Instruction manual

QUICK LOAD
SERVO 65

LNS SA
CH-2534 Orvin
Tél : +41 (0)32 358 02 00
Fax: +41 (0)32 358 02 01
service@Lns-world.com
http://www.Lns-world.com

ENG

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STARTUP MANUAL

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 must be modified when following parameters change:

- Bar stock diameter
- Bar stock shape
- Part length

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

2. SETTINGS RELATED TO POSITIONING

2.1 End of bar

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

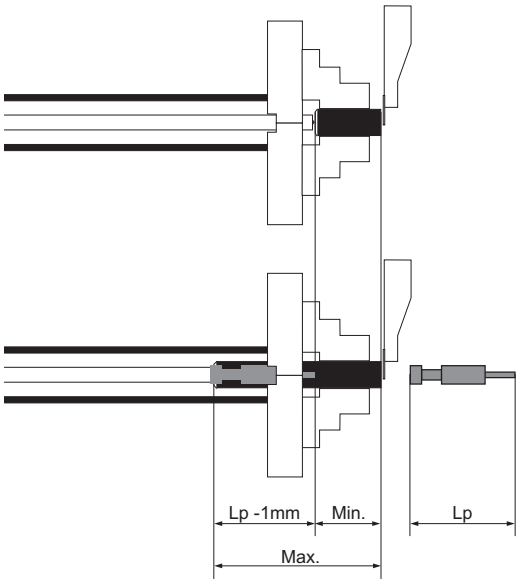
Usually, the end of bar position is adjusted as closely as possible behind the clamping system of the lathe (approximately 5 mm or a 1/4" behind the chuck jaws or collet pads).

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 (Lp - 1 mm).

Maximum remnant length = Lp - 1mm + Min

2.2 End of bar setting

Before handling the bar feeder, stop the lathe at the end of part cycle!

1 

[STOP]

Press the key **[STOP]**.

---

2 F4

Enter the main menu.

---

3 ▲

▲

F3
[ENTER]

Enter the menu "positions / torques".

---

4 
[SET]

Press the key corresponding 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 :

Conditions	Available functions	
	By offset correction	By teaching
- *Loading table down* - *No bar stock in the loading channel*	Icon **[+/-]**	Icon **[TEACH IN]**
- *Loading with extended loading pusher*	Icon **[+/-]**	---

Setting by offset correction: **jump to point 5**
Setting by teach in: **jump to point 6**

---

5 F1
[+/-]

[+/-] By offset correction:

- Press the key corresponding to the icon **[+/-]**.
- The current en of bar position (Z) is displayed.
- Enter with the direction keys the correction to insert, and press the **[+]** icon to add the value, or the icon **[-]** to subtract it. The new value is stored.
- To exit the end of bar set mode, press the key attributed to the icon **[ESC]**.

Jump to point 7.

6

F2
[TEACH IN]

F4
[FWD]

F3
[ENTER]

[TEACH IN] By teaching:

- Press the key attributed to the icon **[TEACH IN]**. The display shows 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.

7

F2
[ESC]

or

STOP
[STOP]

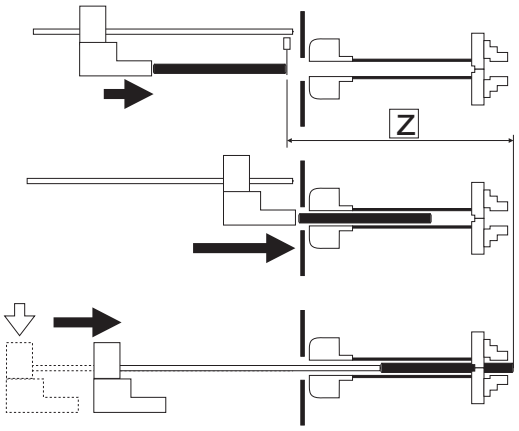
To exit the set mode, press the keys **[ESC]** or **[STOP]**.

2.3 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.



2.4 Top cut position setting

Before handling the bar feeder, stop the lathe at the end of part cycle.

1	STOP **[STOP]**	Press the key [STOP].
2	F4	Enter the main menu.
3	▲ ▲ F3 **[ENTER]**	Enter the menu "positions / torques".
4	F4 **[PG DOWN]**	Go to the screen "top cut position".

5 F3 **[SET]**

Press the key corresponding 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 :

Conditions	Available functions	
	By offset correction	Teach in
- *Loading table down* - *No bar stock in the loading channel*	Icon **[+/-]**	Icon **[TEACH IN]**
- *Loading with extended loading pusher*	Icon **[+/-]**	---

By offset correction: **jump to point 6**
By teach in: **jump to point 7**

---

6 F1 **[+/-]**

[+/-] By offset correction:

- Press the key attributed to the icon **[+/-]**.
  The current top-cut position (Z) is displayed.
- Enter with the direction keys the correction to insert, and press the **[+]** icon to add the value, or the icon **[-]** to subtract it. The new value is stored.
- To exit the end of bar set mode, press the key attributed to the icon **[ESC]**.

Jump to point 8.

---

7 F2 **[TEACH IN]** F1 **[START]** F4 **[FWD]** F3 **[ENTER]**

[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.

---

8 F2 **[ESC]** **or** STOP **[STOP]**

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

3. SETTINGS RELATED TO MACHINED PARTS

3.1 Parameter settings

Following examples describe how to set a simple application. Depending on the unlocked options, several additional parameters may be added to end the setup. For further information, please read the chapter 5 "Operation".

For profiles other than round, hex or square, please contact your local LNS representative.

Example 1: round bars

Bar profile	*round*
Bar diameter	*20.0 mm*
Length of pieces to be machined	*55.0 mm*
Thickness of the cut off tool	*2.0 mm*

Conditions:

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

a) Parameters

1 — F4 — Enter the main menu.

---

2 — F3 **[ENTER]**

Main menu:

Enter the menu "part setup" (default).

---

3 — F3 **[ENTER]**

Part setup menu - profile:

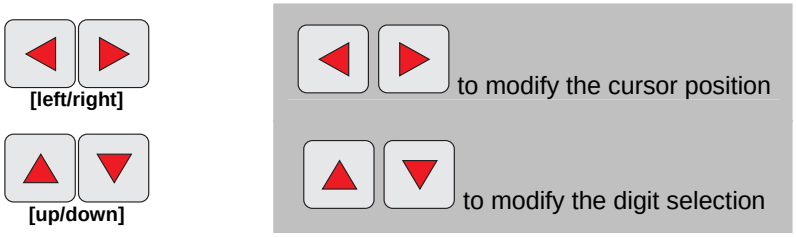
Select the parameter "round" (default).

---

4 — F3 **[SET]**

Part setup menu – Bar stock diameter

To change the value, press any direction key. A cursor is displayed under the first digit.



To store the value, press the key corresponding to the **[ENTER]** icon.

F3 **[ENTER]**

Press the key corresponding to the **[ENTER]** icon again to page down to the next parameter.

Note: the procedure can be interrupted at anytime by pressing the key corresponding to the **[ESC]** icon.

5

F3
[SET]

Part setup menu – Total part feed out length

To change the value, press any direction key. A cursor is displayed under the first digit.

[left/right]

[up/down]

to modify the cursor position

to modify the digit selection

To store the value, press the key corresponding to the **[ENTER]** icon.

F3
[ENTER]

Press the key corresponding to the **[ENTER]** icon again to page down to the next parameter.

Note: the procedure can be interrupted at anytime by pressing the key corresponding to the **[ESC]** icon.

6

F3
[SET]

Part setup menu – Number of clamping device openings

To change the value, press any direction key. A cursor is displayed under the first digit.

[left/right]

[up/down]

to modify the cursor position

to modify the digit selection

To store the value, press the key corresponding to the **[ENTER]** icon.

F3
[ENTER]

Press the key corresponding to the **[ENTER]** icon again to page down to the next parameter.

Note: the procedure can be interrupted at anytime by pressing the key corresponding to the **[ESC]** icon.

7

F2
[ESC]

or

STOP
[STOP]

To exit the setup mode, press the key **[ESC]** or **[STOP]**.

b) Mechanical settings (see the startup chapter):

- Install the 12 mm diameter pusher;
- If the stock is tubing, install the special adapter;
- Check that the table and the loading fingers are in the "Round bars" position.

Example 2: hexagonal bars

Bar profile	*hexagonal*
Bar diameter	*50.0 mm*
Length of pieces to be machined	*37.0 mm*
Thickness of the cut off tool	*2.0 mm*

Conditions:

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

a) Parameters

1 F4 — Enter the main menu.

2 F3 [ENTER] — Main menu:

Enter the menu "part setup" (default).

3 ▲ — Part setup menu – Loading of:

Select the parameter "hexagonal".

F3 [ENTER]

4 F3 [SET] — Part setup menu – Bar stock diameter

To change the value, press any direction key. A cursor is displayed under the first digit.

◀ ▶ [left/right]

▲ ▼ [up/down]

◀ ▶ to modify the cursor position

▲ ▼ to modify the digit selection

To store the value, press the key corresponding to the **[ENTER]** icon.

F3 [ENTER]

Press the key corresponding to the **[ENTER]** icon again to page down to the next parameter.

Note: the procedure can be interrupted at anytime by pressing the key corresponding to the **[ESC]** icon.

5

F3
[SET]

Part setup menu – Total part feed out length

To change the value, press any direction key. A cursor is displayed under the first digit.

[left/right]

[up/down]

to modify the cursor position

to modify the digit selection

To store the value, press the key corresponding to the **[ENTER]** icon.

F3
[ENTER]

Press the key corresponding to the **[ENTER]** icon again to page down to the next parameter.

Note: the procedure can be interrupted at anytime by pressing the key corresponding to the **[ESC]** icon.

6

F3
[SET]

Part setup menu – Number of clamping device openings

To change the value, press any direction key. A cursor is displayed under the first digit.

[left/right]

[up/down]

to modify the cursor position

to modify the digit selection

To store the value, press the key corresponding to the **[ENTER]** icon.

F3
[ENTER]

Press the key corresponding to the **[ENTER]** icon again to page down to the next parameter.

Note: the procedure can be interrupted at anytime by pressing the key corresponding to the **[ESC]** icon.

7

F2
[ESC]

or

STOP
[STOP]

To exit the setup mode, press the key **[ESC]** or **[STOP]**.

b) Mechanical settings (see the startup chapter):

- Install the 20 mm diameter pusher;
- If the stock is tubing, install the special adapter;
- Check that the table and the loading fingers are in the "Round bars" position;
- Check the procedure for profiled bars.

Example 3: square bars

Bar profile	*square*
Bar diameter	*40.0 mm*
Length of pieces to be machined	*58.0 mm*
Thickness of the cut off tool	*2.0 mm*

Conditions:

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

a) Parameters

1 F4

Enter the main menu.

---

2 F3 **[ENTER]**

Main menu:

Enter the menu "part setup" (default).

---

3 ▲ ▲ F3 **[ENTER]**

Part setup menu – Loading of:

Select the parameter "square".

---

4 F3 **[SET]**

Part setup menu – Bar stock diameter

To change the value, press any direction key. A cursor is displayed under the first digit.

◀ ▶ **[left/right]**

▲ ▼ **[up/down]**

◀ ▶ to modify the cursor position

▲ ▼ to modify the digit selection

To store the value, press the key corresponding to the **[ENTER]** icon.

F3 **[ENTER]**

Press the key corresponding to the **[ENTER]** icon again to page down to the next parameter.

Note: the procedure can be interrupted at anytime by pressing the key corresponding to the **[ESC]** icon.

5

F3
[SET]

Part setup menu – Total part feed out length

To change the value, press any direction key. A cursor is displayed under the first digit.

[left/right]

[up/down]

to modify the cursor position

to modify the digit selection

To store the value, press the key corresponding to the **[ENTER]** icon.

F3
[ENTER]

Press the key corresponding to the **[ENTER]** icon again to page down to the next parameter.

Note: the procedure can be interrupted at anytime by pressing the key corresponding to the **[ESC]** icon.

6

F3
[SET]

Part setup menu – Number of clamping device openings

To change the value, press any direction key. A cursor is displayed under the first digit.

[left/right]

[up/down]

to modify the cursor position

to modify the digit selection

To store the value, press the key corresponding to the **[ENTER]** icon.

F3
[ENTER]

Press the key corresponding to the **[ENTER]** icon again to page down to the next parameter.

Note: the procedure can be interrupted at anytime by pressing the key corresponding to the **[ESC]** icon.

7

F2
[ESC]

or

STOP
[STOP]

To exit the setup mode, press the key **[ESC]** or **[STOP]**.

b) Mechanical settings (see the startup chapter):

- Install the 20 mm diameter pusher;
- If the stock is tubing, install the special adapter;
- Check that the table and the loading fingers are in the "Square bars" position;
- Check the procedure for profiled bars.

3.2 Application setup

The QUICK LOAD SERVO 65 allows the quick and easy selection of preconfigured applications.

Following working modes are always available:

1. Feeding with turret
2. Feeding without turret

5. Miscellaneous functions (Dry Run, etc.)

Additionally, depending on the lathe and the unlocked functions, following working modes may be available:

3. Work with sub-spindle
4. Fixed liner

Following examples describe how to set a simple application. Depending on the unlocked options, several additional parameters may be added to end the setup. For further information, please read the chapter 5 "Operation".

Working example with feeding with turret, moving to position

1 F4

Enter the main menu.

---

2 ▲ F3 **[ENTER]**

Main menu:

Enter the menu "application setup".

---

3 F3 **[ENTER]**

Application setup menu:

Select the working mode "feed with turret" (default).
Note: Part feed out is done with “M” function as default.

4. MECHANICAL SETTINGS

4.1 Pusher change

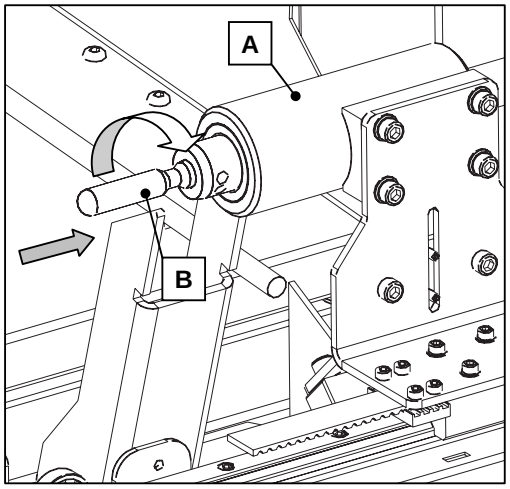
Bring the loading channel into working mode position (down position), then place the bar feed system into the **STOP** mode (remote station).

Advance the carrier **(A)** so that the bayonet system **(B)** of the pusher **(C)** is visible.

Press the bayonet's finger **(B)** toward the front of the bar feeder, then turn the finger a ¼ of a turn clockwise. The finger **(B)** must stay locked in forward position.

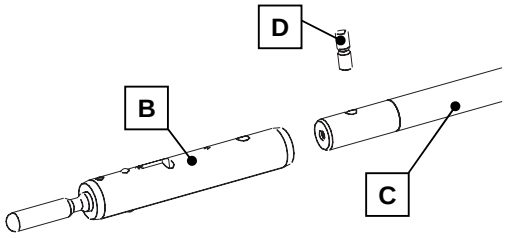
Pull the pusher **(C)** towards the bar feeder front to extract it form the carrier **(A)**.

Pull the white bush on the front guiding towards the bar feeder rear to extract it and take the pusher **(C)** out of the bar feed.



Disassemble the bayonet system **(B)** of the pusher by pushing out the crossing shaft **(D)**.

Assemble the bayonet system **(B)** on the new pusher **(C)** with the corresponding shaft **(D)**. Put the corresponding white bush on the pusher **(C)**.



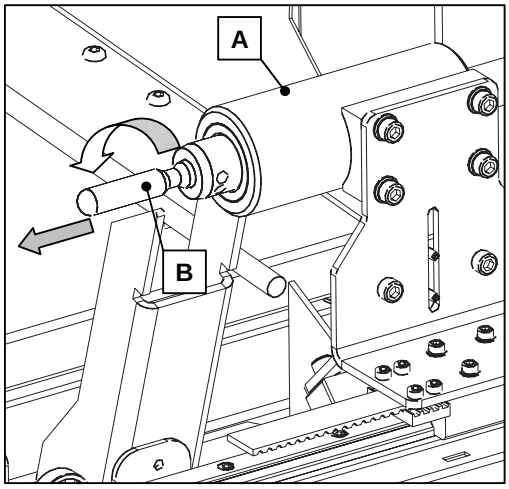
Insert the pusher front into the bar feed pusher exit and the bayonet system **(B)** into the carrier.

When the bayonet system **(B)** is in place in the carrier, turn the finger ¼ of a turn back (counter-clockwise). The finger **(B)** must stay locked in rear position and the pusher must be totally locked into the carrier **(A)**.

Slide the white bush towards the bar feed front **(C)** to fix it into the bearing.

Available pushers:

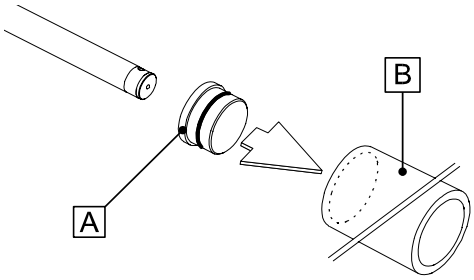
Bar ø [mm]	Pusher ø [mm]
6…15	Ø 6
16…27	Ø 12
28…65	Ø 20



4.2 Tubing

With regards to loading 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, plugs (A) must be installed in the back of the tubing (B).

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

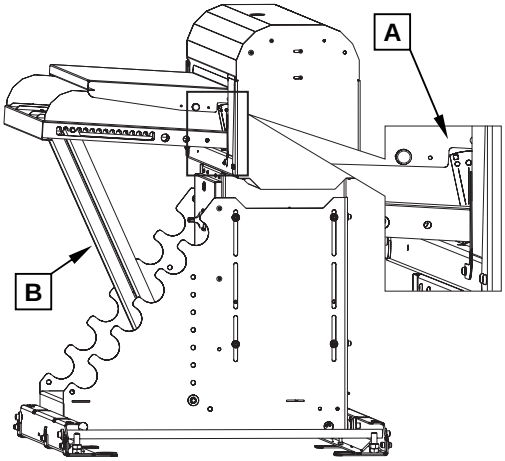


4.3 Slope of the magazine table

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.

Lifting the loading magazine and moving the locking leg (B) on the notches of the loading magazine will vary the slope.



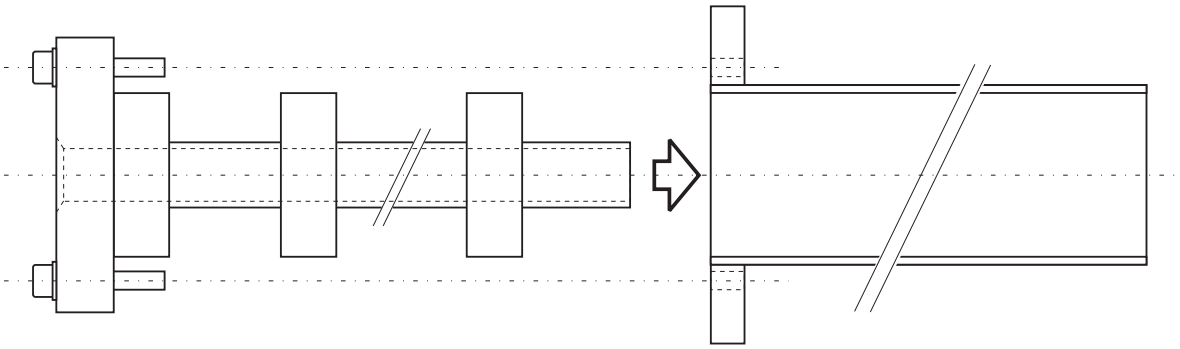
5. PUTTING THE LATHE INTO OPERATION

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 (ø 6.35 and ø 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 5, "Operation").

There are two possibilities for inserting and removing the spindle reductions. The first one consists in moving the bar feed system (see chapter 4, "General description"), and the second one in passing the reduction tube through the bar feed system. To facilitate clearance, set the bar stock diameter at 65 mm (settings related to bar stock and machined parts).

Spindle reduction tubes are available from LNS, upon request.

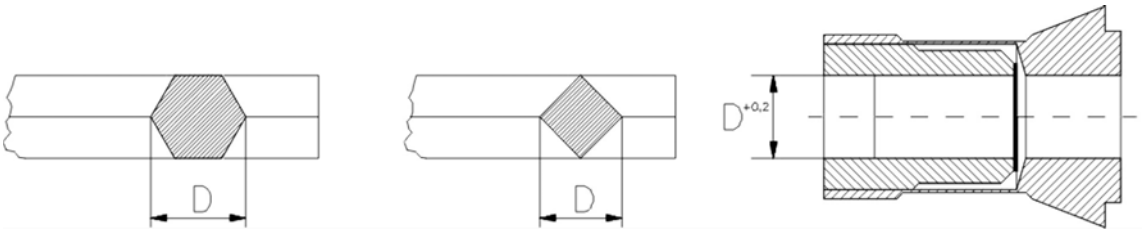
5.2 Shaped bars (hex and square)

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.



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.

CHAPTER 1: BASIC NOTIONS

1. STRUCTURE

This manual consists of various chapters, each containing several points, paragraphs, etc. Lists may be contained in paragraphs.

- The page number is indicated in the top outside margin of the page.
- The chapter number and title are indicated in the top inside margin of the page.
- The model of the bar feed system is indicated in the bottom outside margin of the page.

1.1 Cross-references

Each chapter generally contains all of the information related to the description and settings of the devices and elements represented therein.

Therefore, if a setting must be made while you are handling the system, please refer to the chapter on the device to be set, for example: (see chapter *) or (see point *).

1.2 Captions

Whenever possible, the reference numbers contained in the instruction manual are shown with the LNS ordering number of the indicated element.

To make it easier to place an order of supplies, a form has been included in the annex at the end of this manual.

1.3 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.

2. RIGHTS

LNS SA and its subsidiaries cannot be made responsible 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 SA.

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3. DECLARATION OF COMPLIANCE

(Directive 89/392/EEC, Article 4.2 and Appendix 1, Chapter B)

PROHIBITION OF PUTTING INTO OPERATION

Manufacturer : LNS SA
Address : Route de Frinvillier
CH-2534 Orvin

Declares that:

The **QUICK LOAD SERVO 65** automatic bar feed system

- Is designed to be incorporated into a machine, or to be assembled with other machines, to create a machine covered by Directive 89/392/EEC amended, and that the following (parts/paragraphs) of the harmonized standards have been applied: EN 292, EN 60 204 1, EN 1088, EN 418, EN 60947, 89/336/EEC, 73/23/EEC.

- And furthermore declares that it is prohibited to put the machine into operation before the machine into which it is to be inserted, or of which it will become a part, has been examined and declared in conformity with the provisions of Directive 89/392/EEC and the national laws transposing it, i.e. forming a whole including the machine to which reference is being made in the present declaration.

Orvin, 23.08.2005

LNS SA

B. Brügger
Sales manager

4. SAFETY INSTRUCTIONS

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

5. SAFETY DEVICES

5.1 Description

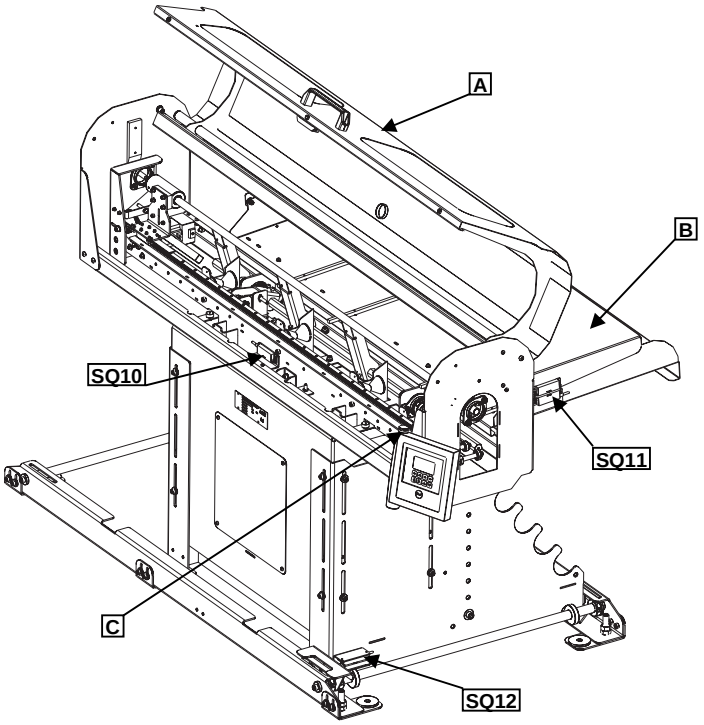
The QUICK LOAD SERVO 65 bar feed system has been designed with a focus on maximum safety during its handling and complies with all IEC requirements.

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.

5.2 Layout



Designation	Description
A	Main access cover
B	Protection cover for magazine table
C	Emergency stop push button
SQ10	Safety switch of the main access cover
SQ11	Safety switch of the protection cover for magazine table
SQ12	Safety switch of the retraction system

CHAPTER 2: TECHNICAL DATA

1. CHARACTERISTICS (*)

Weight	600 kg
Overall length	1971 mm
Overall width	1650 mm
Height	1115 – 1515 mm
Centerline range	950 - 1300 mm
Retraction travel (X and Z axis)	600 mm
Minimum diameter (round)	6 mm
Maximum diameter (round)	65 mm
Minimum bar stock length	350 mm
Maximum bar stock length	1300 mm
Main electrical power (Volt)	220 – 480 50 Hz – 60 Hz
Maximum current rate (Amps)	1 A
Pushing force/torque	167 Nm
Maximum feed rate	>100 m/min
Loading cycle for bar stock	8 – 12 sec.
Loading cycle for shaft loading	4 – 7 sec.

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

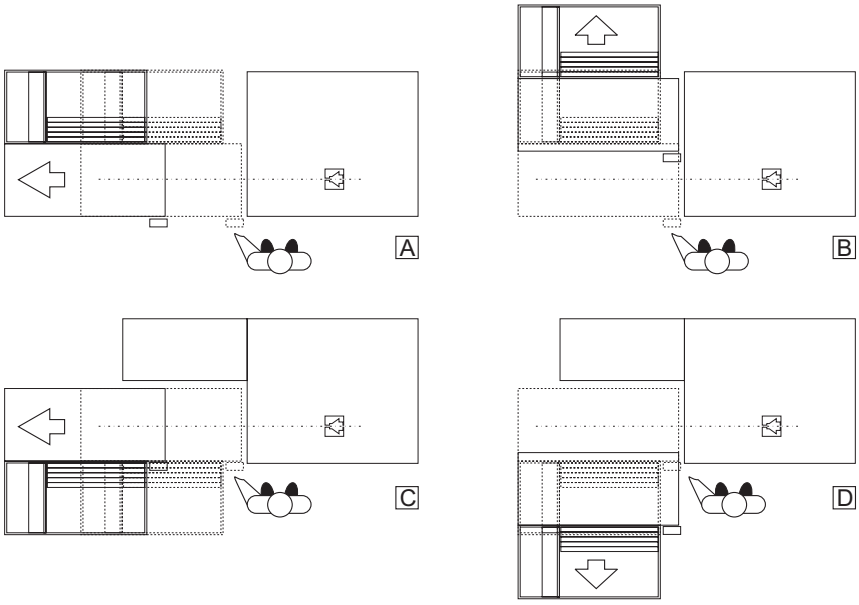
2. FLOOR PLANS

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.

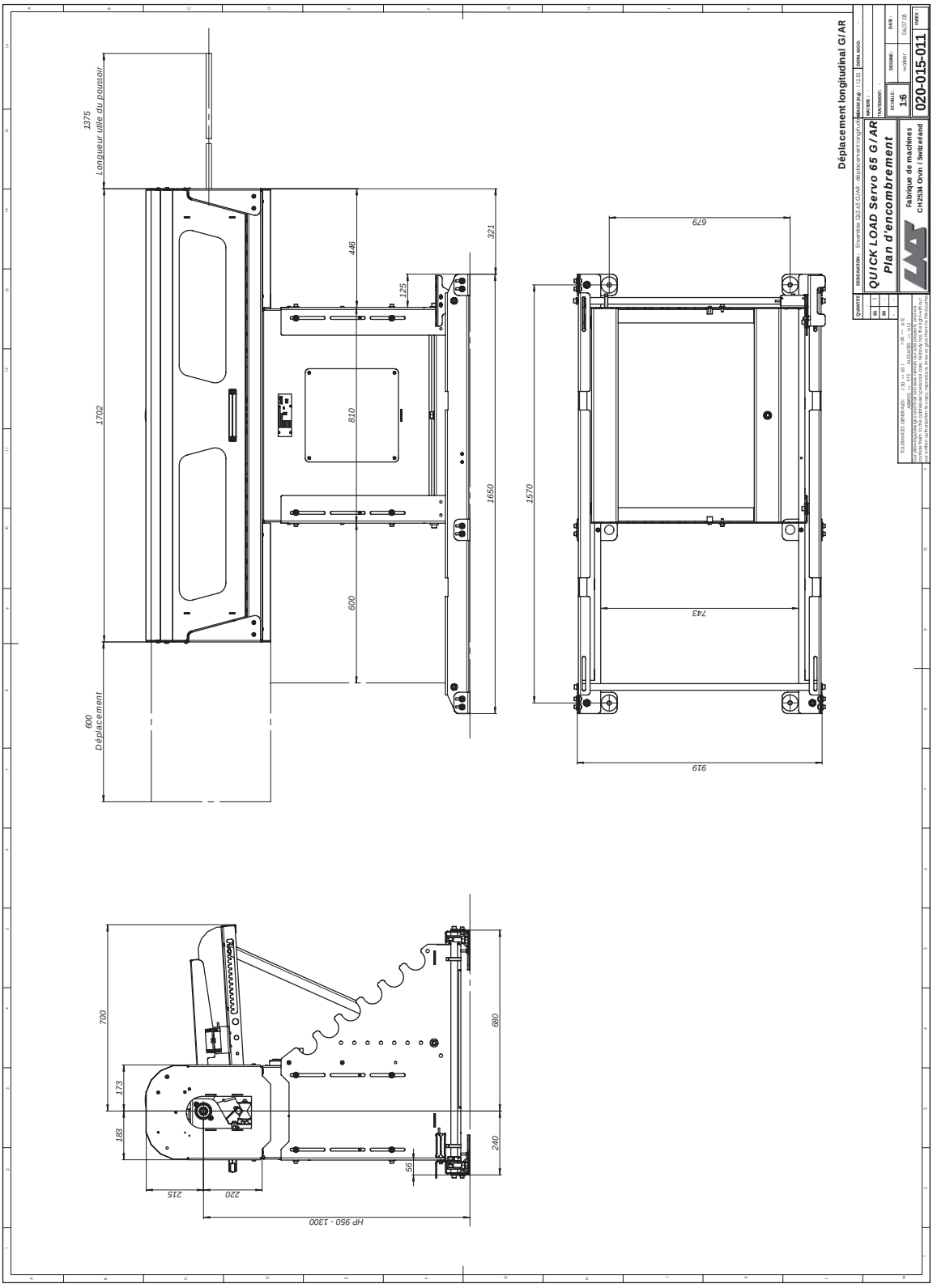
The plans 2.1 and 2.2 show the Quick Load Servo II bar feed system with left/rear loading (A+B).
The plans 2.3 and 2.4 show the Quick Load Servo II bar feed system with left/front loading (C+D).

Both retraction possibilities are displayed.

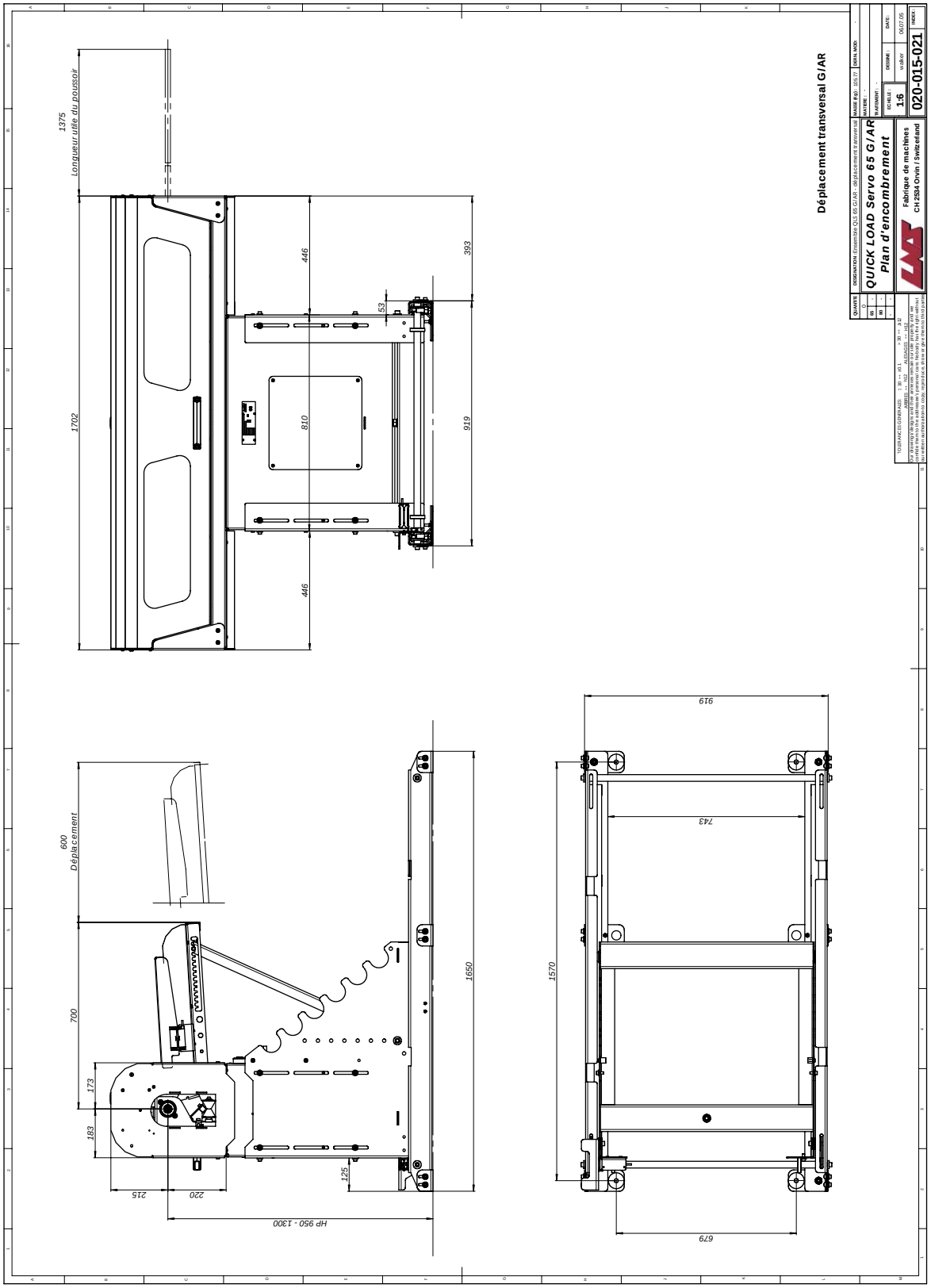
All dimensions in millimeters.



