

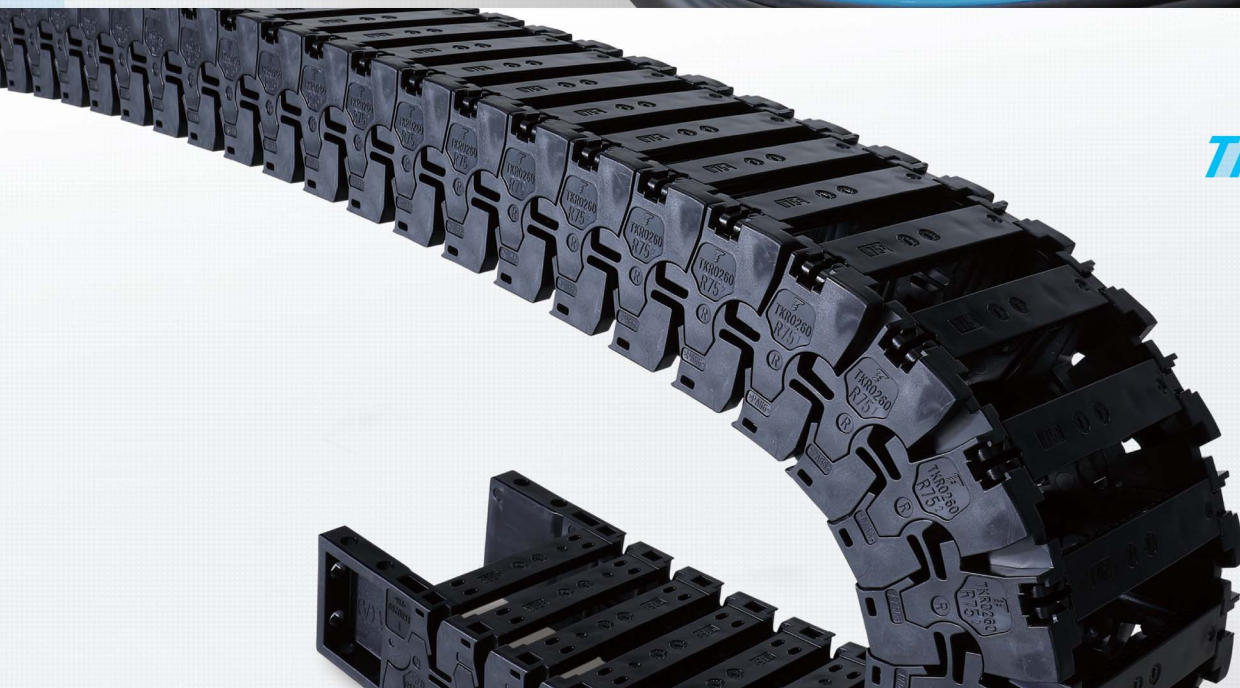
CLEANVEYOR

TSUBAKI Cable Carriers (CABLEVEYOR) Clean Series

Clean & Long-Life



FLATVEYOR

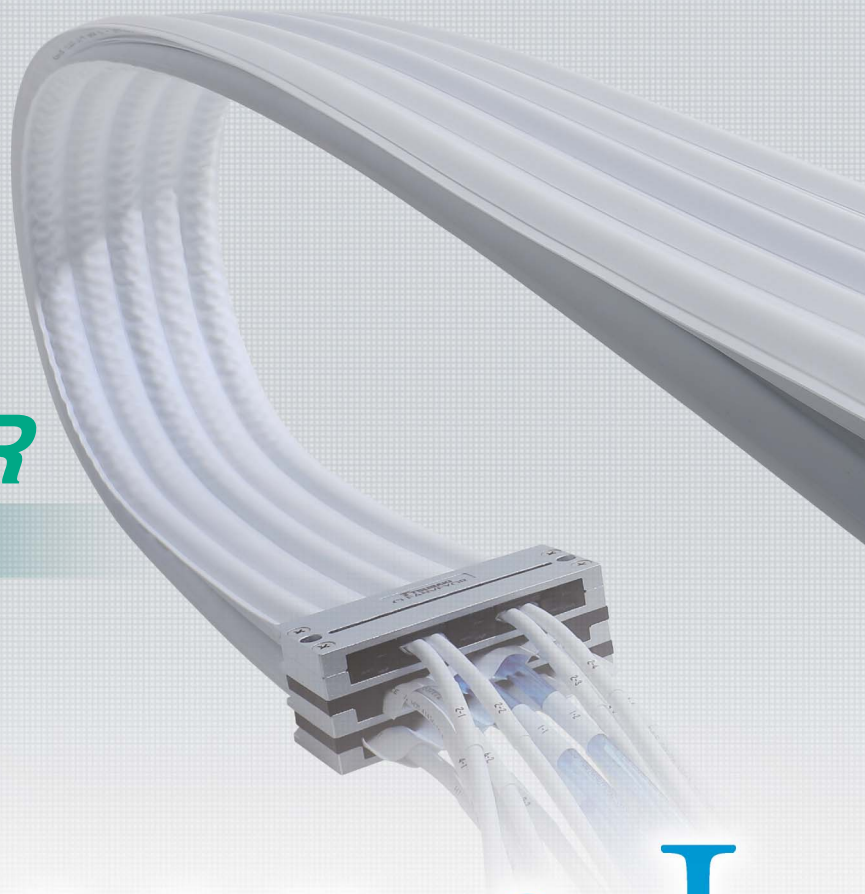


TKR Series

CLEANVEYOR

CLEANVEYOR

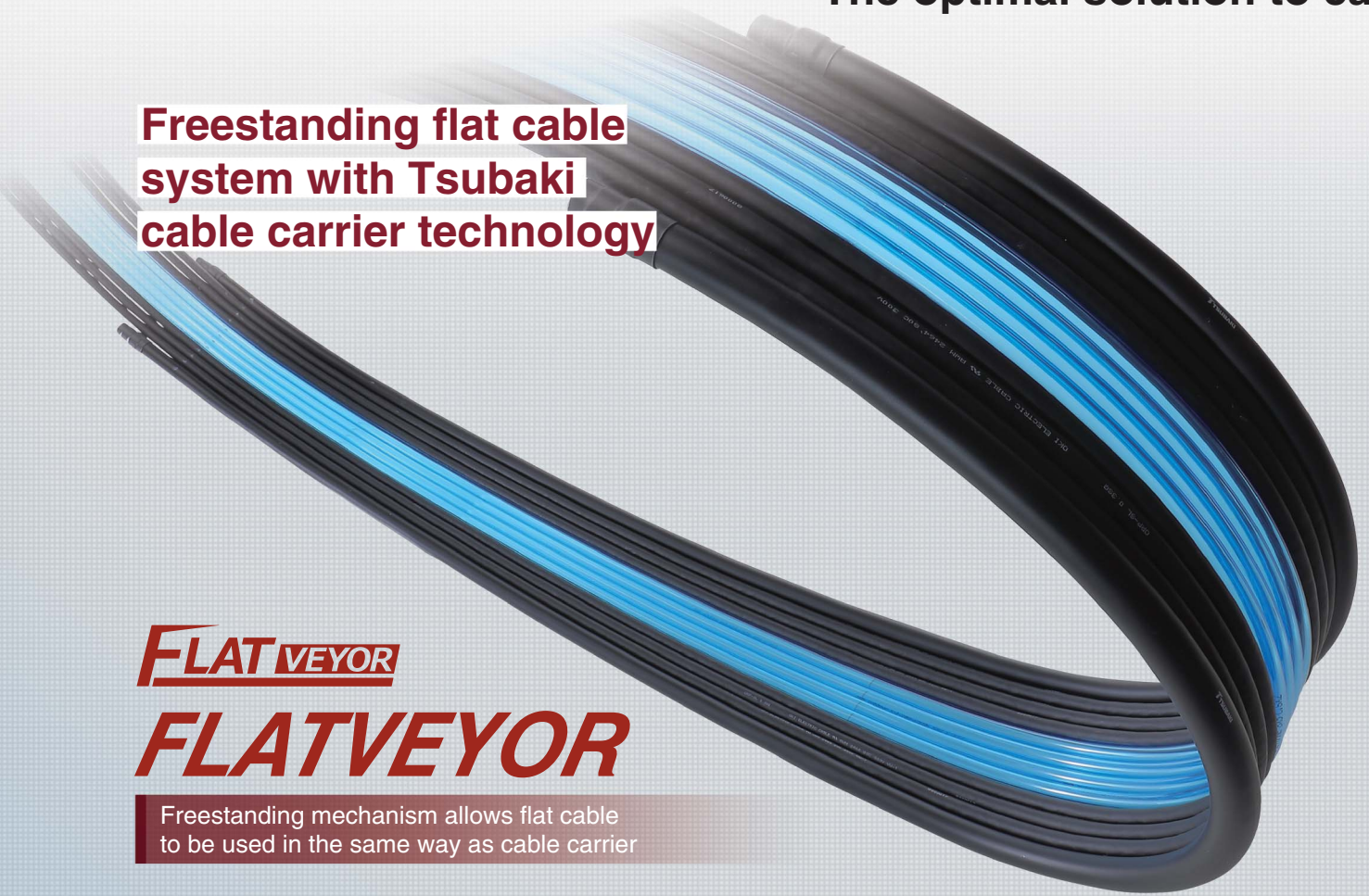
Top-class low debris generation through the use of fluoroplastic pods



Clean & L

The optimal solution to cable

Freestanding flat cable system with Tsubaki cable carrier technology



FLATVEYOR

FLATVEYOR

Freestanding mechanism allows flat cable to be used in the same way as cable carrier

**Lowest debris generation among
Tsubaki hose and cable carrier systems**



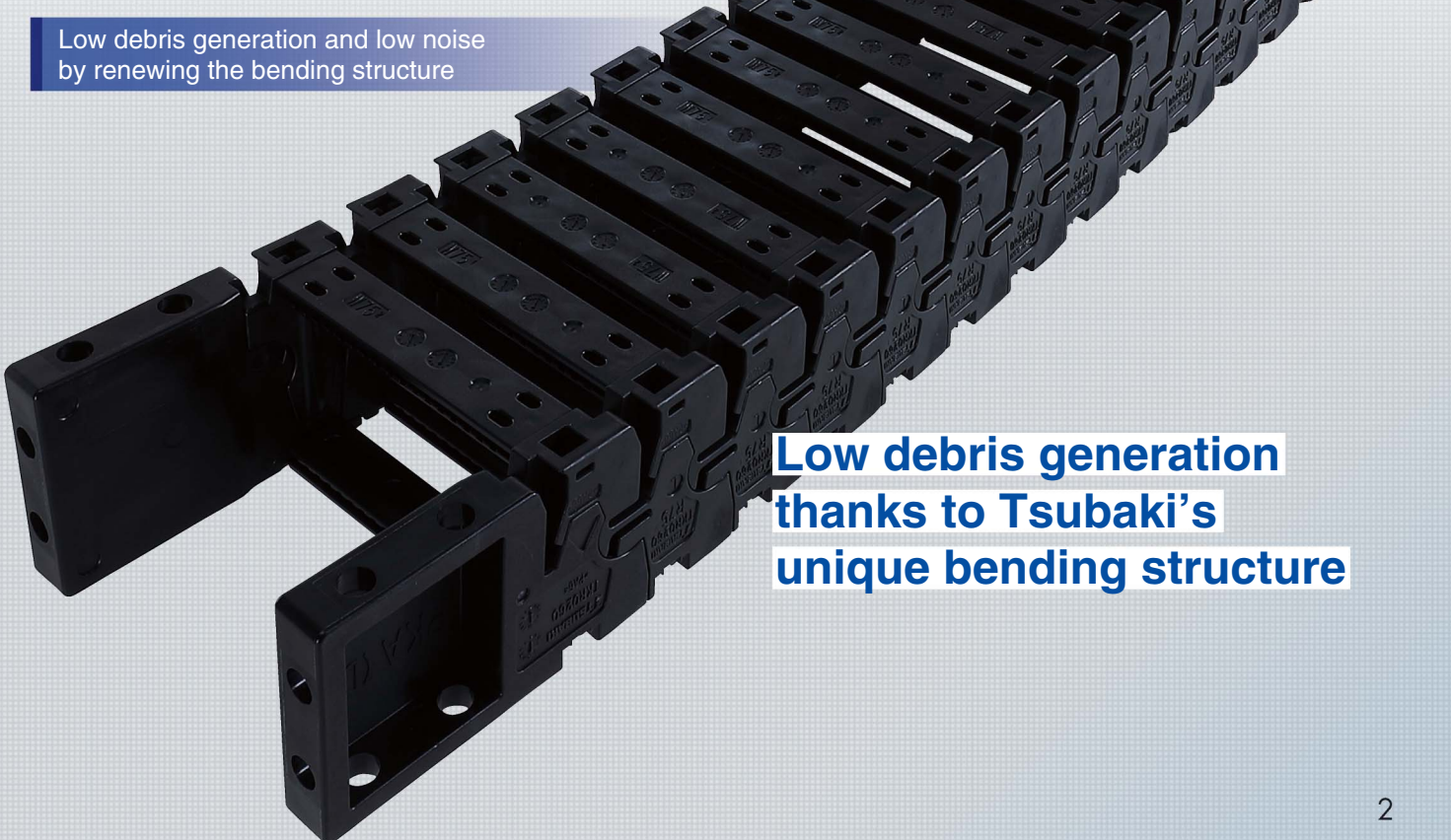
Long-Life

/ tube debris generation and disconnection

TKR Series

Low debris generation and low noise
by renewing the bending structure

**Low debris generation
thanks to Tsubaki's
unique bending structure**



5 Reasons

to select the Clean Series



Product lineup that can be selected according to the required clean level

We have a lineup of products that supports clean level ISO classes 1 to 3. You can choose the most suitable product according to the usage environment and equipment.



