
Super ELF G2

USER'S GUIDE

Preliminary version 09_29(GB)

WARNING!

- Condensation could form on the Weft Feeder when it is moved from the cold environment of the warehouse to the warmer environment of the weaving room. Make sure that it is completely dry before connecting to power.
 - Provide proper information to the people operating the weft Feeders.
 - The installation, connection, adjustment, and maintenance of the Weft Feeder has to be performed by technically qualified personnel.
 - The Loom's main power switch **MUST** be switched OFF before any replacing/connecting operation.
 - Caution must be taken on the close vicinity of the Feeder. In normal working condition, it can start running without prior warning and the moving parts might cause injuries.
 - Repairing any electrical part of the unit has to be carried out by Nuova Roj Electrotex authorized personnel.
 - Always use proper spare parts and accessories supplied by Nuova Roj Electrotex.
 - Nuova Roj Electrotex disclaims all responsibility for the improper use of the Feeder different from what described in the chapter 1. General Information.
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1. GENERAL INFORMATION

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1. GENERAL INFORMATION

Super Elf G2 description

SUPER ELF G2 is a Weft Feeder with **yarn separation** and complete new design.

The new permanent Magnet Motor allows fast reaction and accurate yarn storage control on the spool body.

Super Elf G2 - Technical Data

Power supply by means of the specific

Roj Control Box: **100 V dc – 24 V dc**

Weft feeding speed (**ONLY** with pattern in advance) **max 2000 m/min**

Note

The maximum speed could be effected by causes not related to the Super Elf System. For instance:

- Spooling not suitable
- Weak weft
- Packages position
- Too high tension to the weft on the package side
- Etc.

Threading channel:..... **4.5 mm**

Yarn count range: **6 Nm - 20 dTex**

Noise level: **< 70 dB_A**

Weight: **7.7 kg**

Working temperature: **from 10 ° to 40 °C**

Storage temperature: **from -25 ° to +65 °C**

Relative humidity: **max 95% (not condensed)**

GENERAL INFORMATION

Pulsar HP brake description (optional)

The Pulsar HP device, (P/N 52R00109R), performs the following two functions:

Breaking function: to reduce the tension pick to the weft when the same is stopped by the Electromagnet pin. This is to avoid the following problems:

- a. weft breakage at the end of the insertion
- b. weft loops or slack picks in the fabric.

Pull back function: after the yarn cutting, yarn is pulled back into the nozzle. This is to avoid that the weft gets tangled in the next weft to be inserted by the contiguous nozzle.

Technical data of Pulsar HP (optional)

Cycles per minute.....	1,200
Reaction time	7 ms
Max torque	11.5 Ncm
Weft pull back length	max 35 mm
Eyelet's diameter	6 mm

GENERAL INFORMATION

Features and Characteristics

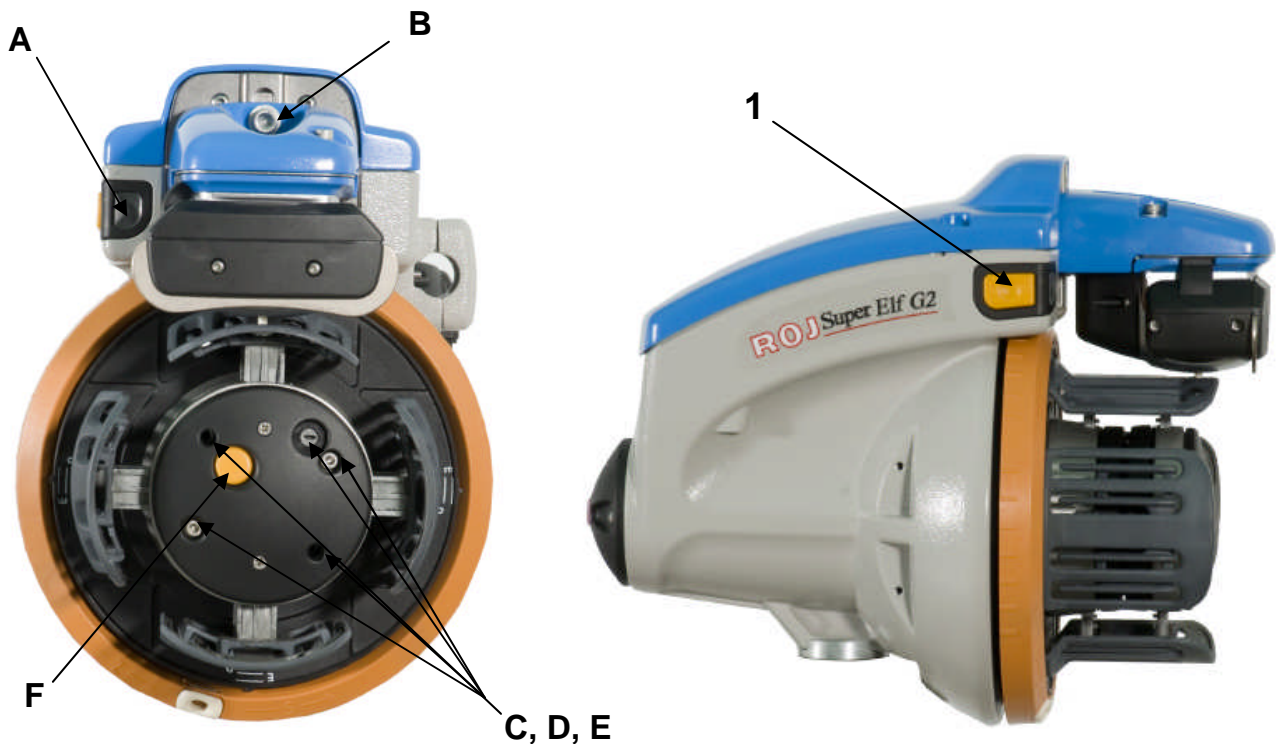
- The Weft Feeder can be set for rotation S or Z depending on the yarn twist.
- Yarn separation is adjustable from 0.7 mm to 2.2 mm.
- Outgoing Coils detection by means of single photocell.
- Weft breakage control (“Loom Stop” function) through a photocell incorporated in the Super Elf G2 or through the TFE6 weft Stop Motion device.
- Weft length adjustment, by setting the spool body diameter and the number of coils to be released each insertion. Range of weft lengths: from 64 to 672 cm.

