Product Usage Safety Guidelines

※Before use, carefully read and follow the safety precautions below.

For safe use, this documentation and Nitta's products utilize various symbols and signal words. After reviewing the "Severity of Risk" section below to understand the meanings of those symbols and signal words, read the safety precautions and follow the instructions listed.
■Improper use (ignoring the symbols and signal words) may result in the following risks:

Symbol and Signal Word	Severity of Risk
DANGER	Indicates situation that may result in imminent risk of death or serious injury if ignored or incorrectly handled.
WARNING	Indicates situation that may lead to high risk of death or serious injury if ignored or incorrectly handled.
CAUTION	Indicates situation that may lead to injury and physical damage if ignored or incorrectly handled.

Signs	Meaning of Signs
Prohibited Action	Indicates actions that must never be taken under any circumstances when handling products.
Mandatory Action	Indicates actions that must always be taken when handling products, without exception.

1. Function and Performance

DANGER (Prohibited Action)

- Do not use belts as hoisting or towing equipment.

WARNING

- Do not use belts beyond the acceptable ranges specified in this catalogue.
- In situations where static electricity generating in the transmission or conveying device could risk causing a fire or causing the control device to malfunction, use an antistatic belt. Install a neutralization apparatus in the device.
- If belt encounters friction against frame or table, temperature range may be exceeded due to frictional heat, potentially causing premature belt wear.
- If water, oil, chemicals, dust, etc. adhere to belts or pulley, it may decrease transmission efficiency or cause premature belt wear.
- Do not use belts for conveying unpackaged food.

2. Storage and Shipping

WARNING

- Keep belts away from fire.
- Belts are combustible; do not store or use them near fire or a high-temperature heat source.
- When storing heavy belts, fix them in place using appropriate jigs or stoppers to prevent falling or rolling.

CAUTION

- When storing and shipping belts, do not distort them excessively. Bending deformation may occur, potentially causing belts to become damaged or break prematurely.
- When storing belts, keep them under a textile covering such as a sheet and put them in a well-ventilated, low-humidity place free from direct sunlight.
- Store belts in their original packaging until needed.

3. Installation and Daily Use

DANGER (Mandatory Action)

- Be sure to put a safety cover over the rotating part of the machine including the belt; hair, gloves or clothes may get caught in the belt pulley.
- Before maintenance, inspection or replacement, be sure to turn off the switch and confirm that the machine has stopped.

WARNING

- When cleaning belts, do not use chemicals harmful to humans.

CAUTION

- After replacing a belt with a new one, perform a test operation to adjust tension, elongation rate and operation.
- Do not attach belts forcibly; use a motor slide, a tension pulley or a special pulling device.
- If abnormal noise, snaking, deviation, slipping, etc. occur, stop the belt immediately for inspection.

4. Installation, Endless Processing, etc.

WARNING

- When using solvent or adhesive, fully ventilate the workspace and keep away from fire.
- Do not leave solvent or adhesive on site. Return them to storage immediately after finishing use.

CAUTION

- Perform endless joining of belts by using the materials, methods and procedures specified by Nitta.

5. Handling Used Belts

WARNING

- Do not leave belts near fire.

CAUTION

- Do not burn used belts; harmful gases may be generated.
- Lawfully dispose of used belts as industrial waste.

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The specification is subject to change for improvement without notice.

B-PB-05E 2504300U

Invention & Innovation
NITTA

Power Transmission and Conveyor Belt

PolyBelt

NITTA CORPORATION

The roots of Nitta Corporation date back to the Meiji period, when we succeeded in the manufacture of leather transmission belts for the first in Japan. Currently, our products have evolved into “PolyBelt”, power transmission and conveyor belts.
Polybelt, which basically consists of a combination of thin, strong polyamide film and highly abrasion-resistant special synthetic rubber, is now used globally in the fields of power transmission and conveyance of industrial machinery.
We deliver high added value and meet the needs of the society, offering products with high functionality for faster and more reliable power transmission and conveyance.
Nitta’s mission is to provide continuing high-quality and reliable products to exactly suit our customers’ needs.

CONTENTS

Features

1 Abrasion resistance

Excellent abrasion resistance achieved due to the stable friction coefficient provided by use of special synthetic rubber (NBR: Acrylonitrile Butadiene Rubber).
(Taber Abrasion Test: 40 mg/1000 times)
※Abrasive wheel used: H22, Load: 5N

2 High-tensile tension member

High-quality stretched polyamide film is used as a tension member to provide high tensile strength.
(Tensile strength of the polyamide film tension member: 300 Mpa {3,000 kgf/cm^2} or more)

3 High-speed power transmission

High flex resistance and high-speed power transmission obtained by using a thin and strong tension member to reduce the effect of centrifugal forces.
(Up to 70 m/s available)

4 Antistatic treatment

PolyBelt (except as noted) is subjected to antistatic treatment to obtain low electrostatic potential.
(500 V or less)

5 Wide variety of types

Wide variety of types available to meet the demands in all fields including power transmission and conveyance.

