

TSUBAKI PLASTIC BLOCK CHAIN

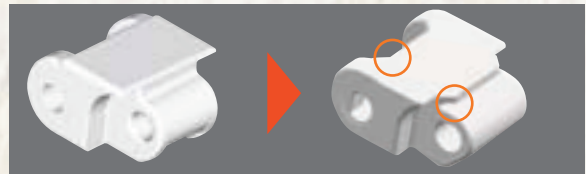


Tsubakimoto Chain Co., a leading manufacturer of power transmission and conveyor components, has redesigned its Plastic Block Chain to provide even greater user-friendliness and safer conveyance. And by expanding its innovative line-up of Tsubaki Plastic Block Chain products to include the new RSP40 chain with top plates, Tsubakimoto can better satisfy customer needs for a variety of applications in food processing, packaging, solar modules, rechargeable batteries, automotive parts, containers and pharmaceuticals.

New Advanced Features

New Chain Link Design Enhances Safety

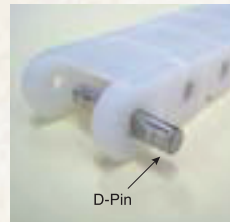
Redesigned chain links result in less toppling and tipping of goods from snagging during transfer from one conveyor to another. They also reduce the potential for broken chain fragments to become intermixed with conveyed goods.



Note: These redesigned components cannot be used to connect with older existing chain designs. If replacement is needed, the entire chain must be replaced as a unit. Design/shape of Heat Resistant/High Speed (KV) Series has not changed.

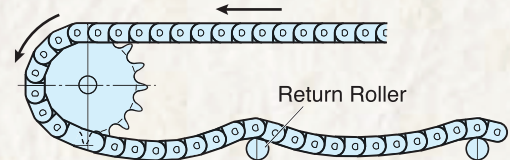
D-Pin Technology Prevents Stress Cracking

The use of D-pins for all connecting pins reduces the risk of damage to connecting areas, such as stress cracking of pin holes, brought on by cleaning solutions or other means.



Smaller Back-Flex Radius Helps in Layout Design

The back-flex radius on the RSP60 single-strand chain has been reduced from 450 mm to 180 mm, making it easier to design return-way layouts.



Basic Features

The following basic features have been proven in various conveyor applications.

Minimal Damage During Conveyance

Proprietary soft plastic top surfaces are ideal for transporting products and materials that could be easily scratched.

Smooth Conveyance

Plastic Block Chain allows smaller ANSI standard sprockets to be used, reducing the dead space between conveyors and ensuring smooth transfer from one conveyor to another.

Easy Maintenance

The simple construction of Plastic Block Chain makes it easy to wash and clean. Parts replacement is faster and simpler than with flat conveyor belts.

Lightweight Chain / Lower Running Costs

Because Plastic Block Chain is one third the weight of conventional steel chain, there's less chain tension. This significantly reduces the amount of power required to run the conveyor.

Lube-Free Operation

The self-lubricating engineering plastic used in the chain components allows dry, "lube-free" operation.

Quiet Operation

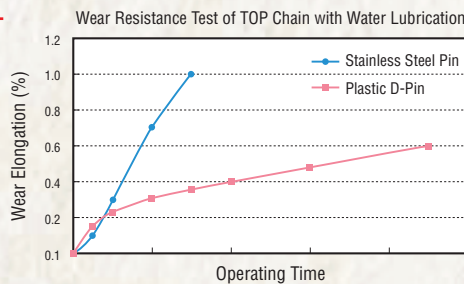
Plastic Block Chain is 5 to 7 dB quieter than conventional steel chain and reduces ear-jarring noises.



Features of Tsubaki Plastic D-Pin Chain

● Long Life

A combination of proprietary Tsubaki materials allows the chain to exhibit outstanding wear resistance between the pin and hinges—under dry, soapy or wet conditions. The chain works particularly well when using water as a lubricant.



● Less Noise & Vibration

With a chain weight 26% to 29% lighter than that of stainless steel knurled pin top chains, there is less dynamic energy involved and thus less noise and vibration.

● Lower Running Costs

Lighter chain weight means less tension on the chain, significantly reducing the amount of energy needed to run the chain.

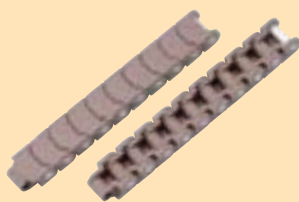
PRODUCT LINE-UP

A full line-up of Plastic Block Chain for a wide range of conveyor applications.

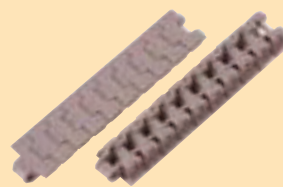
STRAIGHT RUNNING



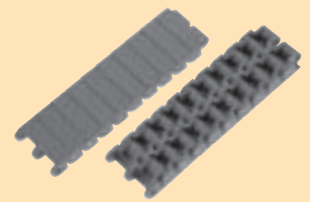
RSP35/40/50/60 --- Page 5
 - Pitch: 9.525 to 19.05 mm
 - Single strand
 - Stainless steel D-pin



RSP40P/60P --- Page 6
 - Pitch: 12.7/19.05 mm
 - Single strand
 - Plastic D-pin

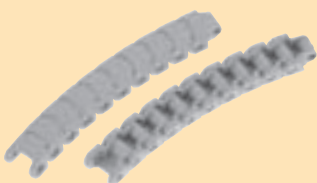


RSP40-SL300 --- Page 7
 - Pitch: 12.7 mm
 - Plate width: 30 mm
 - Single strand
 - Stainless steel D-pin

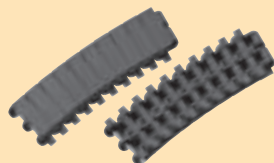


RSP60-2 --- Page 8
 - Pitch: 19.05 mm
 - Double strand
 - 40% stronger than RSP60
 - Stainless steel D-pin

SIDE FLEXING



RSP60-CU --- Page 9
 - Pitch: 19.05 mm
 - Single strand
 - Stainless steel D-pin or plastic D-pin



RSP60-CU-2 --- Page 10
 - Pitch: 19.05 mm
 - Double strand
 - 30% stronger than RSP60-CU
 - New float-preventive tabs (reinforced design)
 - Stainless steel D-pin

HEAVY DUTY



Snap Cover Chain --- Page 11
 - Pitch: 9.525 to 31.75 mm
 - Single strand
 - 6 to 8 times stronger than RSP chains

Innovative Tsubaki Plastic Series

Plastic Block Chain can be selected in accordance with your requirements and application from among a variety of plastic materials other than a standard-grade polyacetal resin.

LF

Low Friction/Wear Resistant Series

1. Protects Conveyed Items

Coefficient of friction is 15% to 45% lower than Standard Series, resulting in reduced line pressure during accumulation and minimizing potential scratching or other damage to conveyed items.

2. Long Service Life (compared to Standard Series)

Chain life is 1.2 to 2 times longer than Standard Series because of lower chain load.

3. Smooth Transfer and Accumulation of Conveyed Items

4. Reduced Drive Power Requirements

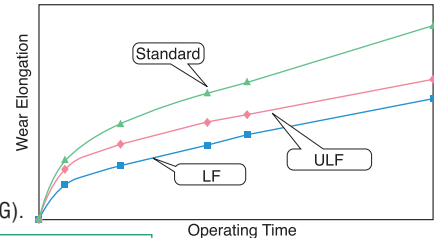
5. Diverse Color Options

Available colors include white (LFW), brown (LFB) and green (LFG).

Applications

- General-purpose series that can be used in a wide range of applications
- Conveyors under harsh conditions (high speeds, high loads) where chain elongation would be accelerated and the use of Standard Series would result in shortened chain replacement cycles
- Conveyors in high line-pressure situations where conveyed goods might be damaged

Wear Elongation Performance of Standard/LF/ULF Series



ULF

Ultra Low Friction Series

1. Protects Conveyed Items

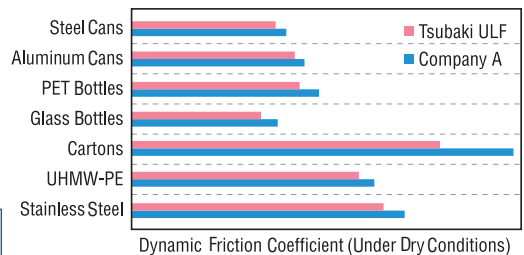
A special polyacetal material incorporating a silicone-based lubricant significantly lowers the coefficient of friction by 15% to 30% compared to that of LF Series (under dry conditions). Line pressure is reduced during accumulation, minimizing potential scratching or other damage to conveyed items.

2. Smooth Transfer and Accumulation of Conveyed Items

3. Reduced Drive Power Requirements

Applications

- Conveyors of PET bottles and paper packs
- Accumulation areas in front of inspection equipment and packaging units such as casers
- Ideal for combiners to reduce line pressure
- Ideal when wanting to reduce or eliminate lubricants (soapy water, etc.)
- Ideal when wanting to improve slip performance over LF Series



DIA

Impact Resistant Series for Dry Environments

1. Impact Resistant

Outstanding durability, plus, even in the unlikely event that the chain breaks, the broken resin fragments tend not to chip or shatter.

2. High Friction

Coefficient of friction is 20% higher than Standard Series. Can be used on slight inclines in dry environments.

3. Conforms to Japan Food Sanitation Act

Resin material satisfies requirements under the Japan Food Sanitation Act (Notification No. 20 of the Ministry of Health, Labour and Welfare).

4. Light Weight

About 20% lighter than Standard Series polyacetal top chain. Easy to handle, and can reduce drive power requirements.

Applications

- Conveyors of trays in bakeries
- Dry environments where food items will be placed directly on conveyor
- Additional countermeasure for protecting foods from contamination
- Slightly inclined conveyors

Impact Resistance Comparison (hammer used to apply impact)



Impact Resistant

Standard



KV

Heat Resistant/High Speed Series

1. Heat Resistant Up to 250°C

KV Series withstands temperatures up to 250°C (KV250) or 180°C (KV180). Can be used inside furnaces and heaters.

2. Minimal Expansion and Contraction Resulting from Temperature Changes

(1/2 to 1/3 of the Standard Series)

3. Fire Resistant

Conforms to UL standard V-0 classification (UL's highest classification).

4. High Chemical Resistance

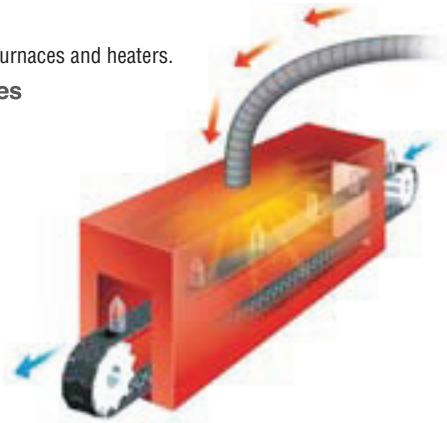
Possesses outstanding tolerance against chemicals used in washing and sterilization.

5. Electroconductivity

Volume specific resistance is low ($1 \times 10^6 \Omega$) with no generation of static electricity.

Applications

- Heat-shrink packaging lines for bottles
- Conveyors of solar modules after laminator
- Conveyors of printed circuit boards after dryer
- Conveyors of injection needles in sterilizing process and gluing process
- Conveyors regularly sterilized with hot water or chemicals
- High-speed conveyors of beverage cans in filler rooms



E

Electroconductive Series

1. Electroconductivity

Volume specific resistance is low ($1 \times 10^6 \Omega$) with no generation of static electricity.

