Innovation in Motion
TSUBAKI



CLEANVEYOR



FLATVEYOR

TSUBAKI Cable Carriers

(CABLEVEYOR)

Clean Series

ver.2



FLATVEYOR
ZP Type

R40 New

Brackets New

Cable Carrier
TKR Series



TSUBAKI ECO LINK

Clean & Long-Life



CLEANVEYOR



FLATVEYOR

	CLEANVEYOR	FLATVEYOR
Ideal for	Areas above the workpiece where you want to reduce particle generation the most. Tsubaki's lowest particle generating model.	Areas above the workpiece where you want to reduce particle generation. Suitable for mass production machines with built-in cables.
Cleanliness level*1	ISO class 1	ISO class 1
Price	●●●●	●●●
Structure	Support member + cable/tube + pod	Support member + cable/tube welded
Cable/tube insertion and handling	Cables are delivered preassembled	Cables are delivered preassembled
Max. cable/tube diameter*2	ϕ10	ϕ16
Max. travel length*2	2,800 mm	2,800 mm
Max. speed	2 m/sec	2 m/sec
Max. acceleration	4G	4G
Bending radius*3	R40/70/100/130	R40/70/100/130
Operating temperature range	-10 to 80℃	-10 to 80℃
Noise level	🔊	🔊
Customizable*4	Made to order	Made to order

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Note: *1. Obtained ISO Class 1 in a test based on ISO 14644-1 "Classification of Air Cleanliness" conducted by the Fraunhofer Institute for Manufacturing Engineering and Automation IPA in Germany.
- CLEANVEYOR(CV-2025-0032)
- FLATVEYOR (FV-2025-0049)
- FLATVEYOR ZP Type(R130)
- TKR20H28

The optimal solution to cable/tube particle generation and disconnection



FLATVEYOR ZP Type

Areas above the workpiece where you want to reduce particle generation. Openable tubes allow for the retrofitting or changing of cables in case of sudden design changes.

ISO class 1

Support member + openable tube

Openable tubes allow for the retrofitting of cables

ϕ11

1,800 mm

2 m/sec

2G

R40/70/100/130

-10 to 60℃

Multilayered, wide width

Page 5



Cable Carrier TKR Series

Areas where you want to reduce particle generation during general-purpose use. Protects large-capacity cables from long travel lengths.

ISO class 1

Bending structure that utilizes plastic deflection

Openable arms allow for the retrofitting of cables

ϕ47

5,940 mm

5 m/sec

2G

R40/50/55/75/95/100/125/150/200

-40 to 80℃

Dry environment type

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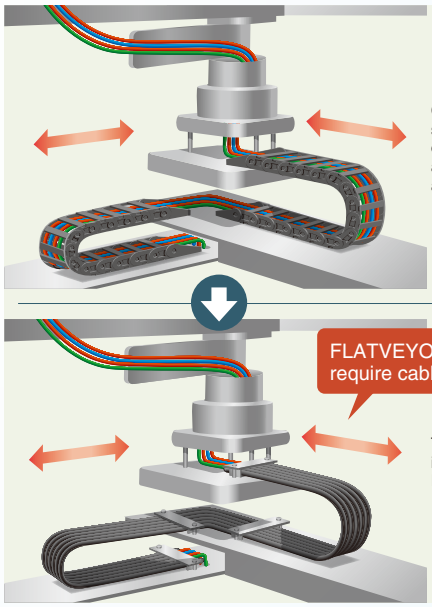
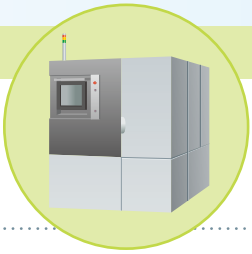
*2. Load properties vary by series. Please refer to each product page for details.
*3. This refers to the bending radius of the support member for CLEANVEYOR, FLATVEYOR, and FLATVEYOR ZP Type, but for the cable carrier TKR Series, this refers to the bending radius of the main unit.
*4. Contact a Tsubaki representative for details.

Application examples

Create an environment with the risk of disconnection



Semiconductor industry



Semiconductor manufacturing equipment

Issue

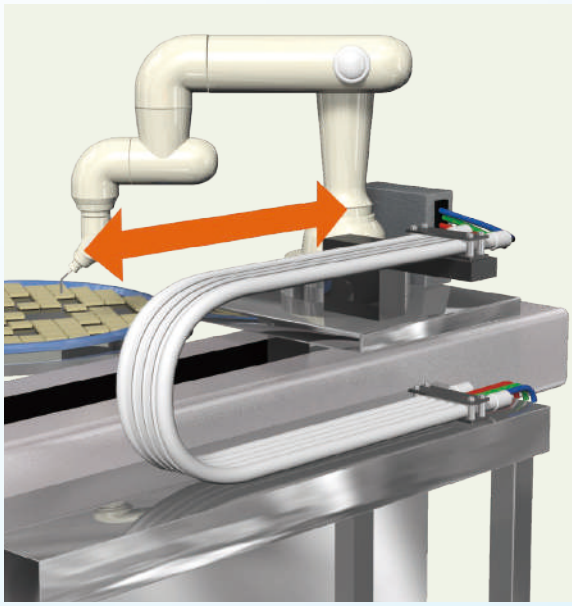
Other company's cable/hose carrier system was used in the past. When replacing the system, it was necessary to create a clean environment with little particle generation.

Proposed product FLATVEYOR

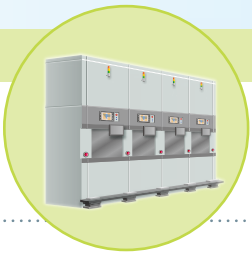
Solution

An integrated structure in which the cable/tube and tube for the support member are welded in a flat shape:

- Creates an environment with less particle generation
- Reduces assembly man-hours by shortening installation time



Semiconductor industry



Wafer manufacturing equipment

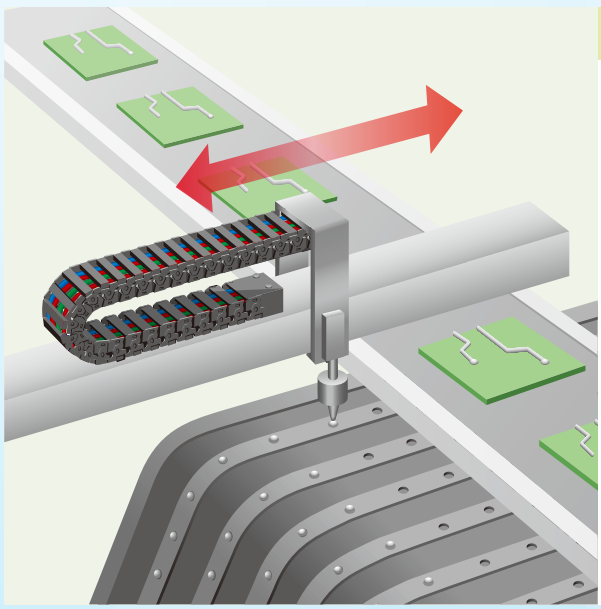
Issue

Need to prevent cable cover entanglement.

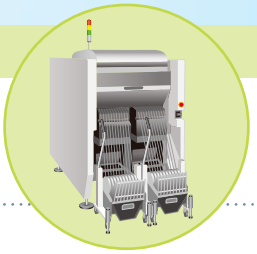
Proposed product FLATVEYOR ZP Type

Solution

- Soft tubes are safe even if your hands come into contact with them
- Reduces man-hours and cost for cable carrier cover installation
- Reduces man-hours for cable insertion and replacement



Electronic component industry



Chip mounter

Issue

This device has a mechanism in which the head part moves above the products, and the cable and cable carrier move following the head part. If wear particles scattered and adhered to the products, they could become defective. It was thus necessary to take measures against particle generation.

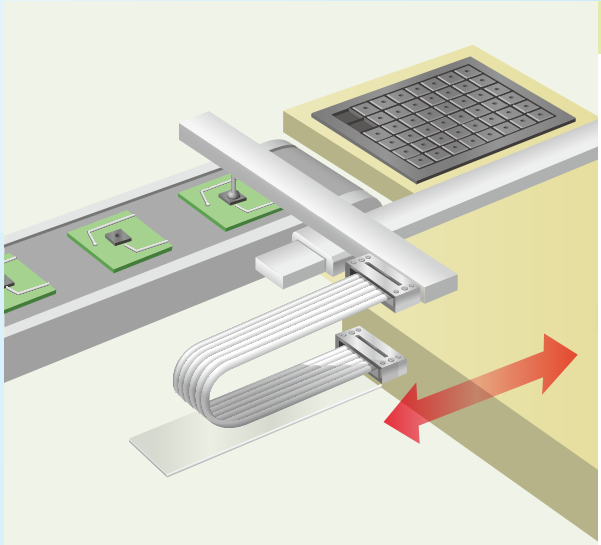
Proposed product TKR Series

Solution

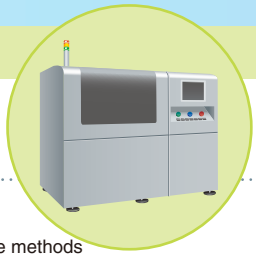
Particle generation is suppressed by a unique bending mechanism that uses plastic deflection:

- Reduces defective products and improves yield rate

less particle generation and reduce



Semiconductor industry



Bonder

Issue

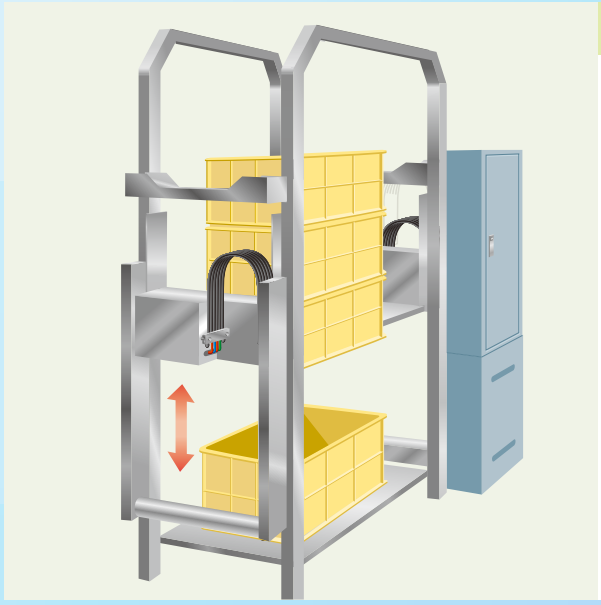
Examined the protection and support guidance methods for cables to be wired to the moving parts of the chip transport device. In response to the growing needs for a clean environment, it was necessary to prioritize measures against particle generation and design equipment with highly reliable product quality.

Proposed product CLEANVEYOR

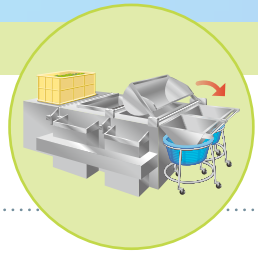
Solution

An integrated type with cable, tube, and support member built into a fluoroplastic pod:

- Suppresses particle generation and improves reliability of production equipment quality
- Reduces installation man-hours



Food industry



Container stacking (unloading) device

Issue

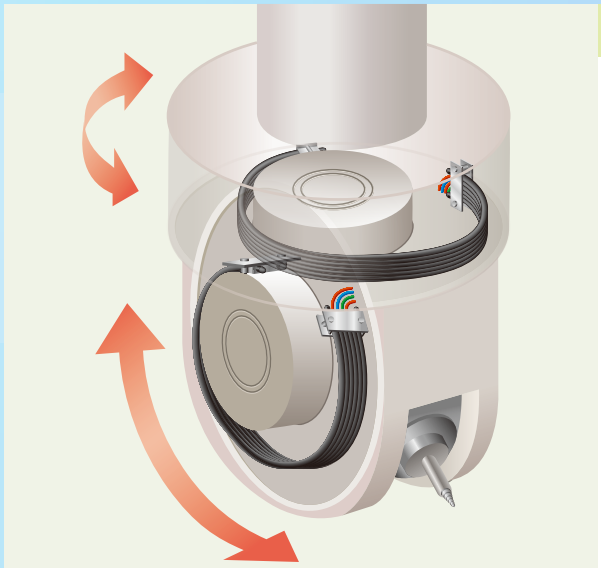
Equipment used for food processing need measures against foreign matter such as falling parts and wear particles. In addition, the production line is cleaned every time the production item is switched. It was necessary to design a device with minimum gaps to make it easier to clean and prevent residue retention, thus maintaining a clean condition.

Proposed product FLATVEYOR

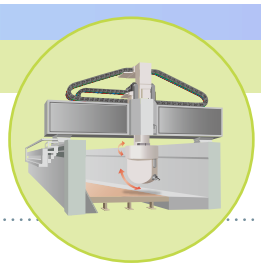
Solution

An integrated structure in which the cable/tube and tube for the support member are welded in a flat shape:

- Reduces the risk of foreign matter getting mixed
- Easy to maintain cleanliness



Machine tool industry



Machining center

Issue

The large machining center has a head that turns horizontally and vertically. Previously, a cable carrier was used to protect the cable inside the head. In developing next-generation models, we aimed to differentiate ourselves from competitors by improving equipment capacity by designing a compact head.

Proposed product FLATVEYOR

Solution

An integrated structure in which the cable/tube and tube for the support member are welded in a flat shape:

- Compact head
- High-speed machining is achieved by reducing inertia

FLATVEYOR

FLATVEYOR ZP Type

TSUBAKI ECO LINK

Patented

Clean Class
ISO class 1*1

Freestanding flat cable system with an openable structure

- Cables and tubes can be easily inserted and replaced
- Helps to improve yield by reducing the generation of wear particles from cables, tubes, and support members

Clean Class — ISO class 1 *1

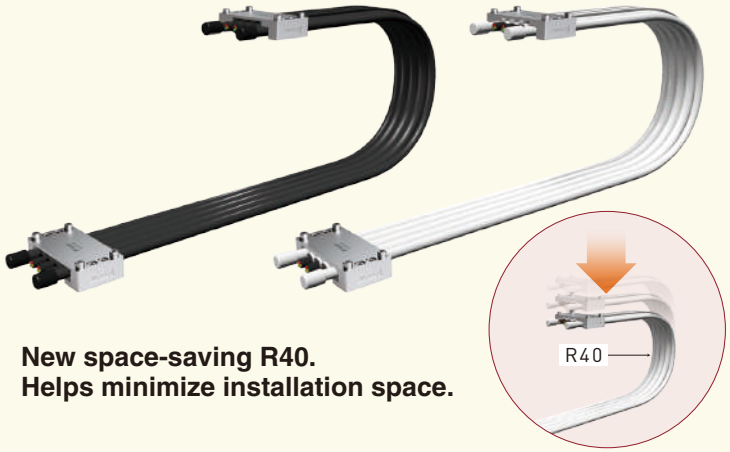
Noise Level — 30dB(A) or less *2



Note: *1. The FLATVEYOR ZP Type(R130) is obtained ISO Class 1 in a test based on ISO 14644-1 "Classification of Air Cleanliness" conducted by the Fraunhofer Institute for Manufacturing Engineering and Automation IPA in Germany.
*2. In-house test results (velocity: 50 m/min, noise measurement distance: 500 mm)

IPA Cleanroom (atmospheric) valid until January 30, 2031
Fraunhofer TESTED® DEVICE
Tsubakimoto Chain Co.
FLATVEYOR ZP Type (R130)
Report No. TS 2511-1693

New! R40



New space-saving R40.
Helps minimize installation space.

New! Brackets



Standardized mounting brackets.
Easy installation and simple design reduce man-hours.

Uses Tsubaki's originally designed openable tube

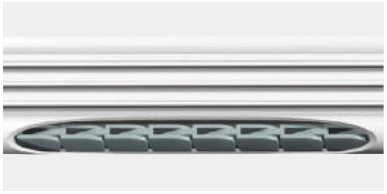
Tsubaki has developed an original openable tube that features excellent flexibility, durability, and slidability. The locking part is easy to open and close and has a zipper structure that does not open during operation.





Low particle generation and low noise

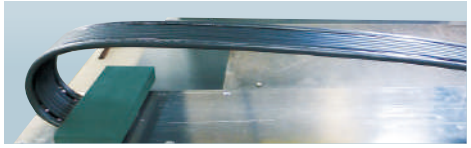
Reduces the scattering of wear particles generated by stored cables and support members.An original short pitch structure and the sound insulation effect of the integrated tubes reduce noise.



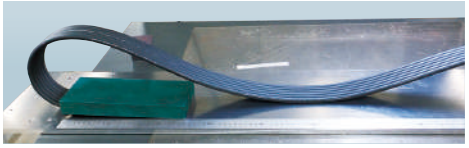
Freestanding function added

The support member reduces sag in the unsupported length section and allows the cable/tube to stand on its own. It also suppresses bouncing during operation.

Sag comparison

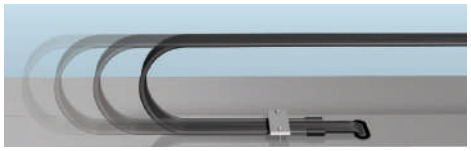


FLATVEYOR (Tsubaki)

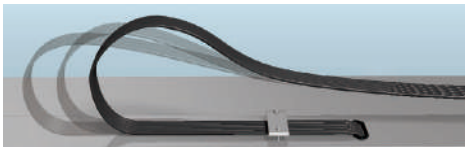


Flat cable (competitor)

Bounce comparison

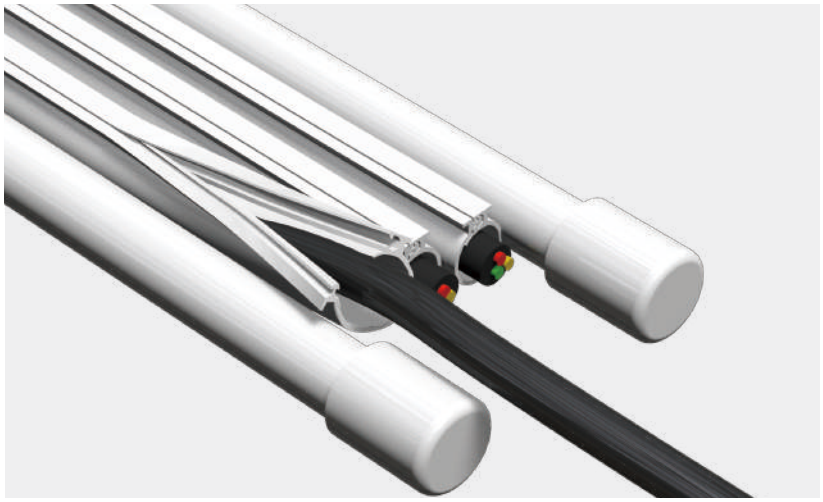


FLATVEYOR (Tsubaki)



Flat cable (competitor)

Cables and tubes can be inserted and replaced

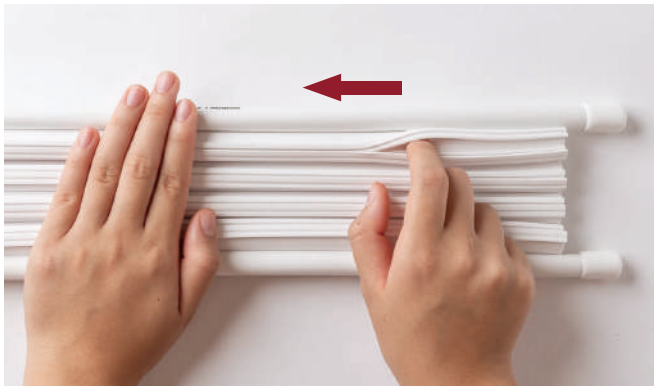


Cables and tubes can be inserted and replaced by opening and closing the locking part.

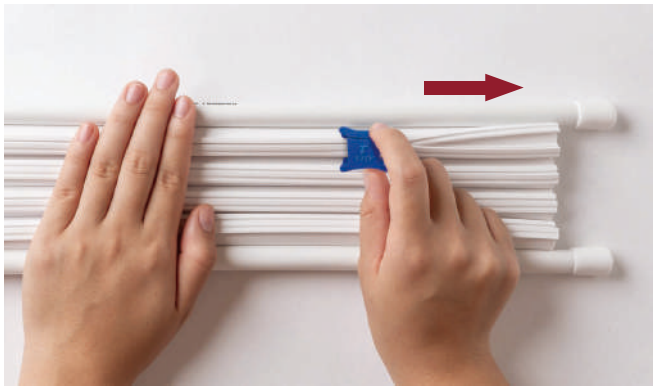
- **Easy to change cable and tube designs**
- **Unlike flat cables, which require all cables to be replaced, you only need to replace the broken ones, which contributes to the SDGs**

Easy insertion and removal of cables and tubes

No screwdriver or hammer is needed to open and close the openable tube.

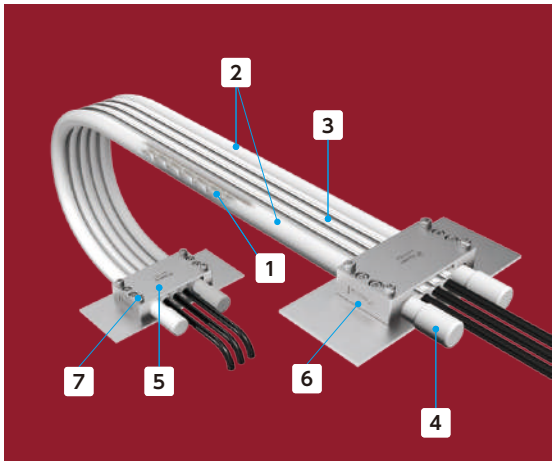


Easy to open by hand



Easy to close using the original closing tool (also closable by hand)

Structure



Main unit

Part name	1 Support member	2 Support member tube
Function	This supports the cable/tube and reduces sag. Like cable carriers, it also maintains the bending radius. This is integrated in support member tubes and assembled on both sides.	This tube stores the support member. Integrated support member structure reduces generation of wear particles.
Material	Engineering plastic	PVC

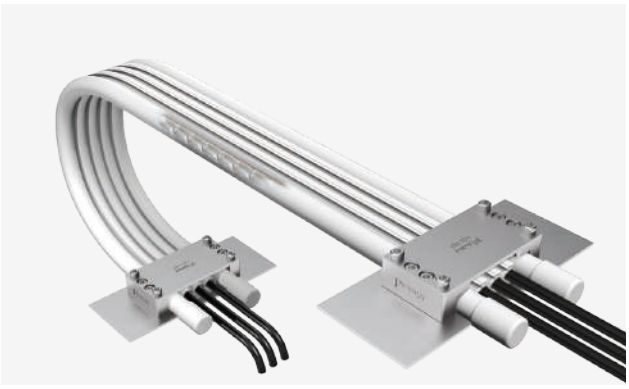
Reduces labor for insertion



Openable tubes create independent insertion spaces.

• No need to divide cables and tubes

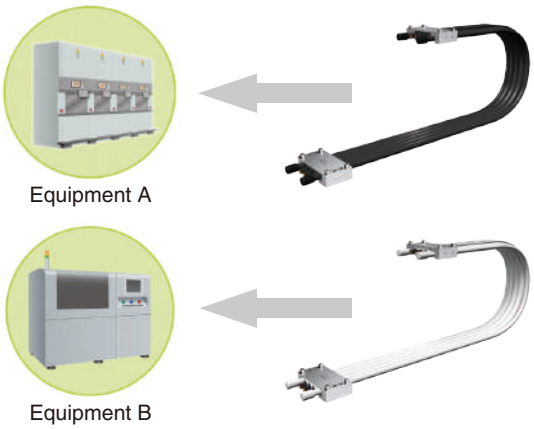
Improved yield



Excellent slidability and sealed structure provide ISO class 2 cleanliness.

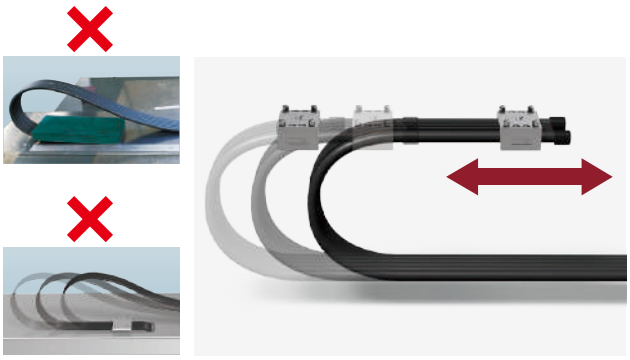
• Effective for particle generation control (low particle generation)

Selectable colors



Black or white can be selected to match the equipment and operating environment.

Prevents equipment stoppage risks



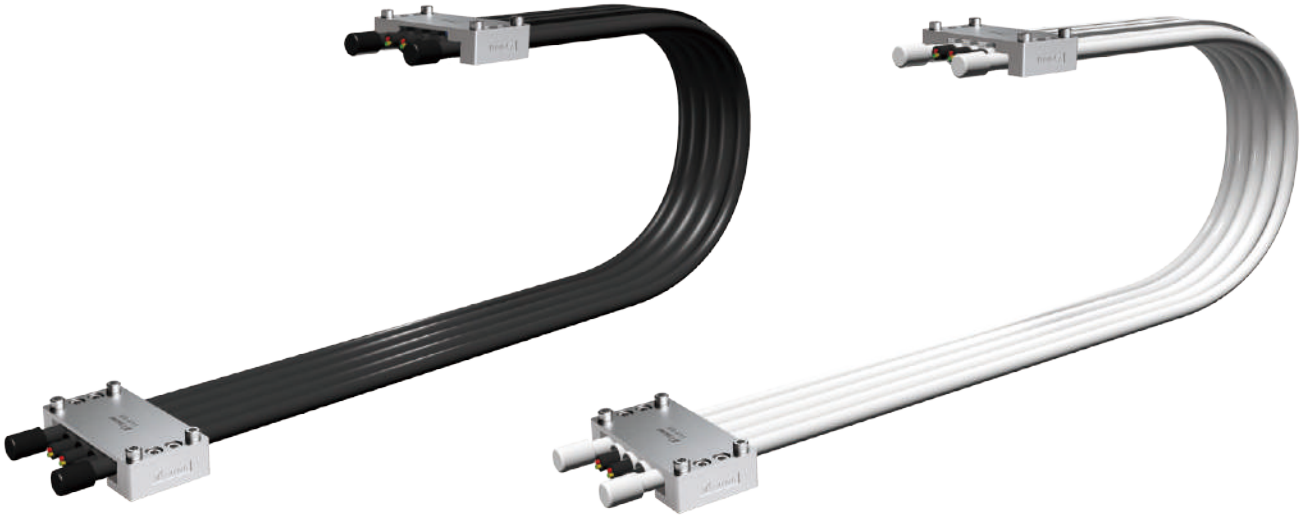
Maintaining the bending radius supports and guides the cables/tubes to keep to the track.

• Reduced risk of failed cable

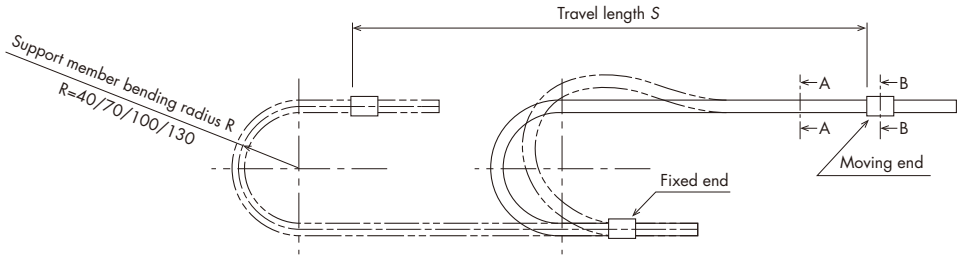
Bracket New

3 Openable tube	4 Cap	5 Plate	6 L-block*	7 Plate fixing bolts
This tube stores a cable or tube. Up to eight tubes can be selected. Each openable tube is welded together.	This prevents the support member from slipping out. It is welded to both ends of the support member tube.	This plate secures the support member. It also serves to prevent the openable tubes from unintentionally opening.	This block fixes the support member in place.	These bolts fix the plate to the L-block.
PVC	PVC	Stainless steel	Aluminum	Stainless steel

*You can also request alumite or other special surface treatments for the L-block. Contact a Tsubaki representative for details.



Basic specifications

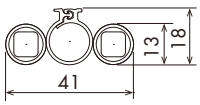


Support member bending radius*1 R mm	Support member pitch P mm	Max. travel length*2 S mm	Max. number of openable tubes in sequence	Max. travel speed m/s	Max. acceleration G	Operating temperature range ℃	Max. cable/ tube outer diameter mm
40 New	17	1200	5	2	2	–10 to 60	11 or less
70	20	1600	8				
100	26	1800					
130	26	1800					

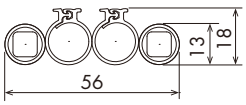
*1. The elasticity of the cable/tube inside the openable tube may cause the bending radius of FLATVEYOR to be larger than the support member bending radius. Because the characteristics will vary by manufacturer, contact your cable/tube manufacturer for further information.
*2. The maximum travel length varies depending on the weight of the cable/tube to be inserted in the openable tube. For details, refer to the load diagrams on pages 14–16.

Cross-section dimensions (Basic specification: A-A arrow view)

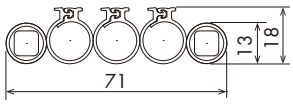
1 openable tube



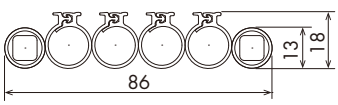
2 openable tubes



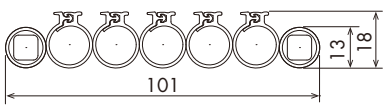
3 openable tubes



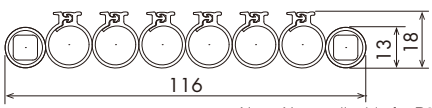
4 openable tubes



5 openable tubes

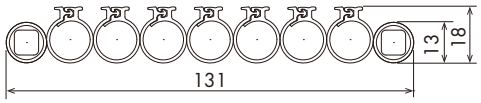


6 openable tubes



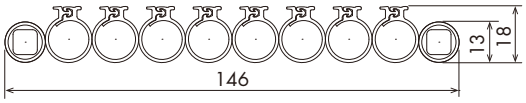
Note: Not applicable for R040.

7 openable tubes



Note: Not applicable for R040.

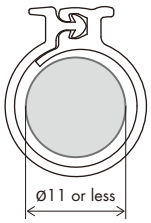
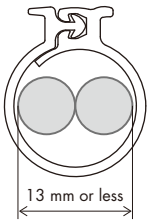
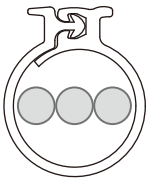
8 openable tubes



Note: Not applicable for R040.

Number of cables and tubes to be inserted and recommended materials

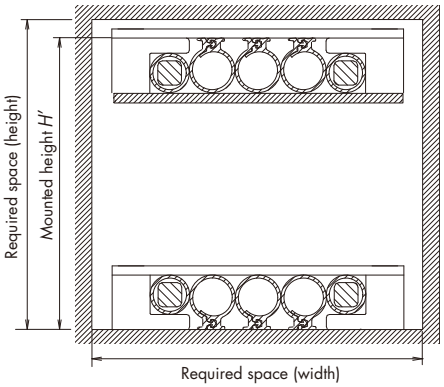
Refer to the table below for the number of insertable cables and tubes.
The materials in the following table are recommended for the cables and tubes. Contact a Tsubaki representative if you want to use materials other than those recommended.

