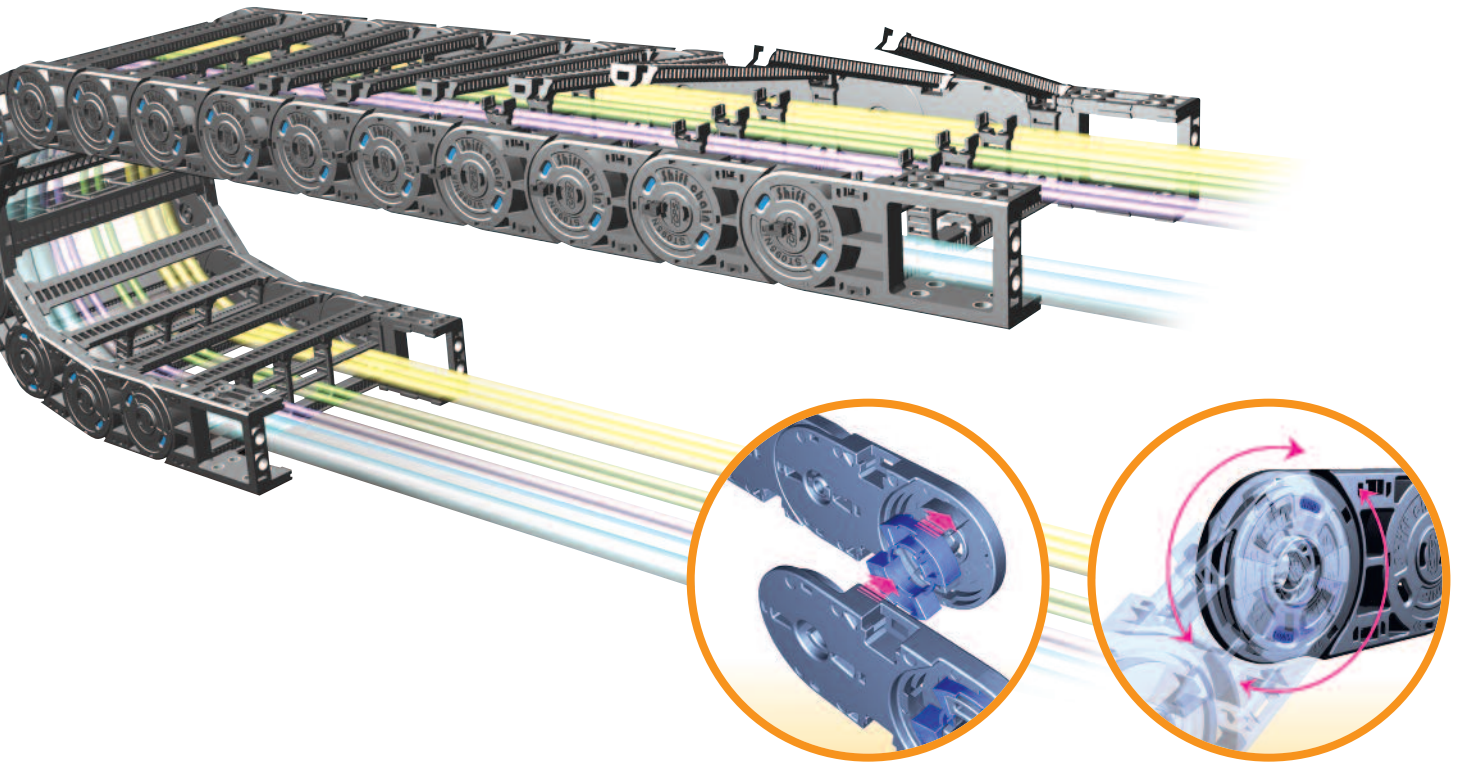




2014 GENERAL CATALOGUE
SHIFT CHAIN



Shift Chain can set up the range of Bending Radius **easily & freely!**

A Shift Chain, with the unique structure, is a new concept that the value of Bending Radius is decided by inserting the BR component.

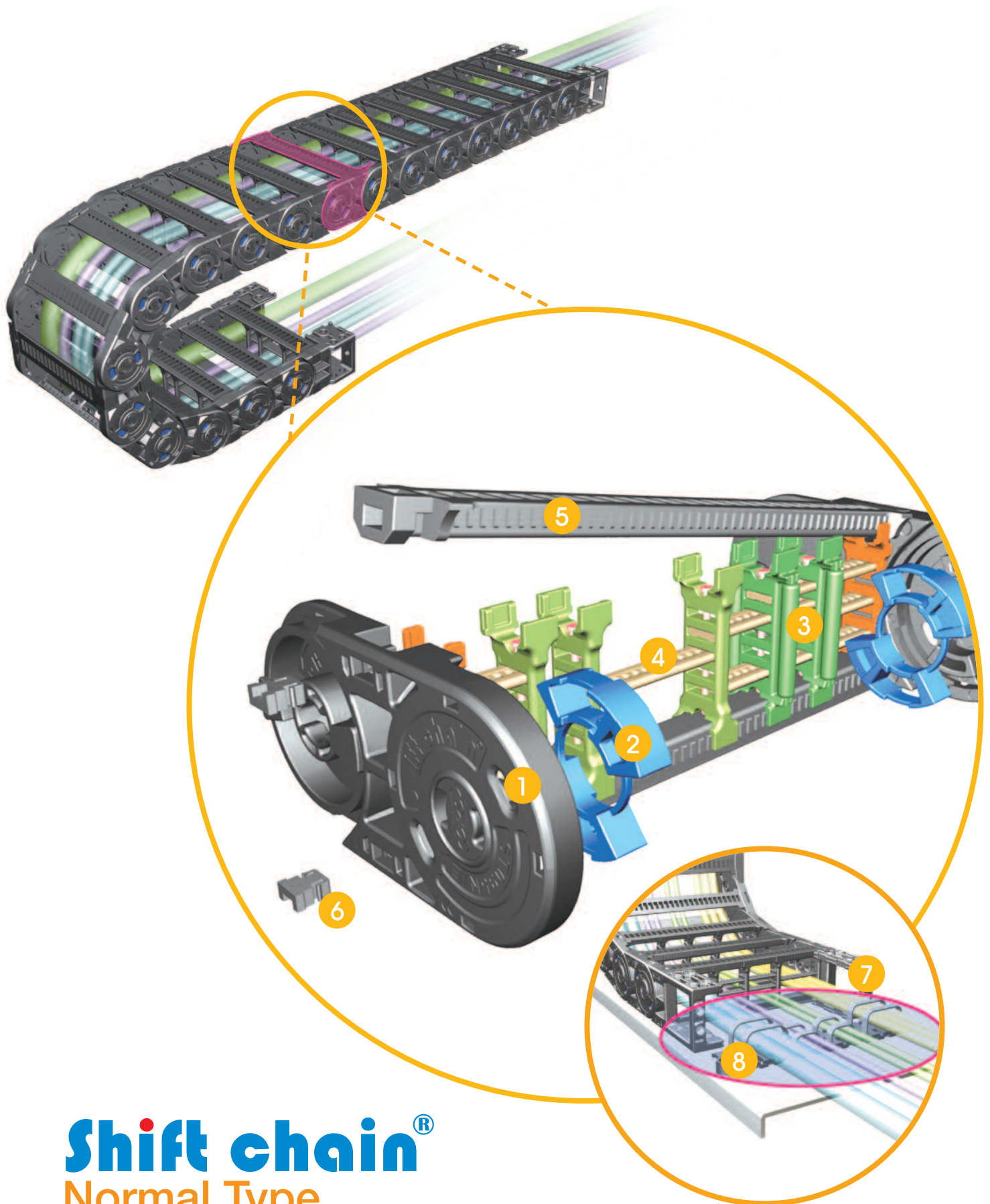
B Shift Chain, inserting the BR component, has more than 6 points of supporting area, so its durability and self-supporting capacity are 30% more than other Cable chain's.

C Shift Chain has an excellent competitiveness and can create the maximum synergy effect in relation to boosting productivity, the efficient stock management and cost reduction because the side-band of each model is the same and the BR component is designed to be replacable.

D Shift Chain is the next generation Cable chain developed to protect the inner cables and hoses applied to equipments and machinery of overall industries widely.



ARTICLE NAME & DETAILS OF SHIFT CHAIN





1 Side Band (SB)

Bending Radius unit, different from the former connecting method of link pin bridge prevents damage of the chain caused by breakdown of connecting link pin and reduces dust due to the friction of link pin.

2 Bending Radius Unit (BR)

Shift Chain has the unique structure that the value of Bending Radius is decided by Bending Radius unit .

3 Divider (DV-S, M, R, T)

Divider sets the inside of chain vertically to prevent cable from twisting and sheath damage caused by friction. There are S, M, R and T type.

4 Separator (SP)

Separator divides the inserted cables vertically to prevent twisting of cables and damage of sheath. Can be cut by 5mm for the convenience. When combining with divider, using separator pin have SP fixed hard not to move.

5 Frame(Hinged -Type) (FR)

Hinged-type frame, open one side, supports connection of both side of side band and have tongue and groove system plate to secure the position of the divider on the frame.

6 Frame Pin (FP)

The connecting pin for preventing the breakaway of Frame connected at Side Band, combining and fixing the Frame and Side Band. For Shift chain(ST)072N, 092N, 120N, 150N type, one side of the frame is fixed by inserting a fixing pin to prevent frame open, which caused by any external impact. Also, in case of ST044N, ST055N type, an open side of the frame is fixed by Hook-type frame .

7 Free End Bracket (FEB)

Shift chain is very effective to be able to be fixed at upper, lower and front direction with the use of FEB (Free End Bracket) like the fixing method of New Sabin Chain and to be fixed stronger due to the use the Steel Insert at the Fixing hole. Shift Chain has a strong point that can be fixed with the diverse ways because this Bracket can be moved more than 45 degrees. For ST150N, Bracket with steel it used.

8 Tie Wrap (TW)

Tie Wrap fixes the cables in one straight line to prevent twisting or entangling during operation. There are two types available depending on the application; attached to bracket and separated from bracket.

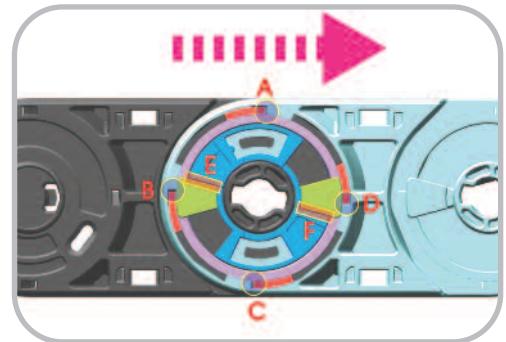
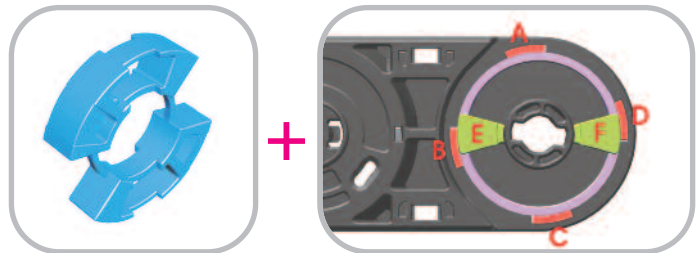


CHARACTERISTIC AND MERIT OF SHIFT CHAIN

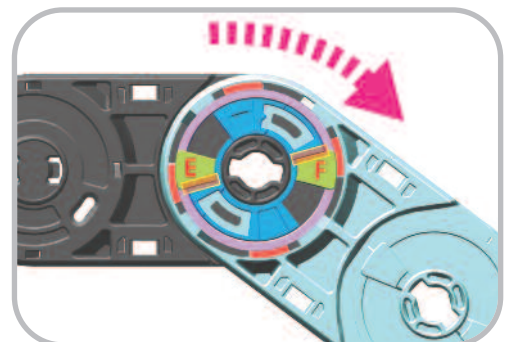


1 Longer Self-Supporting Length!

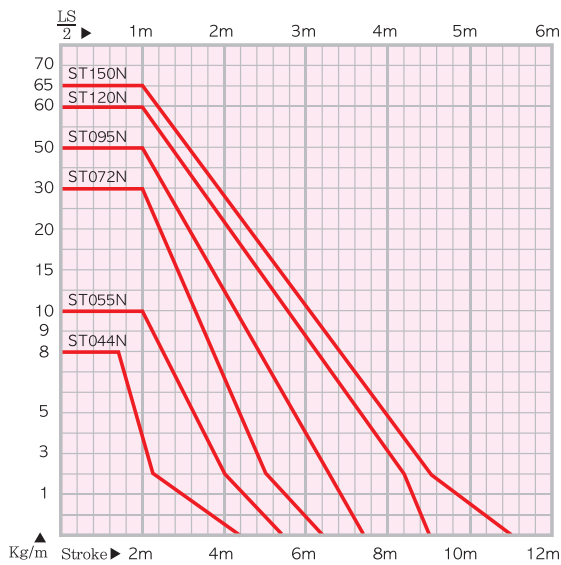
Shift Chain has max 30% longer self-supporting length than other CPS chains under the same condition. It's designed to be durable, even with the massive inserted cables, can effectively protect cables without any sagging. While other chain has two points of supporting area, Shift Chain has six points of it, A, B, C, D, E, F. It helps the side bands can have the maximum supporting.



-supporting point when the side bands connected



-supporting points when the side bands bended (E, F)



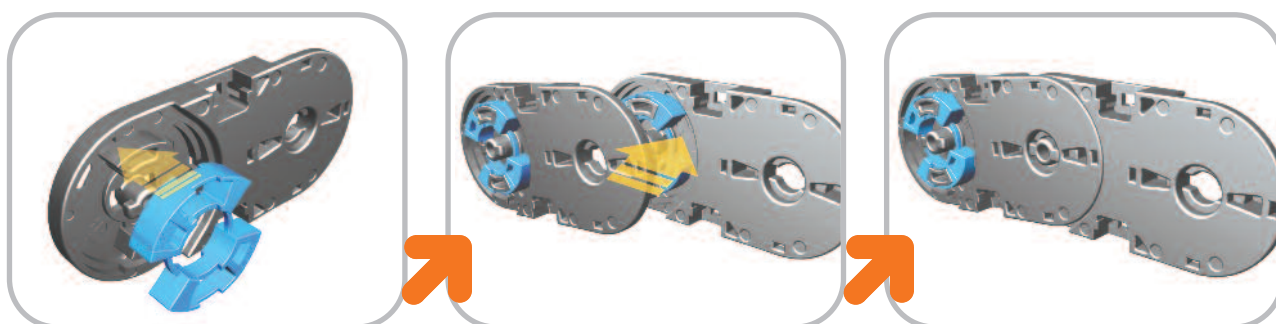
■ Shift chain Self-Supporting Length ■

2 The Feature of Setting-up Unit for Bending Radius!

R설정 유닛 결합으로 Bending Radius값 설정!

Unlike the existing chains, the Shift Chain is designed to use only one side band for the same model and to insert respective Bending Radius unit to make bending radius each.

Like the below pictures, the value of bending radius is changeable just by inserting individual bending unit, and unlike the existing chains, it is suggested that you don't need side bands for each bending radius in stock, but need BR unit for each bending radius, so the Shift Chain has an excellent competitiveness to create the maximum synergy effect in relation to easy maintenance, efficient stock management and cost reduction .



The Bending Radius combined by the Bending Radius unit(BR).

When combining Side Band with the different Bending Radius unit, the bending radius of cable chain is formed like the below and also the 'R' of cable chain will be decided by the Bending Radius-setting unit.

Bending Radius(R) of each cable chains is written with each value of " R" in details of each cable chain.

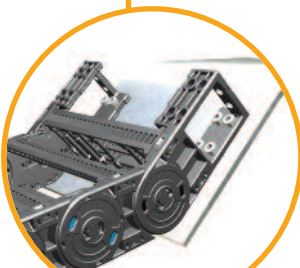
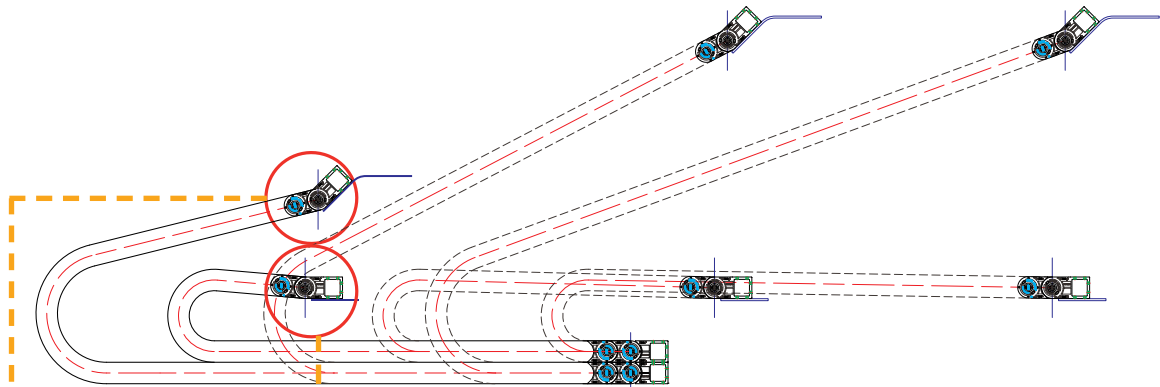
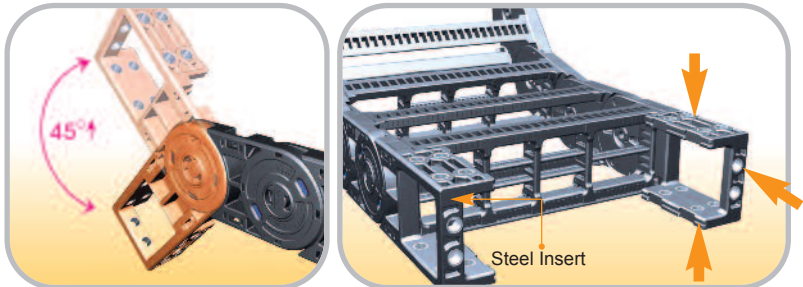




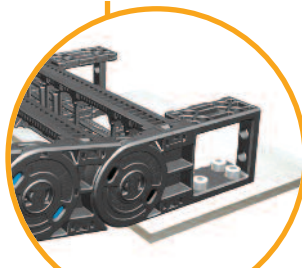
CHARACTERISTIC AND MERIT OF SHIFT CHAIN

3 Efficient & Easy fixing bracket, FEB!

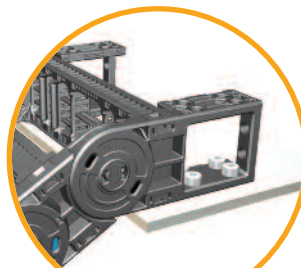
Shift chain's bracket, FEB, is very effective in a way that can be mounted up, down and front side same as the New Sabin chain. For the extra enhance, steel washer is inserted into the fixing hole.



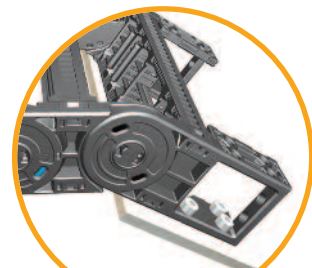
Bending direction of FEB-upper



Bending direction of FEB-horizontal



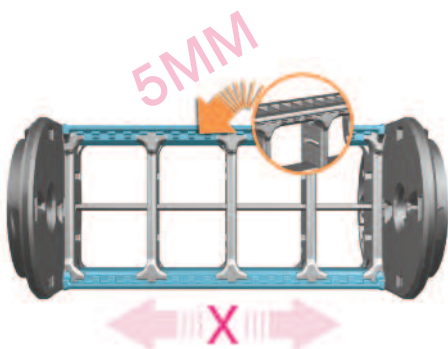
Bending direction of FEB-horizontal



Bending direction of FEB-lower

4 Teeth centered every 5mm eliminate movement during operation!

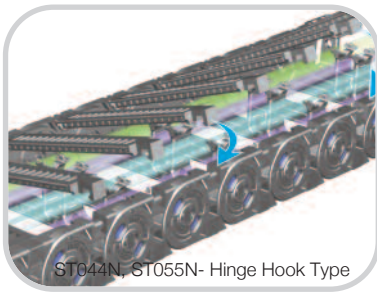
With teeth positioned every 5mm, Shift Chain's patented grooves grip the dividers locking them in place and eliminating any left or right movement during operation. Furthermore, your cables are protected from the shock of outside force as the dividers are locked in firmly and securely ensuring that each of your cables center is held intact and preventing sheathing caused by current systems' inability to secure the dividers properly. Stoppers can fall out or become damaged, resulting in more maintenance and down time. With the Shift Chain divider, you eliminate the need for small excess parts which can break and possibly gain entry to and damage operating machinery.



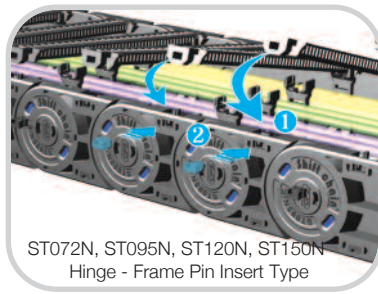


5 More convenient frame structure - Hinged Type Frame !

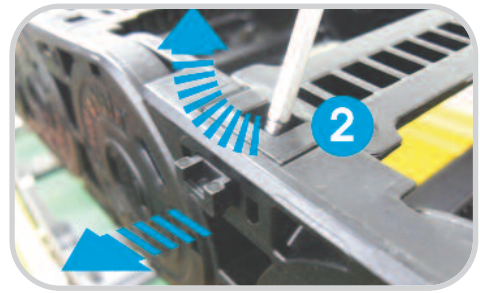
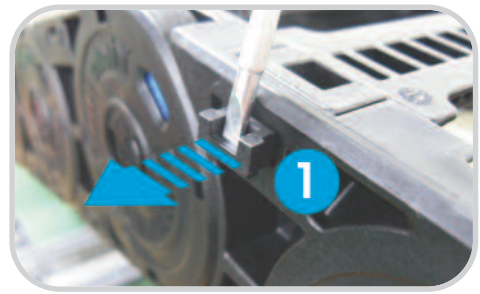
The Hinge type frame is created by using the original frame but locking it into place with a ball hinge on one side and making the cables easily accessible by opening the other. The hinge type frame can open to expose the inserted cables on both the topside and underside of the carrier. In case of models of Shift chain(ST)072N, 095N, 120N, 150N type, one side of the frame is fixed by inserting a fixing pin to prevent frame open, which caused by any external impact. Also, in case of ST044N, 055N type, an open side of the frame is fixed by Hook type frame .



