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

INSTRUCTION MANUAL
weft accumulator
SMART VECTOR FA
1) Switch off the power supply box and the weft accumulator before starting any connections, maintenance or replacements.

2) Switch the weft accumulator off before carrying out any adjustments.

3) If the weft accumulator is fitted with a kit for pneumatic threading, discharge all the compressed air before removing the rear cover.

4) The weft accumulator can be started, if enabled by the loom, at any time during normal operation, without forewarning.

5) Check the feeder to ensure it is intact (flywheel, flywheel bush, moving parts).

6) Never touch any moving parts when the equipment is running.

7) The machine is not fit to operate in work places featuring high explosion risks.

8) Condensation may form on a weft accumulator 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.

9) Never take hold of the weft accumulator by the weft spool body or the weft feeler unit.

10) Only use original L.G.L. Electronics spare parts and accessories.

11) Electronic parts must only be repaired by suitably trained personnel authorised by L.G.L. Electronics.
ADVICE TO ALWAYS KEEP THE FEEDER IN PERFECT WORKING ORDER AND EXTEND ITS SERVICE LIFE.

For an always satisfying performance of the weft 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 weaving environment, Condensation may form on a weft accumulator 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 weft 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. Upon installation, before injecting voltage to the feeder, ensure that the round wires are all hooked-up. Any insufficient grounding may damage electronic components.

4. Machines working in environments featuring a lot of dust require increased maintenance.

   By preventing the weaving 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.

5. In the presence of dusty yarns, residual dust or thread may settle on the various parts of the weft feeder. A weft feeder that is particularly dirty is likely to compromise the fabric quality by leaving deposits on the threads that is introduced. In order to improve the fabric in quality as well as the machine overall performance, it is good rule to routinely clean the mechanical moving parts:
CAUTION

- By blowing compressed air from the ceramic of the flywheel, you may clean the shaft channel and remove any residual dust from the input sensor. Warning: Before using compressed air to clean the feeder, ensure you remove the thread from the drum. If you use compressed air with the thread wound up on the drum, you actually risk having the thread get in and accumulate between the flywheel and the drum.
- The inlet sensor can be periodically removed and cleaned.
- The drum and the flywheel can be periodically dismounted to remove any residual thread and dust.

6. We suggest storing feeders that are not used for long time periods in the special polystyrene boxes, which ensure the best storage.

7. When the weft feeder is being loaded, use the special weft taker. Do not use other tools, especially if made from metal, as the inlet sensor might be damaged, along with any outlet brakes.

8. If the weft feeder is equipped with a TWM brake, always open the brake carriage when you introduce the loading weft taker. Thus, you avoid taking the risk that the weft taker damages the brake unit.
1.1 MAIN PARTS; CONTROLS AND ADJUSTMENT POINTS

Main parts:
1 • MOTOR
2 • TOP PANEL
3 • FLYWHEEL
4 • WEFT SPOOL BODY
5 • OUTPUT TENSIONER UNIT
6 • OUTPUT SENSOR
7 • POWER CABLE
8 • MAIN ELECTRONIC CONTROL BOARD
9 • WEFT FEELER UNIT
10 • COMPRESSED AIR INTAKE

Switch 0 - I

The switch has three positions:
- **S** (set),
- **0** (zero) and
- **Z**.

**LED**

- This comes on and stays on if there are no faults when the accumulator is switched on.
- This flashes if there are malfunctions (see paragraph 10 “Trouble-shooting”).

**PNEUMATIC THREADING BUTTONS**

These control the pneumatic threading.
- Button **Dp** for partial threading (up to weft spool body).
- Button **Df** for final threading (from weft spool body to the output).

**COIL ADJUSTMENT BUTTON**

- This is used to vary the separation of coils (see paragraph 3.7 “Setting the direction of rotation and adjusting the separation of the coils”).

**RELEASE PUSH-BUTTON**

- This is for releasing the output tensioner.

**ADJUSTMENT KNOB**

- This is for adjusting the intensity of the output tensioner.
1 - GENERAL FEATURES

1.2 OVERALL DIMENSIONS

SMART VECTOR FA with ATTIVO tensioner

Weight 7.5 Kg

SMART VECTOR FA with TWM tension modulator

Weight 7 Kg

SMART VECTOR FA with bristle brush tensioner

Weight 7 Kg

SMART VECTOR FA with metal brush tensioner

Weight 7 Kg
1.3 INTENDED USE - MAIN FEATURES AND SPECIFICATIONS

Intended use:
The SMART VECTOR FA is a weft accumulator with separate adjustable coils that can be used on all gripper and projectile weaving machines. It can work with yarn counts ranging from 8 Nm (thick wefts) to 20 den (fine wefts).

Main features:
• Automatic speed control to suit the loom’s weft quantity requirements.
• Direction of rotation can be inverted for S or Z twisted yarns.
• Weft reserve control using an optical/mechanical system, 100% dust, light and smear-proof.
• The possibility, depending on the weaving conditions, to adopt different work programs thanks to different DIP-SWITCH combinations (accessible from outside after raising the rear cover).
• Pneumatic threading (optional).
• If an input sensor (optional) is fitted, the following functions can be carried out:
  - “Loom stop”: It stops the weft accumulator and the loom automatically if there is no weft detected at the accumulator input (broken weft or end spool).
  - “Exclusion of broken wefts”: It excludes broken wefts automatically by stopping the accumulator but without stopping the loom if no weft is detected at the accumulator input (broken weft or end spool). This function is only possible on weaving machines equipped for this function.
• Various tensioners can be fitted at the weft accumulator input and output to suit the yarn being woven.
• Possibility to interface-connect the feeder with the weaving machine through the can-bus protocol.

Technical specifications:
• Power supply box supplied separately by LGL Electronics.
  - supply voltage  STD: \( V = 200/600 \) VA = 450 Hz = 50/60
  - supply voltage  CAN BUS: \( V = 200/600 \) VA = 550 Hz = 50/60
• Automatic weft accumulation speed control up to max. 1800 m/min for the weft mixer and 1500 m/min for individual colours.
• Adjustable coil separation from 0 to max. 2.5 mm
• Three-phase asynchronous motor, maintenance-free:
  Motor data:
  Max. power: 100 W Average absorbed power: 30 W
• Acoustic pressure level \( A \), at max. speed, less than 70 dB
• Pneumatic circuit pressure: min. 4 bar; max. 7 bar
• Operating conditions - Storing conditions:
  Temperature: +10 to +40 °C
  Max. humidity: 80%
1.4 HANDLING AND STORAGE

*Never take hold of the weft accumulator by the weft spool body or weft feeler unit.*

The weft accumulator is supplied with its own polystyrene casing: keep this in a safe place for future use.

1.5 INPUT SENSOR

The weft accumulator can be fitted on request with an input sensor with the following functions:

- **“Loom stop”:**
  It stops the weft accumulator and the loom if there is no weft detected at the accumulator input (broken weft or end spool).

