

KOGANEI

Auxiliary

PLACHAIN DUCT

INSTRUCTION MANUAL Ver.1.0

Handling Instructions and Precautions



Mounting

Calculating the Number of Links

Use the following equation to calculate the number of links.

$$n = \frac{\frac{S}{2} + \pi R + 2K}{P}$$

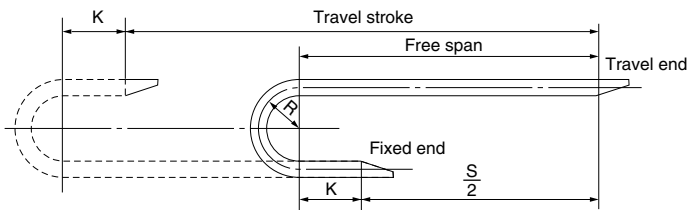
n : Number of links (Rounded up to the nearest whole number.)

S : Travel stroke (mm)

R : Bending radius (mm)

K : Margin (mm)

P : Pitch (mm)

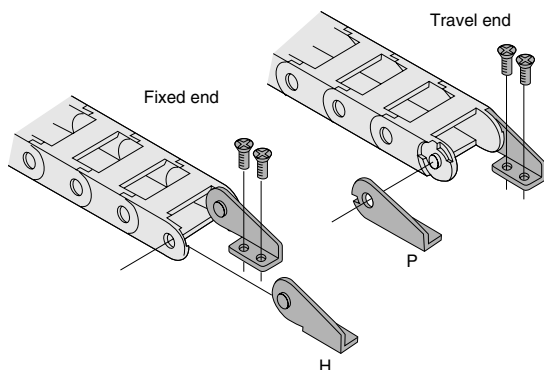


Series	R	K	πR	$\pi R + 2K$	P
PU202, 203	30	Min. 25	94.2	Min. 144.2	25
	45		141.3	Min. 191.3	
PU204, 206 PO204, 206	38	Min. 30	119.3	Min. 179.3	32
	50		157.0	Min. 217.0	
PU306, 408 PO408	50	Min. 50	157.0	Min. 257.0	45
	70		219.8	Min. 319.8	
	75		235.5	Min. 335.6	
	100		314.0	Min. 414.0	
	150		471.0	Min. 571.0	
	200		628.0	Min. 728.0	

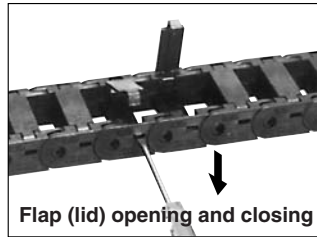
Attaching the Mounting Brackets

Attach the mounting bracket with holes (P) on the travel end of plachain duct (link with pin), and attach the mounting bracket with pin (H) on the fixed end (link with hole) side.

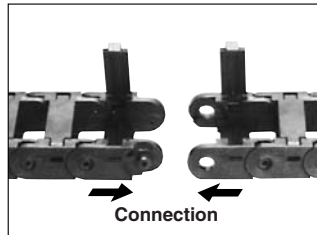
Insert the mounting bracket firmly into the link, and secure in place with mounting screws to prevent the body from twisting.



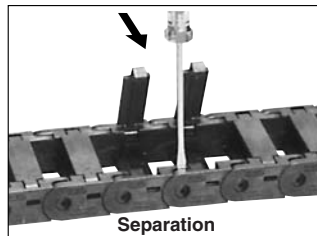
Link Connection and Separation



Flap (lid) opening and closing



Connection



Separation

●Opening and closing the PU series (fully open type) flap (lid)

To open the flap, insert a flat blade screwdriver into the rectangular hole on either side of the link, and push up the flap hook by trying the principle of the lever. To close, use fingers to push the flap down.

Connection

First, open up the flaps on the two links to be connected, then align the links and push them together from both sides.

Separation

First, open up the flaps on the two links to be separated, then insert a flat blade screwdriver into the gap between the links to push on as a lever and force them apart.

