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## Quick Load Servo III



LNS SA  
CH-2534 Orvin  
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## 1. ALARMS



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.

### 1.1. PLC alarms

#### AL01 - SAFETY LINE OPEN !

##### Description

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

##### Solutions

Check the states of the emergency stop buttons of barfeed and lathe.  
Check the wiring according to the  
Electrical drawings.  
Check the PLC connection.

#### AL02 - MAIN ACCESS COVER OPEN !

##### Description

The PLC does not detect the input (I2 – SQ10) of the safety switch on the main access cover. The problem is generated when the main access cover on the bar feeder is open, exposing automated mechanical parts.

##### Solutions

Close the main access cover.  
Check the switch SQ10.

#### AL03 - PROTECTION GRID OPEN !

##### Description

The PLC does not detect the input (I3 – SQ11) of the safety switch on the protection grid. The problem is generated when the protection grid on the bar feeder is open, exposing automated mechanical parts.

##### Solutions

Close the protection grid cover.  
Check the switch SQ11.

#### AL04 - BARFEEDER NOT IN WORKING POSITION !

##### Description

The PLC does not detect the input (I4 – SQ12) of the safety switch on the retraction system. The problem is generated when the barfeeder has not been brought into working position.

##### Solutions

Check the barfeeder position.  
Check the switch SQ12.

**AL05 -**

Not in use.

**AL06 - AIR PRESSURE TOO LOW !****Description**

The PLC does not detect input (I1 – SP1). The problem is generated anytime air pressure is not sufficient, below 3 bar or 45 psi, to make the air pressure switch.

**Solutions**

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

**AL07 -**

Not in use.

**AL08 -**

Not in use.

**AL09 -**

Not in use.

**AL10 - FAILURE ON SWITCH SQ1 !****Description**

The PLC does not detect input (I8 – SQ1).

**Solutions**

Check the switch SQ1.

**AL11 - FAILURE ON SWITCH SQ2 !****Description**

The PLC does not detect input (I9 – SQ2).

**Solutions**

Check the switch SQ2.

**AL12 - FAILURE WHILE LOADING TABLE MOVING UP !****Description**

A mechanical obstruction prevented the table from moving up.

**Solutions**

Check that there is no mechanical obstruction  
Check switches SQ1 and SQ2.

**AL13 - FAILURE ON SWITCH SQ1 !****Description**

The PLC does not detect input (I8 – SQ1).

**Solutions**

Check the switch SQ1.

**AL14 - FAILURE ON SWITCH SQ2 !****Description**

The PLC does not detect input (I9 – SQ2).

**Solutions**

Check the switch SQ2.

**AL15 - FAILURE WHILE LOADING TABLE MOVING DOWN !****Description**

A mechanical obstruction prevented the table from moving down.

**Solutions**

Check that there is no mechanical obstruction

Check switches SQ1 and SQ2.

**AL16 - FAILURE ON SWITCH SQ3 !****Description**

The PLC does not detect input (I10 – SQ3).

**Solutions**

Check the switch SQ3.

**AL17 - FAILURE ON SWITCH SQ4 OR MOTOR M2 !****Description**

The PLC does not detect input (I11 – SQ4).

**Solutions**

Check the switch SQ4.

Check the motor M2.

**AL18 - FAILURE ON SWITCH SQ5 !****Description**

The PLC does not detect input (I12 – SQ5).

**Solutions**

Check the switch SQ5.

**AL19 -**

Not in use.

**AL20 - OPTICAL SWITCH SQ3 ACTIVATED TOO SOON !****Description**

The "Optical switch activated too soon" alarm occurs when the PLC detects input (I10 – SQ3) before the safety maximum length has been reached during the bar stock length measuring.

**Solutions:**

Press the **STOP** key on the remote control to clear the message and reset the alarm.

Press the **MENU** key.

Choose the **SERVICE** item.

From the new menu, choose the **POSITION** item.

Press the key corresponding to **PAGE DOWN** as many times as necessary to display the text "**MAXIMUM BAR LENGTH**".

This value cannot exceed the spindle length. If necessary, correct this value.

Measure the bar stock. This bar length cannot exceed the value entered in the remote control.

**AL21 - EMPTY BAR MAGAZINE !****Description**

No bar has been detected in the bar feeder.

**Solutions**

Check for bar stocks on the barfeeder rack.

Load new bar stocks to continue production.

**AL22 - LOADING CYCLE INTERRUPTED !****Description**

The signal A2 has been lost.

**Solutions**

Check the connection lathe <-> barfeeder.

Check the wire of the signal A2 'lathe in auto mode'.

Check the part program in the lathe.

**AL23 - LOADING TIME ELAPSED !****Description**

The time allowed to reach the position has been exceeded.

**Solutions**

Remove the bar stock from the spindle.

Restart the top cut cycle.

Check the part settings.

**AL24 - LATHE DID NOT START IN PRODUCTION CYCLE !****Description**

The "Lathe did not start in production cycle" alarm occurs if the bar feed does not recognize the chuck signal input (I24 – A1) within 1 minute after reaching top-cut position.

**Solutions**

Alarm needs to be cleared. Press the **STOP** key on the remote control station to clear the message and reset the alarm. Restart the bar feeder and the lathe automatic cycle.

**AL25 - LATHE CHUCK OPENED DURING PRODUCTION CYCLE !****Description**

The signal A1 (lathe's chuck signal) has been detected at a wrong moment.

**Solutions**

Check the lathe program.

**AL26 - LATHE CHUCK CLOSED BEFORE END OF FEED OUT !****Description**

The signal A1 (lathe's chuck signal) has been lost before the end of the positioning.

**Solutions**

Check the lathe program.

Check the interfacing wiring.

**AL27 - PART FEED OUT TIME ELAPSED !****Description**

The time allowed to reach the position has been exceeded.

**Solutions**

The signal A1 is missing.

Check the presence of the closed clamping device signal, when it is closed.

Check the wiring of the clamping device signal A1.

**AL28 - M-CODE PART BEGIN NOT IN SYNC !****Description**

The parts counter and the chuck openings do not match.

**Solutions**

Check the lathe program.

Check the quantity of chuck openings per part.

**AL29 -**

Not in use.

**AL30 – DEFAULT ON TELESCOPIC PUSHER SYSTEM****Description**

An error has happened on the telescopic pusher system.

**Solutions**

Contact your LNS agent.

**AL31 -**

Not in use.

**AL32 -**

Not in use.

**AL33 -**

Not in use.

**AL34 -**

Not in use.

**AL35 -**

Not in use.

**AL36 -**

Not in use.

**AL37 – SERVO POSITIONING ERROR****Description**

There is a mechanical resistance preventing the barfeed from moving the pusher forward.

**Solutions**

Check for mechanical obstructions like bar stocks wrongly loaded, tools left in the unit, or incompatibility between the pusher and the spindle liner diameters.

**AL38 - CC-LINK COMMUNICATION FAULT !****Description**

There is a communication fault between the lathe and the barfeeder.

**Solutions**

Contact your LNS agent.

**AL39 - CUT OFF FEED FAULT !****Description**

The values do not match.

**Solutions**

Check length more than 0mm.  
Check length not more than 50mm.  
Check length not more than remnant length.  
Part ID must in 9990-9999 range.

**AL40 - BAR DETECTED IN SIMULATION MODE !****Description**

A bar has been detected in the bar feeder in simulation mode, which presents a hazard.

**Solutions**

Check that no bar stock is in the barfeeder.

**AL41 - PART ID DOES NOT EXIST !****Description**

Wrong part ID requested.

**Solutions**

Check the correct part ID was requested. Create part ID.

**AL42 - FILE READ ERROR !****Description**

File not readable.

**Solutions**

Check the file, if not able to load, delete and recreate.

**AL43 - INCORRECT PART CONFIGURATION !****Description**

Part requested does not match with current settings.

**Solutions**

Check the bar stock diameter and shape.

**AL44 - PART LOADING FAULT !****Description**

M-Code request parameter disabled.

**Solutions**

Check that the M Code request is active.

**AL45 - POSITIONING COULD NOT BE ACHIEVED !****Description**

An obstacle prevented the progress of the pusher.

**Solutions**

Remove any mechanical obstruction.

**AL46 - SERVO DRIVE NOT READY !****Description**

Communication between PLC and servo drive broken.

**Solutions**

Check that the cable CN1B is properly connected to the servo amplifier.

Check that the output for SON on the PLC is activated when the manual or auto cycle is started.

**AL47 - ALARM ON AMPLIFIER !****Description**

An alarm has been generated on the amplifier, in the electrical cabinet.

**Solutions**

Please refer to the CHAPTER 8: MALFUNCTIONS / MAINTENANCE, section 1.2. Servo amplifier alarms.

**AL48 - COMMUNICATION ERROR !****Description**

Communication between PLC and servo drive broken.

**Solutions**

Check the connection between the PLC and the amplifier.  
Check the 24VDC power supply for fluctuations of the voltage.

**AL49 - AMPLIFIER BATTERY LOW !****Description**

The battery level of the amplifier is low.

**Solutions**

Replace the battery as soon as possible. **Do not shut down the barfeeder until the battery has been replaced.**

**AL50 - AMPLIFIER FIRMWARE NOT COMPATIBLE !****Description**

The firmware of the servo drive is not compatible with the LNS software.

**Solutions**

The amplifier must be replaced. Please contact your LNS agent.

## 1.2. Servo amplifier alarms



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.

	Display	Alarm code (note 2)			Error name	Alarm deactivation		
		Pin CN1B-19	Pin CN1A-18	Power ON->OFF		Power ON->OFF	Press "SET" on the AMP	Needs ALM reset signal
Alarms	AL.10	0	1	0	Undervoltage	✓	✓	✓
	AL.12	0	0	0	Memory error 1	✓	-	-
	AL.13	0	0	0	Clock error	✓	-	-
	AL.15	0	0	0	Memory error 2	✓	-	-
	AL.16	1	1	0	Encoder error 1	✓	-	-
	AL.17	0	0	0	Board error	✓	-	-
	AL.19	0	0	0	Memory error 3	✓	-	-
	AL.1A	1	1	0	Motor combination error	✓	-	-
	AL.20	1	1	0	Encoder error 2	✓	-	-
	AL.24	1	0	0	Main circuit error	✓	-	-
	AL.25	1	1	0	Absolute position erase	✓	-	-
	AL.30	0	0	1	Regenerative error	✓	✓	✓
	AL.31	1	0	1	Overspeed	✓	✓	✓
	AL.32	1	0	0	Overcurrent	✓	✓	✓
	AL.33	0	0	1	Overvoltage	✓	-	-
	AL.35	1	0	1	Command pulse frequency error	✓	✓	✓
	AL.37	0	0	0	Parameter error	✓	-	-
	AL.45	0	1	1	Main circuit device overheat	✓	✓	✓
	AL.46	0	1	1	Servo motor overheat	✓	✓	✓
Warnings	AL.50	0	1	1	Overload 1	✓(note 1)	✓(note 1)	✓(note 1)
	AL.51	0	1	1	Overload 2	✓(note 1)	✓(note 1)	✓(note 1)
	AL.52	1	0	1	Error excessive	✓	✓	✓
	AL.8A	0	0	0	Serial comm. time-out error	✓	✓	✓
	AL.8E	0	0	0	Serial communication error	✓	✓	✓
	88888	0	0	0	Watchdog	✓	-	-
	AL.90				Home position return incomplete	Removing the cause of occurrence deactivates the alarm automatically.		
	AL.92				Open battery cable warning			
	AL.96				Home position setting warning			
	AL.98				Software limit warning			
	AL.9F				Battery warning			
	AL.E0				Excessive regenerative warning			
	AL.E1				Overload warning			
	AL.E3				Absolute position counter warning			
	AL.E6				Servo emergency stop warning			
	AL.E9				Main circuit off warning			

Note 1: To deactivate the alarm, allow 30 minutes of cooling time after removing the cause of occurrence.

Note 2: 0 = off / 1 = on

### 1.3. Alarms cause and solutions

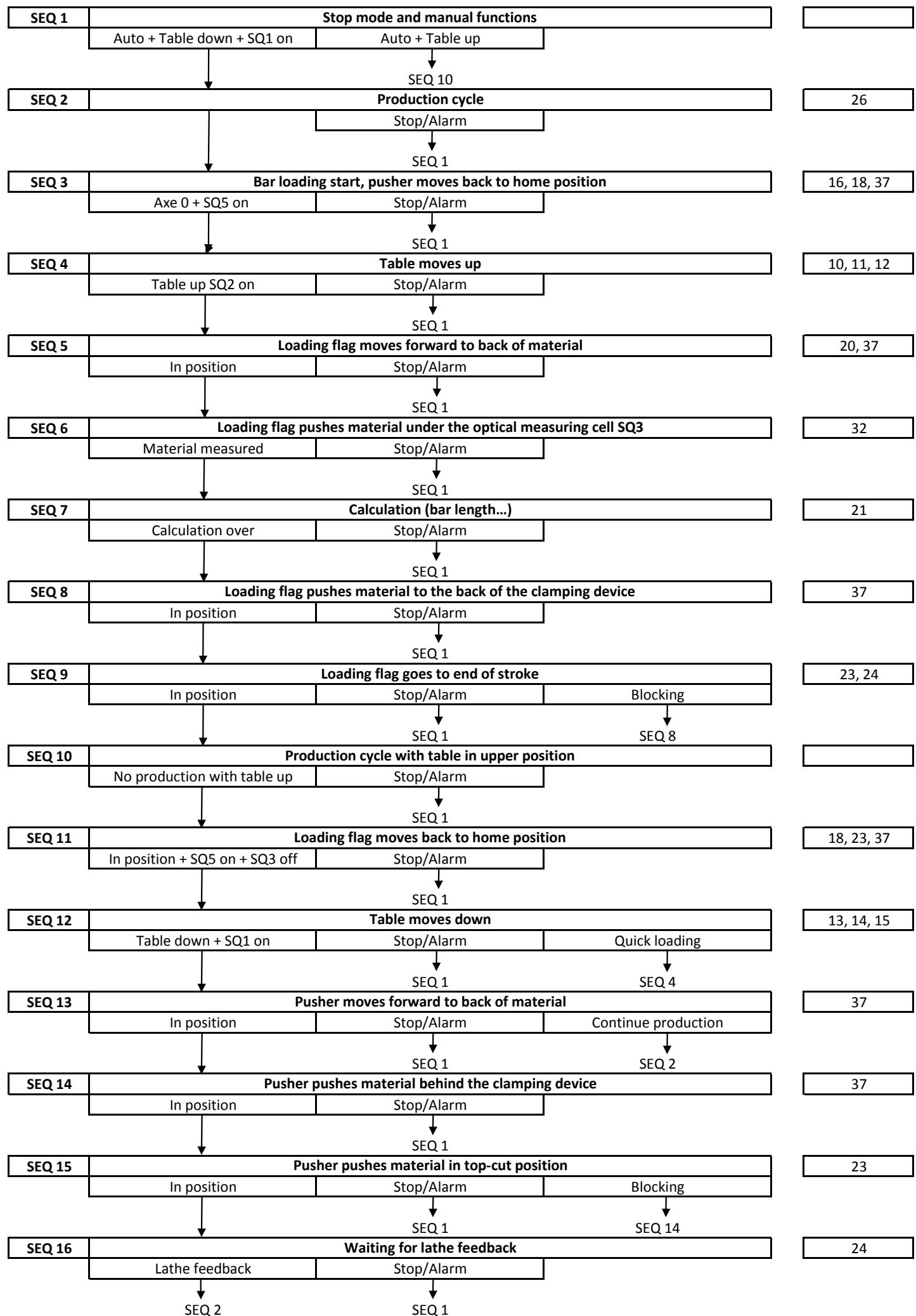
Display	Error name	Definition	Cause	Action
AL.10	Undervoltage	Power supply voltage dropped. MR J2S-CP:160V or less MR J2S-CP1:83V or less	1. Power supply voltage is low 2. There was an instantaneous control power failure of 60 ms or longer 3. Shortage of power supply capacity caused the power supply voltage to drop at start, etc. 4. Faulty parts in the amplifier	Review the power supply Replace the amplifier
AL.12	Memory error 1	RAM, memory fault	Faulty parts in the amplifier	Replace the amplifier
AL.13	Clock error	Printed board fault	Faulty parts in the amplifier	Replace the amplifier
AL.15	Memory error 2	EEP-ROM fault	Faulty parts in the amplifier	Replace the amplifier
AL.16	Encoder error 1	Communication error occurred between encoder and servo amplifier	1. Encode connector (CN2) disconnected 2. Encoder fault 3. Encoder cable faulty	Connect correctly Replace the servo motor Replace the cable
AL.17	Board error	CPU/parts fault	Faulty parts in the amplifier	Replace the amplifier
AL.19	Memory error 3	ROM memory error	Faulty parts in the amplifier	Replace the amplifier
AL.1A	Motor combination error	Combination error between the motor and the amplifier	Combination error between the motor and the amplifier	Use a correct combination
AL.20	Encoder error 2	Communication error between the motor and the amplifier	1. Encode connector (CN2) disconnected 2. Encoder error 3. Encoder cable faulty	Connect correctly Replace the servo motor Replace the cable
AL.24	Main circuit error	Ground fault occurred at the servo motor outputs (U, V and W phases) of the servo amplifier.	1. Power input wires and servo motor output wires are in contact at main circuit terminal block (TE1). 2. Sheathes of servo motor power cables deteriorated, resulting in ground fault. 3. Main circuit of servo amplifier failed. Checking method AL.24 occurs if the servo is switched on after disconnecting the U, V, W power cables from the servo amplifier.	Connect correctly Replace the cable Replace the amplifier
AL.25	Absolute position erase	Absolute position data in error	1. Reduced voltage of super capacitor in encoder 2. Battery voltage low 3. Battery cable or battery is faulty.	After leaving the alarm occurring for a few minutes, switch power off, then on again. Always make home position setting again. Change battery. Always make home position setting again.
		Power was switched on for the first time in the absolute position detection system.	4. Super capacitor of the absolute position encoder is not charged	After leaving the alarm occurring for a few minutes, switch power off, then on again. Always make home position setting again.

Display	Error name	Definition	Cause	Action
AL.30	Regenerative alarm	Permissible regenerative power of the built-in regenerative brake resistor or regenerative brake option is exceeded.  Checking method Call the status display and check the regenerative load ratio.	1. Wrong setting of parameter No. 0	Set correctly the parameter no. 0
			2. Built-in regenerative brake resistor or regenerative brake option is not connected.	Connect correctly
			3. High-duty operation or continuous regenerative operation caused the permissible regenerative power of the regenerative brake option to be exceeded.  Checking method Call the status display and check the regenerative load ratio.	1. Reduce the frequency of positioning. 2. Use the regenerative brake option of larger capacity. 3. Reduce the load.
			4. Power supply voltage is abnormal. MR-J2S- CP:260V or more MR-J2S- CP1:135V or more	Review the power supply
			5. Built-in regenerative brake resistor or regenerative brake option faulty.	Replace the amplifier
	Regen transistor fault		6. Regen transistor faulty.	Replace the amplifier
AL.31	Overspeed	Speed has exceeded the instantaneous permissible speed.	1. Input command pulse frequency exceeded the permissible instantaneous speed frequency.	Set correctly the pulse frequency
			2. Small acceleration /deceleration time constant caused overshoot to be large	Raise the time value
			3. Servo system is instable to cause overshoot.	Reset the servo gain
			4. Electronic gear ratio is large (parameters No. 4, 5)	Set correctly
			5. Encoder faulty.	Replace the servo motor
AL.32	Overcurrent	Current that flew is higher than the permissible current of the servo amplifier.	1. Short occurred in servo amplifier output phases U, V and W.	Correct the wiring
			2. Transistor (IPM) of the servo amplifier faulty.  Checking method Alarm (AL.32) occurs if power is switched on after U,V and W are disconnected.	Replace the amplifier
			3. Ground fault occurred in servo amplifier output phases U, V and W.	Correct the wiring
			4. External noise caused the overcurrent detection circuit to misoperate.	Take noise suppression measures.
AL.33	Overvoltage	Converter bus voltage exceeded 400V.	1. Lead of built-in regenerative brake resistor or regenerative brake option is open or disconnected.	1. Change lead. 2. Connect correctly.
			2. Regenerative transistor faulty.	Replace the amplifier
			3. Wire breakage of built-in regenerative brake resistor or regenerative brake option	Replace the amplifier
			4. Capacity of built-in regenerative brake resistor or regenerative brake option is insufficient.	Add regenerative brake option or increase capacity.
			5. Power supply voltage high.	Review the power supply

Display	Error name	Definition	Cause	Action
AL.35	Command pulse frequency error	Input pulse frequency of the command pulse is too high.	1. Pulse frequency of the manual pulse generator is too high.	Change the pulse frequency to a proper value.
			2. Noise entered the pulses of the manual pulse generator.	Take action against noise.
			3. Manual pulse generator failure	Change the manual pulse generator.
AL.37	Parameter error	Parameter setting is wrong.	1. Servo amplifier fault caused the parameter setting to be rewritten.	Replace the amplifier
			2. Regenerative brake option not used with servo amplifier was selected in parameter No.0.	Set parameter No.0 correctly.
AL.45	Main circuit device overheating	Main circuit device overheating	1. Servo amplifier faulty.	Change the servo amplifier.
			2. The power supply was turned on and off continuously by overloaded status.	The drive method is reviewed.
			3. Air cooling fan of servo amplifier stops.	1. Exchange the cooling fan or the servo amplifier. 2. Reduce ambient temperature.
AL.46	Servo motor overheating	Servo motor temperature rise actuated the thermal protector.	1. Ambient temperature of servo motor is over 40 .	Review environment so that ambient temperature is 0 to 40.
			2. Servo motor is overloaded.	1. Reduce load. 2. Review operation pattern. 3. Use servo motor that provides larger output.
			3. Thermal protector in encoder is faulty.	Replace the servo motor
AL.50	Overload 1	Load exceeded overload protection characteristic of servo amplifier.  Load ratio 300%: 2.5s or more  Load ratio 200%: 100s or more	1. Servo amplifier is used in excess of its continuous output current.	1. Reduce load. 2. Review operation pattern. 3. Use servo motor that provides larger output.
			2. Servo system is instable and hunting.	1. Repeat acceleration/deceleration to execute auto tuning. 2. Change auto tuning response setting. 3. Set auto tuning to OFF and make gain adjustment manually.
			3. Machine struck something.	1. Review operation pattern. 2. Install limit switches.
			4. Wrong connection of servo motor.  Servo amplifier's output terminals U, V, W do not match servo motor's input terminals U, V, W.	Connect correctly
			5. Encoder faulty.  Checking method When the servo motor shaft is rotated with the servo off, the cumulative feedback pulses do not vary in proportion to the rotary angle of the shaft but the indication skips or returns midway.	Replace the servo motor

Display	Error name	Definition	Cause	Action
AL.51	Overload 2	Machine collision or the like caused max. output current to flow successively for several seconds. Servo motor locked: 1s or more	1. Machine struck something.  2. Wrong connection of servo motor. Servo amplifier's output terminals U, V, W do not match servo motor's input terminals U, V, W.  3. Servo system is instable and hunting.	1. Review operation pattern. 2. Install limit switches.  Connect correctly.  1. Repeat acceleration/deceleration to execute auto tuning. 2. Change auto tuning response setting. 3. Set auto tuning to OFF and make gain adjustment manually.
			4. Encoder faulty. Checking method When the servo motor shaft is rotated with the servo off, the cumulative feedback pulses do not vary in proportion to the rotary angle of the shaft but the indication skips or returns midway.	Replace the servo motor
AL.52	Error excessive	The droop pulse value of the deviation counter exceeded the encoder resolution 10 [pulse].	1. Acceleration / deceleration time constant is too small.  2. Internal torque limit 1 (parameter No.28) is too small.  3. Motor cannot be started due to torque shortage caused by power supply voltage drop.  4. Position control gain 1 (parameter No.7) value is small.  5. Servo motor shaft was rotated by external force.  6. Machine struck something.  7. Encoder faulty	Increase the acceleration / deceleration time constant.  Increase the torque limit value.  1. Review the power supply capacity. 2. Use servo motor which provides larger output.  Increase set value and adjust to ensure proper operation.  1. Check the 2. Reduce load. 3. Use servo motor that provides larger output.  1. Review operation pattern. 2. Install limit switches.  Change the servo motor.
			8. Wrong connection of servo motor. Servo amplifier's output terminals U, V, W do not match servo motor's input terminals U, V, W.	Connect correctly.
AL.8A	Serial communication time-out error	RS-232C or RS-422 Communication stopped for longer than the time set in parameter No.23.	1. Communication cable breakage.  2. Communication cycle longer than parameter No. 23 setting.  3. Wrong protocol.	Repair or change communication cable  Set correct value in parameter.  Correct protocol.
AL.8E	Serial communication error	Serial communication error occurred between servo amplifier and communication device (e.g. personal computer).	1. Communication cable fault (Open cable or short circuit)  2. Communication device (e.g. personal computer) faulty	Replace the cable  Change the communication device (e.g. personal computer).
88888	Watchdog	CPU, parts faulty	Faulty parts in the amplifier	Replace the amplifier

Display	Error name	Definition	Cause	Action
AL.90	Home position return incomplete	In incremental system: 1. Positioning operation was performed without home position return. 2. Home position return ended abnormally.	1. Positioning operation was performed without home position return. 2. Home position return speed could not be decreased to creep speed. 3. Limit switch was actuated during home position return starting at other than position beyond dog.	1. Perform home position return. 2. Review home position return speed / creep speed / moving distance after proximity dog.
		In absolute position detection system: 1. Positioning operation was performed without home position setting. 2. Home position setting ended abnormally.	1. Positioning operation was performed without home position setting. 2. Home position setting speed could not be decreased to creep speed. 3. Limit switch was actuated during home position setting starting at other than position beyond dog.	1. Perform home position setting. 2. Review home position setting Speed / creep speed / moving distance after proximity dog.
AL.92	Open battery cable warning	Absolute position detection system battery voltage is low.	1. Battery cable is open.  2. Battery voltage drop to 2.8V or less.	Repair cable or changed.  Change battery.
AL.96	Home position setting warning	Home position setting could not be made.	1. Droop pulses remaining are greater than the in-position range setting  2. Command pulse entered after clearing of droop pulses.  3. Creep speed high.	Remove the cause of droop pulse occurrence  Do not enter command pulse after clearing of droop pulses.  Reduce creep speed.
AL.98	Software limit warning	Software limit set in parameter is reached.	1. Software limit was set within actual operation range.  2. Point table of position data in excess of software limit was executed.  3. Software limit was reached during JOG operation or manual pulse generator operation.	Set parameter No. 48 to 51 correctly.  Set point table correctly.  Perform operation within software limit range.
AL.9F	Battery warning	Voltage of battery for absolute position detection system reduced.	Battery voltage fell to 3.2V or less.	Change the battery.
AL.E0	Excessive regenerative warning	There is a possibility that regenerative power may exceed permissible regenerative power of built-in regenerative brake resistor or regenerative brake option.  Checking method Call the status display and check regenerative load ratio.	Regenerative power increased to 85% or more of permissible regenerative power of built-in regenerative brake resistor or regenerative brake option.  Checking method Call the status display and check regenerative load ratio.	1. Reduce frequency of positioning. 2. Change regenerative brake option for the one with larger capacity. 3. Reduce load.
AL.E1	Overheat warning	There is a possibility that overload alarm 1 or 2 may occur.	Load increased to 85% or more of overload alarm 1 or 2 occurrence level.  Cause, checking method Refer to AL.50,51.	Refer to AL.50, AL.51.
AL.E3	Absolute position counter warning	Absolute position encoder pulses faulty.	1. Noise entered the encoder.  2. Encoder faulty.	Take noise suppression measures.  Change servo motor.
AL.E6	Servo emergency stop warning	EMG-SG are open.	External emergency stop was made valid. (EMG-SG opened.)	Ensure safety and deactivate emergency stop.
AL.E9	Main circuit off warning	Servo was switched on with main circuit power off.		Switch on main circuit power.



## 1. SAFETY DEVICES

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

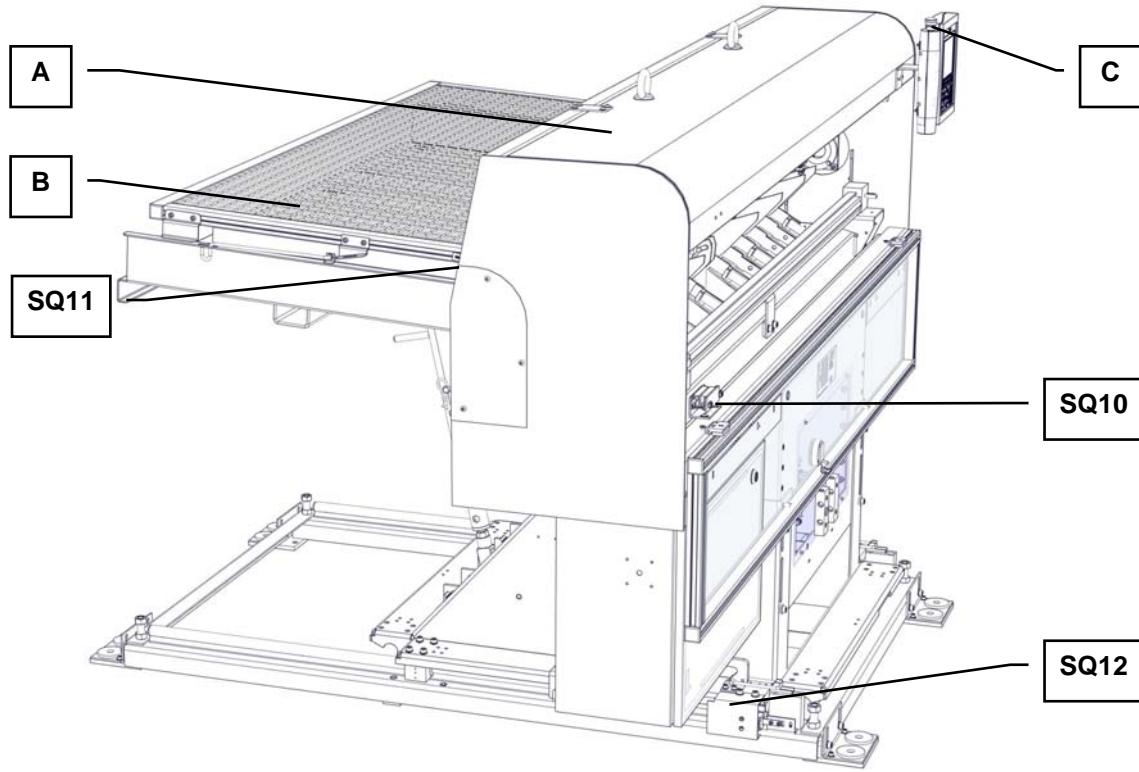
Safety covers and devices make access to the moving parts of the bar feed system impossible. Safety switches keep the bar feed system from operating when these protections are open.

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



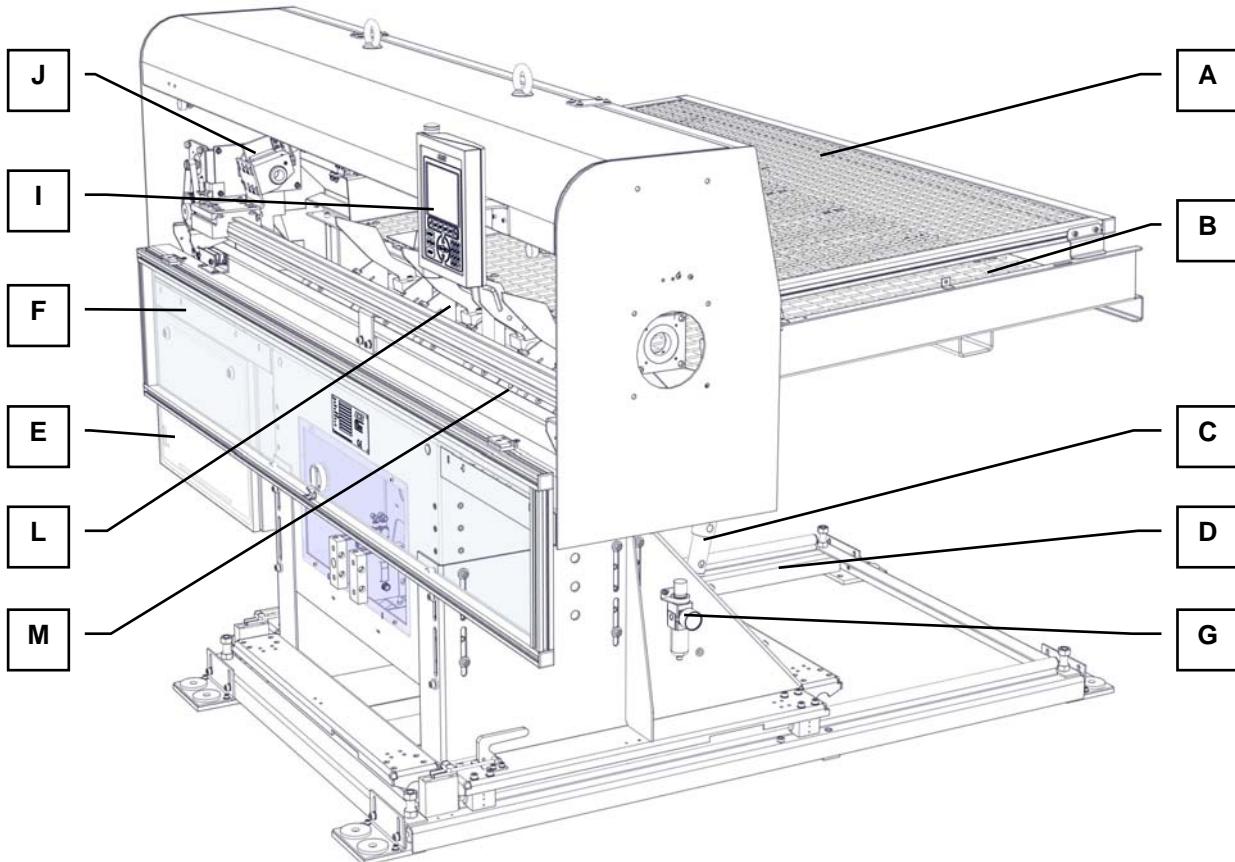
The LNS company, or its local representative, may not be held responsible for possible accidents or property damage, whether caused directly or not, by any means whatsoever, if certain safety devices have not been included.

