

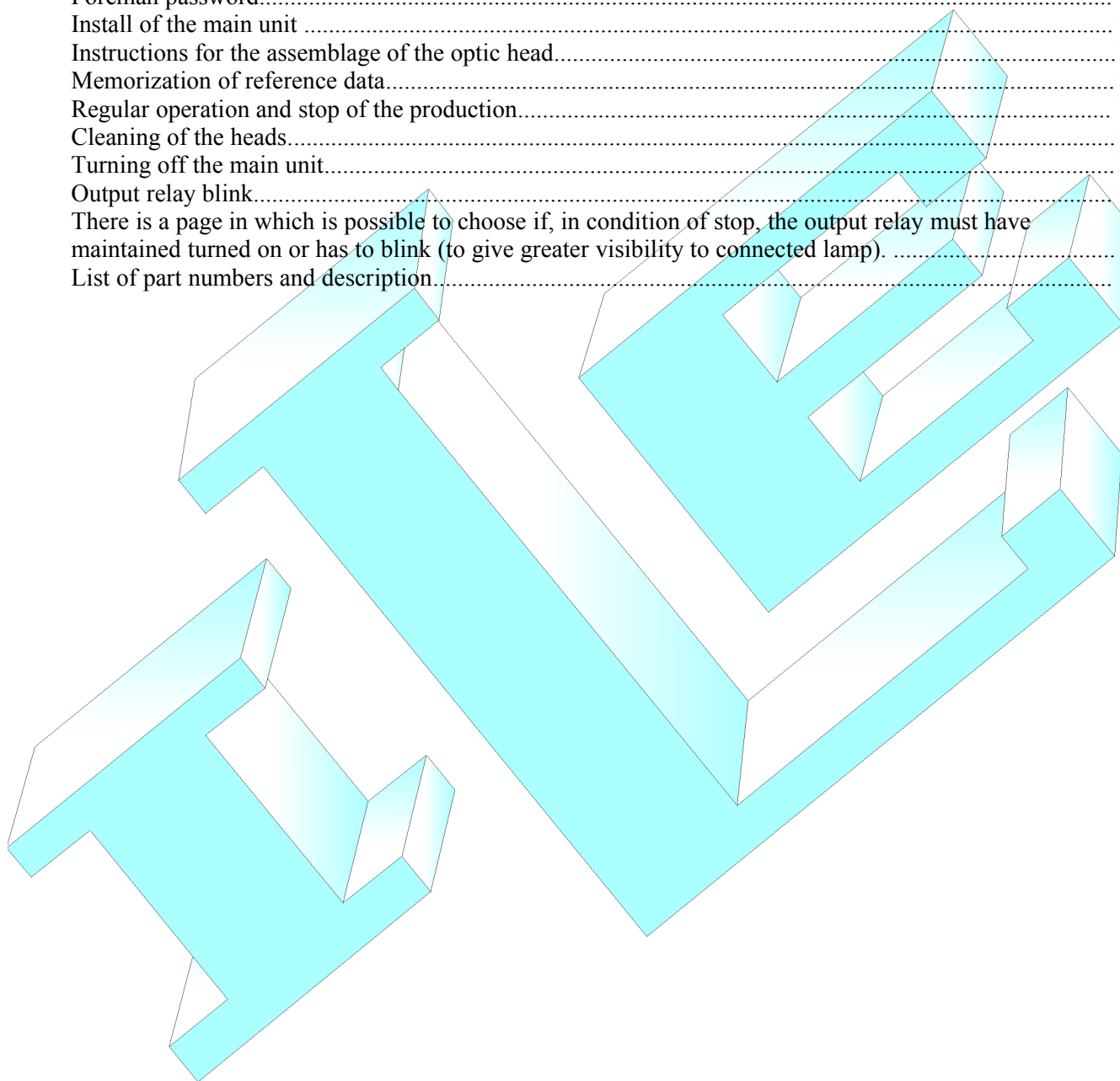
NOTES OF OPERATION OF DEVICE

AGF20



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Overview

The device Agotex AGF20 is installed on Circular textile machines with the purpose to notice the breakup of the heads of the needles and to stop the production.

It is born as fusion of two instruments, the FM8/10 and the AG14. It in fact it unites the functionalities of both allowing the analysis of the fabric produced for check of holes or dropped stitches (FM8/10) and the survey of the breakup of needles hook (AG-14).

It is composed of:

- an electronic *main unit AGF20 or principal unit* with display and keyboard, which the other parts are connected directly:



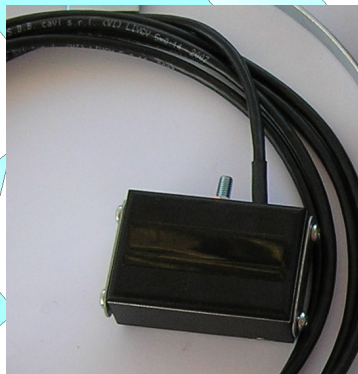
- A *magnetic sensor of precision*, that is activated by a permanent magnet



- One or two *optic needle scanner* placed close to the hook of the needles and hold by special supports, one optic needle scanner for each series of needles to be checked. These scanner serve to count the number of needles hook .



