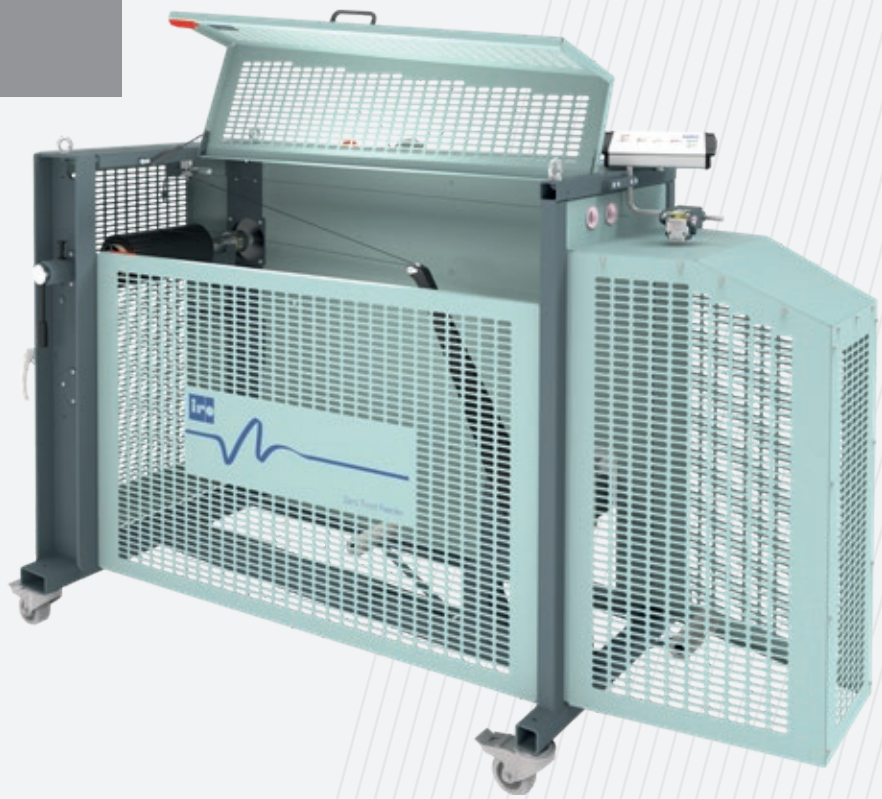
VANDEWIELE

iro®



Ref. no. 34-8930-2001-06/2121

Operating Instructions

EN |

Vandewiele Sweden AB Box 54 SE-523 22 Ulricehamn SWEDEN Tel: (+46) 321 297 00 www.vandewiele.se info@vandewiele.se

Original language instruction

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.

Vandewiele Sweden 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 switch before any work is carried out on the feeder or any other electrical components. The feeder, cabinet and connectors must be fully assembled and closed before the power supply is connected.
- The DC link capacitors RB+ and RB- and the test contacts DC+ and DC- on the supply, motors and option modules can carry life-threatening voltages of up to 875VDC. After disconnecting the servo drive from the mains supply, wait until the voltage has fallen below 50VDC. Only then it is safe to work. Measure the voltage on the test contacts properly. Secure that the work area properly.
- 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 14/34/EC. Please contact Vandewiele Sweden AB if products for use in a potentially explosive atmosphere are required.
- 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.
- Take necessary precautions to avoid injuries when interacting with the product. Use suitable respiratory and eye protection.
- Improper handling at repair, fault finding or similar may damage the feeder/interface mechanical/electrical components including cables and connectors. DO NOT perform measurements on feeder electrical components and parts. Please contact your local IRO service station for further information.
- Carbon fibers are electrical conductive which can cause short circuit in the electrical cabinet. If the cabinet needs to be opened, the Zero Twist shall be cleaned from dust and then moved to another room, which hasn't been subjected to carbon fiber dust. Before opening, clean the Zero Twist with a wet cloth.

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 Vandewiele Sweden AB may be used.
- The feeder is an industrial product and therefore not approved to use household environments /in residential areas.
- Caution must be taken when closing the hatches so that the operator does not get jammed.

NOTE

- Please dispose of obsolete or unwanted equipment responsibly, taking into consideration any local regulations regarding the disposal and / or recycling of materials that are applicable.

	Max 850 m/min. Depends on yarn, bobbin and application.
	230 Kg
	Min +5°C –Max +40°C
	max 85% Rh
	Sound pressure Lpa <70 dB (A) Sound power Lwa 81,4 dB (A)
	Tape yarn, Max 10 mm wide. Max bobbin weight 7kg Bobbin fixation may need special part depending on bobbin center. If required, contact Vandewiele Sweden AB.
	Rated voltage: 3 PH+N 400 / 480 V AC Frequency: 50/60 Hz Max: 19kVA
 Fuse	3x16 A Supply cable Min: 5x2.5 mm^2

NOTE

Subject to technical modifications.

