Accessories Chain Tensioners

Model numbering example

◆ TH type

Tensioner main unit **CT - TH1**

Chain tensioner — Tensioner type

Dedicated idler sprocket **RS40 - TH B 15T**

Size — For TH — Specifications (B: Ball bearing, L: Lube-free bushing) — Number of teeth

◆ TCS/ETS/TA type **CT - TCS 40**

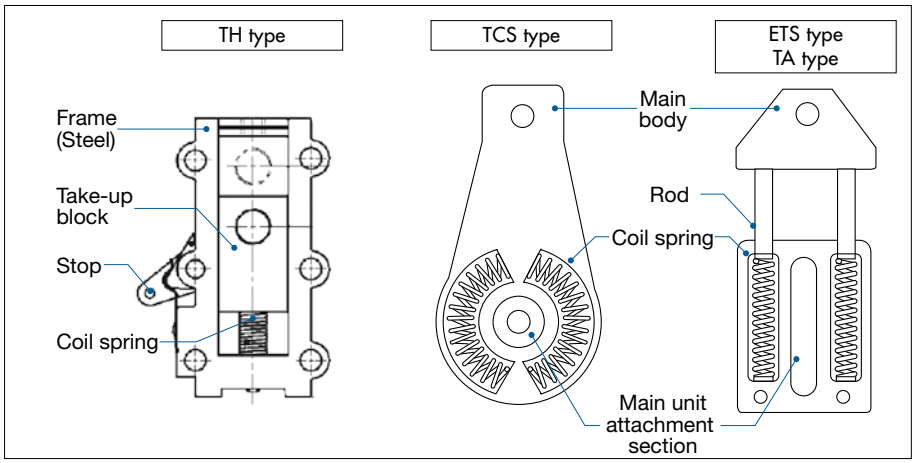
Chain tensioner — Tensioner type — Applicable size
40: RS40-1
50: RS50-1
60: RS60-1
80: RS80-1

Slackness in the chain can cause chain vibration and noise, and improper engagement with the sprocket, as well as preventing the chain from operating properly. The Tsubaki Chain Tensioner adjusts slackness in the chain to enable continuous and proper chain operation. There are four types of Tsubaki Chain Tensioners: Our new TH Type (straight type, with idler sprocket), the TCS Type (swing type, with idler sprocket), the ETS Type (straight type, with idler sprocket), and the TA Type (straight type, with plastic shoe).

Note: Customized models are not available.

Construction

◆ Main unit



The Tsubaki Chain Tensioner is composed of a main unit and an idler sprocket. (The TA Type is a unitized construction with plastic shoe.) The tensioner's main unit employs the elasticity of a built-in coil spring to tension.

◆ Idler sprocket

The idler sprocket is composed of a sprocket with a built-in bearing (TH Type provided with a lube-free bush upon request), an attachment bolt, and a washer. The sprocket teeth undergo induction hardening. TCS and ETS Types are given a black coating, while TH Type is plated.

Product Type

TH type: Straight type, with idler sprocket

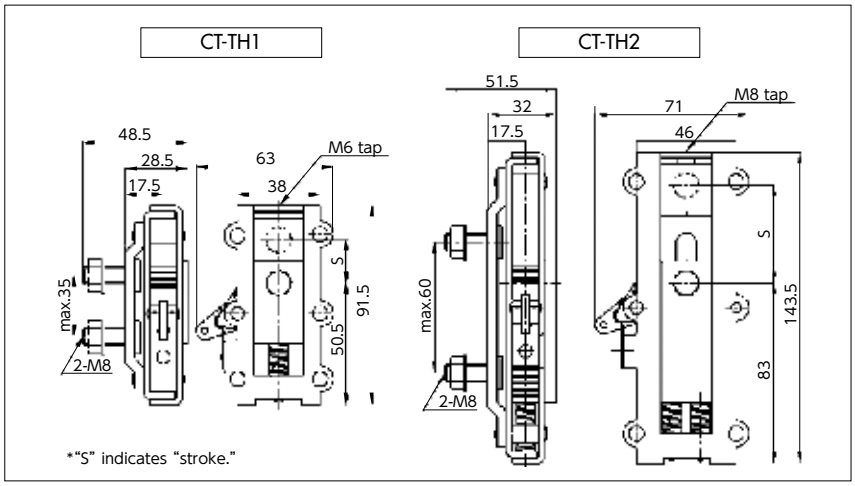
Choose your idler sprocket

Ball bearing type
(Standard type)

