

YARNMASTER® 3N1

Fitting Instruction
RIFA RS40

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Table of Contents

Safety Instructions	7
Norms and Regulations	7
Service Notes	7
Instruction Manual	8
Liability	8
Operational Notes	8
Introduction	9
About this Manual	9
Parts List	9
Principle	9
System Specifications	10
Preparation of Cabling	11
SCU Side:	11
Fitting of Sensors	12
Cabling of the Section Electronic (SE)	14
Connections to RIFA	15
Connections to PLC	15
Connections to Power Board	16
Earthing of SE-Board	18
SE Address	19
Labeling of SE-Board	19
Sensor Cables	20
System Setup	21
First Power Up	21
Settings	21
System Test	21
Service	22
F/P Functions enable/disable	22
Hardware Locks	22
Fuse and Battery Change SCU	23
Fuse and Battery Change SE	24
Replacing a SE-Board	25
Replacing a Detector	25
Spare Part Numbers	25

Software	26
SCU Software Upgrade	26
Software for Section Electronic (Q-Board)	28
Specifications	29

Safety Instructions

Norms and Regulations

The LOEPFE YarnMaster® 3N1 yarn clearing system is a product which has been inspected for technical safety. It complies with the following directives:


2006 / 42 / EC	Machinery Directive
2006 / 95 / EC	Low Voltage Directive
2004 / 108 / EC	Electromagnetic Compatibility

Service Notes

- The servicing of the equipment should only be performed by qualified personnel being familiar with all safety checks, installation and service guidelines.
- Switch-off the power of the spinning machine before servicing.
- The disconnection device of the "SE UNIT 3N1" is located inside in the "SE UNIT 3N1".
- Unplug the power connector near F1 to disconnect the "SE UNIT 3N1" from the supply.
- After servicing, close all covers before starting-up the machine.
- Fuse
 - For continued protection against risk of fire, replace fuses only with the same type and rating of fuse.
- Battery
 - Caution, risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

Instruction Manual

To prevent faults and operating errors, we recommend to carefully read this Instruction Manual and to carefully follow the instructions given.

 **Indicates warnings which, if not properly observed, could harm your health, impair the functioning of the equipment or the security of your data.**

Note: The screen representations in this manual serve as illustration only. They should not be used as setting examples!

A copy of this Instruction Manual must be kept easily accessible near the machine.

Liability

The manufacturer assumes no liability for damage caused by:

- Noncompliance with the safety, operating and maintenance instructions contained in this Manual.
- The use of spare parts/non-OEM parts/conversion parts not supplied by us.
- Unauthorized conversion and modification of the yarn clearer.
- Normal wear.

Operational Notes



This yarn clearing equipment may only be installed, initiated and operated by trained personnel. Improper operation of the equipment could cause hazards.



In accordance with 2006 / 42 / EC, 2006 / 95 / EC, 2004 / 108 / EC. Do not open any covers (cooling, fire protection, contamination, spark interference etc.)



Do not open any sensing head.



Electronic components and assemblies (printed circuit boards) are endangered by electrostatic charges! Beware of touching the soldered connectors, pin contacts before they have been discharged statically. Hold the units at the periphery only.

Introduction



Warning: Switch off all the power sources from the machine and make sure it has come to a standstill before starting the installation or servicing. Follow the safety instructions in the machine's technical documentation.

About this Manual

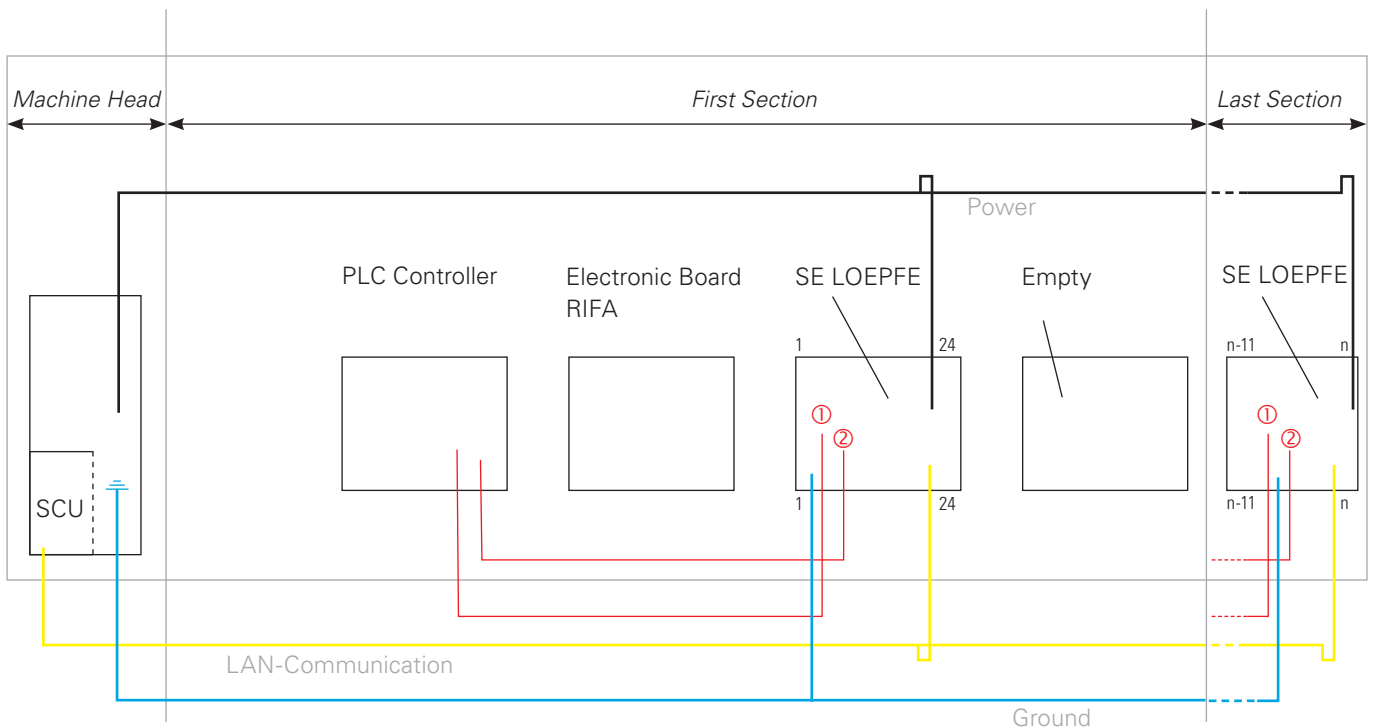
This manual applies to the standard Loepfe 3N1 ready quality control system 1 for RIFA RS40 rotor spinning frames. In this manual, quality is abbreviated as Q, foreigner fibre as FF and polypropylene as PP. This manual has been written for software A700909 V8.08.

Parts List

LOEPFE Description Quantity RIFA

LOEPFE	Description	Quantity
A250423500	SCU and Software Basic	1 per machine
A250437100	SE for 48 units Basic	1 per 2 sections
A905257100	SH for 24 Untis Basic	1 per section

Principle



System Specifications

System

Concept	Modular, integrated in spinning System / Components individually replaceable / Power supply depends on machine type
SCU	One control station per machine / Date and time indication / Data memory in case of power failure / Bus connection to section electronic / Data connection to machine control station LAN connection to local network
Operating	Setting of the conventional clearing parameters via touch screen
Operating temperature	+0° up to +50° C
Humidity	Up to max. 95% relative humidity not condensing
Section electronic	1 Board per Section (24 Rotors)
Sensing head	1 Sensor per rotor
Range of application	For staple-spun yarn of natural, synthetic or blends

Central Unit (SCU)

SCU	Graphics-capable display backlit and, touch screen Keyboard and mouse connection via USB possible Microsoft® Windows CE®
Connection	24V DC SELV, +25%/-15% Max. Current: 4A / Fuse: 2xT3.15AL RS40: Up to 480 clearers can be connected
Settings/side	RS40: 1 setting
Dimension	Approx. 483 x 266 x 83mm (W x H x D)
Max. power consumption	- no lamp tree is connected: 30 Watt - lamp tree with lamps of 3W is connected: 45 Watt - lamp tree with lamps of 5W is connected: 53 Watt
Weight	Approx. 5.25kg
Printing	Printout via USB stick

Evaluation Unit (Section Electronic)

SE-Board	24 rotors
Spinning speed	Up to 400 m/min (LOEPFE side)
Max. power supply and consumption (incl. SH)	Basic: max. 675mA at 24V DC SELV, +25%/-15% Full: max. 750mA at 24V DC SELV, +25%/-15% Max current: 1.1A/fuse: 1xT2AL.