Insertable quantity		
1	2*1*2	3*2
		
	13 mm or less in width when placed side by side	Outer diameter of each cable/tube is 4 mm or less

Type	Recommended material
Cable (jacket)	Low-friction smooth PVC
Tube	Low-friction smooth PUR (polyurethane)

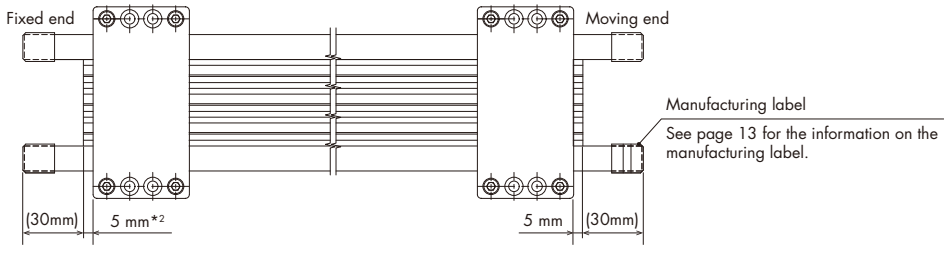
Note:
*1. The difference in outer diameters of adjacent cables/tubes should be 5 mm or less.
*2. Passing over and entanglement of cables/tubes may lead to premature breakage. We recommend that each cable or tube be inserted in a single openable tube.
3. When the outer diameter of a cable/tube is 6 mm or larger, the bending section may bulge significantly due to the elasticity of the cable/tube when using a support member with a bending radius of R40. Therefore, we recommend using a radius of R70 or larger.

Installation dimensions

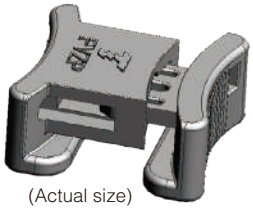


Openable tube quantity	Required space (width)*1 mm	Required space (height) mm	Mounted height H' mm			
			Support member bending radius			
			R040	R070	R100	R130
1	146	Mounted height + 100	133 to 153	223 to 243	283 to 303	343 to 363
2	166					
3	186					
4	206					
5	226					
6	246		—			
7	266					
8	286					

*1. Openable tubes and support member tubes are deformed into an oval shape at bends and other sections, resulting in dimensional changes in the width direction (approx. 5 mm per openable tube).
*2. The fixing position of the bracket should be 5 mm from the end face of the shortest openable tube.



Closing tool



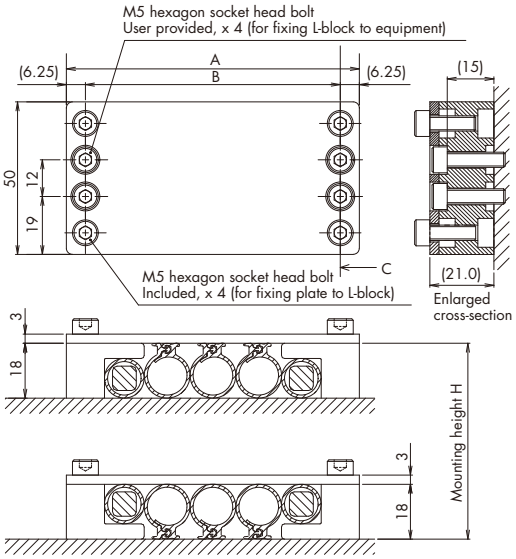
(Actual size)

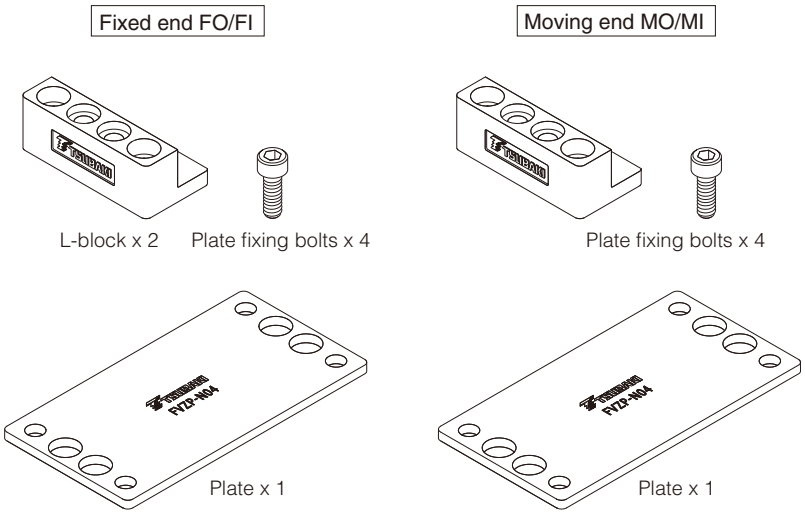
Model number
FVZP-D13-SL

Note: The closing tool is not supplied with the product. Please order it separately.

Bracket dimensions (Basic specification: B-B arrow view) and components

The bolts for attaching the bracket to the equipment are not included. Please procure them separately.





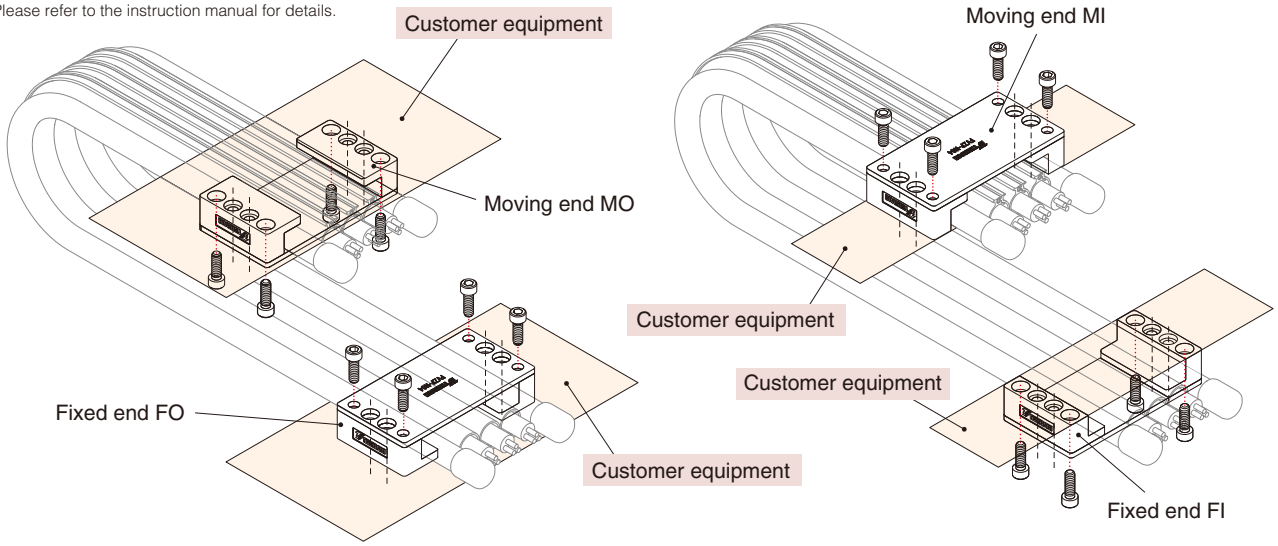
Openable tube quantity	A mm	B mm	Number of plates		Number of L-blocks		Number of plate fixing bolts		Bracket mass g	
			Fixed end FO/FI	Moving end MO/MI	Fixed end FO/FI	Moving end MO/MI	Fixed end FO/FI	Moving end MO/MI	Fixed end FO/FI	Moving end MO/MI
1	66	53.5	1	1	2	2	4	4	158	158
2	81	68.5							176	176
3	96	83.5							193	193
4	111	98.5							211	211
5	126	113.5							229	229
6	141	128.5							247	247
7	156	143.5							265	265
8	171	158.5							283	283

Note: 1. The bolts for attaching the bracket to the equipment are not included. Please procure them separately. We recommend M5 bolts that are L15 or longer, depending on your equipment. You will need a total of 8 bolts for both the fixed and moving ends.
2. Number for each FLATVEYOR ZP Type.
3. The same bracket components can be used for the fixed ends FO and FI and the moving ends MO and MI.
4. The brackets do not come assembled since all components are bundled together with the FLATVEYOR ZP Type main unit.

Bracket mounting instructions

Clamp the support member tubes together with the built-in support member by using L-blocks and a plate and attach it to your equipment. See below for mounting instructions and model numbers for the fixed and moving ends.

Note: Please refer to the instruction manual for details.



FLATVEYOR ZP type model numbering example

FVZP 20 D13 N06 SM2 R070 C1 + 42L - FO - MO
(1) (2) (3) (4) (5) (6) (7) (8) (9)

(1)	Product series code	FLATVEYOR ZP Type
(2)	Support member pitch	Pitch per link*1
(3)	Openable tube inner diameter	Inner diameter of the openable tube
(4)	Openable tube quantity	Number of openable tubes • Up to eight tubes can be selected • This number is expressed by two digits (N01 to N08)
(5)	Support member quantity	Number of support members as a standard quantity • SM2 only
(6)	Support member bending radius	Bending radius of the support member • Dimensions are expressed by three digits (R040, R070, R100, R130)
(7)	Color	Color for the FLATVEYOR ZP Type • C1: black; C3: white
(8)	Support member link quantity	Number of links per support member*2
(9)	Bracket	Brackets for attaching the FLATVEYOR ZP Type to customer equipment • Listed in order from fixed end to moving end (fixed end FO/FI; moving end MO/MI) See page 11 for details.

*1. Specified by the support member bending radius.
*2. Calculated on page 18.

Product lineup

Black



Openable tube quantity \ Support member bending radius	40 mm	70 mm	100 mm	130 mm
1	FVZP17D13N01SM2R040C1	FVZP20D13N01SM2R070C1	FVZP26D13N01SM2R100C1	FVZP26D13N01SM2R130C1
2	FVZP17D13N02SM2R040C1	FVZP20D13N02SM2R070C1	FVZP26D13N02SM2R100C1	FVZP26D13N02SM2R130C1
3	FVZP17D13N03SM2R040C1	FVZP20D13N03SM2R070C1	FVZP26D13N03SM2R100C1	FVZP26D13N03SM2R130C1
4	FVZP17D13N04SM2R040C1	FVZP20D13N04SM2R070C1	FVZP26D13N04SM2R100C1	FVZP26D13N04SM2R130C1
5	FVZP17D13N05SM2R040C1	FVZP20D13N05SM2R070C1	FVZP26D13N05SM2R100C1	FVZP26D13N05SM2R130C1
6	–	FVZP20D13N06SM2R070C1	FVZP26D13N06SM2R100C1	FVZP26D13N06SM2R130C1
7	–	FVZP20D13N07SM2R070C1	FVZP26D13N07SM2R100C1	FVZP26D13N07SM2R130C1
8	–	FVZP20D13N08SM2R070C1	FVZP26D13N08SM2R100C1	FVZP26D13N08SM2R130C1

White



Openable tube quantity \ Support member bending radius	40 mm	70 mm	100 mm	130 mm
1	FVZP17D13N01SM2R040C3	FVZP20D13N01SM2R070C3	FVZP26D13N01SM2R100C3	FVZP26D13N01SM2R130C3
2	FVZP17D13N02SM2R040C3	FVZP20D13N02SM2R070C3	FVZP26D13N02SM2R100C3	FVZP26D13N02SM2R130C3
3	FVZP17D13N03SM2R040C3	FVZP20D13N03SM2R070C3	FVZP26D13N03SM2R100C3	FVZP26D13N03SM2R130C3
4	FVZP17D13N04SM2R040C3	FVZP20D13N04SM2R070C3	FVZP26D13N04SM2R100C3	FVZP26D13N04SM2R130C3
5	FVZP17D13N05SM2R040C3	FVZP20D13N05SM2R070C3	FVZP26D13N05SM2R100C3	FVZP26D13N05SM2R130C3
6	–	FVZP20D13N06SM2R070C3	FVZP26D13N06SM2R100C3	FVZP26D13N06SM2R130C3
7	–	FVZP20D13N07SM2R070C3	FVZP26D13N07SM2R100C3	FVZP26D13N07SM2R130C3
8	–	FVZP20D13N08SM2R070C3	FVZP26D13N08SM2R100C3	FVZP26D13N08SM2R130C3

Bracket model numbers

Brackets can also be ordered separately.

Openable tube quantity	Model number	
	Fixed end	Moving end
1	FVZP-D13N01-FO	FVZP-D13N01-MO
	FVZP-D13N01-FI	FVZP-D13N01-MI
2	FVZP-D13N02-FO	FVZP-D13N02-MO
	FVZP-D13N02-FI	FVZP-D13N02-MI
3	FVZP-D13N03-FO	FVZP-D13N03-MO
	FVZP-D13N03-FI	FVZP-D13N03-MI
4	FVZP-D13N04-FO	FVZP-D13N04-MO
	FVZP-D13N04-FI	FVZP-D13N04-MI
5	FVZP-D13N05-FO	FVZP-D13N05-MO
	FVZP-D13N05-FI	FVZP-D13N05-MI
6	FVZP-D13N06-FO	FVZP-D13N06-MO
	FVZP-D13N06-FI	FVZP-D13N06-MI
7	FVZP-D13N07-FO	FVZP-D13N07-MO
	FVZP-D13N07-FI	FVZP-D13N07-MI
8	FVZP-D13N08-FO	FVZP-D13N08-MO
	FVZP-D13N08-FI	FVZP-D13N08-MI

Accessory model number

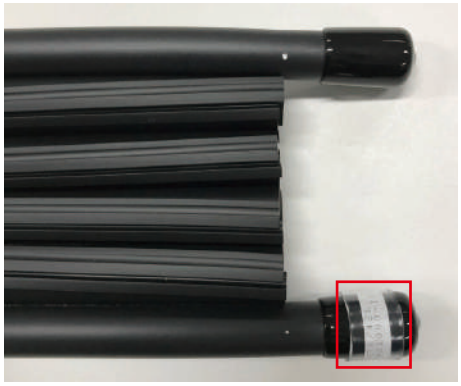
Product name	Model number
Closing tool	FVZP-D13-SL

Ordering example

When ordering two FVZP20D13N06SM2R070C1+42L-FO-MO and one closing tool.

	Model number	Quantity	Unit
Main unit	FVZP20D13N06SM2R070C1+42L-FO-MO	2	H
Closing tool	FVZP-D13-SL	1	K

Manufacturing label information



Manufacturing label layout

Support member bending radius/Number of links
Tsubaki manufacturing number

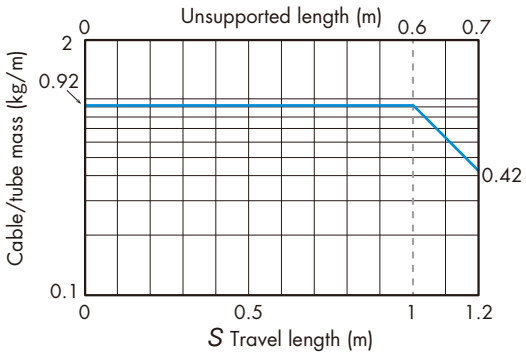
Manufacturing label example

R070/50L
WTA2N015-15

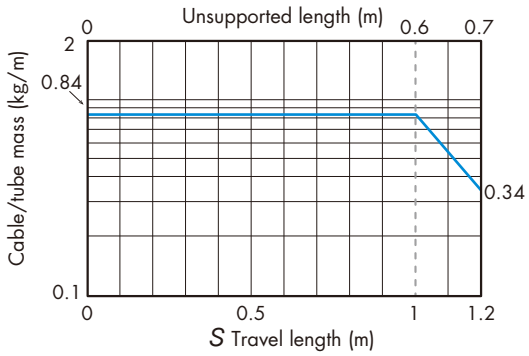
The load diagrams for each support member bending radius are classified by the number of openable tubes.

Support member bending radius 40 mm (R040)

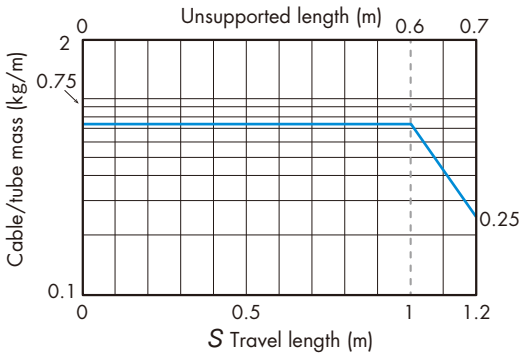
1 openable tube



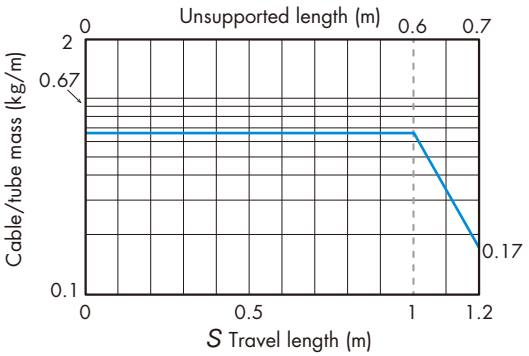
2 openable tubes



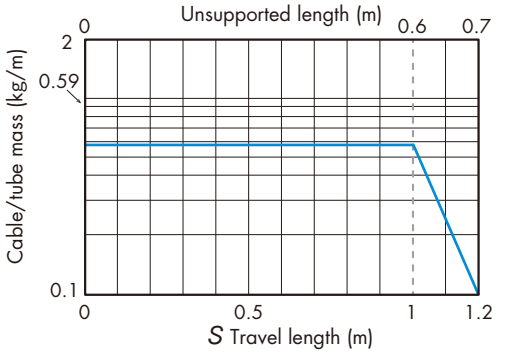
3 openable tubes



4 openable tubes



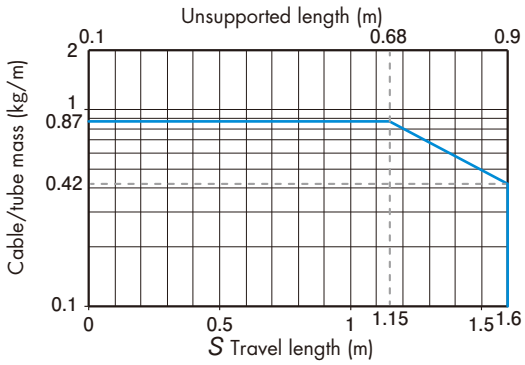
5 openable tubes



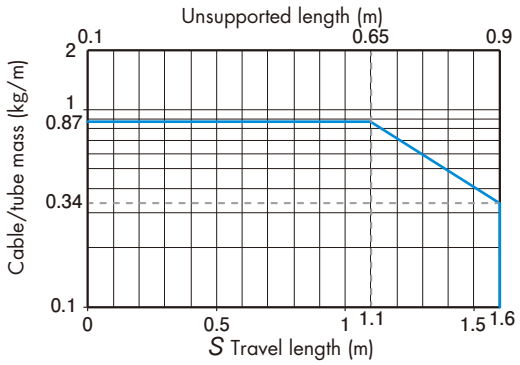
The load diagrams for each support member bending radius are classified by the number of openable tubes.

Support member bending radius 70 mm (R070)

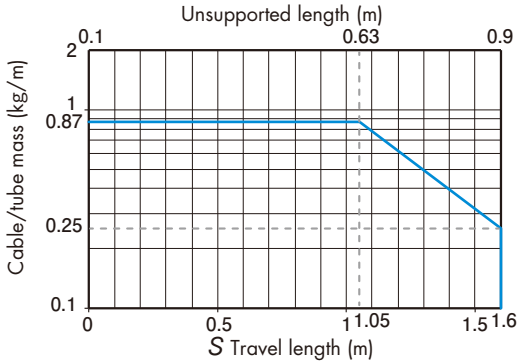
1 openable tube



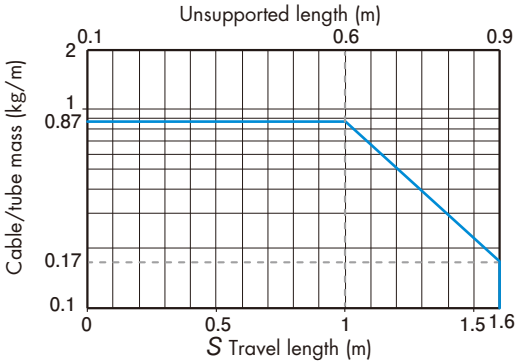
2 openable tubes



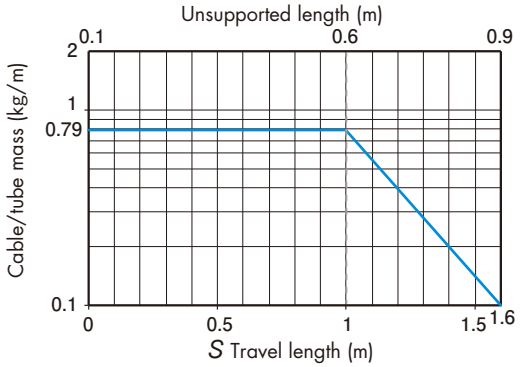
3 openable tubes



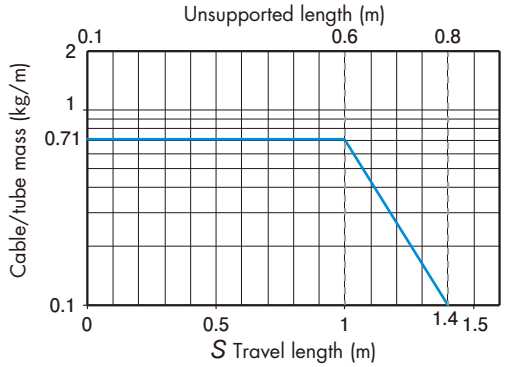
4 openable tubes



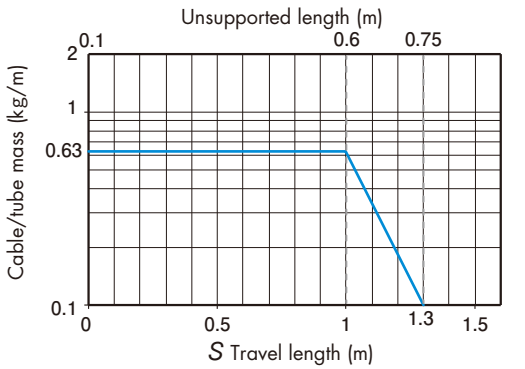
5 openable tubes



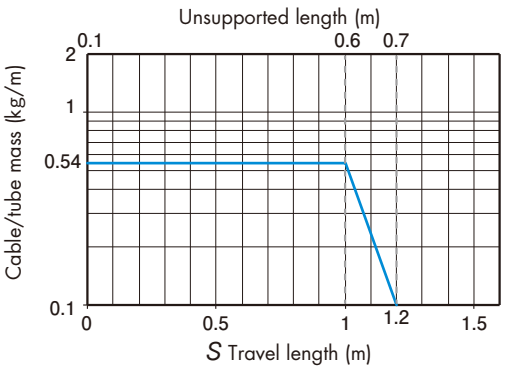
6 openable tubes



7 openable tubes



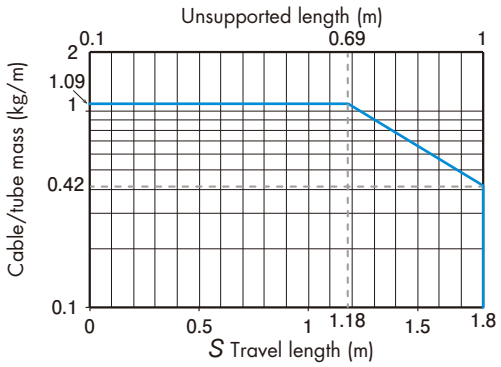
8 openable tubes



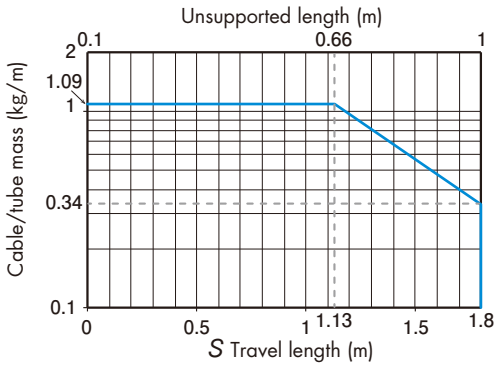
Support member bending radius 100 mm (R100) / 130 mm (R130)

The same load diagrams are used for 100 mm (R100) and 130 mm (R130).

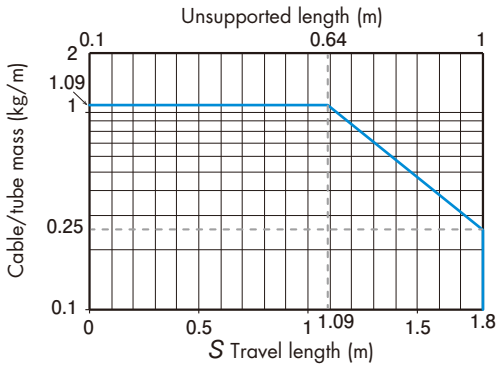
1 openable tube



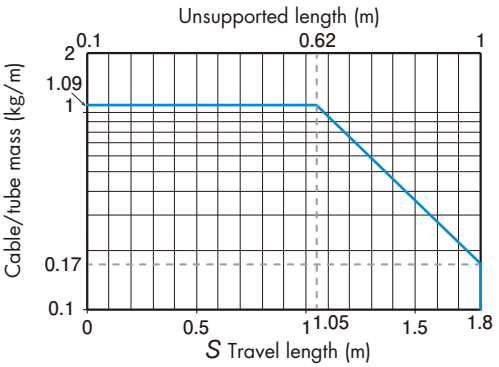
2 openable tubes



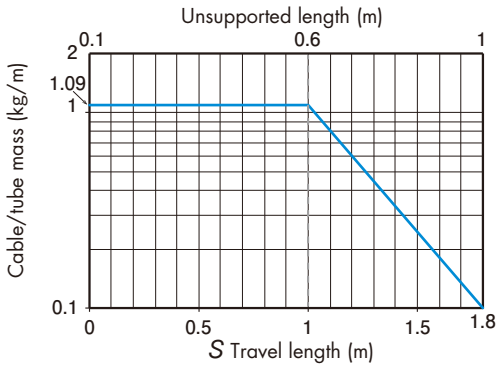
3 openable tubes



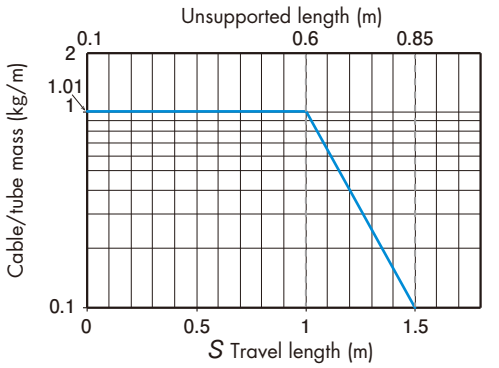
4 openable tubes



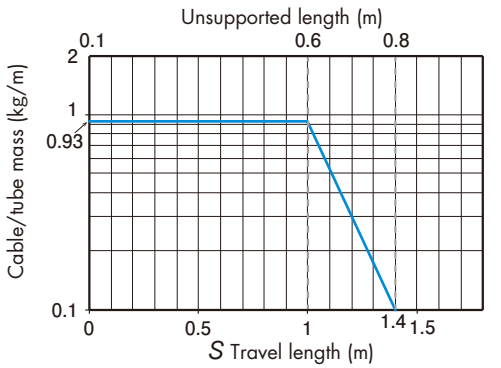
5 openable tubes



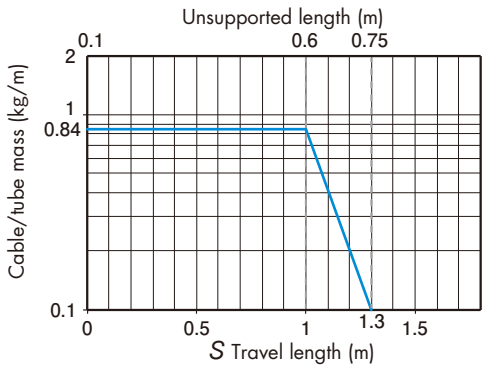
6 openable tubes



7 openable tubes



8 openable tubes



Selection

1 Determine required number of openable tubes and required space (width) dimensions

Determine the cable/tube arrangement and required number of openable tubes. After they have been determined, check the required space (width).

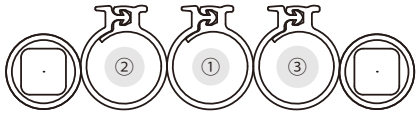
Reference

Page	Item
10	Number of cables and tubes to be inserted and recommended materials
10	Installation dimensions

Example

Insertable cables

No.	Cable outer diameter mm	With/ without shield	Quantity	Mass kg/m
①	6.6	Shielded	1	0.052
②	7.1	Shielded	1	0.070
③	7.2	Shielded	1	0.073



Required number of openable tubes
3

Required space (width)
186 mm

2 Determine support member bending radius

Determine the support member bending radius based on the allowable bending radius of the cable/tube to be inserted.

Reference

Page	Item
9	Basic specifications

Allowable bending radius of cable/tube

Check the allowable bending radius recommended by the cable/tube manufacturer (for repeated bending).

Refer to the following guideline.
Cable with shield = Max. cable outer diameter × 8
Cable without shield = Max. cable outer diameter × 6
Tube = Max. tube outer diameter × 9

Determine support member bending radius

Select a support member bending radius greater than the allowable bending radius of the cable/tube.

Allowable bending radius of cable/tube ≤ Support member bending radius

Example

Insertable cables

No.	Cable outer diameter mm	With/ without shield	Quantity	Mass kg/m
①	6.6	Shielded	1	0.052
②	7.1	Shielded	1	0.070
③	7.2	Shielded	1	0.073

Cable/tube allowable bending radius =7.2 × 8
=57.6 mm

Select a support member bending radius greater than 57.6 mm.

Support member bending radius
R070

Note: When the outer diameter of a cable/tube is 6 mm or larger, the bending section may bulge significantly due to the elasticity of the cable/tube. Therefore, we recommend using a bending radius of R70 or larger.

3 Check capability with load diagram

Using the load diagram that shows the required number of openable tubes and the support member bending radius, check that the operating conditions (travel length, cable/tube mass) are within the capability range.

Reference

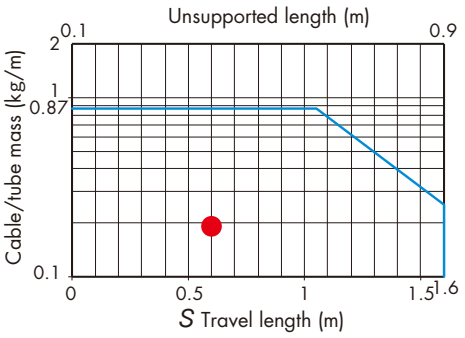
Page	Item
14 to 16	Load diagram

Example

Insertable cables

No.	Cable outer diameter mm	With/ without shield	Quantity	Mass kg/m
①	6.6	Shielded	1	0.052
②	7.1	Shielded	1	0.070
③	7.2	Shielded	1	0.073

Operating conditions:
Travel length: 0.6 m
Cable mass per meter: 0.195 kg/m



If the operating conditions exceed the load diagram, contact a Tsubaki representative.

