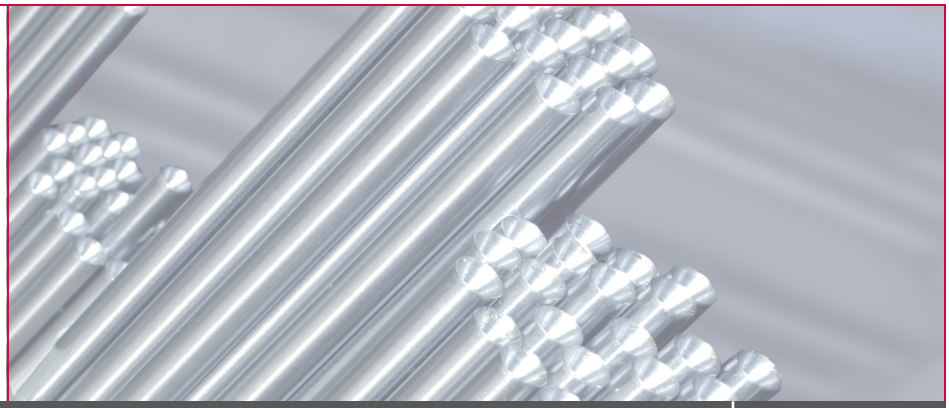
SUPER HYDROBAR HS

УСТРОЙСТВА
ПОДАЧИ
ПРУТКА

БАРФИДЕРЫ

МАНУАЛ (eng)



Instruction Manual

ENG

SUPER HYDROBAR HS

LNS America
4621 East Tech Drive
Cincinnati, Ohio 45245

9.HS.01.US

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1.1. BASIC INTRODUCTION

1.1.1. Symbols and terminology

This sign recommends following the directions very closely avoiding causing an incident that could result in injury, damage to the equipment, or data loss.

This sign indicates that safety measures must be taken to avoid possible electrical shocks or mishaps.

The notes stress interesting points or comments, and provide useful advice for optimal system operation.

This sign points out an advice about environmental protection.

1.2. RIGHTS

CHAPTER 2: DESCRIPTION

2.1. CHARACTERISTICS

NOTE : Depending on the options, these technical data may vary. Please refer to the technical data sheet.

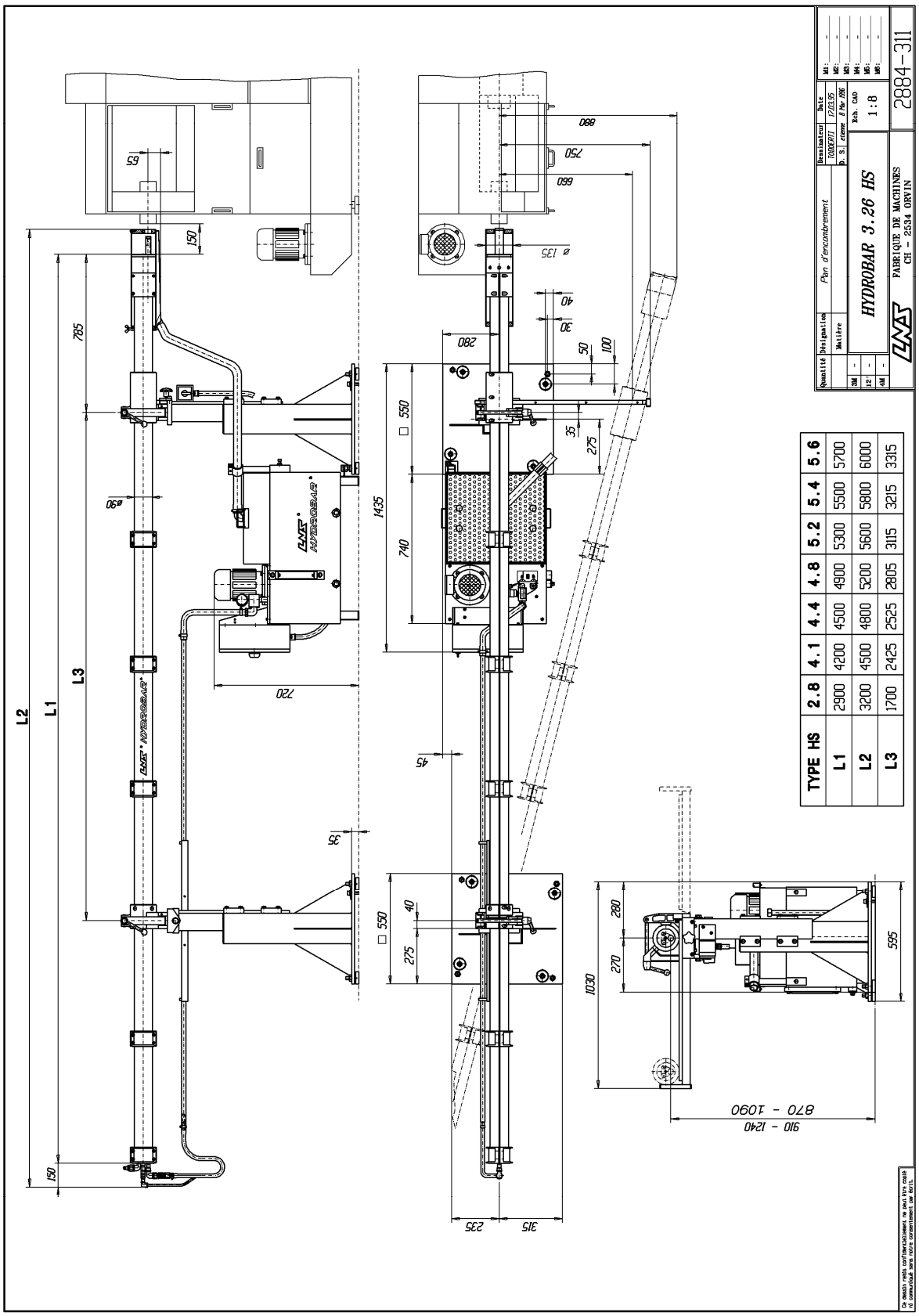
	3.26	**6.42**	**6.65**
Weight	600 Kg	650 Kg	700 Kg
Overall length	See following pages		
Spindle axis height			
Z-axis retraction system			
Retraction device (option)	600 mm	600 mm	600 mm
Main electrical power (Volt)	3 x 220 - 480 volt 50 Hz - 60 Hz	3 x 220 - 480 volt 50 Hz - 60 Hz	3 x 220 - 480 volt 50 Hz - 60 Hz
Hydrolic oil	ISO 100/90 liters	ISO 100/90 liters	ISO 100/90 liters

2.1.1. Floors plans

The following floor space plans indicate the most frequently used dimensions for placing the bar feed system. Details on the dimensions of other parts or elements of the bar feed system will be furnished upon request.

2.1.1.1. HS 3.26

Without retraction



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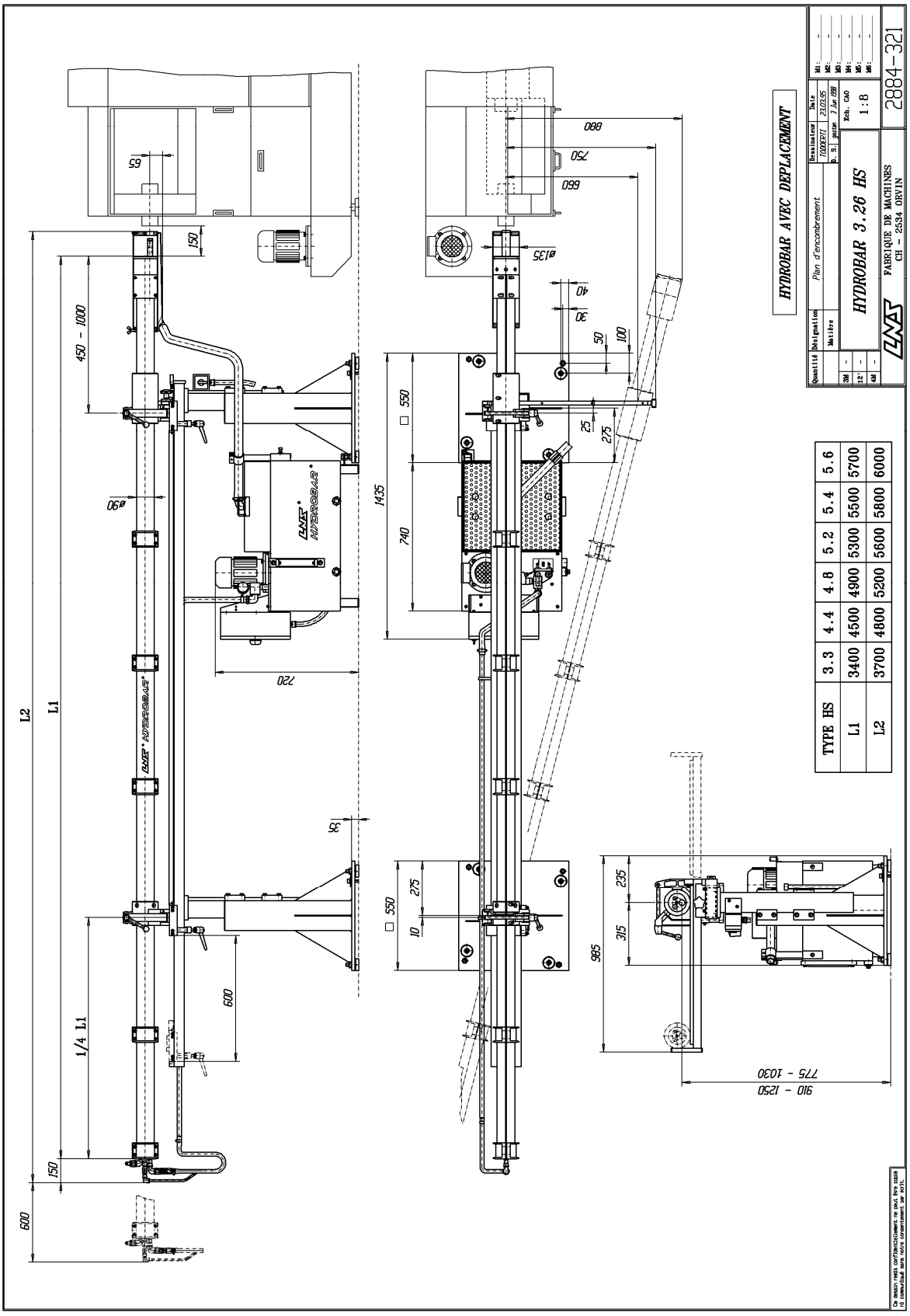

