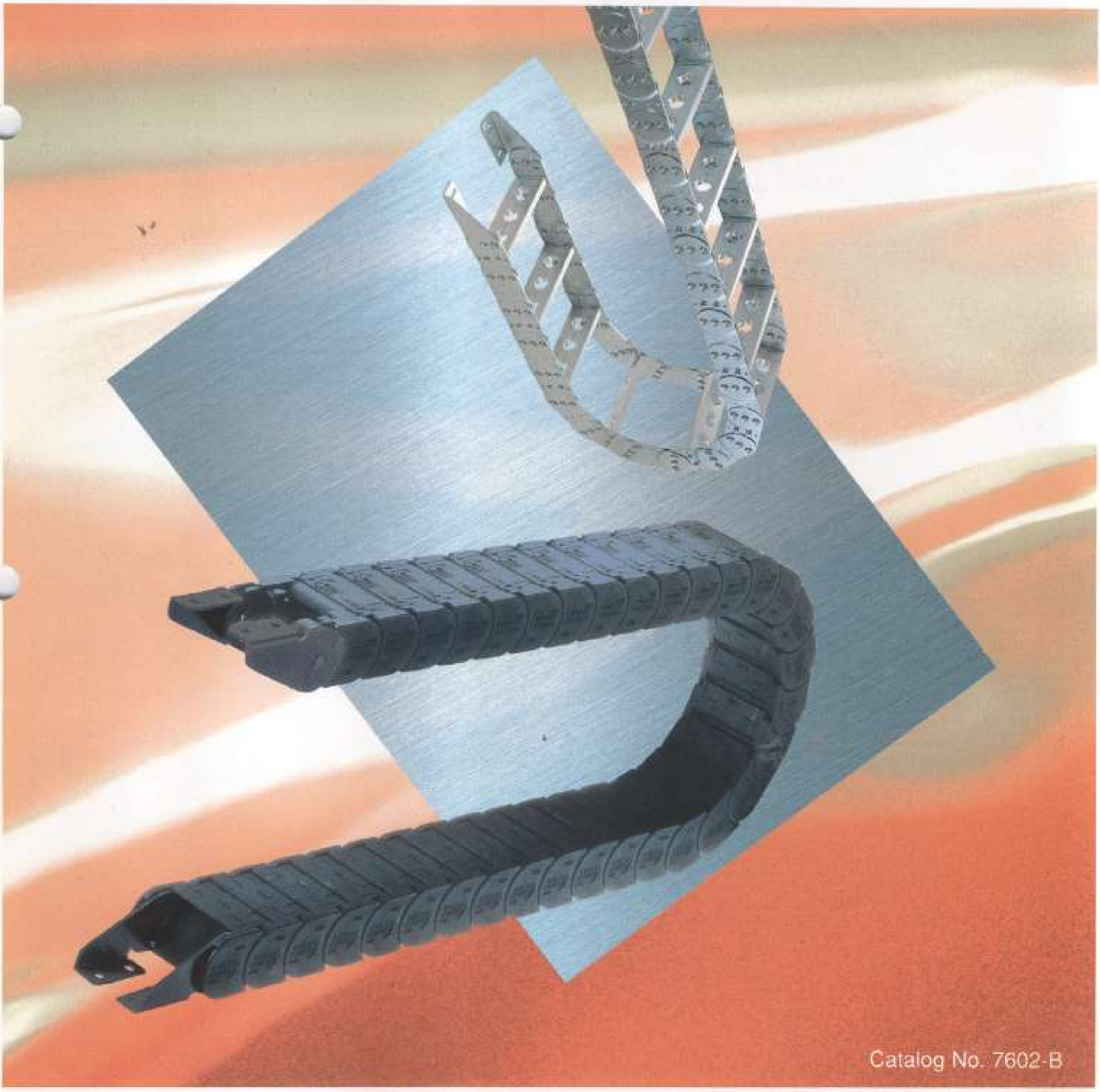
TSUBAKI

TSUBAKI CABLEVEYOR



(mm/kg)

Wide variation of Tsubaki CABLEVEYOR realize the easy selection with the most suitable type.

Super

Reliability

Safety

Durability

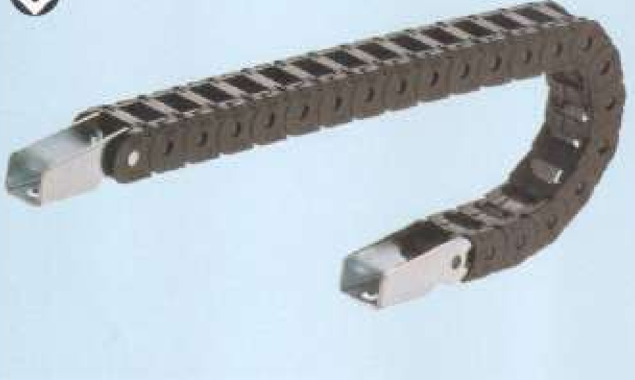
Tsubaki CABLEVEYOR provides protection for power supply cables and hoses supporting them for smoother, controlled movement on machines of all types. Behind every CABLEVEYOR is Tsubaki's wide experience and success in chain and manufacturing technology. Worldwide distribution of CABLEVEYORS for diversified uses in industrial robots, tooling machines and machines for the food, woodworking, steel and electronic industries illustrates the performance of this fine Tsubaki product.

TKC Type

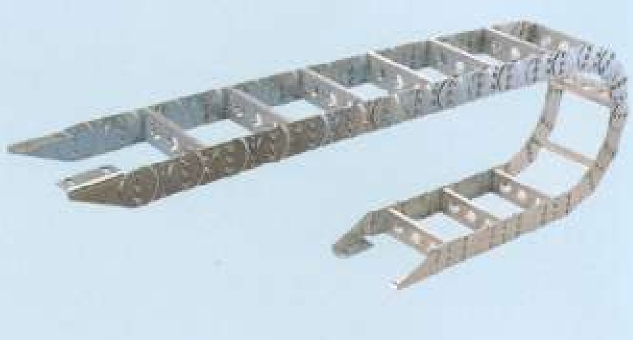
TKP Type

This item has limited sales areas by agreement.

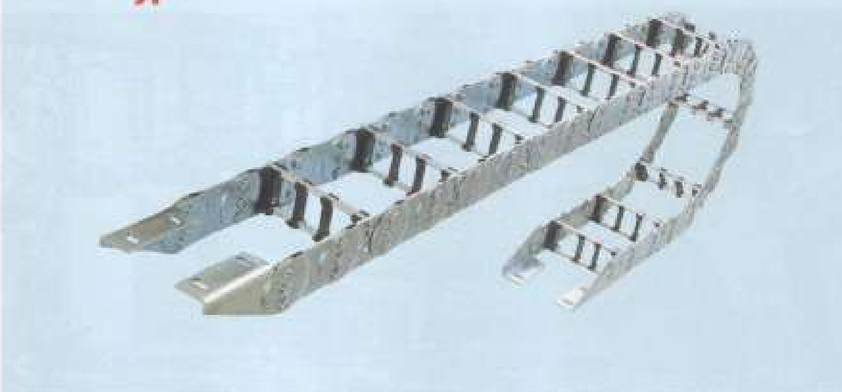
TKP Mini



TK Type



TKS Type



This item has limited sales areas by agreement.

TKF Type

This item has limited sales areas by agreement.

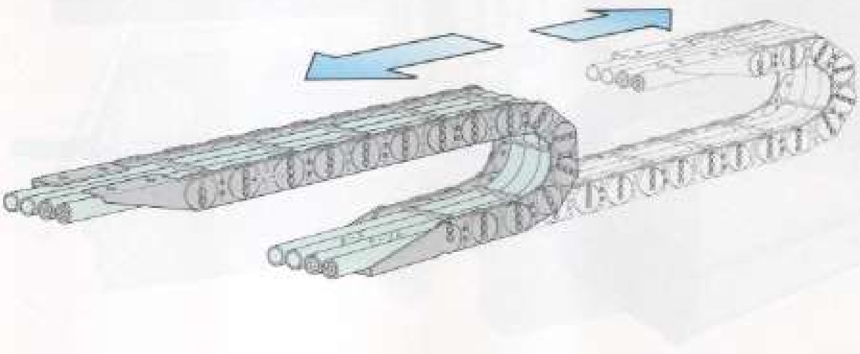
V Type

For high-speed application.

I Type

For long distance and large capacity application.

The CABLEVEYOR enables cables or hoses to bent at the same radius, orderly, and with no chance of breaking, ripping, twisting or accidental power stoppage. A good looking system with easy cable or hose layout are yours with the Tsubaki CABLEVEYOR.



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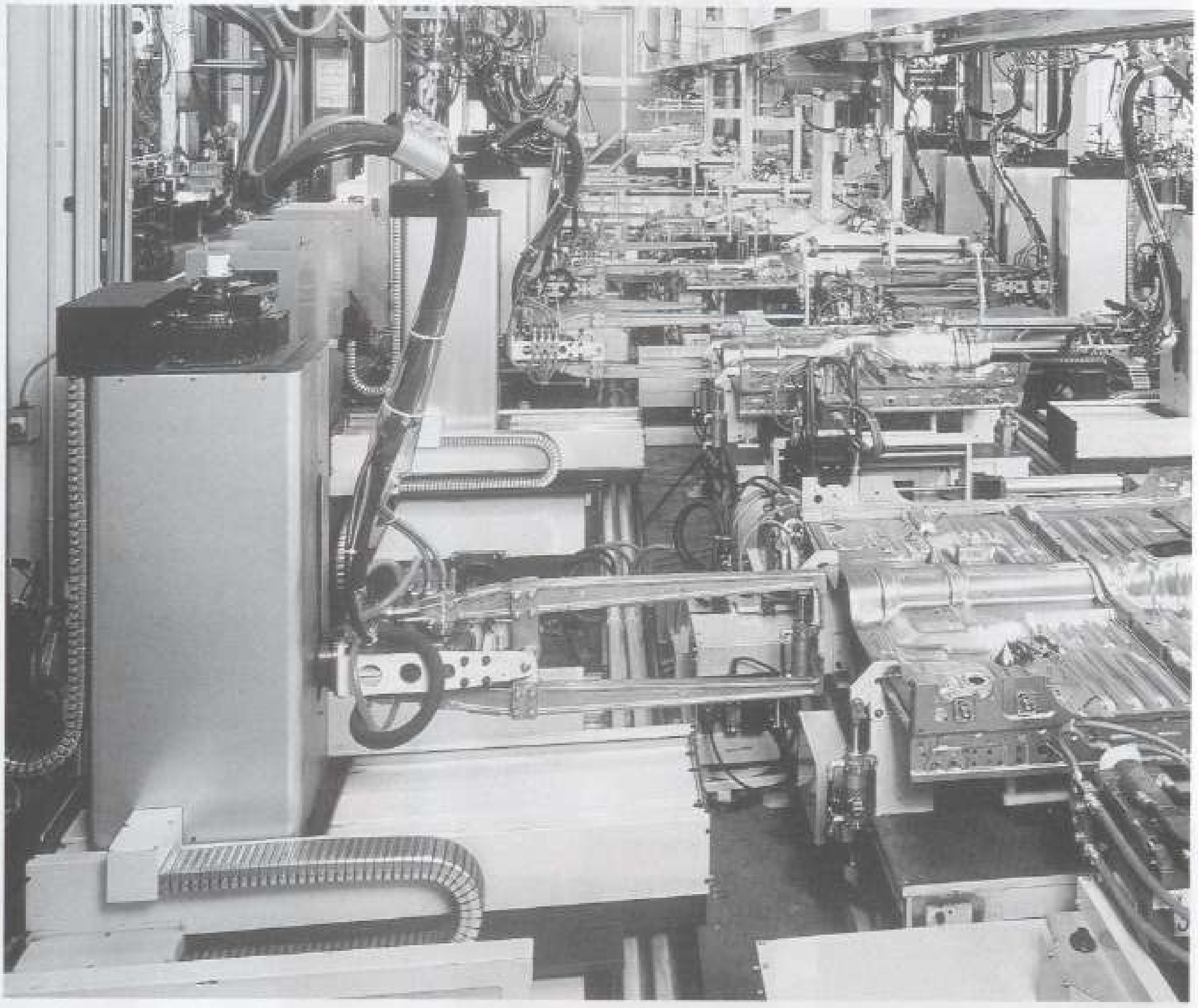
: Symbol of Japanese Good Design Award

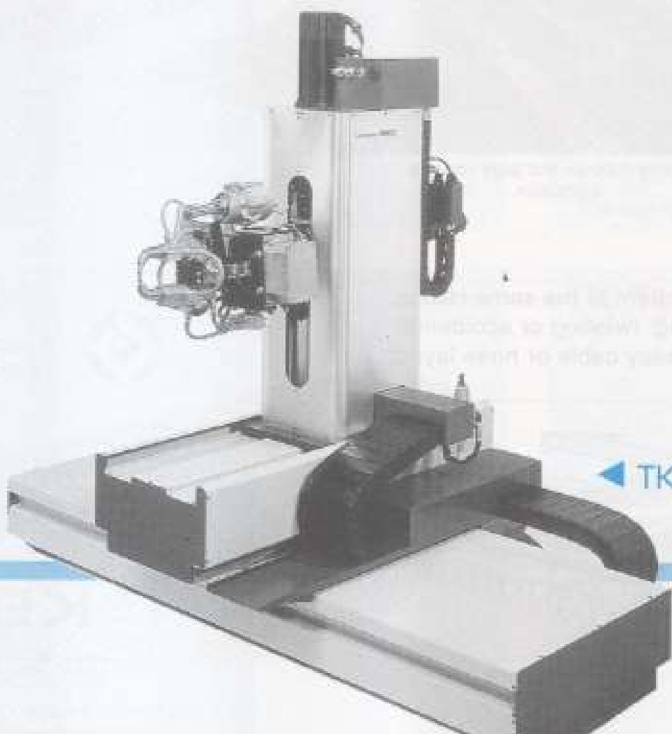
KS KABELSCHLEPP ®

The Tsubaki Cableveyor is produced under a licensing agreement with Kabelschlepp of Germany.