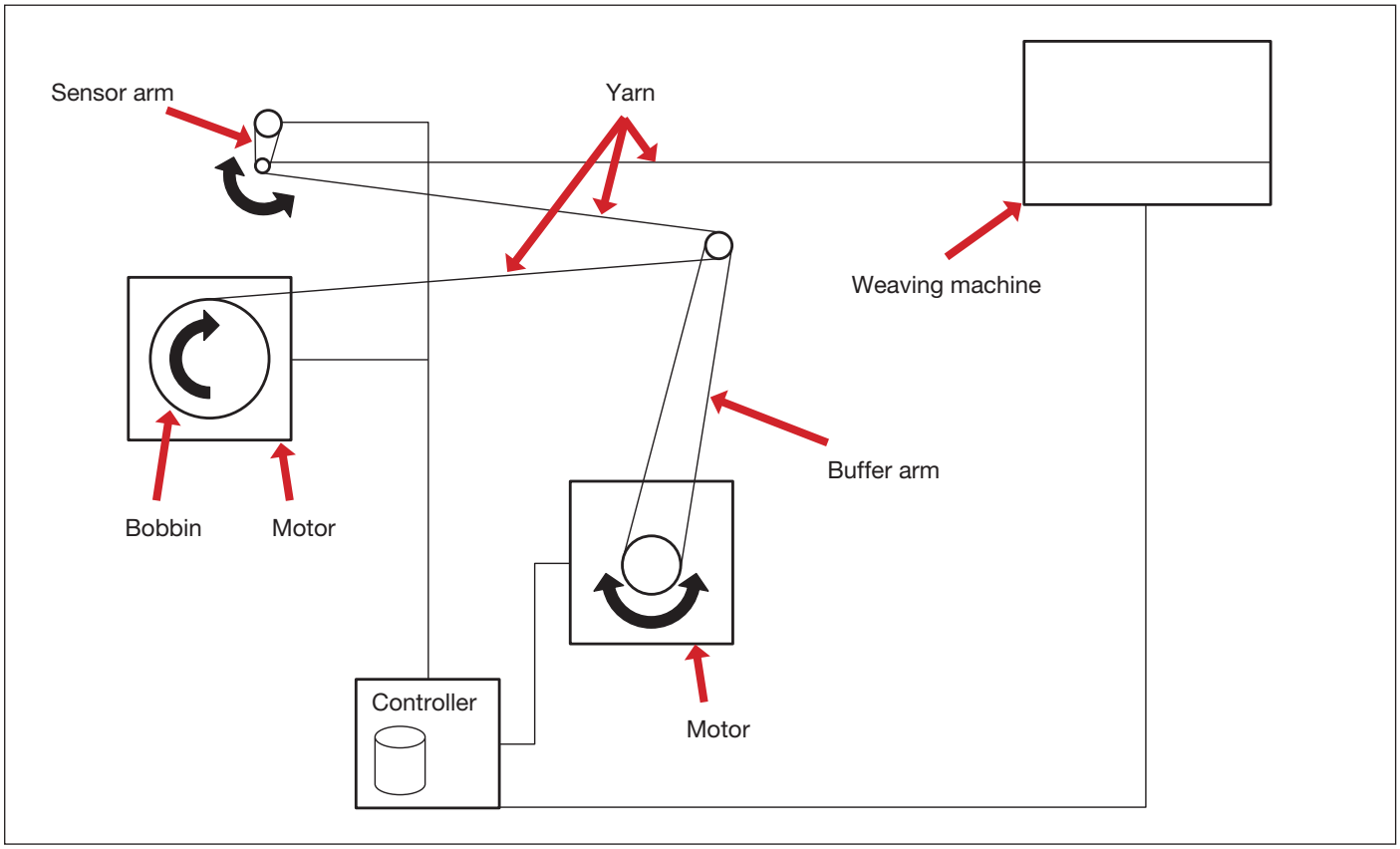
WARNING!

Hearing protection must be worn when operating this equipment.

A motor driven bobbin is rotated to give the average amount of yarn consumed by the weaving machine and a motor driven buffer arm takes care of the difference between the constantly rotating bobbin and the rapier machine insertion. The bobbin rotation and the buffer arm are synchronized with the weaving machine. A sensor arm is used to measure deviations in the process and make corrections in the control system.

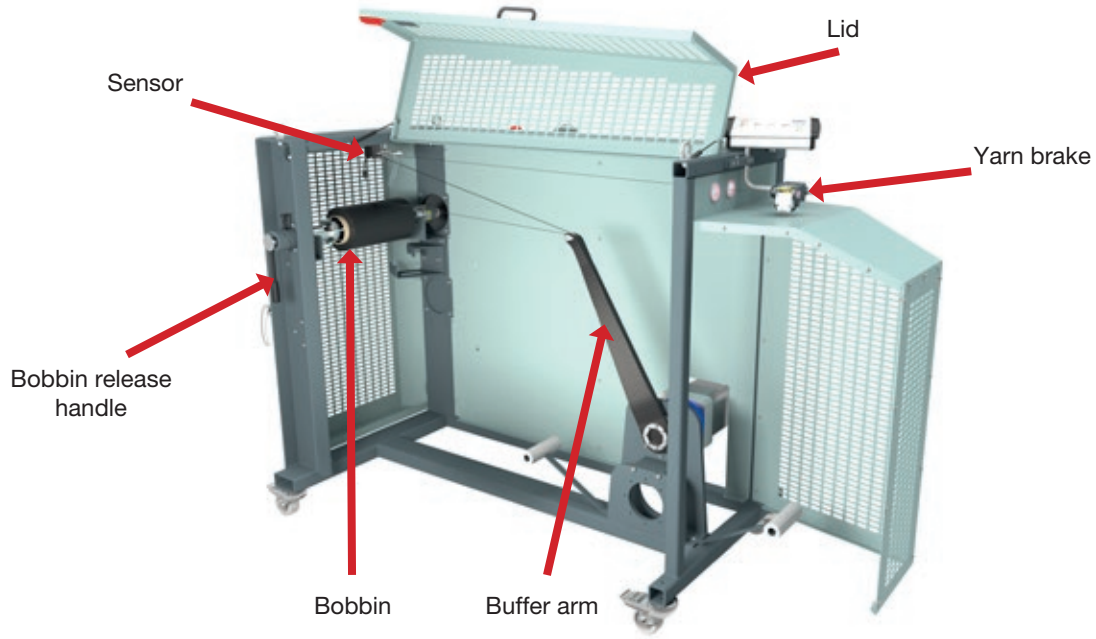
As the yarn is rolled of tangentially from the bobbin, a tape yarn that is rolled on without twist will be rolled off without twist.

