

# **Airloop-Unwinder** **C9100**

Technical handbook

<b>Index</b>	<b>page</b>
1 Safety advices .....	3
1.1 Important warnings .....	3
1.2 Danger advices .....	3
1.3 Symbol descriptions .....	4
2 Introduction .....	5
2.1 General information .....	5
2.2 Safety regulations .....	5
2.2.1 Prevention of accidents .....	5
2.2.2 Noise suppression .....	5
2.3 Installation examples .....	6
3 Airloop-Unwinder .....	7
3.1 Construction .....	7
3.1.1 Mounting plate .....	8
3.1.2 Drive .....	8
3.1.3 Diver roll and paper guide .....	9
3.1.4 Drive .....	9
3.1.5 Guiding plate .....	9
3.1.6 Sensors .....	9
3.1.7 Solid state relais .....	9
3.2 Settings .....	10
3.2.1 Divert roll .....	10
3.2.2 Pinch roll .....	11
3.2.3 Guiding plate .....	12
3.2.4 Paper brake .....	13
3.2.5 Paper guide .....	13
3.2.6 Length of the Air loop .....	13
3.2.7 Sensors .....	14
3.2.8 Support with toothed disk .....	15
3.3 Electrical connection .....	16
3.3.1 Schema .....	16
3.3.2 Schema LSA9120 .....	17
3.3.3 The connector box 9100 .....	18
3.3.4 Fuse F1 (5A slow blowing) .....	18
3.3.5 Pinassignment Monitor Connector DISPENSER .....	19
3.4 Cabling .....	19
4 Setting up .....	20
4.1 Maintenance .....	21
4.1.1 Daily .....	21
4.1.2 Weekly .....	21
4.1.3 Semiannual .....	21

<b>Index</b>	<b>page</b>
4.1.4 Tips for cleaning / removal of labels .....	21
5 Technical data .....	22
5.1 Fuses .....	22
5.2 Dimensions .....	23
6 Troubleshooting .....	24

# 1 Safety advices

## 1.1 Important warnings



**Before installing and operating the Unwinder C9100 read the following safety instructions.**

- **The Collamat 9100 labeller is exclusively intended for labelling goods. It must exclusively be controlled and driven by a C9100 monitor.**
- **Install the Collamat 9100 only by a trained specialist considering the national specific regulations of**
  - **prevention of accidents**
  - **mechanical stability**
  - **construction of electrical and mechanical systems**
  - **noise suppression**
- **Take notice of the technical data of the Collamat 9100. Especially the environment conditions must be observed.**
- **Operate the Collamat 9100 only by trained personnel.**
- **In case of non-authorized modifications the guarantee will become void.**
- **Before connecting non-standard products, ask your competent technical supporter.**

## 1.2 Danger advices

- **The safety symbols and danger advices on the Collamat 9100 and in this manual must strictly be observed.**
- **Switch the monitor C9100 off before connecting or disconnecting the labeller to or from the monitor C9100.**
- **Only authorized personnel may open the monitor and the connector box.**
- **Disconnect the monitor from the mains before opening the connector box.**
- **Danger of pinching hair, jewelry, ties, clothes etc. into the traction unit !**
- **Danger of injury by cutting fingers in the paper zone !**
- **Danger of injury in the dancer roller zone of the Collamat 9100 rewinder and unwinder !**
- **Danger of injury in the case of non-expert use of the Collamat 9100 paper stock control !**
- **When operating the labeller, the operating personnel must keep to a safe location to prevent injury by the products being labeled.**

### 1.3 Symbol descriptions



**ATTENTION**

Danger to damage the Collamat 9100 or other system components, with a potential consequential danger of injuries.

**DANGER**

Imminent hazard for persons.



**DANGER**

Shock hazard due to high voltage at component.



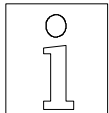
**DANGER**

Hazard of contact injury due to high component temperature.



**ATTENTION**

ESD (ElectroStatic Discharge) warning. The p.c.boards or other components may only be touched in an electrostatically protected environment.



**NOTE**

Important or additional information to Collamat 9100 or its documentation.

## **2 Introduction**

### **2.1 General information**

This Technical Manual describes design and function of the Unwinder C9100. In addition to the Operating Instructions, it contains the settings and notes necessary to get optimum use of the Unwinder C9100. The descriptions of each electrical or mechanical assembly also help for quick error analysis and trouble-shooting.

We recommend to replace p.c.boards always as complete units returning them to Collamat Stralfors or its representative for repair to be sure that the high quality standard of the Unwinder C9100 can also be guaranteed after any repair.

Special characteristics of the Collamat 9100:

- resistant to wear
- rugged
- easy to operate
- quick change-over to other labelling tasks
- high performance
- high labeling precision

### **2.2 Safety regulations**

The Unwinder C9100 must be installed by trained personnel considering the following national specific regulations:

- Prevention of accidents
- Noise suppression
- Construction of electrical and mechanical systems

#### **2.2.1 Prevention of accidents**

When installing and connecting the C9100 monitor and labeller pay attention that the signal and power cables cannot become stumble obstacles. Lay the cables according to the national safety regulations. If the Collamat 9100 is used on a movable stand, this stand must be capable to be tilted by 10° in each direction. See Figure 1:

#### **2.2.2 Noise suppression**

For radio interference suppression the C9100 labeller and monitor are shielded according to the CE directives. Only cables approved by Collamat Stralfors are allowed to be used to connect the monitor to labeller and mains. Additional peripherals have to be connected only to the mains socket of the monitor. These devices must be approved by Collamat Stralfors. Further signal cables must not be placed in close proximity to power cables.

## 2.3 Installation examples

Due to the modular design of the Collamat 9100 there is nearly no limit in variations of the installation. But for best labelling results, the following figure shows an example which work successfully:

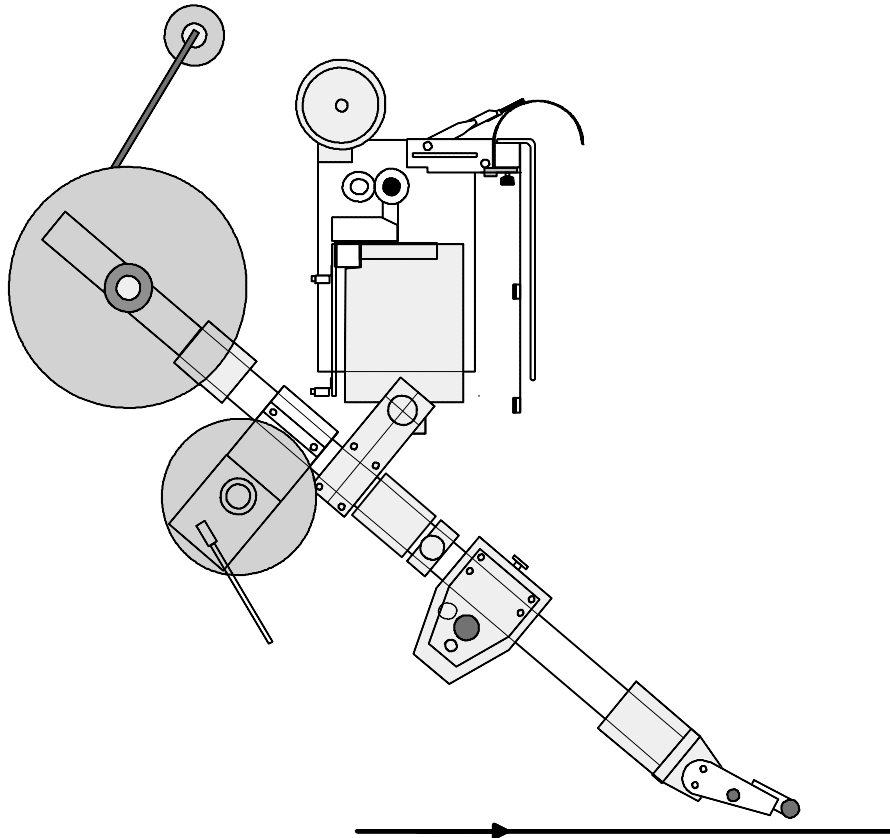
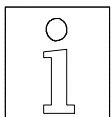


Figure 1: Intallation example



**NOTE:**  
The threading of the paper web, the adjustment of the paper brake and adapter are described in the Operating Instructions of the Collamat 9100 labeller.