Sensing Head

Basic	1 Sensor for diameter measurement integrated
Full	3 Sensor for Q/F/P measurement integrated

Yarn Count Range (Optical scanning principle)

TK Type	Limit Range Coarse	Limit Range Fine
Sensor basic/full	Nm 5	Nm 100

Preparation of Cabling

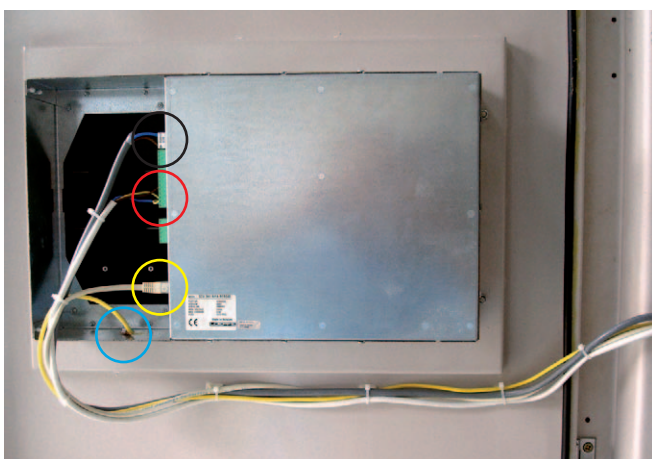


Cabling SCU Front

SCU Side:

- Power supply 24 V
- Ground
- Speed Sensor
- LAN to Q-Board

The power supply must be installed by an electrician

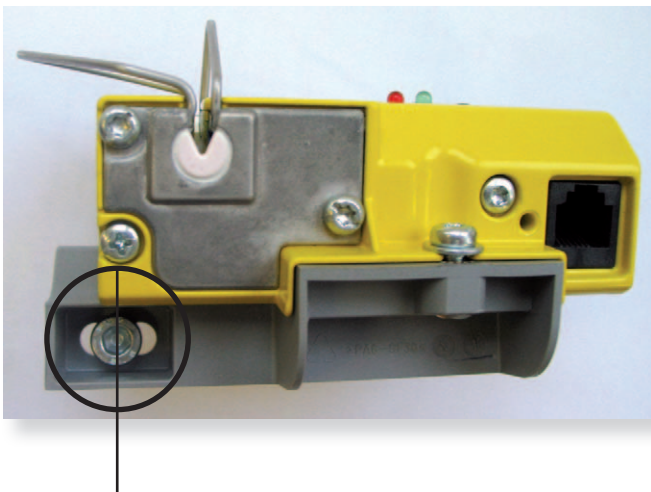
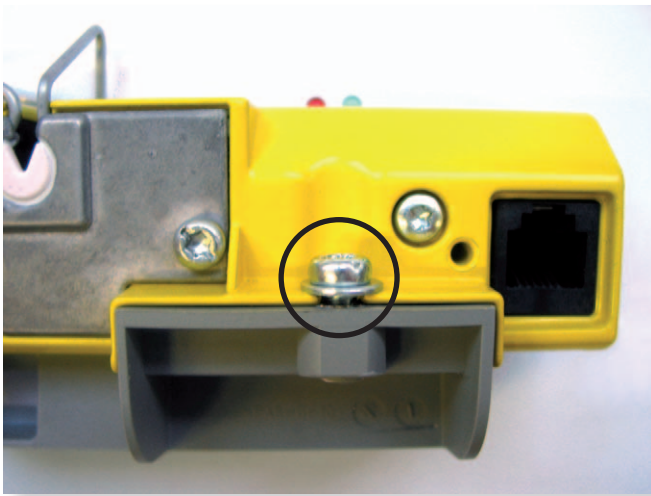


Cabling SCU Backside

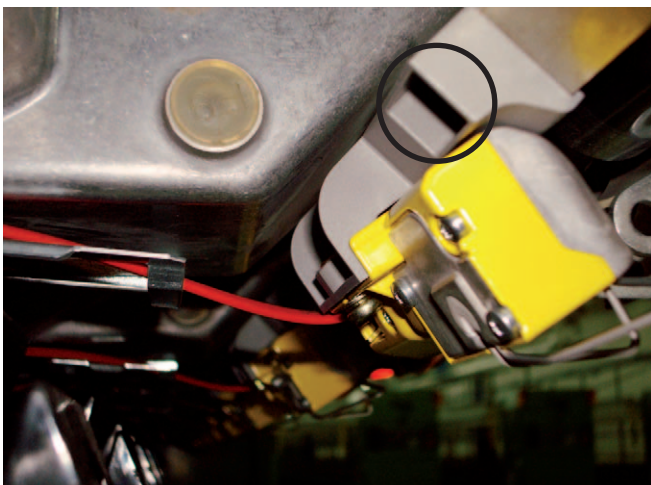
- Black: Power Supply from machine 24V (30W)
- Red: Speed Sensor from RIFA
- Yellow: LAN to SE Electronic
- Blue: Ground to machine ground

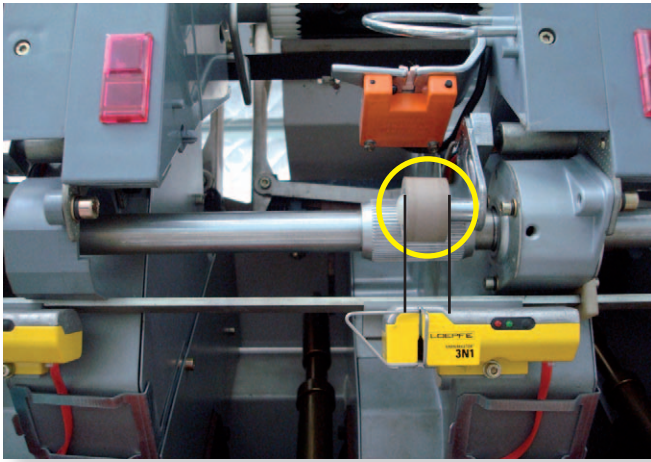
Fitting of Sensors

Prepare the sensors and screw the mounting piece to the sensor.



Screw the sensing head into the existing hole of the bar and position it in the middle of the hole of the mounting piece. It is necessary to do it in this way to be able to make a read-justment.