●Opening and closing the PO series (fully covered type) flap (lid)

In the connected condition, the flaps for each link are in an overlay configuration. When opening or closing the flaps of the connected links, bend the links connection until the bending radius is as small as possible.

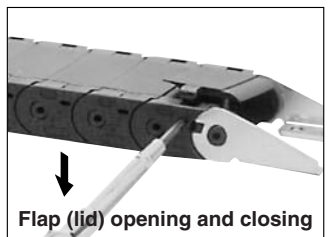
To open the flap, insert a flat blade screwdriver into the rectangular hole on either side of the link, and push up the flap hook by trying the principle of the lever. To close, use fingers to push the flap down, taking care that the flaps overlay.

Connection

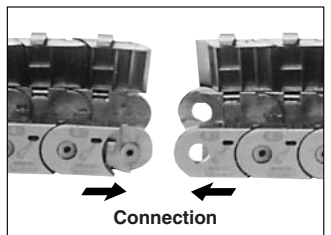
First, open up the flaps on the two links to be connected, then align the links and push them together from both sides.

Separation

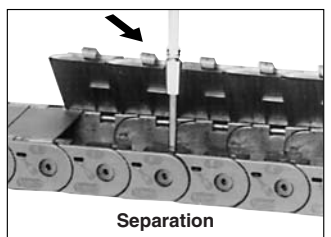
First, open up the flaps on the two links to be separated, then insert a flat blade screwdriver into the gap between the links to push on as a lever and force them apart.



Flap (lid) opening and closing



Connection



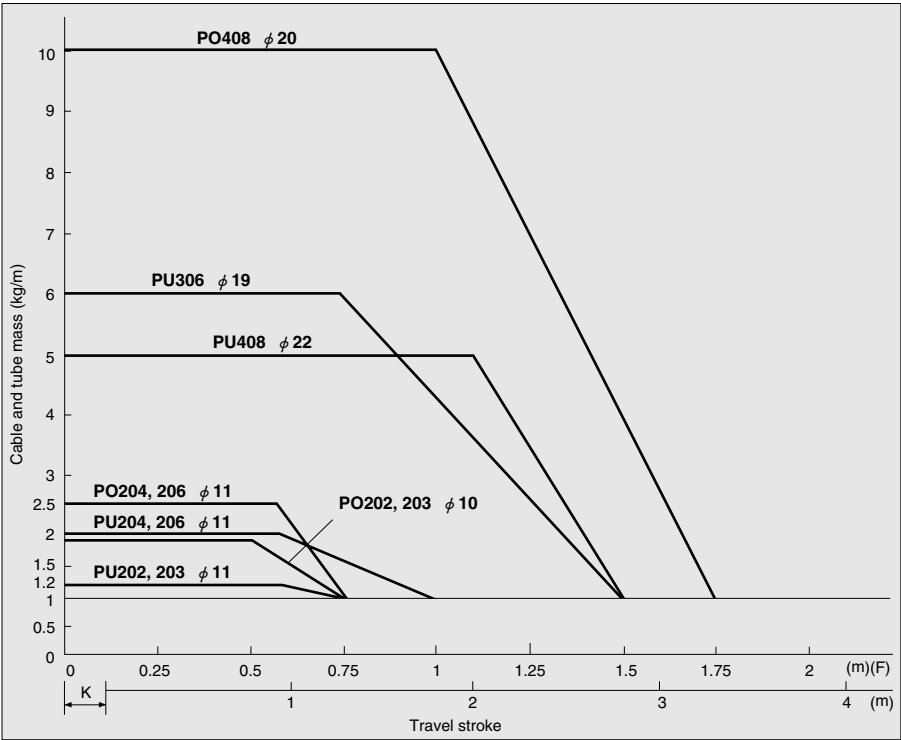
Separation

Operating Conditions

Ensure that the sum of the cross-section occupied by the cables and tubes to be placed into the plachain duct is 60% or less of the plachain duct cross-section.

