



# DYMCO

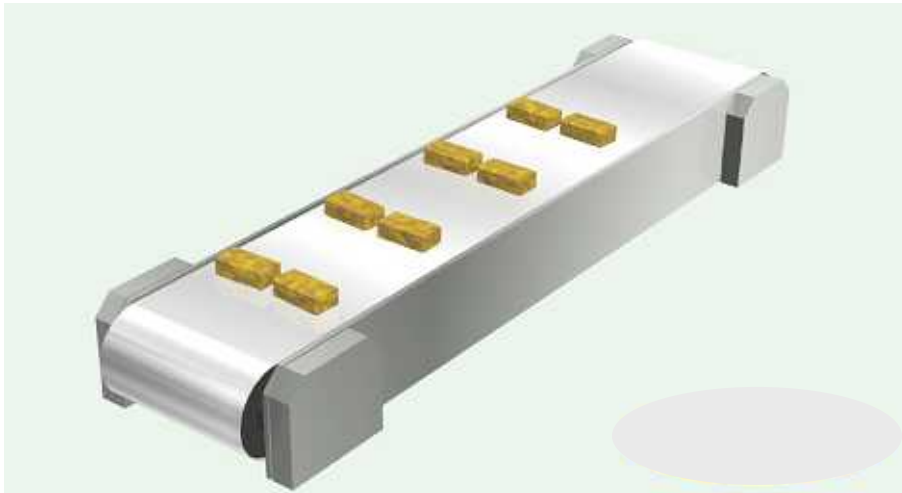
DYMCO LIMITED

## Steel Belt Applications

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# 1. FOOD CONVEYOR BELT

Belt type: DW Type Steel Endless Belt



**Feature: Stainless steel is the most suitable for food processing.**

## Application

1. Food is directly placed on the belt and conveyed.
2. Cutting and cooking can be done on the belt, while foodstuffs are conveyed.

### Demerits of Urethane Rubber Belt

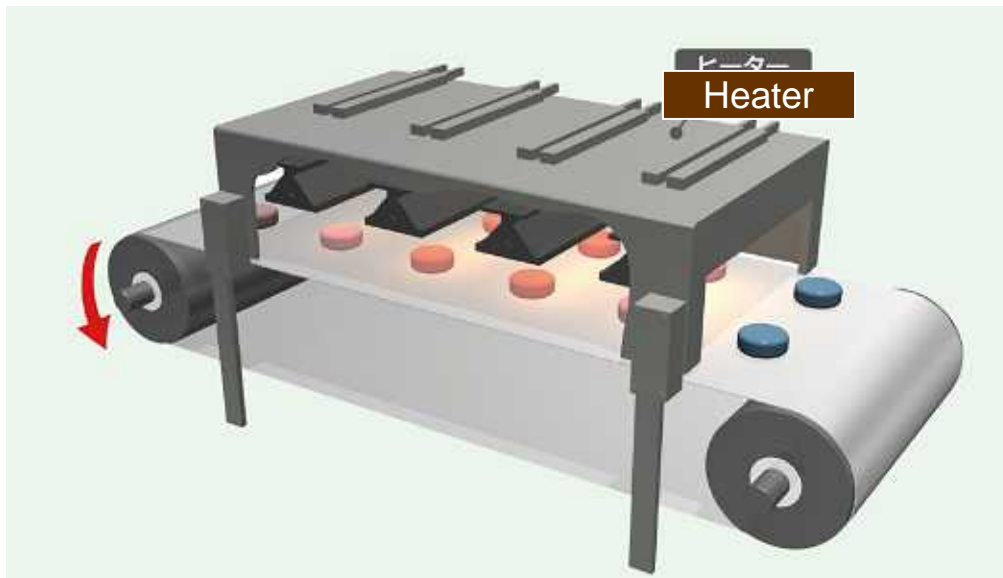
- Scratch damage may provide a hotbed for bacteria.
- Frayed fiber may contaminate conveyed foods.
- The belts cannot be used under hot nor very low temperature.
- The belt requires frequent washing.
- Odor of foodstuffs remains.

### Merits of Stainless Steel Belt

- Foodstuffs can be directly placed on the belt without concern for bacteria contamination.
- Cleaning is easy.
- Steel belts do not get loose like plastic belts.
- Steel belts can be used under the wide range of temperature, between -40 and +150 .
- Food processing is available on the stainless steel belts.

