



Chrono-X2

Operating Instructions



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This section contains important safety information. Read the manual carefully before installing, using or maintaining the weft feeder.



WARNING

Indicates a possible dangerous situation which could result in serious injury or damage to the unit.



CAUTION

Indicates a possible dangerous situation which could result in minor/moderate injury or damage to the unit.

NOTE

Used in order to draw attention to important information, which facilitates operation or handling.

ORIGINAL LANGUAGE INSTRUCTION

IRO AB reserve the right to change the contents of the user's guide and technical specifications without prior notification.

**WARNING!**

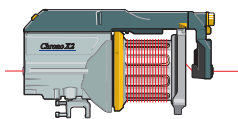
- The power supply must be switched off at the mains before any work is carried out on the feeder, the transformer or any other electrical components. The feeder and the transformer cabinet must be fully assembled before the power supply is connected.
- The weft feeder ON/OFF-switch does not cut off the main power supply. Turn off the main switch before any work is carried out on the electrical circuit.
- 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.
- Always turn off the main switch or isolate the power supply and disconnect the air supply before connecting or disconnecting the feeder, the control board or any of the circuit boards
- Routine checks for damaged or worn parts must be made before operating this equipment. Any part that is worn or damaged should be properly repaired or replaced by authorized personnel. To avoid risk of injury DO NOT operate this equipment if any component does not appear to be functioning correctly.

**CAUTION!**

- 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.
- To comply with C.E. Regulations only replacement parts approved by IRO AB may be used.
- The feeder is an industrial product and therefore not approved to use household environments /in residential areas.

NOTE

To ensure the selection of the most suitable feeder and associated accessories, it is recommended making weaving tests with the intended yarns.

Technical specifications


Max 1800 m/min



9,2 kg



Min 5° C-Max 40° C



Max 85 %



83 dB



Max 6 mm



5,5 - 7 bar



4 mm

Power Supply/ Interface


200 - 575V 400VA


 Max T 10A
Fuse


3,3 kg

Interface


Power Supply via Loom



1,4 kg

Extension Interface


Power via Power Supply/ Interface connected to extension plug



1,4 kg



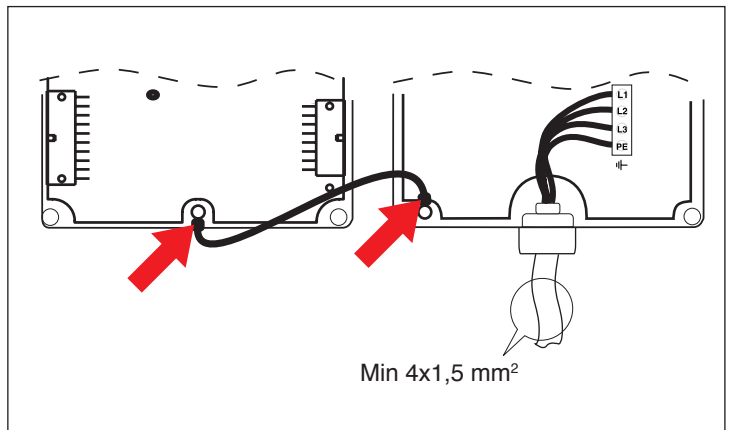
WARNING!

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

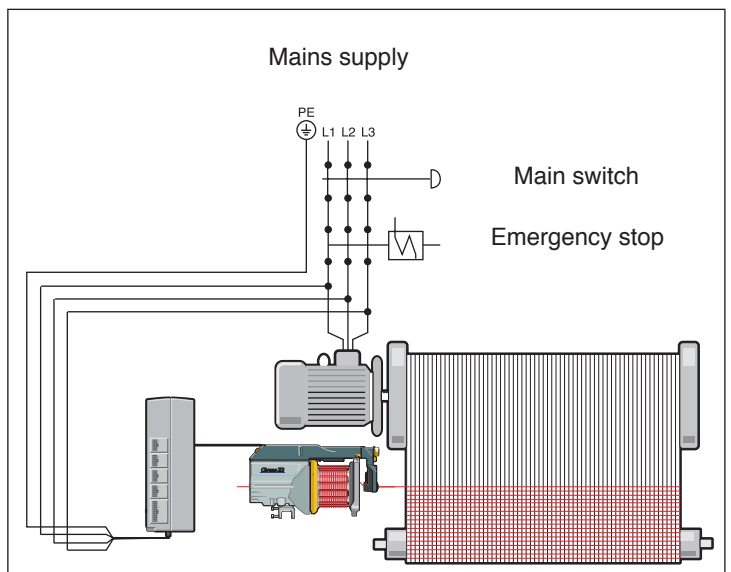
NOTE

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.

Take the Voltage Supply Box out of the packing. Open the cover and connect the three-phase power cord. (4-wires cable). Make sure that the earth connection is properly made. The section of each wire cannot be less than 1,5 mm².



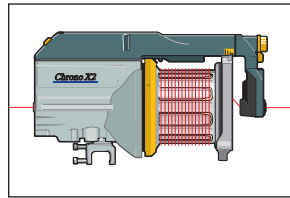
The power supply to the feeder must not be disrupted when the weaving machine stops.



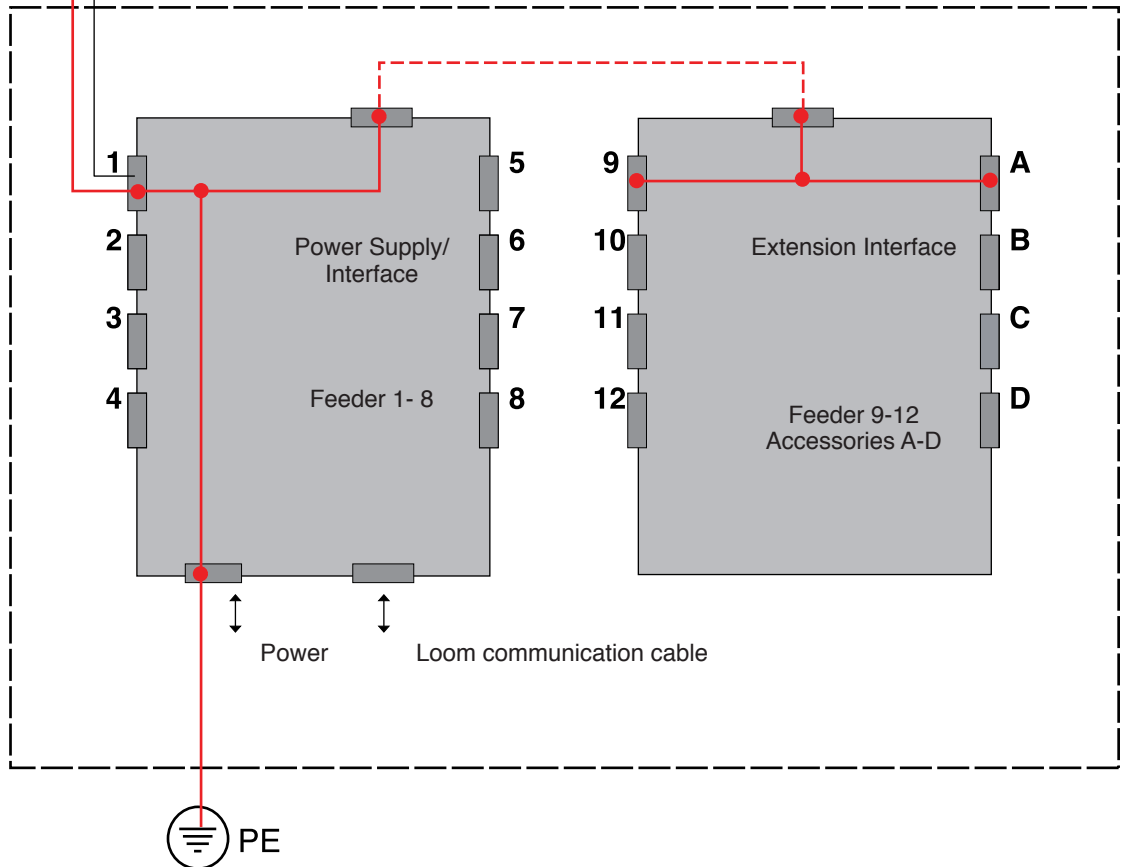
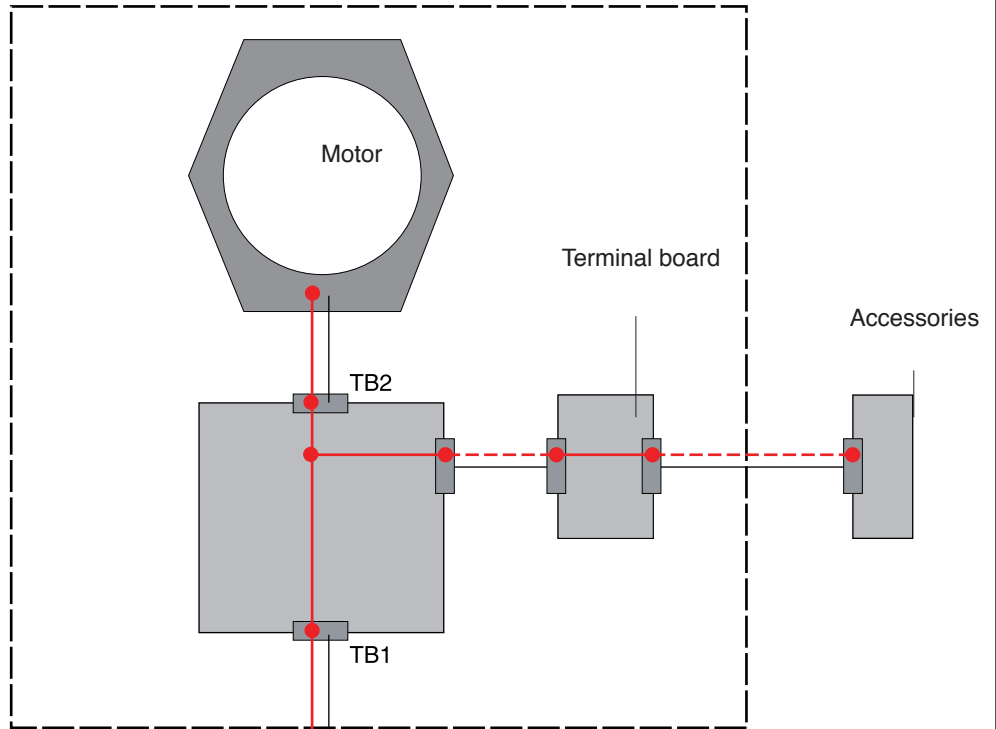
Variations in main voltage.