- **“Exclusion of broken wefts”:**
  It excludes broken wefts by stopping the accumulator but without stopping the loom if no weft is detected at the accumulator input (broken weft or end spool).

  *This function is only possible on weaving machines equipped for this function.*

In this way, defects in the cloth can be avoided, as too can loom stops, thanks to the broken wefts exclusion function.

In order to make the electronic piezoelectric weft sensor act properly, make sure that the weft flows over the sensitive part as normally happens on all yarn flow sensor units.

**N.B.:** To avoid false stops, make sure that the sensor is kept clean so that the weft can flow smoothly over the sensitive part.

*In cases when the “Loom Stop” function is enabled on the loom, the intermediate position 0 (zero) of the S - 0 - Z switch allows for switching off the weft accumulator device without stopping the loom.*
1.6 OUTPUT SENSOR

The output sensor on the accumulator automatically adjusts the speed to suit the amount of weft required by the loom. There is thus no need for adjustment when weaving thick or fine yarns.

1.7 WEFT TWIST DETERMINATION

Hold weft T at one end, hold the other end between your thumb and forefinger and rotate in the direction indicated by arrow L.
If the weft acquires twist, it is S.
If the weft loses twist, it is Z.
2.1 INSTALLATION OF THE POWER CONTROL BOX

To install the power control box, follow these steps:

1) Fix the power supply box to the support with the clamp(s) provided at least 30 cm from the ground.

2) **Check that the power supply box is set for the right supply voltage.**
   See the ratings sticker on the outside of the power supply box.
   If the mains voltage differs from the nominal power supply box rating, open the box and connect the wires from the switch (if MOLEX box) or fuse boxes L1, L2 and L3 (if an AMP box) to the correct input on the transformer.

3) Connect the power supply box cable to the three-phase mains line.
   If the power supply box has been supplied without the cable, it should be connected to the three-phase line with a 4-conductor cable. The section of each conductor must not be less than 1.5 mm².
   Connect the 3 phases in the mains line to terminals L1, L2 and L3. Connect the earth wire to terminal PE.
   For the connections, see the drawing enclosed in the box.
   **N.B.: Make all connections to the three-phase mains line downstream of the main switch on the loom so that it can also act as a switch for the power units on the loom.**

4) Connect the power supply box earth cable to its stand base. (See detail A in the figure).

**WARNING:** Switch off the power supply box before making any connections.
2.2 CAN-BUS FEATURE

The SMART VECTOR FA feeders incorporate a dual communication system with the weaving machine. They can either operate with the traditional system and with the new Can-Bus protocol, provided that a dedicated Cable - Power Supply Box equipment is available.

Notably, if the feeder operates with the Can-Bus protocol, it may exchange a greater number of data with the weaving machine and hence incorporate new features.

The **PATTERN PREVIEW**, which the feeder can use to improve speed adjustment, is an instance of this improved feature.

The weaving machine communicates in advance which feeder will be selected and for how long it will operate. Then the feeder will use this information to optimize its acceleration ramp and set a dedicated winding speed in shorter time lags.

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**Power supply box of the MOLEX CAN-BUS type**

*Feeder cable code A1N1SA504*

![Diagram of Power supply box](image)
2.3 INSTALLATION AND START-UP OF THE WEFT ACCUMULATOR

N.B.: Condensation may form on a weft accumulator 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.

To install and start-up the weft accumulator, follow these steps:

1) Fix the accumulator to its stand using the clamp provided (ø25, ø30, ø32).
   N.B.: Make sure that the stand used to hold the weft accumulator is connected to the earth system.

2) Position the weft accumulator so that the weft is as straight as possible between this and the loom.

3) If necessary (e.g., highly twisted yarns, snarled yarns, etc.), fit the input tensioner to the weft accumulator if not already fitted on the creel.

4) Connect the weft accumulator to the pneumatic circuit (only if fitted with pneumatic threading).

5) Switch off the power supply box before connecting the weft accumulator. This is necessary in order not to damage the weft accumulator electronics.

6) Switch off the weft accumulator by turning its 0 - I switch to 0.

7) Connect the weft accumulator cable to a power supply box socket.
   N.B.: If the box is fitted for the “Exclusion of broken wefts” function, the power supply cable must be connected to the socket marked with the same number as the finger of the loom to be fed by the weft accumulator.

8) Switch on the power supply box. The green led on the accumulator top panel will flash briefly and then go off (Reset).

9) Set the weft accumulator direction of rotation and adjust the coil separation (see paragraph 3.7).
   The default settings for the accumulators are Z rotation and 2.5 mm coil separation.

10) Now thread up the weft accumulator using the special weft taker provided or the pneumatic threading system, if fitted (see paragraphs 3.1, 3.2, 3.3 and 3.4).

11) Having threaded up the accumulator, switch it on by turning switch 0 - I to I and the weft will start to be wound around the weft spool body.
3.1 THREADING OF THE WEFT ACCUMULATOR WITH TWM TENSION MODULATOR

Always switch off the accumulator before any threading operation as shown in the figures below:

To avoid damaging the TWM on the outer edge it is advisable to operate the threading with the TWM open, by taking the actions listed below:

- Open the TWM by pressing the release push-button and pulling the knob;
- Push the balloon breaking ring towards the TWM to complete the opening and facilitate the insertion of the weft taker, which can take place from either direction;
- Insert the taker up to the sensor;
- Hook the thread to the taker and thread it.
- After threading, place the balloon breaking kit back in place and close the output tensioner by pressing knob (G).

To avoid damaging the TWM we recommend using weft takers in good condition and not allowing too much weft to accumulate.

Never use the iron needles normally used to thread heald heddles and the reed on the loom as these will damage the TWM.

The most recent versions of the Smart Vector Fa feeders are equipped with a TWM brake featuring a protective rim on the external diameter.

This rim protects the TWM during threading and operation, so as to increase the overall service life of the brake.
3.2 THREADING OF THE WEFT ACCUMULATOR WITH BRISTLE BRUSH TENSIONER

Always switch off the accumulator before any threading operation as shown in the figures below:

_N.B._: *When the accumulator is switched on again, press the brush on the weft spool body with a finger so that the weft can start winding around this._

3.3 THREADING OF THE WEFT ACCUMULATOR WITH METAL BRUSH TENSIONER

Always switch off the accumulator before any threading operation as shown in the figures below:

_Threading possible in one direction only_
3.4 PNEUMATIC THREADING

Pneumatic threading can be:

- **PARTIAL BACK**: To thread the back of the accumulator up to the weft spool body.

- **PARTIAL+ FINAL (COMPLETE)**: To thread the back of the accumulator up to the weft spool body and then on to the front, from the weft spool body to the output.

*If the accumulator is fitted with a metal brush output tensioner, final threading is not possible.*

**Specifications:**

Compressed air pressure: min. 5 bar; max. 8 bar (we recommend 5-6 bar).

Air tube diameter: 6x4 mm;

Use dry air only.

**THREADING PROCEDURES:**

**PARTIAL (up to the weft spool body)**

*When required:*

- Accumulator in alarm (end spool);
  - Weft still on the front section of the weft spool body.

