Product Information, Company Information, Application, How to Select Product

"CPS moves the heart of customers beyond customer satisfaction."

We are CPS that realizes the customer's impression beyond by the customer satisfaction.
CPS is the leading company to develop the cable protection system. We are manufacturer of cable chain(Energy chain), flexible tube(corrugated tube), connectors, Roboway and robot-kit.

We are the only-one manufacturer who has localized all these products in South Korea.

All of CPS products are manufactured in accord with on the quality control system of ISO9001 and environment control system of ISO14001. CPS obtained certification such as CE, VDE, UL, IPA, TUV(Noise Testing), ATEX and etc.
With our well organized research institute and reliability test laboratary, we are continuously developing and improving our product to respond to chainging market place requirement.
With efficient management system, CPS guarantees reasonable price, high quality product and fast delivery service for customers.
CPS will do their best to offer the best quality products, diverse solutions to customer under a management philosophy "Enterprise shall be disappeared when technical development stops."

Thank you

CEO **Kyung Min, Kim**

2018
Improvement of NHF' feature
Development of Shift Chain Double Chain
Development of Cable Clamp
Development of Narrow Corrugated Flexible Tube

2017
3D Web Catalog Service (CADENAS) open
Exclusive Use of Railway Tube, RAH launched (UL Certified)
RC frame Patent registered for exclusive use of gantry loader and robot carriage
Exclusive use of guide channel for Long stroke Cable Chain Patent registered
System tie wrap Patent registered
Roboway system additional Patent registered
Contract with New Distributor, Decril in France
Cable Guidance unit, UR Band developed for Universal Robot, registered at UR+
Roboway, RW Patent registered
New One-Touch Connector, CPSFIX P series IP68 Certified
Special Flexible Tube, PAM for Industrial Robot developed

2016
Roboway(RW) developed, its Trade Mark registered
4 cases of Patent excluding New One-Touch Connector
Enterprise Research Institute Founded

2015
nsb sliding Cable Chain developed
System tie wrap developed
4 cases of Patent excluding Roboway(RDD)

2014
CPS LOGO trademark registered
Unity system Patent registered
Unity system Trademark registered
Presidential Citation Awarded by developing excellent capital goods

2013
CPS' Head Quarter relocated to new place
Shift chain skid Patent registered in Oct.

2012
USD 3 million export tower Awarded in Nov.

2011
Reliability Certified to sabin Chain
New sabin chain S-type Patent registered
New sabin chain IPA certificate obtained(IPA CLASS1)
Jeonggwan Factory (injection, extrusion line) relocated to new building
New Distributor Founded in Anyang

2010
System guide channel Patent registered in domestic market
Clean room use purposed new sabin Chain Patent registered
Shift chain Patent registered

2009
Reliability of Material Parts Certified (CPSFLEX)
Flexible subsidiary materials Patent registered
Cable supporting unit at Robot arm Patent registered
Revolving Chain/Helix Chain Patent registered
Ministry of Knowledge Economy Awarded
Development of Capital Goods Industry Citation Awarded

2008
Single PPM quality certified
sabin Chain Enclosed(E) Type Patent registered
sabin Chain Sliding Type Patent registered
sabin Chain Clean Room(CR) Type Chinese International Patent registered
CPS Cable Chain Germany International Patent registered

2007
Robo-kit Patent registered
Clean Room Chain (sabin Chain) TUV Noise Test (30dB) approved
Award of Ministry for inventing excellent duty of Ministry of Commerce Awarded
Fixing Device of Robo-kit/Tube Patent registered

2006
sabin chain NET certificate obtained by Ministry of Science and Technology
Development of Capital Goods Prime Minister Citation Awarded
Italy/Iran/Switzerland/Finland Distributor Founded
USD 1 million Export Tower Awarded at 43rd day of export hosted by KFTA
sabin chain NET certificate obtained by Ministry of Science and Technology

2005
Netherland/Belgium/Luxemburg/Germany Distributor founded
Technical Innovation Enterprise designated by INNOBIZ
R&D Center opened, selected as INNOBIZ enterprise by the Small and Medium Business Administration
ISO14001 environment management system certificate obtained (K1356), prize of Ministry of Industry Awarded (58690)
Contracted for distributive research (Dongui University Industrial technology development research center)
Industry Minister Commendation Awarded
Selected as Top Venture Enterprise

2004
Russia/Australia Distributor Founded
Designated as Venture Enterprise

2003
Flame Retardant Test approved by Japan Railroad Car Society of Mechanical Engineer
BSS 7239 Certified
ASTM E662-01, E162-98 Certified
Malaysia CPS Corporation Established, Turkey Distributor Founded

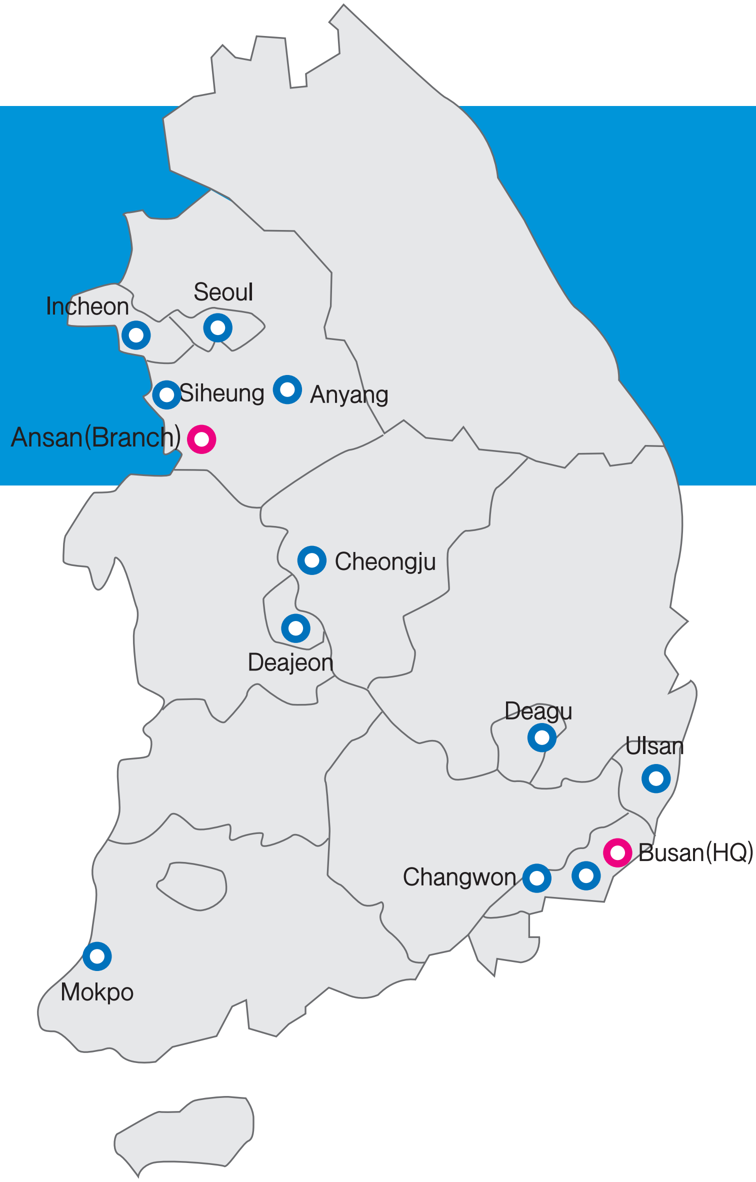
2001
Japan/Thailand/Indonesia Distributor Founded
Designated as a Promising Small and Medium Sized Enterprise for export
Designated as a Promising Small and Medium Sized Enterprise (200182)
VDE (CE) certificate obtained (License No.135369)

2000
Switched to CP SYSTEM Corporation
ISO 9001 certificate obtained (KOR-483-00-02)
UL certificate obtained (File no. 191879)
India Distributor Founded

1999
Hongkong Distributor Founded
Gwangzhou (China) Distributor Founded

1998
Non-metal Nylon (PA6), Cable Chain Q mark Initially Obtained in South Korea

1997
Non-metal Nylon (PA6), Cable Chain, Connector Initially Developed South Korea



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#410 Daewoo Tenopia, 296 Sandan-ro, Danwon-gu, Ansan-si, Kyunggi-do
T: 031-482-1405, F:031-482-1406

Shanghai CPS

RM203, SEC-2, 125 SANBANG ROAD
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T : +86 21 3702 6312 / F : +86 21 3702 6832
shanghaicps@163.com

Overseas Distributor

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T : +81 52 877 9933 / F : +81 52 877 2633
choi0226@sanritsu-co.com

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T : +852 2331 8928 / F : +852 2426 9738
skytophk@icloud.com

THAILAND (Pneumax Co., Ltd)
T : +66 2726 8000 / F : +66 2726 8560
import@pneumax.co.th / www.pneumax.co.th

INDIA (CONTROLWELL India Pvt Ltd)
T : +91 22 2775 6293 / F : +91 22 2775 8767
www.controlwell.com / pradnya@controlwell.com

INDONESIA (PT.RODA MAS ABADI)
T : (021) 5435 6017 / F : (021) 5435 6018
rm_abadi@cbn.net.id

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T: +84(0)946 729 449, +84(0)28 6269 4899,
http://sltvina.com.vn/

TAIWAN (Der Fung Enterprise Co., Ltd)
T : +886-4-2655-8555 / F : +886-4-2656-1117
www.der-fung.com.tw / sales@der-fung.com.tw

MALAYSIA (LETROMEC Industrial (K L) SDN BHD)
T : +603 8060 0269 / F : +603 8061 0267
www.letromec.com / siewwan@letromec.com

AMERICA, OCEANIA, AFRICA

USA (Ameri Mation)
T : +1 847 388 7189 / F : +1 847 388 7194
www.amerimation.net / jchoi@amerimation.net

CANADA (Martechsales)
T : 905 716-5856 / F : 905 715-7883
www.martechsales.com / info@martechsales.com

AUSTRALIA (Key Tubing & Electrical Industries)
T : +61 8 8374 1400 / F : +61 8 8276 9581
www.kte.com.au / Vicki.Brent@kte.com.au

AUSTRALIA (VGL IMPEX PTY. LTD)
T :+61 3 9793 4666 / FAX : +61 3 9706 7010
www.alliedconnectors.com / sales@alliedconnectors.com

EGYPT (IEE)
T: +2 02 25767370 / F: +2 2 25767375
www.iee-egypt.com / ceo@iee-egypt.com

ARGENTINA (Varitel Electronica S.A.)
T : +54 11 4243 1171 / F : +54 11 4292 7545
www.varitel.com / liliana@varitel.com

MIDDLE EAST

IRAN (OSKOYI Ball Bearing Co.)
T : + 98 21 3395 1660 / F : + 98 21 3391 3364
www.1obc.com / hamid970@gmail.com

TURKEY (teknik16)
T : +90 224 443 03 14-15 / F : +90 224 443 03 19
www.teknik16.com / sales@teknik16.com

ISRAEL (Automation Yeruham & Co., Ltd)
T : +972 3 556 7322 / F : +972 3 559 6616
www.ayeruham.com / office@ayeruham.com

EUROPE

HUNGARY (Power Belt Kft.)
T : +36 1/455-2079
www.powerbelt.hu / csaba.dorottya@powerbelt.hu

SLOVAKIA (Power Belt Kft.)
T : +42 2 446 38 144
www.powerbelt.sk / powerbelt@powerbelt.sk

FRANCE (Decril)
T : +33 (0)4 72 25 83 17 / F : +33 (0)4 72 25 82 67
www.decril.fr / g.bourdic@decril.fr

RUSSIA (Servotechnica)
T : +7 (495) 797-88-66
www.servotechnica.ru / logist3@servotechnica.ru

RUSSIA (MDI2B)
T : +7 (499) 755-87-05
www.mdi2b.ru / natalya.yarynkina@mdi2b.ru

SERBIA (Power Belt Kft.)
T : +380-65 / 82-81-576
www.powerbelt.rs / office@powerbelt.rs

CZECH (Bibus s.r.o.)
T : +420 547 125 300 / F : +420 547 125 310
www.bibus.cz / Lucia.Nascakova@bibus.sk

DENMARK(Brd.Klee)
T : +45 43 86 83 33
www.klee.dk / kju@klee.dk

THE UK (ACPD Services LTD.)
T: +44(0)1572 335004, +44(0)7588 502621,
https://acpdservices.co.uk/

ROMANIA (Power Belt Kft.)
T : +40 264 502 495
www.powerbelt.ro / kerekes.a@powerbelt.ro

ITALY (IMYTECH S.R.L.)
T : +39 0444 361312 / F : +39 0444 592272
www.imytech.it / info@imytech.it

UKRAINE (Power Belt Kft.)
T : +38(03131) 3-13-06
www.powerbelt.com.ua / reho.janos@powerbelt.ua

SLOVENIA (Tuli d.o.o., Ljubljana)
T : +386 1 25 72 484 / F : +386 1 25 62 555
www.tuli.si / jure.plesko@tuli.si

System Certification


Single PPM


Exclusive Department for R&D


INNO-BIZ


MAIN-BIZ


3 million Doller Export Tower


Promising export Company


ISO 9001


ISO 14001


Venture Company Certificate


Technically Strong Company


Best Job-Creating Company


Awarded prize for merit part of superb capital goods

Industrial Property Right


Trademark (Unity Systems)


Trademark (CPSFLEX)


Trademark (Sliding chain)


Trademark (Shift chain)


Trademark (CPSFIX)


Trademark (ROBO-KIT)


Trademark (sabin chain)


Trademark (Revolving chain)

Product Certification


UL


CE


VDE


IPA (nsb CR type)


ATEX


VDE (FLEX&FIX)


VDE


IPA (nsb028CR)


IPA (nsb028CRG,75,R70)


Reliability(Cable Chain)


Reliability (Tube)

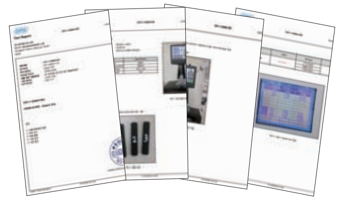

TUV (CPS Cable chain)

Material Property Tester

Material Tensile Test, Compression Test, Bending Test, Elongation Test

Impact Strength Tester

IZOD, Charpy Test



Surface Resistance Tester

Measurement of product's surface resistivity

Reliability Testing Equipment of Cable Chain

Test for Long Travel Type Cable Chain

Linear Test

Magnetic Linear Test

Vertical Operating Test

Reliability Testing Equipment of Specialized Cable Chain

Tester for ST Zig-Zag Chain

Tester for Helix Chain

Tester for Revolving Chain

Production Line System


Material Delivery


Extrusion


Injection


Product Classification


Injection


Assembly


Reliability Test of Cable Chain

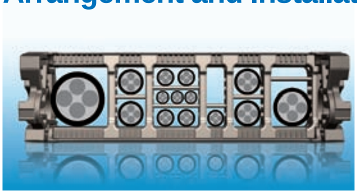
Shipping

Loading

Packaging

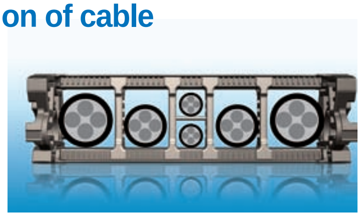
Installation Method of Cable Chain

Arrangement and Installation of cable

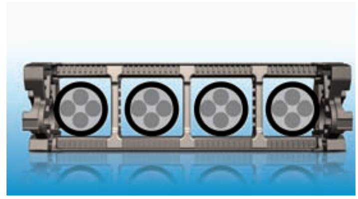


Available Space
Rounded Cable : 10% of space to be guaranteed based on Dia. of cable
Flat Cable : 10% of space to be guaranteed based on thickness of cable
Hose : 20% of space to be guaranteed based on Dia. of hose

10% of space should be secured between cables. When different dia. of cables are inserted, divider should be used. When there is 10% of space between cables, separator should be used.

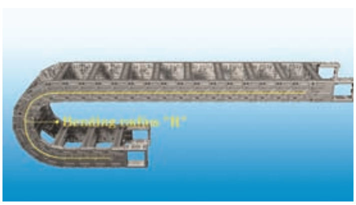


Single layer arrangement of cables are a standard. Big sized cables are placed outside and small sized cables are placed at center. Do not overlap cables but separate them by using separator.



Cables should be placed straightly and arrange them to maintain balance of weight like in the image.

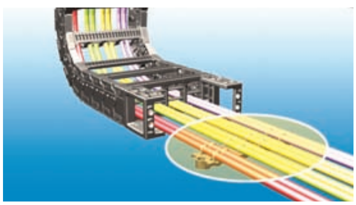
Bending Radius Value, “R”



Minimum "R" Value of Cable :
Multiply 8 to 10 against the biggest cable
Minimum "R" Value of Hose :
Multiply 15 to 20 against the biggest hose

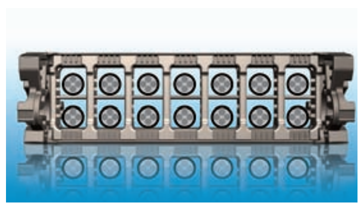
R value of Cable Chain should exceeds the R value of cable or hose.

Fixation of Cable and Hose

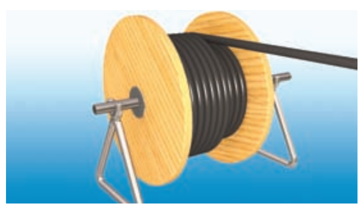


When Tie Wrap is applied, it shall be installed apart from Fixing bracket like in the image.

Arrangement of Cable and Hose



When sum of 2 cables are bigger than X1.2, Inner Height of Cable Chain, Divider does not to be installed. But when it does not exceed X1.2, Divider is recommended to be used.
In case of separator, when cable or hose’ dia is lower than X0.5, separators is recommended to be used.



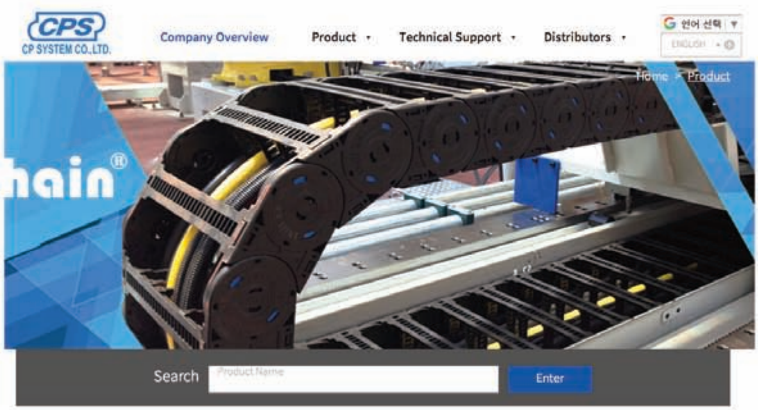
When cable is inserted inside of Cable Chain, its condition should be maintained straightly to prevent cable that to be entangled.

On-line support system

www.cpsystem.co.kr

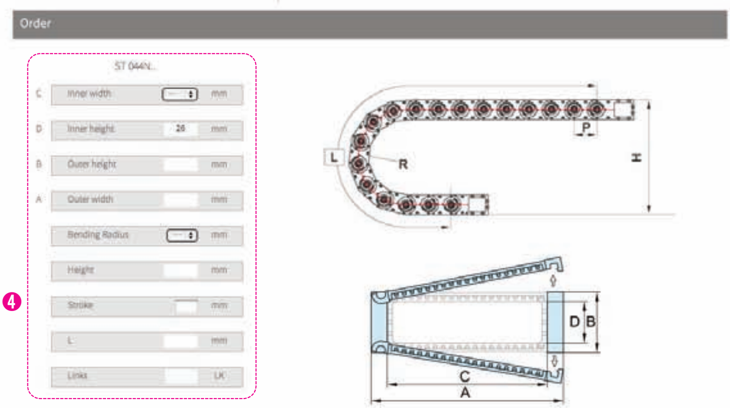
The newly reorganized by the customer can be chosen to make the website more precise specification can more easily identify and take advantage of a variety of product information at a glance.

- E-Catalogue
- Automatically Select Dimension
- 2D DWG / DXF CAD file download
- 3D STP file download

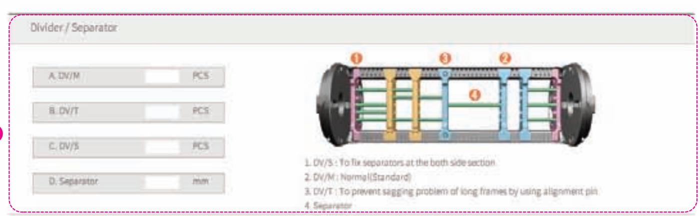


❶ Data sheet includes all information of applicable product.
❷ 3D drawing can be downloaded.
❸ When you order product, please click and select below dimension table exactly.

❹ Select dimension according to your need.



❺ Select dividers or separators.



❻ Select bracket type.

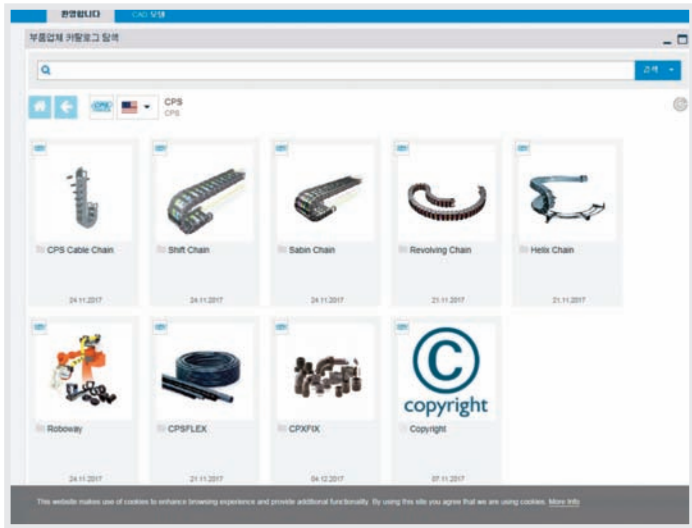
CADENAS, PART Community

https://b2b.partcommunity.com/3d-cad-models

EXPERIENCE CONVENIENT USE OF CPS' 3D ON-LINE CATAGOG SERVICE!
OPTIMIZED SELECTION OF CPS' PRODUCTS POSSIBLY CAN BE MADE BY FEW NUMBER OF CLICKING!

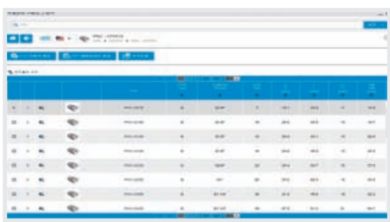
CADENAS_ MAIN WEBSITE

Customer can recognize and download thru Partcommunity Website.



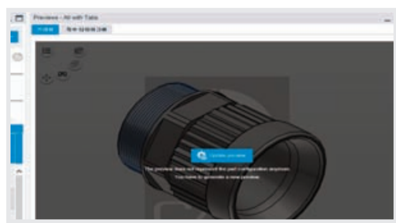
CADENAS_ HOW TO USE CADENAS

01



Access to https://b2b.partcommunity.com/community/ and click 3D drawing

02



Access to
https://b2b.partcommunity.com/community/
and select CPS products
ID and PW should be generated to download 3D/2D drawing of CPS' products at Partommunity Website

Example: In case of Cable Chain

Selection of Cable Chain(Shift chain, nsb chain, etc) → Selection of type(normal, enclosed, sliding, etc) → Selection of Cable Chain size → Selection of Inner height, frame width, vending radius value, length of cable chain and bracket type

CPS PRODUCTS GROUP

CPS CABLECHAIN

Mini type 22 page

Shift Chain®

Normal type 32 page

Shift Chain®

Enclosed type 56 page

Shift Chain®

Skid type 74 page

Shift Chain®

Enclosed Skid type 80 page

Shift Chain®

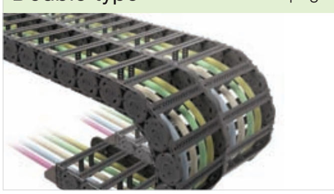
Roller Skid type 94 page

Shift Chain®

Enclosed Roller Skid type 112 page

Shift Chain®

Double type 128 page



Sabin Chain®

asb Clean Room type 136 page

Sabin Chain®

nsb Clean Room type 160 page

Sabin Chain®

Normal type 180 page

Sabin Chain®

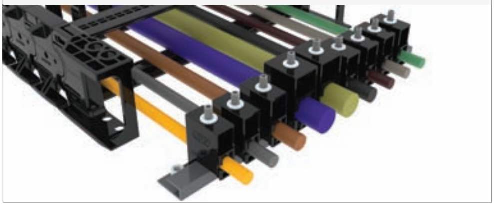
Enclosed type 196 page

Sabin Chain®

Sliding type 210 page

Cable Clamp

226 page



Unity Systems®

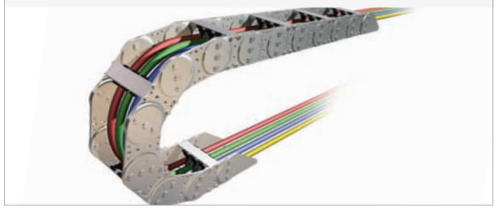
230 page

Guide Channel System

260 page

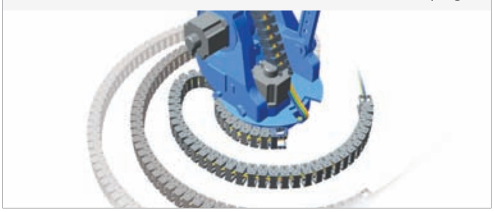
Steel Chain

277 page



Revolving Chain®

288 page



HeliX Chain®

296 page

Roboway® ROBO-KIT®

299 page

CPSFLEX®

319 page

CPSFIX®

336 page

Product Application

Sabin Chain Sliding Type at Goliath Crane

Goliath Crane

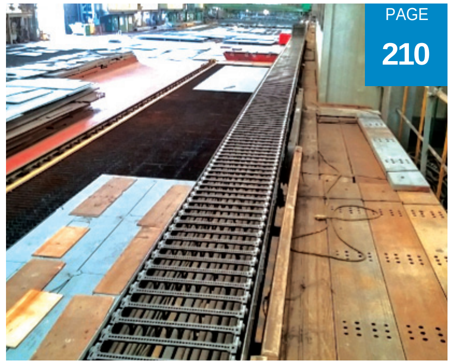

PAGE 94

Shift Chain Roller Skid Type at Goliath Crane

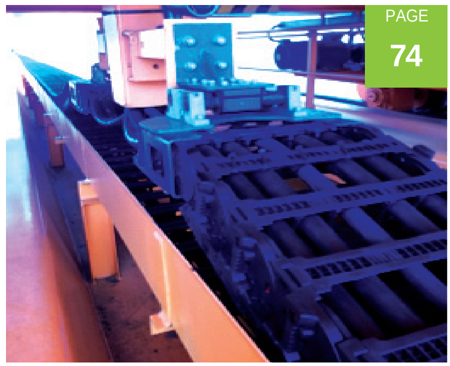

PAGE 299

Roboway

Crane


PAGE 210

Sabin Chain Sliding type at Crane


PAGE 74

Special Moving Arm at Crane


PAGE 210

Sabin Chain applied to winding equipment for long stroke application

Major Customers

SAMSUNG HEAVY INDUSTRIES
KONECRANES
DOOSAN
DSME
SUZLON
HYUNDAI HEAVY INDUSTRIES
faurecia

Gantry Loader ※ Suitable for high speed and long stoke

Sabin Chain Sliding type

Sabin Chain Sliding type

Shift Chain Roller Skid type

Shift Chain Normal type

Sabin Chain Normal type

Robot Carriage

Sabin Chain Sliding type

Shift Chain Normal type

Primary Customers

HYUNDAI

KIA MOTORS

HYUNDAI WIA

SAMSUNG RENAULT SAMSUNG MOTORS

HYUNDAI POWERTECH

※ CPS has been supplying Sliding Type of Cable Chain for gantry loader and robot carriage lines from 2007

Boarding Bridge

Sabin Chain Sliding Type

Primary Customers

HYUNDAI Rotem

GM

DRB Fatec

SUNGWOO HITECH

Railway Train, Subway

CPSFLEX & CPSFIX

CPSFLEX & CPSFIX

Industrial Special Vehicles

Shift Chain Normal Type at Special Vehicle

Shift Chain Normal type at high place operation car

Steel Chain at high place lift car

CPSFLEX, CPSFIX

Machining center, Automatic welding machine, Washing machine, CNC machine / Cutting machine, Printing machine
Textile machine, Milling machine, Setting machine, Packing machine, Handling machine, etc.

Machine Tools

CPS CABLECHAIN (mini)

Shift Chain Normal type

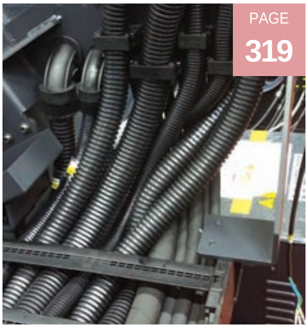
Sabin Chain Normal type (nsb)

Shift Chain Enclosed type

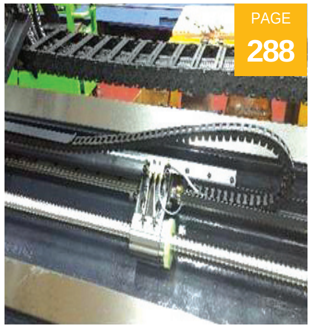
Sabin Chain Enclosed type (nsb)

CPSFLEX & CPSFIX

Machine Tools


PAGE 319

CPSFLEX

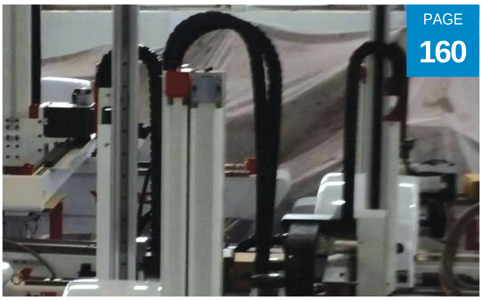

PAGE 288

Revolving Chain

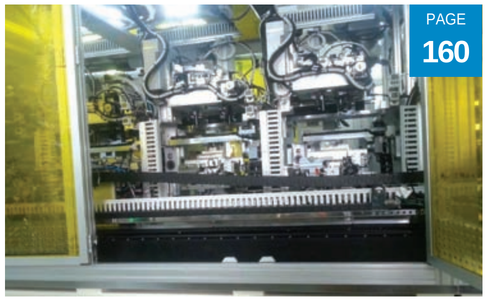
Primary Customers

DOOSAN
HYUNDAI WIA
HWACHEON
YUDO-ROBOTICS
Hanwha Corporation/Machinery

Cleanroom Application


PAGE 160

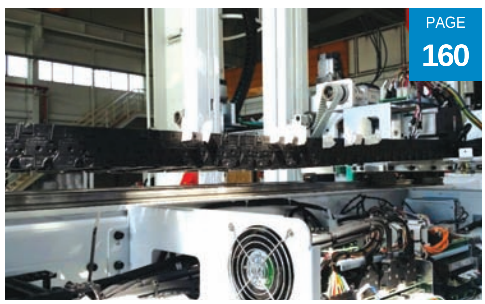
Sabin Chain Clean room type at LCD manufacturing m/c (nsb)


PAGE 160

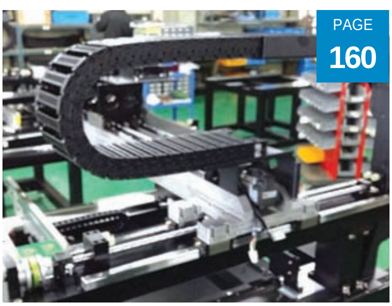
Sabin Chain Clean room type at LCD manufacturing m/c (nsb)


PAGE 160

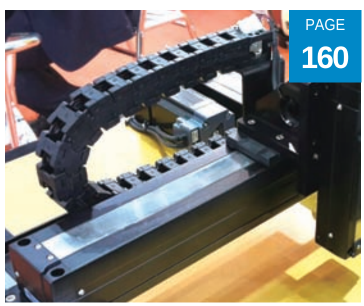
Sabin Chain Clean room type at LCD Printing m/c (nsb)


PAGE 160

Sabin Chain Clean room type at Purging m/c (nsb)


PAGE 160

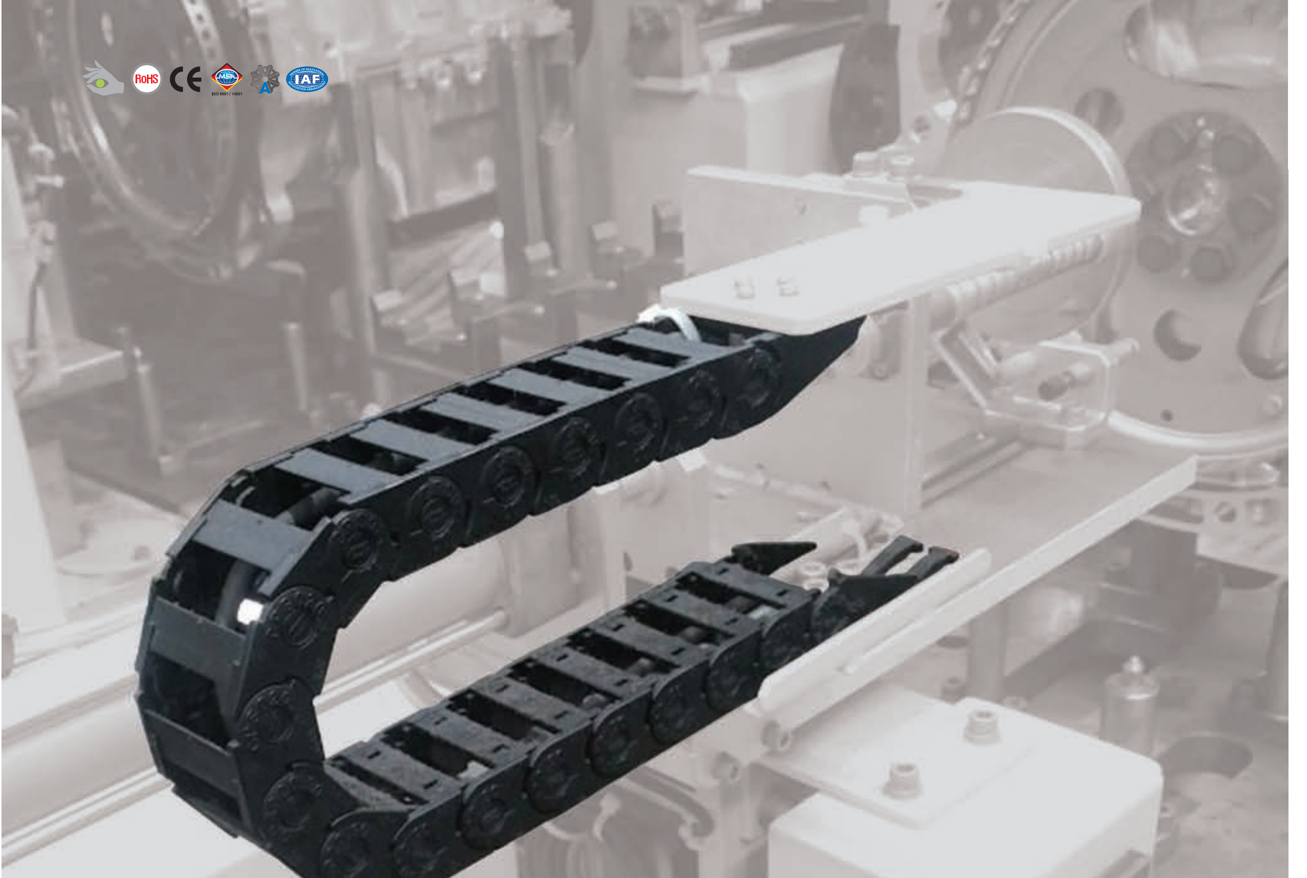
Sabin Chain Clean room type at Test Machine of LCD Plant (nsb)


PAGE 160

Sabin Chain Clean room type at Servo Robot (nsb)

Primary Customers

SAMSUNG ELECTRONICS
LG Electronics
LG Display
SAMSUNG CORNING PRECISION MATERIALS



Value of Speed/Acceleration is subject to change according to cable's amount and travel length.

General Information

Material	CPS-Amide (PA6+G.F)
Noise range	40dB(DIN EN 61672-1)
Speed	6㎧
Acceleration	15㎨
Temperature	-30℃ ~ +130℃
Special production	ESD, UV
Certificate	CE, ATEX(Ex), RoHs2

CPS Mini Cable Chain

Calculation Table

Length of Cable Chain	L = ½ X Ls + Lp	
Bending Radius	Multiply 8~10 of the biggest cable	
	Multiply 15~20 of the biggest hose	

- **CPS015**
- **CPS020**
- **CPS030**
- **CPS033**

Dimension Table

CPS Mini Cable Chain	Pitch	Bending Radius(R)	Weight kg/m	Speed m/sec	Temperature ℃	Size A	Size B	Size C	Size D	Frame type	Section - composition
CPS015	15	18, 28, 38	0.100 0.106 0.111 0.115	6	-30 ~ +130	12.6 16.6 21.6 26.6	13	6 10 15 20	10		
CPS020	20	28, 38, 48	0.245 0.260 0.285 0.310	6	-30 ~ +130	24 29 39 49	20	15 20 30 40	14.5		
CPS030	30	38, 48, 75, 100	0.380 0.400 0.420 0.440	6	-30 ~ +130	29 39 49 64	26	15 25 35 50	19		
CPS033	33	35, 45, 75, 100, 120	0.550 0.590 0.610 0.680 0.700	6	-30 ~ +130	45 55 65 85 95	31	27 37 47 67 77	23		

Ordering

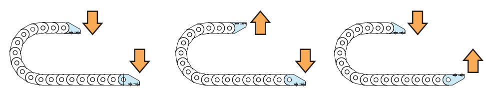
※ DV: Can be ordered from CPS030, CPS033

CPS015. 10. R28 / B2 - 550L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type : B1, B2, B3
  : E (CPS033)
- Bending radius
- Inside width
- CPS Mini Cable Chain

Bracket Type

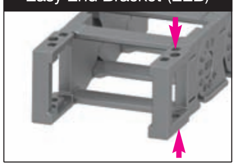
CPS015, CPS020, CPS030



B1 B2 B3

CPS033

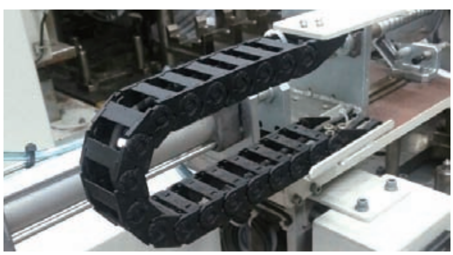
Easy End Bracket (EEB)



There are fixing holes at upper and lower side of bracket.

Application of CPS mini Chain

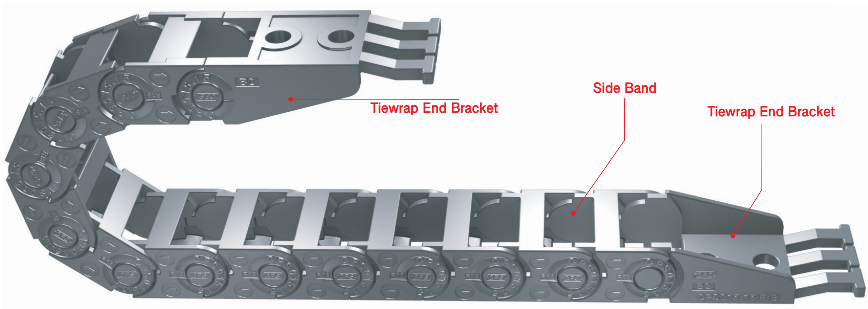
Factory lines

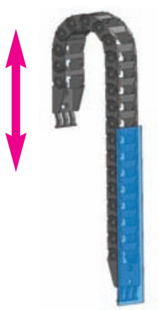


Machine tools

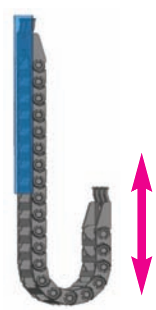
※ Dimensions in mm

CPS015

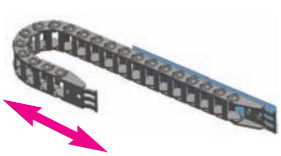




Vertical Standing



Vertical Hanging

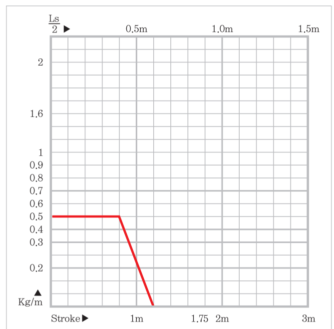


Side Mounted Unsupported

Caculation of the Chain Length

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

Unsupported Length

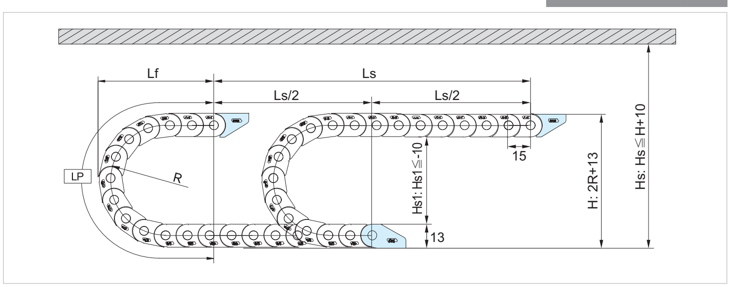


Other Length Restrictions

Vertical Standing(Max) = 0.8m
Vertical Hanging(Max) = 3.0m
Side Mounted Unsupported(Max) = 0.2m

Layout of the Chain

Ls: Stroke Hs: Safe Space



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
18	117	55	49
28	148	65	69
38	180	75	89

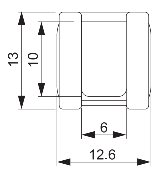
Cable Chain Bending Radius & Weight

Chain Type	Bending Radius (R)	Weight kg/m
CPS015.06	18, 28, 38	0.100
CPS015.10		0.106
CPS015.15		0.111
CPS015.20		0.115

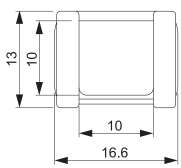
※ Dimensions in mm

Chain Cross Section

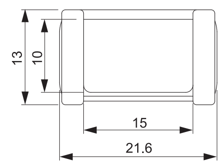
CPS015.06



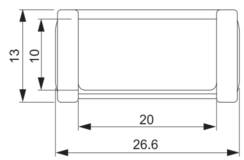
CPS015.10



CPS015.15

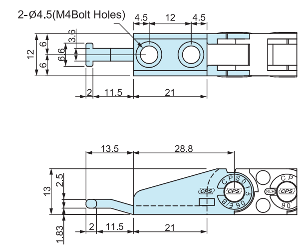


CPS015.20

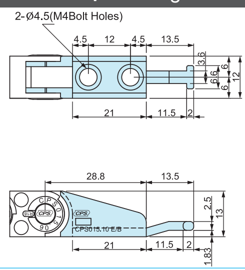


End Bracket(Tie Wrap Type)

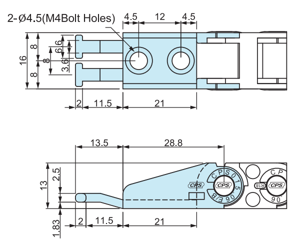
CPS015.06 Moving End



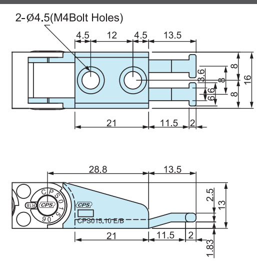
CPS015.06 Fixing End



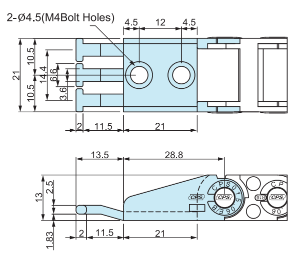
CPS015.10 Moving End



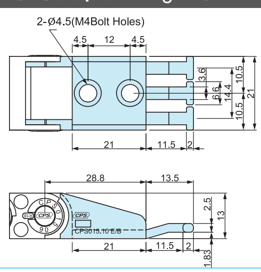
CPS015.10 Fixing End



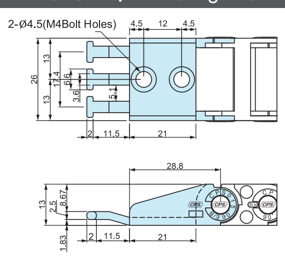
CPS015.15 Moving End



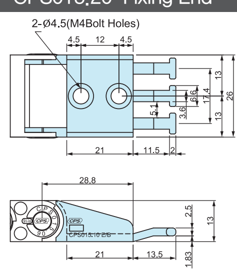
CPS015.15 Fixing End



CPS015.20 Moving End

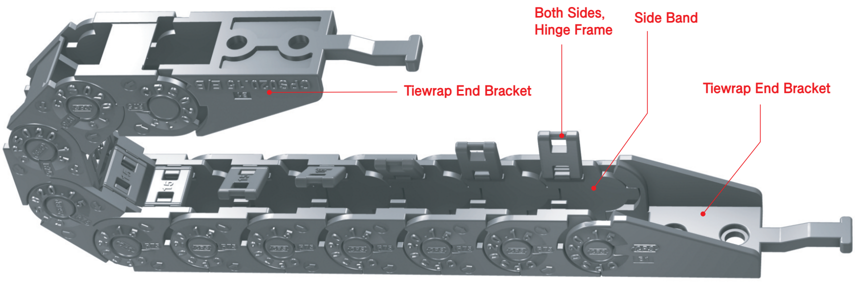


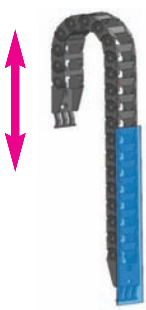
CPS015.20 Fixing End



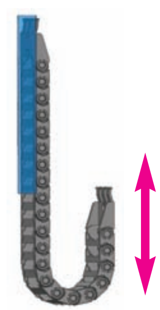
※ Dimensions in mm

CPS020

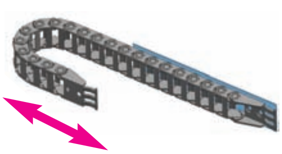




Vertical Standing



Vertical Hanging



Side Mounted Unsupported

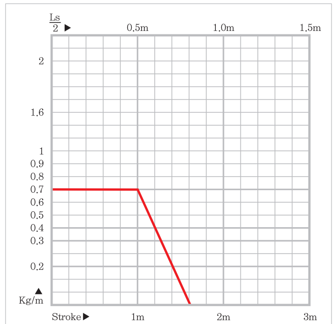
Caculation of the Chain Length

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

Other Length Restricitons

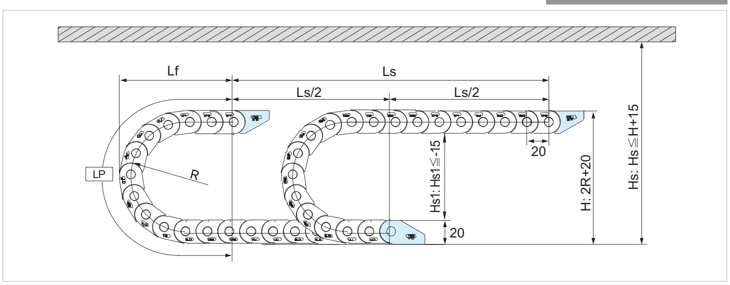
Vertical Standing(Max) = 1.0m
Vertical Hanging(Max) = 5.0m
Side Mounted Unsupported(Max) = 0.5m

Unsupported Length



Layout of the Chain

Ls: Stroke Hs: Safe Space



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
28	170	78	76
38	200	88	96
48	230	98	116

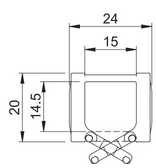
Cable Chain Bending Radius & Weight

Chain Type	Bending Radius (R)	Weight kg/m
CPS020.15	28, 38, 48	0.245
CPS020.20		0.260
CPS020.30		0.285
CPS020.40		0.310

※ Dimensions in mm

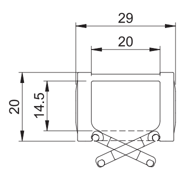
Chain Cross Section

CPS020.15



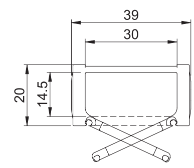
Hinge Frame at lower side

CPS020.20



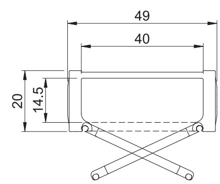
Hinge Frame at lower side

CPS020.30



Hinge Frame at lower side

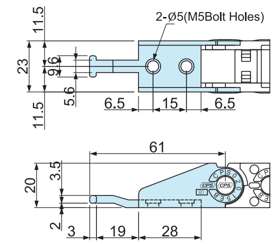
CPS020.40



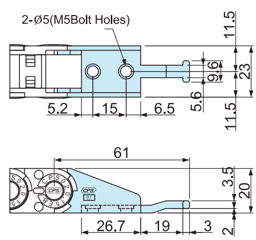
Hinge Frame at lower side

End Bracket(Tie Wrap Type)

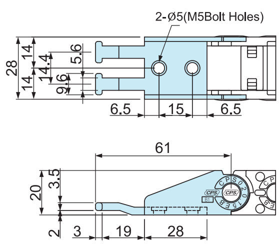
CPS020.15 Moving End



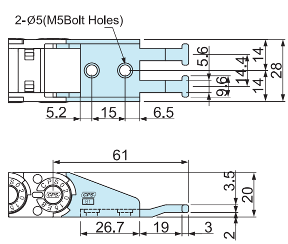
CPS020.15 Fixing End



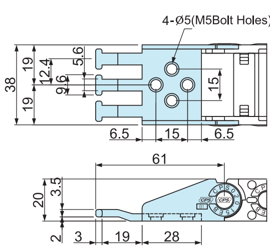
CPS020.20 Moving End



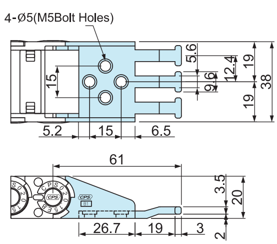
CPS020.20 Fixing End



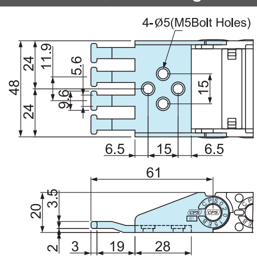
CPS020.30 Moving End



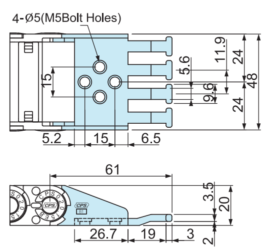
CPS020.30 Fixing End



CPS020.40 Moving End

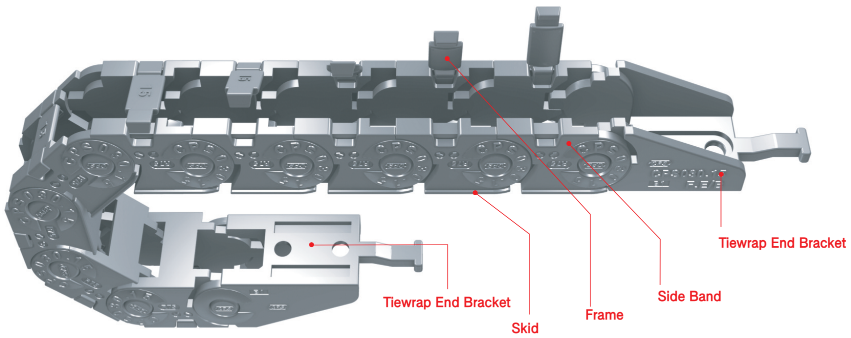


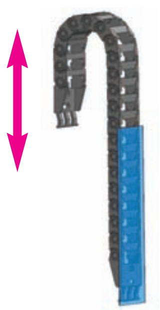
CPS020.40 Fixing End



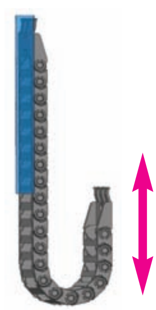
※ Dimensions in mm

CPS030

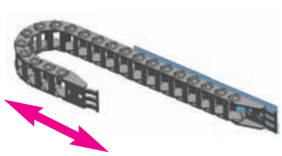




Vertical Standing



Vertical Hanging



Side Mounted Unsupported

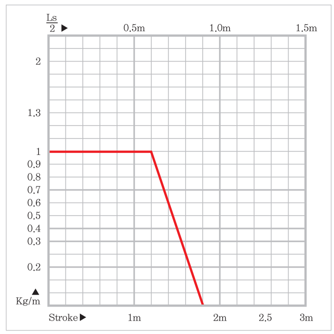
Caculation of the Chain Length

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

Other Length Restricitons

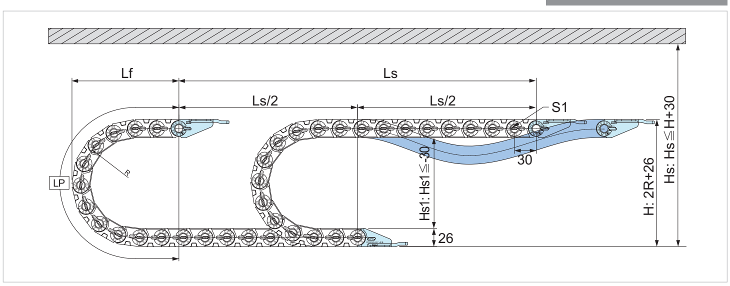
Vertical Standing(Max) = 1.5m
Vertical Hanging(Max) = 10.0m
Side Mounted Unsupported(Max) = 0.6m

Unsupported Length



Layout of the Chain

Ls: Stroke Hs: Safe Space



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
38	240	110	101
48	271	119	121
75	356	148	175
100	434	173	225

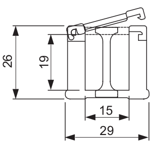
Cable Chain Bending Radius & Weight

Chain Type	Bending Radius (R)	Weight kg/m
CPS030.15	38, 48, 75, 100	0.38
CPS030.25		0.40
CPS030.35		0.42
CPS030.50		0.44

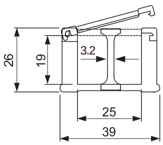
※ Dimensions in mm

Chain Cross Section

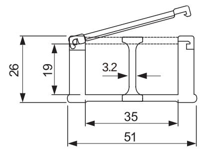
CPS030.15



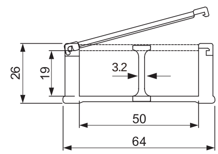
CPS030.25



CPS030.35

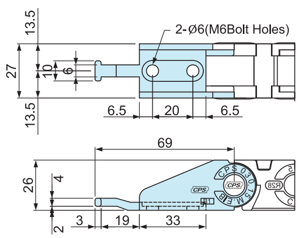


CPS030.50

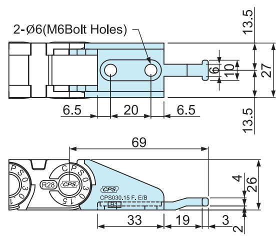


End Bracket(Tie Wrap Type)

