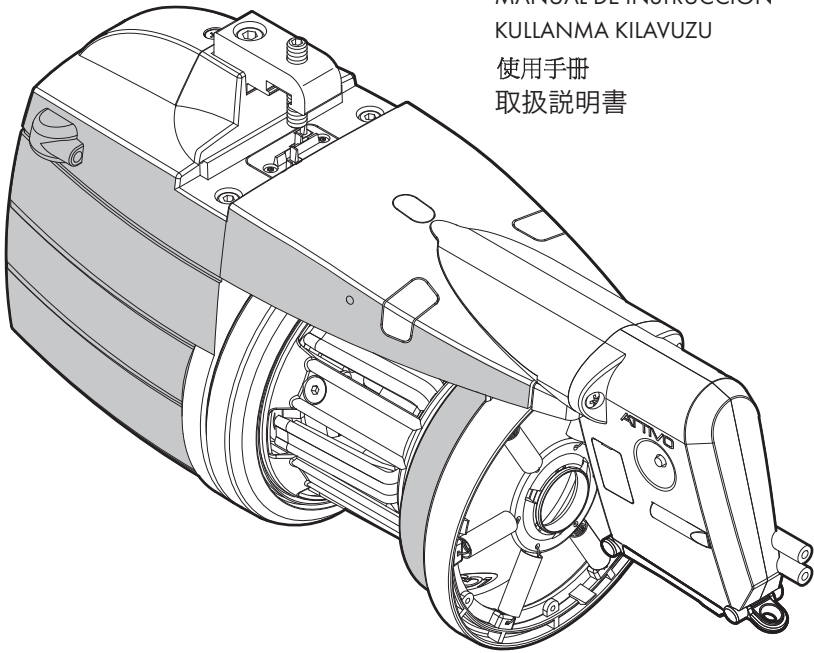




ECOPOWER 2

MANUALE DI ISTRUZIONE
INSTRUCTION MANUAL
NOTICE D'INSTRUCTION
BEDIENUNGSANLEITUNG
MANUAL DE INSTRUCCION
KULLANMA KILAVUZU
使用手冊
取扱説明書



ALIMENTATORE DI FILO A SPIRE SEPARATE
YARN ACCUMULATOR WITH SEPARATE COILS
DISPOSITIF D'ALIMENTATION DE FIL À BOBINES SÉPARÉES
SCHUSSFADENGEBER MIT GETRENNTEN WINDUNGEN
ALIMENTADOR DE HILO DE ESPIRAL SEPARADOS
İPLİK ARASI MESAFELİ İPLİK BESLEYİCİSİ
分离线圈导纱器
セパレート型コイル式 ヤーンアキュムレータ



Scope of supply: Design, manufacture and after sales service of yarn feeders, measuring winders, stands, creels and oil systems for textile machinery.

TRADUZIONI DELLE ISTRUZIONI ORIGINALI.
TRANSLATION OF THE ORIGINAL INSTRUCTIONS.
TRADUCTIONS DES INSTRUCTIONS D'ORIGINE.
ÜBERSETZUNG DER ORIGINALANLEITUNGEN.
TRADUCCIÓN DE LAS INSTRUCCIONES ORIGINALES.
ORJINAL TALİMATLARIN TERCÜMESİ.
原始使用说明的翻译。
オリジナル命令を翻訳。

L.G.L. Electronics is gratified by your choice
and thanks you for the preference

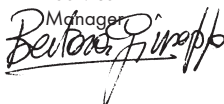
ECO^{POWER 2}

yarn feeder

INSTRUCTION MANUAL

ISSUED BY:

Service
Manager



Date: 01/04/2023

APPROVED BY:

Technical
Manager



Date: 01/04/2023

WARNINGS



- 1) Power down the yarn feeder's power supply box mains switch before beginning any power supply hook-up, maintenance or part replacement operations.



- 2) During standard machine operation, the yarn feeder may suddenly start up without prior warning.

CAUTION: the orange lights do not signal that the yarn feeder is ON, but that the feeder has gone into an alarm mode. Therefore, during standard operation they should be OFF.

- 3) Before yarn feeder start-up, inspect it physically for damage (check the flywheel/the eyelet/all moving parts).

Wear Personal Protective Equipment (gloves, shoes) during transportation and installation of the feeders and the power supply kit, if any, to avoid crushing hazards in the event of a fall.

- 4) Strictly avoid touching any moving part during feeder operation.
Do not wear clothes and clothing accessories that are likely to get caught in the moving parts. Gather up long hair.

- 5) Lubricants may be used to make the yarn slide more easily. The user must refer to the Material Safety Data Sheet of the products used. Keep the feeder clean.



- 6) Only use the original L.G.L. Electronics spare parts and accessories.
- 7) Any repairs to the feeder's electronic parts must be performed by appropriately qualified personnel, regularly authorised by L.G.L. Electronics accordingly.
- 8) Yarn feeders that are moved from warehouse storage into a warmer knitting mill environment may develop condensation; please wait until they are completely dry before connecting them up. Failure to do so may damage the electronic components.
- 9) Never pick the yarn feeder up by its yarn spool body or by its tensioning unit.

WARNINGS

ADVICE TO ALWAYS KEEP THE FEEDER IN PERFECT WORKING ORDER AND EXTEND ITS SERVICE LIFE.

For an always satisfying performance of the yarn feeder over the years, we deem it advisable to provide you with some simple tricks:

- 1. At the time of installation, passing from the store to the warm knitting environment, Condensation may form on a yarn feeder that has been stored in cold places when this is brought into a warm area.
Wait until this is completely dry before connecting it, otherwise the electronic components could be damaged.*
- 2. Water and dampness may harm the electronic parts of the feeder. Operating the yarn feeder for long time periods in extremely damp environments (dampness exceeding 80%) or using water-impregnated threads might quickly compromise the electronic cards. Moreover, the feeder shall not be cleaned with water or similar substances.*
- 3. Machines working in environments featuring a lot of dust require increased maintenance. By prevent the knitting environment clean, you avoid residual dirt and dust from compromising the performance of the machine by stressing the moving parts. The latter are protected, but the accumulation of dust might result in a more difficult movement and, as consequence, in early wear-and-tear.*
- 4. We suggest storing feeders that are not used for long time periods in the special polystyrene boxes, which ensure the best storage.*
- 5. When the yarn feeder is being loaded, use the special heddle tool. Do not use other tools, especially if made from metal, as the inlet sensor might be damaged, along with any outlet brakes.*

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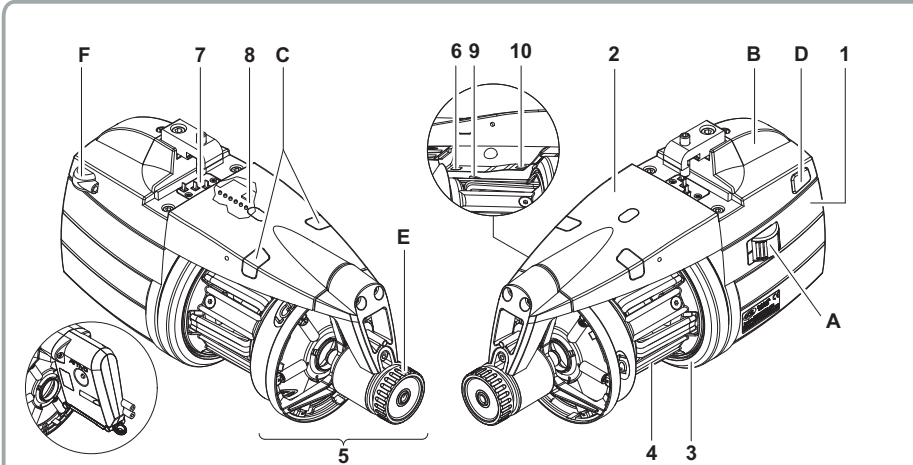
| | | |
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1 - GENERAL FEATURES

1.1 MAIN PARTS – CONTROL AND ADJUSTMENT POINTS

Main Parts:

- | | |
|---------------------------|------------------------------------|
| 1 • MOTOR | 6 • OPTICAL OUTPUT SENSOR |
| 2 • TOP PANEL | 7 • POWER CABLE CONNECTION |
| 3 • FLYWHEEL | 8 • MAIN ELECTRONIC CONTROL BOARD |
| 4 • YARN SPOOL BODY | 9 • WINDING RESERVE CONTROL FEELER |
| 5 • OUTPUT TENSIONER UNIT | 10 • INPUT FEELER |



For further details concerning the **ATTIVO** electronic tensions, please go to **chapter 6**

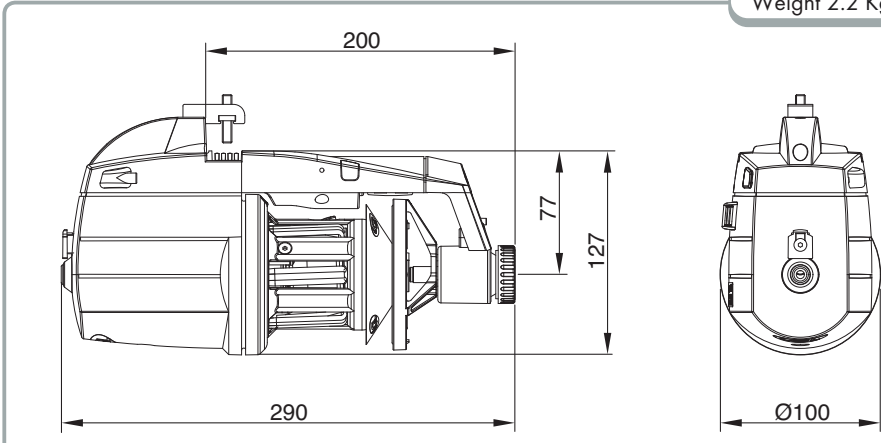
| CONTROLS / ADJUSTMENTS | | FUNCTION |
|------------------------|----------------------------------|--|
| A | 0 – I SWITCH | <ul style="list-style-type: none"> Switches the yarn feeder ON and OFF. |
| B | SERIAL COMMUNICATION PORT | <ul style="list-style-type: none"> Enables Pocket and PC interfacing. |
| C | SIGNAL LAMPS | <ul style="list-style-type: none"> If yarn feeder is turned on and there are no malfunctions, they will not light up. They will light up if any malfunction arises. (<i>consult paragraph "Trouble shooting"</i>). |
| D | DIP SWITCH | <ul style="list-style-type: none"> Enables adjustment of the optical sensor's sensitivity range, reverse the direction of rotation, self-calibrate magnetic sensors and perform the termination of the serial bus. |
| E | ADJUSTING TWIST-KNOB | <ul style="list-style-type: none"> Enable adjustment of the outbound yarn tensioning. |
| F | THREE-WAY CONNECTOR | <ul style="list-style-type: none"> Enables connection of an output yarn feeler. |

1 - GENERAL FEATURES

1.2 OVERALL DIMENSIONS

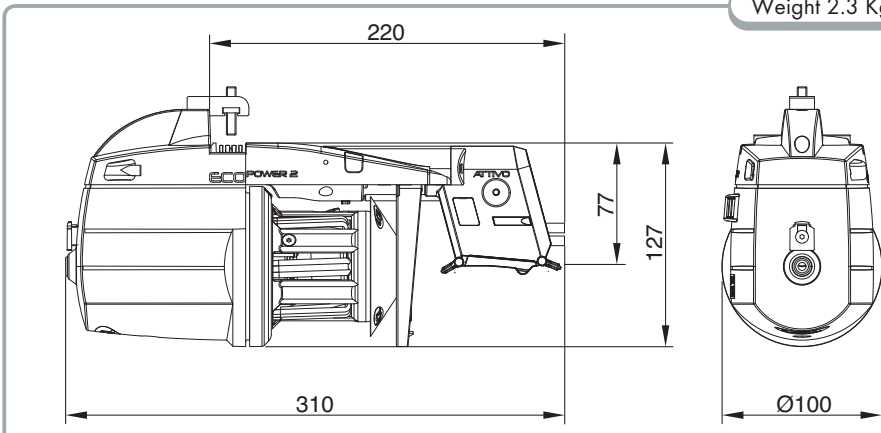
ECOPOWER2 featuring the TWM tension modulator

Weight 2.2 Kg



ECOPOWER2 with ATTIVO electronic tensioner

Weight 2.3 Kg



1 - GENERAL FEATURES

1.3 INTENDED USE – TECHNICAL AND OPERATIONAL FEATURES

Intended Use:

The ECOPOWER2 is a yarn feeder featuring **separate coils**, suitable for all types of knitting machines or for textile machines requiring yarn feed-in with constant tension.

Optimised operation is provided with yarn counts ranging from **800 den** (the thicker yarn counts) down to **5 den** (fine yarn counts).

IMPROPER uses

Improper uses are all those uses which are not expressly indicated among the design uses, namely:

- Working of yarns other than those specified
- Power supply of the machine not matching the specified value
- Use of the machine in an explosive atmosphere.

Operational features:

- Automatic speed adjustment designed to cover the machine's yarn quantity requirements.
- Spool body winding reserve control by means of a magnetic feeler system.
- Yarn feeder and machine stop function if no yarn is detected at the feeder's yarn input (broken yarn or empty yarn bobbin).
- Kit KLS:
Feeder and machine stop function when no yarn is found on feeder outlet without using mechanical sensors (yarn broken or out of the needles).
- The option of being able to fit on various tensioning devices based on the type of yarn actually being used, at both the feeder's inlet and outlet.
- Either vertical set-up or horizontal set-up assembly option, selectable based on requirements.
- Real-time detection and display function of the yarn consumption related to each machine feed
- **ATTIVO** electronic tensioner (optional). The operator sets the desired output tension, and the system will maintain it, to avoid all tension changes depending on the yarn, the bobbin and the like issues.

Technical specifications:

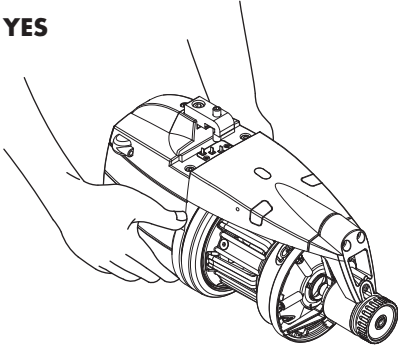
- Power supply by means of a direct connection with the machine, or through a power supply box that is supplied separately by L.G.L. Electronics.
Power supply voltage data: **V = 42-48 VAC three-phase Hz = 50/60 (AC version)**
V = 57 VDC (DC version)
- Automatic yarn input speed control provided up to a maximum of **1000 m/min**.
- Coil separation feature fixed at **1 mm (STD); 2 mm (Z1)**.
- Permanent magnet synchronous motor.
- Motor data:
Maximum power: **35 W**
- Equivalent continuous A-weighted sound pressure level at maximum speed: **<70 dB (A)**
- Operation and storage conditions:
 - Room temperature: from **+10 to +40 °C**
 - Maximum humidity: **80%**

1 - GENERAL FEATURES

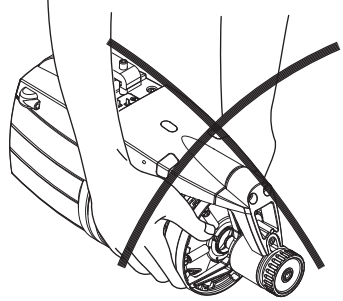
1.4 HANDLING AND STORAGE INSTRUCTIONS

Never pick the yarn feeder up by its yarn spool body, by its top panel or by its tensioning unit.

YES



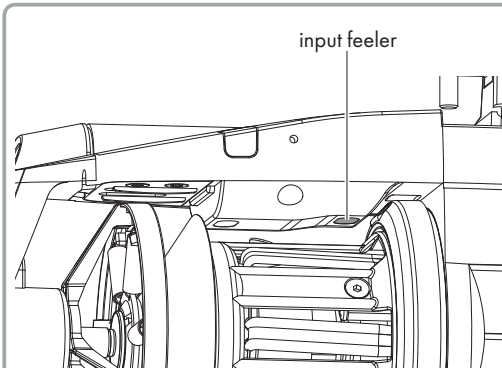
NO



The yarn feeder is supplied in an appropriate polystyrene casing; please store the casing for use during any future handling.

1.5 INPUT FEELER

The yarn feeder features an input feeler that provides the following function:



• **“Machine stop” function:**

this function stops both the feeder and the machine if no yarn is detected at feeder input (broken yarn or empty yarn spool).

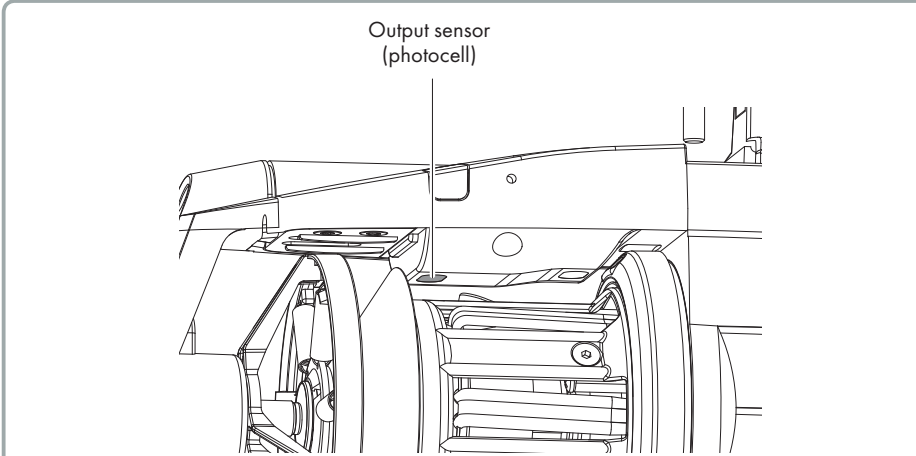
CAUTION: the machine will not stop if the feeder comes to a halt.