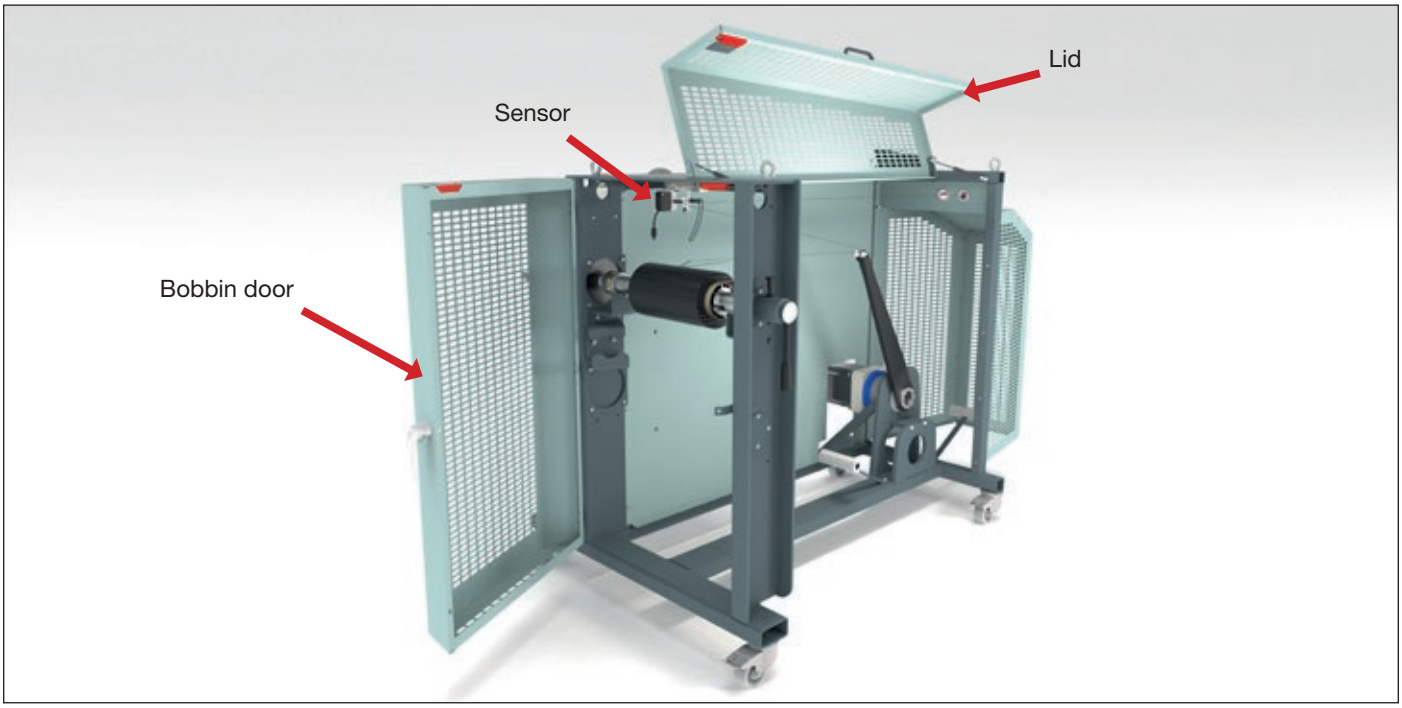
To make the synchronization with the weaving machine it is necessary to make a learning procedure before start of a new article or exchange to a new bobbin type.



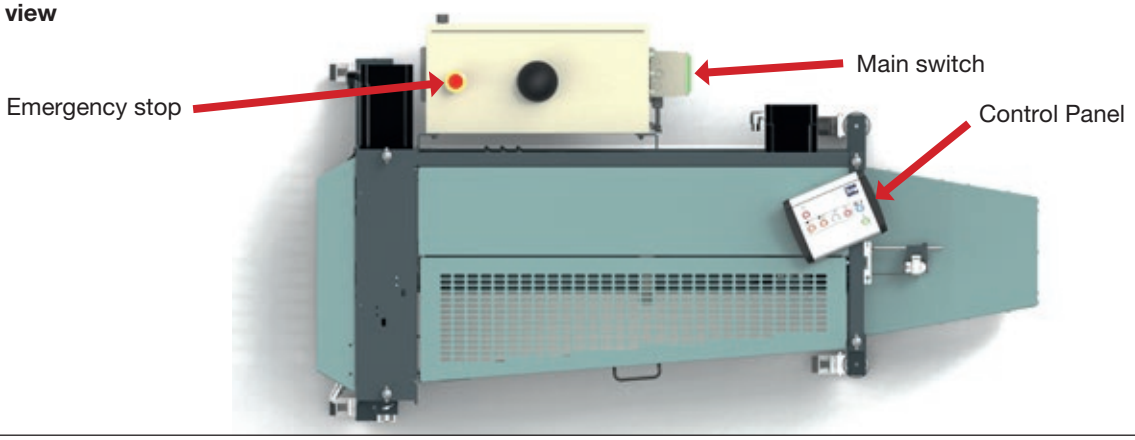
NOTE

This document describes a stand-alone system to be installed on an existing machine.


Lid
Sensor
Yarn brake
Bobbin release handle
Bobbin
Buffer arm


Lid
Sensor
Bobbin door

Top view


Main switch
Emergency stop
Control Panel

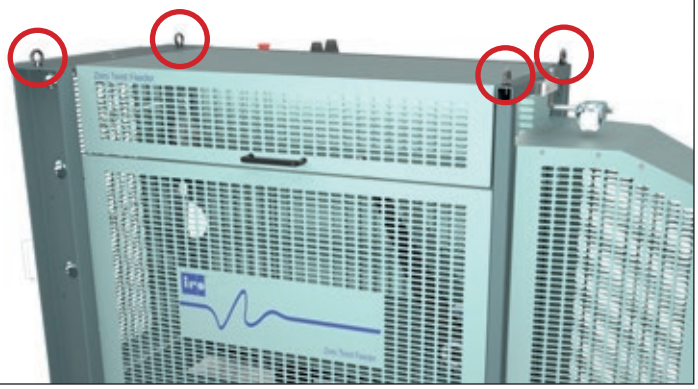
NOTE

Condensation can form on the 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.

