

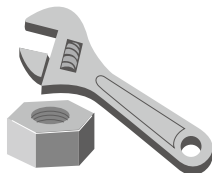
# **TSUBAKI FB Series Wear Resistant Conveyor Chain**



# Tsubaki's new FB Series for customers suffering pro

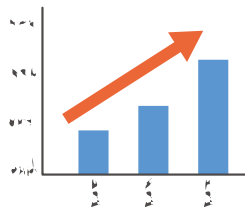
You Want

To spend less time on maintenance



You Want

Greater productivity



You Want

To reduce costs



Tsubaki has the answer thanks to the longer life of its new FB Series Large Size Conveyor Chain.



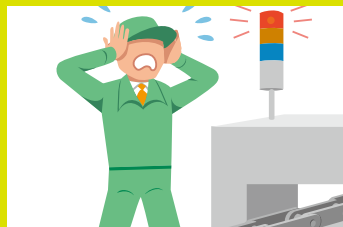
Benefit 1

Reduces troublesome cutting and lubing work!



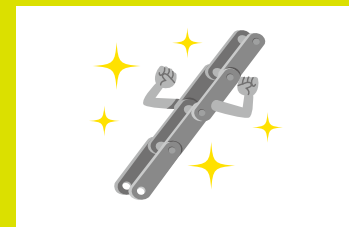
Benefit 2

Reduces productivity losses from stopped lines!



Benefit 3

Reduces chain replacement costs and frequency thanks to its longer life!



Simply put, FB Series can greatly lower your total cost of ownership!

## Cost Calculation

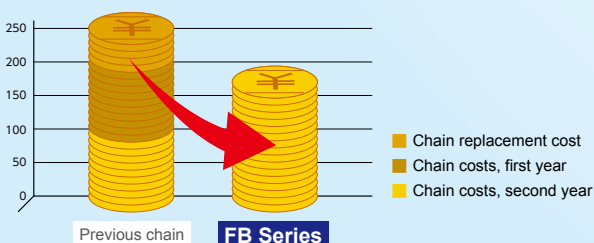
We calculated the total costs saved by a customer that saw two years of service life with FB Series on a line that normally needed annual chain replacement due to pin – bush wear elongation.

	Chain Cost	+ Replacement Cost	= Cost over Two Years
Previous chain	100	50	$100 \times 2 + 50 = 250$
FB Series	170	0	$170 + 0 = 170$

Two chains  $\times 2$  + Chain replacement costs + Production loss from stopped lines and replacement time

Just one chain

\*Assuming previous chain cost as 100, replacement costs as 50 (including labor/crane costs), and FB Series cost as 170.



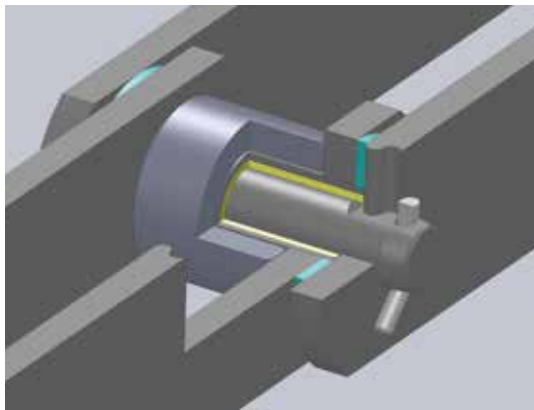
FB Series reduces total cost of ownership by **32%!** (difference of 80)



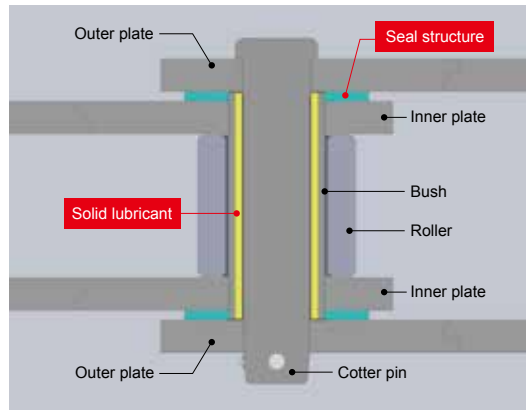
# ies Conveyor Chain – blems with wear elongation