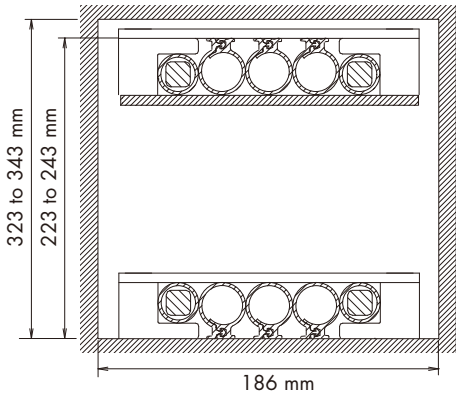
4 Check installation dimensions

Check the space required for installation.

Reference

Page	Item
10	Installation dimensions

Example



Mounting height
223 to 243 mm

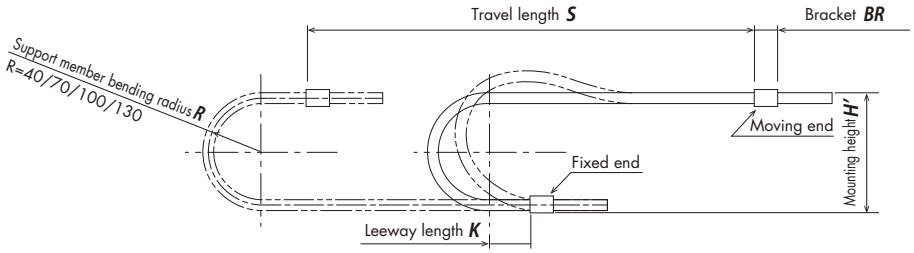
Required space (width)
186 mm

Required space (height)
323 to 343 mm

5 Calculate the number of support member links

Reference

Page	Item
9	Basic specifications
10	Installation dimensions



$$\text{Number of support member links} = \frac{\frac{S}{2} + \frac{(H'-23)\times\pi}{2} + 2K + 2BR + \chi}{P}$$

S : Travel length (mm)
H' : Mounting height (mm)
K : Leeway length = 100 or more (mm)
P : Support member pitch (mm)
BR : Bracket = 50 mm
χ : Fixed number for calculation

Support member bending radius	χ
R040/R070	46
R100/R130	45

Note: The formula is for when the fixed end is at the center of the travel length. After calculating, always round up to a whole number.

Example

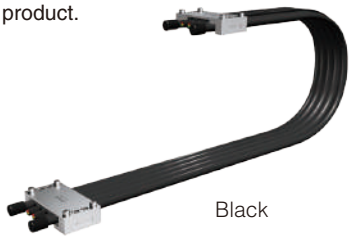
When ***S*** = 600, ***H'*** = 233, support member bending radius R070

$$\text{Number of support member links} = \frac{\frac{600}{2} + \frac{(233-23)\times\pi}{2} + (2\times100) + (2\times50) + 46}{20}$$
$$= 48.7933\cdots$$
$$= 49$$

Number of support member links
49

6 Determine color

Determine the color of the product.



Black



White

Cable/tube insertion procedure and locking part opening/closing procedure

1



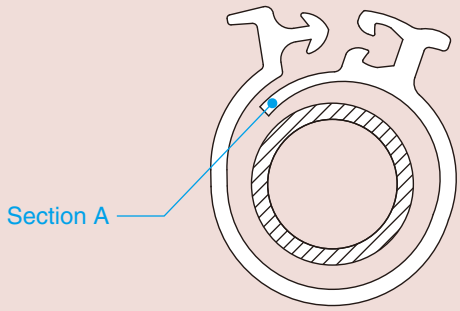
Open the locking part from the end of the openable tube.

2



Insert the cable or tube inside the openable tube.

3



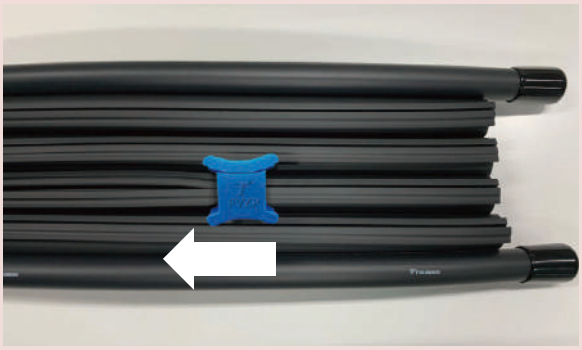
Make sure that section A is correctly overlapped around the entire length of the FLATVEYOR as shown above.

4



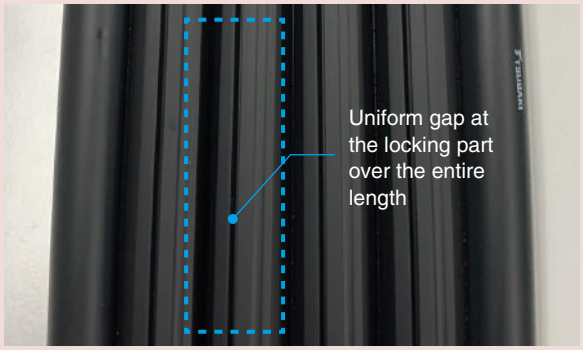
Temporarily tighten the end of the openable tube by hand.

5



Close the locking part from the end of the openable tube using the closing tool. (Also closable by hand.)

6



Check that the locking part is properly closed.

Procedure for installation on equipment

1



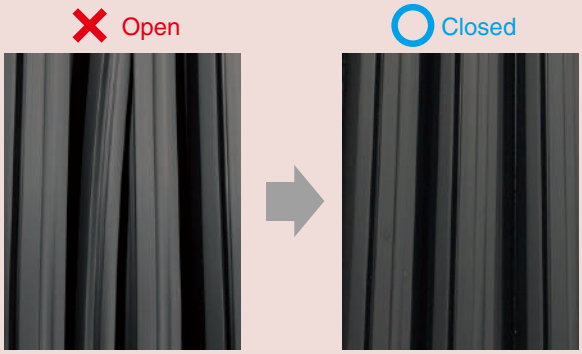
After inserting the cable/tube and before mounting it on the equipment, the locking part of the openable tube should be facing outward, and the FLATVEYOR should be bent as shown above.

2



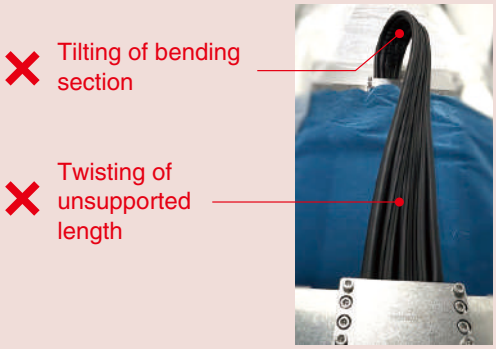
Fix the fixed end and the moving end to the equipment using brackets in the state shown in 1.

3



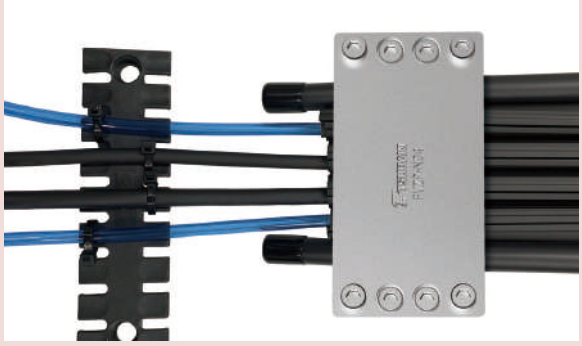
Ensure that the locking part of the openable tube is properly closed.

4



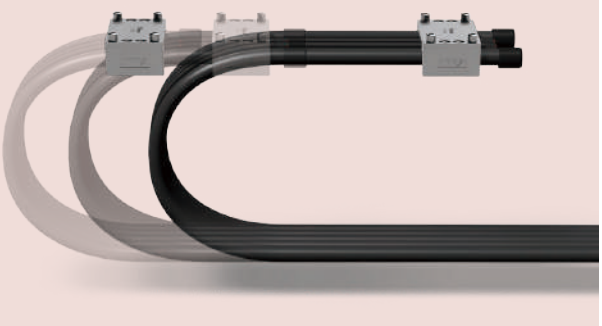
Check that the bending section of the FLATVEYOR is not tilted and that the unsupported length is not twisted.

5



Fix each cable/tube at both the fixed end and the moving end using a cable tie or similar implements.

6



Move the FLATVEYOR slowly to ensure that each cable/tube is not pulled into the openable tube. Check that there are no other operation abnormalities.

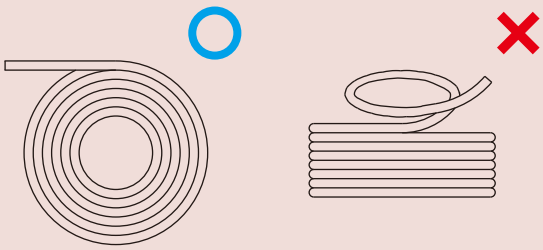
Precautions for handling

1



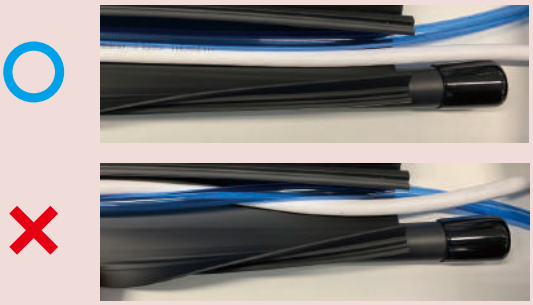
Please handle the cables and tubes with care when wiring and mounting them in equipment to ensure that forces are not applied in a tearing direction on the welded ends. If a force in the tearing direction is applied to a welded end, it could cause the welded section to peel off.

2



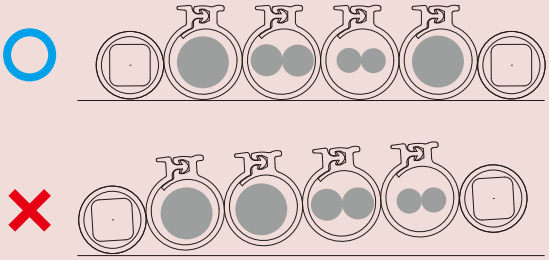
Cables and tubes should be routed without twisting. Do not pull out from the drum or coil in a spiral pattern because this will cause the cable or tube to be routed with a twist. The cable/tube winding tendency may cause the bending section of the FLATVEYOR to tilt and the unsupported length to twist.

3



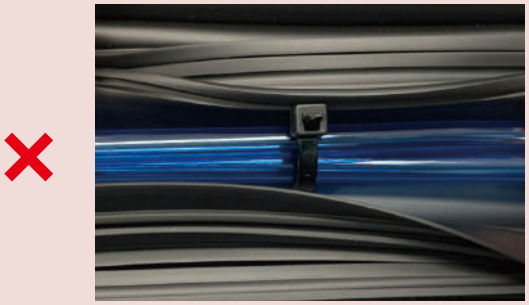
When inserting multiple cables or tubes in a single openable tube, insert by keeping the cables or tubes aligned. Inserting cables while they are twisted could cause premature breakage due to entanglement of cables in the openable tube.

4



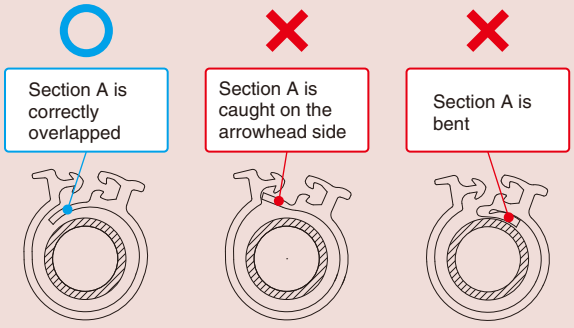
For insertion of cables and tubes, ensure that the cable weight is symmetrically distributed across the width of the FLATVEYOR.

5



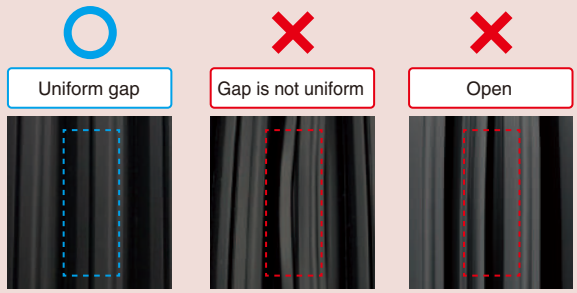
Do not fix cables or tubes inside the openable tubes using cable ties or similar implements. Doing so could cause the openable tube to tear.

6



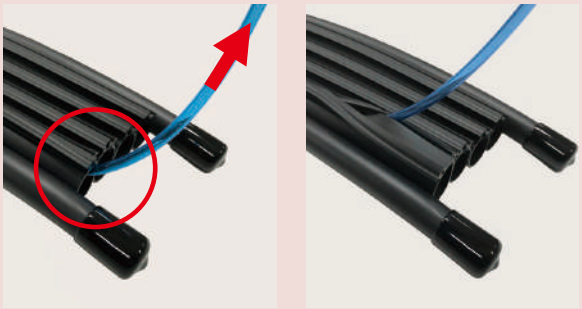
Make sure that section A of the locking part is correctly overlapped. If not correctly overlapped, the locking part could open.

7



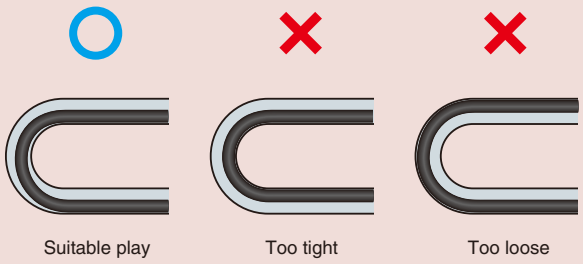
Make sure that the locking part is closed properly. If the gap between the locking part is not uniform or if a locking part opens, it may be because section A is not overlapped correctly. Ensure that section A is overlapped correctly and close the locking part again.

8



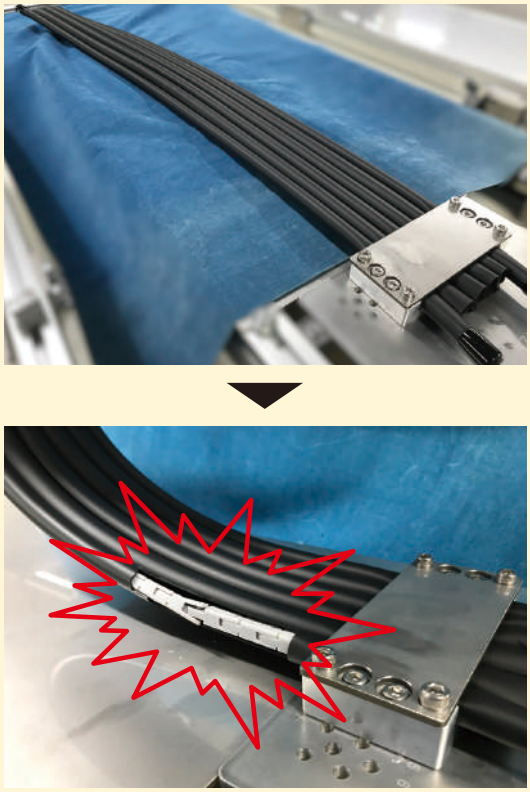
After closing the locking part, ensure that the cable or tube does not exert any outward force on the locking part end. Otherwise, the locking part could open.

9



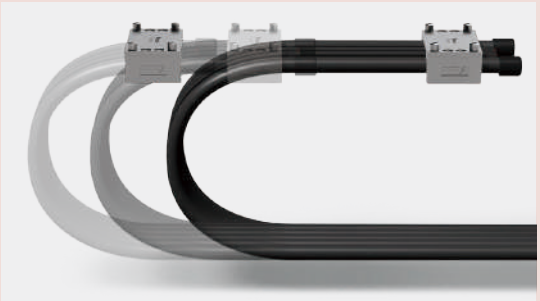
When fixing cables and tubes, make sure to provide a suitable amount of play. Otherwise, the openable tube could tear or the locking part could open.

10 Caution



Make sure to fix to the equipment in a bent position with the locking part facing outward. Fixing one end (fixed or moving end) to the equipment while the FLATVEYOR is extended could cause the support member to be fixed in a direction other than the bending direction. Bending in this state could damage the support member.

11



Do not install any object that could interfere with the inner circumference of the FLATVEYOR.

Precautions for handling

Notes when replacing cables and tubes

- When replacing cables and tubes, remove the FLATVEYOR from the equipment, and perform the replacement work outside the equipment.
- Blow air into the openable tube to clean it before replacing.

Periodic inspection points

Periodically perform inspection for the following points. If any abnormality is found during inspection, maintenance should be performed.

- Locking part of openable tube is not open
- No objects on the floor surface that could damage the FLATVEYOR
- Cables and tubes are not being pulled into the openable tube
- Periodic retightening of plate fixing bolts for brackets and equipment mounting bolts

Service life

(1) Unsupported length sag limits (guideline)

The product is considered to have reached the end of its service life when the smaller of the following is reached.

1) 10% of unsupported length
2) Support member bending radius (R)

Example

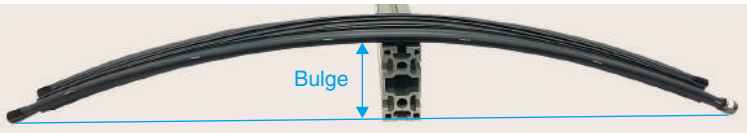
Unsupported length: 500 mm ⇒ (1) 50 mm (500 mm × 10%)
Support member bending radius: R070 ⇒ (2) 70 mm
} Sag amount limit (guideline): 50 mm

(2) FLATVEYOR damaged due to age-related deterioration, etc.

The following abnormal conditions may occur as FLATVEYORs deteriorate over time and depending on the conditions of the cables and tubes inside the FLATVEYOR.

- Tearing of openable tube
- Breakage of support member
- Peeling of welded parts, etc.

Notes when storing or replacing cables and tubes



To make the work easier, refer to the following when opening or closing openable tubes and when storing or replacing cables and tubes.

- Lift the product in the middle as shown above using a stand or other equipment with no corners, burrs, or other characteristics that may damage the product.
- Use a stand with a height appropriate for the bulge of the product.
  (The bulge will vary depending on the product length, the number of openable tubes, and the support member bending radius.)

MEMO

CLEANVEYOR

Patented

Clean Class
ISO class 1[*1]

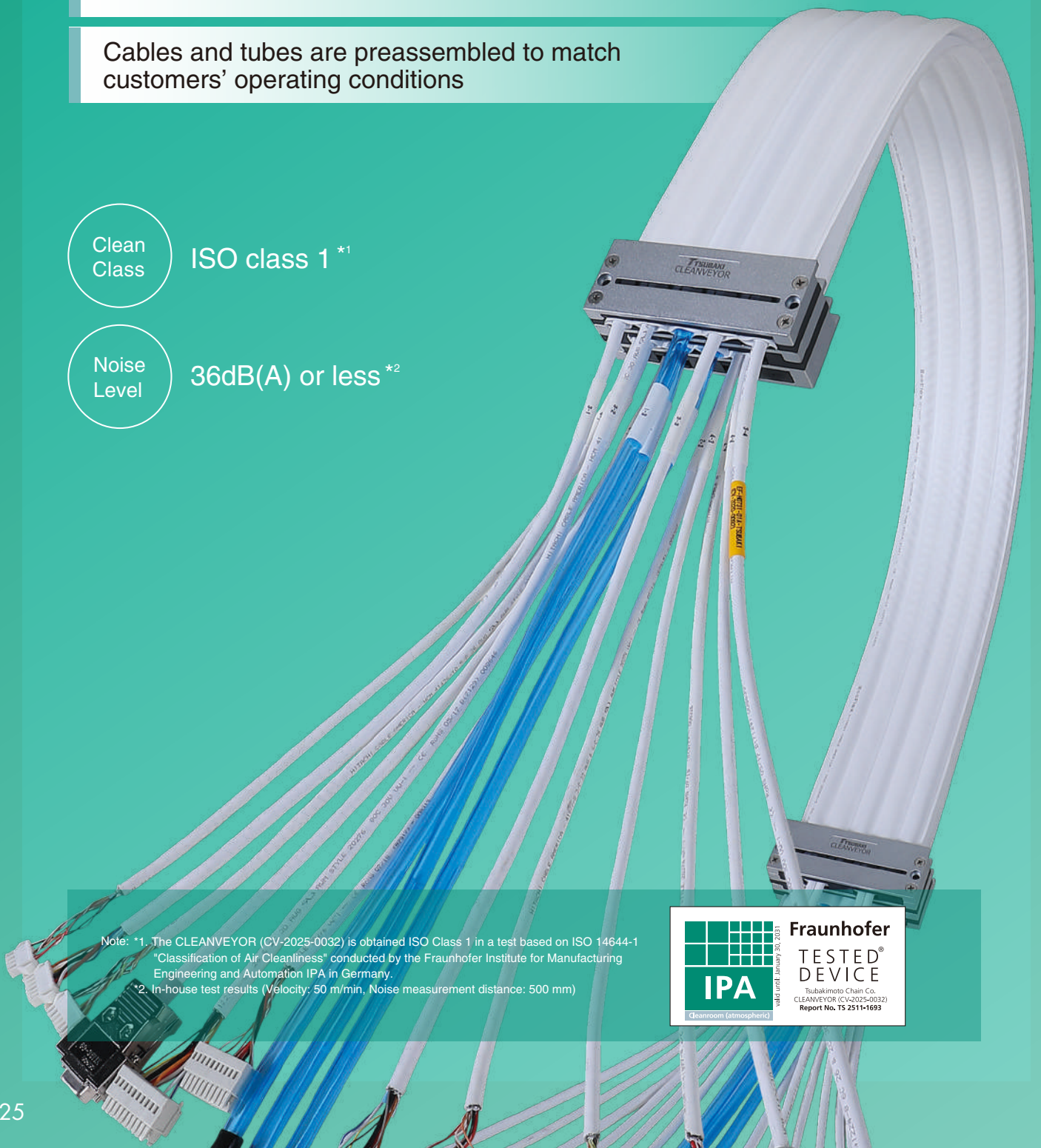
Lowest particle generation among Tsubaki hose and cable carrier systems

The most suitable product for using in a clean room

Cables and tubes are preassembled to match customers' operating conditions

Clean Class — ISO class 1 [*1]

Noise Level — 36dB(A) or less [*2]



Note: *1. The CLEANVEYOR (CV-2025-0032) is obtained ISO Class 1 in a test based on ISO 14644-1 "Classification of Air Cleanliness" conducted by the Fraunhofer Institute for Manufacturing Engineering and Automation IPA in Germany.
*2. In-house test results (Velocity: 50 m/min, Noise measurement distance: 500 mm)

Fraunhofer IPA TESTED® DEVICE
Tsubakimoto Chain Co.
CLEANVEYOR (CV-2025-0032)
Report No. TS 2511-1693
valid until January 30, 2031
Cleanroom (atmospheric)



Low particle generation

The cables, tubes, and support members are stored in the pod to prevent the scattering of wear particles.

Effective as a measure against the risk of disconnection due to sliding or interference between cables.

Reduces installation man-hours

Cables and tubes are preassembled, and a clamp is attached.

It can be smoothly installed onto equipment.

Long life

Provides long service life with over 10 million bending cycles.*1

Supports high acceleration

Supports acceleration of up to 4G. *2

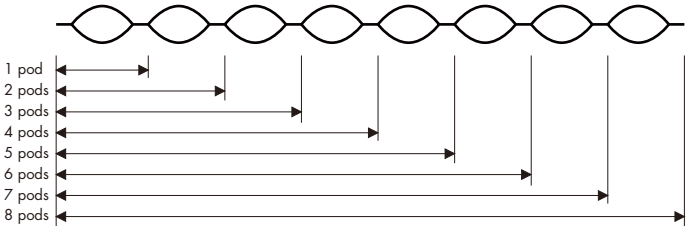
Supports multi-layered structure

Supports up to 6 layers. *2

Note: *1. In-house test results
*2. Depending on operating conditions



Pod types and dimensions

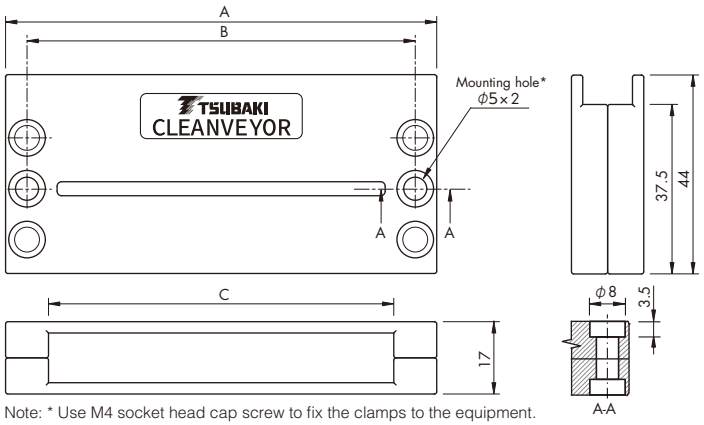


No. of pods	Pod thickness* mm	Pod width* mm	Connection width* mm
1 pod	1	19	2.3
2 pods			
3 pods			
4 pods			
5 pods			
6 pods			
7 pods			
8 pods			

Note: * The dimensions of the pod when it is flat (closed). The dimensions given are nominal dimensions and may differ from the actual dimensions.

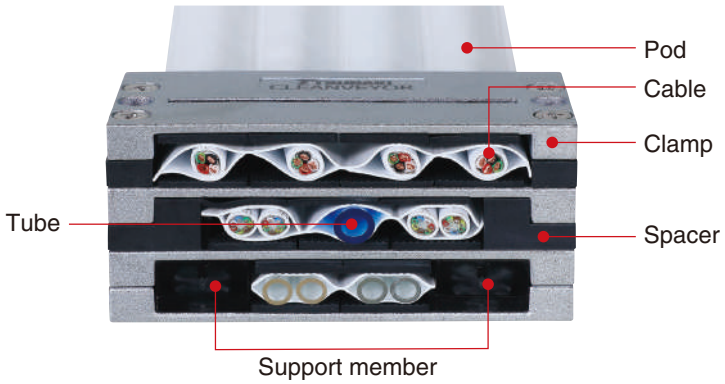
Cable/tube outer diameter mm	Insertable no. of cables/ tubes/pods	Insertion image
Outer diameter ≤ 4.0	3	
4.0 < Outer diameter ≤ 6.3	2	
6.3 < Outer diameter ≤ 10	1	

Clamp types and dimensions



Note: * Use M4 socket head cap screw to fix the clamps to the equipment.

Clamp type	A mm	B mm	C mm
For 2 pods	57.2	47.7	38.2
For 3 pods	76.3	66.8	57.3
For 4 pods	95.4	85.9	76.4
For 5 pods	114.5	105.0	95.5
For 6 pods	133.6	124.1	114.6
For 7 pods	152.7	143.2	133.7
For 8 pods	171.8	162.3	152.8

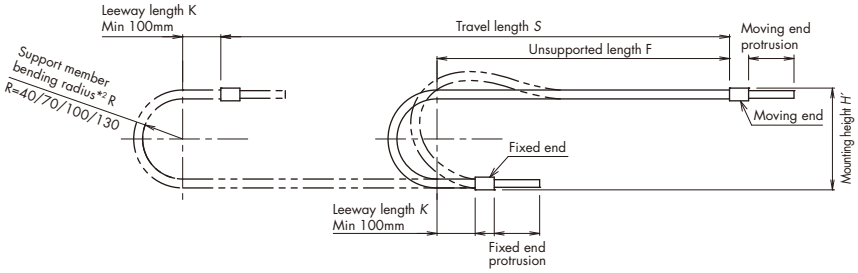


■ Materials

Pod	Fluoroplastic (ePTFE)
Support member	Engineering plastic
Clamp	Aluminum
Spacer	Engineering plastic

Note: A sheet of ultra-high molecular weight polyethylene (UHMW-PE) for placing on the installation surface for CLEANVEYOR is included with the product.

Basic specifications/capacities



Maximum travel length*1 mm	Support member bending radius R40····1600 Support member bending radius R70····2200 Support member bending radius R100····2800 Support member bending radius R130····2800
Maximum cable length mm	8000
Maximum travel speed m/sec	2
Maximum acceleration G	4
Operating temperature range ℃	–10 to 80
Minimum/maximum cable/tube outer diameter mm	3 to 10

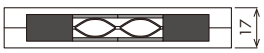
Note: *1. When additional load is 0.4 kg/m.
*2. Support member-bending radius and bending radius when installing the CLEANVEYOR may differ.

Selection

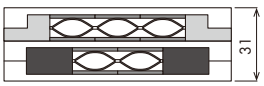
CLEANVEYOR products are all made to order. Fill out the operating conditions on the inquiry sheet (page 58) and contact a Tsubaki representative. Tsubaki will then select the appropriate types.

Layering examples

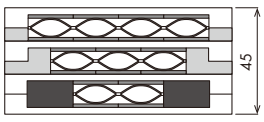
1 layer



2 layers



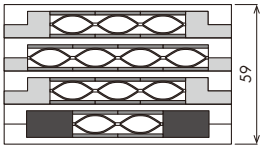
3 layers



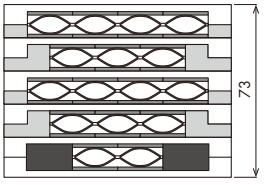


Note: The photo shows a practical example of the left diagram.