2.1.1.2. HS 6.42

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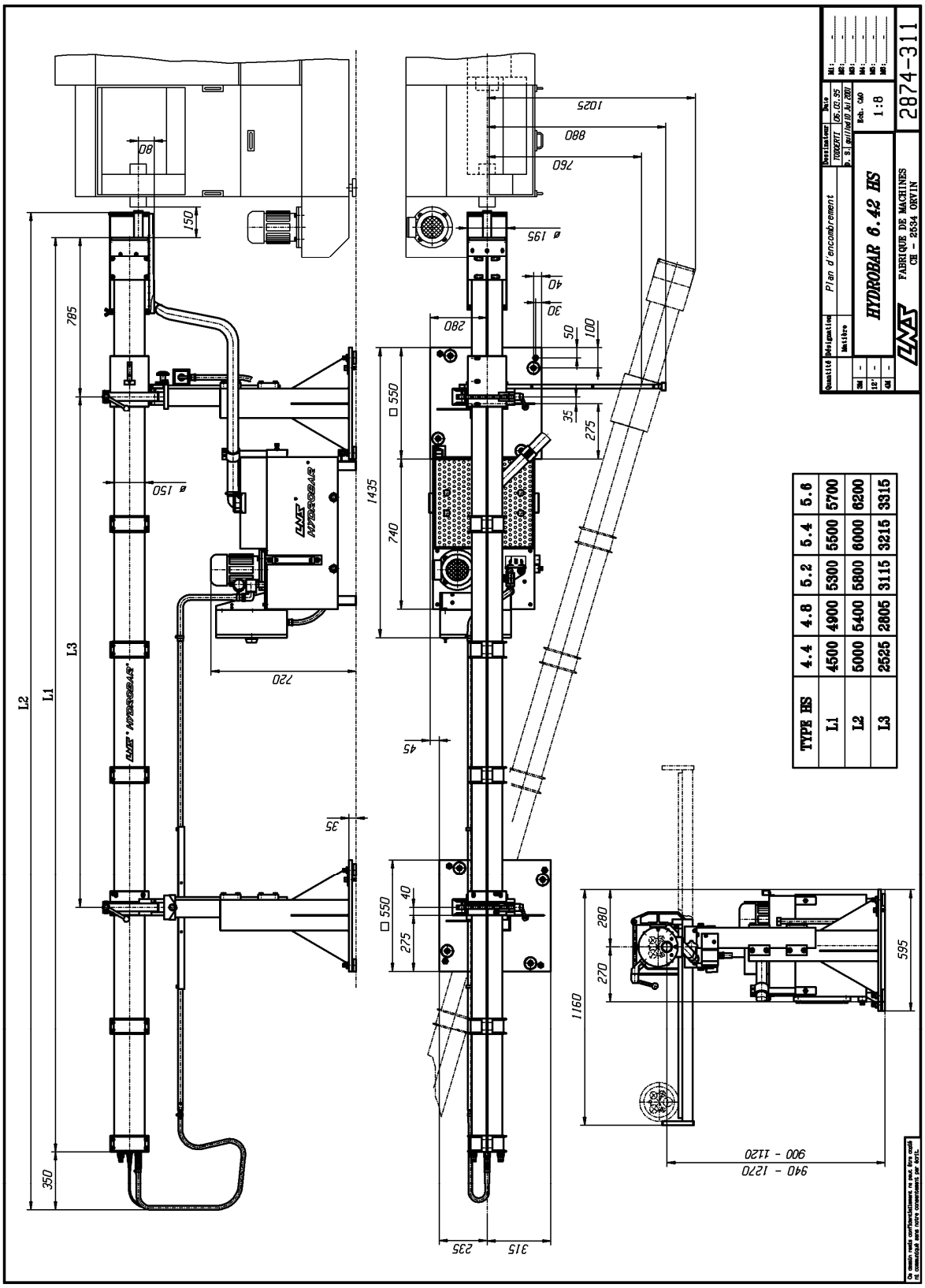

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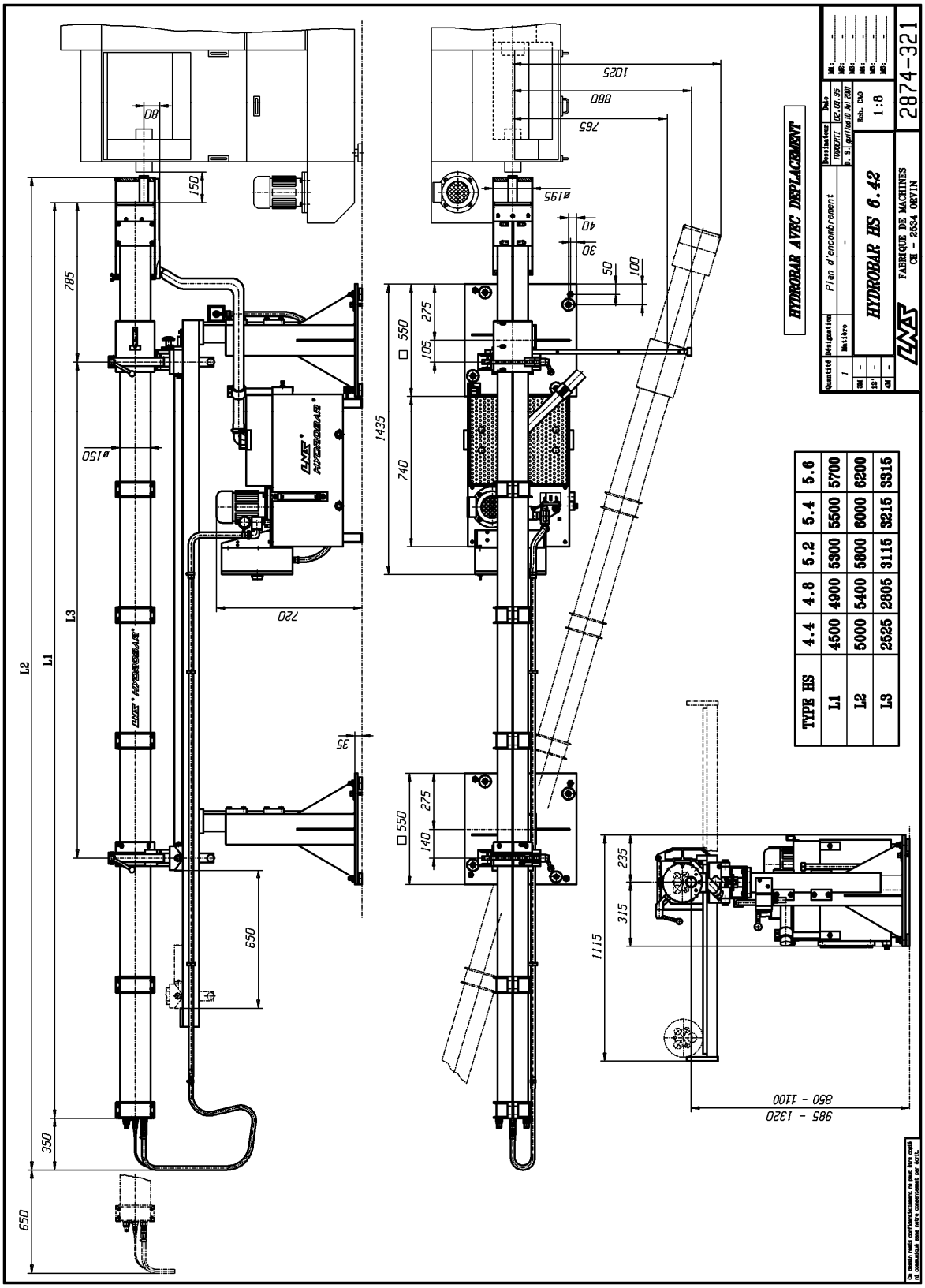

2.1.1.3. HS 6.65

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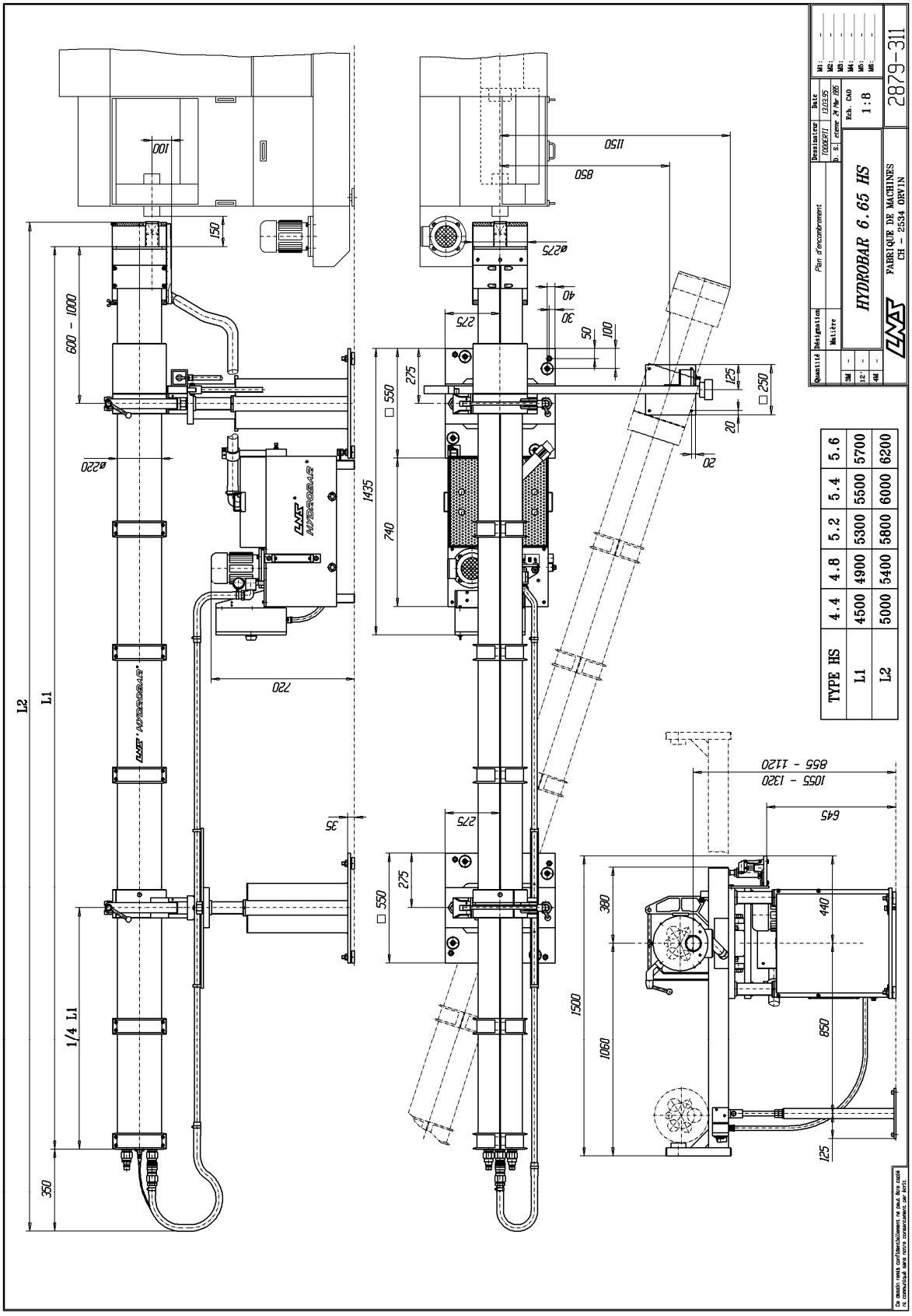