The machine stop signal is operative only if the signal lamps are ON.

1 - GENERAL FEATURES

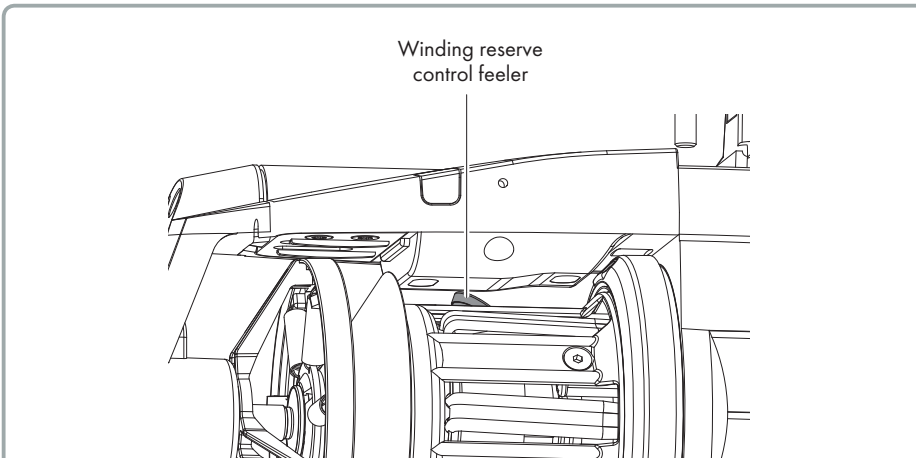
1.6 OPTICAL OUTPUT SENSOR

The optical sensor featured by the yarn feeder provides automatic speed adjustment based on the quantity of yarn needed by the machine. For very fine yarn count processing (lower than 40 den), the sensor requires DIP SWITCH settings (paragraph 2.4 refers).



1.7 YARN SPOOL BODY WINDING RESERVE CONTROL FEELER

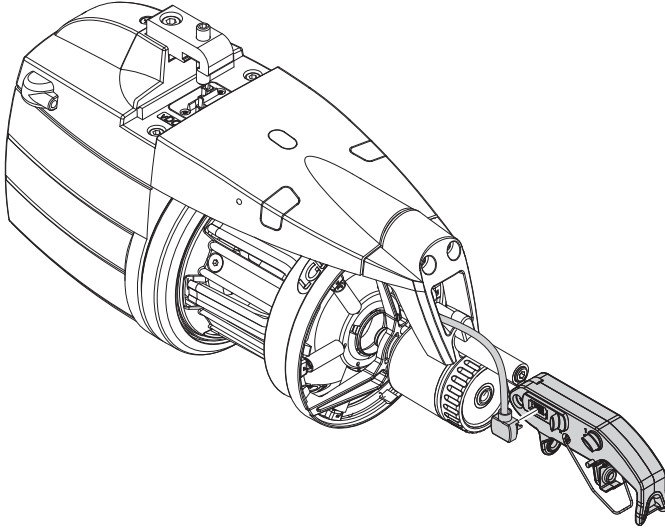
The magnetic sensor that the yarn feeder is provided with has the function of monitoring the yarn winding reserve on the spool body.



1 - GENERAL FEATURES

1.8 YARN OUTPUT DETECTION FEELER

The assembly of this detection feeler onto the feeder output, enables the machine to receive a stop signal that is relayed by the feeder when it detects output yarn snaps/breaks.



2 - INSTALLATION AND START-UP

N.B.: Yarn feeders that are moved from warehouse storage into a warmer knitting mill environment may develop condensation; please wait until they are completely dry before connecting them up.

Failure to do so may damage the electronic components.

2.1 YARN FEEDER INSTALLATION AND START-UP (AC VERSION)

For installation of the yarn feeder onto the machine, proceed as follows:

VERTICAL SET-UP VERSION

Fix the feeder onto the appropriate support plate (**F**) and fit in the power supply flat cable (**G**) as well; tighten in grub screw (**H**) until the flat cable is punctured.

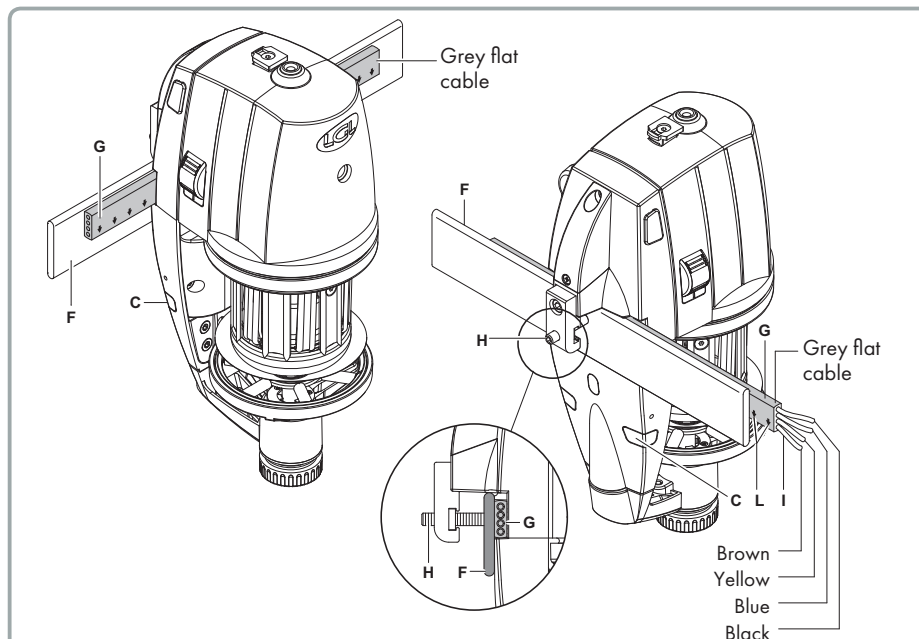
N.B.: The support ring shall be sized as follows:

- Height not less than 25mm
- Max thickness 10 mm

IMPORTANT: To avoid damaging the electronic components, the installation sequence illustrated in the figures below must absolutely be complied with exactly.

The brown cable (**I**) must be kept facing the signal lamps (**C**) (if the flat cable is supplied by LGL, the brown cable (**I**) can be identified by the arrows (**L**) printed on the flat cable).

N.B.: Make sure that the support plate the yarn feeder is fixed onto is provided with an earth connection, the same goes for the 48V AC threephase power supply transformer star-connection.

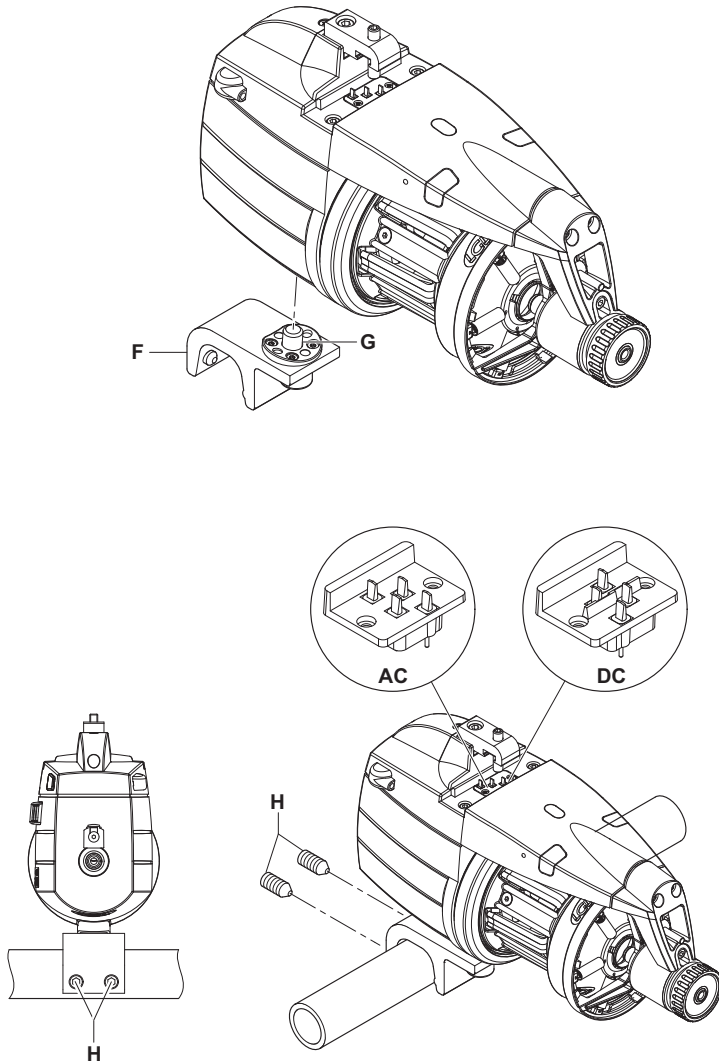


2 - INSTALLATION AND START-UP

HORIZONTAL SET-UP VERSION

For installation of the yarn feeder onto the machine, proceed as follows:

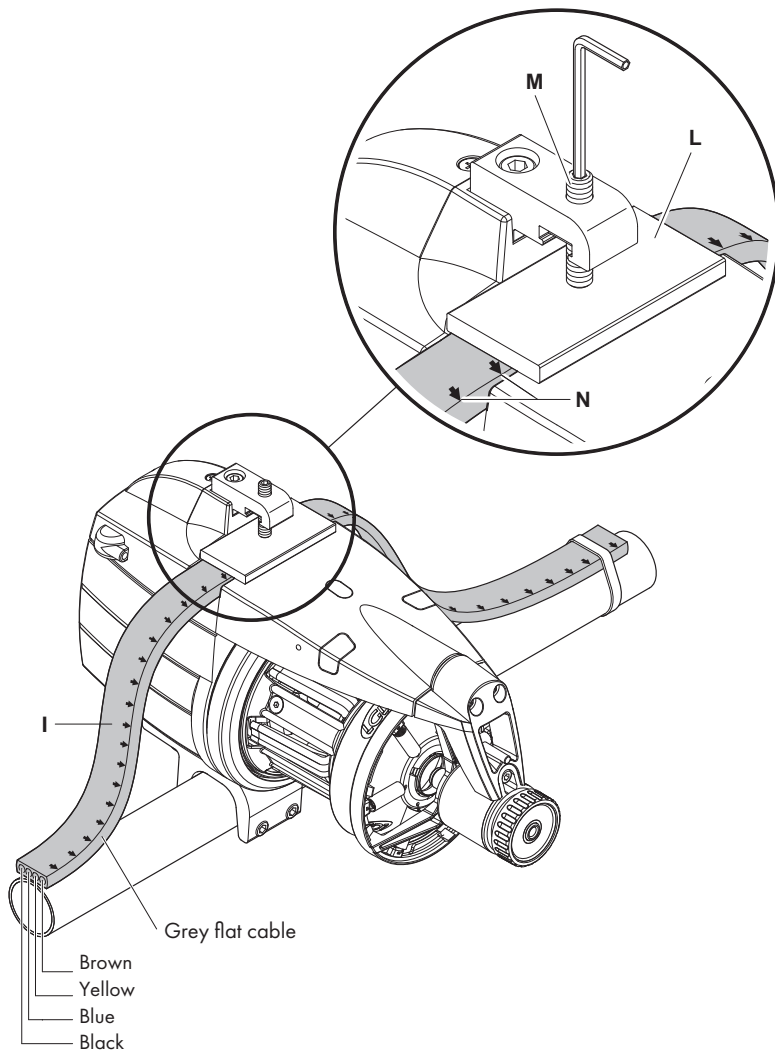
- Fasten the clamp (**F**) with the screw (**G**) to the feeder; then block the clamp on the machine pipe using the grub screw (**H**) that is found in the clamp, placing the feeder with the proper inclination to operate.



2 - INSTALLATION AND START-UP

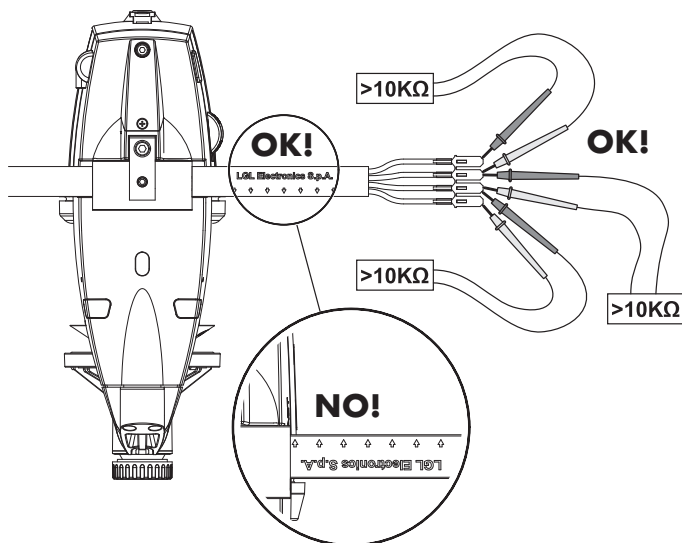
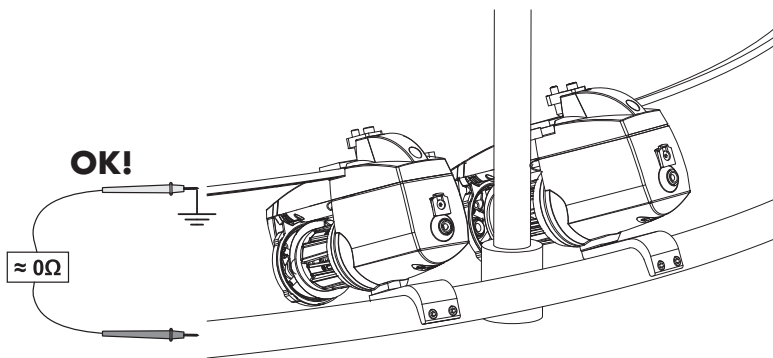
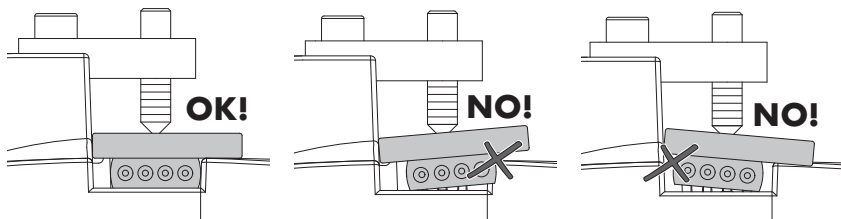
- Connect up the feeders to the flat cable (**I**) by means of the appropriate locking plate (**L**) then tighten it in with screw (**M**) located on the housing.

CAUTION: when connecting the flat cable, keep to the printed reference marks showing the exact fixing position (the arrows (**N**) must point towards the front end of the feeder).

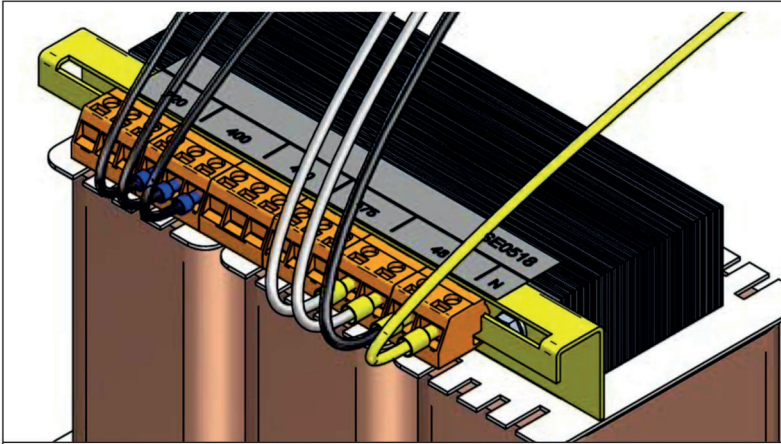


2 - INSTALLATION AND START-UP

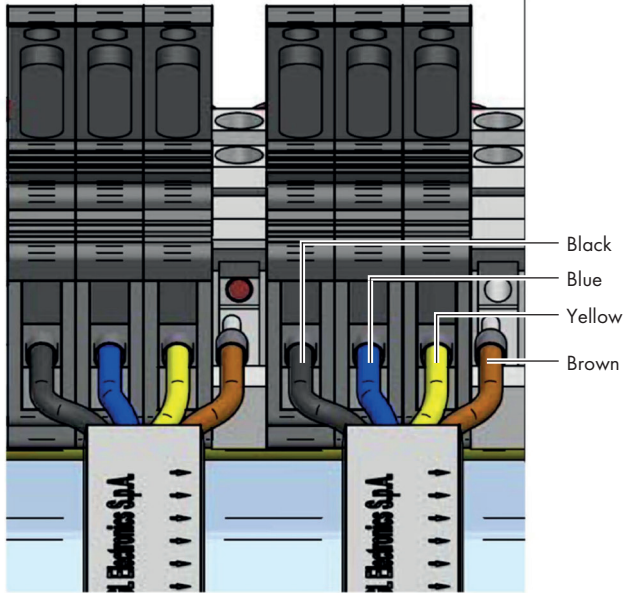
2.1.1 To be checked before switching power on (AC version)



2 - INSTALLATION AND START-UP

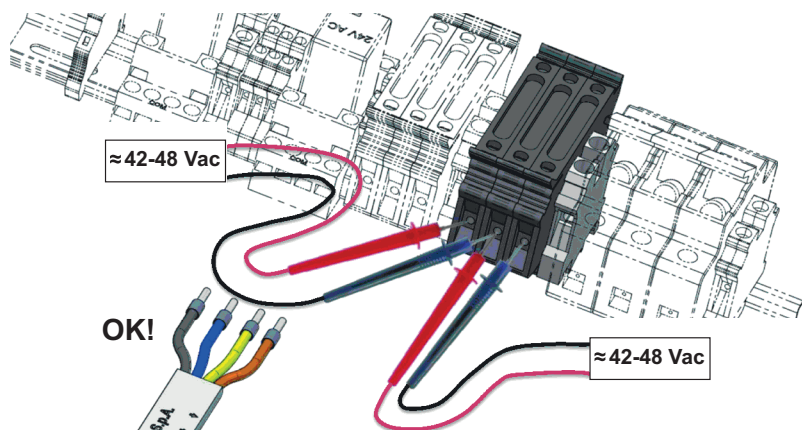


Be sure that the transformer is connected to the correct primary voltage



Be sure that flat cables are connected to the transformer with the correct color sequence

2 - INSTALLATION AND START-UP



2 - INSTALLATION AND START-UP

2.2 YARN FEEDER INSTALLATION AND START-UP (DC VERSION)

For installation of the yarn feeder onto the machine, proceed as follows:

VERTICAL SET-UP VERSION

Fix the feeder onto the appropriate support plate (F) and fit in the power supply flat cable (G) as well; tighten in grub screw (H) until the flat cable is punctured.