*Threading procedure:*

1) With one hand take the weft to ceramic bush (I) and with the other press button (DP).

2) Knot the new weft to the end of the old weft on the front section of the weft spool body.

3) Switch the accumulator off and then back on again for the weft to be wound as normal.
PARTIAL + FINAL (COMPLETE)

Threaded procedure of accumulator with bristle brush

- First stage: “partial back” (up to the weft spool body)
  1) With one hand take the weft to ceramic bush (H) and with the other press button (DP).
     Switch on the accumulator, gently pressing the weft on the weft spool body to make it easier for it to start winding round the weft spool body.

- Second stage: “final” (from the weft spool body to the output)
  2) Open the output tensioner by pressing push-button (F) and pull knob (G).
  3) Pull a little weft from the weft spool body and thread this between the weft spool body and the bristle brush and then press push-button (DF) until the weft moves out of the sensor.
  Leave a little extra weft when pulling the weft on to the output sensor.
  4) After threading the accumulator, close the output tensioner by pressing knob (G).
PARTIAL + FINAL (COMPLETE)

Threading procedure of accumulator with TWM tension modulator:

• First stage: “partial back” (up to the weft spool body)
  1) With one hand take the weft to ceramic bush (H) and with the other press button (DP).
      Switch on the accumulator, gently pressing the weft on the weft spool body to make it easier for it to start winding round the weft spool body.

• Second stage: “final” (from the weft spool body to the output)
  2) Open the output tensioner by pressing push-button (F) and pull knob (G). Push the balloon breaking kit ring towards the TWM to complete the opening and facilitate the threading. Pick up some weft from the spool body.
  3) Move the weft between the spool body and the balloon breaking kit, press push-button (DF) until the weft moves out of the sensor.

      Leave a little extra weft when pulling the weft on to the output sensor.

  4) After threading, place the balloon breaking kit back in place and close the output tensioner by pressing knob (G).
3.5 SPEED ADJUSTMENT

The SMART VECTOR FA is equipped with a microprocessor and an output sensor that automatically adjust the winding speed to suit the insertion speed of the loom. Therefore the operator is not required to adjust the speed.

See paragraph 4 “Programming the operating parameters and special programs” for details of what to do in the case of special working conditions.

3.6 TENSION ADJUSTMENT

Use the output and input tensioners (the latter are not always fitted) on the accumulator to adjust the tension to suit the yarn being used. Here are a few examples:
3.7 SETTING THE DIRECTION OF ROTATION AND ADJUSTING THE SEPARATION OF THE COILS

The SMART VECTOR FA allows for the adjustment of the coil separation from 0 to max. 2.5 mm, regardless of whether the weft twist is S or Z.

1) Set the direction of rotation (S or Z) by moving switch S - 0 - Z to the required position and then adjust the coil separation as follows:

2) Push button (E) and hold down to make flywheel (L) turn until the button engages.

3) With the button held down, jog the flywheel a little (about 1 cm) in the same direction of rotation as the accumulator (set by switch S - 0 - Z) and then release the button. (If the direction of rotation of the accumulator is S, the flywheel must also turn in the S direction, and vice-versa).

4) Switch on the accumulator and check the coil separation.
   If the coil separation is not correct, repeat the above steps (points 2 and 3), making the flywheel turn in the same direction as the accumulator to increase the separation and in the opposite direction to decrease.

Example: “Z” rotation.
If the accumulator is equipped with the TWM tension modulator, remove the whole kit in order to press button (E).

**WARNING:**
Always make sure that the direction of rotation has been set correctly otherwise the coils will not separate.

The accumulator is not used when switch **S - 0 - Z** is in position 0 (zero). In this case, the led on the top panel will flash 7 times per second, indicating an anomaly: turn the switch to either position **S** or **Z**, as required.

*If the “loom stop” function is enabled on the loom, the middle position 0 (zero) of the **S - 0 - Z** switch allows for the weft accumulator to be turned off without stopping the loom.*
3 - THREADING AND ADJUSTMENTS

LOGIC USED FOR COIL SEPARATION ADJUSTMENT

By turning the flywheel in the same direction to that of the accumulator (set by switch S - 0 - Z), the coil separation is increased, whereas by turning the flywheel in the opposite direction to that of the accumulator, the coil separation is decreased.

N.B.: If adjusted halfway between max. Z and max. S, there will be a gap of 1 mm. If this separation satisfies the weaving conditions, the weft accumulator can turn in both directions by simply pressing the S - 0 - Z switch.
4 - PROGRAMMING THE OPERATING PARAMETER
AND SPECIAL PROGRAMS

4.1 PROGRAMMING THE OPERATING PARAMETERS

_For looms equipped with a accumulator with CAN-BUS connection, the operating parameters and display
display of error messages may also be direct from the loom control panel._

4.2 SPECIAL PROGRAMS (fitted as standard on all accumulators)

All accumulators have a series of special operating programs that can be enabled by simply changing the
combination of the DIP-SWITCHES on the electronic control board.

The table below shows the meaning of the Dip-Switch settings:

<table>
<thead>
<tr>
<th>DS1</th>
<th>DS2</th>
<th>DS3</th>
<th>DS4</th>
<th>Selected program</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>SMART VECTOR FA standard</td>
</tr>
<tr>
<td>ON</td>
<td>off</td>
<td>off</td>
<td>off</td>
<td>Option for avoiding too much weft accumulation when the weft is wound manually for certain types of weft. It is best not to set this Dip-Switch when band insertion is required</td>
</tr>
<tr>
<td>off</td>
<td>off</td>
<td>ON</td>
<td>off</td>
<td>Slow acceleration</td>
</tr>
<tr>
<td>off</td>
<td>ON</td>
<td>ON</td>
<td>off</td>
<td>Very slow acceleration</td>
</tr>
<tr>
<td>off</td>
<td>off</td>
<td>off</td>
<td>ON</td>
<td>Special programme for yarns with weft count lower than 40 Den.</td>
</tr>
</tbody>
</table>

By **DS1** we mean the Dip-Switch furthest to the left, looking at the weft accumulator from behind. **DS2, DS3 and DS4** are the next Dip-Switches to the right of this.
5.1 DISASSEMBLY OF THE WEFT SPOOL BODY

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

1) Switch off the weft accumulator by turning O - I switch to 0.

2) Disconnect the supply cable from the power supply box and wait about two minutes before continuing so that the capacitors on the electronic boards have time to discharge.

3) Remove the three screws (1), lift top guard (2), detach connector (C1) from the weft feeler unit control board and connector (C2) from the output sensor and then remove the top guard.

4) Remove cap (3), loosen the three screws (4) and extract the weft spool body (5).

5) Unscrew the six screws (6), and remove the housing for front bearing (7) by means of a puller with a special spacer.