- One *optic head* for the check of holes and dropped stitches in the produced fabric. The optic head is placed directly onto the produced fabric to see holes and dropped stitches .



Otherwise from the models AG and AGF preceding, the optic needle scanner is connected directly to the main unit.

The magnetic sensor points out the conclusion of a turn to the main unit .

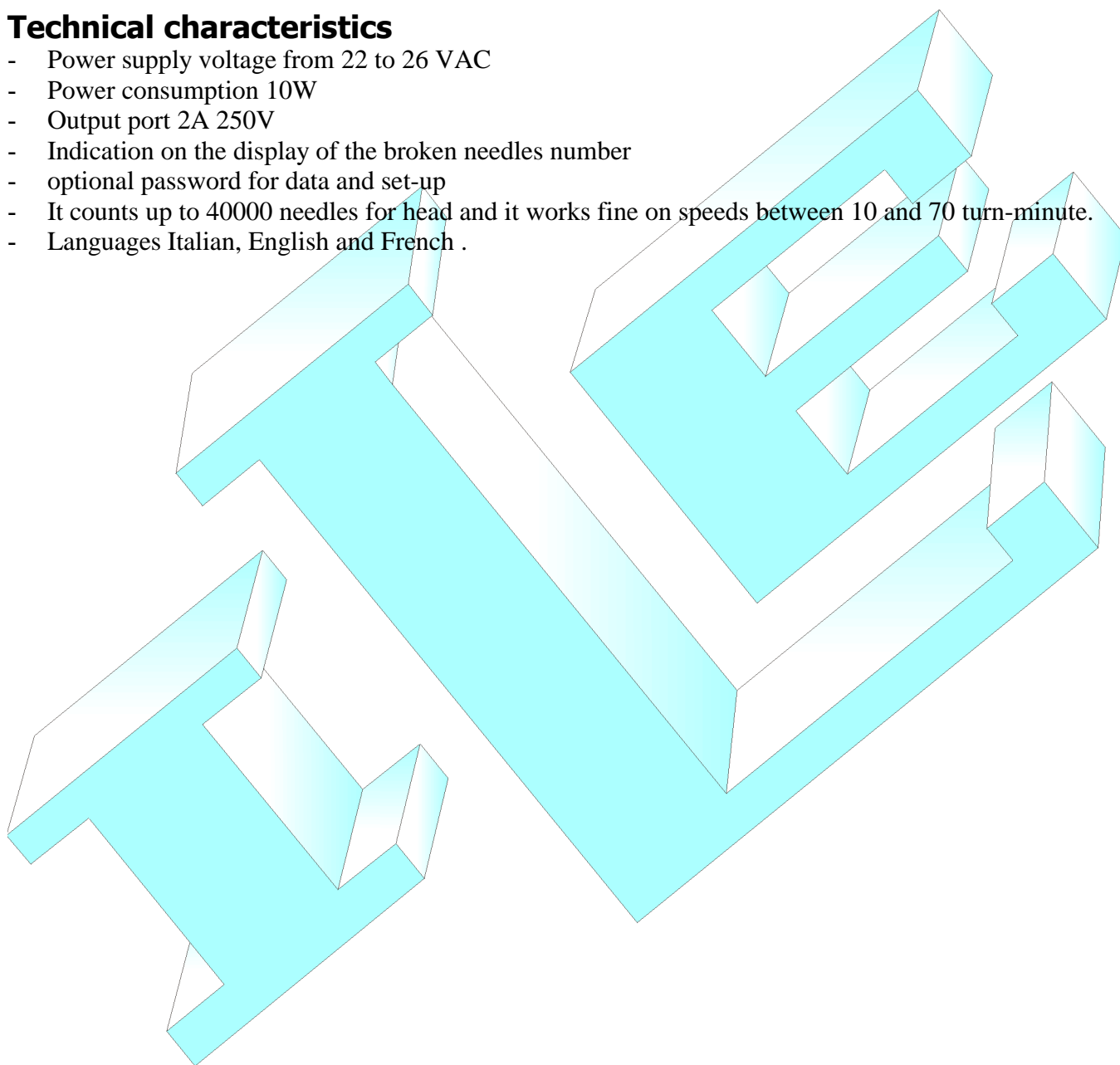
The microcontroller in the principal unit handles to count, to memorize and to verify the number of present needles in two turns of the textile machine (two turns to increase tolerance).

When the device individualizes some needles with the broken hook it points out on the display the number and stops the loom.

The data and the settings of the tool can be protected with a secret code or password .

Technical characteristics

- Power supply voltage from 22 to 26 VAC
- Power consumption 10W
- Output port 2A 250V
- Indication on the display of the broken needles number
- optional password for data and set-up
- It counts up to 40000 needles for head and it works fine on speeds between 10 and 70 turn-minute.
- Languages Italian, English and French .



