

# Shift Chain - Enclosed type



## » General information

Item	Value
Material	CPS-Amid(PA6+GF), RoHs
Speed	3m/s
Acceleration	10m/s <sup>2</sup>
Temperature	-30°C ~ +130°C
Special production	ESD, UV
Certificate	CE, ATEX(Ex)

## » Dimension table

Shift Chain E Type	Pitch	Bending Radius (R)	Weight kg/m	Speed m/s	Temperature °C	Size				Frame type	Section- composition
						A	B	C	D		
ST 044E	44	70, 90, 120, 150	1.03	3	-30 ~ +130	56	38	35	24.5		
			1.21			76		55			
			1.37			96		75			
			1.58			121		100			
ST 055E	55	100, 125, 150, 200	1.36	3	-30 ~ +130	71	52	50	38.5		
			1.56			96		75			
			1.76			121		100			
			1.97			146		125			
2.21	171	150									
ST 072E	72	120, 145, 200, 250, 300	2.37	3	-30 ~ +130	82	66	50	44		
			2.61			107		75			
			2.85			132		100			
			3.09			157		125			
3.33	172	150									
ST 095E	95	150, 200, 230, 280, 400	3.55	3	-30 ~ +130	138	82	100	55		
			3.79			163		125			
			4.04			188		150			
			4.29			213		175			
4.53	238	200									
ST 120E	120	200, 250, 300, 350, 400, 500	5.79	3	-30 ~ +130	192	108	150	76		
			6.43			242		200			
			7.07			292		250			
			7.71			342		290			
300	300	300									
ST 150E	150	305, 405, 505, 605	8.16	3	-30 ~ +130	246	141	200	110		
			8.76			296		250			
			10.50			346		300			
			12.33			396		350			
14.16	446	400									

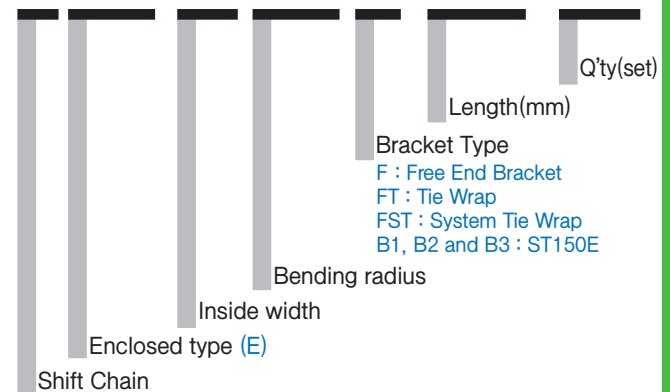
(Dimensions in mm)

## » Calculation table

Item	Value
Length of Cable Chain	$L = \frac{1}{2} \times LS + LP$
Bending Radius	
The biggest Cable inserted	Multiply 8~10 and the biggest cable
The biggest Hydraulic Hose inserted	Multiply 15~20 and the biggest hose

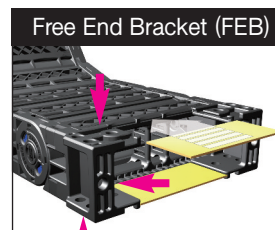
## » Ordering

**ST 044E, 100, R120 / F - 1500L : 10ST**

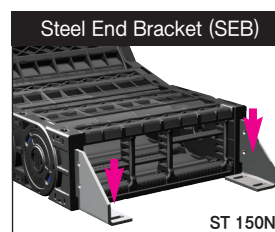


## » Bracket type

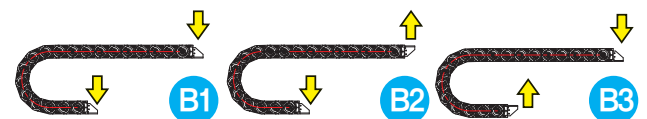
- ST044, ST055, ST072, ST095, ST120



- ST150



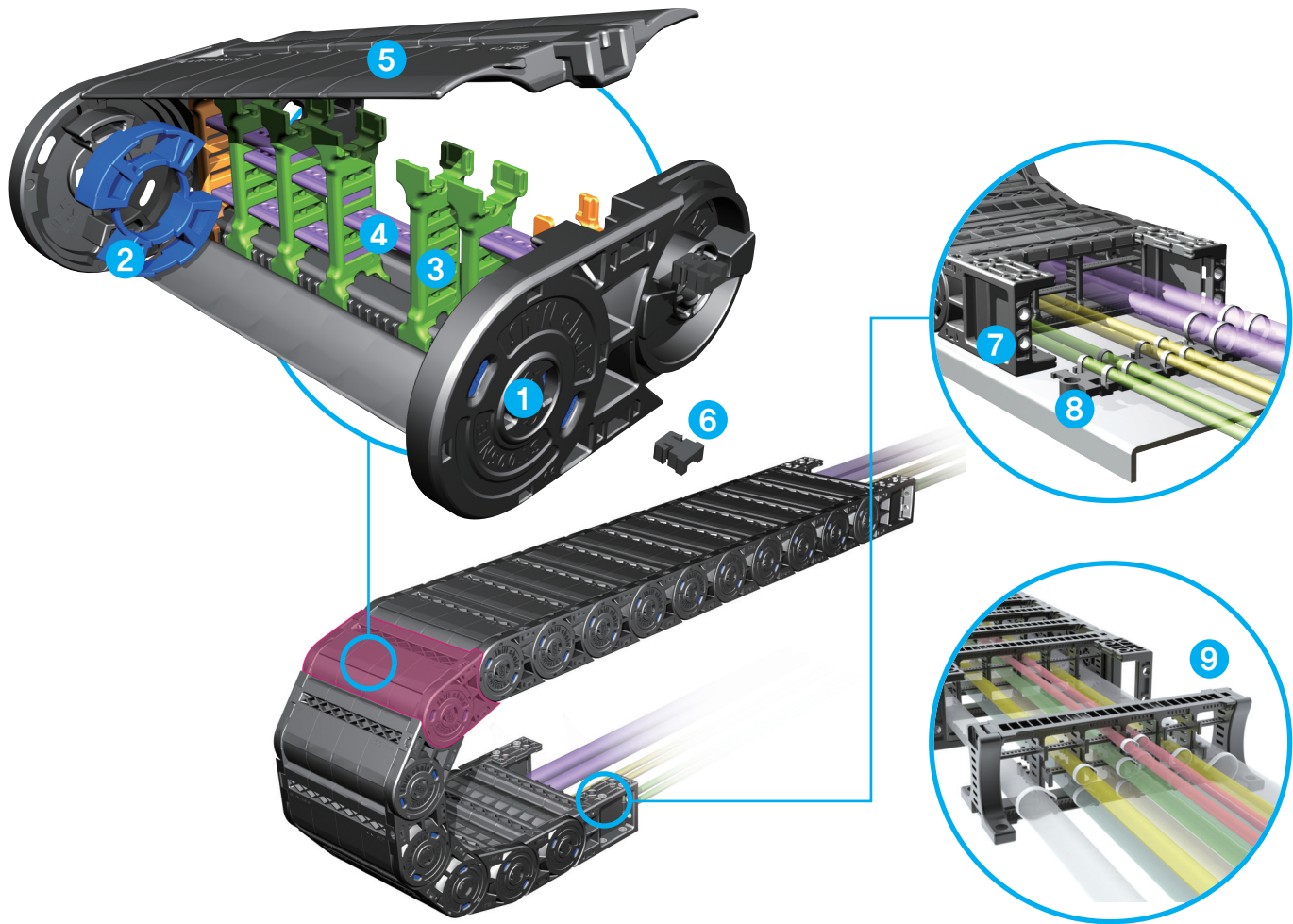
For ST150E, its end parts of cable chain being fixed are used with steel bracket, and it is possible to be installed B1, B2, B3 types of brackets.





# Shift Chain - Enclosed type

## » Part of Shift Chain Enclosed type



### 1 Side Band (SB)

A unit that connects each side band and between them BR is inserted to strengthen clamping force.

### 2 Bending Radius Unit (BR)

A unit that inserted between each side band. There are 6 supporting points to create durability.

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

A unit that divides inserted cables horizontally.

### 4 Separator (SP)

A unit that divides inserted cables vertically to prevent twisting and breaking problem.

### 5 FRU, FRD

A unit that connects left and right side band and there are 2 types of frame : FRU, FRD.

### 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)072E, 092E, 120E, 150E type, one side of the frame is fixed by inserting a fixing pin to prevent frame open, which caused by any external impact.

### 7 Free End Bracket (FEB)

A unit that connects at last side band (left&right). It can be fixed stronger using steel washers.

### 8 Tie Wrap (TW)

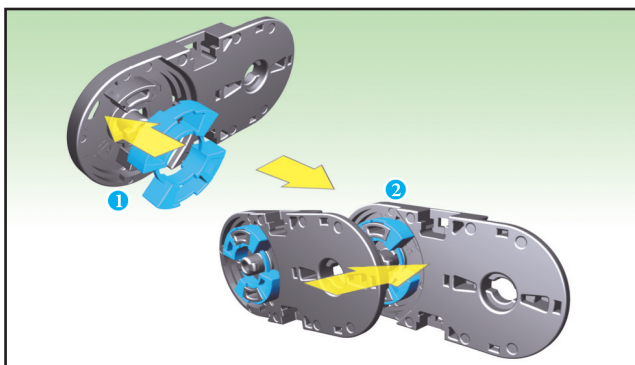
A unit that ties cables to maintain straightness of them. It can be assembled to bracket directly or installed separately from bracket.

### 9 System Tie Wrap (STW)

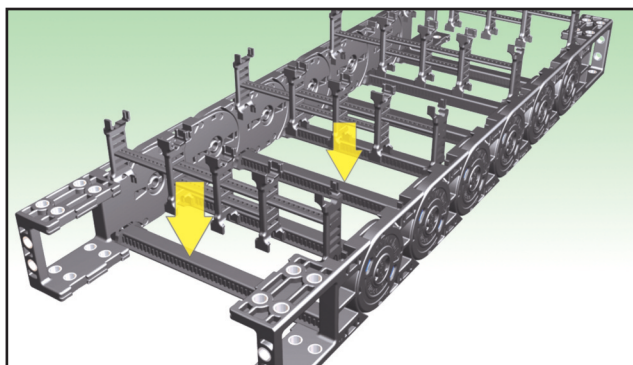
System-Tie Wrap has to be assembled on fixing and moving point of bracket and can be assembled without any tie wrap plate. This tie wrap is used to stay the cables on several floors prevent the cables from being twisted and it can also be assemble without any tools or bolt. This tie wrap has two types, one is to assemble inside bracket the other one is outside.

## » Assemble procedure of Shift Chain Enclosed type

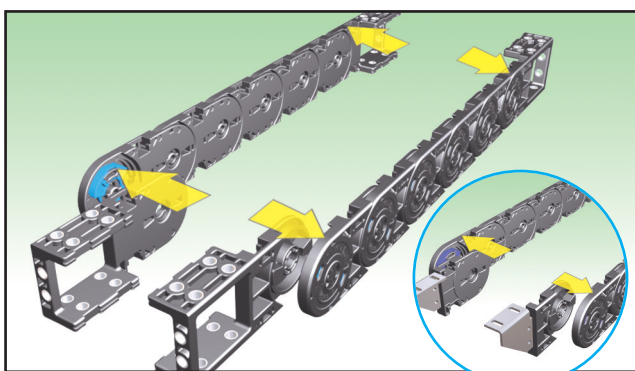
The assembling process of Shift Chain E-Type is like below and you must use rubber hammer with careful combination of Divider and Separator. Be careful of different assembling process depending on product specification such as ST044E, 055E Type, ST072E, 095E, 120E Type, ST150E Type etc.



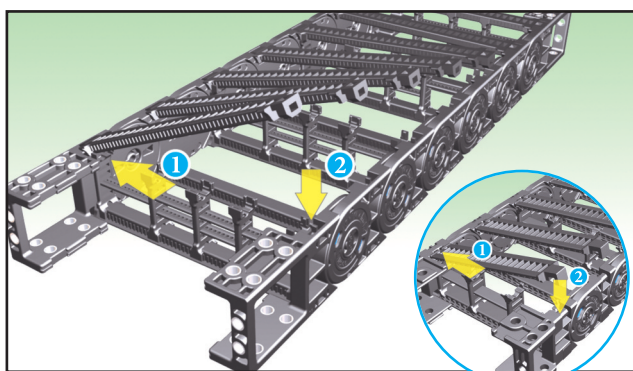
**1** Insert BR unit to each side band, connect the side bands as many as you need, then do the same process to the other side of side band.