Applications

- Conveyors of solar modules before laminator, between cutting machine and laminator
- Conveyors of printed circuit boards after soldering process
- Conveyors of electronic components and modules
- Suitable for preventing dust adhesion by static electricity, and generation of electric noise and sparks

Y

Chemical Resistant Series

1. High Chemical Resistance

Possesses outstanding tolerance against chemicals such as organic solvents, inorganic salts, acids, alkalis and oxidants. (Refer to page 13 for details.)

Applications

- Conveyors of printed circuit boards or silicon wafers in cleaning process
- Conveyors of rechargeable batteries
- Conveyors in cleaning process with chloride chemicals

SY

Super Chemical Resistant Series

1. Enhanced Chemical Resistance

Pin made of titanium instead of 304 stainless steel provides enhanced chemical resistance compared to Chemical Resistant Series (Y). (Refer to page 13 for details.)

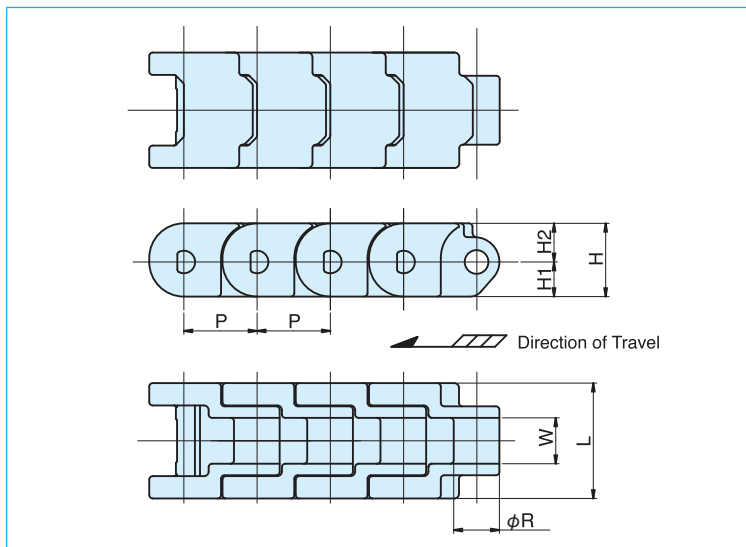
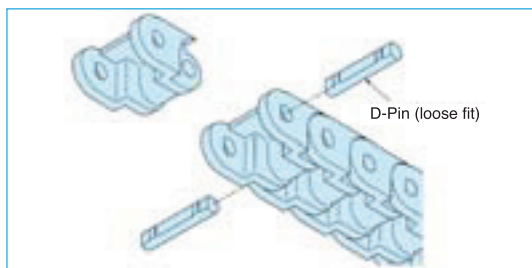
Applications

- Conveyors of rechargeable batteries
- Conveyors in acid or alkaline environments
- Ideal when wanting to improve chemical resistance over Y Series

In addition, various other types are also available, including Antibacterial/Mold Resistant (MWS), Impact Resistant Series for Wet Environments (DIY), Acid Resistant (AR), Ultraviolet Resistant (UVR), High Friction (HF) and Electrostatic Preventive (SE).

Please refer to the Tsubaki Top Chain catalog for more details.

Single Strand, Straight Running, Stainless Steel Pins



Dimensions in mm

Tsubaki Chain No.	P	R	W	L	H1	H2	H	Approx. Mass kg/m	No. of Links per Standard Length (3,048 mm)
RSP35	9.525	5.08	4.78	13	4	5	9	0.15 (0.13/0.18)	320
RSP40	12.7	7.92	7.95	20	6	6.7	12.7	0.36 (0.30/0.45)	240
RSP50	15.875	10.16	9.53	22.5	7	8	15	0.46 (0.40/0.55)	192
RSP60	19.05	11.91	12.7	30	8.5	8.8	17.3	0.72 (0.68/0.90)	160

Note: Mass shown in (/) is for DIA/DIY.

Chain Material Availability / Technical Data

Tsubaki Chain No.	Standard	LF Series			MWS Series	ULF Series	KV Series		E Series	Y Series	SY Series	DIA Series	DIY Series
		LFW	LFG	LFB			KV180	KV250					
		White	White	Green			Brown	Cream					
RSP35	●	●	●	●	●	●	●	—	●	●	—	●	●
RSP40	●	●	●	●	●	●	●	○	●	●	●	●	●
RSP50	●	●	●	●	●	●	—	—	●	●	—	●	●
RSP60	●	●	●	●	●	●	●	○	●	●	●	●	●
Max. Allowable Load kN {kgf}	RSP35	0.18 {18}					0.18 {18}		0.13 {13}	0.10 {10}		0.14 {14}	
	RSP40	0.44 {45}					0.44 {45}		0.34 {35}	0.25 {25}		0.34 {35}	
	RSP50	0.69 {70}					—		0.49 {50}	0.39 {40}		0.54 {55}	
	RSP60	0.88 {90}					0.88 {90}		0.64 {65}	0.49 {50}		0.69 {70}	
Operating Temperature Range °C		-20 to 80					-20 to 180 (250)		-20 to 80				
Max. Allowable Speed m/min	With Lube	60					100		60	50		—	60
	No Lube	60					100		60	50		60	

●: Available ○: Design stock —: Not available

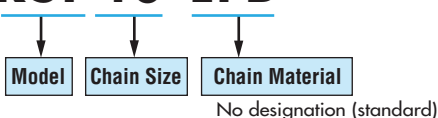
- Notes:
- Operating temperature of (250) is for KV250.
 - Standard chain length is 3,048 mm (10 feet).
 - Please contact Tsubaki for other plastic materials.
 - Only connecting pins for Super Chemical Resistant (SY) Series are diamond-knurled titanium pins.
 - Design/shape of Heat Resistant/High Speed (KV) Series has not changed.
 - Products with updated design cannot be connected to older designs. The entire chain must be replaced as a unit.

■ Sprockets

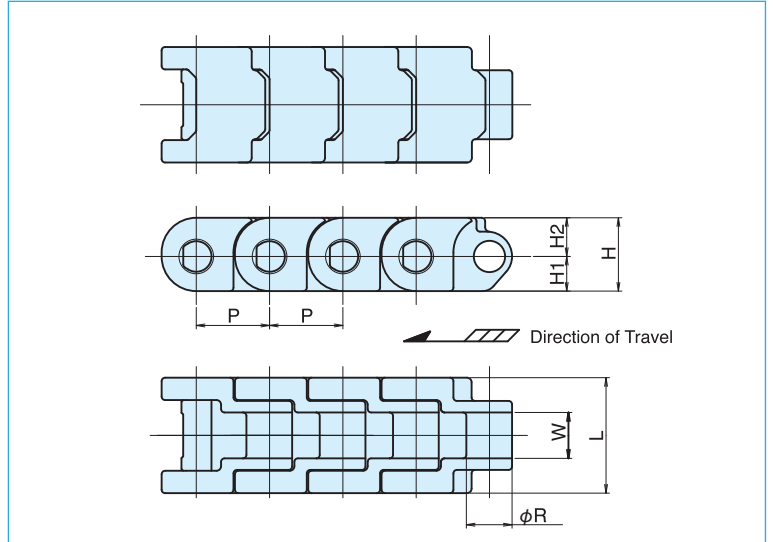
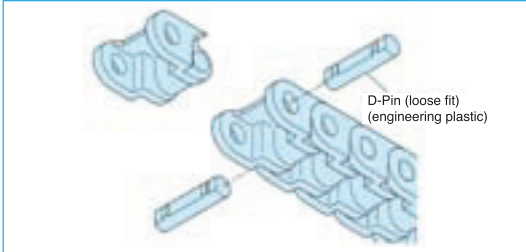
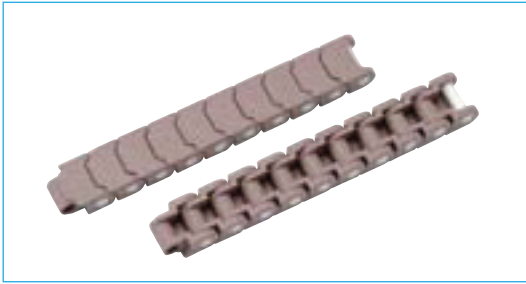
Standard ANSI sprockets can be used (minimum number of teeth is 14).

■ Model Identification

RSP40-LFB



Single Strand, Straight Running, Plastic Pins



Dimensions in mm

Tsubaki Chain No.	P	R	W	L	H1	H2	H	Approx. Mass kg/m	No. of Links per Standard Length (3,048 mm)
RSP40P	12.7	7.92	7.95	20	6	6.7	12.7	0.26 (0.30)	240
RSP60P	19.05	11.91	12.7	30	8.5	8.8	17.3	0.53 (0.62)	160

Note: Mass shown in () is for DIY.

Chain Material Availability / Technical Data

Tsubaki Chain No.	Standard	LF Series			MWS Series	E Series	DIY Series
		White	Green	Brown			
RSP40P	○	●	●	●	●	○	●
RSP60P	○	●	●	●	●	○	●
Max. Allowable Load kN {kgf}	RSP40P	0.25 {25}				0.18 {18}	0.20 {20}
	RSP60P	0.59 {60}				0.41 {42}	0.44 {45}
Operating Temperature Range °C		-20 to 60 (80)					
Max. Allowable Speed m/min	With Lube	60					
	No Lube	60					

●: Available ○: Design stock

Notes: 1. Operating temperature of (80) is for dry conditions (no lubrication).

2. Standard chain length is 3,048 mm (10 feet).

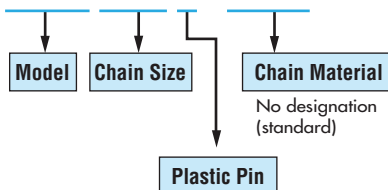
3. Plastic connecting pins (for linking chain units) only will be orange-colored. Plastic main body pins are white.

■ Sprockets

Standard ANSI sprockets can be used (minimum number of teeth is 14).