Note:

*Weft lengths ranging from 87 to 96 cm **CANNOT BE MEASURED.***

- Suitable for CAN BUS communication protocol with the loom panel or for Serial Line communication.
- Super Elf G2 parameter settings from the loom panel or by means of an external ROJ Hand Terminal.
- Pulsar HP brake control (P/N 52R00109R).
- Pulsar Strong brake control (P/N 52R00106R).
- Half weft threading by means of a pneumatic system.
- New Electromagnet design.
- Permanent Magnet motor for more accurate speed control (sensor less), faster acceleration, full torque at all speeds and lower energy consumption.
- Sealed motor, photocells housing and cable connections are IP63 Water Proof standard
- New anti-balloon design with reclining Funnel simplifies maintenance and optimizes space requirements for multi-colour applications.
- New front eyelet holder design

2. SETTING AND CONTROL ELEMENTS



Front Control elements

1 FUNCTION PUSH BUTTON

It activates the Electromagnet and allows the following operations:

a- Weft reserve removal.

b- New weft reserve loading.

c- Release of only one coil when the weft reserve is already on the Spool Body.

d- Automatic photocells calibration if pressed for longer than 10 sec (see pag.)

A SIGNALLING LED

When the weft feeder is powered, the led turns on if no faults are detected.

In case of problems, the led blinks.

B ADJUSTMENT SCREW FOR THE ELECTROMAGNET POSITION

C, D, E

ADJUSTMENTS SCREWS OF SPOOL BODY DIAMETER

(Coil length)

F PUSH BUTTON FOR SETTING OF WINDING DISC ROTATION DIRECTION AND COILS SEPARATION

INSTALLATION AND CONNECTION

Electric connections

- Fix the Voltage Supply Box to the Stand by means of the proper brackets.

Note:

Minimum distance from the Box to the floor must be 20 cm (see fig. 5)

- Install the Weft Feeders on the Stand by means of the existing clamps.

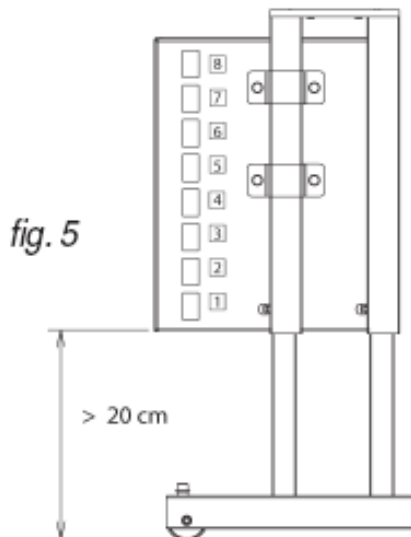
Note:

The feeders must be positioned on the stand according to the type of installation. It is important that the yarn path is as straight as possible between the Feeders and the loom's nozzle, in order to avoid yarn bouncing on the spool body after yarn cut.

- Connect the Feeder's cables to the Voltage Supply Box following the numeric correspondence to the loom nozzles (Feeder working with the weft threaded in nozzle 1 must be connected to the position 1 of the Voltage Supply Box; etc.).
- Connect the CAN BUS or Signals Cable to the loom.
- Feeder's Stand and Creel must be connected to the earth of the loom.
- Connect the plug of the 3-phase power cord to the socket on the loom panel (see fig.12).

