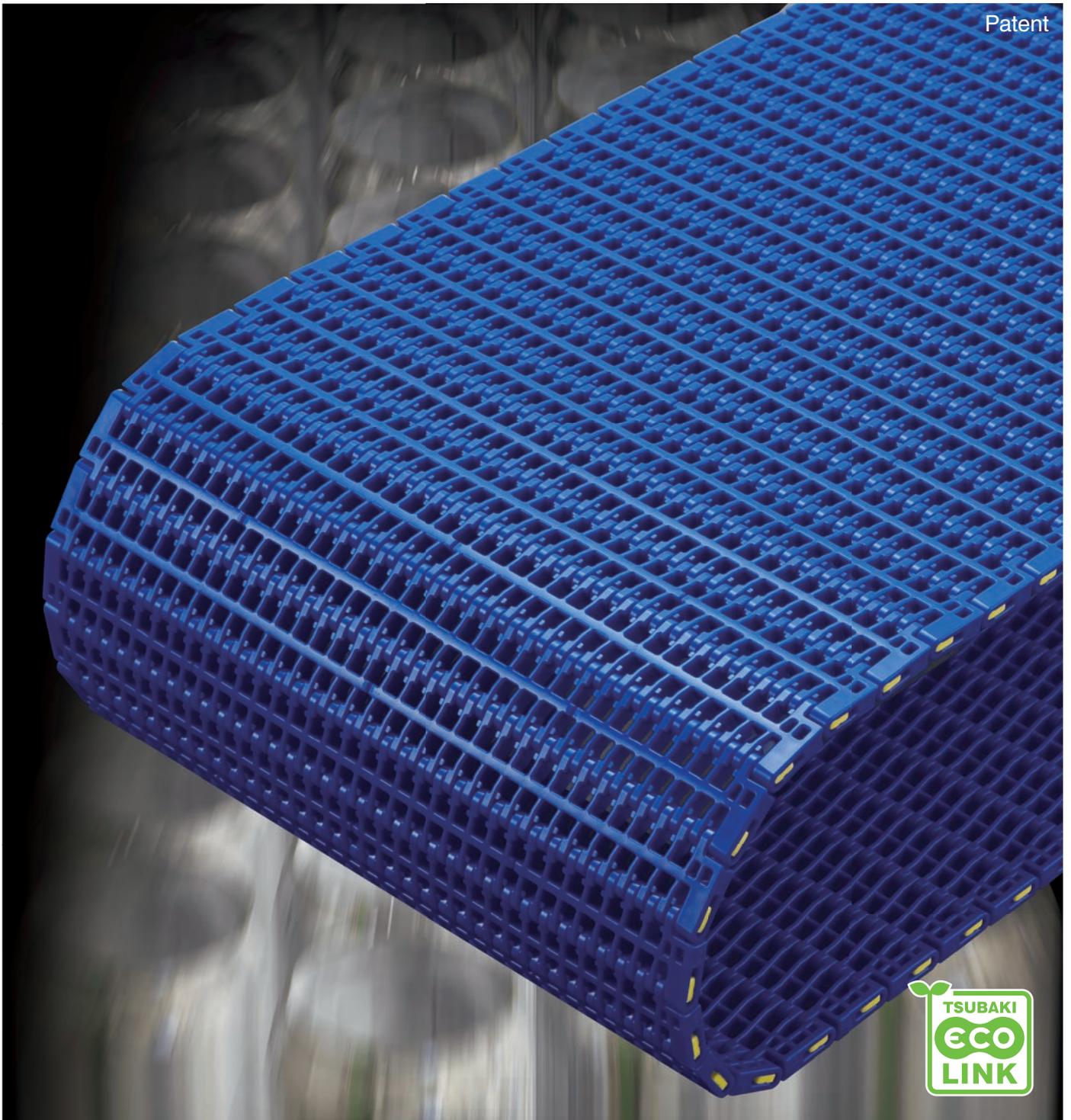


TSUBAKI PLASTIC MODULAR CHAIN WT2706-K

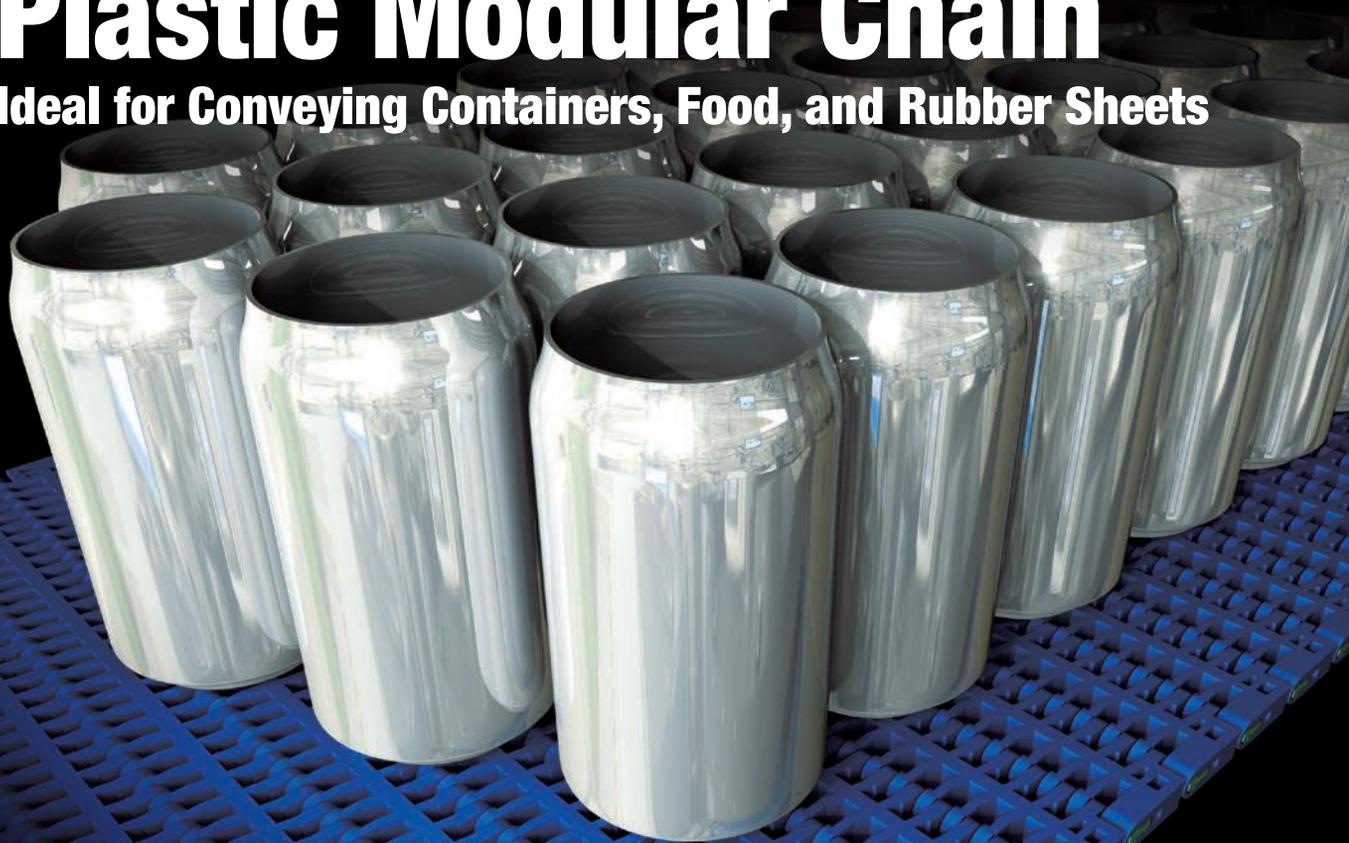
PLASTIC TOP CHAIN

Patent



WT2706-K Plastic Modular Chain

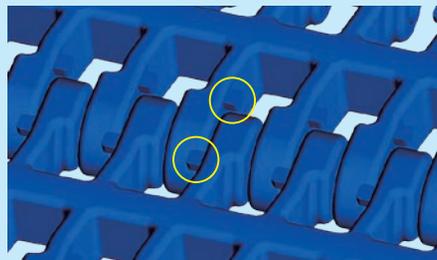
Ideal for Conveying Containers, Food, and Rubber Sheets



Feature 1 Plug-clip pin retention system enables easy connection and disconnection of modules and reuse of pins.



Feature 2 Protrusions on the ribs of each module make positioning them easy and facilitate assembly.



Specifications (Plastic Chain Materials)

B

Standard Series

General-purpose polyacetal chain links

General-purpose type

Uses a commercial-grade polyacetal resin with excellent mechanical properties (tensile strength, sliding characteristics).

Applications

- Versatile type of chain that can be used in a wide range of applications

Color: Blue

LFB

Low Friction/Wear Resistant Series

Polyacetal chain links with better low-friction/anti-wear properties than the Standard Series

1. **Protects conveyed items**
Coefficient of friction is 15% to 45% lower than that of the Standard Series, resulting in reduced line pressure during accumulation and minimized potential for scratching or other damage to conveyed items.
2. **Long life (compared to Standard Series)**
Chain life is 1.2 to 2 times longer than the Standard Series because of lower chain load.
3. **Smooth divergence and accumulation of conveyed items**
4. **Less required drive power**

Applications

- Ideal in harsh conditions (high speeds, high loads) where chain elongation is accelerated, resulting in short chain replacement cycles
- Ideal in high line pressure conditions where conveyed goods may be damaged

Color: Brown

HTW

Heat Resistant Series

Polypropylene chain links with superb chemical resistance

1. **Maximum usable temperature: 105°C**
Ideal for use where hot water is used.
2. **Chemical resistant**
Excellent chemical resistance, including to acids and alkaline substances. Ideal for use where chemicals are used for cleaning.
3. **High friction**
Coefficient of friction is 1.2 to 1.6 times higher than that of the Standard Series. Can be used at a slight incline under dry conditions where there is no oil adhering to the conveyed items.
4. **Lightweight**
About 40% lighter than polyacetal chain. Reduces drive power requirements.