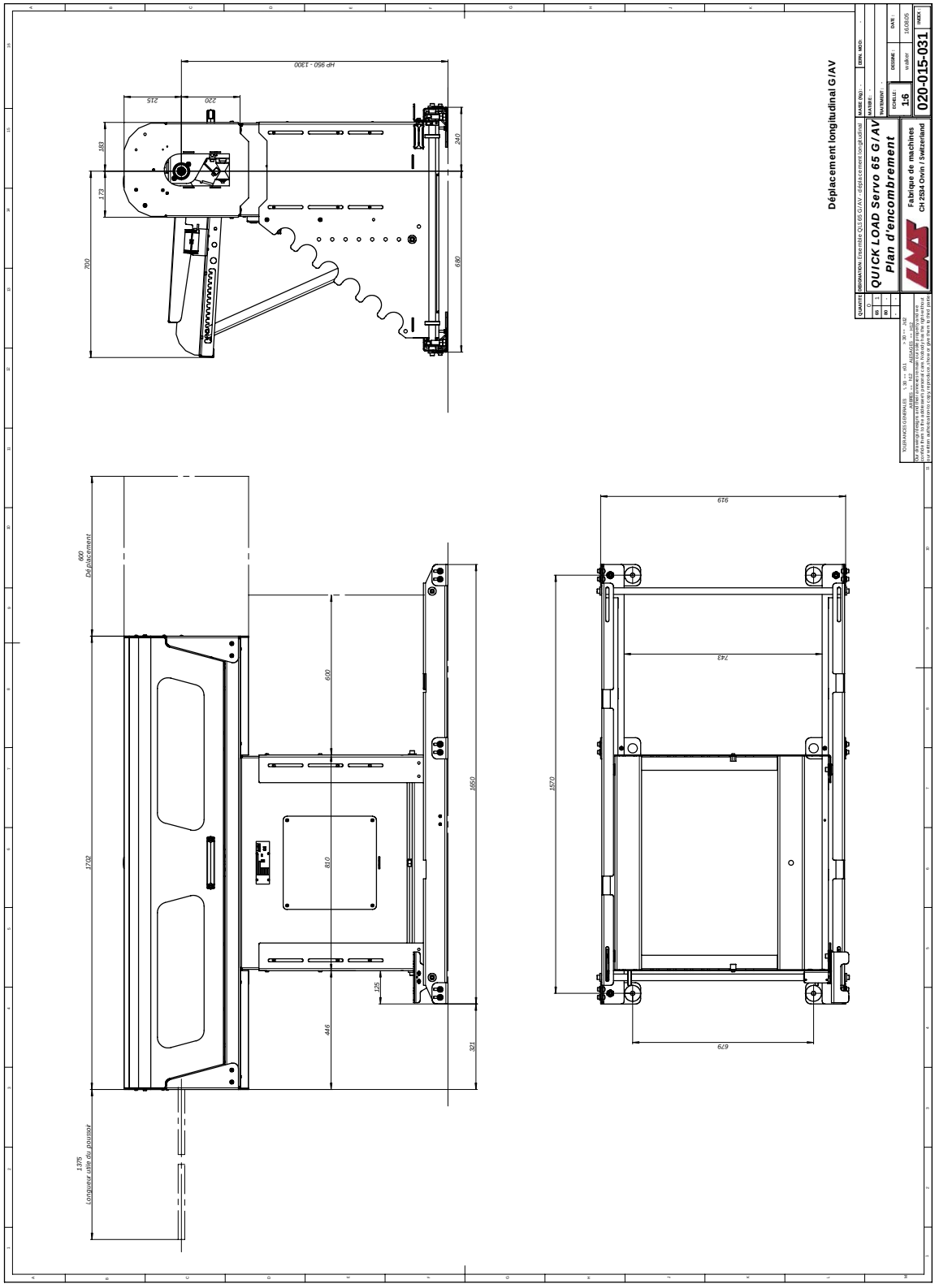
2.1 Left/rear loading with longitudinal retraction



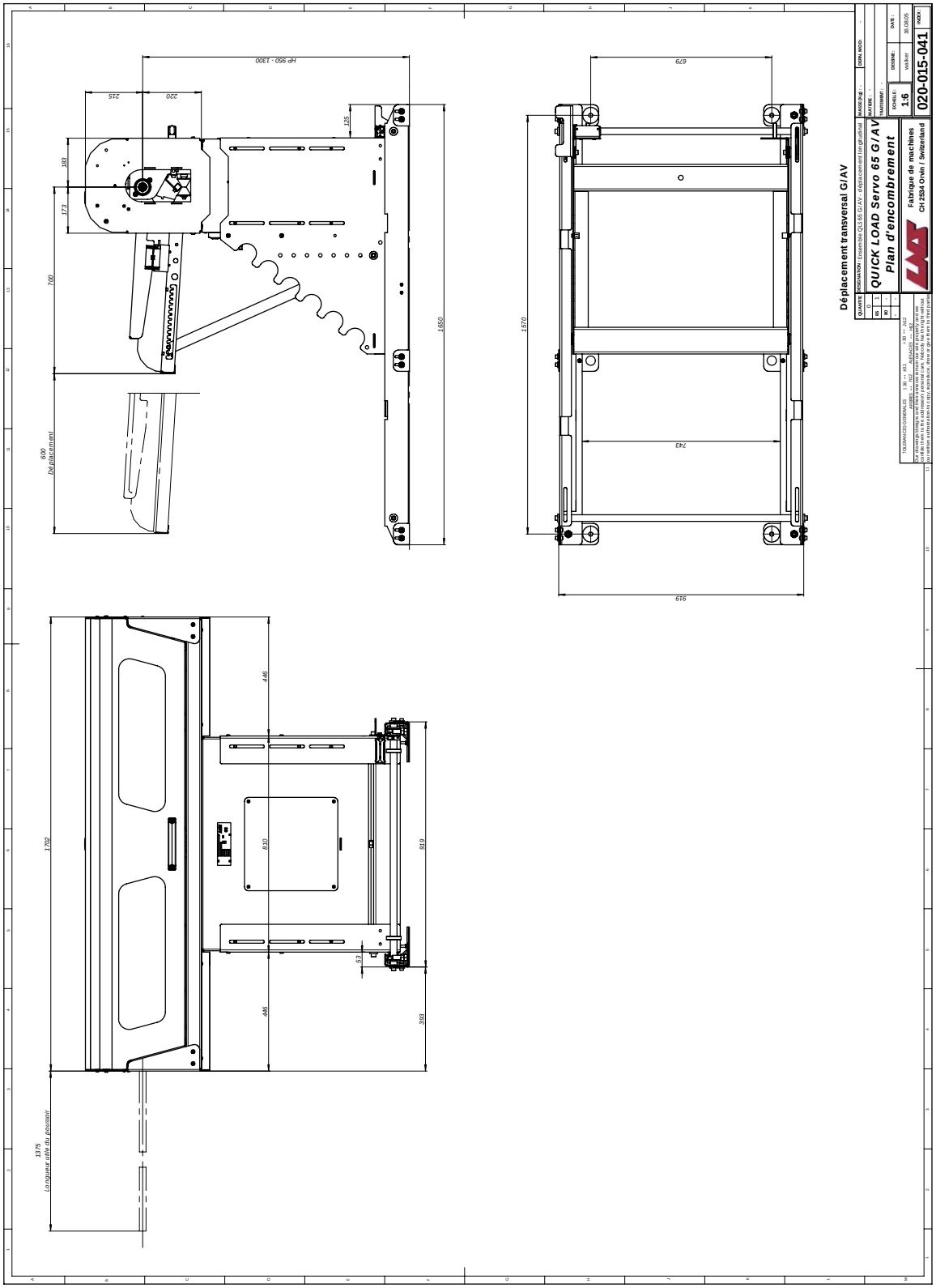
2.2 Left/rear loading with transversal retraction



2.3 Left/front loading with longitudinal retraction



2.4 Left/front loading with transversal retraction

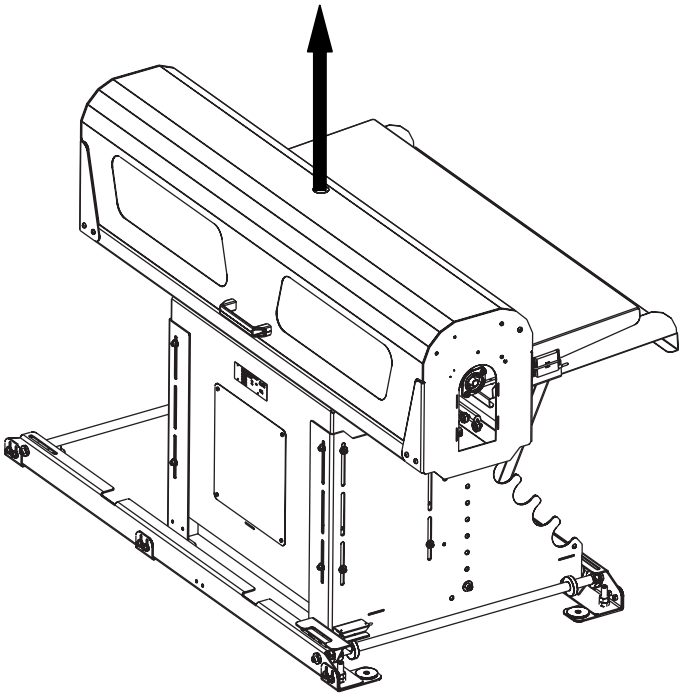


CHAPTER 3: SETTING INTO OPERATION

1. PREPARATION FOR MOUNTING

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.

- Screw the lifting tool through the upper hole on the main access cover.
- Introduce a strap into the lifting screw, hook it to the pulley. Lift the pulley to stretch the strap.
- Lift the bar feed and remove the crate.
- Now the bar feed system can also be moved with a lift truck. In this case, place the arms of the lift truck underneath the body of the bar feed system.
- Move the bar feed system, taking care that it remains horizontal, and that no one is nearby or under the suspended load.
  Do not knock the bar feed system as you move it; this may damage it.
- Place the bar feed system behind the lathe, as close as possible, and in an approximate alignment with the spindle. For the placement, the stationary and mobile space requirements for the lathe and bar feed system should be taken into account.

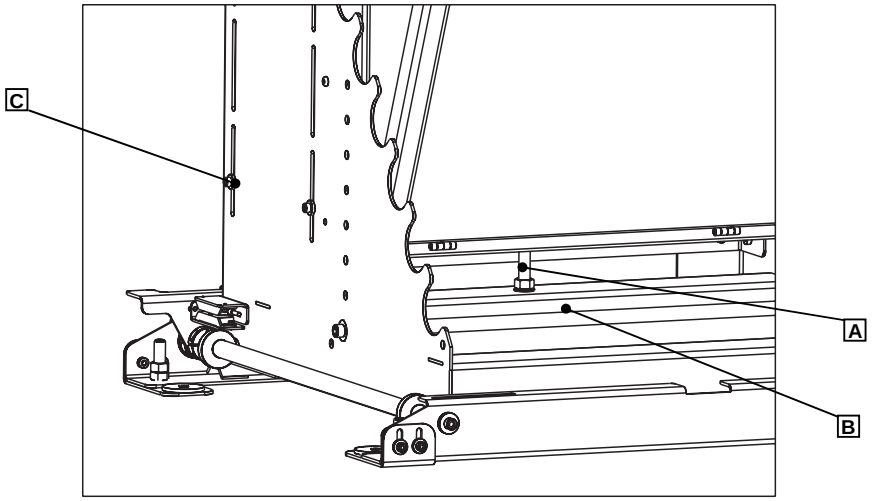


The distance between the lathe and the bar feed system should not exceed 20 mm. If an obstacle should impose a greater distance, please contact LNS or their local representative.

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

2. MOUNTING

- Install the loading table in accordance with the instructions in Chapter 4 of the General Description.
- Install the retraction mechanism in accordance with the instructions provided in Chapter 4/ General Description.



- Check that the central screw (A) rests on the plate (B).
- Carefully loosen the 12 screws (C).
- Adjust the height of the bar feed system by tightening or loosening the central screw (A).
- When the correct height is reached, tighten the screws (C) and proceed with the alignment of the bar feed system. (C).

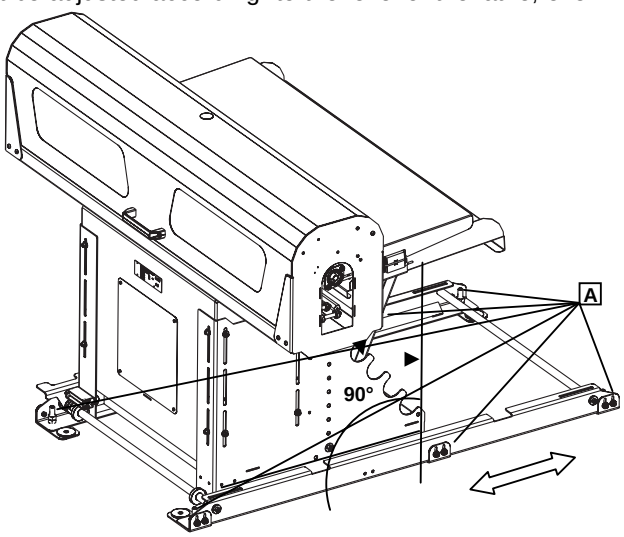
2.1 Alignment

Important: Before aligning the bar feed system, check to see that the lathe is stable and, if possible, leveled.

Reminder: The bar feed system should be placed as close as possible to the lathe spindle.

It is not mandatory that the lateral level of the bar feed system is perfect; just make sure that the latter is as straight as possible (±90°).

The longitudinal level of the bar feed system must be adjusted according to the level of the lathe, even if the lathe lies only over three points and cannot be perfectly leveled. Should the level of the bar feed system not correspond to that of the lathe, the feeding pusher might touch the inside of the spindle.



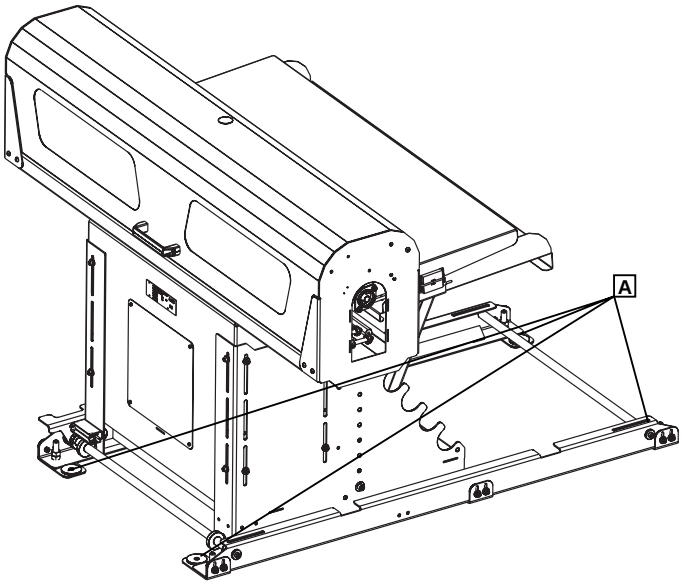
- Place the level on the loading channel. Adjust the level with the screws (A).
- Lock the feeding pusher manually, and move it behind the lathe spindle.
- If necessary, adjust the height, (see preceding page) until the feeding pusher is in the center of the spindle.
- Simultaneously, proceed with the lateral alignment, by moving the device (with a plastic hammer, for example).

- Move feeding pusher forward, checking its entrance into the spindle. If the feeding pusher deviates, check again whether the bar feed system is level.
- The feeding pusher must be centered at the point of entry, as well as behind the collet of the lathe, and should never come into contact with the I.D. of the spindle.
- When the alignment is considered satisfactory, lock all screw nuts.

If there is a spindle reduction in the spindle, check that it is bigger than the pusher. To obtain a perfect alignment, it is recommended to install the biggest pusher.

3. ANCHORING TO THE GROUND

Once the bar feed system is in place, and perfectly aligned, it should be anchored to the ground to make it stable. To accomplish this, 2 x 2 anchorage points (A) have been provided.
4 anchorage bolts must be furnished by the client (minimum M 10 x 100mm) (Minimum 1/2" x 4").



Once the anchoring bolts are tightened, check the alignment again, and correct it if necessary.

4. CONNECTING

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.

For the electrical connection, please see Chapter 4, General Description.

CHAPTER 4: GENERAL DESCRIPTION

1. LOADING MAGAZINE

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

1.1 Description

Placed to the side of the Quick Load Servo 65 bar feed system, the loading magazine, 700mm deep, can receive bars of various lengths, between 350 mm and 1,300 mm. To facilitate the moving of the bars on the magazine table, the latter is equipped with a grate on which the bars are placed.

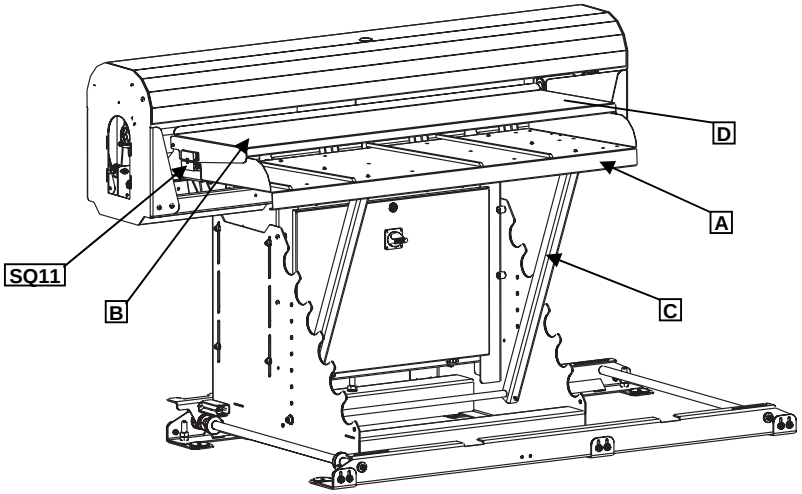
If, however, certain bars (i.e. profiled bars) cannot slide, the slope can be increased via several positions located under the table. If, on the other hand, bars with small diameters overlap, then the slope can or must be reduced.

A protection cover impedes access to the loading table during the automatic cycle. In manual mode, the cover, mounted onto hinges, can be lifted, and thus allows the operator to conduct the necessary maintenance operations.

In no case should a rotating bar extend past the rear of the lathe spindle. The lathe spindle gives the maximum length the bar feed system can load. The bar may not extend more than three times its diameter beyond the front of the lathe clamping device without support.

When they are on the loading table, stopping fingers laid out on an axle holds the bars. The position of the fingers is set automatically when the loading diameter is entered into the bar feed system parameters.

1.2 Layout of the elements



Designation	Description
A	Loading magazine
B	Protection cover
C	Slope setting levers
D	Protection cover holding finger
SQ11	Magazine protection cover safety switch

2. PUSHER CARRIER

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

2.1 Description

An AC Mitsubishi motor drives the carrier for the feeding pusher and the loading pusher, with a built-in absolute encoder.

By means of a timing belt, the SERVO motor starts driving the carrier. While the loading pusher is advancing towards the spindle, the feeding pusher remains stationary. When the carrier returns to its home position, the feeding pusher is locked, this, at that point, is attached to the carrier.

The locking/unlocking mechanism of the feeding pusher depends on the loading table position:

- Loading channel in loading position (upper position),
  The loading pusher faces the spindle, **the feeding pusher is not locked.**

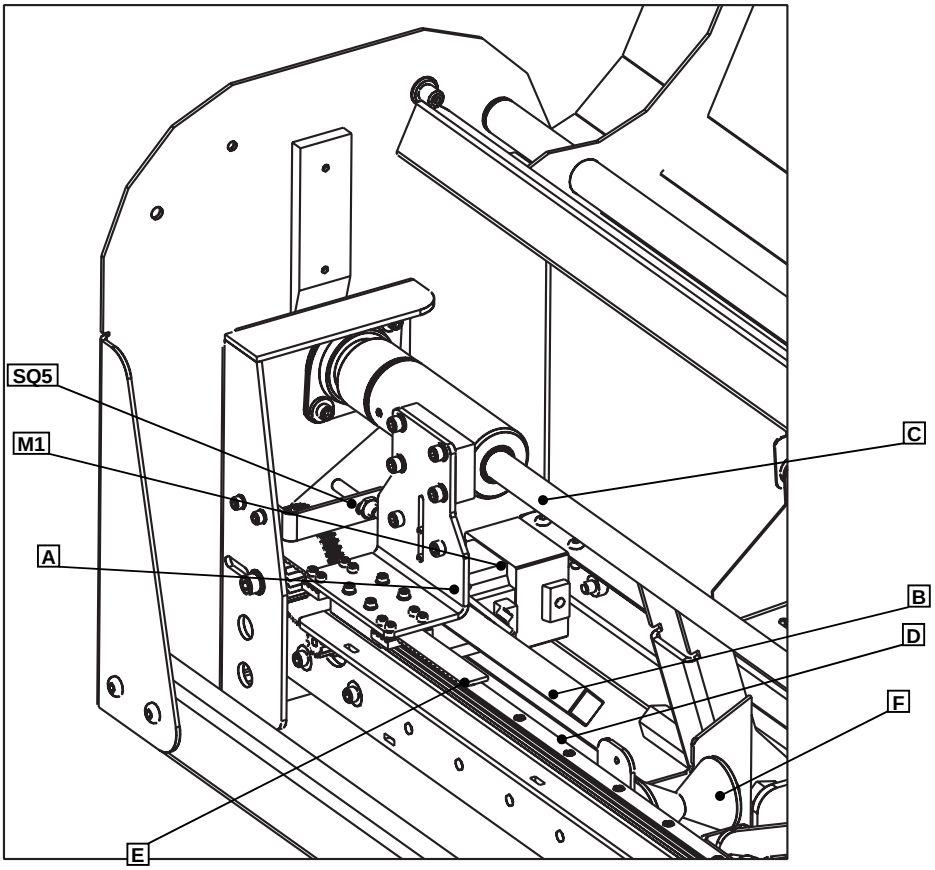
- Loading channel in working position (lower position)
  The feeding pusher faces the spindle, **the feeding pusher is locked onto the carrier.**

The length of the feeding pushers does not vary and is independent of the length of the spindle.

To load tubes, profiled bars or short bars, optional accessories may be installed. Please contact your local LNS representative.

The handling mentioned in this chapter is described in Chapter 5/Handling.

2.2 Layout of the elements



Designation	Description
A	Carrier
B	Loading pusher
C	Feeding pusher
D	Linear unit
E	Notched belt
F	Rolling bearing
M1	Servo motor
SQ5	Carrier home position switch

2.3 Loading pusher

Contrary to the feeding pusher, the loading pusher (B) does not need to be replaced when the bar diameter changes.

2.4 Feeding pusher

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

Diameter range [mm]	Pusher diameter [mm]
6 - 15	6
16 - 27	12
28 - 65	20

To change the feeding pusher, please refer to page S-15 "Pusher changeover" of this manual.

3. RETRACTION DEVICE

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

Before handling the retraction mechanism, check to see that the interface cables between the spindle and the bar feed system are long enough.

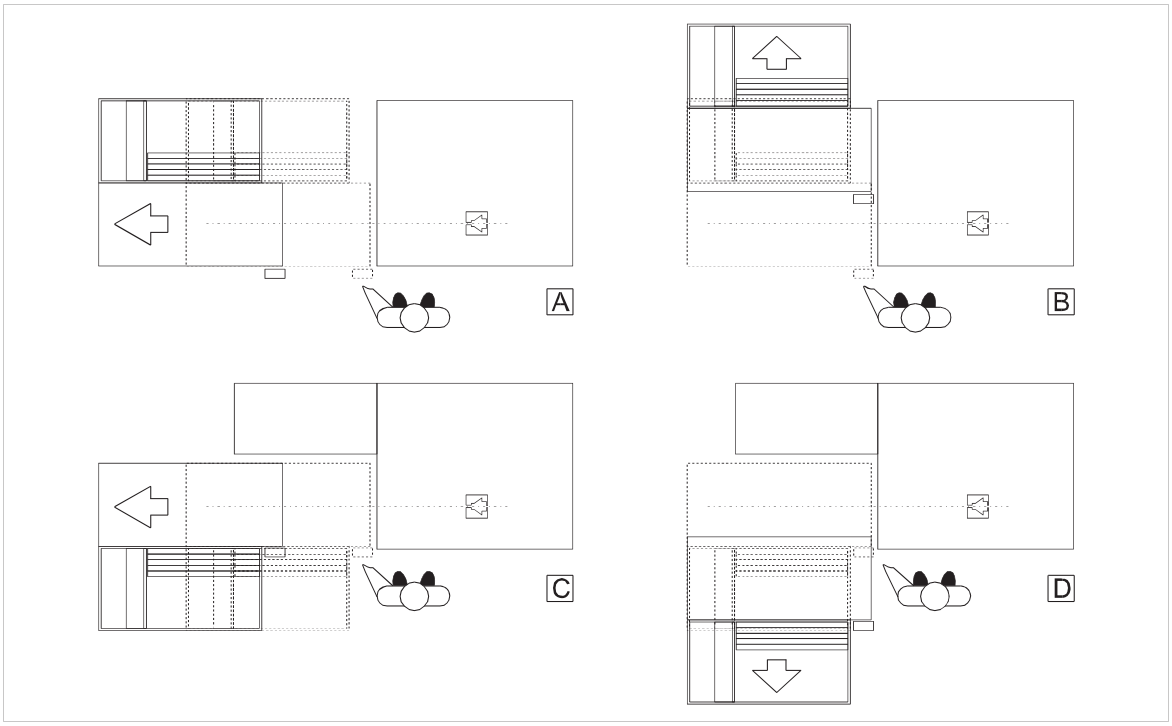
3.1 Description

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.

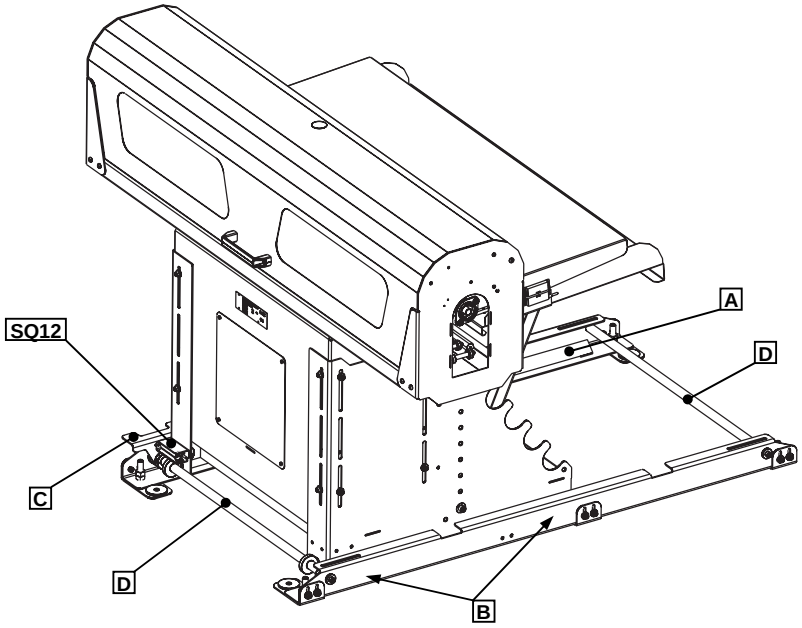
To facilitate these tasks, the Quick Load Servo 65 is equipped with a retraction system, which allows the operator to move the bar feeder.

The retraction mechanism can be assembled to ensure longitudinal or lateral movement.

A	Longitudinal retraction, left/rear load	**B**	Transversal retraction, left/rear load
C	Longitudinal retraction, left/front load	**D**	Transversal retraction, left/front load



3.2 Layout of the elements



Designation	Description
A	Guiding rails
B	Sliding bearings
C	Latch handle
D	Bracket (transversal or longitudinal retraction)
SQ12	Retraction system in position switch

Mounted onto four extremely rigid bearings (B), the bar feed system slides on two guiding rails (A) that keep it aligned when it is in operational position.
In this position, the bar feed system is fastened by two solid hooks (C).

A safety switch (SQ12) impedes any handling as long as the bar feed system is not in operational position.

4. ELECTRICAL EQUIPMENT

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

Particular attention should be given to the handling of electrical elements because of risks of electrocution. In case of possible electrical malfunctions, it is advisable to contact LNS or their local representative.

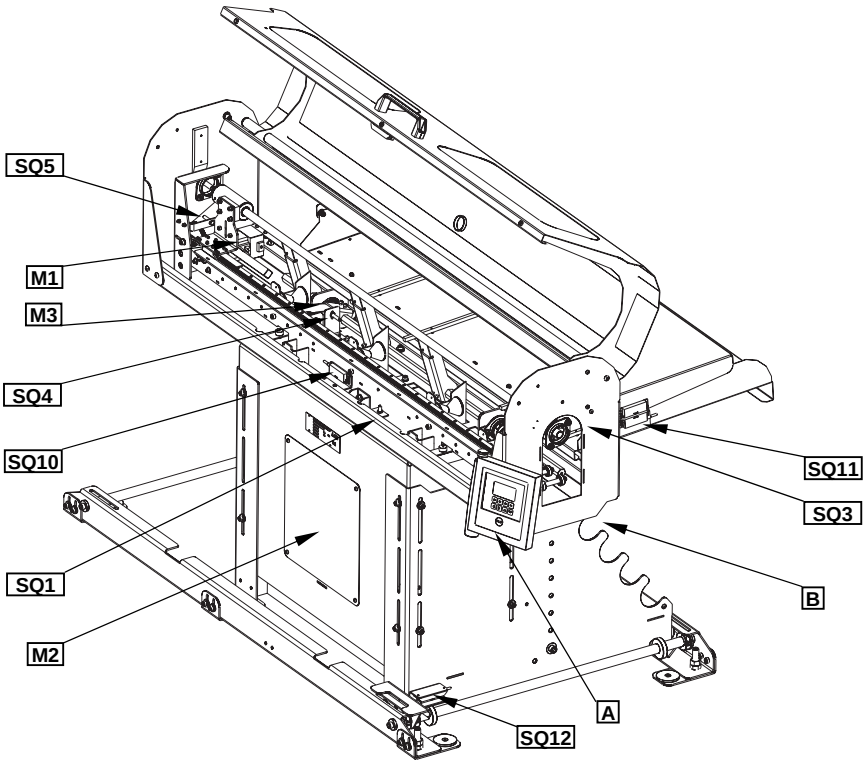
4.1 Description

The electrical parts of the bar feed system, as well as the diagrams representing them, conform to the ISO/IEC 204-1, 617 international electrical codes.

This chapter contains all of the elements regarding the electrical circuit of the bar feed system. The electrical parts, and groups, which may require a setting, at some time or other, are described herein in detail.

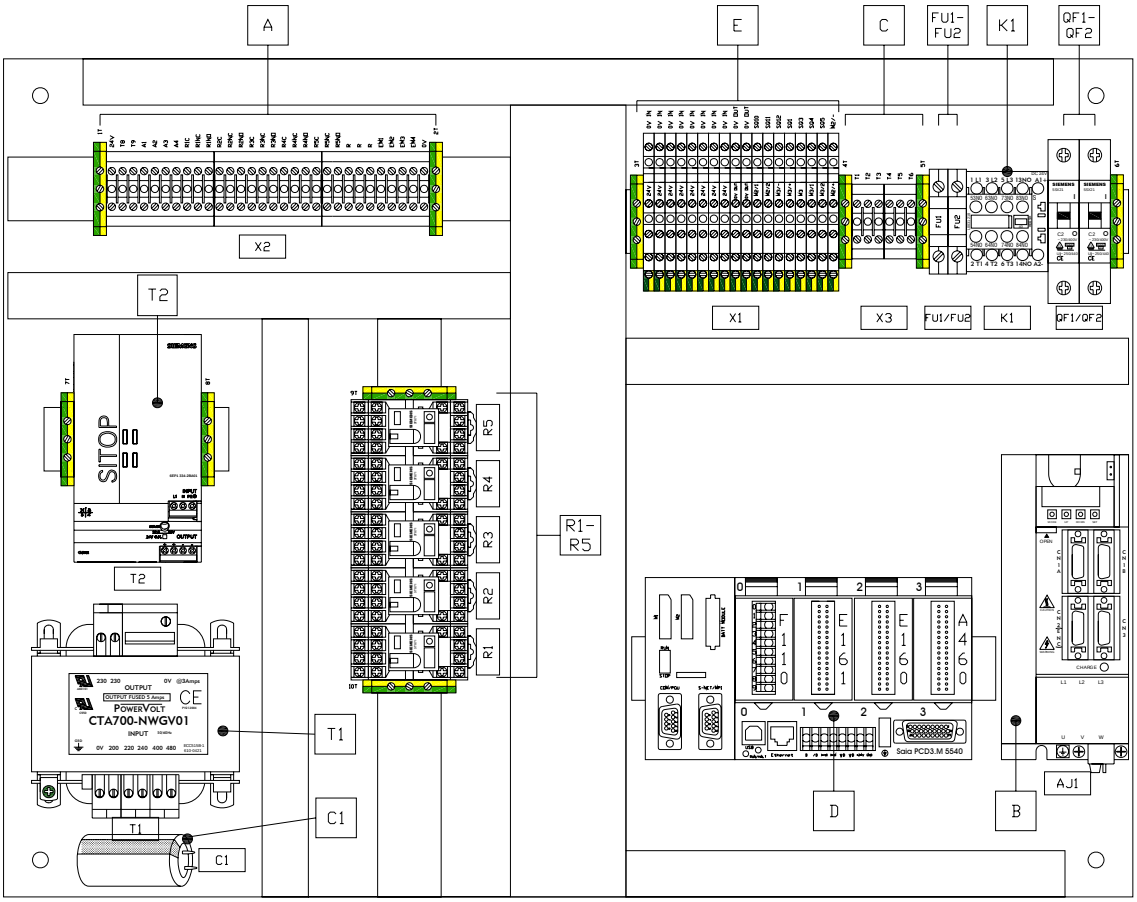
Whenever possible, the article numbers of the elements are shown in tables below each drawing. When a group of elements is indicated, look for the element and then write down the ordering number of the desired element.

4.2 Layout of electrical elements on the bar feed system



Designation	Description
A	Remote control station
B	Control cabinet (not visible)
M 1	Servo motor
M 2	Loading table motor (not visible)
M 3	Diameter adjustment motor (not visible)
QS 1	Main power switch (not visible)
SQ 1	Loading table lower position switch
SQ 3	Measuring cell
SQ 4	Diameter adjustment motor origin (M3) switch
SQ 5	Servo motor origin switch
SQ 10	Protection cover safety switch
SQ 11	Loading magazine cover safety switch
SQ 12	Retraction system in position switch

4.3 Layout of the elements in the control cabinet



Designation	Description
A	Interface connecting terminal blocks
B	Servo amplifier
C	Emergency Stop circuit
D	Programmable controller
E	24 Vdc terminal blocks
FU1	Fuse 2 Amps for 24 Vdc (motor M3)
FU2	Fuse 4 Amps for 24 Vdc (motor M2)
K1	Main contactor
QF1/QF2	Circuit breakers 2x2A
QS1	Main power switch (not visible / located on cabinet door)
R1	Bar feeder alarm relay
R2	Loading cycle relay
R3	End of bar relay
R4	Spindle interlock relay
R5	Auxiliary end of bar relay
T1	Transformer 230VAC / 5A
T2	Transformer + 24 Vdc power supply
C1	Capacitor (35V / 6800µF)

4.4 Description of the elements in the control cabinet

4.4.1 Main power switch QS1

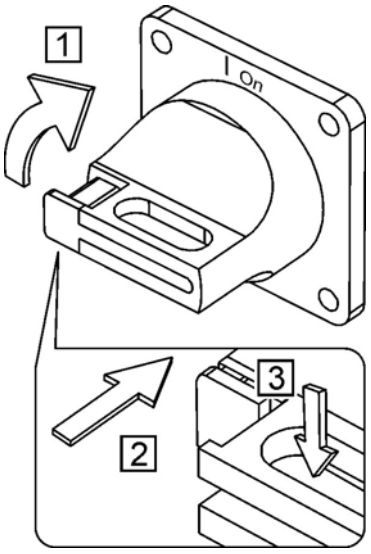
In accordance with the requirements of the international IEC standards, when the main disconnect switch is at 0 off, it interrupts the input of the three phases in the control cabinet of the bar feed system.

To power up the bar feed system, turn (1) the switch handle to the right, to the I on position.

To power down, turn the switch to the left, to the 0 off position.

The main switch can be locked with a padlock. This way, it is impossible to turn the bar feed system on.

Push (2) the locking mechanism and insert (3) the padlock into the opening. Lock the padlock.



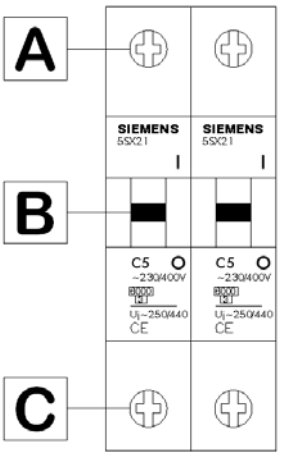
4.4.2 Circuit breaker QF1/QF2

Circuit breaker QF1 protects the two phases, which power the transformer.

Should the latter require excessive power (>5 Amps), the breaker activates and lever (B) flips down.

The power supply to the transformer is immediately interrupted to avoid material damages.

After having located and repaired the problem causing this interruption, reset the lever (B) of the circuit breaker.



Designation	Description
A	Power in connecting terminal
B	Lever off/on
C	Power out connecting terminal

4.4.3 Transformers

The transformer powers the entire low voltage network of the bar feed system, as well as a portion of the interface signals, (see section 4.3.2).

The transformer has an output of 230 Volts which powers the amplifier of the SERVO motor. A 24 VDC transformer supplies the rest of the power.

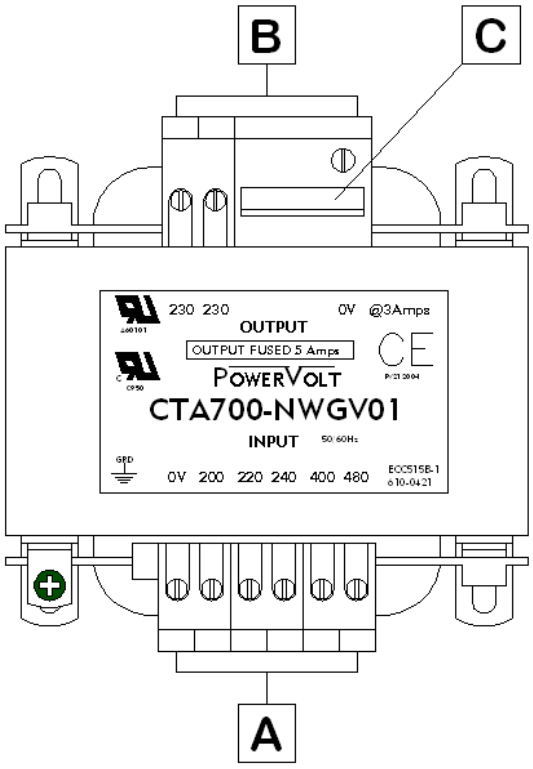
Fuses installed in supports protect the two outputs.