### 1.1. Layout



Designation	Description
A	Main access cover
B	Protection grid for magazine table
C	Emergency Stop push button (not shown here)
SQ10	Safety switch for main access cover
SQ11	Safety switch for magazine protection grid
SQ12	Safety switch for retraction device (in position switch)

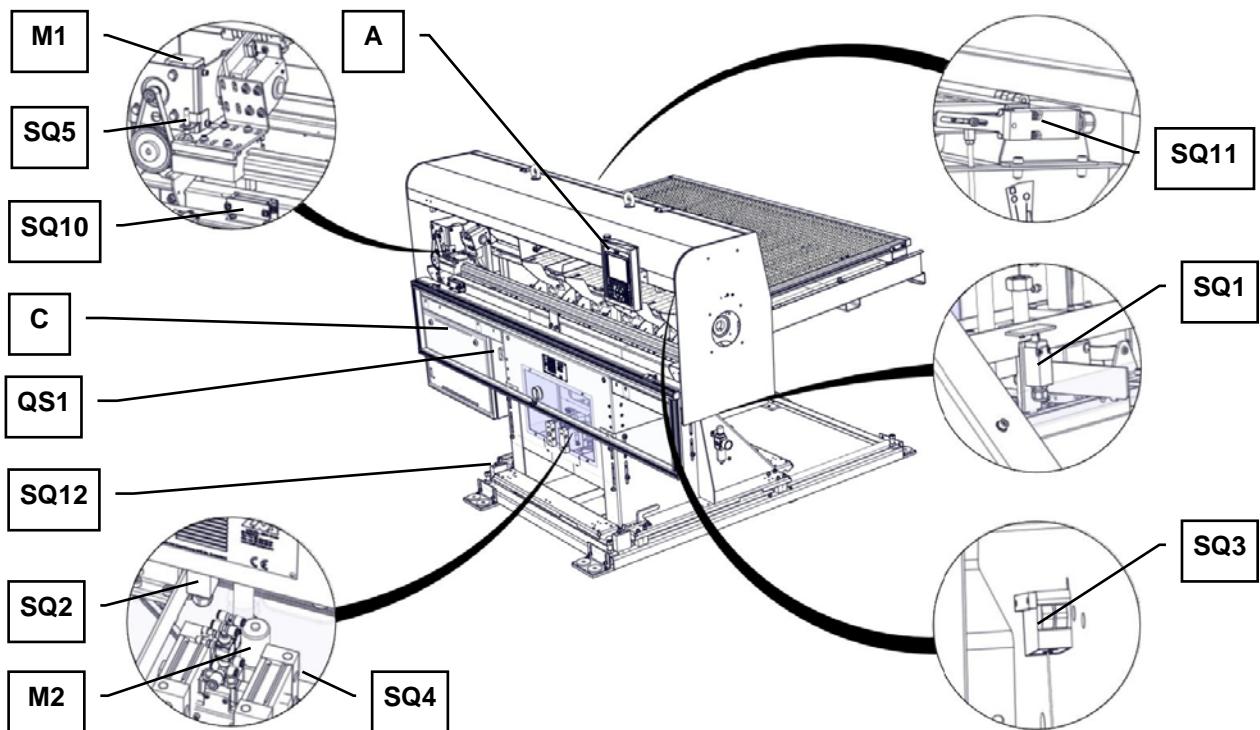
## 2. LAYOUT OF THE ELEMENTS



Designation	Description
A	Protection grid for magazine table
B	Loading magazine
C	Loading table support
D	Retraction system
E	Electrical control
F	Main access cover
G	Air filtering unit
H	Interface plug (acc. to OEM requirements) (not shown here)
I	Remote control
J	Carrier
K	Feeding pusher (not shown here)
L	Loading table
M	Loading fingers

### 3. ELECTRICAL EQUIPMENT

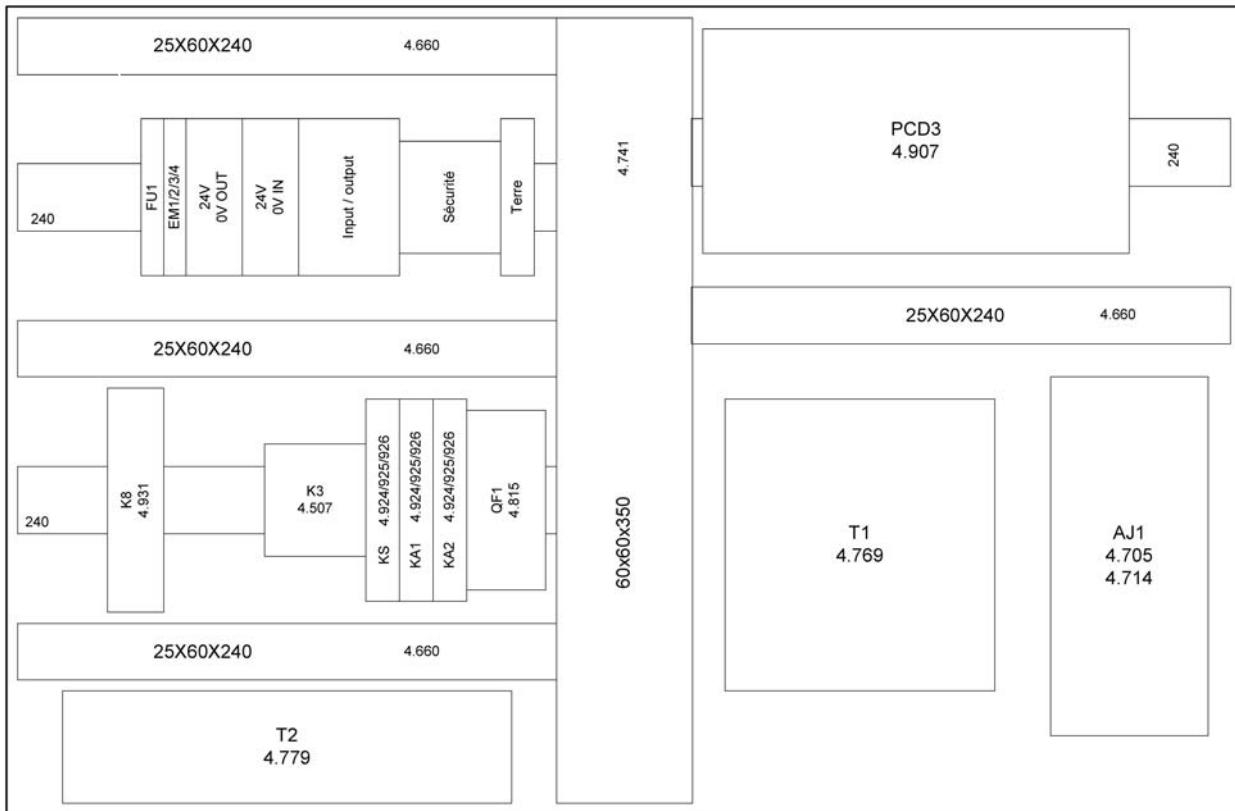
#### 3.1. Layout of the electrical elements on the bar feed system



Designation	Reference no.	Description
A	4.972	Remote control (not shown here)
B	-	Interface connector depending on lathe (not shown here)
C	-	Control cabinet
QS1	4.242	Main disconnect switch
M1	4.706	Servo motor
M2	4.307	Motor for diameter adjustment
SQ1	4.484	Loading table in lower position
SQ2	4.484	Loading table in upper position
SQ3	44.0072	Measuring cell
SQ4	4.391	Proximity switch for diameter adjustment (not shown here)
SQ5	4.391	Proximity switch for pusher in home position
SQ10	4.284	Main access cover safety switch
SQ11	4.277	Magazine grid cover safety switch
SQ12	4.291/4.292	Retraction system in position switch (incl. key)

## 4. ELECTRICAL CABINET

### 4.1. Layout of the elements in the electrical cabinet



Designation	Reference no.	Description
-	-	Input – output terminal blocks X1 (YV1 – YV8)
-	-	Safety terminal blocks X3 (T1 – T6)
PCD3	4.907	Programmable controller PCD3 (PLC)
AJ1	4.705	Servo amplifier 400W
FU1	4.399	Diameter adaption motor fuse 2A
K3	4.507	Safety contactor
KS	4.925	Start relay
K8-K9	4.931	Safety control module
K10	4.932	Safety contactor (option)
KA1	4.925	Relay : Motor M2 "Up"
KA2	4.925	Relay : Motor M2 "Down"
QF1	4.815	Circuit breaker 4A
QS1	4.242	Main disconnect switch
R1-R5	4.925	Interface relay (not shown here)
T1	4.769	Transformer 1ph
T2	4.779	24 VDC Power supply 150W

## 5. PNEUMATICAL EQUIPMENT



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

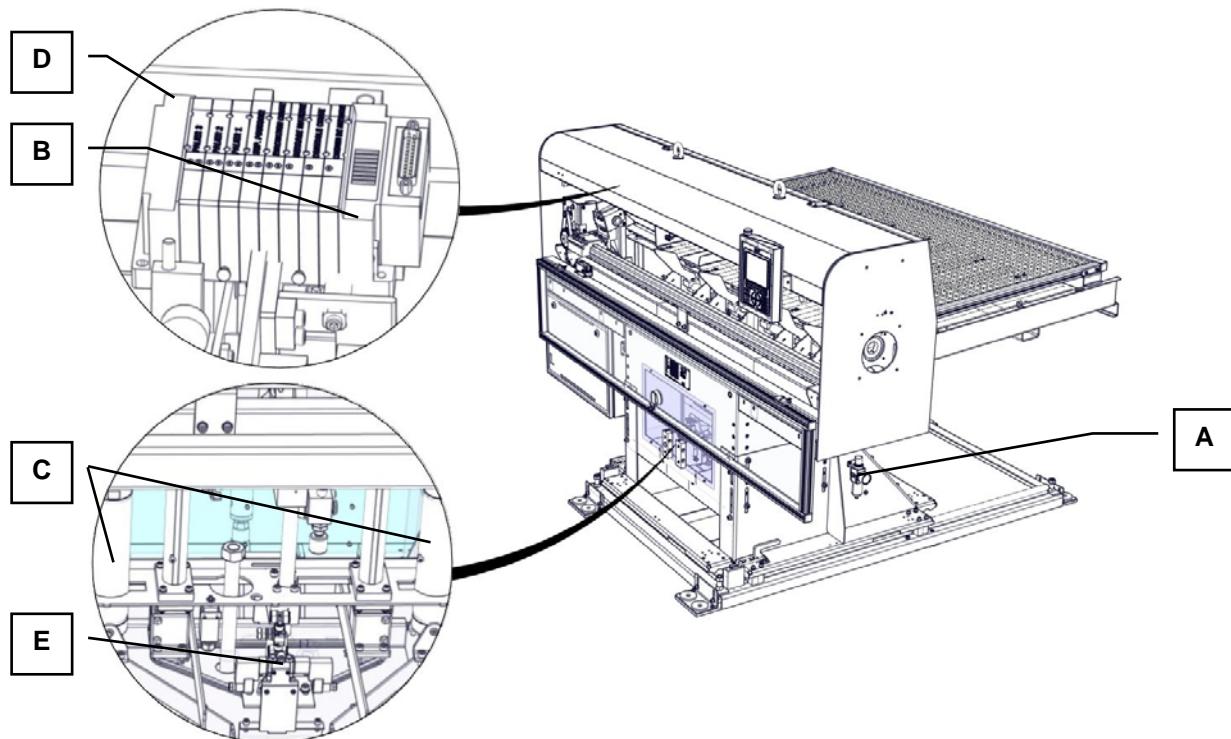
### 5.1. Description

The following automatic movements of the bar feed system are done via pneumatic elements, namely:

- Bar stock loading into the loading table
- Pusher locking system
- Loading table moving / down

To guarantee an optimal operation of the bar feed system, a minimum pressure of 5 bars (75 PSI), and a maximum pressure of 6 bars (90 PSI) is mandatory.

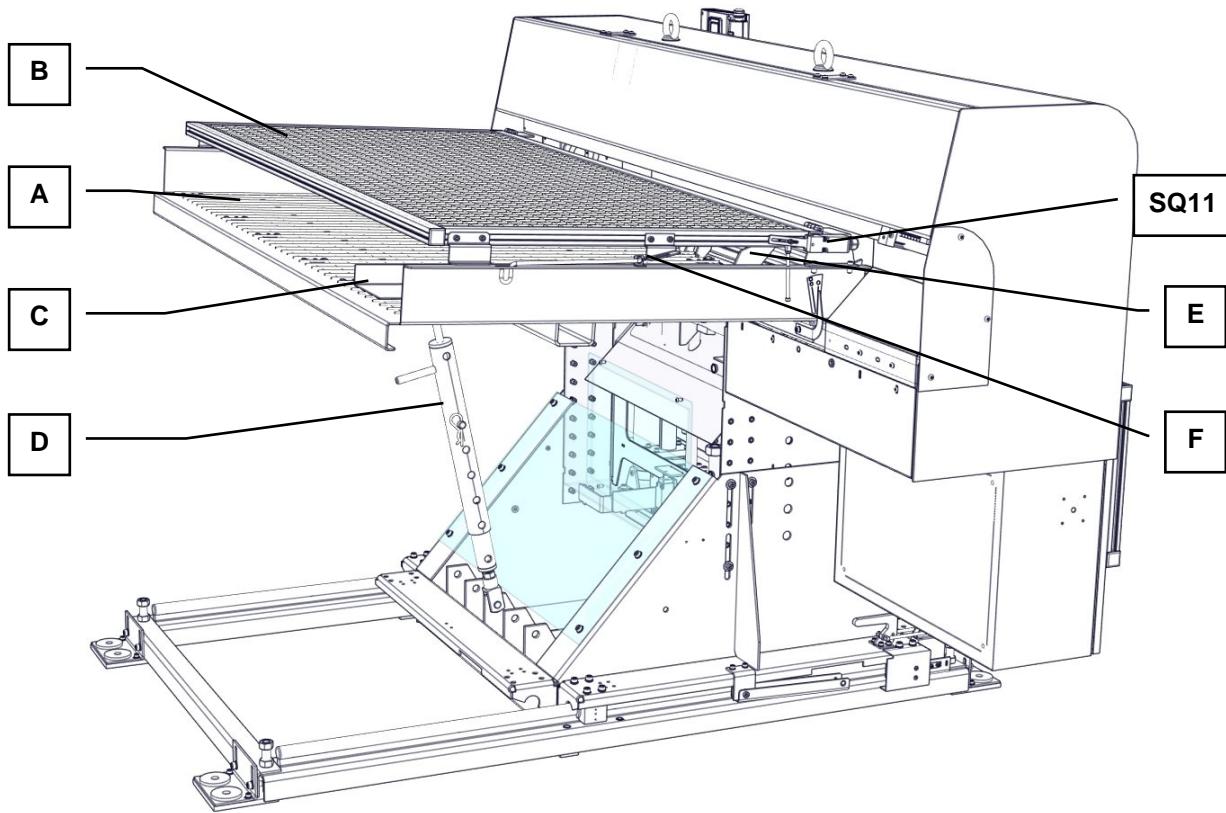
### 5.2. Layout of the pneumatic elements



Designation	Reference no.	Description
A	3.636/3.638	Air filtering unit
B	3.95020.A.30	Cylinder for feeding pusher locking mechanism
C	3.406	Cylinder for loading channel up/down motion
D	3.662	Pneumatic valve battery
E	3.668	Pneumatic electrovalve

## 6. BAR MAGAZINE

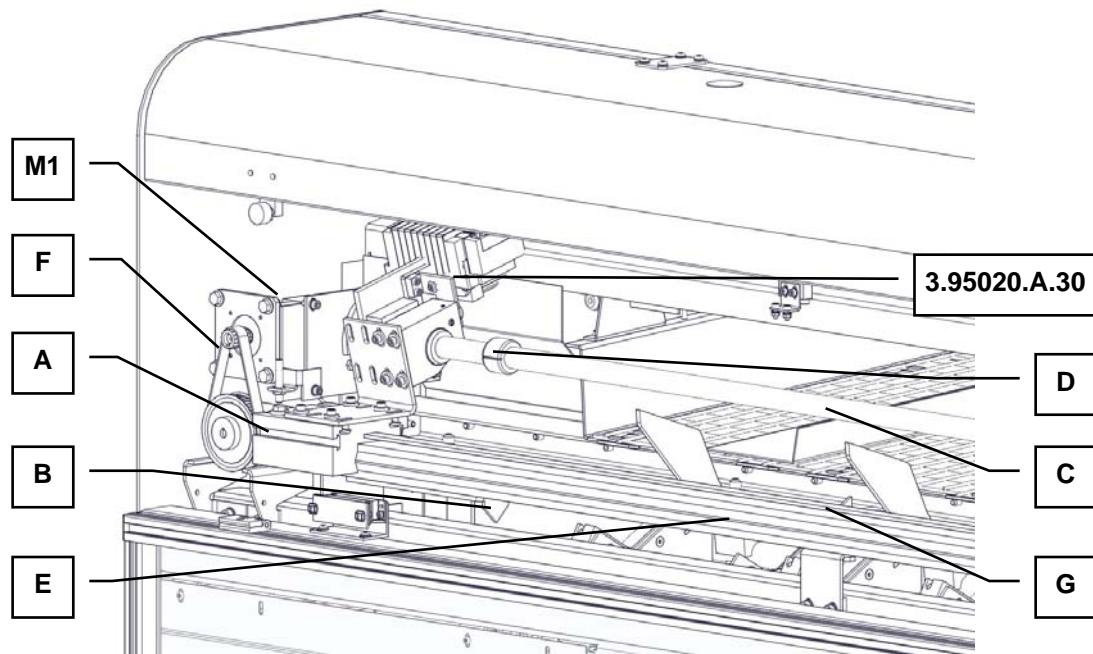
### 6.1. Layout of the elements



Designation	Description
A	Magazine table
B	Protection grid for magazine table
C	Rear limiter
D	Loading table support
E	Fingers for bar selection
F	Holding rod
SQ11	Grid closed safety switch

## 7. PUSHER CARRIER

### 7.1. Layout of the elements



Designation	Description
A	Carrier
B	Loading pusher
C	Feeding pusher
D	Mechanical stop
E	Linear rail
F	Notched belt
G	Linear unit belt
3.95020.A.30	Locking cylinder
M1	Servo motor

## 8. LOADING PUSHER

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

Same-length bars may be loaded directly with a loading pusher without using the feeding pusher. To do this, a special extended loading pusher, available as an option, is required. Selected parameters must then be chosen; see Chapter 7.

## 9. FEEDING PUSHER

### 9.1. Description

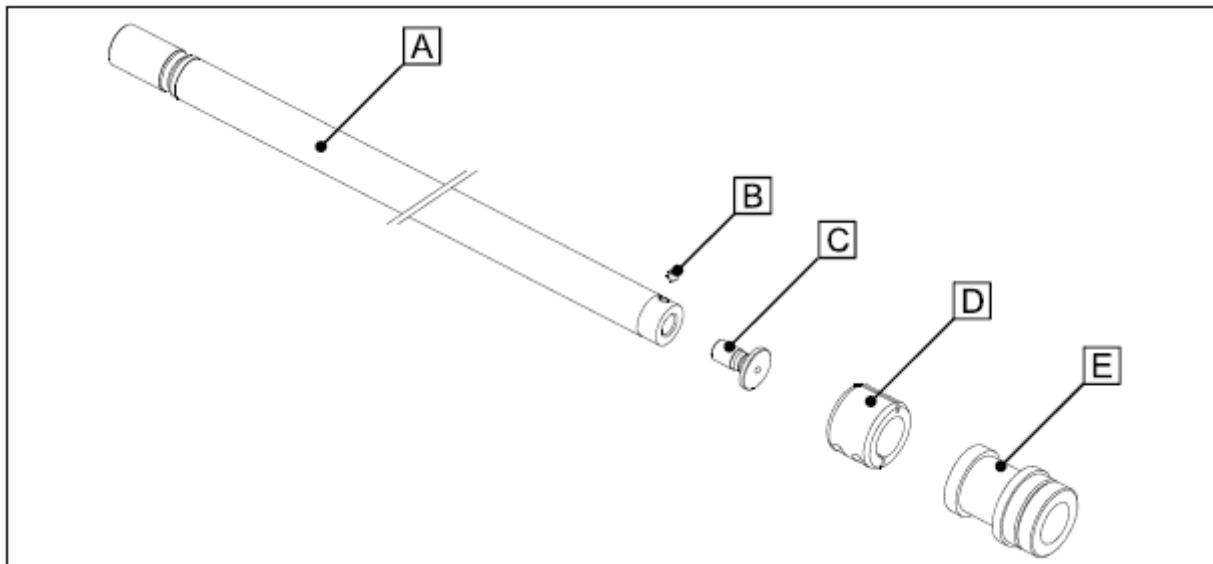
Three feeding pushers are necessary to cover the entire range of the QUICK LOAD SERVO III barfeed system. Each pusher has a defined range of operation :

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

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

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

### 9.2. Layout of the elements



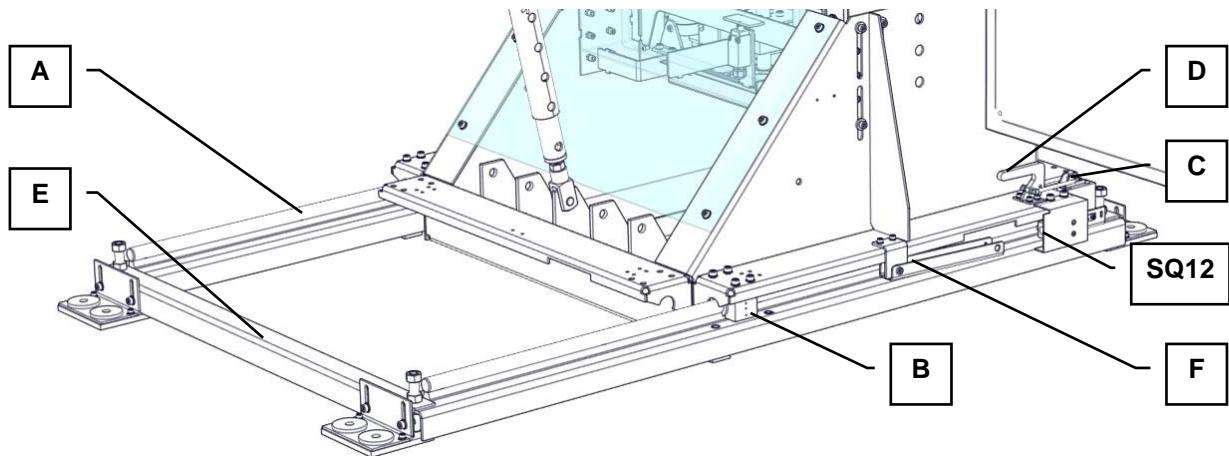
Des.	6,35 (1/4")	12	25	Desc.
	Ordering Nr	Ordering Nr	Ordering Nr	
A	-*	-*	-	Pusher rod
B	-*	-*	914.06.06	Set screw
C	-*	-*	011.07.444	Head
D	011.07.234	011.007.184	011.07.014	Mechanical stop
E	021.05.244	021.05.164	011.007.194	Guide bushing
A+B+C	**021.011.074	**021.011.294	**021.011.304	Pusher Assembly

\* On 6.35 mm and 12 mm pushers, parts (A), (B), and (C) are welded.

\*\* This number is used when the bar feed system is already fitted out with elements (D) and (E).

## 10. RETRACTION

### 10.1. Layout of the elements



Designation	Description
A	Guiding rails
B	Sliding bearings
C	Latches
D	Latch handle
E	Bracket (for lateral or longitudinal retraction)
F	Auto lock device (not shown here)
SQ12	Retraction system in position switch

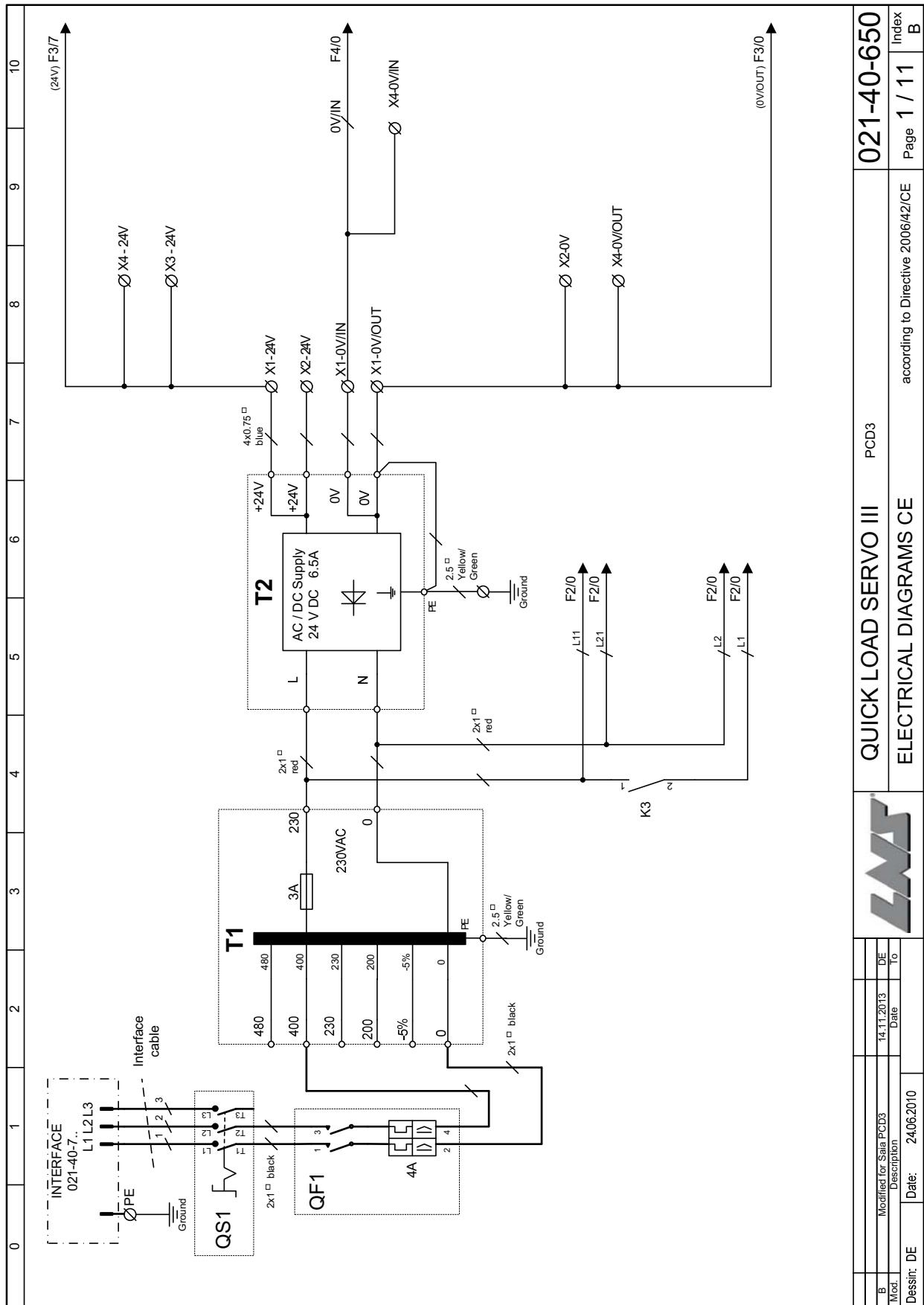
### 10.2. Use of the retraction

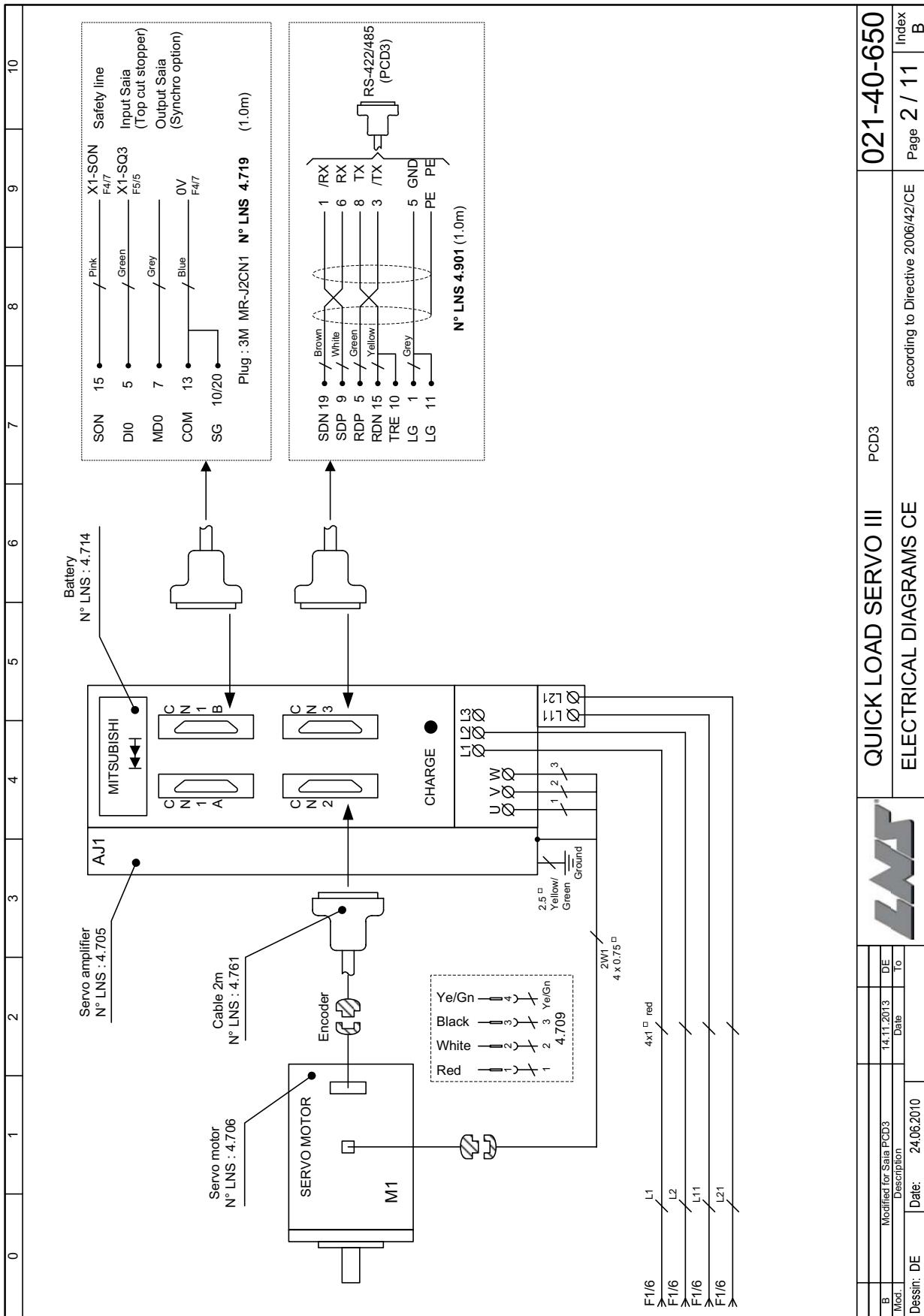
Mounted onto four extremely rigid bearings (B), the bar feed system slides on two cylindrical rails (A) that keep it aligned when it is in operational position. In this position, the bar feed system is fastened by two solid hooks (C).