Minimizes cable/tube debris generation and disconnection

Bending radius protects the cables and hoses while keeping on track and provides reliable support guidance. This minimizes debris generation and the risk of disconnection at the same time.

Contents

Applications	P5
CLEANVEYOR	P7
FLATVEYOR	P15



Improves yield rate and productivity

Clean Series improves yield rate and productivity by reducing product defects caused by debris generation. It is also effective as a measure against debris generation in various situations other than clean rooms.



Man-hour reduction of design

We will make the selection and design the system based on the information you provide on the inquiry sheet (pages 35 to 36). TKR Series are selectable by the customer.



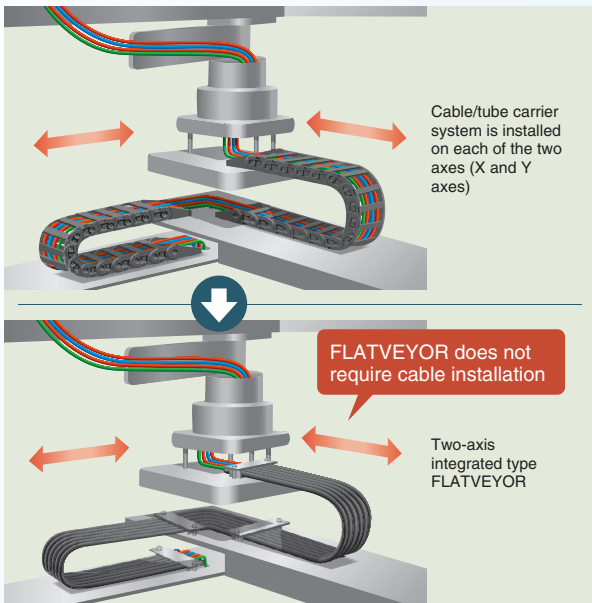
Easy handling and allows quick installation on machinery or equipment

We offer CLEANVEYOR and FLATVEYOR with the cables and tubes preassembled. TKR Series can be cut and assembled as other plastic cable carrier series.

Cable Carriers TKR Series	P23
TKR15H22	P25
TKR20H28	P27
TKR26H40	P29
TKR28H52	P31
TKR37H28	P33

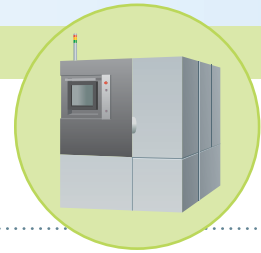
Inquiry Sheet	P35
Clean Series Q&A	P37
For Safe Use	P38

Create an environment with the risk of disconnection



Semiconductor industry

Semiconductor manufacturing equipment



Issue

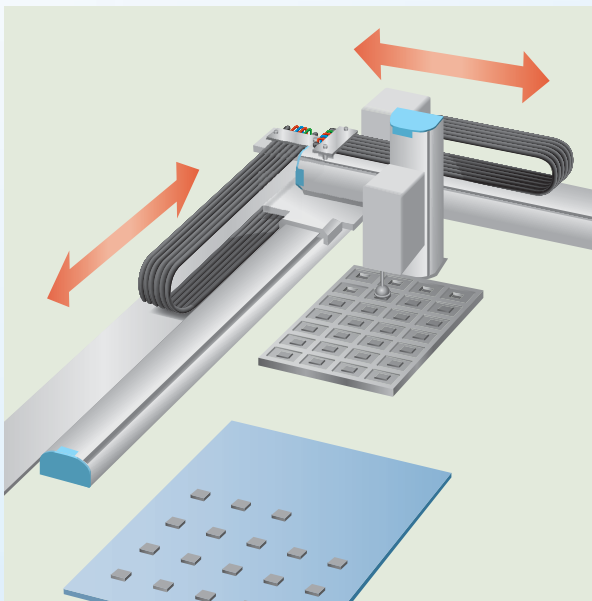
Other company's cable/hose carrier system was used in the past. When replacing the system, it was necessary to create a clean environment with little debris generation.

Proposed product FLATVEYOR

Solution

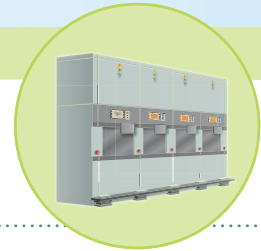
An integrated structure in which the cable/tube and tube for the support member are welded in a flat shape:

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



Semiconductor industry

Semiconductor manufacturing equipment



Issue

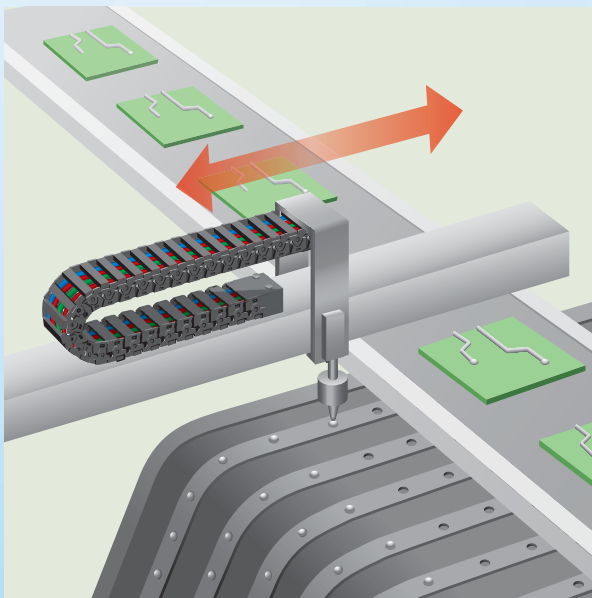
Due to the mechanism in which the X and Y axes of the transport device were located above the products, wear debris from the cable carrier fell and adhered to the products. Since the products became defective and the yield deteriorated, it was necessary to take measures against debris generation.

Proposed product FLATVEYOR

Solution

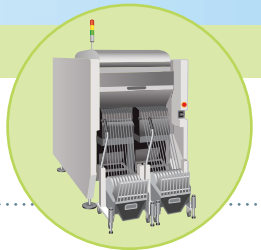
An integrated structure in which the cable/tube and tube for the support member are welded in a flat shape:

- Suppresses debris generation and improves yield
- Reduces disconnection risk and production loss due to equipment outages



Electronic component industry

Chip mouter



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 debris scattered and adhered to the products, they could become defective. It was thus necessary to take measures against debris generation.

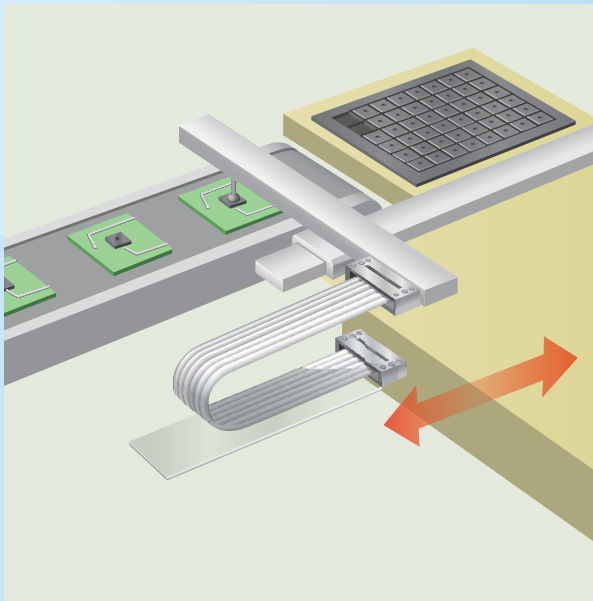
Proposed product TKR Series

Solution

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

- Reduces defective products and improves yield rate

less debris generation and reduce



Semiconductor industry

Bonder

Issue

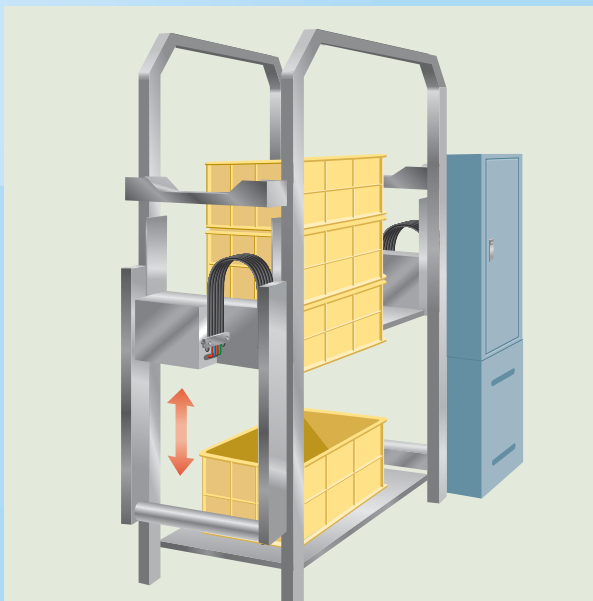
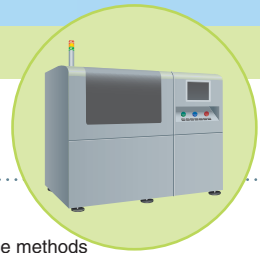
Examined the protection and support guidance methods for cables to be wired to the moving parts of the chip transport device. In response to the growing needs for a clean environment, it was necessary to prioritize measures against debris generation and design equipment with highly reliable product quality.

Proposed product CLEANVEYOR

Solution

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

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



Food industry

Container stacking (unloading) device

Issue

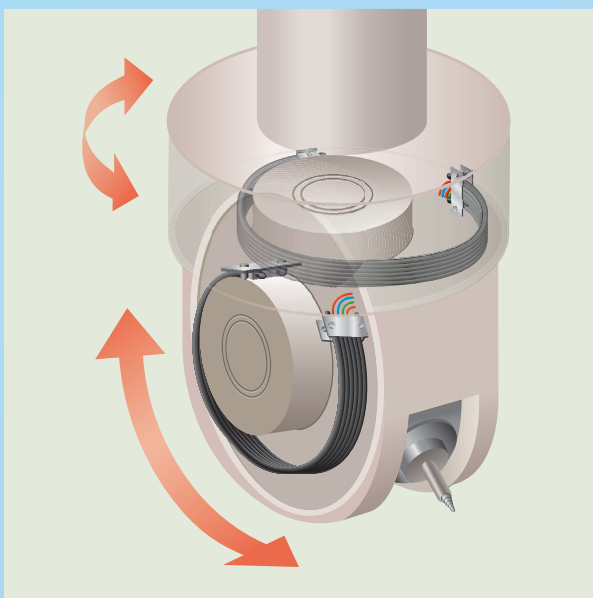
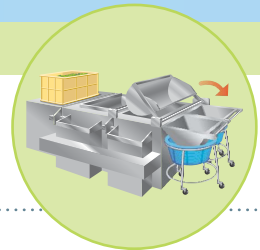
Equipment used for food processing need measures against foreign matter such as falling parts and wear particles. In addition, the production line is cleaned every time the production item is switched. It was necessary to design a device with minimum gaps to make it easier to clean and prevent residue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

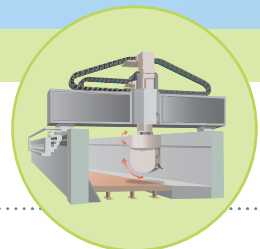
The large machining center has a head that turns horizontally and vertically. Previously, a cable carrier was used to protect the cable inside the head. In developing next-generation models, we aimed to differentiate ourselves from competitors by improving equipment capacity by designing a compact head.