To replace the fuses:

1. Pull out the fuse holder (C).
2. Remove and replace the fuse with an identical one, slide the fuse holder back in place.

Although fuses seldom need replacing, is it advisable to keep some spare ones on hand.

On the primary side, the transformer accepts a voltage of 200 to 480 volts, 50 or 60 Hz. Measure the power provided by the lathe, and, if necessary, adapt the cable on the power terminal block (A).



Designation	Description
A	Primary terminal block, 200V-480V / 50Hz or 60Hz
B	Secondary terminal block, 230VAC
C	Fuse (5 Amp)

4.4.4 Servo amplifier

By means of the servo amplifier, the programmable controller controls the movements of the motor.

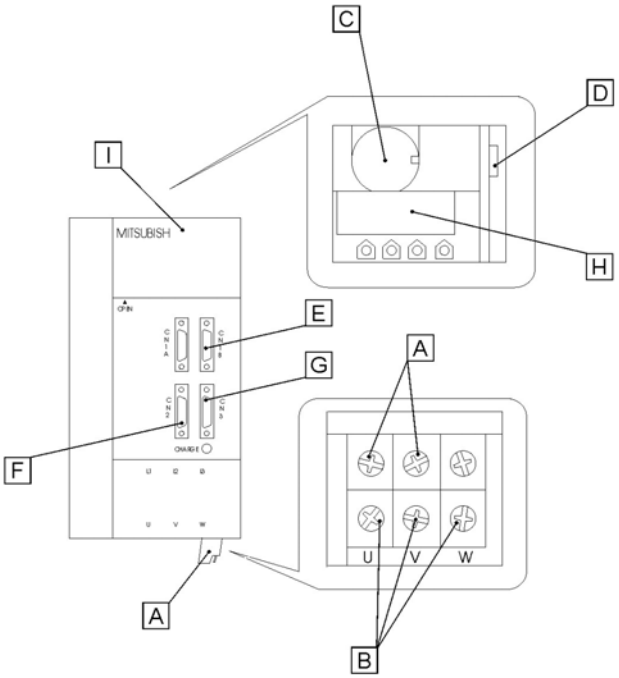
The input values, as well as the position of the pusher carrier, are continuously registered. The values are saved by means of a battery, and, therefore, the axles do not need to be placed at zero when the bar feed system after powered up.

Although the batteries last for a relatively long time (4-7 years), it is advisable to keep spare ones on hand. When a battery becomes low, the amplifier signals this through a control light. The battery is not rechargeable, and must be replaced right away. The replacement must be done while the bar feed system is still powered up.

Procedure:

1. Raise cover **(I)**.
2. Pull out plug **(D)**.
3. Ease clip to the right and remove the battery. The wires on the extremities of the battery connecting it to the switch are part of the battery.
4. Install the new battery inside the support and close it. Connect the plug.

Used batteries must be disposed off in an ecologically safe manner.

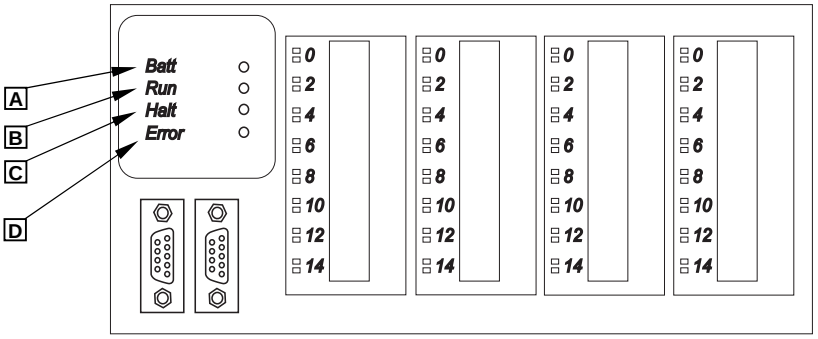


Designation	Description
A	230 V + ground power supply
B	Power output to SERVO motor
C	Battery
D	Battery plug
E	Emergency stop contact
F	Encoder connecting plug
G	Programmable controller / SERVO amplifier connecting plug
H	Alarm and codes display of amplifier
I	Cover

4.4.5 Programmable controller (PLC)

The programmable controller (PLC) continuously scrutinizes all data from the remote control, probes, switches, cells, interface, etc.

The program loaded into the PLC manages this information. The PLC then distributes the interface signals, controls the servo drives, and displays the appropriate messages on the remote control station.



Designation	Description
A	Battery light (Batt)
B	Program running light (Run)
C	Stopped controller light (Halt)
D	Error light (Error)

Although the life of a battery is relatively long (4-7 years), it is advisable to keep spare ones on hand. When a battery becomes low, the PLC signals this through a message on the remote control, and the BATTERY Led on the power supply module turns on. The battery is **not rechargeable**, and must be replaced right away. The replacement must be done while the bar feed system is powered up.

Procedure:

1. Open the blue cover.
2. Pull the battery holding card.
3. Take out the battery that's embedded on its support. Insert the new battery.
4. Install the card and put back the cover.

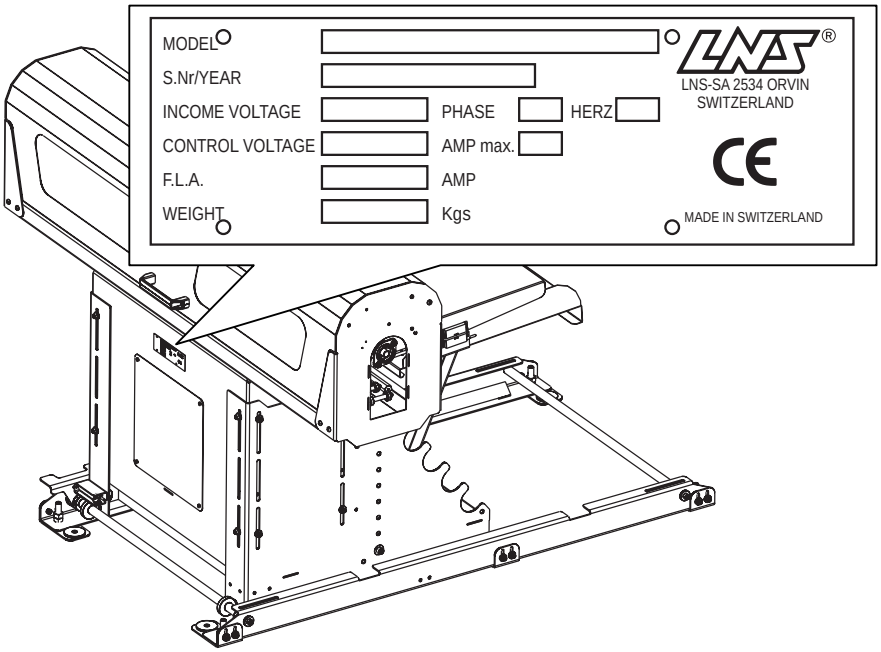
Used batteries must be disposed off in an ecologically safe manner.

4.4.6 PLC inputs / outputs

Inputs		Outputs	
I16	Emergency stop control circuit	O48	Loading table "up" (M2)
I17	Main access cover switch SQ10	O49	Loading table "down" (M2)
I18	Loading magazine cover switch SQ11	O50	Diameter change reference
I19	Retraction device switch SQ12	O51	Diameter change
I24	Loading table down position switch SQ1	O52	Servo motor
I25	Measuring cell SQ3	O56	Relay bar feed alarm R1
I26	Diameter change motor reference SQ4	O57	Relay loading cycle R2
I27	Pusher carrier home position switch SQ5	O58	Relay end of bar R3
I31	Diameter change motor M3	O59	Relay spindle interlock R4
I40	Clamping signal from the lathe A1	O60	R5 (option)
I41	Lathe in AUTO-Cycle A2	O61	R6 (option)
I42	Start loading signal A3	O62	R7 (option)
I43	Part feed out signal A4 (option)	O63	R10 (option)
I44	Reset A2 (A5 - option)		

4.5 Interface

Before turning the power on, verify that the voltage of the bar feed system corresponds to that of the lathe. The voltage of the bar feed system is indicated on the identification plate.



4.5.1 Description

The interface cable(s), between the bar feed system and the lathe is (are) provided by LNS.

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.

By connecting, check that the wires are long enough to support the whole retraction stroke (600mm).

Should the interface instructions not be observed during the setting into operation, the damaged elements as well as the resulting damages are not covered by warranty.

4.6 Connections

4.6.1 Power supply

Voltage: 200-480 V, 50 / 60 Hz + Ground (± 10%)

Maximum current: 3 A

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.

If the voltage provided by the lathe does not correspond to the one provided for the bar feed system, the following elements should be adapted:

Transformer T1

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 Amax.).

For the wiring inside the lathe, the section of the cables should be at least 1.5 mm2 (AWG16).

4.6.2 Signals from the lathe to the bar feed system

Always refer to the electrical diagrams shipped with the bar feed system and placed in the electrical cabinet.

- All wires for interface connections are numbered
- All bar feed systems are equipped with a power supply of +24 Vdc.

a) 24 V dc power supply

Corresponds to the +24 V of the bar feed system. This power shall be used to connect the signals from the lathe to the PLC.

- All signals from the lathe to the PLC shall be powered by the +24 Vdc of the bar feed system.
- All signals from the bar feed system to the lathe shall be powered by the +24 Vdc of the lathe.

For the other types of connections, please contact LNS S.A., or their local representative.

b) "EMERGENCY STOP" signal of lathe XT8-XT9

This signal is part of a safety link (Emergency Stop circuit) of the bar feed system. XT8 -XT9 corresponds to the Emergency Stop signal of the lathe. If the circuit is open, the bar feed system will go into an Emergency Stop mode.

When the lathe is in an Emergency Stop mode, or if the safety line of the bar feed system is interrupted, an alarm will go off and the R1 relay of the bar feed system will be triggered (see description of the R1 relay, below).

c) Lathe clamp signal (input A1)

This signal is for checking the mode of the lathe clamping device (open or closed), and is mainly used for the feeding of a part, which takes place each time the clamp opens.

The chuck signal of the lathe can be changed by parameters in the bar feeder and according to the lathe configuration.

d) Lathe in automatic cycle (input A2)

This signal indicates that the lathe is in automatic cycle.

e) Load command (input A3)

Should the lathe be equipped with a sub-spindle or the lathe is of twin spindle type, should the part require multiple feeds, this signal will be used as a load command from the lathe. For safety reasons, and to prevent collisions between the part being transferred to the second spindle and the newly loaded bar stock when there is a simultaneous loading, the lathe must control the loading of a new bar.

f) Feeding pusher control (input A4)

This signal orders the forward movement of the feeding pusher and the bar, independently of the mode of the lathe clamp.

As long as this signal is present, the signal of the foot switch to open and close the clamping device of the lathe must be locked. The lathe should not start up in automatic cycle as long as the clamping device does not grip the bar.

4.6.3 Signals from the bar feed system to the lathe

a) R1 alarm relay

When the bar feed system is in normal operation, the R1 relay signal is energized. In the event of an alarm or break in the emergency stop circuit, this relay is de-energized.

For safety reasons, this signal should bring to a stop all of the axis movements of the lathe as well as the rotation of the spindle.

When the bar feed system is in alarm mode, the feeding pusher control signal also de-energize.

b) R2 confirmation relay

Either: - Confirmation of the feeding pusher forward command
Or - Confirmation of the loading of a new bar

After the loading and positioning of the new bar on the lathe spindle, relay R2 confirms the end of the loading cycle or the part feed out.

The operational cycle of relay R2 (pulsed, latched, etc.)is controlled by Service parameters.

c) R3 End of bar signal relay

When the feeding pusher reaches the End of Bar position, relay R3 energizes. This signal is used to indicate to the lathe that there is not enough material left to make another part. The CNC must jump into a sub-program to allow the remnant to be dejected.

The operational cycle of relay R3 (pulsed, latched, etc.)is controlled by Service parameters.

d) R4 Spindle interlock relay

This signal is present as soon as the bar feed system is in automatic cycle (Auto + Start).

e) Emergency Stop key of the bar feed system (EM1-EM2)

When the Emergency Stop button is pressed, the contact opens. The lathe must be in Emergency Stop mode, and the feeding pusher signal from the lathe must turn off. Two normally closed contacts of the Emergency Stop button, are available for connection in the Emergency Stop circuit of the lathe.

4.6.4 Options

The options described below are an integral part of the standard equipment of the LNS bar feed systems.

These signals, however, are not required for the proper operation of the devices, or the safety locking for protecting persons and materials. The options are available only to optimize production conditions.

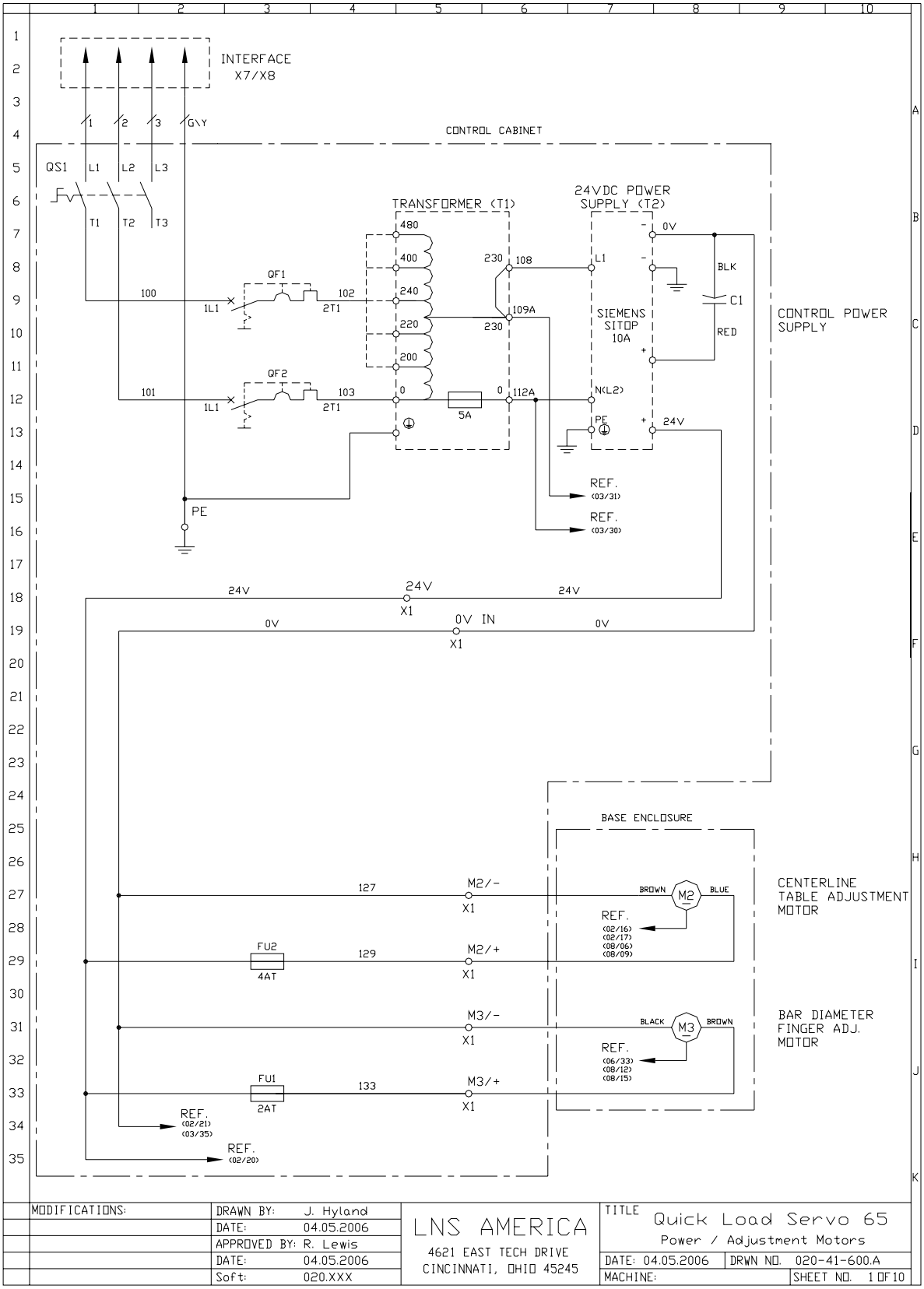
a) R5 Auxiliary end of bar relay

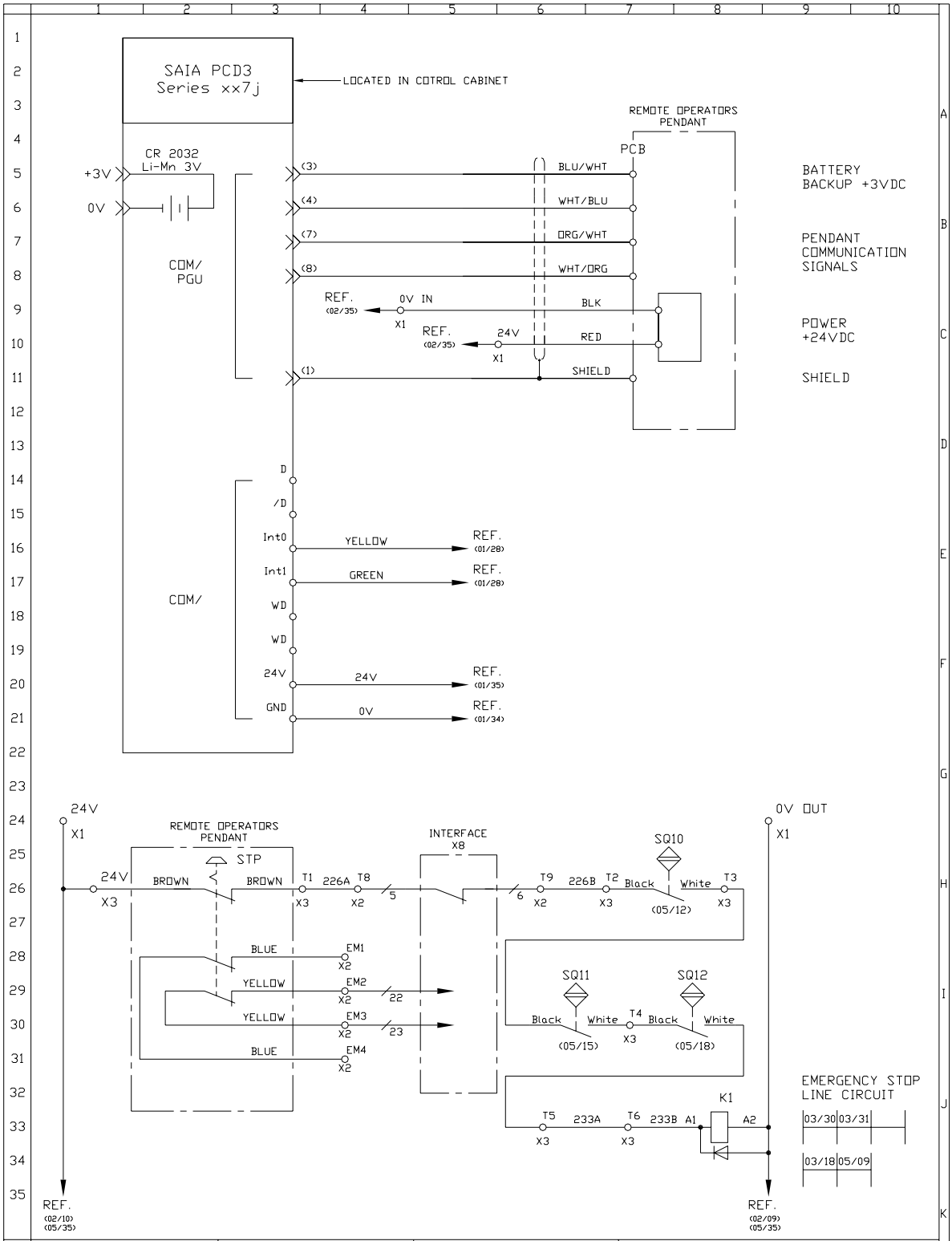
This signal may be used to reduce the length of the remnant in case the remnants exceed the maximum admissible length for the parts catcher of the lathe or its chip conveyor. Relay R5energizes as soon as the feeding pusher reaches the programmed position

4.6.5 Recapitulation of safety instructions related to the interface

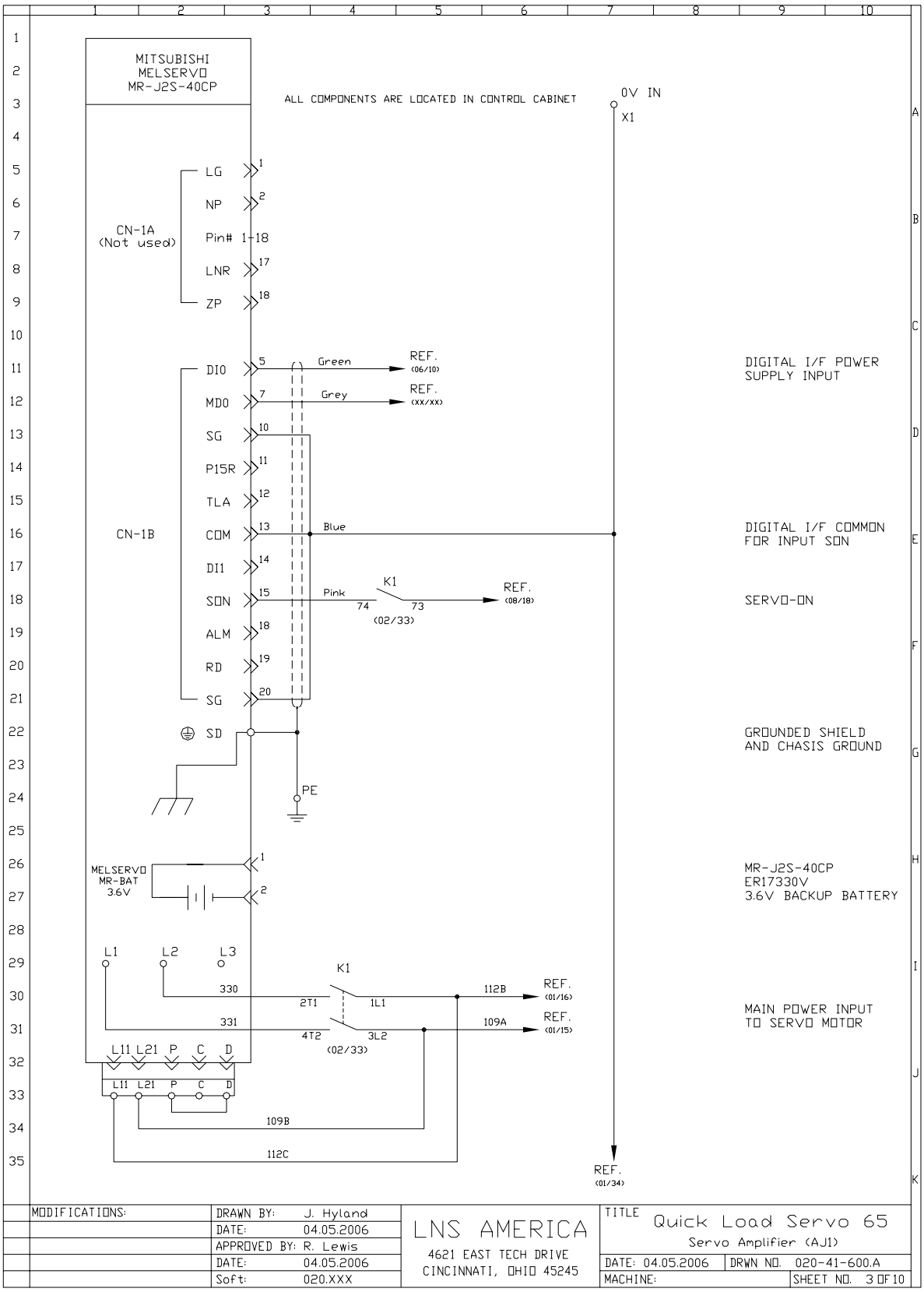
- The lathe foot switch for opening the lathe clamping device should not be operational during the automatic cycle of the lathe.
- The lathe pedal should not be operational as long as the feeding pusher feed command signal is present.
- Whenever possible, it is advisable to interlock lock the manual command for opening the lathe clamping device while the feeding pusher command signal is on.
- If the lathe is in the Emergency Stop mode, the bar feed system must also be under the Emergency Stop mode, and vice-versa.
- If the bar feed system generates an alarm, the lathe should go into alarm mode. The feeding pusher feed command signal should turn off, the spindle axis and rotation must stop.

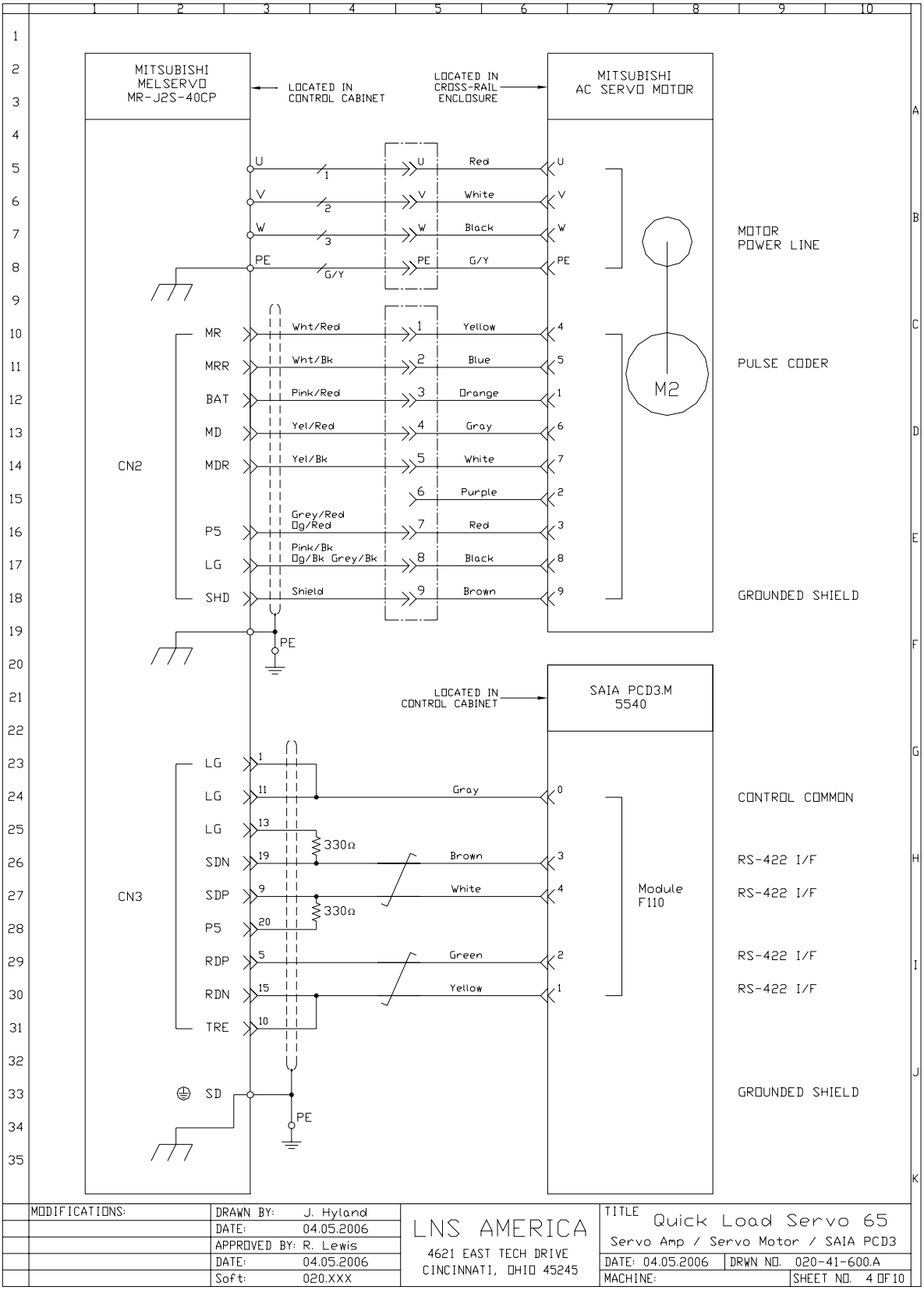
4.7 Electrical diagram





MODIFICATIONS:	DRAWN BY: J. Hyland	LNS AMERICA	TITLE Quick Load Servo 65
	DATE: 04.05.2006		SAIA PCD3 / E-Stop line
	APPROVED BY: R. Lewis	4621 EAST TECH DRIVE	DATE: 04.05.2006 DRWN NO. 020-41-600.A
	DATE: 04.05.2006	CINCINNATI, OHIO 45245	MACHINE: SHEET NO. 2 OF 10
	Soft: 020.XXX		


MITSUBISHI
MELSERVO
MR-J2S-40CP
ALL COMPONENTS ARE LOCATED IN CONTROL CABINET
0V IN
X1
CN-1A
(Not used)
LG
NP
Pin# 1-18
LNR
ZP
CN-1B
DIO
MDO
SG
P15R
TLA
COM
DI1
SON
ALM
RD
SG
SD
Green
Grey
Blue
Pink
REF.
(06/10)
(XX/XX)
(08/18)
K1
74
73
(02/33)
PE
DIGITAL I/F POWER SUPPLY INPUT
DIGITAL I/F COMMON FOR INPUT SON
SERVO-ON
GROUNDED SHIELD AND CHASIS GROUND
MELSERVO
MR-BAT
3.6V
MR-J2S-40CP
ER17330V
3.6V BACKUP BATTERY
L1
L2
L3
330
331
2T1
1L1
4T2
3L2
112B
109A
(01/16)
(01/15)
MAIN POWER INPUT TO SERVO MOTOR
L11 L21 P C D
109B
112C
REF.
(01/34)
MODIFICATIONS:
DRAWN BY: J. Hyland
DATE: 04.05.2006
APPROVED BY: R. Lewis
DATE: 04.05.2006
Soft: 020.XXX
LNS AMERICA
4621 EAST TECH DRIVE
CINCINNATI, OHIO 45245
TITLE
Quick Load Servo 65
Servo Amplifier (AJ1)
DATE: 04.05.2006
DRWN NO. 020-41-600.A
MACHINE:
SHEET NO. 3 OF 10

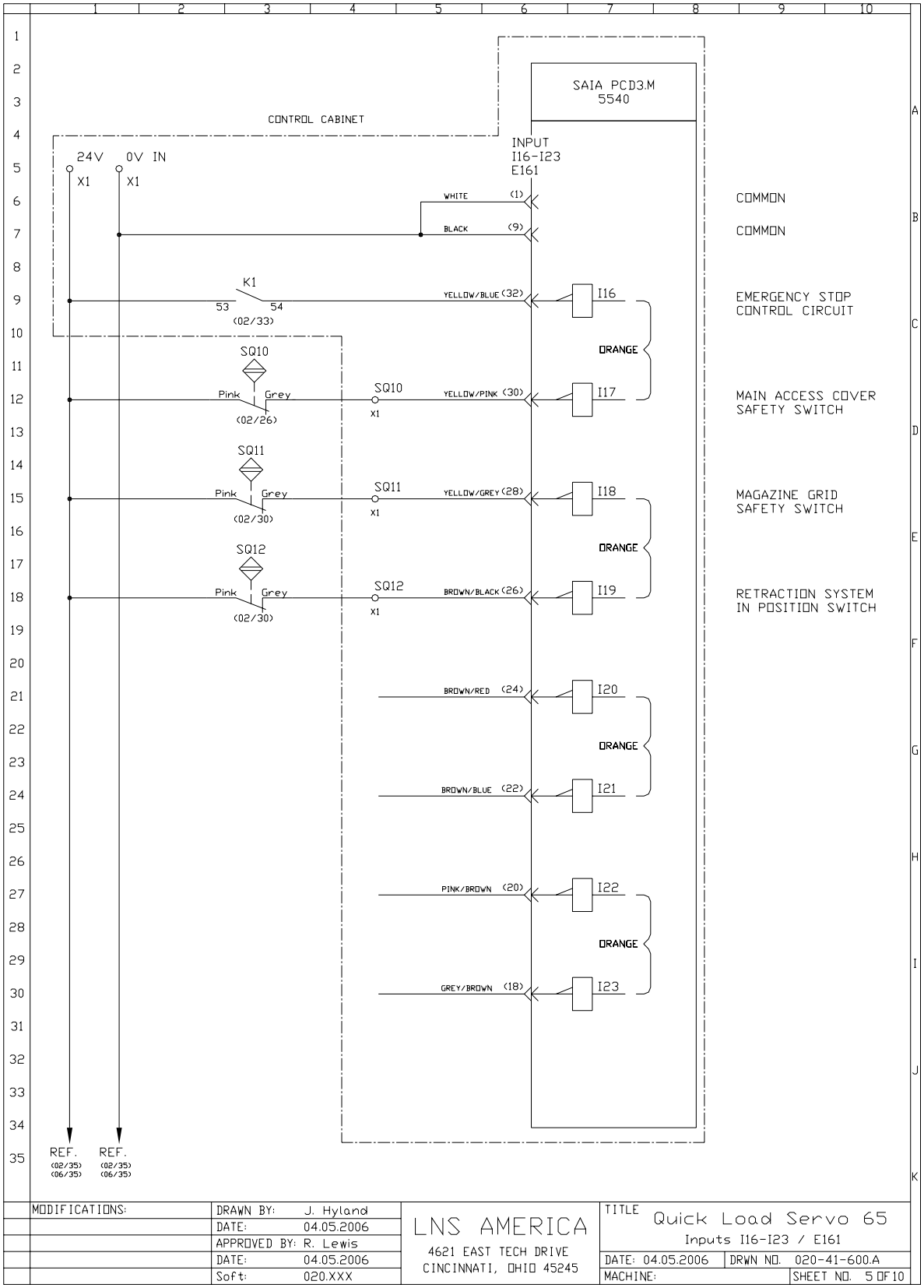


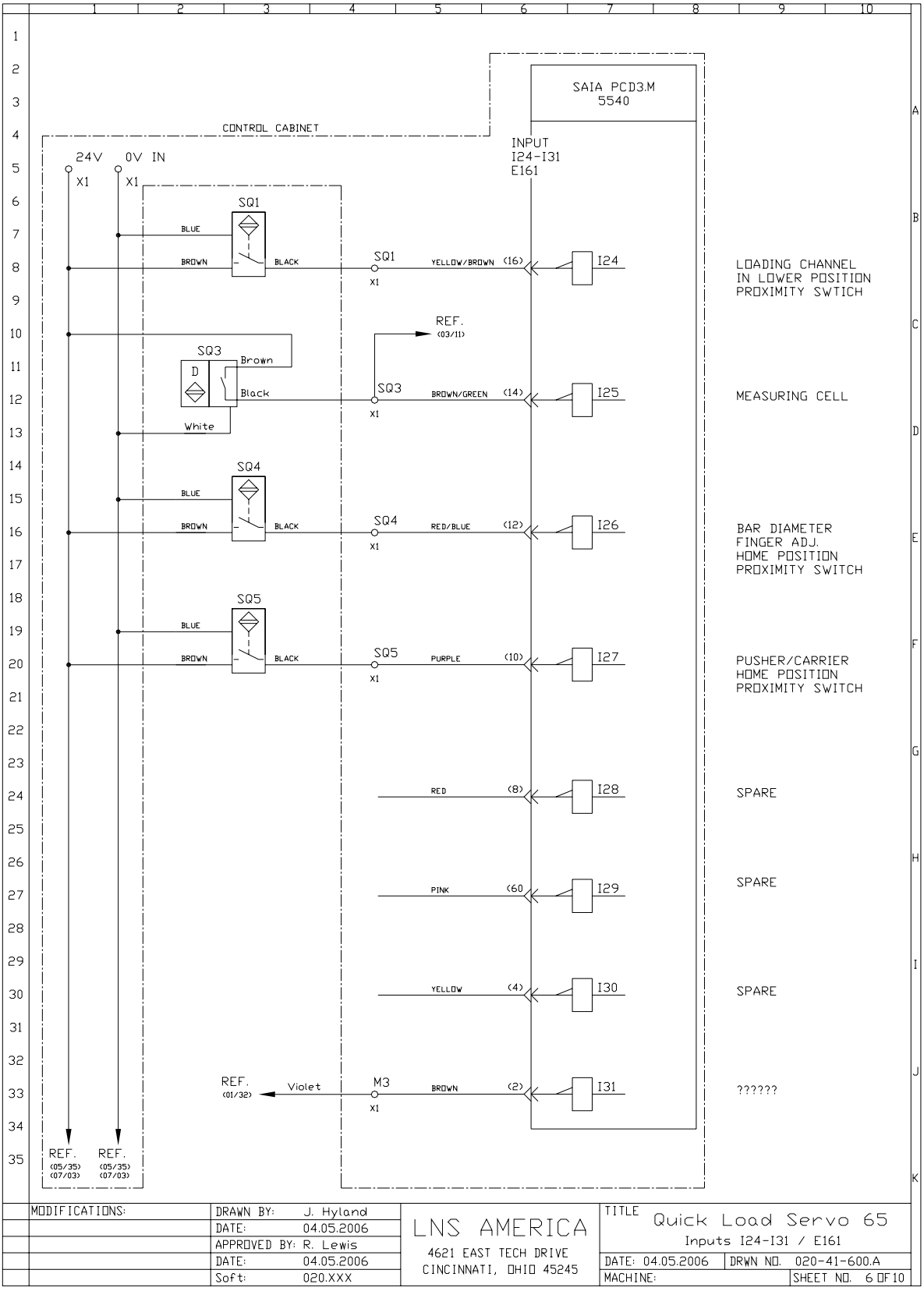
MODIFICATIONS:	DRAWN BY: J. Hyland
	DATE: 04.05.2006
	APPROVED BY: R. Lewis
	DATE: 04.05.2006
	Soft: 020.XXX

