

Leading the Global Food Industry

Tsubaki Power and Performance
for the Food
Processing Machinery **Vol. II**

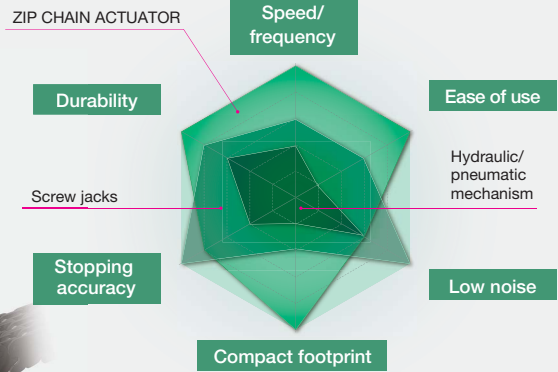
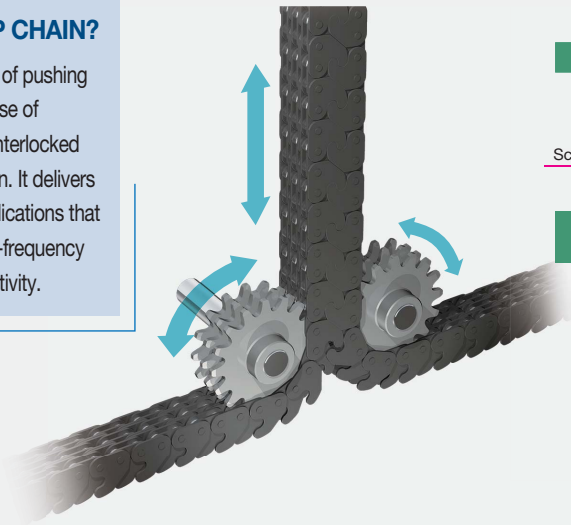


Sort. Lift. Push.

Tsubaki ZIP CHAIN

What is a Tsubaki ZIP CHAIN?

This unique chain is capable of pushing and pulling, and makes full use of Tsubaki's technology. Two interlocked chains form a straight column. It delivers superior performance in applications that require high-speed and high-frequency operation to improve productivity.



ZIP CHAIN ACTUATOR

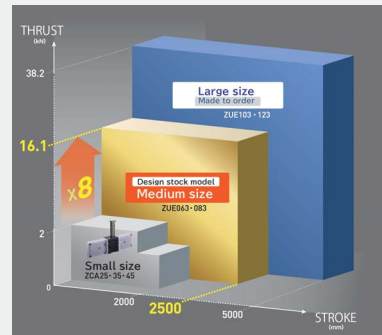


Thrust: Up to 38.2 kN
Stroke: 300 to 5,000 mm
High speed/high frequency/compact

Speed
1,000 mm/s

Service life
Travel: 4,000 km

Stroke/Thrust Range



ZIP CHAIN LIFTER

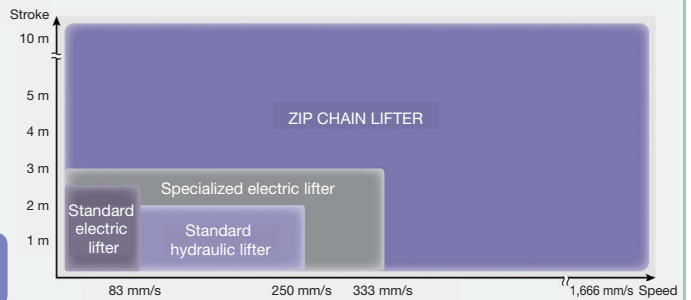


Allowable load: 1,000 kg
Stroke: 1,000 or 1,600 mm
Servomotor drive types are also available.
Support for various operating conditions.