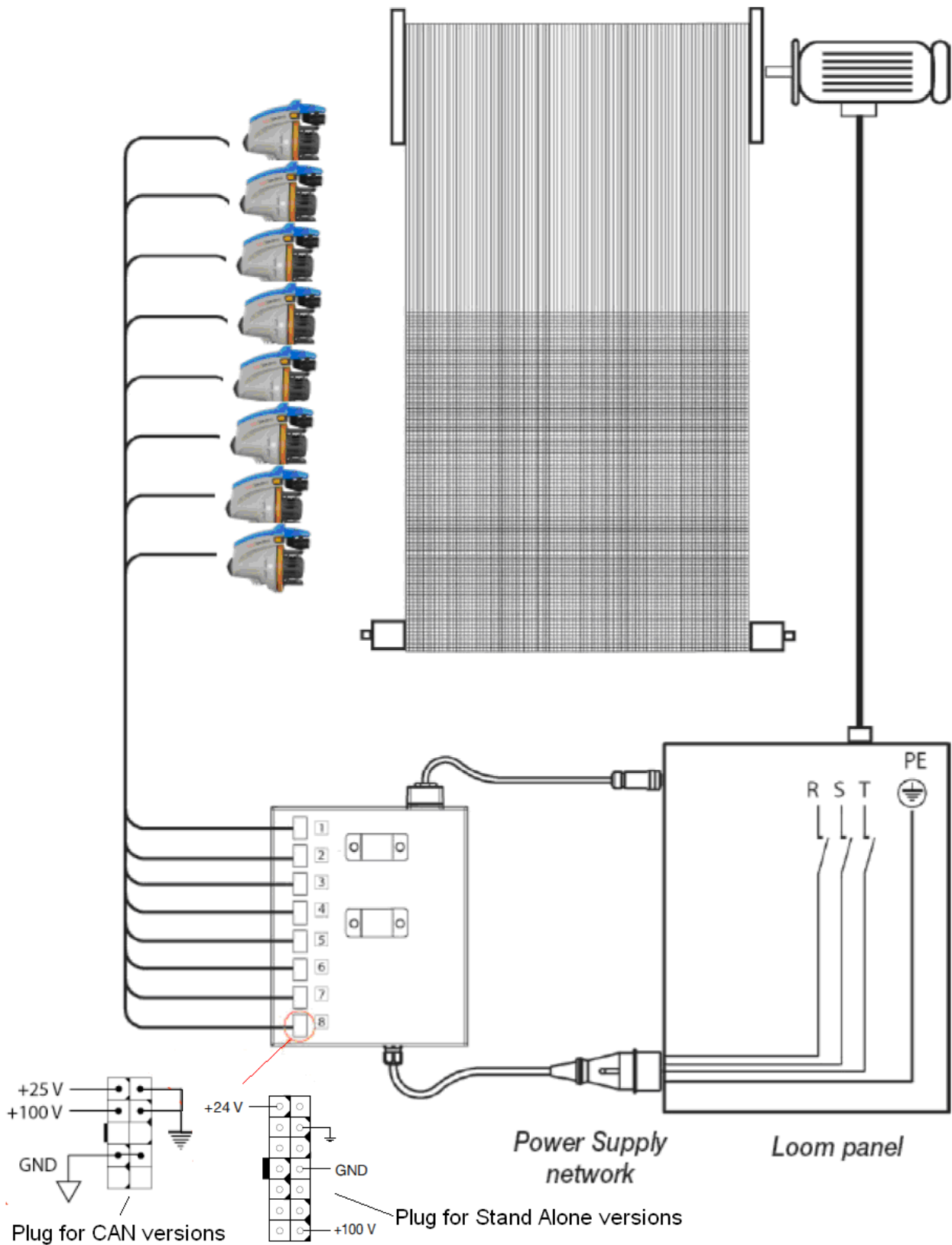
Warning!

The connection between the Voltage Supply Box and the 3-phase power supply network must always be as stated on the following page. In this way, the loom main switch performs also as main switch for the Weft Feeders (see fig. 12).



INSTALLATION AND CONNECTION

Diagram connection of the Voltage Supply Box



Note:

The Voltage values supplied to the Weft Feeders can be checked on the Voltage Supply Box connectors (see fig. above).

4. SETTINGS AND OPERATION

How to set working parameters

1. Turn the loom main switch ON. The feeders are now supplied with power and receive the setup data from the loom panel or from the ROJ Hand Terminal.
2. If the feeders are fitted with the Pulsar HP device (optional), an automatic pulsar calibration cycle (one movement one time up and down completely) is made or at power ON, or when pressing the push button to release one coil, depending on the type of application (see page related to parameter loom type, for additional information). If no errors are found during the calibration, the signalling led remains ON. In case of faults, the led blinks, and an error is shown on the ROJ Hand Terminal or on the loom display.