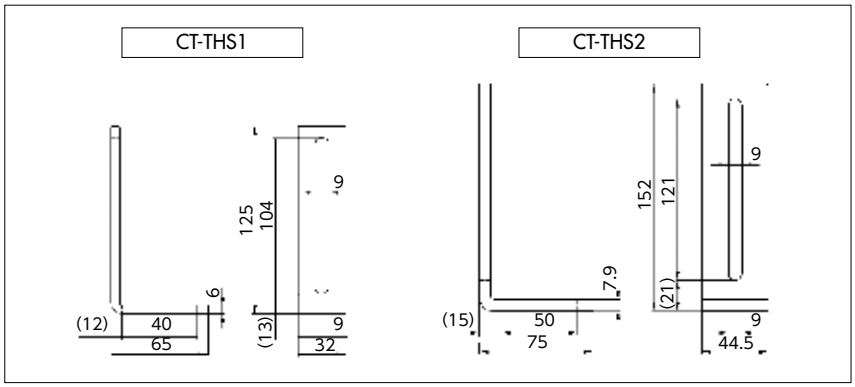
Lube-free bush type
(Optional type)

Unique ratchet and spring construction

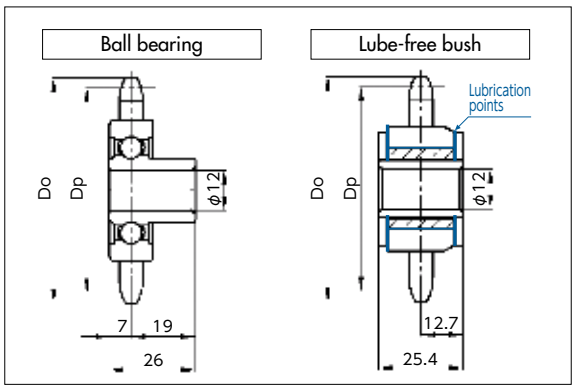
The spring automatically controls chain sag and excessive vibration. The ratchet construction makes installation a snap.



Adapter (fixed washer)



Idler sprocket for TH Series



Applicable chain

CT-TH1: For RS35-1 and RS40-1

CT-TH2: For RS50-1, RS60-1, and RS80-1

TH type main unit attachment bolt

Model number	Applicable size	Sprocket no. of teeth	Sprocket attachment bolt	
			Size	Length
CT-TH1	RS35-1	20	M12	45
	RS40-1	15		
CT-TH2	RS50-1	15	M12	55
	RS60-1	14		
	RS80-1	11		

Note: All models stocked.

Specifications

Model number	Stroke S (mm)	Plunge force (N)	
		Min.	Max.
CT-TH1	25	39.2	117.6
CT-TH2	45	98.0	294.0

Accessories

Each package will contain the following.
Adapter and dedicated idler sprocket are not included.

Contains	Dimensions	CT-TH1	CT-TH2
Hexagonal bolt	M12×45L	1	–
	M12×55L	–	1
Hexagonal screw	M6×35L	1	–
	M8×55L	–	1
Round head screw	M8×23L	2	2
Hex key		1	1
Spacer	Thickness: 3mm	1	3

Model number	Chain tensioner
CT-THS1	CT-TH1
CT-THS2	CT-TH2

Note: All models stocked.