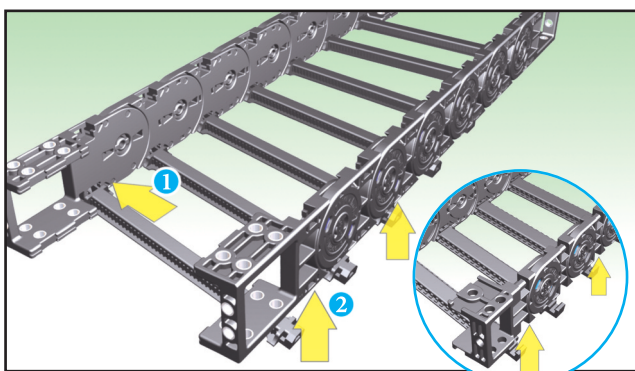
**5** Fix the separator and divider patterns to the bottom-side frames as needed.



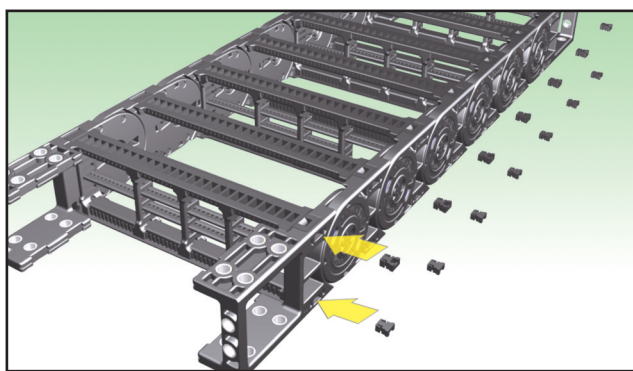
**2** Assemble the end brackets on both ends using the same method. For ST150E, assemble steel brackets on both ends.



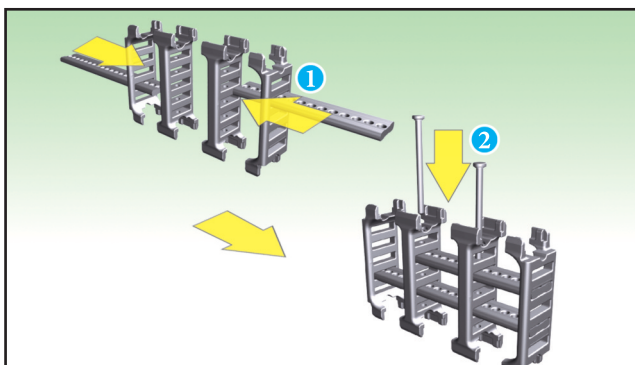
**6** Attach frames to one side groove on the side band, and then the other side. ST044E, 055E frame type.



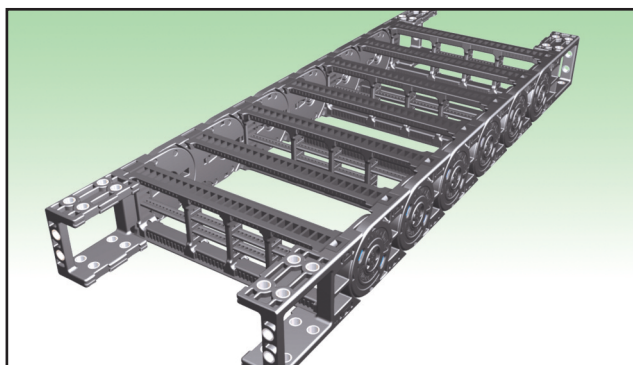
**3** Attach frames to one side groove on the side band, and then the other side. ST 044E, 055E are Hinge Type or Hook Type without frame pin.



**7** Insert frame pins to secure the frames and complete carrier. (ST072E, 095E, 120E, 150E are applied with frame pin, and ST044E, 055E are Hinge Type or Hook Type without frame pin.)



**4** For ST072E, 095E, 120E, and 150E, connect the pin of separator in hole of divider after inserting separator in hole of divider. For ST044E and ST055E, separator fixing pins are not used.



**8** Assembled Shift Chain E-Type is assembled.



# Shift Chain - Enclosed type

## Part list of Shift Chain Enclosed type

- Composition of Cable chain(Standard)  
= Side band(RH) + Frame + Side band(LH) + Bending radius Unit + Free end bracket
  - M divider(normal divider) should be applied every second frames to make a section composition.
- ※ Please refer to below part list and description to understand composition of cable chain.

Model	Classification	Part number	Description
ST044E	SIDE BAND	ST-SB044N/E(LH) ST-SB044N/E(RH)	Left side band of ST044E Right side band of ST044E
	BENDING RADIUS	ST-BR044,R70,90,120,150	Bending radius unit for side band
	FRAME(DOWN) FRAME(UP)	ST-FRD044,35 ST-FRU044,35 ST-FRD044,55 ST-FRU044,55 ST-FRD044,75 ST-FRU044,75 ST-FRD044,100 ST-FRU044,100	Inside frame, 35mm Outside frame, 35mm Inside frame, 55mm Outside frame, 55mm Inside frame, 75mm Outside frame, 75mm Inside frame, 100mm Outside frame, 100mm
	FRAME(DOWN-FIXING END) FRAME(UP-FIXING END) FRAME(DOWN-MOVING END) FRAME(UP-MOVING END)	ST-FRD044,100 ST-FRU044,100 ST-FRD044,100,35,55,75,100 ST-FRU044,100,35,55,75,100 ST-FRD044,35,55,75,100 ST-FRU044,35,55,75,100	Inside half-frame for fixing end bracket Outside half-frame for fixing end bracket Inside half-frame for moving end bracket Outside half-frame for moving end bracket
	FREE END BRACKET	ST-FEB044E	End bracket of ST044E
	DIVIDER	sb-DV028/M sb-DV028/S	Normal divider To fix separstors at the both side section
	SEPARATOR	S-SP/M,35 S-SP/M,50 S-SP/M,75 S-SP/M,100	Separator, 35mm Separator, 50mm Separator, 75mm Separator, 100mm
	TIE WRAP	S-TW036/025CR,35 S-TW036/025CR,55 S-TW036/025CR,75 S-TW036/025CR,100 S-TW036/025CR,125	Tie wrap for end bracket to fix cables, 35mm Tie wrap for end bracket to fix cables, 55mm Tie wrap for end bracket to fix cables, 75mm Tie wrap for end bracket to fix cables, 100mm Tie wrap for end bracket to fix cables, 125mm
	SYSTEM TIE WRAP	sb-DV028/W S-TW,EB028	Divider for fixing cables at end bracket System tie wrap to arrange for cables right after moving bracket or fixing bracket

Model	Classification	Part number	Description
ST055E	SIDE BAND	ST-SB055N/E(LH) ST-SB055N/E(RH)	Left side band of ST055E Right side band of ST055E
	BENDING RADIUS	ST-BR055,R100,125,150,200	Bending radius unit for side band
	FRAME(DOWN) FRAME(UP)	ST-FRD055,50 ST-FRU055,50 ST-FRD055,75 ST-FRU055,75 ST-FRD055,100 ST-FRU055,100 ST-FRD055,125 ST-FRU055,125 ST-FRD055,150 ST-FRU055,150	Inside frame, 50mm Outside frame, 50mm Inside frame, 75mm Outside frame, 75mm Inside frame, 100mm Outside frame, 100mm Inside frame, 125mm Outside frame, 125mm Inside frame, 150mm Outside frame, 150mm
	FRAME(DOWN-FIXING END) FRAME(UP-FIXING END) FRAME(DOWN-MOVING END) FRAME(UP-MOVING END)	ST-FRD055,75,100,125,150 ST-FRU055,75,100,125,150 ST-FRD055,75,100,125,150 ST-FRU055,75,100,125,150	Inside half-frame for fixing end bracket Outside half-frame for fixing end bracket Inside half-frame for moving end bracket Outside half-frame for moving end bracket
	FREE END BRACKET	ST-FEB055E	End bracket of ST055E
	DIVIDER	sb-DV035/M sb-DV035/S	Normal divider To fix separstors at the both side section
	SEPARATOR	S-SP/M,35 S-SP/M,50 S-SP/M,75 S-SP/M,100 S-SP/M,125 S-SP/M,150	Separator, 35mm Separator, 50mm Separator, 75mm Separator, 100mm Separator, 125mm Separator, 150mm
	TIE WRAP	S-TW036/025CR,50 S-TW036/025CR,75 S-TW036/025CR,100 S-TW036/025CR,125 S-TW036/025CR,150 S-TW036/025CR,175 S-TW036/025CR,200	Tie wrap for end bracket to fix cables, 50mm Tie wrap for end bracket to fix cables, 75mm Tie wrap for end bracket to fix cables, 100mm Tie wrap for end bracket to fix cables, 125mm Tie wrap for end bracket to fix cables, 150mm Tie wrap for end bracket to fix cables, 175mm Tie wrap for end bracket to fix cables, 200mm
	SYSTEM TIE WRAP	sb-DV035/W S-TW,EB035	Divider for fixing cables at end bracket System tie wrap to arrange for cables right after moving bracket or fixing bracket

Model	Classification	Part number	Description
ST072E	SIDE BAND	ST-SB072N/E(LH) ST-SB072N/E(RH)	Left side band of ST072E Right side band of ST072E
	BENDING RADIUS	ST-BR072, R120,145,200,250,300	Bending radius unit for side band
	FRAME PIN	S-FP/S1	Frame pin
	FRAME(DOWN) FRAME(UP)	ST-FRD072,50 ST-FRU072,50 ST-FRD072,75 ST-FRU072,75 ST-FRD072,100 ST-FRU072,100 ST-FRD072,125 ST-FRU072,125 ST-FRD072,150 ST-FRU072,150	Inside frame, 50mm Outside frame, 50mm Inside frame, 75mm Outside frame, 75mm Inside frame, 100mm Outside frame, 100mm Inside frame, 125mm Outside frame, 125mm Inside frame, 150mm Outside frame, 150mm
	FRAME(DOWN-FIXING END) FRAME(UP-FIXING END) FRAME(DOWN-MOVING END) FRAME(UP-MOVING END)	ST-FRD072,50,75,100,125,150 ST-FRU072,50,75,100,125,150 ST-FRD072,50,75,100,125,150 ST-FRU072,50,75,100,125,150	Inside half-frame for fixing end bracket Outside half-frame for fixing end bracket Inside half-frame for moving end bracket Outside half-frame for moving end bracket
	FREE END BRACKET	ST-FEB072E sb-FEB/WH045	End bracket of ST072E Steel washer for end bracket
	DIVIDER	sb-DV045/M sb-DV045/S	Normal divider To fix separstors at the both side section
	SEPARATOR	sb-SP/400,400 SP-PIN045	Separator, 400mm Separator pin to fix
	TIE WRAP	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	Tie wrap for end bracket to fix cables, 50mm Tie wrap for end bracket to fix cables, 75mm Tie wrap for end bracket to fix cables, 100mm Tie wrap for end bracket to fix cables, 125mm Tie wrap for end bracket to fix cables, 150mm
	SYSTEM TIE WRAP	sb-DV045/W S-TW,EB045	Divider for fixing cables at end bracket System tie wrap to arrange for cables right after moving bracket or fixing bracket