TRANSPORTATION

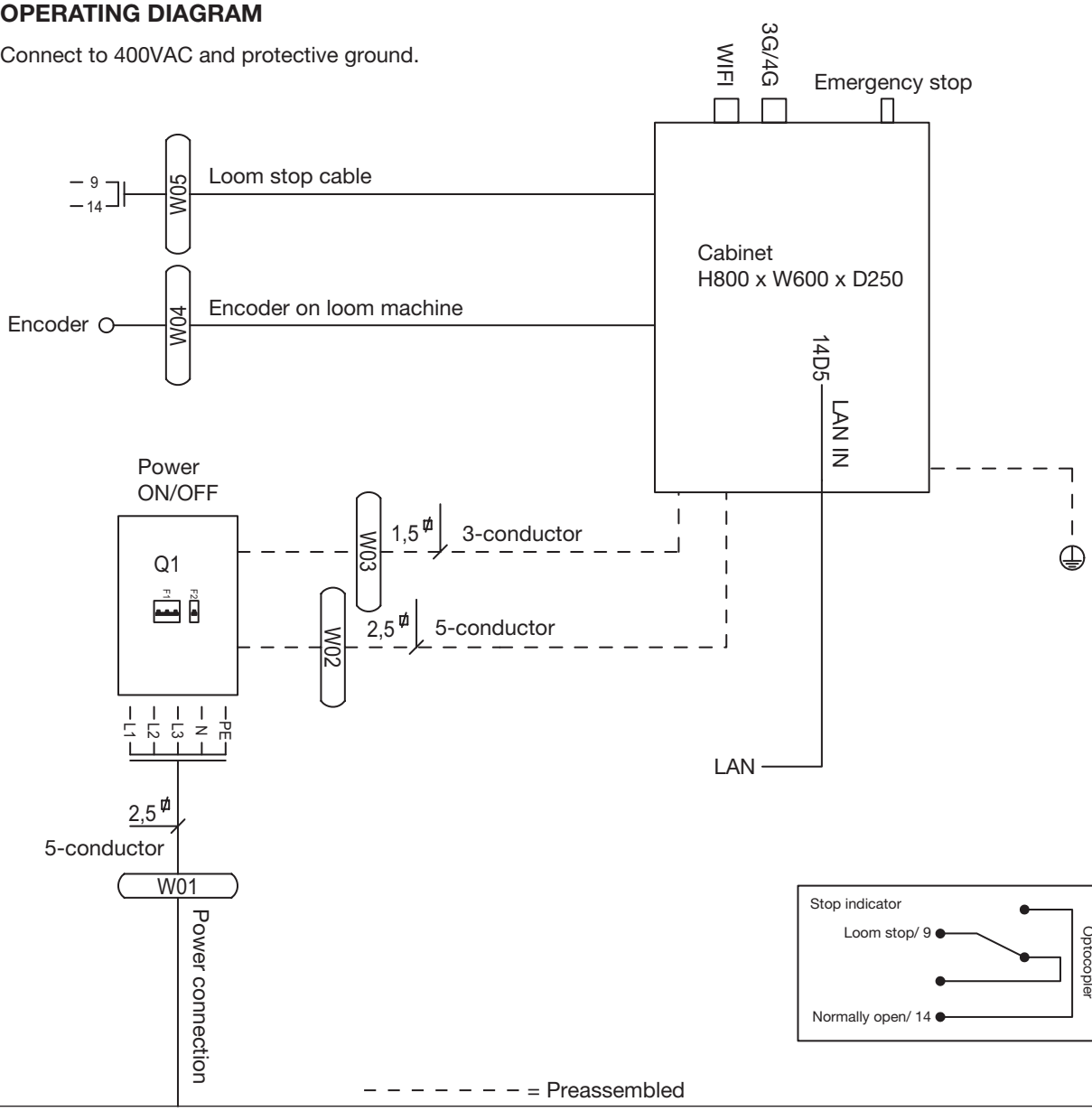
Use the lifting eyes, shown below to lift and transport the Zero Twist Feeder.

Lifting points



OPERATING DIAGRAM

Connect to 400VAC and protective ground.



ENCODER INSTALLATION

An encoder provided by Vandewiele Sweden AB or specified by Vandewiele Sweden AB shall be installed at the weaving machine main shaft.

It is of outmost importance that the encoder shaft is installed in accordance with the product manual to ensure the life length of the encoder. It is the responsibility of the customer to install the encoder in the right way.

Specification of cable and connector – see separate document.

WARNING!

Setting needed: The encoder is of absolute type. After installation and connection the ZTF and loom main shaft angles must be syncronized. This is done by Vandewiele Sweden AB in the ZTF feeder software.

Example of encoder installed on a weaving machine

CONNECTION TO THE WEAVING MACHINE STOP LINE

The stop line from the zero twist feeder shall be connected to the weaving machine stop input. Use the cable provided on the ZTF.