Main unit

The present messages on the display vary according to the state of operation. When the loom regularly turns the display it shows the message 'Counting..OK' and to the left it points out the present heads (up to 4 heads). The count and the relative verify take place in two following turns of the textile machine. What the tool shows after power on, without pressing keys, is called 'initial page.'

The principal functions of the keys are the followings :

- 'Page' key to flow the various visualizations or pages .
- Key 'R' , it restores the normal operation of the device after a block and if pressed for a long time (5 seconds) it disable the device.
- The keys '+', '-', 'C' they serve for planning the data in the various visualizations or pages (delay arrest needle, password...).
- The key 'C' it also serves for memorizing the number of needles to count when he is in the relative page, and to see the speed of rotation during the normal operation.
- The key 'J' allows to enable or to disable the jump of the discarded initial needle. When the jump is enabled the message 'Jump' appear in the inferior line of the display, this immediately implicates the skip of the control of the zones of fabric following to the magnetic sensor . If the present message is then 'No J. ', then the whole fabric is checked.

There are some connector in the lower side :

- the most left connector type DB9 must be connected to the optic head
- the two connectors central type USB must be connected to the optic needle scanner. To the upper connector the optic needle scanner 1 is to be connected, while the lower connector is used for the scanner 2.
ATTENTION: don't connect different objects from optic needle scanner on these connectors.
- To the most right connector type DB15 must be connected the cable of feeding on purpose furnished.

There are present four groups of green lights and red lights;

- the two groups of lights placed next to the connectors are used to regulate the sensibility of the optic needle scanner . The four of left is used for optic needle scanner 1, the four of right are used for optic needle scanner 2.



- The two groups of lights placed on top with the writings 'LEVEL HOLE' and 'LEVEL TEARS' are used for regulating the sensibility of the optic head.



Inside the main unit

Inside the main unit there are some dip-switches, two for each optic needle scanner, accessible when the device is opened for install procedure. These dip-switches must be set to 'ON' when the type of fabric produced is made with some very long voids between groups of needles.

The switches 1 and 2 are used for the optic needle scanner 1, the switches 3 and 4 for the second one. Then if there are some long voids on the optic needle scanner 1 try to put the switch 1 on ON, and if the count is not correct try to put 1 and 2 on ON.

For the optic needle scanner 2 try to set on ON the switch 3 or the switches 3 and 4.

Therefore with total presence of needles, both in coasts 1:1, such switches will stay in the position OFF.

Inside the principal unity there is also a jumper with writing 'Sens. Fotoc.'; such jumper must be inserted for decreasing the sensibility of the optic head, or left disconnected to have a greater sensibility. This jumper works as the selection 'sensibility high/low' present on the FM8/FM10s.

Magnetic Sensor and permanent Magnet:

Install the sensor on a firm part of the machine, in protected position from the bumps. Position the magnet on a rotating part in such position to activate the sensor to every turn of the loom. The distance between sensor and magnet has to be around 4 mm.

Pay attention to the obligatory polarity of the magnet.

Attention to the obligatory polarity of the magnet, and that the support is not vibrations subject!

The cable of the sensor finishes with a connector to insert in the circuit of command. If the sensor is correctly installed it will be noticed on the display the writing 'Magnet!' to the conclusion of every turn. Please note that this magnetic sensor to be used with AG14 is a special one, different from FM8 or C89's magnetic sensors.

Optical heads:

The optic heads (probes) must be set with a lot of care in proximity of the head of the needles, and once individualized the positioning (see underlying figure) their support must be held to avoid moves during the workmanship.

The head of the probe must be placed so that it surmounts the head of the needle to a distance that depends on the type of used head:

For heads produced before 2007 the distance it has to be among 1,5 and 2,5mm.