Nominal	Voltage	Frequency
200V - 346V	180V - 380V	50/ 60 Hz
380V - 400V	342V - 440V	50/ 60 Hz
415V - 575V	374V - 632V	50/ 60 Hz

Motor control unit and fuse panel



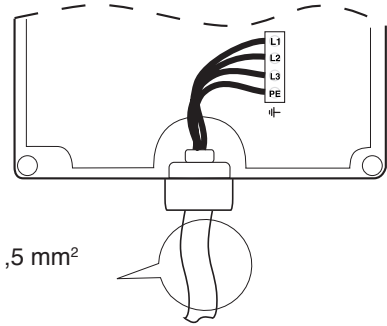
Motor control unit





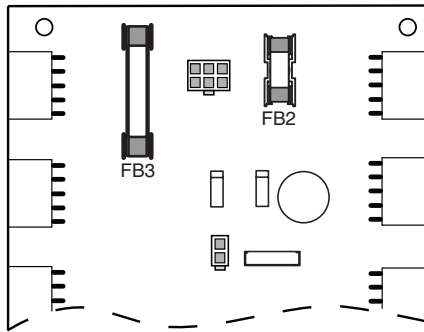
Power Supply/ Interface

Mains connection



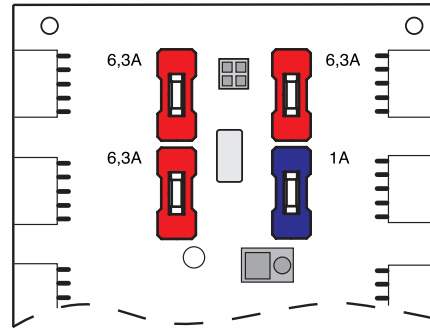
Min 4x1,5 mm²

CAN - INTERFACE
Fuses



FB3= 3,15A slow
FB2= 5A slow

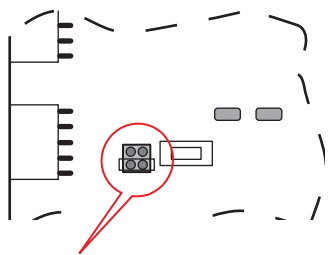
STAND ALONE - INTERFACE
Fuses



Red= 6,3A slow
Blue= 1A slow

STAND ALONE - INTERFACE

Stop relay jumpers

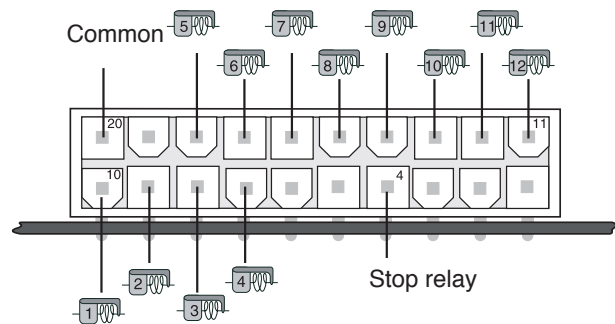


NO - normally open

NC - normally closed

Without stop relay signal

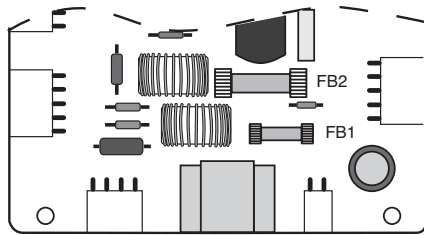
Opto coupler/ stop relay connection





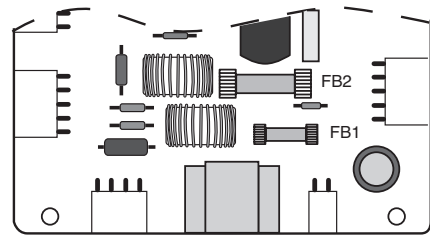
Interface
Power supplied via loom

CAN - INTERFACE Fuses



FB2= 3,15A slow
FB1= 5A slow

STAND ALONE - INTERFACE Fuses



FB2= 3,15A slow
FB1= 5A slow

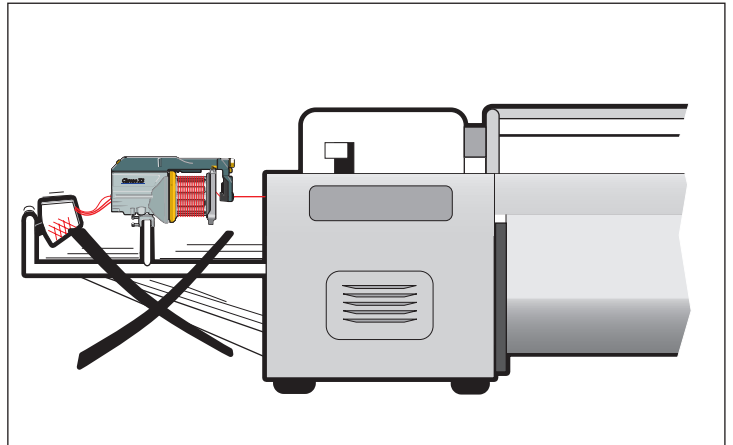
NOTE

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.



CAUTION!

The unit should not be mounted directly on the weaving machine.



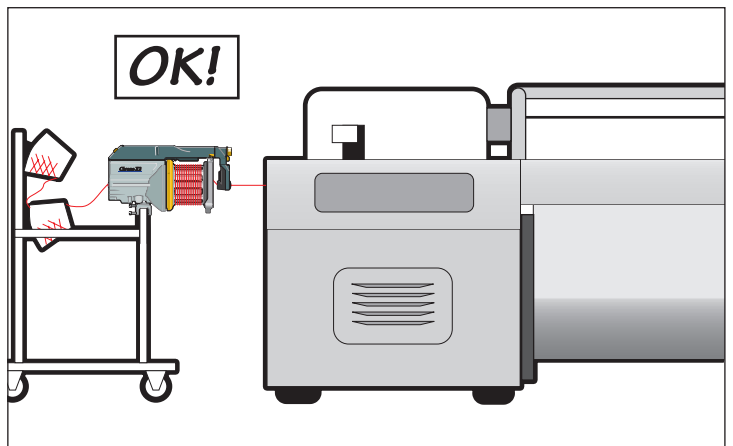
Use a separate floor stand.

NOTE

Feeders' stand and creel must be connected to the earth of the loom.

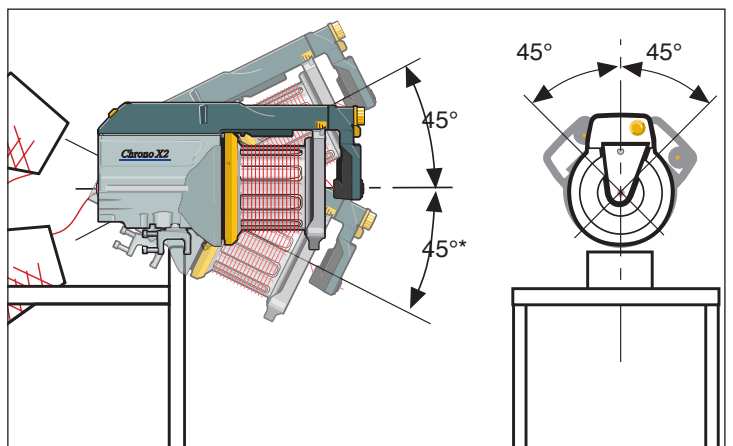
NOTE

Place the creel behind the feeder's stand avoiding sharp angles to the yarn path from the creel output to the feeders.

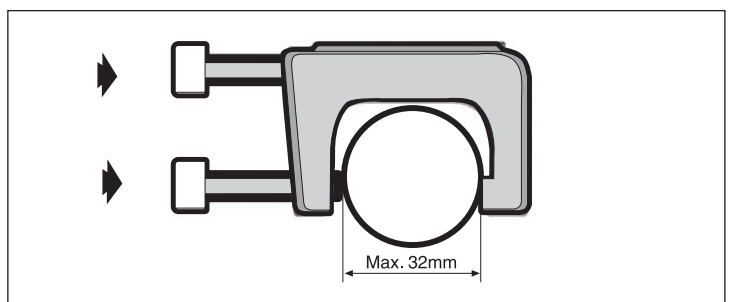


Feeders with Mechanical sensors must be mounted within 45° of the horizontal plane.

*Max 15° with low sensor spring force.(see page 19)

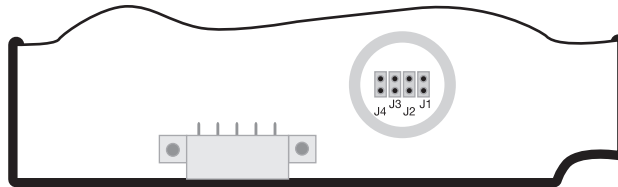


Ensure that the mount screws are correctly tightened.