Applications

- Conveyor lines in beverage plants where hot water is used
- Conveyor for batteries
- Slightly inclined conveyors

Color: White

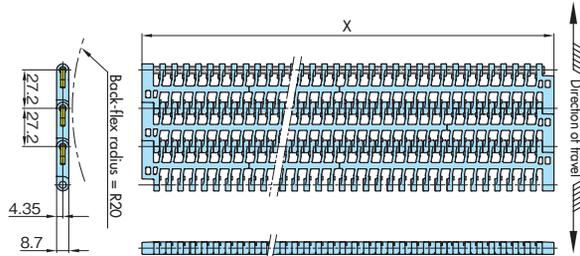
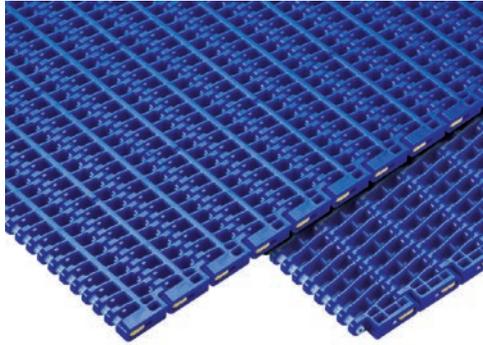
Plastic Modular Chain

WT2706-K

Open Type:
Straight Running

Features

- Plug-clip pin retention system enables easy connection and disconnection of modules and reuse of pins.
- Chain widths can be configured in 3-inch (76.2 mm) units. Modules can be cut to allow 1/3-inch units.



Chain material	Chain pitch mm	Link color	Open area %	Chain strength kN/m (kgf/m)	Approx. mass kg/m ²	Operating temperature range °C	Pin material	Pin retention system		
Standard	27.2	Blue	38	21.6{2200}	5.8	0 to 93	Polypropylene	Plug-clip		
LFB		Brown							-20 to {60} 80	Special engineering plastic
HTW		White							5 to 105	Polypropylene

Note: 1. Values for chain strength are at an ambient temperature of 20°C and assume that tension acts uniformly over the entire chain width. The values in the table above are for chain that is one meter (1 m) in width. To calculate values for other chain widths, multiply the chain width in question by the chain strength for one-meter (1 m) wide chain.

2. Operating temperature of {60} is for wet conditions.

3. Contact a Tsubaki representative for chain specifications (materials) other than the above.

4. Plug-clip color is yellow (material: polyacetal) for Standard and LFB chains and blue (material: polypropylene) for HTW chain.

5. Max. allowable speed: 50 m/min.

Chain (Plastic Pins)

Chain width X mm	Standard B	Low Friction/Wear Resistant LFB	Heat Resistant HTW
	Tsubaki model no.	Tsubaki model no.	Tsubaki model no.
228.6	WT2706-K09-B	WT2706-K09-LFB	WT2706-K09-HTW
304.8	WT2706-K12-B	WT2706-K12-LFB	WT2706-K12-HTW
381.0	WT2706-K15-B	WT2706-K15-LFB	WT2706-K15-HTW
457.2	WT2706-K18-B	WT2706-K18-LFB	WT2706-K18-HTW
533.4	WT2706-K21-B	WT2706-K21-LFB	WT2706-K21-HTW
609.6	WT2706-K24-B	WT2706-K24-LFB	WT2706-K24-HTW
685.8	WT2706-K27-B	WT2706-K27-LFB	WT2706-K27-HTW
762.0	WT2706-K30-B	WT2706-K30-LFB	WT2706-K30-HTW
838.2	WT2706-K33-B	WT2706-K33-LFB	WT2706-K33-HTW
914.4	WT2706-K36-B	WT2706-K36-LFB	WT2706-K36-HTW
990.6	WT2706-K39-B	WT2706-K39-LFB	WT2706-K39-HTW
1066.8	WT2706-K42-B	WT2706-K42-LFB	WT2706-K42-HTW
1143.0	WT2706-K45-B	WT2706-K45-LFB	WT2706-K45-HTW
1219.2	WT2706-K48-B	WT2706-K48-LFB	WT2706-K48-HTW
1295.4	WT2706-K51-B	WT2706-K51-LFB	WT2706-K51-HTW
1371.6	WT2706-K54-B	WT2706-K54-LFB	WT2706-K54-HTW
1447.8	WT2706-K57-B	WT2706-K57-LFB	WT2706-K57-HTW
1524.0	WT2706-K60-B	WT2706-K60-LFB	WT2706-K60-HTW

Note: 1. Standard chain width is 76.2 mm (3 inches). Custom chain widths and widths greater than 1,524 mm are available upon request.

2. Chain widths can be configured in 8.5 mm (1/3-inch) units, starting from a minimum width of 50.8 mm.

3. Chain width X shown is a nominal width. Actual width range is $\pm 0.7\%$ at 20°C operating temperature. Chain width is subject to expansion or contraction with changes in temperature. Expansion/contraction rate is 0.00015/°C for Standard and LFB chains and 0.00011/°C for HTW chains, based on a reference temperature of 20°C.

4. Made-to-order product.

Model Numbering

Chain type	Chain pitch	Chain type	Chain width	Chain material
WT	27	06	K24	B

27: 27.2 mm

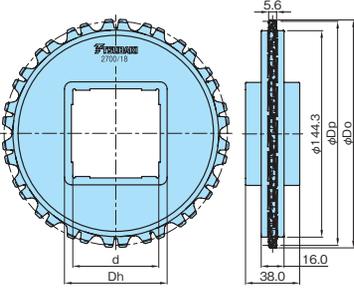
06: Open type

Number denotes width in inches. Multiply the number by 25.4 to convert it into millimeters. Example: 24 x 25.4 = 609.6 mm

B: Standard (blue)
LFB: Low Friction/Wear Resistant (brown)
HTW: Heat Resistant (white)

Note: Do not leave spaces between letters and symbols.

