

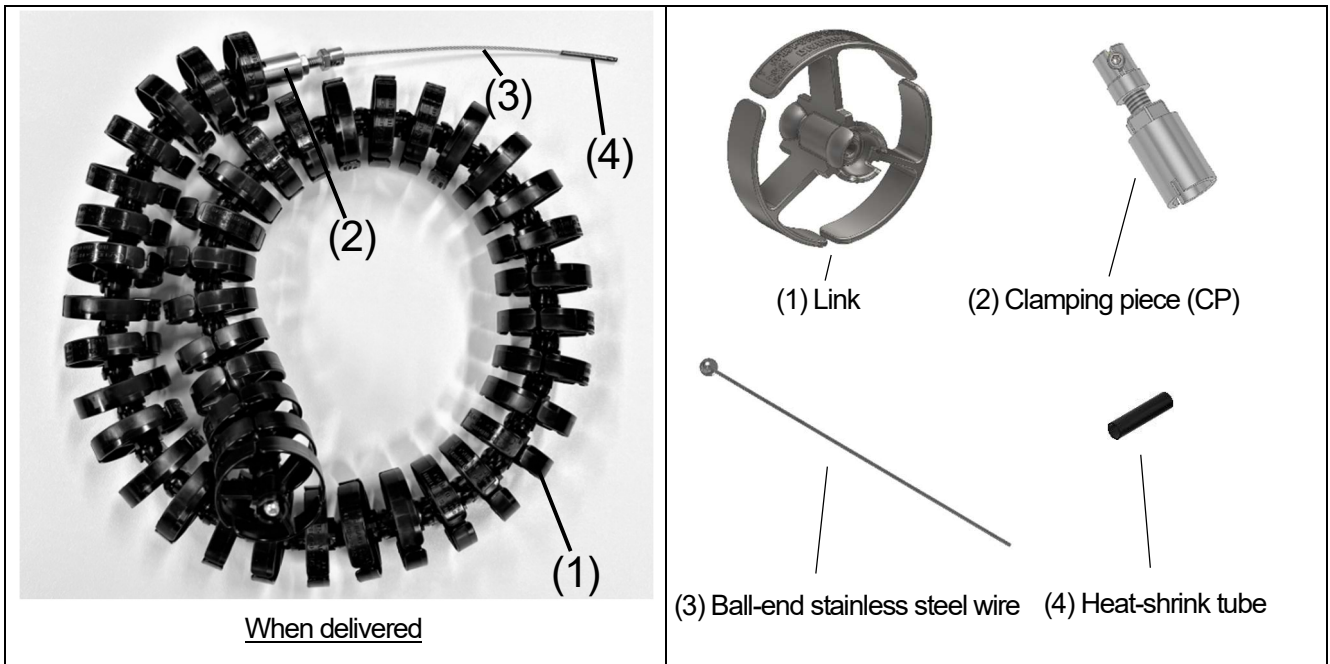
CABLEVEYOR

(Cable Carriers)

TKRB14H10

Caution: Wear the appropriate protective gear (safety glasses, gloves, safety shoes, etc.) when working.

1 Structure/Part Names



* This product is delivered fully assembled.

2 Tools



3 Work Precautions

- 1) This product is designed to be easily assembled and disassembled. If insertion of any part during assembly is difficult, the position may not be aligned properly. In such situations, do not forcibly insert the part, and check the position and adjust as necessary.
- 2) Wear the appropriate protective gear (gloves, safety glasses, safety shoes, etc.) when working.
 (For details, see the end of this manual.)

4

Assembling the Product

Ball joint

4-1 Connecting the ends of two links forms a ball joint, so join links together by combining their ball and socket sides.

4-2 Insert the stainless steel ball-end wire through the socket side of a connected link.

Ball joint ribs (three locations)

CP grooves (three locations)

4-3 After passing the CP onto the wire from the ball side, align the CP grooves with the ball joint ribs of the link, and then connect these parts.

Hex bolt

Hex nut

4-4 Fully tighten the hex bolt and hex nut of the CP and position them as shown above.

0.45 to 0.5 Nm

Stopper

4-5 Pull the wire while pushing the stopper against the bolt head, and then tighten the hex cap locking screw with the prescribed torque.

