

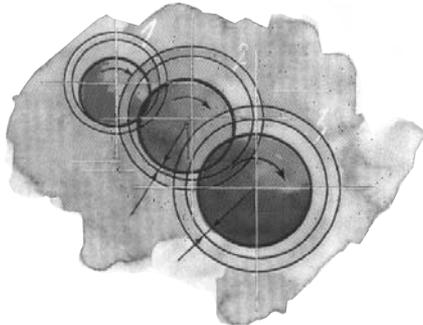
START UP MANUAL

QUICK LOAD SERVO S3

Serial Nr.:



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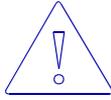




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1. STARTING THE BAR FEED SYSTEM



Please read the safety measures explained at the beginning of the Instruction manual before handling the following equipment.

1.1 Description

All handling, optional accessories and settings required by the bar feed system to carry out a specific job are part of the set-up.

A few simple operations are necessary to prepare the device to handle another range of diameters.

The set-up procedures have been divided into 4 categories:

Settings related to installation :

- End of bar position
- Top-cut position

Settings related to bar stock and machined parts :

- Example 1: Set-up for round bars
- Example 2: Set-up for hexagonal bars
- Example 3: Set-up for square bars
- Example 4: Set-up for "others" bars

Mechanical settings and optional accessories :

- Replacement of the feeding pusher
- Slope of the magazine table
- Settings of the loading fingers
- Settings of the loading table

Lathe set-up :

- Spindle reduction tubes
- Optional accessories for profiled bars

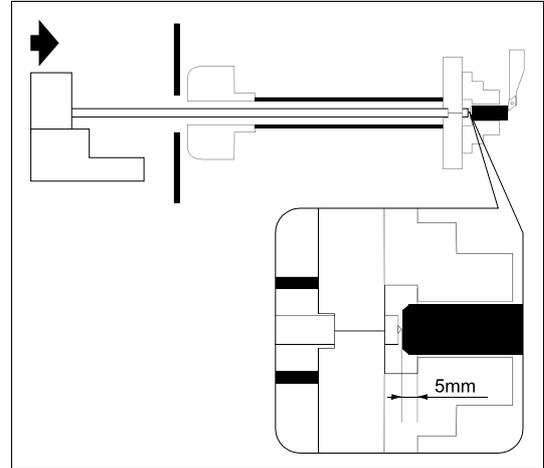
The procedures to be followed are explained in this chapter and will be presented as concrete examples, whenever possible.

2. SETTINGS RELATED TO INSTALLATION

2.1 End of bar

The end of bar position determines the moment when the bar feed enters the loading cycle.

Usually, the end of bar position is adjusted as closely as possible behind the clamping system of the lathe (approximately 5 mm or a 1/4" behind the chuck jaws or collet pads).



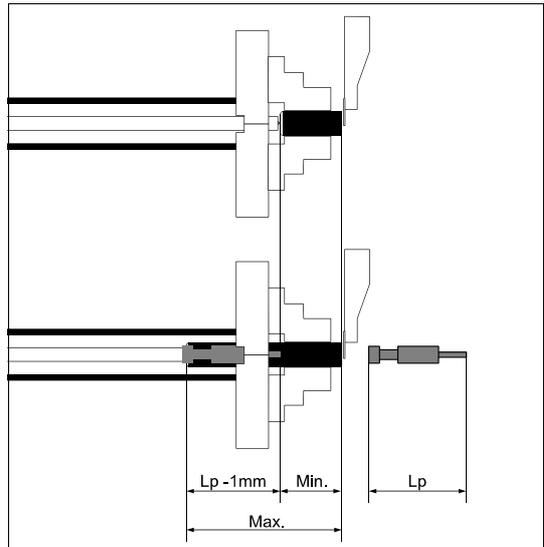
This will provide minimum bar stock remnant.

Regardless of the length of the bars, or parts, the end of bar position is always the same.

In very special cases, a different end of bar setting needs to be selected.

The length of the remnant may vary :

- The minimum remnant length (Min) is obtained when the feeding pusher is just behind the clamping device while the last part is being machined.
- The maximum remnant length (Max) is obtained when there is not enough material for machining an additional part ($L_p - 1 \text{ mm}$).



Maximum remnant length = $L_p - 1 \text{ mm} + \text{Min}$

End of bar setting :

Important : Before handling the barfeeder, stop the lathe at the end of part cycle.