■ Model Identification

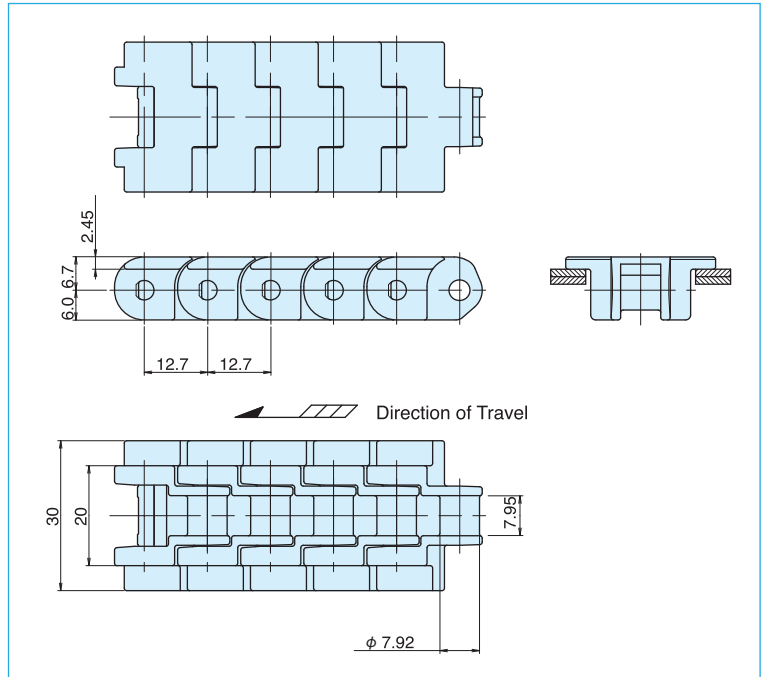
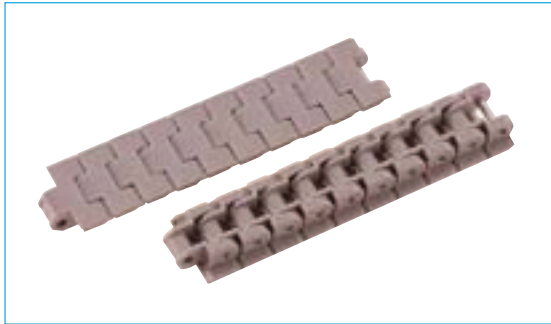
RSP40P-LFB



NEW

Plastic Block Chain

RSP40-SL



Features

- Plastic Block Chain with top plates; ideal for conveying small goods.
- Suitable for suspended conveyance of goods between paralleled strands of chains.

Chain Material Availability / Technical Data

Tsubaki Chain No.	Approx. Mass kg/m	Standard White	LF Series			MWS Series Cream	ULF Series Blue	E Series Black	Y Series Mat White	DIA Series Cream	DIY Series Green
			White	Green	Brown						
RSP40-SL	0.36 (0.3/0.45)	●	●	●	●	●	●	○	○	●	●
Max. Allowable Load kN {kgf}		0.44 {45}						0.26 {27}	0.19 {19}	0.34 {35}	
Operating Temperature Range °C		-20 to 80									
Max. Allowable Speed m/min	With Lube	60						50		—	60
	No Lube	60						50		60	

●: Available ○: Design stock

- Notes:
1. Mass shown in (/) is for DIA/DIY.
 2. Standard chain length is 3,048 mm (10 feet).
 3. Number of links per standard length is 240.
 4. Plastic pins are not available.

■ Sprockets

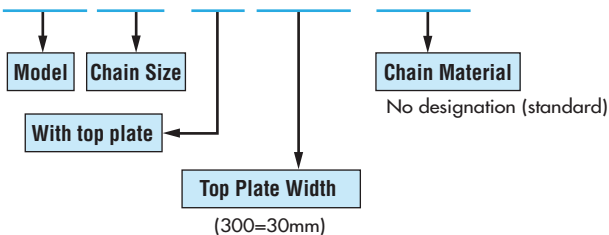
Standard ANSI sprockets can be used (minimum number of teeth is 14).

■ Allowable Load Graphs

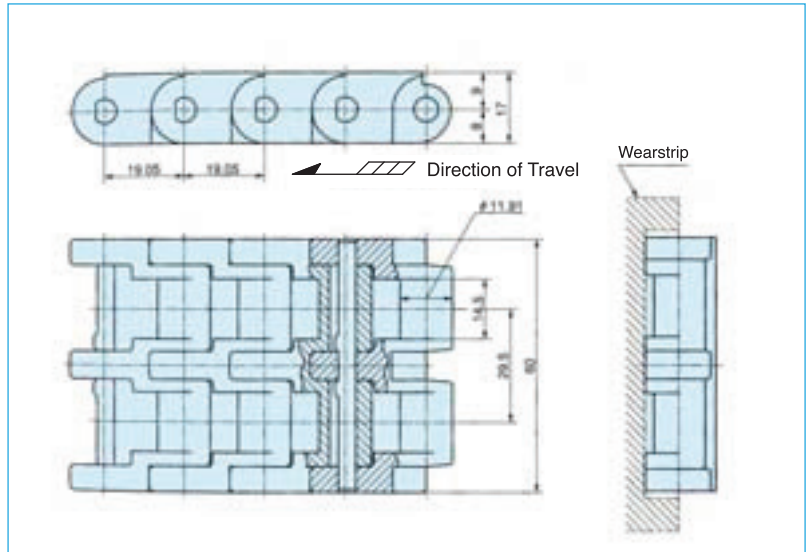
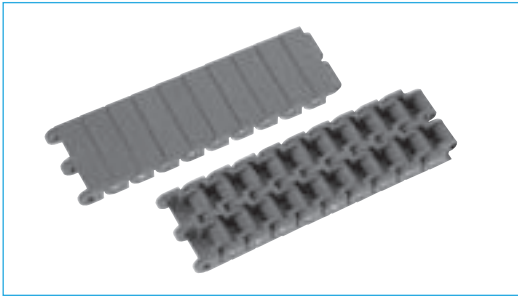
Same as RSP40 stainless steel pin chain. See page 17.

■ Model Identification

RSP40-SL300-LFB



Double Strand, Straight Running, Stainless Steel Pins



Features

- Link width is double that of RSP60 chain. Suitable for conveying wider goods.
- Approx. 40% higher maximum allowable load than RSP60 plastic chain. Ideal for higher applied load conditions.

Chain Material Availability / Technical Data

Tsubaki Chain No.	Approx. Mass kg/m	Standard	LF Series			MWS Series	ULF Series	E Series	Y Series	SY Series	DIA Series	DIY Series
			LFW	LFG	LFB							
		Gray	White	Green	Brown	Cream	Blue	Black	Mat White	Mat White	Cream	Green
RSP60-2	1.50 {1.20/1.65}	●	●	●	●	●	●	○	○	○	●	●
Max. Allowable Load kN {kgf}		1.27 {130}						0.89 {91}	0.64 {65}	0.98 {100}		
Operating Temperature Range °C		-20 to 80										
Max. Allowable Speed m/min	With Lube	100						60	50	—		100
	No Lube	100						60	50	100		

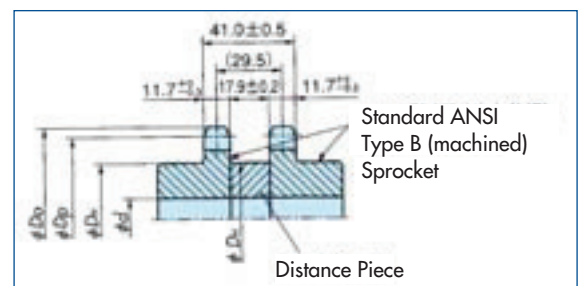
●: Available ○: Design stock

- Notes: 1. Mass shown in (/) is for DIA/DIY.
 2. Standard chain length is 3,048 mm (10 feet).
 3. Number of links per standard length is 160.
 4. Plastic pins are not available.

■ Sprockets (RSP60-2 and RSP60-CU-2)

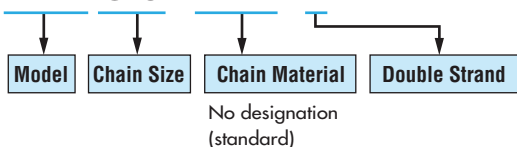
1. Two standard ANSI type B (machined) sprockets are combined for use with RSP60-2 and RSP60-CU-2 chains.
2. Adjust the width between the two sprockets by inserting a distance piece.

- Notes: 1. Standard ANSI double-strand sprockets cannot be used.
 2. Teeth on the two sprockets must be aligned with one another.
 3. No. of sprocket teeth is at least 12 teeth.

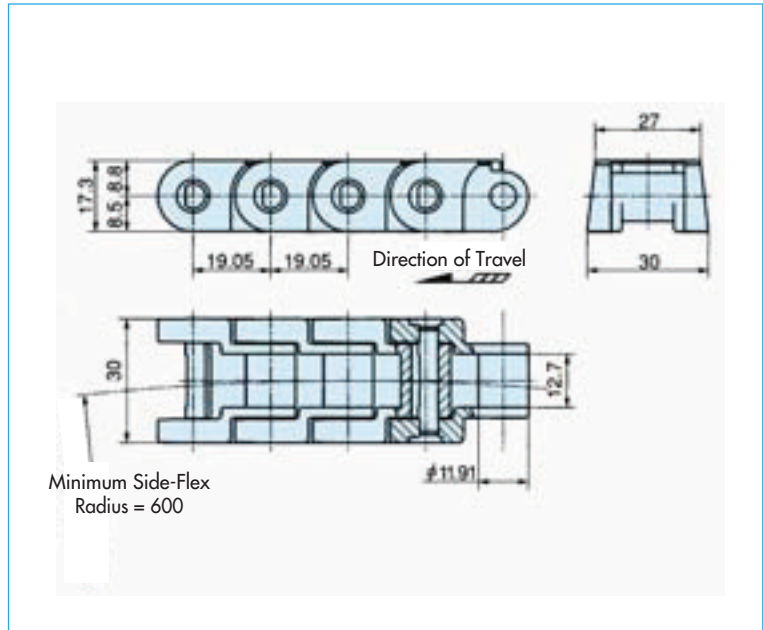
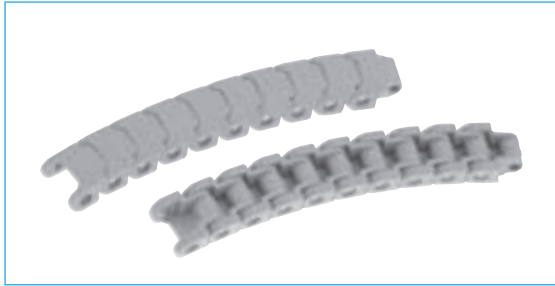


■ Model Identification

RSP60-LFB-2



Single Strand, Side Flexing



Features

- RSP60-CU and RSP60P-CU chain designed for use in side-flexing conveyors.
- Beveled chain links keep the chain securely in position at curved sections.

Chain Material Availability / Technical Data

Tsubaki Chain No.	Approx. Mass kg/m	Standard White	LF Series			MWS Series Cream	ULF Series Blue	E Series Black	Y Series Mat White	DIA Series Cream	DIY Series Green
			LFW White	LFG Green	LFB Brown						
RSP60-CU	0.7 (0.60/0.88)	●	●	●	●	●	●	○	○	●	●
RSP60P-CU	0.5 (-/0.68)	●	●	●	●	●	—	○	—	—	●
Max. Allowable Load kN {kgf}	RSP60-CU	0.83 {85}						0.59 {60}	0.42 {43}	0.64 {65}	
	RSP60P-CU	0.44 {45}						—	0.31 {32}	—	0.33 {34}
Operating Temperature Range °C		-20 to 80									
Max. Allowable Speed m/min	With Lube	60						50	60	—	60
	No Lube	60						50	60	60	

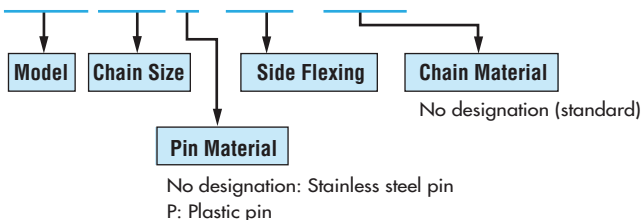
●: Available ○: Design stock —: Not available
 Notes: 1. Mass shown in (/) is for DIA/DIY.
 2. Standard chain length is 3,048 mm (10 feet).