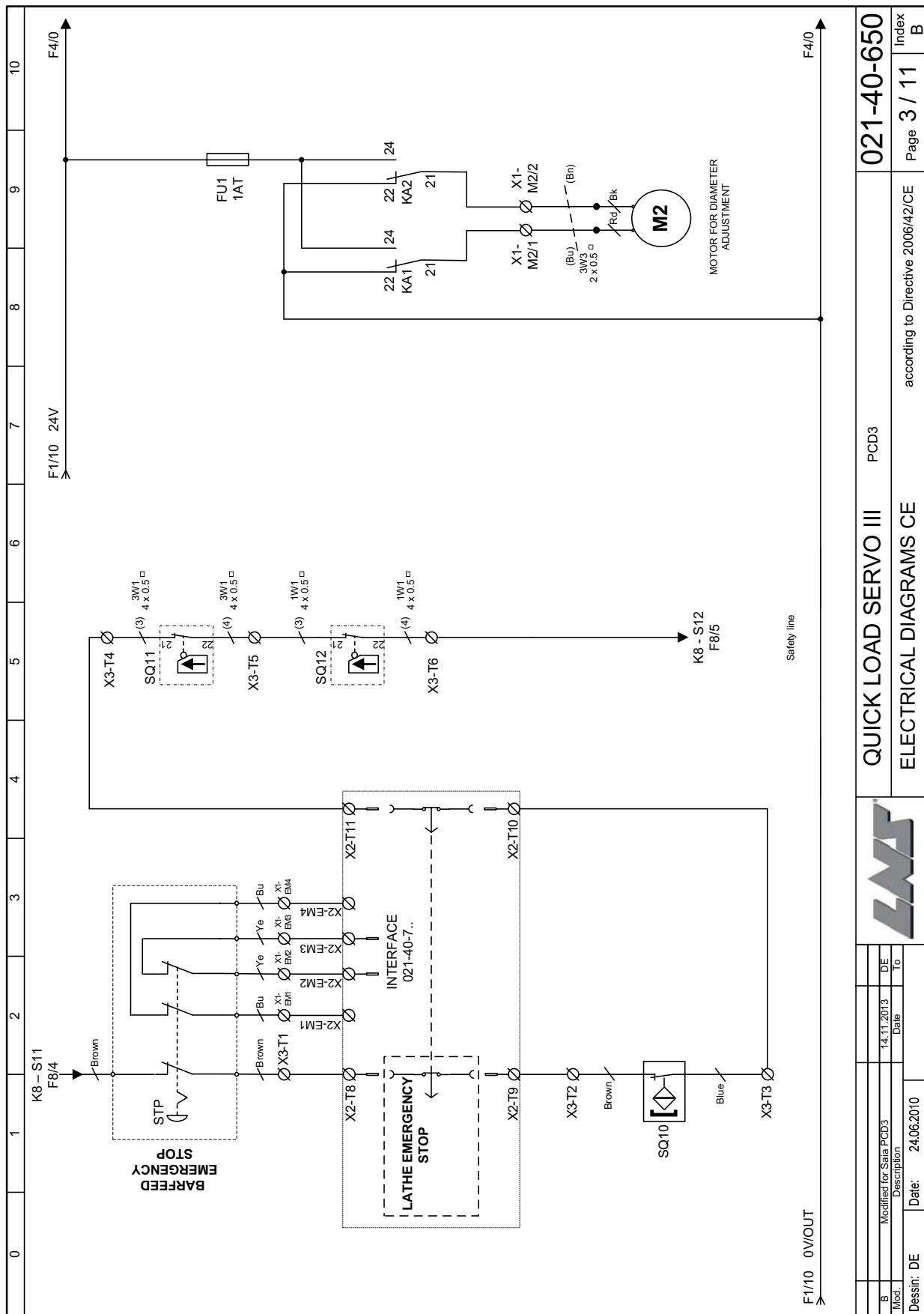
A safety switch (SQ12) impedes any handling as long as the bar feed system is not in operational position.

- To move the bar feed system, unlock the hooks by lifting the latching handles (D). An autolock device (F) will prevent the bar feed system to move back.
- To bring the bar feed in operational position, lift the auto lock device.

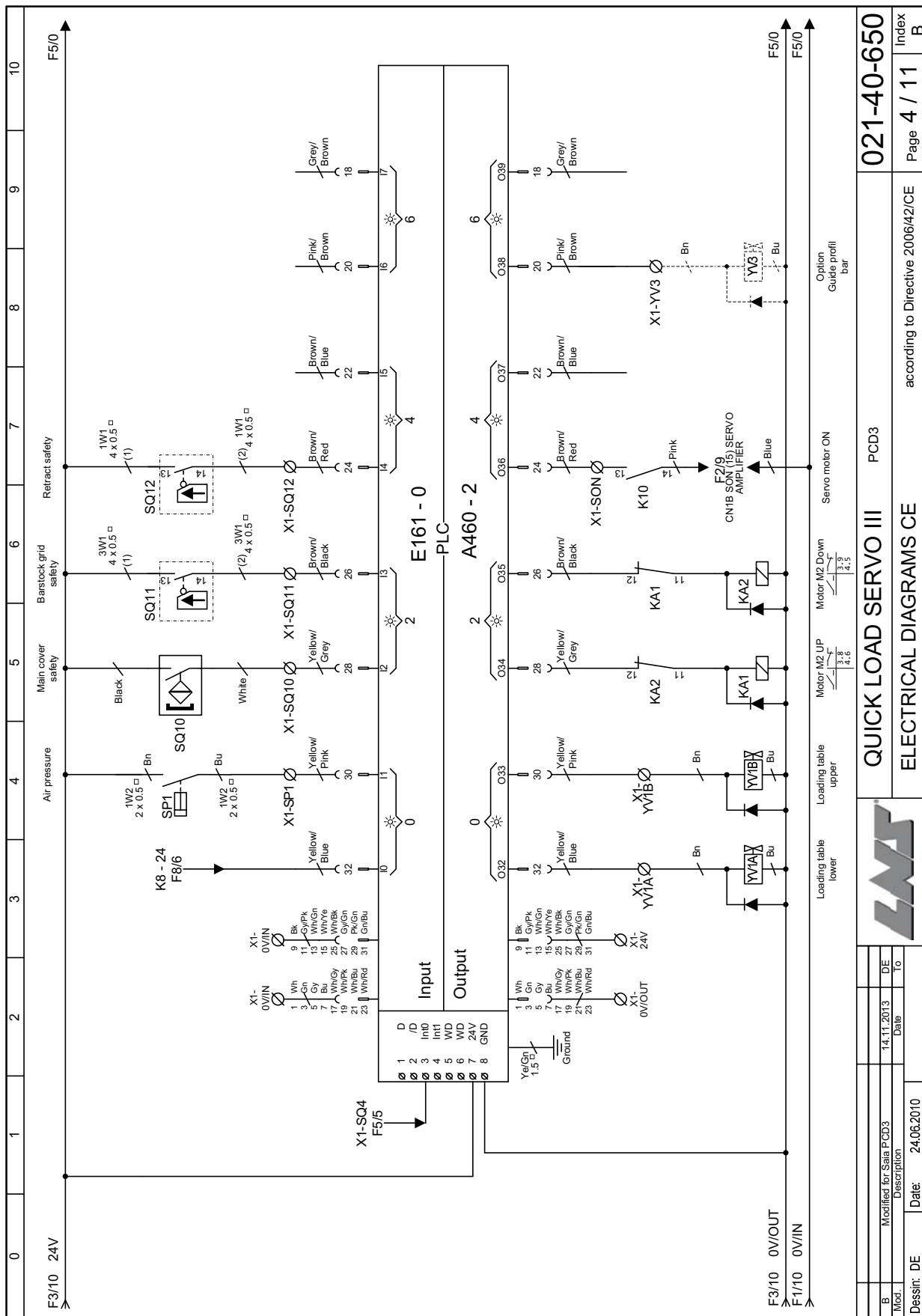
# 1. ELECTRICAL DIAGRAMS

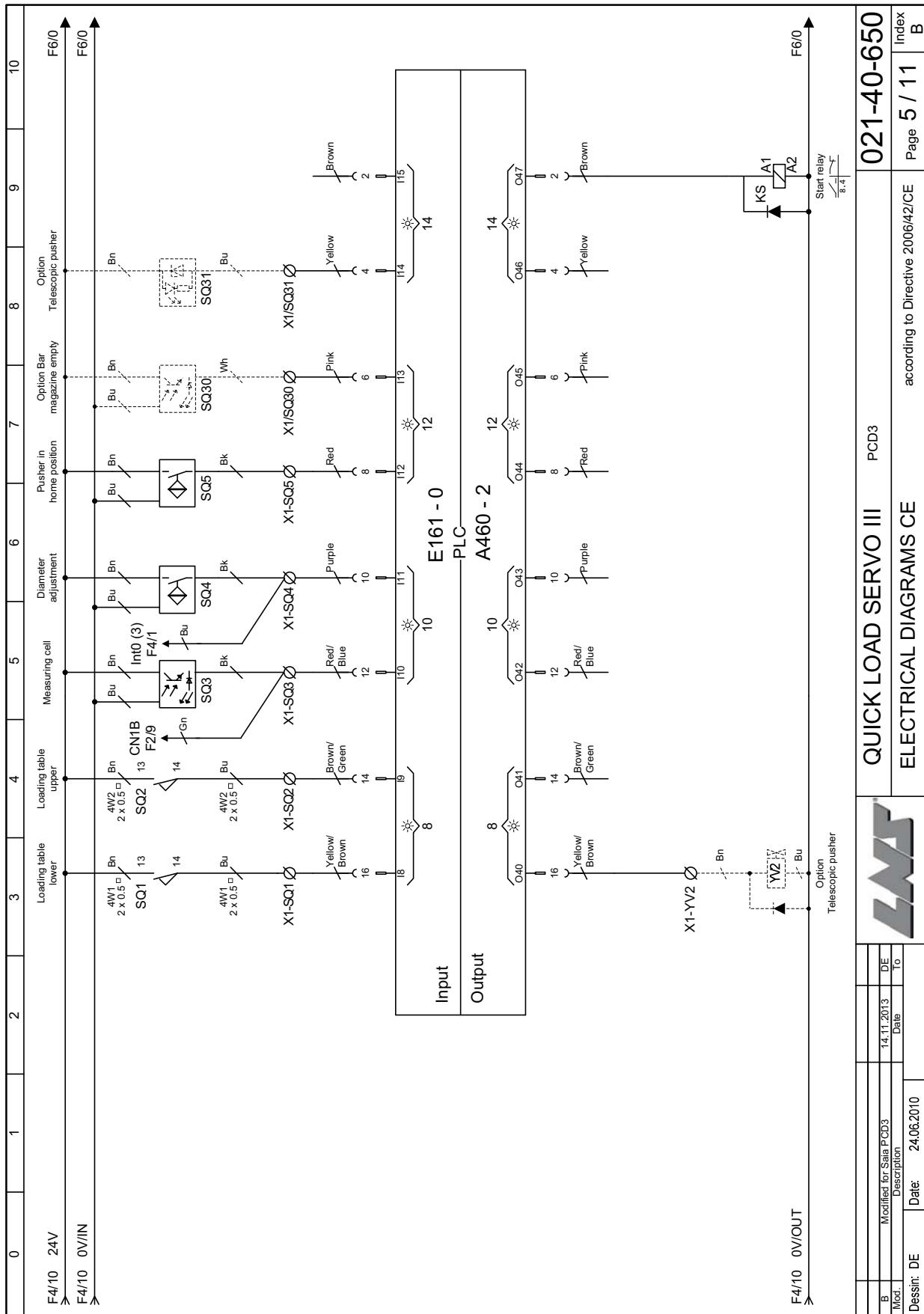


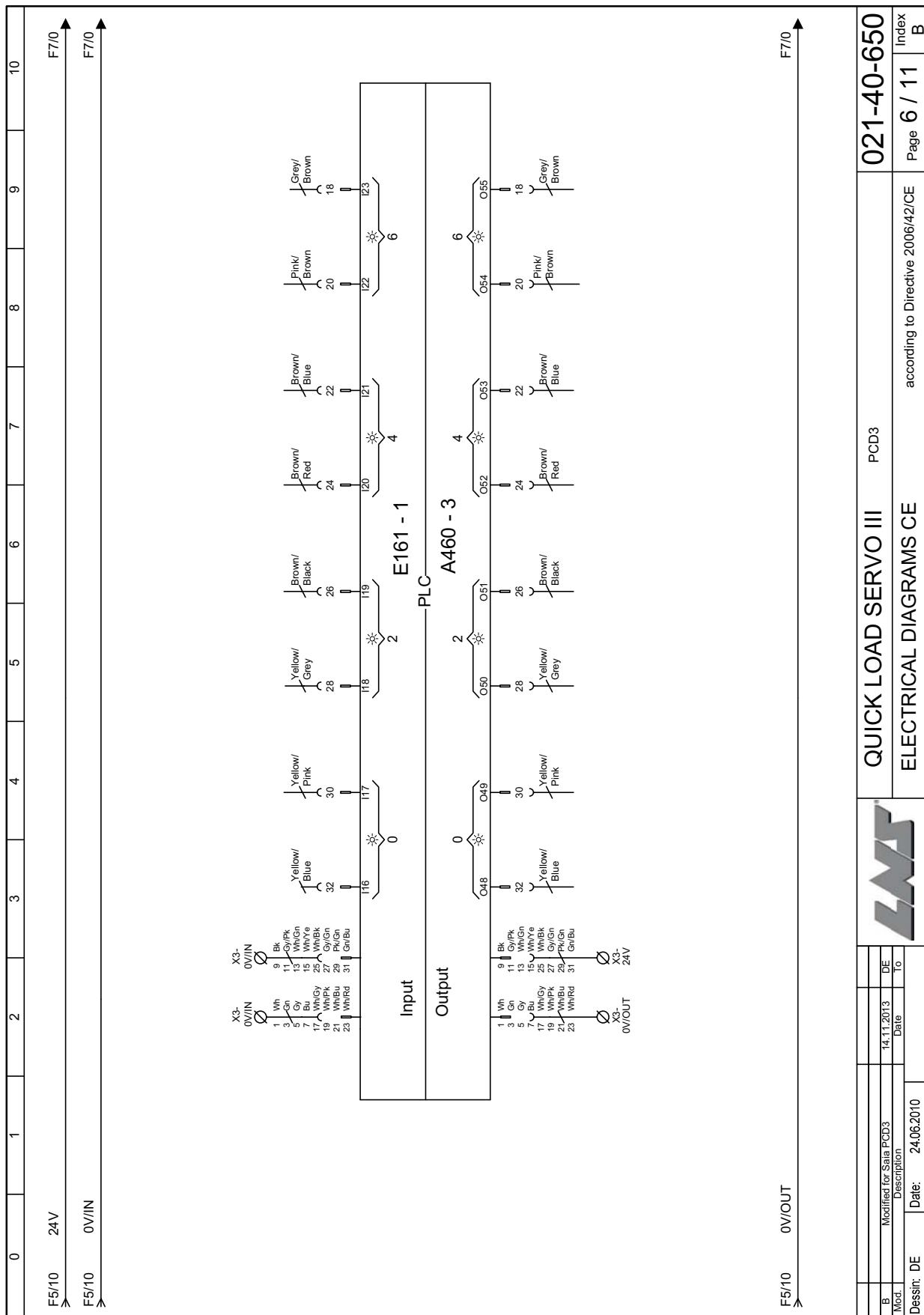


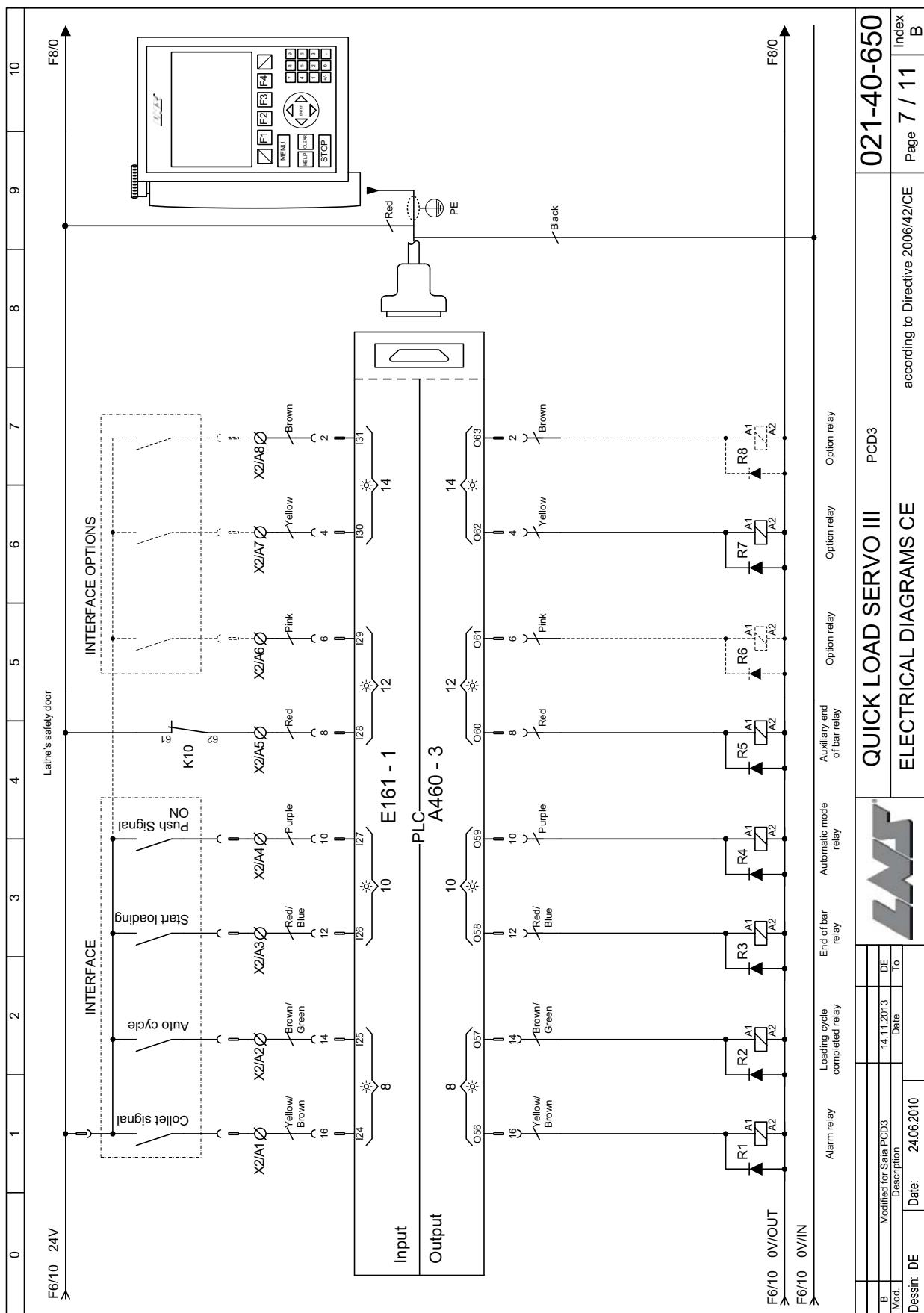


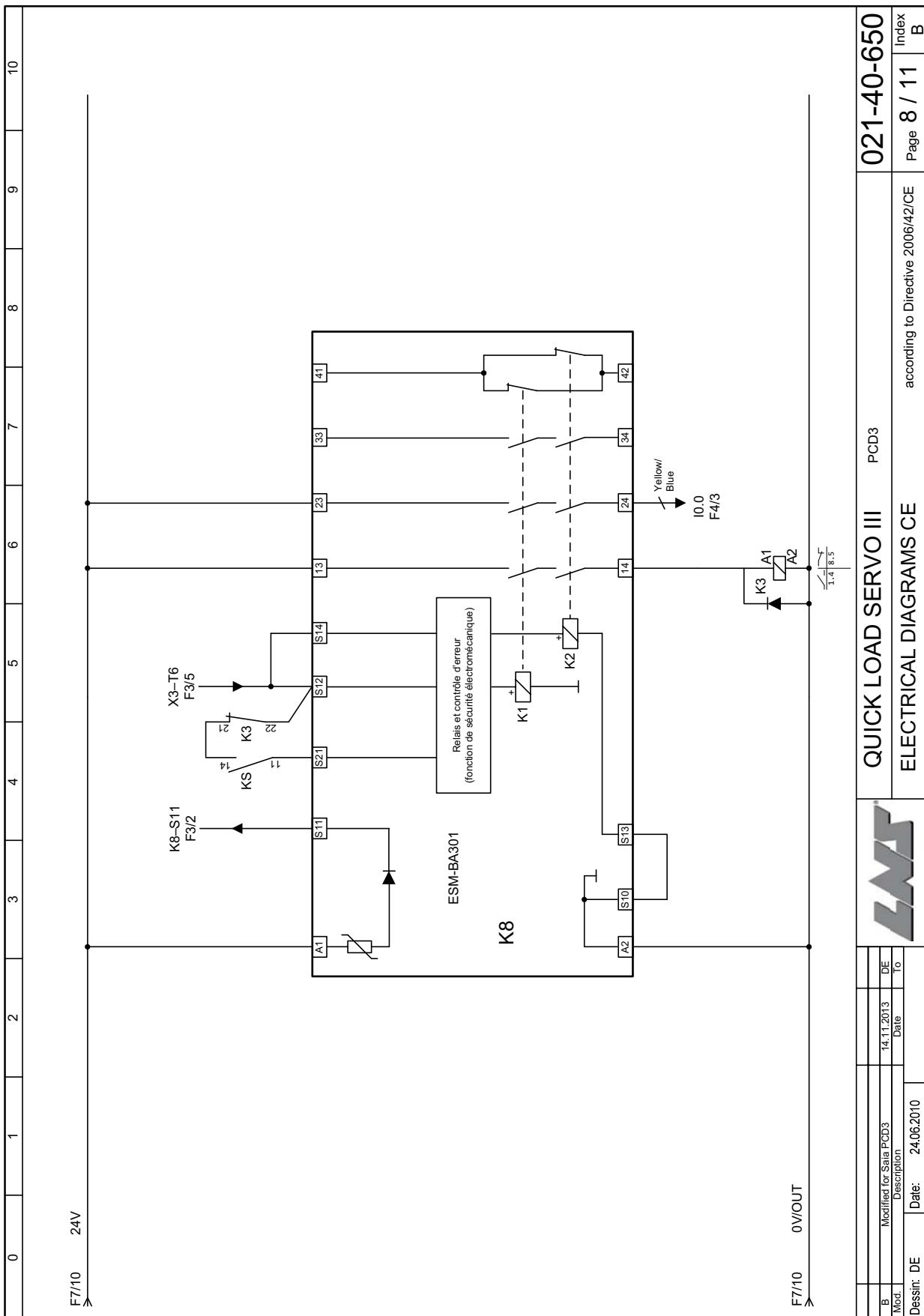
B	Modified for Satia PCD3	14.11.2013	DE	QUICK LOAD SERVO III	PCDS	021-40-650
Mod.	Description	Date	To	LNT	ELECTRICAL DIAGRAMS CE	according to Directive 2006/42/CE
Dessin:	DE	Date:	24.06.2010		Page 3 / 11	Index B

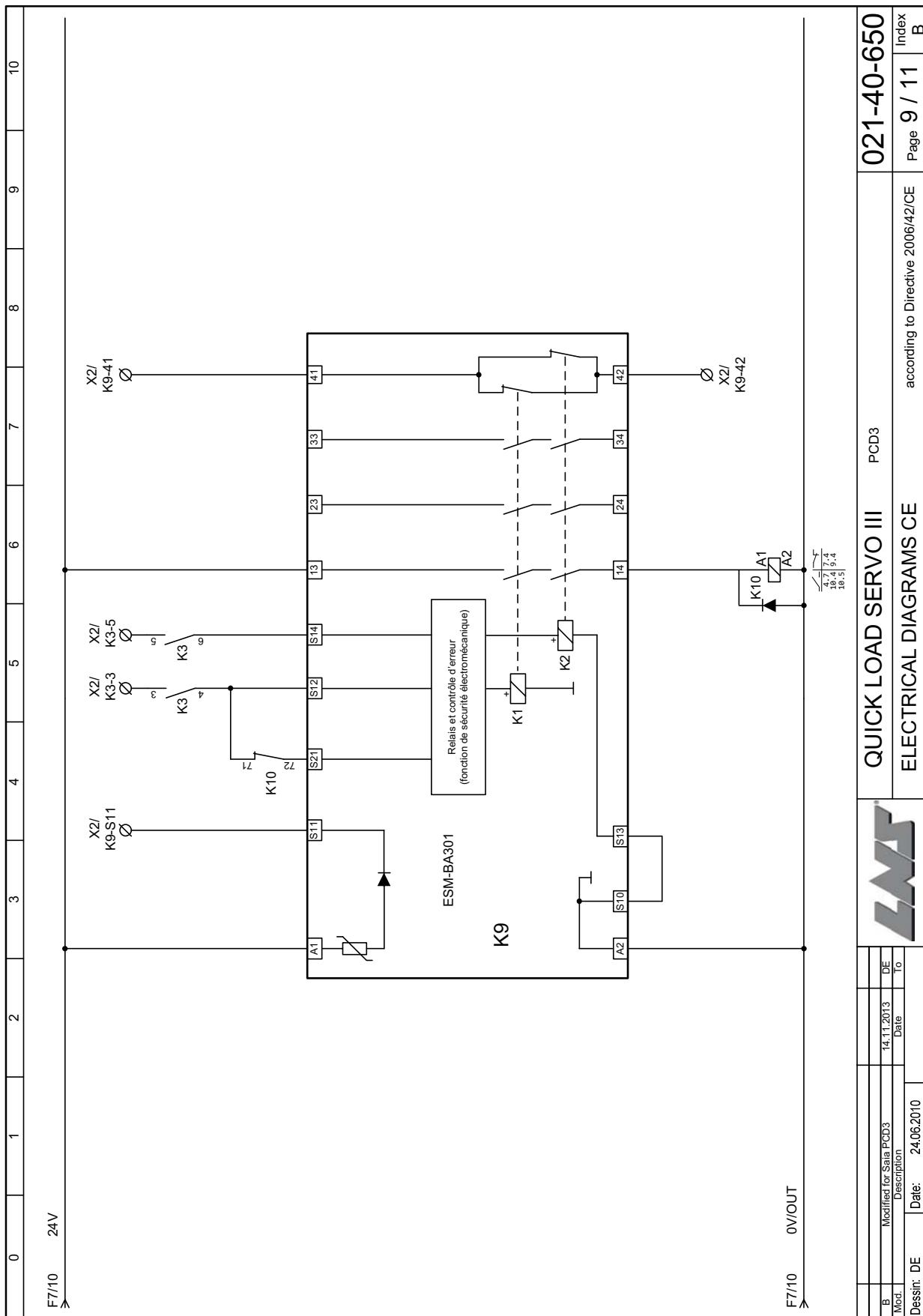


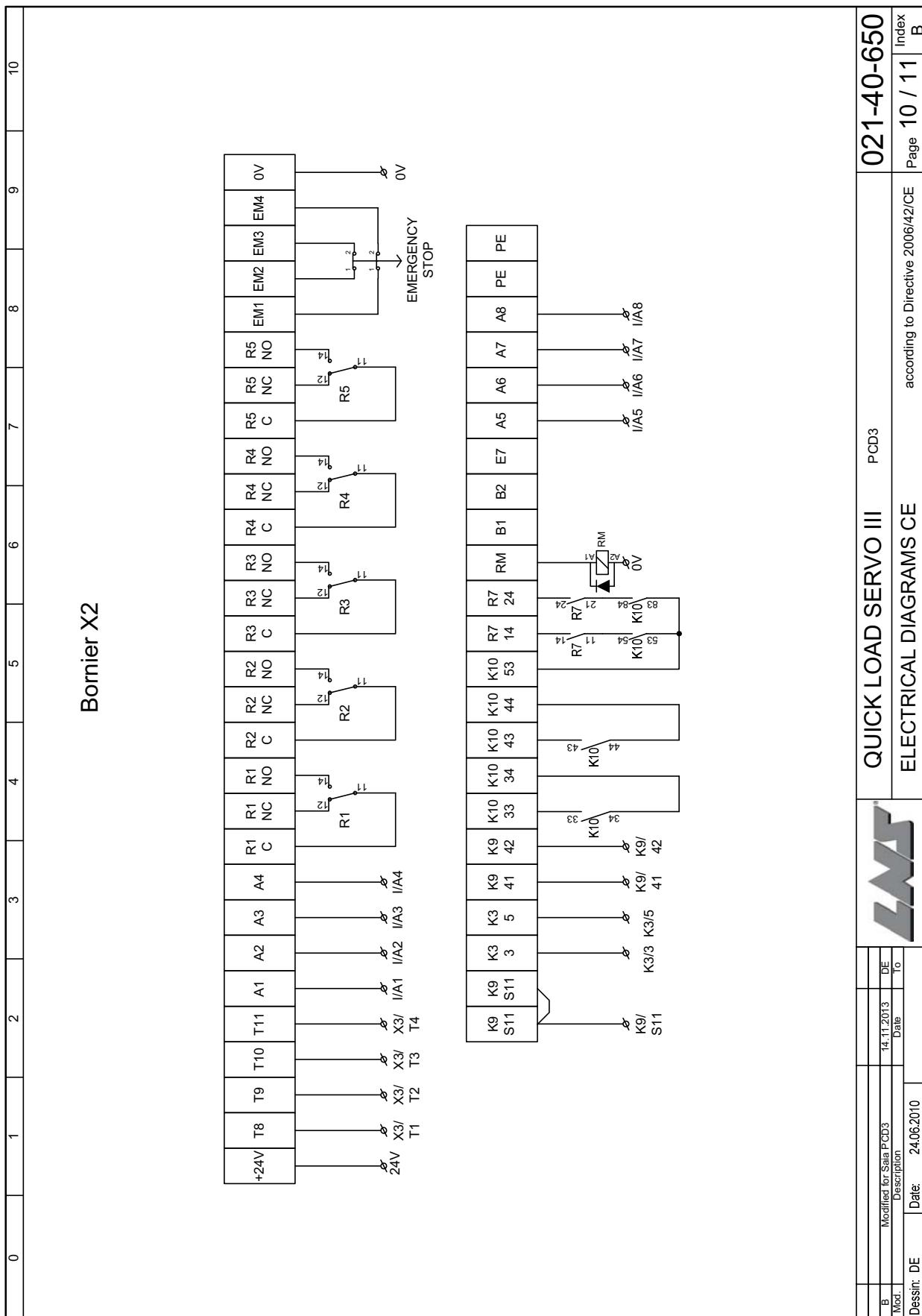


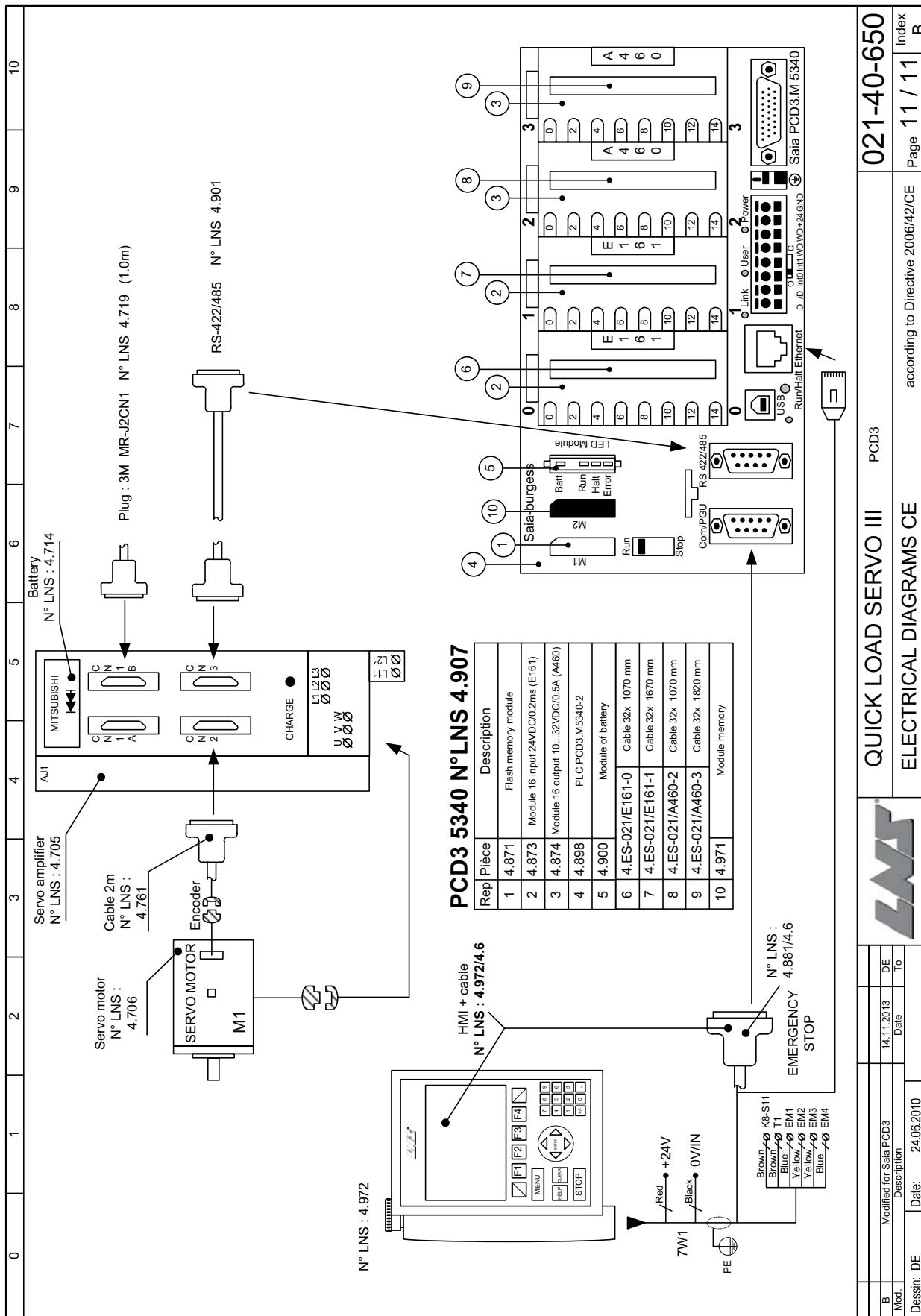












## 1. END OF BAR POSITION

### 1.1. Description

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

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

This will provide minimum bar stock remnant.

