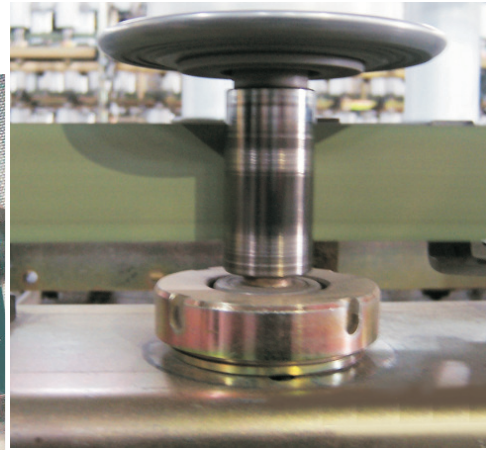


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 **esbelt**
Conveyor belts



ISO 9001:2008

Conveyor and
Transmission Belts in
the Textile Industry.



Textile Industry

1. PREPARATION OF THE MATERIAL

This phase is similar in the various types of processes: WOOL, COTTON, SYNTHETIC STAPLES AND NON-WOVEN FABRICS. The preparation and mixing of the raw materials is processed with machines known as BALE OPENERS and LOADERS, fitted with special belts made of different elements depending on their mechanical adaptation and positioning. These openers and loaders have fibre weighting and unloading devices, on a transversal collection **conveyor belt** which takes the fibres to the carding machines. Occasionally, the bales of wool, cotton, etc. may be made of recycled product.



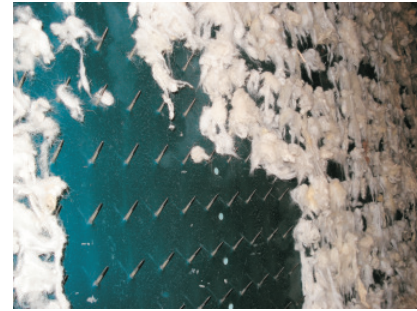
Loader with mobile floor.



Loader at the back. The apron belt is at the front.



Detail of the BREDA 12CF support belt.



Detail of the apron belt that collects and opens the wool conveyed by the support belt.



Wool exit, once mixed with bleaching additives.



Manual separation of reject wool.



Inside the silo full of wool. The apron belt moves towards the silo.



Expulsion roller at the top of the apron belt.



Detail of the back of the apron belts, showing splice with fasteners.



Belts that collect remains that fall from the expulsion roller at the back.

The bales of wool are conveyed by a forklift truck and placed in a loader, which has a moveable floor that pushes the bales to the accompanying belt, **BREDA 12CF** or **FEBOR 12CF***. This conveys them to an **apron belt– BREDA 25CF with polypropylene strips on the inside** – which open the bales of wool. They then pass on to another area for bleaching. Once bleached, an operator manually take out the dirty reject wool.

The open, bleached wool passes through tubes and falls into the silos. When a silo is full, an apron belt (**BREDA 25CF with polypropylene strips attached on its inside**) installed on a mobile train, advances and collects the material from the silo. At the top back of the apron belt an expulsion roller is fitted, which cleans off the remains of wool that might have got stuck. These remains fall onto two **BREDA 12CF** belts fitted at the front, which unload into a hopper and send the wool back into the circuit. Once the silo is empty, the mobile train with the apron belt moves on to the next silo to repeat the process.

* all the belts working at this process must be antistatic.



APRON BELT WITH PINS:

The apron belts with pins that we offer can be:

- a. **Monoblock: BREDA 25CF** base with special **NE.C14** thermoweldable profiles.
- b. **In compacted beech wood:** this is the apron belt used traditionally, highly resistant to breakage.
- b. **In polypropylene:** stronger and lighter than wood.

Depending on the material to be processed, the layout of the pins can be either parallel or staggered (see diagram) with an incline of 90, 45 or 15°. The nails can be single or double (with U-shape).

The strips that hold the pins can be fitted to the top or bottom of the belt. The latter is highly recommended in processes involving long staples, as it makes cleaning easier and provides good protection against staple accumulation, this being very important when processing mixed fibres and dyed flock.

At **Esbelt** we recommend **monoblock** apron belts, currently the most popular in the market, due to their numerous advantages:

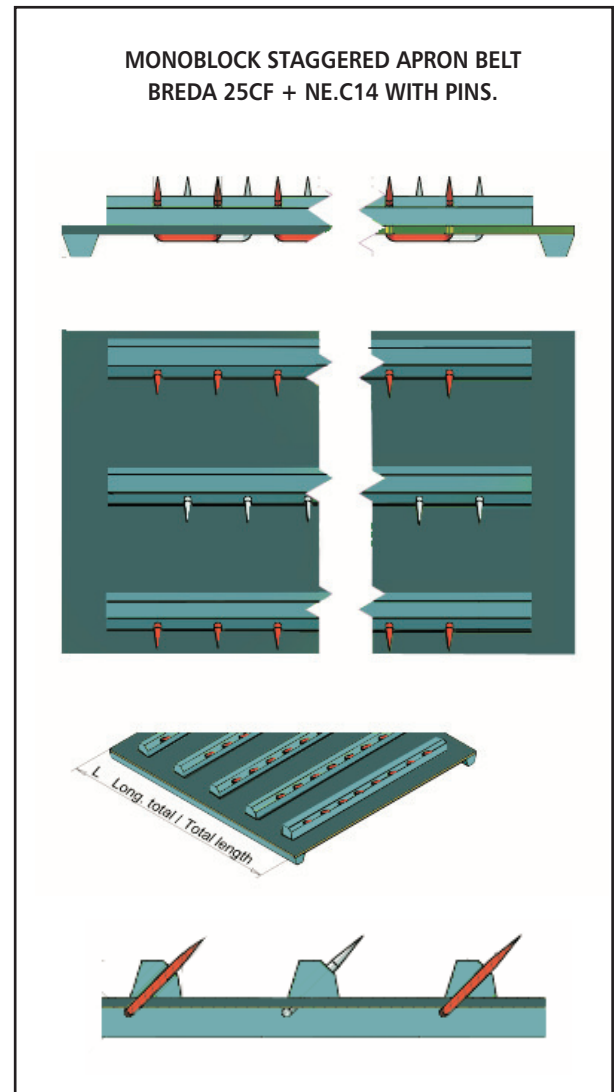
Easy to clean: the heat-sealed profiles prevent fibres from getting underneath.

