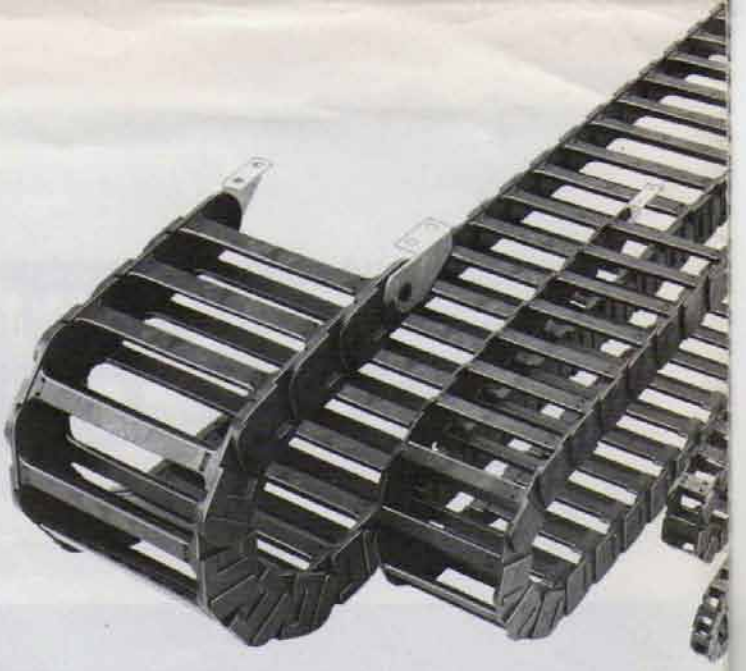
Cable Chain



Robots, machine tools and material handling equipments must ensure precise operation and high performance. Accordingly, the hydraulic hoses, pneumatic hoses, and electric cables of such machines must follow the complicated movements of moving parts and controls, and must protect them. KANA Cable Chain having many excellent characteristics has been developed for these machines and equipments.

■ Advantages

- Since it is made of engineering plastics, it features light weight and ensures high speed operation and extension of stroke.
- It is rust-free and has high oil resistance.
- Mounting and maintenance of hoses and cables are easy.
- Wide variation of bending radius and size is available, which affords a wide choice of design.
- Smooth and quiet motion.
- High speed run. Max. speed: 3m/sec.
- Wider range of use temperature from −25°C to +130°C.

■ Material

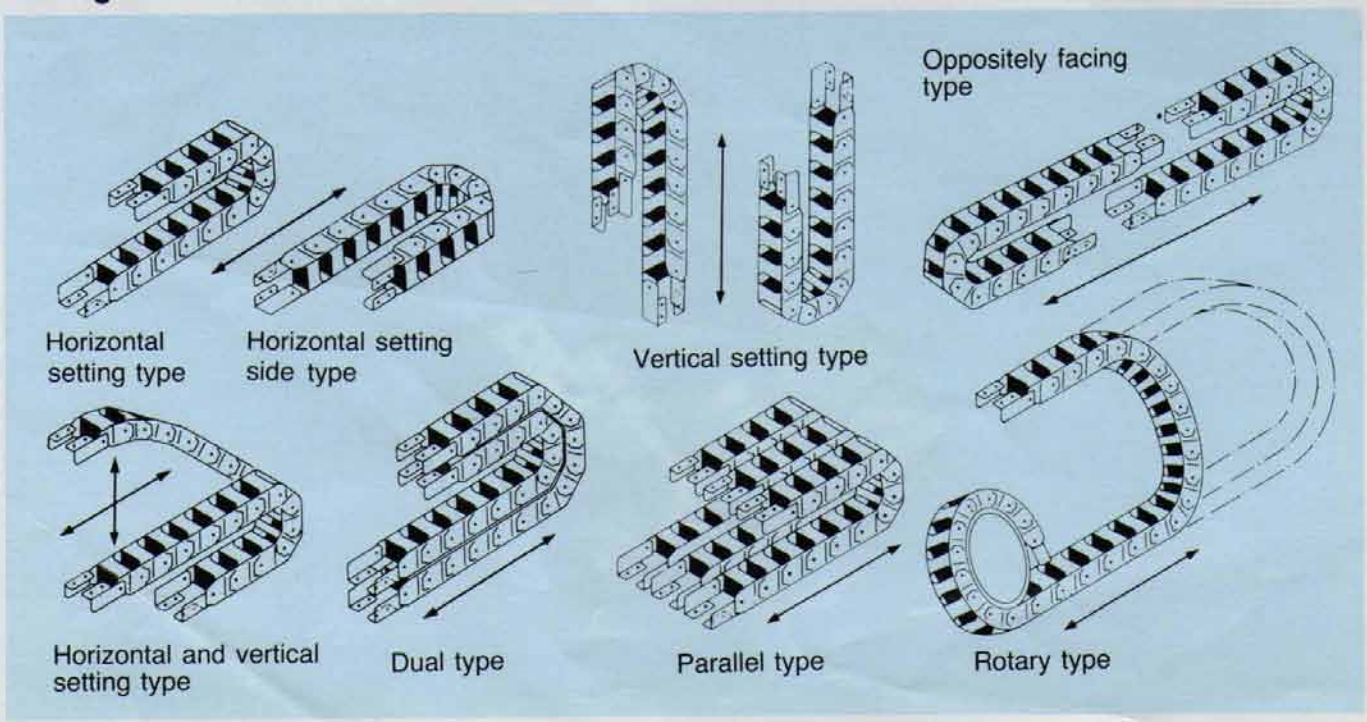
KANA Cable Chain is made of engineering plastics, which thereby ensures high strength, wear resistance, and pressure resistance.