1. Press the key **[STOP]**.
2. Press the key **[MENU]**.
The display reads :

PARAMETERS RELATED TO

Note :
To memorize a new parameter or new value, keep [ENTER] pressed until the icon disappear.

3. Press twice the key attributed to the icon **[PAGE DOWN]**.
The display reads :

SETTINGS FOR POSITIONING

4. Press the key attributed to the icon **[ENTER]**.
The display reads :

END OF BAR POSITION **** MM

5. Press the key attributed to the icon **[SET]**.
Depending on which sequence the bar feed is in when the parameter is selected, the available functions and icons can change :

Functions	By offset correction	By teaching
<i>Conditions</i>		
- Loading channel down - No bar stock in the loading channel	icon : [+/-]	icon : [TEACH IN]

[+/-] By offset correction

- Press the key attributed to the icon **[+/-]**.
The display reads the current end of bar position.
- Enter the correction value with the numerical keys. Then, press the key attributed to the icon **[+]** to add the value, or the key attributed to the icon **[-]** to subtract it.
The display reads the new end of bar position.
- To exit the end of bar set mode, press the key attributed to the icon **[ESC]**.

[TEACH IN] By teaching

- Press the key attributed to the icon **[TEACH IN]**.
The display reads the current end of bar position
- Press the key **[FWD]** and advance the pusher to the desired position (see previous page).
- To validate the new end of bar position, keep **[ENTER]** pressed until the icon disappears.

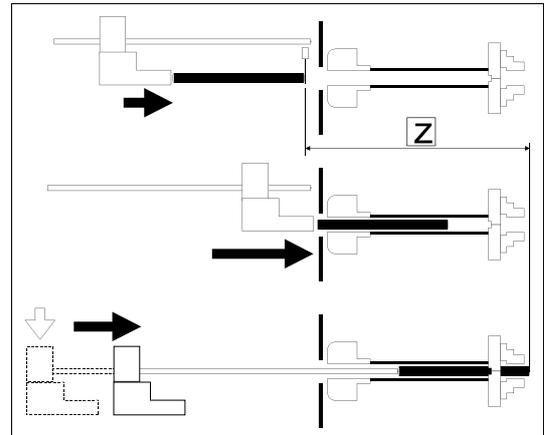
6. To exit the set mode, press the keys **[MENU]** or **[STOP]**.

2.2 Top-cut position

During the loading cycle, the bar is automatically loaded and positioned into the spindle, outside the clamping device of the lathe (chuck or actuator).

This positioning corresponds to a value (Z) programmed by the operator, which is equal to the distance between the measuring cell and the position of the material in the lathe clamping device.

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



Top cut position setting :

Important : Before handling the barfeeder, stop the lathe at the end of part cycle.

1. Press the key **[STOP]**.
2. Press the key **[MENU]**.
The display reads :

PARAMETERS RELATED
TO

3. Press twice the key attributed to the icon **[PAGE DOWN]**.
The display reads :

PARAMETERS RELATED TO
POSITIONING

4. Press the key attributed to the icon **[ENTER]**.
The display reads :

END OF BAR POSITION
**** MM

5. Press twice the key attributed to the icon **[PAGE DOWN]**.
The display reads :

TOP CUT POSITION **** MM

6. Press the key attributed to the icon **[SET]**.
Depending on which sequence the bar feed is in when the parameter is selected, the available functions and icons can change :

Functions	By offset correction	By teaching
<i>Conditions</i>		
- Loading channel down - No bar stock in the loading channel	icon : [+/-]	icon : [TEACH IN]

[+/-] By offset correction

- Press the key attributed to the icon **[+/-]**.
The display reads the current top cut position.
- Enter the correction value with the numerical keys. Then, press the key attributed to the icon **[+]** to add the value, or the key attributed to the icon **[-]** to subtract it.
The display reads the new top cut position.
- To exit the top cut set mode, press the key attributed to the icon **[ESC]**.

[TEACH IN] By teaching

- Press the key attributed to the icon **[TEACH IN]**.
- Press the key attributed to the icon **[START]**.
The loading channel raises and grasps a bar as it passes by. The feeding pusher inserts the bar into the lathe spindle. The feeding pusher returns to its reference position. The loading channel goes down. The feeding pusher is now facing the spindle.
- Press the key **[FWD]** and advance the bar stock to the desired position (see previous page).
- To validate the new top cut position, keep **[ENTER]** pressed until the icon disappears.