ST044N, ST055N- Hinge Hook Type

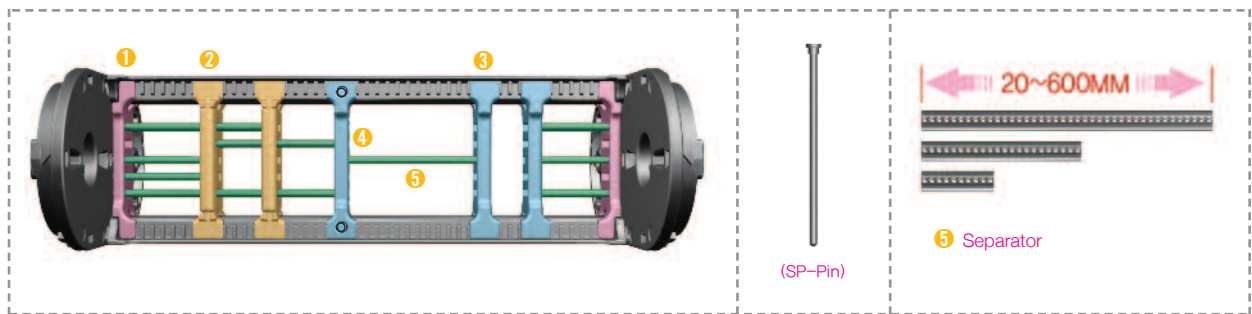


ST072N, ST095N, ST120N, ST150N
Hinge - Frame Pin Insert Type



6 Diversity & Functionality Combine in this New Separator and Divider Creation!

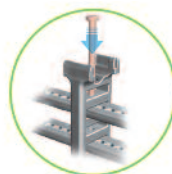
It can protect inner cable more efficient and safe with the diverse combination of Divider and Separator. Divider consists of the exclusive use of side type (S-Type), the adhesive use of roller type (R-Type) and the pin jointing type (M-Type) and also the twist and damage of inner cable can be protected especially because this part is designed to use of the fixing pin strongly. The length of separator can be installed from 20 mm to 600 mm and be cut and used 5 mm apart.



1 DV-S Type



2 DV-R Type



3 DV-M Type



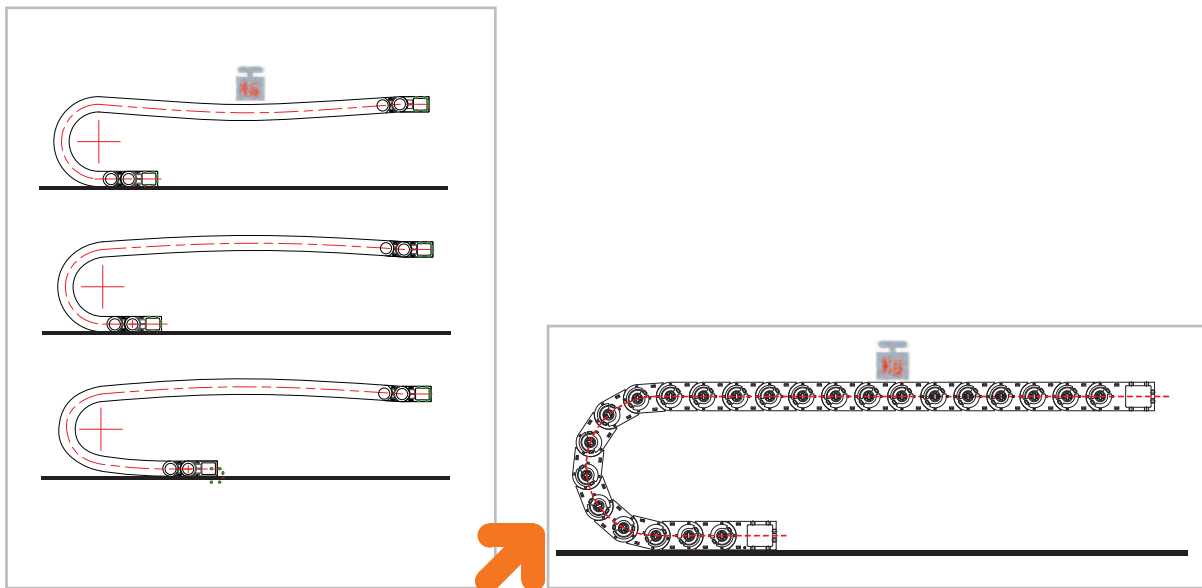
4 DV-T Type



CHARACTERISTIC AND MERIT OF SHIFT CHAIN

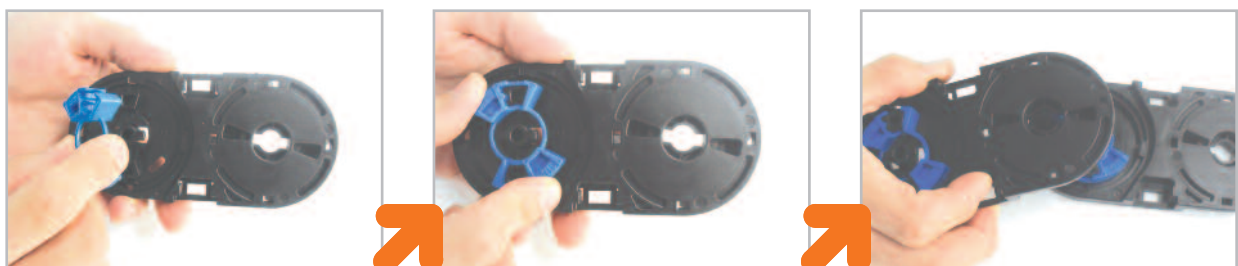
7 Straight supporting area of Shift chain by design with strong bearing capability!

Shift chain completely solves the problems of both chain's sagging that happens in chain's self-supporting area and chain's breakage & short lifespan caused by clearance between the bottom of chain's bending part and ground, because the chain is designed not only to have 6 supporting points on the sideband to enhance self-supporting but also to have strong bearing capacity to support the connected weigh, without sag & arch phenomenon in the self-supporting area of the chain, and protect cables safely since clearance between the bottom of chain's bending part and ground doesn't happen.



8 Without any tools, easy to assemble Side Band!

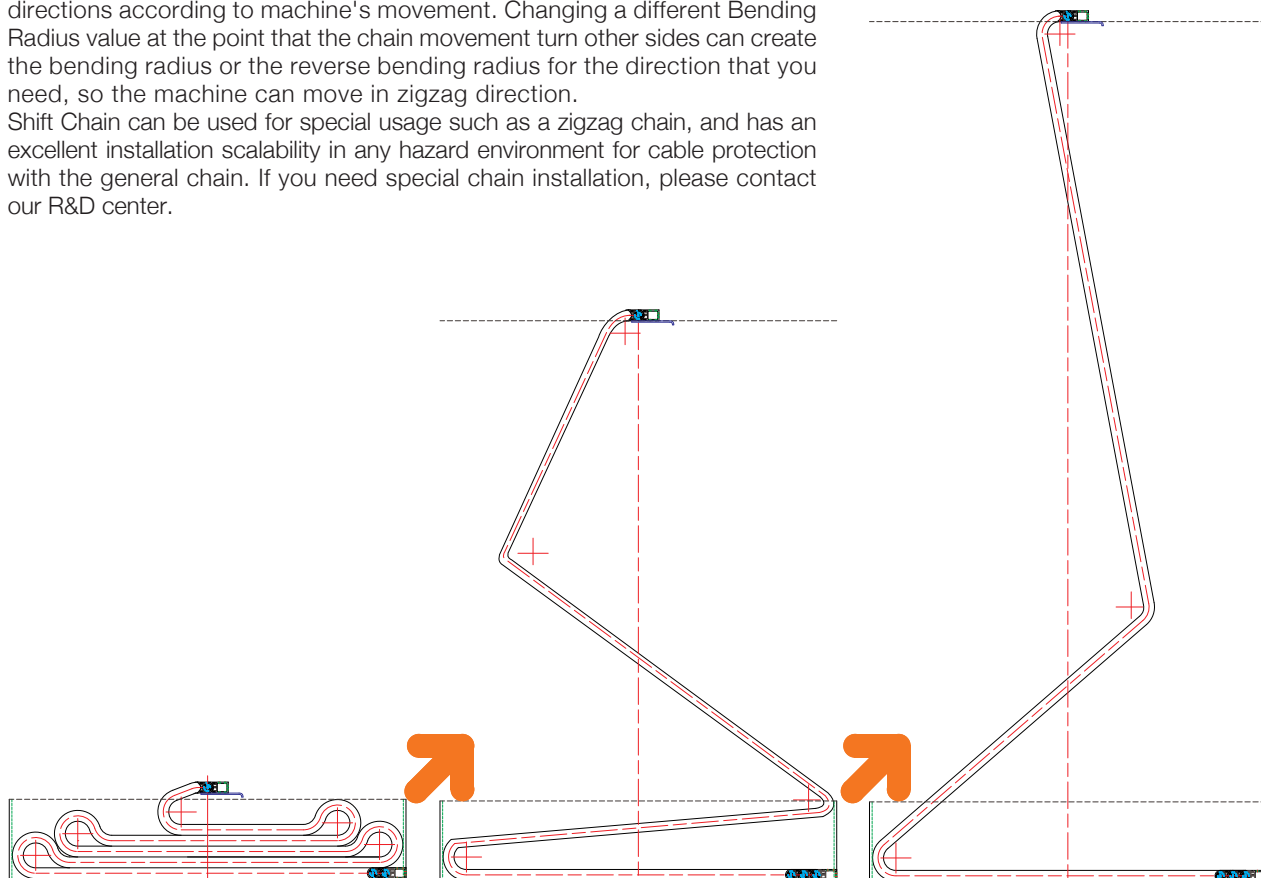
You don't need any tools to connect and disconnect side bands of Shift chain, but can do that easily by hand, so it saves time and the productivity improves.



9 Various applied installation including ST-Z series (Zig-Zag Chain)!

Shift Chain is designed to be able to move in upper, lower and diagonal directions according to machine's movement. Changing a different Bending Radius value at the point that the chain movement turn other sides can create the bending radius or the reverse bending radius for the direction that you need, so the machine can move in zigzag direction.

Shift Chain can be used for special usage such as a zigzag chain, and has an excellent installation scalability in any hazard environment for cable protection with the general chain. If you need special chain installation, please contact our R&D center.



10 UV block and Anti-Electrostatic Discharge!

Shift Chain is produced with high-quality engineering plastic material, which have strong durability and great abrasion resistance, so the chain has less breakage possibility by outside damage and performs stable cable protection in any difficult environment.

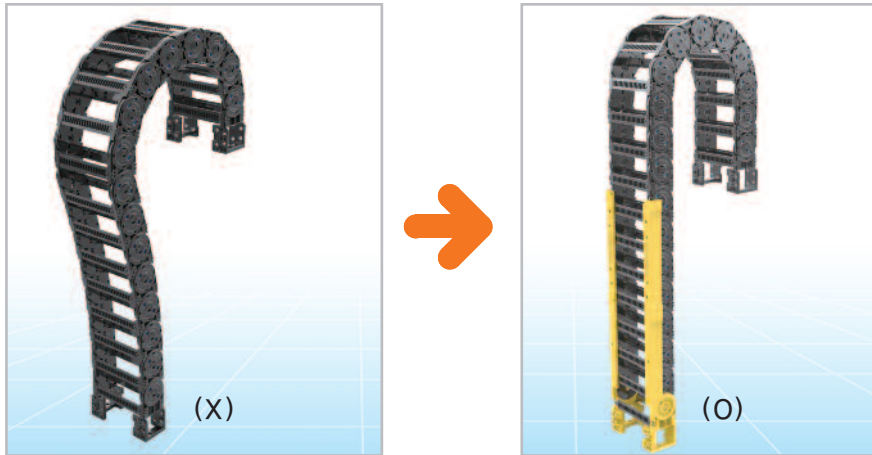
As the chain is verified through the tests for electrostatic discharge (ESD) and explosion proof (ATEX-Directive 94/9/EC), it can be applied in stability to electric equipment and machinery. Also, the chain is UV-coated, and can protect cable in outside installation of the chain. Furthermore, the chain is produced with high-quality engineering plastic, which include none of the 6 harmful substances (restrictives in the Europe market); Lead(Pb), Cdmium(Cd), Mercury(Hg), Hexavalent Chromium (Cr6+), PBB, PB DEs etc and which is recyclable and harmless both to user and environment.





INNOVATED INTEGRAL BRACKET SUPPORTER

THE STRONG POINT OF PRODUCT

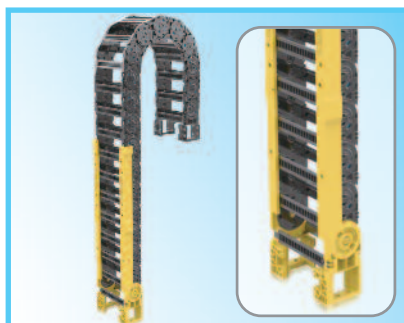


- 1** Cost-Saving effect by using the plastic material, as the substitute with previous expensive Material such as Stainless & Aluminium.
- 2** Time-Saving effect of installation by all-in-one constitution. No need to any additional extra fee when connecting with the cable chain.
- 3** Delivery Times saving because the extra designing process is unnecessary. Installation with only the parts is feasible.
- 4** Technically renovated product which is strong in breaking or chain deviation as the Unity Systems supports the chain when installing the Vertical Chain.

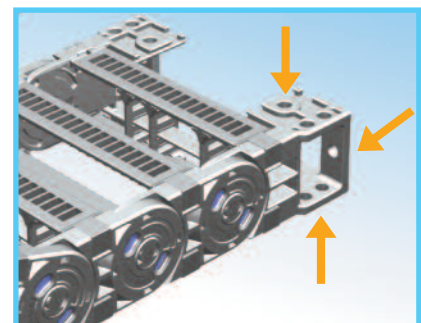
BRACKET TYPE



G : Guide Channel Type End Bracket



V : Vertical Guide Type End Bracket

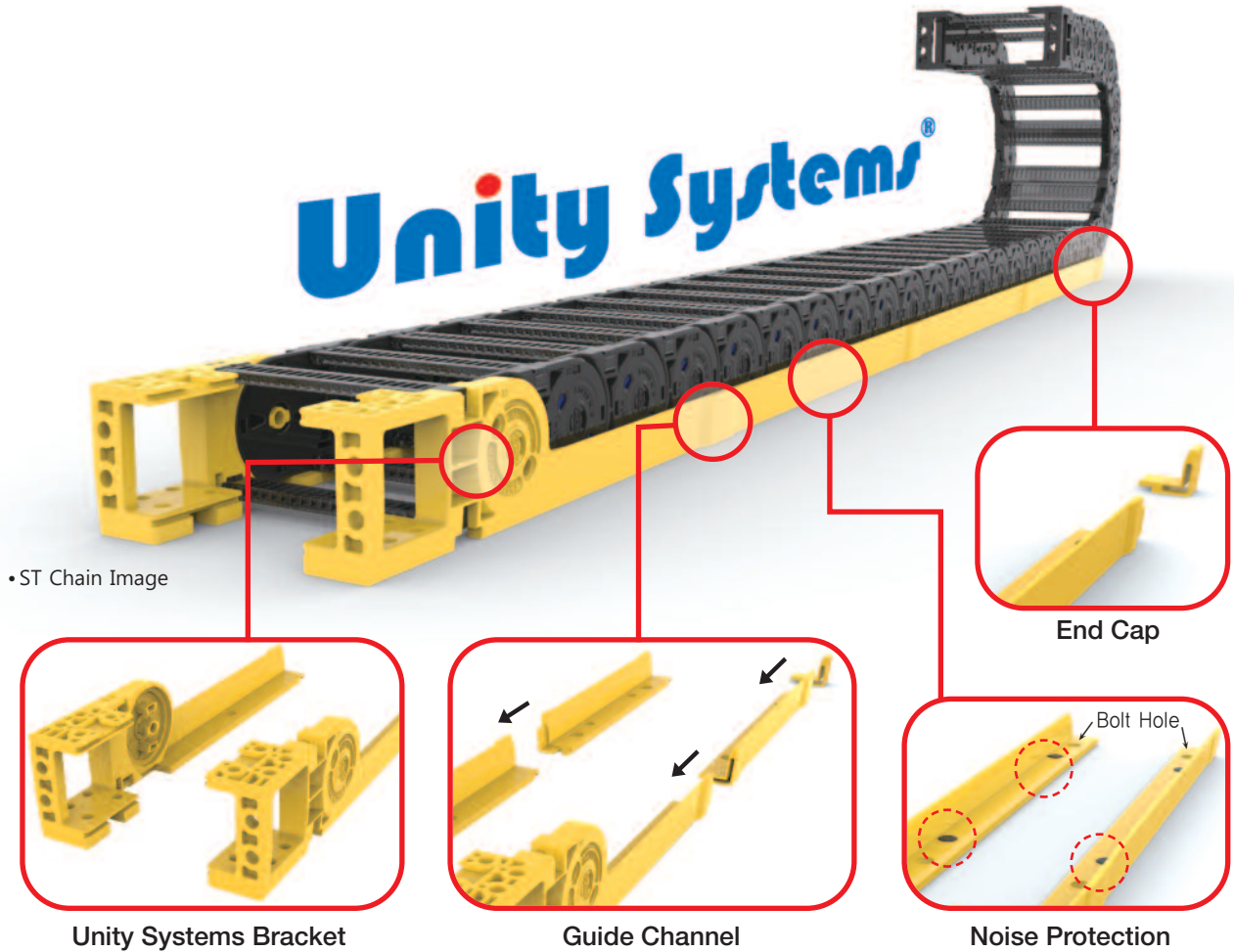


F : Free End Bracket



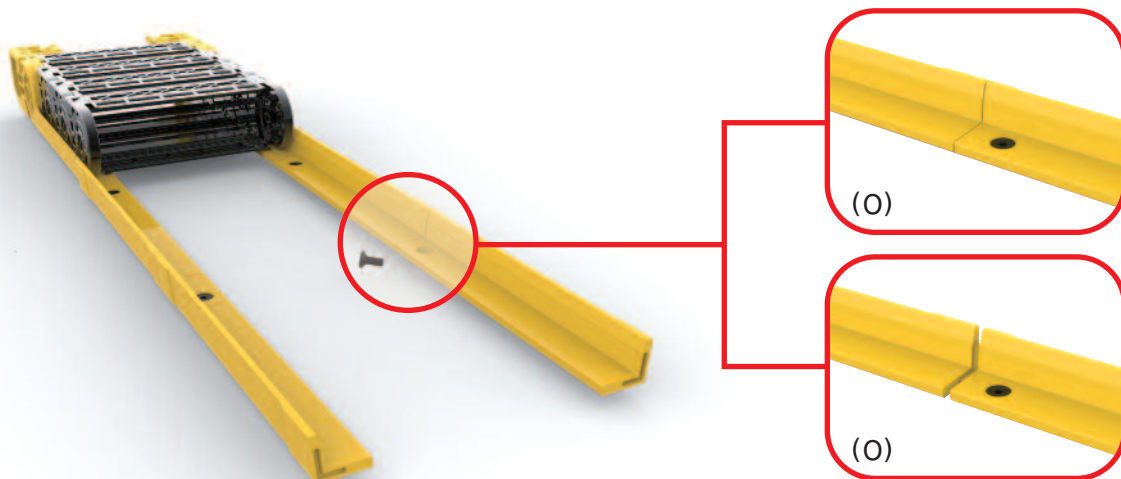
DETAILS OF Unity Systems

This type of bracket is to protect deflection of chain which will support the weight of certain section start from bracket, also will protect the damage of chain.



➔ Assembling by horizontal

The interval may be adjusted with the keeping condition of straightness.





CHAIN REQUEST FOR SELECTING SORTS

➔ Selecting criterion for cable chain

1. STROKE(total traveling distance of the equipment)

Judge whether chain for selecting droops or not.

2. Bending Radius

Rotation diameter of chain must be bigger than the biggest one of cables or hoses to be in the cable chain.

$R_{min} > 8\sim 10 \times \text{Cable outer diameter}$

$R_{min} > 15\sim 20 \times \text{Hose outer diameter}$

3. Internal size of chain

Select sorts of chain by checking quantity and diameter of each cables.
Select the internal size of chain after selecting 1,2

4. The length of chain

Must select the length of chain by checking the starting point of chain when traveling.

➔ Calculation of the length for chain

$$L = LS/2 + LP \quad (LP = \pi \times R + 4P)$$

L : The length of chain

LS/2 : The half of total stroke

LS : Total stroke, total traveling distance of the equipment

LP : Loop length

P : Length of each pitch

π : 3.14 R : Bending radius of chain

➔ Calculation of the height of installation for chain

$$H = 2R + B$$

H: Length of the upper end & lower end for chain when forming round

R: Bending radius of chain

B: The height for outer width for chain

Proper height of installing chain: $H + @$ @: It depends on the sort of chain (ex. CPS068N, 077N $\Rightarrow +40\text{mm}$)

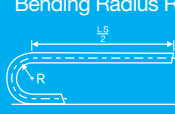
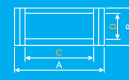








➔ Calculation of the bending radius for cable chain

$$R = (H - B) / 2$$

Check the total height of chain first, height of chain, and subtract the height of outer height from it, finally divide it by 2.