Use at greater than 60% could result in cut cables (cabtyres, etc.) and broken tubes.

Selection Guideline



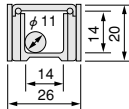
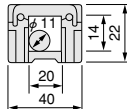
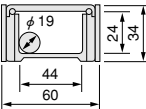
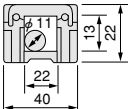
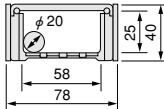
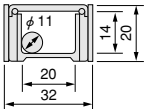
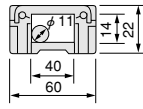
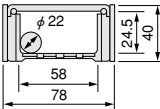
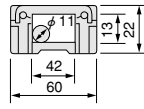
●Plachain duct performance graph

Based on the total mass, maximum outer diameter, and travel stroke of the cables and tubes used, select the optimum series model from the performance graph shown at left. Ensure that the plachain duct bending radius is larger than the cable and tube bending radius.

- Notes :
- 1. F= Free span
The length capable of withstanding a load of 1kg/m [0.672lb./ft.].
 - 2. The K dimension includes a margin length.
 - 3. This graph assumes that the fixed end is located in the center of the travel stroke.

1kg/m = 0.672lb./ft.
1m = 3.28ft.

Specifications

Series	PU series						PO series		
Basic model	PU 202	PU 203	PU 204	PU 206	PU 306	PU 408	PO 204	PO 206	PO 408
Minimum bending radius (R) mm [in.]	30 [1.18] 45 [1.77]		38 [1.50] 50 [1.97]		50 [1.97] 100 [3.94] 150 [5.91] 50 [1.97] 75 [2.95] 100 [3.94] 150 [5.91] 200 [7.87]		38 [1.50] 50 [1.97]		70 [2.76] 100 [3.94] 150 [5.91] 200 [7.87]
Chain link cross section dimensions	<div>PU202</div> 		<div>PU204</div> 		<div>PU306</div> 		<div>PO204</div>  <div>PO408</div> 		
	<div>PU203</div> 		<div>PU206</div> 		<div>PU408</div> 		<div>PO206</div> 		
Note:The ϕ □ figures in the chain link show the maximum cable or tube outer diameter.									
Pitch mm [in.]	25 [0.98]		32 [1.26]		45 [1.77]		26 [1.02]		45 [1.77]
Number of links (per 1m [3.28ft.])	40		32		23		39		23
Maximum free span m [ft.]	0.75 [2.46]		1.0 [3.28]		1.5 [4.92]		0.75 [2.46]		1.5 [4.92]
Maximum travel stroke m [ft.]	1.4 [4.59]		1.9 [6.23]		2.9 [9.51]		1.4 [4.59]		2.9 [9.51]
Maximum cable and tube mass kg/m [lb./ft.]	0.6 [0.403]		1 [0.672]		4 [2.69] 5 [3.36]		1.25 [0.840]		5 [3.36]
Maximum speed m/s [ft./sec.]	2.5 [8.20]		2.5 [8.20]		2.5 [8.20]		2.5 [8.20]		2.5 [8.20]
Allowable cross section volume rate	Max. 60%								
Mass kg/m [lb./ft.]	0.25 [0.168]	0.26 [0.175]	0.5 [0.336]	0.56 [0.376]	0.64 [0.430]	1.1 [0.739]	0.5 [0.336]	0.6 [0.403]	1.36 [0.914]
Operating temperature range °C [°F]	—10～80 [14～176]								
Materials	Nylon or PBT								
Environment conditions	Avoid use in acidic or alkali atmosphere, or in heated water.								
Allowable content volume ratio mm ² [in. ²]	Max. 118 [0.183]	Max. 168 [0.260]	Max. 168 [0.260]	Max. 336 [0.521]	Max. 634 [0.983]	Max. 853 [1.322]	Max. 172 [0.267]	Max. 328 [0.508]	Max. 870 [1.348]

Remark: The figures below show the piping tube cross-section area (mm² [in.²]).