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



CLEANVEYOR

CLEANVEYOR



Fraunhofer
TESTED[®]
DEVICE
Tsubakimoto Chain Co.
Cleanveyor 2-Bytes
Report No. TS 1908-135

Clean Class

ISO class 1^{*1}

Patented

Lowest debris 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. Based on test results by Germany's Fraunhofer Institute for Manufacturing Engineering and Automation (IPA) in accordance with ISO 14644-1 "Classification of air cleanliness by particle concentration."

*2. In-house test results (Travel speed: 50 m/min, Noise measurement distance: 500 mm)





Low debris 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

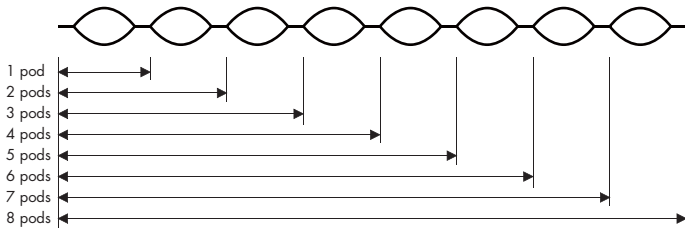
Supports multi-layered structure

Supports up to 6 layers.*2

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



Pod types and dimensions

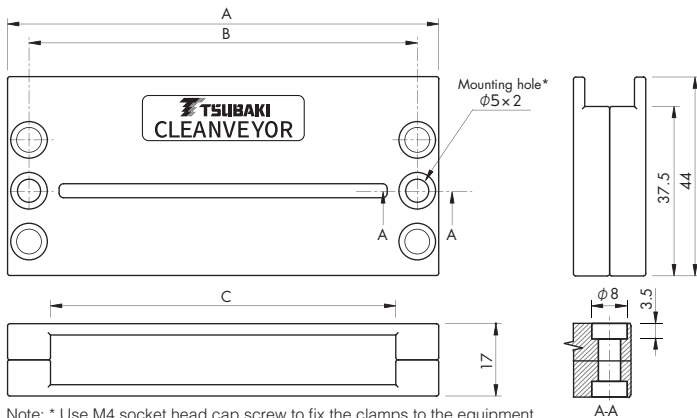


No. of pods	Pod thickness* mm	Pod width* mm	Connection width* mm	Total width mm
1 pod	1	19	2.3	23.6
2 pods				44.9
3 pods				66.2
4 pods				87.5
5 pods				108.8
6 pods				130.1
7 pods				151.4
8 pods				172.7

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

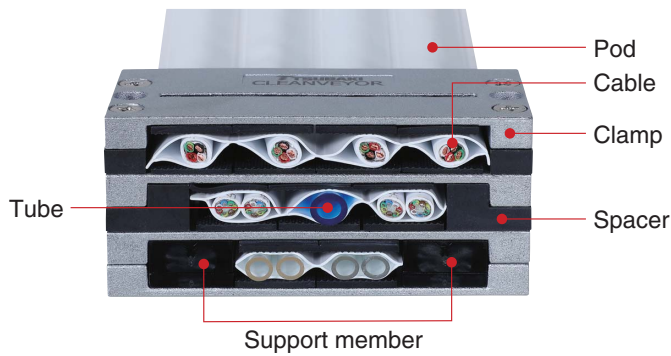
Cable/tube outer diameter mm	Installable no. of cables/tubes/pods	Installation image
Outer diameter ≤ 4.0	3	
4.0 < Outer diameter ≤ 6.3	2	
6.3 < Outer diameter ≤ 10	1	

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

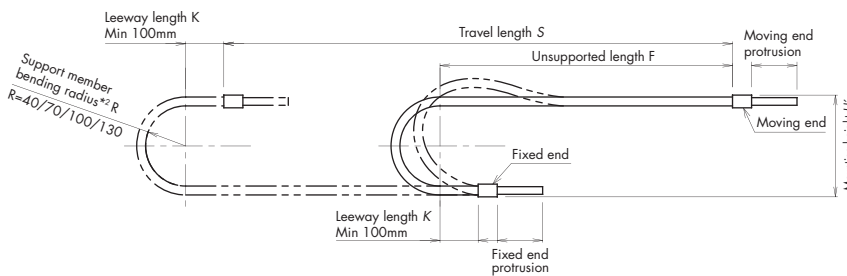


Materials

Pod	Fluoroplastic (ePTFE)	
Cable	Conductor	Tinned annealed copper wire or annealed copper wire
	Insulator	Fluoroplastic (FEP, ETFE, PFA) or thermoplastic polyester elastomer (TPEE)
	Binder	Fluoroplastic (ePTFE)
	Shield	Tinned annealed copper wire
	Sheath	PVC LF (lead free)
Support member	Engineering plastic	
Clamp	Aluminum	
Spacer	Engineering plastic	
Pod support accessories	PVC	

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



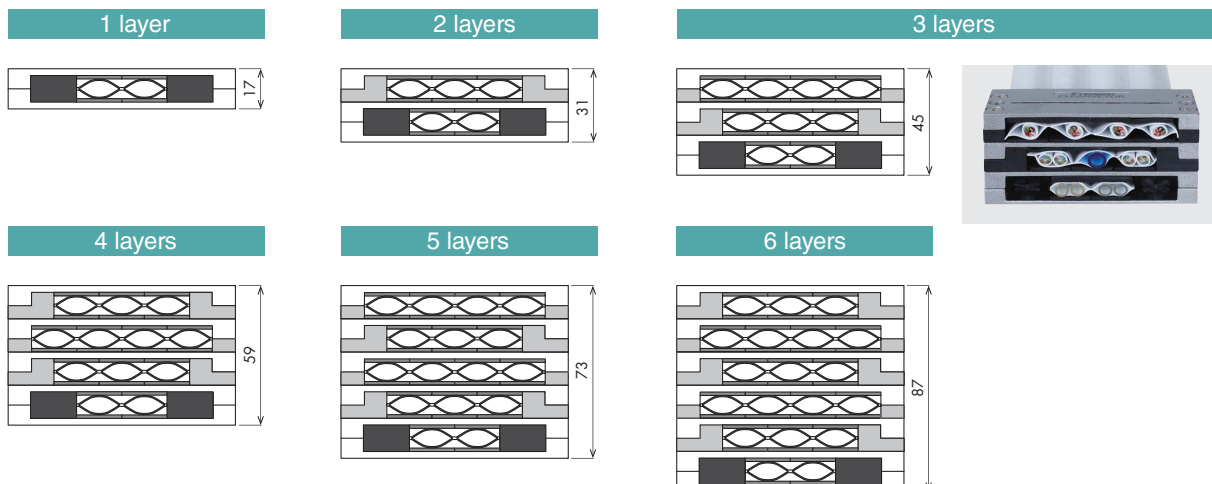
Maximum travel length*1 mm	Support member bending radius R40...1600 Support member bending radius R70...2200 Support member bending radius R100...2800 Support member bending radius R130...2800
Maximum cable length mm	8000
Maximum travel speed m/sec	2
Maximum acceleration G	4
Operating temperature range °C	-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 36) and contact a Tsubaki representative. Tsubaki will then select the appropriate types.

Layering examples



300-V rated cables

UL STYLE No.	2464
Rated temperature °C	80
Rated voltage V	300
Operating temperature range °C	-10 to 80

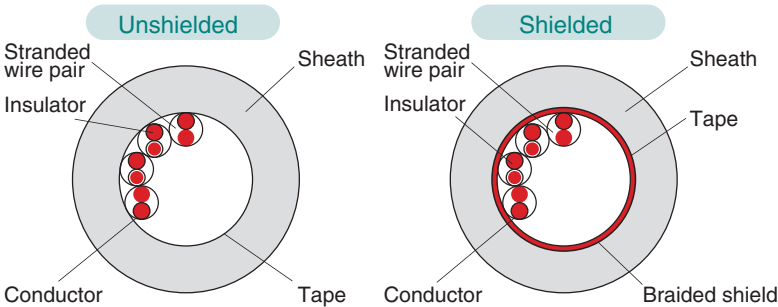
Conductor	Tinned annealed and stranded copper wire
Insulator	Special elastomer
Shield	Tinned annealed copper wire braid
Sheath	Oil resistant PVC (black)

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

Tubes

No.	Specifications			Materials	Configuration
	Outer diameter mm	Inner diameter mm	Maximum working pressure MPa		
A1	4.0	2.5	0.8 (20°C)	Polyurethane	Black, yellow, blue, green, transparent, and white
A2	6.0	4.0	0.8 (20°C)	Polyurethane	Black, yellow, blue, green, transparent, and white
A3	8.0	5.0	0.8 (20°C)	Polyurethane	Black, yellow, blue, green, transparent, and white
A4	10.0	6.5	0.8 (20°C)	Polyurethane	Black, yellow, blue, green, transparent, and white

600-V rated cables

UL STYLE No.	2586
Rated temperature °C	105
Rated voltage V	600
Operating temperature range °C	-10 to 105

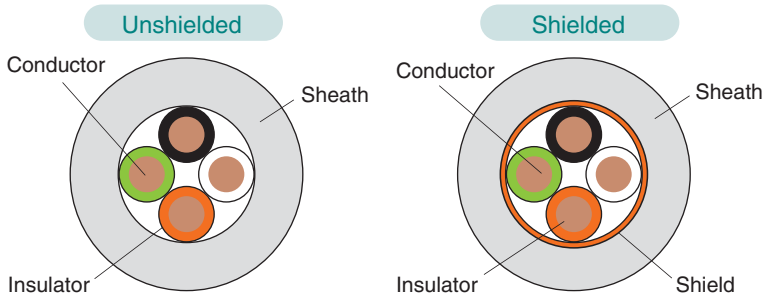
Conductor	Tinned annealed and stranded copper wire
Insulator	Special elastomer
Shield	Tinned annealed copper wire braid
Sheath	Oil resistant PVC (black)

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°C)
SQ mm ²	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

1. Lift part of the pod.



2. Put your arm through the gap and hold CLEANVEYOR by the underside.



Fig.1-2

✗ Hold only the clamp.



Fig.1-3

✗ Hold it twisted.



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

Yellow label (example)

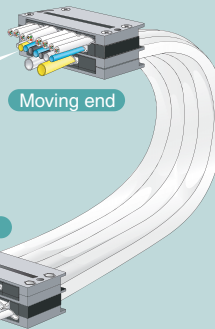


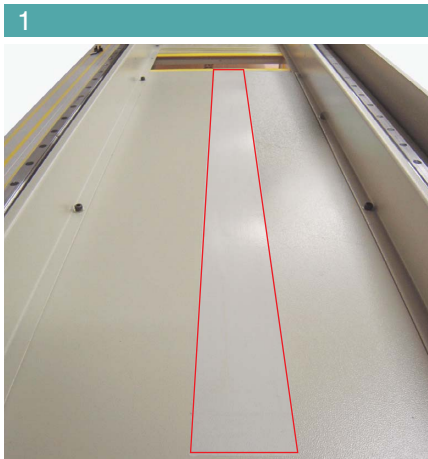
Fig.3

Clamp

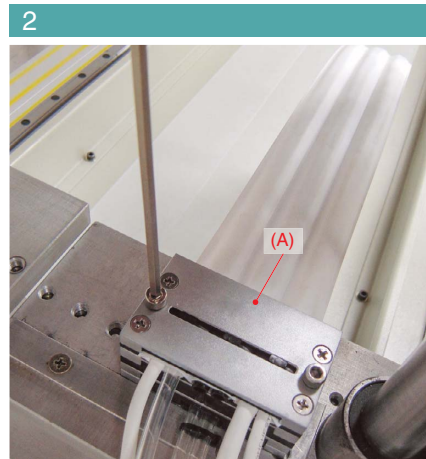
✗ If a guide is installed inside the bent part, it may interfere and be damaged.



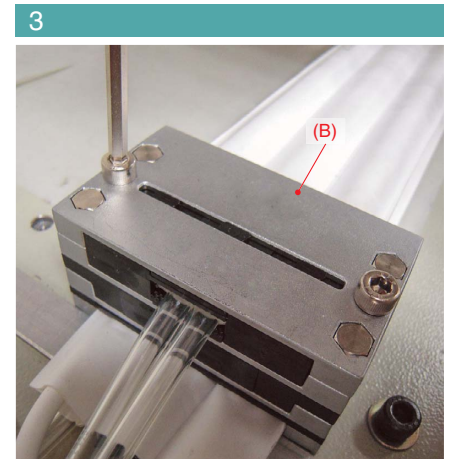
Installation procedure onto equipment



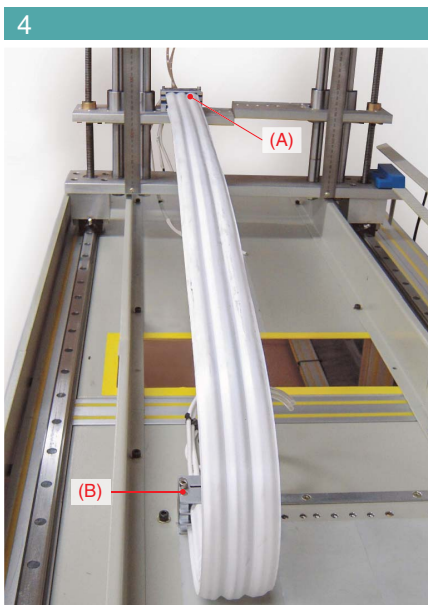
1 Attach an ultra-high molecular weight polyethylene (UHMW-PE) sheet to the floor where the CLEANVEYOR will be installed.