APPLICATION

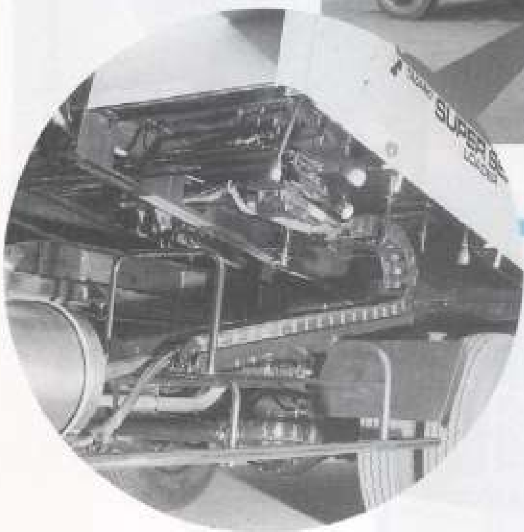


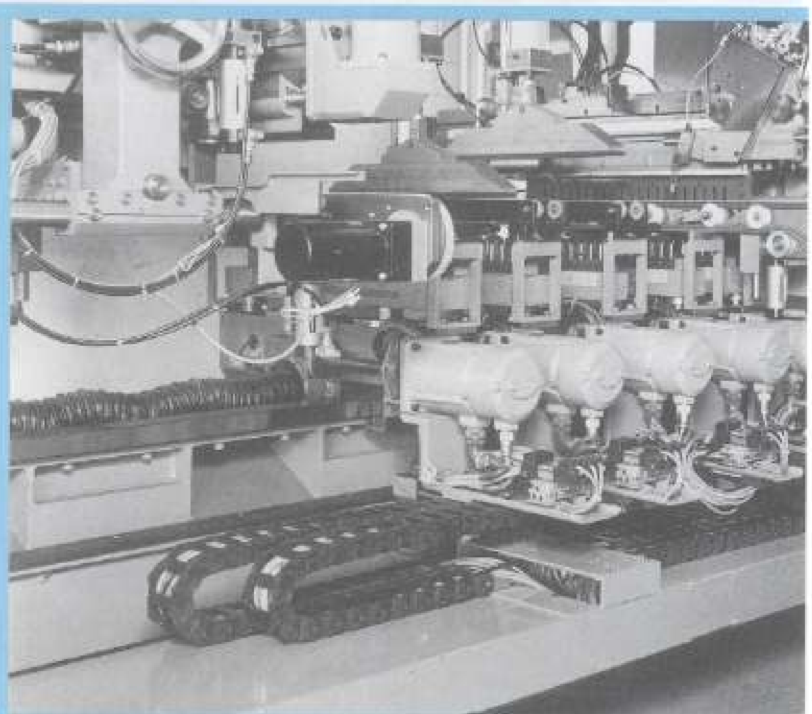
▲ TKF



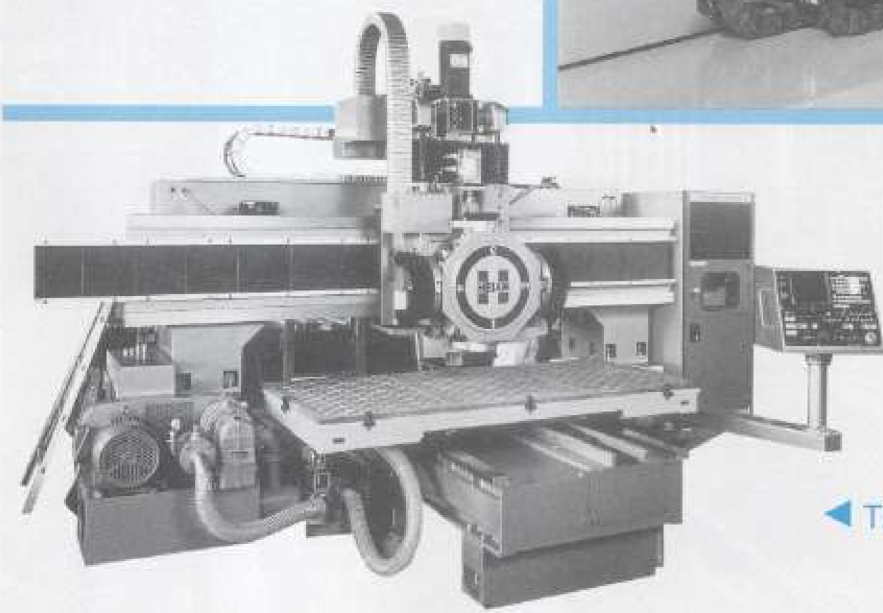
◀ TKC

TKP ▶





▲ TKP



◀ TKF

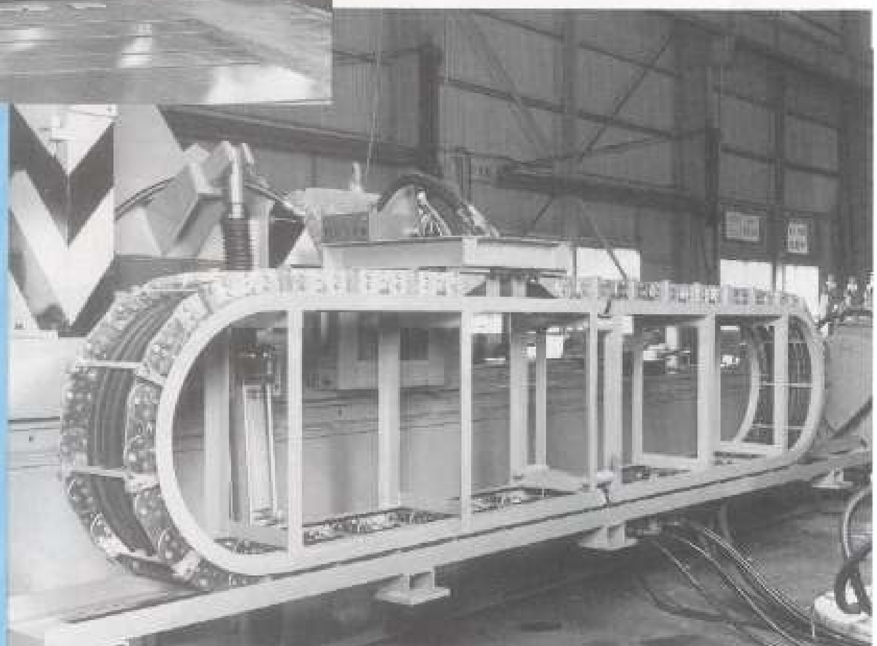
APPLICATION

TKC ▶

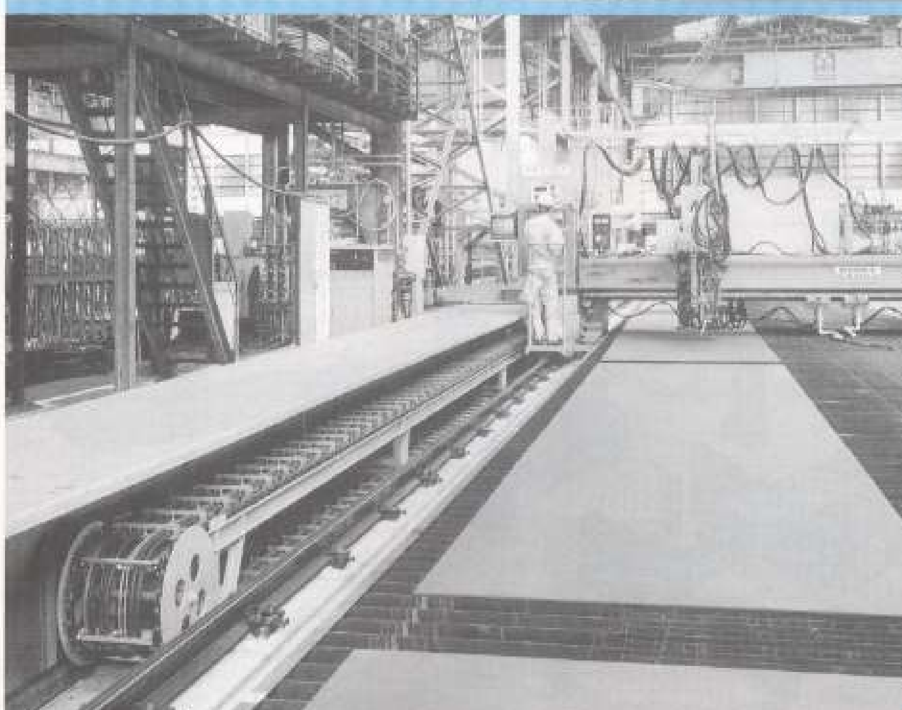
◀ TKC

TKC ▶

◀ TK



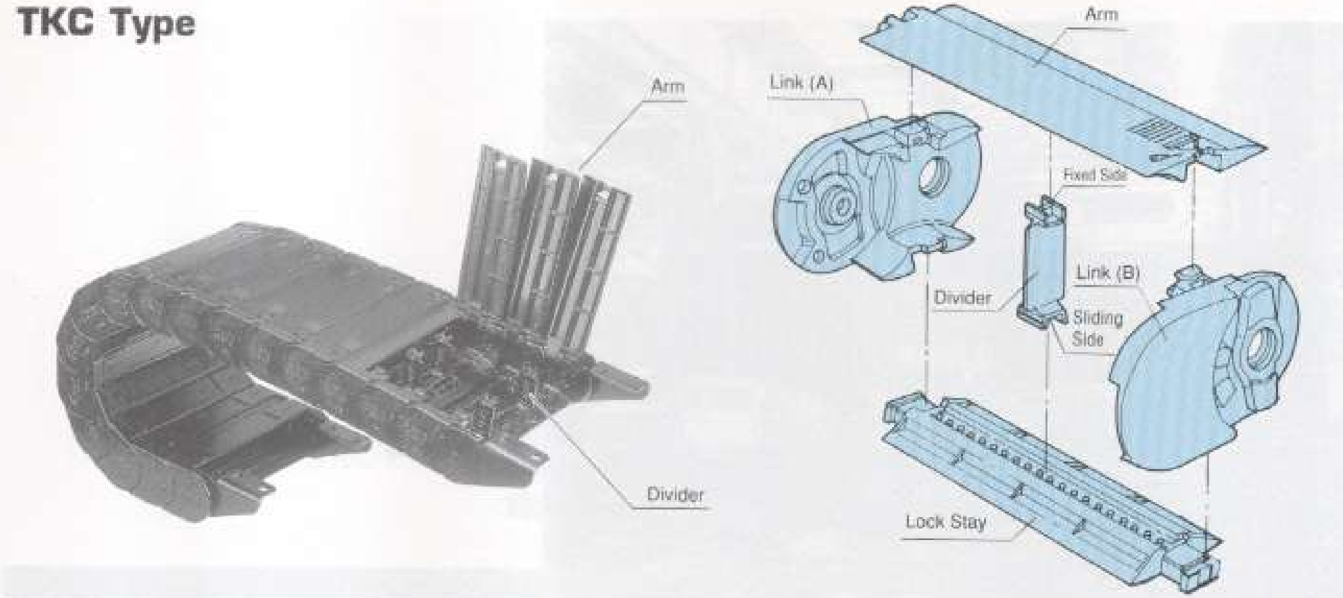
▲ V



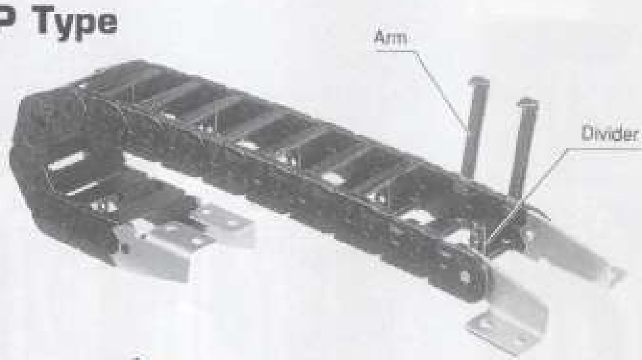
◀ I

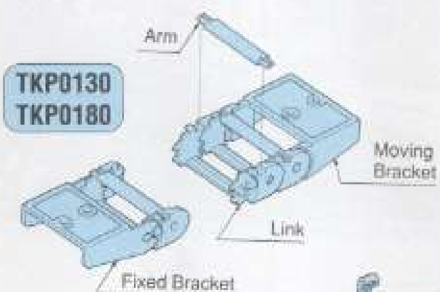
CONSTRUCTION

TKC Type

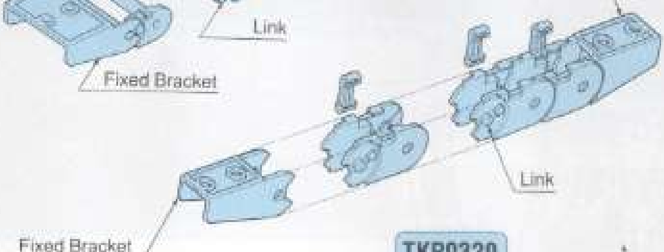


TKP Type

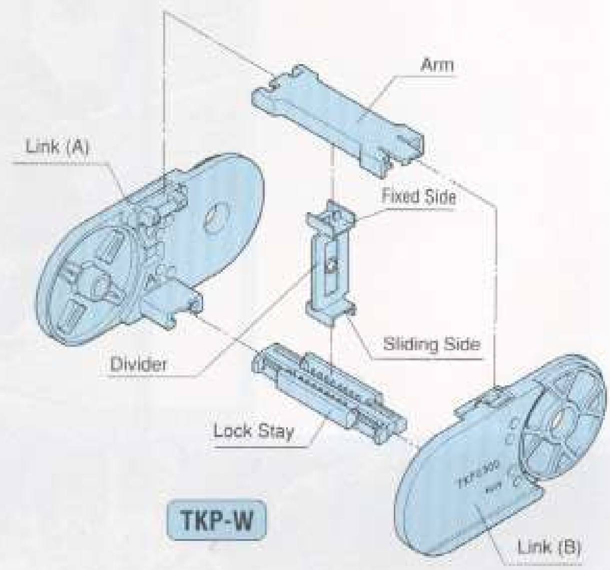




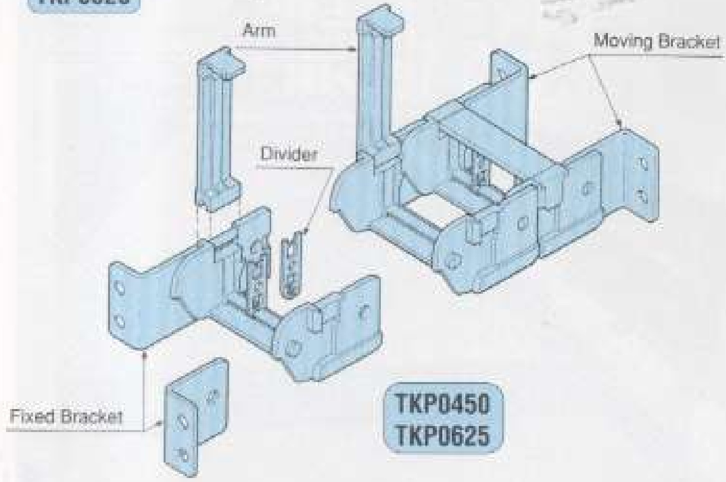
TKP0130
TKP0180



TKP0320

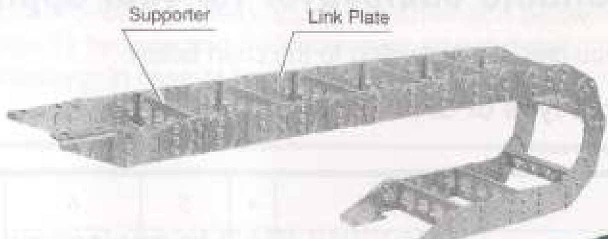


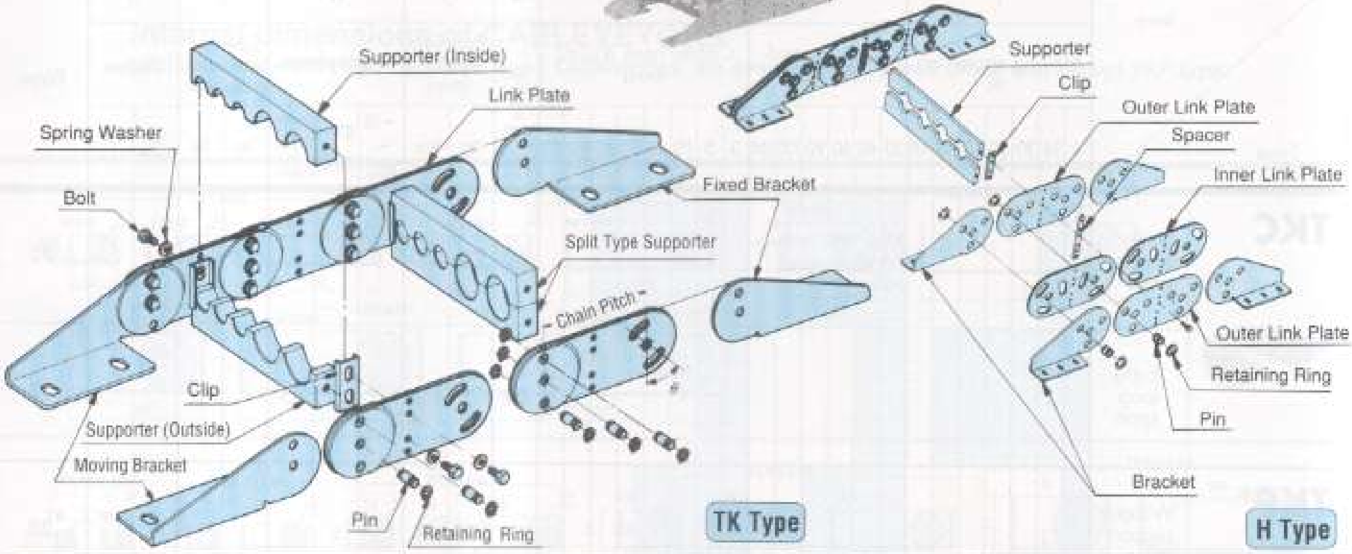
TKP-W



TKP0450
TKP0625

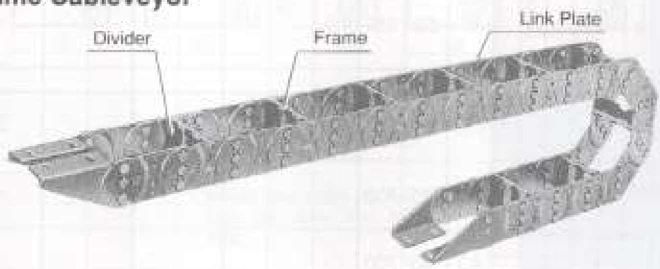
TK·H Type
Oval Cableveyor

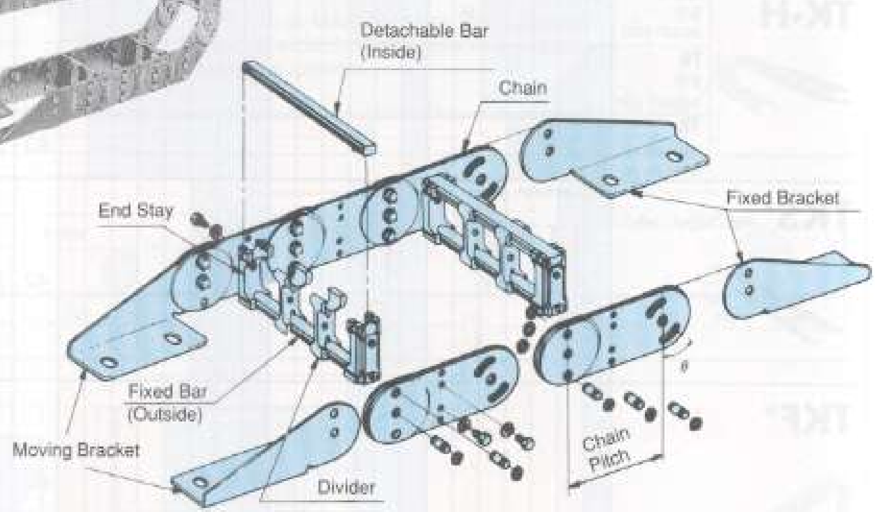




TKS Type
This item has limited sales areas by agreement.

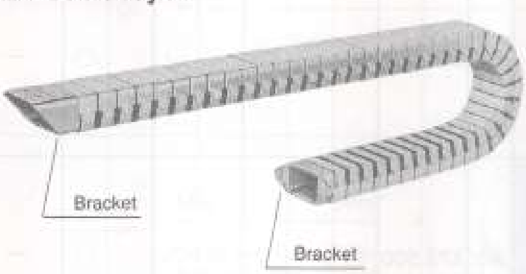
Frame Cableveyor

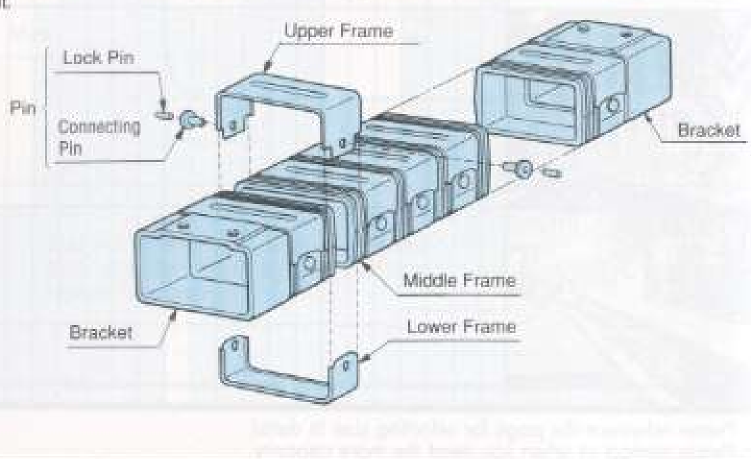




TKF Type
This item has limited sales areas by agreement.

Flex Cableveyor





How to select the most suitable cableveyor for your application

1) Please set up the cableveyor which you can use according to the chart below.

The chart for specifying the suitable type of CABLEVEYORS

(The colored area indicates the range for the cableveyor.)

Type	Item	1 Moving stroke (m) 4 / 16 / 20 / 30 / 40 / 50 / 100	2 Chain speed (m/min) 30 / 40 / 60 / 90 / 120 / 150	3 Cable/hose (kg/m) mass 3 / 5 / 10 / 40 / 50 / 60 / 80 / 100	4 Max. cable/hose dia. (mm)	5 Bending radius (mm) Min.	5 Bending radius (mm) Max.	6 Atmosphere −10 ~ 80°C	6 Atmosphere 80~150°C	6 Atmosphere Available for engineering plastic	7 Support roller & the rail for outboard roller Yes	7 Support roller & the rail for outboard roller No	8 Structure Fully enclosed	8 Structure Open & shut	Page
TKC 	With support roller		Max. 60 m/min (With support roller)		60	70	350	○		○	○		○	○	23
	Extra long span			Max. 6	60	70	350	○		○		○	○	○	27
TKP* 	Without support roller	7.2		45	67	18	450	○		○				○	28
	Extra long span			6	67	50	350	○		○		○		○	—
TK•H 	TK•H With support roller	44			110	75	750	○	○		○			○	35
	TK With outboard roller				80	125	700	○			○			○	—
	TK With outboard roller for extra long span				80	145	700	○				○		○	—
TKS* (With support roller) 					42	75	300	○		○	○			○	38
TKF* 		5.2			60	60	350	○		○			○		40
					60	200	400	○		○		○		○	—
					80	175	500	○				○		○	—

1. Please reference the page for selecting size in detail.
2. Please contact us when you need the more capacity.

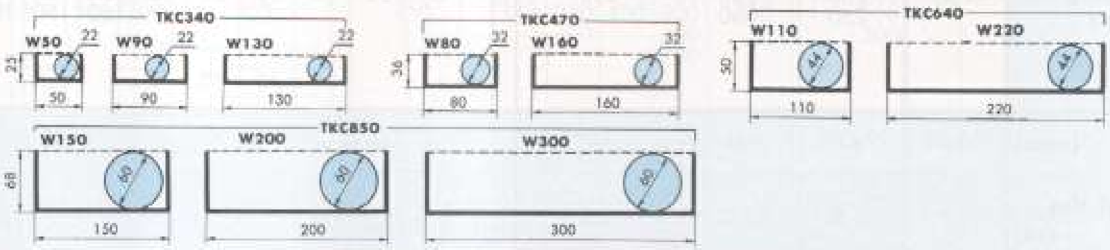
* Some sales areas are not available for some types.

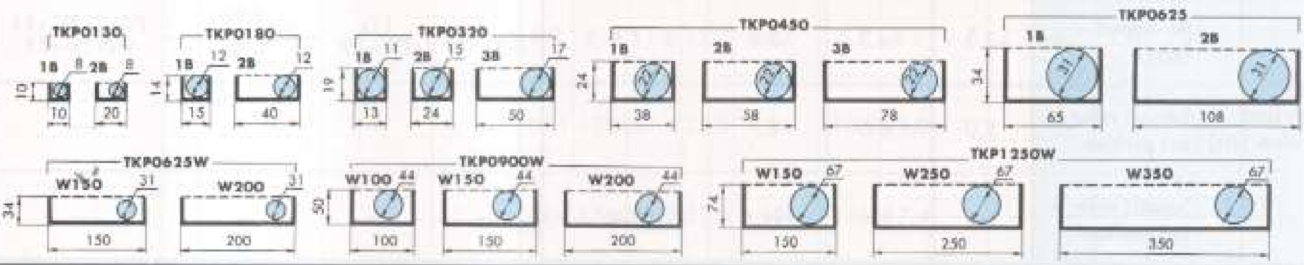
2) Please check the space for cables/hoses, using the dimension below.
3) Please reference page ⑬ for selecting the cableveyor size in detail.
4) Please use FTP cableveyor in case of three dimensional motion.

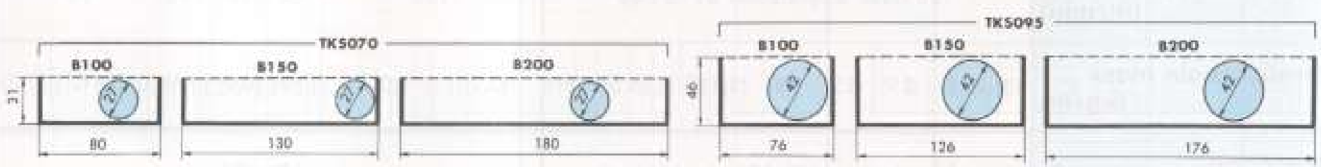
Internal dimensions of CABLEVEYORS

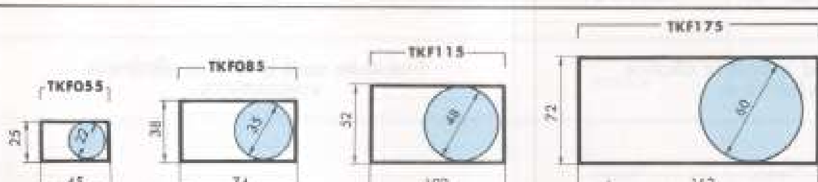
(Dot lines shows for Open & Close type.) Cableveyors' are available for Open & Close arm except TKF type.

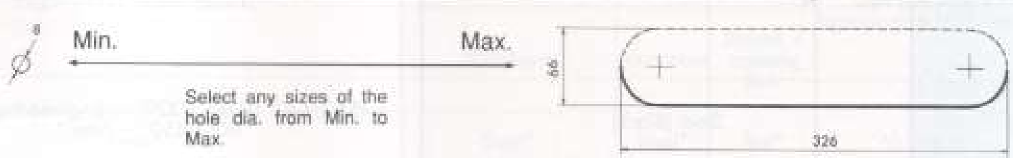
Unit : mm

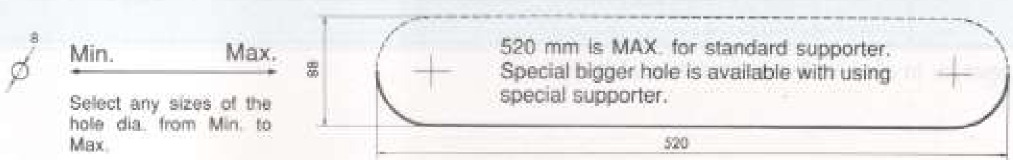












SPECIFICATION

TKC type cableveyor

Cableveyor number		TKC340			TKC470		TKC640		TKC850		
Size		W 50	W 90	W 130	W 80	W 160	W 110	W 220	W 150	W 200	W 300
Standard bending radius R (mm)		70 100 150			100 150 200 250		135 200 250 300		180 250 350		
Chain pitch (mm)		34			47		64		85		
Max. distance of the free-span (m)		1.7			2.25		3.0		4.0		
Max. moving stroke (m)	No support rollers	3.3			4.3		5.8		7.8		
	Support roller in one position	5.0			6.5		8.7		11.7		
	Support roller in two position	6.6			8.6		11.6		15.6		
Max. cable/hose dia. (mm)		22			32		44		60		
Max. cable/hose mass (kg/m)		12			17		25		60		
Max. chain speed (m/min)		120 (With support roller 60 m/min)									
Parallel chain mass (kg/m)		(1.5)	(1.9)	(2.1)	(2.5)	(3.5)	(4)	(5)	(5.7)	(6.5)	(8)
Operating temperature △ (°C)		-10°~80°									
Operating conditions		Not to be used in acid or alkaline environments									
Material	Chain	Engineering plastic (Black)									
	Supporter										
	Brackets	Steel (Black)									
Stock condition		Parts stock									

TKP type plastic cableveyor

Cableveyor number		TKP0130		TKP0180		TKP0320			TKP0450		
Size		1B	2B	1B	2B	1B	2B	3B	1B	2B	3B
Standard bending radius R (mm)		18 28 37	18 28 37	28 37 50	28 37 50	37 50 75	37 50 75	37 50 75	50 95 125 150	50 95 125 150	50 95 125 150
Chain pitch (mm)		13		18		32			45		
Max. distance of the free-span (m)		0.69 (R18 = 0.53)		0.91 (R28 = 0.79)		1.1 1.3			R50 = 1.2 R95 = 1.35 R125-150 = 1.45		
Max. moving stroke (m)	No support rollers	1.3 (R18 = 1.0)		1.75 (R28 = 1.5)		2.05 2.55			R50 = 2.2 R95 = 2.6 R125-150 = 2.8		
	Support roller in one position	—		—		—			—		
	Support roller in two position	—		—		—			—		
Max. cable/hose dia. (mm)		8		12		11	15	17	22		
Max. cable/hose mass (kg/m)		0.4		1.0		1.6	1.6	1.6	3.2		
Max. chain speed (m/min)		120				90	90	120	90		
Parallel chain mass (kg/m)		(0.2)		(0.3)		(0.3)	(0.4)	(0.6)	(0.8)	(1.1)	(1.3)
Operating temperature △ (°C)		-10°~80°									
Operating conditions		Not to be used in acid or alkaline environments									
Material	Chain	Engineering plastic (Black)									
	Supporter										
	Brackets	TKP 0130, 0180, 0320 ···· Engineering plastic TKP 0450 ···· Steel*									
Stock condition		Stock									

Please use FTP cableveyor in case of three dimensional motion.

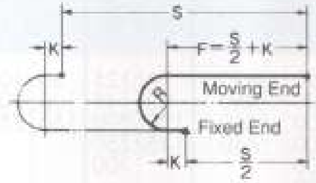
TKP type plastic cableveyor										TK type oval cableveyor				H type cableveyor	TKS type frame cableveyor		TKF type flex cableveyor				V type cableveyor	I type cableveyor
TKP0625				TKP0900			TKP1250			TK 070	TK 095	TK 130	TK 180	H250	TKS 070	TKS 095	TKF 055	TKF 085	TKF 115	TKF 175	V130	I type
1B	2B	W 150	W 200	W 100	W 150	W 200	W 150	W 250	W 350													
75 90 125 200	75 90 125 200	75 90 125 200	75 90 125 200	130 200 250 300			185 250 350 450			75 90 125 145	125 145 200 250 300	200 250 300 400	250 300 400 500 600 700	350 450 600 750	75 90 125 145	125 145 200 250 300	60 100 150	100 200 250	140 225 300	185 250 350	200 250 300 400	175 200 250 300 350 400 500
62.5				90			125			70	95	130	180	250	70	95	20	20	25	30	130	—
2.25				2.7			3.7			3.5	4.5	6.0	8.0	11.5	3.5	4.5	1.5	2.0	2.5	2.75	—	—
4.4				5.2			7.2			6.7	8.7	11.6	15.7	22	6.7	8.7	2.7	3.7	4.7	5.2	30	100
—				—			—			10.1	13.0	17.4	23.5	33	10.1	13.0	-	-	-	-	—	—
—				—			—			13.4	17.4	23.2	31.4	44	13.4	17.4	-	-	-	-	—	—
31				44			67			27	46	60	80	110	27	42	22	35	48	60	60	80
5	12			18			45			50	60	70	80	100	10	10	12	21.5	30	40	50	100
90										60				60	60		60				150	120
(1.7)	(1.9)	(1.8)	(2.1)	(2.6)	(2.9)	(3.1)	(4.5)	(5.1)	(5.7)	6	8	17	21	40	6	8	(1.4)	(2)	(3)	(5)	—	—
-10°~80°										-10°~150°				-10°~150°	-10°~80°		-10°~80°				-10°~80°	-10°~150°
Not to be used in acid or alkaline environments										Indoor				Indoor	Not to be used in acid or alkaline environments							Indoor
Engineering plastic (Black)										Steel*				Steel*	Steel*		Zinc plating steel (upper·lower frame) + Engineering plastic (middle frame)				Steel + engineering plastic*	Steel*
										Aluminum				Aluminum	Aluminum + engineering plastic						Aluminum	Aluminum
Steel*										Steel*				Steel*	Steel*		Aluminum				—	—
Stock (Black)	Parts stock (Black)									Parts stock				Order	Parts stock		Parts stock				Order	Order

*Steel with zinc plating.
△ : Not to be freezed

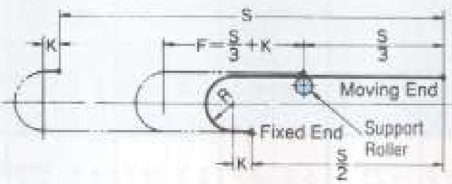
1. Basic matter for selection

1.1 Moving distance and the support roller

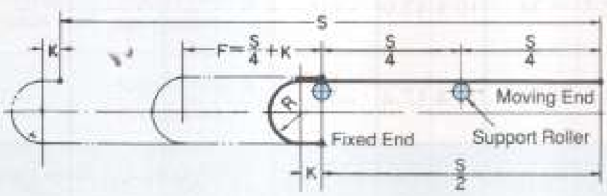
1) Without support roller



2) With one support roller

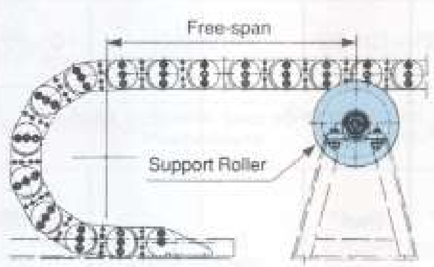


3) With two support rollers



S : Moving stroke
K : Margin length
F : Free-span
For support roller dimensions, please see page 39.

The support roller enables the free-span distance to be extended beyond the original distance.



1.2 Capability graph .... page 14 and 15

1) Moving stroke "S" is effective when fixed end is in the center of moving stroke.
(Please refer 3 figures in left side of this page.)

2) Adjusted moving stroke (S')
The length of moving stroke must be adjusted if used under the circumstances listed in table 1 "service factor".

$$S' = S \times \text{Service factor}$$

Table 1 Service factor

Operating condition	Installation suggestion	Service factor
Frequent starting and stopping.	Sometimes support rollers or guides are needed to prevent the chain from toppling over.	1.5
Sudden starts and stops with large vibrations.	Use a large bending radius to decrease frequent vibrations caused by multiple-angle movements of the chain.	2.0

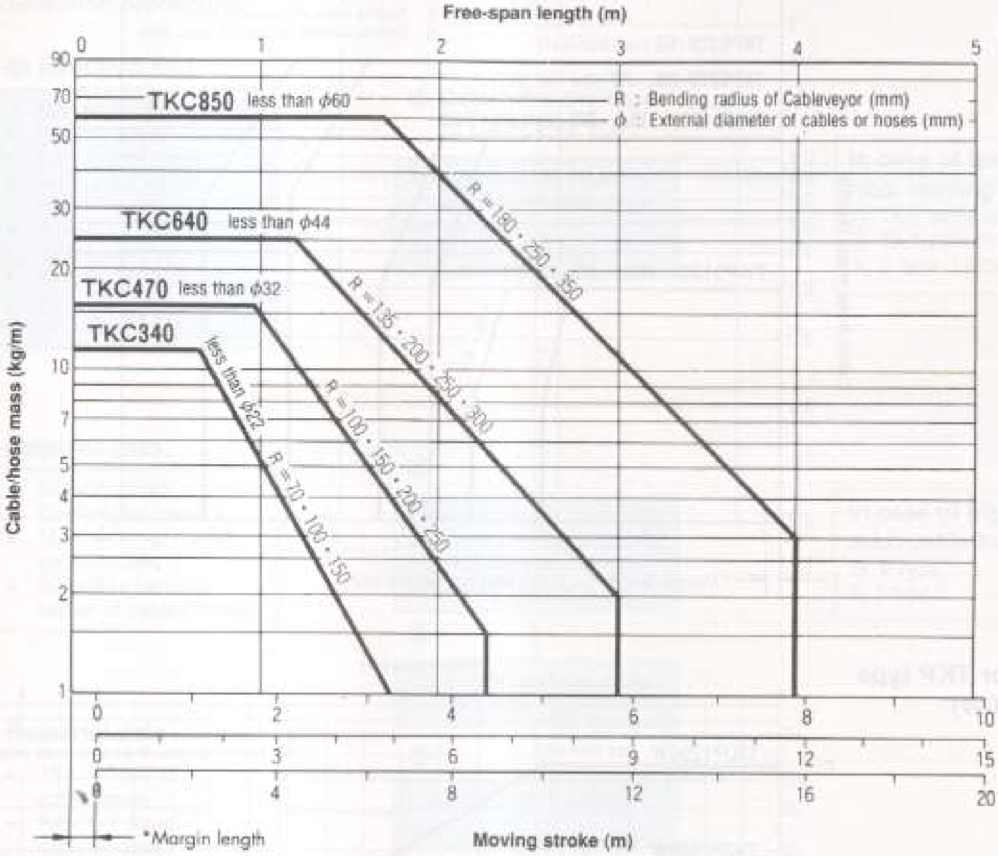
1.3 Allowable bending radius of the cables or hoses.

Please refer to data for cables or hoses determined by own maker.

If the allowable bending radius is unknown, please refer to the calculations below.

- **In the case of cables**
  Allowable bending radius ≧ External diameter × 6
- **In the case of hoses**
  Allowable bending radius ≧ External diameter × 9

Table 2 Capability graph for TKC type



The example of how to use the capability graph

Moving stroke: 3 m
The mass of the cables/hoses: 4 kg/m
The external diameter of the cables/hoses: 20 mm
The allowable bending radius of the cable/hoses: 160 mm
The intersection of the moving stroke axis (3 m) and the cable/hose mass axis (4 kg/m) is within the range of TKC470. The bending radius R = 200 of CABLEVEYOR is selected, because it is larger than the allowable bending radius of the cable/hoses (160 mm).

Supporting rollers

If the capability of CABLEVEYOR with no supporting roller doesn't satisfy the operating condition, study again with supporting rollers.