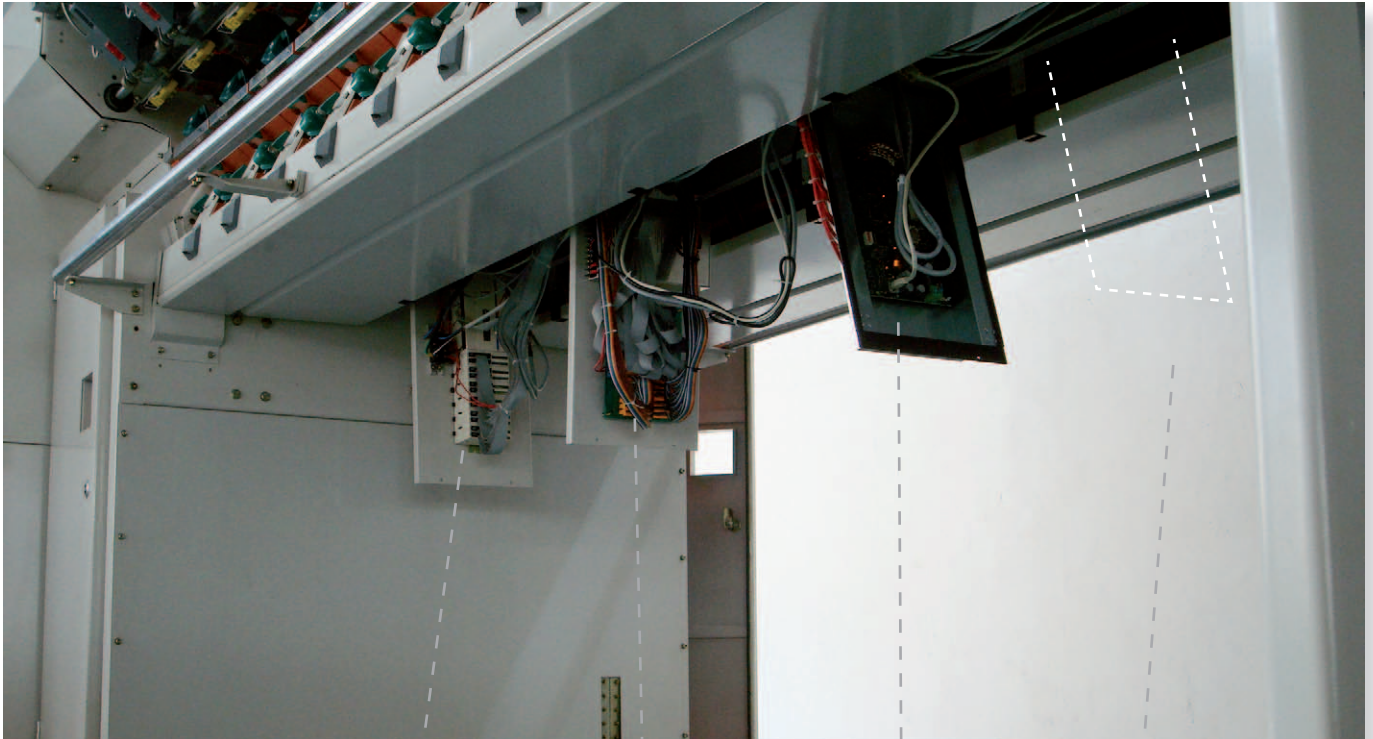




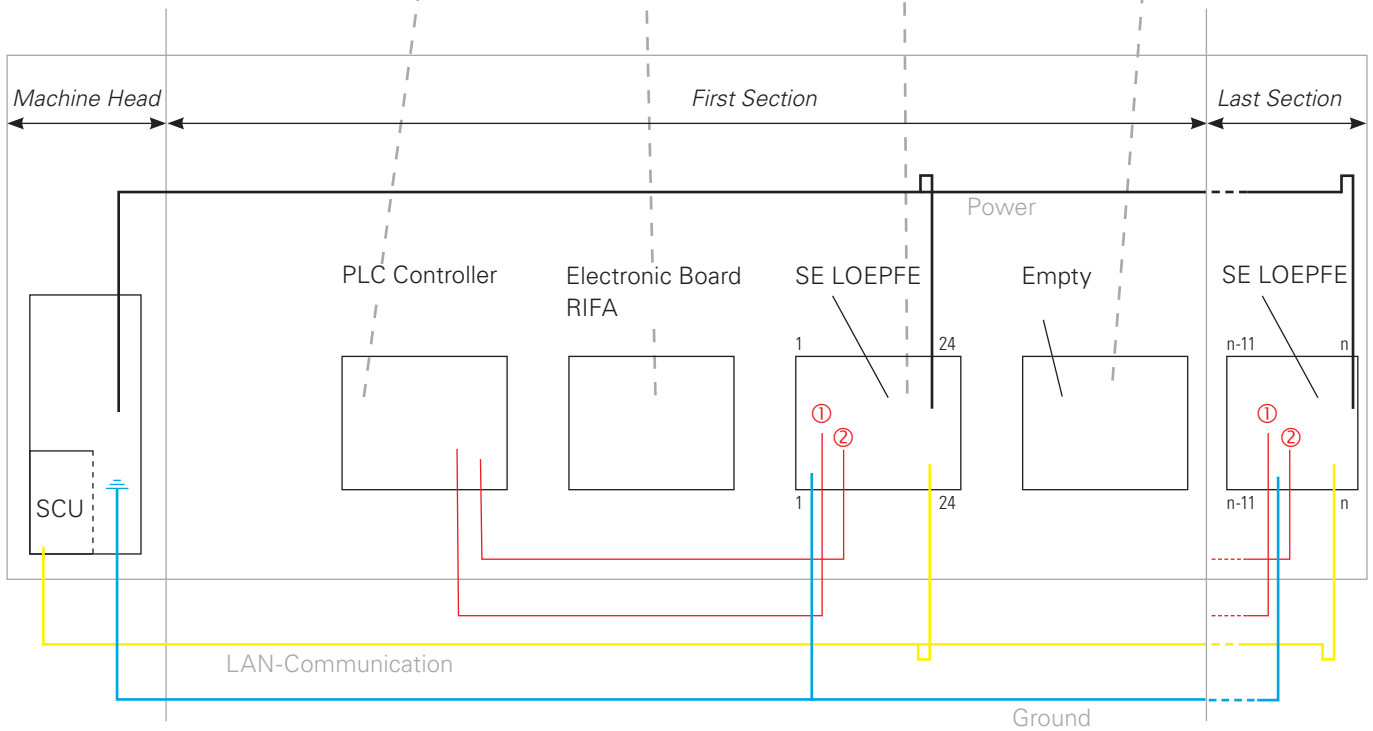
At least: the measuring slit should be in the range of the press roller. (Picture)

If this is not so, the metal bar with with screwed on sensor should be slided. This should be done by the mill mechanics.

Cabling of the Section Electronic (SE)



View from below



Yellow: LAN to SE-boards (splitter on each section)

Black: Power supply (from Power supply of RIFA)

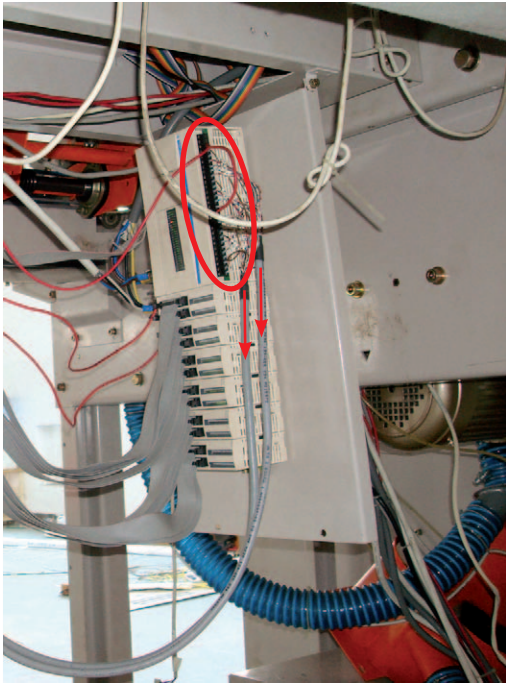
Red: Stop cable IF to connect the SAG)

Blue: Ground from SE to machine ground

For exact cabling see the following description. Before starting with the cabling the sensors should be fitted!