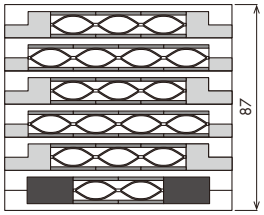
4 layers



5 layers



6 layers



300-V rated cables

UL STYLE No.	2464
Rated temperature ℃	80
Rated voltage V	300
Operating temperature range ℃	−10 to 80

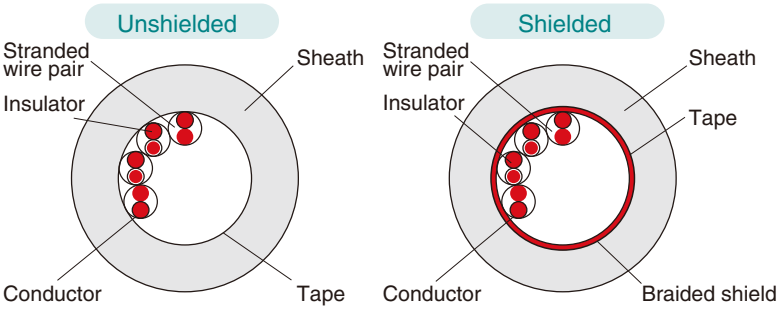
Conductor	Tinned annealed and stranded copper wire
Insulator	Special elastomer
Shield	Tinned annealed copper wire braid
Sheath	Oil resistant PVC (black)

With/without shield	Minimum bending radius
Unshielded	6 times the cable outer diameter or greater
Shielded	8 times the cable outer diameter or greater

Conductor			Core diameter mm	Pairs	Unshielded					Shielded					Permissible current* A (30℃)
SQ mm²	AWG size	Configuration			No.	Outer diameter mm	Approximate mass kg/km	Approximate mass kg/m	Minimum bending R outer diameter x 6	No.	Outer diameter mm	Approximate mass kg/km	Approximate mass kg/m	Minimum bending R outer diameter x 8	
0.1	28	49/0.05	0.74	1	S1	3.3	13	0.013	20	S32	3.8	21	0.021	31	2.4
				2	S2	4.4	20	0.020	27	S33	4.8	30	0.030	39	1.8
				3	S3	4.7	23	0.023	29	S34	5.1	34	0.034	41	1.6
				4	S4	5.0	27	0.027	30	S35	5.4	38	0.038	44	1.4
				5	S5	5.3	32	0.032	32	S36	5.7	43	0.043	46	1.3
				6	S6	5.6	36	0.036	34	S37	6.0	48	0.048	48	1.2
				7	S7	5.6	39	0.039	34	S38	6.0	50	0.050	48	1.2
				8	S8	6.0	43	0.043	36	S39	6.4	56	0.056	52	1.1
				10	S9	6.6	52	0.052	40	S40	7.0	66	0.066	56	1.0
0.2	25	102/0.05	0.93	1	S10	3.7	17	0.017	23	S41	4.2	25	0.025	34	3.8
				2	S11	5.0	27	0.027	30	S42	5.4	37	0.037	44	3.0
				3	S12	5.3	34	0.034	32	S43	5.7	45	0.045	46	2.6
				4	S13	5.7	39	0.039	35	S44	6.3	51	0.051	51	2.3
				5	S14	6.1	47	0.047	37	S45	6.5	60	0.060	52	2.1
				6	S15	6.6	54	0.054	40	S46	7.1	69	0.069	57	2.0
				7	S16	6.6	58	0.058	40	S47	7.1	73	0.073	57	1.9
				8	S17	7.1	65	0.065	43	S48	7.6	80	0.080	61	1.8
				10	S18	7.8	80	0.080	47	S49	8.2	97	0.097	66	1.7
0.3	23	108/0.06	1.09	1	S19	4.0	20	0.020	24	S50	4.4	28	0.028	36	5.2
				2	S20	5.5	36	0.036	33	S51	5.9	44	0.044	48	4.0
				3	S21	5.9	42	0.042	36	S52	6.4	54	0.054	52	3.5
				4	S22	6.3	51	0.051	38	S53	6.7	64	0.064	54	3.2
				5	S23	6.9	61	0.061	42	S54	7.3	76	0.076	59	2.9
				6	S24	7.4	72	0.072	45	S55	7.8	87	0.087	63	2.7
				7	S25	7.4	78	0.078	45	S56	7.8	94	0.094	63	2.5
				8	S26	8.0	88	0.088	48	S57	8.4	105	0.105	68	2.4
				10	S27	8.8	110	0.110	53	S58	9.2	130	0.130	74	2.3
0.5	21	177/0.06	1.36	1	S28	4.6	26	0.026	28	S59	5.0	37	0.037	30	7.7
				2	S29	6.4	51	0.051	39	S60	6.8	67	0.067	41	5.8
				3	S30	6.9	64	0.064	42	S61	7.3	82	0.082	44	4.9
				4	S31	7.5	75	0.075	45	S62	7.9	94	0.094	48	4.7

Note: * Permissible current is for reference and not a guaranteed value.

■ Sample cross section



■ Identification of insulators

Pair no.	Color	
	Core 1	Core 2
1	Blue	White
2	Yellow	Brown
3	Green	Black
4	Red	Gray
5	Purple	Orange

Pair no.	Color	
	Core 1	Core 2
6	Blue	Brown
7	Yellow	Black
8	Green	Gray
9	Red	Orange
10	Purple	White

Tubes

No.	Specifications			Configuration	
	Outer diameter mm	Inner diameter mm	Maximum working pressure MPa	Materials	Color
T1	4.0	2.5	0.8 (20℃)	Polyurethane	Black, yellow, blue, green, transparent, and white
T2	6.0	4.0	0.8 (20℃)	Polyurethane	Black, yellow, blue, green, transparent, and white
T3	8.0	5.0	0.8 (20℃)	Polyurethane	Black, yellow, blue, green, transparent, and white
T4	10.0	6.5	0.8 (20℃)	Polyurethane	Black, yellow, blue, green, transparent, and white

600-V rated cables

UL STYLE No.	2586
Rated temperature ℃	105
Rated voltage V	600
Operating temperature range ℃	−10 to 105

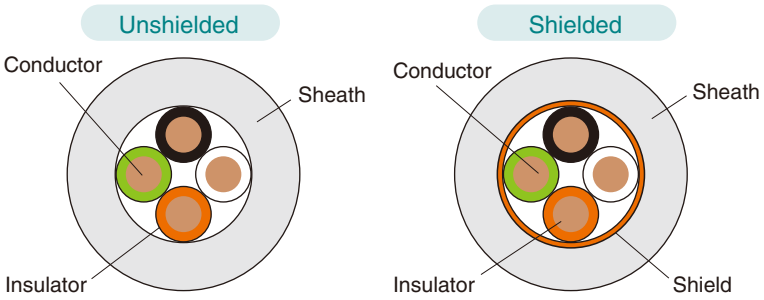
Conductor	Tinned annealed and stranded copper wire
Insulator	Special elastomer
Shield	Tinned annealed copper wire braid
Sheath	Oil resistant PVC (black)

With/without shield	Minimum bending radius
Unshielded	6 times the cable outer diameter or greater
Shielded	8 times the cable outer diameter or greater

Conductor			Core diameter mm	Cores	Unshielded					Shielded					Permissible current * A (30℃)
SQ mm²	AWG size	Configuration			No.	Outer diameter mm	Approximate mass kg/km	Approximate mass kg/m	Minimum bending R outer diameter x 6	No.	Outer diameter mm	Approximate mass kg/km	Approximate mass kg/m	Minimum bending R outer diameter x 8	
0.5	21	100/0.08	1.52	2	P1	5.3	34	0.034	32	P35	5.7	45	0.045	46	9.2
				3	P2	5.5	41	0.041	33	P36	5.9	53	0.053	48	8.0
				4	P3	5.9	49	0.049	36	P37	6.3	61	0.061	51	7.2
				5	P4	6.3	58	0.058	38	P38	6.7	72	0.072	54	6.7
				6	P5	6.8	66	0.066	41	P39	7.2	83	0.083	58	6.2
				8	P6	8.0	90	0.090	48	P40	8.4	110	0.110	68	5.6
				10	P7	8.9	110	0.110	54						5.1
0.75	19	150/0.08	1.73	2	P8	5.7	41	0.041	35	P41	6.1	53	0.053	49	12.0
				3	P9	5.9	51	0.051	36	P42	6.3	62	0.062	51	10.5
				4	P10	6.4	63	0.063	39	P43	6.8	75	0.075	55	9.4
				6	P11	7.4	87	0.087	45	P44	7.8	105	0.105	63	8.1
				8	P12	8.8	120	0.120	53	P45	9.3	145	0.145	75	7.3
				10	P13	9.7	145	0.145	59						6.7
1.25	17	7/36/0.08	2.2	2	P14	6.6	58	0.058	40	P46	7.0	72	0.072	56	17.3
				3	P15	7.0	75	0.075	42	P47	7.4	89	0.089	60	15.1
				4	P16	7.5	92	0.092	45	P48	7.9	110	0.110	64	13.5
				6	P17	8.8	130	0.130	53	P49	9.3	155	0.155	75	11.7
2	15	7/57/0.08	2.6	2	P20	7.4	79	0.079	45	P51	7.8	94	0.094	63	23.6
				3	P21	7.8	105	0.105	47	P52	8.2	120	0.120	66	20.6
				4	P22	8.5	130	0.130	51	P53	9.0	155	0.155	72	18.4
				6	P23	10.0	185	0.185	60						15.9
3.5	12	7/64/0.1	3.4	2	P26	9.3	125	0.125	56	P56	9.8	155	0.155	79	35.5
				3	P27	9.8	165	0.165	59						30.9

Note: * Permissible current is for reference and not a guaranteed value.

■ Sample cross section



■ Identification of insulators

Core no.	Color
1	Black
2	White
3	Red
4	Green
5	Yellow
6	Brown
7	Blue
8	Gray
9	Orange
10	Purple

Precautions for handling

1
Do not expose the product to organic solvents that will affect it.

2
Once grime such as oil gets on the pod, it cannot be removed.

3
When removing from the packing box and attaching to equipment, hold the CLEANVEYOR by the underside, hold it horizontally (parallel), and do not twist it. (Fig. 1-1)

4
If you hold it as shown in Figures 1-2 and 1-3, the clamp and pod may be misaligned or the support member may be damaged, resulting in malfunction.

5
When using a multi-layer CLEANVEYOR, be careful not to misalign the pods on each layer.

6
When handling a large CLEANVEYOR with long strokes and many layers, work with multiple people.

7
Do not disassemble or modify the CLEANVEYOR.

Fig.1-1



Fig.1-2



Fig.1-3



Precautions for installation

1
Before installing on equipment, make sure that the following damage has not occurred during transportation.
• Ripped pod • Clamp chipping, crack

2
The moving end of cables and tubes has a yellow label. (Fig. 2)

3
Clean the dust on the floor where the CLEANVEYOR is to be installed, and place the CLEANVEYOR on the supplied ultra-high molecular weight polyethylene (UHMW-PE) sheet.

4
For installing onto equipment, use M4 socket head capscrews and a tightening torque of 3.6 [N·m]*. If the tightening torque is too strong, the clamps and spacers may be damaged.
Note: * Reference value depending on the specifications of the device and the type of bolt.

5
The bending radius of the support member and the bending radius shown in the installation drawing may differ.

6
Do not install anything that may interfere with the inner circumference of the CLEANVEYOR.

7
Do not install guides etc., inside the bending radius of the moving end or fixed end clamp mounting part. Pods, support members, cables, and tubes can interfere and be damaged. (Fig. 3)

Fig.2

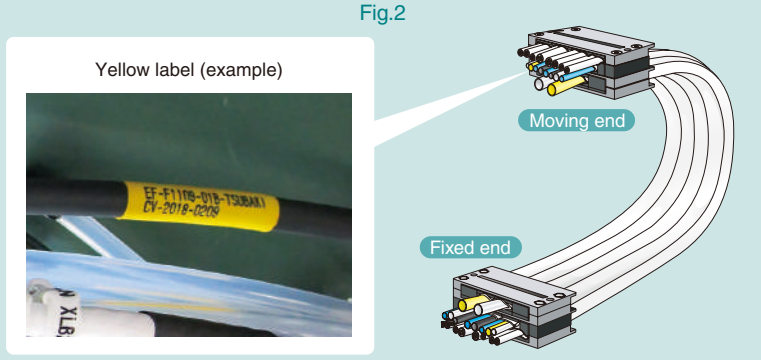
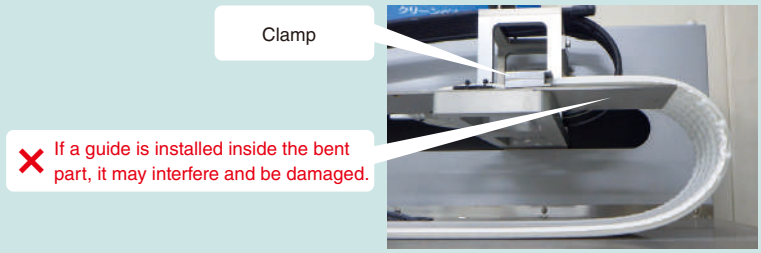


Fig.3



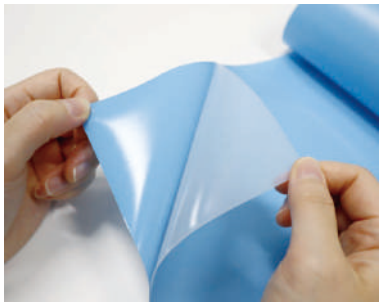
Installation procedure onto equipment

1



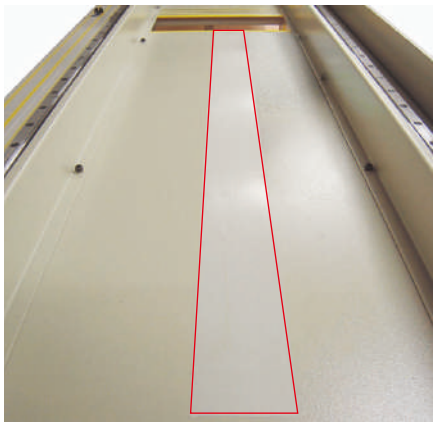
Spread the UHMW-PE sheet (blue sheet roll) supplied with the CLEANVEYOR.

2



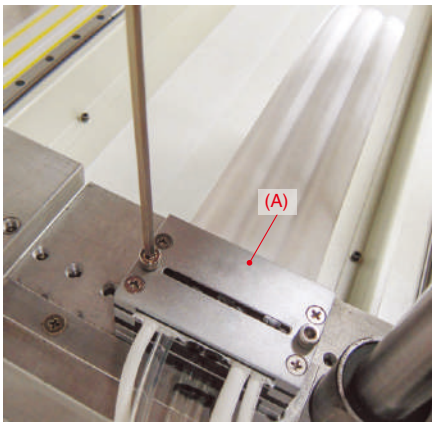
Peel off the UHMW-PE sheet from the blue backing sheet.

3



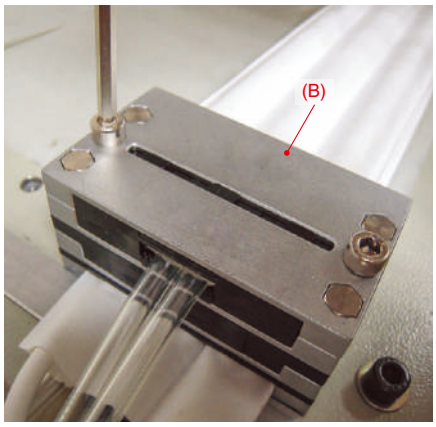
Attach the UHMW-PE sheet to the floor where the CLEANVEYOR will be installed.

4



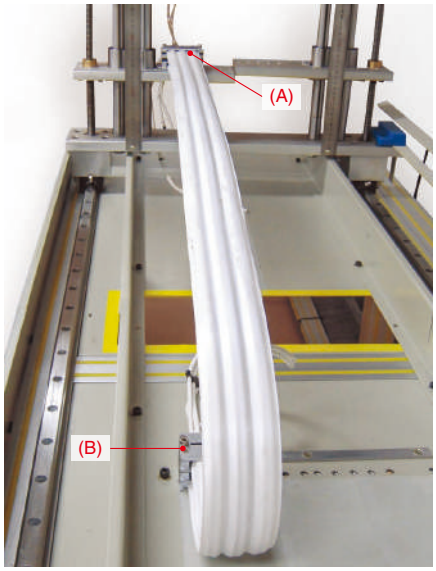
Temporarily fix the moving end clamp (A).

5



Temporarily fix the fixed end clamp (B).

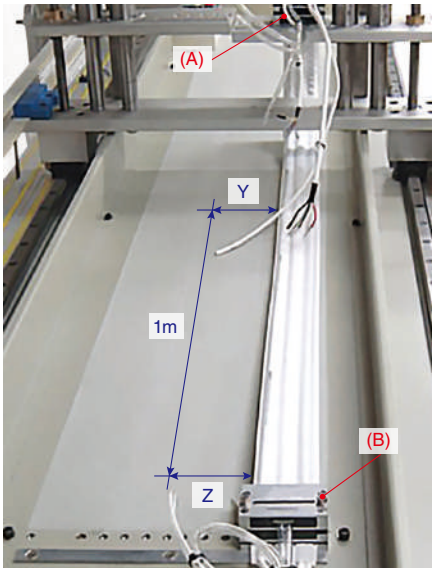
6



With the moving (A) and fixed (B) end clamps temporarily fixed, move the moving end back and forth to check for the following.

- No malfunction
- No interference with the equipment
- No deviation from the UHMW-PE sheet
- On multi-layer CLEANVEYORs, no misalignment between the pods on respective layers

7

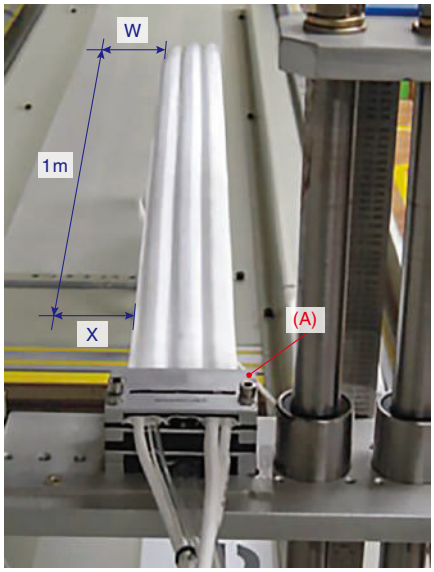


Adjust the amount of lateral deviation in the moving direction as follows.

1. Push the moving end clamp (A) to all the way to the rear end by hand.
2. Check if the difference between the distance Z and the distance Y is within ±10 mm per 1 m.
3. If it is within ±10 mm, securely fix the fixed end clamp (B).*

* If the difference exceeds ±10 mm, adjust the position of the fixed end clamp (B) so that the difference is within ±10 mm and then fix it.

8



Adjust the amount of lateral deviation in the moving direction as follows.

1. Move the moving end clamp (A) to the position where the unsupported length becomes longest.
2. Check if the difference between the distance X and the distance W is within ±10 mm per 1 m.
3. If it is within ±10 mm, securely fix the moving end clamp (A).*

* If the difference exceeds ±10 mm, adjust the position of the moving end clamp (A) so that the difference is within ±10 mm and then fix it.

FLATVEYOR

FLATVEYOR

TSUBAKI ECO LINK

Patented

Clean Class
ISO class 1 *1

Freestanding flat cable system with Tsubaki cable carrier technology

- Integrated support members allow longer travel length than flat cables
- Cables and tubes are preassembled to match customers' operating conditions

Clean Class — ISO class 1 *1

Noise Level — 30dB(A) or less *2



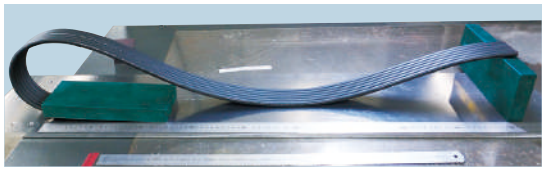
Note: *1. The FLATVEYOR (FV-2025-0049) is obtained ISO Class 1 in a test based on ISO 14644-1 "Classification of Air Cleanliness" conducted by the Fraunhofer Institute for Manufacturing Engineering and Automation IPA in Germany.
*2. In-house test results (Velocity: 50 m/min, Noise measurement distance: 500 mm)

IPA Cleanroom (atmospheric) valid until January 30, 2031
Fraunhofer TESTED® DEVICE
Tsubakimoto Chain Co.
FLATVEYOR (FV-2025-0049)
Report No. TS 2511-1693

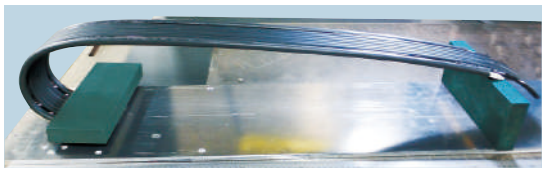


Usable with long strokes

By integrating support members on both sides of the flat cable, it can be used with a maximum travel length of 2.8 m.*1



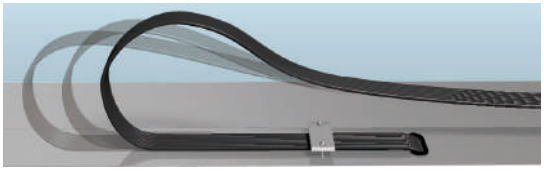
Flat cable (competitor)



FLATVEYOR (Tsubaki)

Minimizes bounce

Support members on both sides minimize bulging of cables and tubes at the bending section and prevent bouncing.



Flat cable (competitor)



FLATVEYOR (Tsubaki)

Low particle generation

Low particle generation thanks to an integrated structure in which the cable/tube are welded in a flat shape.

Our recommended cables and tubes can be selected

A lineup of movable cables with excellent flexibility and flex resistance.
Cables and tubes are provided preassembled.*2

Space-saving

The appearance is similar to a flat cable and it can be installed in a limited space.

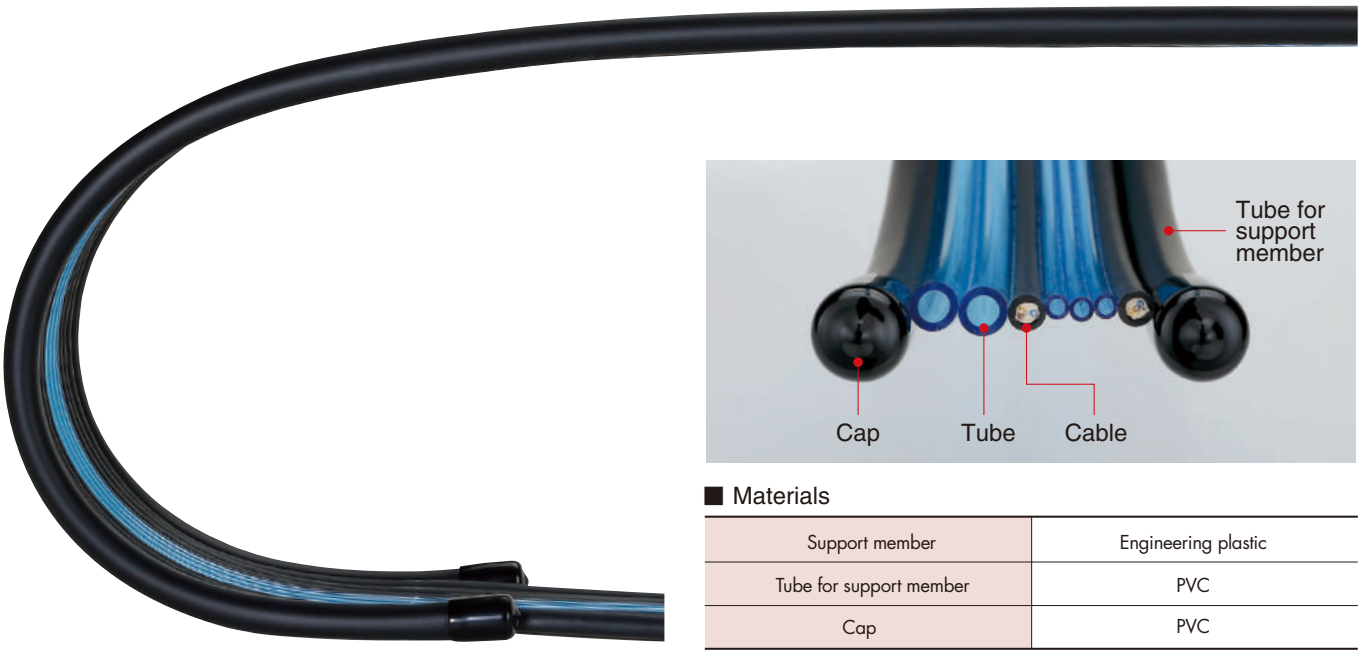
Low noise

The sound insulation effect of the tube for the support member and the unique short-pitch structure reduce noise during operation.

Lightweight

Achieves weight reduction with a compact structure in which both sides of the flat cable are supported by a support member.

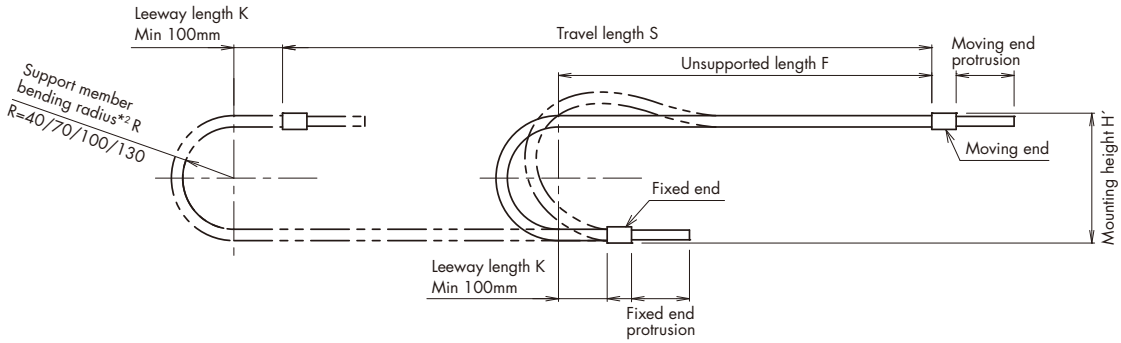
Note: *1. Depending on operating conditions.
*2. Depending on cable/tube specifications and various conditions.



■ Materials

Support member	Engineering plastic
Tube for support member	PVC
Cap	PVC

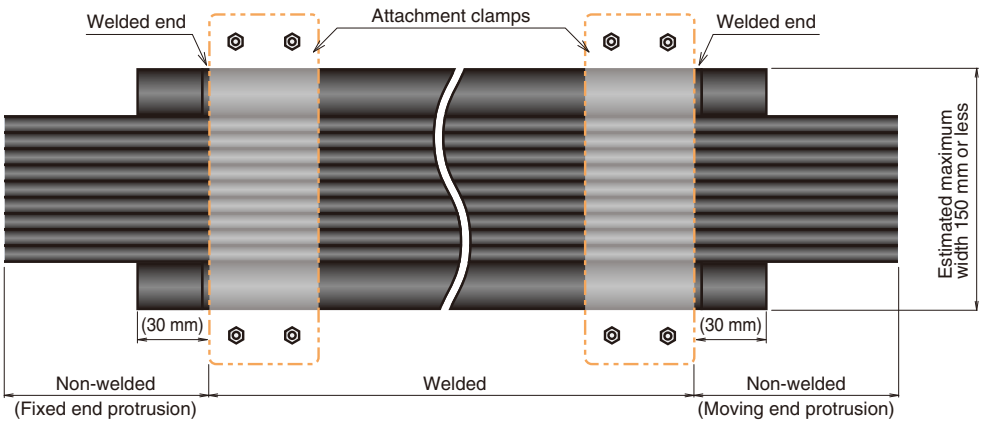
Basic specifications/capacities



Maximum travel length*1 mm	Support member bending radius R40···1600 Support member bending radius R70···2200 Support member bending radius R100···2800 Support member bending radius R130···2800
Maximum travel speed m/sec	2
Maximum acceleration G	4
Operating temperature range ℃	−10 to 80
Maximum cable/ tube outer diameter mm	16 or less
Estimated maximum width mm	150 or less (see diagram above)

Support member bending radius R mm	Mounting height H´ mm
40	103 to 123
70	213 to 233
100	273 to 293
130	333 to 353

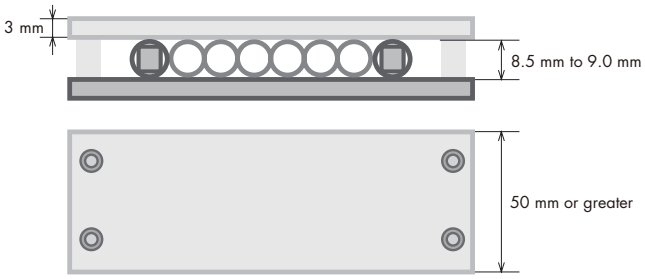
Note: *1. When additional load is 0.4 kg/m.
*2. Support member-bending radius and bending radius when installing the FLATVEYOR may differ.



Handling FLATVEYOR attachment clamps

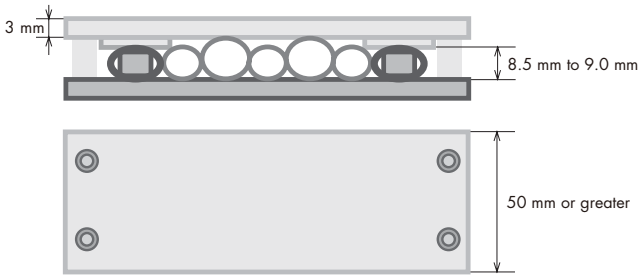
Cable diameter 8.5 mm or less

Ensure that the clamp length is 50 mm or greater and the clamp thickness is 3 mm or greater, and use spacers to adjust the clamp inner height so that it is between 8.5 mm and 9.0 mm. Fasten the clamp with M6 bolts in four locations.



Cable diameter greater than 8.5 mm

Ensure that the clamp length is 50 mm or greater and the clamp thickness is 3 mm or greater, and use spacers to adjust the inner height of the tube for the support member so that it is between 8.5 mm and 9.0 mm. Fasten the clamp with M6 bolts in four locations.



Precautions

The support member may deform and break if the height of the tube for the support member section is less than 8.5 mm.

Option

Connector installation

Provide us with the name of a specific connector manufacturer, the connector model number, the terminal number, and connection information. We will confirm its usability for you.
The parts to be used can be either procured or supplied by us.

Inserting cables not listed in this catalog

Inserting cables not listed in our catalog is possible. Contact a Tsubaki representative.
Our warranty is not applicable to cables supplied by a customer except for defects caused by the manufacture of FLATVEYOR.

Clamp

Tsubaki can also manufacture clamps. If you are manufacturing your own clamps, please follow the above recommended dimensions.

Precautions regarding cable and tube bonding

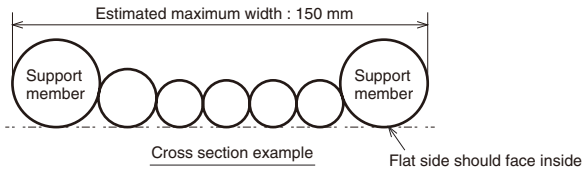
Since adjacent cables/tubes are welded together, the following should be considered.

Materials

Only cables with outer jackets and tubes made of PVC or polyurethane can be welded. Contact a Tsubaki representative for materials other than these.

Differences in outer diameters

The ideal permissible difference between the outer diameters of adjacent cables and tubes should be less than approximately 30%. If there is an outer diameter difference that exceeds that, using dummy tubes may be suggested.



Selection

FLATVEYOR products are all made to order. Fill out the operating conditions on the inquiry sheet (page 58) and contact a Tsubaki representative. Tsubaki will then select the appropriate types.