6 Easy endless joining

On-site endless joining of belts is easy with Nitta’s special tools and adhesives.

Types and Properties

Major Applications	Properties	Belt Type		Total Thickness (mm)	Weight (kg/m²)		Cover Material								Axial load under stable conditions (N/mm width; kgf/cm width)		Minimum pulley diameter (mm)		Antistatic property	Standard maximum width (mm)	Temperature range for continuous use (℃) (For intermittent use)
							Top surface				Bottom surface										
							Material	Surface configuration	Color	Friction coefficient	Material	Surface configuration	Color	Friction coefficient	At 2% elongation	At 1% elongation	For power transmission	For conveyance			
Machine tools (Automatic lathes, etc.) Dryers (Cylinder drying machines, etc.) Small to medium wood working machines Small centrifugal pumps and blowers	Thin rubber especially suitable for flexing/high-speed operation	L	250	1.25	1.4		NBR	Rough	Blue	0.5 ∫ 0.6 (Against iron)	NBR	Rough	Black	0.5 ∫ 0.6 (Against iron)	6.0	3.0	25	20	○	300	−20～80
			350	1.4	1.6		NBR	Rough	Blue		NBR	Rough	Black		10.5	5.2	35	30	○	300	−20～80
			500	1.55	1.8		NBR	Rough	Blue		NBR	Rough	Black		15.0	7.5	50	40	○	300	−20～80
			750	2.2	2.5		NBR	Rough	Blue		NBR	Rough	Black		22.5	11.2	75	50	○	300	−20～80
			1000	2.45	2.8		NBR	Rough	Blue		NBR	Rough	Black		30.0	15.0	100	60	○	300	−20～80
			1500	2.95	3.4		NBR	Rough	Blue		NBR	Rough	Black		45.0	22.5	150	90	○	300	−20～80
			2000※	3.45	4.0		NBR	Rough	Blue		NBR	Rough	Black		60.0	30.0	200	120	○	300	−20～80
Power transmission in industrial machinery (Fans, pumps, etc.) Sawmill machines (Chippers, etc.) Paper working machines (Coaters, etc.) Other general power transmission Cut-proof conveyors (Thin-plate conveyors, etc.)	Standard type Suitable for normal operating conditions	M	250	2.2	2.4		NBR	Rough	Blue	0.5 ∫ 0.6 (Against iron)	NBR	Rough	Black	0.5 ∫ 0.6 (Against iron)	6.0	3.0	25	25	○	300	−20～80
			350	2.35	2.6		NBR	Rough	Blue		NBR	Rough	Black		10.5	5.2	35	35	○	300	−20～80
			500	2.5	2.7		NBR	Rough	Blue		NBR	Rough	Black		15.0	7.5	50	40	○	300	−20～80
			750	2.75	3.0		NBR	Rough	Blue		NBR	Rough	Black		22.5	11.2	75	50	○	300	−20～80
			1000	3.0	3.3		NBR	Rough	Blue		NBR	Rough	Black		30.0	15.0	100	60	○	300	−20～80
			1500	3.5	4.0		NBR	Rough	Blue		NBR	Rough	Black		45.0	22.5	150	90	○	300	−20～80
			2000※	4.0	4.6		NBR	Rough	Blue		NBR	Rough	Black		60.0	30.0	200	120	○	300	−20～80
			2500※	4.5	5.2		NBR	Rough	Blue		NBR	Rough	Black		75.0	37.5	250	150	○	300	−20～80
Compressors Rolling machines Paper tube winding machines Abrasion-resistant conveyors (Building material conveyors, etc.)	Highly abrasion/impact resistant thick rubber cover is used. Suitable for severe operating conditions	H	500	3.5	3.8		NBR	Rough	Blue	0.5 ∫ 0.6 (Against iron)	NBR	Rough	Black	0.5 ∫ 0.6 (Against iron)	15.0	7.5	50	50	○	300	−20～80
			750※	3.75	4.1		NBR	Rough	Blue		NBR	Rough	Black		22.5	11.2	75	60	○	300	−20～80
			1000	4.0	4.4		NBR	Rough	Blue		NBR	Rough	Black		30.0	15.0	100	75	○	300	−20～80
			1500※	4.5	5.0		NBR	Rough	Blue		NBR	Rough	Black		45.0	22.5	150	120	○	300	−20～80
			2000※	5.0	5.6		NBR	Rough	Blue		NBR	Rough	Black		60.0	30.0	200	160	○	300	−20～80
		MH	2500※	5.0	6.0		NBR	Rough	Blue		NBR	Rough	Black		75.0	37.5	250	—	○	300	−20～80
			3000※	5.5	6.5		NBR	Rough	Blue		NBR	Rough	Black		90.0	45.0	300	—	○	300	−20～80
			4000※	6.5	7.6		NBR	Rough	Blue		NBR	Rough	Black		120.0	60.0	400	—	○	300	−20～80

※The products are made to order; please confirm the stock.