KINDS AND DIMENSIONS

Shift Chain N Type	Pitch	Bending Radius R 	Weight kg/m	Speed m/sec	Temperature °C	Clearance 				Frame style	Divider possible with frame
						A	B	C	D		
ST044N.035	44	50, 70, 90, 120, 150	0.93	10	-30 ~ +130	56	38	35	26		
ST044N.050	44		71			38	50	26			
ST044N.055	44		76			38	55	26			
ST044N.075	44		96			38	75	26			
ST044N.100	44		121			38	100	26			
ST044N.125	44		146			38	125	26			
ST044N.150	44		171			38	150	26			
ST044N.175	44		196			38	175	26			
ST044N.200	44		221			38	200	26			
ST055N.035	55		65, 75, 100, 125, 150, 200			1.12	10	-30 ~ +130	56		
ST055N.050	55	71		52	50	40					
ST055N.055	55	76		52	55	40					
ST055N.075	55	96		52	75	40					
ST055N.100	55	121		52	100	40					
ST055N.125	55	146		52	125	40					
ST055N.150	55	171		52	150	40					
ST055N.175	55	196		52	175	40					
ST055N.200	55	221		52	200	40					
ST072N.050	72	72, 100, 120, 145, 200, 250, 300		2.10	10	-30 ~ +130			82	66	50
ST072N.075	72		107	66			75	45			
ST072N.100	72		132	66			100	45			
ST072N.125	72		157	66			125	45			
ST072N.150	72		182	66			150	45			
ST072N.175	72		207	66			175	45			
ST072N.200	72		232	66			200	45			
ST072N.250	72		282	66			250	45			
ST072N.300	72		332	66			300	45			
ST095N.075	95		135, 150, 200, 230, 280, 400	3.11			10	-30 ~ +130	113	82	75
ST095N.100	95	138		82	100	56					
ST095N.125	95	163		82	125	56					
ST095N.150	95	188		82	150	56					
ST095N.175	95	213		82	175	56					
ST095N.200	95	238		82	200	56					
ST095N.250	95	288		82	250	56					
ST095N.300	95	338		82	300	56					
ST095N.350	95	388		82	350	56					
ST095N.400	95	438		82	400	56					
ST120N.075	120	180, 200, 250, 300, 350, 400, 500	4.41	10	-30 ~ +130	117	108	75	78		
ST120N.100	120		142			108	100	78			
ST120N.125	120		167			108	125	78			
ST120N.150	120		192			108	150	78			
ST120N.175	120		217			108	175	78			
ST120N.200	120		242			108	200	78			
ST120N.250	120		292			108	250	78			
ST120N.300	120		342			108	300	78			
ST120N.350	120		392			108	350	78			
ST120N.400	120		442			108	400	78			
ST120N.450	120		7.07			492	108	450	78		
ST120N.500	120		542			108	500	78			
ST120N.550	120		592			108	550	78			
ST120N.600	120		642			108	600	78			
ST150N.075	150	205, 305, 405, 505, 605	5.85	10	-30 ~ +130	121	140	75	110		
ST150N.100	150		146			140	100	110			
ST150N.125	150		171			140	125	110			
ST150N.150	150		196			140	150	110			
ST150N.175	150		221			140	175	110			
ST150N.200	150		246			140	200	110			
ST150N.250	150		296			140	250	110			
ST150N.300	150		346			140	300	110			
ST150N.350	150		396			140	350	110			
ST150N.400	150		446			140	400	110			
ST150N.450	150		8.18			496	140	450	110		
ST150N.500	150		546			140	500	110			
ST150N.550	150		596			140	550	110			
ST150N.600	150		646			140	600	110			

CP5 CABLE CHAIN

SHIFT CHAIN

SABIN CHAIN

REVOLVING CHAIN

HELIX CHAIN

ROBO-KIT

CP5FLEX

CP5FIX

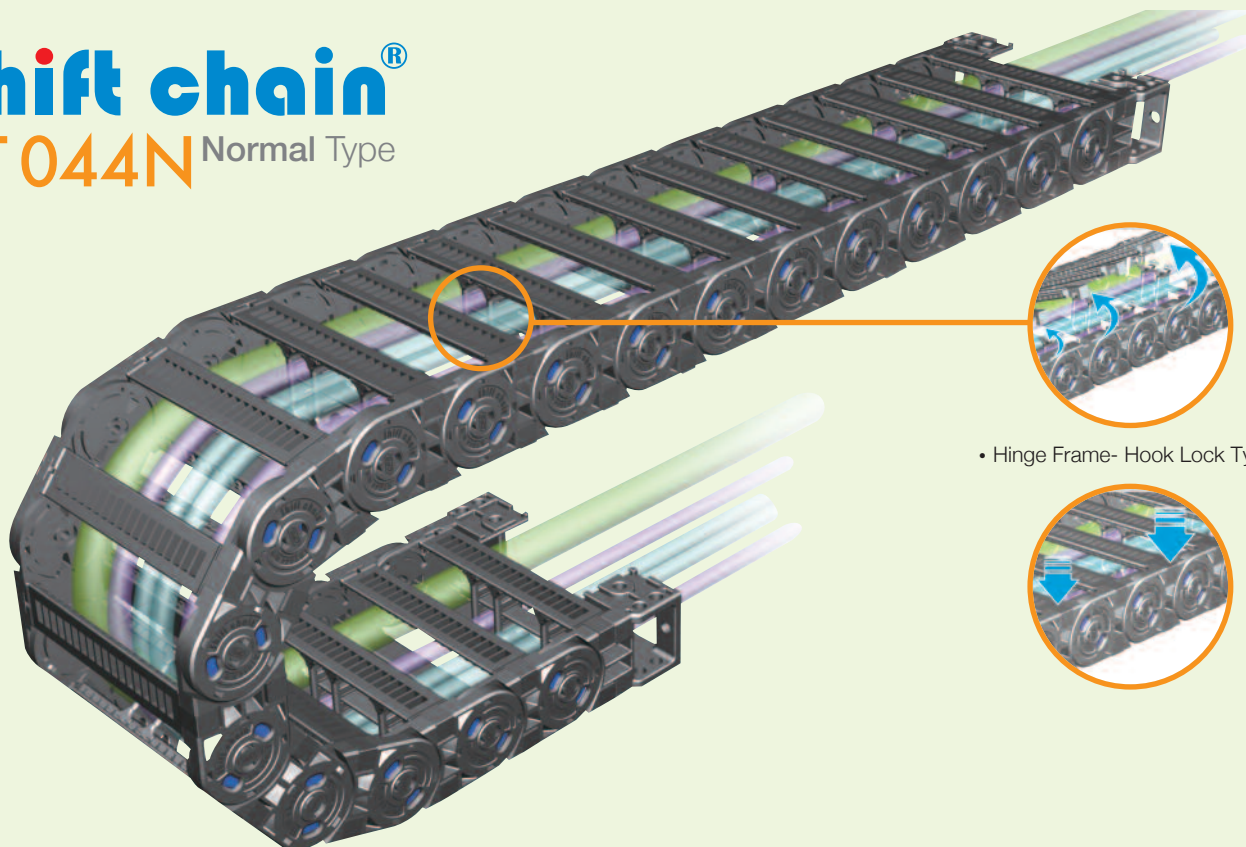
Shift chain[®] N TYPE : Normal

- ST044N - 55p
- ST055N - 60p
- ST072N - 65p
- ST095N - 70p
- ST120N - 75p
- ST150N - 80p

Min ●●●●●● Max

Shift chain®

ST 044N Normal Type



• Hinge Frame- Hook Lock Type •

CPS CABLE CHAIN

SHIFT CHAIN

SABIN CHAIN

REVOLVING CHAIN

HELIX CHAIN

ROBO-KIT

CPSFLEX

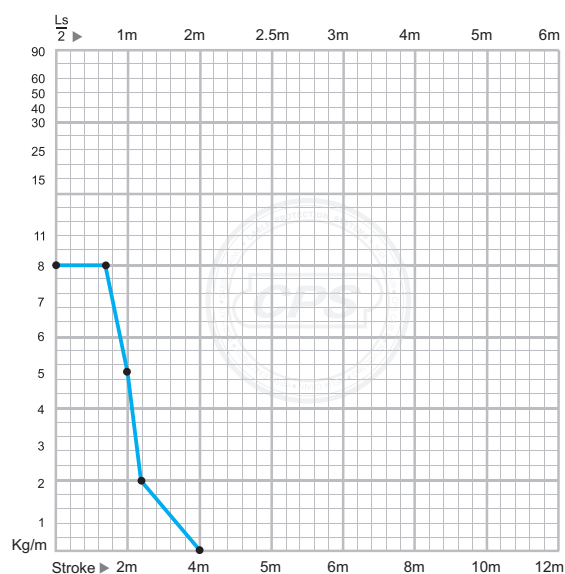
CPSFIX

MATERIAL

- **Chain material:**
CPS-amide with glass fiber reinforced UL94-HB
- **Low Noise**
- **Low Mote**
- **Speed :** 10m / sec
- **Temperature :** -30°C ~ +130°C
- **Other installation Length:**
Vertical curve above= max 2.0m
Vertical curve below= max 40m
Side Mounted, Unsupported= max 1.0m
- **Applications**
Gantry robot, Machining center, Textile machine, Welding machine, Feeder unit, Assembly Loader, Wood work machine, Fabric machine.
- **Calculation of the chain length**

$$\left[L = \frac{Ls}{2} + Lp \right]$$

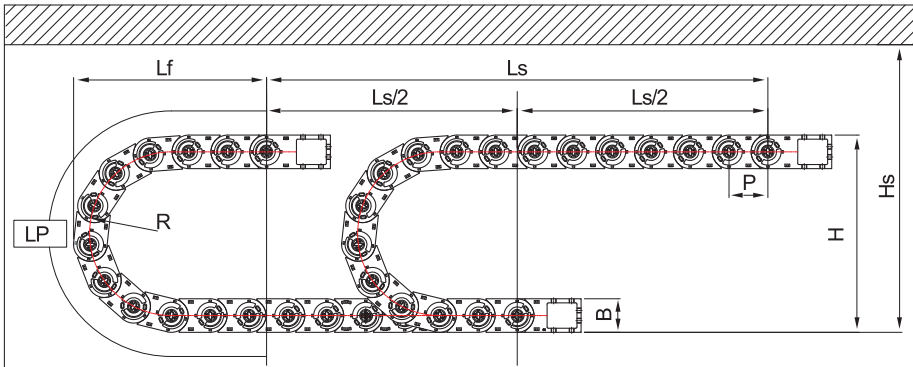
Load diagrams self-supporting length





Normal Type **ST 044N**

LAYOUT OF THE CHAIN



- Ls:** Stroke
- Lp:** Loop Length
- Lf:** Loop Projection
- Hs:** Safe Space

(Dimensions in mm)

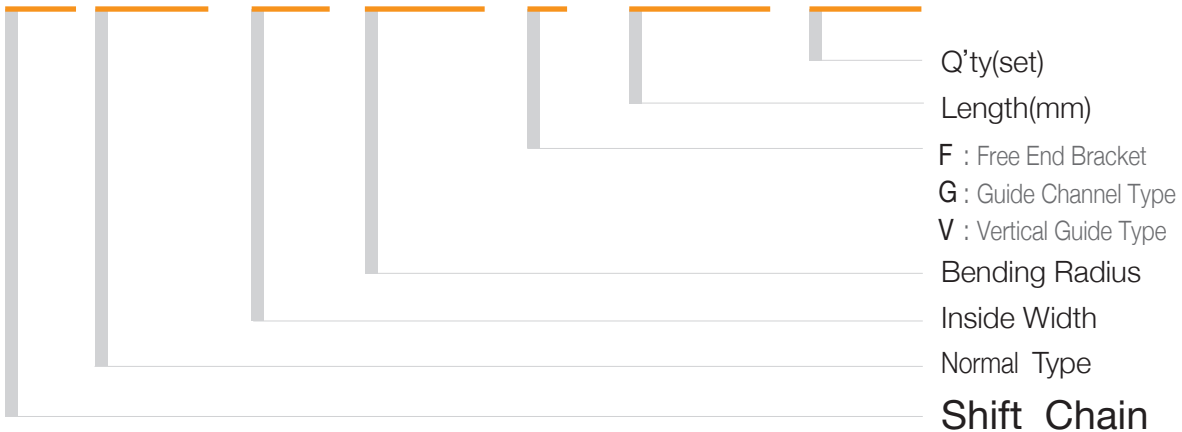
Bending radius R	50	70	90	120	150
Lp	333	396	459	553	648
Lf	157	177	197	227	257
H	138	178	218	278	338

ST 044N Type

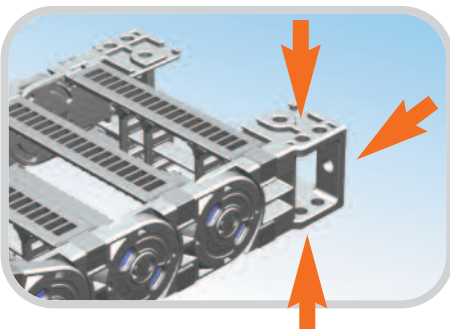
- Pitch P:** 44mm
- Height B:** 38mm
- Height H:** 2R+38mm
- Hs** ≥ H+30mm

ORDERING

ST 044N. 100. R120 / F - 1500L : 10ST



BRACKET TYPE



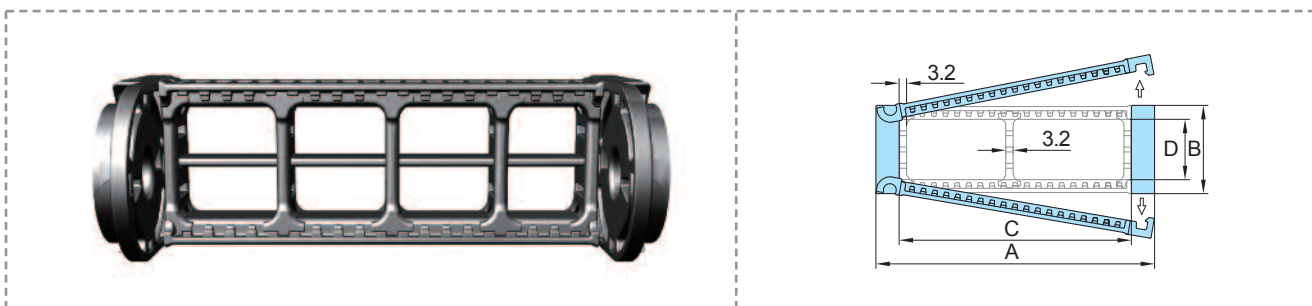
FEB (Free End Bracket)

FEB Fixes the cable chain to the machinery or moving application. CPS has improved mounting efficiency by unifying the existing Easy End Bracket and Normal End Bracket.

▶ Above products are patent registered item which can be protected by industrial property right.

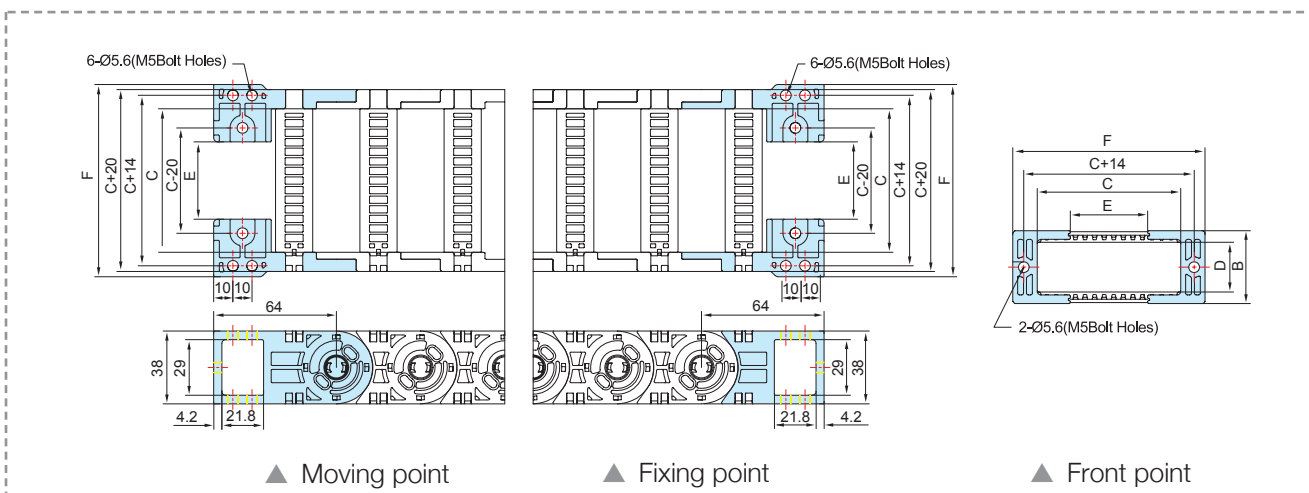
Normal Type **ST 044N**

CHAIN CROSS SECTION



Chain Type	A	B	C	D	Bending Radius(R)	Weight in kg/m
ST 044N.035	56		35		50, 70, 90, 120, 150	0.93
ST 044N.050	71		50			0.97
ST 044N.055	76		55			1.00
ST 044N.075	96		75			1.06
ST 044N.100	121	38	100	26		1.17
ST 044N.125	146		125			1.30
ST 044N.150	171		150			1.43
ST 044N.175	196		175			1.78
ST 044N.200	221		200			1.94

FREE END BRACKET



Chain Type	F	B	C	D	E	Hole Type
ST 044N.035	60.4		35		0.4	M5 Bolt Holes
ST 044N.050	75.4		50		15.4	
ST 044N.055	80.4		55		20.4	
ST 044N.075	100.4		75		40.4	
ST 044N.100	125.4	38	100	26	65.4	
ST 044N.125	150.4		125		90.4	
ST 044N.150	175.4		150		115.4	
ST 044N.175	200.4		175		140.4	
ST 044N.200	225.4		200		165.4	



2014 NEW PRODUCT

Unity Systems[®]

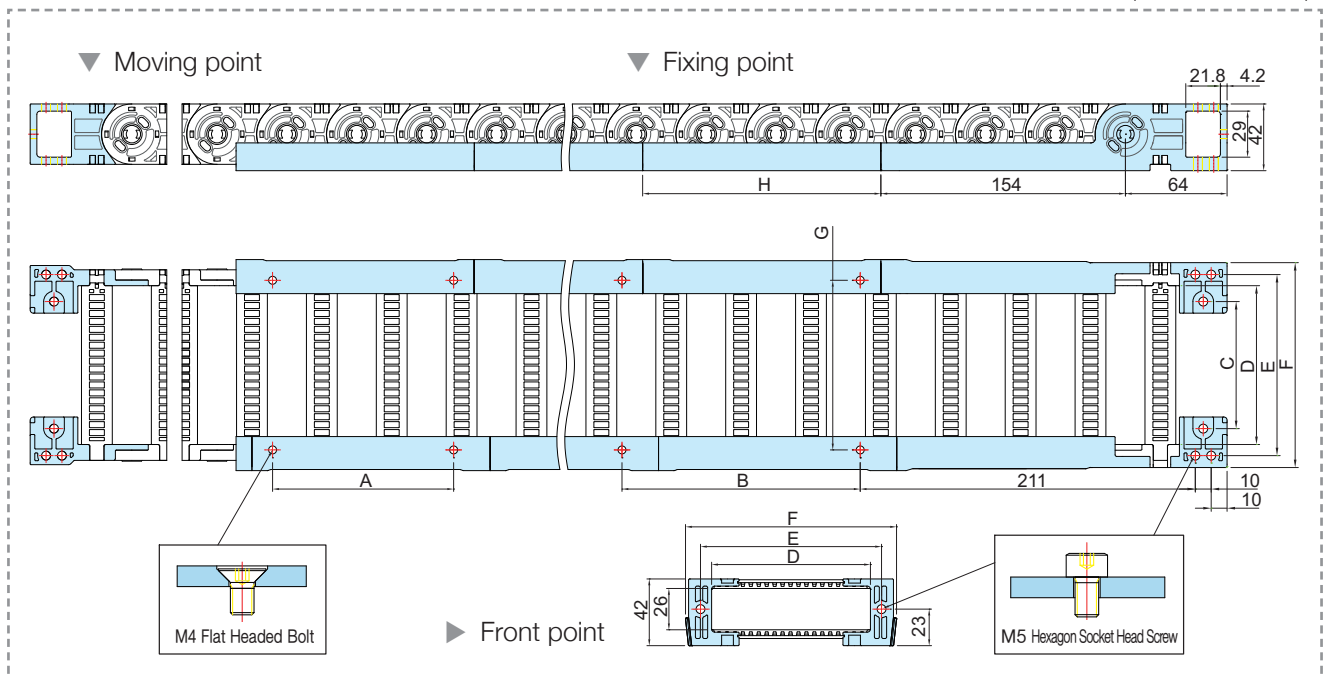
Normal Type **ST 044N**

This type of bracket is to protect deflection of chain which will support the weight of certain section start from bracket, also will protect the damage of chain.



GUIDE CHANNEL TYPE END BRACKET

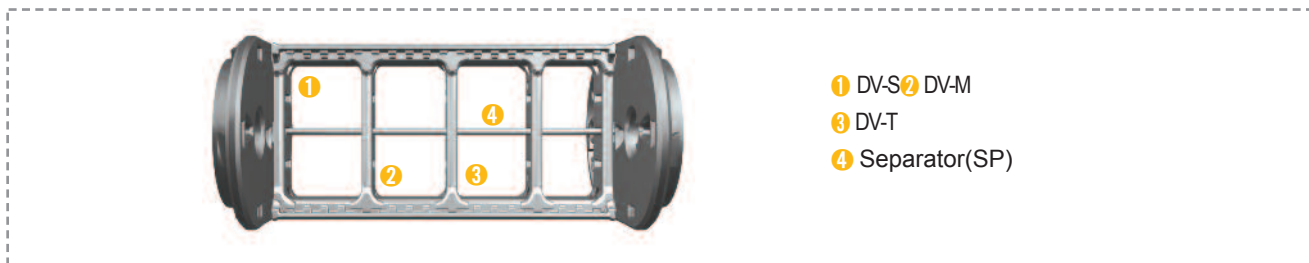
(Dimensions in mm)



Chain Type	C FEB fix hole(inner)	D Frame length dimension	E FEB width	F FEB width	G GC hole width	GC TYPE	H GC length	B GC fixing hole	A GC hole dimension
ST 044N.035	15	35	49	68	41.8	GC150	150	151	114
ST 044N.050	30	50	64	83	56.8				
ST 044N.055	35	55	69	88	61.8				
ST 044N.075	55	75	89	108	81.8				
ST 044N.100	80	100	114	133	106.8				
ST 044N.125	105	125	139	158	131.8				
ST 044N.150	130	150	164	183	156.8	GC250	250	251	214
ST 044N.175	155	175	189	208	181.8				
ST 044N.200	180	200	214	233	206.8				

Normal Type **ST 044N**

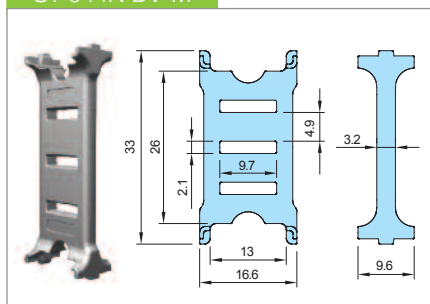
DIVIDERS & SEPARATORS



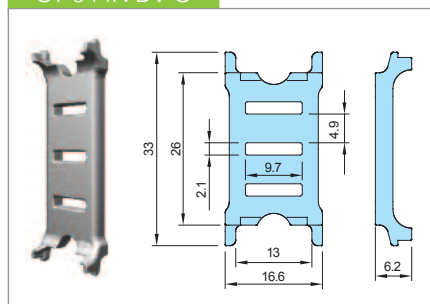
- ① DV-S ② DV-M
- ③ DV-T
- ④ Separator(SP)

Dividers (Vertical) and Separators (Horizontal) divide the inner chamber of the cable chain to give each cable diameter its own center and keep the cables separated from each other. The use of separator in some cases, can also reduce the width requirements as two or more levels can be made within the same chamber. To prevent twisting or damage to the cables, as a rule, there needs to be at least 10% space between the inserted cable and its enclosure.

