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Operating Instructions

| | |
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WARNING

CAUTION MUST BE TAKEN IN THE CLOSE VICINITY OF THE FEEDER AS IT CONTAINS MOVING PARTS THAT CAN CAUSE INJURIES AND, IN NORMAL OPERATION, STARTS WITHOUT PRIOR WARNING.

THE POWER SUPPLY MUST BE SWITCHED OFF AT THE MAINS BEFORE ANY WORK IS CARRIED OUT ON THE FEEDER, THE TRANSFORMER OR ANY OTHER ELECTRICAL COMPONENTS. THE FEEDER AND THE TRANSFORMER CABINET MUST BE FULLY ASSEMBLED BEFORE THE POWER SUPPLY IS CONNECTED.

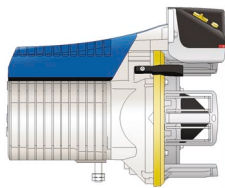
THE FEEDER AND TRANSFORMER CONTAIN ELECTRICAL COMPONENTS THAT RETAIN AN ELECTRIC CURRENT UP TO THREE MINUTES AFTER DISCONNECTION.

ALL WORK ON ELECTRICAL COMPONENTS MUST BE CARRIED OUT BY A QUALIFIED ELECTRICIAN.

THIS PRODUCT IS NOT INTENDED FOR USE IN POTENTIALLY EXPLOSIVE ATMOSPHERES OR IN ZONES CLASSIFIED ACCORDING TO THE EUROPEAN DIRECTIVE 94/9/EC. PLEASE CONTACT IRO AB IF PRODUCTS FOR USE IN A POTENTIALLY EXPLOSIVE ATMOSPHERE ARE REQUIRED.

TO COMPLY WITH CE. REGULATIONS ONLY REPLACEMENT PARTS APPROVED BY IRO AB MAY BE USED.

Technical specifications



Max 5 300 RPM



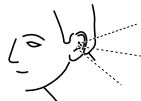
8 kg



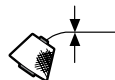
Min 5° C-Max 40° C



Max 85 %



93 dB



Max 5 mm



5,5 - 7 bar



290V DC, 24V DC



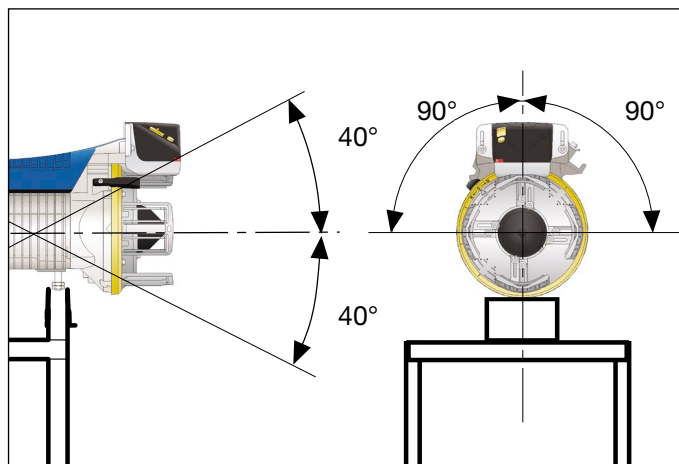
1,3 kg

Installation

NOTE

Condensation can form on the weft feeder when it is moved from the cold environment of the warehouse to the warmer environment of the loom room. Make sure that the feeder is dry before switching it on.

Feeders must be mounted within 40° of the horizontal plane.

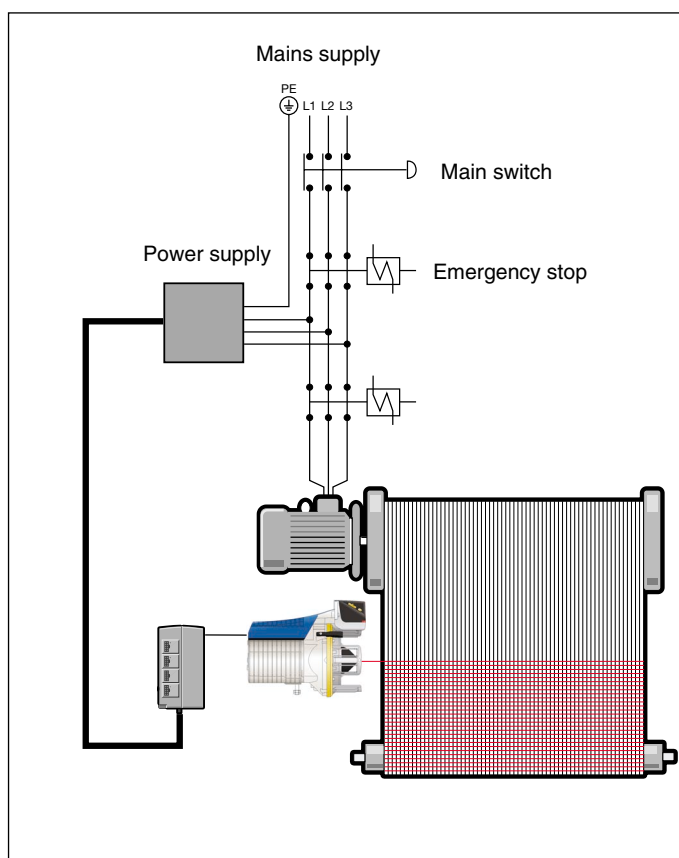


Mains connection

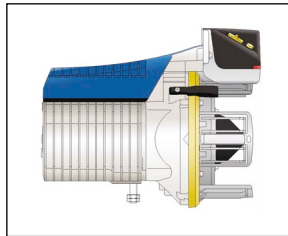
IMPORTANT!

