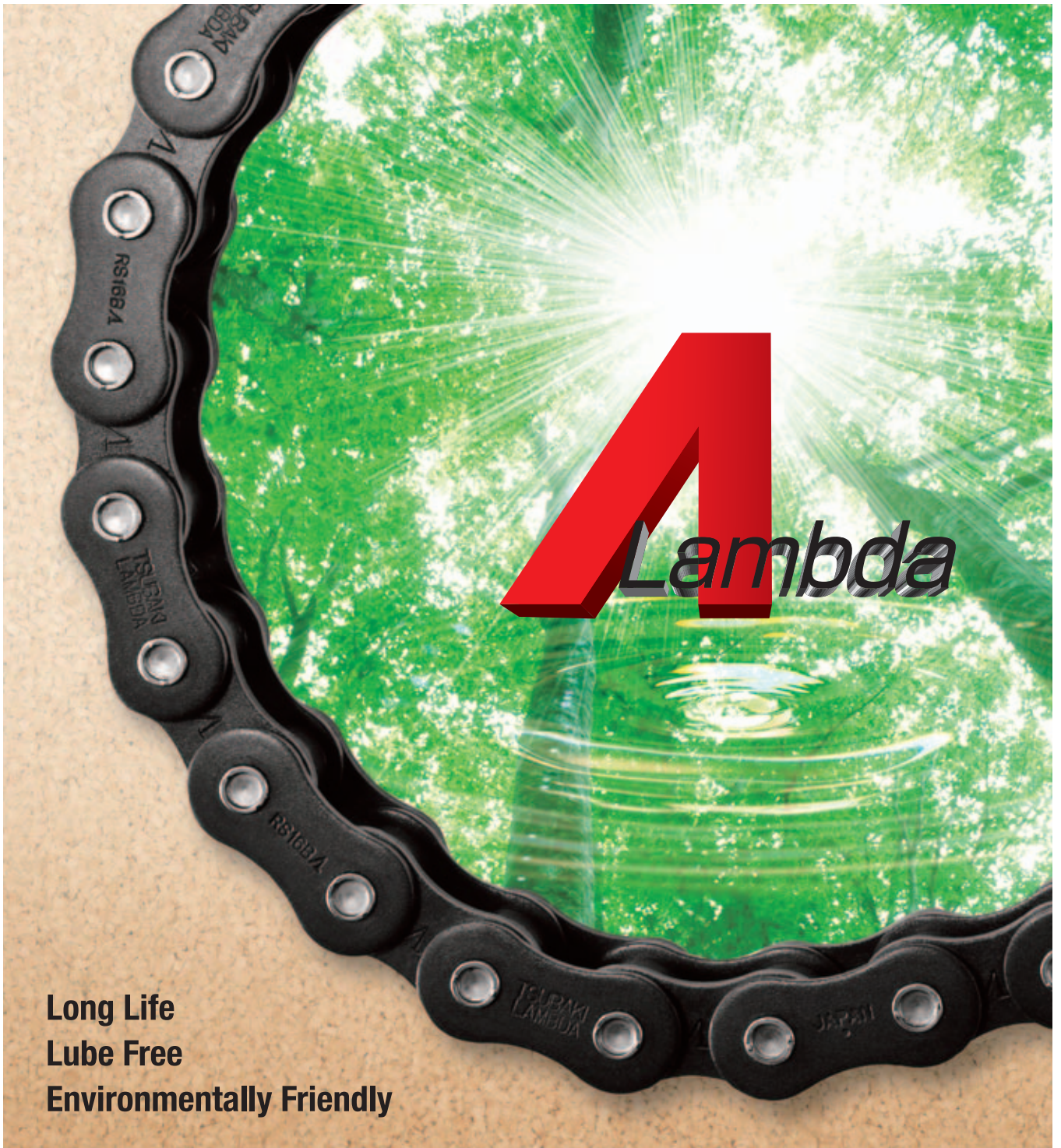


# TSUBAKI LAMBDA<sup>®</sup> CHAIN



Long Life  
Lube Free  
Environmentally Friendly

# TSUBAKI Lambda Chain | Long Life, Lube Free,

Since 1988, Lambda Chain has gained an outstanding reputation in a variety of industries and applications due to its unequalled wear resistant performance. Our new generation Lambda Chain provides even higher levels of performance and quality. Increase your productivity by taking advantage of Lambda Chain's lower maintenance requirements, cleaner operation, increased productivity and longer life.

**Lower Maintenance Costs**

**Increased Productivity**

**Cleaner Working Environment**

**Greater Savings on Chain Replacement Costs**

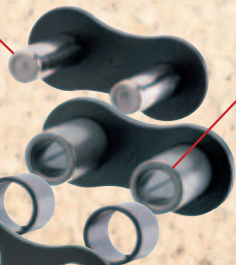


# CLEAN

## Advanced Performance through the Combination of Superior Parts

### Special Coated Pin

For smoother rotation



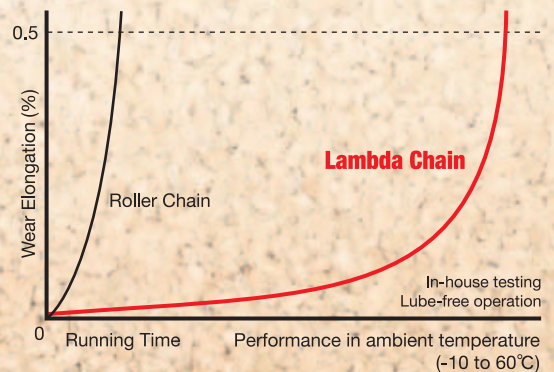
### High-Performance Sintered Bush

Impregnated with lubricant

### Ring-Coined Connecting Link (Patented)

A ring-shaped groove is provided around the connecting link plate hole. This creates positive residual stress that keeps the same strength as the base chain, even with a loose fit between pins and holes.

## More than 7 Times the Wear Elongation Life of Roller Chain

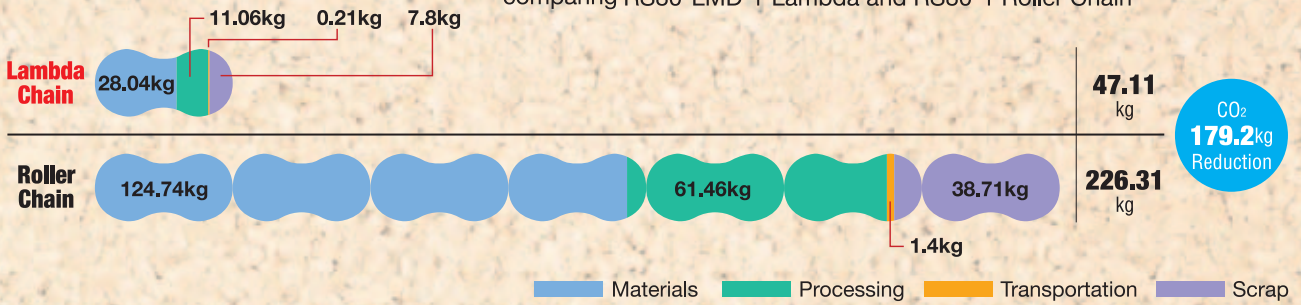


RS120-LMD-1 and RS140-LMD-1 have 2.5 times the wear life of Roller Chain

## and Environmentally Friendly

### Beyond 7 Times Wear Life, Providing 80% Reduction in CO<sub>2</sub> Emissions

•Life Cycle Assessment (LCA) inventory analysis results of CO<sub>2</sub> emissions comparing RS80-LMD-1 Lambda and RS80-1 Roller Chain



for GREEN

### Delivering Important Reductions in CO<sub>2</sub> Levels to Futuer Generations

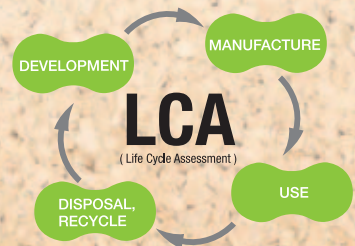


### Actively Incorporating LCA (Life Cycle Assessment) in TSUBAKI Activities

Tsubaki Lambda® Chain is an eco-friendly chain that requires no lubrication and has a long wear life. It is extremely effective in reducing greenhouse gas emissions.

#### LCA (Life Cycle Assessment)

Life Cycle Assessment (LCA) is a tool for the systematic evaluation of the environmental aspects of a product through all stages of its life cycle, from raw materials to waste management including recycling and final disposal.



# Wide Range of Options

Tsubaki Lambda Chain is available in a wide range of options to meet your needs, including Roller Chain, Small Size Conveyor Chain, Large Size Conveyor Chain, Free Flow Chain, and Top Chain.

## Lube Free Roller Chain

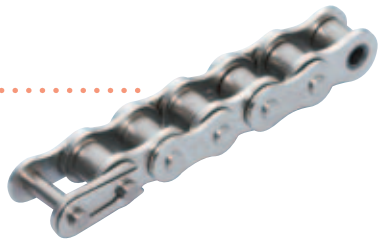
### Lambda Chain



### Surface-Treated Lambda Chain

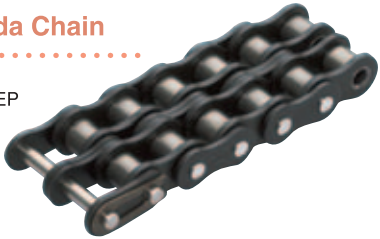
NP / NEP

Photo is NP series



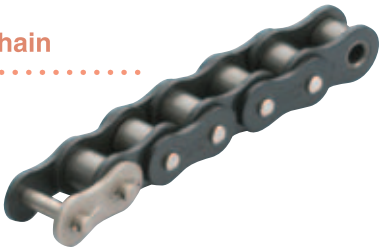
### Heavy Duty Lambda Chain

Greater ultimate tensile strength. Standard / NP / NEP (Note: Requires special sprockets.)



### Curved Lambda Chain

For curved horizontal conveyance layouts.



### BS Lambda Chain

Replacement for ISO 606 B Series roller chain.



### Long Life Lambda Chain (X-Λ® [X-Lambda])

Extended service life thanks to oil-impregnated bushes with felt seal.

BS Long Life Lambda Chain available

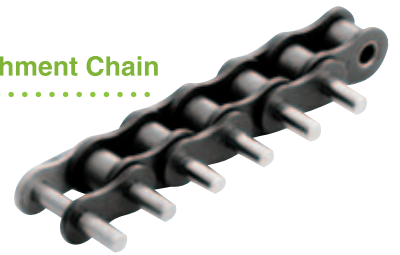


## Lube Free Small Size Conveyor Chain

### Lambda Double Pitch Chain



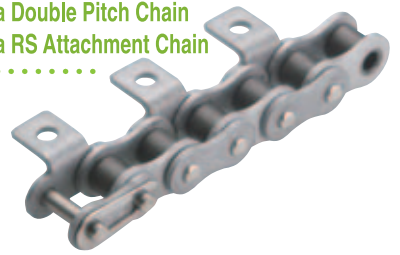
### Lambda RS Attachment Chain



### Surface-Treated Lambda Double Pitch Chain Surface-Treated Lambda RS Attachment Chain

NP / NEP

Photo is NEP series



### Long Life Lambda RS Attachment Chain (X-Λ® [X-Lambda]) Long Life Lambda Double Pitch Chain (X-Λ® [X-Lambda])

Extended service life thanks to oil-impregnated bushes with felt seal.



### BS Lambda Attachment Chain

Replacement for ISO 606 B Series small size conveyor chain.



New

### Heat Resistant Lambda Double Pitch Chain Heat Resistant Lambda RS Attachment Chain

Stable lubricant and anti-wear properties in high temperatures (150°C to 230°C)

Drive Chain available  
Heat Resistant BS Lambda available



## Lube Free Small Size Conveyor Chain

### Lambda RF Roller Chain

Conveyed objects can be placed directly on the chain.  
ANSI, BS/DIN available



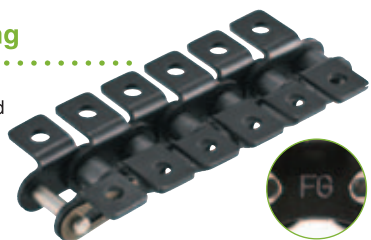
### Lambda Hollow Pin Chain

Hollow pins allow easy insertion of various attachments.



### Lambda Chain for Food Processing

Lambda Chain for Utilizing NSF-H1, H3 certified lubrication; this chain is optimal for food manufacturing facilities (FG marks on outer plate)  
ANSI, BS/DIN available



## Lube Free Free Flow Chain

### Lambda Outboard Roller Double Pitch Chain Lambda Outboard Roller RS Chain

Free flow chain provides ability to accumulate conveyed objects.



### Lambda Top Roller Double Pitch Chain Lambda Top Roller RS Chain

Free flow chain provides ability to accumulate conveyed objects.



### Lambda Double Plus Chain

High-speed, low-noise operation.  
(Refer to separate Free Flow Chain catalog.)



## Lube Free Top Chain

### Lambda Snap Cover Chain

Protects conveyed objects with engineering plastic top plates snapped onto outer links of chain.



### Lambda TN Snap Cover Chain

Conveyed objects can be placed directly on the chain. (Top plates are engineering plastic)



### Lambda TS-P·TS-PA Top Chain Lambda TOS·TOR Top Chain

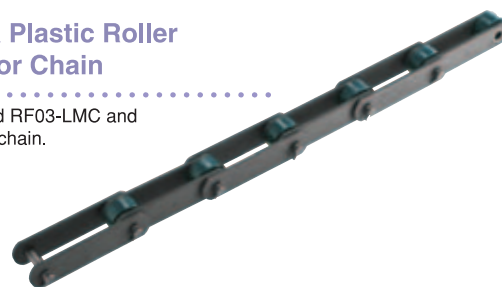
Conveyed objects can be placed directly on the chain. (Top plates are stainless steel)



## Lube Free Large Size Conveyor Chain

### Lambda Plastic Roller Conveyor Chain

Larger-sized RF03-LMC and RF05-LMC chain.

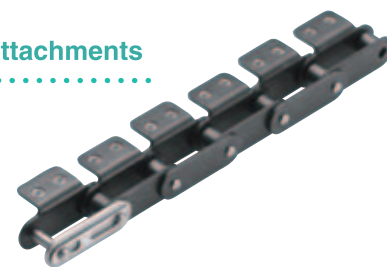


## Lube Free Plus Alpha

### Lambda Plus $\alpha$ Attachments

Meets the needs of any application.

Photo is press-nut att



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Lube Free  
And  
Maintenance Reduction  
Being The  
Definitive  
Advantage



# Lambda<sup>®</sup> Chain

Tsubaki is a pioneer in the industry, being the first to develop a chain that uses special oil-impregnated bushes. Since first being introduced in 1988, Lambda Chain has gained an outstanding reputation in a variety of industries and applications. It is capable of meeting a wide range of customer needs for long life in a lubrication-free environment, resulting in a reduction in overall long-term costs.

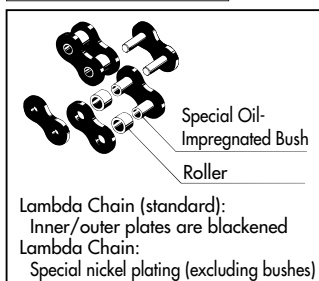
**Long life without additional lubrication** ... Special oil-impregnated bushes provide long service life.

**Interchangeability** ..... Compatible with RS Standard Roller Chain.  
 Note: Single-strand chains use an RS standard sprocket, whereas double-strand chains require a special sprocket because the transverse pitch (dimension C) differs from that of RS Roller Chain.

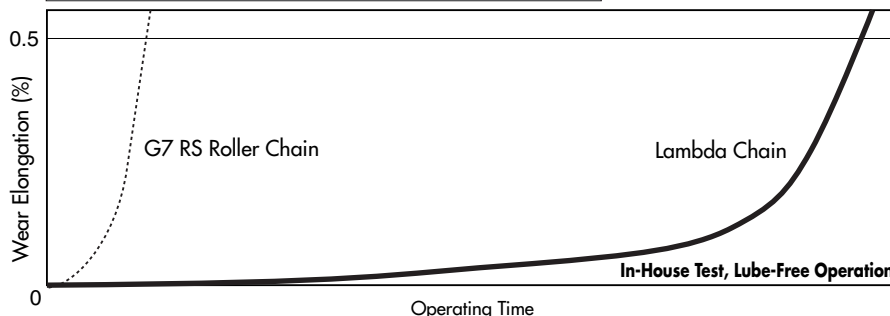
**Operating temperature range** ... -10°C to 150°C

**Selection** ..... Use the General Selection Method.

## Basic Construction



## Performance in Normal Temperatures (-10°C to 60°C)



More than seven times the wear elongation life of RS Roller Chain.  
 (RS120-LMD-1 and RS140-LMD-1 have 2.5 times the life of RS Roller Chain.)

## Products

### ■ Lambda Chain

Inner and outer plates are blackened. This treatment provides better corrosion resistance, as well as improving the overall appearance of the chain. To ensure compatibility with RS Roller Chain, the inner plate is one size thicker with the same tensile strength and maximum allowable load as RS Roller Chain. Thus, pins are longer than those of RS Roller Chain, so please check that there will be no interference with equipment.  
 Note: Kilowatt ratings differ slightly from RS Roller Chain.

### ■ Surface-Treated Lambda Chain

Standard Lambda Chain with corrosive-resistant surface treatments on the plates and rollers.  
**NP** : Nickel-plated plates and rollers provide mild corrosion resistance.  
**NEP** : A special corrosive-resistant surface treatment is applied to the plates and rollers to improve corrosion resistance.

### ■ Heavy Duty Lambda Chain

The outer and inner plates are one size thicker than standard Lambda Chain to give the chain the same strength as RS Roller Chain, even in double-strand configuration.  
 Note: Requires special sprockets.

### ■ Curved Lambda Chain

Lambda Chain with a wide horizontal bending radius thanks to its original pin and bush construction and a large clearance between plates. Curved conveyance can be easily configured using RS standard sprockets.

### ■ BS Lambda Chain (ISO 606 B Series)

Lambda Chain that conforms to ISO 606 B Series. The dimensions are fully interchangeable with existing BS chains. Specially shaped pins are used on single-strand 08B to 16B sizes to enable easy chain disassembly using a standard chain breaker.

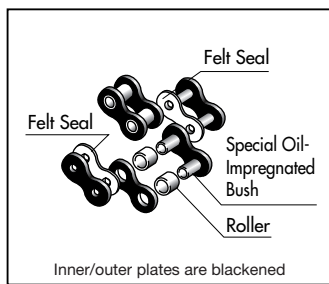


# Long Life Lambda Chain (X-Λ<sup>®</sup> [X-Lambda]) (Patent No. 3280312)

The inclusion of an oil-impregnated felt seal in the construction of X-Lambda Chain significantly improves the anti-wear performance of standard Lambda Chain. Ideal for environments where extended replacement intervals are required when using standard Lambda Chain.

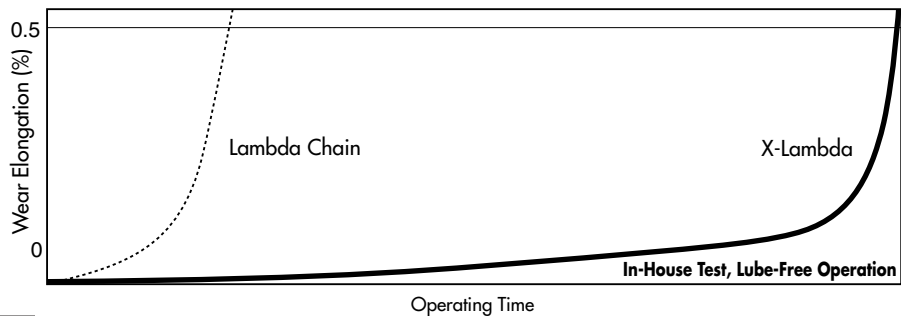
- Ultra long life in a lube-free chain** ... The combination of a special oil-impregnated bush and felt seal further extends service life.
- Interchangeability** ..... Compatible with Lambda Chain. However, as the overall pin length is longer than RS Roller Chain and Lambda Chain, please check that there will be no interference with machinery or other equipment.
- Operating temperature range** ... -10°C to 150°C
- Selection** ..... Use the General Selection Method.

### Basic Construction

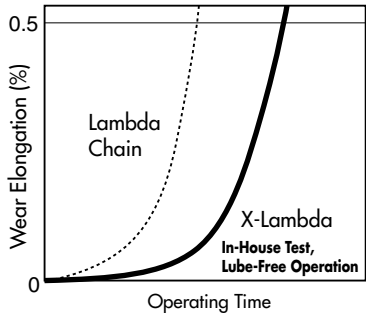


### Performance in Normal Temperatures (-10°C to 60°C)

More than five times the wear elongation life of Lambda Chain.



### Performance in Mid-Range Temperatures (150°C)

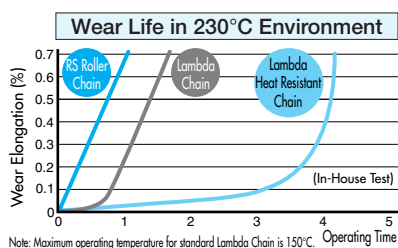


## Heat Resistant Lambda Chain

Heat Resistant Lambda Chain uses special bushes impregnated with a lubricant that does not deteriorate or disperse at high temperatures to deliver lube-free operation and long service life in high-temperature environments where maintenance is difficult.

- Operating Temperature Range:** 150°C to 230°C
- Chain size:** RS40-LMDK to RS80-LMDK

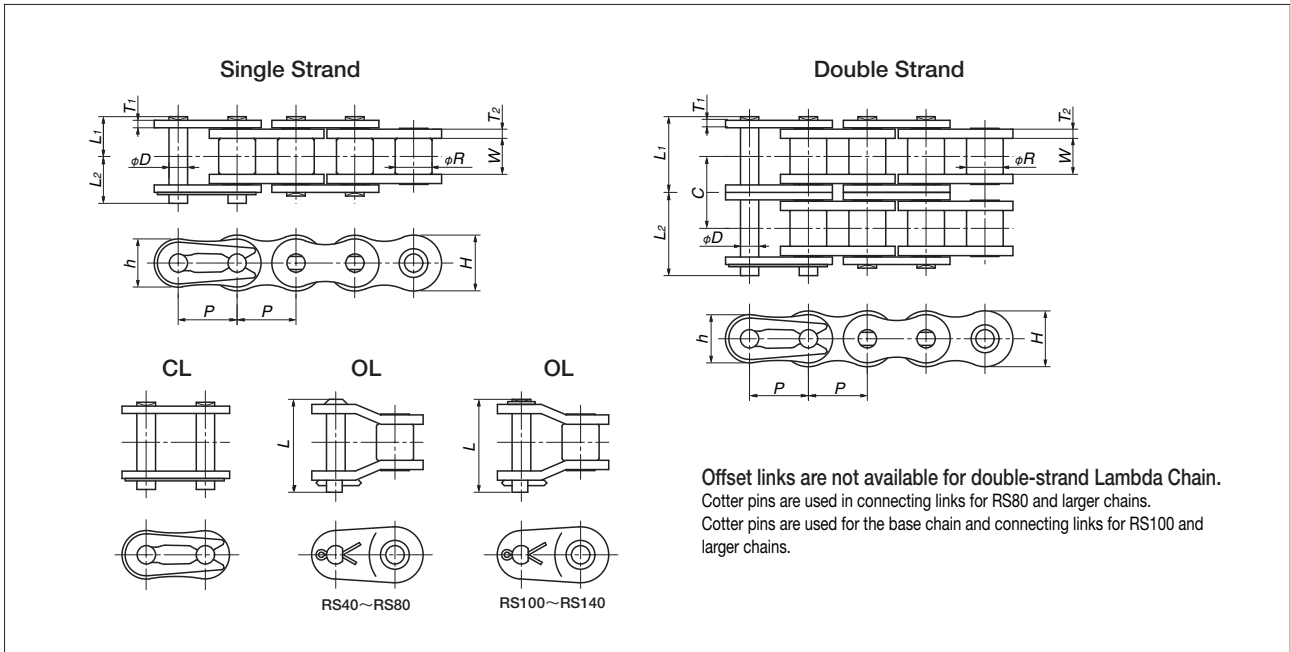
Use in temperatures above 230°C will reduce wear life considerably. Further, there is a possibility of toxic gases being emitted if used in temperatures exceeding 280°C. Do not use at temperatures above 280°C.



**⚠ Safety Precautions for Lambda Chains**

- Do not use Lambda Chain if the chain will come in direct contact with food or where coating flakes or wear dust can contaminate food. Also, in non-food applications, appropriately cover the chain or contact a Tsubakimoto representative about chain selection if using in environments where coating flakes or wear dust present problems. Though nickel is not subject to the Japan Food Sanitation Law or the Industrial Safety and Health Law, plating on sliding parts can peel.
- Do not use Lambda Chain where there is the possibility of exposure to chemicals, water, or cleaning/degreasing vapors.

# Lambda<sup>®</sup> Chain



## Base Chain Dimensions

Unit: mm

Tsubaki Chain No.		Pitch <i>P</i>	Roller Dia. <i>R</i>	Width Between Inner Link Plates <i>W</i>	Plate				Dia. <i>D</i>	Pin				Offset Pin Length <i>L</i>
Single Strand	Double Strand				Thickness <i>T</i> <sub>1</sub>	Thickness <i>T</i> <sub>2</sub>	Height <i>H</i>	Height <i>h</i>		<i>L</i> <sub>1</sub>		<i>L</i> <sub>2</sub>		
RS40-LMD-1	RS40-LMD-2	12.70	7.92	7.55	1.5	2.0	12.0	10.4	3.97	8.75	16.5	10.45	18.1	20.0
RS50-LMD-1	RS50-LMD-2	15.875	10.16	9.26	2.0	2.4	15.0	13.0	5.09	10.75	20.2	12.45	22.0	24.0
RS60-LMD-1	RS60-LMD-2	19.05	11.91	12.28	2.4	3.2	18.1	15.6	5.96	13.70	26.05	15.75	28.05	32.0
RS80-LMD-1	RS80-LMD-2	25.40	15.88	15.48	3.2	4.0	24.1	20.8	7.94	17.15	32.7	20.25	35.9	39.9
RS100-LMD-1	RS100-LMD-2	31.75	19.05	18.70	4.0	4.8	30.1	26.0	9.54	20.65	39.5	23.85	42.5	47.5
RS120-LMD-1	—	38.10	22.23	24.75	4.8	5.6	36.2	31.2	11.11	25.75	—	29.95	—	59.0
RS140-LMD-1	—	44.45	25.40	24.75	5.6	6.4	42.2	36.4	12.71	27.70	—	32.20	—	63.7

Tsubaki Chain No.		Average Tensile Strength kN {kgf}		Max. Allowable Load kN {kgf}		Approx. Mass (kg/m)		No. of Links per Unit	Allowable Speed (m/min)	Transverse Pitch <i>C</i>
Single Strand	Double Strand	Single Strand	Double Strand	Single Strand	Double Strand	Single Strand	Double Strand			
RS40-LMD-1	RS40-LMD-2	19.1 {1950}	38.2 {3900}	3.63 {370}	5.08 {518}	0.70	1.4	240	150	15.4
RS50-LMD-1	RS50-LMD-2	31.4 {3200}	62.8 {6400}	6.37 {650}	8.92 {910}	1.11	2.2	192	135	19.0
RS60-LMD-1	RS60-LMD-2	44.1 {4500}	88.3 {9000}	8.83 {900}	12.4 {1260}	1.72	3.4	160	120	24.52
RS80-LMD-1	RS80-LMD-2	78.5 {8000}	157 {16000}	14.7 {1500}	20.6 {2100}	2.77	5.5	120	90	31.1
RS100-LMD-1	RS100-LMD-2	118 {12000}	235 {24000}	22.6 {2300}	31.6 {3220}	4.30	8.6	96	80	37.6
RS120-LMD-1	—	167 {17000}	—	30.4 {3100}	—	6.4	—	80	50	—
RS140-LMD-1	—	216 {22000}	—	40.2 {4100}	—	8.1	—	68	50	—

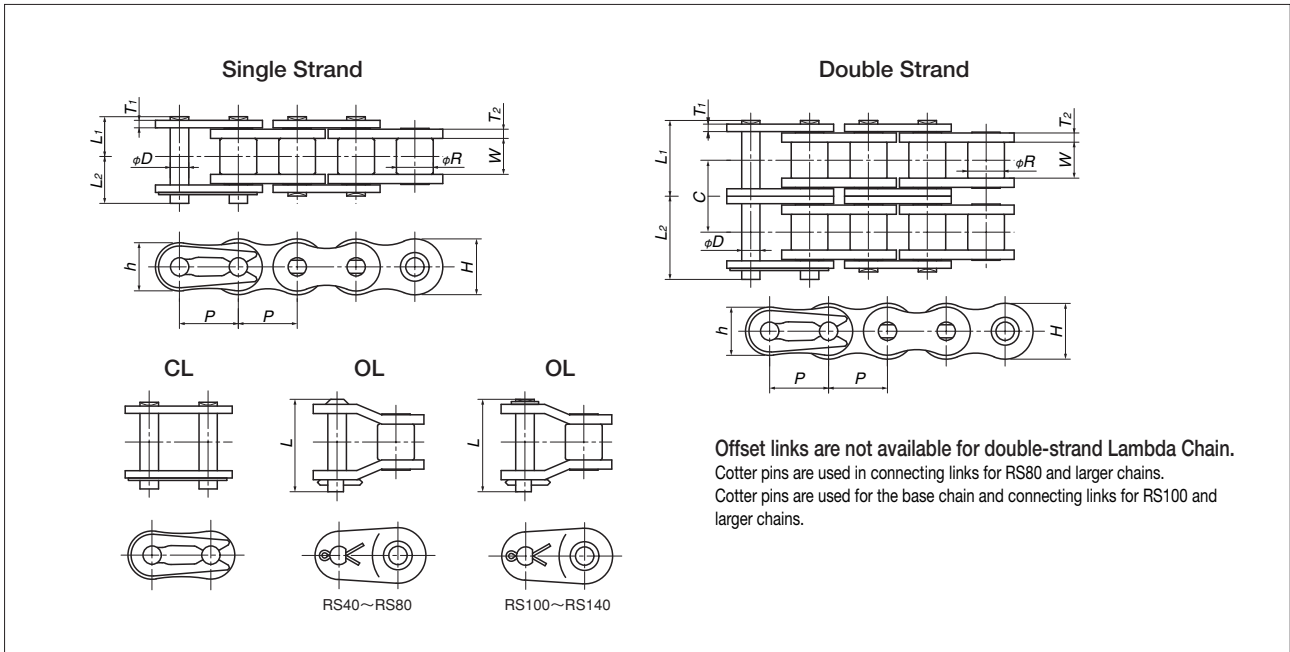
Notes: 1. Maximum allowable load when using a one-pitch offset link (OL) is 65% of the above values.  
2. Offset links are not available for double-strand chain. Use an even number of links.

## Operating Temperature Range: -10°C to 150°C

### Precautions for Use

- Dust in the bushes accelerates wear. Wet environments can cause the oil in the oil-impregnated bushes to leak. Bushes are coated with less rust-prevention oil than those for RS Roller Chain, causing premature rusting.
- Bush oil can leak in a vacuum, decreasing wear resistance. Do not use in a vacuum.
- Chain life will decrease dramatically if oil in the oil-impregnated bushes is depleted.
- Kilowatt ratings for double-strand Lambda Chain (multi-strand coefficient):  
The multi-strand coefficient of a double-strand chain with the same part dimensions of a single-strand chain is 1.4.
- Heavy Duty Lambda Chain** is to achieve the same coefficient 1.7 of double-strand RS Roller Chain, the outer and inner plates must be thickened and an H-class FCL (press fit) must be used. In any event, special sprockets are required; double-strand RS standard sprockets cannot be used.
- Double-strand Lambda Chain pin length:  
Because the inner plate is thicker than that of RS Roller Chain, the pins are longer by an equal amount (*L*<sub>1</sub>, *L*<sub>2</sub>). Please check that there will be no interference with equipment.

# Surface-Treated Lambda Chain (NP/NEP)



## Base Chain Dimensions

Unit: mm

Tsubaki Chain No.		Pitch P	Roller Dia. R	Width Between Inner Link Plates W	Plate				Dia. D	Pin				Offset Pin Length L
Single Strand	Double Strand				Thickness T <sub>1</sub>	Thickness T <sub>2</sub>	Height H	Height h		L <sub>1</sub>		L <sub>2</sub>		
RS40-LMD-NP-1	RS40-LMD-NP-2	12.70	7.92	7.55	1.5	2.0	12.0	10.4	3.97	8.75	16.5	10.45	18.1	20.0
RS50-LMD-NP-1	RS50-LMD-NP-2	15.875	10.16	9.26	2.0	2.4	15.0	13.0	5.09	10.75	20.2	12.45	22.0	24.0
RS60-LMD-NP-1	RS60-LMD-NP-2	19.05	11.91	12.28	2.4	3.2	18.1	15.6	5.96	13.70	26.05	15.70	28.05	32.0
RS80-LMD-NP-1	RS80-LMD-NP-2	25.40	15.88	15.48	3.2	4.0	24.1	20.8	7.94	17.15	32.7	20.25	35.9	39.9
RS100-LMD-NP-1	RS100-LMD-NP-2	31.75	19.05	18.70	4.0	4.8	30.1	26.0	9.54	20.65	39.5	23.85	42.5	47.5
RS120-LMD-NP-1	—	38.10	22.23	24.75	4.8	5.6	36.2	31.2	11.11	25.75	—	29.95	—	59.0
RS140-LMD-NP-1	—	44.45	25.40	24.75	5.6	6.4	42.2	36.4	12.71	27.70	—	32.20	—	63.7

Tsubaki Chain No.		Average Tensile Strength kN {kgf}		Max. Allowable Load kN {kgf}		Approx. Mass (kg/m)		No. of Links per Unit	Allowable Speed (m/min)	Transverse Pitch C
Single Strand	Double Strand	Single Strand	Double Strand	Single Strand	Double Strand	Single Strand	Double Strand			
RS40-LMD-NP-1	RS40-LMD-NP-2	19.1 {1950}	38.2 {3900}	3.04 {310}	4.26 {430}	0.70	1.4	240	150	15.4
RS50-LMD-NP-1	RS50-LMD-NP-2	31.4 {3200}	62.8 {6400}	5.39 {550}	7.55 {770}	1.11	2.2	192	135	19.0
RS60-LMD-NP-1	RS60-LMD-NP-2	44.1 {4500}	88.3 {9000}	7.26 {740}	10.2 {1040}	1.72	3.4	160	120	24.52
RS80-LMD-NP-1	RS80-LMD-NP-2	78.5 {8000}	157 {16000}	12.7 {1300}	17.8 {1820}	2.77	5.5	120	90	31.1
RS100-LMD-NP-1	RS100-LMD-NP-2	118 {12000}	235 {24000}	19.1 {1950}	26.7 {2730}	4.30	8.6	96	80	37.6
RS120-LMD-NP-1	—	167 {17000}	—	25.5 {2600}	—	6.4	—	80	50	—
RS140-LMD-NP-1	—	216 {22000}	—	34.3 {3500}	—	8.1	—	68	50	—

Notes: 1. Maximum allowable load when using a one-pitch offset link (OL) is 65% that of the above values.  
2. Offset links are not available for double-strand chain. Use an even number of links.

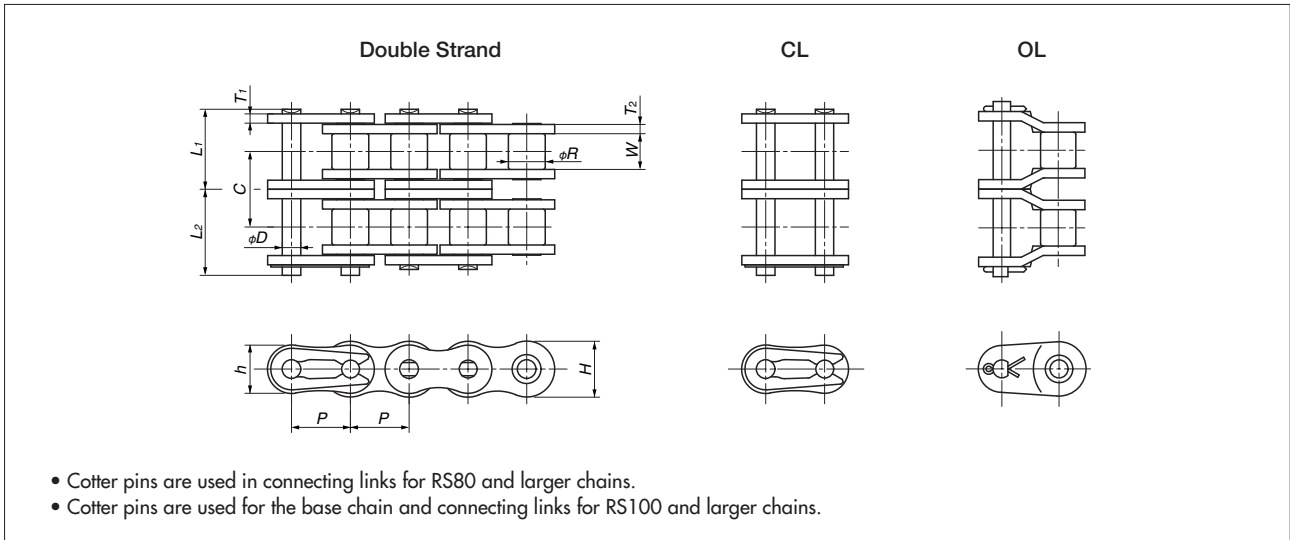
## Operating Temperature Range: -10°C to 150°C

## Lambda-NEP Chain is available.

### ⚠ Precautions for Nickel-Plated Chain

Do not use nickel-plated Lambda Chain if the chain will come in direct contact with food or where coating flakes or wear dust can contaminate food. Also, in non-food applications, appropriately cover the chain or contact a Tsubakimoto representative about chain selection if using in environments where coating flakes or wear dust present problems. Though nickel is not subject to the Japan Food Sanitation Law or the Industrial Safety and Health Law, plating on sliding parts can peel.