■ Sprockets

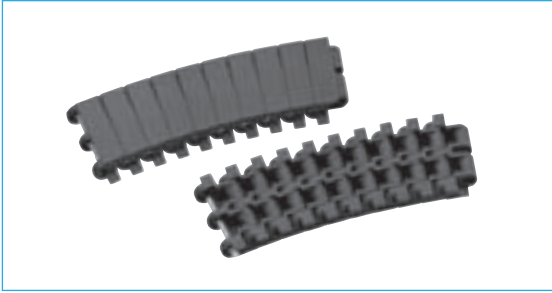
Standard ANSI sprockets can be used (minimum number of teeth is 14).

■ Model Identification

RSP60P-CU-LFB

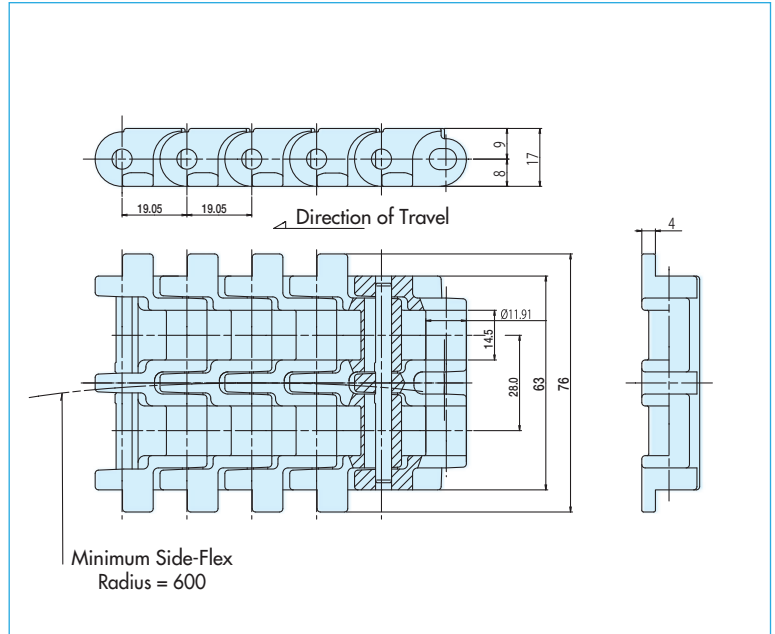


Double Strand, Side Flexing, Stainless Steel Pins



Features

- RSP60-CU-2 chain designed for use in side-flexing conveyors. Suitable for conveying wider goods.
- Approx. 30% higher maximum allowable load than RSP60-CU chain. Ideal for higher applied load conditions.
- Equipped with float-preventive tabs. Keeps the chain securely in position.



Chain Material Availability / Technical Data

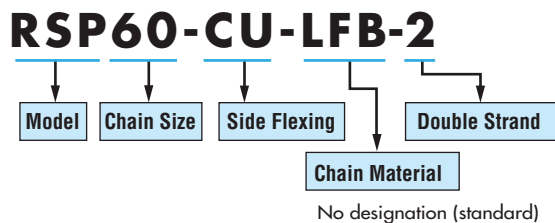
Tsubaki Chain No.	Approx. Mass kg/m	Standard	LF Series				MWS Series	ULF Series	E Series	Y Series	DIA Series	DIY Series
			LFW	LFG	LFB							
			Gray	White	Green	Brown						
RSP60-CU-2	1.50 {1.28/1.88}	●	●	●	●	●	●	○	○	●	●	
Max. Allowable Load kN {kgf}		1.08 {110}						0.78 {77}	0.54 {55}	0.83 {85}		
Operating Temperature Range °C		-20 to 80										
Max. Allowable Speed m/min	With Lube	100						60	50	—		100
	No Lube	100						60	50	100		

●: Available ○: Design stock
 Notes: 1. Mass shown in (/) is for DIA/DIY.
 2. Standard chain length is 3,048 mm (10 feet).
 3. Plastic pins are not available.

■ Sprockets

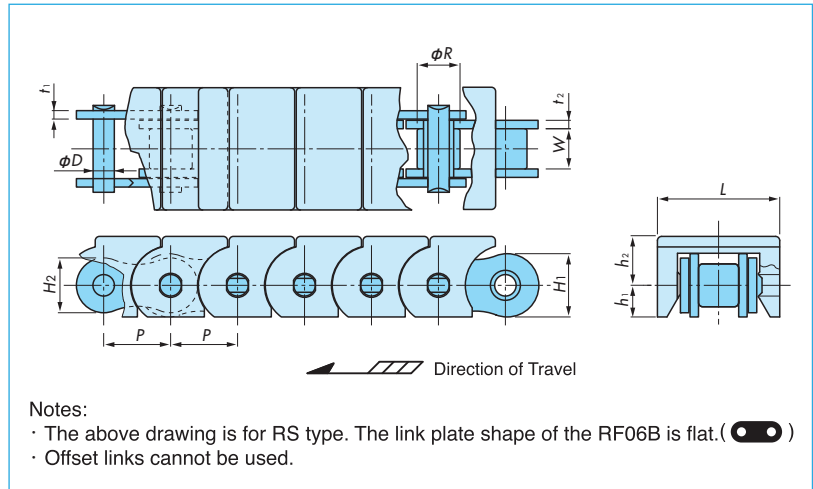
Sprockets are the same as for RSP60-2 chain (see page 8).

■ Model Identification



Snap Cover Chain

The Tsubaki line-up also features Snap Cover Chain, a standard roller chain with a plastic cover attached to each link of a steel base chain. Snap Cover Chain is designed to be used when Plastic Block Chain has insufficient tensile strength or when a longer conveyor length is desired.



Tsubaki Chain No.	Base Chain Type	Plastic Cover
RF06B	Standard	Standard Material: Polyacetal (white) Used for general applications
RS40 RS50	NP (nickel-plated)	
RS60 RS80 RS100	Lambda (lube-free) SS (304SS)	Electroconductive Material: Electroconductive polyacetal (black) Used in applications where dust build-up from static, electrical noise and sparks must be avoided (volume specific resistance $1 \times 10^6 \Omega \cdot \text{cm}$)

(Main Unit)

(Connecting Section)

(Main Unit and Connecting Section)

• Various surface-treated chains are also available. Consult Tsubaki for details.
 * Cannot be used with electroconductive plastic covers as it will impede electroconductivity.

Tsubaki Chain No.				Pitch <i>P</i>	Roller Diameter <i>R</i>	Width between Inner Link Plates <i>W</i>	Pin Diameter <i>D</i>	Plate			
Standard	NP	Lambda	SS					Thickness <i>t</i> ₁	Thickness <i>t</i> ₂	Width <i>H</i> ₁	Width <i>H</i> ₂
RF06B-SC	RF06B-NP-SC	RF06B-LM-SC	RF06B-SS-SC	9.525	6.35	5.72	3.28	1.0	1.27	8.2	8.2
RS40-SC	RS40-NP-SC	RS40-LMC-SC	RS40-SS-SC	12.70	7.92	7.95	3.97	1.5	1.5	12.0	10.4
RS50-SC	RS50-NP-SC	RS50-LMC-SC	RS50-SS-SC	15.875	10.16	9.53	5.09	2.0	2.0	15.0	13.0
RS60-SC	RS60-NP-SC	RS60-LMC-SC	RS60-SS-SC	19.05	11.91	12.70	5.96	2.4	2.4	18.1	15.6
RS80-SC	RS80-NP-SC	RS80-LMC-SC	RS80-SS-SC	25.40	15.88	15.88	7.94	3.2	3.2	24.1	20.8
RS100-SC	RS100-NP-SC	RS100-LMC-SC	RS100-SS-SC	31.75	19.05	19.05	9.54	4.0	4.0	30.1	26.0

Tsubaki Chain No.				Plastic Cover			Max. Allowable Load kN {kgf}		Approx. Mass kg/m	No. of Links per Standard Length
Standard	NP	Lambda	SS	<i>h</i> ₁	<i>h</i> ₂	<i>L</i>	Standard, NP, Lambda	SS		
RF06B-SC	RF06B-NP-SC	RF06B-LM-SC	RF06B-SS-SC	4.2	7.6	17.5	1.47 { 150 }	0.26 { 26.5 }	0.55	320
RS40-SC	RS40-NP-SC	RS40-LMC-SC	RS40-SS-SC	6.2	9.3	23.5	2.65 { 270 }	0.44 { 45 }	0.8	240
RS50-SC	RS50-NP-SC	RS50-LMC-SC	RS50-SS-SC	7.7	11.8	29.0	4.31 { 440 }	0.69 { 70 }	1.3	192
RS60-SC	RS60-NP-SC	RS60-LMC-SC	RS60-SS-SC	8.5	13.7	35.0	6.28 { 640 }	1.03 { 105 }	1.9	160
RS80-SC	RS80-NP-SC	RS80-LMC-SC	RS80-SS-SC	11.5	18.0	42.5	10.7 { 1090 }	1.77 { 180 }	2.9	120
RS100-SC	RS100-NP-SC	RS100-LMC-SC	RS100-SS-SC	14.7	21.3	49.5	17.1 { 1740 }	2.55 { 260 }	4.4	96

• Operating temperature range: -10°C to 80°C

• Maximum allowable speed: 60 m/min.

Sprockets

- Sprockets must have at least 13 teeth.
- RF06B chains are BS/DIN (ISO B) standard chains, which require 06B sprockets.
- Standard ANSI sprockets can be used for chains RS40 to RS100. However, note that, the maximum diameter of the sprocket hub for a given number of teeth must be kept to prevent interference between the bottom plate of the engineering plastic cover and the sprocket hub. Please consult Tsubaki for details.

Chain Availability Matrix

Plastic Chains

Chain Type \ Series		Standard	LF Low Friction/ Anti-Wear	MWS Antibacterial/ Mold Resistant	ULF Ultra Low Friction	KV Heat Resistant/ High Speed		E Electro- conductive	Y Chemical Resistant	SY Super Chemical Resistant
						KV180	KV250			
Plastic Block Chain	RSP35	●	●	●	●	●	▲	●	●	—
	RSP40	●	●	●	●	●	○	●	●	●
	RSP50	●	●	●	●	—	—	●	●	—
	RSP60	●	●	●	●	●	○	●	●	●
	RSP40P	○	●	●	—	—	—	○	▲	—
	RSP60P	○	●	●	—	—	—	○	▲	—
	RSP40-SL	●	●	●	●	—	—	○	○	—
	RSP60-2	●	●	●	●	—	—	○	○	○
	RSP60-CU	●	●	●	●	—	—	○	○	—
	RSP60P-CU	●	●	●	—	—	—	○	▲	—
	RSP60-CU-2	●	●	●	●	—	—	○	○	—
Snap Cover Chain	RF06B-SC	●	—	—	—	—	—	●	—	—
	RS40-SC	●	—	—	—	—	—	●	—	—
	RS50-SC	●	—	—	—	—	—	●	—	—
	RS60-SC	●	—	—	—	—	—	●	—	—
	RS80-SC	●	—	—	—	—	—	●	—	—
	RS100-SC	●	—	—	—	—	—	●	—	—

Chain Type \ Series		DIA Impact Resistant	DIY Impact Resistant	SE Electrostatic Preventive	AR Acid Resistant	HF High Friction	UVR Ultraviolet Resistant	Pin Material (for series other than SY; SY is titanium)
Plastic Block Chain	RSP35	●	●	○	○	○	○	304SS
	RSP40	●	●	○	○	○	○	304SS
	RSP50	●	●	○	○	○	○	304SS
	RSP60	●	●	○	○	○	○	304SS
	RSP40P	—	●	○	—	○	○	Special Engineering Plastic
	RSP60P	—	●	○	—	○	○	Special Engineering Plastic
	RSP40-SL	●	●	○	○	○	○	304SS
	RSP60-2	●	●	○	○	○	○	304SS
	RSP60-CU	●	●	○	○	○	○	304SS
	RSP60P-CU	—	●	○	—	○	○	Special Engineering Plastic
	RSP60-CU-2	●	●	○	○	○	○	304SS
Snap Cover Chain	RF06B-SC	—	—	—	—	—	—	—
	RS40-SC	—	—	—	—	—	—	—
	RS50-SC	—	—	—	—	—	—	—
	RS60-SC	—	—	—	—	—	—	—
	RS80-SC	—	—	—	—	—	—	—
	RS100-SC	—	—	—	—	—	—	—

• Refer to pages 5 to 11 for details on each type.