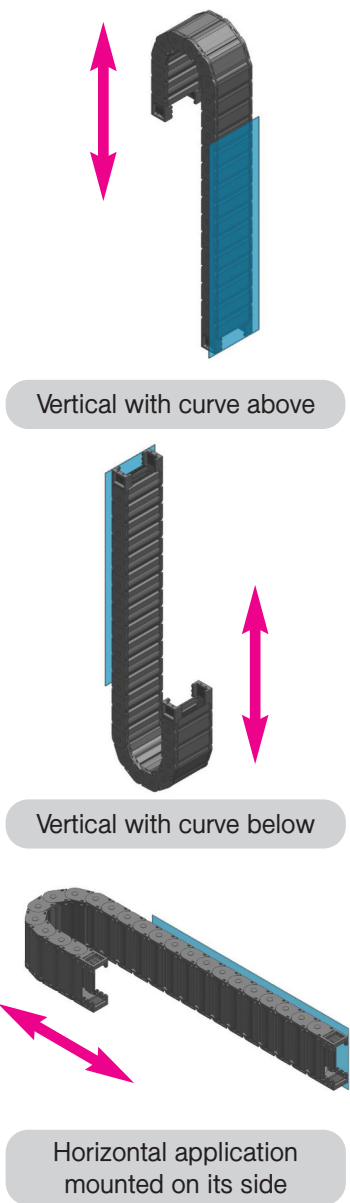
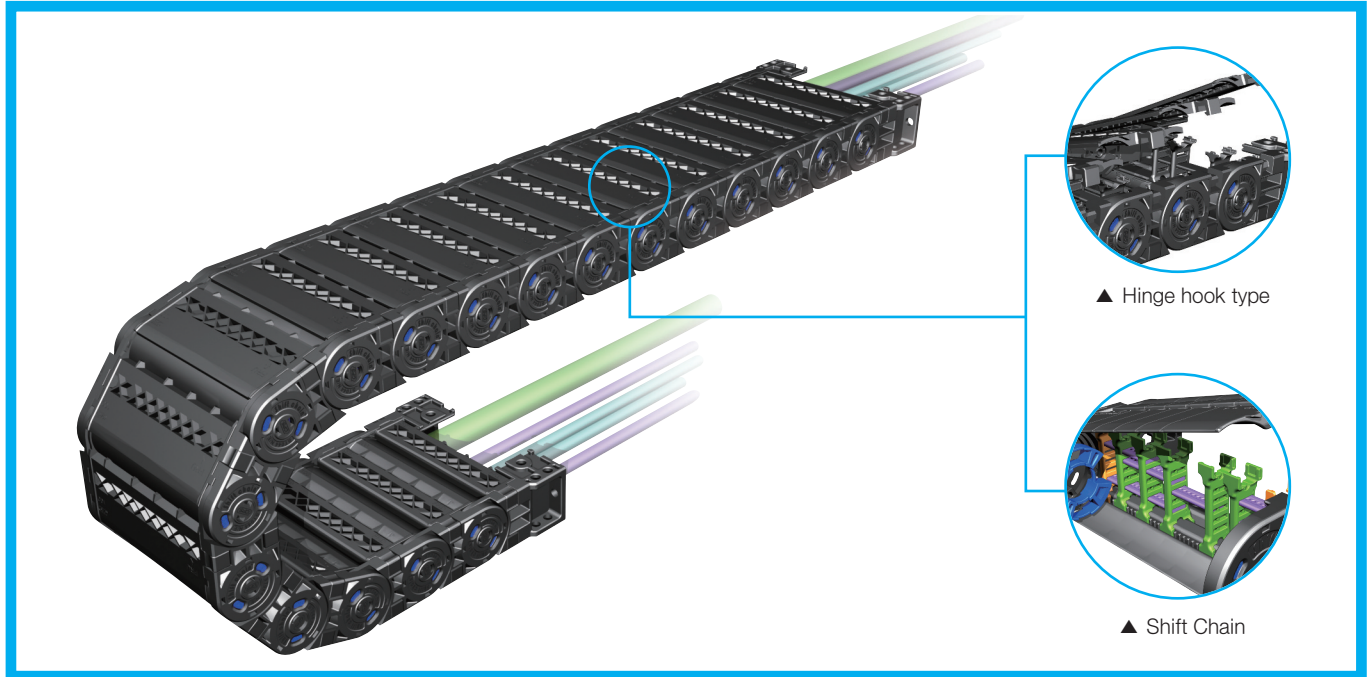
Model	Classification	Part number	Description
ST095E	SIDE BAND	ST-SB095N/E(LH) ST-SB095N/E(RH)	Left side band of ST095N Right side band of ST095N
	BENDING RADIUS	ST-BR095.R150,200,230,280,400	Bending radius unit for side band
	FRAME PIN	S-FP/S1	FRAME PIN
	FRAME(DOWN) FRAME(UP)	ST-FRD095.100 ST-FRU095.100 ST-FRD095.125 ST-FRU095.125 ST-FRD095.150 ST-FRU095.150 ST-FRD095.175 ST-FRU095.175 ST-FRD095.200 ST-FRU095.200	Inside frame, 100mm Outside frame, 100mm Inside frame, 125mm Outside frame, 125mm Inside frame, 150mm Outside frame, 150mm Inside frame, 175mm Outside frame, 175mm Inside frame, 200mm Outside frame, 200mm
	FRAME(DOWN-FIXING END) FRAME(UP-FIXING END) FRAME(DOWN-MOVING END) FRAME(UP-MOVING END)	ST-FRD095.100,125,150,175,200 ST-FRU095.100,125,150,175,200 ST-FRDME095.100,125,150,175,200 ST-FRUME095.100,125,150,175,200	Inside half-frame for fixing end bracket Outside half-frame for fixing end bracket Inside half-frame for moving end bracket Outside half-frame for moving end bracket
	FREE END BRACKET	ST-FEB095E sb-FEB/WH060	End bracket of ST095E Steel washer for end bracket
	DIVIDER	sb-DV060/M sb-DV060/S	Normal divider To fix separstors at the both side section
	SEPARATOR	sb-SP/400.400 SP-PIN060	Separator, 400mm Separator pin to fix
	TIE WRAP	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	Tie wrap for end bracket to fix cables, 50mm Tie wrap for end bracket to fix cables, 75mm Tie wrap for end bracket to fix cables, 100mm Tie wrap for end bracket to fix cables, 125mm Tie wrap for end bracket to fix cables, 150mm
	SYSTEM TIE WRAP	sb-DV060/W S-TW,EB060	Divider for fixing cables at end bracket System tie wrap to arrange for cables right after moving bracket or fixing bracket

Model	Classification	Part number	Description
ST120E	SIDE BAND	ST-SB120N/E(LH) ST-SB120N/E(RH)	Left side band of ST120N Right side band of ST120N
	BENDING RADIUS	ST-BR120.R200,250,300,350,400,500	Bending radius unit for side band
	FRAME PIN	S-FP/S2	FRAME PIN
	FRAME(DOWN) FRAME(UP)	ST-FRD120.150 ST-FRU120.150 ST-FRD120.200 ST-FRU120.200 ST-FRD120.250 ST-FRU120.250 ST-FRD120.300 ST-FRU120.300	Inside frame, 150mm Outside frame, 150mm Inside frame, 200mm Outside frame, 200mm Inside frame, 250mm Outside frame, 250mm Inside frame, 300mm Outside frame, 300mm
	FRAME(DOWN-FIXING END) FRAME(UP-FIXING END) FRAME(DOWN-MOVING END) FRAME(UP-MOVING END)	ST-FRD120.150,200,250,300 ST-FRU120.150,200,250,300 ST-FRDME120.150,200,250,300 ST-FRUME120.150,200,250,300	Inside half-frame for fixing end bracket Outside half-frame for fixing end bracket Inside half-frame for moving end bracket Outside half-frame for moving end bracket
	FREE END BRACKET	ST-FEB120E sb-FEB/WH075	End bracket of ST120E Steel washer for end bracket
	DIVIDER	sb-DV075/M sb-DV075/S	Normal divider To fix separstors at the both side section
	SEPARATOR	sb-SP/400.400 SP-PIN075	Separator, 400mm Separator pin to fix
	TIE WRAP	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	Tie wrap for end bracket to fix cables, 50mm Tie wrap for end bracket to fix cables, 75mm Tie wrap for end bracket to fix cables, 100mm Tie wrap for end bracket to fix cables, 125mm Tie wrap for end bracket to fix cables, 150mm
	SYSTEM TIE WRAP	sb-DV075/W S-TW,EB075	Divider for fixing cables at end bracket System tie wrap to arrange for cables right after moving bracket or fixing bracket

Model	Classification	Part number	Description
ST150E	SIDE BAND	ST-SB150N/E(LH) ST-SB150N/E(RH)	Left side band of ST120N Right side band of ST120N
	BENDING RADIUS	ST-BR150.R305,405,505,605	Bending radius unit for side band
	FRAME PIN	S-FP/S2	FRAME PIN
	FRAME(DOWN) FRAME(UP)	ST-FRD150.200 ST-FRU150.200 ST-FRD150.250 ST-FRU150.250 ST-FRD150.300 ST-FRU150.300 ST-FRD150.350 ST-FRU150.350 ST-FRD150.400 ST-FRU150.400	Inside frame, 200mm Outside frame, 200mm Inside frame, 250mm Outside frame, 250mm Inside frame, 300mm Outside frame, 300mm Inside frame, 350mm Outside frame, 350mm Inside frame, 400mm Outside frame, 400mm
	FRAME(DOWN-FIXING END) FRAME(UP-FIXING END) FRAME(DOWN-MOVING END) FRAME(UP-MOVING END)	ST-FRD150.200,250,300,350,400 ST-FRU150.200,250,300,350,400 ST-FRDME150.200,250,300,350,400 ST-FRUME150.200,250,300,350,400	Inside half-frame for fixing end bracket Outside half-frame for fixing end bracket Inside half-frame for moving end bracket Outside half-frame for moving end bracket
	STEEL END BRACKET	ST-SEB150E/B1~B2~B3	Steel end bracket of ST150E
	DIVIDER DIVIDER(SIDE)	sb-DV100/M sb-DV100/S	Normal divider To fix separstors at the both side section
	SEPARATOR	sb-SP/600.600 SP-PIN100	Separator, 600mm Separator pin to fix
	TIE WRAP	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	Tie wrap for end bracket to fix cables, 50mm Tie wrap for end bracket to fix cables, 75mm Tie wrap for end bracket to fix cables, 100mm Tie wrap for end bracket to fix cables, 125mm Tie wrap for end bracket to fix cables, 150mm



# ST 044E



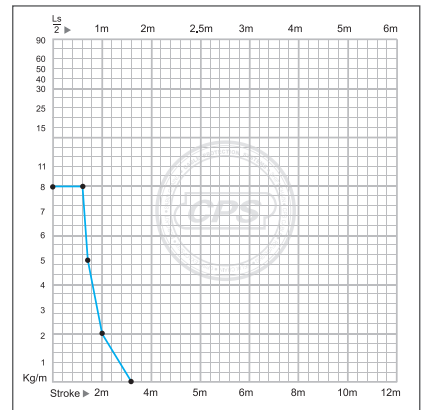
## » Calculation of the chain length

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

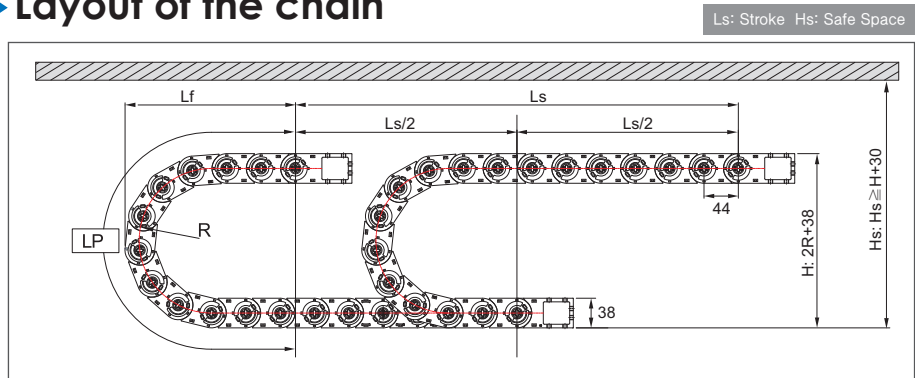
## » Other installation length

Vertical curve above = max 2.0m  
 Vertical curve below = max 40m  
 Side Mounted, Unsupported = max 1.0m

## » Load diagrams self-supporting length



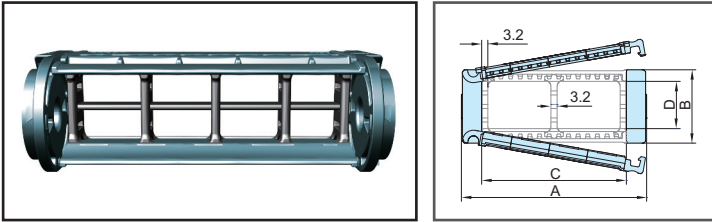
## » Layout of the chain



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
70	396	177	178
90	459	197	218
120	553	227	278
150	648	257	338

(Dimensions in mm)

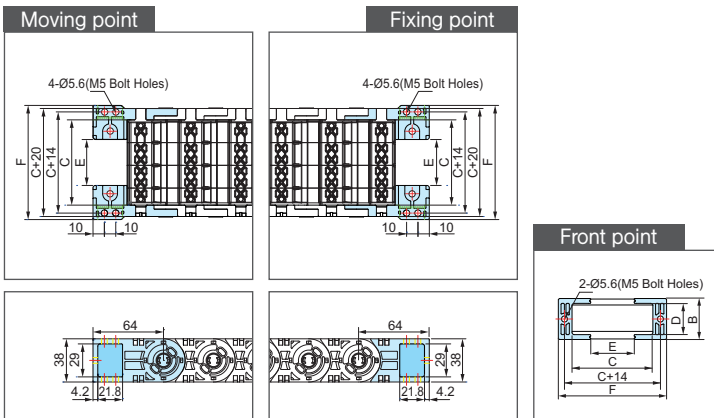
## » Chain cross section



Chain Type	A Width (Outer)	B Height (Outer)	C Frame	D Height (Inner)	Weight kg/m
ST 044E	56	38	35	24.5	1.03
	76		55		1.21
	96		75		1.37
	121		100		1.58

(Dimensions in mm)

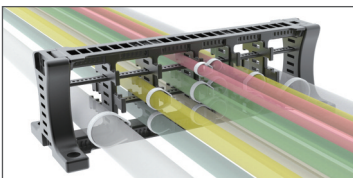
## » Free end bracket



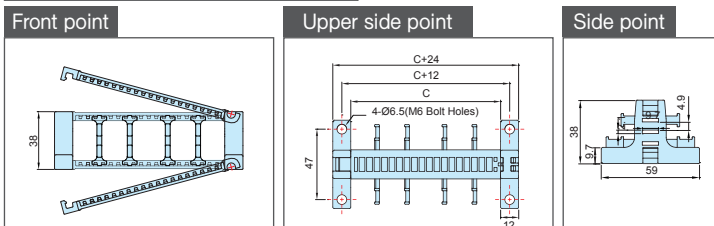
Chain Type	F Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	E M,EB Bolt hole width	Hole Type
ST 044E	60.4	38	35	24.5	0.4	M5 Bolt Holes
	80.4		55		20.4	
	100.4		75		40.4	
	125.4		100		65.4	

(Dimensions in mm)

## » System tie wrap (STW)



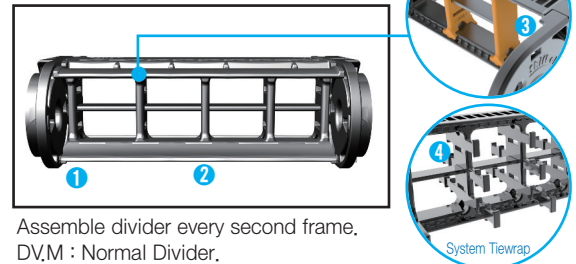
It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.