Specifications

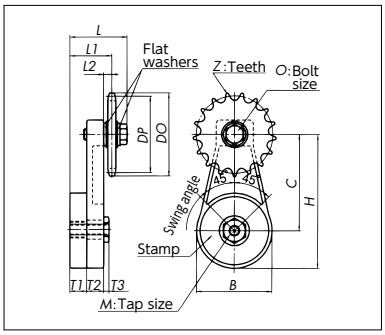
	Model number	Idler no. of teeth	Pitch dia. (Dp)	Outer dia. (Do)	Max. RPM	Allowable bearing load (N)
Ball bearing type	RS35-THB20T	20	60.89	66	3000	3300
	RS40-THB15T	15	61.08	67		
	RS50-THB15T	15	76.35	84		
	RS60-THB14T	14	85.61	95		
	RS80-THB11T	11	90.16	102		
Lube-free bush type	RS35-THL20T	20	60.89	66	2500	343
	RS40-THL15T	15	61.08	67		
	RS50-THL15T	15	76.35	84		
	RS60-THL14T	14	85.61	95		

Note: All models stocked. Thoroughly lubricate sliding areas of lube-free bush type idler sprockets before use.

Accessories Chain Tensioners

Product Type

TCS type: Swing type, with idler sprocket



■ TCS type main unit attachment bolt

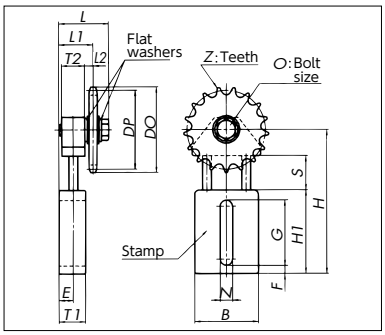
Model number	Sprocket no. of teeth	Sprocket mounting bolt				Flat washer		Tensioner mounting bolt
		Size	Length	Strength classification	Quantity	Nominal	Quantity	
CT-TCS40	17	M10	30	10.9	1	10	2	M10
CT-TCS50	15	M10	30	10.9	1	10	2	M10
CT-TCS60	13	M12	35	10.9	1	12	2	M12
CT-TCS80	11	M12	35	10.9	1	12	4	M12

Note: 1. Only the CT-TCS80 has two washers installed on each side.
2. The swing angle of CT-TCS60 and CT-TCS80 is 30°.
3. Tensioner mounting bolt not included with tensioner.
4. Operating temperature: –10°C to 100°C

Model number	Applicable chain	B	C	H	M	T1	T2	T3	Z	DP	DO	O	L	L1	L2	Plunge force kN{kgf}	Approx. mass kg/unit
CT-TCS40	RS40-1	69	86.5	121	M10	15.5	15.5	5	17	69.12	76	M10	50.5	37.5	6.5	0{0} to 0.15{15}	0.74
CT-TCS50	RS50-1	69	86.5	121	M10	15.5	15.5	5	15	76.35	84	M10	50.5	37.5	6.5	0{0} to 0.15{15}	0.82
CT-TCS60	RS60-1	90	100	145	M12	18	18	7	13	79.60	89	M12	60.5	44.5	8.5	0{0} to 0.39{40}	1.30
CT-TCS80	RS80-1	90	100	145	M12	18	18	7	11	90.16	102	M12	65.5	47	11	0{0} to 0.39{40}	1.52

Note: All models stocked.

ETS type: Straight type, with idler sprocket



■ ETS type main unit attachment bolt

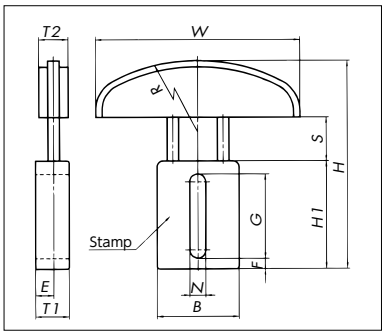
Model number	Sprocket no. of teeth	Sprocket mounting bolt				Flat washer		Tensioner mounting bolt
		Size	Length	Strength classification	Quantity	Nominal	Quantity	
CT-ETS40	17	M10	35	10.9	1	10	2	M10
CT-ETS50	15	M10	35	10.9	1	10	2	M10
CT-ETS60	13	M12	45	10.9	1	12	2	M12
CT-ETS80	11	M12	45	10.9	1	12	4	M12

