



**Technical Documentation / Operation Manual
for Rollers**



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1. Introduction

This is a general operation manual for rollers from GURTEC. The information provided is intended to ensure that the high demands on the quality of the products are met and fulfilled through proper use.

2. Product description

GURTEC Rollers are designed for the use in bulk materials handling applications and bulk transportation. The installation of the rollers is meant either for rigid supporting structures or as suspended garlands depending on the axle end design.

The construction of the rollers comprises the following main components:

Roller shell

- Welded precision tube (Material ST37-2/S235JR or equivalent) acc. to DIN 2394
- Tube and bearing holder welded all around
- Shell with temporary corrosion protection by polyester epoxy powder coating

Bearing housing

- Deep drawn end caps welded to the shell to ensure water and dust tightness
- Bearing seat with tolerance N7, cylinder shape tolerance acc. to DIN 7148, surface roughness acc. to DIN 4762
- Solid end caps optionally available for heavy duty loads

Axle

- Roller axle made from round steel bar (Material ST37-2/S235JR or equivalent) acc. to DIN 668
- Axle end machining considering design specifications

Bearing

- Deep groove ball bearing acc. to DIN 625, tolerances acc. to DIN 620, radial clearance C4 or C3
- Bearing cage material from special plastic or steel
- Greased for lifetime and maintenance free

Sealing system and locking element

- Multiple labyrinth sealing system and dust cap
- Rear bearing seal by sealing disc
- Locking against axial displacement by circlip acc. to DIN 471 or other non-loosen locking methods

3. Safety

Safety must be the top priority regarding operating idler rollers in a belt conveyor installation. The applicable safety regulations and accident prevention regulations must be adhered to minimize the risk to life and damages of any kind.

4. Packing and transportation

Rollers must be either bundled and packed on pallets fixed with steel or plastic straps forming units that are appropriate for transportation or packed into wire-mesh boxes, wooden crates, reinforced cardboard boxes, or similar packages, meeting the international standard ISPM 15.

The permissible dimensions and loads of the used packaging must be observed.

Transportation of loose rollers is prohibited at any time.

Unloading and reloading of goods must be performed with appropriate lifting equipment and lifting accessories that comply with current regulations. Loading by grabs, shovels or electromagnets is not permitted.

When storing and repacking individual rollers, any axial impact load on the roller axles must be avoided. Rollers must not be dropped during repacking and any collision of rollers with one another must be prevented.

The fastening straps must be kept in an undamaged condition until the rollers are unloaded or reloaded. The straps must secure the goods during transportation and storage.

The pallets and packages must remain hanging in balance whilst lifting. It is not allowed to attach lifting equipment to the strapping or to the axle ends of the rollers.

Improper handling may result in damages to the sealing arrangements, roller shell and axle. Any such damaged roller shall be returned to the manufacturer for repair in consultation with the manufacturer.

Due to improper handling or improper transport, e.g. defective packaging (Note: Cargo containers are a means of transportation and not packaging), resulting damages do not constitute a claim for defects.

5. Storage

The storage conditions must correspond to the later application of the rollers and must not lead to premature damages.

The rollers must be stored horizontally in a covered, cool, and dry place before installation. It is important to ensure that protection against the harsh weather conditions, e.g. Wind, rain, snow, direct sunlight, etc. is guaranteed.

In the case of long-term storage, the rollers must be packed in foil using the enclosed drying agents. It must be considered that the grease inside the rollers (bearings and sealing system) and its ingredients will always segregate over time. This is especially the case during long-term storage and high ambient temperatures. The separation of the bearing and sealing grease can only be reduced or prevented by rotating / operating the roller.

Appropriate lifting and handling equipment must be used for relocation at all times. Damages to roller components such as seals, roller shell and axle must be avoided.

The minimum ground clearance must be at least 100 mm during storage. Storage can take place in secure stacks. Only max. 3 packages can be stacked on top of each other provided they are suitable for stacking and considering the max. permissible load capacity of the storage location. Undamaged transport containers are a requirement.

Stacking of the packings is not allowed on unfortified ground.

If outdoor storage is inevitable, appropriate measures must be taken to guarantee stability on compacted ground. Sun exposure (UV radiation) of rubberized rollers should be avoided. The rollers must be stored in a way that they are on all sides protected from the weather and must not be flooded by water accumulation. Use appropriate protective covers to avoid the formation of condensed water.