Speed
1,666 mm/s

Service life
Over 1 million reciprocations

Speed/Stroke Range



ZIP MASTER

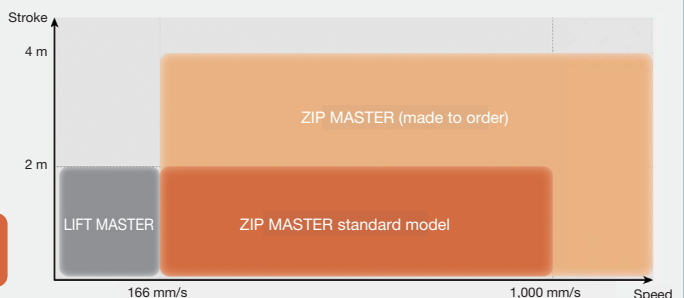


Speed: 60 m/min
Stroke: Up to 2,000 mm
Design/assembly not required, easy installation

Speed
1,000 mm/s

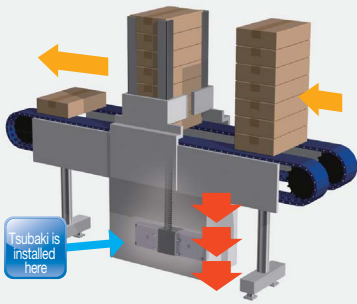
Service life
Over 1 million reciprocations

Speed/Stroke Range



- Breadmaking
- ZIP CHAIN ACTUATOR
- Rice cooking
- ZIP CHAIN LIFTER
- Confectionary production
- ZIP MASTER

User Feedback 01 Stacking/unstacking system



We were able to create lifters with flat tops, low-floor, and high-precision multi-point stop. And because they are electrically powered, they also help reduce CO₂ emissions.
(Facility Engineer)

POINT

- Enables low-floor systems
- Allows multi-point stopping
- Electric operation allows energy saving

User Feedback 02 Multi-tiered conveyor sorting system



Unlike conventional lifters, this product is easy to install and helps to shorten construction time and save construction costs. Since the drive section is located at the bottom of the device, maintenance work is easy, too.
(Facility Engineer)

POINT

- Easy installation, no need for a pit
- Allows to reduce takt time
- Easy maintenance

Convey.

- Breadmaking
- Gear Motor (Food Specifications)
- Slicers/mixers
- Brushless DC Hypoid Motor

Gear Motor (Food Specifications)



Food Specifications [FS]

Gear Motor/Hypoid Motor

Clean → Maintains clean workplace environments

Sanitary → Filled with H1 food-grade oil

User Feedback 03 Panning process



Sanitary transportation of dough is possible even though it comes into direct contact with the conveyor.
(Design Manager)

POINT

- Antibacterial baked powder coating (light gray)
- Aluminum die-cast terminal box
- Metal fan covers
- Output shaft covers for hollow shaft types

Brushless DC Hypoid Motor



0.2 kW to 0.75 kW

Compact

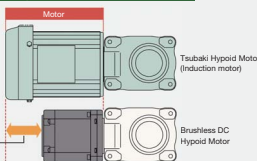
High efficiency means minimal loss, while the small motor and elimination of the cooling fan allow for a more compact design.

Compared with an induction motor

Motor overall length

38% more compact

Example: 67.2 mm shorter at 0.2 kW



Wide variable speed range

Motor speed range **100 to 2,500 r/min**

Enabling a wide range of speed changes from low to high speeds, this single unit can be used for systems that previously required different reduction ratios for different rotation speeds.

For agitators

This product offers superior speed control for agitation at stable speeds even with loads that fluctuate.

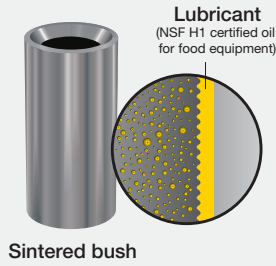


POINT

- Excellent speed control responsiveness and stability
- High efficiency motor (IE4 equivalent)
- Overload protection function
- Compact design
- Easy setup

- Noodle making/breadmaking
- Tsubaki Lambda Chain
- Packaging
- Stainless Steel Chain HS Series
- Frozen treats/desserts
- Stainless Steel Chain LSK Series

Tsubaki Lambda Chain



Special oil-impregnated sintered bushes with NSF H1-compliant oil allow for lube-free construction. Lambda Chains are used on many food processing machinery where lubrication can cause issues.