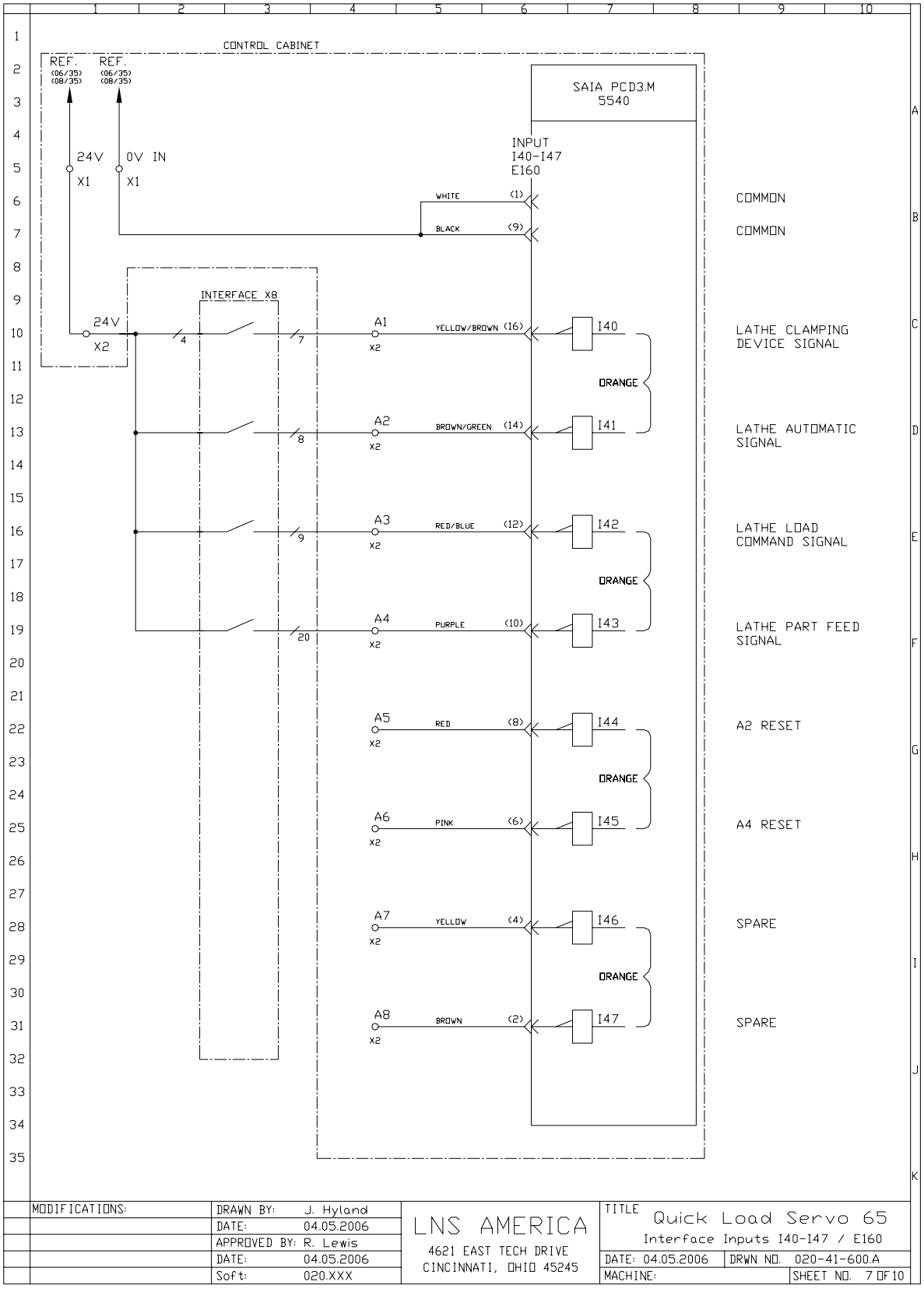
LNS AMERICA
4621 EAST TECH DRIVE
CINCINNATI, OHIO 45245

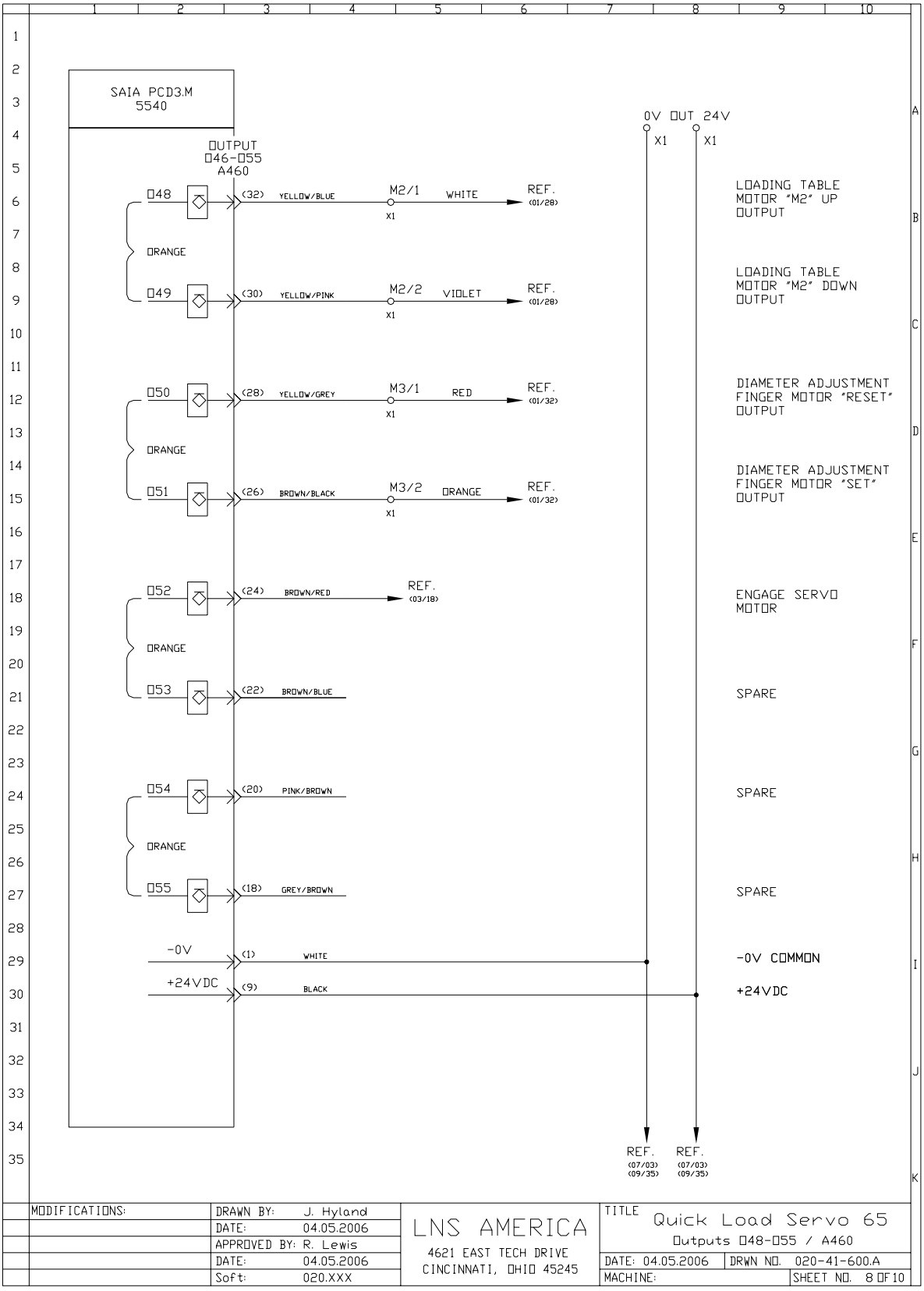
TITLE Quick Load Servo 65
Servo Amp / Servo Motor / SAIA PCD3

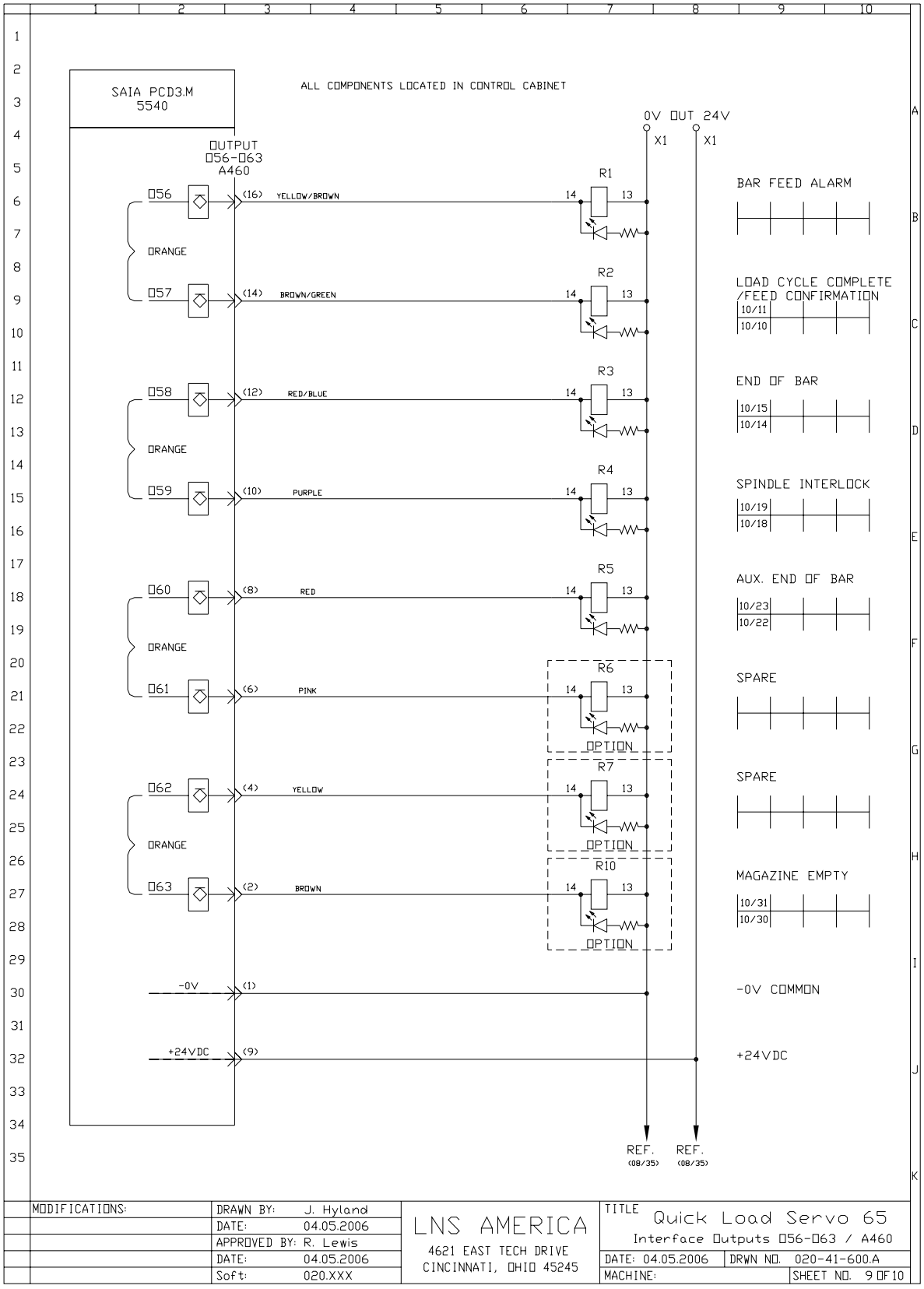
DATE: 04.05.2006	DRWN NO. 020-41-600.A
MACHINE:	SHEET NO. 4 OF 10


SAIA PCD3.M
5540
CONTROL CABINET
INPUT
I16-I23
E161
24V
0V IN
X1
X1
WHITE (1)
BLACK (9)
COMMON
COMMON
K1
53
54
(02/33)
YELLOW/BLUE (32)
I16
EMERGENCY STOP
CONTROL CIRCUIT
ORANGE
SQ10
Pink
Grey
(02/26)
SQ10
X1
YELLOW/PINK (30)
I17
MAIN ACCESS COVER
SAFETY SWITCH
SQ11
Pink
Grey
(02/30)
SQ11
X1
YELLOW/GREY (28)
I18
MAGAZINE GRID
SAFETY SWITCH
ORANGE
SQ12
Pink
Grey
(02/30)
SQ12
X1
BROWN/BLACK (26)
I19
RETRACTION SYSTEM
IN POSITION SWITCH
BROWN/RED (24)
I20
ORANGE
BROWN/BLUE (22)
I21
PINK/BROWN (20)
I22
ORANGE
GREY/BROWN (18)
I23
REF.
(02/35)
(06/35)
REF.
(02/35)
(06/35)
MODIFICATIONS:
DRAWN BY: J. Hyland
DATE: 04.05.2006
APPROVED BY: R. Lewis
DATE: 04.05.2006
Soft: 020.XXX
LNS AMERICA
4621 EAST TECH DRIVE
CINCINNATI, OHIO 45245
TITLE
Quick Load Servo 65
Inputs I16-I23 / E161
DATE: 04.05.2006
DRWN NO. 020-41-600.A
MACHINE:
SHEET NO. 5 OF 10

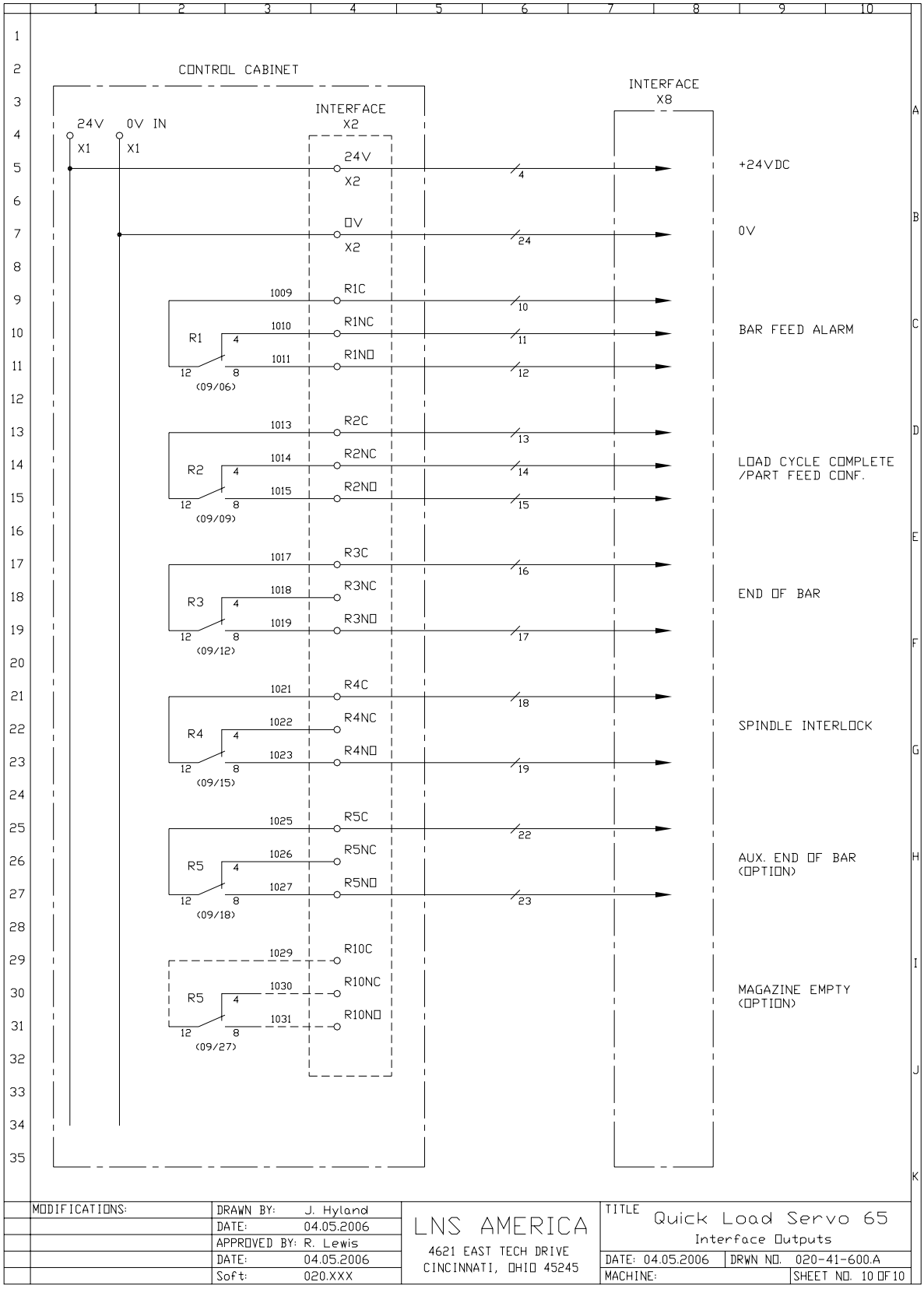

SAIA PCD3.M
5540
CONTROL CABINET
INPUT
I24-I31
E161
24V
0V IN
X1
X1
SQ1
BLUE
BROWN
BLACK
SQ1
X1
YELLOW/BROWN
(16)
I24
LOADING CHANNEL
IN LOWER POSITION
PROXIMITY SWTICH
REF.
(03/11)
SQ3
D
Brown
Black
White
SQ3
X1
BROWN/GREEN
(14)
I25
MEASURING CELL
SQ4
BLUE
BROWN
BLACK
SQ4
X1
RED/BLUE
(12)
I26
BAR DIAMETER
FINGER ADJ.
HOME POSITION
PROXIMITY SWITCH
SQ5
BLUE
BROWN
BLACK
SQ5
X1
PURPLE
(10)
I27
PUSHER/CARRIER
HOME POSITION
PROXIMITY SWITCH
RED
(8)
I28
SPARE
PINK
(60
I29
SPARE
YELLOW
(4)
I30
SPARE
REF.
(01/32)
Violet
M3
X1
BROWN
(2)
I31
??????
REF.
(05/35)
(07/03)
REF.
(05/35)
(07/03)
MODIFICATIONS:
DRAWN BY: J. Hyland
DATE: 04.05.2006
APPROVED BY: R. Lewis
DATE: 04.05.2006
Soft: 020.XXX
LNS AMERICA
4621 EAST TECH DRIVE
CINCINNATI, OHIO 45245
TITLE
Quick Load Servo 65
Inputs I24-I31 / E161
DATE: 04.05.2006
DRWN NO. 020-41-600.A
MACHINE:
SHEET NO. 6 OF 10


CONTROL CABINET
REF. (06/35) (08/35)
REF. (06/35) (08/35)
SAIA PCD3.M 5540
INPUT I40-I47 E160
24V
X1
0V IN
X1
WHITE (1)
BLACK (9)
COMMON
COMMON
INTERFACE X8
24V
X2
4
7
A1
x2
YELLOW/BROWN (16)
I40
LATHE CLAMPING DEVICE SIGNAL
ORANGE
8
A2
x2
BROWN/GREEN (14)
I41
LATHE AUTOMATIC SIGNAL
9
A3
x2
RED/BLUE (12)
I42
LATHE LOAD COMMAND SIGNAL
ORANGE
20
A4
x2
PURPLE (10)
I43
LATHE PART FEED SIGNAL
A5
x2
RED (8)
I44
A2 RESET
ORANGE
A6
x2
PINK (6)
I45
A4 RESET
A7
x2
YELLOW (4)
I46
SPARE
ORANGE
A8
x2
BROWN (2)
I47
SPARE
MODIFICATIONS:
DRAWN BY: J. Hyland
DATE: 04.05.2006
APPROVED BY: R. Lewis
DATE: 04.05.2006
Soft: 020.XXX
LNS AMERICA
4621 EAST TECH DRIVE
CINCINNATI, OHIO 45245
TITLE
Quick Load Servo 65
Interface Inputs I40-I47 / E160
DATE: 04.05.2006
DRWN NO. 020-41-600.A
MACHINE:
SHEET NO. 7 OF 10


SAIA PCD3.M
5540
OUTPUT
046-055
A460
048
(32) YELLOW/BLUE
M2/1
WHITE
X1
REF.
(01/28)
ORANGE
049
(30) YELLOW/PINK
M2/2
VIOLET
X1
REF.
(01/28)
050
(28) YELLOW/GREY
M3/1
RED
X1
REF.
(01/32)
ORANGE
051
(26) BROWN/BLACK
M3/2
ORANGE
X1
REF.
(01/32)
052
(24) BROWN/RED
REF.
(03/18)
ORANGE
053
(22) BROWN/BLUE
054
(20) PINK/BROWN
ORANGE
055
(18) GREY/BROWN
-0V
(1) WHITE
+24VDC
(9) BLACK
0V OUT 24V
X1
X1
REF.
(07/03)
(09/35)
REF.
(07/03)
(09/35)
LOADING TABLE
MOTOR "M2" UP
OUTPUT
LOADING TABLE
MOTOR "M2" DOWN
OUTPUT
DIAMETER ADJUSTMENT
FINGER MOTOR "RESET"
OUTPUT
DIAMETER ADJUSTMENT
FINGER MOTOR "SET"
OUTPUT
ENGAGE SERVO
MOTOR
SPARE
SPARE
SPARE
-0V COMMON
+24VDC
MODIFICATIONS:
DRAWN BY: J. Hyland
DATE: 04.05.2006
APPROVED BY: R. Lewis
DATE: 04.05.2006
Soft: 020.XXX
LNS AMERICA
4621 EAST TECH DRIVE
CINCINNATI, OHIO 45245
TITLE
Quick Load Servo 65
Outputs 048-055 / A460
DATE: 04.05.2006
DRWN NO. 020-41-600.A
MACHINE:
SHEET NO. 8 OF 10



MODIFICATIONS:	DRAWN BY:	J. Hyland	LNS AMERICA	TITLE	Quick Load Servo 65
	DATE:	04.05.2006			Interface Outputs 056-063 / A460
	APPROVED BY:	R. Lewis	4621 EAST TECH DRIVE	DATE: 04.05.2006	DRWN NO. 020-41-600.A
	DATE:	04.05.2006	CINCINNATI, OHIO 45245	MACHINE:	SHEET NO. 9 OF 10
	Soft:	020.XXX			



MODIFICATIONS:	DRAWN BY: J. Hyland	LNS AMERICA	TITLE Quick Load Servo 65
	DATE: 04.05.2006		Interface Outputs
	APPROVED BY: R. Lewis	4621 EAST TECH DRIVE	DATE: 04.05.2006 DRWN NO. 020-41-600.A
	DATE: 04.05.2006	CINCINNATI, OHIO 45245	MACHINE: SHEET NO. 10 OF 10
	Soft: 020.XXX		

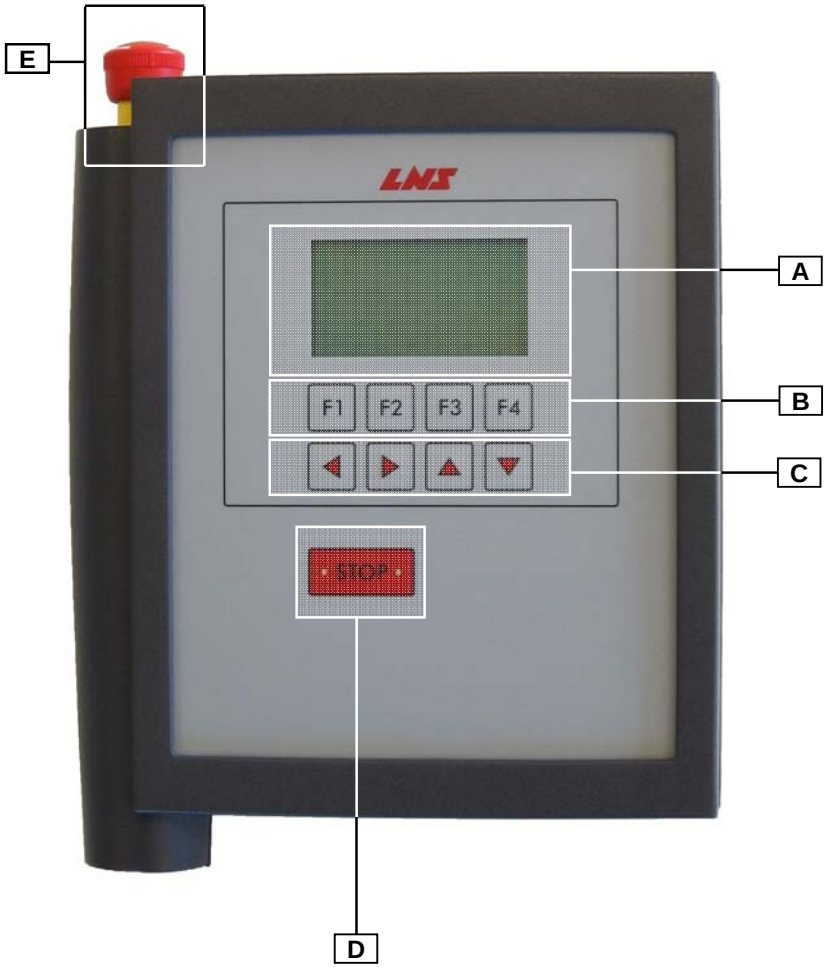
CHAPTER 5: OPERATION

1. REMOTE CONTROL

The ergonomic and user-friendly remote control with a clear built-in display facilitates the handling of the bar feed system. Depending on the sequence under way, the bar feed system gives access only to those functions which are available, thus avoiding any incorrect handling, and reducing the access time to the necessary functions.

The display reads, continuously and clearly, the status of the bar feed system and the production, allowing one to verify at all times the functions, diagnostics, error signals, or their analysis. The most recent error signals are saved in a register and can be recalled to establish the diagnostics.

The remote control has five distinct segments, namely: display (**A**), function keys (**B**), left / right / up / down keys (**C**), STOP key (**D**) and the emergency button (**E**).



1.1 Display

The liquid crystal display provides the operator with all the necessary data, both for handling the bar feed system and for maintenance.

- The upper portion of the display has eleven lines and is reserved for the reading of text.

  Error messages are usually displayed with their diagnostics.

- The lower portion of the display is reserved for the display of icons. The icons indicate to the operator which functions are attributed to keys **F1** through **F4**.

The icons available are the following:

Icon	Signification
	Referencing position
	Switch to automatic mode
	Stop after machining one bar stock
	Switch to manual mode
FWD >>	Pusher forward (picture may be reversed)
<< REW	Pusher reverse (picture may be reversed)
TOP CUT	Automatic Top-Cut positioning in manual mode
	Raise the loading table
	Lower the loading table
TEACH IN	Teach data
	Offset correction

Icon	Signification
ENTER	Confirm
START	Start sequence
SET	Set up
ESC	Escape
PAGE UP	Return to previous menu
PAGE DOWN	Jump to next menu
	Validate
	Cancel
	Increment data in offset correction mode
	Decrement data in offset correction mode
	Setup menu

1.2 Function keys F1 - F4

These keys are located right below the display. The functions attributed to them are indicated on the display by icons.

As the operator advances in the handling, the functions of the keys are automatically reattributed.

The risk of error in handling is therefore virtually reduced given that the proposed functions always correspond to the circumstance and availability of the bar feed system.

1.3 Left / right / up / down keys

These keys allow entering values (bar stock diameter, part length, etc.) or parameters.

When an enumeration of parameters or menu sets is proposed, these keys allow the selection (see section 4.2. of this chapter).

1.4 Emergency stop switch

When a dangerous situation arises, pressing the emergency stop switch interrupts immediately all bar feed system and lathe functions (if interface is wired accordingly).

To clear the alarm, release the switch by rotating its red knob clockwise and pull up, and then press [STOP].

1.5 STOP key

The STOP key allows interrupting the sequence under way.

Important: the automatic cycle of the lathe must first be interrupted.

By pressing the STOP key, allows to exit the setting mode, regardless of the level reached, and to return to the work screen.

2. POWERING UP

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

2.1 Description

The motor of the QUICK LOAD SERVO 65 bar feed system is equipped with a built-in absolute encoder that continuously controls the position of the carrier.

When the bar feed system is powered down or there is a power failure, this position is kept in the memory by the PLC.

When powering up, the value saved is immediately taken into account, thus avoiding any input from the beginning. The status saved in the PLC prior to powering down (loading slide up or down, bar present or not, etc.) are then checked by the PLC which analyzes them. The latter then gives the operator access only to those handling operations, which should be undertaken.

This chapter shows the various functions of the bar feed system and indicates how to access them.

The conditions to be fulfilled to proceed with the handling are systematically displayed on the screen, and, therefore, are not reproduced in this manual.

Given that the handling may vary depending on the status and configuration of the bar feed system, a standard procedure cannot always be described.

2.2 Powering off

To prevent accidental damage to the pusher, prior to powering off, bring the pusher to its home position.

3. MANUAL FUNCTIONS LIST

Icon	Purpose
<< REW	Pusher reverse (picture may be reversed)
FWD >>	Pusher forward (picture may be reversed)
TOP CUT	Automatic Top-Cut positioning in manual mode
	Raise the loading table
	Lower the loading table

4. SETTINGS

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

4.1 Description

The Quick Load Servo 65 has several parameters and functions allowing the operator to configure it so that it adapts as closely as possible to the lathe on which it is installed, as well as to the production mode under way.

The position of the flag, or the quantity of material left to be machine, can be known at any time by checking the remote control.

The pushing torque of the motor is automatically selected according to the bar stock diameter.

The height of the loading table and the slope of the loading fingers are also automatically set.

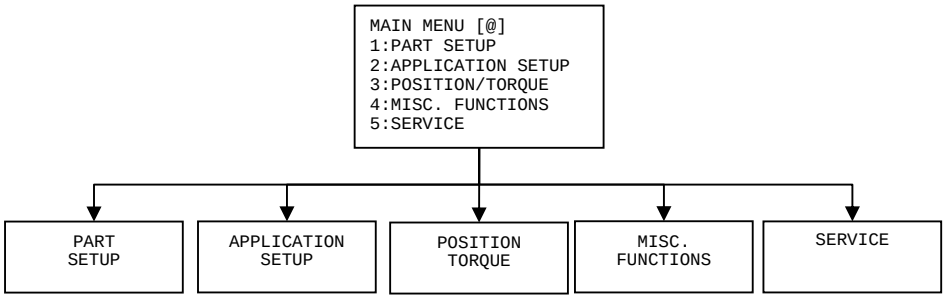
When hexagonal or squares bars must be loaded, the servo motor intelligently manages the loading into the lathe.

This section indicates the activating and setting procedures for these functions. Some functions are explained in more details in the Start-up manual.

4.2 Access to the functions

By pressing the **[SET]** key (icon), it is possible to access the setup functions, no matter what cycle the bar feed is in (automatic sequence, manual sequence, etc.).

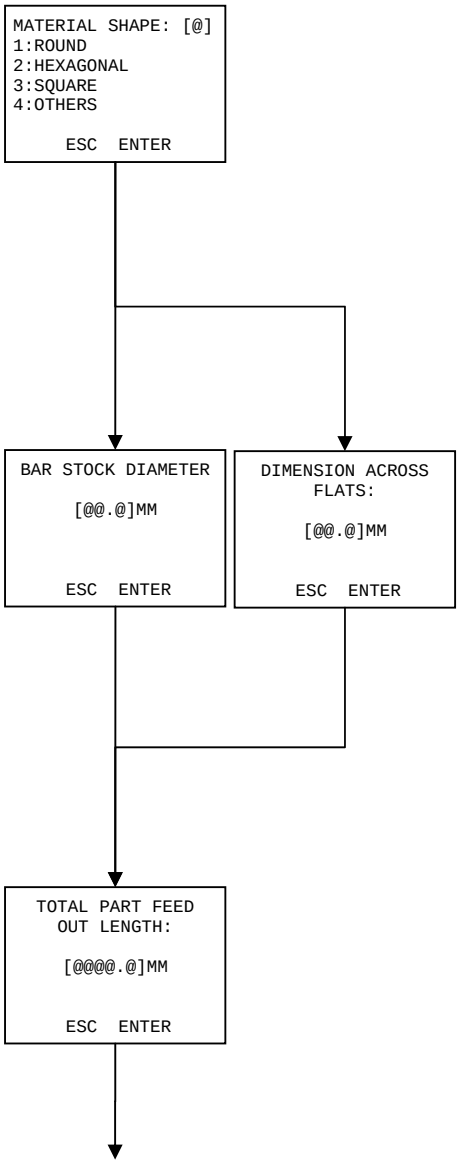
To modify these parameters, the bar feed must be in STOP mode. To validate some values or parameters, hold the **[ENTER]** key until the icon disappears.



Part setup	Allows to define the parameters and values of the part, like: • Bar stock shape (round, hex, square, other) • Bar stock diameter • Overall part length to feed • Number of clamping device openings • Reverse distance of the pusher after feeding • Overall part length for the auxiliary part (remnant machining)
Application setup	Allows setting quickly the working mode by selecting the desired application. Following working modes are always available: 1. Feed with turret 2. Feed without turret 3. Misc. functions (Dry Run, etc.) Depending on the unlocked features and on the lathe, following modes may be available: 4. Sub-spindle 5. Shaft loading 6. etc.
Position / torque	Quick access to the following position and torque values: • End of bar • Top cut • *Auxiliary end of bar* • Torque for the bar stock loading • Torque for the part feeding
Misc. functions	Allows the access to specific settings like: • Language • Measure unit • Reference
Service	Reserved for maintenance to LNS technicians and for unlocking features / displays.

4.2.1 Part setup

All handling, adjustments, and settings that need to be done on the bar feed system for executing a part is included in the start-up. This section presents a brief explanation of the setup parameters of the bar feed system. The start-up settings for the bar feed system are explained through the use of practical examples in the Start-up manual.



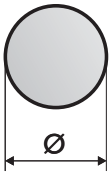
Loading of

Selection of parameters 2, 3, 4 :

- during the bar feed cycle, the bar feed system will try several times (for a duration of 2 minutes) to introduce the bar in the clamping device. The accuracy of positioning is also provided by a procedure designed specifically for profiled bars.
- the setting of the loading table and of the fingers changes. This setting is automatically done by motor M3.

As soon as parameter 1 is selected, the M3 motor automatically repositions the table and the fingers in standard position.

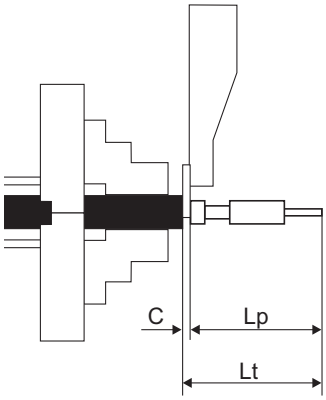
New stock diameter



It is important, at each change in setup, that the diameter of the new bars that the bar feed system will load is updated in the parameters. Doing this allows the adjustment of the height of the loading table and of the settings of the bar magazine loading fingers. These two settings are driven by the remote control. The PLC can, therefore, take this into account and adapt the torque of the pushers. A greater precision in positioning can thus be guaranteed. Moreover, small diameter bars will not bend under the pressure of the pusher

Round: outer diameter
Hexagonal / square: diameter across flats

Overall part length



In some cases (depending on the configuration of the lathe), the QUICK LOAD SERVO 65 is accurate enough (0.2mm) to proceed with the bar feed when the clamping device is opened. Thus, the use of the turret stopper is no longer necessary, shortening noticeably the loading time and at the same time, freeing a tool position on the turret.

The total length of the part (Lt) includes the length of the piece to be machined (Lp) and the thickness of the cut off tool (C).

NUMBER OF CLAMPING DEVICE OPENINGS FOR OVERALL PART LENGTH: [@]

ESC ENTER

TOP-CUT POSITION:

[@@@@]MM

ESC ENTER

PUSHER REVERSING DISTANCE: [@]

1:DEFAULT VALUE
2:OUTSIDE SPINDLE
3:OTHER VALUE

ESC ENTER

OPTIONAL AUXILIARY END OF BAR:[@]

1:RELAY R5
2:RELAY R6

ESC ENTER

PART FEED OUT LENGTH AFTER AUX. EOB

[@@@@.@]MM

ESC ENTER

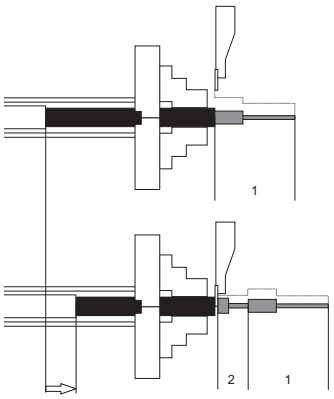
NUMBER OF CLAMPING DEVICE OPENINGS FOR OVERALL PART LENGTH AFTER AUX. END OF BAR: [@]

ESC ENTER

Number of clamping device openings to machine the part

When there is multiple openings required to machine a piece (1 and 2), interface conflicts can occur during the bar feed. If for instance, the bar feed is controlled by the clamping device signal, it might occur when the piece is not finished.