Sprockets for WT2706-K Chain



Tsubaki model no.	No. of teeth	Pitch diameter Dp	Outside diameter Do	Dh	Bore shape	Bore diameter d	Approx. mass kg	Type	Material
WT-N2700-18T40S	18	156.64	159.7	52	Square	40	0.2	Solid	Reinforced polyamide (black)
72				60		0.2			
77				65		0.2			

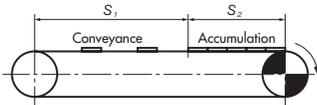
- Note: 1. Made-to-order product.
 2. Operating temperature range: -20°C to 80°C
 3. Sprockets are made to fit loosely on the shaft to absorb differences in thermal expansion between the chain and conveyor, and to offset alignment errors between the sprocket and chain.
 4. The number of sprockets installed and the positions where they are installed will vary depending on load conditions. Please refer to the "Determine Sprocket Locations" section of this brochure.

Conveyor Design

Calculate Chain Tension

1) Calculate the tension acting on the chain and required power

Note: For special conveyors (pasteurizers, warmers, coolers), see page 38 of the Tsubaki Top Chain Engineering Manual (catalog no. ME12Y2) or contact a Tsubaki representative.



Note: Formulas are given for both SI units and gravimetric units. When calculating the chain tension (F), gravimetric weight units (kgf) have the same value as SI mass units (kg).

- F = Chain tension (kN {kgf})
- m₁ = Chain mass (kg/m)
- How to calculate chain mass:
Calculate the chain mass per 1-meter unit of length.
When A mm is the chain width being considered, m₁ = chain mass (value from catalog [kg/m²]) × A/1000
- S₁ = Length of conveyance section (m)
- m₂ = Mass of conveyed goods (kg/m)
- S₂ = Length of accumulation section (m)
- m₃ = Mass of accumulated goods (kg/m)
- μ₁ = Coefficient of dynamic friction between chain and wearstrip (See Table 1)
- μ₂ = Coefficient of dynamic friction between conveyed goods and accumulation section (See Table 1)
- P = Power required (kW)
- V = Chain speed (m/min)
- η = Mechanical transmission efficiency for drive unit
- Sf = Chain safety factor 1.4

SI Units (kN) Chain Tension

$$F = 9.80665 \times 10^{-3} \cdot Sf \{ (2.1m_1 + m_2) S_1 \cdot \mu_1 + (2.1m_1 + m_3) S_2 \cdot \mu_1 + m_3 \cdot S_2 \cdot \mu_2 \} \quad \dots (1)$$

Power Required

$$P = \frac{F \cdot V}{60 \eta \cdot Sf}$$

Gravimetric Units (kgf) Chain Tension

$$F = Sf \{ (2.1m_1 + m_2) S_1 \cdot \mu_1 + (2.1m_1 + m_3) S_2 \cdot \mu_1 + m_3 \cdot S_2 \cdot \mu_2 \} \quad \dots (1)$$

Power Required

$$P = \frac{F \cdot V}{6120 \eta \cdot Sf}$$

Table 1: Coefficient of Dynamic Friction between Chain and Other Materials (μ₁, μ₂)

Chain material	Lubrication	Rail material			Conveyed items			
		Steel, stainless steel	Solidur (P plastic rail), M plastic rail	PMW plastic rail, SJ-CNO	Metallic cans	Glass bottles	Plastic containers	Paper packages
Standard	Dry, water	0.25	0.25	0.20	0.25	0.22	0.25	0.31
	Soapy water, oil	0.15	0.15	0.12	0.14	0.14	0.15	0.20
LFB	Dry, water	0.20	0.20	0.15	0.20	0.14	0.17	0.29
	Soapy water, oil	0.15	0.13	0.12	0.13	0.14	0.13	0.21
HTW	Dry, water	0.32	0.30	—	0.35	0.22	0.30	0.35
	Soapy water, oil	0.20	0.20	—	0.20	0.10	0.20	—

- Note: 1. The coefficients of friction listed above are for room temperature (50°C or less); for high temperatures exceeding 50°C, use 0.35.
 2. This friction coefficient data is based on experiments conducted by Tsubaki.
 Contamination on the chain, the shape of the bottom surface of conveyed goods, and other factors will cause slight differences in friction coefficient values. In particular, because the shape of the bottom surface, the type of paper material, etc., of paper packs and paper-based beverage containers may produce significant differences in friction coefficient values, we recommend that the coefficient of friction be measured for each type of conveyed item. Use the values given in Table 1 to calculate chain tension.
 3. M plastic rails and SJ-CNO are specifically designed for dry conditions.
 4. For lubrication with water, the friction coefficient may be significantly larger than the values given in Table 1 depending on the type of conveyed item. In addition, adhesion may occur.