Motor circuit board jumpers

The feeder is equipped with jumpers on the motor circuit board that adapt the feeders operation to the characteristics of the weaving process. (Weaving machine settings have priority over jumper settings).

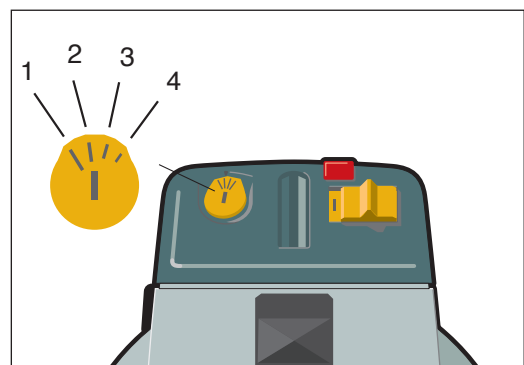


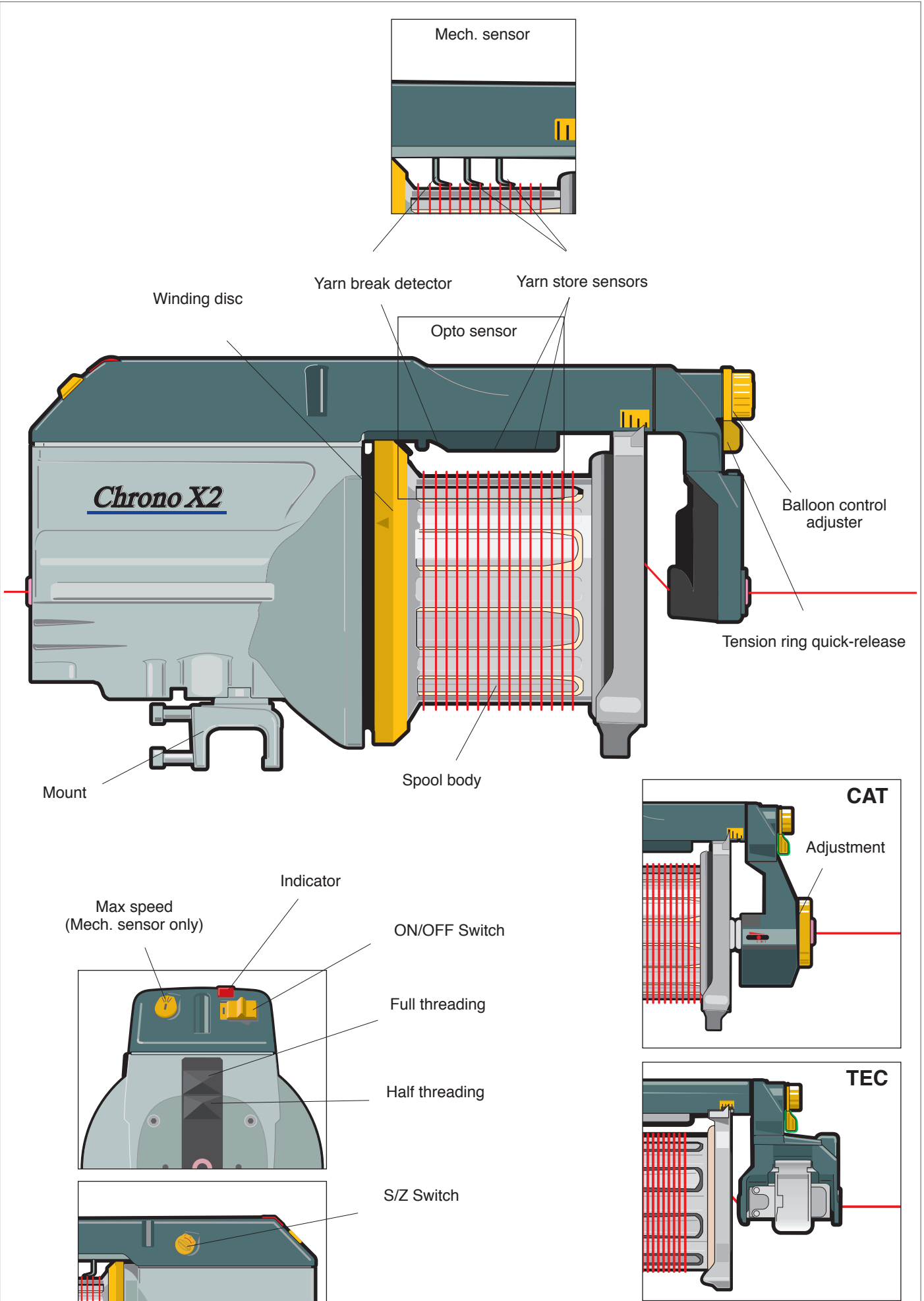
Opto sensors		Mech. sensors	
J1		J1	
	Yarn store sensor sensitivity- LOW		Yarn break sensor filtering- RIGID YARNS
J1		J1	
	Yarn store sensor sensitivity- AUTO		Yarn break sensor filtering- NORMAL
J2		J2	
	Integrated yarn break sensor- DISABLE		Integrated yarn break sensor- DISABLE
J2		J2	
	Integrated yarn break sensor- ENABLE		Integrated yarn break sensor- ENABLE
J3		J3	
	Winding disc positioning- DISABLE (one way bearing)		Winding disc positioning- DISABLE (one way bearing)
J3		J3	
	Winding disc positioning- ENABLE		Winding disc positioning- ENABLE
J4			
	Sensor filtering- DISABLE (continuous take off)		
J4			
	Sensor filtering- ENABLE (weaving)		

Maximum speed mech. sensor

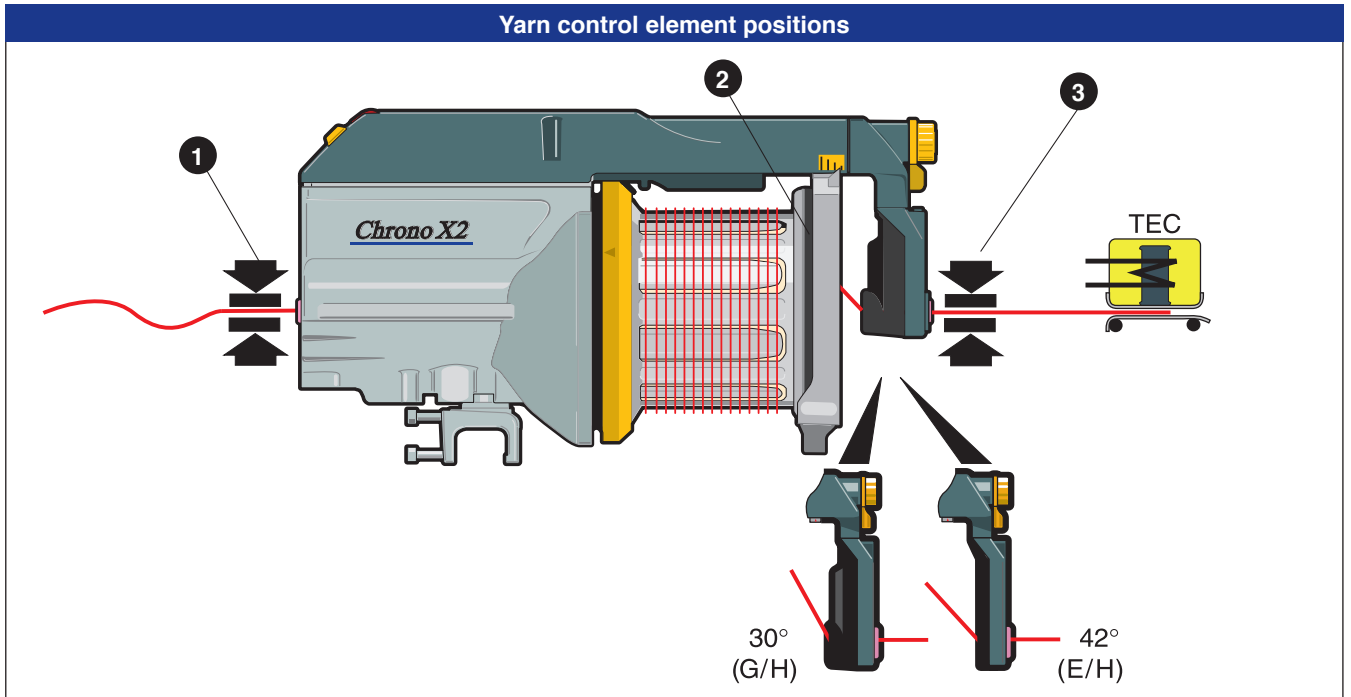
To set the maximum speed rotate the disc to the appropriate position.

- 1 = 1500 m/min
- 2 = 1200 m/min
- 3 = 800 m/min
- 4 = 500 m/min





When weaving certain types of yarn and under special weaving conditions it may be necessary to use yarn control elements in positions 1 and 3. The tables below and on the following page describe suitable combinations.



