



Belt conveyors

User & maintenance manual

Translation of the original manual, version 02

Version tracking :

Version	Date	Description of modifications	Prepared by	Approved by
00	14/12/17	Initial / New index	S.MAIRET	G. AMOROSO
01	03/04/18	Addition of noise level + addition of annexes (ISO 9001 and 14001 certificates + information on the declaration of incorporation)	S.MAIRET	G. AMOROSO
02	18/09/18	2015 edition of ISO 9001 and 14001 standards: deletion of expired certificates	S. MAIRET	S. MAIRET

Table of contents

1	Introduction	1
2	General information	2
2.1	Applicable standards	2
2.2	Applications	2
2.3	Recommended environment.....	2
2.4	Safety rules	3
2.5	Special rules and safety instructions	4
2.6	Safety instructions for the motor	5
2.7	Additional information	5
3	Technical specification	6
3.1	Conveyor types	6
3.2	Motors	10
3.3	Conveyor start-up and shut down.....	10
3.4	Frequency converter	11
3.5	Option : Frequency variator	11
3.6	Dimensions of the conveyors	12
3.7	Belts	12
4	Commissioning.....	12
4.1	Safety instructions	12
4.2	Description of delivery.....	13
4.3	Setting up of the conveyor	14
4.4	Changing the motor position (case of a central motor).....	15
4.5	Position of the tensioning screws.....	16
5	Maintenance manual	19
5.1	Motor dismounting.....	20
5.2	Installation of the new motor.....	22
5.3	Replacing the conveyor belt	23
5.4	Adjusting the conveying belt - Case of a flat belt.....	24
5.5	Adjusting the conveying belt - Case of a timing belt.....	28
5.6	Adjusting the belt position	28
6	Responsability	33
7	Customer service	33
8	ANNEXES	34
8.1	Declaration of incorporation and exploded view.....	34
8.2	Quality and environmental commitment: ISO certifications	34

1 INTRODUCTION

Please find below the instructions for use regarding the Flat belt conveyors and Timing belt conveyors.

Safety instructions

In this user guide, the safety points are identified by the pictogram:



These safety instructions must be read before the installation and followed during the start-up. The people in charge of the equipment installation, start-up and maintenance must have fully read this instruction for use manual.

This guide must be kept within easy reach of users and close to conveyors. Maintenance staff and users are responsible for this instruction for use manual. This manual must always be complete and legible.

2 GENERAL INFORMATION

2.1 Applicable standards

According to the European Directive 2006/42/EC, the **elcom** belt conveyors are considered as partly completed machinery. They are therefore not subject to a CE declaration of conformity.

However, the following standards are taken into account in the design of **elcom** belt conveyors:

- Directive 2006 /42/CE relating to machinery
- Council Directive 73/23/EEC relating to electrical equipment

The **elcom** company ensures the quality of its products and a customer service recognized by the ISO 9001 certification.

To contribute to the protection of the environment, **elcom** company is also ISO 14001 certified.

2.2 Applications

elcom belt conveyors are designed for the transport of individual parts of light to medium weight. They are not recommended for the transport of materials such as sand and dusty products (pellets...) or sharp edges (e.g. punching scrap, scrap metals...).



Each conveyor is built and tested for a specific use. In case of load change, please contact us. The operational safety is only ensured when the equipment is used correctly.

2.3 Recommended environment

To ensure the proper functioning of the belt conveyor on an optimum shelf life, please follow the following advice:

- Operating temperature between 0 to 40 ° C,
- Avoid dusty or smoky atmospheres,
- Avoid the accumulation of parts with cutting edges on the conveyor,
- Avoid placing the machine in direct exposure to UV rays.
- Remove the parts that would have fallen under the belt.

2.4 Safety rules

The following safety instructions and regulations mentioned below must be imperatively followed:

- **Directive 2006/42/CE on machinery relating to safety,**
 - **EN 619 - Continuous handling equipment and systems safety and EMC requirements for equipment for mechanical handling of unit loads,**
 - **EN ISO 12100 Safety of machinery, equipments and installations,**
 - **EN 60204 Safety of machinery - Electrical equipment of machines.
Part 1: General requirements,**
 - **EN 349 Safety of machinery — Minimum gaps to avoid crushing of parts of the human body,**
 - **Directive 2006/95/ relating to electrical equipment designed for use within certain voltage limits,**
 - **Directive 2006/95/ relating to the minimum requirements for the provision of safety and/or health signs at work,**
 - **BGR 500 chap. 2.9 – Regulations concerning the energy, textile and electrical equipment industries -Continuous handling equipment's use.**
- x** The documentation is inseparable from the machine. It must be kept near the machine. The recommendations, instructions regarding the implementation and the use must be followed. This represents a prerequisite for a correct use of the equipment.
- x elcom** ensures all necessary guarantees and meets its responsibilities regarding safety, reliability and operating safety of its equipment only if the assembly, settings, potential modifications, maintenance operations were carried out by **elcom** or an **elcom** qualified representative. The operating conditions must be compliant with the specifications mentioned hereby.

2.5 Special rules and safety instructions



The safety rules relating to conveyors and especially those about electrical equipment must be followed in all operating phases: assembly, transport and production. Failure to observe these rules would be considered as an incorrect use of the conveyor.



Operating a conveyor in an explosive environment is strictly forbidden. Exceptions for specific environments are allowed only by written approvals.



Never carry out maintenance operations **alone**. A second technician must necessarily be present to turn off the power and give first aid if needed.



The change in a motor position or removal of safety parts should be done only when the conveyor is unplugged from any power source.



When handling conveyor in operation (adjustment of belt tensioning), ensure that no part of the body especially the hands, hair and fingers pass through the area between moving parts (belt, drive, transmission...). Appropriate protective measures must be enforced.



Long hair can get stuck between the drive and pulleys. Users working in front and around the conveyor must tie their hair and wear a hairnet.



It cannot be excluded that the components or parts in accumulation at the junction between other machines or devices may create a risk of pinching. The transported parts and the conveyor have to be tested after the putting into operation to check whether a risk exists. If a risk exists, the appropriate protective measures must be taken to remedy the situation. If this is not possible for operational or technical reasons, signs should be placed in the danger zone. The person responsible for this machine set-up must inform the users of the dangers of the area in which they work.



The parts of the conveyor that rotate such as driving, idling and tensioning pulleys constitute basically a danger. Therefore, no unrelated item with the use of the conveyor must be placed on the conveyor or on the pulleys. This is particularly true for strings, pieces of cloth...



Work in the area of the conveyor must not be carried out with loose-fitting clothing or hanging jewelry.



Conveyors have, depending on their type of construction, belts and pulleys. It is possible in very rare cases that parts cling to the belt or pass under the belt and get caught up in the drive.

This risk increases as the belt is provided with a cleat. The risks for the carried parts, the conveyor and employees must be evaluated by the person responsible for the installation and reduced by the implementation of appropriate measures.

2.6 Safety instructions for the motor



The power supply is designed so that the system cannot start unintentionally. In the case of a power failure, switch off the conveyor: It may restart automatically when power returns, which can cause severe damage to the machine or cause injuries to the operator.



The conveyor can only be operated after that the electrical connections are carried out in accordance with the regulations. See point 2.4



Before each start-up of the installation, check that the conveyor or its power supply suffered no damage. The damage must be repaired immediately. A damaged conveyor or conveyor with a damaged power supply must not be started.

If malfunctions or imminent danger occur, the installation must be switched off by pressing the nearest emergency stop button or the main switch. If the conveyor is equipped with a plug, unplug immediately.

2.7 Additional information

These instructions aim at ensuring the safety of persons and the proper functioning of the belt conveyor. If you want to use the belt conveyor in other conditions, please contact us.

Other information is available at the **elcom** website in the documentation section.

<http://elcom-automation.com/conveyors/documentation>

3 TECHNICAL SPECIFICATION

The **elcom** conveyor essentially consists of an aluminum frame, a sliding plate, a driving unit, an idling unit and a conveying belt.

The driving unit consists of engine supports, driving pulleys to drive the conveyor belt. On the opposite side of the belt conveyor is the idling block. It mainly consists of an idling pulley with pulley supports.

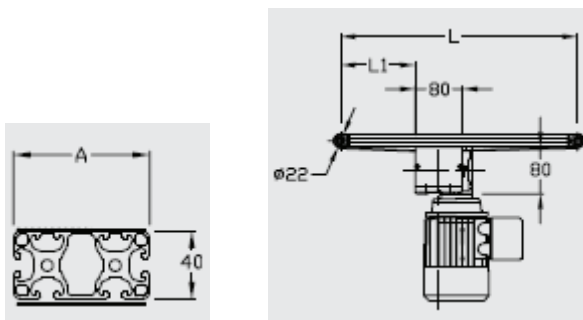
Additional modules such as lower belt support, lateral guides and conveyor stands to be fastened on the floor are also available.

The noise level is below 70 decibels.

Belts, dimensions and additional modules are customized to each type of use of the conveyor. You will find below standard versions of our conveyors.

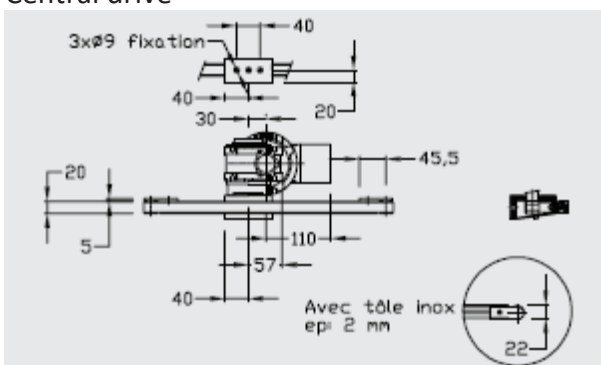
3.1 Conveyor types

In the following paragraphs, A represents the width of the conveyor and L the total length.