Major Applications	Properties	Belt Type		Total Thickness (mm)	Weight (kg/m²)		Cover Material								Axial load under stable conditions (N/mm width; kgf/cm width)		Minimum pulley diameter (mm)		Antistatic property	Standard maximum width (mm)	Temperature range for continuous use (℃) (For intermittent use)
							Top surface				Bottom surface										
							Material	Surface configuration	Color	Friction coefficient	Material	Surface configuration	Color	Friction coefficient	At 2% elongation	At 1% elongation	For power transmission	For conveyance			
General power transmission Printer paper feed Conveying plywood	Moderate sliding properties on both sides Excellent paper conveyance	SG	250	0.8	0.8		NBR	Weave	Green	0.3～0.4 (Against iron)	NBR	Weave	Black	0.3～0.4 (Against iron)	6.0	3.0	25	20	○	300	−20～80
			350	0.95	0.9		NBR	Weave	Green		NBR	Weave	Black		10.5	5.2	35	30	○	300	−20～80
			500	1.1	1.1		NBR	Weave	Green		NBR	Weave	Black		15.0	7.5	50	40	○	300	−20～80
			750	1.35	1.4		NBR	Weave	Green		NBR	Weave	Black		22.5	11.2	75	50	○	300	−20～80
			1000※	1.6	1.7		NBR	Weave	Green		NBR	Weave	Black		30.0	15.0	100	60	○	300	−20～80
		SGL	250	1.0	1.0		NBR	Weave	Green		NBR	Rough	Black	0.5～0.6 (Against iron)	6.0	3.0	25	20	○	300	−20～80
			500	1.3	1.4		NBR	Weave	Green		NBR	Rough	Black		15.0	7.5	50	40	○	300	−20～80
		SG	750-2P※	1.1	1.2		NBR	Weave	Green		Polyamide film	Mirror surfac	—	0.1～0.2 (Against iron)	22.5	11.2	50	40	○	300	−20～80
	Thin rubber especially suitable for flexing/high-speed operation	LS	250※	1.05	1.0		NBR	Rough	Blue	0.5～0.6 (Against iron)	NBR	Weave	Black	0.3～0.4 (Against iron)	6.0	3.0	25	20	○	300	−20～80
			350※	1.2	1.2		NBR	Rough	Blue		NBR	Weave	Black		10.5	5.2	35	30	○	300	−20～80
			500※	1.35	1.4		NBR	Rough	Blue		NBR	Weave	Black		15.0	7.5	50	40	○	300	−20～80
Printer paper feed	Top surface has high friction coefficient. Bottom surface has excellent sliding properties.	IRTA	350※	1.15	1.2		NBR	Rough	Green	0.5～0.6 (Against iron)	Polyamide	Canvas	Blue	0.2～0.25 (Against iron)	10.5	5.2	—	30	○	300	−20～80
		KCS	350※	1.1	0.8		NBR	Weave	Black	0.3～0.4 (Against iron)	Polyamide	Canvas	Blue		10.5	5.2	—	30	○	300	−20～80
			500※	1.2	1.0		NBR	Weave	Black		Polyamide	Canvas	Blue		15.0	7.5	—	40	○	300	−20～80
Printer folding par	Top surface is abrasion resistant and has excellent sliding properties.	TPS-3SN※		1.1	0.8		Polyamide	Canvas	Purple	0.2～0.25 (Against iron)	NBR	Weave	Black	0.3～0.4 (Against iron)	—	3.4	—	30	○	300	−20～80
Corrugated board machine (Paper feeding to and discharging from the rotary cutter)	Highly scratch/abrasion resistant surface material used	CBX-7S※		4.2	2.5		Artifical leather	Flat and smooth	Gray	0.4～0.5 (Against cardboard)	Artifical leather	Flat and smooth	Gray	0.2～0.25 (Against iron)	—	15.0	—	75	×	300	−20～80
Conveying cardboard boxes (Counter eject)	High conveyance capacity achieved due to rough top cover Suitable for severe operating conditions	CBE-20		7.0	3.5		NBR	Rough top	Blue	abt.1.0 (Against cardboard)	Polyester	Canvas	Black	0.2～0.25 (Against iron)	—	6.0 (0.5%)	—	100	○	300	−20～80
Conveying cardboard boxes Conveying plywood		RT	300	abt. 7.0	6.5		NBR	Rough top	Blue		Polyester	Canvas	White		—	6.0 (0.5%)	—	100	○	300	−20～80
		NRT	0	abt. 5.5	4.8		NBR	Rough top	Blue		Polyester	Canvas	White		—	1.3	—	100	○	300	−20～80
			100	abt. 4.5	3.6		NBR	Rough top	Blue		Polyester	Canvas	White		—	6.0	—	50	○	300	−20～80
			300	abt. 6.5	6.5		NBR	Rough top	Blue		Polyester	Canvas	White		—	6.0	—	100	○	300	−20～80
			500	abt. 6.0	5.6		NBR	Rough top	Blue		NBR	Weave	Black	0.5～0.6 (Against iron)	—	7.5	—	90	○	300	−20～80

