

Complex Line Series Pipe Belts

In industries such as mining, ports, power plants, metallurgy, and cement, there are often situations with high requirements for environmental cleanliness, limited space, or complex conveying lines. Addressing these needs, BOTON recommends using the tubular conveyor belt as a specialized complement to traditional conveyor belts. It can utilize various cores—aramid, steel cord, fabric—based on different operating conditions, taking into account properties like heat resistance, flame retardance, oil resistance, and acid-alkali resistance, to meet diversified conveying requirements.

This type of product can effectively handle the challenges presented by complex terrain and limited space: In areas intermingled with plant grounds, hills, or water, traditional belt conveyors struggle with straight-line layout. They must adapt to large-radius curves, steep slopes, and limited space crossings, demanding higher requirements for the flexibility and structural design of the conveying line. Concurrently, the enclosed structure reduces risks such as material dusting, scattering, and moisture contamination, making it particularly suitable for urban factory areas and ecologically sensitive regions, meeting higher environmental protection and safety production standards.

✔ Heat Resistant

✔ Flame Retardant

✔ Oil Resistant

✔ Acid-Alkali Resistant

*Note: For BOTON's complex line series pipe belt, the products meet:

- China Chemical Industry Standard HG/T4224
- China Machinery Industry Standard JB/T10380

Pipe Belt

【ChinaChemicalIndustryStandard HG/T4224】

【China Machinery Industry Standard JB/T10380】

For continuous conveying over ultra-long distances, multiple curves, and undulating terrain, operational stability is also a core consideration:

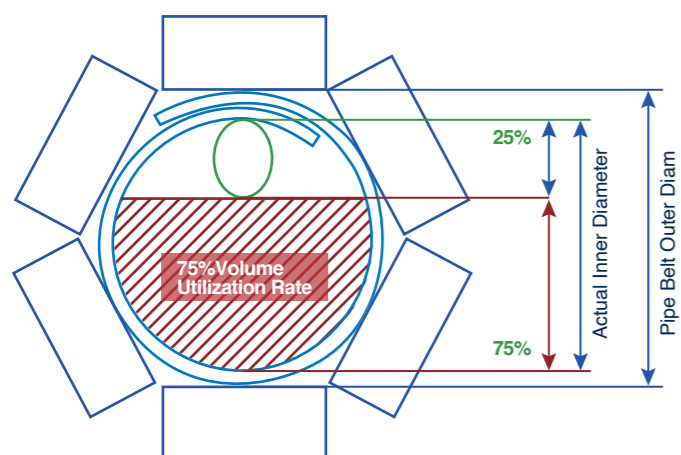
Traditional Conveyor Belt

- Prone to deviation due to uneven tension or eccentric loading in high-load or complex routes
- Risks include material spillage, belt damage, and system downtime



Pipe Belt and Pre-Trough Conveyor Belt

- Through optimized structure and automatic self-correction design, the risk of deviation can be significantly reduced
- Enhances long-term stable operational capability
- Reduces manual intervention, helping customers achieve efficient, safe, and sustainable conveying operations



Pipe Belt

Pipe Complex Terrain Reduces Dust Prevents Spillage Low Noise Protects Material

The tubular conveyor belt is suitable for various complex terrains, narrow spaces, environmentally sensitive areas, and special materials like powder and paste, due to its sealed environmental protection and flexible path characteristics. It can also be used in special scenarios such as high temperatures.

Compared with traditional trough conveyors, the BOTON tubular belt series can effectively prevent dust spillage, material leakage, and material contamination during conveyance. BOTON offers a variety of carcass structure options (steel cord, aramid, fabric core, steel wire mesh) for different conveying needs. BOTON has established good research and cooperative relationships in the field of tubular conveying technology with renowned German and Italian university conveying laboratories, as well as world-famous multinational groups.



Key Features

Shortens Conveying Line, Saves Civil Engineering and O&M Costs

The conveyor turning angle can reach over 65°, and the flexible layout ability reduces intermediate transfer points and civil investment, optimizes plant layout, and improves overall economic benefits.

Good Longitudinal Flexibility, Small Radius Bending

A small bending radius can handle working conditions with multiple turns, undulations, and limited space.

Excellent Resistance to Lateral Fatigue

The pipe shape can still be stably maintained under high-load, continuous operation, reducing the frequency of downtime.