●: Items shown in catalog

○: Design stock available

▲: Design stock may be available; contact Tsubaki for conditions of use, etc.

—: Not Available

■: Plastic pin types

• Plastic pin types cannot be used in environments that are exposed to water temperatures greater than 60°C.

Chain Selection



Important Selection Considerations

- Because of the risk of damage and/or breakage, Plastic Block Chain (with the exception of the Impact Resistant Series) is not recommended for use under conditions in which the chain may be subject to impact, or in which foreign materials or objects might become jammed in the conveyor. Please consider the use of a metal chain under these conditions.
- The presence of abrasives during operation will cause the Plastic Block Chain to wear prematurely. Please consider the use of a metal chain in this case.
- When conveying food products, the Impact Resistant Series (DIA or DIY) is recommended if in case a chance impact were to damage the Plastic Block Chain and there would be a possibility that broken chain pieces or fragments might become intermixed with the product or item being conveyed.
- Consult with a Tsubaki representative before using the chain in cases where it will be in contact with special liquids (for example, solvents or chemicals such as acids or alkalis) or used under special environments (for example, exposure to ultraviolet radiation).
- Using stainless steel pin chain in a wet environment will decrease the resin's self-lubricating ability and thus shorten the life of the chain. The use of plastic pin chain is recommended in environments where the chain will be exposed to water.
- 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.
- The Chemical Resistant and Super Chemical Resistant chains may produce toxic fumes when exposed directly to flame or to temperatures exceeding 150°C. Never expose to flame or excessively high temperatures.
- Plastic Block Chain is combustible. Never use this product near open flame or fire, or at temperatures above the allowable operating range. It may ignite and burn, producing dangerous toxic fumes.



Caution: Corrosion Resistance to Various Fluids

When selecting a chain, refer to Table 1 to determine the suitability of the chain material for specific applications. In addition, Table 1 can be used to check the corrosion resistance of the wearstrip material to be used together with the top chain. The overall usage environment, including humidity and other conditions, must also be thoroughly evaluated in the selection process. This table lists materials separately for the top plate and for other chain components. These must be considered together for optimum selection. The table shows the results of lab tests conducted at 20°C (68°F) and is provided for reference only. No warranty conditions whatsoever are stated or implied by the data in this table.

Follow procedures 1 to 6 to select the chain most suitable for the application.

Step 1: Establish Operating Conditions

A) Conveyed Goods

- 1) Container material
- 2) Mass
- 3) Dimensions

B) Conveyor Arrangement

- 1) Straight or side flexing
- 2) Conveyor length
- 3) Conveyor layout
- 4) Space limitations

C) Conveying Conditions

- 1) Conveying capacity
- 2) Interval/spacing between conveyed goods
- 3) Conveying speed
- 4) Lubrication
- 5) Goods kept in accumulation or not

D) Environment

- 1) Temperature
- 2) Corrosive conditions including the presence of chemicals, water and high humidity (see Table 1)
- 3) Abrasive conditions including the presence of glass fragments, paint chips, metal powder, sand, etc.

Table 1: Corrosion Resistance to Various Fluids

Fluid	Polyacetal (standard)	LF (including MWS)	ULF Ultra-Low Friction	KV Heat Resistant/High Speed	DIA Impact Resistant (Dry)	Chemical Resistant	Super Chemical Resistant	Ultra-High Molecular Weight Polyethylene	DIY Impact Resistant (Wet)	Plastic Pin
Acetone	A	A	A	A	A	×	×	A	×	A
Oils (vegetable, mineral)	A	A	A	A	A	A	A	A	A	A
Alcohol	A	A	A	A	A	A	A	A	A	A
Aqueous Ammonia	A	A	A	A	A	A	A	A	A	B
Whiskey	A	A	A	A	A	A	A	A	A	A
Sodium Chloride	A	A	A	A	A	A	A	A	A	A
Hydrochloric Acid (2%)	×	×	×	×	×	×	A	×	×	A
Seawater	B	B	B	B	B	B	A	A	B	B
Hydrogen Peroxide	×	×	×	A	×	A	A	A	A	×
Sodium Hydroxide (caustic soda [25%])	A	×	A	A	—	A	A	A	A	×
Gasoline	A	A	A	A	A	A	A	B	A	A
Formic Acid	×	×	×	×	×	A	A	A	A	B
Formic Acid Aldehyde	A	A	A	A	A	A	A	A	A	—
Milk	A	A	A	A	A	A	A	A	A	A
Citric Acid	B	B	B	A	B	A	A	A	A	×
Chromic Acid	×	×	×	B	—	B	A	A	B	—
Acetic Acid	×	×	×	A	×	A	A	A	A	A
Carbon Tetrachloride	A	A	A	B	A	A	A	B	A	A
Hypochlorite Soda	×	×	×	×	A	×	A	A	×	B
Nitric Acid (5%)	×	×	×	A	×	A	A	B	A	A
Vinegar	B	B	B	B	×	B	A	A	B	A
Potassium Hydroxide	A	A	A	A	×	A	A	A	A	×
Soft Drinks	A	A	A	A	—	A	A	A	A	A
Soapy Water	A	A	A	A	A	A	A	A	A	A
Lactic Acid	A	A	A	A	B	A	A	A	A	B
Paraffin	A	A	A	A	A	A	A	A	A	A
Beer	A	A	A	A	A	A	A	A	A	A
Fruit Juice	A	A	A	A	B	A	A	A	A	A
Benzene	A	A	A	A	A	A	A	B	A	A
Water	A	A	A	A	A	A	A	A	A	A
Vegetable Juice	A	A	A	A	A	A	A	A	A	A
Iodine	×	×	×	×	—	×	A	B	×	—
Sulfuric Acid	×	×	×	×	×	×	A	×	×	×
Phosphoric Acid (10%)	×	×	×	B	×	B	A	A	B	B
Wine	A	A	A	A	A	A	A	A	A	A

A: Totally resistant B: Partially resistant (depending on operating conditions) X: Not resistant —: Unknown
 Notes: 1. Polyacetal includes both standard and electroconductive series.
 2. The corrosion resistance of the base chain pins (stainless steel) has been taken into consideration for KV and chemical resistant series.

Step 2: Select Chain Link Material

Select the appropriate series (on pages 3 and 4) according to the application and your requirements. Table 2 below shows the applicability of the Standard and LF Series under various usage conditions.

Table 2: Chain Link Material Selection Guide

Conveyed Goods	Link Plate Material	No Lube		With Lube	
		Abrasive			
		No	Yes	No	Yes
Tin Cans, Aluminum Cans, Steel Cans, Metallic Foil Containers (Beer cans, soft drink cans, cans having metal tops and bottoms and fiber sides, etc.)	Standard	C	×	A	D
Industrial Parts (Machine parts, dies, castings, forgings, metals, bearings, bolts, nuts, etc.)	LF				
Plastics and Plastic-Covered Containers, Paper Containers (For candies, confections, milk products such as milk, cheese and ice cream, etc.; includes paper board containers and those with paper bottoms such as those for soap and cereal)	Standard	D	×	B	D
Glass Bottles, Glass Products, Ceramics (Glass bottles and glass containers for liquors, foodstuffs, pharmaceuticals, cosmetics, etc.)	Standard	D	×	B	×
	LF				

A: Most recommended B: Highly recommended C: Recommended D: Acceptable ×: Inappropriate

Step 3: Select Wearstrip Material

Choose a suitable wearstrip material in the same way as in Step 2.

Table 3: Wearstrip Material Selection Guide

Chain Type	Wearstrip Material	No Lube		With Lube	
		Abrasive			
		No	Yes	No	Yes
Plastic Block Chain	Stainless Steel	B	D	A	A
	Steel	A	C	B	B
	P Plastic Rail	D	×	A	D
	PMW Plastic Rail	A	×	A	D
	M Plastic Rail	A	×	×	×

A: Most recommended B: Highly recommended C: Recommended D: Acceptable ×: Inappropriate

- Notes:
1. Refer to "No lube" for Lambda chains.
 2. Select stainless steel or steel wearstrips for KV series chains (heat resistant, high speed) for normal temperatures, and a stainless steel wearstrip for high-temperature applications.
 3. Recommended metallic wearstrip is cold-rolled steel.

	Material, Color	Features
P Plastic Rail	<ul style="list-style-type: none"> ● Ultra-high molecular weight polyethylene ● White (also available in green) 	<ul style="list-style-type: none"> ● Most commonly used rail ● Machined or extruded ● Recommended for plastic chain used under wet conditions
PMW Plastic Rail	<ul style="list-style-type: none"> ● Low friction, wear resistant ultra-high molecular weight polyethylene ● White 	<ul style="list-style-type: none"> ● Lower friction and more wear resistant than P plastic rail ● Machined
M Plastic Rail	<ul style="list-style-type: none"> ● Special polyamide ● Blue 	<ul style="list-style-type: none"> ● Specifically designed for dry use ● Wear resistant ● Machined

Note: Operating temperature range P/PMW plastic rails: -20°C to 60°C M plastic rail: -20°C to 80°C

Step 4: Determine Factors and Coefficients

The coefficients of dynamic friction shown in Tables 4 and 5 below are based on experimental data gathered by Tsubaki. Values may be different depending on usage conditions, environment, properties of the items being transported, level of cleanliness of the chain, and other factors.

Table 4: Coefficient of Dynamic Friction (μ_1) between Link Plate and Wearstrip

Link Plate Material	Lubrication	Wearstrip Material				
		Stainless Steel	Steel	P/M Plastic Rails	PMW Plastic Rail	
Polyacetal	Standard	No Lube	0.25	0.25	0.25	0.20
		Soapy Water	0.15	0.15	0.12	0.12
	LFW LFG LFB MWS	No Lube	0.17	0.17	0.18	0.15
		Soapy Water	0.12	0.12	0.12	0.12
	ULF	No Lube	0.14	0.14	0.15	0.13
		Soapy Water	0.11	0.11	0.11	0.11
KV180	No Lube	0.20	0.20	—	—	
	Soapy Water	0.12	0.12	—	—	
DIA	No Lube	0.30	0.30	0.30	0.30	
	Soapy Water	—	—	—	—	
DIY	No Lube	0.25	0.25	0.25	0.20	
	Soapy Water	0.15	0.15	0.12	0.12	

Notes:

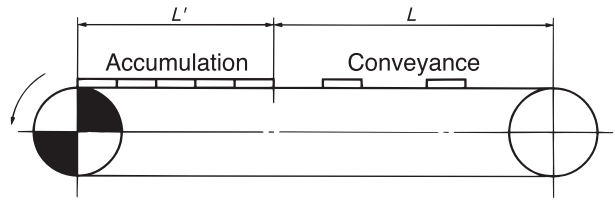
- For KV series, coefficient of dynamic friction listed is for room temperature; for high temperatures, use 0.35.
- M plastic rail is specifically designed for dry applications.