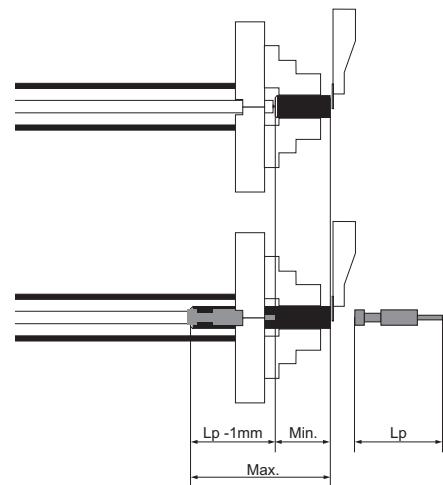
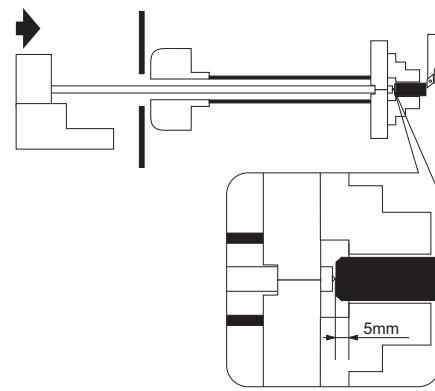
Regardless of the length of the bars, or parts, the end of bar position is always the same.

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

The length of the remnant may vary :

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

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



### 1.2. Setting



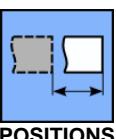
Before handling the bar feeder, stop the lathe at the end of part cycle !

To edit these parameters, the bar feed system must be in **STOP** mode.

To validate a new parameter or a new value, keep **[ENTER]** pressed until the icon disappears.

1  Press the key **[STOP]**.

2  Press the key **[MENU]**.

3  Press the key **[POSITIONS]** on the screen.

4  Press the key attributed to the icon **[PAGE DOWN]** to scroll through the screens, until the "END OF BAR" screen is displayed.

5



The remote command displays the following text : "**END OF BAR POSITION**".

Tap the value displayed on the screen.



Depending on which sequence the bar feed is in when the parameter is selected, the available functions and icons can change :

Conditions	Functions	
	By offset correction	By teaching
- <i>Loading channel down</i>	Icon <b>[+/-]</b>	Icon <b>[TEACH IN]</b>
- <i>No bar stock in the loading channel</i>		
- <i>Loading with extended loading pusher</i>	Icon <b>[+/-]</b>	---

**Setting by offset correction:**

**jump to point 6**

**Setting by teach in:**

**jump to point 7**

6



**[+/-]**



**[+/-] by offset correction:**

- Press the key corresponding to the icon **[+/-]**.
- The current end of bar position (z) is displayed.
- Select the field named "Type in the new value", and type the offset value to be considered, confirm with ok.
- 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



**[TEACH IN]**



**[REW] [FWD]**



**[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). Correct if necessary with the key **[REW]**.
- To validate the new end of bar position, keep **[ENTER]** pressed until the screen blinks.

8



**[ESC]**

or



**[STOP]**

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

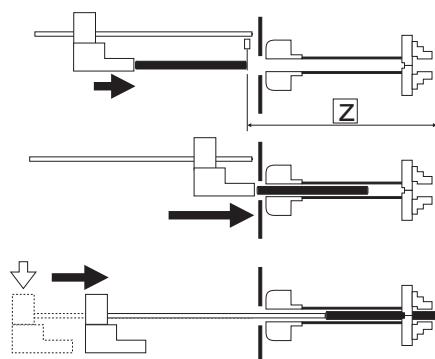
## 2. TOP-CUT POSITION

### 2.1. Description

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.



### 2.2. Setting



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

To edit these parameters, the bar feed system must be in **STOP** mode.

To validate a new parameter or a new value, keep **[ENTER]** pressed until the icon disappears.

**1**



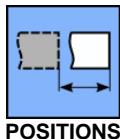
Press the key **[STOP]**.

**2**



Press the key **[MENU]**.

**3**



Press the key **[POSITIONS]** on the screen.

**4**



Press the key attributed to the icon **[PAGE DOWN]** to scroll through the screens, until the "TOP CUT POSITION" screen is displayed.

**5**



The remote command displays the following text : "**TOP CUT POSITION**".

Tap the value displayed on the screen.



Depending on which sequence the bar feed is in when the parameter is selected, the available functions and icons can change :

Conditions	Functions	
	By offset correction	By teaching
- Loading channel down	Icon <b>[+/-]</b>	Icon <b>[TEACH IN]</b>
- No bar stock in the loading channel		
- Loading with extended loading pusher	Icon <b>[+/-]</b>	---

**Setting by offset correction:**  
**Setting by teach in:**

**jump to point 6**  
**jump to point 7**

6



[+/-] by offset correction:

- Press the key corresponding to the icon [+/-].
- The current top cut position (**Z**) is displayed.
- Select the field named “Type in the new value”, and type the offset value to be considered, confirm with ok.
- Press the [+] icon to add the value, or the icon [-] to subtract it. the new value is stored.
- To exit the top cut position set mode, press the key attributed to the icon [**ESC**].

**jump to point 8.**

7

**[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 pusher to the desired position (see previous page). Correct if necessary with the key [**REW**].
- To validate the new end of bar position, keep [**ENTER**] pressed until the screen blinks.



8

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

or



### 3. ALIGNMENT PROCEDURE

#### 3.1. Conditions

- Bar feed power off.
- No air pressure

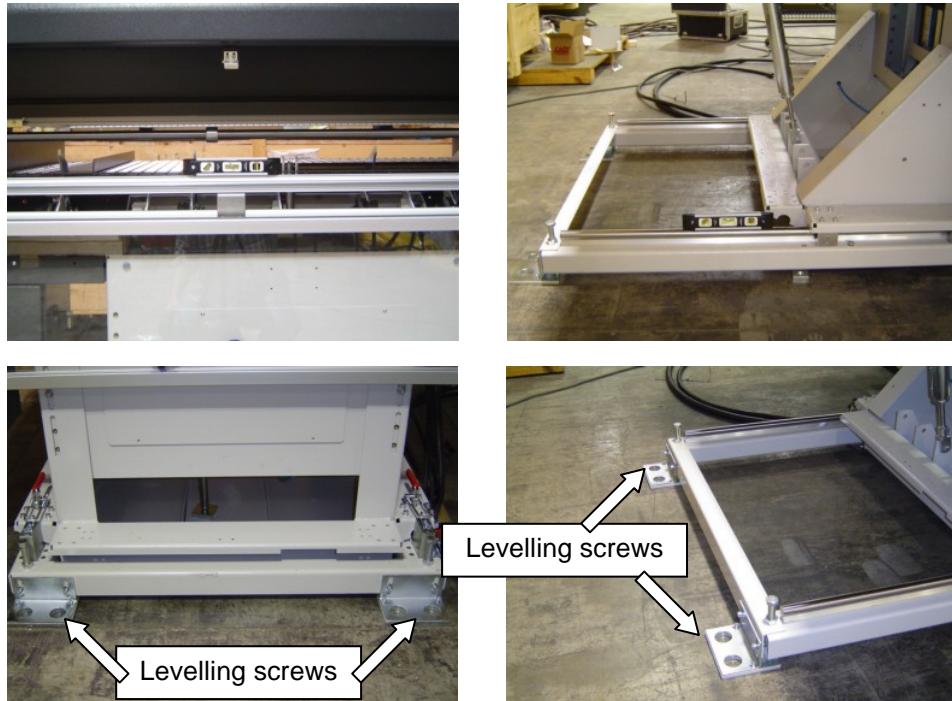
#### 3.2. Procedure



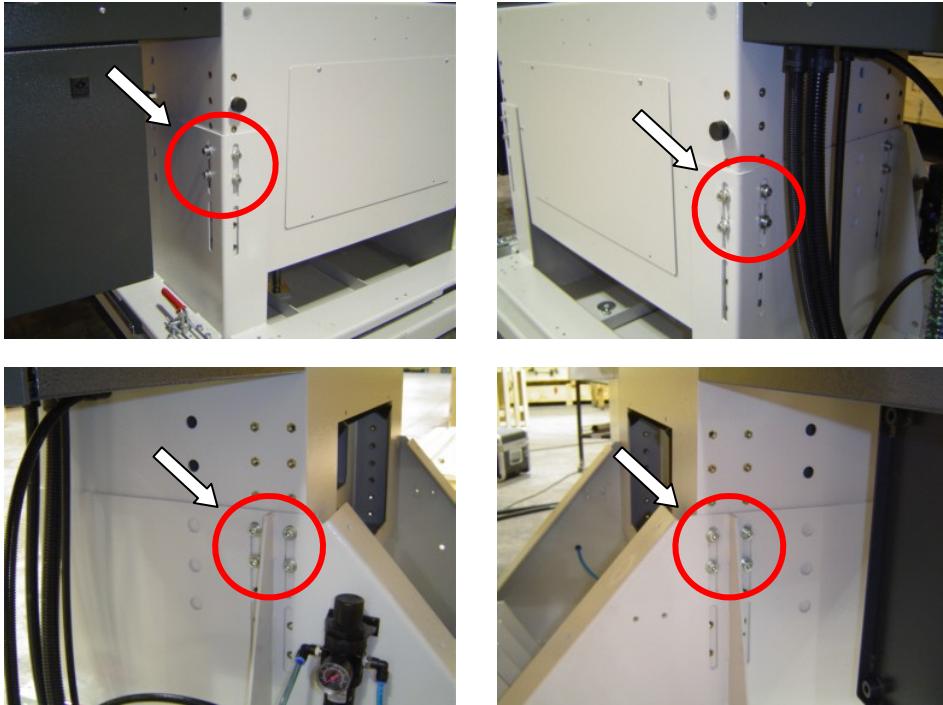
1. Position the bar feed as close as possible to the rear of the lathe. The distance between the front of the bar feed and the back of the spindle should be as small as possible.

Note :

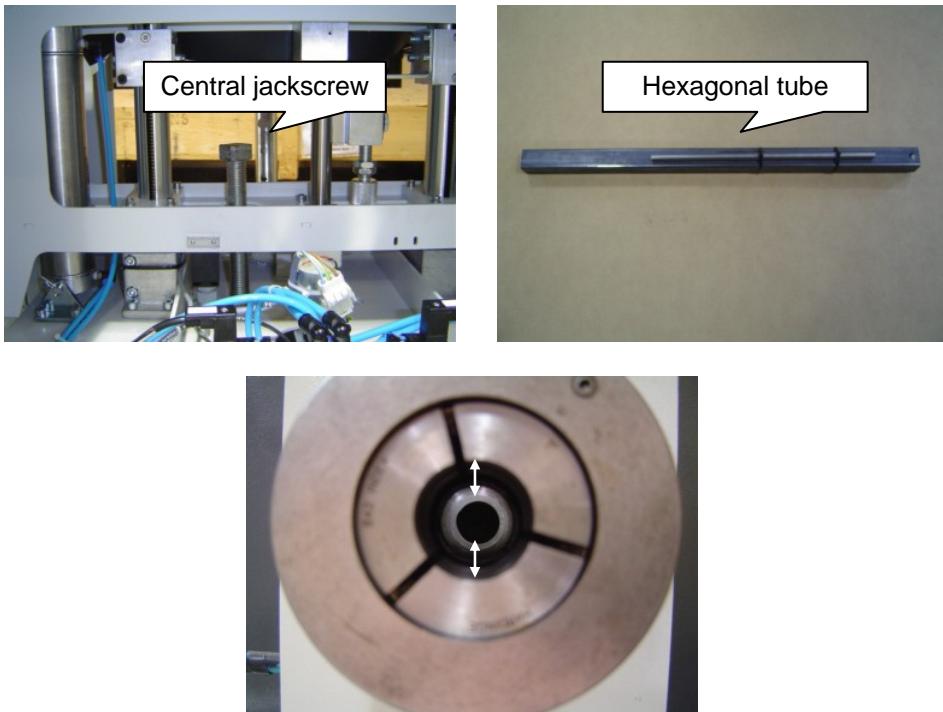
If obstacles prevent the bar feed from being positioned within 8 inches of the back of the spindle an extension will be required.



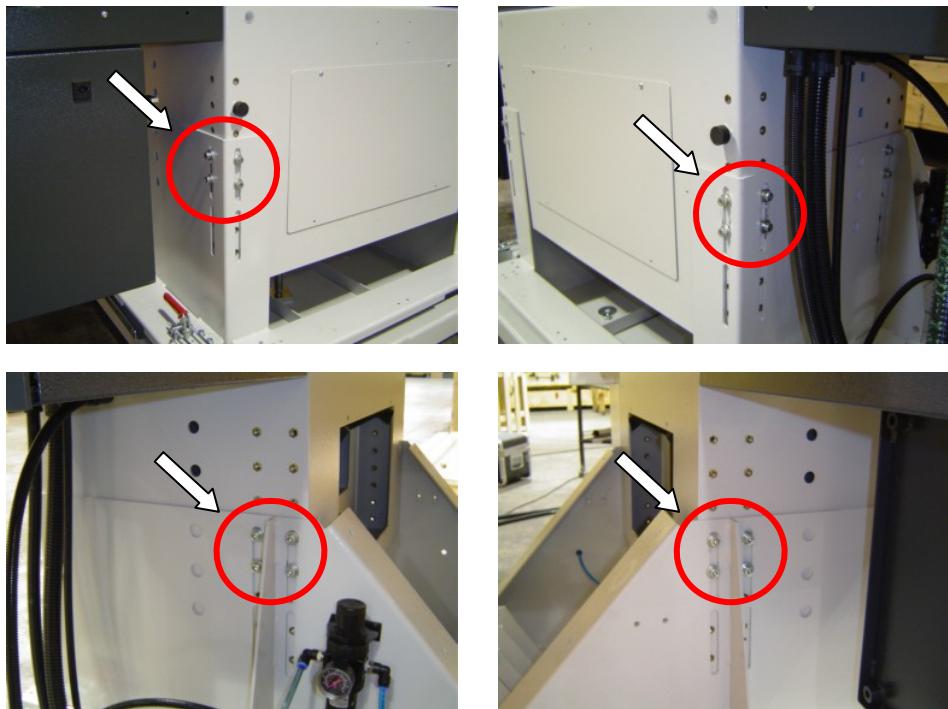
2. Level the bar feed in the x and y axis using a torpedo level. The level can be placed on the linear belt rail to verify the y-axis and on the retract rails to verify the x-axis. Use the leveling screws on the retract to adjust unit to level.



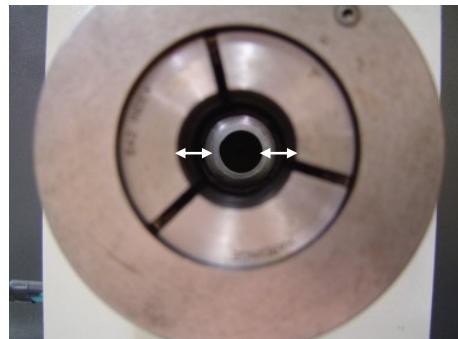
3. Carefully loosen the 16 screws located in the slots on the base of the unit. This will allow the unit to be adjusted up and down.



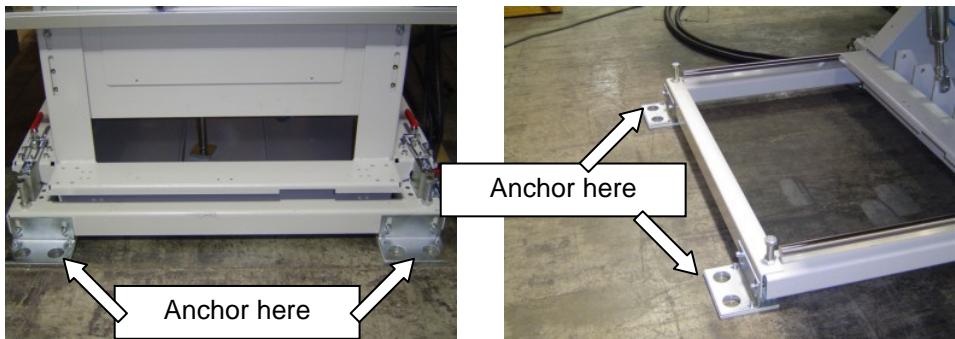
4. Using the central jackscrew and the hexagonal tube supplied with the bar feed; adjust the unit so that the pusher is centered up and down at the back of the spindle. Make sure that the unit raises or lowers uniformly.



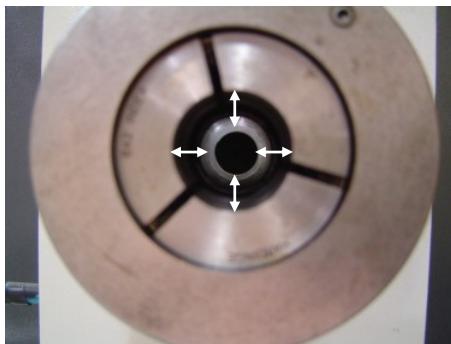
- Once the pusher is centered up and down, tighten the 16 screws to secure unit and recheck the level of the unit.



- Align the unit side to side by centering the pusher in the back of the spindle and then extending the pusher to the back of the collet and centering it there.  
Adjust the rear of the bar feed when centering to the rear of the spindle and the front of the bar feed when centering to the rear of the collet.  
Once the pusher is centered at the back of the collet recheck the alignment at the back of the spindle by pulling the pusher back.  
Continue until the pusher is centered at the rear of the spindle and the rear of the collet..



- Once the bar feed has been aligned anchor it using the  $\frac{1}{2}$  inch anchor bolts supplied with the unit.

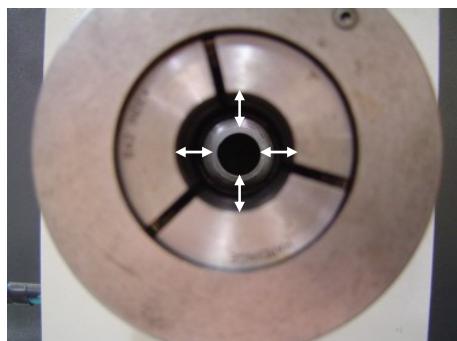


8. After anchoring the unit, recheck the lev I and the alignment of the unit.

9. After the alignment has been rechecked, power and air will need to be hooked up to the bar feeder.

10. Once the power and air have been hooked up, the bar feed must be calibrated.

After calibrating the bar feed, return to this procedure and move on to Step 11 for the final alignment.



11. For final alignment, load a bar into the v-channel and verify that it can be loaded into the spindle of the lathe without hitting the sides of the spindle or spindle liner.

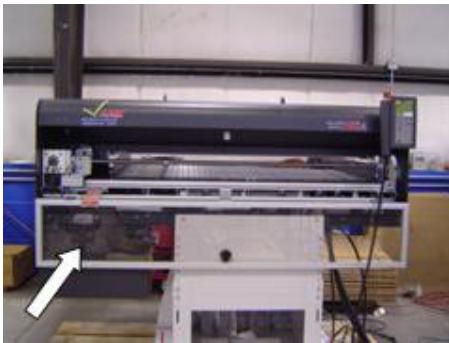
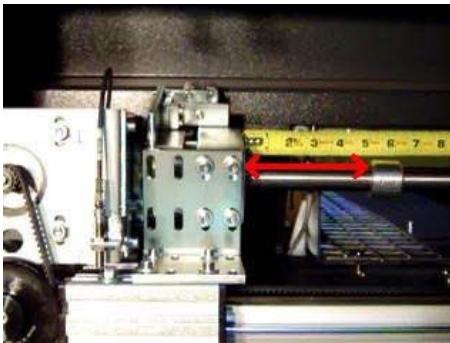
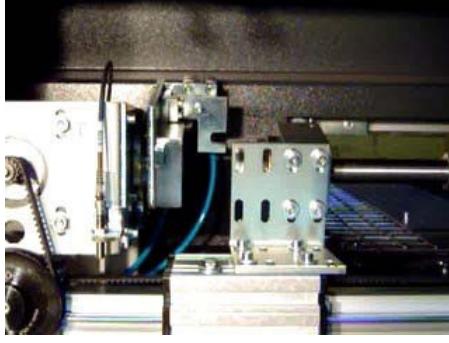
If the bar hits side to side the alignment will have to be adjusted.

## 4. PUSHER CHANGEOVER

### 4.1. Conditions

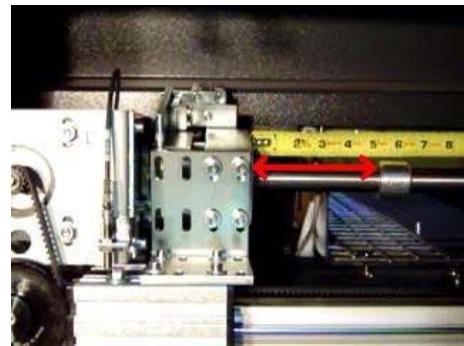
- Bar feed power on.
- V-channel in the lower position.
- Pusher at the mechanical home position against the reference plate.
- Bar feed in STOP mode

### 4.2. Procedure

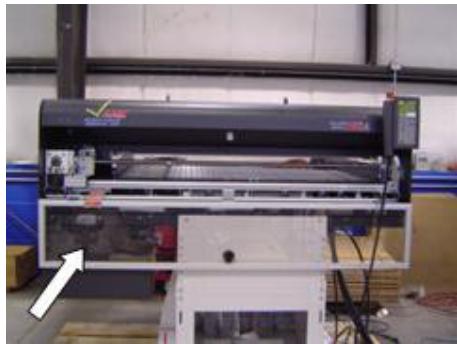
	<p>1. Open the main access cover.</p>		<p>2. Measure the distance of the End-of-Bar bushing.</p>
	<p>3. Pull the carrier away from the home position.</p>		<p>4. Loosen up the setscrews to release the pusher.</p>
	<p>5. Pull out the guide bushing from the front ring. 6. Remove the pusher from the bar feed. 7. Put the new pusher in the bar feed.</p>		<p>8. Push the guide bushing in the front ring.</p>



9. Place the rear end of the pusher in the carrier and tighten the setscrews.



10. Adjust the End-of-Bar bushing to the distance measured at step 2.



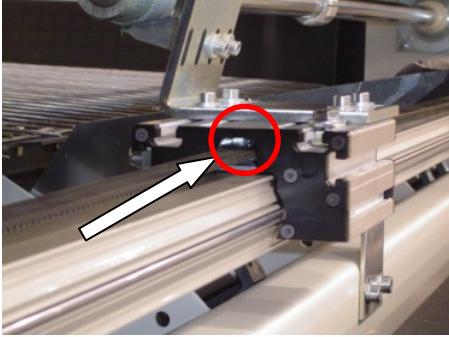
11. Close the main access cover.

## 5. CARRIAGE UNIT BELT TENSION ADJUSTMENT

### 5.1. Conditions

- Bar feed power on.
- Bar feed in STOP mode

### 5.2. Procedure

 A photograph of the machine with its main access cover removed, showing the internal components and the carriage unit. A white arrow points to the open access cover.	 A photograph of the carriage unit being pulled forward along the linear rail towards the center of the machine. A white arrow indicates the direction of movement.
<p>1. Open the main access cover.</p>	<p>2. Pull the carriage unit forward towards the middle of the linear rail.</p>
	 A close-up photograph of the carriage unit's end cap. A red circle highlights the 3mm allen head tensioning screw, and a white arrow points to it.

3. On each end of the carriage unit are black plastic end caps. In the center of the end cap on either side, right above the belt is an opening with a 3mm allen head tensioning screw inside. Turn the screw CW to add tension to the belt and CCW to release tension.

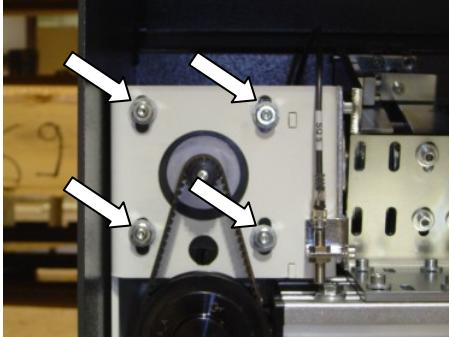
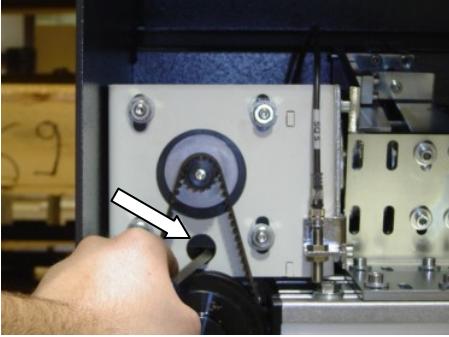
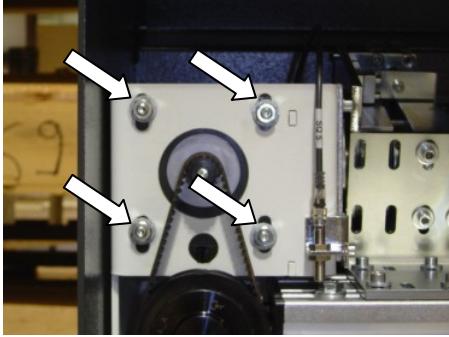
4. Once the tension is adjusted, remove the lever and close the main access cover.

## 6. SERVO MOTOR BELT TENSION ADJUSTMENT

### 6.1. Conditions

- Bar feed power off.

### 6.2. Procedure

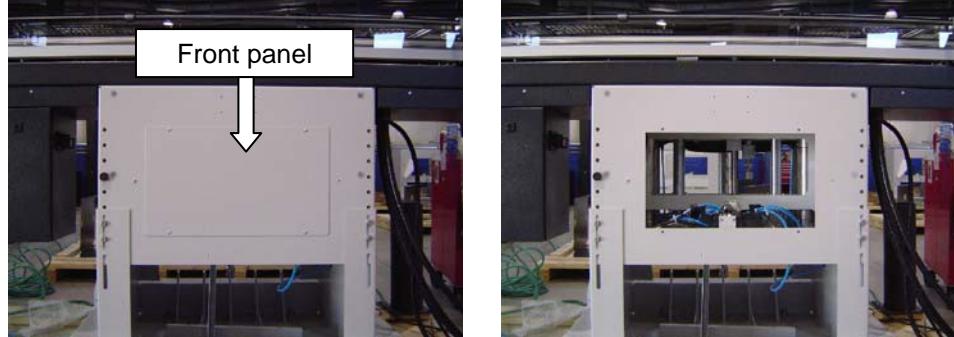
 A photograph of the machine with its main access cover removed, showing the internal structure. A white arrow points to the right side of the machine frame where the cover was removed.	 A close-up photograph of the motor mount plate. Four nuts are highlighted with white arrows, indicating they need to be loosened.
1. Open the main access cover.	2. Loosen the four nuts on the motor mount plate.
 A photograph showing a hand using a lever (a screwdriver) to raise the motor assembly. The lever is shown applying pressure to the motor's mounting point to tension the belt.	 A close-up photograph of the motor mount plate after the nuts have been loosened. The four nuts are again highlighted with white arrows.
3. Using a lever (ex. screwdriver), raise the motor to create tension on the belt.	
4. Holding the belt taut, tighten the four nuts on the motor mount plate.	
5. Once the tension is adjusted, remove the lever and close the main access cover.	

## 7. DIAMETER ADJUSTMENT MOTOR REPLACEMENT

### 7.1. Conditions

- Bar feed power on.
- Bar feed in STOP mode

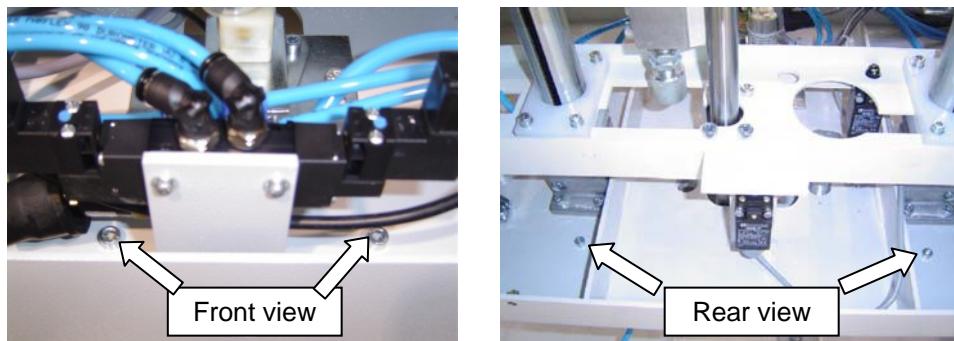
### 7.2. Procedure



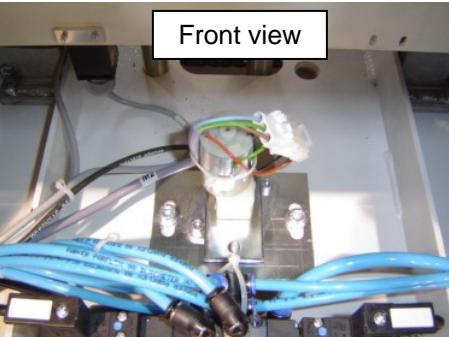
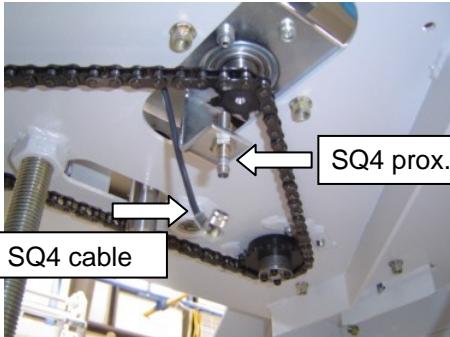
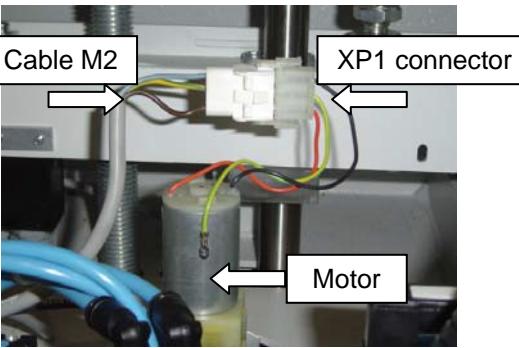
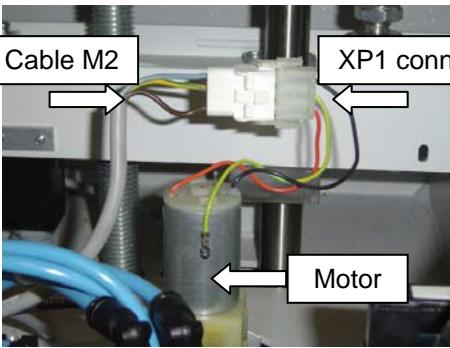
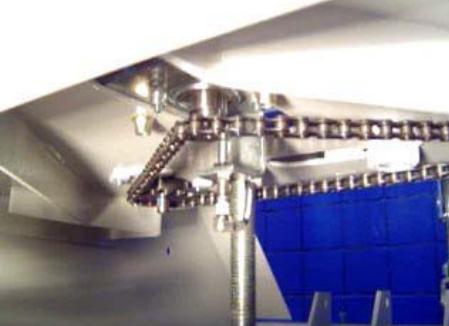
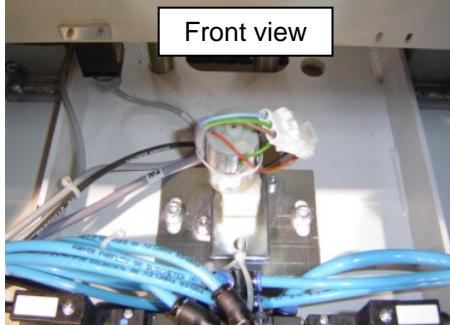
1. Remove the front panel on the sub-base.

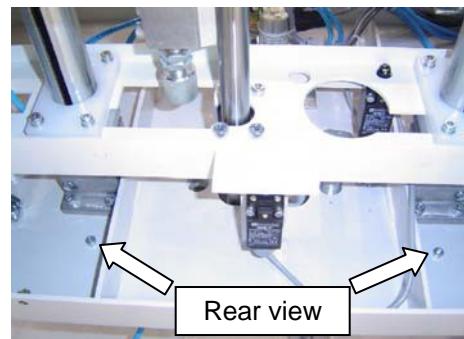
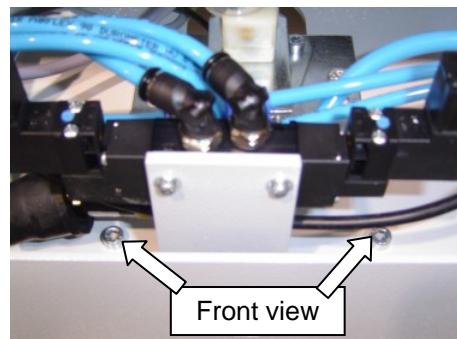


2. Remove the two rear panels on the sub-base.

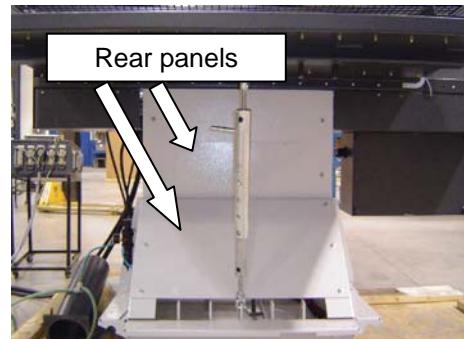
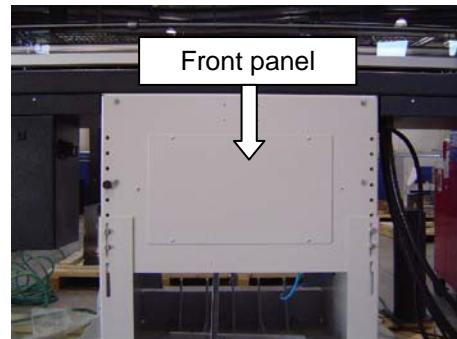


3. Remove the four screws holding on the chain guard cover plate.

 <p>Front view</p>	 <p>SQ4 prox. switch SQ4 cable</p>
<p>4. Remove the two screws holding on the adjustment motor.</p>	<p>5. Disconnect the SQ4 cable from the mounted proximity switch.</p>
 <p>Cable M2 XP1 connector Motor</p>	 <p>Cable M2 XP1 connector Motor</p>
<p>6. Disconnect the M2 cable from the XP1 connector and remove the bad motor.</p>	
	
<p>7. Insert the new motor and connect the M2 cable to the XP1 connector.</p>	
 <p>Front view</p>	
<p>8. Connect the SQ4 cable to the new mounted proximity switch and reconnect the chain.</p>	
	
<p>9. While pulling the motor toward the front of the bar feed to keep the chain taut, tighten the two screws for the motor assembly.</p>	



10. Reassemble the chain guard.



11. Reassemble the front and rear panels.

## 8. HOME POSITION PROXIMITY SWITCH ADJUSTMENT – SQ5

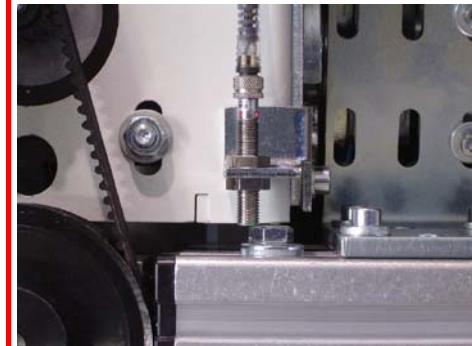
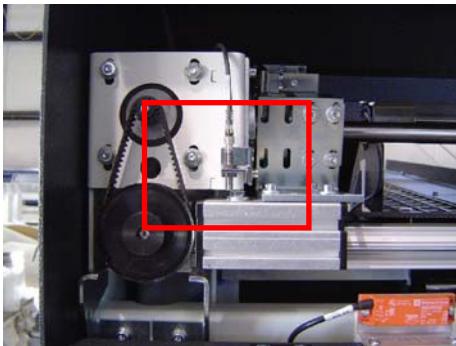
### 8.1. Conditions

- Bar feed power on.
- Bar feed in STOP mode
- Pusher at the mechanical home position against the reference plate

### 8.2. Procedure



1. Open the main access cover.



2. Adjust the hex bolt underneath the SQ5 proximity switch just far enough to get a strong signal from the switch and tighten down.