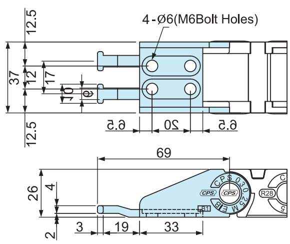
CPS030.15 Moving End



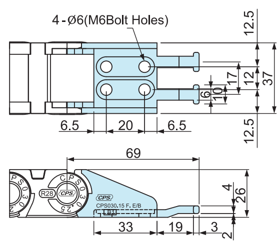
CPS030.15 Fixing End



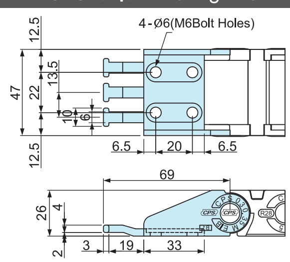
CPS030.25 Moving End



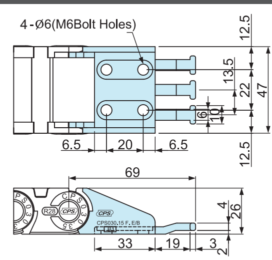
CPS030.25 Fixing End



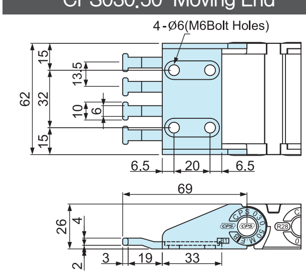
CPS030.35 Moving End



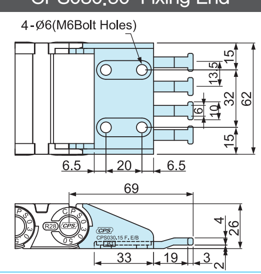
CPS030.35 Fixing End



CPS030.50 Moving End

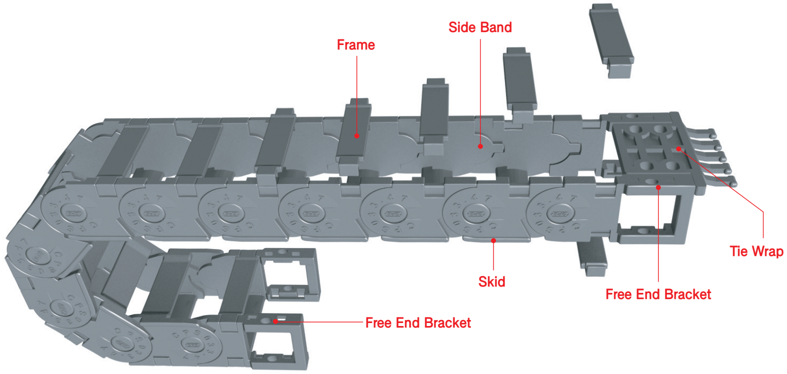


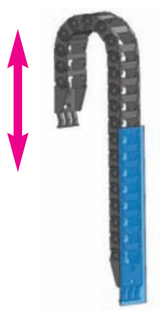
CPS030.50 Fixing End



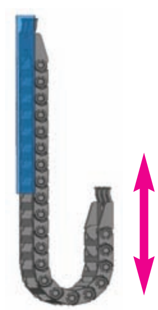
※ Dimensions in mm

CPS033

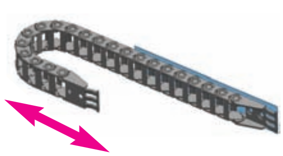




Vertical Standing



Vertical Hanging



Side Mounted Unsupported

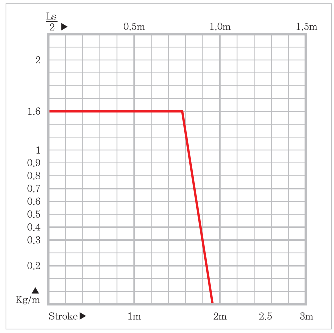
Caculation of the Chain Length

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

Other Length Restricitons

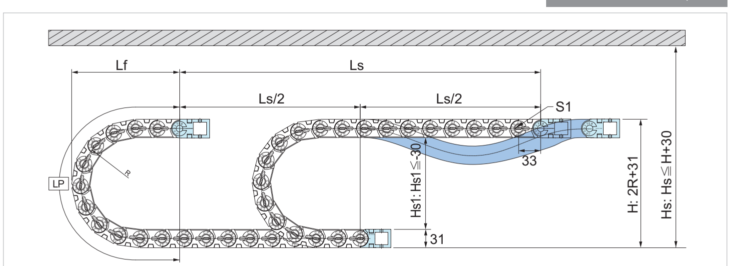
Vertical Standing(Max) = 1.5m
Vertical Hanging(Max) = 0.0m
Side Mounted Unsupported(Max) = 0.6m

Unsupported Length



Layout of the Chain

Ls: Stroke Hs: Safe Space

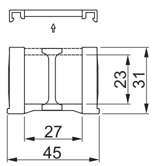


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
35	242	117	101
45	274	127	121
75	368	157	181
100	446	182	231
120	509	202	271

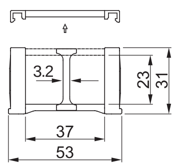
※ Dimensions in mm

Chain Cross Section

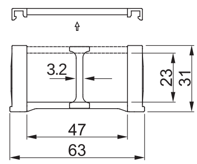
CPS033.27



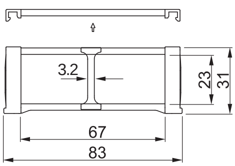
CPS033.37



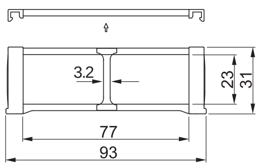
CPS033.47



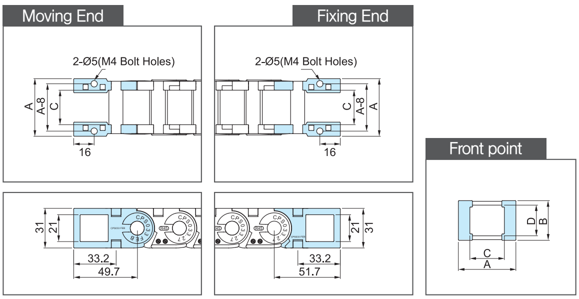
CPS033.67



CPS033.77

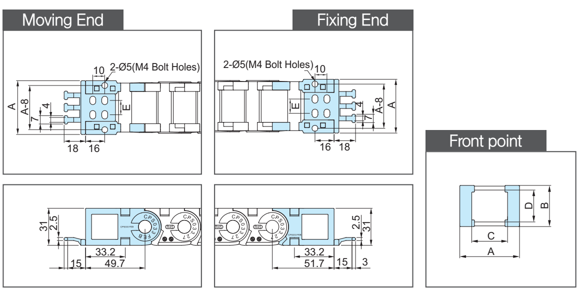


Easy End Bracket



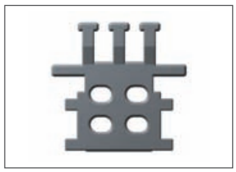
Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	Hole Type
CPS033	45 55 65 85 95	31	27 37 47 67 77	23	M4 Bolt Holes

Easy End Bracket(Tie Wrap Type)

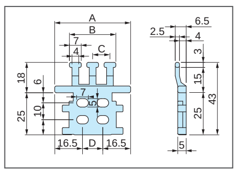


Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	E Hole width	Hole Type
CPS033	45 55 65 85 95	31	27 37 47 67 77	23	12 22 32 52 62	M4 Bolt Holes

Tie Wrap(TW)

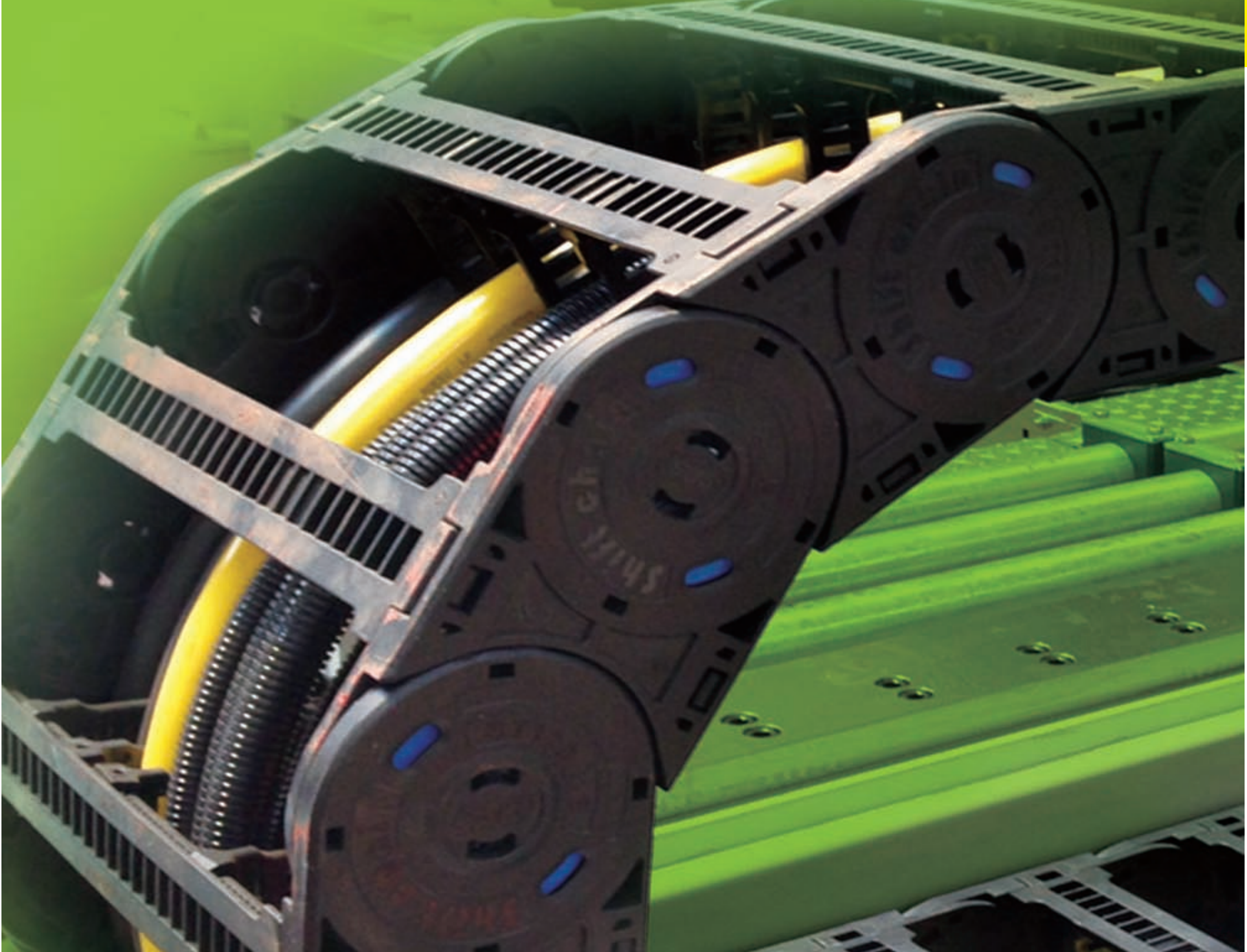


Tie wrap is to prevent damage of the cable and hose from twisting & pulling movements. It can be used as assembled with bracket or separated from the bracket at end position of chain.



Chain Type	Ordering No.	A	B	C	D
CPS033	S-TW033/20CR.27 S-TW033/20CR.37 S-TW033/20CR.47 S-TW033/20CR.67 S-TW033/20CR.77	45.0 55.0 65.0 85.0 95.0	27.5 41.0 48.0 68.0 78.0	10.20 8.50 10.40 10.00 8.87	12.0 22.0 32.0 52.0 62.0

※ Dimensions in mm



Shift Chain is a next generation after CPS mini Chain and it applies to overall industrial sectors where cable and hose' protection is required. It has a new concept as Bending Radius value is determined according to each different 'BR' unit.

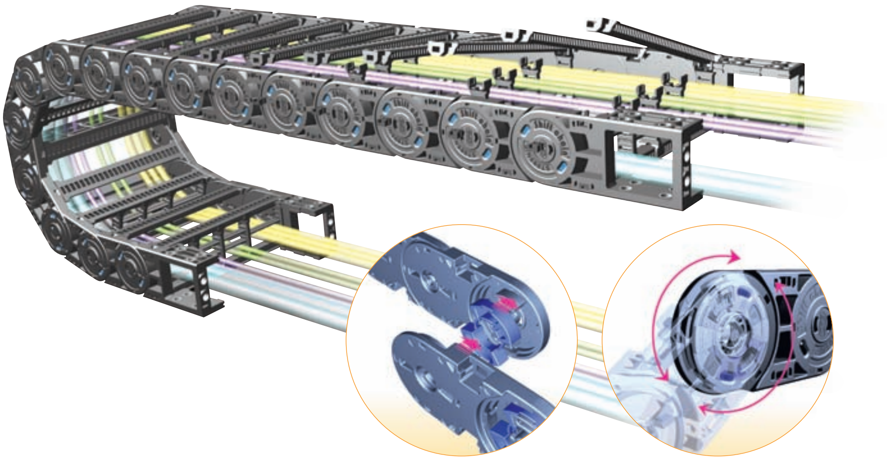
BR unit helps Shift Chain to perform 30% improved Unsupported Length compared to CPS mini Chain with 6 supporting areas that endure the weight of Cable Chain.

Shift Chain®

ST - N Normal	ST - E Enclosed	ST - S Skid	ST - ES Enclosed Skid	ST - RS Roller Skid	ST - ERS Enclosed Roller Skid	ST - D Double Chain
- ST044N	- ST044E	- ST044S	- ST044ES	- ST044RS	- ST044ERS	- ST095D
- ST055N	- ST055E		- ST072ES	- ST072RS	- ST072ERS	- ST120D
- ST072N	- ST072E		- ST095ES	- ST095RS	- ST095ERS	- ST150D
- ST095N	- ST095E		- ST120ES	- ST120RS	- ST120ERS	
- ST120N	- ST120E			- ST150RS	- ST150ERS	
- ST150N	- ST150E					

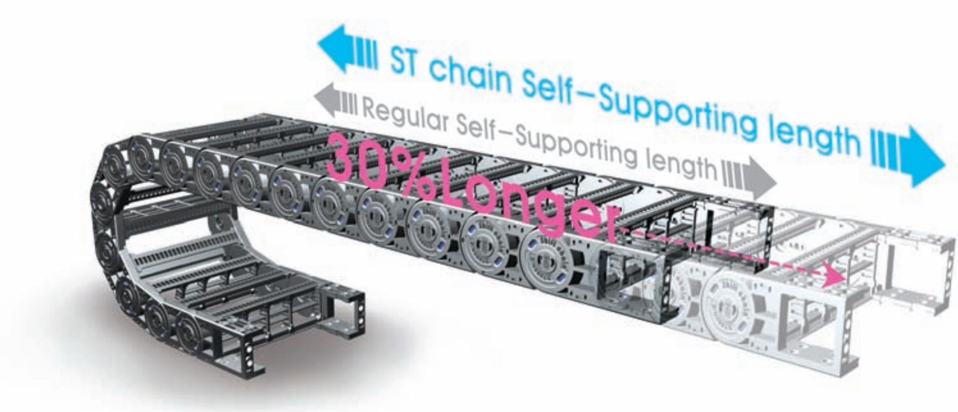
Feature & Strong point of Shift Chain

New concept adopted Cable Chain to adjust R value easily and freely



It helps to improve production capacity and to save cost with its convenient management of parts such as ‘Side Band’, ‘Frame’, ‘Frame pin’ and ‘BR’

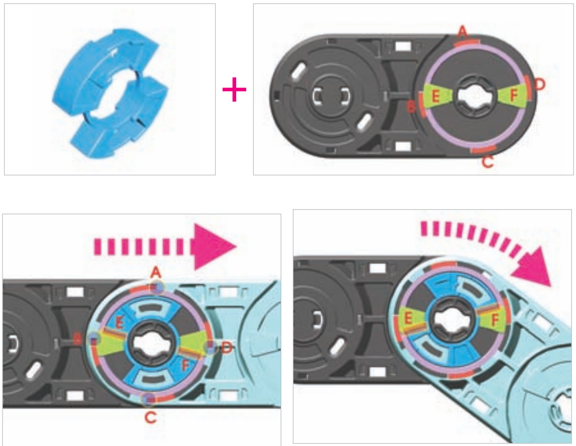
Shift Chain can be applied to many different circumstances from small sized equipment to heavy equipment to protect cable and hose.



Unsupported Length Much Improved!

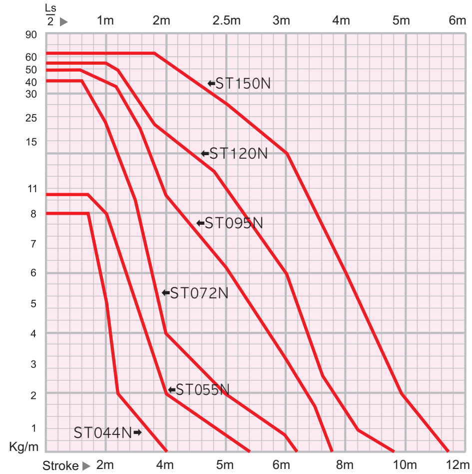
Shift Chain performs outstanding Unsupported Length compared to previous CPS mini Chain. There are 6 supporting sections that make Shift Chain endure rigid linear status compared to CPS mini Chain that only has 2 supporting sections.

Feature & Strong point of Shift Chain



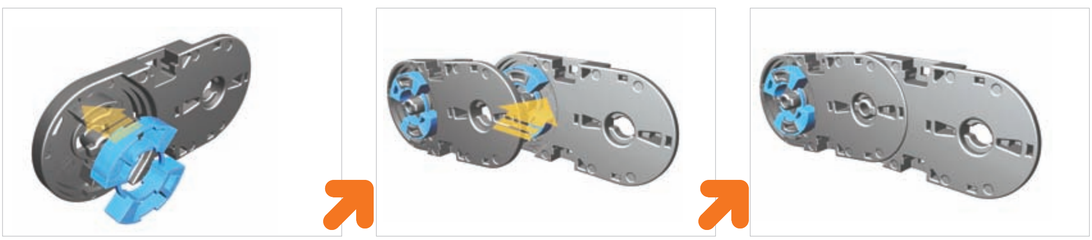
Supporting points when the side bands connected. (A,B,C,D,E,F)

Supporting points when the side bands bent. (E,F)



Shift chain Self- Supporting Length

R value is determined according to each different BR



BR that has each different Bending Radius Value is composed with each different size of Shift Chain. Please refer to the Page38, 42.

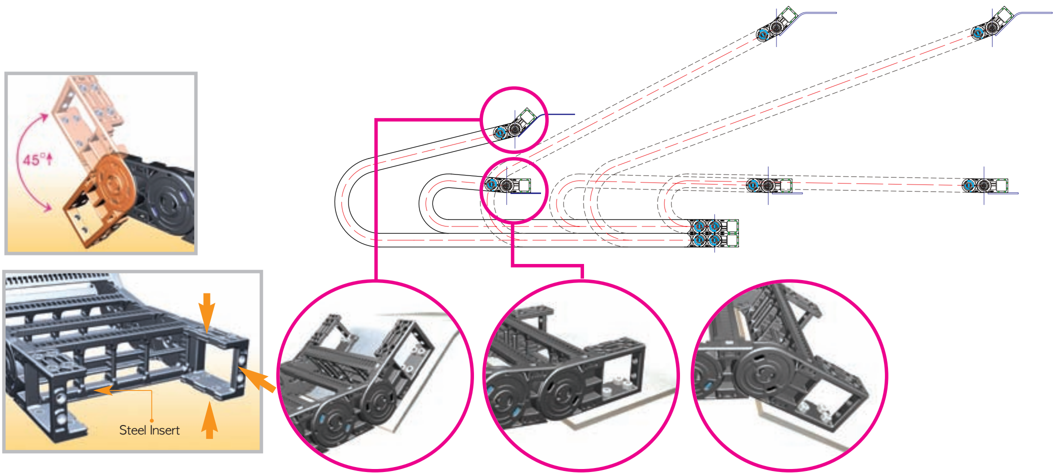
Assemble BR to Side Band

Connect Side Band to Side Band

Radius value is decided by each different BR unit

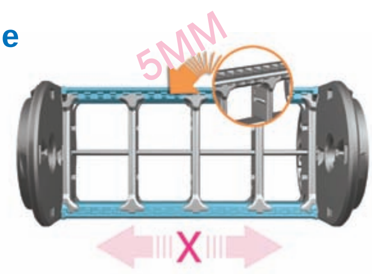
Adoption of FEB helps Cable Chain' Efficient Fixation

Shift Chain' bracket called FEB has 3 fixing section that makes Cable Chain fixed securely and conveniently to counterpart. It also includes steel Insert and it can be moved up and down to each 45° like in the image below



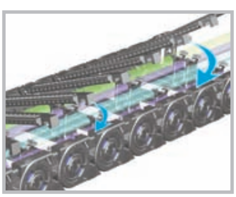
FEB mounted upwards | FEB mounted horizontally | FEB mounted downwards

Frame with teeth every 5mm makes frame does not move to left and right side but placed firmly.

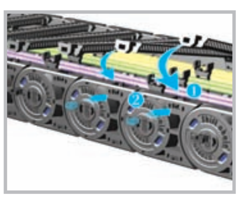


Feature of Hinge Type of Frame

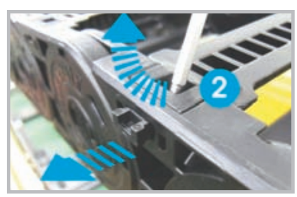
One side of Frame is pin type and the other side of Frame is hinge type that makes easy maintenance of assembly and disassembly.



ST044N, 055N :
One side is Hinge and the other side is Hook



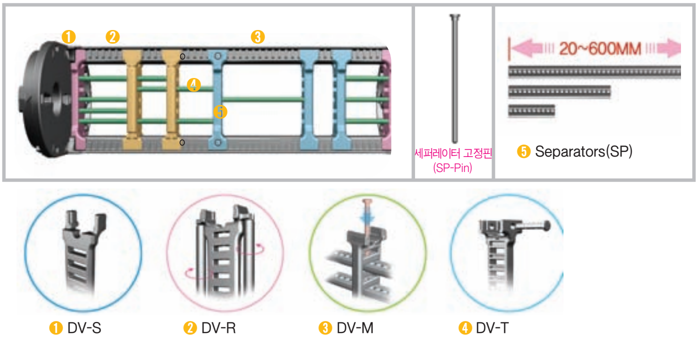
ST 072N, 095N, 120N, 150N :
One side is Hinge and the other side is Pin



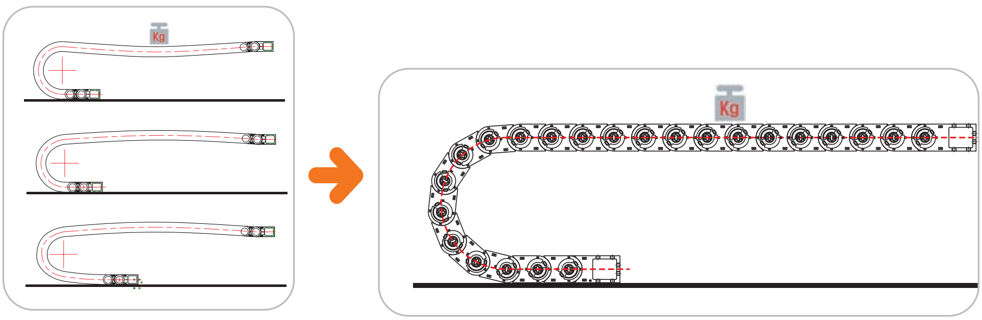
Feature & Strong point of Shift Chain

Secure Space by utilizing Divider and Separator

Divider and Separator makes secure protection of cable and hose.
DV-S : Used to fix a separator that is the same length as the frames
DV-M : Used to separate individual cables
DV-T : Used at center position to support frame longer than 125mm and up
DV-W : Used to hold the cables in place at both ends of the cable chain



Solid Linear State by adopting 'BR'



Easy Disassembly without tools

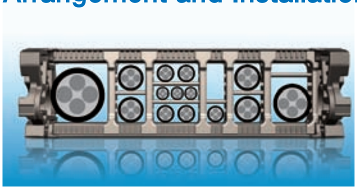
UV, EX, UV and RoHS Certification acquired

ESD EX UV RoHS

Shift Chain is made of High-Quality Engineering Plastic Material, which performs excellent durability and wear resistance, hence it reduces possibility of breakage by external damage, meanwhile performs stable cable protection in harsh circumstance.
As Cable Chain is verified its safeness against explosion possibility through ESD and ATEX qualification Test and it also can be installed at outside when UV retardant material applied.
Shift Chain is Eco-Friendly products as it does not exceeds limited amount of 6 harmful substance such as Pb, Cd, Hg, Cr+6, PBB and PBDEs where European markets regulate strictly.

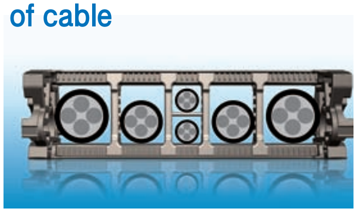
Installation Method of Cable Chain

Arrangement and Installation of cable

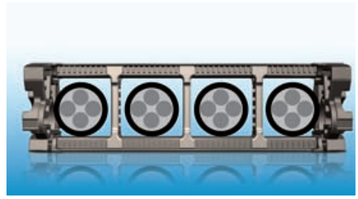


Available Space
Rounded Cable : 10% of space to be guaranteed based on Dia. of cable
Flat Cable : 10% of space to be guaranteed based on thickness of cable
Hose : 20% of space to be guaranteed based on Dia. of hose

10% of space should be secured between cables. When different dia. of cables are inserted, divider should be used. When there is 10% of space between cables, separator should be used.

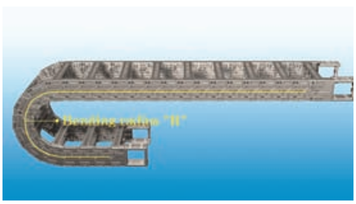


Single layer arrangement of cables are a standard. Big sized cables are placed outside and small sized cables are placed at center. Do not overlap cables but separate them by using separator.



Cables should be placed straightly and arrange them to maintain balance of weight like in the image.

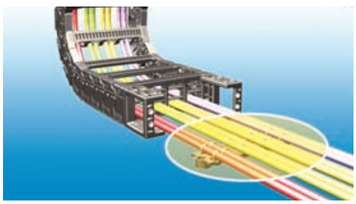
Bending Radius Value,"R"



Minimum "R" Value of Cable :
Multiply 8 to 10 against the biggest cable
Minimum "R" Value of Hose :
Multiply 15 to 20 against the biggest hose

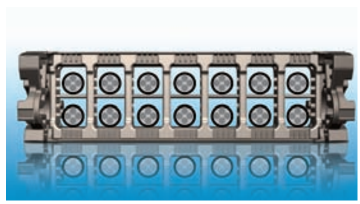
R value of Cable Chain should exceeds the R value of cable or hose.

Fixation of Cable and Hose

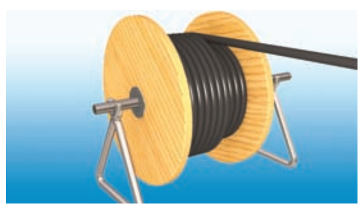


When Tie Wrap is applied, it shall be installed apart from Fixing bracket like in the image.

Arrangement of Cable and Hose



When sum of 2 cables are bigger than X1.2, Inner Height of Cable Chain, Divider does not to be installed. But when it does not exceed X1.2, Divider is recommended to be used.
In case of separator, when cable or hose' dia is lower than X0.5, separators is recommended to be used.



When cable is inserted inside of Cable Chain, its condition should be maintained straightly to prevent cable that to be entangled.

Shift Chain-Normal Type

Value of Speed/Acceleration is subject to change according to cable's amount and travel length.

General Information

Material	CPS-Amide (PA6+G.F)
Speed	6m/s
Acceleration	12m/s²
Temperature	-30℃ ~ +130℃
Special production	ESD, UV
Certificate	CE, ATEX(Ex), RoHs2

Dimension Table

Shift Chain N Type	Pitch	Bending Radius (R)	Weight kg/m	Speed m/s	Temperature ℃	Size A	Size B	Size C	Size D	Frame type	Section-composition
ST044N	44	50, 70, 90, 120, 150	0.93 0.97 1.00 1.06 1.17 1.30 1.43 1.78 1.94	6	-30 ~ +130	56 71 76 96 121 146 171 196 221	38	35 50 55 75 100 125 150 175 200	26		
ST055N	55	65, 75, 100, 125, 150, 200	1.12 1.15 1.18 1.23 1.31 1.41 1.51 1.78 1.92	6	-30 ~ +130	56 71 76 96 121 146 171 196 221	52	35 50 55 75 100 125 150 175 200	40		
ST072N	72	72, 100, 120, 145, 200, 250, 300	2.10 2.20 2.30 2.43 2.51 2.56 2.62 2.66 2.93 3.11 3.21 3.24 3.60	6	-30 ~ +130	82 107 132 157 172 182 197 207 222 232 272 282 332	66	50 75 100 125 140 150 165 175 190 200 240 250 300	45		
ST095N	95	135, 150, 200, 230, 280, 400	3.11 3.17 3.37 3.49 3.60 3.71 3.79 4.00 4.05 4.31 4.69 5.05	6	-30 ~ +130	113 138 163 188 213 228 238 278 288 338 388 438	82	75 100 125 150 175 190 200 240 250 300 350 400	56		
ST120N	120	180, 200, 250, 300, 350, 400, 500	4.41 4.53 4.61 4.67 4.78 4.93 5.17 5.41 5.47 5.80 5.88 6.30 6.73 7.07 7.30 8.13 8.30	6	-30 ~ +130	117 142 157 167 192 217 242 282 292 332 342 392 442 492 542 592 642	108	75 100 115 125 150 175 200 240 250 290 300 350 400 450 500 550 600	78		
ST150N	150	205, 305, 405, 505, 605	5.85 5.96 6.03 6.08 6.18 6.30 6.51 6.72 6.78 7.06 7.14 7.51 7.88 8.18 8.37 9.11 9.26	6	-30 ~ +130	121 146 161 171 196 221 246 286 296 336 346 396 446 496 546 596 646	140	75 100 115 125 150 175 200 240 250 290 300 350 400 450 500 550 600	110		

Calculation Table

Length of Cable Chain	L = ½ X Ls + Lp
Bending Radius	Multiply 8~10 of the biggest cable
	Multiply 15~20 of the biggest hose

Ordering

ST 044N. 100. R120 / F - 1500L : (DV:2)

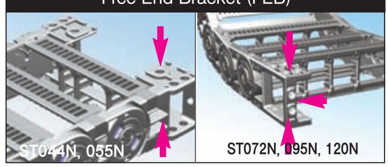
- Shift Chain
- Normal Type (N)
- Inside width
- Bending radius
- Bracket Type
- Length(mm)
- Quantity of Divider (Link)

F : Free End Bracket
FT : Tie Wrap
FST : System Tie Wrap
B1, B2, B3 : Possibly applied

Bracket Type

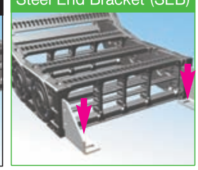
ST044, ST055, ST072, ST095, ST120

Free End Bracket (FEB)

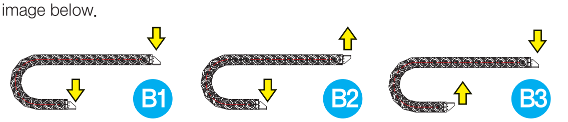


ST072, ST095, ST120, ST150

Steel End Bracket (SEB)

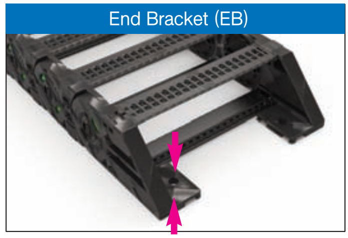


ST072, 095, 120 and 150 use Steel Bracket; there are B1, B2 and B3 like the image below.

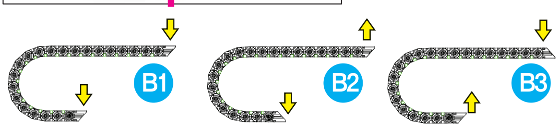


ST044N, ST055N

End Bracket (EB)



ST044N/ST055N use both FEB and EB type of bracket; there are B1, B2 and B3 like the left image.



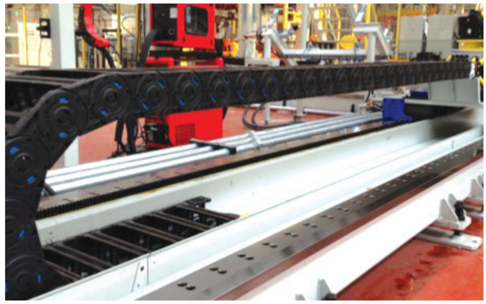
※ Dimensions in mm

Shift Chain

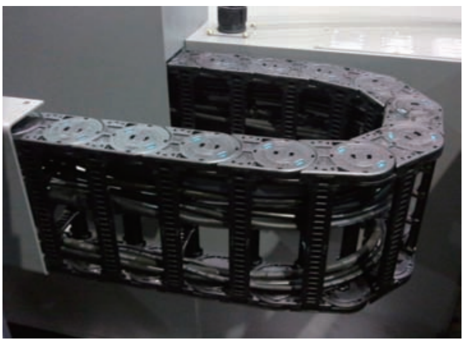
Application of Shift Chain

Shift Chain can be applied to all kinds of machine tools and factory lines

ST044N **Application:** Machine tool
Location: Italy
Remark: Various Stroke and direction

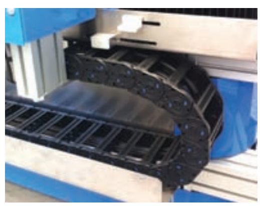


ST120N **Application:** Robot Carriage line
Location: China
Remark: 3 meters of Stroke



ST055N **Application:** Machine tool
Location: Japan
Remark: Side Mounted Unsupported

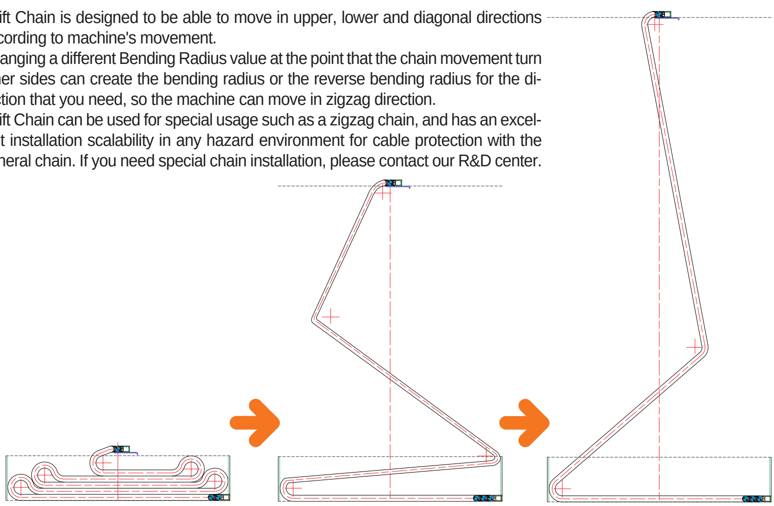
ST095N
Application:
Steel manufacturing line
Location: Korea
Remark:
Various Stroke and direction



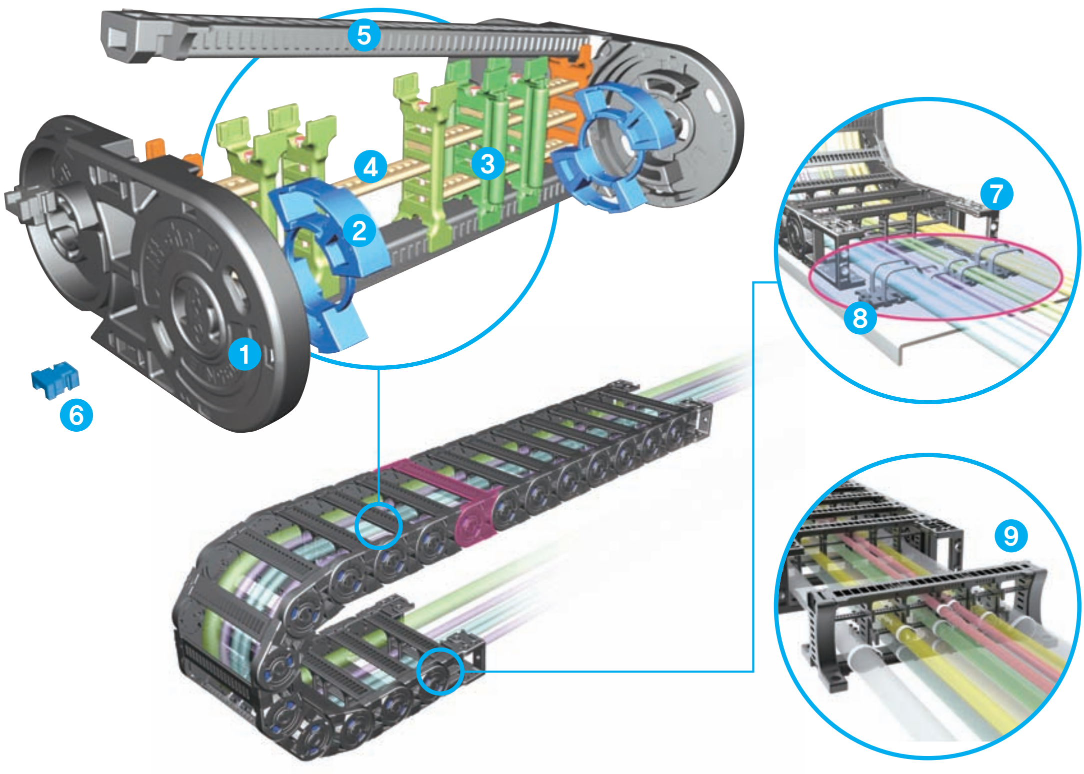
ST072N
Application:
Nylon Cloth cutting machine
Location: Italy
Remark: 2.5 meters of Stroke

Customized Shift 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.



Shift Chain-Normal Type



Part of Shift Chain-Normal Ttype

❶ Side Band (SB)
A part that connects upper and lower frame. There are LH and RH type.

❷ Bending Radius Unit (BR)
A part that is inserted into Side Band. It is one of units that helps Shift Chain's excellent Unsupported Length' performance.

❸ Divider (DV-S, M, R, T)
A part that prevents entanglement risk of cables and hoses by being installed vertically.

❹ Separator (SP)
A part that prevent entanglement risk of cable and hoses by being installed horizontally.

❺ Frame (Hinged Type) (FR)
A part that connects with LH, RH Side Band. There are every 5mm bumps that prevent dividers to be securely positioned at a place. One side of frame has a hinge structure that helps easy assembly and disassembly.

❻ Frame Pin (FP)
A part that is inserted into a hole formed at one side of Frame. It prevents Frame to not be separated after being assembled with Side Band.

*ST072N, 095N, 120N and 150N: Frame Pin is applied.
*ST044N, 055N: Frame Pin not applied, instead Hook structure was designed.

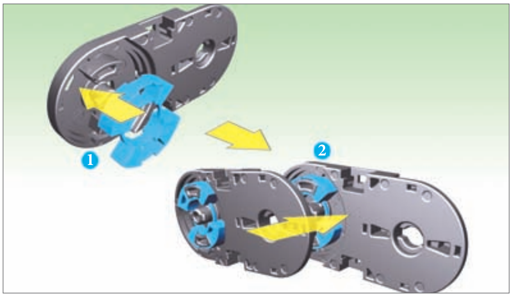
❼ Free End Bracket (FEB)
A part that connects to each end of Cable Chain. There are holes are formed where steel washers are inserted to fix FEB to fixing plate securely.

❽ Tie Wrap (TW)
A part that prevents damage of the cable and hose by twisting & pulling movements. It can be used as assembling with bracket or separating from the bracket at end position of chain.

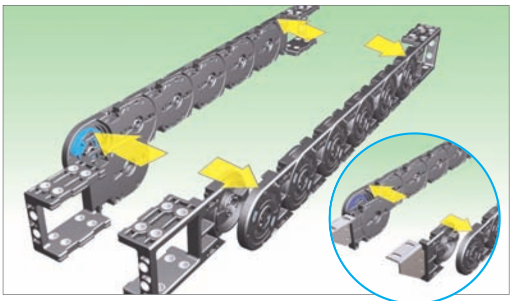
❾ System Tie Wrap (STW)
A part that connects to first or end of Cable Chain. Cables and hoses are arranged at System Tie Wrap by several layers and being tightened using Cable Tie. There are 2 types. One is separated from FEB and the other one is assembled to FEB.

Assembly procedure of Shift Chain Normal Type

The assembling process of Shift Chain N-Type is like below and users 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.

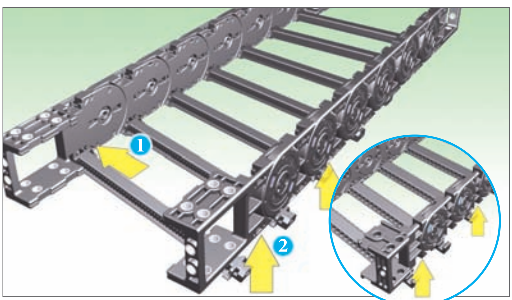


1 Insert BR unit to each side band, connect the side bands as many as you need, then do the same process to the other side of side band.



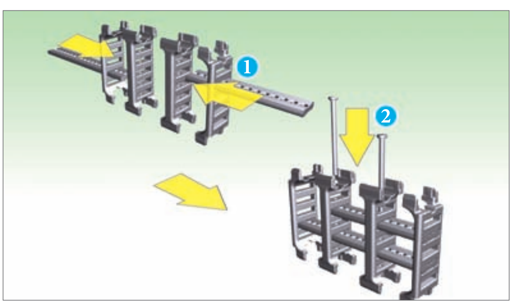
2 Assemble the end brackets on both ends using the same method.

For ST150N, assemble steel brackets on both ends.

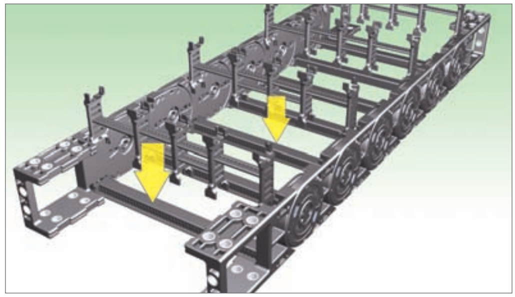


3 Attach frames to one side groove on the side band, and then the other side.

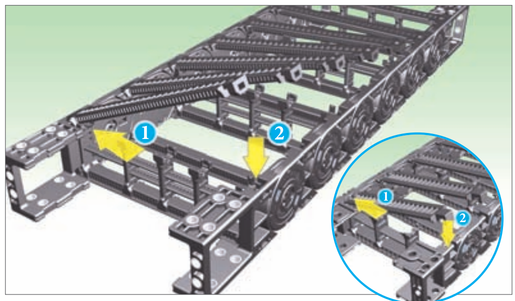
ST 044N, 055N are Hinge Type or Hook Type without frame pin.



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.

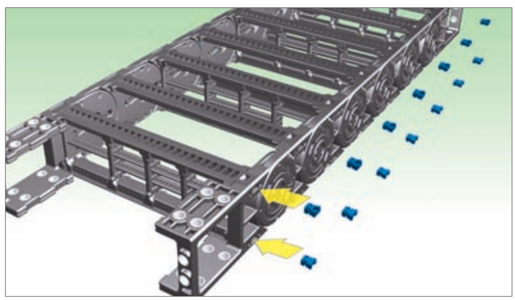


5 Fix the separator and divider patterns to the bottom-side frames as needed.

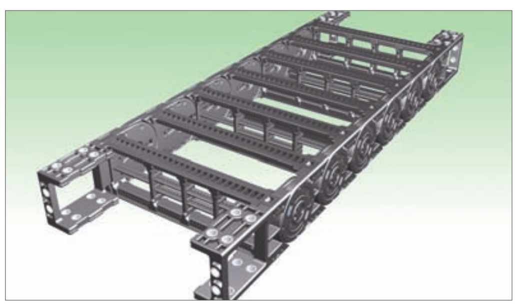


6 Attach frames to one side groove on the side band, and then the other side.

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 Assembly of Shift Chain N-Type is completed.

Shift Chain-Normal Type

Part list of Shift Chain-Normal Type

Composition of Shift Chain(Standard) = Side band(RH/LH) + Frame + 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
ST044N	SIDE BAND	ST-SB044N/E(LH) ST-SB044N/E(RH)	Left side band of ST044N Right side band of ST044N
	BENDING RADIUS	ST-BR044.R50,70,90,120,150	Bending radius unit for side band
	FRAME	sb-FR/M.35 sb-FR/M.50 sb-FR/M.55 sb-FR/M.75 sb-FR/M.100 sb-FR/M.125 sb-FR/M.150 sb-FR/M.175 sb-FR/M.200	Frame, 35mm Frame, 50mm Frame, 55mm Frame, 75mm Frame, 100mm Frame, 125mm Frame, 150mm Frame, 175mm Frame, 200mm
	FREE END BRACKET	ST-FEB044 / B1~B3	Free End bracket of ST044N, End bracket(B1, B2, B3)
	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 S-SP/M.125 S-SP/M.150 S-SP/M.175 S-SP/M.200	Separator, 35mm Separator, 50mm Separator, 75mm Separator, 100mm Separator, 125mm Separator, 150mm Separator, 175mm Separator, 200mm
	TIE WRAP	S-TW036/025CR S-TW036/025CR 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
ST055N	SIDE BAND	ST-SB055N/E(LH) ST-SB055N/E(RH)	Left side band of ST055N Right side band of ST055N
	BENDING RADIUS	ST-BR055.R65,75,100,125,150,200	Bending radius unit for side band
	FRAME	sb-FR/M.35 sb-FR/M.50 sb-FR/M.55 sb-FR/M.75 sb-FR/M.100 sb-FR/M.125 sb-FR/M.150 sb-FR/M.175 sb-FR/M.200	Frame, 35mm Frame, 50mm Frame, 55mm Frame, 75mm Frame, 100mm Frame, 125mm Frame, 150mm Frame, 175mm Frame, 200mm
	FREE END BRACKET	ST-FEB055 / B1~B3	Free End bracket of ST055N, End bracket(B1, B2, B3)
	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.55 S-SP/M.75 S-SP/M.100 S-SP/M.125 S-SP/M.150 S-SP/M.175 S-SP/M.200	Separator, 35mm Separator, 50mm Separator, 55mm Separator, 75mm Separator, 100mm Separator, 125mm Separator, 150mm Separator, 175mm Separator, 200mm
	TIE WRAP	S-TW050/035N.50 S-TW050/035N.75 S-TW050/035N.100 S-TW050/035N.125 S-TW050/035N.150 S-TW050/035N.175 S-TW050/035N.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

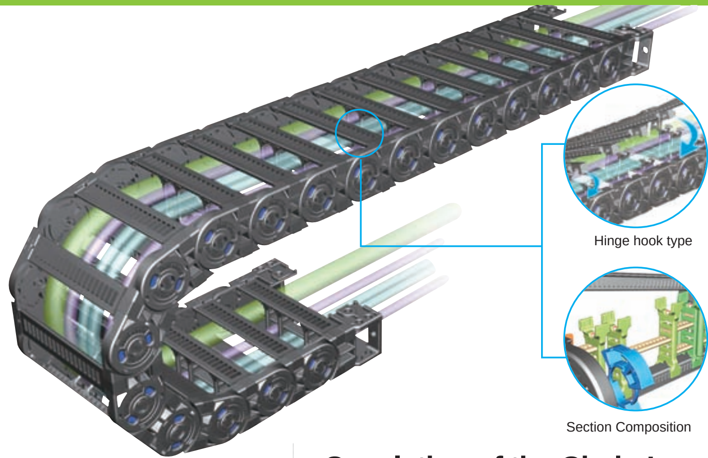
Model	Classification	Part number	Description
ST072N	SIDE BAND	ST-SB072N/E(LH) ST-SB072N/E(RH)	Left side band of ST072N Right side band of ST072N
	BENDING RADIUS	ST-BR072.R72,100,120,145,200,250,300	Bending radius unit for side band
	FRAME PIN	S-FP/S1	Frame pin
	FRAME	sb-FR045.50 sb-FR045.75 sb-FR045.100 sb-FR045.125 sb-FR045.140 sb-FR045.150 sb-FR045.165 sb-FR045.175 sb-FR045.190 sb-FR045.200 sb-FR045.240 sb-FR045.250 sb-FR045.300	Frame, 50mm Frame, 75mm Frame, 100mm Frame, 125mm Frame, 140mm Frame, 150mm Frame, 165mm Frame, 175mm Frame, 190mm Frame, 200mm Frame, 240mm Frame, 250mm Frame, 300mm
	FREE END BRACKET	ST-FEB072 / B1~B3 sb-FEB/WH045	End bracket of ST072N Steel washer for end bracket
	DIVIDER	sb-DV045/M sb-DV045/S sb-DV045/T sb-DV045/TP	Normal divider To fix separstors at the both side section T divider T divider pin
	SEPARATOR	sb-SP/400.Frame 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
ST095N	SIDE BAND	ST-SB095N/E(LH) ST-SB095N/E(RH)	Left side band of ST095N Right side band of ST095N
	BENDING RADIUS	ST-BR095.R135,150,200,230,280,400	Bending radius unit for side band
	FRAME PIN	S-FP/S1	Frame Pin
	FRAME	sb-FR060.75 sb-FR060.100 sb-FR060.125 sb-FR060.150 sb-FR060.175 sb-FR060.190 sb-FR060.200 sb-FR060.230 sb-FR060.250 sb-FR060.300 sb-FR060.350 sb-FR060.400	Frame, 75mm Frame, 100mm Frame, 125mm Frame, 150mm Frame, 175mm Frame, 190mm Frame, 200mm Frame, 230mm Frame, 250mm Frame, 300mm Frame, 350mm Frame, 400mm
	FREE END BRACKET	ST-FEB095 / B1~B3 sb-FEB/WH060	Free End bracket of ST095N, Steel End bracket(B1, B2, B3) Steel washer
	DIVIDER	sb-DV060/M sb-DV060/S sb-DV060/T sb-DV060/TP	Normal divider To fix separstors at the both side section T divider T divider pin
	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		Divider for fixing cables at end bracket System tie wrap to arrange for cables right after moving bracket or fixing bracket

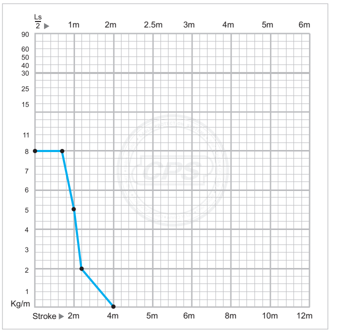
Model	Classification	Part number	Description
ST120N	SIDE BAND	ST-SB120N/E(LH) ST-SB120N/E(RH)	Left side band of ST120N Right side band of ST120N
	BENDING RADIUS	ST-BR120.R180, 200, 250, 300, 350, 400, 500	Bending radius unit for side band
	FRAME PIN	S-FP/S2	Frame Pin
	FRAME	sb-FR075/100.75 sb-FR075/100.100 sb-FR075/100.115 sb-FR075/100.125 sb-FR075/100.150 sb-FR075/100.175 sb-FR075/100.200 sb-FR075/100.240 sb-FR075/100.250 sb-FR075/100.290 sb-FR075/100.300 sb-FR075/100.350 sb-FR075/100.400 sb-FR075/100.450 sb-FR075/100.500 sb-FR075/100.550 sb-FR075/100.600	Frame, 75mm Frame, 100mm Frame, 115mm Frame, 125mm Frame, 150mm Frame, 175mm Frame, 200mm Frame, 240mm Frame, 250mm Frame, 290mm Frame, 300mm Frame, 350mm Frame, 400mm Frame, 450mm Frame, 500mm Frame, 550mm Frame, 600mm
	FREE END BRACKET	ST-FEB120 / B1~B3 sb-FEB/WH075	Fres End bracket of ST120N, Steel End bracket(B1, B2, B3) Steel washer
	DIVIDER	sb-DV075/M sb-DV075/S sb-DV075/T sb-DV075/TP	Normal divider To fix separstors at the both side section T divider T divider pin
	SEPARATOR	sb-SP/400.Frame 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
ST150N	SIDE BAND	ST-SB150N/E(LH) ST-SB150N/E(RH)	Left side band of ST150N Right side band of ST150N
	BENDING RADIUS	ST-BR150.R205,305,405,505,605	Bending radius unit for side band
	FRAME PIN	S-FP/S2	Frame Pin
	FRAME	sb-FR075/100.75 sb-FR075/100.100 sb-FR075/100.115 sb-FR075/100.125 sb-FR075/100.150 sb-FR075/100.175 sb-FR075/100.200 sb-FR075/100.240 sb-FR075/100.250 sb-FR075/100.290 sb-FR075/100.300 sb-FR075/100.350 sb-FR075/100.400 sb-FR075/100.450 sb-FR075/100.500 sb-FR075/100.550 sb-FR075/100.600	Frame, 75mm Frame, 100mm Frame, 115mm Frame, 125mm Frame, 150mm Frame, 175mm Frame, 200mm Frame, 240mm Frame, 250mm Frame, 290mm Frame, 300mm Frame, 350mm Frame, 400mm Frame, 450mm Frame, 500mm Frame, 550mm Frame, 600mm
	STEEL END BRACKET	ST-SEB150 / B1~B3	Steel end bracket of ST150N (B1, B2, B3)
	DIVIDER	sb-DV075/M sb-DV075/S sb-DV075/T sb-DV075/TP	Normal divider To fix separstors at the both side section T divider T divider pin
	SEPARATOR	sb-SP/600.Frame 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

ST044N



Unsupported Length



Caculation of the Chain Length

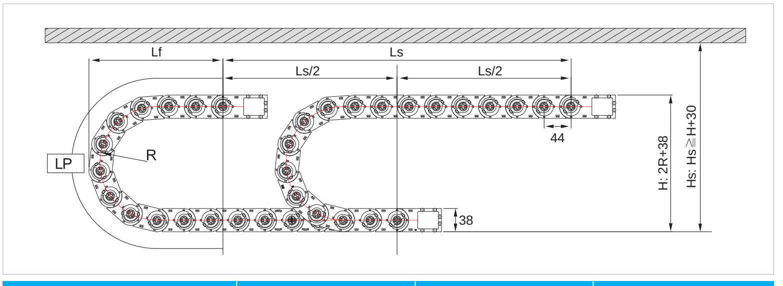
$$\left[\ L = \frac{Ls}{2} + Lp\ \right]$$