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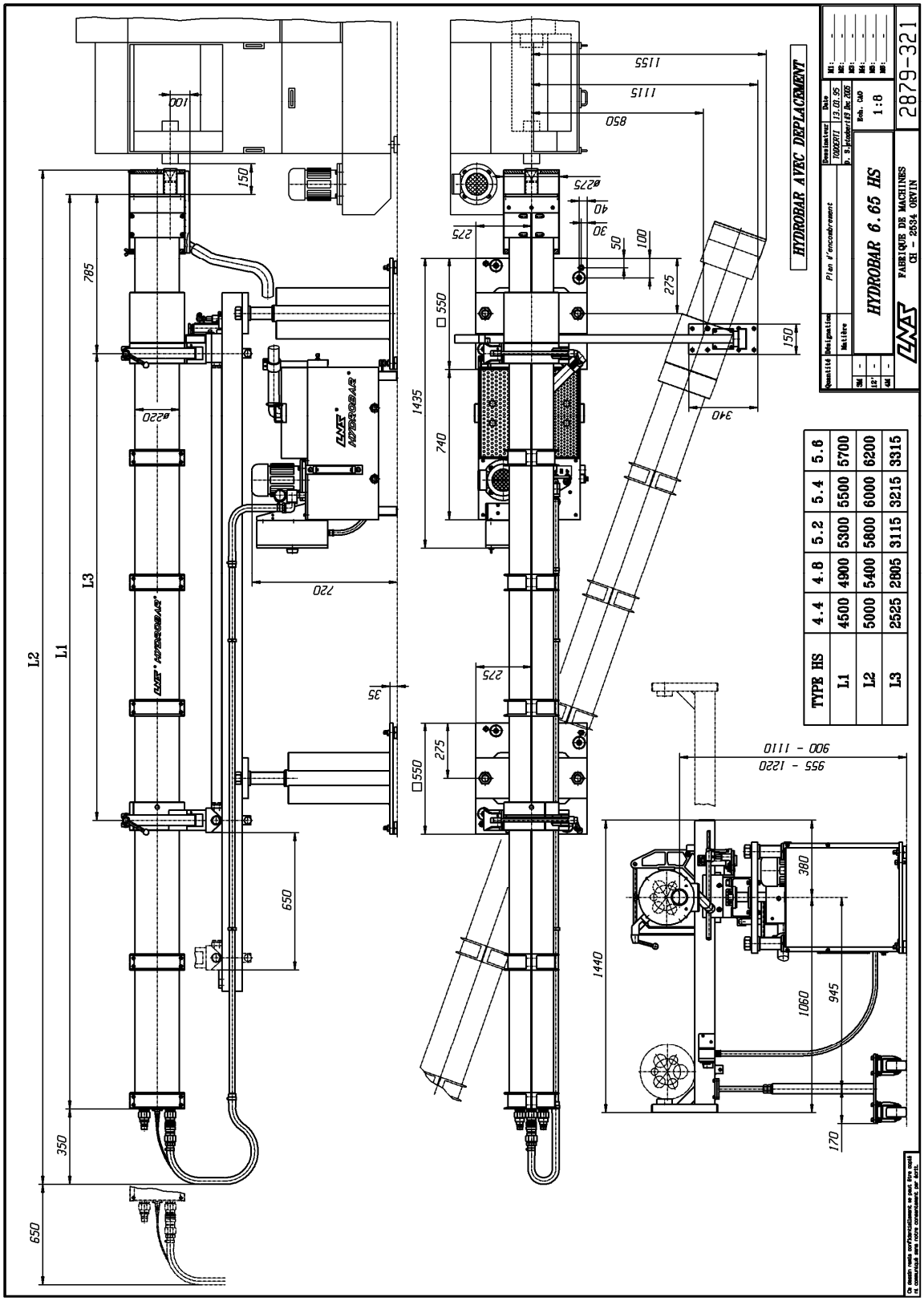
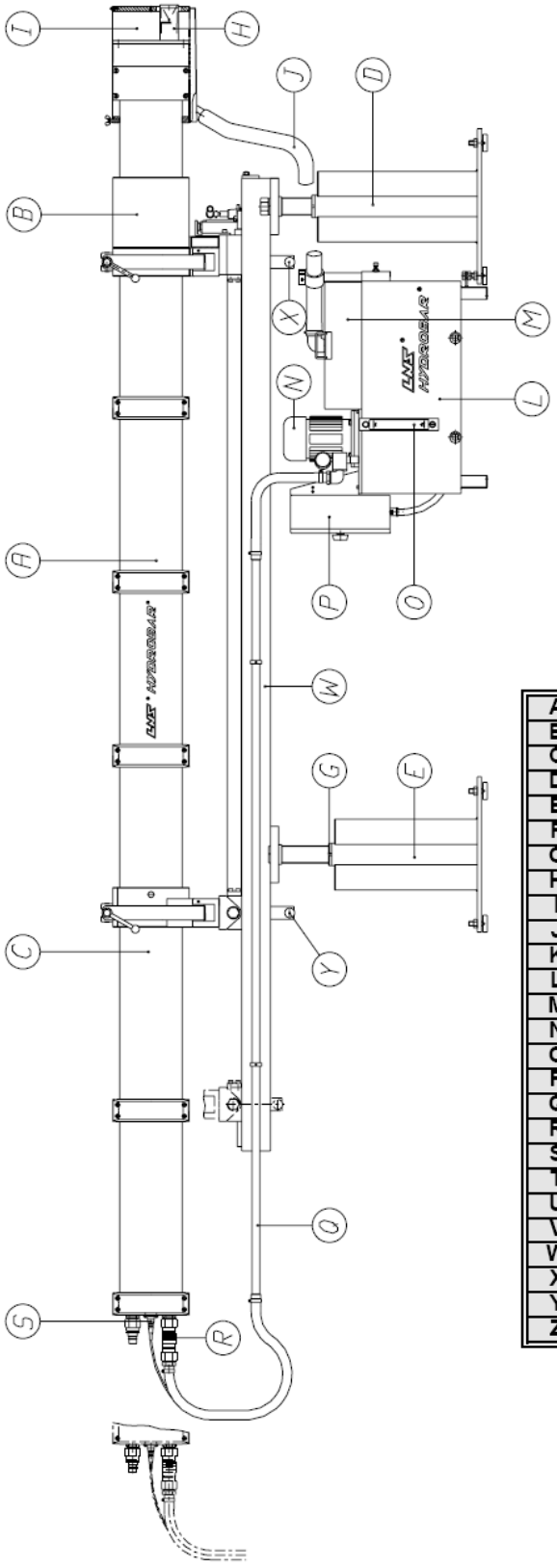
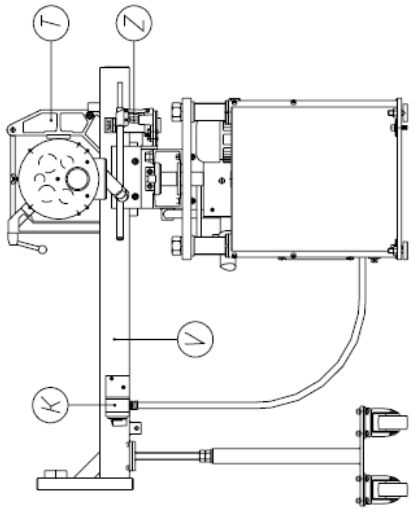


2.1.2. All view





A	Tube
B	Centring ring
C	Indexing ring
D	Front foot
E	Back foot
F	Height-adjusting screw
G	Clamping flange
H	Pusher
I	Oil collector
J	Oil return tube
K	A1 electric control
L	Hydraulic unit
M	Filter
N	Pump motor
O	Oil level
P	Electric control box
Q	Hydraulic feed tube
R	Snap connectors
S	End-of-bar grip
T	Front support
U	Loading arm clamping screw
V	Loading arm
W	Retractor
X	Front retractor-blocking lever
Y	Rear retractor-blocking lever
Z	Loading screw-jack

2.2. SETTING INTO OPERATION

2.2.1. Transport

Please read the safety precautions described at the beginning of this manual before handling the following devices.

The device is delivered in two cases. One containing the hydraulic unit, the feet and the accessories, the other containing the tube. The actual length of the tube, the length of the pushers and the interior diameters of the guide tubes are mentioned on a copy of the manufacturing docket affixed to the hydraulic unit.

	3.42		6.42		6.65	
	Tube	**Accessories**	**Tube**	**Accessories**	**Tube**	**Accessories**
Width	-	1100 mm	-	1200 mm	-	1200 mm
Length	-	510 mm	-	1500 mm	-	1500 mm
Height	-	90 mm	-	1100 mm	-	1100 mm

Unpacking

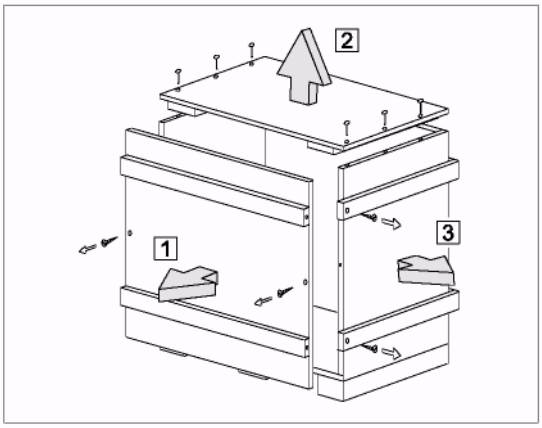
For practical and safety reasons, the bar feed system must be unpacked in a spacious, well-lit location.

Check to see that the lifting capacity of the hoisting crane, or lift truck, is adequate before proceeding with the handling of the merchandise. No one should be near the hanging load, or within the operating range of the overhead hoist/crane, forklift, or any other means used for lifting and transportation.

1) If the bar feed system is received in a crate, start by unscrewing the front panel.

2) Remove the top.

3) Remove the side-walls.



Préparation pour le montage

For mounting and installing the bar feed system, it is advisable to contact LNS or one of its agents. The latter cannot be held responsible for any malfunction resulting from an incorrect installation in which they did not take part.

It is essential that the lathe be levelled before installation of the bar-feeder. The lathe must be fitted with a collet or chuck in order to perform the bar rotation tests.

2.2.2. Mounting

Preparing the feet

Please refer to points 2.1.2. for the designation of the components

Open the oblong case by unscrewing the front plate. Inside you will find the hydraulic unit, the front and back feet, the tube supports and all the small material you will need.