Yarn control element – type and position

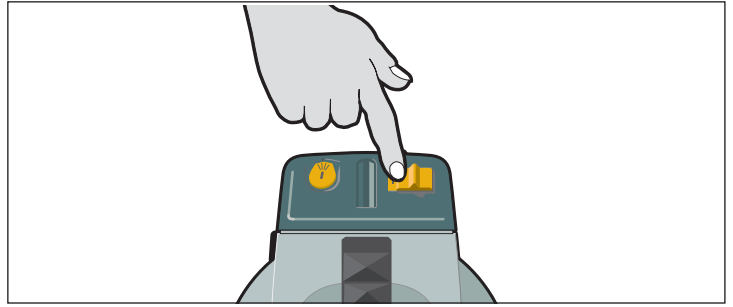
ELEMENT TYPE		POSITION	ELEMENT TYPE		POSITION
A		1	G	(E-flex)	2
B		1 3	H	Brush	2
C		1	J	(CAT)	3
D		1	K		3
E	Lamella	2			

Yarn	Rapier					Projectile		
	YARN COUNT	TENSIONERS			YARN COUNT	TENSIONERS		
		①	②	③		①	②	
Spun cotton and covered elastic	Ne 74 - 35 Ne 59 - 9 Ne 15 - 4 Ne 6 - 0,5	A A A D	G/ I G/ II G/ III G/ IIII	K K K K	Ne > 35 Ne 59 - 16 Ne 20 - 4 Ne 6 - 0,5	A A A D	H/ I G/ II G/ III G/ IIII	
Wool	Nm 120 - 60 Nm 100 - 14 Nm 25 - 7 Nm 10 - 0,8	A A A D	H/ I H/ II G/ III G/ IIII	B+B+K B+B+K K K	Nm > 60 Nm 100 - 27 Nm 33 - 7 Nm 10 - 0,8	A A A D	H/ I G/ II G/ III G/ IIII	
Stiff yarns, Jute and Flax (linen)	Nm 120 - 30 Nm 35 - 20 Nm 26 - 7 Nm 10 - 0,8	A A A D	E/ II E/ III G/ III G/ IIII	K K K K	Nm 120 - 27 Nm 33 - 7 Nm 10 - 0,8	A D D	G/ II G/ III G/ IIII	
Chenille	Nm 120 - 20 Nm 25 - 7 Nm 10 - 0,8	A A D	G/ II G/ III G/ IIII	K K K	Nm 120 - 50 Nm 67 - 7 Nm 10 - 0,8	A A D	H/ I H/ II H/ III	
Fancy yarns, Slub and Nub	Nm 120 - 50 Nm 67 - 7 Nm 10 - 0,8	B B B	H/ I H/ II H/ III	B+B+K B+B+K B+B+K	Nm 120 - 50 Nm 67 - 7 Nm 10 - 0,8	B B B	H/ I H/ II H/ III	
High Twist	Tex 4 - 20 Tex 15 - 50 Tex 40 - 100	C C C	E/ I E/ II E/ III	K K B+B+K	Tex 4 - 20 Tex 15 - 100 Tex 80 - 400	C C C	H/ I H/ II H/ III	
Endless Filament	Tex 4 - 20 Tex 15 - 40 Tex 30 - 100 Tex 80 - 400	C C A A	H/ I H/ II H/ II H/III	J/ I+K J/ II+K J/ III+K B+B+K	Tex 4 - 20 Tex 15 - 100 Tex 80 - 400	C C A	H/ I H/ II H/ III	
Tension rating: I=soft, II=medium, III=stiff, IIII=extra stiff								

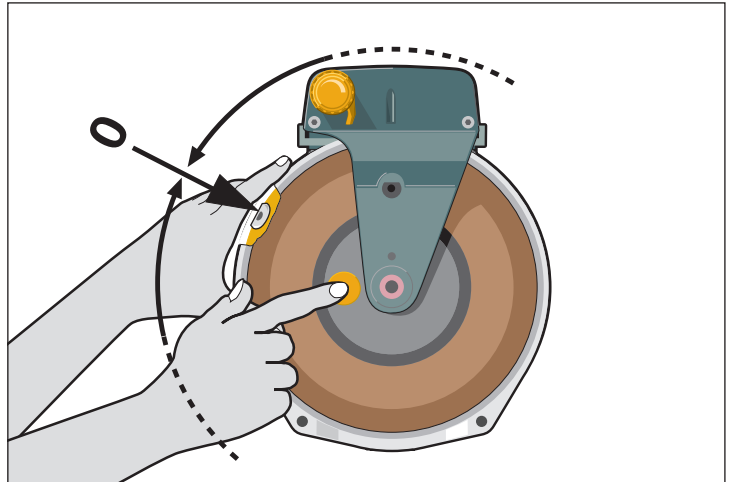
NOTE

As tensioner performance can be affected by various factors connected to the specific yarns being used the above recommendations are intended purely as a guide. In case of any uncertainty it is recommended that a weft insertion test be carried out.

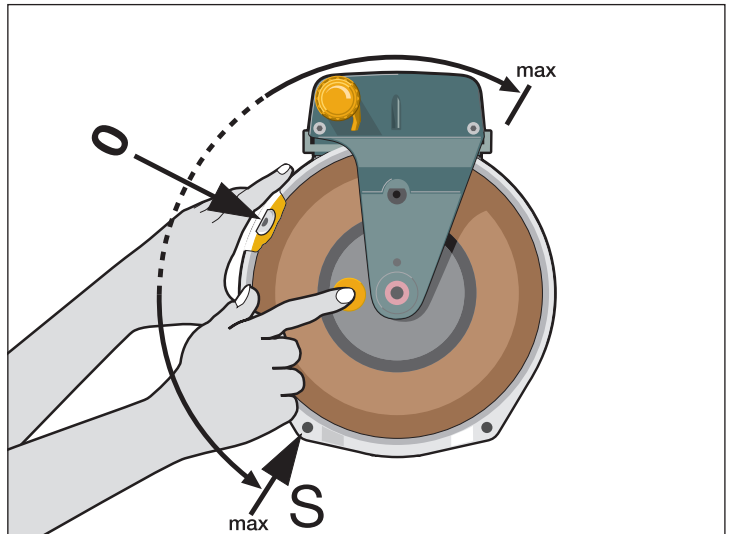
Switch off the feeder.



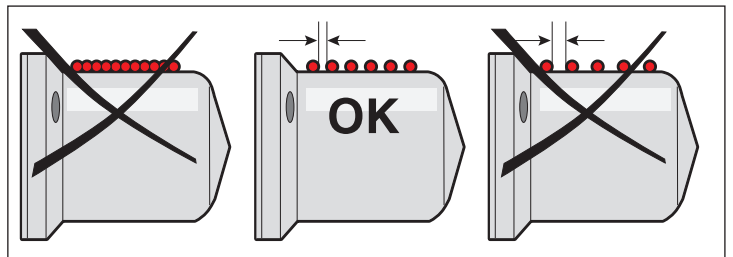
Grip the winding disc and, whilst pressing the orange button on the front of the spool body, rotate the disc until the button is felt to locate. Aligning the mark on the winding disc with the line on the motor house gives the zero separation position.



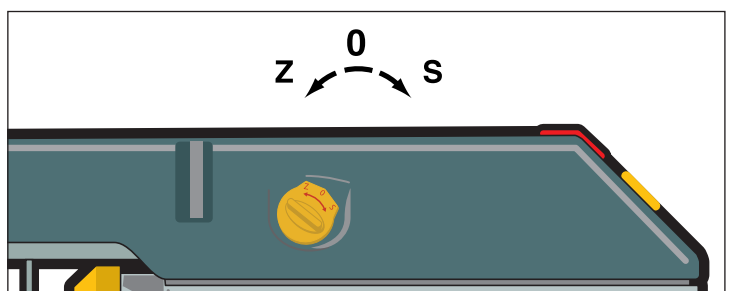
To adjust, press in the button and revolve the winding disc in the appropriate direction. The separation increases from 0 to 4 mm the more the disc is rotated.



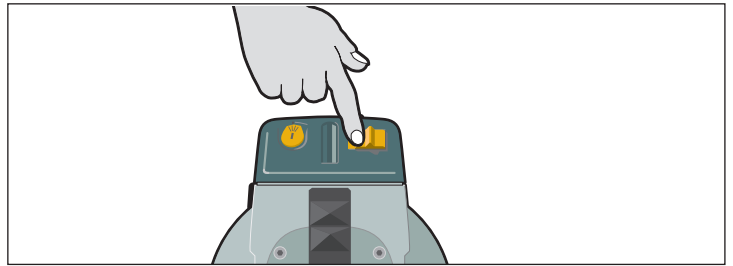
The separation must be distinct, but not excessive.



Set the direction of rotation with the switch. (The feeder is deactivated in the standby position (0))

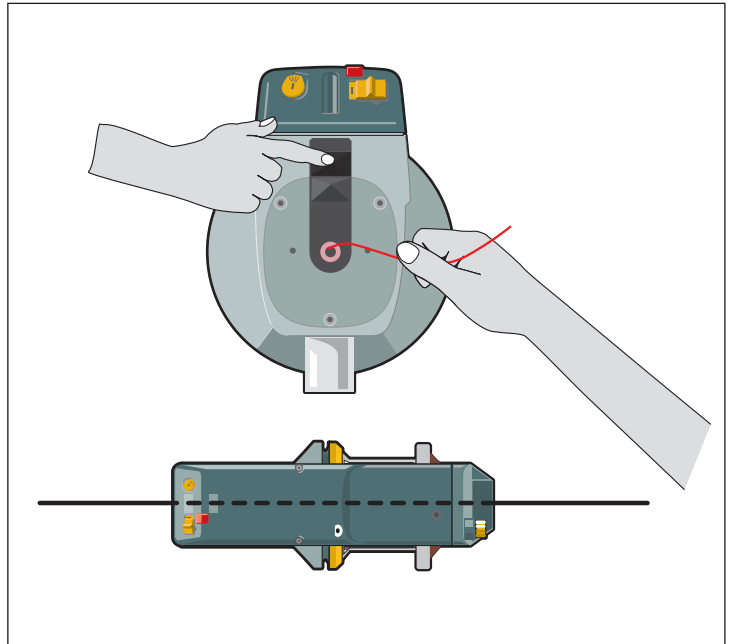


Switch on the feeder.
The winding disc will automatically position itself (empty spool body).



