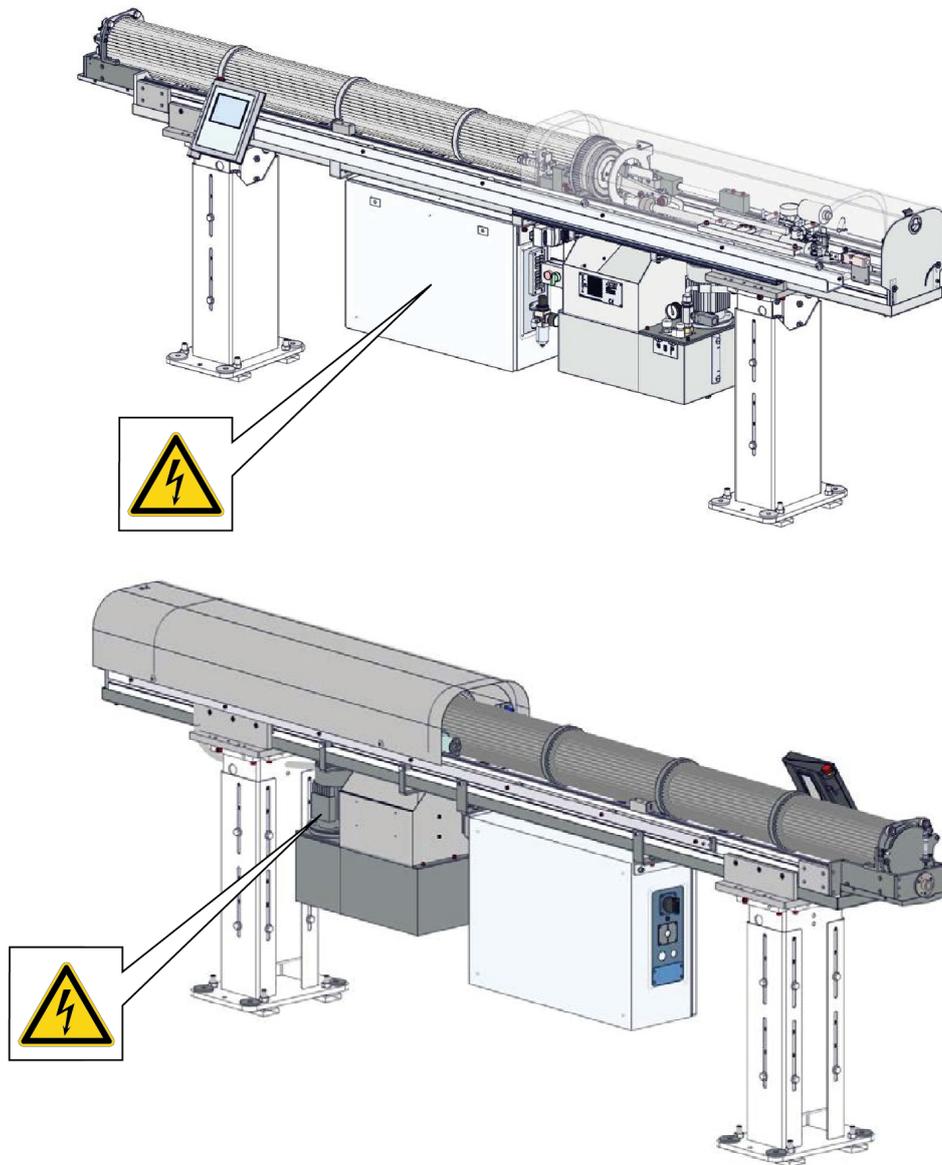


| Designation | Description                     |
|-------------|---------------------------------|
| 1           | Emergency stop button           |
| 2           | Main access cover               |
| 3           | Main access cover safety switch |
| 4           | Loading arm safety switch       |

## 2.11 SAFETY SIGNS

Safety signs mark hazard points on the bar feeder.

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



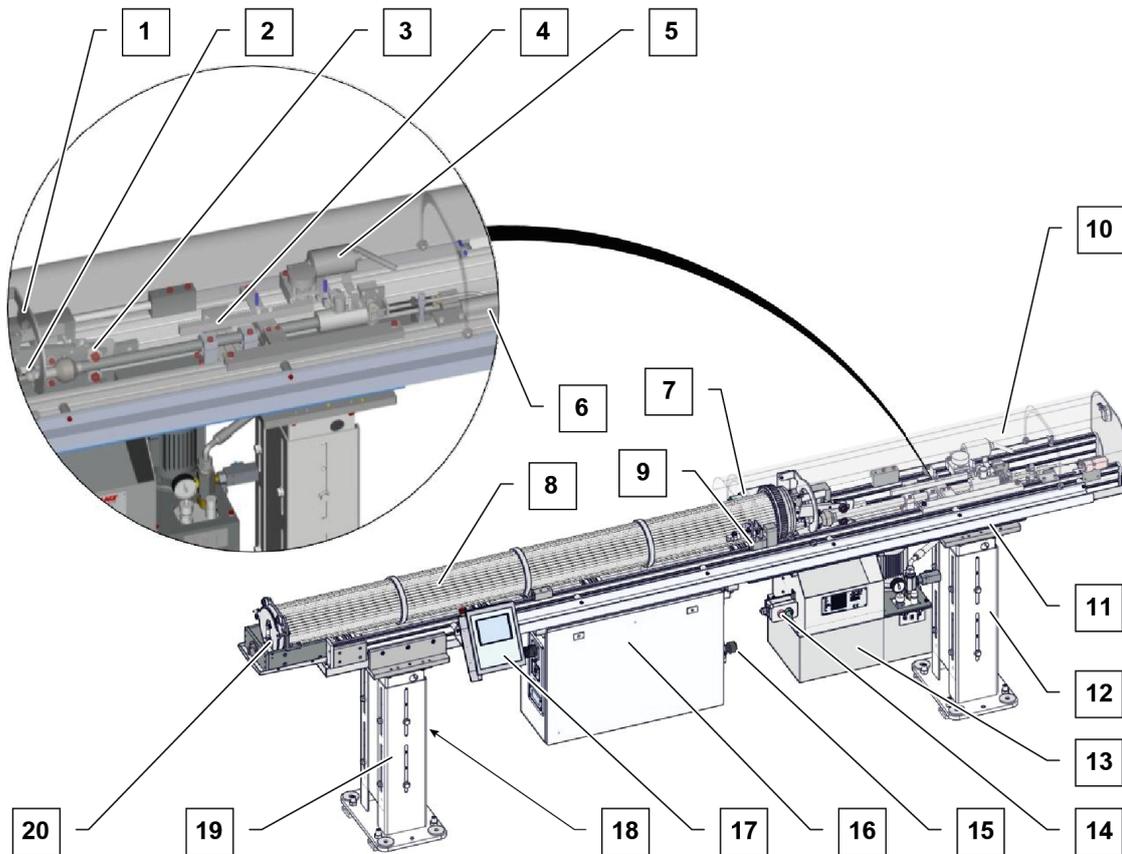
## 2.12 SAFETY ANALYSIS CONCERNING APPROPRIATE INTEGRATION

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

### 3.1 OVERVIEW OF MACHINE COMPONENTS



| Designation | Description                    |
|-------------|--------------------------------|
| 1           | Rear limiter                   |
| 2           | Material presence check        |
| 3           | Mobile vise                    |
| 4           | Connector / Feeding pusher     |
| 5           | Connector feed motor           |
| 6           | Cable feed motor               |
| 7           | Indexing motor                 |
| 8           | Barrel                         |
| 9           | Barrel lock                    |
| 10          | Main access cover              |
| 11          | Material support               |
| 12          | Rear stand                     |
| 13          | Hydraulic tank                 |
| 14          | Stationary control switch      |
| 15          | Air filtering unit             |
| 16          | Pneumatic / Electrical cabinet |
| 17          | Remote control                 |

| Designation | Description                             |
|-------------|---|
| 18          | Pivot retraction support arm (optional) |
| 19          | Front stand                             |
| 20          | Front limiter                           |

### 3.2 LOADING AND GUIDING SYSTEM

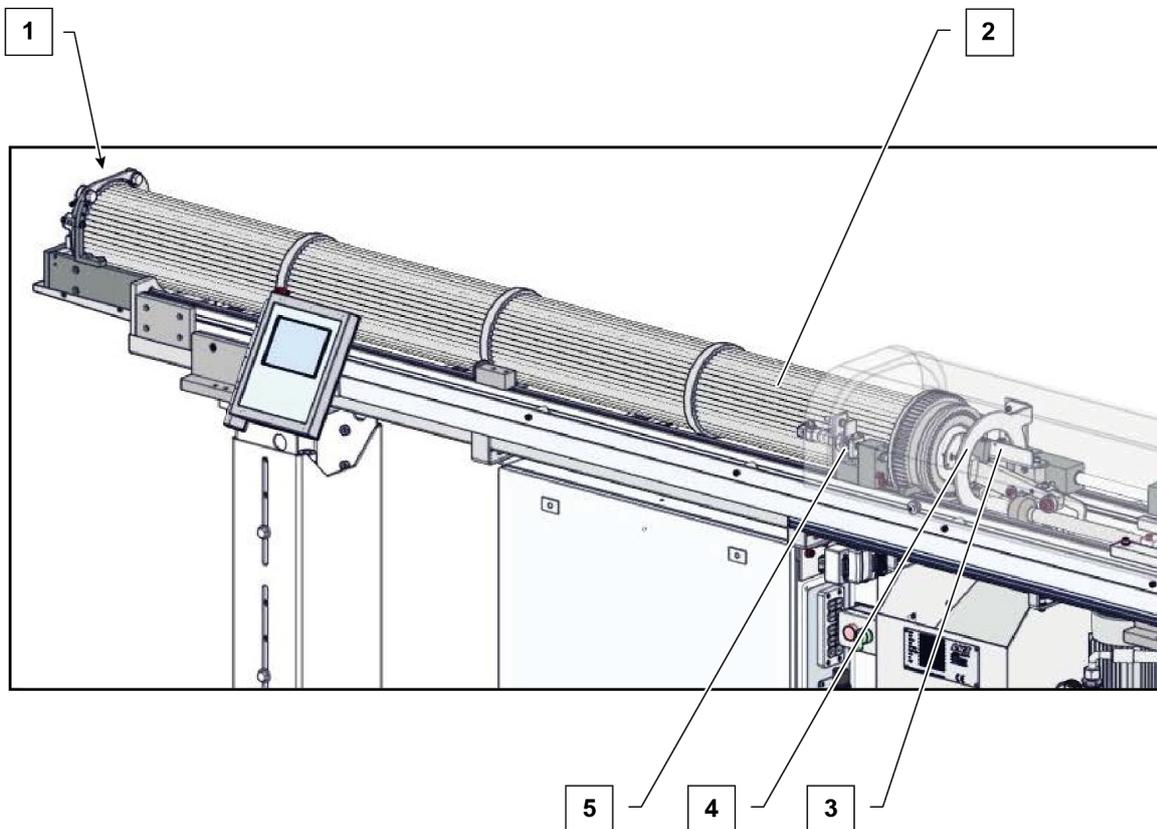
The bar feeder loading system consists of a barrel that stores the bars but also serves as a guiding channel during part feeding. Bars are manually loaded into the barrel by the operator.

Standard barrels house bars of the same diameter. Hybrid barrels can house bars of two different diameters.

The amount of time the bar feeder can run unattended depends directly on the frequency with which the operator loads the barrel. Loading can be done during the production cycle.

For instructions on how to load the barrel, see (→ [LOADING THE BARREL](#) on page 46)

#### 3.2.1 LAYOUT OF THE ELEMENTS



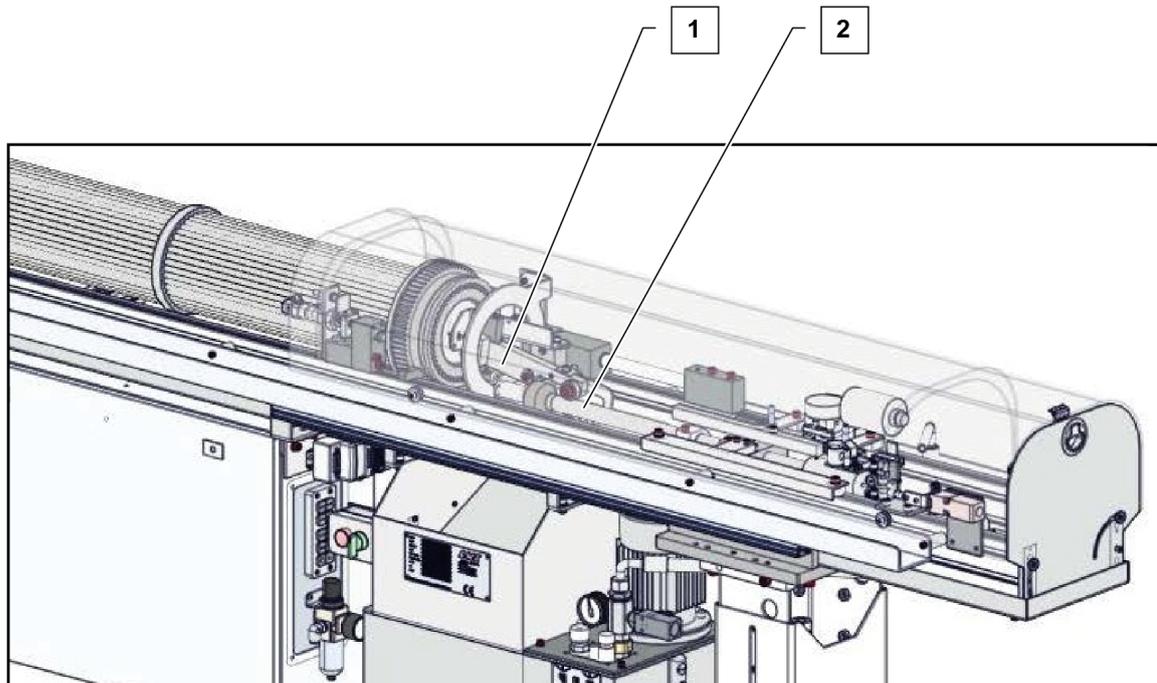
| Designation | Description   |
|-------------|---------------|
| 1           | Front limiter |
| 2           | Barrel        |
| 3           | Mobile vice   |
| 4           | Rear limiter  |
| 5           | Barrel lock   |

### 3.3 FEEDING SYSTEM

The feeding system consists of the pusher assembly powered by the hydraulic system, as well as the mobile vice powered by an electric motor. The feeding system moves the bar forward and backward to achieve the following functions:

- Bar insertion into the collet
- Bar feeding and moving
- Remnant retraction

#### 3.3.1 LAYOUT OF THE ELEMENTS



| Designation | Description                            |
|-------------|--|
| 1           | Mobile vice                            |
| 2           | Connector (houses the pusher assembly) |

#### 3.3.2 PUSHER

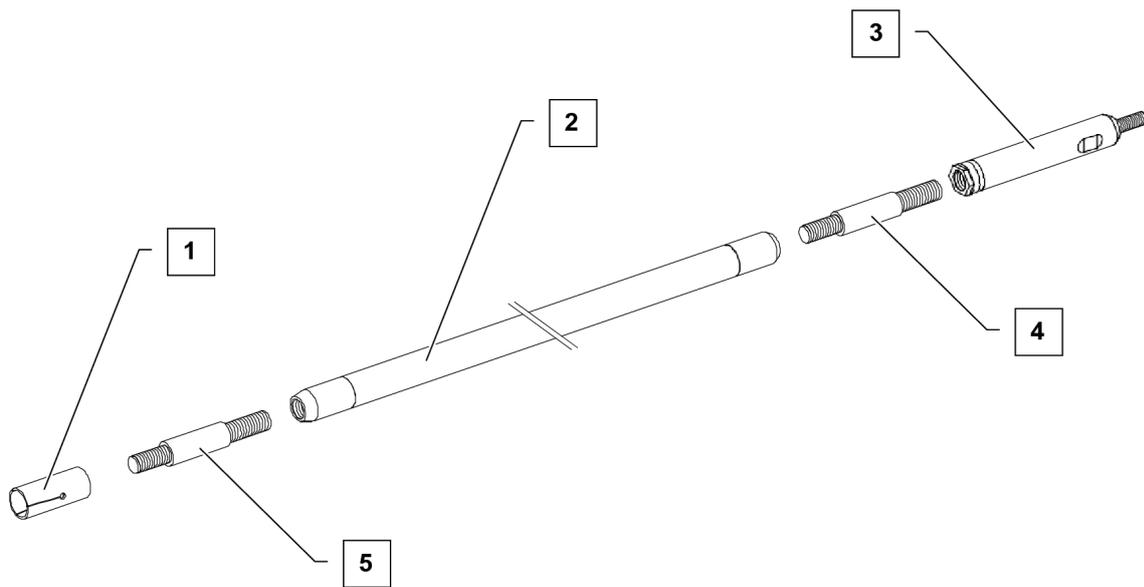
The pusher, fitted with a collet on its front end, grasps and pushes the bar through the barrel to the lathe.

To the rear of the pusher, a cable joined to a motor brings the pusher back to the loading position.

Two rotating ferrules, one at each end of the pusher, ensure the free rotation of the bar. It is important to regularly check that the rotating ferrules are working properly. If one of them should seize up, it is necessary to replace it as soon as possible.

For information on the available pusher assemblies and collets, please contact LNS or its local representative.

### 3.3.2.1 LAYOUT OF THE ELEMENTS



| Designation | Description            |
|-------------|------------------------|
| 1           | Collet                 |
| 2           | Body of the pusher     |
| 3           | Piston                 |
| 4           | Rear rotating ferrule  |
| 5           | Front rotating ferrule |

#### 3.3.2.2 COLLET

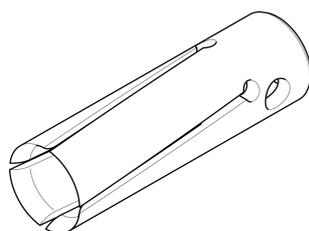
The collet connects the bar and the pusher. When the lathe spindle is rotating, the bar is secured by the lathe chuck and the collet.

The pusher is delivered assembled and the various components that make them up are glued together. Only the collet is interchangeable according to the diameter of bar. For instructions on how to change the collet, see (→ CHANGING THE COLLET on page 48)

#### Standard type

The standard type collet is a cylinder with flexible jaws that clamp the tip of the bar. Each collet matches a specific bar dimension only.

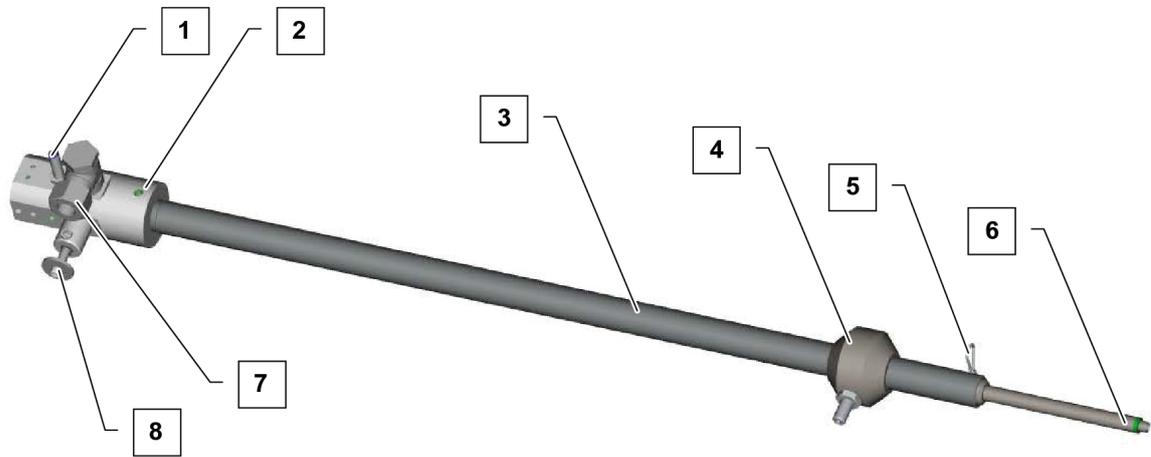
To ensure that the bar is secured well during machining, the collet must be selected according to the bar dimension.



### 3.3.3 CONNECTOR

When it is not in the barrel (for example when indexing the barrel), the pusher is lodged in the connector. The connector block, situated to the rear of the connector, is fed by the hydraulic pump and feeds hydraulic fluid to the guidance tube as well as advances the pusher. During remnant extraction, the pusher is locked in the connector block.

