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1. Generally





1.1 Foreword

Dear customer We congratulate you on your purchase of the newly developed bobbin winding machine **SIGMA**. This machine continues our worldwide success with our legendary mechanical bobbin winding machine.

Exceptional reliability and a long service life is guaranteed by:

- the sturdy mechanism, the result of Swiss quality workmanship,
- a comprehensive range of accessories and special tools,
- our after-sales service and spare part service available around the world.

About our company Casati Carlo AG has been developing and manufacturing machines and accessories for the textile industry for more than 80 years. Take advantage of our extensive knowhow:

-  Our company's own **training centre** regularly offers training courses for your staff.
-  Our **advisory service** is pleased to help if problems arise with bobbin winding, drawing, punching or embroidering.
-  Our **agency service** can assist you with its sound knowledge of the market when it comes to buying and selling textile machines.
-  Take advantage of our **extensive stock** of accessories and spare parts for the benefit of your embroidery business.

Please contact us by telephone, fax or e-mail for immediate further information:




Phone: +41 / 71 744 55 40
Fax: +41 / 71 744 56 24
E-mail: casati@casati.com
Internet: <http://www.casati.com>

Casati Carlo AG



1.2 Conditions of guarantee

Casati Carlo AG guarantees the proper functioning of the bobbin winding machine with a guarantee of:

 **12 months**, where used in single shift operation
or

 **6 months**, where used in multiple-shift operation

The guarantee period commences on the date of delivery of the bobbin winding machine from the factory of Casati Carlo AG.

The guarantee covers

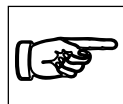
- labour costs for repairs,
- all replaceable electric and mechanical parts.

The customer shall be responsible for the costs of:

- shipping and customs clearance for the bobbin winding machine or spare parts,
- travelling expenses and board and lodging for service personnel.

The manufacturer shall not be liable for damage arising from:

- operation not in accordance with the operating instructions,
- non-observance of operation and safety regulations,
- inadequate maintenance,
- production stoppages,
- force majeure.

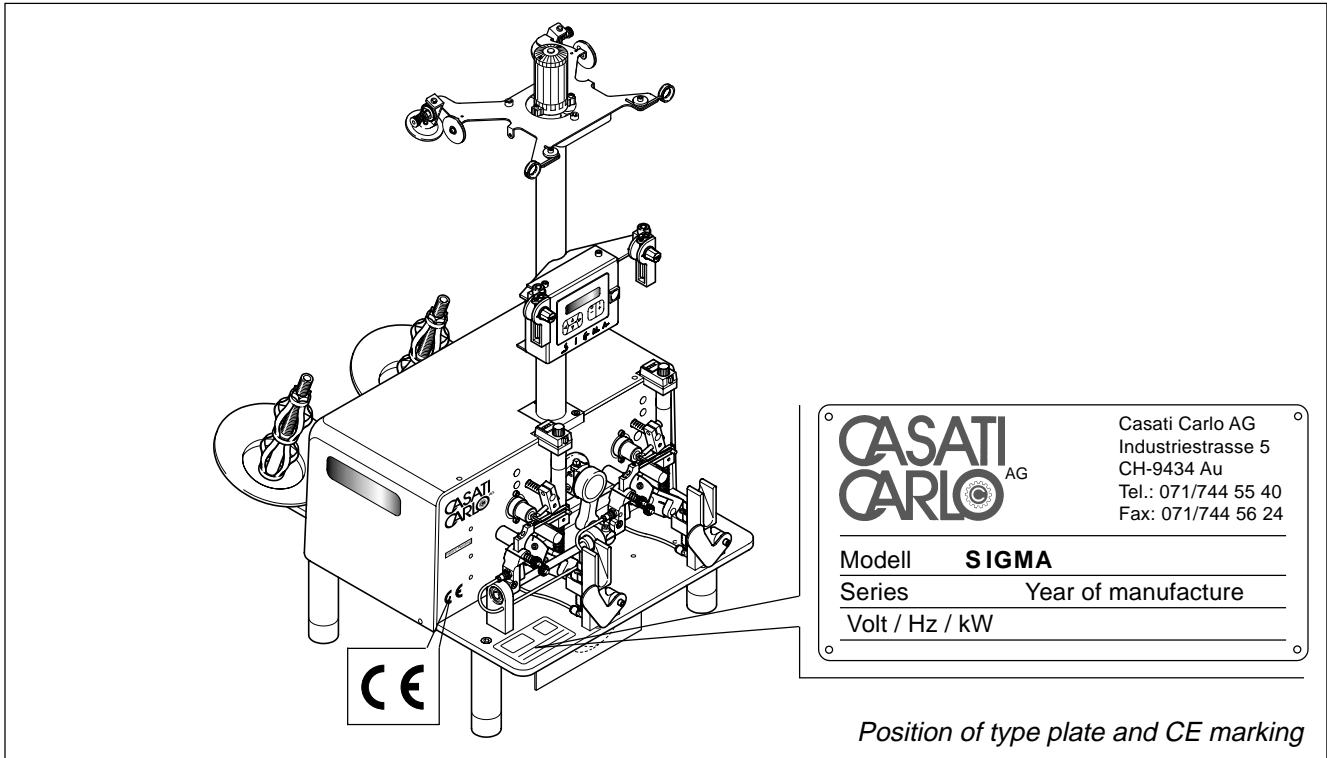


All claims under the guarantee for the bobbin winding machine are void if:

- repairs or modifications are carried out by the customer or third parties without the **manufacturer's written approval**,
- accessories or spare parts of other manufacturers are used,
- the machine is re-sold.



1.3 Product identification



Position of type plate and CE marking

Machine versions Bobbin winding machine **SIGMA** with electronic control.

Right-hand drive of bobbin winding machine (standard) or left-hand drive.

The machine specification sheet in Index 4 contains detailed information.

Certification of origin The bobbin winding machine **SIGMA** was designed and manufactured by Casati Carlo AG in Switzerland.

Level of technology Modifications made as a result of technical improvements are carried out without any requirement of giving notice. For this reason the illustrations, technical specification and scope of delivery shall not be binding.

1.4 Information on operating instructions


Impress The present operating instructions have been drawn up in accordance with the EU Directive for machines 98/37/EEC, app. 1, no 1.7.4 „Operating instructions“. Edition: March 2000, version 1.0 Setting and illustrations: Dogrel AG, St Margrethen, Switzerland




Copyright These operating instructions may not either wholly or in part be copied, photographed, reproduced, translated or converted into a form which may be read electronically or by machine without the manufacturer's prior written permission.

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9434 Au, Switzerland
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Safe keeping These operating instructions should be available to the operating personnel in their entirety and at all times:

 Keep the operating instructions in a place easily accessible in the vicinity of the bobbin winding machine.

 Do not remove individual parts from the operating instructions.

Training In addition to the operating instructions, Casati Carlo AG offers a course of training for operation and maintenance in order that the bobbin winding machine's efficiency is exploited to the full and to ensure that it is always ready for operation.

Symbols used Please commit the meaning of the following symbols and wording to memory:

**WARNING**

This symbol indicates a dangerous situation which can cause serious physical injury.

**WARNING**

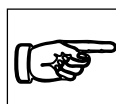
This symbol gives particular notice of the danger of electric voltage which can cause serious physical injury or death due to electric shock.

**WARNING**

This symbol gives particular notice of the danger of being injured by rotating machine parts.

**ATTENTION**

All situations which can cause damage to the machine are indicated by this symbol.

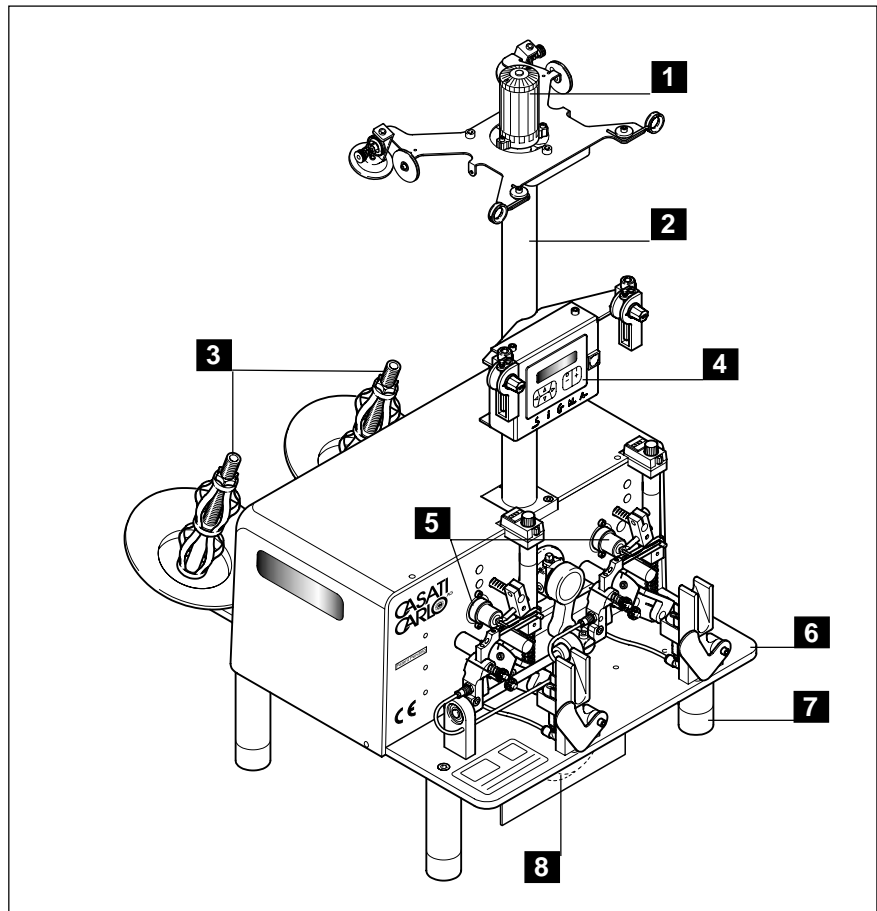
**IMPORTANT**

This sign shows tips on using and useful information.



2. Construction and function

2.1 General view



General view

- | | |
|-----------------|-------------------|
| 1 Signal lamp | 5 Winding heads |
| 2 Thread tree | 6 Base plate |
| 3 Cone holder | 7 Adjustable foot |
| 4 Control panel | 8 Electric motor |

The bobbin winding machine contains two winding heads (5) on the front side. The accompanying cone holders (3) are mounted to the rear of the machine.

Together with the electronic control the mechanical drive system is contained in the machine housing.

On the thread tree (2) the following elements are mounted:

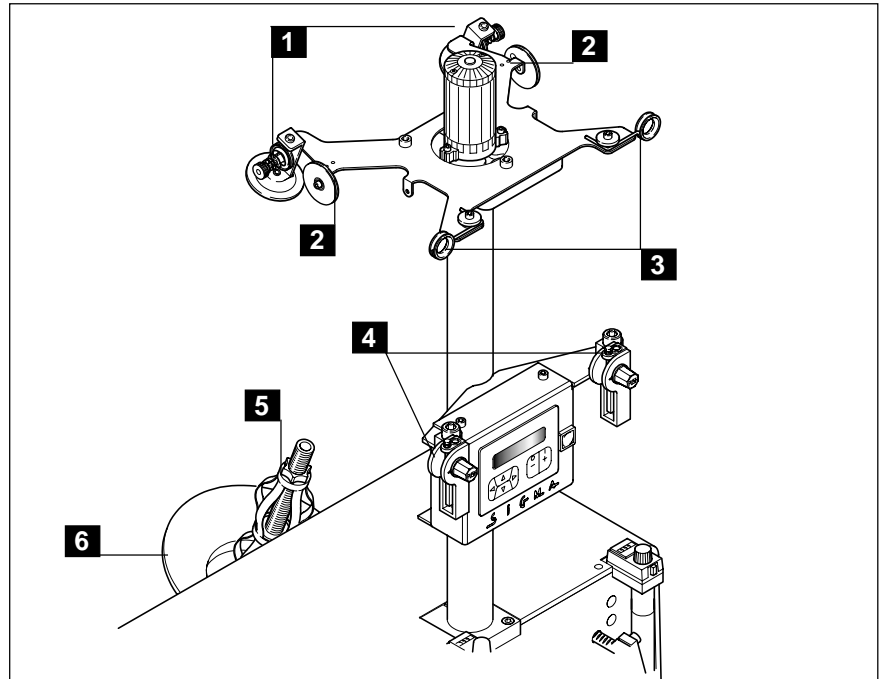
- A signal lamp (1) for indicating errors,
- several thread guiding elements for each winding head,
- the control panel.

To the underside of the base plate four adjustable feet and the electric motor (7) are mounted.

On the rear of the machine the mains socket for the power chord and the compressed air connection can be found.



2.2 Thread running elements



Side view

- | | |
|----------------------|-----------------|
| 1 Inlet brake | 4 Compensator |
| 2 Odometer | 5 Adjusting nut |
| 3 Thread guiding eye | 6 Cone holder |

The yarn in the form of cones is placed on the two cone holders (6) of the bobbin winding machine.

With the help of the adjusting nuts (5) the cone holders can be adapted to the different sized tubes of the cones. For special cases special adapters must be inserted.

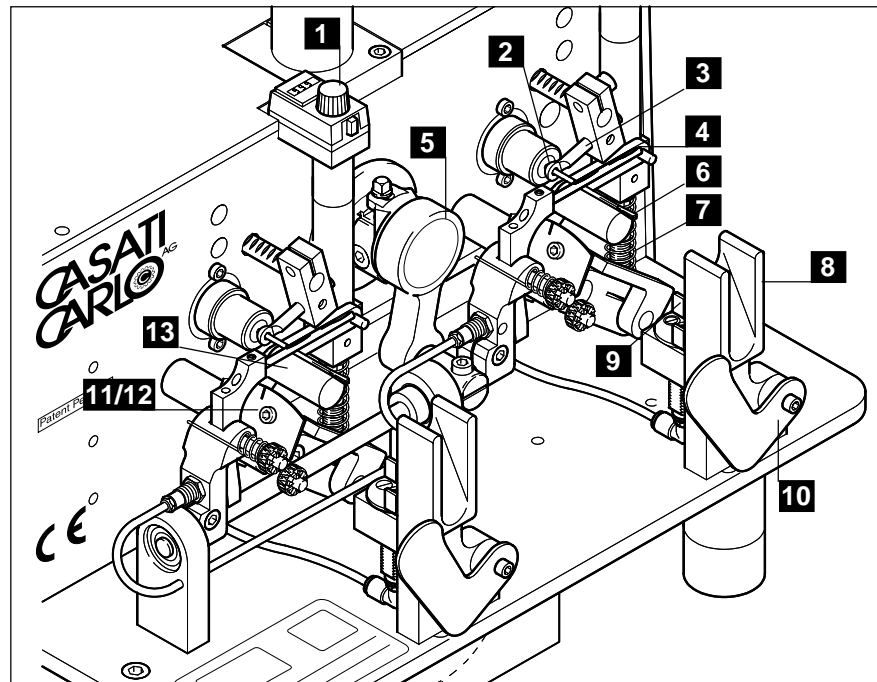
After unwinding on the way to the winding head, the yarn is smoothed and tightened by the inlet brake (1). The inlet brake consists of the thread guiding eyes and two ceramic disks where the yarn passes through. An adjustable spring presses both ceramic disks together and controls the braking effect.

The odometer (2) acquires the yarn length using a pulse generator and transfers the data to the PLC (Programmable Logic Controller).

The thread guiding eye (3) is responsible for guiding the yarn to the compensator (4). Using an adjustable swing lever the compensator compensates the jerky movements of the thread guide. A consistent unwinding speed is required for a slip-free length measurement.



2.3 Winding heads



Winding heads on the front side

- | | |
|-------------------|-----------------|
| 1 Knob | 8 Chute |
| 2 Chuck | 9 Scissors |
| 3 Ejector bolt | 10 Shutter |
| 4 Thread guide | 11 Tucker plate |
| 5 Eccentric drive | 12 Undertucker |
| 6 Spindle | 13 Bobbin table |
| 7 Spring | |

The two identical winding heads are arranged on both sides of the eccentric drive.

The two spindles (9)

- are fixed in a chuck (2) and available in different types,
- have the same pre-set direction of rotation,
- rotate at a constant speed during the winding process.

The eccentric drive (5) converts the rotary movement of the main shaft to a to-and-fro motion of the thread conductor levers (4). The motion of the thread guide is adjustable and determines the length of the bobbins.

The ratio of the twisting

- is a result of the movement of the thread guide and the rotation of the spindle,
- is pre-set by toothed gears,
- results in a precise winding.



The bobbin tables (13)

- influence shape and hardness of bobbin,
- are available as sliding or rolling tables
- are pressed downwards with the increasing thickness of the bobbin.

The distance between the bobbin table and the spindle is adjustable precisely with knob (1). The adjustable spring (7) determines the contact pressure between the table and the bobbin.

The tucker plate (11)

- swings above the bobbin during undertucking,
- centres the yarn from a slit in the middle of the bobbin.

The undertucker (12)

- is located on the under side of the tucker plate,
- is shaped like a large and small plough blade,
- fixes the yarn to the bobbin during undertucking.

The ejector bolt (3)

- has a borehole in which the spindle rotates,
- slides the undertucked bobbin on to the end of the spindle.

If there is already a bobbin at the end of the spindle, it falls into the chute (8).

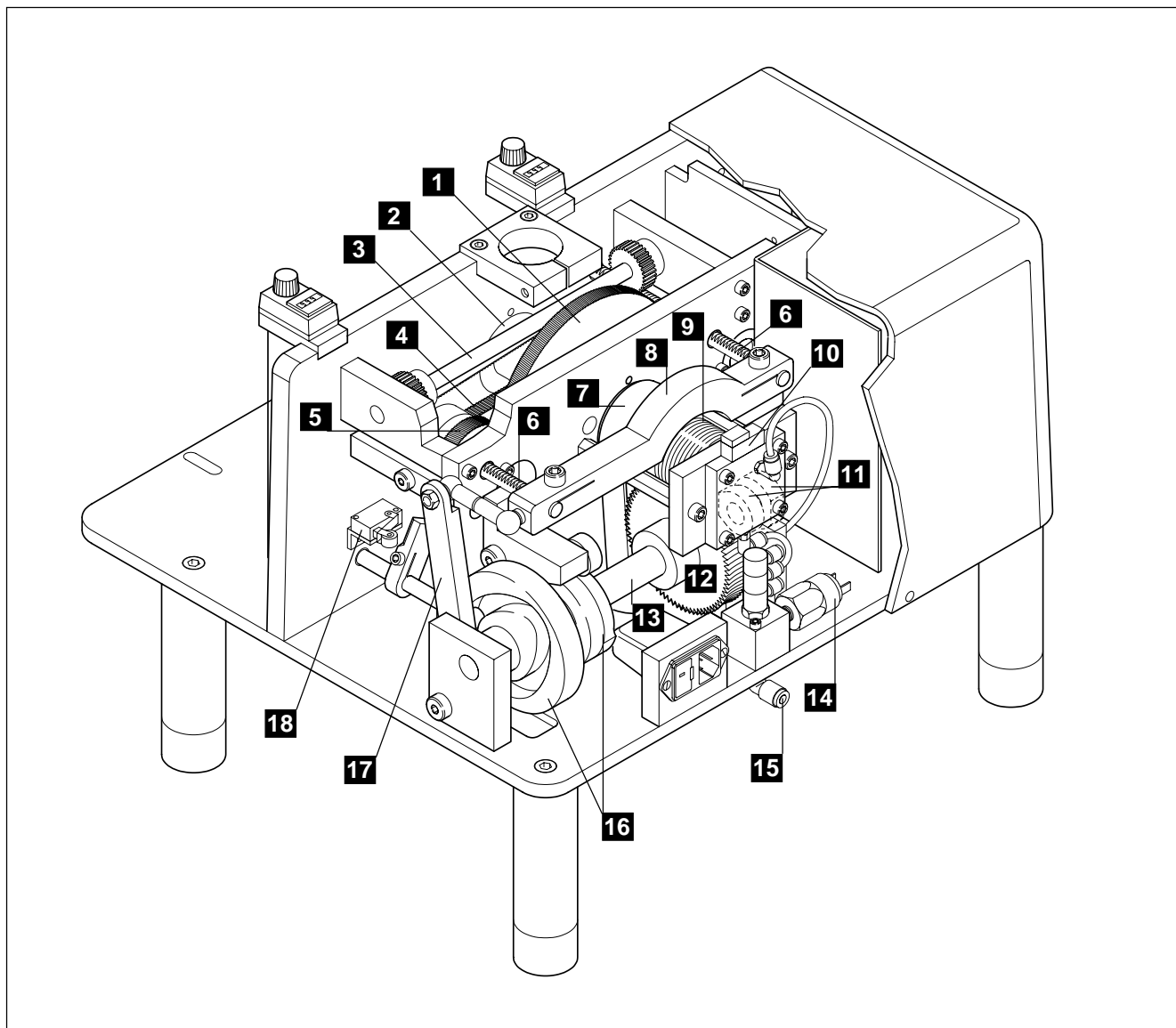
The scissors (9)

- are lifted to the chute entry by a pneumatic cylinder,
- cut through the connecting thread to the next following bobbin.

The shutter (10) blocks the chute until the connecting thread is cut. Subsequently, the shutter swings to the side and the finished bobbin falls into the provided collecting container.



2.4 Drive



Rear view

- | | |
|--------------------------------|----------------------------------|
| 1 Helical gear on main shaft | 10 Pneumatically actuated clutch |
| 2 Main shaft | 11 Control cams |
| 3 Compensation shaft | 12 Worm gear |
| 4 Toothed belt | 13 Secondary shaft |
| 5 Cone clutch on spindle shaft | 14 Manostat |
| 6 Gear racks | 15 Compressed air connection |
| 7 Pulley with flat belt | 16 Large cam plates/disks |
| 8 Yoke | 17 Ejector lever |
| 9 Worm | 18 Roll lever valve |



The main shaft (2) is connected to the electric motor under the base plate by a belt drive (7). At the front end of the main shaft the eccentric drive for the thread guide and at the rear end of the main shaft a pneumatically activated clutch (10) for driving the secondary shaft (13) is mounted.