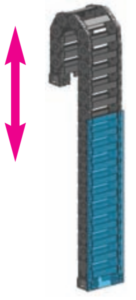
Other Length Restrictions

Vertical Standing(Max) = 2.0m
Vertical Hanging(Max) = 40m
Side Mounted Unsupported(Max) = 1.0m

Layout of the Chain

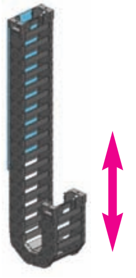
Ls: Stroke Hs: Safe Space





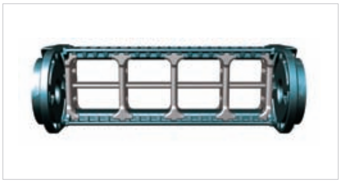
Vertical Standing

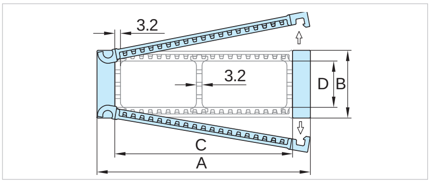
Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
50	333	157	138
70	396	177	178
90	459	197	218
120	553	227	278
150	648	257	338

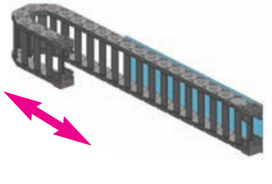


Vertical Hanging

Chain Cross Section







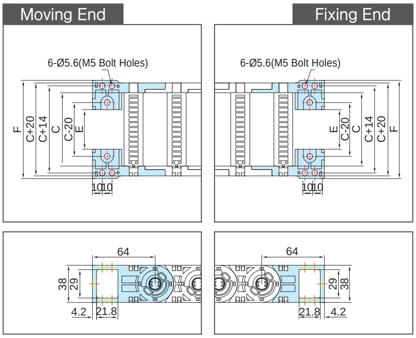
Side Mounted Unsupported

Chain Type	A Width (Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height (Inner)	Weight kg/m
ST044N	56	38	35	26	0.93
	71		50		0.97
	76		55		1.00
	96		75		1.06
	121		100		1.17
	146		125		1.30
	171		150		1.43
	196		175		1.78
	221		200		1.94

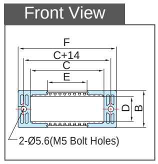
※ Dimensions in mm

Free End Bracket (FEB)

Moving End | Fixing End

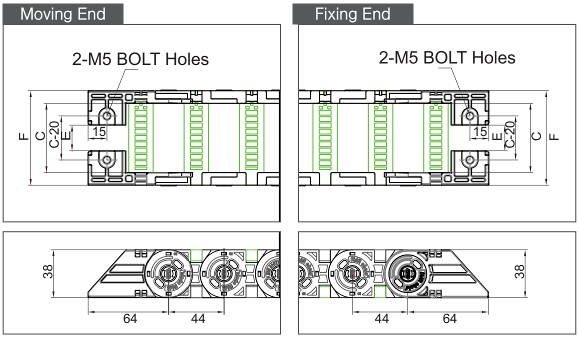


Front View



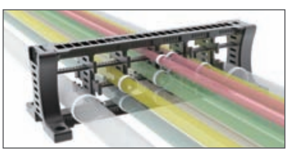
End Bracket (EB)

Moving End | Fixing End



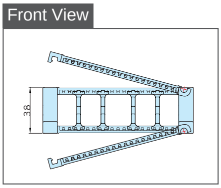
Chain Type	F Width (Outer)	B Height (Outer)	C Frame Width (Inner)	D Height (Inner)	E M,EB Bolt hole width	Hole Type
ST044N	60.4	38	35	26	0.4	M5 Bolt Holes
	75.4		50		15.4	
	80.4		55		20.4	
	100.4		75		40.4	
	125.4		100		65.4	
	150.4		125		90.4	
	175.4		150		115.4	
	200.4		175		140.4	
	225.4		200		165.4	

System Tie Wrap (STW)

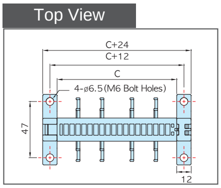


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

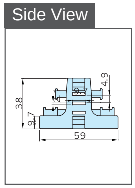
Front View



Top View

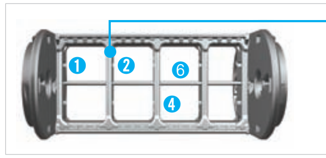


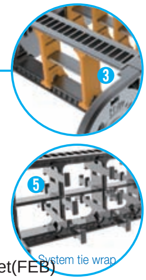
Side View



Chain Type	Ordering No.	C Frame	Hole Type
ST044N	S-TW.EB028.35	35	M6 Bolt Holes
	S-TW.EB028.50	50	
	S-TW.EB028.55	55	
	S-TW.EB028.75	75	
	S-TW.EB028.100	100	
	S-TW.EB028.125	125	
	S-TW.EB028.150	150	
	S-TW.EB028.175	175	
	S-TW.EB028.200	200	

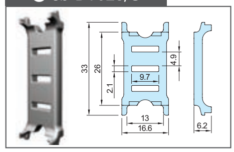
Dividers (DV)



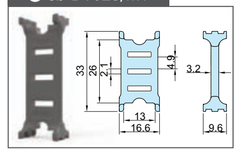


Assemble divider every second frame
DV/T : Applied to Frame 125~200
DV/M : Normal Divider
DV/W : Tie wrap divider for free end bracket(FEB)

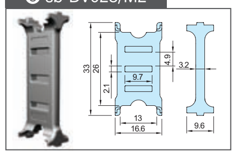
❶ sb-DV028/S



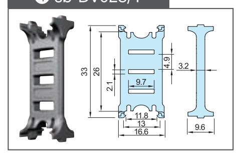
❷ sb-DV028/M1



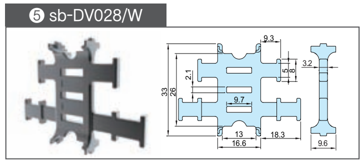
❸ sb-DV028/M2



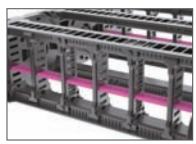
❹ sb-DV028/T



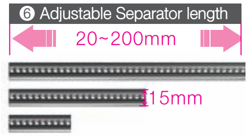
❺ sb-DV028/W



Separators (SP)

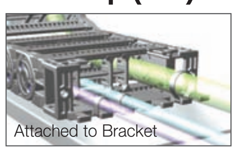


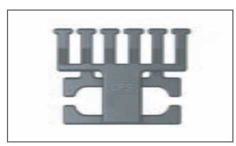
❻ Adjustable Separator length

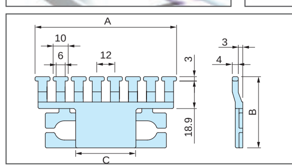


Chain Type	Ordering No.	Frame
ST044N	S-SP/M.35	35
	S-SP/M.50	50
	S-SP/M.55	55
	S-SP/M.75	75
	S-SP/M.100	100
	S-SP/M.125	125
	S-SP/M.150	150
	S-SP/M.175	175
	S-SP/M.200	200

Tie Wrap (TW)



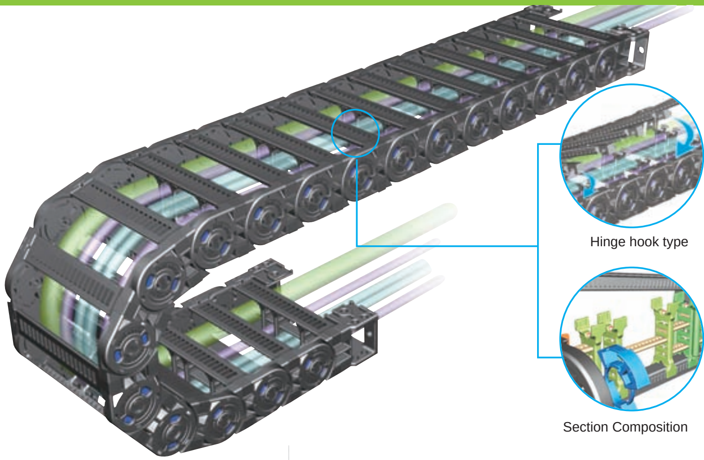




Chain Type	Ordering No.	A	B	C
ST044N	S-TW036/025CR.35	46	35.4	-
	S-TW036/025CR.50	69	48.9	15
	S-TW036/025CR.55	70	48.9	20
	S-TW036/025CR.75	94	48.9	40
	S-TW036/025CR.100	118	48.9	65
	S-TW036/025CR.125	142	48.9	90

※ Dimensions in mm

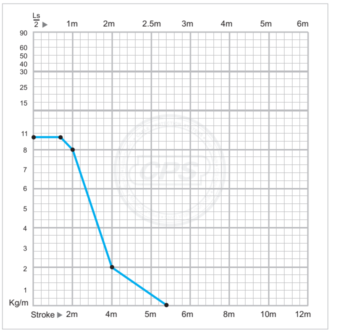
ST055N



Hinge hook type

Section Composition

Unsupported Length



Caculation of the Chain Length

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

Other Length Restrictions

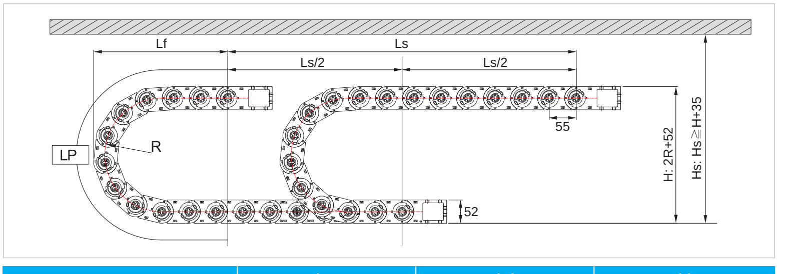
Vertical Standing(Max) = 3.0m

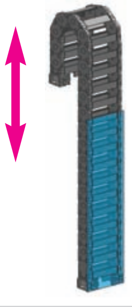
Vertical Hanging(Max) = 50m

Side Mounted Unsupported(Max) = 1.0m

Layout of the Chain

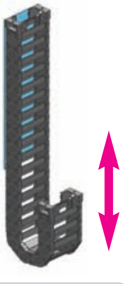
Ls: Stroke Hs: Safe Space





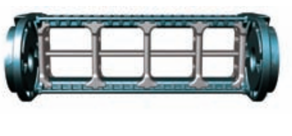
Vertical Standing

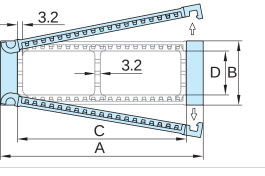
Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
65	424	201	182
75	456	211	202
100	535	236	252
125	613	261	302
150	692	286	352
200	849	336	452

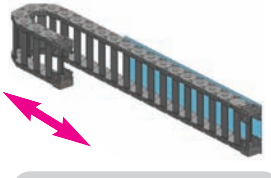


Vertical Hanging

Chain Cross Section





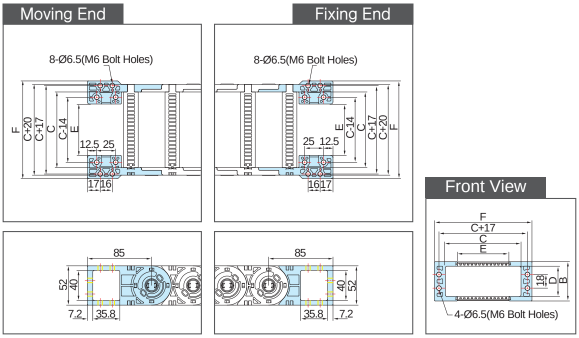


Side Mounted Unsupported

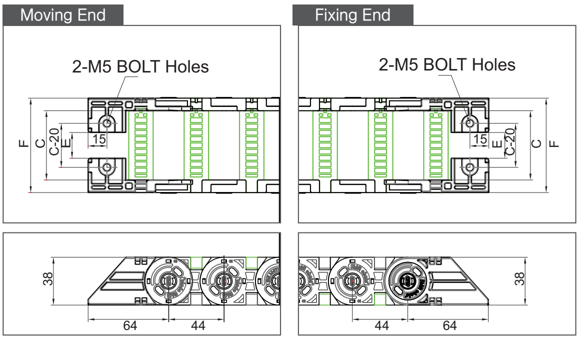
Chain Type	A Width (Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height (Inner)	Weight kg/m
ST055N	56	52	35	40	1.12
	71		50		1.15
	76		55		1.18
	96		75		1.23
	121		100		1.31
	146		125		1.41
	171		150		1.51
	196		175		1.78
	221		200		1.92

※ Dimensions in mm

Free End Bracket (FEB)

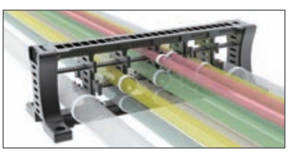


End Bracket (EB)

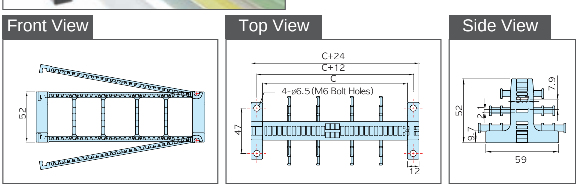


Chain Type	F Width (Outer)	B Height (Outer)	C Frame Width (Inner)	D Height (Inner)	E M,EB Bolt hole width	Hole Type
ST055N	64	52	35	40	3	M6 Bolt Holes
	79		50		18	
	84		55		23	
	104		75		43	
	129		100		68	
	154		125		93	
	179		150		118	
	204		175		143	
	229		200		168	

System Tie Wrap (STW)

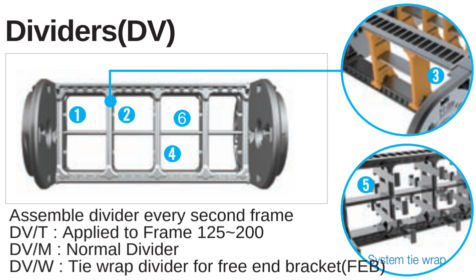


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

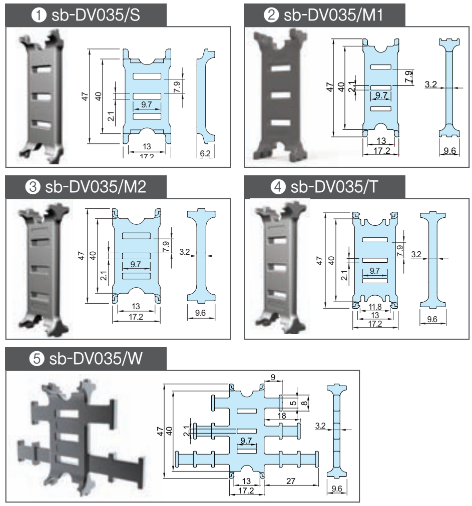


Chain Type	Ordering No.	C Frame	Hole Type
ST055N	S-TW.EB035.35	35	M6 Bolt Holes
	S-TW.EB035.50	50	
	S-TW.EB035.55	55	
	S-TW.EB035.75	75	
	S-TW.EB035.100	100	
	S-TW.EB035.125	125	
	S-TW.EB035.150	150	
	S-TW.EB035.175	175	
	S-TW.EB035.200	200	

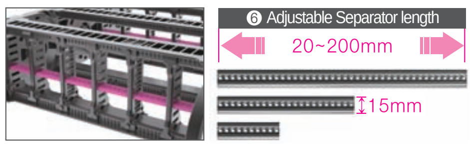
Dividers(DV)



Assemble divider every second frame
DV/T : Applied to Frame 125~200
DV/M : Normal Divider
DV/W : Tie wrap divider for free end bracket(FEB)

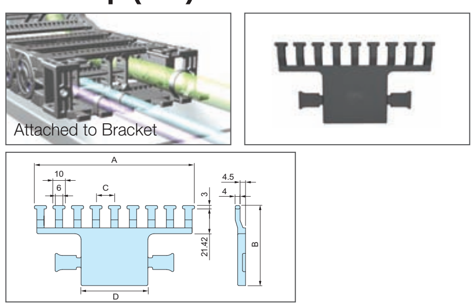


Separators(SP)



Chain Type	Ordering No.	Frame
ST055N	S-SP/M.35	35
	S-SP/M.50	50
	S-SP/M.55	55
	S-SP/M.75	75
	S-SP/M.100	100
	S-SP/M.125	125
	S-SP/M.150	150
	S-SP/M.175	175
	S-SP/M.200	200

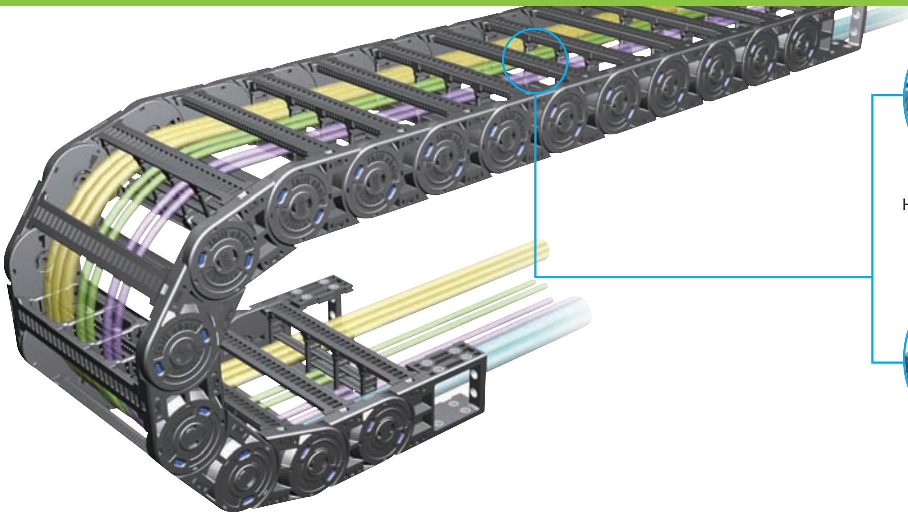
Tie Wrap (TW)

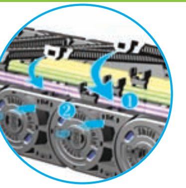


Chain Type	Ordering No.	A	B	C	D
ST055N	S-TW050/035N.50	82	64.5	12.00	5
	S-TW050/035N.55	82		12.00	10
	S-TW050/035N.75	107		12.13	30
	S-TW050/035N.100	132		15.25	55
	S-TW050/035N.125	157		14.70	80
	S-TW050/035N.150	182		14.35	105
	S-TW050/035N.175	203		12.31	130
	S-TW050/035N.200	232		13.88	155

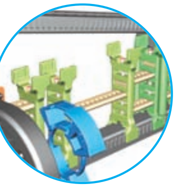
※ Dimensions in mm

ST072N





Hinge Frame-Pin Lock Type



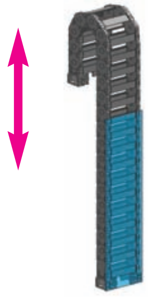
Section Composition

Caculation of the Chain Length

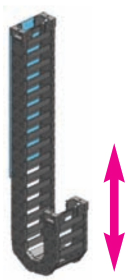
$$\left[\ L = \frac{Ls}{2} + Lp\ \right]$$

Other Length Restrictions

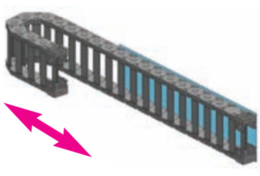
Vertical Standing(Max) = 6.0m
Vertical Hanging(Max) = 100m
Side Mounted Unsupported(Max) = 2.5m



Vertical Standing



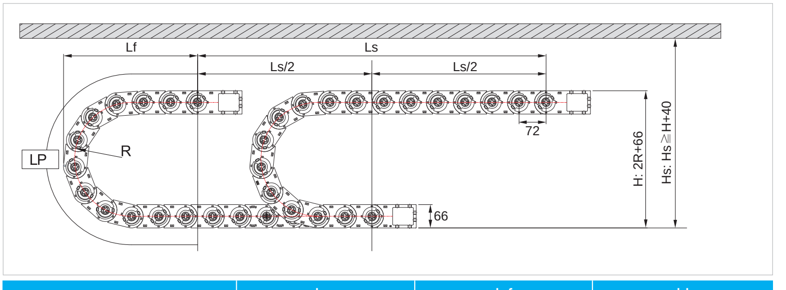
Vertical Hanging



Side Mounted Unsupported

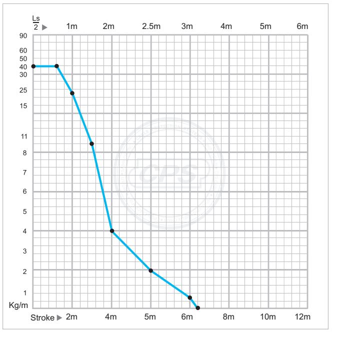
Layout of the Chain

Ls: Stroke Hs: Safe Space

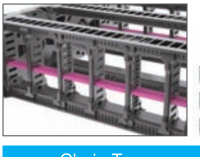


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
72	514	249	210
100	603	277	266
120	665	297	306
145	743	322	356
200	916	377	466
250	1,074	427	566
300	1,230	477	666

Unsupported Length



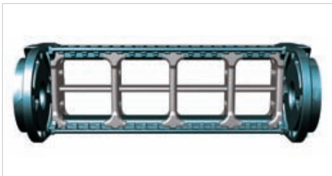
Separators(SP)

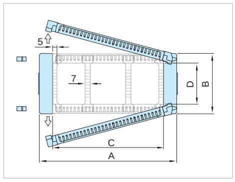


Chain Type	Ordering No.
ST072N	sb-SP/400.Frame

※ Dimensions in mm

Chain Cross Section

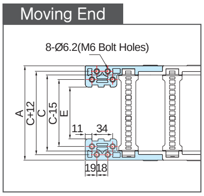




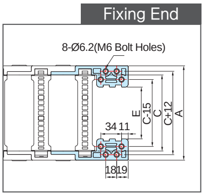
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width (Inner)	D Height (Inner)	Weight kg/m
ST072N	82 107 132 157 172 182 197 207 222 232 272 282 332	66	50 75 100 125 140 150 165 175 190 200 240 250 300	45	2.10 2.20 2.30 2.43 2.51 2.56 2.62 2.66 2.93 3.11 3.21 3.24 3.60

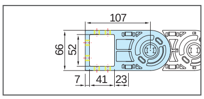
Free End Bracket (FEB)

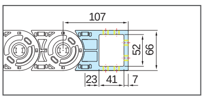
Moving End



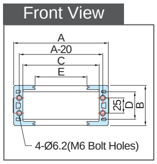
Fixing End





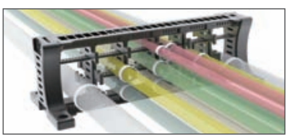


Front View



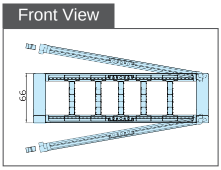
Chain Type	A Width (Outer)	B Height(Outer)	C Frame Width (Inner)	D Height (Inner)	E M,EB Bolt hole width	Hole Type
ST072N	82 107 132 157 172 182 197 207 222 232 272 282 332	66	50 75 100 125 140 150 165 175 190 200 240 250 300	45	10 35 60 85 100 110 125 135 150 160 200 210 260	M6 Bolt Holes

System Tie Wrap (STW)

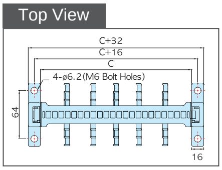


It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.

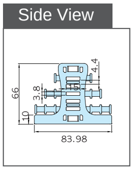
Front View



Top View



Side View

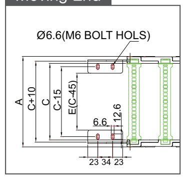


Chain Type	Ordering No.	C Frame	Hole Type
ST072N	S-TW.EB045.50 S-TW.EB045.75 S-TW.EB045.100 S-TW.EB045.125 S-TW.EB045.140 S-TW.EB045.150 S-TW.EB045.165 S-TW.EB045.175 S-TW.EB045.190 S-TW.EB045.200 S-TW.EB045.240 S-TW.EB045.250 S-TW.EB045.300	50 75 100 125 140 150 165 175 190 200 240 250 300	M6 Bolt Holes

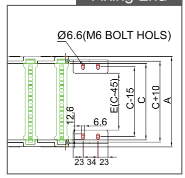
※ Dimensions in mm

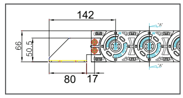
Steel End Bracket (SEB)

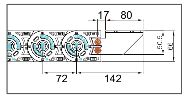
Moving End



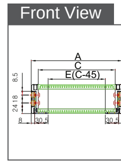
Fixing End



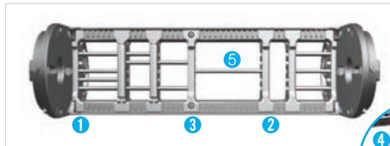


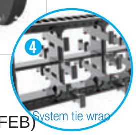


Front View



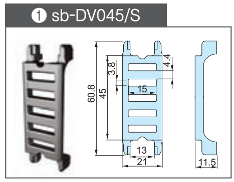
Dividers(DV)



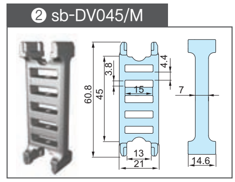


Assemble divider every second frame
DV/T : Applied to Frame 200~300
DV/M : Normal Divider
DV/W : Tie wrap divider for free end bracket(FEB)

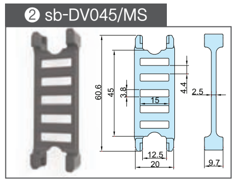
❶ sb-DV045/S



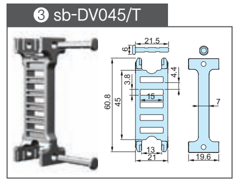
❷ sb-DV045/M



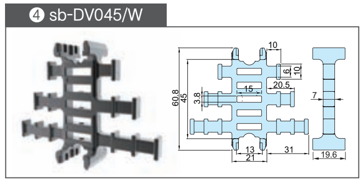
❷ sb-DV045/MS



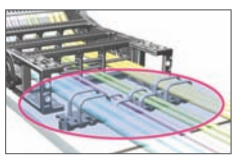
❸ sb-DV045/T

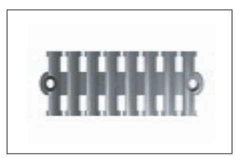


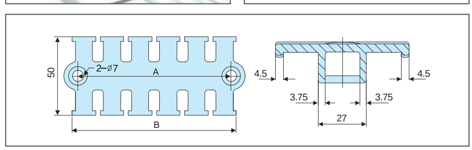
❹ sb-DV045/W



Tie Wrap (TW)

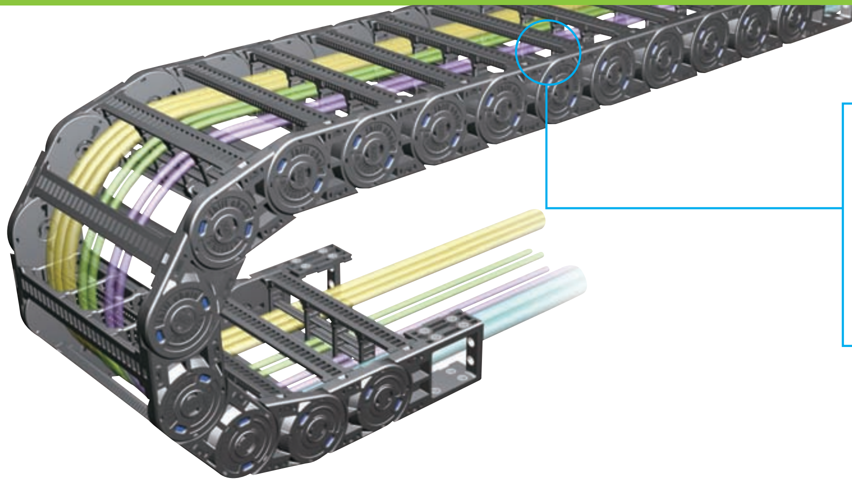


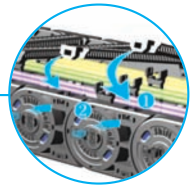




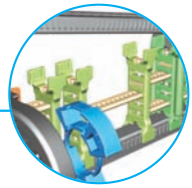
Chain Type	Ordering No.	A	B
ST072N	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

ST095N





Hinge Frame-Pin Lock Type



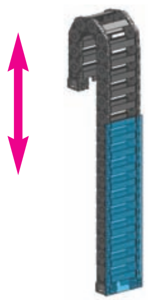
Section Composition

Caculation of the Chain Length

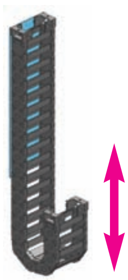
$$\left[\ L = \frac{Ls}{2} + Lp\ \right]$$

Other Length Restrictions

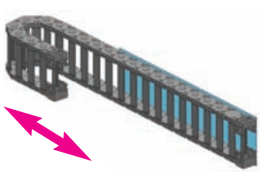
Vertical Standing(Max) = 6.0m
Vertical Hanging(Max) = 100m
Side Mounted Unsupported(Max) = 3.0m



Vertical Standing



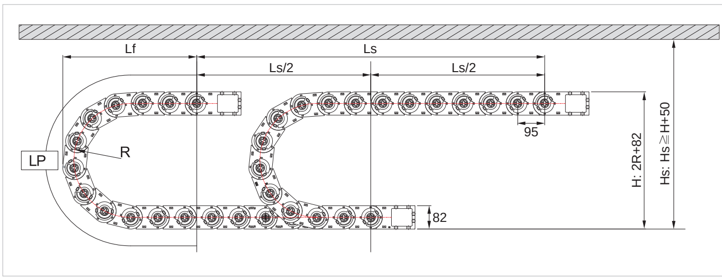
Vertical Hanging



Side Mounted Unsupported

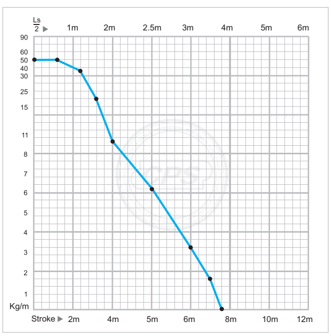
Layout of the Chain

Ls: Stroke Hs: Safe Space

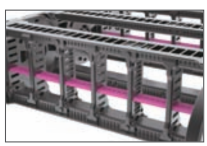


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
135	805	364	352
150	855	374	382
200	1,010	428	482
230	1,110	459	542
280	1,260	505	642
400	1,640	629	882

Unsupported Length



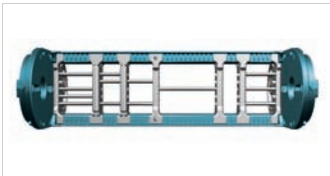
Separators(SP)

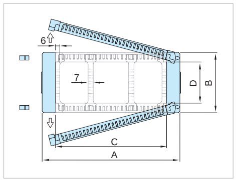


Chain Type	Ordering No.
ST095N	sb-SP/400.Frame

※ Dimensions in mm

Chain Cross Section

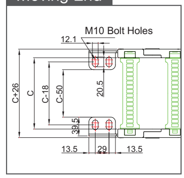




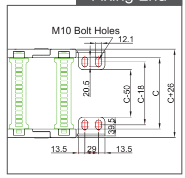
Chain Type	A Width (Outer)	B Height (Outer)	C Frame/Width(Inner)	D Height (Inner)	Weight kg/m
ST095N	113 138 163 188 213 228 238 268 278 288 338 388 438	82	75 100 125 150 175 190 200 230 240 250 300 350 400	56	3.11 3.17 3.37 3.49 3.60 3.71 3.79 3.95 4.00 4.05 4.31 4.69 5.05

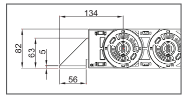
Steel End Bracket (SEB)

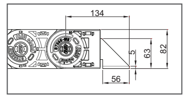
Moving End



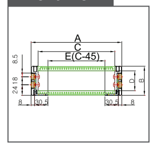
Fixing End



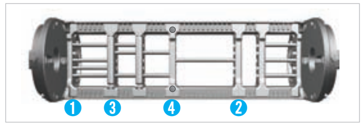


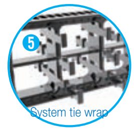


Front View



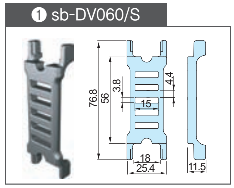
Dividers(DV)



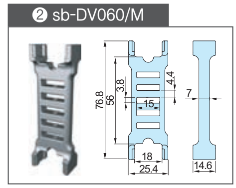


Assemble divider every second frame
DV/T : Applied to Frame 250~400
DV/M : Normal Divider
DV/W : Tie wrap divider for free end bracket(FEB)

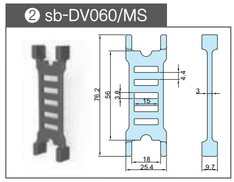
① sb-DV060/S



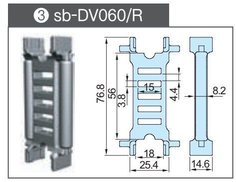
② sb-DV060/M



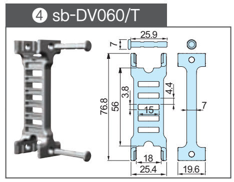
② sb-DV060/MS



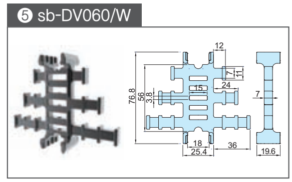
③ sb-DV060/R



④ sb-DV060/T

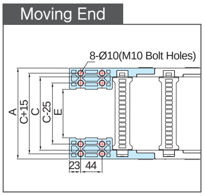


⑤ sb-DV060/W

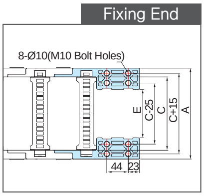


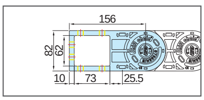
Free End Bracket (FEB)

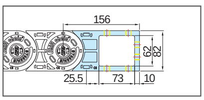
Moving End



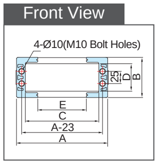
Fixing End







Front View

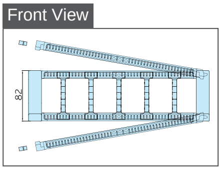


Chain Type	A Width (Outer)	B Height (Outer)	C Frame Width (Inner)	D Height (Inner)	E M,EB Bolt hole width	Hole Type
ST095N	113 138 163 188 213 228 238 268 278 288 338 388 438	82	75 100 125 150 175 190 200 230 240 250 300 350 400	56	24 49 74 99 124 139 149 179 189 199 249 299 349	M10 Bolt Holes

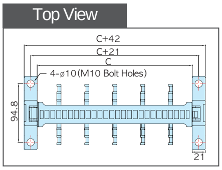
System Tie Wrap (STW)

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.

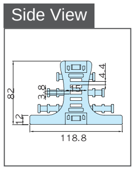
Front View



Top View

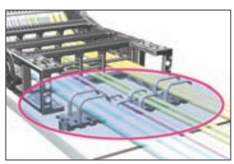


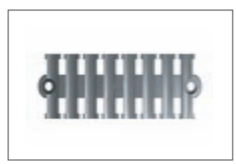
Side View

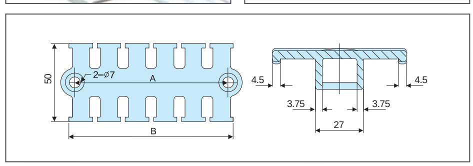


Chain Type	Ordering No.	C Frame	Hole Type
ST095N	S-TW.EB060.75 S-TW.EB060.100 S-TW.EB060.125 S-TW.EB060.150 S-TW.EB060.175 S-TW.EB060.190 S-TW.EB060.200 S-TW.EB060.230 S-TW.EB060.240 S-TW.EB060.250 S-TW.EB060.300 S-TW.EB060.350 S-TW.EB060.400	75 100 125 150 175 190 200 230 240 250 300 350 400	M10 Bolt Holes

Tie Wrap (TW)



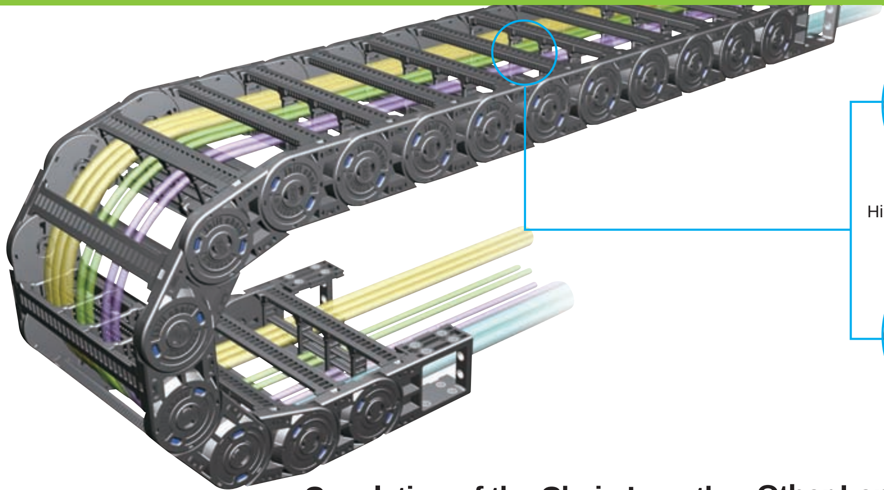


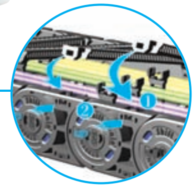


Chain Type	Ordering No.	A	B
ST095N	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

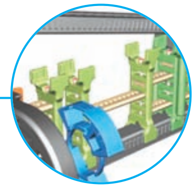
※ Dimensions in mm

ST120N





Hinge Frame-Pin Lock Type



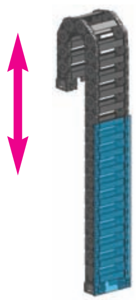
Section Composition

Caculation of the Chain Length

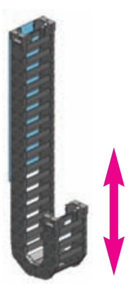
$$\left[\ L = \frac{Ls}{2} + Lp\ \right]$$

Other Length Restrictions

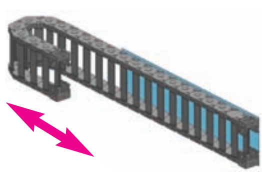
Vertical Standing(Max) = 6.0m
Vertical Hanging(Max) = 120m
Side Mounted Unsupported(Max) = 3.0m



Vertical Standing



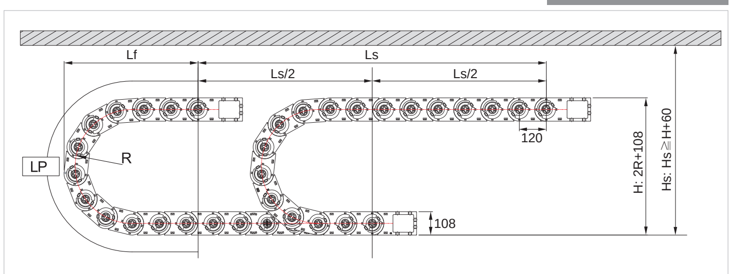
Vertical Hanging



Side Mounted Unsupported

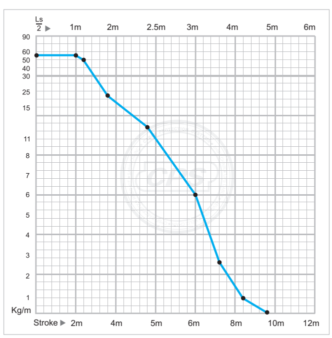
Layout of the Chain

Ls: Stroke Hs: Safe Space

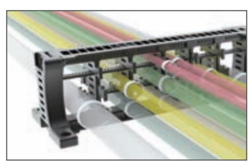


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
180	1,046	474	468
200	1,109	494	508
250	1,266	544	608
300	1,423	594	708
350	1,580	644	808
400	1,737	694	908
500	2,051	794	1,108

Unsupported Length

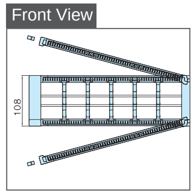


System Tie Wrap (STW)

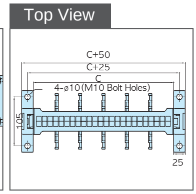


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

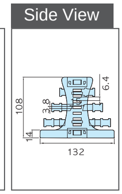
Front View



Top View

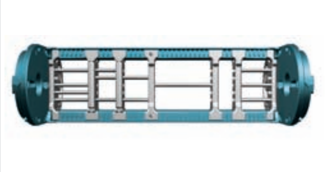


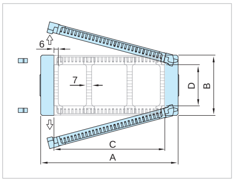
Side View



※ Dimensions in mm

Chain Cross Section

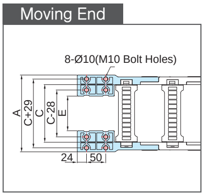




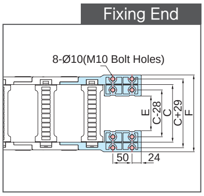
Chain Type	A Width (Outer)	B Height (Outer)	C Frame/Width(Inner)	D Height (Inner)	Weight kg/m
ST120N	117 142 157 167 192 217 242 282 292 332 342 392 442 492 542 592 642	108	75 100 115 125 150 175 200 240 250 290 300 350 400 450 500 550 600	78	4.41 4.53 4.61 4.67 4.78 4.93 5.17 5.41 5.47 5.80 5.88 6.30 6.73 7.07 7.30 8.13 8.30

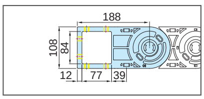
Free End Bracket (FEB)

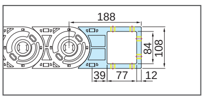
Moving End



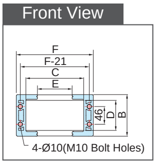
Fixing End







Front View

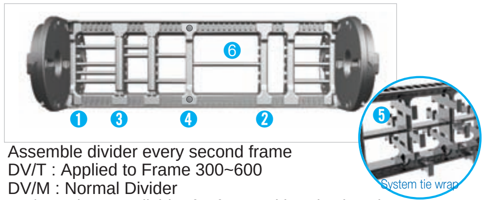


Chain Type	A Width (Outer)	B Height (Outer)	C Frame Width (Inner)	D Height (Inner)	E M.EB Bolt hole width	Hole Type
ST120N	125 150 165 175 200 225 250 290 300 340 350 400 450 500 550 600 650	108	75 100 115 125 150 175 200 240 250 290 300 350 400 450 500 550 600	78	15 40 55 65 90 115 140 180 190 230 240 290 340 390 440 490 540	M10 Bolt Holes

System Tie Wrap (STW)

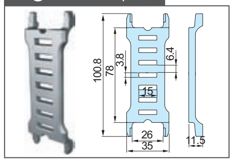
Chain Type	Ordering No.	C Frame	Hole Type
ST120N	S-TW.EB075.75 S-TW.EB075.100 S-TW.EB075.115 S-TW.EB075.125 S-TW.EB075.150 S-TW.EB075.175 S-TW.EB075.200 S-TW.EB075.240 S-TW.EB075.250 S-TW.EB075.290 S-TW.EB075.300 S-TW.EB075.350 S-TW.EB075.400 S-TW.EB075.450 S-TW.EB075.500 S-TW.EB075.550 S-TW.EB075.600	75 100 115 125 150 175 200 240 250 290 300 350 400 450 500 550 600	M10 Bolt Holes

Dividers(DV)

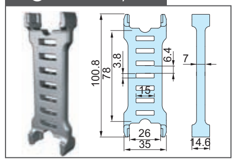


Assemble divider every second frame
DV/T : Applied to Frame 300~600
DV/M : Normal Divider
DV/W : Tie wrap divider for free end bracket(FEB)

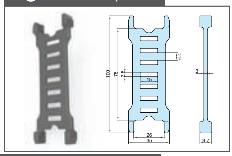
❶ sb-DV075/S



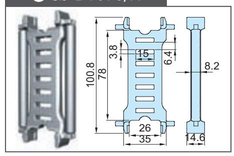
❷ sb-DV075/M



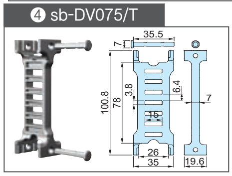
❷ sb-DV075/MS



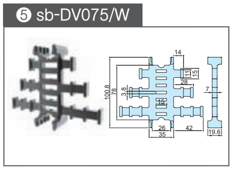
❸ sb-DV075/R



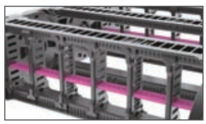
❹ sb-DV075/T



❺ sb-DV075/W

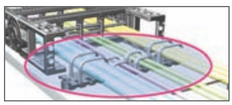


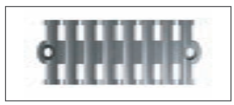
Separators(SP)

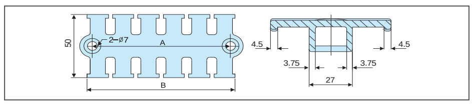


Chain Type	Ordering No.
ST120N	sb-SP/600.Frame

Tie Wrap (TW)



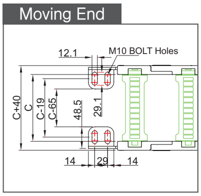




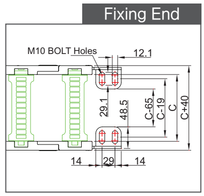
Chain Type	Ordering No.	A	B
ST120N	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

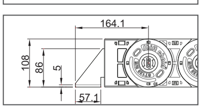
Steel End Bracket (SEB)

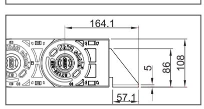
Moving End



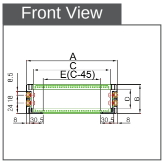
Fixing End





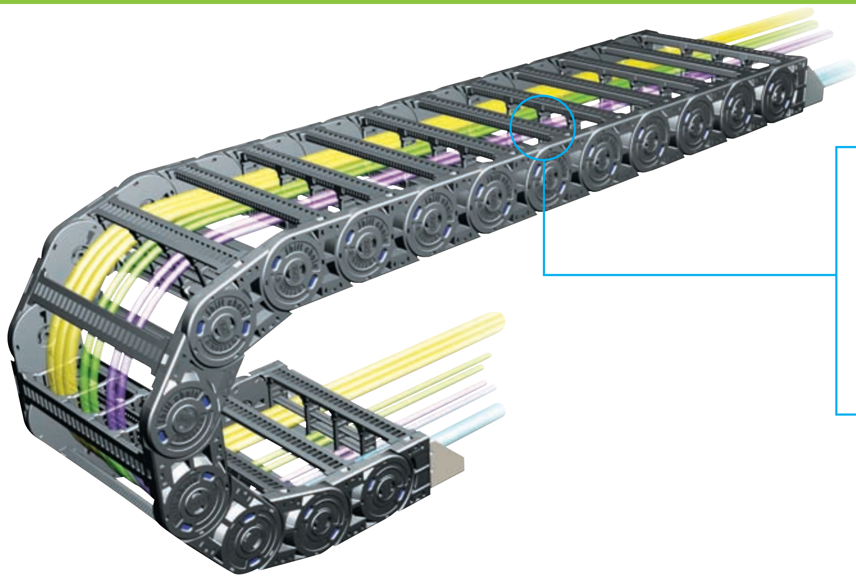


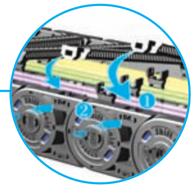
Front View



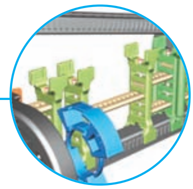
※ Dimensions in mm

ST150N

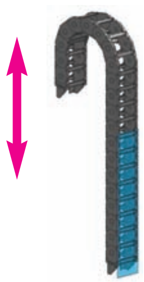




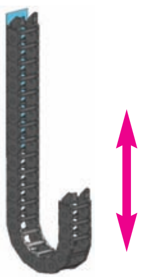
Hinge Frame Pin Type



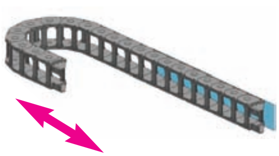
Section Composition



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

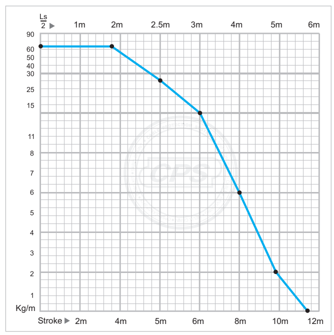
Calculation of the Chain Length

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

Other Length Restrictions

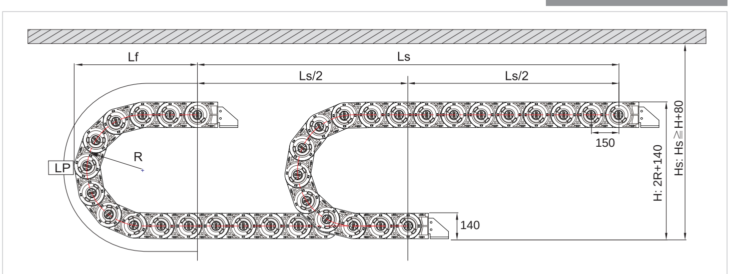
Vertical Standing(Max) = 7.0m
Vertical Hanging(Max) = 150m
Side Mounted Unsupported(Max) = 4.0m

Unsupported Length



Layout of the Chain

Ls: Stroke Hs: Safe Space

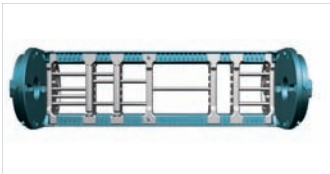


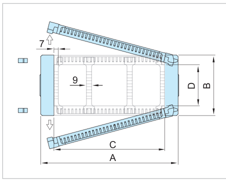
Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
205	1,215	561	550
305	1,510	651	750
405	1,807	743	950
505	2,106	835	1,150
605	2,405	928	1,350

※ Dimensions in mm

Shift Chain

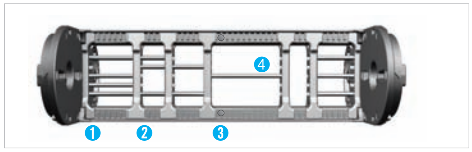
Chain Cross Section





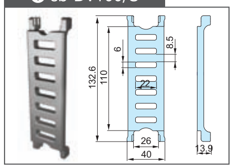
Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	Weight kg/m
	121		75		5.85
	146		100		5.96
	161		115		6.03
	171		125		6.08
	196		150		6.18
	221		175		6.30
	246		200		6.51
	286		240		6.72
ST150N	296	140	250	110	6.78
	336		290		7.06
	346		300		7.14
	396		350		7.51
	446		400		7.88
	496		450		8.18
	546		500		8.37
	596		550		9.11
	646		600		9.26

Dividers(DV)

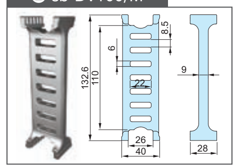


Assemble divider every second frame
DV/T : Normal Divider
DV/M : Applied to Frame 300~600

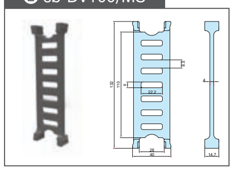
1 sb-DV100/S



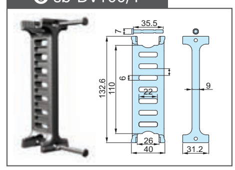
2 sb-DV100/M



2 sb-DV100/MS

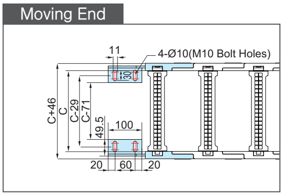


3 sb-DV100/T

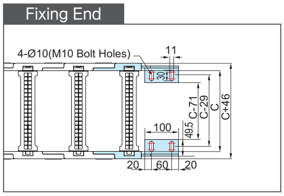


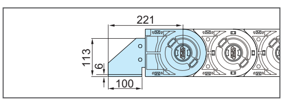
Steel End Bracket(SEB)

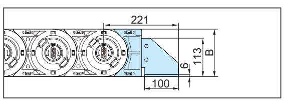
Moving End



Fixing End

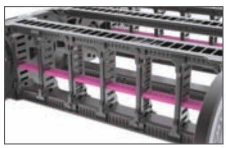




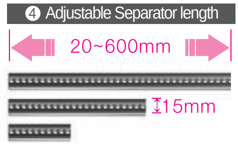


Chain Type	B Height(Outer)	C Frame/Width(Inner)	D Height (Inner)	Hole Type
		75		
		100		
		115		
		125		
		150		
		175		
		200		
		240		
ST150N	140	250	110	M10 Bolt Holes
		290		
		300		
		350		
		400		
		450		
		500		
		550		
		600		

Separators(SP)

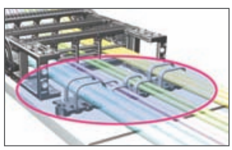


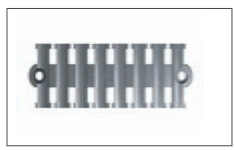
4 Adjustable Separator length

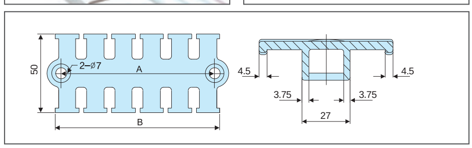


Chain Type	Ordering No.
ST150N	sb-SP/600.Frame

Tie Wrap (TW)







Chain Type	Ordering No.	A	B
	S-TW50	58	65
	S-TW75	75	82
ST150N	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

※ Dimensions in mm

Shift Chain®
Enclosed Type

ST - E
Enclosed Type

- ST044E
- ST055E
- ST072E
- ST095E
- ST120E
- ST150E

Shift Chain-Enclosed Type

Value of Speed/Acceleration is subject to change according to cable's amount and travel length.

General Information

Material	CPS-Amide (PA6+G.F)
Speed	6 m/s
Acceleration	12 m/s²
Temperature	-30℃ ~ +130℃
Special production	ESD, UV
Certificate	CE, ATEX(Ex), RoHs2

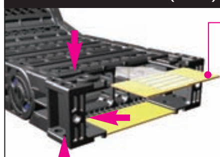
Calculation Table

Length of Cable Chain	L = ½ X Ls + Lp
Bending Radius	Multiply 8~10 of the biggest cable
	Multiply 15~20 of the biggest hose

Bracket Type

ST044, ST055, ST072, ST095, ST120

Free End Bracket (FEB)

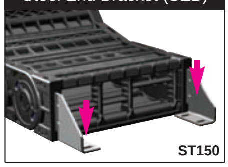


Steel Plate

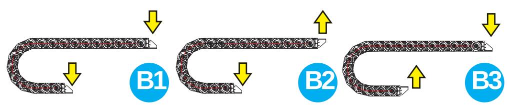
FEB can be fully enclosed by inserting Steel Plate like in the image.(Steel Plate can be ordered separately)
ST 044, 055, 072, 095, 120E
(Steel Plate should be ordered separately)

ST072, 095, 120, 150

Steel End Bracket (SEB)



ST072, 095, 120, 150 : Steel End Bracket(SEB) can be used. There are B1,B2 and B3 type applied according to each different environment.



