Cable Carriers - Overview

■Cable Carrier Selection

Step 1. Tentatively select cable carrier type.

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Step 2. Select cable carrier size.

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Step 3. Calculate free span length.

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Step 4. Confirm if the carried load is within the free span running range.

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Step 5. Calculate the number of links.

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Selection completed.

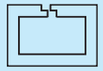
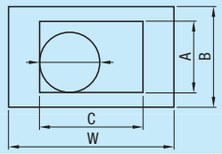
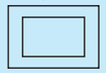
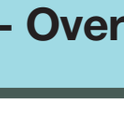
If required sizes are not available, select a different type of cable carrier.

If required free span cannot be obtained, select a different size.

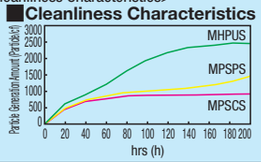
Step 1. Tentatively select cable carrier type.

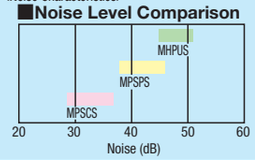
<Selection Examples>
Select MPSCS to use in clean room environment.

Please tentatively select types referring to the following features, open-close methods and sizes.

Type	Features	Flap Open-Close System	Note
Slit Type **SE, SZ** **P.668**	Cables/hoses can be easily inserted in from both external and internal circumference sides. • Available in cleanroom environment. • Cable link assembly is not required.	Insert the cable into the opening. 	<Dimensions> 
Compact Type **MHPKS** **P.669**	Space-saving design enables protection and guide even for only one cable/hose.	Flaps do not open. 	
Flap Open-Close Type **MHPUS** **P.670**	Flaps open on either side.	Flaps open from either right or left. 	
Flap Open-Close Full Cover Type **FHPS** **P.671**	Full Cover Type protects cables/hoses from dust.		
Low Friction, Low Noise Type **MPSPS** **P.673**	Lower friction on cables/ hoses achieves smaller noise.		
Low Particle Generation, Low Noise Type **MPSCS** **P.672**	Low particle generation contributes to meet Cleanroom Class 1000 standard and low noise level.		

	Min.			Max.		
	WxB	CxA	Carried Load Max. Diameter	WxB	CxA	Carried Load Max. Diameter
SE・SZ	23x12.5	16x9.4	Ø7	120x64	96x48.5	Ø25
MHPKS	16x12	9x9	Ø7	59x22	44x16	Ø12
MHPUS	27x12	20x9	Ø7	117x40	97x24.5	Ø19
FHPS	26x20	14x13	Ø10	117x40	97x25	Ø20
MPSPS	32x21	20x15	Ø12	101x50	80x35	Ø28
MPSCS	28x25	20x15	Ø12	113x55	100x35	Ø28

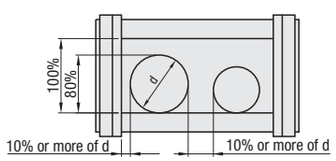
<Cleanliness Characteristics>


<Noise Characteristics>


Step 2. Select cable carrier size.

Select suitable cable carrier size for housing cables/hoses.

<Selection Examples>
One Ø20mm cable needs to be housed.
Select MPSCS2540-60 (Interior Height 25mm) because 20/0.8=25 or more interior height is required for the condition that the cable O.D. must be within 80% of interior height.



*For sectional dimensions and bending radius by type and size, please refer to product pages.

<Size Selection Tips>

①Height
O.D. of the cable/hose must be 80% or less than the internal height of the cable carrier.

②Occupied Space
Cable/hose must be within 60% of Cable Carrier Interior Content = Interior Height x Interior Width. (For MPSPS and MPSCS, up to 70% of Interior Content can be stored.)

③Bending Radius
When housing different types of cables/hoses together, please select the cable carrier bending radius to meet the maximum bending radius.

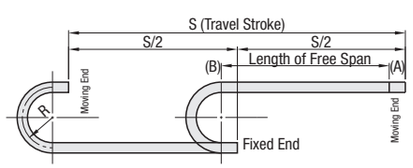
④Distance between the running cable/hose and internal wall
The distance between the running cable/hose and Cable Carrier interior wall must be at least 10% of the running cable/hose O.D.

⑤Cable/Hose Mutual Distances
The distance between adjacent cables/hoses must be at least 10% of the thicker cable O.D.

Step 3. Calculate free span length.

Calculate the length of free span by required moving stroke and the position of fixed end.

<Selection Examples>
1500mm is required for strokes. Free span length requires 1500/2=750mm as the fixed end can be set at a stroke intermediate point.



<Free Span Length>
Distance between the cable carrier moving end (A) and bending radius arc origin point (B).