※The products are made to order; please confirm the stock.

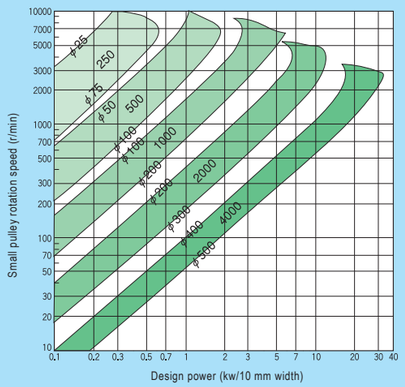
Major Applications	Properties	Belt Type		Total Thickness (mm)	Weight (kg/m²)		Cover Material								Axial load under stable conditions (N/mm width; kgf/cm width)		Minimum pulley diameter (mm)		Antistatic property	Standard maximum width (mm)	Temperature range for continuous use (℃) (For intermittent use)
							Top surface				Bottom surface										
							Material	Surface configuration	Color	Friction coefficient	Material	Surface configuration	Color	Friction coefficient	At 2% elongation	At 1% elongation	For power transmission	For conveyance			
Folder gluer Paper tube winding belt Conveying plywood	High conveyance capacity achieved due to rubber properties	XH	500-3	3.0	3.4		NBR	Rough	Blue	0.8～0.9 (Against iron) 0.7～0.8 (Against iron)	NBR	Rough	Blue	0.8～0.9 (Against iron) 0.7～0.8 (Against iron)	15.0	7.5	50	20	○	300	−20～80
			500-3.5	3.5	3.9		NBR	Rough	Blue		NBR	Rough	Blue		15.0	7.5	55	30	○	300	−20～80
			500-4	4.0	4.3		NBR	Rough	Blue		NBR	Rough	Blue		15.0	7.5	60	40	○	300	−20～80
			500-5※	5.0	6.8		NBR	Rough	Blue		NBR	Rough	Blue		15.0	7.5	70	50	○	300	−20～80
			500-6※	6.0	7.4		NBR	Rough	Blue		NBR	Rough	Blue		15.0	7.5	80	60	○	300	−20～80
			750-4※	4.25	4.4		NBR	Rough	Blue		NBR	Rough	Blue		22.5	11.2	75	20	○	300	−20～80
			1000-4※	4.0	4.4		NBR	Rough	Blue		NBR	Rough	Blue		30.0	15.0	75	40	○	300	−20～80
			1000-6.5※	6.5	7.2		NBR	Rough	Blue		NBR	Rough	Blue		30.0	15.0	100	40	○	300	−20～80
Table-supported conveyor Accumulation conveyor	Excellent sliding on both surfaces	TTA	500N※	1.3	1.2		Polyamide film	Canvas	Blue	0.2～0.25 (Against iron)	Polyamide	Canvas	Blue	0.2～0.25 (Against iron)	—	7.5	40	20	×	300	−20～80
			1000N※	1.8	1.7		Polyamide film	Canvas	Blue		Polyamide	Canvas	Blue		—	15.0	60	30	×	300	−20～80
		TTB	1000※	2.8	2.5		Polyamide film	Canvas	Blue		Polyamide	Canvas	Blue		—	15.0	60	40	×	300	−20～80
Table-supported conveyor	Excellent sliding on one surface	GLTA	350※	1.5	1.6		Polyamide film	Canvas	Blue	0.2～0.25 (Against iron)	NBR	Rough	Blue	0.5～0.6 (Against iron)	—	5.2	35	30	○	300	−20～80
Sloping conveyor	High conveyance capacity achieved due to rough surface of belt	TW	250※	1.8	1.5		NBR	TW	Blue	0.5～0.6 (Against iron)	NBR	Rough	Black	0.5～0.6 (Against iron)	—	3.0	25	30	○	300	−20～80
			500※	2.1	1.9		NBR	TW	Blue		NBR	Rough	Black		—	7.5	40	—	○	300	−20～80
		TWH	500※	3.8	3.8		NBR	TW	Blue		NBR	Rough	Black		—	7.5	40	30	○	300	−20～80
Fiber Driving roller conveyors	Taffeta surface	TFL	6S※	2.25	2.4		NBR	Taffeta	Deep blue	0.5～0.6 (Against iron)	NBR	Rough	Gray	0.5～0.6 (Against iron)	23.0	—	60	75	○	300	−20～80
			7S※	2.4	2.6		NBR	Taffeta	Deep blue		NBR	Rough	Gray		30.0	—	75	—	○	300	−20～80
			10S	2.6	2.8		NBR	Taffeta	Deep blue		NBR	Rough	Gray		39.0	—	100	100	○	300	−20～80
			15S※	3.1	3.4		NBR	Taffeta	Deep blue		NBR	Rough	Gray		60.0	—	150	100	○	300	−20～80
Urethane		HU	250※	1.3	1.6		high degree of hardnessPU	Flatand smooth	Deep blue	0.3～0.4 (Against iron)	NBR	Weave	Green	0.5～0.6 (Against iron)	—	3.0	20	50	○	300	−20～80
Sponge bonded with jersey　Cushioning properties		F500-10J※		abt.10.0	2.8		Jersey	Canvas	Deep blue	—	Polyamide	Canvas	Gray	0.2～0.25 (Against iron)	—	7.5	100	100	×	300	−20～80