# Heavy Duty Lambda Chain



## Base Chain Dimensions

Unit: mm

Tsubaki Chain No.	Pitch $P$	Roller Dia. $R$	Width Between Inner Link Plates $W$	Plate				Pin			Transverse Pitch $C$
				Thickness $T_1$	Thickness $T_2$	Height $H$	Height $h$	Dia. $D$	$L_1$	$L_2$	
RS40-LMD-H-2	12.70	7.92	7.55	2.0	2.0	12.0	10.4	3.97	17.5	19.15	16.4
RS50-LMD-H-2	15.875	10.16	9.26	2.4	2.4	15.0	13.0	5.09	20.95	22.65	19.7
RS60-LMD-H-2	19.05	11.91	12.28	3.2	3.2	18.1	15.6	5.96	27.55	29.45	26.1
RS80-LMD-H-2	25.40	15.88	15.48	4.0	4.0	24.1	20.8	7.94	34.6	37.2	32.6
RS100-LMD-H-2	31.75	19.05	18.70	4.8	4.8	30.1	26.0	9.54	41.35	44.05	39.1

Tsubaki Chain No.	Average Tensile Strength kN {kgf}	Max. Allowable Load kN {kgf}	Approx. Mass (kg/m)	No. of Links per Unit	Allowable Speed (m/min)
RS40-LMD-H-2	38.2 {3900}	6.17 {629}	1.57	240	150
RS50-LMD-H-2	62.8 {6400}	10.8 {1100}	2.35	192	135
RS60-LMD-H-2	88.3 {9000}	15.0 {1530}	3.59	160	120
RS80-LMD-H-2	157 {16000}	25.0 {2550}	6.18	120	90
RS100-LMD-H-2	235 {24000}	38.3 {3910}	9.03	96	80

## Operating Temperature Range: $-10^{\circ}\text{C}$ to $150^{\circ}\text{C}$

### Sprockets

- The chain's transverse pitch ( $C$ ) differs from that of RS Roller Chain. Special sprockets (ANSI Heavy Duty) are required; double-strand RS standard sprockets cannot be used.

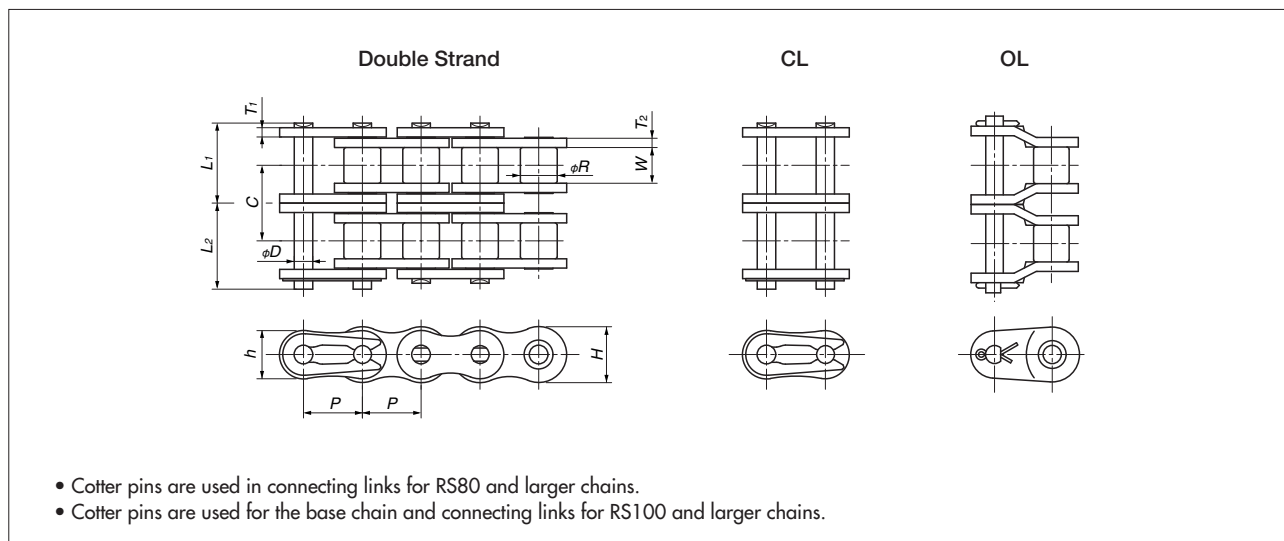
### Kilowatt Ratings (Multi-Strand Coefficient)

- The multi-strand coefficient of Heavy Duty Lambda Chain is 1.7. To select a chain, multiply the kilowatt ratings on pages 58 and 59 by 1.7.

### Pin Length

- Because the outer and inner plates are thicker than those of RS Roller Chain, the pins are longer by an equal amount ( $L_1$ ,  $L_2$ ). Please check that there will be no interference with equipment.

# Heavy Duty Lambda Chain (NP/NEP)



## Base Chain Dimensions

Unit: mm

Tsubaki Chain No.	Pitch $P$	Roller Dia. $R$	Width Between Inner Link Plates $W$	Plate				Pin			Transverse Pitch $C$
				Thickness $T_1$	Thickness $T_2$	Height $H$	Height $h$	Dia. $D$	$L_1$	$L_2$	
RS40-LMD-H-NP-2	12.70	7.92	7.55	2.0	2.0	12.0	10.4	3.97	17.5	19.15	16.4
RS50-LMD-H-NP-2	15.875	10.16	9.26	2.4	2.4	15.0	13.0	5.09	20.95	22.65	19.7
RS60-LMD-H-NP-2	19.05	11.91	12.28	3.2	3.2	18.1	15.6	5.96	27.55	29.45	26.1
RS80-LMD-H-NP-2	25.40	15.88	15.48	4.0	4.0	24.1	20.8	7.94	34.6	37.2	32.6
RS100-LMD-H-NP-2	31.75	19.05	18.70	4.8	4.8	30.1	26.0	9.54	41.35	44.05	39.1

Tsubaki Chain No.	Average Tensile Strength kN {kgf}	Max. Allowable Load kN {kgf}	Approx. Mass (kg/m)	No. of Links per Unit	Allowable Speed (m/min)
RS40-LMD-H-NP-2	38.2 {3900}	5.17 {527}	1.57	240	150
RS50-LMD-H-NP-2	62.8 {6400}	9.17 {935}	2.35	192	135
RS60-LMD-H-NP-2	88.3 {9000}	12.4 {1260}	3.59	160	120
RS80-LMD-H-NP-2	157 {16000}	21.7 {2210}	6.18	120	90
RS100-LMD-H-NP-2	235 {24000}	32.5 {3310}	9.03	96	80

## Operating Temperature Range: -10°C to 150°C

## Sprockets

- The chain's transverse pitch ( $C$ ) differs from that of RS Roller Chain. Special sprockets are required; double-strand RS standard sprockets cannot be used.

## Kilowatt Ratings (Multi-Strand Coefficient)

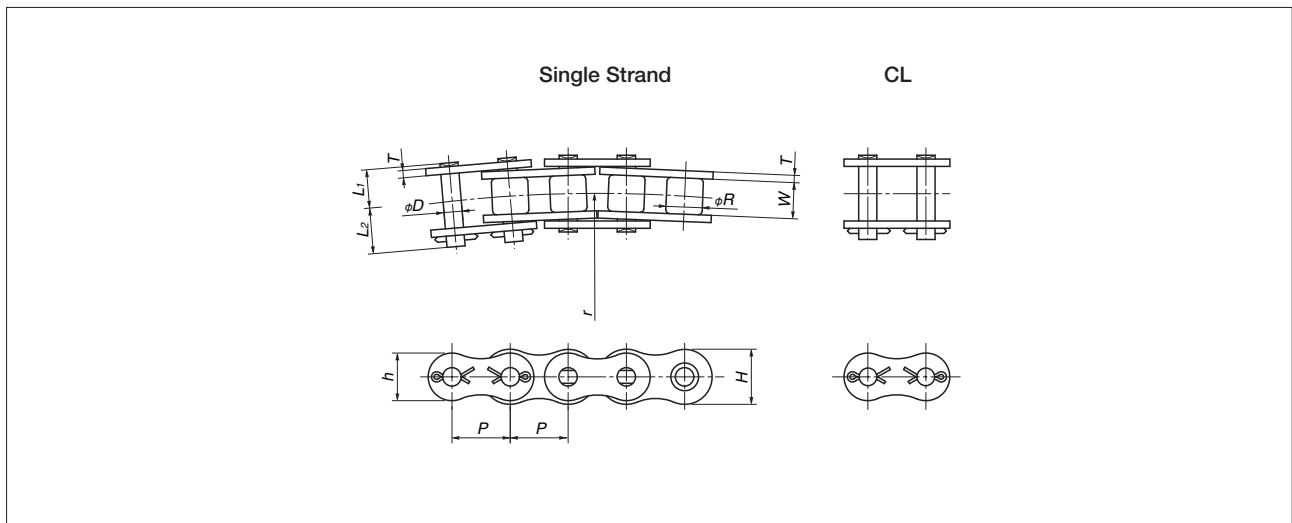
- The multi-strand coefficient of Heavy Duty Lambda Chain is 1.7. To select a chain, multiply the kilowatt ratings on pages 58 and 59 by 1.7.

## Pin Length

- Because the outer and inner plates are thicker than those of RS Roller Chain, the pins are longer by an equal amount ( $L_1$ ,  $L_2$ ). Please check that there will be no interference with equipment.

## Lambda-NEP Chain is available.

# Curved Lambda Chain



## ■ Base Chain Dimensions

Unit: mm

Tsubaki Chain No.	Pitch $P$	Roller Dia. $R$	Width Between Inner Link Plates $W$	Plate			Pin		
				Thickness $T$	Height $H$	Height $h$	Dia. $D$	$L_1$	$L_2$
RS40-LMC-CU-1	12.70	7.92	7.95	1.5	12.0	10.4	3.59	8.45	9.75
RS50-LMC-CU-1	15.875	10.16	9.53	2.0	15.0	13.0	4.45	10.3	11.7
RS60-LMC-CU-1	19.05	11.91	12.70	2.4	18.1	15.6	5.35	12.95	14.55

Tsubaki Chain No.	Average Tensile Strength kN {kgf}	Max. Allowable Load kN {kgf}	Approx. Mass (kg/m)	No. of Links per Unit	Min. Horizontal Bending Radius $r$
RS40-LMC-CU-1	12.4 {1260}	1.86 {190}	0.61	240	400
RS50-LMC-CU-1	19.2 {1960}	2.84 {290}	1.01	192	500
RS60-LMC-CU-1	27.9 {2840}	4.02 {410}	1.40	160	600

■ **Operating Temperature Range:** -10°C to 150°C

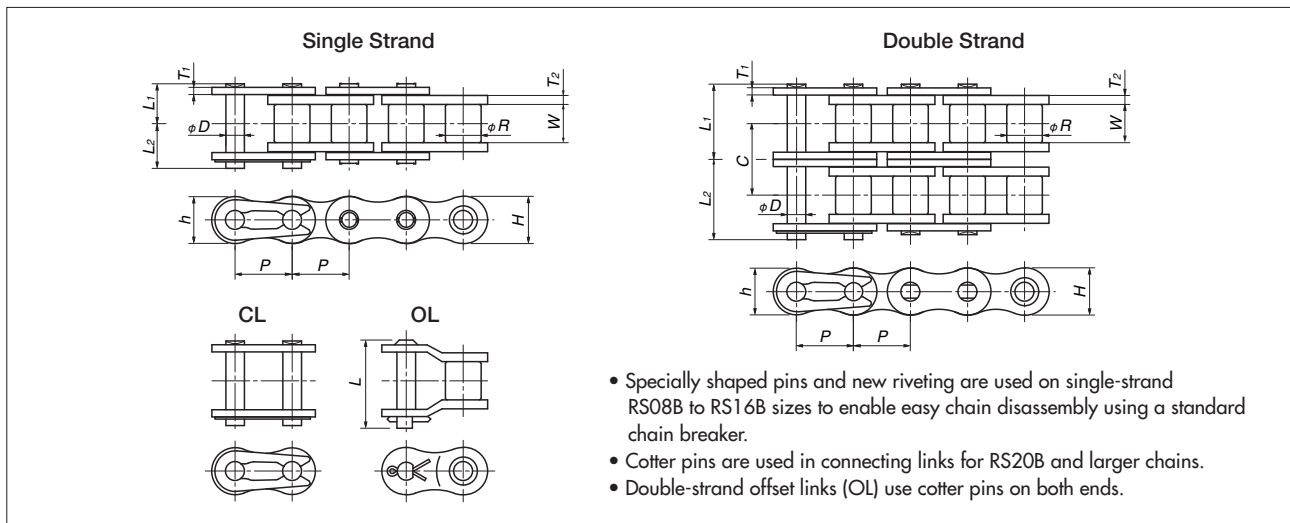
### ■ Sprockets

- RS standard sprockets can be used.

■ **Attachment Chain is available.**

■ **See 9.1, 9.2 on page 71 for installation.**

# BS Lambda Chain (ISO 606 B Series)



## Base Chain Dimensions

Unit: mm

Tsubaki Chain No.		JIS No.	Pitch P	Roller Dia. R	Width Between Inner Link Plates W	Plate				Pin				
Single Strand	Double Strand					Thickness T1	Thickness T2	Height H	Height h	Dia. D	L1		L2	
RF06B-LM-1	RF06B-LM-2	06B	9.525	6.35	5.72	1.0	1.3	8.2	8.2	3.28	6.1	11.2	7.7	12.8
RS08B-LM-1	RS08B-LM-2	08B	12.70	8.51	7.75	1.6	1.6	11.8	10.4	4.45	8.4	15.3	10.0	16.9
RS10B-LM-1	RS10B-LM-2	10B	15.875	10.16	9.65	1.5	1.5	14.7	13.7	5.08	9.55	17.85	11.25	19.55
RS12B-LM-1	RS12B-LM-2	12B	19.05	12.07	11.68	1.8	1.8	16.1	16.1	5.72	11.1	20.85	13.0	22.75
RS16B-LM-1	RS16B-LM-2	16B	25.40	15.88	17.02	3.2	4.0	21.0	21.0	8.28	17.75	33.55	19.95	35.75
RS20B-LM-1	RS20B-LM-2	20B	31.75	19.05	19.56	3.4	4.4	26.4	26.0	10.19	19.9	38.25	23.1	41.45
RS24B-LM-1	RS24B-LM-2	24B	38.10	25.40	25.40	5.6	6.0	33.4	31.2	14.63	26.65	50.8	31.85	56.0

Tsubaki Chain No.		Offset Pin Length L		Min. Tensile Strength kN {kgf}		Approx. Mass (kg/m)		No. of Links per Unit	Transverse Pitch C
Single Strand	Double Strand	Single Strand	Double Strand	Single Strand	Double Strand	Single Strand	Double Strand		
RF06B-LM-1	RF06B-LM-2	15.1	25.9	8.90 {910}	16.9 {1720}	0.39	0.75	320	10.24
RS08B-LM-1	RS08B-LM-2	18.6	34.5	17.8 {1820}	31.1 {3170}	0.70	1.35	240	13.92
RS10B-LM-1	RS10B-LM-2	20.8	39.4	22.2 {2260}	44.5 {4540}	0.95	1.85	192	16.59
RS12B-LM-1	RS12B-LM-2	24.4	45.9	28.9 {2950}	57.8 {5890}	1.25	2.50	160	19.46
RS16B-LM-1	RS16B-LM-2	39.3	73.4	60.0 {6120}	106 {10800}	2.70	5.40	120	31.88
RS20B-LM-1	RS20B-LM-2	46.6	84.6	95.0 {9690}	170 {17300}	3.85	7.65	96	36.45
RS24B-LM-1	RS24B-LM-2	61.7	112.8	160 {16300}	280 {28600}	7.45	14.65	80	48.36

Notes: 1. RF06B plate is flat. ( )

2. Double-strand RF06B and RS08B chains have one inner plate.

3. Minimum tensile strength of attachment chains differs from those above. Please contact a Tsubakimoto representative.

## Operating Temperature Range: -10°C to 150°C

## Sprockets

- BS Roller Chain sprockets (conforming to ISO B Series standards) must be used.

## Pin Shape

- Single-strand chains in sizes RS08B through RS16B use easy disassembly pins (with center sink riveting). All other sizes, including multi-strand chains, use double stake riveting.

## Easy Disassembly and Connection

- Newly developed, specially shaped pins and new riveting are used on single-strand RS08B to RS16B sizes to enable easy chain disassembly using a standard chain breaker.

## Chain Selection: Please contact a Tsubakimoto representative.

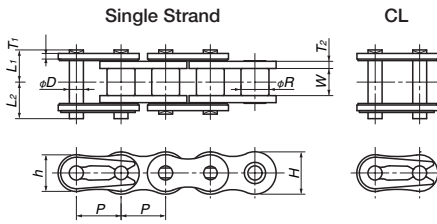
## Compatibility with Old Chain Model

- When replacing an old chain model, always replace the entire chain.
- New chain cannot be connected to an old chain model. Old connecting parts (connecting links, offset links, etc.) cannot be used with new chain.

# Long Life Lambda Chain (X-Λ<sup>®</sup> [X-Lambda])



## ANSI Chain



Offset links are not available for X-Lambda Chain.  
Cotter pins are used in connecting links for RS80 and larger chains.  
Cotter pins are used for the base chain and connecting links for RS100 and larger chains.

### Base Chain Dimensions

Unit: mm

Tsubaki Chain No.	Pitch <i>P</i>	Roller Dia. <i>R</i>	Width Between Inner Link Plates <i>W</i>	Plate				Pin		
				Thickness <i>T</i> <sub>1</sub>	Thickness <i>T</i> <sub>2</sub>	Height <i>H</i>	Height <i>h</i>	Dia. <i>D</i>	<i>L</i> <sub>1</sub>	<i>L</i> <sub>2</sub>
RS40-LMDX-1	12.70	7.92	7.55	1.5	2.0	12.0	10.4	3.97	9.4	11.1
RS50-LMDX-1	15.875	10.16	9.26	2.0	2.4	15.0	13.0	5.09	11.4	13.1
RS60-LMDX-1	19.05	11.91	12.28	2.4	3.2	18.1	15.6	5.96	14.8	16.5
RS80-LMDX-1	25.40	15.88	15.48	3.2	4.0	24.1	20.8	7.94	18.3	20.9
RS100-LMDX-1	31.75	19.05	18.70	4.0	4.8	30.1	26.0	9.54	21.8	24.5
RS120-LMDX-1	38.10	22.23	24.75	4.8	5.6	36.2	31.2	11.11	26.7	30.75

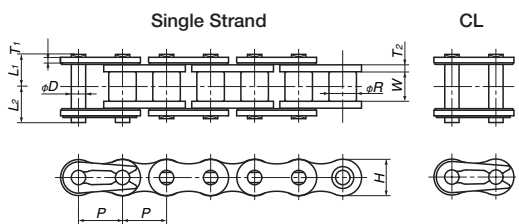
Tsubaki Chain No.	Average Tensile Strength kN {kgf}	Max. Allowable Load kN {kgf}	Approx. Mass (kg/m)	No. of Links per Unit	Allowable Speed (m/min)
RS40-LMDX-1	19.1 {1950}	3.63 {370}	0.70	240	150
RS50-LMDX-1	31.4 {3200}	6.37 {650}	1.11	192	135
RS60-LMDX-1	44.1 {4500}	8.83 {900}	1.72	160	120
RS80-LMDX-1	78.5 {8000}	14.7 {1500}	2.77	120	90
RS100-LMDX-1	118 {12000}	22.6 {2300}	4.30	96	80
RS120-LMDX-1	167 {17000}	30.4 {3100}	6.40	80	50

Operating Temperature Range: -10°C to 150°C

Kilowatt Ratings: See pages 58 and 59.



## BS/DIS Chain (ISO 606 B Series)



- Connecting links are clip type for sizes up to RS12B-LMX, and cotter type for size RS16B-LMX.
- Due to the use of the felt seal, the pins are longer. Check for machine interference.
- X-LAMBDA offset links are not available.
- X-LAMBDA double strand chain is not available.
- Due to the oil in the felt seal, more oil adheres to the surface of X-LAMBDA chain than regular LAMBDA chain.

### Base Chain Dimensions

Unit: mm

Tsubaki Chain No.	Pitch <i>P</i>	Roller Dia. <i>R</i>	Width Between Inner Link Plates <i>W</i>	Plate			Pin			Min. Tensile Strength occ. to ISO 606 kN	Approx. Mass (kg/m)
				Thickness <i>T</i> <sub>1</sub>	Thickness <i>T</i> <sub>2</sub>	Height <i>H</i> (max)	Dia. <i>D</i>	<i>L</i> <sub>1</sub>	<i>L</i> <sub>2</sub>		
RS08B-LMX-1	12.70	8.51	7.75	1.6	1.6	12.0	4.45	9.0	10.6	17.8	0.70
RS10B-LMX-1	15.875	10.16	9.65	1.5	1.5	14.7	5.08	10.3	12.0	22.2	0.95
RS12B-LMX-1	19.05	12.07	11.68	1.8	1.8	16.1	5.72	11.9	13.8	28.9	1.25
RS16B-LMX-1	25.40	15.88	17.02	3.2	4.0	21.0	8.28	18.55	20.75	60.0	2.70

Operating Temperature Range: -10°C to 150°C

### Precautions for Use

- Because the inner plate is thicker than that of RS Roller Chain and due to the felt seals, the pins are longer by an equal amount (*L*<sub>1</sub>, *L*<sub>2</sub>). Please check that there will be no interference with equipment.
- Offset links are not available for X-Lambda Chain. Use an even number of links.
- Due to oil in the felt seals, more oil adheres to the surface of X-Lambda Chain than standard Lambda Chain.

### Connecting

When assembling chain, use connecting links designed for X-Lambda Chain (with felt seals). As shown in Figure 1, insert felt seals between the outer plates and connecting plates, and attach the link. (See page 66 on how to cut and connect chain.)

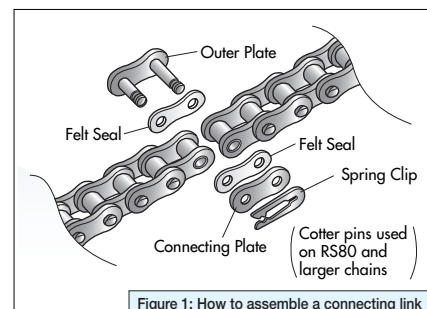
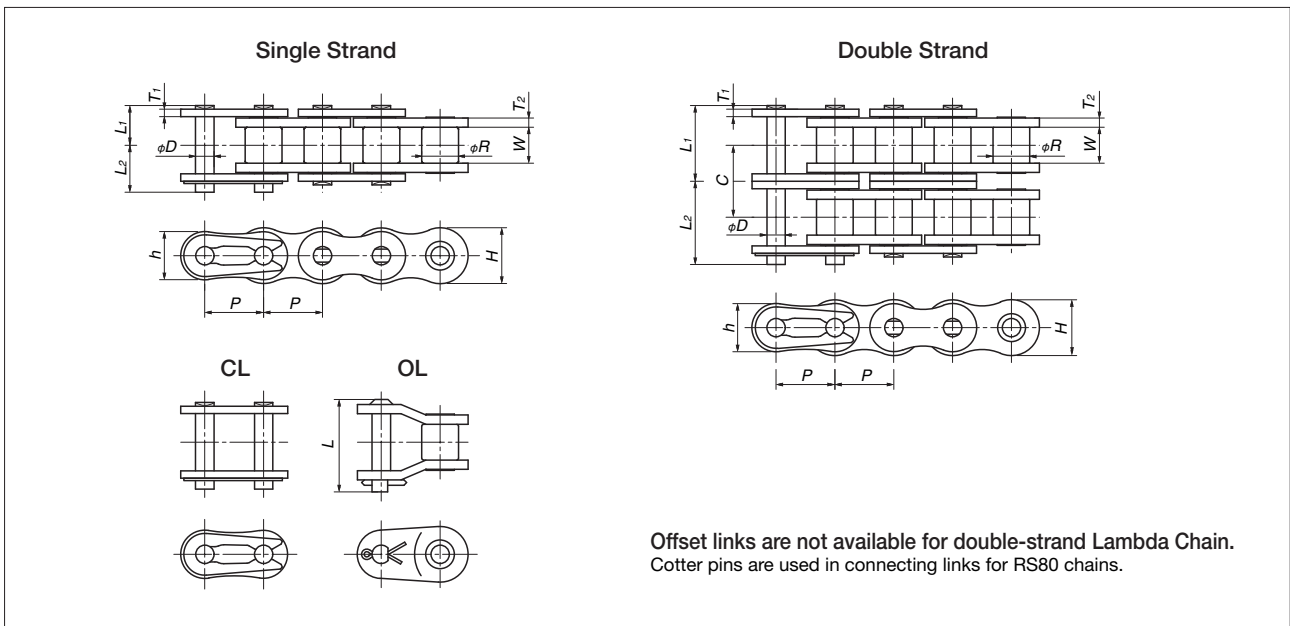


Figure 1: How to assemble a connecting link



# Heat Resistant Lambda Chain



## Base Chain Dimensions

Unit: mm

Tsubaki Chain No.		Pitch P	Roller Dia. R	Width Between Inner Link Plates W	Plate				Pin				Offset Pin Length L	
Single Strand	Double Strand				Thickness T <sub>1</sub>	Thickness T <sub>2</sub>	Height H	Height h	Dia. D	L <sub>1</sub>		L <sub>2</sub>		
RS40-LMDK-1	RS40-LMDK-2	12.70	7.92	7.55	1.5	2.0	12.0	10.4	3.97	8.75	16.5	10.45	18.1	20.0
RS50-LMDK-1	RS50-LMDK-2	15.875	10.16	9.26	2.0	2.4	15.0	13.0	5.09	10.75	20.2	12.45	22.0	24.0
RS60-LMDK-1	RS60-LMDK-2	19.05	11.91	12.28	2.4	3.2	18.1	15.6	5.96	13.70	26.05	15.75	28.05	32.0
RS80-LMDK-1	RS80-LMDK-2	25.40	15.88	15.48	3.2	4.0	24.1	20.8	7.94	17.15	32.7	20.25	35.9	39.9

Tsubaki Chain No.		Average Tensile Strength kN{kgf}		Approx. Mass (kg/m)		No. of Links per Unit	Allowable Speed (m/min)	Transverse Pitch C
Single Strand	Double Strand	Single Strand	Double Strand	Single Strand	Double Strand			
RS40-LMDK-1	RS40-LMDK-2	19.1 {1950}	38.2 {3900}	0.70	1.4	240	150	15.4
RS50-LMDK-1	RS50-LMDK-2	31.4 {3200}	62.8 {6400}	1.11	2.2	192	135	19.0
RS60-LMDK-1	RS60-LMDK-2	44.1 {4500}	88.3 {9000}	1.72	3.4	160	120	24.52
RS80-LMDK-1	RS80-LMDK-2	78.5 {8000}	157 {16000}	2.77	5.5	120	90	31.1

Note: Offset links are not available for double-strand chain. Use an even number of links.

## Operating Temperature Range: 150°C to 230°C

### Precautions for Use

- Kilowatt ratings for double-strand Lambda Chain (multi-strand coefficient):  
The multi-strand coefficient of a double-strand chain with the same part dimensions of a single-strand chain is 1.4. Special sprockets are required; double-strand RS standard sprockets cannot be used.
- Double-strand Lambda Chain pin length:  
Because the inner plate is thicker than that of RS Roller Chain, the pins are longer by an equal amount ( $L_1$ ,  $L_2$ ). Please check that there will be no interference with equipment.

**Chain Selection:** See page 65.

# Tsubaki Lube-Free Lambda Chain

Keeps Your Application Running Clean  
No Product Contamination  
Reduces Downtime and Maintenance Costs

## Application Areas

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Food and Beverage, Packaging, Printing, Personal Care,  
Electronic Appliances, Automotive, Lumber, Textile, Lighting  
... and More!

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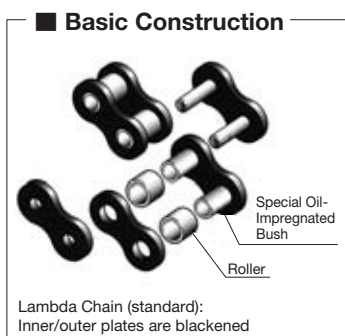
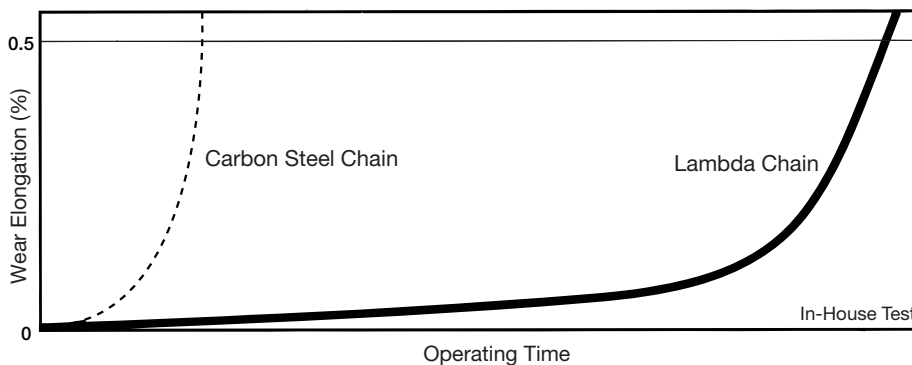
# Lube Free Small Size Conveyor Chain

## Tsubaki Lambda<sup>®</sup> Chain

Tsubaki is a pioneer in the industry, being the first to develop a chain that uses special oil-impregnated bushes. Since first being introduced in 1988, Lambda Chain has gained an outstanding reputation in a variety of industries and applications. It is capable of meeting a wide range of customer needs for long life in a lubrication-free environment, resulting in a reduction in overall long-term costs.

- Long life without additional lubrication: Special oil-impregnated bushes provide long service life.
- Interchangeability: Compatible with Standard Small Size Conveyor Chain.
- Operating temperature range: -10°C to 150°C
- More than seven times the wear elongation life of general-purpose small-size conveyor chain. (RS35-LMC has more than five times the life of general-purpose small-size conveyor chain.)

Performance in Normal Temperatures (-10°C to 60°C)



### Lambda Double Pitch Chain, Lambda RS Attachment Chain

Inner and outer link plates are blackened. This treatment provides better corrosion resistance, as well as improving the overall appearance of the chain.



### Surface-Treated Lambda Double Pitch Chain, Surface-Treated Lambda RS Attachment Chain

Standard Lambda Chain with corrosive-resistant surface treatments.  
 NP: Nickel-plated plates and rollers provide mild corrosion resistance.  
 NEP: A special corrosive-resistant surface treatment is applied to the plates and rollers to improve corrosion resistance.



### BS Lambda Attachment Chain

Lambda Chain that conforms to ISO 606 B series.  
 The dimensions are fully interchangeable with existing BS chains.  
 Specially shaped pins are used on single-strand 08B to 16B sizes to enable easy chain disassembly using a standard chain breaker.



### Lambda Hollow Pin Double Pitch Chain, Lambda Hollow Pin RS Chain

Hollow Pin Chain with all the features of Lambda Chain.  
 (Special oil-impregnated sintered bushes are used on hollow pin bushes.)



### Lambda RF Roller Chain

RF Roller Chain with all the features of Lambda Chain.  
 Designed for lubrication-free applications where conveyed objects are placed directly on the chain.



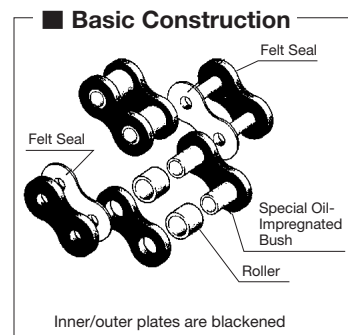
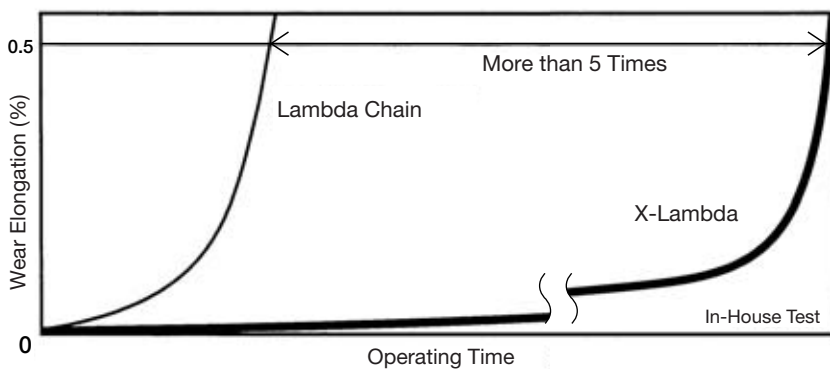
# Lube Free Small Size Conveyor Chain

## Long Life Lambda Chain (X-Λ<sup>®</sup> [X-Lambda])

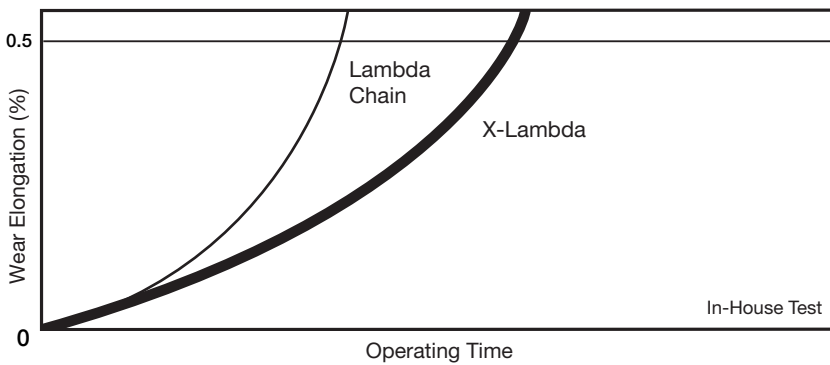
The inclusion of an oil-impregnated felt seal in the construction of X-Λ<sup>®</sup> (X-Lambda) Chain significantly improves the anti-wear performance of standard Lambda Chain. Ideal for environments where extended replacement intervals are required when using lube-free chain.

- **Ultra long life in a lube-free chain:** The combination of a special oil-impregnated bush and felt seal provides more than five times the anti-wear performance of standard Lambda Chain (Tsubakimoto comparison at -10°C to 60°C).
- **Interchangeability:** Fully interchangeable with Lambda Chain. However, as the overall pin length is longer than Lambda Chain, please check attachment dimensions and that there will be no interference with machinery or other equipment.
- **Operating temperature range:** -10°C to 150°C

Performance in Normal Temperatures (-10°C to 60°C)



Performance in Mid-Range Temperatures (150°C)



# Lube Free Small Size Conveyor Chain

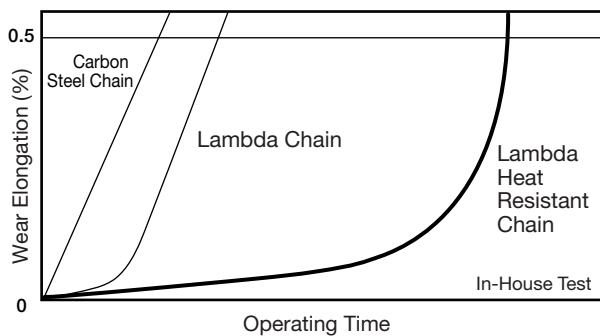
## Heat Resistant Lambda Chain

Heat Resistant Lambda Chain uses special bushes impregnated with a lubricant that does not deteriorate or disperse at high temperatures to deliver “lube-free” operation and long service life in high-temperature environments where maintenance is difficult.

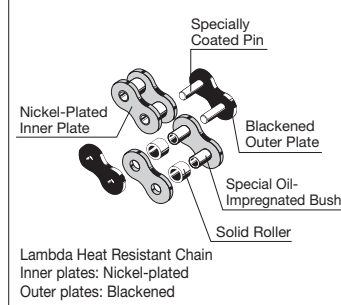
- Outstanding performance at high temperatures.
- Stable lubrication and anti-wear properties at high temperatures.
- Uses NSF-H1 food grade certified lubricating oil and is environmentally friendly.
- Operating temperature range: 150°C to 230°C

Chain size: RS40-LMCK to RS80-LMCK, and RF2040-LMCK to RF2080-LMCK  
Please contact a Tsubakimoto representative if you need other sizes and specifications.

