

Trelleborg plasterboard belts

Technical guide
for stocking, installation and maintenance

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1 GENERAL

Trelleborg Slovenija is an established producer of conveyor belts from Slovenia, with over 100 years of tradition in the rubber manufacturing industry. We produce a wide range of high-quality industrial rubber products, and we are noted for our innovative approach and ability to adapt to customers' requirements. This innovative mindset and long experience in conveyor belt manufacturing enabled us to develop a new conveyor belt for use in gypsum board factories – the Trelleborg Slovenia's Gypsum forming belts / Plasterboard Belts.

Our gypsum forming belts come in two distinct quality types:

- GYPSUM and
- GYPSUM WR (Wear-Resistant).

This technical guide is relevant for both quality types. Non-compliance with the guidelines may lead to the warranty for the belt's expected lifetime being voided.

2 TRANSPORT AND STORAGE OF THE BELT

Trelleborg Slovenija Plasterboard Belts are packaged on custom-designed wooden spools. These spools are engineered to safeguard the belts from any physical damage, weather conditions, UV exposure, and mechanical impacts during transportation and storage of the belt. For extended storage periods, Trelleborg Slovenija Plasterboard Belts must be retained in their original factory packaging.

Belt must be stored in a dedicated warehouse, which should be enclosed to protect against exposure to rainfall. The warehouse should also be situated away from steam pipes, direct sunlight, and any ozone-generating equipment. It is important to ensure a controlled storage environment with temperature range from 0 to +35 °C (32 to +95 °F) and a relative humidity level of maximum 75 %. It is essential to rotate the entire wooden spool by a quarter turn (1/4) at least every four (4) weeks to prevent any potential deformation of the belt's covers and/or carcass.

It is crucial to safeguard the belt from exposure to adverse conditions not only during storage but also during transportation. As previously stated, failure to transport, store, and handle the belt appropriately will result in the warranty for its lifetime being voided.

3 INSPECTION OF THE CONVEYOR LINE

Before installing a new belt, a thorough inspection and cleaning of the conveyor itself are necessary. If any conveyor components are found to be damaged, they must be replaced. The focus is on the presence of bearing grease and the accumulation of gypsum on various components, as well as the conveyor structure. Wallboard coverings should be applied to the following areas: return side frame braces, conduits, the floor between return rollers, the take-up area, and the head pulley area to protect key components.

Before proceeding with installation of the Trelleborg Slovenija Plasterboard Belts following conditions must be met:

CONVEYOR BELT BENDING LIMITATIONS:

- Max allowed central angle of bended belt is 200 °.

- Min drum diameter is Ø400 mm (15.8 inches) to avoid damage to the belt's structure and covers.

CONVEYOR COMPONENTS ROTATION REQUIREMENTS:

- All drums, rollers, and pulleys along the conveyor line must rotate freely. Blocked and/or jammed drums, pulleys, or rollers are not permitted.
- All drums, rollers and pulleys along the conveyor line must be centrally rotating. Allowed rotation out of its central axis is +/- 0,2 mm (+/- 0,008 inch).

CONVEYOR COMPONENTS TRANSVERSE ALIGNMENT:

- All drums, rollers and pulleys must be aligned in transverse direction. Drive and tail drums must have parallel axis, forming a "square" with conveyor line.

CONVEYOR COMPONENTS HORIZONTAL ALIGNMENT:

- Tail drums of single conveyor must be aligned in the same horizontal line. Allowed deviation is +/- 0,5 mm (+/- 0,02 inch).
- Drive drums of single conveyor must be aligned in the same horizontal line. Allowed deviation is +/- 0,5 mm (+/- 0,02 inch).
- All supporting and return rollers of single conveyor must be aligned in the same horizontal line. Allowed deviation is +/- 0,5 mm (+/- 0,02 inch) on 2 m (6,6 ft) of conveyor length.
- If conveyor line contains several conveyors, then all drums, pulleys and rollers must be in the same horizontal line. Allowed deviation between all drums is +/- 0,5 mm (+/- 0,02 inch) and between all rollers is +/- 0,5 mm (+/- 0,02 inch) on 2 m (6,6 ft) conveyor length.