7. To exit the set mode, press the keys **[MENU]** or **[STOP]**.

3.3 Example 3 : Start-up for square bars

<i>Specifications</i>	
<i>Bar profile</i>	<i>Square</i>
<i>Bar diameter</i>	<i>40.0 mm across the flats</i>
<i>Length of pieces to be machined</i>	<i>58.0 mm</i>
<i>Thickness of the cutoff tool</i>	<i>2.0 mm</i>

a) Set-up of parameters :

*Conditions: The loading table is in low position
 2 bars of the new diameter are on the loading table
 Bar feeder in STOP mode*

Press the **[MENU]** key; the remote command displays the following text :

PARAMETERS RELATED TO

Press the **[ENTER]** key; the remote command displays the following text :

NEW MATERIAL PROFILE : 1. ROUND MATERIAL
 2. HEXAGONAL
 3. SQUARE
 4. OTHERS

On the keypad, select [3] Square

Press the **[ENTER]** key twice; the remote command displays the following text:

NEW BAR STOCK DIAMETER :

On the keypad enter [400]

Press the **[ENTER]** key twice; the motor (M2) engages and sets the loading table and the loading fingers of the bar magazine. The remote command displays the following text :

INPUT OVERALL PART LENGTH

On the keypad, enter [600], which represents the sum of the bar length and the thickness of the cutoff tool.

Press the **[ENTER]** key twice to store the data. Press the **[ESC]** key to exit the set-up functions.

b) Mechanical settings :

- Install the 25 mm diameter pusher; see point 4.1
- If the stock is tubing, install the special adapter; see point 4.1.2
- Check that the table and the loading fingers are in the "Profiled bars" position; see points 4.3 and 4.4
- Install the optional accessories for square bars (See Instruction manual, Appendices / Options for Quick Load Servo III)
- Refer to Set-up for profiled bars; see point 5.2.

Note :
For more information concerning the parameters, see Chapter 7, point 5.

Note :
If the previous profile was "Other", a text indicating that the loading table needs to be adjusted manually will be displayed. See point 4.2.

4. MECHANICAL SETTINGS AND OPTIONAL ACCESSORIES

4.1 Feeding pusher

Three feeding pushers are necessary to cover the entire range of the Quick Load Servo III bar feed system. Each pusher has a defined range of operation :

Pusher diameter	Ordering Nr	Diameter Range
**6,35 mm (1/4")	*021.011.022 / 6	6 mm - 15 mm (1/4" - 1/2")
12 mm (1/2")	*021.011.062	16 mm - 32 mm (>2/3" - 1 1/4")
25 mm (1")	*021.011.022 / 25	33 mm - 120 mm (>1 1/4" - 4,7")

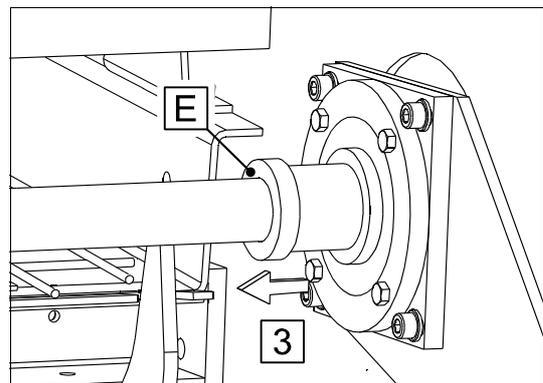
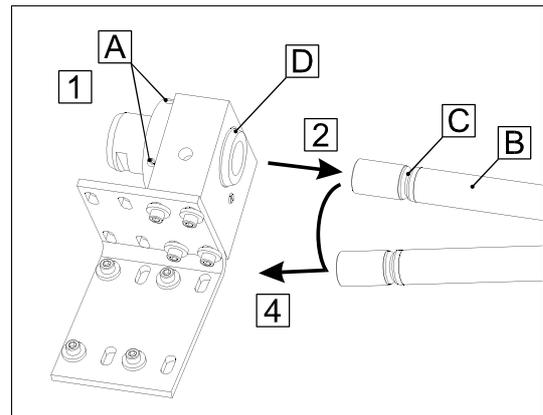
* This ordering number corresponds to the complete pusher, with all of the elements indicated below. When a feeding pusher is ordered for the first time, use this number.