Table 3 Capability graph for TK·TKS·H type

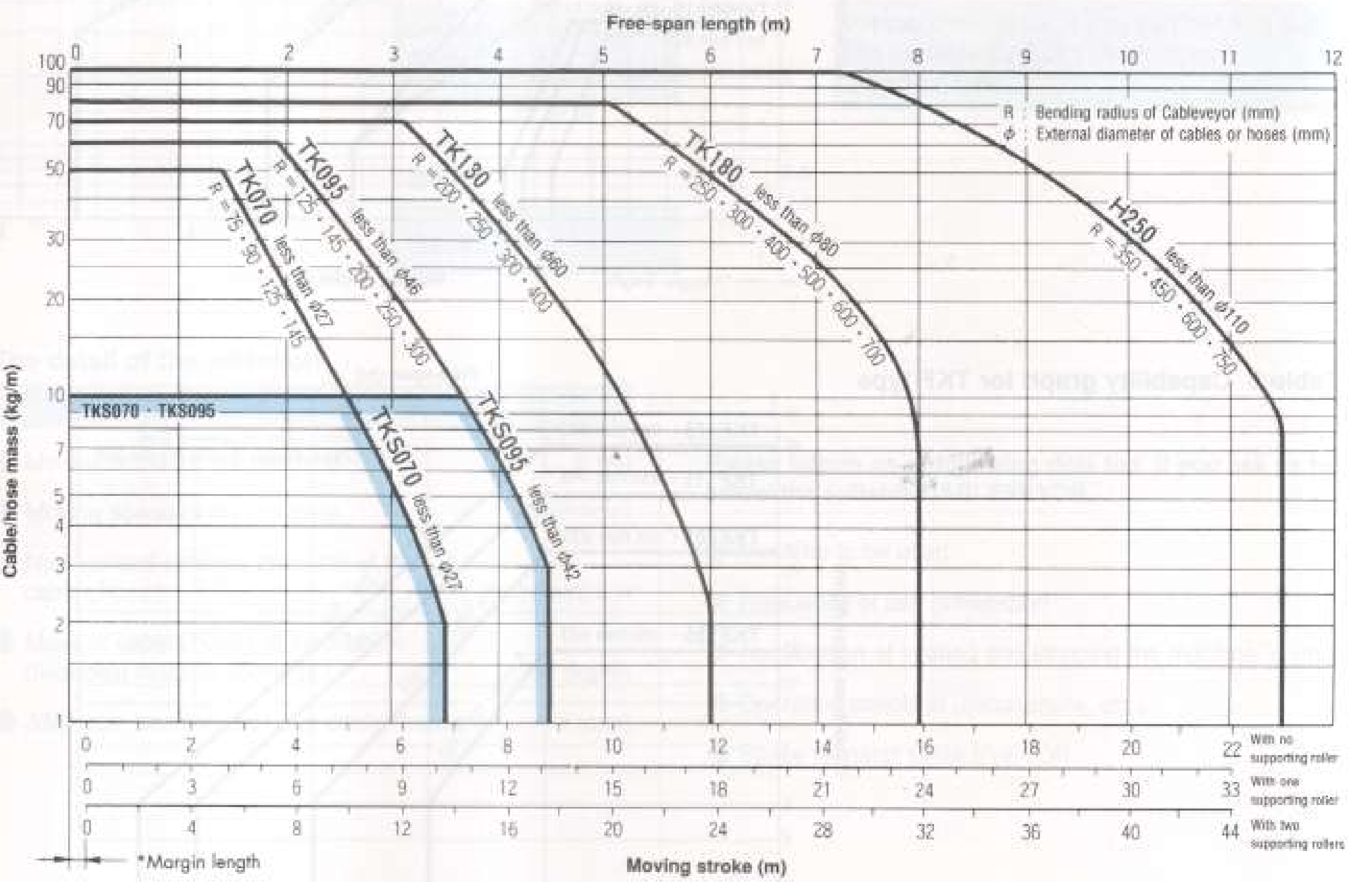


Table 4 Capability graph for TKP type (TKP0130~TKP0320)

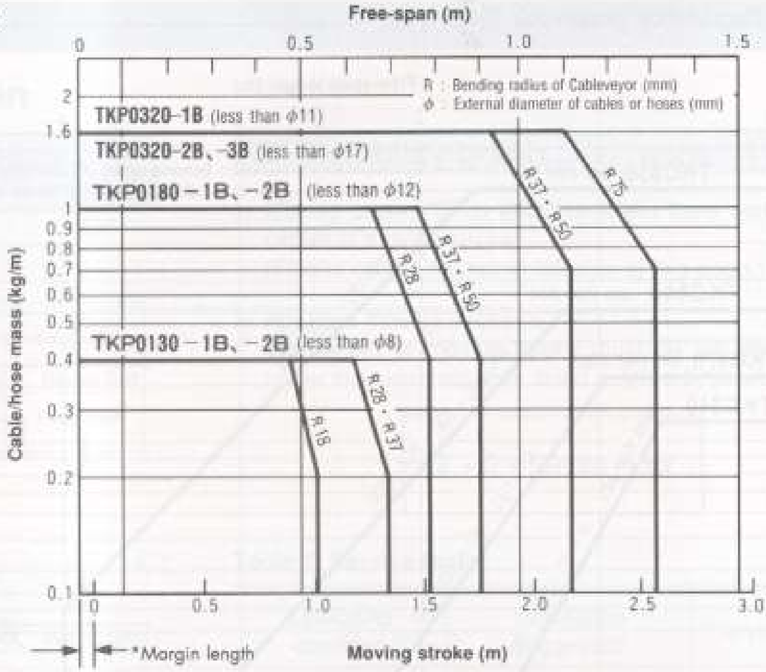


Table 5 Capability graph for TKP type (TKP0450~TKP1250W)

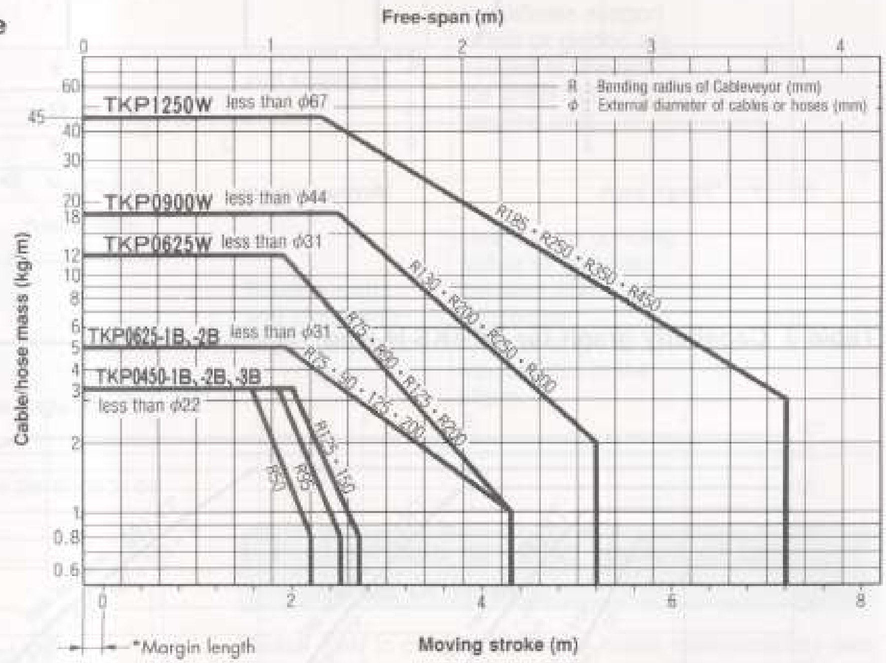
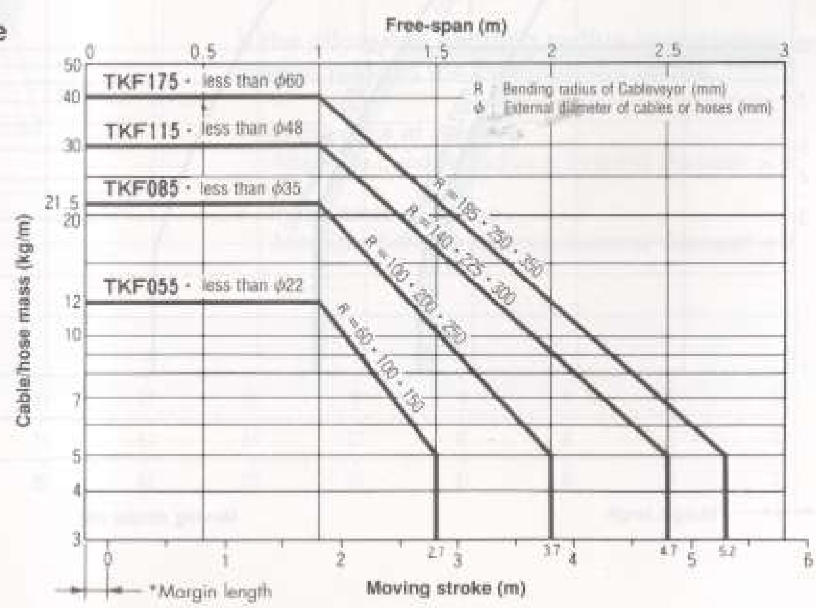


Table 6 Capability graph for TKF type



2. How to select the type and size

<Selection procedure>

① Required data

- Moving stroke
- Moving speed
- Cable/hose mass
- Max. external dia. of cables/hoses
- Allowable bending radius of cables/hoses
- Operating temperature
- Fully enclosed construction or not

② Determine the type of CABLEVEYOR

According to the selection chart (page 9), determine the suitable CABLEVEYOR type

In case of longer moving stroke than max. moving stroke
1) TKC extra long span type
2) TK type with outboard roller
3) V type, I type

In case of bigger cable/hose mass than max. cable/hose mass
1) V type
2) I type

Required data

- Moving stroke
- Cable/hose mass
- Max. external dia. of cables/hoses
- Allowable bending radius of cables/hoses

③

According to the capability graph, determine (page 14 and 15) the suitable CABLEVEYOR size

④

Calculation of the number of chain links.

Required data

- The number of cables/hoses
- External dia. of cables/hoses

⑤

Determine the supporter size.

⑥

Determine the installation brackets type.

Determination of the type and the size of CABLEVEYOR

Please consult us, if you can not find out the suitable CABLEVEYOR in our standard type.

⑦

How to order

The detail of the selection

① Required data

① Moving stroke of the machine	S (m)
② Moving speed of the machine	V (m/min)
③ Number and external diameter of the cables/hoses.	ϕd (mm) × n
④ Mass of cables/hoses at installation (Including mass of contents.)	W (kg/m)
⑤ Allowable bending radius of cables/hoses	r (mm)

Please inform us of following data too, if you ask us to select the suitable CABLEVEYOR.

⑥ Machine to be used

⑦ Frequency of use (times/day)

⑧ Acceleration at starting and stopping the machine. α (m/s^2)

⑨ Operating condition (atmosphere, etc.)

⑩ Space to install CABLEVEYOR

② Determination of the type of CABLEVEYOR

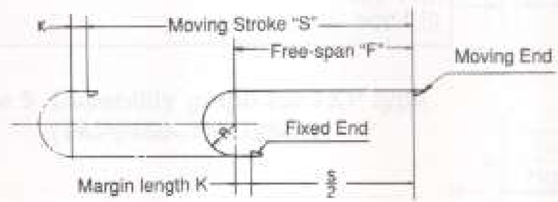
Determine the type of CABLEVEYOR according to the selection chart (page 9).

③ Determination of the size of CABLEVEYOR

Determine the size of CABLEVEYOR according to the capability graph of determined type (page 14 and 15).

④ Calculation of the number of CABLEVEYOR links

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



ℓ : The number of links (Fixed end is in the center of moving stroke)

Any fraction of "ℓ" is counted as one link. H type is used for only in odd numbers of links.

S : Moving stroke (mm) R : Bending radius (mm)

P : Pitch of CABLEVEYOR (mm)

K : Margin length (mm)

Table 7 Margin length for each CABLEVEYOR size

Size	Pitch	K (at least) mm	Size	Pitch	K (at least) mm
TK070 TKS070	70	105	TKP0130	13	20
TK095 TKS095	95	145	TKP0180	18	20
TK130	130	195	TKP0320	32	30
TK180	180	270	TKP0450	45	30
H250	250	270	TKP 0625 0625W	62.5	50
TKC340	34	34	TKP 0900W	90	70
TKC470	47	47	TKP 1250W	125	100
TKC640	64	64	TKF055	20	120
TKC850	85	85	TKF085	20	120
			TKF115	25	140
			TKF175	30	150

Table 8 The limit of number of links for TKF type.

Size	Number of link	Size	Number of link
TKF055 R60	90	TKF085 R100	121
TKF055 R100	96	TKF085 R200	137
TKF055 R150	104	TKF085 R250	145
TKF115 R140	123	TKF175 R185	117
TKF115 R225	133	TKF175 R250	124
TKF115 R300	143	TKF175 R350	135

There is a limit of number of links in capability for TKF type, because no supporting roller is used. (This table shows in case of minimum cable/hose mass, therefore in case of bigger cable/hose mass TKF type has less capability than the table shows.)

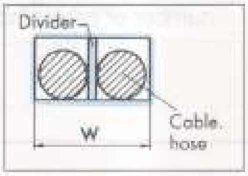
⑤ Determination of the supporter

In case of TK and TKS type, the first link from the moving end is fixed.

5-1 TKC Type

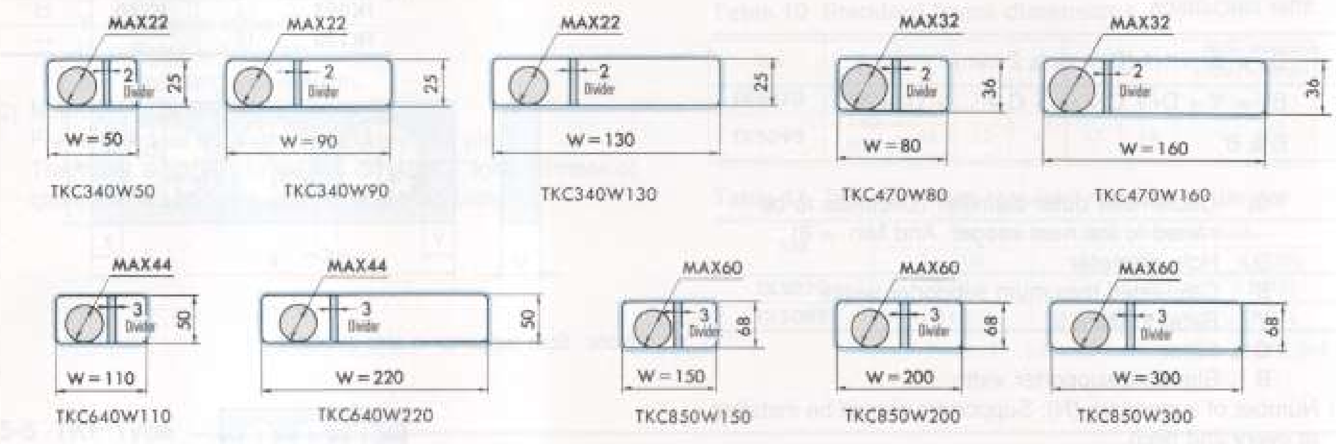
The supporters are made in one piece, therefore it is important to check the number and external diameter of cables and hoses.

1) Dimension (w):
Arrange the cables, hoses and dividers in a row and, keeping in mind the need for some space between them (10 % of cable/hose diameter), calculate the length (w).



2) Number of dividers (n):
In principle, dividers are installed at every fourth pitch, furthermore the most suitable number of dividers = total number of cables/hoses minus 1.

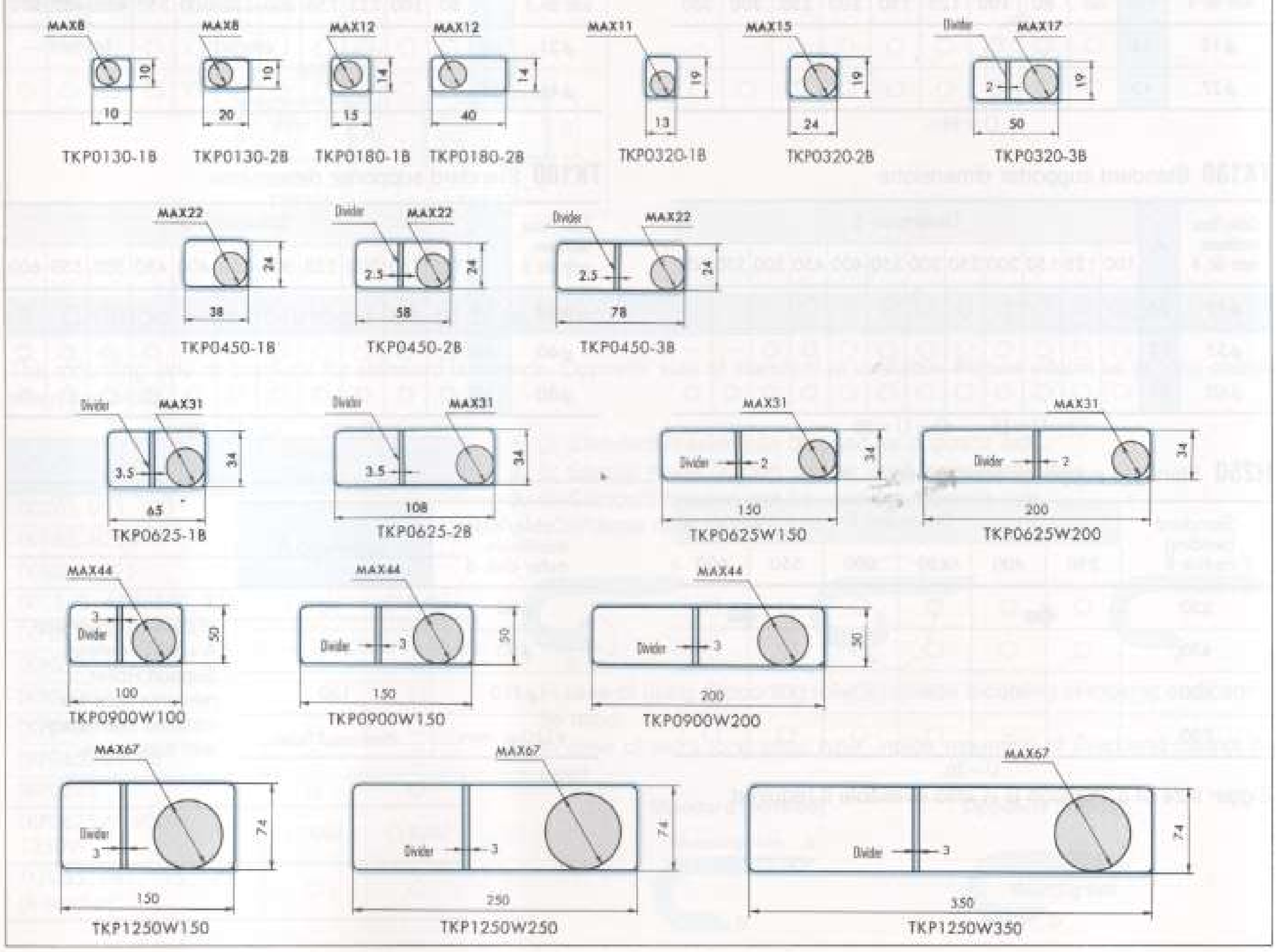
Inside measurement of TKC type



5-2 TKP Type

The supporters are made in one piece, therefore it is important to check the number and external diameter of cables and hoses.

Inside measurement of TKP type



1) Dimension (w):
Arrange the cables, hoses and dividers (if available) in a row and, keeping in mind the need for some space between them (10 % of cable/hose diameter), calculate the length (w).

2) Number of dividers (n):
In principle, dividers are installed at every two pitch, furthermore the most suitable number of dividers = total number of cables/hoses minus 1.

5-3 TK and H type

1) The holes of supporters are made to order.
The size of the supporter (dimension A and B) may be chosen from the reference table below for each chain size after calculation.

$$D_n = d_n \times 1.1 \ (D_n - d_n \geqq 2 \text{ mm})$$
$$B' = Y + D_1 + C + D_2 + C + \dots + D_n + Y$$
$$B \geqq B'$$

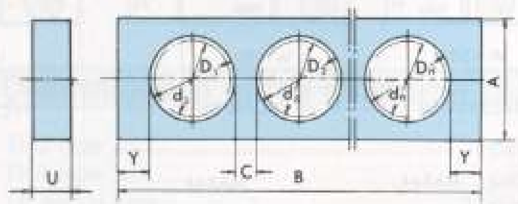
- d_n : Cable/hose outer diameter (Decimals to be raised to the next integer. And Min. = 8)
- D_n : Hole diameter
- B' : Calculated maximum supporter width
- Y : Refer to table 9.
- $C \geqq 4$ mm
- B : Standard supporter width

2) Number of supporters (N): Supporters should be installed at every 2nd pitch.

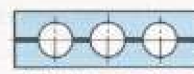
Standard supporter

Table 9 Dimension Y

Size	Min. (Y)	Size	Min. (Y)
TK070	10	**TK180**	18
TK095	15	**H250**	25
TK130	18	—	—



Note: Split supporter is also available.



Split supporter

TK070 Standard supporter dimensions

Cable/hose maximum outer dia. d	A	Dimension B								
		60	80	100	125	150	200	250	300	350
φ18	35	○	○	○	○	○	○	○	–	–
φ27	45	○	○	○	○	○	○	○	○	○

U=10

TK095 Standard supporter dimensions

Cable/hose maximum outer dia. d	A	Dimension B										
		80	100	125	150	200	250	300	350	400	450	500
φ31	50	○	○	○	○	○	○	○	○	○	–	–
φ46	65	○	○	○	○	○	○	○	○	○	○	○

U=15

TK130 Standard supporter dimensions

Cable/hose maximum outer dia. d	A	Dimension B											
		100	125	150	200	250	300	350	400	450	500	550	600
φ46	65	○	○	○	○	○	○	○	○	○	○	–	–
φ55	75	○	○	○	○	○	○	○	○	◎	◎	–	–
φ60	90	○	○	○	○	○	○	○	○	◎	◎	◎	◎

○…U=15 ◎…U=20

TK180 Standard supporter dimensions

Cable/hose maximum outer dia. d	A	Dimension B										
		125	150	200	250	300	350	400	450	500	550	600
φ55	75	○	○	○	○	○	○	○	◎	◎	–	–
φ60	90	○	○	○	○	○	○	○	◎	◎	◎	◎
φ80	110	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

○…U=15 ◎…U=20

H250 Standard supporter dimensions

Standard bending radius R	Dimension B					
	350	400	450	500	550	600
350	○	○	○	○	○	○
450	○	○	○	○	○	○
600	–	○	○	○	○	○
750	–	–	○	○	○	○

U=20

Bigger size of dimension B is also available if required.

Cable/hose maximum outer dia. d	Dimension A
φ60	90
φ80	110
φ110	150
φ110 or more	Please consult Tsubaki

In case of dimension A = 90 or setting Support Roller, reinforce bars are installed alternately with supporters.

5-4 TKS Type

1) The size of frame (dimension B) may be chosen from the reference table for each chain size after calculation.

$$D_n = d_n \times 1.1$$
$$B' = Y + D_1 + U + D_2 + \dots + D_n + Y$$
$$B \geq B'$$

d_n : Cable/hose outer diameter
D_n : Calculated diameter
B' : Calculated maximum width
Y : Refer to table 10
U : Refer to table 10
B : Standard frame width.

2) Number of frames and dividers
Frames should be installed at every 2nd pitch.
The most suitable number of dividers = total number of cables/hoses minus 1, but no less than table 11.

■ **Standard frame**

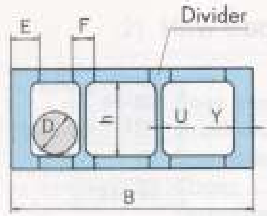


Table 10 Standard frame dimensions

Size	B	h	Y	U	E	F	Max. allowable cable/hose dia. d
TKS070	100	31	10	3	15	13	27
TKS095	150 200	46	12	4	17	14	42

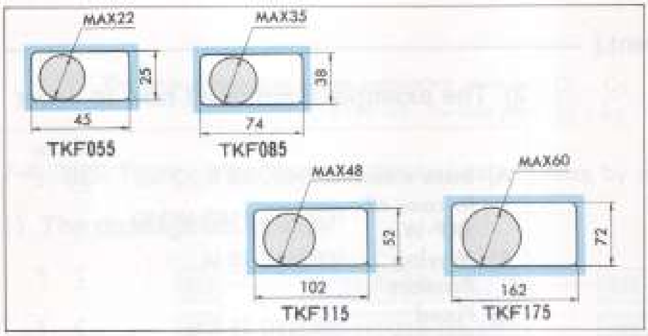
Table 11 The minimum required number of divider

Size	The minimum required number of divider		
	B = 100	B = 150	B = 200
TKS070	0 (5)	1 (8)	2 (12)
TKS095	0 (4)	1 (7)	2 (11)

Note: ( ) shows max. number at one link.

5-5 TKF Type

The supporters are made in one piece, therefore it is important to check the number and outer diameter of cables and hoses.



1) Arrange the cables and hoses in a row, and keeping in mind for some space between them (10 % of cable/hose diameter)
2) Total section area of cables and hoses in the CABLEVEYOR must be less than 60 % of the section area of inside space.

6. Change of mounting side of brackets

The mounting side of brackets for standard is outside. Opposite side of standard is available. Please inform us of your choice when you order.

Type	Moving bracket	Fixed bracket
TK070, 095, 130	○	○
TK180, H250	△	△
TKS070, 095	○	○
TKC340, 470, 640, 850	○ IAU	○ KAU
TKP0130, 0180	○	○
TKP0320-1B, 2B	○	○
TKP0320-3B	○	○
TKP0450-1B	○	○
TKP0450-2B, 3B	⊕	○
TKP0625	⊕	○
TKP0625W, 900W, 1250W	○ IAU	○ KAU
TKF055, 085, 115, 175 (A bracket)	○	○

1. ○: Standard bracket can be used for opposite side.
2. △: Special made bracket can be used for opposite side.
3. ⊕: Standard bracket can be used for opposite side.
(Please refer to the figure.)

4. In case of using supporting roller(s), inside mounting of moving end cannot be used.
5. In case of extra long span type, inside mounting of fixed end cannot be used.

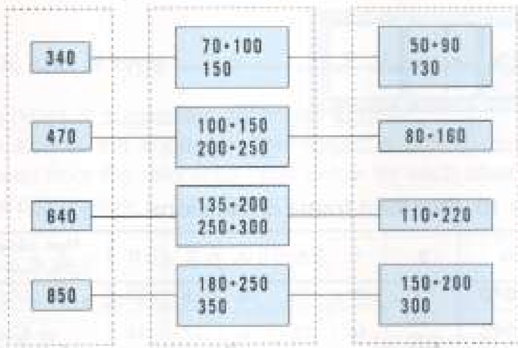
Standard (outside)

Opposite (inside)

7. How to order

7-1 TKC type

1) The description of the type



		Numbers	Unit
A) Base chain	TKC Size R Bending Radius W Inside width	______	Link
B) Moving Bracket	TKC Size IA, IAU, IC, ICC	______	pc.
C) Fixed Bracket	TKC Size KA, KAU, KC, KCC	______	pc.
D) Divider	TKC Size ST	______	pc.