Dimension Table

Shift Chain E Type	Pitch	Bending Radius (R)	Weight kg/m	Speed m/s	Temperature ℃	Size A	Size B	Size C	Size D	Frame type	Section composition
ST044E	44	70, 90, 120, 150	1.03 1.21 1.37 1.58	6	-30 ~ +130	56 76 96 121	38	35 55 75 100	24.5		
ST055E	55	100, 125, 150, 200	1.36 1.56 1.76 1.97 2.21	6	-30 ~ +130	71 96 121 146 171	52	50 75 100 125 150	38.5		
ST072E	72	120, 145, 200, 250, 300	2.37 2.61 2.85 3.09 3.33	6	-30 ~ +130	82 107 132 157 172 182	66	50 75 100 125 150	44		
ST095E	95	150, 200, 230, 280, 400	3.55 3.79 4.04 4.29 4.53	6	-30 ~ +130	138 163 188 213 238	82	100 125 150 175 200	55		
ST120E	120	200, 250, 300, 350, 400, 500	5.79 6.43 7.07 7.71	6	-30 ~ +130	192 242 292 342	108	150 200 250 290 300	76		
ST150E	150	305, 405, 505, 605	8.16 8.76 10.50 12.33 14.16	6	-30 ~ +130	246 296 346 396 446	141	200 250 300 350 400	110		

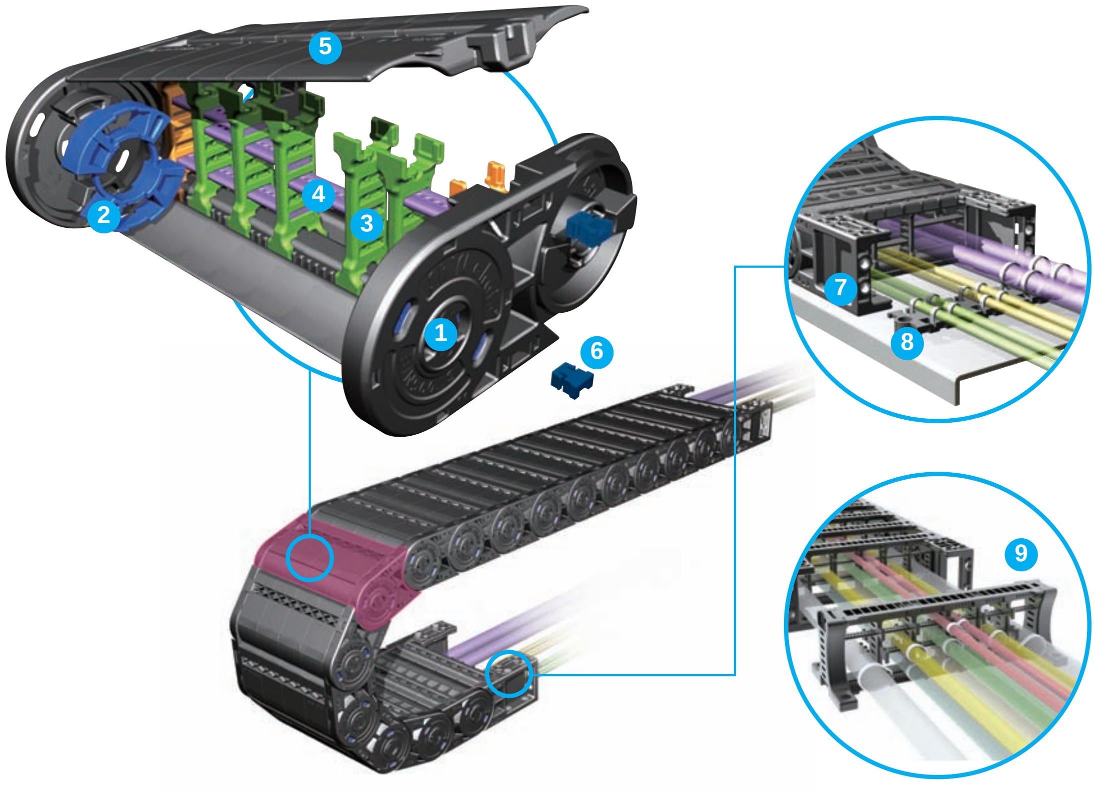
Ordering

ST 044E. 100. R120 / F - 1500L : (DV:2)

- Quantity of Divider (Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - FT : Tie Wrap
  - FST : System Tie Wrap
  - B1, B2, B3 : , ST072E, ST095E, ST120E, ST150E
- Bending radius
- Inside width
- Normal type (E)
- Shift Chain

※ Dimensions in mm

Part of Shift Chain-Enclosed Type



Part of Shift Chain - Enclosed Type

❶ Side Band (SB)
A part that connects upper and lower frame. There are LH and RH type.

❷ Bending Radius Unit (BR)
A part that is inserted into Side Band. It is one of units that helps Shift Chain's excellent Unsupported Length' performance.

❸ Divider (DV-S, M, R, T)
A part that prevents entanglement risk of cables and hoses by being installed vertically.

❹ Separator (SP)
A part that prevent entanglement risk of cable and hoses by being installed horizontally.

❺ FRU, FRD
Parts that assembled with Side Band and there are bumps are formed to prevent divider's separation in operation.

❻ Frame Pin (FP)
A part that is inserted into a hole formed at one side of Frame. It prevents Frame to not be separated after being assembled with Side Band.

❼ Free End Bracket (FEB)
A part that connects to each end of Cable Chain. There are holes are formed where steel washers are inserted to fix FEB to fixing plate securely.

❽ Tie Wrap (TW)
A part that prevents damage of the cable and hose by twisting & pulling movements. It can be used as assembling with bracket or separating from the bracket at end position of chain.

❾ System Tie Wrap (STW)
A part that connects to first or end of Cable Chain. Cables and hoses are arranged at System Tie Wrap by several layers and being tightened using Cable Tie. There are 2 types. One is separated from FEB and the other one is assembled to FEB.

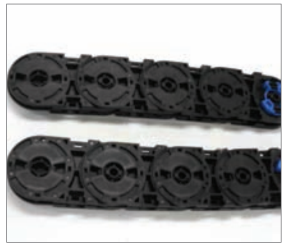
Assemble procedure of Shift Chain Enclosed Type

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.

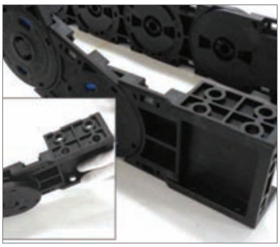
1 Insert BR into Side Band. There are Side Band RH and Side Band LH.

2 Insert all BR into Side Band as much as needed

3 Connect Side Band to Side Band like in the image.



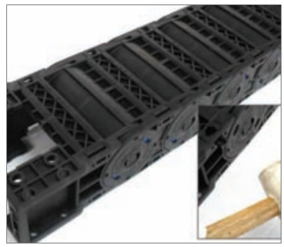
4 Make a long Side Band Connection as much as needed



5 Assemble F.FEB to end of Side Band set by classifying LH, RH.

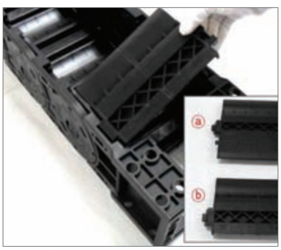
6 Insert FRD(ⓑ) to RH direction of F.FEB.
Side Band. FRD(ⓐ) – normal type
FRD (ⓑ) – special type that is assembled to FEB.

7 Insert Hinge part of FRD (ⓐ) to RH Side Band.

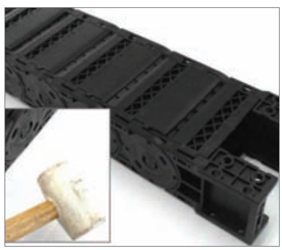


8 After assembling FRD and Side Band, insert Frame Pin by using Teflon or rubber material hammer to not cause external damage to cable chain.

9 Arrange cable and hose by composing section with divider or separator.

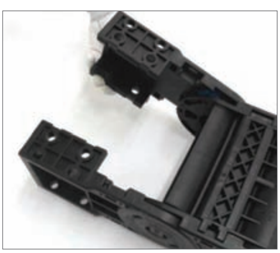


10 Insert Hinge part of FRU(ⓑ) to RH direction of F.FEB.
FRU(ⓐ) – normal type that is assembled to Side Band
FRU(ⓑ) – special type that is assembled to FEB.



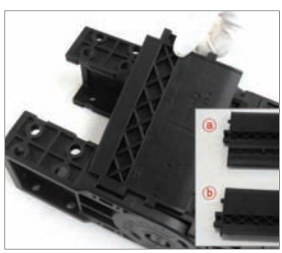
11 Insert Hinge part of FRU(ⓐ) to RH Side Band and then insert Frame Pin

12 Insert BR into FEB



13 Assemble M.FEB to each LH, RH Side Band.

14 Insert Hinge part of FRD (ⓑ) to RH Side Band.
FRD (ⓐ) – normal type that is assembled to Side Band
FRU (ⓑ) – special type that is assembled to FEB.



15 Insert Hinge part of FRU (ⓑ) to RH direction of M.FEB

16 Insert steel washers inside of holes of M.FEB and F.FEB for them to be fixed securely at a structure.

Shift Chain-Enclosed Type

Part list of Shift Chain Enclosed type

Composition of Shift Chain(Enclosed)
= Side band(RH/LH) + Frame(FRU/FRD) + Bending radius unit + Free end bracket/Steel 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-FRDFE044.35,55,75,100 ST-FRUFE044.35,55,75,100 ST-FRDME044.35,55,75,100 ST-FRUME044.35,55,75,100	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	Free 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-FRDFE055(75,100,125,150) ST-FRUFE055(75,100,125,150) ST-FRDME055(75,100,125,150) ST-FRUME055(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

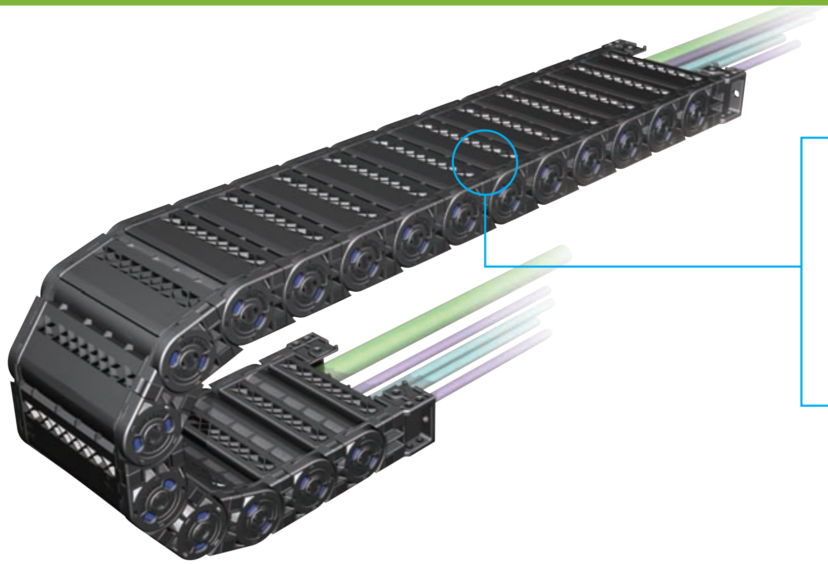
Model	Classification	Part number	Description
ST072E	SIDE BAND	ST-SB072N/E(LH) ST-SB072N/E(RH)	Left side band of ST072E Right side band of ST072E
	BENDING RADIUS	ST-BR072. R120,145,200,250,300	Bending radius unit for side band
	FRAME PIN	S-FP/S1	Frame pin
	FRAME(DOWN) FRAME(UP)	ST-FRD072.50 ST-FRU072.50 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-FRDFE072(50,75,100,125,150) ST-FRUFE072(50,75,100,125,150) ST-FRDME072(50,75,100,125,150) ST-FRUME072(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 End bracket(B1, B2, B3) 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.Frame 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, 2000mm
	FRAME(DOWN-FIXING END) FRAME(UP-FIXING END) FRAME(DOWN-MOVING END) FRAME(UP-MOVING END)	ST-FRDFE095(100,125,150,175,200) ST-FRUFE095(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	Free End bracket of ST095E, Steel End bracket(B1, B2, B3) 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.Frame 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

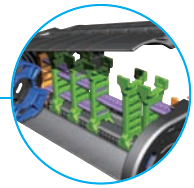
Model	Classification	Part number	Description
ST120E	SIDE BAND	ST-SB120N/E(LH) ST-SB120N/E(RH)	Left side band of ST120N Right side band of ST120N
	BENDING RADIUS	ST-BR120.R200,250,300,350,400,500	Bending radius unit for side band
	FRAME PIN	S-FP/S2	FRAME PIN
	FRAME(DOWN) FRAME(UP)	ST-FRD120.150 ST-FRU120.150 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-FRDFE120(150,200,250,300) ST-FRUFE120(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	Free End bracket of ST120E, Steel End bracket(B1, B2, B3) 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.Frame 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-FRDFE150(200,250,300,350,400) ST-FRUFE150(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 (B1, B2, B3)
	DIVIDER	sb-DV100/M sb-DV100/S	Normal divider To fix separstors at the both side section
	SEPARATOR	sb-SP/600.Frame 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

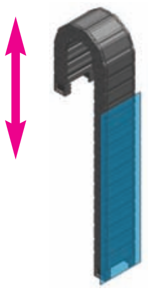
ST044E



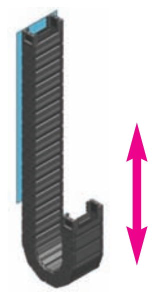
Hinge hook type



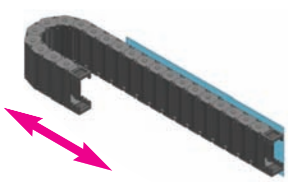
Section composition



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

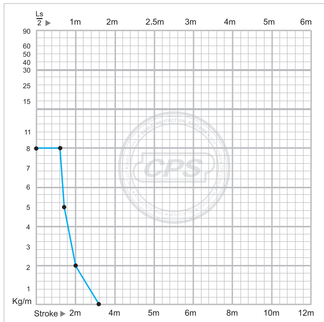
Caculation of the Chain Length

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

Other Length Restrictions

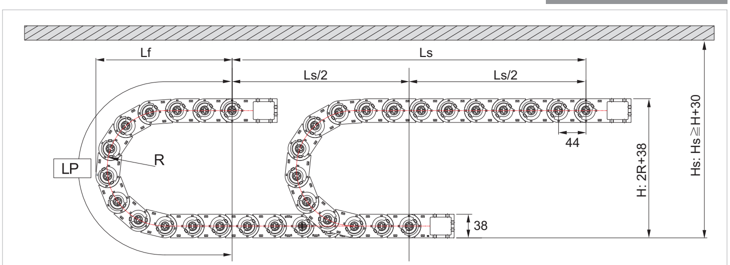
Vertical Standing(Max) = 2.0m
Vertical Hanging(Max) = 40m
Side Mounted Unsupported(Max) = 1.0m

Unsupported Length



Layout of the Chain

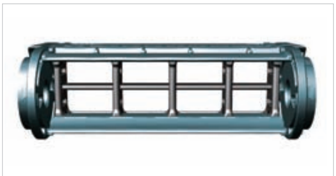
Ls: Stroke Hs: Safe Space

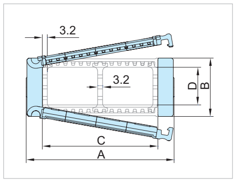


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
70	396	177	178
90	459	197	218
120	553	227	278
150	648	257	338

※ Dimensions in mm

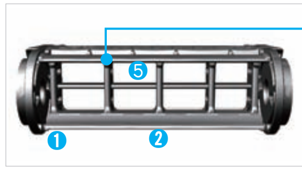
Chain Cross Section

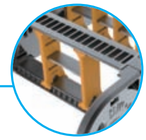


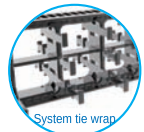


Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
ST044E	56 76 96 121	38	35 55 75 100	24.5	1.03 1.21 1.37 1.58

Dividers(DV)

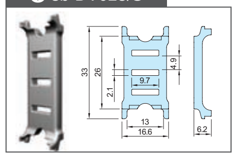




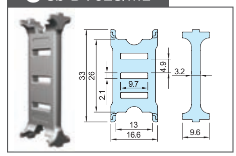


Assemble divider every second frame
DV/M : Normal Divider
DV/W : Tie wrap divider for free end bracket(FEB)

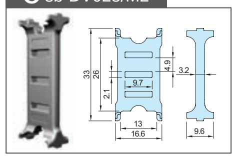
1 sb-DV028/S



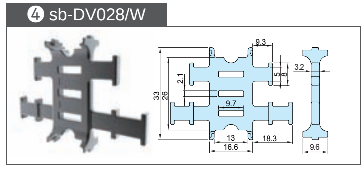
2 sb-DV028/M1



3 sb-DV028/M2

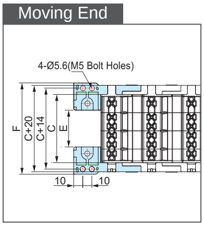


4 sb-DV028/W

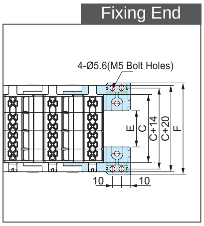


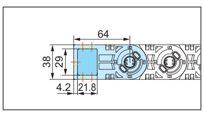
Free End Bracket (FEB)

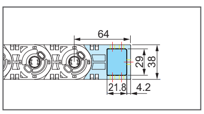
Moving End



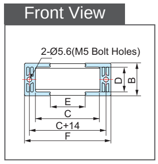
Fixing End





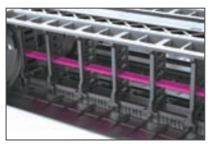


Front View



Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M.E.B Bolt hole width	Hole Type
ST044E	60.4 80.4 100.4 125.4	38	35 55 75 100	24.5	0.4 20.4 40.4 65.4	M5 Bolt Holes

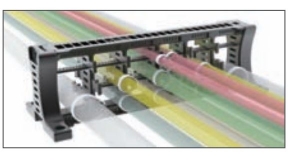
Separators (SP)



5 Adjustable Separator length

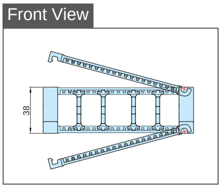
Chain Type	Ordering No.	Frame
ST044E	S-SP/M.35 S-SP/M.55 S-SP/M.75 S-SP/M.100	35 55 75 100

System Tie Wrap (STW)

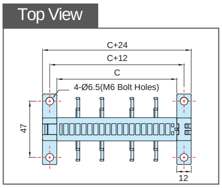


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

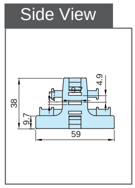
Front View



Top View

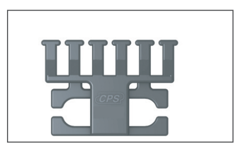


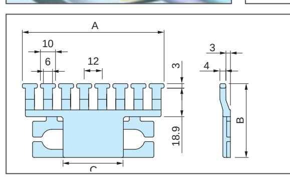
Side View



Chain Type	Ordering No.	C Frame	Hole Type
ST044E	S-TW.EB028.35 S-TW.EB028.55 S-TW.EB028.75 S-TW.EB028.100	35 55 75 100	M6 Bolt Holes

Tie Wrap (TW)

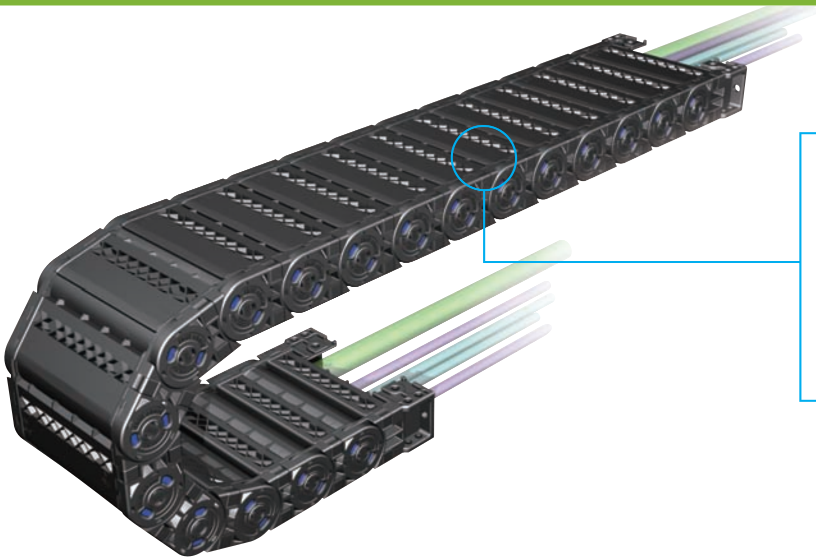




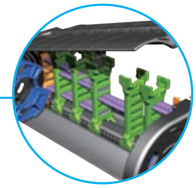
Chain Type	Ordering No.	A	B	C
ST044E	S-TW036/025CR.35 S-TW036/025CR.55 S-TW036/025CR.75 S-TW036/025CR.100	46 70 94 118	35.4 48.9 48.9 48.9	- 20 40 65

※ Dimensions in mm

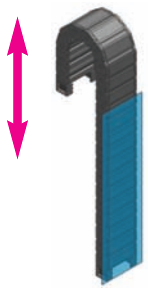
ST055E



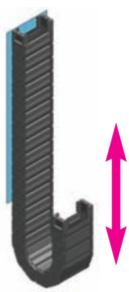
Hinge hook type



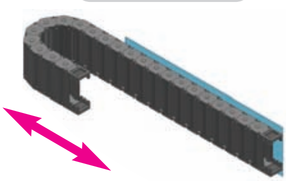
Section composition



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

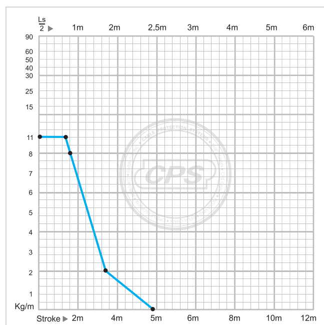
Caculation of the Chain Length

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

Other Length Restrictions

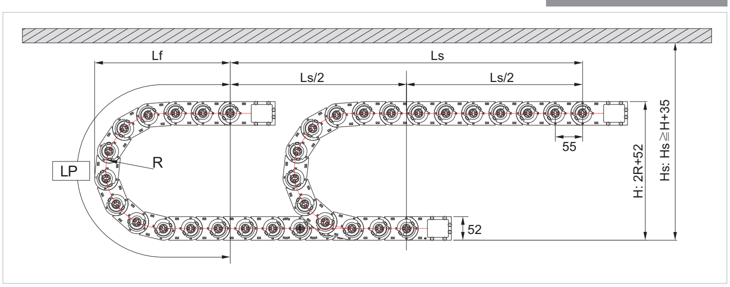
Vertical Standing(Max) = 3.0m
Vertical Hanging(Max) = 50m
Side Mounted Unsupported(Max) = 1.0m

Unsupported Length



Layout of the Chain

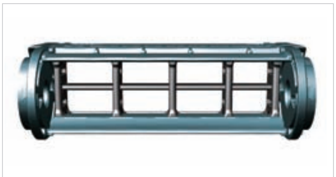
Ls: Stroke Hs: Safe Space

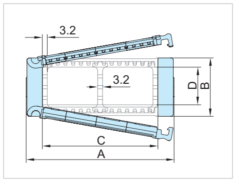


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
100	535	236	252
125	613	261	302
150	692	286	352
200	849	336	452

※ Dimensions in mm

Chain Cross Section

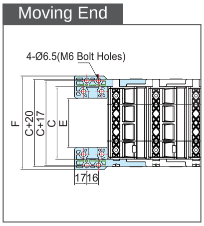




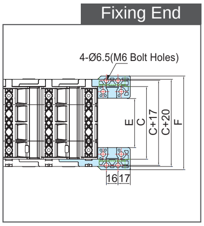
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
ST055E	71 96 121 146 171	52	50 75 100 125 150	38.5	1.36 1.56 1.76 1.97 2.21

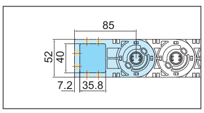
Free End Bracket (FEB)

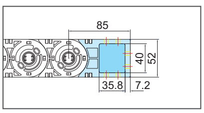
Moving End



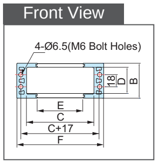
Fixing End





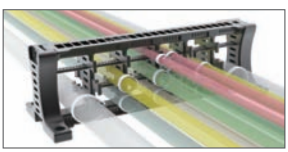


Front View



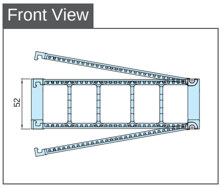
Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M.E.B Bolt hole width	Hole Type
ST055E	79 104 129 154 179	52	50 75 100 125 150	38.5	18 43 68 93 118	M6 Bolt Holes

System Tie Wrap (STW)

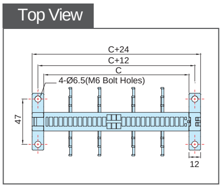


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

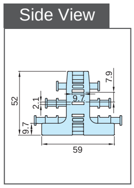
Front View



Top View

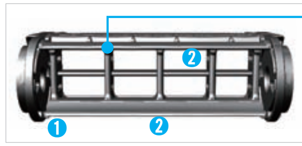


Side View



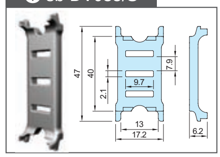
Chain Type	Ordering No.	C Frame	Hole Type
ST055E	S-TW.EB035.50 S-TW.EB035.75 S-TW.EB035.100 S-TW.EB035.125 S-TW.EB035.150	50 75 100 125 150	M6 Bolt Holes

Dividers(DV)

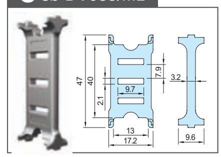


Assemble divider every second frame
DV/M : Normal Divider
DV/W : Tie wrap divider for free end bracket(FEB)

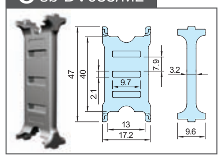
1 sb-DV035/S



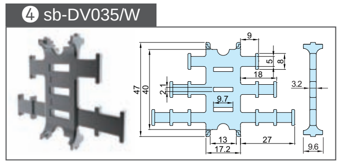
2 sb-DV035/M1



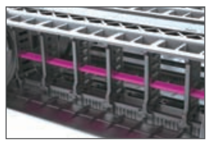
3 sb-DV035/M2



4 sb-DV035/W

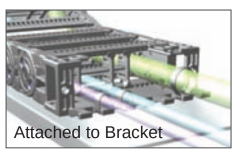


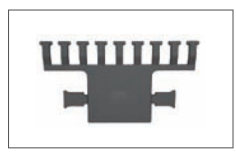
Separators (SP)

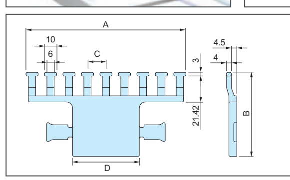


Chain Type	Ordering No.	Frame
ST055E	S-SP/M.50 S-SP/M.75 S-SP/M.100 S-SP/M.125 S-SP/M.150	50 75 100 125 150

Tie Wrap (TW)



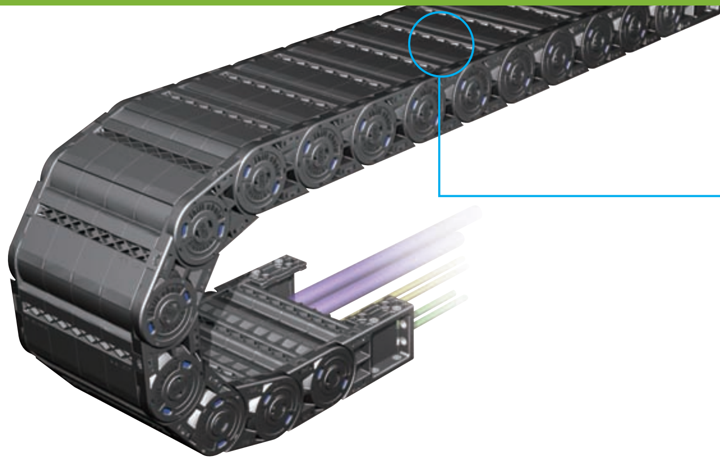


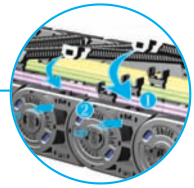


Chain Type	Ordering No.	A	B	C	D
ST055E	S-TW050/035N.50 S-TW050/035N.75 S-TW050/035N.100 S-TW050/035N.125 S-TW050/035N.150	82 107 132 157 182	64.5	12.00 12.13 15.25 14.70 14.35	5 30 55 80 105

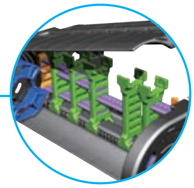
※ Dimensions in mm

ST072E





Hinge frame-pin lock type



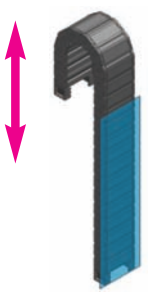
Section composition

Caculation of the Chain Length

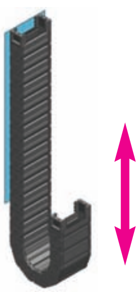
$$\left[\ L = \frac{Ls}{2} + Lp\ \right]$$

Other Length Restrictions

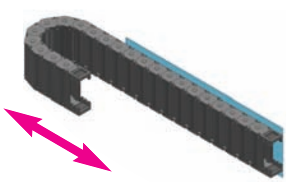
Vertical Standing(Max) = 6.0m
Vertical Hanging(Max) = 100m
Side Mounted Unsupported(Max) = 2.5m



Vertical Standing



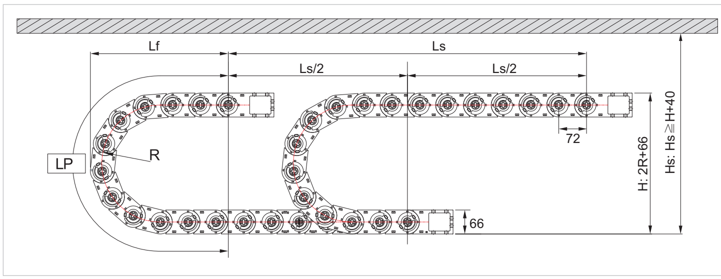
Vertical Hanging



Side Mounted Unsupported

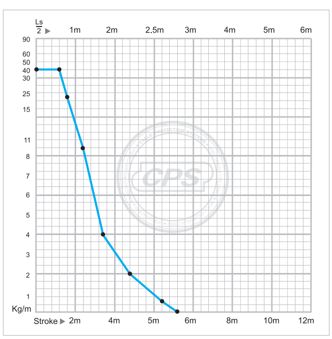
Layout of the Chain

Ls: Stroke Hs: Safe Space

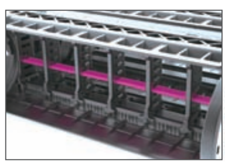


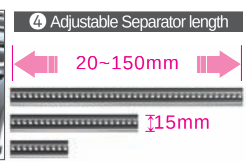
Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
120	665	297	306
145	743	322	356
200	916	377	466
250	1,074	427	566
300	1,230	477	666

Unsupported Length



Separators (SP)



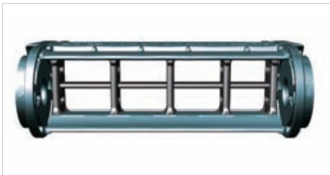


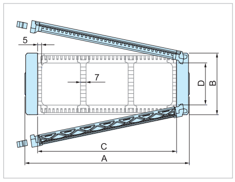
Chain Type	Ordering No.
ST072E	sb-SP/400.Frame

※ Dimensions in mm

Shift Chain-Enclosed Type

Chain Cross Section

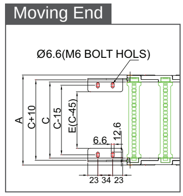




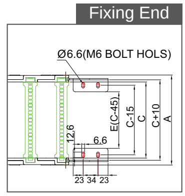
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width (Inner)	D Height(Inner)	Weight kg/m
ST072E	82 107 132 157 182	66	50 75 100 125 150	44	2.37 2.61 2.85 3.09 3.33

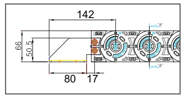
Steel End Bracket (SEB)

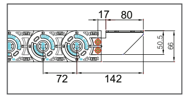
Moving End



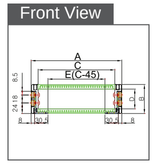
Fixing End



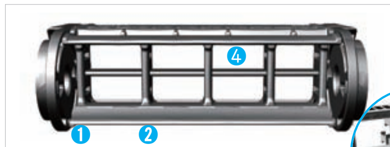


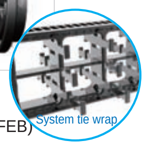


Front View



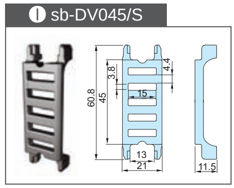
Dividers(DV)



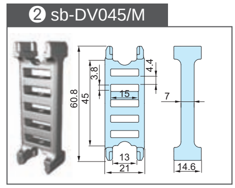


Assemble divider every second frame
DV/M : Normal Divider
DV/W : Tie wrap divider for free end bracket (FEB)

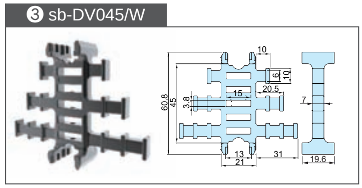
① sb-DV045/S



② sb-DV045/M

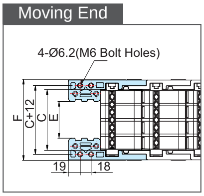


③ sb-DV045/W

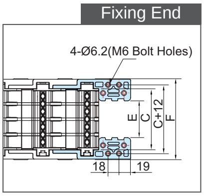


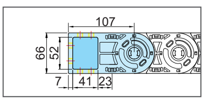
Free End Bracket (FEB)

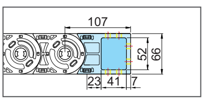
Moving End



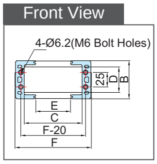
Fixing End







Front View

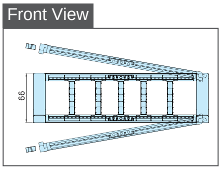


Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M.E.B Bolt hole width	Hole Type
ST072E	82 107 132 157 182	66	50 75 100 125 150	44	10 35 60 85 110	M6 Bolt Holes

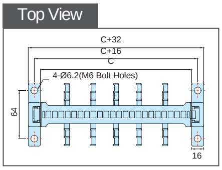
System Tie Wrap (STW)

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.

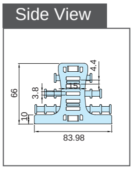
Front View



Top View

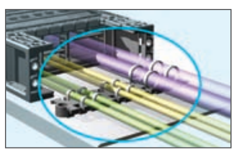


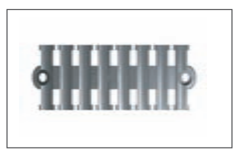
Side View

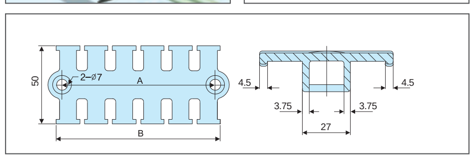


Chain Type	Ordering No.	C Frame	Hole Type
ST072E	S-TW.EB045.50 S-TW.EB045.75 S-TW.EB045.100 S-TW.EB045.125 S-TW.EB045.150	50 75 100 125 150	M6 Bolt Holes

Tie Wrap (TW)



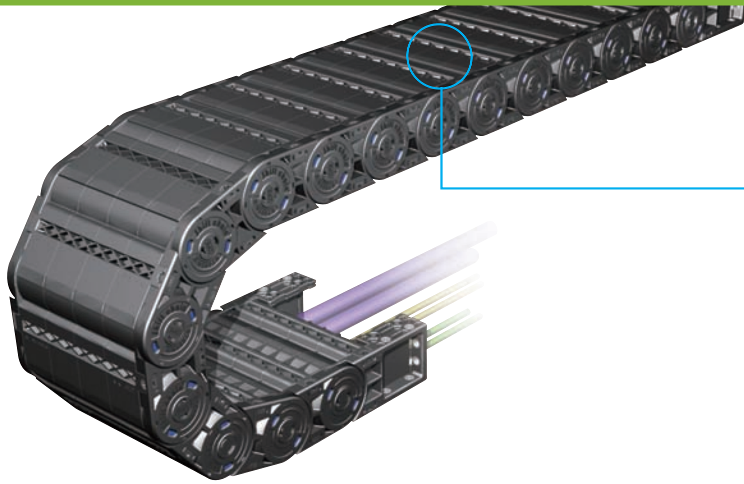


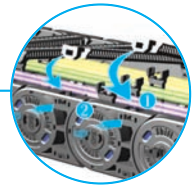


Chain Type	Ordering No.	A	B
ST072E	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

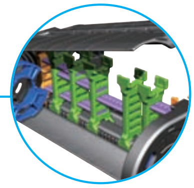
※ Dimensions in mm

ST095E

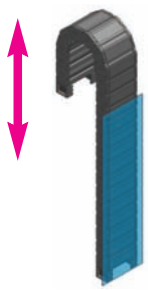




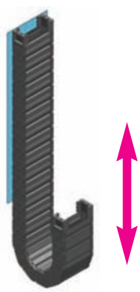
Hinge frame-pin lock type



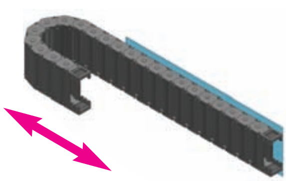
Section composition



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

Caculation of the Chain Length

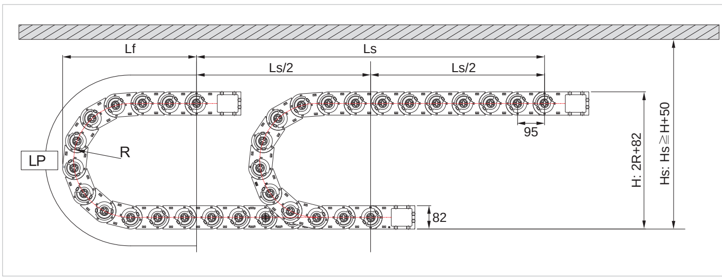
$$\left[\ L = \frac{Ls}{2} + Lp\ \right]$$

Other Length Restrictions

Vertical Standing(Max) = 6.0m
Vertical Hanging(Max) = 100m
Side Mounted Unsupported(Max) = 3.0m

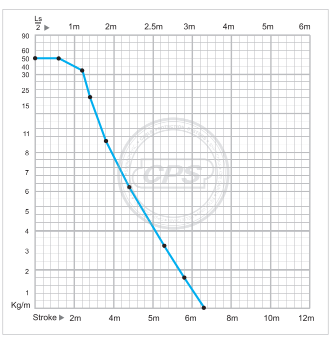
Layout of the Chain

Ls: Stroke Hs: Safe Space

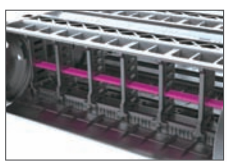


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
150	855	374	382
200	1,010	428	482
230	1,110	459	542
280	1,260	505	642
400	1,640	629	882

Unsupported Length



Separators (SP)

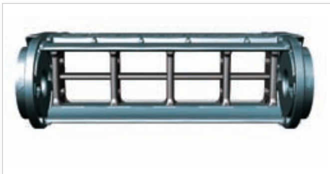


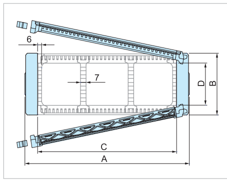
Chain Type	Ordering No.
ST095E	sb-SP/400.Frame

※ Dimensions in mm

Shift Chain-Enclosed Type

Chain Cross Section

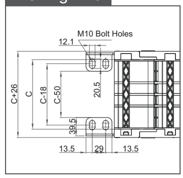




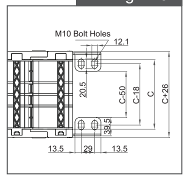
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
ST095E	138 163 188 213 238	82	100 125 150 175 200	55	3.55 3.79 4.04 4.29 4.53

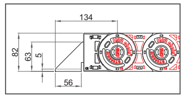
Steel End Bracket (SEB)

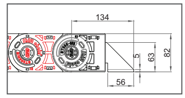
Moving End



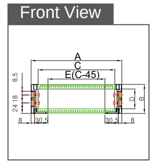
Fixing End



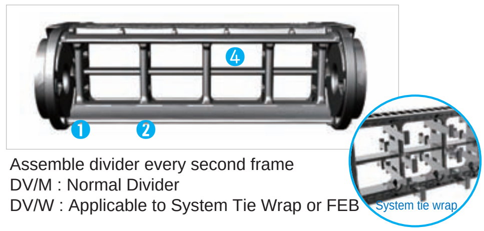




Front View



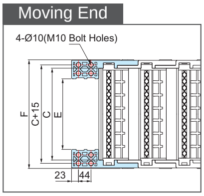
Dividers(DV)



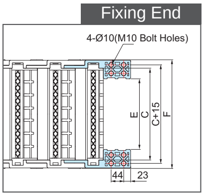
Assemble divider every second frame
DV/M : Normal Divider
DV/W : Applicable to System Tie Wrap or FEB

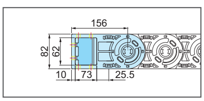
Free End Bracket (FEB)

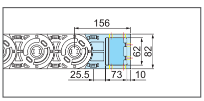
Moving End



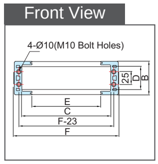
Fixing End



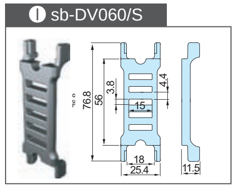




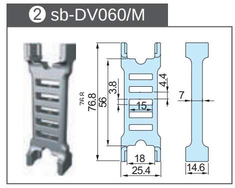
Front View



❶ sb-DV060/S

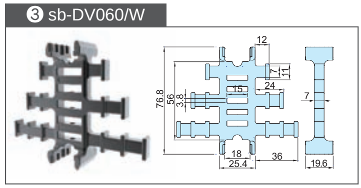


❷ sb-DV060/M

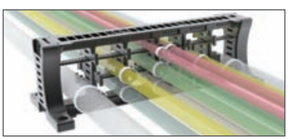


Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M.EB Bolt hole width	Hole Type
ST095E	138 163 188 213 238	82	100 125 150 175 200	55	49 74 99 124 149	M10 Bolt Holes

❸ sb-DV060/W

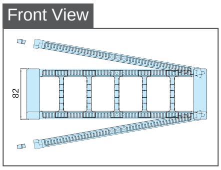


System Tie Wrap (STW)

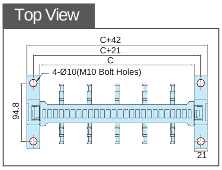


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

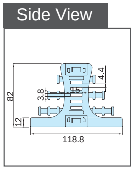
Front View



Top View

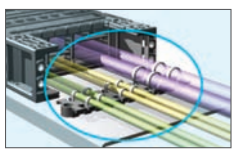


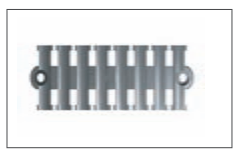
Side View

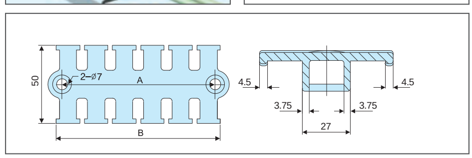


Chain Type	Ordering No.	C Frame	Hole Type
ST095E	S-TW.EB060.100 S-TW.EB060.125 S-TW.EB060.150 S-TW.EB060.175 S-TW.EB060.200	100 125 150 175 200	M10 Bolt Holes

Tie Wrap (TW)



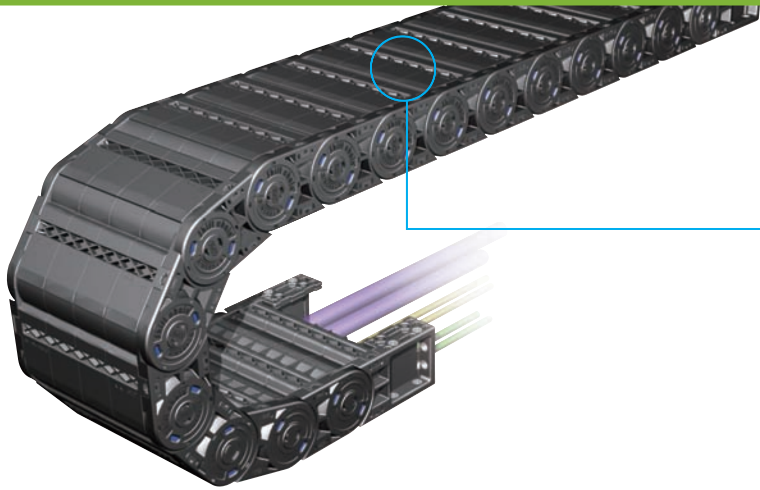


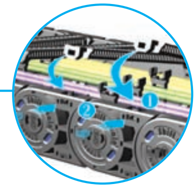


Chain Type	Ordering No.	A	B
ST095E	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

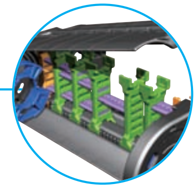
※ Dimensions in mm

ST120E

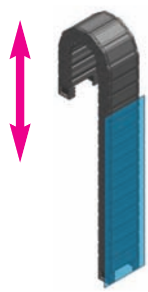




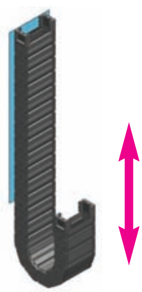
Hinge frame-pin lock type



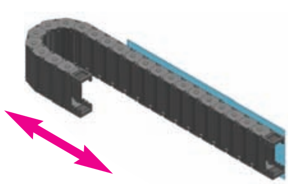
Section composition



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

Caculation of the Chain Length

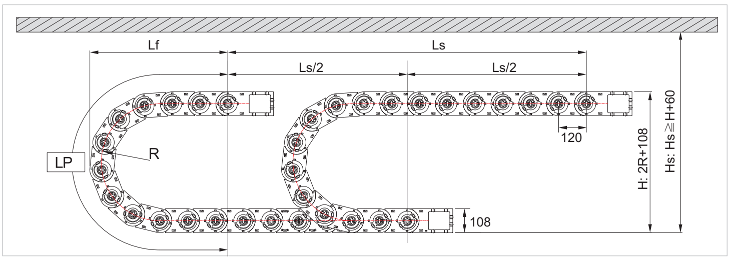
$$\left[\ L = \frac{Ls}{2} + Lp\ \right]$$

Other Length Restrictions

Vertical Standing(Max) = 6.0m
Vertical Hanging(Max) = 120m
Side Mounted Unsupported(Max) = 3.0m

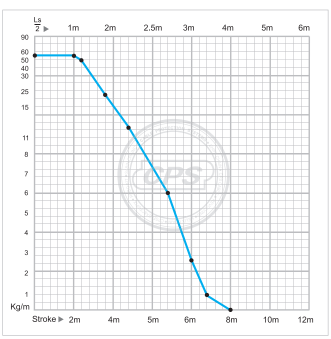
Layout of the Chain

Ls: Stroke Hs: Safe Space

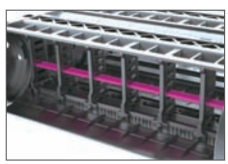


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
200	1,109	494	508
250	1,266	544	608
300	1,423	594	708
350	1,580	644	808
400	1,737	694	908
500	2,051	794	1,108

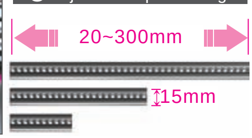
Unsupported Length



Separators (SP)



④ Adjustable Separator length

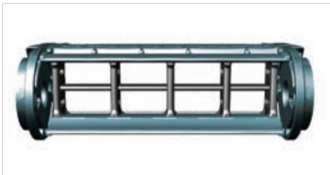


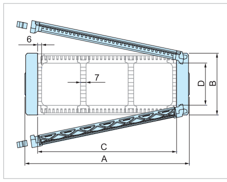
Chain Type	Ordering No.
ST120E	sb-SP/400.Frame

※ Dimensions in mm

Shift Chain-Enclosed Type

Chain Cross Section

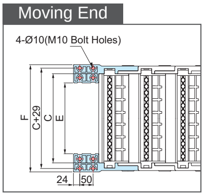




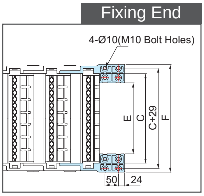
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
ST120E	192 242 292 342	108	150 200 250 300	76	5.79 6.43 7.07 7.71

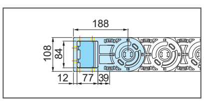
Free End Bracket (FEB)

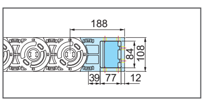
Moving End



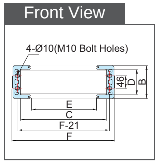
Fixing End





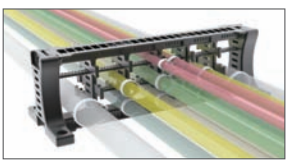


Front View



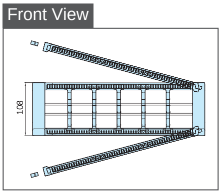
Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M.EB Bolt hole width	Hole Type
ST120E	200 250 300 350	108	150 200 250 300	76	90 140 190 240	M10 Bolt Holes

System Tie Wrap (STW)

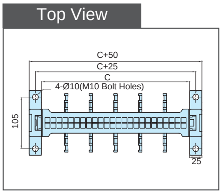


It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according to its application environment.