Chain Type	Ordering No.	C Frame	Hole Type
ST 044E	S-TW,EB028,35	35	M6 Bolt Holes
	S-TW,EB028,55	55	
	S-TW,EB028,75	75	
	S-TW,EB028,100	100	

(Dimensions in mm)

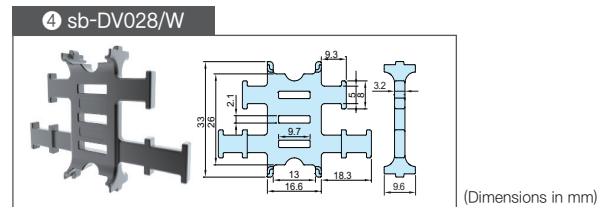
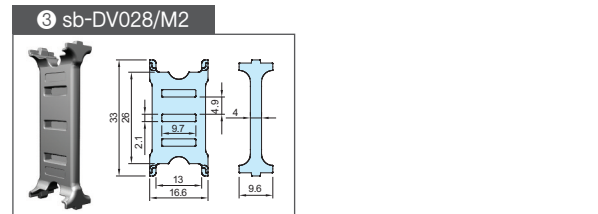
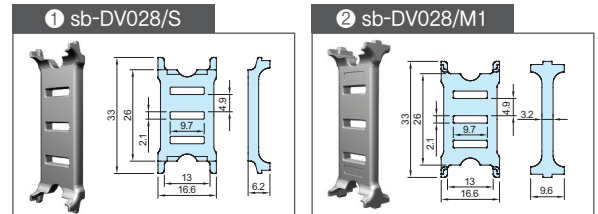
## » Dividers(DV)



Assemble divider every second frame.

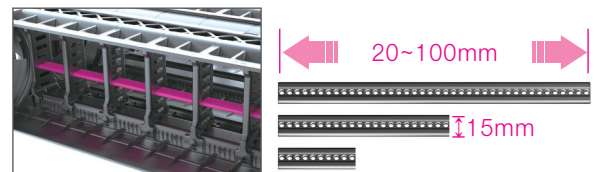
DV,M : Normal Divider.

DV,W : Tie wrap divider for free end bracket(FEB).



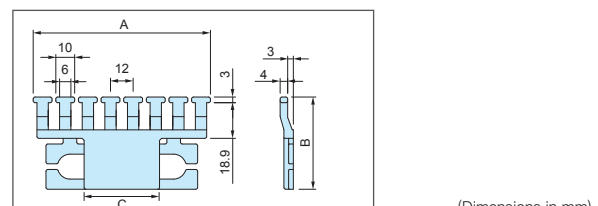
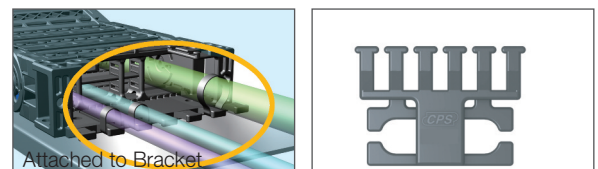
(Dimensions in mm)

## » Separators(SP)



Chain Type	Ordering NO.	Frame
ST 044E	S-SP/M,35	35
	S-SP/M,55	55
	S-SP/M,75	75
	S-SP/M,100	100

## » Tie wrap (TW)

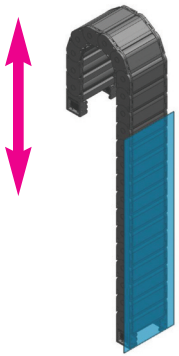
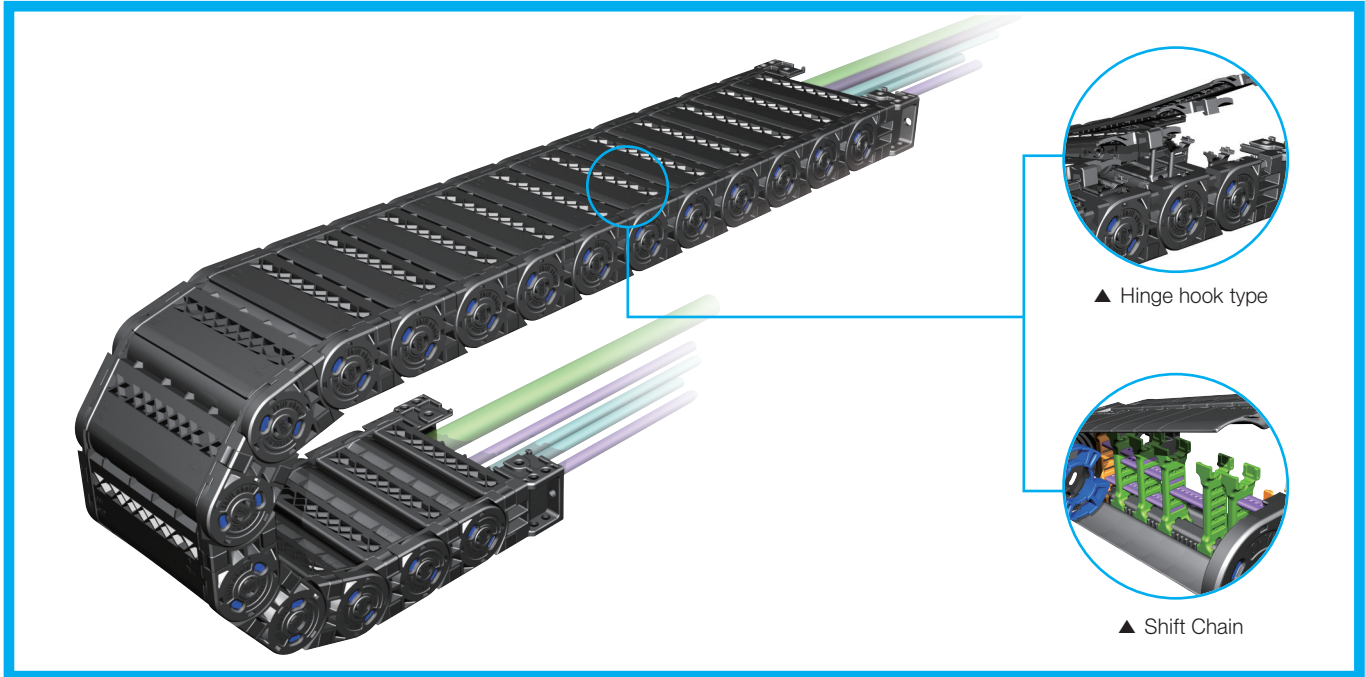


(Dimensions in mm)

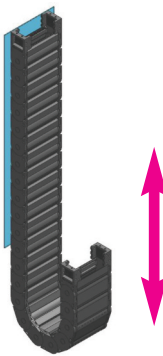
Chain Type	Ordering No.	A	B	C
ST 044E	S-TW036/025CR,35	46	35.4	-
	S-TW036/025CR,55	70	48.9	20
	S-TW036/025CR,75	94	48.9	40
	S-TW036/025CR,100	118	48.9	65



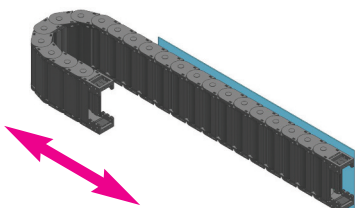
# ST 055E



Vertical with curve above



Vertical with curve below



Horizontal application mounted on its side

## » Calculation of the chain length

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

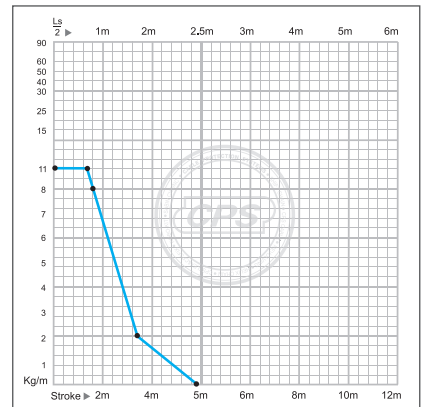
## » Other installation length

Vertical curve above = max 3.0m

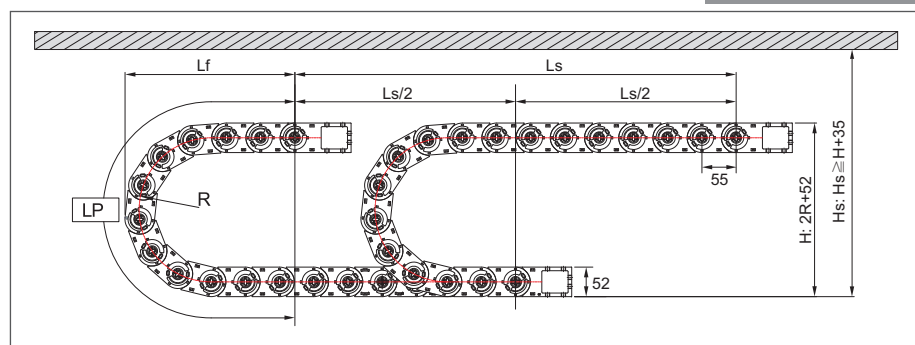
Vertical curve below = max 50m

Side Mounted, Unsupported = max 1.0m

## » Load diagrams self-supporting length



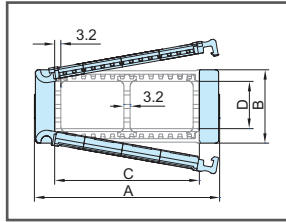
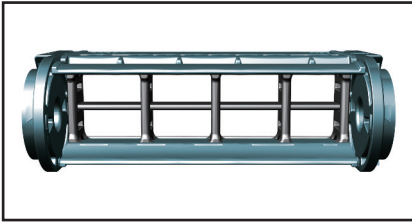
## » Layout of the chain



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
100	535	236	252
125	613	261	302
150	692	286	352
200	849	336	452

(Dimensions in mm)

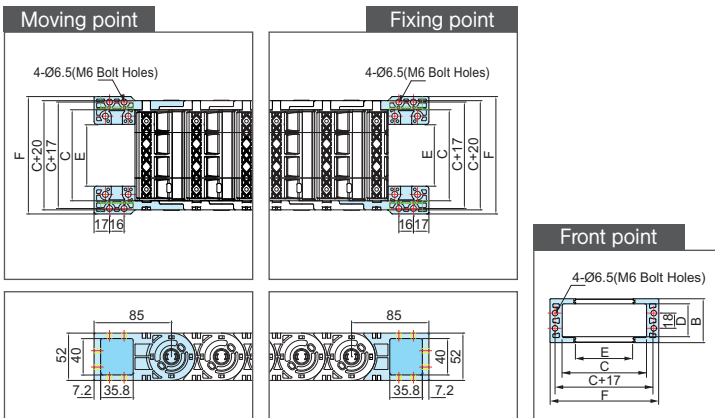
## » Chain cross section



Chain Type	A Width (Outer)	B Height (Outer)	C Frame	D Height (Inner)	Weight kg/m
ST 055E	71	52	50	38.5	1.36
	96		75		1.56
	121		100		1.76
	146		125		1.97
	171		150		2.21

(Dimensions in mm)

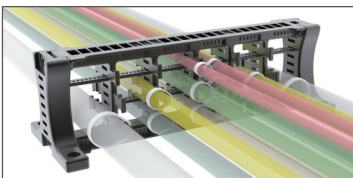
## » Free end bracket



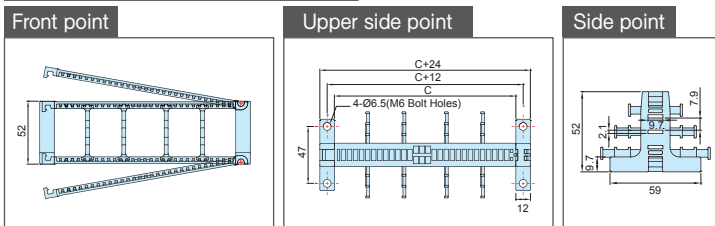
Chain Type	F Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	E M,EB Bolt hole width	Hole Type
ST 055E	79	52	50	38.5	18	M6 Bolt Holes
	104		75		43	
	129		100		68	
	154		125		93	
	179		150		118	

(Dimensions in mm)

## » System tie wrap (STW)



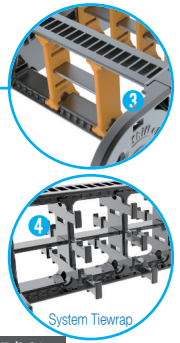
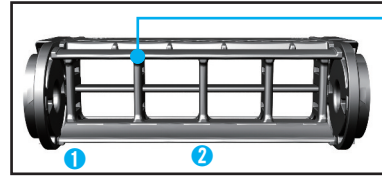
It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.