(1) (2)

4-6 As shown above, loosen the hex bolt of the CP (side (1) in the above figure), use a wrench to tighten the hex nut (side (2) in the above figure), and then adjust the tension of the wire.

(Note)
Left figure: tension applied
Right figure: tension not applied

Check that the ball is at the end.

4-7 Apply enough wire tension so that the product remains straight without any support when you pick up the 10th link of the cable carrier, as shown above.

4-8 Cut the wire protruding from the CP down to the appropriate length.

Heat-shrink tube

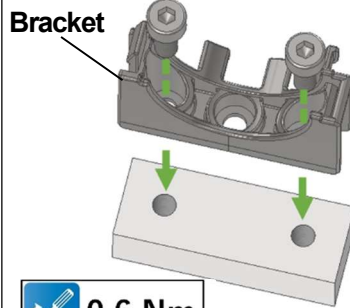
4-9 Cover the wire end protruding from the CP with the heat-shrink tube and then secure this tube in place with a heat gun. After this tube cools, check that it does not come loose.

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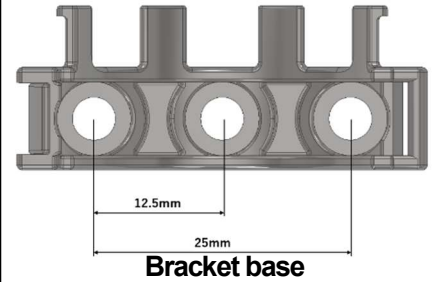
Attaching the Bracket



M4 × 2



0.6 Nm

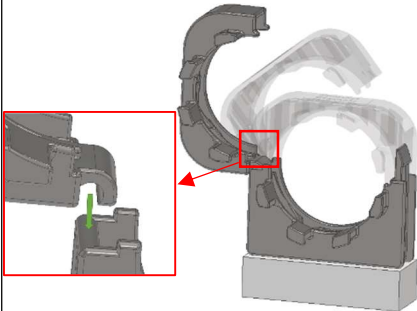


Bracket base

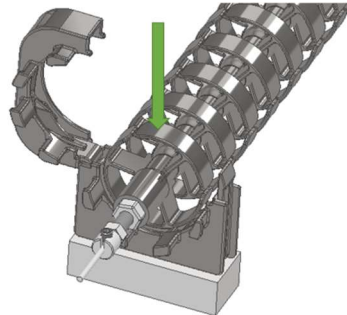
5-1 Prepare two (M4) hex cap bolts. They are required when attaching the bracket.

5-2 Use hex cap bolts to secure the bottom half of the bracket in the mounting location.

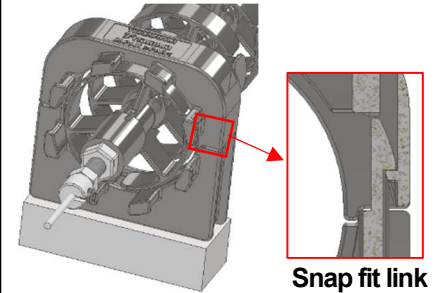
5-3 Use the two outside mounting holes or all three holes on the bracket base.



5-4 Fit the top half of the bracket into the hinge of the secured bottom half of the bracket. Note that the pieces will only fit together if oriented as shown above.

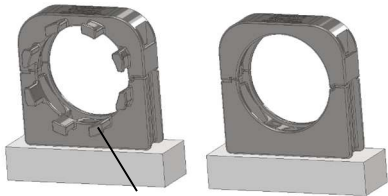


5-5 Align the outside of the link with the edge inside the bracket, and then fit the cable carrier into the bracket.



Snap fit link

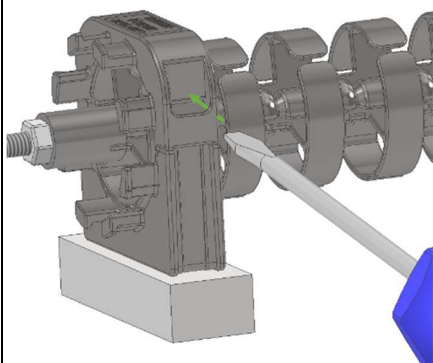
5-6 Close the top half of the bracket (snap fit link) to cover the cable carrier.