** 2 extra roller supports, intended to bolster the support of bars of small diameter, are furnished with the 6.35 mm diameter pushers. Their placement on the loading table will be determined by the length of the bars to be loaded.

Replacement :

Bring the loading channel into working mode position (down position), then place the bar feed system into the STOP mode (remote station).

1. Loosen the fastening screws (A) sufficiently to free the groove (C) that holds the pusher (B) in the connecting piece (D).
 2. Slide the pusher forward by making into the guide bushing (E).
 3. When the rear of the pusher is sufficiently loosened to be able to remove it, pull the guide bushing (E) toward the back to dislodge it.
 4. The pusher is now free and can be removed.
- Place the new pusher into the opening, and insert the guide bushing.
 - Introduce the rear of the pusher into the connection piece and push to a stop.
 - Tighten the fastening screws so that they lodge into the groove of the pusher.
 - Check to see that the mechanical stop sleeve is properly positioned (see next section)



4.1.1 Mechanical stop

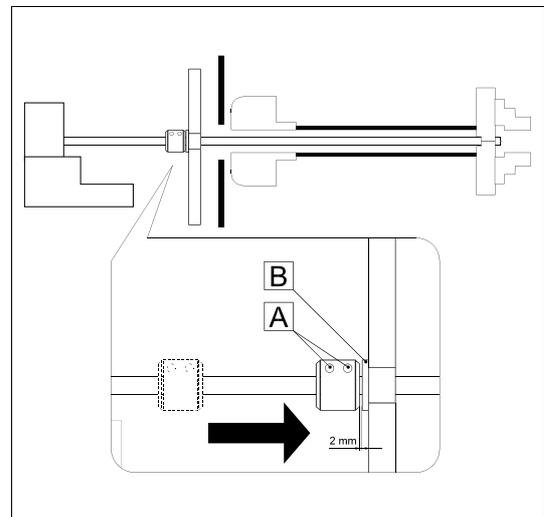
The feeding pusher of the Quick Load Servo III bar feed system has a set length, which was determined so that it can function with all types of lathes.

To make sure that they never collide with the clamping device (end of bar improperly adjusted, or in manual mode, for example), the feeding pusher of the Quick Load Servo III comes with a mechanical safety stop.

When the mechanical stop (stop sleeve) comes into contact with the guide bushing, the feeding pusher is immediately stopped.

Procedure :

- Bring the loading channel into work position (down position).
- Open the main access cover.
- Undo the set screws (A) of the stop sleeve.
- Close the main access cover.
- Move the feeding pusher forward to the end of the bar position (see Chapter 7, Handling).
- Open the main access cover.
- Slide the mechanical stop against the guide bushing (B), and then move it back 2 mm (.08").
- Tighten the set screws.
- Close the main access cover.



This setting must be done on all feeding pushers when the bar feed system is being installed, and should be modified (not necessarily) only when the clamping device is replaced (collet or chuck). In this case, the end of the bar position should also be adjusted.

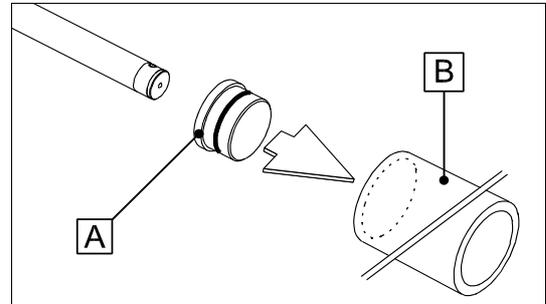
4.1.2 Tubing

With regard to loading the tubing, standard feeding pushers may be used as long as the inside diameter of the tubes is smaller than the outside diameter of the pushers.