It is important that the bar feed system keeps track on the number of openings of the clamping device during the machining of the piece.



For this type of machining, the lathe controls the feed-out of the piece.

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. Refer to the Start-up manual for the settings.

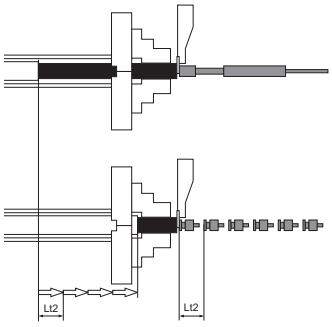
Pusher reverse distance after feeding

In production cycle, each time the clamping device of the lathe closes, the feeding pusher moves backwards so as not to come into contact with the rotating bar. The value of the reverse distance is set at 4 mm at the factory.

1. Default value (4 mm)
2. Outside of the spindle
3. Enter the desired value

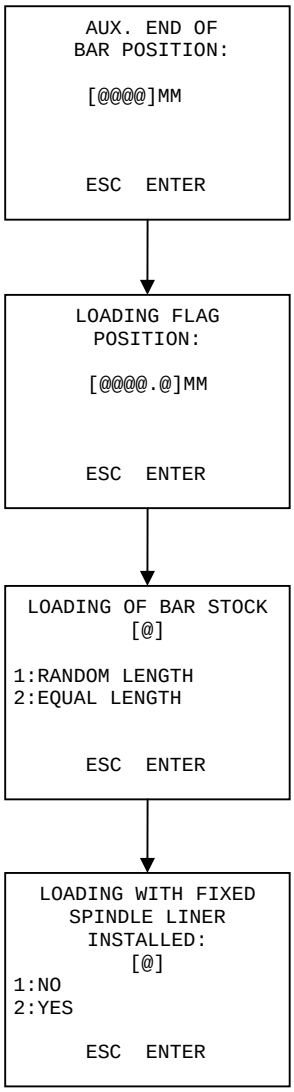
Part feed out length after aux. EOB (option)

When machining remnants (A) of significant length, a second mode of production may be selected to machine the remainder of the stock (depending on the capabilities of the lathe). The lathe starts a second machining program and manufactures shorter parts. Like the previous parameter, this parameter indicates the total length of piece bar feed but in this instance, for the second machining (Lt2).The length of the bar feed includes the length of the piece to be machined and the thickness of the cut off tool.



Number of clamping device openings after aux. EOB (option)

Like the previous parameter, this parameter indicates the number of times the clamping device will open during the machining of the piece, but in this case, for the second machining.



Auxiliary end of bar position (option)

Depending on the lathe and its interface, the auxiliary end of bar may be used in several ways, for example, to control the opening and the closing of an additional steady rest in the lathe. The setting is identical to the End of bar signal.

Loading flag position
This parameter allows adapting another loading flag, and setting it s length accordingly.

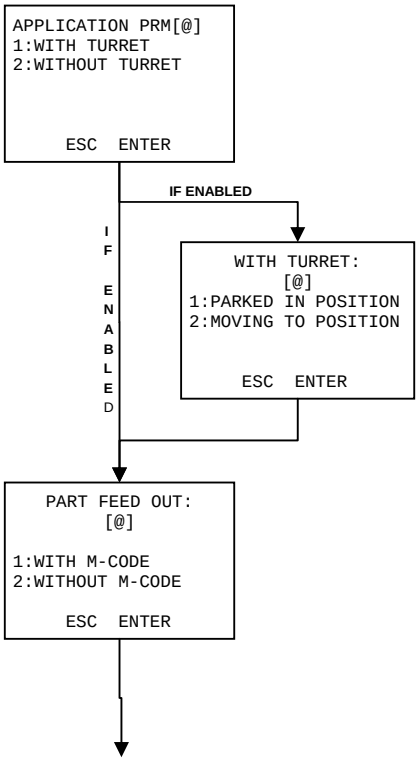
Loading of random / equal length bar stocks (option)
Selecting the equal length parameter allows the bar feeder to spare time at the new bar loading.

When the bar stocks have an equal length and this parameter is selected, the bar feeder measures the first bar length. The second bar stock is no longer measured; the loading flag moves forward at high rate to the rear of the bar stock, reducing the bar stock loading.

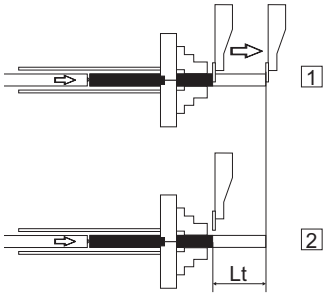
Loading with fixed spindle liner installed (option)
When a fixed spindle liner is installed in the spindle, a new bar stock can be loaded during the machining of the current bar stock.

- The bar feeder positions the bar stock in the spindle liner and waits for loading signal with the pusher already behind the bar stock.
- Once the signal activated, the pusher positions the new bar stock into the clamping device and pushes out the remnant.
- When the bar stock is in position, the cycle restarts.

4.2.2 Application setup



Loading with turret



This parameter determines whether the lathe or the bar feed will control the positioning of the part.

Additional parameters:

a) The turret is parked in position:
the turret travels to the point the bar stock will be pushed to and waits until the bar feed has pushed the material to this point.
b) The turret is moving to position:
The turret comes to the bar stock end; the bar feed starts pushing against the turret. Then, the turret moves to the desired feeding length, the bar feed still maintaining the bar stock pressure against the turret.

Loading without turret

The bar feed drives the feeding cycle. When the clamping device opens, the bar feed pushes the bar stock according to the parameter "overall part length" value. The bar feed is not able to drive the feeding cycle if the machining process requires several clamping device openings.

Dry Run

This function allows the lathe to run without the bar feeder, ex.: hand loading pieces, etc.

Shaft loading (option)

In this work mode, the feeding pusher is not used. An extended loading pusher controls the loading. When the loading table is in low position, the manual functions are disabled. For this type of work, the End of bar position does not require a particular setting.

Pusher is used as mechanical stop in the spindle of the lathe (option)

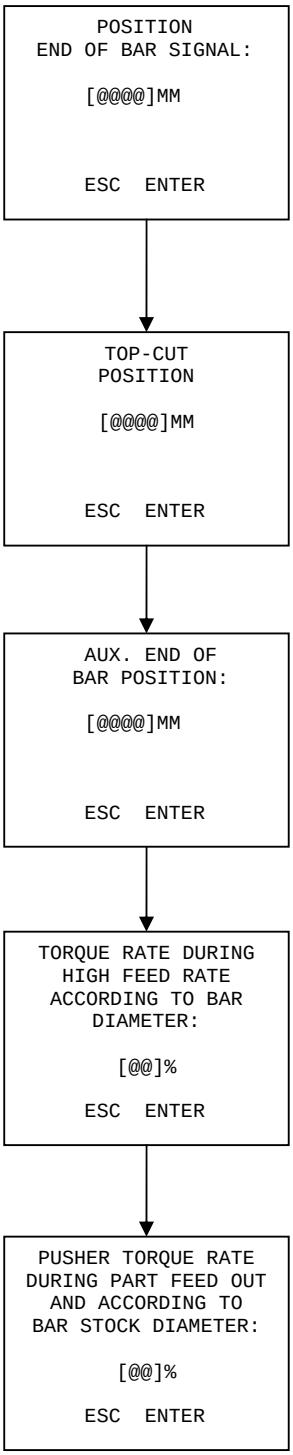
When pieces are loaded manually (without the bar feeder), the pusher can be used as a mechanical stop in the spindle of the lathe and is generally located behind the clamping device to ease the positioning of the pieces in the clamping device.

To enable this machining mode, the interface signals are inhibited. When the clamping device is closed, the pusher moves backward to avoid contact with the rotating bar.

Part feed out (option)

This parameter is used to deactivate the M function receipt of the turret if this function is not used in the lathe interface. In this case, a timer can be used to give the receipt.

4.2.3 Position / torque



End of bar position
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.

Refer to the Start-up manual for the settings.

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.

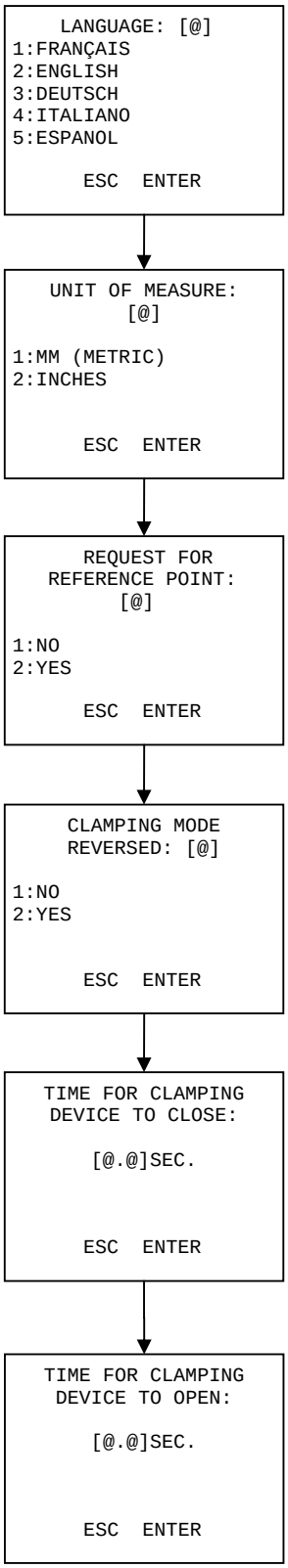
Refer to the Start-up manual for the settings.

Auxiliary end of bar position (option)
Depending on the lathe and its interface, the auxiliary end of bar may be used in several ways, for example, to control the opening and the closing of an additional steady rest in the lathe. The setting is identical to the End of bar signal.

Torque rate during high feed rate (%)
Depending on the diameter of the bar, the bar feed system will automatically select an appropriate pushing torque and speed. The operator may modify this selection if necessary. When the material to be loaded has a high specific weight, the torque must be significant. The contrary applies if the specific weight of the bars is low.

Pusher torque rate during part feed out (%)
Same principle as above.

4.2.4 Miscellaneous functions



Language selection

This parameter allows the user to adapt the language in which the messages will appear, depending on the country of destination of the bar feed system *(for practical reason, it is not necessary to stop the bar feeder to select a language)*.

Unit of measure (millimeters / inches)

This parameter defines whether the measures will be indicated in millimeters or in inches.

Request for reference point

This operation allows the bar feed system to find the original position of the servo motor and the parameters when and if these have been lost.

Clamping mode reversed

When the clamping device is changed from a collet to a chuck with jaws, the clamping signal may need to be reversed. Note that some lathes automatically reverse the signal.

Time for clamping device to close

This is the time it takes for the clamping device to be physically closed. The majority of CNC lathes are equipped with confirmation switches to provide this signal. The time is set at a default value of zero seconds.

Time for clamping device to open

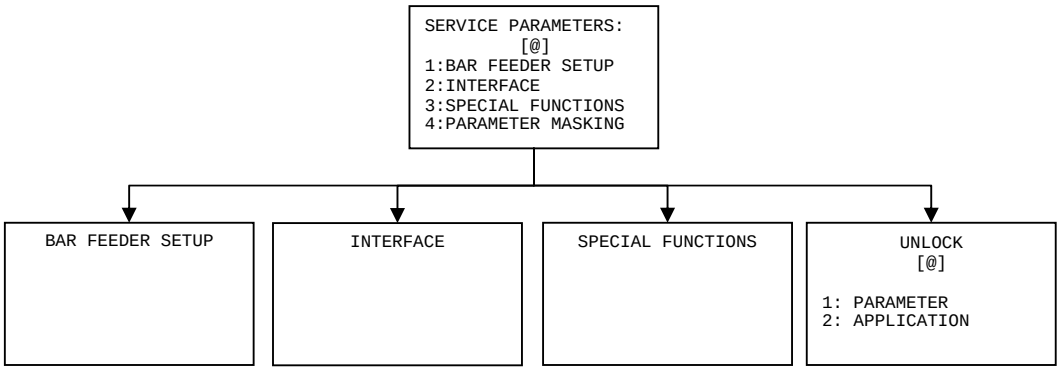
In the case of a clamping device with jaws, some time may be provided to prevent any movement before the clamping device is completely open.

4.2.5 Service

Password

The service parameters allow to configure the bar feed system in its environment and to adapt the interface connected to the lathe.

These parameters are protected with a password, because only LNS (or certified) technician is authorized to modify them.



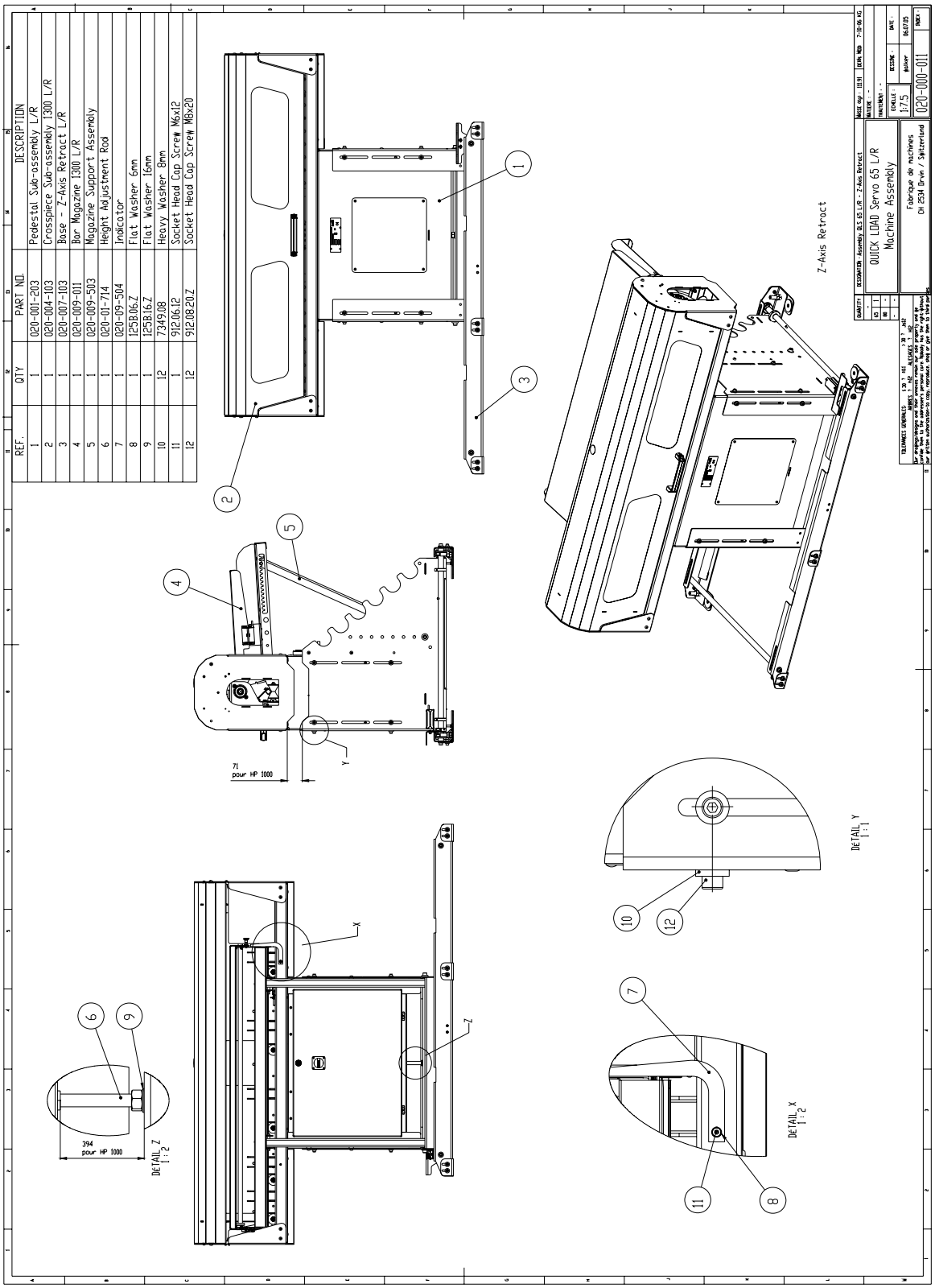
Bar feeder setup	Access to the bar feeder general parameters
Interface	Access to the interface general parameters
Functions	Access to special functions like: • Working mode (exhibition, simulation, etc.) • Workshop configuration
Unlock	Access to enable/disable parameters or applications depending on the use of the bar feeder, like: 1. clamping device reversed 2. loading flag length 3. random / equal bar stock length Additionally, depending on the activated functionalities, following applications may be available: 1. Sub-spindle 2. One shot shaft loading 3. etc.

CHAPTER 6: SPARE PARTS

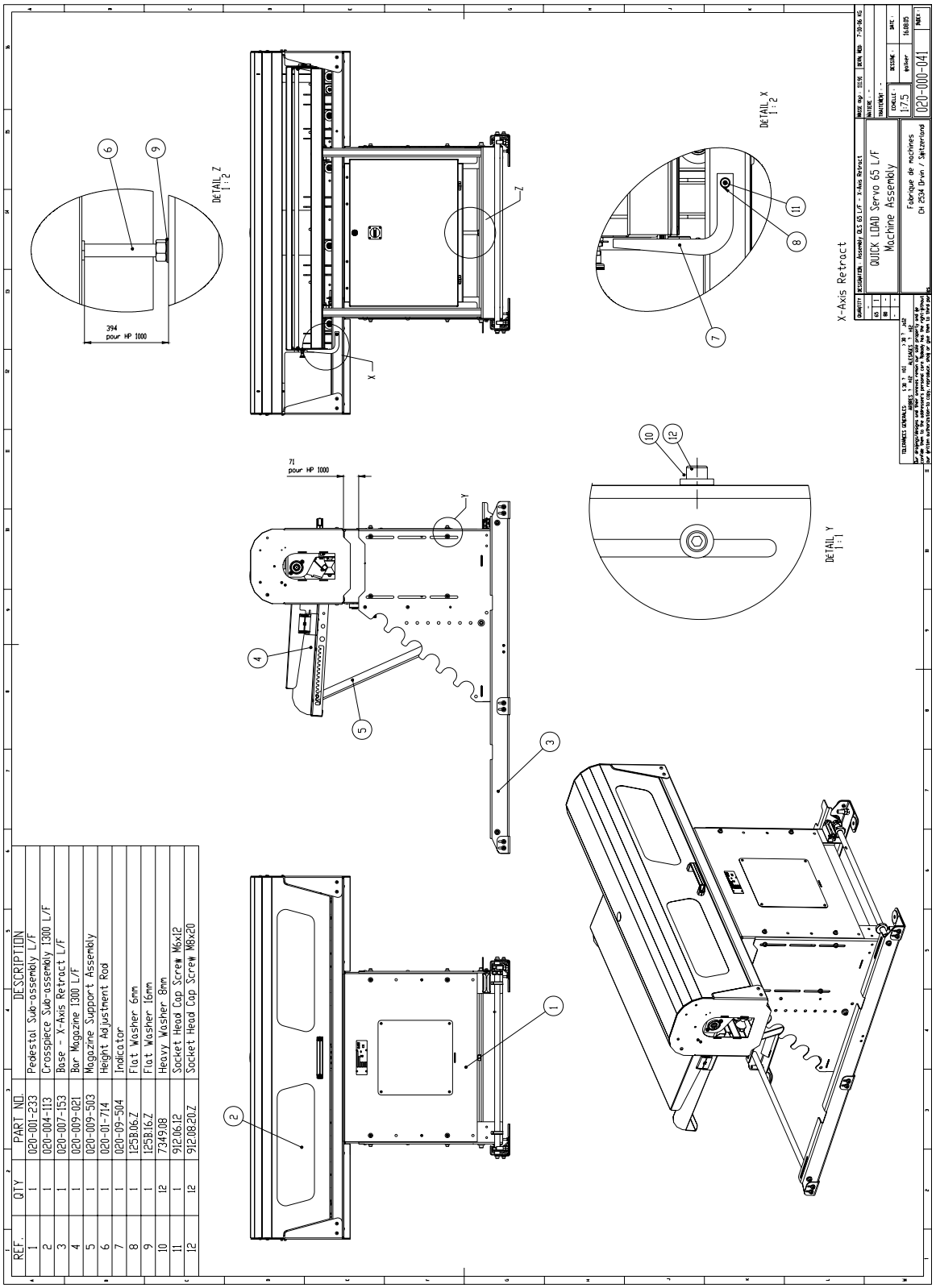
CHAPTER 6: SPARE PARTS 6-1

1. MECANICAL ASSEMBLIES

1.1 020.000.011 Machine assembly – left/rear – Z - axis retraction



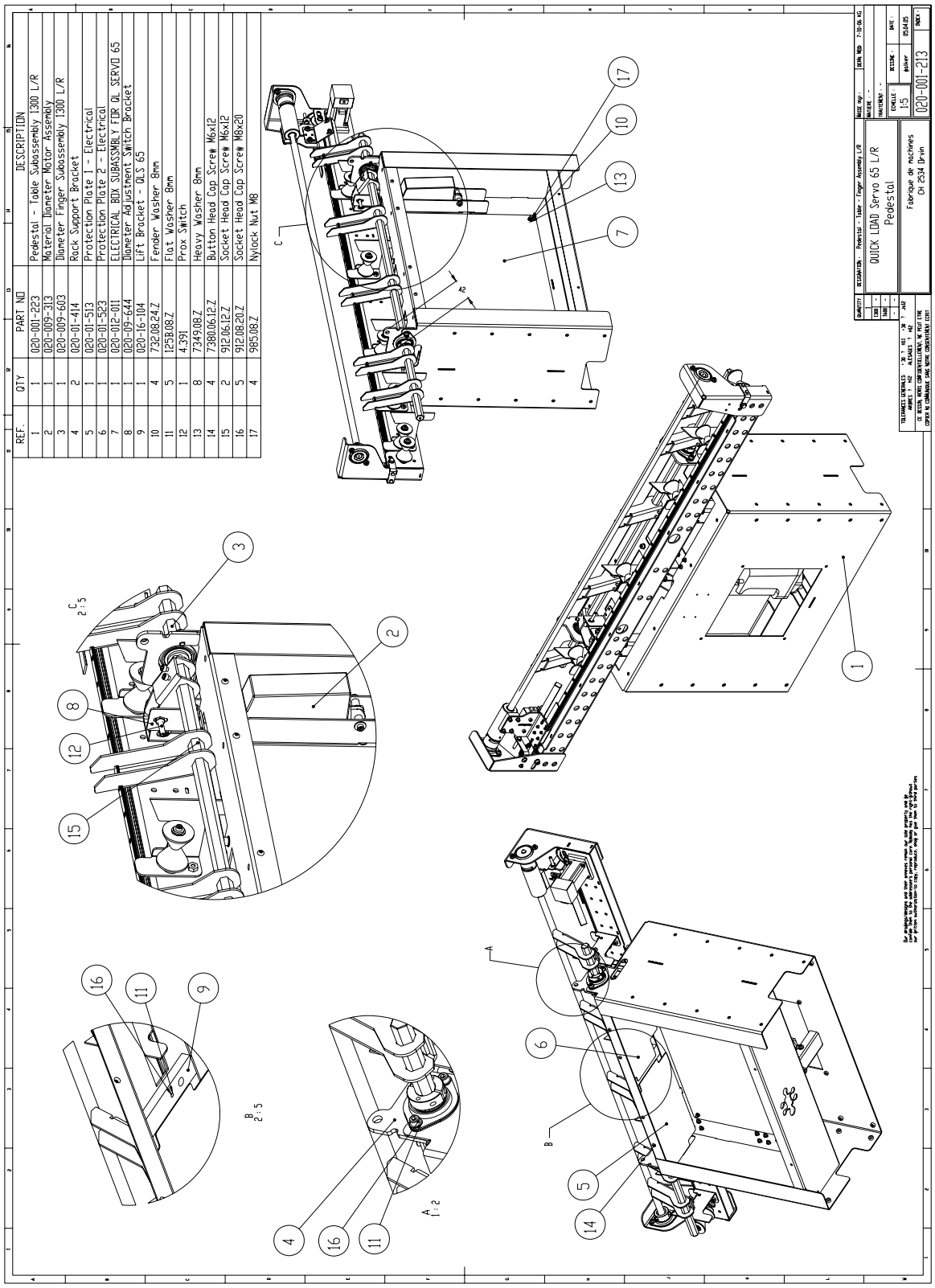
1.2 020.000.041 Machine assembly – left/front – X - axis retraction



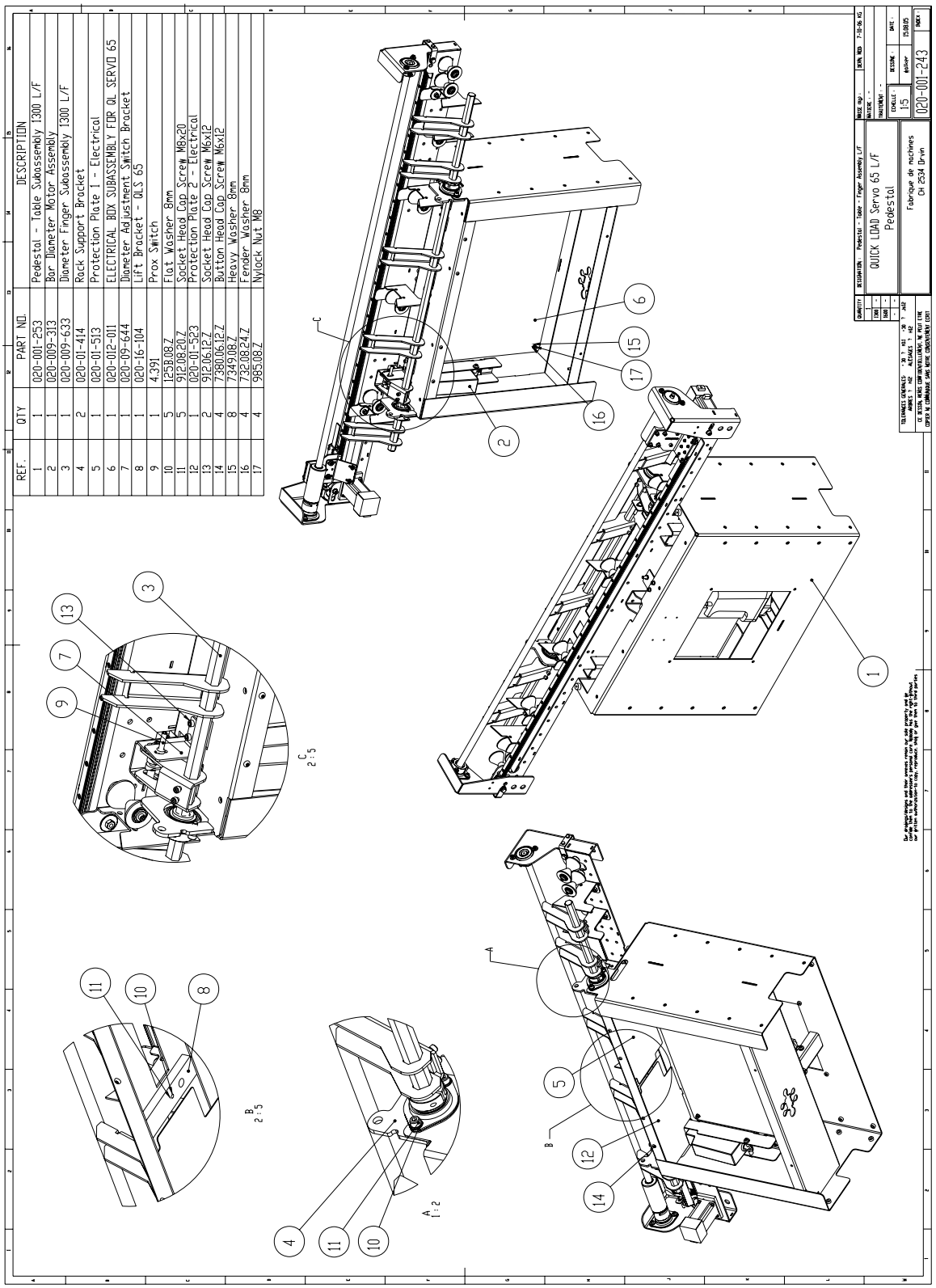
REF.	QTY	PART NO.	DESCRIPTION
1	1	020-001-233	Pedestal Sub-assembly L/F
2	1	020-004-113	Crosspiece Sub-assembly 1300 L/F
3	1	020-007-153	Base - X-Axis Retract L/F
4	1	020-009-021	Bar Magazine 1300 L/F
5	1	020-009-503	Magazine Support Assembly
6	1	020-01-714	Height Adjustment Rod
7	1	020-09-504	Indicator
8	1	1258.06.Z	Flat Washer 6mm
9	1	1258.16.Z	Flat Washer 16mm
10	12	7349.08	Heavy Washer 8mm
11	1	912.06.12	Socket Head Cap Screw M6x12
12	12	912.08.20.Z	Socket Head Cap Screw M8x20

2. BASE

2.1 020.001.213 Base left/rear – Table base – fingers assembled

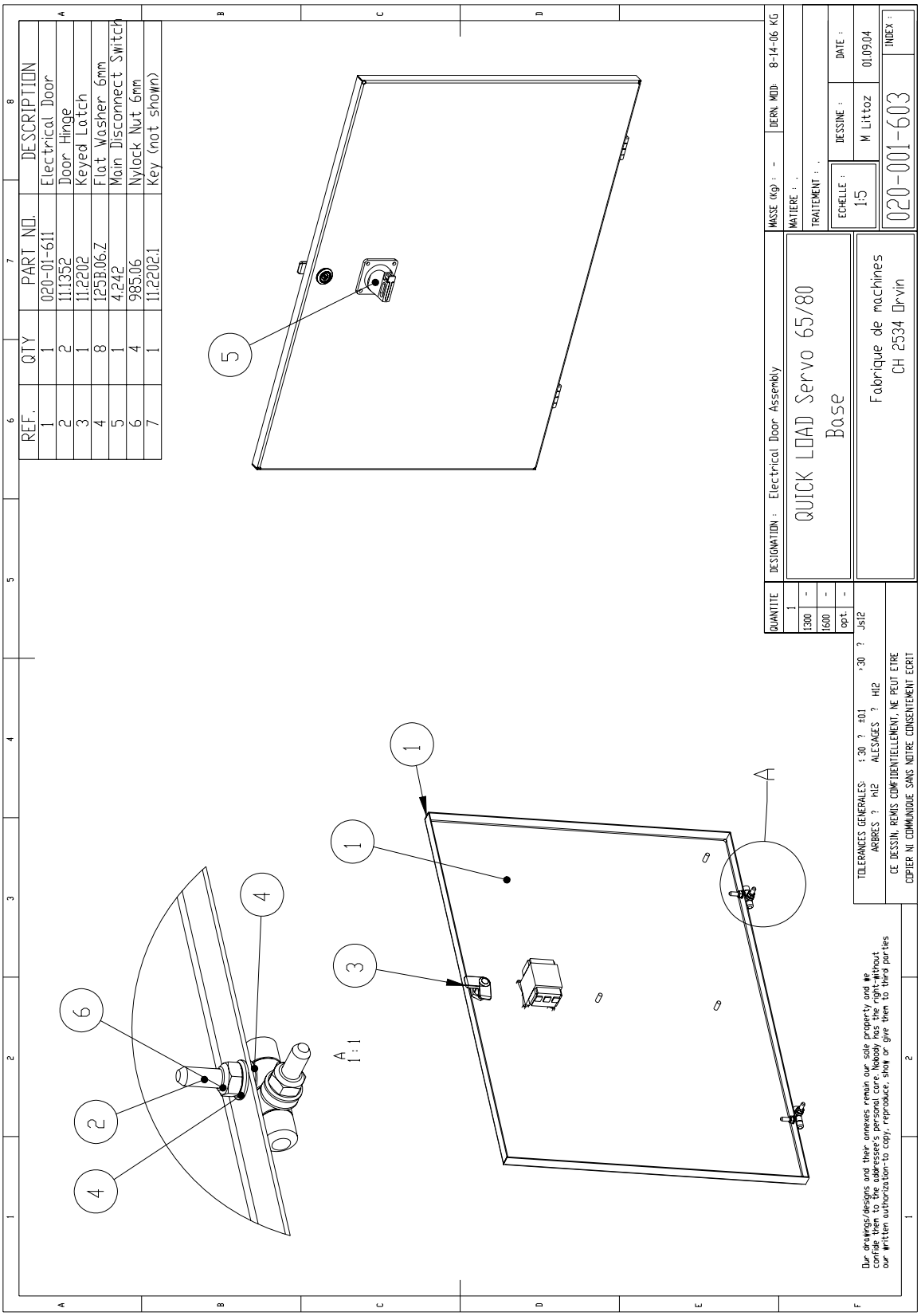


2.2 020.001.243 Base left/front – Base assembled



REF.	QTY	PART NO.	DESCRIPTION
1	1	020-001-253	Pedestal - Table Subassembly 1300 L/F
2	1	020-009-313	Bar Diameter Motor Assembly
3	1	020-009-633	Diameter Finger Subassembly 1300 L/F
4	2	020-01-414	Rack Support Bracket
5	1	020-01-513	Protection Plate 1 - Electrical
6	1	020-012-011	ELECTRICAL BOX SUBASSEMBLY FOR QL SERVO 65
7	1	020-009-644	Diameter Adjustment Switch Bracket
8	1	020-16-104	Lift Bracket - QLS 65
9	1	4.391	Prox Switch
10	5	125B.08.Z	Flat Washer 8mm
11	5	912.08.20.Z	Socket Head Cap Screw M8x20
12	1	020-01-523	Protection Plate 2 - Electrical
13	2	912.06.12.Z	Socket Head Cap Screw M6x12
14	4	7380.06.12.Z	Button Head Cap Screw M6x12
15	8	7349.08.Z	Heavy Washer 8mm
16	4	732.08.24.Z	Fender Washer 8mm
17	4	985.08.Z	Nylock Nut M8

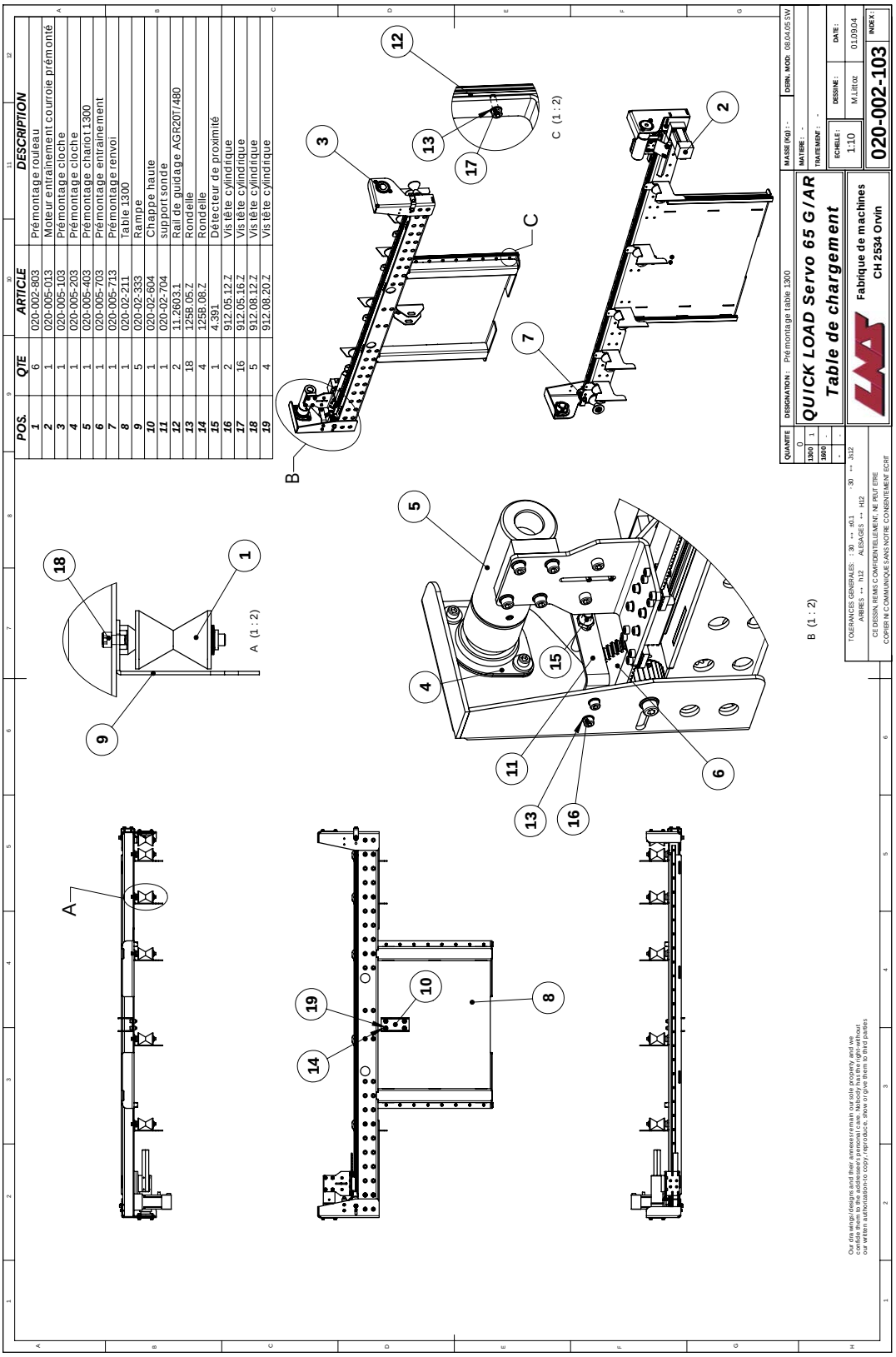
2.3 020.001.603 Sub-assembly electrical cabinet door