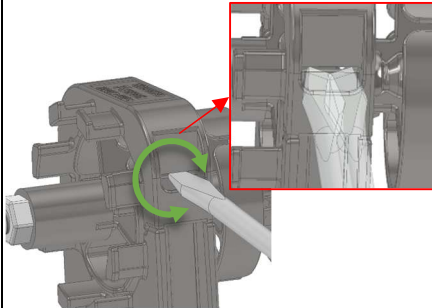
Bracket with tabs

Use brackets with tabs for the ends of the product, and a bracket without tabs for the middle.

Removing the Bracket

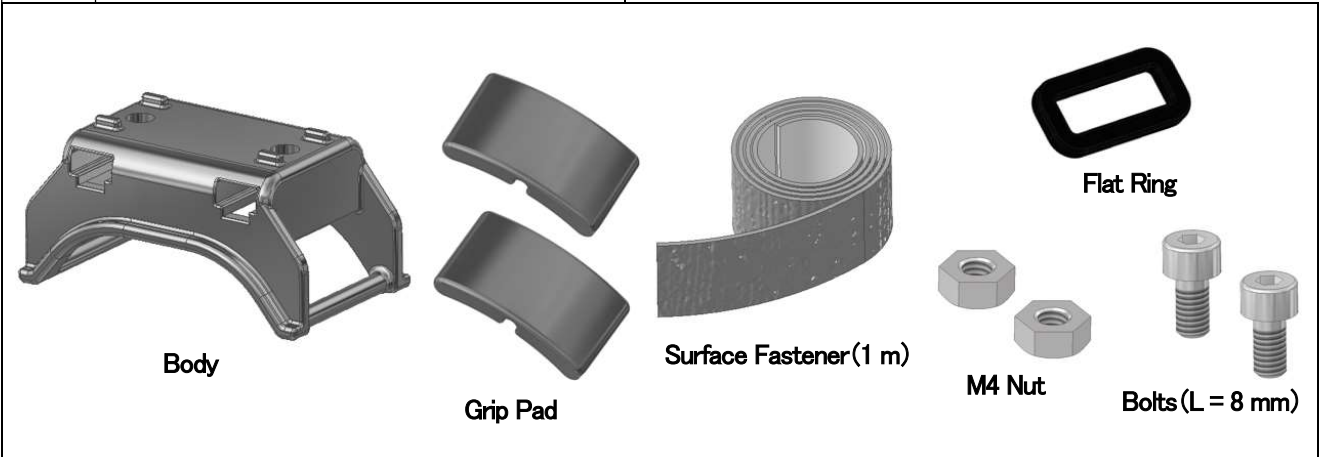


5-7 Insert a flathead screwdriver into the gap in the aperture of the bracket.




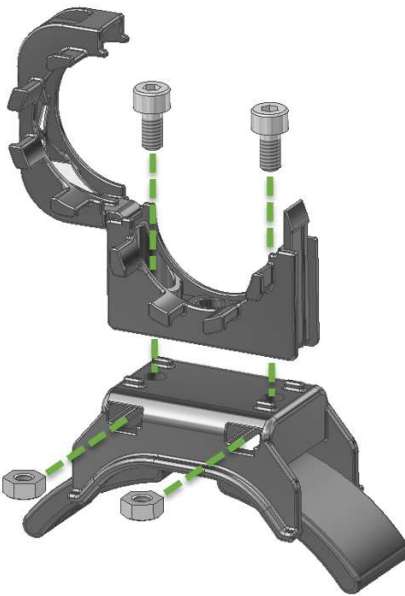
5-8 Twist the flathead screwdriver to disconnect the snap fit link.