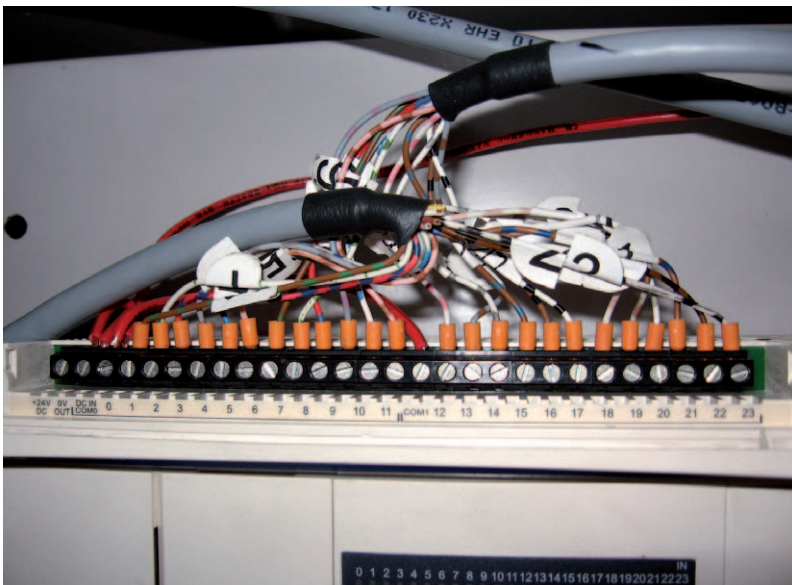
Connections to RIFA

Connections to PLC



3N1 Stop cable to SE board

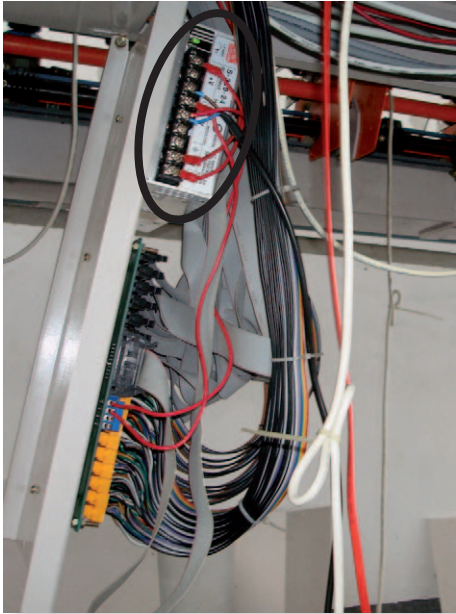
PLC Controller RIFA



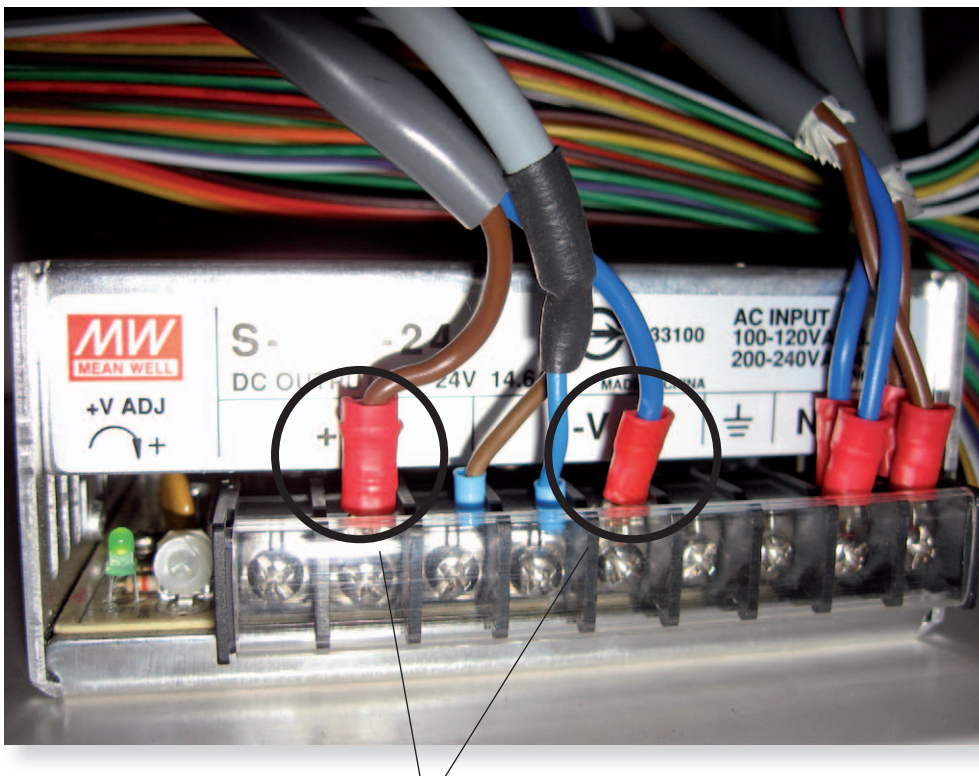
Connections
COM0 – COM1
0V OUT – COM0

RIFA PLC	3N1 Stop cable A5008541	3N1 Stop cable A5008542
0	0	
1	1	
2	2	
3	3	
4	4	
5	5	
6		6
7		7
8		8
9		9
10		10
11		11
12		12
13		13
14		14
15		15
16		16
17		17
18	18	
19	29	
20	20	
21	21	
22	22	
23	23	

Connections to Power Board

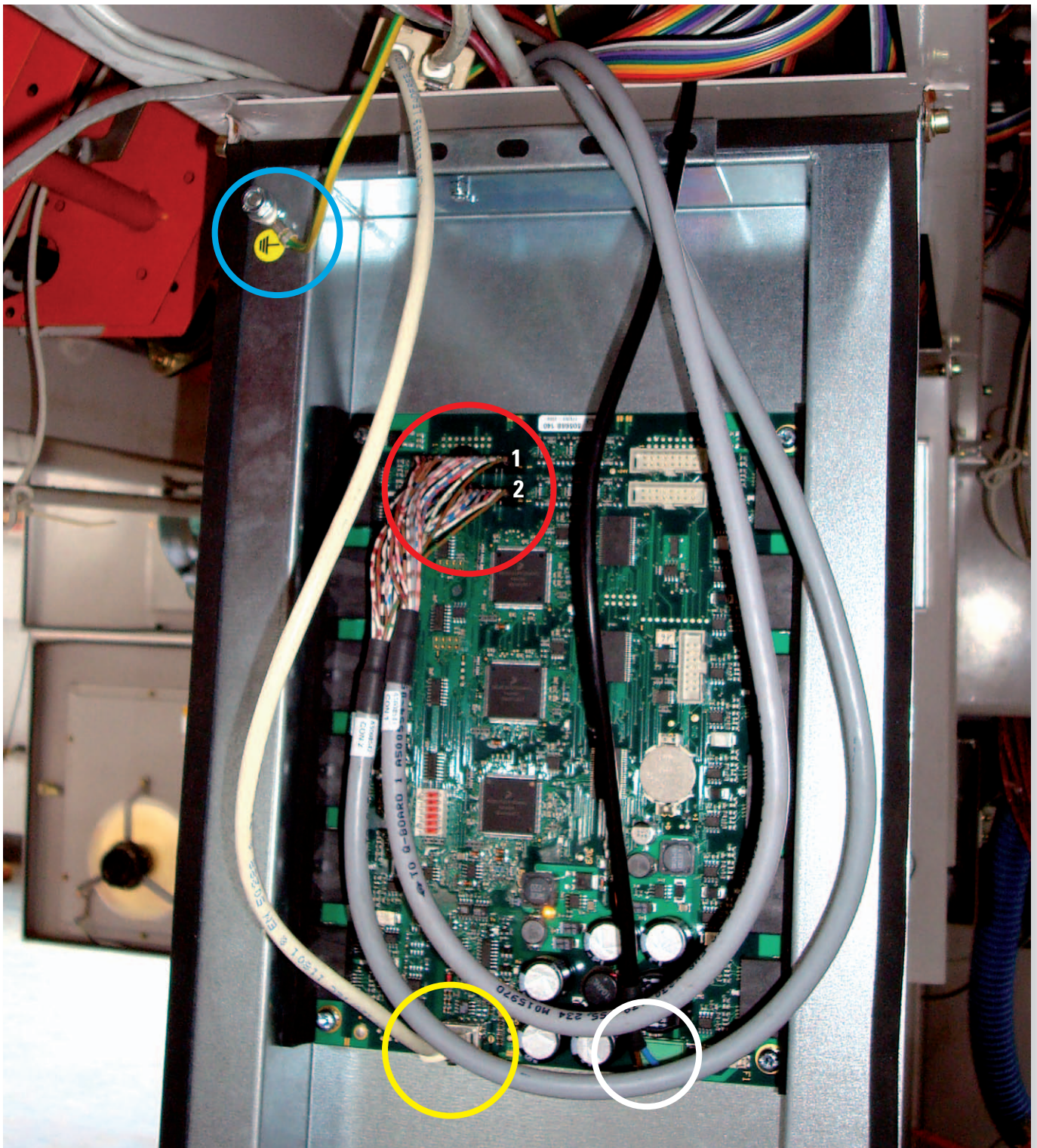


Power Board RIFA



24V Power cable for SE 3N1

Q-Board Connections



Red: Stop cable (**1** = Upper: A5008541, **2** = Lower: A5008542)