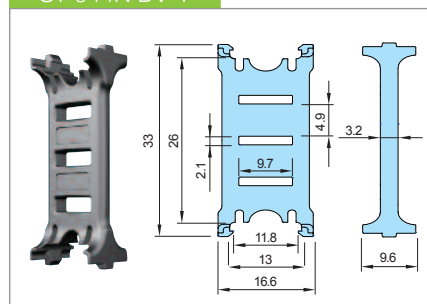
ST 044N DV-M



ST 044N DV-S



ST 044N DV-T



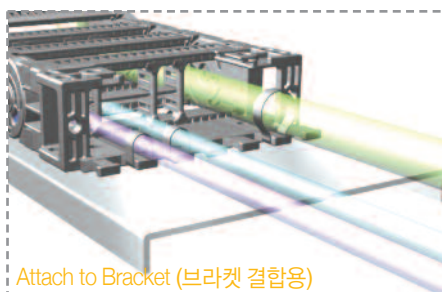
▶ Assemble divider every Two links.

▶ DV/T : Frame 125~200

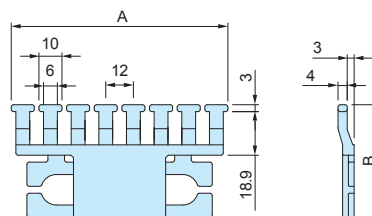
ST044N Separators (SP) (No. : S-SP/M)

Chain Type \ Separators	SP035	SP050	SP055	SP075	SP100	SP125	SP150	SP175	SP200
ST 044N	○	○	○	○	○	○	○	○	○
ST 055N	○	○	○	○	○	○	○	○	○

TIE WRAP



Attach to Bracket (브라켓 결합용)



(Dimensions in mm)

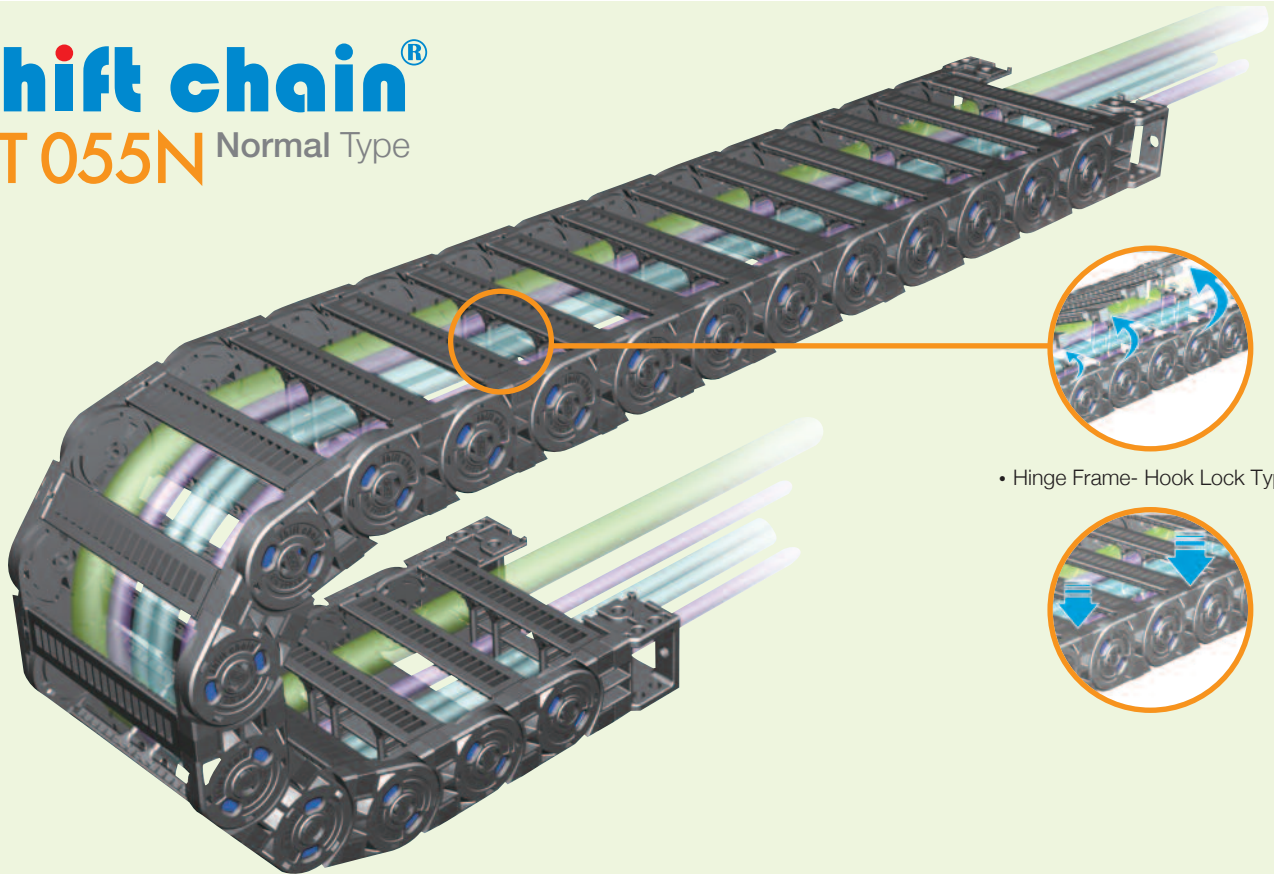
Tie Wrap	035	055	075	100	125
A	46	70	94	118	142
B	35.4	48.9	48.9	48.9	48.9

The Tie Wrap separated from the Shift Chain bracket, when installed properly, protects the inserted cables from becoming entangled and twisted during operation. There are two types in the tie wrap; Attached & Unattached to the bracket.



Min ●●●●●● Max

Shift chain[®] ST 055N Normal Type



• Hinge Frame- Hook Lock Type •

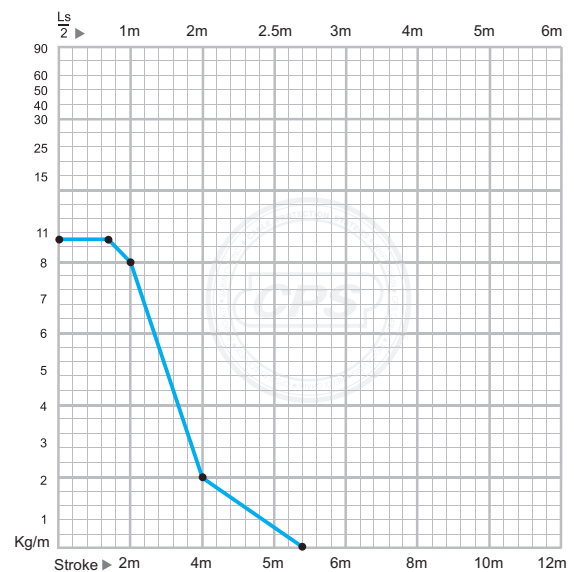
MATERIAL

- **Chain material:**
CPS-amide with glass fiber reinforced UL94-HB
- **Low Noise:**
- **Low Mote:**
- **Speed :** 10m / sec
- **Temperature :** -30°C ~ +130°C
- **Other installation Length:**
Vertical curve above= max 3.0m
Vertical curve below= max 50m
Side Mounted, Unsupported= max 1.0m
- **Applications**
Gantry robot, Machining center, Textile machine, Welding machine, Feeder unit, Assembly Loader, Wood work machine, Fabric machine.

● Calculation of the chain length

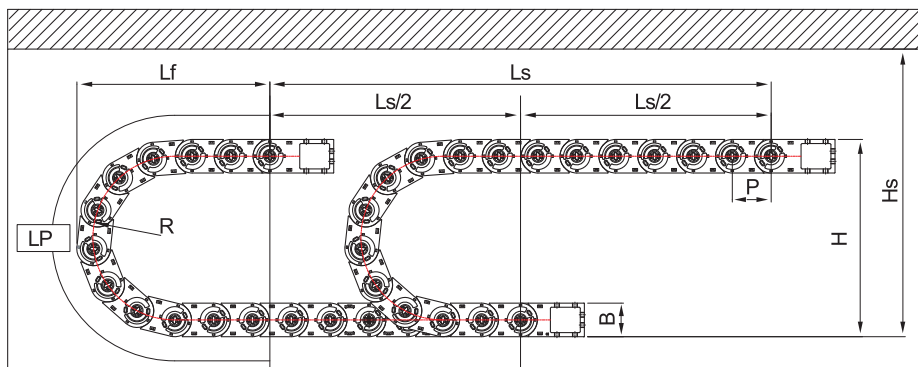
$$\left[L = \frac{Ls}{2} + Lp \right]$$

● Load diagrams self-supporting length



Normal Type **ST 055N**

LAYOUT OF THE CHAIN



- Ls:** Stroke
- Lp:** Loop Length
- Lf:** Loop Projection
- Hs:** Safe Space

(Dimensions in mm)

Bending radius R	65	75	100	125	150	200
Lp	424	456	535	613	692	849
Lf	201	211	236	261	286	336
H	182	202	252	302	352	452

ST 055N Type

- Pitch P:** 55mm
- Height B:** 52mm
- Height H:** 2R+52mm
- Hs** ≥ H+35mm

ORDERING

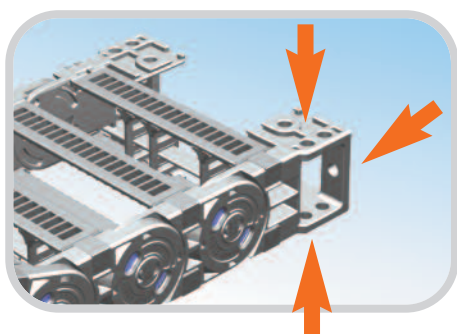
ST 055N. 150. R150 / F - 1800L : 10ST



- Q'ty(set)
- Length(mm)
- F : Free End Bracket
- G : Guide Channel Type
- V : Vertical Guide Type
- Bending Radius
- Inside Width
- Normal Type

Shift Chain

BRACKET TYPE (브라켓타입)



FEB (Free End Bracket)

FEB Fixes the cable chain to the machinery or moving application. CPS has improved mounting efficiency by unifying the existing Easy End Bracket and Normal End Bracket.

▶ Above products are patent registered item which can be protected by industrial property right.



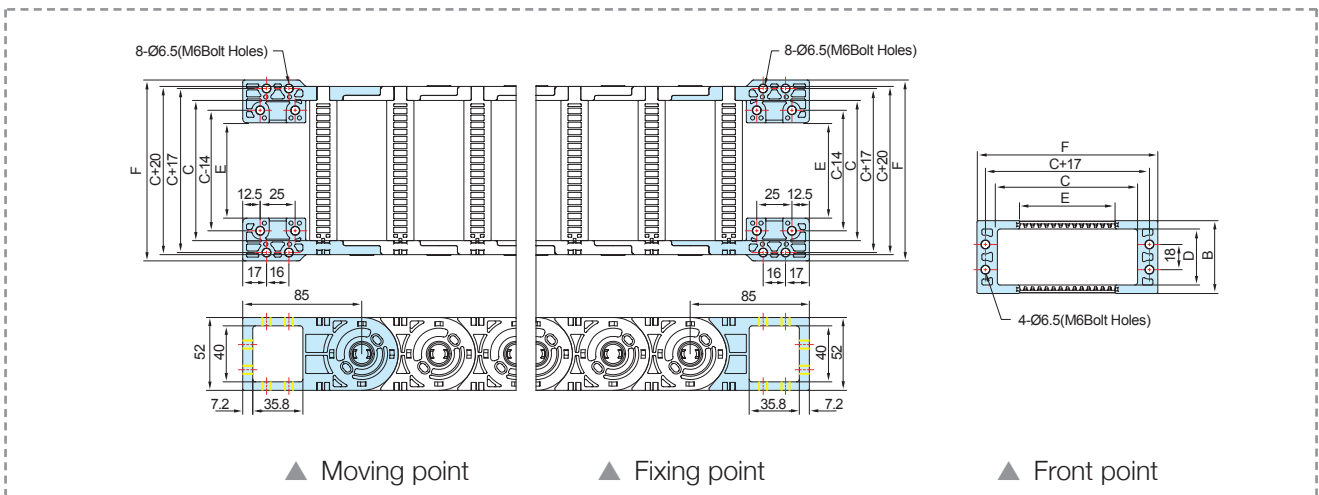
Normal Type **ST 055N**

CHAIN CROSS SECTION



Chain Type	A	B	C	D	Bending Radius(R)	Weight in kg/m
ST 055N.035	56		35			1.12
ST 055N.050	71		50			1.15
ST 055N.055	76		55			1.18
ST 055N.075	96		75			1.23
ST 055N.100	121	52	100	40	65, 75, 100, 125, 150, 200	1.31
ST 055N.125	146		125			1.41
ST 055N.150	171		150			1.51
ST 055N.175	196		175			1.78
ST 055N.200	221		200			1.92

FREE END BRAKET



Chain Type	F	B	C	D	E	Hole Type
ST 055N.035	64		35		3	M6 Bolt Holes
ST 055N.050	79		50		18	
ST 055N.055	84		55		23	
ST 055N.075	104		75		43	
ST 055N.100	129	52	100	40	68	
ST 055N.125	154		125		93	
ST 055N.150	179		150		118	
ST 055N.175	204		175		143	
ST 055N.200	229		200		168	

2014 NEW PRODUCT

Unity Systems®

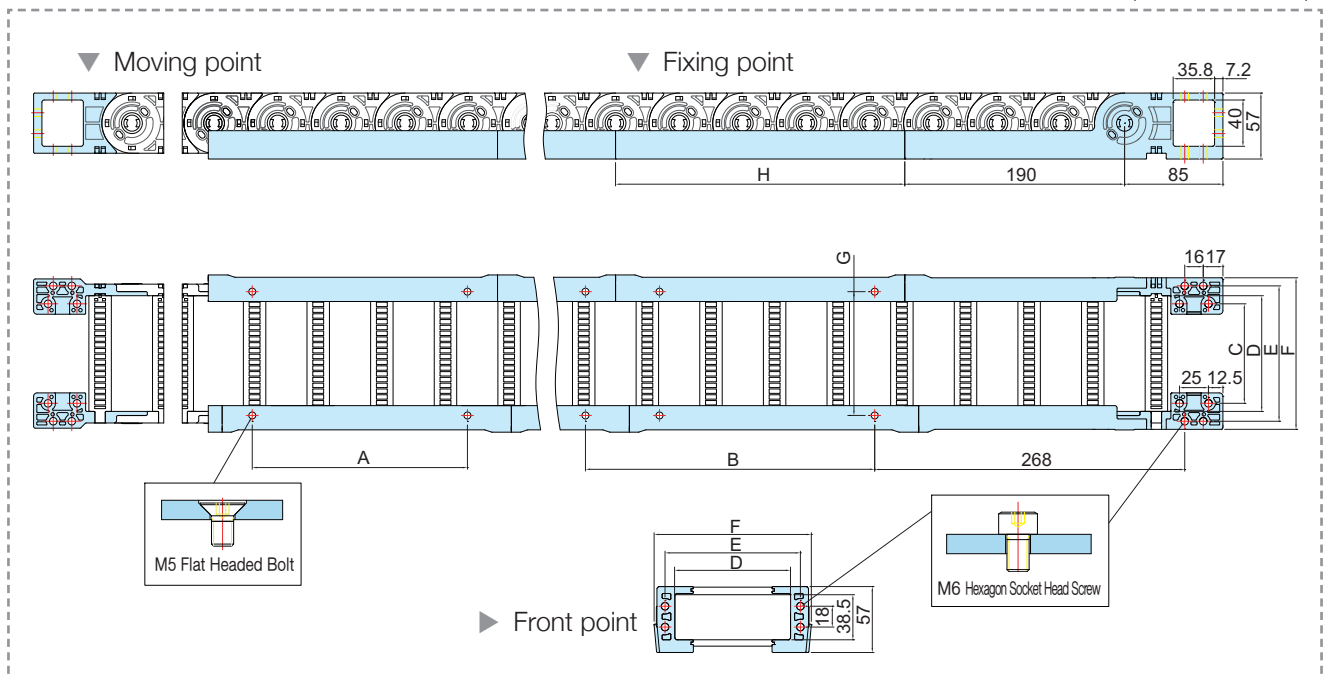
Normal Type **ST 055N**

This type of bracket is to protect deflection of chain which will support the weight of certain section start from bracket, also will protect the damage of chain.



GUIDE CHANNEL TYPE END BRACKET

(Dimensions in mm)

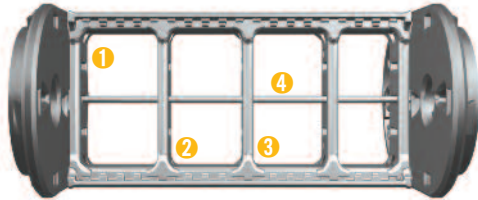


Chain Type	C FEB fix hole(inner)	D Frame length dimension	E FEB width	F FEB width	G GC hole width	GC TYPE	H GC length	B GC fixing hole	A GC hole dimension
ST 055N.035	21	35	52	71	42	GC250	250	251	186
ST 055N.050	36	50	67	86	57				
ST 055N.055	41	55	72	91	62				
ST 055N.075	61	75	92	111	82				
ST 055N.100	86	100	117	136	107				
ST 055N.125	111	125	142	161	132				
ST 055N.150	136	150	167	186	157	GC400	400	401	336
ST 055N.175	161	175	192	211	182				
ST 055N.200	186	200	217	236	207				



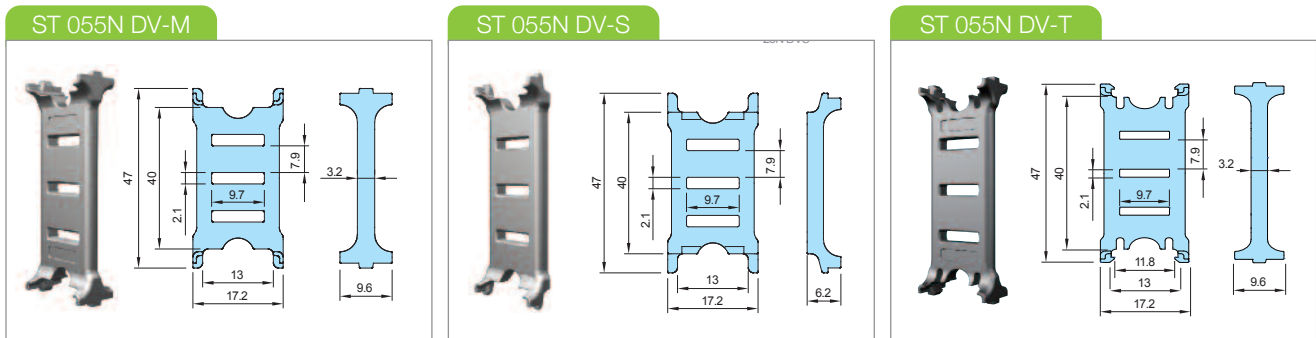
Normal Type **ST 055N**

DIVIDERS & SEPARATORS



- 1 DV-S
- 2 DV-M
- 3 DV-T
- 4 Separator(SP)

Dividers (Vertical) and Separators (Horizontal) divide the inner chamber of the cable chain to give each cable diameter its own center and keep the cables separated from each other. The use of separator in some cases, can also reduce the width requirements as two or more levels can be made within the same chamber. To prevent twisting or damage to the cables, as a rule, there needs to be at least 10% space between the inserted cable and its enclosure.



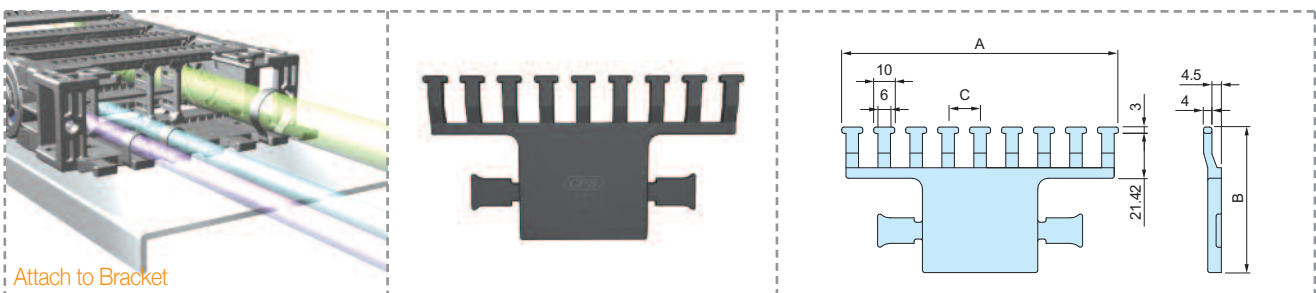
▶ Assemble divider every Two links.