Note: 1. Only the CT-ETS80 has two washers installed on each side.
2. Tensioner mounting bolt not included with tensioner.
3. Lubricate the rod section regularly.
4. Operating temperature: –10°C to 100°C

Model number	Applicable chain	S	H	H1	F	G	B	N	T1	T2	E	Z	DP	DO	O	L	L1	L2	Plunge force kN{kgf}	Approx. mass kg/unit
CT-ETS40	RS40-1	30	129	74	7	58	56.2	11	23	20	12.5	17	69.12	76	M10	42	29	6.5	0.10{10} to 0.25{25}	0.60
CT-ETS50	RS50-1	30	129	74	7	58	56.2	11	23	20	12.5	15	76.35	84	M10	42	29	6.5	0.10{10} to 0.25{25}	0.69
CT-ETS60	RS60-1	38	163	87	9	70	70.5	12.5	28	25	15	13	79.60	89	M12	52	36	8.5	0.15{15} to 0.39{40}	1.15
CT-ETS80	RS80-1	38	163	87	9	70	70.5	12.5	28	25	15	11	90.16	102	M12	57	38.5	11	0.15{15} to 0.39{40}	1.37

Note: All models stocked.

TA type: Straight type, with plastic shoe



■ TA type main unit attachment bolt

Model number	Main unit attachment bolt	Model number	Main unit attachment bolt
CT-TA40	M10	CT-TA60	M12
CT-TA50	M12	CT-TA80	M14

Note: 1. Tensioner mounting bolt not included with tensioner.
2. Lubricate the rod section regularly.
3. Operating temperature: –10°C to 60°C

Model number	Applicable chain	S	H	H1	F	G	B	N	T1	E	W	R	T2	Plunge force kN{kgf}	Approx. mass kg/unit
CT-TA40	RS40-1/ RS08B-1	30	143	74	7	58	56.2	11	23	12.5	140	120	20	0.10{10} to 0.25{25}	0.39
CT-TA50	RS50-1/ RS10B-1	38	164	87	9	70	70.5	12.5	28	15	140	140	22	0.15{15} to 0.39{40}	0.65
CT-TA60	RS60-1/ RS12B-1	38	164	87	9	70	70.5	12.5	28	15	140	140	22	0.15{15} to 0.39{40}	0.65
CT-TA80	RS80-1/ RS16B-1	44	187	104	9	86	82	14.5	33	17.5	140	160	25	0.29{30} to 0.59{60}	0.99

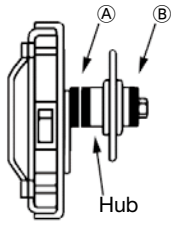
Note: All models stocked.

Note: Always install chain tensioners on the roller chain sag side. Tensioners cannot be installed on the tension side or used when the chain is run backwards.

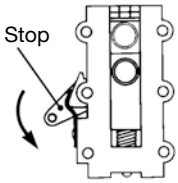
Installation

◆ Attaching the TH type tensioner

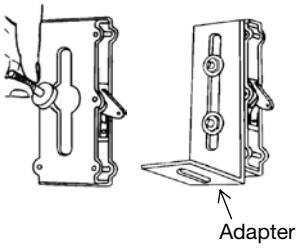
1. Always insert the spacer where indicated (positions A & B) as shown to the right when installing the idler sprocket on the tensioner. (Failure to insert the spacer will result in tensioner contact with the roller chain. See the table below.)
   Attach the hub so that it faces the tensioner when installing ball bearing type idler sprockets. When attaching on the opposite side, install the number of spacers indicated in parentheses in the table below.