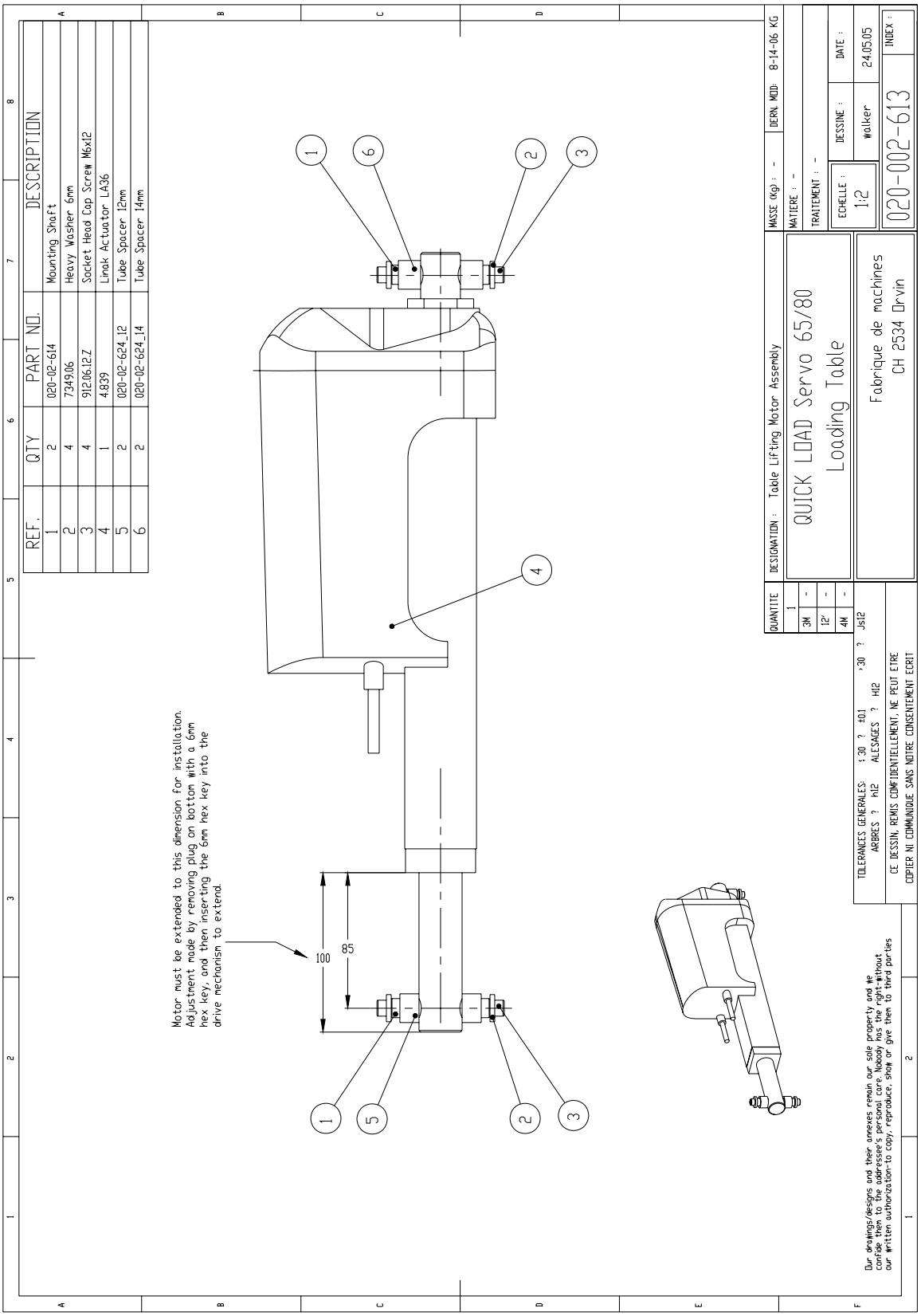
REF.	QTY	PART NO.	DESCRIPTION
1	1	020-01-611	Electrical Door
2	2	11.1352	Door Hinge
3	1	11.2202	Keyed Latch
4	8	125B.06.Z	Flat Washer 6mm
5	1	4.242	Main Disconnect Switch
6	4	985.06	Nylock Nut 6mm
7	1	11.2202.1	Key (not shown)

3. LOADING TABLE

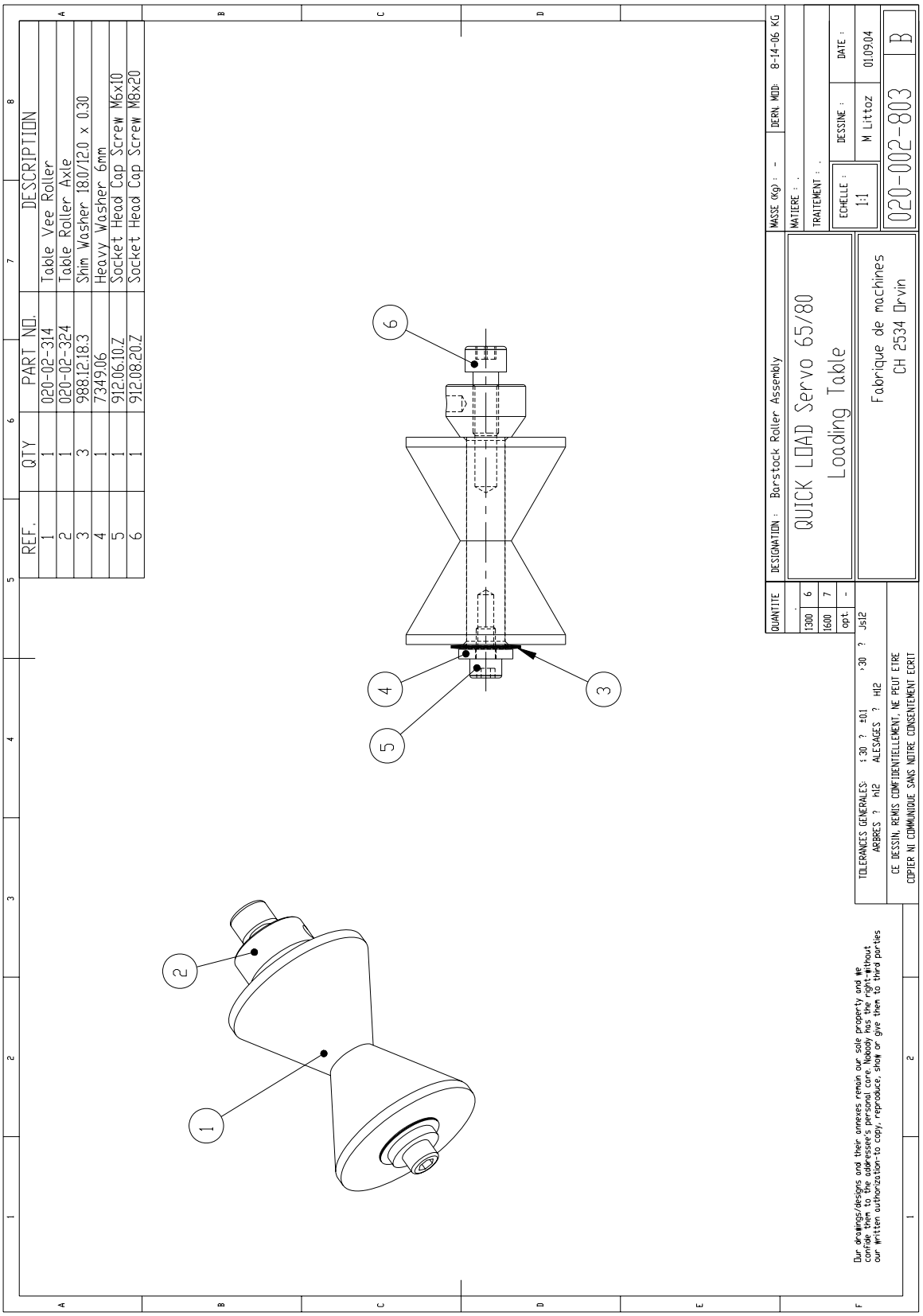
3.1 020.002.103 Sub-assembly table 1300 left/rear



3.2 020.002.613 Sub-assembly motor loading bar stock

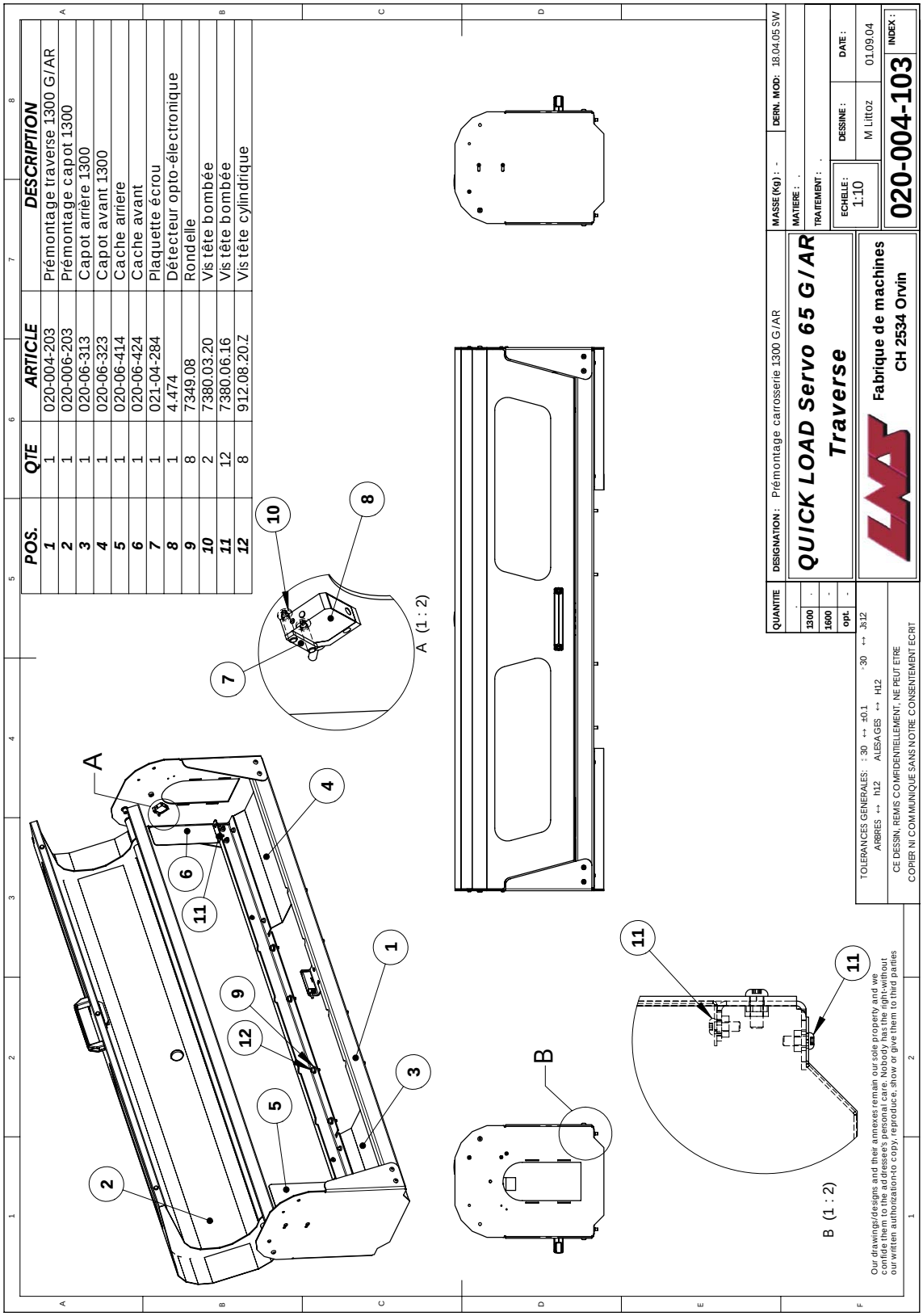


3.3 020.002.803 Sub-assembly rolling bearing



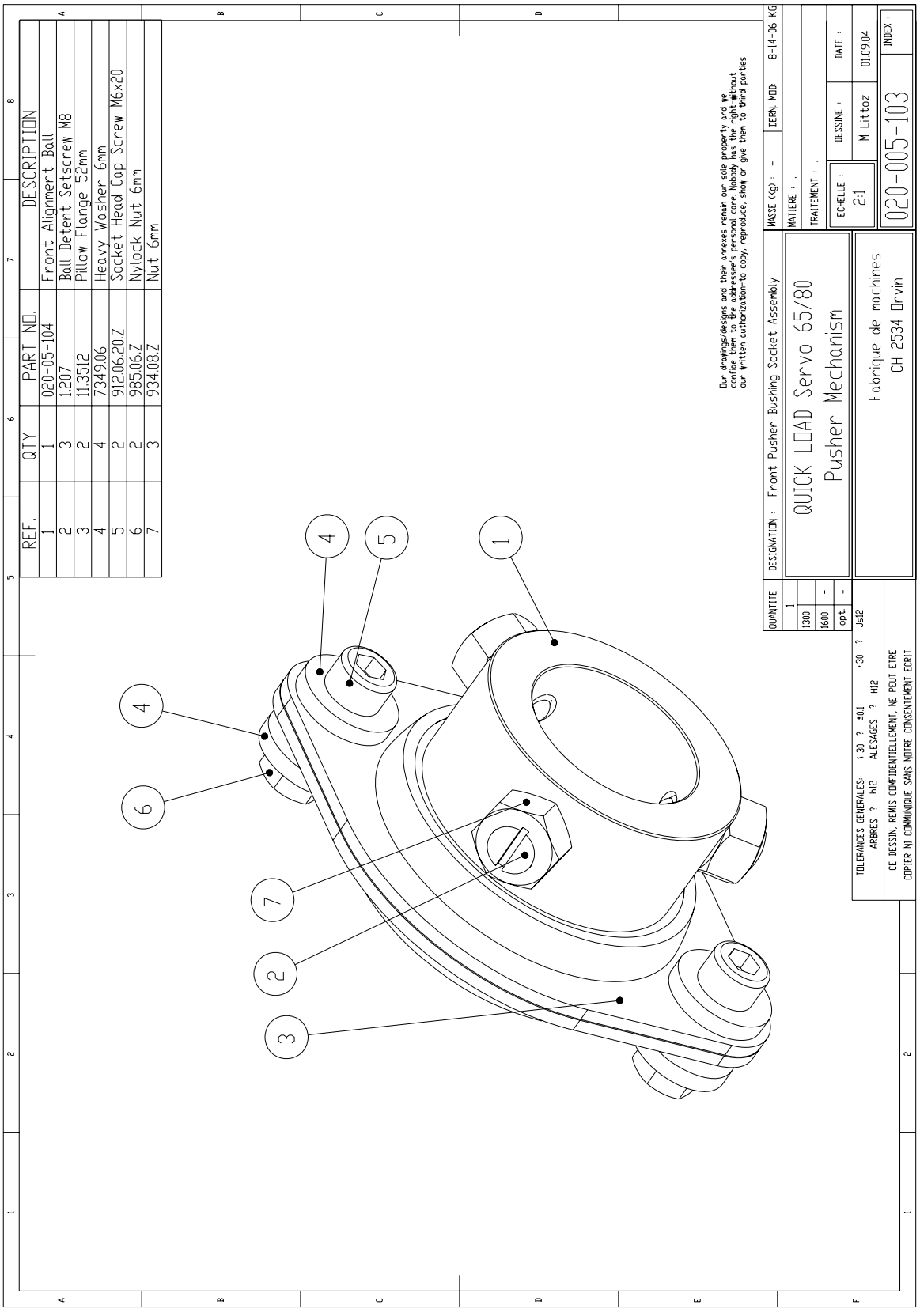
4. CROSSING SLIDE

4.1 020.004.103 Sub-assembly body 1300 left/rear



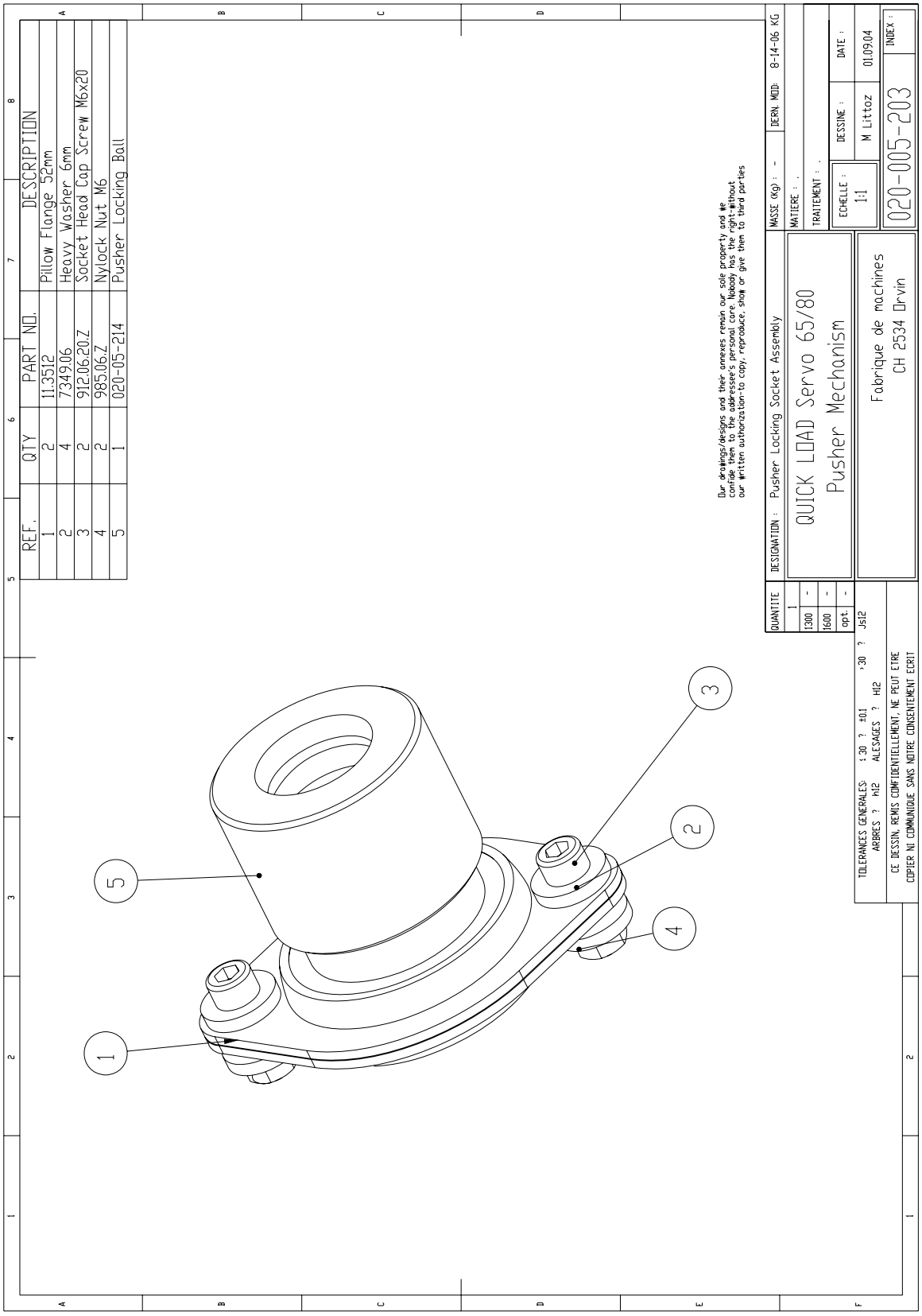
5. LOADING MECHANISM

5.1 020.005.103 Sub-assembly centering bearing

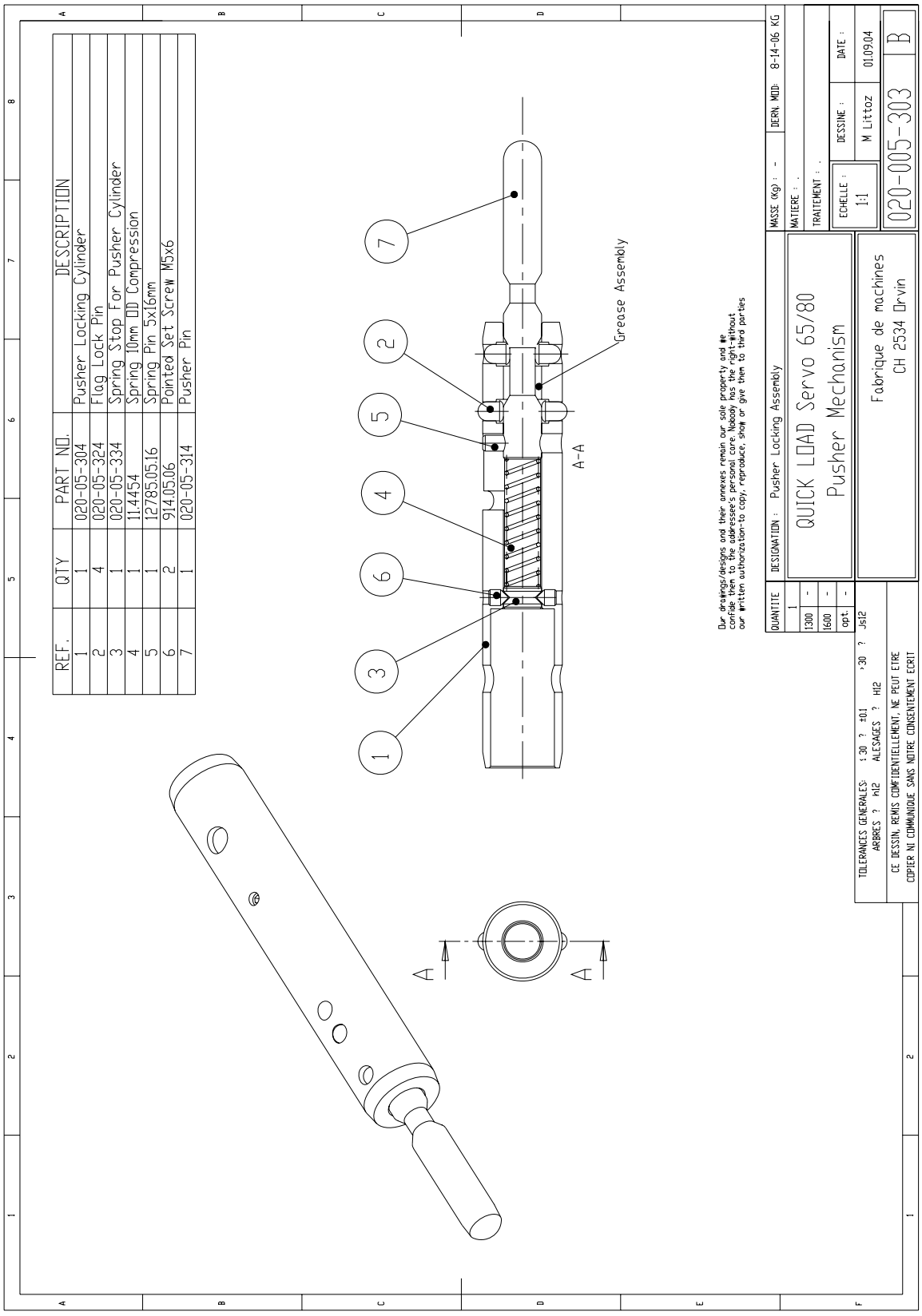


REF.	QTY	PART NO.	DESCRIPTION
1	1	020-05-104	Front Alignment Ball
2	3	1.207	Ball Detent Setscrew M8
3	2	113512	Pillow Flange 52mm
4	4	7349.06	Heavy Washer 6mm
5	2	912.06.20.Z	Socket Head Cap Screw M6x20
6	2	985.06.Z	Nylock Nut 6mm
7	3	934.08.Z	Nut 6mm

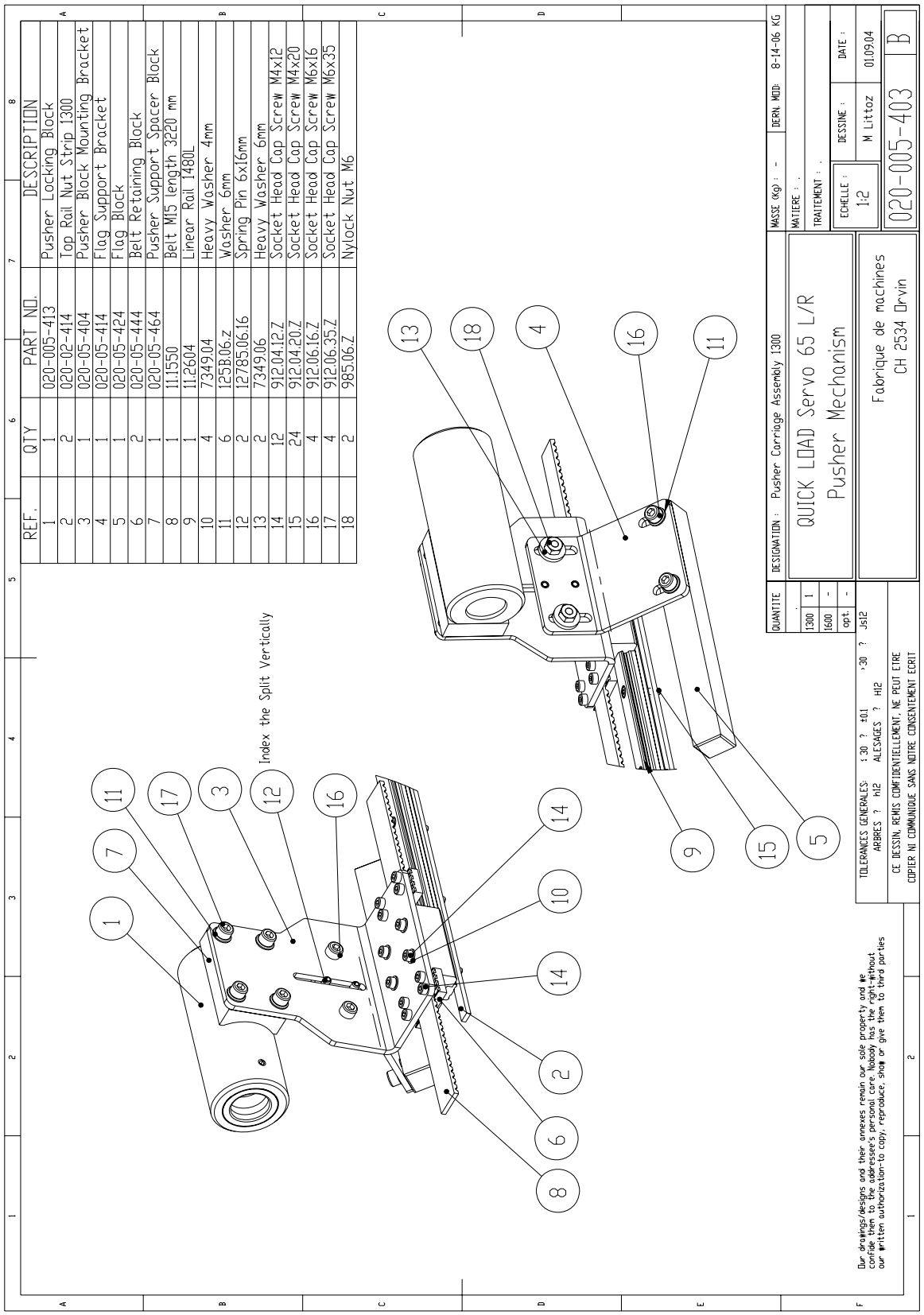
5.2 020.005.203 Sub-assembly centering bearing



5.3 020.005.303 Locking pusher assembled



5.4 020.005.403 Sub-assembly carrier 1300 left/rear



REF.	QTY	PART NO.	DESCRIPTION
1	1	020-005-413	Pusher Locking Block
2	2	020-02-414	Top Rail Nut Strip 1300
3	1	020-05-404	Pusher Block Mounting Bracket
4	1	020-05-414	Flag Support Bracket
5	1	020-05-424	Flag Block
6	2	020-05-444	Belt Retaining Block
7	1	020-05-464	Pusher Support Spacer Block
8	1	11.1550	Belt M15 length 3220 mm
9	1	11.2604	Linear Rail 1480L
10	4	7349.04	Heavy Washer 4mm
11	6	125B.06.Z	Washer 6mm
12	2	12785.06.16	Spring Pin 6x16mm
13	2	7349.06	Heavy Washer 6mm
14	12	912.04.12.Z	Socket Head Cap Screw M4x12
15	24	912.04.20.Z	Socket Head Cap Screw M4x20
16	4	912.06.16.Z	Socket Head Cap Screw M6x16
17	4	912.06.35.Z	Socket Head Cap Screw M6x35
18	2	985.06.Z	Nylock Nut M6

Index the Split Vertically

QUANTITE	
1300	1
1600	-
opt.	-

DESIGNATION : Pusher Carriage Assembly 1300

QUICK LOAD Servo 65 L/R
Pusher Mechanism

MASSE (Kg) : - | DERN. MOD: 8-14-06 KG
MATIERE : .
TRAITEMENT : .

ECHELLE : 1:2 | DESSINE : M Littoz | DATE : 01.09.04

020-005-403 B

Fabrique de machines
CH 2534 Orvin

TOLERANCES GENERALES: ±.30 ? ±01 ,x30 ? Js12
ARBRES ? h12 ALESAGES ? H12

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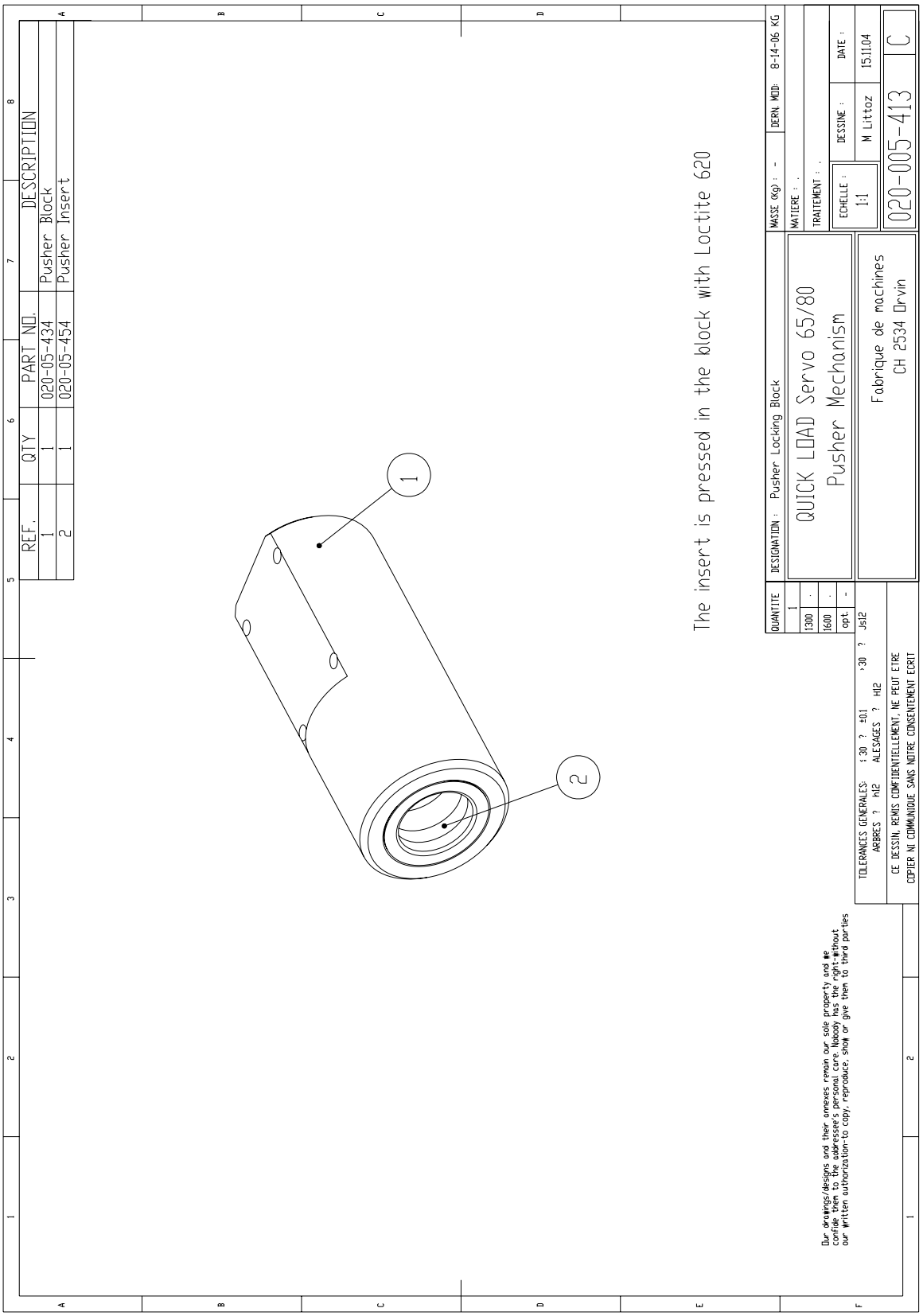
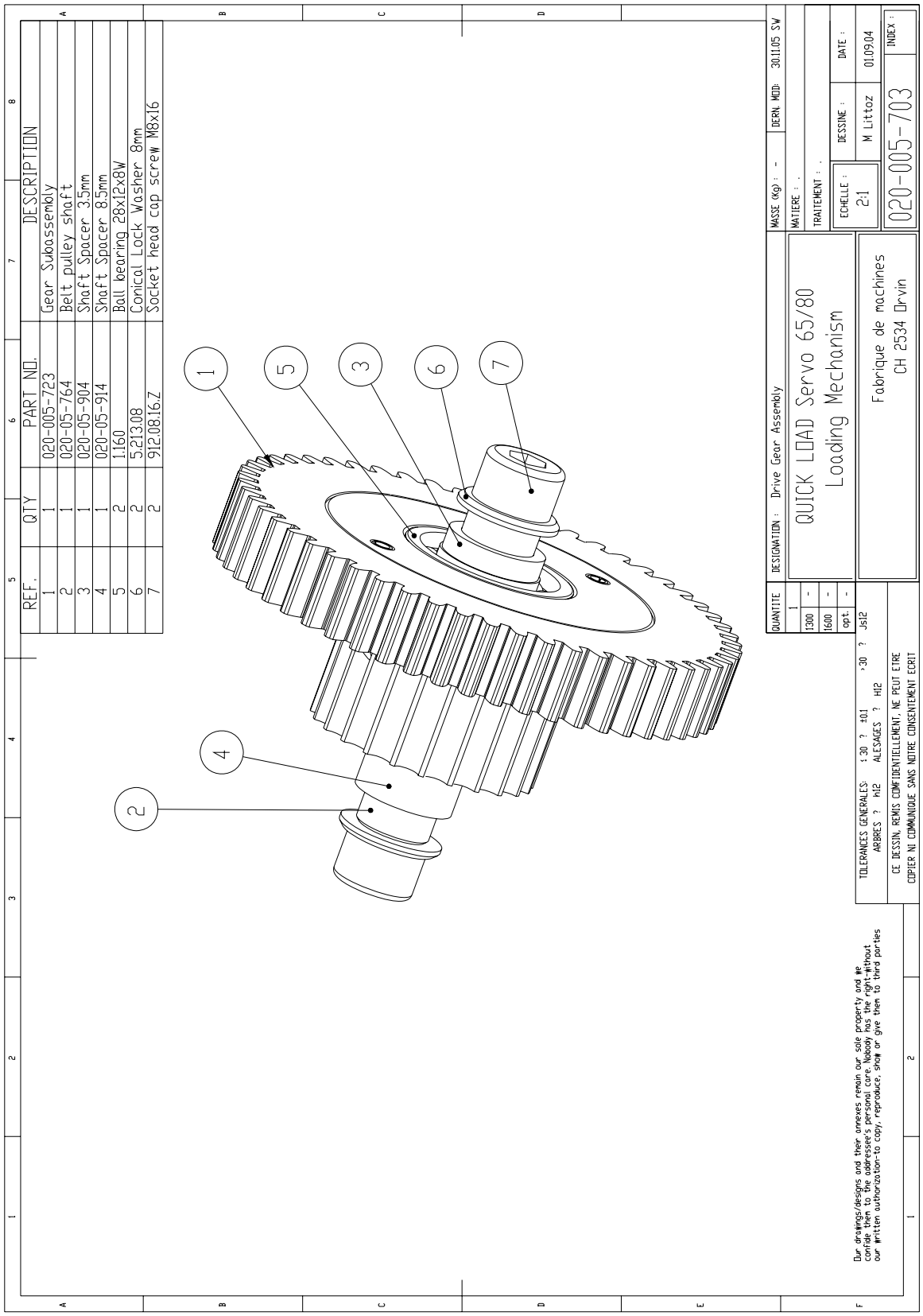
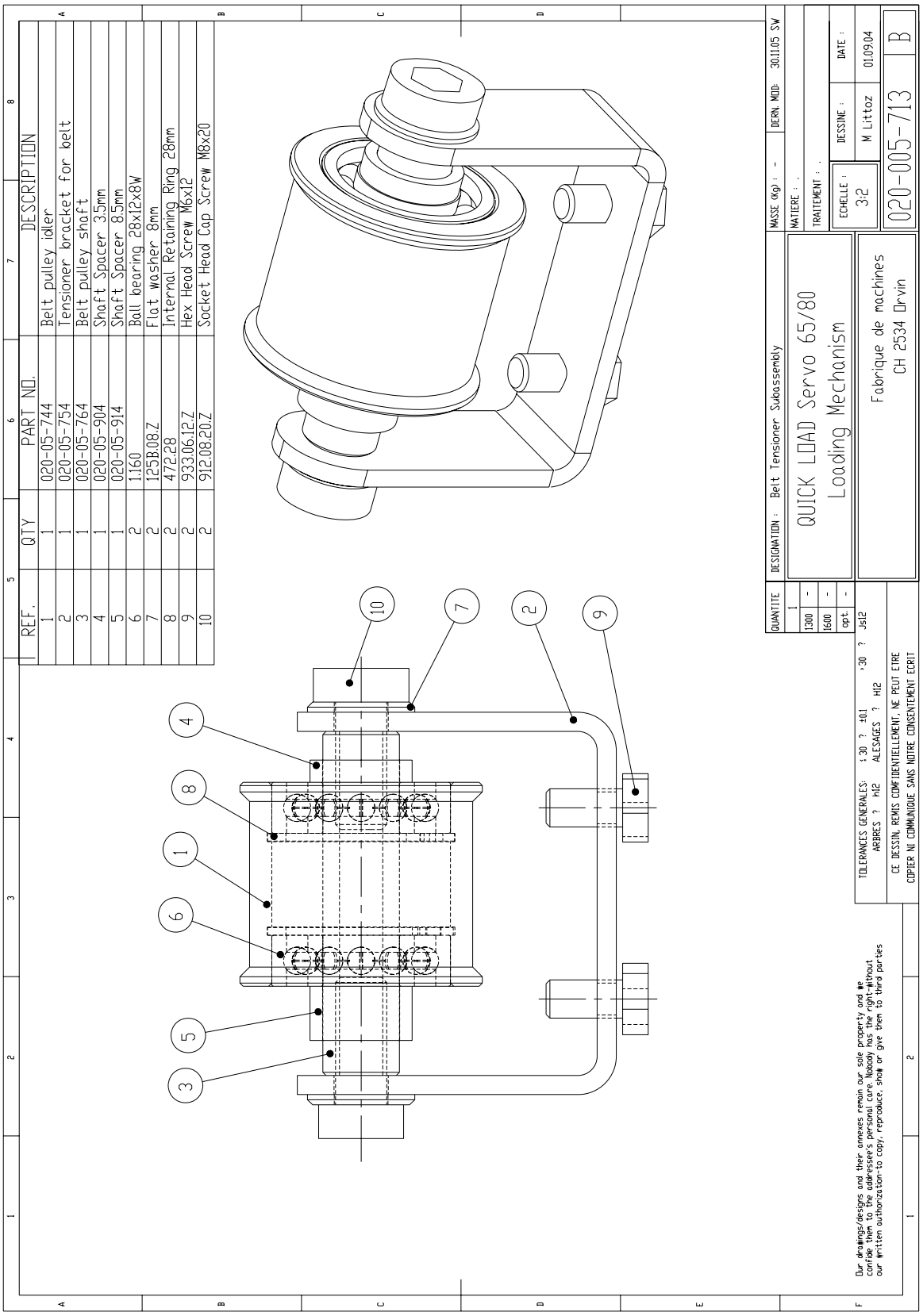
5.5 020.005.413 Locking block