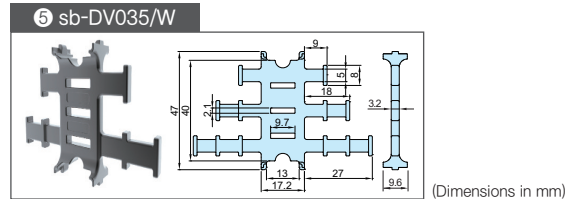
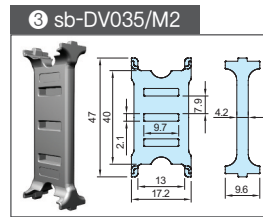
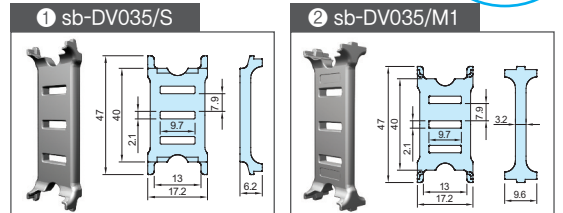
Chain Type	Ordering No.	C Frame	Hole Type
ST 055E	S-TW,EB035,50	50	M6 Bolt Holes
	S-TW,EB035,75	75	
	S-TW,EB035,100	100	
	S-TW,EB035,125	125	
	S-TW,EB035,150	150	

(Dimensions in mm)

## » Dividers(DV)

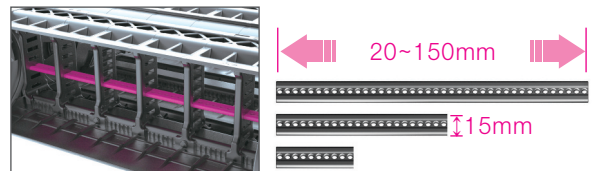


Assemble divider every second frame.  
DV,M : Normal Divider.  
DV,W : Tie wrap divider for free end bracket(FEB).



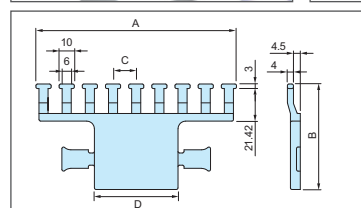
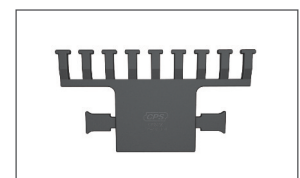
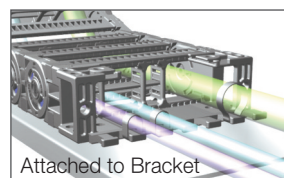
(Dimensions in mm)

## » Separators(SP)



Chain Type	Ordering NO.	Frame
ST 055E	S-SP/M,50	50
	S-SP/M,75	75
	S-SP/M,100	100
	S-SP/M,125	125
	S-SP/M,150	150

## » Tie wrap (TW)

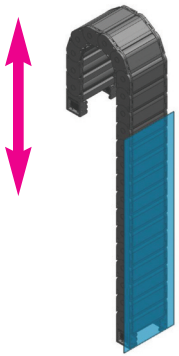
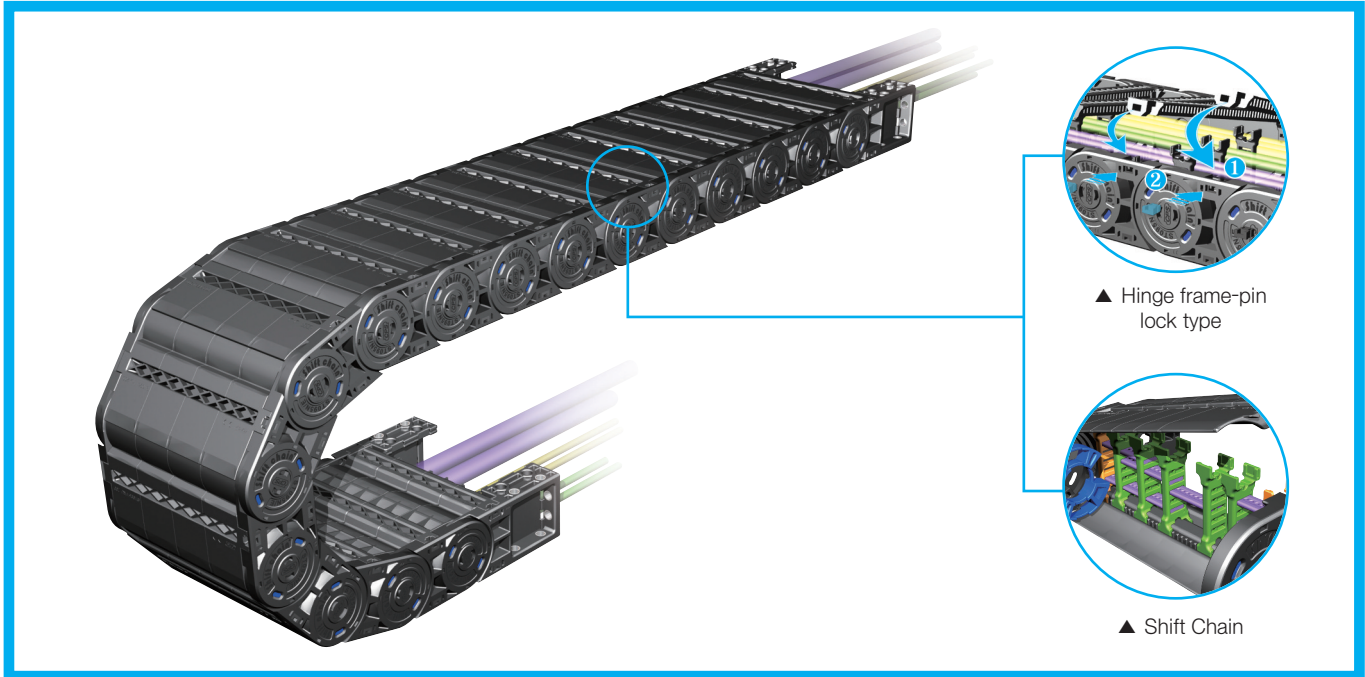


Chain Type	Ordering No.	A	B	C	D
ST 055E	S-TW050/035N,50	82	64.5	12.00	5
	S-TW050/035N,75	107		12.13	30
	S-TW050/035N,100	132		15.25	55
	S-TW050/035N,125	157		14.70	80
	S-TW050/035N,150	182		14.35	105

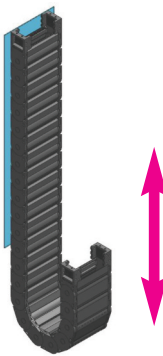
(Dimensions in mm)



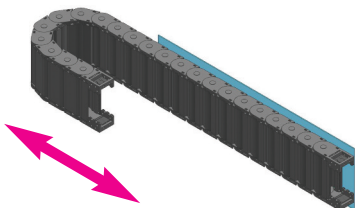
# ST 072E



Vertical with curve above



Vertical with curve below



Horizontal application mounted on its side

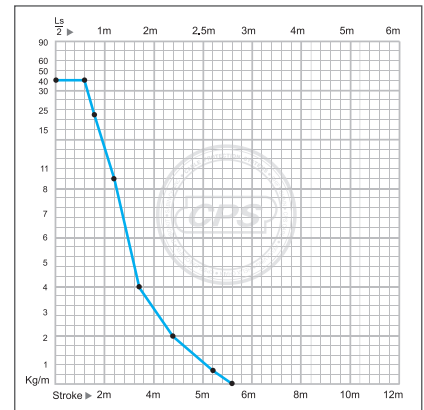
## » Calculation of the chain length

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

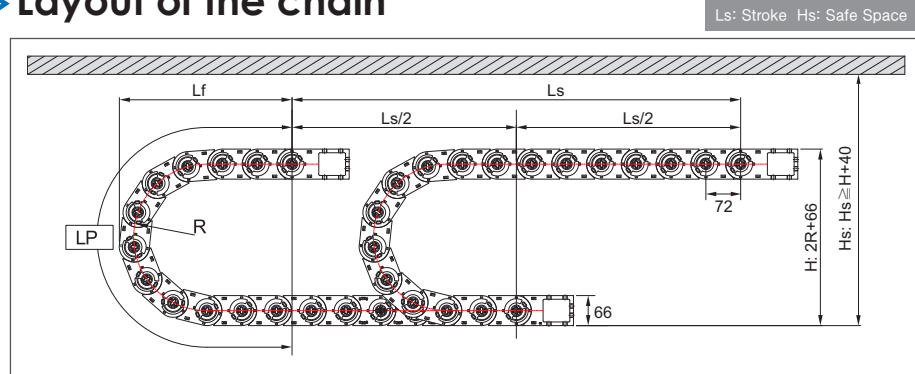
## » Other installation length

Vertical curve above = max 6.0m  
 Vertical curve below = max 100m  
 Side Mounted, Unsupported = max 2.5m

## » Load diagrams self-supporting length



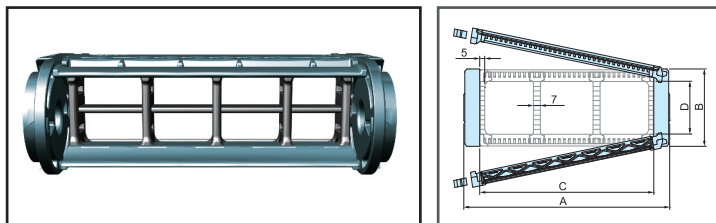
## » Layout of the chain



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
120	665	297	306
145	743	322	356
200	916	377	466
250	1,074	427	566
300	1,230	477	666

(Dimensions in mm)

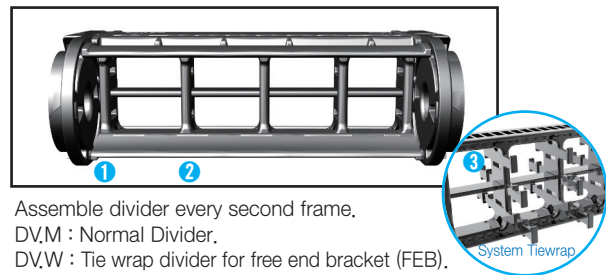
## » Chain cross section



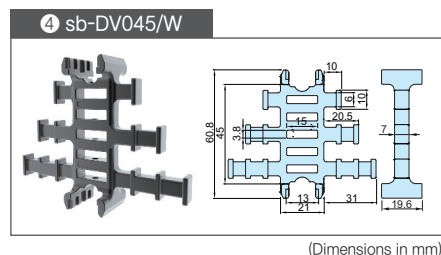
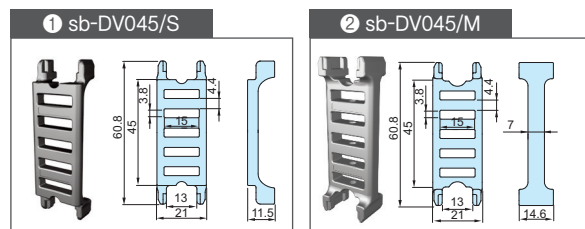
Chain Type	A Width (Outer)	B Height (Outer)	C Frame	D Height (Inner)	Weight kg/m
ST 072E	82	66	50	44	2.37
	107		75		2.61
	132		100		2.85
	157		125		3.09
	182		150		3.33

(Dimensions in mm)

## » Dividers(DV)

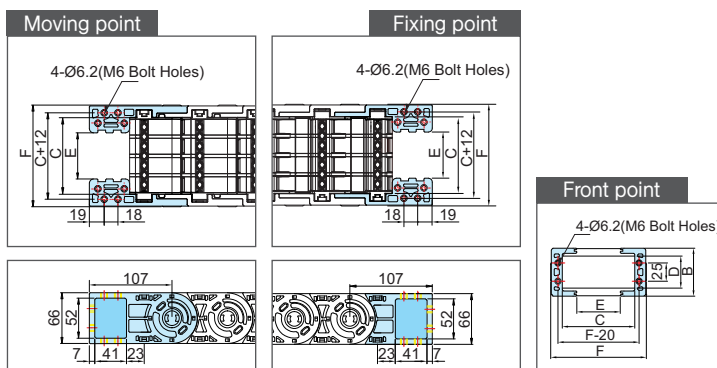


Assemble divider every second frame.  
 DV.M : Normal Divider.  
 DV.W : Tie wrap divider for free end bracket (FEB).