Conveyor 20 – Width 20

Central drive



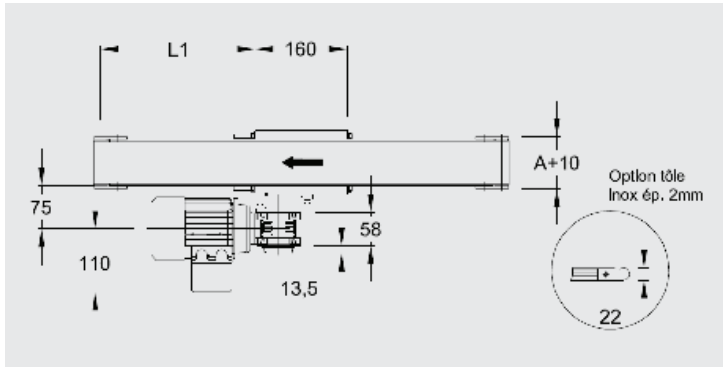
Width A = 20 mm

Length L = 200 to 3000 mm

Belt width = 17 mm

Conveyor 20 – Width 40 – 80 – 160

Central drive



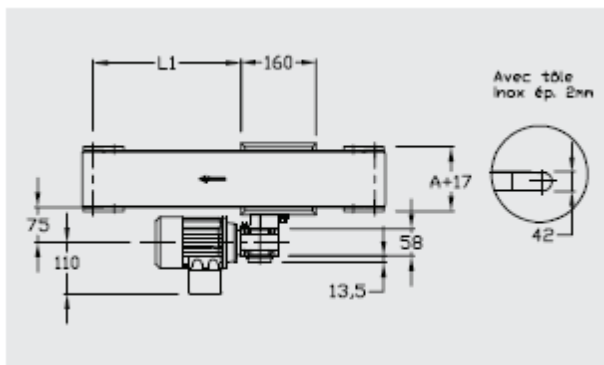
Width A = 40, 80, 160 mm

Length L = 300 to 3000 mm

Belt width = A – 5 mm

Conveyor 40

End drive (motor beside or below) and central drive with flat belt



Width A = 40 – 80 – 120 – 160 – 200 – 250 – 300 – 400 mm

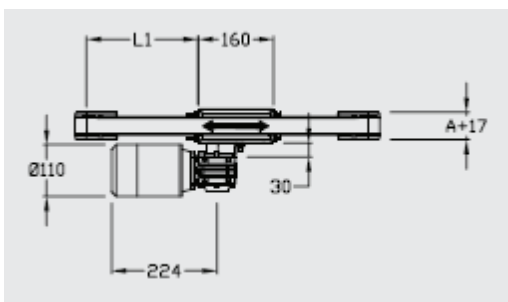
Length L = 400 to 6000 mm

Belt width = (A – 5) mm

L mini = 400 for width 40 to 250

A x 1,5 for width 300 and 400

End drive (motor beside or below) and central drive with timing belt



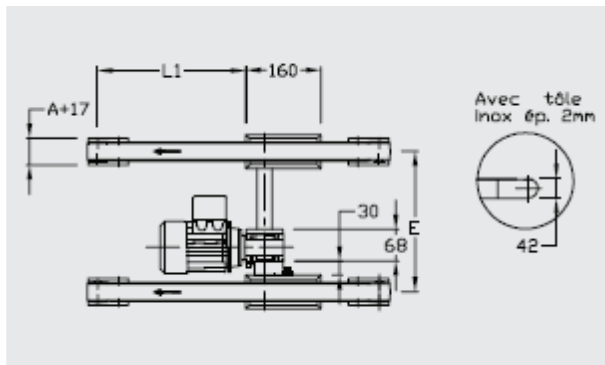
Width A = 40 – 80 mm

Length L = 400 to 6000 mm

Belt width = 32 – 72 mm

Conveyor 40 Double Belt

End drive and central drive (internal and motor beside)



Width = 40 – 80 mm

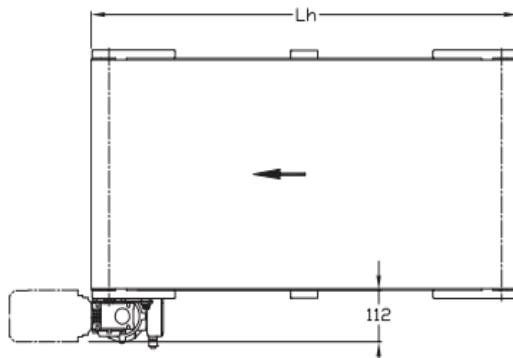
Length L = 400 – 6000 mm

Flat belt width = (A – 5) mm

Timing belt width = 32 – 72 mm

Conveyor 80

End drive flat belt Motor 90W

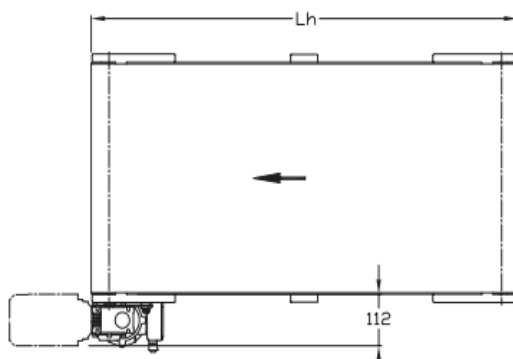


Width A 160 a 600 mm

Length L=400 a 3130

Belt width = A - 10mm

End drive flat belt Motor 250W



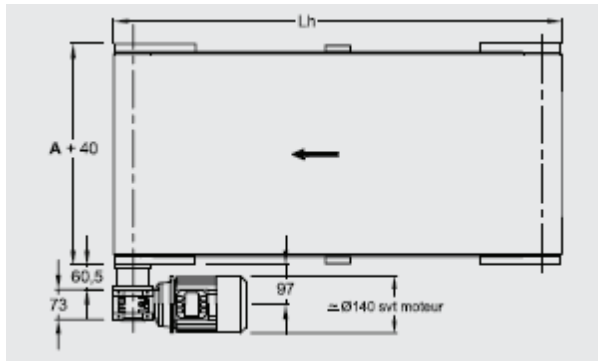
Width A 160 a 1000 mm

Length L=400 a 6130

Belt width = A - 10mm

Conveyor 90

End drive (motor beside or below)



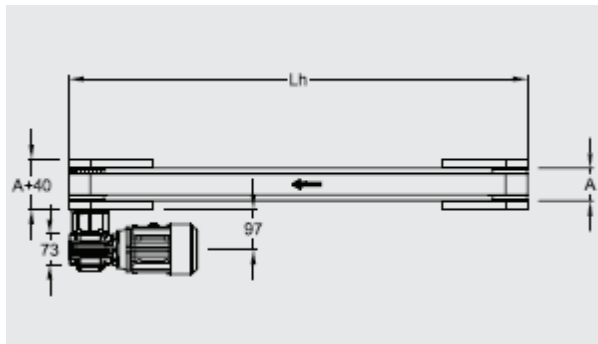
Width A = 500 – 600 – 700 – 800 – 1000 mm

Length L = 500 to 6000 mm

Belt width = (A – 10) mm

L mini = A x 1,5

End drive with timing belt.



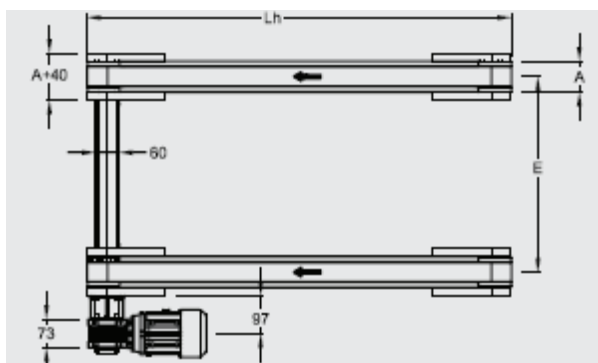
Width A = 40 – 80 – 120 mm

Length L = 500 to 6000 mm

Timing belt width = 25 – 50 – 100 mm

Conveyor 90 double belt

End drive with timing belt



Width A = 40 – 80 – 120 mm

Length L = 500 à 6000 mm

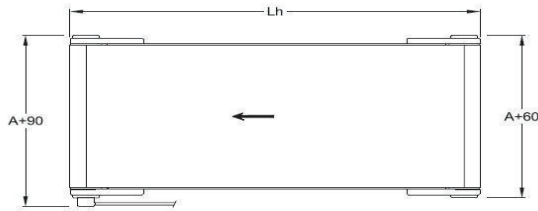
Timing belt width = 25 – 50 – 100 mm

Conveyor with motorized

Width A (mm) : 500, 600, 700, 800

Maxi lenght : 4 000

Width of belt: 490, 590, 690, 790



3.2 Motors

The motors installed on **elcom** conveyors are standard motors from our supplier.

Motorisation	Power	Maximum curent	Protection (IP)
230V mono 50Hz	0,09kW	0,83A	IP54
230-400V tri 50Hz	0,09kW	0,4A à 400V 0,68A à 230V	IP54
230-400V tri 50Hz	0,25kW	0,83A à 400V 1,44A à 230V	IP54

3.3 Conveyor start-up and shut down

The conveyor system must be operated by qualified staff.

3.3.1 Conveyor with plug

The conveyor can be equipped with a plug (designed according to the customer's specifications). The plug replaces a separate on/off switch. Before plugging the conveyor, check the immediate surroundings and potential dangers. Take care particularly to deterioration of the conveyor and of its electrical cables.

The conveyor switch off is made by pulling the plug from the socket.

In the version with plug, make sure that at no time the electric power cable is overstretched.

3.3.2 Conveyor with on/off switch or frequency converter

If the conveyor is equipped with an on/off switch, check the conveyor and its immediate environment to eliminate potential dangers before starting the conveyor. Pay particular attention to the conveyor potential damages and to electric cables.

3.4 Frequency converter

2 references:

- Ref. CELE 30 001 for 100W maximum, delivered non wired.
- Ref. CELE 30 002 for 400W maximum

Input 230V mono 50Hz, output 230V.

Operating range of standard engine: +/- 20% of the speed of the conveyor without forced ventilation.

Ability to use a motor with forced ventilation.

More information on <http://www.deltaacdrives.com>



3.5 Option : Frequency variator



Ref CELE 01201

Input 230V; 50-60Hz

Output 0-230V

370W

IP54



Ref CELE02201

Input 230V; 50-60Hz

Output 0-230V

370W

IP54

More information on <http://www.reo.de>

3.6 Dimensions of the conveyors

The dimensions of the conveyors and their related belts are available in the belt conveyors catalogue. It can be downloaded from the internet address:

<http://elcom-automation.com/conveyors/documentation>

3.7 Belts

Several belts can be used depending on the desired applications.