Turn off the main switch before any work is carried out on the electrical circuit.

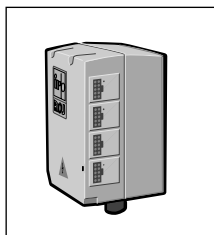
The power supply to the feeder must not be disrupted when the weaving machine stops.



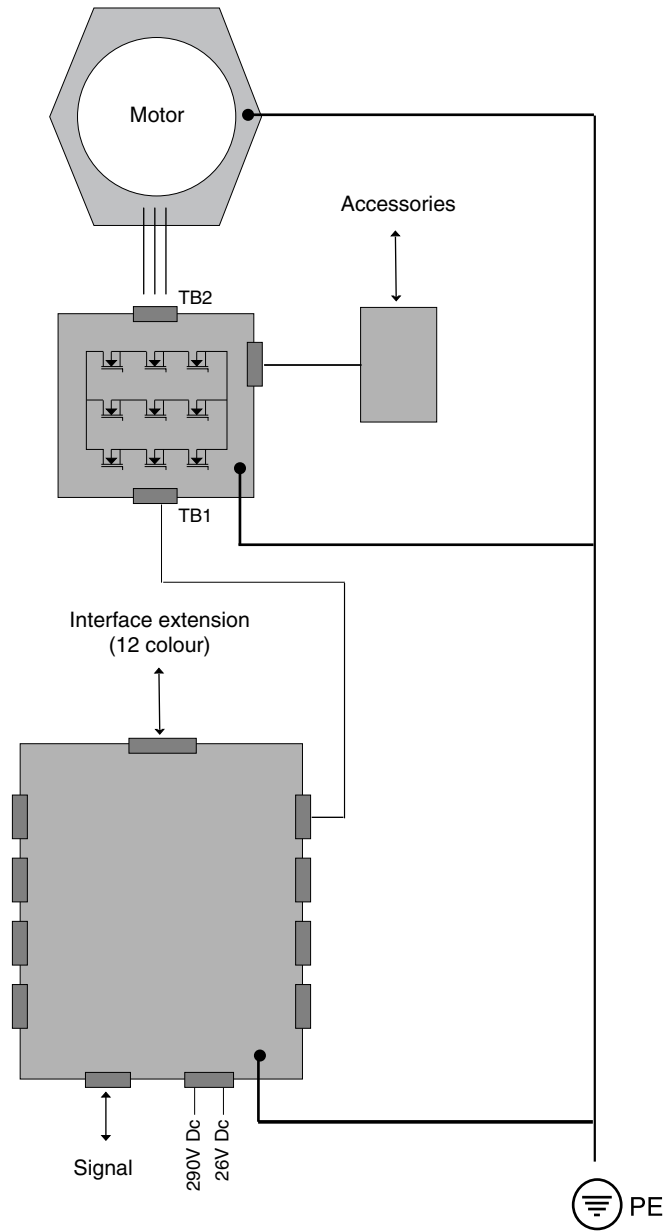
Operating diagram



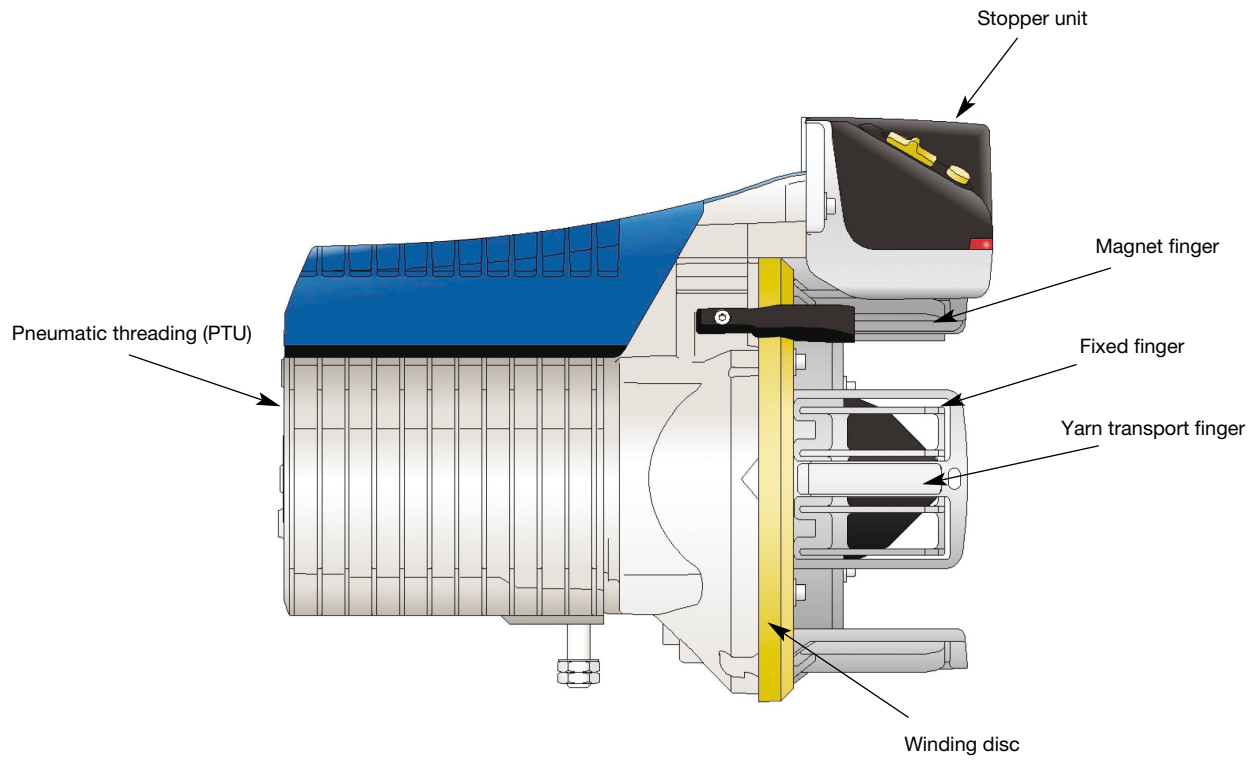
Motor control unit



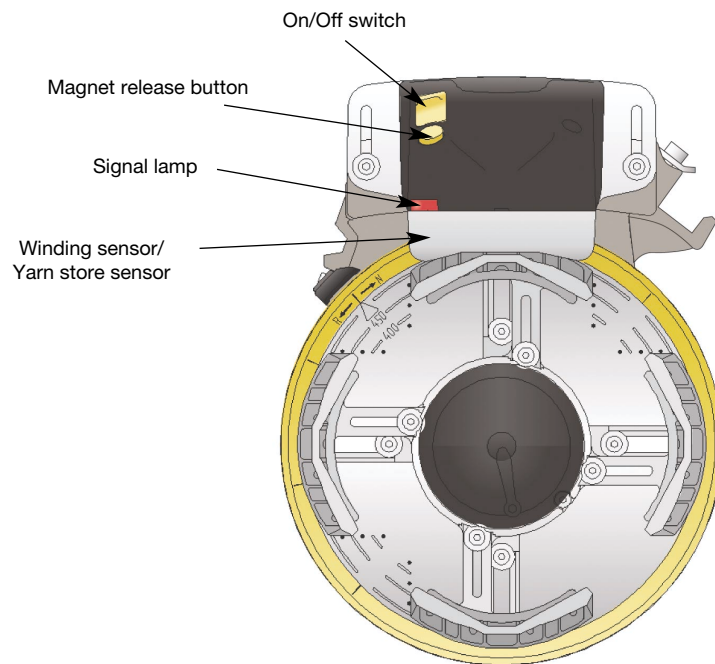
Extension Interface



Side view



Front view



System orientation**SYSTEM**

The system consists of feeders, cables to each feeder, interface control box, PTU (pneumatic threading up), input yarn tensioners and external accessories such as bobbin break sensors and bobbin change detectors.

INTERFACE

This control box handles all communication between feeders and machine via the CAN-bus system. The control box also distributes 290 VDC and 24VDC from the machine to each feeder. An additional extension box is used when more than 8 feeders are connected.

FEEDER

The feeder consists of:

- Motor and control unit.
- Spool body with 4 independantly adjustable fingers.
- Pick length control stopper magnet.
- Yarn store sensor.
- Positioning sensor.
- Winding sensor.
- Bobbin break sensor

Spool body circumference, yarn separation and stopper unit are mechanically adjusted on the feeder. All other settings are carried out on the weaving machines terminal and transmitted to the feeder through the CAN bus.

For precise yarn release the feeders are connected to the machines angle bus (encoder).

The brushless permanent magnet motor is controlled from the control board situated under the top cover.

At feeder start-up, the number of windings on the spool body is controlled by the yarn store sensor which indicates the outer limit of the yarn store. The number of windings supplied to the yarn store is continuously counted by the wind-on sensor whilst at the same time the number of windings removed from the yarn store is counted by the winding sensor. For optimal regulation the pattern information is transfered to each feeder a few picks in advance.

The weft length is equal to the spool body circumference multiplied with number of windings removed during one insertion. The stopper magnet pin is opened at a requested machine-angle by reading the angle-bus and closed directly after the second last winding sensor pulse.