## Construction

Enlarged diagram of bearing area



Enlarged diagram of bearing area



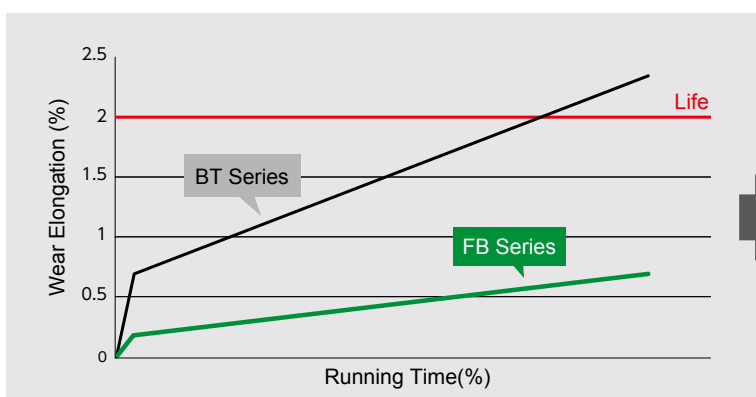
- 1 Solid lubricant ensures lubrication
- 2 Seal structure shuts conveyed material out
- 3 Seal structure retains solid lubricant



**Can reduce conveyor chain wear elongation**  
(pin – bush wear)

\*Be aware that FB Series is effective against chain wear elongation, but not against roller play and other forms of bush – roller wear.

## Wear Life Comparison



**Test results show FB Series has TWICE the life of BT Series**

\*In-house test comparison  
\*Results may differ depending on operating conditions

## Comparison of Pins after Testing



BT Series



FB Series

The seal structure of the FB Series keeps conveyed material out, while ensuring the solid lubricant provides lubrication, to give its pins a good wear surface.

## ■ Application Examples

The following are examples of major orders we have received for FB Series, but there are many other possible applications out there!

### Flow Conveyors

Chain runs in a sealed case and conveys loose material

#### Points

- No take up
- Less replacement frequency thanks to longer chain life
- No production loss from downtime



### Bucket Elevators

Buckets are attached to the chains to carry material to higher locations

#### Points

- Less replacement costs thanks to longer chain life
- Used on a main line that cannot suffer downtime
- Less troublesome chain cutting



### Slat Conveyors

Slats attached to the chains convey various materials.

#### Points

- No take up
- Less costs thanks to longer chain life
- Less troublesome chain cutting



\*We offer a bearing roller series chain as well to combat bush – roller wear. Contact a Tsubaki representative for more information.



## ■ Related Products

Tsubaki offers a line-up of other innovative products that can help you reduce your total cost of ownership.

### FA Series Conveyor Chain

Bushes and rollers are specially hardened for longer chain life. Very effective on lines that cause excessive roller outer diameter wear or play, and lines where bushes wear quickly.

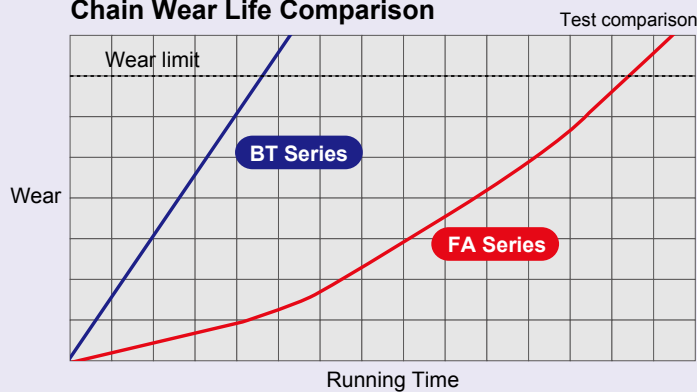
\*FB Series is effective against chain elongation, but FA Series is effective against roller play and other forms of bush – roller wear.