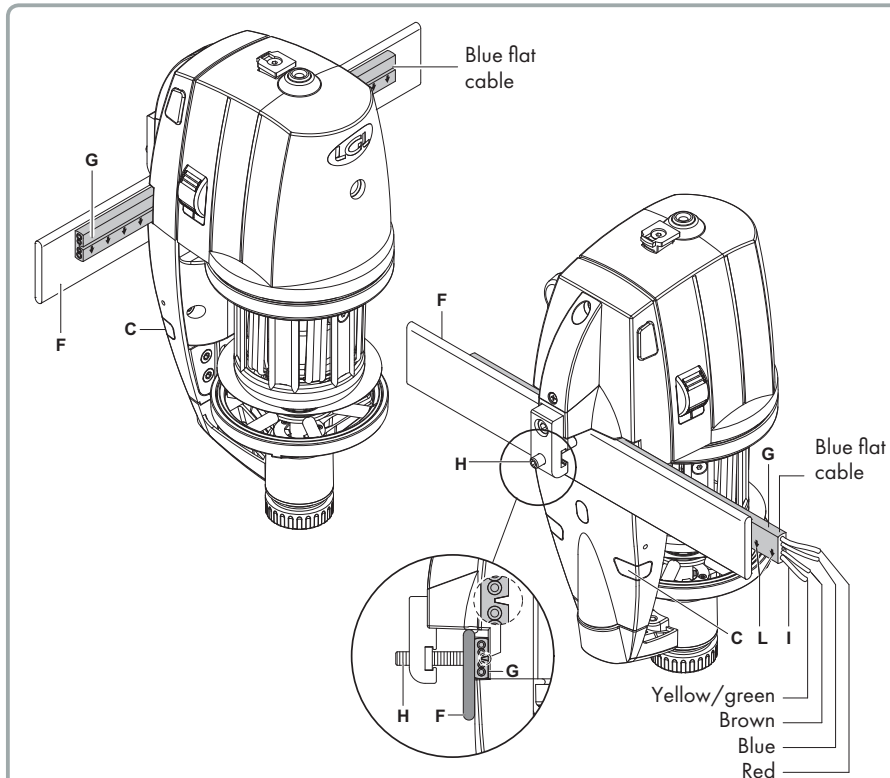
N.B.: The support ring shall be sized as follows:

- Height not less than 25mm
- Max thickness 10 mm

IMPORTANT: To avoid damaging the electronic components, the installation sequence illustrated in the figures below must absolutely be complied with exactly.

The yellow/green cable (I) must be kept facing the signal lamps (C) (if the flat cable is supplied by LGL, the yellow/green cable (I) can be identified by the arrows (L) printed on the flat cable).

N.B.: Ensure that the stand onto which the yarn feeder is fastened is electrically grounded.

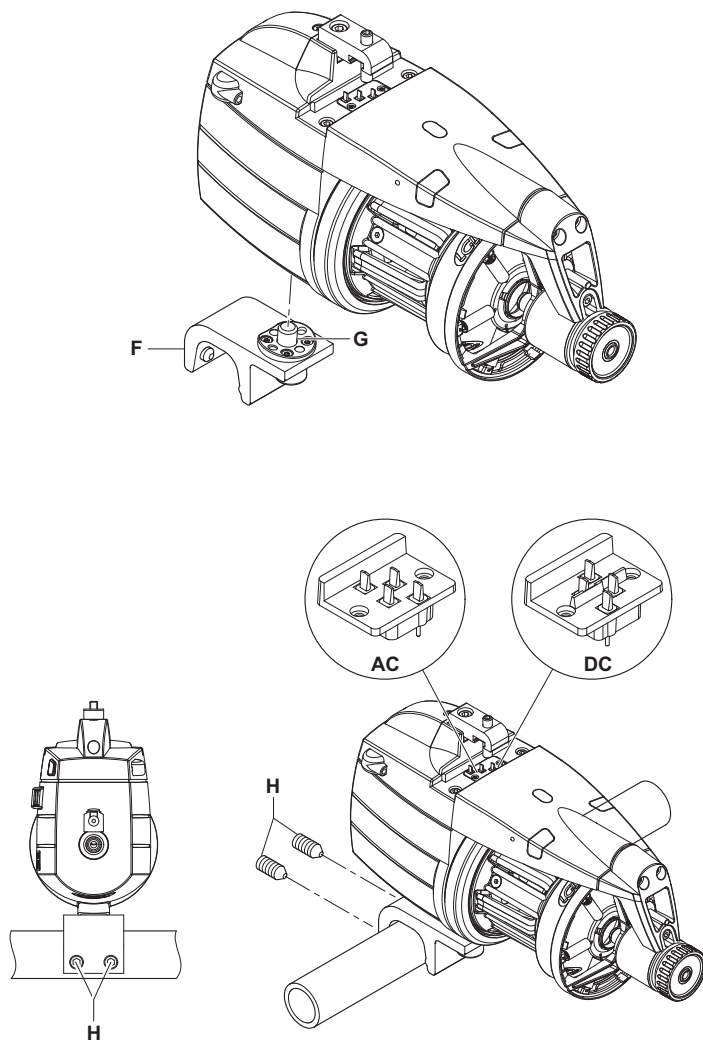


2 - INSTALLATION AND START-UP

HORIZONTAL SET-UP VERSION

For installation of the yarn feeder onto the machine, proceed as follows:

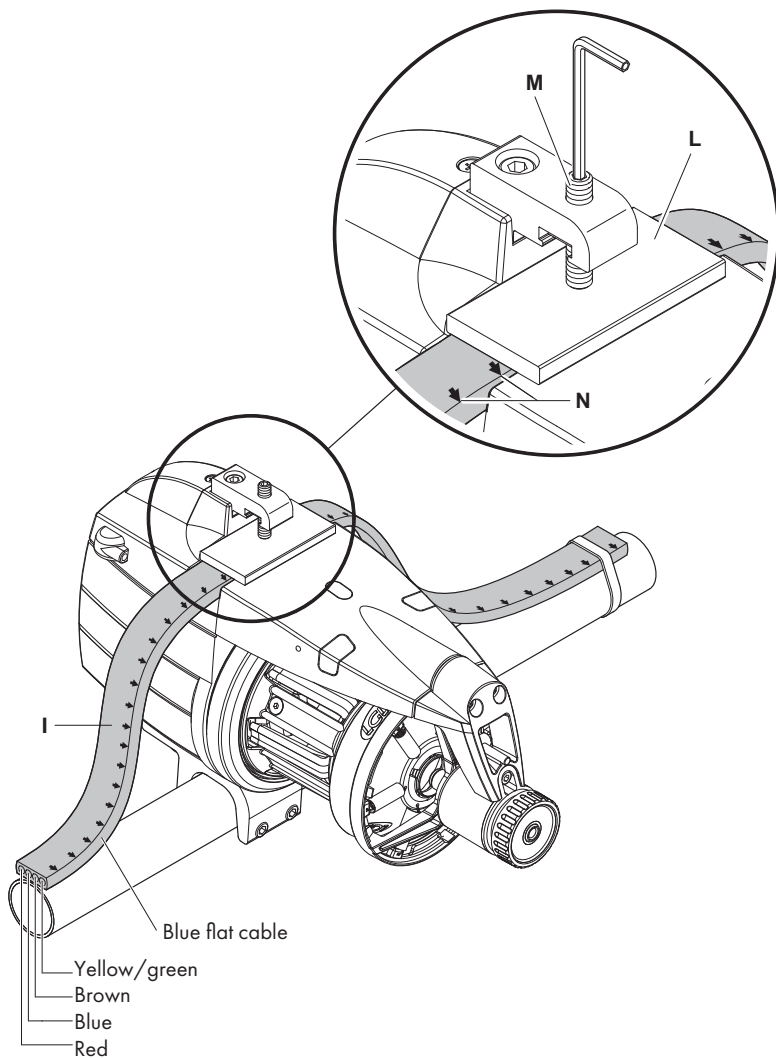
- Fasten the clamp (**F**) with the screw (**G**) to the feeder; then block the clamp on the machine pipe using the grub screw (**H**) that is found in the clamp, placing the feeder with the proper inclination to operate.



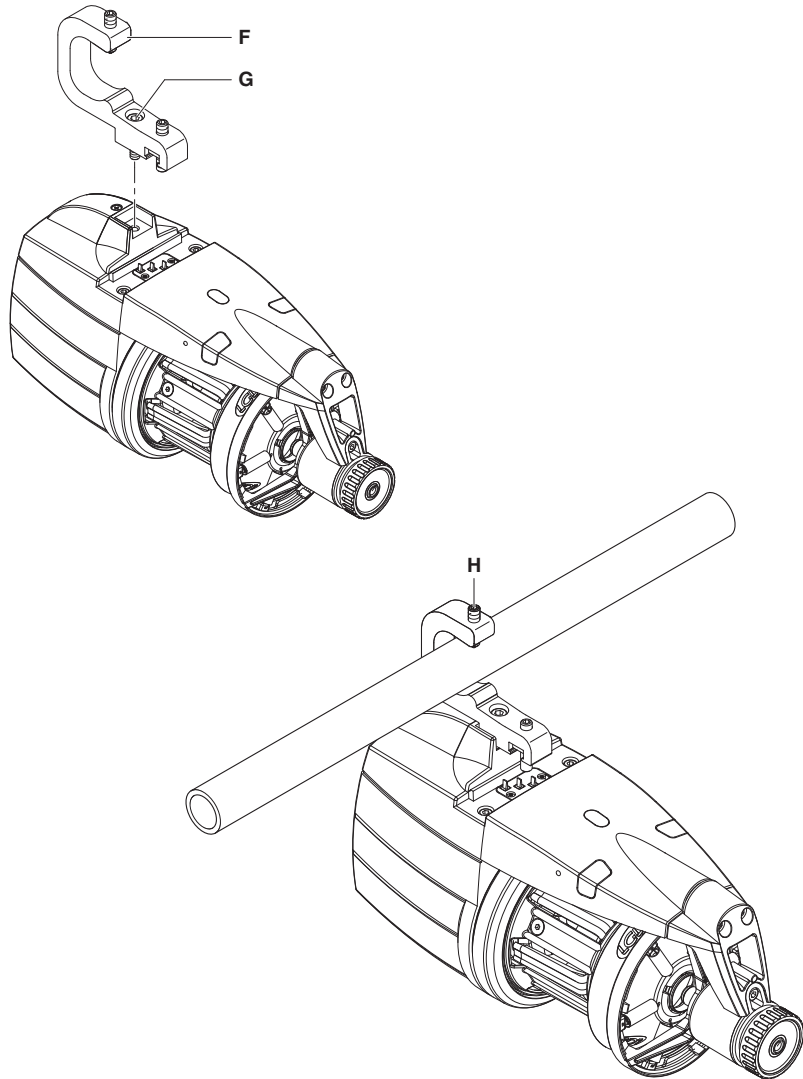
2 - INSTALLATION AND START-UP

- Connect up the feeders to the flat power cable (I) by means of the appropriate locking plate (L) then tighten it in with screw (M) located on the housing.

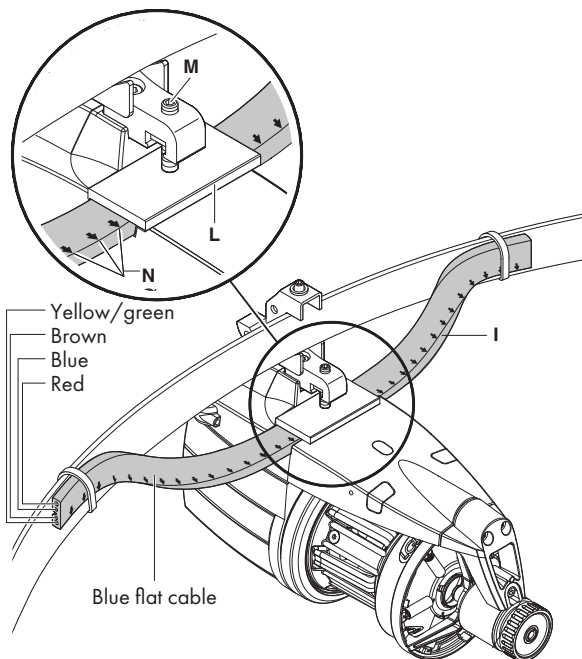
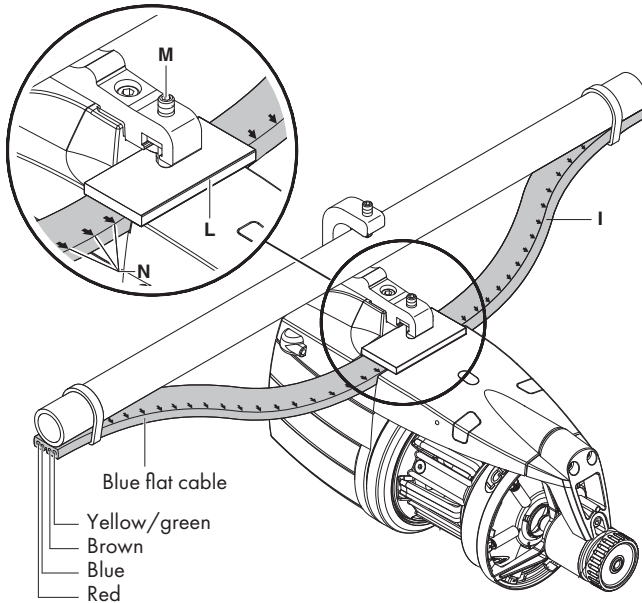
CAUTION: when connecting the flat power cable, keep to the printed reference marks showing the exact fixing position (the arrows (N) must point towards the front end of the feeder).