2 Temporarily tighten the moving end clamp (A).

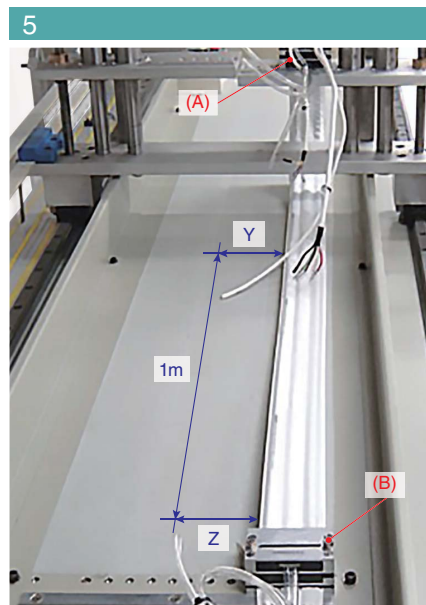


3 Temporarily tighten the fixed end clamp (B).



4 With the moving (A) and fixed end clamps (B) temporarily tightened, run the moving end one cycle to check for the following.

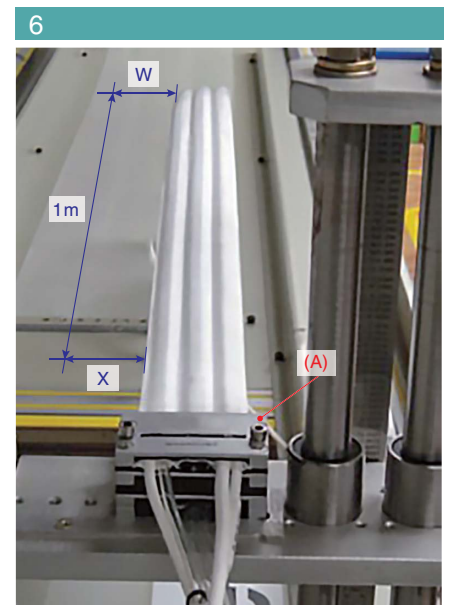
- No abnormality in operation.
- No interference with the equipment.
- No deviation from the UHMW-PE sheet.
- The multi-layer CLEANVEYOR has no deviation in the pods of each stage.



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

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

Note: * If there is a difference exceeding ± 10 mm, adjust the position of the fixed end clamp (B) to fix it within ± 10 mm.



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

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

Note: * If there is a difference exceeding ± 10 mm, adjust the position of the moving end clamp (A) to fix it within ± 10 mm.

FLATVEYOR



Patented

Clean Class
ISO class 2^{*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 2^{*1}

Noise Level

30dB(A) or less^{*2}

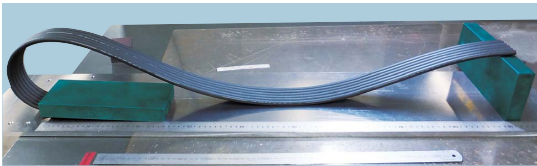
Note: *1. Based on test results by Germany's Fraunhofer Institute for Manufacturing Engineering and Automation (IPA) in accordance with ISO 14644-1 "Classification of air cleanliness by particle concentration."

*2. In-house test results (Travel speed: 50 m/min, Noise measurement distance: 500 mm)



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



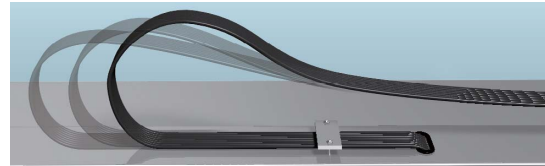
Flat cable (competitor)



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 debris generation

Low debris 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

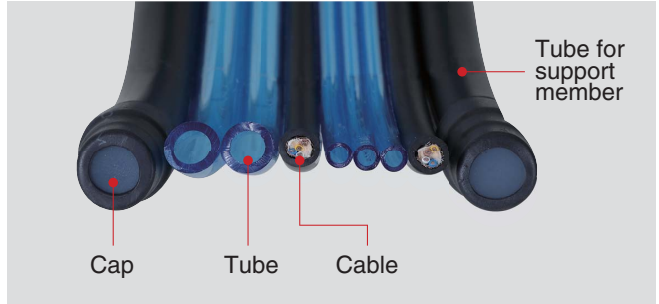
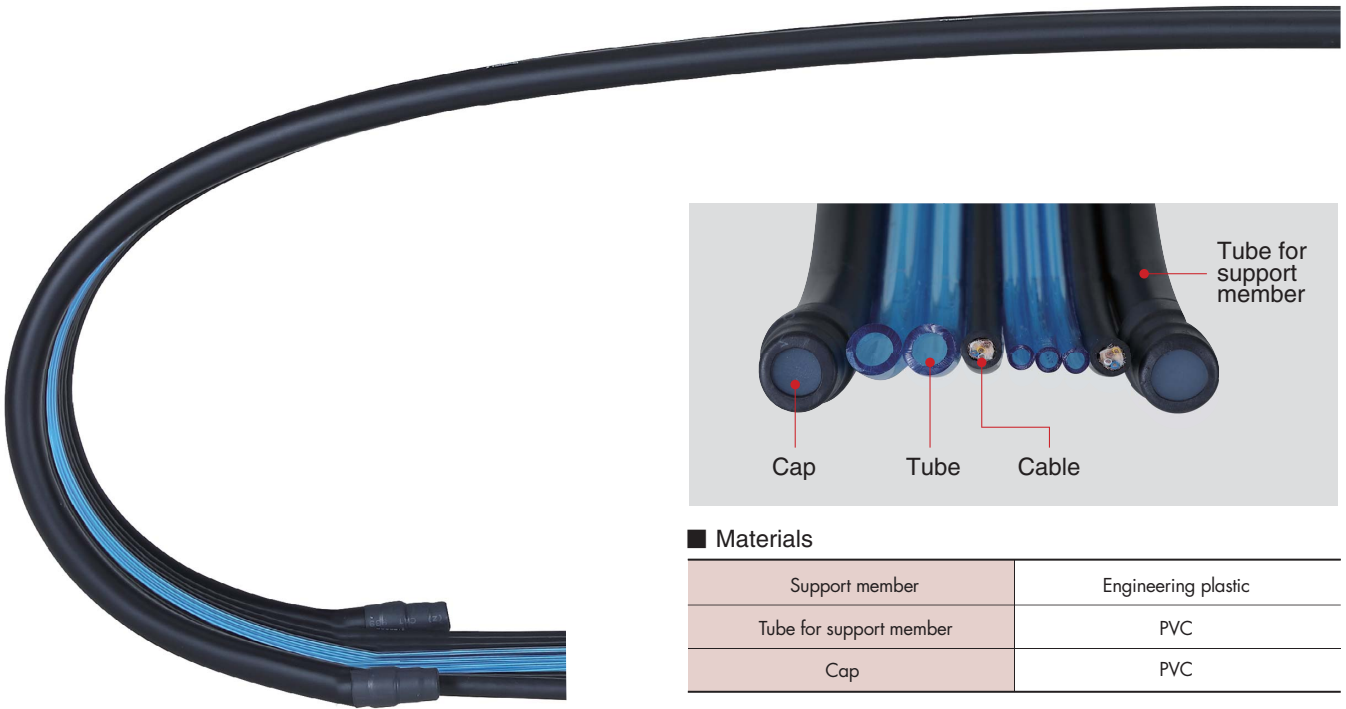
The sound insulation effect of the tube for the support member and the unique short-pitch structure reduce noise during operation.

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.

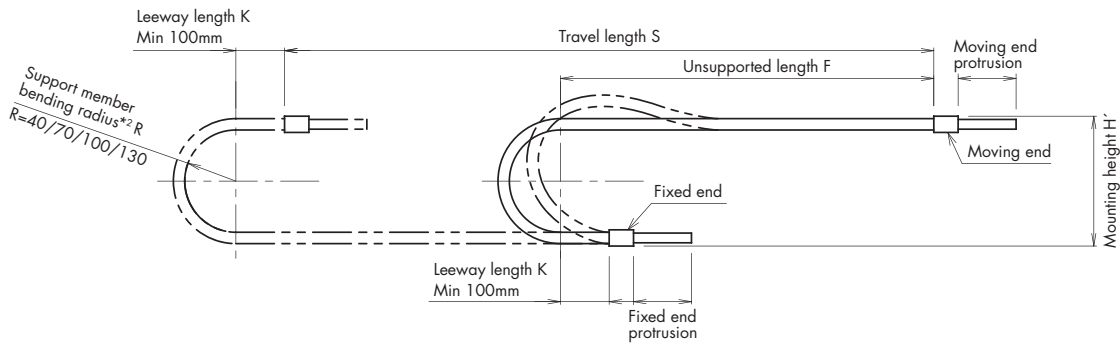
*2. Depending on cable/tube specifications and various conditions.



■ Materials

Support member	Engineering plastic
Tube for support member	PVC
Cap	PVC

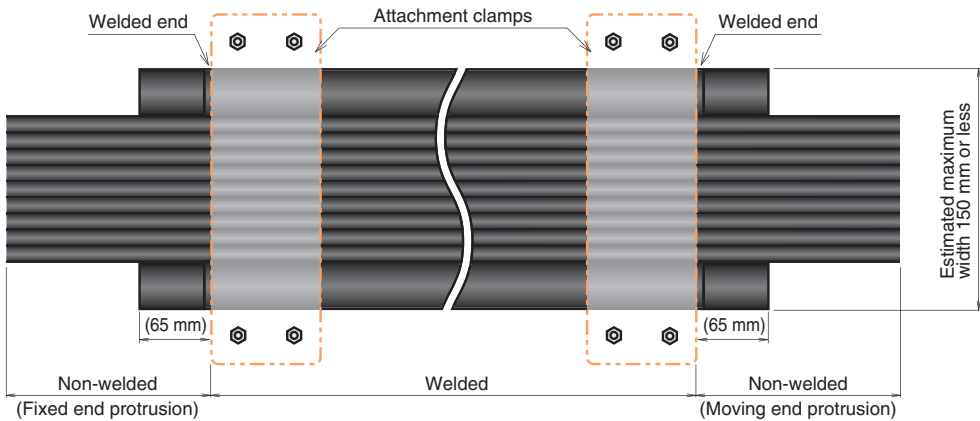
Basic specifications/capacities



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 °C	-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

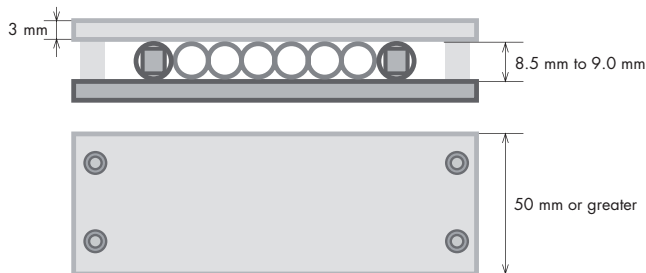
Note: *1. When additional load is 0.4 kg/m.
*2. Support member-bending radius and bending radius when installing the FLATVEYOR may differ.



Handling FLATVEYOR attachment clamps

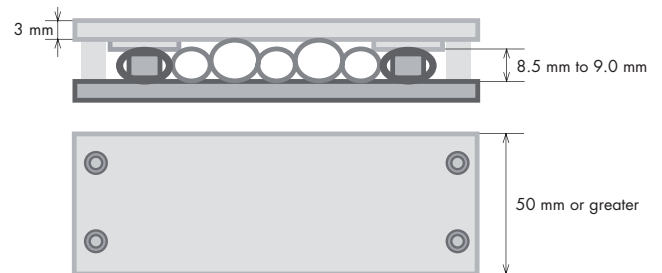
■ Cable diameter 8.5 mm or less

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.

■ Installing cables not listed in this catalog

Installing 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

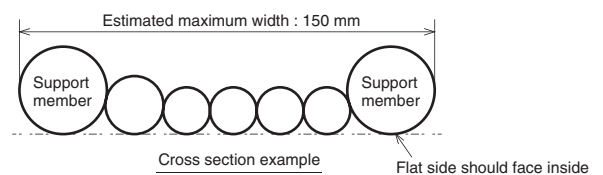
Since adjacent cables/tubes are welded together, the following should be considered.