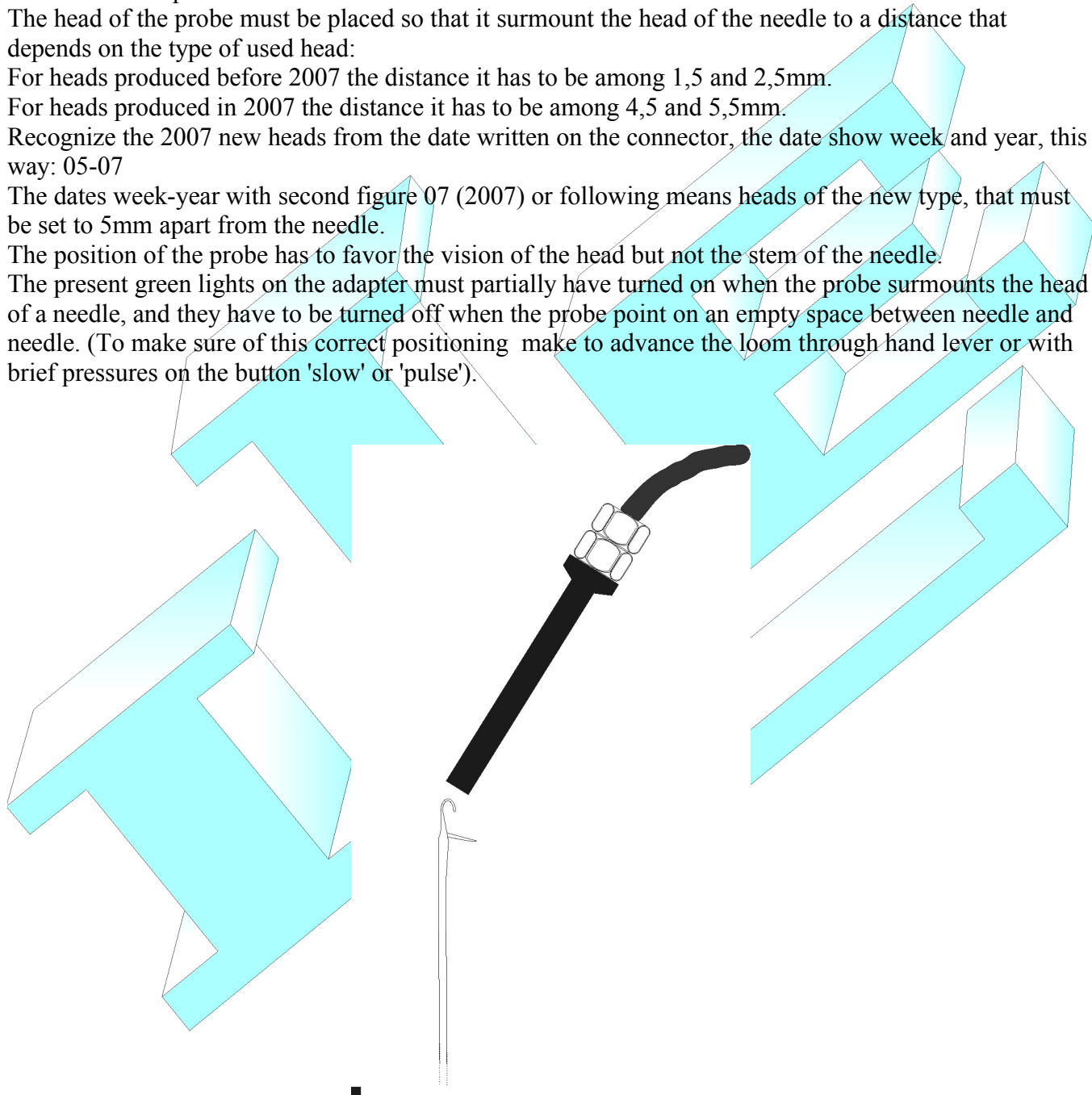
For heads produced in 2007 the distance it has to be among 4,5 and 5,5mm.

Recognize the 2007 new heads from the date written on the connector, the date show week and year, this way: 05-07

The dates week-year with second figure 07 (2007) or following means heads of the new type, that must be set to 5mm apart from the needle.

The position of the probe has to favor the vision of the head but not the stem of the needle.

The present green lights on the adapter must partially have turned on when the probe surmounts the head of a needle, and they have to be turned off when the probe point on an empty space between needle and needle. (To make sure of this correct positioning make to advance the loom through hand lever or with brief pressures on the button 'slow' or 'pulse').



Use of the main unit.

The instrument (device) is endowed with various pages that allow to plan all the necessary parameters for a correct operation.

The various pages are flowed in sequence using the special key 'Page' having the sketch of the pages.

Here following the description of the various pages, where the pages can be recognized from the writing on the superior line of the display.

Note that this description refers to the simplest situation or without foreman password, which is described subsequently.

Page	Description
Initial	<p>This page appears at power-on .</p> <p>From the upper line it is possible to understand the state of the device;</p> <ul style="list-style-type: none"> the writing appears 'Wait for Work' if the device doesn't receive the signal of activity from the textile machine, because it is stopped, or the wire is not connected the writing appears 'Magnet' if the magnetic sensor has given an impulse, which is when a turn of the textile machine is finished the writing appears 'CountS = . OK' if there is the signal of activity, the textile machine is regularly turning and the number of needles match the programmed number . <p>To the left appear the number of optic needle scanner connected; if the scanner is connected then appear its number, 1 or 2; if a dot appear the corresponding scanner is not connected. For example:</p> <p>“1.” mean that optical needle scanner 1 is connected</p> <p>“2.” mean that optical needle scanner 2 is connected</p> <p>“12” mean that optical needle scanner 1 and 2 are connected</p> <p>In the lower line sensibility to holes and dropped stitches is visualized , shown as two numbers between 1 and 100:</p> <ul style="list-style-type: none"> to the left the sensibility to the holes to the right the sensibility to the dropped stitches. <p>Such sensibilities can be modified through 2 couples of keys ‘ - ‘and ‘ + , sets in proximity of the aforesaid numbers.</p> <p>There is then the key ‘ J ’ that it allows to enable or to disable the jump of the discarded initial needle. When the jump is enabled the message ‘ Jump ’ appear in the inferior line of the display, this immediately implicates the skip of the control of the zones of fabric following to the magnetic sensor . If the present message is then ‘ No J. ’ , the whole fabric is checked.</p>