▶ DV/T : Frame 125~200

ST044N Separators (SP) (No. : S-SP/M)

Chain Type	Separators	SP035	SP050	SP055	SP075	SP100	SP125	SP150	SP175	SP200
ST 044N		○	○	○	○	○	○	○	○	○
ST 055N		○	○	○	○	○	○	○	○	○

TIE WRAP



Attach to Bracket

(Dimensions in mm)

Tie Wrap	050	075	100	125	150	175	200
A	82	107	132	157	182	203	232
B	69.42	69.42	69.42	69.42	69.42	69.42	69.42
C	12	12.13	15.25	14.7	14.35	12.31	13.88

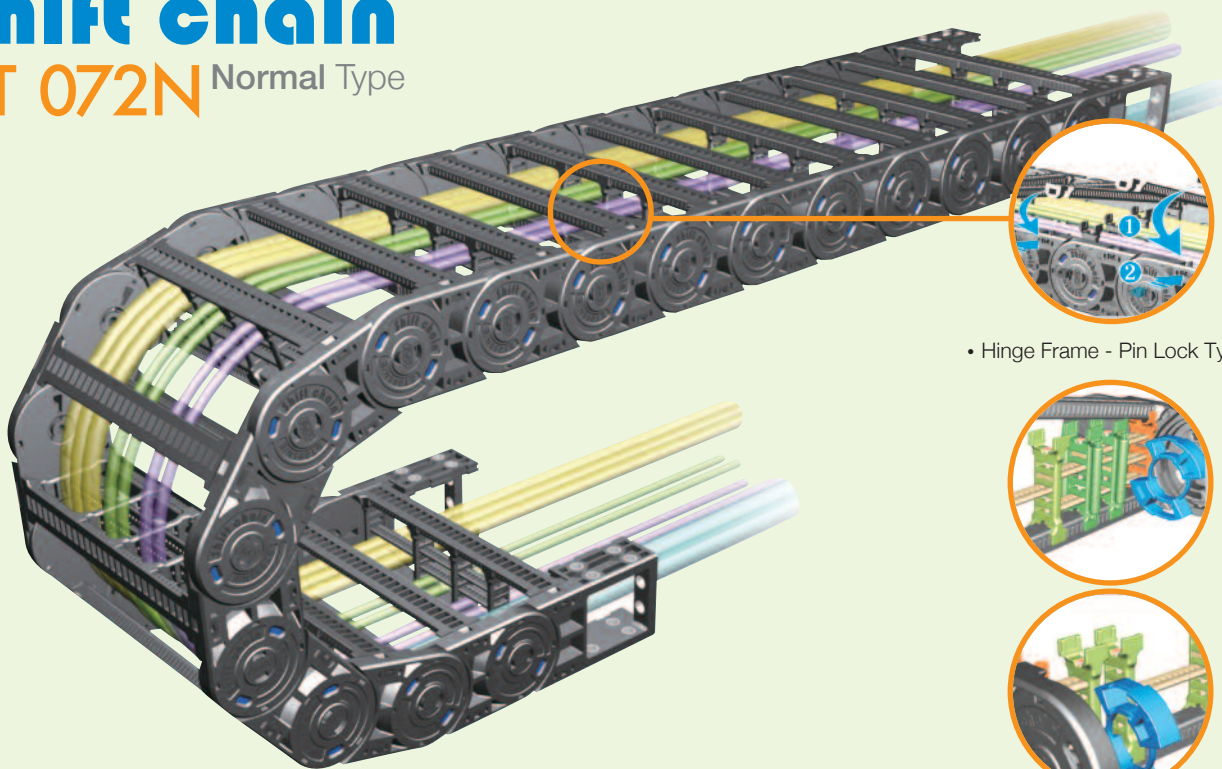
The Tie Wrap separated from the Shift Chain bracket, when installed properly, protects the inserted cables from becoming entangled and twisted during operation. There are two types in the tie wrap; Attached & Unattached to the bracket.

When using the tie wrap option for the Shift Chain ST 055 series, the corresponding frame sizes will be 50, 75, 100, 125, 150, 175 and 200mm respectively.

Min ●●●●● Max

Shift chain®

ST 072N Normal Type



• Hinge Frame - Pin Lock Type •

CPS CABLE CHAIN

SHIFT CHAIN

SABIN CHAIN

REVOLVING CHAIN

HELIX CHAIN

ROBO-KIT

CPSFLEX

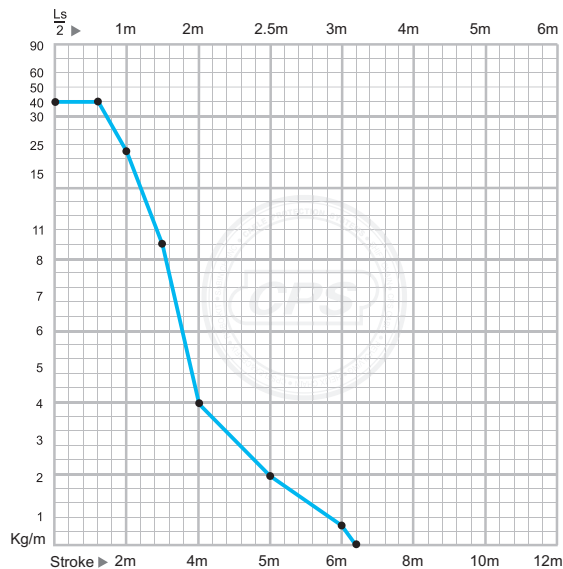
CPSFIX

MATERIAL

- **Chain material:**
CPS-amide with glass fiber reinforced UL94-HB
- **Low Noise**
- **Low Mote**
- **Speed :** 10m / sec
- **Temperature :** -30°C ~ +130°C
- **Other installation Length:**
Vertical curve above= max 6.0m
Vertical curve below= max 100m
Side Mounted, Unsupported= max 2.5m
- **Applications**
Gantry robot, Machining center, Textile machine, Welding machine, Feeder unit, Assembly Loader, Wood work machine, Fabric machine.
- **Calculation of the chain length**

$$\left[L = \frac{Ls}{2} + Lp \right]$$

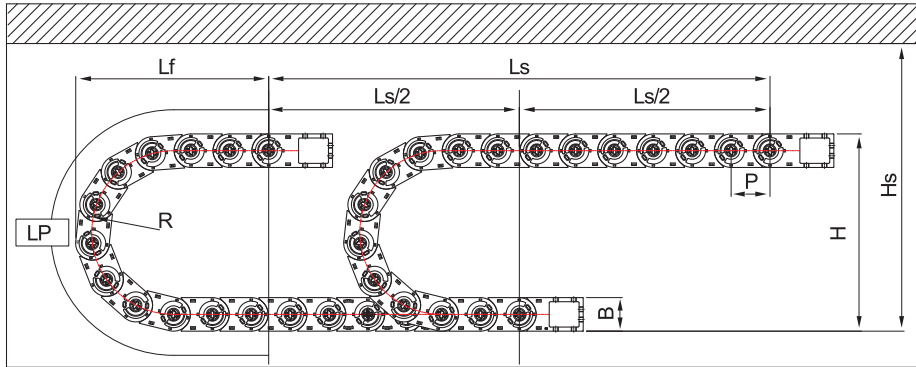
Load diagrams self-supporting length





Normal Type **ST 072N**

LAYOUT OF THE CHAIN



- Ls:** Stroke
- Lp:** Loop Length
- Lf:** Loop Projection
- Hs:** Safe Space

(Dimensions in mm)

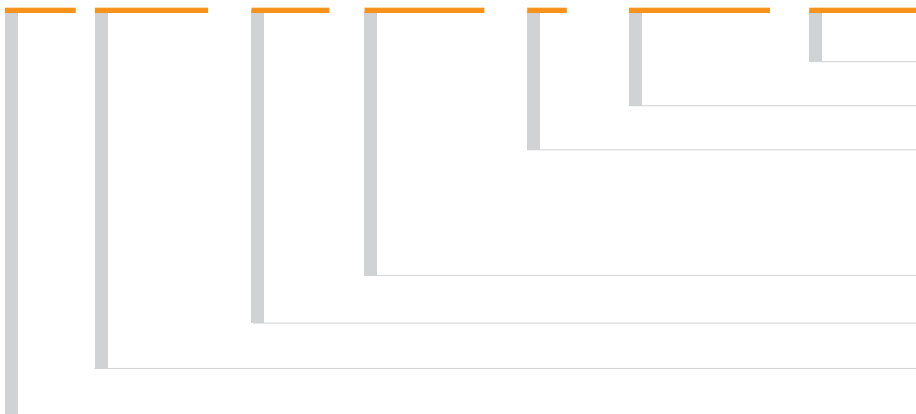
Bending radius R	72	100	120	145	200	250	300
Lp	514	603	665	743	916	1,074	1,230
Lf	249	277	297	322	377	427	477
H	210	266	306	356	466	566	666

ST 072N Type

- Pitch P:** 72mm
- Height B:** 66mm
- Height H:** 2R+66mm
- Hs** ≥ H+40mm

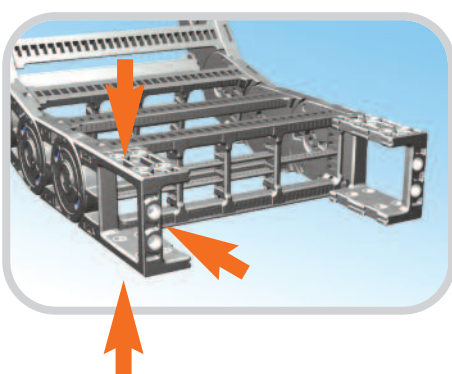
ORDERING

ST 072N. 175. R200 / F - 2000L : 10ST



- Q'ty(set)
- Length(mm)
- F : Free End Bracket
- G : Guide Channel Type
- V : Vertical Guide Type
- Bending Radius
- Inside Width
- Normal Type
- Shift Chain**

BRACKET TYPE



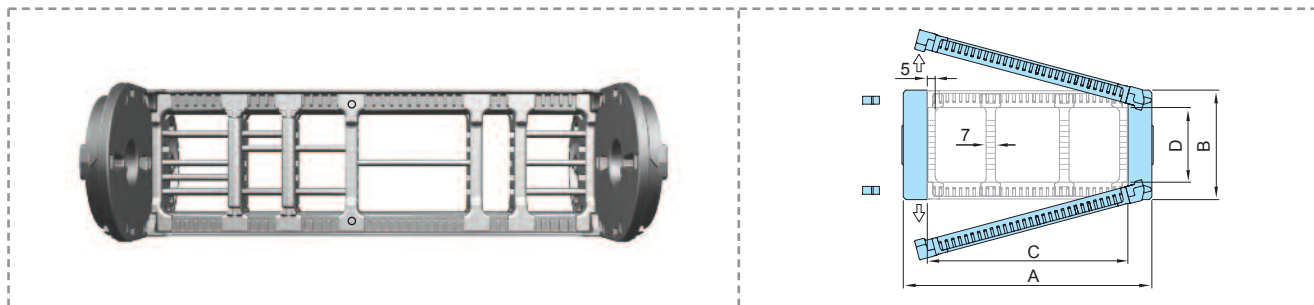
FEB (Free End Bracket)

FEB Fixes the cable chain to the machinery or moving application. CPS has improved mounting efficiency by unifying the existing Easy End Bracket and Normal End Bracket. For added strength, steel spacers are inserted into the fixing holes of each Free End Bracket.

► Above products are patent registered item which can be protected by industrial property right.

Normal Type **ST 072N**

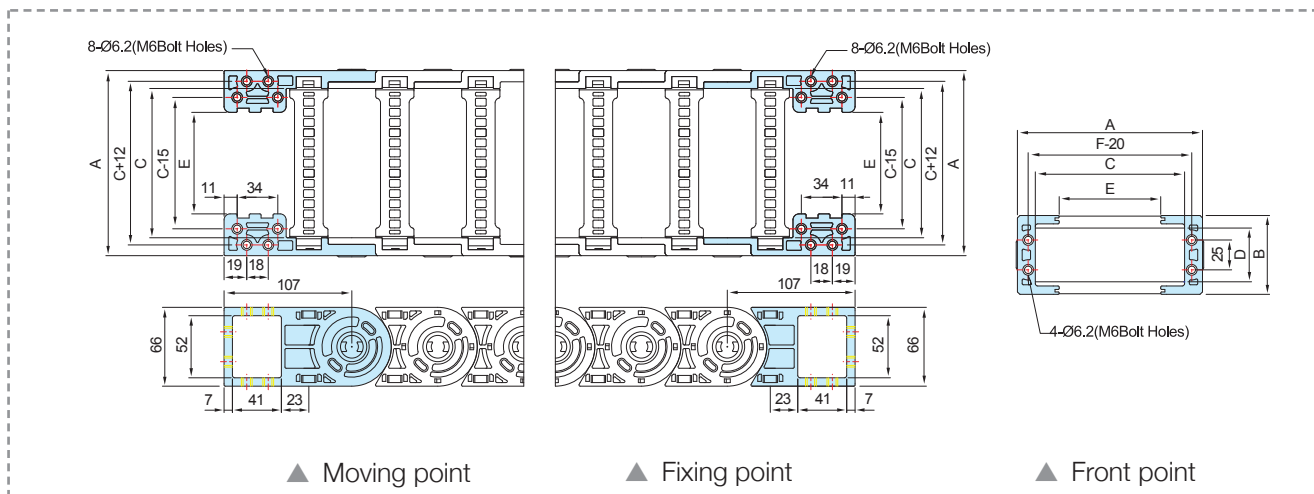
CHAIN CROSS SECTION



Chain Type	A	B	C	D	Bending Radius(R)	Weight in kg/m
ST 072N.050	82		50		72, 100, 120, 145, 200, 250, 300	2.10
ST 072N.075	107		75			2.20
ST 072N.100	132		100			2.30
ST 072N.125	157		125			2.43
ST 072N.150	182	66	150	45		2.56
ST 072N.175	207		175			2.66
ST 072N.200	232		200			3.11
ST 072N.250	282		250			3.24
ST 072N.300	332		300			3.60

▲ Application of special frame. (C:140,165,190,240)

FREE END BRAKET



▲ Moving point

▲ Fixing point

▲ Front point

Chain Type	A	B	C	D	E	Hole Type
ST 072N.050	82		50		10	M6 Bolt Holes
ST 072N.075	107		75		35	
ST 072N.100	132		100		60	
ST 072N.125	157		125		85	
ST 072N.150	182	66	150	45	110	
ST 072N.175	207		175		135	
ST 072N.200	232		200		160	
ST 072N.250	282		250		210	
ST 072N.300	332		300		260	

▲ Application of special frame. (C:140,165,190,240)



2014 NEW PRODUCT

Unity Systems[®]

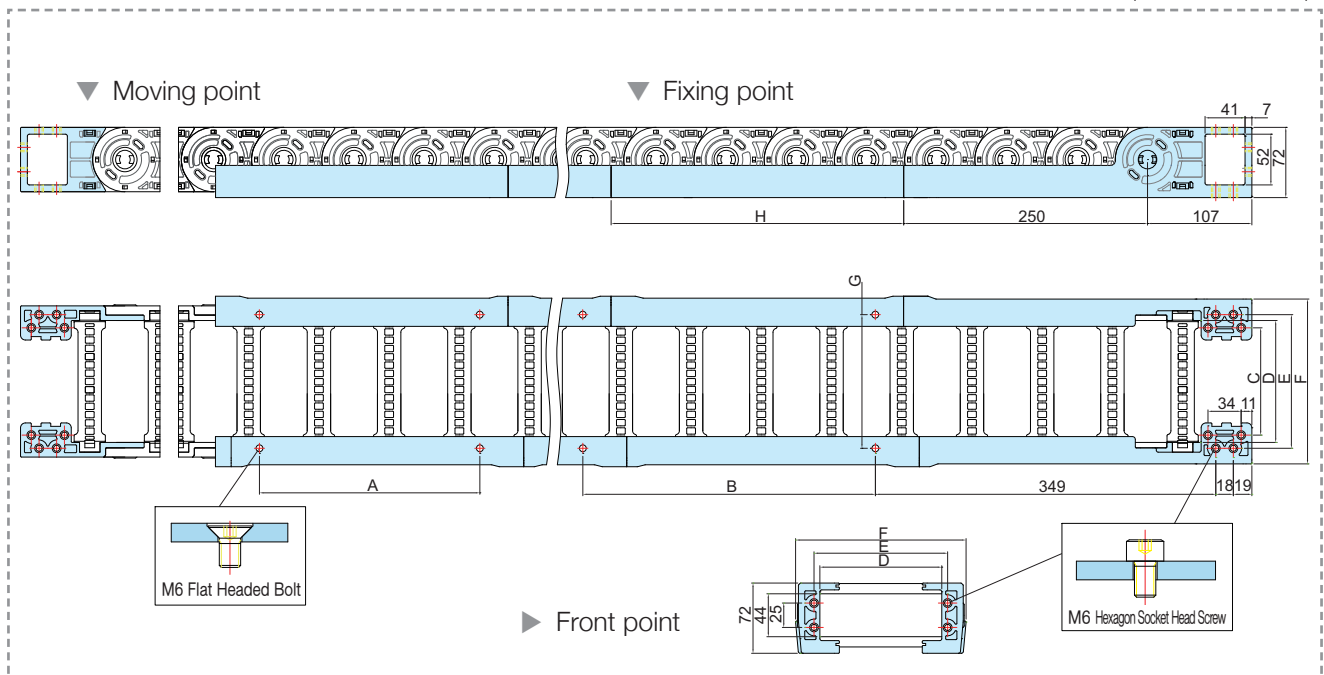
Normal Type **ST 072N**

This type of bracket is to protect deflection of chain which will support the weight of certain section start from bracket, also will protect the damage of chain.



GUIDE CHANNEL TYPE END BRACKET

(Dimensions in mm)

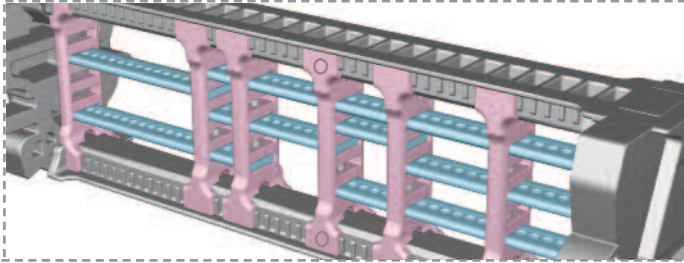


Chain Type	C FEB fix hole(inner)	D Frame length dimension	E FEB width	F FEB width	G GC hole width	GC TYPE	H GC length	B GC fixing hole	A GC hole dimension
ST 072N.050	35	50	62	100	62	GC300	300	301	226
ST 072N.075	60	75	87	125	87				
ST 072N.100	85	100	112	150	112				
ST 072N.125	110	125	137	175	137				
ST 072N.150	135	150	162	200	162				
ST 072N.175	160	175	187	225	187	GC500	500	501	426
ST 072N.200	185	200	212	250	212				
ST 072N.250	235	250	262	300	262				
ST 072N.300	285	300	312	350	312				



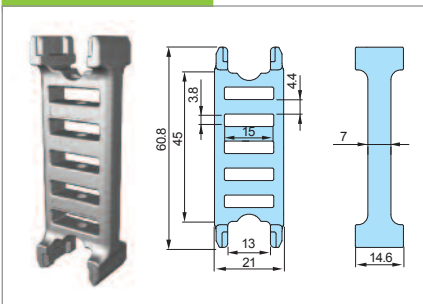
Normal Type **ST 072N**

DIVIDERS

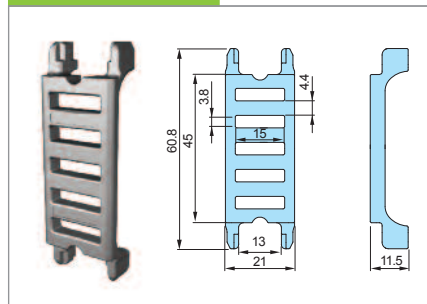


Dividers (Vertical) and Separators (Horizontal) divide the inner chamber of the cable chain to give each cable diameter its own center and keep the cables separated from each other. The use of separator in some cases, can also reduce the width requirements as two or more levels can be made within the same chamber. To prevent twisting or damage to the cables, as a rule, there needs to be at least 10% space between the inserted cable and its enclosure.

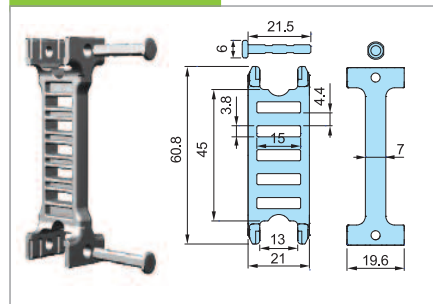
ST072N DV-M



ST072N DV-S



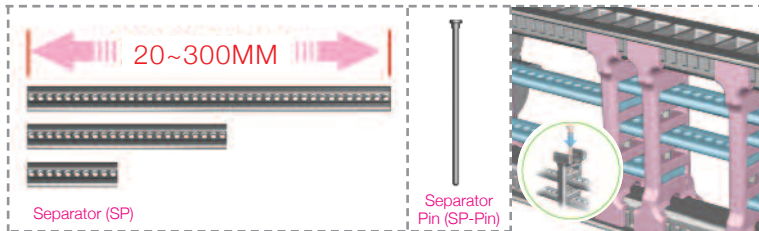
ST072N DV-T



▶ Assemble divider every Two links.

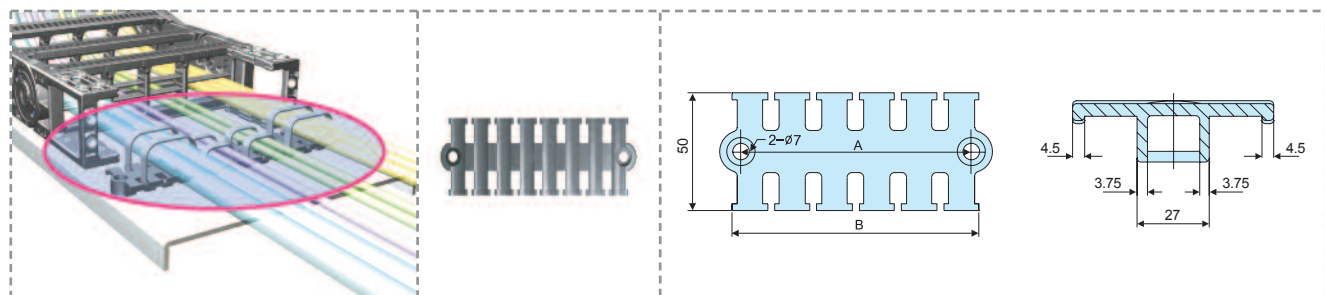
▶ DV/T : Frame 200~300

SEPARATORS (SP)



Separator is available in length from 20mm to 300mm and can be cut every 5mm for use. The combined use of divider and separator with the pin creates the most effective cable pattern and keep insertion space for cables safely, so it protects the inserted cables.