300-V rated cables

UL STYLE No.	2464
Rated temperature ℃	80
Rated voltage V	300
Operating temperature range ℃	−10 to 80

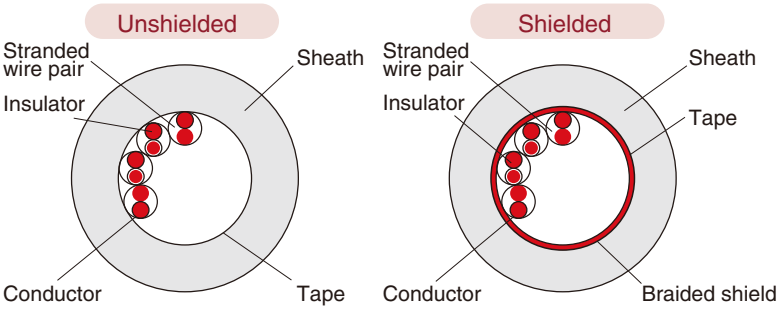
Conductor	Tinned annealed and stranded copper wire
Insulator	Special elastomer
Shield	Tinned annealed copper wire braid
Sheath	Oil resistant PVC (black)

With/without shield	Minimum bending radius
Unshielded	6 times the cable outer diameter or greater
Shielded	8 times the cable outer diameter or greater

Conductor			Core diameter mm	Pairs	Unshielded					Shielded					Permissible current* A (30℃)
SQ mm²	AWG size	Configuration			No.	Outer diameter mm	Approximate mass kg/km	Approximate mass kg/m	Minimum bending R outer diameter x 6	No.	Outer diameter mm	Approximate mass kg/km	Approximate mass kg/m	Minimum bending R outer diameter x 8	
0.1	28	49/0.05	0.74	1	S1	3.3	13	0.013	20	S32	3.8	21	0.021	31	2.4
				2	S2	4.4	20	0.020	27	S33	4.8	30	0.030	39	1.8
				3	S3	4.7	23	0.023	29	S34	5.1	34	0.034	41	1.6
				4	S4	5.0	27	0.027	30	S35	5.4	38	0.038	44	1.4
				5	S5	5.3	32	0.032	32	S36	5.7	43	0.043	46	1.3
				6	S6	5.6	36	0.036	34	S37	6.0	48	0.048	48	1.2
				7	S7	5.6	39	0.039	34	S38	6.0	50	0.050	48	1.2
				8	S8	6.0	43	0.043	36	S39	6.4	56	0.056	52	1.1
				10	S9	6.6	52	0.052	40	S40	7.0	66	0.066	56	1.0
0.2	25	102/0.05	0.93	1	S10	3.7	17	0.017	23	S41	4.2	25	0.025	34	3.8
				2	S11	5.0	27	0.027	30	S42	5.4	37	0.037	44	3.0
				3	S12	5.3	34	0.034	32	S43	5.7	45	0.045	46	2.6
				4	S13	5.7	39	0.039	35	S44	6.3	51	0.051	51	2.3
				5	S14	6.1	47	0.047	37	S45	6.5	60	0.060	52	2.1
				6	S15	6.6	54	0.054	40	S46	7.1	69	0.069	57	2.0
				7	S16	6.6	58	0.058	40	S47	7.1	73	0.073	57	1.9
				8	S17	7.1	65	0.065	43	S48	7.6	80	0.080	61	1.8
				10	S18	7.8	80	0.080	47	S49	8.2	97	0.097	66	1.7
0.3	23	108/0.06	1.09	1	S19	4.0	20	0.020	24	S50	4.4	28	0.028	36	5.2
				2	S20	5.5	36	0.036	33	S51	5.9	44	0.044	48	4.0
				3	S21	5.9	42	0.042	36	S52	6.4	54	0.054	52	3.5
				4	S22	6.3	51	0.051	38	S53	6.7	64	0.064	54	3.2
				5	S23	6.9	61	0.061	42	S54	7.3	76	0.076	59	2.9
				6	S24	7.4	72	0.072	45	S55	7.8	87	0.087	63	2.7
				7	S25	7.4	78	0.078	45	S56	7.8	94	0.094	63	2.5
				8	S26	8.0	88	0.088	48	S57	8.4	105	0.105	68	2.4
				10	S27	8.8	110	0.110	53	S58	9.2	130	0.130	74	2.3
0.5	21	177/0.06	1.36	1	S28	4.6	26	0.026	28	S59	5.0	37	0.037	30	7.7
				2	S29	6.4	51	0.051	39	S60	6.8	67	0.067	41	5.8
				3	S30	6.9	64	0.064	42	S61	7.3	82	0.082	44	4.9
				4	S31	7.5	75	0.075	45	S62	7.9	94	0.094	48	4.7

Note: * Permissible current is for reference and not a guaranteed value.

■ Sample cross section



■ Identification of insulators

Pair no.	Color	
	Core 1	Core 2
1	Blue	White
2	Yellow	Brown
3	Green	Black
4	Red	Gray
5	Purple	Orange

Pair no.	Color	
	Core 1	Core 2
6	Blue	Brown
7	Yellow	Black
8	Green	Gray
9	Red	Orange
10	Purple	White

Tubes

No.	Specifications			Configuration	
	Outer diameter mm	Inner diameter mm	Maximum working pressure MPa	Materials	Color
T1	4.0	2.5	0.8 (20℃)	Polyurethane	Black, yellow, blue, green, transparent, and white
T2	6.0	4.0	0.8 (20℃)	Polyurethane	Black, yellow, blue, green, transparent, and white
T3	8.0	5.0	0.8 (20℃)	Polyurethane	Black, yellow, blue, green, transparent, and white
T4	10.0	6.5	0.8 (20℃)	Polyurethane	Black, yellow, blue, green, transparent, and white

600-V rated cables

UL STYLE No.	2586
Rated temperature ℃	105
Rated voltage V	600
Operating temperature range ℃	−10 to 105

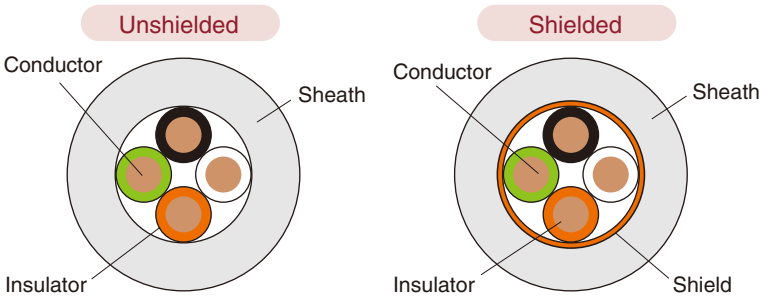
Conductor	Tinned annealed and stranded copper wire
Insulator	Special elastomer
Shield	Tinned annealed copper wire braid
Sheath	Oil resistant PVC (black)

With/without shield	Minimum bending radius
Unshielded	6 times the cable outer diameter or greater
Shielded	8 times the cable outer diameter or greater

Conductor			Core diameter mm	Cores	Unshielded					Shielded					Permissible current * A (30℃)
SQ mm²	AWG size	Configuration			No.	Outer diameter mm	Approximate mass kg/km	Approximate mass kg/m	Minimum bending R outer diameter x 6	No.	Outer diameter mm	Approximate mass kg/km	Approximate mass kg/m	Minimum bending R outer diameter x 8	
0.5	21	100/0.08	1.52	2	P1	5.3	34	0.034	32	P35	5.7	45	0.045	46	9.2
				3	P2	5.5	41	0.041	33	P36	5.9	53	0.053	48	8.0
				4	P3	5.9	49	0.049	36	P37	6.3	61	0.061	51	7.2
				5	P4	6.3	58	0.058	38	P38	6.7	72	0.072	54	6.7
				6	P5	6.8	66	0.066	41	P39	7.2	83	0.083	58	6.2
				8	P6	8.0	90	0.090	48	P40	8.4	110	0.110	68	5.6
				10	P7	8.9	110	0.110	54						5.1
0.75	19	150/0.08	1.73	2	P8	5.7	41	0.041	35	P41	6.1	53	0.053	49	12.0
				3	P9	5.9	51	0.051	36	P42	6.3	62	0.062	51	10.5
				4	P10	6.4	63	0.063	39	P43	6.8	75	0.075	55	9.4
				6	P11	7.4	87	0.087	45	P44	7.8	105	0.105	63	8.1
				8	P12	8.8	120	0.120	53	P45	9.3	145	0.145	75	7.3
				10	P13	9.7	145	0.145	59						6.7
1.25	17	7/36/0.08	2.2	2	P14	6.6	58	0.058	40	P46	7.0	72	0.072	56	17.3
				3	P15	7.0	75	0.075	42	P47	7.4	89	0.089	60	15.1
				4	P16	7.5	92	0.092	45	P48	7.9	110	0.110	64	13.5
				6	P17	8.8	130	0.130	53	P49	9.3	155	0.155	75	11.7
				8	P18	10.5	180	0.180	63	P50	11.1	210	0.210	89	10.6
				10	P19	11.6	220	0.220	70						9.7
2	15	7/57/0.08	2.6	2	P20	7.4	79	0.079	45	P51	7.8	94	0.094	63	23.6
				3	P21	7.8	105	0.105	47	P52	8.2	120	0.120	66	20.6
				4	P22	8.5	130	0.130	51	P53	9.0	155	0.155	72	18.4
				6	P23	10.0	185	0.185	60	P54	10.5	220	0.220	84	15.9
				8	P24	12.0	250	0.250	72	P55	12.5	290	0.290	100	14.4
				10	P25	13.2	310	0.310	80						13.2
3.5	12	7/64/0.1	3.4	2	P26	9.3	125	0.125	56	P56	9.8	155	0.155	79	35.5
				3	P27	9.8	165	0.165	59	P57	10.3	195	0.195	83	30.9
				4	P28	10.7	210	0.210	65	P58	11.2	240	0.240	90	27.6
				6	P29	12.9	290	0.290	78	P59	13.4	330	0.330	108	23.9
				8	P30	15.5	430	0.430	93	P60	16.0	470	0.470	128	21.6
5.5	10	7/100/0.1	4.15	2	P31	11.2	190	0.190	68	P61	11.7	220	0.220	94	48.7
				3	P32	11.8	250	0.250	71	P62	12.3	280	0.280	99	42.4
				4	P33	12.9	290	0.290	78	P63	13.4	320	0.320	108	38.0
				6	P34	15.5	470	0.470	93	P64	16.0	510	0.510	128	32.9

Note: * Permissible current is for reference and not a guaranteed value.

■ Sample cross section



■ Identification of insulators

Core no.	Color
1	Black
2	White
3	Red
4	Green
5	Yellow
6	Brown
7	Blue
8	Gray
9	Orange
10	Purple

Precautions for handling

1

Since the welded end is easily peeled off in the tearing direction as shown in Fig.1, make sure that no force in the tearing direction is applied to the welded end.
Be careful when taking it out from the packaging, processing the connector, and installing onto equipment.

Note: Fig.2 shows an example of a countermeasure.

Fig.1

Please note that it is not resistant to force in the tearing direction.

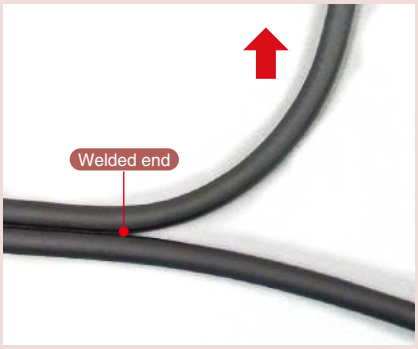
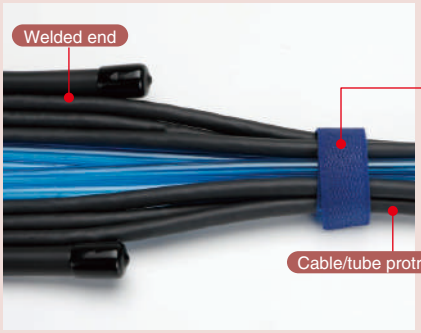


Fig.2



Precautions for installation

1

Do not fasten one end of the FLATVEYOR while it is straightened (Fig.3). If one end (moving end or fixed end) of the FLATVEYOR is fastened to the equipment while the FLATVEYOR is straight and then bent, the support members may twist and break (Fig.4).

Fig.3

Do not fasten one end of the FLATVEYOR while it is straightened.

Note: The tube for the support member is black.

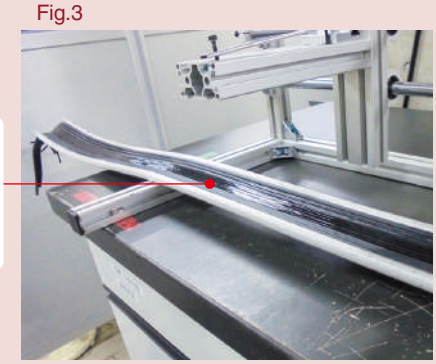
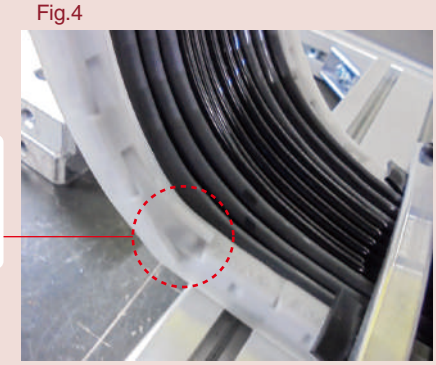


Fig.4

The support members may twist and break.

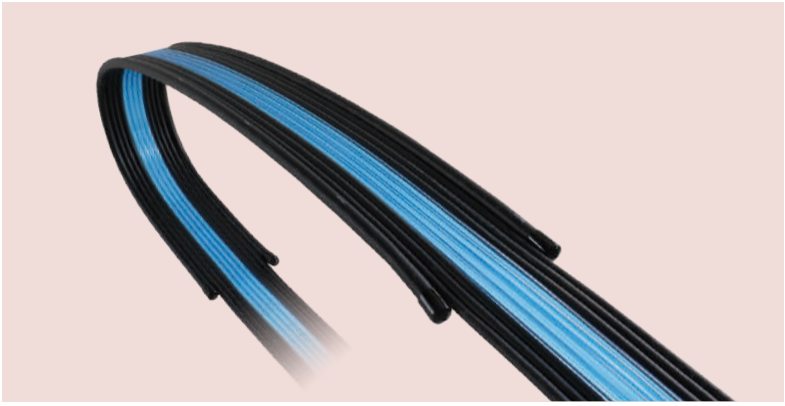
Note: The tube for the support member is black.



Installation procedure onto equipment

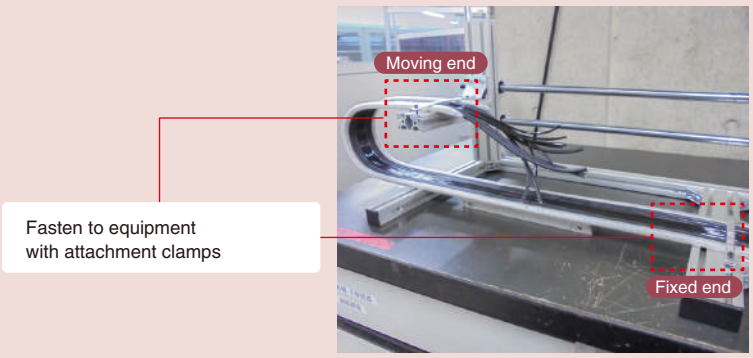
1

Bend the FLATVEYOR before installing it onto equipment.



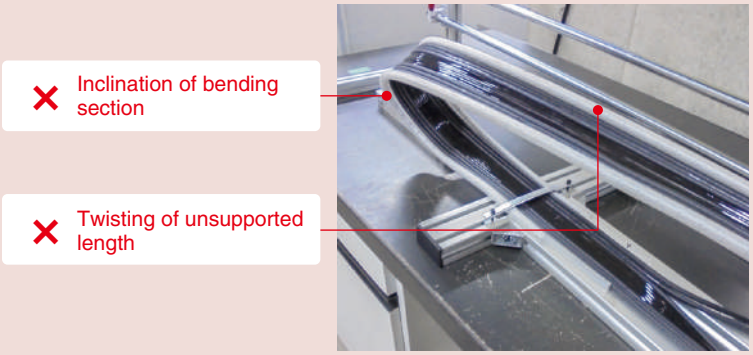
2

With the FLATVEYOR bent as shown in 1, fasten the moving end and fixed end to the equipment with the attachment clamps.



3

After fastening the moving end and fixed end, make sure that the bent section of the FLATVEYOR is not tilted and the unsupported length is not twisted. Next, move the FLATVEYOR slowly and make sure there are no problems with its operation.



Cable Carrier
TKR Series

TSUBAKI ECO LINK

Patented

Clean Class
ISO class 1[*1]

Low particle generation thanks to Tsubaki's unique bending structure

Previous link structure has been renewed
to a bending structure that utilizes plastic deflection

Clean Class — ISO class 1 [*1]

Noise Level — 40dB(A) or less [*2]



Note: *1. The CABLEVEYOR TKR20H28 is obtained ISO Class 1 in a test based on ISO 14644-1 "Classification of Air Cleanliness" conducted by the Fraunhofer Institute for Manufacturing Engineering and Automation IPA in Germany.
*2. In-house test results (TKR15H22-30W40R40, Velocity: 100 m/min or less)

Fraunhofer IPA — valid until January 30, 2023 — Cleanroom (atmospheric)
TESTED® DEVICE
Tsubakimoto Chain Co.
TKR20H28
Report No. TS 2511-1693



Low particle generation

No sliding wear between pins and pin holes and the use of highly wear resistant material with high slidability minimize particle generation.

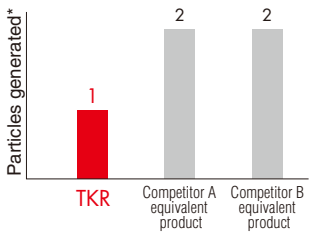


TKR20H28



TKP35H32

■ Comparison of particle generation



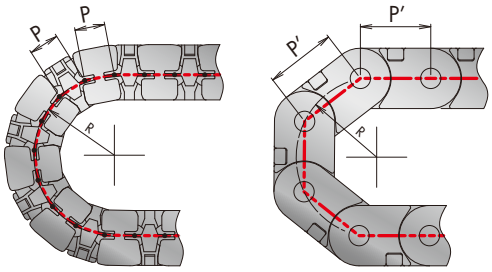
In-house test conditions
- Installation: Standard (with floor)
- Velocity: 120 m/min (no supports)

*Particles generated indicates the number of particles 0.1 µm or larger that exist in one cubic foot.

Smooth bending motion and low vibration

Bending close to an arc ensures smooth low-vibration running.

■ Bent state

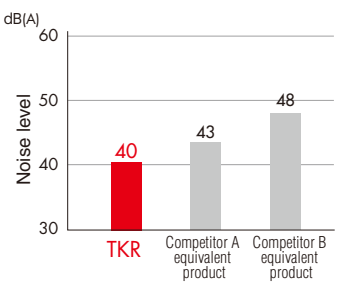


TKR TKP

Low noise

Unique bending mechanism utilizing a short pitch and plastic deflection ensures low noise.

■ Comparison of noise



In-house test conditions
- Installation: Standard (with floor)
- Noise measurement distance: 500 mm
- Velocity: 100 m/min

Can be cut

Can be cut and assembled in the same way as previous plastic series because it uses Snap-fit independent links.

Download instruction manual.

New TKR sizes for larger semiconductor and LCD workpieces and longer travel lengths are now available

NEW

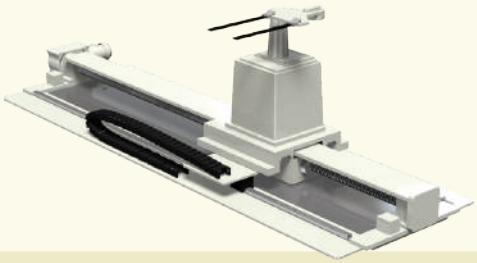
Cable Carrier TKR28H52-EX

Ideal for long travel lengths in clean rooms, such as the semiconductor industry



- **Larger wafers**
- **Long travel length for robots/sliders**
- **Larger LCDs**

Robots that travel large wafers



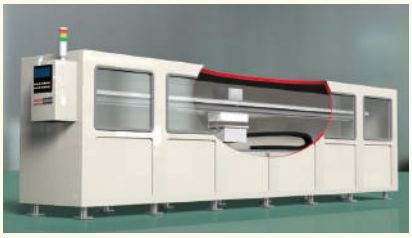
Problem

As wafer diameter increases, the robots used to travel the wafers must now cover long travel lengths.

Solution

The maximum travel length of 5.94 m protects the cables and ensures their cleanliness and long life, even for robots that travel long lengths.

Washer equipment



Problem

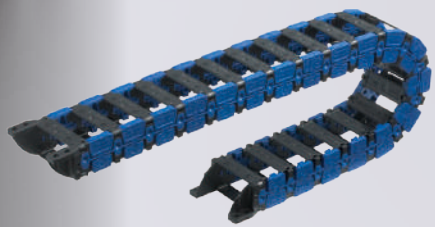
In fully automated washer equipment, the travel distance is increased by the improved yield, but cable carriers that can handle long travel distances generate particles and cause workpiece defects.

Solution

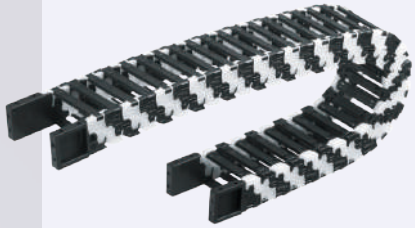
A single TKR28H52-EX unit protects the cables, even with the long travel distances between processes in wafer cleaning, and its low particle generation contributes to improved workpiece failure rates.



Cable Carrier TKR Series Dry environment type



TKR15H22



TKR20H28 / TKR26H40 / TKR28H52 / TKR28H52-EX

Note: Excluding TKR37.



Long travel length

Long travel lengths in clean rooms

Integrating rigid and flexible materials in a single structure provides strength and flexibility. Enables long travel length and quiet operation thanks to its unique structure.

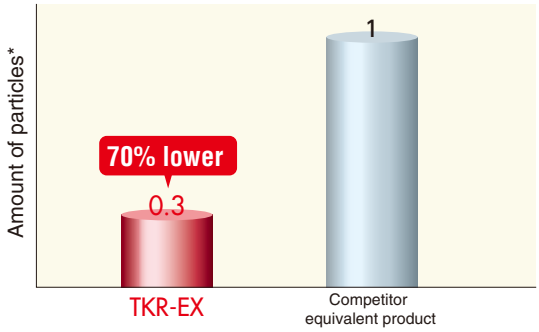


Low particle generation

Clean manufacturing

Unlike the structure of the link, which wears as the pins and holes slide against each other, the bent section has a flexible sag structure without generating many particles.

■ Comparison of particle generation



In-house test conditions
- Installation: Standard (with floor)
- Velocity: 120 m/min
- Acceleration: 4 m/s²
- No cables/tubes

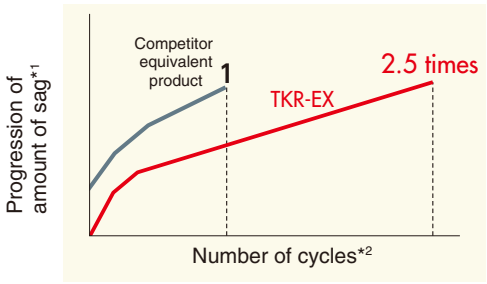
* The amount of generated particles is measured as the number of particles 0.1 µm or larger in one cubic foot, and is expressed as the ratio when the amount for the competitor's product is set at 1.

Long life

Long lasting and easy to maintain

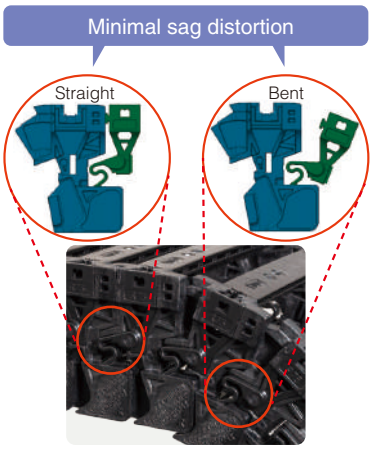
The flexible material comes in a new shape and is highly durable, showing minimal sag distortion whether in the straight or bent sections. In addition, the rigid material extends service life by suppressing the progression of sag in the sections for the unsupported length, which is critical for service life. This reduces the need for replacements.

■ Comparison of service life



In-house test conditions
- Travel length: 5.78 m (unsupported length: 2.95 m)
- Cable and tube mass: 0.3 kg/m
- Velocity: 300 m/min
- Acceleration: 2G

*1 Amount of sag is measured at the point where the unsupported length is greatest.
*2 The number of cycles is expressed as the ratio when the number for the competitor's product is set to 1.



Recommended for

Low-humidity environments

Clean environments

Ideal for low-humidity environments such as for rechargeable battery and LCD manufacturing

Made with durable plastic with high cracking resistance even at low humidity. Tsubaki's unique bending structure also ensures low particle generation.

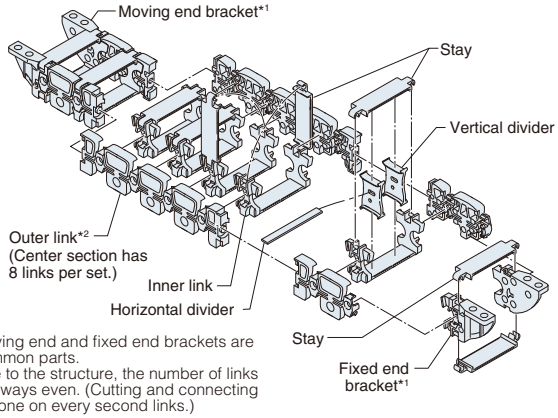
Low humidity

Low particle generation

TKR15H22

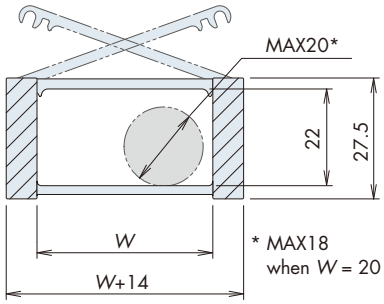
(Patented)

Structure



Note: *1. Moving end and fixed end brackets are common parts.
*2. Due to the structure, the number of links is always even. (Cutting and connecting is done on every second links.)

Cross-section dimensions

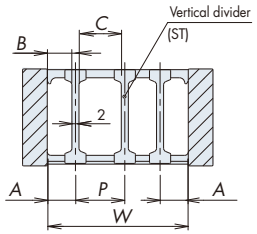


W = 20, 40, 60

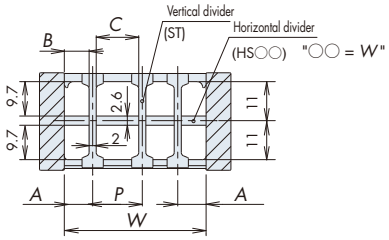
A–A arrow view

Divider dimensions

(1) When using only vertical dividers



(2) Fully-stayed 2-layer height separation



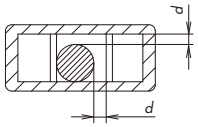
Vertical divider (fastening method)	Inner width W (mm)	A (mm)	B (mm)	P (mm)	C (mm)
ST (sliding installation)	Common for all widths	5 to 21	4 to 20	6 to 50	4 to 48
ST (fixable installation)	20	6, 8	5, 7	6, 8	4, 6
	40	6 to 20 (2 mm increments)	5 to 19 (2 mm increments)	6 to 28 (2 mm increments)	4 to 26 (2 mm increments)
	60	6 to 20	5 to 19	6 to 48	4 to 46

Note: The maximum values for *A*, *B*, *P*, and *C* are applied when using horizontal dividers.

Note:

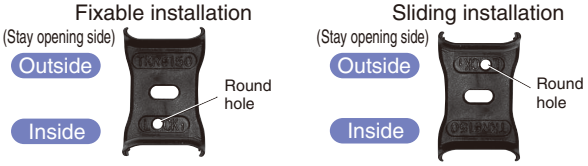
A: Distance from center of vertical divider to end face of link
B: Gap between vertical divider and link
P: Distance between the centers of neighboring vertical dividers
C: Gap between neighboring vertical dividers

Note: Make the gap between cables/tubes and the divider or link (d in the figure to right) to whichever of the following two values is larger: 2 mm or greater or the outer diameter of the cable or tube x 0.1.



Vertical divider (fastening method)

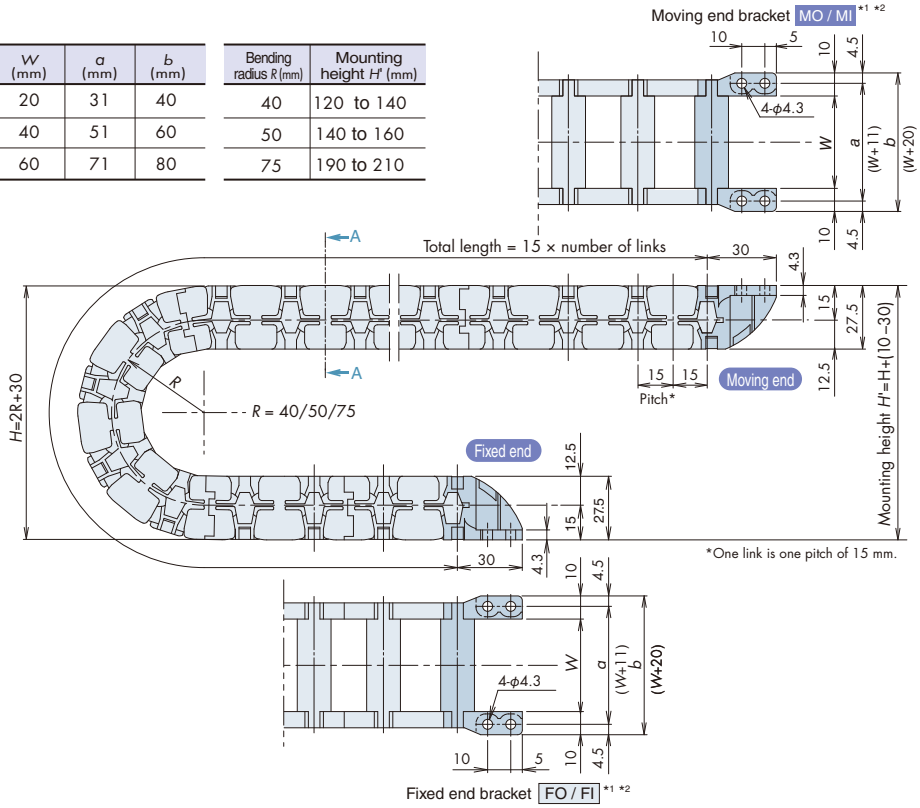
Fixable installation or sliding installation can be selected depending on the installation direction of the same part.



Dimensions & brackets

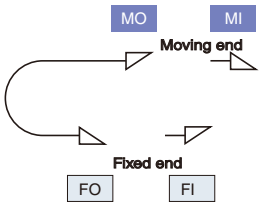
W (mm)	a (mm)	b (mm)
20	31	40
40	51	60
60	71	80

Bending radius R (mm)	Mounting height H' (mm)
40	120 to 140
50	140 to 160
75	190 to 210



Note: *1. MO and FO brackets are common parts.
*2. MI and FI brackets are common parts.

Bracket mounting directions



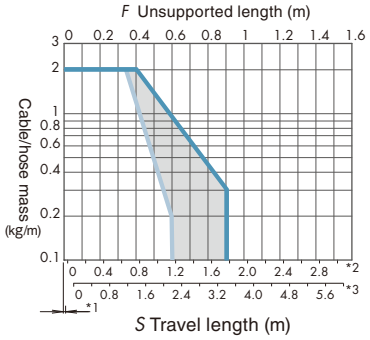
Note: Design and install according to the mounting height *H'* dimension.