The stopper magnet is driven in both directions electrically, but held in closed position after the power is switched off.

Spool body circumference

The required pick length is the deciding factor when calculating the spool body circumference and the number of windings for each pick. The table below indicates the pick length ranges that can be obtained from different numbers of windings. To calculate the appropriate spool body circumference / number of windings per pick, proceed as follows:

1. Determine the required pick length (drawing-in width plus waste).
2. Using the table below determine a pick length range that covers the required pick length.
3. The number of windings necessary to obtain the required pick length will be found in the right hand column. If there are two possible values, always choose the lower value. Adjust the spool body to the required circumference as follows:

| Pick length range (mm) | | No. of Winds |
|------------------------|------|--------------|
| MIN | MAX | |
| 378 | 508 | 1 |
| 756 | 1016 | 2 |
| 1134 | 1524 | 3 |
| 1512 | 2032 | 4 |
| 1890 | 2540 | 5 |
| 2268 | 3048 | 6 |
| 2646 | 3556 | 7 |
| 3024 | 4064 | 8 |

Move the stopper unit to its uppermost position before any adjustments are carried out.

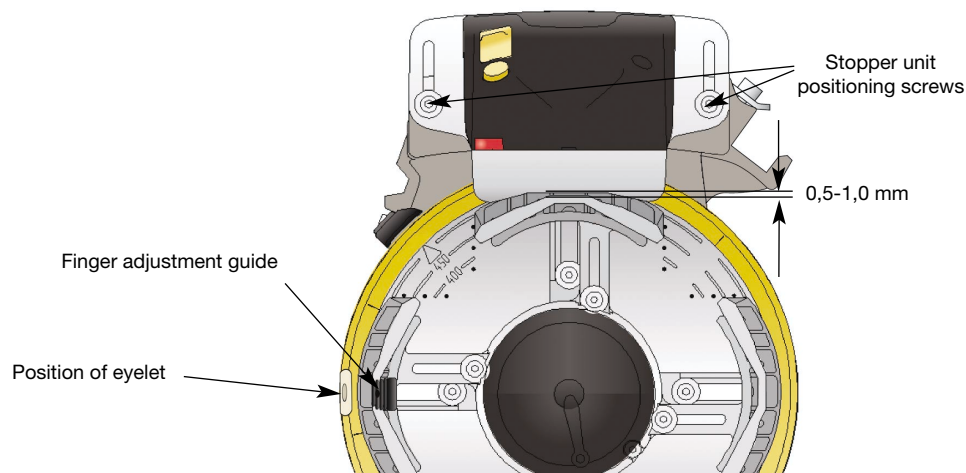
Adjust each finger in turn, first the fixed finger then the yarn transport finger. Only loosen the locating screws sufficiently to move the finger, excessive loosening gives faulty values. When adjusting the yarn transport fingers the winding disc eyelet must be aligned with the centre of the finger being adjusted .

FIXED FINGER ADJUSTMENT:

1. Loosen the locating screw.
2. Adjust the finger using the circumference scale on the front plate as a reference.
3. Re-tighten the locating screw.

YARN TRANSPORT FINGER ADJUSTMENT:

1. Align the winding disc eyelet with the finger to be adjusted.
2. Loosen the locating screw.
3. Insert the short end of the guide between the fixed finger and the yarn transport finger.
4. Adjust the yarn transport finger towards the fixed finger until the guide is felt to locate then, whilst holding the guide and finger in place, re-tighten the screw.



Adjusting N/R rotation and yarn separation

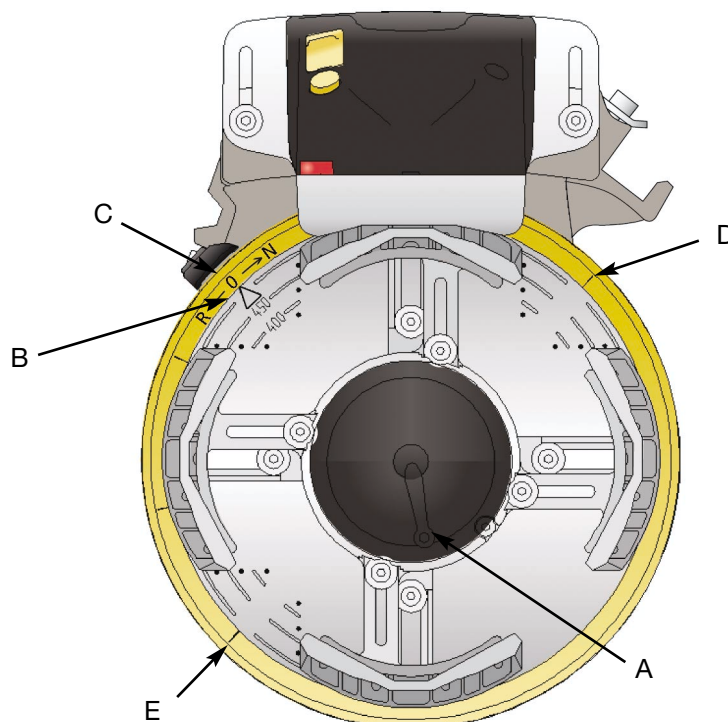
This adjustment is carried out by locking the inclined hub in position and then revolving the winding disc in a clockwise or anti-clockwise direction.