- Align the feet approximate on the head stock. Then place the levelling plates (see point 3.2) under the feet and centre them on the level-adjusting screws. Level the feet.
- Place the rear support (25/A) with the two guide pins on the swivelling plate (25/B) of the rear foot and insert the guide pin into it (25/D).
- Pass the fixing bolt (25/C) though the dowel and screw it tightly to the support. As the dowel (25/D) is thicker than the swivelling plate, the support (25/B) remains free.

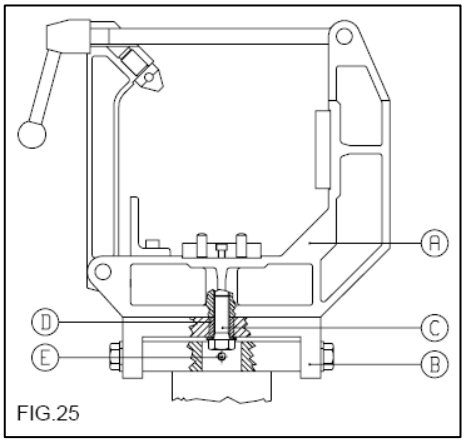


FIG.25

- Tighten the safety screw (25/E), preventing the bolt (25/C) from coming unscrewed.
- Next place the front support (30/A) bearing the two centring plates on the front foot (30/B). Also install the loading arm (it is impossible to do this when the support is fixed)
- Insert the 4 fixing bolts (30/C) into the support plate and fix the front support. When the bolts are blocked, it should still be possible to move the loading arm.

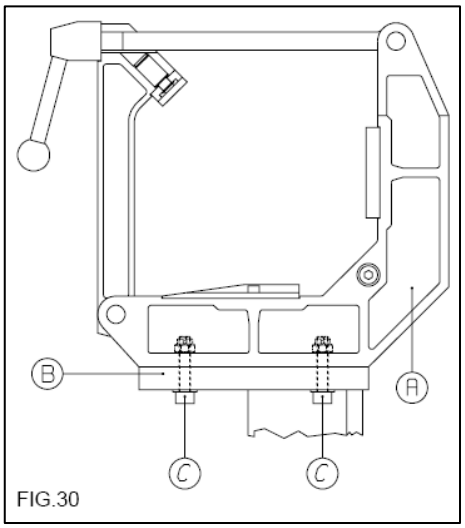


FIG.30

Positionning the feet

- Open the tube case by raising its lid.
- Remove the tube (see lifting instructions).
- Measure the distance (Y) between the front of the tube and the centring lugs. Place the front foot at a distance equivalent to Y+150mm from the spindle exit.
- Place the rear foot, leaving a space (X) being the distance between the centring ring at the front and the indexing ring at the rear of the tube.

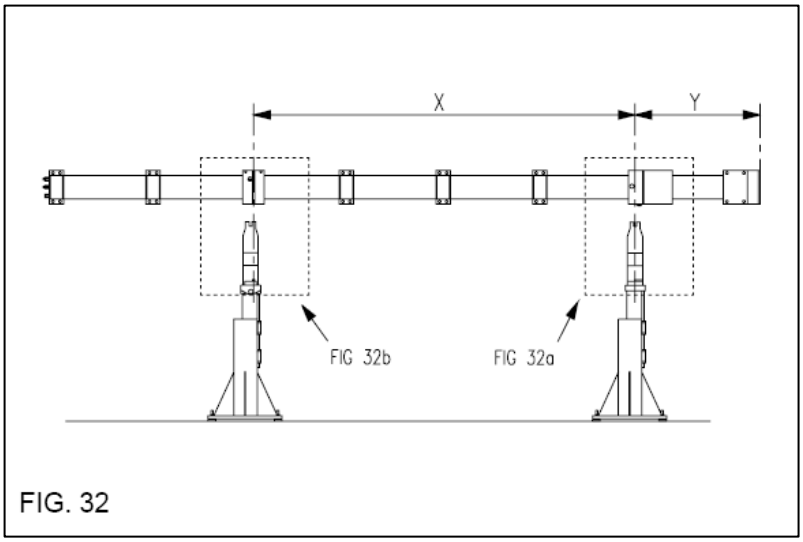


FIG. 32

To define (X), the measurement has to be made as follows:
FIG.32a

- On the centring ring (32a), measure to the middle of the horizontal (PH) and vertical (PV) centring lugs
- On the front foot, this point is located between the horizontal (32a/AH) and vertical (32alAV) support plates.

On the indexing ring, measure to the middle of the positioning groove (32b/R).

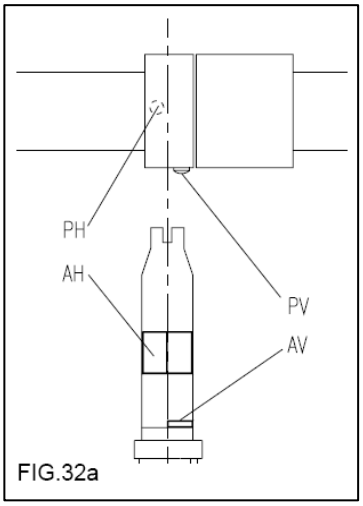


FIG.32a

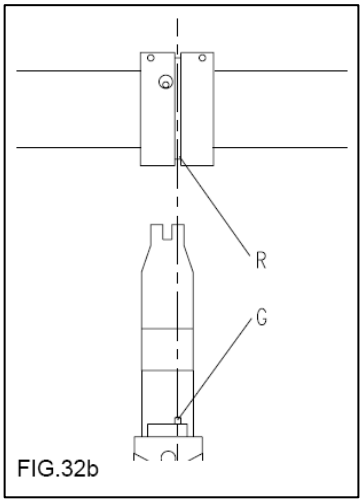


FIG.32b

On the rear foot this point corresponds to the centre of the positioning lugs (32b/G).

When the tube is in place, the front must to be **150mm** from the exit to the spindle (Fig.33).

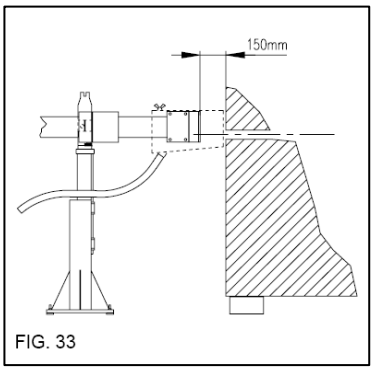


FIG. 33

Stripping the tube

- On the indexing ring (rear support), there is a groove which ensures the longitudinal positioning of the tube when indexing.

- Please make sure, when installing, that this groove has engaged in its guidance system (35/B) and that it is not damaged.

- The lateral (40/C) and vertical (40/B) centring lugs are screwed into the SUPER HYDROBAR HS centring ring (front support). These lugs ensure the centring of each tube.

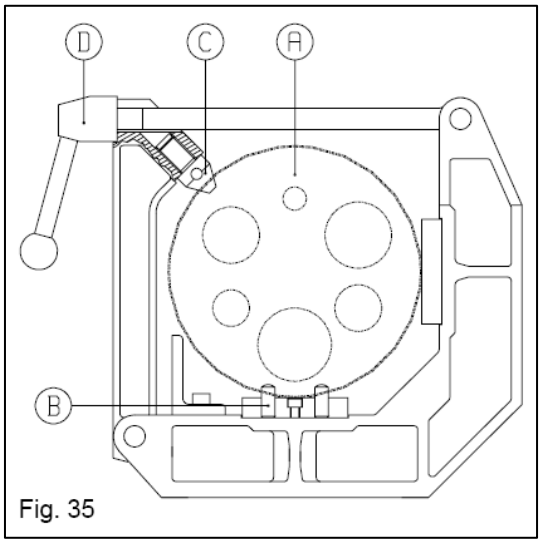


Fig. 35

- The individual centring of the tubes was done at the LNS factory.

- The lugs must align with the corresponding cut-outs on the front support. Therefore, the indexing ring must not be moved otherwise the centring of the tubes can no longer be guaranteed.

- Carefully place the tube (35/A40/A) in its front and rear supports. While turning the indexing ring by means of the tool supplied with the SUPER HYDROBAR HS, bring the largest diameter tube to the 6 o'clock position.

- Swing the fixing stem into its support while making sure that the centring lug (35/C) is engaged in its conical hole. Bring the blocking lever (35/D) to bear on the cut-out in the stem and tighten it.

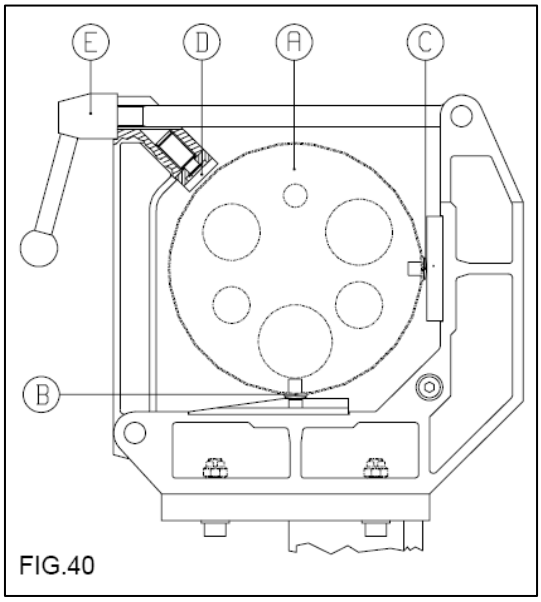


FIG.40

- Check that the centring lugs (40/B,40/C) are positioned correctly in relation to the cut-outs in the front support. Make any possible corrections by moving the foot and not by moving the centring ring. Close down the fixing lever (40/D) and then fix by means of the handle (40/E).

The foot and the centring ring must always be perfectly parallel.

Alignment

Before proceeding with the alignment of the bar feed system, ensure that the lathe is stable and preferably levelled.

During the alignment, ensure that there is no reduction unit in the spindle (spindle liner).

The alignment of the SUPER HYDROBAR HS is unquestionably the most important point in ensuring maximum performance and must be conducted with the utmost care.

An alignment error inevitably results in a reduction in rotational speed and can, in the worse of cases, cause damage to the guide tubes, the pistons and the pushers.

If possible, this installation should be conducted using the LNS alignment checking tool (optical sight). If the assembler does not have this tool, proceed as follows :

To conduct these checks, the pusher must firstly be removed (see point 3.1.2.) from the biggest of the guide tubes (reference tube).

1) Insert a nylon thread into the reference tube (which will be aligned on the head stock).

2) Prepare a plug (55/A) with a 2.2 mm hole in its centre which is inserted into the rear of the guide tube. Pass the nylon thread through this hole and knot it.

3) Bring the tube to the working position

4) Pass the nylon thread through the head stock and fix it with the collet (55/B).