Basic specifications

Maximum travel speed (m/min)		300*1
Maximum acceleration G		2
Operating temperature range (°C)		–40 to 80
Materials	Link	Engineering plastic (black)
	Bracket	
	Vertical divider	
	Horizontal divider	Engineering plastic (white)
Standard length (No. of links)		Specified number of links

Note: *1. 150 m/min for support roller arrangement.
2. Cannot be used in acidic or alkaline environments.

Load diagram



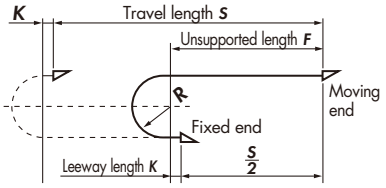
*1. Includes leeway length
*2. Without support rollers
*3. With support rollers

Note: At the conditions in the shaded area of the load diagram, the unsupported length section may run with a sag. This may cause interference between the cable carrier and equipment depending on the installation conditions. Contact a Tsubaki representative for further information.

Calculating no. of links

$$\text{Number of links} = \frac{\frac{S}{2} + \pi R + 2K}{P}$$

Note: When fixed end is at the center of the travel length. Always round up the value.
Due to the structure, the number of links must be even.



S : Travel length (mm)
R : Bending radius (mm)
P : Pitch = 15 mm
K : Leeway length = 15 mm or greater*

* Set the leeway length K to 23 mm or greater for support roller arrangement. Set the installation distance of support rollers to 350 mm or less.

Model number

TKR15H22-(1)W(2)R(3)+(4)L-(5)-(6)

(1) Opening options	(2) Inner width	(3) Bending radius	(4) Number of links	(5) Fixed end	(6) Moving end
30 Outside openable stay	20	40		FO	MO
	40	50		FI	MI
	60	75			

Note: 1. In terms of design, the number of links will always be an even number. One link is one pitch of 15 mm.
2. Moving end and fixed end brackets are common parts.
3. Dividers are delivered uninstalled.
4. Brackets are delivered installed.
5. Required number of vertical dividers: (normally installed every 4 links = installed every 2 stays)
Number of links N for installing vertical dividers = Total number of links (even) ÷ 4
N: Integer (round down decimals)
Required number of vertical dividers = N x n
n: Number of vertical dividers installed per spot on the link
6. Install vertical dividers from second stay on the moving end.

Plastic link (extension)

TKR15H22-(1)W(2)R(3)ETL+(4)L

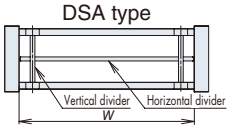
(1) Opening options	(2) Inner width	(3) Bending radius	(4) Number of links
30 Outside openable stay	20	40	
	40	50	
	60	75	

Video on handling and extension

Divider

Type	Model number	Part	Unit
(1) Vertical divider	TKR15H22-ST	1 vertical divider	K (pcs)
(2) Horizontal divider (For DSA type)	TKR15H22-HS (Dimension W) W = 20/40/60	1 horizontal divider	K (pcs)

DSA type



Note: 2 or more vertical dividers are required.

Vertical divider

Model number	For cable carrier model number
TKR15H22-ST	TKR15H22-30W ■■R ■■

Horizontal divider

Model number	For cable carrier model number
TKR15H22-HS20	TKR15H22-30W20R ■■
TKR15H22-HS40	TKR15H22-30W40R ■■
TKR15H22-HS60	TKR15H22-30W60R ■■

Bracket

Model number	For cable carrier model number
TKR15H22W20-MO	TKR15H22-30W20R ■■
TKR15H22W20-MI	
TKR15H22W20-FO	
TKR15H22W20-FI	
TKR15H22W40-MO	TKR15H22-30W40R ■■
TKR15H22W40-MI	
TKR15H22W40-FO	
TKR15H22W40-FI	
TKR15H22W60-MO	TKR15H22-30W60R ■■
TKR15H22W60-MI	
TKR15H22W60-FO	
TKR15H22W60-FI	

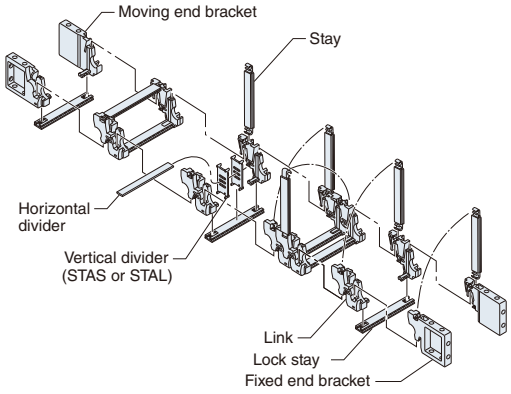
Adding additional links

1) Ordering
When ordering, be sure that the plastic link (extension) model number is for an even number of links.
2) Delivery: (1), (2), and (3) below are delivered uninstalled in the following quantities.
(1) Outer links (8 links = 1 set): {Quantity (number of links) ÷ 8 (round up) × 2 (left/right)} × Number of sets
(2) Inner links: {Quantity (number of links) ÷ 2} × Number of sets
(3) Stays: {Quantity (number of links) ÷ 2} × Number of sets
* Outer links are common parts for both left and right sides. 8 links = 1 set and are delivered uncut.
Ex. 1: **TKR15H22-30W20R40ETL+2L 1H** 2 links × 1 set
(1) Outer links: 2 (2) Inner links: 1 (3) Stay: 1
Ex. 2: **TKR15H22-30W20R40ETL+10L 2H** 10 links × 2 sets
(1) Outer links: 8 (2) Inner links: 10 (3) Stays: 10

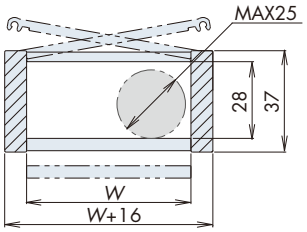
TKR20H28

(Patented)

Structure



Cross-section dimensions

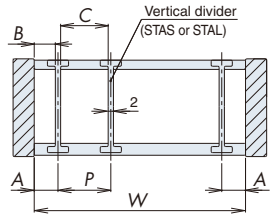


W = 30, 40, 50, 60, 80, 100, 120

A–A arrow view

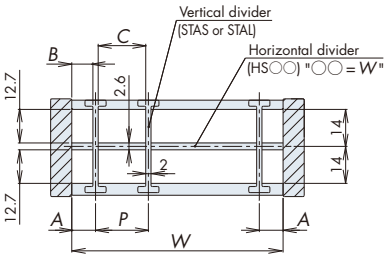
Divider dimensions

(1) When using only vertical dividers

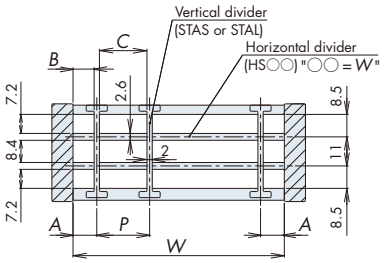


(2) Fully-stayed multiple height separation (DSA type)

When separating into 2 layers



When separating into 3 layers



Vertical divider (fastening method)	Inner width W (mm)	A (mm)	B (mm)	P (mm)	C (mm)
STAS (sliding installation)	Common for all widths	4 to 21	3 to 20	8 to 82	6 to 80
STAL (fixable installation)	30	7 to 15	6 to 14	8 to 16	6 to 14
	40	4 to 20	3 to 19	8 to 32	6 to 30
	50	5 to 21	4 to 20	8 to 40	6 to 38
	60	6 to 18	5 to 17	8 to 48	6 to 46
	80	4 to 20	3 to 19	8 to 72	6 to 70
	100	6 to 18	5 to 17	8 to 80	6 to 82
	120	4 to 20	3 to 19	8 to 80	6 to 82

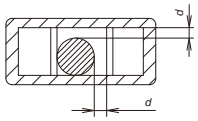
(4 mm increments)

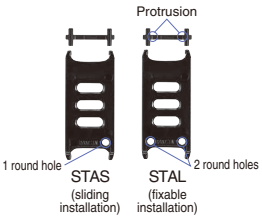
Note: The maximum values for *A*, *B*, *P*, and *C* are applied when using horizontal dividers.

Note:

A: Distance from center of vertical divider to end face of link
B: Gap between vertical divider and link
P: Distance between the centers of neighboring vertical dividers
C: Gap between neighboring vertical dividers

Make the gap between cables/tubes and the divider or link (*d* in the figure to right) to whichever of the following two values is larger: 2 mm or greater or the outer diameter of the cable or tube x 0.1.

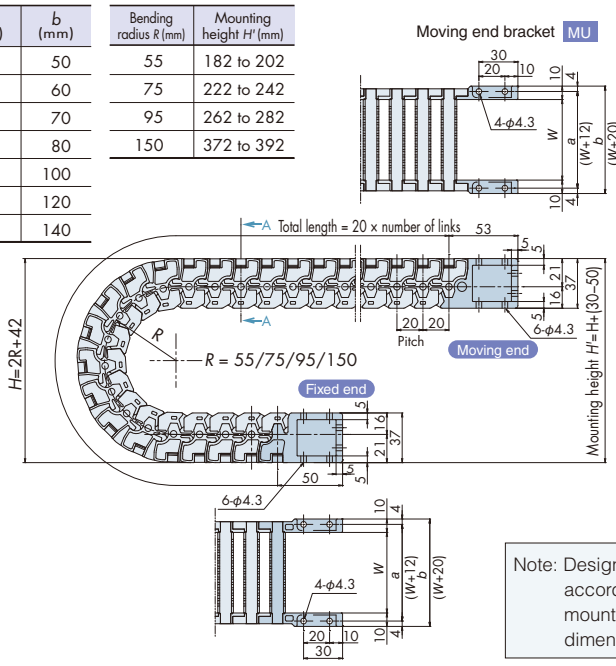




Dimensions & brackets

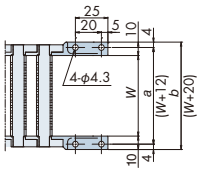
W (mm)	a (mm)	b (mm)
30	42	50
40	52	60
50	62	70
60	72	80
80	92	100
100	112	120
120	132	140

Bending radius R (mm)	Mounting height H' (mm)
55	182 to 202
75	222 to 242
95	262 to 282
150	372 to 392

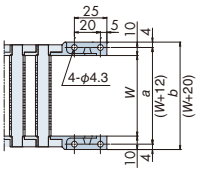


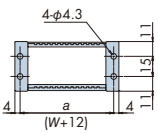
Moving end bracket MU

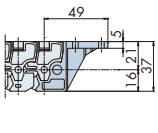
Moving end bracket MO

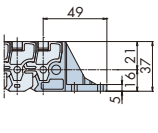


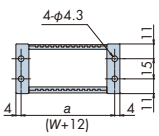
Moving end bracket MI

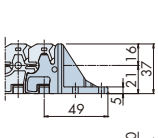


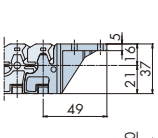






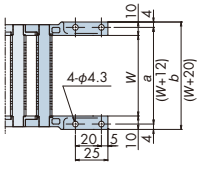




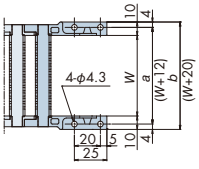


Fixed end bracket FU

Note: Design and install according to the mounting height *H'* dimension.



Fixed end bracket FO



Fixed end bracket FI

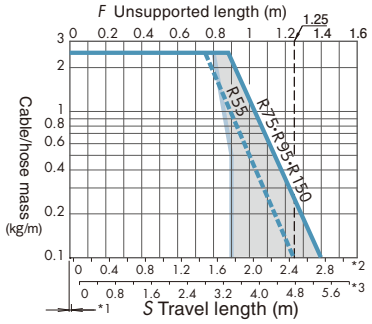
Note: The brackets are all different parts.

Basic specifications

Maximum travel speed (m/min)		300*1
Maximum acceleration G		2
Operating temperature range (°C)		–40 to 80
Materials	Link	Engineering plastic (black)
	Bracket	
	Vertical divider	
	Horizontal divider	Engineering plastic (white)
Standard length (No. of links)		100

Note: *1. 150 m/min for support roller arrangement.
2. Cannot be used in acidic or alkaline environments.

Load diagram



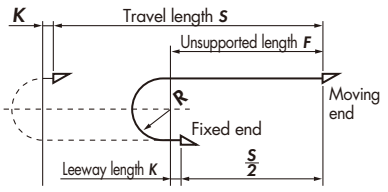
*1. Includes leeway length
*2. Without support rollers
*3. With support rollers

Note: At the conditions in the shaded area of the load diagram, the unsupported length section may run with a sag. This may cause interference between the cable carrier and equipment depending on the installation conditions. Contact a Tsubaki representative for further information.

Calculating no. of links

$$\text{Number of links} = \frac{\frac{S}{2} + \pi R + 2K}{P}$$

Note: When fixed end is at the center of the travel length. Always round up the value.



S : Travel length (mm)
R : Bending radius (mm)
P : Pitch = 20 mm
K : Leeway length = 40 mm or greater*

* Set the leeway length K to 60 mm or greater for support roller arrangement. Set the installation distance of support rollers to 700 mm or less.

Model number

TKR20H28W (1) R (2) + (3) L - (4) - (5)

(1) Inner width
30
40
50
60
80
100
120

(2) Bending radius
55
75
95
150

(3) Number of links

(4) Fixed end
FU
FO
FI

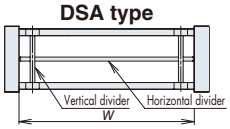
(5) Moving end
MU
MO
MI

Note: 1. Dividers are delivered uninstalled.
2. Brackets are delivered installed.
3. Required number of vertical dividers: (normally installed every 2 links)
Number of links N for installing vertical dividers = (Total number of links + 1) ÷ 2
N: Integer (round down decimals)
Required number of vertical dividers = N x n
n: Number of vertical dividers installed per spot on the link

Divider

Type	Model number	Part	Unit
(1) Vertical divider (sliding installation)	TKR20H28-STAS	1 vertical divider	K (pcs)
(2) Vertical divider (fixable installation)	TKR20H28-STAL	1 vertical divider	K (pcs)
(3) Horizontal divider (For DSA type)	TKR20H28-HS (Dimension W) W = 30/40/50/60/80/100/120	1 horizontal divider	K (pcs)

DSA type



Note: 2 or more vertical dividers are required.

Vertical divider

Model number	For cable carrier model number
TKR20H28-STAS	TKR20H28W ■■R ■■
TKR20H28-STAL	

Horizontal divider

Model number	For cable carrier model number
TKR20H28-HS30	TKR20H28W30R ■■
TKR20H28-HS40	TKR20H28W40R ■■
TKR20H28-HS50	TKR20H28W50R ■■
TKR20H28-HS60	TKR20H28W60R ■■
TKR20H28-HS80	TKR20H28W80R ■■
TKR20H28-HS100	TKR20H28W100R ■■
TKR20H28-HS120	TKR20H28W120R ■■

Bracket

Model number	For cable carrier model number
TKR20H28W30-MU	TKR20H28W30R ■■
TKR20H28W30-MO	
TKR20H28W30-MI	
TKR20H28W30-FU	
TKR20H28W30-FO	
TKR20H28W30-FI	
TKR20H28W40-MU	TKR20H28W40R ■■
TKR20H28W40-MO	
TKR20H28W40-MI	
TKR20H28W40-FU	
TKR20H28W40-FO	
TKR20H28W40-FI	
TKR20H28W50-MU	TKR20H28W50R ■■
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TKR20H28W50-MI	
TKR20H28W50-FU	
TKR20H28W50-FO	
TKR20H28W50-FI	
TKR20H28W60-MU	TKR20H28W60R ■■
TKR20H28W60-MO	
TKR20H28W60-MI	
TKR20H28W60-FU	
TKR20H28W60-FO	
TKR20H28W60-FI	
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TKR20H28W80-MI	
TKR20H28W80-FU	
TKR20H28W80-FO	
TKR20H28W80-FI	
TKR20H28W100-MU	TKR20H28W100R ■■
TKR20H28W100-MO	
TKR20H28W100-MI	
TKR20H28W100-FU	
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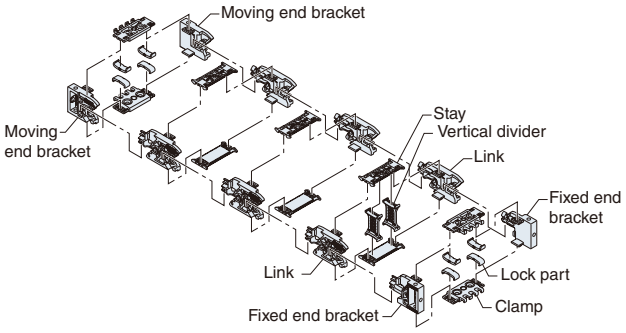
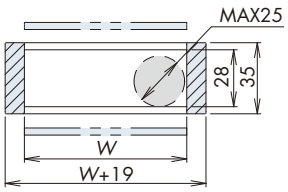
TKR20H28W120-MI	
TKR20H28W120-FU	
TKR20H28W120-FO	
TKR20H28W120-FI	

TKR37H28

Structure



Cross-section dimensions

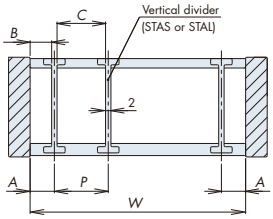


W = 40, 50, 60, 70, 80

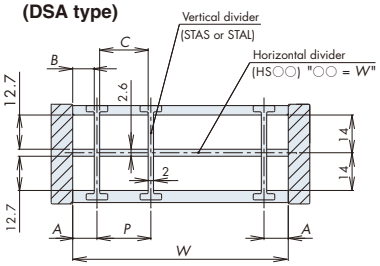
A–A arrow view

Divider dimensions

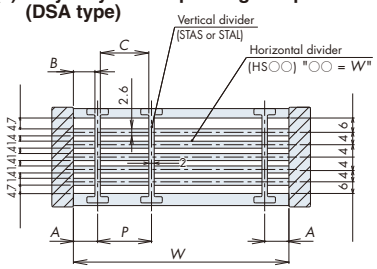
(1) When using only vertical dividers



(2) Fully-stayed 2-layer height separation (DSA type)



(3) Fully-stayed multiple height separation (DSA type)



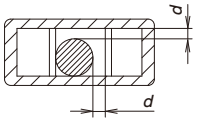
Vertical divider (fastening method)	Inner width *W* (mm)	*A* (mm)	*B* (mm)	*P* (mm)	*C* (mm)
STAS (sliding installation)	Common for all widths	7.5 to 21	6.5 to 20	8 to 65	6 to 63
STAL (fixable installation)	40	8 to 20	7 to 19	8 to 24	6 to 22
	50	9 to 21	8 to 20	8 to 32	6 to 30
	60	8 to 20	7 to 19	8 to 44	6 to 42
	70	9 to 21	8 to 20	8 to 52	6 to 50
	80	8 to 20	7 to 19	8 to 64	6 to 62

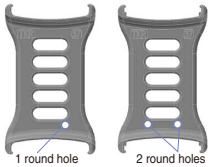
(2 mm increments)

Note:

A: Distance from center of vertical divider to end face of link
B: Gap between vertical divider and link
P: Distance between the centers of neighboring vertical dividers
C: Gap between neighboring vertical dividers

Note: Make the gap between cables/tubes and the divider or link (*d* in the figure below) to whichever of the following two values is larger: 2 mm or greater or the outer diameter of the cable or tube x 0.1.





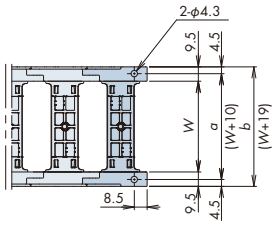
Vertical divider

Dimensions & brackets

W (mm)	*a* (mm)	*b* (mm)	*c* (mm)	Strain relief comb n_z (toothed)
40	50	59	22	3
50	60	69	32	4
60	70	79	42	5
70	80	89	52	6
80	90	99	62	7

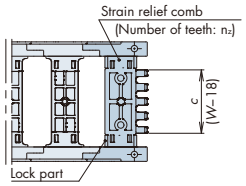
Bending radius *R* (mm)	Mounting height *H'* (mm)
55	180 to 200
75	220 to 240
100	270 to 290

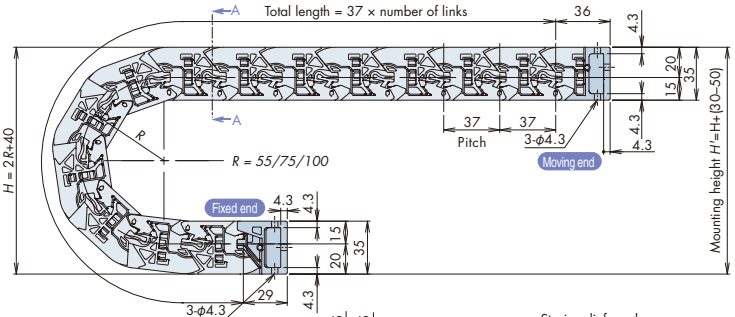
Moving end bracket **MU**

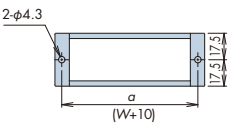


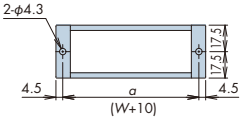
Moving end bracket **MUCLO / MUCLI / MUCLB**

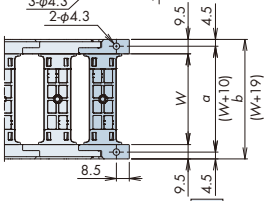
- MUCLO: Strain relief comb outside mounting
- MUCLI: Strain relief comb inside mounting
- MUCLB: Strain relief comb inside/outside mounting



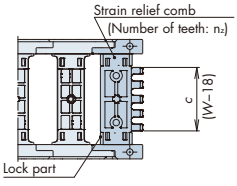








Fixed end bracket **FU**



Fixed end bracket **FUCLO / FUCLI / FUCLB**

Note: Design and install according to the mounting height *H'* dimension.

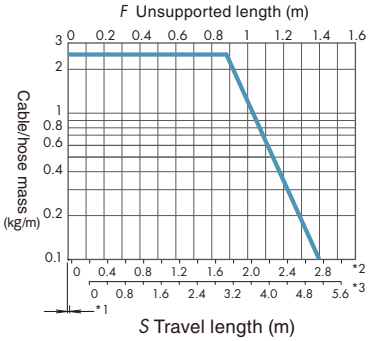
- FUCLO: Strain relief comb outside mounting
- FUCLI: Strain relief comb inside mounting
- FUCLB: Strain relief comb inside/outside mounting

Basic specifications

Maximum travel speed (m/min)		300*1
Maximum acceleration G		2
Operating temperature range (°C)		–40 to 80
Materials	Link	Engineering plastic (black)
	Bracket	
	Vertical divider	
	Horizontal divider	Engineering plastic (white)
	Clamp	Engineering plastic (black)
Standard length (No. of links)		50

Note: *1. 150 m/min for support roller arrangement.
2. Cannot be used in acidic or alkaline environments.

Load diagram

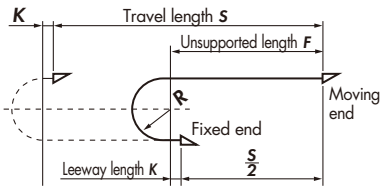


*1. Includes leeway length
*2. Without support rollers
*3. With support rollers

Calculating no. of links

$$\text{Number of links} = \frac{\frac{S}{2} + \pi R + 2K}{P}$$

Note: When fixed end is at the center of the travel length. Always round up the value.



S : Travel length (mm)
R : Bending radius (mm)
P : Pitch = 37 mm
K : Leeway length = 74 mm or greater*

* Set the leeway length K to 111 mm or greater for support roller arrangement. Set the installation distance of support rollers to 700 mm or less.

Model number

TKR37H28W (1) R (2) + (3) L - (4) - (5)

(1) Inner width	(2) Bending radius	(3) Number of links	(4) Fixed end	(5) Moving end
40	55		FU	MU
50	75		FUCLO	MUCLO
60	100		FUCLI	MUCLI
70			FUCLB	MUCLB
80				

Note: 1. Dividers are delivered uninstalled.
2. Brackets are delivered installed.
3. Install dividers every 2 links.
4. Required number of vertical dividers: (normally installed every 2 links)
Number of links N for installing vertical dividers = Total number of links ÷ 2 N: Integer (round down decimals)
Required number of vertical dividers = N x n n: Number of vertical dividers installed per spot on the link

Vertical divider

Model number	For cable carrier model number
TKR37H28-STAS	TKR37H28W ■■R ■■
TKR37H28-STAL	

Horizontal divider

Model number	For cable carrier model number
TKR37H28-HS40	TKR37H28W40R ■■
TKR37H28-HS50	TKR37H28W50R ■■
TKR37H28-HS60	TKR37H28W60R ■■
TKR37H28-HS70	TKR37H28W70R ■■
TKR37H28-HS80	TKR37H28W80R ■■

Strain relief comb

Model number	Applicable bracket
TKR37H28W40-CL-U	TKR37H28W40-MU/FU
TKR37H28W50-CL-U	TKR37H28W50-MU/FU
TKR37H28W60-CL-U	TKR37H28W60-MU/FU
TKR37H28W70-CL-U	TKR37H28W70-MU/FU
TKR37H28W80-CL-U	TKR37H28W80-MU/FU

Bracket

Model number	For cable carrier model number
TKR37H28W40-MU	TKR37H28W40R ■■
TKR37H28W40-FU	
TKR37H28W50-MU	TKR37H28W50R ■■
TKR37H28W50-FU	
TKR37H28W60-MU	TKR37H28W60R ■■
TKR37H28W60-FU	
TKR37H28W70-MU	TKR37H28W70R ■■
TKR37H28W70-FU	
TKR37H28W80-MU	TKR37H28W80R ■■
TKR37H28W80-FU	

Bracket (with 1 strain relief comb)

Model number	For cable carrier model number
TKR37H28W40-MUCLO	TKR37H28W40R ■■
TKR37H28W40-FUCLO	
TKR37H28W40-MUCLI	
TKR37H28W40-FUCLI	
TKR37H28W50-MUCLO	TKR37H28W50R ■■
TKR37H28W50-FUCLO	
TKR37H28W50-MUCLI	
TKR37H28W50-FUCLI	
TKR37H28W60-MUCLO	TKR37H28W60R ■■
TKR37H28W60-FUCLO	
TKR37H28W60-MUCLI	
TKR37H28W60-FUCLI	
TKR37H28W70-MUCLO	TKR37H28W70R ■■
TKR37H28W70-FUCLO	
TKR37H28W70-MUCLI	
TKR37H28W70-FUCLI	
TKR37H28W80-MUCLO	TKR37H28W80R ■■
TKR37H28W80-FUCLO	
TKR37H28W80-MUCLI	
TKR37H28W80-FUCLI	

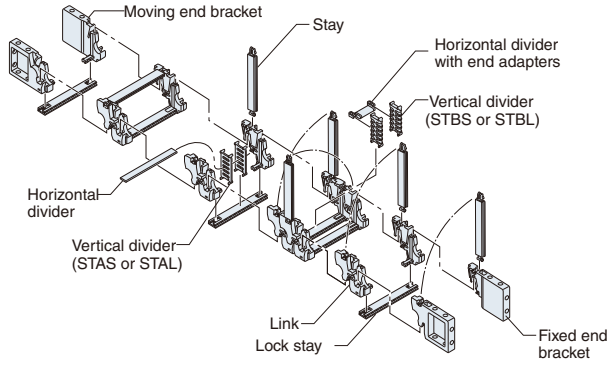
Bracket (with 2 strain relief combs)

Model number	For cable carrier model number
TKR37H28W40-MUCLB	TKR37H28W40R ■■
TKR37H28W40-FUCLB	
TKR37H28W50-MUCLB	TKR37H28W50R ■■
TKR37H28W50-FUCLB	
TKR37H28W60-MUCLB	TKR37H28W60R ■■
TKR37H28W60-FUCLB	
TKR37H28W70-MUCLB	TKR37H28W70R ■■
TKR37H28W70-FUCLB	
TKR37H28W80-MUCLB	TKR37H28W80R ■■
TKR37H28W80-FUCLB	

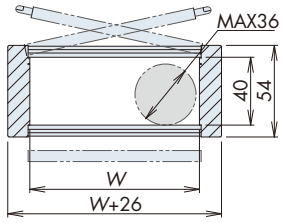
TKR26H40

(Patented)

Structure



Cross-section dimensions

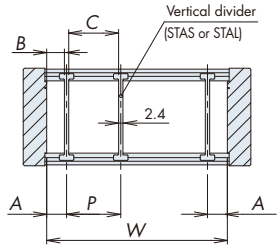


W = 50, 62, 75, 87, 100, 125, 150, 200

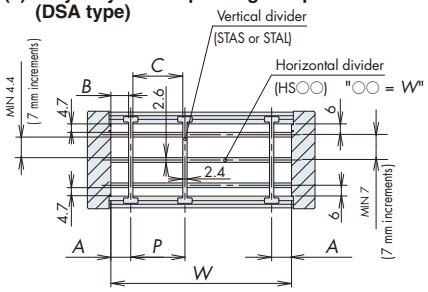
A–A arrow view

Divider dimensions

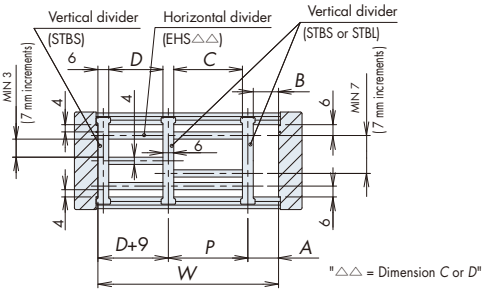
(1) When using only vertical dividers



(2) Fully-stayed multiple height separation (DSA type)



(3) Partial multiple height separation (DSB type)



Vertical divider (fastening method)	Inner width W (mm)	A (mm)	B (mm)	P (mm)	C (mm)	D (mm)
STAS (sliding installation)	Common for all widths	3 to 65	1.8 to 63.8	8 to 140	5.6 to 137.6	
STAL (fixable installation)	50	5 to 37	3.8 to 35.8	8 to 40	5.6 to 37.6	
	62	7 to 47	5.8 to 45.8	8 to 48	5.6 to 45.6	
	75	5.5 to 61.5	4.3 to 60.8	8 to 64	5.6 to 61.6	
	87	3.5 to 63.5	2.3 to 62.3	8 to 80	5.6 to 77.6	
	100	6 to 62	4.8 to 60.8	8 to 88	5.6 to 85.6	
	125	6.5 to 62.5	5.3 to 61.3	8 to 112	5.6 to 109.6	
	150	7 to 63	5.8 to 61.8	8 to 136	5.6 to 133.6	
	200	4 to 64	2.8 to 62.3	8 to 192	5.6 to 189.6	
STBS (sliding installation)	Common for all widths	min 3	min 0	26 to (W-6)	20 to (W-12)	20 to (W-12)
STBL (fixable installation)	50	min 5	min 2	–	–	20 to 36
	62	min 7	min 4	–	–	20 to 46
	75	min 5.5	min 2.5	28 to 40	22 to 34	20.5 to 60.5
	87	min 3.5	min 0.5	28 to 52	22 to 46	22.5 to 74.5
	100	min 6	min 3	28 to 64	22 to 58	21 to 85
	125	min 6.5	min 3.5	28 to 88	22 to 82	21.5 to 109.5
	150	min 7	min 4	28 to 111	22 to 106	22 to 134
	200	min 4	min 1	28 to 164	22 to 138	23 to 187

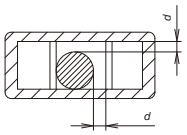
(Each row: A, B, C increase in 4 mm increments; D increases in 4 mm increments.)