2 - INSTALLATION AND START-UP

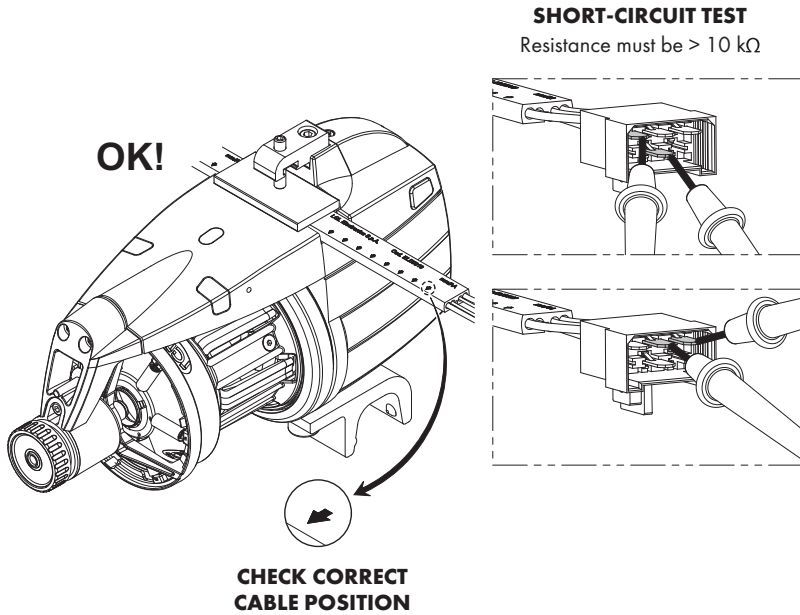


2 - INSTALLATION AND START-UP

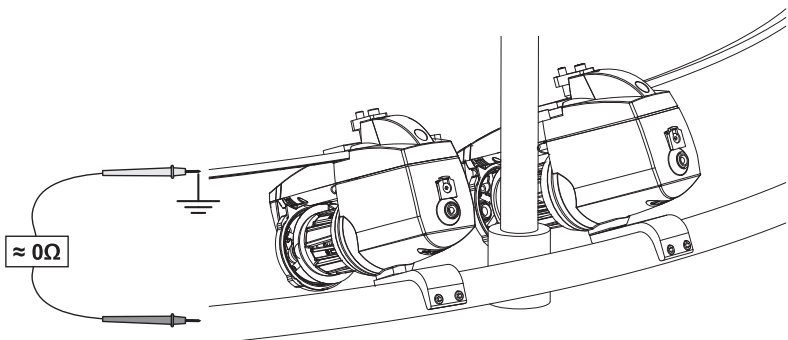


2 - INSTALLATION AND START-UP

2.2.1 Checklist before power on (DC version)

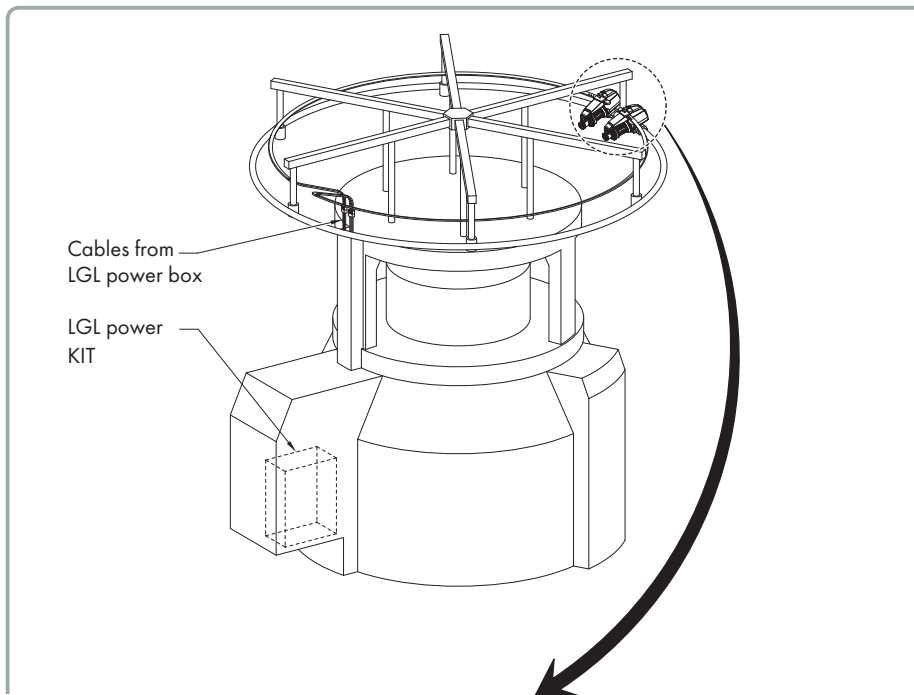


CHECK ON THE RING THE GROUND CONNECTION

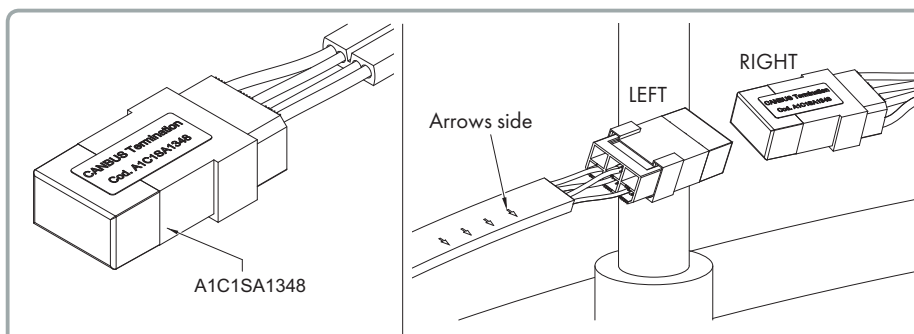


2 - INSTALLATION AND START-UP

2.2.2 CAN-BUS cables connection



N.B: CAN BUS Version. If blue flat cable ends like in the following picture:



The CAN is terminated with a resistor on the cable, so DS4 must be OFF **on all feeders**. If one or more DS4 are ON, this will produce a decrease of the BUS resistance, thus leading to communication problems.

2 - INSTALLATION AND START-UP

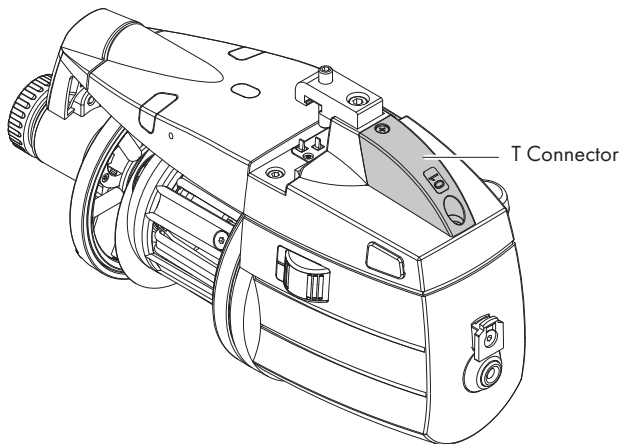
2.3 THE ADDRESS KIT

The address kit identifies each feeder on the communication bus, thus allowing a communication with the machine or with a dedicated interface.

This interface allows to get information from feeders or to set parameters (for example set tensions on ATTIVO or read yarn consumption).

On the DC Version (Blue Flat Cable) the address T-connector is installed on the feeder in LGL. The addresses are also marked outside feeder boxes, so that the operator can take the needed numbers.

We suggest to match feeder number with machine feed number.

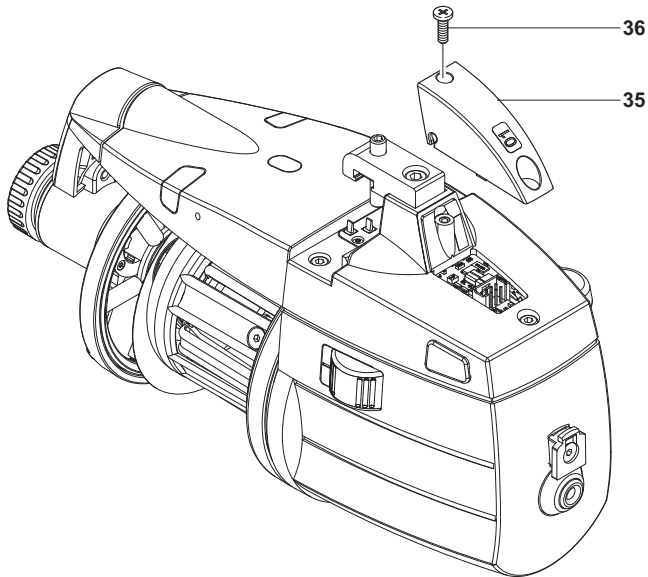


2 - INSTALLATION AND START-UP

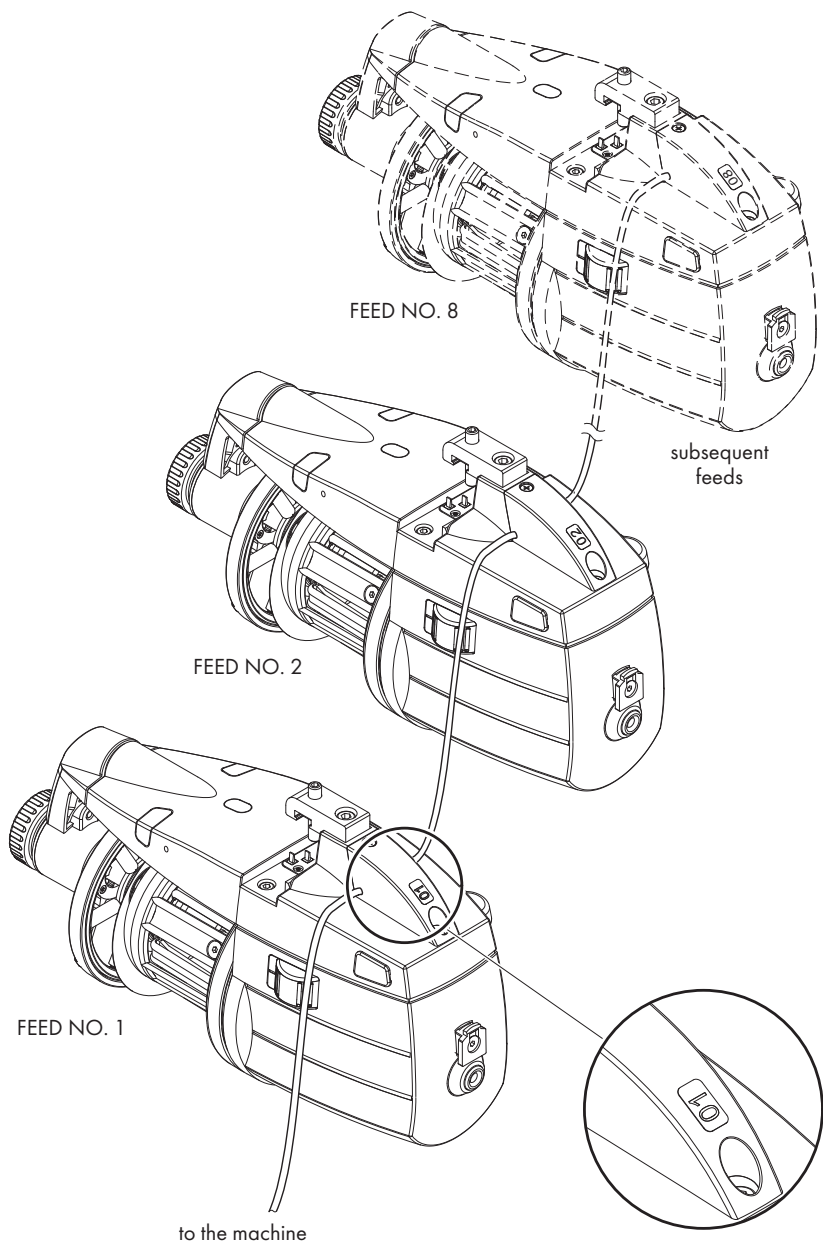
AC VERSION: Plug the T-connector into the serial communication port and carefully check to see that the number on the connector corresponds with the machine-feed number.

Using its appropriate screw **(36)** fix the connector **(35)** to the outer feeder housing. If not already connected, connect up the relative cables as shown in figure below. Connect the cable leading from the first feeder up to the machine.

The kit comprises a set of numbered T-connectors with the relative connection cables.



2 - INSTALLATION AND START-UP



2 - INSTALLATION AND START-UP

2.4 DIP-SWITCH SETTINGS

Access to the DIP-SWITCH is enabled by snapping off side cap located on the feeder housing.

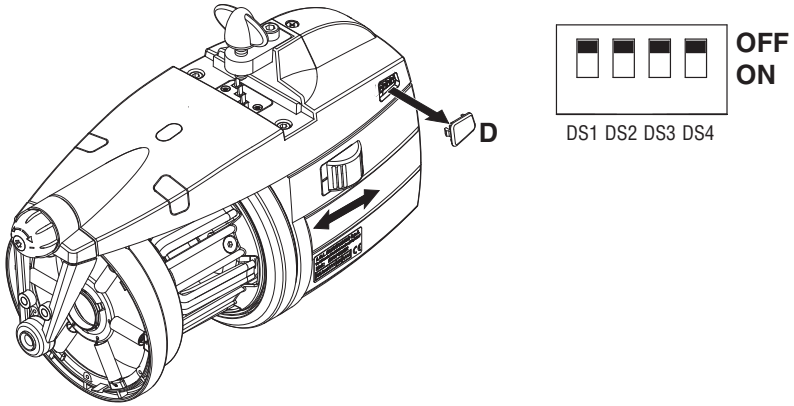
| DS1 | SETTING MEANING (Default Position = OFF) |
|------------|---|
| OFF | Z Rotation |
| ON | S Rotation |

| DS2 | SETTING MEANING (Default Position = OFF) |
|------------|--|
| OFF | Standard optical sensor sensitivity. |
| ON | Increased optical sensor sensitivity, set when operating with yarn counts thinner than 40 den. |

| DS3 | SETTING MEANING (Default Position = OFF) |
|------------|---|
| OFF | Work position (standard) |
| ON | Self-calibration of magnetic sensors. The recommended procedure is stated below: <ul style="list-style-type: none">- Set switch 0-1 to 0. Set DS3 to ON.- Remove the yarn reserve from the spool body, keeping the feeder threaded.- Set switch 0-1 to 1. The feeder winds the reserve laying down a fixed number of turns on the spool body- If the procedure has been correctly performed, the feeder will put the indicator lamps on for one second to indicate that calibration has been correctly performed.- At the end of the procedure, set switch 0-1 to 0.- Set the DS3 to OFF.- Set switch 0-1 to 1 to complete the self-calibration. |

| DS4 | SETTING MEANING (Default Position = OFF) |
|------------|---|
| OFF | Bus termination off. |
| ON | Bus termination on (see paragraph 2.3). |

2 - INSTALLATION AND START-UP

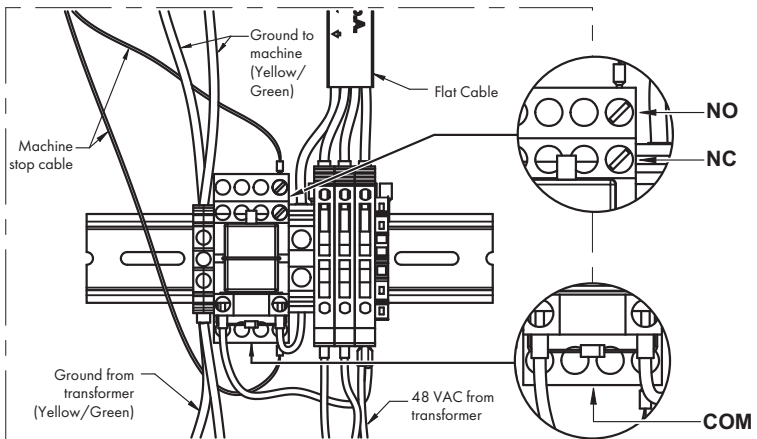
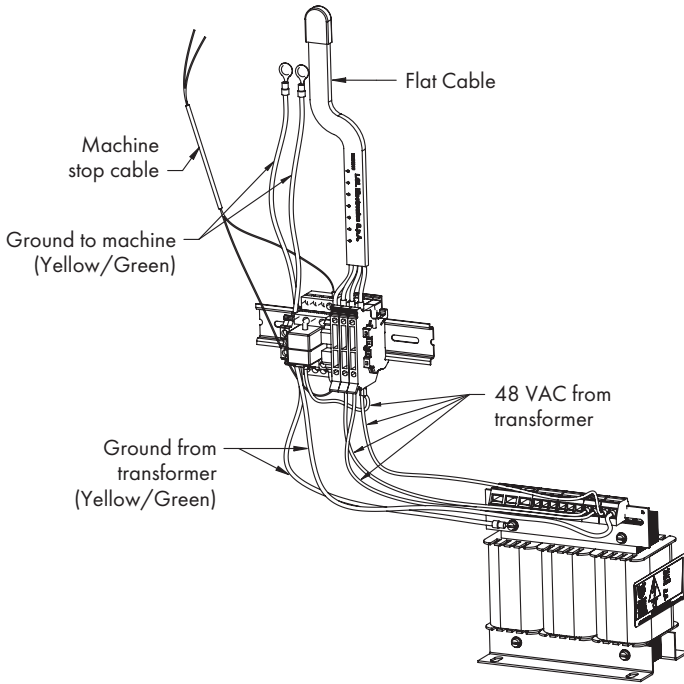


Note: To enable the function performed by each Dip-Switch, the feeder needs to be switched off by acting on switch 0-1; then set the Dip-Switch to the desired position and switch the feeder on again.
Alternatively, dip-switches 1, 2 and 3 can be programmed remotely via tablet or PC.

2 - INSTALLATION AND START-UP

2.5 AC VERSION TRANSFORMER KIT

Up to 10 Feeders



2 - INSTALLATION AND START-UP

2.6 LARGE DIAMETER KNITTING MACHINES (ONLY DC VERSION)

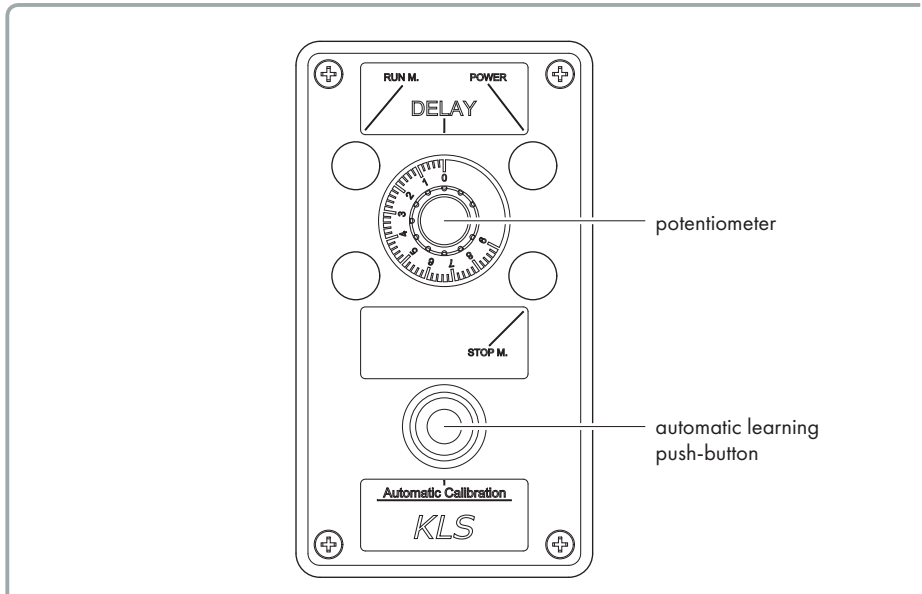
2.6.1 Detection of yarn breakage on feeder outlet: KLS KIT

This kit allows any irregular use of yarn by the machine to be detected without using any mechanical sensors.