Low Noise, Environmentally Friendly

The sealed structure effectively reduces operating noise, making it suitable for environmentally sensitive areas or residential vicinities.

Strong Lateral Rigidity and Pipe Shape Retention

The BOTON tubular conveyor belt can stably maintain its pipe shape during long-term operation, preventing twisting and material leakage, leading to a longer belt service life. The conveyor belt has good lateral rigidity and pipe shape retention; it is also highly resistant to lateral rigidity fatigue.

Sealed Conveyance, No Leakage, Resistance to Extreme Environments

Effectively prevents material spillage and scattering, and also prevents interference from rain/snow and odor diffusion, meeting high environmental protection standards.

Large Angle and Low Running Resistance

Supports a conveyor belt inclination angle of ≥ 35°, and can be optionally equipped with low-rolling-resistance rubber, effectively reducing the running resistance and energy consumption of the conveyor belt.

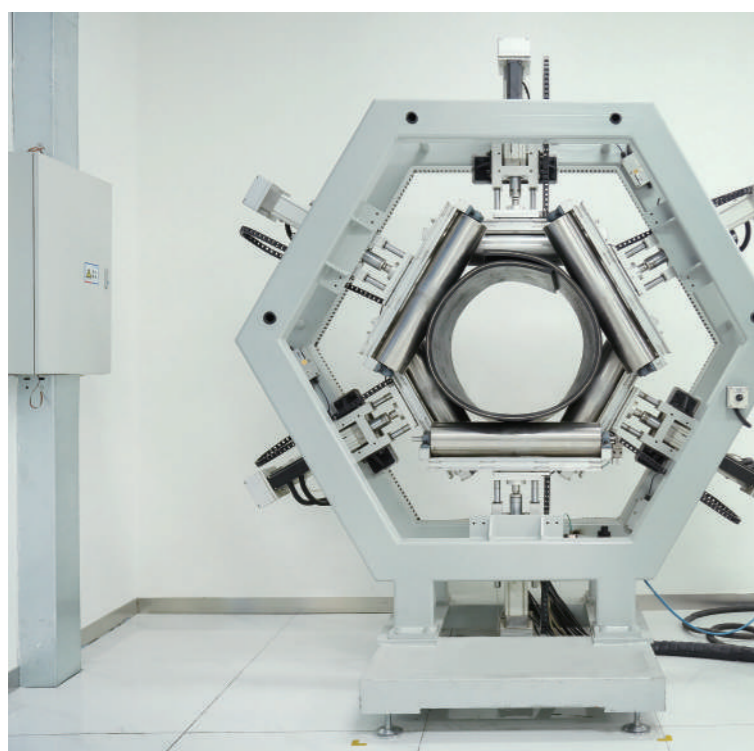
Pipe Belt Outer Diameter(mm)	150	200	250	300	350	400	500	600	700
Belt Width(mm)	600	800	1000	1100	1300	1600	1950	2250	2450



China's First Pipe Conveyor Belt Bending Fatigue Tester

Used to simulate the pipe belt's bending fatigue performance during actual operation, especially under certain pressure or displacement. It compares and optimizes design structures through hundreds of thousands of simulation tests. This is of great significance for testing the pipe retention rate (pipe forming stability) of pipe conveyor belts.

Pipe Conveyor Belt Transverse Stiffness Tester



The transverse stiffness test for pipe conveyor belts primarily evaluates their transverse bending stiffness. This indicator is crucial for determining whether the pipe conveyor belt can maintain a stable tubular shape: insufficient stiffness can lead to pipe collapse, arching, edge misalignment, or twisting, while excessive stiffness can increase rolling resistance and energy consumption (a balance is required).

Furthermore, sufficient transverse stiffness helps reduce lateral vibration and resonance risks, improves system stability and service life, and guides the optimization of belt material design (such as width, thickness, and structure). By utilizing six displacement sensors to encircle the fixed shape of the tubular sample, and applying pressure with a mechanical structure to measure the stiffness value, we can simultaneously and automatically collect and generate curve data showing stiffness changes over time, providing customers with pipe conveyor belts of excellent performance.

Pipe Belt

Case Study / Long-Distance Energy-Saving Model: Aramid + Pipe Belt, 600mm Large Diameter, 5m/s High Belt Speed

Project Background

The coal conveying system of a large coastal power generation enterprise faced complex conditions including long distances, high volume, large curves, and enclosed conveying. This was undertaken to mitigate the risks caused by the instability of the original imported product supply.