※The products are made to order; please confirm the stock.

1. Biaxial Power Transmission Design

(1) Select the belt type according to the design power and the small pulley rotation speed shown in Table 1 below.

Table 1. Standard Transmission Capacity, Belt Speed and PolyBelt Type



<Note>
The types which are not shown in Table 1 (350, 750, 1500, 2500 and 3000) are positioned midway between each PolyBelt type.

(2) Calculate the belt speed (V) by using the pulley diameter and rotation speed.

$$v(m/s) = \frac{\pi \cdot d \cdot n}{60 \times 1000}$$

d: Drive pulley diameter (mm)
n: Drive rotation speed (mm)

(3) Calculate the effective tension (Te) by using the transmission power and the belt speed.

$$Te(N) = \frac{1000 \times P}{v}$$

P: Transmission power (kw)

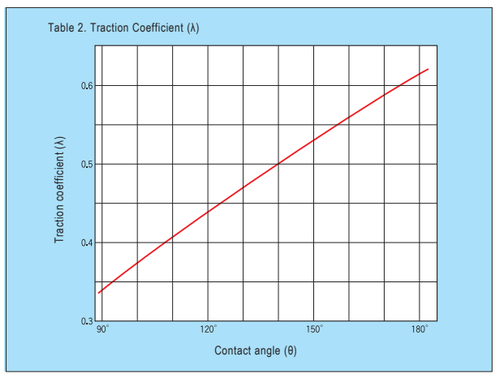
(4) Calculate the pulley contact angle (θ) (for the open belt drive).

$$\theta\,(deg) = 180^\circ - \frac{57(D-d)}{C}$$

D: Large pulley diameter (mm)
d: Small pulley diameter (mm)
C: Center distance (mm)

(5) Obtain the traction coefficient (λ) from Table 2 below.

Table 2. Traction Coefficient (λ)



(6) Select the load reserve factor (K) from Table 3 below.

Table 3. Load Reserve Factor (K)

Use conditions	Normal condition	Environment with oil and dust
Excessively light start-up load; small load fluctuation (Belt conveyors and small centrifugal pumps)	1.3	2.4
Light start-up load; small load fluctuation (Printing machines and wood working machines)	1.5	2.7
Heavy start-up load; large load fluctuation (Printing machines, pressing machines and rolling machines)	2.0	3.6

(7) Calculate the approximate axial load (2To).

$$2To(N) = Te \times \frac{K}{\lambda}$$

(8) Calculate the belt width limit (b).

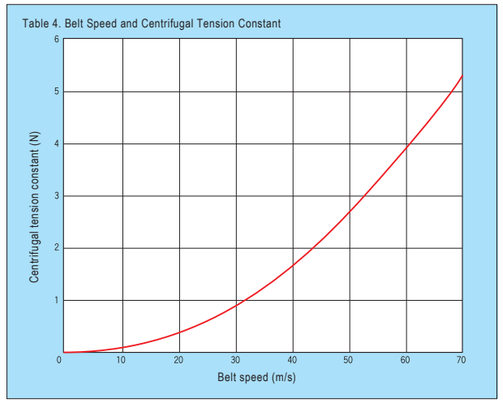
$$b(mm) \leqq \frac{(bp - 10)}{1.1}$$

bp: Pulley width (mm)

Round the calculated belt width to the nearest 5 mm.