These sensors bring about undesired changes in yarn tension that are likely to negatively affect the overall efficiency of the equipment.

The KLS KIT allows these sensors to be completely removed with no need to replace them, as it only makes use of the sensors already found in the feeder.

This Kit, unlike mechanical sensors, does not simply detect breakages, but also other events, e.g. cases when the yarn, though in tension, moves out of the needles and is not properly fed any longer.



Potentiometer: time set by the machine to reach the working speed from the idle state. **Set this value to 3 seconds.**

Automatic learning push-button: each feeder learns the characteristic speed of the item being processed.

Procedure (to be carried out at every item change):

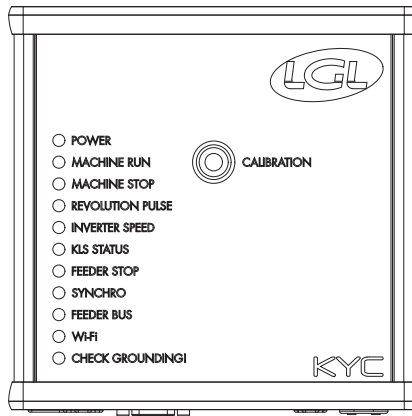
1. Press the push-button. The feeders' lights will switch off.
2. Start the machine, produce a complete item then stop the machine.
During production, the outlet detection system does not operate.
3. When the machine stops, the feeders will store the speed value.
4. Upon restarting the machine, the system will be active and operating.

2 - INSTALLATION AND START-UP

2.6.2 KLS: automatic output stop motion system

KLS system allows the feeder to stop the machine without using a sensor, in case of an output yarn break event. If the yarn gets broken between the feeder and the machine, the feeder will be able to detect the event and stop the machine.

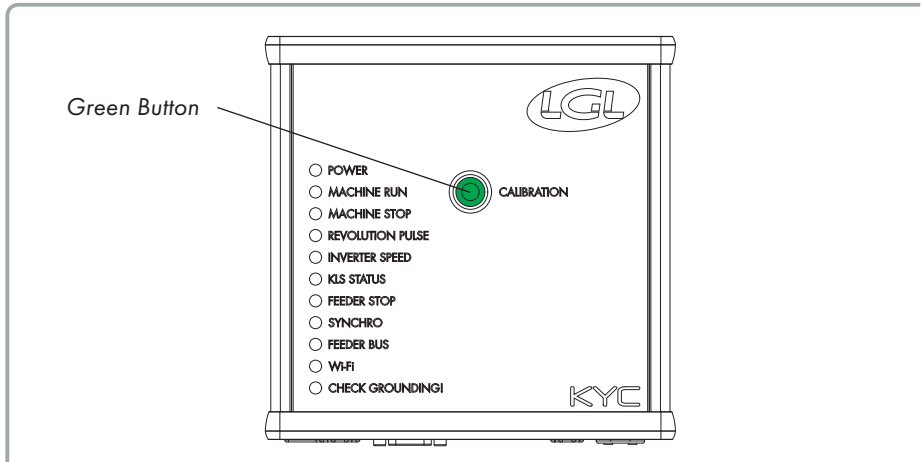
Note: if the yarn gets broken before the feeder (between the bobbin and the feeder), this system is not involved. There is another sensor on the feeder itself detecting this case.



If the machine is equipped with a KYC device, the procedure for activating the KLS kit is described in the relevant instruction manual.

2 - INSTALLATION AND START-UP

2.6.3 Button for the learning procedure located on the KYC box



Once the installation is finished and the machine is ready to start, perform the following learning procedure:

1. Press the button for the learning procedure until all feeders lights turn on (approximately 1s). Feeders will keep their lights on while the machine stands.
2. Start up the machine with working speed. All lights turn off.
3. Run the machine until the end of the pattern.
4. At the end of the pattern stop the machine.

When the machine stops, the feeders store the timing in their memory. Now the feeders are ready to check yarn breaks between feeder and machine.

Note 1: The machine has to run for at least 8 seconds. If for any reason the machine stops earlier than 8 seconds, re start the machine. If the machine runs for more than 8 seconds, but it stops before the end of the pattern, feeders will be ready to check output yarn breaks. In any case if you get false stops, repeat the procedure being sure that the machine completes one full pattern.

Note 2: during the procedure, feeders are not able to detect output yarn breaks.

Note 3: by pressing the button for the learning procedure, all feeders lights turn on. If at this moment the button is pressed a second time, all feeders lights turn off and the system is no more active.

The feeder parameters involved in these functions are:

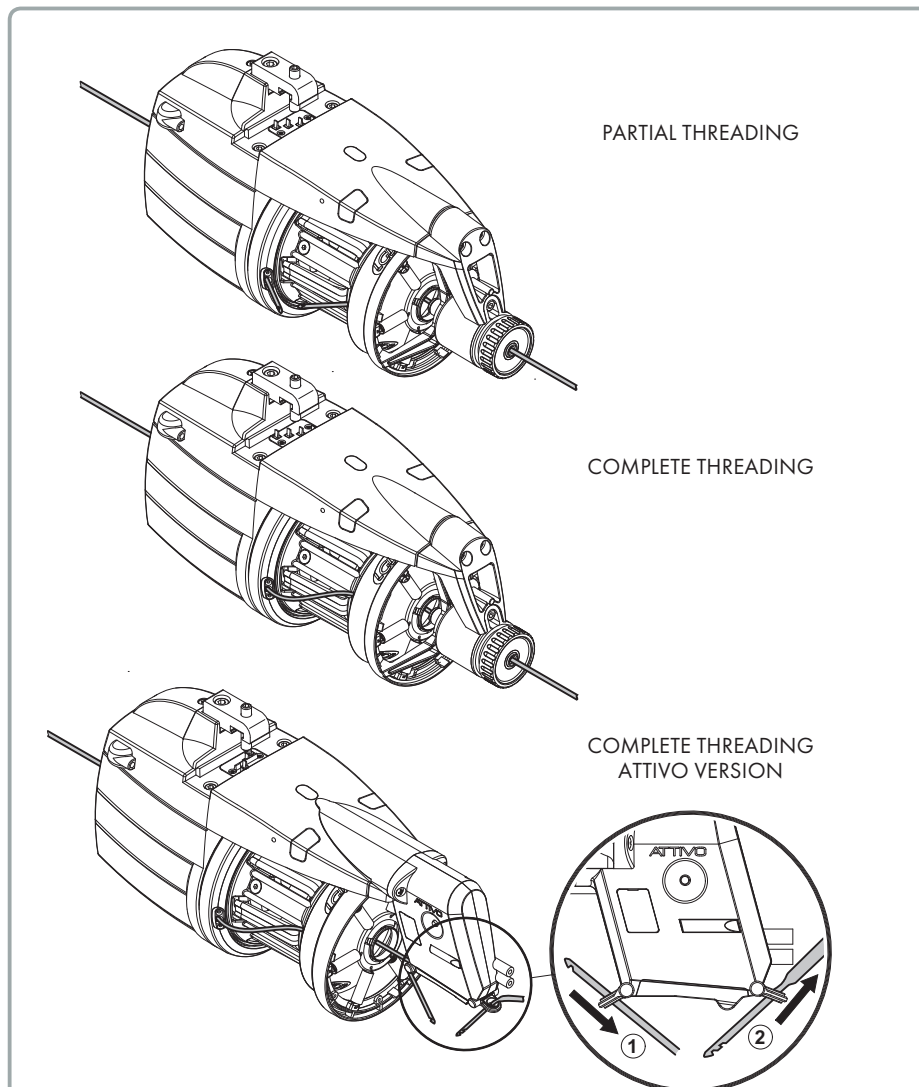
OYB SW Tmr - Kls Cm delay

See table in chapter 6.1 for further explanations.

3 - THREADING AND ADJUSTMENTS

3.1 THREADING YARN FEEDER WITH THE TWM TENSION MODULATOR

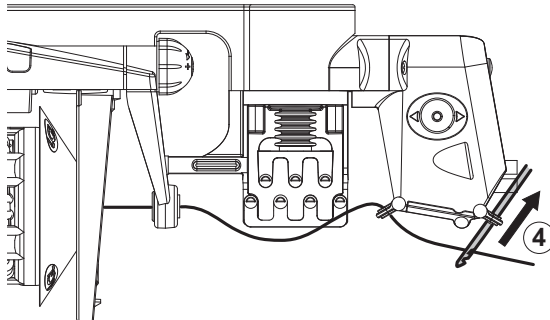
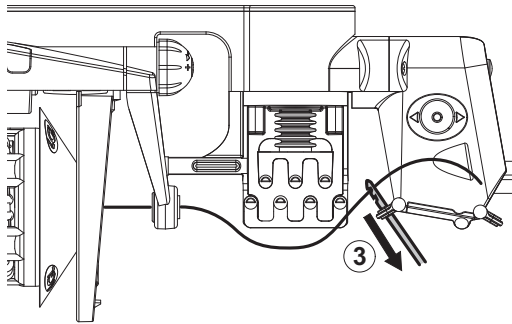
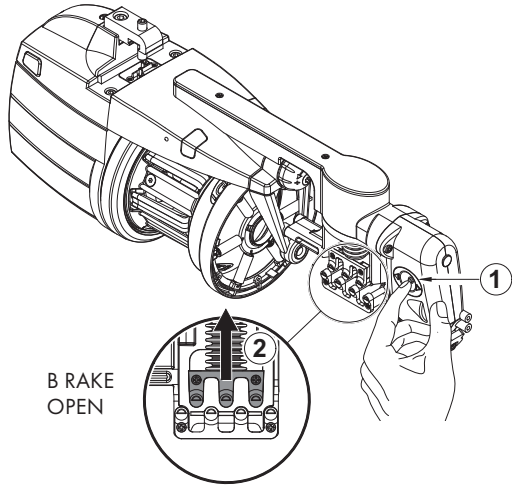
Yarn feeder threading must be carried out when the device is OFF and as illustrated below:



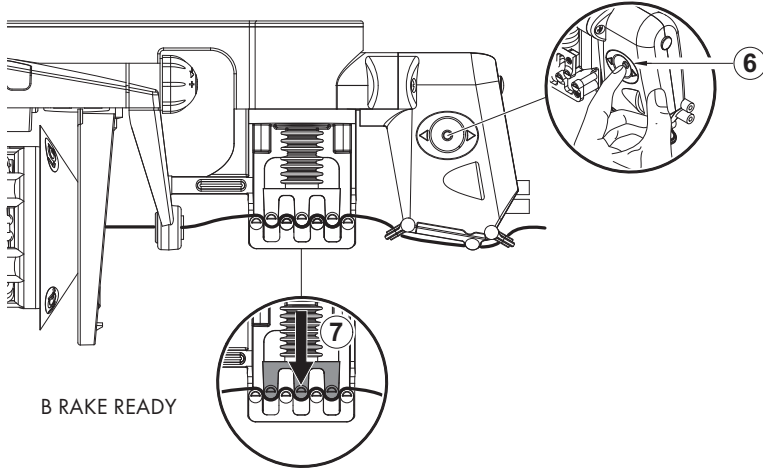
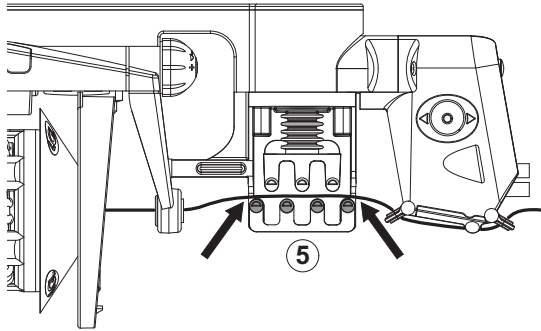
To avoid damaging the TWM we recommend use of threaders that are in good condition with no yarn accumulation around the threader-ends. Use of iron needles for threading must absolutely be avoided as they are liable to damage the TWM.

3 - THREADING AND ADJUSTMENTS

3.1.1 Threading yarn feeder with B BRAKE



3 - THREADING AND ADJUSTMENTS



B BRAKE READY

3 - THREADING AND ADJUSTMENTS

3.2 SPEED ADJUSTMENT

The ECOPOWER2 yarn feeder is provided with a microprocessor and an output sensor that enable **automatic speed adjustment** that conforms to machine feeder speed.

No speed adjustment is therefore required by the operator.

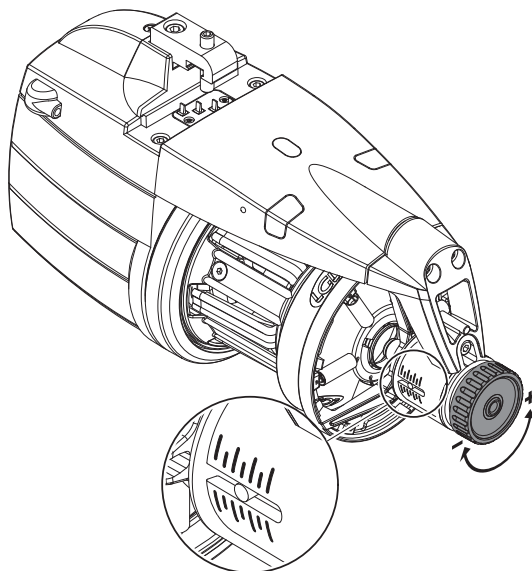
For applications that may require special operational conditions, please consult paragraph 2.4 herein.

3.3 TENSIONING ADJUSTMENT

Adjust tensioning until required yarn tension is reached by acting on the outbound tension modulator (TWM) that is fitted onto the feeder.

Use the adjusting twist-knob to do so.

However, tensioning adjustment is completely automatic in yarn feeders that are equipped with the ATTIVO electronic tensioner.



4 - MAINTENANCE OPERATIONS

4.1 DISMOUNTING THE YARN SPOOL BODY

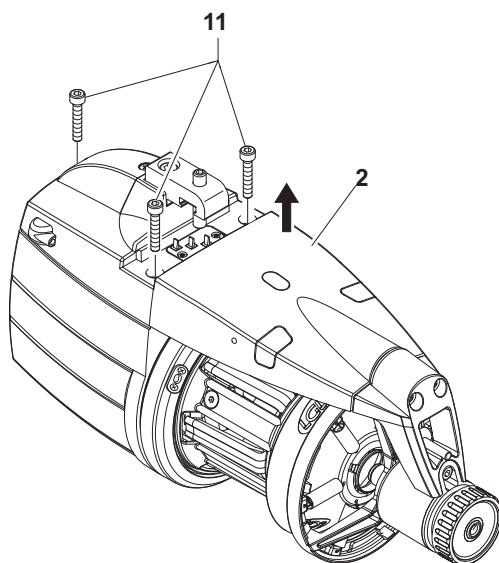
In order to remove the yarn spool body, follow these steps:



1) Power down the yarn feeders by actuating the main switch located on the knitting machine.

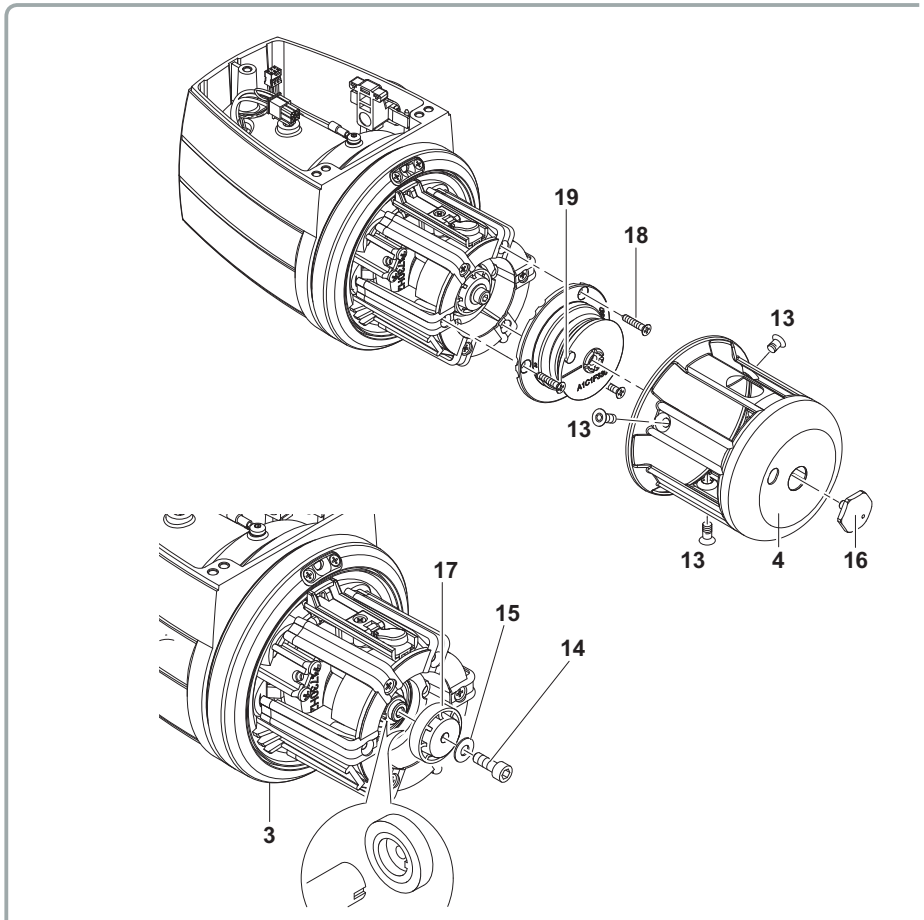
2) Disconnect the feed strip cable and remove the feeder from the machine.