More details on the **elcom** website:

<http://elcom-automation.com/conveyors/documentation>

4 COMMISSIONING

4.1 Safety instructions



The installation of the conveyor must be made by qualified staff. All electrical and pneumatic connections must be carried out by experts. Observe all safety regulations and wear the necessary protective equipment.



The electrical and mechanical intervention on the conveyor must be carried out by qualified persons (electrician/mechanic).



The start-up work, repair and maintenance must be performed by qualified and authorized staff who will take into account the instructions given in this manual.



During the installation, repair and maintenance work, the conveyor must be disconnected from the power supply.



While working, be careful that no third party can be injured in the fall or flying parts. Take appropriate action on this matter.



Before the commissioning, all electrical connections work must have been tested in accordance with guidelines mentioned in this manual.



During the commissioning, the installation must be carried out by a qualified and appropriate staff. It is only when this qualified staff is sure of the perfect state of the equipment that the conveyor can be used.



All foreign bodies such as loose screws, tools should be removed from the work area. These parts must in particular not be located over or under the conveyor belt.



All provided safety housings and security systems have to be put back in place and tested before restarting.



During transport, the legal regulations must be respected. In particular, no one should pass under a suspended load.

4.2 Description of delivery

The conveyor is, unless otherwise agreed, delivered packed with on a strengthened and film-wrapped pallet.



The conveyor is delivered assembled and tested.

4.3 Setting up of the conveyor



The end user must only carry out the necessary connections, level the conveyor and fasten it during the assembly of the conveyor. If the installation is not levelled, the belt can run out of the conveyor and cause damage to the conveyor with a risk of injury.



In addition, excessive tensions of the belt are absolutely to be avoided. These tensions can change the shape of the support and thus lead to a movement of the axis of the belt.



The conveyor line must be removed from its packaging. Mount the conveyor line according to the mounting layout, if provided. All the necessary protection devices must be assembled.



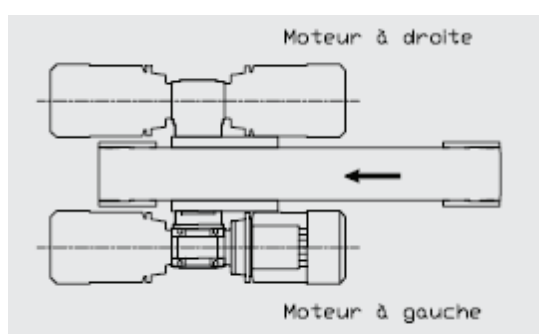
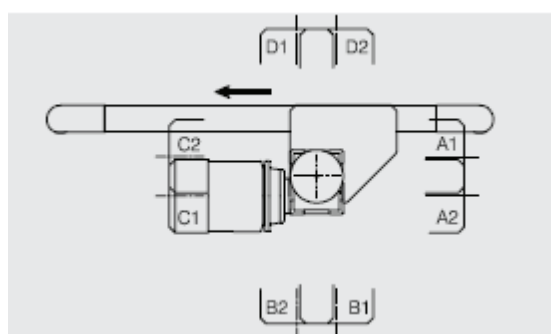
The electrical connection should only be done by a qualified electrician according to the wiring diagram in the electrical box. On this point, the current regulations must be followed.



Conveyors that are not delivered fully assembled have to be mounted according to the corresponding installation instructions and the proper functioning of the conveyors must be tested.

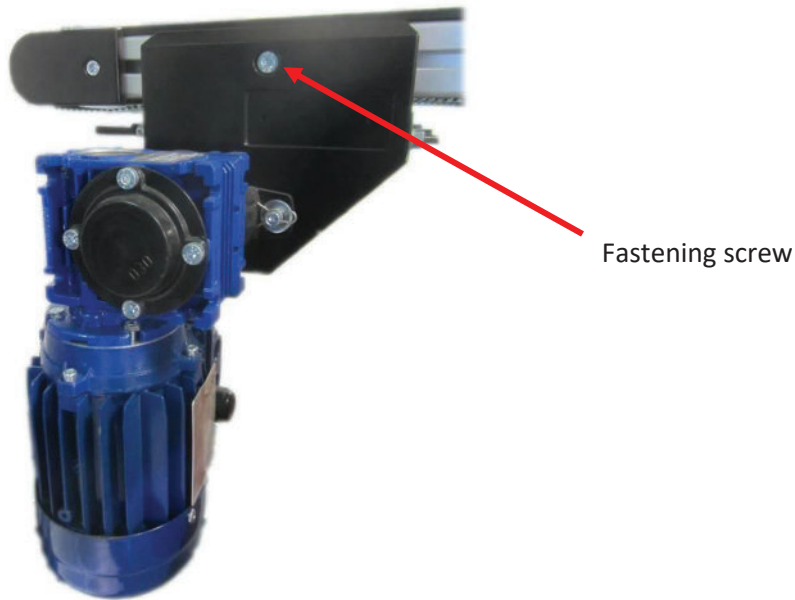
Possible motor positions

The motor can be rotated through four different angles and their symmetry, on each side of the conveyor. There are therefore 16 possible motor positions. Exceptions: a specific choice of options, special equipment or special lay-out chosen by the customer.



4.4 Changing the motor position (case of a central motor)

In the case of a central conveyor drive, the motor can be moved along the rails. The conveyor is delivered with an installed engine. Loosen the motor fastening screws.



Slide the motor along the profiles.

Tighten the engine fastening screws



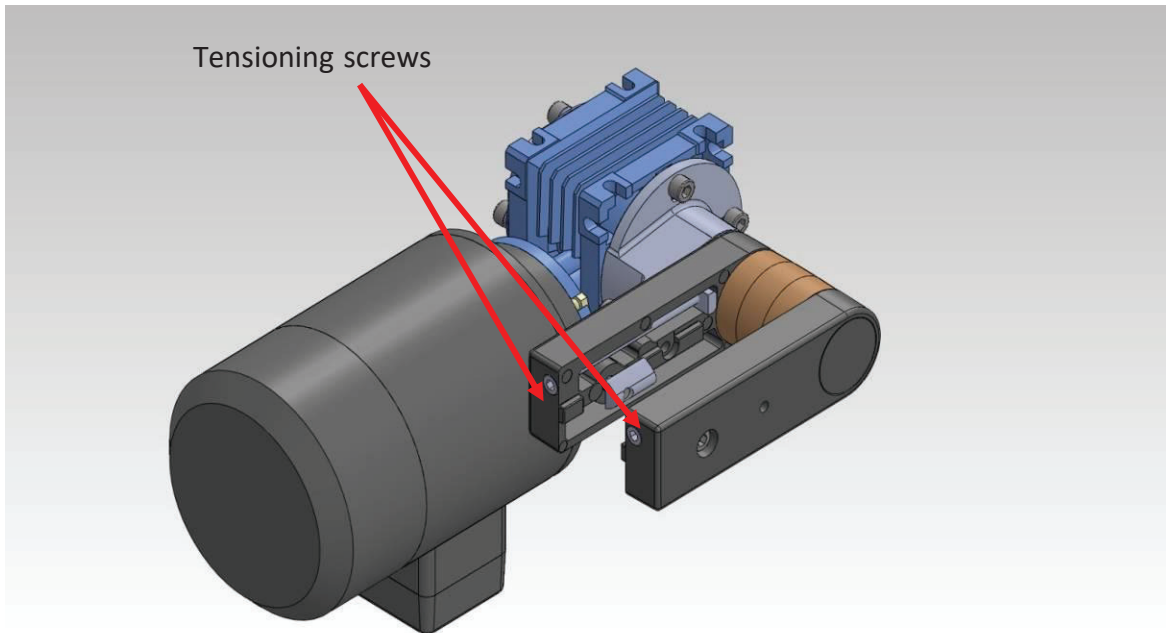
To ensure proper operation of the conveyor, it is imperative to maintain a good squaring. Make sure that both sides of the motor support are moved with an equal dimension.

4.5 Position of the tensioning screws

End drive – motor on the side

The motor is positioned on the side of the belt at the end drive of the conveyor.

2 tensioning screws are located at the extremity.

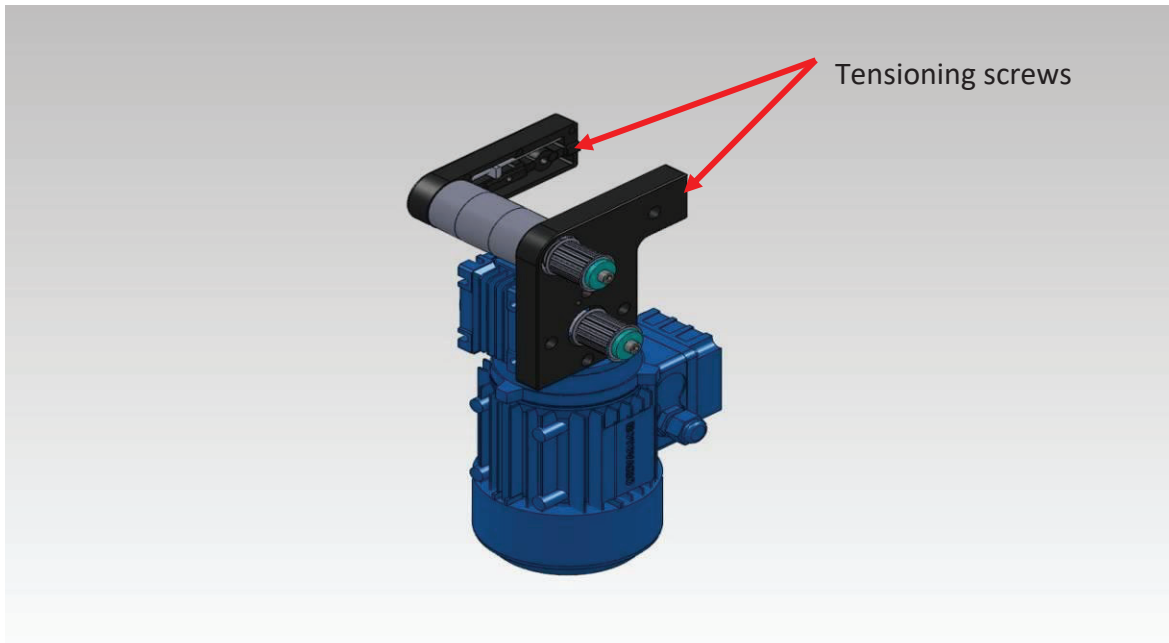


Direct drive.