Page	Description
Memory=	It points out the number of needles memorized for each head. For every head or probe it show her own number of needles to count and verify. This page serves only to read such number (you cannot modify it here, but then in other pages). This page repeats so many times how many the present (connected) probes are.
CountS1= CountS2=	<p>Here the device counts the needles for the suitable probe on the display and visualizes the total number of it every 2 turns of the machine. When the device shows this 'pages of installation' it doesn't verify the number of needles (it doesn't stop the machine), but it count them and eventually memorize the number. In fact pressing the key 'C' the display writes 'MEMORIZZ', and the number of needles counted is set in 'memory needles' for the visualized probe. This page repeats so many times how many the present probes are.</p> <p>Pressing the keys '-' and '+' you can decreased or to increase the sensibility of the optic needle scanner actually visualized. Such sensibility must be measured while the textile machine turns, and planned to such a value that one or two green lights have turned on. You can sometimes try to vary the sensibility so that the number of needles counted is more correct, if the optic needle scanner is correctly positioned .</p>
Stop Machine	In this page a percentage of turn can be specified of which the stop will be delayed, so to stop the loom in a wanted point. With the keys '+' and '-' you can change the number.
OPTICAL HEAD STOP AT x HOLES	It allows to plan the number of holes of small dimensions to count before stopping the machine. Choice happens through the keys '+' and '-' related to the error hole.
AMOUNT OF HOLES	It visualizes the total number of holes that have caused the stop of the machine. Such number accumulates that due to the survey of holes of big dimensions with that due to the attainment of the quantity of holes of small dimensions planned into the preceding page. The number can be reset by the 'R' key.
STOP FOR LITTLE HOLES	It visualizes the total number of machine stop for little holes . The number can be reset by the 'R' key.
AMOUNT LADDERS	It visualizes the total number of machine stop dropped stitches. The number can be reset by the 'R' key.
NEEDLE SENSITIV.	In this page the sensibility of the optic needle scanner 1 or 2 are specified acting on the keys '+' and '-'. This is the sensibility shown by the lights placed lower, related to the count of the number of needles hook. Such sensibility must be measured while the textile machine turns, and planned to such a value that one or two green lights have turned on. Another way of regulating sensibility is in the page "CountS1" above described.

Page	Description
SPEAK ENGLISH/ITALIANO	Imposes the language (English or Italian or French). To application other languages can be included. The maximum number of present languages simultaneously in the device cannot exceed the number of 3.
WARNING: EXPERT MODE PAGES	This page tells that the next pages constitute an advanced use of the device, in how much you can modify the operation of the device. The option 'No' skip the following advanced pages. If the user wants to proceed then it selects the voice 'Yes' with the key '-' of the dropped stitches.
D. STITCHES STOP NO BLINK	It allows to select if during the stop due to dropped stitches the output relay is always active or intermittent at 50% duty cycle. This can help to recognize the stop due to broken needle. Change option with 'C' key.
NEEDLE NUMB.STOP NO BLINK	It allows to select if during the stop due to needle number error the output relay is always active or intermittent at 30% duty cycle. This can help to recognize the stop due to broken needle. Change option with 'C' key.
NEEDLE JUMP LENGHT	In this page it is possible to specify the duration of the jump of needle that effects after received the signal by the magnet. During such jump the control of the fabric is suspended, so that possible lacks of needles foreseen in the fabric doesn't cause a block. The value 9 are the maximum duration (100ms) while 1 are the least duration (11ms). The value 2 correspond to 22ms, and so on .
Maintenance	A number of turns can be input here, at which the device stops the car to ask for a maintenance. With the key 'C' the number is modified, the key '+' it increases the number pointed by the cursor while with the key '-' makes flow the cursor to the following figure. Pressing the key 'C' the number is memorized. A number equal to Zero disables this function.
RELAY WORK MODE	Here you chooses if during the block of the machine the output relay is closed or open.
MODE OF OPTICAL HEAD CONTROL	it selects the way of control of presence of the optical head, in other words how it is verified that the optical head is present and regularly active: -mode 0: no control on the signal from the optic head . -mode 1: during every whole rotation it owes us to be at least a green led turned on on the needles or on the holes, otherwise the machine is stopped. -mode 2: during every whole rotation they owe us to be at least two green leds turned on on the needles or on the holes, otherwise the machine is stopped.
RESTORE FACTORY SETTINGS	This page allows restore the default setting for the advanced pages options. The restored options and values are the followings: -jump length set to 5 (65 milliseconds) -output relays normally open, closed in stop condition -fixed relay in the stop for dropped stitches and needles, not flashing -check for presence of optical head equal to '0' or no control To perform the restoration of the default configuration select the voice 'Yes' with the key '+', press the key 'Page' and then confirm with the key 'J.'

Foreman password

The password foreman serves to limit the access to the configuration pages of the device. If the password is trained then the initial page is always on top while to visualize the other pages the password is required.