The two spindle shafts are connected with a toothed belt (4). One spindle shaft is driven by the main shaft via a helical gear (1). If the cone clutch (5) is disengaged on this spindle shaft both spindle shafts are stopped.

The secondary shaft

- controls the ejection process of bobbins during a full turn,
- is driven by the main shaft via worm (9).

When the PLC triggers the pneumatically actuated clutch via a solenoid valve

- the worm gear is frictionally connected with the main shaft,
- the secondary shaft is turning,
- the bobbin tables are swiveled away from the bobbin.

The two control cams (11) on the secondary shaft are responsible for

- monitoring the turn of the shaft using an inductive proximity switch,
- lifting and closing the scissors via pneumatic valves.

The cam plates/disks (16) on the secondary shaft are

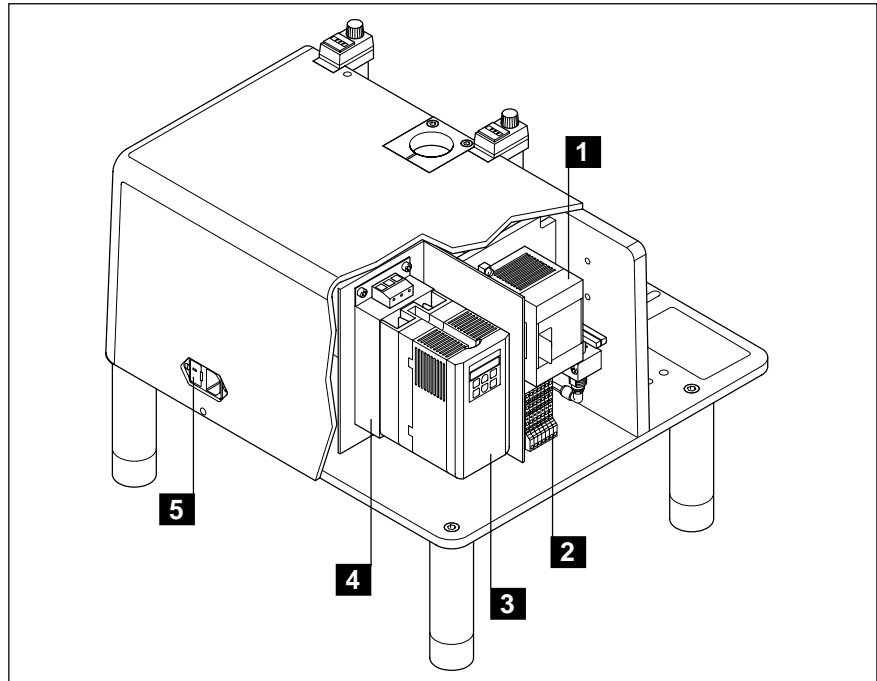
- activating the cone clutch on the spindle shaft via a switching link,
- swinging the tucker plates and shutters,
- activating a roll lever valve (18) for lifting the thread guide from the bobbins,
- moving the ejector bolts.

Both ejector bolts are attached to a yoke (8) via gear racks (6). The yoke is moved by an ejector lever (17). The compensation shaft (3) transfers the movement from the ejector lever to both gear racks and to the ejector bolt.



2.5 Electronic control system

Rear view



- | | |
|---------------------------------|--------------------------|
| 1 Programmable Logic Controller | 4 Mains filter |
| 2 Terminal block | 5 Mains socket with fuse |
| 3 Frequency converter | |

The Programmable Logic Controller (1) is responsible for:

- The communication with the operating personnel via control panel and signal lamp, e.g.
 - for executing control commands,
 - for accepting and indicating setting parameters,
 - for displaying actual thread length,
 - for signalling failures.

- The control of the production process. If the preset thread length on one winding head is reached the ejection process for both winding heads is started.

- Monitoring
 - the operating pressure of the compressed air system,
 - the frequency converter,
 - the position of the secondary shaft.

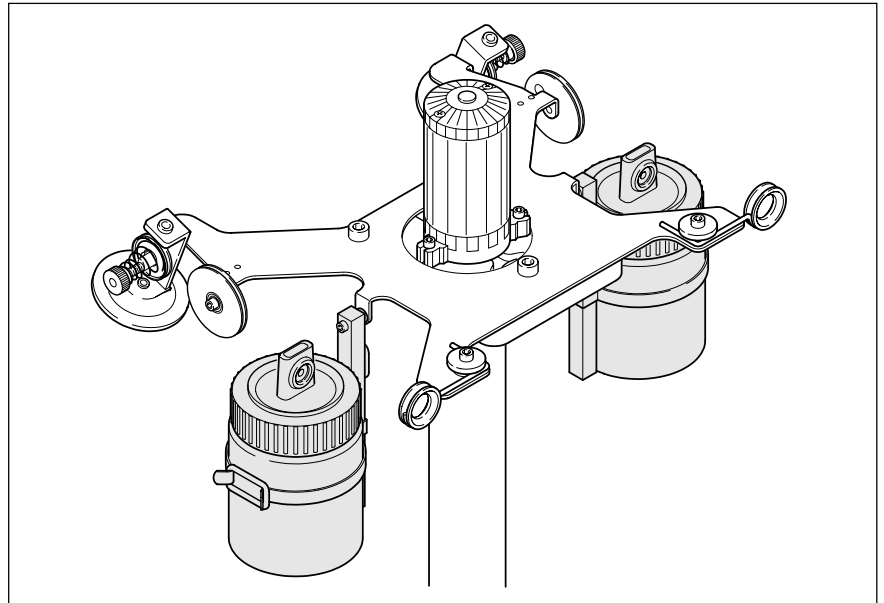
The speed of the motor is controlled and monitored by the frequency converter (3) according to the control commands of the Programmable Logic Controller.

The mains filter (4) is responsible for eliminating mains-borne interferences.



2.6 Optional equipment

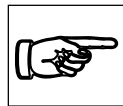
Oiling device



Oiling devices at the thread tree

The oiling device

- is mounted to the perspex plate,
- is capillary-driven and guarantees an evenly applied coat of oil with a sufficient dosing capacity.



The anti-friction property of the yarn is improved by oiling. The type of oil and the dosage must be determined empirically. The oil wetting can be checked using a precision balance.

Working tables

When operating several bobbin winding machines robust working tables are required.

Please contact the specialists of Casati Carlo AG.

Regulation kit

For machine settings a special regulation kit is available (see register 3).



2.7 Description of functions

The bobbin winding machine has two winding heads which carry out the following operating cycle:

1. The winding procedure
2. Undertucking the bobbin
3. Ejecting the bobbin
4. Preparing a fresh bobbin winding
5. Cutting the connecting thread to the ejected bobbin.

Thread guiding

The thread guide is identical for both winding heads. The yarn passes from the thread holders to the thread guiding elements on the perspex plate.

There the yarn

- is tightened by the inlet brake,
- guided over an odometer for acquiring the yarn length,
- surface-coated by an optional oiling device,
- smoothened within a compensator.

Winding process

The yarn passes from the compensator to the thread guide. This is driven by an eccentric and moves to and fro above the spindle. The travel of the thread guide can be adjusted on the eccentric and determines the length of the bobbin.

The spindle:

- rotates at a constant speed,
- draws the yarn off from the cone,
- winds a bobbin precisely, corresponding with the movement of the thread guide.

The first layers of thread contract together on the spindle towards the centre and determine the form (curvature) of the bobbin. During the winding process, the diameter of the bobbin increases steadily and presses the bobbin table downwards.

The bobbin tables

- can be adjusted for pressing force and distance to bobbins,
- influences the hardness, thickness and form of the bobbins.

When one of the bobbin has reached the thread length set, the Programmable Logic Controller terminates the winding process by

- reducing the speed of the drive motor,
- starting the secondary shaft via the pneumatically activated clutch.



Simultaneously with activation of the clutch a pneumatic cylinder lifts the bobbin tables from the bobbin. During one turn the secondary shaft is responsible for the following cycles at the winding heads:

Undertucking the bobbins

On undertucking

- the tucker plates swing above the bobbins,
- the chutes are closed by the shutters,
- the thread guides are pushed upwards by pneumatic cylinders.

The yarn which is being moved to and fro by the thread guide, slips into the slot in the tucker plate and is wound up with a few turns around the centre of the bobbin.

The undertucker on the under side of the tucker plate

- binds the yarn each time under the previous wind,
- fixes the final wind and prevents the bobbin unravelling.

Ejecting the bobbins

During the ejection procedure

- the spindles are stopping,
- the ejection bolts are pushing the bobbins of both winding heads to the end of the spindle.

This bobbins remain at the end of the spindles until falling into the chutes during the ejection process of the following bobbins.

Cutting off the connecting threads

One pneumatic cylinder lifts and closes each pair of scissors. By doing so, the connecting threads between the bobbins in the chute and the bobbins at the end of the spindles are severed. Subsequently, the shutters of the chutes are opened and the bobbins produced are fallen into the collecting container.

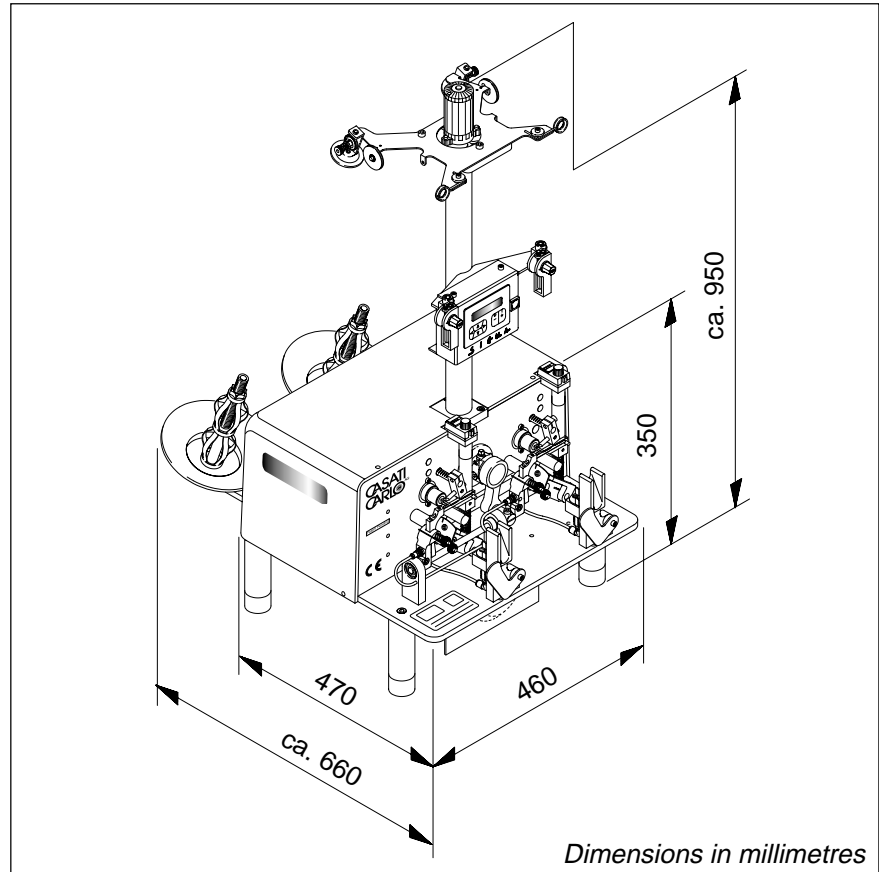
Preparing new bobbins

After the tucker plates swivel upwards the spindles start rotating and the yarn is winded. Then the tucker plates swivel to the side, the thread guides are lowered and the new winding process starts.



3. Technical data

3.1 Dimensions and weight



Bobbin winding machine dimensions

Dimensions in millimetres

L x W x H 460 x 470 x 950 mm

Machine weight 38 kg

Transport weight (incl. packaging) 52 kg

3.2 Recommended operating conditions

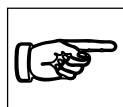
Ambient temperature 18°C - 30°C

Relative air humidity (non-condensing) 45% - 65%

Temperature for storage 5°C - 45°C

3.3 Emissions

Continuous sound pressure level at place of work* ... 65 dB(A)
(*for operating speed 2450 rpm)



When processing short-staple yarns an increased dust exposure occurs.

**3.4 Compressed air connection**Type plug-in connection, \varnothing 8 mm

Operating pressure 5-6 bar

Air consumption approx. 2-4 dm³/hAir quality filtered (particle size 0.3 μ m),
oil and condensate-free**3.5 Mains connection**Mains voltage 1 x 230 V \pm 10%

Mains frequency 50 / 60 Hz

Power consumption: Operation max. 450 W
Standby approx. 50 W**3.6 Drive system**

Electric motor 180 W

Service speed (level 0) 350 rpm

Working speeds (level 1-7) . 1500 / 1650 / 1850 / 2000 / 2150 /
2300 / 2450 rpm**3.7 Control system**

Control system (PLC) Mitsubishi

Control panel MAC-12

3.8 Performance characteristics

Suitable yarns different cotton and synthetic yarns

Maximum size of cones height 300 mm, \varnothing 250 mmSize of bobbin max. \varnothing 16,5 x 47 mm

Shuttle all known sizes may be used

Bobbin winding precise wind with 8-fold separation

Capacity approx. 0.35kg bobbins per hour
(of 80/2 cotton yarn)



4. Safety

4.1 Purpose of use

Intended use The bobbin winding machine **SIGMA** may only be used for producing wound packages (bobbins) of natural or synthetic threads within the specified technical data of chapter 3.







Non-intended use Any other or excessive use shall be deemed to be a **non-intended use**. The user shall bear the risk for all resulting damage.



If used improperly, the possible consequences are:

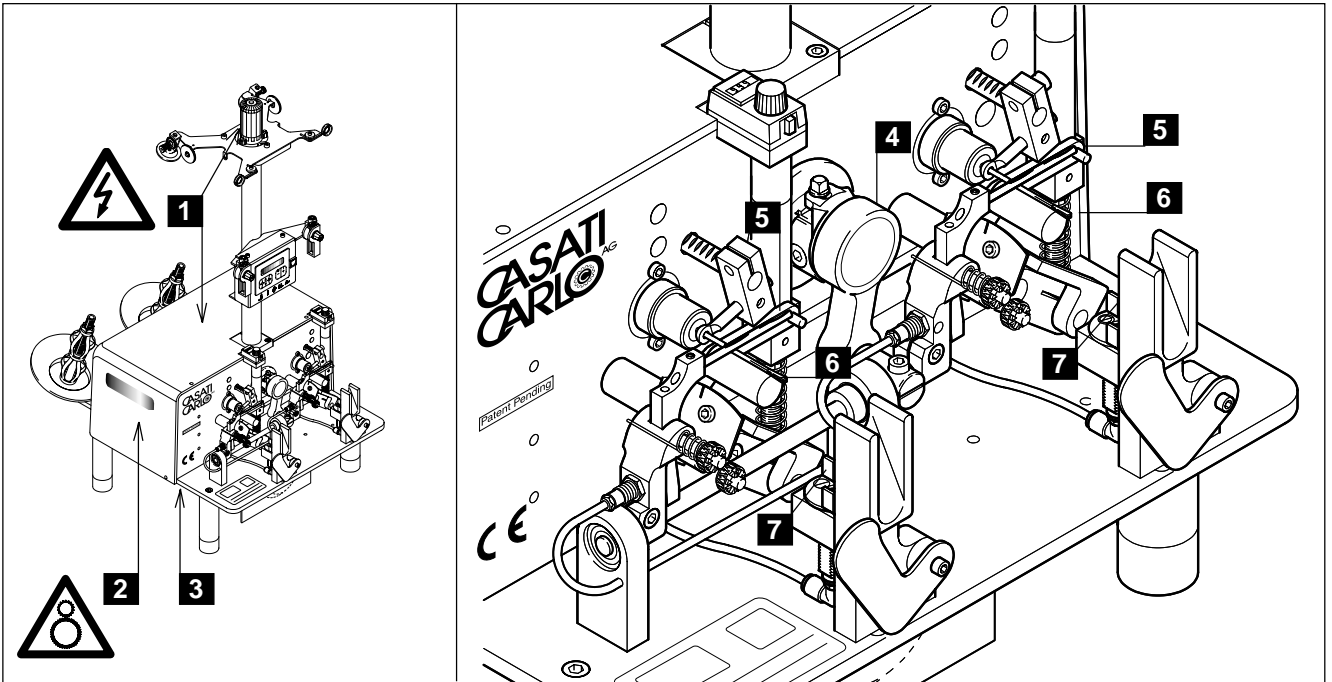
- electric shock,
- severe injury to fingers and hands,
- damage to the machine,
- damage to material and malfunctioning.

Non-intended use also includes:

-  Starting the bobbin winding machine without instruction from a training course or using the operating instructions.
-  Removing the cover to the housing while the bobbin winding machine is in operation or operating the machine without the cover being in place.
-  Carrying out lubricating while the bobbin winding machine is running.
-  Making alterations or modifications to the bobbin winding machine without the approval of Casati Carlo AG.
-  Using accessories and spare parts from other manufacturers without the manufacturer's approval.
-  Operating the bobbin winding machine
 - in a wet environment,
 - with inadmissible mains and compressed air variations.



4.2 Danger areas



Overall view with details of the winding heads

Danger area	Danger of injury through
1 Dangerous electrical voltage within housing	- electric shock
2 Moving parts in the housing	- fingers being caught, squashed and severed - hair and clothing being entangled
3 Rotating belt drive	- fingers being caught and squashed
4 Eccentric drive	- fingers being caught and squashed between the eccentric and the thread guide lever
5 Moving thread guides	- impact, clothing becoming entangled
6 Rotating spindles	- hair becoming entangled and being torn out
7 Scissors	- being cut



4.3 Working safety

The locally applicable safety regulations and accident prevention rules always apply to the operation of the bobbin winding machine.

Any adjustments to the bobbin winding machine may only be made when it is standing still.

In case of unusual noises or vibrations the bobbin winding machine must be switched off and the superior responsible informed immediately.

Do not allow operating personnel to remedy faults with makeshift means. Trained and skilled persons must carry out this work, or otherwise contact Casati Carlo AG's service department.

The bobbin winding machine must be secured against being switched on inadvertently before any work of maintenance and repair is carried out.

4.4 Requirements of operating personnel

The operator must:

- be older than 16 years of age,
- be properly trained and instructed for the work with the bobbin winding machine,
- have read and understood the operating instructions, and section 4 "Safety" in particular.

Persons who have not completed their training may only work with the bobbin winding machine under supervision of an experienced operator.

The operator is responsible for:

- the good and safe working order of the bobbin winding machine,
- immediately reporting to his/her superior changes to the machine which affect safety,
- cleanliness and good order at the place of work.

4.5 Safety equipment

Long hair must either be protected (hair net) or securely bound.

The manufacturer recommends wearing:

- tight-fitting working clothing,
- noise protection, where several bobbin winding machines are simultaneously in use.



5. Transport

5.1 Packing

For shipping, the bobbin winding machine:

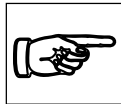
- is pre-assembled,
- packed in a robust carton box.

The two bobbin holders and the accessories are included.

If the bobbin winding machine is to be sent by sea freight, it is specially packed and protected against corrosion.

5.2 Damage in transit

Dispatch is undertaken by competent haulage contractors. Nevertheless, loss and damage can be caused during transit. For this reason, the bobbin winding machine and accessories should be checked for damage and completeness, immediately on receipt.



Compare the contents with the shipping documents and record damage found with photographs.

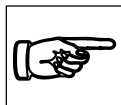
Loss and damage caused during shipping should be:

- confirmed by the haulage contractors immediately,
- reported to the insurers and manufacturer.

5.3 Temporary storage

Until the bobbin winding machine and accessories are set up for first use, they should be:

- stored in the original packing,
- protected against dirt and dust,
- stored under cover in a dry room.



The bobbin winding machine must not be left in the open or stored in moist surroundings.



6. Start up

6.1 Setting up

Place the bobbin winding machine on a robust work table. Subsequently, screw the two cone holders tightly to the base plate and install available accessories (oiling device etc.).

A work place for the operating personnel must be provided at the front side of the bobbin winding machine with

- easy access being available to the cone holders,
- enough space on work table.

Between the table edge and the front side of the bobbin winding machine a distance of min. 10cm should be provided. Here a collecting container for finished bobbins can be placed.



CAUTION

The electric motor is air-cooled. As a result, never place objects under the bobbin winding machine affecting the air supply.

6.2 Connecting compressed air

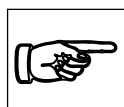
The plug connector for the compressed air supply

- can be found on the rear side of the machine, under the base plate,
- is suitable for plastic pneumatic tubes with an outer diameter of 8 mm.



IMPORTANT

Operating pressure and air quality of compressed air system according to „Technical data“, section 3.4.



Casati Carlo AG recommends the installation of a filter unit with stopvalve and water separator.

6.3 Connecting electricity

Mains voltage variations and electromagnetic interferences can affect the function of the bobbin winding machine.

Countermeasures:

 Replace faulty fluorescent lamps immediately.