■ Materials

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

■ 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 36) and contact a Tsubaki representative. Tsubaki will then select the appropriate types.

300-V rated cables

UL STYLE No.	2464
Rated temperature °C	80
Rated voltage V	300
Operating temperature range °C	-10 to 80

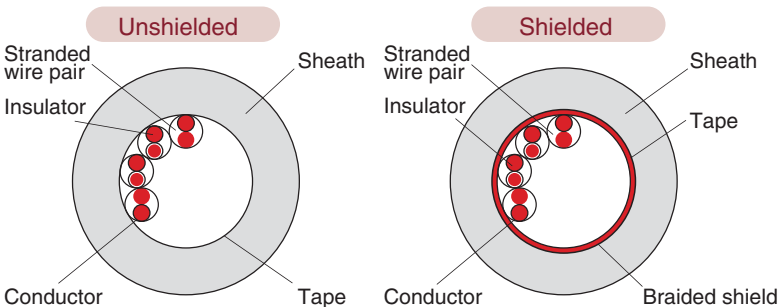
Conductor	Tinned annealed and stranded copper wire
Insulator	Special elastomer
Shield	Tinned annealed copper wire braid
Sheath	Oil resistant PVC (black)

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

Tubes

No.	Specifications			Materials	Configuration
	Outer diameter mm	Inner diameter mm	Maximum working pressure MPa		
A1	4.0	2.5	0.8 (20°C)	Polyurethane	Black, yellow, blue, green, transparent, and white
A2	6.0	4.0	0.8 (20°C)	Polyurethane	Black, yellow, blue, green, transparent, and white
A3	8.0	5.0	0.8 (20°C)	Polyurethane	Black, yellow, blue, green, transparent, and white
A4	10.0	6.5	0.8 (20°C)	Polyurethane	Black, yellow, blue, green, transparent, and white

600-V rated cables

UL STYLE No.	2586
Rated temperature °C	105
Rated voltage V	600
Operating temperature range °C	-10 to 105

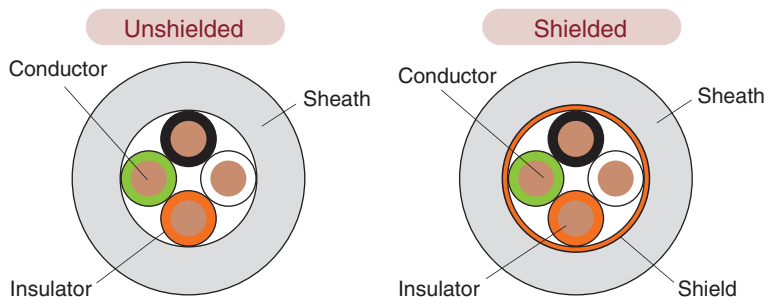
Conductor	Tinned annealed and stranded copper wire
Insulator	Special elastomer
Shield	Tinned annealed copper wire braid
Sheath	Oil resistant PVC (black)

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°C)
SQ mm ²	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

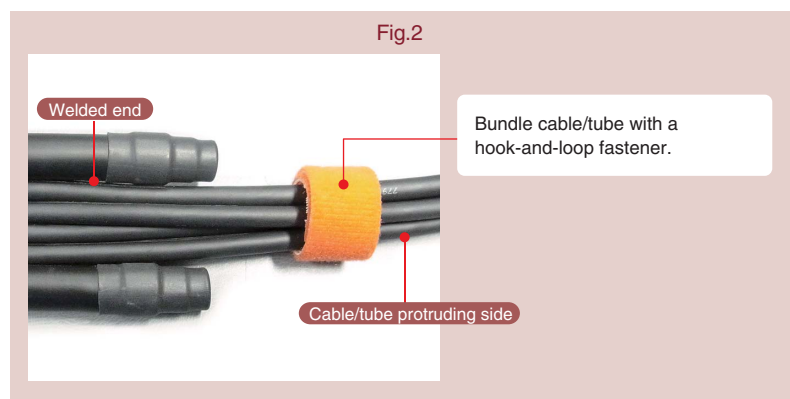
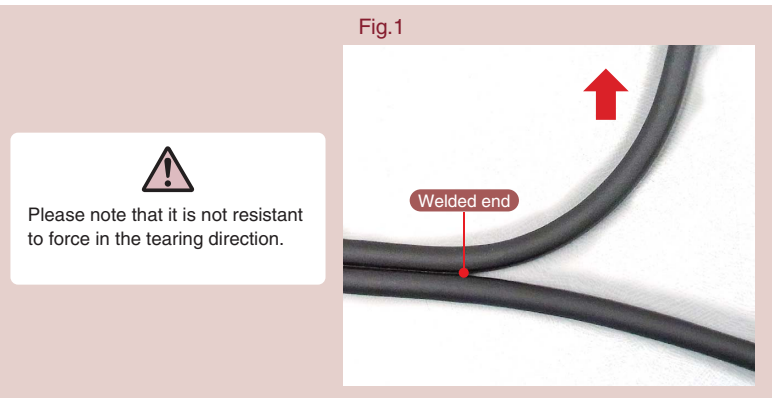
Precautions for handling

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.

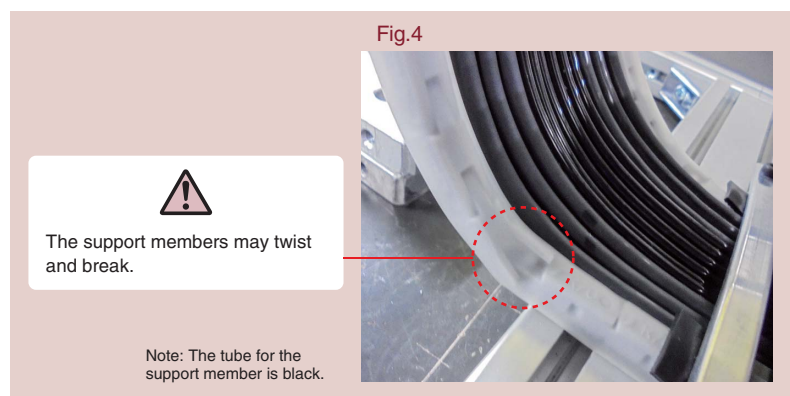
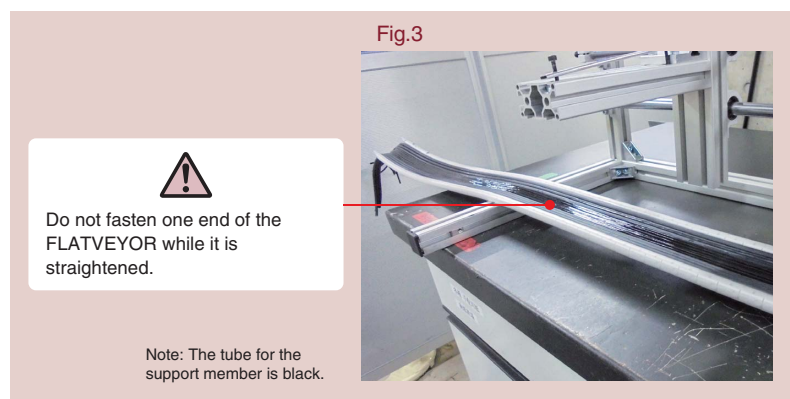
Note: Fig.2 shows an example of a countermeasure.



Precautions for installation

1

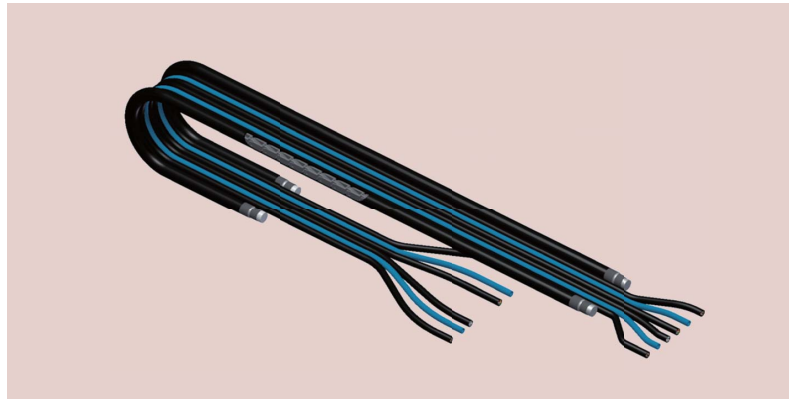
Do not fasten one end of the FLATVEYOR while it is straightened (Fig.3). If one end (moving end or fixed end) of the FLATVEYOR is fastened to the equipment while the FLATVEYOR is straight and then bent, the support members may twist and break (Fig.4).



Installation procedure onto equipment

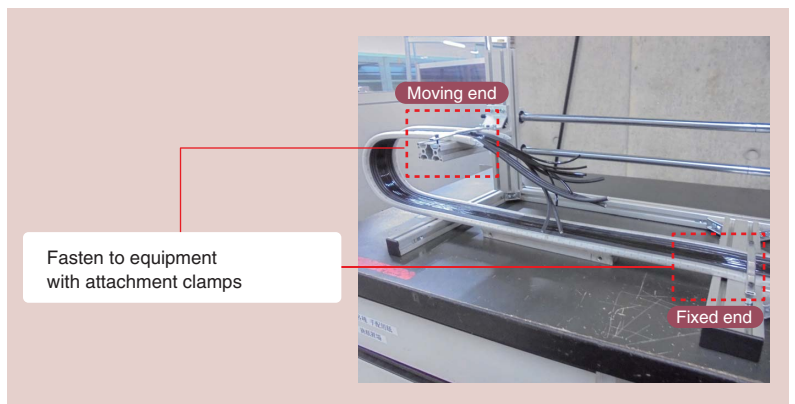
1

Bend the FLATVEYOR before installing it onto equipment.



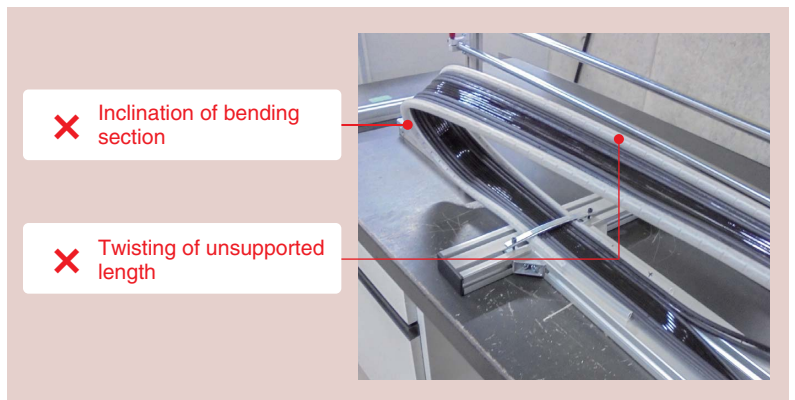
2

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

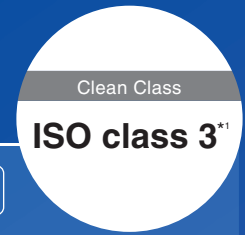


3

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.



TKR Series



Patented

Low debris 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 3*1

Noise Level

40dB(A) or less*2

Note: *1. Based on in-house test results in accordance with ISO 14644-1 "Classification of air cleanliness by particle concentration."

*2. In-house test results (TKR15H22-30W40R40, Travel speed: 100 m/min or less)



Low debris generation

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

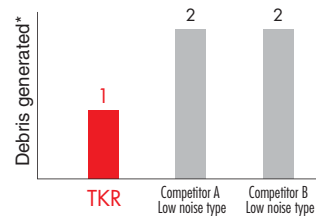


TKR20H28



TKP35H32

■ Comparison of debris generation



In-house test conditions

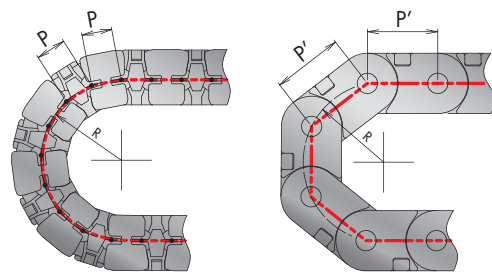
- Installation: Standard (with floor)
- Travel speed: 120 m/min (No supports)

*Debris 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



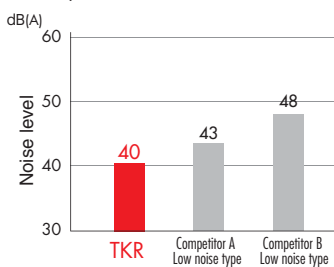
TKR

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
- Travel speed: 100 m/min

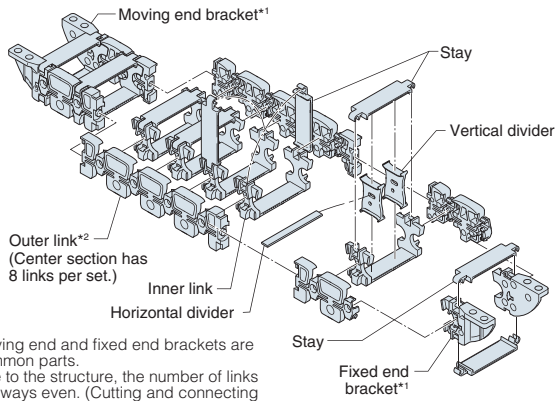
Can be cut

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

Download instruction manual.