## 2. HEATING CONVEYOR BELT

Belt type: DW Steel Endless Belt



Feature: Outstanding Heat-Resistance

### Conventional methods and their problems

- Plastic belts can not be used in high temperature over 100 .
- Very small objects can not be conveyed on steel mesh belts.

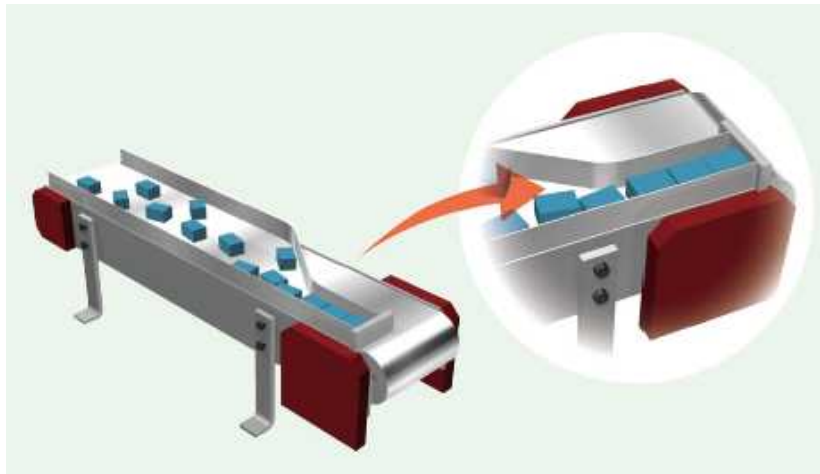
### Merits of Stainless Steel Belt

- Elongation and deformation are quite small.
- Continuous heating is available in 100 and more.
- Steel belts return to the original form when cooled down.
- Very small objects can be conveyed on steel belts.
- Steel belts can be used for drying application.

Notes: Steel belts have the record of in 500 operation.

### 3. TEMPORAL STOPPING CONVEYOR BELT

Belt type: DW Type Steel Endless Belt



Feature: Steel belts can let the objects slide on their surface by a stopping device due to its low friction coefficient

#### Application

Parts are retained by stoppers and until desired quantity is obtained and then released to the next stage.

#### Demerits of Plastic Belt

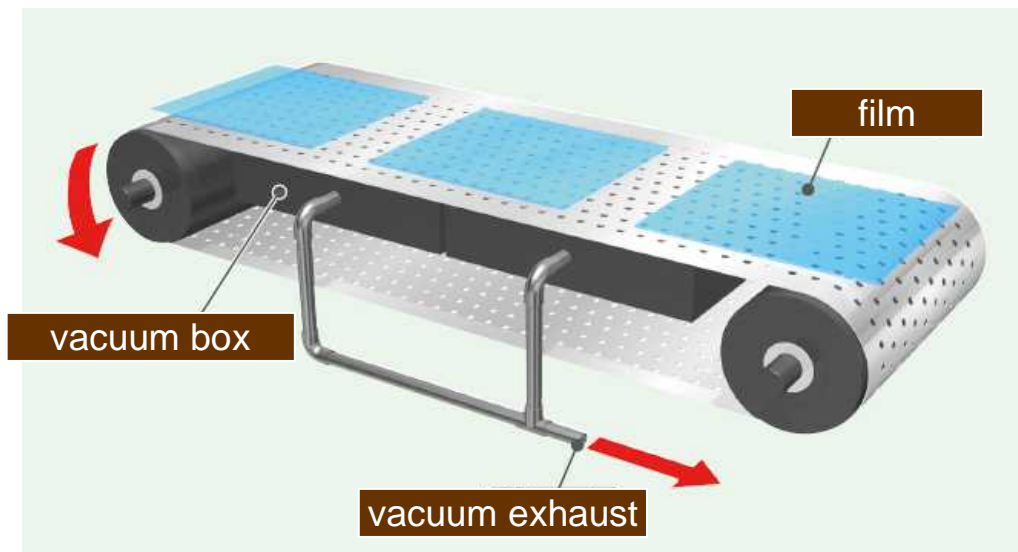
- Due to large frictional resistance between the belt and objects, motor sometimes halts by overload.
- When objects have burrs, burrs damage plastic belts and belt life becomes short.
- Damaged belt pieces may go into objects on the belt and cause contamination.
- Retention and conveyance are sometimes done separately.
- Light objects may create pileups of themselves because of the large frictional resistance..

#### Merits of Stainless Steel Belt

- Metal parts with burrs can be handled on the belt.
- Steel belts don't get frayed and provide a very little chance of contamination.
- Steel belts offer the freedom of design.
- Steel belt surface is very smooth. Objects are always organized on a belt.

