





# Instruction Manual of Plarailchain SP45 (SPO45) Series

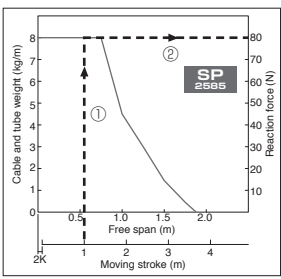
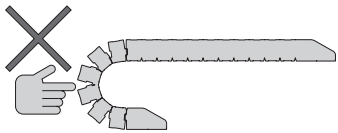
HIR0006-01

Thank you for purchasing PISCO Plarailchain SP45 (SPO45) series.

In order to understand the right usage of this product, please make sure to read this instructions manual before use. (Marks, arrows, etc. in the photo are overstated for explain purposes only and may differ slightly from the actual product).

## Warning

- When connecting, disconnecting, opening and closing, or carrying out a maintenance check of Plarailchain, keep it from moving. There is a danger of self-moving or collapse by its own weight and getting injured.
- Be careful of the flexible part of the Plarailchain. There is a danger of pinching and getting injured your hands by caught in the flexible part.
- Please tighten up all the brackets certainly so that they do not loosen. There is a danger of breakage of the whole system if brackets loosen.
- An inertial force, mass load, and reactive force (the force that Plarailchain is going to lug out) are added to the mounting part of the Plarailchain depending on the specification of the system. When designing the mounting part, please secure sufficient strength. There is a danger to cause damage to the whole system when the strength of the mounting part is not enough.



- Do not wash the product with water. It may cause malfunction.
- The cables and tubes to be stored in the Plarailchain should be fixed as close as possible to the attachment points on both ends. Failure to do so may cause the cables and tubes to fly out of the main unit, or may cause damage to the entire system due to excessive wear caused by tension.
- Do not subject cables and tubes stored in the plastic rail chain to tension, twisting, extreme bending, or excessive fastening or binding. Doing so may result in crushed or broken cables, crushed tubes, ruptures, or disconnections.
- Use dividers, racks, and rack sheets to prevent cables and tubes stored in the Plarailchain from rubbing or getting caught and scratched. This may cause cables to break or tubes to burst.

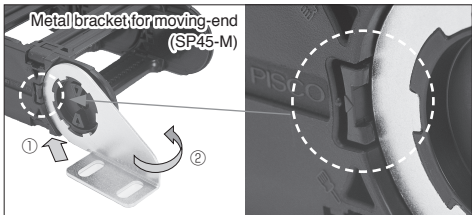
## Caution

- Please check the "Plarailchain Capacity Diagram" in the digital catalog on our website carefully to select the most suitable Plarailchain. Please test it before use because there are various factors that may affect the use of the chain.
- The Plarailchain is set to expand to the outer circumference when the contents are not stored, in order to prevent drooping when the contents are stored.
- The length of the Plarailchain can be adjusted by increasing or decreasing the number of links. When designing or when length adjustment is required, please check the link calculation formula in the digital catalog on our website and calculate the required number of links.
- When installing the Plarailchain on the equipment, make sure that the fixtures at the moving end and the fixed end are installed parallel to each other along the axis of travel. If the Plarailchain runs with torsion, it may cause damage to the entire installation system.
- Cables, hoses or tubes to be stored must be excellent for flexibility and wear resistance for movement. Do not use the wire-braided outer ones since they are perishable.
- Depending on conditions, such as when the weight of cable or tube is heavy and the moving speed and acceleration are fast, the area around the bend may swell due to inertia at the start of moving or immediately after stopping. When designing, ensure that there is sufficient HF dimension. (HF: passable bulge height at free span length)
- The amount of cables and tubes to be stored should be within 70% of the content of the Plarailchain.
- Cables and tubes should be stored in the Plarailchain as horizontally as possible without crossing each other.
- The contents should be arranged in a well-balanced in right ,left, up and down, especially if they are of different diameters so that they do not ride up and cross each other.
- Do not apply undue load to the metal bracket.
- When storing items with different contents (air tubes, water tubes, conductors, etc.) together, please select the bending radius of the Plarailchain according to the largest bending radius of the items to be stored.
- Always wear gloves and wear adequate equipment to avoid injury when using designated tools for assembly, disassembly, opening and closing flaps, etc.
- It may cause fall-out of Plarailchain or may cause disassembling during operation if the assembly is incomplete. Please carefully read the instruction manual and understand proper steps.
- A flat-blade screwdriver with a tip width of 5mm is used for the assembly of main unit and opening/closing the flap, so please refer to the table below and prepare your own.