Safety: no profile attachment points exist, so the risk of them coming off is avoided.

Downtimes and risk of accidents caused by the breakage of profiles when wood is used are also avoided.

The guiding profiles prevent the apron belt from becoming misaligned.

The attachment of U-shaped double pins makes it impossible for them to fall onto the material. This makes them very reliable when dealing with heavy loads, preventing fire hazard and mechanical breakdowns.



At the apron belt exit the already opened and broken down material is transferred by a pneumatic (pipes) or mechanical (**conveyor belt**) systems to silos that feed the carding, combing and drawing machines.

2. CARDING

The purpose of carding is to clean the material, weeding out the short staples, seeds, etc. A long drawing process turns the material into a fine web of 4 or 5 g/m, ready for the next part of the process.

There are different types of card:

FLAT CARD

Fitted with LEATHER – POLYAMIDE **LL14** and **LL20** belts for extracting the web. A **BREDA 12CF** belt is used in the preparation processes for *fine spun yarn (drawing frames and speedframes)*.

ROLLER CARD

The difference with the flat card is that the main pulley is cleaned by mobile rollers driven by **EE20** or **EE14** synthetic belts (depends on the specific case). It is generally used as a direct step to the *thick spun yarns* and the *NON-WOVEN* systems.



3. DRAWING

In the *wool production* process, the material prepared in the cards moves on to combing and automatic regulation. These machines use type **LL14** and **LL20** conical transmission belts.

In the *cotton production* process, the material prepared in the cards moves on to the drawing frames. These machines are fitted with **EE14** type belts.

At this stage the material already regulated and with parallel fibres, moves onto a so-called speed frame, which draws and gently twists the strands, so that it withstands the conveyance and introduction into the next stage. This machine is fitted with a main flat drive belt, and conical transmission belts, type **LL30**.

4. FINAL SPINNING

This stage can be carried out using different systems:

4.1. Conventional Continuous Spinning Machines.

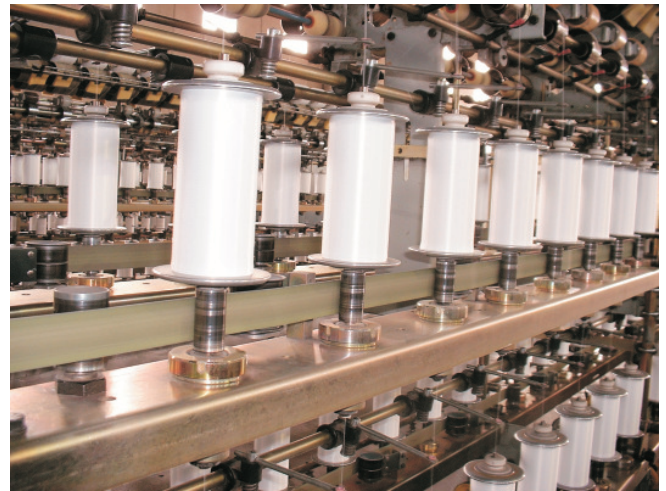
FC04, FC06, FC04H and **CT 10/3** belts. Each belt drives 4 production spindles.

4.2. Tangential Continuous Spinning Machines.

A single belt moves all the production spindles. Double-sided elastomer, type **EE20**.

4.3. The OPEN END system of turbine spinning, currently very widely used. In this case, the turbines and shredders are driven by double-sided rubber and polyamide tangential belt.

The types of belt used depending on power and r.p.m are, **EE10, EE14, EE14, EE10SS** and **EE20SS**.



5. FINISH: Twisting Frames.

The thread is given its finish by twisting and special treatments (waxed, greater strength etc.) depending on the requirements of the weaver. This process is carried out by twisting frames, generally using a tangential drive for the spindles through a double-sided rubber and polyamide **EE30** type belt.

CROSS LAPPERS

Various industrial and domestic applications (carpets, duvets, dishcloths, wipes, etc.) use specific types of fabric, known as non-woven.

In these cases, once steps 1 and 2 are complete, the material leaving the carding machine is taken to the CROSS LAPPER, in which the web is folded, creating a "mattress".

The cross lapper or folder consists of a set of 2.5 to 3-m wide belts (see diagram), fitted with a conducting highly anti-static belt, which unloads onto a collection belt, consisting of a 4 to 5-m wide web, prepared for the stamping process.