TIE WRAP



(Dimensions in mm)

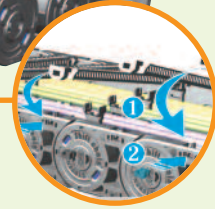
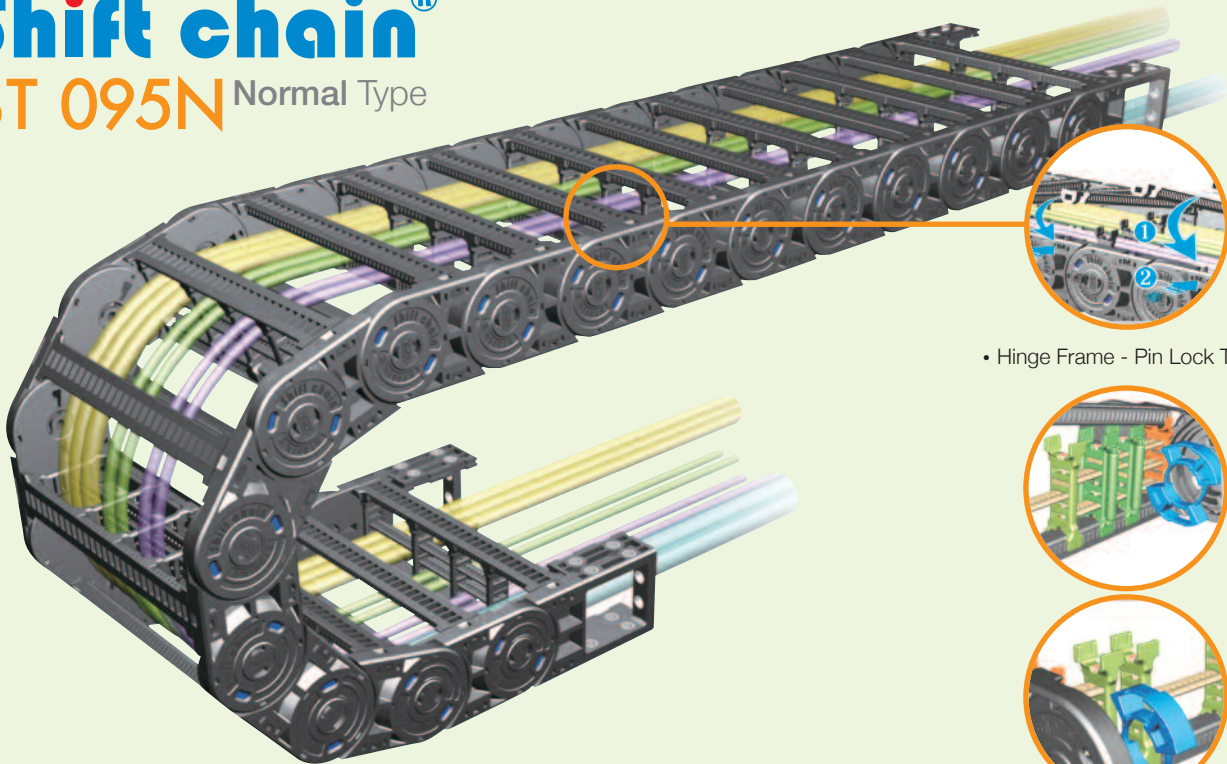
The Tie Wrap separated from the Shift Chain bracket, when installed properly, protects the inserted cables from becoming entangled and twisted during operation.

Tie Wrap	050	075	100	125	150
A	58	75	98	122	141
B	65	82	105	129	148

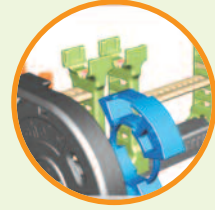
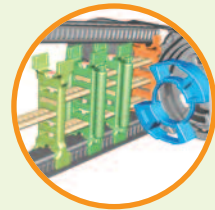


Min ●●●●●●● Max

Shift chain[®] ST 095N Normal Type



• Hinge Frame - Pin Lock Type •



• Shift chain - 내부구조 •

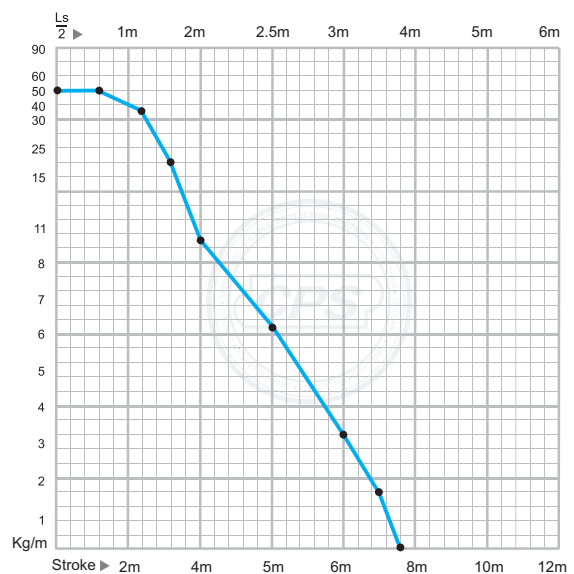
MATERIAL

- **Chain material:**
CPS-amide with glass fiber reinforced UL94-HB
- **Low Noise**
- **Low Mote**
- **Speed :** 10m / sec
- **Temperature :** -30°C ~ +130°C
- **Other installation Length:**
Vertical curve above= max 6.0m
Vertical curve below= max 100m
Side Mounted, Unsupported= max 3.0m
- **Applications**
Gantry robot, Machining center, Textile machine, Welding machine, Feeder unit, Assembly Loader, Wood work machine, Fabric machine.

● Calculation of the chain length

$$[L = \frac{Ls}{2} + Lp]$$

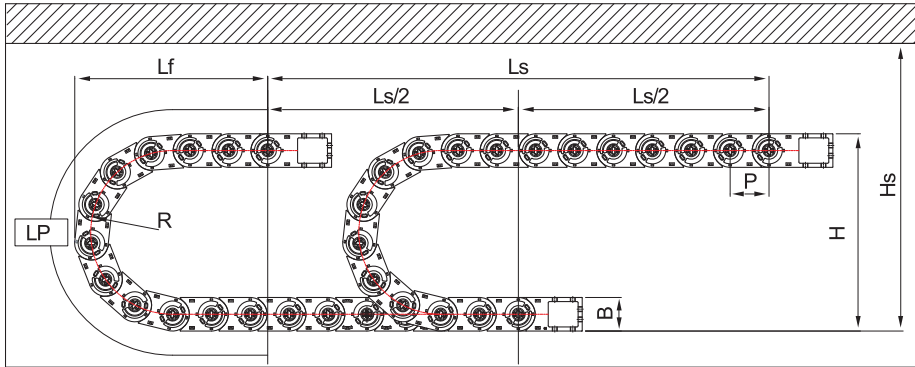
● Load diagrams self-supporting length





Normal Type **ST 095N**

LAYOUT OF THE CHAIN



(Dimensions in mm)

Bending radius R	135	150	200	230	280	400
Lp	805	855	1,010	1,110	1,260	1,640
L f	364	374	428	459	505	629
H	352	382	482	542	642	882

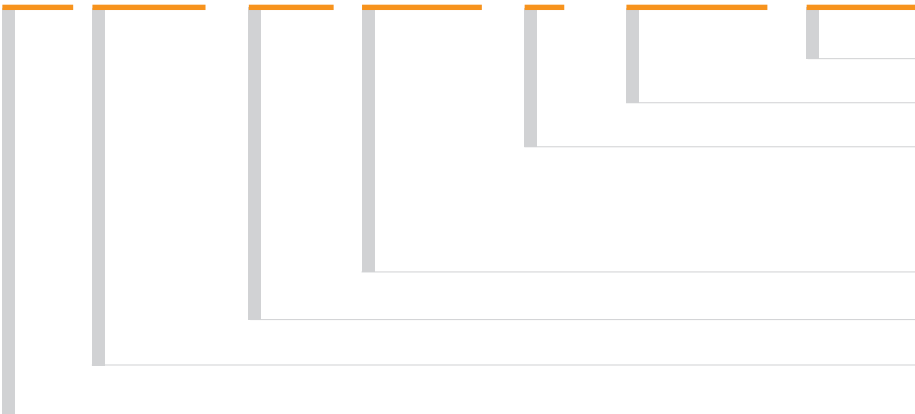
- Ls:** Stroke
- Lp:** Loop Length
- L f:** Loop Projection
- Hs:** Safe Space

ST 095N Type

- Pitch P:** 95mm
- Height B:** 82mm
- Height H:** 2R+82mm
- Hs** ≥ H+50mm

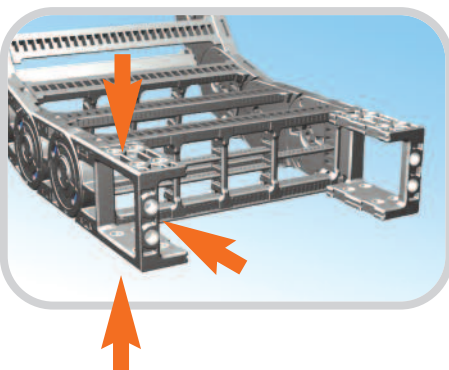
ORDERING

ST 095N. 200. R230 / F - 2500L : 10ST



- Q'ty(set)
- Length(mm)
- F : Free End Bracket
- G : Guide Channel Type
- V : Vertical Guide Type
- Bending Radius
- Inside Width
- Normal Type
- Shift Chain

BRACKET TYPE



FEB (Free End Bracket)

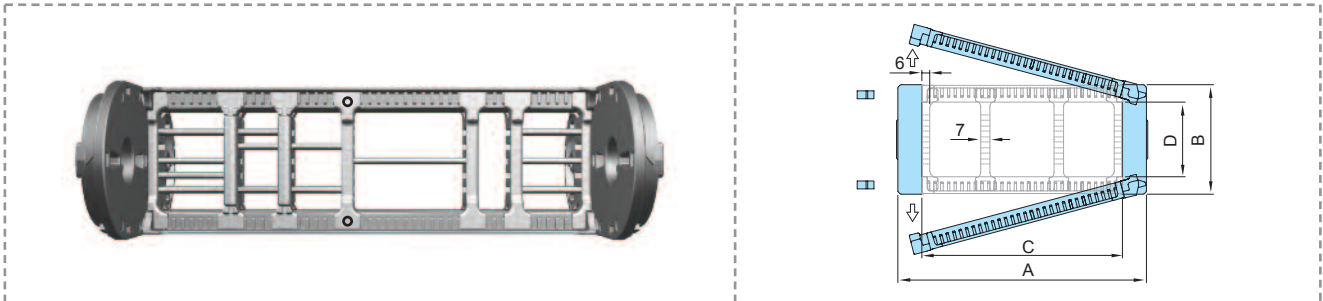
FEB Fixes the cable chain to the machinery or moving application. CPS has improved mounting efficiency by unifying the existing Easy End Bracket and Normal End Bracket. For added strength, steel spacers are inserted into the fixing holes of each Free End Bracket.

▶ Above products are patent registered item which can be protected by industrial property right.



Normal Type **ST 095N**

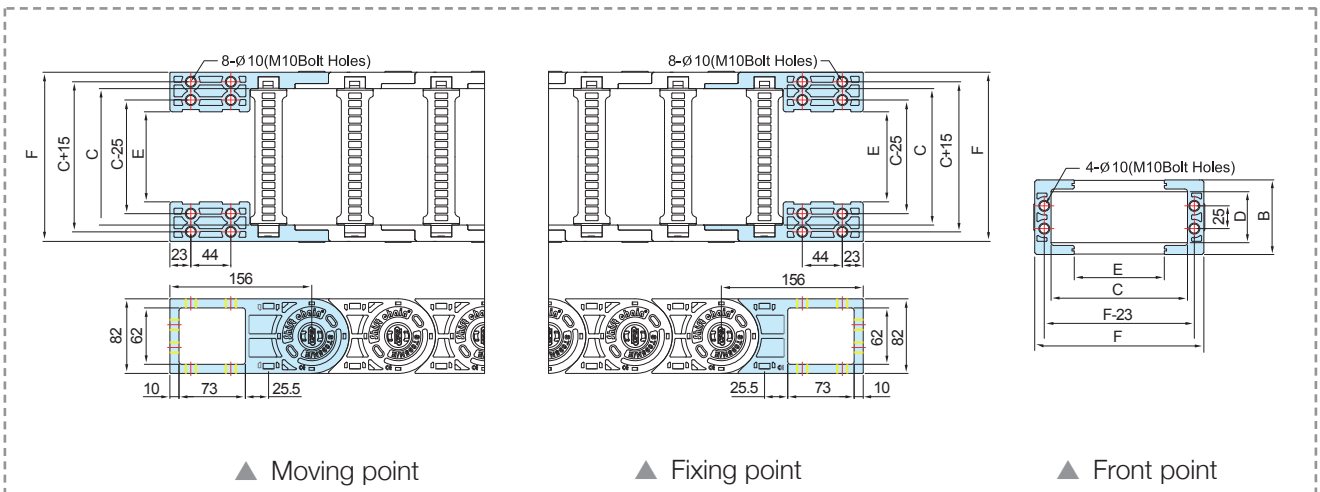
CHAIN CROSS SECTION



Chain Type	A	B	C	D	Bending Radius(R)	Weight in kg/m
ST 095N.075	113		75			3.11
ST 095N.100	138		100			3.17
ST 095N.125	163		125			3.37
ST 095N.150	188		150			3.49
ST 095N.175	213	82	175	56	135, 150, 200, 230,	3.60
ST 095N.200	238		200		280, 400	3.79
ST 095N.250	288		250			4.05
ST 095N.300	338		300			4.31
ST 095N.350	388		350			4.69
ST 095N.400	438		400			5.05

▲ Application of special frame. (C:190,240)

FREE END BRAKET



▲ Moving point

▲ Fixing point

▲ Front point

Chain Type	F	B	C	D	E	Hole Type
ST 095N.075	113		75		24	M10 Bolt Holes
ST 095N.100	138		100		49	
ST 095N.125	163		125		74	
ST 095N.150	188		150		99	
ST 095N.175	213		175		124	
ST 095N.200	238	82	200	56	149	
ST 095N.250	288		250		199	
ST 095N.300	338		300		249	
ST 095N.350	388		350		299	
ST 095N.400	438		400		349	

▲ Application of special frame. (C:190,240)

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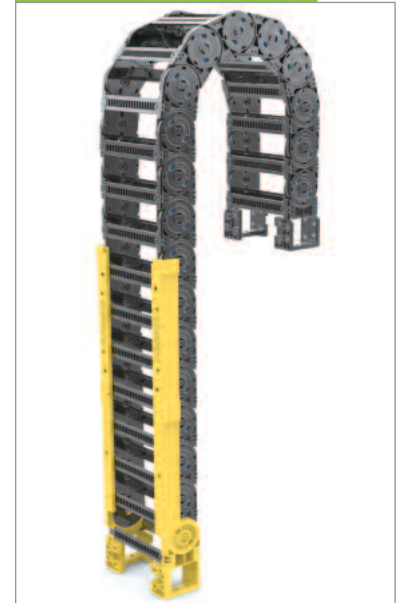
Normal Type **ST 095N**

This type of bracket is to protect deflection of chain which will support the weight of certain section start from bracket, also will protect the damage of chain.

▼ Horizon Type 수평형

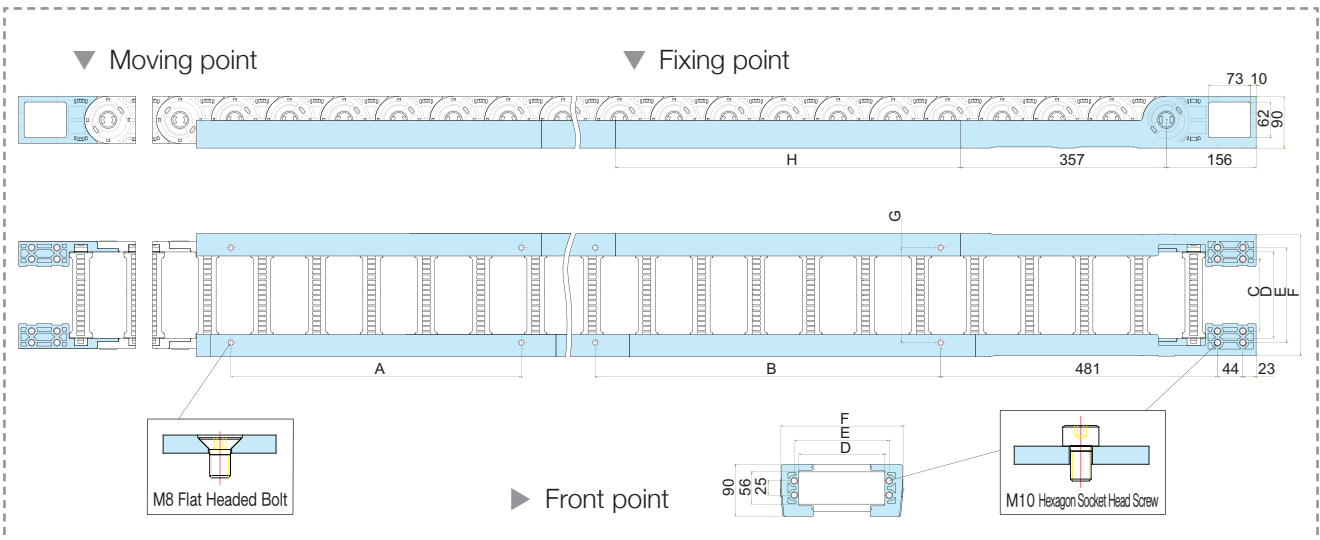


▼ Vertical Type 수직형



GUIDE CHANNEL TYPE END BRACKET

(Dimensions in mm)



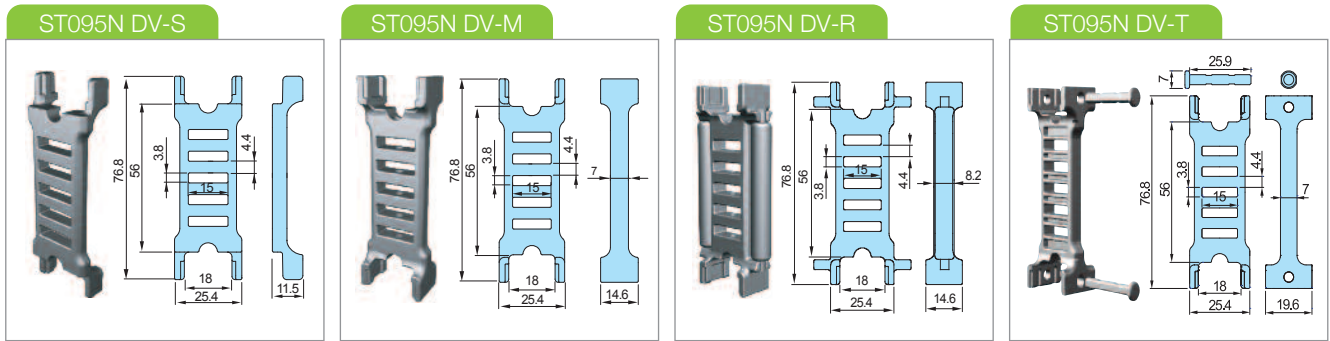
Chain Type	C FEB fix hole(inner)	D Frame length dimension	E FEB width	F FEB width	G GC hole width	GC TYPE	H GC length	B GC fixing hole	A GC hole dimension
ST 095N.075	50	75	90	135	90	GC600	600	601	505
ST 095N.100	75	100	115	160	115				
ST 095N.125	100	125	140	185	140				
ST 095N.150	125	150	165	210	165				
ST 095N.175	150	175	190	235	190				
ST 095N.200	175	200	215	260	215				
ST 095N.250	225	250	265	310	265				
ST 095N.300	275	300	315	360	315	GC800	800	801	705
ST 095N.350	325	350	365	410	365				
ST 095N.400	375	400	415	460	415				



Normal Type **ST 095N**

DIVIDERS

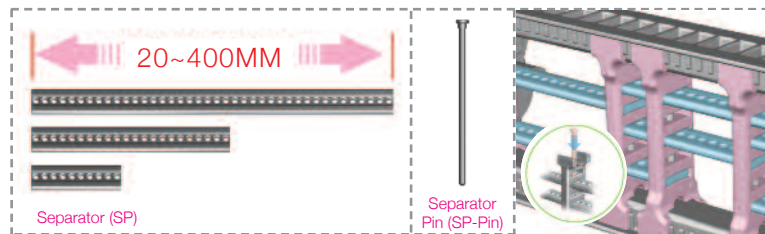
Dividers (Vertical) and Separators (Horizontal) divide the inner chamber of the cable chain to give each cable diameter its own center and keep the cables separated from each other. The use of separator in some cases, can also reduce the width requirements as two or more levels can be made within the same chamber. To prevent twisting or damage to the cables, as a rule, there needs to be at least 10% space between the inserted cable and its enclosure.



▶ Assemble divider every Two links.

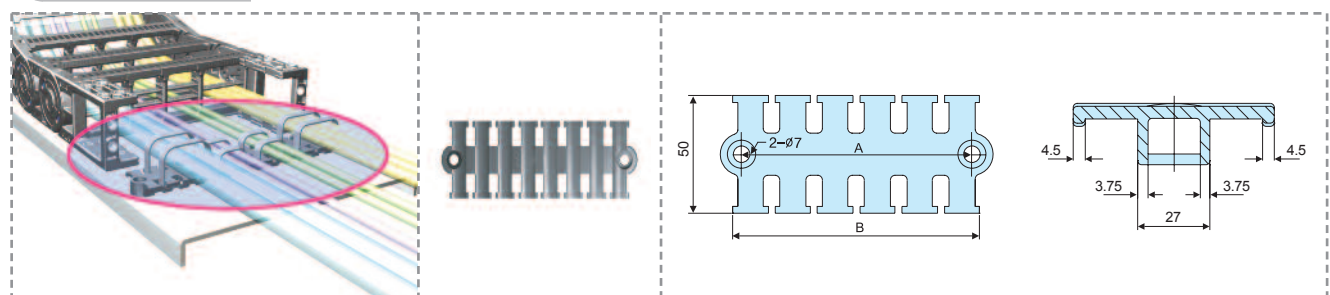
▶ DV/T : Frame 250~400

SEPARATORS (SP)



Separator is available in length from 20mm to 400mm and can be cut every 5mm for use. The combined use of divider and separator with the pin creates the most effective cable pattern and keep insertion space for cables safely, so it protects the inserted cables.