E) Chain formation (The number of the links L + Moving Bracket + Fixed Bracket) × Set

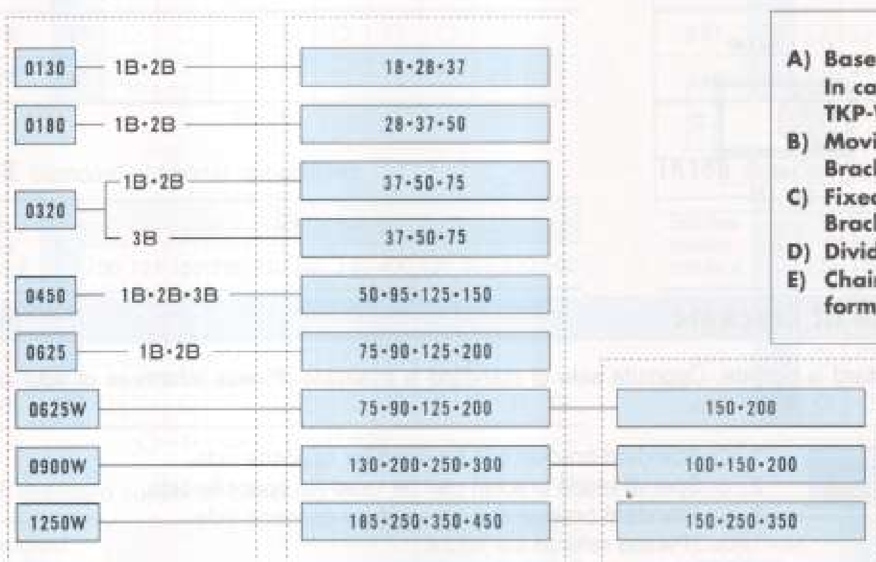
IA IAU IC ICC | KA KAU KC KCC

2) How to fill up the order sheet

		Numbers	Unit
A) Base chain	TKC340 R 150 W 130	50	L
B) Moving Bracket	TKC340 IA	2	P
C) Fixed Bracket	TKC340 KA	2	P
D) Divider	TKC340 ST	48	P
E) Chain formation	(25L + IA + KA) × 2 Sets		

7-2 TKP type (This item has limited sales areas by agreement.)

1) The description of the type



		Numbers	Unit
A) Base chain	TKP Size R Bending radius W Inside width·Color*	______	Pitch
B) Moving Bracket	TKP Size Moving Bracket	______	pc.
C) Fixed Bracket	TKP Size Fixed Bracket	______	pc.
D) Divider	TKP Size ST	______	pc.

KA KB KC | IA IB IC

Fixed Bracket | Moving Bracket

Each size of cableveyor has their own size bracket.
Please see the sketch of each item, in detail.

E) Chain formation (The number of links L + Moving bracket + Fixed bracket) × Set

* The sign of the color

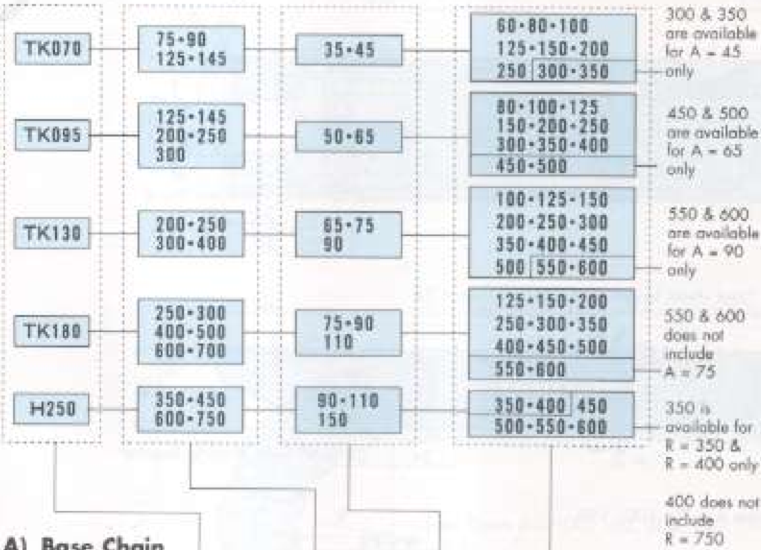
- Black (No marks)
- Grey (CG)
- Ivory (CI)
- Light Green (CL)

2) The example mentioned how to order

		Numbers	Unit
A) Base chain	TKP0450 2B R 50	30	L
In case of TKP-W	TKP1250 R185 W350		
B) Moving Bracket	TKP0450 2B IA	2	P
C) Fixed Bracket	TKP0450 2B KA	2	P
D) Divider	TKP0450 2B ST		
E) Chain formation	(15L + IA + KA) × 2 Sets		

7-3 TK·H Type

1) The description of type



A) Base Chain
TK (H) Size R Bending Radius

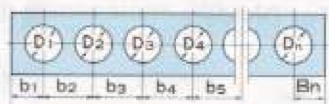
B) Brackets (KG)
TK (H) Size KG

C) Supporter (SPT)
TK (H) Size SPT Dimension A × Dimension B Split type or One piece type

Split type: BUN
One piece type: (Blank)

D) Chain formation (The number of links L + Brackets KG) × Set

E) The hole dimension of the supporter Hole dia. D_1 , D_2 , D_3 , D_4
(From left) The hole pitch b_1 , b_2 , b_3 , b_4 , b_5



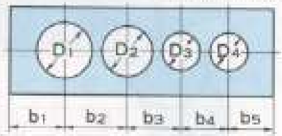
2) How to fill up the order sheet

		Number	Unit
A) Base chain	TK070 R 145	70	L
B) Brackets	TK070 KG	4	P
C) Supporter	TK070 SPT 45 × 100 BUN	34	P
D) Chain formation	(35L + Brackets) × 2 Sets		

E) The hole dimension of the supporter

Hole dia.	D_1 21	D_2 19	D_3 14	D_4 14	
The hole pitch	20.5 b_1	24 b_2	20.5 b_3	18 b_4	17 b_5

The hole dia. to be 21, 19, 14, 14 from the left, The hole pitch to be 20.5, 24, 20.5, 18, 17 from the left.

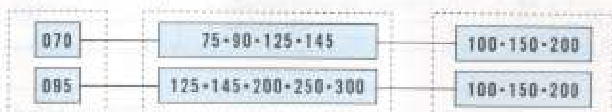


Note: "From left" means the status from A–A cut direction. (see P.35–P.37)

F) Others Please order the support roller independently, if you need it.
TK Size Support roller Quantity: S

7-4 TKS Type (This item has limited sales areas by agreement.)

1) The description of type



		Numbers	Unit
A) Base chain	TKS Size R Bending radius	______	Link
B) Frame	TKS Size SPT The frame width	______	pc.
C) Divider	TKS Size ST	______	pc.
D) Brackets	TKS Size KG	______	pc.

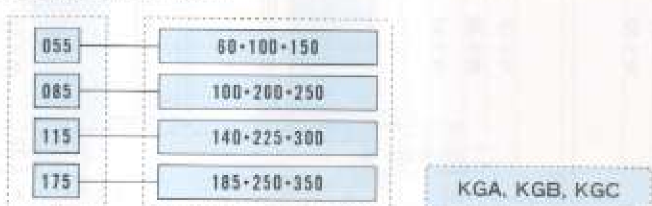
E) Chain formation (Number of links L + Brackets KG) × Set

2) How to fill up the order sheet

		Number	Unit
A) Base chain	TKS070 R 75	70	L
B) Frame	TKS070 SPT 150	34	P
C) Divider	TKS070 ST	102	P
D) Brackets	TKS070 KG	4	P
E) Chain formation	(35L + Brackets) × 2 Sets 3 pieces of Divider at every 2nd link		

7-5 TKF Type This item has limited sales areas by agreement.

1) The description of type



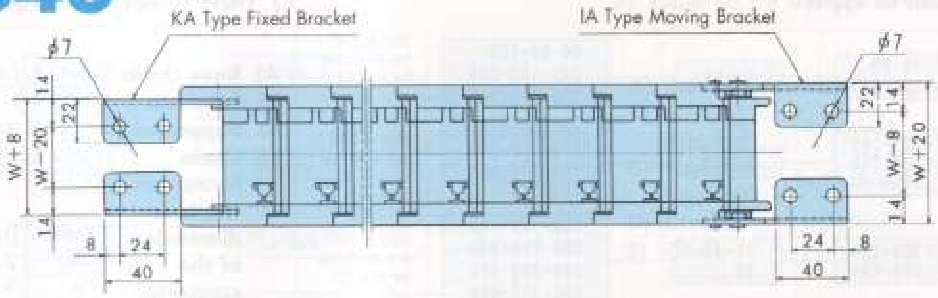
		Numbers	Unit
A) Base chain	TKF Size R Bending radius	______	Link
B) Bracket	TKF Size KG The kind of brackets	______	pc.

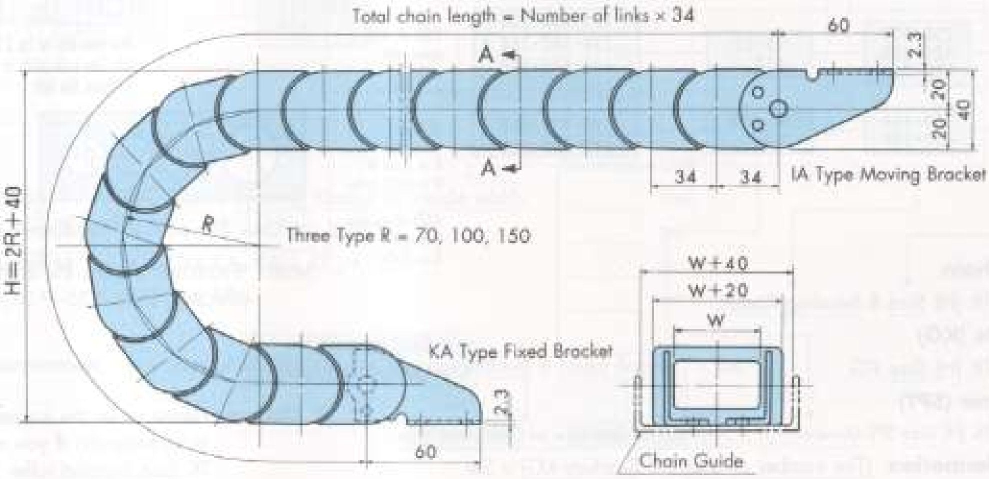
2) Hot to fill up the order sheet

		Number	Unit
A) Base chain	TKF085 R 100	120	L
B) Bracket	TKF085 KGA	1	P
〃	085 KGB	1	P

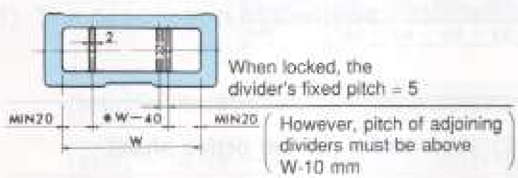
TKC TYPE DIMENSIONS

TKC340



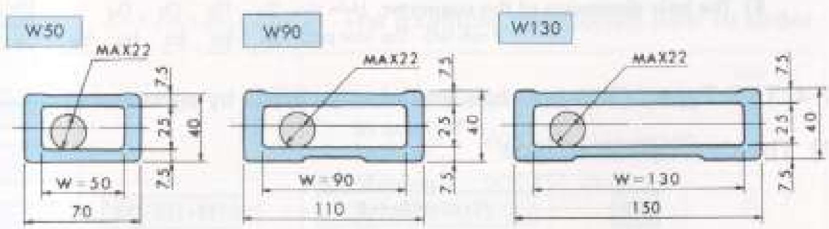


■ Movable Range For Dividers



* Freedom of movement within W-40

■ Internal Width Dimensions (W) A–A Cross Section

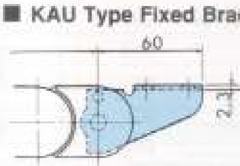


Installation Brackets

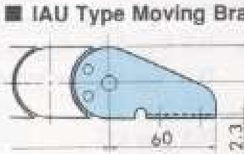
AU Type (Inside wall brackets)

KAU and IAU type brackets are installed on the inside wall of the chain so that the width is the same as KA and IA types.

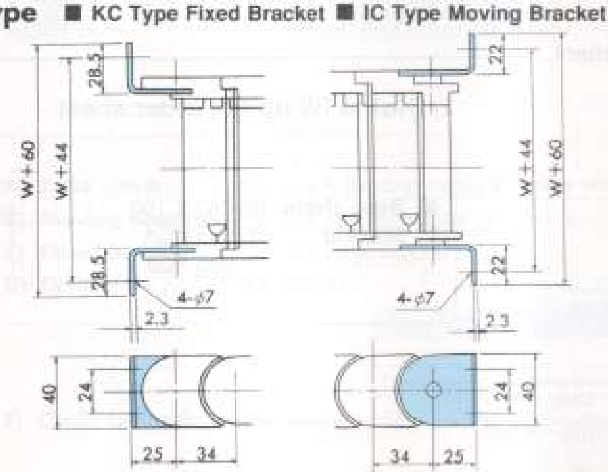
■ KAU Type Fixed Bracket



■ IAU Type Moving Bracket

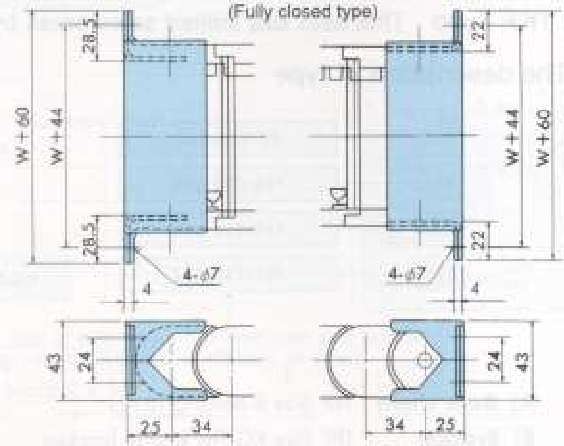


C Type ■ KC Type Fixed Bracket ■ IC Type Moving Bracket

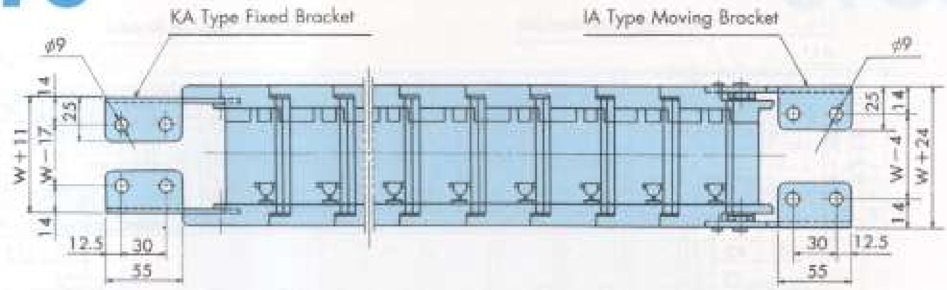


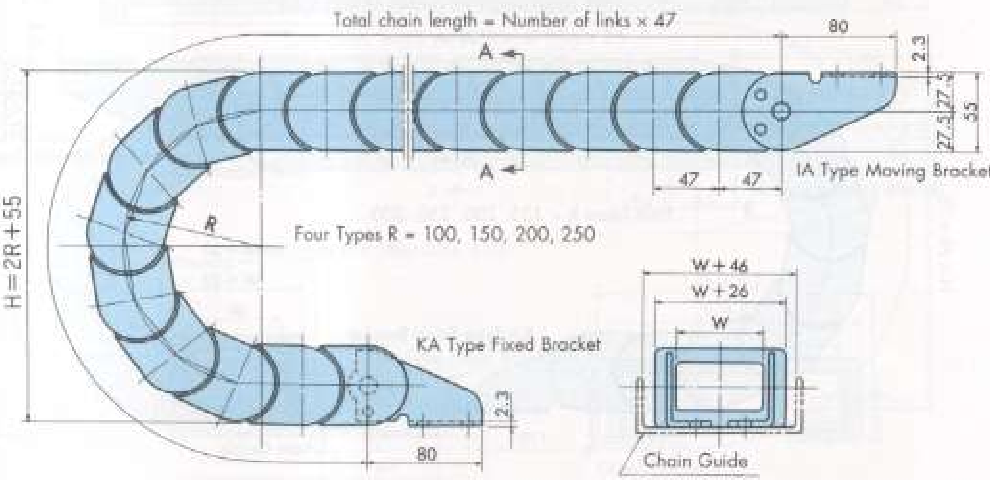
CC Type ■ KCC Type Fixed Bracket ■ ICC Type Moving Bracket

(Fully closed type)

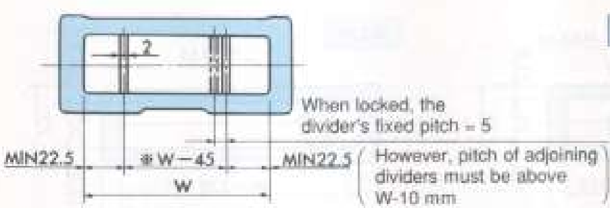


TKC470



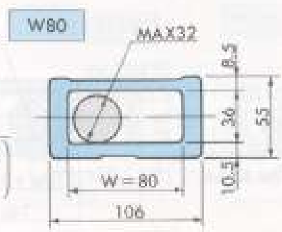


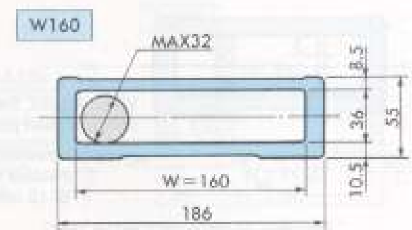
■ Movable Range For Dividers



* Freedom of movement within W-45

■ Internal Width Dimensions (W) A–A Cross Section



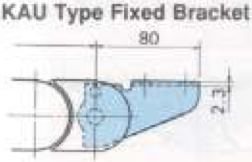


Installation Brackets

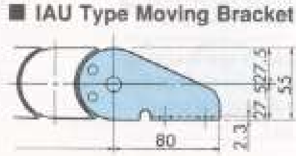
AU Type (Inside wall brackets)

KAU and IAU type brackets are installed on the inside wall of the chain so that the width is the same as KA and IA types.

■ KAU Type Fixed Bracket

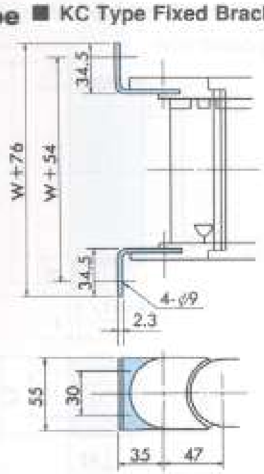


■ IAU Type Moving Bracket

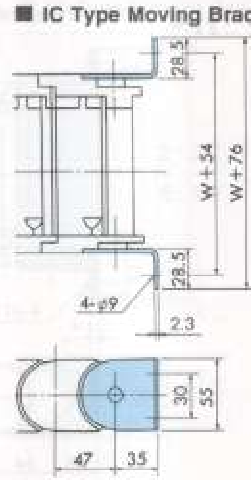


C Type

■ KC Type Fixed Bracket



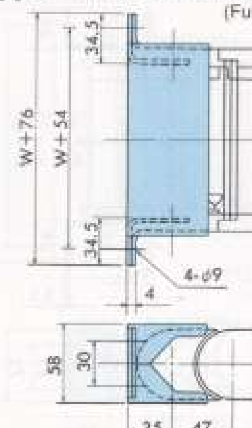
■ IC Type Moving Bracket



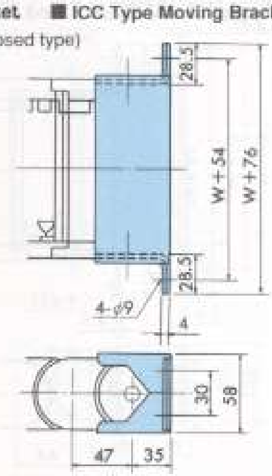
CC Type

■ KCC Type Fixed Bracket

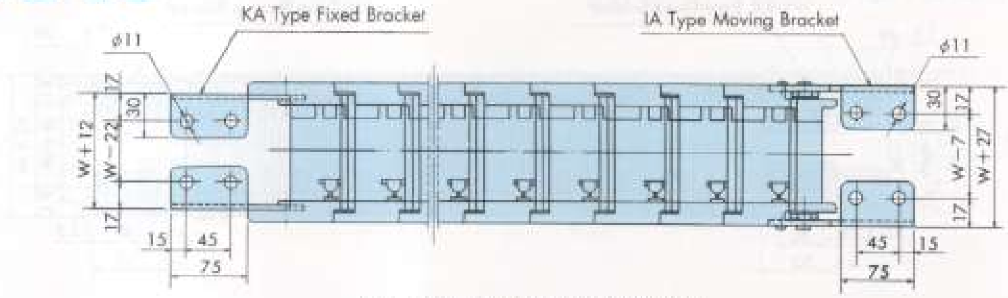
(Fully closed type)

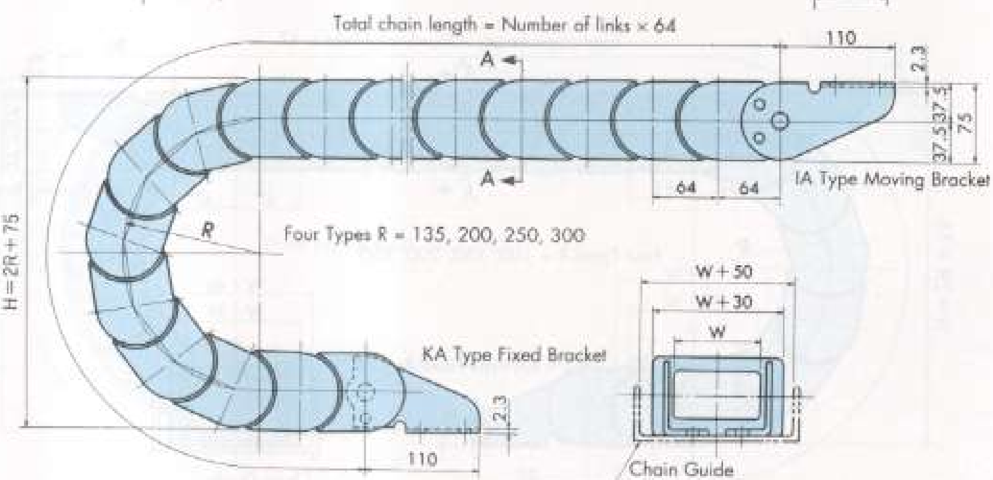


■ ICC Type Moving Bracket

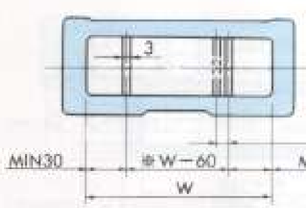


TKC640





■ Movable Range For Dividers



When locked, the divider's fixed pitch = 5

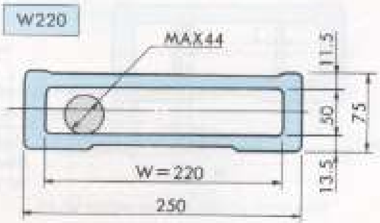
However, pitch of adjoining dividers must be above W-15 mm

* Freedom of movement within W-60

■ Internal Width Dimensions (W) A–A Cross Section

W110

W220

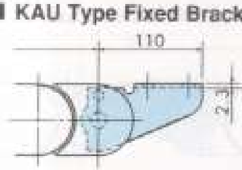


Installation Brackets

AU Type (Inside wall brackets)

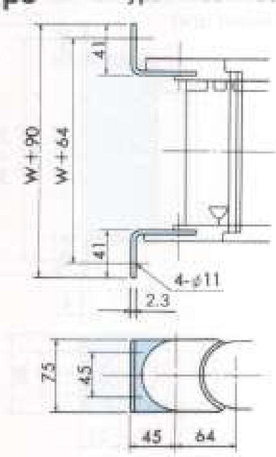
KAU and IAU type brackets are installed on the inside wall of the chain so that the width is the same as KA and IA types.

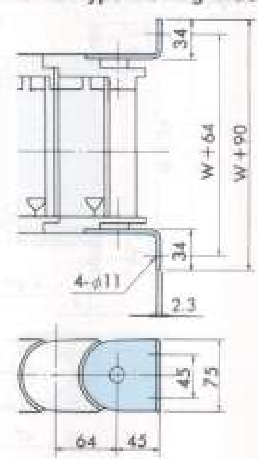
■ **KAU Type Fixed Bracket**



■ **IAU Type Moving Bracket**

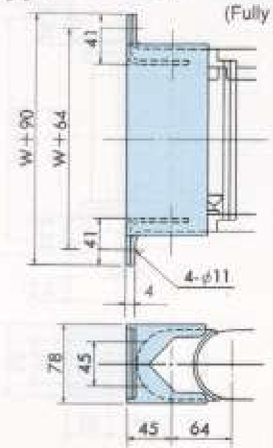
C Type ■ KC Type Fixed Bracket ■ IC Type Moving Bracket

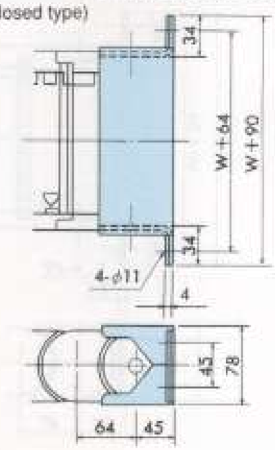




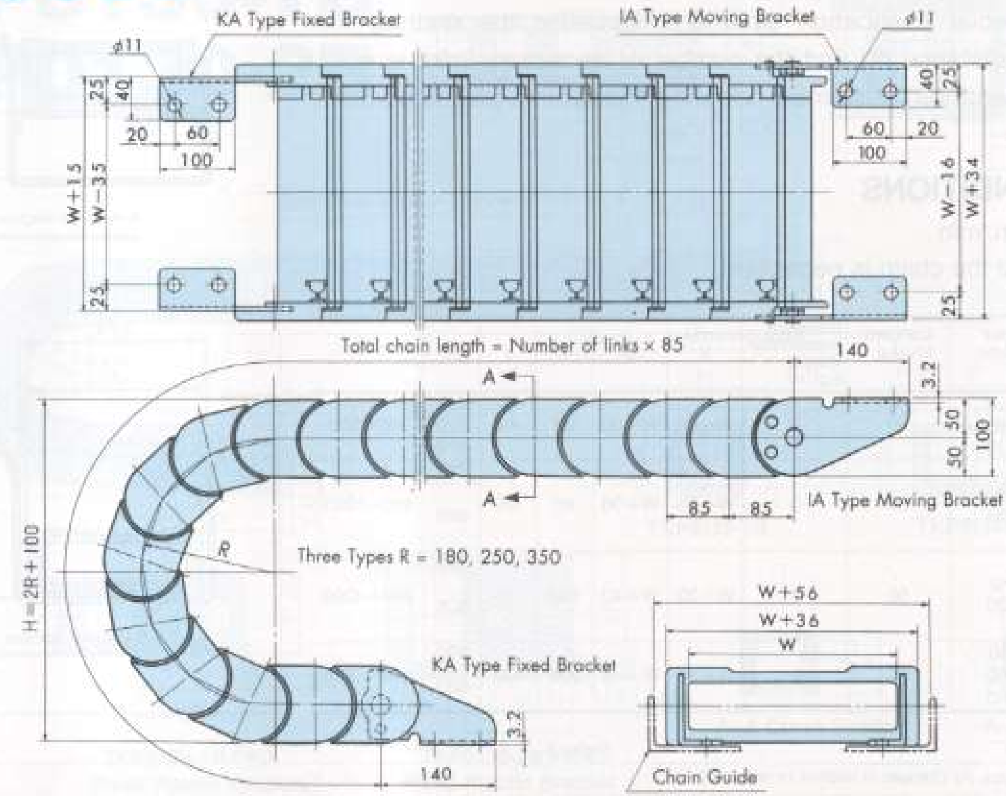
CC Type ■ KCC Type Fixed Bracket ■ ICC Type Moving Bracket

(Fully closed type)

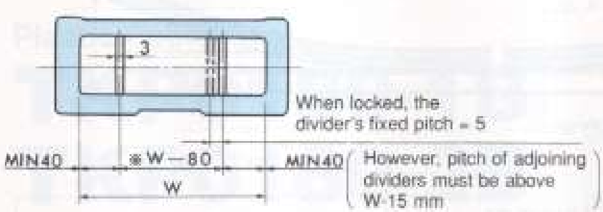




TKC850

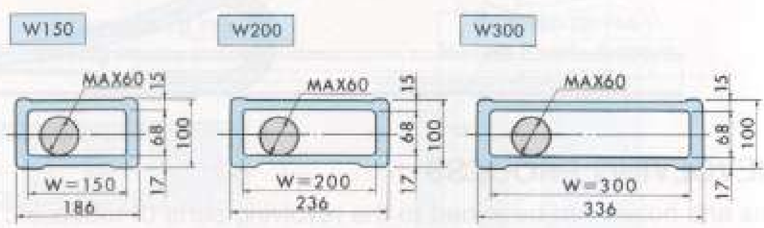


■ Movable Range For Dividers



* Freedom of movement within W-80

■ Internal Width Dimensions A–A Cross Section

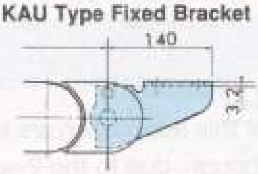


Installation Brackets

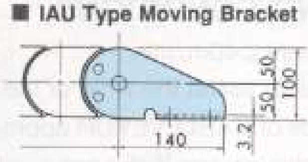
AU Type (Inside wall brackets)

KAU and IAU type brackets are installed on the inside wall of the chain so that the width is the same as KA and IA types.