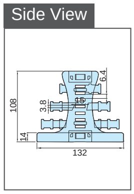
Front View



Top View



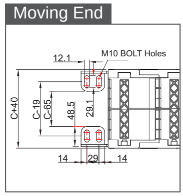
Side View



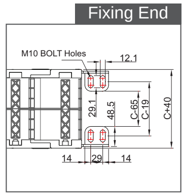
Chain Type	Ordering No.	C Frame	Hole Type
ST120E	S-TW.EB075.150 S-TW.EB075.200 S-TW.EB075.250 S-TW.EB075.300	150 200 250 300	M10 Bolt Holes

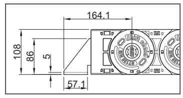
Steel End Bracket (SEB)

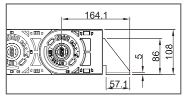
Moving End



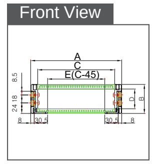
Fixing End



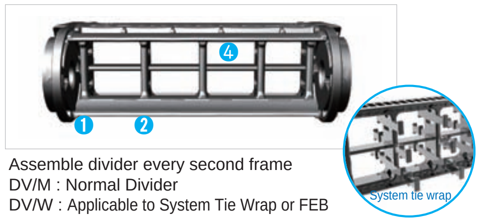




Front View

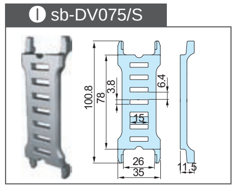


Dividers(DV)

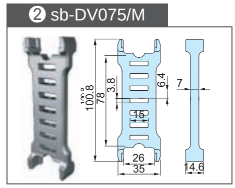


Assemble divider every second frame
DV/M : Normal Divider
DV/W : Applicable to System Tie Wrap or FEB

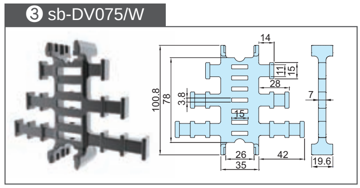
① sb-DV075/S



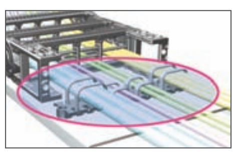
② sb-DV075/M

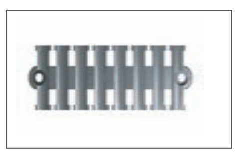


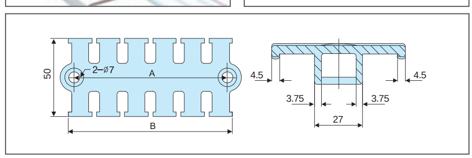
③ sb-DV075/W



Tie Wrap (TW)



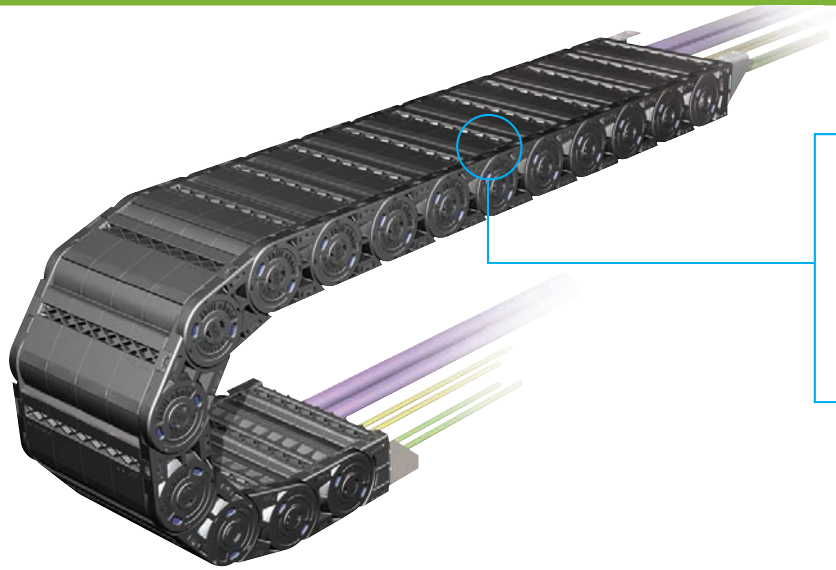


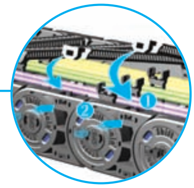


Chain Type	Ordering No.	A	B
ST120E	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

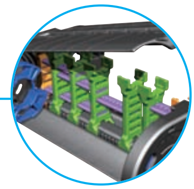
※ Dimensions in mm

ST150E

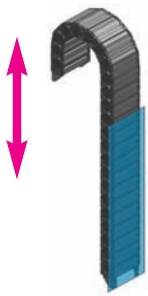




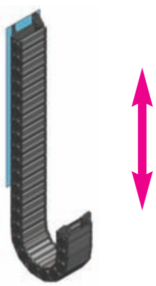
Hinge frame-pin lock type



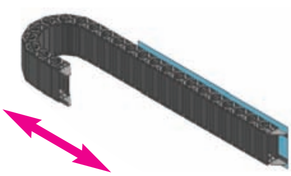
Section composition



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

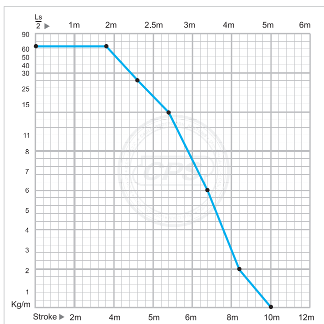
Caculation of the Chain Length

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

Other Length Restrictions

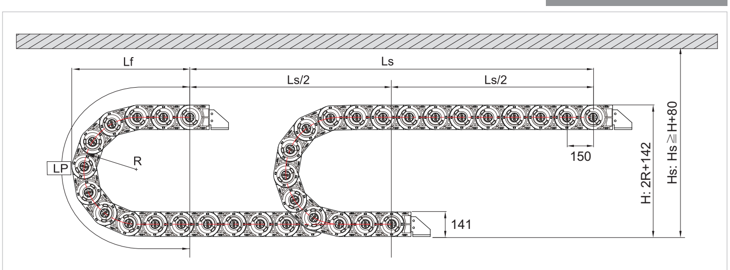
Vertical Standing(Max) = 7.0m
Vertical Hanging(Max) = 150m
Side Mounted Unsupported(Max) = 4.0m

Unsupported Length



Layout of the Chain

Ls: Stroke Hs: Safe Space

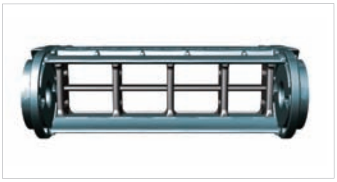


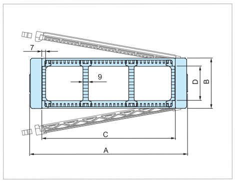
Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
305	1,510	651	752
405	1,807	743	952
505	2,106	835	1,152
605	2,405	928	1,352

※ Dimensions in mm

Shift Chain-Enclosed Type

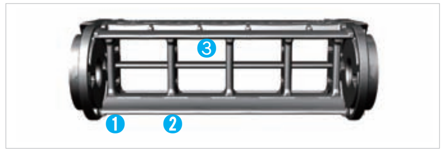
Chain Cross Section





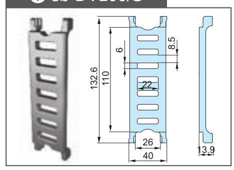
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
ST150E	246 296 346 396 446	141	200 250 300 350 400	110	8.16 8.76 10.50 12.33 14.16

Dividers(DV)

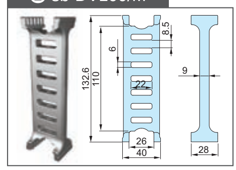


Assemble divider every second frame
DV/M : Normal Divider

1 sb-DV100/S

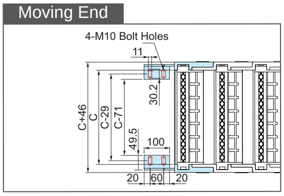


2 sb-DV100/M

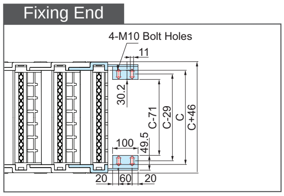


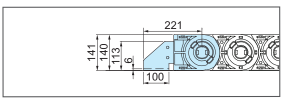
Free End Bracket (FEB)

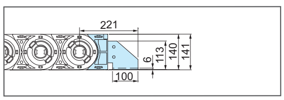
Moving End



Fixing End

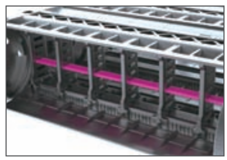


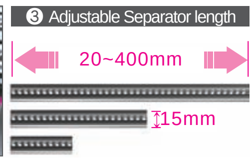




Chain Type	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Hole Type
ST150E	141	200 250 300 350 400	110	M10 Bolt Holes

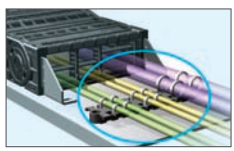
Separators (SP)

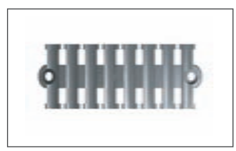


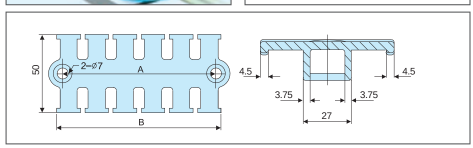


Chain Type	Ordering No.
ST150E	sb-SP/600.Frame

Tie Wrap (TW)

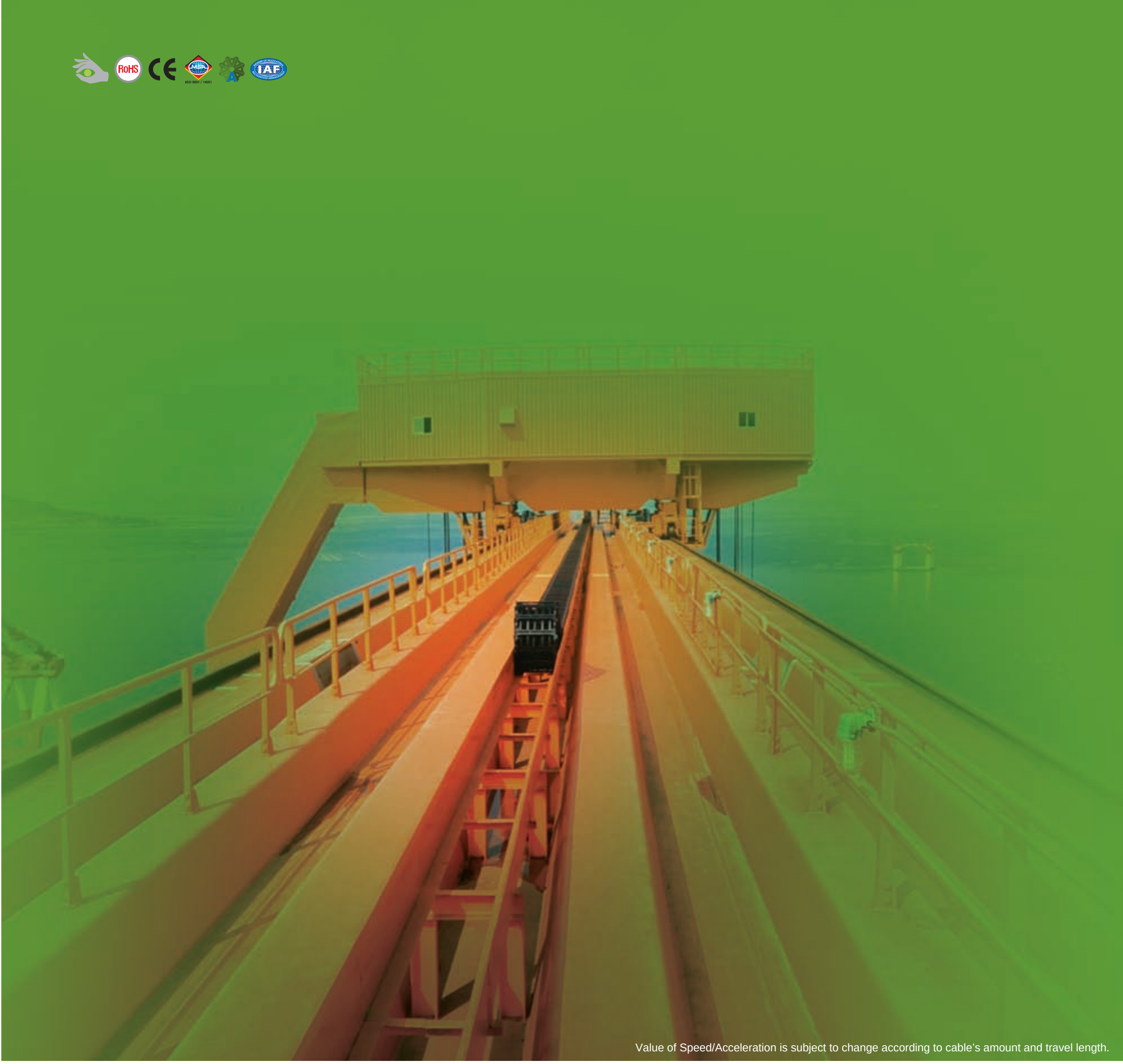






Chain Type	Ordering No.	A	B
ST150E	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

※ Dimensions in mm



Value of Speed/Acceleration is subject to change according to cable's amount and travel length.

Shift Chain®
Skid Type

ST - S
Skid Type

- ST044S

General Information

Material	CPS-Amide(PA6+G.F)
Speed	6m/s
Acceleration	12m/s²
Temperature	-30℃ ~ +130℃
Special production	ESD, UV
Certificate	CE, ATEX(Ex), RoHs2

Calculation Table

Length of Cable Chain	L = ½ X LS + LP
Bending Radius	Multiply 8~10 of the biggest cable
	Multiply 15~20 of the biggest hose

Shift Chain-Skid Type

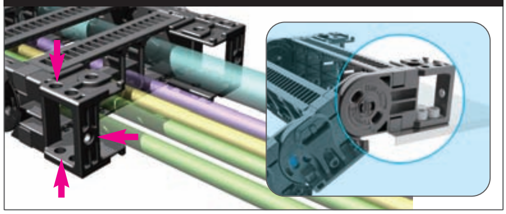
Dimension Table

Shift Chain S Type	Pitch	Bending Radius (R)	Weight kg/m	Speed m/s	Temperature	Size A	Size B	Size C	Size D	Frame type	Section Composition
ST044S	44	70, 90, 120, 150	1.03	6	-30 ~ +130	74	38.5	35	26		
			1.08			89		50			
			1.10			94		55			
			1.17			114		75			
			1.26			139		100			
			1.40			164		125			
			1.52			189		150			
			1.81			214		175			
			1.98			239		200			

Bracket Type

ST044

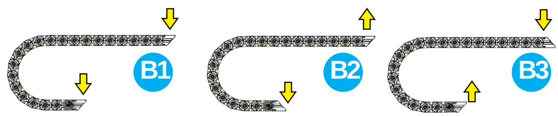
Free End Bracket (FEB)



ST044S

End Bracket (EB)

There are 2 different types of bracket that can be applied according to environment.



Ordering

ST 044S. 100. R120 / F - 1500L : (DV:2)

- Quantity of Divider (Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - FT : Tie Wrap
  - FST : System tie wrap
- Bending radius
- Inside width
- Skid Type (S)
- Shift Chain

Part list of Shift Chain-Skid Type

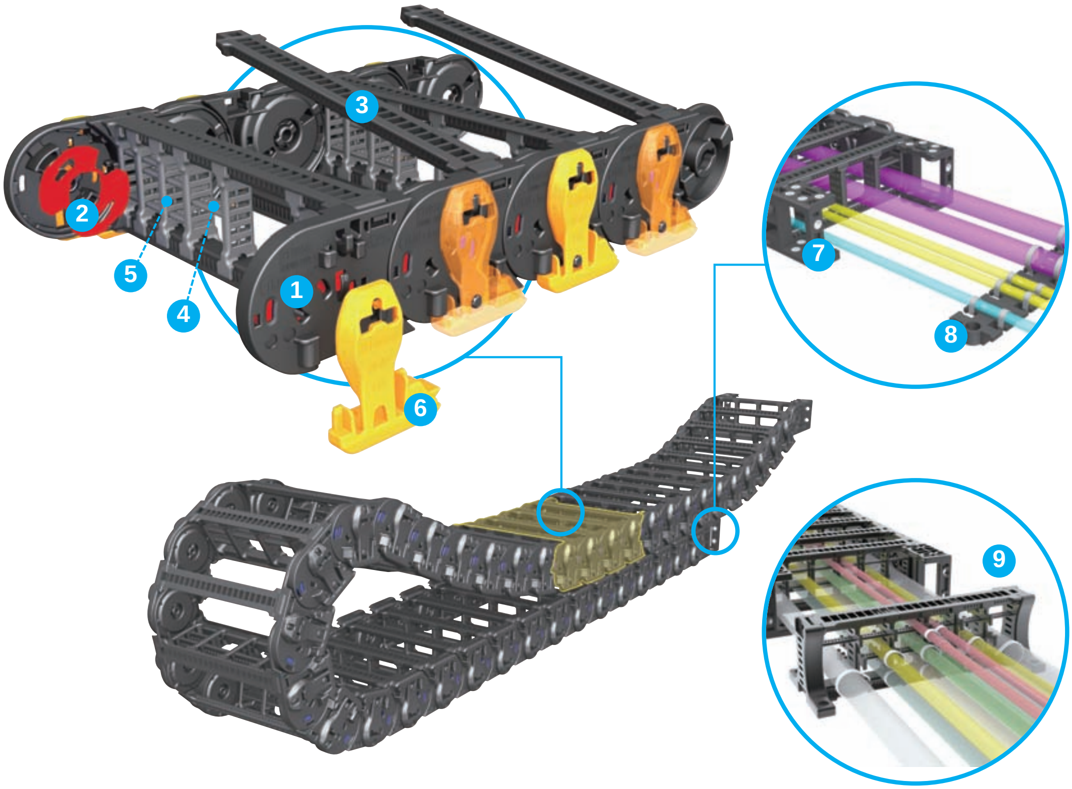
Composition of Shift Chain Skid Type
= Side band(RH/LH) + Frame + Bending Radius Unit + Skid + Free end bracket
M divider(normal divider) should be applied every second frames to make a section composition.

※ Please refer to below part list and description to understand composition of cable chain.

Model	Classification	Part number	Description
ST044S	SIDE BAND	ST-SB044S(LH) ST-SB044S(RH)	Left side band of ST044S Right side band of ST044S
	BENDING RADIUS	ST-BRS044.R70,90,120,150	Bending radius unit for side band
	SKID	ST-SK044S(LH) ST-SK044S(RH)	Skid for long travel(Applied to side band)
	FRAME FRAME(UP)	sb-FR/M.35 sb-FR/M.50 sb-FR/M.55 sb-FR/M.75 sb-FR/M.100 sb-FR/M.125 sb-FR/M.150 sb-FR/M.175 sb-FR/M.200	Frame, 35mm Frame, 50mm Frame, 55mm Frame, 75mm Frame, 100mm Frame, 125mm Frame, 150mm Frame, 175mm Frame, 200mm
	FREE END BRACKET	ST-FEB044S	Free End bracket, End bracket(B1, B2, B3) of ST044S
	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 S-SP/M.125 S-SP/M.150 S-SP/M.175 S-SP/M.200	Separator, 35mm Separator, 50mm Separator, 75mm Separator, 100mm Separator, 125mm Separator, 150mm Separator, 175mm Separator, 200mm
	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

※ Dimensions in mm

Shift Chain-Skid Type



Part of Shift Chain-Skid Type

❶ Side Band (SB)
A unit that connects each side band and between them BR is inserted to strengthen clamping force.

❷ Bending Radius Unit (BR)
A unit that inserted between each side band.
There are 6 supporting points to create durability.

❸ 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.

❹ Separator (SP)
A unit that divides inserted cables vertically to prevent twisting and breaking problem.

❺ Divider (DV-S, M, R, T)
A unit that divides inserted cables horizontally.

❻ Skid
A unit that minimizes friction between upper and lower cable chain.

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

❽ 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.

❾ System Tie Wrap (STW)
System-Tie Wrap has to be assembled on fixing and moving point of bracket and can be assembled wthout 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.

Assembly procedure of Shift Chain Skid-Type

Assembly procedure of Shift chain S-type is as follows. Users must use rubber hammer with careful combination of Divider and Separator.(Disassembly process for repair and replacement are in reverse order)

1

Insert BR Unit into each Side Band. (Side Band is divided into right and left side according to the direction.)

2

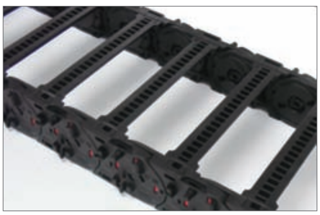
Continue to insert BR Unit into Side Band as you want to make it. Assemble Side Band which is inserted BR Unit as above.

3

Continue to connect each Side Band as long as you want to make it. Connect the Side Band as many as you need.

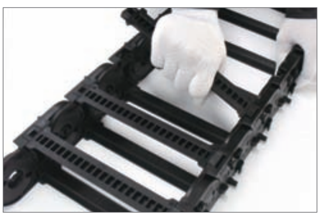
4

Connect right and left link with specified frame. (Put Hinge Type frame in the hole of Side Band)



5

Insert frame pin onto connected each Frame and side of Side Band to be made tightly. (To devide inner room, insert divider which is connected with separator.

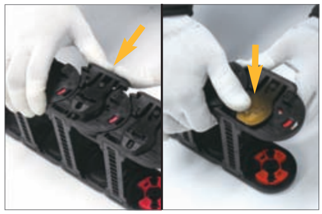


6

Assemble opposite frame as same procedure.

7

Insert Skid to the protruding side of Side Band.

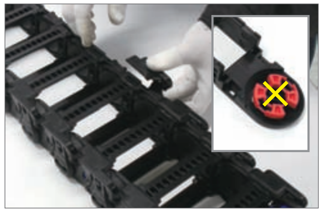


8

When inserting a Skid, push tightly to the home of Side Band until you hear "click"(Skid is divided each direction like right and left.)

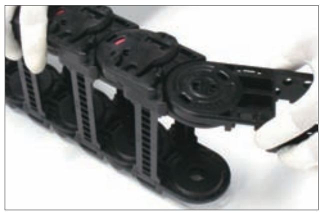
9

Assembly the Skid on the entire connected Side Band as same way.



10

Assembly the Skid on the entire connected opposit side as well. Do not insert a BR Unit to M.FEB. (M.FEB will be making a turn to up and down)



11

Assembly M.FEB to be corrective each direction such as right and left.

12

Assembly F.FEB to be suitable each direction such as right and left. (Do not insert a BR Unit for the Side Band which is connected with F.FEB)

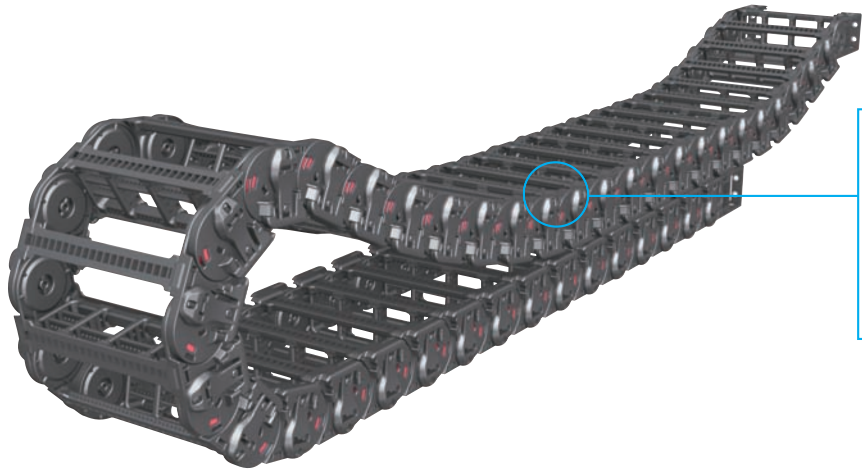
13

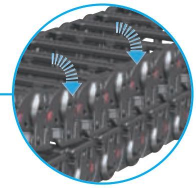
Assembly a specified frame in M.FEB and F.FEB. (Hinge is inserted into RH direction of FEB) Insert Frame pin into connected frame and side of FEB.

14

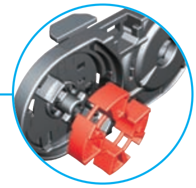
Insert steel washers into FEB according to fixing direction.

ST044S





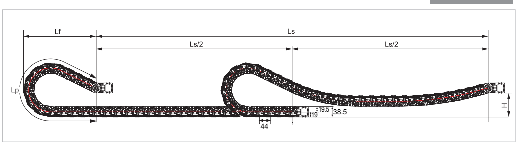
Hinge hook type



Bending Radius Unit

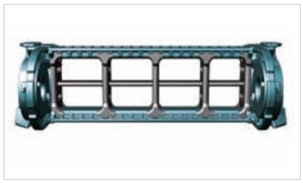
Layout of the Chain

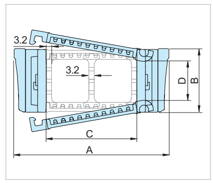
Ls: Stroke



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
70	544	249	110
90	662	289	
120	926	393	
150	1,190	497	

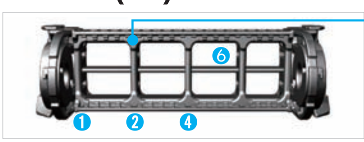
Chain Cross Section

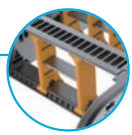


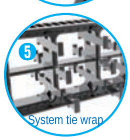


Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
ST044S	74	38.5	35	26	1.03
	89		50		1.08
	94		55		1.10
	114		75		1.17
	139		100		1.26
	164		125		1.40
	189		150		1.52
	214		175		1.81
	239		200		1.98

Dividers(DV)

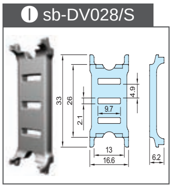




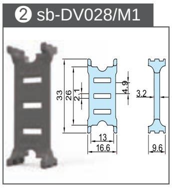


Assemble divider every second frame
DV/T : Applied to Frame 125~200
DV/M : Normal Divider
DV/W : Applicable to System Tie Wrap or FEB

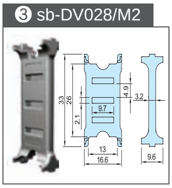
1 sb-DV028/S



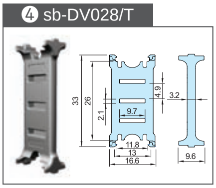
2 sb-DV028/M1



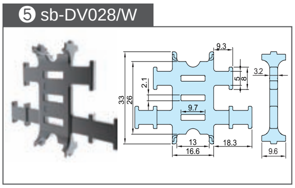
3 sb-DV028/M2



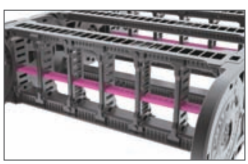
4 sb-DV028/T



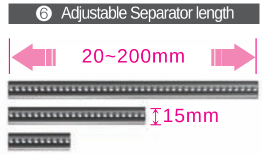
5 sb-DV028/W



Separators (SP)



6 Adjustable Separator length

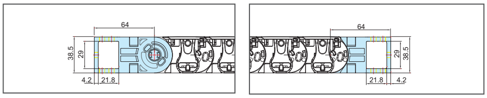


Chain Type	Ordering No.	Frame
ST044S	S-SP/M.35	35
	S-SP/M.50	50
	S-SP/M.55	55
	S-SP/M.75	75
	S-SP/M.100	100
	S-SP/M.125	125
	S-SP/M.150	150
	S-SP/M.175	175
	S-SP/M.200	200

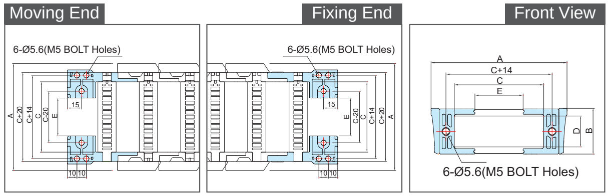
※ Dimensions in mm

Shift Chain-Skid Type

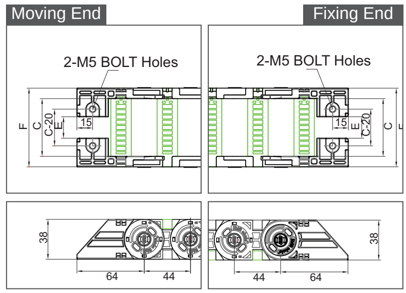
Free End Bracket(FEB)



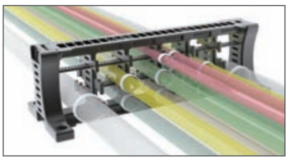
Chain Type	A Width(Outer)	B Height (Outer)	C Frame Width(Inner)	D Height (Inner)	E M.EB Bolt Holes Width	Hole Type
ST044S	74	38.5	35	26	0.4	M5 Bolt Holes
	89		50		15.4	
	94		55		20.4	
	114		75		40.4	
	139		100		65.4	
	164		125		90.4	
	189		150		115.4	
	214		175		140.4	
	239		200		165.4	



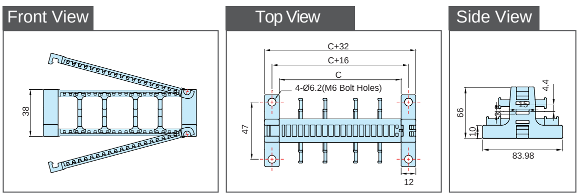
End Bracket(EB)



System Tie Wrap (STW)

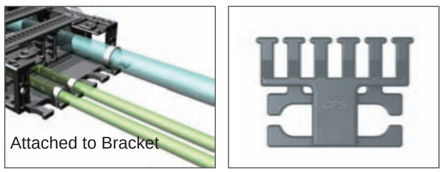


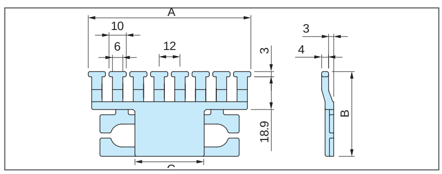
It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.



Chain Type	Ordering No.	C Frame	Hole Type
ST044S	S-TW.EB028.35	35	M6 Bolt Holes
	S-TW.EB028.50	50	
	S-TW.EB028.55	55	
	S-TW.EB028.75	75	
	S-TW.EB028.100	100	
	S-TW.EB028.125	125	
	S-TW.EB028.150	150	
	S-TW.EB028.175	175	
	S-TW.EB028.200	200	

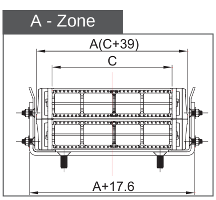
Tie Wrap (TW)

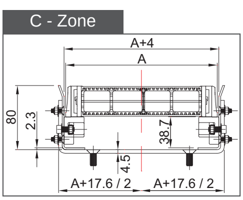


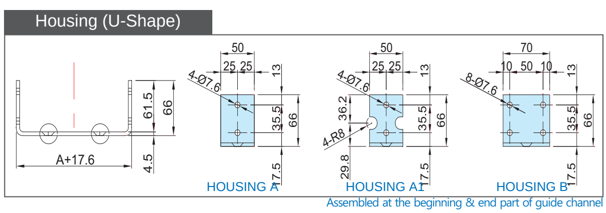


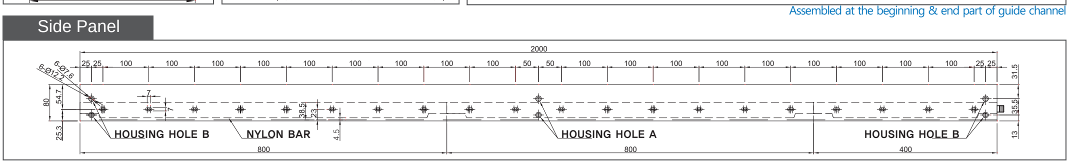
Chain Type	Ordering No.	A	B	C
ST044S	S-TW036/025CR.35	46	35.4	-
	S-TW036/025CR.50	69	48.9	15
	S-TW036/025CR.55	70	48.9	20
	S-TW036/025CR.75	94	48.9	40
	S-TW036/025CR.100	118	48.9	65
	S-TW036/025CR.125	142	48.9	90

Guide Channel









※ Dimensions in mm

Value of Speed/Acceleration is subject to change according to cable's amount and travel length.

Shift Chain®
Enclosed Skid Type

ST - ES
Enclosed Skid Type

- ST044ES
- ST072ES
- ST095ES
- ST120ES

General Information

Material	CPS-Amide (PA6+G.F)
Speed	6㎧
Acceleration	12㎨
Temperature	-30℃ ~ +130℃
Certificate	CE, ATEX(Ex), RoHs2

Calculation Table

Length of Cable Chain	L = ½ X Ls + Lp
Bending Radius	Multiply 8~10 of the biggest cable
	Multiply 15~20 of the biggest hose

Enclosed Skid Type

Dimension Table

Shift Chain ES Type	Pitch	Bending Radius (R)	Weight kg/m	Speed m/s	Temperature ℃	Size A	Size B	Size C	Size D	Frame type	Section-composition
ST044ES	44	70, 90, 120, 150	1.18 1.37 1.53 1.74	6	-30 ~ +130	74 94 114 139	38.5	35 55 75 100	26		
ST 072ES	72	120, 145, 200, 250, 300	2.77 3.01 3.25 3.49 3.73	6	-30 ~ +130	105 130 155 180 205	71.8	50 75 100 125 150	44		
ST095ES	95	150, 200, 230, 280, 400	4.16 4.41 4.65 4.90 5.15	6	-30 ~ +130	162 187 212 237 262	89	100 125 150 175 200	55		
ST120ES	120	200, 250, 300, 350, 400, 500	6.28 6.92 7.56 8.20	6	-30 ~ +130	218 268 318 368	115	150 200 250 290 300	76		

Ordering

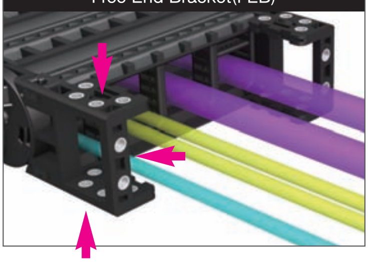
ST 044ES. 100. R120 / F - 1500L : (DV:2)

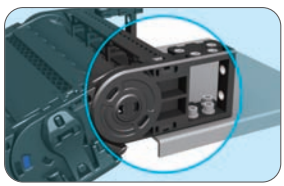
- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - FT : Tie Wrap
  - FST : System Tie Wrap
- Bending radius
- Inside width
- Enclosed Skid Type (ES)
- Shift Chain

Bracket Type

ST044

Free End Bracket(FEB)





▶ BR should not be inserted in the joint of side band and Free End Bracket of moving bracket.

▶ Both Enclosed and normal type of frame can be assembled to M.FEB

Application of Shift Chain Enclosed Skid Type

Shift Chain Enclosed Skid Type can be applied to all kinds of machine tools and factory lines.

ST095ES

Application: Steel manufacturing line

Location: Korea

Remark: 20 meters of Stroke

※ Dimensions in mm

Enclosed Skid Type

Part of Shift Chain Enclosed Skid Type

Composition of Shift Chain Enclosed Skid Type
= Side band(RH/LH) + Frame(FRU/FRD) + 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
ST044ES	SIDE BAND	ST-SB044S(LH) ST-SB044S(RH)	Left side band of ST044S Right side band of ST044S
	BENDING RADIUS	ST-BRS044.R70, 90, 120, 150	Bending radius unit for side band
	SKID	ST-SK044S(LH) ST-SK044S(RH)	Skid for long travel(Applied to side band)
	FRAME(DOWN) FRAME(UP) FRAME(DOWN-FIXING END) FRAME(UP-FIXING END) FRAME(DOWN-MOVING END) FRAME(UP-MOVING END)	ST-FRD044.35 ST-FRU044.35 ST-FRD044.55 ST-FRU044.55 ST-FRD044.75 ST-FRU044.75 ST-FRD044.100 ST-FRU044.100 ST-FRDFE044.35,55,75,100 ST-FRUFE044.35,55,75,100 ST-FRDME044.35,55,75,100 ST-FRUME044.35,55,75,100	Inside frame, 35mm Outside frame, 35mm Inside frame, 55mm Outside frame, 55mm Inside frame, 75mm Outside frame, 75mm Inside frame, 100mm Outside frame, 100mm 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	Free 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

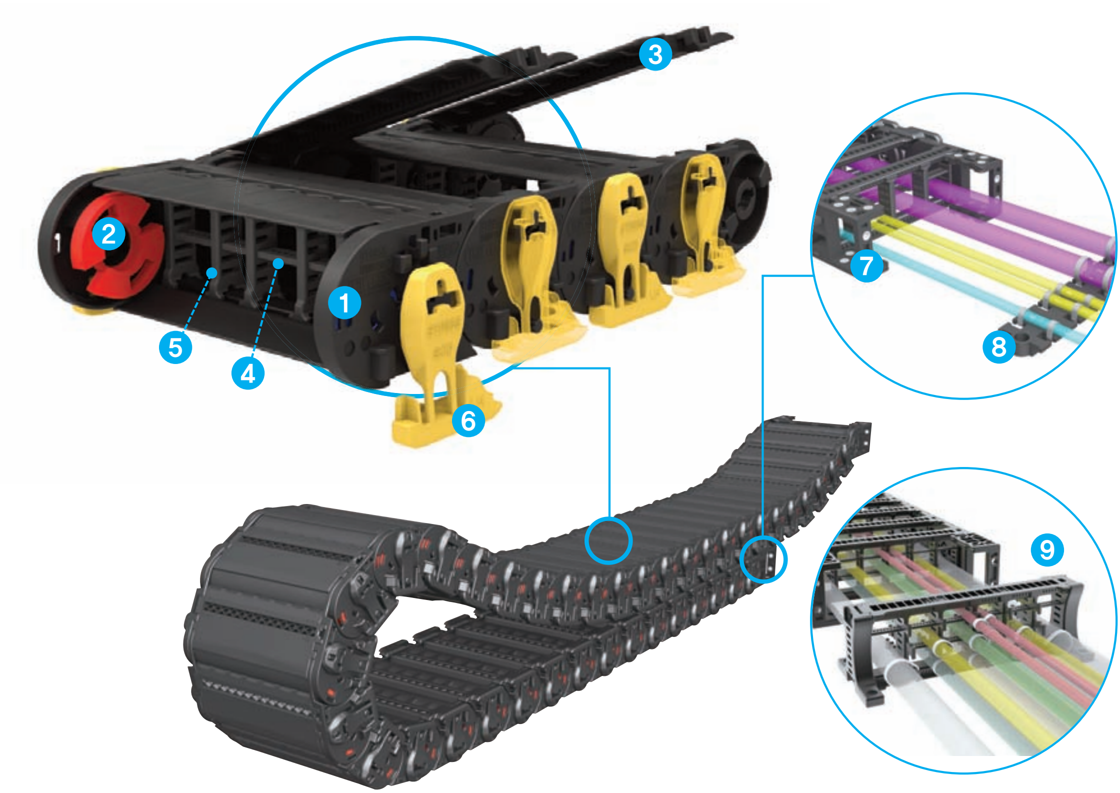
Model	Classification	Part number	Description
ST072ES	SIDE BAND	ST-SB072S(LH) ST-SB072S(RH)	Left side band of ST072S Right side band of ST072S
	BENDING RADIUS	ST-BRS072. R120,145,200,250,300	Bending radius unit for side band
	SKID	ST-SK072S(LH) ST-SK072S(RH)	Skid for long travel(Applied to side band)
	FRAME PIN	S-FP/S1	Frame pin
	FRAME(DOWN) FRAME(UP) FRAME(DOWN-FIXING END) FRAME(UP-FIXING END) FRAME(DOWN-MOVING END) FRAME(UP-MOVING END)	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 ST-FRDFE072(50,75,100,125,150) ST-FRUFE072(50,75,100,125,150) ST-FRDME072(50,75,100,125,150) ST-FRUME072(50,75,100,125,150)	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 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-FEB072 sb-FEB/WH045	Free 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.Frame 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

Enclosed Skid Type

Model	Classification	Part number	Description
ST095ES	SIDE BAND	ST-SB095S(LH) ST-SB095S(RH)	Left side band of ST095S Right side band of ST095S
	BENDING RADIUS	ST-BR095.R150,200,230,280,400	Bending radius unit for side band
	SKID	ST-SK095S(LH) ST-SK095S(RH)	Skid for long travel(Applied to side band)
	FRAME PIN	S-FP/S1	Frame pin
	FRAME(DOWN) FRAME(UP) FRAME(DOWN-FIXING END) FRAME(UP-FIXING END) FRAME(DOWN-MOVING END) FRAME(UP-MOVING END)	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 ST-FRDFE095(100,125,150,175,200) ST-FRUFE095(100,125,150,175,200) ST-FRDME095(100,125,150,175,200) ST-FRUME095(100,125,150,175,200)	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 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-FEB095 sb-FEB/WH060	Free 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.Frame 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	4Description
ST120ES	SIDE BAND	ST-SB120S(LH) ST-SB120S(RH)	Left side band of ST120E Right side band of ST120E
	BENDING RADIUS	ST-BR120.R180,200,250,300,350,400,500	Bending radius unit for side band
	SKID	ST-SK120S(LH) ST-SK120S(RH)	Skid for long travel(Applied to side band)
	FRAME PIN	S-FP/S2	Frame pin
	FRAME(DOWN) FRAME(UP) FRAME(DOWN-FIXING END) FRAME(UP-FIXING END) FRAME(DOWN-MOVING END) FRAME(UP-MOVING END)	ST-FRD120.150 ST-FRU120.150 ST-FRD120.200 ST-FRU120.200 ST-FRD120.250 ST-FRU120.250 ST-FRD120.300 ST-FRU120.300 ST-FRDFE120(150,200,250,300) ST-FRUFE120(150,200,250,300) ST-FRDME120(150,200,250,300) ST-FRUME120(150,200,250,300)	Inside frame, 150mm Outside frame, 150mm Inside frame, 200mm Outside frame, 200mm Inside frame, 250mm Outside frame, 250mm Inside frame, 300mm Outside frame, 300mm 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	Free 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.Frame 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

Enclosed Skid Type



Part of Shift Chain-Enclosed Skid Type

❶ Side Band (SB)
A part that connects upper and lower frame. There are LH and RH type.

❷ Bending Radius Unit (BR)
A unit that inserted between each side band.
There are 6 supporting points to create durability.

❸ FRU, FRD [Applied to Enclosed Type]
FRU, FRD are frames that are assembled to upper and lower of cable chain.

❹ Separator (SP)
A unit that divides inserted cables vertically to prevent twisting and breaking problem.

❺ Divider (DV-S, M, R, T)
A unit that divides inserted cables horizontally.

❻ Skid
A unit that minimizes friction between upper and lower cable chain.

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

❽ 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.

❾ System Tie Wrap(STW)
System-Tie Wrap has to be assembled on fixing and moving point of bracket and can be assembled wthout 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.

Assembly procedure of Shift Chain Enclosed Skid Type

Assembly procedure of Shift chain ES-type is as follows. Users must use rubber hammer with careful combination of Divider and Separator. (Disassembly process for repair and replacement is in reverse order)

1

Insert BR Unit into each Side Band.
(Side Band is divided into right and left side according to the direction.)

2

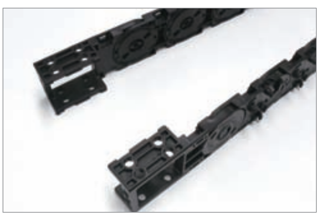
Continue to insert BR Unit into Side Band as you want to make it. Assemble Side Band which is inserted BR Unit as above.

3

Continue to connect each Side Band as long as you want to make it. Connect the Side Band as many as you need.

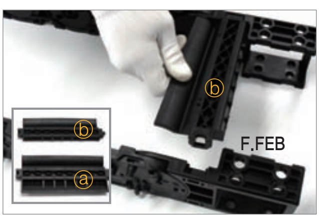
4

Assemble the F.FEB according to the direction of right and left side.
-Do not insert the BR Unit to Side Band connected to F.FEB (Side of F.FEB is not enclosed)



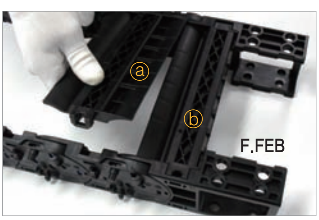
5

Do not insert a BR to M.FEB. (M.FEB will be making a turn to up and down) Assemble the M.FEB according to the direction of right and left side. (Side of M.FEB is not enclosed)



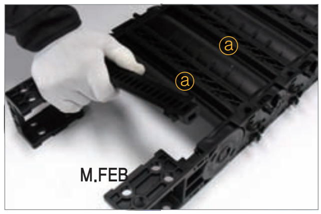
6

Insert one ⓑ Shaped-FRD into F.FEB.
[ⓐ: Normal FRD ⓑ: Built-up only for F.FEB]
-Find one ⓑ shaped-FRD and insert it with the hinge facing RH direction, as above.



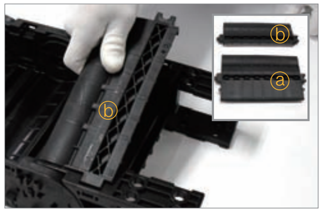
7

Continue to insert the FRD(ⓐ -Normal FRD)with the hinge facing RH direction,
-Assemble the from F.FEB to M.FEB in order.



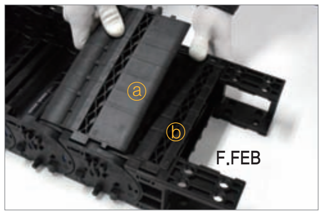
8

Insert the frame as many as you need and insert them one by one with the hinge facing RH direction, as above.
(M.FEB is not turned to up and down when FRD assembling)



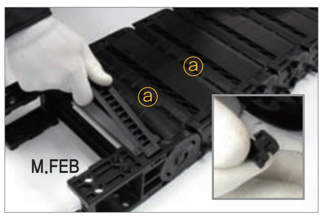
9

Insert the ⓑ shaped-FRD inserted to F.FEB and insert it with the hinge facing RH direction, as above. (ⓐ: Normal FRD ⓑ: Built-up only for F.FEB) Insert the divider with separator to divide the inside of chain.



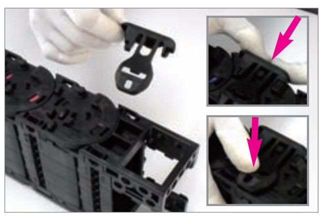
10

Continue to insert the FRU(ⓐ: Normal FRU)with the hinge facing RH direction,
-Assemble the from F.FEB to M.FEB in order.



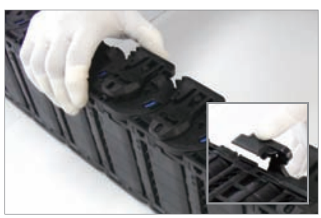
11

Insert ⓐNormal FRU as many as you need and insert them one by one with the hinge facing RH direction, as above. Insert Frame-pin into the hole which is seen where the end of FRU and Side Band meet. (M.FEB is not turning to up and down) when FRU assembling) Check that FRU and FRD are assembled correctly.



12

Insert Skid into mounted Side Band.
Insert Skid into groove of Side Band until you hear the"click".
(Skid is also divided into LH and RH)



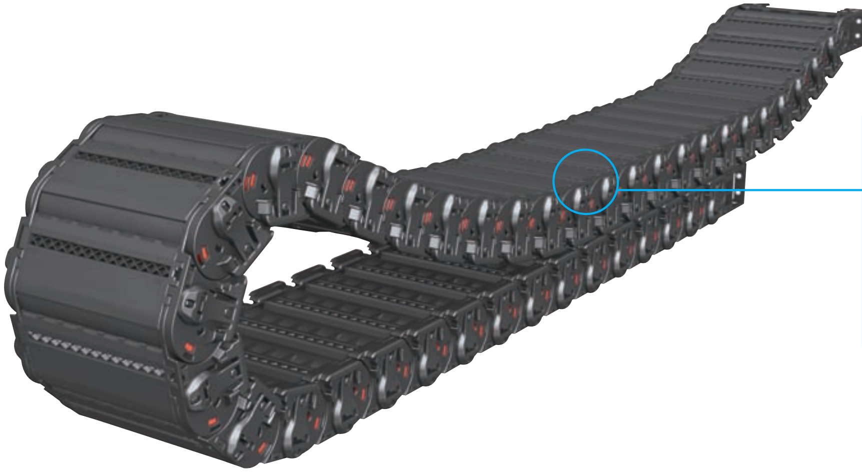
13

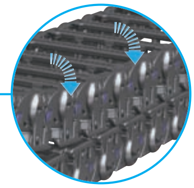
Insert the Skid to all Side band in same way. Insert the Skid to opposite side of each Side Band in the same way.

14

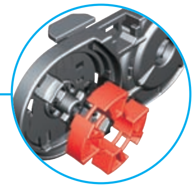
Insert steel washers into M.FEB and F.FEB

ST044ES





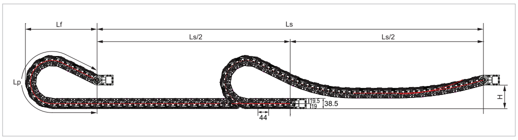
Hinge hook type



Bending Radius Unit

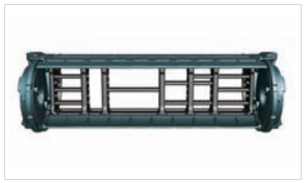
Layout of the Chain

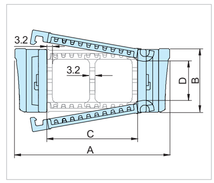
Ls: Stroke



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
70 90 120 150	544 662 926 1,190	249 289 393 497	110

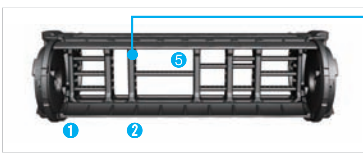
Chain Cross Section

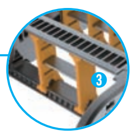


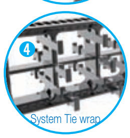


Chain Type	A Width(Outer	B Height(Outer	C Frame/Width(Inner)	D Height(Inner)	Weight kg/m
ST044ES	74 94 114 139	38.5	35 55 75 100	26	1.18 1.37 1.53 1.74

Dividers(DV)

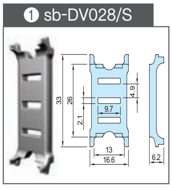




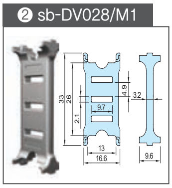


Assemble divider every second frame
DV/M : Normal Divider
DV/W : Applicable to System Tie Wrap or FEB

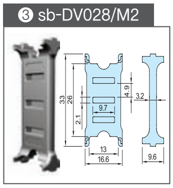
① sb-DV028/S



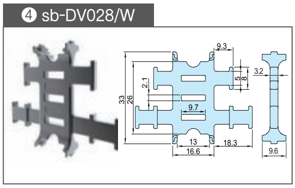
② sb-DV028/M1



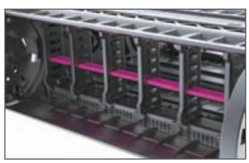
③ sb-DV028/M2



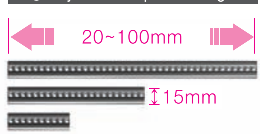
④ sb-DV028/W



Separators(SP)



⑤ Adjustable Separator length



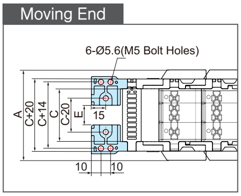
Chain Type	Ordering NO.	Frame
ST044ES	S-SP/M.35 S-SP/M.55 S-SP/M.75 S-SP/M.100	35 55 75 100

※ Dimensions in mm

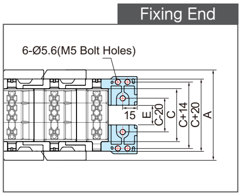
Enclosed Skid Type Shift Chain

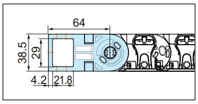
Free End Bracket(FEB)

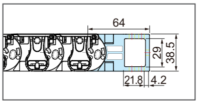
Moving End



Fixing End

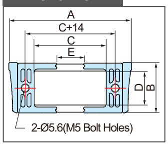




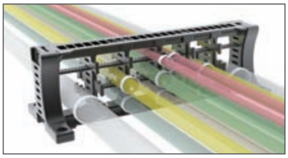


Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Inner Height	E M.EB Bolt Holes Width	Hole Type
ST044ES	74 94 114 139	38.5	35 55 75 100	26	0.4 20.4 40.4 65.4	M5 Bolt Holes

Front View

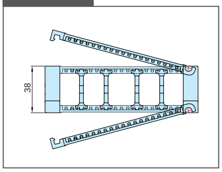


System Tie Wrap(STW)

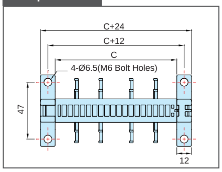


It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.

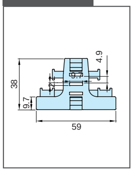
Front View



Top View

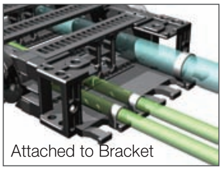


Side View

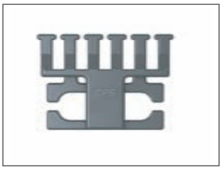


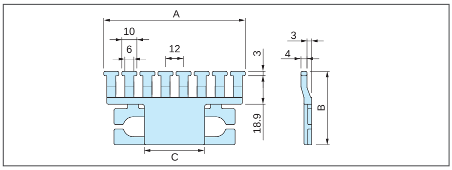
Chain Type	Ordering NO.	C Frame	Hole Type
ST044ES	S-TW.EB028.35 S-TW.EB028.55 S-TW.EB028.75 S-TW.EB028.100	35 55 75 100	M6 Bolt Holes

Tie Wrap(TW)



Attached to Bracket

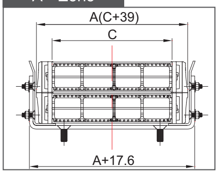




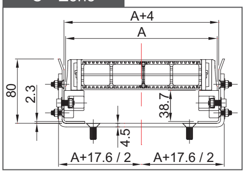
Chain Type	Ordering NO.	A	B	C
ST044ES	S-TW036/025CR.35 S-TW036/025CR.55 S-TW036/025CR.75 S-TW036/025CR.100	46 70 94 118	35.4 48.9 48.9 48.9	- 20 40 65

Guide Channel

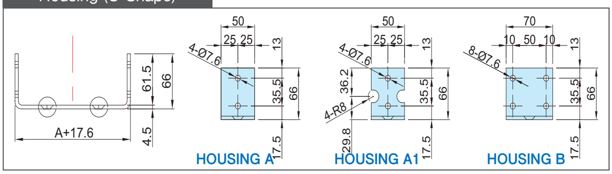
A - Zone



C - Zone

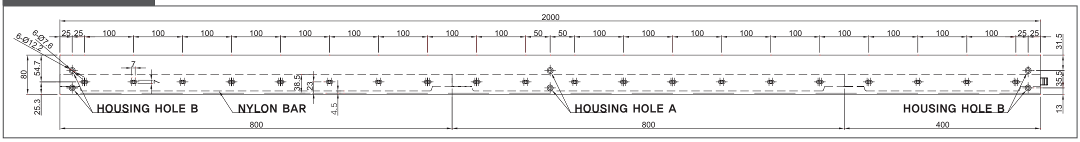


Housing (U-Shape)



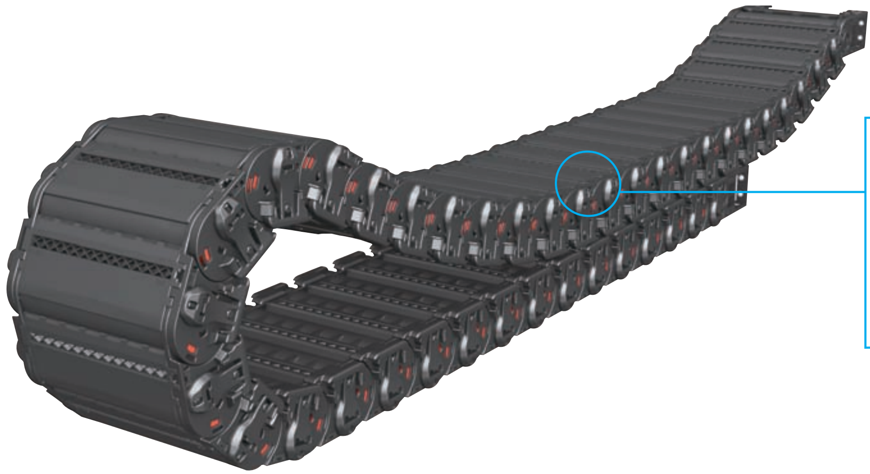
Assembled at the beginning & end part of guide channel

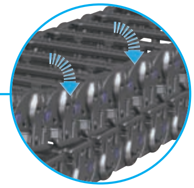
Side Panel



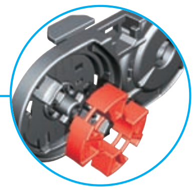
※ Dimensions in mm

ST072ES





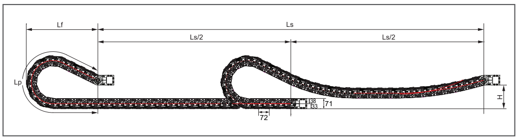
Hinge frame-pin plock type



Bending Radius Unit

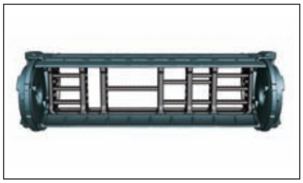
Layout of the Chain

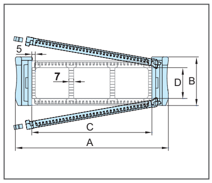
Ls: Stroke



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
120 145 200 250 300	917 1,063 1,400 1,840 2,280	420 470 580 752 924	180

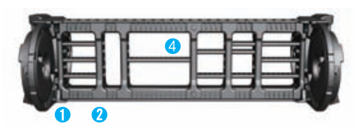
Chain Cross Section

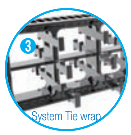




Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	Weight kg/m
ST072ES	105 130 155 180 205	71.8	50 75 100 125 150	44	2.77 3.01 3.25 3.49 3.73

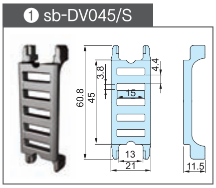
Dividers(DV)



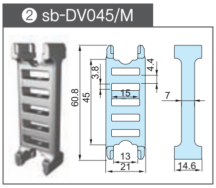


Assemble divider every second frame
DV/M : Normal Divider
DV/W : Applicable to System Tie Wrap or FEB

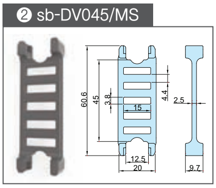
❶ sb-DV045/S



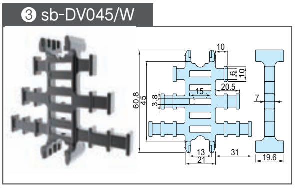
❷ sb-DV045/M



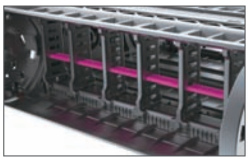
❷ sb-DV045/MS



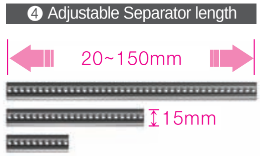
❸ sb-DV045/W



Separators(SP)



❹ Adjustable Separator length



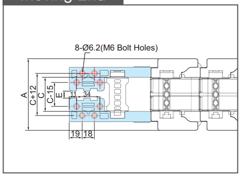
Chain Type	Ordering NO.
ST072ES	sb-SP/400.Frame

※ Dimensions in mm

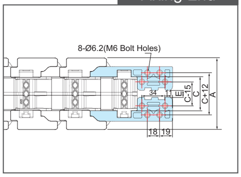
Enclosed Skid Type Shift Chain

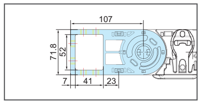
Free End Bracket(FEB)

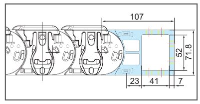
Moving End



Fixing End

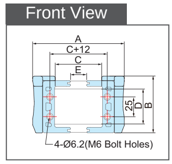




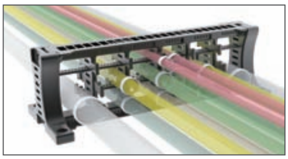


Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	E M.EB Bolt Holes Width	Hole Type
ST072ES	105 130 155 180 205	71.8	50 75 100 125 150	44	10 35 60 85 110	M6 Bolt Holes

Front View

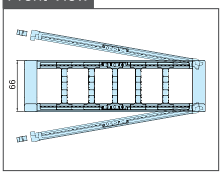


System Tie Wrap(STW)

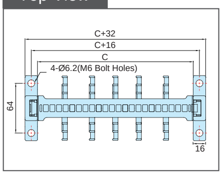


It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.