6) Pull out the six shock absorbers (8), use a driftbolt to remove the pin (10) from the retainer (11).
7) Remove, in sequence:
The retainer (12), the ring nut (13), the seeger ring (14) and the swinging hub (15), then extract the S/Z bush (16).
All these steps are needed to replace the S/Z bush (16) or the swinging hub (15). On reassembling the parts, pay attention to the eccentricity of the bush (16), which must be opposite the cam mass (17).
A special attention must also be paid to the fitting of the ring nut (13), which needs to be fitted with the pushbutton seat turned downwards and the flywheel reference on the 0 position.
Be very careful even when fitting the “OR” seal (19) of the retainer (12).
Going on with the disassembling operation, remove the seeger (20), the cams (17) and the spring (21).

8) Loosen the ring nut (22) by using the special wrench.

9) Remove the front magnet-holder (23), then pull out the flywheel (24).

10) Now even the ceramic bush (25) on the shaft may now be removed easily.

* N.B.: When remounting the weft spool body, make sure that the S/Z coil setting button is opposite the weft feeler lever.

The magnet holder can only be fixed in one position.
5.2 REPLACING THE INPUT SENSOR

In order to replace the input sensor, follow these steps:

1) Switch off the weft accumulator by turning 0 - I switch to 0.

2) Disconnect the supply cable from the power supply box and wait for about two minutes before continuing so that the capacitors on the electronic boards have time to discharge.

3) Weft accumulators with pneumatic threading only: eliminate any compressed air by closing the circuit and pressing push-button (DP) (partial pneumatic threading).

4) If fitted, remove the input tensioner on the weft accumulator.

5) Remove the 4 screws (7) and remove the top cover (8).

6) Disconnect input sensor connector (C3).

7) Remove the 2 screws (9) and then remove sensor support (10).

8) Weft accumulator with pneumatic threading only: detach tube (11).

9) Replace sensor (12).

N.B.: Take care not to crush the sensor cable and the pneumatic circuit tubes when returning sensor bracket (10) and cover (8).
5.3 REPLACING THE OUTPUT SENSOR

In order to replace the output sensor, follow these steps:
1) Switch off the weft accumulator by turning 0 - I switch to 0.
2) Disconnect the supply cable from the power supply box and wait about two minutes before continuing so that the capacitors on the electronic boards have time to discharge.

3) Remove the three screws (1), lift top panel (2), detach connector (C1) from the weft feeler unit control board and connector (C2) from the output sensor and then remove the top panel.

4) Remove the four screws (13) on the weft feeler unit (14) and remove this; remove the TWM balloon breaking ring (if fitted) and then extract the tensioning device (TWM or brush).
5) Unhook the braking saddle with push-bottom (F); unscrew the adjustment knob completely and remove the release spring. Manually move the saddle to the point of maximum braking, remove the 2 screws (15) and extract the sensor.
6) Fit the new sensor.

*N.B.: The new sensor is already fixed to its bracket.*

*N.B.: Take care not to crush the output sensor cable and the pneumatic circuit tubes when returning weft feeler unit (14).*
5.4 REPLACING THE MAIN ELECTRONIC CONTROL BOARD (LGL152)

To replace the main electronic control board, follow these steps:

1) Switch off the weft accumulator by turning 0 - I switch to 0.

2) Disconnect the supply cable from the power supply box and wait about two minutes before continuing so that the capacitors on the electronic boards have time to discharge.

3) Remove the three screws (1), lift top panel (2), detach connector (C1) from the weft feeler unit control board and connector (C2) from the output sensor and then remove the top panel.

4) Disconnect motor connector (C4).

5) Disconnect the power cable connector using the 2 screws (16).

6) Remove the 2 side screws (3x6) (18), the screw on the board (4x8) (19) and the toothed washer (ø 4).

7) Connector (C3) (if fitted) comes away when the board is extracted. **N.B.: Make a special note of the layout of the cables in order to remount the board correctly.**

8) Replace with the new board.

**N.B.: When fitting the new board, make sure that the two side screws (18) and screw (19) are thoroughly tightened so that the aluminium board bracket touches the aluminium casing of the weft accumulator. We recommend putting some thermo-conductive paste on the surface of the bracket at the points where this comes into direct contact with the accumulator casing. Before closing the top panel, check the setting of the DIP-SWITCHES.**
5.5 REPLACING THE WEFT FEELER UNIT ELECTRONIC CONTROL BOARD (LGL93-94)

To replace the weft feeler unit electronic control board, follow these steps:
1) Switch off the weft accumulator by turning 0 - I switch to 0.
2) Disconnect the supply cable from the power supply box and wait about two minutes before continuing so that the capacitors on the electronic boards have time to discharge.

3) Remove the three screws (1), lift top panel (2), detach connector (C1) from the weft feeler unit control board and connector (C2) from the output sensor and then remove the top panel.

4) Remove the four screws (13) and the weft feeler unit (14).
5) Remove the two screws (21) fixing board LGL93-94 (22) to the weft feeler unit, remove the board and replace with a new board.

N.B.: Take care not to crush the output sensor cable and the pneumatic circuit tubes when returning weft feeler unit (14) to the top panel.
6.1 MOUNTING THE TWM TENSION MODULATOR

To mount the TWM tension modulator with its kit, follow these steps:

1) Release the tensioner carriage by pressing the release push-button (F) and by pulling the knob (G), then fix the anti-ballooning ring by inserting the magnetic part into the special seat that is found in the top panel.

2) Insert the TWM tension modulator on the movable stand.

3) Engage the tensioner carriage again by pressing knob (G).

4) After threading the accumulator and winding the weft around the weft spool body, adjust the tensioning as indicated in the figure.

To get to know more on the rim feature, please refer to chapter 3.1.
6.2 MOUNTING THE BRISTLE BRUSH

To mount the bristle brush with its kit, follow these steps:

1) Release the tensioner carriage by acting on the release push-button (F) and by pulling the knob (G).

2) Insert brush holder (L) and then brush (M) on the movable stand.

3) Engage the tensioner carriage again by pressing knob (G).

4) After threading the accumulator and winding the weft around the weft spool body, adjust the tensioning as indicated in the figure.
6.3 MOUNTING THE METAL BRUSH

To mount the metal brush with the related kit, take the following actions:

1) Release the tensioner carriage by pressing the release push-button (F) and by pulling knob (G).

2) Insert the metal brush into the dedicated support and fasten it in place.

3) Lock the support into the brake holding ring.

4) Lock the braking carriage once again by pressing hand-knob (G). After inserting the feeder and winding the weft round the spool body, adjust the braking as shown in the figure.
6.4 DISMOUNTING THE TWM KIT AND MOUNTING THE LAMELLA KIT ONTO THE ATTIVO

To replace the TWM kit, on the ATTIVO tensioner, with the lamella kit, take the following actions:

1) Release the tensioner carriage by pressing release button (F).

2) Release the TWM support from the magnetic pins of the attivo tensioner’s motors.

3) Remove the TWM from the feeder.

4) Release the anti-ballooning ring from its location and remove it from the feeder.
5) Insert the lamella kit, already equipped with the desired lamella, into the feeder.

6) Engage the special support locations to the magnetic pins of the attivo tensioner’s motors.