(Dimensions in mm)

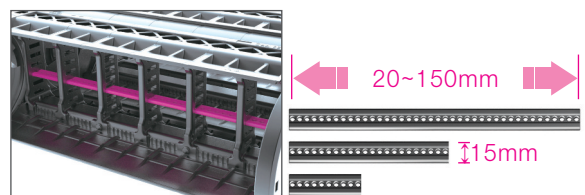
## » Free end bracket



Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	E M,EB Bolt hole width	Hole Type
ST 072E	82	66	50	44	10	M6 Bolt Holes
	107		75		35	
	132		100		60	
	157		125		85	
	182		150		110	

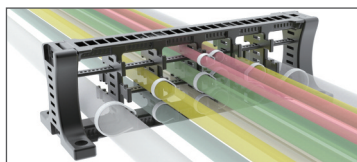
(Dimensions in mm)

## » Separators(SP)

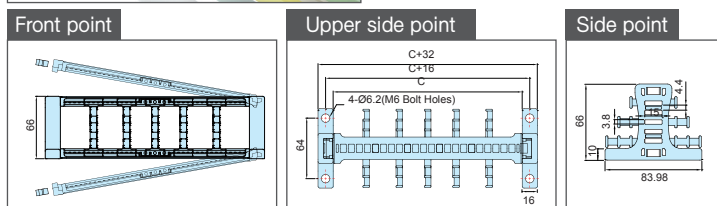


Chain Type	Ordering NO.
ST 072E	sb-SP/400,400

## » System tie wrap (STW)



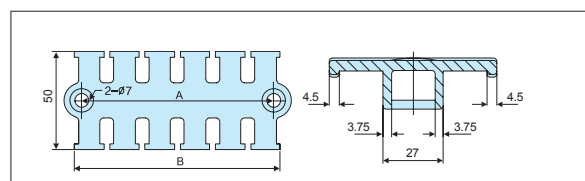
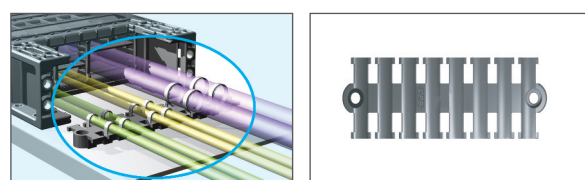
It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.



Chain Type	Ordering No.	C Frame	Hole Type
ST 072E	S-TWEB045.50	50	M6 Bolt Holes
	S-TWEB045.75	75	
	S-TWEB045.100	100	
	S-TWEB045.125	125	
	S-TWEB045.150	150	

(Dimensions in mm)

## » Tie wrap (TW)

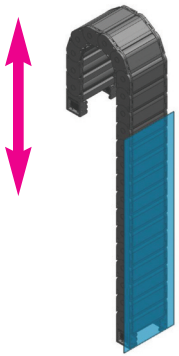
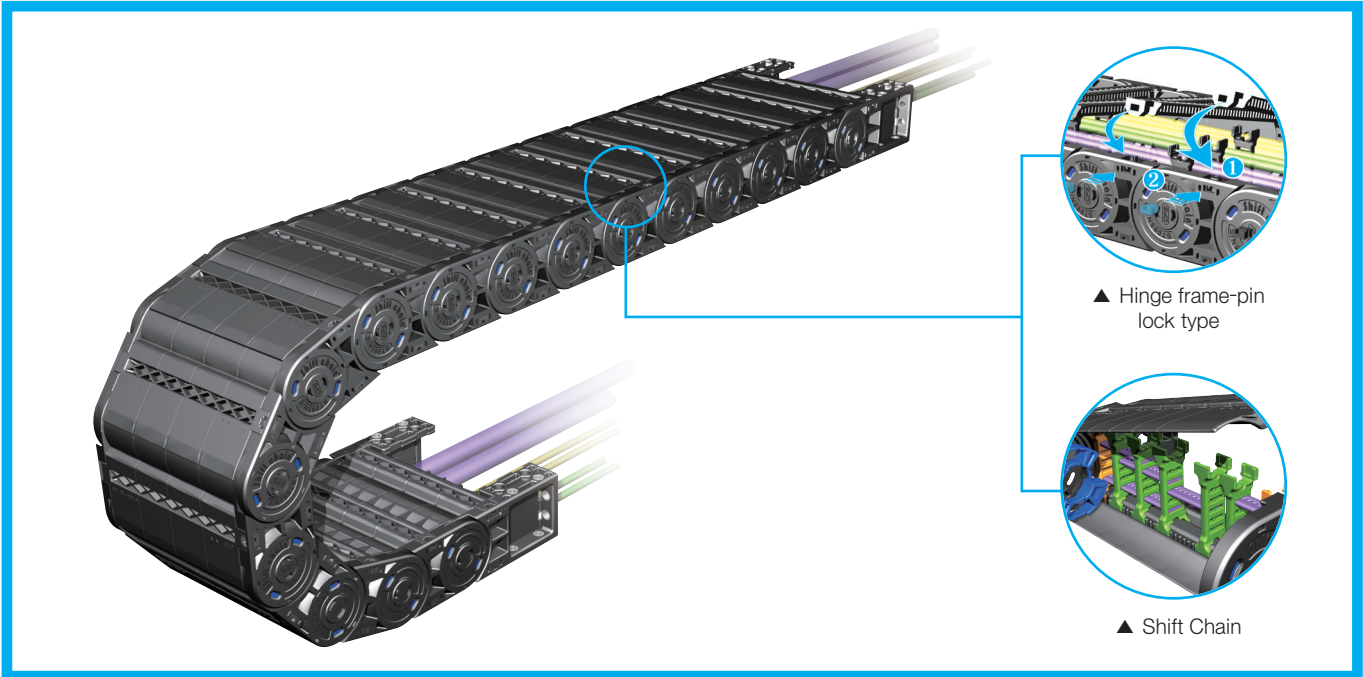


Chain Type	Ordering No.	A	B
ST 072E	S-TW50	58	65
	S-TW75	75	82
	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

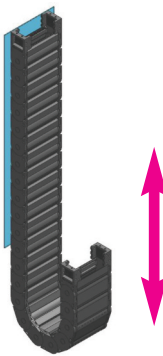
(Dimensions in mm)



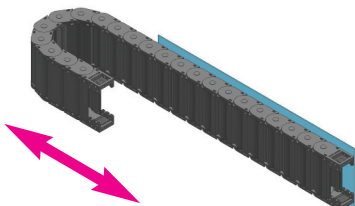
# ST 095E



Vertical with curve above



Vertical with curve below



Horizontal application mounted on its side

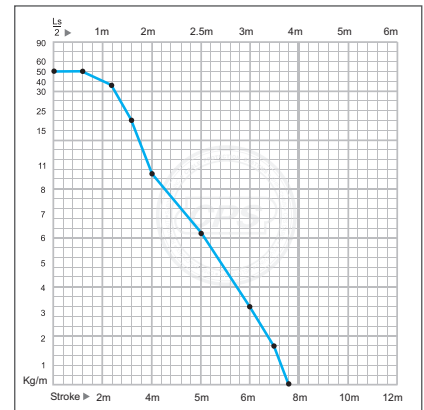
## » Calculation of the chain length

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

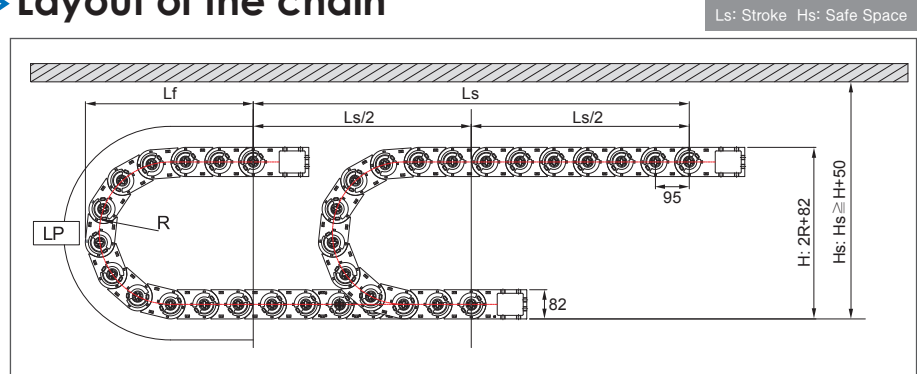
## » Other installation length

Vertical curve above = max 6.0m  
 Vertical curve below = max 100m  
 Side Mounted, Unsupported = max 3.0m

## » Load diagrams self-supporting length



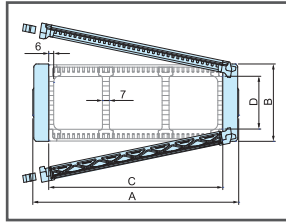
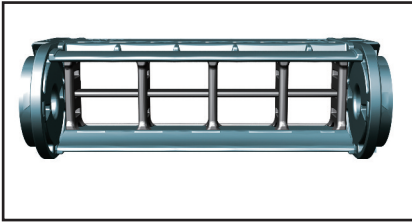
## » Layout of the chain



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
150	855	374	382
200	1,010	428	482
230	1,110	459	542
280	1,260	505	642
400	1,640	629	882

(Dimensions in mm)

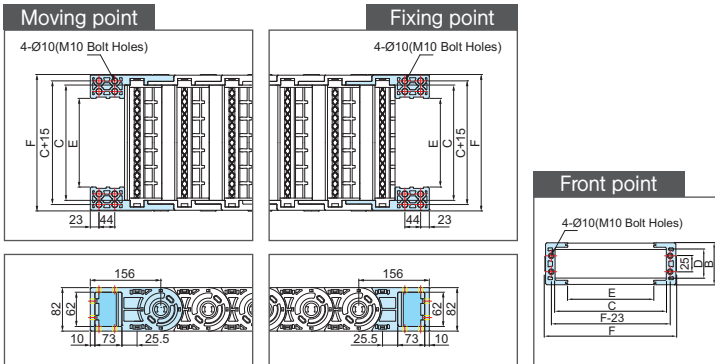
## » Chain cross section



Chain Type	A Width (Outer)	B Height (Outer)	C Frame	D Height (Inner)	Weight kg/m
ST 095E	138	82	100	55	3.55
	163		125		3.79
	188		150		4.04
	213		175		4.29
	238		200		4.53

(Dimensions in mm)

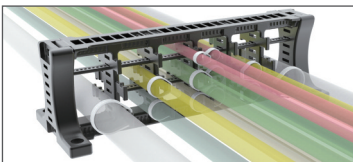
## » Free end bracket



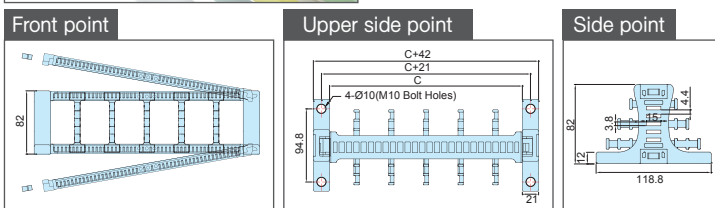
Chain Type	F Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	E M,EB Bolt hole width	Hole Type
ST 095E	138	82	100	55	49	M10 Bolt Holes
	163		74			
	188		99			
	213		124			
	238		149			

(Dimensions in mm)

## » System tie wrap (STW)



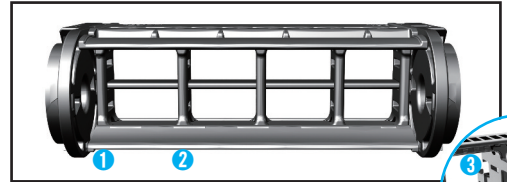
It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.