## 4. VACUUM CONVEYOR BELT

Belt type: DP Type Perforated Steel Endless Belt



**Feature: Dead-Flat belt surface**

Application: Positioning and Process of Films or small light parts

### **Demerits of plastic belt**

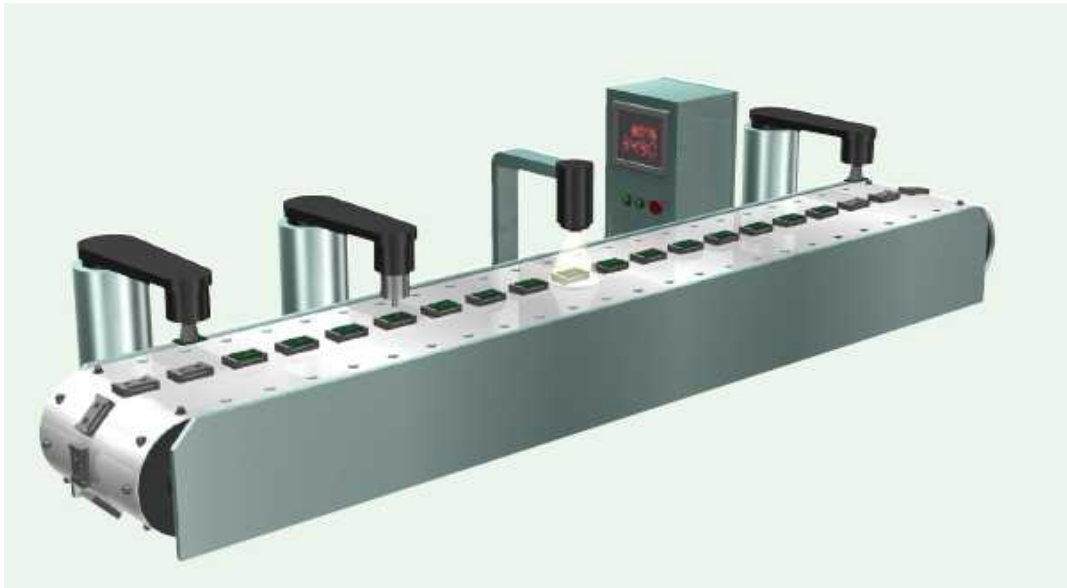
- Plastic belt flatness cannot be controlled in vacuum. Flatness is not expected.
- Small holes can not be punched on belts. Holes smaller than 1mm are not possible.

### **Merits of stainless steel belts**

- Steel belts provide smooth and stable operation.
- Belt surface is kept flat by suction.
- Vacuum hole design (size and pattern) is adjustable to each process.
- Minute perforation is available, which are not possible in plastic belts.

## 5. POSITIONING CONVEYOR BELT

Belt type: DP Type Perforated Steel Endless Belt



**Feature: Steel belts do not elongate and enable precise positioning.**

### Applications

1. Positioning for inspection of electronic parts and PCBs.
2. Positioning of food and medical packages that are synchronized with automatic injection devices.

#### **Conventional methods and their problems**

- Plastic and rubber timing belts elongates much. Positioning accuracy is not expected.
- Lots of dusts and contamination due to abrasion.

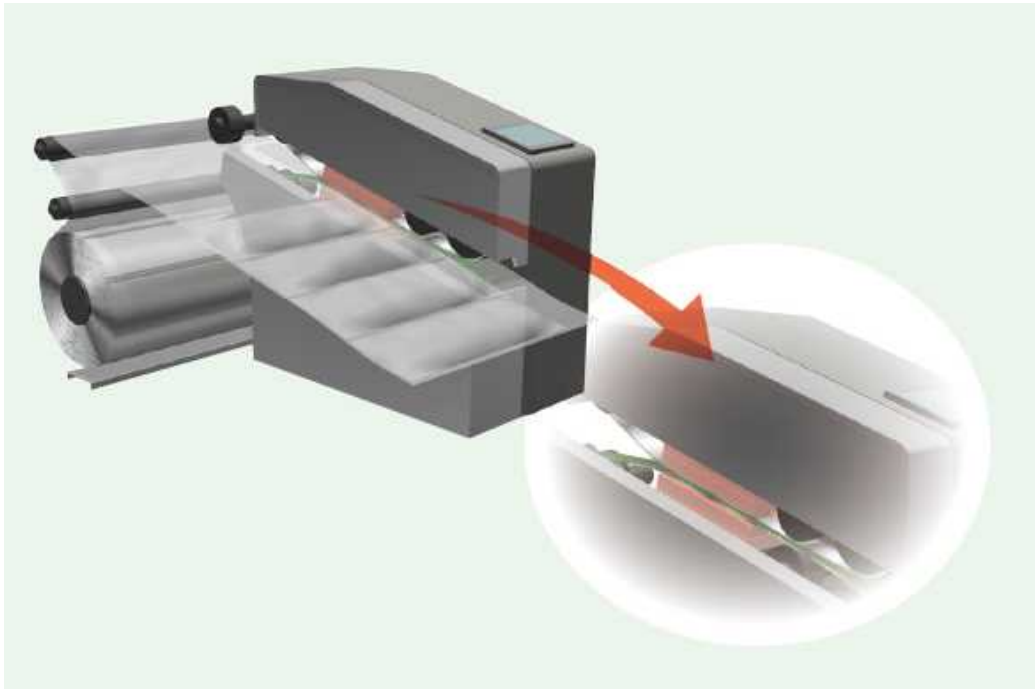
#### **Effects of stainless steel belts**