Table 5: Coefficient of Dynamic Friction (μ_2) between Conveyed Goods and Link Plate

Conveyed Material	Lubrication	Link Plate Material					
		Polyacetal			KV 180	DIA	DIY
		Standard	LFW, LFG, LFB	ULF			
Steel Cans	No Lube	0.25	0.17	0.14	0.20	0.30	0.25
Aluminum Cans	Soapy Water	0.12	0.12	0.11	0.12	—	0.12
Paper Packages	No Lube	0.30	0.25	0.18	0.35	0.38	0.30
	Soapy Water	0.20	0.20	0.12	0.20	—	0.20
Glass Bottles	No Lube	0.22	0.12	0.10	0.12	0.25	0.22
	Soapy Water	0.12	0.12	0.10	0.12	—	0.12
Plastic Containers	No Lube	0.25	0.16	0.13	0.20	0.30	0.25
	Soapy Water	0.15	0.15	0.11	0.15	—	0.15
Industrial Parts (metal)	No Lube	0.25	0.17	0.14	0.20	0.30	0.25
	Soapy Water	0.12	0.12	0.11	0.12	—	0.12

Note: For KV series, coefficient of dynamic friction listed is for room temperature; for high temperatures, use 0.35.

Step 5: Calculate Chain Tension and Power Required



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).

Explanation of Symbols

F	= Chain tension	kN kgf
m_1	= Chain mass	(kg/m)
L	= Length of conveyance section	(m)
m_2	= Mass of conveyed goods	(kg/m)
L'	= Length of accumulation section	(m)
m_3	= Mass of accumulated goods	(kg/m)
μ_1	= Coefficient of dynamic friction between chain and wearstrip	(See Table 4)
μ_2	= Coefficient of dynamic friction between conveyed goods and chain in accumulation section	(See Table 5)
P	= Power required	(kW)
V	= Chain speed	(m/min)
η	= Mechanical transmission efficiency for drive unit	

SI Units (kN)

Chain Tension

$$F = 9.80665 \times 10^{-3} \{ (2.1m_1 + m_2) L \cdot \mu_1 + (2.1m_1 + m_3) L' \cdot \mu_1 + m_3 \cdot L' \cdot \mu_2 \}$$

Power Required

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

Gravimetric Units (kgf)

Chain Tension

$$F = (2.1m_1 + m_2) L \cdot \mu_1 + (2.1m_1 + m_3) L' \cdot \mu_1 + m_3 \cdot L' \cdot \mu_2$$

Power Required

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

Step 6: Determine Chain Size

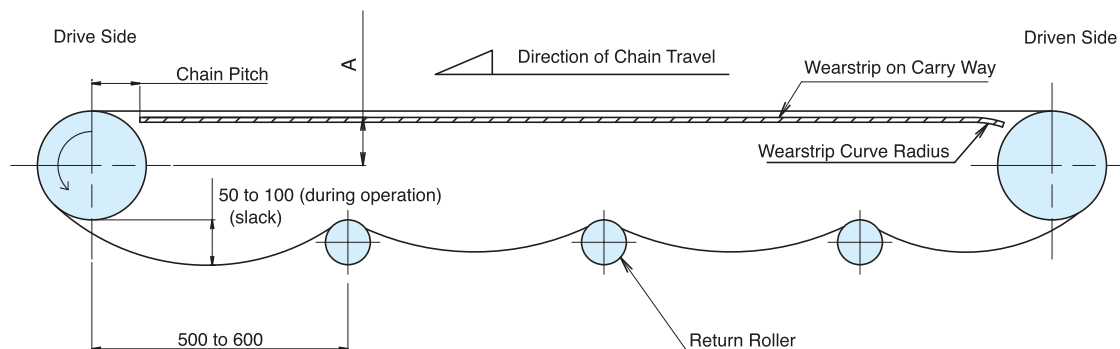
Select a plastic block chain having a maximum allowable load larger than the maximum tension (F) to be applied to the chain. Consult the maximum allowable load graphs on pages 17 and 18 and consider conveyor speed and ambient temperature in the selection process.

$$F \leq \text{Maximum allowable load (coupled with speed and temperature)}$$

When the maximum allowable load is insufficient, it can be corrected by increasing the number of chain strands or by splitting it into many short conveyors.

General Conveyor Design

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



1) Chain Slack

Return rollers should be spaced at intervals of 500 to 600 mm to support the return way of the chain. The amount of slack in the chain between return rollers should be 50 to 100 mm.

2) Engagement Angle

The engagement angle between the drive sprocket and the chain must be greater than 150°. When working tension is greater than 50% of maximum allowable load, the engagement angle must be greater than 180°.

3) Wearstrip Ends

A distance equivalent to the pitch spacing of the chain must be established between the end of the wearstrip and the respective shaft centers on both the drive and driven ends. Also, the tail end of the return wearstrip on the driven side must be rounded or chamfered (sloped) to prevent catching or snagging of the chain.

4) Height of Wearstrip on Carry Way

Refer to the above diagram or dimension A from the equation to the right.

$$A = \frac{\text{Sprocket Pitch Diameter}}{2} + a$$

Chain Type	<i>a</i>
RSP40-SL	+5
RSP35	-3.5
RSP40 (including plastic pins)	-5.5
RSP50	-6.5
RSP60-2, RSP60-CU-2	-7.5
RSP60, RSP60-CU (including plastic pins)	-8

Carry-Way Chain Guides

1) Chain Guide for Straight Running Chains

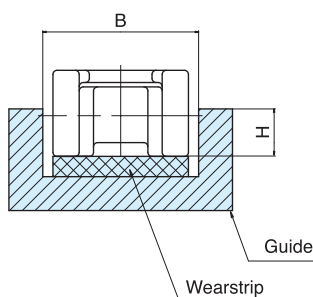


Table 6: Dimensions of Chain Guide

Type	RSP35	RSP40	RSP50	RSP60	RSP60-2
B	16	23	25.5	33	63
H	6	8	10	12	12

Notes:

Do not support the chain by the bush.

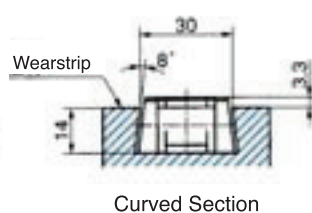
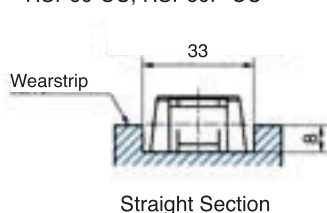
There is a risk of uneven wear due to sliding friction between the wearstrip and the bush.

Installing a wearstrip between the guide and the chain is recommended.

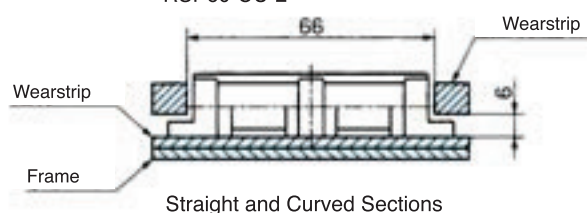
See Table 3 on page 13 for wearstrip selection information.

2) Chain Guide for Side Flexing Chains

• RSP60-CU, RSP60P-CU



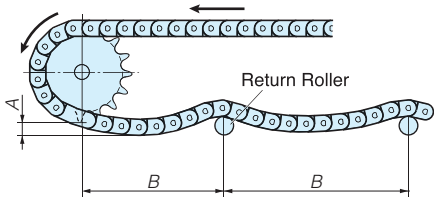
• RSP60-CU-2



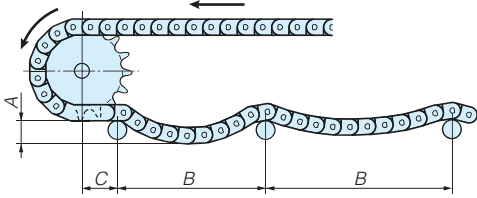
Return-Way Layout

1) Supported by Return Rollers

When working tension is less than 50% of maximum allowable chain load



When working tension is greater than 50% of maximum allowable chain load



This is the most common and recommended layout.

- Angle of chain wrap on the drive sprocket must be at least 150°.
- Make sure the return rollers rotate freely. If they do not rotate smoothly, localized sliding will occur, possibly generating wear dust or causing the top plate to wear unevenly.

- A: 50 to 100 mm (during operation)
 - B: 500 to 600 mm
 - C: Less than half the outer diameter of sprocket
- May vary depending on chain type and conveying conditions. To be used only as a basic guide.

- When using return rollers, check the back-flex radius of chains in Table 7. The radius of the return roller must be greater than the back-flex radius of the chain. However, as long as the back-flex radius is less than around 300 mm, return rollers can be used by keeping the chain slack low.

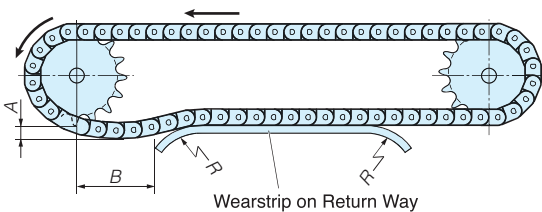
Table 7: Back-Flex Radius of Chains Unit: mm

	Chain Type	Back-Flex Radius
Straight Running	RSP35(-KV180)	110 (150)
	RSP40 (including plastic pins)	125
	RSP40-SL	50
	RSP50	200
	RSP60* (including plastic pins)	180
Side Flexing	RSP60-2	450
	RSP60-CU (including plastic pins)	250
	RSP60-CU-2	150

* Back-flex radius is 450 mm before design update.

- The ratio of the inner diameter to the outside diameter of the return rollers should be at least 1:4 to ensure smooth rotation of rollers. This is particularly beneficial for return rollers that use a soft material on the periphery of the rollers, such as TP-IR18 and TP-IR60 (specifically for dry environments).

2) Supported by Wearstrip

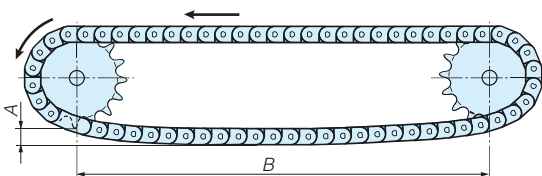


Although this is an economical option for layouts, it has a disadvantage in that the upper surface of the link plates is susceptible to damage from sliding. Suitable for when working tension is less than 50% of maximum allowable chain load.

- Angle of chain wrap on the drive sprocket must be at least 150°.
- The radius of curvature (R) on both ends of the return-way wearstrip must be greater than the back-flex radius of the chain in Table 7 so that the chain does not get caught.

- A: 50 to 100 mm (during operation)
 - B: 500 to 600 mm
- May vary depending on chain type and conveying conditions. To be used only as a basic guide.

3) No Support

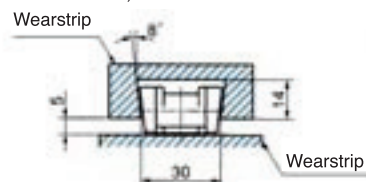


This conveyor layout is normally not recommended because the tension of the return way from the weight of the chain causes chain vibration and prevents smooth operation. If this method is unavoidable in the case of short conveyor lengths (less than 1.5 m), provide a take-up mechanism on the driven side or splice the chain in case the chain is elongated. The wrap angle on the drive sprocket must be at least 150° (when working tension is less than 50% of maximum allowable chain load).