5) Fix the collet in the material collet of the lathe, tension the nylon thread and block it.

6) Use centring disks to check the horizontal and vertical gaps at the exit of the SUPER HYDROBAR HS (55/C) and entry to the head stock (55/D).

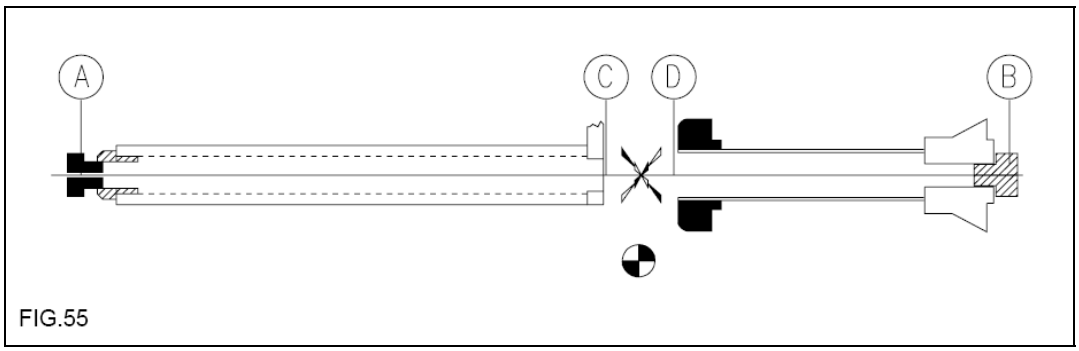


FIG.55

7) Move the front and rear feet until the nylon thread pass precisely through the centre of the guide tube and the centre of the mouth of the head stock.

8) Tighten the screws (F) or the nuts (G) to raise the tube, loosen them to lower; when the height is correct, tighten the flanges to secure the whole structure (G). (see points 2.1.2.)

9) Block all the securing screws

Anchoring to the ground

After centring, the feet should be fixed to the ground by means of 8 plugs. The anchorage is effected by passing bolts through the holes in the base plate.

The ground must be hard to guarantee the suppression of vibrations. If the machine is installed on unstable ground, it is recommended that the feet be secured to concrete blocks.

Block the plugs while bearing down on the washers (60/4). Once this has been done, check the centring again. Make any necessary adjustments then remove the centring device.

1) Base.plate suporting foot
2) Levelling screws
3) Base levelling plate
4) Ground plate
5) Screw

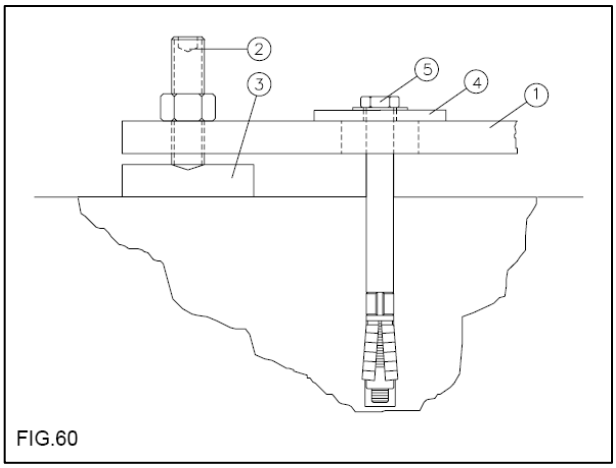


FIG.60

2.2.3. Security analysis for the correct incorporation

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

- Consider security strategies that reduce risks 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 risks, including failures and failure modes associated with each task. Risks can come from:
    - machine in which the device SUPER HYDROBAR HS is integrated;
    - its association with other equipment,
    - People's intraction with the machine.
- Evaluate and assess the risks associated by using the machine SUPER HYDROBAR HS:
    - 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

Once the bar feed system has been aligned and anchored to the ground, the bar feeder must be connected to the interface of the lathe. At this stage, the hydraulic tank may be filled.

2.2.4. Hydraulic connections

Procedure :

- Unscrew the lock-nuts (C). Place the unit in position by locating the foot bolts in the holes in the fixing plates.
- Unscrew the nuts (B) to raise the unit roughly two millimetres off the ground. Block the unit with the lock-nuts (B).
- Install the steel pressure tube in its support on the rear feet.
- Using the hoses provided with the small material, join the front end of the pressure tube to the hydraulic unit.
- The rear end of the pressure tube must be connected to the female snap-joint also provided with the small material.

The hoses can be shortened but while ensuring that they are long enough to permit the opening of the tube (loading).

- The hoses must be secured with the straps provided to ensure a perfect seal.
- Fill the tank with oil.

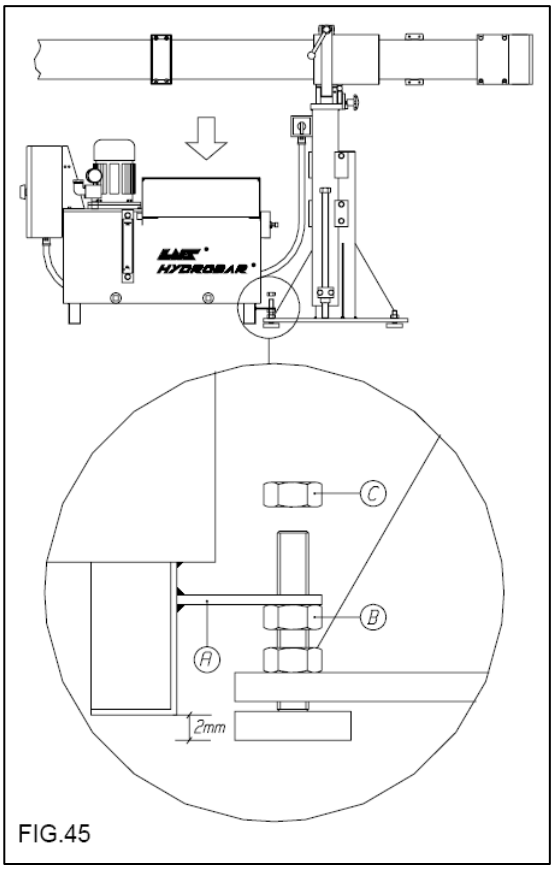


FIG.45

Filling

The bar feed system is delivered without oil. 100 litres of hydraulic oil of the type indicated below must be provided by the client. The oil must be poured directly into the machine.

Viscosity equivalency table			
ISO 100	100 mm2/s (cSt) à 40°C	DIN 68	8°E à 50°C

Consult your supplier who will recommend the correct oil for you.

Operating pressure

The operating pressure must be set according to the diameter of the guide tube.

Altering the pressure (17) and changing of diameter of the working tube will cause the thrust force to vary.

The operating pressure can be adjusted between 0.8 and 6 bar according to the diameters of the bar to be worked.

Turning the pressure regulator to the right causes the pressure to increase. This can be seen on the pressure gauge

If the speed regulator is completely closed, there will no longer be any operating pressure.

Procedure:

- Tube in reloading position
- Pusher blocked so that the piston is at least 200 mm short of the end-stop.
- A1 selector in AUT position
- Speed regulator fully open
- Turn on the lathe and the HYDROBAR
- Find the desired setting by means of the pressure regulator.

Vitesse d'avance

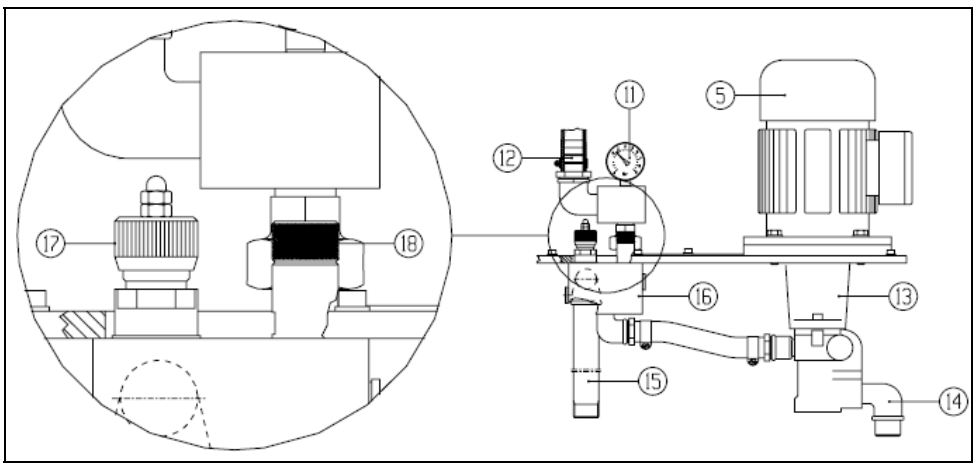
The feed speed must be sufficient to be able to push the bar while following the positioning movement of the turret (without damaging it).

The feed speed can be adjusted by means of the flow regulator (18).

Procedure :

- Tube in reloading position
- Pusher blocked so that the piston is about 200 mm ahead of the end-of-bar stop.
- Fully open the speed regulator by turning to the left
- Place A1 selector in AUT position
- Turn on the lathe and the HYDROBAR

Progressively close the speed regulator until the pressure begins to drop. Reopen the speed regulator and find the balance point. This is the position in which the feed speed will be at its lowest possible. Now, to increase it, turn the speed regulator to the left.



2.2.5. Electric connections

Connections

End-of-bar cable:

The end-of-bar cable will be found rolled up under the electric control box. It is protected by a plastic sheath and has a female connector on its end. Unwind the cable and plug it in. Once the plug has been inserted, it is necessary to fix it by screwing its cap to the male connector.

The male connector is mounted on ball-bearings to prevents the cable from twisting inside the tube despite the rotations of the tube each time there is a change of work diameter (the cable passes down the tube from the plug to the micro-switch at the front).
Attach the cable along the plastic hoses and the pressure tube. Any surplus cable can be rolled up and attached under the electric control box.

Safety switches / Emergency stop:

A safety switch placed on the front support prevents any operation when that support is open. An emergency (panic) button is installed next to the A1 control selector (see point 3.2.).

Safety switches (retraction option):

A safety switch placed in front of the retraction mechanism prevents any operation when the bar-feeder is in the retracted position.

A1 command selector:

The A1 command selector is delivered with a 3 m length of cable. It is already wired and can be installed by means of its bracket on the front foot or, if preferred, directly on the lathe. For the functions of the selector, please see point 3.2.
If the selector is installed on the front feet, the surplus cable can be either coiled around the foot or rolled up around or under the box.

Interface cable:

The interface cable is also three metres long. It is fitted with a connector the type and the model of which can vary according to the interface required by the lathe manufacturer.

Installation of the collector:

Place the collector on the tube, fit the oil-return hose with the collector.

Alimentation

Before connecting, check to make sure that the voltage of the bar feed system corresponds to the one provided by the lathe. The voltage of the bar feed system is indicated on the identification plate.