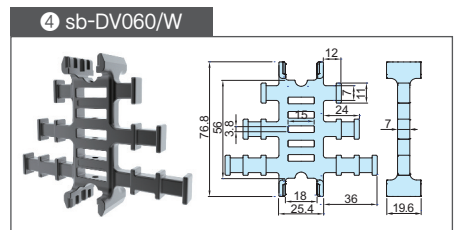
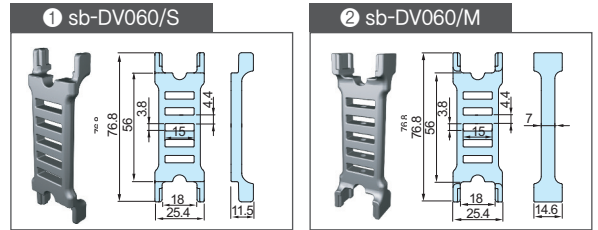
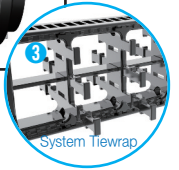
Chain Type	Ordering No.	C Frame	Hole Type
ST 095E	S-TW,EB060,100	100	M10 Bolt Holes
	S-TW,EB060,125	125	
	S-TW,EB060,150	150	
	S-TW,EB060,175	175	
	S-TW,EB060,200	200	

(Dimensions in mm)

## » Dividers(DV)

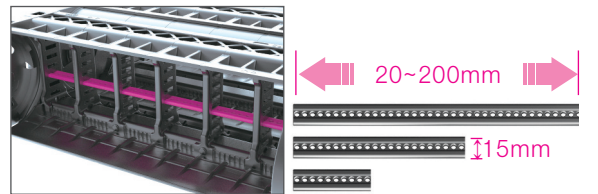


Assemble divider every second frame.  
 D.V.M : Normal Divider.  
 DV.W : Applicable to System Tie Wrap or FEB.



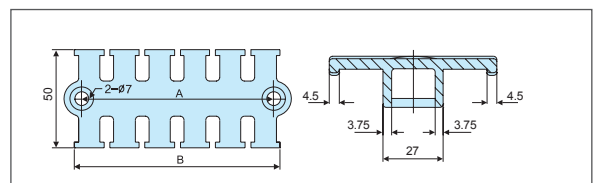
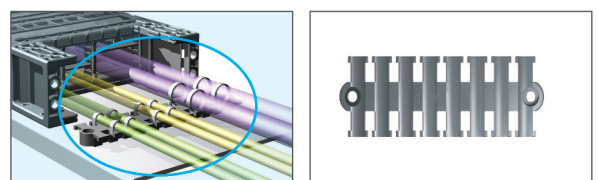
(Dimensions in mm)

## » Separators(SP)



Chain Type	Ordering NO.
ST 095E	sb-SP/400,400

## » Tie wrap (TW)

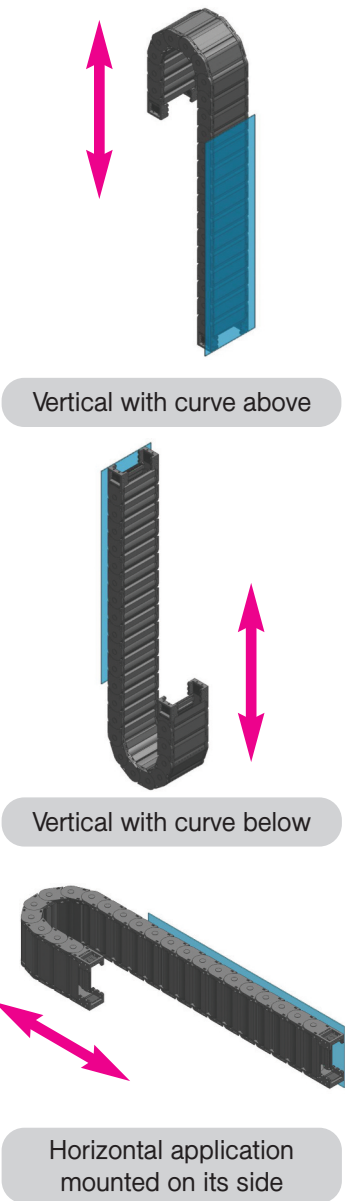
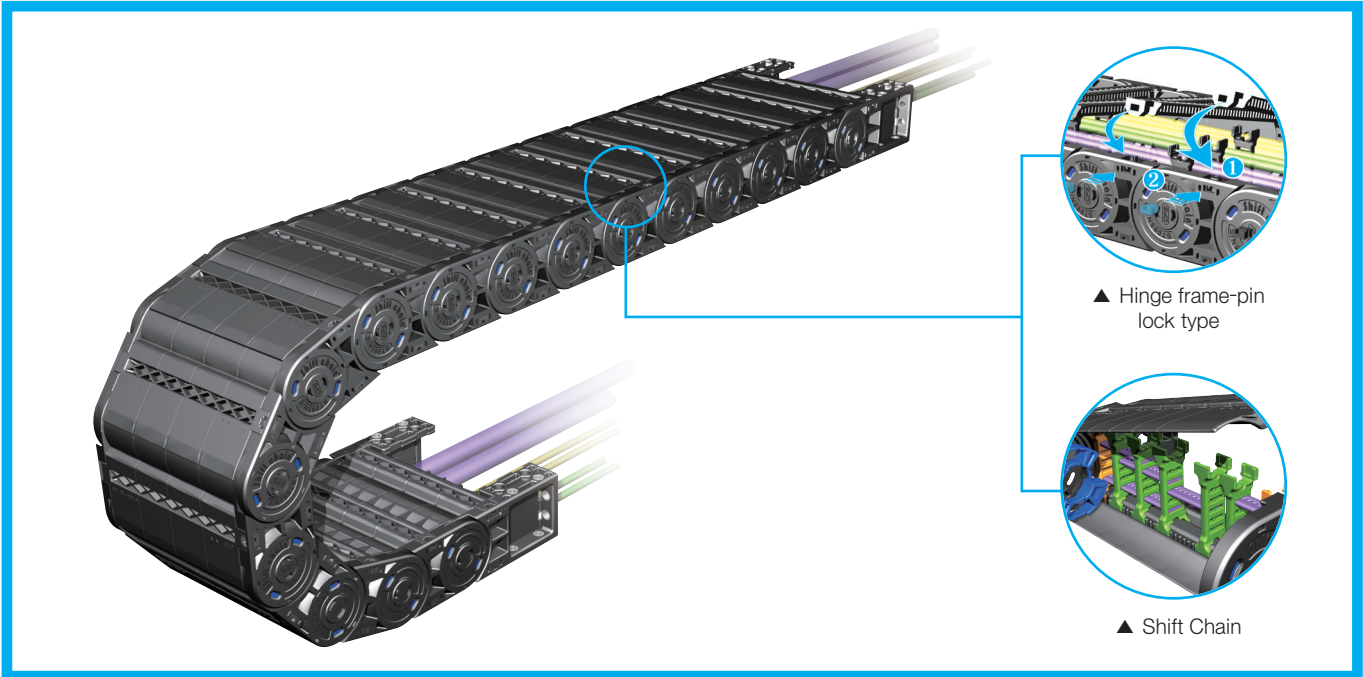


Chain Type	Ordering No.	A	B
ST 095E	S-TW50	58	65
	S-TW75	75	82
	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

(Dimensions in mm)



# ST 120E



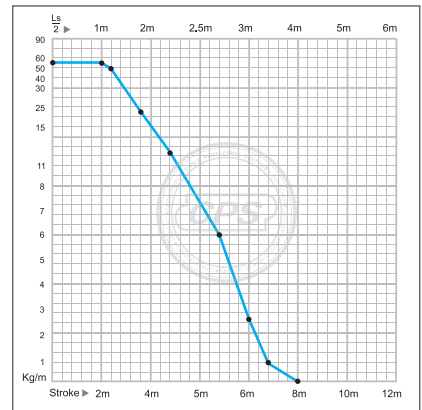
## » Calculation of the chain length

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

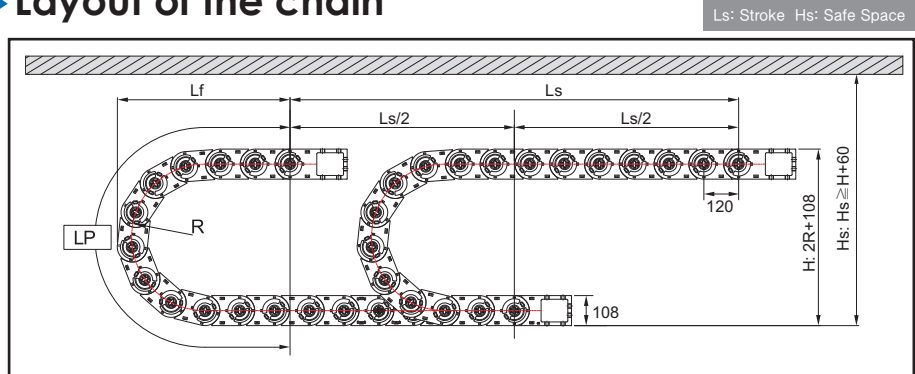
## » Other installation length

Vertical curve above = max 6.0m  
 Vertical curve below = max 120m  
 Side Mounted, Unsupported = max 3.0m

## » Load diagrams self-supporting length



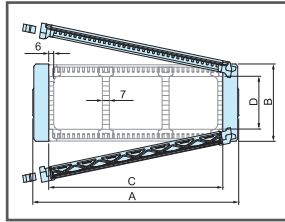
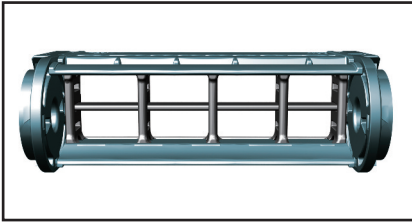
## » Layout of the chain



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
200	1,109	494	508
250	1,266	544	608
300	1,423	594	708
350	1,580	644	808
400	1,737	694	908
500	2,051	794	1,108

(Dimensions in mm)

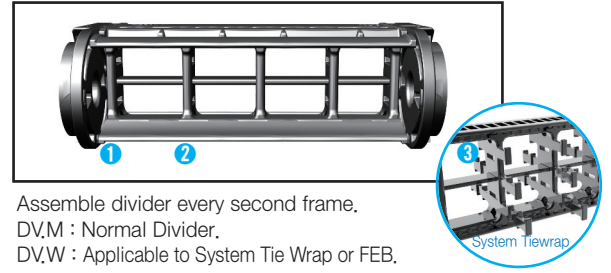
## » Chain cross section



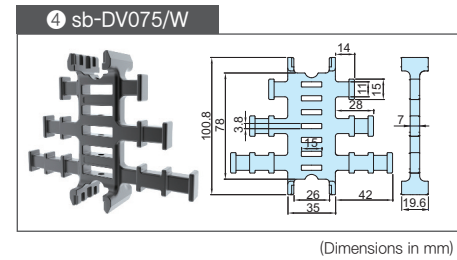
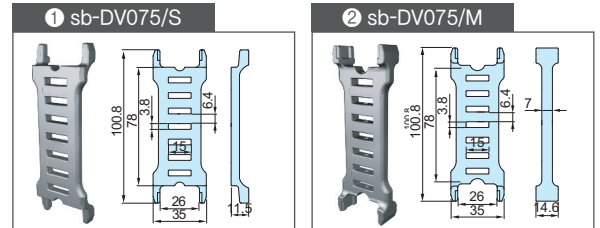
Chain Type	A Width (Outer)	B Height (Outer)	C Frame	D Height (Inner)	Weight kg/m
ST 120E	192	108	150	76	5.79
	242		200		6.43
	292		250		7.07
	342		300		7.71

(Dimensions in mm)

## » Dividers(DV)

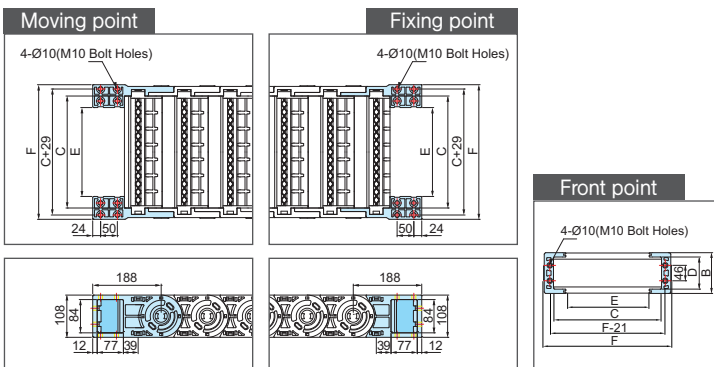


Assemble divider every second frame.  
 D.V.M : Normal Divider.  
 D.V.W : Applicable to System Tie Wrap or FEB.