SECURITY CAGE

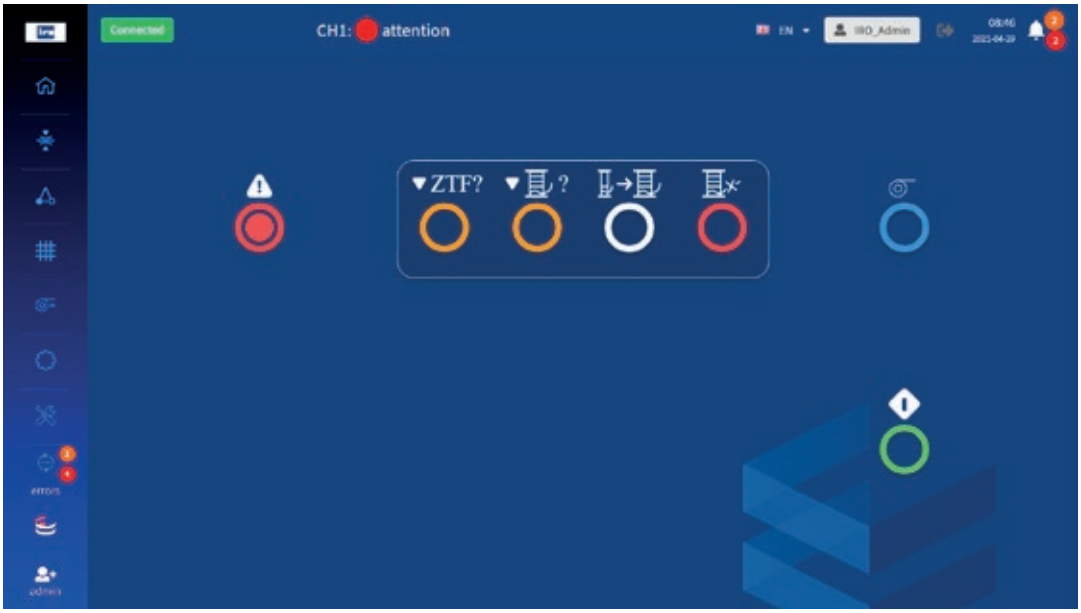
The ZTW has a security cage with switches on the lids. If a lid is opened the motors are stopped as fast as possible and then the power to the motors is switched off (STO, Safe Torque Off).

WARNING!

Do not insert any object or body limb into the cage while the ZTF is running or at stop before everything is stationary.

OVERVIEW

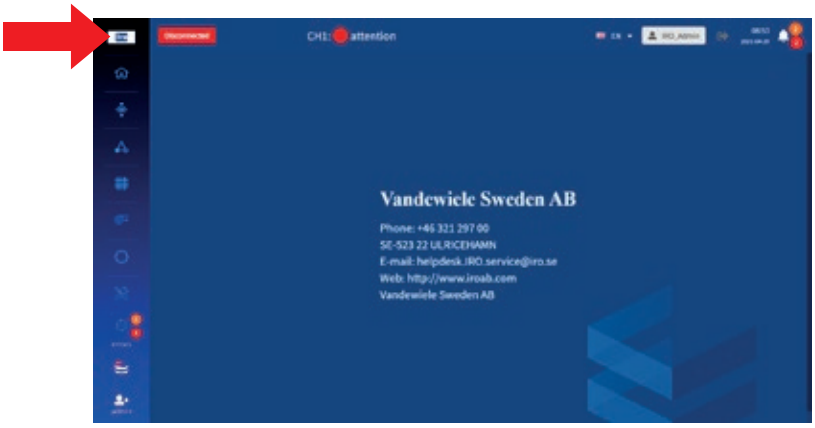
Side Navigation	Connection status	Attention	Log in status	Alarm and Warnings
Contact info help desk				
Home page				
Electronic Brake settings				
Sensor arm angle				
Pattern				
End of Bobbin sensor				
Synchronization*				
Service Settings				
Errors				
Diagnostics				
Admin settings				



* Synchronization Weaving machine – Zero Twist Feeder

CONTACT INFO

Contact information to Helpdesk/Service center



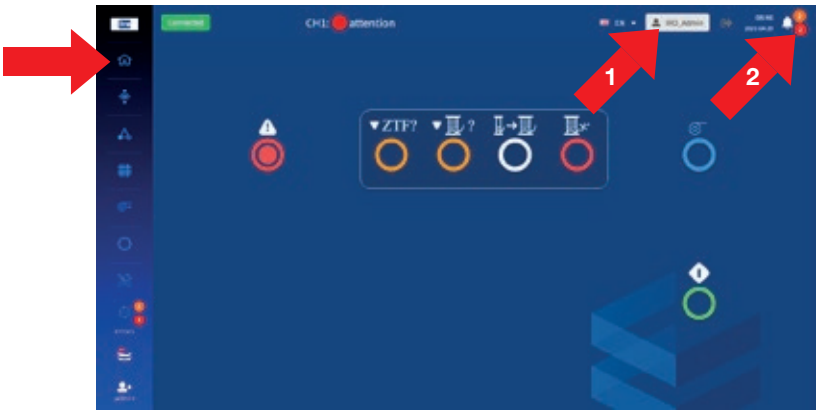
HOME PAGE

Overview of system status.

Note
Light button NOT clickable.

1. Log in status
   - IRO_Admin
   - operator

2. Alarm and warnings



ELECTRONIC BRAKE SETTINGS

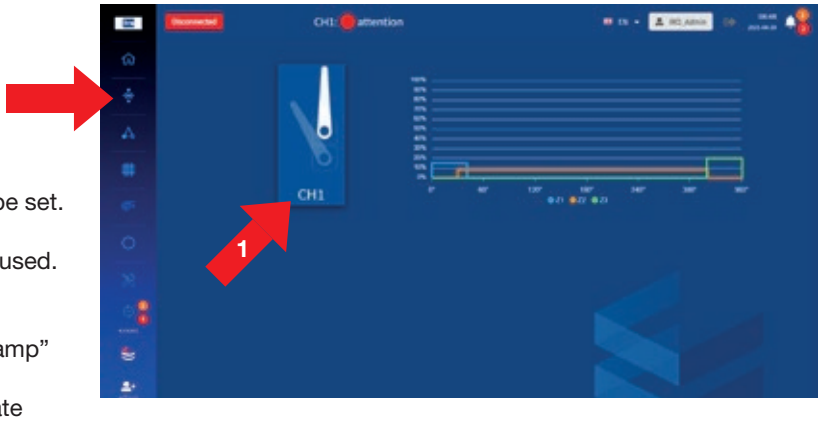
Information of current brake settings.