#### 3.3.3.1 LAYOUT OF THE ELEMENTS



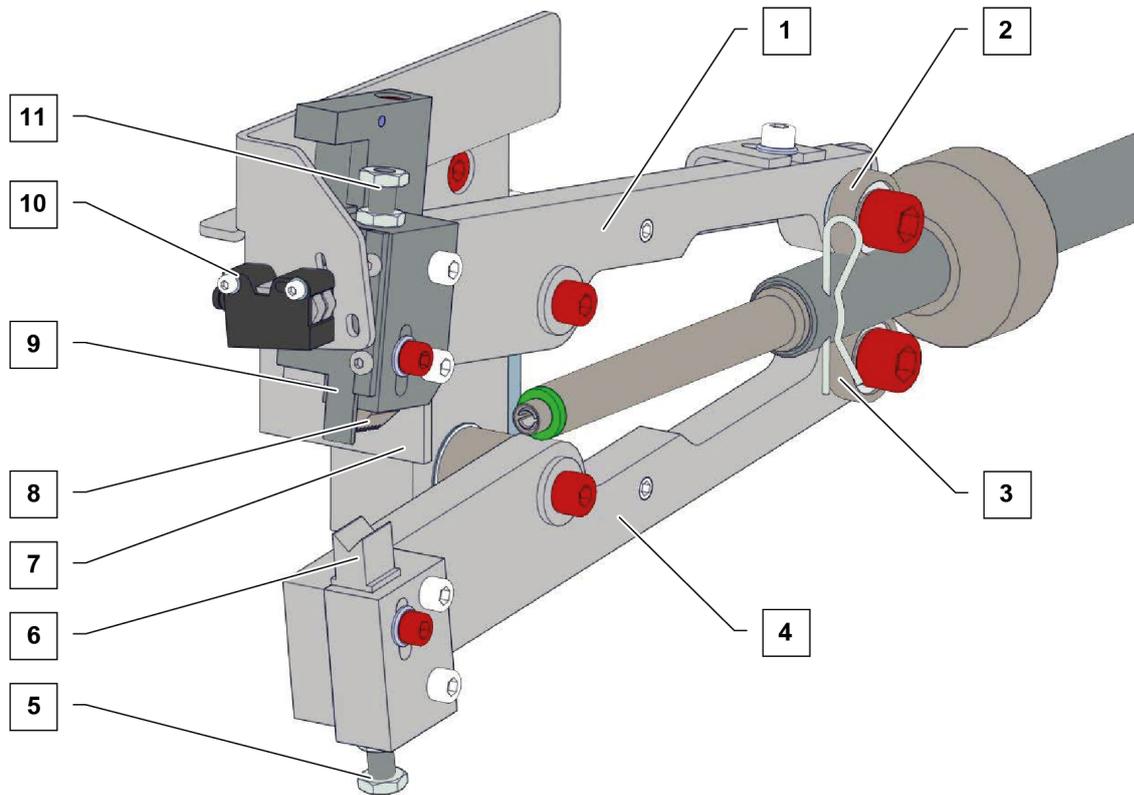
| Designation | Description                        |
|-------------|------------------------------------|
| 1           | Proximity detector for positioning |
| 2           | Connector block                    |
| 3           | Connector                          |
| 4           | Cam                                |
| 5           | Cotter pin                         |
| 6           | Nozzle                             |
| 7           | Hydraulic fluid feed               |
| 8           | Locking screw                      |

### 3.4 MOBILE VICE

When loading the bar into the feeding system, the mobile vice serves to hold the bar while it is inserted into the pusher collet. Once the bar feeding is finished, the pusher retracts and the movable vice extracts the remnant from the pusher collet.

For instructions on adjusting the mobile vice, see (→ ADJUSTING THE MOBILE VICE on page 49)

#### 3.4.1 LAYOUT OF THE ELEMENTS



| Designation | Description                          |
|-------------|--------------------------------------|
| 1           | Upper arm                            |
| 2           | Roller-bearings                      |
| 3           | Roller-bearings                      |
| 4           | Lower arm                            |
| 5           | Lower jaw adjustment screw           |
| 6           | Lower jaw                            |
| 7           | Positioner                           |
| 8           | Upper jaw                            |
| 9           | Material presence check plate        |
| 10          | Material presence verification probe |
| 11          | Upper jaw adjustment screw           |

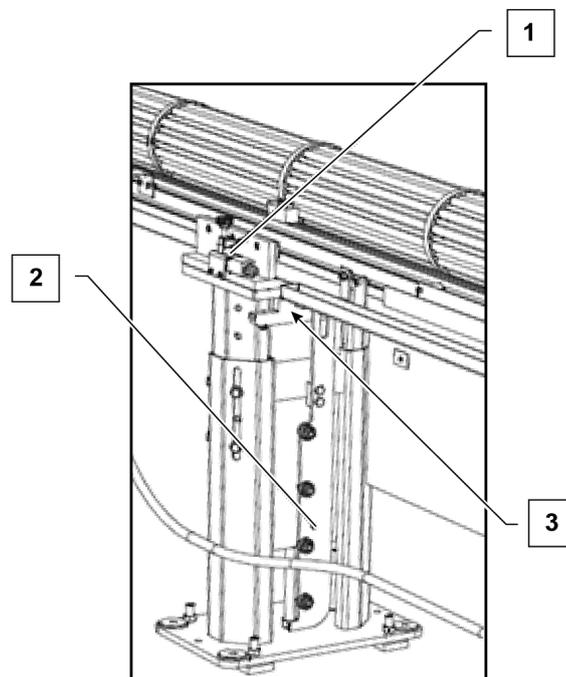
### 3.5 LATERAL PIVOT RETRACTION SYSTEM (OPTIONAL)

When a lathe is equipped with a bar feed system, certain elements (motors, spindle reduction tubes, etc.) become inaccessible, and sometimes it is difficult, or even impossible, to proceed with their maintenance. To facilitate these tasks, the bar feeder can be equipped with a loading arm, which allows the operator to pivot the bar feeder laterally.

The rigidity of the system guarantees a perfect alignment when the bar feed system is in working position. The bar feeder is held in working position by a bolting device, fitted with a safety switch that prevents any manipulation when the bar feeder is in operation.

To operate the lateral pivot retraction system, see (→ PIVOTING THE BAR FEEDER (OPTIONAL) on page 51).

#### 3.5.1 LAYOUT OF THE ELEMENTS



| Designation | Description                |
|-------------|----------------------------|
| 1           | Position locking lever     |
| 2           | Support arm                |
| 3           | Support arm fixed supports |

### 3.6 ELECTRICAL EQUIPMENT

#### DANGER

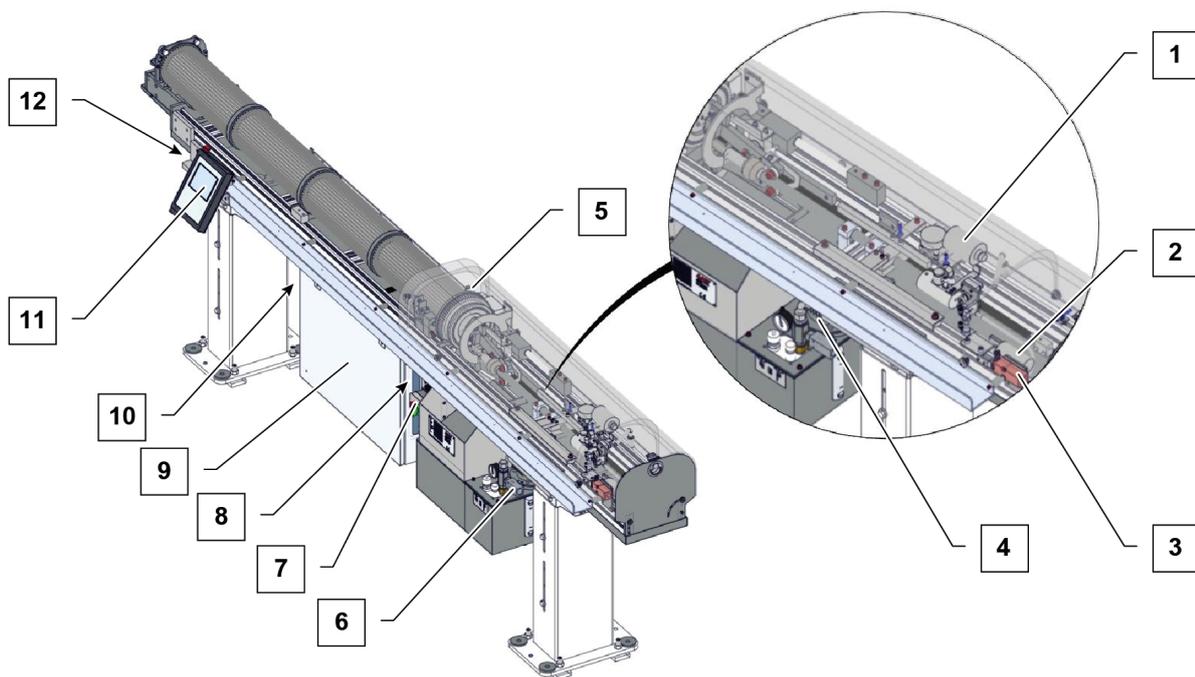


#### Danger of death by electrocution!

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 in this section.

#### 3.6.1 LAYOUT OF THE ELEMENTS



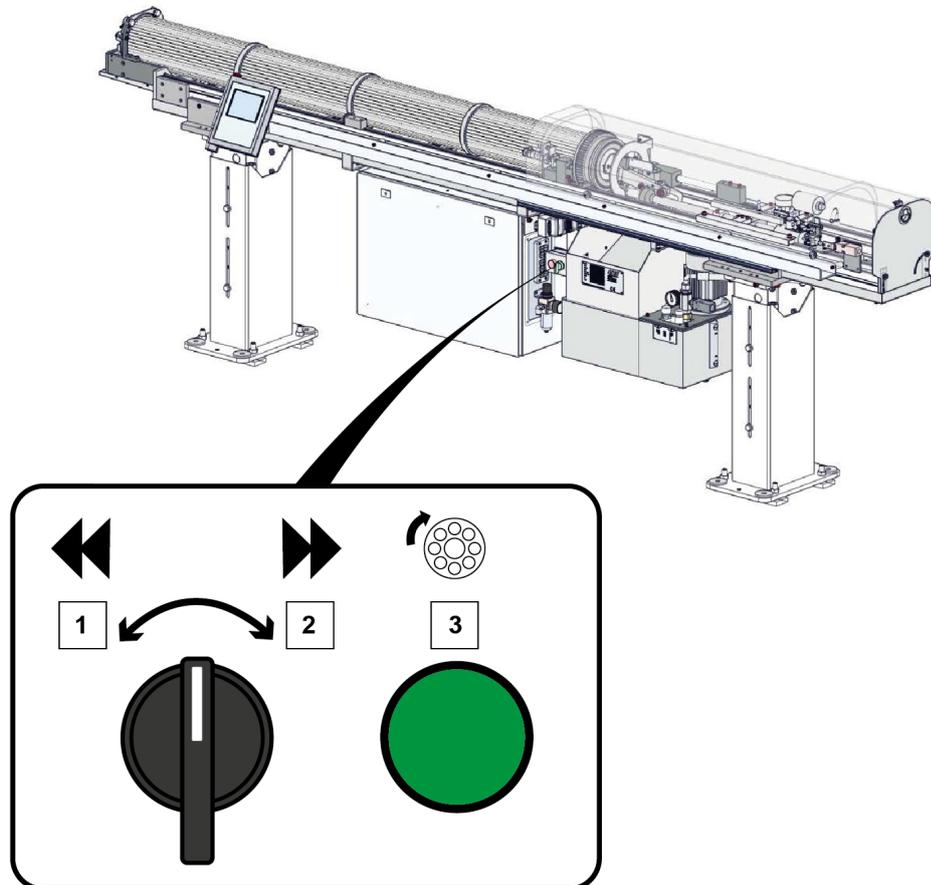
| Designation | Description   |
|-------------|---|
| 1           | Connector motor   |
| 2           | Pusher cable motor                                      |
| 3           | Main access cover safety switch                         |
| 4           | Hydraulic pump motor                                    |
| 5           | Barrel-indexing motor                                   |
| 6           | Hydraulic pressure switch                               |
| 7           | Stationary control                                      |
| 8           | Pneumatic pressure switch                               |
| 9           | Electrical cabinet                                      |
| 10          | Main power switch                                       |
| 11          | Remote control  |
| 12          | Pivot retraction support arm security switch (optional) |

### 3.6.2 STATIONARY CONTROL

The bar feeder is equipped with a stationary control unit which is very useful when conducting mechanical adjustments. This control is only active in manual mode.

The stationary control is used to :

- advance/retract the connector (1/2)
- advance/retract the pusher (1/2)
- index the barrel (3)



| Designation | Description                                    |
|-------------|--|
| 1           | Switch (turned to the left): advance position  |
| 2           | Switch (turned to the right): retract position |
| 3           | Barrel indexing button                         |

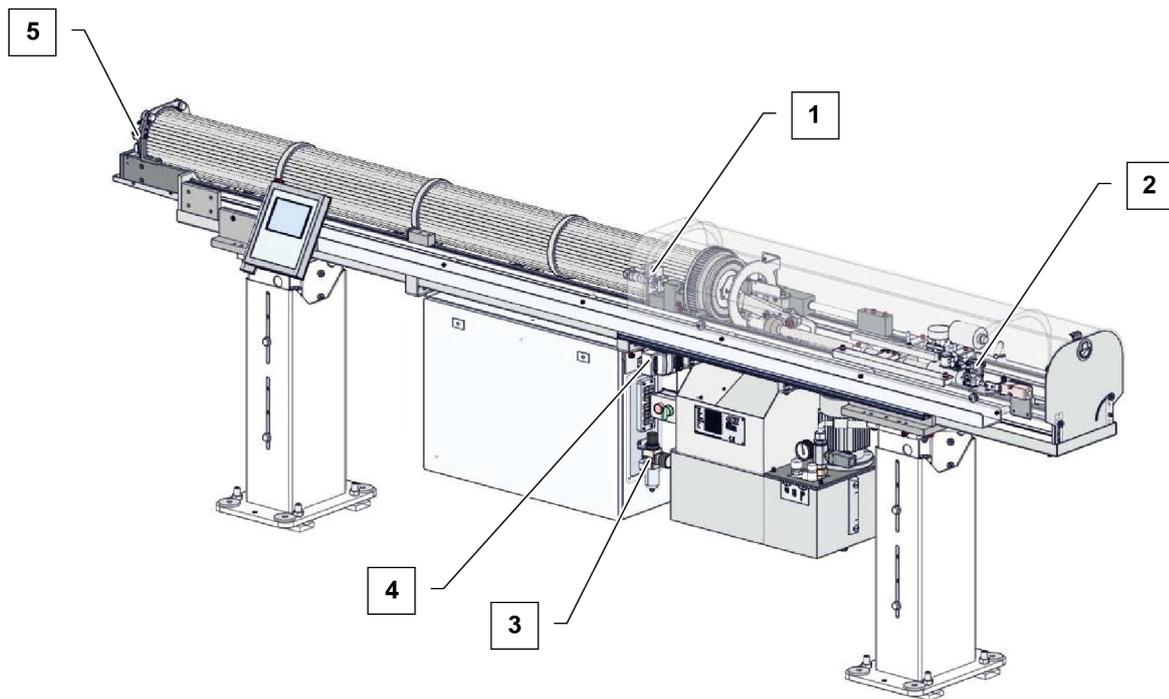
### 3.7 PNEUMATIC EQUIPMENT

The following automatic movements are activated by the pneumatic system:

- Locking the barrel
- Front positioning end-stop
- Engaging the cable-feed device

To guarantee the optimal operation of the bar feeding system, a minimum pressure of 0.5 MPa (5 bars), and a maximum pressure of 0.6 MPa (6 bars) is required.

#### 3.7.1 LAYOUT OF THE ELEMENTS



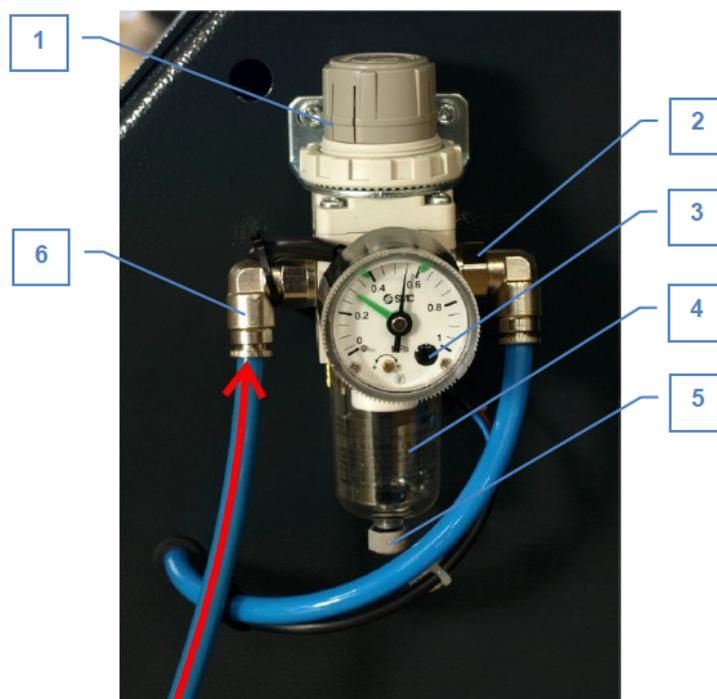
| Designation | Component  |
|-------------|--|
| 1           | Pneumatic barrel-lock cylinder                     |
| 2           | Pneumatic cable-feed clutch cylinder               |
| 3           | Air treatment unit with air pressure switch        |
| 4           | Valve assembly                                     |
| 5           | Pneumatic positioning stop cylinder (only for CNC) |

### 3.7.2 AIR TREATMENT UNIT

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.

#### LAYOUT OF THE ELEMENTS



| Designation | Description             |
|-------------|-------------------------|
| 1           | Air pressure regulation |
| 2           | Air outlet              |
| 3           | Manometer               |
| 4           | Decanter                |
| 5           | Screw for discharging   |
| 6           | Air inlet               |

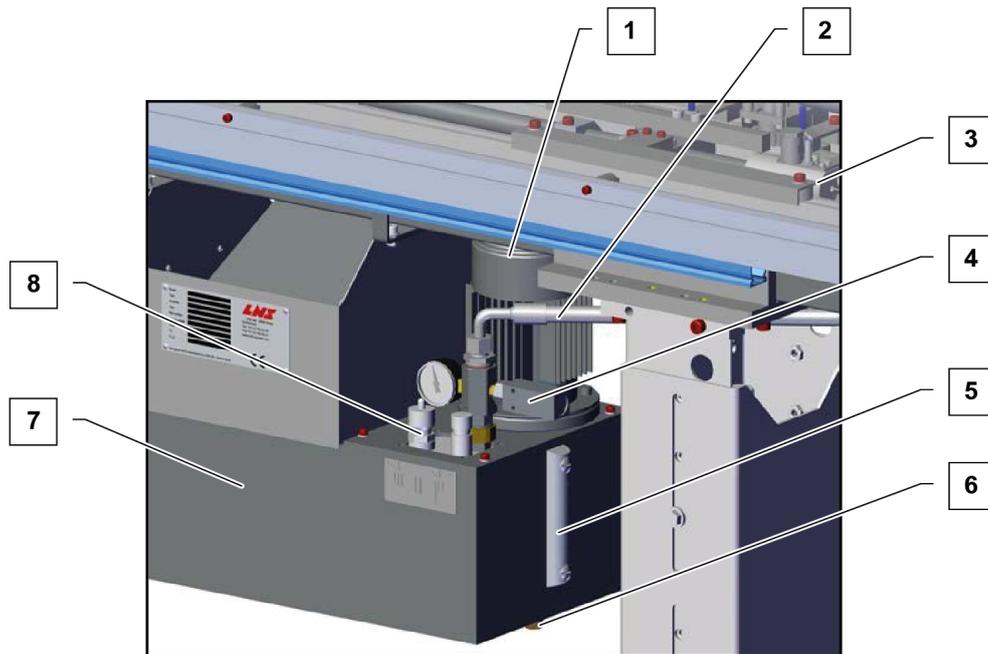
### 3.8 HYDRAULIC EQUIPMENT

The guidance principle of the bar feeder consists in creating an oil film around the rotating bar that maintains it in the centre of the barrel tube thus avoiding vibrations and friction.

The hydraulic oil is contained in the hydraulic tank. The oil is drawn up by a motor pump and injected in the connector. This pressure causes the pusher to advance and also guides the bar. The pressure switch measures the pressure at the outlet of the pump. The level allows the monitoring of the filling rate of the hydraulic tank.

For instructions on draining and filling the hydraulic tank, cleaning the hydraulic filter, see (→ HYDRAULIC TANK MAINTENANCE on page 87).

#### 3.8.1 LAYOUT OF THE ELEMENTS



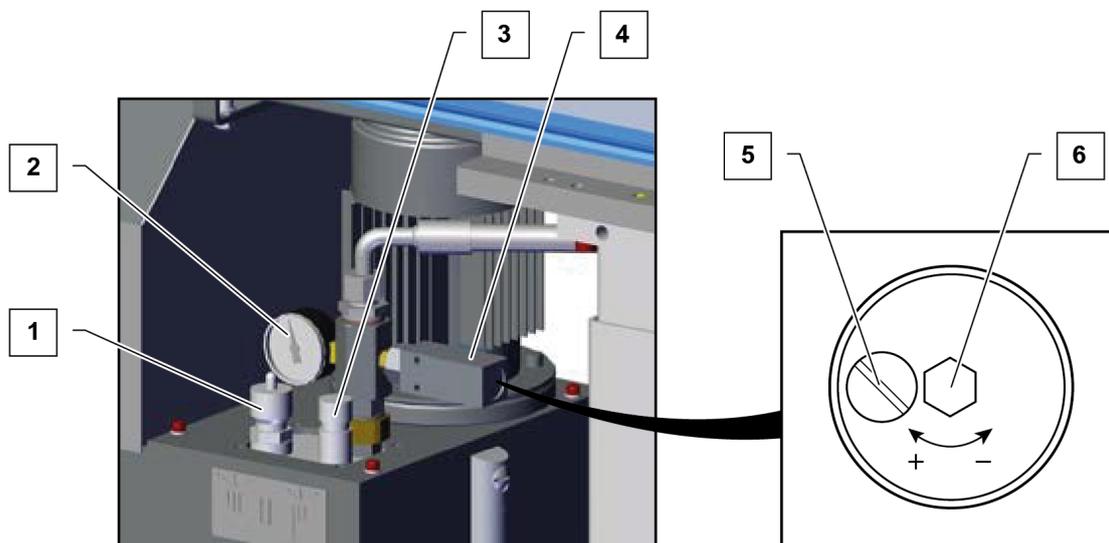
| Designation | Description                |
|-------------|----------------------------|
| 1           | Hydraulic pump motor       |
| 2           | Connection block feed tube |
| 3           | Connector block            |
| 4           | Pressure control switch    |
| 5           | Oil level indicator        |
| 6           | Drain plug                 |
| 7           | Hydraulic tank             |
| 8           | Hydraulic block            |

### 3.8.2 HYDRAULIC BLOCK

The hydraulic block regulates the hydraulic pressure of the bar feeder.