If this is not the case, there are two ways to proceed :

5. The first one consists in making caps (A) and installing them behind the tubes (B).

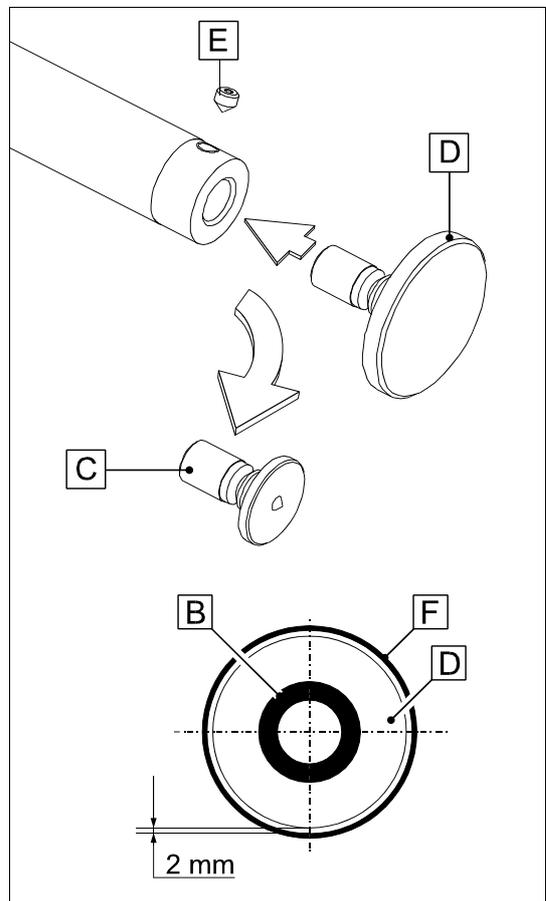
For the caps to stay in place while the bar is rotating, they should be fitted with an O-Ring.



2. The second one consists in replacing the head of the pusher (C) with a special nose (D), 130 mm in diameter (available for pusher Ø 25 mm only).

Des.	Ord. Nr	Description
D	021.11.104.130	130mm disk

To feed properly inside the spindle (F), the outside diameter of the disk (D) should be turned to a diameter 4 mm (.015") smaller than that the inside diameter of the spindle (F) or of the spindle liner. The head must be adjusted before it is mounted onto the pusher.



Procedure :

- Switch the bar feed system in STOP mode (remote station).
- Undo the set screw (E) holding the head (C) onto the pusher.
- Remove standard head.
- Install special disk (D), by pushing it to a stop in the pusher.
- Secure disk with the set screw.

4.2 Calibration of the loading table

To obtain an optimal loading, the bar must be perfectly centered on the spindle, regardless of its diameter or profile. Whenever the diameter or the profile is changed, the position of the loading table is automatically adjusted according to the parameters entered by the operator.

If, for any reason whatsoever, the position of the loading table would be incorrect (either too low or too high), it can be corrected.

Procedure :

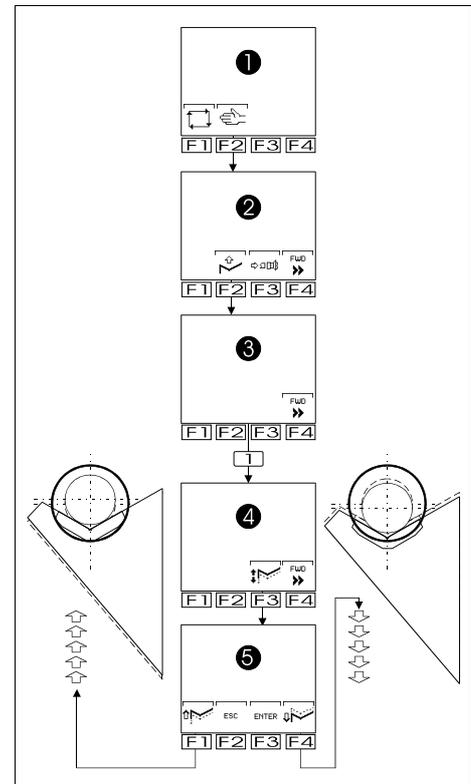
*Conditions: Bars are on the magazine
The loading table is in the low position*

1. Select manual mode by pressing the [F2] key.
2. Bring the loading table in upper position [F2].
The bar now faces the spindle of the lathe.
3. The remote command offers icon [F4] Forward. To obtain the icon [F3] Adjust the height of the loading table, press the [1] key.
4. Press the [F3] key.
5. Four icons are displayed :
[F1] raise the table
[F2] ESC (exit without saving)
[F3] ENTER (save)
[F4] lower the table

Note :

The pneumatic cylinders, controlling the vertical movement of the table, release the pressure to allow motor M2 to proceed with the setting. After the setting is complete, they are reactivated.