1. Click on symbol CH1 or CH2 to set angles and forces (depending on ZTF model).

2. Here the braking force and activation zones can be set. Up to three separate braking zones can be set. If the angles overlap, the highest braking force is used.

3. To save and activate the changes, the Zero Twist feeder must be in stop mode and the ”attention lamp” has to be activated, a solid red light. For instance, open the door or the hatch to activate the stop mode.

Stop mode: Lamp is activated. Solid red light



SENSOR ARM ANGLE

A graph of the sensor arm angles. Used to detect if something unexpected happens and ZTF stops.

High value:
Indicates too low tension on the sensor arm.

Low value:
Can be several factors: Low braking force, incorrect braking angles in relation to the weaving machine, the gripper loose the yarn.

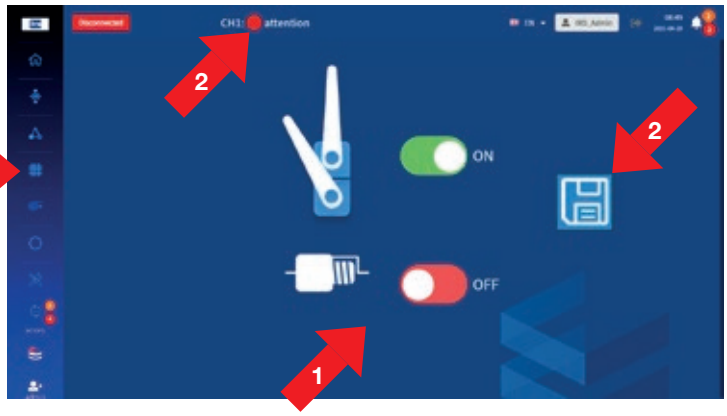
PATTERN

Setting of single or mix.

1. Setting of mix between two ZTF arms or one ZTF arm and a weft feeder. (depending on ZTF model)

2. To save and activate the changes, the machine must be in stop mode.

Stop mode: Lamp is activated. Solid red light.



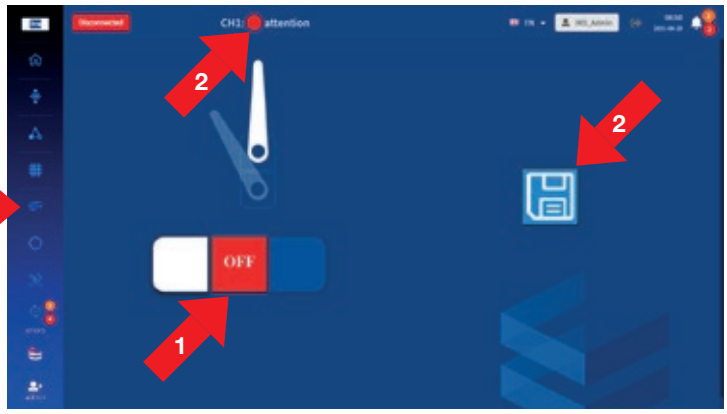
END OF BOBBIN SENSOR

Setting of End of Bobbin sensor.

1. Set ON / OFF and if it should check for light or dark bobbin center.

2. To save and activate the changes, the machine must be in stop mode.

Stop mode: Lamp is activated. Solid red light.



SYNCHRONIZATION WEAVING MACHINE – ZERO TWIST FEEDER

NOTE

A new synchronization must be done each time the Zero Twist Feeder is installed at a new weaving machine.

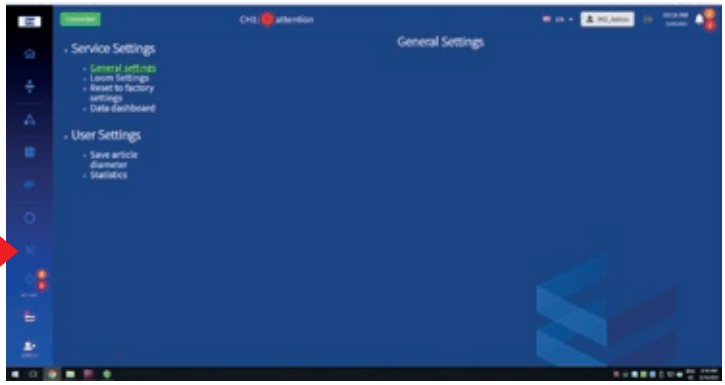
1. Enter the current angle of the Weaving machine.

2. To save and activate the changes, the Zero Twist Feeder must be in stop mode.

Stop mode: Lamp is activated. Solid red light.

SERVICE SETTINGS

Only accessable for service technicians .
Only visible in Admin login.



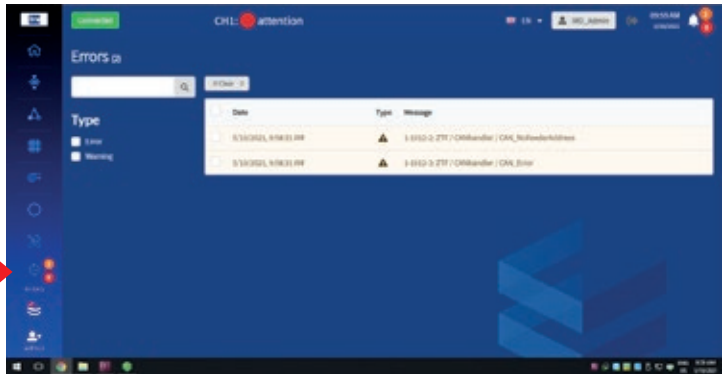
DIAGNOSTICS

A detailed graph of ZTF status.
If needed, zoom in for closer study is possible.