(9) Obtain the centrifugal constant from Table 4 below. Then calculate the centrifugal tension (tc) using the following calculation formula.
<Calculation formula> Centrifugal tension (tc) = Centrifugal tension constant x Belt thickness (h) (mm)

Table 4. Belt Speed and Centrifugal Tension Constant



(10) Calculate the axial load (2to) per unit width (N/mm width).

$$2to(N/mm\ width) = \frac{2To}{b} + 2tc$$

(11) Calculate the elongation rate (ε) of the selected belt.

$$\varepsilon = \frac{2to}{2to(2\%)} \times \varepsilon''$$

ε'' : Standard elongation rate (2 %)
2to (2 %): Axial load under stable conditions (N/mm width) at 2 % elongation

The allowable belt elongation rate is 1 - 3 %.
When the belt elongation rate is outside this range, take the following measures.
a. Change the belt type. b. Change the belt width.

(12) Calculate the axial load (F) by using the belt tension.

During operation stop: $Fs(N) = 2to \times \frac{\varepsilon}{2} \times b \times \sin\frac{\theta \times \pi}{2 \times 180^\circ}$

During operation: $Fr(N) = \left(2to \times \frac{\varepsilon}{2} - 2tc\right) \times b \times \sin\frac{\theta \times \pi}{2 \times 180^\circ}$

(Note) For multiaxial power transmission and conveyance, please consult Nitta.

2. Belt Length Calculation Formula

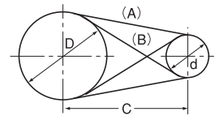
Calculate the inner peripheral length (Li) as follows:

Inner peripheral length (A)

$$Li(mm) = 2C + \frac{\pi}{2}(D+d) + \frac{(D-d)^2}{4C}$$

Inner peripheral length (B)

$$Li(mm) = 2C + \frac{\pi}{2}(D+d) + \frac{(D+d)^2}{4C}$$



The length of PolyBelt is determined according to the pitch length (Lc). Convert "Li" obtained above into "Lc" .

Pitch length $Lc = Li + \pi h$ h: Belt thickness (mm)

When the center distance is fixed and there is no tension pulley in the device, shorten the belt length by the elongation rate as shown in the calculation formula below.

$$\text{Belt length (mm)} = \frac{Lc}{1+E} \qquad E = \frac{\varepsilon}{100}$$

ε: Elongation rate (%)

(Note) Please inform Nitta of the pulley diameter and the coordinates; we will calculate the belt length for multiaxial power transmission.

3. Pulley Shape

(1) Calculate the pulley width (bp) from the following formula.

$$bp(mm) = 1.1b + 10mm$$

b = Belt width (mm)

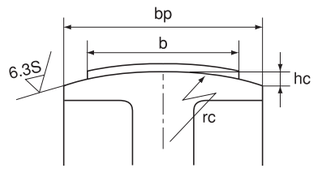
(2) Obtain the pulley crown (hc) from Table 5.

Table 5. Standard Crown hc (mm)

Pulley width \ Pulley diameter	30～150	151～300	301～700	701～1000	1001～1500	1501 or more
30～125	0.8	1.2	1.3	1.7	2.0	2.5
126～260	1.0	1.3	1.5	2.0	2.3	2.8
261～400	1.1	1.4	1.6	2.2	2.5	3.0

(3) Calculate the curvature radius (rc) from the following formula.

$$rc(mm) = \frac{bp^2}{8hc}$$



(4) The pulley surface finish is required to be 6.3S or more.

(5) Belt speed and pulley material

Belt speed	30 m/s or less	30 to 50m/s	50 m/s or more
Pulley material	Cast iron, aluminum, mild steel	Cast iron or mild steel	Mild steel

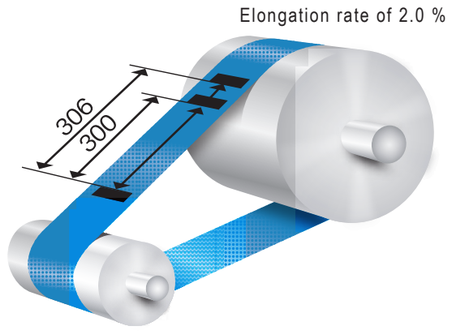
(6) As a rule, do not attach a flange to the pulley.