(Dimensions in mm)

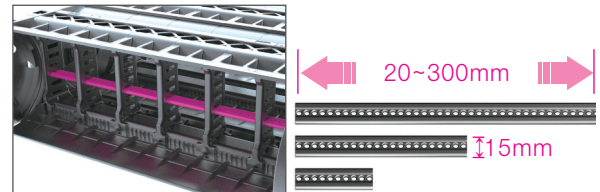
## » Free end bracket



Chain Type	F Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	E M,EB Bolt hole width	Hole Type
ST 120E	200	108	150	76	90	M10 Bolt Holes
	250		140			
	300		190			
	350		240			

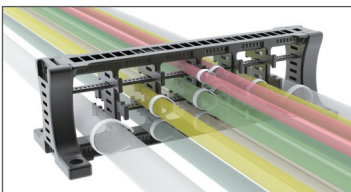
(Dimensions in mm)

## » Separators(SP)

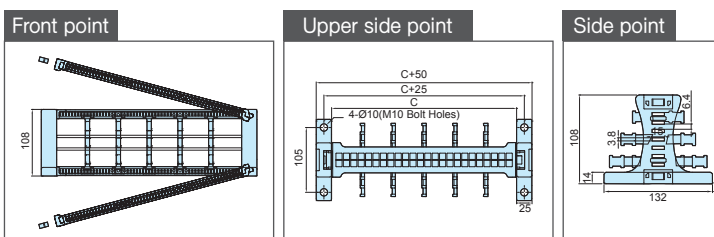


Chain Type	Ordering NO.
ST 120E	sb-SP/400,400

## » System tie wrap (STW)

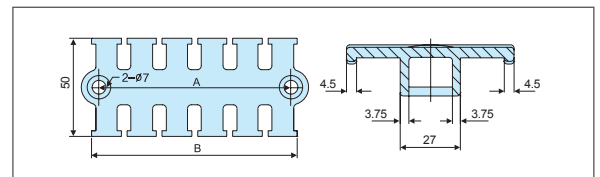
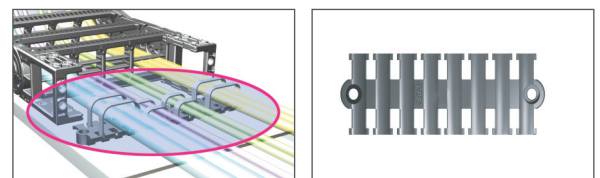


It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.



Chain Type	Ordering No.	C Frame	Hole Type
ST 120E	S-TWEB075,150	150	M10 Bolt Holes
	S-TWEB075,200	200	
	S-TWEB075,250	250	
	S-TWEB075,300	300	

## » Tie wrap (TW)

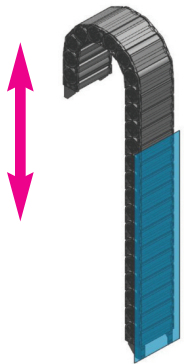
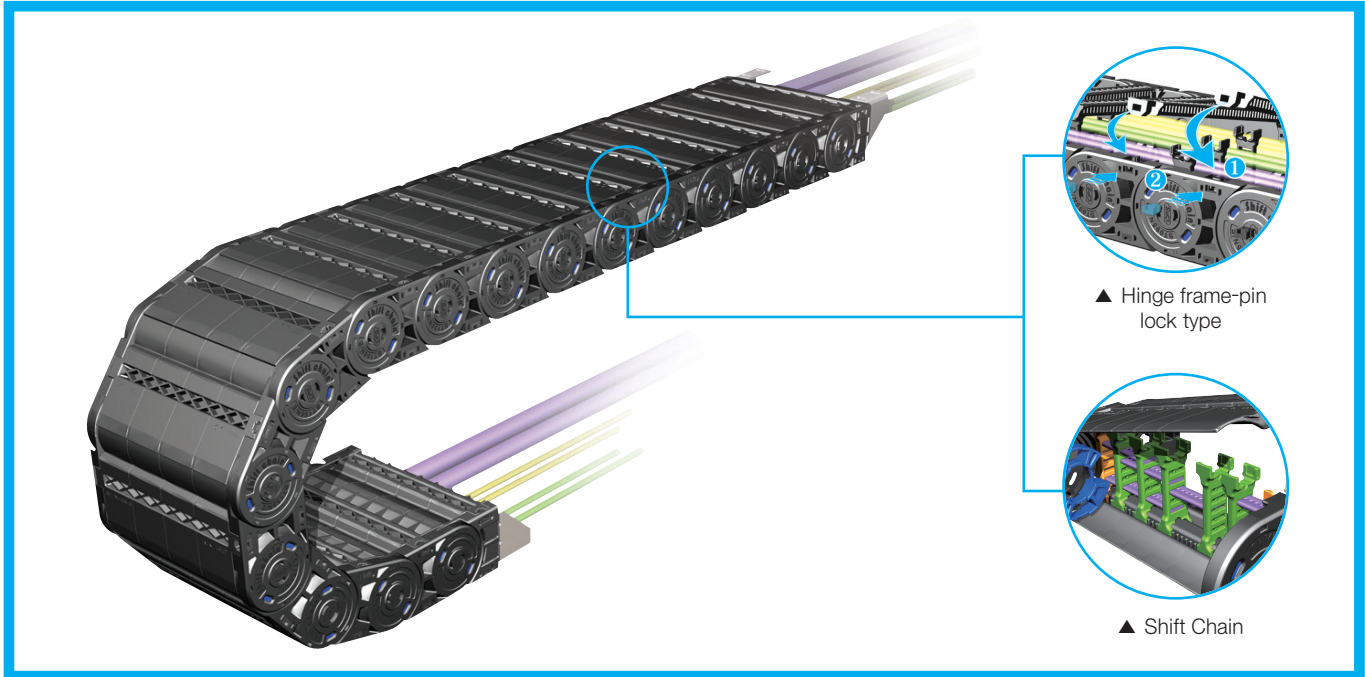


Chain Type	Ordering No.	A	B
ST 120E	S-TW50	58	65
	S-TW75	75	82
	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

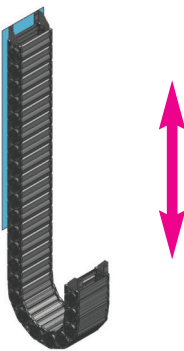
(Dimensions in mm)



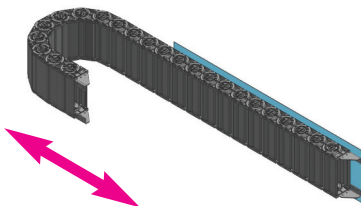
# ST 150E



Vertical with curve above



Vertical with curve below



Horizontal application mounted on its side

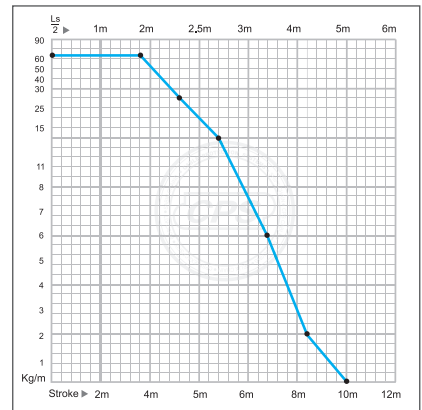
## » Calculation of the chain length

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

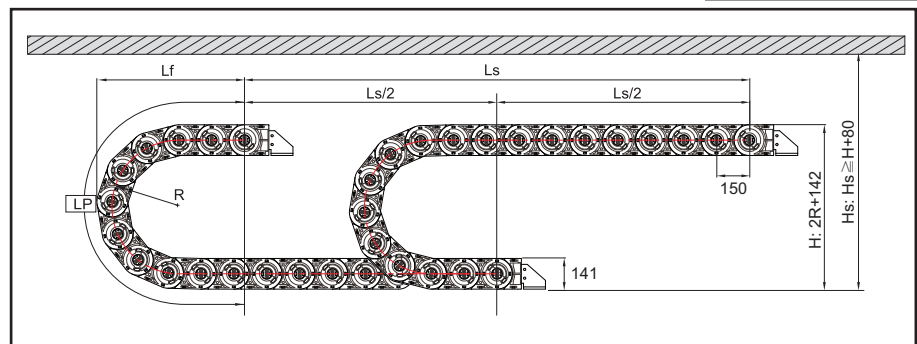
## » Other installation length

Vertical curve above = max 7.0m  
 Vertical curve below = max 150m  
 Side Mounted, Unsupported = max 4.0m

## » Load diagrams self-supporting length



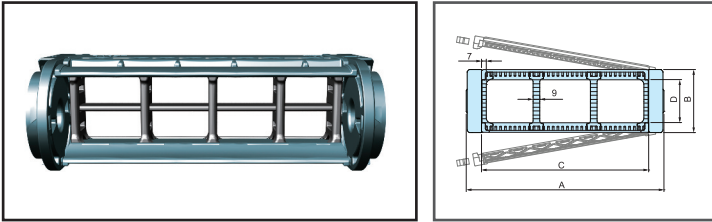
## » Layout of the chain



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
305	1,510	651	752
405	1,807	743	952
505	2,106	835	1,152
605	2,405	928	1,352

(Dimensions in mm)

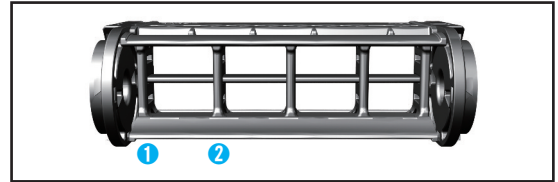
## » Chain cross section



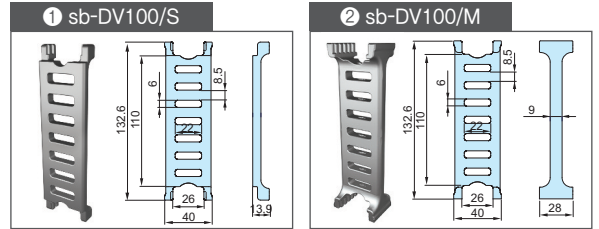
Chain Type	A Width (Outer)	B Height (Outer)	C Frame	D Height (Inner)	Weight kg/m
ST 150E	246	141	200	110	8.16
	296		250		8.76
	346		300		10.50
	396		350		12.33
	446		400		14.16

(Dimensions in mm)

## » Dividers(DV)

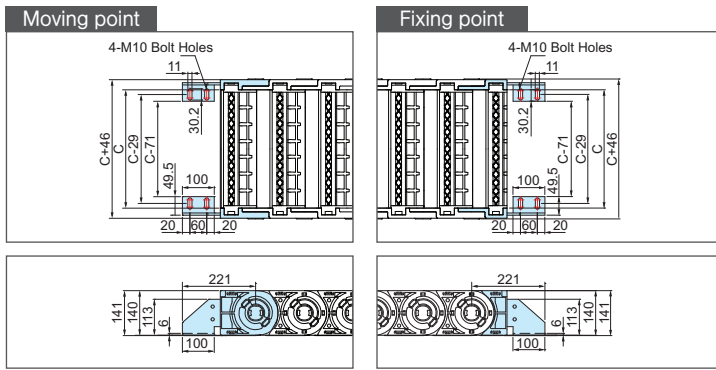


Assemble divider every second frame.  
D.V.M : Normal Divider.



(Dimensions in mm)

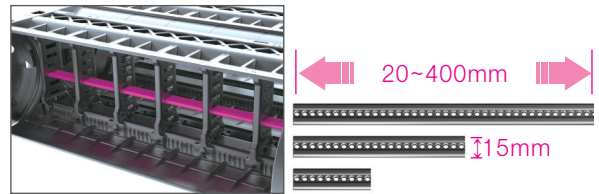
## » Free end bracket



Chain Type	B Height(Outer)	C Frame	D Height(Inner)	Hole Type
ST 150E	141	200	110	M10 Bolt Holes
		250		
		300		
		350		
		400		

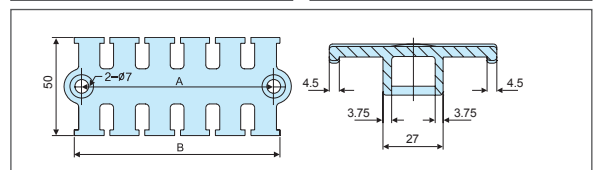
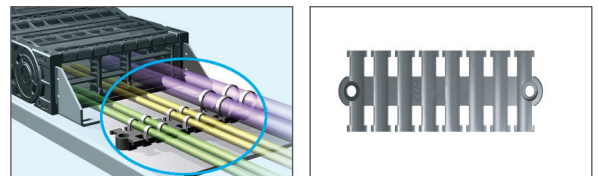
(Dimensions in mm)

## » Separators(SP)



Chain Type	Ordering NO.
ST 150E	sb-SP/600,600

## » Tie wrap (TW)



Chain Type	Ordering No.	A	B
ST 150E	S-TW50	58	65
	S-TW75	75	82
	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

(Dimensions in mm)