For instructions on adjusting the feed hydraulic pressure and feed speed, see (→ ADJUSTING THE FEED PRESSURE AND SPEED on page 52).

#### 3.8.2.1 LAYOUT OF THE ELEMENTS



| Designation | Description               |
|-------------|---------------------------|
| 1           | Pressure regulator        |
| 2           | Pressure gauge            |
| 3           | Feed regulator            |
| 4           | Pressure control switch   |
| 5           | Locking screw             |
| 6           | Pressure adjustment screw |

## 4 TECHNICAL DATA

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

### 4.1 TRYTON 112+ FOR CAM TYPE LATHES

|                                     | Unit | 2 m           | 3 m   | 12'   | 4 m   |
|-------------------------------------|------|---------------|-------|-------|-------|
| Total weight                        | kg   | 400           | 450   | 550   | 620   |
| Total height                        | mm   | 1,060 - 1,470 |       |       |       |
| Total length                        | mm   | 3,680         | 4,780 | 5,290 | 5,780 |
| Total width                         | mm   | 490           |       |       |       |
| Min. bar Ø                          | mm   | 1             |       |       |       |
| Max. bar Ø                          | mm   | 12.7          |       |       |       |
| Max. bar length                     | mm   | 2,100         | 3,200 | 3,710 | 4,200 |
| Min. remnant length                 | mm   | 100           |       |       |       |
| Max. remnant length                 | mm   | 230           |       |       |       |
| Centerline range                    | mm   | 870 - 1,250   |       |       |       |
| Loading arm (optional)              | mm   | 450           |       |       |       |
| Mains voltage                       | V    | 3x 220 - 480  |       |       |       |
| Mains frequency                     | Hz   | 50 - 60       |       |       |       |
| Hydraulic oil (ISO 100)             | l    | 25            |       |       |       |
| Pneumatic pressure (min. - max.)    | MPa  | 0.5 - 0.6     |       |       |       |
|                                     | bar  | 5 - 6         |       |       |       |
| Air consumption (per loading cycle) | l    | 10            |       |       |       |
| Noise emission                      | dBA  |               |       |       |       |

## 4.2 TRYTON 112+ FOR CNC TYPE LATHES

|  | Unit       | 2 m                | 3 m           | 12'           | 4 m           |
|--|------------|--------------------|---------------|---------------|---------------|
| Total weight                           | kg         | 400                | 450           | 550           | 620           |
| Total height                           | mm         | 1,060 - 1,470      |               |               |               |
| Total length                           | mm         | 3,737 / 4,047      | 4,837 / 5,147 | 5,347 / 5,657 | 5,837 / 6,147 |
| Total width                            | mm         | 490                |               |               |               |
| Min. bar Ø                             | mm         | 1                  |               |               |               |
| Max. bar Ø                             | mm         | 12.7               |               |               |               |
| Max. bar length                        | mm         | 2,100              | 3,200         | 3,710         | 4,200         |
| Min. remnant length                    | mm         | 100                |               |               |               |
| Max. remnant length                    | mm         | 230                |               |               |               |
| Centerline range                       | mm         | 870 - 1,250        |               |               |               |
| Loading arm<br>(optional)              | mm         | 450                |               |               |               |
| Mains voltage                          | V          | 3x 220 - 480       |               |               |               |
| Mains frequency                        | Hz         | 50 - 60            |               |               |               |
| Hydraulic oil (ISO 100)                | l          | 25                 |               |               |               |
| Pneumatic pressure<br>(min. - max.)    | MPa<br>bar | 0.5 - 0.6<br>5 - 6 |               |               |               |
| Air consumption<br>(per loading cycle) | l          | 10                 |               |               |               |
| Noise emission                         | dBA        |                    |               |               |               |

---

### 4.3 BARREL - LOADING CAPACITY

| Barrel Type | Laoding capacity [bars] | Max. bar Ø [mm] | Max. bar Ø without bar preparation [mm] |
|-------------|-------------------------|-----------------|---|
| A           | 45                      | 5               | 4                                       |
| B           | 36                      | 7               | 6                                       |
| C           | 24                      | 10              | 8                                       |
| D           | 24                      | 12.7            | 10                                      |
| H10 (A+C)   | 2 x 14                  | 10              | 8                                       |
| H12 (A+D)   | 2 x 14                  | 12.7            | 10                                      |

---

## 5 SYSTEM START-UP

### 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

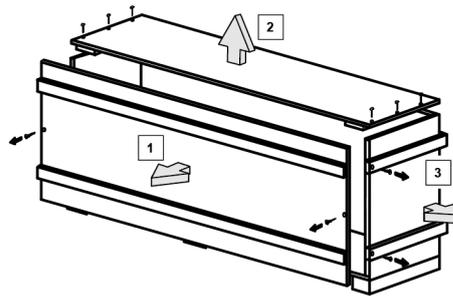
The bar feeder may be delivered either on a pallet or packed in a wooden crate, according to customer requirements. Follow the unpacking and lifting instructions recommended below in order to prevent any injuries to people and damage to objects.

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

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



### 5.3 SCOPE OF DELIVERY

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

In general, the bar feeder is delivered with the following items:

- Pusher assembly (installed)
- Remote control
- Interface cable and plug
- Lifting bars
- Accessory box including documentation.

## 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.

### INFO



The distance between the lathe and the front of the bar feeder should not exceed 20 mm. If an obstacle requires a greater distance, contact LNS or its local representative.

The area around the lathe and the bar feeder must be cleared to allow for their maintenance and handling. It should remain clear after the installation is completed.

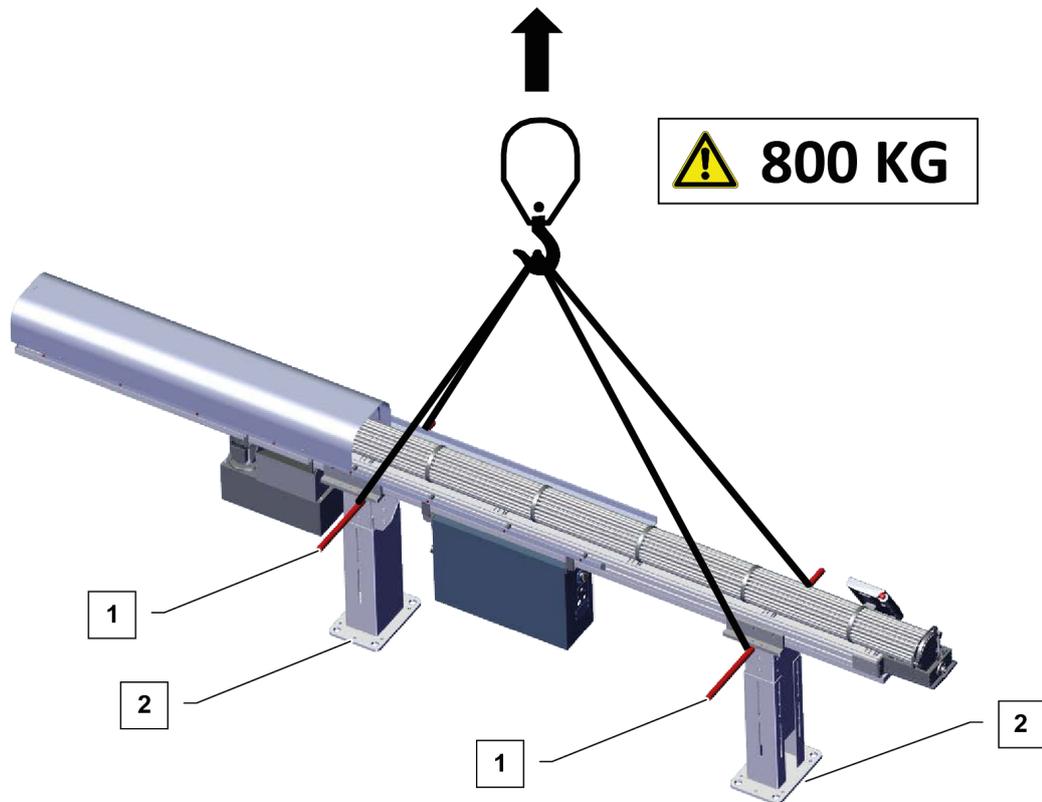
We advise customers to have the bar feeder assembled and installed by LNS or by a local LNS representative. We accept no liability for malfunctions attributable to an improper installation in which we were not involved.

The following accessories are required to lift the bar feeder:

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

**Procedure:**

1. Insert a lifting bar (1) into the hole at the top of each stand. Insert the bar from the front, ensuring that the bar protrudes from the front and the back of the stand.
2. Place the hoist vertically above the bar feeder.
3. Secure the straps at the ends of the lifting bars (1).
4. Attach the straps to the hoist.
5. 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, and remains horizontal. Do not knock the bar feeder during lifting as it may damage it.



**INFO**



Position the bar feeder behind the lathe, aligned as closely as possible with the lathe spindle. When positioning, the stationary and mobile space requirements for the lathe and the bar feeder should be taken into account.

When installing the bar feeder system, insert leveling plates under the feet.

## 5.5 MOUNTING

The bar feeder is delivered completely assembled. Once in place behind the lathe, the bar feeder can be aligned.

### INFO



Depending to the type of the lathe, the installation of some adaptation parts is needed between the lathe and the feeder. Please check with LNS or its local representative.

### 5.5.1 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 injury or damage to the bar feeder!**

If the bar feeder is equipped with a lateral pivoting device then, for safety reasons, the four safety screws at the top of both stands must not be removed until after the bar feeder has been anchored to the ground.

#### NOTICE



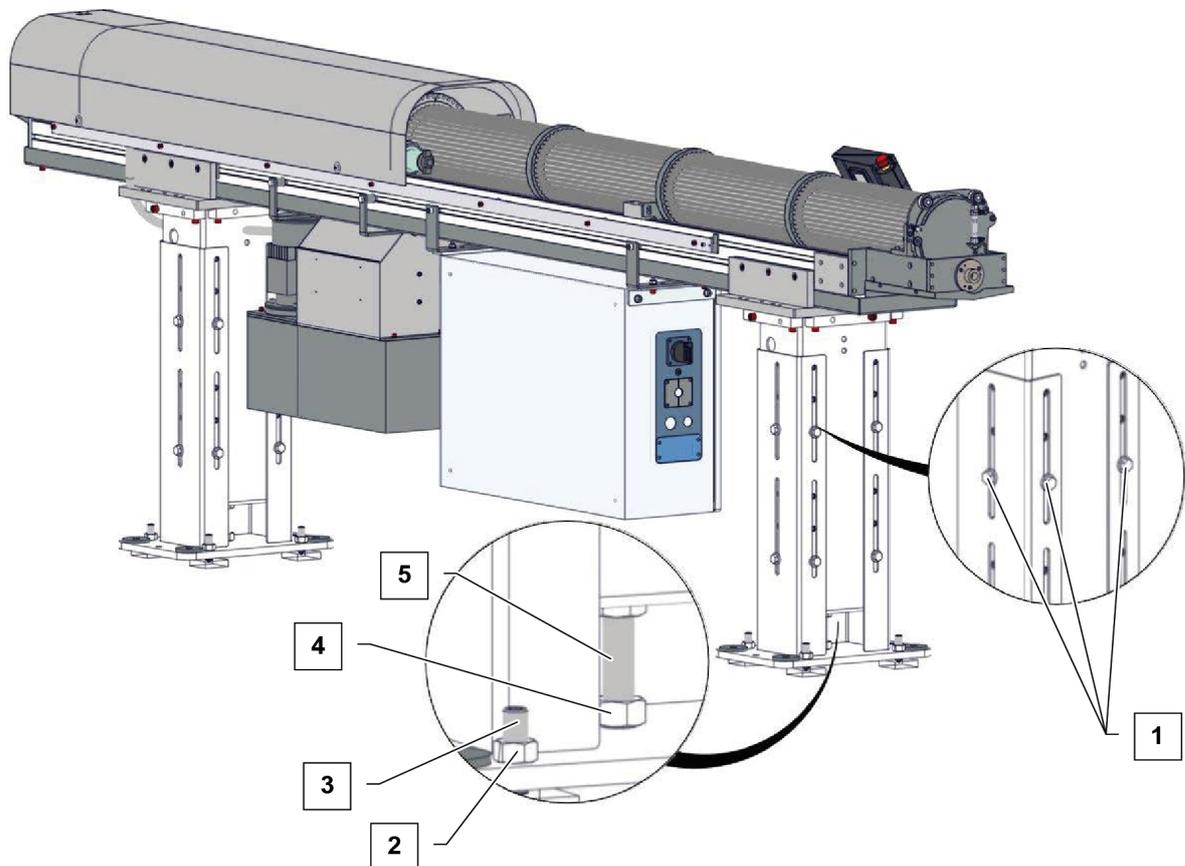
#### **Risk of damage to the bar feeder, lathe!**

When aligning the bar feeder, make sure there is no spindle liner extending into the lathe to avoid damage to equipment.

The alignment may be carried out using an optical tool, level. 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. Loosen the lock nuts (2) of the leveling screws (3), and ensure the weight of the bar feeder is evenly distributed over the eight support points.
2. Loosen the screws (4) and make sure the central threaded pin (5) of both stands are supported.
3. Loosen the screws (1) that lock the height position.
4. Place a the optical tool or level transversally across the aluminum chassis of the bar feeder.
5. Adjust the leveling screws (3) to set the lateral level of the bar feeder.
6. Adjust the nut on the central threaded pins (5) to set the height of the bar feeder. Normally, when the reference point is known, this adjustment is made at the factory.
7. 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.
8. When the alignment is satisfactory, tighten all the screws (1) to lock the height position, as well as the lock nuts (4) and (2).
9. Check the alignment and, if necessary, correct it by adjusting the leveling screws (3).



## 5.6 ANCHORING

Once the bar feeder is in place and perfectly aligned, it should be anchored to the ground to ensure stability. To do so, four anchorage points (1) are provided on each stand. The anchoring bolts must be furnished by the customer.

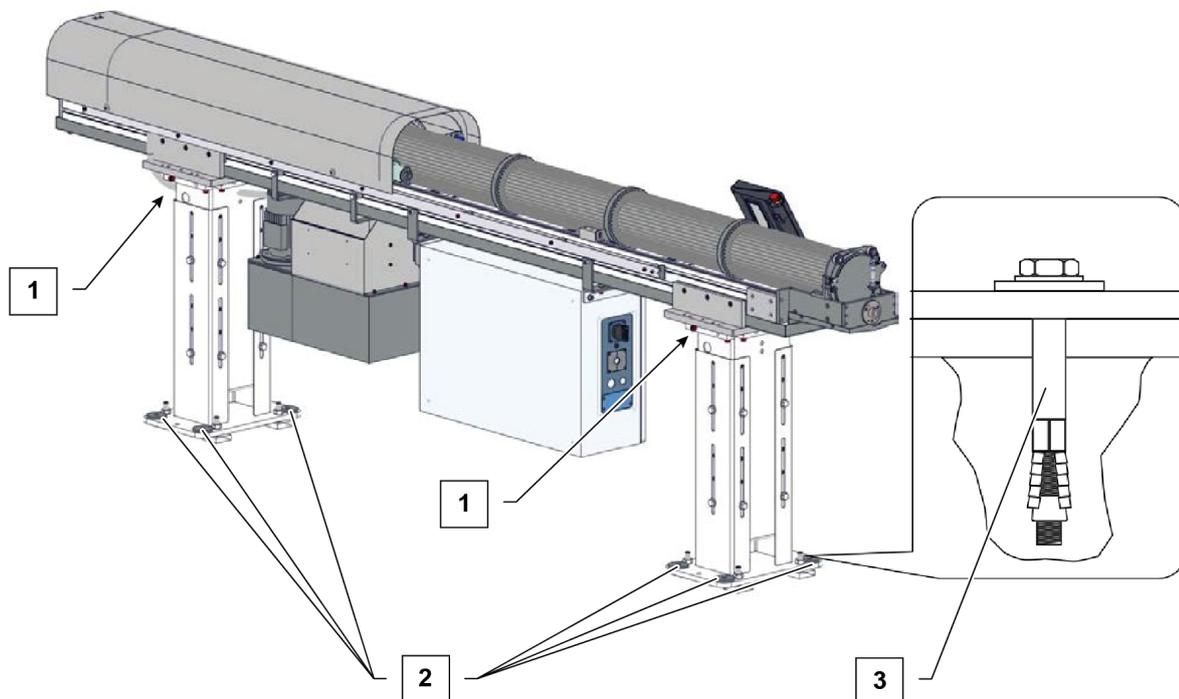
### INFO



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

#### Procedure:

1. Use four anchor bolts (3) on each stand to anchor the bar feeder to the ground at the four anchoring points at the bottom of each stand (2).
2. Once the anchor bolts are tightened, check the alignment again, and correct if necessary.
3. Remove the safety screws (1) at the top of each stand.



## 5.7 SETTING UP THE AIR INTAKE FOR THE PNEUMATIC SYSTEM

### 5.7.1 CONNECTING THE COMPRESSED AIR

#### NOTICE



**Material damage from incorrect adjustments!**

**Incorrect line pressure can damage the bar feeder.**

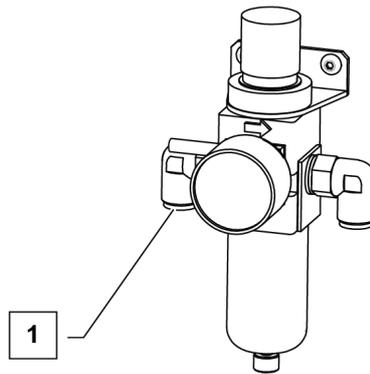
Ensure the line pressure is correct before using the bar feeder.

The air treatment unit, to which the compressed air must be connected, is located behind the electrical cabinet.

To connect the compressed air to the air treatment unit, the customer must provide an 8 mm (5/16") diameter air hose. The hose must be long enough to allow the complete travel of the retraction system (500 mm). When the hose is connected, it should not trail on the ground as it could be damaged.

#### Procedure:

1. Make sure that the factory air pressure is not above 0.6 MPa (6 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).



#### INFO



Once the compressed connection is completed, the operating pressure must be set, see (→ SETTING THE AIR PRESSURE on the next page).

## 5.7.2 SETTING THE AIR PRESSURE

### NOTICE



**Material damage from incorrect adjustments!**

**Incorrect line pressure can damage the bar feeder.**

Ensure the line pressure is correct before using the bar feeder.

#### Procedure:

1. Pull the air pressure regulation up to unlock it.
2. Turn the air pressure regulation until the manometer indicates the correct value:  
To increase the air pressure: turn the air pressure regulation counterclockwise  
To decrease the air pressure: turn the air pressure regulation clockwise



### INFO



The operating pressure must be set between 0.5 MPa and 0.6 MPa (5 - 6 bar).

3. Push the air pressure regulation down to lock it.

## 5.8 CONNECTION

Once the bar feeder has been aligned and anchored to the ground, it must be connected to the lathe interface and the compressed air.

The hydraulic tank can be filled.

- For the electrical connection (→ ELECTRICAL EQUIPMENT on page 28).
- For the pneumatic connection (→ PNEUMATIC EQUIPMENT on page 30).
- For the hydraulic connection (→ HYDRAULIC EQUIPMENT on page 32).

## 5.9 FACTORS AFFECTING PERFORMANCE

### 5.9.1 INSTALLATION

Proper installation is crucial for the correct functioning of the bar feeder. Improper installation can seriously compromise the operation of the bar feeder. The following parameters must be taken into account:

|                |   |
|----------------|---|
| Distance       | The distance between the bar feeder and the lathe directly affects the quality of the bar feeder's guiding performance.<br>The further the bar feeder is from the spindle, and therefore from the clamping system, the larger the non-guided part of the bar will be.   |
| Alignment      | The guide channel of the bar feeder serves, by definition, to guide the bar outside the lathe. Although the bar rotates in an oil bath inside the guide channel, the alignment of the channel with the axis of the spindle must be perfect.<br>It is essential that the bar feeder is aligned in accordance with the instructions indicated in (→ ALIGNMENT on page 40) |
| Spindle length | In some cases, the length of the spindle may influence the quality of the bar feeder's guiding performance.   |

### 5.9.2 CLEARANCE BETWEEN THE GUIDING CHANNEL AND THE BAR

The best results are achieved when the bar is guided with precision. The smaller the clearance between the guiding channel and the bar, the higher the rotational speeds can be.

When the clearance between the bar and the guiding channel becomes too great, a rupture of the oil film occurs which results in the reduction of the permitted rotation speeds.

The correctly sized guiding elements should always be used in relation to the diameter of bar stock being fed.

### 5.9.3 CLEARANCE BETWEEN THE SPINDLE AND THE BAR

With the rear of the bar maintained by the bar feeder pusher collet and the front by the lathe collet or mandrel, it is possible that the section of the bar inside the spindle may oscillate if the play is too great. It is therefore highly recommended that a spindle liner be used to reduce the clearance.