Clean → Maintains clean workplace environments

Lube free → Reduction of maintenance man-hours

User Feedback 04 Pasta transport bucket elevator



We adopted a Lambda Chain on equipment where lubrication is strictly prohibited. The service life has been greatly improved compared to roller chains that require lubrication!
(Maintenance Manager)

POINT

- Uses NSF H1 compliant impregnating oil
- Lineup with a wide range of temperatures
 - Heat resistant series (-10 to 230°C)
 - NEW** Cold resistant series (-30 to 150°C)

Stainless Steel Chain SS (Launched in 2023) / HS Series



	Previous SS Series	HS Series
Plate		18-8 stainless steel
Pin	18-8 stainless steel	13 Cr stainless steel*
Bush		
Roller		

* R rollers are 18-8 stainless steel

SS series

Double the wear life of previous products and 1.5 times the maximum allowable load

HS series

Better wear life than the SS series (up to 3 times longer) and 1.8 times the maximum allowable load

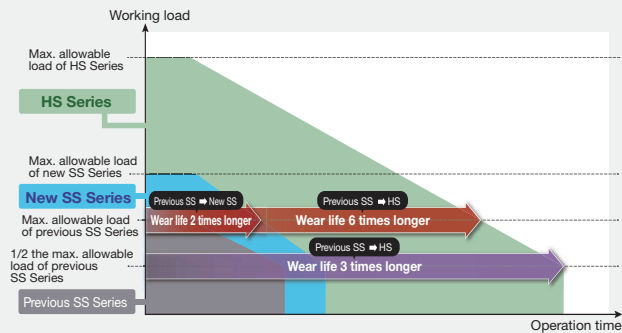
Greater strength → Compact design

Long life → Lower running cost

POINT

- Greater strength!
(Stainless Steel Sprockets Wear-resistant series are also available)
- Long life!

Comparing wear elongation



In-house test conditions
Size: RS50 No. of links: 66
Sprockets: 17 teeth (drive/driven)
RPM: 185 r/min
Environment: Ambient temperature, dry condition*

* What is "dry condition"?

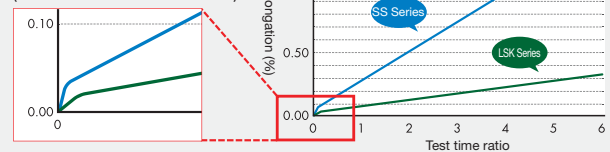
When the chain is not lubricated and is not exposed to water during operation.
Example: When a chain is washed after a day of operation and run the next day in an almost dry state, it is considered to be in a "dry condition."

Stainless Steel Chain LSK Series



Bushings made of special engineering plastic* are used in the bearing section to realize lubrication-free operation. Long service life and reduced initial elongation makes this a popular product for filling and packaging machines.

Normal ambient temperature wear elongation (In-house test results: -10°C to 60°C)



* Special engineering plastic is plastic that complies with the Food Sanitation Act.

User Feedback 05 Cup filling machine



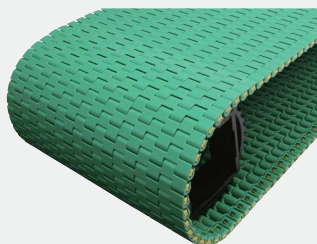
Not only does this chain offer a long service life, but initial elongation is minimized, which reduces the man-hours required for conveyor adjustment at the time of installation!
(Maintenance Manager)

POINT

- Reduced initial elongation
- Long life
- Chemical resistance
- Can be used from -20 to 180°C

- Bread making/noodle making
- Packaging
- Seasoning/beverages
- Plastic Modular Chain
- Plastic Top Chain

Plastic Modular Chain

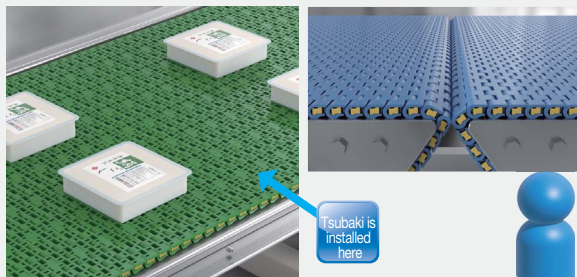


	Plastic Modular Chain	Belt
Meandering prevention	○	△
Maintenance	○	○
Accumulation	○	△
Durability (service life)	○	△
Initial costs	△	○
Running costs	○	△

Plastic modular chains are the solution for various conveyor belt issues!