7) Engage the tensioner carriage again by pressing knob (G).
### 7.1 APPLICATION FIELD FOR INPUT TENSIONERS

<table>
<thead>
<tr>
<th>WEFT TYPE</th>
<th>Wool yarn</th>
<th>Cotton and viscose staple fibre</th>
<th>Strong twisted yarns, crêpe and silk yarns</th>
<th>Stiff yarns: Linen, Camel hair, etc.</th>
<th>Viscose, Synthetic fibres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compensator tensioner</td>
<td>from Nm 12 to Nm 120</td>
<td>from Nm 8 to Nm 200</td>
<td>from Nm 15 to Nm 150</td>
<td>from Nm 3 to Nm 90</td>
<td>from Nm 9 to Nm 200</td>
</tr>
<tr>
<td>Double compensator tensioner</td>
<td></td>
<td></td>
<td>from Nm 15 to Nm 150</td>
<td></td>
<td>from Nm 48 to Nm 200</td>
</tr>
<tr>
<td>Disk tensioner</td>
<td>from Nm 12 to Nm 30</td>
<td></td>
<td>from Nm 15 to Nm 120</td>
<td></td>
<td>from Nm 9 to Nm 120</td>
</tr>
<tr>
<td>Disk tensioner for pneumatic threading</td>
<td>from Nm 12 to Nm 120</td>
<td>from Nm 8 to Nm 200</td>
<td>from Nm 15 to Nm 120</td>
<td>from Nm 6 to Nm 90</td>
<td>from Nm 9 to Nm 120</td>
</tr>
<tr>
<td>Leaf tensioner</td>
<td>from Nm 12 to Nm 30</td>
<td>from Nm 8 to Nm 40</td>
<td></td>
<td>from Nm 3 to Nm 50</td>
<td>from Nm 9 to Nm 50</td>
</tr>
<tr>
<td>Anti-snarling unit</td>
<td>from Nm 20 to Nm 120</td>
<td>from Nm 20 to Nm 120</td>
<td>from Nm 15 to Nm 150</td>
<td></td>
<td>from Nm 40 to Nm 150</td>
</tr>
<tr>
<td>Oiling unit</td>
<td>from Nm 8 to Nm 120</td>
<td>from Nm 8 to Nm 200</td>
<td>from Nm 15 to Nm 150</td>
<td>from Nm 3 to Nm 90</td>
<td>from Nm 9 to Nm 200</td>
</tr>
<tr>
<td>Waxing unit</td>
<td>from Nm 8 to Nm 30</td>
<td>from Nm 8 to Nm 60</td>
<td>from Nm 15 to Nm 70</td>
<td>from Nm 3 to Nm 40</td>
<td>from Nm 9 to Nm 80</td>
</tr>
</tbody>
</table>
7.2 APPLICATION FIELD FOR THE “TWM” TENSION MODULATOR

### TWM type LT10 SM (code A1N2S974BE-T7)

<table>
<thead>
<tr>
<th>Spring assembly options</th>
<th>Wool yarn</th>
<th>Cotton and viscose staple fibre</th>
<th>Strong twisted yarns, crêpe and silk yarns</th>
<th>Stiff yarns: Linen, Camel hair, etc.</th>
<th>Viscose, Synthetic fibres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard assembly (6 x ø 0.6 springs)</td>
<td>from Nm 12 to Nm 30</td>
<td>from Nm 8 to Nm 30</td>
<td>from Nm 15 to Nm 30</td>
<td>from Nm 20 to Nm 40</td>
<td></td>
</tr>
<tr>
<td>Option 1 (6 x ø 0.4 springs)</td>
<td>from Nm 23 to Nm 48</td>
<td>from Nm 30 to Nm 70</td>
<td>from Nm 23 to Nm 70</td>
<td>from Nm 38 to Nm 60</td>
<td></td>
</tr>
</tbody>
</table>

Springs supplied:
- No. 6 springs Ø 0.6 mm length 15 mm - ELM 1695
- No. 6 springs Ø 0.4 mm length 15 mm - ELM 1650

*N.B.: LIGHT BLUE text is found on the spool body trunk.*

### TWM type LT05 SM (code A1N2S973BE-T7)

<table>
<thead>
<tr>
<th>Spring assembly options</th>
<th>Wool yarn</th>
<th>Cotton and viscose staple fibre</th>
<th>Strong twisted yarns, crêpe and silk yarns</th>
<th>Stiff yarns: Linen, Camel hair, etc.</th>
<th>Viscose, Synthetic fibres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard assembly (6 x ø 0.6 springs)</td>
<td>from Nm 12 to Nm 40</td>
<td>from Nm 20 to Nm 60</td>
<td>from Nm 20 to Nm 70</td>
<td>from Nm 30 to Nm 50</td>
<td>from Nm 20 to Nm 50</td>
</tr>
<tr>
<td>Option 1 (6 x ø 0.4 springs)</td>
<td>from Nm 36 to Nm 120</td>
<td>from Nm 50 to Nm 150</td>
<td>from Nm 45 to Nm 150</td>
<td>from Nm 48 to Nm 90</td>
<td>from Nm 48 to Nm 120</td>
</tr>
</tbody>
</table>

Springs supplied:
- No. 6 springs Ø 0.6 mm length 15 mm - ELM 1695
- No. 6 springs Ø 0.4 mm length 15 mm - ELM 1650

*N.B.: green text is found on the spool body trunk.*

### TWM type K (code A1N1SA160)

<table>
<thead>
<tr>
<th>Spring assembly options</th>
<th>Wool yarn</th>
<th>Cotton and viscose staple fibre</th>
<th>Strong twisted yarns, crêpe and silk yarns</th>
<th>Stiff yarns: Linen, Camel hair, etc.</th>
<th>Viscose, Synthetic fibres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard fitting (6 springs Ø 0.4)</td>
<td>from Nm 70 to Nm 150</td>
<td>from Ne 50 to Ne 120</td>
<td>from Den 20 to Den 110</td>
<td>from Den 20 to Den 160</td>
<td></td>
</tr>
</tbody>
</table>

Springs supplied:
- No. 6 springs Ø 0.4 mm length 15mm-ELM 1650

*N.B.: the spool body trunk is transparent.*

### TWM type KLBE (code A1N1SA252BE) - KLBE with special springs (code A1N1SA519BE)

<table>
<thead>
<tr>
<th>Spring assembly options</th>
<th>Wool yarn</th>
<th>Cotton and viscose staple fibre</th>
<th>Strong twisted yarns, crêpe and silk yarns</th>
<th>Stiff yarns: Linen, Camel hair, etc.</th>
<th>Viscose, Synthetic fibres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard fitting (6 springs Ø 0.4)</td>
<td>from Nm 40 to Nm 80</td>
<td>Beyond Nm 85</td>
<td>from Nm 70 to Nm 200</td>
<td>Beyond Nm 50</td>
<td>from Nm 80 to Nm 150</td>
</tr>
</tbody>
</table>