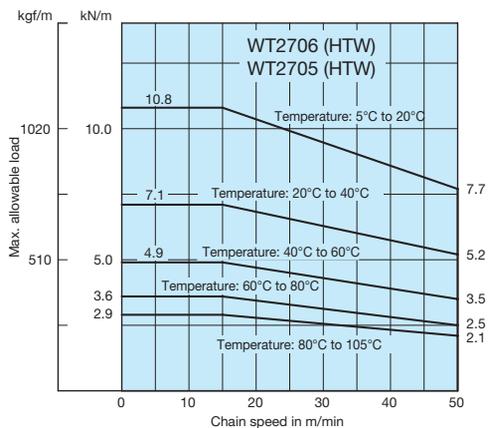
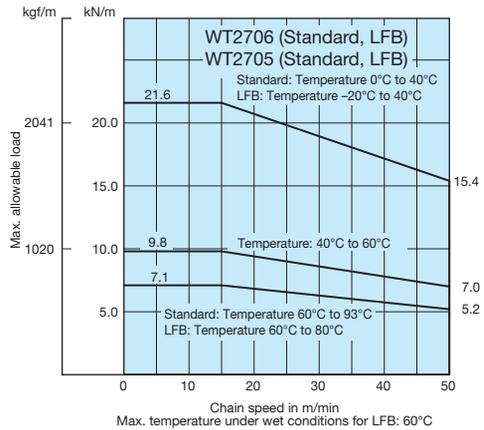
Determine Chain Size and Width

- 1) The maximum tension applied to the chain (FkN) derived using formula (1) is converted into chain tension per one meter of chain width (F' kN/m) by the following formula.

$$F' = \frac{1000F}{\text{Chain width (mm)}} \quad \dots (2)$$

- 2) A chain can be used when the tension per one meter of chain width (F') that is obtained using formula (2) is below a curve representing the maximum allowable load of the chain that takes into account chain speed and temperature. If the tension, thus obtained, is found to be within the allowable range, determine the size and width of the chain.

Allowable Load Graphs



Determine Sprocket Installation Pitch

The diagram on the next page show the location and distance between sprockets (pitch) for WT2706-K chain. Find the percentage of maximum allowable load (maximum allowable load per 1 meter of chain width) that the tension per 1 meter of chain width F' derived by means of formula (2) represents. Note that the locations and pitch may change depending on chain tension rate F1.

Formula of Chain Tension Rate F1 (%)

$$F1 = \frac{100F'}{A} \quad \dots (3)$$

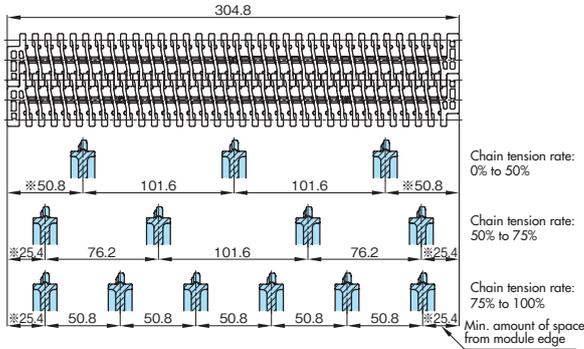
- F'...Tension applied per 1 meter of chain width derived by formula (2) [kN/m {kgf/m}]
 A...Maximum allowable load per 1 meter of chain width with given temperature [kN {kgf}]
 Refer to allowable load graphs.

Determine Sprocket Locations

Sprockets can be installed on WT2706-K chain in an axial direction. When installing sprockets, be sure to check for allowable load. The sprocket locations shown below are recommended under the following conditions.

- When the chain tension rate is 0% to 50%: Sprockets should be installed every 101.6 mm (4 inches) and allowing for a certain amount of space from the edges of the module.
 - When the chain tension rate is 50% to 75%: Sprockets should be installed every 76.2 mm (3 inches) and allowing for a certain amount of space from the edges of the module.
 - When the chain tension rate is 75% to 100%: Sprockets should be installed every 50.8 mm (2 inches) and allowing for a certain amount of space from the edges of the module.
- Note: The dimensions marked with ※ in the diagram below indicate the minimum amount of space required from the edges of the module.

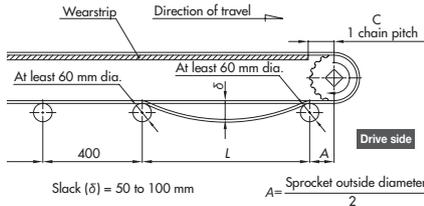
Sprocket Installation Example (for WT2706-K12)



Layout of Supports for Chains

The layout of the supports for chains will vary according to the installation space available and other parameters. A typical layout is shown below.

Note: The wearstrip of the drive sprocket section and the end of the frame should be chamfered to prevent interference.



1. Amount of Chain Slack

Table 2 shows the spacing L between return rollers supporting the chain on the return way below the drive sprocket. The amount of slack in the chain between return rollers should be 50 to 100 mm. This slack prevents chain teeth jumping. There is a possibility of chain teeth jumping if the amount of slack is outside this range.