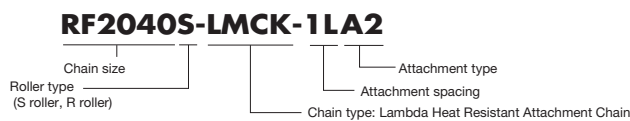
### Wear Life in 230°C Environment



### Basic Construction



### Chain Numbering



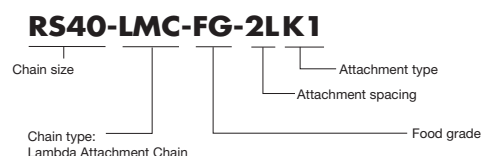
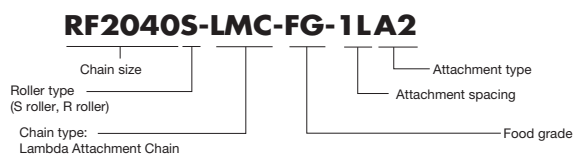
## Lambda Chain for Food Processing (FG: Food Grade)

This Lambda Chain uses highly safe food grade lubricating oil (NSF-H1 certified) and anti-rust oil (NSF-H3 certified). The use of this chain helps meet product liability requirements and contributes to HACCP safety improvement initiatives.

Chain size: RS40-LMC-FG to RS60-LMC-FG, and RF2040-LMC-FG to RF2060-LMC-FG

- **Clean**  
These chains use an odorless, colorless lubricant oil, helping to keep work sites clean.
- **Wide range of available types and sizes**  
Available in single-pitch chain sizes from RS40-LMC to RS60-LMC and double-pitch chains from RF2040-LMC to RF2060-LMC with attachments.
- **Clearly identified as food specification chain**  
An FG mark is stamped on approximately 30% of the outer plates, making it easy to distinguish these products from standard Lambda Chain.

### Chain Numbering



### ⚠ Safety Precautions for Lambda Chains

1. Do not use Lambda Chain if the chain will come in direct contact with food or where coating flakes or wear dust can contaminate food. Also, in non-food applications, appropriately cover the chain or contact a Tsubakimoto representative about chain selection if using in environments where coating flakes or wear dust present problems. Though nickel is not subject to the Japan Food Sanitation Law or the Industrial Safety and Health Law, plating on sliding parts can peel.
2. Do not use Lambda Chain where there is the possibility of exposure to chemicals, water, or cleaning/degreasing vapors.

# Lambda Double Pitch Chain, Surface-Treated Lambda Double Pitch Chain

## Base Chain

S Roller	Offset Link	R Roller	Offset Link

• Connecting links: RF2040-LMC to RF2060-LMC use spring clips. RF2080-LMC and RF2100-LMC as well as chains with GNK1 attachments (all sizes) use cotter pins. Base chain pins are riveted.

## Attachments

A1 Attachment	A2 Attachment	K1 Attachment	K2 Attachment
SA1 Attachment	SA2 Attachment	EP Attachment	
SK1 Attachment	SK2 Attachment	GNK1 Attachment	

• Pin end diameter on EP attachments is slightly larger.  
 • Actual dimension P' may differ from P. Please contact a Tsubakimoto representative for details.

• Pins other than those on connecting links are riveted regardless of whether attachments are present.  
 • Attachments shown are S roller type. However, the dimensions for attachments are the same when R rollers are used.  
 Also, the drawings show attachments added on every link.

R roller type not available.

# Lambda Double Pitch Chain, Surface-Treated Lambda Double Pitch Chain

## Base Chain Dimensions

Unit: mm

Tsubaki Chain No.			Roller Type	Pitch P	P'	Width Between Inner Link Plates W	Roller Dia.		Pin			Offset Pin Length L	Plate	
							S Roller R <sub>1</sub>	R Roller R <sub>2</sub>	Dia. D	L <sub>1</sub>	L <sub>2</sub>		Thickness T	Height H
RF2040-LMC	RF2040-LMC-NP	RF2040-LMC-NEP	S · R	25.40	Contact a Tsubakimoto representative for details.	7.95	7.92	15.88	3.97	8.25	9.95	18.2	1.5	12.0
RF2050-LMC	RF2050-LMC-NP	RF2050-LMC-NEP		31.75		9.53	10.16	19.05	5.09	10.30	12.0	22.6	2.0	15.0
RF2060-LMC	RF2060-LMC-NP	RF2060-LMC-NEP		38.10		12.70	11.91	22.23	5.96	14.55	16.55	31.5	3.2	17.2
RF2080-LMC	RF2080-LMC-NP	RF2080-LMC-NEP		50.80		15.88	15.88	28.58	7.94	18.30	20.90	39.9	4.0	23.0
RF2100-LMC	RF2100-LMC-NP	RF2100-LMC-NEP		63.50		19.05	19.05	39.69	9.54	21.80	24.50	47.5	4.8	28.6

## Attachment Dimensions

Unit: mm

Tsubaki Chain No.			Attachment															
			C	C <sub>1</sub>	C <sub>2</sub>	K	N	O	O <sub>1</sub>	S	T	X	X <sub>2</sub>	X <sub>s</sub>	D	L <sub>3</sub>	L <sub>4</sub>	G
RF2040-LMC	RF2040-LMC-NP	RF2040-LMC-NEP	12.7	11.1	13.6	9.5	19.1	3.6	5.2	9.1	1.5	19.3	17.6	19.8	3.97	9.5	16.75	4.1
RF2050-LMC	RF2050-LMC-NP	RF2050-LMC-NEP	15.9	14.3	15.9	11.9	23.8	5.2	6.8	11.1	2.0	24.2	22.0	24.6	5.09	11.9	21.0	5.1
RF2060-LMC	RF2060-LMC-NP	RF2060-LMC-NEP	21.45	17.5	19.1	14.3	28.6	5.2	8.7	14.7	3.2	31.5	28.2	30.6	5.96	14.3	27.45	6.1
RF2080-LMC	RF2080-LMC-NP	RF2080-LMC-NEP	27.8	22.2	25.4	19.1	38.1	6.8	10.3	19.1	4.0	40.7	36.6	40.5	7.94	19.1	35.5	8.1
RF2100-LMC	RF2100-LMC-NP	RF2100-LMC-NEP	33.35	28.6	31.8	23.8	47.6	8.7	14.3	23.4	4.8	49.9	44.9	50.4	9.54	23.8	43.4	10.1

Tsubaki Chain No.			Max. Allowable Load kN {kgf}	Approx. Mass (kg/m)		Additional Weight per Attachment (kg)			No. of Links per Unit
				S Roller	R Roller	A, SA	K, SK	EP	
RF2040-LMC	RF2040-LMC-NP	RF2040-LMC-NEP	2.65{ 270}	0.51	0.87	0.003	0.006	0.001	120
RF2050-LMC	RF2050-LMC-NP	RF2050-LMC-NEP	4.31{ 440}	0.84	1.30	0.006	0.012	0.002	96
RF2060-LMC	RF2060-LMC-NP	RF2060-LMC-NEP	6.28{ 640}	1.51	2.19	0.017	0.034	0.003	80
RF2080-LMC	RF2080-LMC-NP	RF2080-LMC-NEP	10.7 {1090}	2.41	3.52	0.032	0.064	0.007	60
RF2100-LMC	RF2100-LMC-NP	RF2100-LMC-NEP	17.1 {1740}	3.54	5.80	0.06	0.12	0.012	48

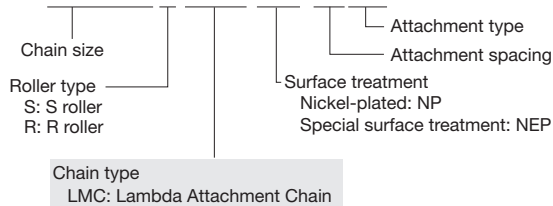
Note: Dimensions O and O<sub>1</sub> are slightly smaller on NEP chains.

## Operating Temperature Range: -10°C to 150°C

### Chain Numbering

Old No. RFC2040NP S-LAMDA-1LK2

New No. **RF2040S-LMC-NP-1LK2**



# Lambda RS® Attachment Chain, Surface-Treated Lambda RS® Attachment Chain

## Base Chain

Offset Link

- Connecting links: RS35-LMC to RS60-LMC use spring clips. RS80-LMC and RS100-LMC use cotter pins. Base chain pins are riveted.

## Attachments

A1 Attachment, K1 Attachment, EP Attachment, SA1 Attachment, SK1 Attachment

- Pin end diameter on EP attachments is slightly larger.
- Actual dimension P' may differ from P. Please contact a Tsubakimoto representative for details.
- Pins other than those on connecting links are riveted regardless of whether attachments are present.
- Drawings show attachments added on every link.

## Base Chain Dimensions

Unit: mm

Tsubaki Chain No.			Pitch P	P'	Width Between Inner Link Plates W	Roller Dia. (Bush Dia.) R	Pin				Plate			Max. Allowable Load kN {kgf}	Approx. Mass (kg/m)	No. of Links per Unit
							Dia. D	L1	L2	L	Thickness T	Height H	Height h			
RS35-LMC	RS35-LMC-NP	RS35-LMC-NEP	9.525	Contact a Tsubakimoto representative for details.	4.78	(5.08)	3.00	5.85	6.85	13.5	1.25	9.0	7.8	1.52{ 155}	0.33	320
RS40-LMC	RS40-LMC-NP	RS40-LMC-NEP	12.70		7.95	7.92	3.97	8.25	9.95	18.2	1.5	12.0	10.4	2.65{ 270}	0.64	240
RS50-LMC	RS50-LMC-NP	RS50-LMC-NEP	15.875		9.53	10.16	5.09	10.3	12.0	22.6	2.0	15.0	13.0	4.31{ 440}	1.04	192
RS60-LMC	RS60-LMC-NP	RS60-LMC-NEP	19.05		12.70	11.91	5.96	12.85	14.75	28.2	2.4	18.1	15.6	6.28{ 640}	1.53	160
RS80-LMC	RS80-LMC-NP	RS80-LMC-NEP	25.40		15.88	15.88	7.94	16.25	19.25	36.6	3.2	24.1	20.8	10.7 {1090}	2.66	120
RS100-LMC	RS100-LMC-NP	RS100-LMC-NEP	31.75		19.05	19.05	9.54	19.75	22.85	43.7	4.0	30.1	26.0	17.1 {1740}	3.99	96

## Attachment Dimensions

Unit: mm

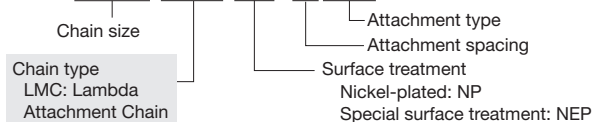
Tsubaki Chain No.			Attachment										Additional Weight per Attachment (kg)		
			C	C1	N	O	S	X	X2	Xs	L3	L4	A, SA	K, SK	EP
RS35-LMC	RS35-LMC-NP	RS35-LMC-NEP	9.5	9.5	7.9	3.4	6.35	14.3	14.3	14.55	9.5	14.6	0.0008	0.0016	0.0008
RS40-LMC	RS40-LMC-NP	RS40-LMC-NEP	12.7	12.7	9.5	3.6	8.0	17.8	17.8	17.40	9.5	16.75	0.002	0.004	0.001
RS50-LMC	RS50-LMC-NP	RS50-LMC-NEP	15.9	15.9	12.7	5.2	10.3	23.4	23.4	23.05	11.9	21.0	0.003	0.006	0.002
RS60-LMC	RS60-LMC-NP	RS60-LMC-NEP	19.05	18.3	15.9	5.2	11.9	28.2	28.2	26.85	14.3	25.75	0.007	0.014	0.003
RS80-LMC	RS80-LMC-NP	RS80-LMC-NEP	25.4	24.6	19.1	6.8	15.9	36.6	36.6	35.45	19.1	33.85	0.013	0.026	0.007
RS100-LMC	RS100-LMC-NP	RS100-LMC-NEP	31.75	31.8	25.4	8.7	19.8	44.9	44.9	44.0	23.8	41.75	0.026	0.052	0.012

- Notes: 1. Pin diameters for Lambda RS35-LMC and Standard RS35 are different and therefore they cannot be connected together.  
 2. RS35-LMC has no rollers.  
 3. Dimension D of RS35-LMC EP attachment is 3.0 mm diameter and is smaller than that of Standard RS35.  
 4. Dimension O is slightly smaller on NEP chains.

## Operating Temperature Range: -10°C to 150°C

### Chain Numbering

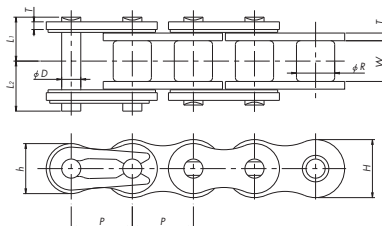
Old No. RSC40NP-LAMDA-1LSA1  
 New No. **RS40-LMC-NP-1LSA1**





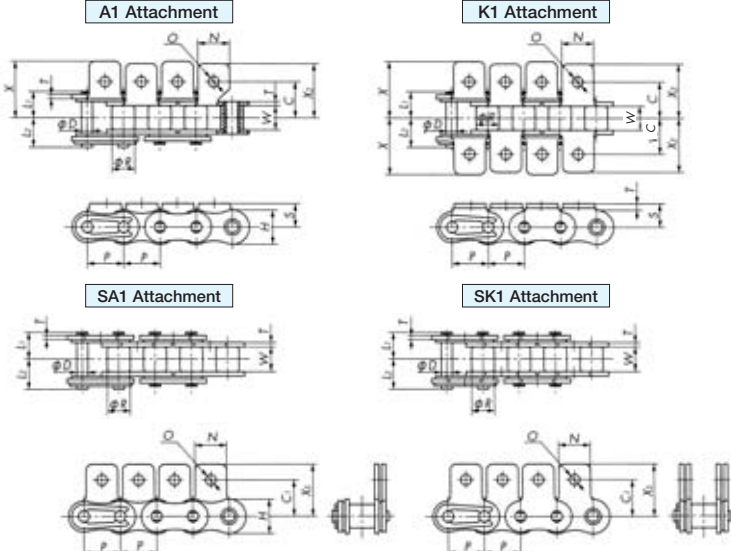
# Long Life Lambda RS Attachment Chain (X-Λ<sup>®</sup> [X-Lambda])

## Base Chain



- Connecting links: RS40-LMCX to RS60-LMCX use spring clips. RS80-LMCX and RS100-LMCX use cotter pins. Base chain pins are riveted.
- Offset links are not available.

## Attachments



- Pins other than those on connecting links are riveted regardless of whether attachments are present.
- Drawings show attachments added on every link.
- When attachments are to be installed on each even-numbered link, they will be installed on the inner link. Please specify when they must be installed on the outer link.

## Base Chain Dimensions

Unit: mm

Tsubaki Chain No.	Pitch P	Width Between Inner Link Plates W	Roller Dia. R	Pin			Plate			Max. Allowable Load kN {kgf}	Approx. Mass (kg/m)	No. of Links per Unit
				Dia. D	L <sub>1</sub>	L <sub>2</sub>	Thickness T	Height H	Height h			
RS40-LMCX	12.70	7.95	7.92	3.97	8.90	10.6	1.5	12.0	10.4	2.65{ 270}	0.64	240
RS50-LMCX	15.875	9.53	10.16	5.09	11.0	12.7	2.0	15.0	13.0	4.31{ 440}	1.04	192
RS60-LMCX	19.05	12.70	11.91	5.96	13.7	15.6	2.4	18.1	15.6	6.28{ 640}	1.53	160
RS80-LMCX	25.40	15.88	15.88	7.94	17.1	20.1	3.2	24.1	20.8	10.7 {1090}	2.69	120
RS100-LMCX	31.75	19.05	19.05	9.54	20.6	23.6	4.0	30.1	26.0	17.1 {1740}	4.02	96

## Attachment Dimensions

Unit: mm

Tsubaki Chain No.	Attachment								Additional Weight per Attachment (kg)	
	C	C <sub>1</sub>	N	O	S	X	X <sub>2</sub>	X <sub>s</sub>	A, SA	K, SK
RS40-LMCX	12.7	12.7	9.5	3.6	8.0	18.40	17.8	17.40	0.002	0.004
RS50-LMCX	15.9	15.9	12.7	5.2	10.3	24.10	23.4	23.05	0.003	0.006
RS60-LMCX	19.05	18.3	15.9	5.2	11.9	29.05	28.2	26.85	0.007	0.014
RS80-LMCX	25.4	24.6	19.1	6.8	15.9	37.5	36.6	35.45	0.013	0.026
RS100-LMCX	31.75	31.8	25.4	8.7	19.8	45.6	44.9	44.0	0.026	0.052

## Operating Temperature Range: -10°C to 150°C

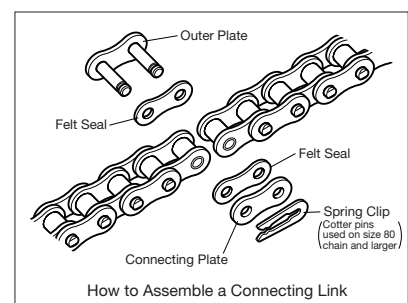
Due to the felt seals, X-Lambda chain pin length is slightly longer than that on standard attachment chain. The X dimension is longer on X-Lambda chain attachments than on standard attachments. Please check that there will be no interference with equipment.

When assembling chain, use connecting links designed for X-Lambda Chain (with felt seals). As shown in the diagram at the right, insert felt seals between the outer plates and connecting plates, and attach the link. The felt seals are impregnated with oil. Be careful to ensure that oil is not squeezed out.

## Chain Numbering

Old No. RSC40X-LAMDA-1LSA1

New No. **RS40-LMCX-1LSA1**



# Long Life Lambda Double Pitch Chain (X- $\Lambda$ <sup>®</sup> [X-Lambda])

## ■ Base Chain

**S Roller**

**R Roller**

• Connecting links: RF2040-LMCX to RF2060-LMCX use spring clips. RF2080-LMCX and RF2100-LMCX use cotter pins.  
Base chain pins are riveted.

## ■ Attachments

**A1 Attachment**

**A2 Attachment**

**K1 Attachment**

**K2 Attachment**

**SA1 Attachment**

**SA2 Attachment**

**SK1 Attachment**

**SK2 Attachment**

• Attachments shown are S roller type. However, the dimensions for attachments are the same when R rollers are used.  
Drawings show attachments added on every link.  
• When attachments are to be installed on each even-numbered link, they will be installed on the inner link. Please specify if they must be installed on the outer link.

# Long Life Lambda Double Pitch Chain (X-Λ<sup>®</sup> [X-Lambda])

## Base Chain Dimensions

Unit: mm

Tsubaki Chain No.	Roller Type	Pitch P	Width Between Inner Link Plates W	Roller Dia.		Pin			Plate		Max. Allowable Load kN {kgf}
				S Roller R <sub>1</sub>	S Roller R <sub>2</sub>	Dia. D	L <sub>1</sub>	L <sub>2</sub>	Thickness T	Height H	
RF2040-LMCX	S · R	25.40	7.95	7.92	15.88	3.97	8.90	10.6	1.5	12.0	2.65 { 270}
RF2050-LMCX		31.75	9.53	10.16	19.05	5.09	11.0	12.7	2.0	15.0	4.31 { 440}
RF2060-LMCX		38.10	12.70	11.91	22.23	5.96	15.25	17.15	3.2	17.2	6.28 { 640}
RF2080-LMCX		50.80	15.88	15.88	28.58	7.94	19.15	21.75	4.0	23.0	10.7 {1090}
RF2100-LMCX		63.50	19.05	19.05	39.69	9.54	22.6	25.3	4.8	28.6	17.1 {1740}

## Attachment Dimensions

Unit: mm

Tsubaki Chain No.	Attachment												Approx. Mass (kg/m)		Additional Weight per Attachment (kg)		No. of Links per Unit
	C	C <sub>1</sub>	C <sub>2</sub>	K	N	O	O <sub>1</sub>	S	T	X	X <sub>2</sub>	X <sub>S</sub>	S Roller	R Roller	A, SA	K, SK	
RF2040-LMCX	12.7	11.1	13.6	9.5	19.1	3.6	5.2	9.1	1.5	19.9	17.6	19.8	0.51	0.87	0.003	0.006	120
RF2050-LMCX	15.9	14.3	15.9	11.9	23.8	5.2	6.8	11.1	2.0	24.85	22.0	24.6	0.84	1.30	0.006	0.012	96
RF2060-LMCX	21.45	17.5	19.1	14.3	28.6	5.2	8.7	14.7	3.2	32.4	28.2	30.6	1.51	2.19	0.017	0.034	80
RF2080-LMCX	27.8	22.2	25.4	19.1	38.1	6.8	10.3	19.1	4.0	41.6	36.6	40.5	2.43	3.54	0.032	0.064	60
RF2100-LMCX	33.35	28.6	31.8	23.8	47.6	8.7	14.3	23.4	4.8	50.8	44.9	50.4	3.56	5.82	0.06	0.12	48

Note: Please contact a Tsubakimoto representative regarding OL (offset links).

## Operating Temperature Range: -10°C to 150°C

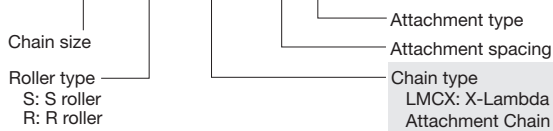
Due to the felt seals, X-Lambda chain pin length is slightly longer than that on standard attachment chain. The X dimension is longer on X-Lambda chain attachments than on standard attachments. Please check that there will be no interference with equipment.

See page 24 for instructions on handling connecting links. Note that the shape of the felt seal is round and differs from the felt seals on RS Chain. Four felt seals are installed on each connecting link.

## Chain Numbering

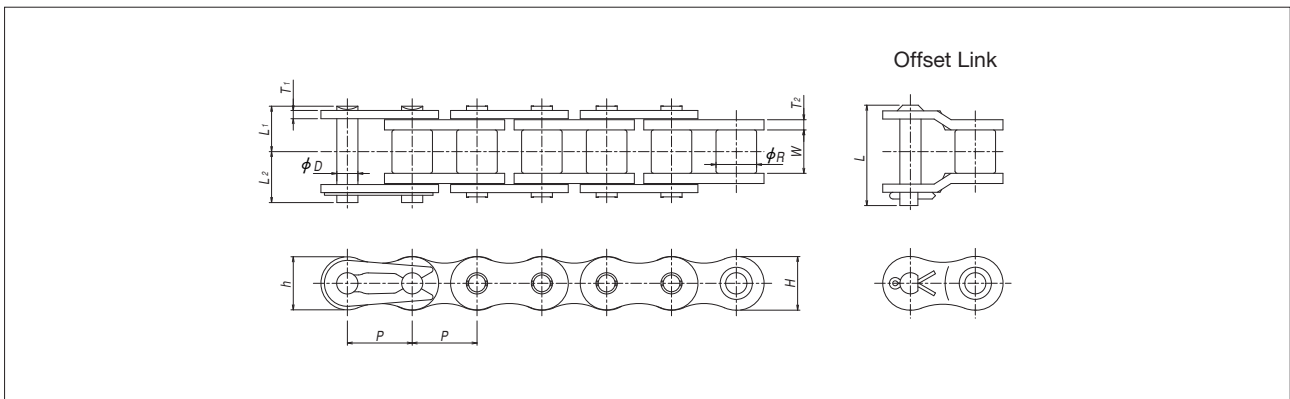
Old No. RFC2040S-X-LAMDA-1LK2

New No. **RF2040S-LMCX-1LK2**

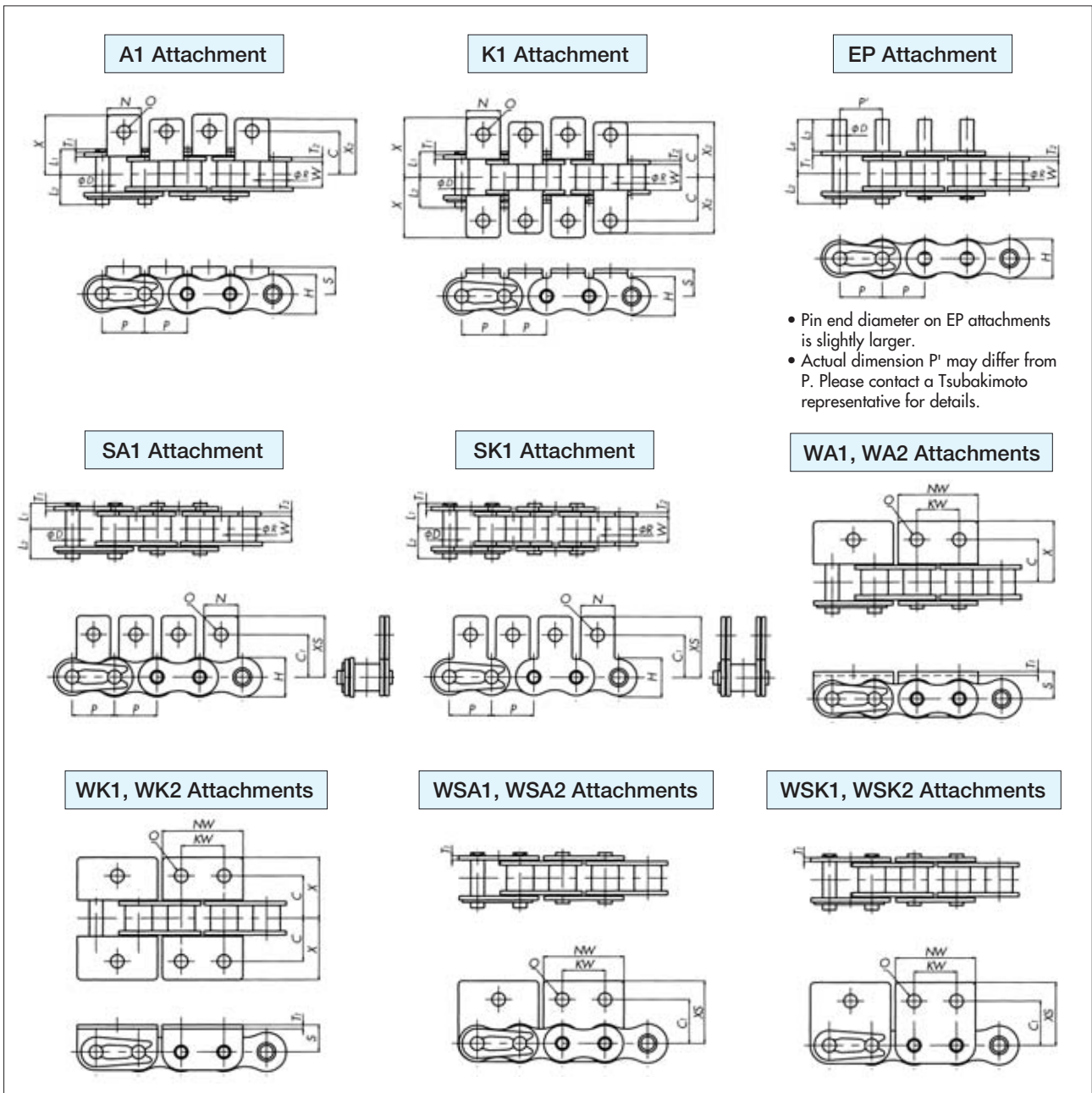


# BS Lambda Attachment Chain (ISO 606 B Series)

## Base Chain



## Attachments



# BS Lambda Attachment Chain (ISO 606 B Series)

## Base Chain Dimensions

Unit: mm

Tsubaki Chain No.	Pitch <i>P</i>	<i>P</i> '	Roller Dia. <i>R</i>	Width Between Inner Link Plates <i>W</i>	Plate				Pin Dia. <i>D</i>
					Thickness <i>T</i> <sub>2</sub>	Thickness <i>T</i> <sub>1</sub>	Height <i>H</i>	Height <i>h</i>	
RS08B-LM	12.70	Contact a Tsubakimoto representative for details.	8.51	7.75	1.6	1.6	12.0	10.4	4.45
RS10B-LM	15.875		10.16	9.65	1.5	1.5	14.7	13.7	5.08
RS12B-LM	19.05		12.07	11.68	1.8	1.8	16.1	16.1	5.72
RS16B-LM	25.40		15.88	17.02	4.0	3.2	21.0	21.0	8.28

Unit: mm

Tsubaki Chain No.	Pin Length			Offset Pin Length <i>L</i>	Min. Tensile Strength kN {kgf}	Approx. Mass (kg/m)	No. of Links per Unit
	<i>L</i> <sub>1</sub> + <i>L</i> <sub>2</sub>	<i>L</i> <sub>1</sub>	<i>L</i> <sub>2</sub>				
RS08B-LM	18.4	8.4	10.0	18.6	13.7{1400}	0.70	240
RS10B-LM	20.8	9.55	11.25	20.8	16.1{1640}	0.95	192
RS12B-LM	24.1	11.1	13.0	24.4	19.5{1990}	1.25	160
RS16B-LM	37.7	17.75	19.95	39.3	54.1{5520}	2.70	120

## Attachment Dimensions

Unit: mm

Tsubaki Chain No.	A1, SA1, K1, SK1 Attachments								Additional Weight per Attachment (kg)	
	<i>C</i>	<i>C</i> <sub>1</sub>	<i>N</i>	<i>O</i>	<i>S</i>	<i>X</i>	<i>X</i> <sub>2</sub>	<i>X</i> <sub>s</sub>	<i>A</i> , <i>SA</i>	<i>K</i> , <i>SK</i>
RS08B-LM	11.9	12.7	11.4	4.2	8.9	19.05	17.15	19.3	0.002	0.004
RS10B-LM	15.9	15.9	12.7	5.0	10.2	22.25	20.6	22.9	0.003	0.006
RS12B-LM	19.05	22.2	16.5	7.1	13.5	29.85	27.8	32.05	0.006	0.012
RS16B-LM	23.8	23.9	24.3	6.7	15.2	37.35	34.4	34.1	0.014	0.028

Unit: mm

Tsubaki Chain No.	WA2, WSA2, WK2, WSK2 Attachments WA1, WSA1, WK1, WSK1 Attachments							EP Attachment			Additional Weight per Attachment (kg)			
	<i>C</i>	<i>C</i> <sub>1</sub>	<i>NW</i>	<i>O</i>	<i>S</i>	<i>X</i>	<i>X</i> <sub>s</sub>	<i>KW</i>	<i>D</i>	<i>L</i> <sub>3</sub>	<i>L</i> <sub>4</sub>	<i>WA</i> , <i>WSA</i>	<i>WK</i> , <i>WSK</i>	<i>EP</i>
RS08B-LM	12.7	13.1	24.6	4.9	8.9	20.3	20.7	12.7	4.45	9.5	17.0	0.005	0.010	0.001
RS10B-LM	15.9	16.6	30.0	5.0	10.2	22.85	23.6	15.9	5.08	11.9	20.25	0.006	0.012	0.002
RS12B-LM	17.45	17.6	34.8	5.5	11.4	25.65	25.75	19.1	5.72	14.3	24.1	0.009	0.018	0.003
RS16B-LM	28.6	26.0	46.0	8.1	15.9	39.25	36.7	25.4	8.28	19.1	35.25	0.030	0.060	0.008

## Operating Temperature Range: -10°C to 150°C

### Sprockets

BS Roller Chain sprockets (conforming to ISO B Series) must be used.

### Pin Shape

Single-strand chains in sizes RS08B-LM through RS16B-LM use easy disassembly pins (with center sink riveting). All other sizes, including multi-strand chains, use double stake riveting.

### Chain Selection: Please inquire for chain selection.

## Special Orders

Tsubaki can manufacture special attachments and special extended pins, as well as RF06B, RS20B, and RS24B Attachment Chain having dimensions other than those given above. Please inquire for details.

## Note

When replacing European standard attachment chain with Lambda Chain, note that dimensions may be different than Tsubaki standard dimensions. Be sure to check attachment dimensions before ordering.

## Chain Numbering

Old No. RS08B-LAMDA-1LA1

New No. **RS08B-LM-1LA1**



# Heat Resistant Lambda Double Pitch Chain

**S Roller**

**R Roller**

**A1 Attachment**

**A2 Attachment**

**K1 Attachment**

**K2 Attachment**

**SA1 Attachment**

**SA2 Attachment**

**SK1 Attachment**

**SK2 Attachment**

**EP Attachment**

**GNK1 Attachment**

R Roller unavailable.

- Connecting Link: Spring clip = RF2040-LMCK - RF2060LMCK  
Cotter pin = RF2080LMCK
- All pins besides connecting link pins are riveted, regardless of whether attachment is present or not.
- Attachment drawings are for S roller type, but similar attachment dimensions apply to R roller types as well. Drawings will show when attachment is on every link.

- Pin head diameter for EP attachments is marginally larger than body diameter.
- Actual dimensions of P' differ from P. Contact a Tsubaki representative for more details.

Unit: mm

Tsubaki Chain No.	Roller Type	Pitch P	P'	Width Between Inner Link Plates W	Roller Dia.		Pin			Plate	
					S Roller R <sub>1</sub>	R Roller R <sub>2</sub>	Dia. D	L <sub>1</sub>	L <sub>2</sub>	Thickness T	Height H
RF2040-LMCK	S · R	25.40	Contact Tsubaki	7.95	7.92	15.88	3.97	8.25	9.95	1.5	12.0
RF2050-LMCK		31.75		9.53	10.16	19.05	5.09	10.30	12.0	2.0	15.0
RF2060-LMCK		38.10		12.70	11.91	22.23	5.96	14.55	16.55	3.2	17.2
RF2080-LMCK		50.80		15.88	15.88	28.58	7.94	18.30	20.90	4.0	23.0

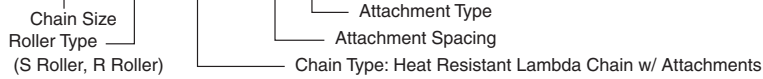
Unit: mm

Tsubaki Chain No.	Attachment															
	C	C <sub>1</sub>	C <sub>2</sub>	K	N	O	O <sub>1</sub>	S	T	X	X <sub>2</sub>	X <sub>S</sub>	D	L <sub>3</sub>	L <sub>4</sub>	G
RF2040-LMCK	12.7	11.1	13.6	9.5	19.1	3.6	5.2	9.1	1.5	19.3	17.6	19.8	3.97	9.5	16.75	4.1
RF2050-LMCK	15.9	14.3	15.9	11.9	23.8	5.2	6.8	11.1	2.0	24.2	22.0	24.6	5.09	11.9	21.0	5.1
RF2060-LMCK	21.45	17.5	19.1	14.3	28.6	5.2	8.7	14.7	3.2	31.5	28.2	30.6	5.96	14.3	27.45	6.1
RF2080-LMCK	27.8	22.2	25.4	19.1	38.1	6.8	10.3	19.1	4.0	40.7	36.6	40.5	7.94	19.1	35.5	8.1

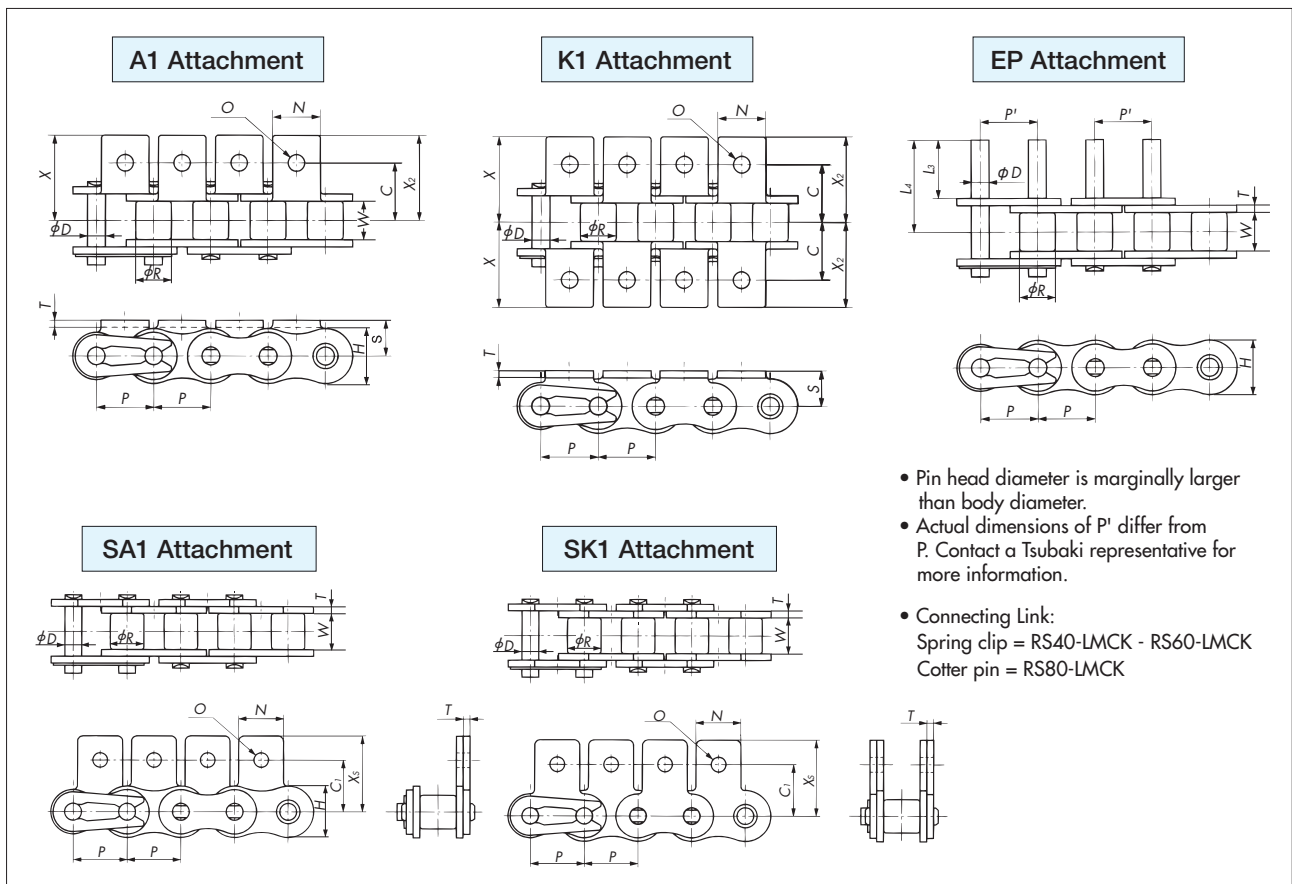
Tsubaki Chain No.	Max. Allowable Load kN {kgf}	Approx. Mass (kg/m)		Load Mass Per Attachment kg			No. of Links per Unit
		S S Roller	R R Roller	A, SA A/SA Attachment	K, SK K/SK Attachment	EP EP Attachment	
RF2040-LMCK	2.65{ 270}	0.51	0.87	0.003	0.006	0.001	120
RF2050-LMCK	4.31{ 440}	0.84	1.30	0.006	0.012	0.002	96
RF2060-LMCK	6.28{ 640}	1.51	2.19	0.017	0.034	0.003	80
RF2080-LMCK	10.7 {1090}	2.41	3.52	0.032	0.064	0.007	60

## Chain Numbering

### RF2040S-LMCK-1LA2



# Heat Resistant Lambda RS Attachment Chain



Unit: mm

Tsubaki Chain No.	Pitch P	P'	Width Between Inner Link Plates W	Roller (Bush) R	Pin			Plate		Max. Allowable Load kN {kgf}	Approx. Mass (kg/m)	No. of Links per Unit
					Dia. D	L <sub>1</sub>	L <sub>2</sub>	Thickness T	Height H			
RS40-LMCK	12.70	Contact Tsubaki	7.95	7.92	3.97	8.25	9.95	1.5	12.0	2.65{ 270}	0.64	240
RS50-LMCK	15.875		9.53	10.16	5.09	10.3	12.0	2.0	15.0	4.31{ 440}	1.04	192
RS60-LMCK	19.05		12.70	11.91	5.96	12.85	14.75	2.4	18.1	6.28{ 640}	1.53	160
RS80-LMCK	25.40		15.88	15.88	7.94	16.25	19.25	3.2	24.1	10.7 {1090}	2.66	120

Unit: mm

Tsubaki Chain No.	Attachment										Load Mass Per Attachment kg		
	C	C <sub>1</sub>	N	O	S	X	X <sub>2</sub>	X <sub>5</sub>	L <sub>3</sub>	L <sub>4</sub>	A, SA A/SA Attachment	K, SK K/SK Attachment	EP EP Attachment
RS40-LMCK	12.7	12.7	9.5	3.6	8.0	17.8	17.8	17.40	9.5	16.75	0.002	0.004	0.001
RS50-LMCK	15.9	15.9	12.7	5.2	10.3	23.4	23.4	23.05	11.9	21.0	0.003	0.006	0.002
RS60-LMCK	19.05	18.3	15.9	5.2	11.9	28.2	28.2	26.85	14.3	25.75	0.007	0.014	0.003
RS80-LMCK	25.4	24.6	19.1	6.8	15.9	36.6	36.6	35.45	19.1	33.85	0.013	0.026	0.007

## Chain Numbering

### RS40-LMCK-2LK1



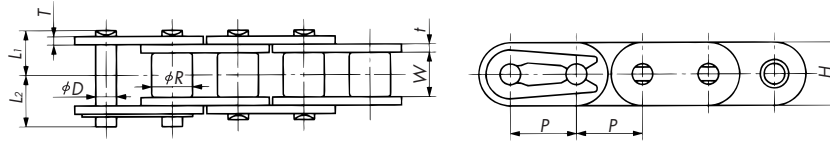
■ Heat Resistant BS Lambda is available. Please contact a Tsubakimoto representative.