ϕ 4: 12.5 [0.0194] ϕ 6: 28.2 [0.0437] ϕ 8: 50.2 [0.0778] ϕ 10: 78.5 [0.1217] ϕ 12: 113 [0.175] ϕ 16: 201 [0.312]

Order Codes

● Complete chains (sales unit 1m)



Type	Size	Minimum bending radius
PU	202	30, 45
	203	30, 45
	204	38, 50
	206	38, 50
	306	50, 100, 150
	408	50, 75, 100, 150, 200
PO	204	38, 50
	206	38, 50
	408	70, 100, 150, 200

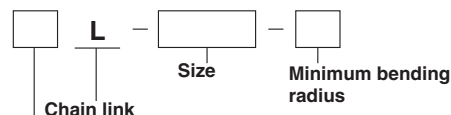
Mounting bracket for links with holes (fixed end)

- Blank** — No mounting bracket
- HA** — For attached facing outward (inside mounting holes)
- HB** — For attached facing inward (inside mounting holes)
- HAE** — For attached facing outward (outside mounting holes)
- HBE** — For attached facing inward (outside mounting holes)

Mounting bracket on link side with pin (travel end)

- Blank** — No mounting bracket
- PA** — For attached facing outward (inside and outside combined use mounting holes)
- PB** — For attached facing inward (inside and outside combined use mounting holes)

● Chain links (for add on : Sales unit one set)



Type

- PU** — Fully open type
- PO** — Fully covered type

Mounting Bracket Specifications

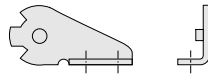
Brackets for these two series can be used as mounting brackets for the **PU** series.

Mounting position variations

Mounting for link with pin (travel end)

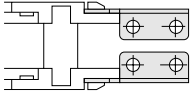


Mounting for link with hole (fixed end)

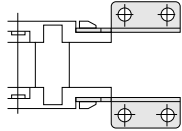


Mounting hole position variations

Inside mounting holes



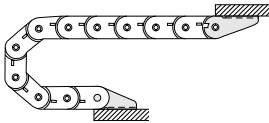
Outside mounting holes



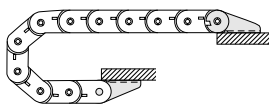
(-PA and -PB apply to inside and outside combined use mountings.)

Variations for secured surfaces

Attached facing outward



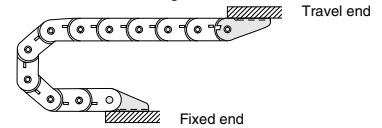
Attached facing inward



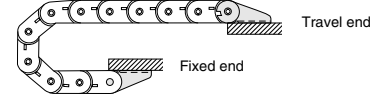
(Mounting dimensions are identical. The secured surface facings are on opposite sides.)

Mounting examples

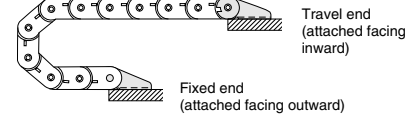
Both travel and fixed ends are attached facing outward



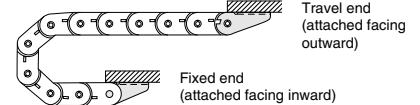
Both travel and fixed ends are attached facing inward



Travel end is attached facing inward, and fixed end is attached facing outward



Travel end is attached facing outward, and fixed end is attached facing inward



Mounting Bracket Order Codes

● Mounting bracket (For one end only, Sales unit one set)

In the table PUM-□-□ shows the models of the mounting brackets. Use the descriptions below to select the model.