**Combats bush – roller wear**



FA Series being used on a cement tanker and for conveying fly ash.

#### Chain Wear Life Comparison



**Test results show FA Series has THREE TIMES the wear life of BT Series.**

\*In-house test comparison  
\*Results may differ depending on operating conditions

Comparison of Bushes after Testing



The BT Series bush was heavily ground out by the conveyed material, but the special hardening of the FA Series bushes almost totally prevented this grinding.

### Replaceable Tooth Insert Sprockets

Tsubaki also offers a line-up of sprockets where just the teeth can be replaced, which can reduce the massive replacement costs and labor when sprockets need replacing. We can also deliver sprockets already assembled onto their shafts. Contact a Tsubaki representative for more information.



Block tooth insert

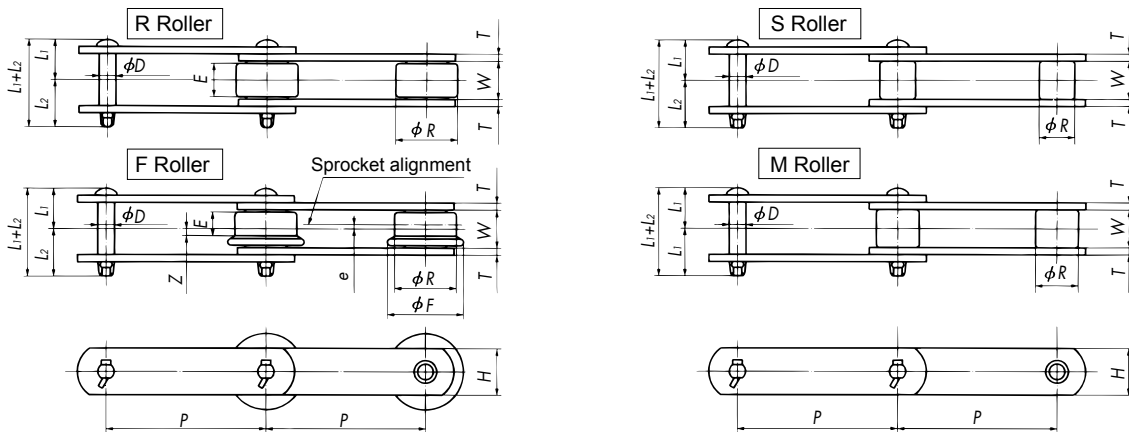


Split tooth insert



\*Specially hardened replaceable tooth inserts also available. Contact a Tsubaki representative for more information.