Table 2: Return Roller Spacing L

Chain type	Chain tension rate (F1)	
	50% or less	More than 50%
WT2706	450 to 500	

2. Engagement Angle

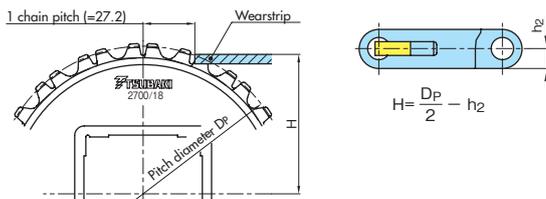
The engagement angle of the chain on the drive sprocket should be at least 180°. If the angle is small, teeth jumping may occur.

3. Wearstrip Ends

A distance C equivalent to the pitch spacing of the chain should be provided between the sprocket and the end of the wearstrip. In addition, the end of the driven-side wearstrip should be rounded or chamfered to prevent the chain from snagging or catching on the wearstrip.

4. Location of Sprockets and Wearstrips

See illustration below.



Guide Clearance

Leave a clearance between the chain and the wearstrip (guide clearance) as indicated below to allow for thermal expansion.
 Conveyor guide width (G) = chain width (X) + guide clearance (Gc)

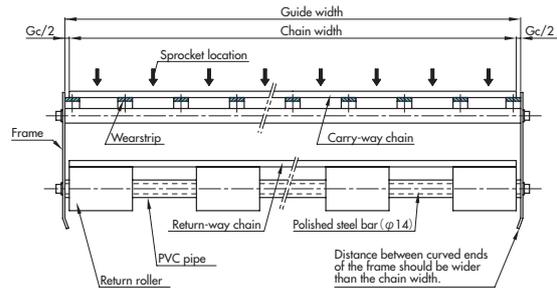
Table 3: Guide Clearance Gc (mm)

Chain width mm	Temperature °C		
	-20 to 40	40 to 60	60 to 80
300 or less	5.0	6.0	7.0
300 to 500	6.0	7.0	9.0
500 to 1,000	8.0	11.0	15.0
1,000 to 1,500	11.0	15.0	21.0
1,500 to 2,000	14.0	20.0	28.0

Reference: Coefficient of linear expansion of polyacetal chain: $15 \times 10^{-5} / ^\circ\text{C}$

Example of Wearstrip Installation (at Ambient Temperature)

Wearstrips should be located at equal intervals alternating with sprockets.



Conveyor Layout

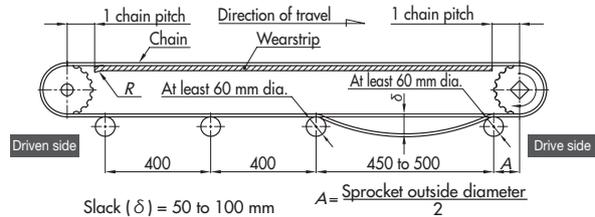
There are two methods of supporting the return way: the return roller system and the wearstrip system. Examples are shown below.

Precautions:

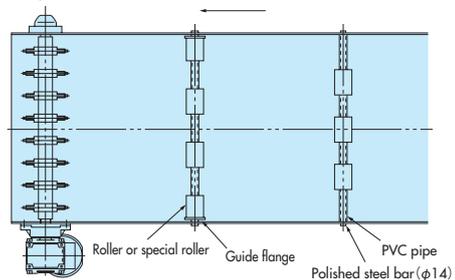
1. Pay particular attention to the ends when connecting conveyors using TOD chain.
2. The infed section of the return wearstrip should be made with a large radius of at least R40.
3. Cut the chain so that the catenary section will have an appropriate amount of slack to compensate for expansion and contraction caused by temperature changes. A tensioner or similar device should be used to adjust the chain take-up.

1) Support System Using Return Rollers

(Conveyor side view)



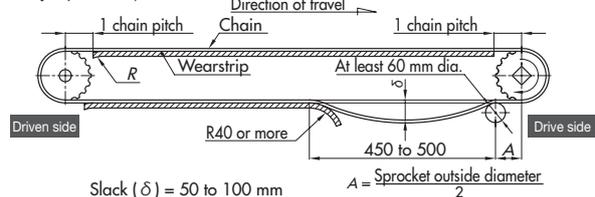
(Conveyor side view)



The center distance of the rollers (in the direction of the conveyor width) should be adjusted according to the width of the chain to be used.

Support System Using Wearstrips

(Conveyor plan view)



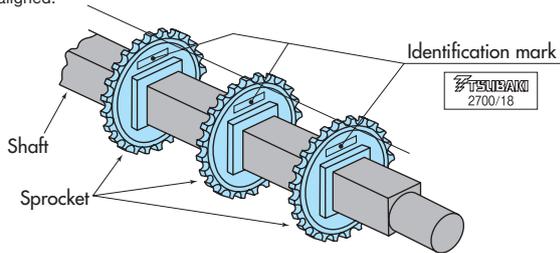
Handling

■ Handling Sprockets

In general, square shafts are recommended for the drive and driven shafts used with plastic modular chain, except for special cases (such as fixed-width chains and right-angle transfers using TOD chains). Because changes in temperature will cause the chain to expand and contract, sprockets must be mounted so that they are free to move laterally across the width. However, to prevent meandering (snaking) of the chain, one (or two) sprocket(s) should be locked in position in the center of both the drive and driven shafts using setscrews or set-collars and hexagonal socket head cap screws. When installing the sprockets on the square shaft, the inscribed markings or identification marks should be used to orient the sprockets so that they all face the same direction and to keep the position of the teeth aligned.