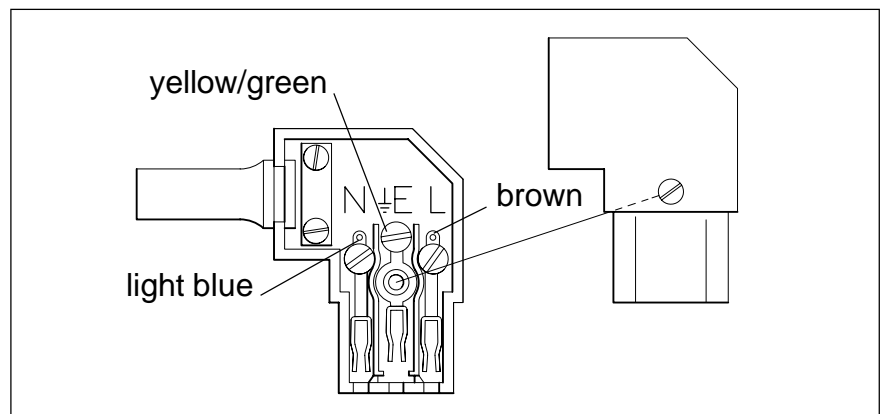
- 👁️ Only connect interference-free equipment to the mains supply line of the bobbin winding machine.
- 👁️ In case of inadmissible mains voltage variations use a voltage stabilizer.

Power line At the working site a suitable power line should be installed. Connection to mains via appliance plug on the rear side of machine.

The plug

- contains a fuse,
- is equipped with an extra spare fuse.

The socket supplied is intended for connecting the power line.



Socket

For the power line please note:

- max. cable length: 10 m
- min. cross section of wire: 1,0 mm²
- colour of wires for
 - phase (L): brown
 - zero conductor (N): light blue
 - protective earth (E): yellow/green



IMPORTANT

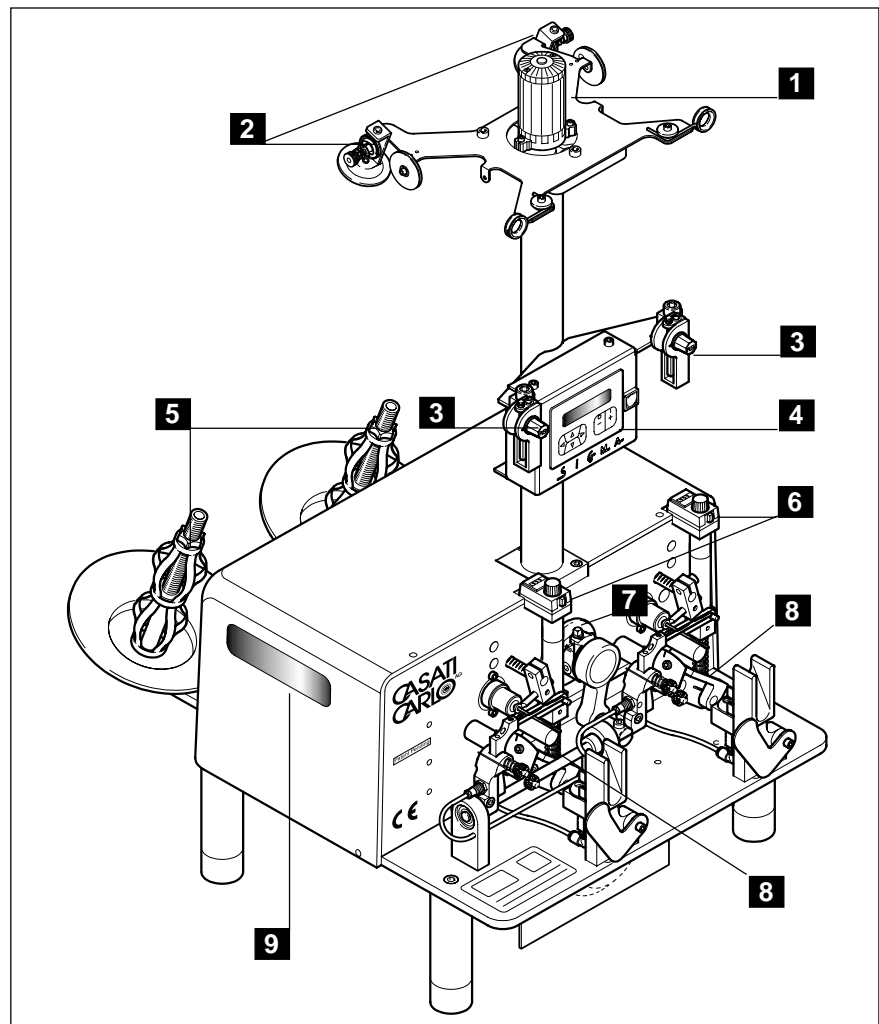
Local mains voltage must correspond to voltage value on type plate.

Bobbin winding machine must be connected to protective conductor.



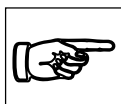
7. Operating

7.1 Operating, setting and signal elements



Total view

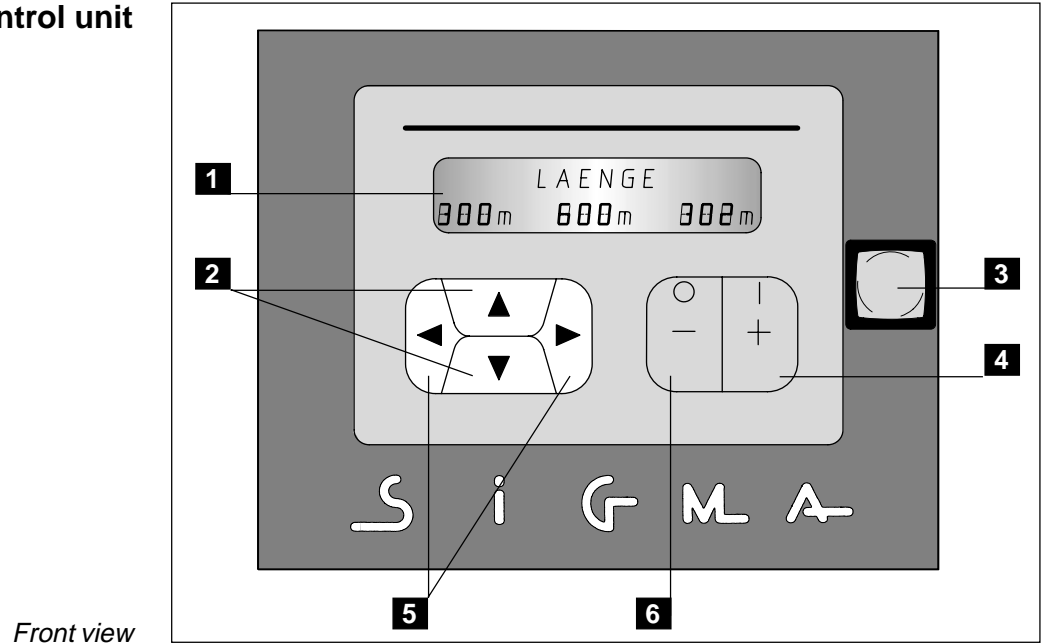
- 1 Signal lamp for indicating operating troubles
- 2 Knurled nut for regulating the inlet brake
- 3 Knob for setting the compensator
- 4 Control unit for switching on/off and programming the bobbin winding machine
- 5 Adjusting nut for adapting the cone holder to the different tube diameters
- 6 Knob with setting scale for positioning the bobbin table
- 7 Adjusting screw of eccentric drive for setting the bobbin length
- 8 Adjusting nut with scale for setting the contact pressure of the bobbin table
- 9 Housing window for checking control elements of frequency converter and PLC



For using the setting elements refer to section 7.3 "Machine settings".



Control unit

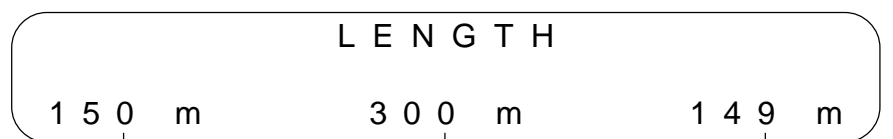


- 1 LCD
- 2 Up/Down keys
- 3 Reset button
- 4 Green key I / +
- 5 Left/Right arrow keys
- 6 Red key O / -

The control unit has different functions in the modes Standby, Winding and Setting operation.

Standby and winding operation

After mains connection the bobbin winding machine is in the standby mode. The LCD (1) shows:



Current thread length of left winding head Set value of thread length Current thread length of right winding head

The winding operation is started with the green key (4), stopped and switched to standby mode with the red key (6). By pressing the reset button (3) the current thread length of the two winding heads are reset to zero meter. Simultaneously, with machine running the currently wound bobbins are ejected and new bobbins inserted.

If the up/down arrow keys (2) are pressed during standby operation the control system switches into setting operation.



Control unit (contd.) During winding operation (with machine running) the up/down arrow keys have no function.

The left/right arrow key (5) have no function.

The following error message can be displayed by the control unit:

E R R O R
C O M P R E S S E D A I R

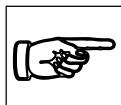
E R R O R
F R E Q U E N C Y C O N V E R T E R

Setting operation

Using the up/down arrow keys different setting parameters can be indicated on the LCD.

The left/right arrow key (5) have no function.

The value of the indicated setting parameter can be increased with the green key (+) or decreased with the red key (-).



Green or red key:

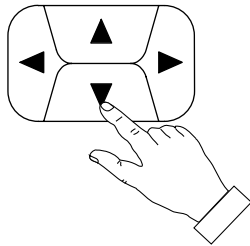
- press briefly and repeatedly to change parameter value by one unit,
- keep pressed to make big value changes (e.g. thread length)

Pressing the reset button the machine is switched into standby operation. By doing so, all settings made are kept.

LCD indications during setting operation

As soon as you change from standby into setting operation using the down arrow key the first setting parameter appears on the LCD. By pressing the same arrow repeatedly all setting parameters appear one after the other on the display. Subsequently, the machine is switched into the standby mode.

By pressing the up arrow key the setting parameter appear in reverse order.

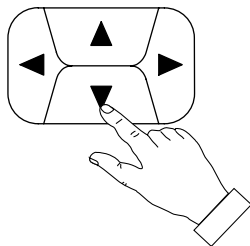


T H R E A D L E N G T H

X X X m

Input of set value of thread length with green/red key. As soon as the measured thread length of one winding head has reached set value both bobbins are undertucked and ejected.

Input range: 10 - 999 m



S P I N D L E S P E E D

X

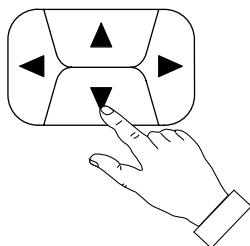
Input of spindle speed in eight levels, from "0" to "7".

Level "0"

- is a speed particularly low,
- is intended for setting and service works,
- is also described as service speed.

1500 rpm level "1" is the lowest working speed in winding operation. Before undertucking and ejecting of bobbins the control system reduces the spindle speed to this level automatically.

With level "7" the bobbin winding machine runs with max. operating speed of 2450 rpm.

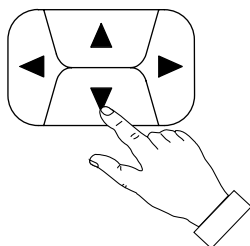


T O L E R A N C E

0 - X m

Input of permissible deviation between measured thread lengths of the two winding heads. If the tolerance is exceeded during winding operation the signal lamp starts flashing in regular sequence.

Input range: 0 - 10 m



B O B B I N W I N D E R b y

C A S A T I C A R L O A G

Display of machine and company name. Subsequently, the display for the standby and the winding operation appears.



Signal lamp With different light signals the operating personnel is notified by the signal lamp of operating conditions requiring an intervention:

Continuous signal

The bobbin winding machine stops

- after pressure drop or missing compressed air (see LCD indication),
- due to a malfunction of the frequency converter (see LCD indication),
- because **both** odometers are not turning (thread breakage or end of thread reached).

Irregular flashing signal (short signal followed by a long off time)

Thread breakage at one winding head or end of thread reached. The bobbin winding machine continuous winding operation with half capacity.

Regular flashing signal

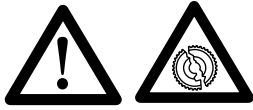
The deviation between the current thread lengths of the two winding heads exceed the tolerance range. The bobbin winding machine continuous winding operation.

The signal lamp extinguishes automatically

- after failure recovery,
- as soon as the thread lengths are within the tolerance range again.





7.2 Setting up



WARNING

Danger of injuries and damage to machine if the bobbin winding machine is starting unexpectedly.

Precautions:


-  The bobbin winding machine may only be set up when **the machine is standing still**.
-  The machine should be secured against being switched on unintentionally by activating the setting mode or by pulling the mains plug.


Constitution of the thread

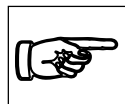
The maximum size of the winding for the thread is given in section 3.8 "Performance characteristics".

The preset direction the spindles turn determines

- the winding direction of the bobbins,
- the yarn type, particularly with strongly twisted hard yarn:

 **S yarn** for eccentric which turn to the right
(spindles turn left)

 **Z yarn** for eccentric which turn to the left
(spindles turn right)



As standard, the bobbin winding machine is manufactured with clockwise running eccentric. The special design with anti-clockwise running eccentric is extra labeled with a direction arrow on the machine housing.

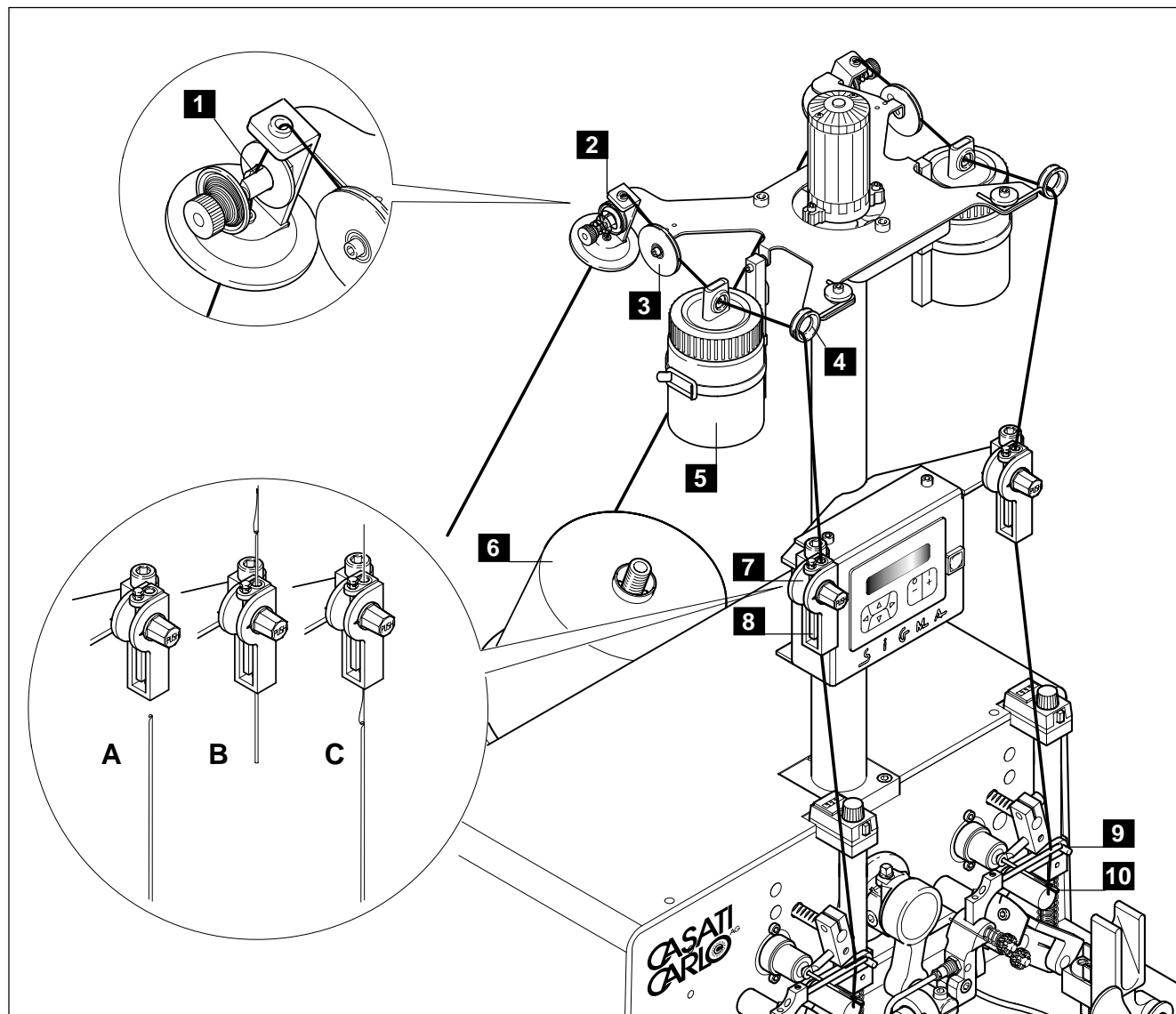
Replacement parts

Special spindle types and thread guides available as well as further accessories and setting tools can be found in index 3 to these operating instructions.

Casati Carlo AG'S advisory service is pleased to answer your queries.



Threading



Course of thread to the winding head

- | | |
|---------------------|----------------|
| 1 Thread guide slot | 6 Cone |
| 2 Inlet brake | 7 Compensator |
| 3 Odometer | 8 Swing lever |
| 4 Thread guide eye | 9 Thread guide |
| 5 Oiling device | 10 Spindle |

The threading procedure is the same at both winding heads.

Procedure

- 👁️ Thread the yarn through the eye of the inlet brake (2).
Lift brake disk and pull yarn through the thread guide (1).



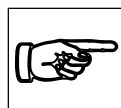
- 👁️ Lead the yarn round the odometer (3) with one or several windings.
- 👁️ If an optional oiling device (5) is installed thread the yarn through the eye of the wick holder.
- 👁️ Next, thread the yarn into the thread guide eye (4).
- 👁️ Step A: Press swing lever (8) manually into the compensator housing (7) and hold. Lead the threading tool (crochet hook, etc.) through the compensator with the tip from bottom to top.
Step B: Fix yarn to the tip of the threading tool with a loop.
Step C: Pull the threading tool downwards through the compensator. Release swing lever and check if yarn is running through all lugs of the compensator.
- 👁️ Pull yarn through the slot of the thread guide (9).
- 👁️ Wind the yarn a few times around the spindle (10) against the direction of rotation. Pull the end of the yarn through the splayed end of the spindle to secure it.

7.3 Machine setting

The machine setting

- determines the dimensions and properties of the bobbins,
- adapts the bobbin winding machine to the yarn used.

Every bobbin winding machine is delivered by the manufacturer with either a standard setting or one requested by the customer.

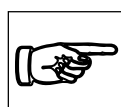


Important

For the first setting of the machine special knowledge and experience is required.

For this reason the manufacturer recommends:

- 👁️ That only trained persons should be responsible for the first setting of the machine at the place of operation.
- 👁️ That each resetting should be put down on index 4 of these Operating Instructions.



Under index 4 special sheets can be found for putting down all important machine settings. With the help of these documents settings on the bobbin winding machine can be carried out quickly and trouble-free even by inexperienced operating personnel.



Machine setting (cont.)

For customers Casati Carlo AG offers the following:

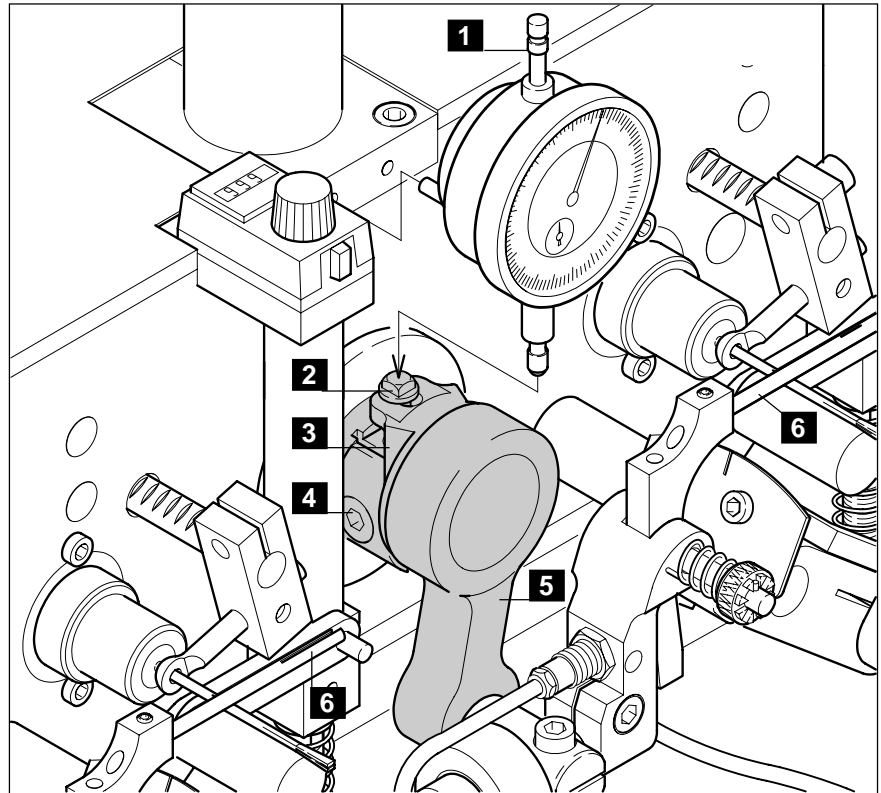
- 👁️ Special courses about machine setting.
- 👁️ Setting the bobbin winding machine(s) at the customer's premises.
- 👁️ A regulation kit with measuring devices and special tools for machine setting (see index 3).

Setting instructions

The settings on the bobbin winding machine in part affect each other. For this reason, the following procedure is recommended with resetting:

- 👁️ Carry out each setting at a winding head only in single steps.
- 👁️ Carry out a test run with min. two bobbins.
- 👁️ Use the setting tested for the other winding head. Settings for the two winding heads must always be identical.

Setting eccentric deflection

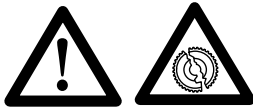


Front view

- | | |
|-------------------|------------------|
| 1 Dial gauge | 4 Clamping screw |
| 2 Adjusting screw | 5 Connecting rod |
| 3 Eccentric | 6 Thread guide |

This setting

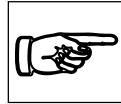
- determines the bobbin length of **both** winding heads,
- changes the travel of the thread guide,
- is only possible during standstill.