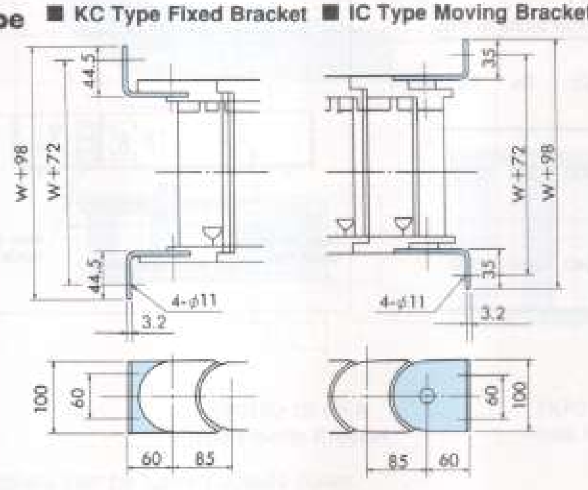
■ KAU Type Fixed Bracket



■ IAU Type Moving Bracket

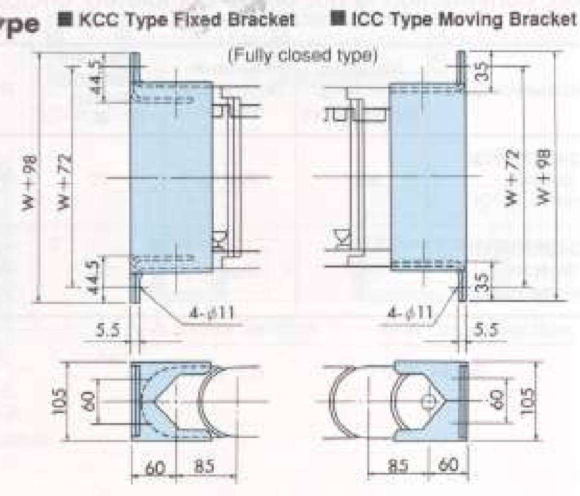


C Type ■ KC Type Fixed Bracket ■ IC Type Moving Bracket



CC Type ■ KCC Type Fixed Bracket ■ ICC Type Moving Bracket

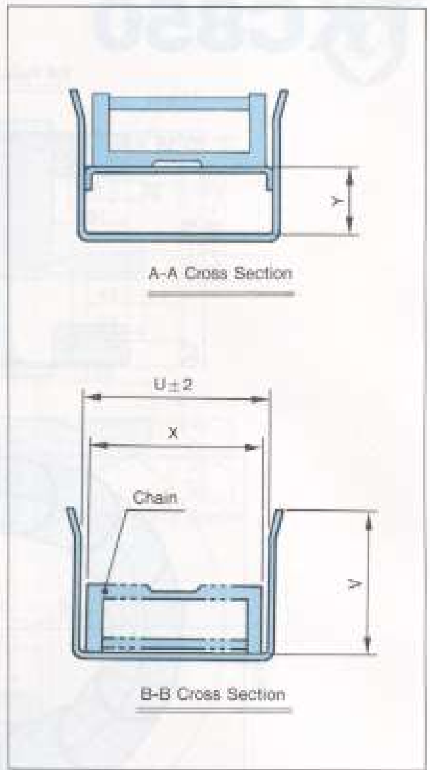
(Fully closed type)



TKC SPECIAL DIMENSION

1) EXTRA LONG SPAN:

For use when the stroke exceeds the capability graph's freespan length, in addition to other special application situations. Because the method for calculating the extra distance (K) and the number of necessary links is non-standard, we recommend that customers adopting this system please contact us.

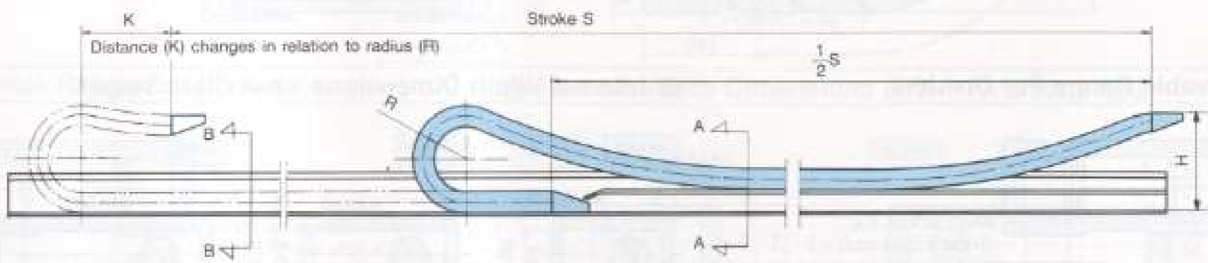


OPERATING CONDITIONS

1. Moving speed≦40m/min
2. A guide rail to assist the chain is necessary.

Dimensions in mm

Size	Standard Bending Radius R	Inner Width W	Longest Stroke S(m)	Maximum Supportable Weight (kgf/m)	X	U	V	Y	H'	K
TKC340	70 100 150	50 90 130	50	2	W+20	W+30	80	40	210 270 370	110~500
TKC470	100 150 200 250	80 160	50	3	W+26	W+36	110	55	285 385	150~1200
TKC640	135 200 250 300	110 220	50	4	W+30	W+40	150	75	375 505	200~1200
TKC850	180 250 350	150 200 300	50	6	W+36	W+46	200	100	490 630	260~1200

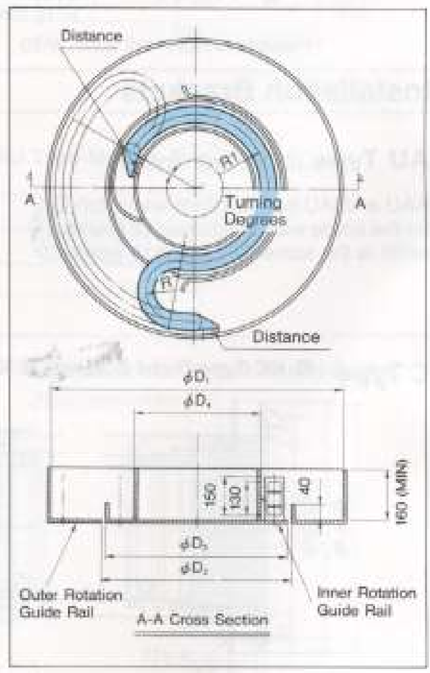


2) REVOLVING PROCESS

Cables and hoses can be joined to the revolving parts of robots,etc. However, because the revolving process of TKC CABLEVEYOR is non-standard, we recommend that customers adopting this system please contact us.

OPERATING CONDITIONS

1. Moving speed≦40m/min
2. A guide rail to assist the whirl of the chain is necessary.
3. The 2 kinds of CABLEVEYOR appropriate for this application are listed below.
4. Opening/closing arm locks are available although, due to the 2-way bending action, construction is not of the completely enclosed type.



Dimensions in mm

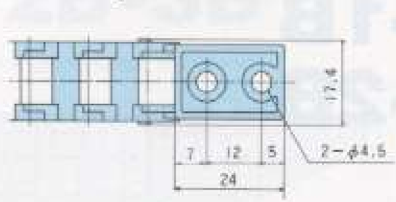
TKC Cableveyor Code	Maximum Revolving Degree	Maximum Supportable Weight	Standard Bending Radius R	R_1	D_1	D_2	D_3	D_4
TKC340R70W130 Special (Reverse R170)	360°	6kgf/m	70	170	690	400	394	290
TKC340R70W130 Special (Reverse R140)	360°	6kgf/m	70	140	630	340	334	230

TKP TYPE DIMENSIONS

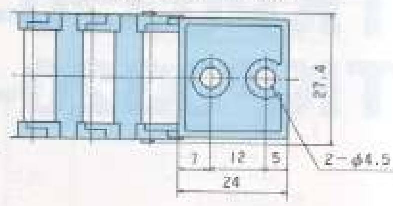
Plastic Cableveyor

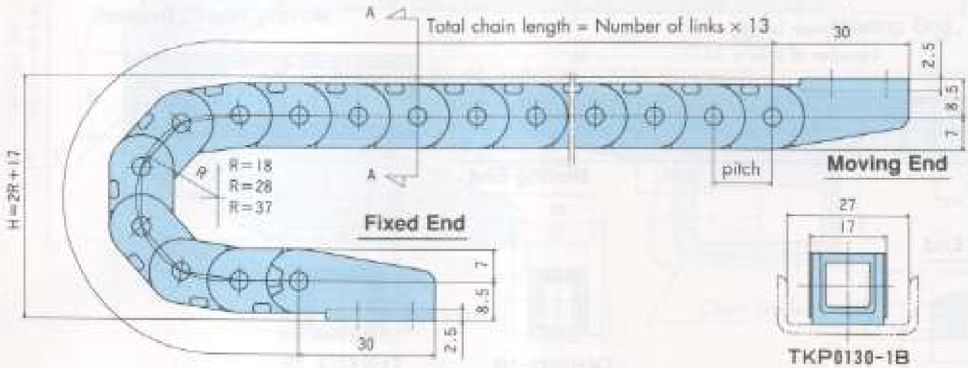
TKP0130-1B
TKP0130-2B

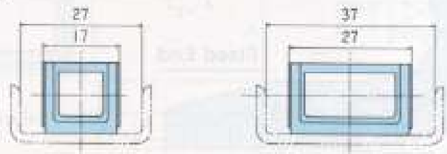
TKP0130-1B PIA
Moving Plastic Bracket



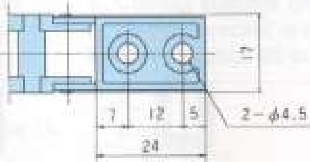
TKP0130-2B PIA
Moving Plastic Bracket



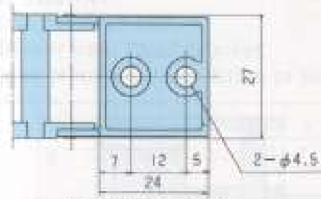




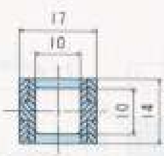
TKP0130-1B
TKP0130-2B



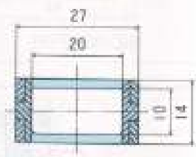
TKP0130-1B PKA
Fixed Plastic Bracket



TKP0130-2B PKA
Fixed Plastic Bracket



A–A Cross Section



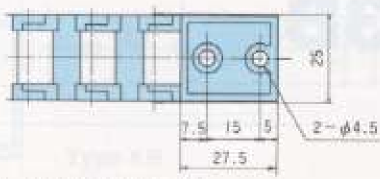
A–A Cross Section

• Brackets can be turned upside down.

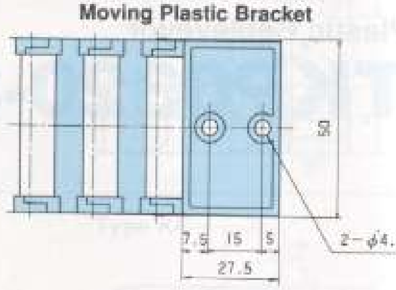
Plastic Cableveyor

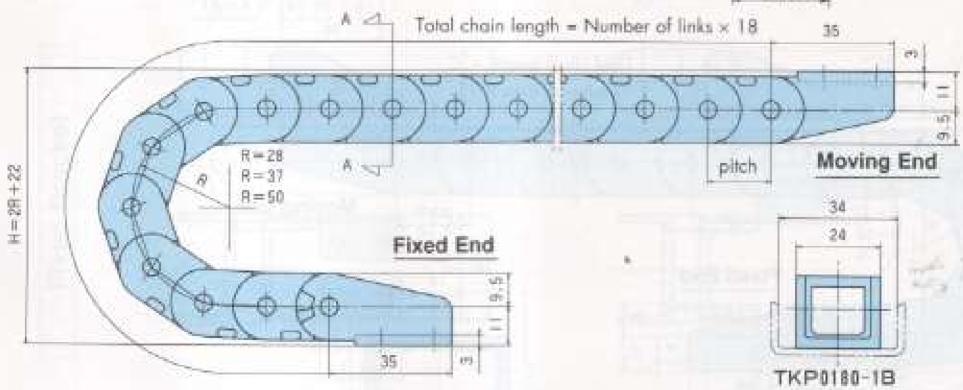
TKP0180-1B
TKP0180-2B

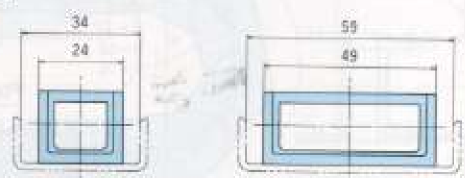
TKP0180-1B PIA
Moving Plastic Bracket



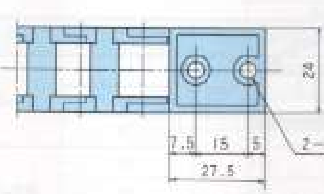
TKP0180-2B PIA
Moving Plastic Bracket



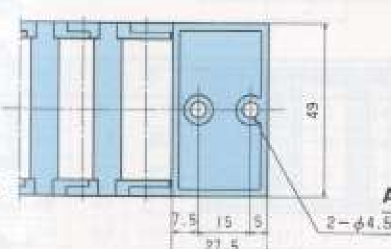




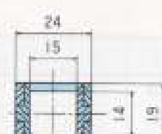
TKP0180-1B
TKP0180-2B



TKP0180-1B PKA
Fixed Plastic Bracket



TKP0180-2B PKA
Fixed Plastic Bracket



A–A Cross Section
TKP0180-1B

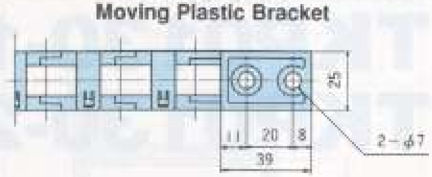
A–A Cross Section
TKP0180-2B

• Brackets can be turned upside down.

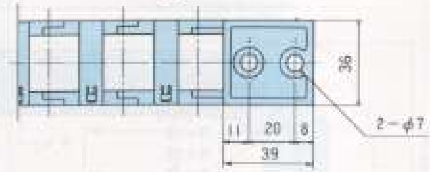
Plastic Cableveyor

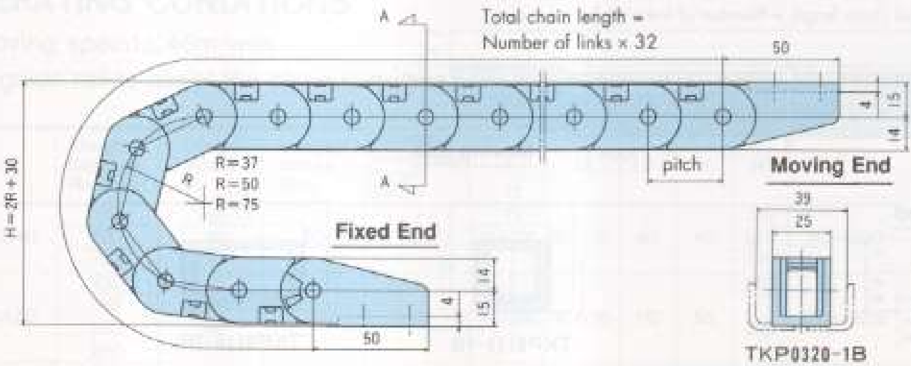
TKP0320-1B
TKP0320-2B

TKP0320-1B PIA
Moving Plastic Bracket

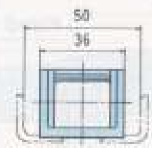


TKP0320-2B PIA
Moving Plastic Bracket

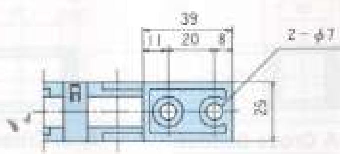




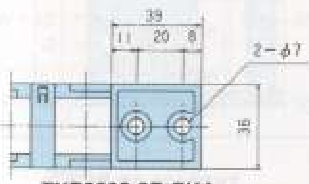
TKP0320-1B



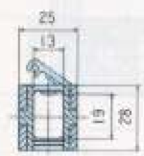
TKP0320-2B



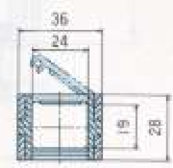
TKP0320-1B PKA
Fixed Plastic Bracket



TKP0320-2B PKA
Fixed Plastic Bracket



A-A Cross Section
TKP0320-1B



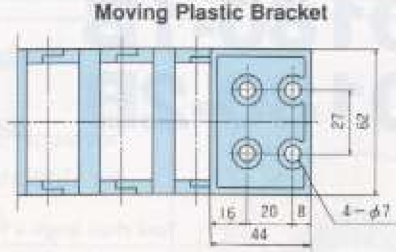
A-A Cross Section
TKP0320-2B

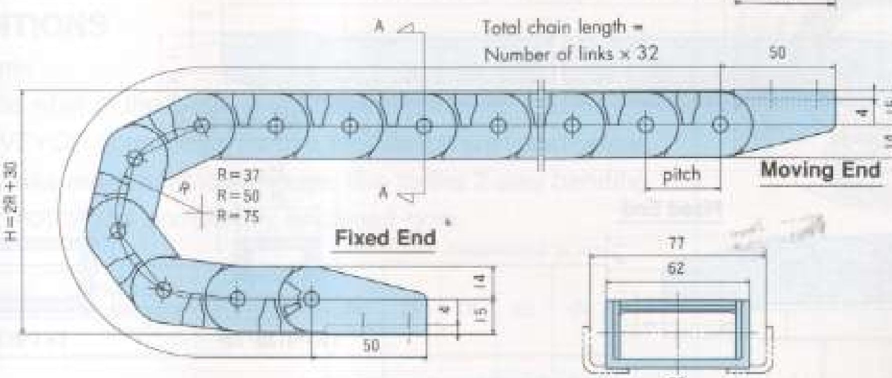
- Brackets can be turned upside down.

Plastic Cableveyor

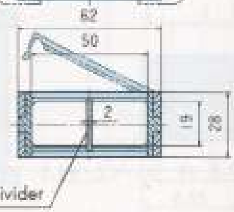
TKP0320-3B

TKP0320-3B PIA
Moving Plastic Bracket





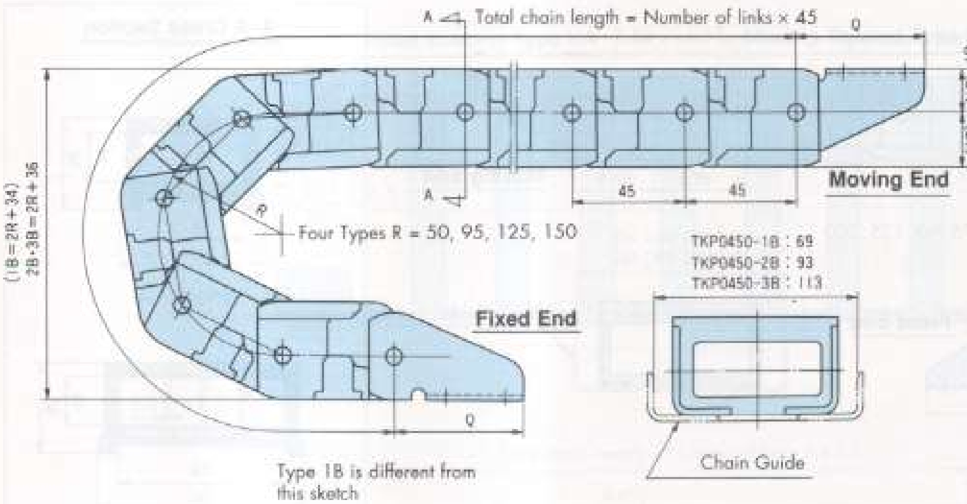
TKP0320-3B PKA
Fixed Plastic Bracket

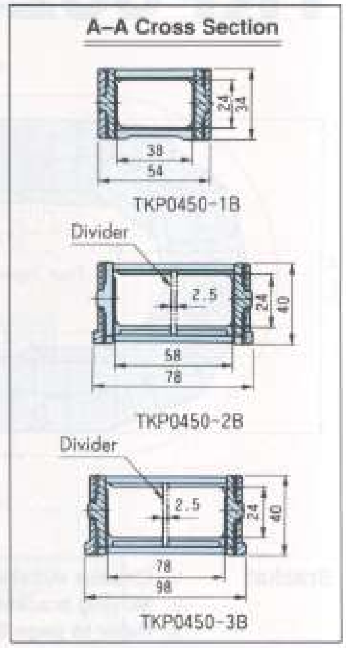


A-A Cross Section

- Brackets can be turned upside down.

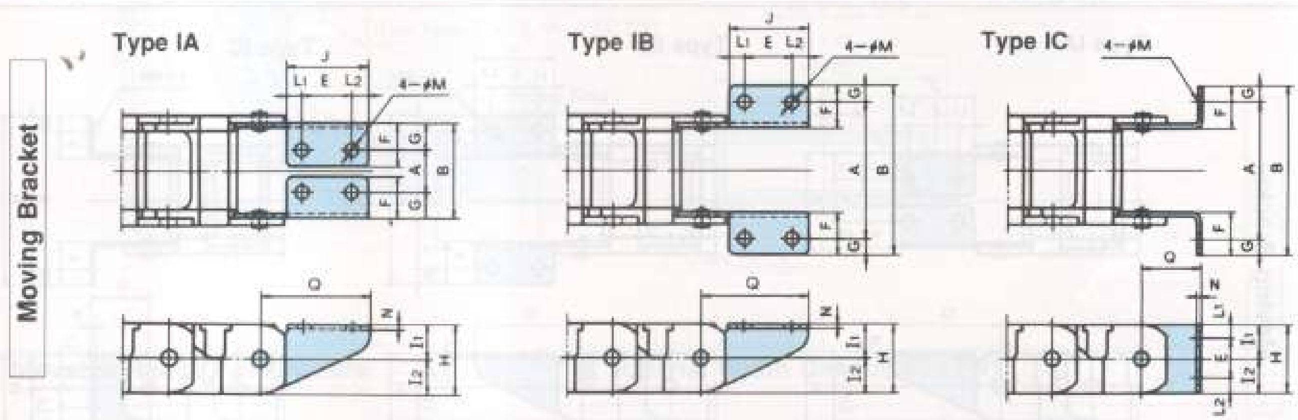
TKP0450-1B•2B•3B

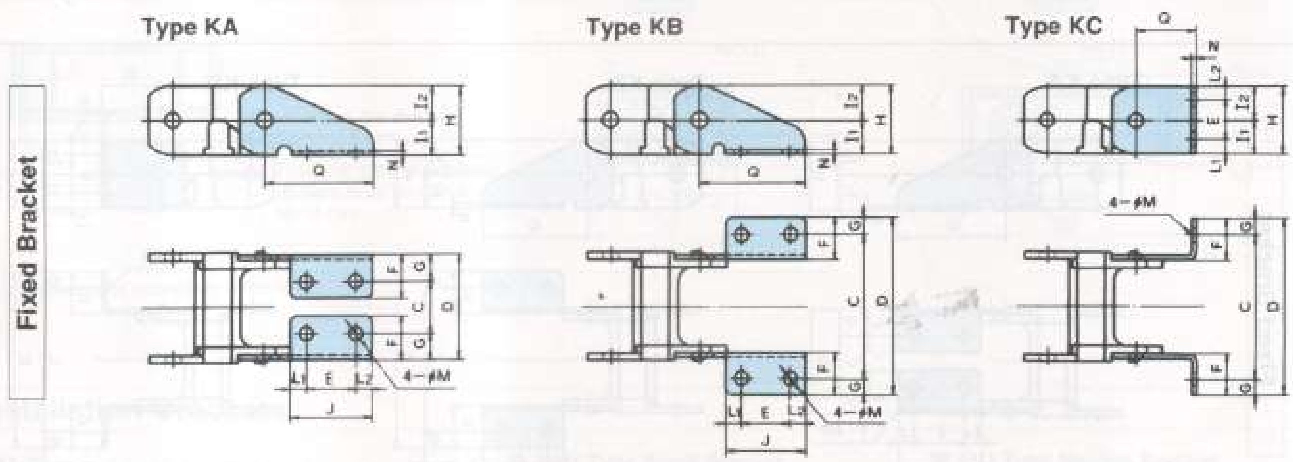




Bracket

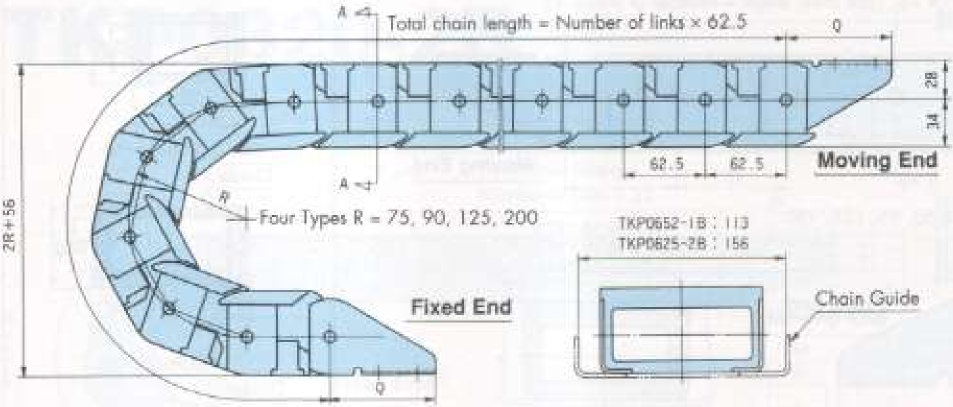
1. Choose suitable bracket for each end.
2. Moving bracket is different from Fixed bracket.
3. Refer to page 20 in case of reverse installation of brackets.