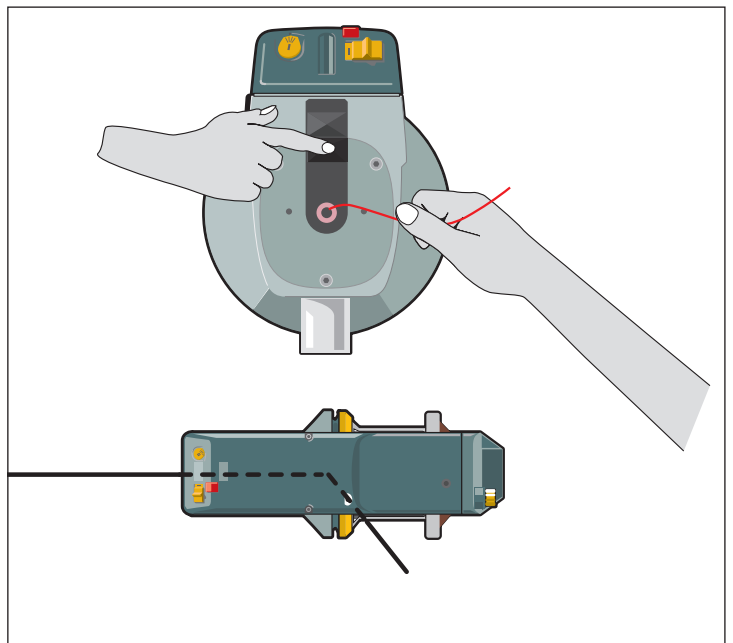
FULL THREADING

Insert the yarn into the eyelet and press the upper button, whilst lightly holding the yarn.



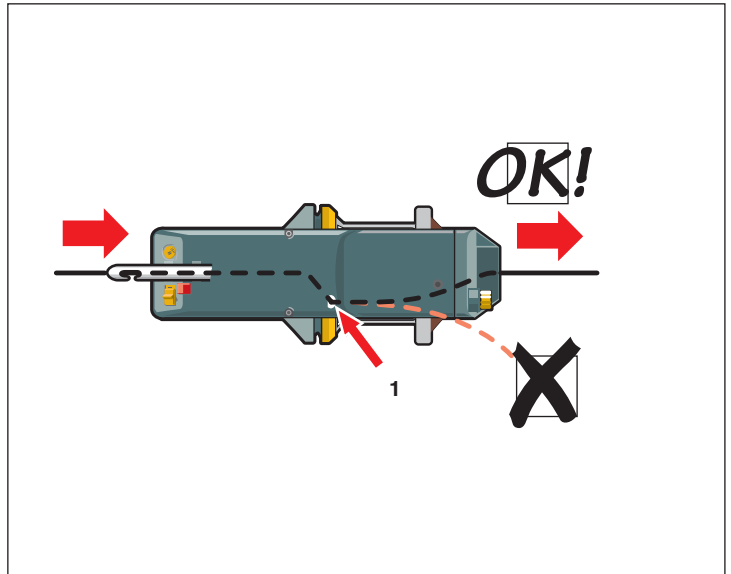
HALF THREADING

Insert the yarn into the eyelet and press the lower button, whilst lightly holding the yarn.



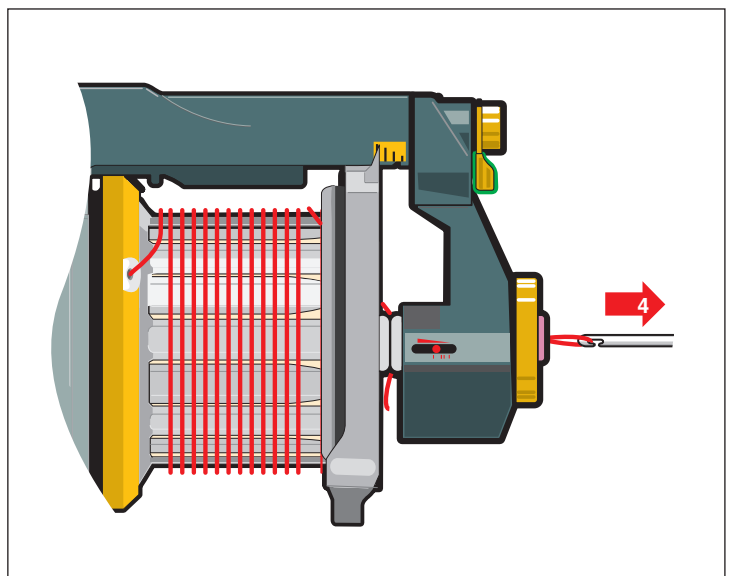
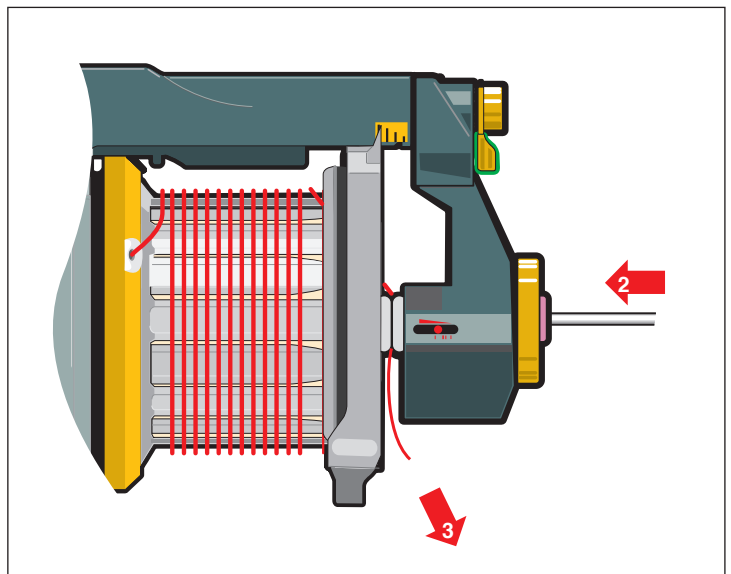
WITHOUT CAT

- Switch off the feeder.
- Align the winding disc eyelet (1).
- Open the brush holder (see page 17).
- Thread the needle all the way through the feeder and output eyelet.
- Pull the yarn through.
- Restart the feeder.



WITH CAT

- Switch off the feeder.
- Align the winding disc eyelet.
- Thread the needle through the feeder and balloon control brush.
- Start the feeder and fill the yarn store.
- Insert the threading needle into the CAT (2) as far as possible.
- Pulling the yarn (3) will cause it to wrap around the threading needle.
- When the threading needle is pulled out (4) the yarn will follow.

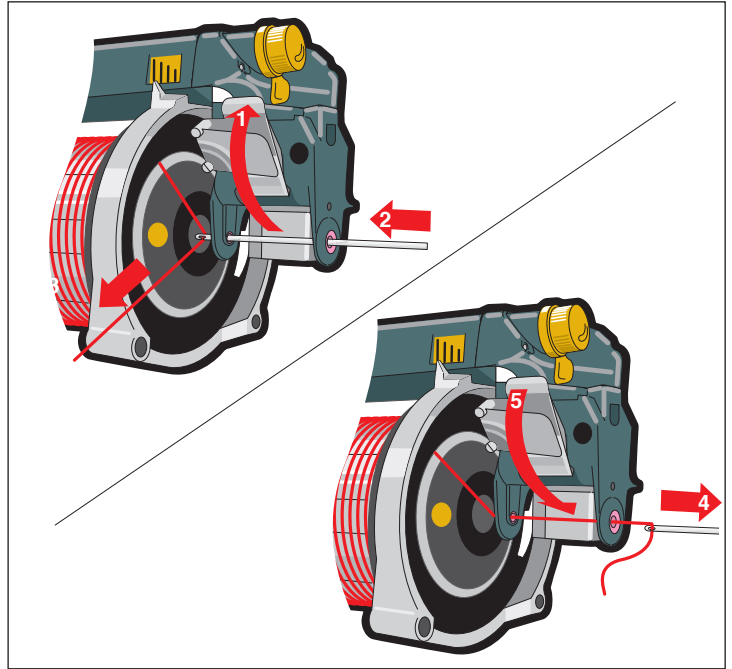


WARNING

When using a threading needle, care must be taken to avoid damaging the Flex Brake. Ensure that the flex holder is in the forward position before threading.

THREADING THE TEC

- Open the cover (1)
- Insert a threading needle (2)
- Pull on the yarn (3). The yarn will wrap itself around the needle
- Pull out the needle (4)
- Close the cover (5)

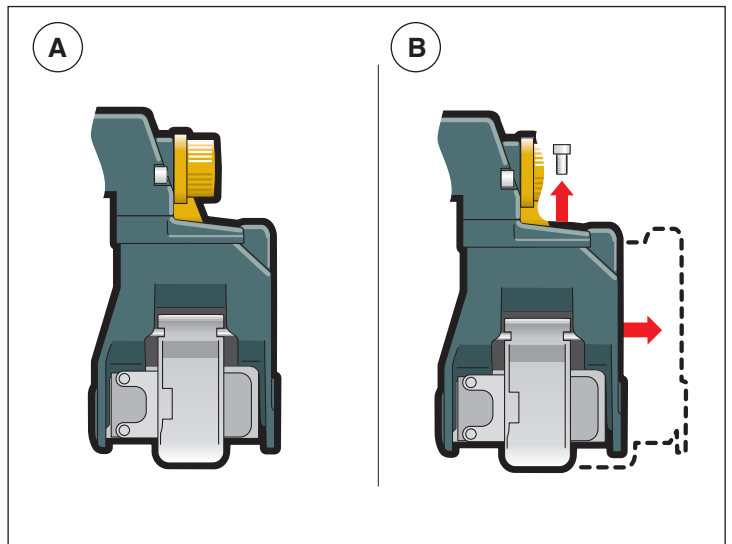


Position A

Recommended when using the TEC together with a 30° FlexBrake.