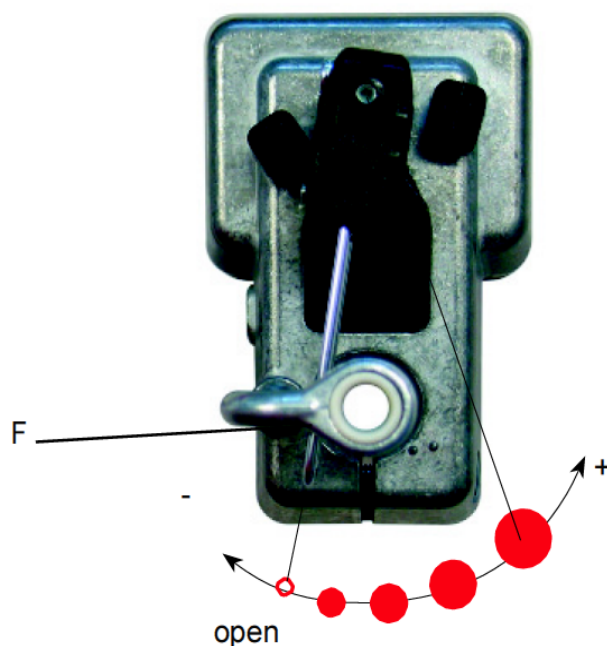


fig. 14

3. According to the woven article, adjust the functioning parameters of Super Elf G2 through the loom panel keyboard, or through the ROJ LCS Loom control system, or through the ROJ Hand Terminal.

SETTINGS AND OPERATION

WORKING PARAMETERS

LENGTH

To set the weft length [in cm] to be released by the feeder at each pick. The value is automatically converted into an alphanumeric combination:

- the letter, (between A and E), indicates how to adjust the Spool Body diameter.
- the number, (between 2 and 12), indicates how many coils are released at each pick.

Note:

Some weft lengths can be woven by using different combinations between Spool Body diameters and coils to be released. It is strongly recommended to make the Feeder operating with the Spool Body set to the wider diameter and releasing the minimum number of coils (see table).

Nr. of coils	Reference letter				
	A	B	C	D	E
	Reed width [cm]				
02	68 ...72	73...75	76...78	79...82	83...85
03	96...108	109...112	113...118	119...123	124...127
04	128...144	145...150	151...157	158...164	165...170
05	171...180	181...187	188...196	197...205	206...212
06	206...216	217...225	226...235	236...246	247...255
07	241...252	253...262	263...274	275...287	288...297
08	275...288	289...300	301...314	315...328	329...340
09	310...324	325...337	338...353	354...369	370...382
10	344...359	360...374	375...392	393...410	411...425
11	378...396	397...412	413...431	432...451	452...467
12	413...432	433...450	451...470	471...492	493...501

ROTATION

To set the winding direction of the Feeder according to the yarn twist.

- Possible setting: ROT Z / ROT S

Note:

When changing the winding direction, the coils pitch has to be changed too.

SENSIBILITY

This is to set the sensitivity of the photocell which is controlling the outgoing coils.

- Possible setting: LOW (low sens.) / HIGH (high sens.)
- Recommended setting: LOW

Note:

Set HIGH when the yarn count is lower than 50 dtex, or in case of shining and reflective yarns.

WEFT STORAGE

To set the number of coils to be on the Spool Body of the Feeder.

- Possible setting: 12 - 68
- Recommended setting: according to the yarn count, set the coils pitch as low as possible. Set the highest number of coils so to avoid they overlap each other at the Stopper side. The reserve has to be over 3/4 of the Spool Body's length.

Note:

In case of different reserve position between Feeders set with the same number of coils, make them equal by adjusting the coils pitch.

LOOM STOP

This is to set the reaction time of the Weft break signal.

- Possible setting: 2 - 5 / N (Weft break control Off)
- Recommended setting: 3

Note:

Increase the value in case of false stops of the Loom.

PIEZO

To control the yarn break with an external sensor (e.g. Roj's PIEZO sensor TFE6).

- Possible setting: 2 _ 5 / N (sensor Off)
- Recommended setting: 3

INHIBITION

To avoid faulty length measurement due to fluffs or dust released by the yarn.

- Possible setting: 40% - 80%
- Recommended setting: 60%

Notes:

1. *Increase the value to 70% or 80% in case of fluffy yarns (e.g. Cotton), or wrong length released by the Feeder (one coil less).*
2. *Reduce the value to 50% or 40% only with non fluffy yarns (e.g. synthetics) and irregular flying times.*

ACCELERAT.

This is to set the acceleration ramp of the motor according to the pattern to be woven.

- Possible setting: LOW (standard) / HIGH (max)
- Recommended setting: LOW

Note:

Set HIGH when weaving stripes, or one color installation. With this setting the working temperature of the Feeder could increase.

MANUAL RLS

To set the number of coils to be manually released, when pressing the release push button on the feeder side.

- Possible setting: 1 COIL / LENGTH
- Recommended setting: 1 COIL

LOOM TYPE

This is to set how the Super Elf operates, according to the type of loom.