Voltage: 3 x 220-480 V, 50 / 60 Hz + Ground (± 10%)

Maximum voltage: 3 x 220 V = 3 A
3 x 480 V = 1,5 A

In the case where the voltage supplied by the tour does not match that provided for the mothership, the following must be adapted:

a) Transformer T1
b) Hydraulic pump motor

The LNS bar feed systems are equipped with their own thermal protection systems (breakers, thermal relays and fuses, etc.). The power supply for the bar feed system should be connected to the output of a breaker mounted in the electrical control box of the lathe (10 A max.).

For the wiring inside the lathe, the section of the cables should be at least 1.5 mm^2 (AWG 16).

Electrical interface lathe – barfeeder

Always refer to the electrical diagrams shipped with the bar feed system and placed in the electrical cabinet. Although an example of an interface diagram is provided, the diagram for the interface corresponding to your device, essential when making the electrical connection, is located inside the electrical cabinet.

Only LNS (or certified) technician is authorized to modify the interface or parameter system.

2.3. MAINTENANCE

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

2.3.1. Hydraulique

The SUPER HYDROBAR HS hydraulic unit is fitted with an oil-return filter with a 200µ mesh.

The filter needs cleaning as soon as the oil in the collector is not reabsorbed. The cleaning frequency depends on the kind of material and state of cleanliness of the bars.

Never work without a filter or with a pierced filter because the pump and the hydraulic unit could be damaged by the metal particles, in which case all guarantees are invalidated.

It is important to clean the bars (even briefly) before loading them on the feed system magazine. Excessive dirt can form a deposit at the base of the bar feed system, which can in turn slow the oil return.

The oil tank must be drained at least once a year.

2.3.2. Cleaning

As with any vehicle, machinery, or device, regular cleaning of your bar feed system can only serve to improve its operation and prolong its useful life.

For cleaning on the outside, use a soft cloth and a regular detergent; for the inside, use a cloth or a brush. 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 impede the proper operation of the bar feed system.

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

2.3.3. Spare parts

Without the written consent of LNS SA, no addition or modification of the machine or spare parts can be undertaken.

LNS SA assumes no responsibility when using spare parts which were not provided by LNS SA.

2.4. SAFETY INSTRUCTIONS

Only people who know the product and are sufficiently qualified, may install, put the spindle in use, maintain and, where necessary, repair. The customer must ensure that the provisions regarding internal monitoring, the indication prescribed events, organization of work, staff training is available with instructions for assembly.

All persons who perform work on this machine, must have read and understood the notice instructions

LNS disclaim all responsibility for possible accidents or property damage caused when safety instructions are not followed :

- Do not handle the equipment without having knowledge of the safety instructions and the instructions for use. Safety instructions for the bar feed system, as well as the CNC lathe, must be strictly observed.
- Non-qualified personnel, children, and persons under the influence of alcohol or medication should not handle the equipment.
- Loose garments, long hair and jewellery can be dangerous.
- Do not remove any covers while the bar feeder or the machine is under electrical power.
- Do not conduct any maintenance operations during the automatic cycle.
- Do not grasp moving or rotating objects, or nearby elements.
- If certain safety shields or safety covers are removed to conduct maintenance, they must be reinstalled as soon as the maintenance work is completed.
- No servicing should be carried out on the interface or inside the electrical cabinet while the bar feeder or the lathe is under electrical power.
- It is strictly prohibited to jump wire or remove circuit breakers, main switches, and especially safety switches.
- To avoid any harm to persons, or damage to components, use only the indicated points for lifting and moving the bar feeder system. No one should be near the hanging load, or within the operating range of the overhead hoist/crane, forklift, or any other means used for lifting and transportation. Do not knock the bar feeder while moving it as this could damage it.
- Do not hit the barfeeder while traveling as this could damage it.
- Do not move the bar feeder while it is electrically powered on.
- The work area surrounding the bar feed system should always be clear of objects and well lit. The presence of oil on the ground could cause falls; it is important to maintain the floor clean on a regular basis.
- Do not place the machine in a damp area and make sure that water or oil does not come into contact with the electrical equipment.
- Do not open the clamping device (collet or chuck) of the lathe manually when the bar feeder is in automatic mode (Interface).
- Each time the diameter is changed, also adapt spindle reduction tube. The use of spindle reduction tubes is highly recommended for machining bars with diameters smaller than the maximum capacity of the spindle.
- Do not attempt to recharge the batteries of the PLC.
- For the use and maintenance of the bar feeder, use only parts provided by or recommended by LNS.
- If it is necessary to move the bar feeder once it has been originally installed, do not reinstall it before first contacting LNS or its local representative.
- The rotating bar should never protrude the rear of the lathe spindle.
- The maximum length (max. L) the bar feeder system is allowed to load is given by the length of the lathe spindle. The bar should never extend more than 3 times its diameter beyond the lathe clamping device without support.

2.4.1. Safety devices

The SUPER HYDROBAR HS bar feed system 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 feed system impossible. Safety switches keep the bar feed system from operating when these protections are open.
The design of the switches, as well as their insertion into the bar feed system, makes it practically impossible to bypass them.

By pressing the emergency stop button located on the remote control, the functions of the bar feed system and the lathe are immediately stopped.

The LNS company, 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.

Safety device for lathes with mobile headstock

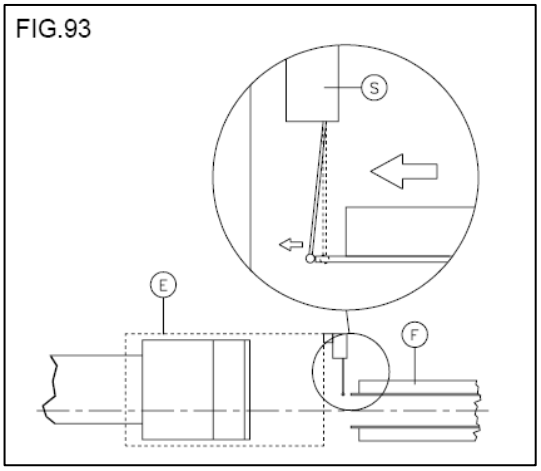
Some mobile-headstock lathes withdraw the spindle whenever they reset, which is what happens every time they are turned on.

In such cases, the collector has to be moved back and, if that is not sufficient, it will be necessary to clear the tube in the loading position.

If the operator fails to do this, the collector can be damaged. To avoid this, it is possible (on request) to install a safety switch (S) on the front of the collector.

When the spindle (F) withdraws, it operates the safety switch (S) fitted to the collector (E). This breaks the safety circuit and the spindle stops moving.

FIG.93



CHAPTER 3: INSTRUCTIONS

3.1. START UP PRODUTION

3.1.1. Change of diameter

Thoroughly empty the working tube by repeatedly placing the A1 selector in position R.

A) Remove the female hydraulic connector supplying the working tube. The end-of-bar cable plug must not be removed.

B) Unscrew the wing-screws on the collector so that it is completely free. It is imperative that the collector remain horizontal and that it does not turn when the tube is indexed.

C) Unscrew the locking bar (68/E) without withdrawing the closing lever (68/D).

D) As the HS 6.50 to 6.65 bar-feeders are very heavy, they are fitted with a hydraulic screw-jack for lifting (67/B).

Insert the lever (67/A). Then, by up-and-down movements, operate the jack 67/B).

As the tube rises, it is no longer resting on the centring ring but on the roller ring. This thus facilitates rotation.

Check that the handle (68/E) is sufficiently unscrewed and that the closing lever (68/D) is opened enough and does not block the rise of the tube (68/A)

E) Unscrew the locking bar (69/D) so that the centring pin (69/C) is cleared sufficiently to permit the rotation of the tube (69/A).

F) Insert the tool (69/B) for indexing the tube (supplied with the small material) into one of the openings in the indexing ring.

Index the tube by pushing backwards.

G) Once the tube of the desired diameter is in place (to help you, the diameters have been engraved on the indexing ring), close the lever and insert the centring pin (69/C) into the corresponding hole.

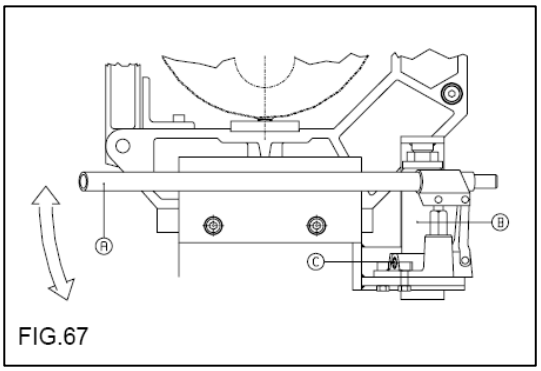


FIG.67

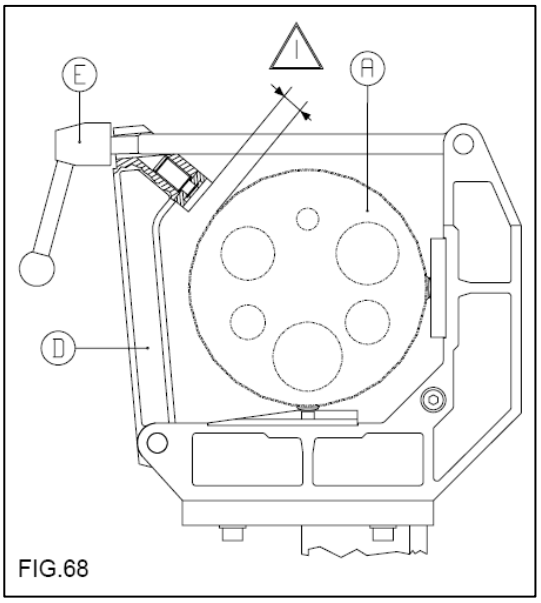


FIG.68

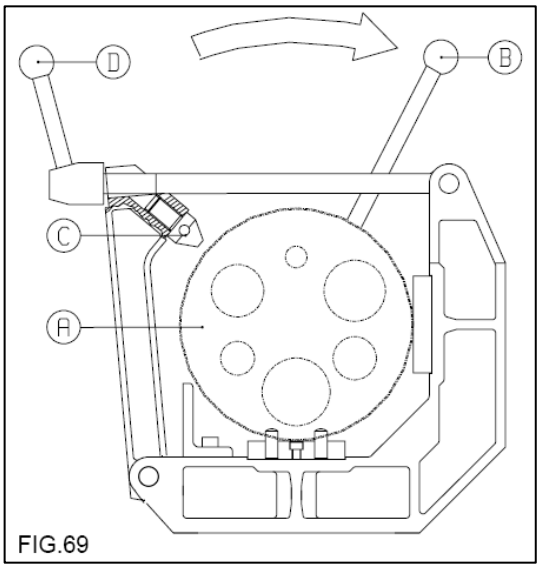


FIG.69

H) Screw down the locking bar (69/D).