# Lambda RF Roller Chain



## ANSI Chain

### Base Chain



- Connecting links: RF35-LMC to RF60-LMC use spring clips. RF80-LMC and larger use cotter pins. Base chain pins are riveted.
- Offset links are not available.

### Base Chain Dimensions

Unit: mm

Tsubaki Chain No.	Pitch $P$	Roller Dia. $R$	Width Between Inner Link Plates $W$	Plate			Pin			Max. Allowable Load $kN \{kgf\}$	Approx. Mass $(kg/m)$	No. of Links per Unit
				Thickness $T$	Thickness $t$	Height $H$	Dia. $D$	$L_1$	$L_2$			
RF35-LMC	9.525	(5.08)	4.78	1.25	1.25	9.0	3.0	5.85	6.85	1.52{ 155}	0.41	320
RF40-LMC	12.70	7.92	7.95	1.5	1.5	12.0	3.97	8.25	9.95	2.65{ 270}	0.74	240
RF50-LMC	15.875	10.16	9.53	2.0	2.0	15.0	5.09	10.3	12.0	4.31{ 440}	1.22	192
RF60-LMC	19.05	11.91	12.70	2.4	2.4	18.1	5.96	12.85	14.75	6.28{ 640}	1.78	160
RF80-LMC	25.40	15.88	15.88	3.2	3.2	24.1	7.94	16.25	19.25	10.7 {1090}	3.09	120
RF100-LMC	31.75	19.05	19.05	4.0	4.0	28.6	9.54	19.75	22.85	17.1 {1740}	4.43	96

Notes: 1. Pin diameters for Lambda RS35-LMC and Standard RS35 are different and therefore they cannot be connected together.  
2. RS35-LMC has no rollers.

### Operating Temperature Range: $-10^{\circ}C$ to $150^{\circ}C$

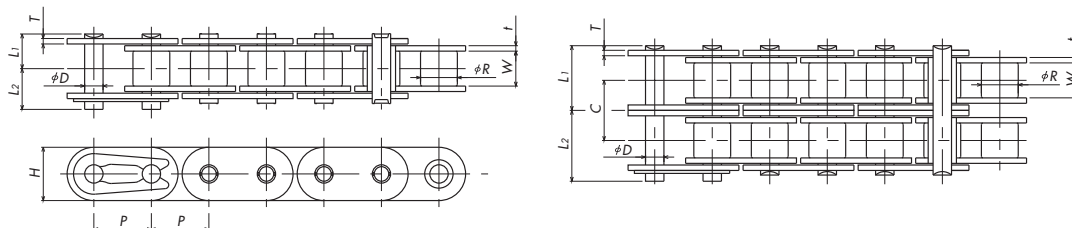
### Sprockets

- RS standard sprockets can be used.



## BS/DIS Chain (ISO 606 B Series)

### Base Chain



### Base Chain Dimensions

Unit: mm

Tsubaki Chain No.	Pitch $P$	Roller Dia. $R$	Width Between Inner Link Plates $W$	Plate			Pin			Transverse Pitch $(pt)$	Approx. Mass $(kg/m)$
				Thickness $T$	Thickness $t$	Height $H$	Dia. $D$	$L_1$	$L_2$		
RF08B-LM-1	12.70	8.51	7.75	1.6	1.6	11.8	4.45	8.40	10.0	—	0.7
RF08B-LM-2								15.30	16.90	13.92	1.40
RF10B-LM-1	15.875	10.16	9.65	1.5	1.5	14.7	5.08	9.55	11.25	—	0.95
RF10B-LM-2								17.85	19.55	16.59	1.90
RF12B-LM-1	19.05	12.07	11.68	1.8	1.8	16.1	5.72	11.10	13.0	—	1.25
RF12B-LM-2								20.85	22.75	19.46	2.60
RF16B-LM-1	25.40	15.88	17.02	4.0	3.2	24.0	8.28	17.75	19.95	—	2.7
RF16B-LM-2								33.55	35.75	31.88	5.60

### Operating Temperature Range: $-10^{\circ}C$ to $150^{\circ}C$

### Sprockets

- BS Roller Chain sprockets (conforming to ISO 606 B Series) must be used.

### Chain Numbering

Old No. RFC40-LAMDA

New No. **RF40-LMC**

Chain size  
Chain type  
LMC: Lambda Attachment Chain

Old No. RFC10B-LAMDA

New No. **RF10B-LM**

Chain size  
Chain type  
LM: Lambda Chain



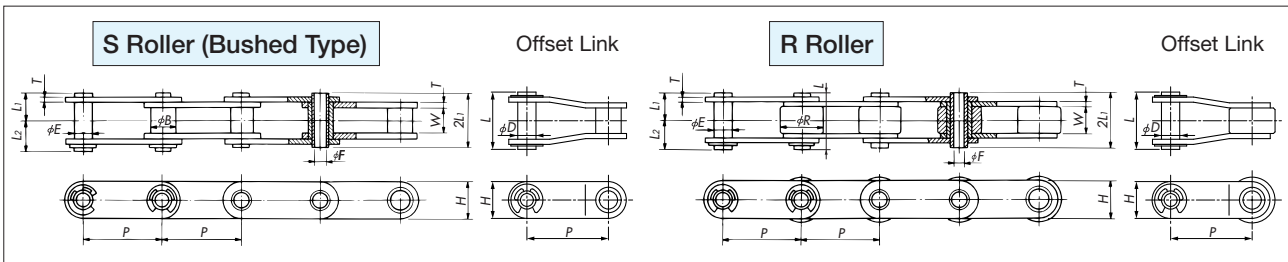
# Lambda Hollow Pin Chain



Double Pitch

## Lambda Hollow Pin Double Pitch Chain

### Base Chain



### Base Chain Dimensions

Unit: mm

Tsubaki Chain No.	Roller Type	Pitch $P$	Bush Dia. $B$	Roller Dia. $R$	Width Between Inner Link Plates $W$	Plate		Pin				Offset Pin Length $L$	Approx. Mass (kg/m)		No. of Links per Unit
						Thickness $T$	Height $H$	Outer Dia. $E$	Inner Dia. $F$ (min.)	$L_1$	$L_2$		Bushed Type	R Roller	
RF2040-LMC-HP	S • R	25.40	7.92	15.88	7.95	1.5	12.0	5.68	4.00	8.00	9.50	19.1	0.46	0.82	120
RF2050-LMC-HP		31.75	10.16	19.05	9.53	2.0	15.0	7.22	5.12	10.05	11.65	23.4	0.75	1.21	96
RF2060-LMC-HP		38.10	11.91	22.23	12.70	2.4	17.2	8.38	5.99	12.55	14.25	28.7	1.38	2.06	80
RF2080-LMC-HP		50.80	15.88	28.58	15.88	3.2	23.0	11.375	8.02	16.25	17.80	35.7	1.80	2.81	60

### Operating Temperature Range: -10°C to 150°C

### Sprockets

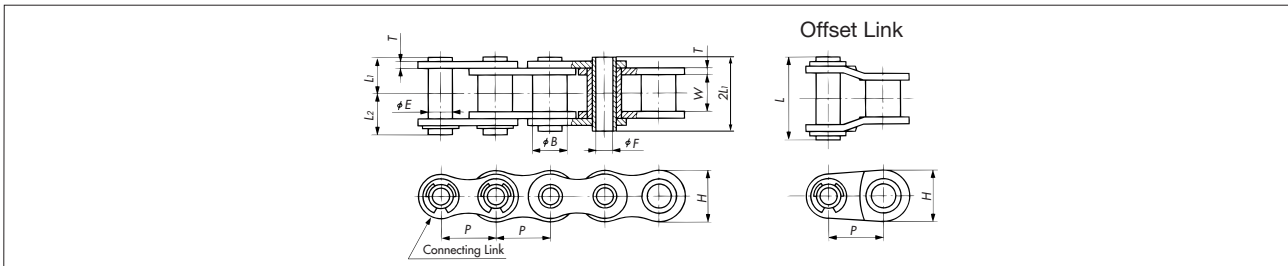
- Double Pitch sprockets can be used. RS standard sprockets can be used provided that the sprockets are of the S roller type and have 30 or more teeth.



RS

## Lambda Hollow Pin RS Chain

### Base Chain



### Base Chain Dimensions

Unit: mm

Tsubaki Chain No.	Pitch $P$	Bush Dia. $B$	Width Between Inner Link Plates $W$	Plate		Pin				Offset Pin Length $L$	Approx. Mass (kg/m)	No. of Links per Unit
				Thickness $T$	Height $H$	Outer Dia. $E$	Inner Dia. $F$ (min.)	$L_1$	$L_2$			
RS40-LMC-HP	12.70	7.92	7.95	1.5	12.0	5.68	4.00	8.00	9.50	19.1	0.53	240
RS50-LMC-HP	15.875	10.16	9.53	2.0	15.0	7.22	5.12	10.05	11.65	23.4	0.86	192
RS60-LMC-HP	19.05	11.91	12.70	2.4	18.1	8.38	5.99	12.55	14.25	28.7	1.27	160
RS80-LMC-HP	25.40	15.88	15.88	3.2	24.1	11.375	8.02	16.25	17.80	35.7	2.15	120

### Operating Temperature Range: -10°C to 150°C

### Sprockets

- RS standard sprockets can be used.

### Chain Numbering

Old No. RFC2040HPS-LAMDA

New No. **RF2040S-LMC-HP**

Chain size | Roller type: S: S roller, R: R roller | Chain type: Lambda Hollow Pin Chain

Old No. RSC40HP-LAMDA

New No. **RS40-LMC-HP**

Chain size | Chain type: Lambda Hollow Pin Chain

# Lambda Outboard Roller Chain

## Double Pitch Chain with Outboard Rollers (same for all types)

### Chain Without Brake

**Base Chain S Roller Staggered Installation (Type I)**

**Crosswise Installation (Type II)**

**Base Chain R Roller Staggered Installation (Type I)**

**Crosswise Installation (Type II)**

- All connecting links are cotter pin type.

**Chain with Brake**

- All connecting links are cotter pin type.
- The dimensional drawing is of a conductive type (spring brake). Chains with plastic brakes have the same structure as those with no brakes.

Unit: mm

Tsubaki Chain No.		Roller Type	Pitch P	Roller Dia. R	Width Between Inner Link Plates W	Plate		Pin			Outboard Roller		Approx. Mass (kg/m)		
						Thickness T	Height H	Dia. D	L1	L2	L3	DS	HS	Base Chain Steel Roller	Base Chain Plastic Roller
RF2040S-LMC-SRP	RF2040S-LMC-SRPB	S	25.40	7.92	7.95	1.5	12.0	3.97	9.65	17.9	19.3	15.88	7.8	0.66	—
RF2050S-LMC-SRP	RF2050S-LMC-SRPB		31.75	10.16	9.53	2.0	15.0	5.09	11.9	21.6	23.3	19.05	9.4	1.03	—
RF2060S-LMC-SRP	RF2060S-LMC-SRPB		38.10	11.91	12.70	3.2	17.2	5.96	16.95	29.65	32.05	22.23	12.6	1.80	—
RF2040R-LMC-SRP	RF2040R-LMC-SRPB	R	25.40	15.88	7.95	1.5	12.0	3.97	9.65	23.1	24.5	23.0	13.0	1.24	0.89
RF2050R-LMC-SRP	RF2050R-LMC-SRPB		31.75	19.05	9.53	2.0	15.0	5.09	11.9	25.3	27.0	27.0	13.0	1.70	1.23
RF2060R-LMC-SRP	RF2060R-LMC-SRPB		38.10	22.23	12.70	3.2	17.2	5.96	16.95	29.65	32.05	30.0	12.6	2.64	1.93

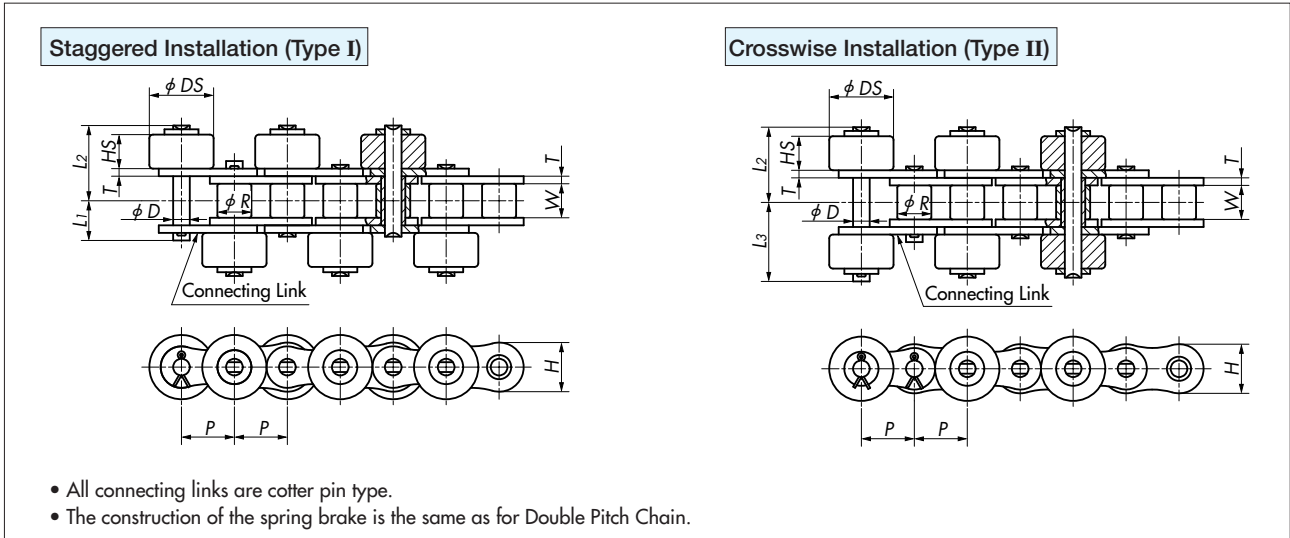
Unit: mm

Tsubaki Chain No.		Roller Type	Pitch P	Roller Dia. R	Width Between Inner Link Plates W	Plate		Pin			Outboard Roller		Approx. Mass (kg/m)	
						Thickness T	Height H	Dia. D	L1	L2	L3	DS		HS
Steel Outboard Roller		S	25.40	7.92	7.95	1.5	12.0	3.97	9.65	17.9	19.3	15.88	7.8	1.02
Lambda			31.75	10.16	9.53	2.0	15.0	5.09	11.9	21.6	23.3	19.05	9.4	1.53
Lambda			38.10	11.91	12.70	3.2	17.2	5.96	16.95	29.65	32.05	22.23	12.6	2.56
Lambda		R	25.40	15.88	7.95	1.5	12.0	3.97	9.65	23.1	24.5	23.0	13.0	—
Lambda			31.75	19.05	9.53	2.0	15.0	5.09	11.9	25.3	27.0	27.0	13.0	—
Lambda			38.10	22.23	12.70	3.2	17.2	5.96	16.95	29.65	32.05	30.0	12.6	—

Notes: 1. The mass given in the above table assumes that outboard rollers are installed on every link in a staggered installation (as illustrated above in the diagram on the left) or on every second link in a crosswise installation (as illustrated above in the diagram on the right).  
 2. If using a conductive roller, the brake is a spring brake with chain number SRPBE.

# Lambda Outboard Roller Chain

## RS Chain with Outboard Rollers (same for all types)



## Chain Without Brake

Tsubaki Chain No.	Pitch <i>P</i>	Roller Dia. <i>R</i>	Width Between Inner Link Plates <i>W</i>	Plate		Pin			Outboard Roller		Approx. Mass (kg/m)	
				Thickness <i>T</i>	Height <i>H</i>	Dia. <i>D</i>	<i>L</i> <sub>1</sub>	<i>L</i> <sub>2</sub>	<i>L</i> <sub>3</sub>	<i>DS</i>		<i>HS</i>
RS40-LMC-SRP	12.70	7.92	7.95	1.5	12.0	3.97	9.65	17.9	19.3	15.88	7.8	0.94
RS50-LMC-SRP	15.875	10.16	9.53	2.0	15.0	5.09	11.9	21.6	23.2	19.05	9.4	1.42
RS60-LMC-SRP	19.05	11.91	12.70	2.4	18.1	5.96	15.25	27.95	30.35	22.23	12.6	2.11

Tsubaki Chain No.	Pitch <i>P</i>	Roller Dia. <i>R</i>	Width Between Inner Link Plates <i>W</i>	Plate		Pin			Outboard Roller		Approx. Mass (kg/m)	
				Thickness <i>T</i>	Height <i>H</i>	Dia. <i>D</i>	<i>L</i> <sub>1</sub>	<i>L</i> <sub>2</sub>	<i>L</i> <sub>3</sub>	<i>DS</i>		<i>HS</i>
RS40-LMC-SR	12.70	7.92	7.95	1.5	12.0	3.97	9.65	17.9	19.3	15.88	7.8	1.67
RS50-LMC-SR	15.875	10.16	9.53	2.0	15.0	5.09	11.9	21.6	23.2	19.05	9.4	2.42
RS60-LMC-SR	19.05	11.91	12.70	2.4	18.1	5.96	15.25	27.95	30.35	22.23	12.6	3.63

Notes: 1. The mass given in the above table assumes that outboard rollers are installed on every link in a staggered installation (as illustrated above in the diagram on the left) or on every second link in a crosswise installation (as illustrated above in the diagram on the right).  
 2. Even if the chain with steel outboard rollers is Lambda Chain, the outboard rollers need to be lubricated.

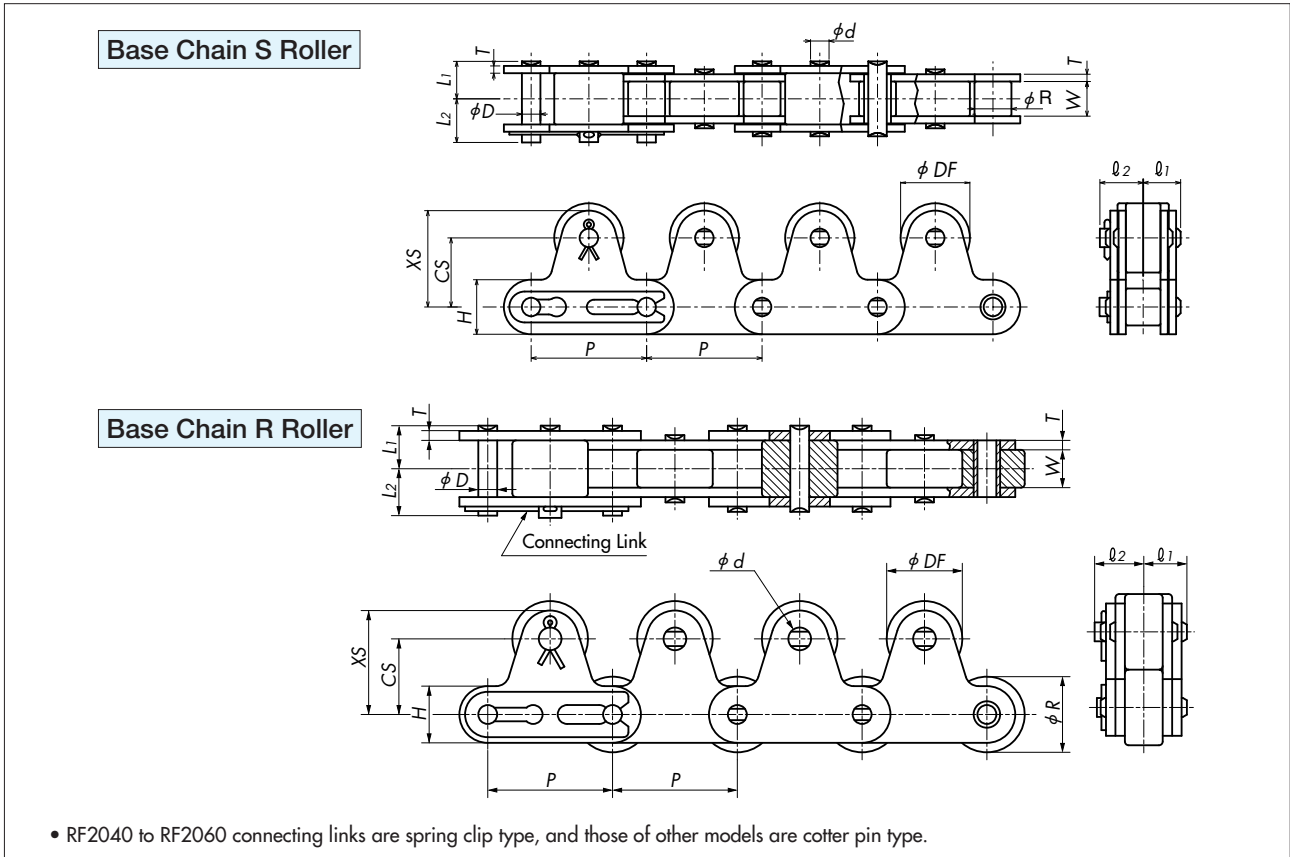
## Chain With Brake

Tsubaki Chain No.	Pitch <i>P</i>	Roller Dia. <i>R</i>	Width Between Inner Link Plates <i>W</i>	Plate		Pin			Outboard Roller		Approx. Mass (kg/m)	
				Thickness <i>T</i>	Height <i>H</i>	Dia. <i>D</i>	<i>L</i> <sub>1</sub>	<i>L</i> <sub>2</sub>	<i>L</i> <sub>3</sub>	<i>DS</i>		<i>HS</i>
RS40-LMC-SRPB	12.70	7.92	7.95	1.5	12.0	3.97	9.65	17.9	19.3	15.88	7.8	0.94
RS50-LMC-SRPB	15.875	10.16	9.53	2.0	15.0	5.09	11.9	21.6	23.2	19.05	9.4	1.42
RS60-LMC-SRPB	19.05	11.91	12.70	2.4	18.1	5.96	15.25	27.95	30.35	22.23	12.6	2.11

Notes: 1. The mass given in the above table assumes that outboard rollers are installed on every link in a staggered installation (as illustrated above in the diagram on the left) or on every second link in a crosswise installation (as illustrated above in the diagram on the right).  
 2. If using a conductive roller, the brake is a spring brake with chain number SRPBE.

# Lambda Top Roller Chain

## Double Pitch Chain with Top Rollers (same for all types)



Unit: mm

Tsubaki Chain No. Plastic Top Roller Lambda	Pitch P	Width Between Inner Link Plates W	Roller Dia. R		Pin			Plate		Top Roller						Approx. Mass (kg/m)		
			S Roller	R Roller	Dia. D	L <sub>1</sub>	L <sub>2</sub>	Height H	Thickness T	DF	CS	XS	θ <sub>1</sub>	θ <sub>2</sub>	d	S Roller	R Roller	Plastic R Roller
RF2040S-LMC-TRP	25.40	7.95	7.92	15.88	3.97	8.25	9.95	12.0	1.5	15.88	15.0	21.0	8.25	9.65	3.97	0.91	—	—
RF2050S-LMC-TRP	31.75	9.53	10.16	19.05	5.09	10.3	12.0	15.0	2.0	19.05	19.0	26.5	10.3	11.9	5.09	1.44	—	—
RF2060S-LMC-TRP	38.10	12.70	11.91	22.23	5.96	14.55	16.55	17.2	3.2	22.23	23.0	31.6	14.55	16.95	5.96	2.77	—	—
RF2040R-LMC-TRP	25.40	7.95	7.92	15.88	3.97	8.25	9.95	12.0	1.5	15.88	15.0	21.0	8.25	9.65	3.97	—	1.27	0.92
RF2050R-LMC-TRP	31.75	9.53	10.16	19.05	5.09	10.3	12.0	15.0	2.0	19.05	19.0	26.5	10.3	11.9	5.09	—	1.90	1.43
RF2060R-LMC-TRP	38.10	12.70	11.91	22.23	5.96	14.55	16.55	17.2	3.2	22.23	23.0	31.6	14.55	16.95	5.96	—	3.46	2.75

Unit: mm

Tsubaki Chain No. Steel Top Roller Lambda	Pitch P	Width Between Inner Link Plates W	Roller Dia. R		Pin			Plate		Top Roller						Approx. Mass (kg/m)	
			S Roller	R Roller	Dia. D	L <sub>1</sub>	L <sub>2</sub>	Height H	Thickness T	DF	CS	XS	θ <sub>1</sub>	θ <sub>2</sub>	d	S Roller	R Roller
RF2040S-LMC-TR	25.40	7.95	7.92	15.88	3.97	8.25	9.95	12.0	1.5	15.88	15.0	21.0	8.25	9.65	3.97	1.33	—
RF2050S-LMC-TR	31.75	9.53	10.16	19.05	5.09	10.3	12.0	15.0	2.0	19.05	19.0	26.5	10.3	11.9	5.09	2.04	—
RF2060S-LMC-TR	38.10	12.70	11.91	22.23	5.96	14.55	16.55	17.2	3.2	22.23	23.0	31.6	14.55	16.95	5.96	3.68	—
RF2040R-LMC-TR	25.40	7.95	7.92	15.88	3.97	8.25	9.95	12.0	1.5	15.88	15.0	21.0	8.25	9.65	3.97	—	1.69
RF2050R-LMC-TR	31.75	9.53	10.16	19.05	5.09	10.3	12.0	15.0	2.0	19.05	19.0	26.5	10.3	11.9	5.09	—	2.50
RF2060R-LMC-TR	38.10	12.70	11.91	22.23	5.96	14.55	16.55	17.2	3.2	22.23	23.0	31.6	14.55	16.95	5.96	—	4.36

Notes: 1. When a top roller is installed on each even-numbered link, the top roller is installed on the inner link unless otherwise specified.  
2. Lubrication is required on Steel Top Rollers.

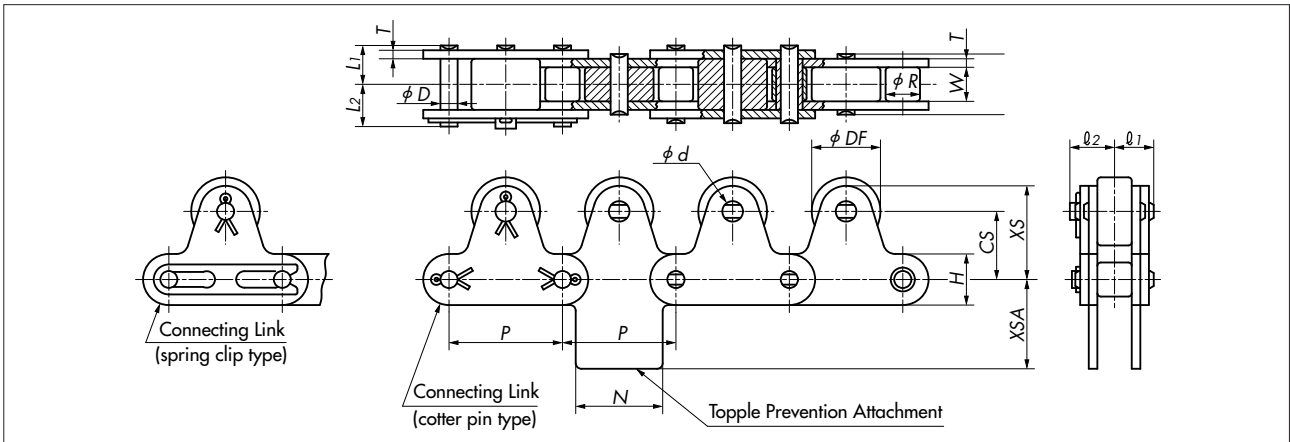
## Sprockets for Double Pitch Chain with Top Rollers

If the base chain roller is an R roller, a standard sprocket for Double Pitch Chain (R roller) cannot be used since the tooth end of the sprocket comes in contact with the top roller. In this case, use the sprocket for Top Roller Chain shown on page 41.  
If the base chain roller is an S roller, a standard sprocket for RF Double Pitch Chain (S roller) can be used as is. RS Roller Chain sprockets can only be used if they are the S roller type and when the number of the engaging teeth is 15 or more (number of sprocket teeth: 30).

# Lambda Top Roller Chain

## Double Pitch Chain with Topple Prevention Attachments

Special attachments are installed on a long conveyor so as to prevent toppling and meandering of the conveyor.



Unit: mm

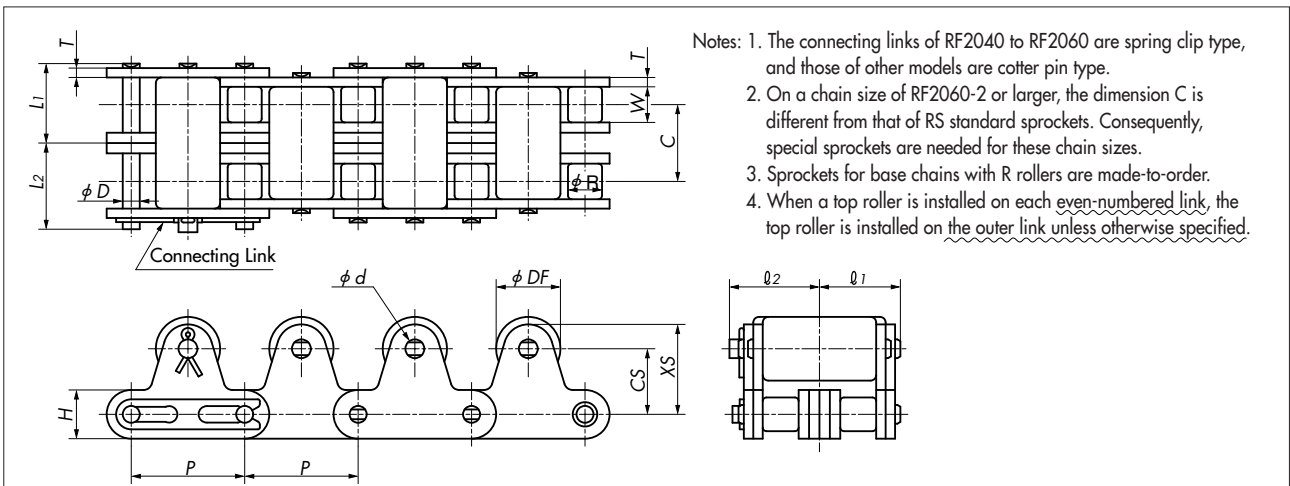
Tsubaki Chain No.	Pitch P	Width Between Inner Link Plates W	Roller Dia. R		Pin			Plate		Top Roller & Attachment							
			S Roller	R Roller	Dia. D	L1	L2	Height H	Thickness T	DF	CS	XS	l1	l2	d	N	XSA
RF2040-LMC-TG	25.40	7.95	7.92	15.88	3.97	8.25	9.95	12.0	1.5	15.88	15.0	21.0	8.45	9.65	3.97	19.1	12.7
RF2050-LMC-TG	31.75	9.53	10.16	19.05	5.09	10.3	12.0	15.0	2.0	19.05	19.0	26.5	10.5	11.9	5.09	23.8	15.9
RF2060-LMC-TG	38.10	12.70	11.91	22.23	5.96	14.55	16.55	17.2	3.2	22.23	23.0	31.6	14.75	16.95	5.96	28.6	19.1
RF2080-LMC-TG	50.80	15.88	15.88	28.58	7.94	18.3	20.9	23.0	4.0	28.58	29.0	40.5	18.5	21.3	11.32	38.1	25.4
RF2100-LMC-TG	63.50	19.05	19.05	39.69	9.54	21.8	24.5	28.6	4.8	39.69	35.4	49.7	22.1	27.2	14.52	47.6	31.8

Notes: 1. Sprockets for base chains with R rollers are made-to-order.

2. Please use caution so as to avoid contact between these attachments and the hub of the sprocket. Please specify the installation spacing of the top rollers and attachments (four links or more).

## Double Pitch Chain with Double-Strand Top Rollers

This chain allows for a larger conveying capacity than single-strand Top Roller Chain.