White: Power supply 24 V from Power Board RIFA

Yellow: LAN to SCU, is splitted by each section see the following picture

Blue: Ground, connected to machine ground

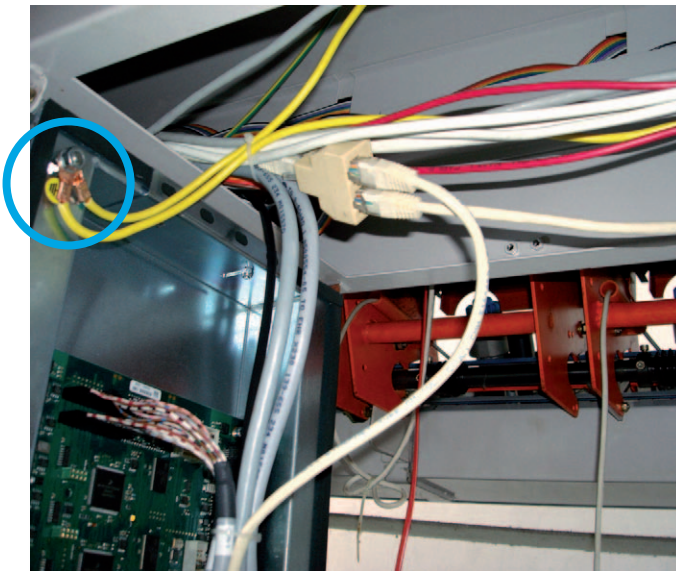
CABLING OF THE SECTION ELECTRONIC (SE)



Output for next section (if last, empty)
Input from SCU or last Q-Board

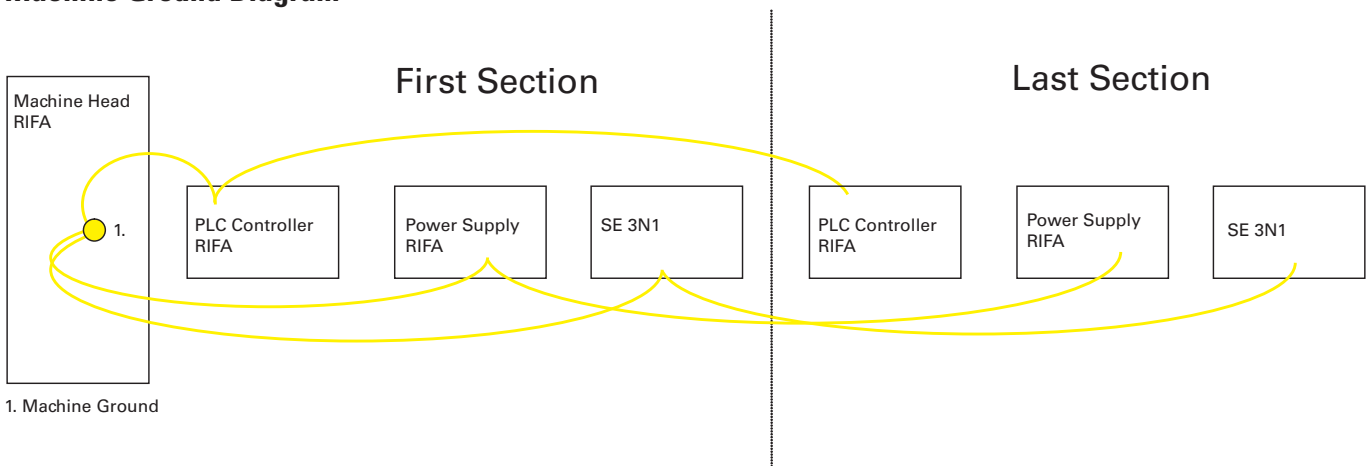
LAN for Q-Board

Earthing of SE-Board



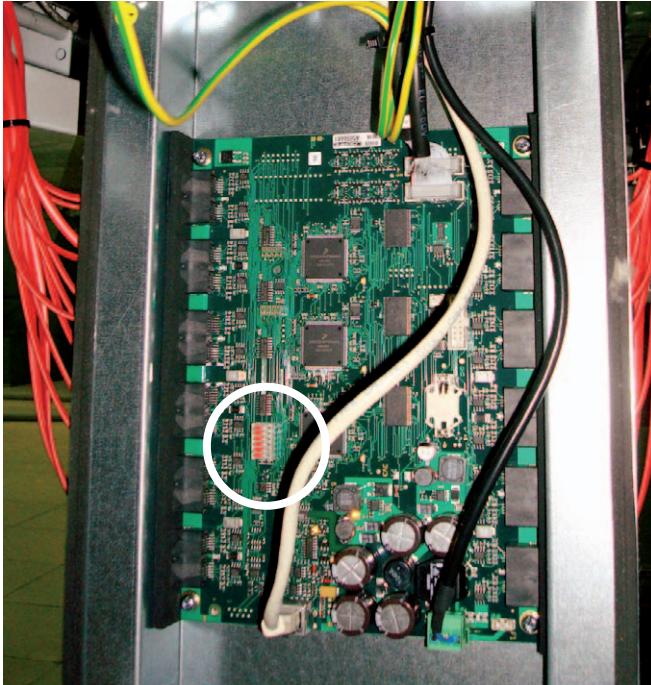
The screw must be screwed onto the Q-Board at the upper left side, as illustrated.

Machine Ground Diagram



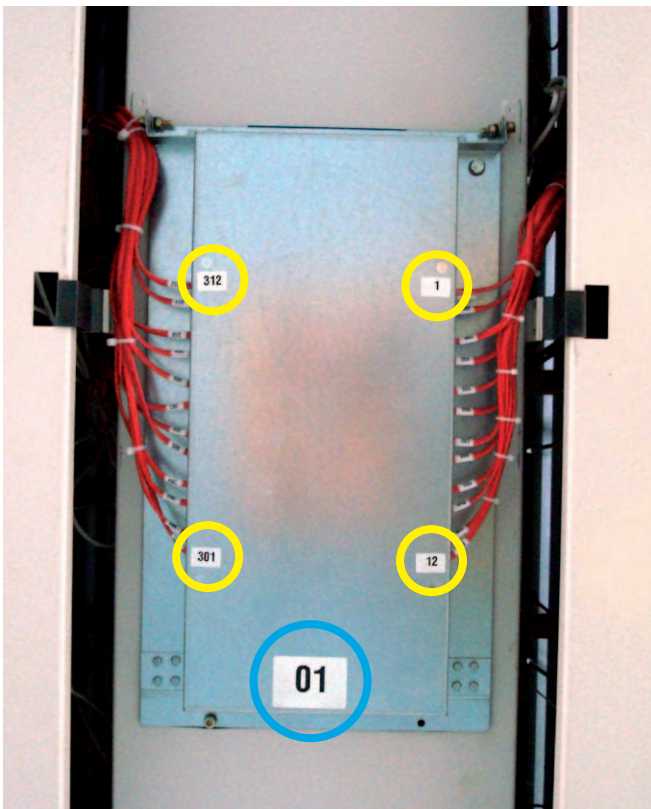
The earthing is assured by the machine ground. The ground wire can simply be laid along the side panel.