Proceed as follows:

1. Insert a three millimeter socket key (or similar object) into the hole (A) in the cone at the front of the spool body.
2. Whilst asserting a slight inward pressure on the key, revolve the winding disc until the key is felt to lock into position.
3. Firmly grasp the spool body* and rotate the winding disc in the required direction. For normal rotation rotate the winding disc in a clockwise direction and for reversed rotation in an anti-clockwise direction. The more the winding disc is rotated the larger will be the yarn separation.
4. Point B on the front plate is the reference point for adjusting separation. When point C is aligned with B the yarn separation is set at zero. By aligning D or E with B the yarn separation is set at maximum.

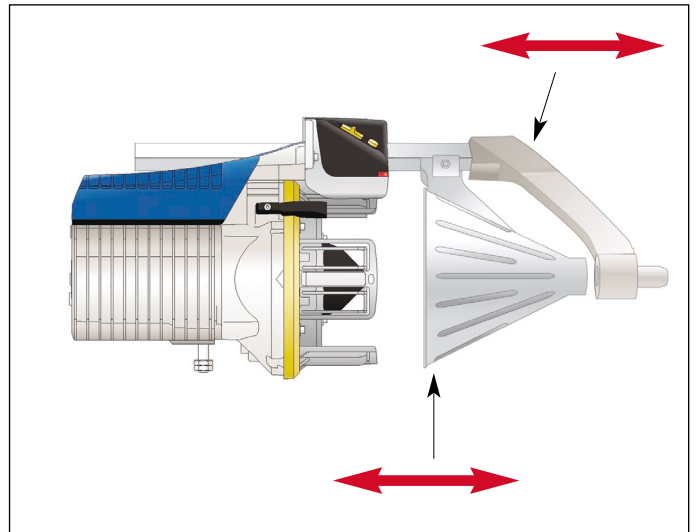
Note, excessive yarn separation can cause inferior weaving results and reduce the yarn store capacity. Do not set a larger yarn separation than necessary for the yarn count being used.

* Failure to hold the spool body in position when adjusting yarn separation will result in damage to the stopper magnet pin.



Balloon control

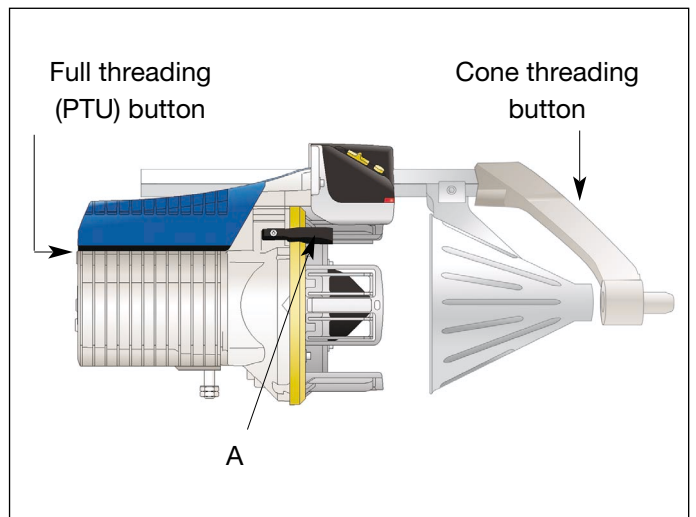
To ensure optimal yarn performance between the feeder and the weaving machine it may be beneficial, especially when weaving heavier yarns, to use a cone for balloon control. During the initial installation the cone should be adjusted to the outermost position, then, with the machine running, slide the cone inwards towards the feeder until the optimum yarn path is obtained. The cone should then be locked into position.


Threading

Before threading the feeder it is necessary to remove any yarn that may be on the spool body. To do this the magnet pin must be opened. This can be performed using any of the following methods:

1. A short push on the yarn release button will release one winding.
2. By pushing the yarn release button and keeping it pushed in the magnet pin will remain open as long as the button is pushed in.

After the magnet pin has been opened any yarn on the spool body can be removed.


To thread the unit proceed as follows: *

1. Hold the end of the yarn close to the input eyelet at the rear of the feeder.
2. Push the PTU activating button and release the yarn.
3. Take hold of the yarn end.
5. Reset the feeder (switch off/on).

* = Full threading: Insure that the yarn eyelet is correctly positioned under the guide (A).

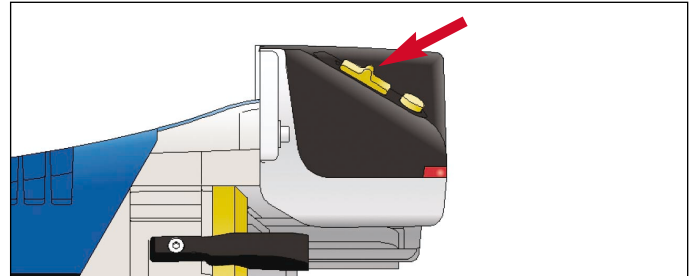
Rotating the spool body

WARNING!!