Precautions for Use

The following are precautions for using PolyBelt.

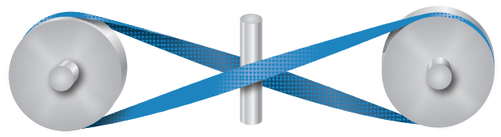
Belt Tension

Measure the tension mark and stretch the belt to obtain the specified elongation rate. Rotate the belt once or twice to stretch it uniformly and check the tension mark.



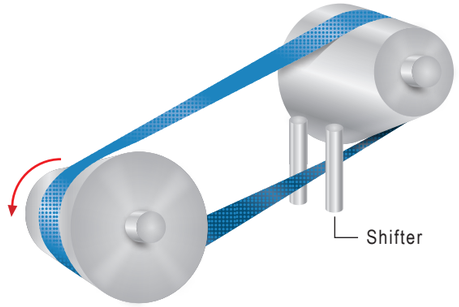
Crossed Belt Drive

PolyBelt is highly abrasion resistant.
In order to lengthen the belt life, insert a rotator at the intersection of the belt.



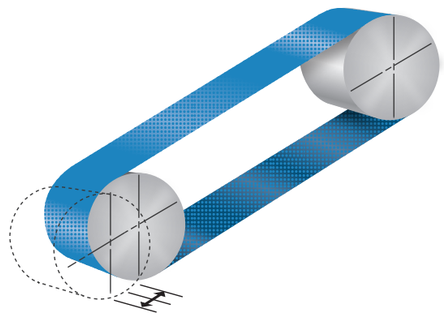
Belt Shifters

Use rotary belt shifters. If the shifters do not rotate, belt abrasion is accelerated.
Set the shifters at the positions where the belt enters the driven pulley.
When selecting the belt type, consider the shifting property as well as the transmission calculation.



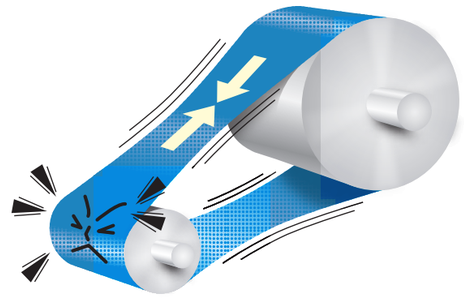
Attaching the Belt

When attaching the belt, use a center-distance adjuster.
If the adjuster is not available, cover the pulley edges with waste cloth, etc. to prevent damage to the belt



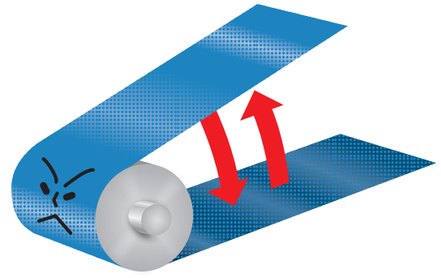
Belt Elongation Rate

The maximum allowable elongation rate for PolyBelt is 3 %.
When the belt elongation rate is more than 3 %, use the next highest rank of belt type or a wider belt.



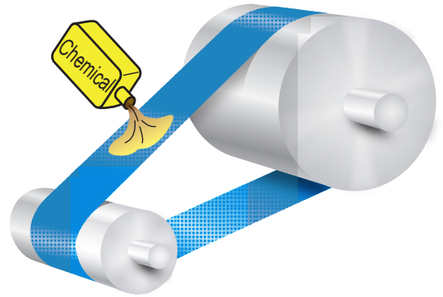
Minimum Pulley Diameter

The minimum pulley diameters of PolyBelt for conveyance are listed in “Types and Properties” on P. 2 to 7. When the belt speed is 5 m/s or less, the minimum pulley diameter for conveyance is in effect.



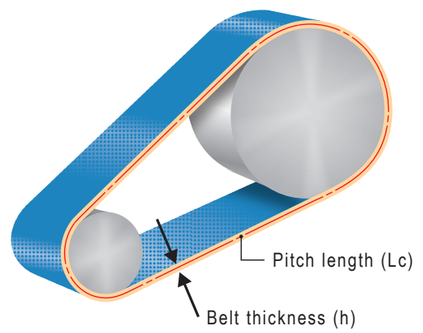
Resistance to Chemicals

PolyBelt is not affected by wetting and drying, machine oil, steam, fat, benzine, etc. However, be aware that PolyBelt is affected by concentrated acids, phenols, ketones and alcohol.