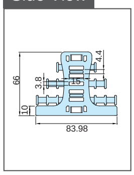
Front View



Top View

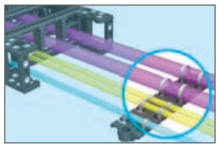


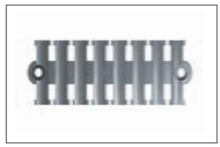
Side View

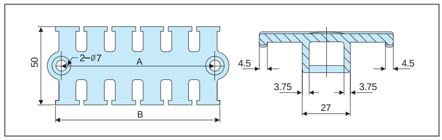


Chain Type	Ordering NO.	C Frame	Hole Type
ST072ES	S-TW.EB045.50 S-TW.EB045.75 S-TW.EB045.100 S-TW.EB045.125 S-TW.EB045.150	50 75 100 125 150	M6 Bolt Holes

Tie Wrap(TW)



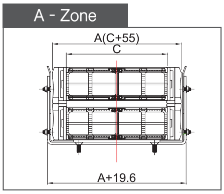




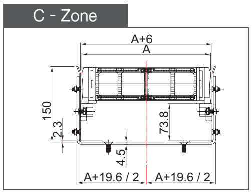
Chain Type	Ordering NO.	A	B
ST072ES	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

Guide Channel

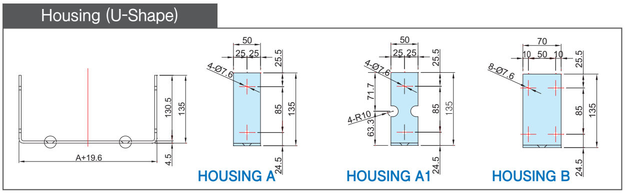
A - Zone



C - Zone

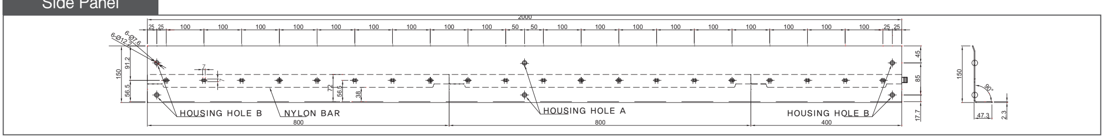


Housing (U-Shape)



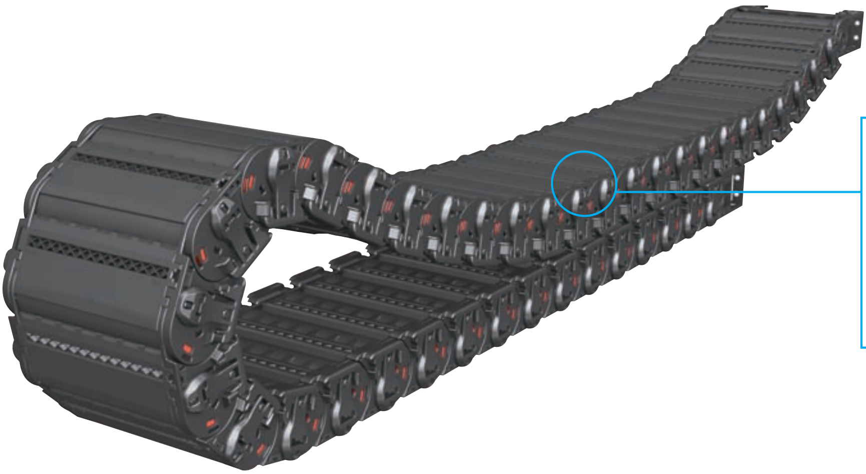
Assembled at the beginning & end part of guide channel

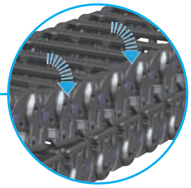
Side Panel



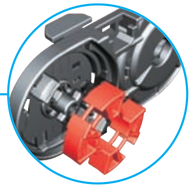
※ Dimensions in mm

ST095ES





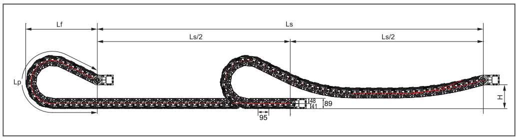
Hinge frame-pin plock type



Bending Radius Unit

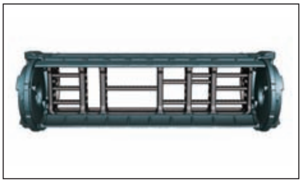
Layout of the Chain

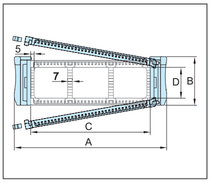
Ls: Stroke



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
150	1,178	534	210
200	1,479	634	
230	1,666	694	
280	2,146	889	
400	3,232	1,319	

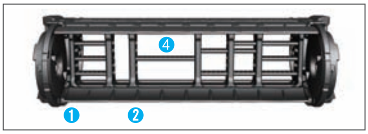
Chain Cross Section

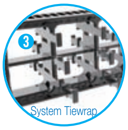




Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	Weight kg/m
ST095ES	162	89	100	55	4.16
	187		125		4.41
	212		150		4.65
	237		175		4.90
	262		200		5.15

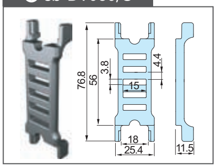
Dividers(DV)



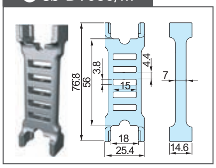


Assemble divider every second frame
DV/M : Normal Divider
DV/W : Applicable to System Tie Wrap or FEB

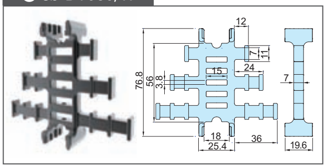
① sb-DV060/S



② sb-DV060/M

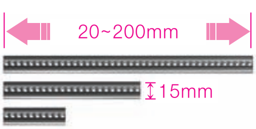


③ sb-DV060/W



Separators(SP)

④ Adjustable Separator length



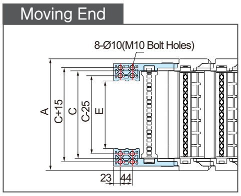
Chain Type	Ordering NO.
ST095ES	sb-SP/400.Frame

※ Dimensions in mm

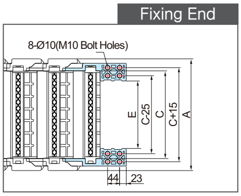
Enclosed Skid Type Shift Chain

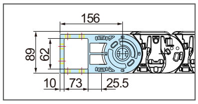
Free End Bracket(FEB)

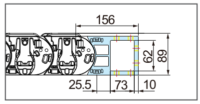
Moving End



Fixing End

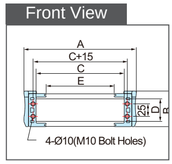




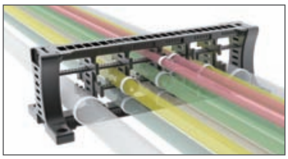


Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	E M.EB Bolt Holes Width	Hole Type
ST095ES	162 187 212 237 262	89	100 125 150 175 200	55	49 74 99 124 149	M10 Bolt Holes

Front View

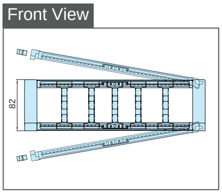


System Tie Wrap(STW)

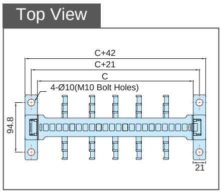


It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.

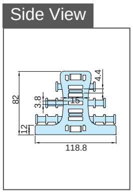
Front View



Top View

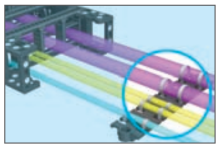


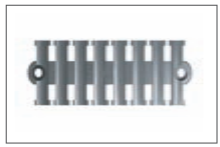
Side View

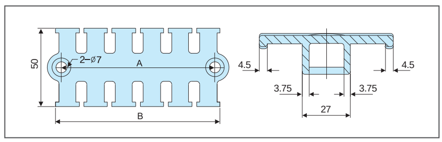


Chain Type	Ordering NO.	C Frame	Hole Type
ST095ES	S-TW.EB060.100 S-TW.EB060.125 S-TW.EB060.150 S-TW.EB060.175 S-TW.EB060.200	100 125 150 175 200	M10 Bolt Holes

Tie Wrap(TW)



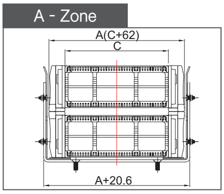




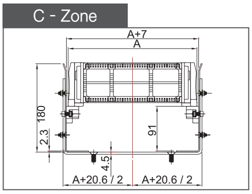
Chain Type	Ordering NO.	A	B
ST095ES	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

Guide Channel

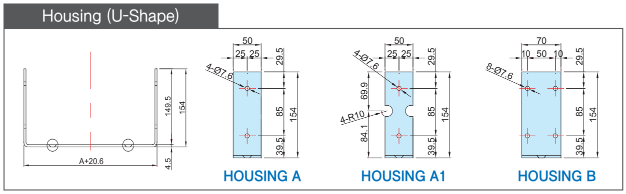
A - Zone



C - Zone

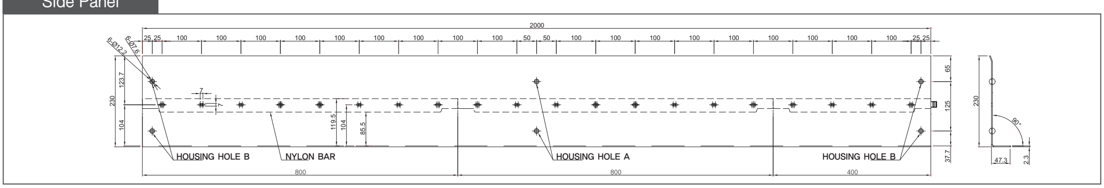


Housing (U-Shape)



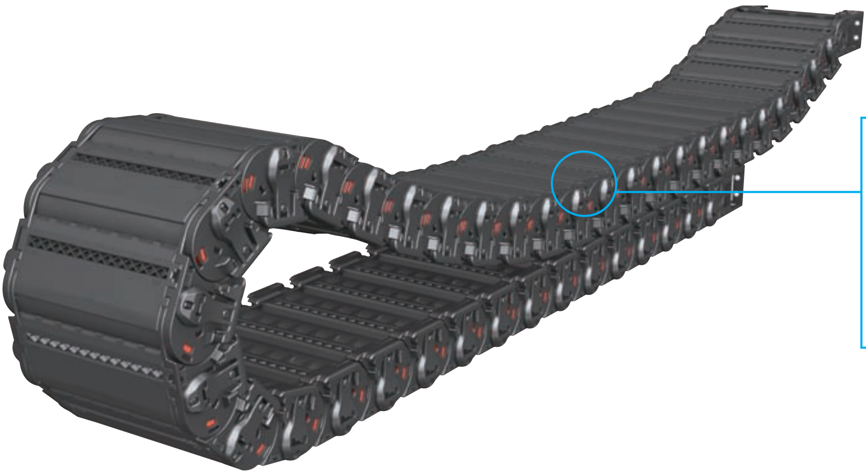
Assembled at the beginning & end part of guide channel

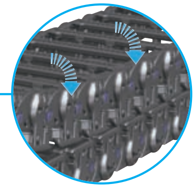
Side Panel



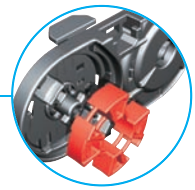
※ Dimensions in mm

ST120ES





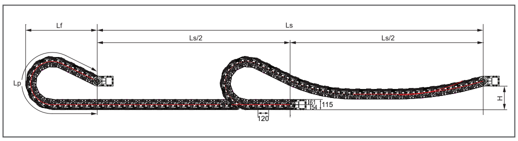
Hinge frame-pin plock type



Bending Radius Unit

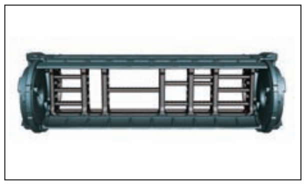
Layout of the Chain

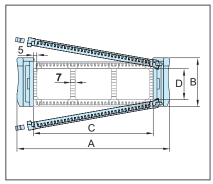
Ls: Stroke



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
200	1,559	694	260
250	1,864	794	
300	2,178	894	
350	2,701	1,114	
400	3,225	1,334	
500	4,062	1,654	

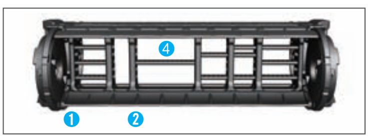
Chain Cross Section

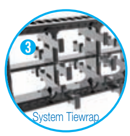




Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	Weight kg/m
ST120ES	218	115	150	76	6.28
	268		200		6.92
	318		250		7.56
	368		300		8.20

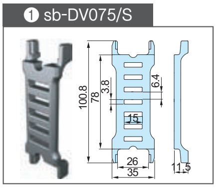
Dividers(DV)



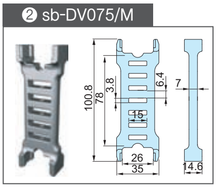


Assemble divider every second frame
DV/M : Normal Divider
DV/W : Applicable to System Tie Wrap or FEB

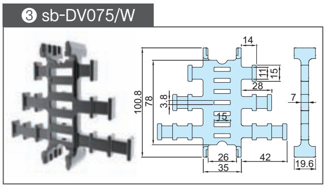
❶ sb-DV075/S



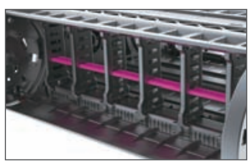
❷ sb-DV075/M



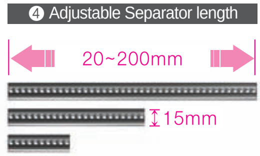
❸ sb-DV075/W



Separators(SP)



④ Adjustable Separator length



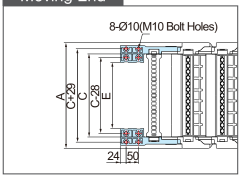
Chain Type	Ordering NO.
ST120ES	sb-SP/400.Frame

※ Dimensions in mm

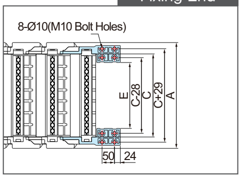
Enclosed Skid Type Shift Chain

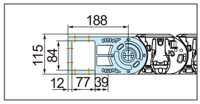
Free End Bracket(FEB)

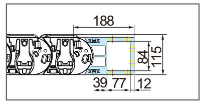
Moving End



Fixing End

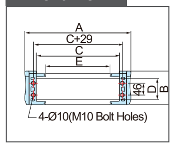




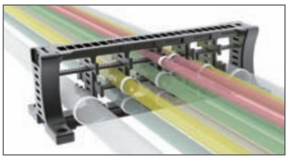


Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	E M,EB Bolt Holes Width	Hole Type
ST120ES	218 268 318 368	115	150 200 250 300	76	90 140 190 240	M10 Bolt Holes

Front View

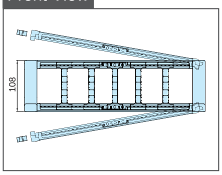


System Tie Wrap(STW)

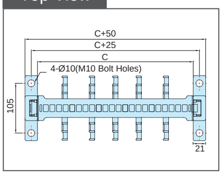


It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.

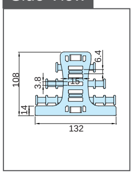
Front View



Top View

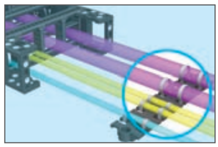


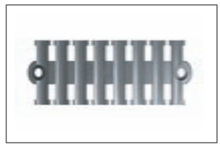
Side View

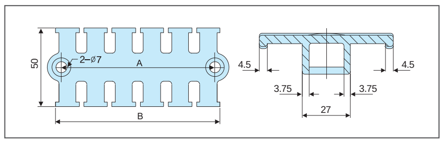


Chain Type	Ordering NO.	C Frame	Hole Type
ST120ES	S-TW.EB075.150 S-TW.EB075.200 S-TW.EB075.250 S-TW.EB075.300	150 200 250 300	M10 Bolt Holes

Tie Wrap(TW)



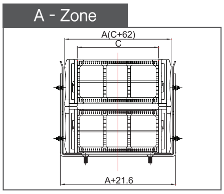




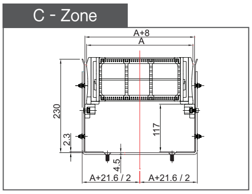
Chain Type	Ordering NO.	A	B
ST120ES	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

Guide Channel

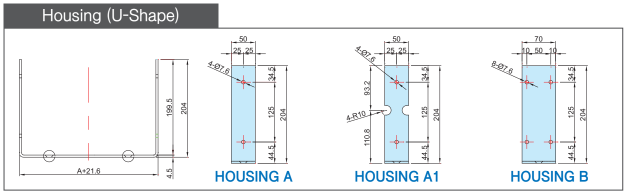
A - Zone



C - Zone

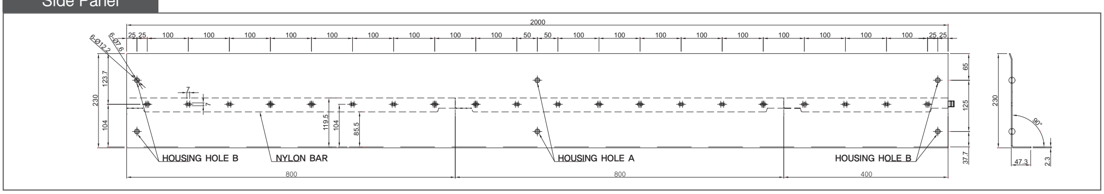


Housing (U-Shape)

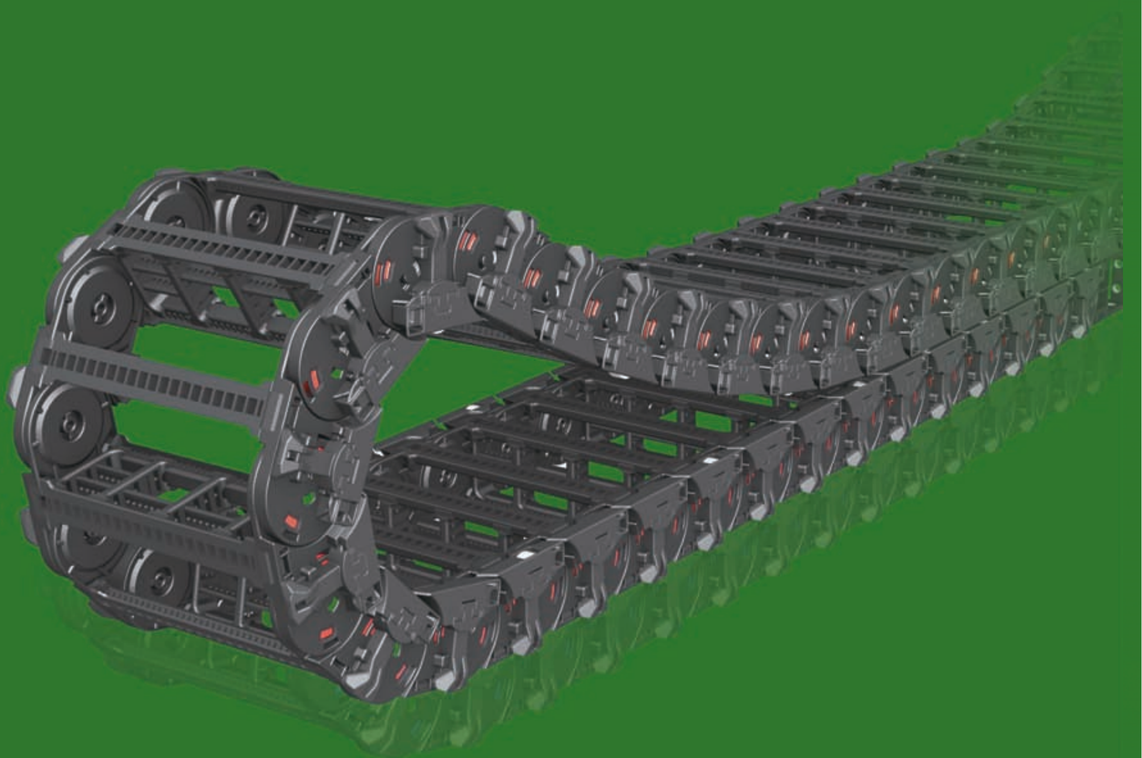


Assembled at the beginning & end part of guide channel

Side Panel



※ Dimensions in mm



Shift Chain®
Roller Skid Type

ST - RS
Roller skid type

- ST044RS
- ST072RS
- ST095RS
- ST120RS
- ST150RS

Value of Speed/Acceleration is subject to change according to cable's amount and travel length.

General Information

Material	CPS-Amide (PA6+G.F)
Speed	6㎧
Acceleration	12㎨
Temperature	-30℃ ~ +130℃
Certificate	CE, ATEX(Ex), RoHs2

Calculation Table

Length of Cable Chain	L = ½ X Ls + Lp
Bending Radius	Multiply 8~10 of the biggest cable
	Multiply 15~20 of the biggest hose

Roller Skid Type

Dimension Table

Shift Chain Roller Skid Type	Pitch	Bending Radius (R)	Weight kg/m	Speed m/s	Temperature ℃	Size A	Size B	Size C	Size D	Frame type	Section-composition
ST044RS	44	70, 90, 120, 150	1.09 1.15 1.17 1.24 1.33 1.47 1.59 1.88 2.05	6	-30 ~ +130	73 88 93 113 138 163 188 213 238	40.5	35 50 55 75 100 125 150 175 200	26		
ST072RS	72	100, 120, 145, 200, 250, 300	2.59 2.67 2.77 2.91 3.02 3.05 3.12 3.17 3.42 3.59 3.91 3.99 4.34	6	-30 ~ +130	104 129 154 179 194 204 219 229 244 254 294 304 354	69	50 75 100 125 140 150 165 175 190 200 240 250 300	45		
ST095RS	95	135, 150, 200, 230, 280, 400	3.48 3.55 3.73 3.84 3.96 4.07 4.14 4.36 4.41 4.67 5.03 5.43	6	-30 ~ +130	143 168 193 218 243 258 268 308 318 368 418 468	90	75 100 125 150 175 190 200 240 250 300 350 400	56		
ST120RS	120	180, 200, 250, 300, 350, 400, 500	4.75 4.87 4.96 5.02 5.10 5.28 5.52 5.76 5.82 6.16 6.25 6.67 6.96 7.42 7.65 8.49 8.66	6	-30 ~ +130	143 168 183 193 218 243 268 308 318 358 368 418 468 518 568 618 668	117	75 100 115 125 150 175 200 240 250 290 300 350 400 450 500 550 600	78		
ST150RS	150	305, 405, 505, 605	7.87 7.98 8.06 8.11 8.18 8.34 8.55 8.76 8.81 9.11 9.18 9.55 9.98 10.21 10.41 11.14 11.29	6	-30 ~ +130	162 187 202 212 237 262 287 327 337 377 387 437 487 537 587 637 687	145	75 100 115 125 150 175 200 240 250 290 300 350 400 450 500 550 600	110		

Ordering

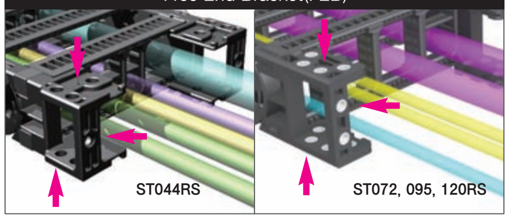
ST 044RS. 100. R120 / F - 1500L : (DV:2)

- Shift Chain
- Roller Skid Type (RS)
- Inside width
- Bending Radius
- Bracket Type
  - F : Free End Bracket
  - FT : Tie Wrap
  - FST : System Tie Wrap
  - B1, B2, B3 : ST150RS
- Length(mm)
- Quantity of Divider(Link)

Bracket Type

ST044, ST072, ST095, ST120

Free End Bracket(FEB)

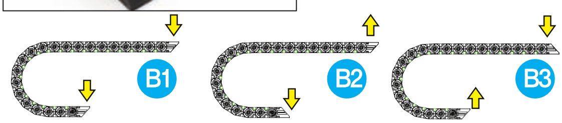


BR should not be inserted in the joint of last side band and Free End Bracket.

ST044

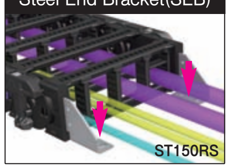
End Bracket(EB)

ST044N/ST055N use both FEB and EB type of bracket; there are B1, B2 and B3 like the left image.

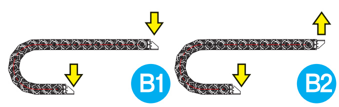


ST072, 095, 120, 150

Steel End Bracket(SEB)



For ST150RS, its end parts of cable chain being fixed are used with steel bracket, and it is possible to be installed B1, B2 types of brackets.

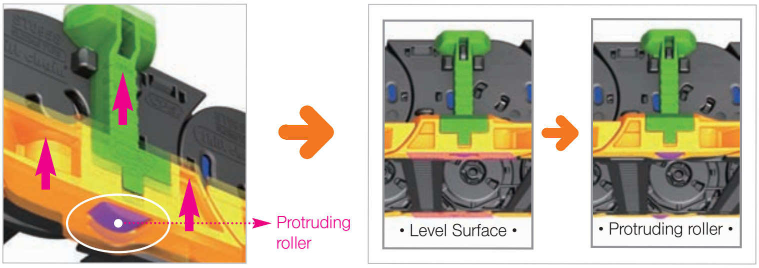


In case of applying ‘RS Type’, BR should not be inserted into the side band which is in combination with SEB.

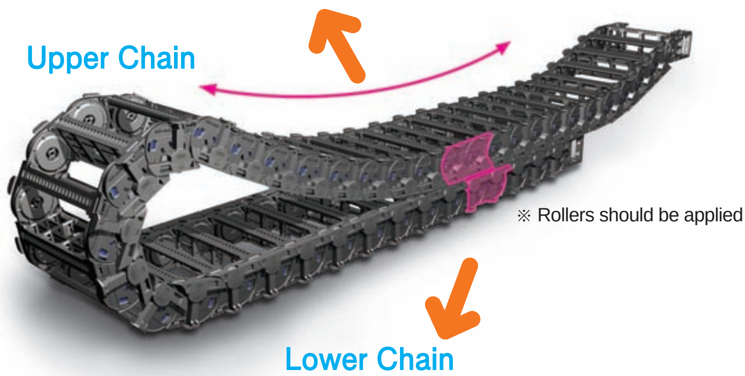
※ Dimensions in mm

Characteristics of Shift Roller Skid Type

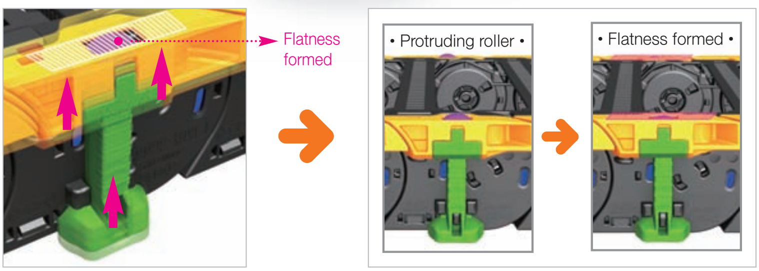
Roller Skid Performance Property



Principle of skid motion : The protruding Roller is performed as a wheel when Roller mounted skid is touched on lower chain. This principle makes it possible to move fast in long-distance travel without friction.



※ Rollers should be applied every 2 or 4 links.



The support lifts Skid(Roller-Skid, Skid) and makes the surface flat, when the cable chain which includes cables is contacted on the surface of bottom of guide channel.

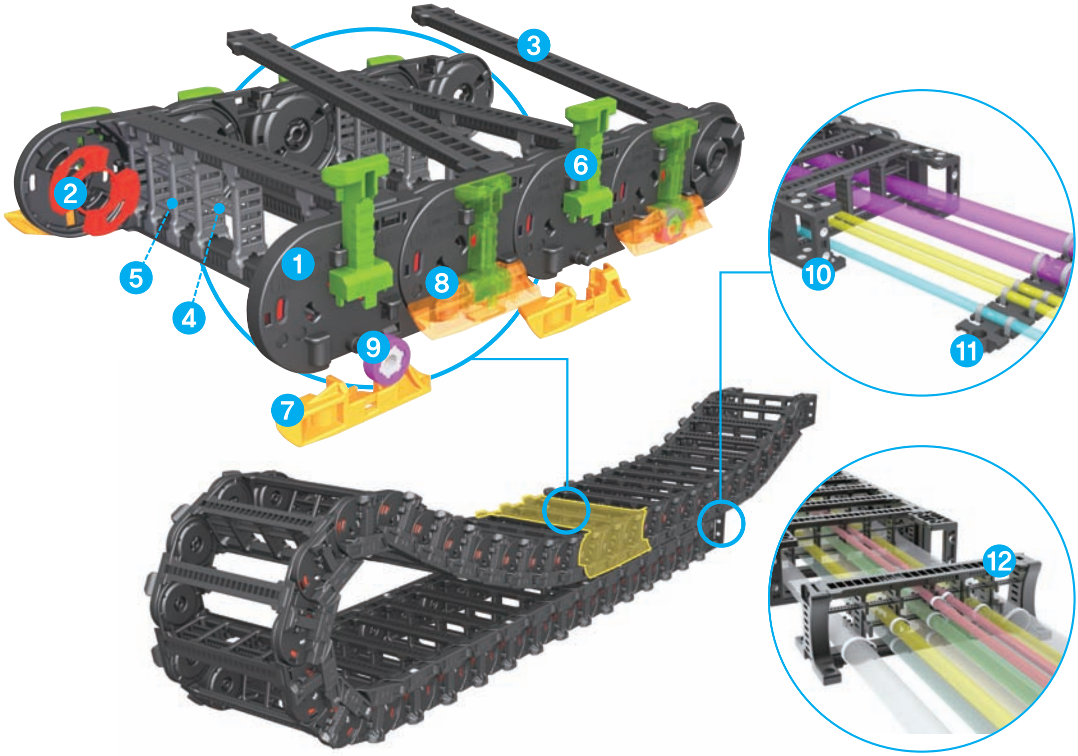
Application of Shift Chain

Shift Chain Roller Skid type can be applied to all kinds of machine tools and factory lines.

ST120RS
Application: Thermoeletric power plant
Location: Korea
Remark: 198 meters of Stroke

ST072RS
Application: Transmission Line
Location: Korea
Remark: 24 meters of Stroke

Roller Skid Type



Part of Shift Chain Roller Skid Type

❶ Side Band (SB)
A part that connects upper and lower frame. There are LH and RH type.

❷ Bending Radius Unit (BR)
A part that is inserted into Side Band. It is one of units that helps Shift Chain's excellent Unsupported Length' performance.

❸ Frame (FR)
A part that connects with LH, RH Side Band. There are every 5mm bumps that prevent dividers to be securely positioned at a place. One side of frame has a hinge structure that helps easy assembly and disassembly.

❹ Separator (SP)
A part that prevent entanglement risk of cable and hoses by being installed horizontally.

❺ Divider (DV-S, M, R, T)
A part that prevents entanglement risk of cables and hoses by being installed vertically.

❻ Support
A unit that supports skid & roller skid which makes skid& roller skid move up and down.

❼❽ Skid, Roller Skid
Skid : A unit that minimizes friction between upper and lower cable chain.
Roller Skid : A unit that minimizes coefficient of friction between upper and lower cable chain. There is a roller unit that is assembled to Support and Skid.

❾ Roller
A unit that reduces coefficient of friction between upper and lower cable chain.

❿ Free End Bracket (FEB)
A part that connects to each end of Cable Chain. There are holes are formed where steel washers are inserted to fix FEB to fixing plate securely.

⓫ Tie Wrap (TW)
A part that prevents damage of the cable and hose by twisting & pulling movements. It can be used as assembling with bracket or separating from the bracket at end position of chain.

⓬ System Tie Wrap(STW)
A part that connects to first or end of Cable Chain. Cables and hoses are arranged at System Tie Wrap by several layers and being tightened using Cable Tie. There are 2 types. One is separated from FEB and the other one is assembled to FEB.

Assembly procedure of Shift Chain Roller skid type

Assembly procedure of Shift chain RS-type is as follows. Users must use rubber hammer with careful combination of Divider and Separator. (Disassembly process for repair and replacement is in reverse order)

1

Insert BR Unit into each Side Band.
(Side Band is divided into right and left side according to the direction.)

2

Continue to insert BR Unit into Side Band as you want to make it. Assemble Side Band which is inserted BR Unit as above.

3

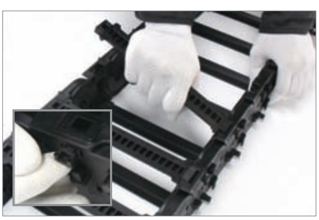
Continue to connect each Side Band as long as you want to make it. Connect the Side Band as many as you need.

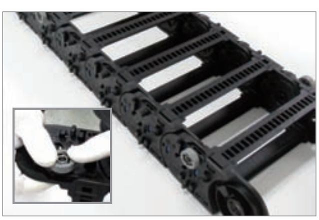
4

Connect right and left link with specified frame. (Put Hinge Type frame in the hole of Side Band)

5

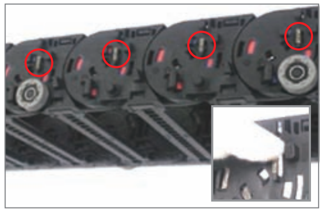
Insert Frame Pin onto connected each Frame and side of Side Band to be made tightly.(to devide inner room, insert divider which is connected with separator.
Assemble opposite frame as same procedure.





6

Install a Roller in the protruding side of Side Band to be placed one roller per 4 link.

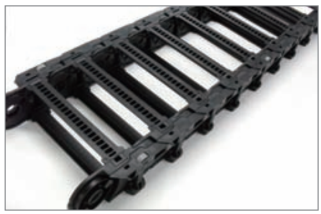


7

When inserting a support, push tightly into groove of Side Band until you hear "click".
(Support is only one direction without right and left side)

8

Insert normal type Skid into the side of Side Band which is not assembled a roller.
Assemble roller type Skid and normal type Skid for the each side of Side Band.

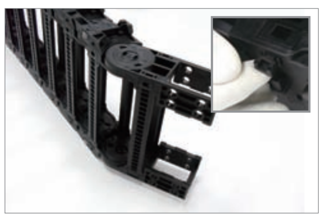


9

Assemble skid and support into opposite side of Side Band as same way. (Check whether assembled skid is working well by pushing your hand)

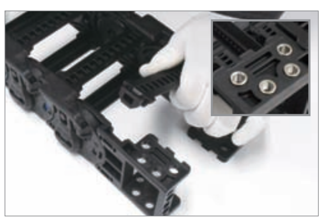
10

Do not insert a BR Unit for M.FEB. (M.FEB will be making a turn to up and down) Assembly M.FEB for being correct direction like right and left.



11

Assembly specified frame in M.FEB. (Hinge is inserted into RH direction of FEB) Insert Frame pin into connected Frame and side of FEB.



12

Assembly F.FEB for being correct direction like right and left.(Do not insert a BR for the side band which is connected with F.FEB) Insert reinforcement washers into FEB according to fixing direction.

13

Completion

Roller Skid Type

Part List of Shift Chain Roller Skid Type

- Composition of Shift Chain Roller Skid Type
  = Side band(RH/LH) + Frame + Bending Radius Unit + Skid + 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
ST044RS	SIDE BAND	ST-SB044S(LH) ST-SB044S(RH)	Left side band of ST044S Right side band of ST044S
	BENDING RADIUS	ST-BRS044.R50,70,90,120,150	Bending radius unit for side band
	SKID	ST-SK044RS(LH-N) ST-SK044RS(LH-N) ST-SK044RS(RH-N) ST-SK044RS(RH-R)	Skid for long travel(Applied to side band)
	SPRING	ST-SPR044	Spring with roller
	SUPPORT	ST-SUP044	Supporter to fix skid unit
	ROLLER	ST-RL044	Roller for long travel(Applied to side band)
	FRAME	sb-FR/M.35 sb-FR/M.50 sb-FR/M.55 sb-FR/M.75 sb-FR/M.100 sb-FR/M.125 sb-FR/M.150 sb-FR/M.175 sb-FR/M.200	Frame, 35mm Frame, 50mm Frame, 55mm Frame, 75mm Frame, 100mm Frame, 125mm Frame, 150mm Frame, 175mm Frame, 200mm
	FREE END BRACKET	ST-FEB044N/S	Free End bracket of ST044S , End bracke(B1, B2, B3)
	DIVIDER	sb-DV028/M sb-DV028/S	Normal divider To fix separstors at the both side sectionEnd bracket of ST044S
	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 S-SP/M.175 S-SP/M.200	Separator, 35mm Separator, 50mm Separator, 75mm Separator, 100mm Separator, 125mm Separator, 150mm Separator, 175mm Separator, 200mm
	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

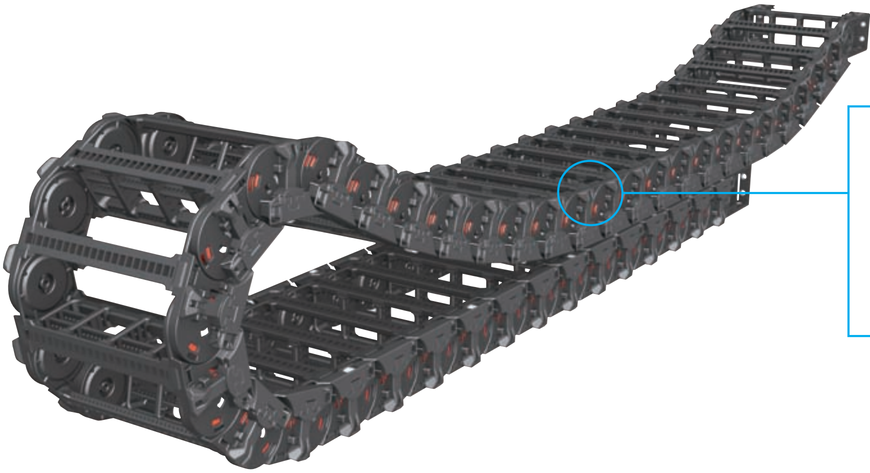
Model	Classification	Part number	Description
ST072RS	SIDE BAND	ST-SB072S(LH) ST-SB072S(RH)	Left side band of ST072S Right side band of ST072S
	BENDING RADIUS	ST-BRS072.R72,100,120,145,200,250,300	Bending radius unit for side band
	SKID	ST-SK072RS(LH-N) ST-SK072RS(LH-R) ST-SK072RS(RH-N) ST-SK072RS(RH-R)	Skid for long travel(Applied to side band)
	SPRING	ST-SPR072	Spring with roller
	SUPPORT	ST-SUP072	Supporter to fix skid unit
	ROLLER BEARING	ST-RL072/95	Roller for long travel(Applied to side band)
	FRAME PIN	S-FP/S1	Frame pin
	FRAME	sb-FR045.50 sb-FR045.75 sb-FR045.100 sb-FR045.125 sb-FR045.140 sb-FR045.150 sb-FR045.165 sb-FR045.175 sb-FR045.190 sb-FR045.200 sb-FR045.240 sb-FR045.250 sb-FR045.300	Frame, 50mm Frame, 75mm Frame, 100mm Frame, 125mm Frame, 140mm Frame, 150mm Frame, 165mm Frame, 175mm Frame, 190mm Frame, 200mm Frame, 240mm Frame, 250mm Frame, 300mm
	FREE END BRACKET	ST-FEB072N/S	Free End bracket of ST072S, Steel End bracket(B1, B2, B3)
	DIVIDER	sb-DV045/M sb-DV045/S sb-DV045/T sb-DV045/TP	Normal divider To fix separstors at the both side section T divider T divider pin
	SEPARATOR	sb-SP/400.Frame SP-PIN045	Separator, 400mm (Separator can be ordered according to inner width of cable chain) 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

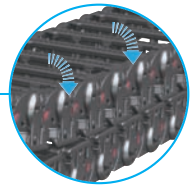
Model	Classification	Part number	Description
ST095RS	SIDE BAND	ST-SB095S(LH)	Left side band of ST095S
		ST-SB095S(RH)	Right side band of ST095S
	BENDING RADIUS	ST-BRS095.R135,150,200,230,280,400	Bending radius unit for side band
	SKID	ST-SK095RS(LH-N)	Bending radius unit for side band
		ST-SK095RS(LH-R)	
		ST-SK095RS(RH-N)	
		ST-SK095RS(RH-R)	
	SPRING	ST-SPR095	Spring with roller
	SUPPORT	ST-SUP095	Supporter to fix skid unit
	ROLLER BEARING	ST-RL072/095	Roller for long travel(Applied to side band)
	FRAME PIN	S-FP/S1	Frame pin
	FRAME	sb-FR060.75	Frame, 75mm
		sb-FR060.100	Frame, 100mm
		sb-FR060.125	Frame, 125mm
		sb-FR060.150	Frame, 150mm
		sb-FR060.175	Frame, 175mm
		sb-FR060.190	Frame, 190mm
		sb-FR060.200	Frame, 200mm
		sb-FR060.230	Frame, 230mm
		sb-FR060.250	Frame, 250mm
		sb-FR060.300	Frame, 300mm
		sb-FR060.350	Frame, 350mm
		sb-FR060.400	Frame, 400mm
	FREE END BRACKET	ST-FEB095N/S	Free End bracket of ST095S, Steel End bracket(B1, B2, B3)
		sb-FEB/WH060	Steel washer for end bracket
	DIVIDER	sb-DV060/M	Normal divider
		sb-DV060/S	To fix separstors at the both side section
		sb-DV060/T	T divider
		sb-DV060/TP	T divider pin
	SEPARATOR	sb-SP/400.Frame	Separator, 400mm
		SP-PIN060	Separator pin to fix
	TIE WRAP	S-TW50	Tie wrap for end bracket to fix cables, 50mm
		S-TW75	Tie wrap for end bracket to fix cables, 75mm
		S-TW100	Tie wrap for end bracket to fix cables, 100mm
		S-TW125	Tie wrap for end bracket to fix cables, 125mm
		S-TW150	Tie wrap for end bracket to fix cables, 150mm
	SYSTEM TIE WRAP	sb-DV060/W	Divider for fixing cables at end bracket
		S-TW.EB060	System tie wrap to arrange for cables right after moving bracket or fixing bracket

Model	Classification	Part number	Description
ST120RS	SIDE BAND	ST-SB120S(LH)	Left side band of ST120S
		ST-SB120S(RH)	Right side band of ST120S
	BENDING RADIUS	ST-BRS120.R180,200,250,300,350,400,500	Bending radius unit for side band
	SKID	ST-SK120RS(LH-N)	Bending radius unit for side band
		ST-SK120RS(LH-R)	
		ST-SK120RS(RH-N)	
		ST-SK120RS(RH-R)	
	SPRING	ST-SPR120	Spring with roller
	SUPPORT	ST-SUP120	Supporter to fix skid unit
	ROLLER BEARING	ST-RL120	Roller for long travel(Applied to side band)
	FRAME PIN	S-FP/S2	Frame pin
	FRAME	sb-FR075/100.75	Frame, 75mm
		sb-FR075/100.100	Frame, 100mm
		sb-FR075/100.115	Frame, 115mm
		sb-FR075/100.125	Frame, 125mm
		sb-FR075/100.150	Frame, 150mm
		sb-FR075/100.175	Frame, 175mm
		sb-FR075/100.200	Frame, 200mm
		sb-FR075/100.240	Frame, 240mm
		sb-FR075/100.250	Frame, 250mm
		sb-FR075/100.290	Frame, 290mm
		sb-FR075/100.300	Frame, 300mm
		sb-FR075/100.350	Frame, 350mm
		sb-FR075/100.400	Frame, 400mm
		sb-FR075/100.450	Frame, 450mm
		sb-FR075/100.500	Frame, 500mm
		sb-FR075/100.550	Frame, 550mm
		sb-FR075/100.600	Frame, 600mm
	FREE END BRACKET	ST-FEB120N/S	Free End bracket of ST120S, Steel End bracket(B1, B2, B3)
		sb-FEB/WH075	Steel washer for end bracket
	DIVIDER	sb-DV075/M	Normal divider
		sb-DV075/S	To fix separstors at the both side section
		sb-DV075/T	T divider
		sb-DV075/TP	T divider pin
	SEPARATOR	sb-SP/400.Frame	Separator, 400mm (Separator can be ordered according to inner width of cable chain)
		SP-PIN075	Separator pin to fix
	TIE WRAP	S-TW50	Tie wrap for end bracket to fix cables, 50mm
		S-TW75	Tie wrap for end bracket to fix cables, 75mm
		S-TW100	Tie wrap for end bracket to fix cables, 100mm
		S-TW125	Tie wrap for end bracket to fix cables, 125mm
		S-TW150	Tie wrap for end bracket to fix cables, 150mm
	TIE WRAP	sb-DV075/W	Divider for fixing cables at end bracket
		S-TW.EB075	System tie wrap to arrange for cables right after moving bracket or fixing bracket

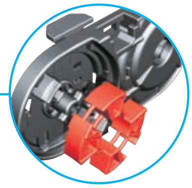
Model	Classification	Part number	Description
ST150RS	SIDE BAND	ST-SB150S(LH)	Left side band of ST150S
		ST-SB150S(RH)	Right side band of ST150S
	BENDING RADIUS	ST-BRS150.R205,305,405,505,605	Bending radius unit for side band
	SKID	ST-SK150RS(LH-N)	Bending radius unit for side band
		ST-SK150RS(LH-R)	
		ST-SK150RS(RH-N)	
		ST-SK150RS(RH-R)	
	SPRING	ST-SUP150RS	Spring with roller
	SUPPORT	ST-SUP150	Supporter to fix skid unit
	ROLLER BEARING	ST-RL150	Roller for long travel(Applied to side band)
	FRAME PIN	S-FP/S2	Frame pin
	FRAME	sb-FR075/100.75	Frame, 75mm
		sb-FR075/100.100	Frame, 100mm
		sb-FR075/100.115	Frame, 115mm
		sb-FR075/100.125	Frame, 125mm
		sb-FR075/100.150	Frame, 150mm
		sb-FR075/100.175	Frame, 175mm
		sb-FR075/100.200	Frame, 200mm
		sb-FR075/100.240	Frame, 240mm
		sb-FR075/100.250	Frame, 250mm
		sb-FR075/100.290	Frame, 290mm
		sb-FR075/100.300	Frame, 300mm
		sb-FR075/100.350	Frame, 350mm
		sb-FR075/100.400	Frame, 400mm
		sb-FR075/100.450	Frame, 450mm
		sb-FR075/100.500	Frame, 500mm
		sb-FR075/100.550	Frame, 550mm
		sb-FR075/100.600	Frame, 600mm
	STEEL END BRACKET	ST-SEB150S/B1~B2~B3	Steel end bracket of ST150S
	DIVIDER	sb-DV100/M	Normal divider
		sb-DV100/S	To fix separstors at the both side section
		sb-DV100/T	T divider
		sb-DV100/TP	T divider pin
	SEPARATOR	sb-SP/600.Frame	Separator, 600mm (Separator can be ordered according to inner width of cable chain)
		SP-PIN100	Separator pin to fix
	TIE WRAP	S-TW50	Tie wrap for end bracket to fix cables, 50mm
		S-TW75	Tie wrap for end bracket to fix cables, 75mm
		S-TW100	Tie wrap for end bracket to fix cables, 100mm
		S-TW125	Tie wrap for end bracket to fix cables, 125mm
		S-TW150	Tie wrap for end bracket to fix cables, 150mm

ST044RS





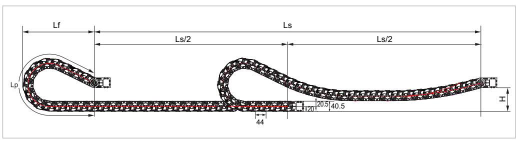
Hinge hook type



Bending Radius Unit

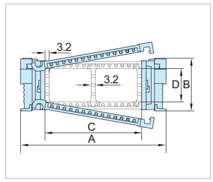
Layout of the Chain

Ls: Stroke



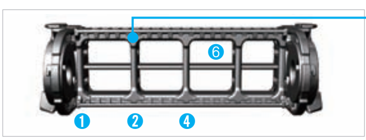
Bending Radius(R)	Lp Loop Length	Lf Loof Projection	H Moving Height
70	544	249	110
90	662	289	
120	926	393	
150	1,190	497	

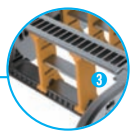
Chain Cross Section

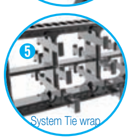


Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
ST044RS	73	40.5	35	26	1.09
	88		50		1.15
	93		55		1.17
	113		75		1.24
	138		100		1.33
	163		125		1.47
	188		150		1.59
	213		175		1.88
	238		200		2.05

Dividers(DV)

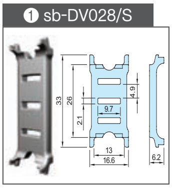




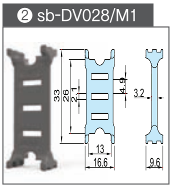


Assemble divider every second frame
DV/M : Normal Divider
DV/W : Applicable to System Tie Wrap or FEB

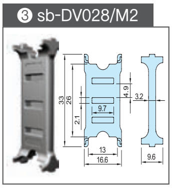
❶ sb-DV028/S



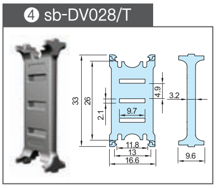
❷ sb-DV028/M1



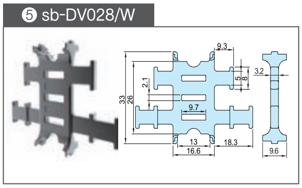
❸ sb-DV028/M2



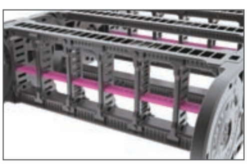
❹ sb-DV028/T



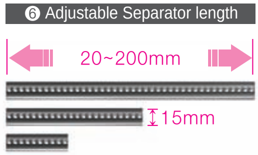
❺ sb-DV028/W



Separators(SP)



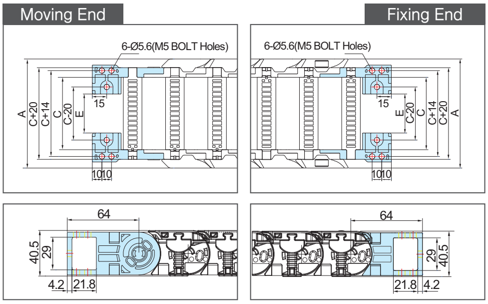
❻ Adjustable Separator length



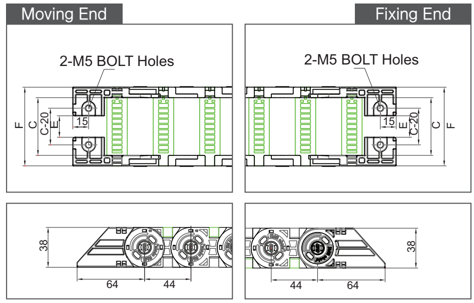
Chain Type	Ordering No.	Frame
ST044RS	S-SP/M.35	35
	S-SP/M.50	50
	S-SP/M.55	55
	S-SP/M.75	75
	S-SP/M.100	100
	S-SP/M.125	125
	S-SP/M.150	150
	S-SP/M.175	175
	S-SP/M.200	200

※ Dimensions in mm

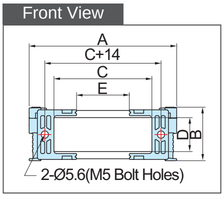
Free End Bracket(FEB)



End Bracket(EB)

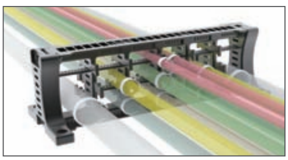


Front View

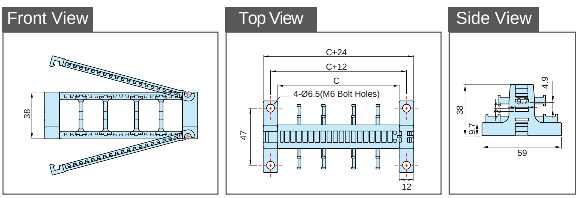


Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	E M.EB Bolt Holes Width	Hole Type
ST044RS	73	40.5	35	26	0.4	M5 Bolt Holes
	88		50		15.4	
	93		55		20.4	
	113		75		40.4	
	138		100		65.4	
	163		125		90.4	
	188		150		115.4	
	213		175		140.4	
	238		200		165.4	

System Tie Wrap(STW)

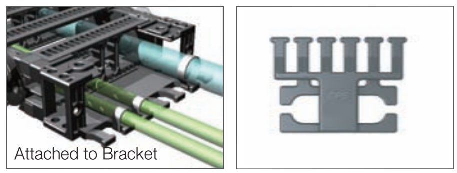


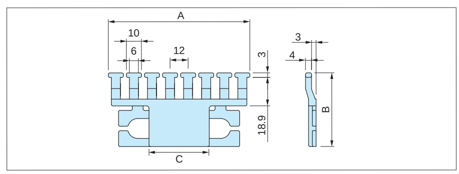
It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.