Failure to follow these instructions will result in damage to the spool body, stopper magnet, stopper magnet pin or the stopper housing

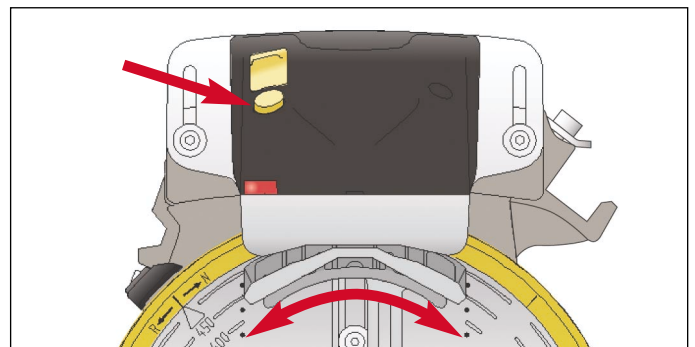
With feeder connected to the weaving machine and machine power on.

Switch off the feeder.



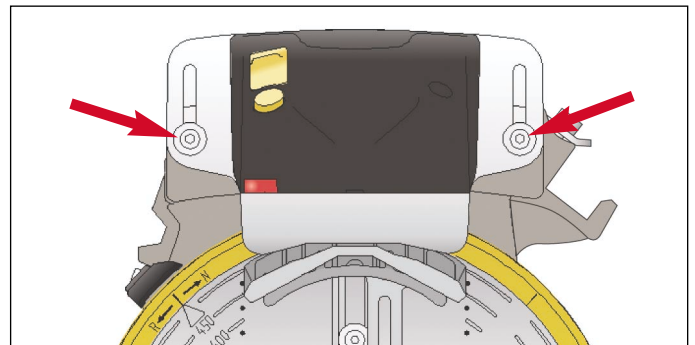
Press the button on the stopper housing and ensure that the magnet pin retracts.

The spool body can be rotated as long as the button is activated.



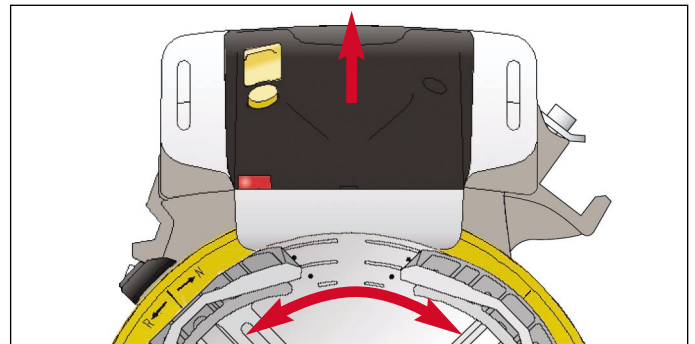
With feeder removed from the weaving machine OR when the power to the weaving machine is switched off.

Remove the two screws retaining the stopper housing.

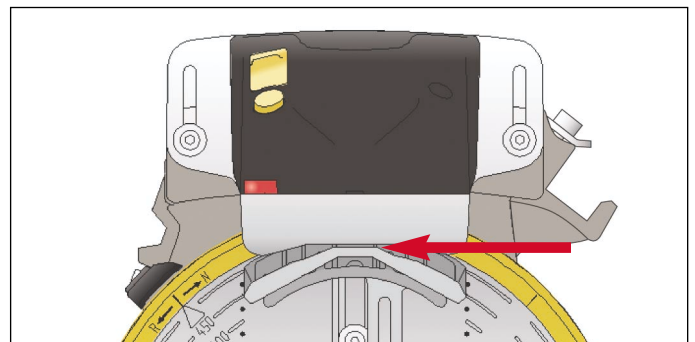


Remove the stopper housing completely.

The spool body can now be rotated as necessary.