I) By means of the lever (67/A), turn the jack opening system anti-clockwise (67/C) and the tube will descend. Once the tube is resting on the centring lugs, return the jack device (67/C) to its working position by turning it clockwise until it butts up against the end-stop. (Only for bar-feeders HS 6.50 to 6.65)

J) Place the closing lever (68/D) against the indexing ring, **while checking that the centring lugs are bedding onto the plates**, then tighten the locking bar (68/E).

K) Plug the hydraulic connector into the current working tube.

L) Position the collector and tighten the winged screws.

3.1.2. Pusher

If it was not possible accurately to define the length of the pushers when placing the order, it may be necessary to cut them on site.

Stripping the pushers

Please proceed as follows to extract the pushers :

A) Unscrew the screws (A) that hold the support cheek (B)
B) Remove the support cheek (B)
C) Withdraw end-of-bar spring (C)
D) Withdraw the pusher disk (D)
E) Remove the stop ring (E)

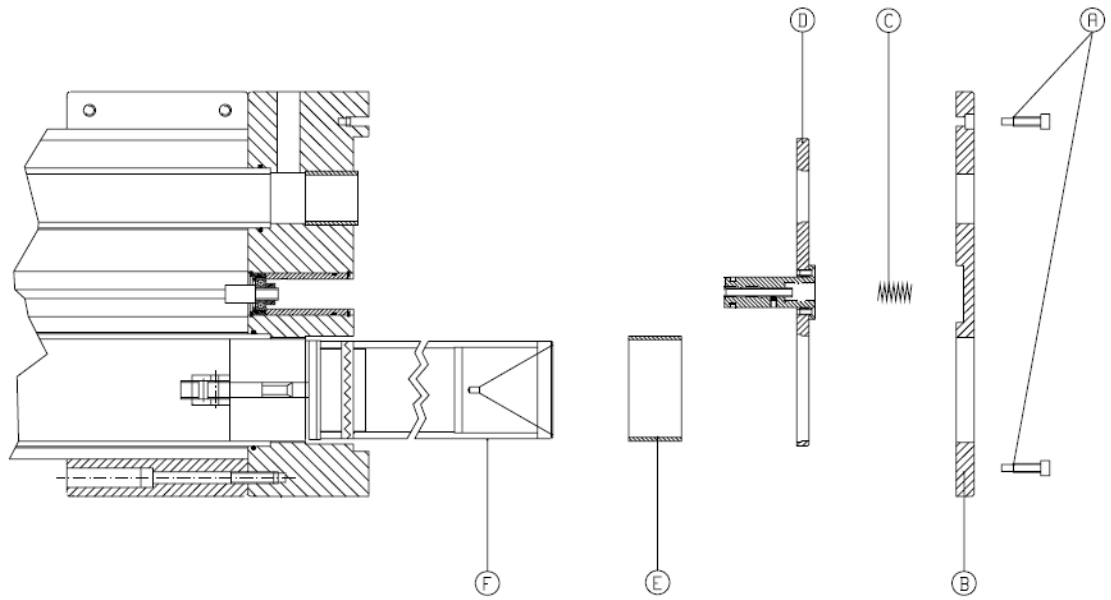


FIG.80

The pusher (F) and its piston are now free and can be withdrawn from the tube.

Define pusher lenght

- Insert a pusher into the spindle and push it until it is 10mm short of the lathe collet.
- Make a mark at 190mm, measuring from the lathe spindle (T).
- Using a punch (51/C), extract (51/1) the pin (51/G).
- Separate (51/2) the **pusher** from the **piston**.
- Saw the pusher at the point you marked. Re-drill the hole for the pin using the previous measurements.
- Snagg all holes well and reassemble the pusher. When reinserting the pin, make sure that it does not stand proud of the pusher otherwise the guide tube will be damaged.

  When assembled, the piston must be free and must not be pressing against the pusher.

  Replace the pusher in the HS and check that in the end-of-bar position it does not touch the lathe collet.

  Do the same with the other pushers.
- When at the end-of-bar position, the pusher is still 40mm inside the tube.

  By adding the 150mm distance between the leading end of the tube and the spindle (see point 2.2.2., FIG.33), you get the 190mm mentioned above.

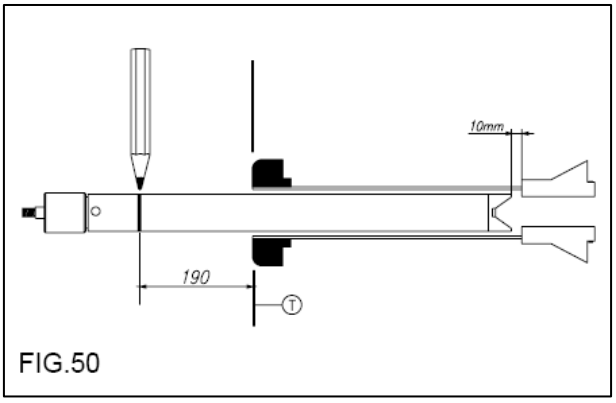


FIG.50

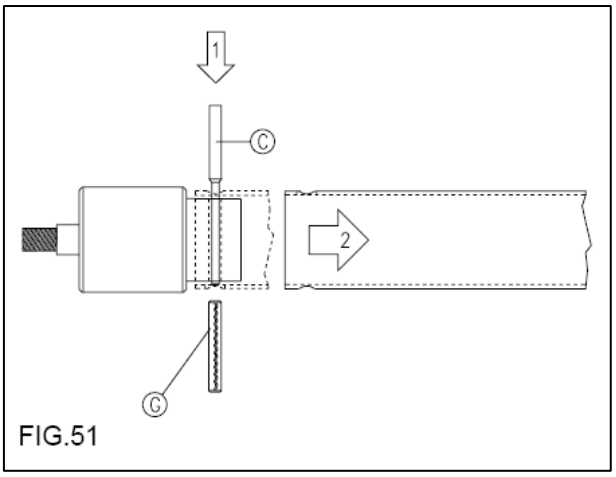


FIG.51

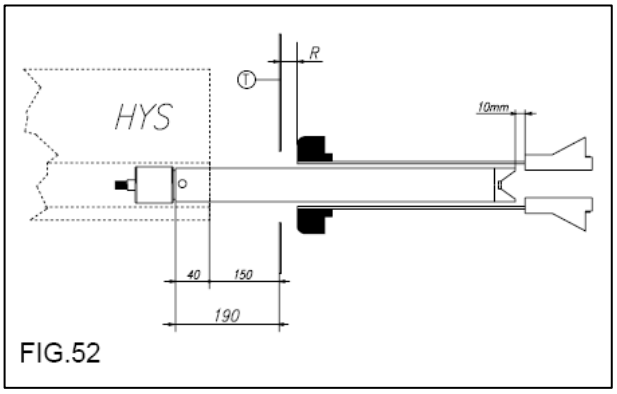


FIG.52

or lathes whose spindle is set back (52/R) more than 50mm inside the casing, it is necessary to consider cutting away the housing (52/T), see even installing a retraction system.

<u>Pushers less than 13 mm:</u>

Pushers of diameter less than 13 mm, cannot be separated from the piston and must therefore be cut at the front. After having shortened them, refashion a conical chamfer on the end of the pushers, identical to that which has been cut off.

For pushers fitted with rotating ferrules, see next pages

Internal valve of piston

The internal valve of the piston serves to calibrate the quantity of oil that passes from the compression chamber (behind the piston) to the guide tube in which the bar turns.
This valve is set in the factory but if, for any reason, the setting has to be adjusted, please proceed as follows:
(this setting can be checked only when the bar-feeder is operational).

Regulative the valve:

The quantity of oil that passes through the valve is adjustable by means of the regulating screw (A).

A) Tube in feeding position (swung back)
B) Pusher blocked so that the piston is at least 200 mm shy of the stop ring.
C) Thrust-pressure set (see point 2.2.4.).
D) Flow regulated (see point 2.2.4.).
E) A1 selector on AUT
F) Lath and SUPER HYDROBAR HS ON.

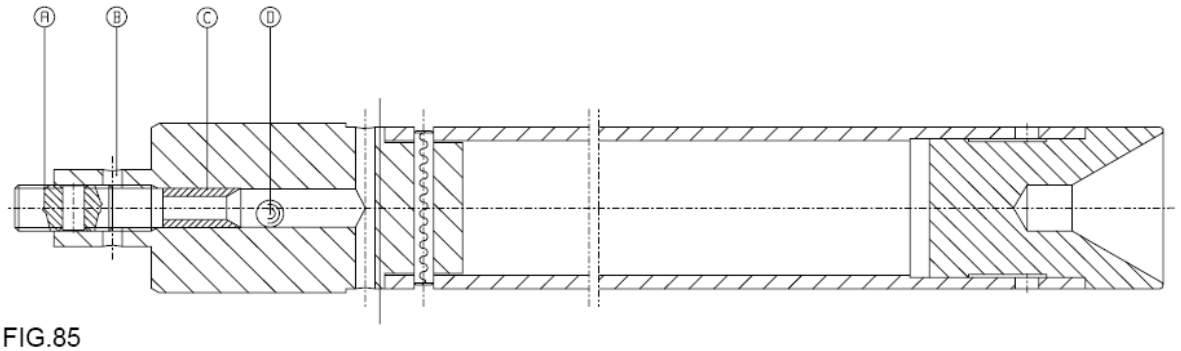


FIG.85

A thread of oil, the size of a finger, should flow out into the collector. If that is not the case, the pusher will have to be extracted from the tube again (as indicated in point 3.1.3.), then :

- If the thread of oil is too thick, it is necessary to tighten the screw (A) on the piston valve (B).
- If on the contrary the thread is too thin, release the screw (A).

Pistons of less than 10 mm in diameter, have no interior valve. Calibration is done by taking the difference between the external diameter of the piston and the internal diameter of the tube. That difference should be 0.3 - 0.5mm.

When the control is in position R, the direction of rotation of the pump is reversed and the oil which is in the guide tube is sucked in. At this point, the ball (D) is pressed up against the ring (C) and acts as a valve. The pusher withdraws.

Rotating pushers (option)

When extremely small diameter bars have to be guided, it is recommended that the front of the pusher (A) be fitted with a collet (B).

The collet has then to be fitted to a rotating ferrule (C) so that the bar does not twist as it draws the pusher.

In standard operation, the pusher turns and forces the oil into the collector (E). When it is fitted with a rotating ferrule, the pusher does not turn.

Should the oil not be correctly removed, a brush (D) can be fitted inside the collector to clean the pusher.