To specify and to train the password, act as it follows:

1. While the device is turned on and display the initial page, unplug the connector of the optic head and insert the key of password furnished with the tool. The machine has to be stopped , or on the signal in entry of 'activity' it doesn't have to be any voltage.
2. The special page will appear. The password is a decimal number of 4 digit . The key '+' increase the number pointed by the blinking cursor . The key '-' move the blinking cursor to next digit. Pressing the key page the password is memorized and the writing 'new inserted password is visualized.
3. Unplug the key of password so the device return to the initial page and the password is memorized. .

The password is trained if different from '0000.' Then to disable the password protection just input a new password equal to '0000.'

The device is furnished with password of default planned to '0000, such password allows the unconditional access to all the pages.

When the password is trained, pressing the key 'page' make the tool require the password :

To insert the password use the same keys described above . Pressing the key page, the tools goes to the following pages if the password is correct.

When the password is trained, there are one or two new pages :

Page	Description
LOCK KEYS +,-,J WITH PASS. ?	In the initial page the keys + and- allow to regulate the sensibility of the optical head for holes and tears. If it is wanted that such keys are protected with password, to specify 'Yes' in this page. In such case the initial page serves only to read such values, and the page described below is used for modifying them.

Install of the main unit

1. Choose a position for the main unit that is firm and visible. Unscrew the two screw placed on the sides, and separate the front panel of the device from the hull in black metal, making slip downward the front panel . Put aside the Front panel, handle with care.
2. Fix the black metal hull to the select place, avoiding leaning screw toward the inside of the device. Clean possible metallic shavings due to the workmanship, and insert again the front panel in the metallic hull. Fix the front panel with the screw previously removed.
3. Plug the power supply cable to the main unit; the black cable with 3 wires and the terminal block in head must be connected to the magnetic sensor, connecting the white to the white, the brown one to the brown one, the screen to the screen; the grey cable with 7 wires must be connected here according to the suitable instructions following and to manual end.

Wire	Function	Connection
Brown	power supply input -	to the 0V of the transformer of the services of the loom
Red with fuse	power supply input +	to the 24V of the transformer of the services of the loom
Black or Orange	Activity Input signal	to 12V o 24V available only when the machine is turning
Yellow	connection to GND	to protection earth (PE) or ground
Green	Needle protection Input	to Needle protection device (option)
Blue with fuse	Stop output relay +	Note 1
Bianco	Stop output relay +	Note 1

Nota 1 : the “Stop output relays” are the two pins of a contact of relay, selectable NC or NA through the pages of the device. Such contact of the relay doesn't have inside connections to the device, and it is isolated therefore from GND and from any other signal. Use to stop the machine

Warning: Avoid to make the cables run near the cables of power supply to the loom (380 V) and avoid to pick up the excesses of length rolling up her. Stretch well the cables.

Assemblage of the optic needle scanner for the count of the needles

1. Install the cylindrical supports of the optic needle scanner in stable way (eventually through perforation on the sector).
2. Install the optic needle scanner according to the suggestions statements in the description of the parts. Their supports allow any movement. For every loom it will be opportune to adapt the wands of metal so that to make her the shortest possible. We remember that the heads don't have to prevent the access the needles from the special counters, they don't have to hamper the movements of the guide-threads and don't have to be one with the ring of the guide-threads, so that to avoid that the adjustments of the same don't alter the distances between scanner and needles.
3. Connect the optic needle scanner to the main unit. Power on and go to chapters about regulation of the device and memorization of reference data.

Instructions for the assemblage of the optic head

1. The optic head has a black plastic front with a transparent window, as visible in the following image, and a plastic cork on the back. Mount one or two sleighs of metal on the optic head so that sticks out of around two millimeters from the front. Then mount the optic head with the sleighs in contact with the fabric, so that the front of the head is firmly two millimeters apart from the cloth.
2. The head must be placed on top, next to the needles, where the fabric is formed. It is generally fixed on the yarn guide. The transparent window of the front, visible in the following image, has to be parallel to the defects of the fabric as the dropped stitches. Mainly the head is placed standing in portrait (not landscape), exactly as in the image.
3. If the head is very near to the needles, only the lower sleigh is necessary.
4. Check that the fans don't make to tremble the cloth at their passage. This could cause some stop not necessary.
5. To make the jump of discarded needle then position the loom so that the discarded needle is placed one inch before the optic head and mount paired the couple of magnet and magnetic sensor. This to be able to effect the jump of needle, that happen immediately after received the signal by the magnetic sensor. During such jump the control of the fabric is suspended, so that possible lacks of needles programmed in the fabric doesn't cause a stop.
6. Connect the head to the main unit, turn on and regulate the sensibility using the keys as previously exposed.
7. In the regulation of the sensibility keep in mind that can be increased or decrease acting on the jumper put inside the main unit, previously described.
8. The sensibility must be increased until the tool stops the machine in presence of defects, but not too much to stop the machine without motive. And' profit in this the distinction between holes and dropped stitches :
 1. The sensibility to dropped stitches (shown on the right on the display) can relatively be kept high without a negligible defect stop the machine; in fact the defect of dropped stitches has to present three consecutive times in the same point to cause a stop.
 2. **The sensibility to the holes (shown on the left on the display) must relatively be held low so that to stop only when necessary.**



Memorization of reference data

The main unit counts the present needles in two turns of the loom and compares them with the memorized datum, this for every probe or connected optic head.