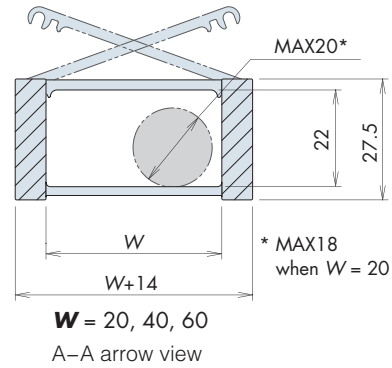


Structure



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.)

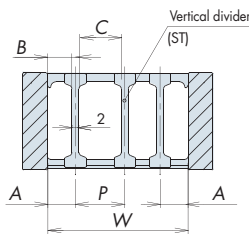
Cross-section dimensions



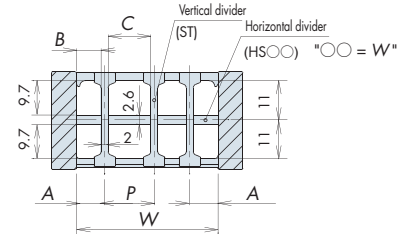
W = 20, 40, 60
 A-A arrow view

Divider dimensions

(1) When using only vertical dividers



(2) Fully-stayed 2-layer height separation



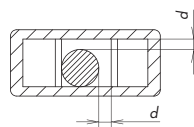
Vertical divider (fastening method)	Inner width W(mm)	A (mm)	B (mm)	P (mm)	C (mm)
ST (sliding installation)	Common for all widths	5 to 21	4 to 20	6 to 50	4 to 48
ST (fixable installation)	20	6, 8	5, 7	6, 8	4, 6
	40	6 to 20 2 mm increments	5 to 19 2 mm increments	6 to 28 2 mm increments	4 to 26 2 mm increments
	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/hoses 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 hose x 0.1.



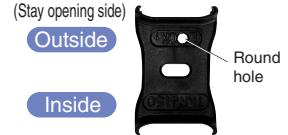
Vertical divider (fastening method)

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

Fixable installation



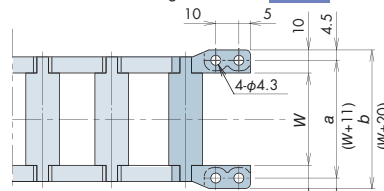
Sliding installation



Dimensions & brackets

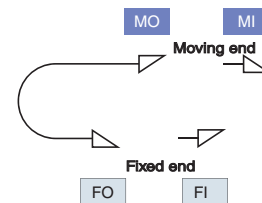
W (mm)	a (mm)	b (mm)	Bending radius R (mm)	Mounting height H' (mm)
20	31	40	40	120 to 140
40	51	60	50	140 to 160
60	71	80	75	190 to 210

Moving end bracket MO / MI *1 *2

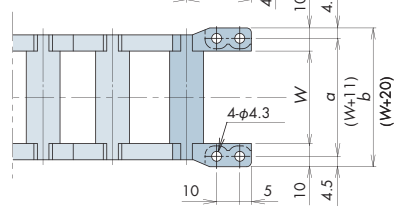
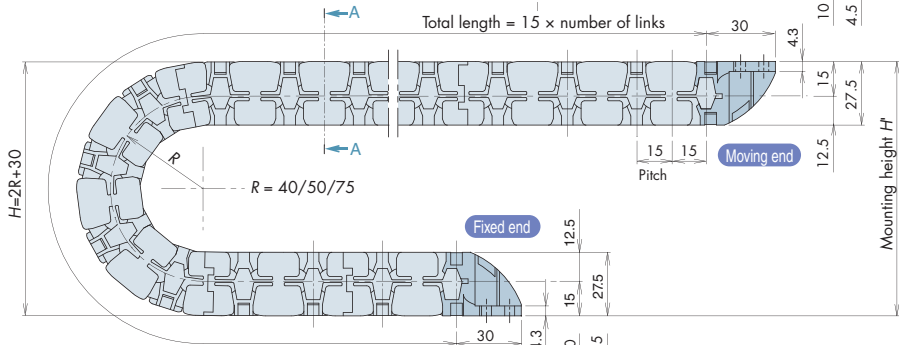


Note: *1. MO and FO brackets are common parts.
 *2. MI and FI brackets are common parts.

Bracket mounting directions



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



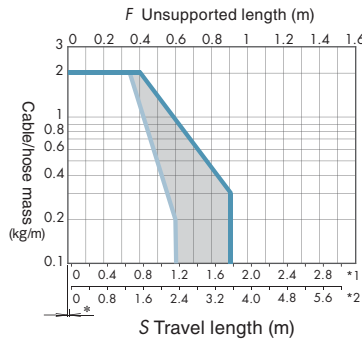
Fixed end bracket FO / FI *1 *2

Basic specifications

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

Note: *1: 150 m/min for support roller arrangement.
 2. Contact a Tsubaki representative regarding maximum acceleration.
 3. Cannot be used in acidic or alkaline environments.

Load diagram



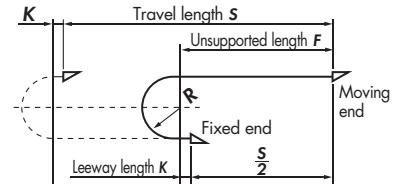
* Includes leeway length.
 *1: Without support rollers
 *2: With support rollers

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 60	40 50 75		FO FI	MO MI

Note: 1. Moving end and fixed end brackets are common parts.
 2. Dividers are delivered uninstalled.
 3. Brackets are delivered installed.
 4. 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
 5. Install vertical dividers from second stay on the moving end.

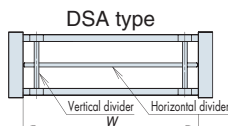
Plastic link (extension)

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 60	40 50 75	

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)



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 ■■

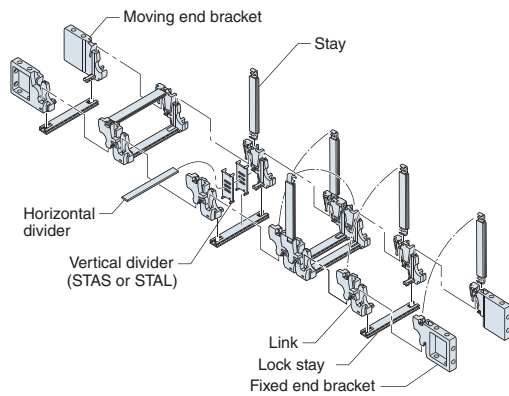
Bracket

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

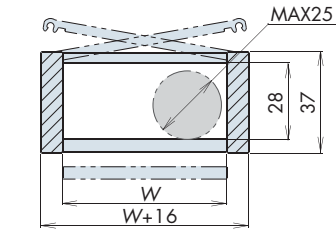
Adding additional links

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: (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

Structure



Cross-section dimensions

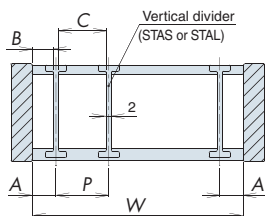


W = 30, 40, 50, 60, 80, 100, 120

A-A arrow view

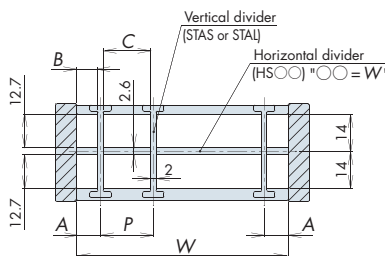
Divider dimensions

(1) When using only vertical dividers

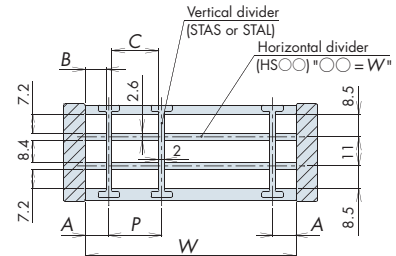


(2) Fully-stayed multiple height separation (DSA type)

When separating into 2 layers



When separating into 3 layers

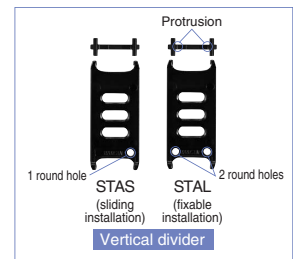
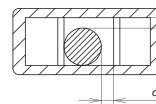


Vertical divider (fastening method)	Inner width W (mm)	A (mm)	B (mm)	P (mm)	C (mm)
STAS (sliding installation)	Common for all widths	4 to 21	3 to 20	8 to 82	6 to 80
	30	7 to 15	6 to 14	8 to 16	6 to 14
	40	4 to 20	3 to 19	8 to 32	6 to 30
STAL (fixable installation)	50	5 to 21	4 to 20	8 to 40	6 to 38
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

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

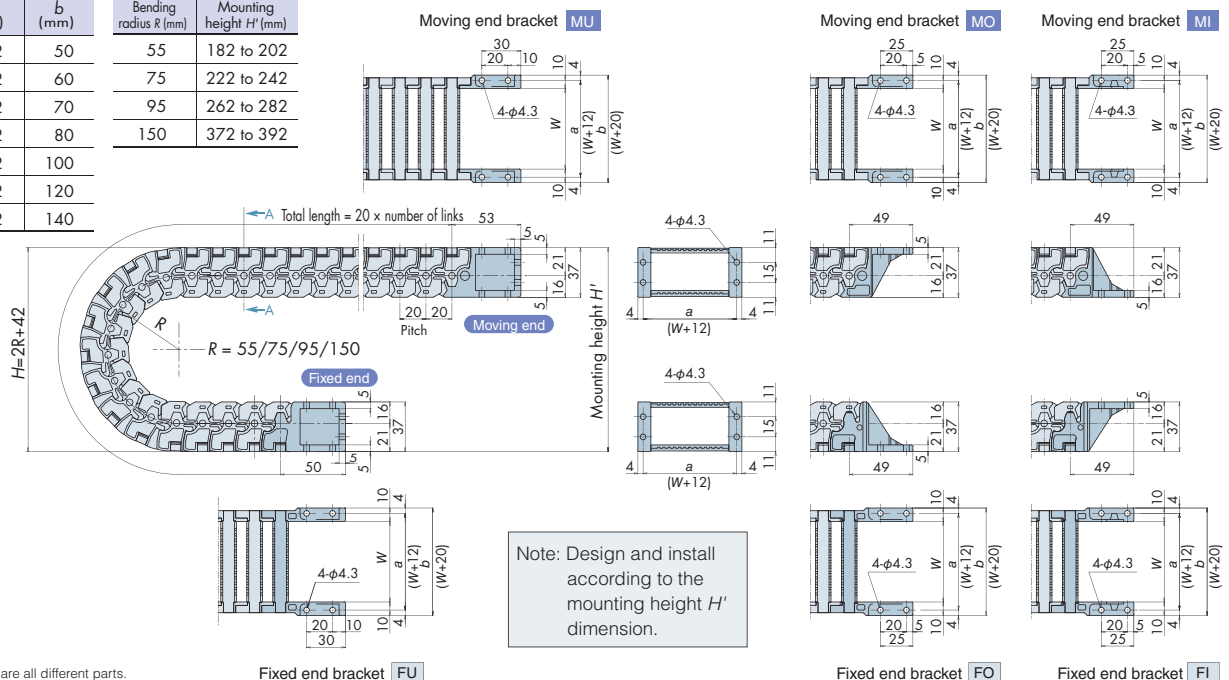
Note:

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/hoses 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 hose x 0.1.



Dimensions & brackets

W (mm)	a (mm)	b (mm)	Bending radius R (mm)	Mounting height H' (mm)
30	42	50	55	182 to 202
40	52	60	75	222 to 242
50	62	70	95	262 to 282
60	72	80	150	372 to 392
80	92	100		
100	112	120		
120	132	140		



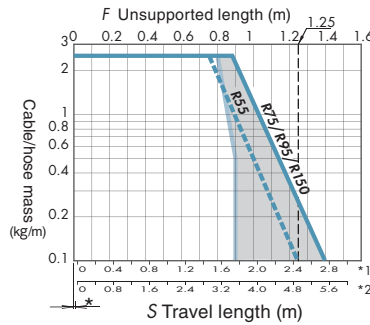
Note: The brackets are all different parts.