**WARNING**

Danger of injuries and damage to machine if the bobbin winding machine is starting unexpectedly.






Precaution:

Only one person may work at the bobbin winding machine.



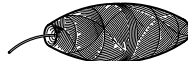
For this setting a modified dial gauge is helpful (see index 3). Instead of the dial gauge the stroke of the eccentric can be measured using a caliper rule.

Procedure:

-  Undo the clamping screw (4) by a quarter turn using a 5 mm hexagonal key.
-  Adjust connecting rod (5) by hand until adjusting screw (2) is exactly vertical.
-  Insert pins of dial gauge (1) into holes of thread tree.
-  Press feeler pin onto the adjusting screw with finger.
-  Now turn the adjusting screw with a open-end wrench:




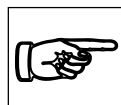
Clockwise = the bobbin length becomes shorter.



Anti-clockwise = the bobbin length becomes longer.

With the basic setting the travel of the thread guide should be 1 to 1.5 mm more than the bobbin length. The stroke can be determined as follows: Measure the max. and min. distance between thread guide and housing using a caliper rule and calculate the difference of both distance values.

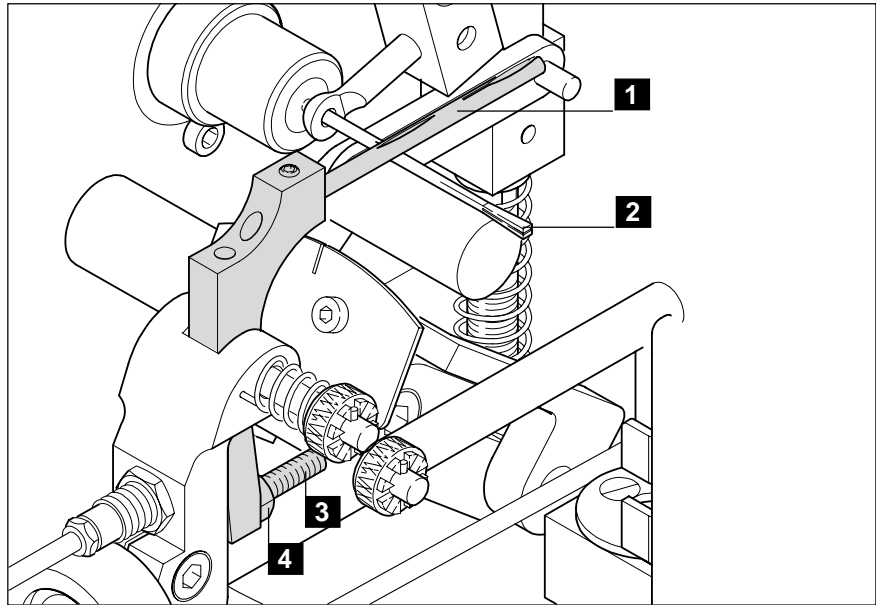
-  When setting is finished
 - take down the measured value indicated,
 - remove dial gauge,
 - re-tighten the clamping screw.



When setting the eccentric according the sheet "Machine settings" the backlash of the adjusting screw must be always considered.



Setting the thread guide

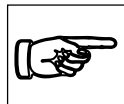


Detailed view of winding head

- | | |
|----------------|-------------|
| 1 Thread guide | 3 Stud bolt |
| 2 Spindle | 4 Lock nut |

This setting




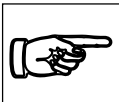



- determines the distance between the thread guide and the spindle,
- determines the shape of the bobbins,
- may only be carried out during standstill.



IMPORTANT

Adjust thread guide only after the eccentric stroke is determined (see previous page).

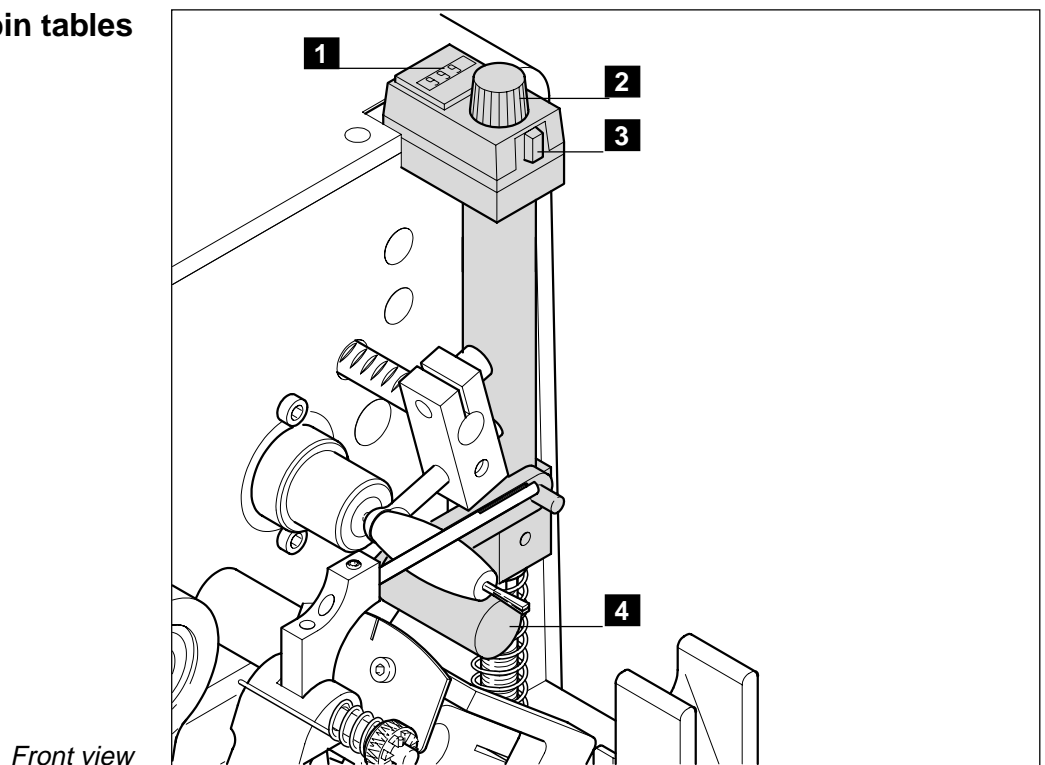
Procedure

-  Undo lock nut (4).
-  Turn stud bolt (3) to lift/lower the thread guide.
-  For the **basic setting** set thread guide to centre position.
-   Measure distance between thread guide and base plate using the depth gauge of a caliper rule: vertical and to the left of the table roll.
-  Set thread guide to a distance of 131.5mm to the base plate with the stud bolt.
-  Tighten lock nut.



👁️ After fine adjustment take down the distance to the base plate and use it for setting the second thread guide.

Setting the bobbin tables



1 Counter

2 Setting knob

3 Locking lever

4 Bobbin table

This setting

- determines the minimum distance between the bobbin table (4) and the spindle,
- determines the form of the bobbin,
- can also be carried out when bobbin winding machine is running.

Procedure

👁️ Press locking lever (3) to the left.

👁️ Now turn the setting knob (2):



Clockwise = the bobbin is more chased.



Anti-clockwise = the bobbin is less chased.

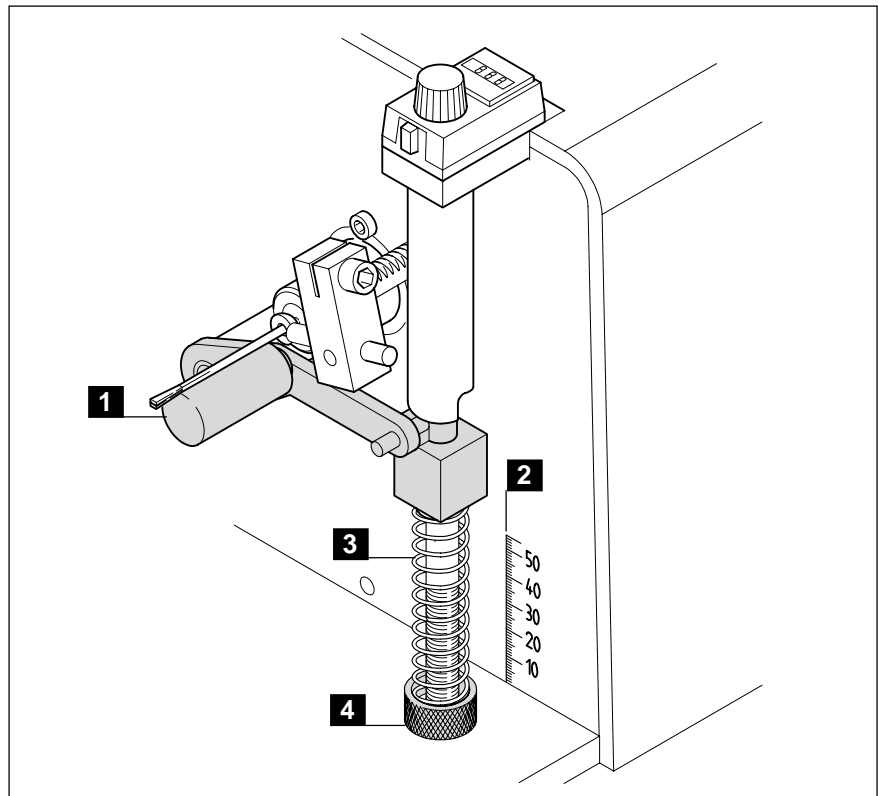
👁️ When setting is finished

- read off the counter (1) and take down the indicated value,
- press locking lever to the right.



Setting the contact pressure of the bobbin tables

Front view



1 Bobbin table
2 Height scale

3 Spring
4 Adjusting nut

The setting of the spring (3)

- determines the contact pressure of the bobbin tables (1) to the bobbin,
- determines the bobbin hardness.
- may only be carried out during standstill.



WARNING

Danger of injuries and damage to machine if the bobbin winding machine starts unexpectedly during setting of left bobbin table.

Precaution: Pull the mains plug.

Procedure


 Turn the adjusting nut (4):



Upwards - the bobbin becomes harder.

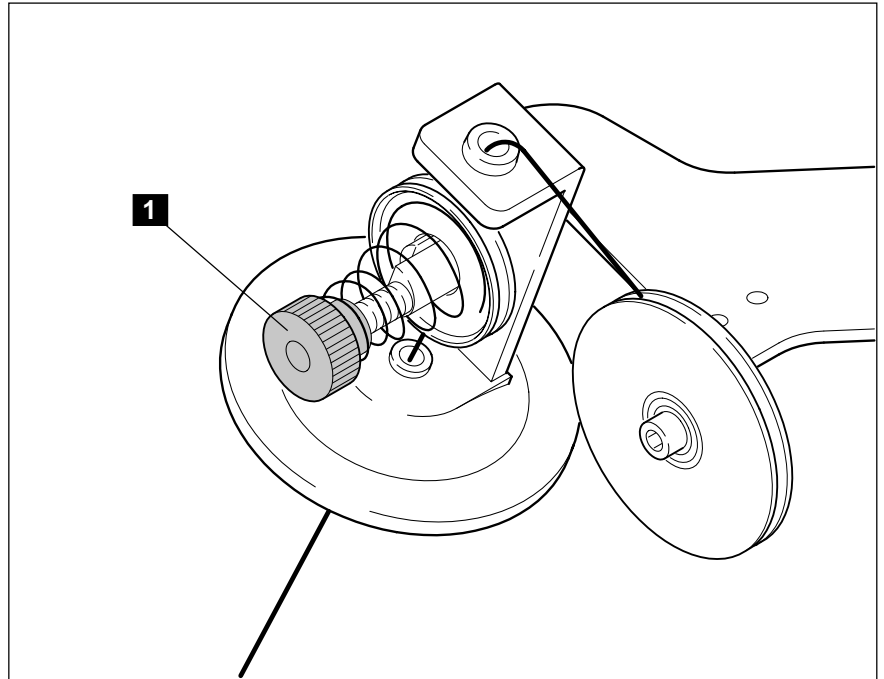


Downwards – the bobbin becomes softer.

 When setting is finished read off the position of the adjusting nut's lower edge from the scale (2) and take it down.



Setting the inlet brake




Detailed view of inlet brake

Setting the inlet brake affects

- the yarn tension,
- the bobbin hardness,
- the thread length winded on bobbin,
- the function of the odometer.

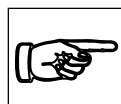
The inlet brakes are adjusted with bobbin winding machine running.

Procedure:

 Turn the knurled nut (1):

Clockwise = the braking effect and the yarn tension is increased.

Anti-clockwise = the braking effect and the yarn tension is decreased.



Important

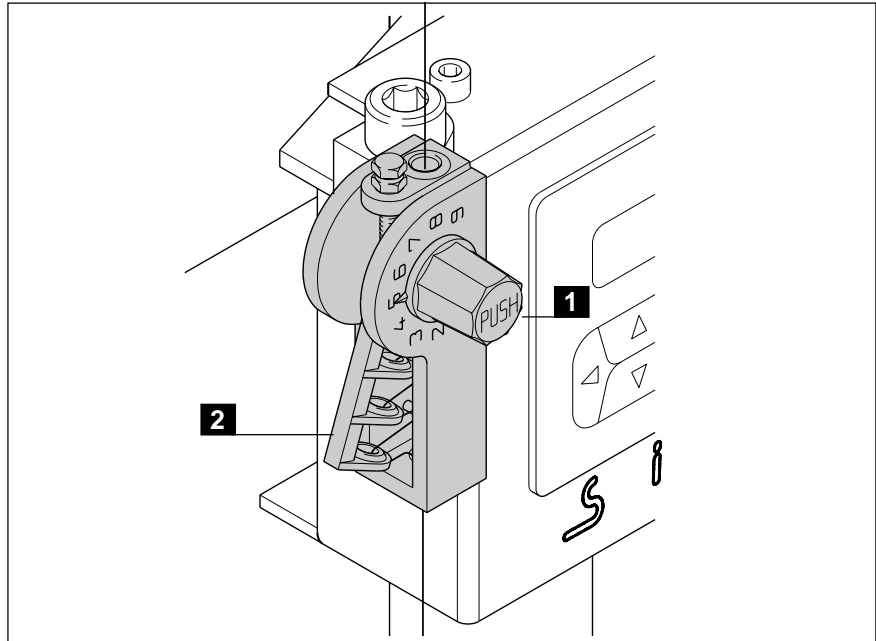
For a correct function of the thread measuring device a minimum yarn tension of 25cN is required (measured **after** the inlet brake).

The inlet brakes for both winding heads

- must be set so that they are identical,
- must be adjusted if there are tolerance deviations between the thread lengths of both winding heads.



Setting the compensator



Detailed view of compensator

The compensator

- dampens the jerky course of the thread from the thread guide with its swing lever (2),
- cause a regular turning of the odometer,
- is set when bobbin winding machine is running.

With knob (1) the deflection force of the swing lever can be adjusted gradually from 1 to 9.

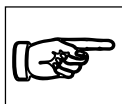
Procedure:

- 👁️ Press knob into direction of the compensator housing and set to desired number **simultaneously**:

Turn clockwise = deflection force is increased.

Turn anti-clockwise = deflection force is decreased.

- 👁️ Read off set value and take it down.



Important

- During winding operation the swing lever should be freely movable without bouncing against the housing or swinging out into the end position completely.
- With each changing of the yarn tension with the inlet brake also the compensator setting must be checked.
- If the compensator is wrongly adjusted, measurement errors and different thread lengths of the two winding heads could be the result.



7.4 Bobbin sizes

The following table gives the bobbin dimensions for normal shuttle sizes (accuracy not guaranteed).

Shuttle no.	Diameter x Length Dimensions in mm	Notes
4	10,8 x 33,0	
5	10,2 x 31,0	
6	11,7 x 34,5	
7	12,0 x 35,0	
S2	12,2 (11,9) x 35,0	
8	13,0 x 37,0 (34,5)	
9	12,5 x 36,0	
10 (Top)	14,5 x 42,0	
11	15,5 x 45,0	

7.5 Operating instructions

Operating modes

In **standby operation**

- the bobbin winding machine is automatically after the mains connection,
- the current thread lengths of both winding heads and the set value of thread length appear on the LCD of the control unit,
- the pneumatic operating pressure is monitored already.

From standby operation you can switch into the other operating modes:

In **setting operation** the following parameters can be defined with the control unit (refer to section 7.1):

- thread length of bobbins,
- spindle speed,
- length tolerance.

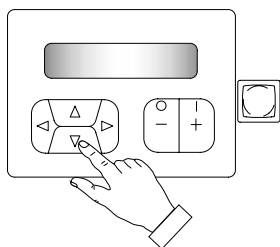
In **winding operation**

- bobbins are produced according to the preset parameters,
- the operating pressure and the frequency converter are monitored,
- the thread end or thread breakages are monitored and displayed,
- deviations in thread lengths between the two winding heads are monitored and displayed.



Activate setting operation

 During the standby operation press up/down arrow key.

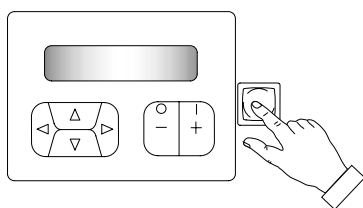


The first operating parameter/manufacturer's name appears on the LCD.

The control functions during setting operation are described under section 7.1.


Quit setting operation

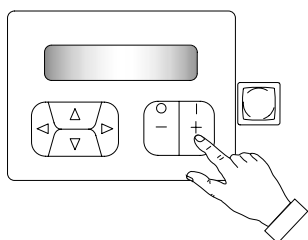
 Press the reset button.



The bobbin winding machine returns into the standby mode. All inputs made during setting operation are kept.

Start winding operation

 Press the green key (I/+) during standby operation; the winding process is started.



Checks **before** winding operation:

- Is the
 - bobbin winding machine set to desired bobbin?
 - bobbin winding machine completely set up?
 - yarn correctly thread?
- Are all setting parameters correct?
- Are tools, measuring instruments, etc. still on the bobbin winding machine?

Checks **during** winding operation:



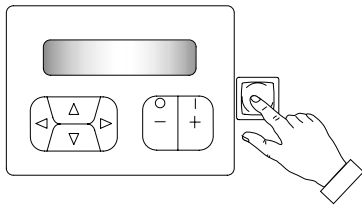
- If the bobbin winding machine makes unusual noises switch off immediately and request a trained person to find the fault.



- Unauthorised persons (children) must not be present in the area of the bobbin winding machine – there is a danger of injury.

**Cancel winding operation**


 During the winding operation press the reset button.

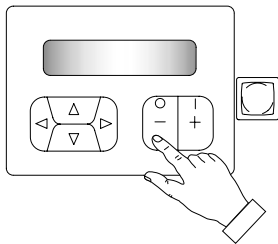


The bobbin winding machine

- ejects the bobbins just winded,
- resets the current thread length of both winding heads to the initial value zero,
- starts a new winding process.

Stop winding operation

 Press the red key (O/-).

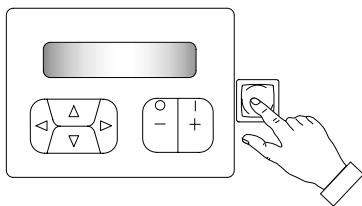


After braking and stopping of spindles the bobbin winding machine returns into the standby mode.

The actual thread lengths of both winding heads remain stored and are allowed for the following winding operation.

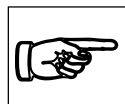
Reset thread lengths

 During the standby operation press the reset button.



The current thread length of both winding heads are set to the initial value zero.

After starting the winding operation the first bobbins are completely winded with the defined thread length.

**IMPORTANT**

By pressing the reset button during standby operation the bobbins present **cannot be ejected**. Instead the defined thread length is additionally winded to the bobbins.

For ejecting the bobbins the reset button must be pressed during the winding operation.

Longer operation interruptions

During standby operation the energy consumption of the bobbin winding machine is about 50 Wh. Therefore, we recommend to disconnect the bobbin winding machine from mains in case of longer operation interruptions.

**Hints for making bobbins**

1. Make sure that the machine settings for both winding heads are the same.
2. The distance between the bobbin table and the spindle influences shape and unwinding length of a bobbin:

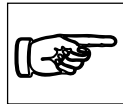


- Small distance – cylindrical shape of bobbin; higher unwinding length.



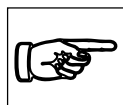
- Great distance – barrel shape of bobbin; lower unwinding length.

3. Using the inlet brake set a yarn tension of approx. 30% to 40% of the min. tensile strength. With this value relative hard bobbins with good unwinding properties can be produced.



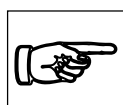
The dynamic thread tension during winding operation can be several times the basic setting!

4. For optimizing the bobbin hardness increase the thread tension at both winding heads step by step and simultaneously. In case of repeated thread breakages reduce slightly.
5. The weight of the bobbin depends on the unwinding length. Using a precision balance check both bobbins of one ejection. As an example, the permissible weight difference between both bobbins must be specified in a production standard.



The precision balance used should have a resolution of 0.001 gram.

6. The unwinding length of the bobbin can be influenced by changing the yarn tension: With the lighter bobbin reduce the yarn tension step by step at the winding head. After each changing check weight of several bobbins until the weight difference is within the tolerance value.



Constant measuring results are only possible after a winding operation of several minutes under production conditions.



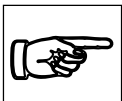
7. If bobbin weight and unwinding length is not sufficiently reproducible: Increase the anti-friction property of the yarn by oiling. The oiling device is described under section 2.6 "Options".
8. In case of irregular unwinding of the bobbins and uncontrolled contracting together of the yarn during start of winding: Change spring force and spindle distance of both bobbin tables.



7.6 Diagnosis



Faults arising may only be remedied
 - by qualified personnel,
 - when the bobbin winding machine is standing still.



All settings should be carried out by the same person.