### 3 Airloop-Unwinder

the motor driven unwinder is intended to automatically unwind the paper web for Collamat 9100 labellers. To provide an impact free paperfeed the full label roll is unwound through an air loop. The loop is supervised by the unwinders photocells which turn on or off the feeding motor. For servicing and exchanging the paperrolls, the motor can be switched off. The unwinder is powered by 24 VDC.

#### 3.1 Construction

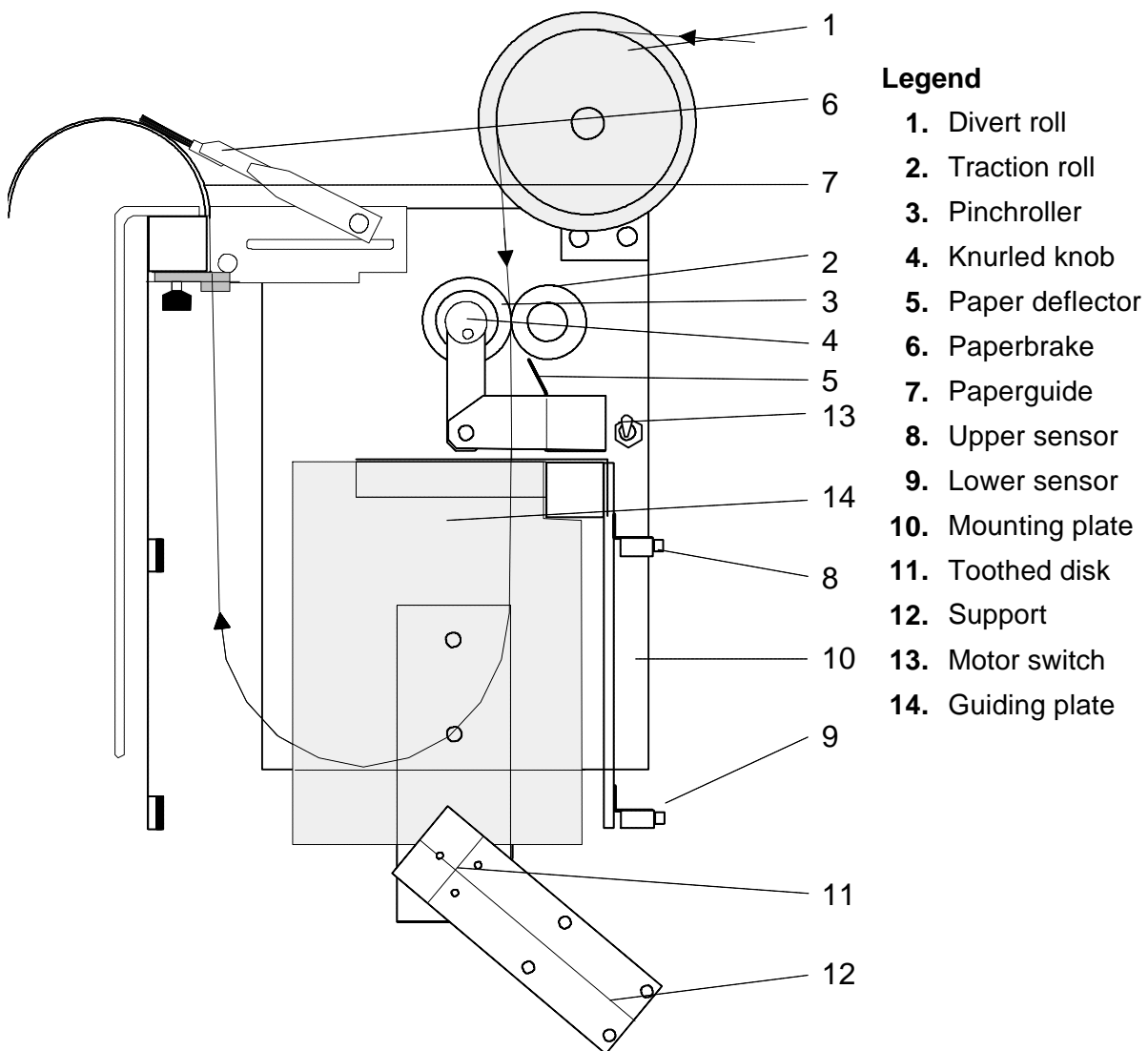


Figure 2: Unwinder frontview

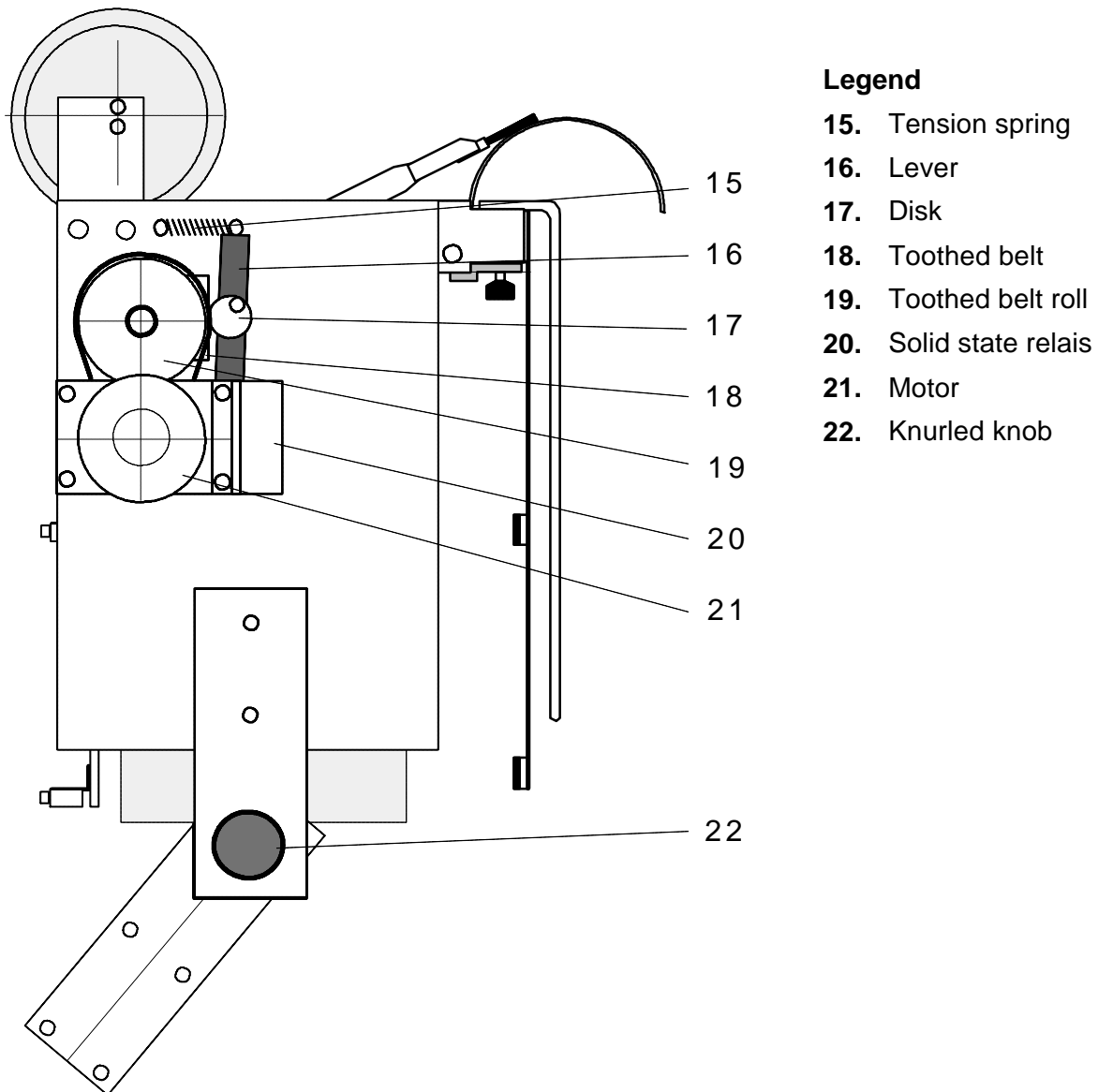


Figure 3: Unwinder rearview

### 3.1.1 Mounting plate

The unwinder is constructed on a massive mounting plate 10. This provides for a stable mechanical fixation of the unwinder components together and carries the support 12 for the fixation to the module rail. With the tooth disk 11 and the knurled knob 22, the inclination of the unwinder in relation to the module rail can be adjusted.

### 3.1.2 Drive

The traction roll 2 is driven by a DC-motor 21. A translation with toothed belt 18 and toothed roll 19 adapts the number of revolutions of the motor to the traction roll. With the disk 17, the pinch roll 3 can be separated for harnessing the paperweb by the traction roll. The disk 17 is mounted through a shaft with the knurled knob 4.

### 3.1.3 Diver roll and paper guide

The large divert roll **1** leads the paperweb to the tractionroller. The diameter of this roll is largely designed so stiff labels or credit cards can be unwound without being predisposed along the paperpath.

The paperguide **7** leads the paperweb out from the unwinder. It has a large radius like the divert roll. It serves also as a counterpart for the paper brake **6**. The paper brake prevents, that at longer distances between the unwinder to the traction unit, the paperweb is pulled by its net weight out of the unwinder.