- Jigs can be attached to the steel belts. This makes the whole units compact in limited space.
- Steel belts do not elongate or contract compared with plastic belts. Positioning accuracy of 0.1mm is available when sprocket pulleys are used.
- Steel positioning belts work in vacuum and clean rooms. They resist corrosion and heat, yet cause very little dusts.
- Steel belts are operative in lubricant free condition..
- Stainless steel is hygiene. They serve best for food or medical applications.

Notes: Please contact us for sprocket holes and pins.

## 6. HEAT SEALER BELT

Belt type: DW Type Steel Endless Belt



**Feature: Flat surface and High thermal conductivity**

Application: Continuous film is pinched between 2 steel belts, and thermo-compressed while it goes through heating zone.

### **Conventional methods and their problems**

- Process is not continuous, but is done by one after another sequence.
- Thermo-compression has been done on limited areas with electric heat wires.
- Melted films often stick to wires.
- Teflon belts are not good at thermal conductivity.

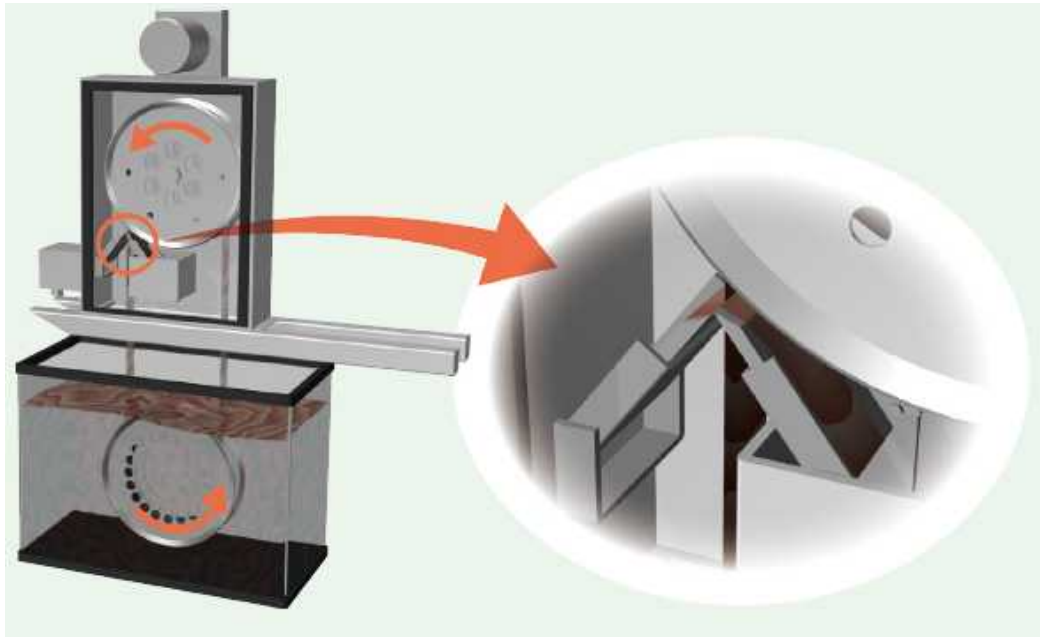
### **Merit of stainless steel belts**

- Excellent thermal conductivity of steel belts results in improved productivity.
- Once steel belts are coated, non-adherent property is enforced.