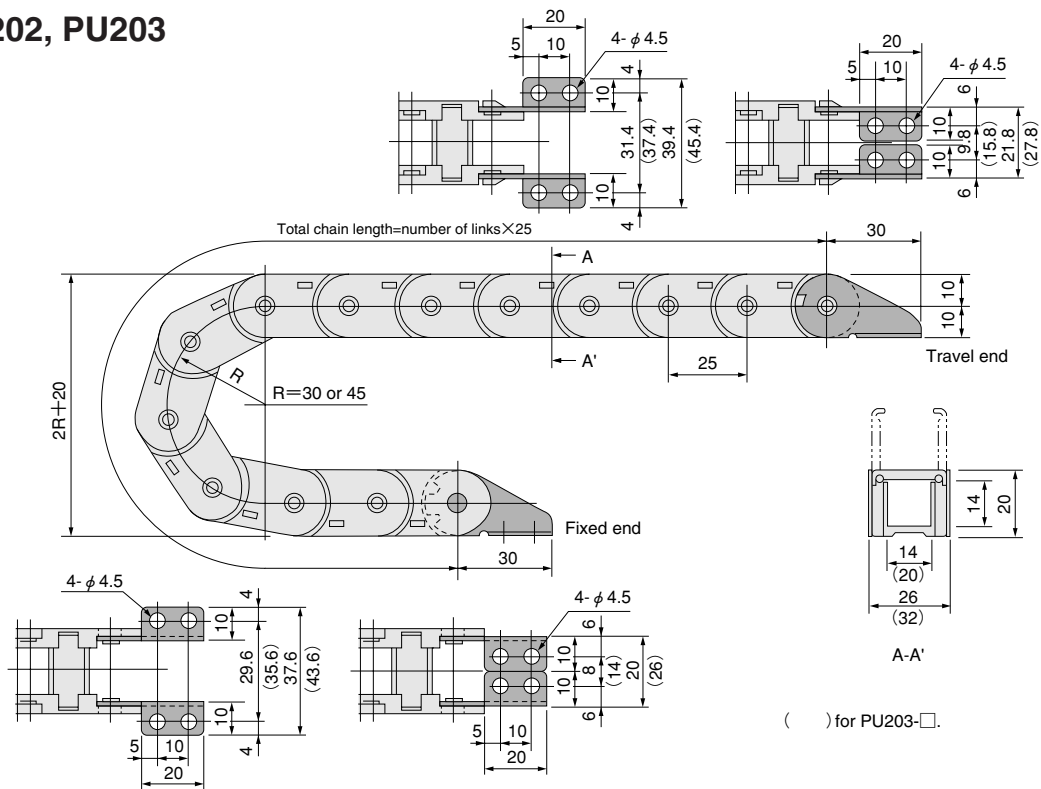
1. Select type (PU or PO)
2. Select the size
3. Select what type of connection link (Travel end/Fixed end)
4. Select the facing direction of bracket (Inside mounting holes/Outside mounting holes)
5. Select the attaching direction of bracket (Attached facing outward/Attached facing inward)
6. Select the mounting bracket model