### 3.1.4 Drive

The paper drives take place via the traction roll **2** and the pinch roll **3**. The pinch roll is symmetrically supported. It can be released by the knurled knob **4** to harness the paper web. A paper deflector **5** prevents the paper to jam around the traction roll caused by glue residues.

For the paper change the drive can be switched off with the switch **13**. This function stopps all rolls. So hazzardous sitiations can be prevented.

### 3.1.5 Guiding plate

The guiding plate **14** guides the paperweb. It must be adjusted so that the paperweb cannot deviate lateraly.

### 3.1.6 Sensors

The sensors supervise the air loop of the paperweb. The motor is controlled so that the air loop always covers the lower sensor **9**. If the paperweb leaves the lower sensor, the motor is started. If the paperweb covers the lower sensor again, it is stopped. If the upper sensor **8** is uncovered, the unwinder will be turned off. That prevents a free running of the motors. With this signal also the labeler can be blocked.

### 3.1.7 Solid state relais

The solid state relais **20** controls the unwinding process. The signals of the sensors **8** and **9** are connected t so hat the solid state relay of the motor is activated or stopped. The solid state relay therefore feeds the motor **21** in dependence of the air loop of the paperweb.

## 3.2 Settings

Es folgt nun die Beschreibung zu den diversen Einstellungen. Hier sind folgende Punkte zu beachten:

- Divert roll
- Pinch roll
- Guiding plate
- Paper brake
- Upper and lower sensors
- Support with toothed disk

### 3.2.1 Divert roll

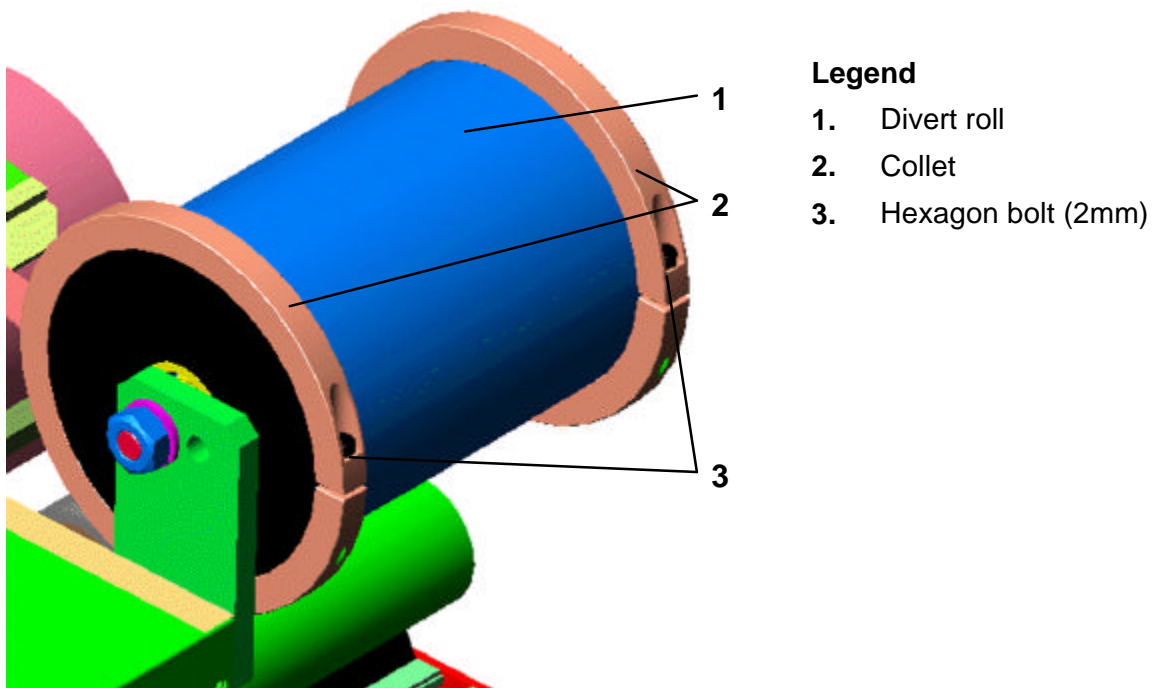


Figure 4: Divert roll

The divert roll **1** leads the paperweb to the paper drive of the unwinder. The distance between both collets **2** can be adjusted suitable to the paperweb. Therefore both hexagon bolts **3** of the collets must be untightened. Then the collets must be shifted to the correct position to guide the paperweb, then retighten the hexagon bolts again.