SE Address



Set the right address on the switch of the SE. Address sticker is on the SE case.

Labeling of SE-Board

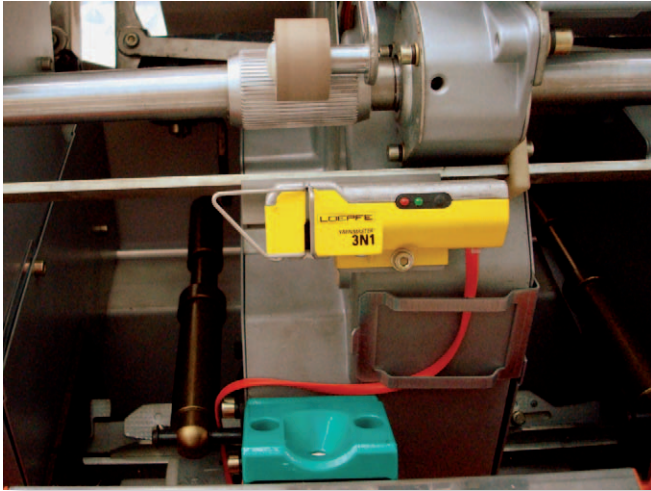


The labelling is to be done by the fitter. As soon as the Q-Boards are placed the attached stickers must be fixed. This marking serves for a correct cabling and helps in case of exchange.

Blue: SE-Board number

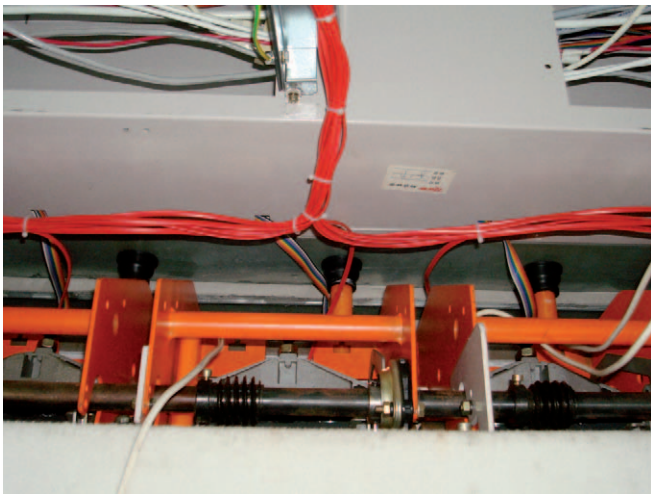
Yellow: first and last rotor number on each side.

Sensor Cables

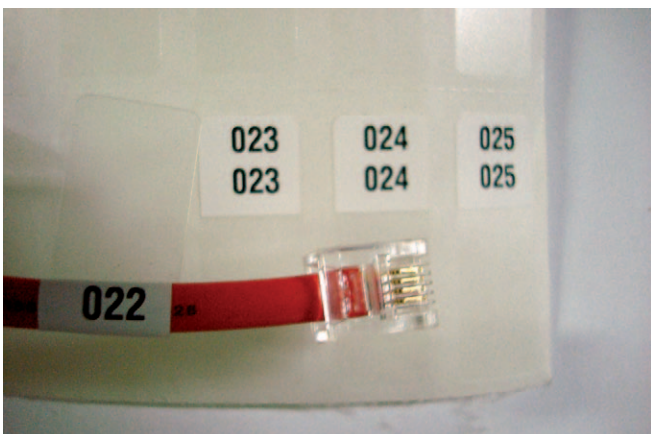


On each machine side:
6 cables, length 3m (SCU side, longest way to Q-Board)
6 cables, length 2m (shorter way to Q-Board)

Cable from the sensor to the inside of the machine. Use the support (different types available).



Inside (view of the backside of the rotor)
For sensor cable layings an orderly laying is necessary to avoid unnecessary kops. Use cable channels.



Labling of sensor cable (hanging end!!), when the cable is plugged into the sensor and led to the inside.

Use the Rotor number as a help!!!

System Setup

First Power Up

After completing the installation and safety checks for the Savio machine, power on the machine and both machine sides.


The following happens:

1. The SCU starts up. ⇒ If not, check the SCU power connection.
2. Within one minute, the LEDs of the SH of at least the first section show a running light.
3. The SCU downloads the SE-Unit software to SE-Units that are connected. This takes some minutes.
While downloading, the red LEDs of all SH blink simultaneously.

Caution: During download, do not interrupt power!

Settings

Caution: Touch the touch screen with bare finders only. Do not use any object or tool to touch the screen. Do not push hard on the screen, nor hit it with a heavy or sharp object. Remove the protection foil of the SCU display (touch screen).

Next table lists the settings to be done. Enter the system or user password when it is requested. The system password is known by Savio and Loepfe installers only. The default user password is "123". Save settings by pressing OK or .

Setting	Where?	Do what?
Date and Time	Setup menu > System Date / Time	Select the current date, set current time and select the time zone.
Number of spindles	Service menu > Machine Configuration > Side(s)	Enter the number of spinning units of each machine side. Note: After saving the settings, the picture in the Machine Overview page is adapted.
Number of piecers	Service menu > Machine Configuration > Side(s)	Enter the number of piecers. Note: 3N1 can generate Q-reports per piecer.

Note: Other configuration settings are set in accordance with or by the customer.

System Test

Cable Test

Now all detector LEDs should show a running light, which indicates that they are addressed by the SCU. Power off and check cabling if sections fail to scan. Power on. A download will be started for newly connected SE-Units.

Q-Lock Test

1. On the SCU, click Service, Diagnostics and open the Tests page.
2. In Left, click Start forced locks and enter rotor number 1 and the last rotor number of the machine side.
3. A Q-lock signal will start from spinning unit 1, left side. Both Q-detector LEDs will light up, and as a consequence, after ±8 seconds, the red light of the corresponding spinning unit will be on (machine must be running).
4. Write down the detector number if the order is wrong.
5. The sequence stops at the last spinning unit of this same side.
6. Same procedure for the right side.
7. Correct cable errors.
8. Repeat the Q-lock test until detector LEDs and stop lamps light up correctly.
9. Reset the detector LEDs: click Setup, Production and then click Lot Change for the side/s under test.

Service

F/P Functions enable/disable

With the YM 3N1 FP it is possible to switch the sensing heads F and P function on/off.

After changing, it is necessary to carry out a warm start. Settings: Service/Service Parameters/Other

F and P is only available with the corresponding sensor and the additional PCB (Art. No. 701000.000) on the SE.

Hardware Locks

LOEPFE YM 3N1 has a built-in diagnostic function. Technical problems are indicated by means of hardware locks.

Hardware locks can be cancelled by means of the unlock card, from the SCU or with button on sensing head. Since hardware failures of this kind can have several influences on yarn quality, they should be corrected and reset by qualified personnel only. Hardware locks should therefore be assigned to unlock card 3, which should be accessible to qualified personnel only.

A hardware alarm is indicated on the Q-sensor: Both LEDs are flashing. The type of alarm can be viewed on the SCU screen.