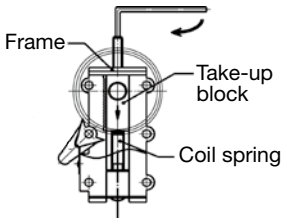
2. The tensioner stop should be positioned facing down (spring facing down) as per the figure on the right.



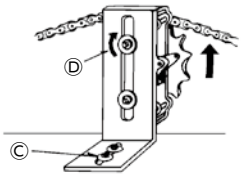
3. Once the round head bolts are attached to the tensioner as shown, attach the adapter and tighten the nuts just until snug.



4. Attach a hexagonal screw to the tap hole on the end of the tensioner. Use the hex key to tighten the screw, and push the take-up block down as far as possible.
   (Caution: Failure to perform action "2." above will prevent the take-up block from being pushed down.)



5. Once the drive and driven sprockets have been aligned, fix the adapter to the attachment area using a commercially available mounting bolt ("C" in figure).



6. Once the chain is engaging the sprocket, tighten the adapter mounting nuts ("D" in figure). Next, after inverting the tensioner stop as shown by the arrow in the figure above, removing the hexagonal screw will activate the spring. Installation is now complete. Check the condition of the roller chain sag and the installation itself.

■ Number of spacers

Idler sprocket		Number of spacers	
Type	Model number	"A" side in figure	"B" side in figure
Ball bearing	RS35-THB20T	0 (1)	1 (0)
	RS40-THB15T	0	1
	RS50-THB15T	0 (3)	3 (0)
	RS60-THB14T	0	3
	RS80-THB11T	2	1
Lube-free bush	RS35-THL20T	0	1
	RS40-THL15T	1	0
	RS50-THL15T	2	1
	RS60-THL14T	3	0

■ Attachment bolt locking torque

(Unit: N·m {kgf·m})

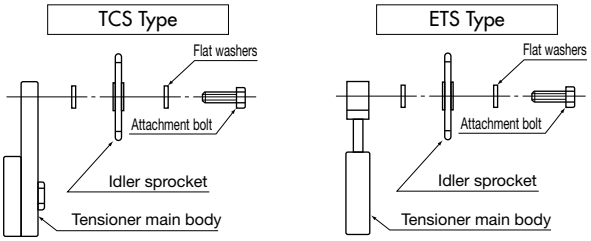
	Idler sprocket attachment bolt	Tensioner attachment bolt
CT-TH-1	40 {4.0}	12{1.2}
CT-TH-2	40 {4.0}	12{1.2}

Note: Always install chain tensioners on the roller chain sag side. Tensioners cannot be installed on the tension side or used when the chain is run backwards.

Installation

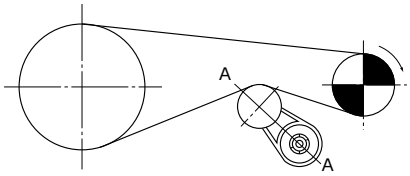
◆ TCS and ETS type assembly

Remove the main unit of the TCS or ETS type tensioner, the idler sprocket, attachment bolt and washers from their packaging, and assemble them as shown in the diagram on the right. The plastic shoe for the TA type comes as part of the main unit and no assembly is required.
One flat washer should be installed on each side of the idler sprocket. However, the CT-TCS80 and CT-ETS80 should have two washers installed on each side. The idler sprocket attachment bolt and flat washers are included with the idler sprocket.

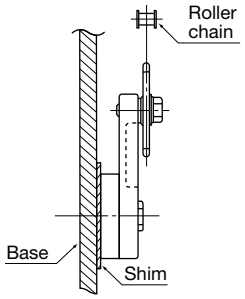


◆ Attaching the TCS type tensioner

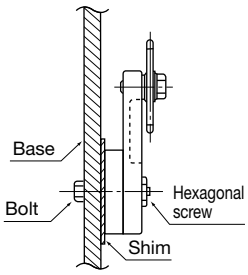
1. Attach the roller chain to the drive and driven sprockets.
2. In order to attach the tensioner to the slack side of the roller chain as shown in the figure below, first push in on the roller chain with the idler sprocket and determine the attachment position (bolt hole) for the tensioner.