### 3.2.2 Pinch roll

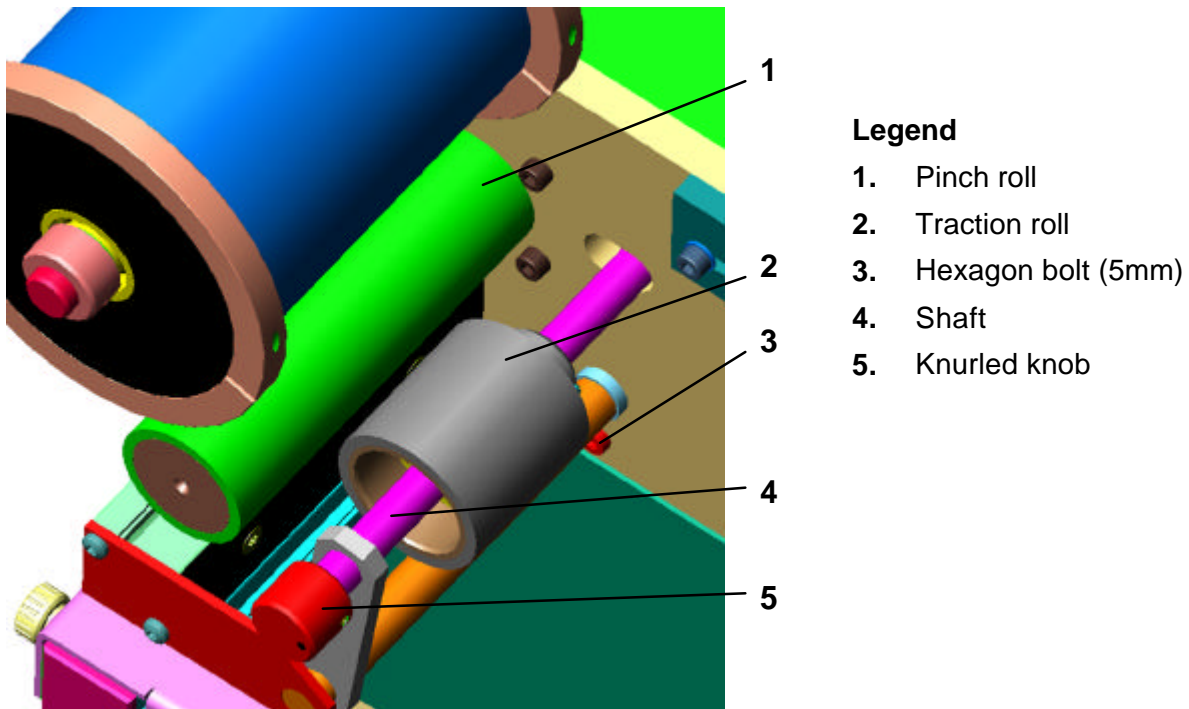
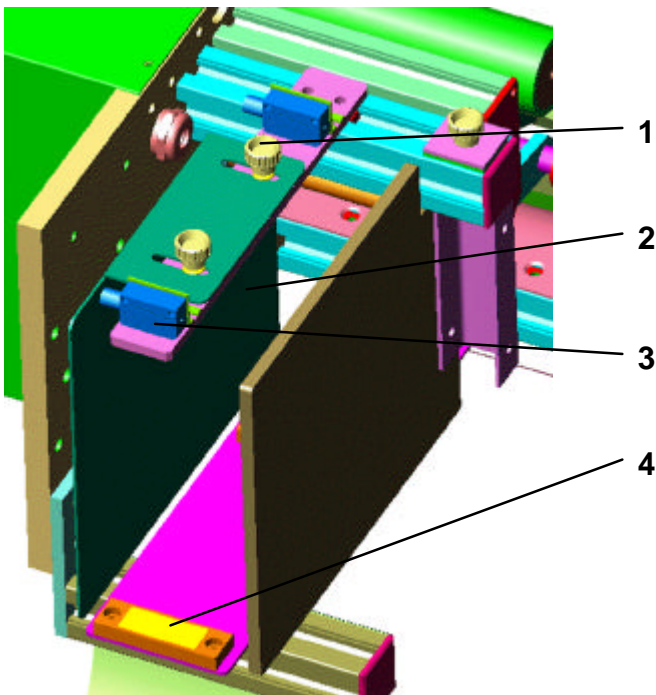


Figure 5: Pinch roll

The paper drive is built up by the traction roll **2** and the pinch roll **1**. For narrow paperwebs, the pinch roll can be shifted concentric to the web. Therefore the paper drive must be opened using the knurled knob. Then the pinch roll must be untightened at the hexagon bolt **3** (use hexagon wrench 5mm). Now the pinch roll can be shifted on the shaft **4** concentric to the paper- web. Then retighten the hexagon bolt **3**.

### 3.2.3 Guiding plate



#### Legend

1. Guiding plate
2. Knurled knob
3. Mirror
4. Sensor

Figure 6: Guiding plate

The guiding plate **1** must be adjusted so that the paperweb cannot deviate laterally. For adjusting the guiding plate, the knurled knob **2** must slightly be untightened. Then the guiding plate can be shifted to a suitable position. At the end it must be retightened.

The guiding plate must not be positioned between sensor **4** and mirror **5**!

### 3.2.4 Paper brake

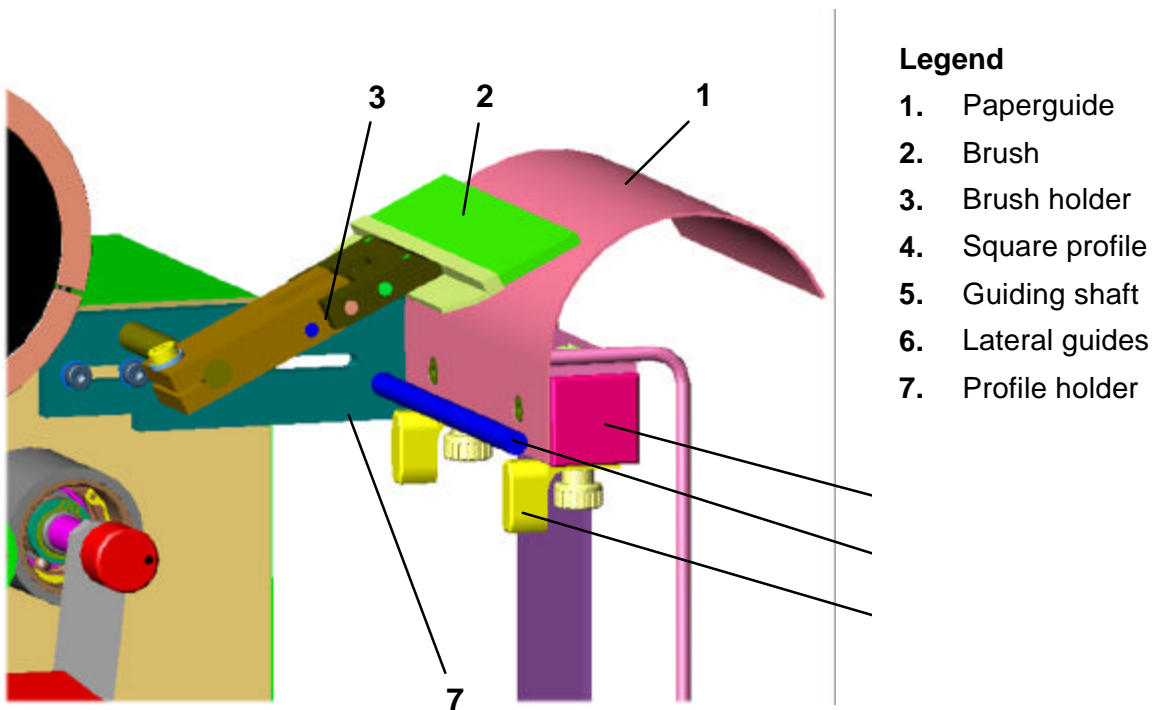


Figure 7: Paper brake

In the case of a longer distance between unwinder and traction unit, the paper brake prevents that it is pulled by its net weight out of the unwinder. The paper brake is factory adjusted and should not be readjusted. It is so adjusted that the paperweb does not become very stretched, and does not even fall out of the unwinder. The position of the brush 2 can be set at the side by shifting of the brush holder 3 on the shaft. It should be placed concentric on the paperweb.