# FB Series Conveyor Chain Dimensions

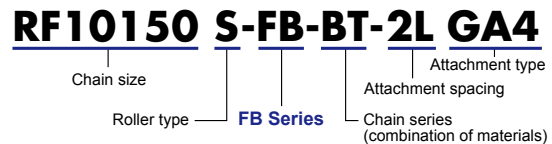


## ● Base Chain Dimensions

Chain No.	Roller Type	Average Tensile Strength				Pitch P	Inner Link Inner Width W	Plate			Pin				Roller							
		CT Series		BT Series				Width H	Thickness T	Dia. D	L1+L2	L1	L2	R Roller		F Roller			S Roller	M Roller		
		kN	{kgf}	kN	{kgf}									Dia. R	Contact Face Width E	Dia. R	Flange Dia. F	Contact Face Width E			Offset e	Z
RF08125	R/F/S	78.5	8000	98.1	10000	125	25.6	28.6	6.2	11.3	65.5	34.5	31.0	44.5	23.0	44.5	55.0	18.0	2.5	6.5	22.2	-
RF08150	R/F/S	78.5	8000	98.1	10000	150	25.6	28.6	6.2	11.3	65.5	34.5	31.0	44.5	23.0	44.5	55.0	18.0	2.5	6.5	22.2	-
RF10100	R/S/M	123.0	12500	226.0	23000	100	27.6	38.1	6.3(6.0)	14.5	69.0	36.0	33.0	50.8	25.0	50.8	65.0	19.0	3.0	6.5	29.0	31.8
RF10125	R/F/S/M	123.0	12500	226.0	23000	125	27.6	38.1	6.3(6.0)	14.5	69.0	36.0	33.0	50.8	25.0	50.8	65.0	19.0	3.0	6.5	29.0	31.8
RF10150	R/F/S/M	123.0	12500	226.0	23000	150	27.6	38.1	6.3(6.0)	14.5	69.0	36.0	33.0	50.8	25.0	50.8	65.0	19.0	3.0	6.5	29.0	31.8
RF12200	R/F/S/M	186.0	19000	279.0	28500	200	34.8	44.5	7.9	15.9	83.5	43.0	40.5	65.0	30.0	65.0	80.0	23.0	4.0	7.5	34.9	38.1
RF12250	R/F/S/M	186.0	19000	279.0	28500	250	34.8	44.5	7.9	15.9	83.5	43.0	40.5	65.0	30.0	65.0	80.0	23.0	4.0	7.5	34.9	38.1
RF17200	R/F/S/M	245.0	25000	387.0	39500	200	49.2	50.8	9.5(10.0)	19.1	109.5	58.0	51.5	80.0	42.0	80.0	100.0	33.0	5.0	11.5	40.1	44.5
RF17250	R/F/S/M	245.0	25000	387.0	39500	250	49.2	50.8	9.5(10.0)	19.1	109.5	58.0	51.5	80.0	42.0	80.0	100.0	33.0	5.0	11.5	40.1	44.5
RF17300	R/F/S/M	245.0	25000	387.0	39500	300	49.2	50.8	9.5(10.0)	19.1	109.5	58.0	51.5	80.0	42.0	80.0	100.0	33.0	5.0	11.5	40.1	44.5
RF26200	R/S/M	314.0	32000	520.0	53000	200	54.9	63.5	9.5(10.0)	22.2	116.5	61.0	55.5	100.0	48.0	100.0	125.0	37.0	6.0	12.5	44.5	50.8
RF26250	R/F/S/M	314.0	32000	520.0	53000	250	54.9	63.5	9.5(10.0)	22.2	116.5	61.0	55.5	100.0	48.0	100.0	125.0	37.0	6.0	12.5	44.5	50.8
RF26300	R/F/S/M	314.0	32000	520.0	53000	300	54.9	63.5	9.5(10.0)	22.2	116.5	61.0	55.5	100.0	48.0	100.0	125.0	37.0	6.0	12.5	44.5	50.8
RF26450	R/F/S/M	314.0	32000	520.0	53000	450	54.9	63.5	9.5(10.0)	22.2	116.5	61.0	55.5	100.0	48.0	100.0	125.0	37.0	6.0	12.5	44.5	50.8

- Note: 1. The W dimension on FB Series differs from other large size conveyor chains. FB Series can be used as is with RF conveyor chain sprockets, but be sure that the plates do not contact the sprocket teeth.  
 2. Refer to the Tsubaki Large Size Conveyor Chains and Sprockets catalog for more information on attachment types and chain selection/handling.  
 3. Sizes other than those shown above are available (including inch pitches). Contact a Tsubaki representative for more information.  
 4. Be aware that thrust loads on the chain may cause the seal to break and promote wear.  
 5. Due to the difference in the W dimension with standard sizes, contact a Tsubaki representative regarding connecting FB Series with other chain series.  
 6. Contact a Tsubaki representative regarding use when the operating temperature range is greater than 80°C.  
 7. Dimensions in brackets <> in the dimensional chart above are for 300 Series stainless steel. Dimensions not in brackets are for standard steel material.