Problem	Possible cause(s)	Remedy
1 The bobbin winding machine cannot be started; signal lamp and LCD remain dark.	Mains connection interrupted.	<ul style="list-style-type: none"> • Check mains lead.
	Instrument fuse tripped.	Acc. to fig. 1 and description in chapter "Repair": <ul style="list-style-type: none"> • Remove cause of overload. • Pull mains plug and replace fuse.
2 The bobbin winding machine cannot be started; LCD is illuminated.	PLC is faulty. LED "PROG-E / CPU-E lights up (fig. 2).	Reset PLC: <ul style="list-style-type: none"> • Pull mains plug and insert again after approx. 20 seconds. • If the error cannot be removed, call Casati Carlo AG.
3 Signal lamp indicates no failures.	Faulty bulb.	Acc. to fig. 3 and description in chapter "Repair": <ul style="list-style-type: none"> • Replace bulb.
4 Signal lamp lights up.	Both cones are empty.	<ul style="list-style-type: none"> • Replace cones and thread.

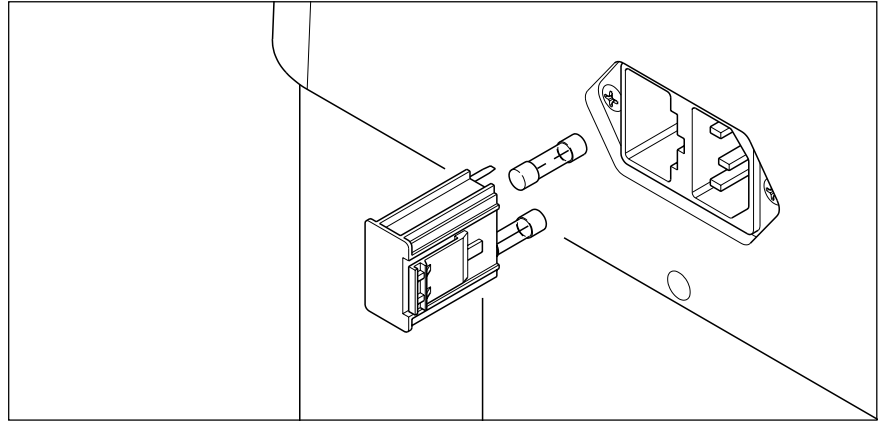


Fig. 1) Replacing instrument fuse

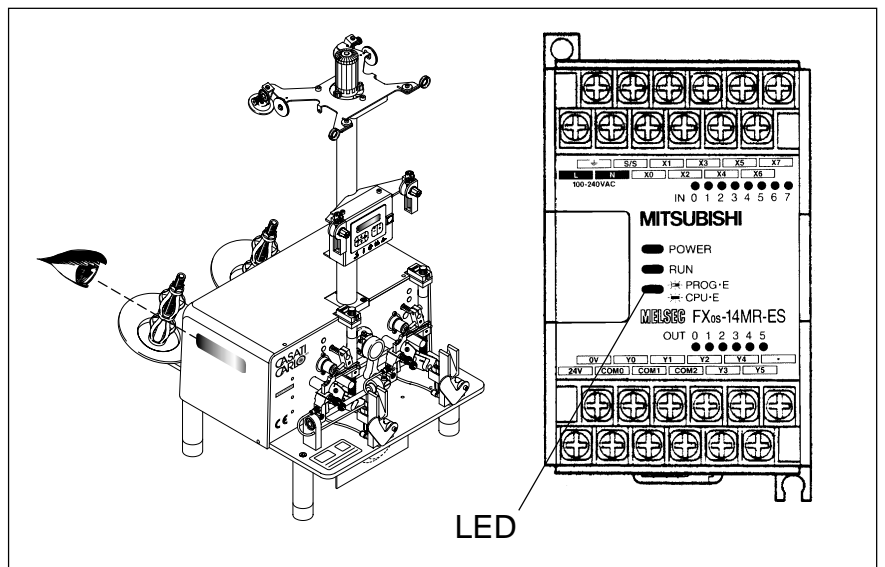


Fig. 2) Checking programmable logic controller

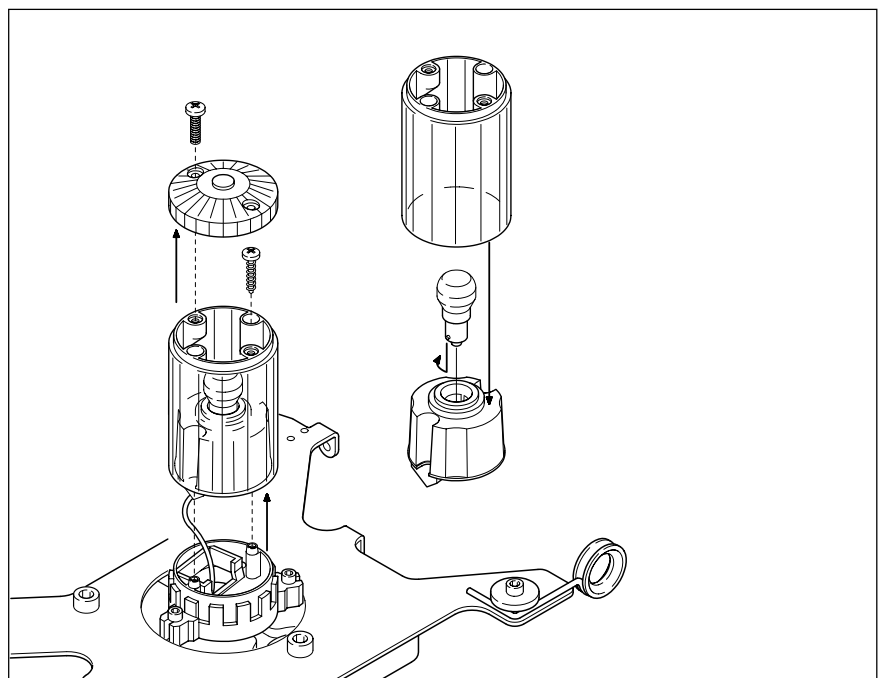


Fig. 3) Replacing bulb



Problem	Possible cause(s)	Remedy
<p>4 Signal lamp lights up (contd.)</p> <p>Additional error message: Failure compressed air</p> <p>Additional error message: Failure frequency converter</p>	Thread breakage at both winding heads.	<ul style="list-style-type: none"> • Determine cause: Check unit settings and remove rough or seizing positions. • Re-thread.
	<p>No compressed air available.</p> <p>Operating pressure too low.</p>	<ul style="list-style-type: none"> • Check compressed air connection. • Set operating pressure to min. 5.5 bar.
	<p>Drive jammed or braked.</p> <p>Faulty electric motor.</p> <p>Earth connection at output of frequency converter.</p>	<p>Acc. to section 9.3 "Reset frequency converter":</p> <ul style="list-style-type: none"> • Read error message at frequency converter (fig. 4). • Remove error cause. • Reset frequency converter.
<p>5 Signal lamp flashes briefly with long intervals: Standstill of odometer of a winding head.</p>	One cone is empty.	<ul style="list-style-type: none"> • Replace cone.
	Thread breakage at one of the winding heads.	<ul style="list-style-type: none"> • Determine cause: Check yarn tension and remove rough or seizing positions. • Re-thread and observe winding operation; replace thread guide, if required.
	Adhesion between yarn and odometer too low.	<ul style="list-style-type: none"> • Check odometer for easy turning (fig. 5). • Check course of thread: Thread must be lead around the odometer with min. one loop. • Increase yarn tension at the inlet brake with the knurled nut (fig. 6)

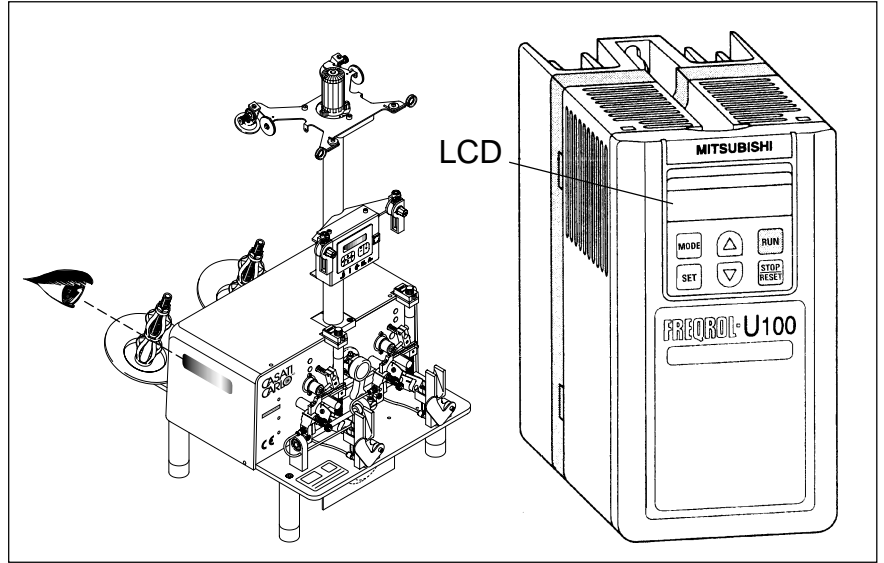


Fig. 4) Checking frequency converter

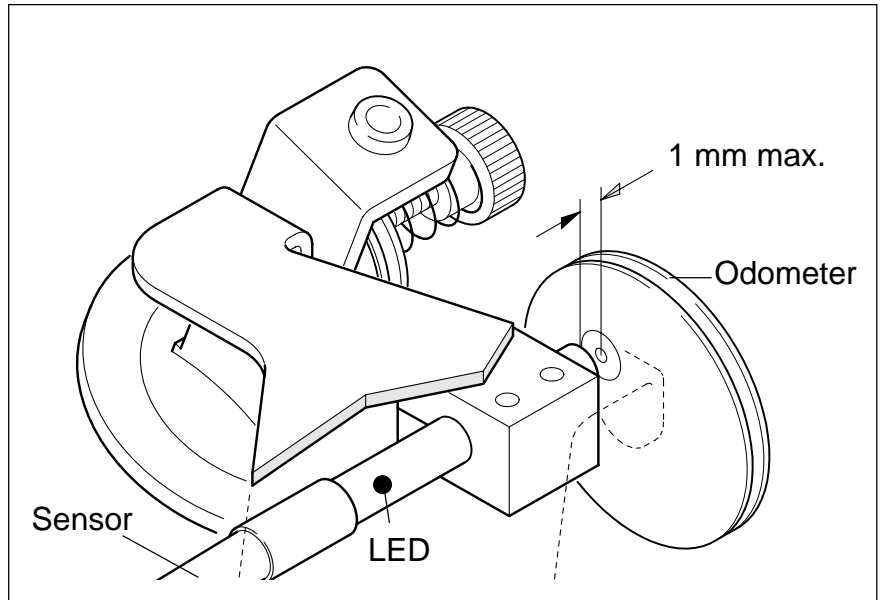


Fig. 5) Checking odometer and sensor

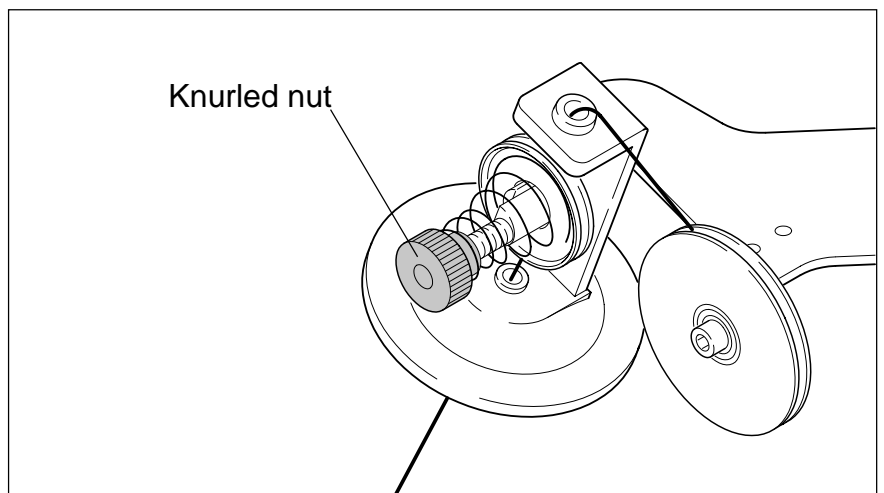


Fig. 6) Setting inlet brake



Problem	Possible cause(s)	Remedy
5 Signal lamp flashes briefly with long intervals (contd.)	Sensor of odometer is - not correctly installed, - wrongly connected, - faulty.	<ul style="list-style-type: none"> • Check switching distance between odometer and sensor (fig. 5). • Check sensor wiring. • Check function: Turn odometer by hand. With each turn the relevant LED's on the sensor and on the PLC must light up once (fig. 5 and 7). Otherwise, replace faulty sensor.
6 Signal lamp flashes regularly: Length tolerance exceeded.	Different quality of both cones.	<ul style="list-style-type: none"> • Vary yarn tension with knurled nut (fig. 6). • Check cones and replace a cone, if required.
	Different yarn tensions.	<ul style="list-style-type: none"> • At both winding head after the inlet brake: Determine yarn tension with measuring instrument and readjust each other (fig. 6).
	At one or both winding heads - the thread is not running correctly through the compensator, - the compensator is wrongly adjusted.	<ul style="list-style-type: none"> • Using the threading tool lead the yarn through the compensator (refer to fig. 8 and section 7.2 "Setting up"). • Check both compensators for ease of movement and same setting.
	Length tolerance too low.	<ul style="list-style-type: none"> • At the control unit select a higher value for the length tolerance during setting operation.

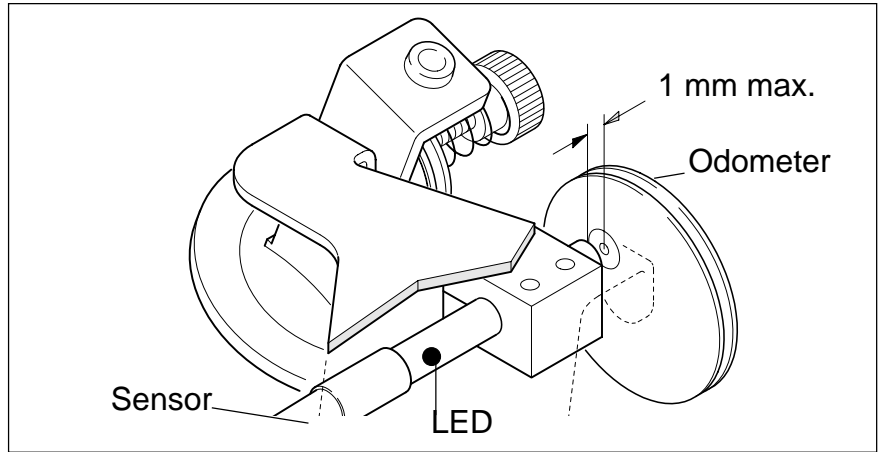


Fig. 5) Checking odometer and sensor

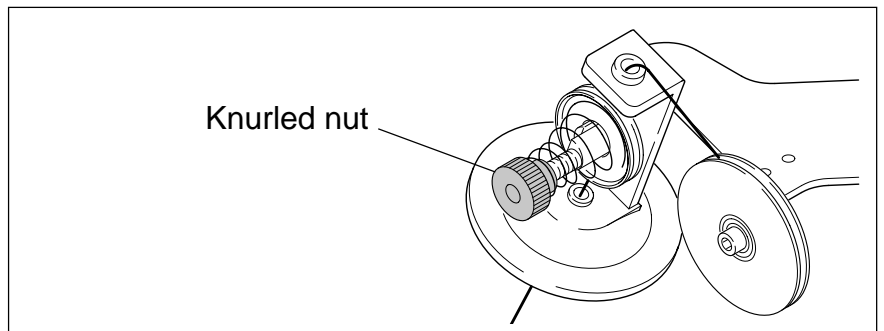


Fig. 6) Setting inlet brake

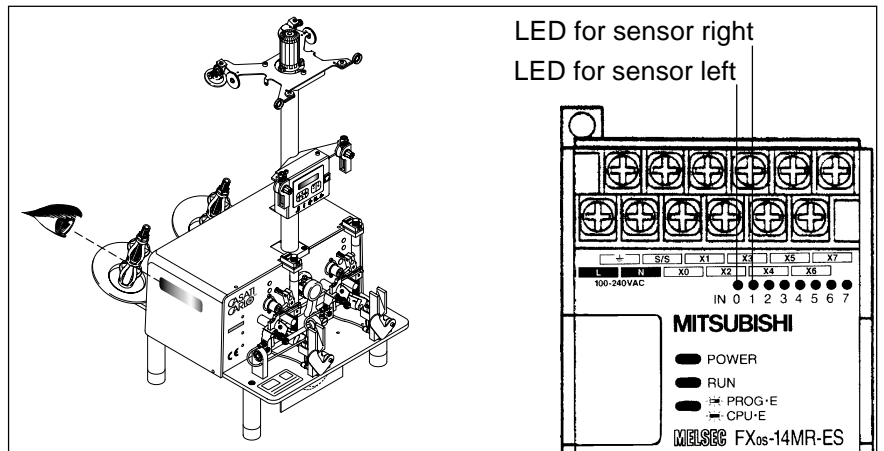


Fig. 7) Sensor signals on PLC

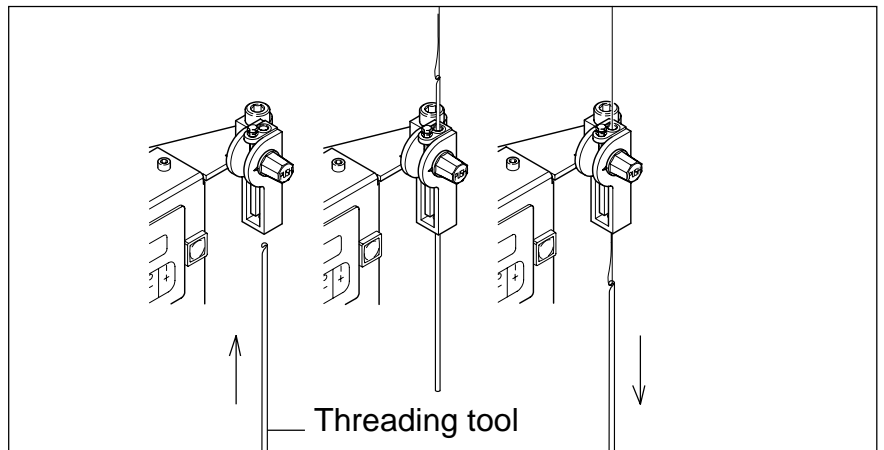


Fig. 8) Threading yarn into compensator



Problem	Possible cause(s)	Remedy
7 Bobbin too long.	The eccentric's stroke is too long.	<ul style="list-style-type: none"> • Measure bobbin length with caliper rule. <p>Set bobbin length following fig. 1:</p> <ul style="list-style-type: none"> • Undo the clamping screw of eccentric by a quarter turn using a 5mm hexagonal key. • Move connecting rod by hand until adjusting screw of eccentric is exactly vertical. • Insert pins of dial gauge into holes of thread tree. • Press feeler pin onto the adjusting screw with finger and take down measured value. • Turn adjusting screw clockwise with an open-end wrench (until dial gauge shows set value acc. to machine setting sheet): <p>Important: The backlash of the adjusting screw must be always considered.</p> <ul style="list-style-type: none"> • Remove dial gauge, take down the measured value and re-tighten the clamping screw. • Start winding process, measure length of bobbins produces and repeat setting, if required.
8 Bobbin too short.	The eccentric's stroke is too short.	<p>Make settings as described above; but turn adjustment screw anti-clockwise.</p>

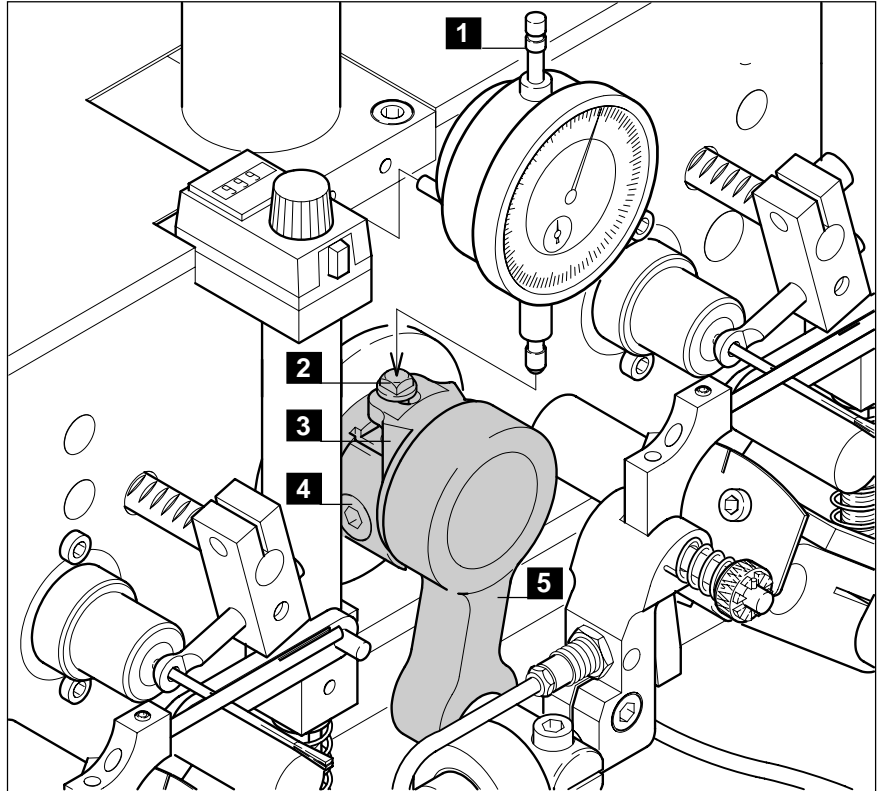


Fig. 1) Setting stroke of eccentric

- 1 Dial gauge
- 2 Adjusting screw
- 3 Eccentric

- 4 Clamping screw
- 5 Connecting rod



Problem	Possible cause(s)	Remedy
9 Bobbin too pointed.	The clearance between bobbin table and spindle is too great.	Reduce distance (fig. 10): <ul style="list-style-type: none"> • Press locking lever to left. • Turn setting knob anti-clockwise. • Press locking lever to right. • Take down counter indication.
	Thread guide too low.	Lift thread guide (fig. 11): <ul style="list-style-type: none"> • Undo lock nut. • Set thread guide with bolt to desired height. • Re-tighten lock nut. • Measure distance between thread guide and base plate (see section 7.3) and take down.
	Yarn tension too low.	<ul style="list-style-type: none"> • Determine yarn tension with measuring instrument. • Increase yarn tension with knurled nut of inlet brake (fig. 6). • Measure new yarn tension and take down.
	Bobbin tables' pressure is too little.	<ul style="list-style-type: none"> • Determine pressure of table with measuring instrument. • Turn adjusting nut anti-clockwise to increase pressure of table (fig. 12). • Take down new pressure (measured value or scale indication).