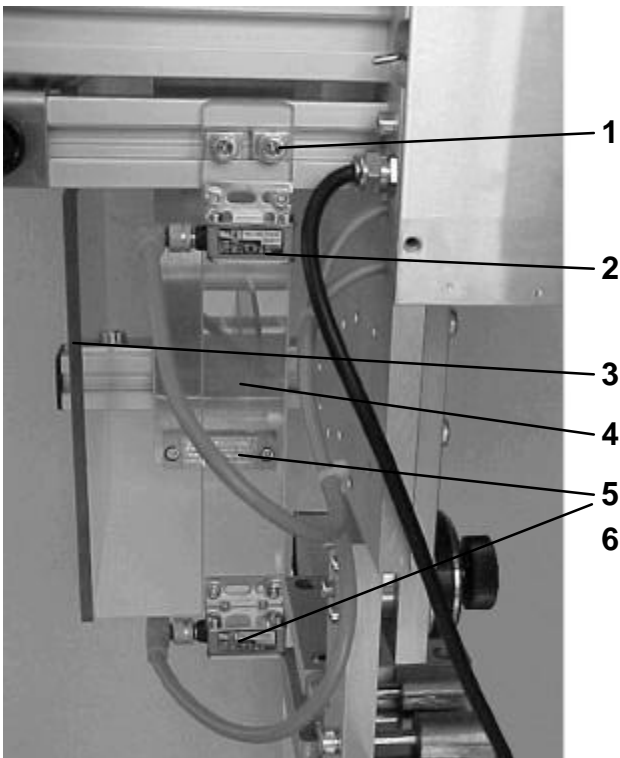
### 3.2.5 Paper guide

The paper web must be threaded in between the paperguide 1, the guiding shaft 5 and the lateral guides 6 respectively. If necessary the clearance between the lateral guides must be adjusted to the width of the paper web. The paper web must run easily through the lateral guides.

### 3.2.6 Length of the Air loop

Dependent to the length of the labels the clearance of the air loop must be adjusted so that the labels can track easily the path of the paper web's loop without being deformed. For this purpose the profile holder 7 must be loosened at its hexagon bolts, then shifted forward or backward according to the air loop's dimension.

### 3.2.7 Sensors



#### Legend

1. Fixing screws
2. Upper sensor
3. Guiding plate
4. Sensorcarrier
5. Mirror
6. Lower sensor

Figure 8: Sensors

The lateral position of the sensors must be placed the way that the lightbeam of the sensor 2 and 6 to the mirrors 5 is completely interrupted by the paperweb. To change the lateral position of the sensorcarrier 4 the two fixing screws 1 must be untightened. necessary also the carrier of the mirrors must be adapted to the position of the sensors. Using narrow paperwebs the guiding plate 3 may not be located between the sensors and its mirrors. In this case also respected that the paperweb cannot emerge between sensorcarrier and guiding plate.



#### **ATTENTION:**

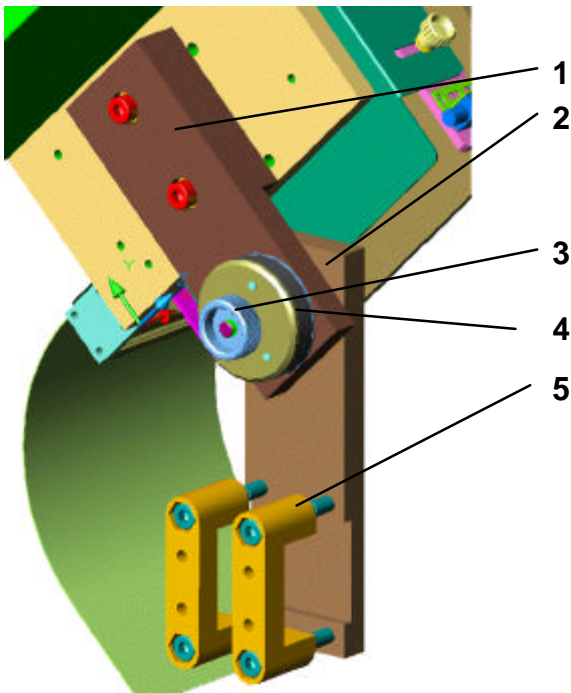
**Before transporting the Unwinder C9100 both sensorcables must be disconnected from the sensors.**

**If the sensors are shipped with the connectors plugged in, the connectors can be broken out of the sensorhousing.**

**Both sensors and the appropriate cables must be marked to establish a proper reconnection (Upper sensor, lower sensor).**

**Before setting up the unwinder both sensors must be connected properly.**

### 3.2.8 Support with toothed disk



#### Legend

1. Upper support
2. Lower support
3. Knurled knob
4. Toothed disk
5. Klamp

Figure 9: Support

The upper **1** and lower **2** support respectively, serve for adjusting the inclination of the unwinder. The unwinder works best in vertical position. With the toothed disk **4** the inclination of the unwinder can be adjusted in  $5^\circ$  steps. For adjusting the inclination, the unwinder must first be held. Then the knurled knob **3** must be untightened carefully until the unwinder can become tilt. Now adjust it to the correct inclination, and after all the knurled knob must be retightened. The unwinder can be shifted along the module rail by untightening the clamps **5**.