### 5.9.4 MATERIAL

The following factors regarding the material used affect the bar feeder's performance:

|                      |   |
|----------------------|---|
| Bars                 | To ensure the bar is inserted into the bar feeder collet perfectly, it is essential that the bars are chamfered (at the rear), concentrically, at 30°. It is recommended that the bars are deburred at the front, to prevent them from catching when the bar is inserted into the spindle as it is fed. |
| Tubes                | To prevent oil from the bar feeder and coolant from the lathe from mixing, it is recommended that tubes are capped at the rear when machined.   |
| Profiled bars        | Round and hexagonal bars are relatively easy to guide. Square bars or bars with other special profiles increase the risk of the oil film to rupture.  |
| Bar straightness     | Performances may vary depending on the material machined, the length of the bar, etc. To obtain optimum output, the bars must be straight. If the torsion of the bars exceeds 0.5 mm/m, performance will automatically be reduced in terms of rotation speed, and vibrations will increase accordingly. |
| Material composition | In general, the difficulty increases with the specific weight of the bar. Steel bars are relatively easy to guide. However brass bars, due to their great flexibility and specific weight, are relatively difficult to guide at high speeds. Aluminum bars on the other hand are very easy to guide.    |

## 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 LOADING THE BARREL

### WARNING



**Risk of injury from moving parts!**

**Crushing hazard.**

While loading bars during operation or standby mode, handle the elements of the bar feeder with extreme care to avoid crushing from moving components! Only introduce hands directly into the bar feeder when it is in STOP mode.

The amount of time the bar feeder can run unattended will depend directly on the frequency with which the operator fills the barrel. This operation can be effected during the production cycle.

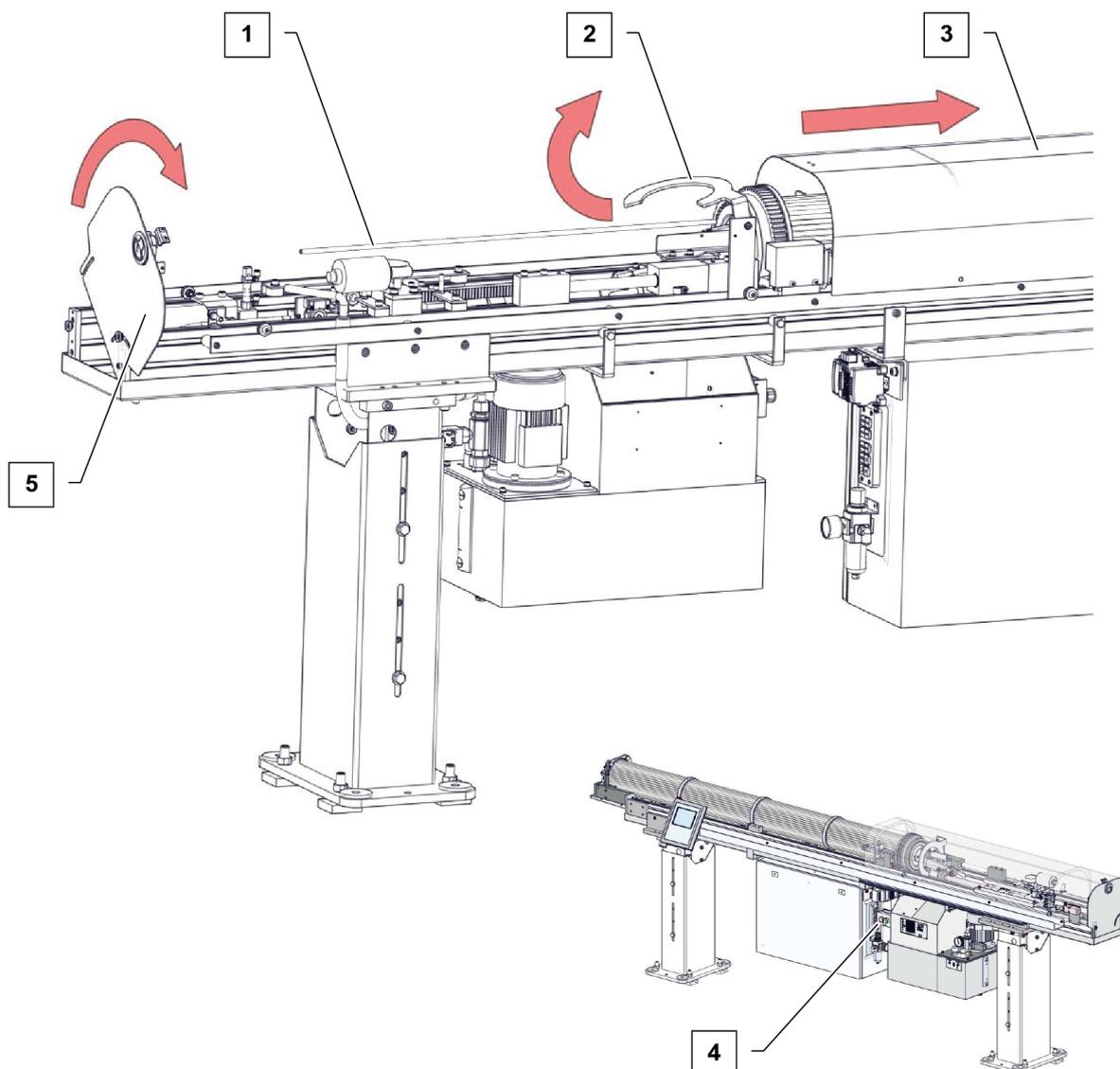
The barrel is loaded from the rear of the bar feeder. If there is an obstacle (wall, machine, etc.) which prevents loading from the rear, the bar feeder can be fitted with a pivoting retraction system so that the barrel can be loaded from the front.

**Prerequisite:**

- The pusher is at the rear, and retracted
- The bar feeder is in STOP mode

**Procedure:**

1. Slide the main access cover (3) towards the front of the bar feeder.
2. Raise the rear limiter (2).
3. If necessary, swing down the rear protector (5).
4. Insert the bars (1) into the barrel cylinders, using the stationary control switch (4) to index the barrel.
5. Once the barrel is loaded, lower the rear limiter (2) back into position.  
Make sure that all the bars in the barrel rest against the rear limiter. If necessary, move the bars back until they rest on the rear limiter.
6. Put the rear protector (5) back into operation position.
7. Slide the main access cover (3) back into operation position.

**INFO**

Before the automatic cycle is started, it is advisable to check the following:



- The bars rest against the rear limiter,
- The pusher collet corresponds to the diameter of the bars loaded,
- The pushing torque is adapted to the bars loaded,
- On the lathe, the clamping device corresponds to the bars loaded.

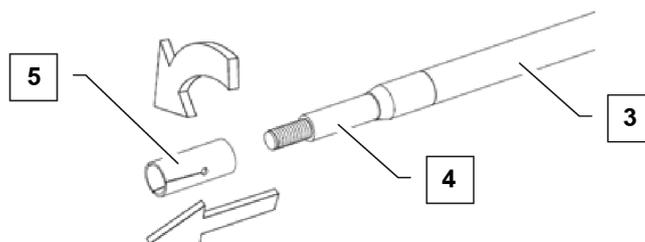
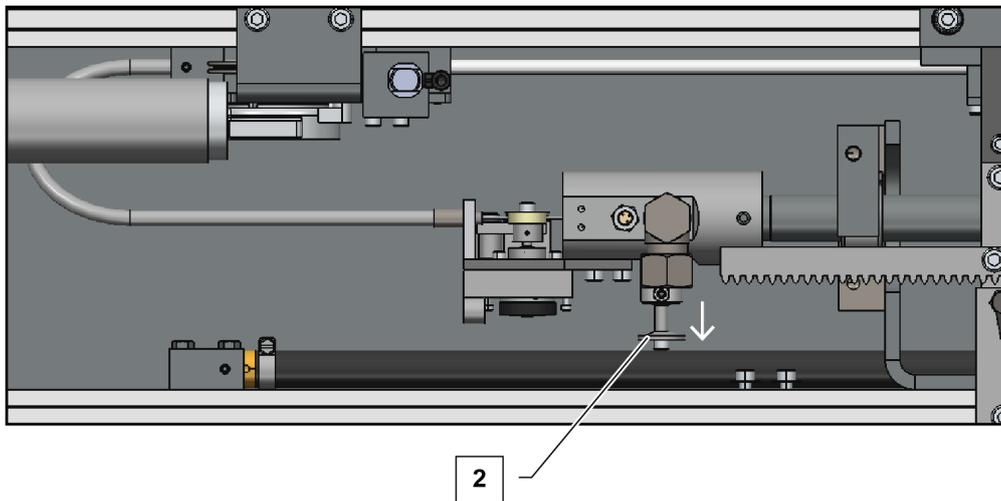
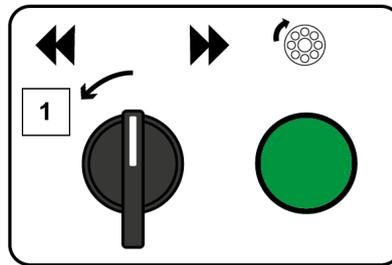
### 6.1.2 CHANGING THE COLLET

#### Prerequisite:

- The bar feeder is in STOP mode

#### Procedure:

1. Press the **STOP** key on the remote control.
2. Press the **MAINTENANCE** key.
3. Press the **CHANGE PUSHER** key.
4. Advance the pusher (3) out of the connector with the stationary control switch (1) or by pressing the forward arrows key on the screen.
5. If the pusher was positioned all the way at the back of the ensemble, the position lock piston must be manually released. Pull the piston (2) outwards while advancing the pusher assembly.
6. Once the pusher assembly is accessible, unscrew the collet (5) from the rotating ferrule (4), and remove the collet.
7. Screw the new collet (5) onto the rotating ferrule (4).
8. Move the pusher (3) back into the connector with the stationary control switch (2). Exit the adjustment mode on the remote control by pressing the **STOP** key.



---

### 6.1.3 ADJUSTING THE MOBILE VICE

#### WARNING



**Risk of injury from moving parts!**

**Crushing hazard.**

Particular caution must be taken while handling the mobile vice. Do not handle the mobile vice while the bar feeder is in standby or operation mode! Only introduce hands into the bar feeder when it is in STOP mode.

---

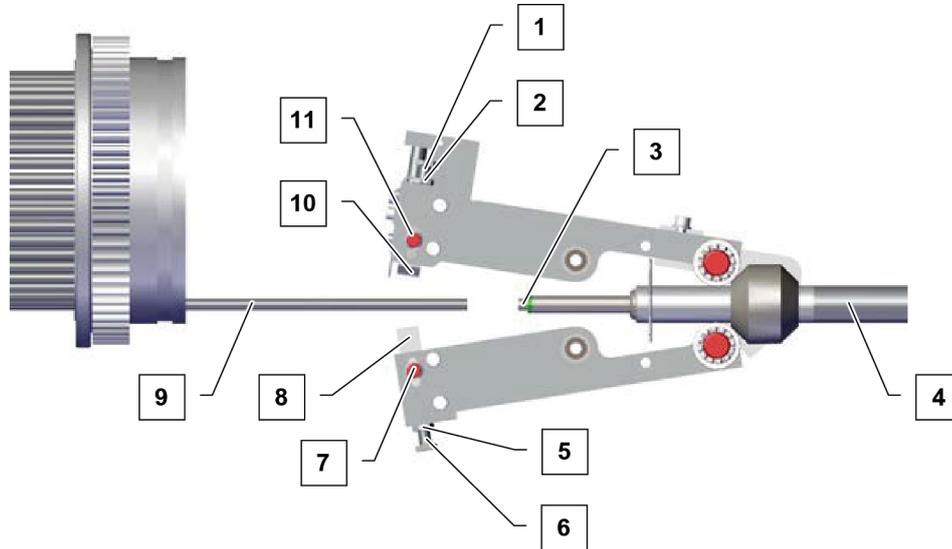
The mobile vice jaws must be adjusted to the diameter and profile of the bars to be machined.

**Prerequisite:**

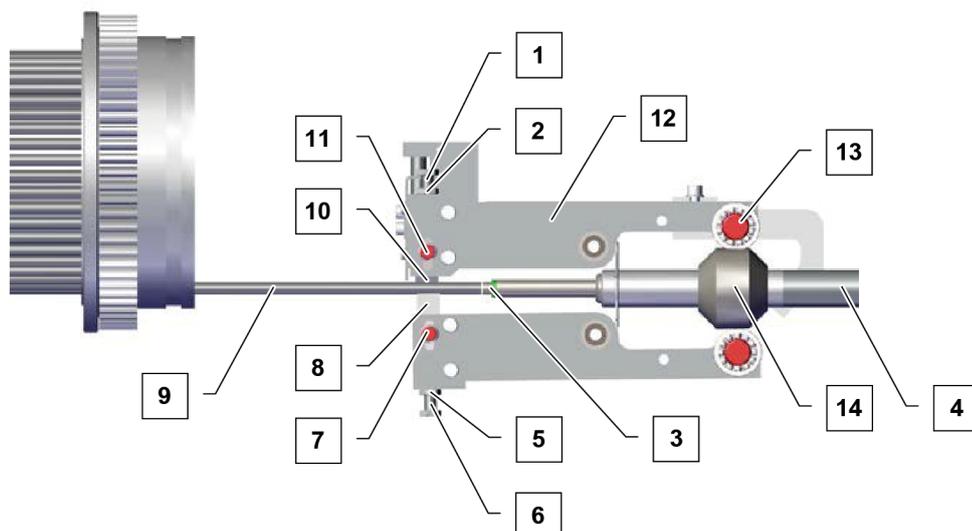
- The pusher is retracted.
- The bar feeder is in the STOP mode.

**Procedure:**

1. Place a bar (9) in one of the barrel cylinders.
2. Index the barrel until the bar is inline with the pusher collet (3).
3. Move the connector (4) forward to about half of its travel.
4. Pull the bar backwards up to the collet.
5. Loosen the screws (7 and 11) of the lower and upper jaws of the mobile vice.
6. Loosen the nuts (5 and 2), then the bolts (6 and 1) of the lower and upper jaws.



7. Draw back the mobile vice unit (12) until the roller bearings (13) are on the flats of the cam (14) as depicted below.
8. Screw in the bolt (6) until the bar, resting on the lower jaw (8), is centred on the collet (3).
9. Screw in the bolt (1) until the upper jaw (10) is resting on the bar. then tighten the bolt (1) further by half a turn so that the bar is securely held between the upper and lower jaws. Make sure the bar is still centred in the collet!
10. Tighten the nuts (5 and 2).
11. Tighten the screws (7 and 11).
12. Position the bar (9) into the loading position as depicted below.
13. Advance the mobile vice (12).
14. Advance the connector (4) and check that the bar is securely gripped and correctly inserted into the collet (3).
15. Finally, move the connector back to check that the collet disconnects from the bar correctly.



### 6.1.4 PIVOTING THE BAR FEEDER (OPTIONAL)

#### 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.

#### WARNING



#### Injury and damage hazard from improperly positioned support arm!

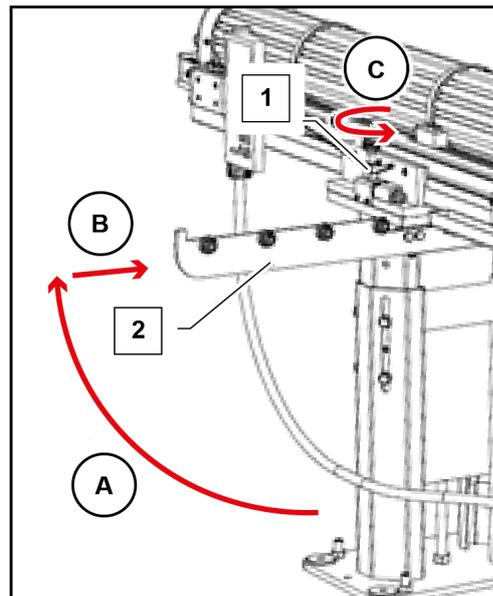
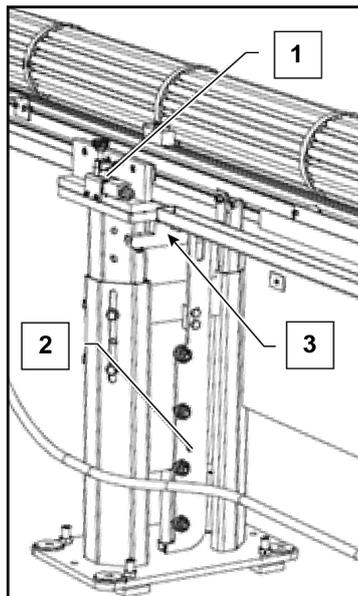
If the support arm is not placed correctly, the bar feeder may fall over causing considerable physical and material damage. Before pivoting the bar feeder, make sure the support arm is pushed into the stop and resting on its supports.

#### Prerequisite:

- The bar feeder is in Manual or STOP mode.
- There is no bar between the bar feeder and the lathe.
- The pusher is inside the bar feeder.
- The area around the bar feeder is cleared.

#### Procedure:

1. Raise (A) the support arm (2) upwards and out.
2. Push (B) the support arm (2) in against the stop so that it is resting on the supports (3).  
ATTENTION: If the support arm is not pushed back to the stop and does not rest correctly on its supports, the bar feeder may fall causing considerable injury and material damage.
3. Loosen (C) the position locking screw (3) until it is free.
4. Pivot the bar feeder.
5. Once the maintenance operations are finished, pivot the bar feeder back into the operation position and lock it into place by tightening the locking position screw (1) all the way, then lower the support arm (2) back down under the bar feeder.



### 6.1.5 ADJUSTING THE FEED PRESSURE AND SPEED

#### INFO



The hydraulic pressure must not exceed 0.5 MPa (5 bar)

#### INFO



For the pressure to be adjusted, the speed regulator must not be closed completely.

#### SETTING THE FEED PRESSURE

The hydraulic pressure indicated on the manometer (1), can be set to between 0.08 and 0.5 MPa (0.8 and 5 bar) depending on the diameter of the bars and the use of spindle liners.

Set the hydraulic feed pressure by adjusting the pressure regulator knob (2):

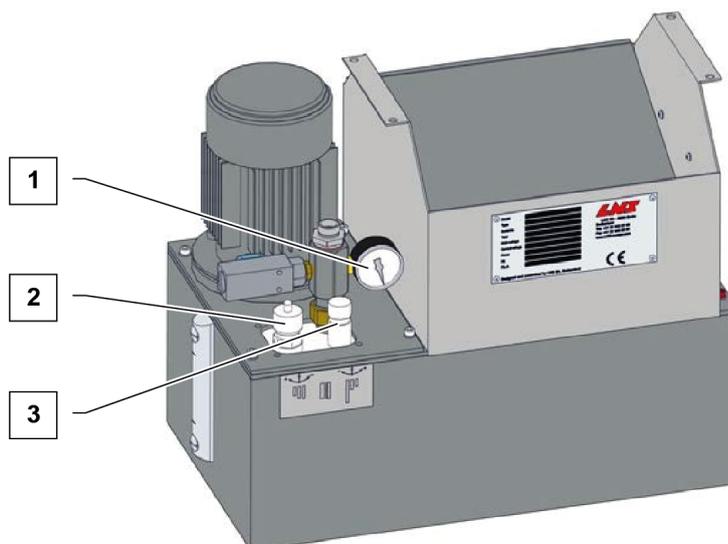
- Screw the pressure regulator knob (2) downward to increase the pressure.
- Unscrew the pressure regulator knob (2) upward to decrease the pressure

#### SETTING THE FEED SPEED

The feed speed can be adjusted to between 50 and 200 mm per second.

Set the feed speed by adjusting the feed speed regulator knob (3):

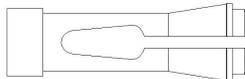
1. Close the feed speed regulator knob (3) slowly by screwing it downward until the pressure falls.
2. Slowly reopen the feed speed regulator knob (3) by unscrewing it upward until the pressure stabilizes. In this position the feed speed is at its minimum.
3. To increase the feed speed, further unscrew the speed regulator knob (3) upward to the desired speed/-pressure.



## 6.2 LATHE ADJUSTMENTS

### 6.2.1 CLAMPING DEVICE

#### COLLET

|   |  |
|---|--|
| <b>Single cone collet</b>   | <b>Effectiveness: good to very good</b>  |
| The bar is gripped at about 350° over a length of 0.5 to 7 times its diameter.  |  |
| <b>Biconical collet</b>   | <b>Effectiveness: very good to excellent</b>                                       |
| The bar is gripped at 1 or 2 times 350° over a length of around 1.2 times the diameter.   |   |
| <b>Double cone collet</b>   | <b>Effectiveness: excellent</b>  |
| 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. |  |

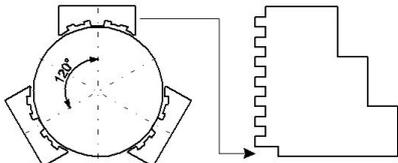
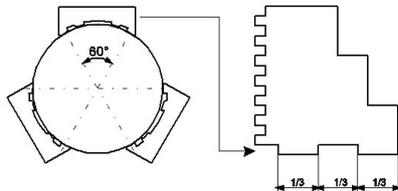
#### 3-JAWS CHUCK

### INFO



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

Frequent errors and possibilities for improving the effectiveness of the clamping grip.