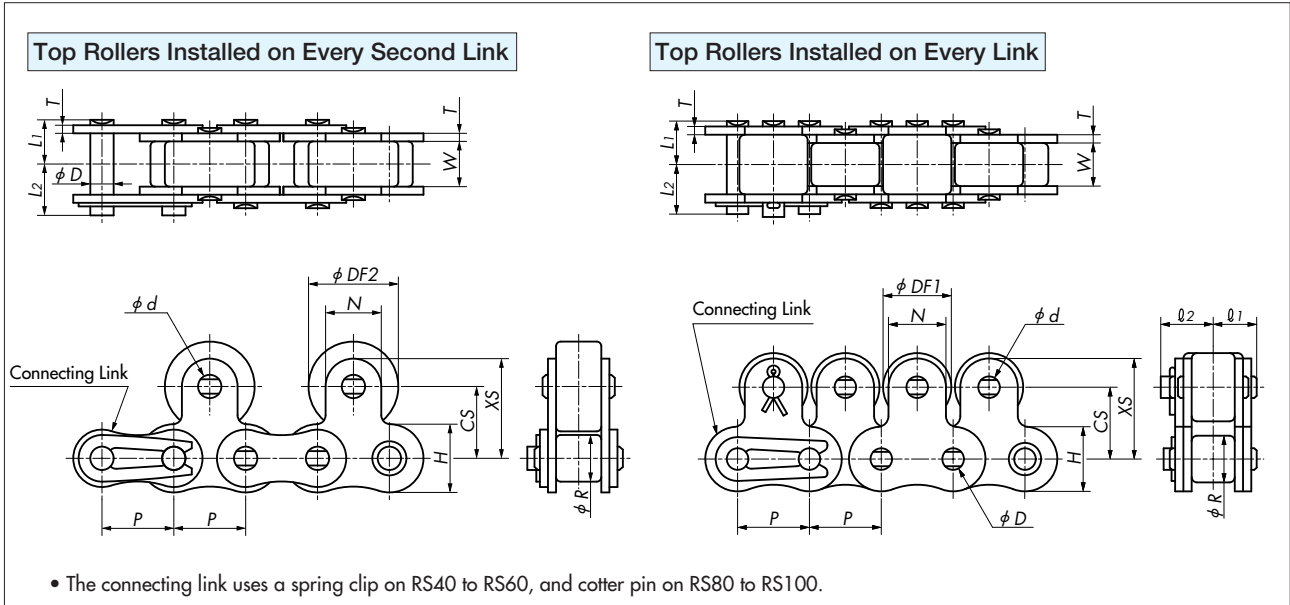


Unit: mm

Tsubaki Chain No.	Pitch P	Width Between Inner Link Plates W	Transverse Pitch C	Roller Dia. R		Pin			Plate		Top Roller					
				S Roller	R Roller	Dia. D	L1	L2	Height H	Thickness T	DF	CS	XS	l1	l2	d
RF2040-LMC-2-TR	25.40	7.95	14.4	7.92	15.88	3.97	15.45	17.15	12.0	1.5	15.88	15.0	21.0	15.65	17.25	3.97
RF2050-LMC-2-TR	31.75	9.53	18.1	10.16	19.05	5.09	19.35	21.15	15.0	2.0	19.05	19.0	26.5	19.55	21.95	5.09
RF2060-LMC-2-TR	38.10	12.70	26.2	11.91	22.23	5.96	27.7	29.6	17.2	3.2	22.23	23.0	31.6	27.85	30.85	5.96
RF2080-LMC-2-TR	50.80	15.88	32.6	15.88	28.58	7.94	34.6	37.2	23.0	4.0	28.58	29.0	40.5	34.8	37.5	11.32
RF2100-LMC-2-TR	63.50	19.05	39.1	19.05	39.69	9.54	41.4	44.1	28.6	4.8	39.69	35.4	49.7	41.65	46.75	14.52

# Lambda Top Roller Chain

## RS Chain with Top Rollers (same for all types)



Unit: mm

Tsubaki Chain No. Plastic Top Roller Lambda	Pitch <i>P</i>	Width Between Inner Link Plates <i>W</i>	Base Chain Roller Dia. <i>R</i>	Pin			Plate		Top Roller							Approx. Mass (kg/m)		
				Dia. <i>D</i>	<i>L</i> <sub>1</sub>	<i>L</i> <sub>2</sub>	Height <i>H</i>	Thickness <i>T</i>	<i>DF</i> <sub>1</sub>	<i>DF</i> <sub>2</sub>	<i>CS</i>	<i>N</i>	<i>XS</i>	<i>Ø</i> <sub>1</sub>	<i>Ø</i> <sub>2</sub>	<i>d</i>	On Every Link	On Every 2nd Link
RS40-LMC-TRP	12.70	7.95	7.92	3.97	8.25	9.95	12.0	1.5	11.0	15.88	12.7	9.5	17.45	8.25	9.65	3.97	0.92	0.85
RS50-LMC-TRP	15.875	9.53	10.16	5.09	10.3	12.0	15.0	2.0	15.0	19.05	15.9	12.7	22.25	10.3	11.9	5.09	1.56	1.38
RS60-LMC-TRP	19.05	12.70	11.91	5.96	12.85	14.75	18.1	2.4	18.0	22.23	18.3	15.9	26.25	12.85	15.25	5.96	2.30	2.03

Unit: mm

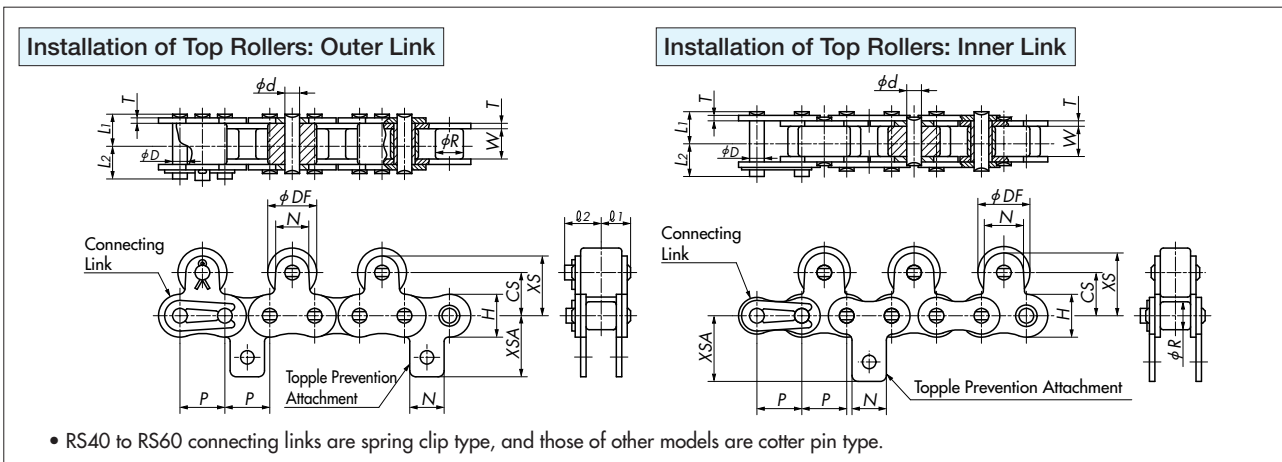
Tsubaki Chain No. Steel Top Roller Lambda	Pitch <i>P</i>	Width Between Inner Link Plates <i>W</i>	Base Chain Roller Dia. <i>R</i>	Pin			Plate		Top Roller							Approx. Mass (kg/m)		
				Dia. <i>D</i>	<i>L</i> <sub>1</sub>	<i>L</i> <sub>2</sub>	Height <i>H</i>	Thickness <i>T</i>	<i>DF</i> <sub>1</sub>	<i>DF</i> <sub>2</sub>	<i>CS</i>	<i>N</i>	<i>XS</i>	<i>Ø</i> <sub>1</sub>	<i>Ø</i> <sub>2</sub>	<i>d</i>	On Every Link	On Every 2nd Link
RS40-LMC-TR	12.70	7.95	7.92	3.97	8.25	9.95	12.0	1.5	11.0	15.88	12.7	9.5	17.45	8.25	9.65	3.97	1.83	1.41
RS50-LMC-TR	15.875	9.53	10.16	5.09	10.3	12.0	15.0	2.0	15.0	19.05	15.9	12.7	22.25	10.3	11.9	5.09	2.39	2.18
RS60-LMC-TR	19.05	12.70	11.91	5.96	12.85	14.75	18.1	2.4	18.0	22.23	18.3	15.9	26.25	12.85	15.25	5.96	3.60	3.18

- Notes:
1. "On Every Link" and "On Every 2nd Link" described in the column of the "Approx. Mass" refer to the spacing for the installation of the top rollers.
  2. When a top roller is installed on each even-numbered link, the top roller is installed on the inner link unless otherwise specified.
  3. Even if the chain with steel top rollers is Lambda Chain, the top rollers need to be lubricated.
  4. Lubrication is required on Steel Top Rollers.

# Lambda Top Roller Chain

## RS Chain with Topple Prevention Attachments

Special attachments are installed on a long conveyor so as to prevent toppling and meandering of the conveyor.



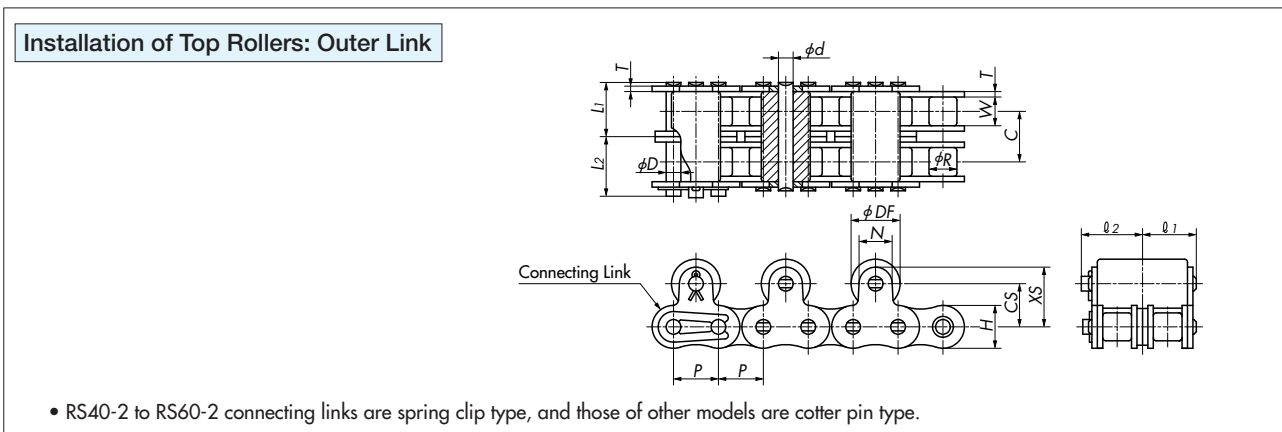
Unit: mm

Tsubaki Chain No.	Pitch P	Width Between Inner Link Plates W	Roller Dia. R	Pin			Plate		Top Roller & Attachment							
				Dia. D	L <sub>1</sub>	L <sub>2</sub>	Height H	Thickness T	DF	CS	N	XS	Ø <sub>1</sub>	Ø <sub>2</sub>	d	XSA
RS40-LMC-TG	12.70	7.95	7.92	3.97	8.25	9.95	12.0	1.5	15.88	12.7	9.5	17.45	8.25	9.65	3.97	17.4
RS50-LMC-TG	15.875	9.53	10.16	5.09	10.3	12.0	15.0	2.0	19.05	15.9	12.7	22.25	10.3	11.9	5.09	23.05
RS60-LMC-TG	19.05	12.70	11.91	5.96	12.85	14.75	18.1	2.4	22.23	18.3	15.9	26.25	12.85	15.25	5.96	26.85
RS80-LMC-TG	25.40	15.88	15.88	7.94	16.25	19.25	24.1	3.2	28.58	24.6	19.1	34.15	16.25	19.25	7.94	35.45
RS100-LMC-TG	31.75	19.05	19.05	9.54	19.75	22.85	30.1	4.0	39.69	31.8	25.4	44.5	19.75	22.85	9.73	44.0

- Notes:
1. Please specify whether to install the top rollers on the inner or outer link.
  2. Please use caution so as to avoid contact between these attachments and the hub of the sprocket. Please specify the installation spacing of the top rollers and attachments (four links or more).
  3. Lubrication is required on Steel Top Rollers.

## RS Chain with Double-Strand Top Rollers

This chain allows a larger conveying capacity than single-strand Top Roller Chain.



Unit: mm

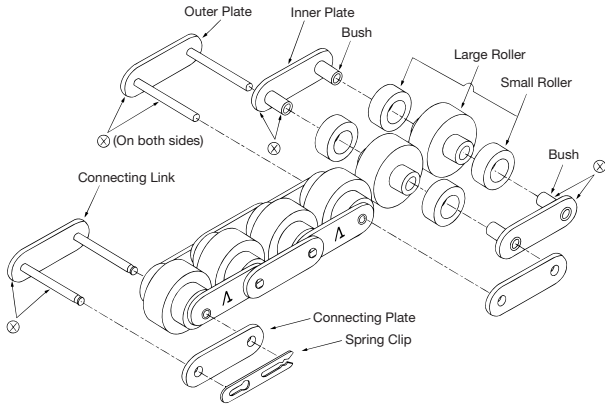
Tsubaki Chain No.	Pitch P	Width Between Inner Link Plates W	Roller Dia. R	Transverse Pitch C	Pin			Plate		Top Roller						
					Dia. D	L <sub>1</sub>	L <sub>2</sub>	Height H	Thickness T	DF	CS	XS	N	Ø <sub>1</sub>	Ø <sub>2</sub>	d
RS40-LMC-2-TR	12.70	7.95	7.92	14.4	3.97	15.45	17.15	12.0	1.5	15.88	12.7	17.45	9.5	15.45	16.95	3.97
RS50-LMC-2-TR	15.875	9.53	10.16	18.1	5.09	19.35	21.15	15.0	2.0	19.05	15.9	22.25	12.7	19.35	21.15	5.09
RS60-LMC-2-TR	19.05	12.70	11.91	22.8	5.96	24.25	26.25	18.1	2.4	22.23	18.3	26.25	15.9	24.25	26.75	5.96
RS80-LMC-2-TR	25.40	15.88	15.88	29.3	7.94	30.9	33.9	24.1	3.2	28.58	24.6	34.15	19.1	30.9	33.9	7.94
RS100-LMC-2-TR	31.75	19.05	19.05	35.8	9.54	37.7	40.8	30.1	4.0	39.69	31.8	44.5	25.4	37.7	40.8	9.54

- Notes:
1. Dimension DF changes when top rollers are installed on every link.
  2. RS standard sprockets (double-strand) can be used.
  3. When a top roller is installed on each even-numbered link, the top roller is installed on the outer link unless otherwise specified.
  4. Lubrication is required on Steel Top Rollers.

# Lambda Double Plus Chain

## Construction

### ■ Lambda Type (Lube Free)



Parts marked with ⊗ are press fit.

Other parts are slip fit.

- Uses a special oil-impregnated bush.
- The bush is press-fitted into the inner plate.
- The pin is treated with a special nickel plating.
- The inner and outer plates are treated with a black oxide finish.

## Combination of Base Chain and Roller

The same combination is also allowed for Double Plus Chain with Snap Cover.

Base Chain Type, Material, Application	Roller Series	Engineering Plastic Roller				Urethane Lining*1		Steel Roller
		VRPA Standard	VRPB High Friction	VRPC Electro- conductive	VRPD Electroconductive, High Friction	VRPUA Standard	VRPUB High Friction	VR
Lambda (Lube Free) <small>(Base chain is the same as the standard type)                      Applications where lubrication is not permitted or not preferable</small>		○	○	○	○	○	○	○

\*1 Urethane lining is available only for RF2030VRP.

\*2 Slight magnetism occurs due to plastic deformation during parts processing and assembly. For an application requiring complete non-magnetism, contact a Tsubakimoto representative for details.

## Roller Classification by Use

Type	Roller		Classification	Lubrication	Environment
	Large Roller (Roller Color)	Small Roller (Roller Color)			
VRPA Standard	Standard (Brown)	Standard (Gray)	10 dB quieter than standard plastic outboard roller chain	No lubrication required. For long-term use, follow the Guidelines for Use on page 151 for Small Size Conveyor Chains (Catalog No. M003).  Lambda type requires no lubrication.	Even if the base chain is HCP or SS type, the chain cannot be used in a place where it is exposed to water due to the use of engineering plastic rollers.
VRPB High Friction		High Friction (Off-White)	Rapid Start-up Low Noise		
VRPC Electroconductive	Conductive (Black)	Standard (Gray)	Volume Resistivity $10^6 \Omega \cdot \text{cm}$		
VRPD Electroconductive, High Friction		High Friction (Off-White)	Volume Resistivity $10^6 \Omega \cdot \text{cm}$ Rapid Start-up Low Noise		
VRPUA Standard	Urethane Lining (Off-White)	Standard (Gray)	Direct Placement on Conveyor		
VRPUB High Friction		High Friction (Off-White)	Direct Placement on Conveyor Rapid Start-up Low Noise		
VR	Steel	Steel	High Load	Required	Not for use in humid environments.





# Lambda Double Plus Chain

## Base Chain

• RF2080VRP connecting link is a cotter pin type.

Unit: mm

Tsubaki Chain No.		Pitch P	Roller		Width		Plate			Pin			Approx. Mass kg/m		No. of Links per Unit
Plastic Roller	Steel Roller		R	R1	W1	W2	t	T	H	D	L1	L2	Plastic Roller	Steel Roller	
RF2030VRP-LMC	RF2030VR-LMC	19.05	11.91	18.3	8.0	4.0	1.5	1.5	9.0	3.00	12.05	13.25	0.6	1.4	160
RF2040VRP-LMC	RF2040VR-LMC	25.40	15.88	24.6	10.3	5.7	2.0	1.5	12.0	3.97	15.8	17.0	1.0	2.5	120
RF2050VRP-LMC	RF2050VR-LMC	31.75	19.05	30.6	13.0	7.1	2.4	2.0	15.0	5.09	19.55	21.25	1.4	3.7	96
RF2060VRP-LMC	RF2060VR-LMC	38.10	22.23	36.6	15.5	8.5	3.2	3.2	17.2	5.96	24.5	26.4	2.0	5.6	80
RF2080VRP-LMC	RF2080VR-LMC	50.80	28.58	48.0	20.0	15.0	4.0	4.0	23.0	7.94	35.8	38.0	3.9	—	60

Pin of RF2030VRP-LMC and RF2030VR-LMC are thinner than that of standard chain.

## Base Chain (with Snap Cover)

(Japanese Utility model registration No. 2548222)

- RF2080VRP connecting link is a cotter pin type.
- The base chain is for dedicated use with snap covers.
- Snap covers cannot be attached onto Double Plus Chain shown above.
- An offset link with a snap cover is not available.

The snap cover prevents small parts from falling into the frame.

Unit: mm

Tsubaki Chain No.		Pitch P	Roller		Width		Plate			Pin			Approx. Mass kg/m		No. of Links per Unit
Engineering Plastic Roller	Steel Roller		R	R1	W1	W2	t	T	H	D	L1	L2	Plastic Roller	Steel Roller	
RF2030VRP-LMC-SC	RF2030VR-LMC-SC	19.05	11.91	18.3	8.0	4.0	1.5	1.5	9.0	3.00	12.05	13.25	0.6	1.4	160
RF2040VRP-LMC-SC	RF2040VR-LMC-SC	25.40	15.88	24.6	10.3	5.7	2.0	1.5	12.0	3.97	15.8	17.0	1.0	2.5	120
RF2050VRP-LMC-SC	RF2050VR-LMC-SC	31.75	19.05	30.6	13.0	7.1	2.4	2.0	15.0	5.09	19.55	21.25	1.4	3.7	96
RF2060VRP-LMC-SC	RF2060VR-LMC-SC	38.10	22.23	36.6	15.5	8.5	3.2	3.2	17.2	5.96	24.5	26.4	2.0	5.2	80
RF2080VRP-LMC-SC	RF2080VR-LMC-SC	50.80	28.58	48.0	20.0	15.0	4.0	4.0	23.0	7.94	35.8	38.0	3.9	—	60

Pin of RF2030VRP-LMC and RF2030VR-LMC are thinner than that of standard chain.  
The snap cover is made of engineering plastic and is light gray in color.

## Max. Allowable Tension

### Max. Allowable Tension --- Engineering Plastic Roller Series

Tsubaki Chain No.	Roller Type Base Chain Type	Max. Allowable Tension kN {kgf}		Operating Temperature Range °C
		A, C, UA* Type	B, D, UB* Type	
RF2030VRP-LMC RF2030VRP-LMC-SC	Lambda	0.55 { 56 }	0.27 { 28 }	-10 to 60
RF2040VRP-LMC RF2040VRP-LMC-SC	Lambda	0.88 { 90 }	0.44 { 45 }	
RF2050VRP-LMC RF2050VRP-LMC-SC	Lambda	1.37 { 140 }	0.69 { 70 }	
RF2060VRP-LMC RF2060VRP-LMC-SC	Lambda	2.06 { 210 }	1.03 { 105 }	
RF2080VRP-LMC RF2080VRP-LMC-SC	Lambda	5.30 { 540 }	2.65 { 270 }	

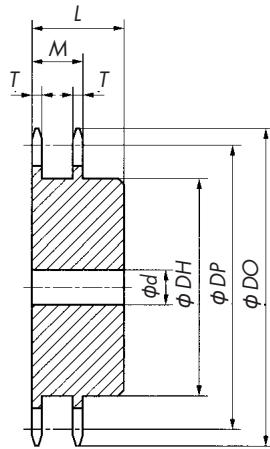
### Max. Allowable Tension --- Steel Roller Series

Tsubaki Chain No.	Max. Allowable Tension kN {kgf}	Operating Temperature Range °C -10 to 150 For use at temperatures of 60°C and above, lubricate chain with high-temperature lubricant.
RF2030VR-LMC	0.98 { 100 }	
RF2040VR-LMC	1.57 { 160 }	
RF2050VR-LMC	2.45 { 250 }	
RF2060VR-LMC	3.73 { 380 }	
RF2080VR-LMC	5.30 { 540 }	

\* Urethane lining is available only for RF2030VRP-LMC.

# Special Sprockets

## Sprockets for Double Plus Chain



### Sprocket Numbering

**RF2030VRP-10T-SC**

Applicable chain size

Chain with snap cover

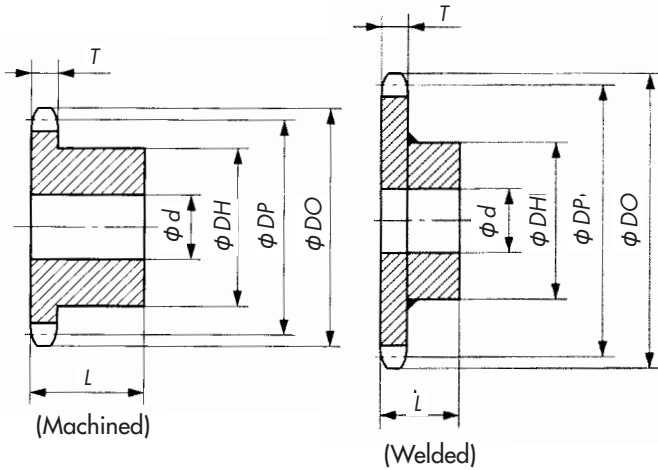
No. of teeth: 10

Unit: mm

Tsubaki Sprocket No.	No. of Sprocket Teeth	Pitch Dia. $D_p$	Outer Dia. $D_o$	Facewidth $T$	Total Facewidth $M$	Bore Dia. $d$		Hub Dia. $D_H$	Total Width $L$	Approx. Mass (kg)	Material (Specification)
						Pilot Hole	Max.				
RF2030VRP-10T-SC	10	61.65	63	3.0	15.3	12.7	20	37	25	0.2	Carbon Steel (machined)
RF2040VRP-10T-SC	10	82.20	85	4.0	20.4	15.9	32	52	40	0.8	
RF2050VRP-10T-SC	10	102.75	107	5.0	25.5	15.9	45	66	45	1.5	
RF2060VRP-10T-SC	10	123.30	128	6.0	30.5	19	55	81	50	2.5	
RF2080VRP-10T-SC	10	164.39	172	12.0	47.5	23	72	110	67	7.0	

- Notes: 1. The tooth tip is not hardened on any model.  
 2. Delivery: Please contact a Tsubakimoto representative.  
 3. Same as for Double Plus Chain without snap cover.

## Sprockets for Double Pitch Chain with Top Rollers



### Sprocket Numbering

**RF2040R 1200T-TR**

Applicable chain size

Top roller

No. of engaging teeth (1200 T: 12)

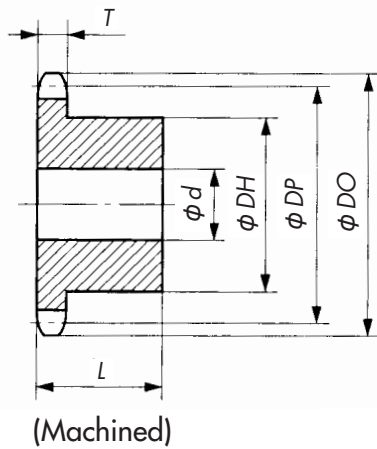
Unit: mm

Tsubaki Sprocket No.	Roller Type	No. of Engaging Teeth	Pitch Dia. $D_p$	Outer Dia. $D_o$	Facewidth $T$	Bore Dia. $d$		Hub Dia. $D_H$	Total Width $L$	Approx. Mass (kg)	Material (Specification)		
						Pilot Hole	Max.						
RF2040R 1100T-TR	R Roller	11	90.16	97	7.3	12.7	42	63	25	0.8	Carbon Steel (machined)		
RF2040R 1200T-TR		12	98.14	105									
RF2040R 1300T-TR		13	106.14	114									
RF2050R 1100T-TR		11	112.70	124	8.9	15.9	48	73	28	1.3			
RF2050R 1200T-TR		12	122.67	134									
RF2050R 1300T-TR		13	132.67	144									
RF2060R 1100T-TR		11	135.24	150	11.9	18	55	83	45	2.6			
RF2060R 1200T-TR		12	147.21	162									
RF2060R 1300T-TR		13	159.20	175									
RF2080R 1100T-TR		11	180.31	109	15	28	75	107	45	4.8			
RF2080R 1200T-TR		12	196.28	216									
RF2080R 1300T-TR		13	212.27	232									
RF2100R 1100T-TR			11	225.39	244	18	33	80	117	56		7.9	Rolled Steel (welded)

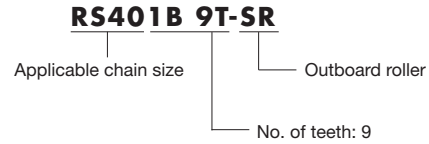
- Notes: 1. The tooth tip is not hardened on any model.  
 2. Delivery: Please contact a Tsubakimoto representative.  
 3. RS standard sprockets can be used with RF Double Pitch Chain (S roller) or when the number of engaging teeth of the sprocket is 15 or more (sprocket teeth: 30).

# Special Sprockets

## Sprockets for RS Chain with Outboard Rollers



### Sprocket Numbering



Unit: mm

Tsubaki Sprocket No.	No. of Teeth	Pitch Dia. $D_p$	Outer Dia. $D_o$	Facewidth $T$	Bore Dia. $d$		Hub Dia. $D_H$	Total Width $L$	Approx. Mass (kg)	Material (Specification)	
					Pilot Hole	Max.					
RS401B 09T-SR	9	37.13	42	7.3	9.5	10	20	22	0.08	Carbon Steel (machined)	
RS401B 10T-SR	10	41.10	46			11	24		0.10		
RS401B 11T-SR	11	45.08	51			14	28		0.14		
RS401B 12T-SR	12	49.07	53			16	32		0.17		
RS401B 13T-SR	13	53.07	58			20	36		0.22		
RS401B 14T-SR	14	57.07	63			22	40		0.27		
RS401B 15T-SR	15	61.08	67		26	44	0.32				
RS401B 16T-SR	16	65.10	71		28	48	0.38				
RS401B 17T-SR	17	69.12	75		32	52	0.44				
RS401B 18T-SR	18	73.14	78		35	56	0.50				
RS401B 19T-SR	19	77.16	83		38	60	0.57				
RS401B 20T-SR	20	81.18	88		42	64	0.72				
RS401B 21T-SR	21	85.21	92		44	68	0.80				
RS401B 22T-SR	22	89.24	96		46	72	0.90				
RS401B 23T-SR	23	93.27	98		50	76	0.98				
RS501B 09T-SR	9	46.42	53		8.9	9.5	12	26	25		0.15
RS501B 10T-SR	10	51.37	58				16	31			0.21
RS501B 11T-SR	11	56.35	63				20	36			0.25
RS501B 12T-SR	12	61.34	68	12.7		23	41	0.32			
RS501B 13T-SR	13	66.34	73			27	46	0.41			
RS501B 14T-SR	14	71.34	78			31	51	0.51			
RS501B 15T-SR	15	76.35	83			35	56	0.61			
RS501B 16T-SR	16	81.37	88			38	61	0.71			
RS501B 17T-SR	17	86.39	93			43	66	0.82			
RS501B 18T-SR	18	91.42	98	46	71	0.98					
RS601B 09T-SR	9	55.70	63	11.9	9.5	16	32	32	0.30		
RS601B 10T-SR	10	61.65	68		20	37	0.37				
RS601B 11T-SR	11	67.62	76		12.7	26	44		0.52		
RS601B 12T-SR	12	73.60	82			30	50		0.68		
RS601B 13T-SR	13	79.60	88			35	56		0.80		
RS801B 09T-SR	9	74.26	85	15	15.9	26	44	40	0.65		
RS801B 13T-SR	13	106.14	118		50	76	1.88				
RS801B 15T-SR	15	122.17	135		62	92	2.57				
RS1001B 10T-SR	10	102.75	117	18	18	40	62	50	1.82		
RS1001B 11T-SR	11	112.70	127		46	72	2.21				
RS1001B 12T-SR	12	122.67	138		52	81	2.73				

- Notes: 1. The tooth tip is hardened on all models.  
 2. Delivery: Please contact a Tsubakimoto representative.  
 3. Models other than those listed above can be used with RS standard sprockets.




## Sprockets for RF Outboard Roller Chain

RF Double Pitch sprockets can be used for RF outboard roller chains.

# Lambda Snap Cover Chain

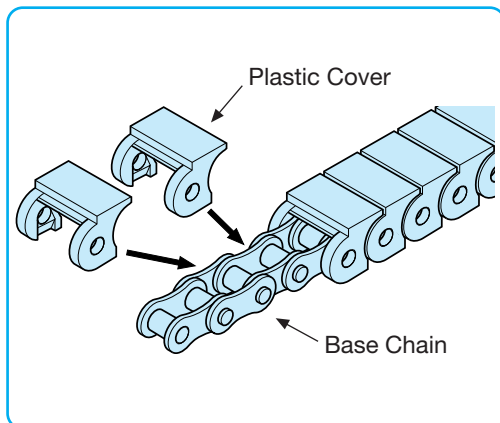
## Features

- Higher maximum allowable load than RS plastic block chain (type RS60-SC approx. seven times higher than RSP60 chain). Ideal for long, heavy-load conveyors.
- Plastic covers provide safety for both conveyed goods and people.
- Six different chain pitches available, suitable for a diverse range of applications.

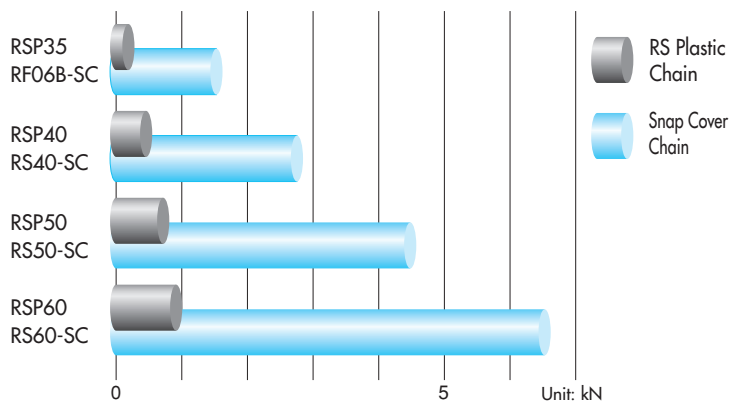
Tsubaki Chain No.	Base Chain Type	Plastic Cover
RF06B	Lambda (lube-free)	<p align="center"><b>Standard</b></p>  <p>Material: Polyacetal (white) Used for general applications</p>
RS40		 <p>Material: Polyacetal (light blue) * Enables easy identification of the connecting section</p>
RS50		
RS60		<p align="center"><b>Electroconductive</b></p>  <p>Material: Electroconductive polyacetal (black) Used in applications where dust build-up from static, electrical noise and sparks must be avoided (volume specific resistance <math>1 \times 10^6 \Omega \cdot \text{cm}</math>)</p>
RS80		
RS100		

Notes:  
Various surface-treated chains are available. Consult a Tsubakimoto representative for details.  
\* Cannot be used with electroconductive plastic covers as it will impede electroconductivity.

## Structure

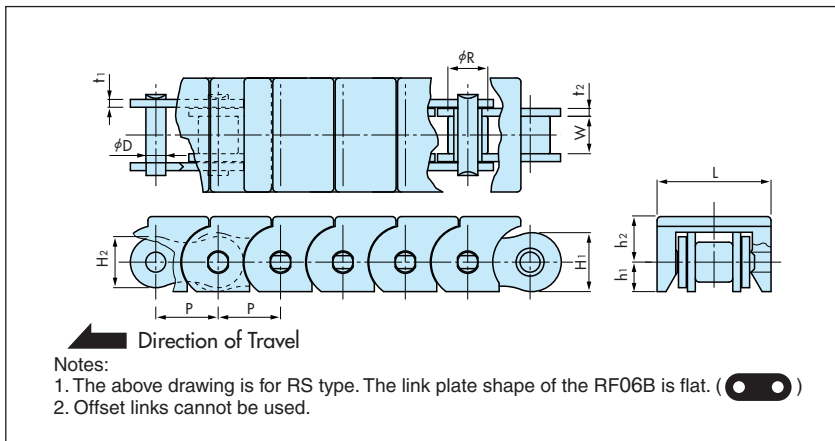


## Allowable Load Comparison with RS Plastic Chain\*



\* No comparison of RS80-SC and RS100-SC chains as there are no corresponding RS plastic chains.

# Lambda Snap Cover Chain



### Special Connecting Links

A special connecting link makes it possible to hold the detachable plate by attaching the plastic snap cover. Note that standard connecting links with cotters and spring clips for standard roller chains cannot be used.

Unit: mm

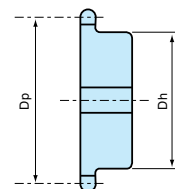
Tsubaki Chain No.	Pitch P	Roller Diameter R	Width Between Inner Link Plates W	Pin Diameter D	Plate				Plastic Cover					
					Thickness t1	Thickness t2	Height H1	Height H2	Height h1	Height h2	Width L	Max. Allowable Load kN {kgf}	Approx. Mass (kg/m)	No. of Links per Unit
RF06B-LMC-SC	9.525	6.35	5.72	3.28	1.0	1.27	8.2	8.2	4.2	7.6	17.5	1.47 { 150}	0.55	320
RS40-LMC-SC	12.70	7.92	7.95	3.97	1.5	1.5	12.0	10.4	6.2	9.3	23.5	2.65 { 270}	0.8	240
RS50-LMC-SC	15.875	10.16	9.53	5.09	2.0	2.0	15.0	13.0	7.7	11.8	29.0	4.31 { 440}	1.3	192
RS60-LMC-SC	19.05	11.91	12.70	5.96	2.4	2.4	18.1	15.6	8.5	13.7	35.0	6.28 { 640}	1.9	160
RS80-LMC-SC	25.40	15.88	15.88	7.94	3.2	3.2	24.1	20.8	11.5	18.0	42.5	10.7 {1090}	2.9	120
RS100-LMC-SC	31.75	19.05	19.05	9.54	4.0	4.0	30.1	26.0	14.7	21.3	49.5	17.1 {1740}	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 (ISO B) DIN 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, as shown in the table below, must be kept to prevent interference between the bottom plate of the engineering plastic cover and the sprocket hub.



Max. hub diameter  
 $D_h \leq D_p - 2S$

### ■ Maximum Hub Diameter (Dh)

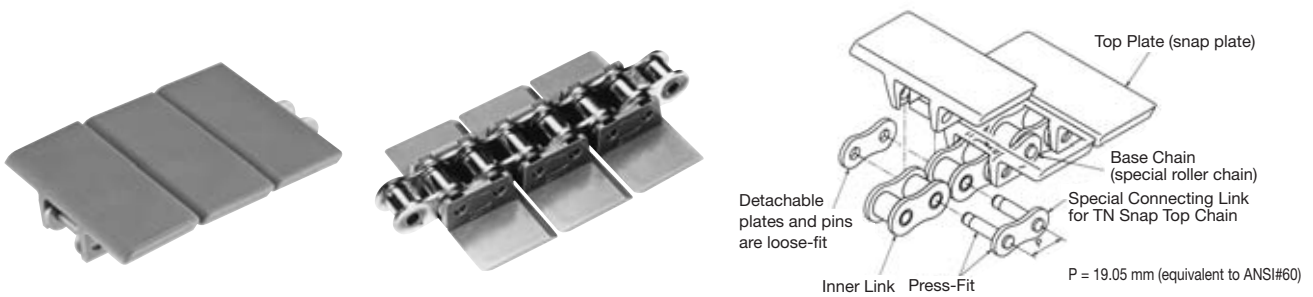
Unit: mm

Tsubaki Sprocket No.	No. of Teeth	13	14	15	16	17	18	19	20	21	22	23
RS40	—	41	45	49	53	—	61	65	69	73	—	—
RS50	47	—	—	—	—	—	—	—	—	—	—	—

Unit: mm

	RS 06B	RS 40	RS 50	RS 60	RS 80	RS 100
2S	14	16	19	22	29	37

# Lambda TN Snap Top Chain



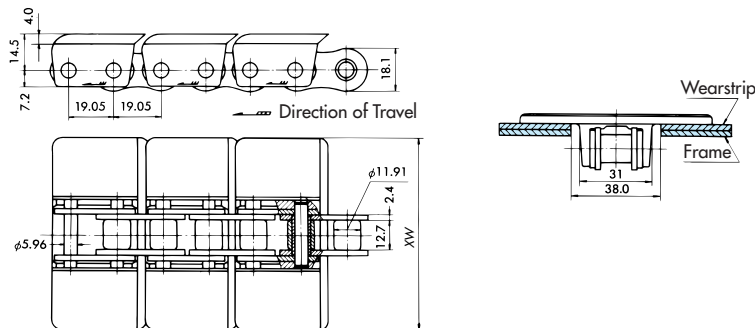
## Features

- Suitable for heavy loads and long conveyor applications because of high allowable chain load.
- Replacing top plates is simple and easy.
- Base chain is Nickel-plated Lambda Chain or NEP-plated Lambda for operating environments where corrosion could be a problem.