### 3.3 Electrical connection

#### 3.3.1 Schema

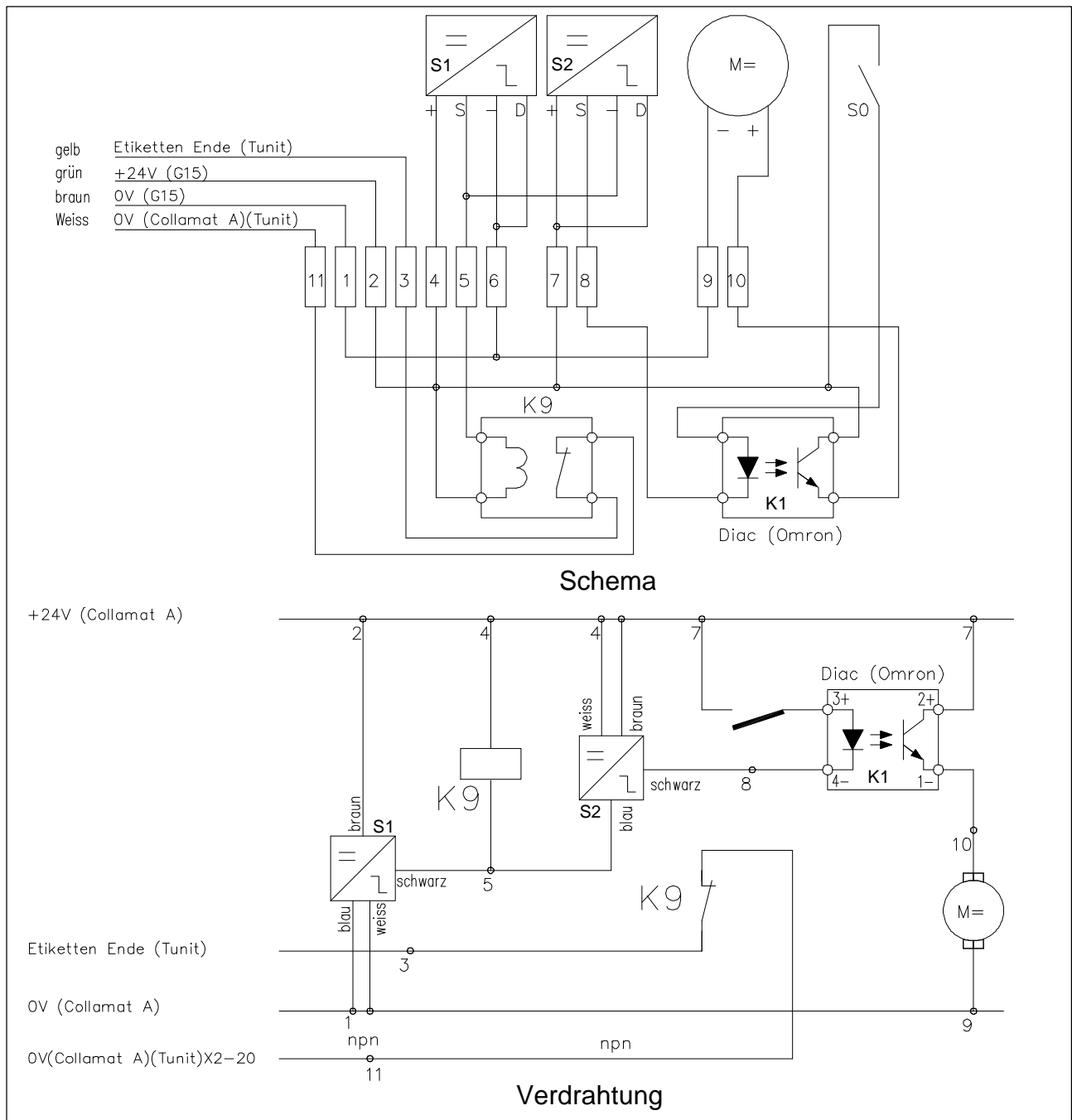


Figure 10: Schema LSA9110

The solidstate rels K1 switches the motor on when the light barrier S2 (lower) is free. If the paperweb is stretched the upper light barrier S2 deactivates the light barrier S2 and activates the rels K9. This rels closes the contact K9 to activate the TUNIT signal. The signal TUNIT is used to activate an errormessage on the monitor display and starts a switchover in nonstopmode.

### 3.3.2 Schema LSA9120

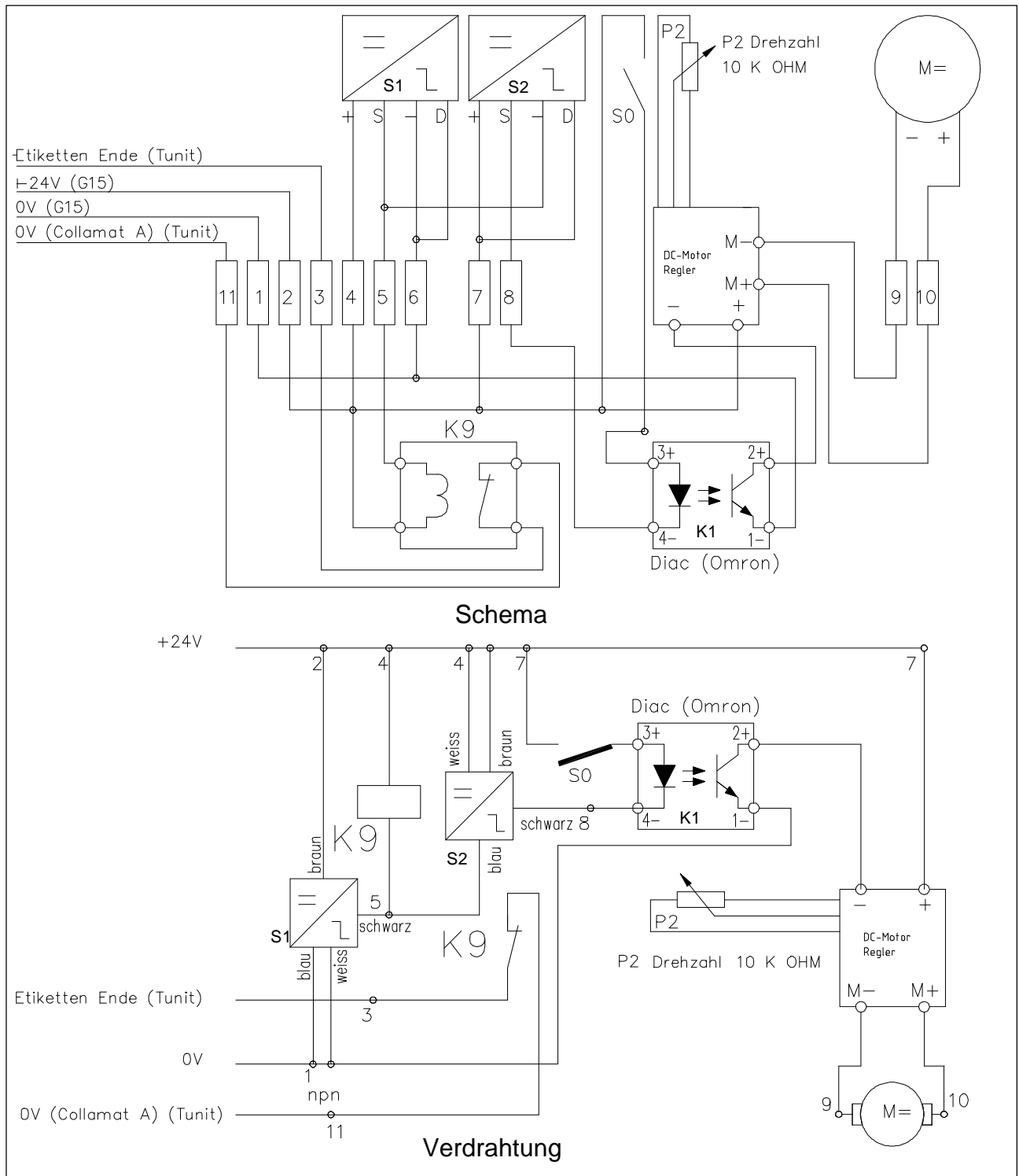


Figure 11: Schema LSA9120

### 3.3.3 The connector box 9100

All signals of the C9100 monitor are fed in one cable to the connector box on the labeller. There all electrical modules of the labeller with the exception of the stepper motor are connected. The following Figure shows the position of the connector terminals in the connector box.

The unwinder C9100 is electrically connected inside the connector box C9100. There the terminals Unwinder are used. On the connector p.c.board the wire colors are marked with the numbers of the resistor color code. These colors are valid for Collamat Stralfors peripherals. The connection cables of the modules are fed through the lateral conduit glands. The signal Label-End TUNIT is connected to the TUNIT terminal inside the connector box. This signal will stop the labeller in the case of a stretched paperweb.

The following figure shows the position of the block terminals inside the connector box.