Simplified assembly and dismantling.

A tensioning screw on each side of the conveyor.

End drive under the belt

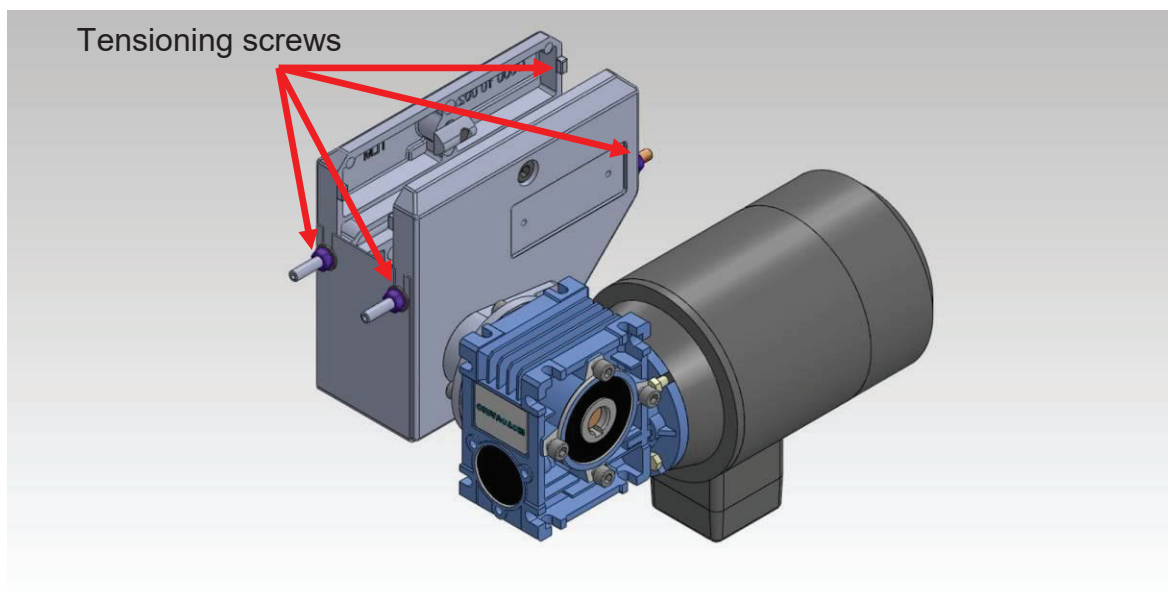


This lay-out allows the motor installation while minimizing the lateral space requirement.

It operates with a timing belt drive that transfers torque from the drive to the idling roller.

2 tensioning screws are provided on the driving side for the tensioning belt and control.

Central drive – motor beside



The motor is located next to the belt at the required place.

8 motors positions are possible.

2 idling pulleys.

2 tension pulleys.

4 tensioning screws positioned on the motor support.

Adjusting the belt tensioning

The conveyor is delivered with an installed belt. The belt tensioning was already made and tested. It is therefore not necessary to adjust the belt when you receive the conveyor.

The belt tensioning depends on the type of belt used. Follow the belt manufacturer's recommendations.

Make sure that the belt is not slowed down in its running: a too tight installation on a belt side can put strain on the belt. Avoid any parts that can rub continuously on the conveyor. Caution! This can then greatly damage the conveyor belt.

5 MAINTENANCE MANUAL

If any of the parts that constitute the conveyor is damaged or broken, it is possible to replace it just by following the instructions:



The conveyor must be cleaned at regular intervals to ensure trouble-free operating and to reduced wear.



The proper functioning of wear parts must be checked regularly.



Tools and equipment must not come into contact with electrical conductors or cause short circuits.

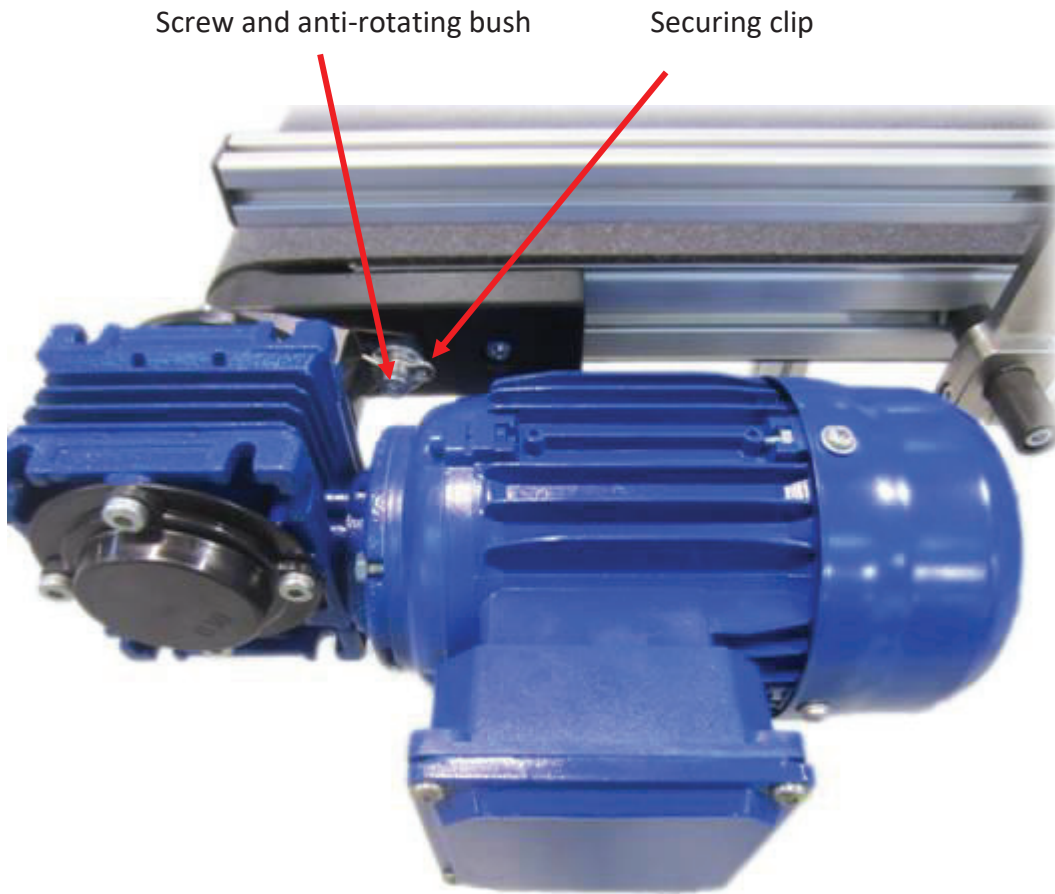


Before starting up the conveyor again, the proper functioning of the conveyor must be controlled.

5.1 Motor dismantling

If necessary, the motor can easily be dismantled.

Case of a gear motor for an end drive conveyor. Motor beside.

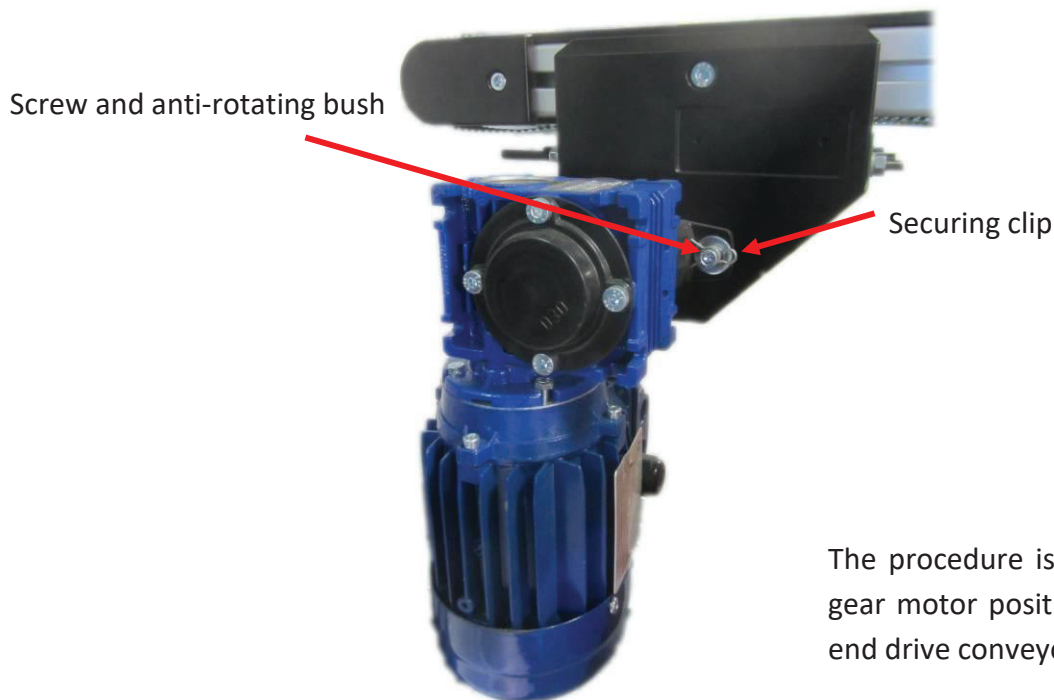


First remove the securing clip.

Then remove the motor and its flange from the conveyor for maintenance.

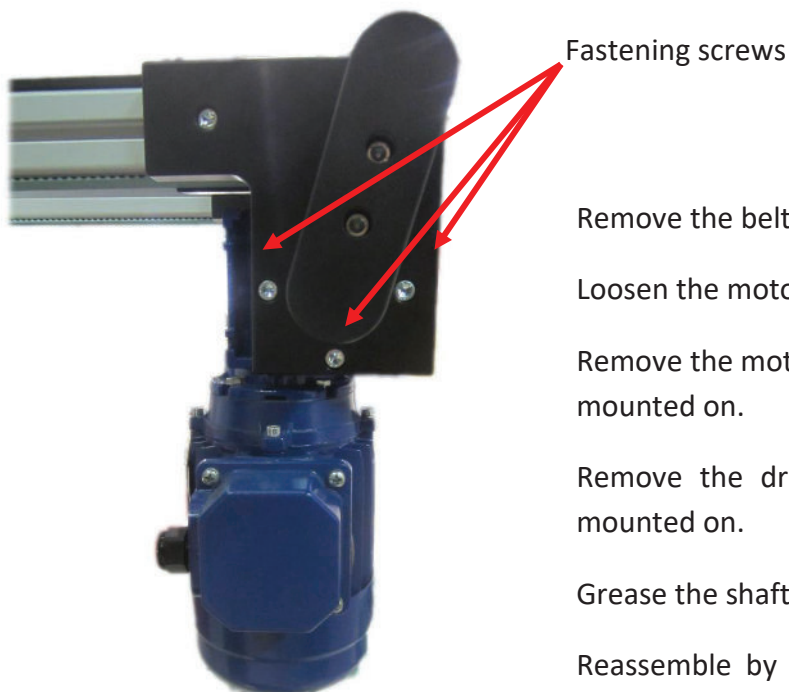
Next, remove the motor and the motor flange to carry out the maintenance of the drive shaft. The shaft must be protected against corrosion with copper grease. Installation without the use of a suitable corrosion protection can cause damage to the gear and the drive shaft.