To memorize the correct number of needles it is necessary to use the keyboard and the display of the main unit so that to access the special pages of installation heads.

We recommends to read the part 'use of the main unit' first exposed.

Then follow the indications here available:

- To begin the installation, power on the instrument .
- Press the key 'Page' to flow the various present pages, until it reaches the page 'ContaS1 =.....'. This message points out a 'page of installation'. It can be necessary to insert the password , as described later in this document.
- The device counts the needles for the suitable probe on the display and visualizes the total number of it every 2 turns of the machine. When the device shows these 'pages of installation' it doesn't verify the number of needles, but it limits to count them and eventually to memorize them.
- Press the key 'page' until appear the 'page of installation' related to the probe that is desired to install.
- Start the machine .
- In such page at every couple of turns the number of counted needles remains on display for 2 seconds ; pressing the key 'C' the display writes 'MEMORIZZ', and the number of needles counted is set in 'memory needles' for the visualized probe.
- If the number of needles shown doesn't correspond to the reality, intervene on the present potentiometer inside the adapter that corresponds to the visualized probe; then increase or decrease the sensibility of the probe until the instrument count the exact number.
- If he doesn't succeed in getting the exact number it will be useful to check or modify the positioning of the probe and the distance from the needles .
- When the counter is correct press again the key 'C', the display writes again 'Memory = visualizing the new amount just saved.
- The installation of this probe is complete, others of it can be installed or return to the normal page with the key 'Page.' After a time-out the device returns itself to the normal operation.

Regular operation and stop of the production

The block of the machine happens if the device notices for two couples of consecutive turns a greater difference of 1 among the number of counted needles and the data saved in memory.

The device counts and verifies the needles regardless of any operation that is performing through keyboard, except in the following cases:

1. the instrument show a 'Page of installation.'
2. the instrument is disarmed through the key 'R', see relative paragraph.
3. the instrument doesn't receive the signal of activity, and in such case the display shows the message 'WaitForWork'

When the device notices the breakup of the head of a needle the block of the machine can be immediate or delayed so that the broken needle is placed in a pre-arranged position.

Opportunely programming the device in the page 'Stop Machine' it will involve in the select way during the stop.

Cleaning of the heads.

With the progress of the job in the time, in case of dusty yarns, there is the danger that the dust obscure progressively the heads, causing a lowering of sensibility (this is underlined by a decrease of brightness of the leds on the form adapter).

It is useful to handle the cleaning of the heads with regularity, for instance every piece, with spun of middle cotton. Or clean the heads blowing with compressed air or, if dirty of paraffin, clean the optic part brushing with a clean and soft rag.

Turning off the main unit

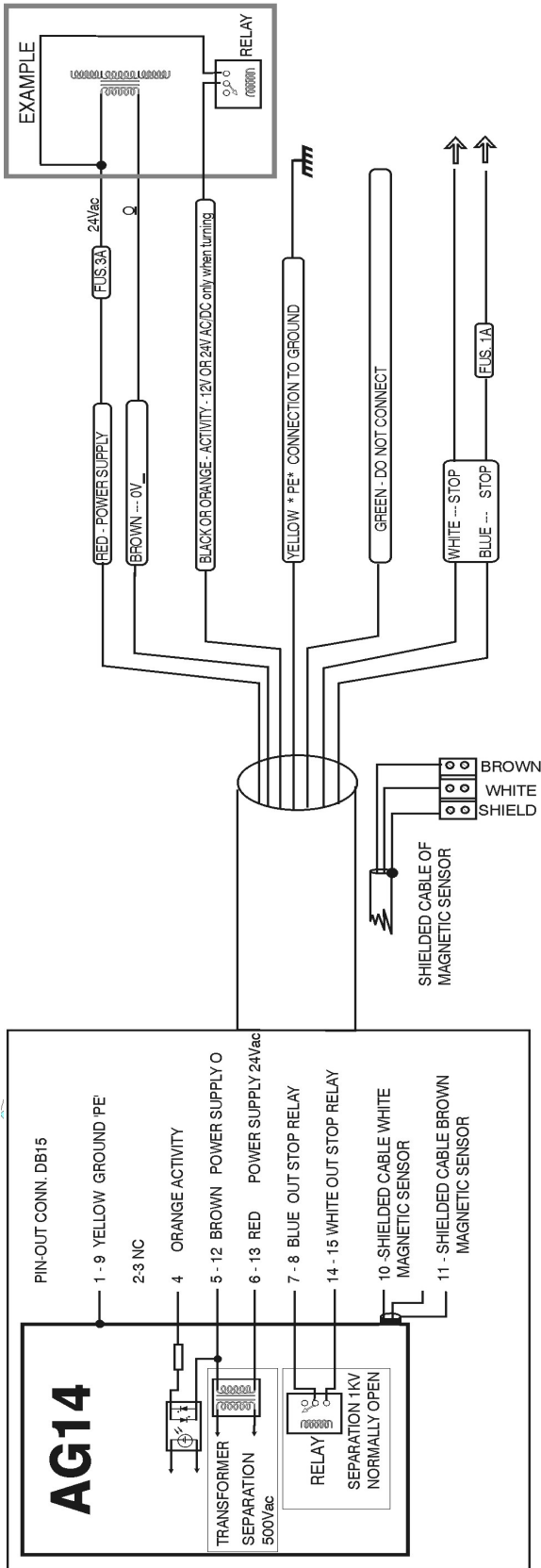
The device can be disarmed pressing for a long time the key 'R.'