Note : any slight movement forward of the carrier should deactivate the proximity sensor.

3. Close the main access cover.

4. Press the STOP key on the remote control station to clear and reset the alarm.

5. Re-reference the bar feeder.

## 9. MAGAZINE AND LOADING FINGER ADJUSTMENT

The slope of the magazine rack needs to be adjusted when the shape of the material being loaded changes from round to profiled or vice versa.

When loading round stock, if the slope of the magazine is too much it is possible for the material to stack up and cause double loading if the weight of the material is great enough (especially when loading smaller diameter stock). Therefore, the slope must be reduced.

When loading profiled (ex. square/hex) stock, if the slope of the magazine is not great enough it can prohibit the ability of the material to slide down the rack. Therefore, the slope must be increased.

### 9.1. Conditions

- No stock on the magazine
- Bar feed in STOP mode

### 9.2. Procedure [ROUND] -> [PROFILED]

Rotate the loader rack adjustment axle CCW to increase the slope of the magazine until the indicator on the side of the magazine references the profiled material.

**Note :** *if there is not enough adjustment on the threaded rod, remove the pin and lift the magazine up to the next hole and reinsert the pin. Caution when removing the pin, the magazine rack will drop if not supported properly.*

### 9.3. Procedure [PROFILED] -> [ROUND]

Rotate the loader rack adjustment axle CW to decrease the slope of the magazine until the indicator on the side of the magazine references the round material.

**Note :** *if there is not enough adjustment on the threaded rod, remove the pin and drop the magazine down to the next hole and reinsert the pin. Caution when removing the pin, the magazine rack will drop if not supported properly.*

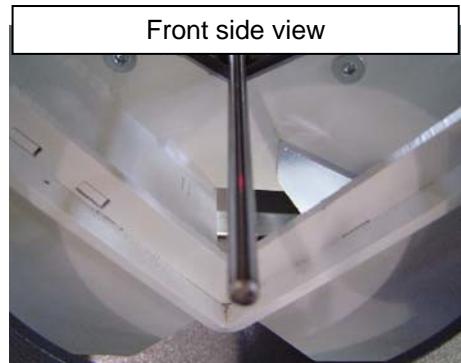
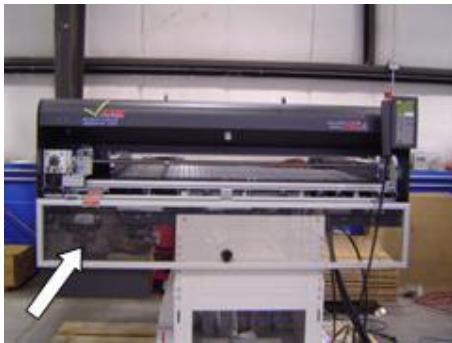
## 10. MEASURING CELL ADJUSTMENT – SQ3

### 10.1. Conditions

- Bar feed power on.
- V-channel in the upper position.
- Bar feed in STOP mode

### 10.2. Procedure

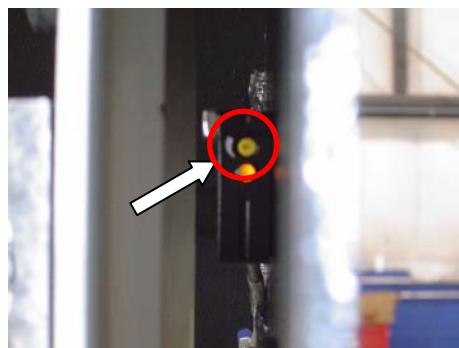
1. Retract the bar feed for access to the front of the unit.



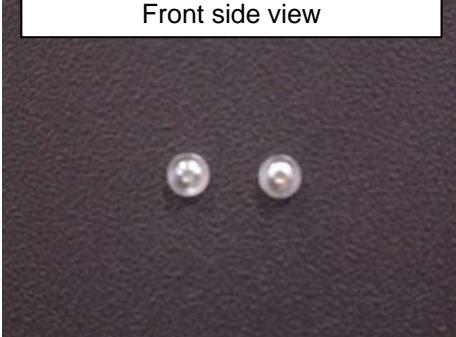
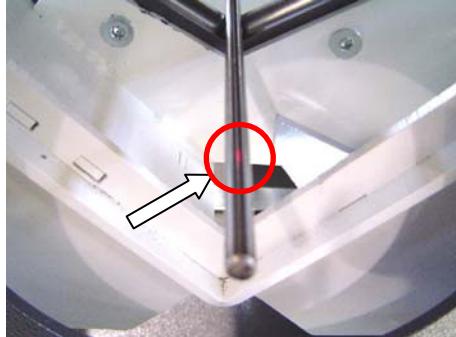
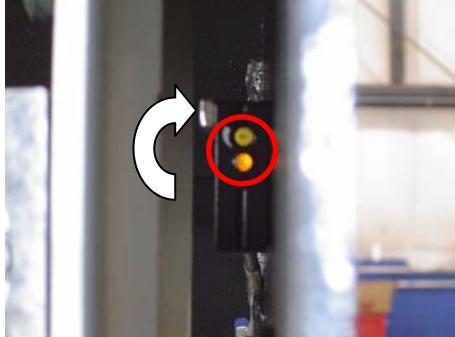
2. Open the main access cover.

3. Place a piece of 6mm (or smallest diameter stock available) into the v-channel and set parameter NEW BAR STOCK DIAMETER for the corresponding diameter.

**Note :** the stock must be straight to obtain the ideal adjustment.



4. Push the stock up so that it is sticking out the front of the bar feeder. Turn the gain adjustment on the measuring cell to the max position.

<p>Front side view</p> 	
<p>5. Loosen screws and adjust the cell so that the "red" sensor is reflecting off the center of the bar and tighten the cell down.</p>	
	 <p>6. Turn the gain adjustment CCW to the minimum position.</p> <p>7. From the minimum position slowly turn the gain adjustment CW until the sensor detects the bar. Once the sensor detects the bar continue to turn the gain CW another <math>\frac{1}{2}</math> turn.</p>
<p>8. Remove the material from the v-channel and close the main access cover.</p> <p>9. Press the STOP key on the remote control station to clear the Main Access Cover Open alarm.</p>	

## 11. PUSHER REVERSING DISTANCE ADJUSTMENT

The pusher reverses a specified distance, after the chuck closes, so that it is not making contact with the rotating bar or the spindle. Generally, the smaller the diameter of the pusher the greater the reversing distance. This is due to deflection (or sagging) of the pusher, which is caused when the pusher is far up in the spindle of the lathe and can no longer support its own weight so the tip of the pusher begins to sag.

### 11.1. Conditions

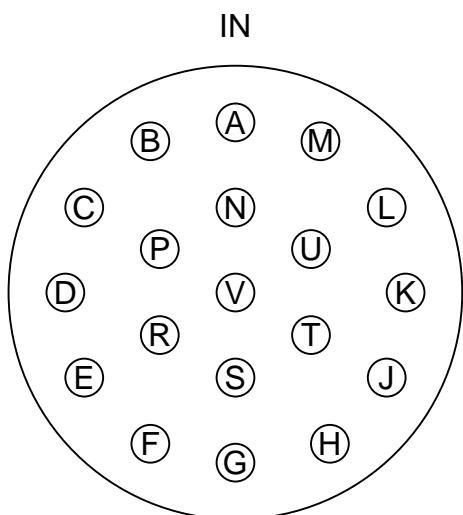
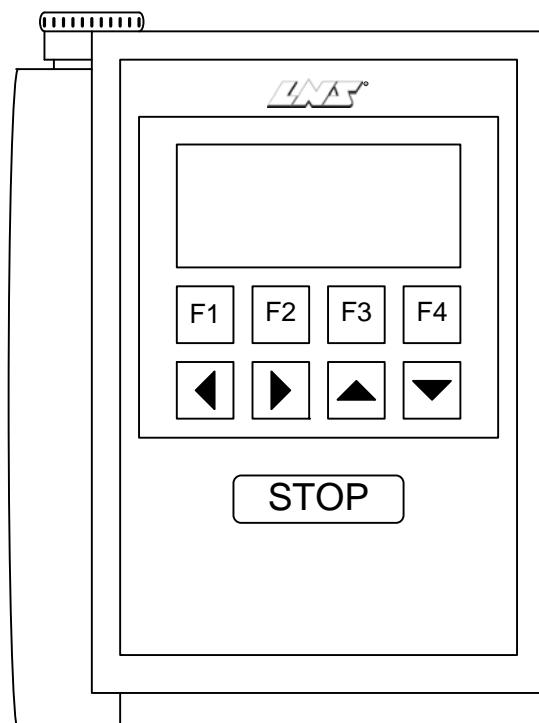
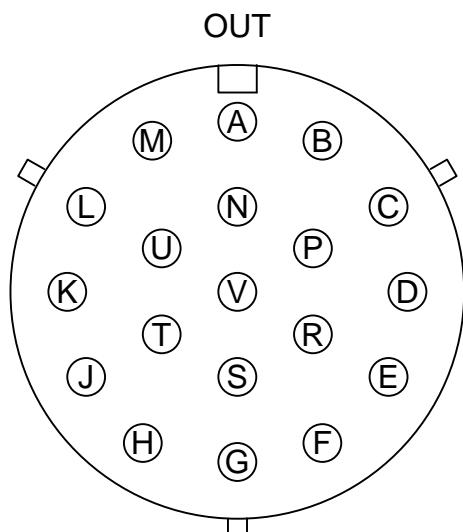
- Bar feed power on.
- V-channel in the lower position.
- No bar stock in the spindle.
- End of Bar Position is set

### 11.2. Procedure

1. Press the icon for manual mode.
2. Run the pusher forward until the tip of the pusher sags and is touching the spindle (or spindle liner if one is installed).

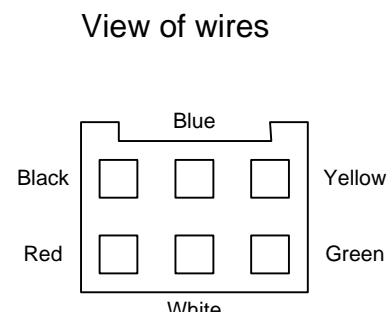
Note: if the pusher does not touch the spindle before the End of Bar position is reached, then the default value will remain as the value for the Pusher Reversing Distance parameter. If this is the case, then return the pusher to the home position and this procedure is complete, otherwise go to Step 3.

3. Reverse the pusher just slightly until there is  $\frac{1}{4}$ " clearance between the pusher and the bottom of the spindle.
4. Record the value of the pusher position on the remote control station.
5. Take this value and subtract it from the value of the End of Bar position. Take this new value and enter it as the value for the Pusher Reversing Distance parameter.

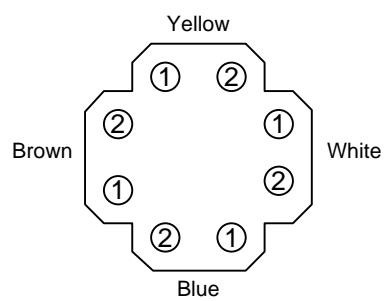


A = Black
B = Red
C = Yellow
D = Green
E = Blue
F = White
H = White
J = White
K = Blue
L = Blue
M = Yellow
N = Yellow
P = Brown
R = Brown

Blue plug



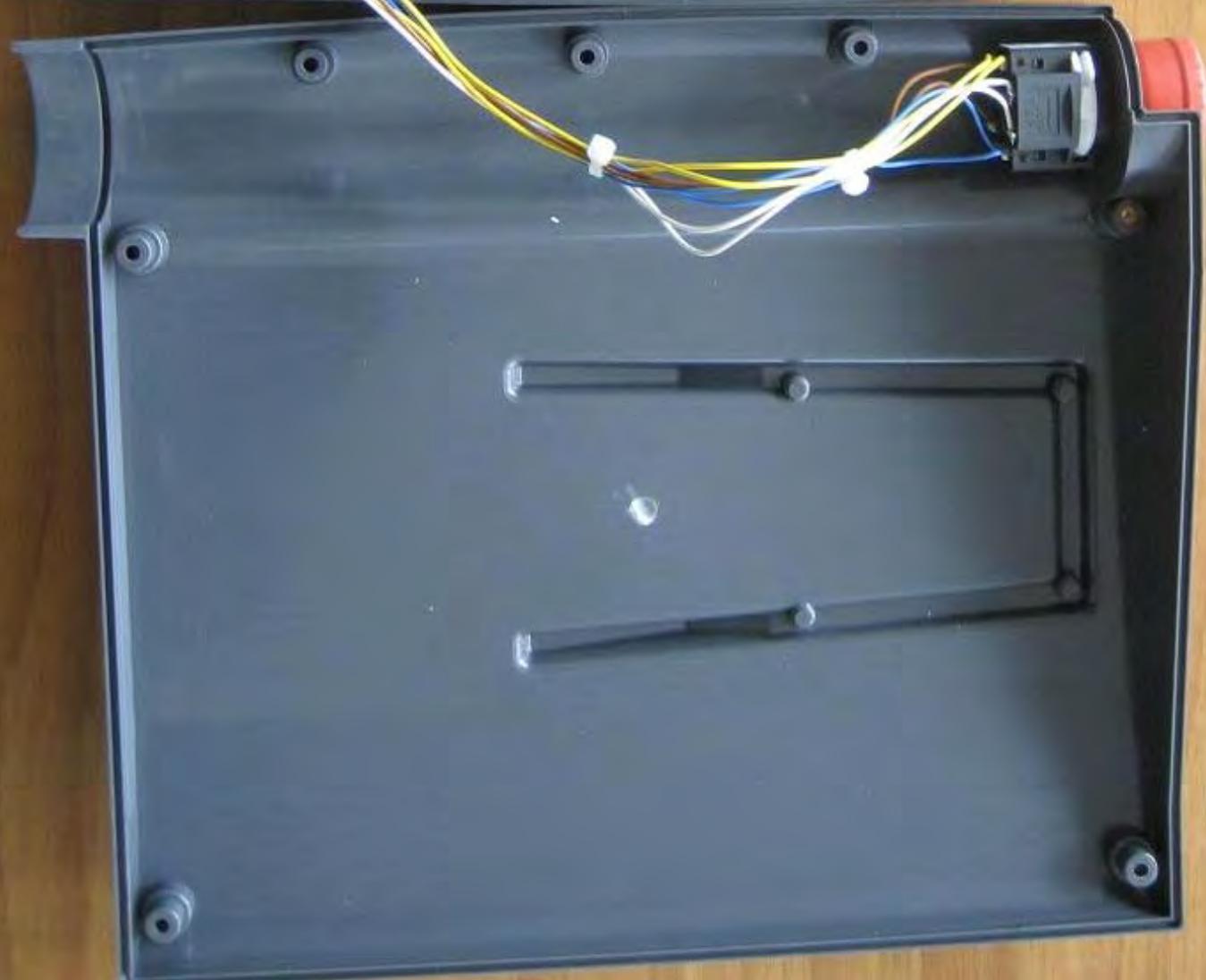
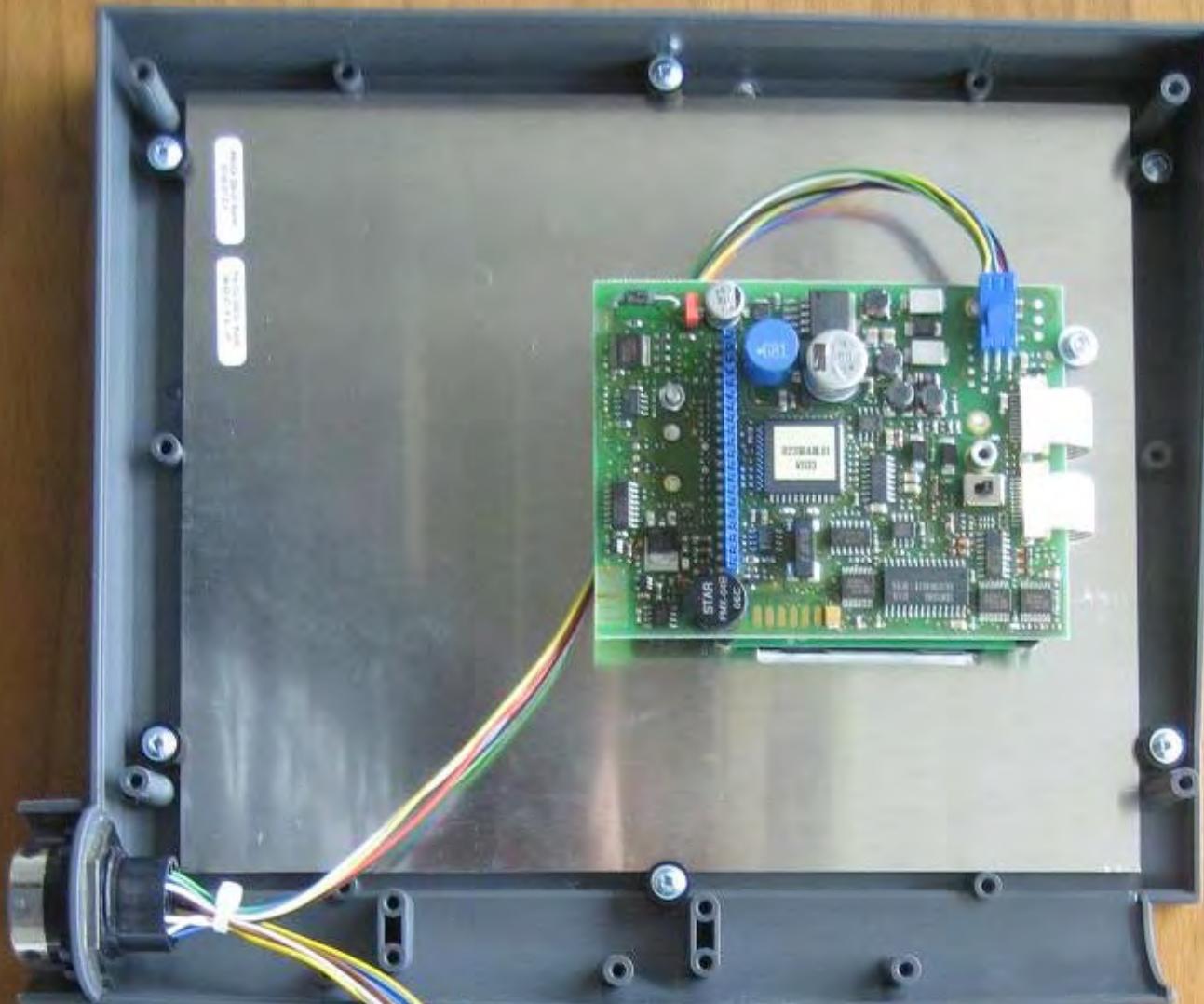
Emergency Stop

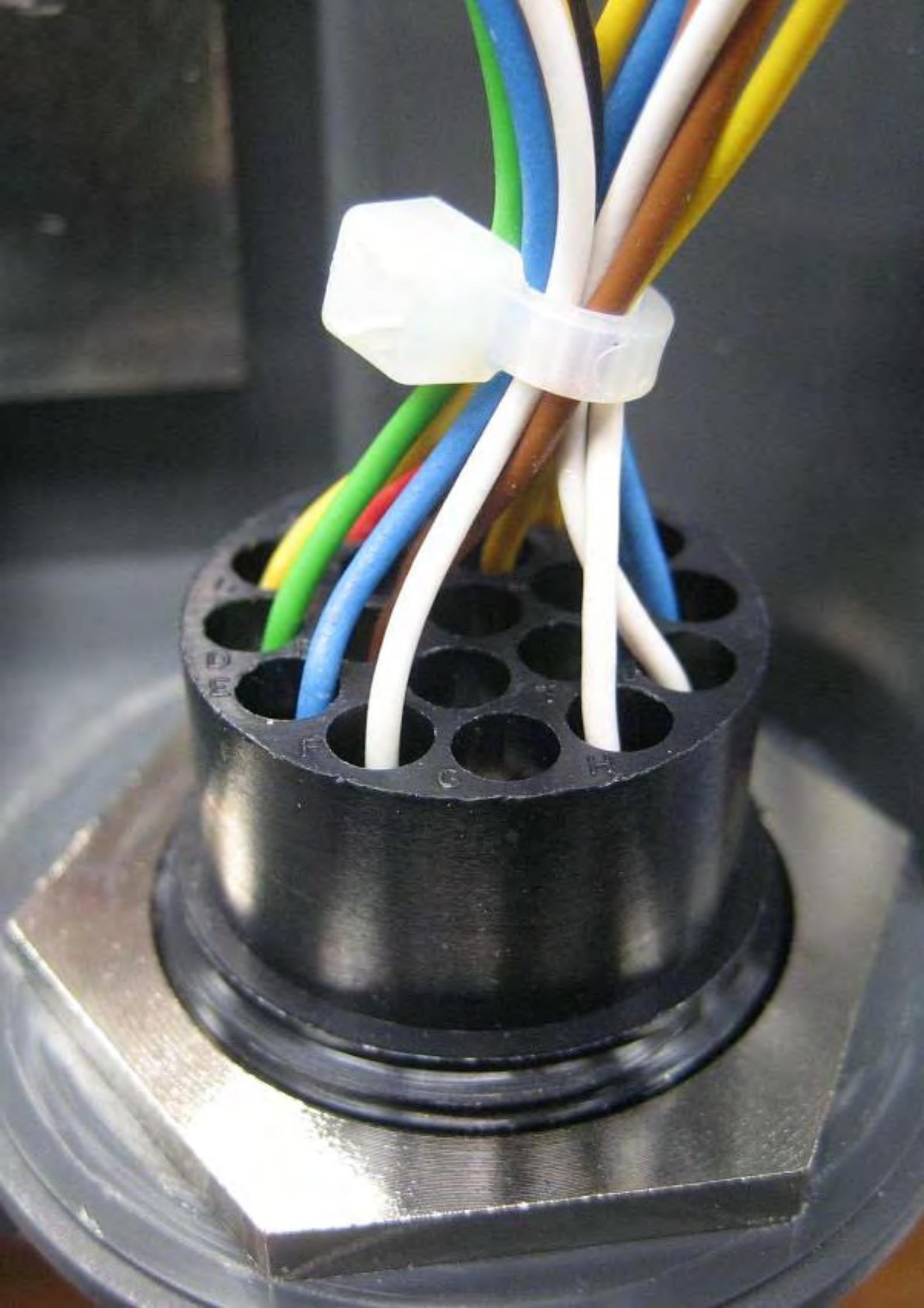


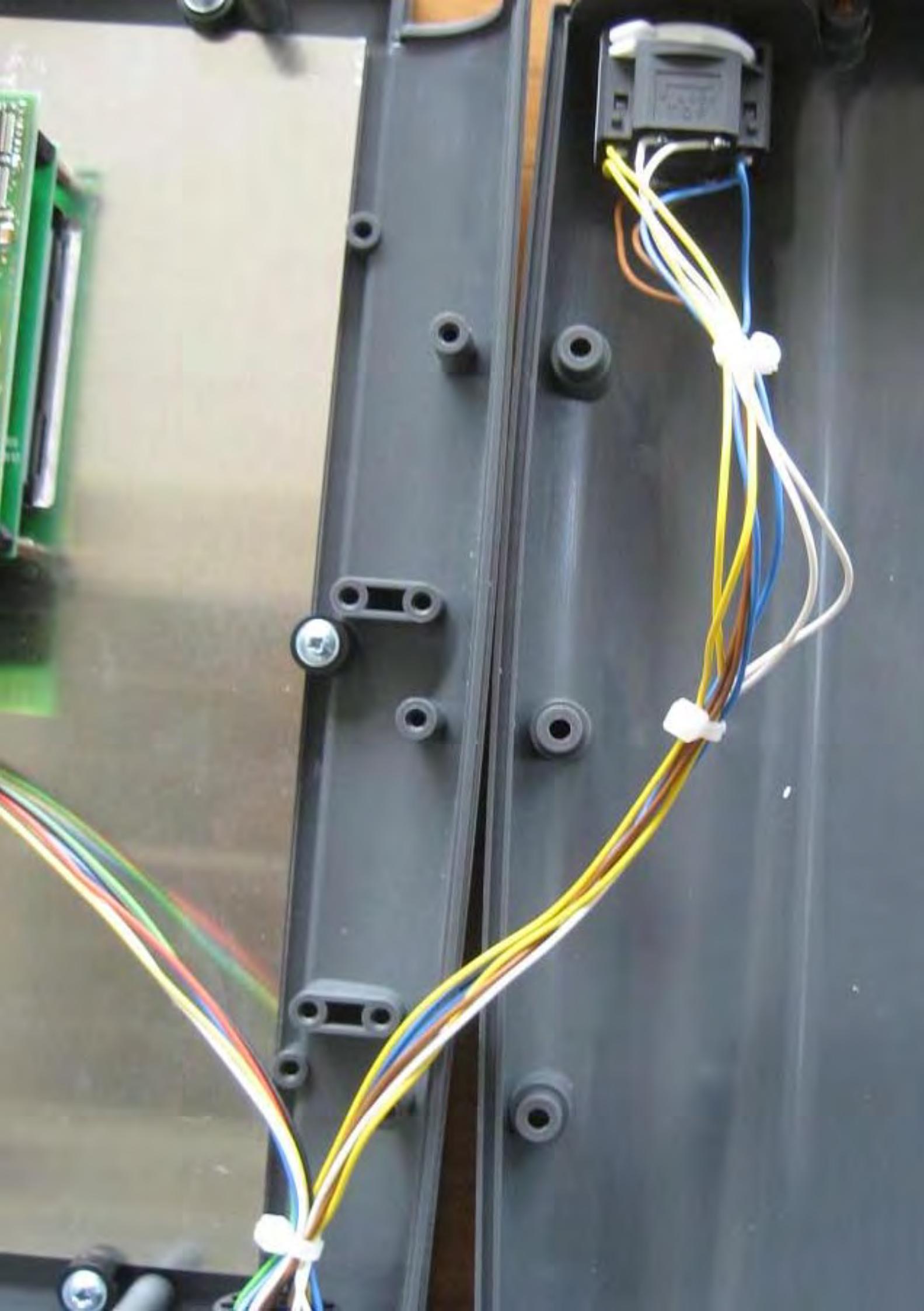


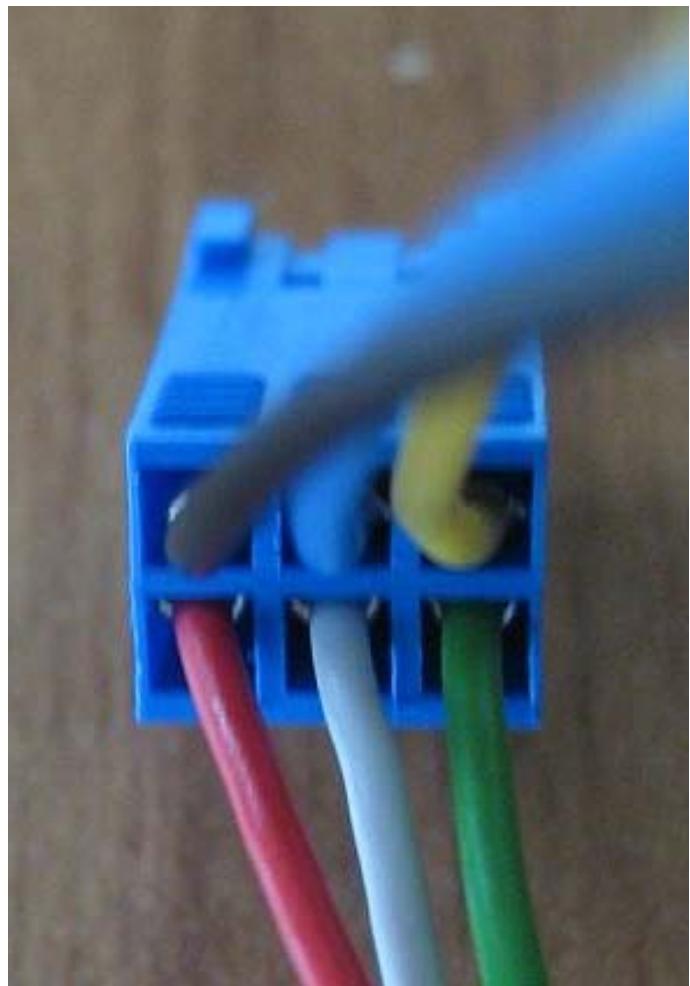
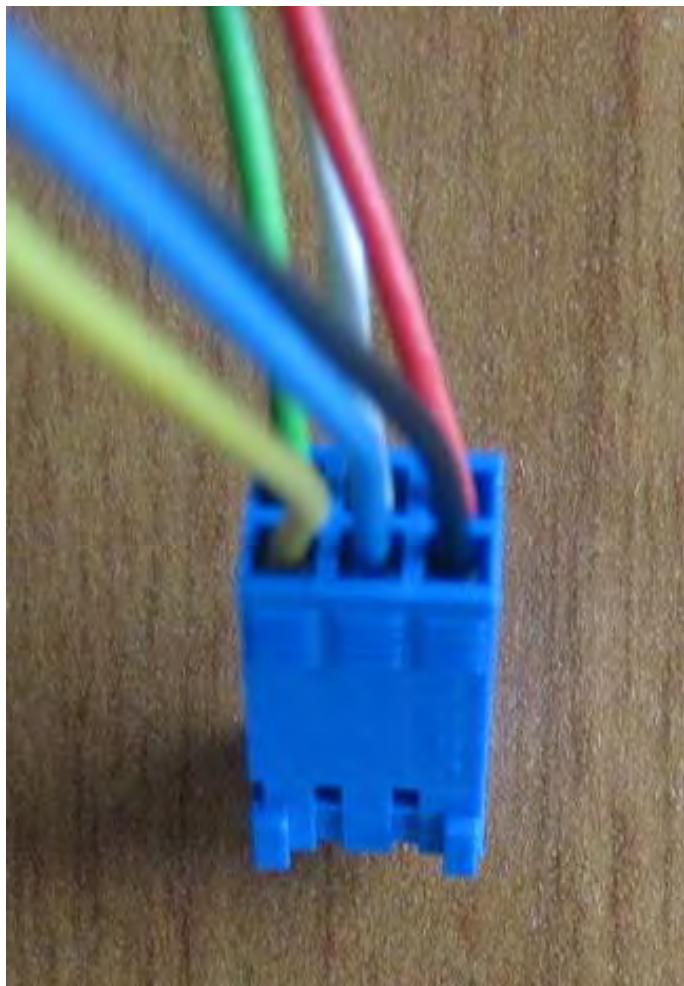
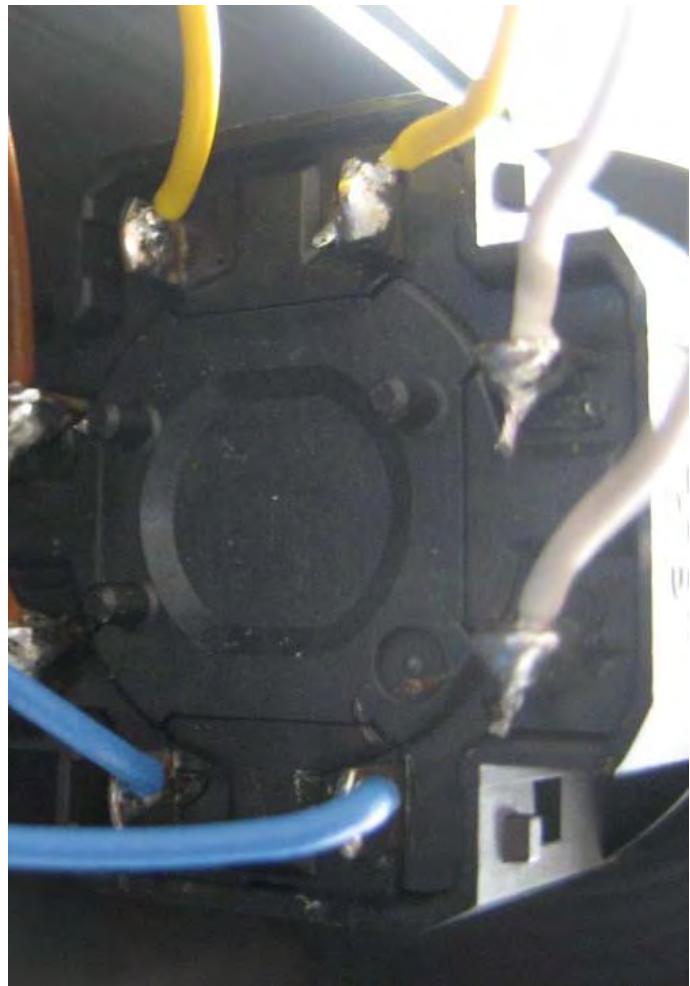
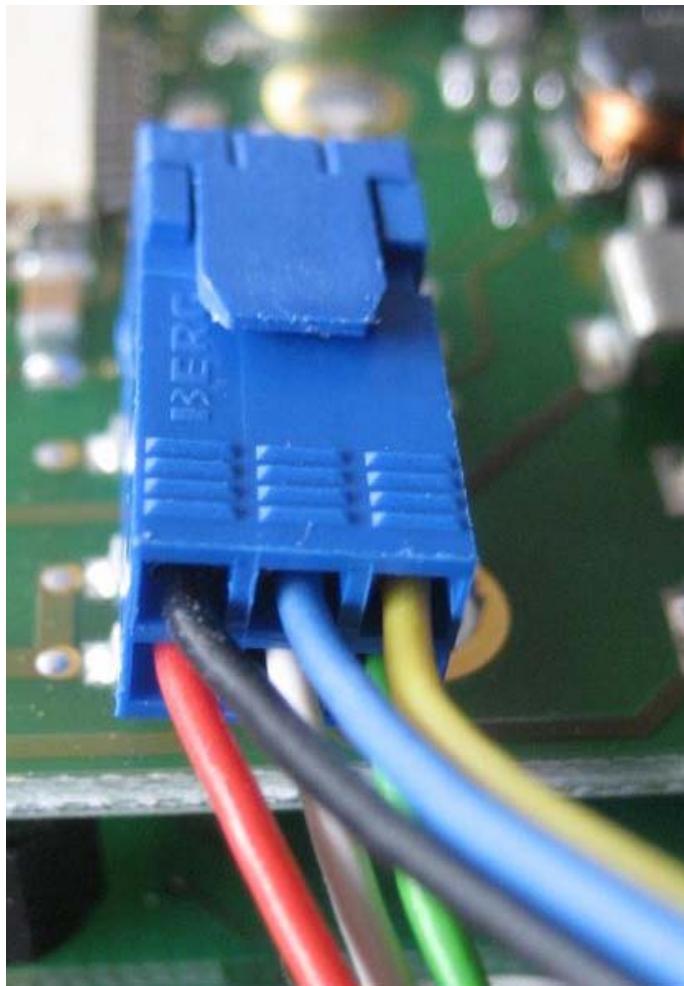
A-CH 220.01:R0HS  
07.02.07.D.F