Mounting bracket model

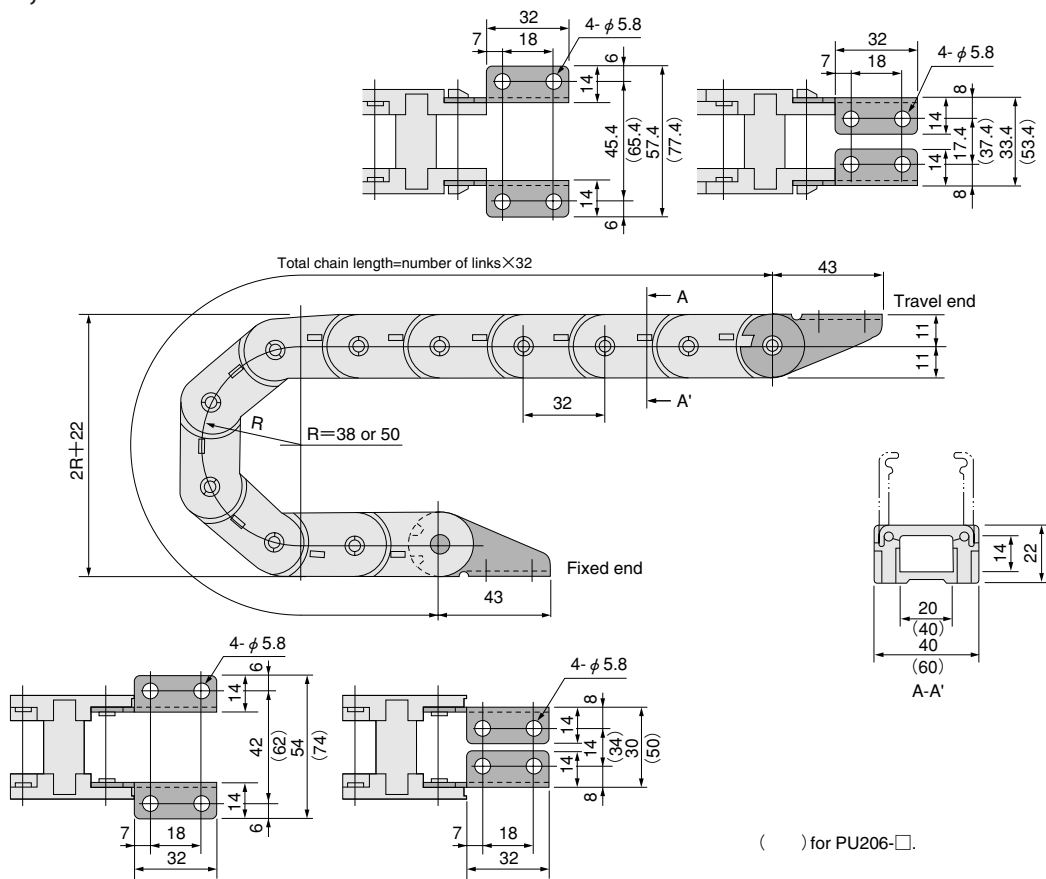
Mounting bracket for link (link type)				Bracket with hole for travel end (link with pin)				Bracket with pin for fixed end (link with hole)				
Bracket facing direction				Bracket facing direction				Bracket facing direction				
Mounting bracket attaching direction				Mounting bracket attaching direction				Mounting bracket attaching direction				
Type	PU	Size	202	PUM-202-PA	PUM-202-PB	PUM-202-PA	PUM-202-PB	PUM-202-HA	PUM-202-HA	PUM-202-HAE	PUM-202-HAE	
			203									
			204	PUM-204-PA	PUM-204-PB	PUM-204-PA	PUM-204-PB	PUM-204-HA	PUM-204-HA	PUM-204-HAE	PUM-204-HAE	
			206									
			306	PUM-306-PA	PUM-306-PA	PUM-306-PA	PUM-306-PA	PUM-306-HA	PUM-306-HB	PUM-306-HAE	PUM-306-HBE	
	408	PUM-408-PA	PUM-408-PA	PUM-408-PA	PUM-408-PA	PUM-408-HA	PUM-408-HB	PUM-408-HAE	PUM-408-HBE			
	PO	204	PUM-204-PA	PUM-204-PB	PUM-204-PA	PUM-204-PB	PUM-204-HA	PUM-204-HA	PUM-204-HAE	PUM-204-HAE		
		206										
408		PUM-408-PA	PUM-408-PB	PUM-408-PA	PUM-408-PB	PUM-408-HA	PUM-408-HB	PUM-408-HAE	PUM-408-HBE			

Dimensions of Fully Open Type (mm)