Basic specifications

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

Note: *1. 150 m/min for support roller arrangement.
2. Contact a Tsubaki representative regarding maximum acceleration.
3. Cannot be used in acidic or alkaline environments.

Load diagram



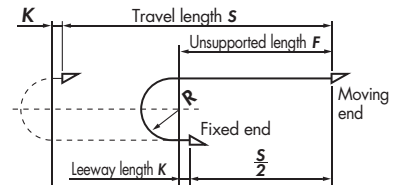
* Includes leeway length.
*1: Without support rollers
*2: With support rollers

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

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

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

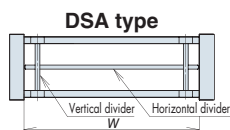
TKR20H28W (1) R (2) + (3) L - (4) - (5)

(1) Inner width	(2) Bending radius	(3) Number of links	(4) Fixed end	(5) Moving end
30	55		FU	MU
40	75		FO	MO
50	95		FI	MI
60	150			
80				
100				
120				

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)



Note: 2 or more vertical dividers are required.

Vertical divider

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

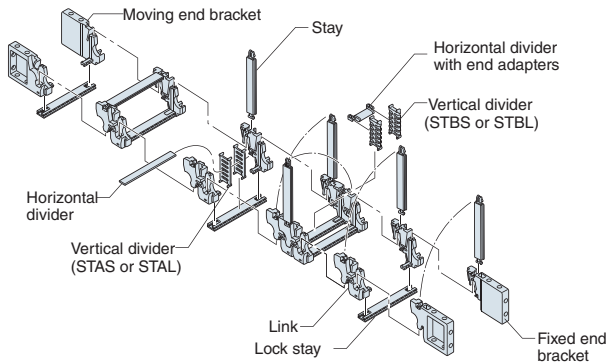
Horizontal divider

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 ■■

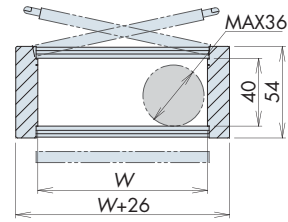
Bracket

Model number	For cable carrier model number
TKR20H28W30-MU	TKR20H28W30R ■■
TKR20H28W30-MO	
TKR20H28W30-MI	
TKR20H28W30-FU	
TKR20H28W30-FO	
TKR20H28W40-MU	TKR20H28W40R ■■
TKR20H28W40-MO	
TKR20H28W40-MI	
TKR20H28W40-FU	
TKR20H28W40-FO	
TKR20H28W50-MU	TKR20H28W50R ■■
TKR20H28W50-MO	
TKR20H28W50-MI	
TKR20H28W50-FU	
TKR20H28W50-FO	
TKR20H28W60-MU	TKR20H28W60R ■■
TKR20H28W60-MO	
TKR20H28W60-MI	
TKR20H28W60-FU	
TKR20H28W60-FO	
TKR20H28W80-MU	TKR20H28W80R ■■
TKR20H28W80-MO	
TKR20H28W80-MI	
TKR20H28W80-FU	
TKR20H28W80-FO	
TKR20H28W100-MU	TKR20H28W100R ■■
TKR20H28W100-MO	
TKR20H28W100-MI	
TKR20H28W100-FU	
TKR20H28W100-FO	
TKR20H28W120-MU	TKR20H28W120R ■■
TKR20H28W120-MO	
TKR20H28W120-MI	
TKR20H28W120-FU	
TKR20H28W120-FO	

Structure



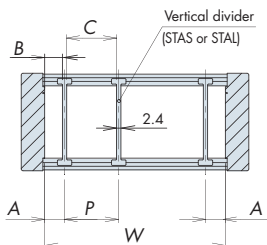
Cross-section dimensions



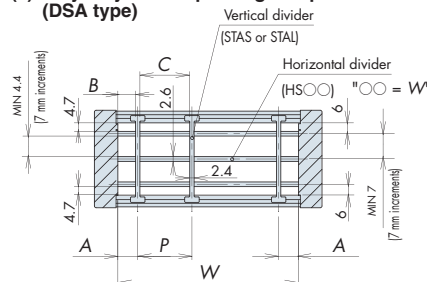
W = 50, 62, 75, 87, 100, 125, 150, 200
A-A arrow view

Divider dimensions

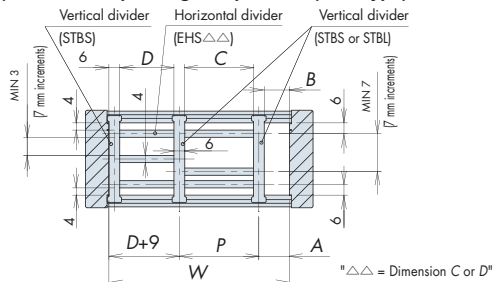
(1) When using only vertical dividers



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



(3) Partial multiple height separation (DSB type)

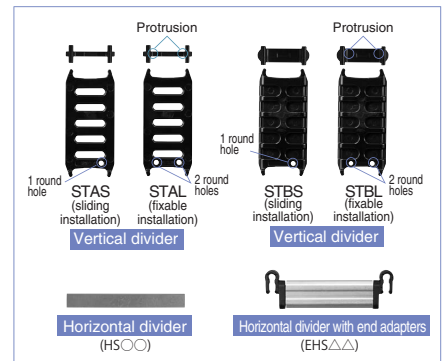
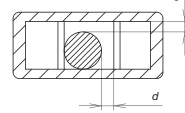


Vertical divider (fastening method)	Inner width W (mm)	A (mm)	B (mm)	P (mm)	C (mm)	D (mm)
STAS (sliding installation)	Common for all widths	3 to 65	1.8 to 63.8	8 to 140	5.6 to 137.6	-
	50	5 to 37	3.8 to 35.8	8 to 40	5.6 to 37.6	-
	62	7 to 47	5.8 to 45.8	8 to 48	5.6 to 45.6	-
	75	5.5 to 61.5	4.3 to 60.8	8 to 64	5.6 to 61.6	-
STAL (fixable installation)	87	3.5 to 62.3	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)
	50	min 5	min 2	-	-	20 to 36
	62	min 7	min 4	-	-	20 to 46
	75	min 5.5	min 2.5	22 to 40	22 to 34	20.5 to 60.5
STBL (fixable installation)	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

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

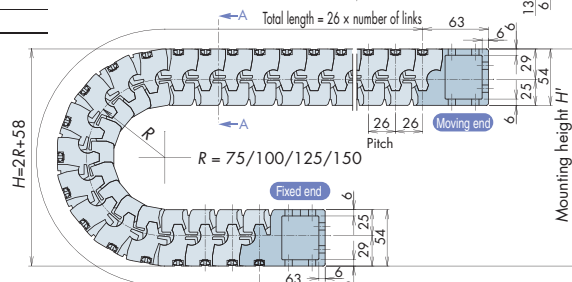
Note: Make the gap between cables/hoses and the divider or link (d in the figure below) to whichever of the following two values is larger: 2 mm or greater or the outer diameter of the cable or hose x 0.1.



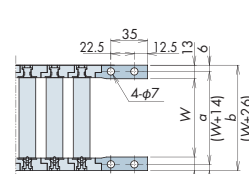
Note: The maximum values for A, B, P, and C are applied when using horizontal dividers.

Dimensions & brackets

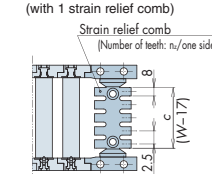
W (mm)	a (mm)	b (mm)	c (mm)	Strain relief comb n _z (toothed)	Bending radius R (mm)	Mounting height H' (mm)
50	64	76	33	3	75	238 to 258
62	76	88	-	-	100	288 to 308
75	89	101	58	5	125	338 to 358
87	101	113	-	-	150	388 to 408
100	114	126	83	7	-	-
125	139	151	108	9	-	-
150	164	176	133	11	-	-
200	214	226	-	-	-	-



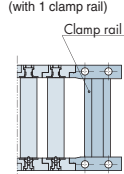
Moving end bracket **MU** *2



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

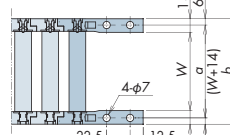


Moving end bracket **MUCR** *1 (with 1 clamp rail)

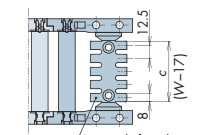


Note: Design and install according to the mounting height H' dimension.

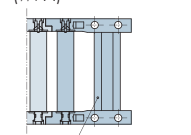
- *1. Strain relief combs and clamp rails can be installed on the inside and outside.
- *2. Note that the strain relief comb and clamp rail cannot be added to the MU and FU brackets.
- *3. Only when W = 50, 75, 100, 125, or 150.



Fixed end bracket **FU** *2



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



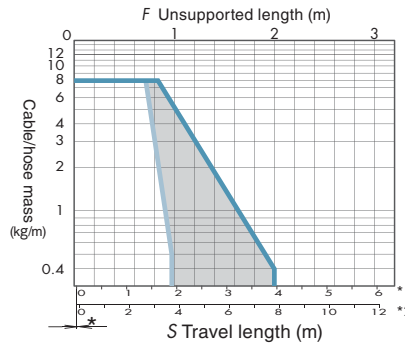
Fixed end bracket **FUCR** *1 (with 1 clamp rail)

Basic specifications

Maximum travel speed (m/min)	300*1	
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. Contact a Tsubaki representative regarding maximum acceleration.
 3. Cannot be used in acidic or alkaline environments.

Load diagram



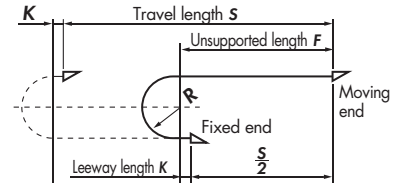
* Includes leeway length.
 *1: Without support rollers
 *2: With support rollers

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

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

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

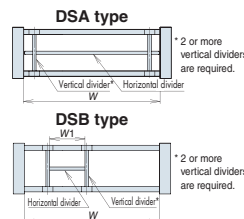
TKR26H40W (1) R (2) + (3) L - (4) - (5)

(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
		Fixable installation	TKR26H40-STAL	1 vertical divider
	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
		Fixable installation	TKR26H40-STBL	1 vertical divider
	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 ■■

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	

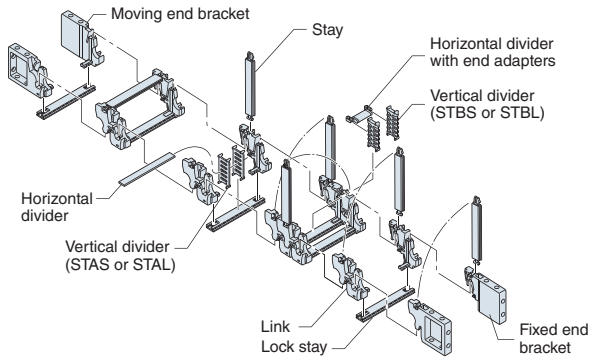
Clamp rail (steel)

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

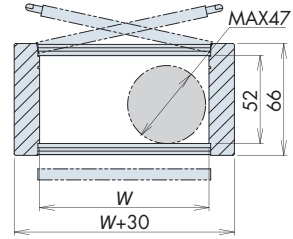
Bracket (with 1 clamp rail)

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	

Structure



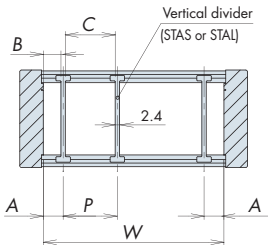
Cross-section dimensions



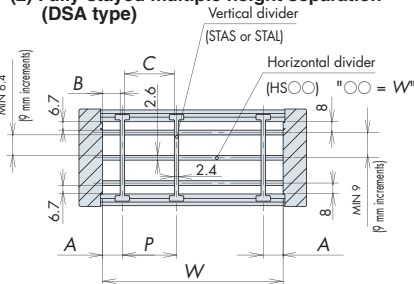
W = 50, 62, 75, 87, 100, 125, 150, 200
A-A arrow view

Divider dimensions

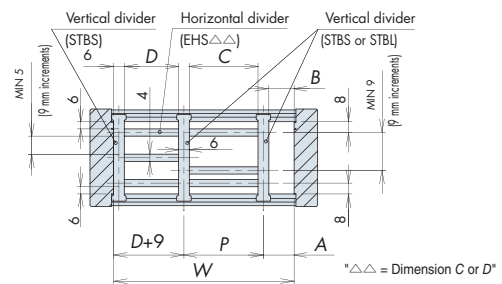
(1) When using only vertical dividers



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



(3) Partial multiple height separation (DSB type)