■ Phase Matching of Sprockets

Install the sprockets on the shaft in such a manner that the direction and the position of all the inscribed markings or identification marks on the sprockets are aligned.



■ Chain Expansion/Contraction

Plastic modular chain is made of polymer resin and will expand and contract with changes in temperature. A rough estimate for linear chain expansion is 15×10^{-5} ($^{\circ}\text{C}$) for Standard and LFB chains and 11×10^{-5} ($^{\circ}\text{C}$) for HTW chain, using 20°C as the reference temperature. The expansion per nominal width (ΔW) is found using the following formula:

$$\Delta W = \text{chain nominal width} \times (\text{operating ambient temperature} - 20) \times 15 \times 10^{-5} \text{ (Standard, LFB)}$$

$$\Delta W = \text{chain nominal width} \times (\text{operating ambient temperature} - 20) \times 11 \times 10^{-5} \text{ (HTW)}$$

(Example)

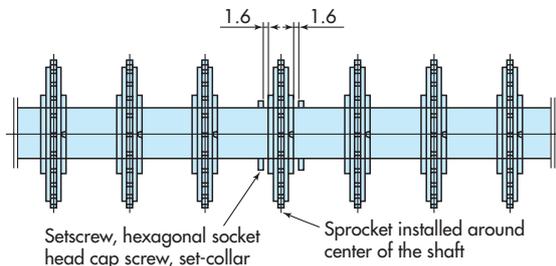
For K60 chain (1,524 mm wide) used in an environment where the temperature rises from 20°C to 60°C :

$$\Delta W = 1524 \times (60 - 20) \times 15 \times 10^{-5} = 9.1 \text{ mm (Standard, LFB)}$$

$$\Delta W = 1524 \times (60 - 20) \times 11 \times 10^{-5} = 6.7 \text{ mm (HTW)}$$

■ Locking Sprockets

The sprockets and the shaft are loosely fitted in order to absorb differences in thermal expansion between the chain and the conveyor and also installation errors of the chain and the sprockets. However, a setscrew, a hexagonal socket head cap screw, or a set-collar should be mounted on each side of a sprocket installed around the center with about 1.6 mm clearance with the sprocket in order to prevent winding motion in the chain.



■ Chain Installation

Wind the chain onto the sprockets installed at the given intervals (see "Determine Sprocket Locations").

■ Handling Plastic Modular Chain

■ Disconnecting the WT2700 Series

1) Insert a small flathead screwdriver or similar tool between the chain and the plug-clip on the side of the chain.



2) Using the screwdriver as a lever, pry out and remove the plug-clip from the base chain. Work carefully so that the plug-clip does not pop out and fly off.



3) Use a threaded head screwdriver and screw it into the center hole (1.0 mm dia.) of the pin and pull out the pin to disconnect the chain.



■ Reconnecting the WT2700 Series

1) When reconnecting the links of a chain, bring the ends of the two chains together, interlace the links, and insert the connecting pin from one side.



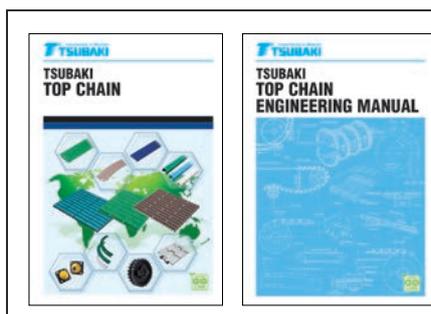
2) Then re-insert the plug-clip to cover the insertion area. At this point, check the orientation of the plug-clip (make sure that the protrusion is going into the pin hole), and seat the plug-clip by pushing in until you hear it click into place.



3) Check that the plug-clip is properly installed.



Note: When reconnecting chain links, be sure to use the pins provided or special pins.



For information on conveyor design, calculation of load, and selection of accessories and chains not listed in this catalog, please refer to the Tsubaki Top Chain catalog and engineering manual.

For Your Safety When Using the Chain



Warning

To avoid danger, observe the following rules.

General

- Do not use chain or chain accessories for any purpose other than their originally intended use.
- Never perform additional work on chain (including machining, grinding, annealing, cleaning with acids or alkalis, electroplating, or welding or cutting with a torch which will cause heat effects). These processes may cause the chain to break during operation, leading to a risk of severe injury.
- When replacing a worn or damaged part, do not replace just the worn or damaged part. Replace all parts with new parts. The chain may break during operation, leading to a risk of severe injury.
- When using chain in a lifting device, set up a safety barrier and do not allow anyone to go under the equipment. Also, when jigs or tools are connected to the edges of the chain, be sure to adequately lubricate the connecting parts. Detachment of the chain or unexpected chain breakage may lead to severe injury from flying or falling parts.
- Strictly observe the general guidelines listed in Section 1, Chapter 1, 2nd Edition of the Japanese Occupational Safety and Health Regulations as well as rules and regulations concerning occupational safety and health in your region/country. Always install safety equipment (safety covers, etc.) on chain and sprockets. There is a risk of severe injury from conveyed items or the chain as a result of becoming caught in the chain or from unexpected chain breakage.
- Chain and sprockets must be inspected on a regular basis. Damaged parts, or parts that have reached the end of their service life, should be replaced with new parts. There is a risk not only of the chain not functioning properly, but also of severe injury from chain breakage or abnormal operation. Perform the work as instructed in the manual, catalog or other documentation that was provided with the product.