Notes: Surface treatment is available on steel belts, such as fluororesin and other special coatings to achieve non-adherent property or release property.

## 7. OIL SKIMMER STEEL BELT

Belt type: DW Type Steel Endless Belt



**Feature: Efficient recovery of floating oil from oil mixed coolant water**

Application: Steel belts collect floating oil in degreasing washing machines, heat treatment basins, and sewerage treatment basins.

### **Demerits of Plastic Belt**

- Plastic belts deteriorate soon in acid and strong basic environment.
- Plastic belts are damaged in high temperature. They also elongate and belt tension adjustment is difficult.

### **Merits of stainless steel belts**

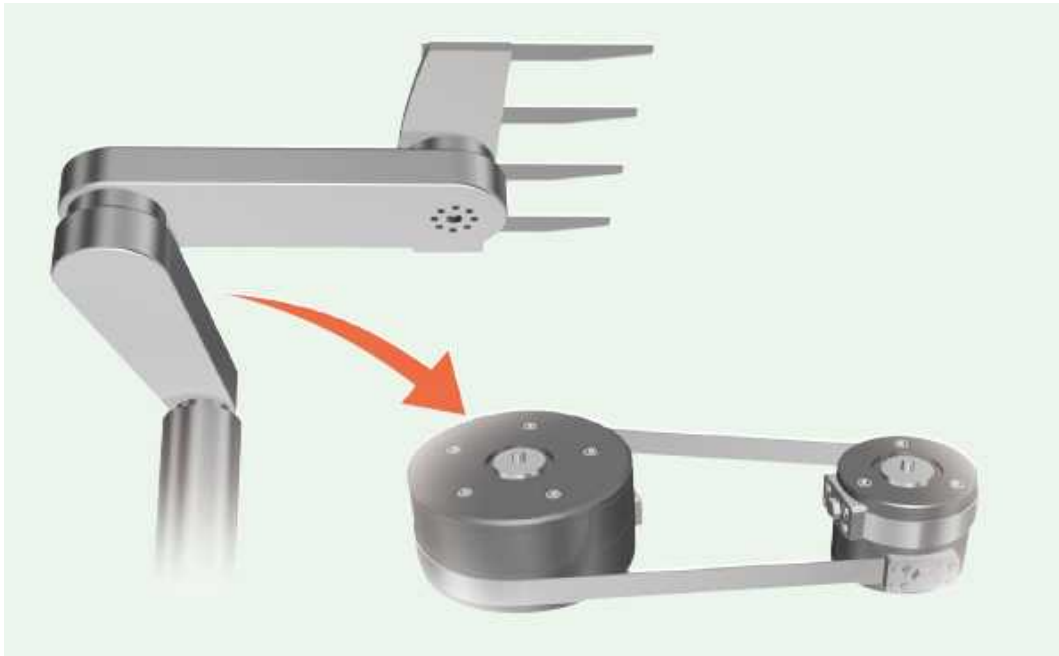
- Stainless steel belts are rustproof.
  - It can be used in strong acid and basic environment.
  - Steel belts do not swell.
- Scrapers remove oil from smooth belt surface, collected efficiently.

Notes: 2-pulley configuration is basic. Please contact us for other layout. Oil skimmer removes floating oil on water surface only.



## 8. ROBOT ARM DRIVING BELT

Belt type: DO Type Steel Open Belt



Feature: Precise power transmission without backlash

### Conventional methods and their problems

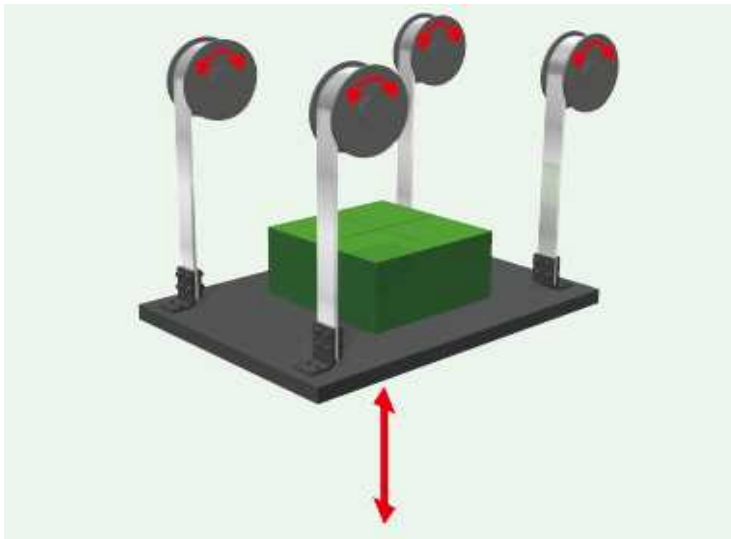
- Gear wheels and plastic timing belts have been used.
- Plastic belts elongate over years.
- Plastic belts do not withstand vacuum, heat, and other hard environment.
- Due to backlash and lost motion, precise positioning is not possible.
- Noises are remarkable in gear wheels and timing belts.