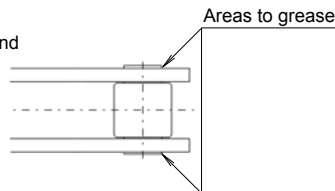
## ● Chain Numbering Example



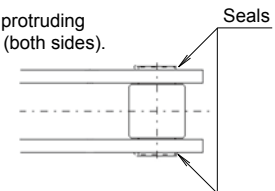
## Chain Connection

A. Lightly grease around the ends of the bushes (both sides) protruding from the end of the inner link plate on each chain formation.

\*Be careful that grease does not get into the inner diameters of the bushes.



B. Attach a seal to the protruding areas of the bushes (both sides).



C. Insert the inner link into the outer link of the chain you want to connect, taking care that the seal does not fall off or shift.

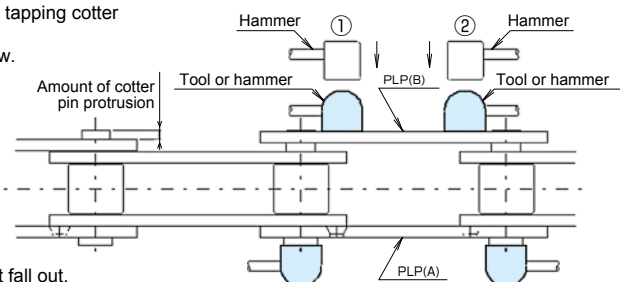
D. Set a tool or hammer against the cotter pin on the T-pin side as shown in the diagram below. Fix the hammer securely on the head of the cotter pin and tap the hammer or tool on the T-pin side with the hammer to press fit the cotter pin into the link pin. Alternate tapping cotter pins (1) and (2) on both sides of the link.

Tap the cotter pins so that they protrude an amount specified in the chart below.

\*Be careful so that the seal does not fall off or shift from the impact of hammering.

Size	Amount of Cotter Pin Protrusion on the T-pin Side
RF08,10,12	7.5
RF17,26	12

\*Contact a Tsubaki representative regarding our selection of chain connection tools.



E. Insert a T-pin and use a T-pin bending tool to bend the T-pin so that it does not fall out.

\*A monkey wrench can be used in place of a T-pin bending tool.

## For Your Safety When Using the Chain



**Warning** To avoid danger, observe the following rules.

- Do not use chain or chain accessories for any purpose other than their originally intended use.
- Never perform additional work on chain.
  - Do not anneal any chain parts.
  - Do not clean chain with acids or alkalis. These may cause cracking.
  - Never attempt to electroplate chain or chain parts. This may cause hydrogen embrittlement.
  - Do not weld chain. Heating effects will cause weakening and cracking.
  - When a torch is used to heat or cut chain, remove the links on each side and do not reuse them.
- When replacing a worn or damaged part, do not replace just the worn or damaged part. Replace all parts with new parts.
- If a material that causes hydrogen embrittlement (acid, strong alkali, battery fluid, etc.) comes in contact with the chain, immediately stop using the chain and replace it with new chain.
- When using chain in a lifting device, set up a safety barrier and do not allow anyone to go under the equipment.
- Always install safety equipment (safety covers, etc.) on chain and sprockets.
- 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.
- When installing, removing, inspecting, maintaining and oiling chain,
  - Perform the work as instructed in the manual, catalog or other documentation that was provided with the product.
  - Before starting work, turn off the power switch and take measures to prevent it from being turned on accidentally.
  - Secure the chain and parts to prevent them from moving freely.
  - Use a press tool or other special tools to separate or connect chain, and follow the correct procedures.
  - Remove and insert pins and rivets in the correct direction.
  - Wear clothing and protective gear (safety glasses, gloves, safety shoes, etc.) that are appropriate for the work.
  - Only experienced personnel should perform chain replacement.



**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.
- Minimum tensile strength refers to the failure point when the corresponding load is applied to the chain once and does not refer to the allowable operational load.

## 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

- (a) 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.
- (b) 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.
- (c) 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.

- (d) 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.

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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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