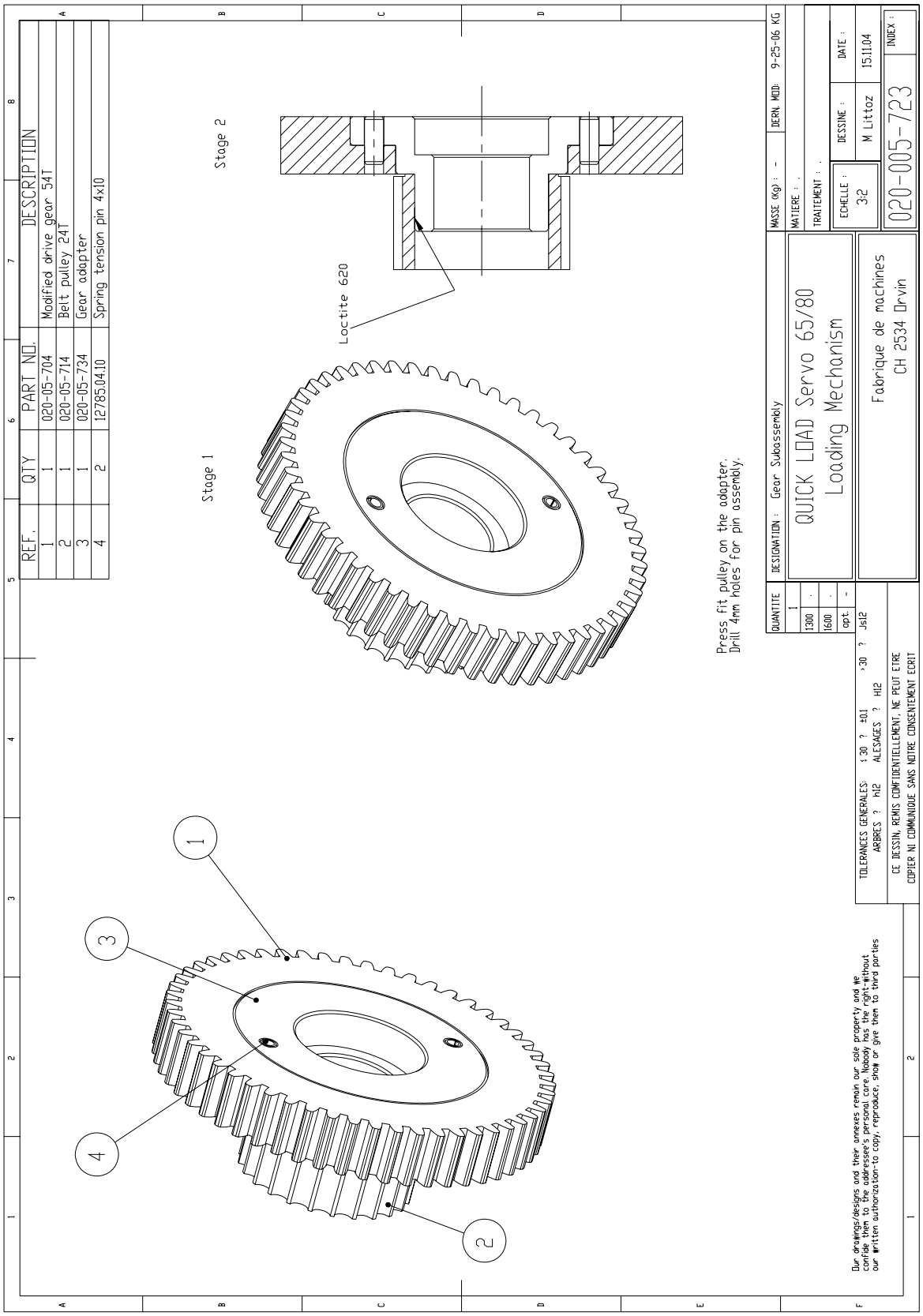
5.6 020.005.703 Sub-assembly drive



5.7 020.005.713 Sub-assembly tensioner

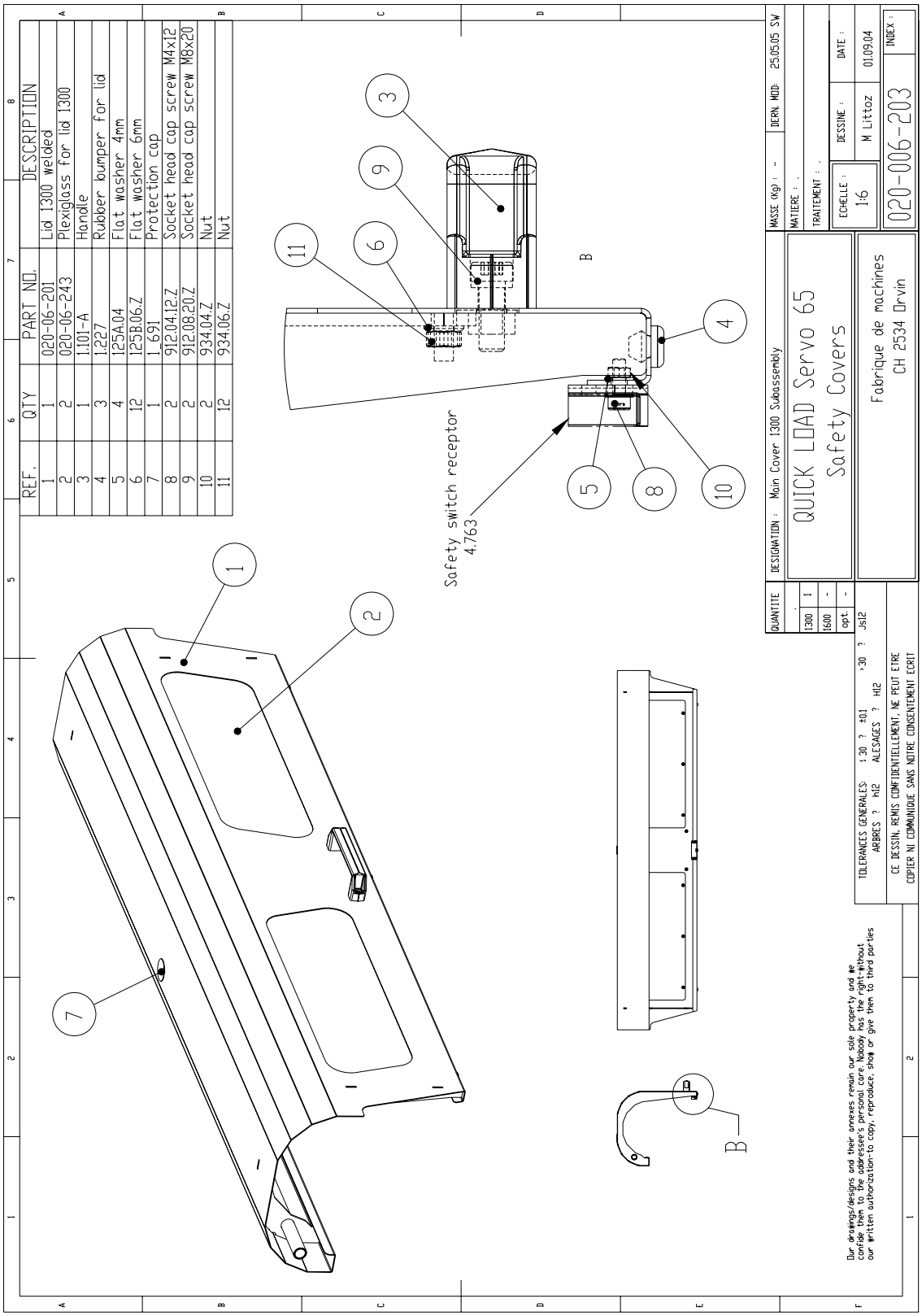


5.8 020.005.723 Sub-assembly cogwheel



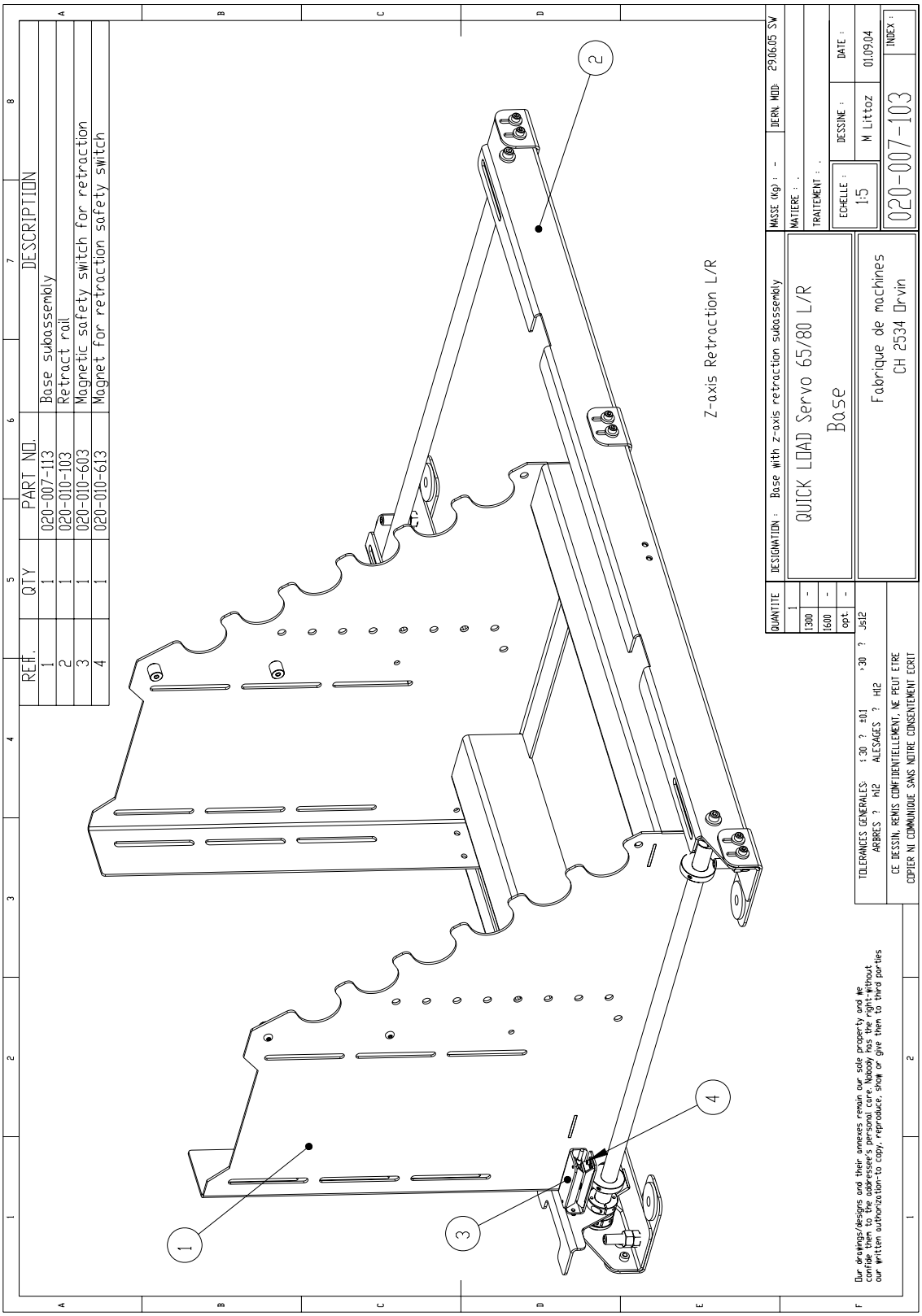
6. PROTECTIONS

6.1 020.006.203 Sub-assembly main access cover 1300

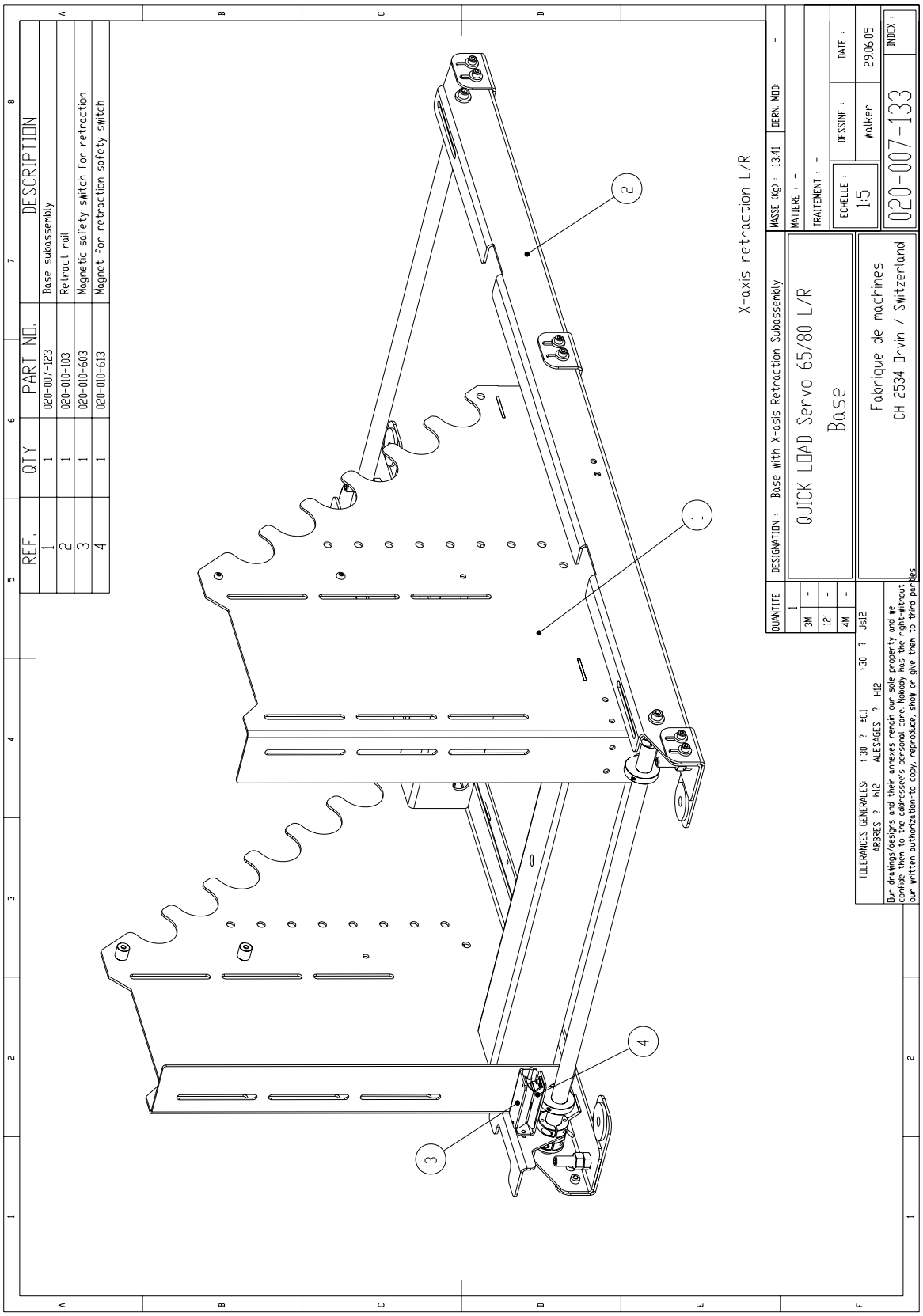


7. FOOT

7.1 020.007.103 Foot – Z - axis retraction assembled left/rear

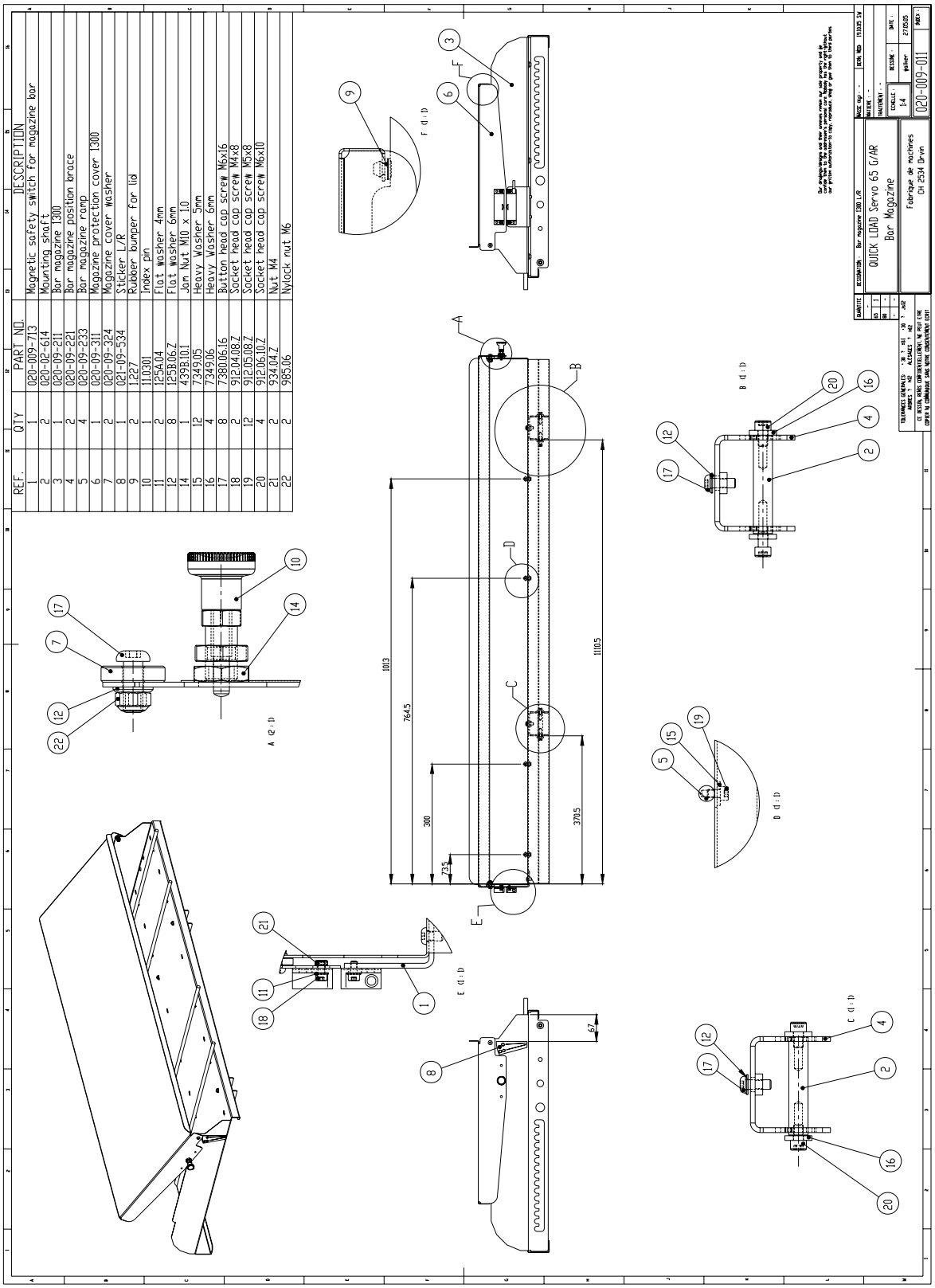


7.2 020.007.133 Foot – X - axis retraction assembled left/rear



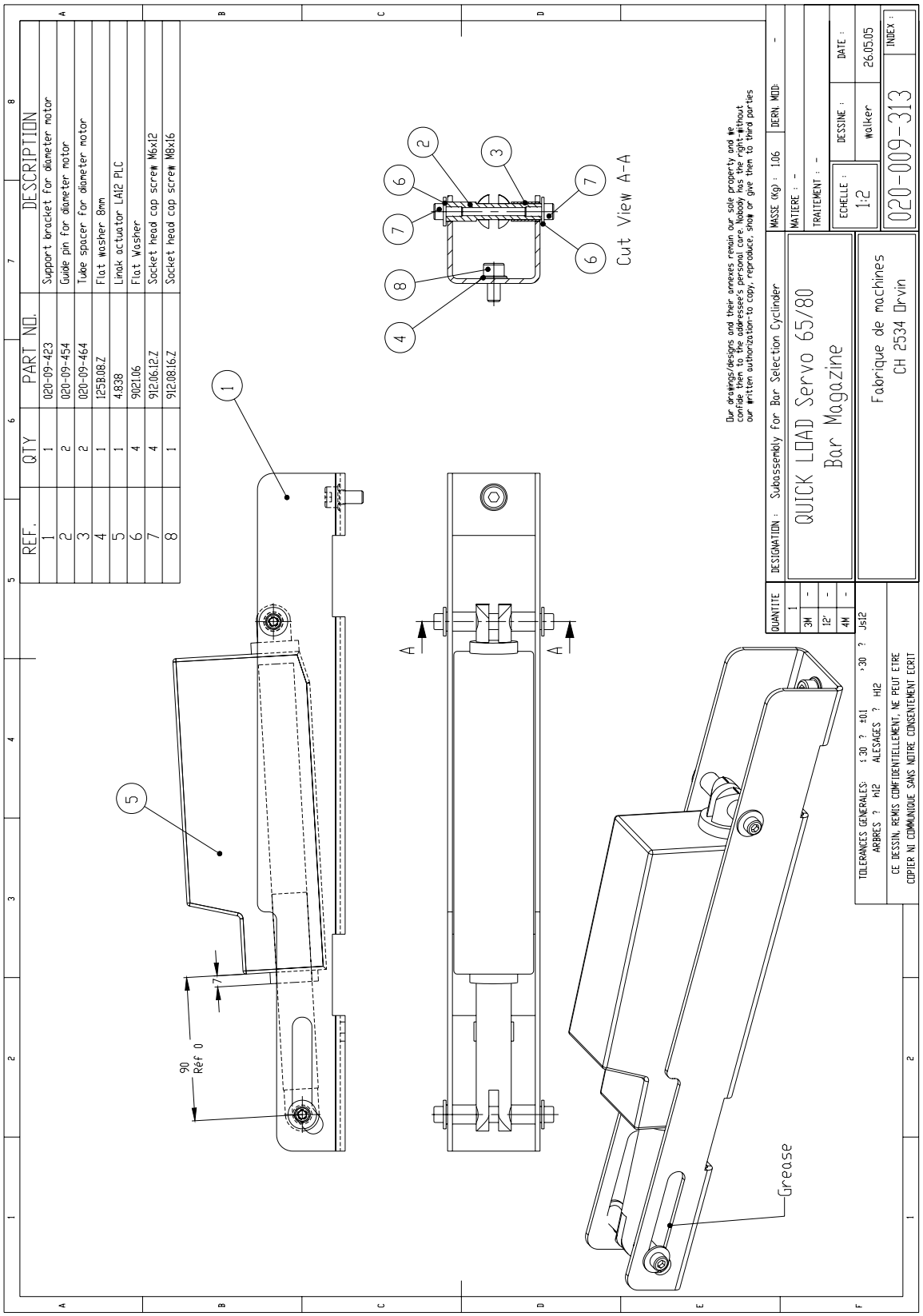
8. LOADING MAGAZINE

8.1 020.009.011 Loading magazine 1300 left/rear

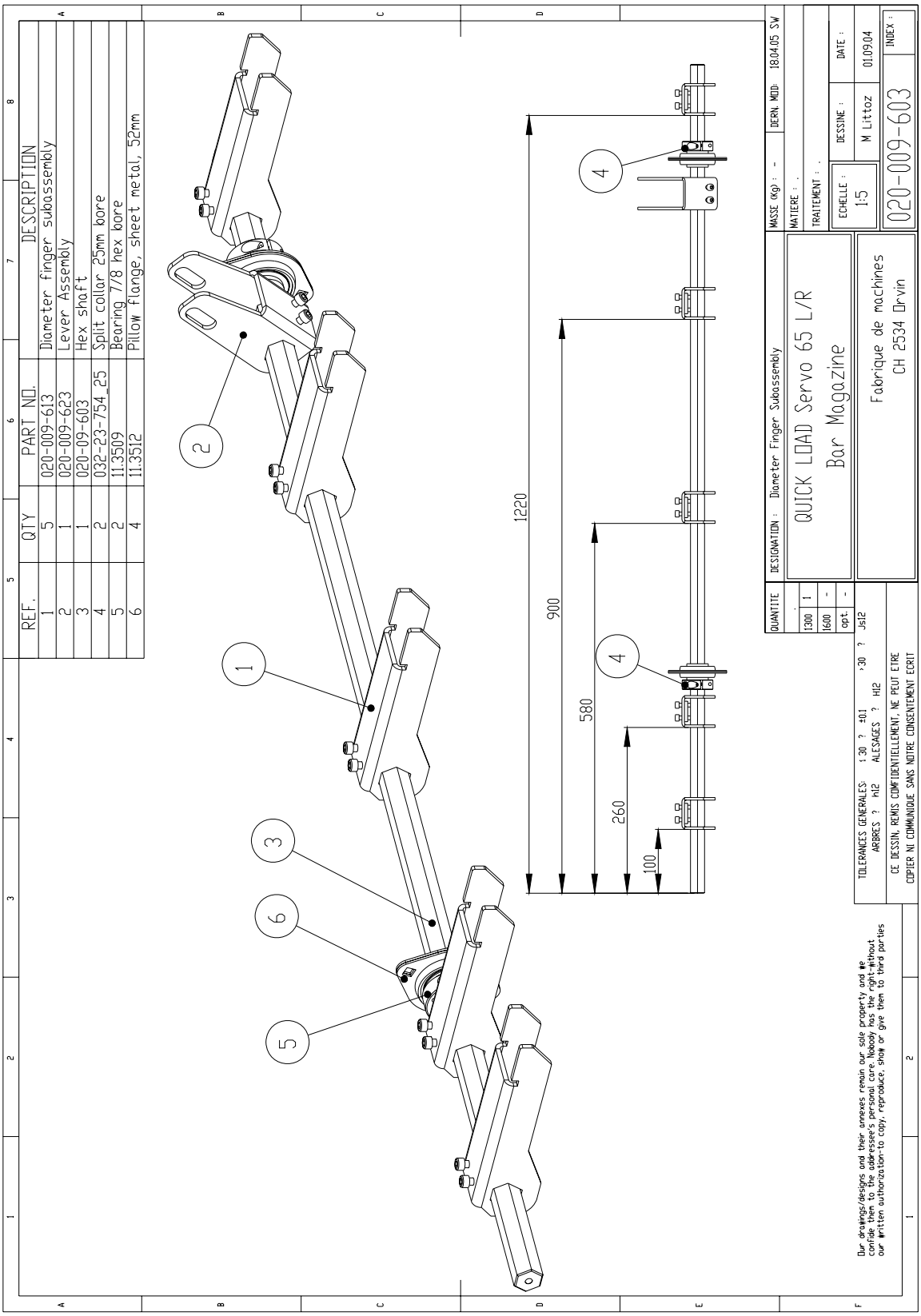


REF.	QTY	PART NO.	DESCRIPTION
1	1	020-009-713	Magnetic safety switch for magazine bar
2	2	020-02-614	Mounting shaft
3	1	020-09-211	Bar magazine 1300
4	2	020-09-221	Bar magazine position brace
5	4	020-09-233	Bar magazine ramp
6	1	020-09-311	Magazine protection cover 1300
7	2	020-09-324	Magazine cover washer
8	1	021-09-534	Sticker L/R
9	2	1.227	Rubber bumper for lid
10	1	110301	Index pin
11	2	125A.04	Flat washer 4mm
12	8	125B.06.Z	Flat washer 6mm
14	1	439B.1001	Jam Nut M10 x 1.0
15	12	7349.05	Heavy Washer 5mm
16	4	7349.06	Heavy Washer 6mm
17	8	7380.06.16	Button head cap screw M6x16
18	2	912.04.08.Z	Socket head cap screw M4x8
19	12	912.05.08.Z	Socket head cap screw M5x8
20	4	912.06.10.Z	Socket head cap screw M6x10
21	2	934.04.Z	Nut M4
22	2	985.06	Nylock nut M6