Springs supplied:
- No. 6 springs Ø 0.4 mm length 15 mm - ELM 1650
- Special springs: No. 6 springs Ø 0.6 mm length 18 mm - ELM 3746

*N.B.: the spool body trunk is transparent.*
7.3 APPLICATION FIELD FOR BRISTLE BRUSH TENSIONERS

<table>
<thead>
<tr>
<th>WEFT TYPE</th>
<th>Wool yarn</th>
<th>Cotton and viscose staple fibre</th>
<th>Strong twisted yarns, crêpe and silk yarns</th>
<th>Stiff yarns: Linen, Camel hair, etc.</th>
<th>Viscose, Synthetic fibres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goat hair (white)</td>
<td>from Nm 40 to Nm 150</td>
<td>from Nm 17 to Nm 150</td>
<td>from Nm 75 to Nm 200</td>
<td>from Nm 90 to Nm 150</td>
<td>from Nm 50 to Nm 200</td>
</tr>
<tr>
<td>Chinese horsehair (brown)</td>
<td>from Nm 32 to Nm 45</td>
<td>from Nm 48 to Nm 80</td>
<td>from Nm 54 to Nm 100</td>
<td>from Nm 48 to Nm 100</td>
<td>from Nm 36 to Nm 150</td>
</tr>
<tr>
<td>0.20 (black)</td>
<td>from Nm 18 to Nm 34</td>
<td>from Nm 25 to Nm 70</td>
<td>from Nm 45 to Nm 60</td>
<td>from Nm 30 to Nm 50</td>
<td>from Nm 25 to Nm 60</td>
</tr>
<tr>
<td>0.30 (black)</td>
<td>from Nm 12 to Nm 30</td>
<td>from Nm 8 to Nm 50</td>
<td>from Nm 30 to Nm 50</td>
<td>from Nm 16 to Nm 32</td>
<td>from Nm 18 to Nm 40</td>
</tr>
</tbody>
</table>

N.B.: The radial versions fall within the same fields of application, but the results tend to be closer to the hardest model.

BRISTLE BRUSHES

<table>
<thead>
<tr>
<th>BRISTLE TYPE</th>
<th>Code “S” TWIST</th>
<th>Code “Z” TWIST</th>
<th>Cod. RADIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.20</td>
<td>A1C1F306</td>
<td>A1C1F308</td>
<td>A1C1F310</td>
</tr>
<tr>
<td>0.30</td>
<td>A1C1F305</td>
<td>A1C1F307</td>
<td>A1C1F309</td>
</tr>
<tr>
<td>Chinese mane</td>
<td>A1C1F311</td>
<td>A1C1F312</td>
<td>A1C1F315</td>
</tr>
<tr>
<td>Goat hair</td>
<td>A1C1F313</td>
<td>A1C1F314</td>
<td>A1C1F316</td>
</tr>
</tbody>
</table>

In the case of Goat hair and Chinese horsehair brushes, we recommend using the output tensioning device with 2 medium double-leaf brakes or, alternatively, the Standard double-leaf brake.

In the case of the 0.20 and 0.30 brushes, we recommend using the output tensioning device with the Standard double-leaf brake or, alternatively, with 2 folded double-leaf brakes.

Special Standard double-leaf brake + Folded double-leaf brake or 1 Medium double-leaf brake Kits are available.
### 7.4 APPLICATION FIELD FOR METAL BRUSH TENSIONERS

<table>
<thead>
<tr>
<th>WEFT TYPE</th>
<th>Wool yarn</th>
<th>Cotton and viscose staple fibre</th>
<th>Strong twisted yarns, crêpe and silk yarns</th>
<th>Stiff yarns: Linen, Hemp, Camel hair, Jute, etc.</th>
<th>Viscose, Synthetic fibres</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type B 10</strong> (Thickness 0.10 mm)</td>
<td>over Nm 60</td>
<td>over Nm 60</td>
<td>over Nm 90</td>
<td>over Nm 40</td>
<td>over Nm 80</td>
</tr>
<tr>
<td><strong>Type B 15</strong> (Thickness 0.15 mm)</td>
<td>from Nm 12 to Nm 70</td>
<td>from Nm 30 to Nm 70</td>
<td>from Nm 30 to Nm 100</td>
<td>from Nm 25 to Nm 45</td>
<td>from Nm 30 to Nm 100</td>
</tr>
<tr>
<td><strong>Type B 20</strong> (Thickness 0.20 mm)</td>
<td>from Nm 12 to Nm 30</td>
<td>from Nm 12 to Nm 40</td>
<td>from Nm 12 to Nm 40</td>
<td>from Nm 12 to Nm 30</td>
<td>from Nm 18 to Nm 40</td>
</tr>
</tbody>
</table>

#### METAL BRUSHES

<table>
<thead>
<tr>
<th>TYPE</th>
<th>CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type B 10</td>
<td>ELM3072</td>
</tr>
<tr>
<td>Type B 15</td>
<td>ELM3996</td>
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<tr>
<td>Type B 20</td>
<td>ELM3997</td>
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</table>
### 7.5 YARN COUNT SYSTEMS CONVERSION TABLE

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<th>den</th>
<th>Dtex</th>
<th>NeL</th>
<th>Nm</th>
<th>Ne</th>
<th>tex</th>
<th>den</th>
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</thead>
<tbody>
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<td>10</td>
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<td>27.210</td>
<td>16,07</td>
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<td>331</td>
<td>367</td>
<td>45</td>
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<td>70</td>
<td>8.4</td>
<td>76</td>
<td>84</td>
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<tr>
<td>30.000</td>
<td>17,72</td>
<td>34</td>
<td>300</td>
<td>335</td>
<td>49.61</td>
<td>120.000</td>
<td>70.86</td>
<td>8.4</td>
<td>75</td>
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<td>297</td>
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<td>50</td>
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<td>80</td>
<td>7.2</td>
<td>66</td>
<td>73</td>
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<tr>
<td>30.480</td>
<td>18</td>
<td>32</td>
<td>295</td>
<td>328</td>
<td>50.40</td>
<td>150.000</td>
<td>88.58</td>
<td>6.8</td>
<td>60</td>
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<td>32.000</td>
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<td>32</td>
<td>280</td>
<td>310</td>
<td>52.91</td>
<td>152.400</td>
<td>90</td>
<td>6.4</td>
<td>59</td>
<td>64</td>
<td>252</td>
</tr>
<tr>
<td>33.260</td>
<td>19,64</td>
<td>30</td>
<td>270</td>
<td>300</td>
<td>55</td>
<td>169.300</td>
<td>100</td>
<td>6</td>
<td>53</td>
<td>58</td>
<td>280</td>
</tr>
<tr>
<td>33.870</td>
<td>20</td>
<td>30</td>
<td>266</td>
<td>295</td>
<td>56</td>
<td>186.300</td>
<td>110</td>
<td>5.2</td>
<td>48</td>
<td>53</td>
<td>-</td>
</tr>
<tr>
<td>34.000</td>
<td>20,08</td>
<td>30</td>
<td>265</td>
<td>294</td>
<td>56.22</td>
<td>203.200</td>
<td>120</td>
<td>5</td>
<td>44</td>
<td>49</td>
<td>-</td>
</tr>
</tbody>
</table>
8.1 ATTIVO ELECTRONIC BRAKE

The ATTIVO electronic brake is composed of two motors that move the weft feeder brake. It can be applied to existing brakes: pile brushes, metal brushes or TWM. The movement can only be programmable electronically, from the control panel of the weaving machine, and manually, through the adjustment knob located on the weft feeder.