If any of the conditions fall outside the specified requirements and an issue is identified, it should be promptly resolved. Faulty components within the system must be repaired or replaced as they have the potential to cause mechanical damage to the belt surface or belt itself.

4 INSTALATION AND SPLICING OF THE BELT

During the installation and splicing of the Trelleborg Slovenija Plasterboard Belt, it is essential to handle the belt with the utmost care. If the belt is placed on the floor, ensure that it forms large loops to prevent damage to the belt's structure. Throughout the entire installation process, protect the belt from welding splatter, oil, grease, and any other potential dirt in general to prevent any marks or damage to its surface, as this could lead to long-term damage to the belt's rubber cover. Avoid placing any materials, tools, or weight on the belt to prevent surface damage or deformation. In the event of oil or grease contact with the belt, it should be quickly cleaned with a soft sponge and warm water with mild detergent. Details of correct belt cleaning procedure are described in chapter 6 – Cleaning of the belt.

Once the installation is finished, the next step involves the hot splicing of the belt if it was delivered in a non-spliced condition. It is necessary that the splicing procedure is carried out exclusively by the Trelleborg Slovenija splicing team or companies authorized by Trelleborg Slovenija. The quality of the splice is of utmost importance, and Trelleborg Slovenija cannot assume any responsibility if the splicing is performed by a non-authorized company. In such a case, the warranty for the splice is excluded.

5 BELT TRACKING

After splicing the belt, ensure that it is correctly pre-tensioned. Proper pre-tensioning means reaching the point just beyond where slippage occurs. To achieve this, it is necessary to move the tensioning pulley within a range of 0,15 % to 0,40 % of the wheelbase between the drive and tail drum in one conveyor line. We recommend starting with 0,20 %.

Once adjusted to the recommended pre-tension, the belt should decline by less than 0,1 mm (0.004 inches) between the upper supporting rollers at intervals of 200 mm (7.87 inches) to 350 mm (13.78 inches).

Regular and periodic monitoring of belt pre-tension is crucial to ensure the long service life of the belt and prevent slippage on the drive pulley. Never increase the belt's pre-tension without first checking the existing pre-tension, as doing so could damage the belt and disrupt production. Over-tensioning the belt will shorten the lifespan of both the splice and the belt itself. For over-tensioning exceeding 0,40 %, our warranty for splice lifetime is invalidated.

The belt should undergo tracking before first use. The entire conveyor line, including all drums, rollers, and pulleys, should be properly aligned. The first movements of the Trelleborg Slovenija Plasterboard Belts should be slow and intermittent to detect and correct any tendencies that could cause the belt to be misaligned what could result in the damage of the belt edges. We advise a speed of up to 20 m/min (65.6 fpm). Adjustments can be made by altering the shaft angle of the rollers 2-5 meters (6.6 – 16.4 ft) before the point where lateral movement occurs. Finally, it is advisable to let the belt run without any load for a while.

6 CLEANING OF THE BELT

At this stage, the belt must be cleaned with a mild soap and water solution. The belt, as it is sanded during production, may leave small rubber particles that need to be removed from the belt's surfaces. The proper method for this is a thorough washing of the belt, and manual washing with clean, soft sponges and a mild detergent with a pH-neutral formula. It's best to clean the forming belt surface with warm water, with a recommended water temperature of approximately 40 °C (104 °F), although cool water is also acceptable.

It is forbidden to use any aggressive chemicals, degreasers, sandpapers, or other abrasive materials that could harm the belt's surface. It's preferable to wash both surfaces (working and running) of the belt. After washing, both the belt and its components need to be dried. Only after these steps is the belt ready for stearate treatment.

7 STEARATE TREATMENT OF THE BELT

After the belt is installed, spliced, tracked, and washed, it is recommended to perform a Ca-stearate treatment, Ca-stearate must be in powder form, before starting the trial production. Calcium stearate primarily serves as a friction reducer and acts as an initial startup agent by covering and filling any microscopic peaks and valleys resulting from the factory sanding process.

To carry out this treatment effectively, the belt should be running at a slow speed. A non-woven or felt-like blanket should be positioned and securely fastened in place. While the belt is in motion, Ca-stearate is added in front of the blanket. To ensure even distribution of the stearate across the belt cover, the belt should make numerous revolutions.