- Each time the [F1] or [F4] key is pressed, the vertical position of the table is modified by 0.25 mm. For substantial adjustments, keep pressing the key to keep the table moving in a continuous motion
- When the desired position is reached, press the [F3] ENTER key to validate the choice and recalibrate the device at this new position. Since the calibration must be changed, the command automatically accesses "Parameters related to set-up, diameter, length, etc." (See Chapter 7 / point 5.2).
The command asks the operator to confirm the setting of the diameter. Using the keypad, enter the diameter of the bar used to center the table. Press the [F3] ENTER key twice to validate.



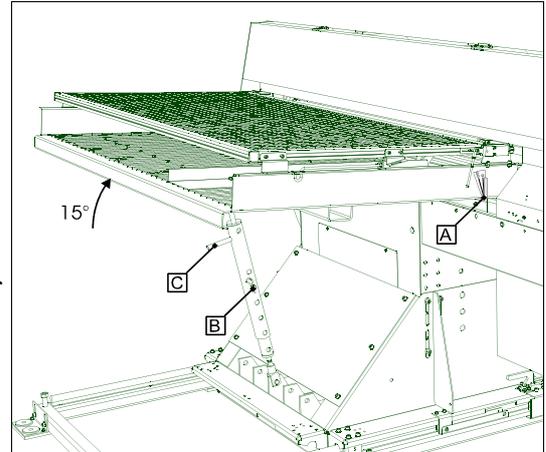
4.2.1 Profiled bars

The loading table of the Quick Load Servo III has been designed, in standard version, to load various bar profiles. To load square bars, see the Instruction manual, Appendices / Options for Quick Load Servo III.

4.3 Slope of the magazine table

When profiled bar stock is loaded, and the bars do not slide easily, the slope of the table may be increased. A reference mark (A) indicates two positions: one position for round bars and another of greater slope, for profiled bars.

By adjusting the set-up axle (C), the slope of the table varies. If the range of adjustment is not enough, remove the pin (B), lift and place the table on the next hole, and replace the pin.

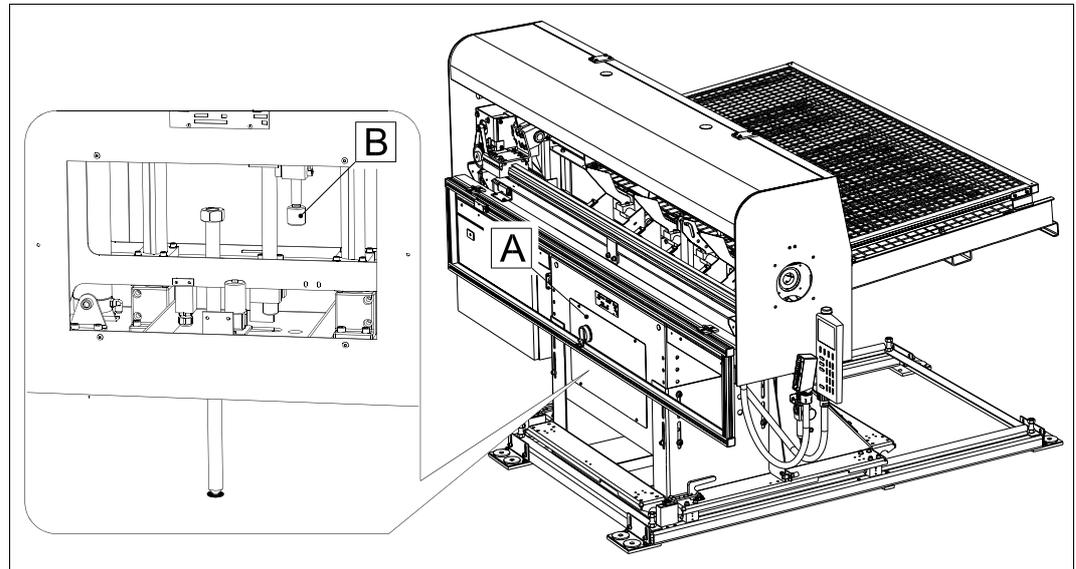


4.4 Loading fingers set-up

The slope of the table barely affects the loading of bars of great diameter.

However, it is possible that bars of small diameter may not load correctly. For this reason, the fingers must be adjusted whenever the slope of the table is modified.