● PU202, PU203

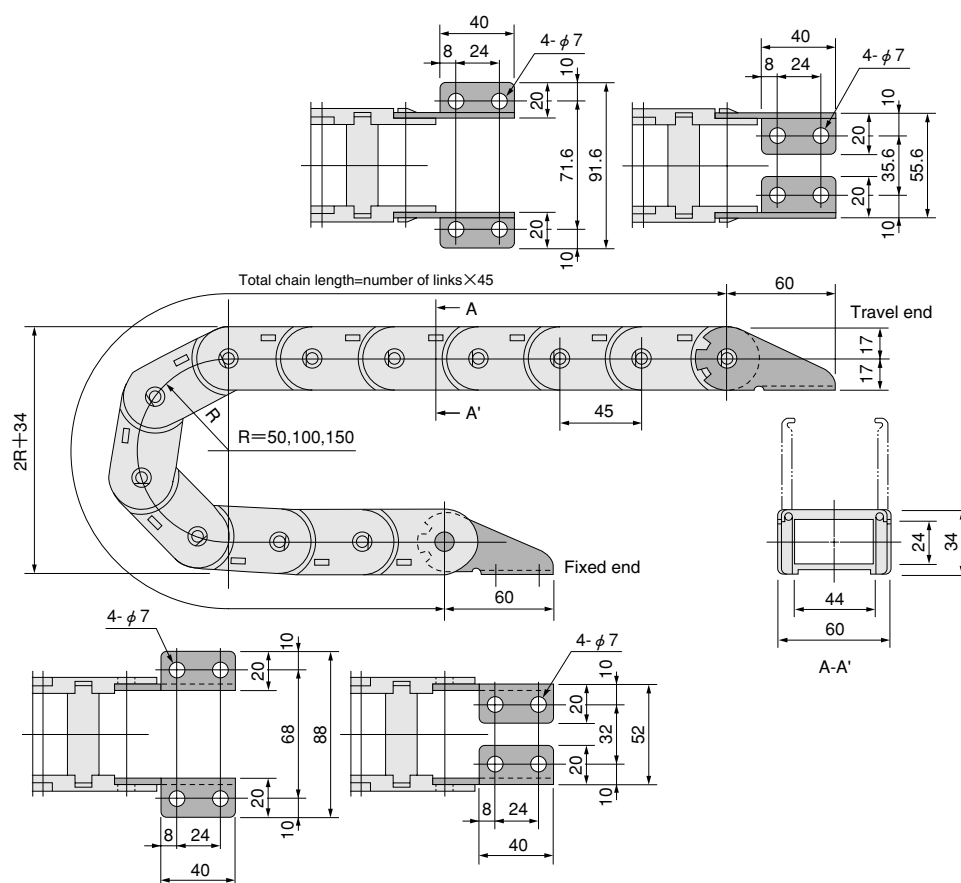


● PU204, PU206

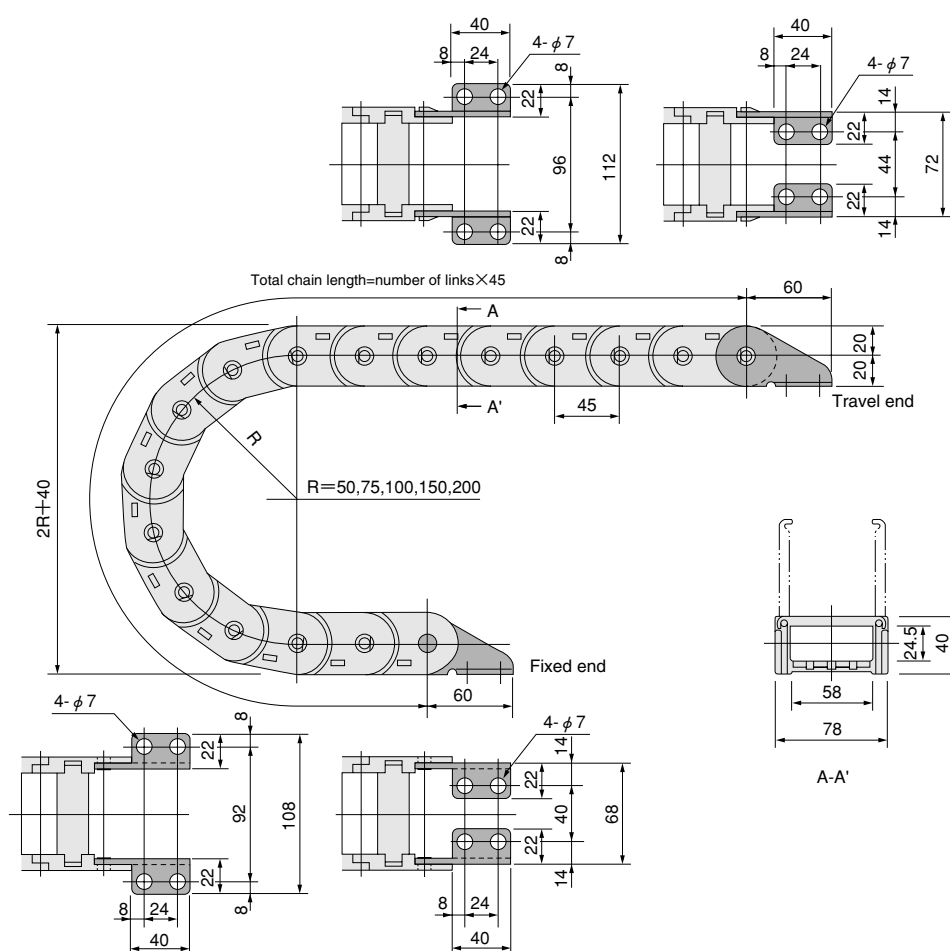


Dimensions of Fully Open Type (mm)