1. Electronic programming. The user may decide when and how to move the brake.
   When: during the 360 degrees of weft insertion.
   Up to 8 or 9 operating areas can be programmed, depending on the loom it is mounted on.
   How much: within a 0 to 100% rate. 0% means open brake, 100% means closed brake.

2. Manual programming. The tension is also affected by the position of the knob. The knob is required to provide a static starting tension. We suggest this tension should be as low as possible. The real braking tension will then be produced by the electronic movement of the motor only in the set insertion points.

   Note: If the user wishes to try the real hand braking tension, the control panel of the loom has a dedicated item where the feeder address and the breakage percentage shall be entered (when the loom is not moving, one feeder at a time). The brake at issue moves to the desired position and stays there for one minute, or until the time when the machine resumes its motion.

Here follows a starting electronic programming chart, which can suit several types of threads.

---

**Note:**
At first use, a brake calibration procedure shall be carried out (one brake at a time):
- Remove the yarn from the weft feeder and release the brake by acting on the dedicated pushbutton (see picture)
- Press the related pushbutton on the loom control panel.
8.2 TIPS TO OPTIMIZE OPERATION OF THE ATTIVO BRAKE

BY acting on the programming table, available on the loom control panel, one can optimize operation of the ATTIVO brake.

TO START:
1. Locate a feeder and work on it. The settings found may possibly be copied onto other weft feeders at a later time.
2. Enter the braking table provided in the chart on the previous page into the loom control panel, in the page dedicated to the electronic brake.
   Through the manual adjustment knob, take the braking index on the weft feeder to notch no. 3.
3. To test the hand-set tension: enter the number of the feeder one is working upon and, then the value 80% (the maximum braking in the table entered in 1) into the loom page related to the brake test. The ATTIVO brake reaches 80% of the braking and holds this position for one minute.
4. Pull by hand the feeder yarn, so as to feel the desired braking.
5. If this braking is too high, manually reduce it by using the adjustment knob; if it is too low, increase it, always by using the adjustment knob.
6. It is important to use the brake type that suits the yarn type (please refer to the table of use in the following paragraph).

SENSITIVE POINTS
The insertion of the weft into a gripper loom is characterized by the presence of some “sensitive” points.
In these points, a precise and accurate check of yarn tension may improve the overall effectiveness of the machine.
Please refer to the braking table on the graph in the previous paragraph.

Cutting and start of insertion: When the bearing gripper takes the yarn, the latter shall only be at the tension required for gripping, so as to facilitate the gripper's work. We suggest you should lower the braking percentage down to 5% ten degrees before the cutting. If, for instance, the cutting takes place at 60°, the braking of ATTIVO shall be taken to 5% at about 50°. Thus, the tension peak caused by the acceleration of the gripper will be minimized even though the correct gripping will still be guaranteed.

Exchange: The exchange takes place at 180 degrees. If the grippers do not exchange their yarns, we suggest you should increase the braking percentage before the exchange. One may possibly extend the braking area. For instance, if the braking starts at 150° with 40% and goes to 50% at 170°, one may act by taking that braking to 60% and 70%, respectively, or bring forward the degrees from 150° to 140° or 130°.
NOTE: the braking shall only be increased in the insertion points where the gripper reduces its speed. If the braking is increased in the points where the gripper accelerates (between 90° and 120°, for instance), one runs the risk of worsening the performance of the machine.

End of insertion: The braking percentage shall be set between 240° and 300° approximately, as a function of the tail one wishes to obtain.
If, for instance, the weft does not reach the bottom, one needs to decrease the braking percentage or delay the braking start degrees. If, on the contrary, the tail is too long or small buttonholes form in the right portion of the fabric, one needs to increase the braking percentage, or bring forward the braking start degrees.
After 320°, when the insertion is over, it is advisable to leave an average braking percentage (30% or 40%) from 320° up to ten degrees before the cutting, to prevent the weft from losing tension and from being gripped upon the next-coming insertion.
8.3 ATTIVO APPLICATION FIELD

**TWM Version**

<table>
<thead>
<tr>
<th>TWM Type</th>
<th>Wool</th>
<th>Linen</th>
<th>Chenille</th>
<th>Spun</th>
<th>Synthetic Fibres</th>
<th>Cotton</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWM LT10</td>
<td>From Nm 5</td>
<td></td>
<td></td>
<td>From Nm 7</td>
<td>From Nm 10</td>
<td>From Nm 7 to Nm 60</td>
</tr>
<tr>
<td></td>
<td>to Nm 15</td>
<td></td>
<td></td>
<td>to Nm 15</td>
<td>to Nm 50</td>
<td></td>
</tr>
<tr>
<td>TWM LT05</td>
<td>From Nm 10</td>
<td>From Nm 12 to Nm 30</td>
<td></td>
<td></td>
<td>-</td>
<td>From Nm 40 to Nm 100</td>
</tr>
<tr>
<td></td>
<td>to Nm 60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Metal Brush Version**

<table>
<thead>
<tr>
<th>Metal Brush Type</th>
<th>Wool</th>
<th>Linen</th>
<th>Chenille</th>
<th>Spun</th>
<th>Synthetic Fibres</th>
<th>Cotton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type B20 N° 6 Springs Ø 0.7mm 22mm length</td>
<td>From Nm 2.5 to Nm 10</td>
<td>-</td>
<td>From Nm 2.5 to Nm 10</td>
<td>From Nm 2.5 to Nm 10</td>
<td>From Nm 18 to Nm 45</td>
<td>From Nm 2.5 to Nm 10</td>
</tr>
<tr>
<td>Type B15 N° 6 Springs Ø 0.7mm 22mm length</td>
<td>From Nm 15 to Nm 60</td>
<td>-</td>
<td>From Nm 7 to Nm 15</td>
<td>From Nm 7 to Nm 50</td>
<td>From Nm 25 to Nm 90</td>
<td>From Nm 7 to Nm 60</td>
</tr>
<tr>
<td>Type B10 N° 6 Springs Ø 0.7mm 22mm length</td>
<td>From Nm 40 to Nm 100</td>
<td>From Nm 20 to Nm 60</td>
<td>-</td>
<td>-</td>
<td>Over Nm 90</td>
<td>From Nm 80 to Nm 150</td>
</tr>
</tbody>
</table>

**Note:**
If necessary, a bristle brush can also be mounted onto the ATTIVO tensioner, possibly matched with a leaf tensioner, by using the special support.
9.1 KNOT DETECTOR

This device prevents the knots that are on the thread to get into the fabric. It is handled by the feeder and can possibly be used along with dedicated software packages supplied by the machine manufacturer (in this latter case, please consult the instruction manual of the weaving machine).