When positioning the fixed end in the center of the moving stroke, Free Span Length = Moving Stroke/2

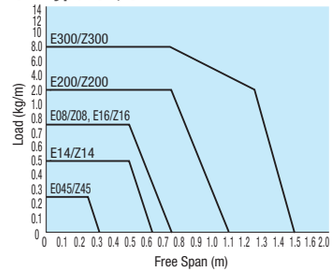
*Possible to minimize the quantity of Cable Carrier Links by setting the fixed end at the intermediate point of moving stroke.

Step 4. Confirm the carried load and free span running range.

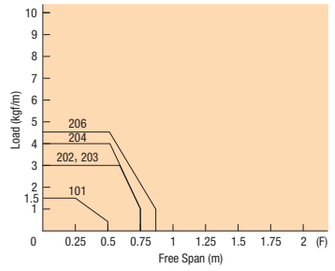
<Selection Examples>
Cable weight is 1.5kg/m. When free span length is 0.75m, it is applicable because 1.5kg falls within the weight capacity line in the graph.

The relationship between the free span length and bearable load (weight of cables/hoses stored) depends on cable carrier types. Please check if housed cables / hoses weight falls within the free span travel allowable range (inside the line graph) in the graph below.

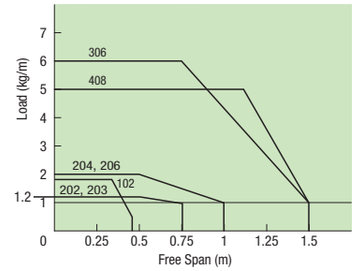
• Slit Type: SE, SZ



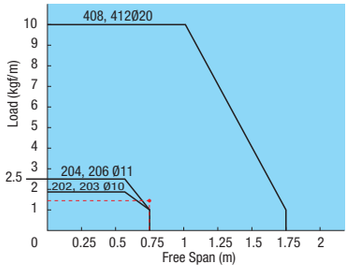
• Compact Type: MHPKS



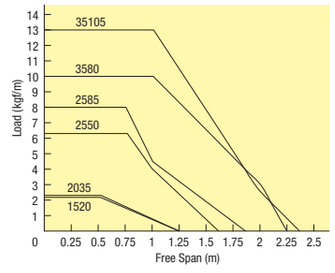
• Flap Open-Close Type: MHPUS



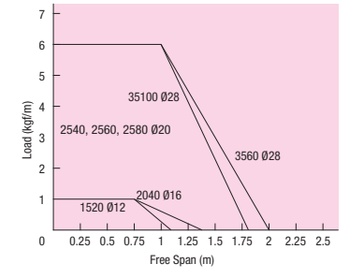
• Flap Open-Close Full Cover Type : FHPS



• Low Friction, Low Noise Type : MPSPS



• Low Particle Generation, Low Noise Type : MPSCS



Step 5. Calculate the number of links.

<Selection Examples>
As 2000mm is required for FHPS408-70 and strokes, and the fixed end is set at a stroke intermediate point.

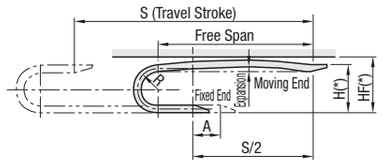
$$\frac{\frac{2000}{2}+319.8\ (\text{Arc + Allowance})+0}{45\ (\text{Pitch})} \approx 30\ (\text{Required Number of Links}) + 2\ (\text{Number of Spare Links})\ *1$$

Calculate the number of links by the following formula.

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

n : Number of Links
S : Travel Stroke
K : Arc + Margin (*)
A : Distance from an intermediate point (mm) when fixed end is not set at a travel stroke intermediate point.
(0 when at an intermediate point)
P : Pitch (*)

*1 About Number of Spare Links
• In the case of new designs, there may be a possibility that carrier links run short.
• It is recommended that links are selected longer by one or two links, and are adjusted (removed) at the time of installing (removing) device.
• For installation, see product pages.

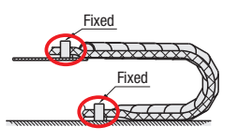


Drawing mark "HF" indicates a height with a potential bow that may occur when no cable hoses are inserted.

*For K (Arc + Allowance), P (Pitch) and H/HF (Physical Height), see product pages.

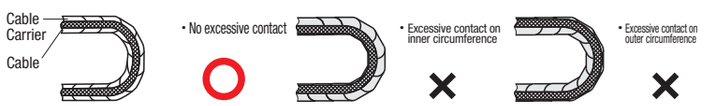
Cautions on cable installation and mounting

• Fix the cable on both ends of cable carrier.



Please arrange wiring to allow cable free movement.

• In all the stroke ranges, check if the cable is not making excessive contact on inner and outer circumference of cable carrier.



Please fix cables at both moving and fixed ends so that no undue tension force applies.

* Cables can be tied with cable ties at the comb teeth ends with the Slit Type Cable Carrier on **P.667**.