Remove front cover (A) and adjust the position of the fingers using the knurled knob located under the loading table.

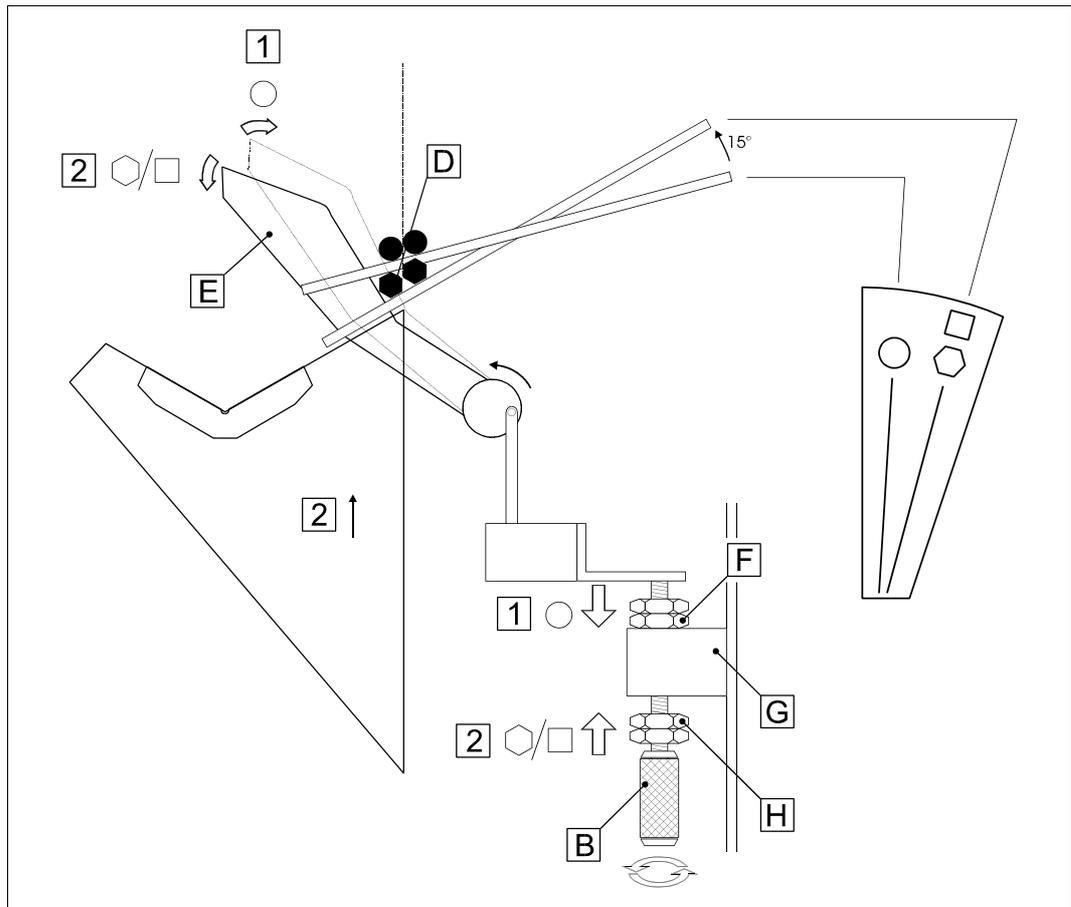


Like the loading table, the loading fingers also have two working positions :

1. Round bars
2. Profiled bars.

Fingers set-up for loading profiled bars :

- While screwing the knurled knob (B), the loading fingers (E) tilt. Continue turning until the lower nuts (H) rest against the block (G), in position 2.
- Place two bars (D) on the table, against the loading fingers (E).
- Load manually to check the adjustment.



Fingers set-up for loading round bars :

- Adjust the slope of the table to the round bar loading position.
- Adjust the stops by unscrewing the knurled handle (B) until the top nuts (F) rest against the block (G), in position 1.

If the slope of the table must be adjusted between the two indicated positions, adjust the slope to accommodate this setting. The main point is that only one bar should be loaded when the loading table rises.