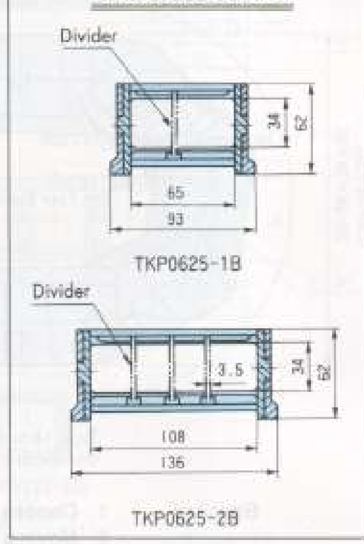




Cableveyor No.	Moving Bracket	Fixed Bracket	A	B	C	D	E	F	G	H	I_1	I_2	J	Q	L_1	L_2	M	N
TKP0450-1B	IA	KA	20	46	25	51	24	21	13	34	17	17	40	53	8	8	7	2
	IB	KB	68	84	73	89	24	21	8	34	17	17	40	53	8	8	7	2
	IC	KC	68	84	73	89	20	21	8	34	17	17	—	30	7	7	7	2
TKP0450-2B	IA	KA	40	66	45	71	24	21	13	40	18	22	40	53	8	8	7	2
	IB	KB	88	104	93	109	24	21	8	40	18	22	40	53	8	8	7	2
	IC	KC	88	104	93	109	20	21	8	40	18	22	—	30	8	12	7	2
TKP0450-3B	IA	KA	60	86	65	91	24	21	13	40	18	22	40	53	8	8	7	2
	IB	KB	108	124	113	129	24	21	8	40	18	22	40	53	8	8	7	2
	IC	KC	108	124	113	129	20	21	8	40	18	22	—	30	8	12	7	2

TKP0625-1B•2B



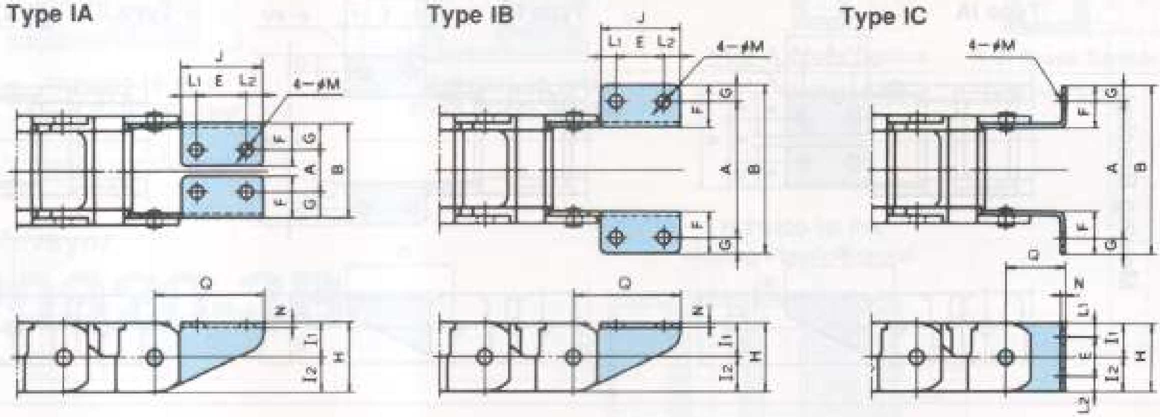


Bracket

1. Choose suitable bracket for each end.
2. Moving bracket is different from Fixed bracket.
3. Refer to page 20 in case of reverse installation of brackets.

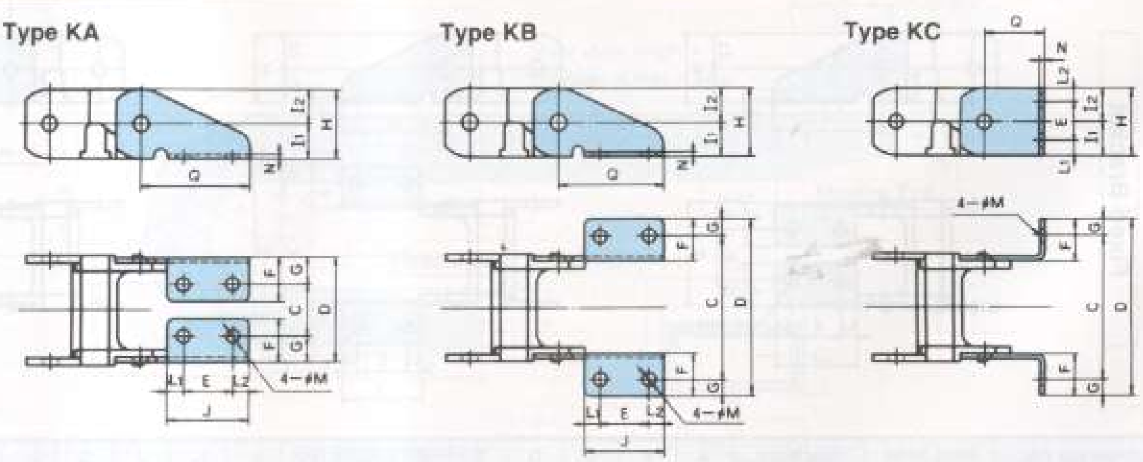
Moving Bracket

Type IA   Type IB   Type IC



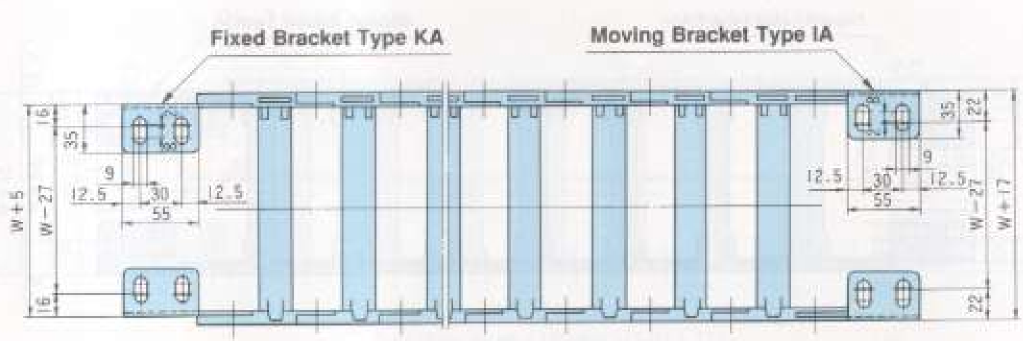
Fixed Bracket

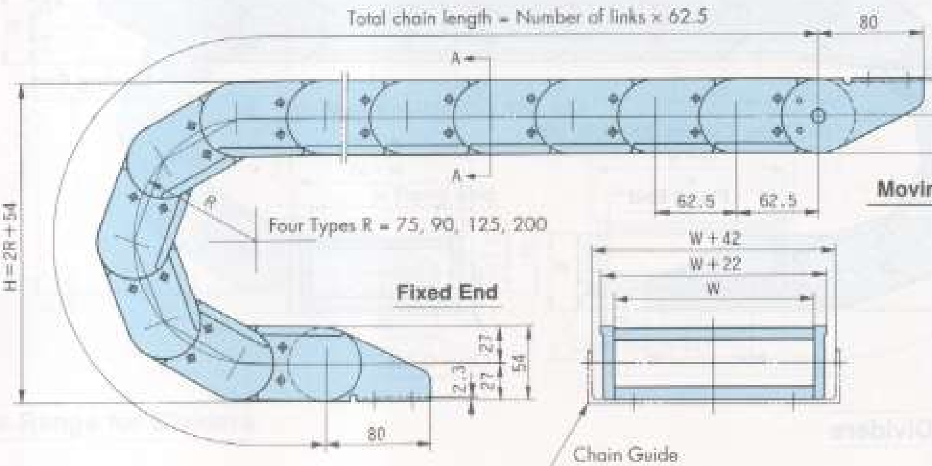
Type KA   Type KB   Type KC



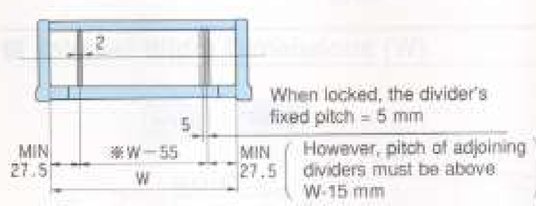
Cableveyor No.	Moving Bracket	Fixed Bracket	A	B	C	D	E	F	G	H	l_1	l_2	J	Q	L_1	L_2	M	N
TKP0625-1B	IA	KA	49	75	53	79	30	25	13	62	28	34	55	80	12.5	12.5	9	2.3
	IB	KB	97	121	101	125	30	25	12	62	28	34	55	80	12.5	12.5	9	2.3
	IC	KC	97	121	101	125	30	25	12	62	28	34	—	55	13	19	9	2.3
TKP0625-2B	IA	KA	92	118	96	122	30	25	13	62	28	34	55	80	12.5	12.5	9	2.3
	IB	KB	140	164	144	168	30	25	12	62	28	34	55	80	12.5	12.5	9	2.3
	IC	KC	140	164	144	168	30	25	12	62	28	34	—	55	13	19	9	2.3

TKP0625W



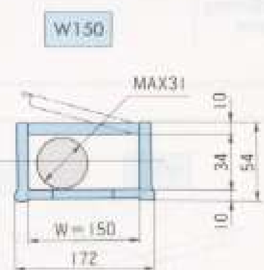


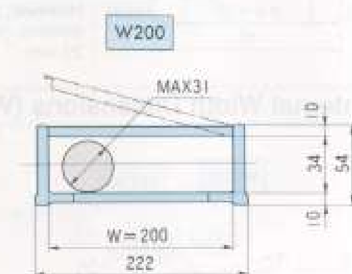
■ Movable Range For Dividers



※ Freedom of movement within W-55

■ Internal Width Dimensions (W)



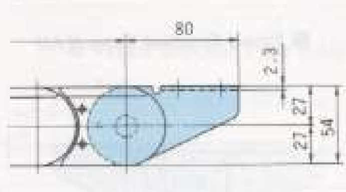


Installation Brackets

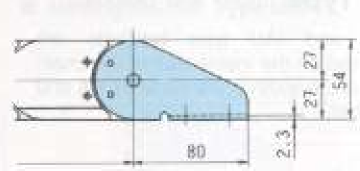
AU Type (Inside wall brackets)

KAU and IAU type brackets are installed on the inside wall of the chain so that the width is the same as KA and IA types.

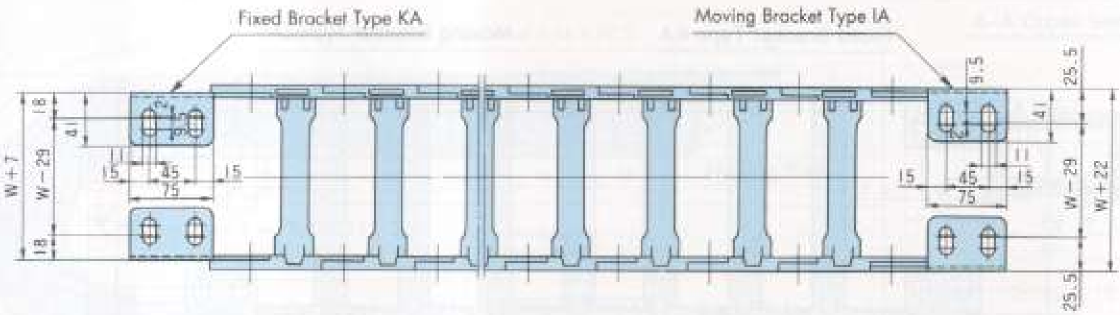
■ KAU Type Fixed Bracket

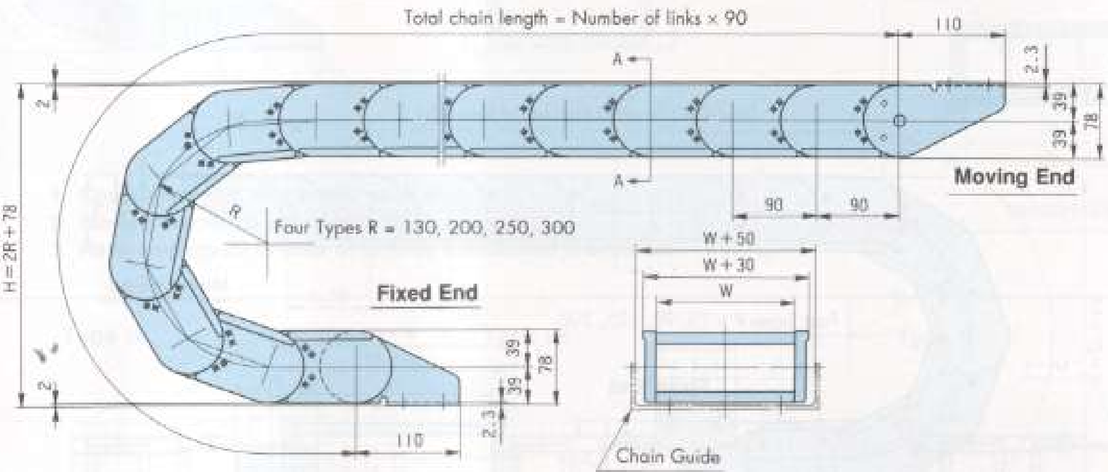


■ IAU Type Moving Bracket

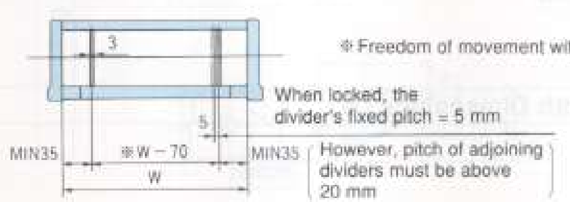


TKP0900W

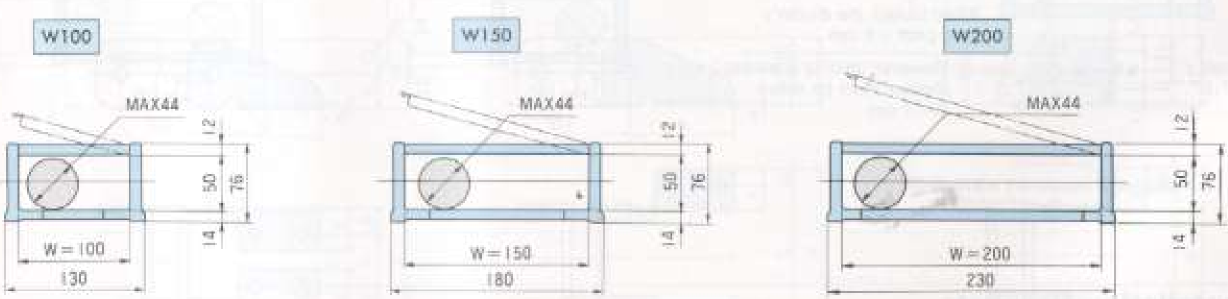




■ Movable Range for Dividers



■ Internal Width Dimensions (W)

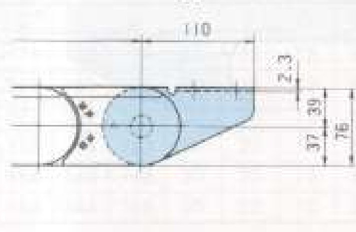


Installation Brackets

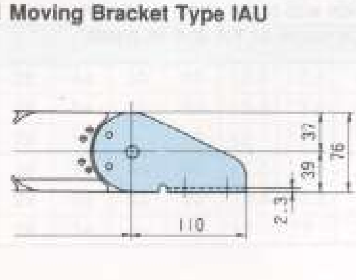
AU Type (Inside wall brackets)

KAU and IAU type brackets are installed on the inside wall of the chain so that the width is the same as KA and IA types.

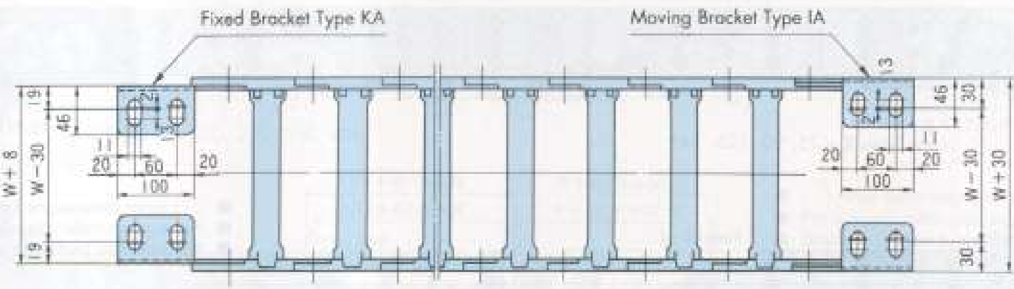
■ Fixed Bracket Type KAU

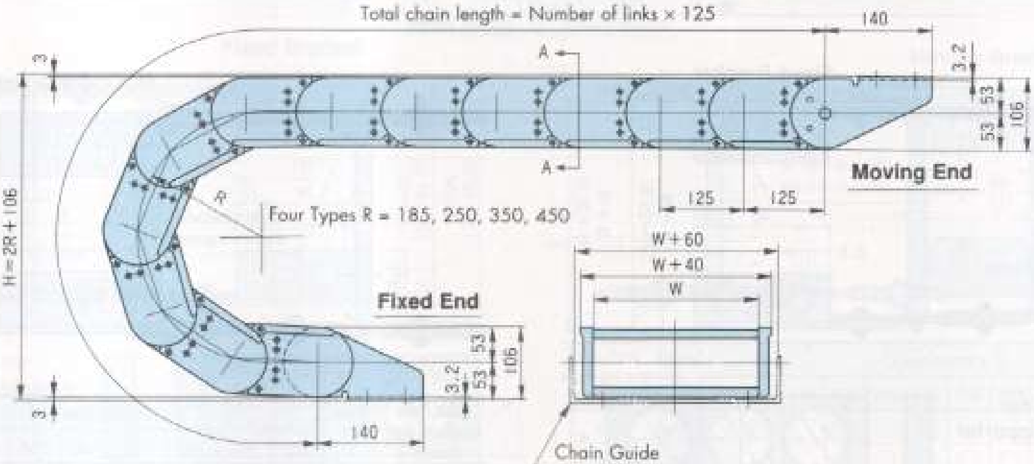


■ Moving Bracket Type IAU

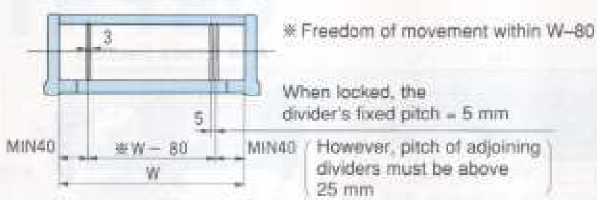


TKP1250W

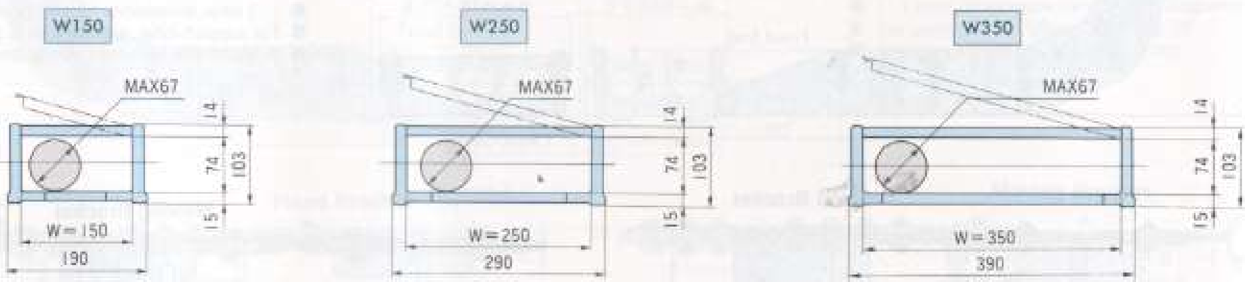




■ Movable Range for Dividers



■ Internal Width Dimensions (W)

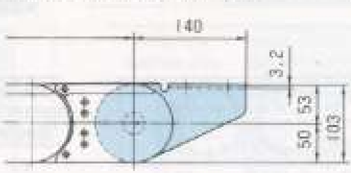


Installation Brackets

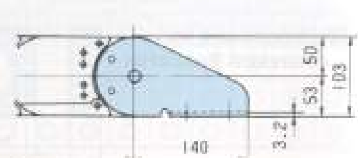
AU Type (Inside wall brackets)

KAU and IAU type brackets are installed on the inside wall of the chain so that the width is the same as KA and IA types.

■ Fixed Bracket Type KAU

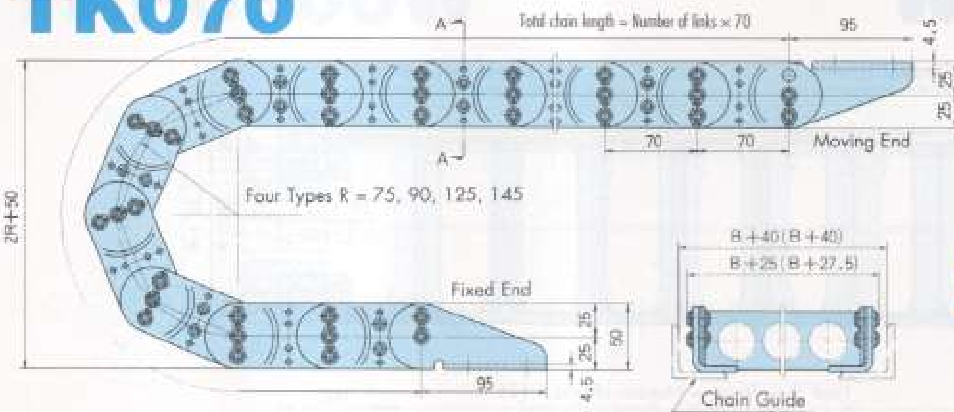


■ Moving Bracket Type IAU

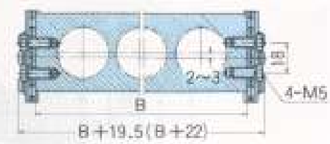


TK TYPE DIMENSIONS

TK070

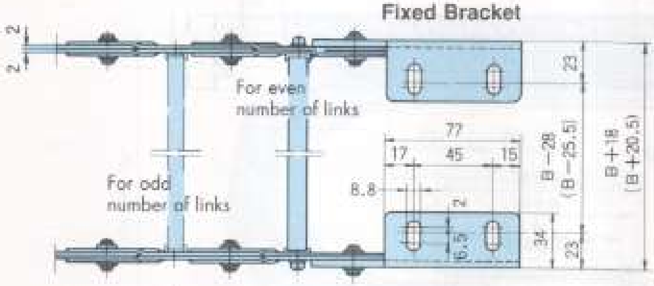


A-A Cross Section

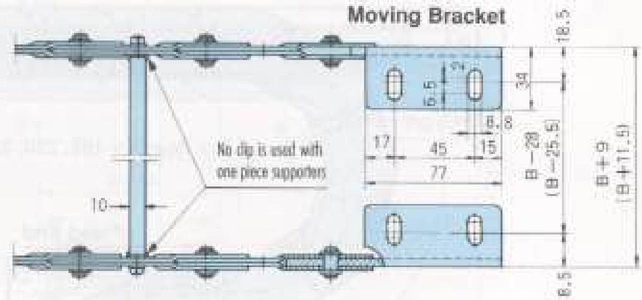


- ( ) inner dimensions for split type supporter
- For support roller, please refer to p.39
- Brackets can be turned upside down.

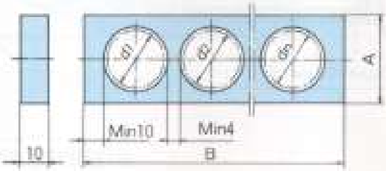
Fixed Bracket



Moving Bracket

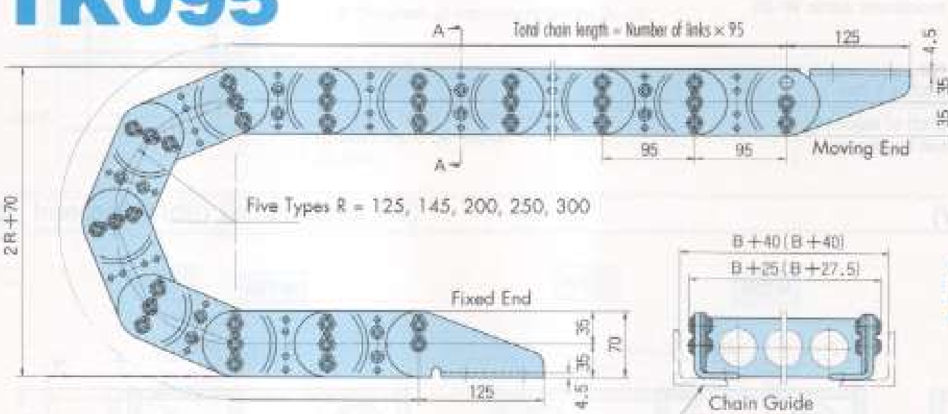


Dimensions for Standard Supporter

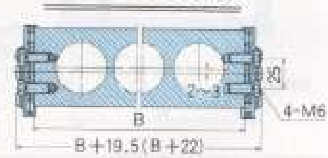


Cable/hose maximum outer diameter d	Dimensions A	Dimensions B 60	80	100	125	150	200	250	300	350
φ18	35	○	○	○	○	○	○	○	—	—
φ27	45	○	○	○	○	○	○	○	○	○

TK095

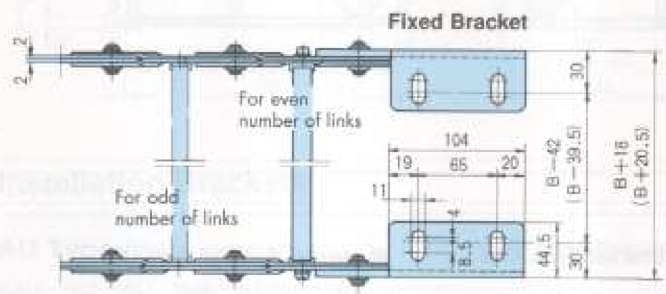


A-A Cross Section

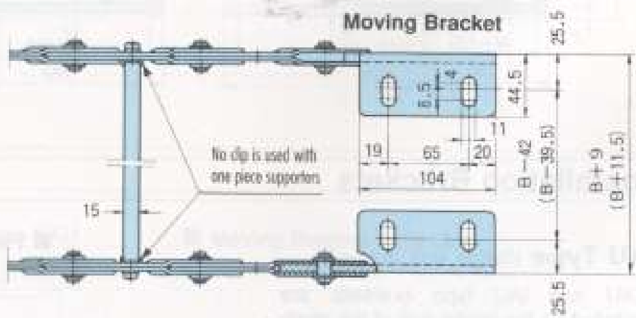


- ( ) inner dimensions for split type supporter
- For support roller, please refer to p.39
- Brackets can be turned upside down.