3) Unscrew the 3 set screws (**11**) and remove the guard (**2**).



4 - MAINTENANCE OPERATIONS

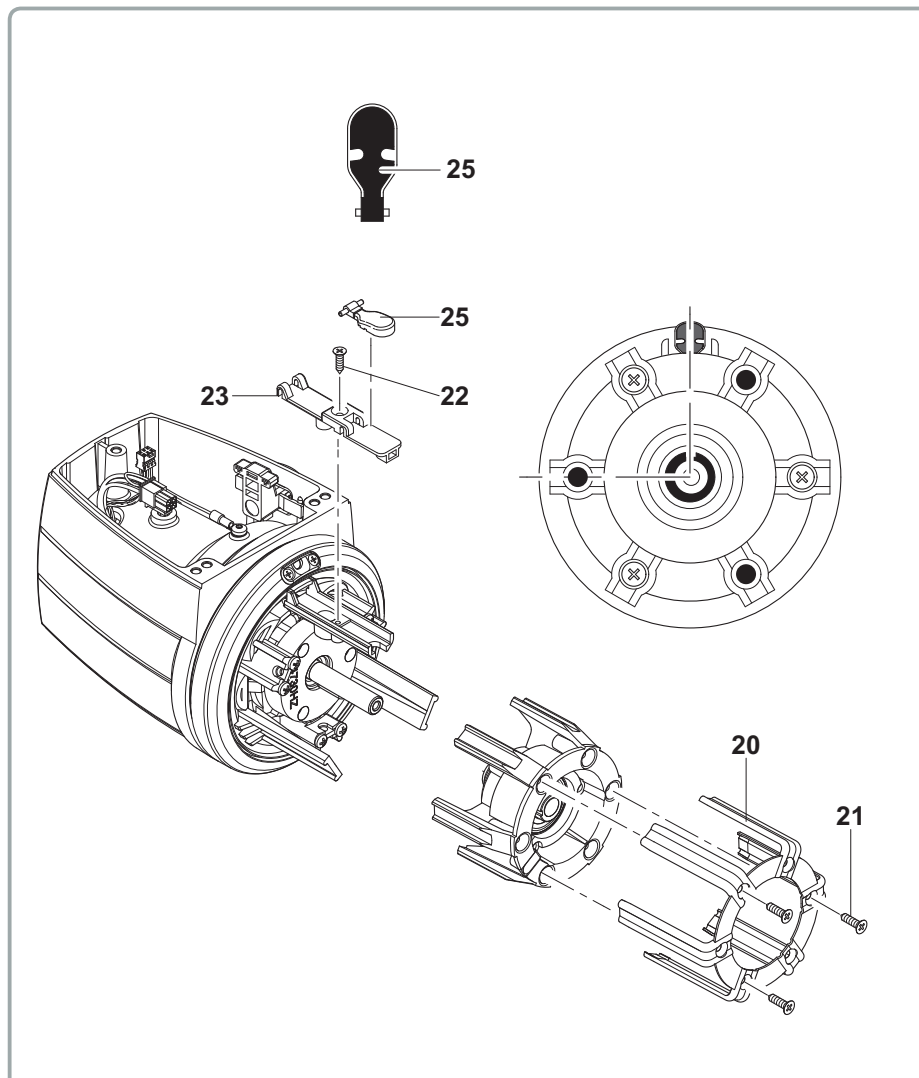
- 4) Unscrew the screw (**16**); unscrew the 3 fastening screws (**13**) that are on the thread winding cone (**4**) and remove the latter.
- 5) Remove the absorber that is fastened to the teetered hub by unscrewing the related fastening screws (**18**). The absorber shall be later put back in place taking care to have the notch (**19**) that is on the external disc to match the hole in the cone (**4**).



- 6) By holding the flywheel (**3**) steady (**3**), unscrew the screw (**14**) and remove it along with the Belleville spring (**15**); remove the protection (**17**) from its location on the bush. The latter shall be fit back in place in the same position, i.e. with the protection reference notch into the bush hollow.

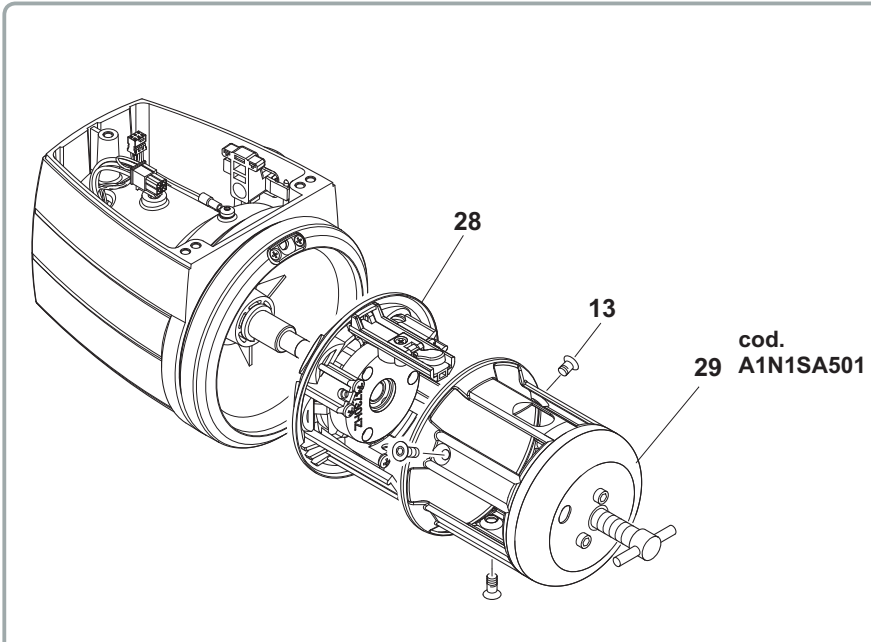
4 - MAINTENANCE OPERATIONS

- 7) Remove the winding assembly by taking it out of the shaft; the thin protection sheet (**20**) can be replaced by unscrewing the 3 fastening screws (**21**). The assembly shall be later fit back in place by matching the hole where the thin sheet is not fastened, as shown in the figure.
- 8) At this point, if necessary, by unscrewing the set screw (**22**), it is possible to extract the feeler (**23**) lock and replace the yarn feeler (**25**).



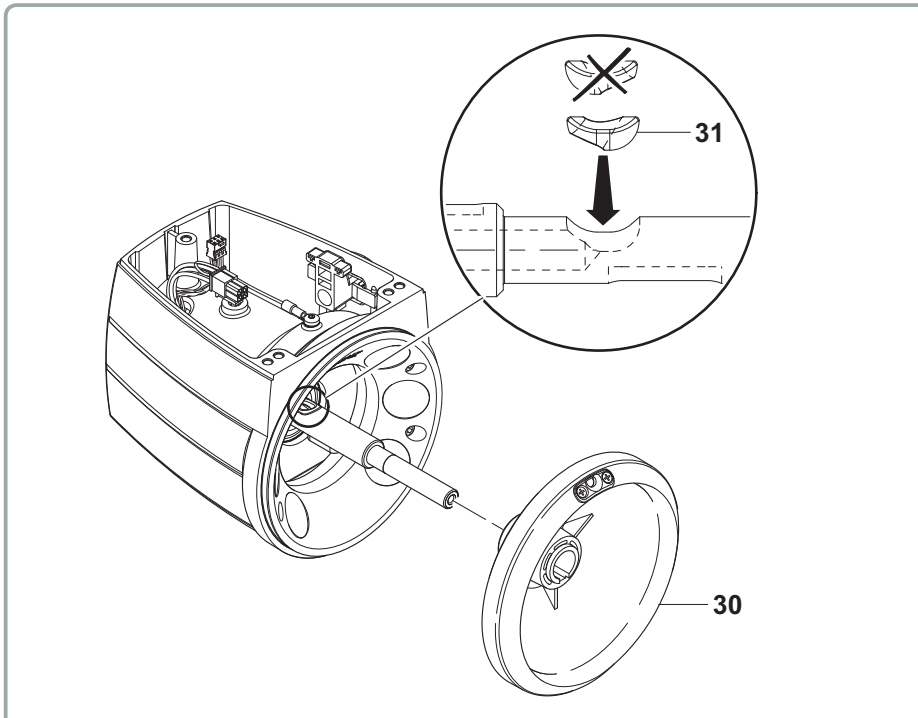
4 - MAINTENANCE OPERATIONS

- 9) Removal of the front magnet holder (**28**) must be carried out using the appropriate tool (**29**) that needs to be fixed onto the magnet holder being removed, using the three fixing screws (**13**) belonging to the yarn spool body. Once removed, detach it from the tool used for extraction.



4 - MAINTENANCE OPERATIONS

- 10) At this point the flywheel (30) can be removed. It is now also easy to replace the ceramic bushing (31) located in the yarn feeder shaft.



4.2 REPLACEMENT OF THE MAIN ELECTRONIC CONTROL BOARD

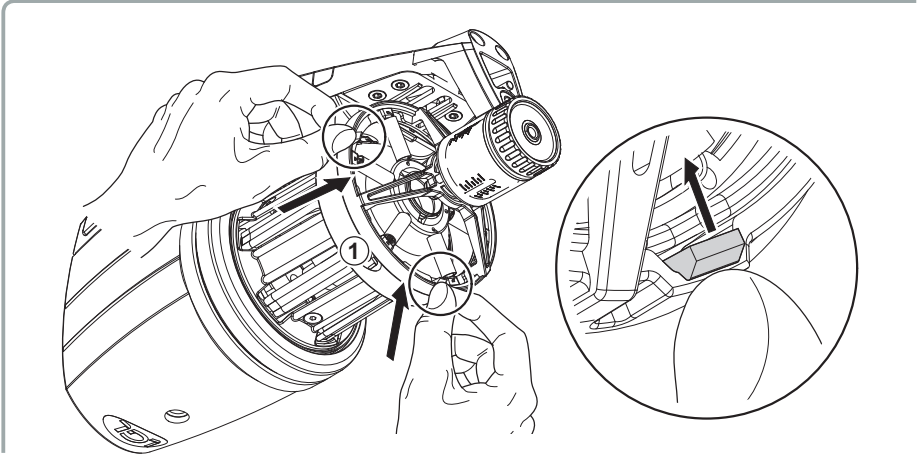
The main electronic control board can only be replaced by a regularly authorised L.G.L. service and repair centre.

5 - COMPONENT REPLACEMENT

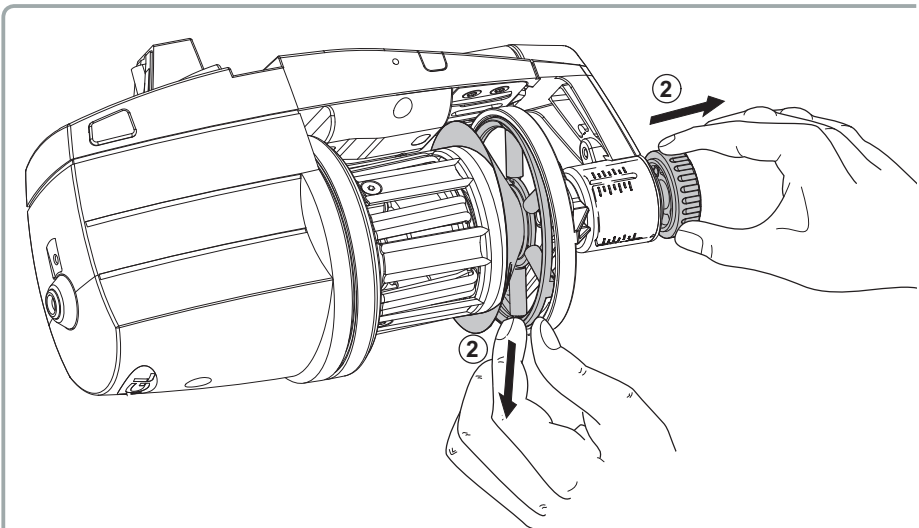
5.1 REPLACEMENT OF THE TWM TENSIONER

To remove the TWM tension modulator, proceed as follows:

- 1) Release the TWM tension modulator from the support ring by pressing on the retaining lugs.

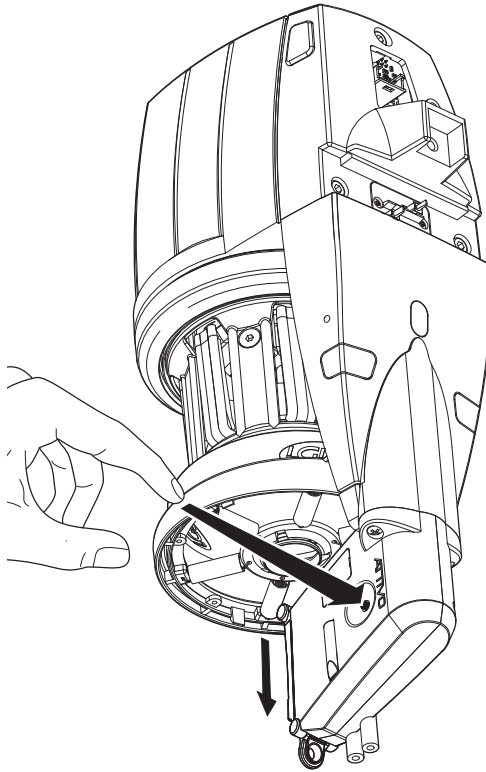


- 2) Pull the knob with one hand and at the same time remove the TWM tension modulator.

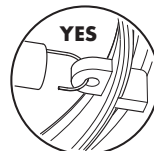


5 - COMPONENT REPLACEMENT

- 3) If the ATTIVO brake is provided, press the release button. The lights will begin to flash fast. The TWM brake opens. It is only possible to act on the TWM unit when the flashing changes from fast to slow

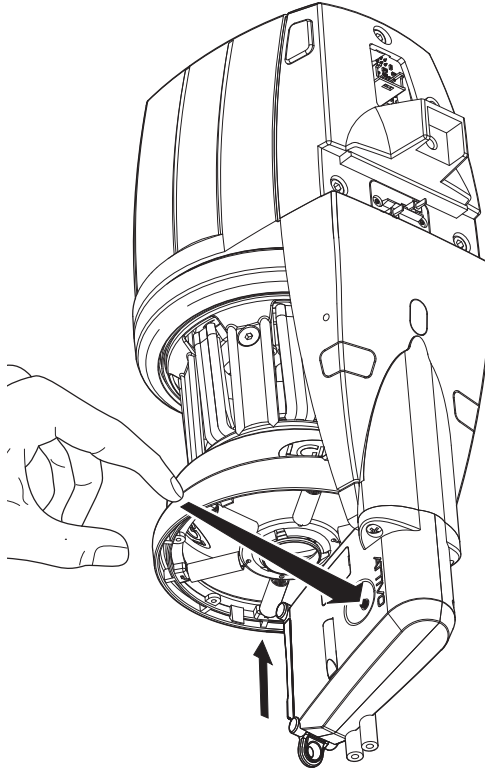


- 4) Pay attention to the way the springs are fitted to the TWM unit support: the spring hook must be fitted facing outwards from the TWM unit in order to prevent contact with the cone section and thus damage it.



5 - COMPONENT REPLACEMENT

- 5) If the ATTIVO brake is provided, when the new TWM unit has been installed, press the release button. The lights will change from slow flashing to fast flashing. The brake will then return to its previous working position.

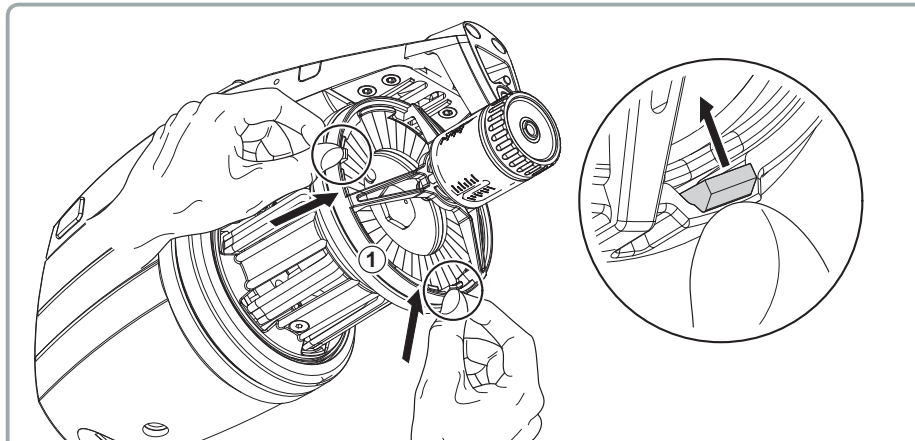


5 - COMPONENT REPLACEMENT

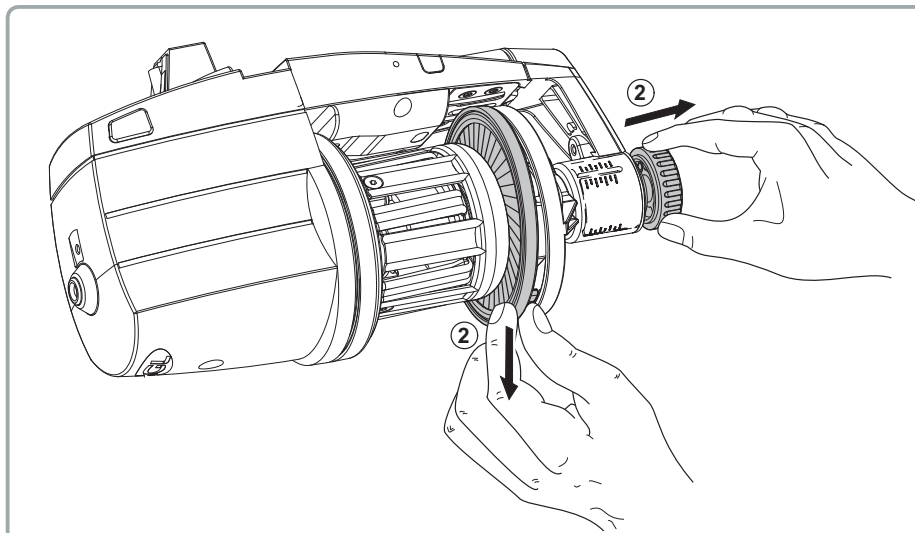
5.2 REPLACEMENT OF THE BRISTLE BRUSH

The operating procedures for replacing the bristle brush are as follows:

- 1) Release the bristle brush from the support ring by pressing on the retaining lugs.