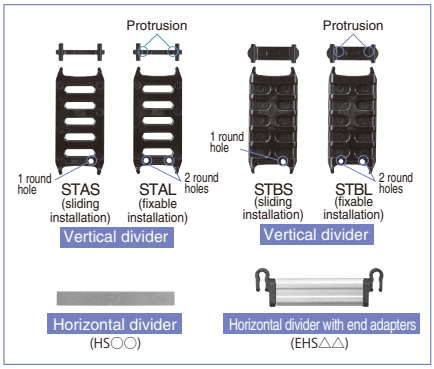
Note: The maximum values for *A*, *B*, *P*, and *C* are applied when using horizontal dividers.

Note:

A: Distance from center of vertical divider to end face of link
B: Gap between vertical divider and link
P: Distance between the centers of neighboring vertical dividers
C: Gap between neighboring vertical dividers
D: Gap between neighboring vertical dividers when vertical dividers/dividers for both ends are installed

Note: Make the gap between cables/tubes and the divider or link (*d* in the figure below) to whichever of the following two values is larger: 2 mm or greater or the outer diameter of the cable or tube x 0.1.

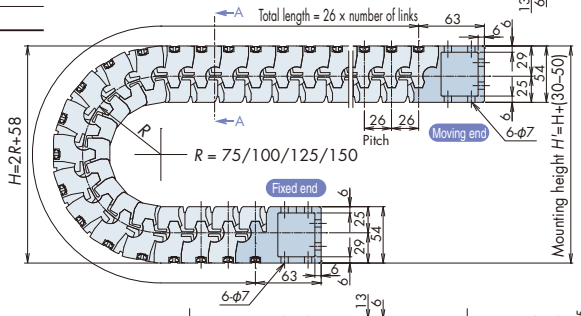




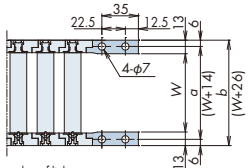
Dimensions & brackets

W (mm)	a (mm)	b (mm)	c (mm)	Strain relief comb n_2 (toothed)
50	64	76	33	3
62	76	88	–	–
75	89	101	58	5
87	101	113	–	–
100	114	126	83	7
125	139	151	108	9
150	164	176	133	11
200	214	226	–	–

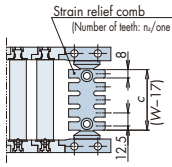
Bending radius R (mm)	Mounting height H' (mm)
75	238 to 258
100	288 to 308
125	338 to 358
150	388 to 408



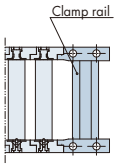
Moving end bracket **MU** *2

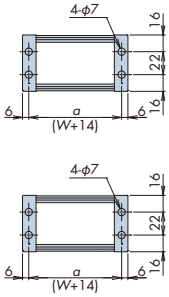


Moving end bracket **MUCL** *1 *3 (with 1 strain relief comb)



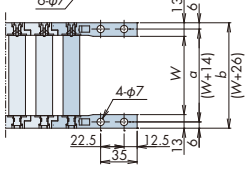
Moving end bracket **MUCR** *1 (with 1 clamp rail)



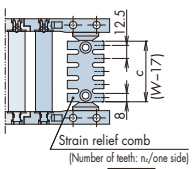


Note: Design and install according to the mounting height *H'* dimension.

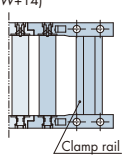
Fixed end bracket **FU** *2



Fixed end bracket **FUCL** *1 *3 (with 1 strain relief comb)



Fixed end bracket **FUCR** *1 (with 1 clamp rail)



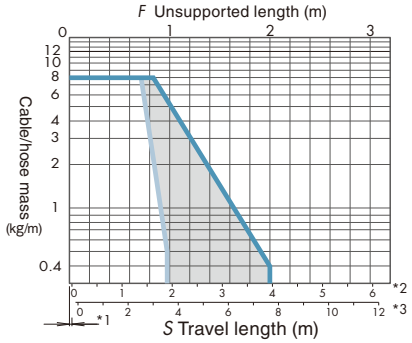
Note: *1. Strain relief combs and clamp rails can be installed on the inside and outside.
*2. Note that the strain relief comb and clamp rail cannot be added to the MU and FU brackets.
*3. Only when *W* = 50, 75, 100, 125, or 150.

Basic specifications

Maximum travel speed (m/min)			300*1
Maximum acceleration G			2
Operating temperature range (°C)			–40 to 80
Materials	Link		Engineering plastic (black)
	Bracket		
	Vertical divider		
	Horizontal divider	For DSA type (HS)	Aluminum
		For DSB type (EHS)	Engineering plastic + aluminum (black)
Standard length (No. of links)			100

Note: *1. 150 m/min for support roller arrangement.
2. Cannot be used in acidic or alkaline environments.

Load diagram



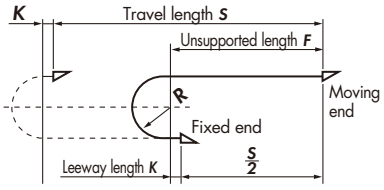
*1. Includes leeway length
*2. Without support rollers
*3. With support rollers

Note: At the conditions in the shaded area of the load diagram, the unsupported length section may run with a sag. This may cause interference between the cable carrier and equipment depending on the installation conditions. Contact a Tsubaki representative for further information.

Calculating no. of links

$$\text{Number of links} = \frac{\frac{S}{2} + \pi R + 2K}{P}$$

Note: When fixed end is at the center of the travel length. Always round up the value.



S : Travel length (mm)
R : Bending radius (mm)
P : Pitch = 26 mm
K : Leeway length = 52 mm or greater*

* Set the leeway length K to 78 mm or greater for support roller arrangement. Set the installation distance of support rollers to 700 mm or less.

Model number

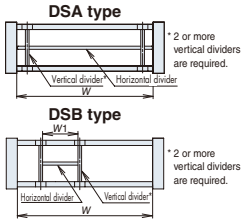
TKR26H40W (1) R (2) + (3) L - (4) - (5)

(1) Inner width	(2) Bending radius	(3) Number of links	(4) Fixed end	(5) Moving end
50	75		FU	MU
62	100		FUCL*4	MUCL*4
75	125		FUCR	MUCR
87	150			
100				
125				
150				
200				

Note: 1. Dividers, strain relief combs, and clamp rails are delivered uninstalled.
2. Brackets are delivered installed.
3. Required number of vertical dividers: (normally installed every 2 links)
Number of links N for installing vertical dividers = (Total number of links + 1) ÷ 2
N: Integer (round down decimals)
Required number of vertical dividers = N x n
n: Number of vertical dividers installed per spot on the link
*4. Those for W = 62, 87, and 200 cannot use the FUCL fixed end and MUCL moving end.

Divider

Method	Type		Model number	Part	Unit
DSA type	Vertical divider	Sliding installation	TKR26H40-STAS	1 vertical divider	K (pcs)
		Fixable installation	TKR26H40-STAL	1 vertical divider	K (pcs)
	Horizontal divider		TKR26H40-HS (Dimension W) W = 50/62/75/87/100/125/150/200	1 horizontal divider	K (pcs)
DSB type	Vertical divider	Sliding installation	TKR26H40-STBS	1 vertical divider	K (pcs)
		Fixable installation	TKR26H40-STBL	1 vertical divider	K (pcs)
	Horizontal divider with end adapters		TKR26H40-EHS△△ △△= Dimension C or D of divider dimensions	1 horizontal divider 2 end adapters	K (pcs)



Strain relief comb (plastic)

Model number	Applicable bracket
TKR26H40W50-CL-U	TKR26H40W50-MU/FU
TKR26H40W75-CL-U	TKR26H40W75-MU/FU
TKR26H40W100-CL-U	TKR26H40W100-MU/FU
TKR26H40W125-CL-U	TKR26H40W125-MU/FU
TKR26H40W150-CL-U	TKR26H40W150-MU/FU

Note: None for W62, 87, and 200.

Vertical divider

Model number	For cable carrier model number
TKR26H40-STAS	TKR26H40W■■R■■
TKR26H40-STAL	
TKR26H40-STBS	
TKR26H40-STBL	

Horizontal divider with end adapters

Model number
TKR26H40-EHS△△

△△: 20 to less than 188 Note: Minimum 0.5 mm each

Horizontal divider

Model number	For cable carrier model number
TKR26H40-HS50	TKR26H40W50R■■
TKR26H40-HS62	TKR26H40W62R■■
TKR26H40-HS75	TKR26H40W75R■■
TKR26H40-HS87	TKR26H40W87R■■
TKR26H40-HS100	TKR26H40W100R■■
TKR26H40-HS125	TKR26H40W125R■■
TKR26H40-HS150	TKR26H40W150R■■
TKR26H40-HS200	TKR26H40W200R■■

Clamp rail (steel)

Model number	Applicable bracket
TKR26H40W50-CRA	TKR26H40W50-MU/FU
TKR26H40W62-CRA	TKR26H40W62-MU/FU
TKR26H40W75-CRA	TKR26H40W75-MU/FU
TKR26H40W87-CRA	TKR26H40W87-MU/FU
TKR26H40W100-CRA	TKR26H40W100-MU/FU
TKR26H40W125-CRA	TKR26H40W125-MU/FU
TKR26H40W150-CRA	TKR26H40W150-MU/FU
TKR26H40W200-CRA	TKR26H40W200-MU/FU

Bracket

Model number	For cable carrier model number
TKR26H40W50-MU	TKR26H40W50R■■
TKR26H40W50-FU	
TKR26H40W62-MU	TKR26H40W62R■■
TKR26H40W62-FU	
TKR26H40W75-MU	TKR26H40W75R■■
TKR26H40W75-FU	
TKR26H40W87-MU	TKR26H40W87R■■
TKR26H40W87-FU	
TKR26H40W100-MU	TKR26H40W100R■■
TKR26H40W100-FU	
TKR26H40W125-MU	TKR26H40W125R■■
TKR26H40W125-FU	
TKR26H40W150-MU	TKR26H40W150R■■
TKR26H40W150-FU	
TKR26H40W200-MU	TKR26H40W200R■■
TKR26H40W200-FU	

Bracket (with 1 strain relief comb)

Model number	For cable carrier model number
TKR26H40W50-MUCL	TKR26H40W50R■■
TKR26H40W50-FUCL	
TKR26H40W75-MUCL	TKR26H40W75R■■
TKR26H40W75-FUCL	
TKR26H40W100-MUCL	TKR26H40W100R■■
TKR26H40W100-FUCL	
TKR26H40W125-MUCL	TKR26H40W125R■■
TKR26H40W125-FUCL	
TKR26H40W150-MUCL	TKR26H40W150R■■
TKR26H40W150-FUCL	

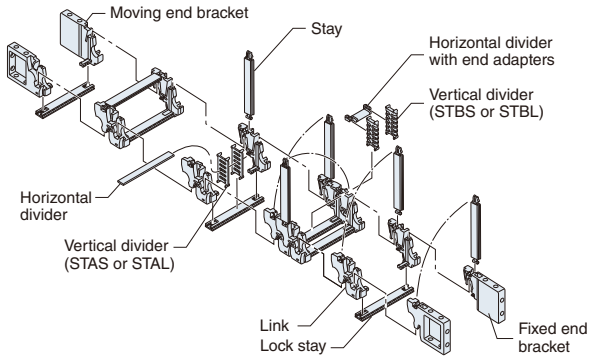
Bracket (with 1 clamp rail)

Model number	For cable carrier model number
TKR26H40W50-MUCR	TKR26H40W50R■■
TKR26H40W50-FUCR	
TKR26H40W62-MUCR	TKR26H40W62R■■
TKR26H40W62-FUCR	
TKR26H40W75-MUCR	TKR26H40W75R■■
TKR26H40W75-FUCR	
TKR26H40W87-MUCR	TKR26H40W87R■■
TKR26H40W87-FUCR	
TKR26H40W100-MUCR	TKR26H40W100R■■
TKR26H40W100-FUCR	
TKR26H40W125-MUCR	TKR26H40W125R■■
TKR26H40W125-FUCR	
TKR26H40W150-MUCR	TKR26H40W150R■■
TKR26H40W150-FUCR	
TKR26H40W200-MUCR	TKR26H40W200R■■
TKR26H40W200-FUCR	

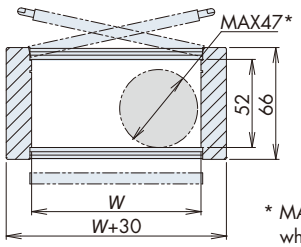
TKR28H52

(Patented)

Structure



Cross-section dimensions



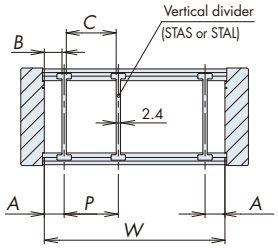
* MAX45 when W = 50

W = 50, 62, 75, 87, 100, 125, 150, 200

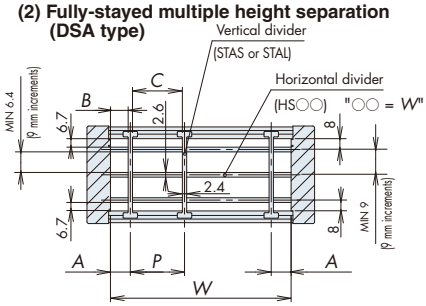
A–A arrow view

Divider dimensions

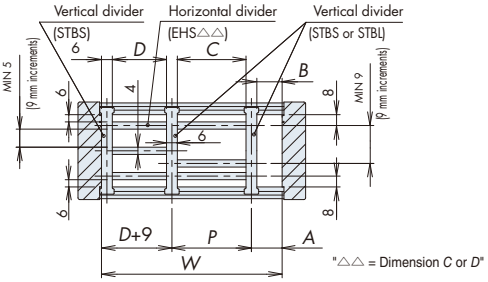
(1) When using only vertical dividers



(2) Fully-stayed multiple height separation (DSA type)



(3) Partial multiple height separation (DSB type)



"△△ = Dimension *C* or *D*"

Vertical divider (fastening method)	Inner width W (mm)	A (mm)	B (mm)	P (mm)	C (mm)	D (mm)
STAS (sliding installation)	Common for all widths	3 to 65	1.8 to 63.8	8 to 130	5.6 to 127.6	
STAL (fixable installation)	50	5 to 37	3.8 to 35.8	8 to 40	5.6 to 37.6	4 mm increments
	62	7 to 47	5.8 to 45.8	8 to 48	5.6 to 45.6	
	75	5.5 to 61.5	4.3 to 60.3	8 to 64	5.6 to 61.6	
	87	3.5 to 63.5	2.3 to 62.3	8 to 80	5.6 to 77.6	
	100	6 to 62	4.8 to 60.8	8 to 88	5.6 to 85.6	
	125	6.5 to 62.5	5.3 to 61.3	8 to 112	5.6 to 109.6	
	150	7 to 63	5.8 to 61.8	8 to 124	5.6 to 121.6	
	200	4 to 64	2.8 to 62.8	8 to 124	5.6 to 121.6	
STBS (sliding installation)	Common for all widths	min 3	min 0	26 to (W-6)	20 to (W-12)	20 to (W-12)
STBL (fixable installation)	50	min 5	min 2	–	–	20 to 36
	62	min 7	min 4	–	–	22 to 46
	75	min 5.5	min 2.5	28 to 40	22 to 34	20.5 to 60.5
	87	min 3.5	min 0.5	28 to 52	22 to 46	22.5 to 74.5
	100	min 6	min 3	28 to 64	22 to 58	21 to 85
	125	min 6.5	min 3.5	28 to 88	22 to 82	21.5 to 109.5
	150	min 7	min 4	28 to 112	22 to 106	22 to 134
	200	min 4	min 1	28 to 164	22 to 158	23 to 187

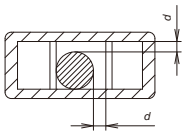
4 mm increments

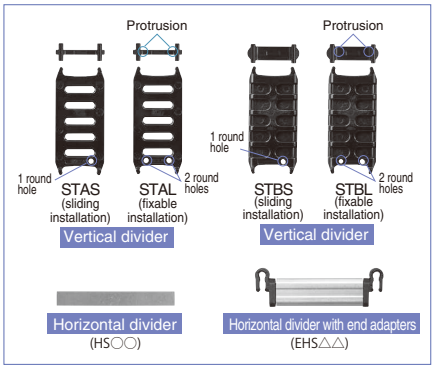
Note: The maximum values for *A*, *B*, *P*, and *C* are applied when using horizontal dividers.

Note:

A: Distance from center of vertical divider to end face of link
B: Gap between vertical divider and link
P: Distance between the centers of neighboring vertical dividers
C: Gap between neighboring vertical dividers
D: Gap between neighboring vertical dividers when vertical dividers/dividers for both ends are installed

Note: Make the gap between cables/tubes and the divider or link (*d* in the figure below) to whichever of the following two values is larger: 2 mm or greater or the outer diameter of the cable or tube x 0.1.



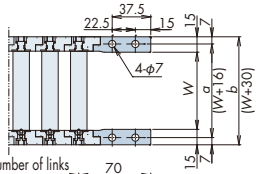


Dimensions & brackets

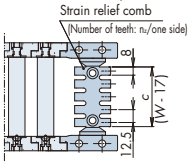
W (mm)	a (mm)	b (mm)	c (mm)	Strain relief comb n_2 (toothed)
50	66	80	33	3
62	78	92	–	–
75	91	105	58	5
87	103	117	–	–
100	116	130	83	7
125	141	155	108	9
150	166	180	133	11
200	216	230	–	–

Bending radius R (mm)	Mounting height H' (mm)
75	252 to 272
100	302 to 322
150	402 to 422
200	502 to 522

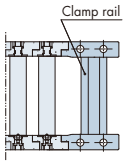
Moving end bracket **MU** *2

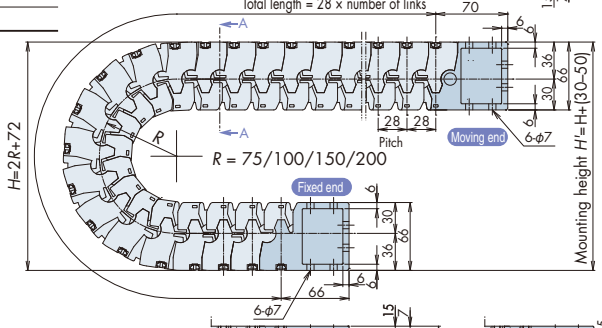


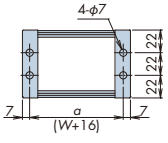
Moving end bracket **MUCL** *1 *3 (with 1 strain relief comb)

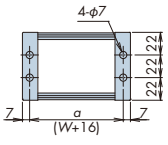


Moving end bracket **MUCR** *1 (with 1 clamp rail)

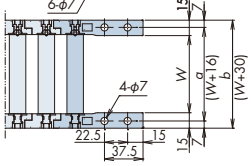




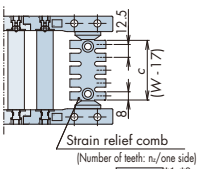




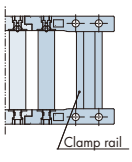
Note: Design and install according to the mounting height *H'* dimension.



Fixed end bracket **FU** *2



Fixed end bracket **FUCL** *1 *3 (with 1 strain relief comb)



Fixed end bracket **FUCR** *1 (with 1 clamp rail)

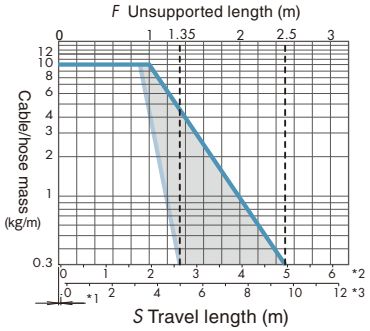
Note: *1. Strain relief combs and clamp rails can be installed on the inside and outside.
*2. Note that the strain relief comb and clamp rail cannot be added to the MU and FU brackets.
*3. Only when *W* = 50, 75, 100, 125, or 150.

Basic specifications

Maximum travel speed (m/min)			300*1
Maximum acceleration G			2
Operating temperature range (°C)			–40 to 80
Materials	Link		Engineering plastic (black)
	Bracket		
	Vertical divider		
	Horizontal divider	For DSA type (HS)	Aluminum
		For DSB type (EHS)	Engineering plastic + aluminum (black)
Standard length (No. of links)			100

Note: *1. 150 m/min for support roller arrangement.
2. Cannot be used in acidic or alkaline environments.

Load diagram



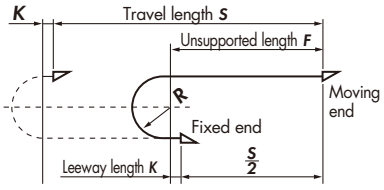
*1. Includes leeway length
*2. Without support rollers
*3. With support rollers

Note: At the conditions in the shaded area of the load diagram, the unsupported length section may run with a sag. This may cause interference between the cable carrier and equipment depending on the installation conditions. Contact a Tsubaki representative for further information.

Calculating no. of links

$$\text{Number of links} = \frac{\frac{S}{2} + \pi R + 2K}{P}$$

Note: When fixed end is at the center of the travel length. Always round up the value.



S : Travel length (mm)
R : Bending radius (mm)
P : Pitch = 28 mm
K : Leeway length = 56 mm or greater*

* Set the leeway length K to 84 mm or greater for support roller arrangement. Set the installation distance of support rollers to 900 mm or less.

Model number

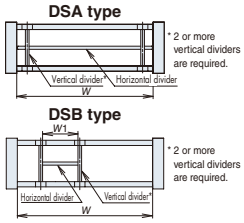
TKR28H52W (1) R (2) + (3) L - (4) - (5)

(1) Inner width	(2) Bending radius	(3) Number of links	(4) Fixed end	(5) Moving end
50	75		FU	MU
62	100		FUCL*4	MUCL*4
75	150		FUCR	MUCR
87	200			
100				
125				
150				
200				

Note: 1. Dividers, strain relief combs, and clamp rails are delivered uninstalled.
2. Brackets are delivered installed.
3. Required number of vertical dividers: (normally installed every 2 links)
Number of links N for installing vertical dividers = (Total number of links + 1) ÷ 2
N: Integer (round down decimals)
Required number of vertical dividers = N x n
n: Number of vertical dividers installed per spot on the link
*4. Those for W = 62, 87, and 200 cannot use the FUCL fixed end and MUCL moving end.

Divider

Method	Type		Model number	Part	Unit
DSA type	Vertical divider	Sliding installation	TKR28H52-STAS	1 vertical divider	K (pcs)
		Fixable installation	TKR28H52-STAL	1 vertical divider	K (pcs)
	Horizontal divider		TKR28H52-HS (Dimension W) W = 50/62/75/87/100/125/150/200	1 horizontal divider	K (pcs)
DSB type	Vertical divider	Sliding installation	TKR28H52-STBS	1 vertical divider	K (pcs)
		Fixable installation	TKR28H52-STBL	1 vertical divider	K (pcs)
	Horizontal divider with end adapters		TKR28H52-EHS△△ △△= Dimension C or D of divider dimensions	1 horizontal divider 2 end adapters	K (pcs)



Strain relief comb (plastic)

Model number	Applicable bracket
TKR28H52W50-CL-U	TKR28H52W50-MU/FU
TKR28H52W75-CL-U	TKR28H52W75-MU/FU
TKR28H52W100-CL-U	TKR28H52W100-MU/FU
TKR28H52W125-CL-U	TKR28H52W125-MU/FU
TKR28H52W150-CL-U	TKR28H52W150-MU/FU

Note: None for W62, 87, and 200.

Vertical divider

Model number	For cable carrier model number
TKR28H52-STAS	TKR28H52W■■R■■
TKR28H52-STAL	
TKR28H52-STBS	
TKR28H52-STBL	

Horizontal divider with end adapters

Model number
TKR28H52-EHS△△

△△: 20 to less than 188 Note: Minimum 0.5 mm each

Horizontal divider

Model number	For cable carrier model number
TKR28H52-HS50	TKR28H52W50R■■
TKR28H52-HS62	TKR28H52W62R■■
TKR28H52-HS75	TKR28H52W75R■■
TKR28H52-HS87	TKR28H52W87R■■
TKR28H52-HS100	TKR28H52W100R■■
TKR28H52-HS125	TKR28H52W125R■■
TKR28H52-HS150	TKR28H52W150R■■
TKR28H52-HS200	TKR28H52W200R■■

Clamp rail (steel)

Model number	Applicable bracket
TKR28H52W50-CRA	TKR28H52W50-MU/FU
TKR28H52W62-CRA	TKR28H52W62-MU/FU
TKR28H52W75-CRA	TKR28H52W75-MU/FU
TKR28H52W87-CRA	TKR28H52W87-MU/FU
TKR28H52W100-CRA	TKR28H52W100-MU/FU
TKR28H52W125-CRA	TKR28H52W125-MU/FU
TKR28H52W150-CRA	TKR28H52W150-MU/FU
TKR28H52W200-CRA	TKR28H52W200-MU/FU

Bracket

Model number	For cable carrier model number
TKR28H52W50-MU	TKR28H52W50R■■
TKR28H52W50-FU	
TKR28H52W62-MU	TKR28H52W62R■■
TKR28H52W62-FU	
TKR28H52W75-MU	TKR28H52W75R■■
TKR28H52W75-FU	
TKR28H52W87-MU	TKR28H52W87R■■
TKR28H52W87-FU	
TKR28H52W100-MU	TKR28H52W100R■■
TKR28H52W100-FU	
TKR28H52W125-MU	TKR28H52W125R■■
TKR28H52W125-FU	
TKR28H52W150-MU	TKR28H52W150R■■
TKR28H52W150-FU	
TKR28H52W200-MU	TKR28H52W200R■■
TKR28H52W200-FU	

Bracket (with 1 strain relief comb)

Model number	For cable carrier model number
TKR28H52W50-MUCL	TKR28H52W50R■■
TKR28H52W50-FUCL	
TKR28H52W75-MUCL	TKR28H52W75R■■
TKR28H52W75-FUCL	
TKR28H52W100-MUCL	TKR28H52W100R■■
TKR28H52W100-FUCL	
TKR28H52W125-MUCL	TKR28H52W125R■■
TKR28H52W125-FUCL	
TKR28H52W150-MUCL	TKR28H52W150R■■
TKR28H52W150-FUCL	

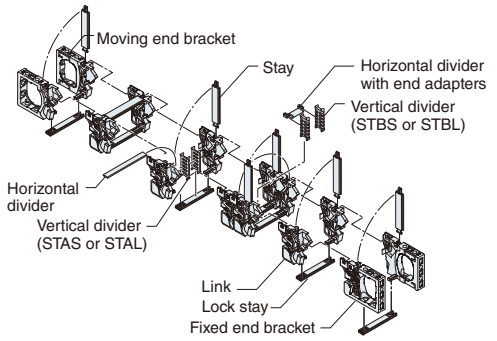
Bracket (with 1 clamp rail)

Model number	For cable carrier model number
TKR28H52W50-MUCR	TKR28H52W50R■■
TKR28H52W50-FUCR	
TKR28H52W62-MUCR	TKR28H52W62R■■
TKR28H52W62-FUCR	
TKR28H52W75-MUCR	TKR28H52W75R■■
TKR28H52W75-FUCR	
TKR28H52W87-MUCR	TKR28H52W87R■■
TKR28H52W87-FUCR	
TKR28H52W100-MUCR	TKR28H52W100R■■
TKR28H52W100-FUCR	
TKR28H52W125-MUCR	TKR28H52W125R■■
TKR28H52W125-FUCR	
TKR28H52W150-MUCR	TKR28H52W150R■■
TKR28H52W150-FUCR	
TKR28H52W200-MUCR	TKR28H52W200R■■
TKR28H52W200-FUCR	

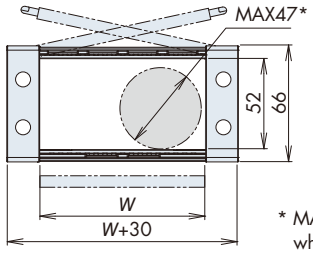
TKR28H52-EX NEW

(Patented)

Structure



Cross-section dimensions



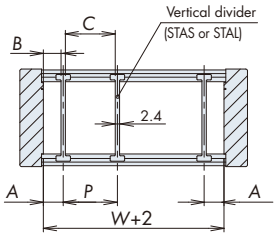
* MAX45 when W = 50

W = 50, 62, 75, 87, 100, 125, 150, 200

A–A arrow view

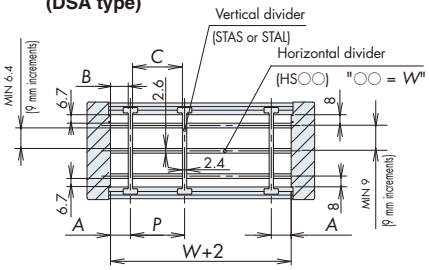
Divider dimensions

(1) When using only vertical dividers



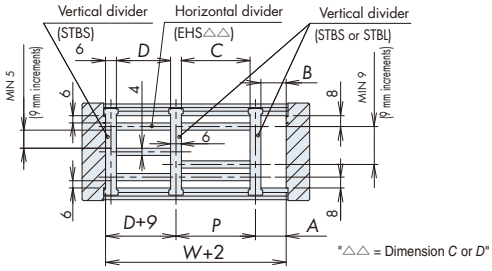
B–B arrow view

(2) Fully-stayed multiple height separation (DSA type)



B–B arrow view

(3) Partial multiple height separation (DSB type)



B–B arrow view

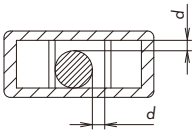
Vertical divider (fastening method)	Inner width W (mm)	A (mm)	B (mm)	P (mm)	C (mm)	D (mm)
STAS (sliding installation)	Common for all widths	4 to 65	2.8 to 63.8	8 to 130	5.6 to 127.6	
STAL (fixable installation)	50	6 to 38	4.8 to 36.8	8 to 40	5.6 to 37.6	4 mm increments
	62	8 to 48	6.8 to 46.8	8 to 48	5.6 to 45.6	
	75	6.5 to 62.5	5.3 to 61.3	8 to 64	5.6 to 61.6	
	87	4.5 to 64.5	3.3 to 63.3	8 to 80	5.6 to 77.6	
	100	7 to 63	5.8 to 61.8	8 to 88	5.6 to 85.6	
	125	7.5 to 63.5	6.3 to 62.3	8 to 112	5.6 to 109.6	
	150	8 to 64	6.8 to 62.8	8 to 124	5.6 to 121.6	
	200	5 to 65	3.8 to 63.8	8 to 124	5.6 to 121.6	
STBS (sliding installation)	Common for all widths	min 4	min 1	26 to (W-6)	20 to (W-12)	20 to (W-12)
STBL (fixable installation)	50	min 6	min 3	—	—	20 to 36
	62	min 8	min 5	—	—	22 to 46
	75	min 6.5	min 3.5	28 to 40	22 to 34	20.5 to 60.5
	87	min 4.5	min 1.5	28 to 52	22 to 46	22.5 to 74.5
	100	min 7	min 4	28 to 64	22 to 58	21 to 85
	125	min 7.5	min 4.5	28 to 88	22 to 82	21.5 to 109.5
	150	min 8	min 5	28 to 112	22 to 106	22 to 134
	200	min 5	min 2	28 to 164	22 to 158	23 to 187

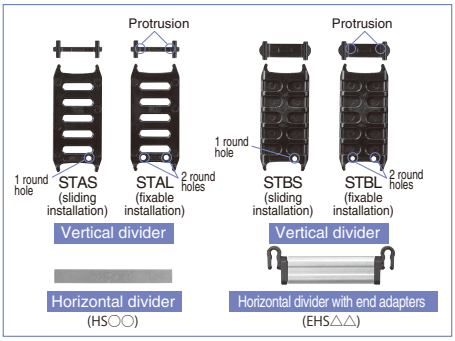
Note: The maximum values for *A*, *B*, *P*, and *C* are applied when using horizontal dividers.