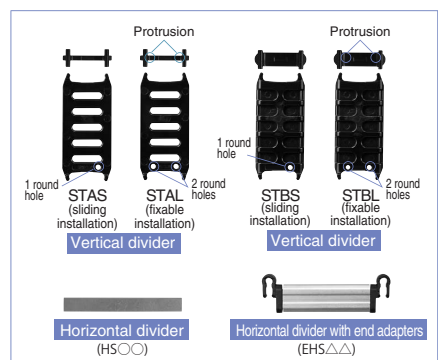
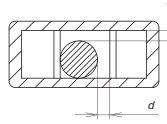


Vertical divider (fastening method)	Inner width W (mm)	A (mm)	B (mm)	P (mm)	C (mm)	D (mm)
STAS (sliding installation)	Common for all widths	3 to 65	1.8 to 63.8	8 to 130	5.6 to 127.6	
STAL (fixable installation)	50	5 to 37	3.8 to 35.8	8 to 40	5.6 to 37.6	
	62	7 to 47	5.8 to 45.8	8 to 48	5.6 to 45.6	
	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	
STBS (sliding installation)	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	
	50	min 3	min 0	26 to (W-6)	20 to (W-12)	20 to (W-12)
	62	min 5	min 2	-	-	20 to 36
STBL (fixable installation)	75	min 5.5	min 4	-	-	22 to 46
	87	min 3.5	min 2.5	22 to 34	20.5 to 60.5	20.5 to 60.5
	100	min 6	min 0.5	28 to 52	22 to 46	22.5 to 74.5
	125	min 6.5	min 3	28 to 64	22 to 58	21 to 85
	150	min 7	min 3.5	28 to 88	22 to 82	21.5 to 109.5
	200	min 4	min 4	22 to 106	22 to 106	22 to 134
		min 4	min 1	28 to 164	22 to 158	23 to 187
						4 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
- D: Gap between neighboring vertical dividers when vertical dividers for both ends are installed

Note: Make the gap between cables/hoses and the divider or link (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 hose x 0.1.

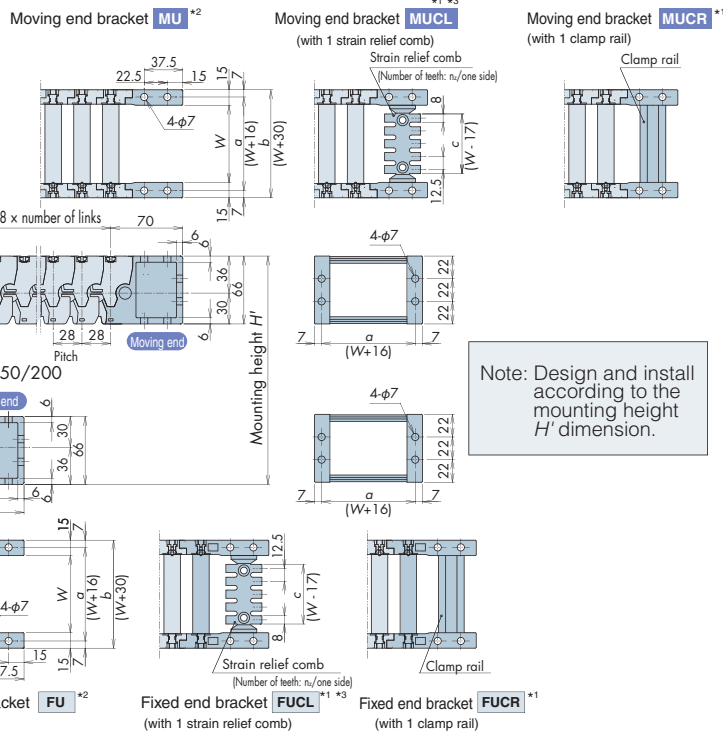


Note: The maximum values for A, B, P, and C are applied when using horizontal dividers.

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



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

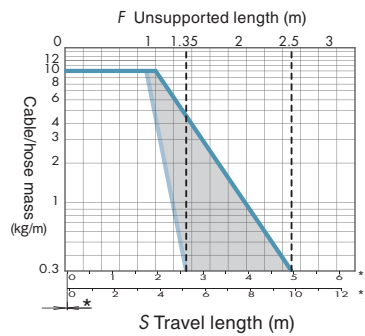
Note: *1. Strain relief combs and clamp rails can be installed on the inside and outside.
*2. Note that the strain relief comb and clamp rail cannot be added to the MU and FU brackets.
*3. Only when W = 50, 75, 100, 125, or 150.

Basic specifications

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

Note: *1. 150 m/min for support roller arrangement.
*2. Contact a Tsubaki representative regarding maximum acceleration.
*3. Cannot be used in acidic or alkaline environments.

Load diagram



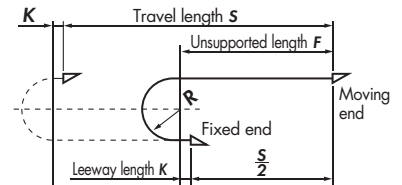
* Includes leeway length.
*1: Without support rollers
*2: With support rollers

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

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

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

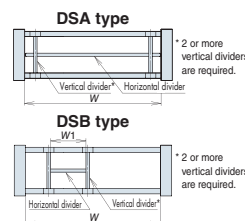
TKR28H52W (1) R (2) + (3) L - (4) - (5)

(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 × 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)
	Horizontal divider Fixable installation	TKR28H52-STAL	1 vertical divider	K (pcs)
DSB type	Vertical divider Sliding installation	TKR28H52-HS (Dimension W) W = 50/62/75/87/100/125/150/200	1 horizontal divider	K (pcs)
	Vertical divider Fixable installation	TKR28H52-STBS	1 vertical divider	K (pcs)
	Horizontal divider with end adapters	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-CLU	TKR28H52W50-MU/FU
TKR28H52W75-CLU	TKR28H52W75-MU/FU
TKR28H52W100-CLU	TKR28H52W100-MU/FU
TKR28H52W125-CLU	TKR28H52W125-MU/FU
TKR28H52W150-CLU	TKR28H52W150-MU/FU

Note: None for W62, 87, and 200.

Vertical divider

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

Horizontal divider with end adapters

Model number	For cable carrier model number
TKR28H52-EHS△△	

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

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	

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 ■■

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	

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 (with 1 clamp rail)

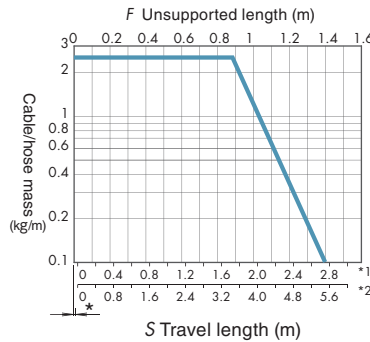
Model number	For cable carrier model number
TKR28H52W50-MUCR	TKR28H52W50R ■■
TKR28H52W50-FUCR	
TKR28H52W62-MUCR	TKR28H52W62R ■■
TKR28H52W62-FUCR	
TKR28H52W75-MUCR	TKR28H52W75R ■■
TKR28H52W75-FUCR	
TKR28H52W87-MUCR	TKR28H52W87R ■■
TKR28H52W87-FUCR	
TKR28H52W100-MUCR	TKR28H52W100R ■■
TKR28H52W100-FUCR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

Basic specifications

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

Note: *1. 150 m/min for support roller arrangement.
2. Contact a Tsubaki representative regarding maximum acceleration.
3. Cannot be used in acidic or alkaline environments.

Load diagram

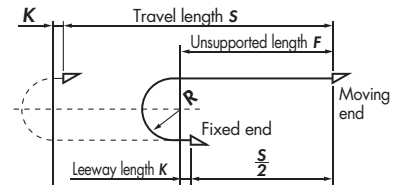


* Includes leeway length.
*1: Without support rollers
*2: With support rollers

Calculating no. of links

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

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-CLU	TKR37H28W40-MU/FU
TKR37H28W50-CLU	TKR37H28W50-MU/FU
TKR37H28W60-CLU	TKR37H28W60-MU/FU
TKR37H28W70-CLU	TKR37H28W70-MU/FU
TKR37H28W80-CLU	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	

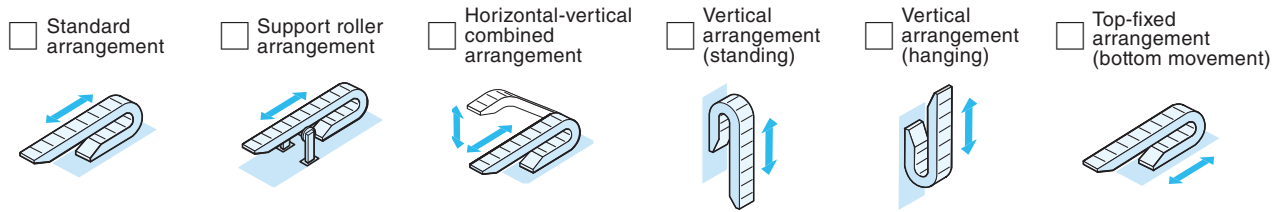
Bracket (with 1 strain relief comb)

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	

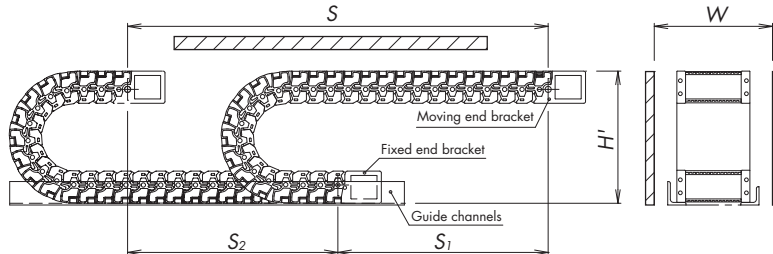
Bracket (with 2 strain relief combs)

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	

Installation method



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	_____ °C
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 _____
 Name _____
 Date of submission _____

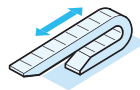
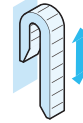
Department _____
 TEL _____
 E-MAIL _____

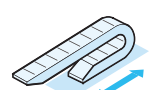
Product name

 CLEANVEYOR

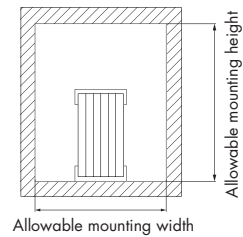
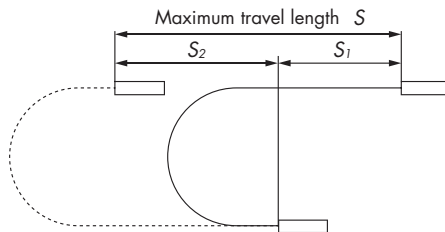
 FLATVEYOR


Installation method

 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	°C
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 install a connector on one end or no connectors only. Cables cannot be installed when cables have connectors on both ends.

No.*1	Rated voltage V	Rated temperature °C	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
P11	300	80	4C	20AWG	○	5.0	0.01	40	1	1000	500	○		
													2	1000

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 ×
A2	Blue	6.0	4.0	0.0193	15	1	1000	500	×

Note: *1. Select the desired cable numbers and tubes numbers from pages 11 to 12 for a CLEANVEYOR and pages 19 to 20 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 _____

TEL _____

Date of submission _____

E-MAIL _____



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 debris generation.

Q Do they comply with the RoHS directive (10 substances)?

A **Tsubaki cable carriers, CLEANVEYOR, and FLATVEYOR conform to the RoHS.**

Excluding customer-supplied cables and tubes.

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, and FLATVEYOR 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 I would like to know the cleanliness of each product with low debris generation specifications.

A ISO class 1 : CLEANVEYOR
 ISO class 2 : FLATVEYOR
 ISO class 3 : TKR Series
 ISO class 4 : TKQ Series
 ISO class 5 : TKP Series, MW Type

All of the above values are for reference only and are not guaranteed.

ISO 14644 -1	FED STD 209E
ISO class 1	—
ISO class 2	—
ISO class 3	ISO class 1
ISO class 4	ISO class 10
ISO class 5	ISO class 100
ISO class 6	ISO class 1000

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.**



Q Please tell me how to request a quotation for CLEANVEYOR and FLATVEYOR.

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

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.**

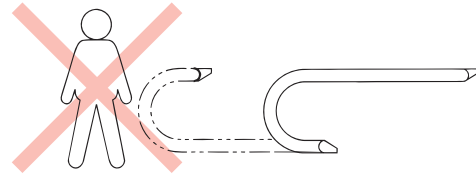
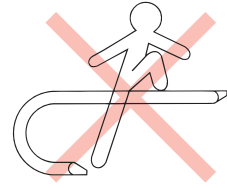
Even if you provide us with a cable with connectors on both ends, it cannot be installed on CLEANVEYOR.

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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