Case of a gear motor for a central drive conveyor. Motor beside.



The procedure is the same as for a gear motor positioned beside on an end drive conveyor.

Case of a gear motor positioned below for an end drive conveyor



Remove the belt protective housing.

Loosen the motor fastening screws.

Remove the motor and the shaft with the pulley mounted on.

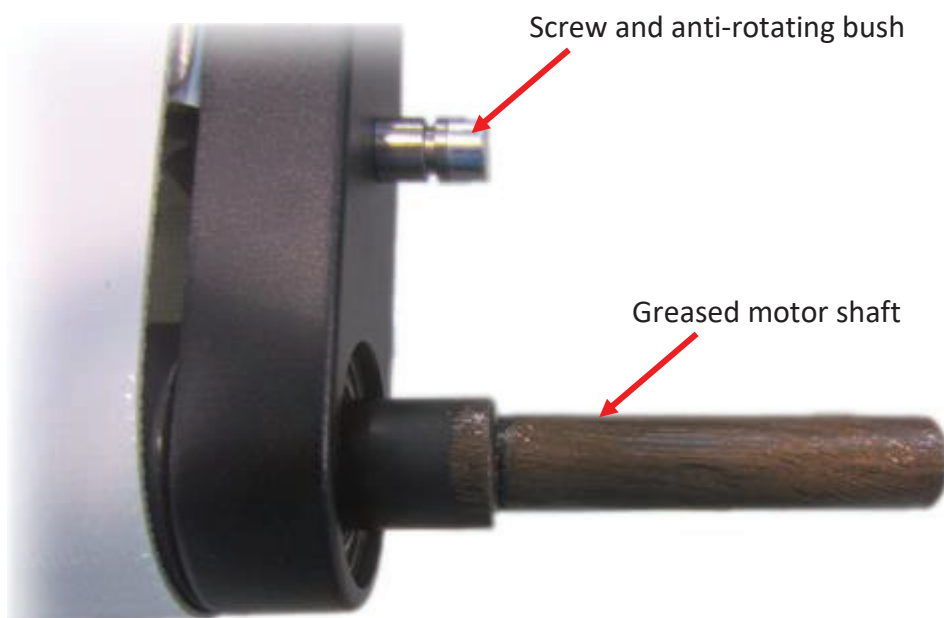
Remove the drive shaft with the pulley still mounted on.

Grease the shaft with copper grease.

Reassemble by following the steps in reverse order.

5.2 Installation of the new motor

Before installing the motor, make sure that the rod is correctly greased with copper grease.



The grease must completely cover the motor shaft.



Use copper grease for the motor shaft. Meltdown risks of the shaft on the motor are possible in case of bad lubrication.



Reassemble the motor in the desired position.

The position is set by the aluminum flange attached to the motor.

Once the motor installed on the shaft, put the securing clip back in place on anti-rotating bush.

5.3 Replacing the conveyor belt

To replace the belt, it is first necessary to release it to get it out.

First of all, disassemble the engine (see paragraph 5.1).

Then take away the parts that could interfere with the belt removal: fastening stands, lateral guides...

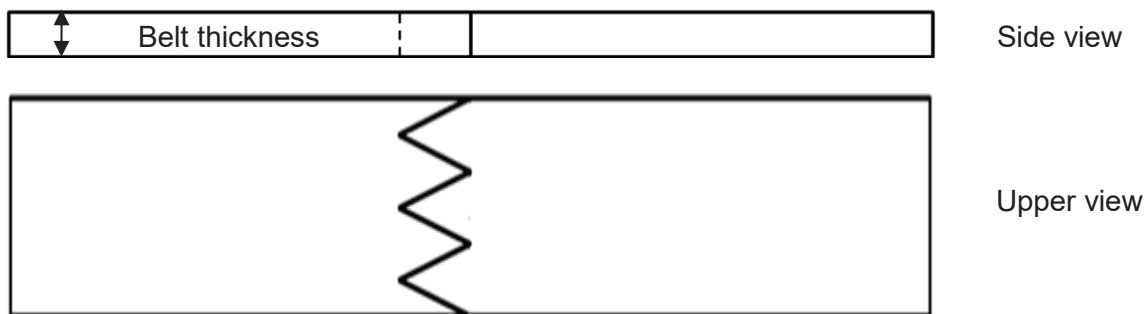
Loosen the belt using the tension bolts.

- For an end drive motor, the tension bolts are located on the motor side only. Unscrew them to remove the tensioning of the belt.

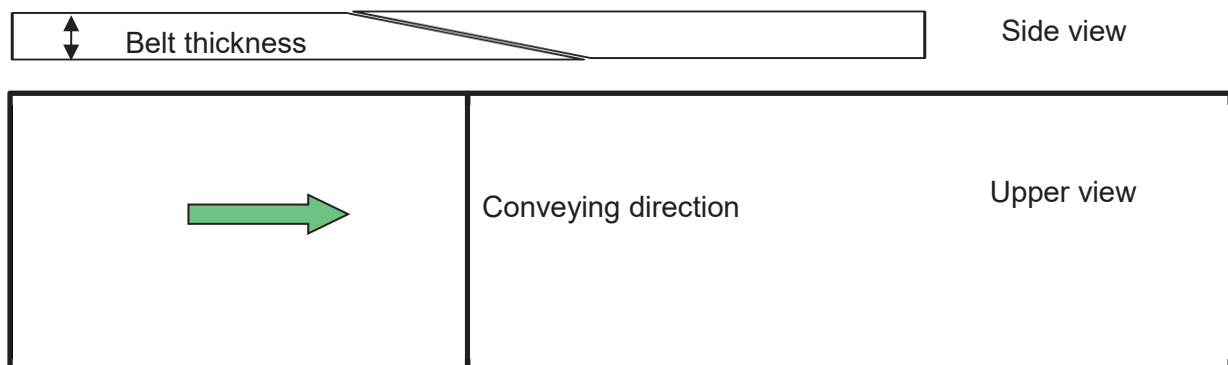
- For a central drive motor, tension bolts are located on the motor support. Unscrew them to remove the tension of the belt.

Place new belt in place of the old one.

In the case of a saw-tooth welding, there is no rotation direction of the belt.



In the case of a beveled welding, take the conveying belt direction into account: the beveling must be positioned so that the conveyed parts will not be disturbed.



Then proceed to the tensioning adjustment of the conveyor belt. (See section 5.5 of this manual).

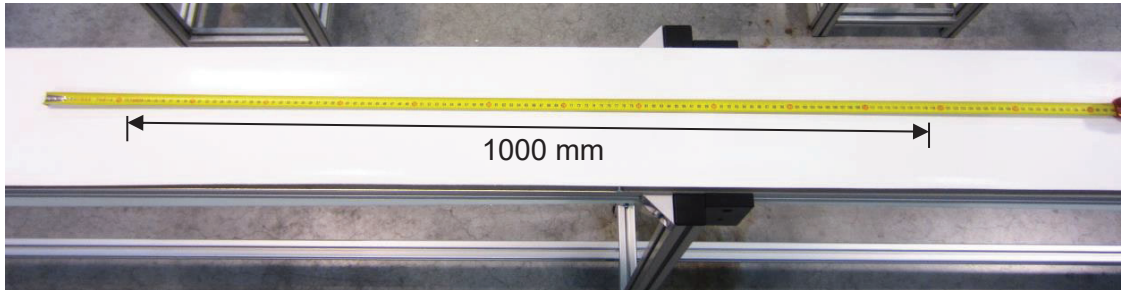
Finally reassemble the motor and the additional parts (fastening stands, lateral guides...)

5.4 Adjusting the conveying belt - Case of a flat belt

Necessary tools to adjust the belt:

- Measuring tape,
- Pencil,
- Hex key of 6.

Once the belt is in place, make two marks of one meter apart in the conveying direction.



Adjust the tensioning using the tension bolts located in the motor area.

The tensioning should be adjusted so that the belt stretching meets the supplier's recommendations. In most cases, the recommendation to respect is a 0.5% stretching.



Before adjustment, the lower side is visible

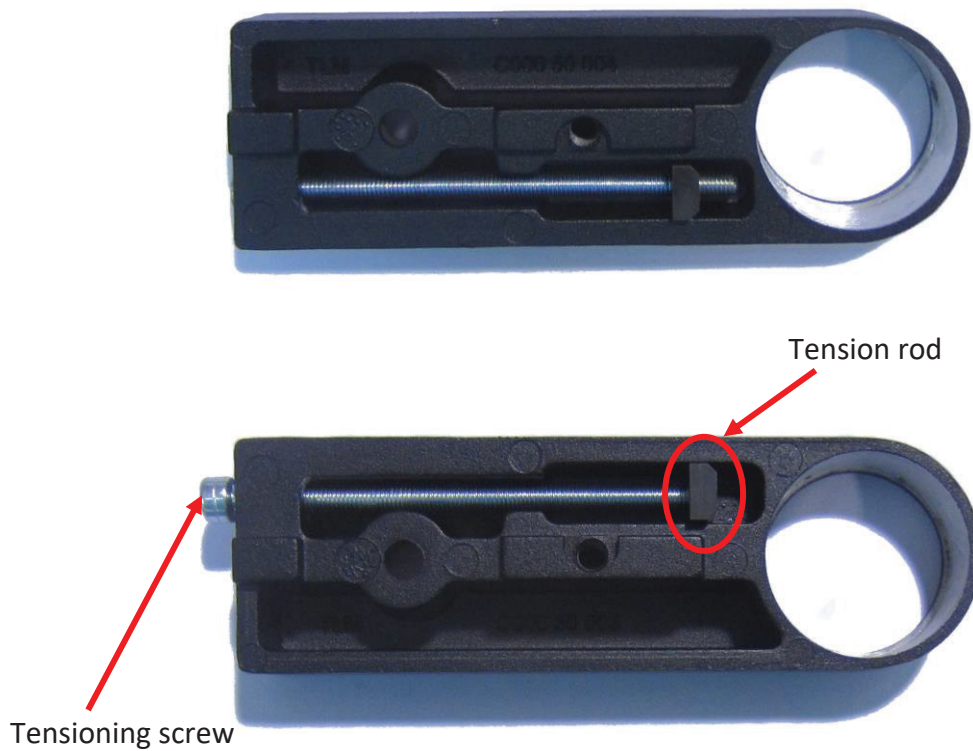
After adjustment, the belt is tightened

Adjust the setting of the tensioners until the two marks made on the belt are spaced of 1005 cm (The 5mm correspond to a 0.5% stretching that can be applied to most of belts. However this value may vary, we advise you to check the stretching tension with the belt supplier).