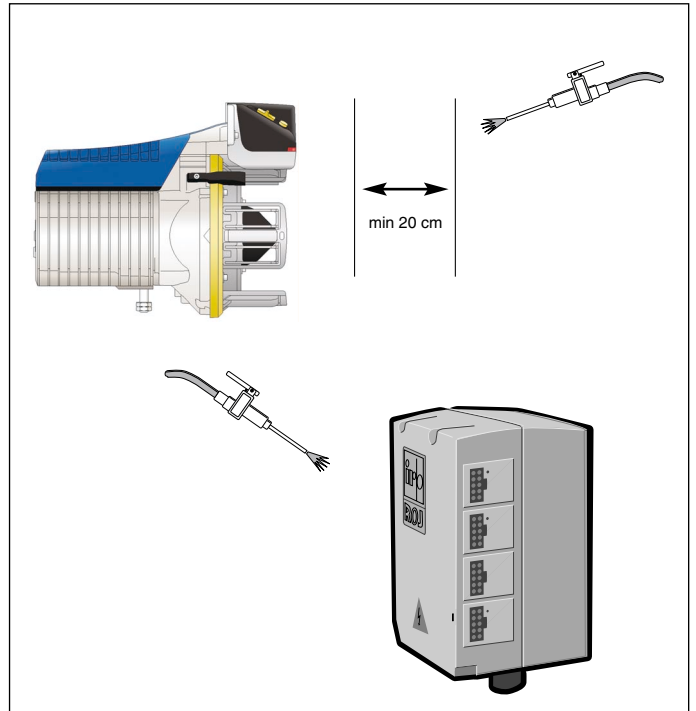


When reassembling the stopper housing it will be necessary to adjust the distance between the magnet and the magnet finger using the guide (see page 7).

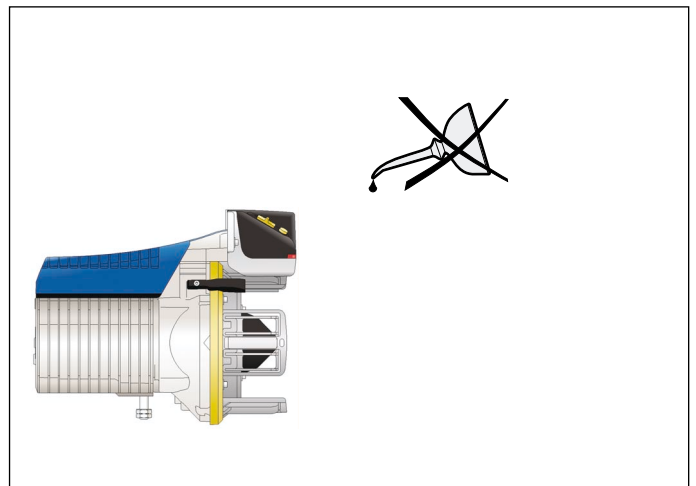


Maintenance

It is recommended to carry out a periodical cleaning of any lint or dust accumulation on the feeder or the control box.

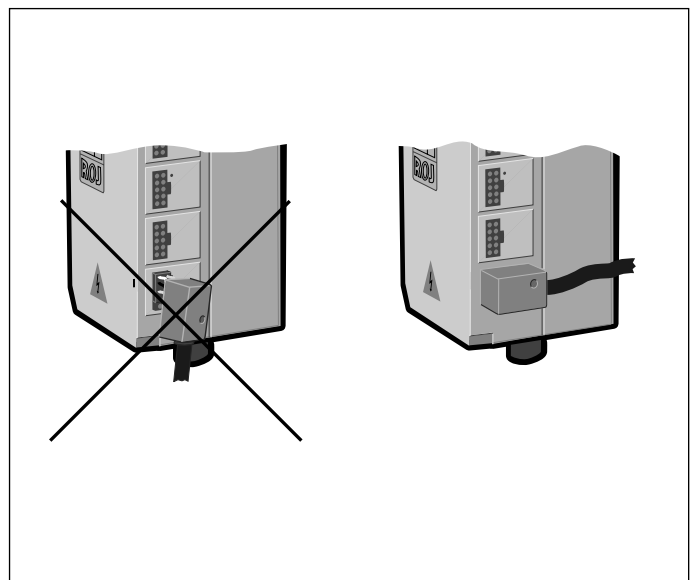


The unit requires no extra lubrication.

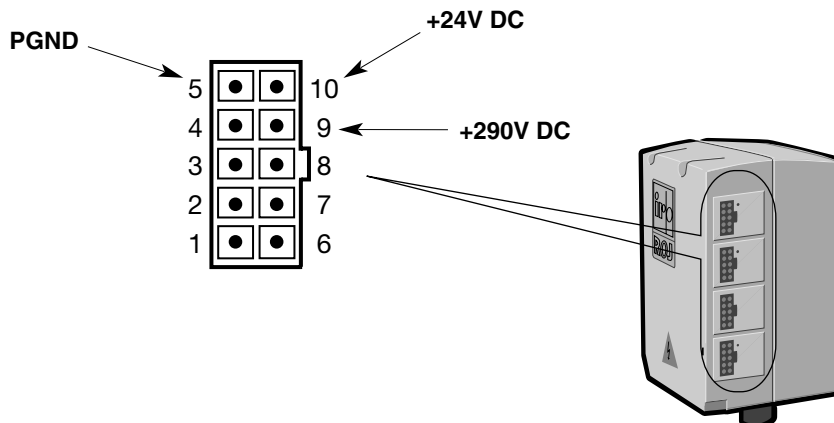


IMPORTANT!

The connector cover must be assembled.