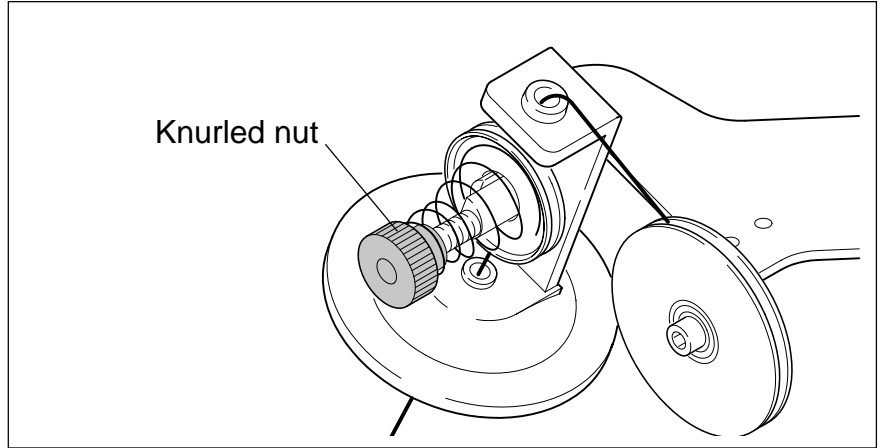


Fig. 6) Setting the inlet brake

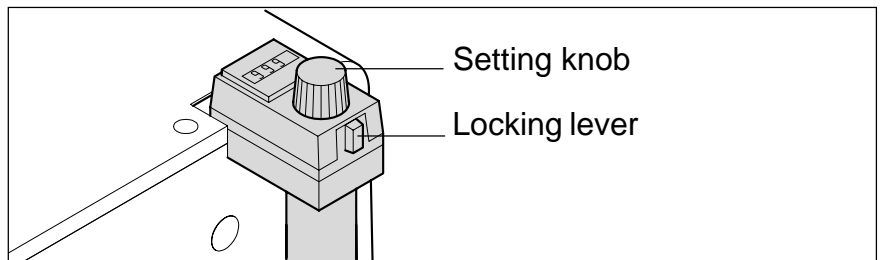


Fig. 10) Setting the bobbin table

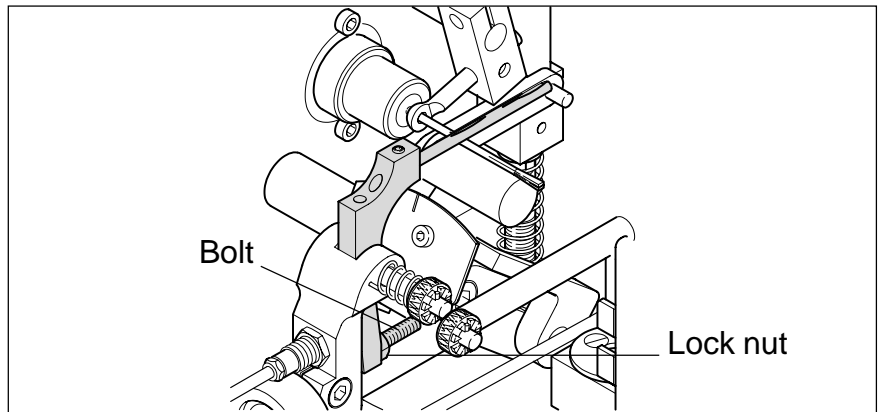


Fig. 11) Lifting/lowering thread guide

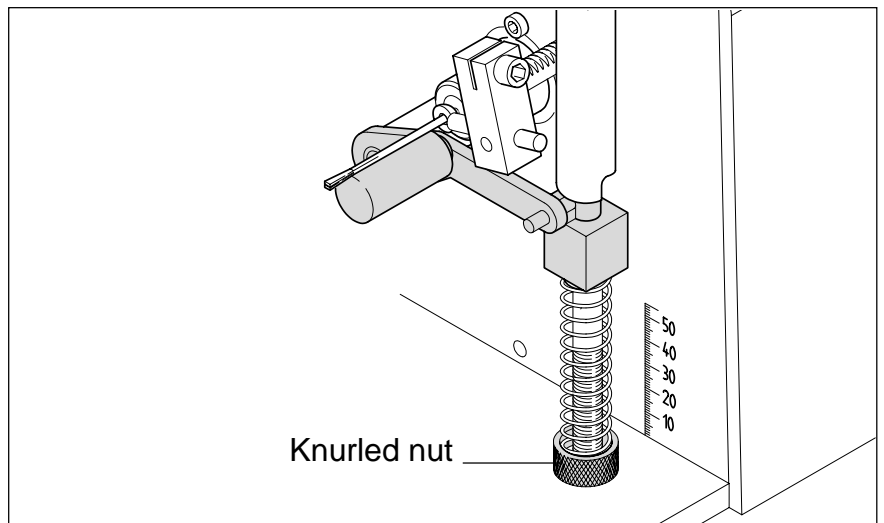


Fig. 12) Setting the bobbin tables' pressure



Problem	Possible cause(s)	Remedy
10 Bobbin ends too flat.	Clearance between bobbin table and spindle too small.	Increase distance (fig. 10): <ul style="list-style-type: none"> • Press locking lever to left. • Turn setting knob clockwise. • Press locking lever to right. • Take down counter indication.
	Thread guide too high.	Lower thread guide (fig. 11): <ul style="list-style-type: none"> • Undo lock nut. • Set thread guide with bolt to desired height. • Re-tighten lock nut. • Measure distance between thread guide and base plate (see section 7.3) and take down.
	Yarn tension too high.	<ul style="list-style-type: none"> • Determine yarn tension with measuring instrument. • Decrease yarn tension with knurled nut of inlet brake (fig. 6). • Measure new yarn tension and take down.
	Bobbin tables' pressure too high.	<ul style="list-style-type: none"> • Determine pressure of table with measuring instrument. • Turn adjusting nut clockwise to decrease pressure of table (fig. 12). • Take down new pressure (measured value or scale indication).

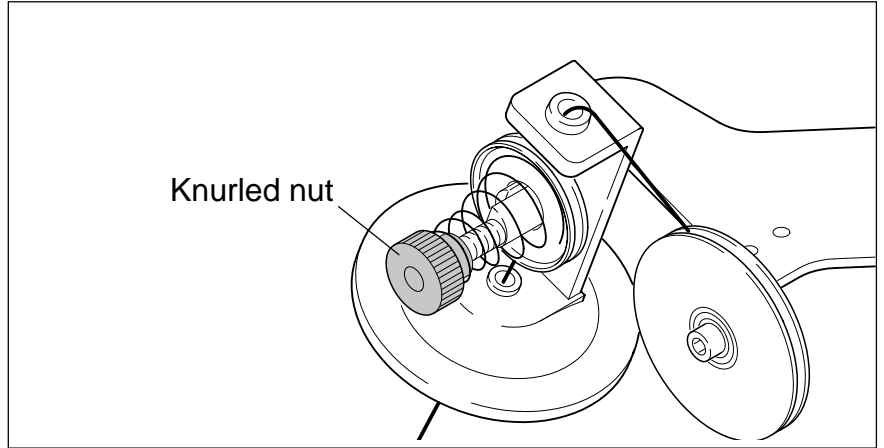


Fig. 6) Setting the inlet brake

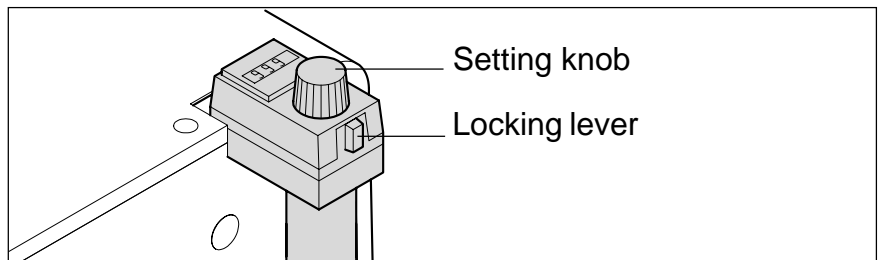


Fig. 10) Setting the bobbin tables

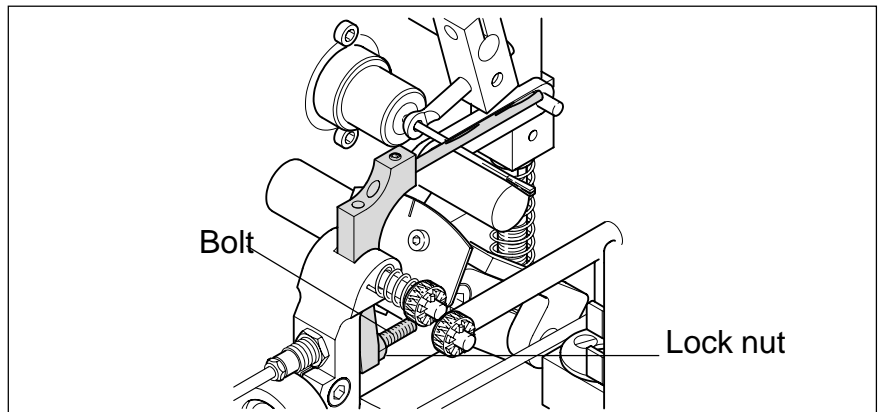


Fig. 11) Lifting/lowering thread guide

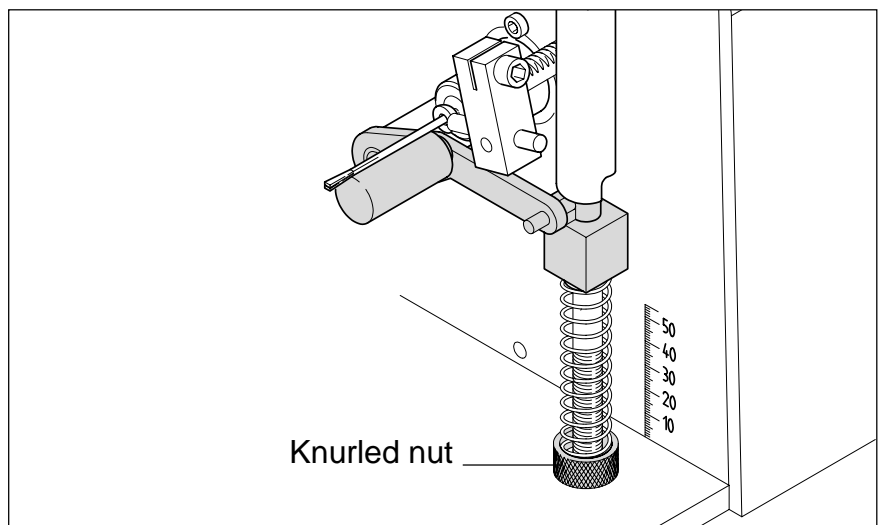


Fig. 12) Setting the bobbin tables' pressure



Problem	Possible cause(s)	Remedy
11 Bobbin table over-heated (only valid for as sliding tables)	Bobbin tables' pressure too high.	<ul style="list-style-type: none"> • Determine pressure of table with measuring instrument. • Turn knurled nut clockwise to decrease pressure of table (fig. 12). • Take down new pressure (measured value or scale indication). <p>Important: The shape of the bobbin changes after this adjustment is made (note points 9 and 10).</p> <ul style="list-style-type: none"> • Lubricate yarn (optional oiling device (fig. 13).
	Friction too high.	<ul style="list-style-type: none"> • Use rolling table.
12 Bobbin diameter too big.	Too much thread on bobbin.	<ul style="list-style-type: none"> • Measure bobbin diameter with caliper rule. • Reduce thread length on operating unit during Setting operation (see section 7.1). • Start winding operation. Determine new diameter value of bobbins and take down.
	Wrong thread.	<ul style="list-style-type: none"> • Use correct thread.
13 Bobbin diameter too small.	Not enough thread on bobbin.	<ul style="list-style-type: none"> • Measure bobbin diameter with caliper rule. • Increase thread length on operating unit during Setting operation (see section 7.1). • Start winding operation. Determine new diameter value of bobbins and take down.
	Wrong thread.	<ul style="list-style-type: none"> • Use correct thread.

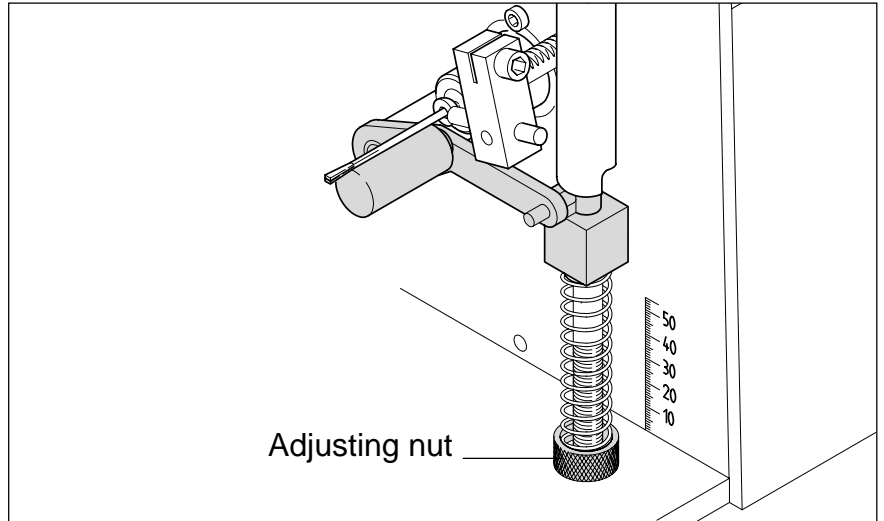


Fig. 12) Setting the bobbin tables' pressure

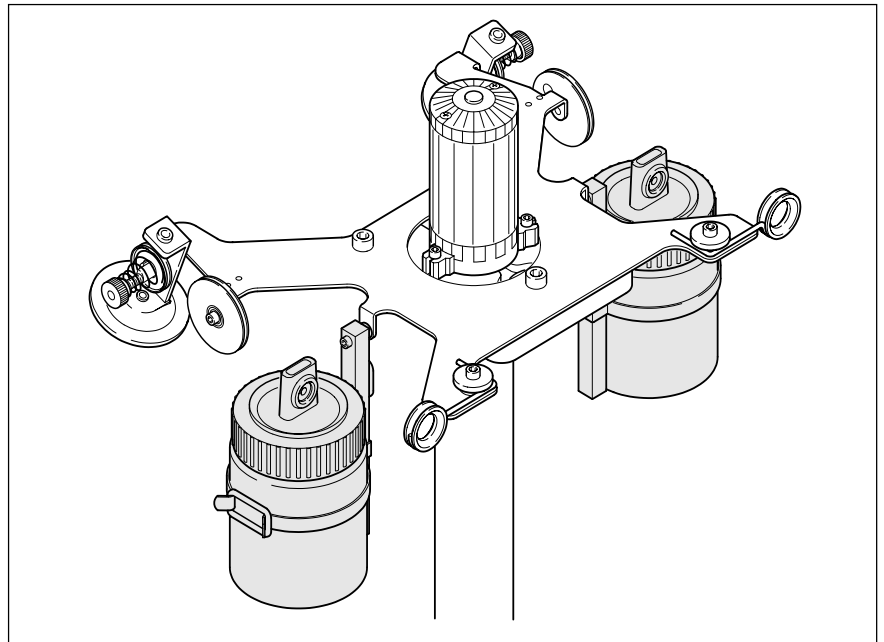


Fig. 13) Oiling device (option)



Problem	Possible cause(s)	Remedy
14 Bobbin is squashed on being pushed out from the spindle.	Thread tension too low.	<ul style="list-style-type: none"> • Determine yarn tension with measuring instrument. • Turn knurled nut of inlet brake clockwise (fig. 6). • Measure yarn tension again and take down measured value.
	Bobbin tables' pressure too low.	<ul style="list-style-type: none"> • Determine pressure of table with measuring instrument. • Turn adjusting nut clockwise to increase pressure of table (fig. 12). • Take down new pressure (measured value or scale indication). <p>Important: The shape of the bobbin changes after this adjustment is made (note points 9 and 10).</p>
	Adhesion to the spindle too strong.	<ul style="list-style-type: none"> • Polish the spindle or replace by more suitable type.
15 Jerky run-out of the bobbin from the shuttle.	Shuttle wrongly set or faulty.	<ul style="list-style-type: none"> • Re-adjust shuttle or replace.
	Start of bobbin contracts uncontrollably.	<p>Change clearance between bobbin table and spindle (fig. 10):</p> <ul style="list-style-type: none"> • Loosen locking lever. • Turn setting knob clockwise or anti-clockwise. • Lock locking lever and take down counter indication. • Start winding operation and check bobbins already produced.

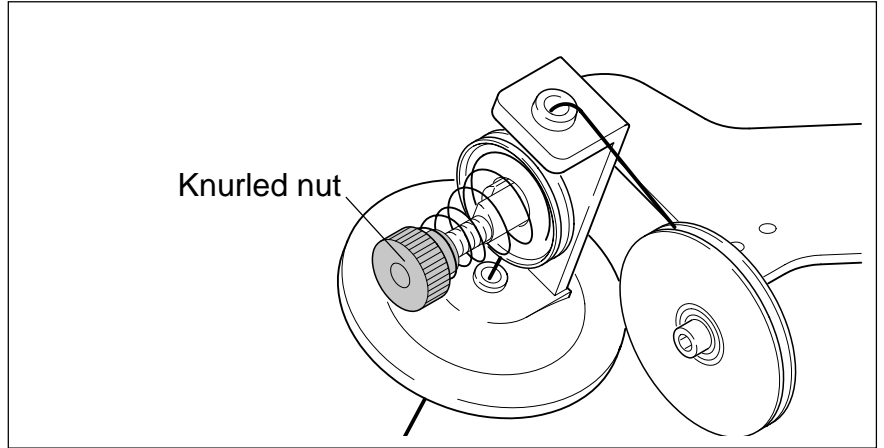


Fig. 6) Setting the inlet brake

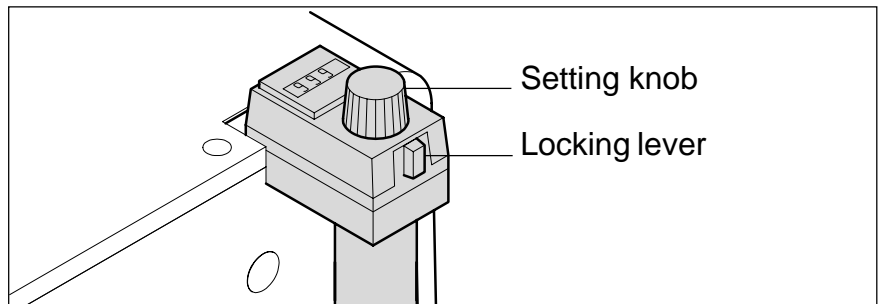


Fig. 10) Setting the bobbin table

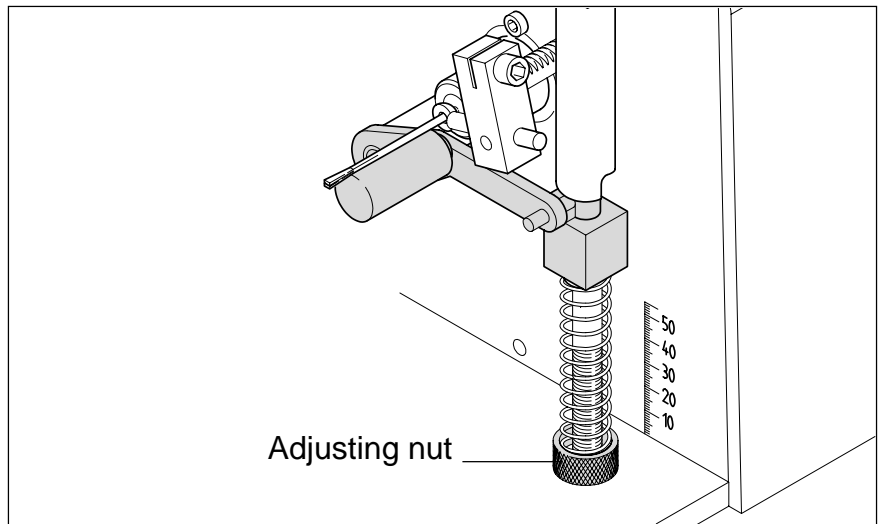


Fig. 12) Setting the bobbin tables' pressure



Problem	Possible cause(s)	Remedy
15 Jerky run-out of the bobbin from the shuttle (contd.).	Thread tension too high or too low.	<ul style="list-style-type: none"> • Check thread tension and correct.
	Material properties of polyester threads are altered during winding.	<ul style="list-style-type: none"> • Check bobbins already produced and thermal retreat, if required.
16 Bobbin is not properly undertucked.	Tucker plate pressure too low.	<ul style="list-style-type: none"> • Press in spring setting ring and turn clockwise (fig. 14).
	Wrong position of undertucker.	Adjust undertucker (fig. 15): <ul style="list-style-type: none"> • Place suitable adjusting gauge onto round spindle. Find adjusting gauges with outer diameter of normal bobbins in the regulation kit. <ul style="list-style-type: none"> • Position tucker plate: Start winding operation with speed "0" and press reset button. Press red key as soon as the tucker plate is in its highest position during ejection. • Undo lock nut. • Turn thread plug with Allen key until the undertucker touches the adjusting gauge at the same point (see detail). • Tighten lock nut.