- Possible setting: 0 - 9

Notes:

1. *The value is set automatically to 1 for installation on Dornier Serial line looms*
2. *Set this parameter to 4 in case of installations on water jet looms with LCSW (Loom Control System) or with W2C. For these applications, in case of installations with Pulsar HP, it is necessary to make a Pulsar HP calibration cycle at every loom power ON, before starting the loom, by pressing the normal release push button to release one coil (during this phase, when releasing one coil, it is also opened the gripper in order to allow correct Pulsar HP fork movement during the calibration). If the calibration was not made correctly, when pressing the button ARRANGE on the loom, the feeder will start blinking and indicate the message "PULSAR ERROR".*
3. *Set this parameter to 6 for installations with ROJ Mt4 Plus Voltage Supply box.*
4. *Set this parameter to 9 for installations on water jet loom with 1 color control box. For these applications, in case of installations with Pulsar HP, the calibration cycle for the Pulsar fork is automatically at every loom power ON (it is also automatically released one coil, to make sure that the yarn is loose and the Pulsar HP fork can move correctly).*

TRIGGER AUX

To set how many coils are released during the "automatic pick finding" operation.

- Possible setting: 1 - 9

WEFT IRREG

This is to void wrong weft length measurement due to eventual overlapping of the coils on the Spool Body.

- Possible setting: YES (protection not activated) - 5 / N (protection activated)
- Recommended setting: NO

Note:

Set YES only in case of short picks (one coil less) and very irregular insertion times (fancy yarns).

BRAKE TIME

It sets the braking starting point, referred as anticipation from the point "0" (zero), adjusted with steps of 0,5 seconds each. With the setting "0", there is no anticipation, the Pulsar braking rod reaches its angle position at the same time when the yarn is stopped by the magnet pin.

- Possible setting: **0...20**
- Recommended setting: **0...3** = range recommended for **filament yarns**
4...8 = range recommended for **fiber yarns**
> 8 = range recommended for **delicate yarns** (for example **wool**)

BRAKE WEFT

It sets the torque of the Pulsar's rod.

- Possible setting: **0 ... 4** for fiber yarns
5 ... 9 for filament yarns
10 ... 14 for wool yarns
- Recommended setting: depends on yarn type and count (see below):

Yarn type	maximum	high	medium	low	minimum
Fiber	[< 5 Ne] 4	[5 - 10 Ne] 3	[10 - 16 Ne] 2	[16 - 30 Ne] 1	[> 30 Ne] 0
Filament	[>1100 dtex] 9	[1100-550 dtex] 8	[550-300 dtex] 7	[300-150 dtex] 6	[<150 dtex] 5
Wool	[< 18 Nm] 14	[18 - 35 Nm] 13	[35 - 48 Nm] 12	[48 - 58 Nm] 11	[> 58 Nm] 10

BRAKE STEP1

This parameter enables yarn tension control by setting the pulsar torque angle:

- Possible setting: **1 ... 5** **NO** = pulsar disabled
 1 = Min. angle
 5 = Max. angle
- Recommended setting: **2** = the low torque angle allows a small reduction of the peak torque at yarn stop without slowing-down the weft arrival.
3 = the medium torque angle allows a good reduction of the peak torque at yarn stop with a small slow-down of the weft arrival.
4 = the high torque angle allows a bigger reduction of the peek torque at yarn stop but slows- down the weft arrival.

PULSAR TYPE

To be set according the type of Pulsar connected.

Notes:

- 1 *Set the value to 2 in case using the Pulsar Strong P/N 52R00106R*
- 2 *When using the Pulsar HP, it is automatically recognize by the feeder board, and this parameter is not considered.*

PULL BACK

This is to set the control of the Pulsar in order to draw back the weft from the nozzle after the cut (Pull-back function).

- Possible setting: YES - NO

Note:

If the parameter PULSAR TYPE is set to 2 (Pulsar Strong for water jet looms, the Pull Back function is never activated)

Weft length adjustment

The diameter of the Weft Feeder Spool Body must be set according to the indication shown on the loom panel display.

Procedure:

1. Turn OFF the Weft Feeder
2. Loosen the screw **B** and raise the Photocells/Electromagnet Group. Fix it.
3. Loosen **D and E** socket head screws (3 mm socket).
4. Adjust the diameter of the Spool Body by turning the **screw F** in order to move the sectors of the Winding Group to the marked reference letter shown on the loom panel display.
5. Turning the Winding Disc put the eyelet in the upward position.
6. Tighten the two screws **D** to block the fixed sectors
7. Check that the movable sectors are centrally positioned in respect with the fixed ones.
8. Tighten the two screws **E** to block the movable sectors.
9. Turn the Winding Disc and check that no movable sectors get in contact with the fixed ones; this is in order to avoid possible damages when the feeders is in operation.

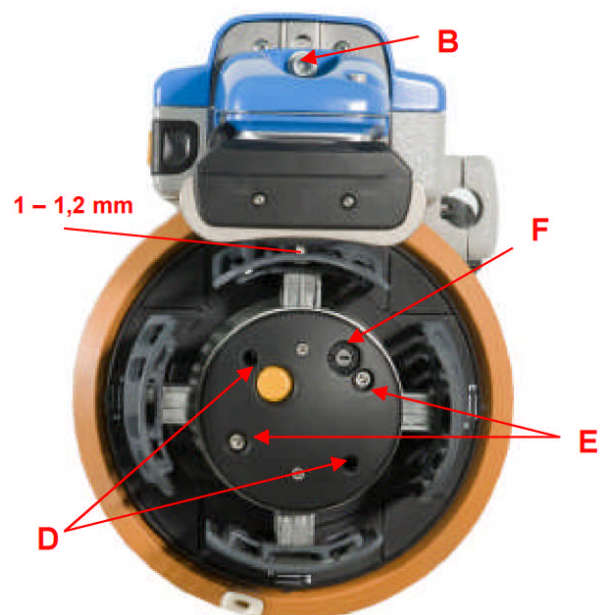
NOTE:

*If the movable sectors get in contact with fixed ones, loosen the two screws **E**, adjust the position of the movable sectors, and tighten the two screws again.*

10. Loosen the screw **B** and position the Photocells/Electromagnet Group so that the distance between the Electromagnet and the Spool Body is about 1 - 1.2 mm (see picture below - use the special gauge supplied together with the Feeder). Tighten the screw **B**.
11. Load the reserve as described in page
12. Start up the loom and check if the weft length is required. If it is too long, decrease the Spool Body diameter. If it is too short, increase the diameter

Warning!

Fixing torque recommended for the screws **D** and **E**: 2.3 Nm \pm 10%.



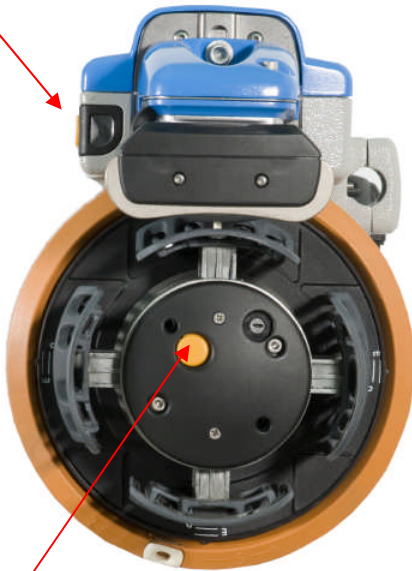
SETTINGS AND OPERATION

Winding direction and coils pitch adjustment

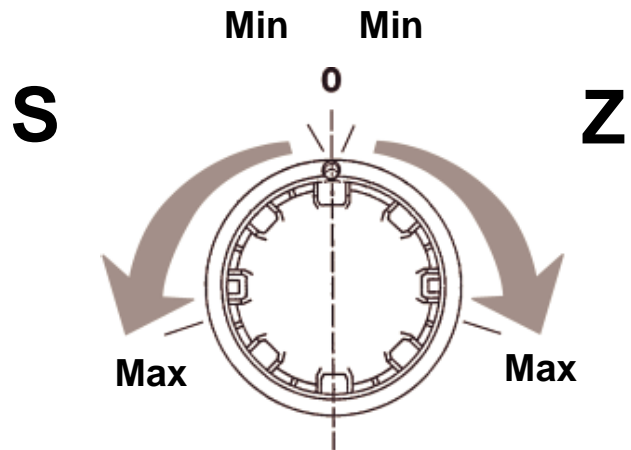
The winding direction of the Weft Feeder (S or Z) must be adjusted according to the yarn twist. Correspondence is needed between the motor electric setting and the mechanical one of the Spool Body. Act as follows:

1. Press the yellow Separation push-button placed in front of the Spool Body and simultaneously turn the Winding Disc until you hear a “click” (the yellow push-button is entered in a slot).
2. While keeping pressed this push-button, turn the Winding Disc up to the chosen position (the ceramic eyelet indicates the position). Release the push-button.

Reserve
Push-button



Separation
Push-button



Front view

Note:

The coils pitch must be adjusted according to the yarn count and the number of coils set on the loom panel. Avoid the accumulation of coils in front of the Spool Body.

3. Select the winding direction rotation on the loom panel: the Electromagnet pin goes up allowing removal of the reserve from the Spool Body. In the meanwhile, the eyelet of the Winding Disc moves to the threading position.
4. Press the reserve push button, the Electromagnet pin goes down and the weft reserve is loaded.

Reserve loading

1. Press the Reserve push-button on the feeder side for more than 3 seconds: the Electro- magnet pin goes up and the Winding Disc automatically moves to the threading position.
2. Thread the weft through the feeder and through the output accessories, by means of a manual plastic hook, or with half-way pneumatic threading (optional).
3. Press the Reserve push-button on the feeder side a second time: the Electro- magnet goes down and the Feeder loads the reserve.