In the event of long-term storage of the products in any case from 9 months onwards, the location and the storage conditions must be documented in writing and the suitability clarified and confirmed with the manufacturer.

Improper storage, especially over a long period of time, can lead to a warranty exclusion.

6. Installation instructions

Safety must be the top priority when installing any roller into a conveyor system.

Rollers should always be installed with care, since the quality of the mounting into the structure has a significant influence on the operating behaviour of the belt conveyor and thus on the service life of the roller.

Idler frames must be installed perpendicular to the belt running direction. Frames and brackets must be connected firmly to the conveyor structure to avoid movement and loosening.

The installation of the roller into the idler frame or the bracket should, if not easily possible, be carried out with a slight hit by hand or carefully with a rubber or plastic hammer.

The use of metal hammers is not permitted.

The rollers should not receive any axial load or impact on the axle ends during installation.

When installing rollers with a ventilation hole, the roller shall be positioned in the steel structure in a way that no rain or spray water can penetrate from above into the roller.

Return rollers with support rings are not allowed to be used as snub rollers in front of conveyor pulleys and in belt curves. If rollers with support rings are installed in belt curves, there is a risk that the support rings on the roller shell will be axially displaced because of increased shear forces.

The installation of rollers is requiring a sufficiently stable steel structure designed for the throughput capacity of the conveyor system.

Damages that result from a weakly designed support structure or improper installation give no grounds for a warranty claim.

7. Operation / Maintenance

In general, the system operator or end user is responsible for the correct operation of the rollers and must take the recommendations listed into account.

Regular and careful maintenance of the conveyor system is required for proper functioning and safe operation. In addition, the system design shall provide adequate protection against weather influences, e.g. Rain, snow, sandstorms, strong cross winds, etc.

a) Continuous operation

To avoid adverse effects- during operation, a comprehensive and, above all, regular inspection of the rollers in operation is essential.

In addition to spot checks in day-to-day operation, the following points must be observed as part of a scheduled inspection of the system with the belt conveyor running and standing still:

- Do the rollers rotate freely, no contact with built up bulk material, dirt, or jammed objects?
- Is the rotation of rollers smooth and quiet?
- Is the roller shell undamaged and free from soiling and dirt caking?
- Does the wear pattern of the shell show abnormalities?
- For garlands: Condition of the suspensions and connecting elements, flexibility given?
- Is the rubber lagging in a clean and undamaged condition?
- Are the support and buffer rings undamaged and in the correct position?
- Is the axial locking still sufficient?

In case of failure of a roller or garland, it is highly recommended to stop the conveyor -immediately to avoid any further catastrophic consequential damage. If this is not possible, the defective roller or garland shall be disengaged by using the lowering devices.

It is strictly forbidden to perform maintenance work on the rollers during operation!

If a potential damage is ignored, it can- cause consequential damages to the conveyor belt and to the entire conveyor structure.

When stopping the conveyor system, extra care must be taken that there may be- an increased risk of fire for the stationary conveyor belt in the event of a "hot runner" (heat development due to friction, e.g. bearing damage). The belt conveyor must be restarted to avoid a belt fire, if necessary.

It must be paid attention that the rollers are able to rotate freely and without interference (minimizing dirt contamination, etc.). If a conveyor roller turns completely or partially in contact with dirt or accumulated loss of bulk material, the surrounding material must be removed immediately.

The contamination of the running area can lead to the following damage to the roller:

- Abrasive wear of the roller shell
- Blocking of the roller including wearing of the tube and other elements
- Freezing of the material and roller during long downtimes
- Insufficient heat exchange, overheating and fire hazard
- Contamination and damage to the roller sealing system

The following information must be observed for a long service life, especially with rubberized rollers:

- Sticking material shall be removed from the roller surface immediately
- Avoid unnecessary exposure to UV radiation
- Rubber laggings need to be checked regularly for damages (e.g. seams and side faces)
- Damaged areas shall be repaired immediately

When cleaning the conveyor system, direct spraying, e.g. High-pressure water on the roller ends including the labyrinth seal and dust cover, must be avoided. It can cause the grease to be removed from the seal and the bearing. The consequential damage may be corrosion of the bearing and eventually even the failure of the entire idler roller. This falls within the responsibility of the operator or end user.

It is not permitted to clean, or power wash the rollers with grease-dissolving substances (steam cleaners, cold cleaners).