1. Weaving machine angle
2. Sensor arm angle
3. Bobbin unwinder angle
4. Buffer arm angle

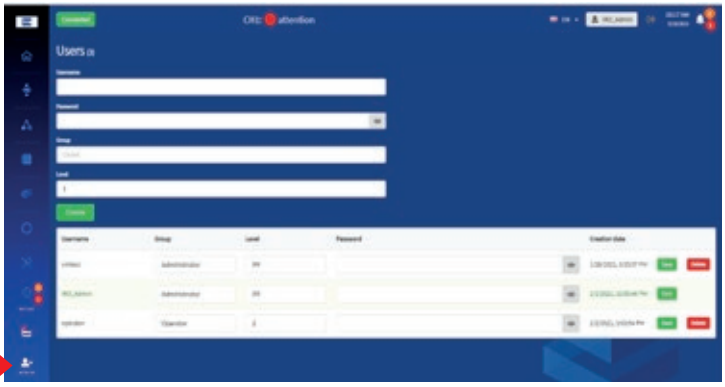
ERRORS

Error messages displayed.



ADMIN SETTINGS

Only accessable for admin technicians .
Only visible in Admin login.

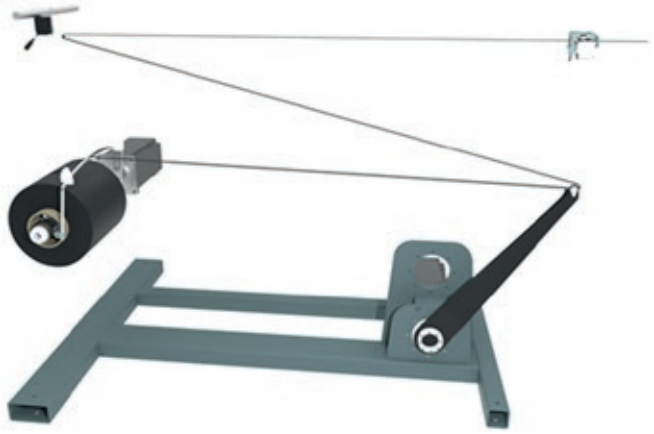


CONTROL PANEL

Button	Button name	Function
	Thread up	The ZTF is in thread mode which means that the motor for the buffer arm is on and kept still and the motor that rotates the bobbin is on and will supply yarn when the operator is pulling the yarn through the sensor arm. The ZTF automatically goes to this state when the weaving machine stops. The thread button is also used to reset any active alarms. The blue lamp light is always solid.
	Ready to weave	Arms the ZTF before weaving. Push this button before starting the weaving machine. When the light flashes the ZTF is preparing for entering the ready-mode. When the light goes solid the ZTF is ready.
	Bobbin replaced	When an empty bobbin is replaced with a new, full bobbin of the same sort as previously used, push this button. The ZTF will initialize its system with the new bobbin. It requires the bobbin to have the same diameter and the same material as the previous one.
	Feeder calibration	Use this button when the ZTF is placed on a new weaving machine or when there is a change to a new yarn. When pushing the button it turns solid orange and it also activates a learning procedure. When the light is solid it is waiting for a slow motion insertion. When the insertion is ongoing the lamp flashes and it goes solid when the insertion is ready, waiting for the operator to start another slow motion insertion. The system needs 4 insertions in order to fully calibrate. When calibration is done the light goes off.

	Bobbin calibration	Use this button when a new bobbin in the same material, but where the diameter is unknown.
	Emergency stop	The ZTF have an emergency stop on the electrical cabinet but that would not stop the weaving machine. Instead, if the weaving machine emergency stop is pushed, then the ZTF will stop as well.
	Error	Lamp flash when there is a problem with the ZTF. The lamp gives a solid red light when it is ready for restart.
	Yarn break	Lamp solid light at yarn break or lost yarn in the ZTF. It requires the operator to change bobbin or tie the material back together.

THREAD UP



WARNING!

Make sure that the output of the yarn is on the upper side of the bobbin.

Lock the bobbin release handle properly before start.

Lamp button	Operation
 Solid Light	Open the lid to reach the buffer arm. Thread up the yarn from the bobbin through the buffer arm and through the yarn sensor arm. Ensure that the tape is not twisted. When the hatch is open the motors are turned off. The arm and bobbin can in this mode be freely moved. Ensure that the yarn is stretched to avoid entangling when the lid is closed and the machine goes over to thread mode. If not, press Thread-up button. The buffer arm should be positioned upwards.
 Solid Light	Close the lid and press the Tread-up button which will turn blue and the motors will be turned on. The ZTF will allow pulling of the yarn tip and keep tension of the yarn to avoid the thread to be tangled up inside the ZTF. Pull the yarn tip and connect it to the weaving machine in the position where the rapier can take the yarn in the right way.
	After the thread up has been done the user has following options: - Calibrate Zero Twist - Calibrate bobbin - Put Zero Twist in “Ready to Weave”-mode

NEW STYLE/ARTICLE NEW YARN TYPE, NEW WEAVING MACHINE

1. Learning how much yarn the weaving machine inserts in one pick

This learning procedure has to be done for each new yarn type. It has also to be done when the ZTW is installed on a now weaving machine.

Lamp button	Operation
	Push button “Feeder calibration” to start the learning procedure. The ZTF will move in position for calibration and the feeder calibration light will flash.
	When the lamp “calibration” is solid, make one manual slow motion insertion. During the insertion the lamp will flash. A complete weaving machine cycle (without stop) shall be done.
	When the lamp light solid again, make one more slow motion. This has to be repeated a number of times, typically 4 slow motion insertions has to be done.
 Lamp off  Solid Light	When the calibration is finished, the system will go back to threading mode. The thread light will be solid and the feeder calibration light will be off.