## 3. How to set up the brackets

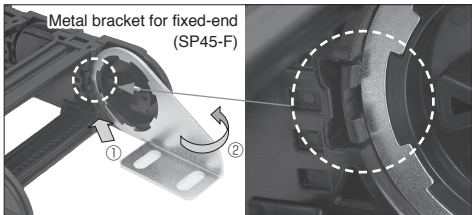
### ●Metal bracket for moving-end

Insert the metal bracket stamped SP45-M into the deformed circle boss on the outer side of the side plate diagonally in the direction of the arrow ① diagonally toward the gap between the side plate hooks, and push in the direction of the arrow ② until the hole in the metal bracket is completely inserted into the deformed circle boss on the side plate. Follow the same step to assemble the other side.



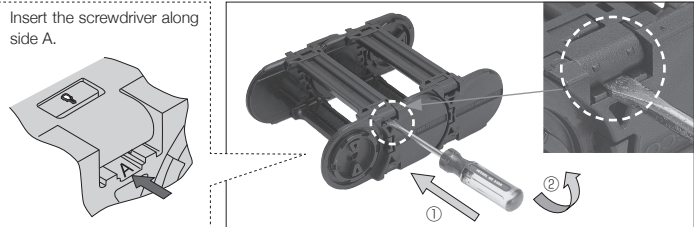
### ●Metal bracket for fixed-end

Insert the metal bracket stamped SP45-F into the deformed circle boss on the outer side of the side plate diagonally in the direction of the arrow ① diagonally toward the gap between the side plate hooks, and push in the direction of the arrow ② until the hole in the metal bracket is completely inserted into the deformed circle boss on the side plate. Follow the same step to assemble the other side.



## 4. How to open and close flaps

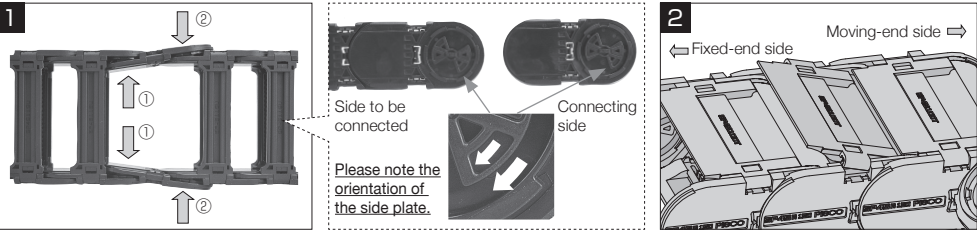
- Insert a flat-blade screwdriver with a tip width of 5 mm as shown in the photo on the right.
- When close, follow the step (Instruction 6 and 7) of the assembly instruction.



## 5. How to attach links

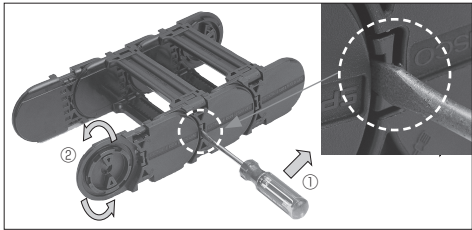
- Make sure that the direction of the side plate arrows is the same for both the connecting side and the side to be added, and assemble them diagonally between the Plarailchains to be connected as shown in photo 1, pushing them in the direction of the arrows ① and ②.
- Assemble the upper and lower flaps according to the step 6 and 7 in "How to assemble main unit".

※ For SPO series, attach the flap from the fixed-end and slide the moving-end of the flap under the adjacent flap as shown in fig. 2 for the last flap.



## 6. How to detach links

- Remove the top and bottom flaps of one link at the end of the plarailchain, insert a 5mm flat-blade screwdriver into the gap between the side plate hooks, and rotate the side plate in the direction of arrow ② while tipping the grip in the direction of arrow ① to separate them.
- Separate the side plate on the other side in the same way.
- If it is unavoidable to separate the middle part of the plarailchain, remove all the upper and lower flaps from the short end to the separation part, and follow steps 1 and 2 to the desired separation part.



※ When removing the flaps [B] and [T] of the SPO series, do it from the moving-end side as reverse step of assembling.