Chain Type	Ordering No.	C Frame	Hole Type
ST044RS	S-TW.EB028.35	35	M6 Bolt Holes
	S-TW.EB028.50	50	
	S-TW.EB028.55	55	
	S-TW.EB028.75	75	
	S-TW.EB028.100	100	
	S-TW.EB028.125	125	
	S-TW.EB028.150	150	
	S-TW.EB028.175	175	
	S-TW.EB028.200	200	

Tie Wrap(TW)

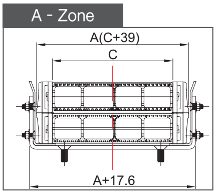




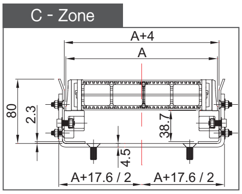
Chain Type	Ordering No.	A	B	C
ST044RS	S-TW036/025CR.35	46	35.4	-
	S-TW036/025CR.50	69	48.9	15
	S-TW036/025CR.55	70	48.9	20
	S-TW036/025CR.75	94	48.9	40
	S-TW036/025CR.100	118	48.9	65
	S-TW036/025CR.125	142	48.9	90

Guide Channel

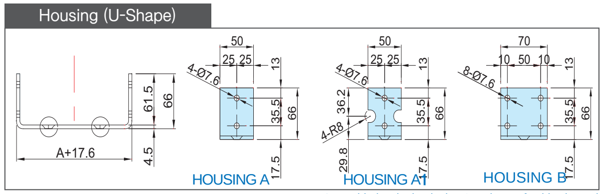
A - Zone



C - Zone

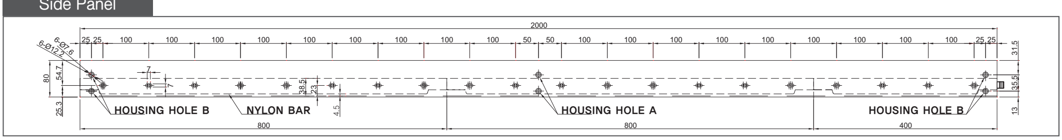


Housing (U-Shape)



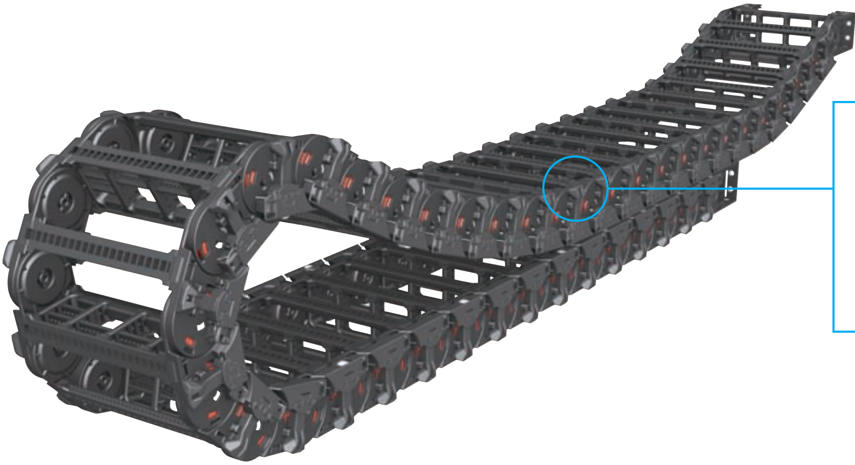
Assembled at the beginning & end part of guide channel

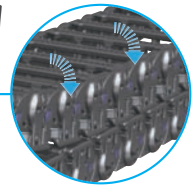
Side Panel



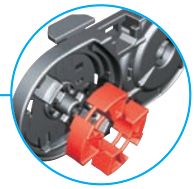
※ Dimensions in mm

ST072RS





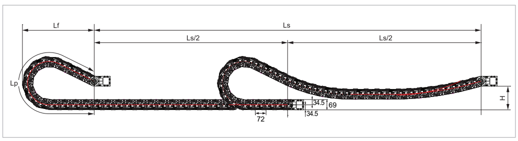
Hinge frame-pin lock type



Bending Radius Unit

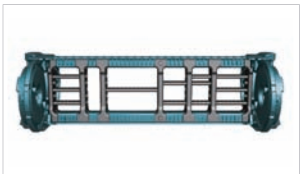
Layout of the Chain

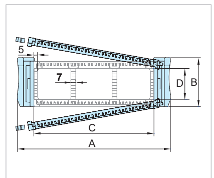
Ls: Stroke



Bending Radius(R)	Lp Loop Length	Lf Loof Projection	H Moving Height
100	806	380	180
120	917	420	
145	1,063	470	
200	1,400	580	
250	1,840	752	
300	2,280	924	

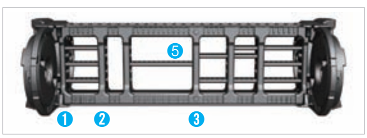
Chain Cross Section

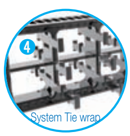




Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
ST072RS	104	69	50	45	2.59
	129		75		2.67
	154		100		2.77
	179		125		2.91
	194		140		3.02
	204		150		3.05
	219		165		3.12
	229		175		3.17
	244		190		3.42
	254		200		3.59
	294		240		3.91
	304		250		3.99
	354		300		4.34

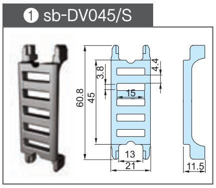
Dividers(DV)



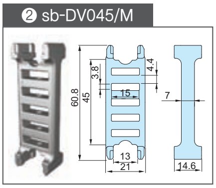


Assemble divider every second frame
DV/T : Applied to Frame 200~300
DV/M : Normal Divider
DV/W : Applicable to System Tie Wrap or FEB

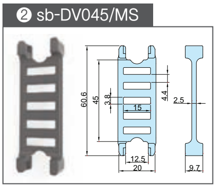
1 sb-DV045/S



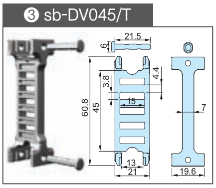
2 sb-DV045/M



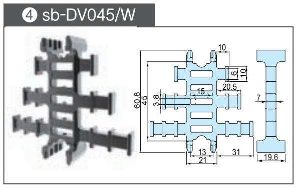
2 sb-DV045/MS



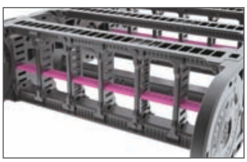
3 sb-DV045/T



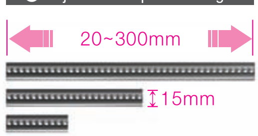
4 sb-DV045/W



Separators(SP)



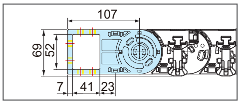
5 Adjustable Separator length

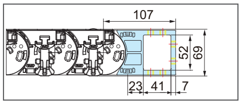


Chain Type	Ordering No.
ST072RS	sb-SP/400.Frame

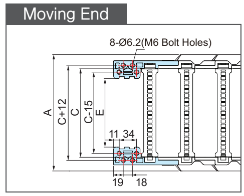
※ Dimensions in mm

Free End Bracket(FEB)

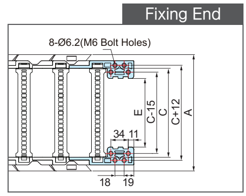




Moving End

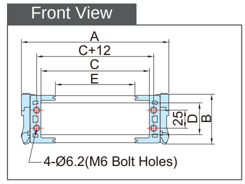


Fixing End

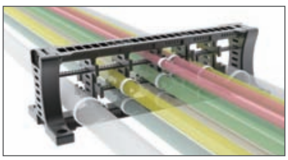


Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M,EB Bolt Holes Width	Hole Type
ST072RS	104 129 154 179 194 204 219 229 244 254 294 304 354	69	50 75 100 125 140 150 165 175 190 200 240 250 300	45	10 35 60 85 100 110 125 135 150 160 200 210 260	M6 Bolt Holes

Front View

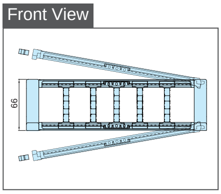


System Tie Wrap(STW)

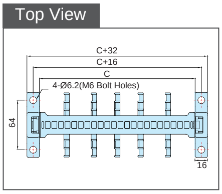


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

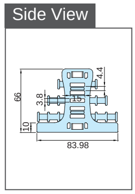
Front View



Top View



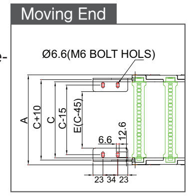
Side View



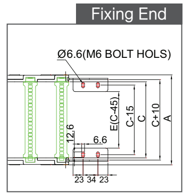
Chain Type	Ordering No.	C Frame	Hole Type
ST072RS	S-TW.EB045.50 S-TW.EB045.75 S-TW.EB045.100 S-TW.EB045.125 S-TW.EB045.140 S-TW.EB045.150 S-TW.EB045.165 S-TW.EB045.175 S-TW.EB045.190 S-TW.EB045.200 S-TW.EB045.240 S-TW.EB045.250 S-TW.EB045.300	50 75 100 125 140 150 165 175 190 200 240 250 300	M6 Bolt Holes

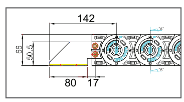
Steel End Bracket(SEB)

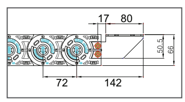
Moving End



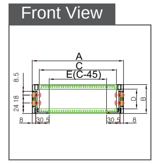
Fixing End



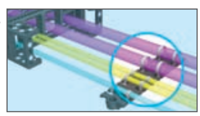


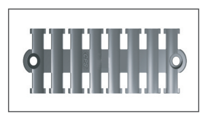


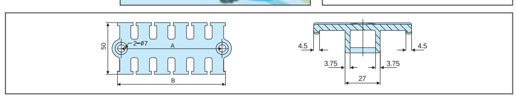
Front View



Tie Wrap (TW)



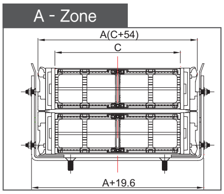




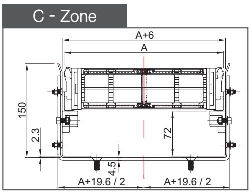
Chain Type	Ordering No.	A	B
ST072RS	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

Guide Channel

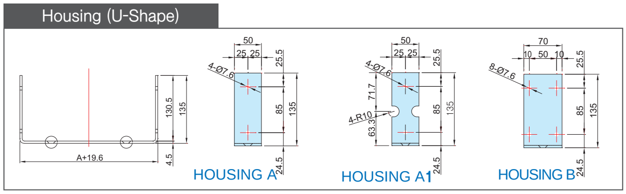
A - Zone



C - Zone

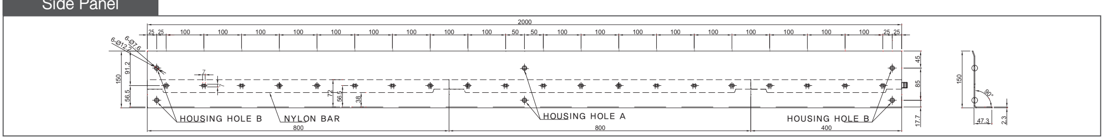


Housing (U-Shape)



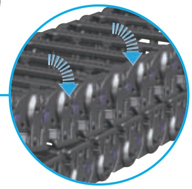
Assembled at the beginning & end part of guide channel

Side Panel

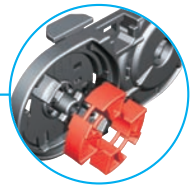


※ Dimensions in mm

ST095RS



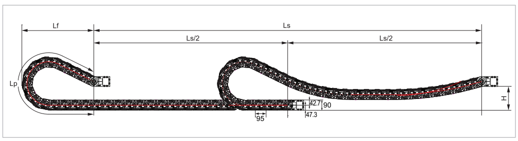
Hinge frame-pin lock type



Bending Radius Unit

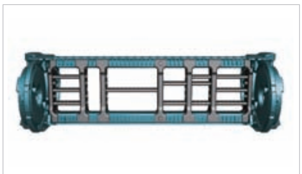
Layout of the Chain

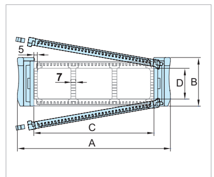
Ls: Stroke



Bending Radius(R)	Lp Loop Length	Lf Loof Projection	H Moving Height
135	1,091	504	210
150	1,178	534	
200	1,479	634	
230	1,666	694	
280	2,146	889	
400	3,232	1,319	

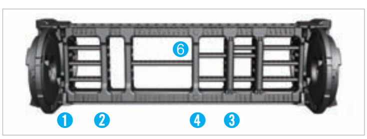
Chain Cross Section

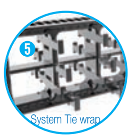




Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
ST095RS	143	90	75	56	3.48
	168		100		3.55
	193		125		3.73
	218		150		3.84
	243		175		3.96
	258		190		4.07
	268		200		4.14
	298		230		4.30
	308		240		4.36
	318		250		4.41
	368		300		4.67
	418		350		5.03
	468		400		5.43

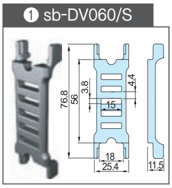
Dividers(DV)



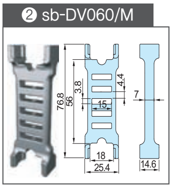


Assemble divider every second frame
DV/T : Applied to Frame 250~400
DV/M : Normal Divider
DV/W : Applicable to System Tie Wrap or FEB

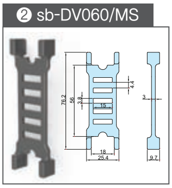
❶ sb-DV060/S



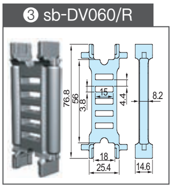
❷ sb-DV060/M



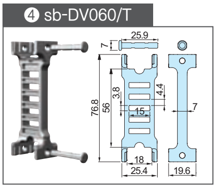
❷ sb-DV060/MS



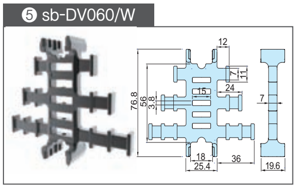
❸ sb-DV060/R



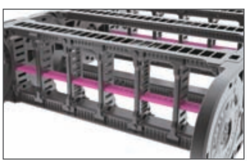
❹ sb-DV060/T



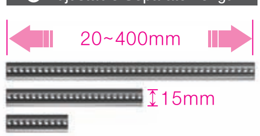
❺ sb-DV060/W



Separators(SP)



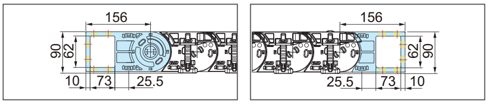
❻ Adjustable Separator length



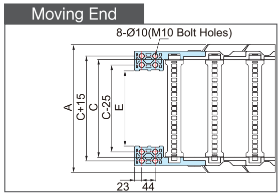
Chain Type	Ordering No.
ST095RS	sb-SP/400.Frame

※ Dimensions in mm

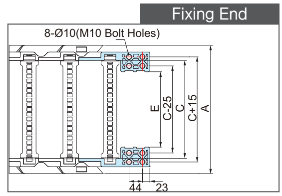
Free End Bracket(FEB)



Moving End

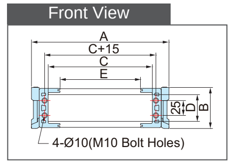


Fixing End

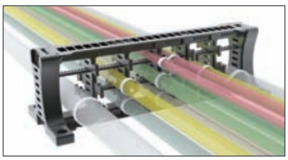


Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M,EB Bolt Holes Width	Hole Type
ST095RS	143	90	75	56	24	M10 Bolt Holes
	168		100		49	
	193		125		74	
	218		150		99	
	243		175		124	
	258		190		139	
	268		200		149	
	298		230		179	
	308		240		189	
	318		250		199	
	368		300		249	
	418		350		299	
	468		400		349	

Front View

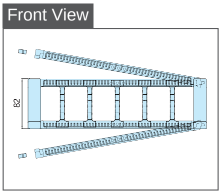


System Tie Wrap(STW)

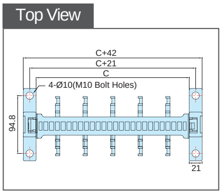


It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.

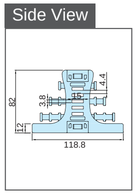
Front View



Top View



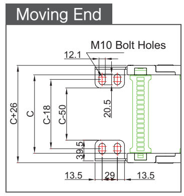
Side View



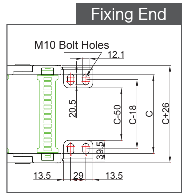
Chain Type	Ordering No.	C Frame	Hole Type
ST095RS	S-TW.EB060.75	75	M10 Bolt Holes
	S-TW.EB060.100	100	
	S-TW.EB060.125	125	
	S-TW.EB060.150	150	
	S-TW.EB060.175	175	
	S-TW.EB060.190	190	
	S-TW.EB060.200	200	
	S-TW.EB060.230	230	
	S-TW.EB060.240	240	
	S-TW.EB060.250	250	
	S-TW.EB060.300	300	
	S-TW.EB060.350	350	
	S-TW.EB060.400	400	

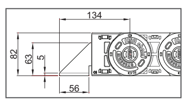
Steel End Bracket(SEB)

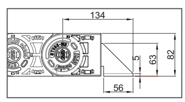
Moving End



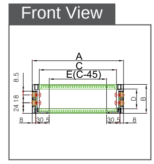
Fixing End



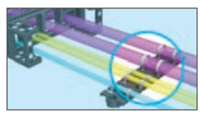


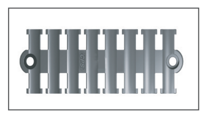


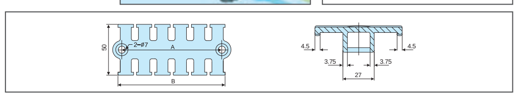
Front View



Tie Wrap (TW)



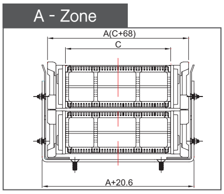




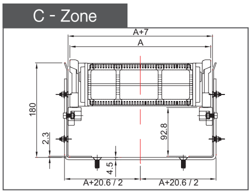
Chain Type	Ordering No.	A	B
ST095RS	S-TW50	58	65
	S-TW75	75	82
	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

Guide Channel

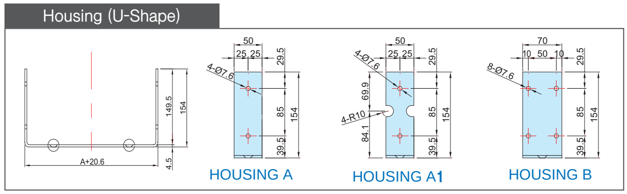
A - Zone



C - Zone

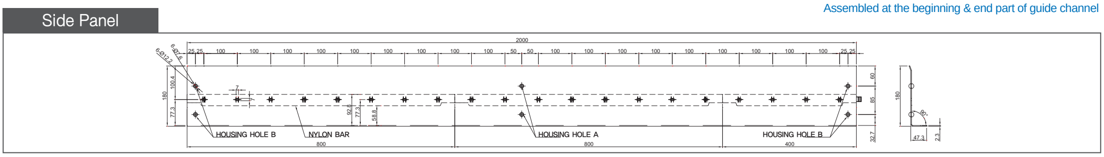


Housing (U-Shape)



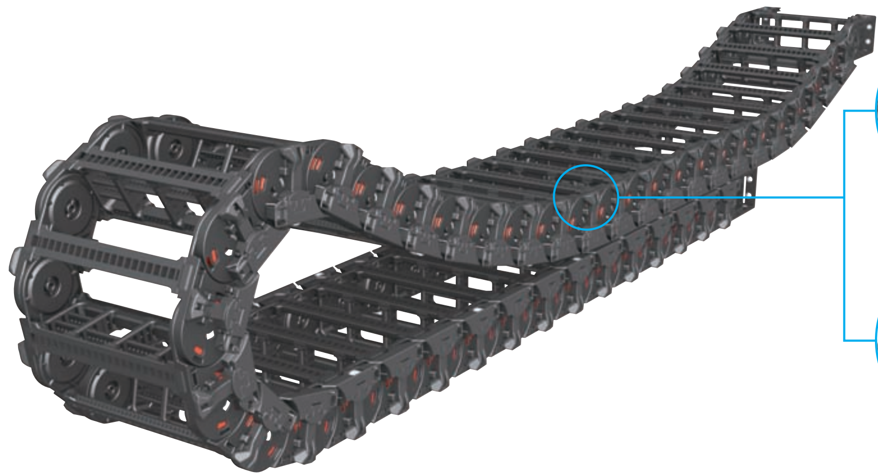
Assembled at the beginning & end part of guide channel

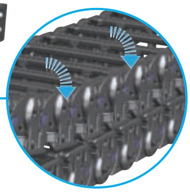
Side Panel



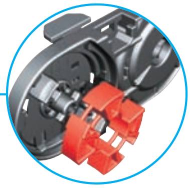
※ Dimensions in mm

ST120RS





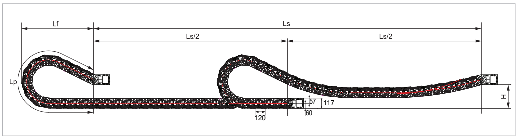
Hinge frame-pin lock type



Bending Radius Unit

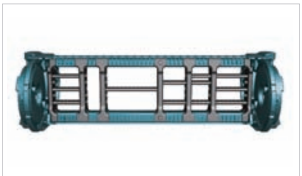
Layout of the Chain

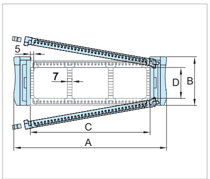
Ls: Stroke



Bending Radius(R)	Lp Loop Length	Lf Loof Projection	H Moving Height
180	1,441	654	260
200	1,559	694	
250	1,864	794	
300	2,178	894	
350	2,701	1,114	
400	3,225	1,334	
500	4,062	1,654	

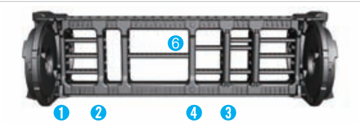
Chain Cross Section

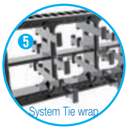




Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	Weight kg/m
ST120RS	143	117	75	78	4.75
	168		100		4.87
	183		115		4.96
	193		125		5.02
	218		150		5.10
	243		175		5.28
	268		200		5.52
	308		240		5.76
	318		250		5.82
	358		290		6.16
	368		300		6.25
	418		350		6.67
	468		400		6.96
	518		450		7.42
	568		500		7.65
	618		550		8.49
	668		600		8.66

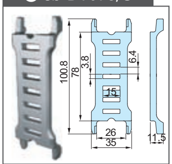
Dividers(DV)



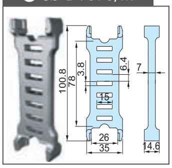


Assemble divider every second frame
DV/T : Applied to Frame 300~600
DV/M : Normal Divider
DV/W : Applicable to System Tie Wrap or FEB

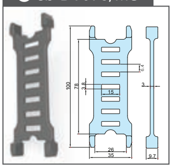
1 sb-DV075/S



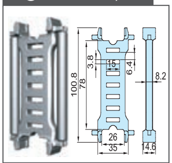
2 sb-DV075/M



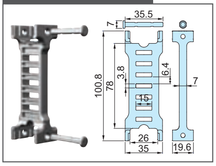
2 sb-DV075/MS



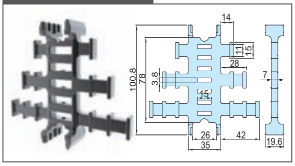
3 sb-DV075/R



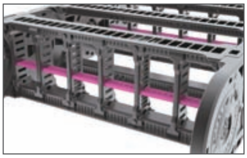
4 sb-DV075/T



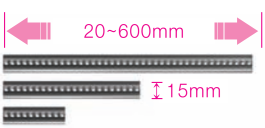
5 sb-DV075/W



Separators(SP)



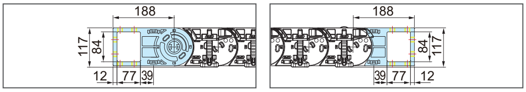
6 Adjustable Separator length

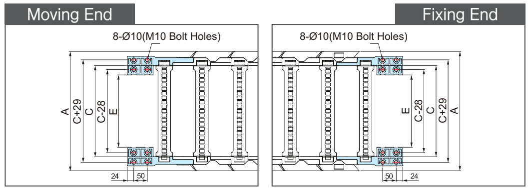


Chain Type	Ordering No.
ST120RS	sb-SP/600.Frame

 ※ Dimensions in mm

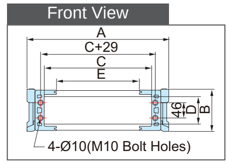
Free End Bracket(FEB)



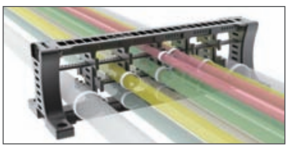


Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	E M,EB Bolt Holes Width	Hole Type
ST120RS	143	117	75	78	15	M10 Bolt Holes
	168		100		40	
	183		115		55	
	193		125		65	
	218		150		90	
	243		175		115	
	268		200		140	
	308		240		180	
	318		250		190	
	358		290		230	
	368		300		240	
	418		350		290	
	468		400		340	
	518		450		390	
	568		500		440	
	618		550		490	
	668		600		540	

Front View

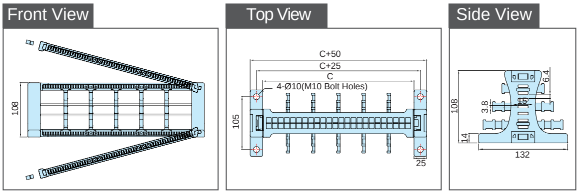


System Tie Wrap(STW)



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.

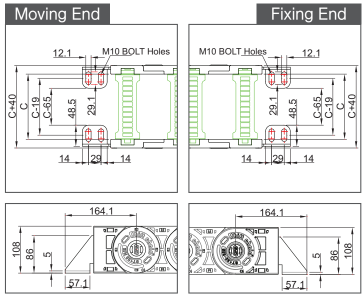
Front View / Top View / Side View



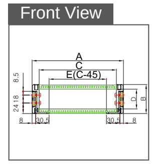
Chain Type	Ordering No.	C Frame	Hole Type
ST120RS	S-TW,EB075,75	75	M10 Bolt Holes
	S-TW,EB075,100	100	
	S-TW,EB075,115	115	
	S-TW,EB075,125	125	
	S-TW,EB075,150	150	
	S-TW,EB075,175	175	
	S-TW,EB075,200	200	
	S-TW,EB075,240	240	
	S-TW,EB075,250	250	
	S-TW,EB075,290	290	
	S-TW,EB075,300	300	
	S-TW,EB075,350	350	
	S-TW,EB075,400	400	
	S-TW,EB075,450	450	
	S-TW,EB075,500	500	
	S-TW,EB075,550	550	
	S-TW,EB075,600	600	

Steel End Bracket(SEB)

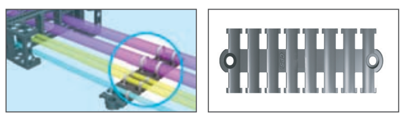
Moving End / Fixing End

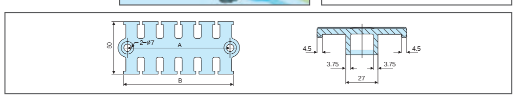


Front View



Tie Wrap (TW)

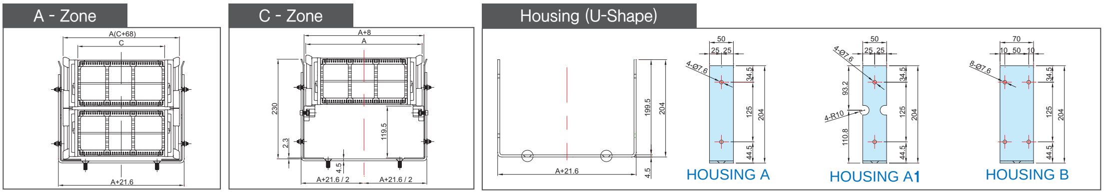




Chain Type	Ordering No.	A	B
ST120RS	S-TW50	58	65
	S-TW75	75	82
	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

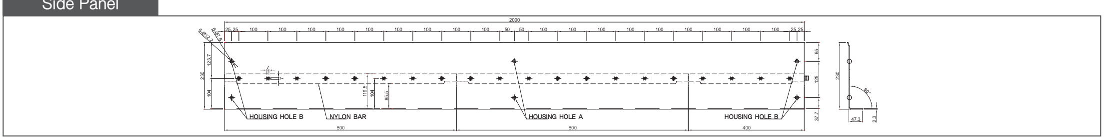
Guide Channel

A - Zone / C - Zone / Housing (U-Shape)



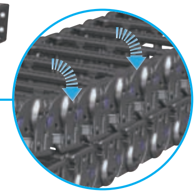
Assembled at the beginning & end part of guide channel

Side Panel

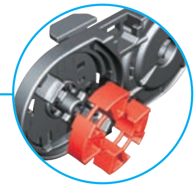


※ Dimensions in mm

ST150RS



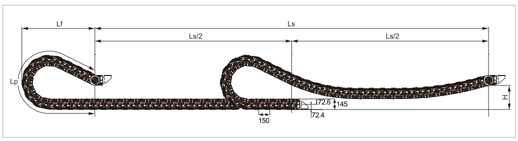
Hinge frame-pin lock type



Bending Radius Unit

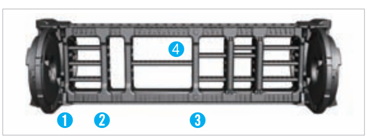
Layout of the Chain

Ls: Stroke



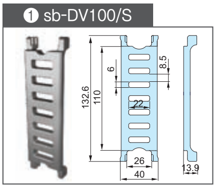
Bending Radius(R)	Lp Loop Length	Lf Loof Projection	H Moving Height
305	2,272	985	400
405	3,161	1,335	
505	4,050	1,685	
605	4,940	2,035	

Dividers(DV)

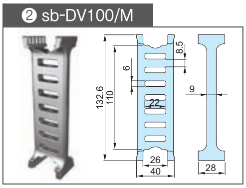


Assemble divider every second frame
DV/T : Applied to Frame 300~600
DV/M : Normal Divider

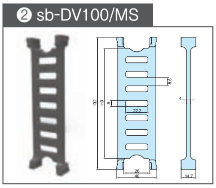
1 sb-DV100/S



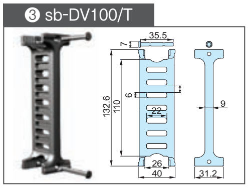
2 sb-DV100/M



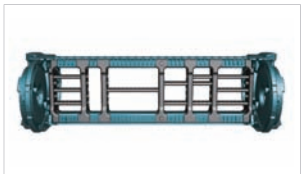
2 sb-DV100/MS

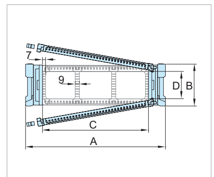


3 sb-DV100/T



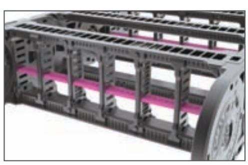
Chain Cross Section



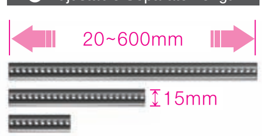


Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	Weight kg/m
ST150RS	162	145	75	110	7.87
	187		100		7.98
	202		115		8.06
	212		125		8.11
	237		150		8.18
	262		175		8.34
	287		200		8.55
	327		240		8.76
	337		250		8.81
	377		290		9.11
	387		300		9.18
	437		350		9.55
	487		400		9.98
	537		450		10.21
	587		500		10.41
	637		550		11.14
	687		600		11.29

Separators(SP)



4 Adjustable Separator length

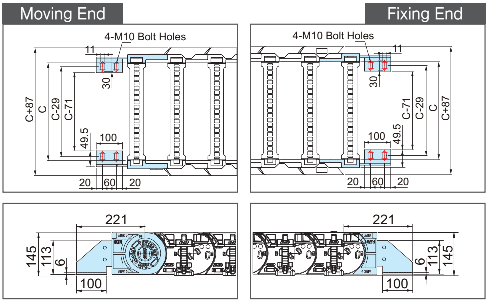


Chain Type	Ordering No.
ST150RS	sb-SP/600.Frame

※ Dimensions in mm

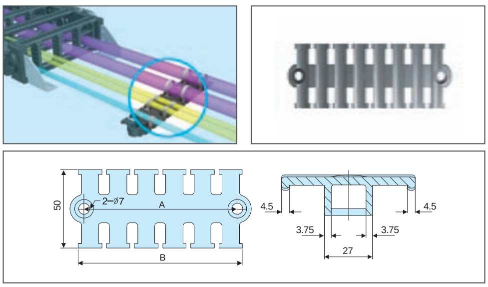
Steel End Bracket(SEB)

Moving End | Fixing End



Chain Type	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	Hole Type
ST150RS	145	75 100 115 125 150 175 200 240 250 290 300 350 400 450 500 550 600	110	M10 Bolt Holes

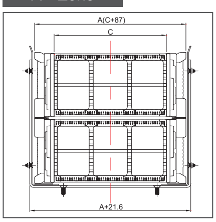
Tie Wrap(TW)



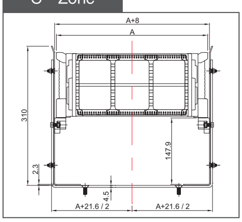
Chain Type	Ordering No.	A	B
ST150RS	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

Guide Channel

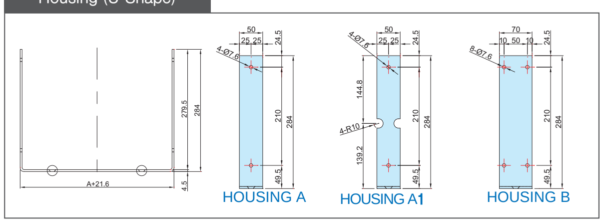
A - Zone



C - Zone

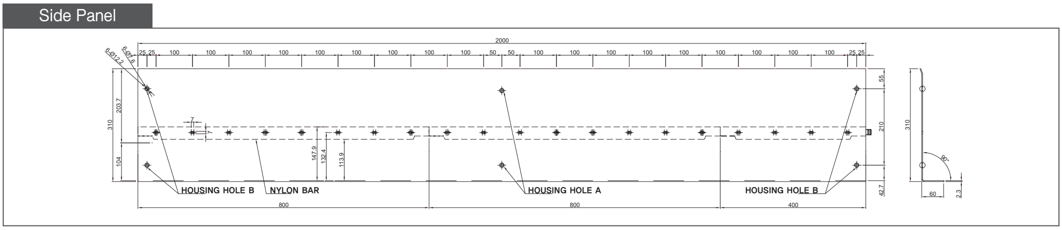


Housing (U-Shape)

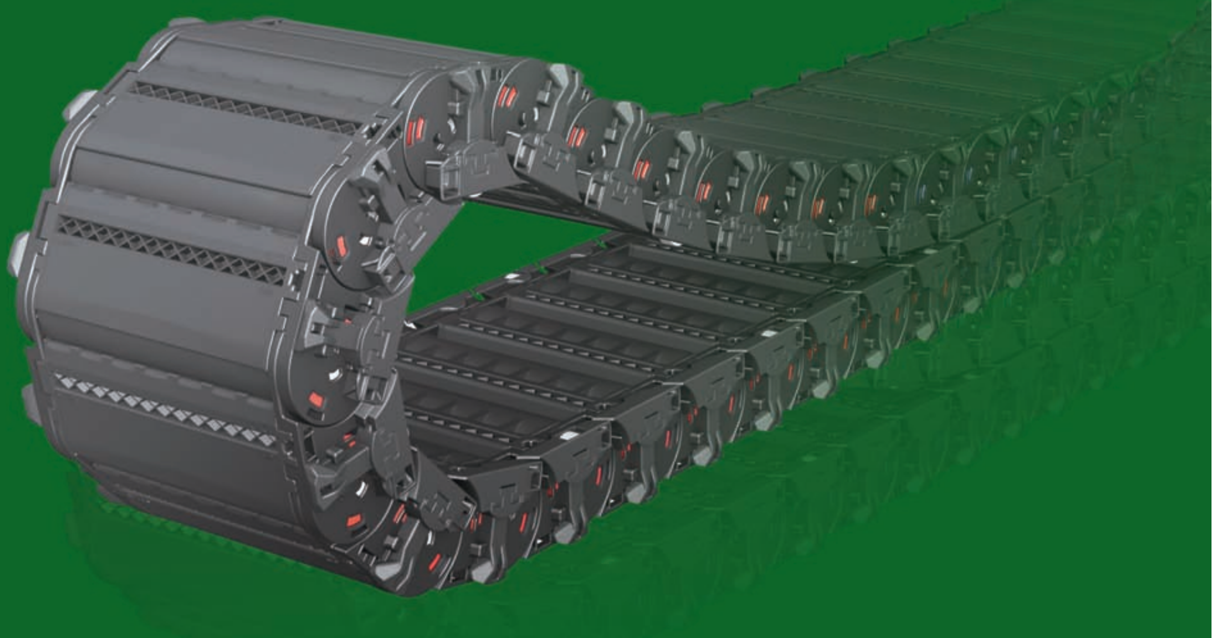


Assembled at the beginning & end part of guide channel

Side Panel



※ Dimensions in mm



Value of Speed/Acceleration is subject to change according to cable's amount and travel length.

Shift Chain®
Enclosed Roller Skid Type

ST - ERS
Enclosed Roller Skid Type

- ST044ERS
- ST072ERS
- ST095ERS
- ST120ERS
- ST150ERS

General Information

Material	CPS-Amide (PA6+G.F)
Speed	6㎧
Acceleration	12㎨
Temperature	-30℃ ~ +130℃
Certificate	CE, ATEX(Ex), RoHs2

Calculation Table

Length of Cable Chain	L = ½ X Ls + Lp
Bending Radius	Multiply 8~10 of the biggest cable
	Multiply 15~20 of the biggest hose

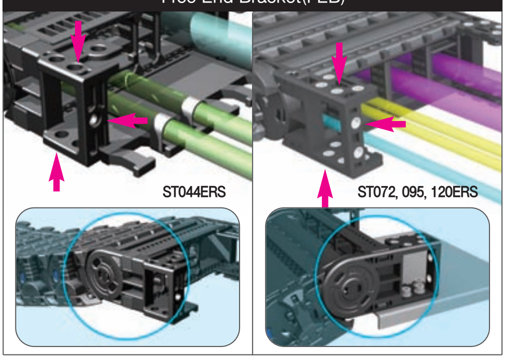
Dimension Table

Shift Chain Enclosed Roller Skid Type	Pitch	Bending Radius(R)	Weight kg/m	Speed m/s	Temperature ℃	Size A	Size B	Size C	Size D	Frame type	Section composition
ST044ERS	44	70, 90, 120, 150	1.07 1.16 1.23 1.33	6	-30 ~ +130	73 93 113 138	40.5	35 55 75 100	24.5		
ST072ERS	72	120, 145, 200, 250, 300	2.53 2.65 2.77 2.89 3.01	6	-30 ~ +130	104 129 154 179 204	69	50 75 100 125 150	44		
ST095ERS	95	150, 200, 230, 280, 400	4.20 4.45 4.70 4.95 5.19	6	-30 ~ +130	168 193 218 243 268	85	100 125 150 175 200	55		
ST120ERS	120	200, 250, 300, 350, 400, 500	5.17 5.48 5.78 6.09	6	-30 ~ +130	218 268 318 368	112	150 200 250 300	76		
ST150ERS	150	305, 405, 505, 605	10.23 10.84 11.45 12.06 12.67	6	-30 ~ +130	287 337 387 437 487	145	200 250 300 350 400	110		

Bracket Type

ST044, ST072, ST095, ST120

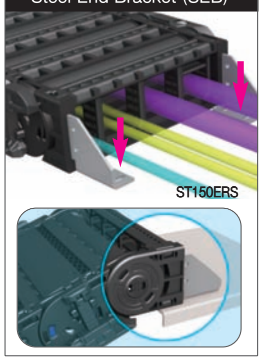
Free End Bracket(FEB)



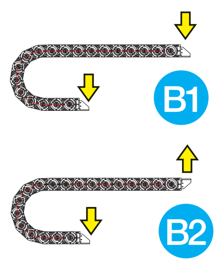
BR should not be inserted in the joint of side band and Free End Bracket.
Normal Frame, not FRU/FRD, is inserted into Free End Bracket.

ST072, ST095, ST120, ST150

Steel End Bracket (SEB)



Steel bracket is assembled to end part of cable chain and there are B1, B2 type of bracket available.



BR is not inserted at the end part of Side Band where Steel End Bracket is assembled.
Normal Frame(not FRD, FRU) is assembled to Free End Bracket

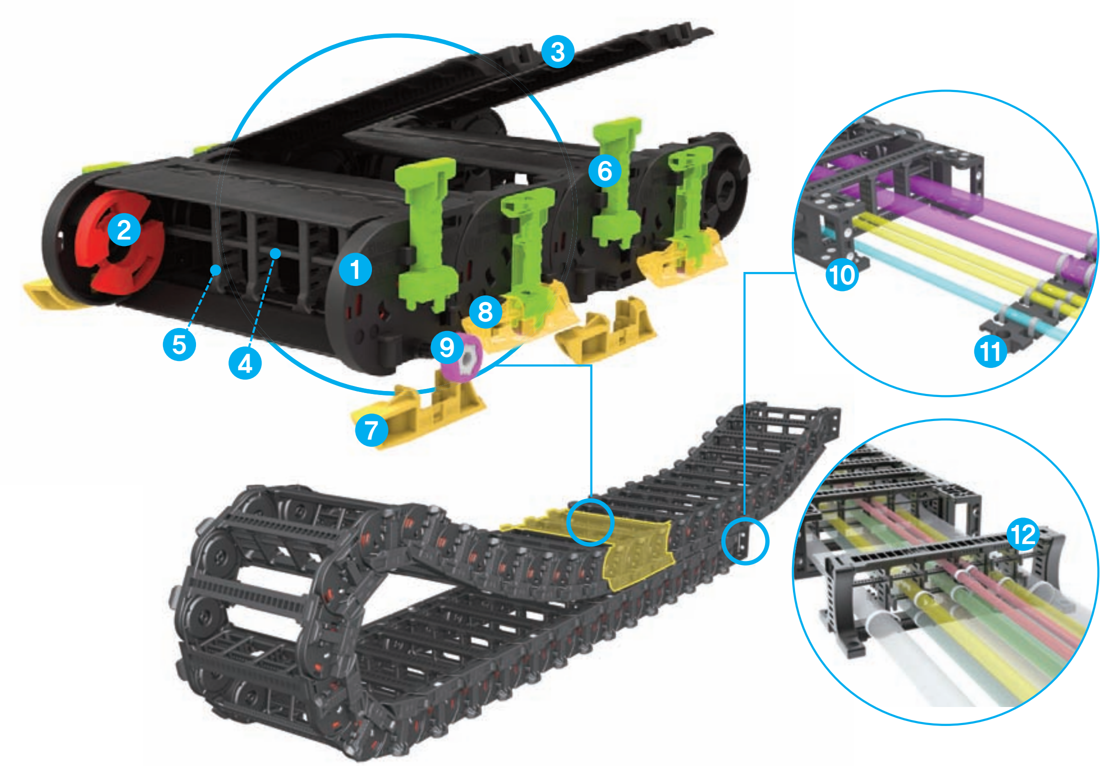
Ordering

ST 044ERS. 100. R120 / F - 1500L : (DV:2)

- Shift Chain
- Enclosed Roller Skid Type (ERS)
- Inside width
- Bending Radius
- Bracket Type
  - F : Free End Bracket
  - FT : Tie Wrap
  - FST : System Tie wrap
- Length(mm)
- Quantity of Divider(Link)

※ Dimensions in mm

Enclosed Roller Skid Type



Part of Shift Chain-Enclosed Roller Skid Type

❶ Side Band (SB)
A part that connects upper and lower frame. There are LH and RH type.

❷ Bending Radius Unit (BR)
A part that is inserted into Side Band. It is one of units that helps Shift Chain's excellent Unsupported Length' performance.

❸ FRU, FRD [FRU(D) Enclosed type applicable]
FRU, FRD are frames that assembled to upper and lower of cable chain.

❹ Separator (SP)
A part that prevent entanglement risk of cable and hoses by being installed horizontally.

❺ Divider (DV-S, M, R, T)
A part that prevents entanglement risk of cables and hoses by being installed vertically.

❻ Support
A unit that supports skid & roller skid which makes skid& roller skid move up and down.

❼❽ Skid, Roller Skid
Skid : A unit that minimizes friction between upper and lower cable chain.
Roller Skid : A unit that minimizes coefficient of friction between upper and lower cable chain. There is a roller unit that is assembled to Support and Skid.

❾ Roller
A unit that reduces coefficient of friction between upper and lower cable chain.

❿ Free End Bracket(FEB)
A part that connects to each end of Cable Chain. There are holes are formed where steel washers are inserted to fix FEB to fixing plate securely.

⓫ Tie Wrap (TW)
A part that prevents damage of the cable and hose by twisting & pulling movements. It can be used as assembling with bracket or separating from the bracket at end position of chain.

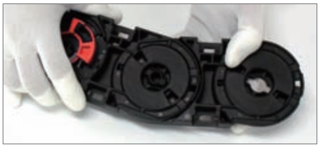
⓬ System Tie Wrap(STW)
A part that connects to first or end of Cable Chain. Cables and hoses are arranged at System Tie Wrap by several layers and being tightened using Cable Tie. There are 2 types. One is separated from FEB and the other one is assembled to FEB.

Assembly procedure of Shift Chain Enclosed Roller Skid Type

Assembly procedure of Shift chain ERS-type is as follows. Users must use rubber hammer with careful combination of Divider and Separator. (Disassembly process for repair and replacement is in reverse order)

1

Insert BR Unit into each Side Band.
(Side Band is divided into right and left side according to the direction.)



2

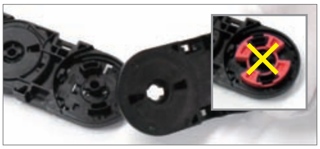
Continue to insert BR Unit into Side Band as you want to make it. Assembly Side Band which is inserted BR Unit as above.

3

Continue to connect each Side Band as long as you want to make it.

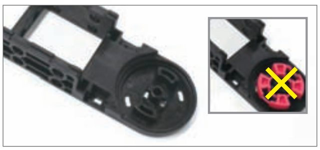
4

Connect the Side Band as many as you need



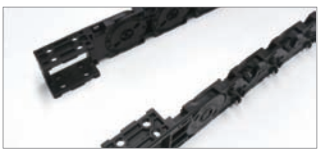
5

Assemble the F.FEB according to the direction of right and left side. (Do not insert the BR Unit to Side Band connected to F.FEB.Side of F.FEB is not enclosed.)



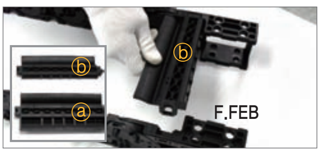
6

Do not insert a BR to M.FEB.
(M.FEB will be making a turn to up and down.)



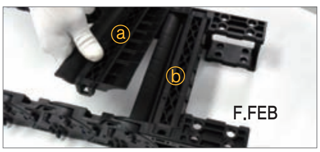
7

Assemble the M.FEB according to the direction of right and left side.
(Side of M.FEB is not enclosed.)



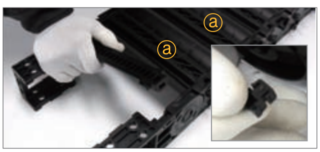
8

Insert one ⓑ Shaped-FRD into F.FEB. (ⓐ: Normal FRD ⓑ: Built-up only for F.FEB)Find one ⓑ shaped-FRD and insert it with the hinge facing RH direction, as above.



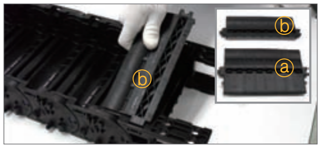
9

Continue to insert the FRD(ⓐ: Normal FRD) with the hinge facing RH direction. (Assemble the from F.FEB to M.FEB in order.)



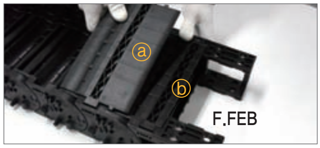
10

Insert the frame as many as you need and insert them one by one with the hinge facing. RH direction, as above. (M.FEB is not turned to up and down when FRD assembling)



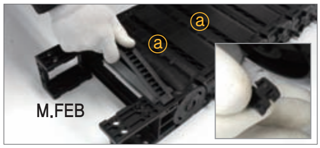
11

Insert the ⓑ shaped-FRD inserted to F.FEB and insert it with the hinge facing RH direction, as above. (ⓐ: Normal FRD ⓑ: Built-up only for F.FEB) Insert the divider with separator to divide the inside of chain.



12

Continue to insert the FRU(ⓐ: Normal FRU) with the hinge facing RH direction. (Assemble the from F.FEB to M.FEB in order)

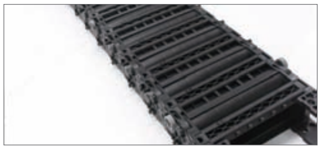


13

Insert ⓐ Normal FRU as many as you need and insert them one by one with the hinge facing RH direction, as above. Insert Frame-pin into the hole which is seen where the end of FRU and Side Band meet. (M.FEB is not turning to up and down when FRU assembling.)

14

Insert Roller into mounted Side Band

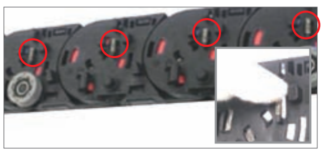


15

Continue to insert Roller into Side Band.
Basically, you insert one roller per 4 Link.

16

Insert Roller Skid into Side Band where roller inserted in. Skid is divided into Roller Skid (Skid with mount for roller) and normal Skid. (Skid without mount)



17

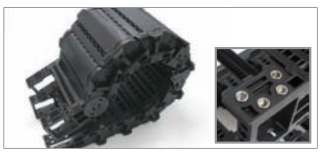
Insert support into groove of side band until you hear the "click". (Same support for both LH and RH.)

18

Insert a normal Skid into Side Band which is not inserted a roller

19

Insert Skid and Support into all Side Band links. (Check that Skid is working up-and-down properly when you push the assembled Skids by hands.)



20

Insert steel washers into M.FEB and F.FEB

Part of Shift Chain Enclosed Roller Skid Type

● Composition of Shift Chain Enclosed Roller Skid Type
= Side band(RH/LH) + Frame(FRD/FRU) + 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.

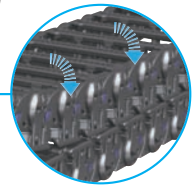
Model	Classification	Part number	Description
ST044ERS	SIDE BAND	ST-SB044S(LH) ST-SB044S(RH)	Left side band of ST044S Right side band of ST044S
	BENDING RADIUS	ST-BRS044.R70, 90, 120, 150	Bending radius unit for side band
	SKID	ST-SK044RS(LH-N) ST-SK044RS(LH-R) ST-SK044RS(RH-N) ST-SK044RS(RH-R)	Skid for long travel(Applied to side band)
	SPRING	ST-SPR044	Spring with roller
	SUPPORT	ST-SUP044	Supporter to fix skid unit
	Roller Bearing	ST-RL044	Roller for long travel(Applied to side band)
	FRAME(DOWN) FRAME(UP) FRAME(DOWN-FIXING END) FRAME(UP-FIXING END) FRAME(DOWN-MOVING END) FRAME(UP-MOVING END)	ST-FRD044.35 ST-FRU044.35 ST-FRD044.55 ST-FRU044.55 ST-FRD044.75 ST-FRU044.75 ST-FRD044.100 ST-FRU044.100 ST-FRDFE044(35,55,75,100) ST-FRUFE044(35,55,75,100) ST-FRDME044(35,55,75,100) ST-FRUME044(35,55,75,100)	Inside frame, 35mm Outside frame, 35mm Inside frame, 55mm Outside frame, 55mm Inside frame, 75mm Outside frame, 75mm Inside frame, 100mm Outside frame, 100mm 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
ST072ERS	SIDE BAND	ST-SB072S(LH) ST-SB072S(RH)	Left side band of ST072S Right side band of ST072S
	BENDING RADIUS	ST-BRS072. R120,145,200,250,300	Bending radius unit for side band
	SKID	ST-SK072RS(LH-N) ST-SK072RS(LH-R) ST-SK072RS(RH-N) ST-SK072RS(RH-R)	Skid for long travel(Applied to side band)
	SPRING	ST-SPR072	Spring with roller
	SUPPORT	ST-SUP072	Supporter to fix skid unit
	Roller Bearing	ST-RL072	Roller for long travel(Applied to side band)
	FRAME PIN	S-FP/S1	Frame pin
	FRAME(DOWN) FRAME(UP) FRAME(DOWN-FIXING END) FRAME(UP-FIXING END) FRAME(DOWN-MOVING END) FRAME(UP-MOVING END)	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 ST-FRDFE072(50,75,100,125,150) ST-FRUFE072(50,75,100,125,150) ST-FRDME072(50,75,100,125,150) ST-FRUME072(50,75,100,125,150)	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 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-FEB072 sb-FEB/WH045	Free End bracket of ST072E, Steel End bracket(B1, B2, B3) 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.Frame 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

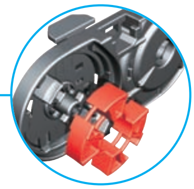
Model	Classification	Part number	Description
ST095ERS	SIDE BAND	ST-SB095S(LH) ST-SB095S(RH)	Left side band of ST095S Right side band of ST095S
	BENDING RADIUS	ST-BR95.R150,200,230,280,400	Bending radius unit for side band
	SKID	ST-SK095RS(LH-N) ST-SK095RS(LH-R) ST-SK095RS(RH-N) ST-SK095RS(RH-R)	Skid for long travel(Applied to side band)
	SPRING	ST-SPR095	Spring with roller
	SUPPORT	ST-SUP095	Supporter to fix skid unit
	Roller Bearing	ST-RL095	Roller for long travel(Applied to 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-FRDFE095(100,125,150,175,200) ST-FRUFE095(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	Free End bracket of ST095E, Steel End bracket(B1, B2, B3)
	DIVIDER	sb-DV060/M sb-DV060/S	Normal divider To fix separstors at the both side section
	SEPARATOR	sb-SP/400.Frame 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
ST120ERS	SIDE BAND	ST-SB120S(LH) ST-SB120S(RH)	Left side band of ST120E Right side band of ST120E
	BENDING RADIUS	ST-BR120,R180,200,250,300,350,400,500	Bending radius unit for side band
	SKID	ST-SK120RS(LH-N) ST-SK120RS(LH-R) ST-SK120RS(RH-N) ST-SK120RS(RH-R)	Skid for long travel(Applied to side band)
	SPRING	ST-SPR120 ST-SUP120	Spring with roller
	SUPPORT	ST-SUP120	Supporter to fix skid unit
	Roller Bearing	ST-RL120	Roller for long travel(Applied to 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-FRDFE120.150,200,250,300 ST-FRUFE120.150,200,250,300 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	Free End bracket of ST120E, Steel End bracket(B1, B2, B3) 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.Frame 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

ST044ERS



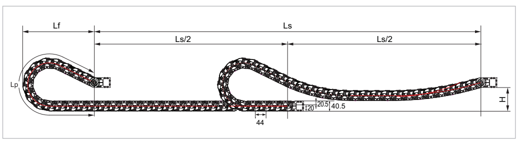
Hinge hook type



Bending Radius Unit

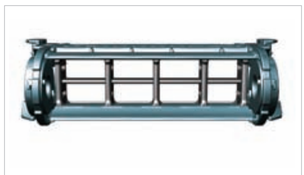
Layout of the Chain

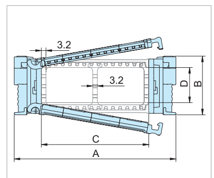
Ls: Stroke



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
70 90 120 150	544 662 926 1,190	249 289 393 497	110

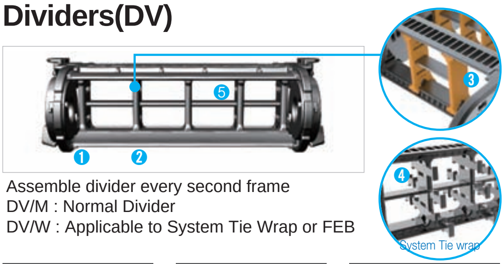
Chain Cross Section





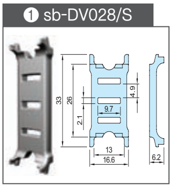
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
ST044ERS	73 93 113 138	40.5	35 55 75 100	24.5	1.07 1.16 1.23 1.33

Dividers(DV)

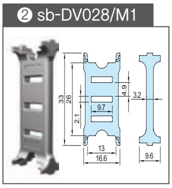


Assemble divider every second frame
DV/M : Normal Divider
DV/W : Applicable to System Tie Wrap or FEB

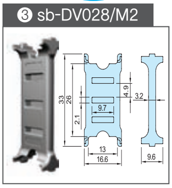
❶ sb-DV028/S



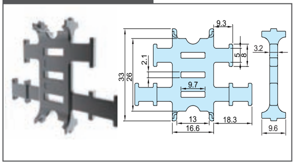
❷ sb-DV028/M1



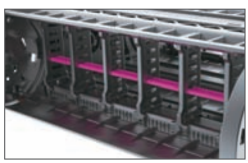
❸ sb-DV028/M2

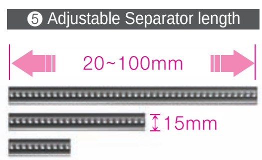


❹ sb-DV028/W



Separators(SP)



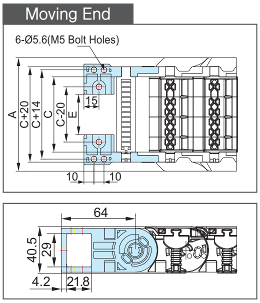


Chain Type	Ordering NO.	Frame
ST044ERS	S-SP/M.35 S-SP/M.55 S-SP/M.75 S-SP/M.100	35 55 75 100

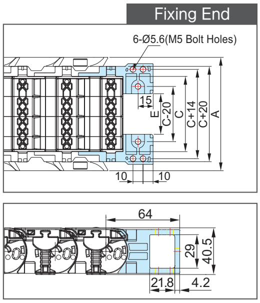
※ Dimensions in mm

Free End Bracket(FEB)

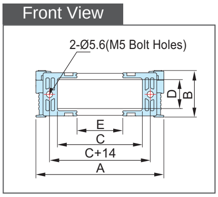
Moving End



Fixing End

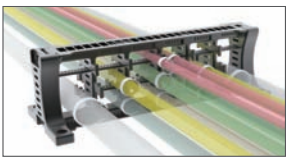


Front View



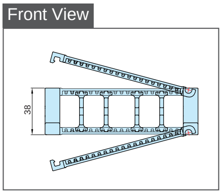
Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	E M,EB Bolt hole width	Hole Type
ST044ERS	73 93 113 138	40.5	35 55 75 100	24.5	0.4 20.4 40.4 65.4	M5 Bolt Holes

System Tie Wrap(STW)

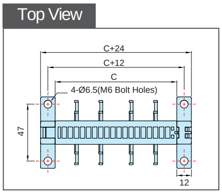


It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.