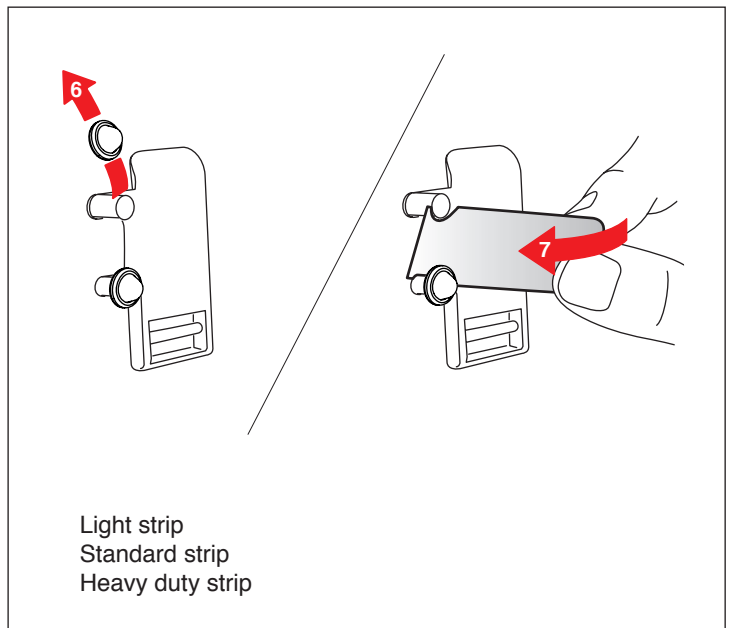
Position B

Recommended when using the TEC together with a Brush Ring or a 42° Flexbrake.



CHANGING THE TENSION STRIP

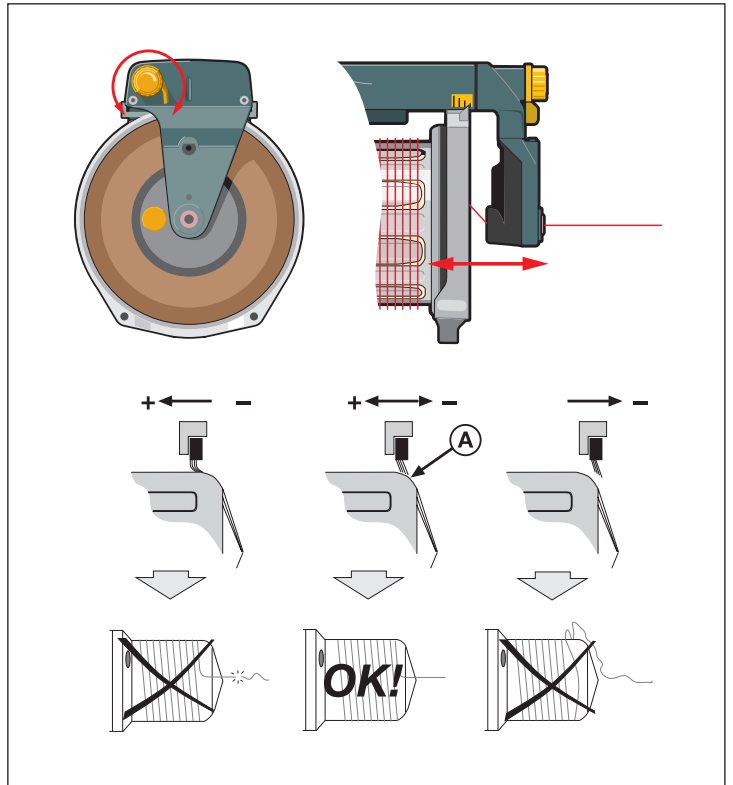
- Open the cover (1)
- Remove the cap (6)
- Tilt the strip to remove (7)
- Tilt the new strip forwards to insert
- Close the cover (5)



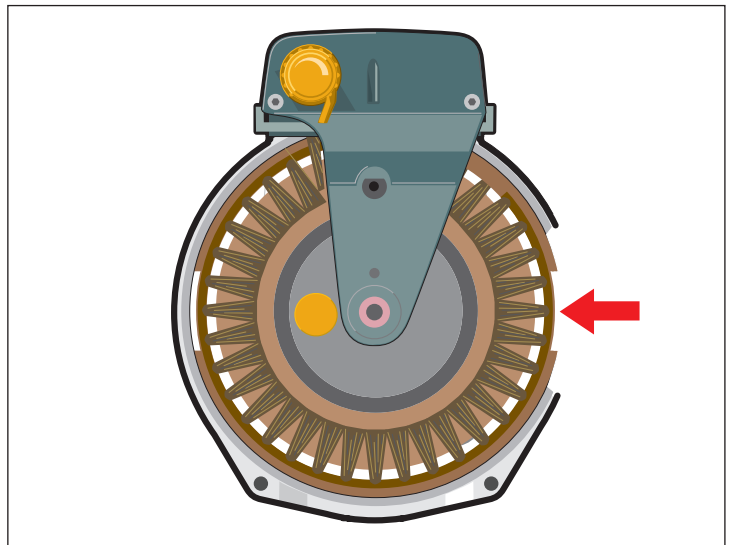
Adjust the balloon control/ E-flex tension.

NOTE

Excessive brush tension will cause abnormal wear.

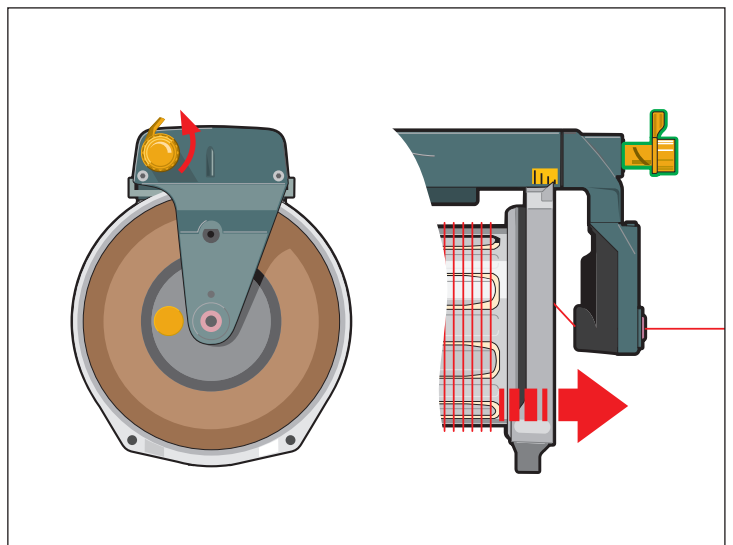


Ensure that the brush ring/ E-flex is correctly positioned.



REPLACING THE BRUSH/ E- FLEX

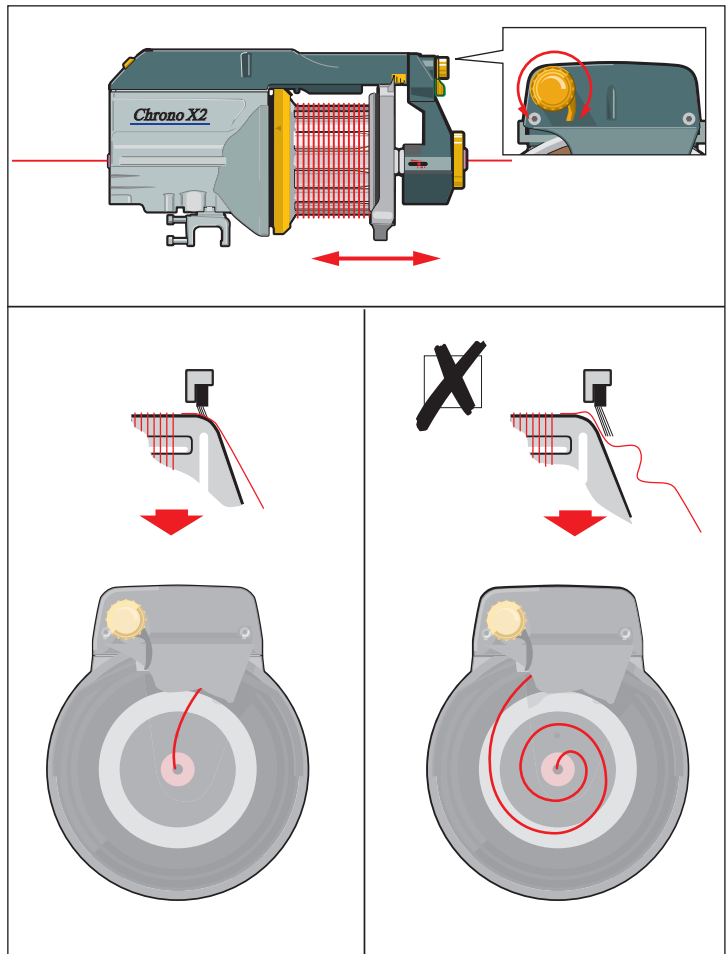
Rotating the slide shift lever will detach the brush/ E-flex from the spool body



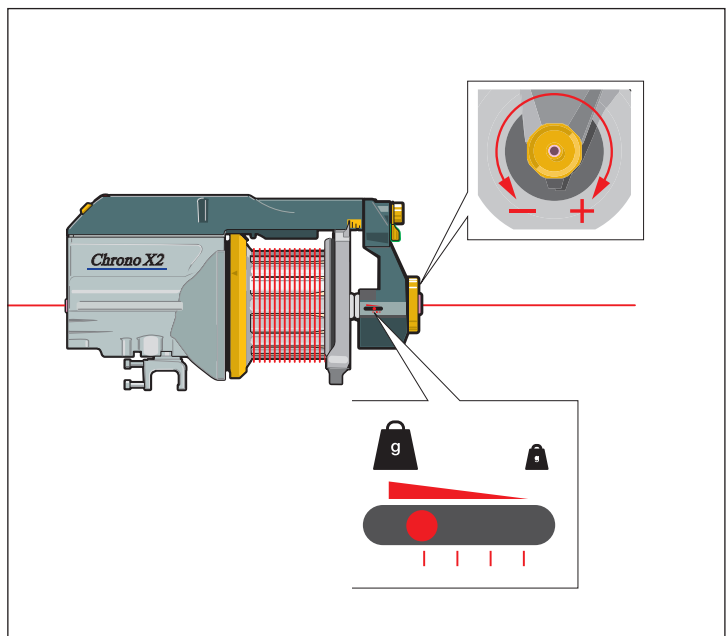
Control input yarn tension to the CAT.