3. Then, within a range where the roller chain does not contact the tensioner unit, ensure the force of the roller chain moves as perpendicular as possible to the A-A line. (Tensioner is a swing type unit.)
4. Adjust with a shim, as shown to the right, so that the center of the roller chain and idler sprocket are aligned.



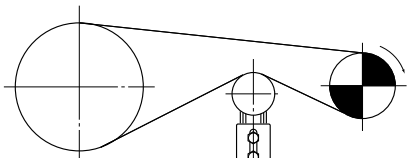
5. Open a hole in the base that holds the tensioner. (A slotted hole is convenient.)
6. Push in on the chain with the tensioner and temporarily tighten the tensioner to the base with a bolt. (Right figure) Then tighten the hexagonal screw and anchor so that the swing angle is about 15°.



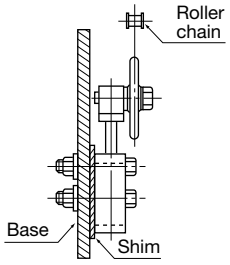
7. Perform a test operation and check whether the tensioner works properly. If any of the following occurs, reset the tensioner.
   - **Contacts the side of the idler sprocket: Not centered properly**
   - **Vertical or traverse vibration: Insufficient initial tension**
   - **Increased noise: Excessive initial tension**

◆ Attaching the ETS and TA type tensioners

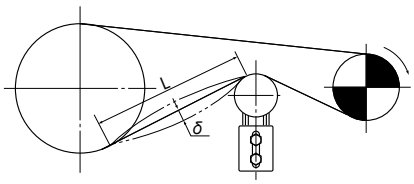
1. Push in on the roller chain with the tensioner's idler sprocket (see figure below) and determine the position of the hole on the attachment base.
   Note: Cannot be used for horizontal drive configurations where shafts are perpendicular to the floor.



2. Open a hole in the attachment base. In this case, two bolt holes are required, but a hole that is as long as possible will make positioning simpler, and the re-tensioning operation will be easier when the chain elongates.
3. Temporarily tighten the tensioner with two bolts. At this time, adjust with a shim, etc., so that the center of the idler sprocket and roller chain are aligned. (Right figure)



4. Push in on the chain with the tensioner and, if the amount of slack is appropriate (δ), tighten the nut and anchor the tensioner. Aim for a value less than $\delta = 0.02 \times L$. (Figure below)



5. Perform a test operation and check whether the tensioner works properly. If any of the following occurs, reset the tensioner.
   - **Contacts the side of the idler sprocket: Not centered properly**
   - **Vertical or traverse vibration: Insufficient initial tension**
   - **Increased noise: Excessive initial tension**

■ Attachment bolt locking torque

(Unit: N·m {kgf·m})

	Idler sprocket attachment bolt	Tensioner attachment bolt
CT-TCS40,50	20 {2.0}	40 {4.0}
CT-TCS60,80	30 {3.0}	50 {5.0}
CT-ETS40,50	30 {3.0}	30 {3.0}
CT-ETS60,80	40 {4.0}	40 {4.0}
CT-TA40	–	30 {3.0}
CT-TA50,60	–	40 {4.0}
CT-TA80	–	50 {5.0}

Note: Always install chain tensioners on the roller chain sag side. Tensioners cannot be installed on the tension side or used when the chain is run backwards.

Innovation in Motion

TSUBAKI

MASA JAYA

PT. MASA JAYA PERKASA

info@masajayaperkasa.com

Jl. Hayam Wuruk No. 76,
Jakarta Barat,DKI Jakarta 11160

(+62)21-649-6496

(+62)852-1116-7713