## 1. Factory shipped Form

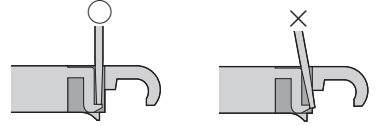
Plarailchain and metal brackets are sold separately. Please order the metal brackets separately.

Plarailchain (Assembled form)	Side plate	R-piece	Flap [U] for SP45 series	Flap [B] for SPO45 series	Flap [T] for SPO45 series
Components · Side plate (Number of links x 2) · Flap (Number of links x 2) · R-piece (Number of links x 2)	Components · Side plate (front and back shape)	Components · R-piece (Installed on the side place from the shipment)	Components · Flap (front and back shape)	Components · Flap B (front and back shape)	Components · Flap T (front and back shape)
Metal bracket for moving-end	Metal bracket for fixed-end	Divider	Rack	※)Only SP4542, SP4575, SP45100, SP45115, SPO4575, SPO45100	
Components · Metal bracket for moving-end	Components · Metal bracket for fixed-end	Components · Divider (multiply number of order)	Components · Rack (multiply number of order)		

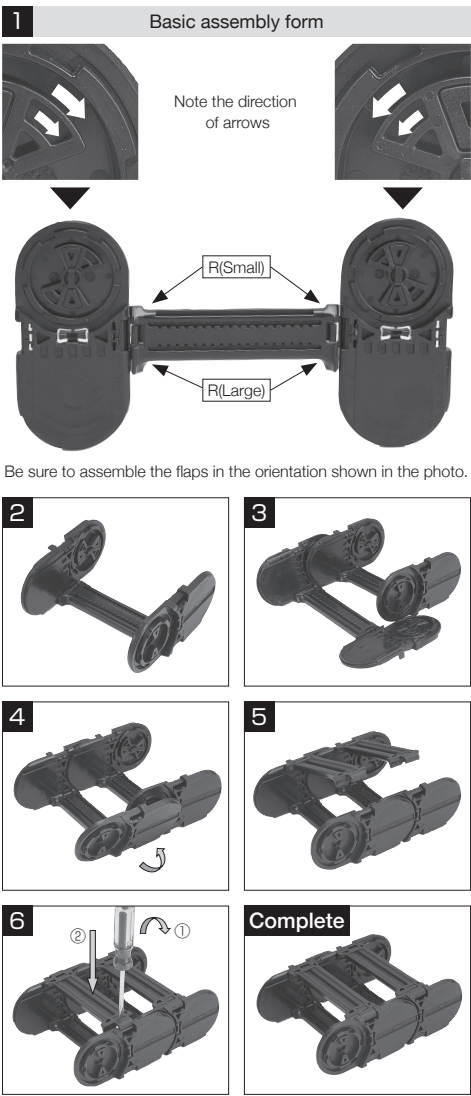
## 2. How to assemble main unit

### ● SP45 series

- Make the basic shape shown in the photo 1. Be sure to check the orientation of the flap assembled and the direction of the R-piece arrows already attached to the side plate, and assemble it in the orientation shown in the photo.
- From the basic shape, turn the side plate 90 degrees up against the flap to form a U-shape, as shown in the photo 2.
- To the U-shape unit created in step 2, create another basic shape and place it in the position shown in photo 3.
- Roll up the side plate 90 degrees on one side (either side is fine) of the second basic shape that you have created, and combine it with the first basic shape as shown in the photo 4. Do the same for the opposite side.
- As shown in the photo 5, attach the flap to the side plate on one side of the U-shaped part (either side is fine), aligning it with the flap of the basic shape in the same direction and tilting the flap by 45 degrees.
- Gently tilt the edge of the flap on the side that has not been assembled to the side plate towards the side plate with your hand. (Make sure that the flap does not rest on top of the side plate as shown in photo below).
- Insert a flat-blade screwdriver with a tip width of 5mm into the position indicated on photo 6, and while pushing the screwdriver in the direction of the arrow 1, simultaneously push the part indicated by the arrow 2 with your finger to mount the flap. (When inserting the screwdriver, make sure that the screwdriver is inserted and not sticking out as shown in the picture below)
- Complete the link of assembly. For additional assembly, repeat steps 3 to 7 to increase the number of links.