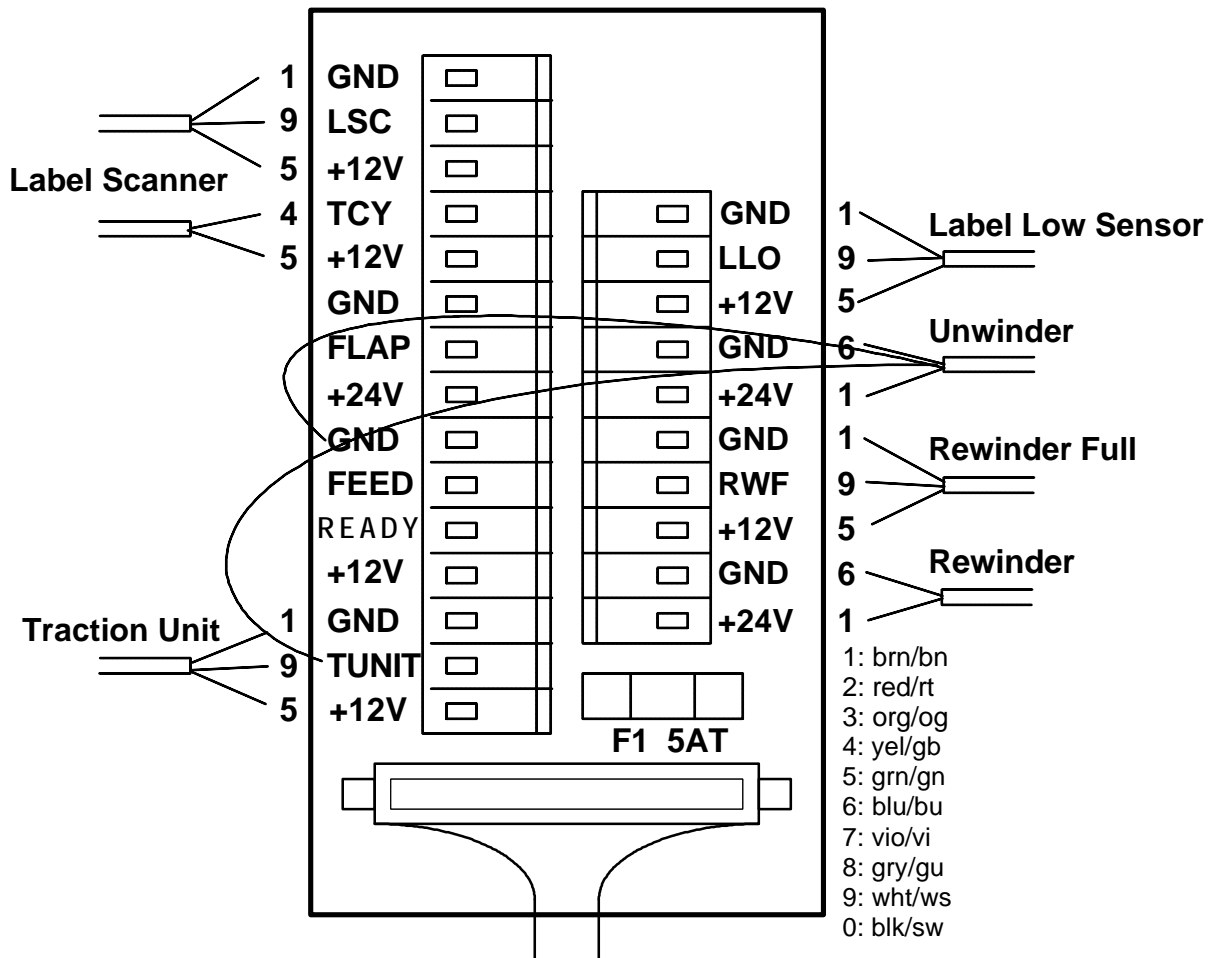


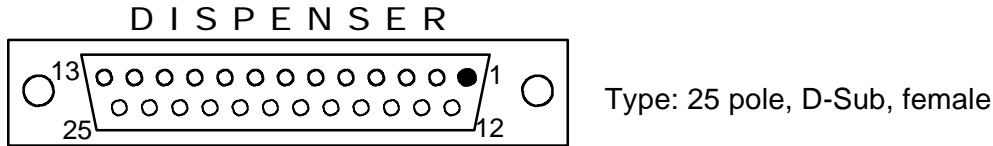
Figure 12:Connector print

### 3.3.4 Fuse F1 (5A slow blowing)

Fuse F1 protects the 24V power supply of the winders from short-circuit and overload. If one or both winders are dead, first check this fuse.

### 3.3.5 Pinassignment Monitor Connector DISPENSER

The control cable to the connector box is attached to this connector . The signals of this connector are used especially to control the dispenser and its units.



Pin	Name	In/Out
1	GND	
2	LSC	I
3	GND	
4	TUNIT	I
5	GND	
6	READY	I
7	GND	
8	LLO	I
9	RWF	I
10	GND	
11	GND	
12	GND	
13	GND	

Pin	Name	In/Out
14	+12V	
15	TCY	O
16	+12V	
17	+12V	
18	FLAP	O
19	FEED	O
20	+12V	
21	+12V	
22	+24V	
23	+24V	
24	+24V	
25	+24V	

Pin assignment of the connector DISPENSER



**For the connection of the dispenser signals a shielded cable must be used. Keep care that the cable is capable to lead the maximum current of the two connected winders. The cable must not be placed near power electronic devices. See also in chapter RMI protection.**

### 3.4 Cabling

Electromagnetic interferences can lead to non repeatable and not obvious errors while labelling. Often misplaced layout of the cabling, RMI and ESD interferences disturb the labelling. Because of this the following rules must be observed for the cabling:

- Separated mains and signal cables
- Use shielded cables
- All units must be grounded
- Connect only devices which meet the RMI standards
- Use power filtering units in interfered environments and interfered mains supplies

## 4 Setting up

The setting up must be done carefully by trained personnel. The following items must be observed:

- Visual control of the control unit
  - Are all electrical and mechanical units correctly attached ?
  - Are all connectors accessible ?
- Connect the monitor to mains and switch it on
  - Is the display illuminated ?
  - Does the startup message appear ?
- Turn off the monitor and unplug it from mains
- Set up the winder and unwinder and connect it to the connector box
  - Are the jumpers inside the rewinder set correctly ?
- Attach the goods scanner signals to the DISPENSER connector
- Connect the monitor to the mains voltage and turn it on
  - Do the winder turn the right way ?
- Turn off the monitor and unplug it from mains
- Connect the remaining units to the connector box of the Collamat®
- Connect the monitor to the mains voltage and turn it on
  - Do the peripheral units work OK ?
- Turn off the monitor and unplug it from mains
- Attach the motorcable
- Connect the monitor to the mains voltage and turn it on
  - Does the motor work in the MOTORTTEST-menu ?
  - Is the turning direction OK ?
- Thread the paperweb and adjust the label scanner
- Dispense a label by the control panel
  - Is it dispensed correctly ?
- Connect the goods scanners (and possible incremental encoder)
- Dispense a label by the goods scanner
  - Watch to the error messages on the display

## 4.1 Maintenance

To prevent failures, it is necessary to perform the required servicing-, inspection- and revisioning measures respectively at regular intervals by a trained personnel. Variances compared to the standard operation (higher powerconsumption, temperature, vibrations, sounds eg. or responding supervision sensors) indicate interfered function. To prevent failures which can lead to collateral or immediate personal injury or material damage, the responsible servicing personnel must immediately be informed.

- Perform the required adjustments, maintenance and inspections in due time.
- Inform the operating staff before beginning the servicing and maintenance.
- Protect all upstream and downstream plant components such as compressed air, control elements, power supplies against unintended activation.
- Power off the labeller and protect the mains switch against unintended activation while performing all servicing, inspection or repairing works.
- Mount a danger sign against unintended activation at a good visible position
- Exchanging weighty components, secure it with lifting gear.
- Check untightened screw fittings for proper tightening after servicing.
- Check all safety components for proper function after finishing the servicing.

The servicing and maintenance of the Unwinder C9100 must be performed in intervals.