SETTINGS AND OPERATION

Photocells automatic calibration

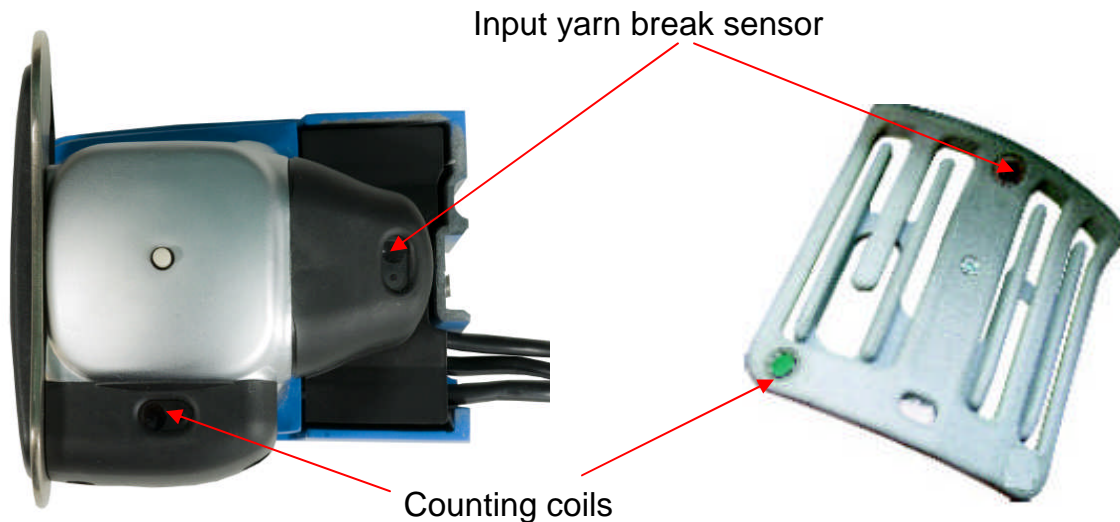
The Super Elf G2 is fitted with an automatic photocells calibration system. Proceed as follows:

1. Remove all the yarn from the spool body, and verify that the photocells glass and mirrors are clean (see below)
2. Press the Reserve push-button on the feeder side for about 10 seconds, till the LED makes a short blinking and then remains steady ON: the calibration is automatically performed by the feeder SW. Wait a few seconds, then reset the feeder by switching it OFF, and then back ON. The automatic calibration is needed whenever replacing the feeder circuit board or one of the sensors groups.

Note: if the calibration procedure is made with yarn on the spool body, or with glass - mirrors dirty, the feeder can go in alarm and it is completely blocked. To unlock the feeder, remove the yarn from spool body, or the dust from glass – mirrors, and make the automatic calibration again.

Photocells functions

The photocells functions are indicated on pictures below:



Note:

We recommend to check periodically photocells glass and the reflective areas of the feeder. If needed, clean them manually with water or glass cleaning liquids. Do not use abrasive materials.

In order to understand if the photocells need to be cleaned, please check the relevant information on the loom panel or on the ROJ Hand Terminal..

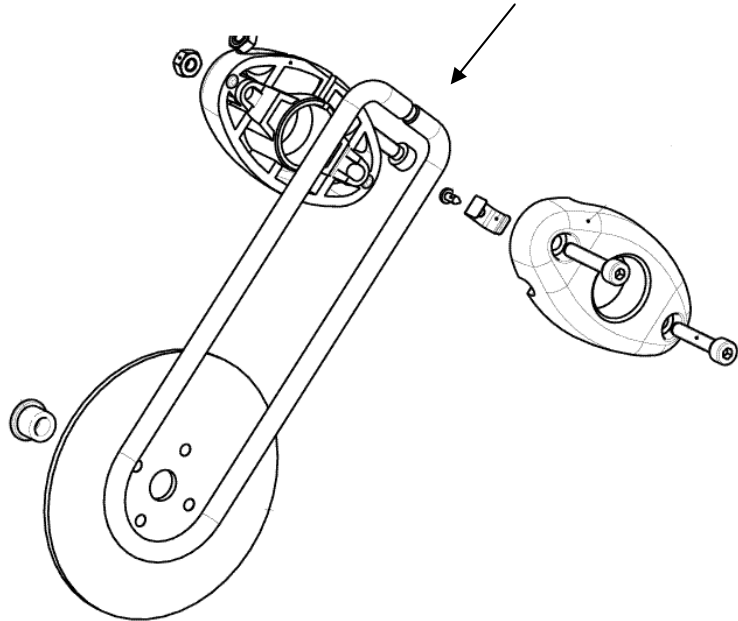
ACCESSORIES

FRONT EYELET HOLDER – P/N 54R00405R (optional)

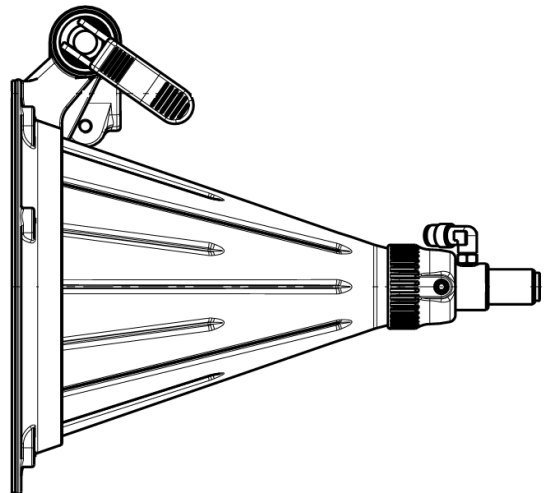


Mounting rod to be fixed
on the feeder side

Front eyelet holder,
with adjustable
position and distance



FUNNEL KIT – P/N 54R00404R (optional)



TROUBLESHOOTING

Eventual faults in the Super Elf system are shown on the loom display or on the ROJ Hand Terminal, depending on the type of application.