NOTE

The brush ring shall only be used for balloon control.

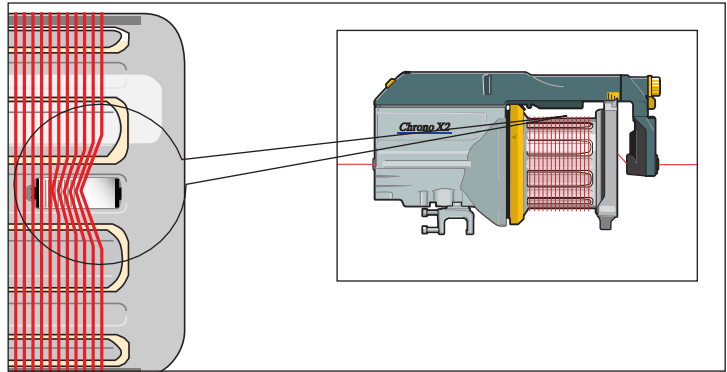


Adjustment of the output tension.

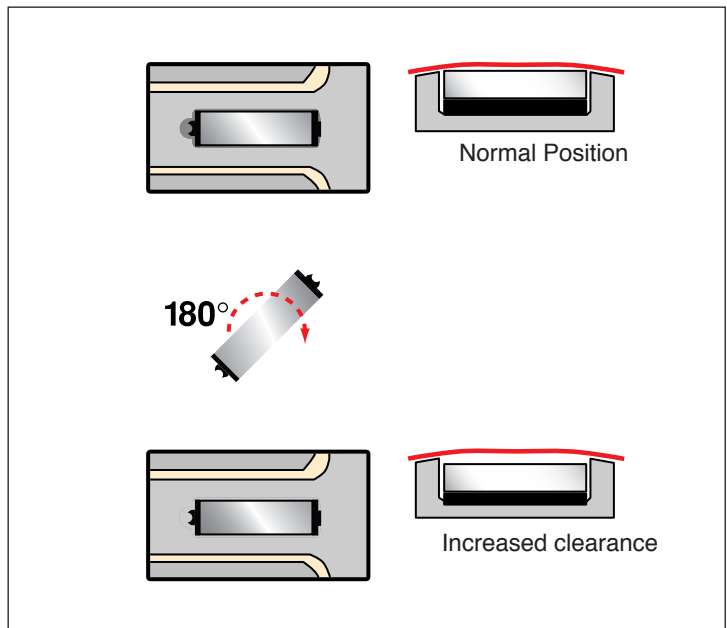


Opto sensor

Certain yarn types may stick to, or leave deposits on, the sensor mirror. In such cases the clearance between the yarn and the mirror can be increased.

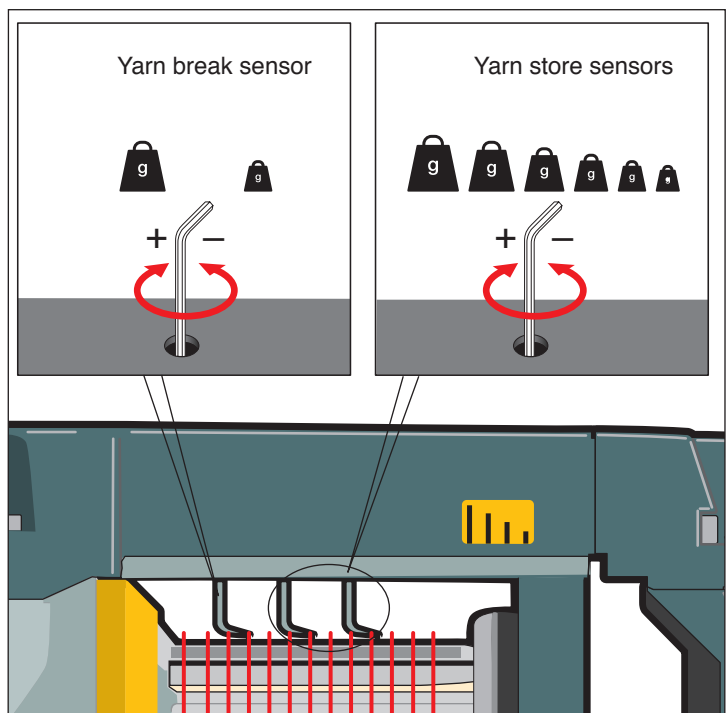


Adjust the clearance by rotating the mirror 180 degrees.



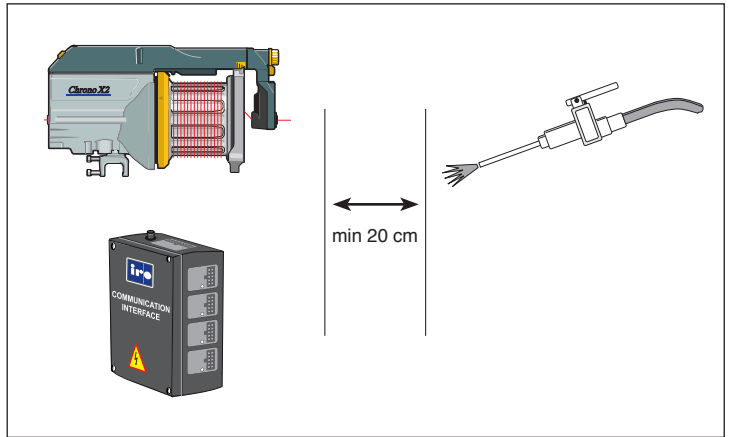
Mech. sensor

Certain yarns may cause excessive vibration of the sensors. This can be remedied by increasing the damper pressure.



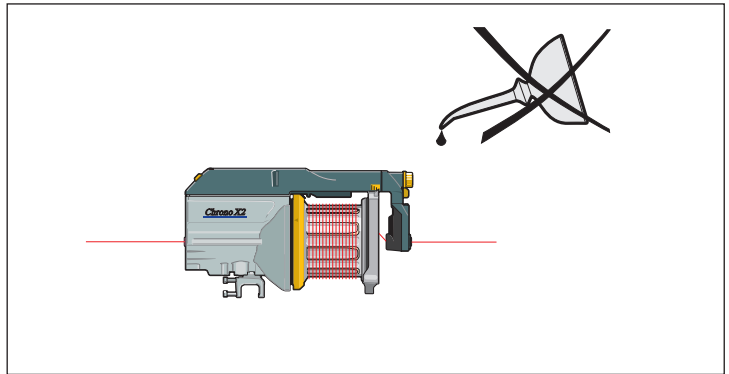
CLEANING

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



LUBRICATION

The unit requires no extra lubrication.

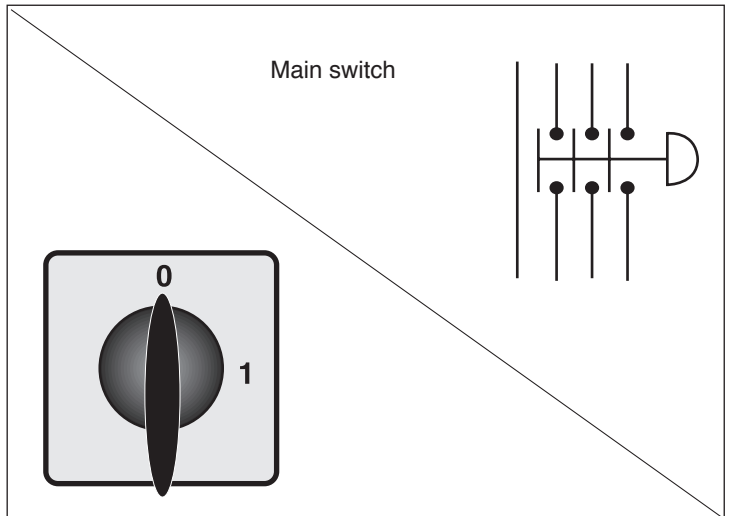


CONNECTIONS



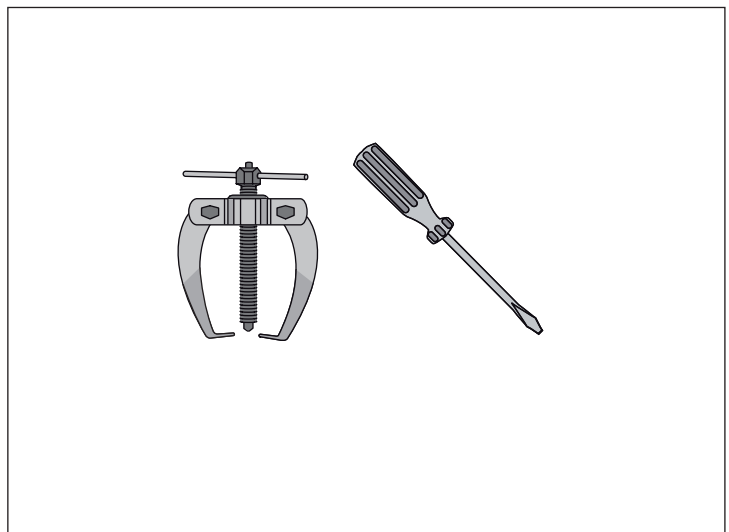
WARNING

Always turn off the main switch or isolate the power supply and disconnect the air supply before connecting or disconnecting the feeder, the control board or any of the circuit boards.