By following the graduated scale (1), act on the adjustment knob (M) so as to bring the shaped cylinder (2) to the thin blade (3). The adjustment shall be made so that the thread may freely run between the thin blade and the cylinder, whereas each knot shall touch the thin blade.

The thread-guides (4) can be adjusted in height by means of the related fastening knobs so as to allow the thread to easily flow within the device.

The knot detector operates both on traditional weaving machines and on those of the Can-Bus type.
### LED STATUS

<table>
<thead>
<tr>
<th>LED STATUS</th>
<th>PROBLEM</th>
<th>CHECK / REMEDY</th>
</tr>
</thead>
</table>
| Led off                     | The accumulator continues to turn, accumulating weft on the weft spool body. | • Remove the top panel on the accumulator and check the connections between weft feeler board LGL 93/94 and the main control board.  
(Connectors C1 and C2 from board LGL 93/94 must be connected to the corresponding inputs on the main control board).  
• Replace weft feeler board LGL 93/94.                                                                                      |
| Led on                      | The accumulator continues to turn, accumulating weft on the weft spool body. | • If working with fine weft yarns, increase the input tension and/or decrease the coil separation.  
• Check that the photoelectric cell on weft feeler board LGL 93/94 works properly, as follows:  
  - Raise the weft feeler lever with a screwdriver: the accumulator should stop if the photoelectric cell is working properly. If this is not the case, the photoelectric cell is faulty and so weft feeler board LGL 93/94 needs to be replaced. |
| Led on                      | The motor fails to turn when the accumulator is switched on.            | • Check that the weft feeler unit works correctly, as follows:  
  - Switch off the accumulator, remove the top panel and detach connectors C1 and C2 from weft feeler board LGL 93/94 from the inputs on the main control board;  
  - Switch the accumulator back on: if the motor turns, the problem lies with the weft feeler unit.  
• Replace weft feeler board LGL 93/94.                                                                                       |
| Led flashes 3 times a second | The motor fails to turn when the accumulator is switched on.            | • Check for faulty fuses in the power supply box.  
• Check the 6.3 A fuse on the main control board: if blown, replace the main control board.                                       |
| Led remains on or off       | The motor fails to turn when the accumulator is switched on.            | • Disconnect the accumulator cable from the power supply box and then reconnect after a few seconds.  
If the problem persists, replace the main control board.                                                                         |
| (despite using the ON/OFF switch) |                            |                                                                                                                                              |
| Led remains on              | The accumulator fails to work.                                          | • Check the 4 A fuse in the power supply box.  
• Check that the power supply box is switched on.  
• Replace the main control board.                                                                                             |
| (despite using the ON/OFF switch) |                            |                                                                                                                                              |
| Led flashes 3 times a second | The 135 V DC power supply has dipped below the minimum threshold.       | • Check that the three input phases of the transformer inside the power supply box are connected to the right terminals.  
• Check for faulty fuses in the power supply box. If none of the fuses are blown, replace the main control board.                      |
<table>
<thead>
<tr>
<th>LED Flash Pattern</th>
<th>Description</th>
<th>Troubleshooting Steps</th>
</tr>
</thead>
</table>
| Flashing 3 times a second | The 24 V DC power supply has dipped below the minimum threshold. | • Check that the three input phases of the transformer inside the power supply box are connected to the right terminals.  
• Check for faulty fuses in the power supply box.  
• Check that the input sensor and output sensor cables are not frayed or crushed.  
If the problem persists, replace the main control board. |
| Flashing 3 times a second (accumulator works normally) | The LED will only stop flashing when the set voltage rate is restored. | |
| Flashing 3 times a second | Main control board overheats. | • Manually turn the flywheel and check that the motor shaft turns freely.  
• Wait for the accumulator to cool down.  
If the problem persists, replace the main control board.  
**N.B.: When weft insertion conditions are irregular, it is quite normal for the accumulator to overheat without this affecting its performance. The microprocessor automatically cuts the supply to the motor if the temperature of the last power stage reaches 100°C: the accumulator will only start again when the temperature drops to an acceptable level.** |
| On for 15 seconds then flashing 3 times a second | The accumulator has been unable to wind the spare weft coils within the space of 15 seconds. | • Try to load the spare wefts again, holding the thread near the weft spool body to help it.  
• Check for faulty fuses in the power supply box.  
• Manually turn the flywheel and check that the motor shaft turns freely. |
| Flashing 7 times a second | The feeder operates regularly. | • Make sure that switch S - 0 - Z is not in the middle position 0 (zero), but either at S or Z to suit the direction of rotation (see paragraph 3.7).  
**N.B. In cases when the “Loom Stop” position is enabled on the loom, the intermediate position 0 (zero) of the S - 0 - Z switch allows for switching off the weft accumulator that is not using without turning off the loom.** |
| Flashing once a second | Broken weft at input. | • Switch off the accumulator, rethread and then switch back on. |
| On | The accumulator gradually tends to lose weft from the weft spool body. The accumulator fails to work at a constant speed when constant weft insertion is required. | • Increase the output tension slightly.  
• Replace the output sensor. |
| Flashing once a second | The accumulator immediately goes into broken weft alarm mode when the loom starts, even if this is not the case. | • Increase the input tension.  
• Clean the input sensor.  
• Replace the input sensor.  
**N.B.: If necessary, you can still work with the input sensor disconnected.** |

**N.B.: as regards operation of the Can-Bus protocol, please refer to the instruction manual issued by the manufacturer of the weaving machine.**
11 - TROUBLE-SHOOTING

11.1 FUSES IN THE POWER SUPPLY BOX

**AMP power supply box:**
- General supply three-phase fuse: 10x38 4 A slow-blow
- 24 V DC fuse 5x20 2.5 A slow-blow
- 90 V AC three-phase fuse 5x20 6.3 A slow-blow

**MOLEX power supply box:**
- 24 V DC fuse 5x20 2.5 A slow-blow
- 90 V AC three-phase fuse 5x20 6.3 A slow-blow

11.2 FUSE IN THE WEFT ACCUMULATOR MAIN ELECTRONIC CONTROL BOARD

6.3 A fuse slow-blow

12 SCRAPPING

The identification plates and relevant documents must be destroyed or cancelled if the machine is to be scrapped. If the machine is to be scrapped by third parties, only use authorised disposal centres for the scrapping/recovery of the consequent materials. If the machine is to be scrapped directly by the user, it is important that the materials are split by type and then sent to authorised centres for proper disposal of each category. Separate all metal parts, the electric motor, rubber parts and synthetic materials for recycling. The machine must be scrapped in full compliance with prevailing law in the country of use. These requirements cannot be foreseen here: the exclusive responsibility for compliance with these lies with the last owner of the machine or his appointed representative.

**L.G.L. ELECTRONICS** cannot be held liable for any damage or injury arising from the reuse of individual machine parts for functions or assembly situations other than the original ones for which the machine was intended.