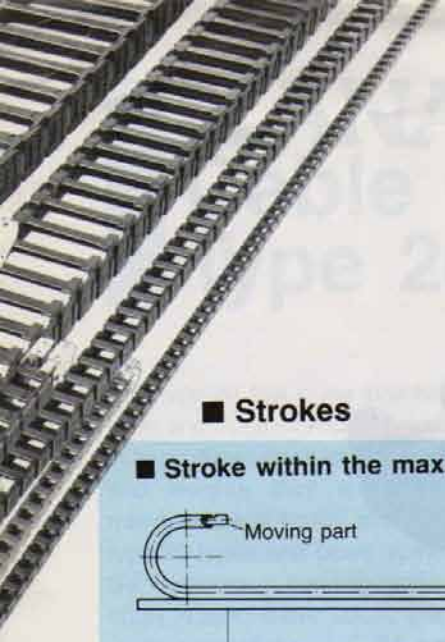
■ Physical Properties of Cable Chain Material

Porperties		Unit	Value
Tensile strength		N/mm²	190/130
Elongation		%	4/6
Bending modulus		N/mm²	9000/7000
Impact load	23 °C	N/mm²	55/65/55
	−40 °C	N/mm²	40
Usable temperature range	Short time	°C	Up to 200
	500hrs.	°C	140
	20000hrs.	°C	130
Thermal conductivity		W/k·m	0.23
Nonconductivity		10^5hz	3.9/6.2
Change in volume		Ω·cm	10^{15}/10
Density		g/cm³	1.4
Moisture absorption	23°C/50%	%	1.8
Friction coefficient		—	0.4

Cable Chain is not affected by petroleum, greases, oils, alcohols, ester, and Cetone. Never expose it to acid.