Note: The above will vary depending on the operating conditions, such as mass of conveyed items and conveyance speeds.

User Feedback 06 Food conveyor lines



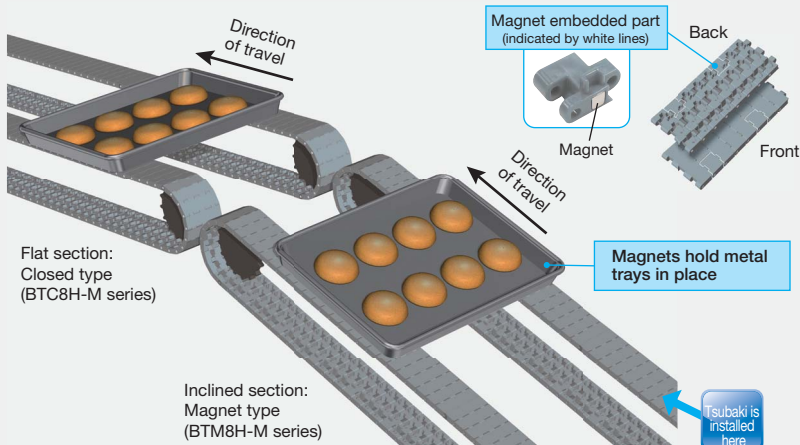
We used the WT0705-W with 7.5 mm chain pitch for replacing the flat belt. We were impressed by the benefits of partial chain repairs, and the service life was even longer than expected!

(Facility Engineer)

POINT

- Allows for a variety of layouts such as straight line and right-angle transfers.
- Easy maintenance. Partial chain replacement is possible
- Excellent sliding performance for smooth conveyance
- Available in material compliant with the Food Sanitation Law (MHLW Notification No. 370)

BTM8H-M magnet type for inclined conveyors



Magnets embedded in the chain hold onto metal trays for smoother transportation even on inclined or slippery sections.

POINT

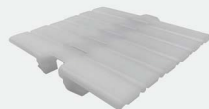
- Thick link structure resists chipping
- Easy maintenance, partial chain replacement is possible
- Small pinhole depressions prevent food crumb clogging

Plastic Top Chain TPUMF1200-T & TPUMF1200-TB

NEW

A new lineup with three types of chains for various transport conditions

Sideflexing chain with a flat surface
TPUMF1200-T

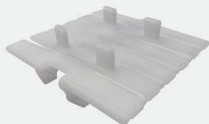


Three protrusions on the transport surface keep conveyed products from sliding
TPUMF1200-TB



Note: The top surface of the plates for TPUMF1200-TB has a glossy surface with no texture.

Capable of conveying products at an incline by combining TPUMF1200-T and TPUMF1200-TB with flight links
TPUMF1200F-T



Note: The top surface of the plates and the flights of TPUMF1200F-T have a glossy surface with no texture.

These new plastic top chains with sideflexing conveyance are optimized for food and food tray transport, including for noodle making.

POINT

- The standard (W) uses materials approved by the FDA (U.S. Food and Drug Administration)
- Short pitch reduces space for transfers between conveyors
- Adopts a D-shaped pin to prevent pin hole breakage
- Prevents floating on the carry-way and surface scratches on the return-way with float-preventive tabs

Rotate.

- Frozen food
- Pin Gear Drive Unit
- Ingredients

Pin Gear Drive Unit



These gear rack and wheel with rollers has features that differ from conventional gears. Stainless steel models and surface-treated models are also available. Can accommodate circular arc shapes for the required angle.

User Feedback 07 Washing machine



Tsubaki is installed here

We were considering using a large-diameter gear, but this was less likely to mesh off than gears and could be flexibly designed to accommodate our needs. We also chose this because it can be used in environments with exposure to water!