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

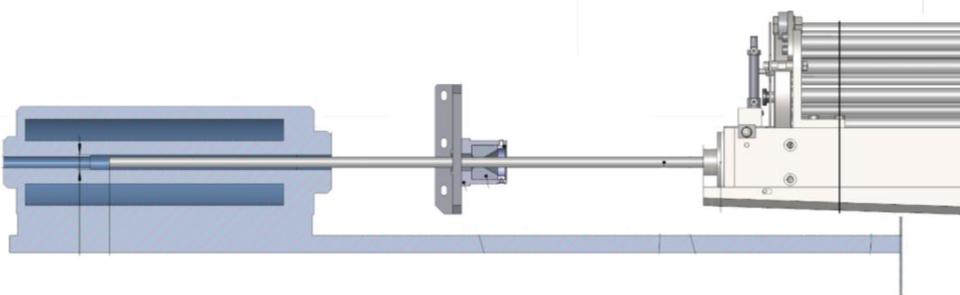
| Soft jaws   |  |
|---|--|
| <p>Incorrect: the radius of the jaws is larger than the radius of the bar.<br/>The jaws only touch at 3 points at 120°.</p> |  |
| <p>Correct: release the center of the jaws so that there are 2 x 6 contact points at 60°.</p>                               |  |

## 6.3 BAR FEEDER/LATHE CONNECTION

### 6.3.1 GUIDANCE TUBE

The quality of the bar guidance in the lathe is determined by the clearance between the spindle bore and the rotating bar. The greater the clearance, the more vibrations there are.

The bar feeder can be fitted with a guidance tube at the front of the bar feeder extending bar guidance into the lathe.



### INFO



The guidance tube must be chosen depending on:

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

For more information on available guidance tubes, please contact LNS or its local representative.

## 6.4 TOP-CUT POSITION

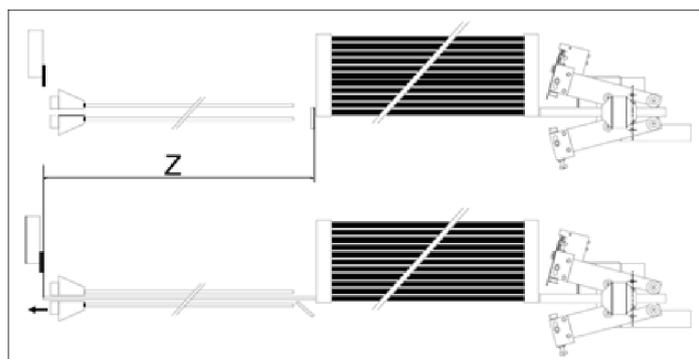
### 6.4.1 TOP-CUT POSITION FOR CNC-TYPE LATHES

#### 6.4.1.1 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 (Z) programmed by the operator, which is equivalent to the distance between the light sensor and the position of the bar in the clamping device of the lathe.

With this system, the setting is the same for any bar length.



## 6.4.1.2 ADJUSTMENT

**NOTICE****Risk of damage to the lathe!**

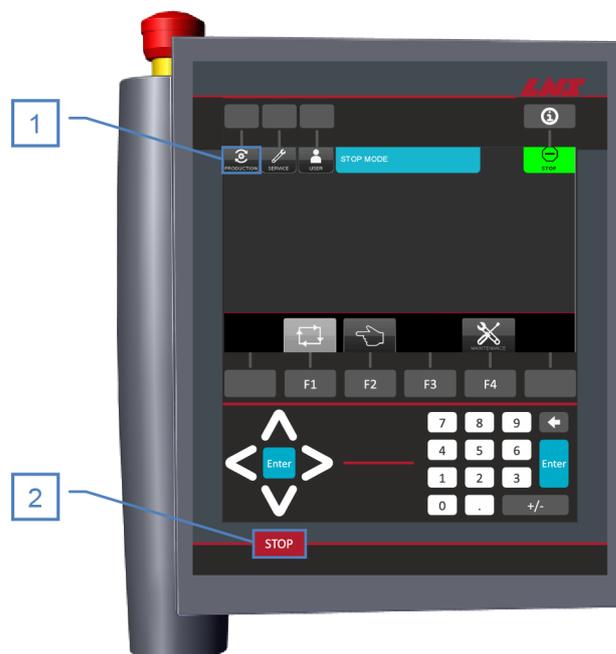
Stop the lathe at the end of the part.  
Put the bar feeder in STOP mode.

**Prerequisite:**

- The lathe is stopped at end of part
- The bar feeder is in STOP mode

**Procedure:**

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



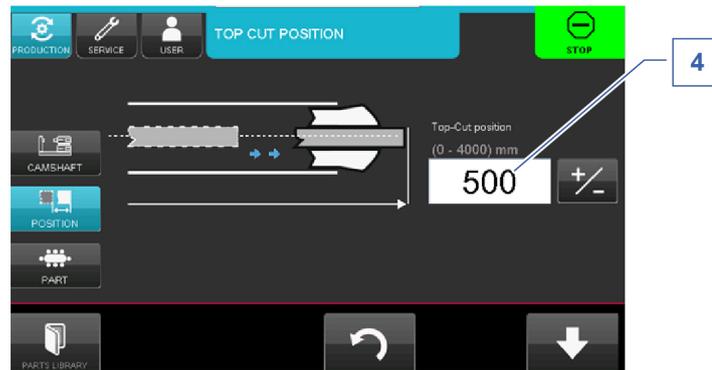
3. Press the POSITION key (3).



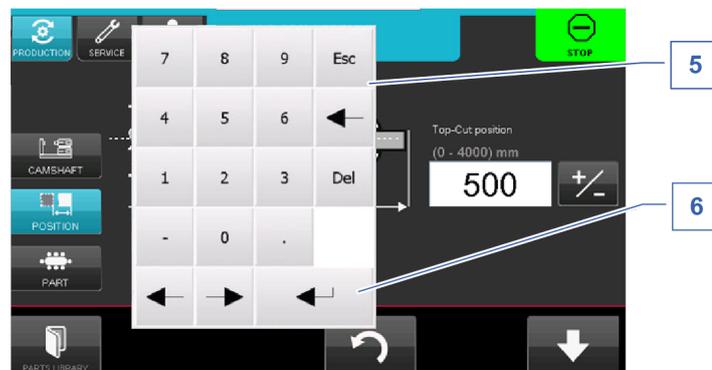
There are two options:

*Use the keypad to enter the value directly*

1. Press the field (4).

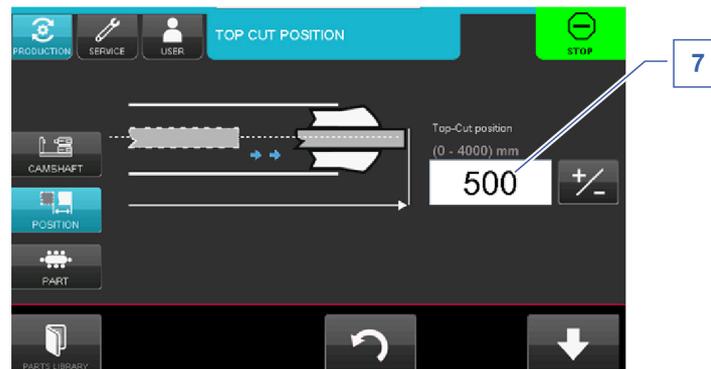


2. Use the keypad (5) to enter the new value.
3. Press the Enter key (6) to confirm the value.

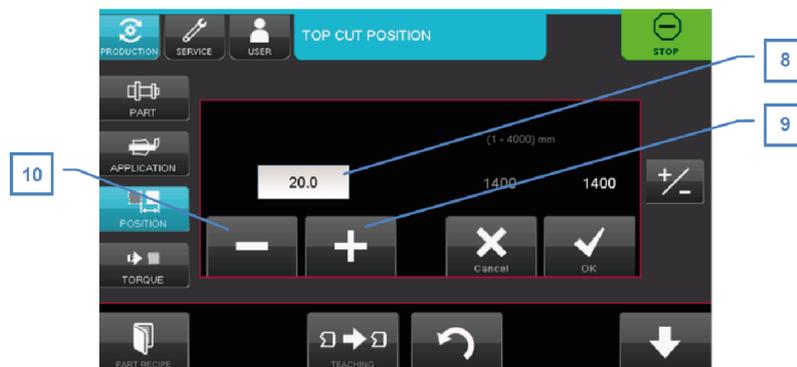


Use the +/- key to enter the value by adding/subtracting

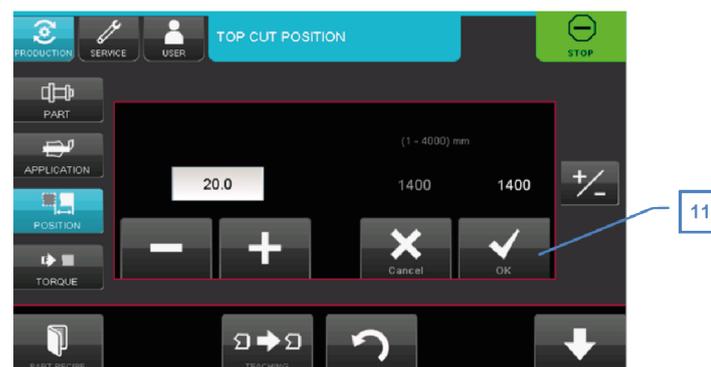
1. Press the +/- key (7).



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.



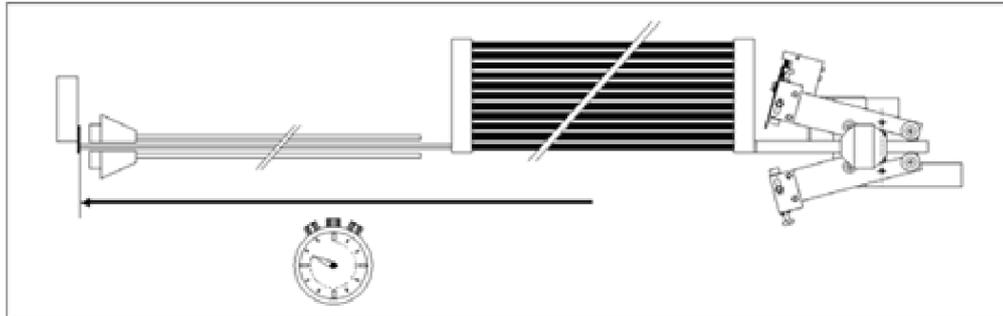
## 6.4.2 TOP-CUT POSITION WITH TIMER LOADING FOR CAM-TYPE LATHES

### 6.4.2.1 DESCRIPTION

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

The bar feeder has a timer, programmed by the operator, whereby the bar can be introduced into the lathe clamping device in the desired position.

This is adjusted by eye and depends on a number of factors such as bar length, feed speed, bar feeder and spindle length, etc.



## 6.4.2.2 ADJUSTMENT

**NOTICE****Risk of damage to the lathe!**

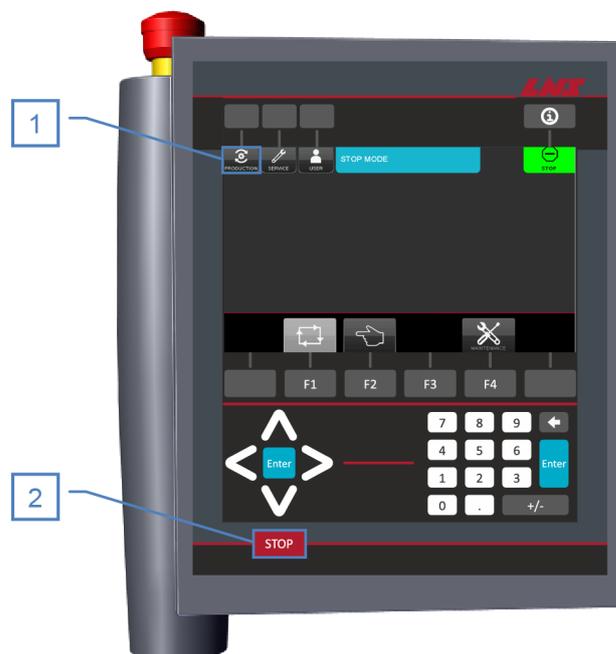
Stop the lathe at the end of the part.  
Put the bar feeder in STOP mode.

**Prerequisite:**

- The lathe is stopped at end of part
- The bar feeder is in STOP mode

**Procedure:**

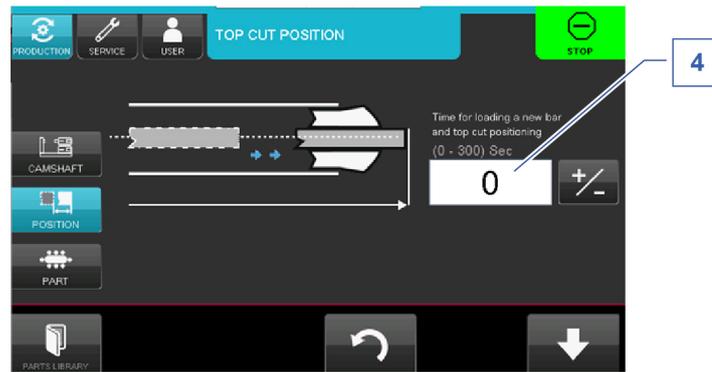
1. Press the STOP key (2).
2. Press the PRODUCTION key (1).



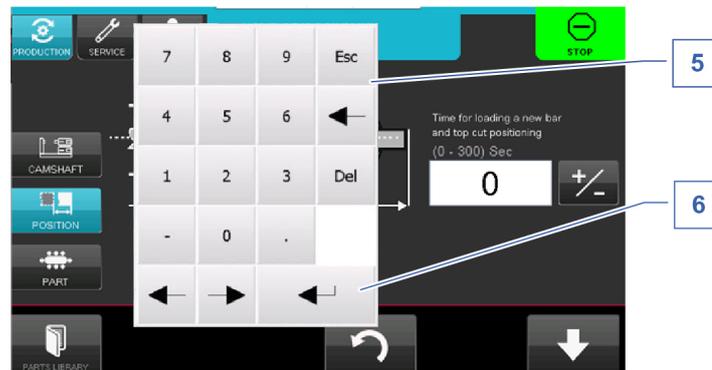
3. Press the POSITION key (3).



1. Press the field (4).



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



## 6.5 END OF BAR

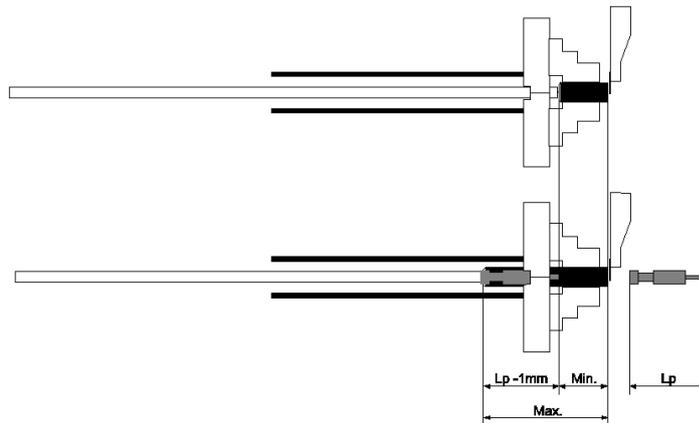
### 6.5.1 DESCRIPTION

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 ( $L_p - 1\text{ mm}$ ).

Maximum bar remnant =  $L_p - 1\text{ mm} + \text{min}$

## 6.5.2 ADJUSTMENT

### NOTICE



#### Risk of damaging the lathe!

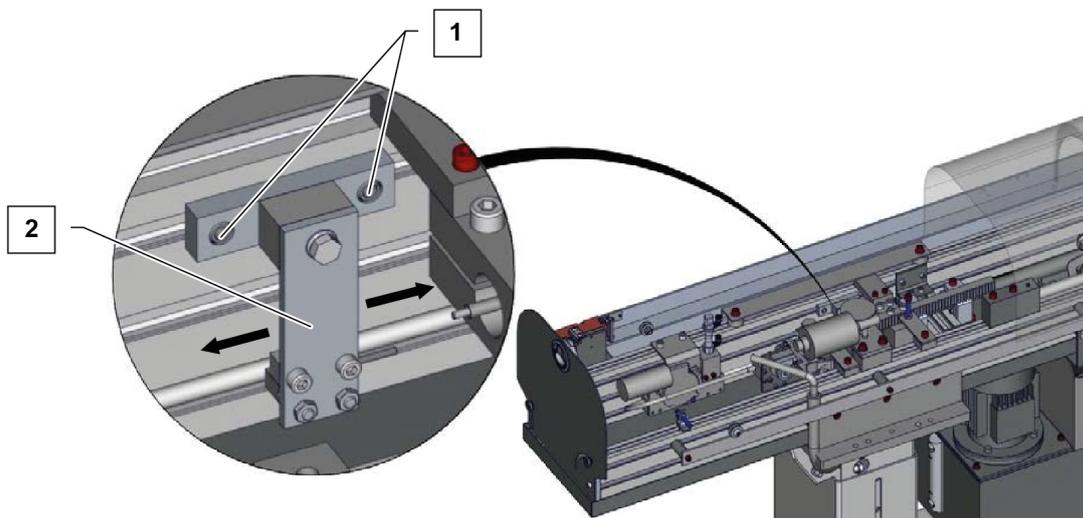
Stop the lathe at the end of the part.  
Put the bar feeder in STOP mode.

#### Prerequisite:

- The bar feeder is in STOP mode

#### Procedure:

1. In manual mode, advance the pusher to just behind the chuck jaw, i.e. the desired end of bar position.
2. At the rear of the bar feeder, undo the screws (1) which hold the end of bar probe support (2).
3. Slide the probe support forwards or backwards until the probe indicator lights up. Note: Moving the probe support forwards increases the remnant length, while moving the probe support backwards decreases the remnant length.
4. Fix the position of the probe support by tightening the screw (1).
5. Retract the pusher then advance it to ensure that it stops at the set position.



### INFO



For screw-cutters and mobile headstock lathes, the end of bar position must be set 5 mm from chuck jaw when the headstock is in the rear-of-part position.

## 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

### DANGER



#### Danger of death by electrocution!

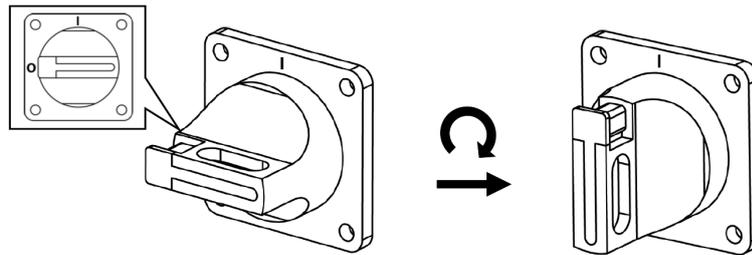
Work on the electrical system must only be performed by a qualified electrician. Always lock the electrical cabinet again after opening it.

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 the main switch on the electrical cabinet clockwise to the I- position (on).



#### Switch off:

1. Turn the main 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:

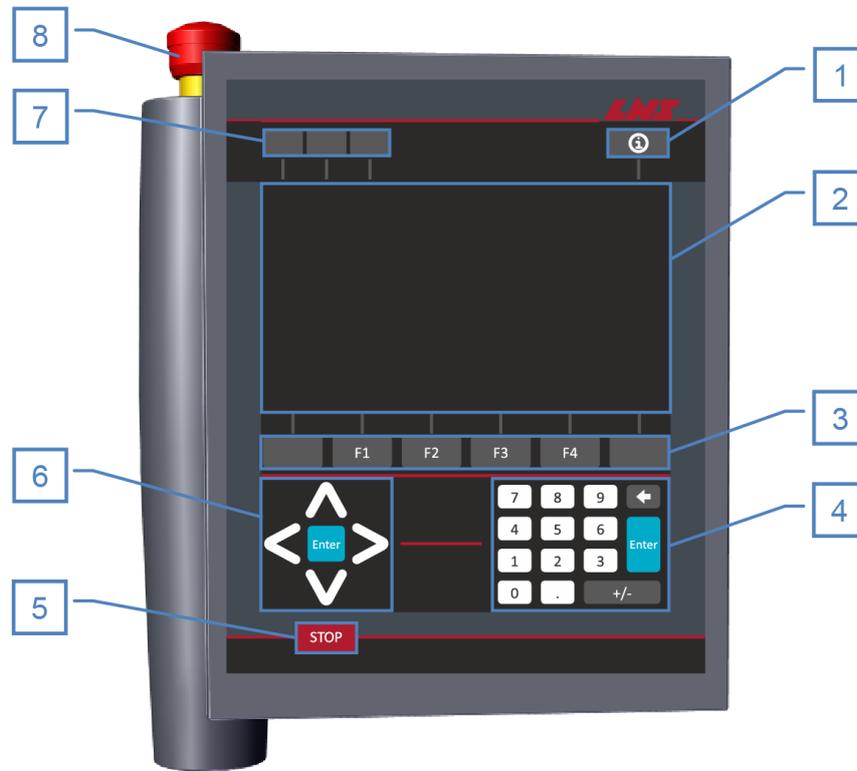
1. Push in the main switch and insert a padlock into the opening (1).
2. Close the padlock.