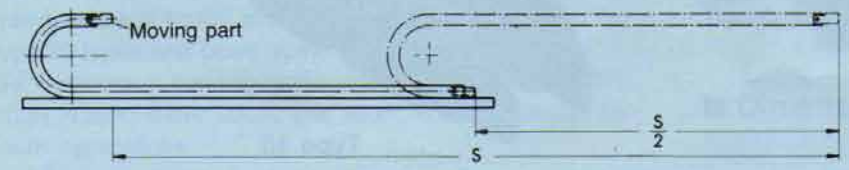
■ Usages





■ Strokes

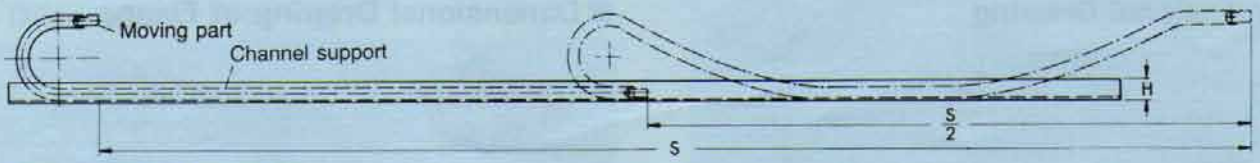
■ Stroke within the max. free span



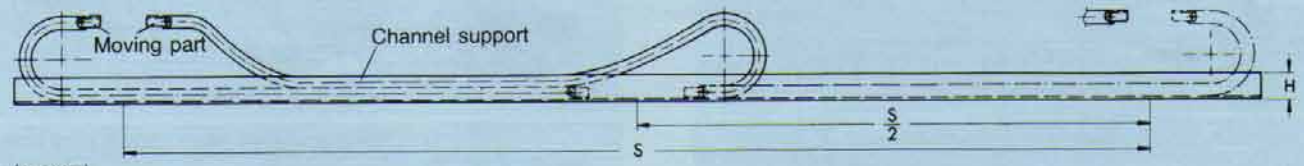
Calculation of length = $\frac{S}{2}$ + K

S: Stroke
K: Length of curved part (indicated for each size)
H: Height of channel support
h: Total height of chain
b: Width of chain

■ Long stroke



■ Oppositely facing type



(S≦40m)

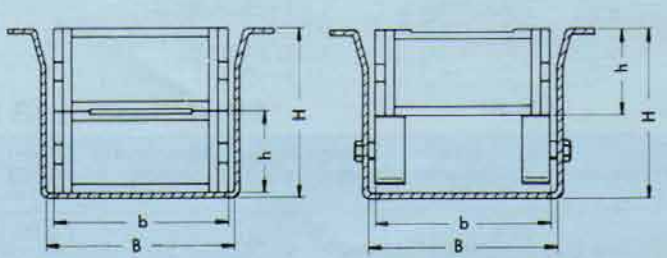
■ Channel Support

When stroke is long, the upper chain hungs down and runs on the lower chain. In such a case, use the channel support.
In special conditions where the stroke is 100m or high tensile strength is required, it is necessary to use the channel support provided with rollers.

$H \geqq 2 \cdot h$

$B \geqq b + 5$

H: Height of channel support
B: Inside width of channel support
h: Height of chain
b: Width of chain



Upper chain running type

Roller support type

■ Ordering (An example)

10.1 – 038 – 900 – 100.1/100.2

Chain No.	Bending radius (R)	Total length (mm) or number of links	Flange

Determine the bending radius of the chain you selected, calculate the total length using the formula "L = $\frac{S}{2}$ + K", and place an order, describing all the required information above.

■ Max. Free Span

The cable chain can be used without channel support if the max. free span is within the range shown in the table below, though it depends on load and carrying speed.

Chain No.	Max. free span (m)
Type 10	1.5
Type 20, type 25	2.5
Type 30, type 35	3.0
Type 40	4.5

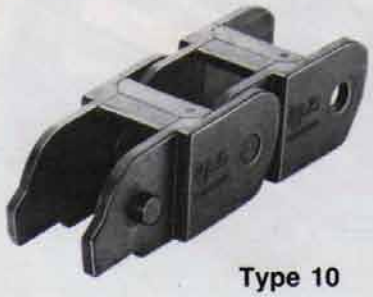
■ Flange

When mounting the cable chain, use the flange. It serves for the moving part or the fixed part by combination of hole open type and pivot type.