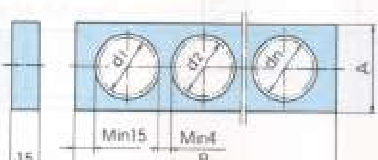
Fixed Bracket



Moving Bracket

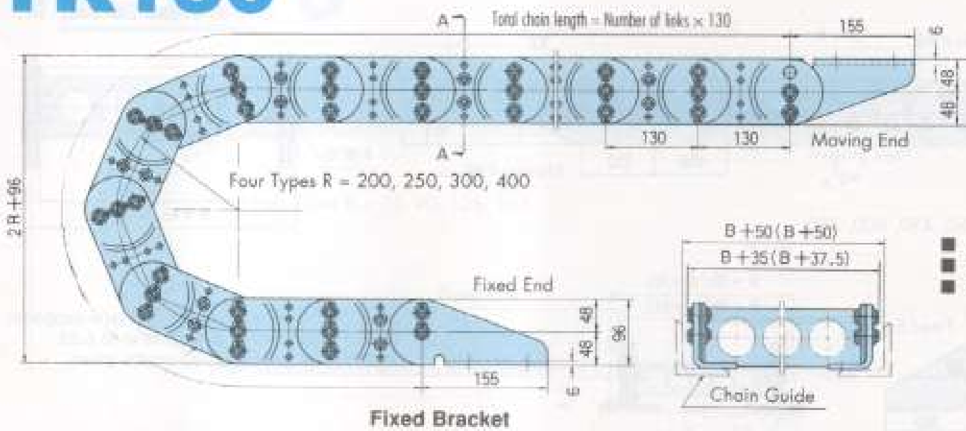


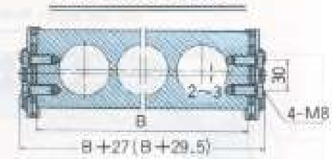
Dimensions for Standard Supporter



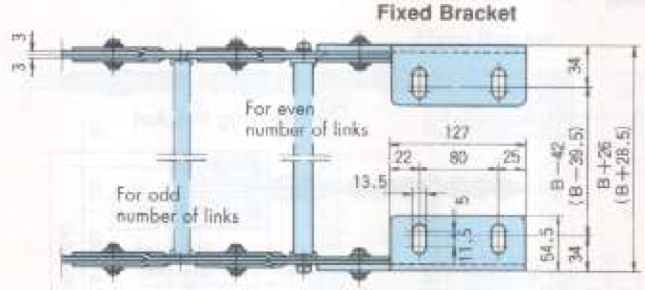
Cable/hose maximum outer diameter d	Dimensions A	Dimensions B 80	100	125	150	200	250	300	350	400	450	500
φ31	50	○	○	○	○	○	○	○	○	○	—	—
φ46	65	○	○	○	○	○	○	○	○	○	○	○

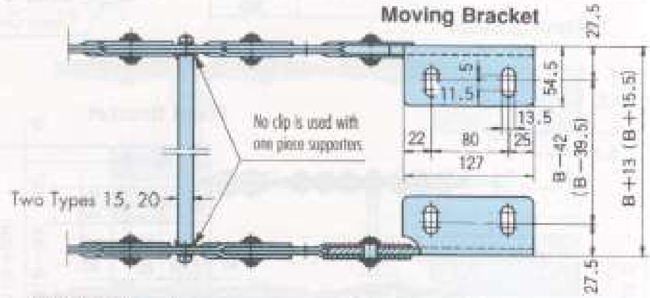
TK130



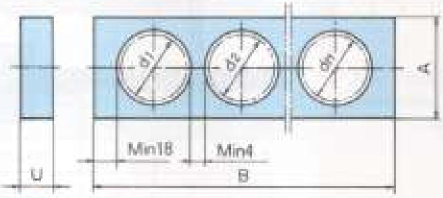


- ( ) inner dimensions for split type supporter
- For support roller, please refer to p.39
- Brackets can be turned upside down.





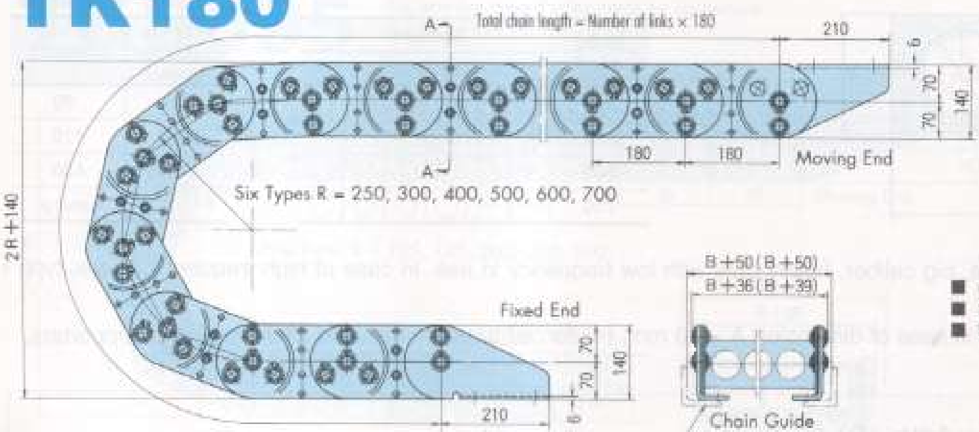
■ Dimensions for Standard Supporter

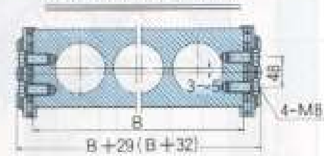


Cable/hose maximum outer diameter d	Dimensions A	Dimensions B											
		100	125	150	200	250	300	350	400	450	500	550	600
φ46	65	○	○	○	○	○	○	○	○	○	○	—	—
φ55	75	○	○	○	○	○	○	○	○	◎	◎	—	—
φ60	90	○	○	○	○	○	○	○	○	◎	◎	◎	◎

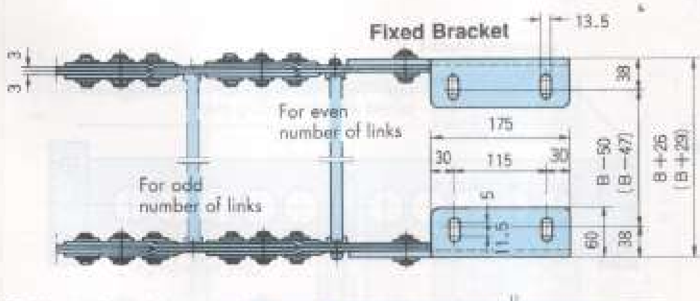
○…U=15 ◎…U=20

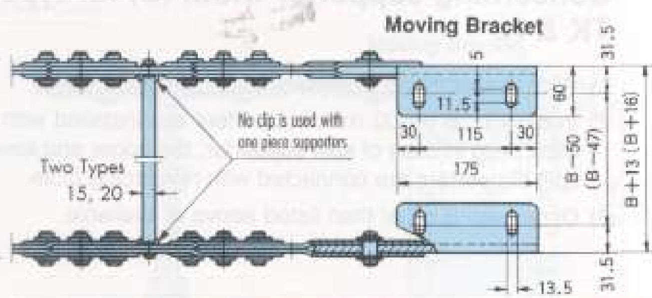
TK180



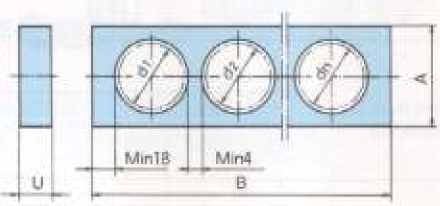


- ( ) inner dimensions for split type supporter
- For support roller, please refer to p.39
- Brackets can be turned upside down.





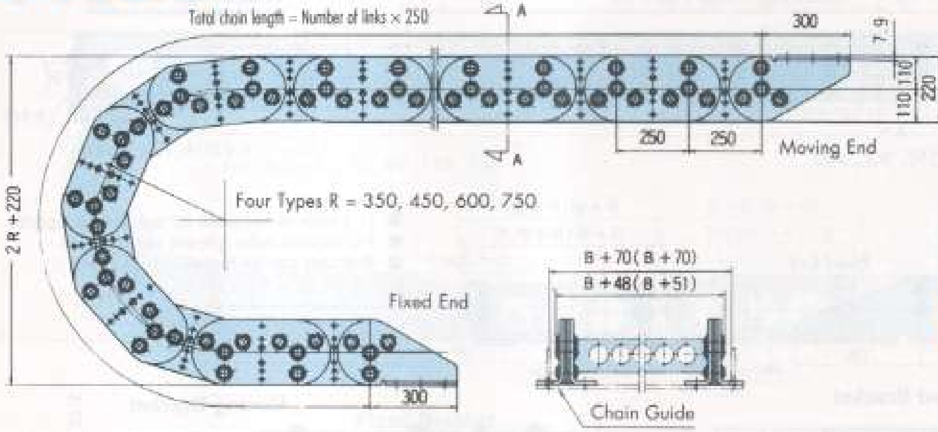
■ Dimensions for Standard Supporter

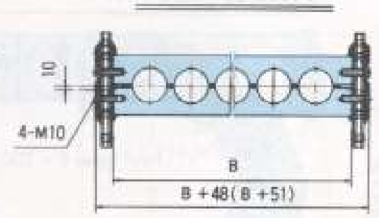


Cable/hose maximum outer diameter d	Dimensions A	Dimensions B										
		125	150	200	250	300	350	400	450	500	550	600
φ55	75	○	○	○	○	○	○	○	◎	◎	—	—
φ60	90	○	○	○	○	○	○	○	◎	◎	◎	◎
φ80	110	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

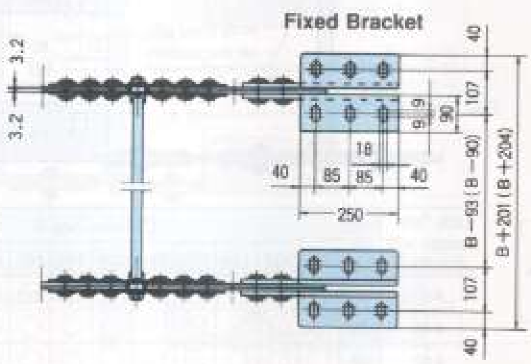
○…U=15 ◎…U=20

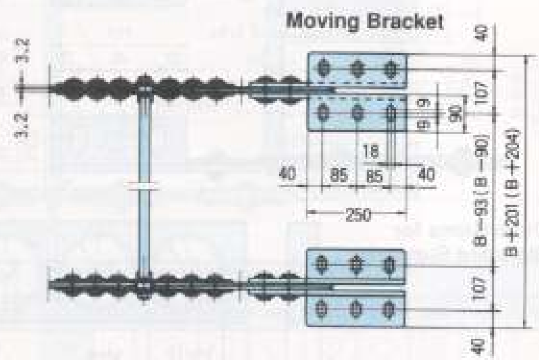
H250



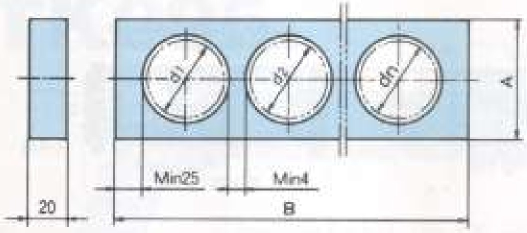


■ ( ) inner dimensions for split type supporter
■ For support roller, please refer to p.39
■ Brackets can be turned upside down.





■ **Dimensions for Standard Supporter**



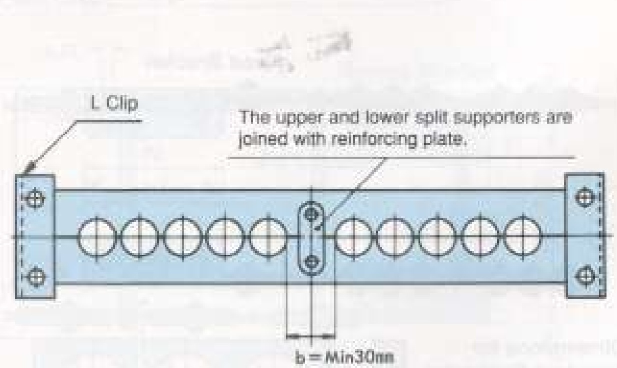
Bending radius R	Dimension B 350	400	450	500	550	600
350	○	○	○	○	○	○
450	○	○	○	○	○	○
600	—	○	○	○	○	○
750	—	—	○	○	○	○

Cable/hose maximum outer diameter d	Dimensions A
φ60	90
φ80	110
φ110	150
φ 110 or more	Consult us

- Type H is suitable for long stroke, big caliber, heavy duty with low frequency in use. In case of high frequency in use, type I or type V is recommended.
- When applying support roller, or in case of dimension A = 90 mm, reinforced bars are installed alternately with supporters.

Concerning supporter width (B) for type TK & H.

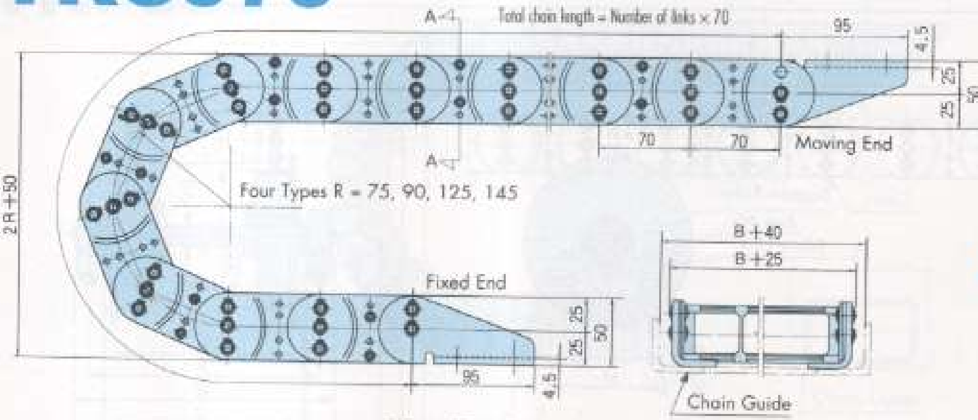
1) Wider supporter is available.
2) In case of B > 600 mm, supporters are installed with L clips. Also in case of split supporter, the upper and lower split supporters are connected with reinforcing plate.
3) Dimension B other than listed above is available.



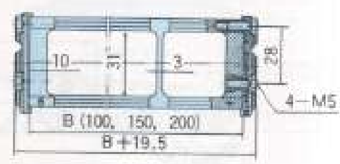
TKS TYPE DIMENSIONS

TKS070

This item has limited sales areas by agreement.

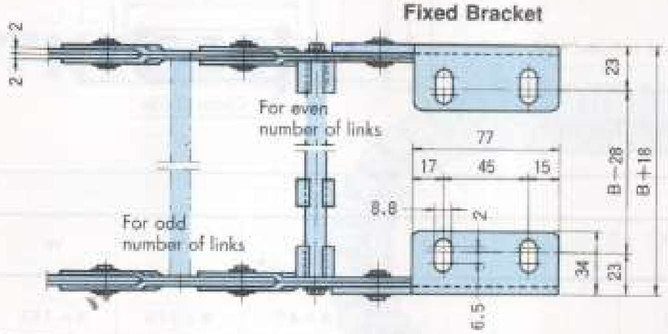


A-A Cross Section

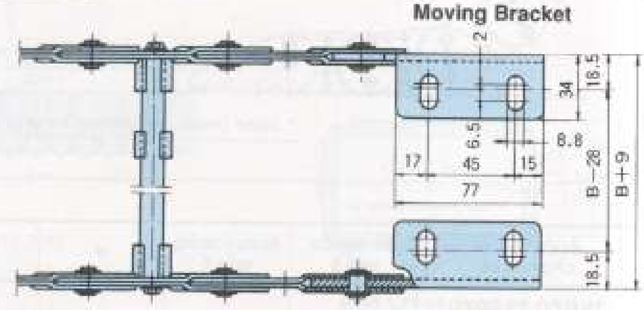


- For support roller, please refer to p.39
- Brackets can be turned upside down.

Fixed Bracket



Moving Bracket

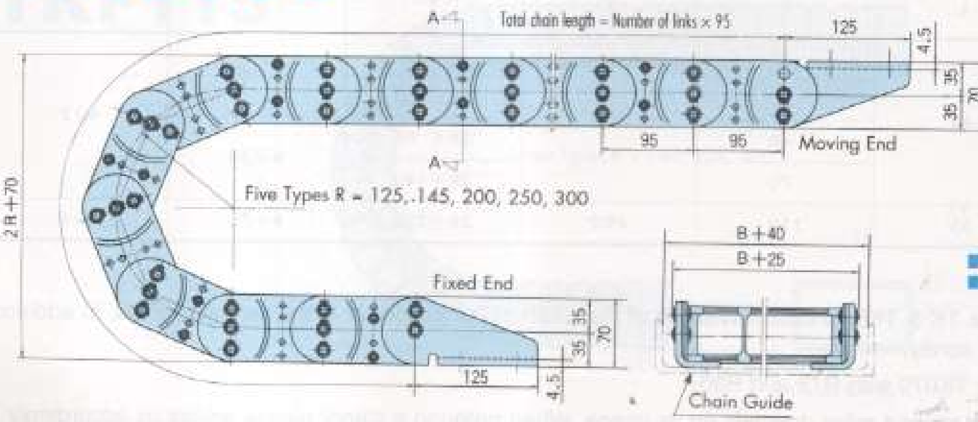


Cable/hose maximum outer diameter d max		27		
Frame width B		100	150	200
Divider	Min. number	0	1	2
	Max. number	5	8	12

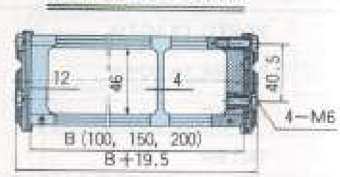
After installing dividers, setting single cable/hose in each division would be preferable.

TKS095

This item has limited sales areas by agreement.

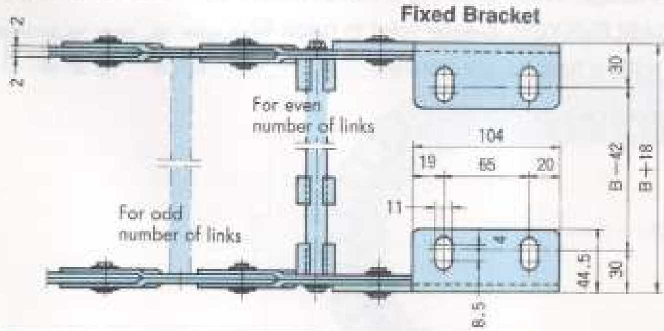


A-A Cross Section

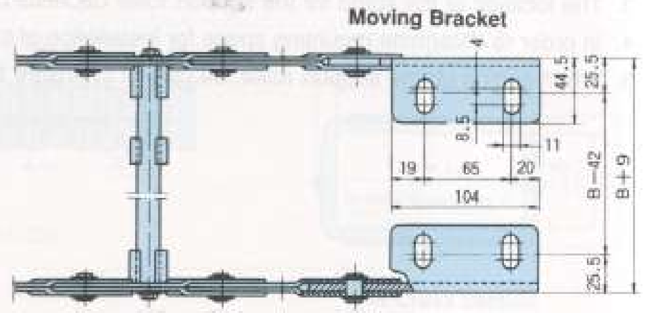


- For support roller, please refer to p.39
- Brackets can be turned upside down.

Fixed Bracket



Moving Bracket

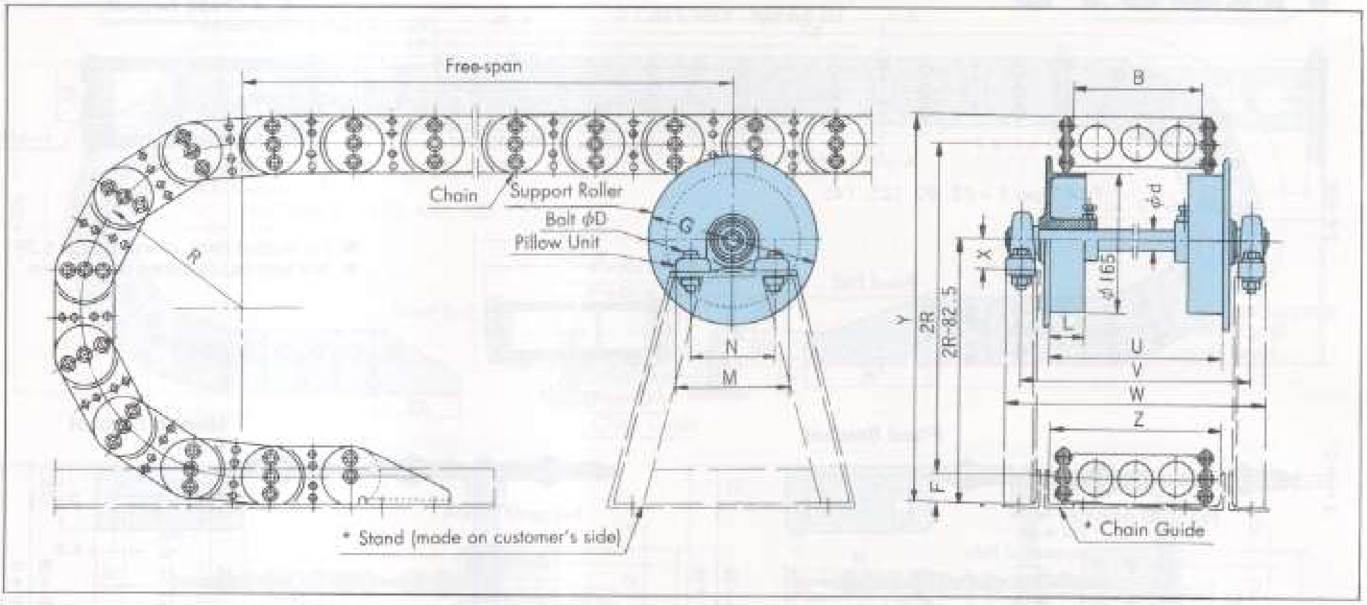


Cable/hose maximum outer diameter d max		42		
Frame width B		100	150	200
Divider	Min. number	0	1	2
	Max. number	4	7	11

After installing dividers, setting single cable/hose in each division would be preferable.

SUPPORT ROLLER FOR TK, H & TKS TYPE

1. Support roller can not be used for TKP & TKF.
2. Supporting plate can be used for TKC type.



Appropriate chain size	Min. supporter width B	Minimum bending radius R	d	G	M	N	U	V	W
TK070,TKS070	80	125	25	205	140	105	B+45	B+115	B+153
TK095,TKS095									
TK130	100	200		285			B+55	B+125	B+163
TK180	125	250							
H250	350	350	40	365	184	137	B+75	B+176	B+230

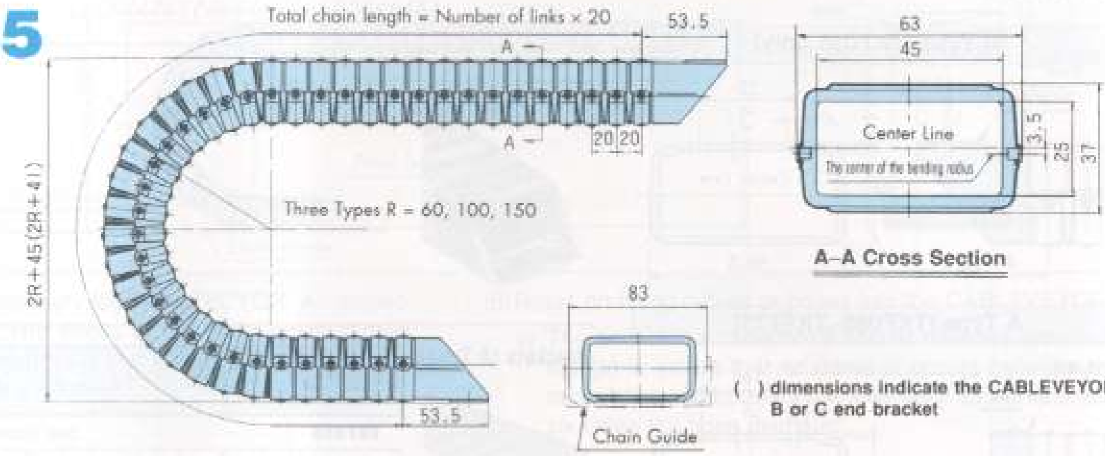
Appropriate chain size	L	F	X	Y	Z	Bolt size D
TK070,TKS070	45	25	36.5	2R+ 50	B+40	M12
TK095,TKS095		35		2R+ 70		
TK130		48		2R+ 96	B+50	
TK180		70		2R+140		
H250	55	110	49.2	2R+220	B+70	M16

1. When ordering support roller for TK & TKS, please advise us of the width of the supporter & the bending radius, in addition to the name of CABLEVEYOR, surely.
2. Support rollers are available for TK070 with R75 and R90.
3. The location of the stand for the support roller depends on its usage. When ordering a stand, please advise us accordingly.
4. In order to determine mounting space for installation of the CABLEVEYOR, please refer to page 42.
5. When setting up the support roller, be careful to ensure that roller's flanges are parallel.

This item has limited sales areas by agreement.

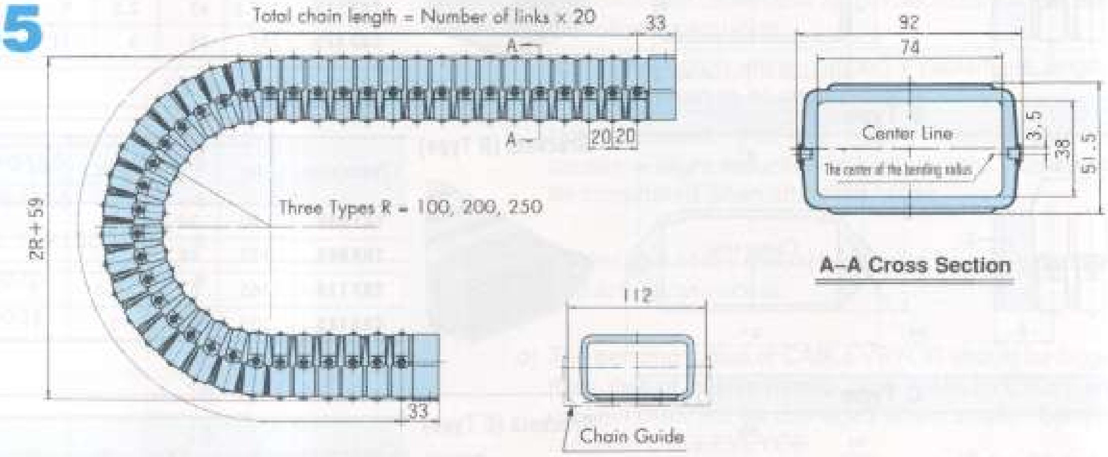
The next page for end brackets.