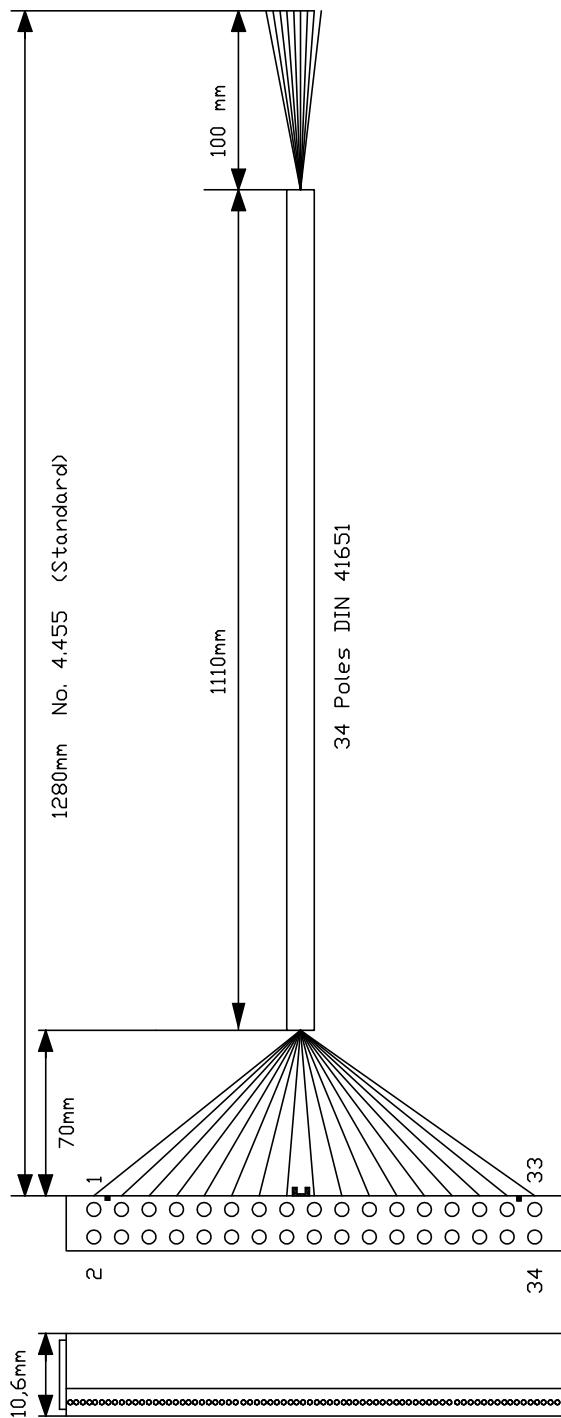
PM-CH 220.01:R0HS  
08.02.07.P.BF (VT)











	Input	Output
PCD1	White	White/Gray
PCD2	Brown	Gray/Brown
PCD3	Green	0.7
	Yellow	White/Pink
	Gray	Pink/Brown
	Pink	0.6
	Blue	White/Blue
	Red	Brown/Blue
	Black	White/Red
	Purple	Brown/Red
	Gray/Pink	White/Black
	Red/Blue	Brown/Black
	White/Green	0.3
	Brown/Green	Gray/Green
	White/Yellow	Yellow/Gray
	Yellow/Brown	Pink/Green
		Yellow/Pink
		Green/Blue
		Yellow/Blue

7.7-7.0/6.7-6.0 5.7-5.0/4.7-4.0

	Input	Output
(1)	White	4.7
(2)	Brown	2.7
(3)	Green	0.7
(4)	Yellow	7.7
(5)	Gray	5.6
(6)	Pink	7.6
(7)	Blue	5.5
(8)	Red	7.4
(9)	Black	5.4
(10)	Purple	7.3
(11)	Gray/Pink	5.3
(12)	Red/Blue	7.2
(13)	White/Green	5.2
(14)	Brown/Green	7.1
(15)	White/Yellow	5.1
(16)	Yellow/Brown	7.0
(17)	White/Gray	4.6
(18)	Gray/Brown	2.6
(19)	White/Pink	0.6
(20)	Pink/Brown	4.6
(21)	White/Blue	2.5
(22)	Brown/Blue	4.5
(23)	White/Red	5.5
(24)	Brown/Red	4.4
(25)	White/Black	2.4
(26)	Brown/Black	4.3
(27)	Gray/Green	6.4
(28)	Yellow/Gray	0.2
(29)	Pink/Green	4.2
(30)	Yellow/Pink	2.2
(31)	Green/Blue	6.2
(32)	Yellow/Blue	4.0

LNS SA	DESSIN R.S.	Cable for PLC SAI A PCD2/PCD3
Fabrique de Machines 2534 ORVINSUISSE	DATE: 19.01.11	Modifications: 4.455 F1/1

# Loading procedure for flash card (blue card) on SAIA PCD3

## 1 Introduction

This procedure allows to record all necessary files from the bar feeder to the flash card (blue card) located on the PLC. These files contains all messages (cycles, alarms), the screens graphics as well as available languages.

Unlike LNS software, the files are transferred through FTP with PLC acting as a server. The difficulty in this connection lies in the fact that the PLC has a fixed IP address (192.168.10.197) which can't be easily modified. We therefore connects with an Ethernet crossover cable in the case of a direct connection PC <-> PLC to eliminate potential conflicts with the IP addresses of an internal company network.

## 2 Required

### 2.1 LNS machines:

- Express 332 S2
- QLSIII + (starting at 2014)
- QLSIII MI (Mazak)
- Express 112
- Express 220 S2

### 2.2 Material :

- Flash card (blue card)
  - o Reference SAIA : PCD7.R550M04                   nr. LNS 4.971
  - o Reference SAIA : PCD7.R551M04                   nr. LNS 4.
- PLC SAIA : PCD3 M5340
  - o Firmware : version 1.16.45 or later
- Control (HMI) PCDx Webpanel
  - o Firmware : version VGA\_1.18.23.02\_LNS or later
- Ethernet crossover cable

### 2.3 Software :

- Filezilla FTP Client 3.6 or later
- Filezilla configuration file (FileZilla\_PCD3.xml)
- Flash card content (cartebleue.zip)

### 3 Installation and configuration of Filezilla software

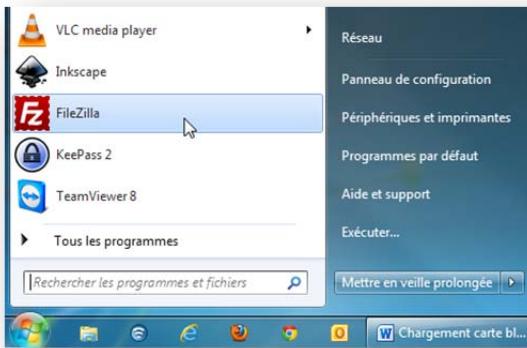
#### 3.1 Installation

3.1.1 Install Filezilla software FTP Client (double-clic on file « FileZilla\_3.x.x\_win32-setup.exe »).

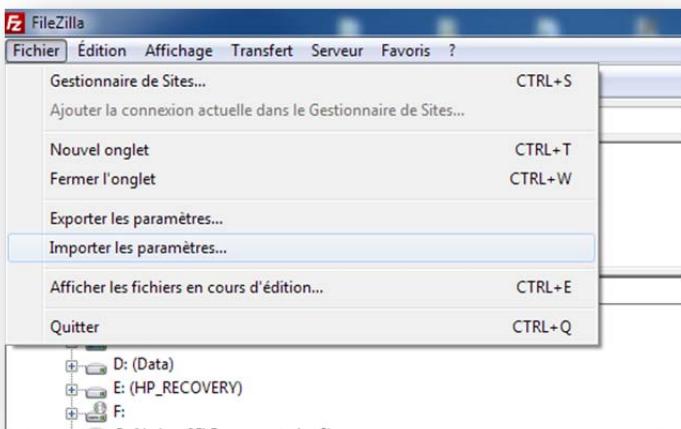
3.1.2 Follow instructions on the screen.

#### 3.2 Configuration

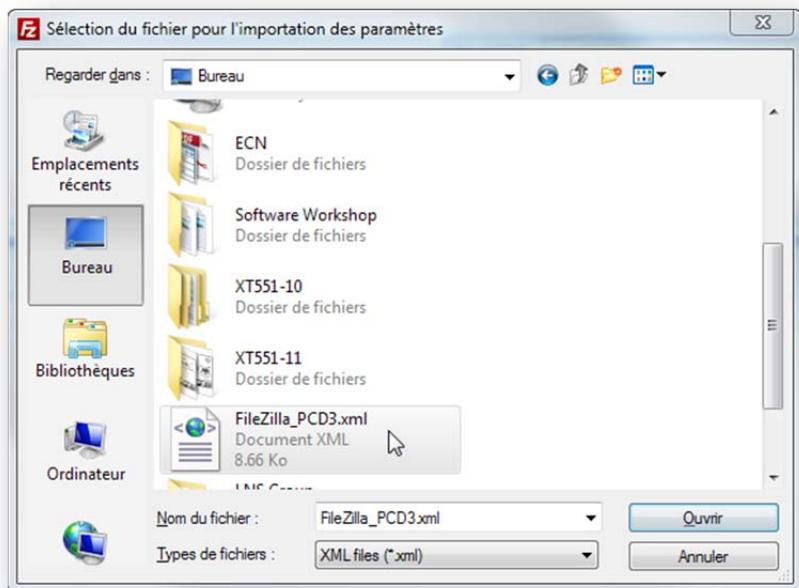
3.2.1 Open Filezilla :



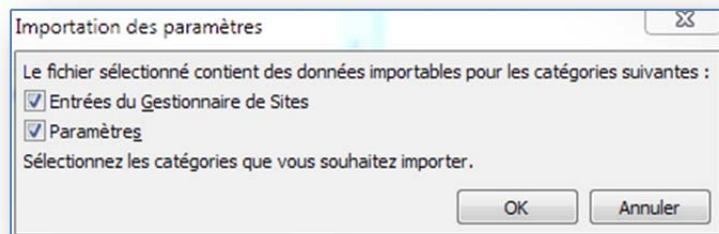
3.2.2 Install the configuration file (File > import parameters...)



### 3.2.3 Select the configuration file « FileZilla\_PCD3.xml » and confirm with « open » function :

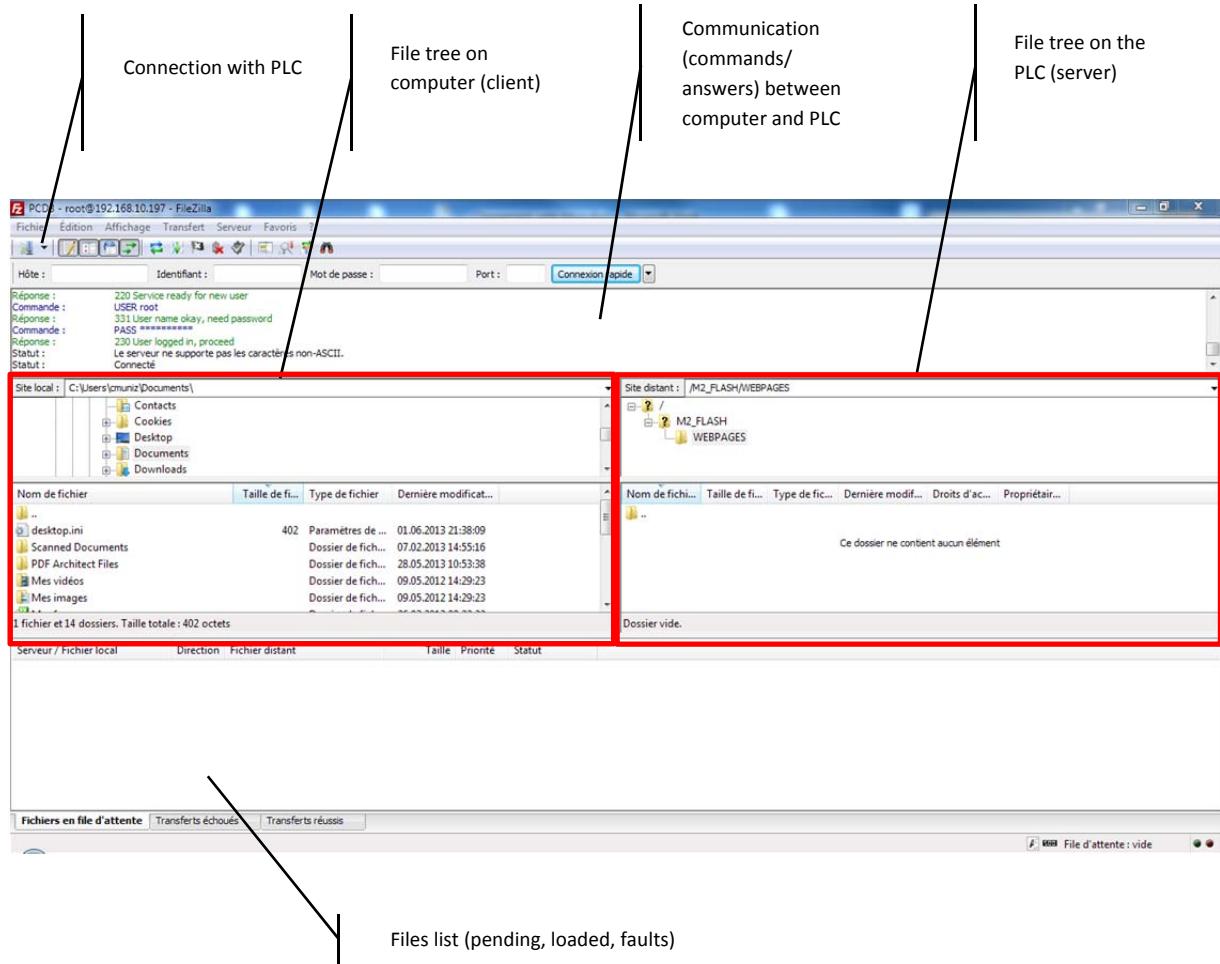


### 3.2.4 Select all data and confirm with “OK” :



## 4 Filezilla basic functions

### 4.1 Filezilla screen :



## 5 Loading of the flash card (blue card)

### 5.1 Bar feeder setting

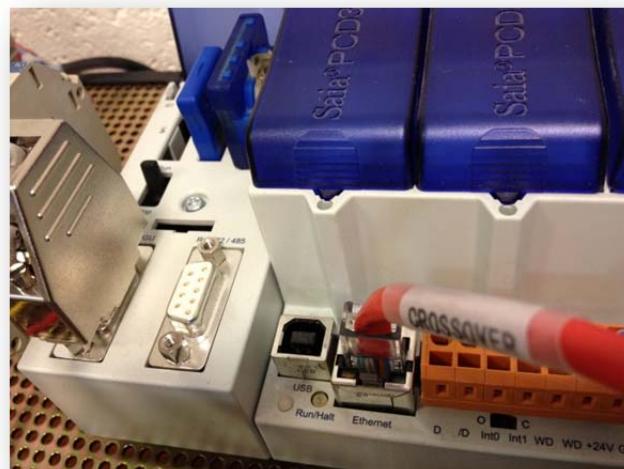
- 5.1.1 Switch off the bar feeder.
- 5.1.2 Insert the flash card into slot M2.



- 5.1.3 Switch on the bar feeder and wait for the complete start-up.

### 5.2 File transfer to the flash card (blue card)

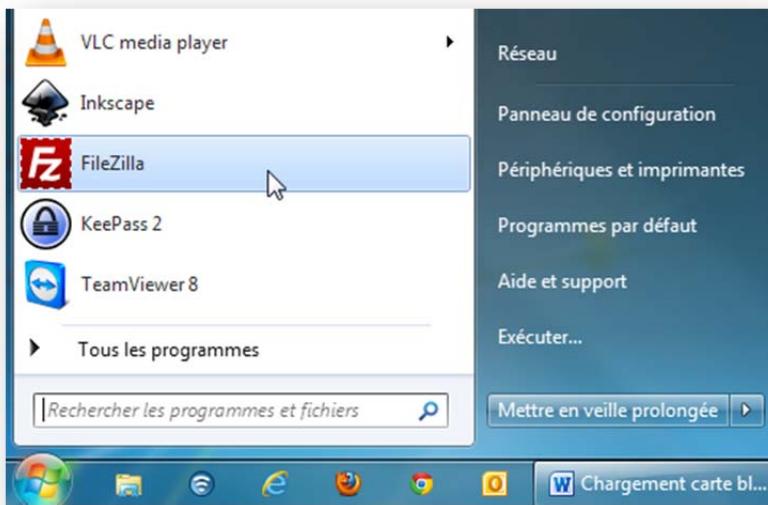
- 5.2.1 Disconnect the cable from Ethernet plug of the PLC.  
Connect the crossover Ethernet cable.



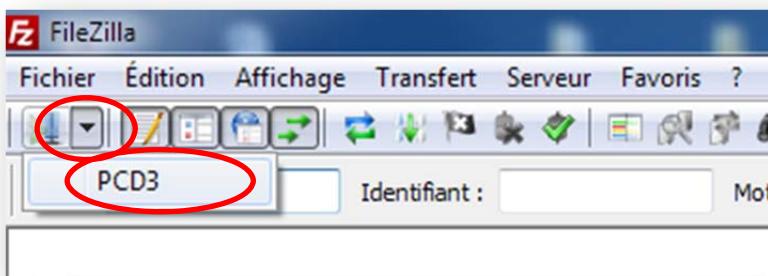
5.2.2 Check that all network connection (cable, wifi) are switched off on the computer.

5.2.3 Connect the crossover cable to the computer.

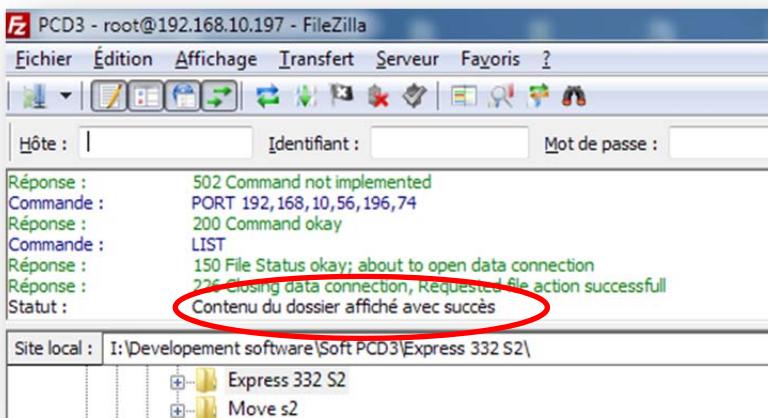
5.2.4 Start Filezilla.



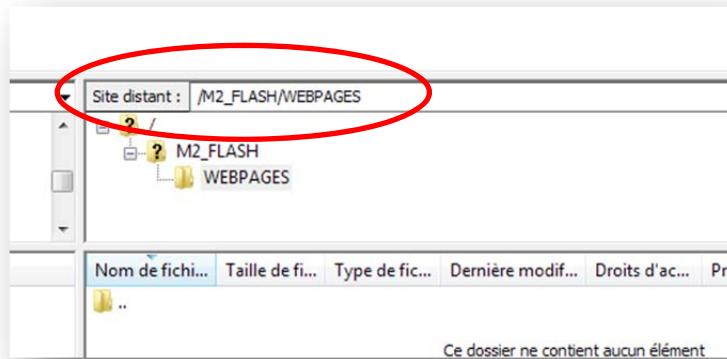
5.2.5 Start the connection from Filezilla to the PLC.



5.2.6 The connection is correct when the screen displays « file content successfull » :



5.2.7 Make sure that the PLC side is setted to the directory **/M2\_FLASH/WEBPAGES**.

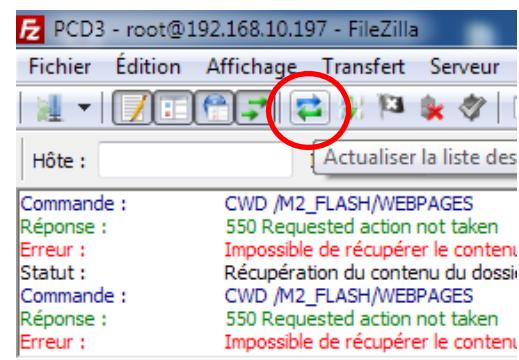


5.2.8 If the flash card already contains files, select (**Ctrl+A**) and delete (**Del**) all the content of the **PLC directory**.

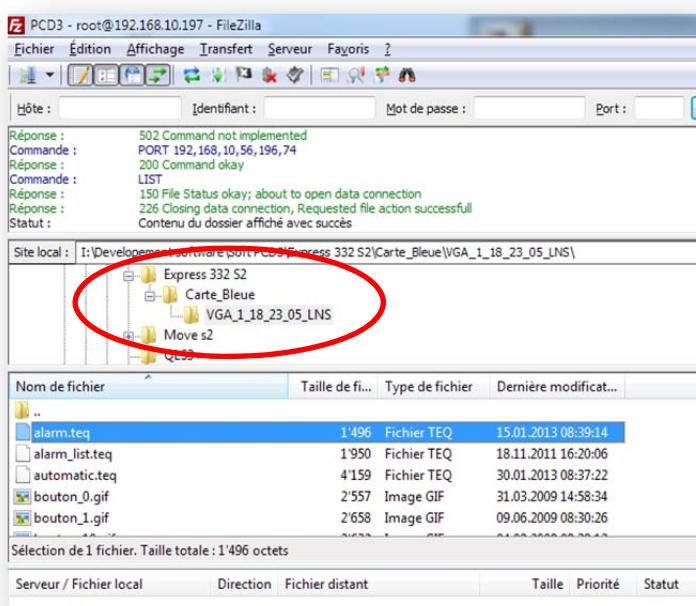
**Warning :**

The file deleting is fast, but the PLC takes 1-2 minutes to renew the card memory.

The PLC is unavailable during this time. Refresh the communication using the control button "Refresh".

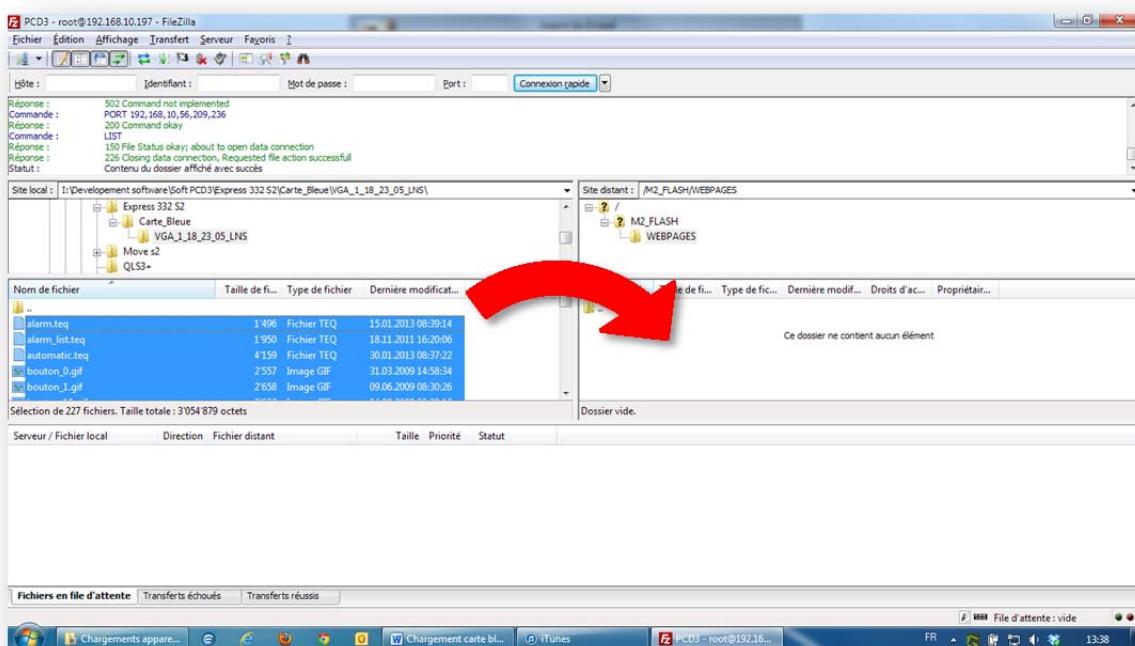
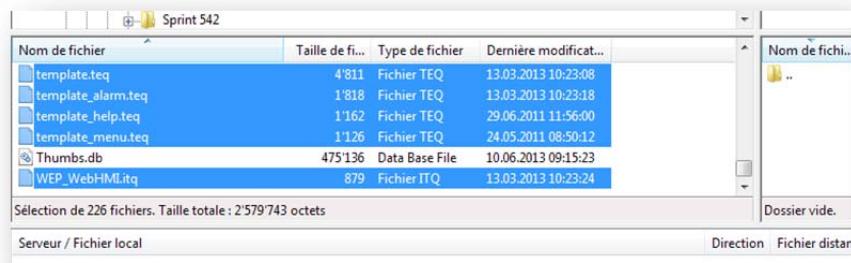


5.2.9 Navigate on the computer side through the file "cartebleue.zip", already unzipped.

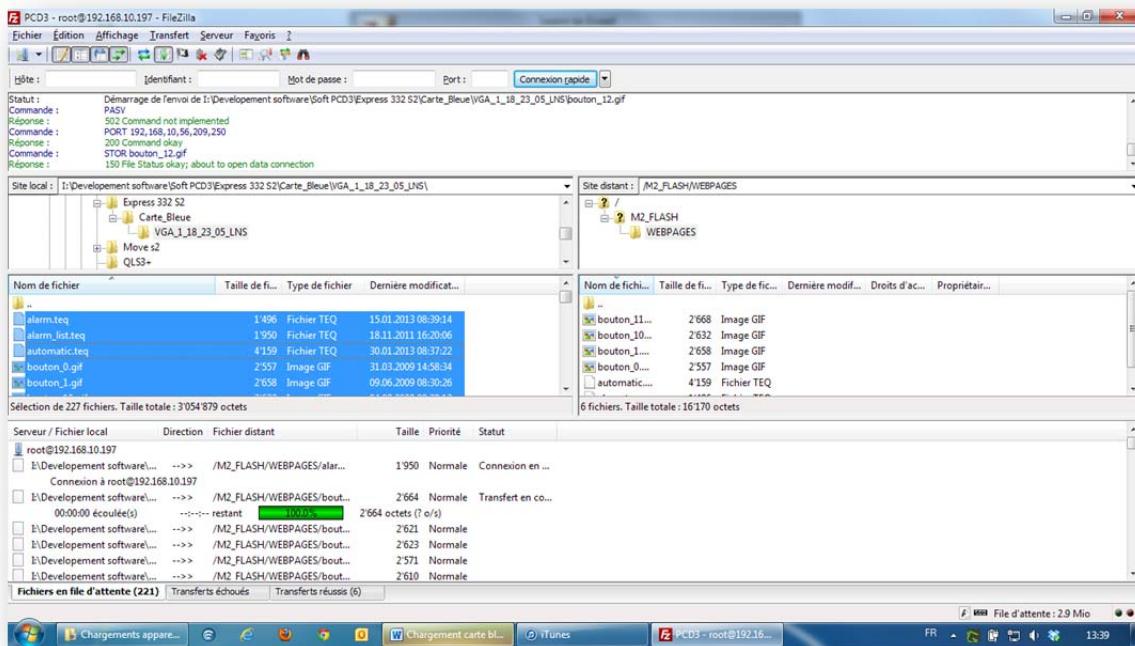


### 5.2.10 Select all the directory content (**Ctrl+A**) and move the files on the PLC side.

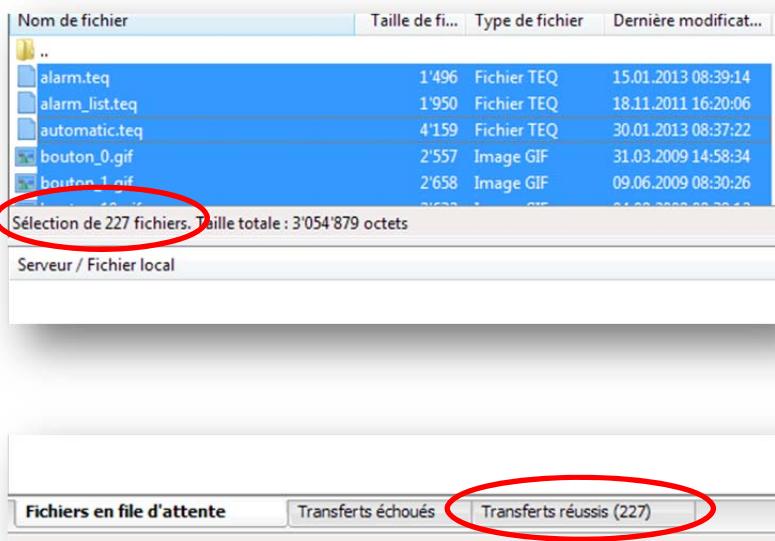
**Warning :** It's possible that a file called « **Thumbs.db** » is on the list of files (computer side). This file is automatically generated by windows. Even if this file is not a problem, it can take about 10% of the memory. We recommend to unselect this file before moving all files from the computer to the PLC (select all files with **Ctrl+A**, keep **Ctrl** pressed and select the file “**Thumbs.db**”).



### 5.2.11 Wait for the complete transfer of all files (pending list should be empty).



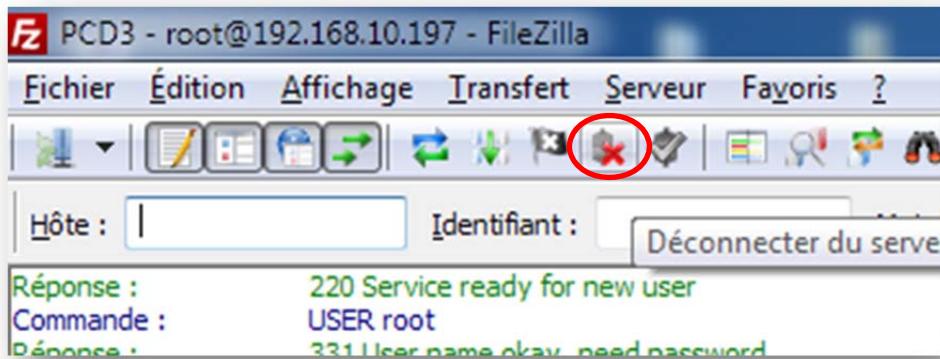
### 5.2.12 Check the number of files transferred : the number of selected files must be equal to the number of successful transferred files.