It must be considered that rollers are subject to natural wear & tear and are subject to failure after a certain period of use and must be therefore replaced. Additional wear can be caused by the conveyor design, e.g. belt misalignment and drop heights. This is the reason why the design load limits of a roller must be considered at all times.

Due to the possibility that failures can occur during the warranty period, the installation and operating situation of the rollers must be documented by the system operator and a signed maintenance report (template attached) must be sent to the manufacturer at least every six (6) months after the start of operation, but no later than twelve (12) months after delivery. On the basis- of this documentation, problems can be identified, and solutions can be worked out.

b) Seasonal operation

- The conveyor system must operate for at least 2 hours every 6 months at the latest so that the rollers rotate and damages due to long downtimes are avoided
- This process must be documented by the operator

c) Operating in low temperature areas (< -30 °C)

- The operator must ensure that the conveyor system runs continuously at operating temperatures <-30 ° C
- Downtimes for maintenance must not take longer than max. 30 Min. and must be documented by the operator

d) Operation in explosive atmosphere

- Information must be taken from the ATEX Documentation for GURTEC rollers

8. Maintenance

The repair of rollers is not recommended and may only be carried out by the manufacturer.

It is advised that the functionality and load capacity can only be guaranteed using original parts.

When removing and installing already used rollers, the previous direction of rotation must -be maintained.

The operator must follow the current environmental protection guidelines when disposing of used rollers.

9. Annex

Maintenance Report Rollers *(Check box where applicable and send filled out back to: info@gurtec.com)*

Customer:	Date:	Signature:
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Only for Rollers in temporary storage:						Inspection reports (x Months after delivery)				
Scope of testing:	Test criteria:					9 Mon.	12 Mon.	18 Mon.	24 Mon.	36 Mon.
<input type="checkbox"/>	Storage place:	<input type="checkbox"/> Closed building	<input type="checkbox"/> Covered outside area	<input type="checkbox"/> Outside area covered with tarpaulin		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	Packaging:	<input type="checkbox"/> Intact	<input type="checkbox"/> Slightly damaged	<input type="checkbox"/> Badly damaged, weathering		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	Others:				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Only for Rollers in installed condition:						Inspection reports (x Months after delivery)				
Scope of testing:	Test criteria:					9 Mon.	12 Mon.	18 Mon.	24 Mon.	36 Mon.
<input type="checkbox"/>	Roller shell:									
<input type="checkbox"/>	No observation	<input type="checkbox"/> Dirt accumulation	<input type="checkbox"/> Low wear	<input type="checkbox"/> Abnormal wear pattern		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	Accessories / Support and buffer rings / Spacers / Rubber lagging:									
<input type="checkbox"/>	No observation	<input type="checkbox"/> Axial displacement	<input type="checkbox"/> Damages / peel off	<input type="checkbox"/> One-sided wear / flatten		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	Garlands and their suspension:									
<input type="checkbox"/>	No observation	<input type="checkbox"/> No flexibility	<input type="checkbox"/> Wear, abrasive wear	<input type="checkbox"/> Damages / missing parts		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	Behavior in operation (Idle / under load):									
<input type="checkbox"/>	No observation	<input type="checkbox"/> Loud running noises	<input type="checkbox"/> Irregular running, vibrations	<input type="checkbox"/> Axial moving of shell on axle		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	Installation situation of roller(s)									
<input type="checkbox"/>	Open, unprotected	<input type="checkbox"/> Conveyor cover	<input type="checkbox"/> Wind and rain protected	<input type="checkbox"/> Completely enclosed		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	Ambient temperatures of the roller(s) used									
<input type="checkbox"/>	Max. Temperature	<input type="checkbox"/> approx. +20°C	<input type="checkbox"/> approx. +30°C	<input type="checkbox"/> approx. +40°C and above		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	Min. Temperature	<input type="checkbox"/> approx. -20°C	<input type="checkbox"/> approx. -30°C	<input type="checkbox"/> approx. -40°C and below		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	Operation and maintenance / cleaning information:									
<input type="checkbox"/>	Seasonal operation	<input type="checkbox"/> 1 - 3 Months/Year	<input type="checkbox"/> 3 - 6 Months/Year	<input type="checkbox"/> 6 - 9 Months/Year		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	Regular cleaning	<input type="checkbox"/> Dust from ground	<input type="checkbox"/> Cleaning with air pressure	<input type="checkbox"/> Cleaning with water pressure		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	Other observations:									
<input type="checkbox"/>	No observation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	