### 4.1.1 Daily

- Clean all rolls and sheet metal components from dirt and dust
- Check moving parts for smooth running

### 4.1.2 Weekly

- Clean all rolls and sheet metal components from dirt and dust
- Check all cables for damage

### 4.1.3 Semiannual

- Check all cables for damage
- Check all screws and bolts for being tightened

### 4.1.4 Tips for cleaning / removal of labels

The labels described below do not stick on a product. They stick on any part of the labeling machine. Such label can lead to a failure of the Unwinder C9100 eg. increased friction or malfunction of the Unwinder C9100.

For cleaning the Unwinder C9100, mainly for removal of labels and remainders of labelling glue, a non acid detergent must be used (Alcohol, cleaning gasoline, Rotaprint). First saturate or moisten the labels, it will dissolve the glue. You must not remove the labels using a sharp tool such as a knife. The surface below the label could be scrapped. Remove labels as quick as possible. The longer the glue is stuck to the base material the stronger the adhesive force will become.

## 5 Technical data

### Airloop-Unwinder

System	C9110	C9120
Voltage	24V DC	24V DC
Current	3A	6A
Motor powerconsumption	72W	140W
Outlet width	95mm	140mm
Dimensions (LWH in mm)	295...370x315x480mm	295...370x380x480mm
Ambient temperature	+5-40°C	+5-40°C
Ambient humidity	15-90% non condensing	15-90% non condensing
Type of protection	IP40	IP40
Weight	approx 15.5 kg	approx 16.5 kg

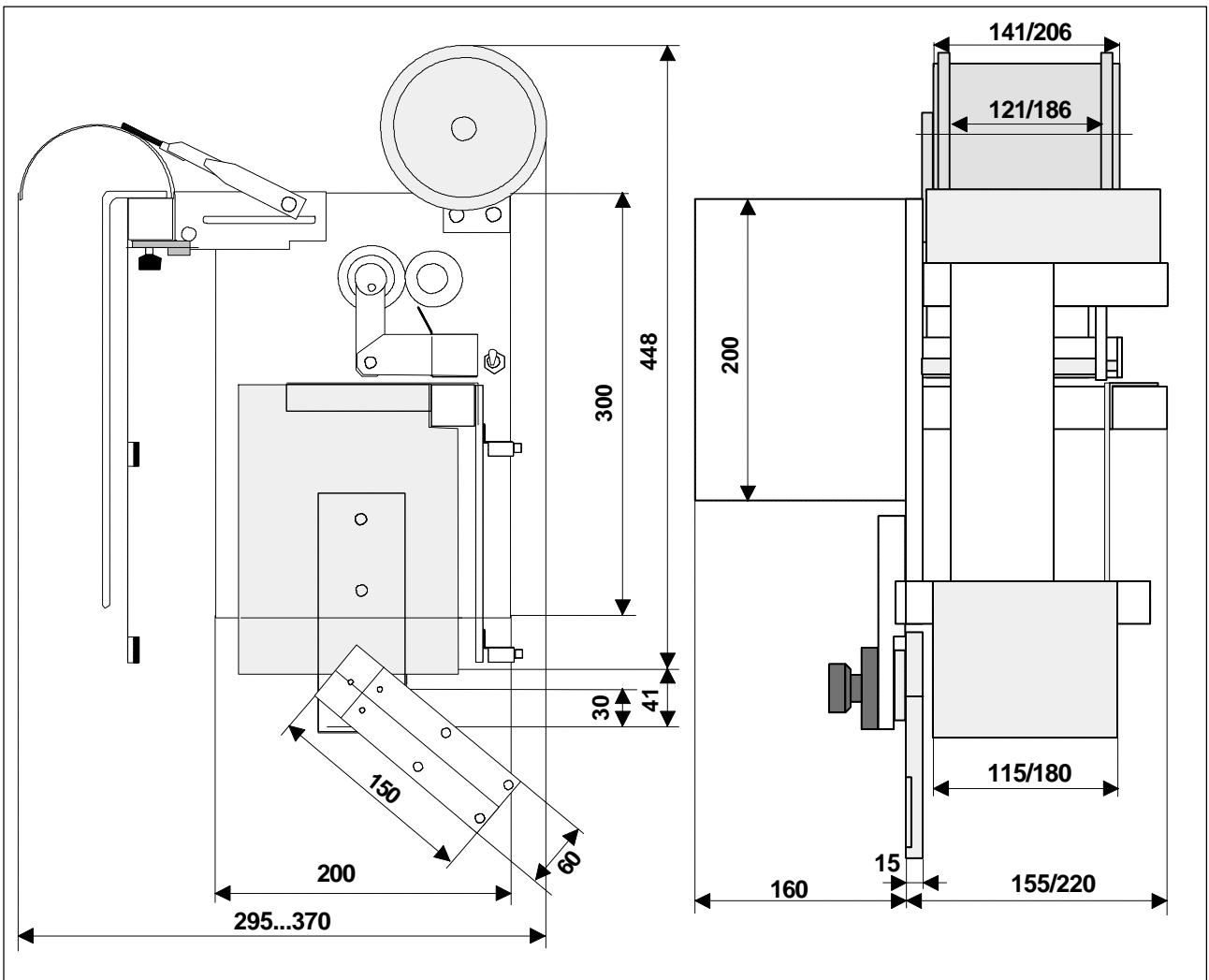
### Powered unwinder

System	Unwinder
Diameter of roll core	see Midi-unwinder
Max. diameter of roll	350mm
Drive	DC-motor
Electric power	24 V DC, 3A max.
Type of protection	IP42
Ambient temperature	+5...+40 °C
Ambient humidity	15-90% non condensing
Noise figure max.	70 dB(A) @ 1 m distance
Weight	11kg

### 5.1 Fuses

Fuse	Rating	Part Number
Monitor	110/120V: 10 AT	7403.0833
	220/230/240V: 5 AT	7403.0822
Interface F1	4 AT	7403.0800
Interface F2	10 AT	7403.0333
Connector box F1	5 AT	7403.1224

## 5.2 Dimensions



The information in this handbook reflects the state of the publication date. We reserve the right to make design modifications.

## 6 Troubleshooting

1. Unwinder troubleshooting		
SYMPTOM	DIAGNOSIS	ACTION
Labels peel off at the dancer roll	Dancer roll diameter is too small	Change the standard roll against a roll with enlarged diameter
Flange of the fixed disk breaks	Material defect, wrong type of aluminum	Replace flange against new series flange
The paperloog bekomes stretched	Midi-unwinder disk touches the disk brake bolt	Readjust the unwinder disk brake
	Midi-unwinder disk touches the module rail	Shift the disk on the unwindershaft away from the module rail
	Unwinder roll blocking	Lubricate the bearings of the roll
	End of paper is fixed to the core with an adhesive tape	Use unfixed paper rolls, the paperend must be free
Paperweb jams inside the loop space	Distance of the guiding plate to the mounting plate too narrow	Increase the distance between the plates until paper is free
		Readjust the paperguide of the ingoing paper web
	Unwinder mounted tilt	Readjust unwinder vertically
Tractionroll does not stop	Lower sensor is not covered by the paperweb	Readjust the paperguide of the ingoing paper web
		Lateraly readjust the guiding plate until the sensor is covered
		Lateraly readjust the sesors and the mirrors position
Unwinder blocks	Disk touches the module rail	Shift the disk on the unwindershaft away from the module rail
Unwinder does not stop	Paperbrake too weak	Readjust the paperbrake
	Paperwight too heavy	Paperweb must be guided between unwinder and traction unit