## 6 Back to standard functioning status

### 6.1 Disconnecting

6.1.1 Disconnect the link between computer and PLC, then close Filezilla :



6.1.2 Disconnect the crossover Ethernet cable, then connect the standard Ethernet cable into the PLC plug.

6.1.3 Switch off the bar feeder, wait for 3 seconds and switch back on the bar feeder.  
Wait for the complete start-up of the bar feeder.

# Firmware loading on SAIA PCD3

## 1 Introduction

A firmware manages the basic functions of an electronic component. The firmware is usually loaded at the factory, but we sometimes update some functions and you may update your firmware to integrate these new functions.

As the LNS software, the firmware transfer use USB port of the PLC, as well as SAIA Firmware Downloader.

## 2 Required

### 2.1 LNS machines :

- Express 332 S2
- Move S2
- Sprint 542
- Sprint 552/565
- Sprint S3
- QLS80 S2
- QLSIII + (à partir de 2014)
- QLSIII MI (Mazak)
- Express 112
- Express 220 S2

### 2.2 Material :

- PLC SAIA PCD3 M5340, with firmware 1.08.23 or later
- Cable USB type A<->type B

### 2.3 Software :

- SAIA Firmware Downloader installed and working
- Firmware file from LNS (PCD3.Mxxx0\_x.x.xx.blk)

**Warning :** **SAIA PCD3 PLC type M5540 can't be updated.**

The PLC must be replaced by model M5340 before you can update the software.

### 3 Actual firmware version

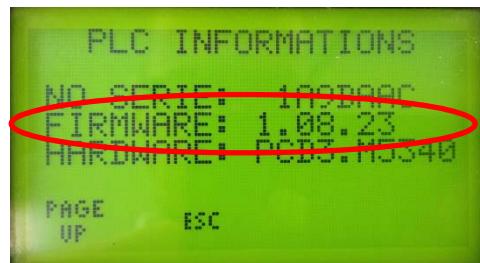
#### 3.1 Machine equipped with basic remote control

- 3.1.1 Wait for the complete start-up of the machine or press STOP to come back to the main menu.



- 3.1.2 Press on to display Help menu.

- 3.1.3 Press on F4 (PageDown) until PLC information is displayed :



- 3.1.4 Press on F2 (ESC) to escape from Help menu.

#### 3.2 Machine equipped with tactile remote control

- 3.2.1 Wait for the complete start-up of the machine or press STOP to come back to the main menu.

- 3.2.2 Press on « HELP » to display Help menu.  
 PLC information is displayed



- 3.2.3 Press on F2 (ESC) to escape from Help menu.

## 4 Firmware update

### 4.1 Preparation of the barfeeder

4.1.1 Wait for the complete start-up of the machine.

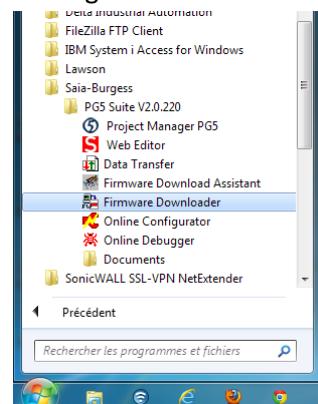
4.1.2 Insert USB plug on PLC socket.



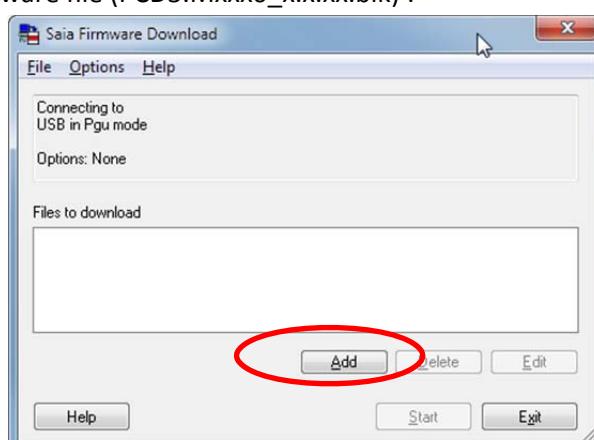
4.1.3 Connect the second extremity of the USB cable to the computer.

### 4.2 Transfer and firmware update

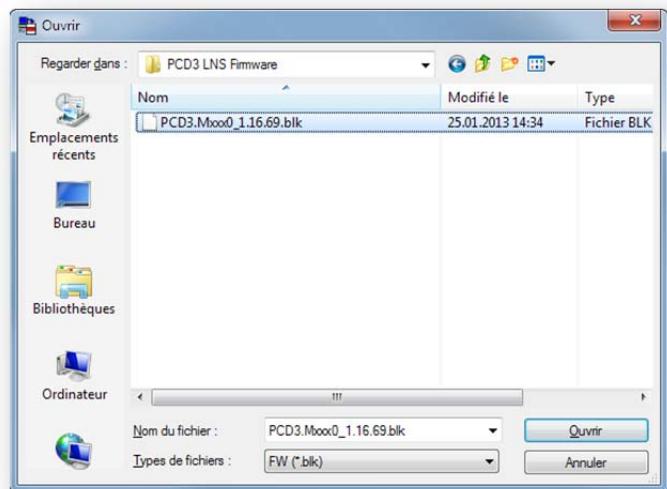
4.2.1 Start Firmware Downloader of SAIA-Burgess.



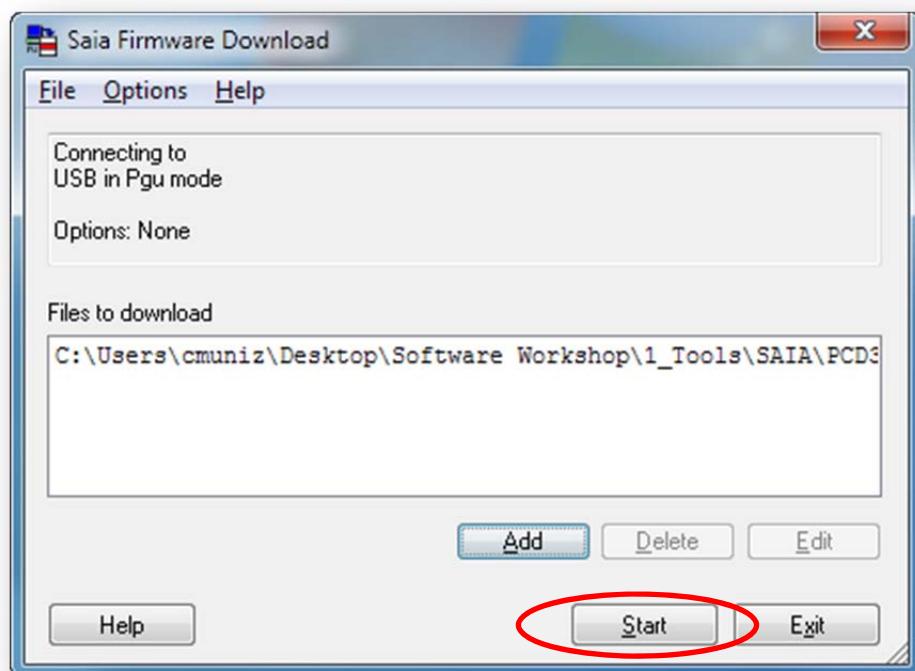
4.2.2 Add the LNS firmware file (PCD3.Mxxx0\_x.x.xx.blk) :



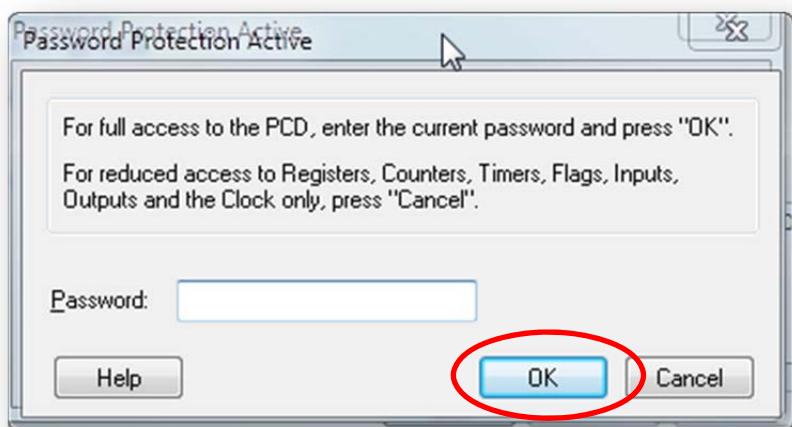
#### 4.2.3 Select the LNS firmware file (PCD3.Mxxx0\_x.x.xx.blk) :



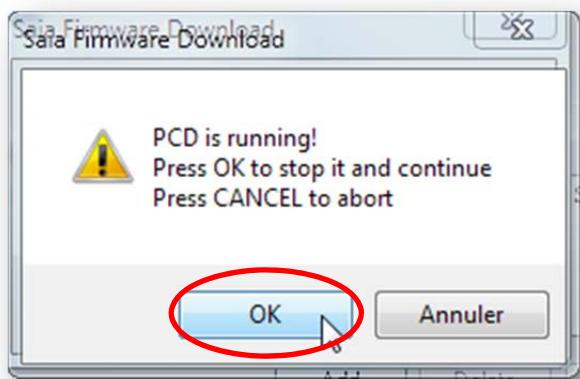
#### 4.2.4 Click on "Start" to transfer and update the firmware :



4.2.5 Enter the password if needed « Ins2534orvin » and confirm with "OK" :



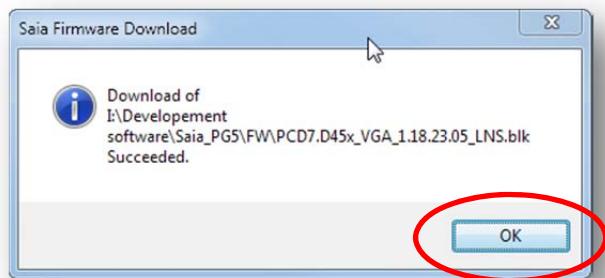
4.2.6 Confirm PLC shut down with "OK" :



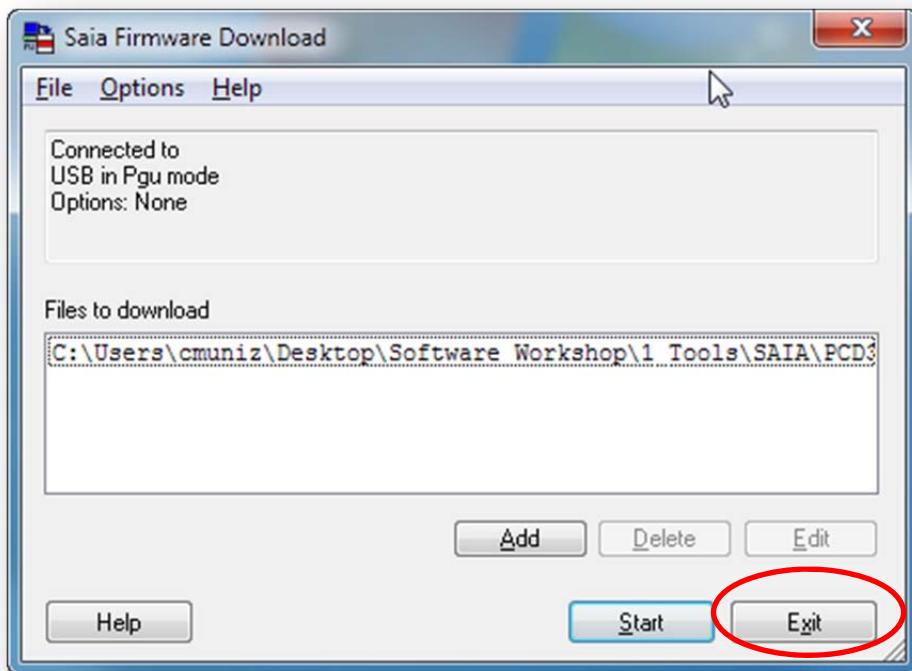
4.2.7 The flash memory is deleted and the new firmware is transferred :



4.2.8 When the transfer is complete, confirm the successful message with "OK" :



4.2.9 Close the window with "Exit" :



### 4.3 Back to standard functioning status

4.3.1 Disconnect the link between computer and PLC.

4.3.2 Switch off the bar feeder, wait for 3 seconds and switch back on the bar feeder.  
Wait for the complete start-up of the bar feeder.



# Loading procedure for SAIA PLC

PCD3  
5340 or 5540

Pages : 1/4

## 1. Introduction :

This procedure is to transfer the latest software version into **PLC PCD3** :

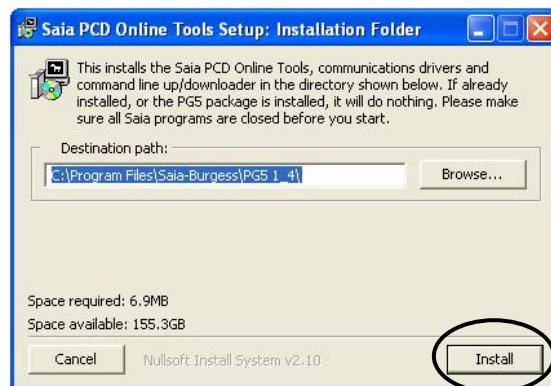


## 2. Program installation :

### Utility installation :

In the folder <I:\Developement software\Soft PCD3>

- Double-click "Stand Alone Online Tool 514.exe"
- On the following displayed window, click on "Install"



- Once the transfer completed, click on "close".

### Creating a shortcut folder PCD3 :

Create on the desktop a shortcut to the file <I:\Developement software\Soft PCD3>

### USB connecting

When first connecting USB cable from PLC to PC, an installation window will appear :

- Click on "yes, this time only" and click on "next"
- Click on "Install the software automatically" and click on "next"
- Complete



# Loading procedure for SAIA PLC

PCD3  
5340 or 5540

Pages : 2/4

## 3. Procedure :



1. Check that all switches of the selection are in the middle position.



2. Remove the module (see photo above), insert the battery and replace the module in the PLC.



3. Remove the orange connector from the PLC and replace by the board connector.
4. Connect the USB A/B cable



5. Turn the switches to **ON** and **24V**.





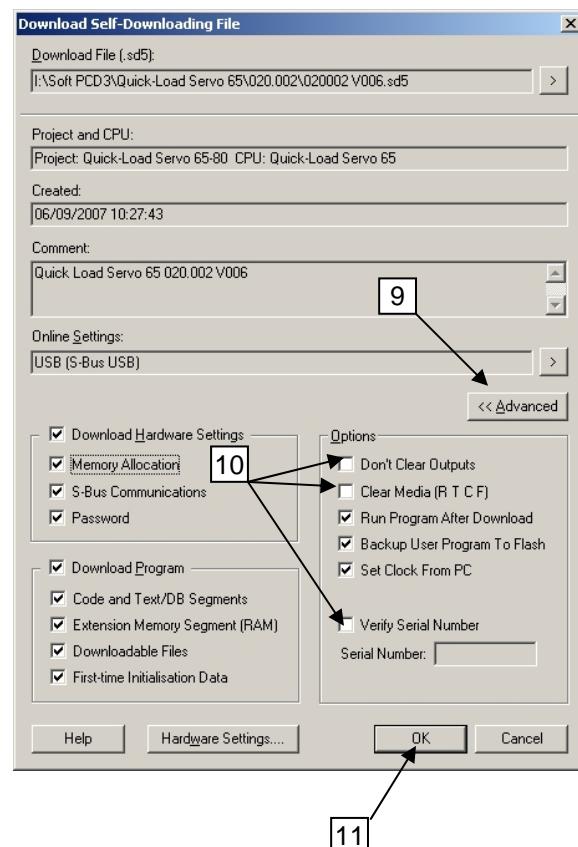
# Loading procedure for SAIA PLC

PCD3  
5340 or 5540

Pages : 3/4

## 3.1 On the computer :

6. Connect the USB cable to the computer.
  - Once the USB cable connected, see point **2.Program installation** and follow the instruction on **USB connection**.
7. Once the installation completed, Open the PCD3 file.  
(see the point **2.Programm Installation** and follow the instruction on **Creating a shortcut folder PCD3**).
8. Select the desired barfeeder. Once the barfeeder file open, double-click the last version based.
9. A download page is displayed, open the tab "**Advanced>>**".
10. Select all the boxes except "**Don't Clear Outputs**", "**Clear Media (RTCF)**" and "**Verify Serial Number**".  
  
Note : Before transferring the program, wait until the PLC is initialized (time: approx. 30 sec). The green led (RUN) should be on.
11. Click "**OK**" and control the monitor progress (0-100%) (the LEDs on the module RUN / HALT flash).
12. When loading is completed, the loading window closes.
13. Once the loading done, switch off the PLC using the switch ON/OFF.
14. Switch ON the PLC.  
  
Note wait until the PLC is initialized (time: approx. 30 sec). The green led (RUN) should be on.
15. Wait until the green LED lights continuously.





## Loading procedure for SAIA PLC

PCD3  
5340 or 5540

Pages : 4/4



16. Once the download completed, check by using the remote control the correct downloading of the program.  
Simply connect the PGU / COM on the lower left



17. Return all the buttons on the selection box in the middle position.

18. Disconnect all cables.

**Procedure completed.**

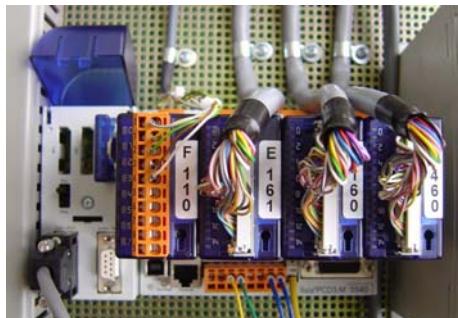
This procedure is to transfer a software version of a flash card to a PCD3 PLC:

## **1. Software versions / PCD :**

To find the software version, in the work menu, press  button on the remote contrôle and press **Page Down** until the current software appears.

## **2. Updating software :**

1.



Open the cover of the PLC.

2.



Insert the card containing the software into the M1 Bay.

Switch on the PLC and wait a few seconde while it initializes.

3.



Once the PLC in RUN mode, using a pointed object, press the Run/Halt button approximately three seconds until the LED flashes.

The PLC is restarted, and the new software is loaded.

4. When the PLC has recovered the parameters, it's again functional.

5. Remove the card containing the software, and close the cover.

**Procedure completed**



# Loading procedure for flash card SAIA

PCD3

5340 or 5540

Pages : 1/4

Created by Kevin Studer le 08.03.2011

## 1. Introduction :

This procedure is to transfer the lastest version in a flash card SAIA. There are **two kind of PLC, PCD3 5540 and PCD3 5340 :**

- ⇒ **PCD3 5540** intended for barfeed : QLS 65/80 (old generation)
- ⇒ **PCD3 5340** intended for barfeeds : Sprint S3, Sprint 555/565, Move S2, QLS 65/80 (new generation)

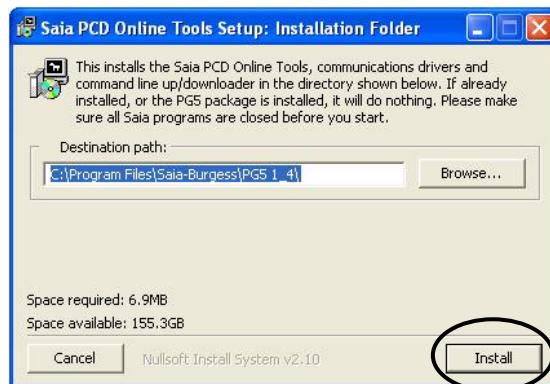


## 2. Program installation :

Utility installation :

In the folder <I:\Developement software\Soft PCD3>

- Double-click the file "Stand Alone Online Tool 514.exe"
- A page will appear, click on "Install" (see below)



- Once de transfer completed, click on "close".

Creating a shortcut folder PCD3:

Create a shortcut to the file <I:\Developement software\Soft PCD3> on the desktop

USB Connecting

When first conecting USB cable from PLC to PC, an installation window will appears :

- Click on "yes, this time only" and press on next
- Click on "Install the software automatically" and press on next
- Complete



# Loading procedure for flash card SAIA

PCD3

5340 or 5540

Pages : 2/4

Created by Kevin Studer le 08.03.2011

## 3. Procedure :



1. Check the selection box has all its buttons in the middle.



2. Open the blue cover and insert the flash card SAIA (red) in the bay M1.



3. Remove the module (see photo above), insert the battery and replace the module in the PLC.



4. Turn the buttons on **ON** and on **24V**.



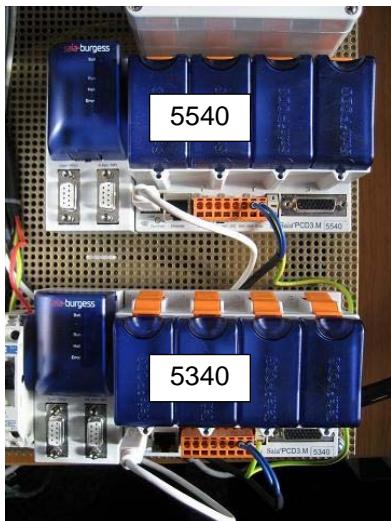
# Loading procedure for flash card SAIA

PCD3

5340 or 5540

Pages : 3/4

Created by Kevin Studer le 08.03.2011



5. Select on the selection box the PLC 5540 or 5340 (as needed) to load the programm.

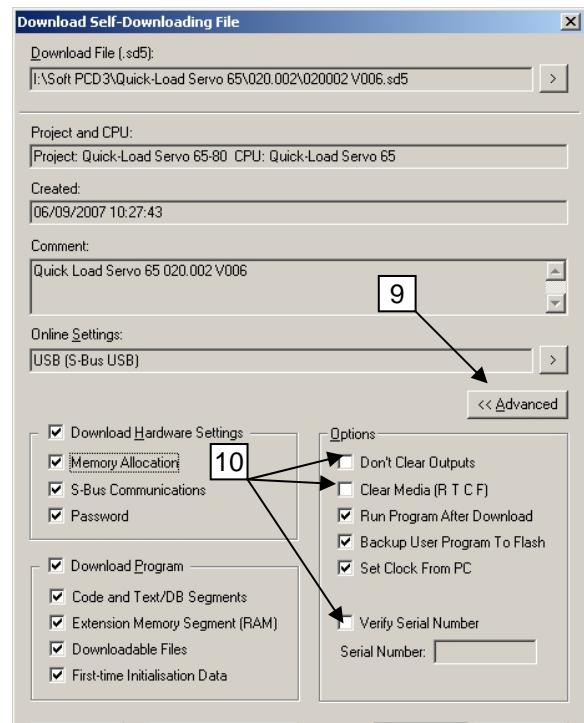


## 3.1 On the computer :

6. Connect the USB cable to the computer.
- Once the USB cable connected, see point **2.Programm installation** and follow the instruction on **USB connection**.
7. Once the installation completed, Open the PCD3 file. (see the point **2.Programm Installation** and follow the instruction on **Creating a shortcut folder PCD3**)
8. Select the desired barfeeder. Once the barfeeder fil open, double-click the last version based.
9. A download page is displayed, open the tab "**Advanced>>**".
10. Select all the boxes except "**Don't Clear Outputs**", "**Clear Media (RTCF)**" and "**Verify Serial Number**".

Note : Before transferring the program, wait until either the PLC is initialized (time: approx. 30 sec). The green led (RUN) should be on.

11. Clic "**OK**" and control the monitor progress (0-100%) (the LEDs on the module RUN / HALT flash).
12. When loading is completed, the loading window closes.
13. Once the loading done, switch off the PLC using the switch ON/OFF





## Loading procedure for flash card SAIA

PCD3

5340 or 5540

Pages : 4/4

Created by Kevin Studer le 08.03.2011

14. Switch ON the PLC.

Note Wait until either the PLC is initialized (time: approx. 30 sec). The green led (RUN) should be on.

15. Push on the button RUN/HALT until the PLC LEDs flashes (approx. time 3 sec), then release.

16. Wait until the green LED lights continuously



17. Once the download completed, check by using the remote control.

Note Simply connect the PGU / COM on the site located on the lower left.



18. Return all the buttons on the selection box in the middle position.

19. **Remove the flash card.**

**Procédure completed.**

L'automate Saia est pourvu de deux zones mémoire.

RAM pour le travail

Flash pour la sauvegarde

*The PLC Saia has two memory areas*

*RAM for the work*

*Flash for the backup*

Die PLC Saia hat zwei Speicher Zone

RAM für arbeit

Flash für Backup

## 1.

**Vider la zone mémoire RAM**

*Empty the RAM memory areas*

Leeren die RAM Speicher zone

- couper le courant
  - enlever la batterie
  - attendre minimum 8 heures
- 
- *Turn the power OFF*
  - *Remove the battery*
  - *Wait at least 8 hours*
- 
- Strom abschaltet
  - Entfernen die Batterie
  - Warten mindestens 8 Stunden

## 2.

Récupération du Programme de la mémoire Flash à la mémoire RAM

**Recovery Program from Flash memory to RAM memory**

Nacholen der program von Flash Speicher bis RAM Speicher



avec courant enclencher et PLC en RUN  
presser la touche RUN/Halt ...

*with power ON and the PLC in RUN mode  
Press the RUN/Halt button...*

Mit strom eingeschaltet und PLC in RUN  
Drucken am drucknopf RUN/Halt...



Jusqu'au clignotement des LED

*Until the LED are flashing*

Bis die LED blinkt

### 3.

#### Reset des mémoires (registres et marqueurs) de la RAM

**Reset memories (registers and markers) of RAM**

**Reset register und Markierer von RAM**

Les paramètres seront remis aux valeurs par défaut

*The parameter will be back at factory value*

Die parameter wurde am werk einstellung zurück gesetzt

disponible selon version software :

*available with software version:*

Möglich von software version:

Trytex V15\$ ou 005.001 V000

Sprint 565 V13

Move S2 V11

a) couper le courant dans une position sûr

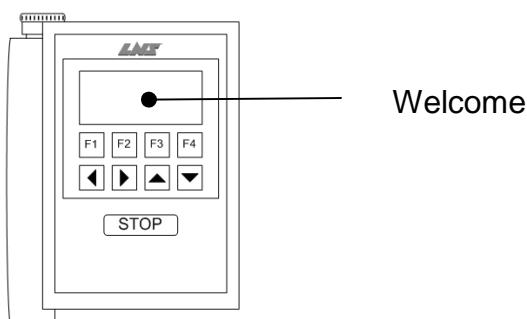
*Turn power OFF in a safty position*

In eine sicher stellung Strom ausschalten

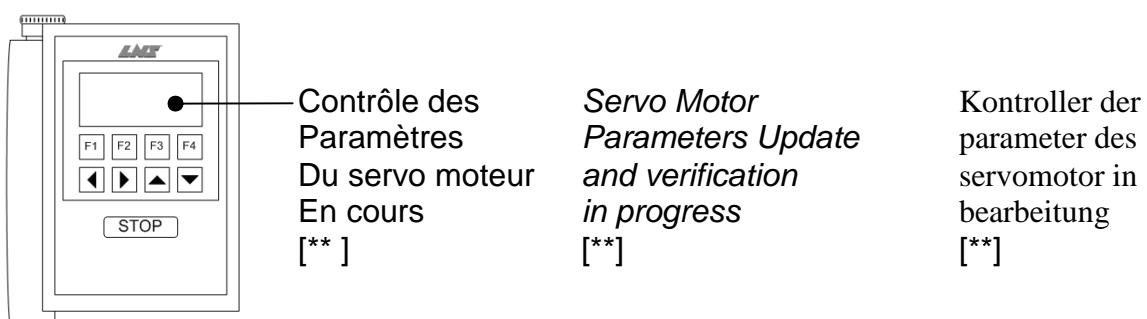
b) enclencher le courant

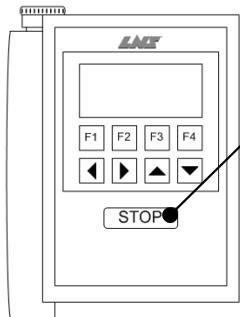
*Turn power ON*

Strom einschalten



Welcome





Presser le Stop pendant quelques secondes  
Durant le comptage en cours

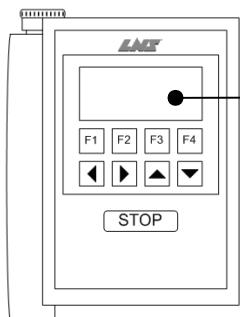
*Press the Stop button for a few seconds  
During the current counting*

Drucken Stop taste für einige sekunden  
Während die aktuelle Zählung

Sprint S3 (sans servo moteur) presser le stop dans les 2 secondes à la fin du décompte après l'affichage de la page de départ

*Sprint S3 (without servo motor) press the stop in the next 2 sec. After the start page as been display at the end of counting*

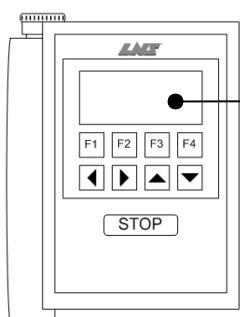
Sprint S3 (ohne Servomotor) drücken die stop in die nächste 2 seconds nach die start Seite am ende der zählung



réinitialisation  
des registres et  
des marqueurs

*Reset of registers  
and markers*

Reset aller  
registern und  
markierer



Le moteur servo  
A besoin d'une  
Coupure de  
courant  
- couper le courant  
- attendre 2 secondes  
- remettre le courant

*-turn off main power  
- wait for 2 seconds  
- restore main power*

Der Servomotor muss  
ausgeschaltet  
werden  
- strom ausschalten  
- 2 sekunden warten  
- strom einschalten

## 4.

### Récupération des paramètres

**Recovery parameters**

Nachholen die parameters

Conditions :

- Après 20 cycles automatique sans interruption, les paramètres seront sauvegardés dans la mémoire flash.

Après un reset des registre ou une panne batterie il sera possible de récupérer les paramètres dans le menu 4

*Conditions:*

*- after 20 auto cycles without interruption, the parameters will be saved in the flash memory.*

*After a reset of register or a battery failure it will be possible to recover the parameters in menu 4*

Kondition:

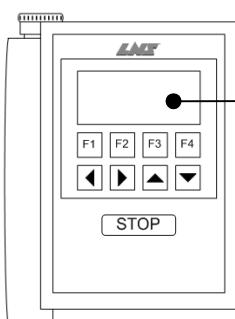
- Nach 20 Automatik Zyklen ohne unterbrechung, wird die parameters im Flash Speicher gespeichert werden.

Nach einem reset der registern oder ein Batterie fehler ware möglich die Parameter im menu 4 nachholen

Presser la touche F4 (clef)

Press the button F4 (spanner)

Drucken am F4 knopf (schlussel)



Menu principal  
1.réglage pièce  
2.rég. application  
3.position/couples  
4. fonction diverses  
5. service

Main Menu  
1.Parts setup  
2.application setup  
3.position/torques  
4.misc.functions  
5.service

Hauptmenu  
1.teileeinstellung  
2.einst. ausfuehrung  
3.position/kraft  
4.diverse funktionen  
5.service

Choisir 4 et « enter »

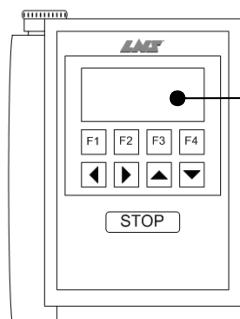
Presser PgDown jusqu'à l'affichage :

*Choose 4 and “enter”*

*Press PgDown until the following is displayed:*

Whälen 4 und „enter“

Drucken am PgDown bis die folgendes ist am display:



Restaure les  
Parametres [\*\*]  
1.non  
2.sauvegardés  
3.par defaut

*restore  
parameters [\*\*]  
1.non  
2.saved  
3.factory*

parametern wiederherrstellen  
1.nein  
2.gespeicherte  
3.werk-einstellung

Choisir 2 et « enter »

*Choose 2 and “enter”*

Whälen 2 und „enter“

# Firmware loading on SAIA HMI

## 1 Introduction

A firmware manages the basic functions of an electronic component. The firmware is usually loaded at the factory, but we sometimes update some functions and you may update your firmware to integrate these new functions.

As the LNS software, the firmware transfer use USB port of the PLC, as well as SAIA Firmware Downloader.

## 2 Required

### 2.1 LNS machines :

- Express 332 S2
- Sprint 542
- QLSIII + (à partir de 2014)
- QLSIII MI (Mazak)
- Express 112
- Express 220 S2

### 2.2 Material :

- PLC SAIA PCD3 M5340, with firmware 1.16.45 or later
- Remote control (HMI) PCDx Webpanel
- Cable USB type A<->type B

### 2.3 Software :

- SAIA Firmware Downloader installed and working
- Firmware file from LNS (VGA\_1.xx.xx.xx\_LNS.blk)

### 3 Actual firmware version

#### 3.1 Actual firmware version on the bar feeder

- 3.1.1 Switch off the bar feeder, wait 2 seconds and switch back to on the bar feeder.
- 3.1.2 After 10 seconds, the start-up screen is displayed.
- 3.1.3 Check the firmware version on the start-up screen.