Please note that conveyors over 250 mm must not undergo a higher tensioning than the one mentioned above. This would result in damage to driving and idling units. In this case, please contact our technicians.

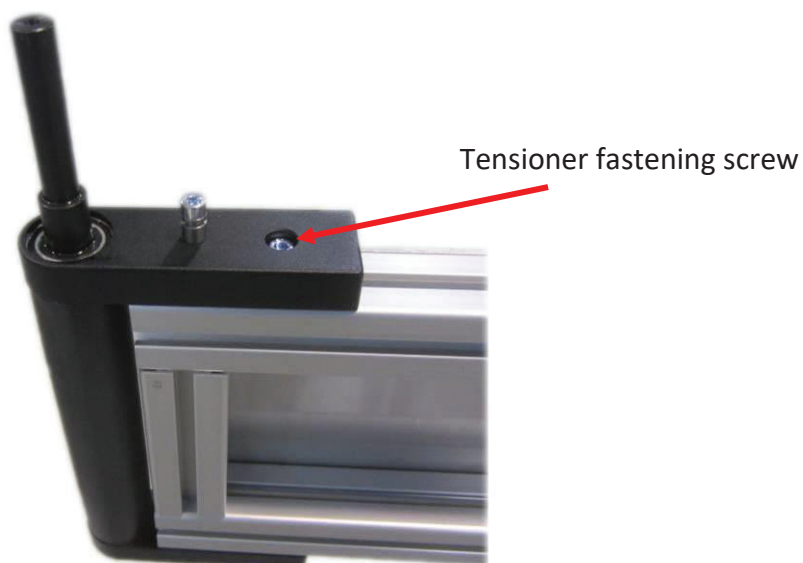


Case of an end drive motor (motor beside): inner view of the tensioners



The tension rod is supported by the end of the aluminum profile. By screwing the tension screw, the tensioner shifts and stretches the belt.

NOTE: It is important to loosen the tensioner fastening screw before making this adjustment.



It is also better to perform the belt tensioning in static first without the motor being mounted on the shaft. In this way, the force induced by the weight of the motor does not interfere with the setting.

Then reassemble the conveyor parts to return to its original shape.

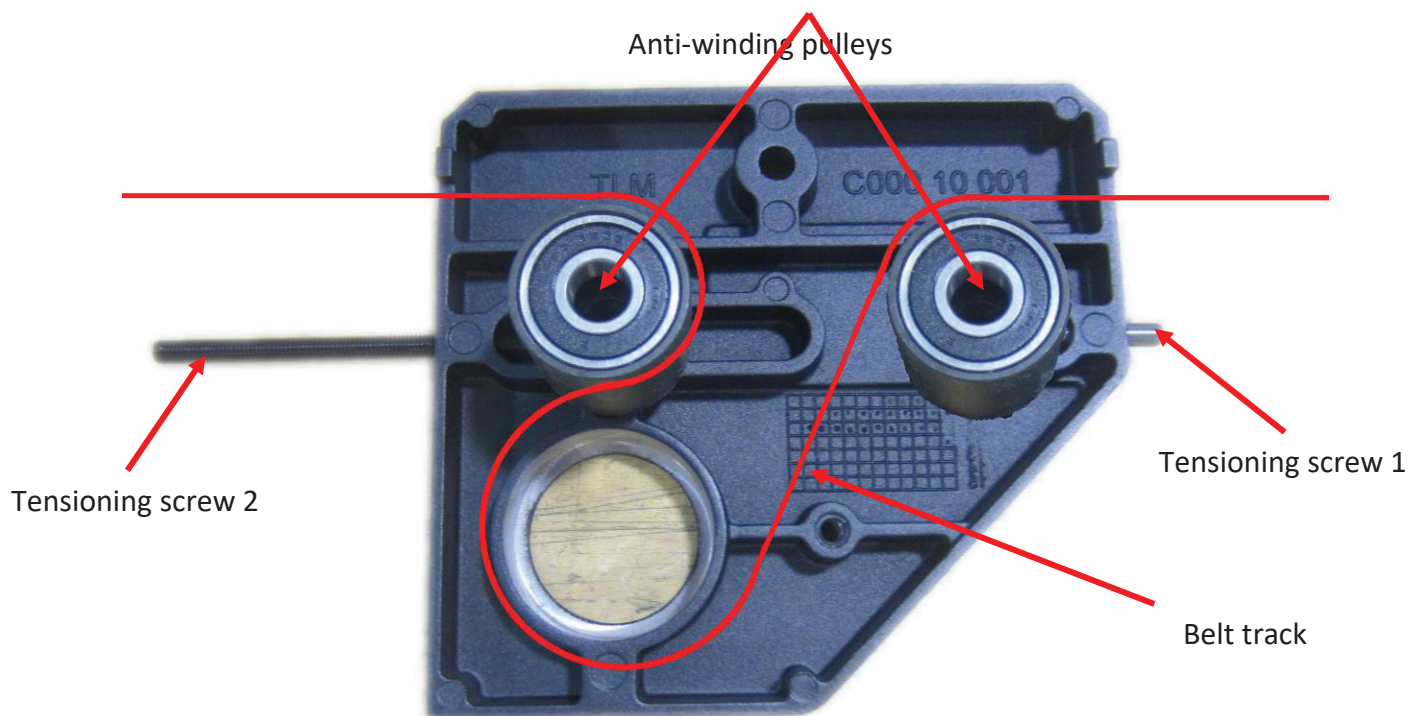
Finally perform a dynamic adjustment following the recommendations of paragraph 4.5 of this document.

At the end of the setting, retighten the fastening screws of the tensioner and then tighten the tensioning screw a quarter turn to fix the setting.

- Case of a central motor

Setting principle is the same. Only the position of the tension screws changes. We advise you to use the tension screws only on one side (in the case of a belt conveyor with a large width, it may be necessary to use both sides).

Inner view of the central motor support:

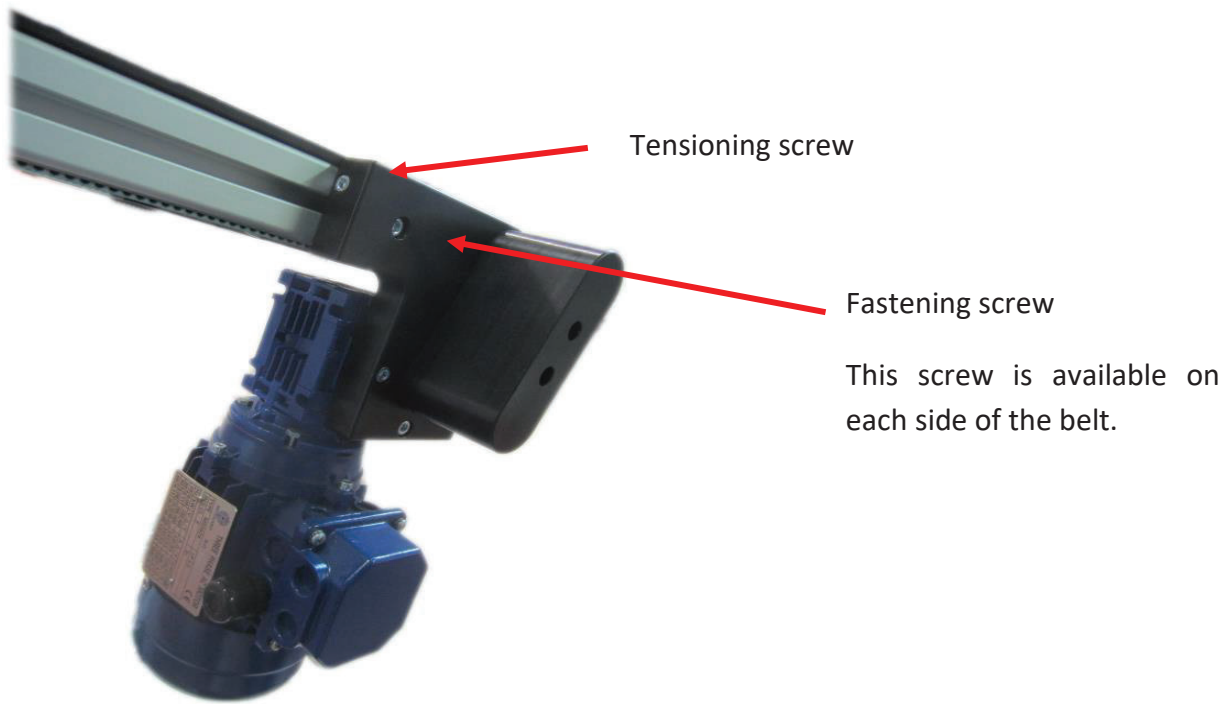


The belt setting is carried out using the tension screw 2. The tension screw 1 should preferably remain fixed and is used only if it is impossible to get a good setting with the tension screw 2.



In static, to ensure proper operation of the conveyor, it is imperative to maintain a good squaring. Make sure that both sides of the motor support are moved with an equal dimension.

In case of a motor positioned below, the adjustment is identical to the motor placed beside.
The screws are located on the tensioner at the extremity of the conveyor.



In all cases, finally perform a dynamic adjustment according to the recommendations of the paragraph 5.5 of this document.