Voltage check

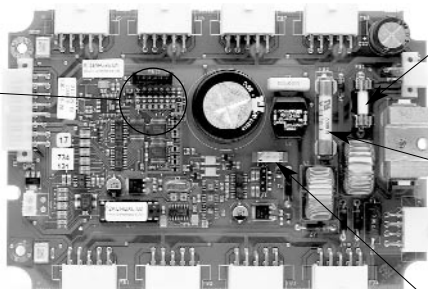


Interface check

Code switch settings



CAN enabled



Fuse T5A/ 250 V
24V DC for feeder
and communication
feeder size

Fuse T3,15A/ 500V
290V DC,
feeder motor

Fuse T0,75A/ 250V
24V DC. for
communication
(loom side)

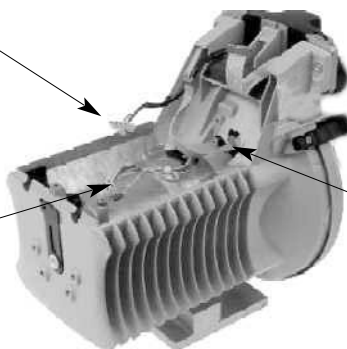
Feeder check

Stopper magnet connector

Coil resistance:
Yellow- Blue \approx 65 Ohm
Red- Green \approx 65 Ohm

Motor connector

Coil resistance:
Yellow- Red \approx 8 Ohm
Yellow- Green \approx 8 Ohm
Green- Red \approx 8 Ohm



Positioning sensor (proximity switch)

Make sure that sensor is
mounted close to motor
housing for reliable
function.

Fault finding

| Type of problem | Check in the following order |
|-------------------------------------------------------------------------|-------------------------------------|
| Feeder motor does not start when ON/ OFF switch is ON - Feeder LED Off. | 19-20-8-1-2-3 |
| Feeder motor does not start when ON/ OFF switch is ON - Feeder LED On. | 21-10-9-5-4 |
| Feeder LED indicates error (double blinking). | 5-6-26-27 |
| Feeder LED indicates error (blinking). | 29-10-17-22 |
| Feeder stopper magnet does not open. | 1-7-8-26-24-25 |
| Input yarn breaks frequently. | 18 |
| Feeder does not fill up yarn properly. | 21-10-23-24 |
| Feeder does not stop (over filling). | 10-21-23-24 |
| Loom terminal indicates "Blocked rotor". | 5-6 |
| Communication failure between loom and feeder. | 2-3-24-25 |
| Feeder 1131 CAN Plus is displayed as 2231 CAN Plus at loom terminal. | 8-23-24 |
| Frequent problems with long or short picks. | 11-28-23-24 |
| Feeder indicates bobbin break but the yarn is not broken. | 17-22-12 |
| Feeder does not stop at yarn break. | 15-13-24-22 |

| Possible causes | Remedies |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1. Switch failure | Replace stopper housing cover. |
| 2. Fuses blown - Feeder | Check fuse. If broken, replace circuit board. |
| 3. Fuses blown - Interface | Check fuse. If broken, replace fuse or circuit board. |
| 4. Motor stator damaged | Check stator resistance with Ohm-meter. |
| 5. Rotor blocked | Check if the winding disc rotates freely. |
| 6. Rotation sensor not connected connected to the circuit board. | Check that the rotation sensor connector is properly connected to the circuit board. |
| 7. Magnet not connected to the circuit board. | Check that the magnet connector is properly connected to the circuit board. |
| 8. Sensor board not connected connected to the circuit board. | Check that the sensor board connector is properly connected to the circuit board. |
| 9. Motor not connected to the circuit board | Check that the motor connector is properly connected. to the circuit board |
| 10. Wrong reserve sensor settings | Adjust sensor sensitivity settings (loom terminal). |
| 11. Wrong winding sensor settings | Adjust sensor sensitivity settings (loom terminal). |
| 12. Wrong yarn-break sensor settings | Adjust sensor sensitivity settings (loom terminal). |
| 13. Yarn break sensor not activated | Activate yarn break sensor (loom terminal). |
| 14. Yarn break sensor not connected | Connect yarn break sensor. |
| 15. External sensor selected, but not installed | Set "internal" yarn break sensor (loom terminal) or install external sensor. |
| 16. Yarn break sensor set to "internal" | Set "external" yarn break sensor (loom terminal). |
| 17. Input yarn tension too low | Adjust input tensioner. |
| 18. Input yarn tension too high | Adjust input tensioner. |
| 19. Loom main power off | Switch loom "main power" on. |
| 20. Loom "stand by" switch off | Switch "stand by" on. |
| 21. Feeder not clean | Remove dust and fibres, clean sensor window (see page 10). |
| 22. Sensor not clean | Remove dust and fibres, clean sensor window and mirror (see page 10). |
| 23. Sensor damaged | Replace sensor. |
| 24. Motor circuit board damaged | Replace motor circuit board. |
| 25. Interface board damaged | Replace interface circuit board. |
| 26. Power failure | 290V/ 24V DC failure. Check interface and feeder fuses, check voltage level. |
| 27. Feeder motor failure | Check feeder motor coil resistance. |
| 28. Incorrect distance between fixed finger and stopper unit | Adjust gap. |
| 29. Yarn break indication | Rethread feeder. |