For proper treatment procedure following conditions should be met:

- The non-woven or felt blanket, used to evenly distribute the Ca-stearate on the belt surface, should cover the entire belt width, ensuring equal distribution. Use approximately 4-5 kg (9-11 lbs.) of Ca-stearate along the total length of the belt or one revolution of the belt.
- Apply Ca-stearate must be applied with a line speed not exceeding 20 m/min (65.6 fpm).
- After the belt completes one full revolution, add an additional 4-5 kg (9-11 lbs.) of Ca-stearate.
- When the belt completes a second round, allow it to run for approximately 30 minutes.
- After 30 minutes spray water in front of the blanket to wash the belt for an additional 30 minutes.

A successful Stearate treatment results in a very smooth and lubricated surface, reminiscent of candle wax. This treatment enhances the belt's performance, as Ca-stearate has a positive effect on achieving a smooth, paper-release surface. It works by filling the micro holes in the belt surface and remaining in place, contributing to better paper release during the production process. These steps are integral to the proper preparation of the belt for the trial production phase, ensuring optimal performance and product quality.

Important note: Excessive stearate application is not advisable. Stearate should only be used as an initial startup agent and not as a frequent release agent. Overusing stearate can lead to the formation of a mixture of small rubber particles, gypsum, and stearate, potentially contaminating the conveyor line and the belt itself.

8 MAINTENANCE OF THE BELT AND CONVEYOR LINE

Trelleborg Slovenija Plasterboard Belts are highly advanced products that require protection against potential damages and deformations. Maintaining the belt properly is essential for extending its service life and preserving its optimal condition. To ensure this, it is crucial to perform regular and proper maintenance on both the belt and the conveyor line. In the event of any mechanical damage to the belt cover, we recommend reaching out to Trelleborg Slovenia for technical assistance as soon as possible.

The main measures of proper maintenance of the belt are:

CONVEYOR LINE:

- Regularly check the belt tension to prevent belt slippage on the drive drum.
- Periodically inspect the cleanliness of the entire conveyor line. Ensure that all drums, rollers, and pulleys are free from gypsum slurry and other contaminants resulting from the production process and clean them as needed. Dirty drums, rollers, and pulleys can lead to mechanical damage and contamination of the belt surface.
- Regularly check the alignment of drums, pulleys, and rollers both longitudinally and transversely.
- Follow the conveyor manufacturers' recommendations for lubricating the conveyor line while exercising extreme care to prevent any oil or grease from coming into contact with the conveyor belt itself. Avoid the use of oil coatings on drums, pulleys, and rollers for cleaning, as this can damage the belt cover. Instead, employ buffing, washing, or scraping methods, and regularly inspect this equipment for proper operation.
- Ensure that plows, squeegees, rotary brushes, and similar equipment are in good condition and made of appropriate durometer materials.

PLASTERBOARD BELT:

- It is recommended to regularly wash the belt to remove contaminations from gypsum slurry and other production-related dirt.
- Avoid the use of scrapers made from materials like UHMW, belt itself, hard rubber, or metal inserts on either the working or bottom surface of the belt.
- Scrappers should not be in constant contact with the belt during production.
- Avoid sanding, grinding, or glazing the belt with sandpaper; consult the belt producer before taking any such action.
- Ensure proper belt cleaning by avoiding rubber, PVC, or any other scrapers that are too hard (maximum 65 Shore A), as they can damage the belt surface.
- Scrappers with a hardness of less than 65 Shore A may be used for cleaning the belt, but only during the washing process.
- Belt washing can be performed using warm water (maximum 40 °C) to clean accumulated material.
- We do not recommend using gypsum paper for glazing the belt; consult the belt producer before taking any similar action.
- We do not recommend cleaning the belt with metal scrapers, knives, and similar sharp tools due to the potential for causing mechanical damage to the belt's surface.

9 MANUFACTURERS' ASSISTANCE

If you need any further assistance regarding your new Trelleborg Slovenija Plasterboard Belts, feel free to contact Trelleborg Slovenija's Conveyor Belt PG.

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