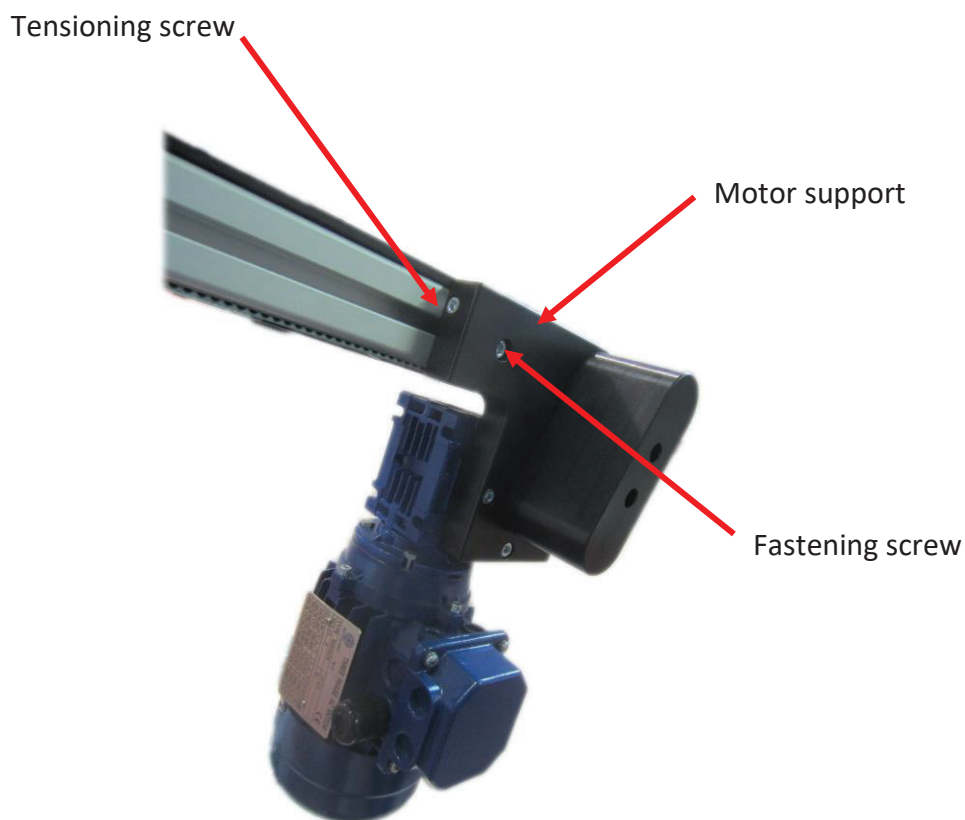
5.5 Adjusting the conveying belt - Case of a timing belt

The technique is similar to the flat belt, but the tension of the belt is different. The adjustment is made with a stretch of 0.1%.

5.6 Adjusting the belt position

Using the tensioner

Use the tensioners to correct the path of the curve and make it quite linear.



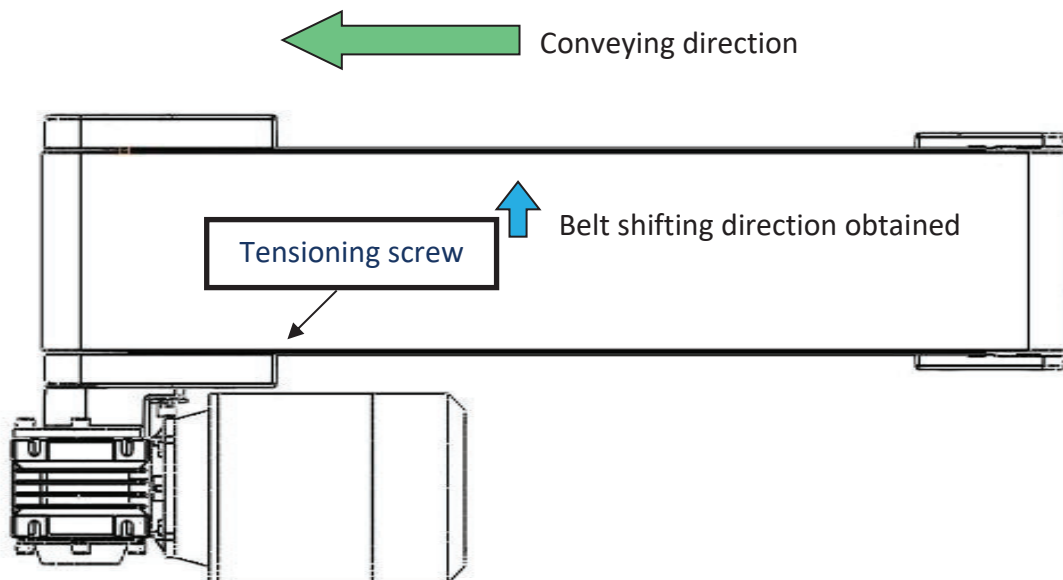
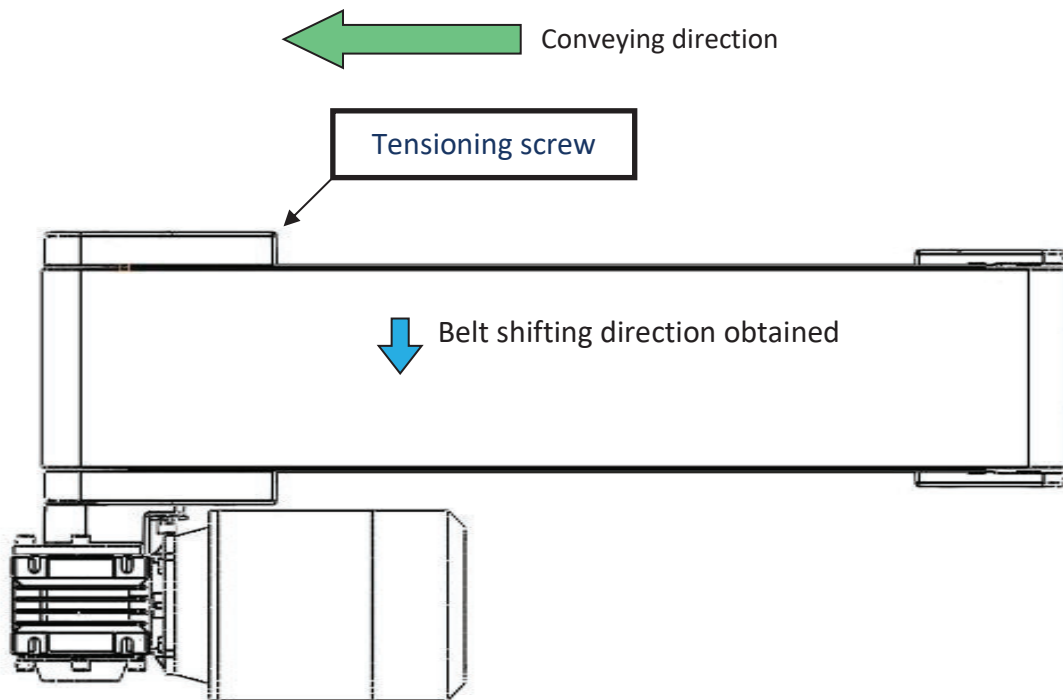
By screwing and unscrewing the adjusting screw on one side of the conveyor, the motor position changes, which allows adjusting the belt position.

Use this method on the motor support which achieves the expected result in the following cases.

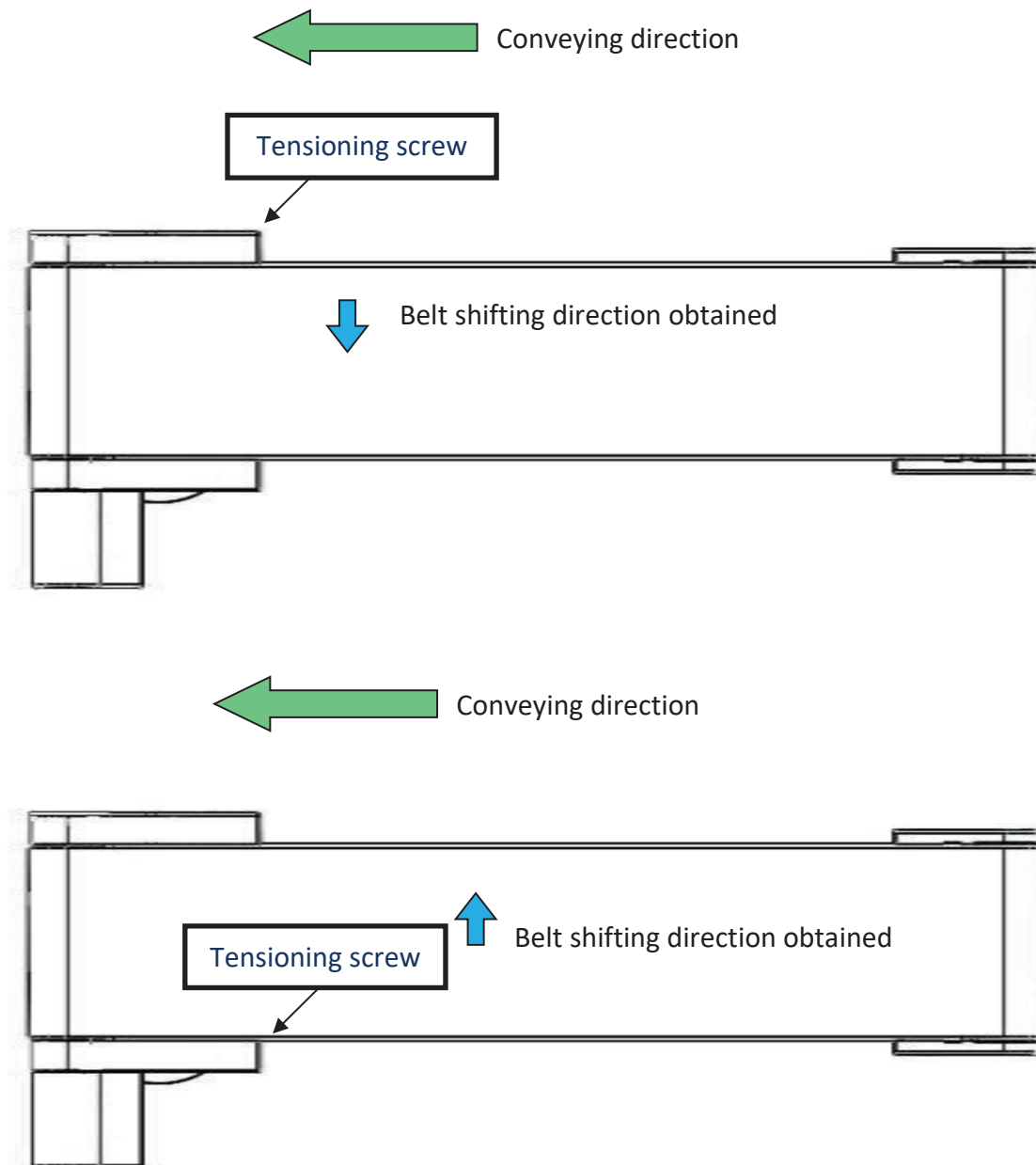
NOTE: the screws of the motor support must be loosened during the adjustment to allow the motor support to slide on the rail. Once the setting made, tighten the screws and check the proper functioning of the conveyor.