6 Bracket Holder Component Parts

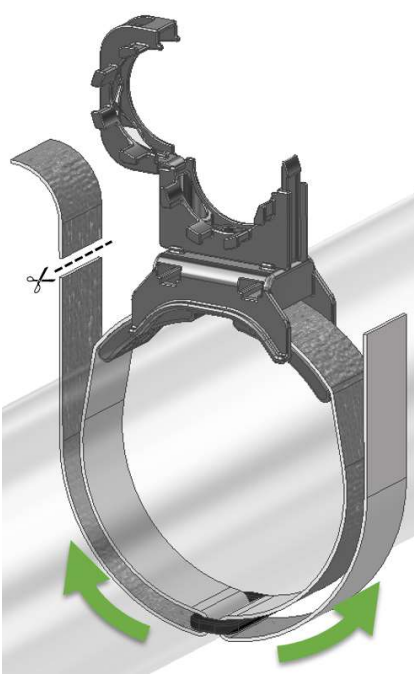


7 Attaching the Bracket Holder

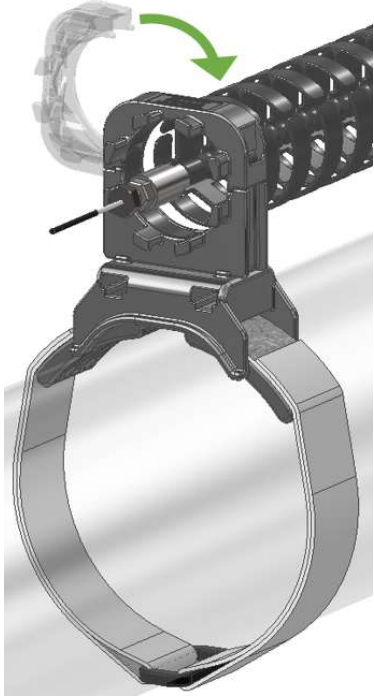
 **0.6 Nm**



① Insert nuts to body
② Fix brackets with bolts



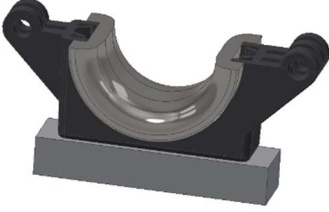
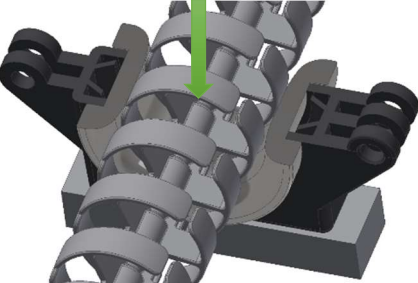
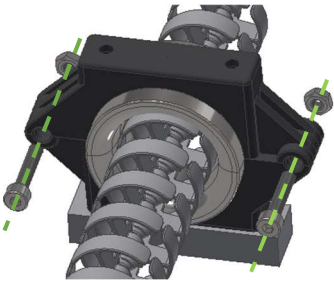



③ Put surface fastener through body
④ Put bracket holder on a robot arm
⑤ Put both edge of surface fastener through flat ring, fix surface fastener while pulling it to both side



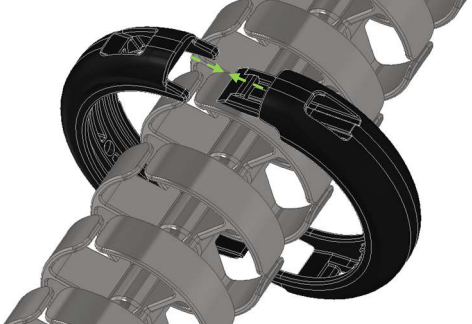

⑥ Align the outside of the link with the edge inside the bracket, and then fit the cable carrier into the bracket.
⑦ Close the top half of the bracket (snap fit link) to cover the cable carrier.

6 Attaching the Guide Holder

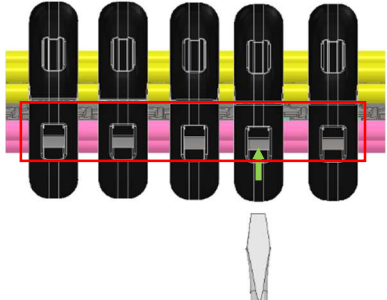
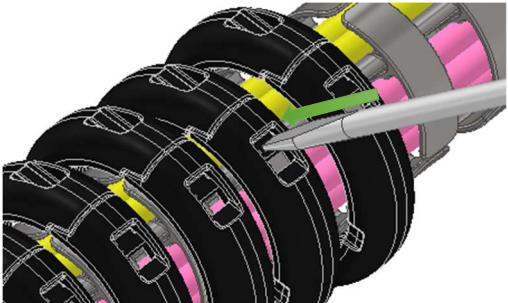
 <p>M4 × 2</p> <p>6-1 Prepare two (M4) hex cap bolts. They are required when attaching the guide holder.</p>	 <p>0.6 Nm</p> <p>6-2 Use hex cap bolts to secure the part shown above (one half of the guide holder) in the mounting location.</p>	 <p>6-3 Place one half of the cylindrical part on the part you secured in place in the previous step.</p>
 <p>6-4 Place the cable carrier on the secured guide holder.</p>	 <p>6-5 Cover the cable carrier with the other half of the guide holder, and then secure the guide holder with hex cap bolts and hex nuts.</p>	 <p>The cable carrier can also be inserted with the guide holder closed. This manual explains how to attach the separated pieces of the guide holder to show how easy it is to attach to the device.</p>