If the learning procedure fails the red “error” lamp will light solid and the procedure has to be repeated.

During this calibration procedure the ZTF learns how much yarn the weaving machine inserts in one pick, and makes a synchronization with the weaving machine insertion.

2. Learn a new bobbin in same material

This learning procedure has to be done for each new bobbin in the same material but where the diameter is unknown.

Lamp button	Operation
	Push button “Bobbin calibration” to start the learning procedure. The ZTF will move in position for calibration and the bobbin calibration light will flash.
 Lamp off  Solid Light	When the calibration is finished, the system will go back to threading mode. The thread light will be solid and the bobbin calibration light will be off.

If the learning procedure fails the red “error” lamp will light solid and the procedure has to be repeated.

During this calibration procedure the ZTF learns how much yarn it´s on the bobbin.

3. Learning the rapier motion at high speed weaving

After calibration: If the weaving machine shall run in a very high production speed, it might be necessary to start up and run a few picks at a lower speed to learn the dynamics of the system.

After this the system is prepared to start weaving in production speed, or according to a specified lower starting speed.

START WEAVING

Start after a stop

Check that the yarn is properly threaded.
If not : See “Thread up” above.

Lamp button	Operation
	Push the “start” button to enable the ZTF system The button will start to flash while the buffer arm is moved into position. When the system is ready to run the button will have a solid green light, the ZTF-system is then ready to be started via the weaving machine.

BOBBIN SWITCH

With bobbin length counter or end of bobbin sensor

If the system is equipped with a bobbin length counter or end of bobbin sensor the weaving machine will stop before the end of the yarn reaches the shed. The end of bobbin sensor provided by IRO should be set to either detect a bobbin centre that is lighter than the yarn, or a bobbin centre that is darker than the yarn. This is done in the HMI. The sensitivity of the sensor is adjusted on the sensor itself. Test the threshold by turning the adjustment screw and see the switching point on the LED placed on the sensor.

Lamp button	Operation
	Make sure that the weaving machine is off
	When the length counter or bobbin sensor is activated the withe “New bobbin”-button starts to light.
 Solid Light	Open the bobbin door.
 Solid Light	Replace the bobbin and connect (knot or splice) to the end of the yarn that is already threaded through the ZTF.
 Solid Light	Close the bobbin door.

 Solid Light	Pull the yarn end until the connection point comes out.
 Solid Light	Place the weft yarn in the proper positon for the rapier to catch it.
 Push	Push the “New Bobbin” button. When it starts flashing the calibration process is under way. When calibration is done, the light stops.
 Solid Light	When the new bobbin is calibrated the ZTF goes back to Tread Up-mode, ready to start.
	Push the “start” button to enable the ZTF system. The button will start to flash while the buffer arm is moved into position. When the system is ready to run the button will have a solid green light, the ZTF-system is then ready to be started via the weaving machine.

YARN BRAKE

If the ZTF is equipped with controlled yarn brake the force and active period must be set.
The brake can be set active up to three zones.
Set the force, start and end of zone1.
Set the force, start and end of zone2 (optionally).
Set the force, start and end of zone3 (optionally).
These settings are available via a PC/HMI.

YARN TENSION

The yarn tension can be set on the sensor arm. The spring force is adjustable with a mechanical setting. For fast weaving machines the spring force needs to be high in order for the sensor arm to follow the fast speed changes of the yarn. This setting can be done by an technician.

The ZTF needs regular cleaning from dust and fibres. Special attention to the yarn deviation points at the buffer arm and the sensor arm. There are two versions:

1. Roller with bearing to be used for sticky or high friction yarns. This version limits the speed due to the extra inertia. The bearings and rollers needs cleaning and if worn out replacement. Check up regularly.

2. Low inertial version with friction against the yarn. To be used for high speed and yarns or tapes with low friction. May be subject to wear and needs regular check-up.

WEAR PARTS

The ZTF contain wear parts such as the bearings and rollers or friction deviation points for the buffer arm and sensor arm. The bearings for motors and gear might be contaminated by dust. Check this regularly. Also check the dust protection that is assembled in front of the bearings. Exchange parts with IRO original when necessary.

FAULT FINDING

- Carbon fibers are electrical conductive which can cause short circuit in the electrical cabinet. If the cabinet needs to be opened, the Zero Twist shall be cleaned from dust and then moved to another room, which hasn't been subjected to carbon fiber dust. Before opening, clean the Zero Twist with a wet cloth.

- If the buffer arm during stand still is positioned at a very low level (near horizontal) it might block the start. In that case, open the lid and move the arm manually to a vertical position.

- If the lid is opened during running the power to the drives is switched off. The bobbin will then roll out and until stopped it might wind up yarn backwards. Before starting, make sure that the yarn is properly wound on the bobbin and in the right direction. Same situation is valid if the power to the ZTF is broken during running.

- A new calibration has to be done for each new article.

WARNING!

At all service: Switch off mains supply. Use proper personal protection gears. Note that carbon fibre, glass fibre and similar might be a risk for the health.

EC DECLARATION OF CONFORMITY

Vandewiele Sweden AB
Box 54
SE-523 22 Ulricehamn

Guarantee that machine type:

ZTF-1034 Tape, single channel
ZTF-1134 Tape, dual channel
ZTF-1234 Carbon, single channel
ZTF-1334 Carbon, dual channel

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

		Standard used to verify the compliance
Safety of machinery	2006/42/EC	EN ISO 111 11-1 2016 EN ISO 111 11-6 2005
Low voltage equipment	2014/35/EC	EN ISO 111 11-1 2016 EN ISO 111 11-6 2005
Electromagnetic compatibility	2014/30/EC	Immunity: EN 6100-6-2:2005 Emission: EN 6100-6-4:2007 +A:2011

Pär Josefsson, Manager Product and Development department, 2019-10-28