Chain No.	Flange No.	
	For moving part	For fixed part
Type 10	100.1	100.2
Type 20, type 25	200.1	200.2
Type 30, type 35	300.1	300.2
Type 40	400.1	400.2

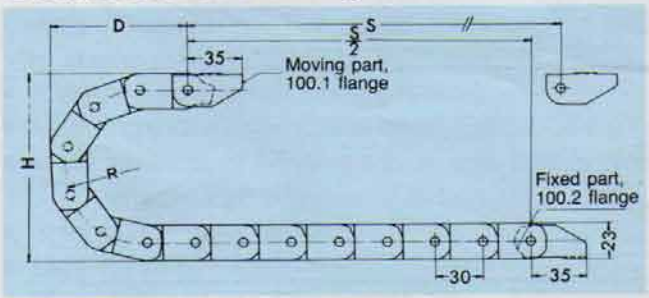
Cable Chain Type 10

KANA Cable Chain, type 10, is a light chain having high durability.
Since it is 38mm in bending radius, large enough to incorporate cable with Out Dia. of max. 18mm. It ensures compact design. 38R and 48R are available, ensuring design for many applications.



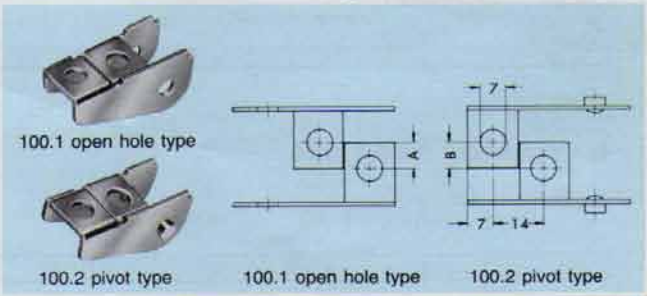
Type 10

■ Dimensional Drawing



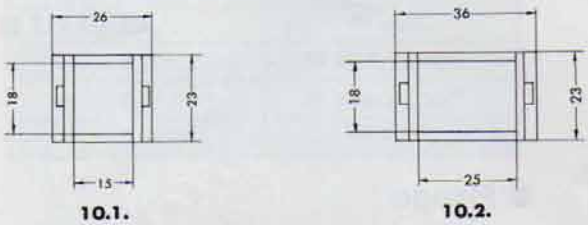
Dimension	Bending radius R	
	38	48
H	100	120
D	60	70
K	150	210

■ Dimensional Drawing of Flange



Applied chain No.	100.1 open hole type	100.2 pivot type
	A	B
10.1.	3	—
10.2.	13	10

■ Sectional Configuration of Type 10 (Close type)



10.1. **10.2.**

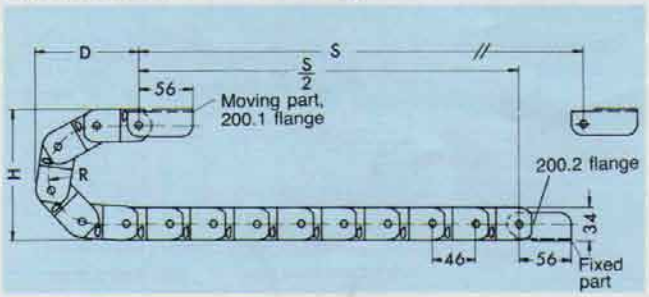
■ Specification

Chain No.	Bending radius R	Chain pitch	Containment dimension W×H	Separator	Structure	Max. free span m	Range of use temperature °C	Movement speed m/sec.	Chain weight kg·f/m
10.1.	038 048	30	15×18	—	Close type	1.5	−25 − +130	3.0	0.30
10.2.			25×18						0.33

Cable Chain
Type 20, Type 25

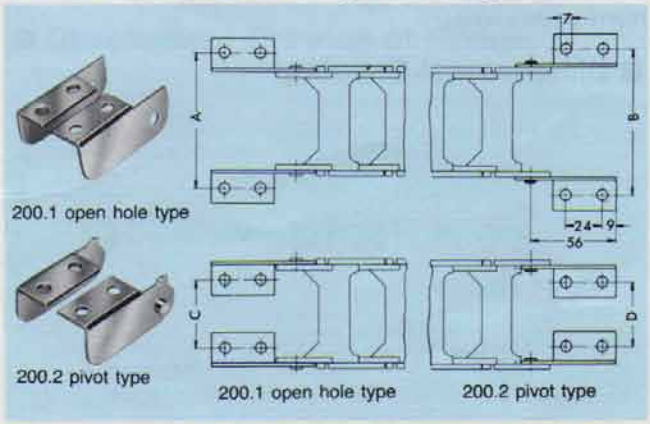
The type 20 has close structure, whereas the type 25 has open and close structure. Since these two types are identical in basic dimensions (outside diameter, bending radius, parts, and weight), they are interchangeable. Mounting and maintenance of hoses and cables are easy, when using the type 25 (open and close type).
Six variations of bending radius are available, namely, 55R, 100R, 125R, 150R, 200R, and 250R, ensuring design for many applications.