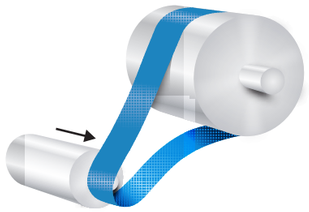
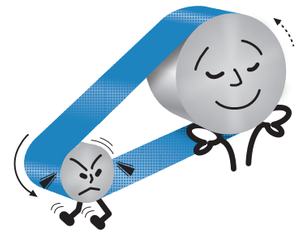
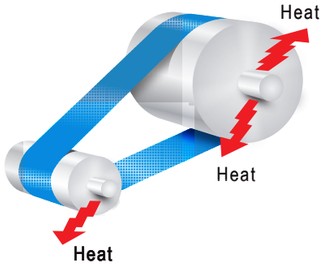
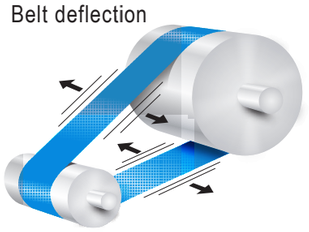
Belt Length

PolyBelt is manufactured according to pitch length. When ordering the belt, specify the pitch length. When ordering the belt to be set at a location where the center distance is not adjustable, specify the pitch length shortened in advance by the specified elongation rate. (See P.9.)



Troubleshooting for Power Transmission Problems

When any of the following failures occur, troubleshoot as follows:

Failure	Failure Diagnosis	Troubleshooting
The belt comes off the pulley. 	The belt deviates at start-up and then returns.	• The starting torque is too high; tighten the belt further or lower the starting load.
	Normal performance when the load is low; the belt comes off under high load.	• The load is high; tighten the belt further or lower the load.
	The belt comes off even when the load is low.	• Correct the pulley parallelism. • Tighten the part where the belt comes off. • If the tension pulley is used, tilt its axis.
The specified speed is not reached. 	When further tightening the belt, the rotation speed does not increase.	• Measure the pulley diameter. When the speed ratio is large, add the belt thickness to the pulley diameter. • Measure the rotation speed of the driver.
	When further tightening the belt, the rotation speed increases.	• Check for excessive load. • Check the belt tension and the tension rate. • Recheck that the belt transmission capacity is appropriate for the load. • In an excessively high temperature environment, tighten the belt further.
The bearings are excessively heated. 	Check for excessive tightening of the belt.	• Check the tension mark or measure the tension with a tensiometer. If the tension is too high, loosen the belt. • If the belt is too wide for the load, narrow the belt width.
	The belt tension is appropriate.	• Select appropriate bearings according to the bearing allowable load and rotation speed. Check for a shortage of lubricating oil.
Belt deflection 	The belt deflects to the pulley axis. (Snaking)	• When slight snaking of the belt affects functionality, check that the belt is not bent.
	The belt deflects perpendicularly to the direction of the pulley axis. (Waving)	• The vibration frequency of the machine resonates with that of the natural vibration frequency of the belt; change the belt tension.

Basic Structure

Belt Types

M-1000 50×7000E-T

- M-1000: Surface cover configuration
- 50: Tension member polyamide film type
- 7000: Belt width
- E: Belt length
- T: Joint type
- Special processing

Surface cover configuration

Code	Configuration	Description	Material
SG	Extremely thin rubber with weave	Slight Green	NBR
L	Thin rubber with rough surface	Light	NBR
M	Medium thick rubber with rough surface	Middle	NBR
H	Thick rubber with rough surface	Heavy	NBR
XH	Super thick rubber with rough surface		NBR
RT	RT		NBR
NRT	NRT		NBR
TW	TW		NBR
TF	Taffeta		NBR
HU	High hardness urethane (Flat and smooth)		PU

Joint type

Code	Description
E	Endless joint
B	Both ends joint
S	One end joint
C	Slit/cut roll
CJ	Cut products with length tolerance requirements
R	Original roll

Special processing

Code	Description
T	Special processing (Hole processing, etc.)

Manufacturing Tolerance

Width

Nominal width	Tolerance
～ 10	±0.3
11 ～ 50	±0.5
51 ～ 100	±1.0
101 ～ 280	±2.0
281 ～	±3.0

Endless joint (E), Both ends joint (B)

Nominal length	Tolerance	
	Less than 100 mm W	100 mm W or over
～ 500	±2.0	±2.5
501 ～ 1.000	±3.0	±4.0
1.001 ～ 2.000	±5.0	±6.5
2.001 ～ 5.000	±7.0	±9.0
5.001 ～ 10.000	±10.0	±13.0
10.001 ～ 20.000	±20.0	±25.0
20.001 ～	±0.15%	±40.0

※W=Width

Cut(C), Both sides joint (S), Roll (R)

Tolerance
Nominal length or longer

● Polybelt is subject to dimensional change depending on storage conditions. The above dimensions are within the tolerance range before shipment.