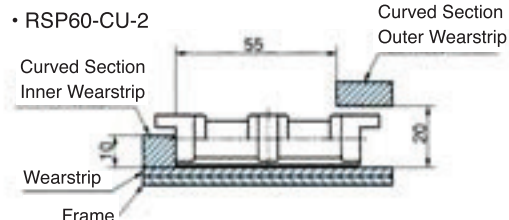
- The amount of chain slack A should be approximately 10% of the conveyor length B.

4) Chain Guide for Side Flexing Chains in Curved Sections

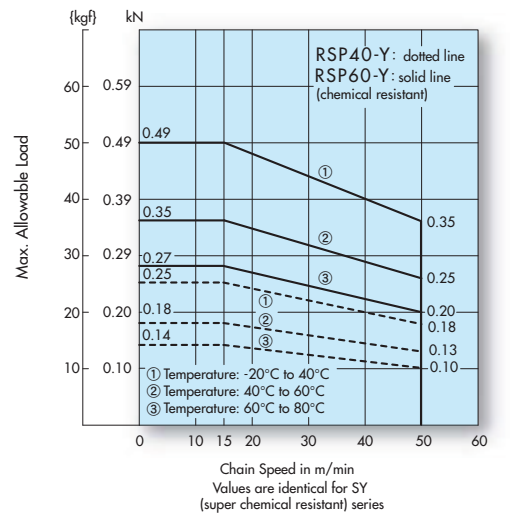
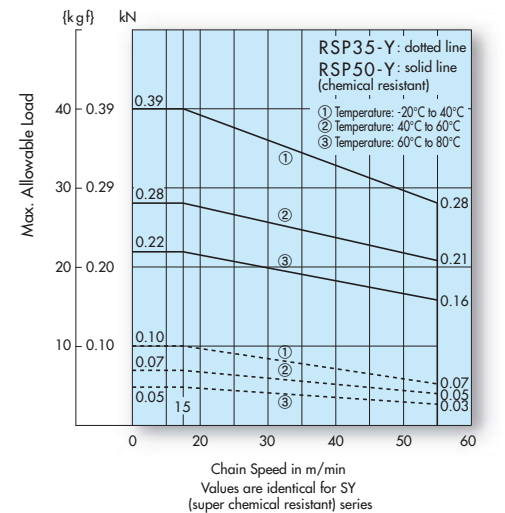
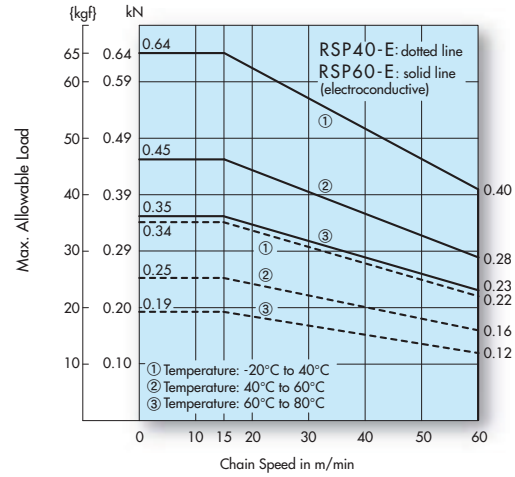
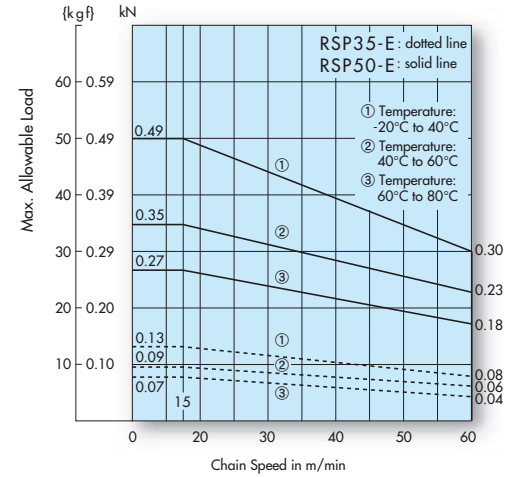
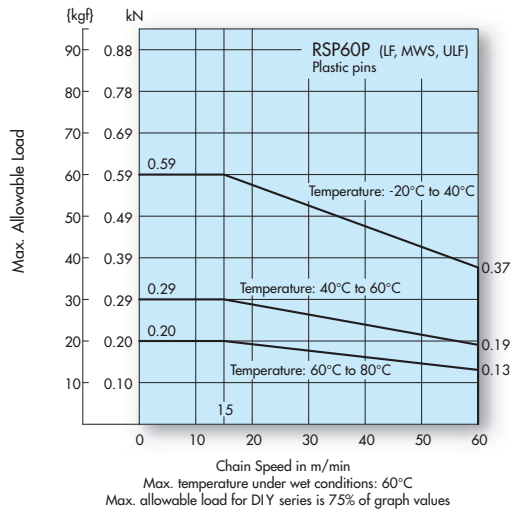
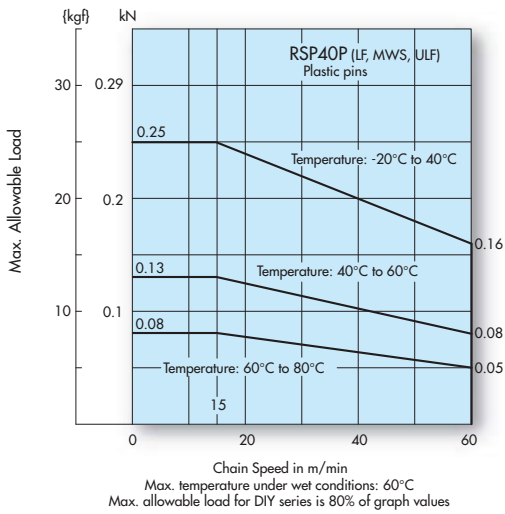
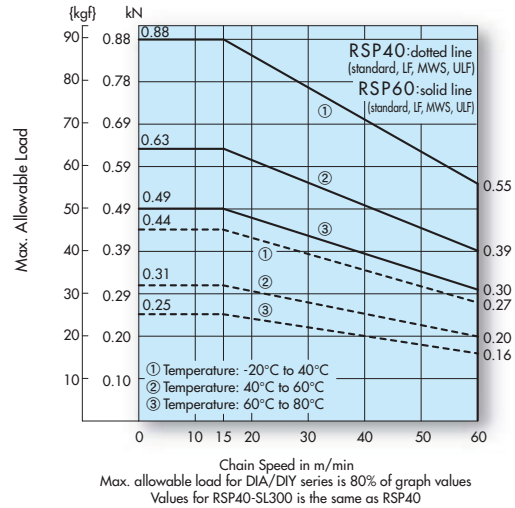
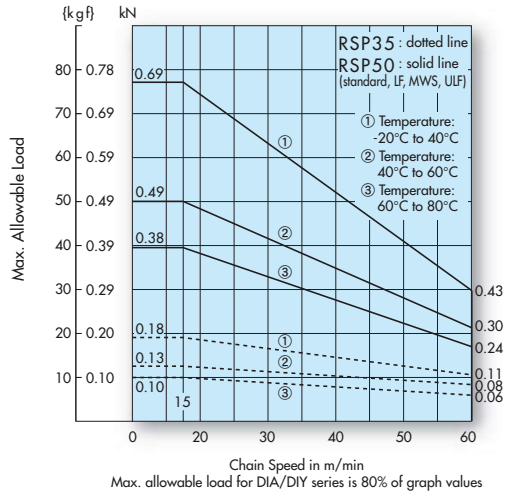
- RSP60-CU, RSP60P-CU



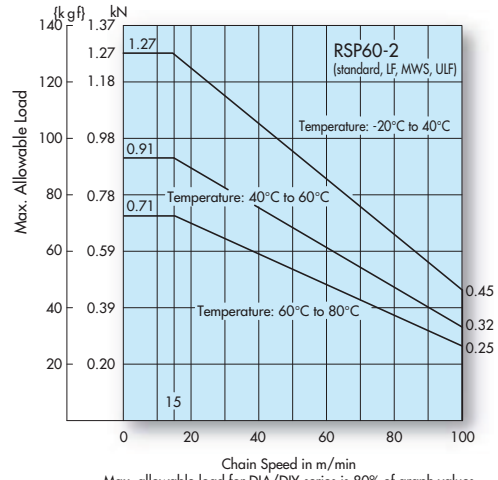
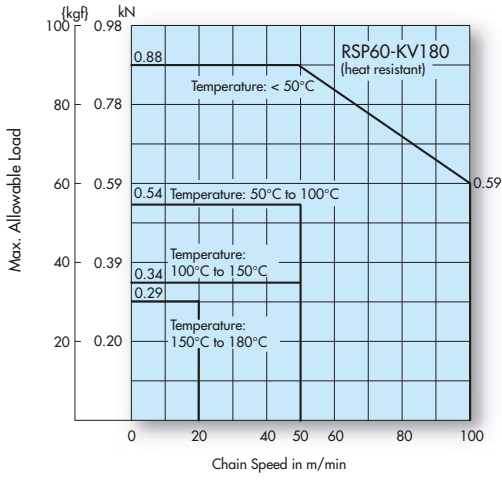
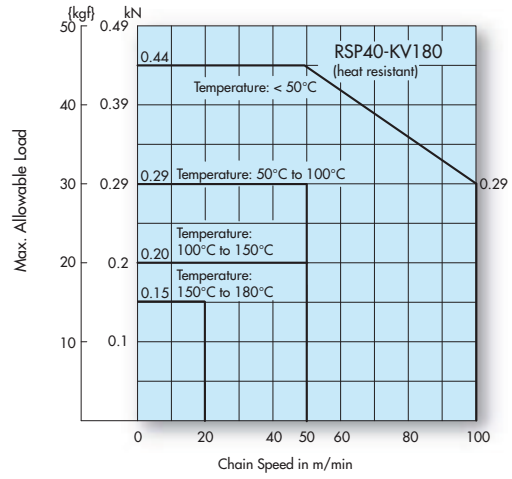
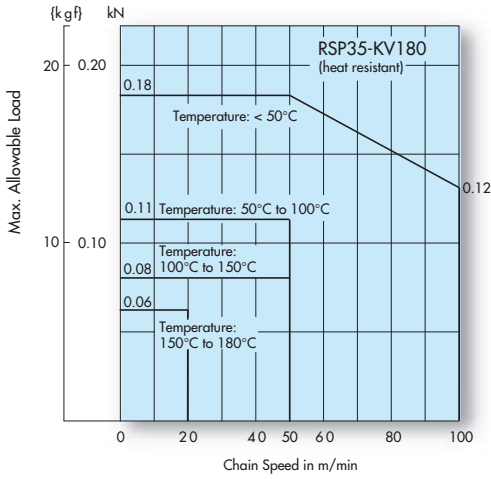
- RSP60-CU-2