■ Dimensional Drawing



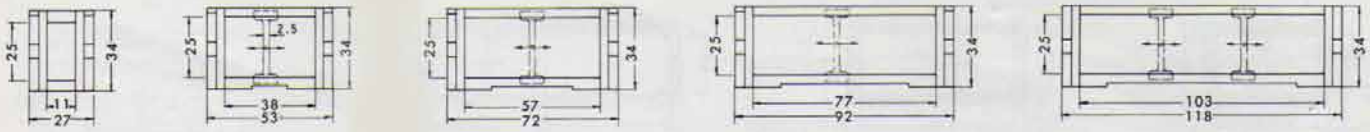
Dimension	Bending radius R					
	55	100	125	150	200	250
H	140	235	285	335	435	535
D	125	170	195	220	270	320
K	276	414	476	598	736	920

■ Dimensional Drawing of Flange



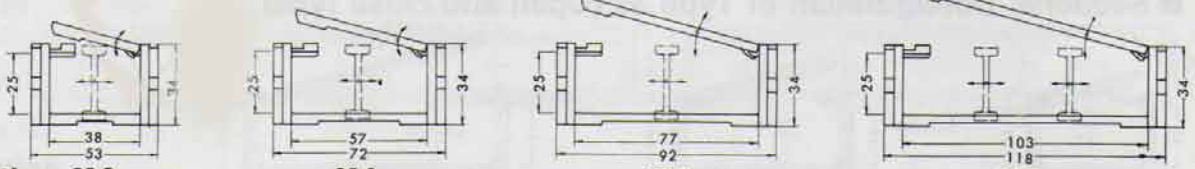
Applied chain No.	200.1 open hole type		200.2 pivot type	
	A	C	B	D
20.1.	43	—	51	—
20.2./25.2.	71	27	79	22
20.3./25.3.	89	45	97	41
20.4./25.4.	109	66	117	61
20.5./25.5.	135	92	143	87

■ Sectional Configuration of Type 20 (Close type)



20.1. 20.2. 20.3. 20.4. 20.5.

■ Sectional Configuration of Type 25 (Open and close type)



25.2. 25.3. 25.4. 25.5.

■ Specification

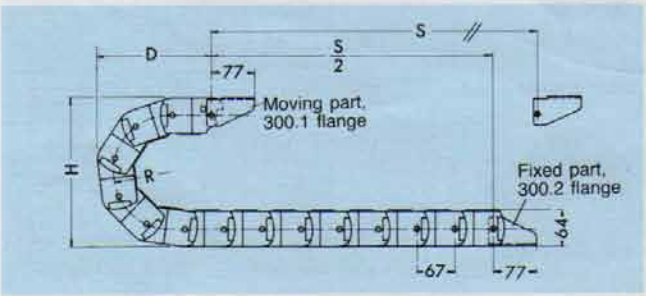
Chain No.	Bending radius R	Chain pitch	Containment dimension W×H	Separator	Structure	Max. free span m	Range of use temperature °C	Movement speed m/sec.	Chain weight kg·f/m
20.1.	055 100 125 150 200 250	46	11×25	Mounting is possible	Close type	2.5	−25~+130	3.0	0.60
20.2.			38×25						0.75
20.3.			57×25						0.84
20.4.			77×25						0.95
20.5.			103×25						1.02
25.2.			38×25		Open and close type				0.75
25.3.			57×25						0.84
25.4.			77×25						0.95
25.5.			103×25						1.02

Cable Chain Type 30, Type 35

The type 30 has close structure, whereas the type 25 has open and close structure. Since these two types are identical in basic dimensions (outside diameter, bending radius, parts, and weight), they are interchangeable. Mounting and maintenance of hoses and cables are easy when using the type 35 (open and close type).
Six variations of bending radius are available, namely, 100R, 125R, 150R, 200R, 250R, and 300R, ensuring design for many applications.