### Chain Construction

TN top chains consist of snap top plates and ANSI #60 base chain. The “legs” of the top plates are used to snap the plates onto the outer links of the base chain and hold down the detachable plate and prevent it from coming loose. Connecting link pins have a shouldered end shape to keep a right inner width of connecting link.

### TN-NP-Lambda



Tsubaki Chain No.	Top Plate Width XW (mm)	Approx. Mass (kg/m)	Top Plate Material	Max. Allowable Load (kN {kgf})	Operating Temperature Range (°C)	Max. Allowable Speed (m/min)
TN826-LMC-NP	82.6	2.1	Polyacetal	6.28 {640}	-10 to 80	60
TN1016-LMC-NP	101.6	2.2				
TN1143-LMC-NP	114.3	2.3				
TN1270-LMC-NP	127.0	2.4				
TN1905-LMC-NP	190.5	2.8				

## ■ Sprockets

Standard ANSI #60 sprockets can be used. A 12-tooth sprocket is recommended as the minimum to prevent any interference between chain and sprocket.

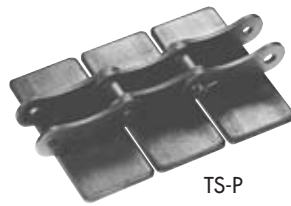
### ⚠ Caution

Be sure to specify chain length using the number of links in the base chain. TN top plates are attached only to the outer links of the base chain, which means that the number of links in the chain is twice the number of top plates. Also, note that the number of links for standard base chain length is 160, in other words, with a chain pitch of 19.05 mm, standard length is 3,048 mm.

# Lambda TS-P · TS-PA Top Chain



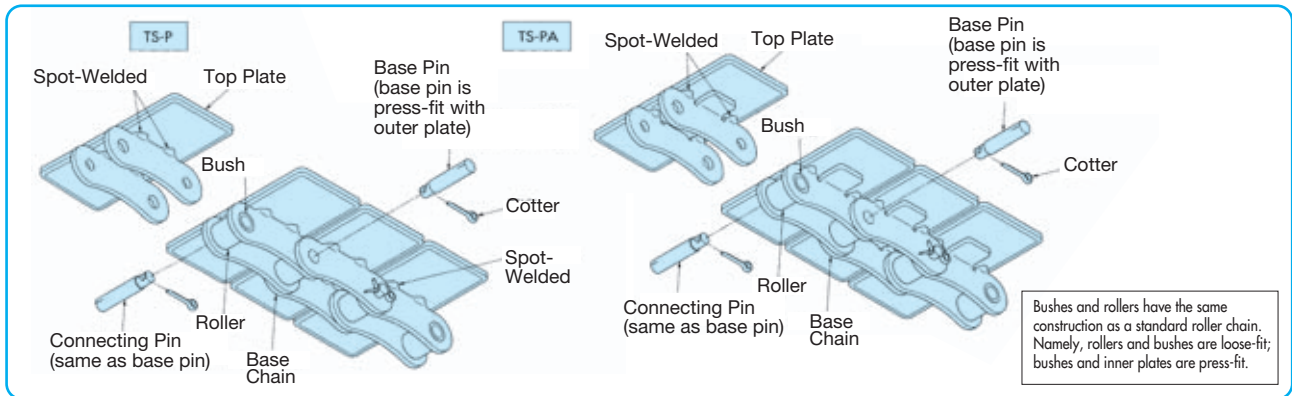
TS-P · TS-PA



TS-P

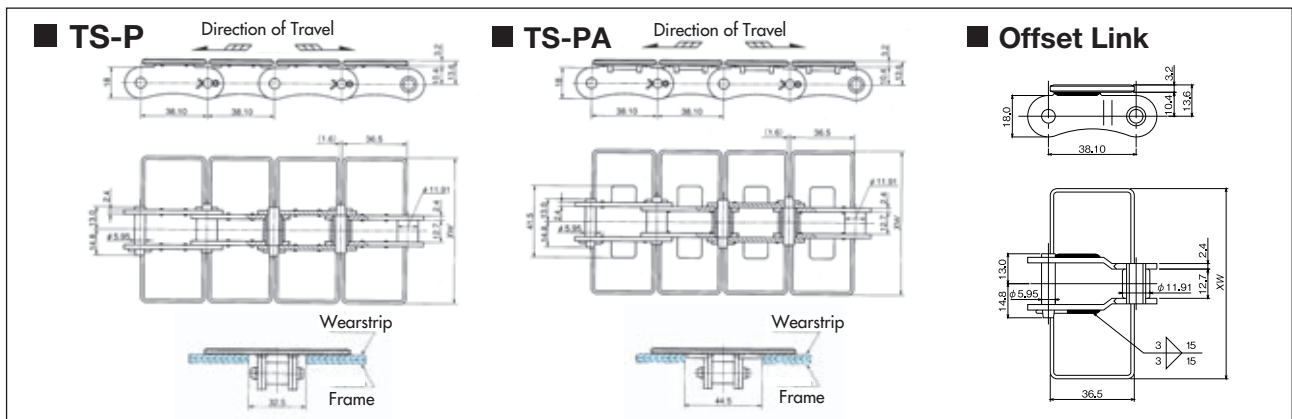


TS-PA



## Features

- 430 stainless steel (18-Cr) top plates attached to ANSI Nickel-plated Lambda double pitch chain. Standard sprockets for ANSI double pitch chains can be used.
- Available in type TS-P for single-strand applications and in type TS-PA for multi-strand applications.
- Available in a wide variety of special finishes to suit various applications and work environments. Includes hard chromium plated, buffed top plates, and heat-treated top plates for improved wear resistance.



## TS-P

Tsubaki Chain No.	Top Plate Width XW (mm)	Approx. Mass (kg/m)	Max. Allowable Load (kN (kgf))	Operating Temperature Range (°C)	Max. Allowable Speed (m/min)
TS550-LMC-NP	55.0	2.5	2.94 {300}	-10 to 150	60
TS635-LMC-NP	63.5	2.7			
TS762-LMC-NP	76.2	3.0			
TS826-LMC-NP	82.6	3.2			
TS950-LMC-NP	95.0	3.5			
TS1016-LMC-NP	101.6	3.7			
TS1100-LMC-NP	110.0	3.9			
TS1143-LMC-NP	114.3	4.0			
TS1270-LMC-NP	127.0	4.3			
TS1524-LMC-NP	152.4	4.9			
TS1905-LMC-NP	190.5	5.8			

## TS-PA

Tsubaki Chain No.	Top Plate Width XW (mm)	Approx. Mass (kg/m)	Max. Allowable Load (kN (kgf))	Operating Temperature Range (°C)	Max. Allowable Speed (m/min)
TSA550-LMC-NP	55.0	2.8	2.94 {300}	-10 to 150	60
TSA635-LMC-NP	63.5	3.0			
TSA762-LMC-NP	76.2	3.3			
TSA826-LMC-NP	82.6	3.5			
TSA950-LMC-NP	95.0	3.8			
TSA1016-LMC-NP	101.6	4.0			
TSA1100-LMC-NP	110.0	4.2			
TSA1143-LMC-NP	114.3	4.3			
TSA1270-LMC-NP	127.0	4.6			
TSA1524-LMC-NP	152.4	5.2			
TSA1905-LMC-NP	190.5	6.1			

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

# Lambda TOS · TOR Top Chain

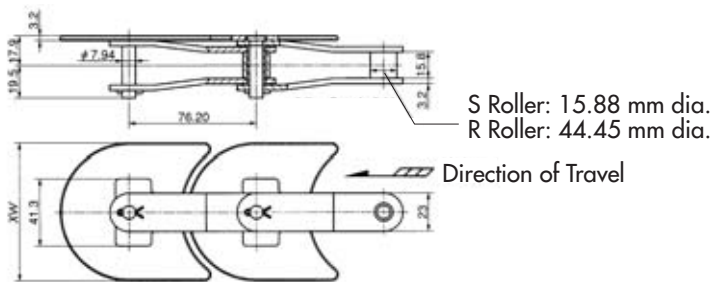


### Features

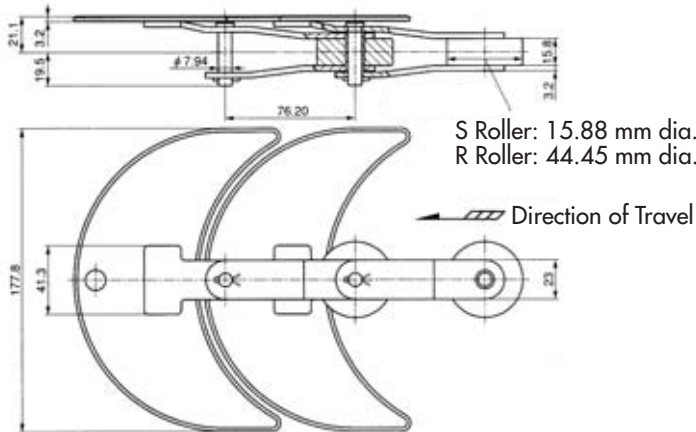
- TOS · TOR chain designed for use in horizontal conveyors. Ideal for conveyance in tight spaces.

Unit: mm

### TOS (R) 826,1143

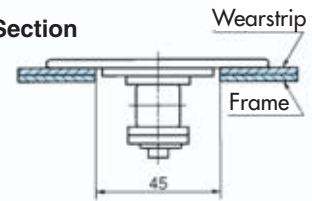


### TOS (R) 1778

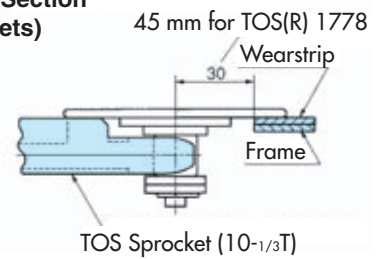


### TOS

#### Straight Section

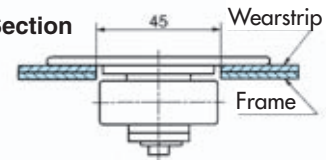


#### Curved Section (Sprockets)

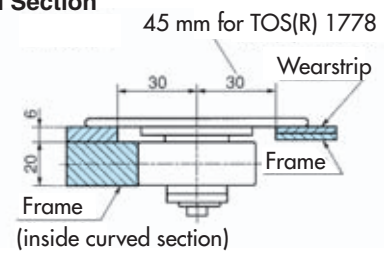


### TOR

#### Straight Section



#### Curved Section



Curved section with the sprocket is the same as TOS series.

Tsubaki Chain No.		Top Plate Width XW (mm)	Max. Allowable Load (kN {kgf})	Approx. Mass (kg/m)		Operating Temperature Range (°C)	Max. Allowable Speed (m/min)	
S Roller	R Roller			S Roller	R Roller		With Lube	No Lube
TOS826-LMC	TOR826-LMC	82.6	2.94 {300}	4.1	5.9	-10 to 150	60	60
TOS1143-LMC	TOR1143-LMC	114.3		4.8	6.9			
TOS1778-LMC	TOR1778-LMC	177.8		6.3	8.1			

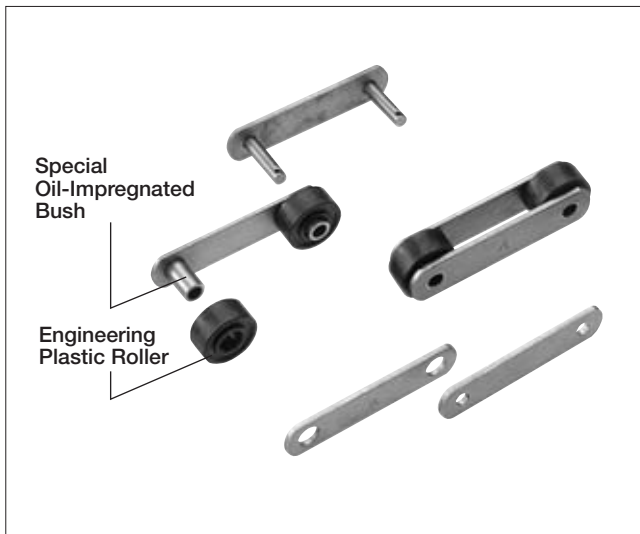
Note: Standard chain length is 3,048 mm (40 links).

### Materials

Chain Type	Standard
Top Plates	430 Stainless Steel (18-Cr)
Base Chain	Lambda



# Lambda Plastic Roller Conveyor Chain



- 1. Long life without additional lubrication**  
Wear life between pin-bush and bush-roller is more than seven times that of DT chain while being lube-free.
- 2. Low noise**  
5 to 7 dB quieter than steel roller chain. No grating sounds when the rollers rotate.
- 3. Low running resistance**  
55% lower than steel roller chain (lube-free operation).
- 4. Clean**  
Suppresses the generation of metal wear dust.
- 5. Lightweight**  
30% lighter than steel roller chain.
- 6. Interchangeability**  
Dimensionally compatible with standard conveyor chain. Users can replace their conveyor chain with Lambda Plastic Roller Conveyor Chain with no additional changes. (It is necessary to check for strength and other factors.)

## Specifications

Material			Operating Temperature Range	Coefficient of Rolling Friction of Rollers	Chain Speed	Sprocket
Roller	Bush	Other Parts				
Engineering Plastic	Special Oil-Impregnated Bush	Steel	0°C to 50°C	0.07 (lube-free)	25 m/min or less	RF Standard Sprocket

- Notes: 1. Link plates are blackened carbon steel.  
2. Coefficient of rolling friction assumes a low-dust, indoor environment within the operating temperature range.

## Maximum Allowable Load

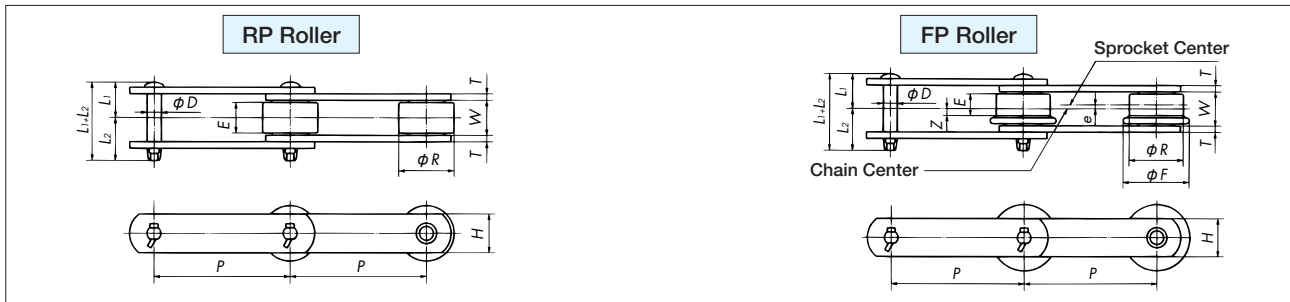
Unit: kN {kgf}

Tsubaki Chain No.	No. of Sprocket Teeth		6		7		8		9		10	
	kN	{kgf}	kN	{kgf}	kN	{kgf}	kN	{kgf}	kN	{kgf}	kN	{kgf}
RF03075-LMC	1.48	{150}	1.86	{190}	1.96	{200}	1.96	{200}	1.96	{200}	1.96	{200}
RF03100-LMC	1.86	{190}	1.96	{200}	1.96	{200}	1.96	{200}	1.96	{200}	1.96	{200}
RF05100-LMC	2.65	{270}	3.33	{340}	4.21	{430}	5.20	{530}	5.20	{530}	5.20	{530}
RF05125-LMC	3.74	{380}	4.71	{480}	5.20	{530}	5.20	{530}	5.20	{530}	5.20	{530}
RF05150-LMC	4.90	{500}	5.20	{530}	5.20	{530}	5.20	{530}	5.20	{530}	5.20	{530}

- Notes: 1. The table above shows max. allowable load for R rollers with a chain speed of 25 m/min or less.  
2. Max. allowable load for F rollers is 70% that of the above values.  
3. Refer to selection on page 60 for chain load calculations.

## Dimensions

Dimensions of the base chain and attachments are the same as RF Conveyor Chain.

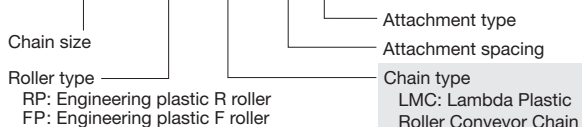


Unit: mm

Tsubaki Chain No.	Pitch P	RP Roller		FP Roller					Width Between Inner Link Plates W	Plate		Pin			Allowable Load per Roller		Approx. Mass (kg/m)	Attachment Type	
		Dia. R	Contact Width E	Dia. R	Flange Dia. F	Contact Width E	Offset e	Z		Height H	Thickness T	Dia. D	L1+L2	L1	L2	kN			{kgf}
		RF03075-LMC	75	31.8	15.5	31.8	42	12		1.8	4.3	16.1	22	3.2	8.0	38			18
RF03100-LMC	100																	1.7	K
RF05100-LMC	100																	3.6	SA
RF05125-LMC	125	40	19	40	50	14	2.5	4.5	22	32	4.5	11.3	53.5	25	28.5	0.83	{85}	3.4	SK
RF05150-LMC	150																	3.2	G

## Chain Numbering

### RF03075RP-LMC-1LK2



## Ordering Example

Chain size: RF30  
Pitch: 75 mm  
Roller type: Engineering plastic R roller  
Chain specification: Lambda Chain  
Number of links: For 400 links

Model Number	Quantity	Unit
<b>RF03075RP-LMC</b>	400	L

# Lambda Chain Specialty Attachments

Tsubaki Specialty Attachments provide solutions for a wide range of conveying needs. If your operations convey long, narrow items and stoves, convey items on chains, use slats, or have other unique requirements, consider these benefits.

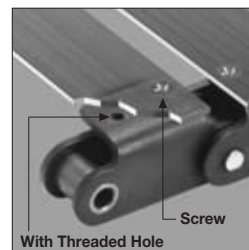
- Custom engineering at a reasonable cost
- Proven reliability
- Quick delivery
- High strength
- Easy selection
- Outstanding performance

## Press Nut and Threaded Hole Chain

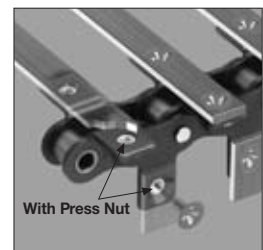
Press nuts can be inserted into holes on chain attachments, or holes can be tapped to provide a threaded hole in chain attachments. This special attachment allows slats or jigs to be attached using only machine screws or bolts, significantly improving work efficiency.



Chain with K2 attachment and press nut



Chain with bent-over A2 attachment and threaded hole



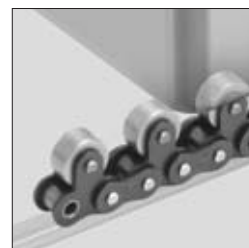
Chain with K1 and SA1 attachments and press nut

## Free Flow Chain

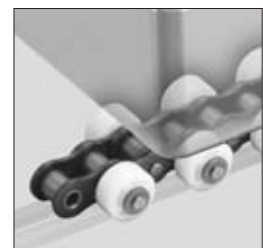
This chain consists of a Lambda base chain with freely rotating rollers. Although the base chain does not require lubrication, steel top rollers and steel outboard rollers must be lubricated. (Plastic top rollers and plastic outboard rollers do not require lubrication.)



Double Plus Chain



Top Roller Chain



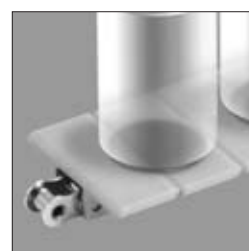
Outboard Roller Chain

## Direct Loading Top Chain

This chain is designed to allow various types of machine parts and container products (such as bottles, cans, and paper packs) to be placed directly on the chain for conveyance. The base chain is Lambda Chain.



TS Top Chain



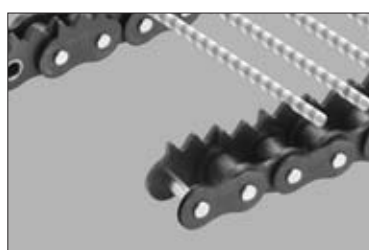
TN Top Chain



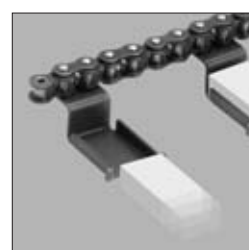
RT Roller Table

## Direct Loading Chain with Special Attachments

This is Lambda Chain with special attachments to match the shape of the workpiece, such as round bars, pipes, small boxes, etc.



Chain with triangle attachments for conveying bar-type objects



Chain with tray attachments for conveying small boxes



Chain with V-shaped attachments for conveying pipes

# Lambda Chain Specialty Attachments

## Direct Loading Bent Attachment Chain

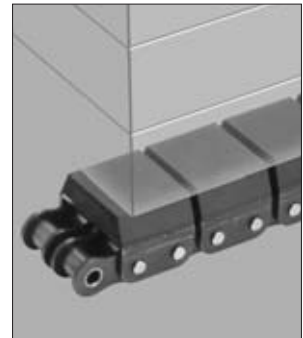
This chain is designed to allow pallets, cardboard boxes, plastic containers, etc., to be placed directly on the chain for conveyance. Stainless steel attachments, upper-layer attachments, and rubber attachments can be custom made according to the application.



Chain with upper-layer attachments (stainless steel)



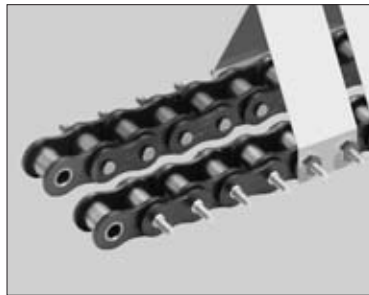
Double Pitch Chain with upper-layer attachments



Double-strand chain with rubber attachments

## Extended Pin with Thread Chain

This chain features extended pins, threaded extended pins, or extended pins with spring clips to enable installation of various attachments. The attachments can be secured by nuts, inserted into tubing, or attached to spring clips.



Chain with threaded extended pins



Extended pin chain



Extended pin chain with spring clips

## Bar, Slat, and Wire Mesh Conveyor Chain

Special attachment chain to match the shape of attached tools or jigs such as slats with holes, stepped bars, square bars, round bars, etc.



Chain for conveyor with slats with holes (Chain center and slats are at the same level)



Stepped bar chain (Ends are inserted into holes in attachments)



Square bar chain



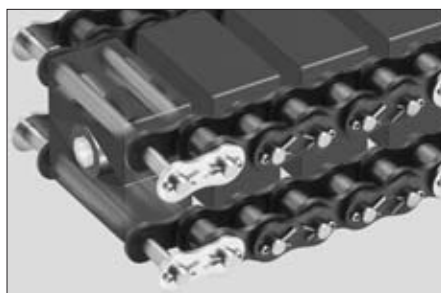
Hollow Pin Chain for wire mesh conveyor with guide rollers



Round bar attachment bush chain

## Chains That Convey by Sandwiching Workpieces Between Chains

These chains form two conveyors that sandwich an object between them using the stay pins of the chain, or a bent-over open-box-shaped attachment.



Stay-pin chain (with blocks attached to the stay pins)



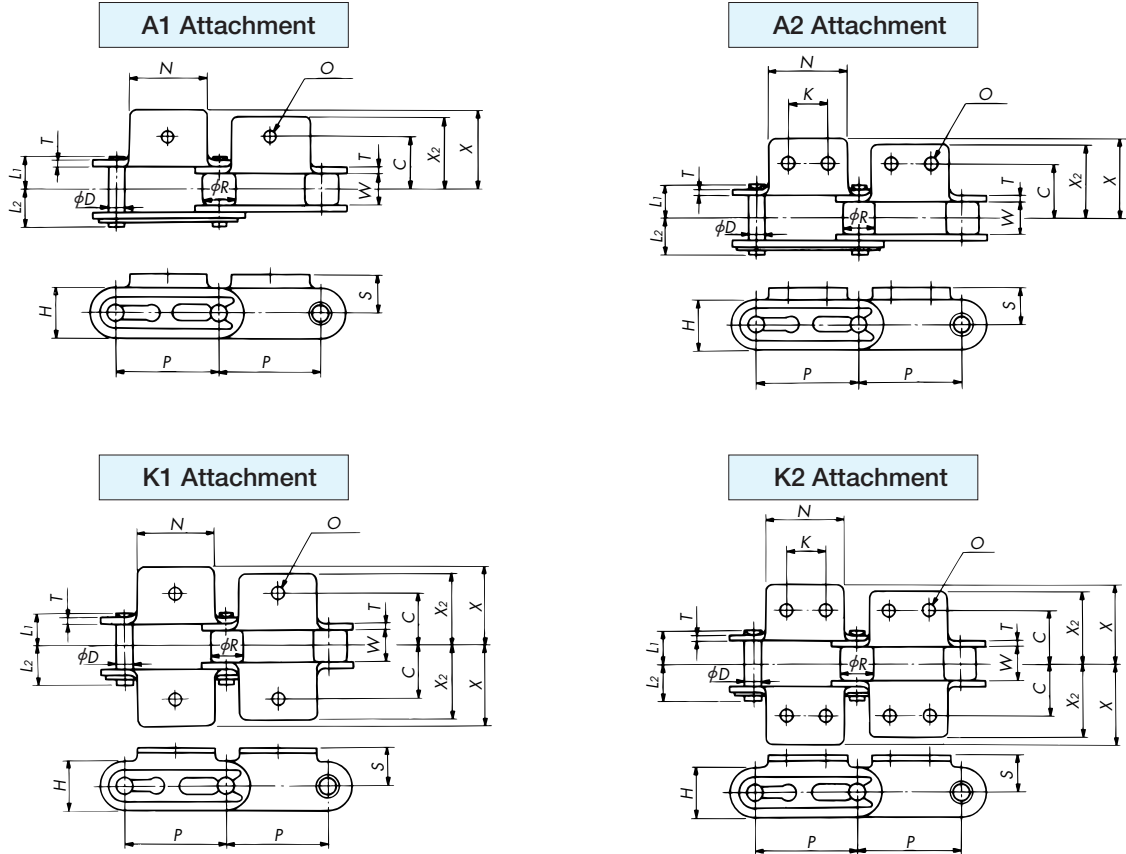
Chain with bent-over attachments

# Lambda Plus $\alpha$ Attachments

Attachments with special hole diameters.



## Special Hole Diameter Attachment (Attachment Types: A, K)



- Connecting links: RF2040 to RF2060 use spring clips. RF2080 and larger use cotter pins. Base chain pins are riveted.
- Attachments shown are S roller type. However, the dimensions for attachments are the same when R rollers are used. Also, the drawings show attachments added on every link.
- Pins other than those on connecting links are riveted regardless of whether attachments are present.
- X and X2 are the width of the attachments installed on the outer link and inner link, respectively.

### Attachment Dimensions

Unit: mm

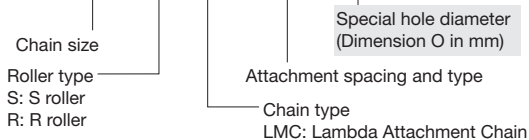
Tsubaki Chain No.	Pitch P	Width Between Inner Link Plates W	Roller Dia. R		Pin			Plate		Attachment						
			S Roller	R Roller	Dia. D	L1	L2	Height H	Thickness T	C	K	N	S	X	X2	O
RF2040-LMC	25.40	7.95	7.92	15.88	3.97	8.25	9.95	12.0	1.5	12.7	9.5	19.1	9.1	19.3	17.6	4.5 · 5.5
RF2050-LMC	31.75	9.53	10.16	19.05	5.09	10.30	12.0	15.0	2.0	15.9	11.9	23.8	11.1	24.2	22.0	4.5 · 5.5
RF2060-LMC	38.10	12.70	11.91	22.23	5.96	14.55	16.55	17.2	3.2	21.45	14.3	28.6	14.7	31.5	28.2	5.5 · 6.5
RF2080-LMC	50.80	15.88	15.88	28.58	7.94	18.30	20.90	23.0	4.0	27.8	19.1	38.1	19.1	40.7	36.6	9.0
RF2100-LMC	63.50	19.05	19.05	39.69	9.54	21.80	24.50	28.6	4.8	33.35	23.8	47.6	23.4	49.9	44.9	11.0

### Chain Numbering

#### Special Hole Diameter

Old No. RFC2040R-LAMDA-1LK1-5.5

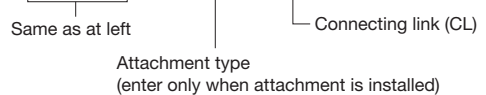
New No. **RF2040R-LMC-1LK1-5.5**



#### Connecting Link (CL)

Old No. RFC2040-LAMDA-K1-5.5CL

New No. **RF2040-LMC-K1-5.5-CL**



# Lambda Plus $\alpha$ Attachments



## Special Hole Diameter Attachment (Attachment Types: A, K)

### A1 Attachment

### K1 Attachment

- Connecting links: RS40 to RS60 use spring clips. RS80 and larger use cotter pins. Base chain pins are riveted.
- X and X<sub>2</sub> are the width of the attachments installed on the outer link and inner link, respectively.
- Drawings show attachments added on every link.
- Pins other than those on connecting links are riveted regardless of whether attachments are present.

### Attachment Dimensions

Unit: mm

Tsubaki Chain No.	Pitch <i>P</i>	Width Between Inner Link Plates <i>W</i>	Roller (Bushing) Dia. <i>R</i>	Pin			Plate		Attachment					
				Dia. <i>D</i>	<i>L</i> <sub>1</sub>	<i>L</i> <sub>2</sub>	Height <i>H</i>	Thickness <i>T</i>	<i>C</i>	<i>N</i>	<i>S</i>	<i>X</i>	<i>X</i> <sub>2</sub>	<i>O</i>
RS40-LMC	12.70	7.95	7.92	3.97	8.25	9.95	12.0	1.5	12.7	9.5	8.0	17.8	17.8	4.5 · 5.5
RS50-LMC	15.875	9.53	10.16	5.09	10.3	12.0	15.0	2.0	15.9	12.7	10.3	23.4	23.4	4.5 · 5.5
RS60-LMC	19.05	12.70	11.91	5.96	12.85	14.75	18.1	2.4	19.05	15.9	11.9	28.2	28.2	5.5 · 6.5
RS80-LMC	25.40	15.88	15.88	7.94	16.25	19.25	24.1	3.2	25.4	19.1	15.9	36.6	36.6	9.0
RS100-LMC	31.75	19.05	19.05	9.54	19.75	22.85	30.1	4.0	31.75	25.4	19.8	44.9	44.9	11.0

### Chain Numbering

**Special Hole Diameter**

Old No. RSC40-LAMDA-1LA1-4.5  
 New No. **RS40-LMC-1LA1-4.5**

Chain size: RS40

Attachment spacing and type: LMC-1LA1

Chain type: LMC: Lambda Attachment Chain

Special hole diameter (Dimension O in mm): 4.5

**Connecting Link (CL)**

Old No. RSC40-LAMDA-A1-4.5CL  
 New No. **RS40-LMC-A1-4.5CL**

Same as at left: RS40-LMC-A1-4.5

Attachment type (enter only when attachment is installed): CL

# Lambda Plus $\alpha$ Attachments

Nuts are added on the attachment to enable slats to be installed simply and easily. Both the attachment and nut are heat-treated for ample strength.



## Press Nut Attachment (Attachment Types: A-NM, K-NM)

- Connecting links: RF2040 to RF2060 use spring clips. Base chain pins are riveted.
- Attachments shown are S roller type. However, the dimensions for attachments are the same when R rollers are used. Also, the drawings show attachments added on every link.
- Pins other than those on connecting links are riveted regardless of whether attachments are present.
- X and X2 are the width of the attachments installed on the outer link and inner link, respectively.

### Attachment Dimensions

Unit: mm

Tsubaki Chain No.	Pitch P	Width Between Inner Link Plates W	Roller Dia. R		Pin			Plate		Attachment								
			S Roller	R Roller	Dia. D	L1	L2	Height H	Thickness T	C	K	N	B	S	X	X2	T1	O
RF2040-LMC-NM3	25.40	7.95	7.92	15.88	3.97	8.25	9.95	12.0	1.5	12.7	9.5	19.1	5.5	9.1	19.3	17.6	3.6	M3
RF2040-LMC-NM4	25.40	7.95	7.92	15.88	3.97	8.25	9.95	12.0	1.5	12.7	9.5	19.1	7.0	9.1	19.3	17.6	3.8	M4
RF2050-LMC-NM4	31.75	9.53	10.16	19.05	5.09	10.3	12.0	15.0	2.0	15.9	11.9	23.8	7.0	11.1	24.2	22.0	4.3	M4
RF2050-LMC-NM5	31.75	9.53	10.16	19.05	5.09	10.3	12.0	15.0	2.0	15.9	11.9	23.8	8.0	11.1	24.2	22.0	5.1	M5
RF2060-LMC-NM5	38.10	12.70	11.91	22.23	5.96	14.55	16.55	17.2	3.2	21.45	14.3	28.6	8.0	14.7	31.5	28.0	6.3	M5
RF2060-LMC-NM6	38.10	12.70	11.91	22.23	5.96	14.55	16.55	17.2	3.2	21.45	14.3	28.6	10.0	14.7	31.5	28.0	7.3	M6

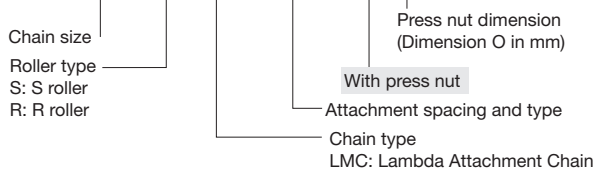
Dimension B is the width when nuts are installed on upper and lower surfaces.

### Chain Numbering

#### Press Nut (Double Pitch)

Old No. RFC2040R-LAMDA-1LK1-NM4

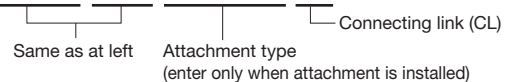
New No. **RF2040R-LMC-1LK1-NM4**



#### Connecting Link (CL)

Old No. RFC2040-LAMDA-K1-NM4CL

New No. **RF2040-LMC-K1-NM4-CL**



# Lambda Plus $\alpha$ Attachments



## Press Nut Attachment (Attachment Types: A-NM, K-NM)

### A1NM Attachment

### K1NM Attachment

Dimension B is the width when nuts are installed on upper and lower surfaces.

- Connecting links: RS40 to RS60 use spring clips. Base chain pins are riveted.
- Drawings show attachments added on every link.
- Pins other than those on connecting links are riveted regardless of whether attachments are present.
- X and X<sub>2</sub> are the width of the attachments installed on the outer (pin) link and inner (roller) link, respectively.

### Attachment Dimensions

Unit: mm

Tsubaki Chain No.	Pitch P	Width Between Inner Link Plates W	Roller Dia. R	Pin			Plate			Attachment							
				Dia. D	L <sub>1</sub>	L <sub>2</sub>	Height h	Height H	Thickness T	C	N	B	S	X	X <sub>2</sub>	T <sub>1</sub>	O
RS40-LMC-NM3	12.70	7.95	7.92	3.97	8.25	9.95	10.4	12.0	1.5	12.7	9.5	5.5	8.0	17.8	17.8	3.6	M3
RS40-LMC-NM4	12.70	7.95	7.92	3.97	8.25	9.95	10.4	12.0	1.5	12.7	9.5	7.0	8.0	17.8	17.8	3.8	M4
RS50-LMC-NM4	15.875	9.53	10.16	5.09	10.3	12.0	13.0	15.0	2.0	15.9	12.7	7.0	10.3	23.4	23.4	4.3	M4
RS50-LMC-NM5	15.875	9.53	10.16	5.09	10.3	12.0	13.0	15.0	2.0	15.9	12.7	8.0	10.3	23.4	23.4	5.1	M5
RS60-LMC-NM5	19.05	12.70	11.91	5.96	12.85	14.75	15.6	18.1	2.4	19.05	15.9	8.0	11.9	28.2	28.2	5.5	M5
RS60-LMC-NM6	19.05	12.70	11.91	5.96	12.85	14.75	15.6	18.1	2.4	19.05	15.9	10.0	11.9	28.2	28.2	6.5	M6

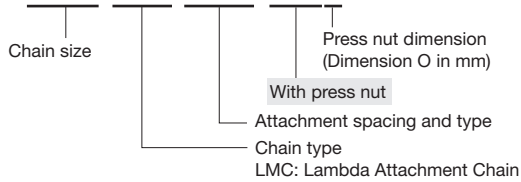
Dimension B is the width when nuts are installed on upper and lower surfaces.

### Chain Numbering

#### Press Nut (RS)

Old No. RSC40-LAMDA-2LK1-NM4

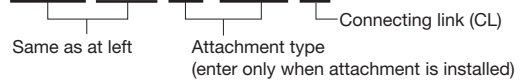
New No. **RS40-LMC-2LK1-NM4**



#### Connecting Link (CL)

Old No. RSC40-LAMDA-K1-NM4CL

New No. **RS40-LMC-K1-NM4-CL**



# Lambda Plus $\alpha$ Attachments

Chain with extended pins projecting to a customer-specified length can be manufactured with a short leadtime for perfect compatibility with your attachments or parts.



## Special Extended Pin (Attachment Type: EPL)

- Actual dimension P' may differ from P. Please contact a Tsubakimoto representative for details.
- Extended pins on standard Lambda Chain are nickel-plated. Consequently, pin end diameter will be slightly larger.
- Connecting links: RF2040 to RF2060 use spring clips. RF2080 and larger use cotter pins. Base chain pins are riveted.
- Attachments shown are S roller type. However, the dimensions for attachments are the same when R rollers are used. Also, the drawings show attachments added on every link.
- Pins other than those on connecting links are riveted regardless of whether attachments are present.