BOTON Technology first applied high-strength aramid material to the design of large-diameter pipe conveyor belts, effectively meeting the demand for long-distance, high-speed, and low-energy consumption green conveying.

Key Indicator	Parameter
Horizontal Conveying Distance	1500m
Lifting Height	23.8m
Pipe Diameter	600mm
Designed Belt Speed	5m/s
Designed Conveying Volume	3250t/h
Designed Service Life	10year



Pipe Belt

Case Study / Large-Diameter Lifting Project: Stable and Efficient Coal Conveying Solution

Project Background

A coal conveying line for a large group enterprise in Henan features significant height and long conveying distance, involving large-diameter coal transport. The project demanded high standards for system stability, efficiency, and safety, requiring a reliable and efficient conveying solution to meet the enterprise's production needs. To this end, BOTON customized and supplied this high-lift, large-diameter pipe conveyor belt for the project.

Key Indicator	Parameter
Horizontal Conveying Distance	1600m
Lifting Height	55.6m
Pipe Diameter	600mm
Designed Belt Speed	4.5m/s
Material Conveyed	coal

Case Study / Heat-Resistant Pipe Conveyor Coke System: 2x+ Lifespan, 5 Years of Continuous Operation

Project Background

A large-scale integrated steel enterprise in Jiangsu relies on its coking plant's coke conveying system as a key link between the coke oven and blast furnace production. This project has a total conveying length of 4,950 meters and requires stable transport of high-temperature coke, imposing strict demands on the belt's heat resistance, structural strength, and operational stability. The line is designed as a pipe conveyor belt system, presenting integrated technical challenges including large diameter, sharp curves, long distance, continuous climbing, and turning operations. The original belt used on this line had a service life of 1.5 to 2.5 years, and frequent replacements placed significant pressure on production continuity and equipment maintenance.

To improve system operational reliability and reduce maintenance costs, the project was upgraded in 2014 to a heat-resistant steel cord pipe conveyor belt supplied by BOTON (Model: ST1600 B1600 structure 10+6, heat resistance 125°C).



Operating Results

Strong High-Temperature Adaptability

Uses a heat-resistant cover rubber formula that effectively resists coke heat radiation and corrosion, ensuring the long-term stability of the rubber compound's performance.

Adaptable to Complex Routes

Good flexibility and durability meet the demands of turning and steep slope operations on the route.

Structural Reinforcement Design

The steel cord carcass, combined with thick cover rubber, enhances the overall belt body strength and fatigue resistance, suitable for continuous operation.

High System Stability

No major tearing, collapsing, twisting, or structural damage occurred during operation, ensuring safe and reliable running.



The actual operating time of this conveyor belt has exceeded 5 years, which is 2 to 3 times the original service life, far surpassing the user's expectations.

Patterned Conveyor Belt

Incline Angle 18°~40° Chevron Pattern Sidewall Cleated Sidewall



Large-incline conveyor belts are suitable for conveying materials at larger angles (generally exceeding 18°), sometimes exceeding 30° or even 40°, or even near-vertical conditions, and are widely used in mining, ports, construction materials, metallurgy, and other industries. This product series, through a special belt surface structure and auxiliary design, significantly enhances the material's ability to resist sliding, maintain direction, and prevent spillage, ensuring safe and efficient conveying.

Key Features

Patterned Conveyor Belt

- Features a soft and highly regular pattern that increases friction and cushioning performance. Chevron patterns promote material concentration toward the center of the belt, reducing side spillage and slippage, and improving conveying stability.
- The pattern cleats on the rubber surface and the cover rubber on the belt body are molded and vulcanized simultaneously, ensuring the product's long-lasting durability.
- The pattern alters the transverse stiffness of the conveyor belt, allowing its troughability to meet the requirements for large trough-angle three, four, or five idler configuration used on large-incline conveyors.
- Can be customized for different applications as needed, such as: flame retardancy, high temperature resistance, cold resistance, wear resistance, oil resistance, acid and alkali resistance, etc.
- Maximum conveying angle can reach 28°-40°.
- Pattern size and shape can be customized according to the usage scenario and specific requirements.



Typical Pattern Designs

Type	Closed Chevron Pattern	Open Eight-Shape Pattern	Multi-Pedestrian Chevron Pattern
Open Edge Type			
Closed Edge Type			