* The guide holder is an optional part.

7 Attaching the Protector

 <p>8-1 Attach the protector so it is aligned with the outside of the link, and then secure the protector by fitting its snap fit link on each side.</p>	 <p>8-2 With the protectors attached, it is not possible to insert the cables/hoses through the slits in the cable carrier. Insert the cables/hoses into the cable carrier before attaching the protectors.</p>
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Removing the Protector

 <p>8-3 Insert a flathead screwdriver into the aperture of the protector (indicated above with the red frame).</p>	 <p>8-4 Push the flathead screwdriver in the direction shown above to detach the snap fit link.</p>
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* Protectors are optional parts.

8 Maintenance (link extension/contraction)

Link extension (up to 4 links)



Cut around where the heat-shrink tube and stainless steel wire meet, and remove the heat-shrink tube.



Loosen the hex socket set screw and remove the clamping piece.



Pass the additional links through the wire.



Mount the clamping piece.
*Tightening torque 0.45-0.5Nm

Notes: 1. When extending by five links or more, purchase a new ball-end stainless steel wire.
2. As a safety measure, protect the tip with a heat-shrink tube (separately purchased), cover, etc.

Link contraction



Cut around where the heat-shrink tube and stainless steel wire meet, and remove the heat-shrink tube.



Loosen the hex socket set screw and remove the clamping piece.



Remove the number of links required for contraction.



Mount the clamping piece.
*Tightening torque 0.45-0.5Nm

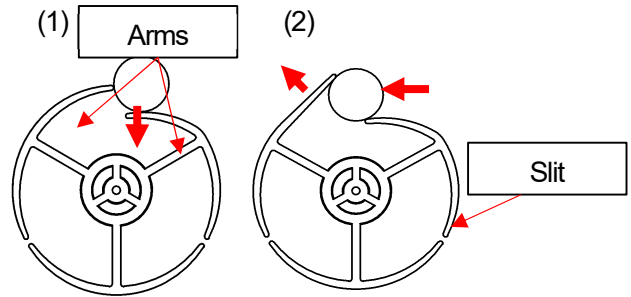
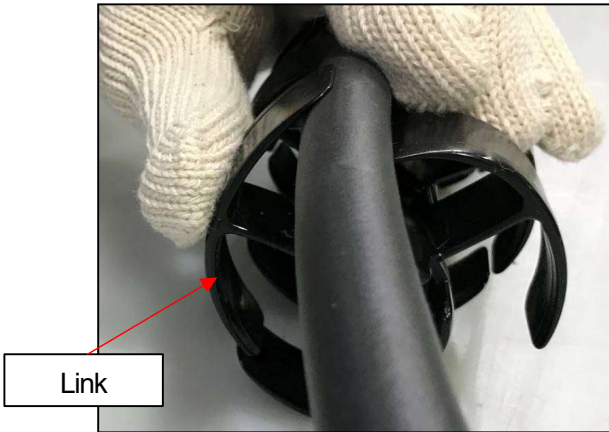


Cut the extra length of stainless steel wire as needed.

Note: As a safety measure, protect the tip with a heat-shrink tube (separately purchased), cover, etc.

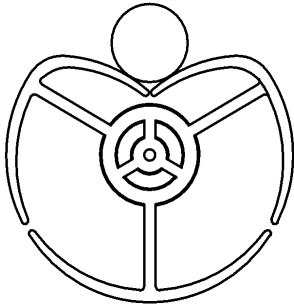
9 Inserting Cables/Hoses

■ Inserting the first cable/hose



- (1) Push the cable/hose into the arms to deform just one of them.
- (2) Push the cable/hose horizontally against the widened slit to raise the other arm, facilitating the insertion of the cable/hose.