### Attachment Dimensions

Unit: mm

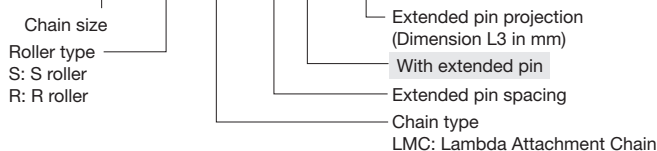
Tsubaki Chain No.	Pitch P	Width Between Inner Link Plates W	Roller Dia. R		Pin		Plate		Pin	
			S Roller	R Roller	Dia. D	L <sub>2</sub>	Height H	Thickness T	L <sub>3</sub>	L <sub>4</sub>
RF2040-LMC-EPL15.4	25.40	7.95	7.92	15.88	3.97	9.95	12.0	1.5	15.4	22.65
RF2040-LMC-EPL20.3	25.40	7.95	7.92	15.88	3.97	9.95	12.0	1.5	20.3	27.55
RF2040-LMC-EPL29.8	25.40	7.95	7.92	15.88	3.97	9.95	12.0	1.5	29.8	37.05
RF2050-LMC-EPL19.3	31.75	9.53	10.16	19.05	5.09	12.0	15.0	2.0	19.3	28.4
RF2050-LMC-EPL23.8	31.75	9.53	10.16	19.05	5.09	12.0	15.0	2.0	23.8	32.9
RF2050-LMC-EPL31.2	31.75	9.53	10.16	19.05	5.09	12.0	15.0	2.0	31.2	40.3
RF2060-LMC-EPL16.5	38.10	12.70	11.91	22.23	5.96	16.55	17.2	3.2	16.5	29.65
RF2060-LMC-EPL20.8	38.10	12.70	11.91	22.23	5.96	16.55	17.2	3.2	20.8	33.95
RF2060-LMC-EPL28.2	38.10	12.70	11.91	22.23	5.96	16.55	17.2	3.2	28.2	41.35
RF2080-LMC-EPL27.1	50.80	15.88	15.88	28.58	7.94	20.90	23.0	4.0	27.1	43.5
RF2080-LMC-EPL35.4	50.80	15.88	15.88	28.58	7.94	20.90	23.0	4.0	35.4	51.8
RF2080-LMC-EPL56.5	50.80	15.88	15.88	28.58	7.94	20.90	23.0	4.0	56.5	72.9
RF2100-LMC-EPL34.0	63.50	19.05	19.05	39.69	9.54	24.50	28.6	4.8	34.0	53.6
RF2100-LMC-EPL43.7	63.50	19.05	19.05	39.69	9.54	24.50	28.6	4.8	43.7	63.3
RF2100-LMC-EPL69.9	63.50	19.05	19.05	39.69	9.54	24.50	28.6	4.8	69.9	89.5

### Chain Numbering

#### Special Extended Pin (Double Pitch)

Old No. RFC2040S-LAMDA-2LEPL15.4

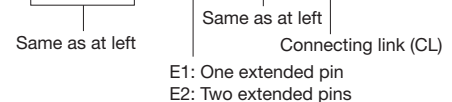
New No. **RF2040S-LMC-2LEPL15.4**



#### Connecting Link (CL)

Old No. RFC2040-LAMDA-E1-L15.4CL

New No. **RF2040-LMC-E1-L15.4-CL**

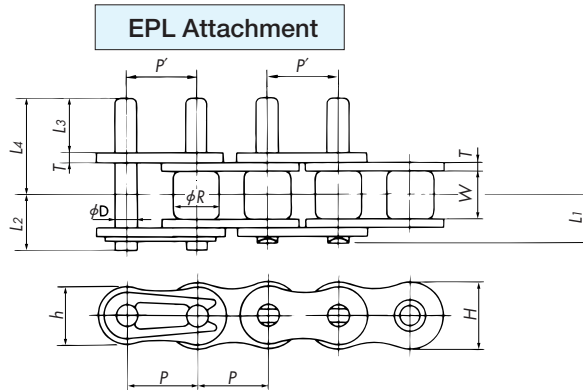




# Lambda Plus $\alpha$ Attachments



## Special Extended Pin (Attachment Type: EPL)



- Actual dimension P' may differ from P. Please contact a Tsubakimoto representative for details.
- Extended pins on standard Lambda Chain are nickel-plated. Consequently, pin end diameter will be slightly larger.
- Connecting links: RS40 to RS60 use spring clips. RS80 and larger use cotter pins. Base chain pins are riveted.
- Drawings show attachments added on every link.
- Pins other than those on connecting links are riveted regardless of whether attachments are present.

### Attachment Dimensions

Unit: mm

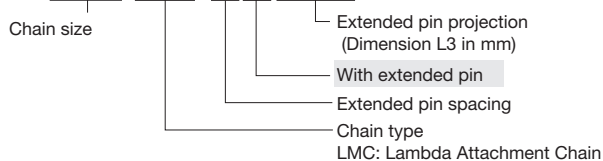
Tsubaki Chain No.	Pitch P	Width Between Inner Link Plates W	Roller Dia. R	Pin			Plate			Pin	
				Dia. D	L <sub>1</sub>	L <sub>2</sub>	Height h	Height H	Thickness T	L <sub>3</sub>	L <sub>4</sub>
RS40-LMC-EPL15.4	12.70	7.95	7.92	3.97	8.25	9.95	10.4	12.0	1.5	15.4	22.7
RS40-LMC-EPL20.3	12.70	7.95	7.92	3.97	8.25	9.95	10.4	12.0	1.5	20.3	27.6
RS40-LMC-EPL29.8	12.70	7.95	7.92	3.97	8.25	9.95	10.4	12.0	1.5	29.8	37.1
RS50-LMC-EPL19.3	15.875	9.53	10.16	5.09	10.3	12.0	13.0	15.0	2.0	19.3	28.4
RS50-LMC-EPL23.8	15.875	9.53	10.16	5.09	10.3	12.0	13.0	15.0	2.0	23.8	32.9
RS50-LMC-EPL31.2	15.875	9.53	10.16	5.09	10.3	12.0	13.0	15.0	2.0	31.2	40.3
RS60-LMC-EPL19.9	19.05	12.70	11.91	5.96	12.85	14.75	15.6	18.1	2.4	19.9	31.45
RS60-LMC-EPL24.2	19.05	12.70	11.91	5.96	12.85	14.75	15.6	18.1	2.4	24.2	35.75
RS60-LMC-EPL31.6	19.05	12.70	11.91	5.96	12.85	14.75	15.6	18.1	2.4	31.6	43.15
RS80-LMC-EPL30.8	25.40	15.88	15.88	7.94	16.25	19.25	20.8	24.1	3.2	30.8	45.55
RS80-LMC-EPL39.1	25.40	15.88	15.88	7.94	16.25	19.25	20.8	24.1	3.2	39.1	53.9
RS80-LMC-EPL42.3	25.40	15.88	15.88	7.94	16.25	19.25	20.8	24.1	3.2	42.3	57.1
RS100-LMC-EPL37.7	31.75	19.05	19.05	9.54	19.75	22.85	26.0	30.1	4.0	37.7	55.65
RS100-LMC-EPL45.0	31.75	19.05	19.05	9.54	19.75	22.85	26.0	30.1	4.0	45.0	62.95
RS100-LMC-EPL50.7	31.75	19.05	19.05	9.54	19.75	22.85	26.0	30.1	4.0	50.7	68.65

### Chain Numbering

#### Special Extended Pin (RS)

Old No. RSC40-LAMDA-1LEPL15.4

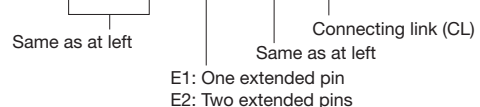
New No. **RS40-LMC-1LEPL15.4**



#### Connecting Link (CL)

Old No. RSC40-LAMDA-E1-L15.4CL

New No. **RS40-LMC-E1-L15.4CL**



## Lube Free Drive Chain

### 1-1. Kilowatt Ratings

Kilowatt ratings are dependent on the following factors:

- 1) Indoor environment with a temperature range of -10°C to 60°C and where no wear dust is present.
- 2) No corrosive gases, high humidity or other harmful elements are present.
- 3) The two sprocket transmission shafts are maintained parallel to each other and the chains are properly installed.
- 4) No possibility of exposure to chemicals, water, or cleaning/degreasing vapors.
- 5) No significant load change during conveyance.

### 1-2. Operating Factors

As the drive capacity of the chain is subject to various application factors, the following table has been designed to rectify kilowatt changes in relation to load fluctuation. The Kilowatt Rating Tables are for conditions where the load is small. Refer to them for adjustments corresponding to load fluctuations.

**Table 1: Operating Factors**

Type of Impact	Power Source Type of Machine	Motor or Turbine	Internal Combustion	
			Hydraulic Drive	Non-Hydraulic
Smooth Transmission	Belt conveyors with small load fluctuations, chain conveyors, centrifugal pumps, centrifugal blowers, general textile machinery, general machines with small load fluctuations	1.0	1.0	1.2
Small-Impact Transmission	Centrifugal compressors, marine engines, conveyors with some load fluctuations, automatic furnaces, dryers, pulverizers, general machine tools, compressors, general construction machinery, general papermaking machines	1.3	1.2	1.4
Large-Impact Transmission	Presses, crushers, construction and mining machines, vibration machines, oil-drilling rigs, rubber mixers, rolls, roll gangs, general machines with reverse or large impact loads	1.5	1.4	1.7

### Step 1: Selection Factors

- 1) Type of machine
- 2) Type of impact
- 3) Power source
- 4) Kilowatt rating
- 5) Diameter and rpm of high-speed shaft (small sprocket)
- 6) Diameter and rpm of low-speed shaft (large sprocket)
- 7) Distance between shafts

### Step 2: Determine Operating Factors

Use Table 1 to obtain the appropriate operating factors.

### Step 3: Determine Corrected Kilowatt Value

Multiply the kilowatt rating value by the appropriate operating factor to obtain the corrected kilowatt value.

### Step 4: Determine Chain and Small Sprocket Teeth Number

Using the Kilowatt Rating Tables and referring to the rpm of the small sprocket, determine the appropriate chain and the number of teeth of the small sprocket that satisfy the corrected kilowatt value. For smoother chain drive, the smallest pitch chain, which has the required kW, is recommended.

For double-strand LMD and LMD-H chain, multiply the multi-strand coefficient 1.4 for LMD and 1.7 for LMD-H by the kW ratings in the Kilowatt Rating Tables to determine the appropriate chain and the number of teeth of the small sprocket that satisfy the corrected kilowatt value and small-sprocket rpm.

### Step 5: Determine Large Sprocket Teeth Number

The number of teeth for the large sprocket is determined by multiplying the number of teeth of the small sprocket by the speed ratio. A small sprocket with more than 15 teeth is recommended. However, the number of teeth on the large sprocket should be less than 120. By reducing the number of teeth on the small sprocket, the number of teeth on the large sprocket can be reduced. Even in this case though, the number of teeth on the small sprocket should not be reduced to less than 13.

### Step 6: Confirm Shaft Diameter

After determining the number of teeth necessary for the small sprocket, refer to the RS Sprocket Dimension Table (separate catalog) to check if the sprocket diameter satisfies space limitations.

### Step 7: Calculate Chain Length

Calculate the necessary number of chain links.

#### Formula for Calculating Chain Length

$$L = \frac{Z+Z'}{2} + 2C + \frac{\left(\frac{Z-Z'}{6.28}\right)^2}{C}$$

$L$  = Chain length expressed in number of links

$Z$  = Number of teeth of large sprocket

$Z'$  = Number of teeth of small sprocket

$C$  = Distance between shafts expressed in number of links

#### Formula for Calculating Chain Speed

$$V = \frac{P \cdot Z' \cdot n}{1000} \text{ (m/min)}$$

$V$  = Chain speed (m/min)

$P$  = Chain pitch (mm)

$Z'$  = Number of teeth of small sprocket

$n$  = Rotations per minute of small sprocket (rpm)

Notes: The maximum allowable load of double-strand Lambda Conveyor Chain (LMC) is roughly equal to only that of single-strand Lambda Drive Chain (LMD). When using LMC for drive purposes, please contact a Tsubakimoto representative beforehand.

# Kilowatt Rating Tables ( Lambda Chain, Surface-Treated Lambda Chain, X-Lambda Chain, Heat Resistant Lambda Chain )

## ■ RS40-LMD-1 Kilowatt Ratings (Single-Strand Chain)

Small Sprocket Teeth No.	Small Sprocket Max. rpm											
	10	25	50	100	200	300	400	500	700	900	1000	1200
9	0.05	0.11	0.21	0.39	0.72	1.04	1.35	1.64	2.23	2.79	3.07	3.62
10	0.05	0.12	0.23	0.43	0.81	1.16	1.51	1.84	2.49	3.13	3.44	
11	0.06	0.14	0.26	0.48	0.90	1.29	1.67	2.04	2.76	3.47	3.81	
12	0.07	0.15	0.28	0.53	0.98	1.42	1.84	2.24	3.04	3.81		
13	0.07	0.17	0.31	0.57	1.07	1.54	2.00	2.45	3.31	4.15		
14	0.08	0.18	0.33	0.62	1.16	1.67	2.17	2.65	3.59			
15	0.08	0.19	0.36	0.67	1.25	1.80	2.34	2.86	3.87			
16	0.09	0.21	0.39	0.72	1.34	1.93	2.50	3.06	4.14			
17	0.10	0.22	0.41	0.77	1.43	2.06	2.67	3.27				
18	0.10	0.23	0.44	0.82	1.52	2.20	2.84	3.48				
19	0.11	0.25	0.46	0.87	1.62	2.33	3.02	3.69				
20	0.12	0.26	0.49	0.92	1.71	2.46	3.19	3.90				
21	0.12	0.28	0.52	0.96	1.80	2.59	3.36	4.11				
22	0.13	0.29	0.54	1.01	1.89	2.73	3.53	4.32				
23	0.13	0.31	0.57	1.06	1.99	2.86	3.71	4.53				
24	0.14	0.32	0.60	1.11	2.08	3.00	3.88					
25	0.15	0.33	0.62	1.16	2.17	3.13	4.06					
26	0.15	0.35	0.65	1.21	2.27	3.27	4.23					
28	0.17	0.38	0.71	1.32	2.46	3.54	4.58					
30	0.18	0.41	0.76	1.42	2.65	3.81						
32	0.19	0.44	0.81	1.52	2.84	4.09						
35	0.21	0.48	0.90	1.67	3.13	4.50						
40	0.24	0.56	1.04	1.93	3.61							
45	0.28	0.63	1.18	2.20	4.10							

## ■ RS50-LMD-1 Kilowatt Ratings (Single-Strand Chain)

Small Sprocket Teeth No.	Small Sprocket Max. rpm												
	10	25	50	100	200	300	400	500	600	700	800	900	
9	0.10	0.23	0.43	0.80	1.49	2.15	2.78	3.40	4.01	4.60	5.19	5.77	
10	0.11	0.26	0.48	0.90	1.67	2.41	3.12	3.81	4.49	5.16	5.82		
11	0.12	0.28	0.53	0.99	1.85	2.67	3.46	4.22	4.98	5.72			
12	0.14	0.31	0.58	1.09	2.03	2.93	3.80	4.64	5.47	6.28			
13	0.15	0.34	0.64	1.19	2.22	3.19	4.14	5.06	5.96				
14	0.16	0.37	0.69	1.29	2.40	3.46	4.48	5.48	6.46				
15	0.17	0.40	0.74	1.39	2.59	3.73	4.83	5.91					
16	0.19	0.43	0.80	1.49	2.78	4.00	5.18	6.33					
17	0.20	0.46	0.85	1.59	2.96	4.27	5.53	6.76					
18	0.21	0.49	0.91	1.69	3.15	4.54	5.88						
19	0.23	0.51	0.96	1.79	3.34	4.81	6.24						
20	0.24	0.54	1.01	1.89	3.53	5.09	6.59						
21	0.25	0.57	1.07	2.00	3.72	5.36	6.95						
22	0.26	0.60	1.12	2.10	3.91	5.64							
23	0.28	0.63	1.18	2.20	4.11	5.92							
24	0.29	0.66	1.24	2.30	4.30	6.19							
25	0.30	0.69	1.29	2.41	4.49	6.47							
26	0.32	0.72	1.35	2.51	4.69	6.75							
28	0.34	0.78	1.46	2.72	5.08	7.32							
30	0.37	0.84	1.57	2.93	5.47								
32	0.40	0.90	1.69	3.14	5.87								
35	0.44	0.99	1.86	3.46	6.46								
40	0.50	1.15	2.14	4.00	7.47								
45	0.57	1.30	2.44	4.54									

## ■ RS60-LMD-1 Kilowatt Ratings (Single-Strand Chain)

Small Sprocket Teeth No.	Small Sprocket Max. rpm											
	10	25	50	100	150	200	250	300	400	500	600	700
9	0.18	0.41	0.76	1.41	2.03	2.63	3.22	3.79	4.92	6.01	7.08	8.14
10	0.20	0.45	0.85	1.58	2.28	2.95	3.61	4.25	5.51	6.73	7.94	
11	0.22	0.50	0.94	1.75	2.53	3.27	4.00	4.71	6.11	7.46		
12	0.24	0.55	1.03	1.93	2.77	3.59	4.39	5.18	6.71	8.20		
13	0.26	0.60	1.13	2.10	3.03	3.92	4.79	5.65	7.31			
14	0.29	0.65	1.22	2.28	3.28	4.25	5.19	6.12	7.92			
15	0.31	0.70	1.31	2.45	3.53	4.57	5.59	6.59	8.54			
16	0.33	0.75	1.41	2.63	3.79	4.90	6.00	7.06				
17	0.35	0.81	1.50	2.81	4.04	5.24	6.40	7.54				
18	0.38	0.86	1.60	2.98	4.30	5.57	6.81	8.02				
19	0.40	0.91	1.70	3.16	4.56	5.90	7.22	8.51				
20	0.42	0.96	1.79	3.34	4.82	6.24	7.63	8.99				
21	0.44	1.01	1.89	3.53	5.08	6.58	8.04					
22	0.47	1.06	1.99	3.71	5.34	6.92	8.46					
23	0.49	1.12	2.08	3.89	5.60	7.26	8.87					
24	0.51	1.17	2.18	4.07	5.87	7.60	9.29					
25	0.54	1.22	2.28	4.26	6.13	7.94	9.71					
26	0.56	1.28	2.38	4.44	6.40	8.29						
28	0.61	1.38	2.58	4.81	6.93	8.98						
30	0.65	1.49	2.78	5.18	7.46	9.67						
32	0.70	1.60	2.98	5.56	8.00							
35	0.77	1.76	3.28	6.12	8.82							
40	0.89	2.03	3.79	7.07	10.2							
45	1.01	2.31	4.30	8.03								

## ■ RS80-LMD-1 Kilowatt Ratings (Single-Strand Chain)

Small Sprocket Teeth No.	Small Sprocket Max. rpm													
	10	25	50	75	100	125	150	200	250	300	350			
9	0.40	0.91	1.69	2.44	3.16	3.86	4.55	5.90	7.21	8.50	9.76			
10	0.45	1.02	1.90	2.73	3.54	4.33	5.10	6.61	8.08	9.52	10.9			
11	0.49	1.13	2.10	3.03	3.93	4.80	5.65	7.33	8.96	10.6				
12	0.54	1.24	2.31	3.33	4.31	5.27	6.21	8.05	9.84					
13	0.59	1.35	2.52	3.63	4.70	5.75	6.77	8.77	10.7					
14	0.64	1.46	2.73	3.93	5.09	6.23	7.34	9.51	11.6					
15	0.69	1.58	2.94	4.24	5.49	6.71	7.90	10.2						
16	0.74	1.69	3.15	4.54	5.88	7.19	8.48	11.0						
17	0.79	1.80	3.37	4.85	6.28	7.68	9.05	11.7						
18	0.84	1.92	3.58	5.16	6.68	8.17	9.63							
19	0.89	2.03	3.80	5.47	7.08	8.66	10.2							
20	0.94	2.15	4.01	5.78	7.49	9.15	10.8							
21	0.99	2.27	4.23	6.09	7.89	9.65	11.4							
22	1.04	2.38	4.45	6.41	8.30	10.1	12.0							
23	1.10	2.50	4.67	6.72	8.71	10.6	12.5							
24	1.15	2.62	4.89	7.04	9.12	11.1								
25	1.20	2.74	5.11	7.35	9.53	11.6								
26	1.25	2.85	5.33	7.67	9.94	12.2								
28	1.36	3.09	5.77	8.31	10.8	13.2								
30	1.46	3.33	6.22	8.96	11.6									
32	1.57	3.57	6.67	9.60	12.4									
35	1.73	3.94	7.34	10.6	13.7									
40	1.99	4.55	8.48	12.2										
45	2.26	5.16	9.63	13.9										

Notes: 1. Kilowatt ratings when using a one-pitch offset link (OL) are 80% that of the above values.

2. Kilowatt ratings shown for X-Lambda Chain, whose wear performance is seven times greater than RS Roller Chain in lube-free operation (more than 2.5 times for RS120 and RS140) and over five times that of Lambda Chain.

3. Kilowatt ratings for RS Roller Chain differ from above.

# Kilowatt Rating Tables ( Lambda Chain, Surface-Treated Lambda Chain, X-Lambda Chain, Heat Resistant Lambda Chain )

## ■ RS100-LMD-1 Kilowatt Ratings (Single-Strand Chain)

Small Sprocket Teeth No.	Small Sprocket Max. rpm												
	10	25	50	75	100	125	150	175	200	225	250	275	
9	0.66	1.51	2.82	4.07	5.27	6.44	7.59	8.72	9.83	10.9	12.0	13.1	
10	0.74	1.70	3.16	4.56	5.90	7.22	8.50	9.77	11.0	12.2	13.5		
11	0.82	1.88	3.51	5.05	6.54	8.00	9.42	10.8	12.2	13.6			
12	0.90	2.06	3.85	5.55	7.19	8.79	10.4	11.9	13.4				
13	0.99	2.25	4.20	6.05	7.84	9.58	11.3	13.0					
14	1.07	2.44	4.55	6.55	8.49	10.4	12.2	14.0					
15	1.15	2.63	4.90	7.06	9.15	11.2	13.2						
16	1.23	2.82	5.26	7.57	9.81	12.0	14.1						
17	1.32	3.01	5.61	8.08	10.5	12.8							
18	1.40	3.20	5.97	8.60	11.1	13.6							
19	1.49	3.39	6.33	9.11	11.8	14.4							
20	1.57	3.58	6.69	9.63	12.5	15.3							
21	1.66	3.78	7.05	10.2	13.2								
22	1.74	3.97	7.41	10.7	13.8								
23	1.83	4.17	7.78	11.2	14.5								
24	1.91	4.36	8.14	11.7	15.2								
25	2.00	4.56	8.51	12.3	15.9								
26	2.09	4.76	8.88	12.8									
28	2.26	5.15	9.62	13.9									
30	2.43	5.55	10.4	14.9									
32	2.61	5.95	11.1	16.0									
35	2.88	6.56	12.2										
40	3.32	7.58	14.1										
45	3.77	8.60	16.1										

## ■ RS120-LMD-1 Kilowatt Ratings (Single-Strand Chain)

Small Sprocket Teeth No.	Small Sprocket Max. rpm												
	5	10	15	20	25	30	40	50	60	80	100	125	
9	0.65	1.22	1.75	2.27	2.77	3.27	4.23	5.17	6.09	7.90	9.65	11.8	
10	0.73	1.36	1.96	2.54	3.11	3.66	4.74	5.80	6.83	8.85	10.8	13.2	
11	0.81	1.51	2.17	2.82	3.44	4.06	5.25	6.42	7.57	9.81	12.0		
12	0.89	1.66	2.39	3.09	3.78	4.46	5.77	7.06	8.31	10.8	13.2		
13	0.97	1.81	2.60	3.37	4.12	4.86	6.29	7.69	9.07	11.7	14.4		
14	1.05	1.96	2.82	3.65	4.47	5.26	6.82	8.33	9.82	12.7			
15	1.13	2.11	3.04	3.94	4.81	5.67	7.35	8.98	10.6	13.7			
16	1.21	2.26	3.26	4.22	5.16	6.08	7.88	9.63	11.3	14.7			
17	1.29	2.41	3.48	4.51	5.51	6.49	8.41	10.3	12.1				
18	1.38	2.57	3.70	4.79	5.86	6.90	8.94	10.9	12.9				
19	1.46	2.72	3.92	5.08	6.21	7.32	9.48	11.6	13.7				
20	1.54	2.88	4.15	5.37	6.57	7.74	10.0	12.3	14.4				
21	1.63	3.03	4.37	5.66	6.92	8.15	10.6	12.9	15.2				
22	1.71	3.19	4.60	5.95	7.28	8.58	11.1	13.6					
23	1.79	3.35	4.82	6.25	7.64	9.00	11.7	14.2					
24	1.88	3.50	5.05	6.54	7.99	9.42	12.2	14.9					
25	1.96	3.66	5.28	6.83	8.35	9.84	12.8	15.6					
26	2.05	3.82	5.50	7.13	8.72	10.3	13.3	16.3					
28	2.22	4.14	5.96	7.72	9.44	11.1	14.4						
30	2.39	4.46	6.42	8.32	10.2	12.0	15.5						
32	2.56	4.78	6.89	8.92	10.9	12.9	16.7						
35	2.82	5.27	7.59	9.83	12.0	14.2							
40	3.26	6.08	8.76	11.4	13.9	16.4							
45	3.70	6.91	9.95	12.9	15.8								

## ■ RS140-LMD-1 Kilowatt Ratings (Single-Strand Chain)

Small Sprocket Teeth No.	Small Sprocket Max. rpm												
	5	10	15	20	25	30	40	50	60	80	100	125	
9	1.02	1.90	2.74	3.55	4.34	5.12	6.63	8.10	9.55	12.4	15.1	18.5	
10	1.14	2.13	3.07	3.98	4.87	5.73	7.43	9.08	10.7	13.9	16.9		
11	1.27	2.36	3.41	4.41	5.39	6.35	8.23	10.1	11.9	15.4	18.8		
12	1.39	2.60	3.74	4.85	5.92	6.98	9.04	11.1	13.0	16.9			
13	1.52	2.83	4.08	5.28	6.46	7.61	9.86	12.1	14.2	18.4			
14	1.64	3.07	4.42	5.72	7.00	8.25	10.7	13.1	15.4	19.9			
15	1.77	3.30	4.76	6.17	7.54	8.88	11.5	14.1	16.6				
16	1.90	3.54	5.10	6.61	8.08	9.52	12.3	15.1	17.8				
17	2.03	3.78	5.45	7.06	8.63	10.2	13.2	16.1	19.0				
18	2.16	4.02	5.80	7.51	9.18	10.8	14.0	17.1	20.2				
19	2.29	4.27	6.14	7.96	9.73	11.5	14.9	18.2					
20	2.42	4.51	6.49	8.41	10.3	12.1	15.7	19.2					
21	2.55	4.75	6.85	8.87	10.8	12.8	16.6	20.2					
22	2.68	5.00	7.20	9.33	11.4	13.4	17.4	21.3					
23	2.81	5.24	7.55	9.78	12.0	14.1	18.3						
24	2.94	5.49	7.91	10.2	12.5	14.8	19.1						
25	3.07	5.74	8.26	10.7	13.1	15.4	20.0						
26	3.21	5.99	8.62	11.2	13.7	16.1	20.8						
28	3.48	6.48	9.34	12.1	14.8	17.4	22.6						
30	3.74	6.99	10.1	13.0	15.9	18.8							
32	4.01	7.49	10.8	14.0	17.1	20.1							
35	4.42	8.25	11.9	15.4	18.8	22.2							
40	5.11	9.53	13.7	17.8	21.7								

Notes: 1. Kilowatt ratings when using a one-pitch offset link (OL) are 80% that of the above values.

2. Kilowatt ratings shown for X-Lambda Chain, whose wear performance is seven times greater than RS Roller Chain in lube-free operation (more than 2.5 times for RS120 and RS140) and over five times that of Lambda Chain.

3. Kilowatt ratings for RS Roller Chain differ from above.

## Lube Free Small Size Conveyor Chain

An appropriate chain size and type can be selected based upon the type and capacity of the conveyor. In some cases, it may be difficult to determine the most appropriate chain size and type, since there are a variety of operating conditions for the conveyor. The general procedure for chain selection is as follows:

- Step 1: Check conveyance conditions
- Step 2: Tentatively determine chain type
- Step 3: Check allowable load of rollers and attachments
- Step 4: Calculate maximum chain tension
- Step 5: Determine chain size

In this catalog, values are indicated in both SI and gravimetric units. The weight (kgf) used to calculate the max. tension in the gravimetric units is the same value as the mass (kg).

### Step 1: Check Conveyance Conditions

- 1) Type of conveyor (slat conveyor, bucket elevator, etc.)
- 2) Method of chain travel (horizontal, inclined, or vertical conveyor)
- 3) Type, mass, and size of materials to be conveyed
- 4) Conveyor capacity, interval between conveyed objects
- 5) Conveying speed
- 6) Conveyor length
- 7) Existence of lubrication (yes/no)
- 8) Considerations for special environments (high/low temperature, presence of corrosive substances)

Lambda Chain operating temperature range: -10°C to 150°C

- Lambda Outboard Roller Chain, Lambda Top Roller Chain: -10°C to 80°C
- Lambda Plastic Roller Conveyor Chain: 0°C to 50°C

### Step 2: Tentatively Determine Chain Type

#### SI Units

$$F(\text{kN}) = W \times f_1 \times K_v \times \frac{G}{1000} \quad \underline{G} = 9.80665 \text{ m/s}^2$$

#### {Gravimetric Units}

$$F(\text{kgf}) = W \times f_1 \times K_v$$

- $W$  : Total mass {weight} of conveyed objects on conveyor kg {kgf}
- $f_1$  : Coefficient of friction (See page 62. For free-flow conveyors, see Table 5  $f_2$  and Table 6  $f_3$ .)
- $K_v$  : Speed coefficient (See page 62)

Tentatively select a chain that has maximum allowable tension of  $F$  (for two parallel strands, use  $F \times 0.6$ ) or more.

### Step 3: Check Allowable Load

The load applied to rollers or attachments should not exceed the allowable loads shown in Table 1 and Table 2.

**Table 1: Allowable Load of Base Chain Roller**

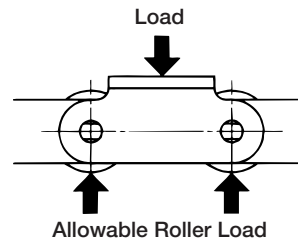
Chain Size	Steel Roller	
	R Roller	S Roller
RF2040·RF40·RS40	0.64 { 65 }	0.15 { 15 }
RF2050·RF50·RS50	1.98 { 100 }	0.20 { 20 }
RF2060·RF60·RS60	1.57 { 160 }	0.29 { 30 }
RF2080·RF80·RS80	2.65 { 270 }	0.54 { 55 }
RF2100·RF100·RS100	3.92 { 400 }	0.78 { 80 }

Chain Size	Plastic Roller (R/F Roller)
RF03	0.49 { 50 }
RF05	0.83 { 85 }

Unit: kN {kgf}/roller

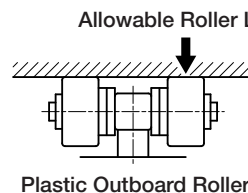
Note: The material used for double-pitch R Roller guide rail should be a high-tensile-strength material at least S45C (JIS), 1045 (AISI), or better.



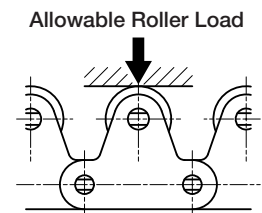
**Table 2: Allowable Roller Load**

Unit : kN {kgf}/roller

Chain Size	Engineering Plastic Outboard Roller	Engineering Plastic Top Roller
RF2040·RS40	0.05 { 5 }	0.05 { 5 }
RF2050·RS50	0.07 { 7 }	0.07 { 7 }
RF2060·RS60	0.10 { 10 }	0.10 { 10 }



Plastic Outboard Roller



Single-Strand Top Roller

#### ■ Explanation of Symbols (1)

- $F$  : Max. static tension applied to chain kN {kgf}
  - $V$  : Conveying speed (chain speed) m/min
  - $H$  : Center distance between sprockets (vertical direction) m
  - $L$  : Center distance between sprockets (horizontal direction) m
  - $C$  : Center distance between sprockets m
  - $M$  : Mass {weight} of moving parts (chain, bucket, apron, etc.) kg/m {kgf/m}
  - $W$  : Total mass {weight} of conveyed objects on conveyor (max. value) kg {kgf}
- For countable items:

$$W = \frac{C}{\text{Loading interval}} \times \text{Mass \{weight\} of conveyed items}$$

- $\eta$  : Transmission efficiency of drive unit
- $kW$  : Power required
- $f_1$  : Coefficient of friction between chain and guide rail (Table 3)
- $G$  : Acceleration of gravity: 9.80665 m/s<sup>2</sup>

Do not use Lambda Chain where there is the possibility of exposure to chemicals, water, or cleaning/degreasing vapors.

## Step 4: Calculate Max. Chain Tension (F)

### 1) Horizontal Conveyance

1-1) Goods are directly loaded on the conveyor

#### SI Units

$$F = (W + 2.1M \cdot C) f_i \times \frac{G}{1000}$$

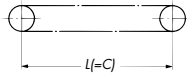
$$kW = \frac{F \cdot V}{60} \times 1.1 \times \frac{1}{\eta}$$

#### {Gravimetric Units}

$$F = (W + 2.1M \cdot C) f_i$$

$$kW = \frac{F \cdot V}{6120} \times 1.1 \times \frac{1}{\eta}$$

Explanation of symbols (1): Previous page



1-2) Goods are accumulated (free-flow conveyors)

#### SI Units

$$F = \{ (W_1 + M) L_1 \cdot f_i + W_2 \cdot L_2 \cdot f_2 + (W_2 + M) L_2 \cdot f_3 + 1.1M(L_1 + L_2) f_i \} \times \frac{G}{1000}$$

$$kW = \frac{F \cdot V}{60} \times 1.1 \times \frac{1}{\eta}$$

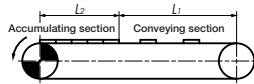
#### {Gravimetric Units}

$$F = (W_1 + M) L_1 \cdot f_i + W_2 \cdot L_2 \cdot f_2 + (W_2 + M) L_2 \cdot f_3$$

$$+ 1.1M(L_1 + L_2) f_i$$

$$kW = \frac{F \cdot V}{60} \times 1.1 \times \frac{1}{\eta}$$

Explanation of symbols (2): Next page



### 2) Vertical Conveyance

#### SI Units

$$F = (W + M \cdot C) \times \frac{G}{1000}$$

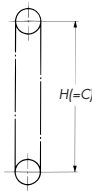
$$kW = \frac{W \cdot V}{60} \cdot \frac{G}{1000} \times 1.1 \times \frac{1}{\eta}$$

#### {Gravimetric Units}

$$F = W + M \cdot C$$

$$kW = \frac{W \cdot V}{6120} \times 1.1 \times \frac{1}{\eta}$$

Explanation of symbols (1): Previous page



### 3) Inclined Conveyance\*

3-1) Goods are directly loaded on the conveyor

#### SI Units

$$F = \{ (W + M \cdot C) \frac{L \cdot f_i + H}{C} + 1.1M(L \cdot f_i - H) \} \times \frac{G}{1000}$$

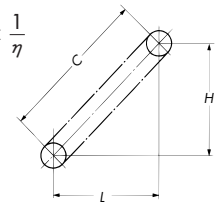
$$kW = \frac{V}{60} \{ F - M(H - L \cdot f_i) \frac{G}{1000} \} \times 1.1 \times \frac{1}{\eta}$$

#### {Gravimetric Units}

$$F = (W + M \cdot C) \frac{L \cdot f_i + H}{C} + 1.1M(L \cdot f_i - H)$$

$$kW = \frac{V}{6120} \{ F - M(H - L \cdot f_i) \} \times 1.1 \times \frac{1}{\eta}$$

Explanation of symbols (1): Previous page



### 4) Horizontal/Inclined Conveyance\*

4-1) Goods are directly loaded on the conveyor

#### SI Units

$$F = \{ ( \frac{W}{C_1 + C_2} + 2.1M ) C_1 \cdot f_i + ( \frac{W}{C_1 + C_2} + M ) (L_1 \cdot f_i + H) + 1.1M(L_1 \cdot f_i - H) \} \times \frac{G}{1000}$$

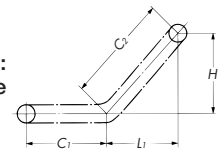
$$kW = \frac{V}{60} \{ F - M(H - L_1 \cdot f_i) \frac{G}{1000} \} \times 1.1 \times \frac{1}{\eta}$$

#### {Gravimetric Units}

$$F = ( \frac{W}{C_1 + C_2} + 2.1M ) C_1 \cdot f_i + ( \frac{W}{C_1 + C_2} + M ) (L_1 \cdot f_i + H) + 1.1M(L_1 \cdot f_i - H)$$

$$kW = \frac{V}{6120} \{ F - M(H - L_1 \cdot f_i) \} \times 1.1 \times \frac{1}{\eta}$$

Explanation of symbols (1): Previous page



\* When calculating the value for F, if  $L \cdot f_i - H < 0$ , make  $L \cdot f_i - H = 0$ . Also when calculating the value for kW, if  $H - L \cdot f_i < 0$ , make  $H - L \cdot f_i = 0$ .