TIE WRAP



(Dimensions in mm)

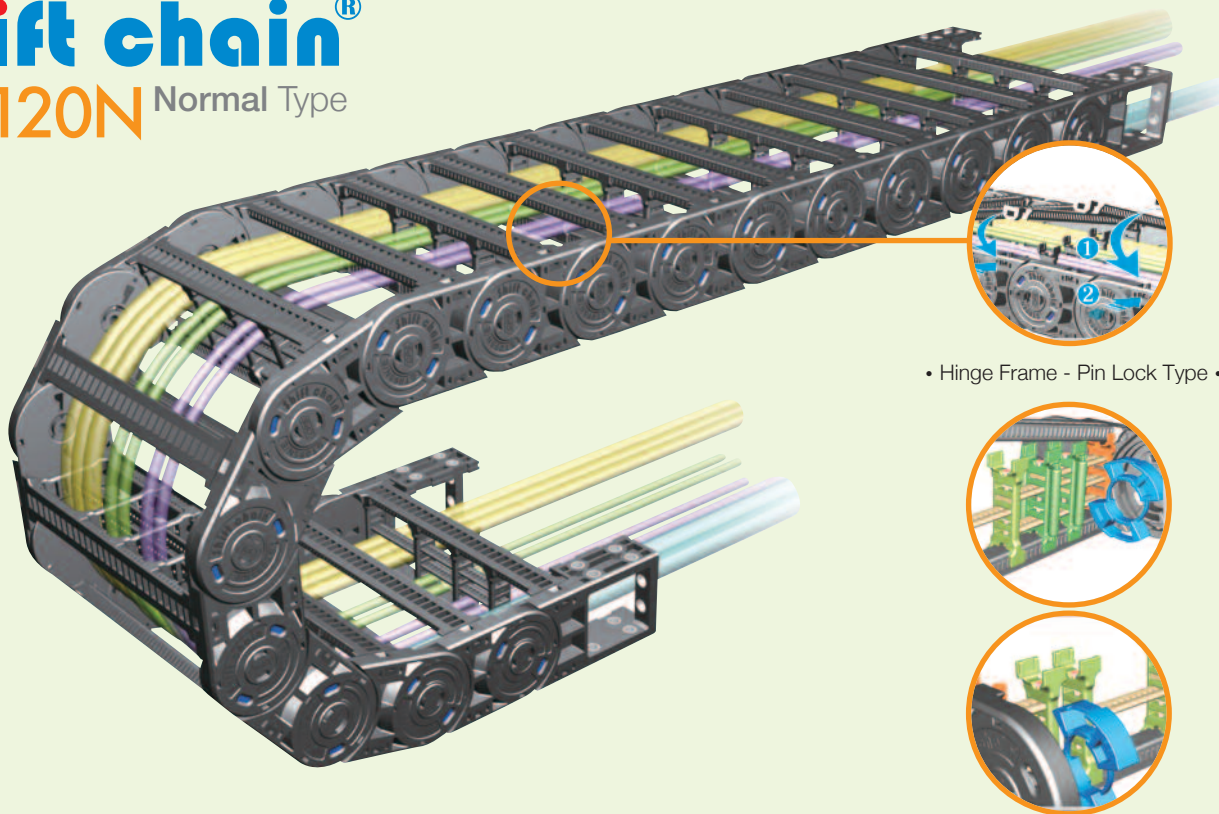
The Tie Wrap separated from the Shift Chain bracket, when installed properly, protects the inserted cables from becoming entangled and twisted during operation.

Tie Wrap	050	075	100	125	150
A	58	75	98	122	141
B	65	82	105	129	148

Min ●●●●●●● Max

Shift chain®

ST 120N Normal Type



• Hinge Frame - Pin Lock Type •

CPS CABLE CHAIN

SHIFT CHAIN

SABIN CHAIN

REVOLVING CHAIN

HELIX CHAIN

ROBO-KIT

CPSFLEX

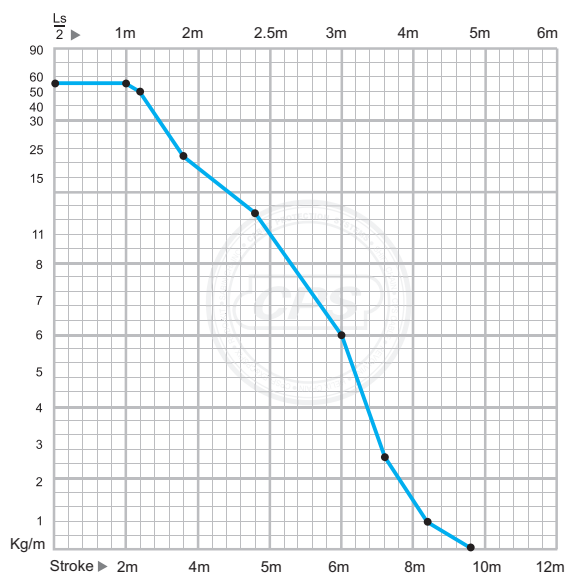
CPSFIX

MATERIAL

- **Chain material:**
CPS-amide with glass fiber reinforced UL94-HB
- **Low Noise**
- **Low Mote**
- **Speed :** 10m / sec
- **Temperature :** -30°C ~ +130°C
- **Other installation Length:**
Vertical curve above= max 6.0m
Vertical curve below= max 120m
Side Mounted, Unsupported= max 3.0m
- **Applications**
Gantry robot, Machining center, Textile machine, Welding machine, Feeder unit, Assembly Loader, Wood work machine, Fabric machine.
- **Calculation of the chain length**

$$[L = \frac{L_s}{2} + L_p]$$

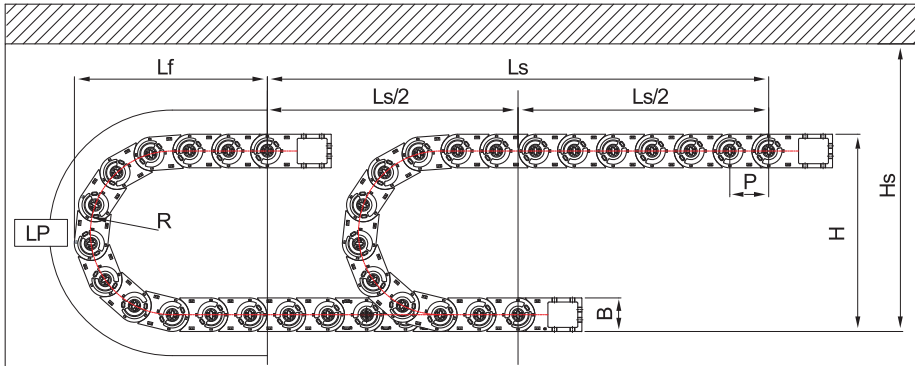
Load diagrams self-supporting length





Normal Type **ST 120N**

LAYOUT OF THE CHAIN



- Ls:** Stroke
- Lp:** Loop Length
- Lf:** Loop Projection
- Hs:** Safe Space

(Dimensions in mm)

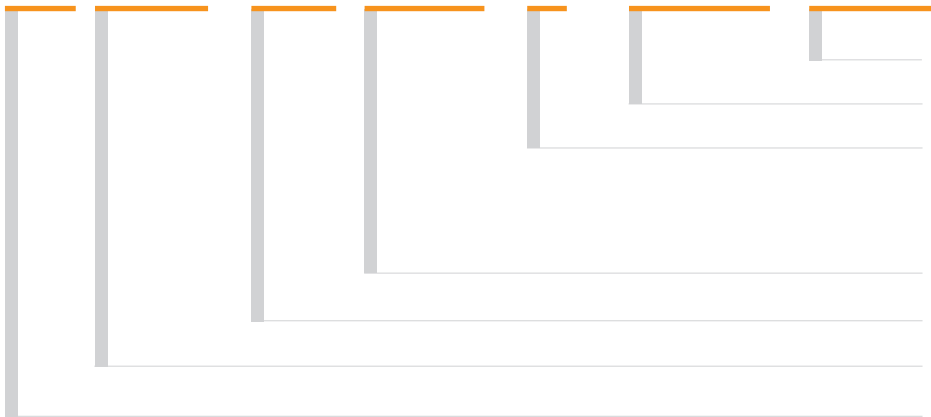
Bending radius R	180	200	250	300	350	400	500
Lp	1,046	1,109	1,266	1,423	1,580	1,737	2,051
L f	474	494	544	594	644	694	794
H	468	508	608	708	808	908	1,108

ST 120N Type

- Pitch P:** 120mm
- Height B:** 108mm
- Height H:** 2R+108mm
- Hs** ≥ H+60mm

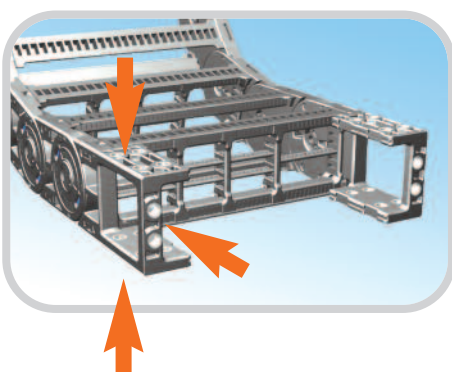
ORDERING

ST 120N. 400. R300 / F - 3000L : 10ST



- Q'ty(set)
- Length(mm)
- F : Free End Bracket
- G : Guide Channel Type
- V : Vertical Guide Type
- Bending Radius
- Inside Width
- Normal Type
- Shift Chain

BRACKET TYPE



FEB (Free End Bracket)

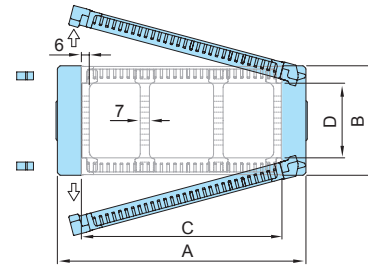
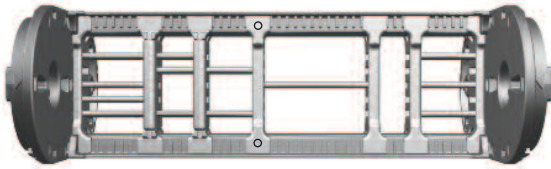
FEB Fixes the cable chain to the machinery or moving application. CPS has improved mounting efficiency by unifying the existing Easy End Bracket and Normal End Bracket. For added strength, steel spacers are inserted into the fixing holes of each Free End Bracket.

► Above products are patent registered item which can be protected by industrial property right.



Normal Type **ST 120N**

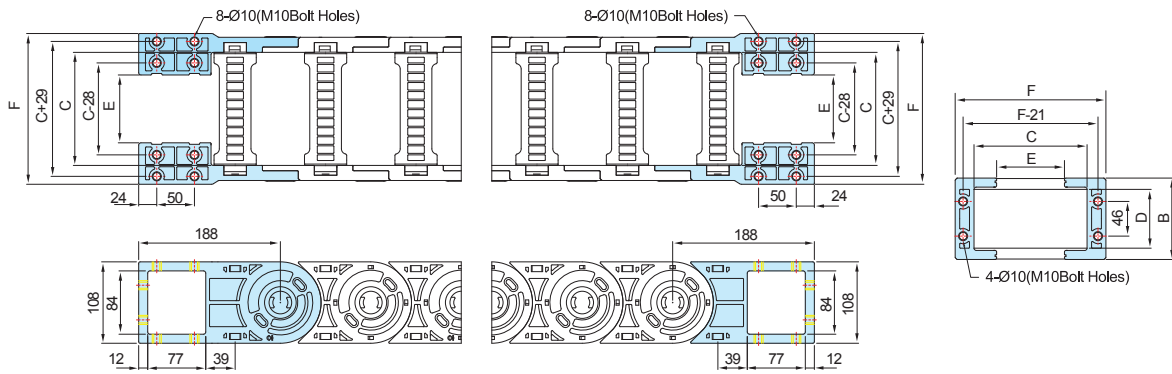
CHAIN CROSS SECTION



Chain Type	A	B	C	D	Bending Radius(R)	Weight in kg/m
ST 120N.075	117		75			4.41
ST 120N.100	142		100			4.53
ST 120N.125	167		125			4.67
ST 120N.150	192		150			4.78
ST 120N.175	217		175			4.93
ST 120N.200	242		200			5.17
ST 120N.250	292	108	250	78	180, 200, 250, 300,	5.47
ST 120N.300	342		300		350, 400, 500	5.88
ST 120N.350	392		350			6.30
ST 120N.400	442		400			6.73
ST 120N.450	492		450			7.07
ST 120N.500	542		500			7.30
ST 120N.550	592		550			8.13
ST 120N.600	642		600			8.30

▲ Application of special frame. (C:115,240,290)

FREE END BRACKET



▲ Moving point

▲ Fixing point

▲ Front point

Chain Type	F	B	C	D	E	Hole Type
ST 120N.075	125		75		15	
ST 120N.100	150		100		40	
ST 120N.125	175		125		65	
ST 120N.150	200		150		90	
ST 120N.175	225		175		115	
ST 120N.200	250		200		140	
ST 120N.250	300	108	250	78	190	
ST 120N.300	350		300		240	M10 Bolt Holes
ST 120N.350	400		350		290	
ST 120N.400	450		400		340	
ST 120N.450	500		450		390	
ST 120N.500	550		500		440	
ST 120N.550	600		550		490	
ST 120N.600	650		600		540	

▲ Application of special frame. (C:115,240,290)



2014 NEW PRODUCT

Unity Systems®

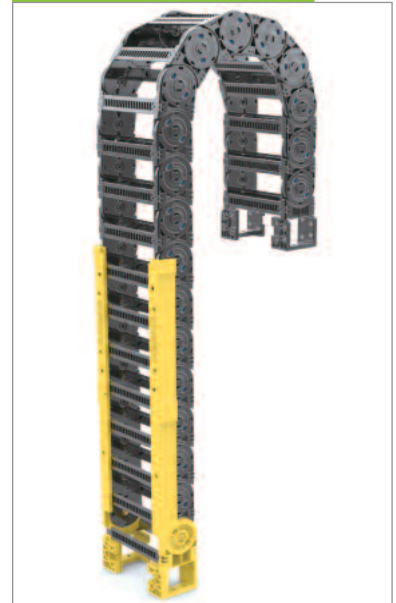
Normal Type **ST 120N**

This type of bracket is to protect deflection of chain which will support the weight of certain section start from bracket, also will protect the damage of chain.

▼ Horizon Type

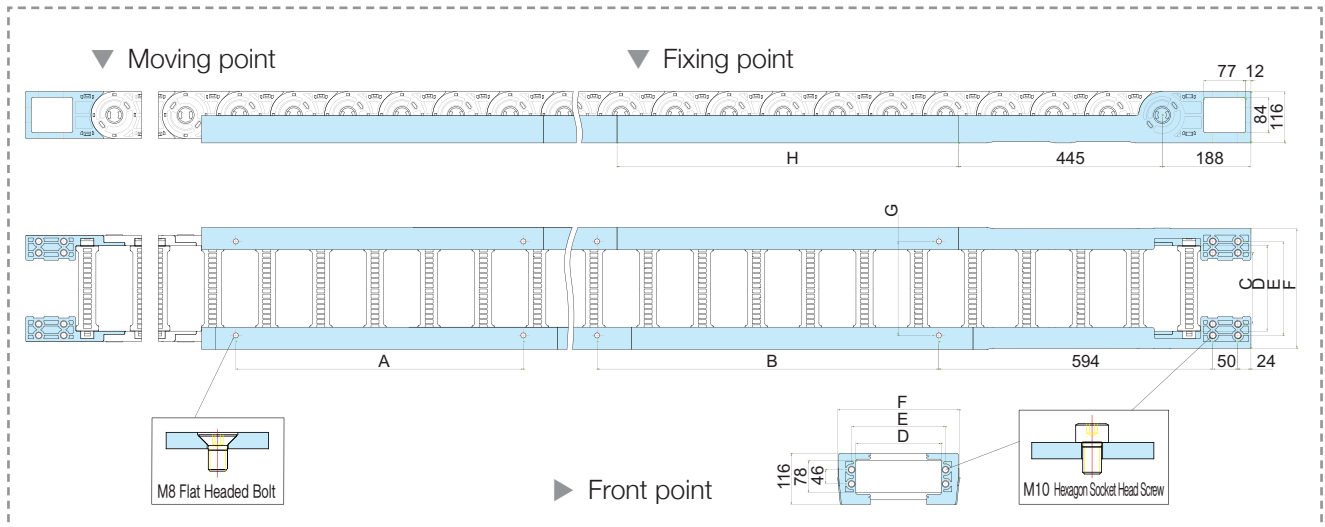


▼ Vertical Type



GUIDE CHANNEL TYPE END BRACKET

(Dimensions in mm)



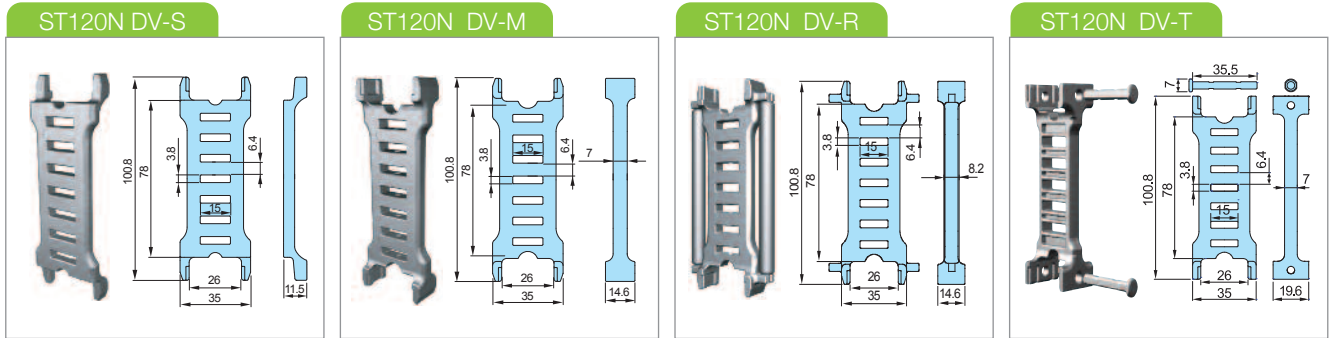
Chain Type	C FEB fix hole(inner)	D Frame length dimension	E FEB width	F FEB width	G GC hole width	GC TYPE	H GC length	B GC fixing hole	A GC hole dimension
ST 120N.075	47	75	104	139	94	GC600	600	601	505
ST 120N.100	72	100	129	164	119				
ST 120N.125	97	125	154	189	144				
ST 120N.150	122	150	179	214	169				
ST 120N.175	147	175	204	239	194				
ST 120N.200	172	200	229	264	219				
ST 120N.250	222	250	279	314	269				
ST 120N.300	272	300	329	364	319				
ST 120N.350	322	350	379	414	369				
ST 120N.400	372	400	429	464	419				
ST 120N.450	422	450	479	514	469				
ST 120N.500	472	500	529	564	519				
ST 120N.550	522	550	579	614	569				
ST 120N.600	572	600	629	664	619				
						GC800	800	801	705



Normal Type **ST 120N**

DIVIDERS

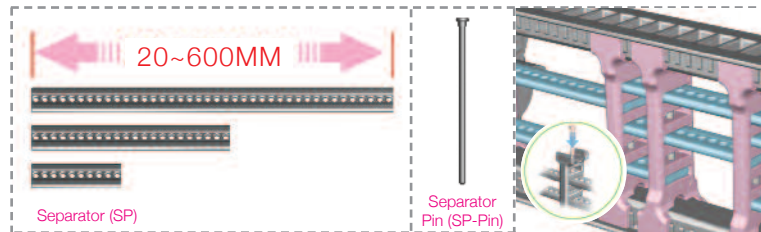
Dividers (Vertical) and Separators (Horizontal) divide the inner chamber of the cable chain to give each cable diameter its own center and keep the cables separated from each other. The use of separator in some cases, can also reduce the width requirements as two or more levels can be made within the same chamber. To prevent twisting or damage to the cables, as a rule, there needs to be at least 10% space between the inserted cable and its enclosure.



▶ Assemble divider every Two links.

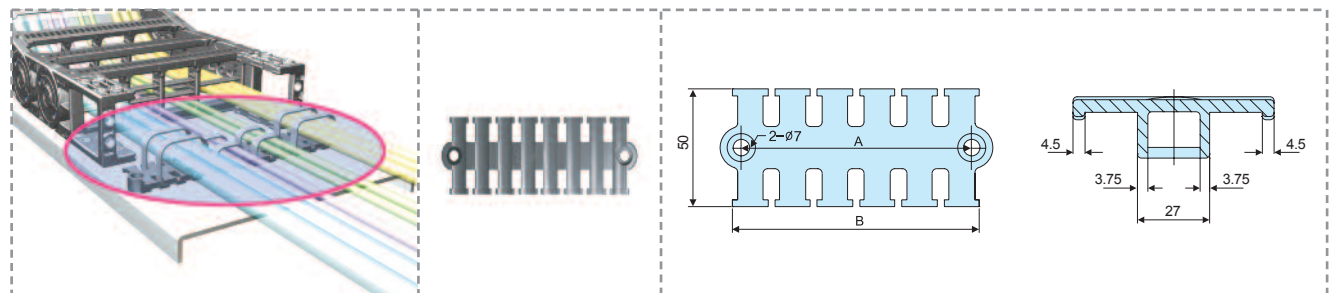
▶ DV/T : Frame 300~600

SEPARATORS (SP)



Separator is available in length from 20mm to 600mm and can be cut every 5mm for use. The combined use of divider and separator with the pin creates the most effective cable pattern and keep insertion space for cables safely, so it protects the inserted cables.