Note:

A: Distance from center of vertical divider to end face of link
B: Gap between vertical divider and link
P: Distance between the centers of neighboring vertical dividers
C: Gap between neighboring vertical dividers
D: Gap between neighboring vertical dividers when vertical dividers/dividers for both ends are installed

Note: Make the gap between cables/tubes and the divider or link (*d* in the figure below) to whichever of the following two values is larger: 2 mm or greater or the outer diameter of the cable or tube x 0.1.

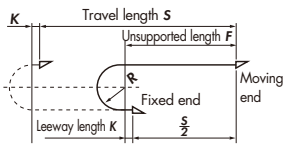




Calculating no. of links

$$\text{Number of links} = \frac{\frac{S}{2} + \pi R + 2K}{P}$$

Note: When fixed end is at the center of the travel length. Always round up the value.



S: Travel length (mm)
R: Bending radius (mm)
P: Pitch = 28 mm
K: Leeway length = 56 mm or greater*

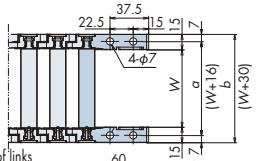
* Set the leeway length K to 84 mm or greater for support roller arrangement. Set the installation distance of support rollers to 900 mm or less.

Dimensions & brackets

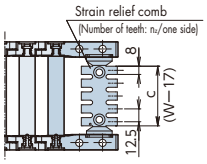
W (mm)	a (mm)	b (mm)	c (mm)	Strain relief comb n_z (toothed)
50	66	80	33	3
62	78	92	–	–
75	91	105	58	5
87	103	117	–	–
100	116	130	83	7
125	141	155	108	9
150	166	180	133	11
200	216	230	–	–

Bending radius R (mm)	Mounting height H' (mm)
75	252 to 272
100	302 to 322
150	402 to 422
200	502 to 522

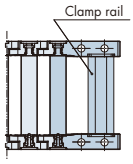
Moving end bracket **MU** *2

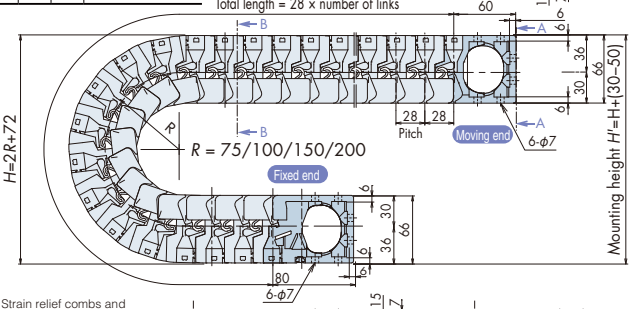


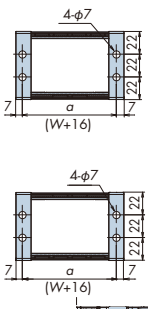
Moving end bracket **MUCL** *1 *3 (with 1 strain relief comb)



Moving end bracket **MUCR** *1 (with 1 clamp rail)

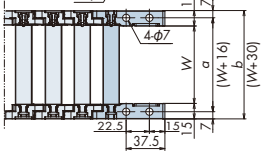




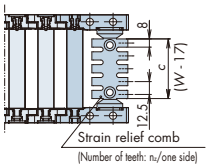


Note: Design and install according to the mounting height *H'* dimension.

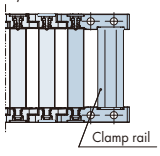
Note: *1. Strain relief combs and clamp rails can be installed on the inside and outside.
*2. Note that the strain relief comb and clamp rail cannot be added to the MU and FU brackets.
*3. Only when *W* = 50, 75, 100, 125, or 150.



Fixed end bracket **FU** *2



Fixed end bracket **FUCL** *1 *3 (with 1 strain relief comb)



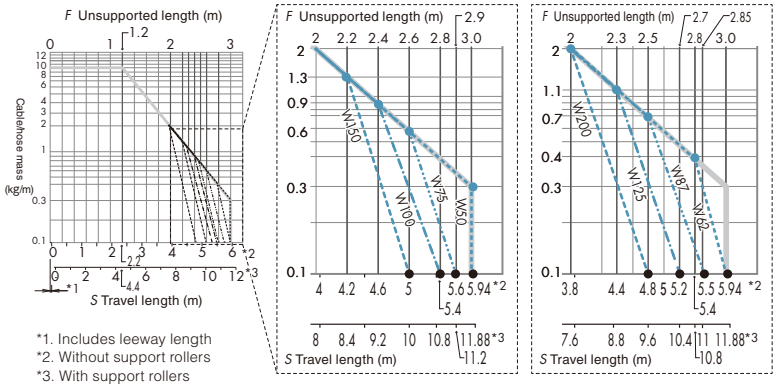
Fixed end bracket **FUCR** *1 (with 1 clamp rail)

Basic specifications

Maximum travel speed (m/min)			300*1
Maximum acceleration G			2
Operating temperature range (°C)			–40 to 80
Materials	Link		Engineering plastic (black)
	Bracket		
	Vertical divider		
	Horizontal divider	For DSA type (HS)	Aluminum
		For DSB type (EHS)	Engineering plastic + aluminum (black)
Standard length (No. of links)			100

Note: *1. 150 m/min for support roller arrangement.
2. Cannot be used in acidic or alkaline environments.

Load diagram



*1. Includes leeway length
*2. Without support rollers
*3. With support rollers

Model number

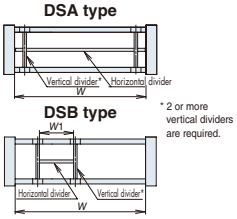
TKR28H52W (1) R (2) EX+ (3) L- (4) - (5)

(1) Inner width	(2) Bending radius	(3) Number of links	(4) Fixed end	(5) Moving end
50	75		FU	MU
62	100		FUCL*4	MUCL*4
75	150		FUCR	MUCR
87	200			
100				
125				
150				
200				

Note: 1. Dividers, strain relief combs, and clamp rails are delivered uninstalled.
2. Brackets are delivered installed.
3. Required number of vertical dividers: (normally installed every 2 links)
Number of links N for installing vertical dividers = (Total number of links + 1) ÷ 2
N: Integer (round down decimals)
Required number of vertical dividers = N x n
n: Number of vertical dividers installed per spot on the link
*4. Those for W = 62, 87, and 200 cannot use the FUCL fixed end and MUCL moving end.

Divider

Method	Type		Model number	Part	Unit
DSA type	Vertical divider	Sliding installation	TKR28H52EX-STAS	1 vertical divider	K (pcs)
		Fixable installation	TKR28H52EX-STAL	1 vertical divider	K (pcs)
	Horizontal divider		TKR28H52EX-HS (Dimension W) W=50/62/75/87/100/125/150/200	1 horizontal divider	K (pcs)
DSB type	Vertical divider	Sliding installation	TKR28H52EX-STBS	1 vertical divider	K (pcs)
		Fixable installation	TKR28H52EX-STBL	1 vertical divider	K (pcs)
	Horizontal divider with end adapters		TKR28H52EX-EHS△△ △△= Dimension C or D of divider dimensions	1 horizontal divider 2 end adapters	K (pcs)



* 2 or more vertical dividers are required.

Strain relief comb (plastic)

Model number	Applicable bracket
TKR28H52W50EX-CL-U	TKR28H52W50EX-MU/FU
TKR28H52W75EX-CL-U	TKR28H52W75EX-MU/FU
TKR28H52W100EX-CL-U	TKR28H52W100EX-MU/FU
TKR28H52W125EX-CL-U	TKR28H52W125EX-MU/FU
TKR28H52W150EX-CL-U	TKR28H52W150EX-MU/FU

Note: None for W62, 87, and 200.

Vertical divider

Model number	For cable carrier model number
TKR28H52EX-STAS	TKR28H52W■■R■■EX
TKR28H52EX-STAL	
TKR28H52EX-STBS	
TKR28H52EX-STBL	

Horizontal divider with end adapters

Model number
TKR28H52EX-EHS △△

△△: 20 to less than 188 Note: Minimum 0.5 mm each

Horizontal divider

Model number	For cable carrier model number
TKR28H52EX-HS50	TKR28H52W50R■■EX
TKR28H52EX-HS62	TKR28H52W62R■■EX
TKR28H52EX-HS75	TKR28H52W75R■■EX
TKR28H52EX-HS87	TKR28H52W87R■■EX
TKR28H52EX-HS100	TKR28H52W100R■■EX
TKR28H52EX-HS125	TKR28H52W125R■■EX
TKR28H52EX-HS150	TKR28H52W150R■■EX
TKR28H52EX-HS200	TKR28H52W200R■■EX

Clamp rail (steel)

Model number	Applicable bracket
TKR28H52W50EX-CRA	TKR28H52W50EX-MU/FU
TKR28H52W62EX-CRA	TKR28H52W62EX-MU/FU
TKR28H52W75EX-CRA	TKR28H52W75EX-MU/FU
TKR28H52W87EX-CRA	TKR28H52W87EX-MU/FU
TKR28H52W100EX-CRA	TKR28H52W100EX-MU/FU
TKR28H52W125EX-CRA	TKR28H52W125EX-MU/FU
TKR28H52W150EX-CRA	TKR28H52W150EX-MU/FU
TKR28H52W200EX-CRA	TKR28H52W200EX-MU/FU

Bracket

Model number	For cable carrier model number
TKR28H52W50EX-MU	TKR28H52W50R■■EX
TKR28H52W50EX-FU	
TKR28H52W62EX-MU	TKR28H52W62R■■EX
TKR28H52W62EX-FU	
TKR28H52W75EX-MU	TKR28H52W75R■■EX
TKR28H52W75EX-FU	
TKR28H52W87EX-MU	TKR28H52W87R■■EX
TKR28H52W87EX-FU	
TKR28H52W100EX-MU	TKR28H52W100R■■EX
TKR28H52W100EX-FU	
TKR28H52W125EX-MU	TKR28H52W125R■■EX
TKR28H52W125EX-FU	
TKR28H52W150EX-MU	TKR28H52W150R■■EX
TKR28H52W150EX-FU	
TKR28H52W200EX-MU	TKR28H52W200R■■EX
TKR28H52W200EX-FU	

Bracket (with 1 strain relief comb)

Model number	For cable carrier model number
TKR28H52W50EX-MUCL	TKR28H52W50R■■EX
TKR28H52W50EX-FUCL	
TKR28H52W75EX-MUCL	TKR28H52W75R■■EX
TKR28H52W75EX-FUCL	
TKR28H52W100EX-MUCL	TKR28H52W100R■■EX
TKR28H52W100EX-FUCL	
TKR28H52W125EX-MUCL	TKR28H52W125R■■EX
TKR28H52W125EX-FUCL	
TKR28H52W150EX-MUCL	TKR28H52W150R■■EX
TKR28H52W150EX-FUCL	

Bracket (with 1 clamp rail)

Model number	For cable carrier model number
TKR28H52W50EX-MUCR	TKR28H52W50R■■EX
TKR28H52W50EX-FUCR	
TKR28H52W62EX-MUCR	TKR28H52W62R■■EX
TKR28H52W62EX-FUCR	
TKR28H52W75EX-MUCR	TKR28H52W75R■■EX
TKR28H52W75EX-FUCR	
TKR28H52W87EX-MUCR	TKR28H52W87R■■EX
TKR28H52W87EX-FUCR	
TKR28H52W100EX-MUCR	TKR28H52W100R■■EX
TKR28H52W100EX-FUCR	
TKR28H52W125EX-MUCR	TKR28H52W125R■■EX
TKR28H52W125EX-FUCR	
TKR28H52W150EX-MUCR	TKR28H52W150R■■EX
TKR28H52W150EX-FUCR	
TKR28H52W200EX-MUCR	TKR28H52W200R■■EX
TKR28H52W200EX-FUCR	

FLATVEYOR ZP Type Inquiry Sheet

Step 1: Select product

☐ Black ☐ White



Required number of FLATVEYOR units:

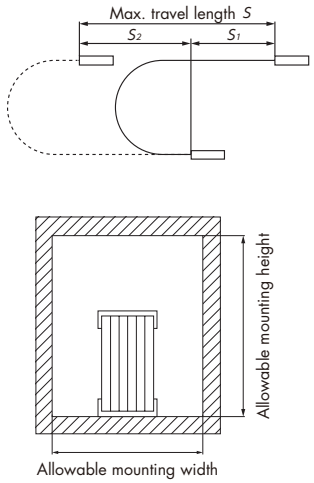
Step 2: Select installation variants

☐ Standard arrangement*1 ☐ Vertical arrangement*2 ☐ Vertical arrangement*2 ☐ Top-fixed arrangement*1



*1. A bottom rail is required for standard arrangement and top-fixed arrangement.
*2. Support rails on both sides are required for vertical arrangement.

Step 3: Complete service conditions form



Item		Fill in here	Unit
Max. travel length S (required) S1*			mm mm
S2*			mm
Allowable mounting height (required)			mm
Allowable mounting width (required)			mm
Max. acceleration (required)			m/S²
Travel speed (required)			m/S
Machine to be used			
Operating environment	Temperature		℃
Operating environment	Humidity		%
Operating environment	Frequency of use		Times/day

If the allowable mounting height or width does not satisfy your desired specifications and conditions, select which value to use as the standard.
☐ Allowable mounting height (Maintain height and allow expanded width)
☐ Allowable mounting width (Maintain width and allow expanded height)

*If S1 ≠ S2 (fixed end is not in the center of the travel length), please include the travel length distribution.

Step 4: Complete cable/tube specifications form

Type	Outer diameter mm	Mass kg/m	Min. bending radius* mm	Quantity
Cable				
Tube				

*If no information is entered, we will consider the following allowable bending radii for cables and tubes.
Cables: Max. outer diameter x 8
Tubes: Max. outer diameter x 9

Step 5: Number of spare openable tubes

If you think you may insert extra cables and tubes in addition to those you listed in Step 4 and would like to order spare openable tubes, please enter the number in the box on the right. If you know the specifications for the cables/tubes you plan to add, please enter them in the table below.

Desired number

Type	Outer diameter mm	Mass kg/m	Min. bending radius* mm	Quantity
Cable				
Tube				

Step 6: Enter your information

Company name (required)

Name (required)

Date of submission

Department (required)

Phone (required)

Email (required)

Dealer

Memo

CLEANVEYOR and FLATVEYOR Inquiry Sheet

Product name

☐ CLEANVEYOR

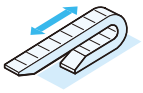


☐ FLATVEYOR

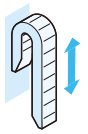


Installation variants

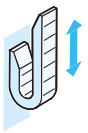
☐ Standard arrangement



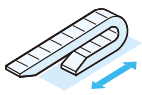
☐ Vertical arrangement (standing)



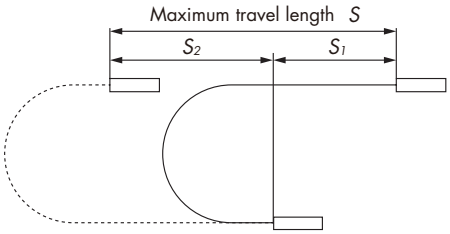
☐ Vertical arrangement (hanging)

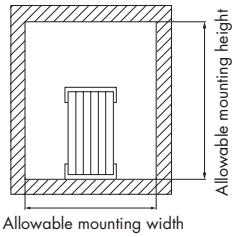


☐ Top-fixed arrangement (bottom movement)



Specifications and conditions





1. Maximum travel length S (required) mm
2. Allowable mounting height H' (required) mm
3. Allowable mounting width W (required) mm
4. Maximum acceleration (required) m/s^2
5. Travel speed (required) m/s
6. Machine to be used
7. Operating environment Temperature ℃
   Humidity %
8. Frequency of use Times/day

Write the distribution of the length when the front/back length is not S/2

S_1 mm

S_2 mm

If the mounting height or width does not satisfy your desired specifications and conditions, select which value to use as the standard. (Required)

☐ Mounting height

☐ Mounting width

Cable/tube types

Cable

For CLEANVEYOR, cables can insert a connector on one end or no connectors only.
Cables cannot be inserted when cables have connectors on both ends.

No.*1	Rated voltage V	Rated temperature ℃	No. of cores C or no. of pairs P	Conductor size AWG or SQ	Shield With ○ / Without ×	Outer diameter mm	Mass kg/m	Minimum bending radius mm	Number	Fixed end protrusion mm	Moving end protrusion mm	Provided Yes ○ / No ×	Connector*2 With ○ / Without ×	
													Fixed end	Moving end
	300	80	4C	20AWG	○	5.0	0.01	40	1	1000	500	○		
P11									2	1000	500			

Tube

No.*1	Color*3	Outer diameter mm	Inner diameter mm	Mass kg/m	Minimum bending radius mm	Number	Fixed end protrusion mm	Moving end protrusion mm	Provided Yes ○ / No ×
T2	Blue	6.0	4.0	0.0193	15	1	1000	500	×

Note: *1. Select the desired cable numbers and tubes numbers from pages 29 to 30 for a CLEANVEYOR and pages 37 to 38 for a FLATVEYOR.
*2. Include a harness drawing if connector fabrication is required.
*3. The color will be black unless otherwise specified.

Company name _____ Department _____

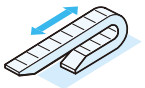
Name _____ Phone _____

Date of submission _____ Email _____

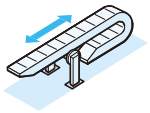
TKR Series Inquiry Sheet

Installation variants

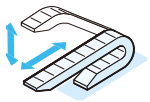
☐ Standard arrangement



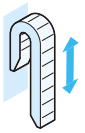
☐ Support roller arrangement



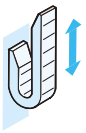
☐ Horizontal-vertical combined arrangement



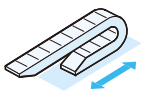
☐ Vertical arrangement (standing)



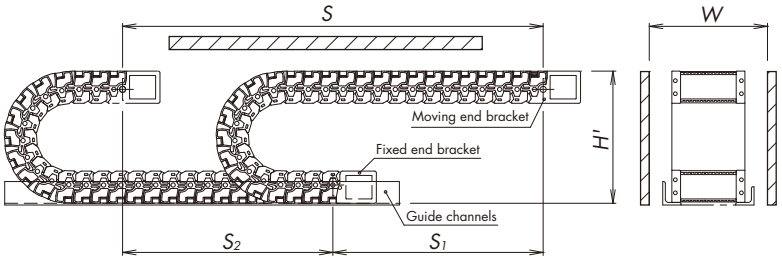
☐ Vertical arrangement (hanging)



☐ Top-fixed arrangement (bottom movement)



Specifications and conditions



1. Maximum travel length S mm

Write the distribution of the length when the front/back length is not S/2

S_1 mm

S_2 mm

2. Allowable mounting height H' mm

3. Allowable mounting width W mm

4. Machine to be used

5. Operating environment Temperature ℃

Humidity %

For horizontal-vertical combined arrangement, maximum vertical travel length mm

6. Maximum acceleration m/s^2

7. Travel speed m/s

8. Frequency of use Times/day

9. Special remarks

●Please fill in the applicable items.
Dirt/Dust/Chips/Sand/Outdoors/Corrosive environment (acidic or alkaline)/Paint

Cable/tube types

	Specifications	Outer diameter	Mass kg/m	Number	Allowable bending radius
1	Cable/tube				
2	Cable/tube				
3	Cable/tube				
4	Cable/tube				
5	Cable/tube				
6	Cable/tube				
7	Cable/tube				
8	Cable/tube				
9	Cable/tube				
10	Cable/tube				

For a multi-layer arrangement, enter the types for the top and bottom cables and tubes, respectively.

Special remarks

Company name

Department

Name

Phone

Date of submission

Email

Clean Series Q & A

Here are some frequently asked questions.

Q Can CLEANVEYOR and FLATVEYOR be used in multiple layers?

A **CLEANVEYOR can be stacked up to 6 layers. FLATVEYOR is not recommended for stacking.**

The products may slide against each other and induce particle generation.

Q Can FLATVEYOR ZP Type be used in multiple layers?

A **Yes, under certain conditions; however, this is not recommended in clean environments because the products will slide against each other and generate particles.**

Q Can I use FLATVEYOR ZP Type brackets with FLATVEYOR?

A **Yes. Please contact a Tsubaki representative about the possibility of using L-blocks for FLATVEYOR installation.**

Q Please tell me how to request a quotation for CLEANVEYOR, FLATVEYOR, or FLATVEYOR ZP Type.

A **Please fill in the inquiry sheet and contact a Tsubaki representative.**

Q Is it okay to install it lower than the mounting height (H') described in the catalog or quotation drawing?

A **Please install within the mounting height recommended by Tsubaki.**

The support members for Tsubaki cable carriers, CLEANVEYOR, FLATVEYOR, and FLATVEYOR ZP Type are pre-bulged to compensate for the deflection caused by the mass of the product body and cables/tubes. If installed below our recommended mounting height, the bulge will be suppressed and it may break prematurely.

Q If I cannot secure the required space (width and height) for the FLATVEYOR ZP Type, can I still use it?

A **Please contact a Tsubaki representative as this may be possible in some cases. Please note that the required space (width and height) is set taking the following factors in account.**

Required space (width):
- Deformation of the openable tubes may cause the bending sections to expand laterally. (Approx. 5 mm per openable tube)
- The FLATVEYOR ZP Type main unit may shift laterally due to the twisting of cables and tubes.

Required space (height):
- The bending sections may extend beyond the installation height due to the elasticity of the cables and tubes.

Q Is it possible to request the installation of cable/tube connectors for CLEANVEYOR and FLATVEYOR ?

A **Yes. Please send the harness drawing with the inquiry sheet.**

Even if you provide us with a cable with connectors on both ends, it cannot be installed on CLEANVEYOR.

Clean Series Q & A

Q If I attach a spare openable tube to the FLATVEYOR ZP type in anticipation of adding another cable or tube, can it be used empty?

A **This is possible as long as it is used under the conditions indicated in the load diagram.**

Q Can FLATVEYOR ZP Type brackets be treated with alumite or other surface treatments?

A **Yes.**
Since the plate and plate fixing bolts are made of stainless steel, alumite or other surface treatments are only available for the L-block. Some surface treatments are not available, but please contact a Tsubaki representative for details.

Q When inserting multiple cables or tubes in the openable tubes of FLATVEYOR ZP Type, will they slide against each other and generate wear particles?

A **The cables and tubes will slide, but in an in-house test, we confirmed that sliding will not lead to breakage.**
Although we recommend only inserting one cable or tube in each openable tube on the FLATVEYOR ZP Type, we have established standards for the insertion of multiple tubes giving consideration to convenience and realistic usage situations.

Q Do I need to change the thickness of the bracket depending on the size and pitch of the support member?

A **No. Support member height and support member tube size are the same for all sizes.**

Q Is it possible to increase the number of support members in the FLATVEYOR ZP type to accommodate an increased amount of cables and tubes or extended travel distance?

A **Yes, depending on the amount of cables and tubes, acceleration, and other conditions of use. Please contact a Tsubaki representative for details.**

Q Are any restricted hazardous substances exceeding the threshold levels specified in the EU RoHS II Directive used?

A **Cableveyor®, Cleanveyor®, Flatveyor®, and Flatveyor® ZP Type specifications do not use any restricted hazardous substances exceeding the threshold levels.**
(Excluding customer-supplied cables and tubes.)

Q I would like to know how to cut and assemble the TKR Series.

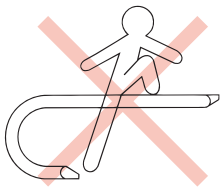
A **The instruction manual is posted on our website. Please check it.**

Classification Table (Maximum Concentration/m³) Particles equal to or larger than the sizes shown below:

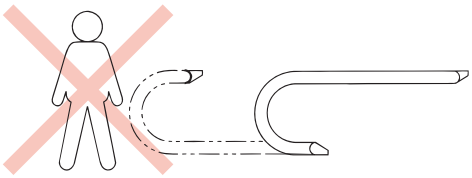
Clean Class		Maximum Allowable Concentration (particles/m³)					
ISO 14644-1:2015	U.S. Federal Standard Fed. Std. 209D (reference particle size: 0.5 μm)	Measured Particle Size					
		0.1μm	0.2μm	0.3μm	0.5μm	1.0μm	5.0μm
Class 1		10					
Class 2		100	24	10			
Class 3	1	1,000	237	102	35		
Class 4	10	10,000	2,370	1,020	352	83	
Class 5	100	100,000	23,700	10,200	3,520	832	
Class 6	1,000	1,000,000	237,000	102,000	35,200	8,320	293
Class 7	10,000				352,000	83,200	2,930
Class 8	100,000				3,520,000	832,000	29,300
Class 9					35,200,00	8,320,000	293,000

For Safe Use

Warning Observe the following points in order to prevent hazardous situations.



- Do not use the cable carrier and its accessories (including CLEANVEYOR and FLATVEYOR) for anything other than their original purpose.
- Do not stand or ride on the cable carrier. There is a risk of damage and falls.
- Never perform additional work on the cable carrier or the accessories (except fitting connectors on CLEANVEYOR or FLATVEYOR).
  - Do not clean the cable carrier or the accessories with acids or alkalis, as they may cause cracking.
  - Never electroplate the cable carrier or the accessories, as this may cause cracking due to hydrogen embrittlement.
  - Do not weld the cable carrier or the accessories, as the heat may cause cracking or a reduction in strength.
- Observe all appropriate labor safety codes and standards for your region or area.
- When there is a need to replace a damaged (fractured) portion of a cable carrier or an accessory, always replace the whole cable carrier or the accessory with a new product rather than replacing only the damaged or fractured portion.
- Immediately stop using the cable carrier or the accessories if they come into contact with a substance that can cause embrittlement cracking (acid, strong alkali, battery fluid, etc.) and replace with a new cable carrier or accessory.
- Observe the following when connecting, installing, removing, servicing, and inspecting the cable carrier or the accessories.
  - Perform the procedure as specified in the instruction manual, catalog, or documentation specially provided to the customer.
  - Secure the cable carrier and the accessories so they do not move freely.
    The cable carrier may move on its own or collapse under its own weight.
  - Be careful not to pinch, crush, or entangle hands in the bending section of the cable carrier.
  - Wear suitable clothing and protective equipment for the work (such as safety goggles, gloves, and safety shoes).
  - Always turn off the source power supply beforehand, and take care not to accidentally operate switches.
  - Only experienced personnel should handle the cable carrier.



Caution Observe the following points to prevent accidents.

- Carefully understand the construction and specifications of the cable carrier or the accessories before handling.
- Inspect the cable carrier or the accessories for damage during transport before installation.
- The cable carrier or the accessories should be periodically serviced and inspected.
- Cable carrier capacity varies according to manufacturer. When selecting a chain based on a Tsubaki catalog or similar, always use the corresponding Tsubaki product.
- Always ensure that the final customer receives the instruction manual.
  - If you do not have the instruction manual, contact a Tsubaki representative with the product name, series name, and chain/model number to receive the appropriate manual.
- The product information given in this brochure is mainly for selection purposes. Thoroughly read the instruction manual before actually using the product, and use it properly.

Warranty

1. Warranty period without charge

Tsubakimoto Chain Co. (hereinafter referred to as “Company”) provides a warranty without charge valid for either 18 months after the shipment of the purchased product (hereinafter referred to as “Goods”) from the factory, or 12 months after the first use of Goods, whichever comes first. First use of Goods is considered to be the complete incorporation of Goods into the equipment of the purchasing party (hereinafter referred to as “Customer”). This warranty may be provided with charge in certain circumstances.

2. Warranty coverage

Should any malfunction in Goods arise during the warranty period, given that Goods were properly installed, operated, and maintained as instructed in the catalog, instruction manual, or similar, Company shall promptly deliver or repair Goods at no charge once Company has confirmed such failure. This warranty covers delivered Goods only and therefore does not include the following: (“Instruction manual or similar” includes documentation specially provided to Customer.)

(1) Any costs required for the removal or installing of Goods from or into Customer’s equipment for repair or replacement.
(2) Costs required for transporting Customer’s equipment to repair shop, etc.
(3) Profits lost due to a malfunction or repair, or any other consequential loss.

3. Warranty with charge

Company will charge for any investigation, repair, and/or manufacturing of a malfunction in Goods (even during the warranty period) if caused by:

(1) Improper location, installation (including cutting and connecting), lubrication, or maintenance by Customer’s failing to follow the catalog, instruction manual, or similar.
(“Instruction manual or similar” includes documentation specially provided to Customer.)
(2) Operation methods (including operating conditions, operating environment, and allowable values) resulting from Customer’s failure to follow operation described in the catalog, instruction manual, or similar. (“Instruction manual or similar” includes documentation specially provided to Customer.)
(3) Inappropriate disassembly, modification, alteration, or processing by Customer.
(4) Use of Goods by Customer in conjunction with damaged or worn parts not made by Company. (e.g., use of Goods with sprocket, drum, rail, etc., that has a worn chain.)
(5) Failure of operational life under operating conditions use as determined by Company to satisfy operational life covered by Warranty.
(6) Use by Customer under conditions other than those discussed.
(7) Consumption, wear, or deterioration of bearings, oil seals, oil, and other consumable parts incorporated into Goods.
(8) Secondary failure or malfunction in Goods resulting from malfunctioning of Customer’s equipment.
(9) Malfunction of Goods resulting from a force majeure such as an act of God.
(10) Malfunction of Goods resulting from a wrongful act committed by a third party.
(11) Any other reason that is not attributable to Company.

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The specifications of this brochure are subject to change without notice due to improvements or other reasons.
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China	Tsubakimoto Chain (Shanghai) Co., Ltd.	https://www.tsubaki-sh.cn/

The Tsubaki Eco Link logo is used only on products that satisfy the standards for environmental friendliness set by the Tsubaki Group.

Note: In accordance with the policy of TSUBAKIMOTO CHAIN CO. to constantly improve its products, the specifications in this catalog are subject to change without notice.

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