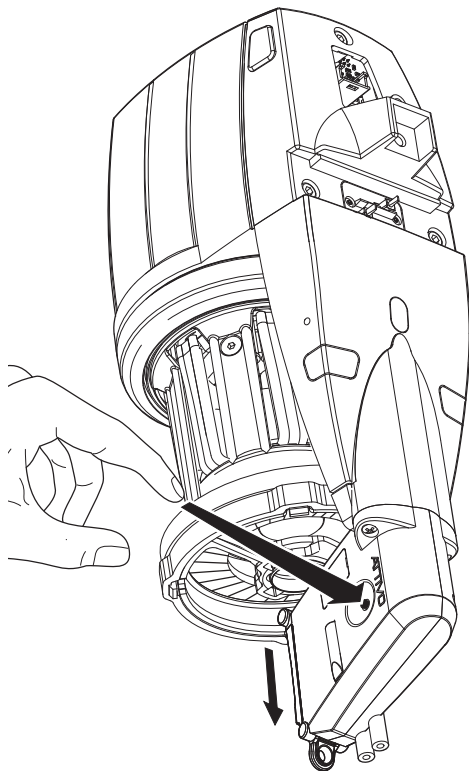


- 2) Pull the knob with one hand and simultaneously remove the bristle brush.



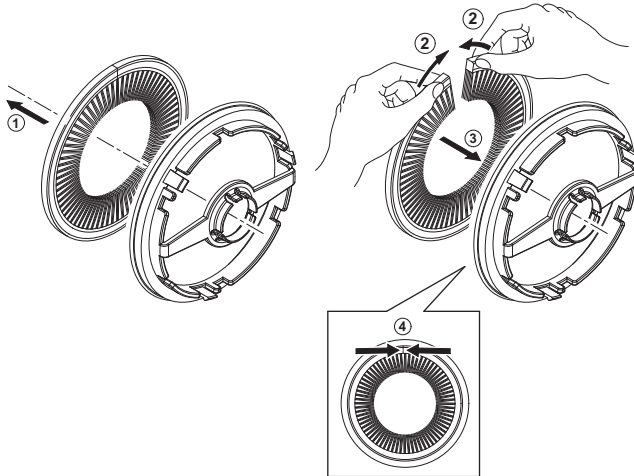
5 - COMPONENT REPLACEMENT

- 3) If the ATTIVO brake is provided, press the release button. The lights will start flashing quickly. The bristle brush unit will open. You are allowed to operate the bristle brush unit when the latter shifts from fast blinking to slow flashing.

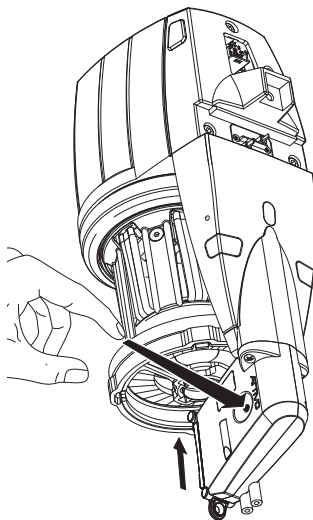


5 - COMPONENT REPLACEMENT

- 4) Pull the brush to be replaced out of the holder. Insert the new brush by pressing it into its support. Ensure that the ends of the bristles are joined when they are fitted into the ring.



- 5) If the ATTIVO brake is provided, once the new bristle brush unit has been fitted, press the release button. The indicator lights will change their flashing frequency from slow to fast. Then the bristle brush unit will resume its previous working position.



6 - ATTIVO

6.1 ATTIVO ELECTRONIC TENSIONER

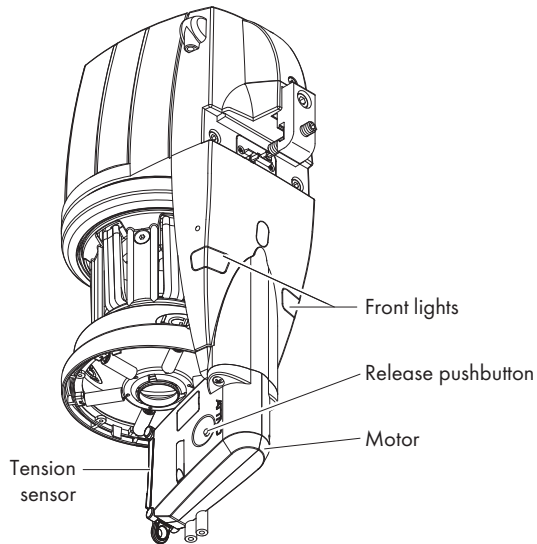
ATTIVO is an electronic system that has been purposely conceived to hold yarn tension constant and programmable. The output sensor provides a real-time measurement of the output tension and an electric motor uses this value to adjust the position of the TWM tensioner. Thus, all tension-related issues, e.g. yarns that change in features on the same bobbin, differences in yarn waxing, differences in yarn tension in full and empty bobbins and so on, can be solved.

The desired tension can be set via a PC or tablet.

The involved parameters are:

- T des. dgr: to set the desired tension;
- T read dgr: to read the current tension (in order to understand whether the tension sensor is operating in a proper manner).

Note: if the desired tension cannot be obtained during normal operation, the front indicator lights will start blinking.



6 - ATTIVO

In addition to the two tension parameters, there are other parameters that may be relevant:

| Parameter | Default setting | Description | Notes |
|-------------|-----------------|--|---|
| KLSCm Delay | 86 | To speed up the feeder's response time, in case of output yarn breakage (faster KLS response time) | To be set from 20 to 100. If it is too low, false stops are potential problems. If the value is decreased, the KLS response time also decreases, if the value is increased, the KLS response time increases. |
| ENBrk OpAlr | 0 | If =1, if the ATTIVO brake is open, the feeder stops the machine | |
| EnOffstp | 0 | If =1, if the ON/OFF switch is in the OFF position, the feeder stops the machine | If ENOff STP is =1, the Offset is as follows: <ol style="list-style-type: none"> 1. Thread the yarn into the feeder. 2. Remove the yarn from the load cell. 3. Switch off the feeder. The feeder and the brake lights will go on. 4. Press the OFFSET button and hold it pressed until the ATTIVO light goes out. 5. Switch on the feeder. The feeder lights will go out and the ATTIVO indicator light will flash once. This means the offset has been successfully carried out. |

6 - ATTIVO

| Parameter | Default setting | Description | Notes |
|---------------|---------------------|---|---|
| SM Man pos | 150 | Useful in the event of breakage of the tension cell, for manual adjustment of yarn voltage. Use: Set TDes=0 Press the ATTIVO opening button. When the Attivo unit is fully open, press the button once again to close it. The brake closes 150 motor steps. | |
| Tens TmOut | 40 (seconds) | If the set tension is not reached within Tens TmOut, the feeders will stop the machine (Tmtrerr) | |
| OYB SW Tmr | 0 (KLS disabled) | Time interval between two subsequent windings. (ms=OYB SWTmr \times 50). Trigger value for KLS. | Check for the correct value: if the machine increases speed the value must decrease. If the machine decreases speed, the value must increase. |
| AutSync Tim | 0 | If it is =0, yarn consumption is in cm/rev If it is \neq 0, yarn consumption is in cm/AutSyncTim seconds (up to 15) | AutSyncTim=0 for seamless and large diameter (where the rev signal is provided). AutSyncTim=1 for tights. |

6 - ATTIVO

| Parameter | Default setting | Description | Notes |
|--------------|-----------------|--|---|
| Real speed | | Feeder speed in revs per minute | Max 4900 revs. per min Yarn consumption in m/min= actual speed x 16.3 |
| Rot s/z Src | 1 | 1 = direction of rotation set by dip switch DS1 0 = direction of rotation read by parameter Rot s/z | |
| Rot s/z | 0 | 0 = Z rotation 1 = S rotation | Only significant if Rot s/z Src |
| Sens FTC Src | 1 | 1 = Photocell sensitivity set by dip switch2 0 = photocell sensitivity read by parameter "Sens FTC" | |
| Sens Ftc | 1 | 1 = standard 0 = fine yarns < 40den | Only significant if Sens Ftc Src = 0 |
| T Des Dgr | 40 (grams) | Set tension | |
| T Read Dgr | | Read tension | |

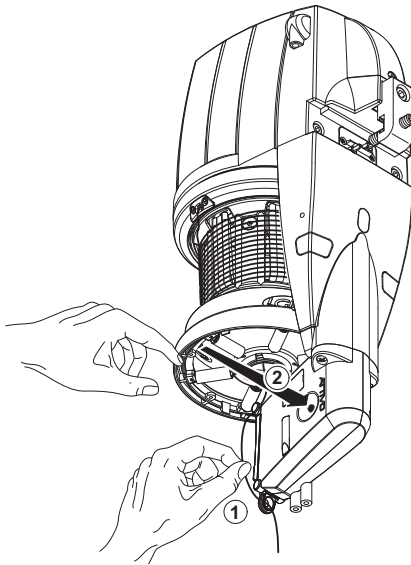
6 - ATTIVO

6.2 OFFSET

Upon first installation of this device, you need to enable the tension sensor to acquire the OFFSET function (mechanical error zero function).

Follow the procedure below:

- Remove the yarn from the tension feeder.
- Switch off the feeder.
- Press the release button and hold it pressed until the device light turns on.
- Switch on the feeder.
- Light will turn off and OFFSET is obtained.



NOTE 1: The OFFSET procedure may have to be repeated even after the equipment has been inoperative for some time.

NOTE 2: The OFFSET procedure must be performed each time a feeder that was in stock or a feeder back from a repair is installed on the machine.

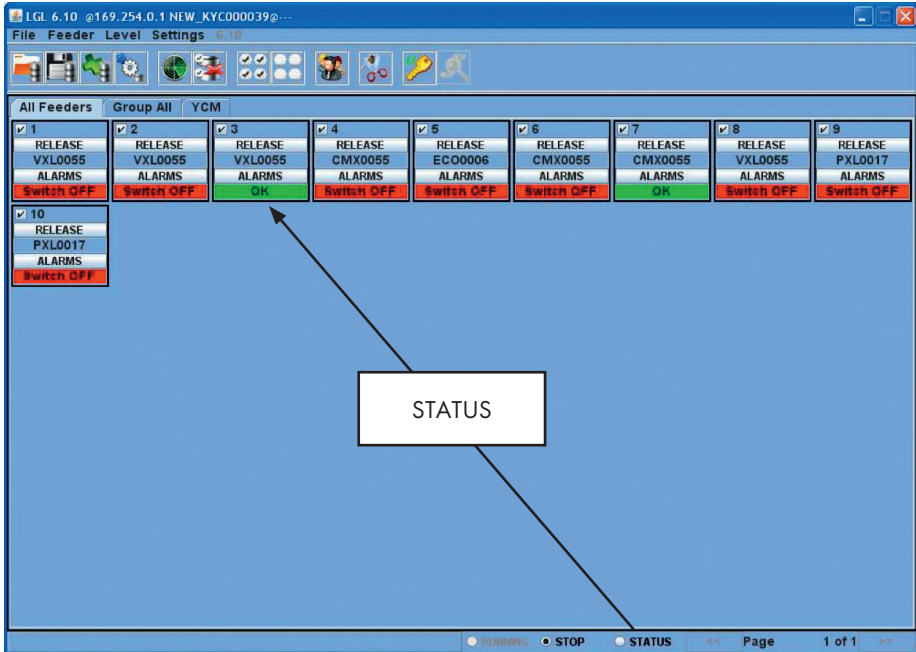
NOTE 3: Below OFFSET procedure in case "ENOFFSTP" parameter is 1.

- Remove the yarn from the tension feeder.
- Switch off the feeder. The device light turns on.
- Press the release button and hold it pressed until the device light turns off.
- Switch on the feeder.
- Light will turn on and OFFSET is obtained.

6 - ATTIVO

FEEDERS ALARMS

By clicking on the STATUS button located on each feeder it is possible to ask feeders about their status. If a feeder has its lights ON or blinking, it means the feeder is in alarm condition. At the same time the feeder is sending an information about the alarm. By clicking on the STATUS button it is possible to display the alarm reason.



In this example feeder number 2 is OK.

STATUS TAB located at the bottom of the screen: alarm monitoring in continuous mode. This feature is necessary if the computer is far from the machine, in order to be able to have information on possible alarms without being at the machine. In case an alarm takes place while the machine is running and the STATUS tab is selected, the feeder will stop the machine and a big writing will come out on the display as in the following picture:

6 - ATTIVO

| Feeder n°: | Status: |
|------------|------------|
| 1 | Switch OFF |
| 2 | Switch OFF |
| 4 | Switch OFF |
| 5 | Switch OFF |
| 6 | Switch OFF |
| 8 | Switch OFF |

In case feeders are OK, nothing will be shown on the display. Here below a list of the possible alarms:

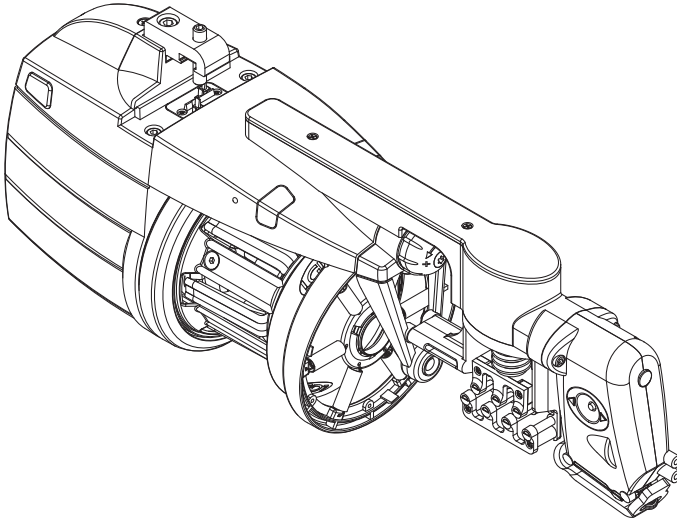
| ALARM | MEANING | ACTIONS |
|------------------|---|---|
| AC PWRFAIL | phase number 2 (blue) and /or phase number 3 (yellow) are missing | Check input voltage and feeder connection on the flat cable |
| YARN BREAK | Yarn broken before the feeder | Repair the yarn |
| MOTOR LOCK | Yarn entangled somewhere between the bobbin and the feeder | Check yarn passage between bobbin and feeder |
| HIGH TEMPERATURE | Too high temperature on the feeder electronic | <ol style="list-style-type: none"> 1. Reduce input tension on the yarn 2. Check that the flywheel turn freely. In case disassemble spool body and remove dust and/or yarn residual. |
| TIME ERROR | the feeder takes too much time to wind up the yarn on the spool body at the start up. | Stop the yarn on the spool body with one finger to help yarn reserve filling procedure. |
| VB MOT FAIL | DC voltage on the motor too low. | Check connections on the power transformer primary voltage winding. |
| AC1PWRFAIL | phase number 1 (black) is missing. | Check input voltage and feeder connection on the flat cable |

6 - ATTIVO

| ALARM | MEANING | ACTIONS |
|------------|--|--|
| SWITCH OFF | ON OFF switch in position OFF | Switch ON the feeder (see also EN OFF STP parameter) |
| TENSMTRERR | The feeder can't reach the preset tension value within a preset time (see also TensTMOut parameter page 58). | Check the following: 1. The yarn is passing on the load cell, 2. The TWM brake and springs are suitable to reach the desired tension 3. OFFSET of the load cell |
| OYB ERROR | yarn broken after the feeder (or yarn consumption too low) | Repair the yarn |
| ELBRK OPEN | brake open (ATTIVO). | Close it by pressing the related button located on the ATTIVO blk support |
| PREWINDERR | Only during winding up phase of the spool body, during the start up or after a yarn break | It tells that during spool body filling up, the machine cannot run. |
| I2T ERROR | I2T protection | 3. Reduce input tension on the yarn 4. Check that the flywheel turn freely. In case disassemble spool body and remove dust and/or yarn residual |

6 - ATTIVO

6.3 ECOPOWER2 B RAKE



The ECOPOWER2 B RAKE is a version of ECOPOWER2 ATTIVO that is made to reach higher yarn tensions.