Fault	Description	Possible cause	Recommended action
Hardware QB lock 0	Unspecified diagnostic lock after restart of SE	A lock was present before Power Down of the SE and is restored by the SCU	Correct lock situations before Power Down of SE Reset lock and check again
Hardware QB lock 1 (*)	The SH detects no Yarn signal although the rotor is in RUN state	Yarn not/not correctly in the SH measuring slit SH lower ceramic missing SH defective	Check Yarn position and guiding Replace SH
Hardware QB lock 2	Measured Yarn signal is too low	Yarn position wrong SH lower ceramic missing SH defective	Check Yarn position and guiding Replace SH
Hardware QB lock 3	Measured Yarn signal is too high	Measuring slit obstructed by dust or lint SH defective	Remove dust or lint Replace SH
Hardware QB lock 4	Too much Run/Stop transitions in the measured Yarn signal	Maximum piecing attempts reached (default 20 per shift) Yarn position wrong SH defective	Check piecing robot and spinbox components Check and correct Replace SH
Hardware QB lock 5	No communication with YM 3N1 SH	Cable unplugged or defective SH defective SE has a defective input	Connect or replace cable Replace SH Replace SE
Hardware QB lock 6	Minimum intensity signal. (F channel)	SH has no F-function SH defective	Install correct SH Replace SH
Hardware QB lock 7	Maximum intensity signal. (F channel)	Machine is producing blended yarn SH defective	Disable F-channel of YM 3N1 Replace SH
Hardware QB lock 8	Minimum intensity signal. (P channel)	SH has no P-function SH defective	Install correct SH Replace SH
Hardware QB lock 9	Maximum intensity signal. (P channel)	Machine is producing synthetic yarn SH defective	Disable P-channel of YM 3N1 Replace SH

Notes:

(*) = Function not present on stand-alone installations

SH = Sensing Head

SE = Section Electronics

SCU = Sensors Central Unit

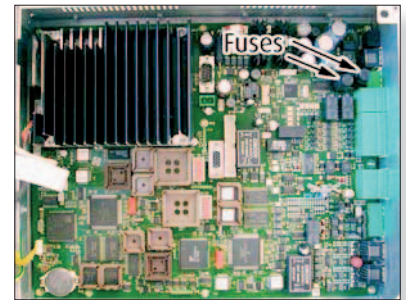
YM 3N1 = YarnMaster 3N1

Fuse and Battery Change SCU

Fuses

2x T3.15AL. Part number: V314103.

- The fuses are located behind the SCU front door. Disconnect SCU power before opening the SCU.



Battery

Replacing the Battery

Caution: Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

- The battery is located behind the SCU front door. Disconnect SCU power before opening the SCU.



Spare Battery SCU
 BMS part number: P222004
 Type of battery: Li CR 2477 3V/0.95Ah

Supplier Data:

- Renata CR2477

Replacing battery:

- The battery holder is polarity protected.
- This means if the batteries is placed reverse, there is no risk of danger.

Replacement instruction:

- Battery is placed with the positive polarity on the top.

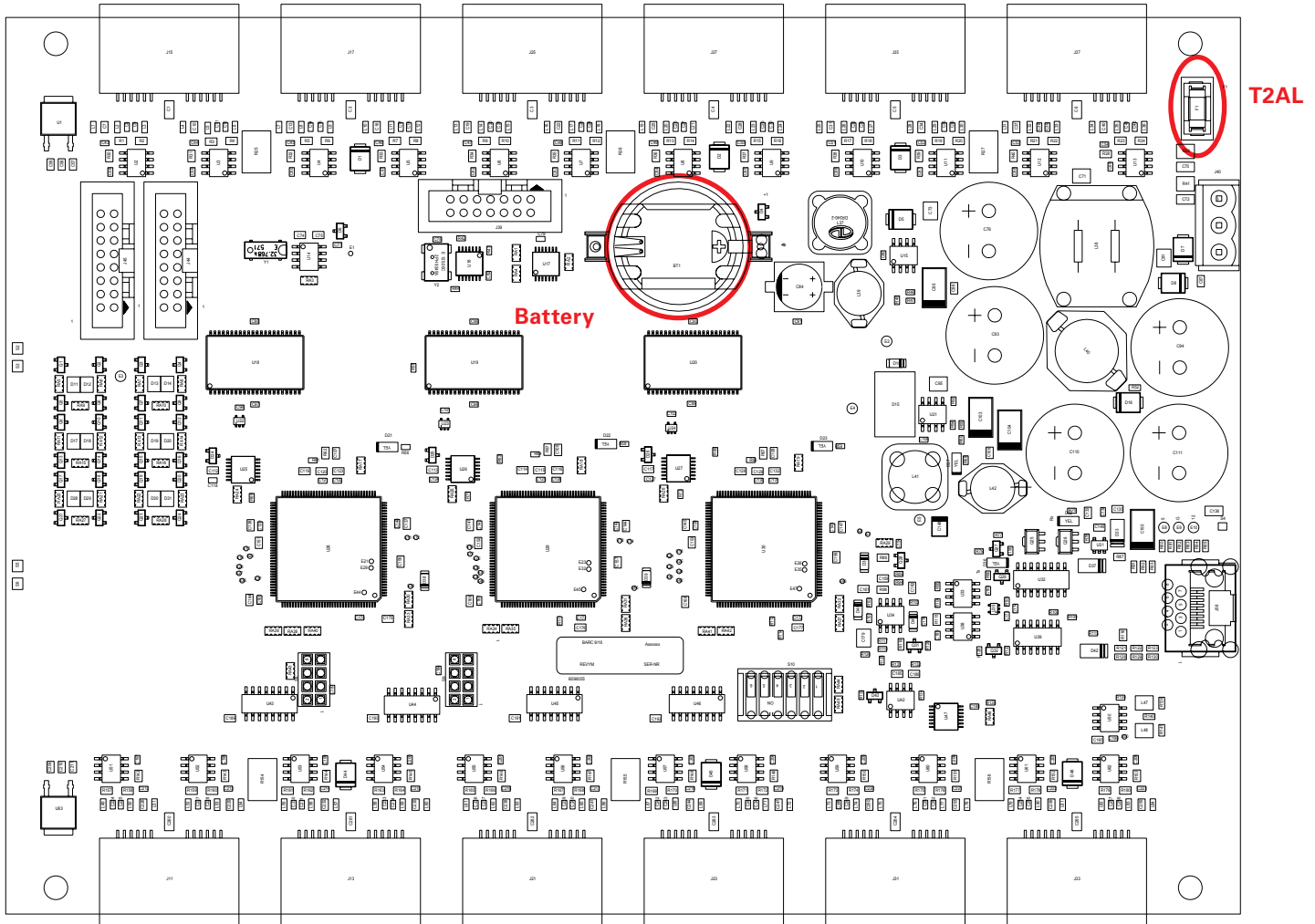
Effect when defect:

- Battery back-up memory stores all logged data of the last 6 shift exchanges.
- If the battery fails and the power is switched off, all logged data is lost.
- In this case, if the operator request the shift data of one of the previous 6 shifts, a warning will be displayed on the SCU screen (at this moment, this warning is not implemented yet, this will be coming later)

Life time battery:

- When power is switched off : 2.5 years
- When power is switched on : 10 years

Fuse and Battery Change SE



Fuse

The input fuse (T2AL) of the 3N1Q-board is an SMD fuse (6.1x2.6x2.6mm) in a holder.

Spare fuse SE (Q-board)
 BMS part number: A080992900
 Type of fuse: T2AL

Supplier Data:
 – LittleFuse 0452 002.L

Battery

Replacing the Battery

Caution: Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

Spare battery SE (Q-board)
 BMS part number: A016957900
 Type of battery: Li CR 2032 3V/0.17Ah

Supplier Data:
 – Panasonic CR2032
 – Varta 6032 101 501R
 – Duracell DL 2032
 – Renata CR2032

Replacing a SE-Board

Part number: A250437100

1. Remove the two SE-unit cover screws.
2. Unplug the power connection and then all connections.
3. Hook the unit off the mounting frame.
4. Remove the five screws and take out the board.
5. Copy the address DIP switches settings.
6. Hook the unit on the mounting frame.
7. Reinsert all connections and finally the power cable.
8. Close the SE-unit.