## Explanation of Symbols (2)

### When Accumulating Objects (Free Flow Conveyor)

$F$ : Max. static tension applied to chain	kN {kgf}
$V$ : Chain speed	m/min
$L_1$ : Length of conveying section	m
$W_1$ : Mass of conveyed objects in conveying section	kg/m
$L_2$ : Length of accumulating section	m
$W_2$ : Mass of conveyed objects in accumulating section	kg/m
$M$ : Mass of moving parts	kg/m
$\eta$ : Transmission efficiency of drive unit	
$kW$ : Power required	
$f_1$ : Coefficient of friction between chain and rail during conveyance (Table 4)	
$f_2$ : Coefficient of friction between chain and conveyed objects during accumulation (Table 5)	
$f_3$ : Coefficient of friction between chain and rail during accumulation (Table 6)	

**Table 3-1:**  
 **$f_1$ : Coefficient of Rolling Friction**

Roller Type	Steel Roller
R Roller	0.08
S Roller	0.14

**Table 3-2:**  
 **$f_1$ : Coefficient of Sliding Friction**

Steel Plate	
Dry	Lubricated
0.3	0.2

**Table 3-3:  $f_1$ : Coefficient of Rolling Friction (Lambda Plastic Roller Conveyor Chain)**

Roller Type	Plastic Roller
R Roller	0.07
S Roller	

**Table 4:  $f_1$ : Coefficient of Friction Between Chain and Rail During Conveyance**

Chain Type	Base Chain Roller Type	$f_1$	
Lambda Outboard Roller Chain	Steel Roller	R Roller	0.08
		S Roller	0.14

**Table 5:  $f_2$ : Coefficient of Friction Between Chain and Conveyed Objects During Accumulation**

Chain Type	Transfer Roller Type	$f_2$
Lambda Outboard Roller Chain	Plastic Outboard Roller	0.06
	Outboard Roller with Plastic Brake	0.10
Lambda Top Roller Chain	Plastic Top Roller	0.06

**Table 6:  $f_3$ : Coefficient of Friction Between Chain and Rail During Accumulation**

$f_3$	Same as $f_1$

## Step 5: Determine Chain Size

Multiply the maximum static tension ( $F$ ) applied to a chain by the speed coefficient ( $K$ ) given in Table 7 for a chain that satisfies the following formula:

$$F \times K \leq \text{Max. Allowable Tension}$$

For two parallel strands, use max. tension of  $0.6F$ .

**Table 7: Speed Coefficient (K)**

Chain Speed (m/min)	Speed Coefficient (K)
15 or less	1.0
15 to 30	1.2
30 to 50	1.4
50 to 70	1.6
70 to 90	2.2
90 to 110	2.8
110 to 120	3.2

**Table 8-1: Max. Allowable Tension** Unit: kN {kgf}

Chain Type	RS35	RS40 RF2040 RF40	RS50 RF2050 RF50	RS60 RF2060 RF60	RS80 RF2080 RF80	RS100 RF2100 RF100
Lambda RS Attachment Chain Lambda Double Pitch Chain Lambda RF Roller Chain	1.52 {155}	2.65 {270}	4.31 {440}	6.28 {640}	10.7 {1090}	17.1 {1740}
Lambda Hollow Pin Chain	—	1.47 {150}	2.55 {260}	3.43 {350}	6.18 {630}	—

**Table 8-2: Max. Allowable Tension of Free Flow Chain** Unit: kN {kgf}

Chain Type	Type of Base Chain Roller	RS40 RF2040	RS50 RF2050	RS60 RF2060
Lambda Outboard Roller Chain	Steel Roller	2.65 {270}	4.31 {440}	6.28 {640}
Lambda Top Roller Chain	Steel Roller			

**Table 8-3: Max. Allowable Tension of Lambda Plastic Roller Conveyor Chain** Unit: kN {kgf}

No. of Sprocket Teeth Tsubaki Chain No.	6	7	8	9	10
RF03075	1.47 {150}	1.86 {190}	1.96 {200}	1.96 {200}	1.96 {200}
RF03100	1.86 {190}	1.96 {200}	1.96 {200}	1.96 {200}	1.96 {200}
RF05100	2.65 {270}	3.33 {340}	4.21 {430}	5.20 {530}	5.20 {530}
RF05125	3.74 {380}	4.71 {480}	5.20 {530}	5.20 {530}	5.20 {530}
RF05150	4.90 {500}	5.20 {530}	5.20 {530}	5.20 {530}	5.20 {530}

Note: The table above shows max. allowable tension for R Rollers with a chain speed of 25 m/min or less. Max. allowable tension for F Rollers is 70% of the above values.

## TN Snap Cover Chain (LMC-NP) TS Top Chain (LMC-NP)

Follow the procedure below to select the top chain and wearstrip that are most economical and suitable for your application.

- Step 1: Establish operating conditions
- Step 2: Select top plate material
- Step 3: Select wearstrip material
- Step 4: Determine coefficients
- Step 5: Select top plate width
- Step 6: Calculate chain load
- Step 7: Determine chain size

In this catalog, values are indicated in both SI and gravimetric units. The weight (kgf) used to calculate the max. load in the gravimetric units is the same value as the mass (kg).

### Step 1: Establish Operating Conditions

- |  |  |
|--|--|
| <b>A) Conveyed Objects</b> <ol style="list-style-type: none"> <li>1) Container material</li> <li>2) Mass</li> <li>3) Dimensions</li> </ol>   | <b>B) Conveyor Arrangement</b> <ol style="list-style-type: none"> <li>1) Straight or side flexing</li> <li>2) Conveyor length</li> <li>3) Conveyor layout</li> <li>4) Space limitations</li> </ol>   |
| <b>C) Conveying Conditions</b> <ol style="list-style-type: none"> <li>1) Conveying capacity</li> <li>2) Interval/spacing between objects to be conveyed</li> <li>3) Conveying speed</li> <li>4) Lubrication</li> <li>5) Objects kept in accumulation or not</li> </ol> | <b>D) Environment</b> <ol style="list-style-type: none"> <li>1) Temperature Range<br/>TS : -10°C to 150°C<br/>TN : -10°C to 80°C</li> <li>2) Avoid exposure to chemicals, water, or cleaning/degreasing vapors</li> <li>3) Avoid abrasive conditions including the presence of glass fragments, paint chips, metal powder, sand, etc.</li> </ol> |

### Step 2: Select Top Plate Material

Choose a suitable top plate material according to the type of objects to be conveyed.

**Table 1: Plate Material Selection Guide**

Conveyed Objects	Top Plate Material	No Lube Abrasives	
		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.)	Polyacetal
Industrial parts (machine parts, dies, castings, forgings, metals, bearings, bolts, nuts, etc.)	Stainless Steel	B	A
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)	Polyacetal	B	×
	Stainless Steel	A	A
Glass bottles, glass products, ceramics (glass bottles and glass containers for liquors, foodstuffs, pharmaceuticals, cosmetics, etc.)	Polyacetal	B	×
	Stainless Steel	A	A

A: Most Recommended B: Acceptable X: Inappropriate

### Step 3: Select Wearstrip Material

Choose a suitable wearstrip material according to the type of top plate material.

**Table 2: Wearstrip Material Selection Guide**

Top Plate Material (Chain Type)	Wearstrip Material	No Lube Abrasives	
		No	Yes
		Stainless Steel (straight-running TS)	Stainless Steel
	Steel	B	A
	UHMWPE	A	×
Polyacetal (straight-running TN)	Stainless Steel	B	B
	Steel	A	×
	UHMWPE	B	A

A: Most Recommended B: Acceptable X: Inappropriate

### Step 4: Determine Coefficients (f<sub>1</sub>, f<sub>2</sub>)

**Table 3: Coefficient of Friction Between Top Plate and Wearstrip (f<sub>1</sub>)**

Top Plate Material	Lubrication	Wearstrip Material and Coefficient of Dynamic Friction		
		Stainless Steel	Steel	UHMWPE
Stainless Steel	No lube	0.35	0.35	0.25
Polyacetal	No lube	0.25	0.25	0.25

**Table 4: Coefficient of Friction Between Conveyed Objects and Top Plate (f<sub>2</sub>)**

Conveyed Material	Lubrication	Top Plate Material and Coefficient of Dynamic Friction	
		Stainless Steel	Polyacetal
Plastics, paper containers, film-wrapped goods	No lube	0.35	0.25
Cans (with metal top and bottom)	No lube	0.35	0.25
Glass bottles, ceramics	No lube	0.25	0.22
Industrial parts (metal)	No lube	0.35	0.25

### Step 5: Select Top Plate Width

Generally, the top plate must be slightly wider than the objects being conveyed. When objects are very wide and none of the top plate widths are satisfactory, top plates of the same width may be used in multi-strand arrangement.

### Step 6: Calculate Max. Chain Load (F)

#### 1) Calculating F

$$\text{SI Units } F = \{ (W + 2.1M) Lf_1 + WL' f_2 \} \times \frac{G}{1000}$$

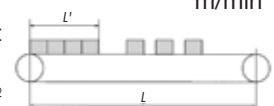
$$\{\text{Gravimetric Units}\} F = (W + 2.1M) Lf_1 + WL' f_2$$

#### 2) Calculating Power Required

$$\text{SI Units } kW = \frac{F \cdot V}{60} \times 1.1 \times \frac{1}{\eta}$$

$$\{\text{Gravimetric Units}\} kW = \frac{F \cdot V}{6120} \times 1.1 \times \frac{1}{\eta}$$

- F : Max. tension applied to chain kN {kgf}
- W : Mass of conveyed objects kg/m
- M : Chain mass kg/m
- L : Length of conveyance (center distance between sprockets) m
- L' : Length of accumulating section (zero when no slipping between conveyed objects and chain) m
- f<sub>1</sub> : Coefficient of friction between top plate and wearstrip (Table 3)
- f<sub>2</sub> : Coefficient of friction between conveyed objects and top plate (Table 4)
- K : Speed coefficient (Table 5)
- V : Chain speed m/min
- η : Transmission efficiency of drive unit
- kW : Power required
- G : Acceleration of gravity : 9.80665 m/s<sup>2</sup>





## Step 7: Determine Chain Size

Multiply the maximum tension ( $F$ ) applied to a chain by the speed coefficient ( $K$ ) given in Table 5 for a chain that satisfies the following formula:

$$F \times K \leq \text{Max. Allowable Tension}$$

When the maximum allowable tension is insufficient, it can be corrected by using top plates with narrower width and increasing the number of chain strands, or by splitting it into many short conveyors.

**Table 5: Speed Coefficient (K)**

Chain Speed (m/min)	Speed Coefficient (K)
15 or less	1.0
15 to 30	1.2
30 to 50	1.4
50 to 70	1.6
70 to 90	2.2
90 to 110	2.8
110 to 120	3.2

## Lambda Snap Cover Chain

### 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 1.

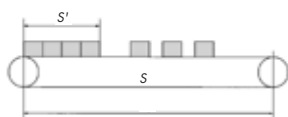
**Table 1: Maximum Allowable Load of Snap Cover**

Unit: kN {kgf}/pitch

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

### Step 2: Calculate Chain Tension

$F$ : Max. tension applied to chain	kN {kgf}
$m1$ : Mass of conveyed objects	kg/m
$m2$ : Chain mass	kg/m
$S$ : Length of conveyance (center distance between sprockets)	m
$S'$ : Length of accumulating section	m
$\mu 1$ : Coefficient of friction between chain and guide rail (carry way)	(Table 2)
$\mu 2$ : Coefficient of friction between chain and guide rail (return way)	(Table 3)
$\mu 3$ : Coefficient of friction between conveyed objects and chain (carry way)	(Table 4)
$P$ : Power required	kW
$V$ : Chain speed m/min	m/min
$K$ : Speed coefficient	(Table 5)
$\eta$ : Transmission efficiency of drive unit	
$G$ : Acceleration of gravity: 9.80665 m/s <sup>2</sup>	



**Table 2: Coefficient of Rolling Friction Between Chain and Guide Rail (Carry Way) ( $\mu 1$ )**

With Lubrication
0.14



**Table 3: Coefficient of Sliding Friction Between Chain (Plastic Cover) and Guide Rail (Return Way) ( $\mu 2$ )**

Plastic Cover Material	Guide Rail Material	
	Stainless Steel, Steel	UHMWPE
Standard Type, Electroconductive Type	0.25	0.25

Note: Without lubrication

**Table 4: Coefficient of Sliding Friction Between Conveyed Goods and Chain (Plastic Cover) ( $\mu 3$ )**

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

Note: Without lubrication

**Table 5: Speed Coefficient (K)**

Chain Speed (m/min)	Speed Coefficient (K)
15 or less	1.0
15 to 30	1.2
30 to 50	1.4
50 to 60	1.6

### SI Units

$$F = \{ (m1 + m2) S \cdot \mu 1 + 1.1m2 \cdot S \cdot \mu 2 + m1 \cdot S' \cdot \mu 3 \} \cdot G / 1000$$

### {Gravimetric Units}

$$F = \{ (m1 + m2) S \cdot \mu 1 + 1.1m2 \cdot S \cdot \mu 2 + m1 \cdot S' \cdot \mu 3 \}$$

### Step 3: Determine Chain Size

Multiply the maximum tension ( $F$ ) applied to a chain by the speed coefficient ( $K$ ) given in Table 5 for a chain that satisfies the following formulas:

One strand of chain:  $F \cdot K \leq \text{Max. Allowable Tension}$

Two strands of chain:  $0.6F \cdot K \leq \text{Max. Allowable Tension}$

### Step 4: Calculate Power Required

#### SI Units

$$P = F \cdot V / (54.5 \cdot \eta)$$

#### {Gravimetric Units}

$$P = F \cdot V / (5565 \cdot \eta)$$

## Heat Resistant Lambda Chain

### 1. Temperature Selection Method for Lube Free Roller Chain

Use the General Selection Method using the kW rating tables.

This selection method allows for a strength reduction due to temperature.

Multiply the kW rating table values by the coefficients below.

Refer to the selection pages of the catalog for more information.

**Table 1: kW Rating Indicators for Lube Free Roller Chain by Temperature**

Temperature	RS40-LMDK to RS80-LMDK
150°C to 200°C	Standard Lambda kW Rating Table Values × 0.75
200°C to 230°C	Standard Lambda kW Rating Table Values × 0.5

**Table 2: Maximum Allowable Load for Lambda Heat Resistant Chain (Reference Values)**

	Max. Allowable Load kN {kgf}	
	Single Strand	Double Strand
RS40-LMDK	3.04 {310}	4.26 {430}
RS50-LMDK	5.39 {550}	7.55 {770}
RS60-LMDK	7.26 {740}	10.2 {1040}
RS80-LMDK	12.7 {1300}	17.8 {1820}

### 2. Temperature Selection Method for Lube Free Small Size Conveyor Chain

This selection method allows for a strength reduction due to temperature.

Multiply the maximum allowable load by the coefficients below.

**Table 3: Maximum Allowable Load Indicators for Lube Free Small Size Conveyor Chain by Temperature**

Temperature	RS40-LMCK to RS80-LMCK, RF2040-LMCK to RF2080-LMCK
150°C to 200°C	Standard Lambda Max. Allowable Load × 0.75
200°C to 230°C	Standard Lambda Max. Allowable Load × 0.5

Note: Use in temperatures above 230°C will reduce wear life considerably. Further, there is a possibility of toxic gases being emitted if used in temperatures exceeding 280°C. Do not use at temperatures above 280°C.

# Chain Handling

## 1. How to Disassemble Lube Free Roller Chain

Roller Chains are generally sold in 1-unit sections (1 unit = 3,048 mm). Configuring chain to a specific length will require disassembling units.

**1.1** Firmly lock the chain in a chain vise. Using a grinder, grind down the ends of the two pins on the outer link (on the same side) until they are level with the link plate. Take care that the grinder does not overheat.

**1.2** Use a dedicated cradle and an RS Roller Chain punch to disassemble the chain. Using a primary punch suitable for the chain size, place the punch on the head of the pin that was ground down and strike with a hammer. Be sure to strike the pins on the outer link alternately to remove them evenly and at the same time. Strike the pins until they are just about to release from the outer plate.

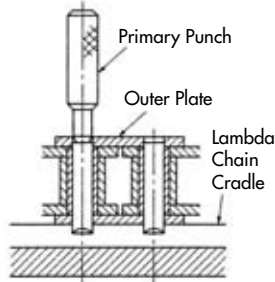


Figure 1: Tapping Pin with Primary Punch

**1.3** Using a secondary punch and a hammer, completely remove the pair of pins from the outer plate. Check that the bush of the removed pins has not come loose from the inner plate. If the bush has come loose, do not continue to use it.

**1.4** When removing the pins, lightly tap them alternately, taking due care not to damage the bush.

### ⚠ Safety Points

1. Use the grinder to grind down only the riveted portion of the pin head. Removing the pin without grinding the riveted head off will require additional time and effort, and may damage the chain.
2. Do not re-use pins and plates removed from the chain.

## 2. How to Disassemble Lube Free Small Size Conveyor Chain

### 2.1 Grinding Riveted Pin

Using a grinder, grind down the ends of the two pins on the outer link (on the attachment side) until they are level with the outer plate. Take care that the grinder does not overheat (see Figures 2 and 3). Particularly in the case of Lambda Chain, work on the chain slowly so that the oil-impregnated bush does not become too hot.

(Grind down the riveted heads of the pins until they are level with the outer plate.)

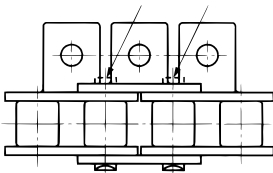


Figure 2: Attachment Chain



Figure 3: Grinding Down Pin Ends

### 2.1 Setting Chain on Vise and Cradle

#### 2.2.1 S Roller (A, SA, EP, GNK1 Attachments)

Place the chain in the jaws of the vise with the attachment side facing up and gently tighten the vise to secure the chain (Figures 4 and 5).



Figure 4: Setting Chain in Chain Vise

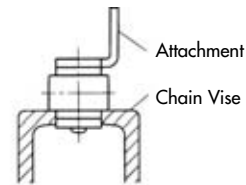


Figure 5: Cross Section of Chain Set in Chain Vise

#### 2.2.2 S Roller (K, SK Attachments), R Roller (K, SK Attachments)

For these types, the chain is set in a cradle (Figure 6-1). Another method, used only for steel S Rollers (Figure 6-2), is to set the pin to be removed on the edge of the chain vise.

Whichever method is used, support blocks should be placed under the chain on either side of the vise to ensure that the chain remains stable (Figure 7).

Any attachment can be disassembled using this method. However more force will be required to remove the pin as mentioned in "2.3 Pin Removal" on the next page.

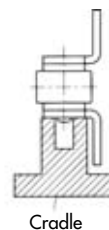


Figure 6-1: Cradle Cross Section

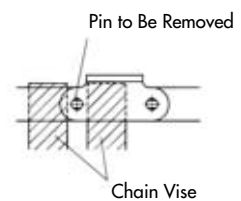


Figure 6-2: Chain Vise Usage

# Chain Handling

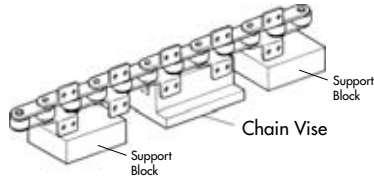


Figure 7: Cradle and Support Blocks

## 2.2.3 R Roller (A, SA, EP Attachments)

Secure the non-attachment side plate of the chain in the vise and support the R Rollers on the vise (Figure 9). Ensure that the chain is supported on both sides of the vise (Figure 8).

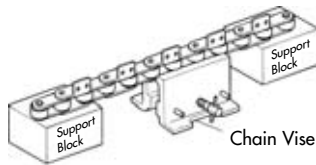


Figure 8: Chain Vise and Support Blocks

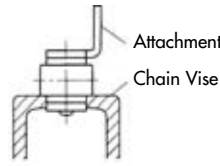


Figure 9: Cross Section of Chain Set in Chain Vise

## 2.3 Pin Removal

1) Using a primary punch suitable for the chain size, place the punch on the head of the pin that was ground down and strike with a hammer. Be sure to strike the pins on the outer link alternately to remove them evenly and at the same time. Strike the pins until they are just about to release from the outer plate (Figure 10).

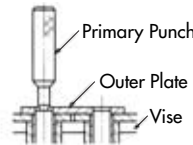


Figure 10: Tapping Pin with Primary Punch

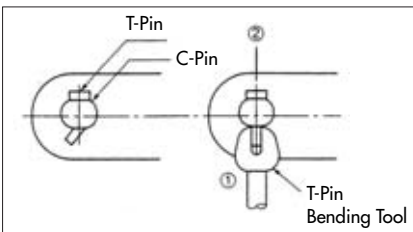
2) Using a secondary punch and a hammer, completely remove the pair of pins from the outer link. Check that the bush of the removed pins has not come loose from the inner plate. If the bush has come loose, do not continue to use it.

## 3. How to Disassemble Large Size Lambda Plastic Roller Conveyor Chain

### 3.1 T-Pin Removal

Using the T-Pin Bending Tool, straighten the T-pin and remove it.

Figure 11: Straightening T-Pin



In the case of small-size chain, a monkey wrench can be used to straighten the pin.

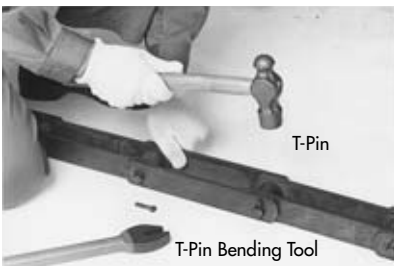


Photo: Straightening and removing T-pins

### 3.2 Alternately Striking C-Pins

1) These instructions are for removing the plate on the T-pin side.  
2) The two C-pins remain inserted in the other outer plate.  
3) As shown in the photo, using a tool to hold and support the inner link, alternately strike the C-pins on the T-pin side with a hammer.

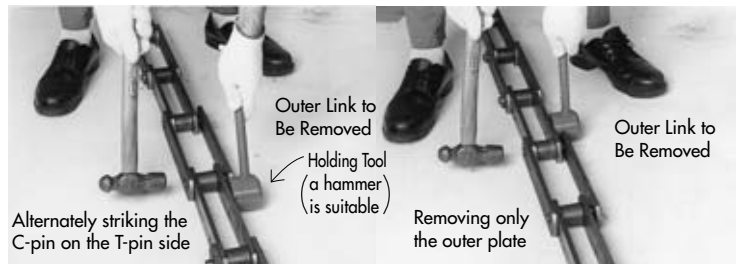
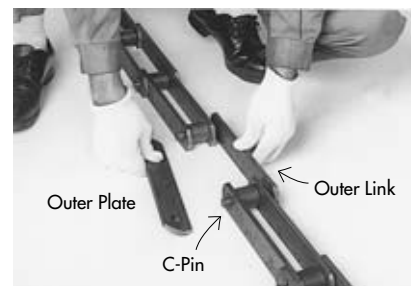


Photo: Striking one pin

Photo: Striking the other pin

### 3.3 Outer Link Removal

Remove the outer plate and the outer link with the two C-pins connected.



Note: The chain in the above photos is not the actual Lambda Plastic Roller Conveyor Chain.  
Caution: When working on the chain, make sure that the plastic rollers suffer no shocks or impact, as these could lead to roller breakage.

### ⚠ Safety Points

- Work on the chain only in conditions where there is no tension on the chain. For any chain set-up, vertical, horizontal or diagonal, the chain must be kept so as to have no tension around the area to be cut (using chain blocks or wire).
- To prevent any problems arising with the chain, do not perform any additional processing on the chain, especially around the plate holes and pins.
- Be sure to wear safety glasses when striking the C-pins with a hammer so as to prevent injury from flying metal fragments.

## 4. How to Disassemble Lambda Outboard Roller Chain

### 4.1 When the Base Chain Roller Is an S Roller

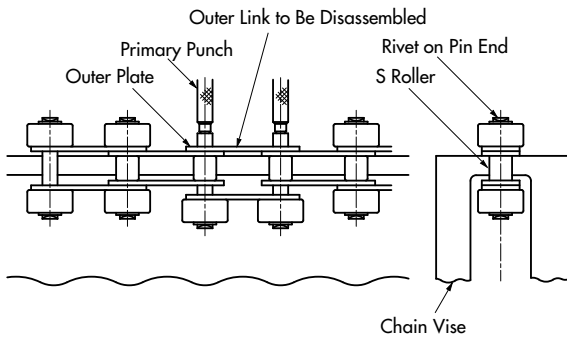


Figure 12: Setting S Roller Chain

- 1) Determine the outer link to be disassembled and mark the link for identification.
- 2) Set the chain on a chain vise (sold separately) as shown in Figure 12 and shear off the rivets on the pin ends (two rivets on one side) using a hand grinder. Take care that the grinder does not overheat.
- 3) Remove the two pins using a pin with a diameter slightly smaller than the pin diameter of the chain (using a Tsubaki Primary Punch or its equivalent). When the pins are pulled out a little, the two outboard rollers on the upper side can be removed. (Figure 12 shows the outboard rollers being removed.)
- 4) Directly tap the pin with a small hammer until the end of the pin reaches the upper face of the outer plate to remove. Tap the two pins alternately to ensure they come off evenly. Use caution not to damage the outboard rollers on the right and left.
- 5) Tap and pull out the two pins using a primary punch until the outer plate on the upper side can be removed.

#### Chain Vise (Optionally Available)

Chain Vise No.	Applicable OR Chain Size (Base Chain Roller: S Type)
RS-CV1	RS40, RF2040S
RS-CV2	RS40 to 60, RF2040S to 2060S

OR: Outboard Roller

### 4.2 When the Base Chain Roller Is an R Roller

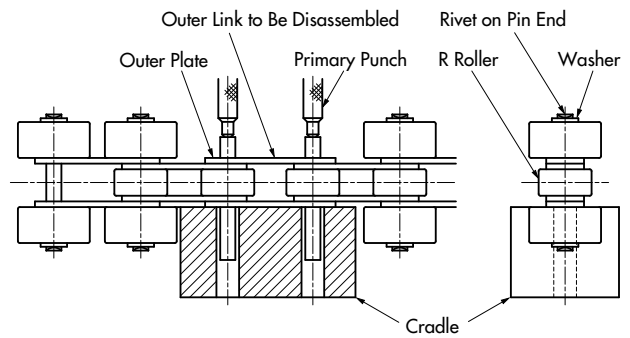


Figure 13: Setting R Roller Chain

- 1) Determine the outer link to be disassembled and mark the link for identification.
- 2) Shear off the rivets on the pin ends (four rivets) using a hand grinder so as to remove the four outboard rollers. In doing so, shear down to the washers with the grinder to remove the washers. Take care that the grinder does not overheat.
- 3) Remove the four outboard rollers. (Receive the outboard roller on the cradle, apply the punch on the pin end face, and tap the pin out until the washer is removed. Follow the same procedure to remove the washers on the other side.)
- 4) Set the chain on the cradle as shown above and remove the two pins by tapping the punch with a hammer. Prepare a cradle yourself as appropriate.
- 5) Follow steps 4) and 5) of 4. 1.
- 6) If outboard rollers are spaced every two or more links, the rivet parts to be sheared off will differ from those shown in the above diagram. (See Figure 14.)

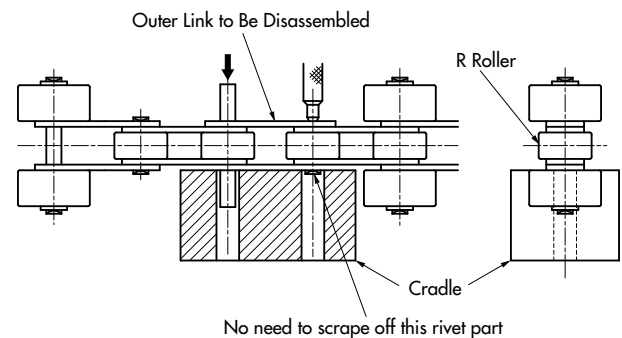


Figure 14: Removing the Pins

## 5. How to Disassemble Lambda Top Roller Chain

- 1) Mark the outer link to be disassembled for identification.

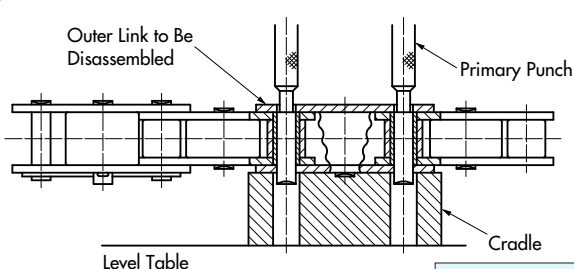
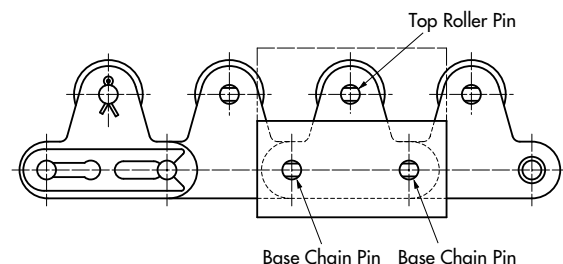


Figure 15: Removing Base Chain Pins



# Chain Handling

- 2) Shear off the rivets on the base chain pin ends and top roller pin ends using a hand grinder or other means (three rivets on one side of the chain). Take care that the grinder does not overheat.
- 3) Turn the chain side that was grounded by the grinder upward and set the chain on a cradle, as shown in Figure 15. Prepare a cradle yourself as appropriate. To remove the three pins including the top roller pin at the same time, prepare a cradle integrating the part shown by the phantom line.
- 4) Tap the primary punch (or its equivalent) with a hammer until the two (three) pins are removed from the outer plate (up to the position shown in Figure 15.)
- 5) Change the setting of the cradle as shown in Figure 16 to remove the top roller pin. (When top rollers are not attached to the outer link, this procedure is not necessary.)
- 6) Remove the top roller pin by repeating step 4).

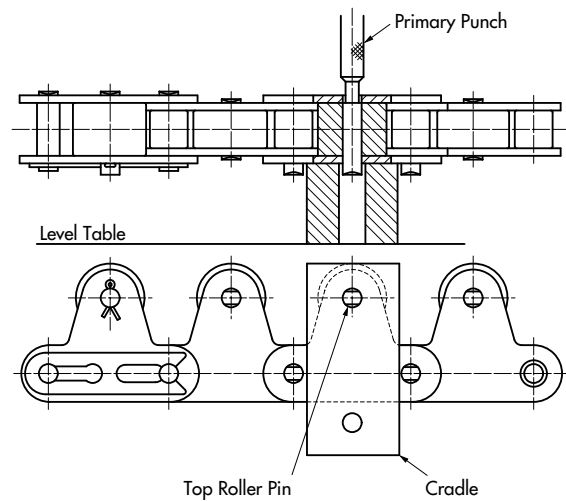


Figure 16: Removing Top Roller Pins

## 6. How to Disassemble Lube Free Top Chain

### 6.1 Lambda TS-P·TS-PA Top Chain

The chain can be disassembled from anywhere on the chain. The pins should be removed from the cotter pin side.

### 6.2 Lambda TN Snap Top Chain

The pin of the connecting link is loosely fitted in the connecting plate. For sections other than the connecting parts, push out the pair of pins parallel to one another by means of a punch and a hammer. (The pins are not riveted.)

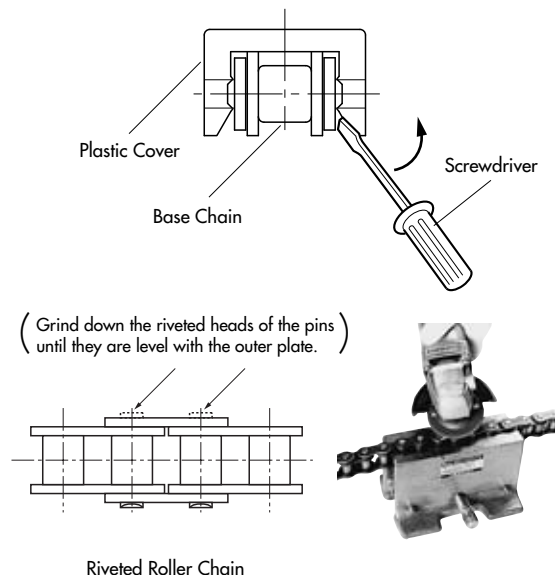
## 7. How to Disassemble Lambda Snap Cover Chain

### 7.1 Detaching and Attaching Plastic Covers

The plastic cover can be detached using a screwdriver. When attaching the plastic cover, attach the cover in the base chain firmly.

### 7.2 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 disassembled. 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.



# Chain Handling

## 8. Tools for Chain Disassembly

### For Use with Roller Chain and Small Size Conveyor Chain

#### 8.1 Cradles for Lambda Roller Chain



Cradle

#### Cradles

Model No.	Applicable Chain
RS-LMD01-AST	RS40-LMD-1
RS-LMD02-AST	RS50-LMD-1
RS-LMD03-AST	RS60-LMD-1
RS-LMD04-AST	RS80-LMD-1
RS-LMD05-AST	RS100-LMD-1
RS-LMD06-AST	RS120-LMD-1
RS-LMD07-AST	RS140-LMD-1

#### 8.3 Chain Vises

The vise that can be used is restricted to certain chains depending on the chain's attachment type and roller type.



CV-1 Type



CV-2 Type

Model No.	Applicable Chain	Dimensions		
		L	H	B
RS-CV1	RS40 to 80, RF2040 to 2080	100	65	94~115
RS-CV2	RS40 to 160, RF2040 to 2160	180	110	120~151

#### 8.2 Punches



Primary Punch



Secondary Punch



Rivet Punch

Model No.		Applicable Chain
Primary Punch	Secondary Punch	
RS-P14	RS-P24	RS40 to 60, RF2040 to 2060
RS-P15	RS-P25	RS80 to 120, RF2080 to 2120
RS-P16	RS-P26	RS140 to 160, RF2160

### For Use with Large Size Conveyor Chain

#### 8.4 T-pin Bending Tools

Made to order.



#### 8.5 Holding Tools



#### Reference

Chain T-Pin Nominal Diameter	Applicable Chain
$\phi$ 3 (2.6) x 15R	RF03
$\phi$ 4 (3.6) x 20R	RF05

Note: Actual diameters are shown in ( ).

Please contact your local Tsubakimoto representative if you wish to purchase any of the above tools.

# Chain Handling

## 9. Installing Curved Lambda Chain

### 9.1 Installing the Guide

Compared to RS Roller Chain, Curved Lambda Chain has a larger play between the pins and bushes, providing a greater degree of freedom. Be sure to install a guide on the chain so that it engages straight onto the sprocket.

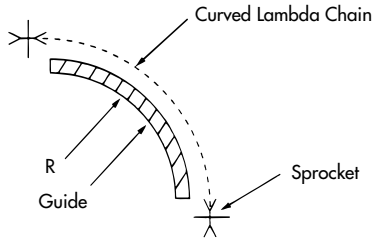


Figure 19: Guide

### 9.2 Minimum Horizontal Bending Radius (r)

Manufacture the guide so that its curve radius is equal to or greater than the minimum horizontal bending radius shown below.

Unit: mm

	Min. Horizontal Bending Radius (r)
RS40-LMC-CU-1	400
RS50-LMC-CU-1	500
RS60-LMC-CU-1	600

## 10. Conveyor Design for Lambda Snap Cover Chain

### 10.1 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.

### 10.2 Chain Slack

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

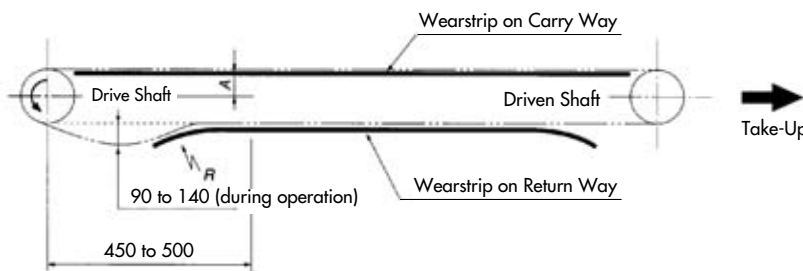


Figure 20: Conveyor Layout

### 10.3 Curve at End of Wearstrip

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

Unit: mm

	RS40-SC	RS50-SC	RS60-SC	RS80-SC	RS100-SC
Min. Back-Flex Radius R	380	480	560	740	880

### 10.4 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.

### 10.5 Sprocket and Wearstrip Location

$A = \text{Sprocket PCD} - \text{roller diameter} / 2$

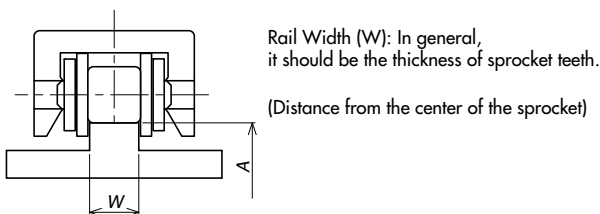


Figure 21: Carry Way

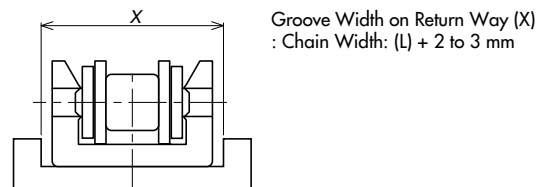


Figure 22: Return Way



## 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.

### 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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