## 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.

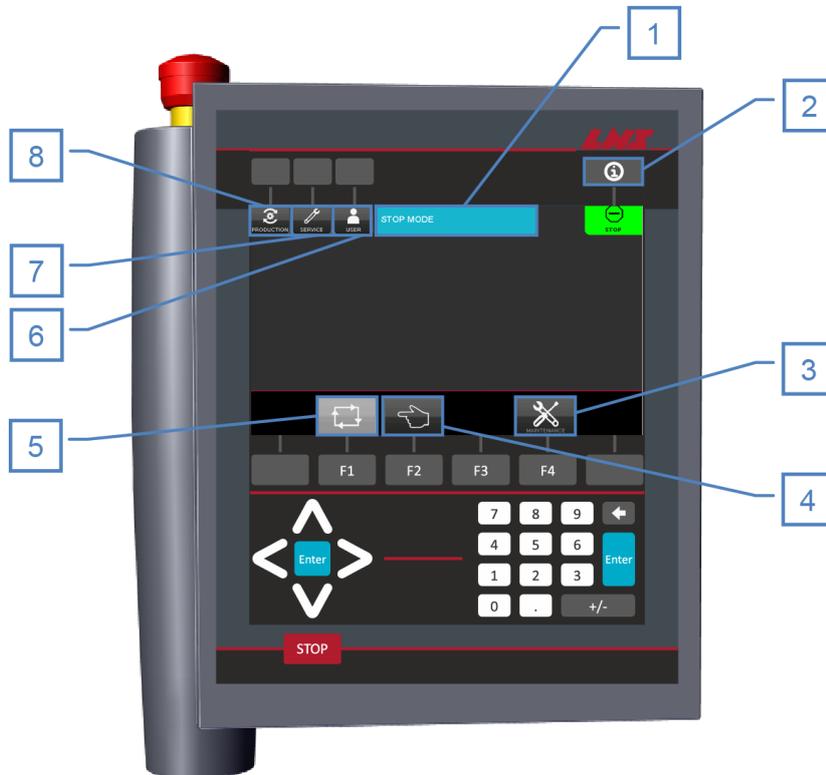
The latest error messages are stored in a register and can be called up to establish the diagnostics.



| 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 display 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   |  | Validate                  |
|   | Change to automatic mode   |  | Cancel                    |
|   | Stop after one bar   |  | Part recipes              |
|   | Change to manual mode  |  | Maintenance               |
|   | Forwards (the image can be inverted depending on the bar feed-out side)  |  | Exiting function          |
|   | Backwards (the image can be inverted depending on the bar feed-out side) |  | Index barrel one position |
|   | In top-cut-position (Top-Cut)  |  | Index barrel continuously |
|   | Previous page  |  | Start                     |
|  | Next page  |   |                           |

## 7.5 KEYS

### WARNING



#### Emergency stop. Use the emergency stop button!

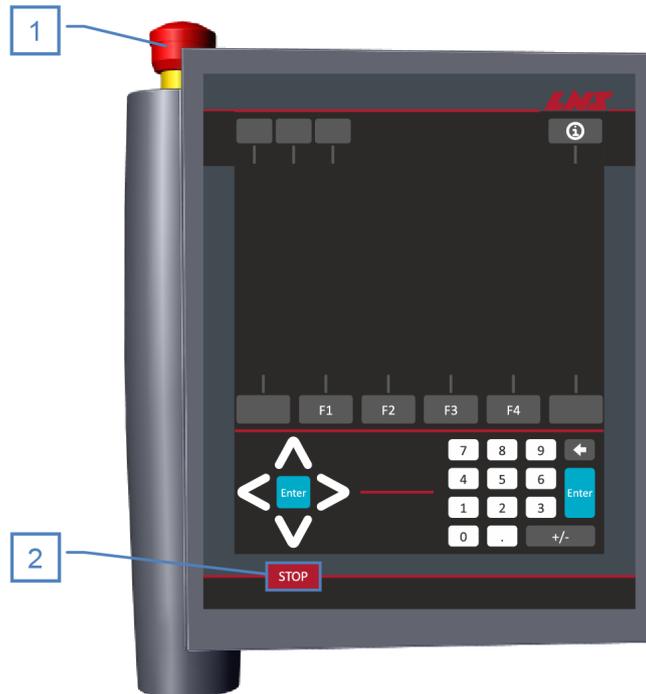
The STOP key is not an emergency stop button.

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

|  |  |
|--|--|
|   | <p><b>STOP key</b><br/>The STOP key is used to interrupt the sequence under way.<br/><b>Important: the automatic cycle of the lathe must first be interrupted.</b><br/>The STOP key can be pressed to exit setting mode, regardless of the level reached, and return to the work screen.</p> |
|   | <p><b>Function keys</b><br/>The multi-function keys are located right below the screen. The function attributed to them is indicated on the display by icons.<br/>As the operator advances through the handling operations, the functions of the buttons are automatically reassigned.</p>   |
|  | <p><b>Info key</b><br/>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.</p>   |

## 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.

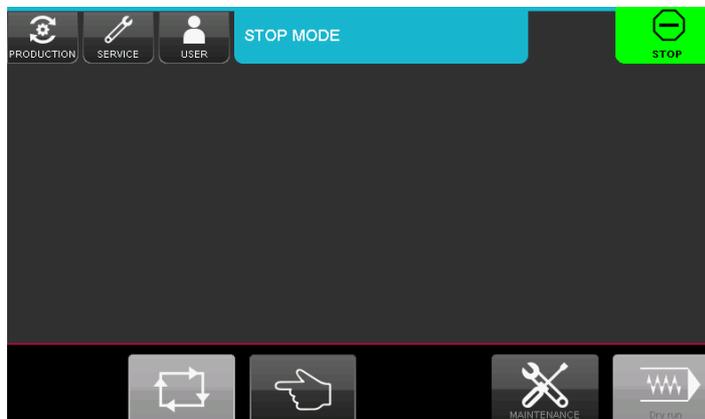
### INFO



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.

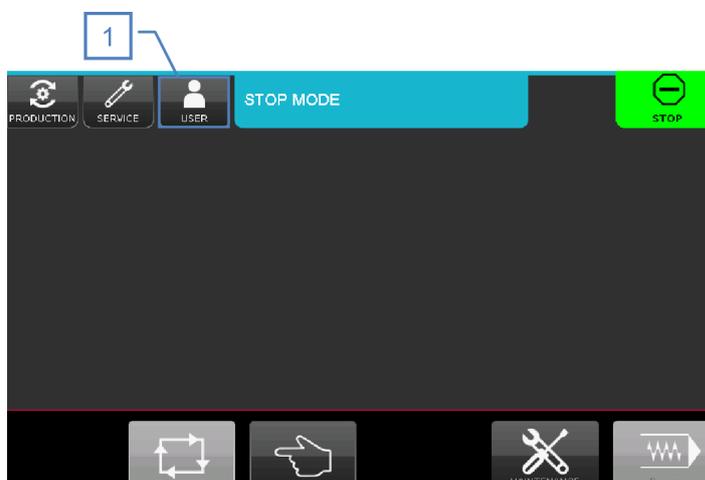


### INFO



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

2. Press the USER key (1).



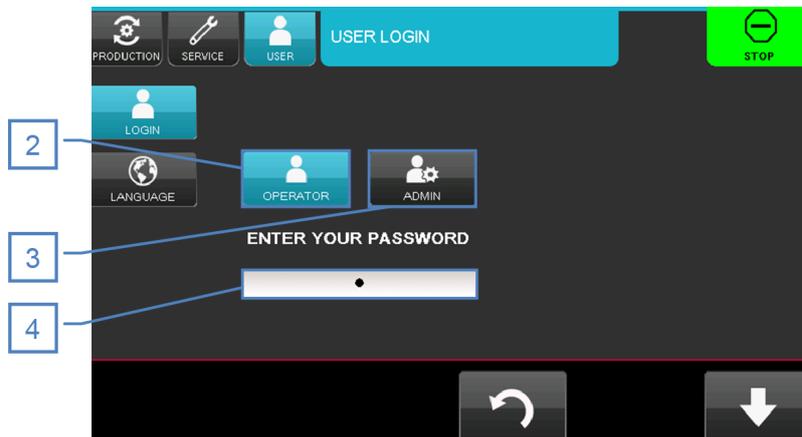
To log in as:

## OPERATOR

3. Press the OPERATOR key (2).

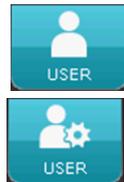
## ADMIN

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



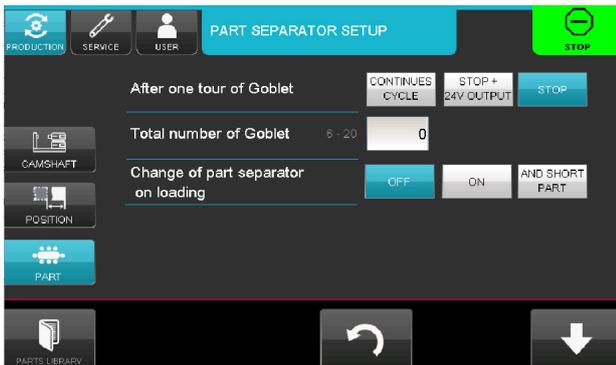
## INFO

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



## 7.7.2 PART

### Part separator (1/2)



#### After one tour of the goblet

Option of the part separator after one complete tour:

- Continue the cycle: continue the production and the part separator as usual.
- Stop + 24V output: Stop the production and send a signal to the lathe.
- Stop: Stop the production and trigger an alarm

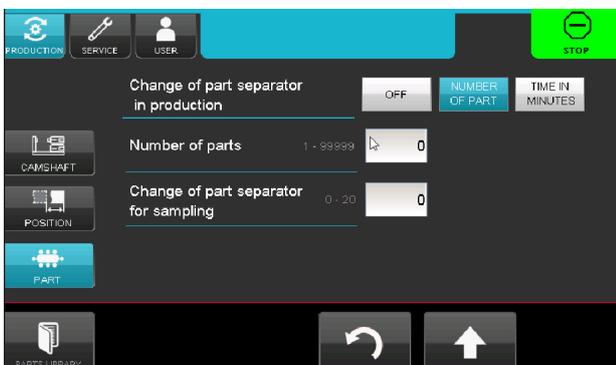
#### Total number of goblet

The total number of Goblet in the installation.

#### Change of part separator on loading

This parameter allow the user to enable/disable the part separator tumbler system during the new bar loading. A third option allows the user to enable the part separator goblets change when machining short parts.

### Part separator (2/2)



#### Change of part separator in production

This parameter allows the user to enable/disable the part separator barrel change during the production cycle. With two options, number of parts or by time minute

#### Number of parts

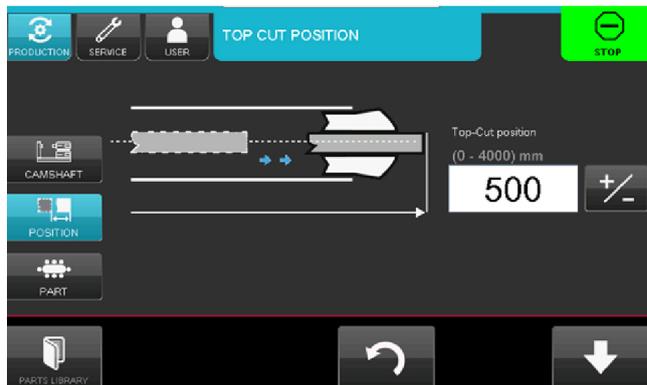
This parameter allows the user to set the quantity of parts to be machined before changing the parts separator.

#### Change of part separator for sampling

How many parts are tacked for sampling after each complete barrel production.

### 7.7.3 POSITION

#### Top-cut position for CNC type lathes

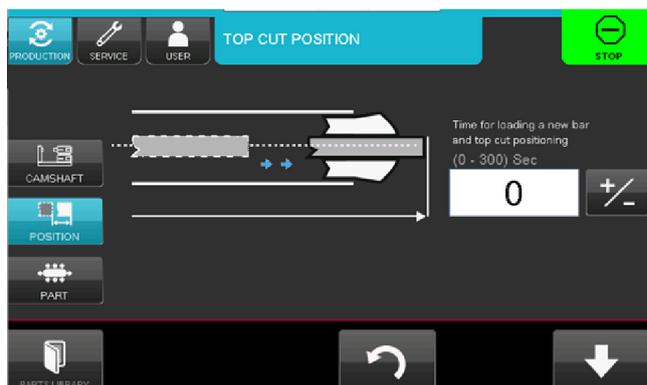


At feed out, the bar is entered into the spindle then automatically positioned in the clamping device of the lathe.

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.

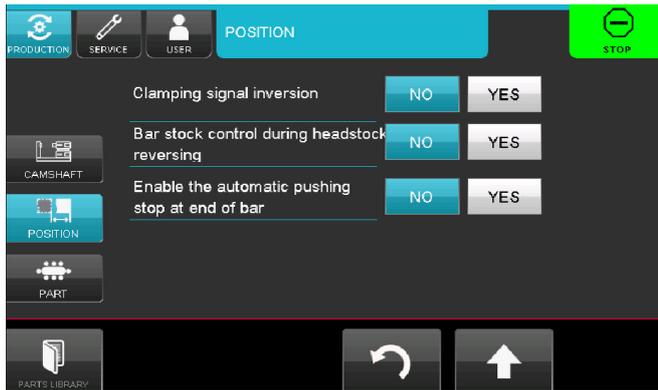
#### Top-cut position for CAM type lathes



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 time value manually determined and input into the barfeeder by the operator. The time value is equivalent to the distance to be travelled to the position of the bar stock in the clamping device of the lathe.

## Position parameters



### Clamping signal inversion

The interface signal is reversed depending on whether the clamping device functions by pushing or by pulling. It is therefore essential to know the operation of the clamping device, without this, the feeding process cannot be done correctly.

### Bar stock control during headstock reversing (only for lathers with mobile headstock)

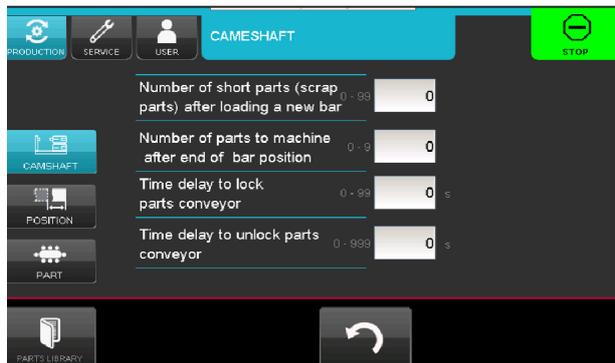
This parameter allow to enable/disable the alarm. When the headstock moves forward with open collet, this parameter ensure that the bar stock position doesn't change. For example if the collet stick to the bar stock.

### Enable the automatic pushing stop at end of bar

If this parameter is enabled, the barfeeder stops pushing when the end of bar position is reached.

### 7.7.4 CAMSHAFT

#### Camshaft parameters



#### Number of short parts after loading a new bar

This parameter ensures the quality of the first part produced. This is done by controlling the screw-cutter lug that serves to hold the headstock in the forward position and the part separator.

#### Number of parts to machine after end of bar position

In very specific cases, this parameter is used to produce short parts before loading a new bar. Depending on the material used and to guarantee optimum loading, it is sometimes advisable to remove the burr on the leading edge of the off-cuts. In principle, this is set to 0 or 1. For more information or advice regarding this parameter, contact LNS or its local representative.

#### Time delay to lock parts conveyor

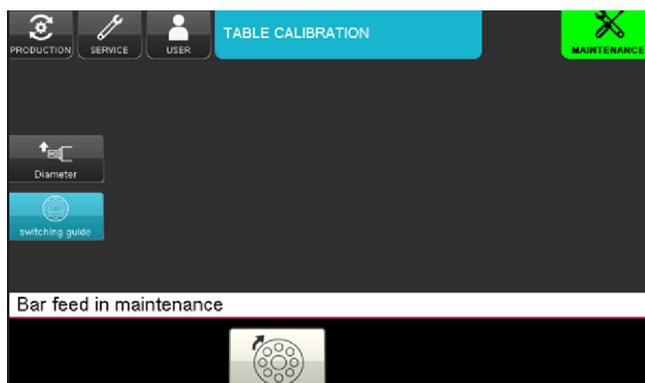
This parameter allows the user to set the delay before the parts conveyor is locked.

#### Time delay to unlock parts conveyor

This parameter allows the user to set the time duration for the parts conveyor to stay locked.

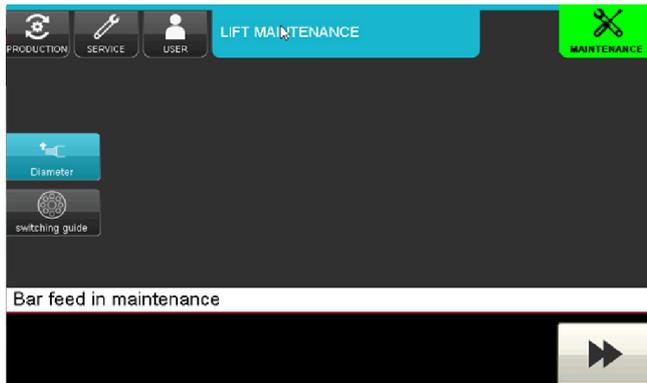
### 7.7.5 MAINTENANCE

#### Index the barrel



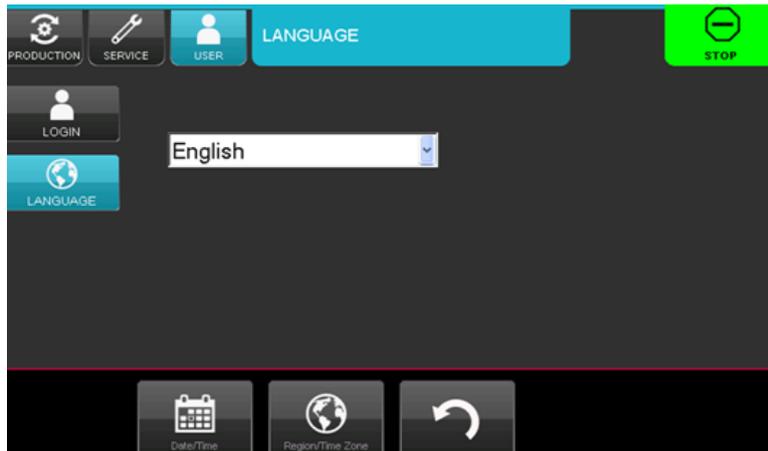
This function allows the user to manually index the barrel, for example to change bar diameter if the bar feeder is fitted with a hybrid barrel.

## Advance the pusher assembly



This maintenance function allows the user to advance the pusher assembly forward without advancing the connector, for example to make change the bar diameter.

### 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

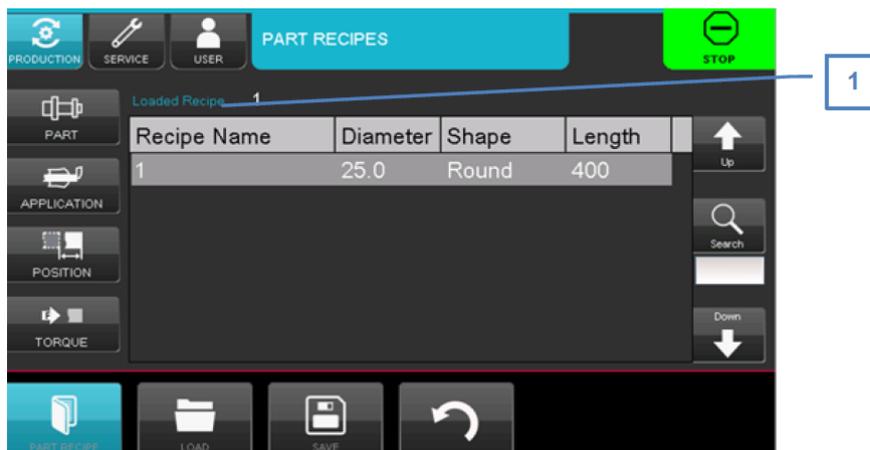
#### INFO



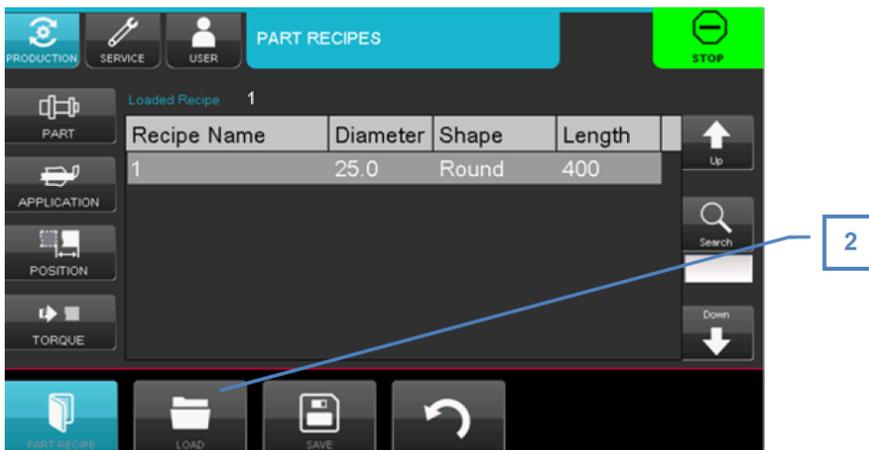
Part recipes only function if an extension memory card (optional) is installed on the machine.

Please contact LNS or its local representative for more information.

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.

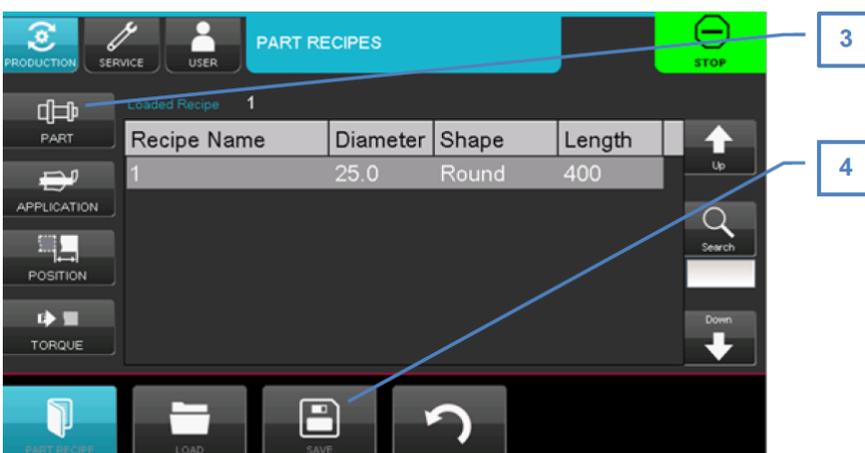
1. Select the part recipe by selecting the line that you want.
  - The recipe is highlighted.
2. Press the LOAD key (2).
  - The recipe is loaded.