(Design Manager)

Easy selection → Versatile lineup for easy product selection

Easy installation → Support for shortened lead times

User Feedback 08 Cooking machine manufacturing



Tsubaki is installed here

The separable segmented design makes it easier than conventional gears to install, allowing us to reduce the man-hours required! This has resulted in shorter delivery times and lower equipment costs!

(Design Manager)

POINT

- Compatible with large diameters
- Easy handling
- Significant backlash tolerance

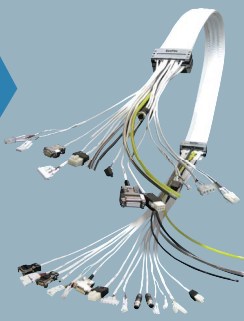
Protect.

- Breadmaking
- Cleanveyor
- Rice cooking
- Flatveyor

Cleanveyor/Flatveyor



Cleanliness
ISO Class 1

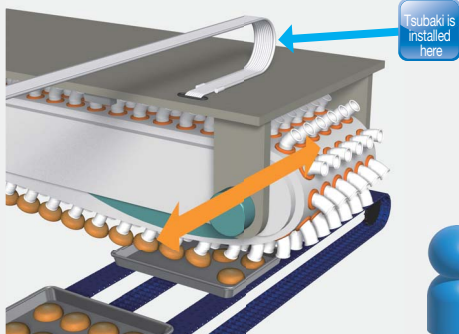


Cleanliness
ISO Class 2



This hose and cable carrier system helps suppress debris generation in movable wiring sections, reducing the risk of disconnections. It also has a freestanding function that allows for a maximum travel length of up to 2.8 m. The Flatveyor lineup also features the Flatveyor ZP Series which allows for cables and tubes to be installed and replaced!

User Feedback 09 Depanner system



Tsubaki is installed here

The drive unit had to be placed on the top of the product to automate the depanning section and save on labor. We chose Cleanveyor because it helps minimize the risk of foreign matter contamination!

(Design Manager)

Low debris generation → Minimizes contamination of foreign matter

Space-saving → Compatible with low installation space

POINT

- Low debris generation
- Reduced risk of wear debris contamination
- Easy to keep equipment sanitary

Monitor

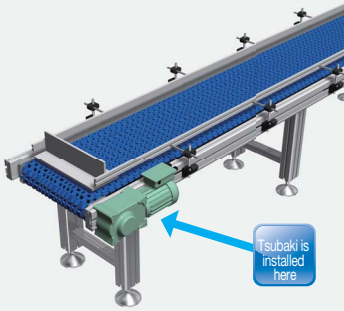
- Gear Motor IoT Series
- Shock Monitor

Gear Motor IoT Series



This gear motor features integrated power, temperature, and vibration sensors. It allows you to monitor the system operating status and load. This unit is also suitable for variable frequency drives. You can also save data for preventive maintenance.

User Feedback 10 Food conveyor line drive section



Modular sensors → Wiring each sensor not necessary

Visualization → Actual torque can be displayed and configured

We chose this unit for its predictive maintenance features as part of our efforts to create a smart factory. Thanks to high-precision load monitoring, quick abnormality detection, and stopping factor analysis, this is truly a treasured piece of equipment!

(Maintenance Manager)

POINT

- Power, temperature, and vibration monitoring
- Identifying load states of systems
- Maintenance to prevent malfunctions

Shock Monitor



This electricity-monitoring control device quickly detects even minimal load variations, including those due to running out of chain lubricant, and notifies operators of insufficient lubrication or lubrication timing.

User Feedback 11 Cup-filling machine



Electric → Can be installed in a control box that is not exposed to water

Not only can this unit detect overloads due to biting of foreign objects, etc., it can also notify when the oil runs out after chain lubrication, which helps with preventive maintenance.

(Maintenance Manager)

POINT

- Even minimal load variations can be detected
- Can be installed later without modifying the system



TSUBAKIMOTO CHAIN CO.

Japan Tsubakimoto Chain Co. <https://tsubakimoto.com/>

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