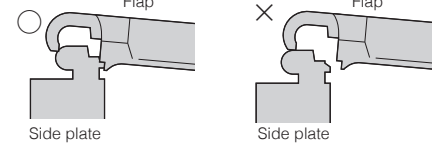
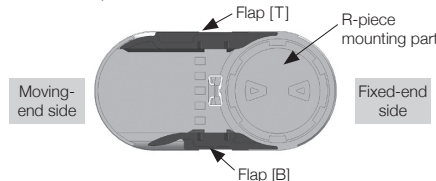
※) After assembly is complete, check that the unit operates smoothly before use.



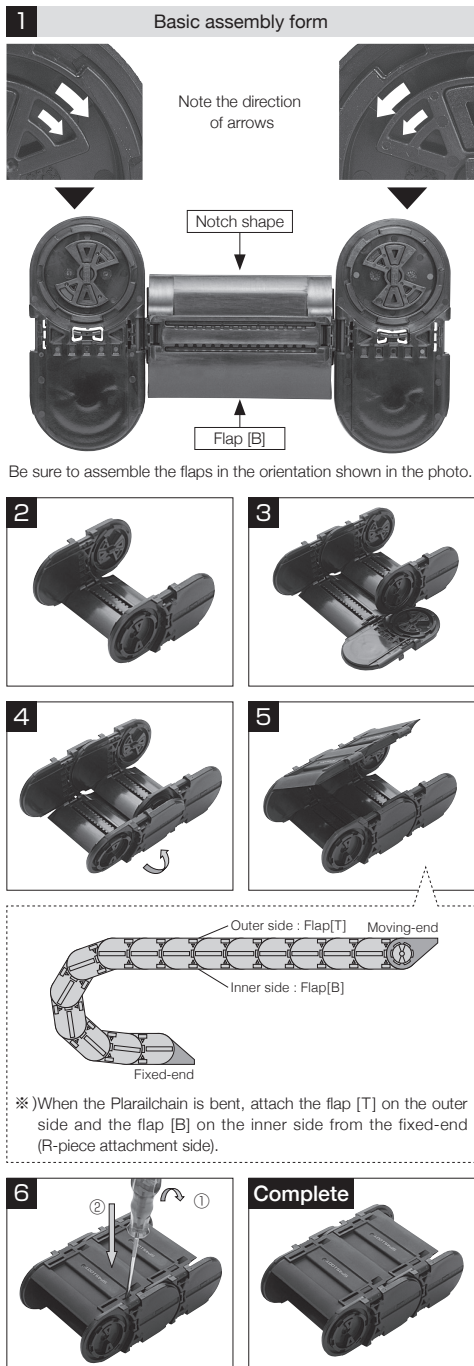
Be sure to assemble the flaps in the orientation shown in the photo.

### ● SPO45 series

- Make the basic shape shown in the photo 1. Be sure to check the orientation of the flap assembled and the direction of the R-piece arrows already attached to the side plate, and assemble it in the orientation shown in the photo.
- From the basic shape, turn the side plate 90 degrees up against the flap to form a U-shape, as shown in the photo 2.
- To the U-shape unit created in step 2, create another basic shape and place it in the position shown in photo 3.
- Roll up the side plate 90 degrees on one side (either side is fine) of the second basic shape that you have created, and combine it with the first basic shape as shown in the photo 4. Do the same for the opposite side.
- Pay attention to the direction of the flap (see the picture below), and install the flap by tilting it about 45 degrees to the side plate (either side is fine) as shown in photo 5.
- Gently tilt the edge of the flap on the side that has not been assembled to the side plate towards the side plate with your hand. (Make sure that the flap does not rest on top of the side plate as shown in photo below).
- Insert a flat-blade screwdriver with a tip width of 5mm into the position indicated on photo 6, and while pushing the screwdriver in the direction of the arrow 1, simultaneously push the part indicated by the arrow 2 with your finger to mount the flap. (When inserting the screwdriver, make sure that the screwdriver is inserted and not sticking out as shown in the picture below)
- Complete the link of assembly. For additional assembly, repeat steps 3 to 7 to increase the number of links.

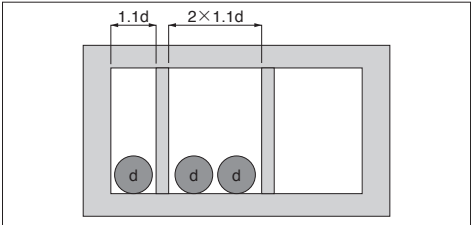
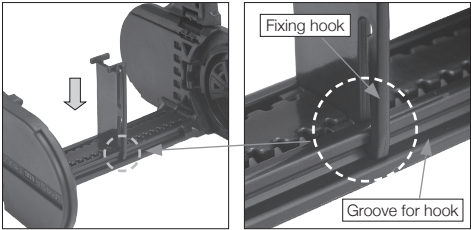


※) After assembly is complete, check that the unit operates smoothly before use.