Note: *The software is automatically sent to the SE-Board by the SCU.*

Replacing a Detector

Part number: A905257100 (basic), A905257000 (full)

1. Lock the spinning unit.
2. Disconnect the detector cable.
3. Loosen the two nuts and washers.
4. Mount and connect the new detector.
5. Unlock the spinning unit software

Spare Part Numbers

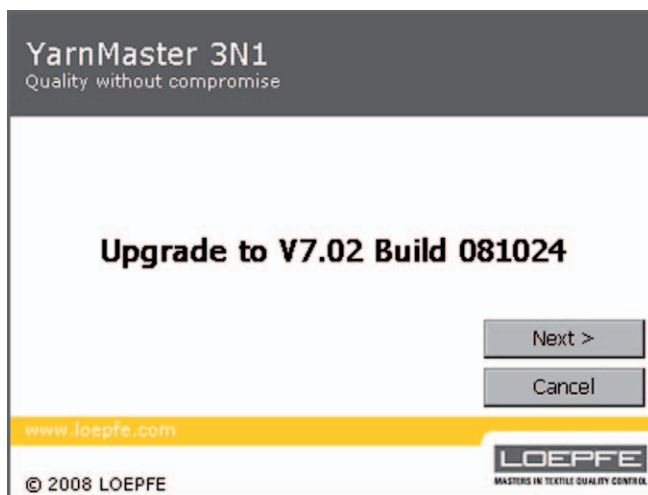
Loepfe	Description
A016964900	Cleaning Tips
A250423500	SCU basic
A250437100	SE board basic
A701000	extension print for SE (Full Version)
A905257100	Sensor basic
A905257000	Sensor full
V314103	Fuse for SCU
A080992900	Fuse for SE
P222004	Battery for SCU
A016957900	Battery for SE
045757000	USB Stick Loepfe

Software

SCU Software Upgrade

Upgrade Procedure by Means of a USB Memory Stick

1. Take the "Open End VX.XX Build XXXXXX Upgrade.exe" file from the data carrier
2. *In special case:* Rename the file "Open End V7.02 Build 081024 Upgrade.oxo" to "Open End VX.XX Build XXXXXX Upgrade.exe".
3. Make sure there is no "BARCO" directory on top of the memory stick. In case there is one, copy this temporarily to your hard disk or rename it, but remove it from the memory stick. Best Case: take an empty USB stick
4. Copy the file "Open End VX.XX Build XXXXXX Upgrade.exe" to the memory stick (on top).
5. Double-click the file "Open End V7.02 Build 081024 Upgrade.exe", and unzip (or extract) it. This will create a "BARCO" directory on top of the memory stick, containing all required files and folders for the upgrade.
6. Now, plug the memory stick into the SCU, and after 10 to 15 seconds the following screen will appear:

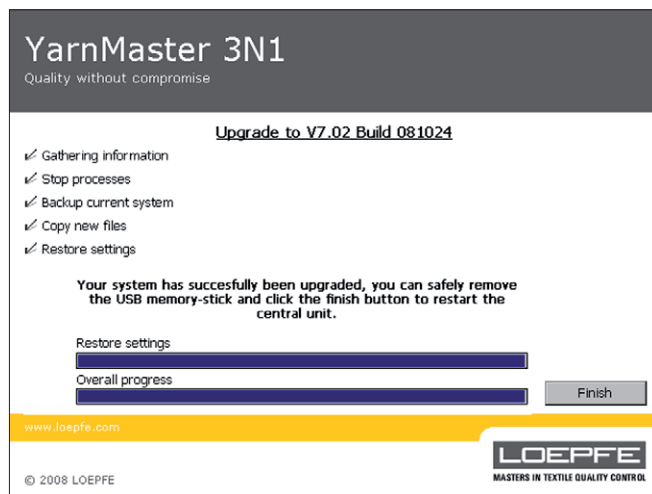


7. Click the "Next >" button, and a new screen appears:



Now, click the “Start Upgrade” button to start the upgrade.

8. At the end (all 5 steps executed), the following screen appears:



9. Now, you can unplug the memory stick from the SCU, and click the “Finish” button. The SCU will reboot with the new software version.
10. Now, you can move on to the next machine, and repeat this procedure from step 6.

!!! Start a new lot !!!
!!! No need to put in the settings again !!!
!!! There is no downgrade possible !!!

Upgrade Procedure by Means of Changing the Compact Flash

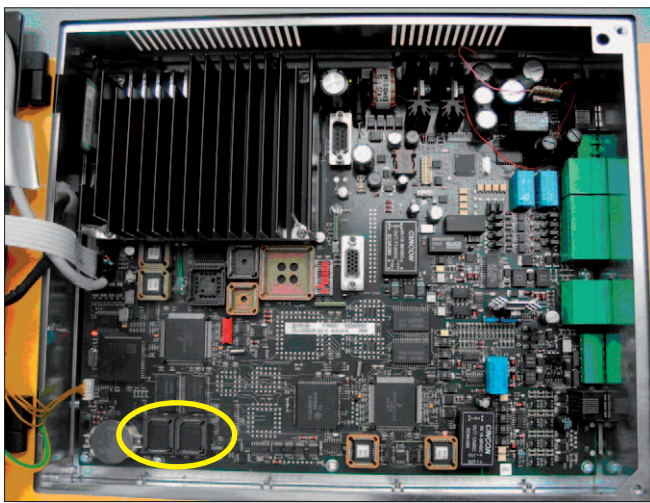
1. Save all data (USB or note it)
2. Switch off the power of the SCU
3. Take the compact flash with the latest “Open End VX.XX Build XXXXXX “ Version and interchange with the old one.
4. Switch on the power of the SCU
5. Put in all data again

!!! Start a new lot !!!
!!! Need to put in the settings again !!!
!!! There is a downgrade possible !!!

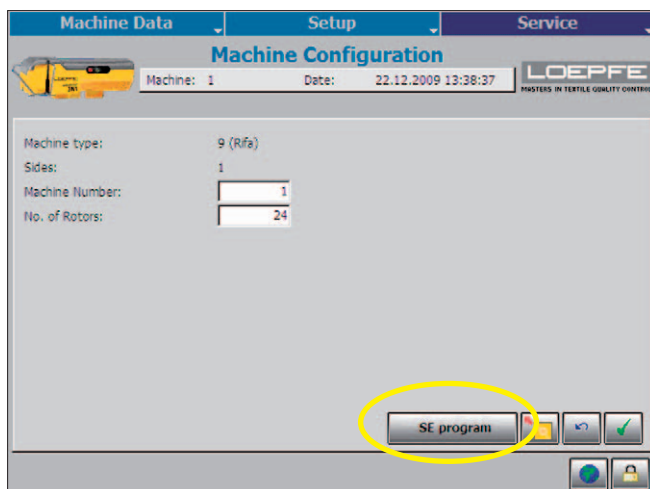
Software for Section Electronic (Q-Board)

Change Procedure for the 2 Flash EPROM Units

1. Stop production of the OE Spinning machine
2. Switch off the Power of the SCU
3. Open the cover of the SCU (2 screws)
4. Replace the old flash EPROM with then new one. (use a special gripper)
L (Low) for U23, left side
H (High) for U24, right side



5. Switch on the Power of the SCU
6. Go to menu: service / machine configuration and press button QB program (for programming the section electronic).



Specifications

- Unit	
- supply voltage	: 24Vdc SELV
- supply voltage range	: -15% / +25% (including ripple)
- supply current	: 1.1A _{dc}
- Fuse	: T2AL
- Temperature range	: 5 – 50°C non condensing
- Output stop signals	
- Auxiliary supply stop signals	: pin10/J44 and pin10/J45
- Output voltage	: 12V +/- 5%
- Maximum output current	: 100mA / connector
- High side outputs	: J48, J49
- Type of output	: open collector
- number of outputs	: 2 x 12 outputs
- Max. output current / output	: 5mA
- Max. output voltage if output is active	: Supply voltage
- Min. output voltage if output is active	: Supply voltage - 1.5V
- Low side outputs	: J44, J45 or J53, J54
- Type of output	: open collector
- number of outputs	: 2 x 12 outputs
- Max. output current / output	: 30mA
- Max. output voltage if output is active	: 1.5V
- Min. output voltage if output is active	: 0V
- Max. output sustaining voltage	: Supply voltage
- Internal pull-up resistor	: 10K Ω / output to supply voltage



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