## Adding a part/saving a part

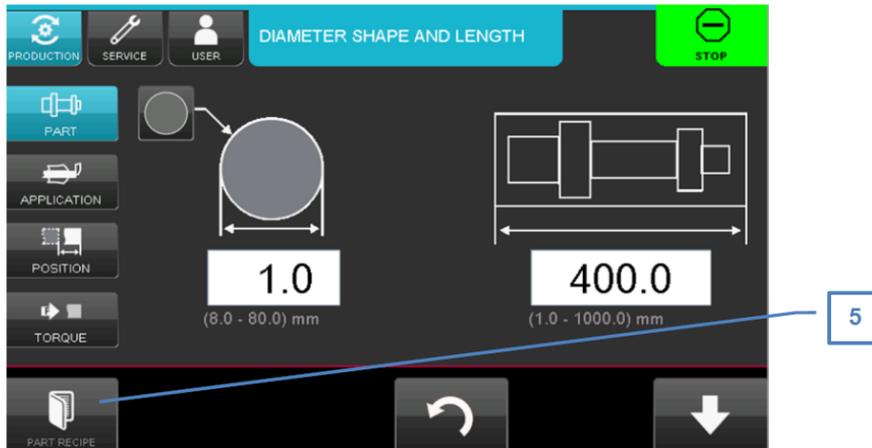
This screen makes it possible to add a new part to the library by saving all the current settings.

To add a part:

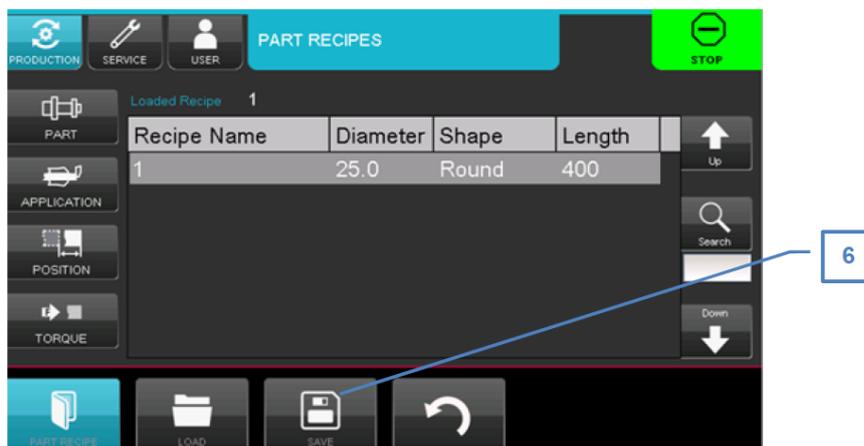
1. Load the part recipe.
2. Press the SAVE key (4).
  - Press the PART key (3) to make the changes to the part settings.



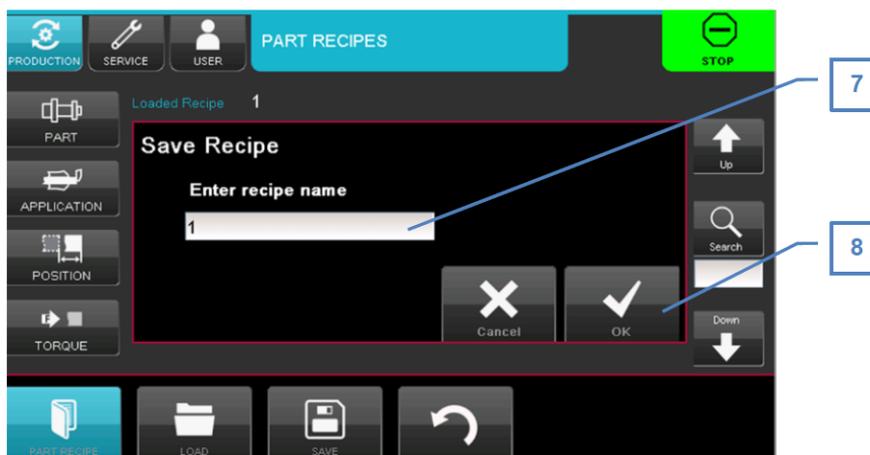
3. Press the PART RECIPE key (5).



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

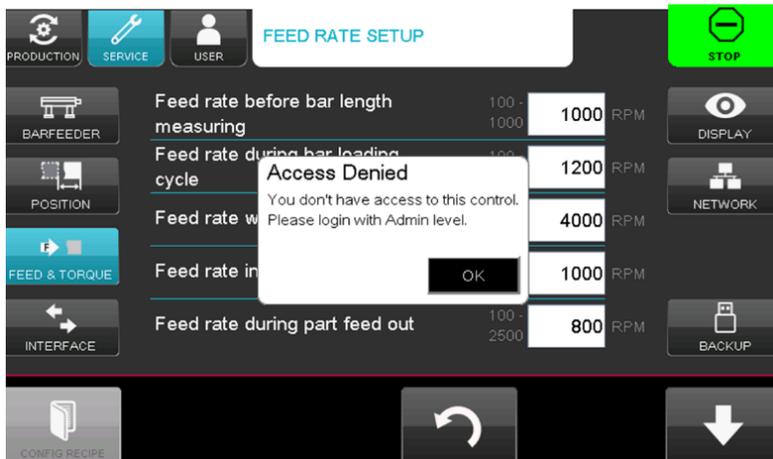


Changing the service settings can damage the machine and create operator safety issues.

Therefore, these settings can only be accessed by an ADMIN.

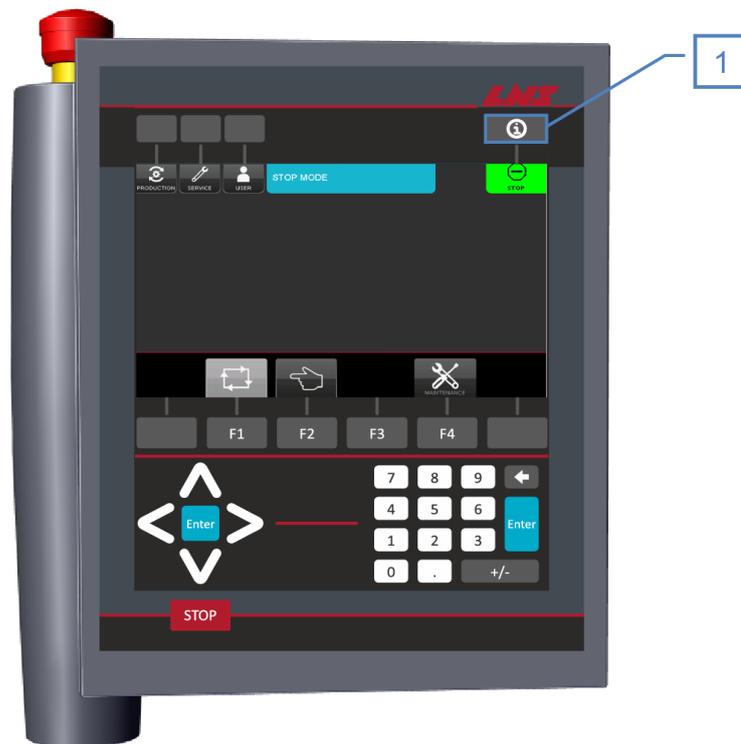
Only an LNS (or certified) technician is authorized to change them.

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 85).

### 7.7.10 AUTOMATIC CYCLE

#### WARNING



**Risk of crushing due to falling remnant during remnant extraction in automatic mode!**

Do not introduce hands or arms into the bar feeder when it is in operating mode to avoid crushing from the falling remnant during remnant extraction in automatic mode.

#### 7.7.10.1 DESCRIPTION

The amount of time the bar feeder can run unattended will depend directly on the frequency with which the operator fills the barrel. This operation can be performed during the production cycle.

Before the automatic cycle is started, it is advisable to check the following:

- The bars rest against the rear limiter,
- The pusher collet corresponds to the diameter of the bars loaded,
- The pushing torque is adapted to the bars loaded,
- The front rest (optional) is adjusted (opening and closing) and its elements are adapted to the shape of the bars loaded.
- On the lathe, the clamping device corresponds to the bars loaded.

#### INFO



Under certain conditions, it is possible to perform manual movements during the automatic cycle.

#### INFO



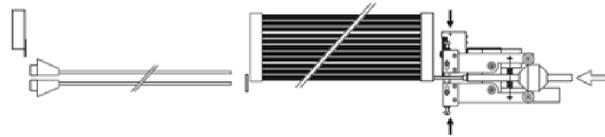
Depending on the lathe configuration and the bar feed system, the automatic cycle may vary.

### 7.7.10.2 PRODUCTION CYCLE

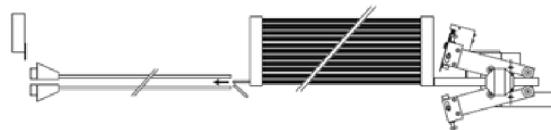
1. The bar is in the barrel, in the axis of the pusher and the spindle. The mobile vice and the connector advance.



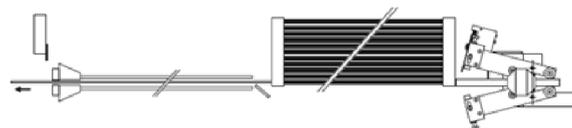
2. When the mobile vice reaches the end stop, the cam separates the roller bearings and the jaws clamp the bar. The connector advances and inserts the bar into the pusher collet.



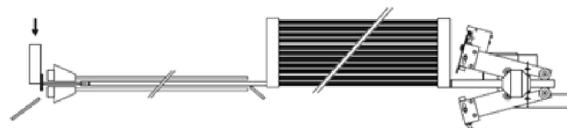
3. The mobile vice continues on its way and moves up against the barrel. The hydraulic pump starts up and pushes the pusher into the barrel.  
Only for CNC type lathes: on leaving the barrel, the bar pushes the positioning stop and the measuring path begins.  
Only for CAM type lathes: the loading timer set in the parameters starts.  
Note: If the barrel is empty, the bar feeder stops when the jaws clamp to insert the bar into the pusher collet.



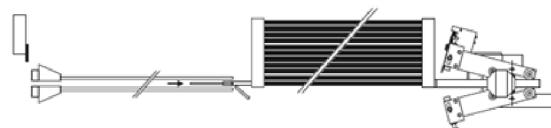
4. The pusher advances and positions the bar in the lathe clamping device. The lathe clamping device closes. For CAM type lathes, the lathe clamping device closes after the loading timer runs out. The production cycle begins.



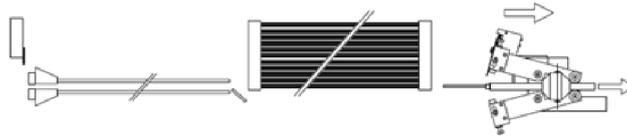
5. If there is not enough bar left to make another piece when the bar feeder collet draws close to the lathe clamping device, the end of bar signal is given and the bar feeder enters the loading sequence.



6. The hydraulic motor reverses the direction of rotation and draws the oil into the guidance tube. Drawn by the retraction cable, the pusher moves back with the remnant.



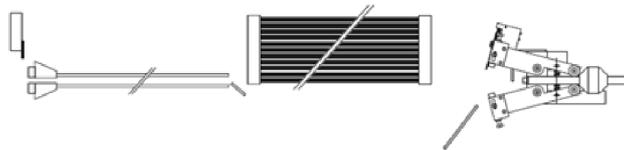
7. The pusher is locked into the connector, the hydraulic motor stops turning and the connector retracts, taking the mobile vice with it.



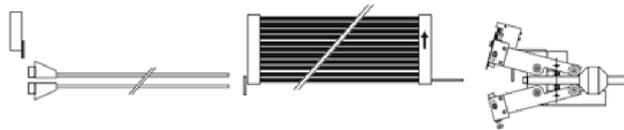
8. The mobile vice reaches the end stop, the cam separates the ball bearings and the jaws grip the remnant.



9. The connector withdraws to the end stop and extracts the remnant from the pusher collet.

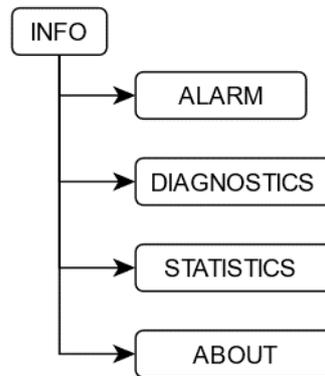


10. The barrel is then indexed and positions the next bar in the axis of the pusher and the spindle. The loading cycle restarts.

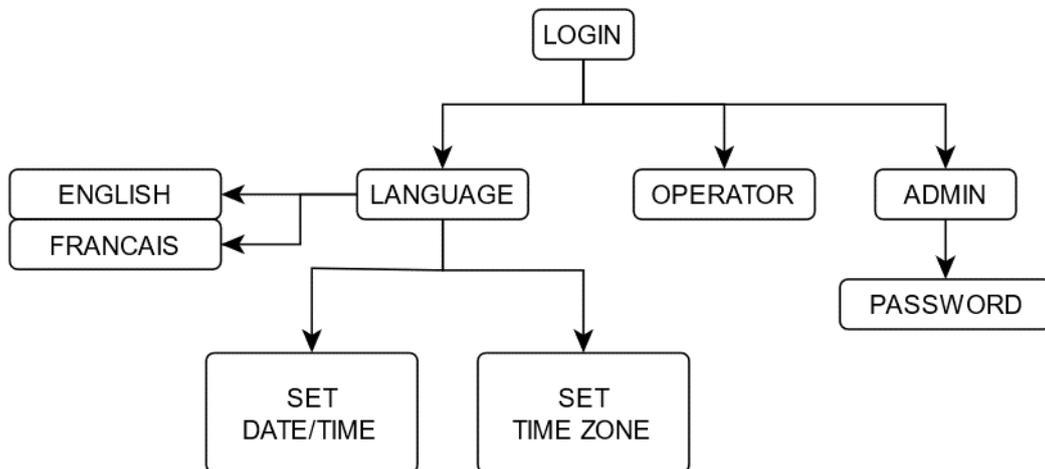


## 7.8 MENU STRUCTURE

### 7.8.1 INFORMATION



### 7.8.2 LOGIN



## 8 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.

### WARNING



**Risk of injury from moving parts!**

**Crushing hazard.**

Stop the machine before carrying out any maintenance work.

## 8.1 INSPECTIONS

### 8.1.1 INTERVALS

| Component             | Maintenance operation  | Every day | Every week | Every month | Every six months | Every year |
|-----------------------|--|-----------|------------|-------------|------------------|------------|
| 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         |            |             |                  |            |
| Hydraulic equipment   | Check the oil level in the hydraulic tank.   |           | X          |             |                  |            |
| Hydraulic equipment   | Clean the oil filter (→ HYDRAULIC TANK MAINTENANCE on the facing page)                               |           |            |             | X                |            |
| Bar feeder            | Clean the bar feeder.  |           |            |             |                  | X          |
| Rotating sleeve       | Check that the component rotates without friction. If a defect is present, contact your local agent. |           |            | 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 HYDRAULIC TANK MAINTENANCE

### NOTICE



#### **Danger of damaging the hydraulic pump and assembly!**

Maintain the hydraulic system regularly and change the hydraulic filter before it is no longer working properly.

Never operate the bar feeder without a hydraulic filter or with a damaged hydraulic filter.

### CAUTION



#### **Harmful to the environment!**

**Used oil is a pollutant and must not be disposed of in drains or outdoors.**

Bring used oil to a recycling center.

Otherwise, have it recycled by an authorized local service.

### INFO



It is important that the bars be cleaned before being inserted into the barrel. Excessive dirt can obstruct the filter and so slow down the return of the oil and hinder the performance of the hydraulic system.

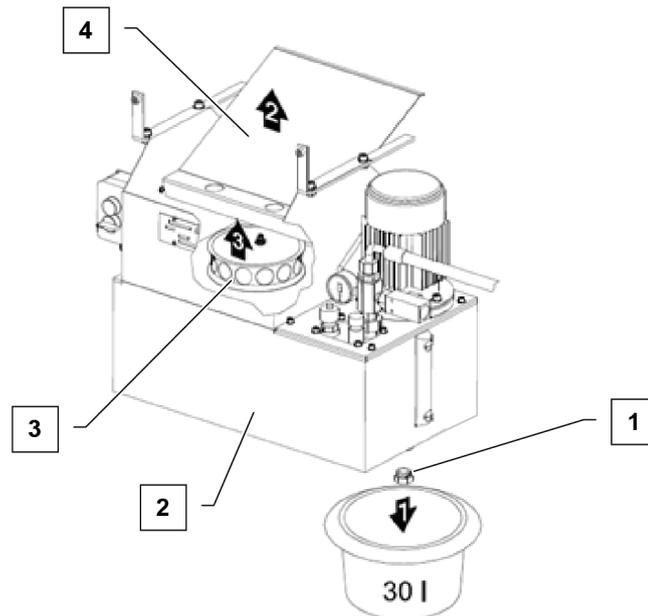
The following table shows the required hydraulic oil type and quantity:

|                               |  |
|-------------------------------|--|
| <b>Hydraulic oil quantity</b> | 25 l   |
| <b>Hydraulic oil type</b>     | ISO 100<br>100 mm <sup>2</sup> /s (cSt) at 40°C<br>DIN 68, 8°E at 50°C |

The frequency with which the filter and hydraulic tank must be cleaned and refilled with fresh oil depends on the type and cleanliness of the bars used and the frequency of use of the bar feeder.

**Procedure:**

1. Turn the bar feeder off.
2. Wait a few moments to make sure most of the oil has returned to the hydraulic tank (2).
3. Place a container with sufficient capacity (30 l) underneath the hydraulic tank drain plug (1) located under the hydraulic tank.
4. Unscrew the drain plug and drain the hydraulic tank.
5. Remove any metal scraps and remnants, then lift up the collection plate (4) to get access to the oil filter.
6. Remove the oil filter (3) by pulling it out upward.
7. Clean the oil filter in a bowl filled with benzene.
8. Clean the inside of the hydraulic tank with a clean rag.
9. Put the clean or new filter into position.
10. Clean the drain plug, apply some sealant it, then reattach it to the bottom of the hydraulic tank.
11. Fill the hydraulic tank with fresh oil (25 l).
12. Lower the collection plate back into position.



---

## 8.3 CLEANING

### NOTICE



**Risk of machine disruption from lack of cleanliness!**

Clean the bar feeder regularly.

---

### 8.3.1 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.**

---

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.

### 8.3.2 BARS

It is important to clean the bars, even briefly, before loading them into the bar feeder. Excessive dirt can form a deposit at the base of the bar feeder, which can in turn slow the oil return and affect the performance of the hydraulic system.

## 8.4 BATTERIES

In the event of a power failure, a backup battery saves the data contained in the PLC. It is possible that with time this battery will slowly drain; in this case a message will be displayed on the remote control. The battery must be replaced as soon as possible with a battery of the same type. The same applies to the servo amplifier.

### INFO



**Switching off the bar feeder when the message “Battery low” is displayed may wipe the parameters.**

Do not switch off the power until the battery has been replaced.

---

---

## 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

#### AL01 – EMERGENCY STOP LINE OPEN!

##### Description

The lathe or the bar feeder goes into an emergency stop condition. The problem is generated anytime the safety line opened.

##### Solutions

1. Check the states of the emergency stop buttons of barfeed and lathe.
2. Check the wiring according to the Electrical drawings.
3. Check the PLC connection.
4. Press STOP key on the remote control to reset the alarm.

#### AL02 – MAIN ACCESS COVER OPEN!

##### Description

The PLC does not detect input (I4 – SQ11) from the safety switch on the main access cover. The problem is generated when the main access cover on the bar feeder is open, exposing automated mechanical parts.

##### Solutions

1. Close the cover.
2. Adjust or replace switch SQ11.
3. Press STOP key on the remote control to reset the alarm.

#### AL04 – BAR FEEDER RETRACTED OR NOT LOCKED IN ITS WORKING POSITION!

##### Description

The PLC does not detect input (I3 – SQ10) from the safety switch on the lateral pivoting device. The problem is generated anytime the bar feeder is swung out to load new bar stock into the guide barrels and the SQ10 switch is no longer intact.

##### Solutions

1. Put the bar feed back into working position and tighten down the locking screw so that the bar feed cannot move out of its working position.
2. Adjust or replace switch SQ10.
3. Press STOP key on the remote control to reset the alarm.

---

**AL05 – OIL PRESSURE FAILURE!**

---

**Description**

The PLC does not detect input (I2 – SP2) when using the hydraulic pump motor. The problem is generated after 30 seconds, anytime the oil pressure is not sufficient to make the oil pressure switch (factory setting 0.5 bar).

**Solutions**

1. Check the oil level (25 liters of oil ISO 100 are recommended).
2. Switch the PLC to RUN mode.
3. Adjust or replace pressure switch SP2.
4. Press STOP key on the remote control to reset the alarm.

---

**AL06 – AIR PRESSURE FAILURE!**

---

**Description**

The PLC does not detect input (I1 – SP1) after a period of 5 seconds. The problem is generated anytime air pressure is not sufficient, below 3 bar or 45 psi.