● PU306

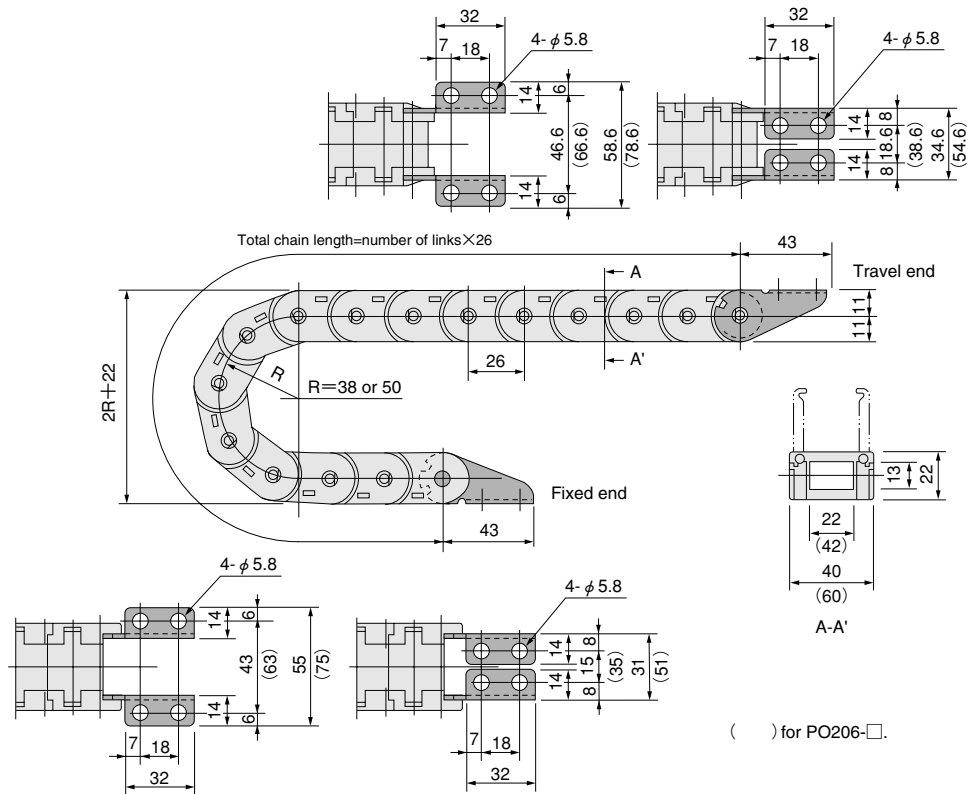


● PU408



Dimensions of Fully Covered Type (mm)

● PO204, PO206



● PO408