* Precautions when inserting cables/hoses



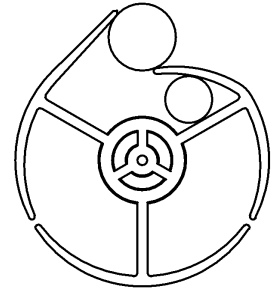
Insert cables/hoses properly. Pushing in the middle of the slit may break the link.

Also note that the link may break if cables/hoses are inserted multiple times in environments with low temperature and humidity.

■ Inserting subsequent cables/hoses



Move the inserted cable/hose to the end of the storage space of the link, and then insert subsequent cables/hoses with the same method as the first one.



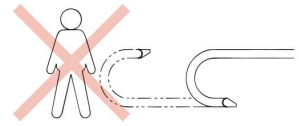
10 Maintenance Check

- 1) Cable carriers do not require lubrication.
- 2) Do not stand or put heavy objects on the cable carrier. Doing so may damage the cable carrier.
- 3) Take care to prevent foreign matter from falling into or accumulating in the operating range.
- 4) Before actually using the cable carrier, be sure to carry out test operation and check that the cable carrier moves smoothly with no unnecessary force applied in any locations.
- 5) Use protectors on the links where the cable carrier is expected to come into contact with inserters or other devices.
- 6) Check the cable carrier for cracks or abnormal wear on the outside surface.
- 7) Before operation, be sure to check that the bolts are tight and the snap fit links are closed.

Safety Precautions

⚠ WARNING To prevent hazards, be sure to observe the following safety precautions.

- Do not use the cable carrier (including Cleanveyor and Flatveyor) or its parts 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 attempt to make additions or modifications to the cable carrier or its parts. (except for Cleanveyor and Flatveyor cable and tube end terminations)
 - Do not clean cable carriers or their parts with acid or alkali. Doing so will cause cracks to form.
 - Never electroplate the cable carrier or its parts. Doing so could cause hydrogen embrittlement cracking.
 - Do not weld onto the cable carrier or its parts. Doing so will cause loss of strength and cracking due to thermal effects.
- Observe the general standards stipulated in Part 2, Chapter 1, Section 1 of the Ordinance on Industrial Safety and Health. (The Ordinance on Industrial Safety and Health also includes items that do not apply to cable carrier products.)
- When replacing worn (damaged) parts, do not replace only the worn (damaged) parts, but replace all parts with new ones.
- If any substance (acid, strong alkali, battery acid, etc.) that may cause embrittlement cracking adheres to the cable carrier or its parts, immediately stop using the cable carrier or its parts, and replace them with new ones.
- Be sure to observe the following points when connecting, mounting, disconnecting, and servicing cable carriers and its parts.
 - Perform the procedures as specified in the instruction manual, catalog, or documentation specially provided to the customer.
 - Secure the cable carrier and parts so they do not move freely. Otherwise, the cable carrier may move on its own or collapse under its own weight.
 - Be careful that your hands do not get pinched, crushed, or entangled 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 main power supply of the equipment before starting any work, and be careful not to inadvertently operate any switches.
 - Only experienced personnel should handle the cable carrier.



⚠ CAUTION Observe the following points to prevent accidents.

- Be sure that you fully understand the construction and specifications of the cable carrier and its parts before operation.
- Before installing, inspect the cable carrier and its parts for any damage that may have occurred during transport.
- The cable carrier and its parts should be periodically serviced and inspected.
- The performance of the hose and cable carrier system varies depending on the manufacturer. Please be sure to use a Tsubaki product when selecting based on the Tsubaki catalog.
- Before using the product, be sure to visit our website and read the instruction manual.
- The product details described in this brochure are intended primarily for model selection. Before using the product, read the instruction manual thoroughly, and ensure the product is used correctly.

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 the Customer 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. (Ex: Use of Goods with sprocket, drum, rail, etc., that has a worn chain.)
- (5) When the service life of Goods determined by Company under Customer's operating conditions does not satisfy the warranty service life.
- (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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