### Merits of Steel belts

- High rigidity and durability result in long belt life.
- Steel belts do not elongate over years.
- Steel belts work under vacuum and heat.
- When belt ends are fixed on pulleys, 'non-backrush operation' is realized.
- Steel belts are operative in lubricant free condition.
- Driving is silent..
- Vibration is restrained when arm rotation and stoppage take place.

## 9. ELEVATOR STEEL BELT

Belt type: DO Type Steel Open Belt



Feature: Lifting and lowering stage by wound steel belts

Application: Up and down operation

### Conventional methods and their problems

- Conventional design is wire type and air cylinder type, which combine LM guides and actuators.
- These devices require a lot of space.
- Take-up is not so easy in the wire type.

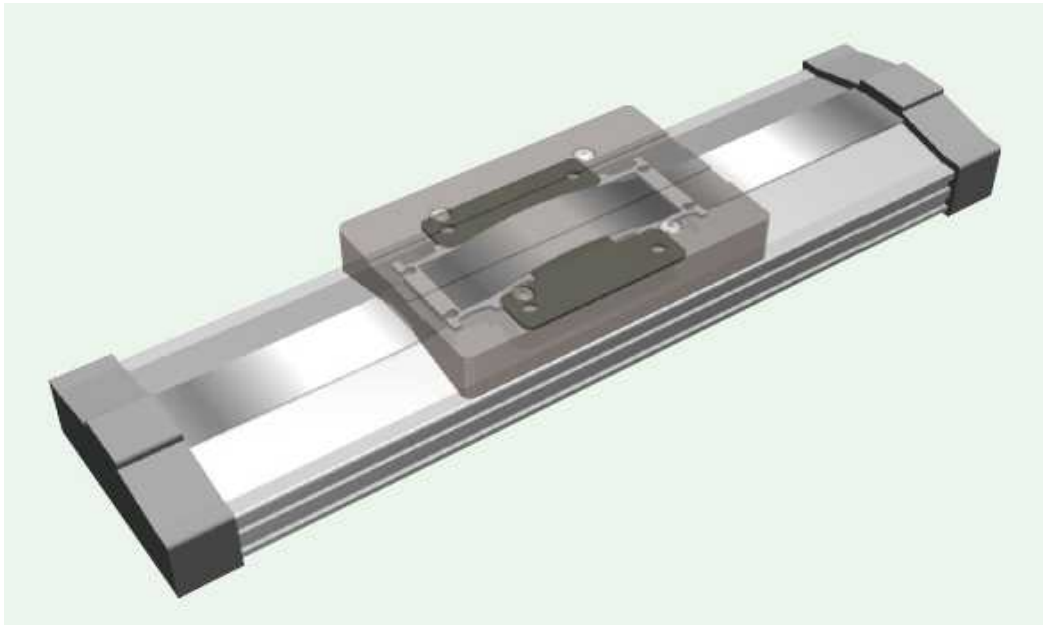
### Merits of Stainless Steel Belt

- Elongation is limited, and the belts work best for positioning.
- Belt motion is much more smooth than wires.
- Compact design is realized because of the belt winding structure.
- Steel belt life is long. Belts are capable of withstanding 10 million times of bendings\*.

Notes: \* This is for reference and not what we assure.  
The value is based on results of non-load tests in our company.

# 10. ACTUATOR COVER BELT

Belt Type: DO Type Steel Open Belt



Feature: Straight and tight dust cover

Application: Steel belts serve as actuator covers and protect devices from dusts.

## Competing product

Camber tolerance is not satisfactory..

## Merits of Dymco Steel Belt

- Camber\* is within 0.5mm and less per 2 meters.
- This merit guarantees no gap between the cover and the unit body.

When magnetic steel material is chosen, the belt is firmly attaches to the unit surface and realizes the dust proof.

Notes: 1.\* This indicates straightness of belts.

2. In general JIS specifies 1mm / m, although it may differ in size.