In such case, the Feeder itself is also giving an alarm signal by means of the red LED, that it is flashing in case of problems, while it is steady ON during the normal operation of the Feeder. Main problems and possible solutions are listed hereafter.

Fault 1

When switching ON the Loom, the Feeder Nr. ... does not get ON and does not communicate with the Loom.

Message on the display: NO COMMUNICATION

Solutions

- Make sure that the Feeder Nr. ... is ON (it has to be switched ON before switching ON the Loom).
- Check the cable connection of the Feeder.
- Check the output voltage value of the correspondent plug on the Voltage Supply Box (see pag. 3-2).
- Check the fuses inside the Voltage Supply Box
- Exchange position of the faulty Feeder.
- If the problem stays with the same Feeder, replace its electronic Board.
- If the problem moves to other Feeder, replace the Interface Board inside the Voltage Supply Box.

Fault 2

Feeder Nr. ... indicates voltage rate too low (the front LED is flashing, too).

Message on the Hand Terminal: UNDERVOLTAGE

Solutions

- Switch OFF and ON again the Feeder.
- Replace the relevant 6.3 Amp Fuse inside the Voltage Supply Box.
- If it burns out again, replace the electronic Board of the Feeder.

Fault 3

Feeder Nr. ... indicates voltage rate too high (the front LED is flashing, too).

Message on the display: OVERVOLTAGE

Solutions

- Verify the connection of the input wires to the transformer (see the sticker inside the Voltage Supply Box).

Fault 4

Feeder Nr. ... shows Motor Locked (the front LED is flashing, too).

Message on the display: MOTOR LOCK

Solutions

- Make sure that the Winding Disc is free to rotate (fluffs or weft collected on its hub could lock it).
- Make sure that the weft is free from the bobbin side.
- Check the output voltage value of the correspondent plug on the Voltage Supply Box (see pag. 3-6).
- Replace the electronic Board of the Feeder.

Fault 5

Feeder Nr. ... shows to clean the photocells (the front LED is flashing, too).

Message on the display: PHOTOCCELL CLEAN

Solutions

- Clean the photocell's glasses and the reflecting area on the Spool Body. Do not use abrasive materials.
- If the Feeder is equipped with the "self cleaning system", check whether this is blowing air as per setting.

Fault 6

Feeder Nr. ... shows "TIME OUT" (the front LED is flashing, too).

Message on the display: INSER. TIME OUT

Solution

- Check the operation condition of the main Nozzle. Dust or fluffs could cause not correct insertion of the weft.
- Check if the weft is broken between the Feeder and the relevant Nozzle.
- Check the gap between the Electromagnet and the Spool Body (see pag. 4-7)
- Check whether the Feeder is threaded to the relevant Nozzle
- Exchange position of the faulty Feeder. If the problem stays with the same Feeder, replace the main circuit board.

Fault 7

Yarn Break on Feeder Nr. ... (the front LED is flashing, too).

Message on display: BOBBIN BREAKAGE

Solutions

- Check the path of the weft from bobbin to Feeder; it has to be as smooth as possible.
- In case of false stops (yarn is not broken), clean the yarn break Sensor.

Fault 8

Short pick. Feeder Nr. ... did release one coil less.

Solutions

- In case of fluffy yarn, increase the INHIBITION value (see pag. 4-3).
- Flying time has to be as regular as possible. In case of fancy yarn, set WEFT IRREG to YES.

Fault 9

Long pick. Feeder Nr. ... did release one coil more.

Solutions

- Check the position of the Feeders Set in order to avoid the whip effect of the yarn on the Feeder's Spool Body after the cut.
- In case of non fluffy yarn, reduce the INHIBITION value (see pag. 4-3)
- Load a new reserve.

Fault 10

The Feeder Nr. ... is gradually losing the reserve.

Solutions

- Check the position of the Feeders Set in order to avoid the whip effect of the yarn on the Feeder's Spool Body after the cut.
- In case of non fluffy yarn, reduce the INHIBITION value (see pag. 4-3)
- Check the gap between the Electromagnet and the Spool Body (see pag. 4-7).
- Clean the Photocell's glasses and reflecting area.

Fault 11

Feeder Nr. ... is losing reserve at the start of the Loom.

Solution

- Reduce the coils pitch and increase the number of coils of reserve.
- Reduce tension at bobbin side.
- Check the output voltage value of the correspondent plug on the Voltage Supply Box.
- Check main Fuses in the Voltage Supply Box.

Fault 12

Too many filling stops at the end of the insertion. Slack picks (at left side of the fabric).

Solution

- Check air pressure and timing of the main Nozzles. They have to be properly set according to the type of yarn.
- Check the proper setting of Pulsar
- If required, increase the braking time and torque of Pulsar
- Check the settings of Nozzles and Sub-nozzles. They have to be properly set to stretch the weft up to the beating.