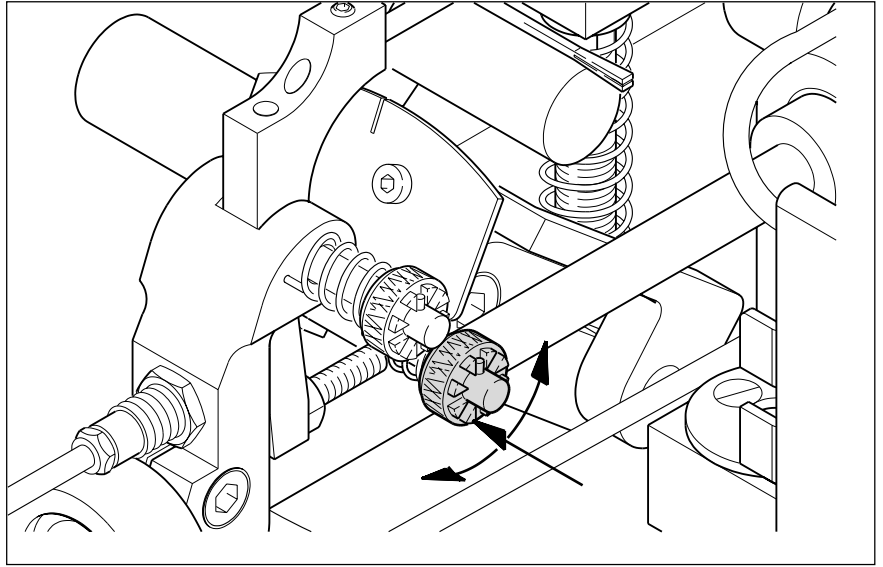


Fig. 14) Adjusting tucker plate

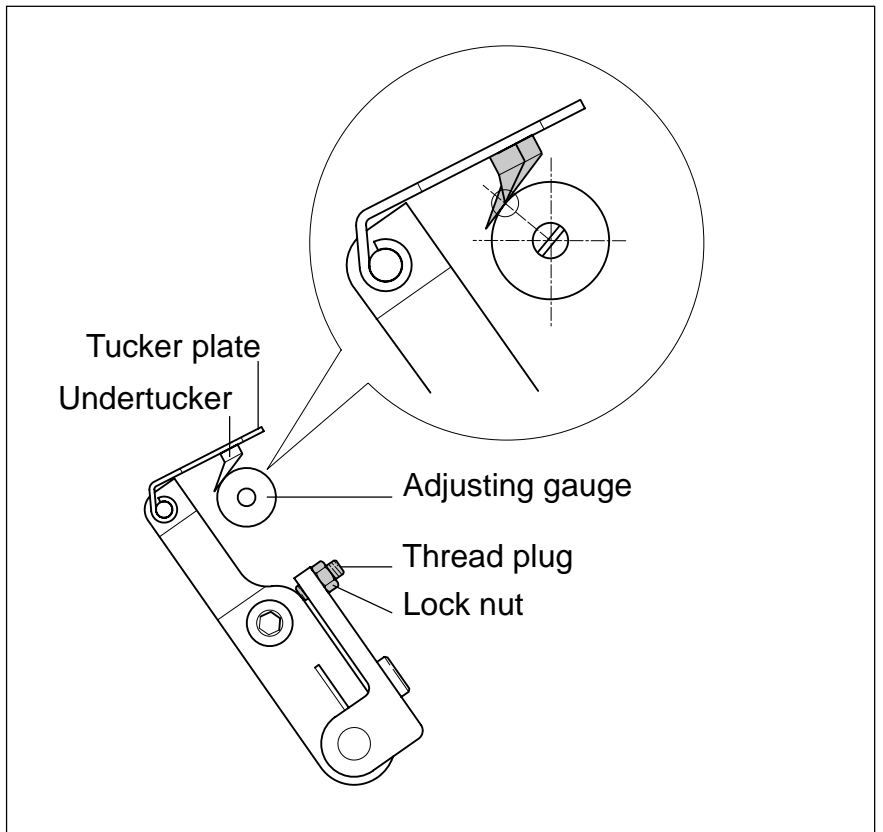


Fig. 15) Adjusting undertucker



Problem	Possible cause(s)	Remedy
17 Bobbin is damaged on being undertucked.	Tucker plate pressure too high.	<ul style="list-style-type: none"> • Press in spring setting ring and turn clockwise (fig. 14).
	Undertucker touches bobbin during ejection.	<p>Lift undertucker (fig. 16):</p> <ul style="list-style-type: none"> • Check distance of undertucker with a suitable adjusting gauge. <p>Find adjusting gauges with outer diameter of normal bobbins in the regulation kit.</p> <ul style="list-style-type: none"> • Undo lock nut. • Turn thread plug with Allen key until the undertucker does not touch the bobbin any more. • Tighten lock nut.
18 Thread is torn when undertucking.	Undertucker damages thread.	<ul style="list-style-type: none"> • Smoothen the undertucker.
	Thread inlet in the tucker plate has a sharp edge.	<ul style="list-style-type: none"> • Smoothen the thread inlet.

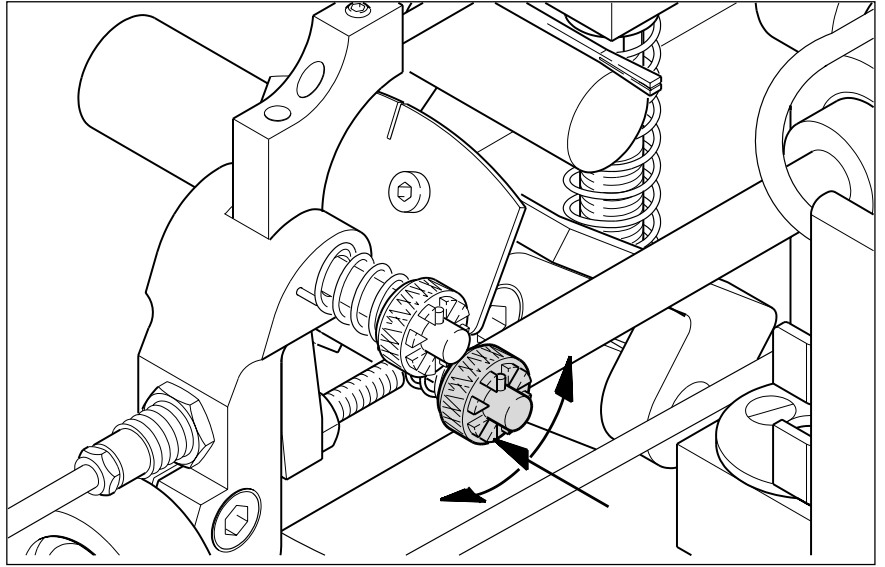


Fig. 14) Adjusting the tucker plate

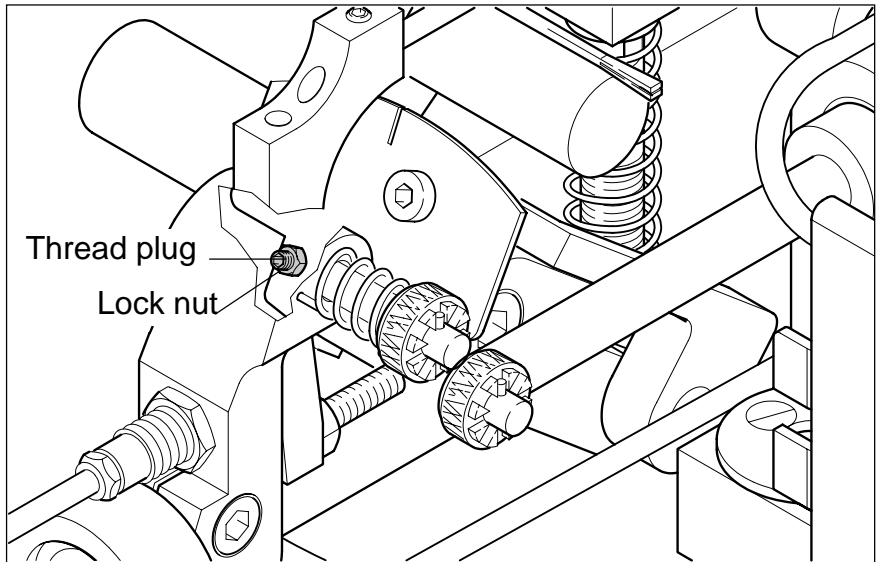


Fig. 16) Lifting the undertucker



Problem	Possible cause(s)	Remedy
19 Thread is torn after the bobbin has been ejected.	Ejection bolt has sharp or rough edges at the spherical end.	<ul style="list-style-type: none"> • Polish the ejection bolt at the spherical end or replace.
	Thread guide touches the tucker plate.	Lift undertucker earlier (fig. 17): <ul style="list-style-type: none"> • Disconnect bobbin winding machine completely from mains. • Remove plastic cover: Undo both mounting screws on top side of housing. Only loosen all four mounting screws on side of housing. Tilt cover backwards 1-2 cm and lift subsequently. • Loosen clamping screw at switching lever. • Turn switching lever 0.5 mm into direction roll lever valve and fix. • Install plastic cover and fix.
20 Bobbin is thrown away by the scissors.	Bobbin does not fall into chute.	Shift scissors (fig. 18): <ul style="list-style-type: none"> • Undo fixing screw at underside of housing. • Shift scissors into direction of spindle so that the bobbin is fallen correctly into the chute. • Tighten fixing screw again.

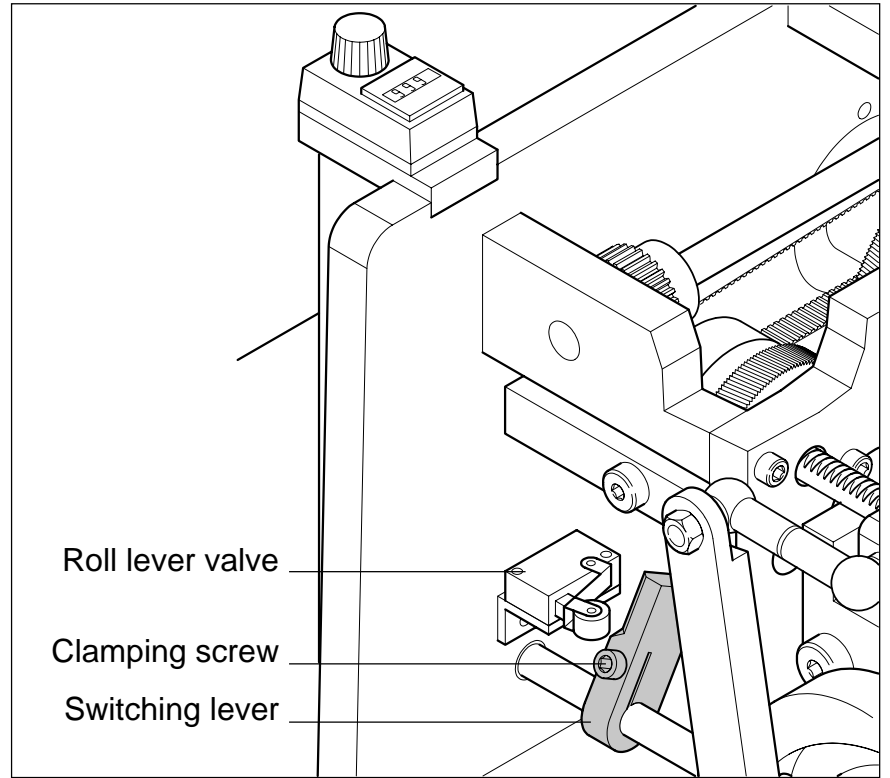


Fig. 17) *Lifting the undertucker earlier*

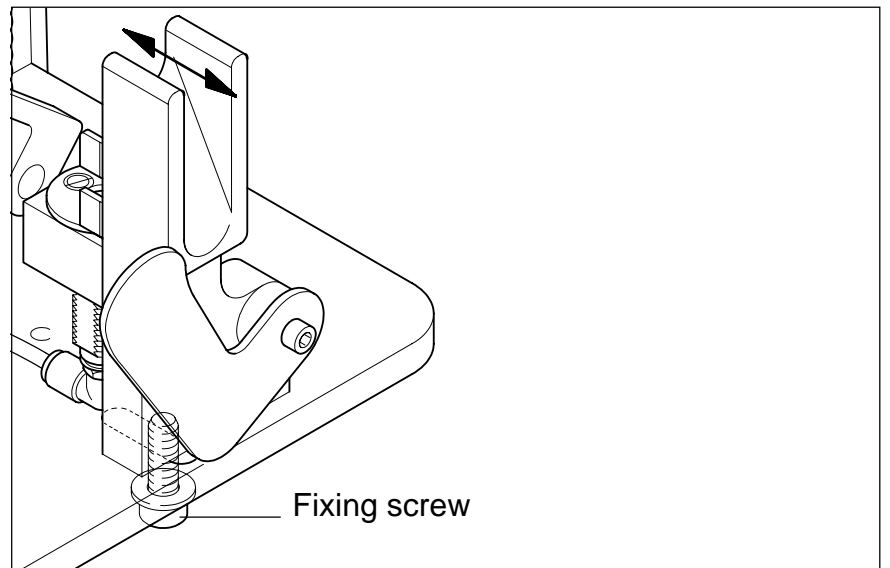
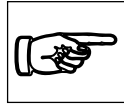


Fig. 18) *Shifting the scissors*



8. Maintenance




The bobbin winding machine has a low-maintenance drive. Meeting the required lubrication intervals is a pre-condition for uninterrupted operation and a long service life.



CAUTION

Danger of injuries during maintenance works.

Precautions

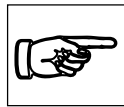
 All maintenance work on the bobbin winding machine may only be carried out at **stand still**.

 Before opening the housing always pull mains plug.

8.1 Cleaning

Once daily Remove the rubbed-off fibre and residue from the yarn from the winding heads and thread guide elements.

Once annually Clean the complete bobbin winding machine thoroughly.



Casati Carlo AG recommends using an extraction unit if winding yarns produces excessive rubbed off fibres.

8.2 Lubricating instructions

Once daily Lubricate ball-and-socket joint of eccentric.

Once annually Remove cover. After cleaning of drive, cam plate and worm apply grease using a brush (about 2 brushstrokes).

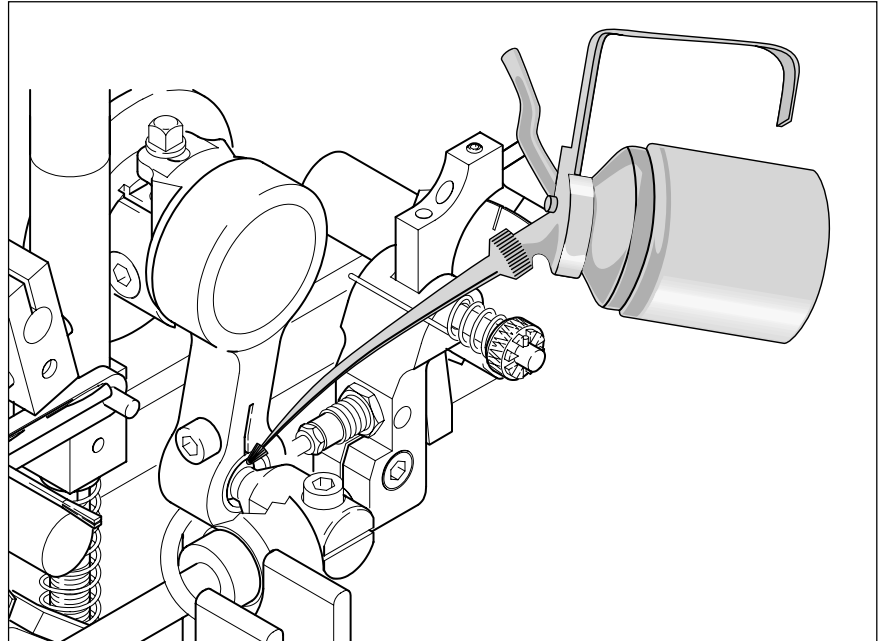
8.3 Specification for lubricants

Lubricating oil e.g. HLP10, branded hydraulic oil with a kinematic viscosity of 10 cSt (10 mm²/s)

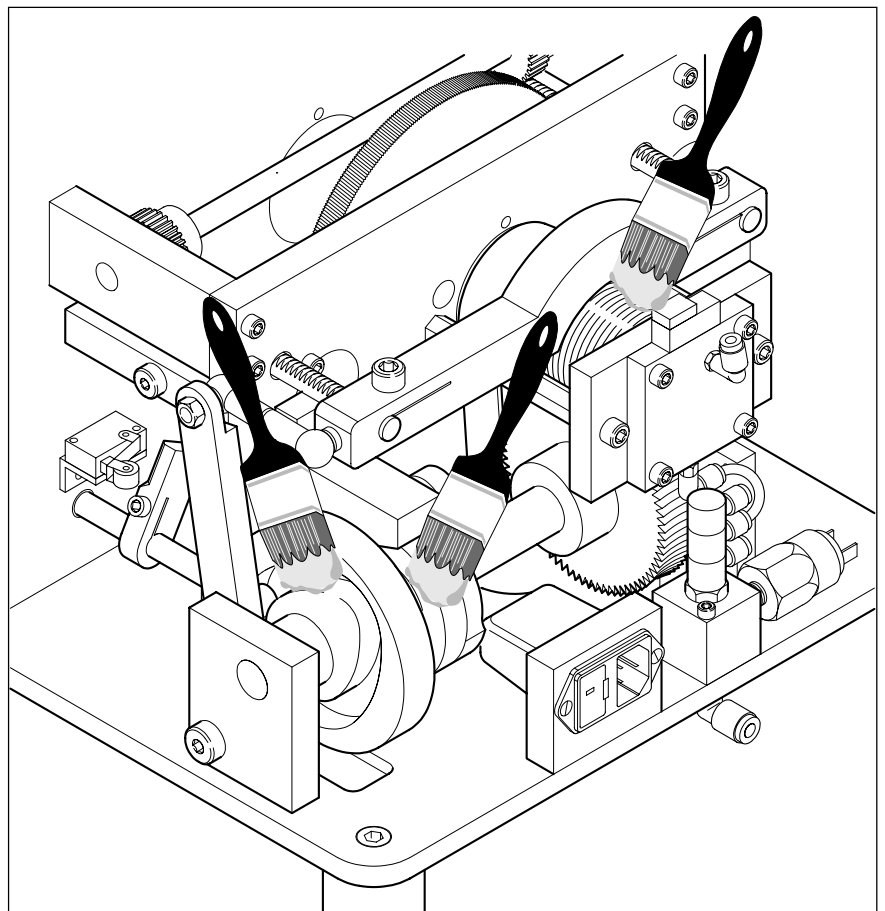
If oil of this quality is not available, mix in high-pressure additive (T4) to a good spindle oil.



Grease e.g. T4 white grease, highly adhesive grease with lithium soap base or a textile machine grease according to DIN 51 502.



Lubricating ball-and-socket joint



Lubricating cam plates and worm

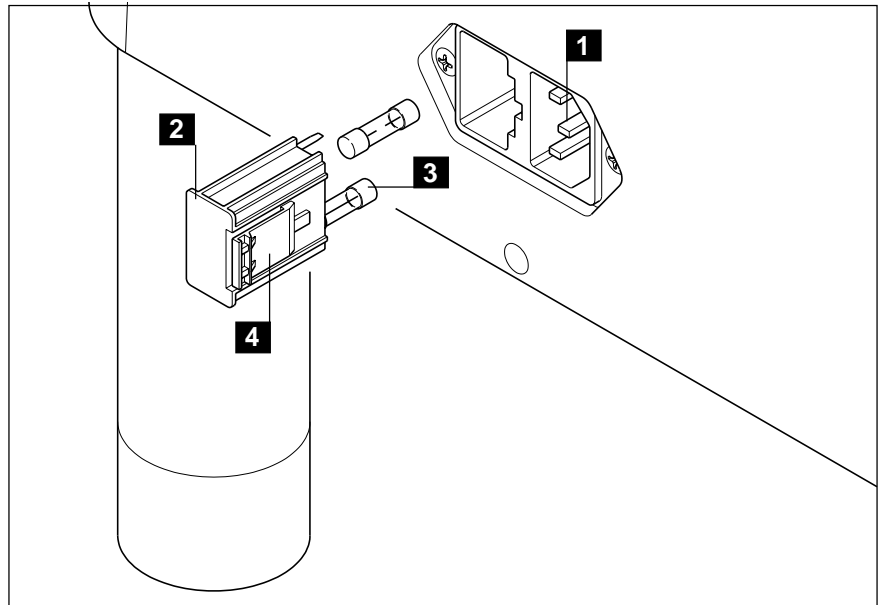


9. Repair



All repair work may only be carried out by qualified personnel in order to detect and avoid occurring dangers.