TKF055

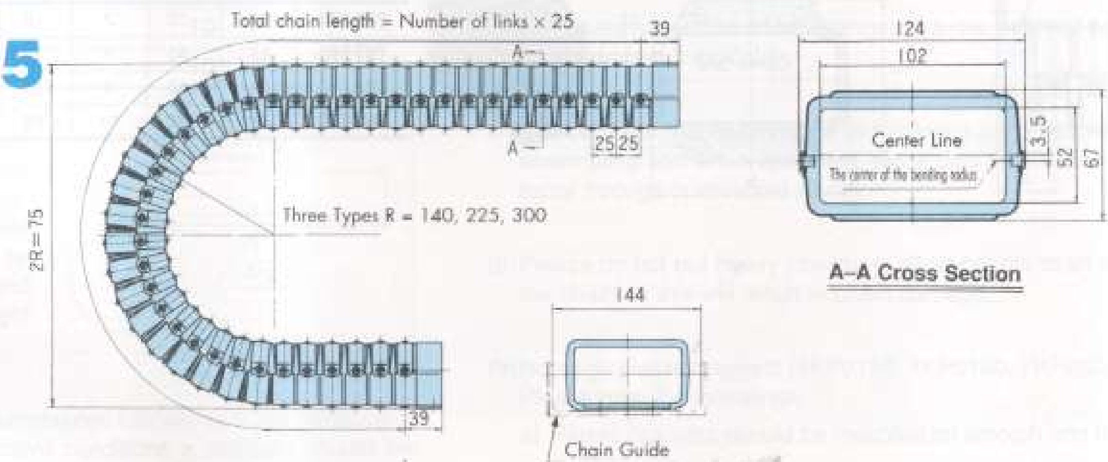


( ) dimensions indicate the CABLEVEYOR B or C end bracket

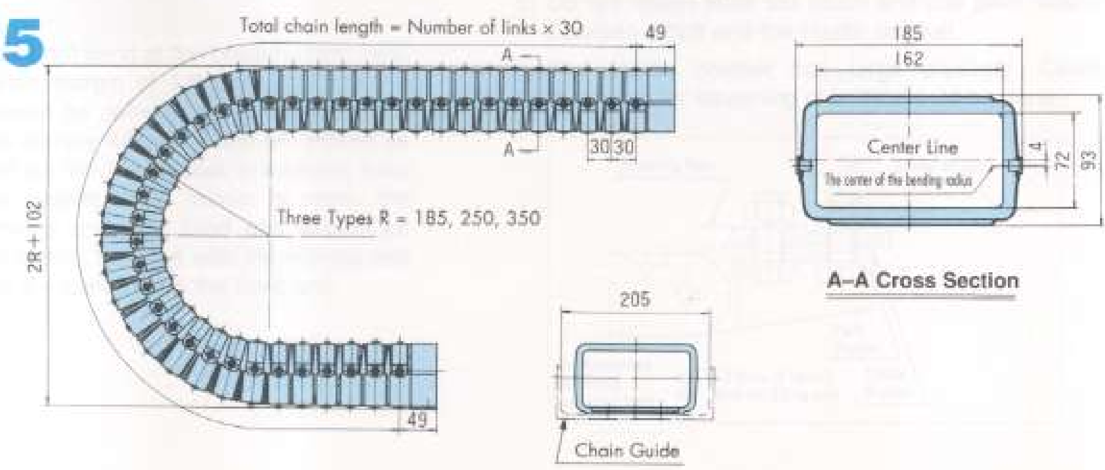
TKF085



TKF115

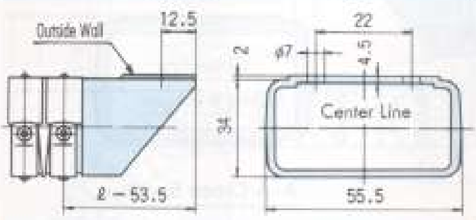


TKF175

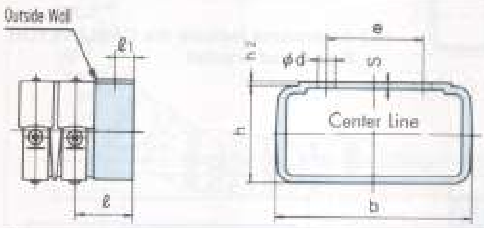


Brackets

A Type (TKF055 only)



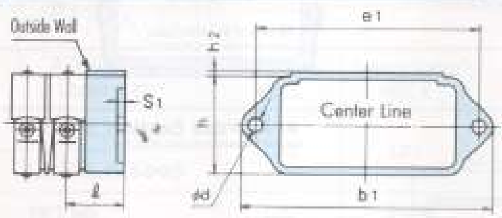
A Type (TKF085~TKF175)



Brackets (A Type)

Chain size	b	h	h_2	d	e	ℓ	$ℓ_1$	S
TKF055	See above							
TKF085	85	48.5	2	7	50	33	10	3.5
TKF115	117.5	63	2.5	9	65	39	10	3.5
TKF175	181	88	3	11	100	49	14	5.5

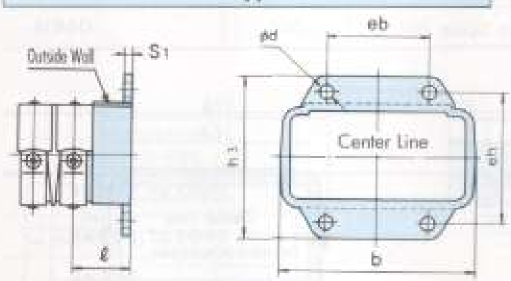
B Type



Brackets (B Type)

Chain size	b_1	h	h_2	d	e_1	ℓ	S_1
TKF055	90	34	0	7	75	29.5	4
TKF085	123	48.5	2	7	107	37	4
TKF115	165	63	2.5	9	146	44	5
TKF175	231	88	3	11	205	55	6

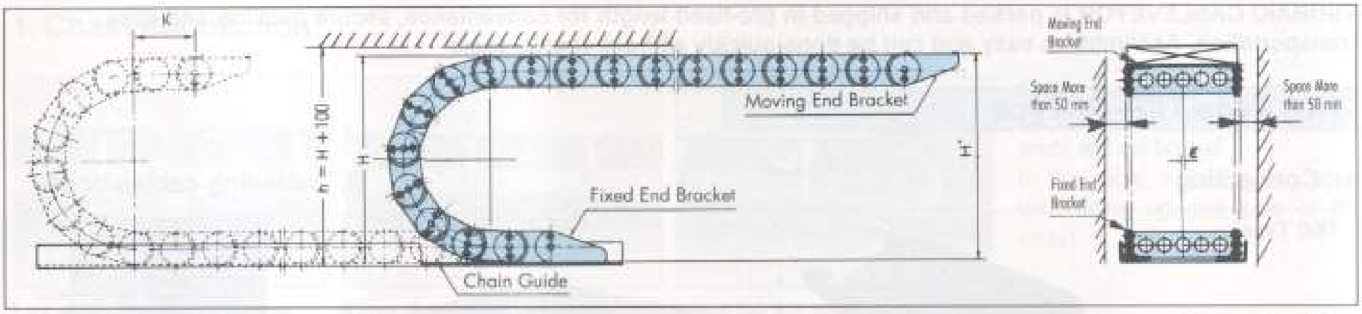
C Type



Brackets (C Type)

Chain size	b	h_1	d	eb	eh	ℓ	S_1
TKF055	55.5	70	7	18	55	29.5	4
TKF085	85	85	7	45	70	37	4
TKF115	117.5	110	9	60	90	44	5
TKF175	181	144	11	95	118	55	6

NOTES FOR HANDLING CABLEVEYOR TKC, TKP, TK, H, TKS, TKF



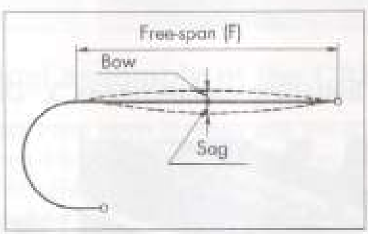
(1) A chain guide is necessary for CABLEVEYOR. An angled steel plate is best. The edges of the chain guide should be sloped or chamfered so that CABLEVEYOR can run into the chain guide smoothly.

(2) The dimensions ε and H' shown in the figure above is as follows.

Dimension in mm

Size	ε (max.)	H'
TKC	**6**	
TKP0130, TKP0180	**3**	H + (10~30)
TKP0320, TKP0450B	**4**	
TKP0625, TKP900, TKP1250	**6**	
TK070, TKS070	**4**	
TK095, TKS095	**6**	
TK130	**8**	H + 10
TK180	**10**	
H250	**15**	
TKF055, TKF085	**8**	
TKF115	**10**	H + (10~20)
TKF175	**10**	

(3) Note that the chain will show bow shape in its unloaded condition as it is designed to straighten out by its own weight and cables/hoses weight when attached.



(4) Under normal circumstances lubrication is not necessary. However, for corrosive conditions a lubricant should be used for rust prevention. (TK, TKS and H type)

(5) Since the TK types do not bend at the bracket chain joint, a minimum extension margin of 1.5 pitches (K on the diagram above) should be adhered to. If this extension margin is difficult to comply with, only one pin should be used in the center of the moving bracket. In addition, if the unit is operated at speeds of 20 m/min. or more, the location of the moving end and fixed end should be switched. Two pins should be used with the moving end and only one pin (in the center) with the fixed end.

(6) Notes on fitting cables or hoses into the CABLEVEYOR.

a) The end of the cable/hose should have an extension margin to insure that no damage occurs between the cable/hose and its attachment. Usually, this amounts to six times the hose diameter.

b) The minimum cable/hose length necessary is given by the following equation:

L = {(chain pitch × link number) + cable/hose length from chain to its attachment} × 1.015.

Note, however, that the hose's internal pressure causes a slight reduction in hose length. This should be considered when attaching hoses.

c) Cables and hoses should be moving type with flexibility and anti-abrasiveness.

d) The bending radius of CABLEVEYOR should be bigger than that of cables/hoses. Both CABLEVEYOR and cables/hoses will be damaged when smaller bending radius of CABLEVEYOR.

e) Cables/hoses should be arranged in a row and kept tidy by dividers if available.

(7) Please check that bolts and other hardware are tight when assembling and when operating, since they may become loose through operational vibration.

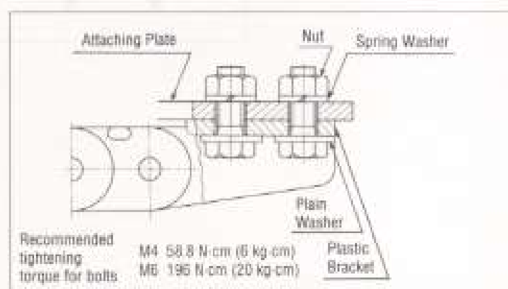
(8) Please do not put heavy objects or allow people to sit on the chain as this will result in chain damage.

(9) Notes on plastic brackets (TKP0130, TKP0180, TKP0320) Please note the followings.

a) Plastic brackets should be mounted on smooth and flat surface.

b) Do not fasten bolts too much and use plain washers between a bolt and the plastic bracket.

c) The plastic bracket has large elasticity. Counter measures for loosening of bolts should be done.



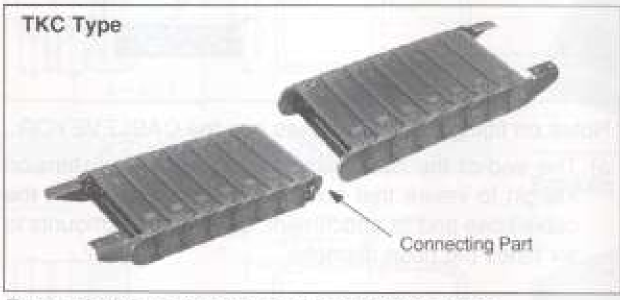
CONNECTING AND ASSEMBLY

TSUBAKI CABLEVEYOR is packed and shipped in pre-fixed length for convenience, secure packing and easy transportation. Assembly is easy and can be done quickly without special tools.

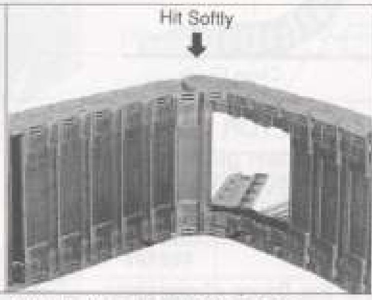
TKC Type•TKP–W Type

1. Connecting

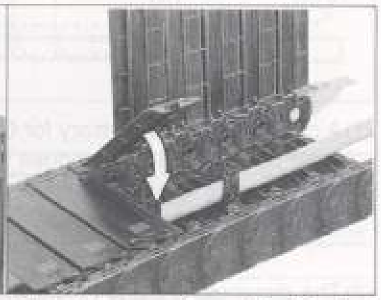
2. Installing cables/hoses



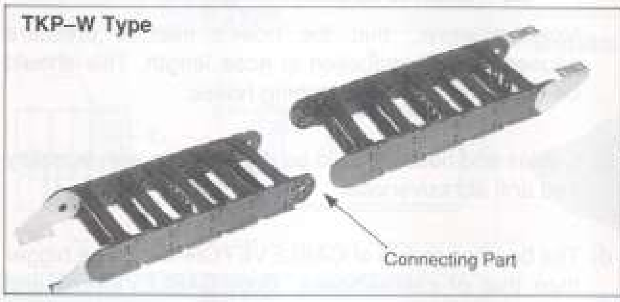
Removing 3 or 4 arms and lockstays of the moving end side.



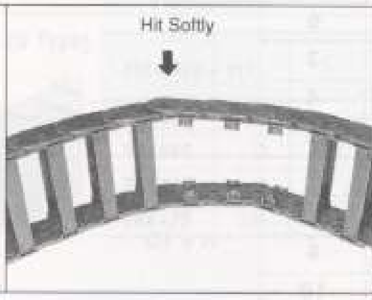
Attach the lockstays after connecting the links.



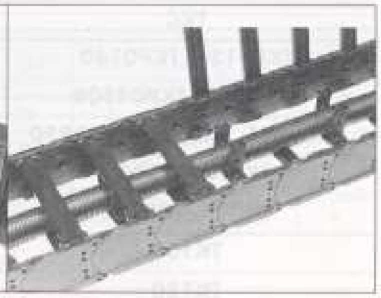
Close the arms from the fixed end after installing cables/hoses.



Removing 3 or 4 arms and lockstays of the moving end side.



Attach the lockstays after connecting the links.

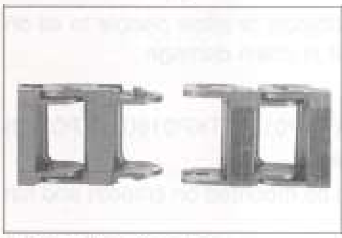


Close the arms after installing cables/hoses.

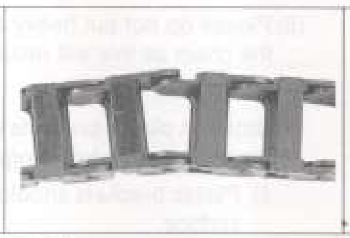
TKP Type

1. Connecting

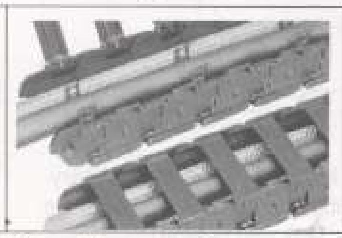
2. Installing cables/hoses 3. Disconnecting



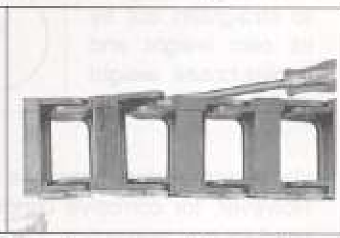
Adjust the direction.



Insert.



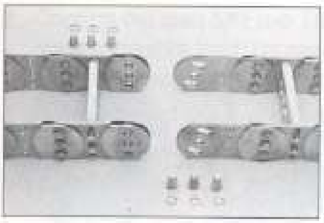
Close the arms after installing cables/hoses.



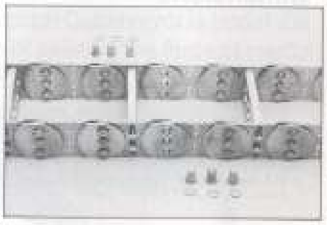
Insert a screw driver and turning or lift up.

TK•H•TKS Type

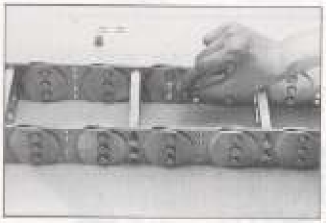
1. Chain connection



Lay the outer side of the chain facing down.



Align the holes on both sides of the chain.



Insert the pin and lock in place with the retaining ring.

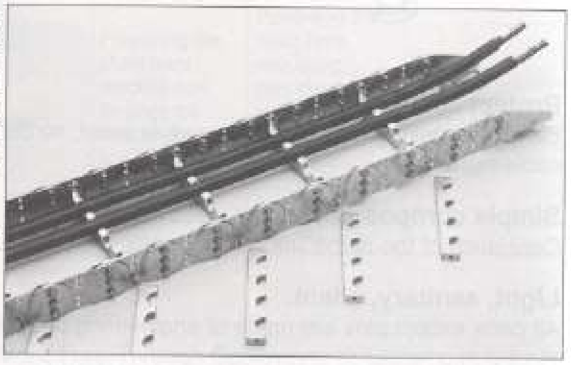
Chain in no-load has slight bow, so that laying on the floor both ends will off bound.
In this case, adjusting pin holes with rising up one side of the chain.

2. Installing the cables and hoses

■ **TK•H Type (split supporter)**

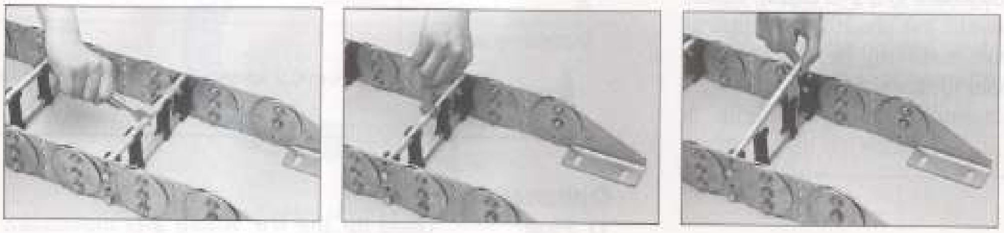
Take off the inner side of the supporter. When the supporter is difficult to remove, loosen the side bolts of the other supporter. Next, place the cables/hoses on the groves. The inner supporter can then be put back and the supporter bolts loosely tightened. Do not firmly tighten the bolts until all the supporters have been reattached and the CABLEVEYOR has been placed according to the photo for adjusting and final assembly.

- In case of one-piece supporter, the cables/hoses may be inserted from the moving or fixed end.



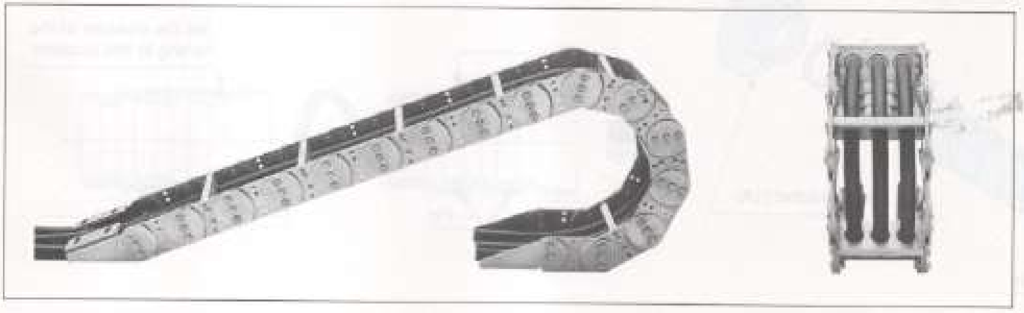
■ **TKS Type**

The inner supporter bar must be turned 90° before removing.



3. Adjusting and final assembly of the CABLEVEYOR

After the cables or hoses have been inserted and the supporters replaced, set the CABLEVEYOR in the position as shown in the photo below. When the CABLEVEYOR is in this position, the supporter bolts can be completely tightened.
Be careful that the CABLEVEYOR chain is not twisted when working on it. Please tighten bolts evenly, keeping the CABLEVEYOR straight. Also check that the bolts have not come loose during handling and assembly.



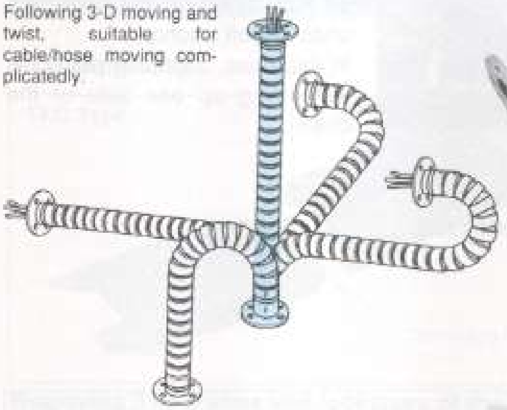
TKF Type

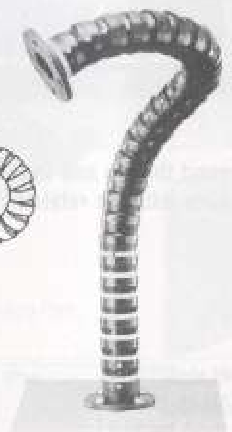
The cables/hoses may be inserted from the moving or fixed end.

FTP TYPE FREE-THROUGH® CABLEVEYOR

Supporting Guide of Cable/Hose, moving freely.

Following 3-D moving and twist, suitable for cable/hose moving complicatedly.



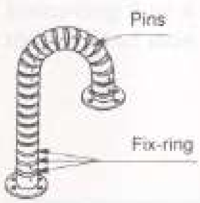


Protect cable/hose
Bending regularly with fixed radius, dust proof, no damage to cable/hose.

Simple composition, easy assembly
Consisting of the same link in form, easy assembly.

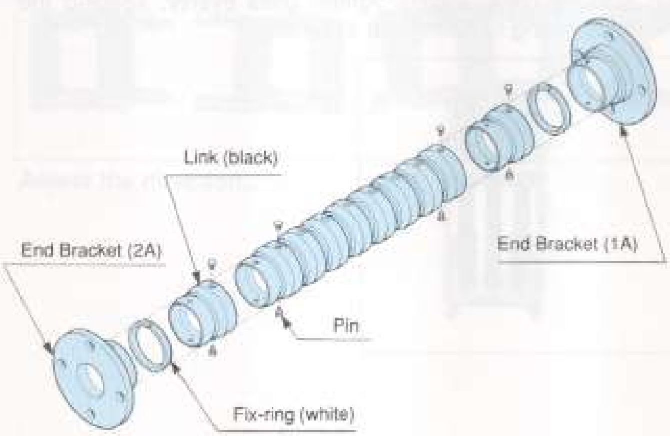
Light, sanitary, silent.
All parts except pins are made of engineering plastic.

Restricting or fixing movement is feasible

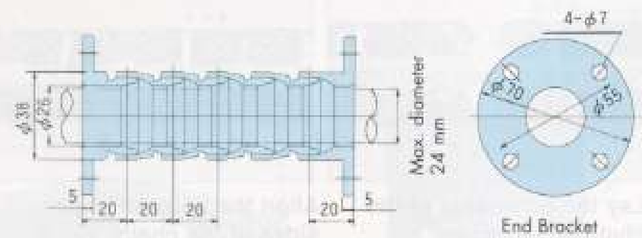


Inserting pins restrict the movement to a 2-D plane, which prevent the chain from toppling over. Installing fix-ring enables chain to stand alone.

Construction
Joint between link and link or link and end bracket is a loose fit with spheric contact. The spheric contact enables the chain to follow 3-D or twisting movement. 4 pins and 1 fix-ring belong to the chain at end bracket portion.



Dimensions



Chain size		Chain pitch (mm)	Max. mass of cable/hose (kg/m)	Mass of chain (kg/m)	Max. allowable chain speed (m/min)	Ambient temperature (°C)
Size	Standard bending radius (R)					
FTP026R100	100	20	1	0.5	120	0~50

It is not allowed under acid or alkaline environment.

Max. allowable load

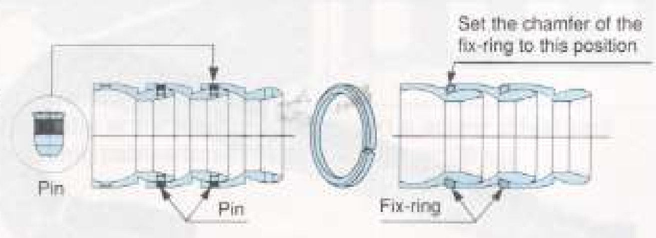
(N/kgf)

	Standard	With pins
Tensile strength	78/8	176/18
Pressure at bending portion	20/2	59/6
Moment against twist	2 N·m/0.2 kg-m	3.9 N·m/0.4 kg-m

Optional parts

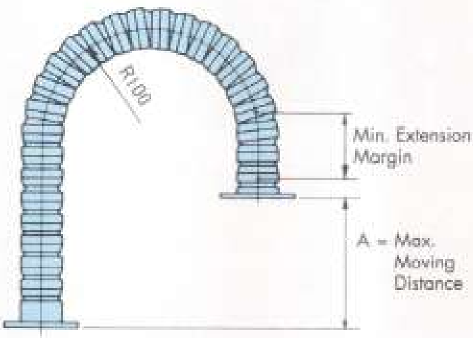
1) Pins Used for the link where 2-D movement or preventing the chain from toppling over is required. Tap pins after aligning the holes.

2) Fix-ring Used at a part where stand alone is required. Spreading out the split of the ring, install the ring between link and link. At this time please notice the direction of the ring.



Selection

1. Use cable/hose with its bending radius below R = 100.
2. Confirm the load on Free-Through Cableveyor is under the max. allowable load. (In case of existing the force of inertia caused by acceleration, add it.)
3. Calculation of the number of chain links

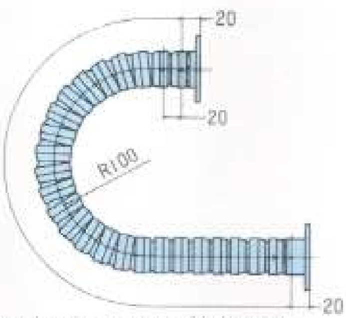


Determine the Max. Moving Distance = A.

$$\ell = \frac{A + 100\pi + 120}{20\ (\text{chain pitch})}$$

Count fractions as a whole number.

4. Determine the position taking the length of end bracket into consideration.



Total chain length = Number of links × 20

5. Determine the position and the number of pins and fix-ring according to the application. (2 pins per link or 1 fix-ring per link should be required.)

Example

Usage		Reverse-U type	Catenary type	U type
① Other usage should be selected by M.A.L. ② Mass of cable/hose should be less than 1 kg/m				
Allowable length ℓ (mm)	Without pins	700	1000	2700
	With pins	1000	1400	6000
Remarks		Preventing the chain from toppling over, fix-rings for vertical portion and pins for bending portion are required.	Preventing the chain from weavering pins should be installed. In case of bending at horizontal portion fix-rings are required.	—

Handling

1. Confirm if Free-Through Cableveyor or cable/hose are not stretched excessively.
2. Prohibit from loading heavy weight or person on Free-Through Cableveyor.
3. When installing the end bracket to the machine, pay attention not to tighten the bolts too much.
4. Links are joined by push fit. Warming (max. 80°C) makes the chain cut easier.

Number	**FTP026 R100**	
Chain length	(☐ link + each end bracket) × ☐ pce	
Option parts	Pin ☐ p	Fix-ring ☐ p

Option parts are loose.

⚠ WARNING

USE CARE TO PREVENT INJURY COMPLY WITH THE FOLLOWING TO AVOID SERIOUS PERSONAL INJURY:

1. Guards must be provided on all chain and sprocket installations in accordance with provisions of ANSI/ASME B15.1 – 1984 "Safety Standards for Mechanical Power Transmission Apparatus", and ANSI/ASME B20.1 – 1990 "Safety Standards for Conveyors and Related Equipment", or other applicable safety standards. When revisions of these standards are published, the updated edition shall apply.
2. Always lock out the power switch before installing, removing, lubricating or servicing a chain system.
3. When connecting or disconnecting chain:
   a. Eye protection is required. Wear safety glasses, protective clothing, gloves and safety shoes.
   b. Support the chain to prevent uncontrolled movement of chain and parts.
   c. Use of pressing equipment is recommended. Tools must be in good condition and properly used.
   d. Determine correct direction for pin/rivet removal or insertion.

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