At the end of the adjustment after tightening the fastening screws again, tighten the tensioning screw a quarter turn to "lock" the adjustment.

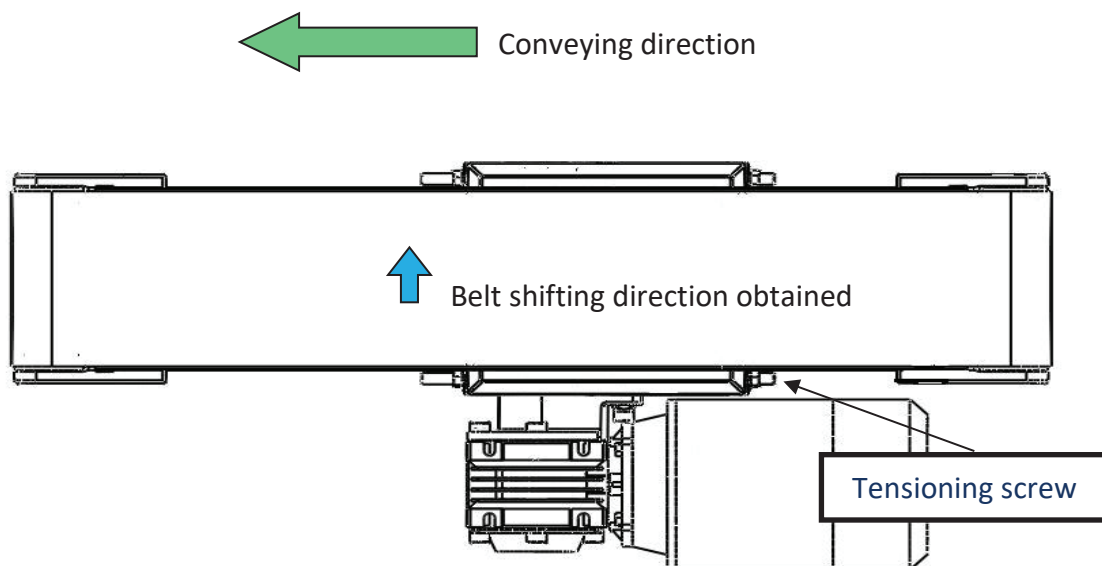
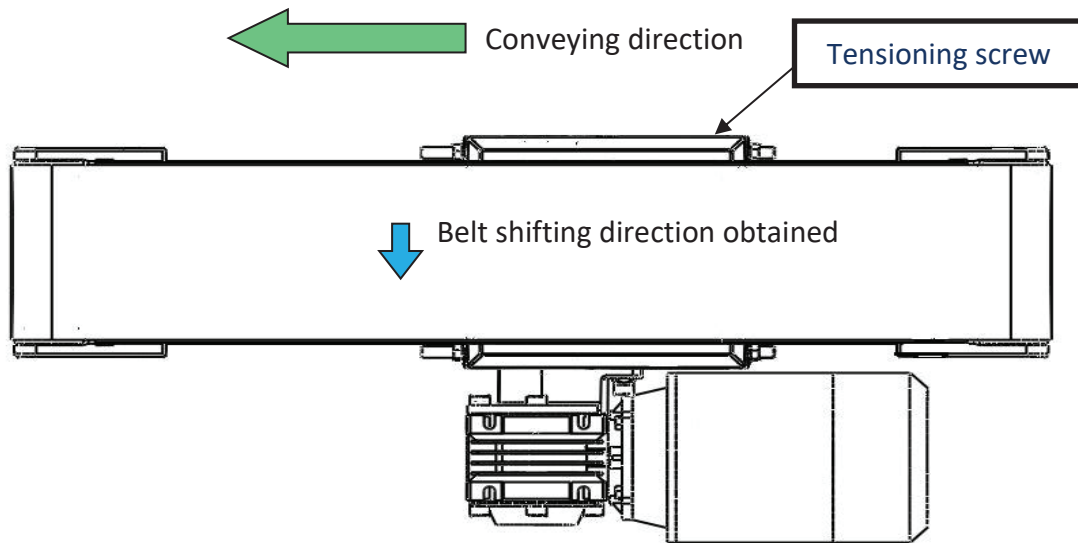
End drive – motor beside

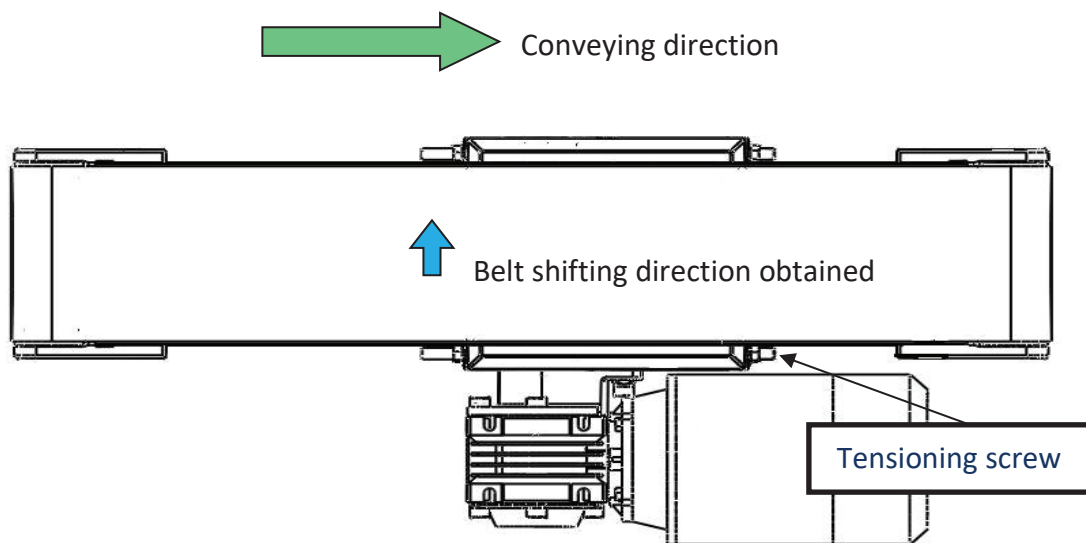
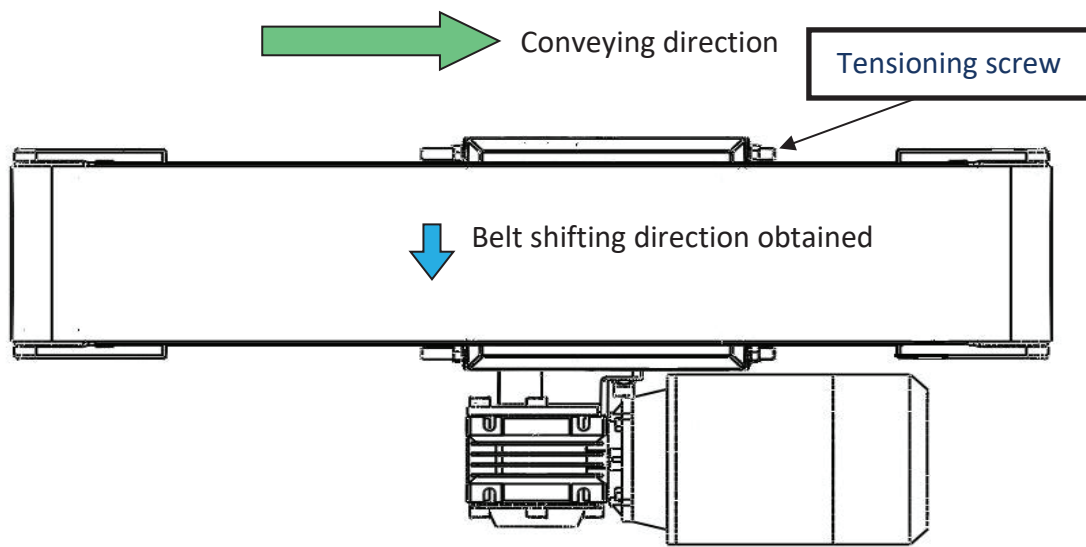


End drive – motor below



Central drive – motor beside





6 RESPONSABILITY

elcom cannot be held responsible for any damages or harms due to non-authorised modification of the any parts, specially the safety parts.

Only the original components can be used for maintenance or fixing.

elcom cannot be held responsible for any malfunction if some spare parts have been used without the validation of **elcom**.

elcom keeps the right to realise improvements and technical modification without any further notice.

7 CUSTOMER SERVICE

Do not hesitate to contact us for any question or advice. It's our duty to help you.

Tel: + 33 (0)4 74 43 99 61

Email : elcom@elcom.fr

Address : 1 rue Isaac Asimov
ZAC La Maladière
38300 Bourgoin-Jallieu
France

Prior to any contact, please note the serial number of the conveyor. It is written on the sticker present on the conveyor.



8 ANNEXES

8.1 Declaration of incorporation and exploded view

As a quasi-machine, manufactured and sold conveyors are subjects of a declaration of incorporation. The latter is transmitted at the time of delivery, accompanied by the exploded view of the motorized equipment.

8.2 Quality and environmental commitment: ISO certifications

Our company is recognized according to the following ISO standards and their respective evolutions since our first certification:

- Quality Management through ISO 9001 [since 2002]
- Environmental Management through ISO 14001 [since 2013]

All our current certificates are available for download in French, English and German on our website <http://elcom-automation.com/>