9.1 Replacing instrument fuse



Replacing instrument fuse

1 Built-in plug
2 Fuse insert

3 Spare fuse
4 Locking part

Procedure

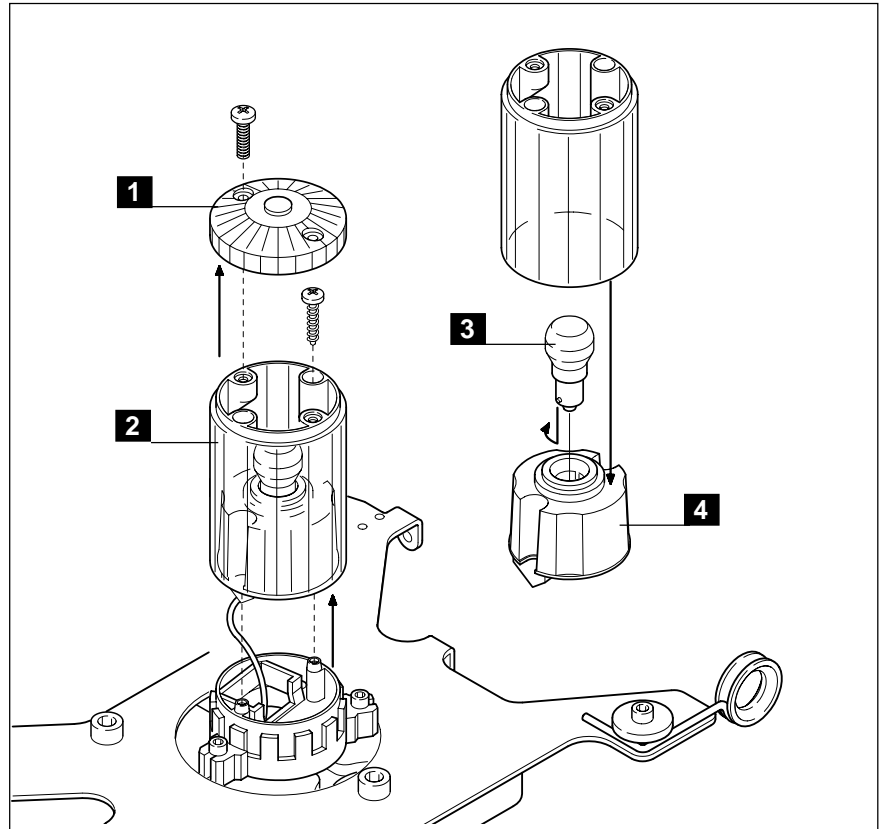
- 👁️ Unplug mains cable from built-in plug (1).
- 👁️ Unlock locking part (4) using a suitable screwdriver and pull out fuse insert (2).
- 👁️ Remove blown fuse and replace with spare fuse (3).
- 👁️ Insert fuse insert into built-in plug again and connect mains cable.

Permissible spare fuse for replacing fuse again:

Safety fuse with small breaking capacity: 4.0 A sluggish, dia. 5 x 20 mm.



9.2 Replacing LED



Replacing signal lamp

- | | |
|----------------|---------------|
| 1 Cover | 3 LED |
| 2 Lamp housing | 4 Lamp socket |

Procedure

- 👁️ Disconnect mains cable.
- 👁️ Undo two mounting screws and remove cover (1)
- 👁️ Undo two mounting screws in lamp housing (2).
- 👁️ Lift lamp housing carefully and pull out lamp socket (4).
- 👁️ Replace signal bulb (3):
 - carefully press bulb into lamp socket,
 - turn anti-clockwise,
 - pull out of lamp socket.
- 👁️ Insert a suitable LED into the lamp socket (see spare parts catalog).
- 👁️ Insert lamp socket into the housing and screw to base.
- 👁️ Install cover and connect mains cable again.



9.3 Reset frequency converter

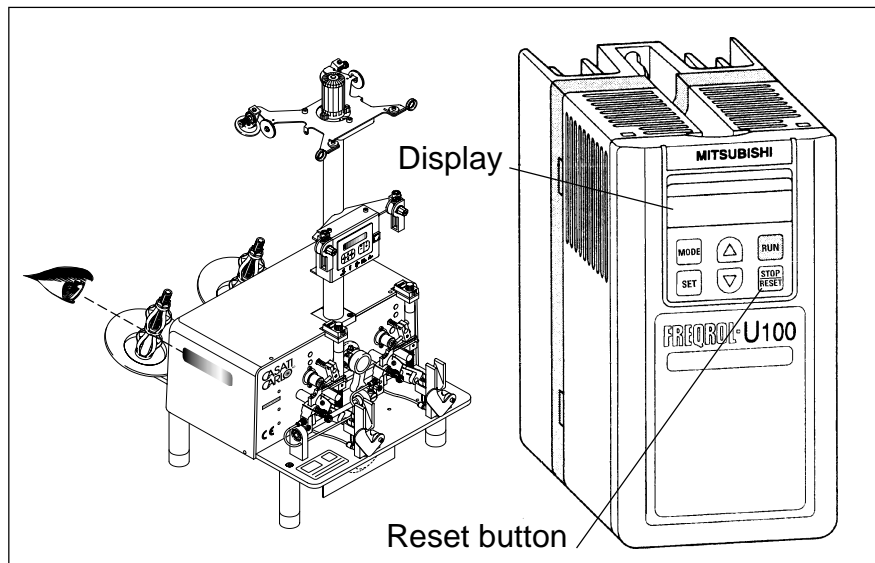


CAUTION

No parameter settings may be carried out on the frequency converter!

Damage to machine and warranty loss could be the result of altered parameters.

Determining error cause

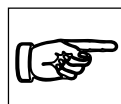


Checking frequency converter

In case of overload or breakdown the drive is stopped by the frequency converter. The malfunction is shown on the control unit and indicated by the signal lamp. Additionally, on the display of the frequency converter an error code appears. With the help of the following error code table the exact error cause can be determined.



Error code	Description	Remedy
OC 1 OC 2 OC 3	Overcurrent limit exceeded: - Drive braked or blocked. - Short- circuit. - Short circuit to earth with electric motor.	<ul style="list-style-type: none"> Remove cause of braking or blocking of drive. Check electric motor by specialist and replace, if necessary.
THM THT OLT	Electronic motor protection switch triggered: - Drive braked. - Faulty motor winding.	<ul style="list-style-type: none"> Remove cause of braking of drive. Check electric motor by specialist and replace, if necessary.
GF	Fault current against protective earth: - Short circuit to earth at output of frequency converter.	<ul style="list-style-type: none"> Check electric motor and motor cable for short circuit to earth.
UU	Mains voltage too low: - Permissible mains voltage range of 230 V \pm 10% exceeded.	<ul style="list-style-type: none"> Take suitable measures against voltage drops and undervoltages by qualified personnel.
OVT OHT PE	Failure of frequency converter.	<ul style="list-style-type: none"> Contact Casati Carlo AG.

**IMPORTANT**

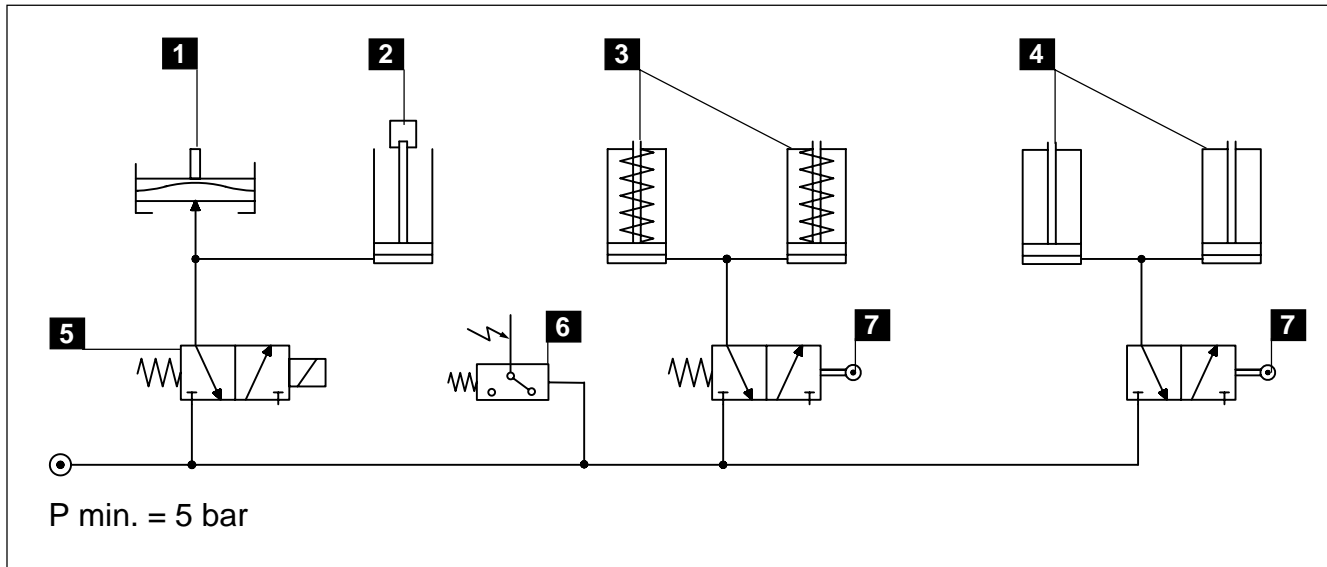
Always determine and remove error cause first before resetting the frequency converter.

When resetting the frequency converter:

- pull mains plug and disconnect bobbin winding machine min. 20 seconds from mains.
- or with housing open press key "STOP / RESET" on the frequency converter during standby operation.



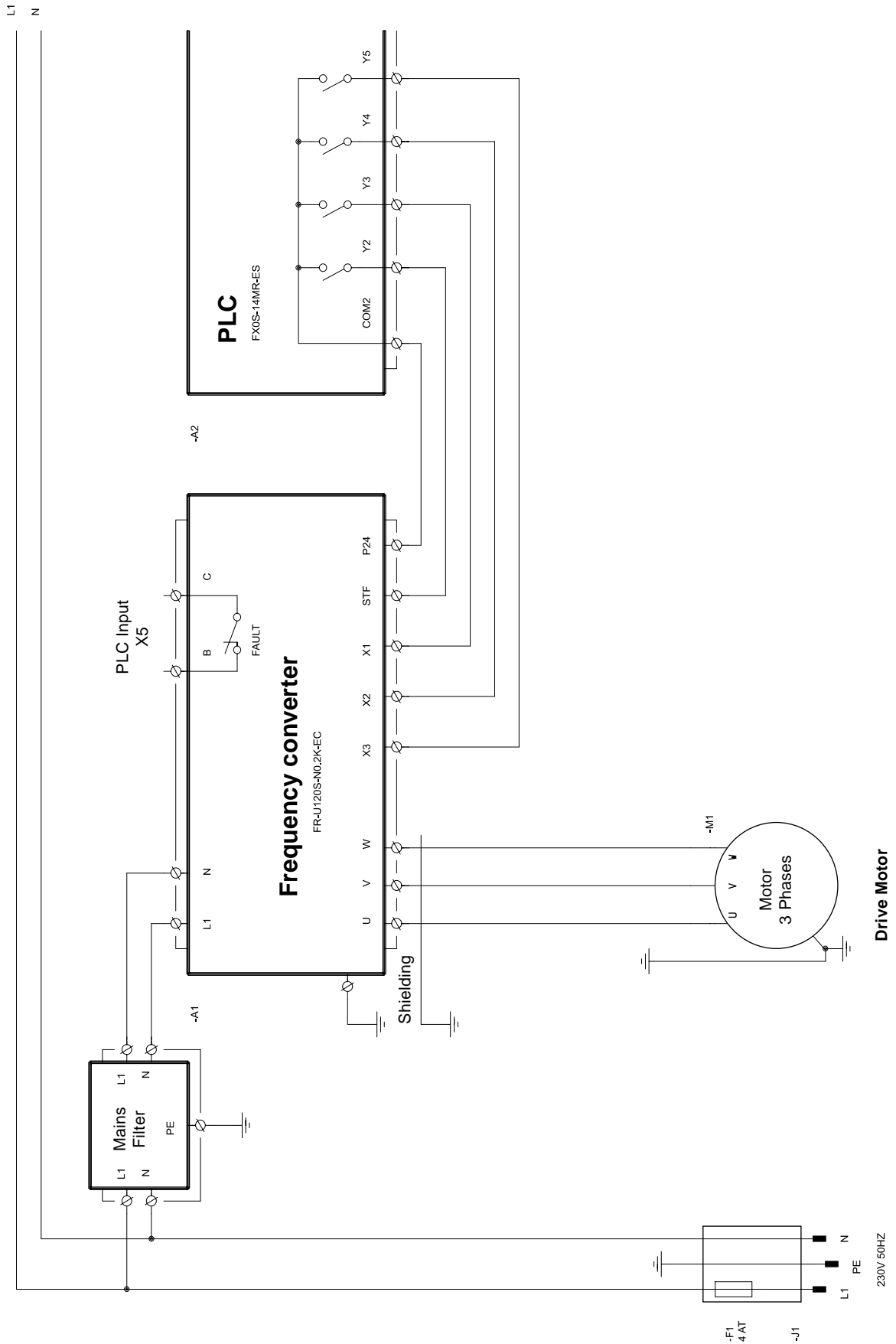
9.4 Pneumatic diagram



- 1 Pneumatically activated clutch
- 2 Pneumatic cylinder for lowering the bobbin tables
- 3 Pneumatic cylinder for activating the scissors
- 4 Pneumatic cylinder for lifting the thread guide
- 5 Solenoid valve
- 6 Manostat
- 7 Control valve with roll lever

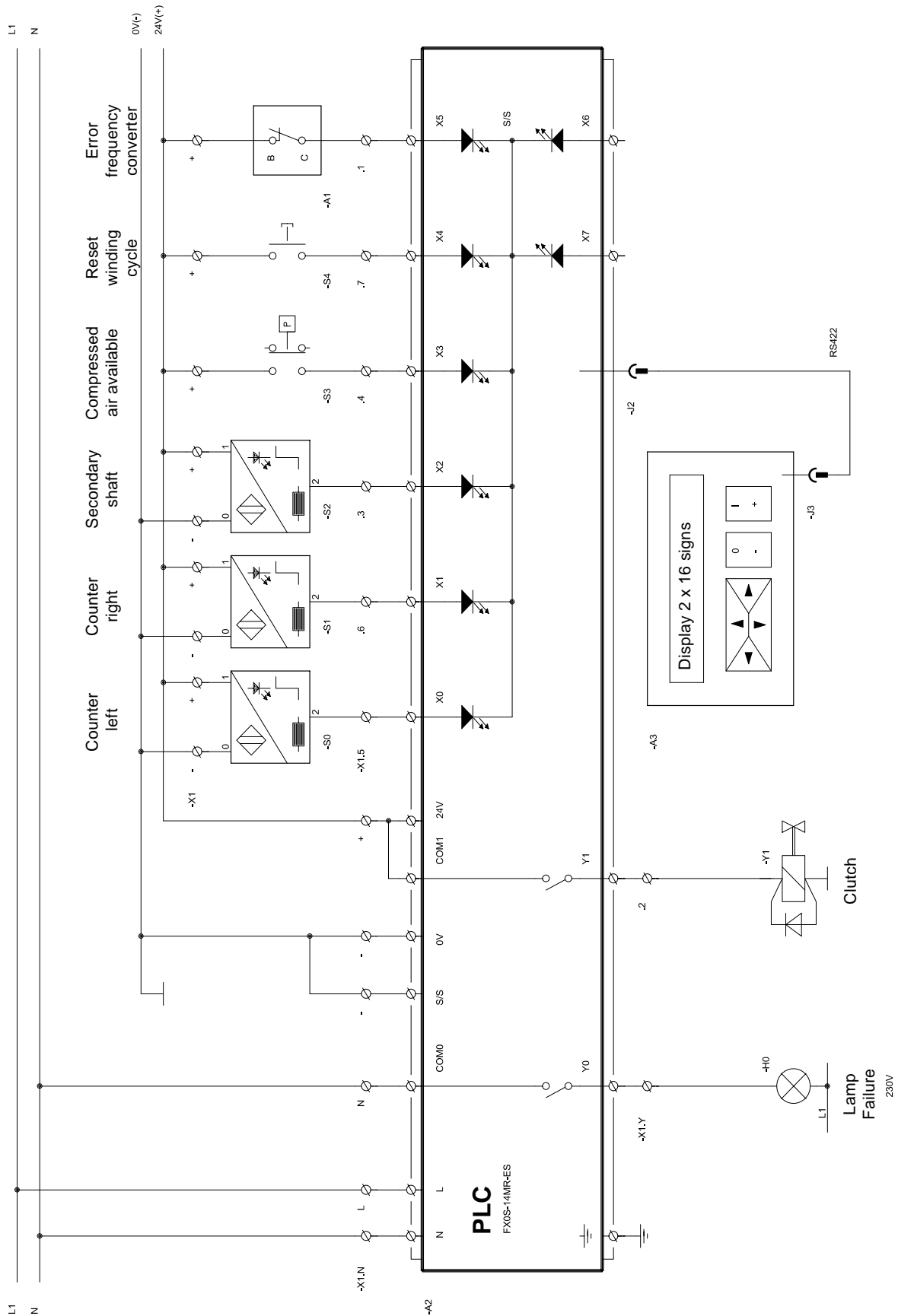


9.5 Wiring diagram





Wiring diagram (contd.)







10. Waste disposal

The bobbin winding machine can be disposed of without the need to take special precautions.

Please take account of the following points:

-  Observe all national regulations concerning waste disposal.
-  Deliver the bobbin winding machine to Casati Carlo AG for proper recycling or to a waste disposal company.



CAUTION

When taking the bobbin winding machine apart, injury can be caused by sprung machine parts (couplings etc.).





Machine data sheet SIGMA

Machine number

Mains connection

Single-phase, with protective conductor: L1, N, PE
Mains voltage: 230 VAC ($\pm 10\%$)
Mains frequency: 50 / 60 Hz
Installed load: 450 W
Motor output: 180 W

Compressed air connection

Operating pressure: 5 - 7 bar (min./max.)
Consumption: approx. 2 - 4 dm³/h

Control system

Software version: _____
User language: de en it es pt pl tr

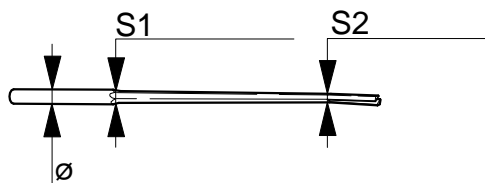
Speed levels

0	350 rpm	4	2000 rpm
1	1500 rpm	5	2150 rpm
2	1650 rpm	6	2300 rpm
3	1850 rpm	7	2450 rpm

Direction of rot. of eccentric

Left Right

Spindle



Cross section: ●
 ■
 ◆

Art. No. _____

Thread guides

Casati Carlo Ceramic

Bobbin tables

Roller Slide

Spring of bobbin tables

Normal Light

Accessories fitted

Oiling device Extraction unit Worktable
 _____ _____ _____

Modifications / Remarks

Basic setting

Refer to extra sheet "Machine settings"

Au, _____	
Date _____	Signature _____





Machine settings SIGMA

Machine No.				
Shuttle No.				
Dimensions of bobbin L x \varnothing (mm)				
Material				
Weight (g)				
Thread length (m)				
Speed range (1 - 7)				
Length tolerance (m)				
Eccentric stroke (mm)				
Setting of table left				
Setting of table right				
Height of thread guide, left (mm)				
Height of thread guide, right (mm)				
Spring setting left (mm)				
Spring setting right (mm)				
Pretension of left inlet brake (cN)				
Pretension of right inlet brake (cN)				
Compensator setting left (1 - 9)				
Compensator setting right (1 - 9)				





Machine settings SIGMA

Machine No.				
Shuttle No.				
Dimensions of bobbin L x \varnothing (mm)				
Material				
Weight (g)				
Thread length (m)				
Speed range (1 - 7)				
Length tolerance (m)				
Eccentric stroke (mm)				
Setting of table left				
Setting of table right				
Height of thread guide, left (mm)				
Height of thread guide, right (mm)				
Spring setting left (mm)				
Spring setting right (mm)				
Pretension of left inlet brake (cN)				
Pretension of right inlet brake (cN)				
Compensator setting left (1 - 9)				
Compensator setting right (1 - 9)				





Machine settings SIGMA

Machine No.				
Shuttle No.				
Dimensions of bobbin L x \varnothing (mm)				
Material				
Weight (g)				
Thread length (m)				
Speed range (1 - 7)				
Length tolerance (m)				
Eccentric stroke (mm)				
Setting of table left				
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Height of thread guide, left (mm)				
Height of thread guide, right (mm)				
Spring setting left (mm)				
Spring setting right (mm)				
Pretension of left inlet brake (cN)				
Pretension of right inlet brake (cN)				
Compensator setting left (1 - 9)				
Compensator setting right (1 - 9)				





Machine settings SIGMA

Machine No.				
Shuttle No.				
Dimensions of bobbin L x \varnothing (mm)				
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Thread length (m)				
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Pretension of left inlet brake (cN)				
Pretension of right inlet brake (cN)				
Compensator setting left (1 - 9)				
Compensator setting right (1 - 9)				





Machine settings SIGMA

Machine No.				
Shuttle No.				
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Spring setting left (mm)				
Spring setting right (mm)				
Pretension of left inlet brake (cN)				
Pretension of right inlet brake (cN)				
Compensator setting left (1 - 9)				
Compensator setting right (1 - 9)				





Fax: +41 / 71 744 56 24



EU Declaration of conformity



CASATI CARLO AG
Maschinenfabrik
Industriestrasse 5
CH-8434 Au / SG
Switzerland

We hereby declare that for the bobbin winding machine(s) with the machine no.

all essential safety requirements of the following EU directives apply:

- 98/37/EWG** **Directive ,Machines‘, appendix II A**
- 89/336/EWG** **EMC directive**
- 73/23/EWG** **Low voltage directive**

Standards applied for assessing the bobbin winding machine:

- EN 292-1/2** **Safety of machines, equipment and plants**
- EN ISO 11111** **Safety requirements for textile machinery**
- EN 50 081-2** **EMC, generic emission standard / industrial environment**
- EN 50 082-2** **EMC, generic immunity standard / industrial environment**
- EN 60 204-1** **Electrical equipment of machines**

Au, _____

Place and date of issue

Description of signatory

Signature