TIE WRAP



(Dimensions in mm)

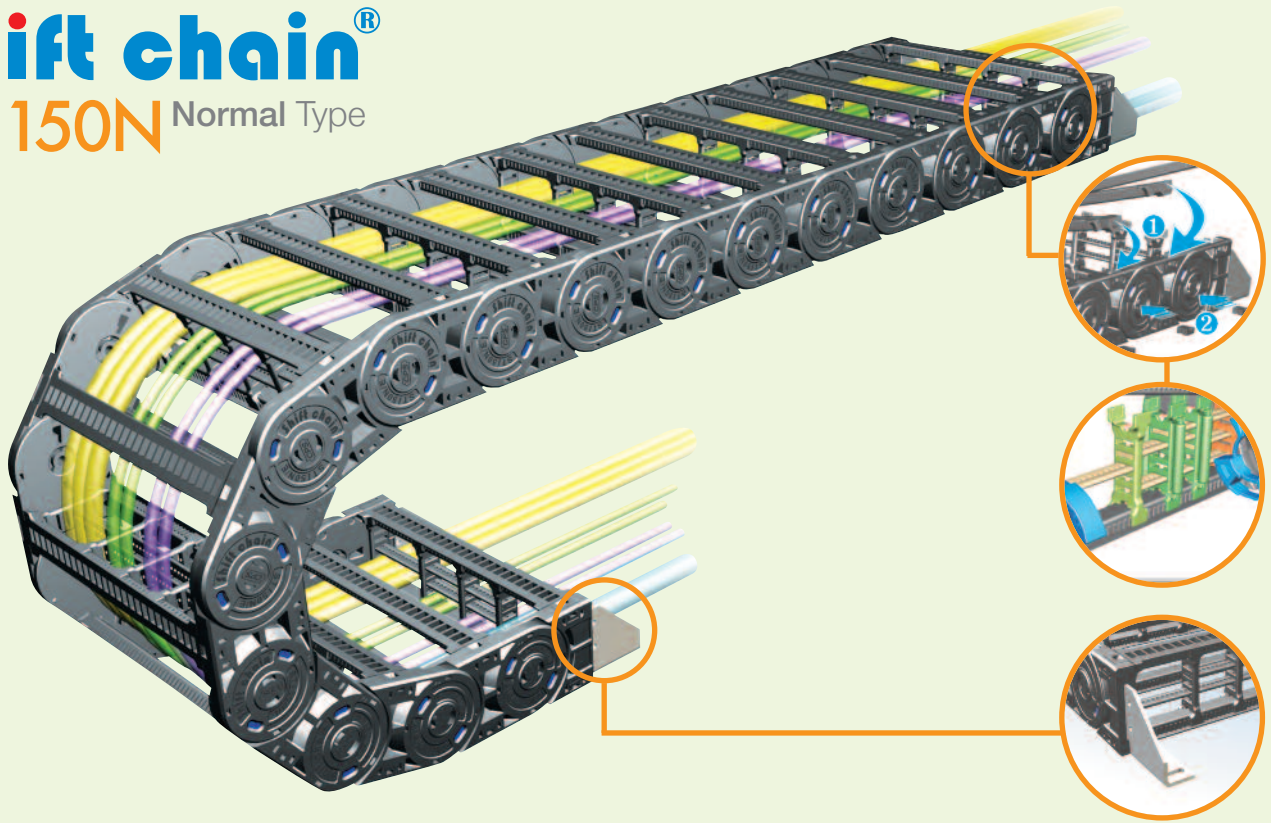
The Tie Wrap separated from the Shift Chain bracket, when installed properly, protects the inserted cables from becoming entangled and twisted during operation.

Tie Wrap	050	075	100	125	150
A	58	75	98	122	141
B	65	82	105	129	148



Min ●●●●●● Max

Shift chain® ST 150N Normal Type



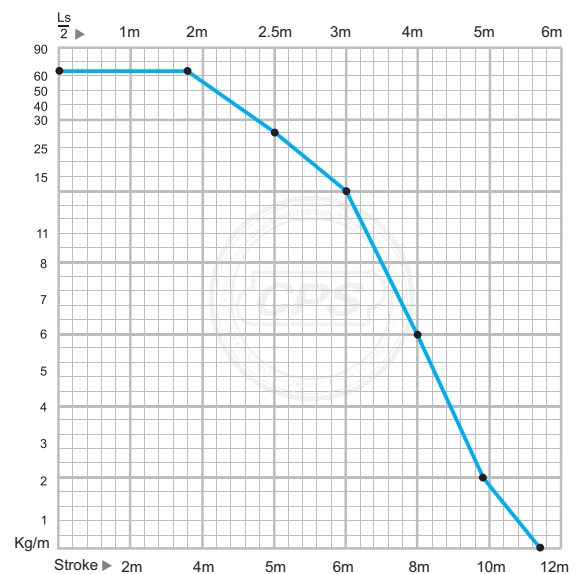
• Steel Bracket •

MATERIAL

- **Chain material:**
CPS-amide with glass fiber reinforced UL94-HB
- **Low Noise**
- **Low Mote**
- **Speed :** 10m / sec
- **Temperature :** -30°C ~ +130°C
- **Other installation Length:**
Vertical curve above= max 7.0m
Vertical curve below= max 150m
Side Mounted, Unsupported= max 4.0m
- **Applications**
Gantry robot, Machining center, Textile machine, Welding machine, Feeder unit, Assembly Loader, Wood work machine, Fabric machine.
- **Calculation of the chain length**

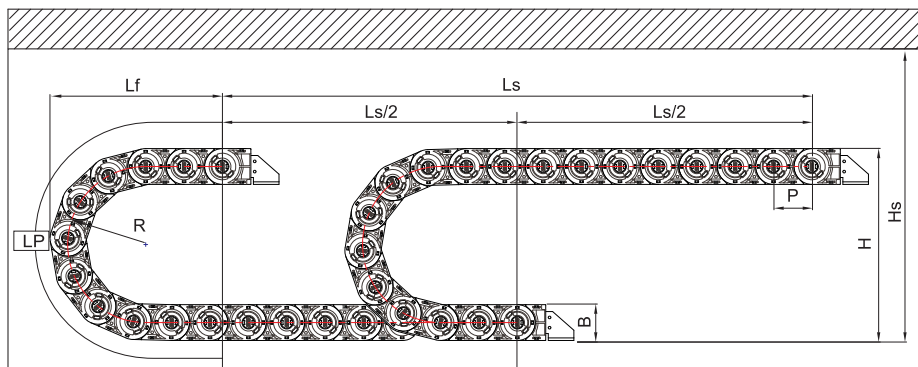
$$[L = \frac{L_s}{2} + L_p]$$

● Load diagrams self-supporting length



Normal Type **ST 150N**

LAY OUT OF THE CHAIN



- Ls:** Stroke
- Lp:** Loop Length
- Lf:** Loop Projection
- Hs:** Safe Space

(Dimensions in mm)

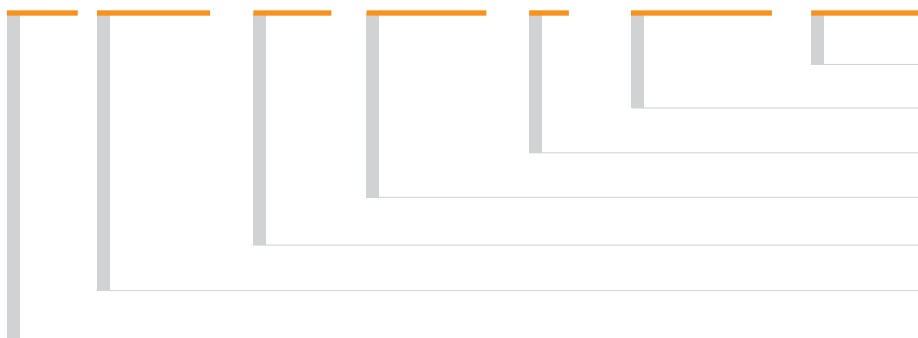
Bending radius R	205	305	405	505	605
Lp	1,215	1,510	1,807	2,106	2,405
Lf	561	651	743	835	928
H	550	750	950	1,150	1,350

ST 150N Type

- Pitch P:** 150mm
- Height B:** 140mm
- Height H:** 2R+140mm
- Hs** ≥ H+80mm

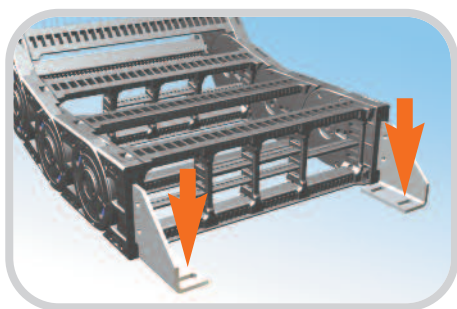
ORDERING

ST 150N. 400. R405 / B₁- 3000L :10ST



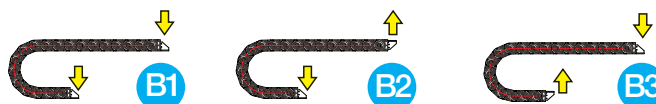
- Q'ty(set)
- Length(mm)
- End Bracket (B₁, B₂, B₃)
- Bending Radius
- Inside Width
- Normal Type
- Shift Chain

BRACKET TYPE



SEB (Steel End Bracket)

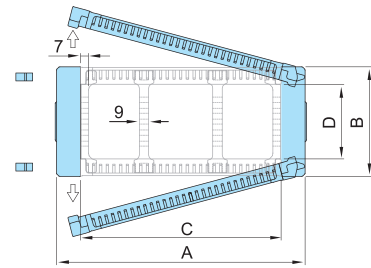
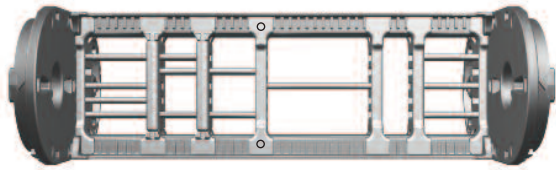
For ST150N, its end parts of cable chain being fixed are used with steel bracket, and it is possible to be installed B₁, B₂, B₃ types of brackets.





Normal Type **ST 150N**

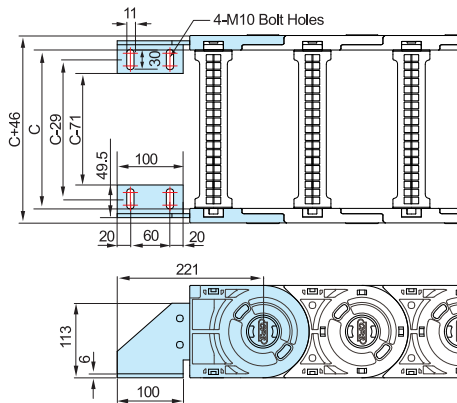
CHAIN CROSS SECTION



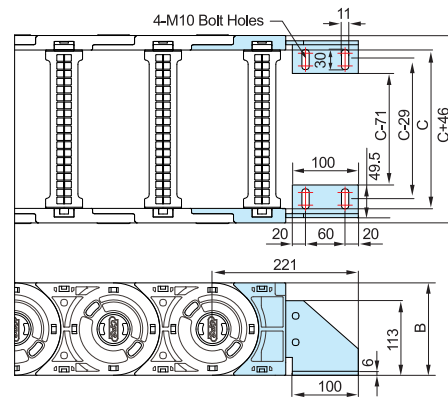
Chain Type	A	B	C	D	Bending Radius(R)	Weight in kg/m
ST 150N.075	121	140	75	110	205, 305, 405, 505, 605	5.85
ST 150N.100	146		100			5.96
ST 150N.125	171		125			6.08
ST 150N.150	196		150			6.18
ST 150N.175	221		175			6.30
ST 150N.200	246		200			6.51
ST 150N.250	296		250			6.78
ST 150N.300	346		300			7.14
ST 150N.350	396		350			7.51
ST 150N.400	446		400			7.88
ST 150N.450	496		450			8.18
ST 150N.500	546		500			8.37
ST 150N.550	596		550			9.11
ST 150N.600	646		600			9.26

▲ Application of special frame. (C:115,240,290)

END BRACKET (STEEL TYPE)



▲ Moving point



▲ Fixing point

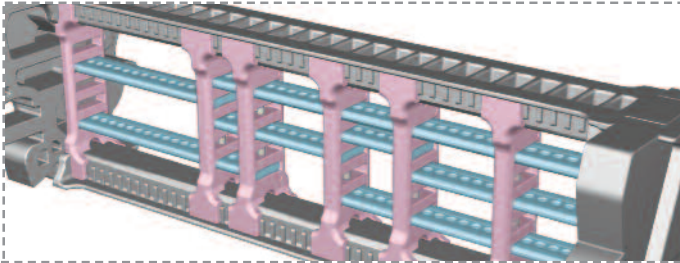
Chain Type	B	C	D	Hole Type
ST 150N.075	140	75	110	M10 Bolt Holes
ST 150N.100		100		
ST 150N.125		125		
ST 150N.150		150		
ST 150N.175		175		
ST 150N.200		200		
ST 150N.250		250		
ST 150N.300		300		
ST 150N.350		350		
ST 150N.400		400		
ST 150N.450		450		
ST 150N.500		500		
ST 150N.550		550		
ST 150N.600		600		

▲ Application of special frame. (C:115,240,290)

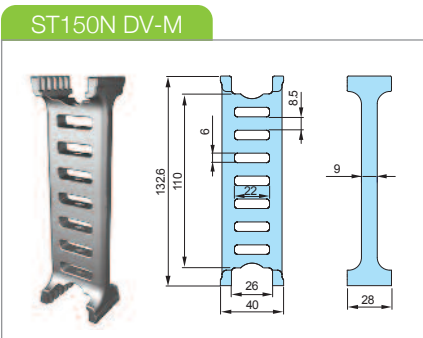


Normal Type **ST 150N**

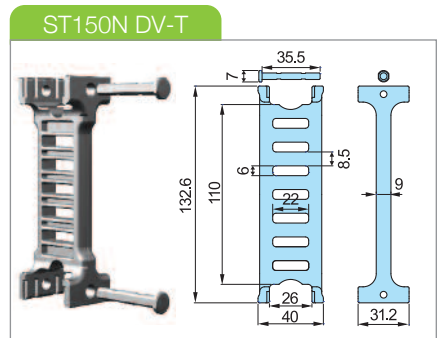
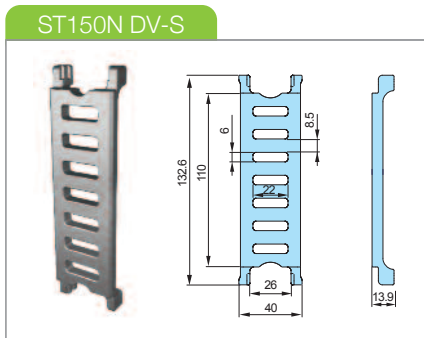
DIVIDERS



Dividers (Vertical) and Separators (Horizontal) divide the inner chamber of the cable chain to give each cable diameter its own center and keep the cables separated from each other. The use of separator in some cases, can also reduce the width requirements as two or more levels can be made within the same chamber. To prevent twisting or damage to the cables, as a rule, there needs to be at least 10% space between the inserted cable and its enclosure.

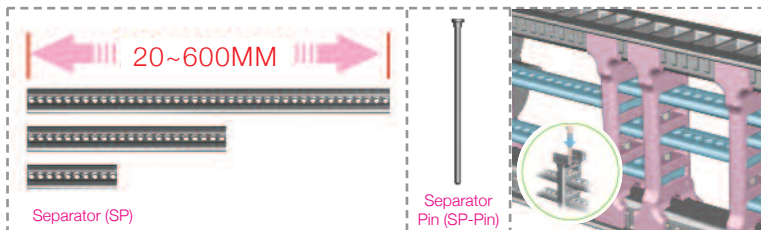


▶ Assemble divider every Two links.



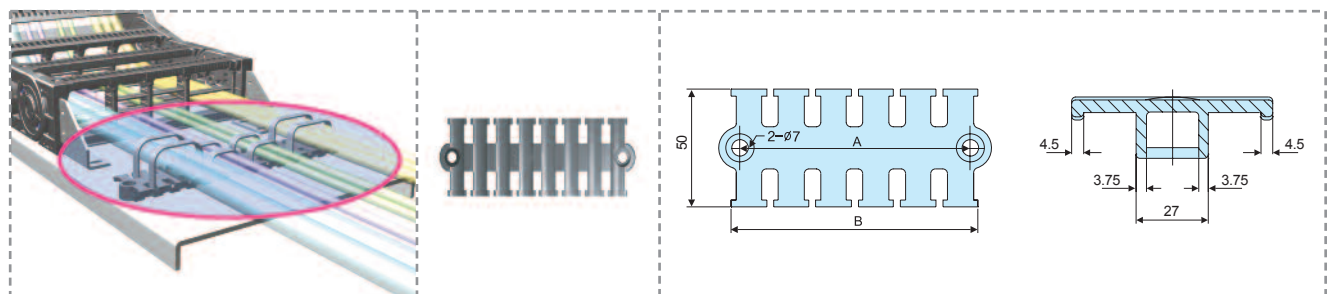
▶ DV/T : Frame 300~600

SEPARATORS (SP)



Separator is available in length from 20mm to 600mm and can be cut every 5mm for use. The combined use of divider and separator with the pin creates the most effective cable pattern and keep insertion space for cables safely, so it protects the inserted cables.

TIE WRAP



The Tie Wrap separated from the Shift Chain bracket, when installed properly, protects the inserted cables from becoming entangled and twisted during operation.

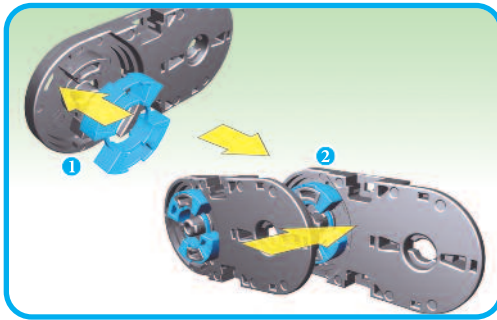
(Dimensions in mm)

Tie Wrap	050	075	100	125	150
A	58	75	98	122	141
B	65	82	105	129	148



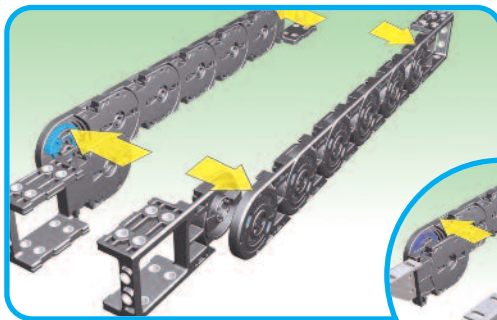
ASSEMBLY PROCEDURE / NORMAL Type

The assembling process of Shift Chain N-Type is like below and you must use rubber hammer with careful combination of Divider and Separator. Be careful of different assembling process depending on product specification such as ST044N, 055N Type, ST072N, 095N, 120N Type, ST150N Type, etc.



1.

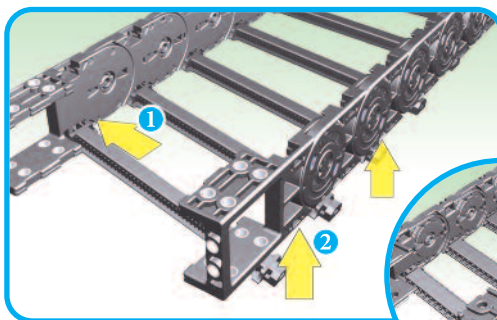
Insert BR unit to each side band, connect the side bands as many as you need, then do the same process to the other side of side band.



2.

Assemble the end brackets on both ends using the same method.

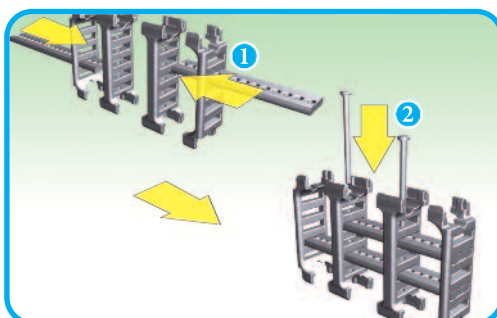
For ST150N, assemble steel brackets on both ends.



3.

Attach frames to one side groove on the side band, and then the other side.

ST 044N, 055N are Hinge Type or Hook Type without frame pin.

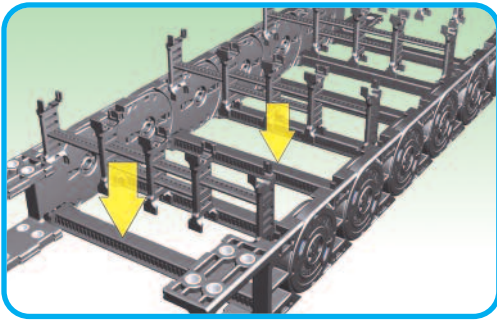


4.

For ST072N, 095N, 120N, and 150N, connect the pin of separator in hole of divider after inserting separator in hole of divider. For ST044N and ST055N, separator fixing pins are not used.

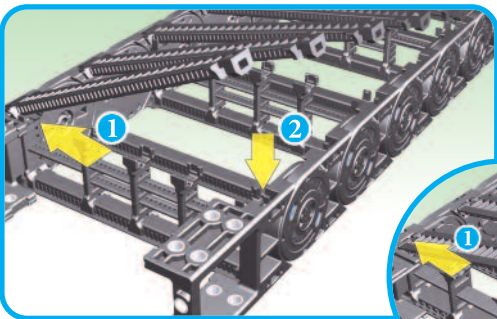


ASSEMBLY PROCEDURE / NORMAL Type



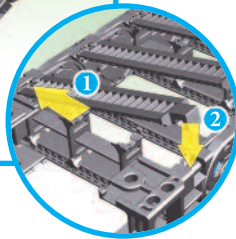
5.

Fix the separator and divider patterns to the bottom-side frames as needed.

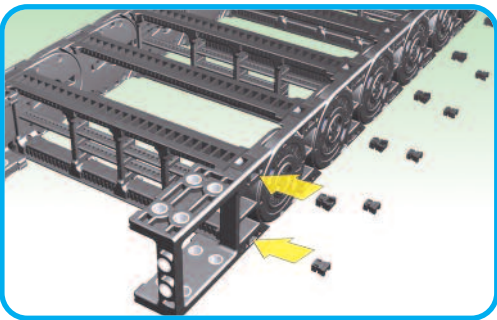


6.

Attach frames to one side groove on the side band, and then the other side.

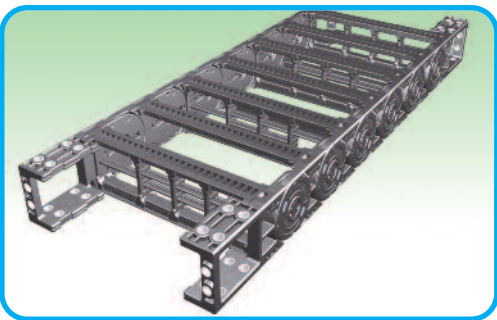


ST044N, 055N Frame Type



7.

Insert frame pins to secure the frames and complete carrier. (ST072N, 095N, 120N, 150N are applied with frame pin, and ST044N, 055N are Hinge Type or Hook Type without frame pin.)



8.

Assembled Shift Chain N-Type is assembled.