IRO/ ROJ TOOL KIT

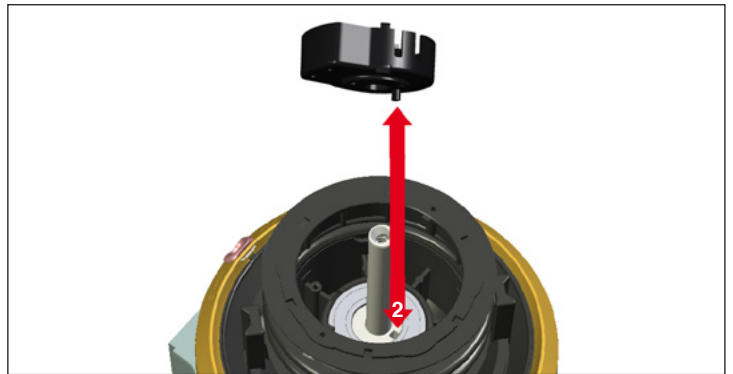
It is recommended to use IRO tool kit, with specialised tools, to ensure easy and correct disassembly/ assembly of IRO feeders during maintenance work. Please contact your local IRO service station for further information.



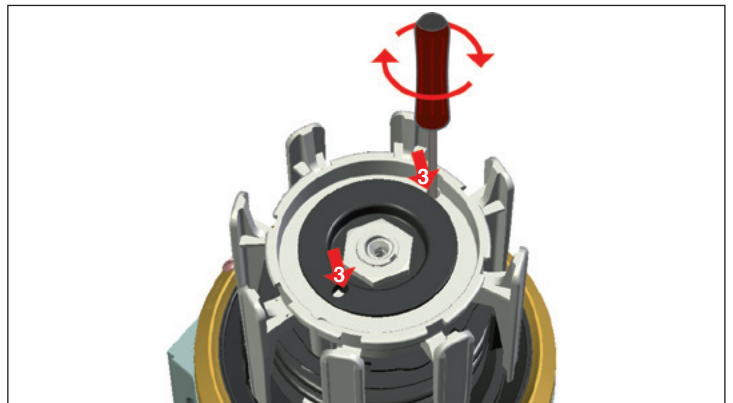
After disassembling, it is necessary to install the spool-body part by part to avoid damaging the parts. Secure the bellow properly with plastic straps (1).



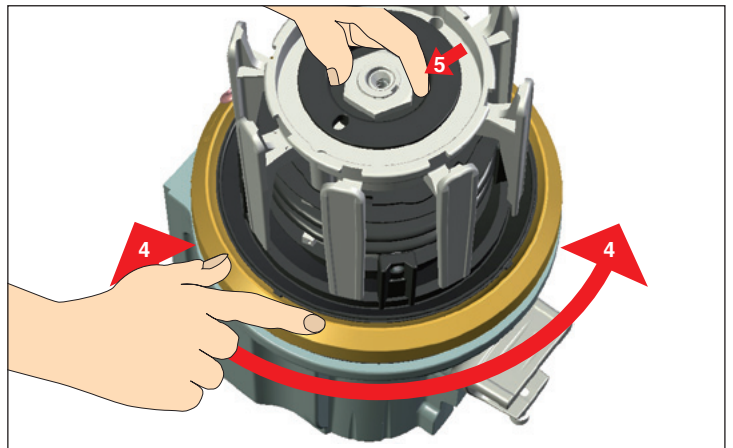
Be sure that the carrier pin fits into the keygroove in the motor shaft (2).



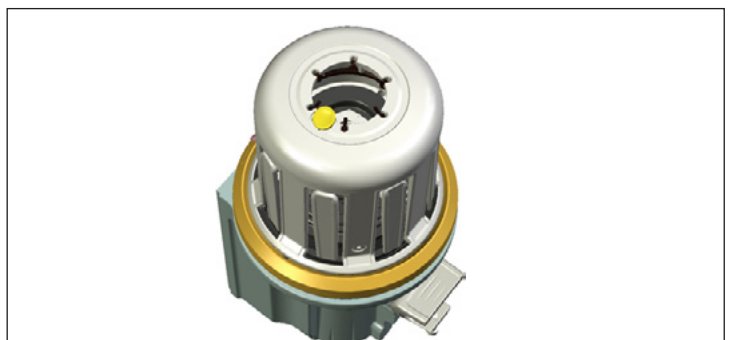
Insert the two screws for the rubber belly (3) and be sure they are properly tightened with the correct key. (Torx T10)



Turn the winding disc (4) when holding the centre nut (5) to get the balance weight in position. When correct, the disc can easily be moved 180° only.

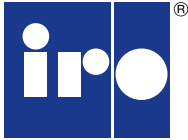


Install the centre screw, outer rubber belly, spoolbody and cover. Set the yarn separation in a suitable position to be sure it is correctly assembled.



Fault	Check in the following order	
	Optical sensor	Mechanical sensor
Feeder will not start	1 - 2 - 3 - 4 - 6 - 7 - 8 - 24 - 25 - 26	1 - 2 - 3 - 5 - 6 - 7 - 8 - 24 - 25 - 26
Feeder will not stop	2 - 4 - 24 - 25	9 - 13 - 5 - 15 - 24 - 25
Low or empty yarn store	4 - 3 - 13 - 9 - 8 - 21 - 24 - 25 - 27 - 26	17 - 3 - 5 - 16 - 13 - 9 - 8 - 21 - 24 - 25 - 27 - 26
Input yarn breaks frequently	22 - 10 - 13	22 - 10 - 18 - 14
Output yarn breaks frequently	11 - 20 - 12 - 19 - 23	11 - 20 - 12 - 19 - 23
Fuses blow repeatedly	25 - 28	25 - 28
Feeder warning light flashes slowly	4	9 - 13
Feeder warning light flashes rapidly	3 - 9 - 8 - 27	3 - 9 - 8 - 27
Feeder warning light continuously on	29	29

No	Possible causes	Remedies	See page
1.	Incorrect S/Z switch position	Set the S/Z switch in appropriate position	13
2.	Incorrect spoolbody position	Ensure the sensor unit is positioned upwards	19
3.	Winding disc jammed	Free and clean the winding disc	20
4.	Contaminated sensor or mirror	Clean the sensor and mirror using a mild cleaning agent	19
5.	Sensor arms jammed	Free the arms and clean the sensing unit	20
6.	Faulty cable connections	Check and rectify	4-7
7.	Fuses blown	Replace the relevant fuse	6-7
8.	Mains supply / primary voltage fault	Check the mains supply and connections	4-7
9.	Insufficient input tension	Increase the input tension	11-12
10.	Excessive input tension	Reduce the input tension	11-12
11.	Insufficient balloon control	Increase the balloon control	17-18
12.	Excessive output tension	Reduce the output tension	17-18
13.	Excessive yarn separation	Reduce the yarn separation	13
14.	Incorrect jumper J1 setting	Reposition jumper	9
15.	Excessive pressure on max sensor arm	Reduce the spring pressure	19
16.	Max sensor bouncing	Increase the spring pressure	19
17.	Insufficient max speed setting	Increase the max speed setting	9
18.	Excessive max speed setting	Reduce the max speed setting	9
19.	Insufficient yarn store	See "low or empty yarn store" under "fault"	-
20.	Damaged balloon control	Repair/replace all defective parts	11-12
21.	Stop signal fault between control box and weaving M/C	Check all connections/cable	6-7
22.	Misalignment between the bobbin and the feeder	Realign the bobbin/feeder	-
23.	Misalignment between the feeder and the machine	Realign the feeder/machine	-
24.	Defect yarn store sensor unit	Replace the relevant sensor unit	10
25.	Defective motor circuit board	Replace the relevant circuit board	5
26.	Defective fuse panel	Replace the relevant fuse panel	6-7
27.	Defective control box interface	Replace the relevant interface	6-7
28.	Defective feeder connection cable	Replace the relevant connection cable	-
29.	Yarn break	Rethread the feeder	15-16



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EC DECLARATION OF CONFORMITY
 EG-KONFORMITÄTSEKLRUNG
 DECLARATION CE DE CONFORMITE
 DICHIARAZIONE CE DI CONFORMITA'
 DECLARACIÓN DE CONFORMIDAD CE
 DECLARAÇÃO CE DE CONFORMIDADE CE

Guarantee that machine type:
 Versichert dass der Maschinentyp:.....
 Garantie pour machine type: **Chrono-X2**
 Garantisce che il tipo di macchina:.....
 Garantia que é o tipo de máquina:
 Garantiza de que os tipos de máquinas:.....

Is manufactured in conformity with the provisions of the following EC directives and applicable amendments:

Ist gemäss der folgenden für Maschinen geltenden EG-Richtlinien hergestellt worden (damit auch alle zusätzliche Änderungen)

Est fabriqué en conformité aux dispositions des directives CE suivantes (y compris tous les amendements):

E' costruito in conformità a quanto previsto dalle seguenti direttive UE e successive modifiche:

Està fabricado conforme con las disposiciones de las debajo mencionadas directivas CE (y sucesivas modificaciones):

Està fabricado em conformidade como estabelecido nas seguintes directivas CE (incluido alterações):

Safety of machinery	98/ 37/ EEC	EN ISO 111 11-1
Low voltage equipment	2006/ 95/ EC	EN ISO 111 11-1
Electromagnetic compatibility	2004/ 108/ EC	EN ISO 111 11-1

Pär Josefsson, Manager Product and Development department, 2007-12-01