The display shows the writing 'turned off by operator.' To reactivate press the same key for a long time.

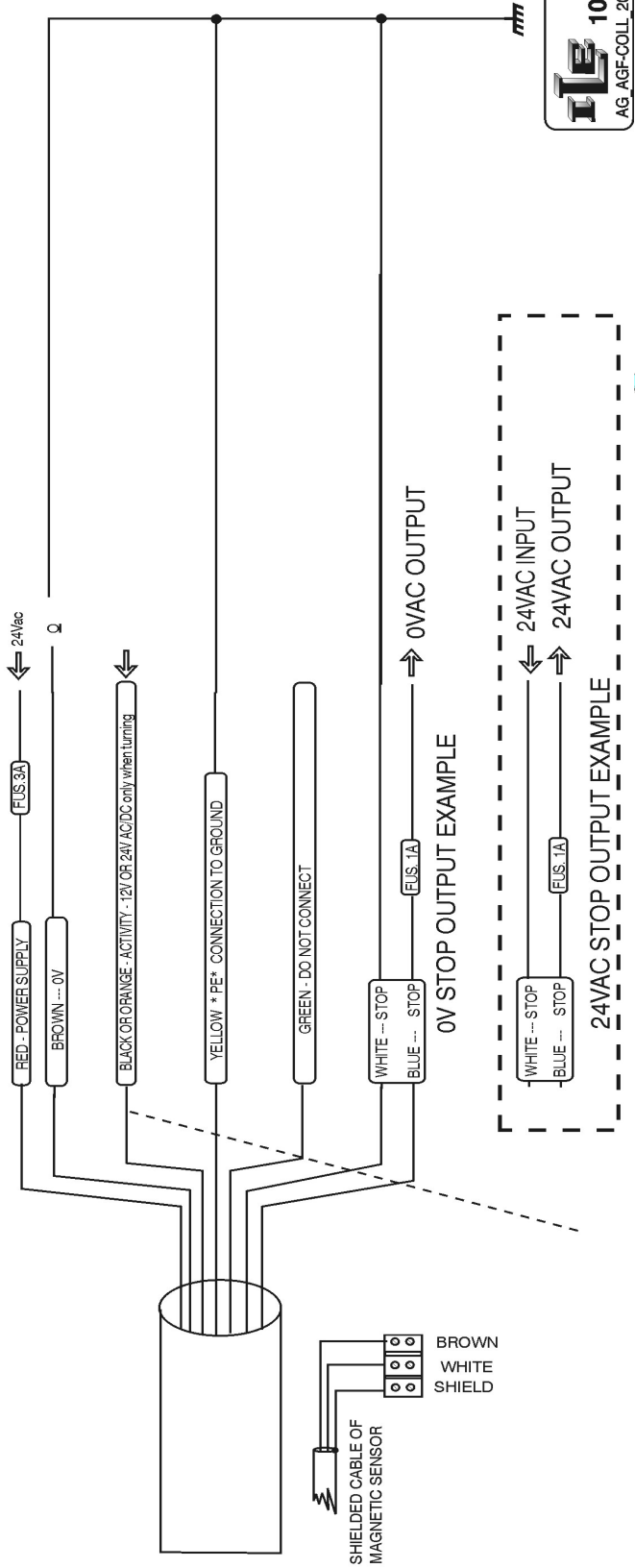
The device remains turned off indefinitely even if powered off and on .

Output relay blink

There is a page in which is possible to choose if, in condition of stop, the output relay must have maintained turned on or has to blink (to give greater visibility to connected lamp).



SUGGESTED CONNECTION FOR OLD MACHINE NOT COMPATIBLE WITH NEW STANDARD





List of part numbers and description

809 OPTIC HEAD 40X60

810 OPTIC HEAD BRACKET

811 LARGE SLEIGH

822 AG12/AG14/AGF OPTIC NEEDLE SCANNER

823 BRACKET FOR NEEDLE SCANNER

825 AG14/AGF MAGNETIC SENSOR PLUS MAGNET

826 AG14/AGF POWER SUPPLY CABLE

827 AG14/AGF PASS

870 AGF20 MAINUNIT