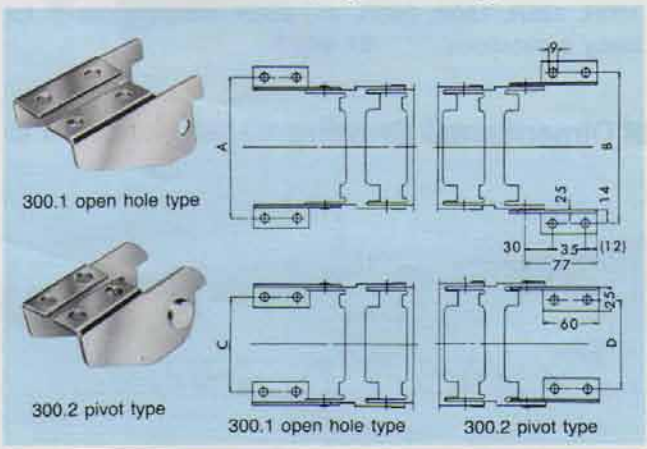
Type 30 Type 35

■ Dimensional Drawing



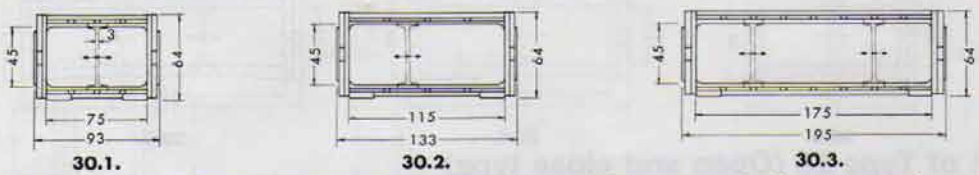
Dimension	Bending radius R					
	100	125	150	200	250	300
H	265	315	365	465	565	665
D	200	225	250	300	350	400
K	500	650	725	875	1050	1225

■ Dimensional Drawing of Flange



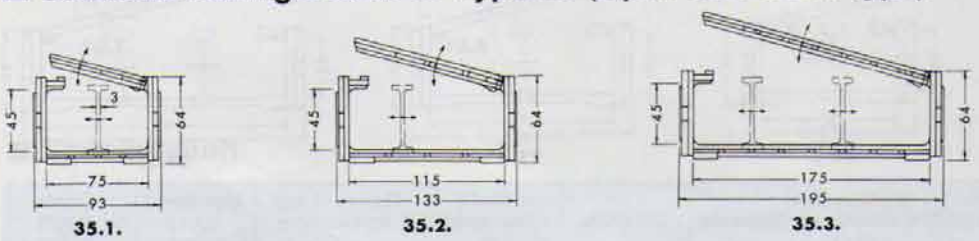
Applied chain No.	300.1 open hole type		300.2 pivot type	
	A	C	B	D
30.1./35.1.	111	60	122	54
30.2./35.2.	151	100	162	94
30.3./35.3.	212	161	224	155

■ Sectional Configuration of Type 30 (Close type)



30.1. 30.2. 30.3.

■ Sectional Configuration of Type 35 (Open and close type)



35.1. 35.2. 35.3.

■ Specification

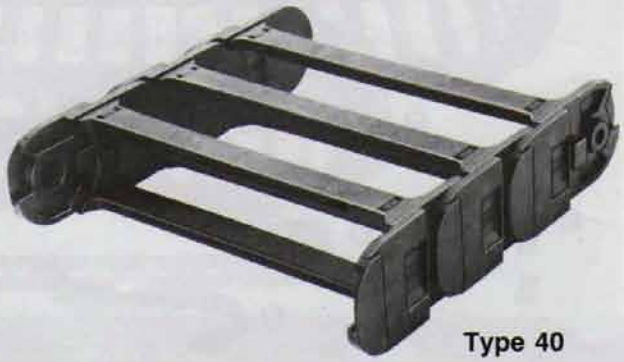
Chain No.	Bending radius R	Chain pitch	Containment dimension W×H	Separator	Structure	Max. free span m	Range of use temperature °C	Movement speed m/sec.	Chain weight kg·f/m
30.1.	100	67	75×45	Mounting is possible	Close type	3.0	−25~+130	3.0	1.43
30.2.	125		115×45						1.65
30.3.	150		175×45						2.16
35.1.	200		75×45		Open and close type				1.43
35.2.	250		115×45						1.65
35.3.	300		175×45						2.16