### 4 Preparation

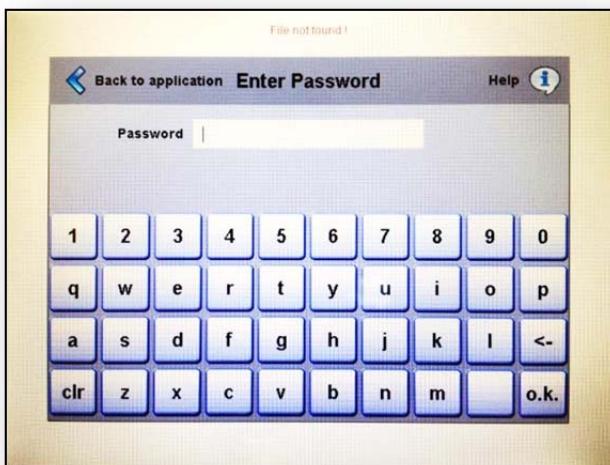
#### 4.1 Preparation of the remote control

- 4.1.1 Switch off the bar feeder, wait 2 seconds and switch back to on the bar feeder.
- 4.1.2 After 10 seconds, the start-up screen is displayed.  
Immediately press on Setup :



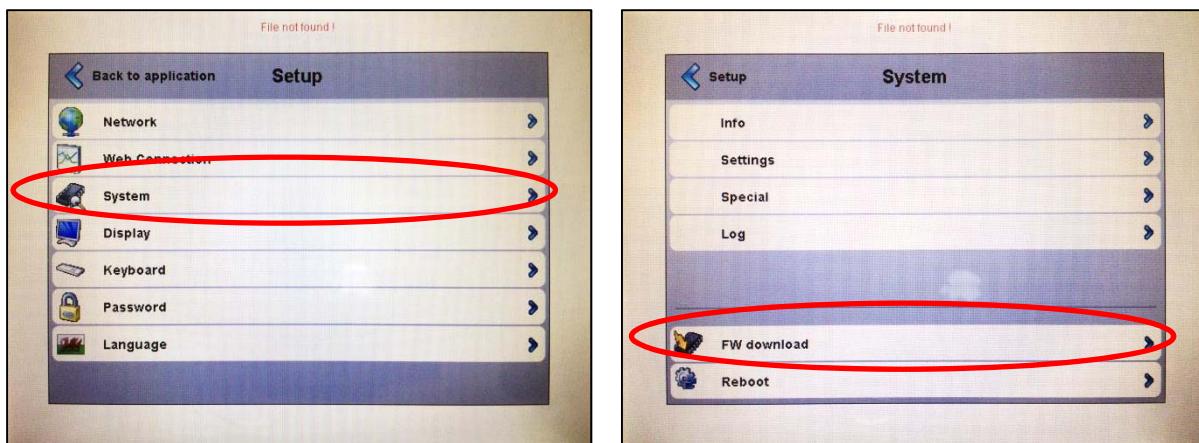
4.1.3 The following screen is displayed.

Enter the password « Ins2534orvin » and confirm with "OK" :



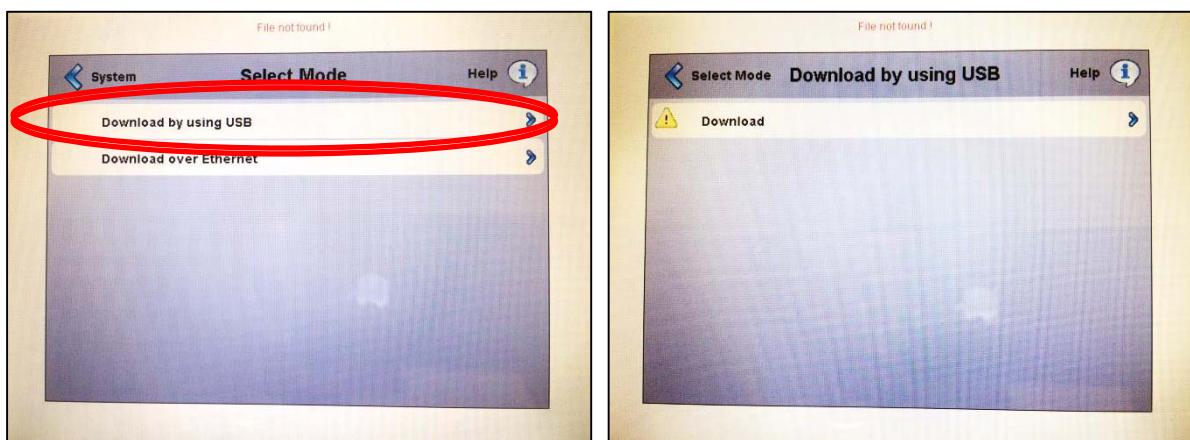
4.1.4 Navigate through the menu System > FW download > Download by using USB.

Confirm with "Download".



4.1.5 Select the transfer mode « Download by using USB ».

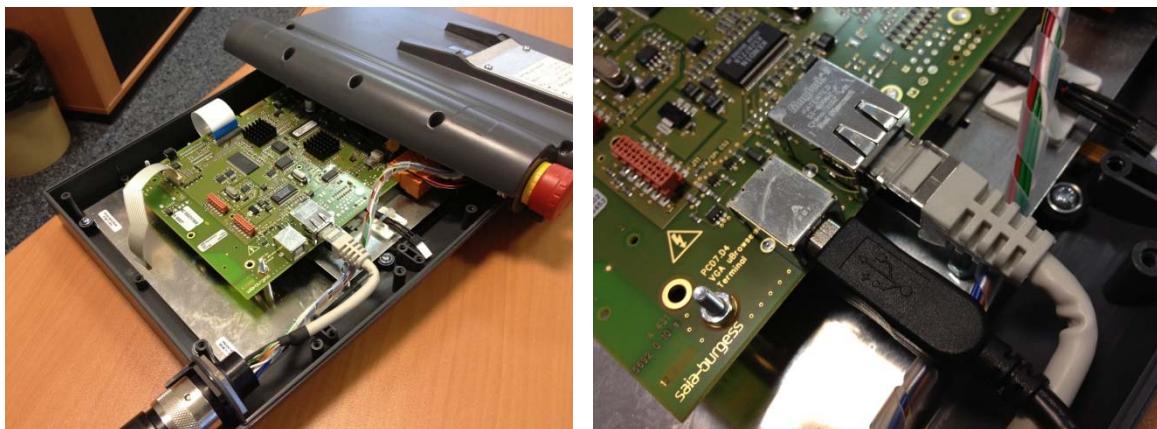
Confirm with "Download".



- 4.1.6 On the back side of the remote control, unscrew the 7 fixing screws.



- 4.1.1 Carefully open the back plate of the remote control.  
Insert the USB plug into the USB socket of the PLC.



- 4.1.2 Connect the second extremity of the USB cable to the computer.

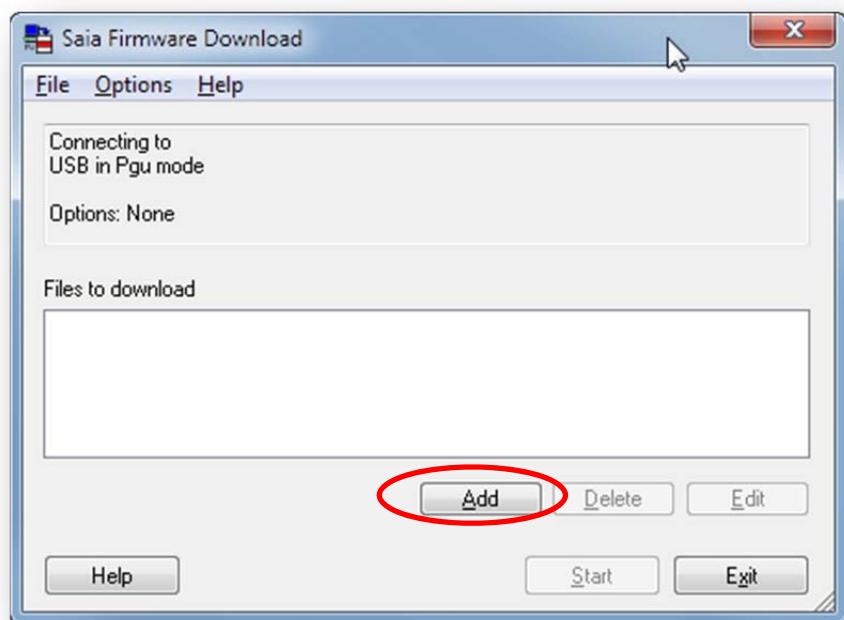
## 5 Firmware update

### 5.1 Firmware transfer

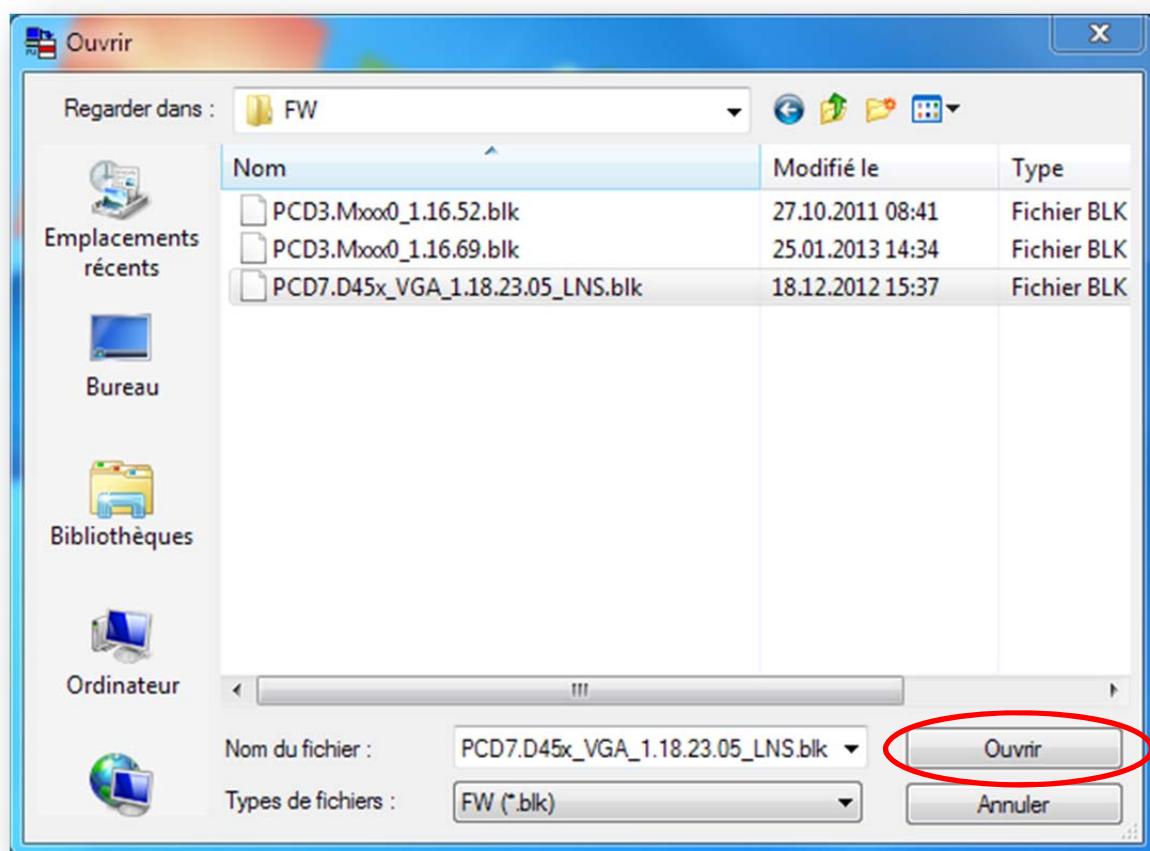
- 5.1.1 Start Firmware Downloader of SAIA-Burgess.



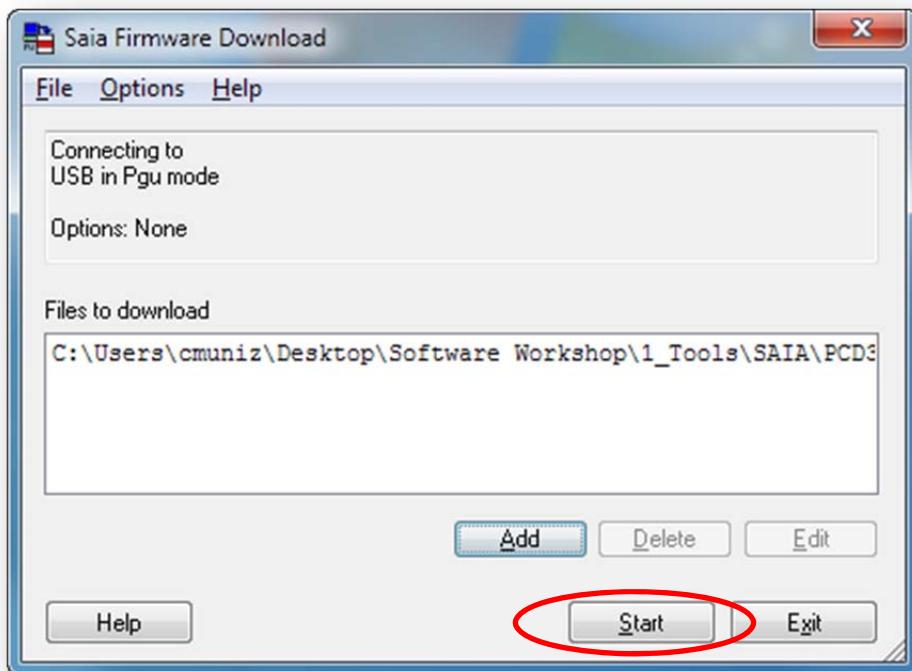
5.1.2 Add the LNS firmware file (VGA\_1.xx.xx.xx\_LNS.blk) :



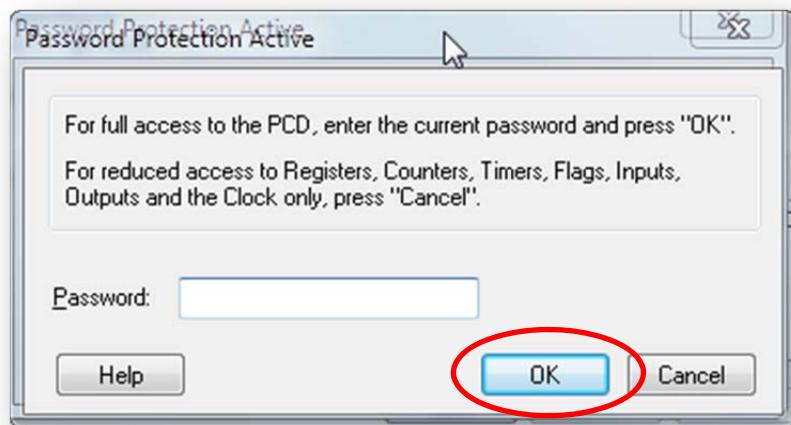
5.1.3 Select the LNS firmware file (PCD3.Mxxx0\_x.x.xx.blk)  
confirm with "Open" :



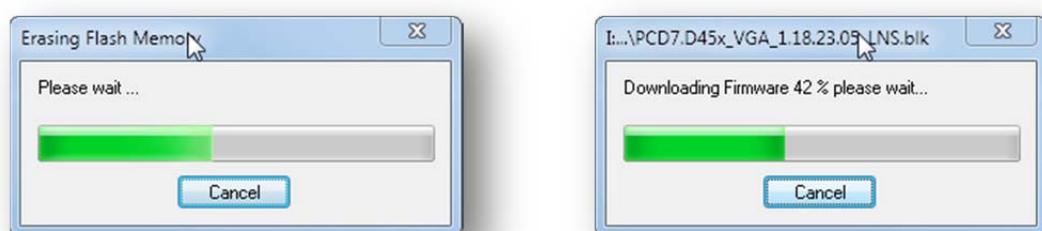
5.1.4 Click on "Start" to transfer and update the firmware :



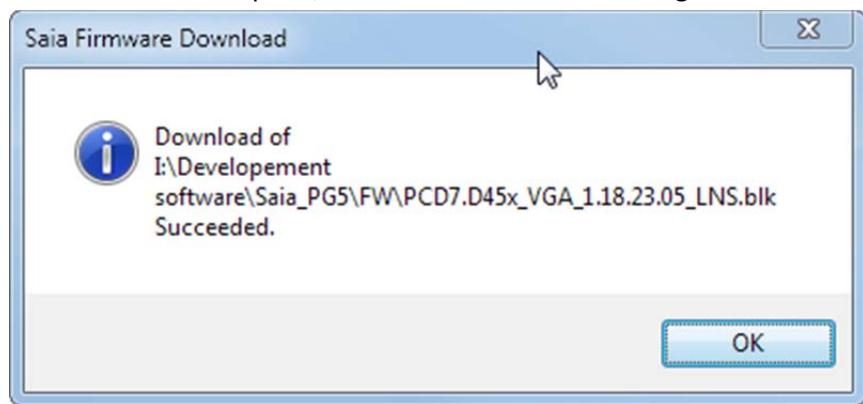
5.1.5 Enter the password if needed « lns2534orvin » and confirm with "OK" :



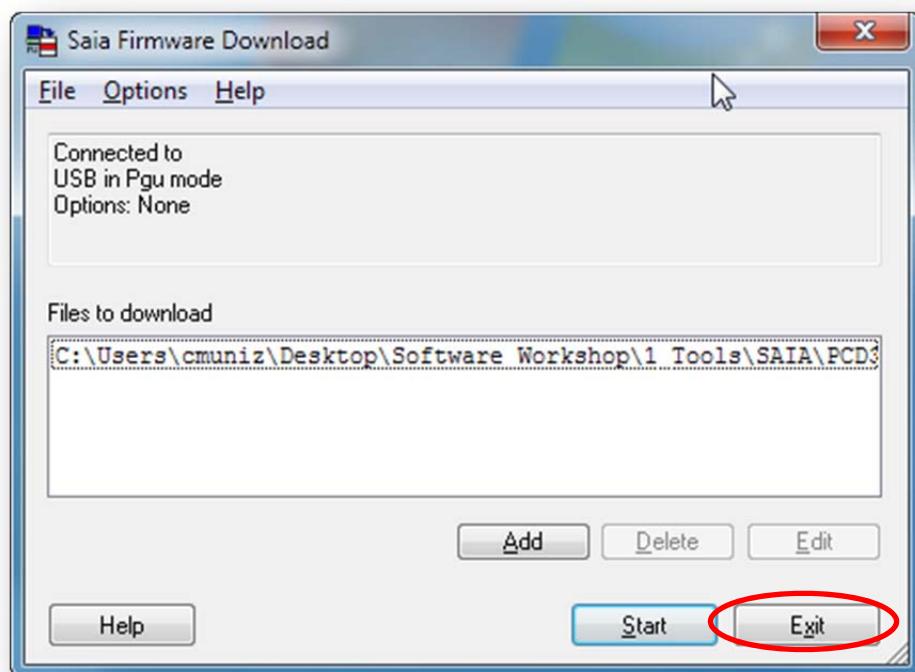
5.1.6 The flash memory is deleted and the new firmware is transferred :



- 5.1.7 When the transfer is complete, confirm the successful message with "OK" .



- 5.1.8 Close the window with "Exit" :



## 6 Back to standard functioning status

### 6.1 Disconnection

- 6.1.1 Disconnect the link between computer and PLC.
- 6.1.2 Carefully fix the back plate of the remote control with the original screws.



- 6.1.3 Switch off the bar feeder, wait for 3 seconds and switch back on the bar feeder.  
Wait for the complete start-up of the bar feeder.

### 6.2 Check the firmware version

- 6.2.1 Check the firmware version on the start-up screen.



Produit	Racine soft	Version PG5	Version	Date	Firmware PCD3	Firmware HMI	Batterie PCD3	Carte Flash Programme	Carte expansion mémoire	Date entrée liste	
Express 332 S2	332.000	1.4	V0	05.10.2011	1.16.45 et +	VGA_1.18.23.02_LNS et +	non	R500	R550/R551	28.06.2013	
Express 332 S2	332.000	1.4	V1	26.10.2011	1.16.45 et +	VGA_1.18.23.02_LNS et +	non	R500	R550/R551	28.06.2013	
Express 332 S2	332.000	1.4	V2	02.02.2012	1.16.45 et +	VGA_1.18.23.02_LNS et +	non	R500	R550/R551	28.06.2013	
Express 332 S2	332.000	1.4	V3	01.03.2012	1.16.45 et +	VGA_1.18.23.02_LNS et +	non	R500	R550/R551	28.06.2013	
Express 332 S2	332.000	1.4	V4	02.04.2012	1.16.45 et +	VGA_1.18.23.02_LNS et +	non	R500	R550/R551	28.06.2013	
Express 332 S2	332.000	1.4	V5	12.04.2012	1.16.45 et +	VGA_1.18.23.02_LNS et +	non	R500	R550/R551	28.06.2013	
Express 332 S2	332.000	1.4	V5.01	10.05.2012	1.16.45 et +	VGA_1.18.23.02_LNS et +	non	R500	R550/R551	28.06.2013	
Express 332 S2	332.000	1.4	V5.02	11.07.2012	1.16.45 et +	VGA_1.18.23.02_LNS et +	non	R500	R550/R551	28.06.2013	
Express 332 S2	332.000	1.4	V5.03	04.09.2012	1.16.45 et +	VGA_1.18.23.02_LNS et +	non	R500	R550/R551	28.06.2013	
Express 332 S2	332.000	1.4	V5.04	04.02.2013	1.16.45 et +	VGA_1.18.23.02_LNS et +	non	R500	R550/R551	28.06.2013	
Express 332 S2	332.000	2.0	V5.05	25.04.2013	1.16.45 et +	VGA_1.18.23.02_LNS et +	non	R500/R550/R551	R550/R551	28.06.2013	
Move S2	024.001	1.4	V01	08.02.2008	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
Move S2	024.001	1.4	V02	26.02.2008	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
Move S2	024.001	1.4	V03	05.03.2008	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
Move S2	024.001	1.4	V04	07.05.2008	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
Move S2	024.001	1.4	V05	29.08.2008	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
Move S2	024.001	1.4	V06	29.09.2008	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
Move S2	024.001	1.4	V07	16.10.2008	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
Move S2	024.001	1.4	V08	10.11.2008	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
Move S2	024.001	1.4	V09	16.04.2009	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
Move S2	024.001	1.4	V10	18.06.2009	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
Move S2	024.001	1.4	V11	30.09.2011	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
Move S2	024.001	1.4	V12	08.06.2012	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.001	1.4	V01	24.02.2006	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.001	1.4	V02	01.05.2006	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.002	1.4	V01	24.08.2006	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.002	1.4	V02	03.05.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.002	1.4	V03	30.05.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.002	1.4	V04	26.06.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.002	1.4	V05	31.08.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.003	1.4	V01	08.10.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.003	1.4	V02	22.01.2008	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.003	1.4	V03	27.02.2008	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.003	1.4	V04	16.05.2011	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.003	1.4	V05	02.05.2012	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.003	1.4	V05.01	30.05.2012	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.003	1.4	V05.02	Test	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS III + / MI	021.200	2.0							R500/R550/R551	R550/R551	28.06.2013

**Attention : Les automates n'ayant pas au minimum le firmware 1.08.23 ne sont pas compatibles avec des versions de firmware supérieure.  
Leur mise à jour du logiciel ne peut se faire qu'avec une carte rouge (R500).**

QLS65/80/S2	020.001	1.4	V01	24.02.2006	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.002	1.4	V01	24.08.2006	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.002	1.4	V02	03.05.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.002	1.4	V03	30.05.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.002	1.4	V04	26.06.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.002	1.4	V05	31.08.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.003	1.4	V01	08.10.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.003	1.4	V02	22.01.2008	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.003	1.4	V03	27.02.2008	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.003	1.4	V04	16.05.2011	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.003	1.4	V05	02.05.2012	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.003	1.4	V05.01	30.05.2012	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS65/80/S2	020.003	1.4	V05.02	Test	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte	28.06.2013	
QLS III + / MI	021.200	2.0							R500/R550/R551	R550/R551	28.06.2013

Sprint 542	042.000	1.4	V01	30.11.2009	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 542	042.000	1.4	V02	04.03.2011	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 542	042.000	1.4	V03	07.11.2011	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 542	042.000	1.4	V04		1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 542	042.000	1.4	V05	28.09.2011	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 542	042.000	1.4	V06	09.03.2012	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 542	042.000	1.4	V06.01	10.06.2013	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 552/565	055.001	1.4	V01	24.05.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 552/565	055.001	1.4	V02	31.05.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 552/565	055.001	1.4	V03	14.06.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 552/565	055.001	1.4	V04	19.06.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 552/565	055.001	1.4	V05	21.06.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 552/565	055.001	1.4	V06	12.07.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 552/565	055.001	1.4	V07	13.09.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 552/565	055.001	1.4	V08	05.10.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 552/565	055.001	1.4	V09	14.02.2008	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 552/565	055.001	1.4	V10	01.07.2008	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 552/565	055.001	1.4	V11	07.08.2008	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 552/565	055.001	1.4	V12	03.10.2008	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 552/565	055.001	1.4	V13	31.03.2010	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 552/565	055.001	1.4	V14	18.05.2011	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 552/565	055.001	1.4	V15	31.05.2012	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint 552/565	055.001	1.4	V15.05	10.06.2013	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint S3	014.001	1.4	V01	07.05.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint S3	014.001	1.4	V02	29.05.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint S3	014.001	1.4	V03	15.06.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint S3	014.001	1.4	V04	04.12.2007	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint S3	014.001	1.4	V05	24.06.2008	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint S3	014.001	1.4	V06	07.04.2009	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint S3	014.001	1.4	V07	20.01.2010	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint S3	014.002	1.4	V01	04.06.2010	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint S3	014.002	1.4	V02	16.07.2010	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Sprint S3	014.002	1.4	V03	13.09.2010	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Trytex 107	005.001	1.4	V00	02.09.2010	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte
Trytex 107	005.001	1.4	V01	05.04.2011	1.08.23 et +	Pas de firmware	oui	R500	Pas de carte

## 1. SHAFT LOADING

### 1.1. Description

The QUICK LOAD SERVO III can load a bar to be manufactured in one shot (1 bar = 1 piece). Thus, the working time is reduced.

For this application, a long pusher is needed.

### 1.2. Setting

The table below indicates the parameters to modify to use this function:

Setting path	Setting Nr	Setting value
Service parameters Displayed parameters selection Parameter display "material length variable or constant "		Yes [2]
Service parameters Displayed parameters selection Parameter display "pusher length "		Yes [2]
Service parameters Displayed parameters selection Parameter display "quick load with long pusher "		Yes [2]
Additional information for set-up parameters Workpiece loading with long pusher (see instruction manual, chapter 7)	89	Yes [2]
Additional information for set-up parameters The front of the pusher is at position (see instruction manual, chapter 7)	69	Input value
Additional information for set-up parameters Material length (see instruction manual, chapter 7)	80	Constant [2]

The workpiece is always pushed to the Top-Cut position. Don't forget to adjust the Top-Cut position and the magazine limiter.

## 2. USE OF THE FEEDING PUSHER AS MACHANICAL STOP

### 2.1. Description

The QUICK LOAD SERVO III can use the feeding pusher as a mechanical stop. Thus, we can manually load the bar to the chuck with fixed and precise stop position.

When the signal "chuck open" is received, the bar feeder pushes the end of the feeding pusher at End of Bar position. The user can load the bar by pushing it against the end of the feeding pusher. When the signal "chuck closed" is received, the feeding pusher moves back to the home position.

### 2.2. Setting

The table below indicates the parameters to modify to use this function:

Setting path	Setting Nr	Setting value
Service parameters Displayed parameters selection Display of the stop end function		Yes [2]
Miscellaneous functions and parameters Simulation of a mechanical stop (see instruction manual, chapter 7)		[ENTER] Keep 2 seconds pressed

### 3. USE OF SUB-SPINDLE

#### 3.1. Description

The use of lathe with sub-spindle needs specific parameters, because in this case, the sub-spindle moves the bar.

Because the feeding pusher is no more used, a workpiece counter ensures the production cycle to indicate to the bar feeder when a new bar should be loaded.

#### 3.2. Setting

The table below indicates the parameters to modify to use this function:

Setting path	Setting Nr	Setting value
Service parameters Displayed parameters selection Parameter display "the feeding pusher follows the bar during production cycle "		Yes [2]
Service parameters Displayed parameters selection Parameter display "the end of bar is indicated by the counter "		Yes [2]
Additional information for set-up parameters The feeding pusher follows the bar during production cycle (see instruction manual, chapter 7)	25	No [2]
Additional information for set-up parameters The new bar loading will be done by (see instruction manual, chapter 7)	28	Counter [2]

## 1. MAINTENANCE



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

### 1.1. Pneumatics

The air-filtering device is equipped with an automatic drainage valve, making it unnecessary to empty it. The water recuperated comes from the pneumatic circuit of the building. It is advisable to make certain that the air received by the bar feed system is as dry as possible (see CHAPTER 5: PNEUMATICS).

### 1.2. Batteries

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



Switching power off when the message "Battery low" could lead to loss of parameters. Don't switch the power until the battery has been replaced.

### 1.3. Belt

It is possible that after a certain period of use the transmission belt will need to be tightened. Please refer to CHAPTER 6: GENERAL DESCRIPTION, section 6. Belt.

### 1.4. Cleaning

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

For cleaning on the outside, use a soft cloth and a regular detergent, for the inside, use a cloth or a brush. However, make sure that the rollers and parts made of synthetic materials do not come into contact with these products.

The use of compressed air for cleaning is not advisable, because particles could become lodged in sensitive areas and impede the proper operation of the bar feed system.



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

### 1.5. Spare parts

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

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

## 1. RECOMMENDED SPARE PARTS LIST

As an extended courtesy, a list of recommended spare parts has been compiled for the end user. The list consists of mechanical, pneumatical and electrical parts that over time may become faulty due to everyday wear on the item. For machines that are running production during multiple shifts or even 24/7, keeping an inventory of these spare parts can vastly minimize downtime.

### 1.1. Feeding pusher

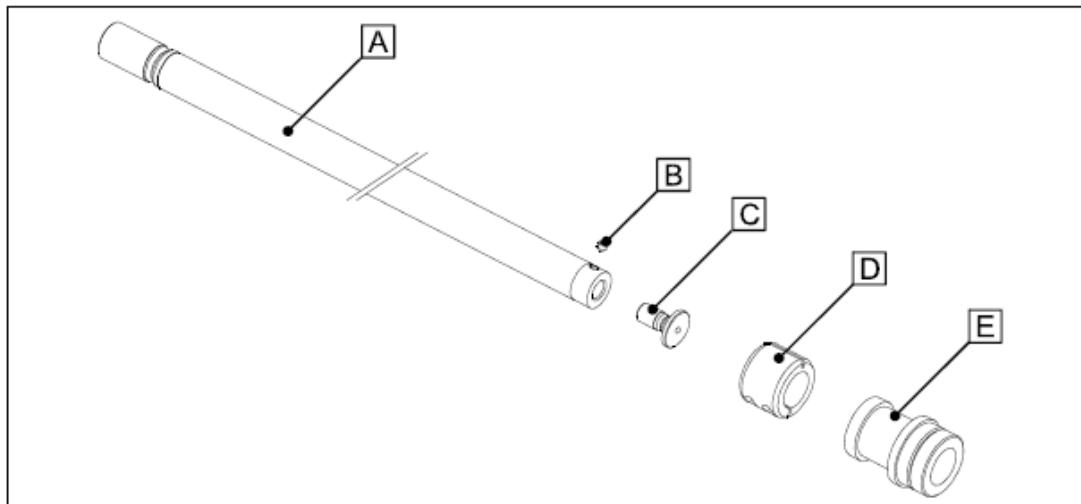
Three feeding pushers are necessary to cover the entire range of the QUICK LOAD SERVO III barfeed system. Each pusher has a defined range of operation :

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

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

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

### 1.2. Layout of the elements



Des.	6,35 (1/4")	12 mm (1/2")	25 mm (1")	Description
	Ordering Nr	Ordering Nr	Ordering Nr	
A	-*	-*	-	Pusher rod
B	-*	-*	914.06.06	Set screw
C	-*	-*	011.07.444	Head
D	011.07.234	011.007.184	011.07.014	Mechanical stop
E	021.05.244	021.05.164	011.007.194	Guide bushing
A+B+C	**021.011.074	**021.011.294	**021.011.304	Pusher Assembly

\* On 6.35 mm and 12 mm pushers, parts (A), (B), and (C) are welded.

\*\* This number is used when the bar feed system is already fitted out with elements (D) and (E).

### 1.3. Electrical and pneumatic elements

Designation	Reference no.	Description
-	4.972	Remote control
PCD3	4.907	Programmable controller PCD3 (PLC)
AJ1	4.705	Servo amplifier 400W
FU1	4.399	Diameter adaption motor fuse 2A
K3	4.507	Safety contactor
KS	4.925	Start relay
K8-K9	4.931	Safety control module
K10	4.932	Safety contactor (option)
KA1	4.925	Relay : Motor M2 "Up"
KA2	4.925	Relay : Motor M2 "Down"
QF1	4.815	Circuit breaker 4A
QS1	4.242	Main disconnect switch
R1-R5	4.925	Interface relay (not shown here)
T1	4.769	Transformer 1ph
T2	4.779	24 VDC Power supply 150W
QS1	4.242	Main disconnect switch
M1	4.706	Servo motor
M2	4.307	Motor for diameter adjustment
SQ1	4.484	Loading table in lower position
SQ2	4.484	Loading table in upper position
SQ3	44.0072	Measuring cell
SQ4	4.391	Proximity switch for diameter adjustment (not shown here)
SQ5	4.391	Proximity switch for pusher in home position
SQ10	4.284	Main access cover safety switch
SQ11	4.277	Magazine grid cover safety switch
SQ12	4.291/4.292	Retraction system in position switch (incl. key)
	3.636/3.638	Air filtering unit
	3.95020.A.30	Cylinder for feeding pusher locking mechanism
	3.406	Cylinder for loading channel up/down motion
	3.662	Pneumatic valve battery
	3.668	Pneumatic electrovalve