During Installation

- Before starting work, turn off the power switch and take measures to prevent it from being turned on accidentally. There is a risk of severe injury from becoming caught in the chain.
- Always wear safety goggles when using hammers while working to connect chains. There is a risk of severe injury from flying metal fragments or splinters.
- Secure the chain and parts to prevent them from moving freely. There is a risk of severe injury from chain components moving under their own weight, or from falling and body parts becoming pinched in the chain.



Caution

To prevent accidents, observe the following rules.

- Understand the structure and specifications of the chain that you are handling.
- Before installing chain, inspect it to make sure no damage occurred during delivery.
- Inspect and maintain chain and sprockets at regular intervals.
- Chain strength varies by manufacturer. Only Tsubaki products should be used when chain is selected using Tsubaki catalogs.
- Start and stop the chain gradually, and do not subject it to sudden impact.
- Do not apply initial tension to the chain.
- Consult a Tsubaki representative before using the chain in cases where it will be in contact with special liquids or used under special environments.
- When disconnecting chains that have engineering plastic pins, do not reuse a pin once removed since it may not engage properly or it may even come loose.
- When using chains with engineering plastic pins under wet conditions, make sure that the temperature does not exceed 60°C.
- The link material for ULF ultra low friction series contains silicone-based lubricant. Therefore, do not use this chain for printing processes, or in cases where silicone will have a harmful effect.
- The TP-IR18/IR60/RR55 (return rollers), PR520-M (M plastic rail), and SJ-CNO are dry conveyor parts (lube-free, no water adhesion). DIA, MPD, MF, HS, and KV150 chains are specifically for dry environments. Do not use these on a conveyor under wet conditions (environments where they will come into contact with water, soapy water or other liquids), since this may cause the chain to malfunction. Bearing corner discs are also designed for use in dry environments.
- Using a plastic top chain in a wet environment will decrease the resin's self-lubricating ability and thus shorten the life of the chain. Since this is especially true with stainless steel pins, we recommend using plastic pins or KV series chain.
- The operating temperature range for accessories, sprockets, and idler wheels made of UHMW-PE (ultra-high molecular weight polyethylene) is -20°C to 60°C. Also, do not use in environments where such components will be exposed to steam.
- Toxic gases may be generated if the Chemical Resistant series (including Super Chemical Resistant) is exposed directly to open flame, or to temperatures above 150°C. Do not expose to excessive heat or to open flame.
- Plastic chain is flammable. Do not use at temperatures above the maximum allowable temperature or use near open flame. Combustion may generate dangerous toxic gases.

Warranty

1. LIMITED WARRANTY

Products manufactured by Seller: (a) conform to the design and specifications, if any, expressly agreed to in writing by Seller; and (b) are free of defects in workmanship and materials at the time of shipment. The warranties set forth in the preceding sentence are exclusive of all other warranties, express or implied, and extend only to Buyer and to no other person. ALL WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY EXCLUDED.

2. NON-RELIANCE

Buyer is not relying upon any advice, representations or warranties (except the warranties expressly set forth above) of Seller, or upon Seller's skill or judgment regarding the Seller's products. Buyer is solely responsible for the design and specifications of the products, including without limitation, the determination of suitability for Buyer's application of the products.

3. CLAIMS

- Any claim relating to quantity or type shall be made to Seller in writing within 7 days after receipt of the products; any such claim made thereafter shall be barred.
- Any claim under the above-stated Limited Warranty shall be made to Seller in writing within three (3) months after receipt of the products; any such claim made thereafter shall be barred.
- Seller's liability for breach of warranty or otherwise is limited to repair or replacement, at Seller's option, of non-conforming or defective products. Buyer waives all other remedies, including, but not limited to, all rights to consequential, special or incidental

damages, including, but not limited to, damages resulting from personal injury, death or damage to or loss of use of property.

- Repair, alteration, neglect or misuse of the products shall void all applicable warranties.

4. INDEMNIFICATION

Buyer will indemnify, defend and hold Seller harmless from all loss, liability, damage and expense, including attorneys' fees, arising out of any claim (a) for infringement of any patent, trademark, copyright, misappropriation of trade secrets, unfair competition or similar charge by any products supplied by Seller in accordance with the design or specifications furnished by Buyer, or (b) arising out of or connected with the products or any items into which the products are incorporated, including, but not limited to, any claim for product liability (whether or not based on negligence or strict liability of Seller), breach of warranty, breach of contract or otherwise.

5. ENTIRE AGREEMENT

These terms and conditions constitute the entire agreement between Buyer and Seller and supersede any inconsistent terms and conditions, whether contained in Buyer's purchase order or otherwise, and whether made heretofore or hereafter. No statement or writing subsequent to the date hereof which purports to modify or add to the terms and conditions hereof shall be binding unless consented to in writing, which makes specific reference hereto, and which has been signed by the party against which enforcement thereof is sought. Seller reserves the right to change these terms and conditions without prior notice.



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The TSUBAKI Eco Link logo is used only on products that satisfy the standards for environmental friendliness set by the Tsubaki Group.

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