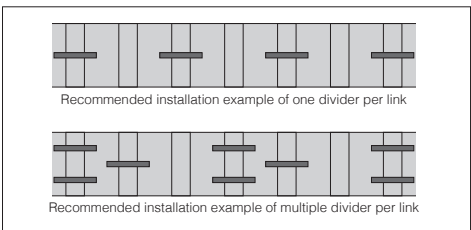


## 7. How to install dividers

- Open the flap and assemble it, make sure that the hook for fixing divider goes into the groove for the hook on the flap.
- After assembling the divider, close the flap according to the assembly step (6 and 7).
- Install the dividers at intervals of at least 1.1 times the cable/hose diameter (d). The dividers can be installed in the recesses provided at a pitch of 5mm on the flap. The minimum pitch between adjacent dividers is 15mm.

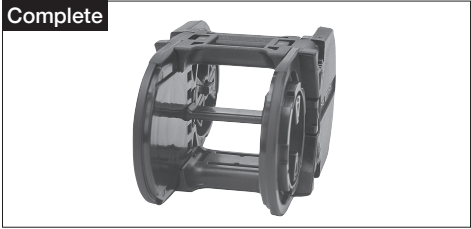
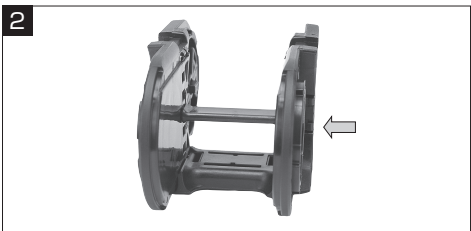
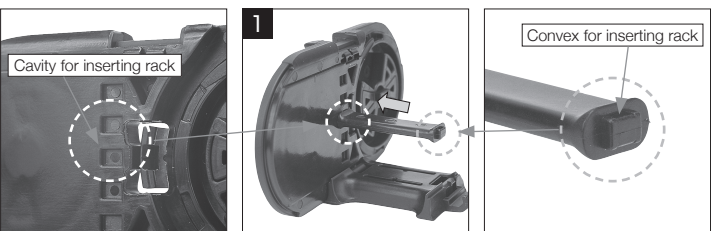


- We recommend dividers should be installed every other link. If more than one divider is required per link, try to avoid the dividers next to each other.



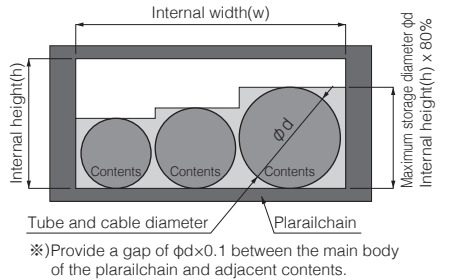
## 8. How to install racks

- As shown in photo 1, insert the Rack divider into the desired position of the cavity for inserting the rack on either side of the side plate, so that the convex part for inserting the rack fits completely.
- As shown in the photo 2, select the cavity for inserting rack on the side plate, and assemble rack with the convex part to insert, taking care that the rack and the flap are parallel.
- Follow the assembly instruction 5 to 7 to attach the removed flap and assemble it.



## 9. Cautions for storage and installation of cables and tubes

- The amount of cables and tubes to be stored should be within 70% of the content of the Plarailchain = internal height (h) x internal width (w). (Refer to the part of the picture on the right.)
- Select a type of cables and tubes diameter is within 80% of the inner height (h) of the Plarailchain. (Refer to the picture on the right.)
- When storing items with different contents (air tubes, water tubes, conductors, etc.) together, please select the bending radius of the plarailchain according to the largest bending radius of the items to be stored.
- By installing the divider, the contents set in array can be kept intact. This is very effective against wear and scraping.
- Cables and tubes should be stored in the plarailchain as horizontally as possible without crossing each other.
- Cables and tubes should be arranged and stored in a balanced manner.
- The contents should be arranged in a well-balanced in right ,left, up and down, especially if they are of different diameters so that they do not ride up and cross each other.
- Fasten the contents at both ends of the plarailchain in order to prevent the contents from being pulled or overloaded.



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