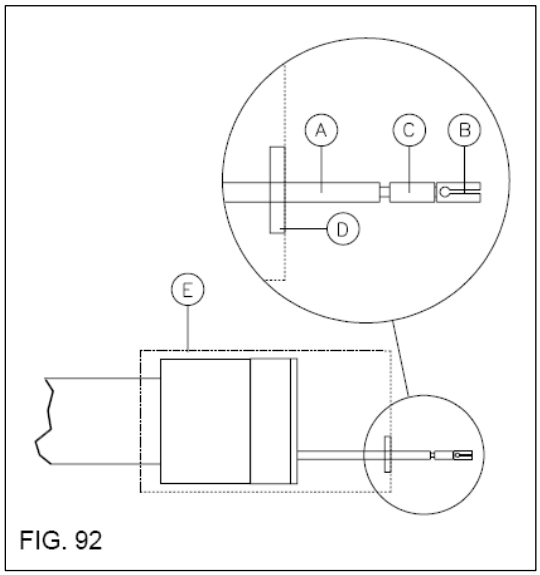


FIG. 92

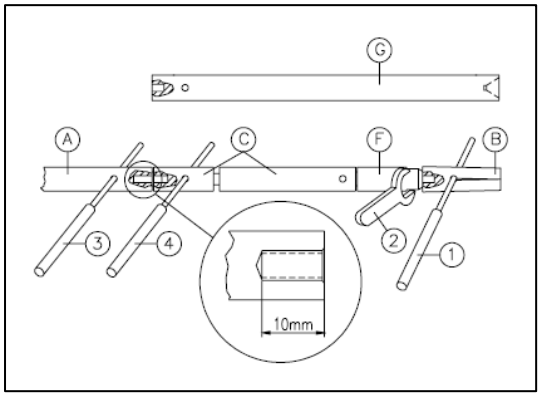
Changing collet:

Insert a punch (1) through the collet (B). Then by using a spanner (2), unscrew the collet from the adapter piece (F) and fit the new collet.

The pushers with rotating ferrule can also be fitted with a cone. Insert a punch (3) through the pusher (A).

Insert a second punch (4) through the rotating ferrule then unscrew. Fit the cone (G) directly onto the pusher (A).

(The tools mentioned in this paragraph are not supplied with the device)



A 10 mm deep M3 hole (identical to the original) will have to be tapped in the front end of the pusher if the pusher has had to be shortened.

3.1.3. Loading

When the lathe stops and indicates that the bar is finished (end of bar), please proceed as follows:

Place the A1 selector in position R

- When the pump stops, check that the pusher has been drawn back and that it is no longer between the bar-feeder and the lathe, otherwise move it back by hand (it can happen that some large-diameter pushers have difficulty in moving back).
- Loosen the clamping screw (*/U) on the loading arm (*/V) and remove it in loading position (see point 2.1.2).
- Unscrew the locking bar (66/E) and lower the closing lever (66/D).
- Lift the tube while bearing on the loading arm.
- Insert a new bar
- Return the tube to its working position while ensuring that the centring lugs are well supported.

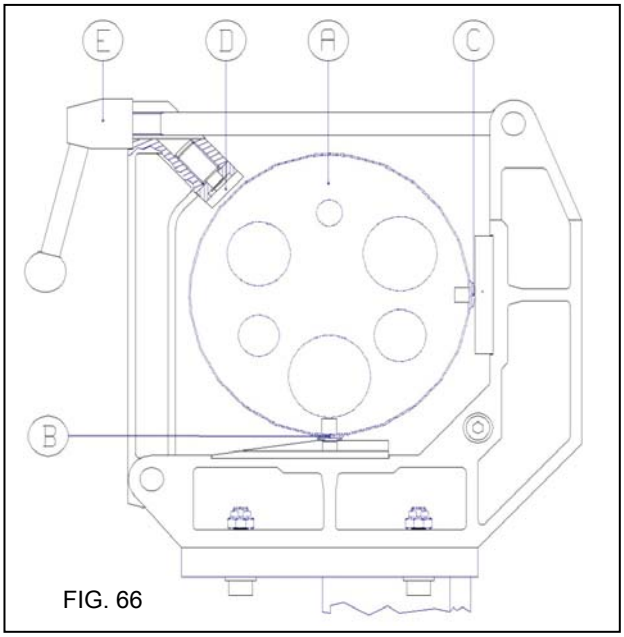


FIG. 66

- Raise the closing lever (66/D) and secure with the locking bar (66/E).

Any off-cut must be removed from the lathe collet before inserting the new bar.

- Make the bar advance by holding the A1 selector in the MAN position.
- When the bar is in position, close the collet.
- Place the A1 selector in the AUT position and start the lathe production cycle.
- As soon as the cycle starts, the bar-feeder pump will start up.

3.2. Operations

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

In case of alarm, switch the selector to R (reset function).

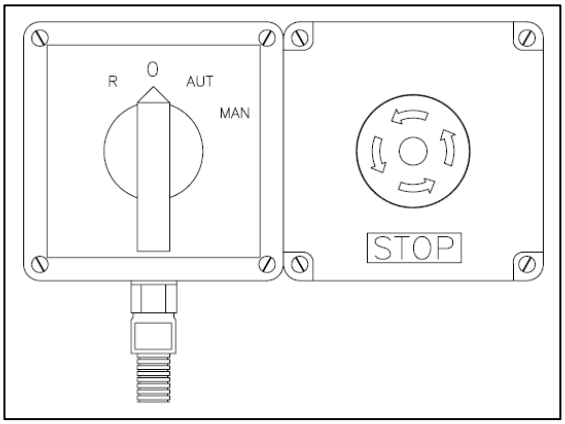
O Position :

The SUPER HYDROBAR HS is OFF. The lathe can be used without the bar-feeder device. Reloading must be done in position 0.

AUT Position :

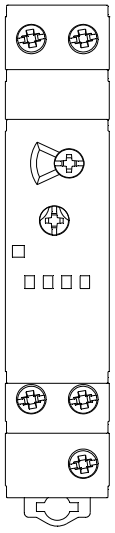
When the SUPER HYDROBAR HS is in the AUT position, it is awaiting the thrust signal that will be issued by the lathe.

The starting up of the lathe then starts the HS pump motor. Stopping the lathe, or switching it to manual will cause the SUPER HYDROBAR HS to stop.



MAN Position :

Manual start of the SUPER HYDROBAR HS when the lathe is OFF. If the selector is released, it automatically returns to the AUT position.



R Position :

The pump draws oil up the tube and makes the pusher piston retract. If the selector is released, it automatically returns to position 0. The pump however continues to draw the oil for the time set on the timer relay (T).

The timer relay is in the electric control box. The pump can also be made to stop drawing in oil by switching the selector to AUT.

Emergency stop button :

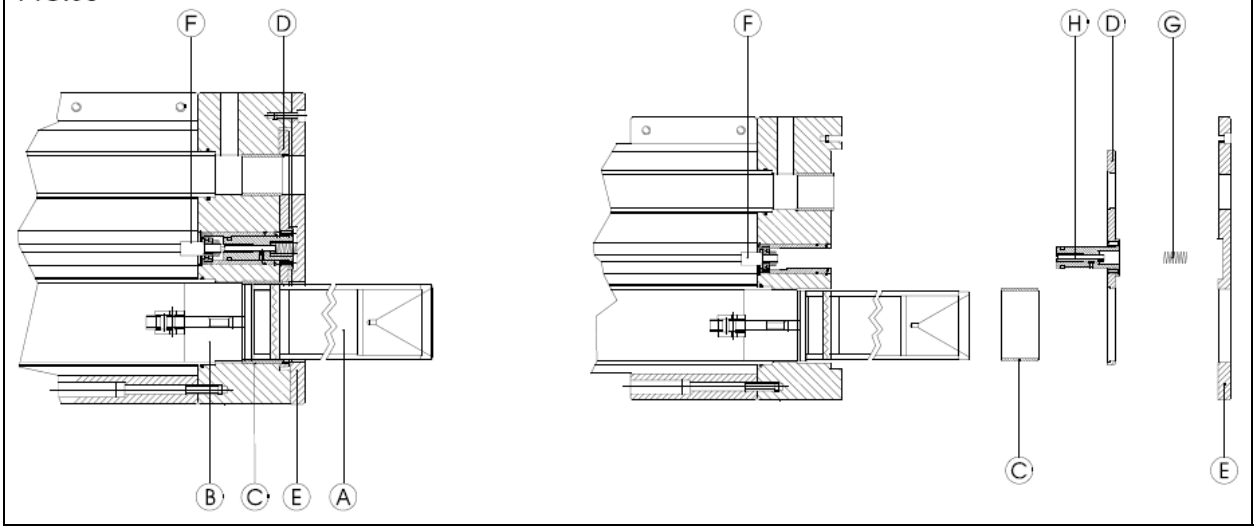
When this knob is pressed, the lathe and bar-feeder are immediately deactivated. In order that the machinery may be restarted, turn the STOP knob in the direction indicated by the arrows.

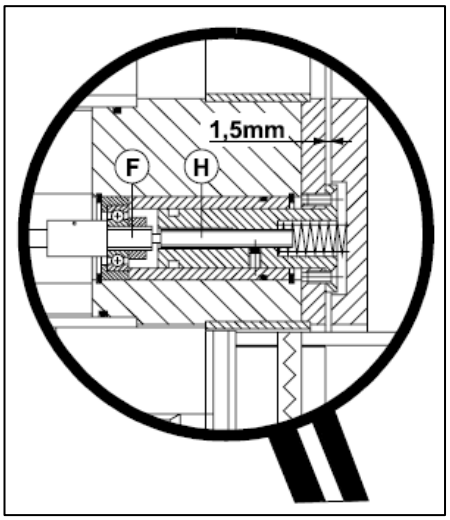
3.2.1. End of bar position

The end-of-bar signal is given when the piston (B) enters into contact with the stop ring (C). This moves up against the pusher disk (D) and releases the microswitch (F). In normal mode, the microswitch is held down by the spring (G).

The length of the off-cut will depend on the length of the pusher (see point 3.1.2). For the sake of safety, a maximum distance of 150mm between the exit of the tube and entry of the headstock must not be exceeded.

FIG.90





NB: The total travel of the pusher disk (D) and the stop pin (C) is 2 mm. The screw (H) therefore has to be adjusted in such a way that when the pusher disk (D) is in the rear (or working) position, the microswitch (F) is ON.

At the end of the bar, the pusher disk (D) is pushed 1.5 mm forwards. At that point, the microswitch (F) should be OFF.
As total disk travel is 2 mm, there is still a 0.5 mm mechanical travel in reserve.

Should there be no end-of-bar signal, check that there are no shavings between the mobile parts of the end-of-bar device (pusher disk, stop pin, etc.)

End-of-bar monitor

- Tube in reloading position
- A1 function selector in AUT position
- Turn on the lathe in automatic cycle
- Allow the piston to move up against the end stop

When the collet next opens, the lathe and the bar-feeder hydraulic pump should come on.

По вопросам продаж и поддержки обращайтесь

Архангельск(8182)63-90-72
Астана +7(7172)727-132
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
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Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург(343)384-55-89
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Киргизия (996)312-96-26-47
Россия (495)268-04-70
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Адрес сайта: https://fedek.nt-rt.ru/ || **эл.почта:** fka@nt-rt.ru