**Solutions**

1. Raise the air pressure to min. 0.3 MPa (3 bar) and max. 0.6 MPa (6 bar).
2. Switch the PLC to RUN mode.
3. Adjust or replace pressure switch SP1.
4. Press STOP key on the remote control to reset the alarm.

---

**AL08 – BARREL INDEXING SIGNAL SQ2 MISSING!**

---

**Description**

The PLC does not detect input (I6 – SQ2) anytime the barrel indexes. The problem is normally generated when the SQ2 switch is mis-adjusted on the barrel locking assembly.

**Solutions**

1. Adjust or replace switch SQ2.
2. Adjust the barrel locking assembly.
3. Press STOP key on the remote control to reset the alarm.

---

**AL09 - BARREL INDEXING SIGNAL SQ2 ALWAYS PRESENT!**

---

**Description**

The PLC always detect input (I6 – SQ2) anytime the barrel indexes. The problem is normally generated when the SQ2 switch mis-adjusted too close to the locking bracket.

**Solutions**

1. Adjust or replace switch SQ2.
2. Adjust the barrel locking assembly.
3. Press STOP key on the remote control to reset the alarm.

---

**AL10 – BARREL INDEXING DECODING SIGNAL SQ3 MISSING!**

---

**Description**

The PLC does not detect input (I7 – SQ3) each time the barrel is indexed. The problem is normally generated when the indexing ring on the barrel is not picking up the SQ3 switch.

**Solutions**

1. Adjust or replace switch SQ3.
2. Press STOP key on the remote control to reset the alarm.

---

**AL11 - BARREL INDEXING DECODING SIGNAL SQ3 ALWAYS PRESENT!**

---

**Description**

The PLC always detect input (I7 – SQ3) while indexing the barrel. The problem is normally generated when the SQ3 switch is mis-adjusted and does not detect the indexing holes.

**Solutions**

1. Adjust or replace switch SQ3.
2. Press STOP key on the remote control to reset the alarm.

---

**AL12 – PRODUCTION CYCLE INTERRUPTED! QUANTITY OF PROGRAMMED PARTS REACHED (PARTS COUNTER)!**

---

**Description**

This option allows to program the bar feed system and the lathe to stop after machining a quantity of work-pieces set by the user.

**Solutions**

1. Restart the bar feed system and the lathe

---

**AL13 – TRANSFER DEVICE FRONT POSITION SIGNAL SQ5 MISSING!**

---

**Description**

The PLC does not detect input (I9 – SQ5) during top-cut positioning. The problem is normally generated when the SQ5 switch is mis-adjusted and does not pick up the transfer device in the maximum forward position.

**Solutions**

1. Adjust or replace switch SQ5.
2. Remove the obstruction keeping the transfer device from advancing all the way forward.
3. Press STOP key on the remote control to reset the alarm.

---

**AL14 - TRANSFER DEVICE FRONT POSITION SIGNAL SQ5 ALWAYS PRESENT!**

---

**Description**

The PLC always detect input (I9 – SQ5). The problem is normally generated when the SQ5 switch is mis-adjusted and remains on after the transfer device has moved to the home position.

**Solutions**

1. Check Adjust or replace switch SQ5.
2. Remove the obstruction keeping the transfer device from advancing all the way forward.
3. Press STOP key on the remote control to reset the alarm.

---

**AL15 - TRANSFER DEVICE BACK POSITION SIGNAL SQ6 MISSING!**

---

**Description**

The PLC does not detect input (I10 – SQ6) in the home position. The problem is normally generated when the SQ6 switch is mis-adjusted and does not detect the transfer device in the home position.

**Solutions**

1. Adjust or replace switch SQ6.
2. Remove the obstruction keeping the transfer device from reversing to the home position.
3. Press STOP key on the remote control to reset the alarm.

---

**AL16 - TRANSFER DEVICE BACK POSITION SIGNAL SQ6 ALWAYS PRESENT!**

---

**Description**

The PLC always detect input (I10 – SQ6). The problem is normally generated when the SQ6 switch is mis-adjusted and remains on after the transfer device has moved to the maximum forward position (SQ5).

**Solutions**

1. Adjust or replace switch SQ6.
2. Remove the obstruction keeping the transfer device from reversing to the home position.
3. Press STOP key on the remote control to reset the alarm.

---

**AL17 – PUSHER/PISTON LOCKED SIGNAL SQ7 MISSING!**

---

**Description**

The PLC does not detect input (I11 – SQ7) in automatic production cycle. The problem is normally generated when the SQ7 switch is mis-adjusted and does not read the mechanical plunger when the pusher/piston is locked in place.

**Solutions**

1. Adjust or replace switch SQ7.
2. Check and reconnect if necessary the pusher/piston to the retract cable.
3. Check and adjust if necessary the disconnecting hook of the connector locking device.
4. Remove any mechanical obstruction keeping the connector to move.
5. Press STOP key on the remote control to reset the alarm.

---

**AL18 - PUSHER/PISTON LOCKED SIGNAL SQ7 ALWAYS PRESENT!**

---

**Description**

The PLC always detect input (I11 – SQ7) after the transfer device has reached the maximum forward position (SQ5 turns on). The problem is normally generated when the mechanical pusher/piston release bracket is not adjusted correctly.

**Solutions**

1. Adjust or replace switch SQ7.
2. Check and reconnect if necessary the pusher/piston to the retract cable.
3. Check and adjust if necessary the disconnecting hook of the connector locking device.
4. Remove any mechanical obstruction keeping the connector to move.
5. Press STOP key on the remote control to reset the alarm.

---

**AL20 – PROXIMITY SWITCH SQ1 SIGNAL MISSING!**

---

**Description**

The PLC does not detect input (I5 – SQ1) prior to measuring the new bar during top-cut positioning. The problem is normally generated by a mechanical obstruction, however it can be caused by switch mis-adjustment or defective.

**Solutions**

1. Adjust or replace switch SQ1.
2. Remove any mechanical obstruction keeping the mechanical stop to move.
3. Press STOP key on the remote control to reset the alarm.

---

**AL21 – END OF BAR SIGNAL SQ8 FAULTY!**

---

**Description**

The PLC receives inputs (I12 – SQ8) and (I10 – SQ6) simultaneously. The problem is generated during sequence 2 of the production cycle if the end-of-bar signal (SQ8) is still active when the transfer device reaches the home position.

**Solutions**

1. Adjust or replace switch SQ8.
2. Remove any mechanical obstruction keeping the connector to move.
3. Check and replace if necessary the pusher retract cable.
4. Press STOP key on the remote control to reset the alarm.

---

**AL23 – TOP CUT POSITIONING CONFIRMATION 2 MIN. TIME ELAPSED!**

---

**Description**

This alarm occurs whenever the top-cut position is not reached within the 2-minute safety time allowed. The problem is normally generated when the hydraulic pressure is not adjusted properly.

**Solutions**

Signal A1 missing

1. Make sure the hydraulic pressure is set correctly.
2. Remove any obstruction that could be preventing the bar from reaching top-cut position.

---

**AL25 – LATHE DID NOT RESUME ITS PRODUCTION CYCLE!**

---

**Description**

The PLC has not received the signal of the clamping device in automatic production cycle.

**Solutions**

1. Check to see if the input changes while opening and closing the clamping device.
2. Press STOP key on the remote control to reset the alarm.

---

**AL27 – BAR STOCK MOVING FWD WHILE HEADSTOCK MOVING BACKWARD!**

---

**Description**

This problem occurs if the lathe tool is defective, broken or at the wrong place.

**Solutions**

1. Check the status and position of the lathe tool.

---

**AL28 – HEADSTOCK TRAVEL SHORTER THAN EXPECTED. THE PUSHER LOST THE BAR STOCK!**

---

**Description**

The overall part length parameter value is too short or the pusher did not travel the distance that was programmed in for the overall part length.

**Solutions**

1. Check that the Input Overall Part Length parameter is equal to the travel of the headstock and not the finished part length.
2. Check the collet on the pusher. It may be broken or worn or the incorrect size.
3. Check to see if the pusher is jammed.
4. If the problem persists please contact LNS SA for further information.

---

**AL29 – PARTS SEPARATOR GOBLETS SYSTEM MALFUNCTION!**

---

**Description**

This alarm occurs if any mechanical obstruction prevent the separator goblets to be correctly positionned or when the positioning motor is defective.

**Solutions**

1. Remove any obstruction that could prevent the functioning of separator goblets positionning.
2. Adjust or replace the goblets' positioning motor.
3. If the problem persists please contact LNS SA for further information.

---

**AL30 – PUSHER LOST THE BAR STOCK WHILE MOVING BACK TO HOME POSITION!**

---

**Description**

This alarm occurs whenever the PLC does not receive the signal (I8 – SQ4) during remnant extraction in automatic production cycle. The problem occurs when the remnant is lost during extraction movement.

**Solutions**

1. Check the collet function and state.
2. Make sure the collet internal diameter is the right size for bar stock.
3. Remove any excess burrs on the bar before loading.

---

**AL31 – LATHE TAPPING DEVICE FAILURE!**

---

**Description**

This alarm occurs when the screw-tap is broken.

**Solutions**

1. Replace the screw-tap.

---

**AL32 – BAR STOCK NOT EXTRACTED FROM THE COLLET!**

---

**Description**

This alarm is generated whenever the PLC receive the signal (I8 – SQ4) after trying to extract the remnant out of the collet. The problem occurs when the proximity switch detects something after extraction of the remnant from the collet.

**Solutions**

1. Remove any obstruction from the proximity switch SQ4 detection range.
2. Check the correct functioning of the remnant extraction device.
3. Check the collet function and state.
4. Check the function of proximity switch SQ4.
5. Adjust or replace switch SQ4.

---

**AL35 – BAR MAGAZIN EMPTY!**

---

**Description**

The alarm occurs mainly when the barrel is empty.

**Solutions**

1. Load bar stock into the barrel.

---

**AL43 – PLC BATTERY LOW!**

---

**Description**

This alarm occurs whenever PLC drops below the 3VDC needed to supply backup memory power for the PLC.

**Solutions**

1. Replace the battery as soon as possible.

Note: do not power down the bar feeder until the battery has been replaced. Failure to follow this direction will result in loss of PLC program.

---

**AL56 – SINGLE BAR MODE!**

---

**Description**

This option allows to program the bar feed system and the lathe to stop after machining one bar, set by the user.

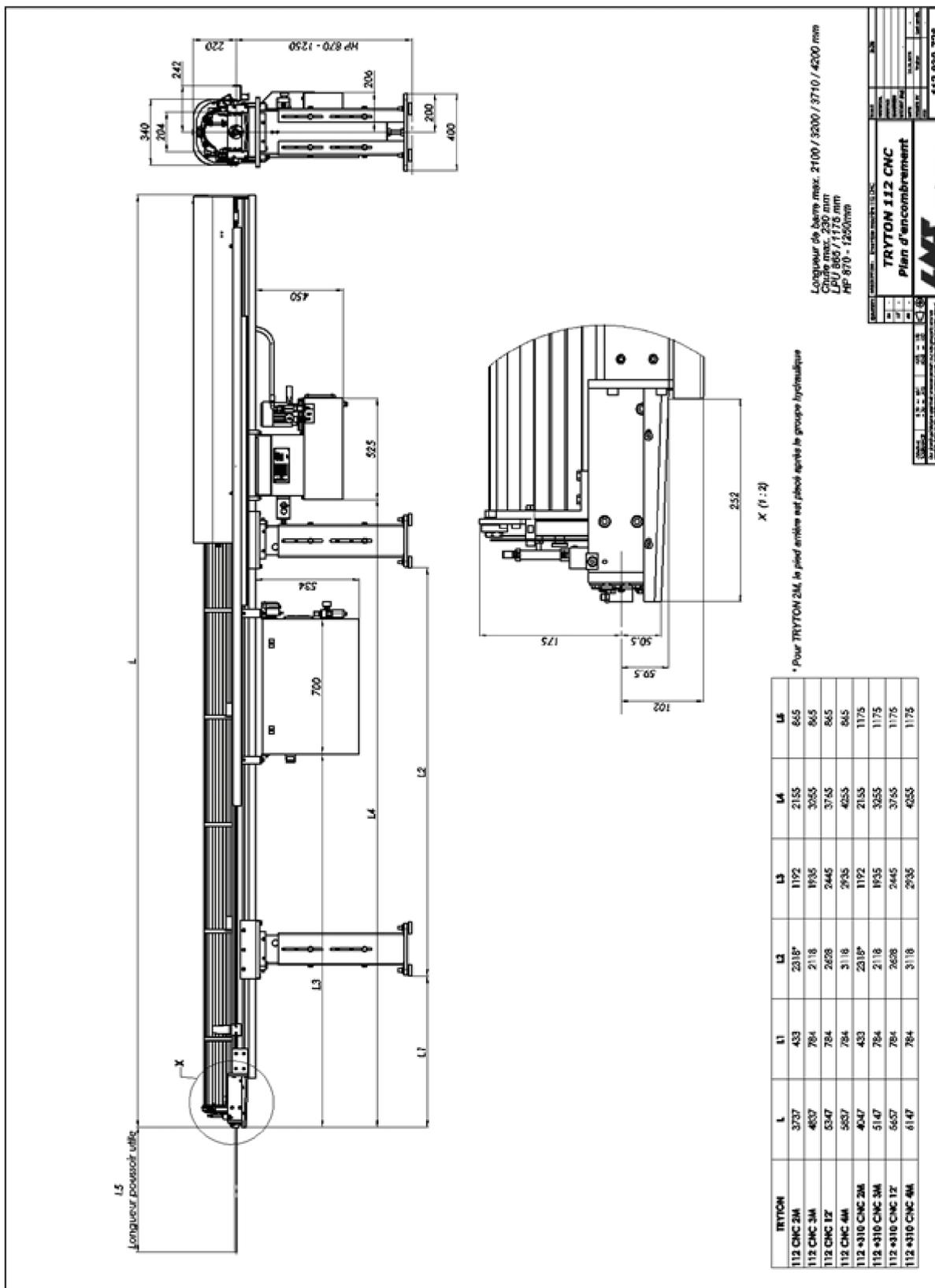
**Solutions**

1. Restart the bar feed system and the lathe.

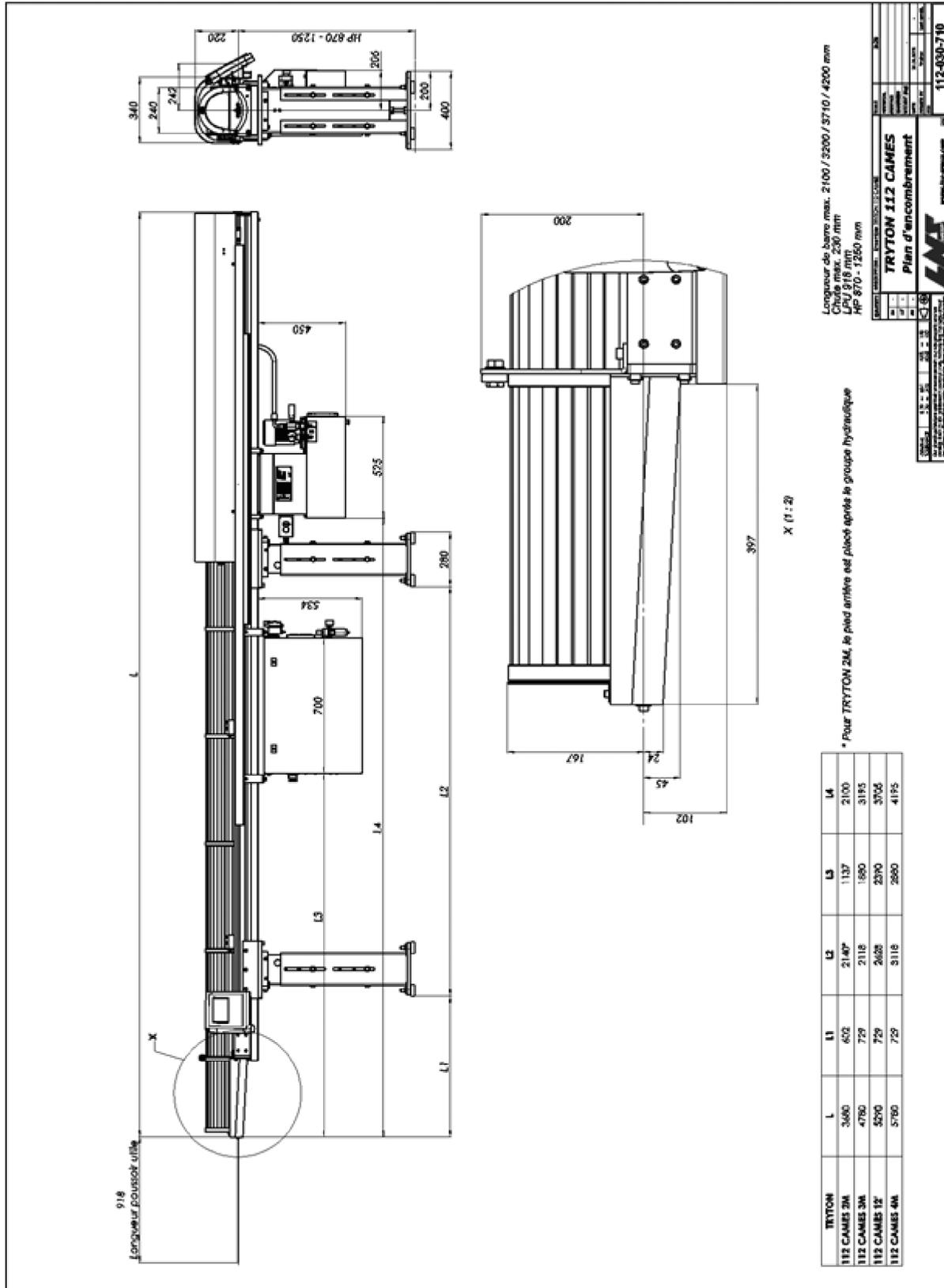
# 11 APPENDICES

## 11.1 DIMENSIONAL DRAWINGS

### 11.1.1 TRYTON 112+ FOR CNC TYPE LATHES



11.1.2 TRYTON 112+ FOR CAM TYPE LATHES



---

## 11.2 GLOSSARY

|                            |   |
|----------------------------|---|
| <b>Bearing</b>             | Machine component in which a shaft or other elements turn.  |
| <b>Collet</b>              | Secures the bar stock and connects it to the pusher.  |
| <b>Drive</b>               | Transforms electrical energy into mechanical energy.  |
| <b>Front rest</b>          | The last guide element in contact with the bar stock before the entrance of the lathe spindle. Stabilizes the bar movement.                                   |
| <b>Informed persons</b>    | Persons sufficiently informed or supervised by qualified personnel to enable them to avoid the dangers posed by electricity (maintenance or operating staff). |
| <b>Motor</b>               | Equipment transforming electrical energy into mechanical energy.  |
| <b>PLC</b>                 | Programmable Logic Controller: Digital computer used for process automation. The PLC controls the machine's operation.  |
| <b>Pusher</b>              | Controls the movement of the bar stock inside the bar feeder and lathe spindle.   |
| <b>Remnant vice</b>        | Fixes the bar stock for insertion or retraction.  |
| <b>Rotating sleeve</b>     | Connects the pusher to the collet.  |
| <b>Shaft</b>               | Steel bar for supporting rotating elements or to transfer power.  |
| <b>SD card</b>             | Removable memory card (Secure Digital).   |
| <b>Qualified personnel</b> | 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



**SERVICE HOTLINE**

|                     |                     |
|---------------------|---------------------|
| Mo. - Th.           | Fr.                 |
| 07:30 - 12:00 (CET) | 07:30 - 12:00 (CET) |
| 13:30 - 17:00 (CET) | 13:30 - 16:00 (CET) |



LNS Sàrl

Route de Frinvillier

2534 Orvin

Switzerland

[service@lns-europe.com](mailto:service@lns-europe.com)

<http://www.lns-europe.com/>

Tel.: +41 (0) 32 358 02 00

Fax: +41 (0) 32 358 02 01

## 11.5 EC DECLARATION OF CONFORMITY

### EC DECLARATION OF CONFORMITY



In accordance with Annex II 1 A of the directive 2006/42/EC

We hereby declare that the machine below meets the requirements of the following directives:

- Machinery directive: 2006/42/EC
- Low voltage directive: 2014/35/EU
- EMC directive: 2014/30/EU

|   |   |
|---|---|
| Manufacturer:   | <b>LNS Sàrl</b><br><b>Route de Frinvillier</b><br><b>2534 Orvin</b><br><b>Switzerland</b>                                     |
| Authorized Representative:  | <b>LNS Sàrl</b><br><b>Route de Frinvillier</b><br><b>2534 Orvin</b><br><b>Switzerland</b>                                     |
| Creation of the relevant technical documents in accordance with Annex VII Section A of the machinery directive 2006/42/EC | <b>PLASECO</b><br><b>Kurt De Pauw</b><br><b>Route de Payerne 11</b><br><b>CH-1752 Villars-sur-Glâne</b><br><b>Switzerland</b> |
| Description of machine:   | Bar Feeder  |
| Type:   | Tryton 112+   |
| Serial number:  |   |

The following national and harmonized standards have been applied:

In relation to 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

In relation to the low voltage directive:

EN IEC 61439-1:2021; EN IEC 61439-2:2021; EN 61439-3:2012/2019-04

In relation to the EMC directive:

EN IEC 61000-6-4:2019; EN IEC 61000-6-2:2019

Place and date  
Orvin, April 13<sup>th</sup>, 2022

(Stamp and signature)  
Sabrina Tschannen  
Export Manager