Cable Chain Type 40

The type 40 is a new product to advance into the area exclusively occupied by metal chain, though it is large in size. Since it has open and close structure, mounting and maintenance of hoses and cables are easy.

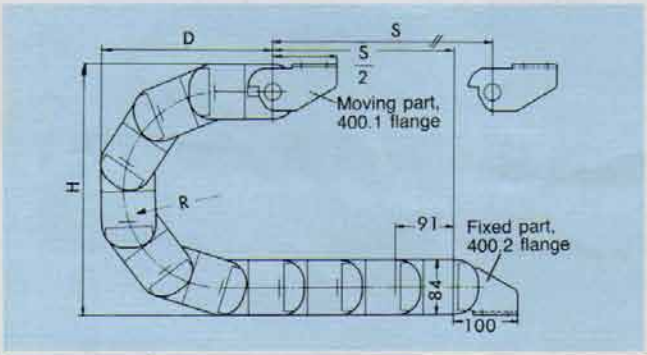
The chain consists of 4 components, allowing it to be assembled on site. Furthermore, due to high strength it can endure weight of 80kg.

Five variations of bending radius are available, namely, 150R, 200R, 250R, 300R, and 400R, ensuring design for many applications.



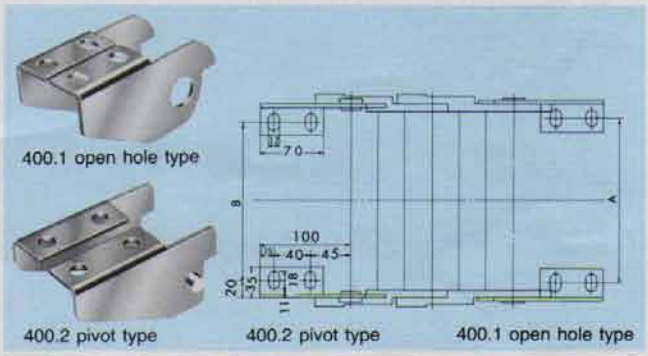
Type 40

■ Dimensional Drawing



Dimension	Bending radius R				
	150	200	250	300	400
H	385	485	585	685	885
D	275	325	375	425	525
K	750	900	1050	1225	1450

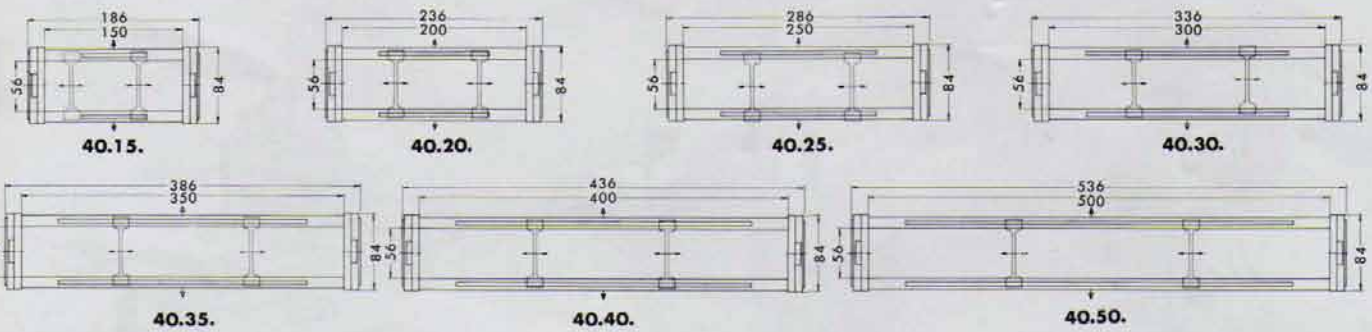
■ Dimensional Drawing of Flange



Applied chain No.	400.1 open hole type	400.2 pivot type
	A	B
40.15.	130	130
40.20.	180	180
40.25.	230	230
40.30.	280	280