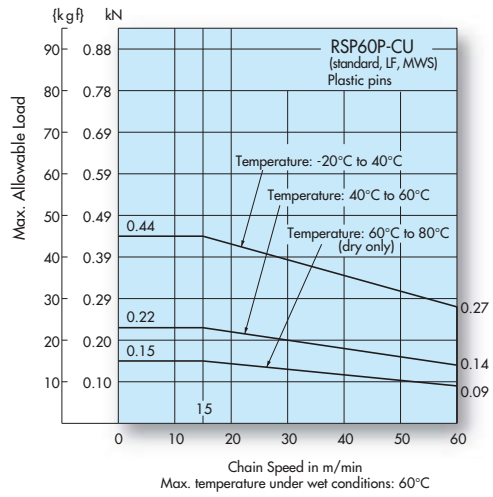
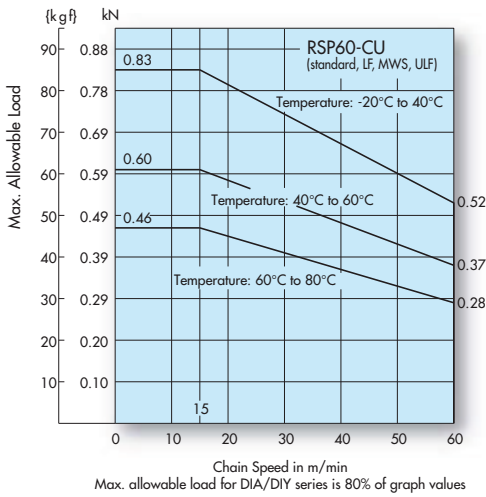
Allowable Load Graphs for Plastic Block Chain



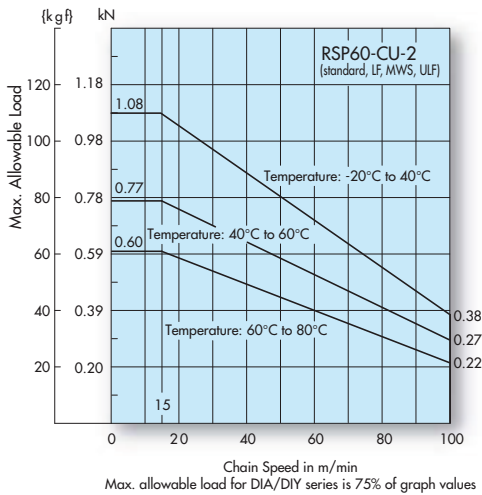
■ Allowable Load Graphs for Plastic Block Chain



Max. allowable load for DIA/DIY series is 80% of graph values



Max. temperature under wet conditions: 60°C



Max. allowable load for DIA/DIY series is 75% of graph values

Chain Selection for Snap Cover Chain

Follow procedures 1 to 4 to select the chain most suitable for the application.

Step 1: Check Maximum Allowable Load of Snap Cover

Make certain that the load applied per link is within the maximum allowable load indicated in Table 8.

Step 2: Calculate Chain Tension

Explanation of Symbols

F	= Maximum chain tension	kN {kgf}
m_1	= Mass of conveyed goods	(kg/m)
m_2	= Chain mass	(kg/m)
S	= Length of conveyance (sprocket center distance)	(m)
S'	= Length of accumulation section	(m)
μ_1	= Coefficient of friction between chain and guide rail (carry way)	(See Table 9)
μ_2	= Coefficient of friction between chain and guide rail (return way)	(See Table 10)
μ_3	= Coefficient of dynamic friction between conveyed goods and chain	(See Table 11)
P	= Power required	(kW)
V	= Chain speed	(m/min)
K	= Coefficient of speed	(See Table 12)
η	= Mechanical transmission efficiency for drive unit	
G	= Gravitational acceleration 9.80665 m/s ²	

Table 8: Maximum Allowable Load of Snap Cover

Unit: kN{kgf}/pitch

	RF06B-SC	RS40-SC	RS50-SC	RS60-SC	RS80-SC	RS100-SC
Allowable Load	0.03 {3}	0.05 {5}	0.07 {7}	0.1 {10}	0.15 {15}	0.25 {25}

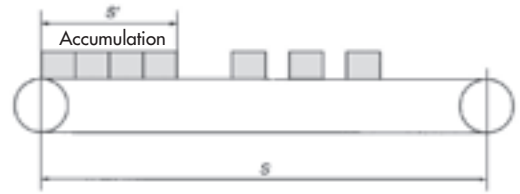


Table 9: Coefficient of Rolling Friction (μ_1) between Chain and Guide Rail

Without Lubrication	With Lubrication
0.21	0.14

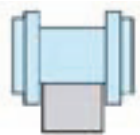


Table 10: Coefficient of Sliding Friction (μ_2) between Chain (Plastic Cover) and Guide Rail

Guide Rail Material	Stainless Steel	Ultra-High Molecular Weight Polyethylene
Polyacetal (electroconductive type)	0.25	0.25

Note: Without lubrication

Table 11: Coefficient of Dynamic Friction (μ_3) between Conveyed Goods and Chain (Plastic Cover)

Plastic Cover Material	Conveyed Goods				
	Steel Cans Aluminum Cans	Paper Packages	Glass Bottles	Plastic Containers	Industrial Parts (metal)
Standard Type	0.25	0.30	0.22	0.25	0.25
Electroconductive Type	0.25	0.30	0.22	0.25	0.25

Note: Without lubrication

Table 12: Coefficient of Speed (K)

Chain Speed (m/min)	Coefficient of Speed (K)
Less than 15	1.0
15 to 30	1.2
30 to 50	1.4
50 to 60	1.6

The maximum chain tension is calculated using the following formula.

• SI Units (kN)

$$F = \{ (m_1 + m_2) S \cdot \mu_1 + 1.1 m_2 \cdot S \cdot \mu_2 + m_1 \cdot S' \cdot \mu_3 \} \cdot \frac{G}{1000}$$

• Gravimetric Units (kgf)

$$F = (m_1 + m_2) S \cdot \mu_1 + 1.1 m_2 \cdot S \cdot \mu_2 + m_1 \cdot S' \cdot \mu_3$$

Step 3: Determine Chain Size

Using the maximum tension (F) and the coefficient of speed (K) shown in Table 12, check whether or not the following formulas are satisfied. See the maximum allowable load of each chain size on page 11.

One strand of chains: $F \times K \leq \text{Maximum allowable load}$

Two strands of chains in a pair: $0.6 F \times K \leq \text{Maximum allowable load}$

Step 4: Calculate Power Required

The power required is calculated using the following formula.

• SI Units (kN)

$$P = \frac{F \cdot V}{54.5 \times \eta}$$

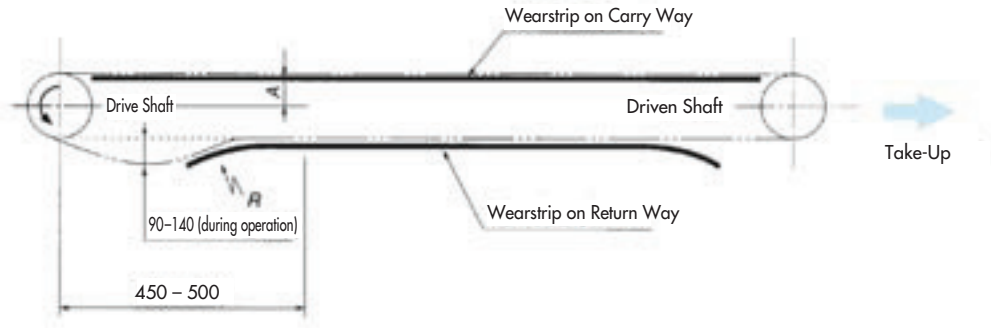
• Gravimetric Units (kgf)

$$P = \frac{F \cdot V}{556.5 \times \eta}$$

Conveyor Design

1) Basics of Wearstrip

Conveyance should be effectuated on the tension side and the conveyor on the slack side should be supported by the wearstrip, both ends of which should be slightly curved to prevent vibrations and pulsation of the chain.



2) Chain Slack

The necessary slack in the chain during conveyor operation is 90 to 140 mm below the drive sprocket as shown in the above figure.

4) Curve at End of Wearstrip

The curve radius of the wearstrip should be larger than the back-flex radius of the chain (see table on the right).

3) Sprocket and Wearstrip Location

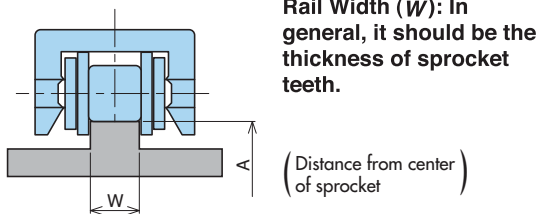
$$A = \frac{\text{Sprocket P.C.D.} - \text{Roller Diameter}}{2}$$

	RF06B-SC	RS40-SC	RS50-SC	RS60-SC	RS80-SC	RS100-SC	Unit: mm
Back-Flex Radius R	280	380	480	560	740	880	

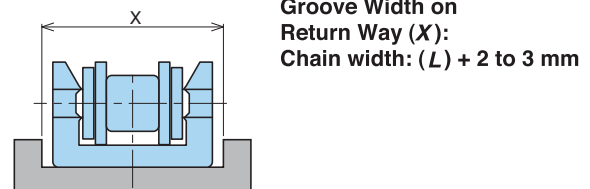
5) Ways to Support Chain

- Carry way ... Make sure the chain is supported by the rollers. If supported by the plastic cover, the cover will quickly wear down.
- Return way ... The whole surface of the plastic cover should be supported.

Carry Way



Return Way



Chain Length Adjustment

Chain length adjustment should be properly carried out in accordance with the procedure described below.

1) Detaching Plastic Covers

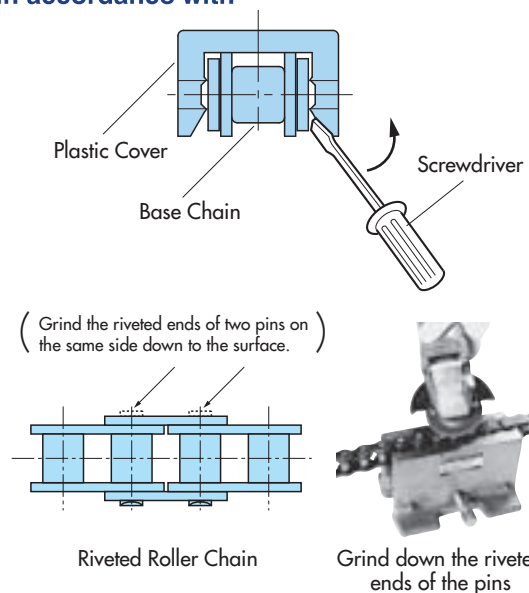
The plastic cover can be detached by hand, but a screwdriver makes the work easier.

2) Disassembling Base Chain

For riveted roller chain, use a hand grinder to remove the riveted ends of the two pins (on the same side) of the outer link to be cut. Be careful not to overheat the chain when performing the grinding operation. For Lambda chain, work especially slowly so as not to heat the oil-impregnated bushes.

3) Attaching Special Connecting Link and Plastic Covers

Join both ends of the chain with special connecting link. Be sure to install the detachable plate before attaching plastic covers. When attaching the plastic cover, attach the cover in the base chain firmly.



MEMO

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 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 with 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 chains contains silicone-based lubricant. Therefore, do not use this chain for printing processes, or in cases where silicone will have a harmful effect.
- The TR-IR18/60 return rollers and PR520-M (M plastic rail) are dry conveyor parts (lube-free, no water adhesion). The DIA series 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.

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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