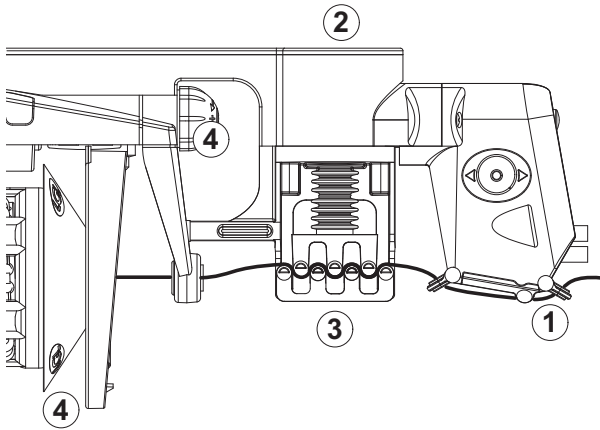
ECOPOWER2 ATTIVO load cell: range 0-50cN; maximum tensions depending upon yarn type, yarn count, yarn speed and brakes type: around 25-30cN.

ECOPOWER2 B RAKE load cell: range 0-200cN; maximum tensions depending upon yarn type, yarn count, yarn speed and brakes type: around 150-200cN.

6 - ATTIVO

The system is made by following parts:

1. The load cell which drives the rake motor
 2. The rake motor
 3. The rake which is responsible for the yarn tension setting and adjusting
 4. A brake on the feeder with a manual adjustment to grant a minimum tension to the yarn.
- The yarn does not have to make any balloon on the feeder drum.



“ALWAYS BRAKE” PARAMETER

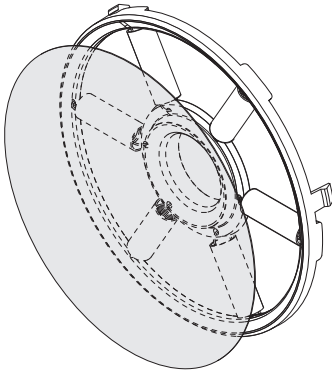
If it is necessary to hold the yarn in order not to let it go loose while the machine stands, It is possible to enable a parameter called “always brake” by PC, in order to automatically close the rake on the yarn every time the machine stops.

This function is useful in case of use of the feeder with LAY IN yarns on the large diameter knitting machines.

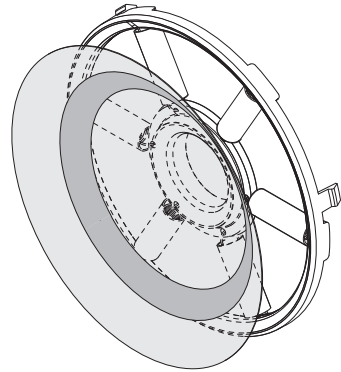
7 - APPLICATION RANGE

7.1 TWM TENSION MODULATOR APPLICATION RANGES

| TYPE OF YARN | SPRINGS | YARN RANGE |
|-----------------------------------|---------|-------------------------|
| Woollen yarns | 0.4 | From 100 Nm to 15 Nm |
| Cotton and viscose fibre yarns | 0.4 | From 120 Ne to 10 Ne |
| High-twist, crêpe and silk yarns | 0.3 | From 20 Den to 120 Den |
| High-twist, crêpe and silk yarns | 0.4 | From 100 Den to 250 Den |
| Viscose and synthetic fibre yarns | 0.3 | From 10 Den to 120 Den |
| Viscose and synthetic fibre yarns | 0.4 | From 100 Den to 250 Den |



TWM TYPE K

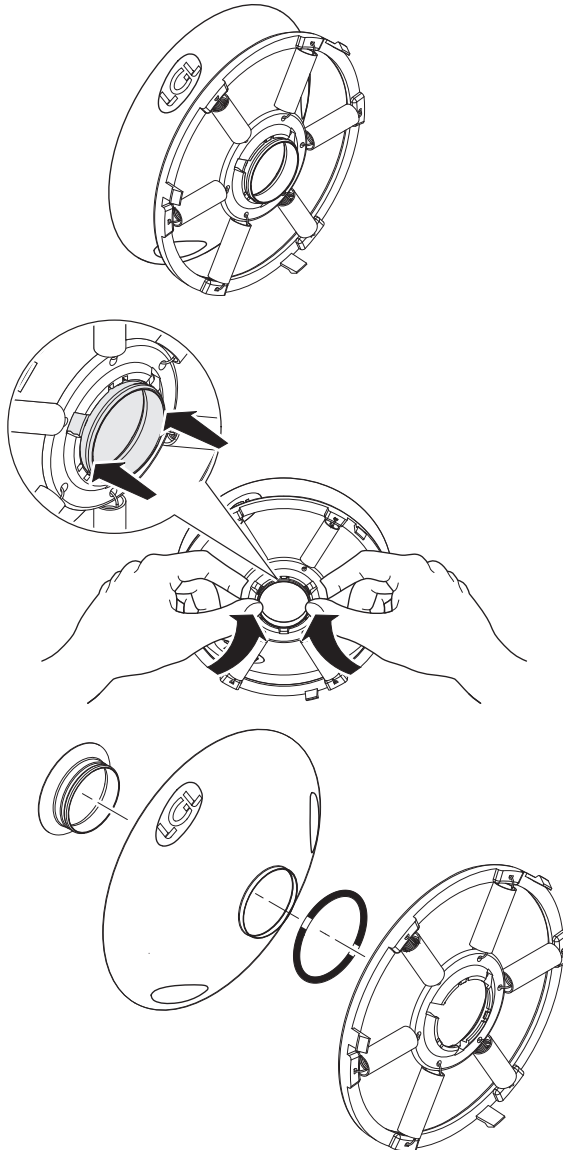


TWM TYPE KL

- For tensioning strength exceeding 10 grams, use of **TWM KL** is recommended.

7 - APPLICATION RANGE

It is possible to replace the truncated cone, the disk unit, the o-ring and chrome ring of the TWM.



8 - CONVERSION TABLE

8.1 Conversion table for the various yarn count systems

| Nm | Ne | tex | den | Dtex | Ne _L | Nm | Ne | tex | den | Dtex | Ne _L |
|---------------|-----------|-----------|------------|------------|-----------------|----------------|------------|-------------|------------|------------|-----------------|
| 18.000 | 10,63 | 56 | 500 | 550 | 29,76 | 48.000 | 28,35 | 21 | 187 | 208 | 79,37 |
| 18.140 | 10,71 | 56 | 496 | 551 | 30 | 48.380 | 28,57 | 21 | 186 | 206 | 80 |
| 19.350 | 11,43 | 52 | 465 | 516 | 32 | 50.000 | 29,53 | 20 | 180 | 200 | 82,68 |
| 20.000 | 11,81 | 50 | 450 | 500 | 33,07 | 50.800 | 30 | 20 | 177 | 197 | 84 |
| 20.320 | 12 | 50 | 443 | 492 | 33,60 | 54.190 | 32 | 18 | 166 | 184 | 89,6 |
| 21.170 | 12,50 | 48 | 425 | 472 | 35 | 54.430 | 32,14 | 18 | 165 | 183 | 90 |
| 22.500 | 13,29 | 44 | 400 | 440 | 37,20 | 60.000 | 35,43 | 17 | 150 | 167 | 99,21 |
| 23.710 | 14 | 42 | 380 | 420 | 39,20 | 60.480 | 35,71 | 17 | 149 | 166 | 100 |
| 24.190 | 14,29 | 42 | 372 | 413 | 40 | 60.960 | 36 | 16 | 147 | 165 | 100,8 |
| 25.710 | 15,19 | 38 | 350 | 390 | 42,52 | 64.350 | 38 | 16 | 140 | 156 | 106,4 |
| 27.090 | 16 | 36 | 332 | 369 | 44,80 | 67.730 | 40 | 15 | 132 | 147 | 112 |
| 27.210 | 16,07 | 36 | 331 | 367 | 45 | 70.000 | 41,34 | 14 | 129 | 143 | 115,7 |
| 30.000 | 17,72 | 34 | 300 | 335 | 49,61 | 74.510 | 44 | 13 | 121 | 134 | 123,2 |
| 30.240 | 17,86 | 34 | 297 | 330 | 50 | 75.000 | 44,29 | 13 | 120 | 133 | 124 |
| 30.480 | 18 | 32 | 295 | 328 | 50,40 | 80.000 | 47,24 | 12,5 | 112 | 125 | 132,3 |
| 32.000 | 18,90 | 32 | 280 | 310 | 52,91 | 81.280 | 48 | 12,5 | 110 | 122 | 134,4 |
| 33.260 | 19,64 | 30 | 270 | 300 | 55 | 84.670 | 50 | 12 | 106 | 118 | 140 |
| 33.870 | 20 | 30 | 266 | 295 | 56 | 90.000 | 53,15 | 11 | 100 | 110 | 148,8 |
| 34.000 | 20,08 | 30 | 265 | 294 | 56,22 | 101.600 | 60 | 10 | 88 | 97 | 168 |
| 36.000 | 21,26 | 28 | 250 | 280 | 59,53 | 118.500 | 70 | 8,4 | 76 | 84 | 196 |
| 36.290 | 21,43 | 28 | 248 | 275 | 60 | 120.000 | 70,86 | 8,4 | 75 | 84 | 198,4 |
| 39.310 | 23,21 | 25 | 229 | 254 | 65 | 135.500 | 80 | 7,2 | 66 | 73 | 224 |
| 40.000 | 23,62 | 25 | 225 | 250 | 66,14 | 150.000 | 88,58 | 6,8 | 60 | 67 | 248 |
| 40.640 | 24 | 25 | 221 | 246 | 67,20 | 152.400 | 90 | 6,4 | 59 | 64 | 252 |
| 42.330 | 25 | 24 | 212 | 235 | 70 | 169.300 | 100 | 6 | 53 | 58 | 280 |
| 44.030 | 26 | 23 | 204 | 227 | 72,80 | 186.300 | 110 | 5,2 | 48 | 53 | - |
| 45.000 | 26,57 | 22 | 200 | 220 | 74,41 | 203.200 | 120 | 5 | 44 | 49 | - |
| 47.410 | 28 | 21 | 189 | 210 | 78,40 | | | | | | |

9 - TROUBLE SHOOTING

9.1 DURING INSTALLATION

- If the yarn feeder will not work once it has been fitted onto the machine, (i.e. the orange lights won't light up and the motor won't run), check to see that the flat strip power cable has been connected correctly (par. 2.1, 2.2 refers). Try loosening and reconnecting the feeder back onto the power cable once again. If it doesn't start up, try moving the fixing point on the power cable 1 cm away to the side.
If, after having tried the above options the feeder still doesn't start up, it must be replaced due to a probable failure of the main control board.

9.2 DURING OPERATION

- If after having functioned correctly, the feeder's orange signal lights won't light up when the machine stops, check to see whether the lights are still working correctly.
- If any failure by the feeder were not caused by incorrect installation or by connection errors, there probably is a failure in the main control board.
In these cases the yarn feeder must be replaced and the repair operations must be carried out by regularly authorised L.G.L. personnel.

10 - STRIPPING AND SCRAPPING

If stripping and scrapping of the machine is required, relative rating plates and all related documents must be destroyed or cancelled. If the machine is to be scrapped by third parties, only authorised centres are to be used for any waste recovery or disposal of the ensuing materials.

If the machine is to be scrapped directly by the user, it is important that the materials are split according to their category and then disposed of separately through specialised centres.

All metal parts, the electrical motor, rubber parts and all the parts made out of synthetic materials must be separated for recycling. Scrapping must at all times be carried out in full conformity with prevailing laws in the country of use wherefore any liability for non compliance with any local requirement lies solely with the last proprietor of the machine and/ or any appointed nominee.

L.G.L. Electronics will not be held liable for any damage or injury whatsoever arising from reuse of any one of the machine components for operations or assemblies that do not in any way conform to the original use the machine was intended for.

L.G.L. ELECTRONICS S.p.a.

Sede amministrativa, legale e stabilimento
Via Foscolo 156, - 24024 Gandino (BG) - Italy
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— ITALIANO —

DICHIARAZIONE DI CONFORMITÀ CE

La macchina è un alimentatore di trama per macchine per maglieria.

Produttore: **L.G.L. Electronics**
Modello: **ECOPOWER 2**



La macchina è conforme ai requisiti essenziali delle direttive 2006/42/CE, 2014/35/UE, 2014/30/UE.

— ENGLISH —

CE CONFORMITY DECLARATION

This machine is a weft accumulator, suitable for knitting machines.

Manufacturer: **L.G.L. Electronics**
Model: **ECOPOWER 2**



The machine is in compliance with the main requirements of directives 2006/42/CE, 2014/35/UE, 2014/30/UE.

— FRANÇAISE —

DECLARATION DE CONFORMITE CE

L'appareil est un délivreur de trame pour métiers à tricoter.

Producteur: **L.G.L. Electronics**
Modele: **ECOPOWER 2**



La machine est conforme aux conditions requises essentielles des directives 2006/42/CE, 2014/35/UE, 2014/30/UE.

— DEUTSCH —

CE ÜBEREINSTIMMUNGS ANGABE

Die Maschine ist ein Vorspulgerät für Wirkmaschinen.

Hersteller: **L.G.L. Electronics**
Typ: **ECOPOWER 2**



Die Maschine entspricht der wesentlichen Anforderungen der Richtlinien 2006/42/CE, 2014/35/UE, 2014/30/UE.

— ESPAÑOL —

DECLARACIÓN DE CONFORMIDAD CE

La máquina es un alimentador de trama para máquinas de género de punto por urdimbre.

Productor: **L.G.L. Electronics**
Modelo: **ECOPOWER 2**



La máquina está en conformidad con los requisitos esenciales de las directivas 2006/42/CE, 2014/35/UE y 2014/30/UE.

— PORTOGUES —

DECLARAÇÃO DE CONFORMIDADE CE

A máquina è um alimentador de trama para máquinas de malha por urdimento.

Productor: **L.G.L. Electronics**
Modelo: **ECOPOWER 2**



A máquina está em conformidade com os requisitos essenciais das directivas 2006/42/CE, 2014/35/UE, 2014/30/UE.

— NEDERLANDS —

VERKLARING VAN CE OVEREENSTEMMING

Deze machine is een inslagvoorspoelmachine voor breimachines.

Merk: **L.G.L. Electronics**
Type: **ECOPOWER 2**



De machine voldoet aan de essentiële vereisten van de richtlijnen 2006/42/CE, 2014/35/UE, 2014/30/UE.

— ΕΛΛΗΝΙΚΑ —

ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ CE

Το μηχάνημα είναι ένας τροφοδότης υφαδιού που δουλεύει με μηχανικούς αργαλειούς με λαβίδες ή σαίτες.

Ύψηθά: **L.G.L. Electronics**
Τύπος: **ECOPOWER 2**



Η μηχανή πληρεί τις βασικές προϋποθέσεις που ορίζονται από τις οδηγίες 2006/42/CE, 2014/35/UE, 2014/30/UE.

— SVENSKA —

CE OVERENSSTÄMMELSEDEKLARATION

Maskinen är en stickmaskin.

Märke: **L.G.L. Electronics**
Typ: **ECOPOWER 2**



Maskinen överensstämmer med de grundläggande kraven enligt EU-direktiven 2006/42/CE, 2014/35/UE och 2014/30/UE.

— SUOMEKSI —

CE VASTAAVUUSTODISTUS

Kone on neulekone.

Merkki: **L.G.L. Electronics**
Tyyppi: **ECOPOWER 2**



Kone on direktiivien 2006/42/CE, 2014/35/CE ja 2014/30/UE olennaisten vaatimusten mukainen.

— DANSK —

CE OVERENSSTEMMELSERKLÄRING

Maskinen er en strikkemaskine.

Mærke: **L.G.L. Electronics**
Type: **ECOPOWER 2**



Maskinen opfylder de grundlæggende krav i EU-direktiverne 2006/42/CE, 2014/35/UE og 2014/30/UE.

Gandino, 01/04/2022

Authorized to compile the technical file

Il Direttore Generale: Ing. Zenoni Pietro

A handwritten signature in black ink, appearing to read 'Ing. Zenoni Pietro'.



L.G.L. ELECTRONICS S.P.A

Via Ugo Foscolo 156 – 24024 Gandino (BG) – Italy
Tel. 0039 035 733408 – Fax 0039 035 733146 – Mail: lg@lg.it

DECLARATION OF CONFORMITY UKCA

The machine is a weft accumulator.

Manufacturer: **L.G.L Electronics S.p.A** **UK**
Model: **ECOPOWER2** **CA**

L.G.L Electronics S.p.A DECLARE

under its responsibility that the ECOPOWER2 are designed, manufactured and commercialized in compliance with the following UKCA Standards:

- The Electrical Equipment (Safety) Regulations 2016 – UK SI 2016 No. 1101
- Electromagnetic Compatibility Regulations 2016 – UK SI 2016 No. 1091
- Supply of Machinery (Safety) Regulations 2008 – UK SI 2008 No. 1597

Gandino (BG), 19/09/2022

CEO: Pietro Zenoni

A handwritten signature in black ink, appearing to read 'Pietro Zenoni', is written below the printed name.



L.G.L. Electronics S.p.A. reserve the right to alter in any moment one or more specifications of his machines for any technical or commercial reason without prior notice and without any obligation to supply these modifications to the machines, already installed.

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