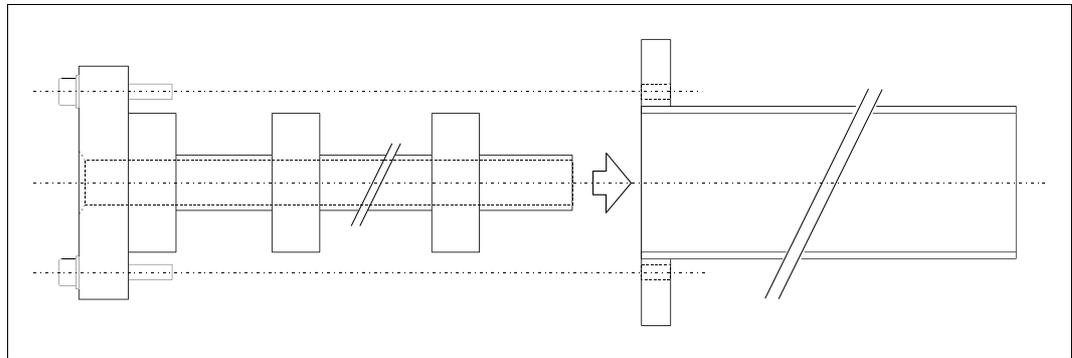
5. PUTTING THE LATHE INTO OPERATION

5.1 Spindle reduction tubes

The efficiency of the bar guiding while in rotation in the lathe is determined by the clearance between the spindle reduction tube and the rotating bar. The greater the clearance is, the more frequent the vibrations are.

Using reduction tubes helps to decrease this clearance. Guiding is thus improved, but, in addition, the insertion of the bar into the clamping device of the lathe is made much easier.

The inside diameter of the reduction tubes should be chosen in terms of the diameter of the bar (diameter of the bar + 1 mm), but should always be larger than that of the diameter of the feeding pusher.



To guarantee that the small feeding pushers (dia. 6.35 and dia. 12 mm) do not come into contact, at any time, with the inside walls of the reduction tube, it is recommended to retract them from the spindle before the bar begins to rotate (see Chapter 7, section 5).

There are two possibilities for inserting and removing the spindle reductions. The first one consists in moving the bar feed system (see Chapter 6, section 4), and the second one in passing the reduction tube through the bar feed system. To facilitate clearance, set the bar stock diameter at 120 mm (settings related to bar stock and machined parts).

Spindle reduction tubes are available from LNS, upon request.

5.2 Shaped bars (hex and square)

a) Lathes without spindle orientation

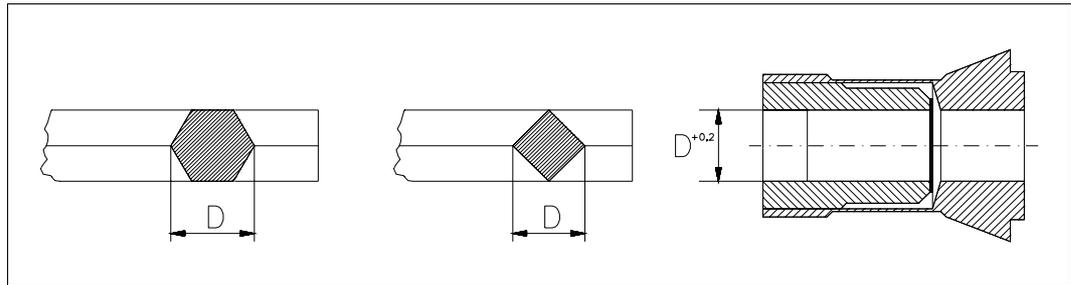
For all lathes without spindle orientation, it is possible to install a bushing, inside the clamping device, with the same inside profile (+ 0.2 mm) as the bar.

The rear of this collet and the front of the bars should be flat.

During the loading cycle, a slight rotation of the spindle (about 30 RPM) is desirable.

Note :

The shorter the shaped bar, the more difficult it will be to position it.



b) Lathes with spindle orientation

When the material is located in the loading channel, it is "kept", so to speak, in position. The profile of the clamping device should be positioned with regard to the profile of the bar.

If the bar is of the same length as the spindle, at the time it leaves the loading channel it should already be inserted into the clamping device.

If the distance between the front of the bar feed system and the rear of the spindle is significant, and the bar has already left the loading channel, but is not yet inside the clamping device, it is advisable to install in back of the spindle a "V" shaped support to "keep" the bar in place while it is being inserted by the feeding pusher into the clamping device.