8.2 020.009.313 Diameter selection setup assembled

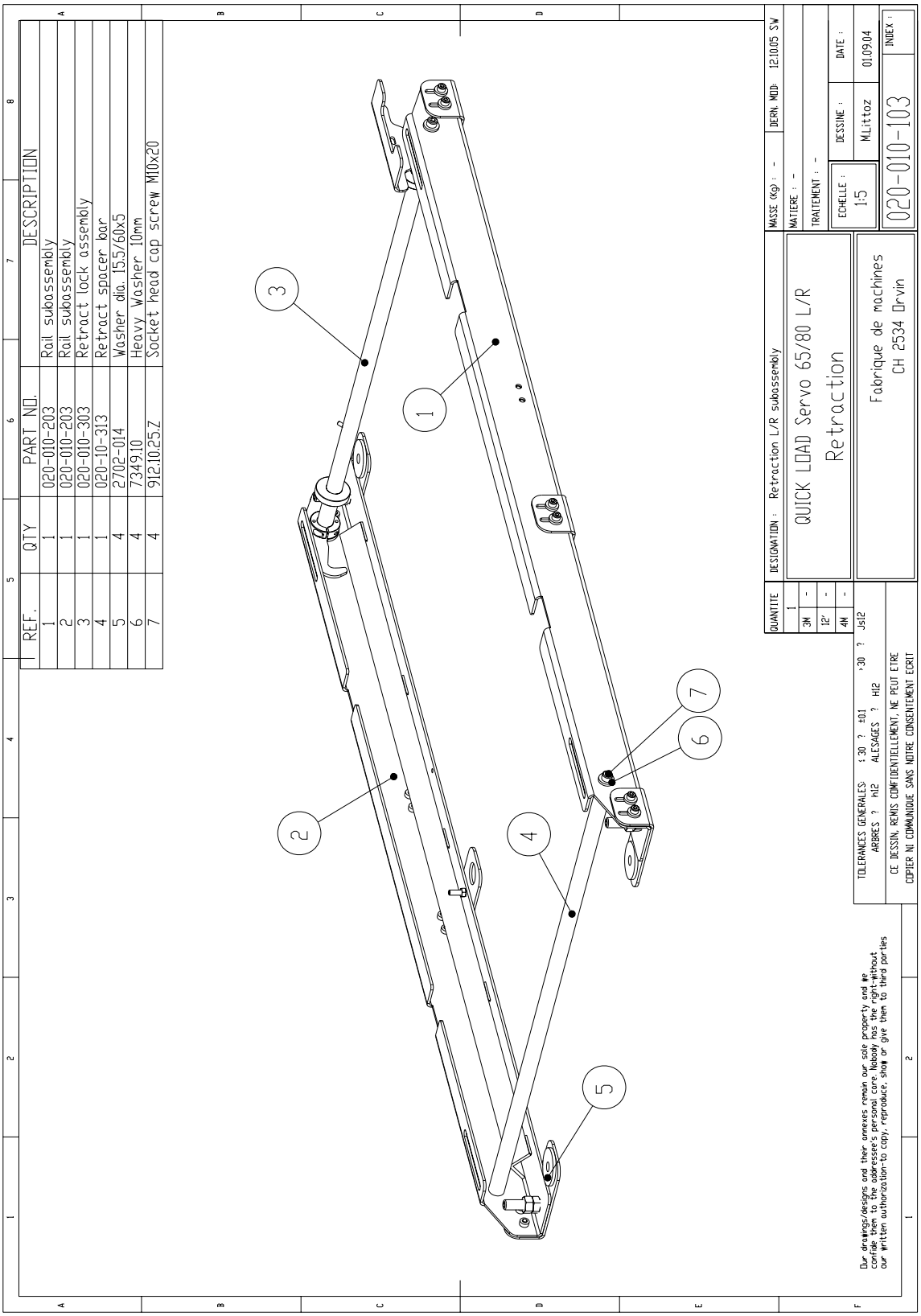


8.3 020.009.603 Sub-assembly shaft 1300 left/rear

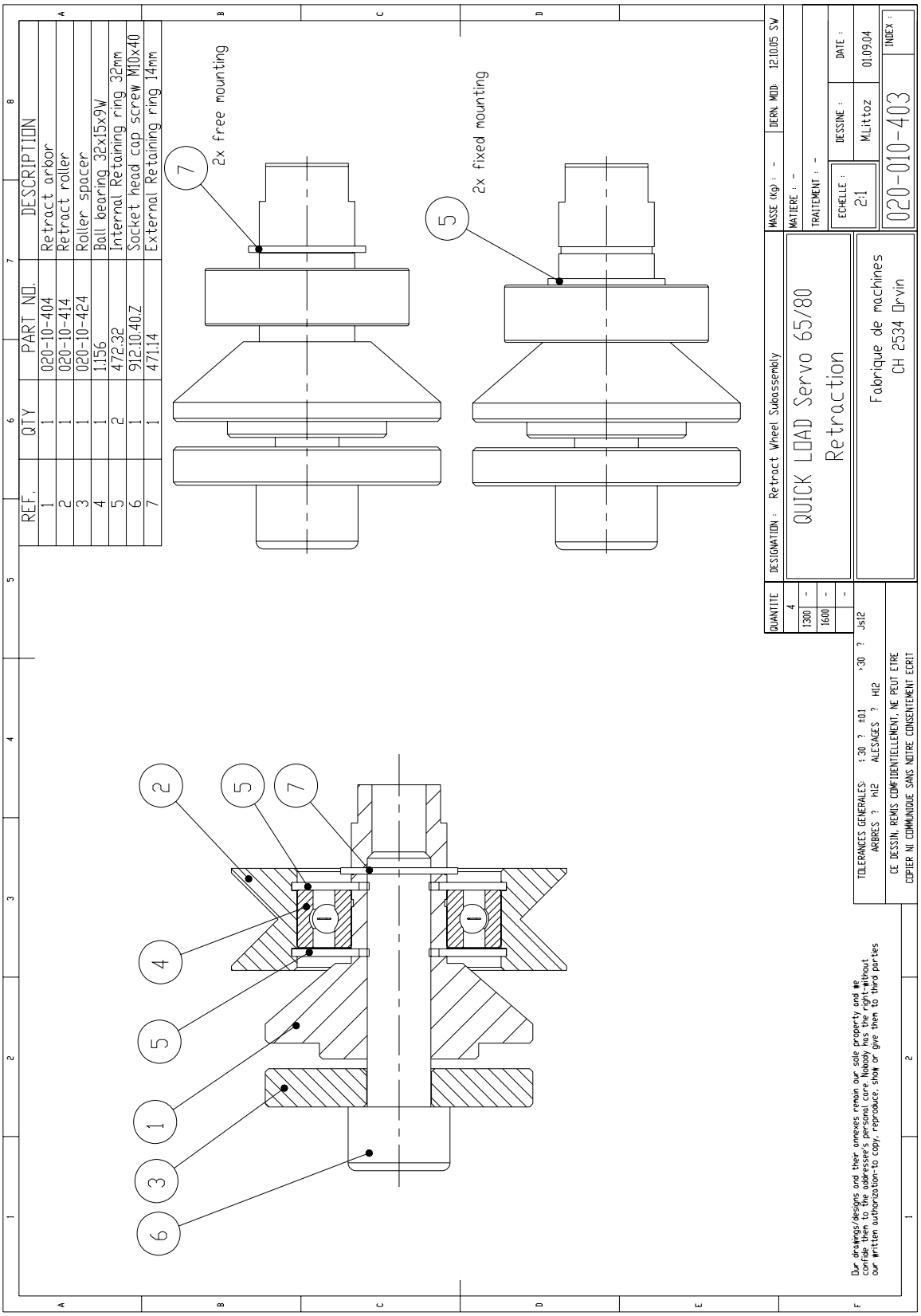


9. RETRACTION

9.1 020.010.103 Retraction left/rear assembled



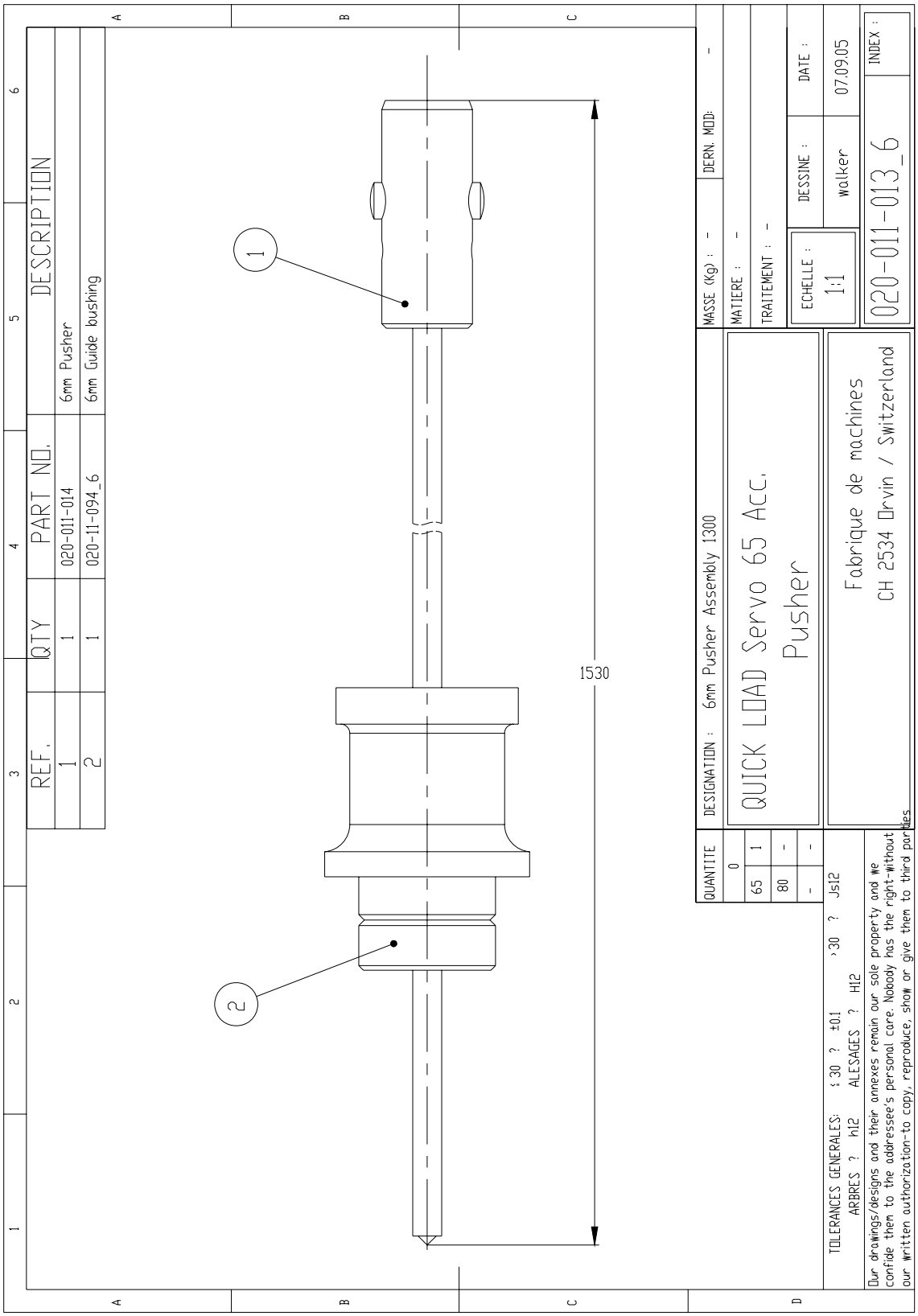
9.2 020.010.403 Sub-assembly retraction wheel



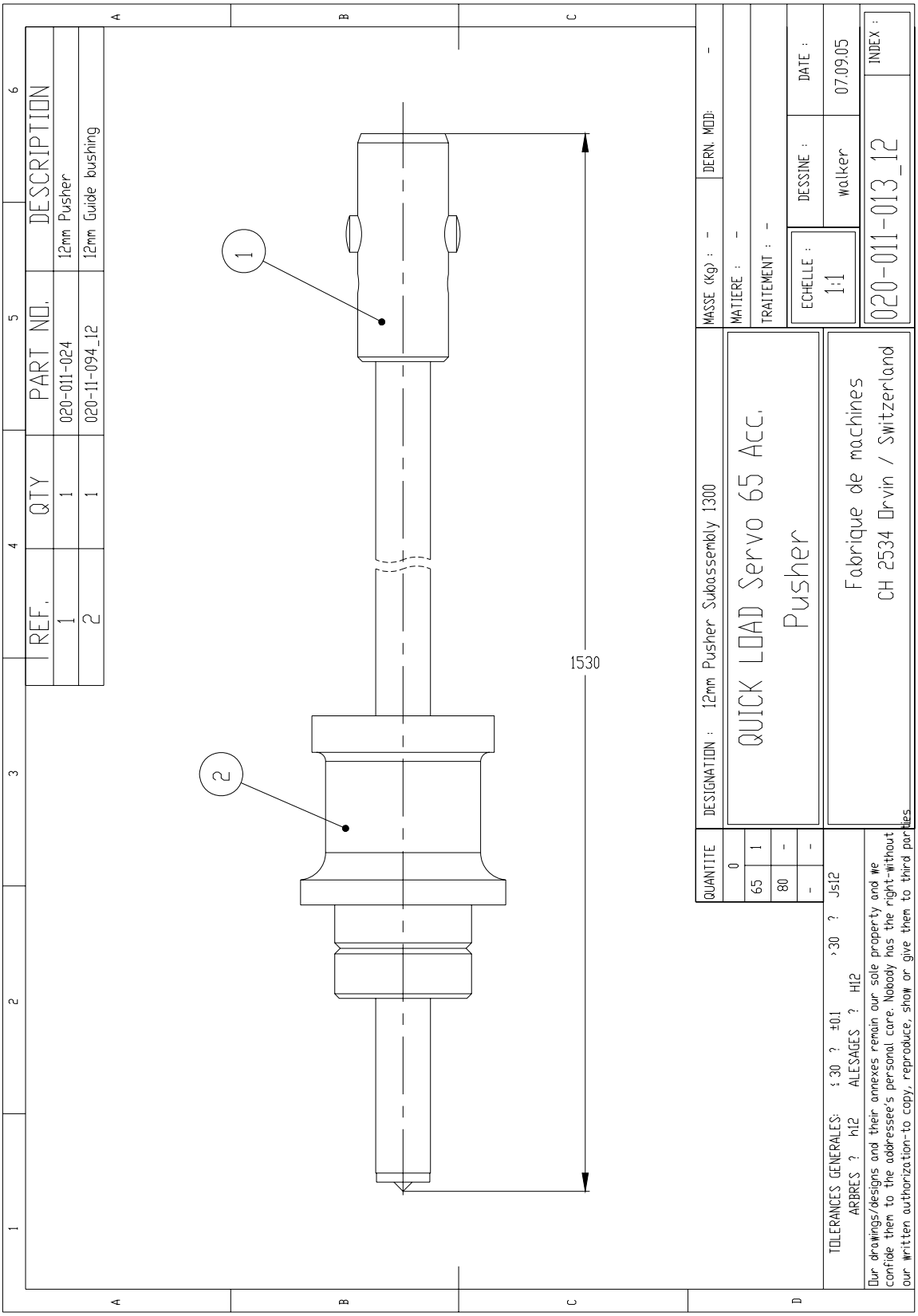
REF.	QTY	PART NO.	DESCRIPTION
1	1	020-10-404	Retract arbor
2	1	020-10-414	Retract roller
3	1	020-10-424	Roller spacer
4	1	1.156	Ball bearing 32x15x9W
5	2	472.32	Internal Retaining ring 32mm
6	1	912.10.40.Z	Socket head cap screw M10x40
7	1	471.14	External Retaining ring 14mm

10. PUSHER

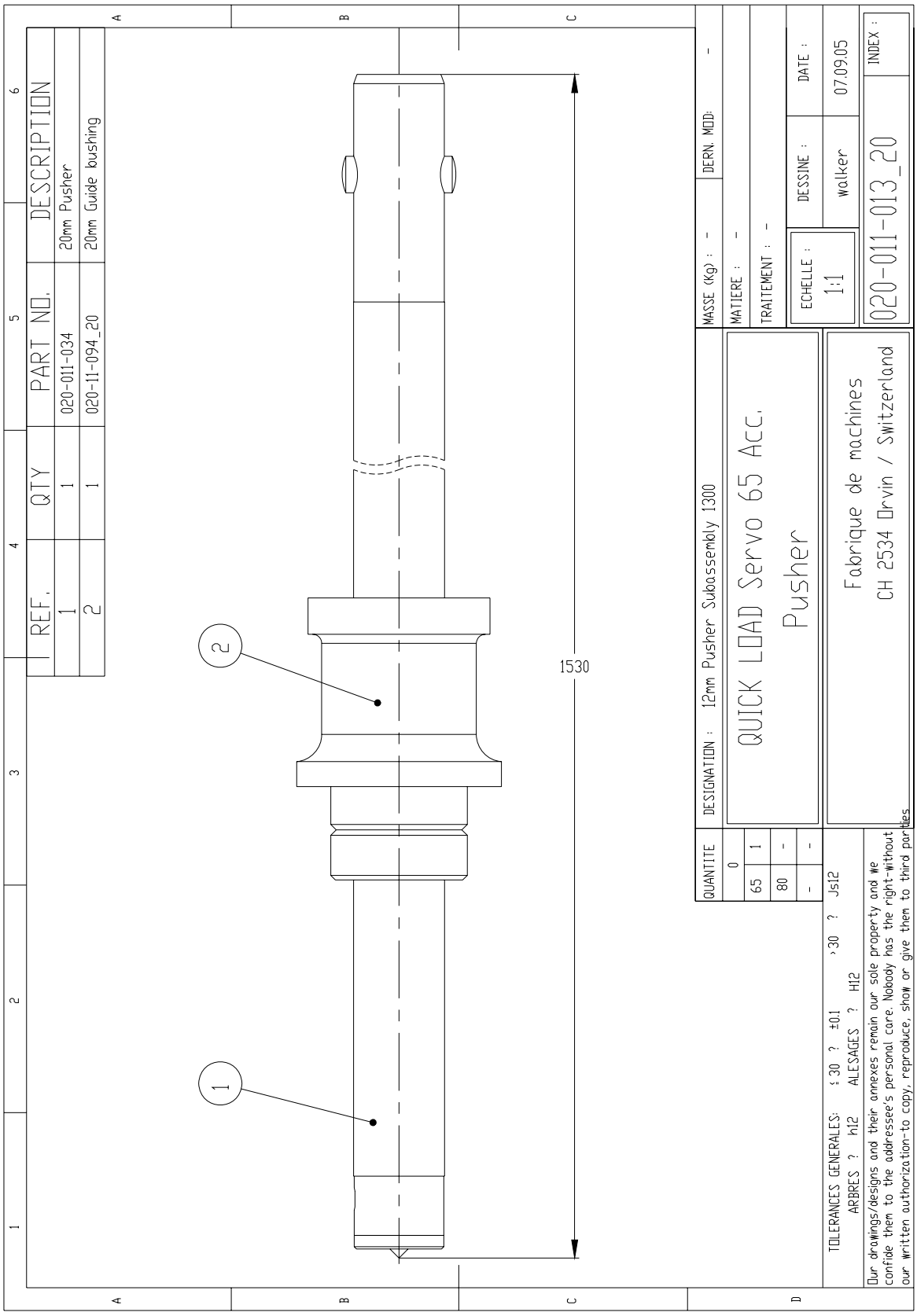
10.1 020.011.013 / 6 Assembly pusher ø1/4"



10.2 020.011.013 / 12 Assembly pusher ø12

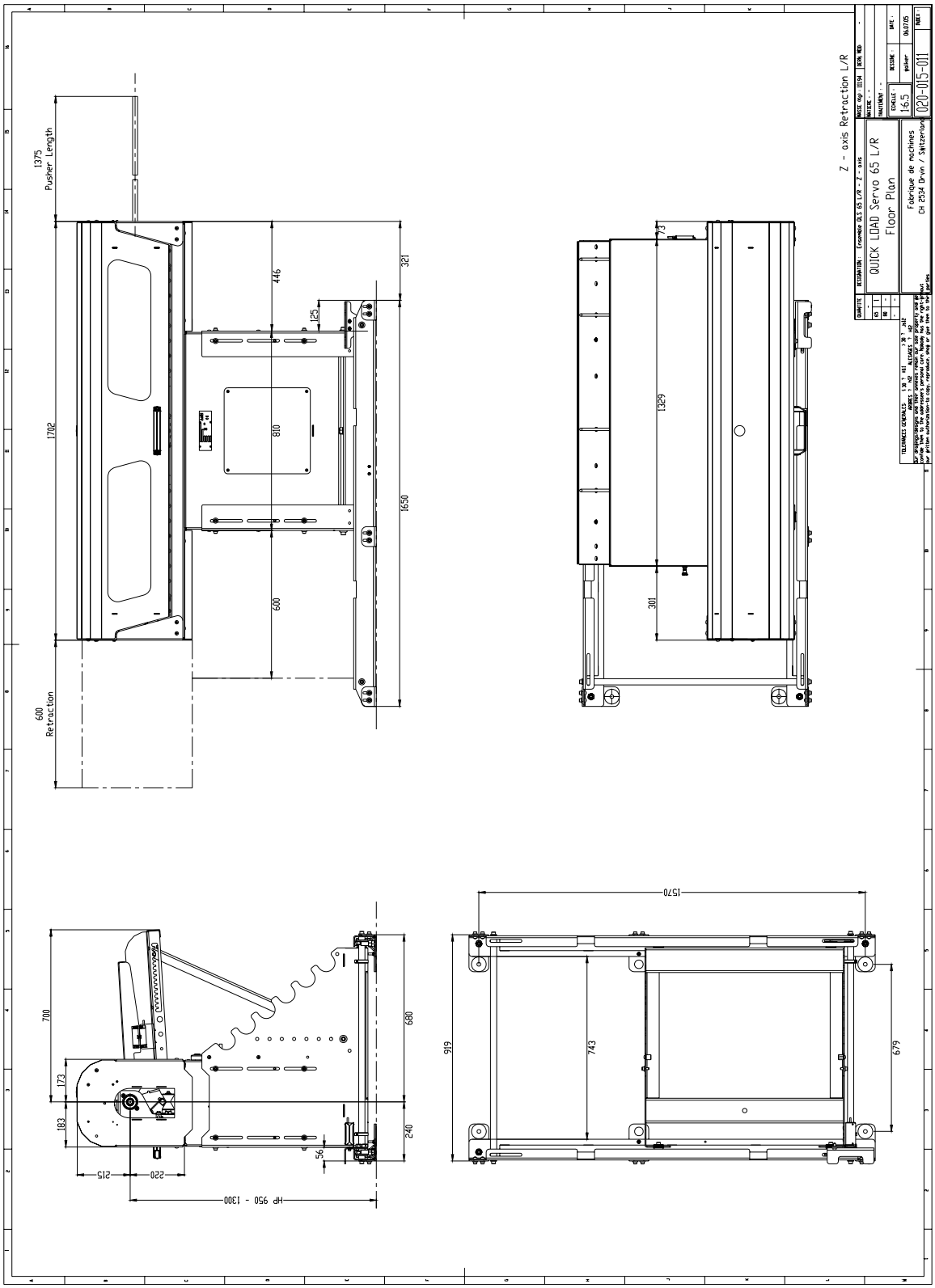


10.3 020.011.013 / 20 Assembly pusher ø20

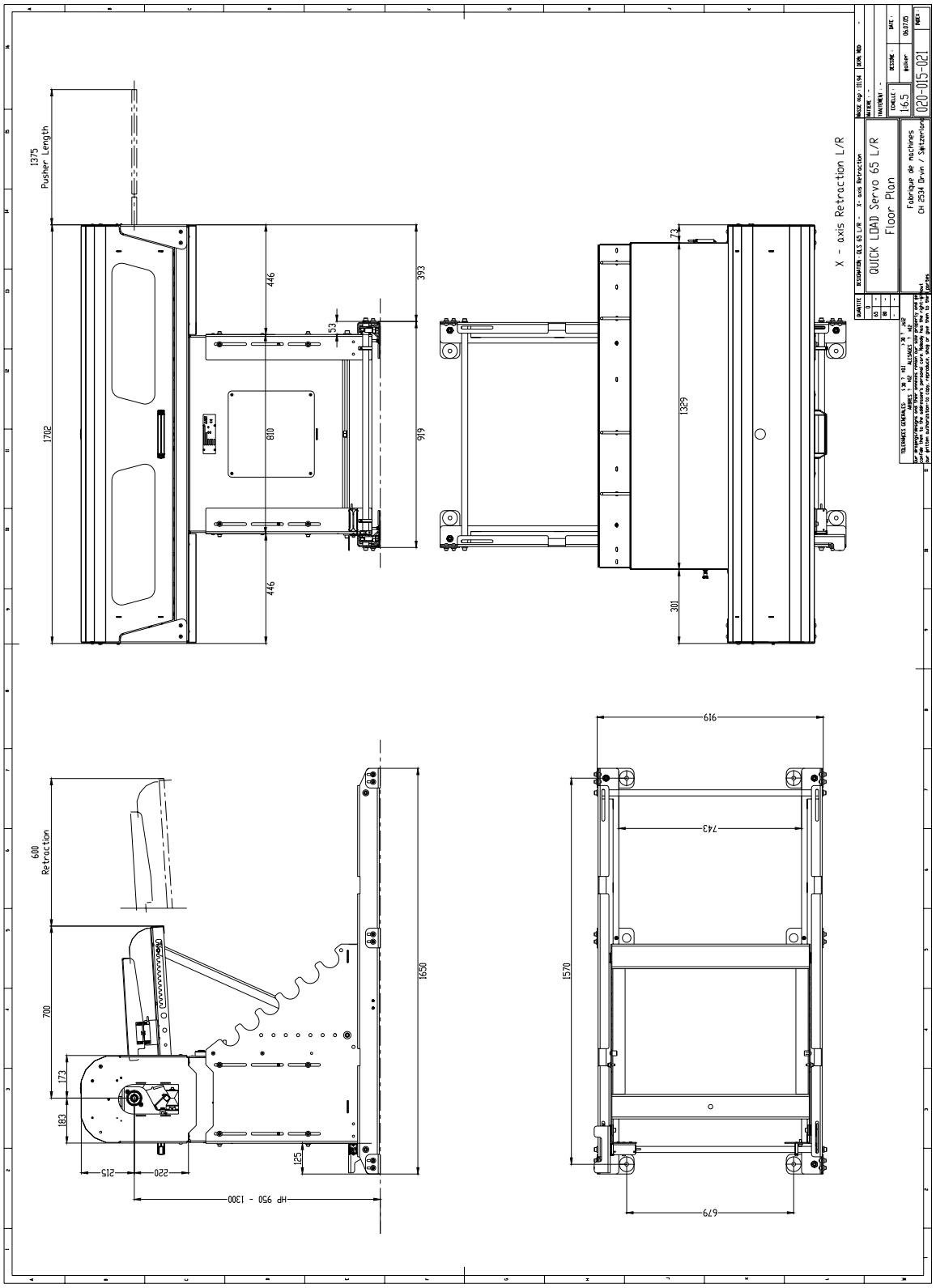


11. FLOOR PLANS

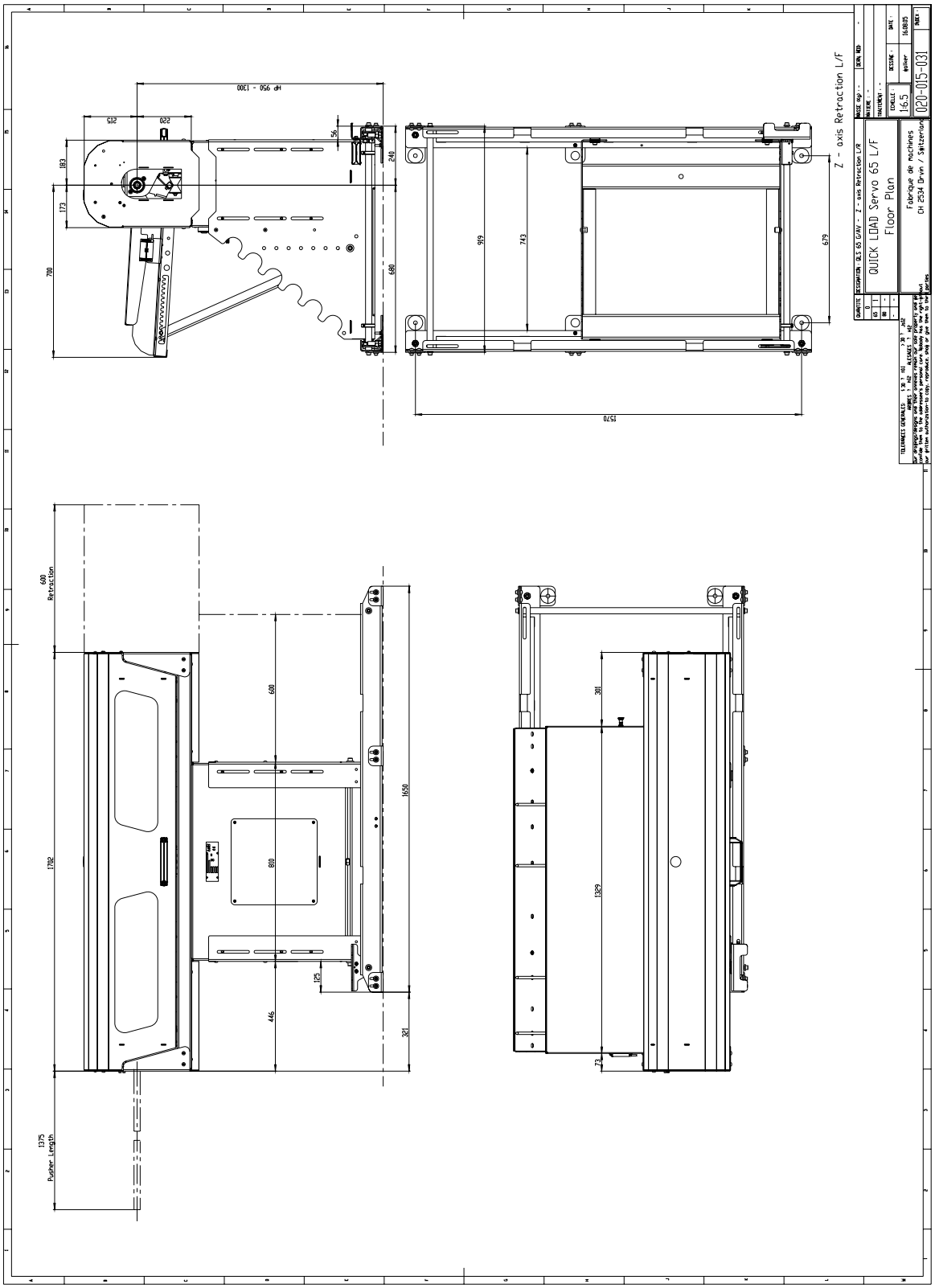
11.1 020.015.011 Assembly QLS 65 left/rear – Z - axis



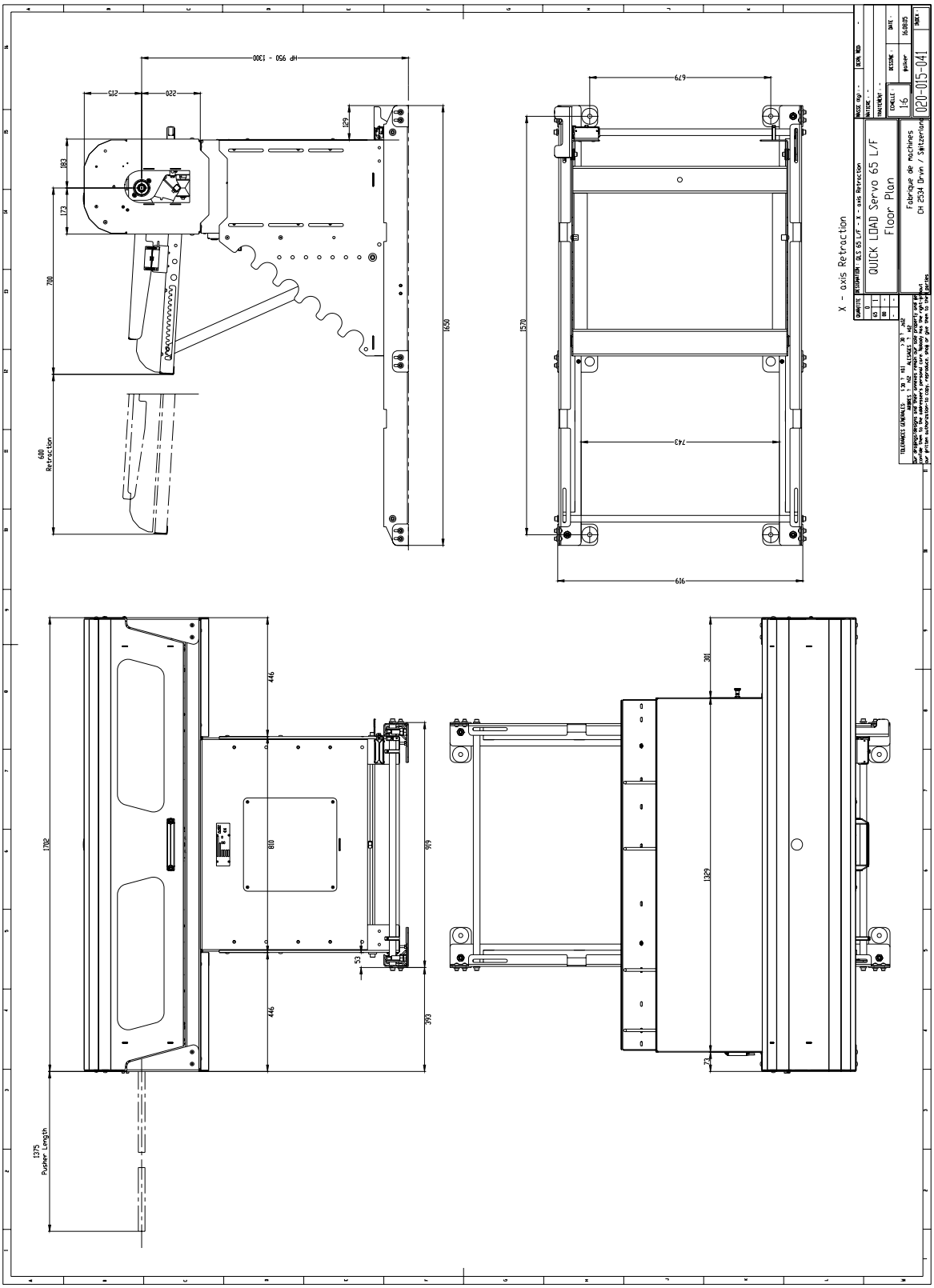
11.2 020.015.021 Assembly QLS 65 left/rear – X - axis



11.3 020.015.031 Assembly QLS 65 left/front – Z - axis



11.4 020.015.041 Assembly QLS 65 left/front – X - axis



APPENDICES

APPENDIX A:

PROGRAMMING EXAMPLE

MAIN PROGRAM

N... END OF BAR CHECK (PROGRAM JUMP) >

N... SPINDLE STOP

N... COOLANT OFF

N... TURRET TO FEED IN POSITION

N... COLLET OPEN

N... TURRET TO FEED OUT POSITION

N... ”M” CODE (PUSH COMMAND)

N... CLOSE COLLET

N... CLEAR TURRET

N...

PART PROGRAM

N... X, Z, G, F, T, S, M, ...

N... MACHINE PART

N... PARTS CATCHER IN (IF AVAILABLE)

N... CUT OFF

N... PARTS CATCHER OFF (IF AVAILABLE)

N...

N...

N... X, Z, G, F, T, S, M, ...

N...

N... END OF PROGRAM (LOOP)

> SUB-PROGRAM

N... TURRET HOME

... “M”CODE (DWELL/LOAD)

N... CLOSE COLLET

N... START SPINDLE

N... COLLANT ON

N... TOP CUT MATERIAL

N...

N...

N... END OF SUB-PROGRAM

< (RETURN TO MAIN PROGRAM)

Important: The above is an example only. Programming may change according to the interface between the lathe and the bar feed.

APPENDIX B:

ORDERING FORM

This form should be photocopied, duly filled out, and returned to your retailer or nearest LNS agent

Company name:

Person in charge:

Address:

ZIP: City :

Country:

Phone:

Fax:

Type of device:

Serial number:

Qty.	Ordering no.	Description

Expected delivery:

Location and date:

Signature and stamp of the company:

APPENDIX C:

LNS AGENCIES

BELGIQUE		
SL-TECH Industrial Automation & Services Avenue du Bois Jacquet 15 B - 7711 DOTTIGNIES	TEL. +32 56 845 699 FAX +32 56 845 609	stephane.leloup@sltech.be
DEUTSCHLAND		
MAW WERKZEUGMASCHINEN GMBH Industriestrasse 6 Postfach 60 01 64 D - 71050 SINDELFINGEN	TEL. +49 703 17 37 60 FAX +49 703 13 82 005	info@maw-gmbh.de www.maw-gmbh.de
DENMARK		
N.L. TOOLS Kuldyssen 13 I. Sal DK - 2630 TASTRUP	TEL. +45 43 71 17 29 FAX +45 43 71 23 59	nltools@vip.cybercity.dk
ESPANA / PORTUGAL		
ITALMATIC S.A. Paseo Donostia 82 POL. 26 CP 4 E - 20115 ASTIGARRAGA GUIPUZCOA	TEL. +34 943 33 56 33 FAX +34 943 33 55 65	italmatic@italmatic.es
FINLAND		
GROENBLOM AB P.O. Box 81 Mekaanikonkatu 6 FI - 00811 Helsinki	TEL. +35 89 755 8240 FAX +35 89 780 715	gronblom@gronblom.fi www.gronblom.fi
FRANCE		
LNS FRANCE Pae les Jourdies BP 355 St-Pierre en Faucigny F - 74807 LA ROCHE S/FORON CEDEX	TEL. +33 4 50 03 93 32 FAX +33 4 50 03 93 34	lnsfrance@lns.fr
GREAT BRITAIN		
LNS TURBO UK Limited Waterside Park, Valley Way Wombell Barnsley S73 0BB GREAT BRITAIN	TEL. +44 1226 27 00 33 FAX +44 1226 27 00 44	sales@lnsturbo.uk www.turbosystemsinc.com
HUNGARY		
Prevotex Hungary Kft. Lágymányosi út 6. 1111 BUDAPEST HUNGARY	TEL. +36 1 279 26 50 FAX +36 1 279 26 59	info@prevotex.hu www.prevotex.hu
INDIA		
TETRAMA CONSULT PVT LTD Flat 523, The Embassy 15, Ali Asker Road 560 052 BANGALORE INDIA	TEL. +91 80 220 48 87 FAX +91 80 220 23 37	contact@tetrama.com www.tetrama.com

ISRAEL		
M.T.M. Machine Tool Marketing Ltd. Habarzel Str. 31 P.O. Box 13334 61132 TEL AVIV / RAMAT-HACHAYAL ISRAEL	TEL. +97 23 647 9560 FAX +97 23 647 9578	sales@mtm.co.il www.mtm.co.il
ITALIA		
LNS AUTOMAZIONE S.R.L. Via Mons. Colombo 34 I - 21053 CASTELLANZA - VA	TEL. +39 0 331 501 901 FAX +39 0 331 482 101	lns@lnsautomazione.it
NORWAY		
VEMA BRYNILDSRUD Maskin As Postbox 114 Vestre Nes 2 1378 NESBRU NORWAY	TEL. +47 669 83 634 FAX +47 669 83 640	vema@vema.no www.vema.no
PHILIPPINES		
MESCO INC. P.O. Box 1688 MCPO 1256 MAKATI METRO MANILA PHILIPPINES	TEL. +632 631 17 75 FAX +632 631 40 28	
POLAND		
Prevotex Service Sp. z.o.o. ul. Brukselska 44/21A PL - 09-973 Warsawa	TEL. +48 22 672 91 81 FAX +48 22 616 55 81	info@prevotex.pl
SCHWEIZ / SUISSE / SVIZZERA		
LNS S.A. Case postale 33 CH - 2534 ORVIN	TEL. +41 / 32 358 02 00 FAX +41 / 32 358 02 01	service@lns-world.com
SOUTH AFRICA		
EDWIN ROTH & CO. LTD 6 Derrick Road Spartan 1620 KEMPTON PARK SOUTH AFRICA	TEL. +27 11 970 19 30 FAX +27 11 394 11 32	edwinroth@icon.co.za
SWEDEN		
AB BONTHRON & EWING Box 18 Gymnasievägen 2 18 621 VALLENTUNA SWEDEN	TEL. +46 8 514 307 60 FAX +46 8 514 307 61	info@bonthron-ewing.se www.bonthron-ewing.se
TAÏWAN		
FEDEK MACHINES Co. LTD. 13-10, Chi Nan Rd. Wujih Hsiang TAICHUNG SIEN	TEL. +88 642 335 49 20 FAX +88 642 335 49 29	www.fedek.com.tw
TCHECHISCHE REPUBLIK- SLOWAKEI		
MRG spol. sr.o. Jizni 57 37010 CESKE BUDEJOVICE TCHECHISCHE REPUBLIK	TEL. +420 386 321 829 FAX +420 386 222 702	

USA / CANADA / MEXICO

LNS AMERICA INC
4621 East Tech Drive
CINCINNATI, OHIO 45245
USA

TEL. +1 513 528 56 74
FAX +1 513 528 57 33

sales@lnsamerica.com
www.lnsamerica.com