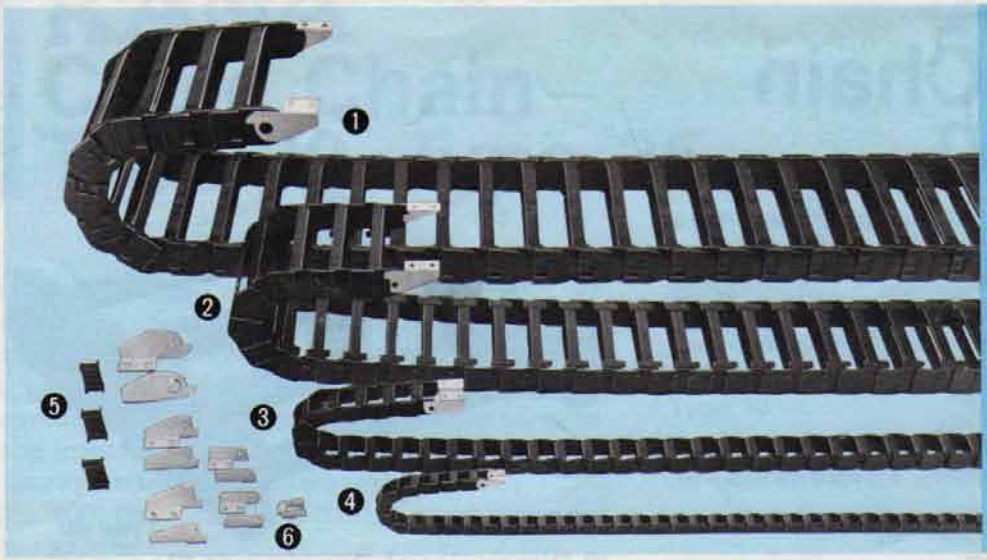
Chain No.	400.1 open hole type	400.2 pivot type
	A	B
40.35.	330	330
40.40.	380	380
40.50.	480	480

■ Sectional Configuration of Type 40 (Open and close type)



■ Specification

Chain No.	Bending radius R	Chain pitch	Containment dimension W×H	Separator	Structure	Max. free span m	Range of use temperature °C	Movement speed m/sec.	Chain weight kg·f/m
40.15.	150	91	150×56	Mounting is possible	Open and close type	4.5	−25~+130	3.0	3.90
40.20.			200×56						4.30
40.25.	200		250×56						4.70
40.30.	250		300×56						5.10
40.35.	300		350×56						5.50
40.40.	400		400×56						6.00
40.50.			500×56						6.50

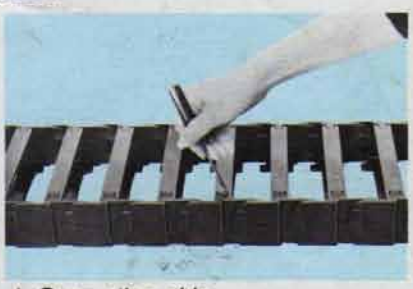


① Cable chain type 40
② Cable chain type 35
③ Cable chain type 25
④ Cable chain type 10
⑤ Separator
⑥ Flanges of each type

■ Assembling Procedures ✻ For assembling only one screw driver is used.

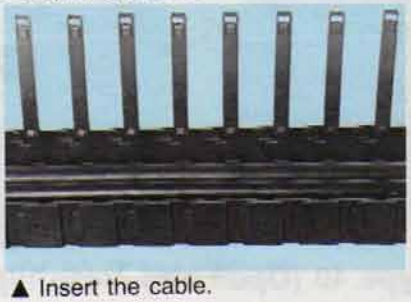
▲ Delivery.

▲ Open one side.



▲ Open other side.

▲ Open chain.



▲ Insert the cable.

▲ Close flips (pushing by hand).

Usages