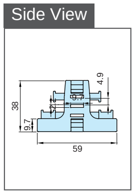
Front View



Top View

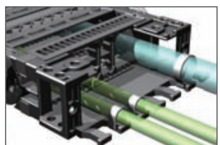


Side View

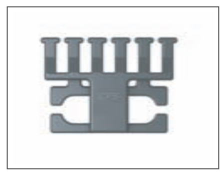


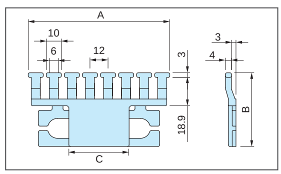
Chain Type	Ordering NO.	C Frame	Hole Type
ST044ERS	S-TW.EB028.35 S-TW.EB028.55 S-TW.EB028.75 S-TW.EB028.100	35 55 75 100	M6 Bolt Holes

Tie Wrap(TW)



Attached to Bracket

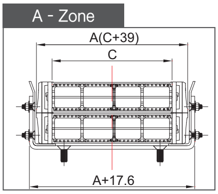




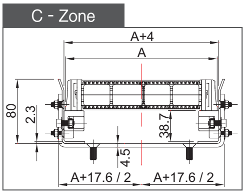
Chain Type	Ordering NO.	A	B	C
ST044ERS	S-TW036/025CR.35 S-TW036/025CR.55 S-TW036/025CR.75 S-TW036/025CR.100	46 70 94 118	35.4 48.9 48.9 48.9	- 20 40 65

Guide Channel

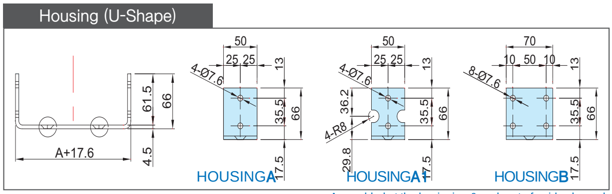
A - Zone



C - Zone

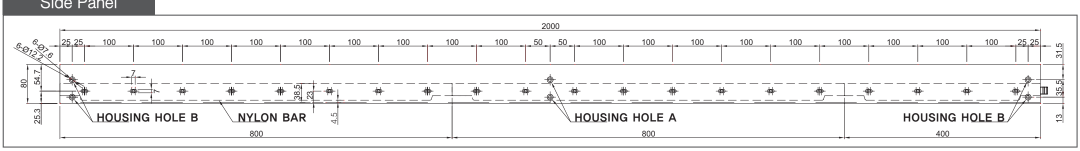


Housing (U-Shape)



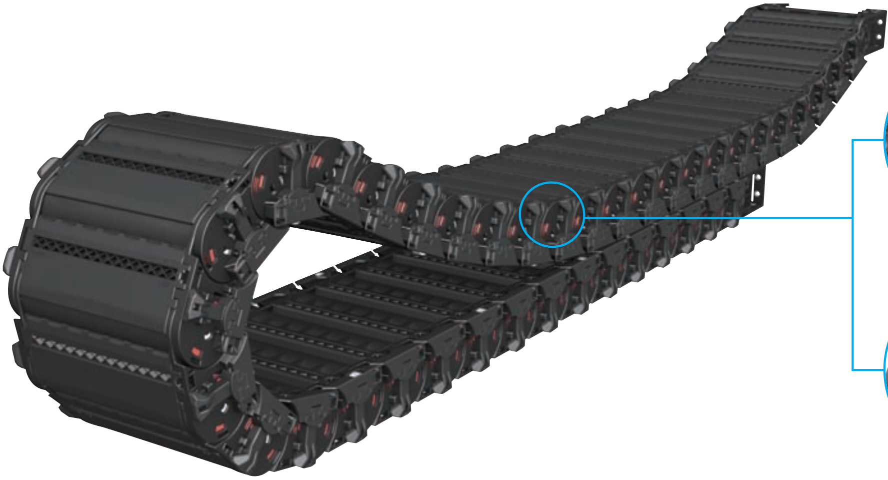
Assembled at the beginning & end part of guide channel

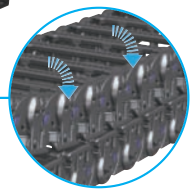
Side Panel



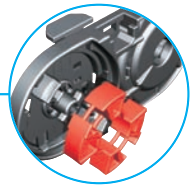
※ Dimensions in mm

ST072ERS





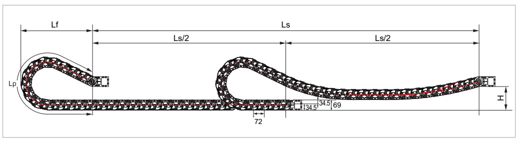
Hinge hook type



Bending Radius Unit

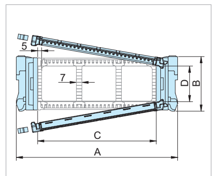
Layout of the Chain

Ls: Stroke



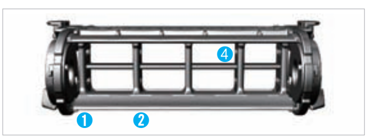
Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
120	917	420	180
145	1,063	470	
200	1,400	580	
250	1,840	752	
300	2,280	924	

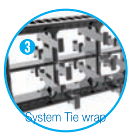
Chain Cross Section



Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
ST072ERS	104	69	50	44	2.53
	129		75		2.65
	154		100		2.77
	179		125		2.89
	204		150		3.01

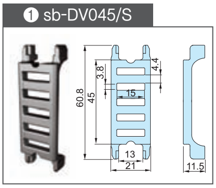
Dividers(DV)



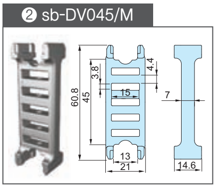


Assemble divider every second frame
DV/M : Normal Divider
DV/W : Applicable to System Tie Wrap or FEB

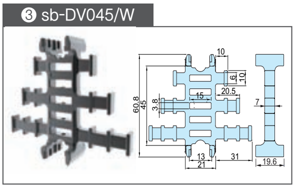
❶ sb-DV045/S



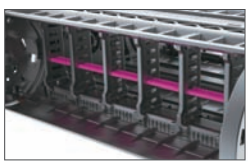
❷ sb-DV045/M



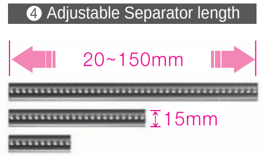
❸ sb-DV045/W



Separators(SP)



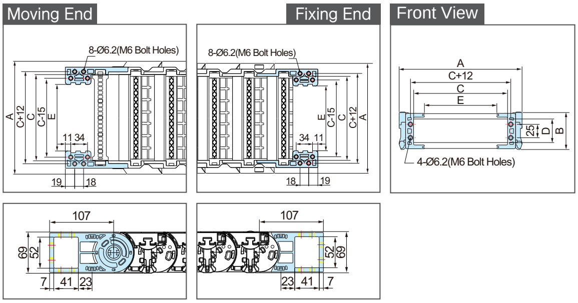
❹ Adjustable Separator length



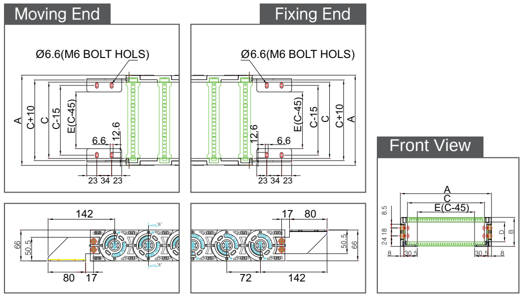
Chain Type	Ordering NO.
ST072ERS	sb-SP/400.Frame

 ※ Dimensions in mm

Free End Bracket(FEB)

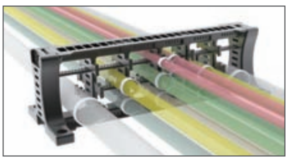


Steel End Bracket(SEB)

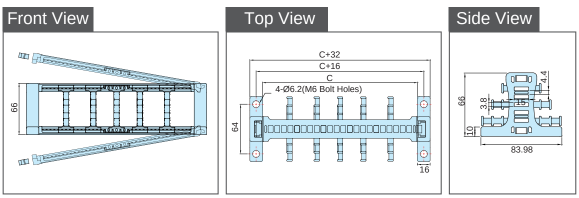


Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	E M.EB Bolt hole width	Hole Type
ST072ERS	104 129 154 179 204	69	50 75 100 125 150	44	10 35 60 85 110	M6 Bolt Holes

System Tie Wrap(STW)

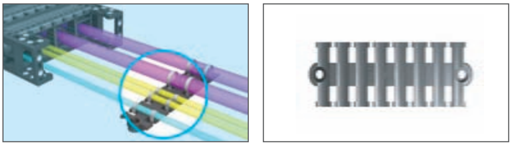


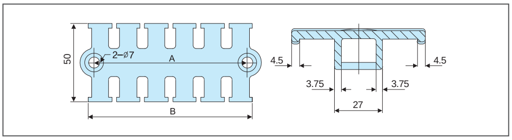
It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.



Chain Type	Ordering NO.	C Frame	Hole Type
ST072ERS	S-TW.EB045.50 S-TW.EB045.75 S-TW.EB045.100 S-TW.EB045.125 S-TW.EB045.150	50 75 100 125 150	M6 Bolt Holes

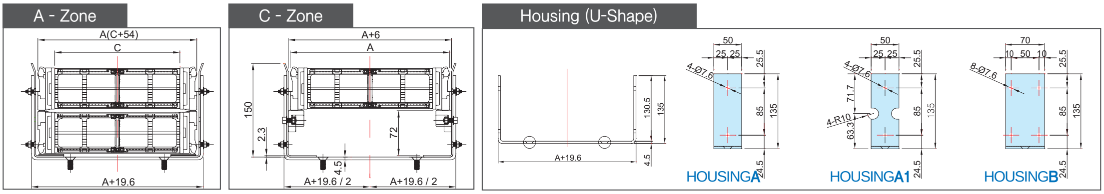
Tie Wrap(TW)



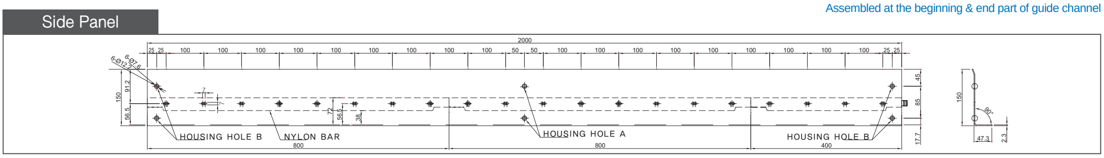


Chain Type	Ordering NO.	A	B
ST072ERS	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

Guide Channel

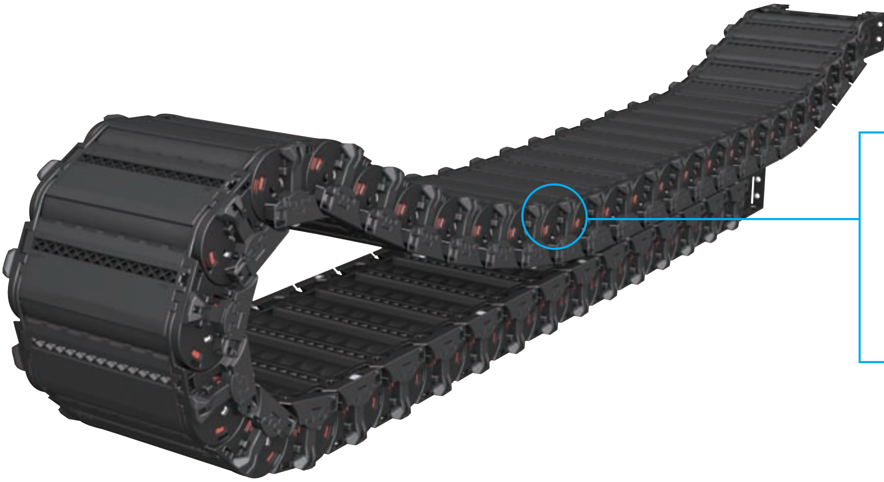


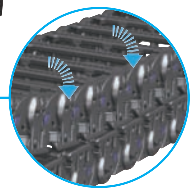
Assembled at the beginning & end part of guide channel



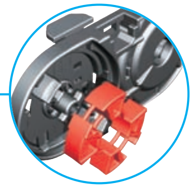
※ Dimensions in mm

ST095ERS





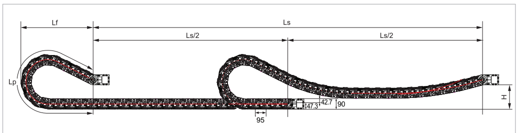
Hinge hook type



Bending Radius Unit

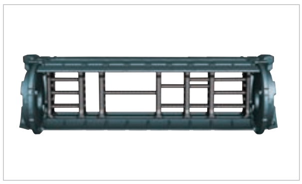
Layout of the Chain

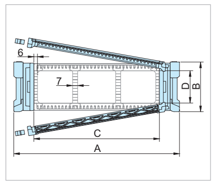
Ls: Stroke



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
150	1,178	534	210
200	1,479	634	
230	1,666	694	
280	2,146	889	
400	3,232	1,319	

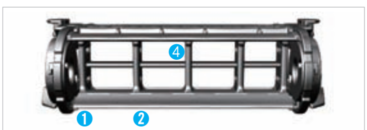
Chain Cross Section

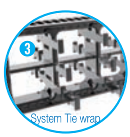




Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
ST095ERS	168	90	100	55	4.20
	193		125		4.45
	218		150		4.70
	243		175		4.95
	268		200		5.19

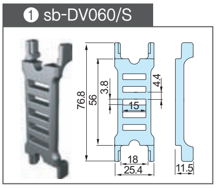
Dividers(DV)



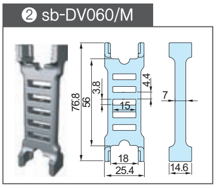


Assemble divider every second frame
DV/M : Normal Divider
DV/W : Applicable to System Tie Wrap or FEB

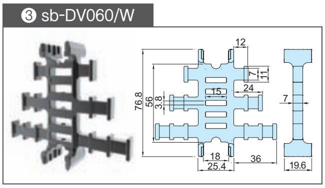
❶ sb-DV060/S



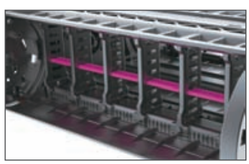
❷ sb-DV060/M



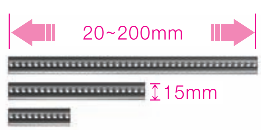
❸ sb-DV060/W



Separators(SP)



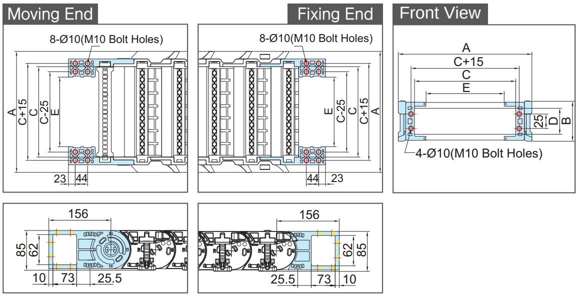
❹ Adjustable Separator length



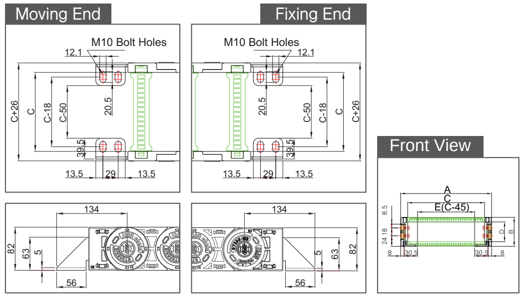
Chain Type	Ordering NO.
ST095ERS	sb-SP/400.Frame

※ Dimensions in mm

Free End Bracket(FEB)

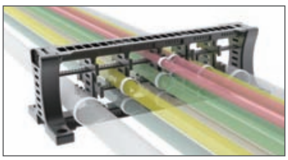


Steel End Bracket(SEB)

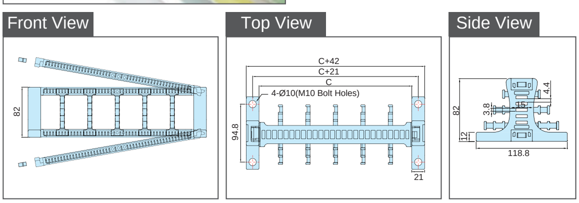


Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	E M.EB Bolt hole width	Hole Type
ST095ERS	168 193 218 243 268	90	100 125 150 175 200	55	49 74 99 124 149	M10 Bolt Holes

System Tie Wrap(STW)

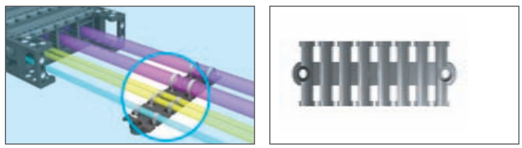


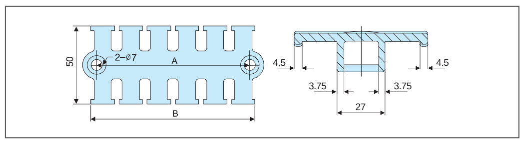
It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.



Chain Type	Ordering NO.	C Frame	Hole Type
ST095ERS	S-TW.EB060.100 S-TW.EB060.125 S-TW.EB060.150 S-TW.EB060.175 S-TW.EB060.200	100 125 150 175 200	M10 Bolt Holes

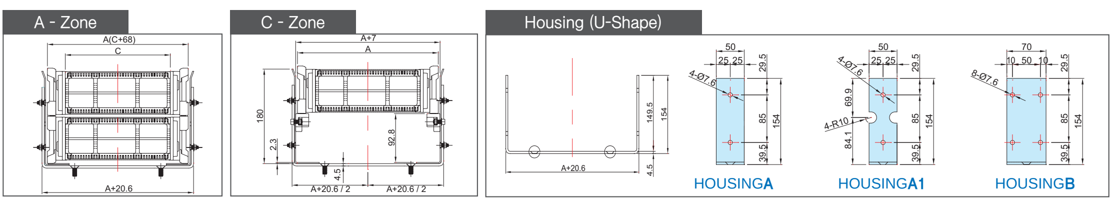
Tie Wrap(TW)



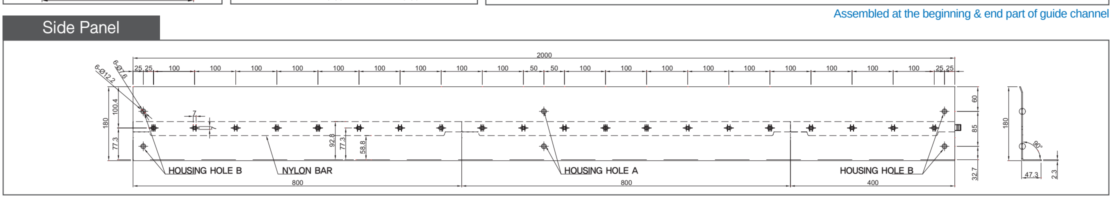


Chain Type	Ordering NO.	A	B
ST095ERS	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

Guide Channel

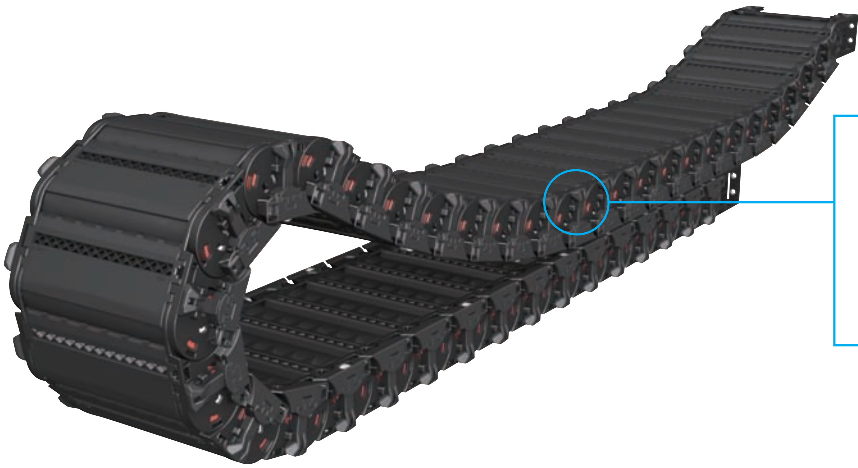


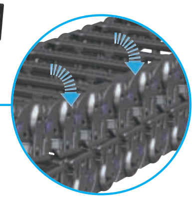
Assembled at the beginning & end part of guide channel



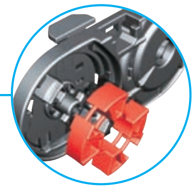
※ Dimensions in mm

ST120ERS





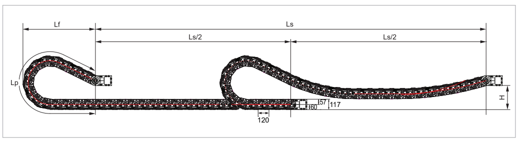
Hinge hook type



Bending Radius Unit

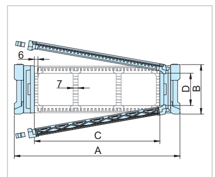
Layout of the Chain

Ls: Stroke



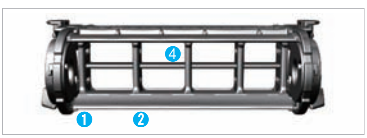
Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
200	1,559	694	260
250	1,864	794	
300	2,178	894	
350	2,701	1,114	
400	3,225	1,334	
500	4,062	1,654	

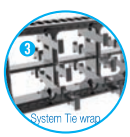
Chain Cross Section



Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	Weight kg/m
ST120ERS	218	117	150	76	5.17
	268		200		5.48
	318		250		5.78
	368		300		6.09

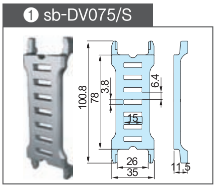
Dividers(DV)



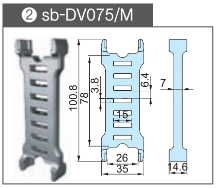


Assemble divider every second frame
DV/M : Normal Divider
DV/W : Applicable to System Tie Wrap or FEB

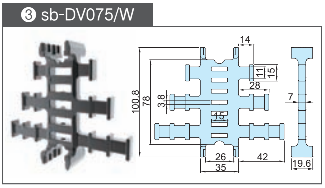
❶ sb-DV075/S



❷ sb-DV075/M

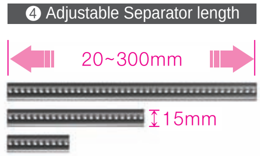


❸ sb-DV075/W



Separators(SP)

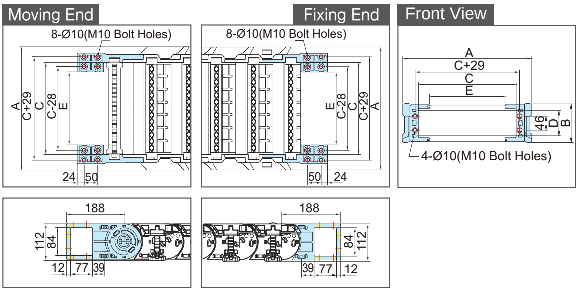
❹ Adjustable Separator length



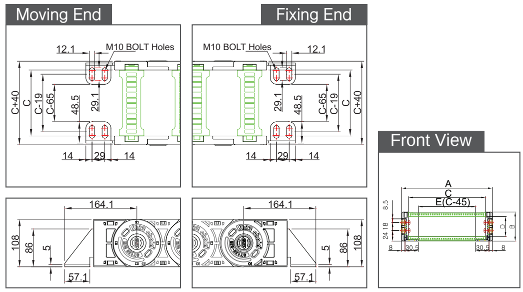
Chain Type	Ordering NO.
ST120ERS	sb-SP/400.Frame

 ※ Dimensions in mm

Free End Bracket(FEB)

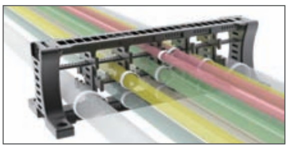


Steel End Bracket(SEB)

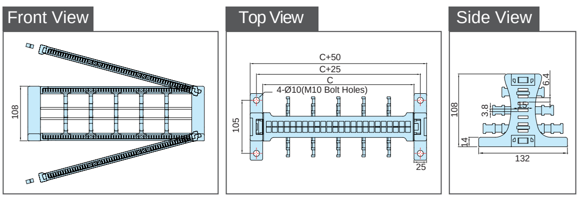


Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	E M,EB Bolt hole width	Hole Type
ST120ERS	218 268 318 368	117	150 200 250 300	76	90 140 190 240	M10 Bolt Holes

System Tie Wrap(STW)

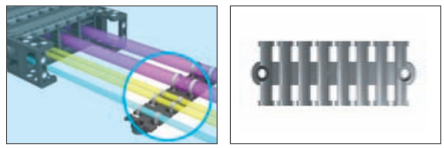


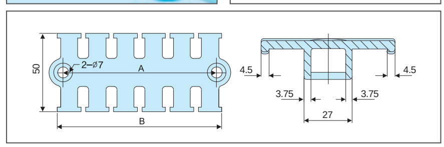
It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.



Chain Type	Ordering NO.	C Frame	Hole Type
ST120ERS	S-TW.EB075.150 S-TW.EB075.200 S-TW.EB075.250 S-TW.EB075.300	150 200 250 300	M10 Bolt Holes

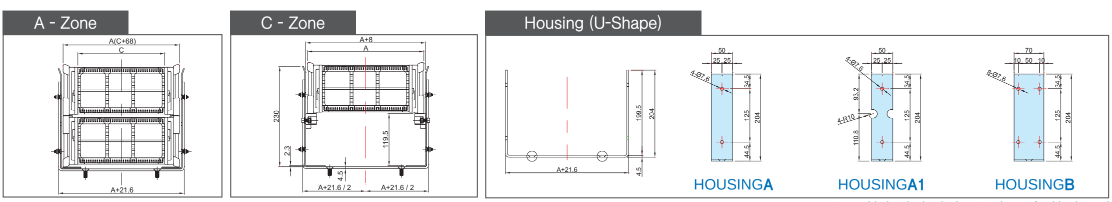
Tie Wrap(TW)



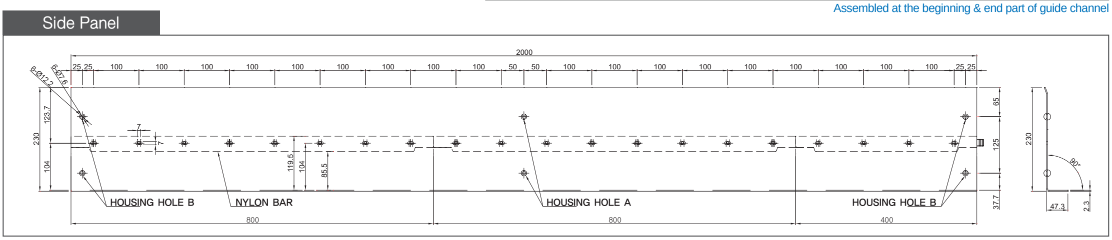


Chain Type	Ordering NO.	A	B
ST120ERS	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

Guide Channel

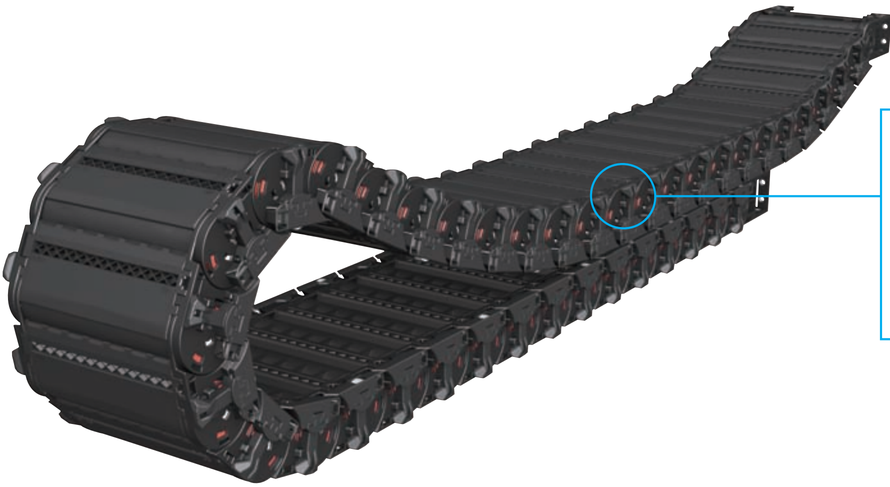


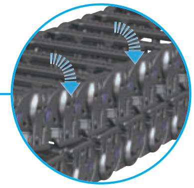
Assembled at the beginning & end part of guide channel



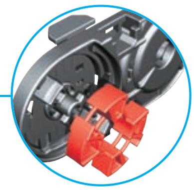
※ Dimensions in mm

ST150ERS





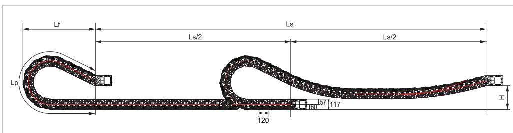
Hinge hook type



Bending Radius Unit

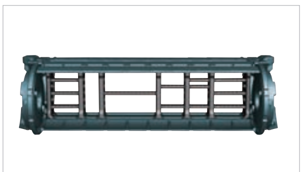
Layout of the Chain

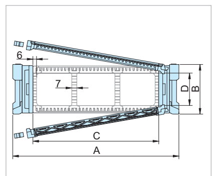
Ls: Stroke



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
305	2,272	985	400
405	3,161	1,335	
505	4,050	1,685	
605	4,940	2,035	

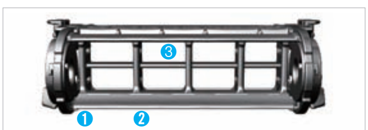
Chain Cross Section





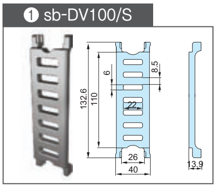
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
ST150ERS	287	145	200	110	10.23
	337		250		10.84
	387		300		11.45
	437		350		12.06
	487		400		12.67

Dividers(DV)

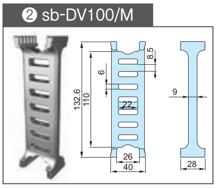


Assemble divider every second frame

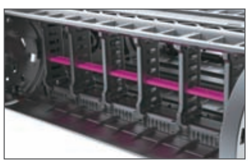
❶ sb-DV100/S



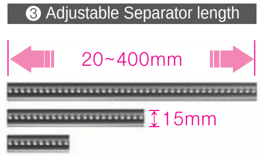
❷ sb-DV100/M



Separators(SP)



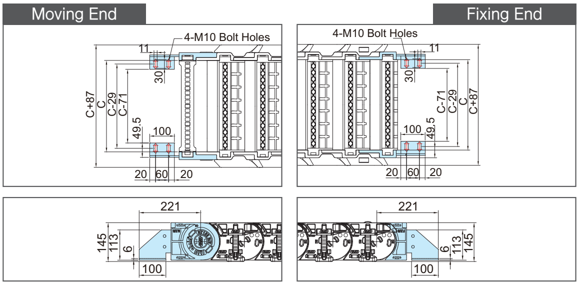
❸ Adjustable Separator length



Chain Type	Ordering NO.
ST150ERS	sb-SP/600.Frame

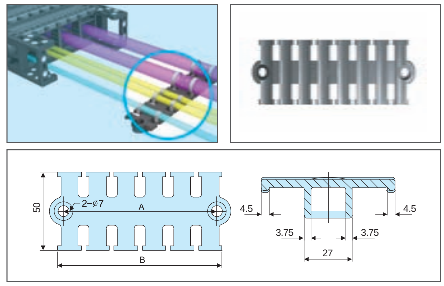
※ Dimensions in mm

Steel End Bracket(SEB)



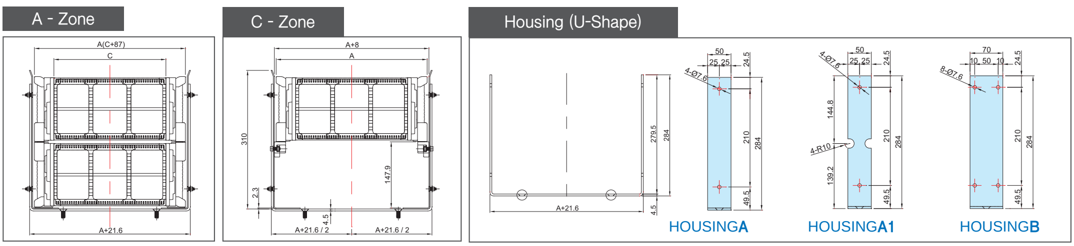
Chain Type	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Hole Type
ST150ERS	145	200 250 300 350 400	110	M10 Bolt Holes

Tie Wrap(TW)

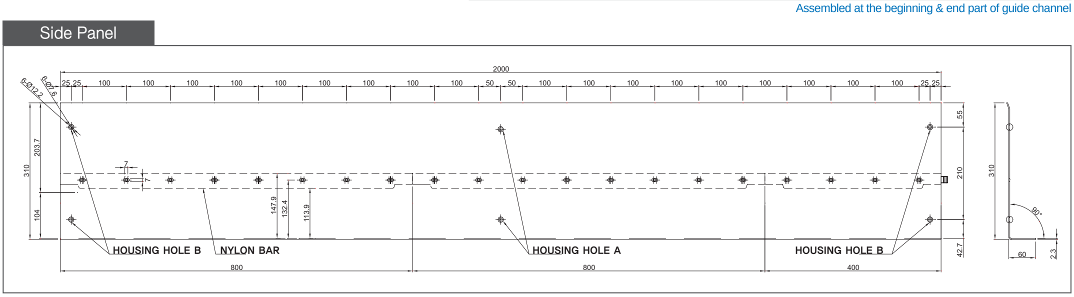


Chain Type	Ordering NO.	A	B
ST150ERS	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

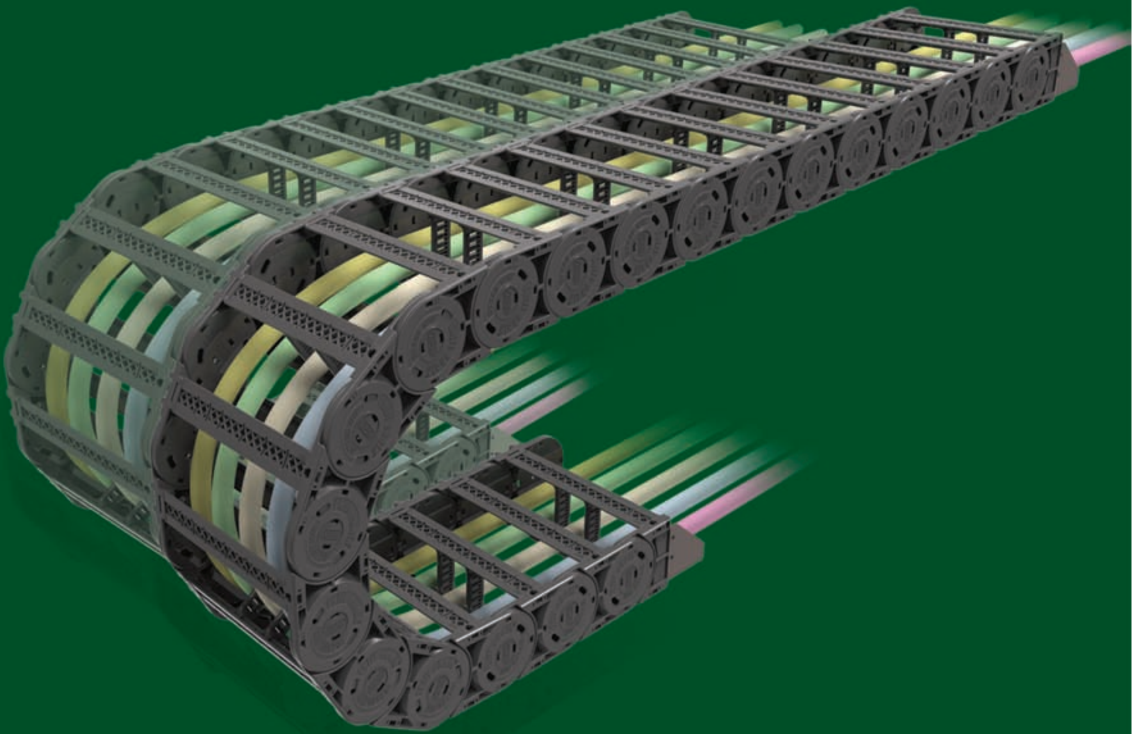
Guide Channel



Assembled at the beginning & end part of guide channel



※ Dimensions in mm



Shift Chain®

Double Chain

Double Type of Shift Chain

Double Chain

- ST095D
- ST120D
- ST150D

Double Chain

Value of Speed/Acceleration is subject to change according to cable's amount and travel length.

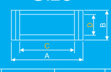
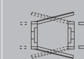
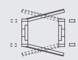
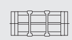
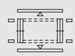
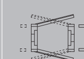
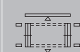
General Information

Material	CPS-Amide (PA6+G.F)
Speed	6㎧
Acceleration	12㎨
Temperature	-30℃ ~ +130℃
Certificate	CE, ATEX(Ex), RoHs2

Calculation Table

Length of Cable Chain	L = ½ X Ls + Lp
Bending Radius	Multiply 8~10 of the biggest cable
	Multiply 15~20 of the biggest hose

Dimension Table

Shift Chain Double Chain	Pitch	Bending Radius (R) 	Weight kg/m	Speed m/s	Temperature ℃	Size  A	B	C	D	Frame type	Section composition
ST095D	95	135, 150, 200, 230, 280, 400	3.11	6	-30 ~ +130	113	82	75	56		
			3.17			138		100			
			3.37			163		125			
			3.49			188		150			
			3.60			213		175			
			3.71			228		190			
			3.79			238		200			
			4.00			278		240			
			4.05			288		250			
			4.31			338		300			
			4.69			388		350			
			5.05			438		400			
ST120D	120	180, 200, 250, 300, 350, 400, 500	4.41	6	-30 ~ +130	117	108	75	78		
			4.53			142		100			
			4.61			157		115			
			4.67			167		125			
			4.78			192		150			
			4.93			217		175			
			5.17			242		200			
			5.41			282		240			
			5.47			292		250			
			5.80			332		290			
			5.88			342		300			
			6.30			392		350			
			6.73			442		400			
			7.07			492		450			
			7.30			542		500			
			8.13			592		550			
			8.30			642		600			
ST150D	150	205, 305, 405, 505, 605	5.85	6	-30 ~ +130	121	140	75	110		
			5.96			146		100			
			6.03			161		115			
			6.08			171		125			
			6.18			196		150			
			6.30			221		175			
			6.51			246		200			
			6.72			286		240			
			6.78			296		250			
			7.06			336		290			
			7.14			346		300			
			7.51			396		350			
			7.88			446		400			
			8.18			496		450			
			8.37			546		500			
			9.11			596		550			
			9.26			646		600			

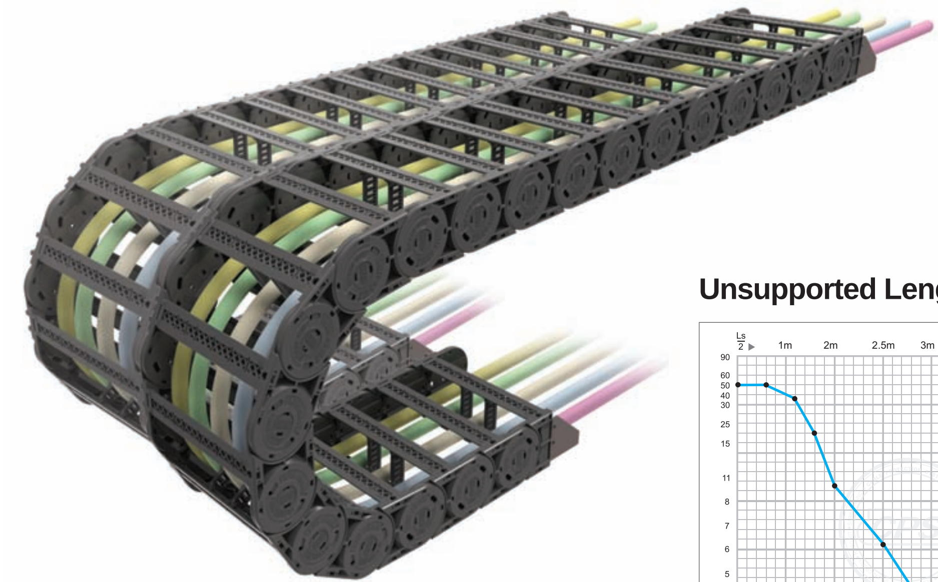
Ordering

ST 150D. RH400.LH350. R405 / B1 - 3000L : (DV:2)

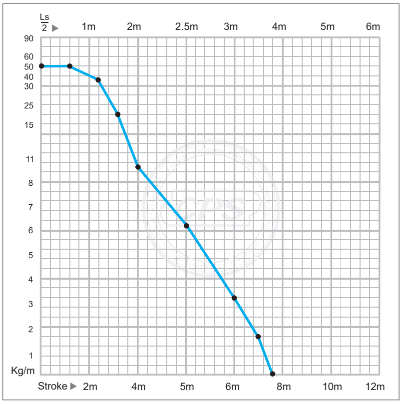
- Shift Chain
- Double Chain (D)
- RH Inside width
- LH Inside width
- Bending Radius
- Bracket Type **B1, B2, B3 : T** Tie Wrap
  - Bracket : B1, B2, B3 (Spec. 095, 120, 150)
  - **T** : Tie Wrap
  - F : Free End Bracket (Spec. 095, 120)
  - FT : Tie Wrap
  - FST : System Tie wrap
- Length(mm)
- Quantity of Divider(Link)

※ Dimensions in mm

ST095D

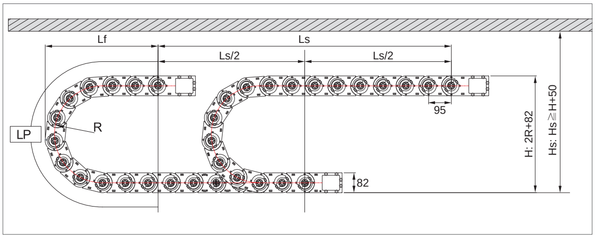


Unsupported Length



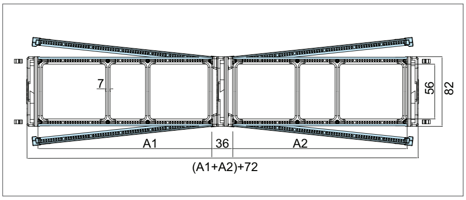
Layout of the Chain

Ls: Stroke Hs: Safe Space



R Bending Radius	Lp Loop Length	Lf Loof Projection	H Moving Height
135	805	364	352
150	855	374	382
200	1,010	428	482
230	1,110	459	542
280	1,260	505	642
400	1,640	629	882

Chain Cross Section

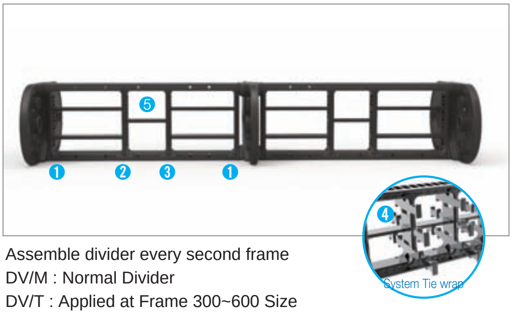


Chain Type	A1 Frame												
ST095D	75	100	125	150	175	190	200	230	240	250	300	350	400
Chain Type	A2 Frame												
ST095D	75	100	125	150	175	190	200	230	240	250	300	350	400

※ Dimensions in mm

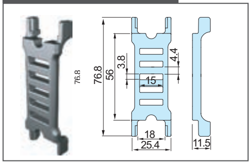
Double Chain

Dividers(DV)

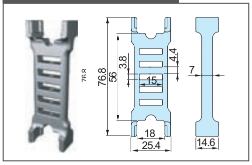


Assemble divider every second frame
DV/M : Normal Divider
DV/T : Applied at Frame 300~600 Size

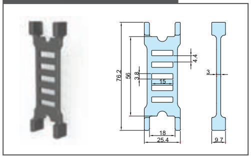
❶ sb-DV060/S



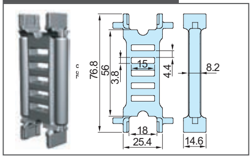
❷ sb-DV060/M



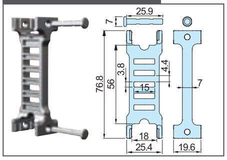
❷ sb-DV060/MS



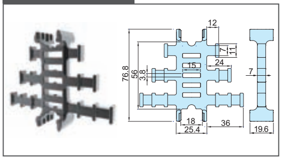
❷ sb-DV060/R



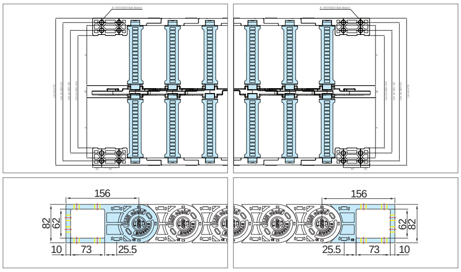
❸ sb-DV060/T



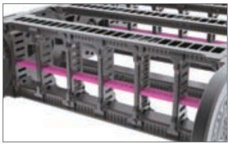
❹ sb-DV060/W



Free End Bracket(FEB)



Separators(SP)

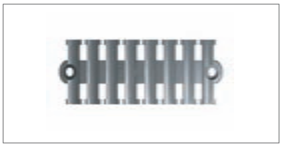


❺ Adjustable Separator length

Chain Type	Ordering NO.
ST095D	sb-SP/400.Frame

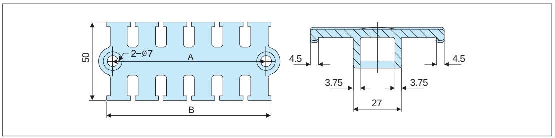
Chain Type	A1 Frame												
ST095D	75	100	125	150	175	190	200	230	240	250	300	350	400
Chain Type	**A2 Frame**												
ST095D	75	100	125	150	175	190	200	230	240	250	300	350	400

Tie Wrap(TW)



Chain Type	Ordering NO.	A	B
ST095D	S-TW50	58	65
	S-TW75	75	82
	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

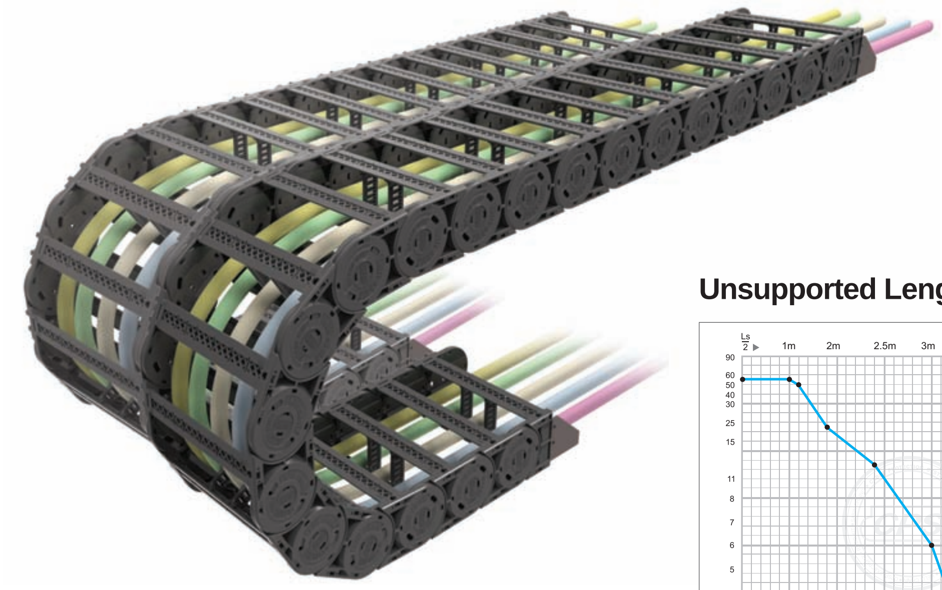
Cable Clamp



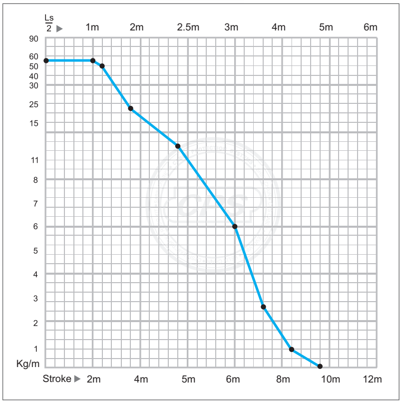
⁎ Please refer to Page.226 for more details of Cable Clamp

※ Dimensions in mm

ST120D

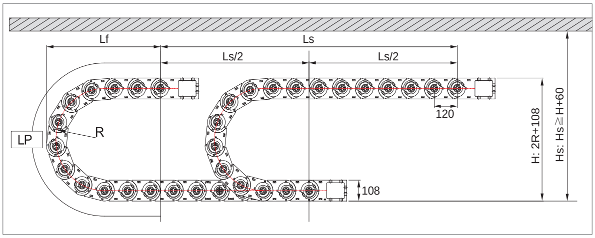


Unsupported Length



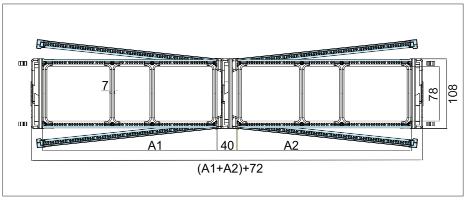
Layout of the Chain

Ls: Stroke Hs: Safe Space



R Bending Radius	Lp Loop Length	Lf Loof Projection	H Moving Height
180	1,046	474	468
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

Chain Cross Section

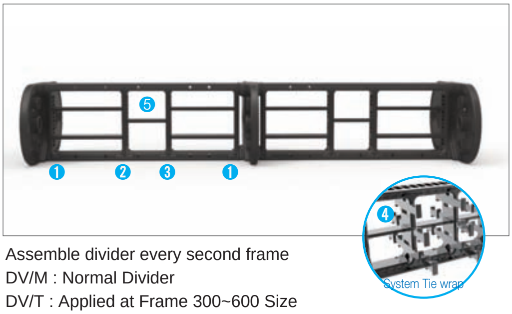


Chain Type	A1 Frame																
ST120D	75	100	115	125	150	175	200	240	250	290	300	350	400	450	500	550	600
Chain Type	A2 Frame																
ST120D	75	100	115	125	150	175	200	240	250	290	300	350	400	450	500	550	600

※ Dimensions in mm

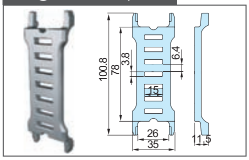
Double Chain

Dividers(DV)

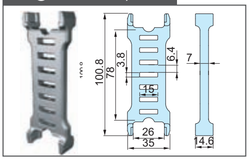


Assemble divider every second frame
DV/M : Normal Divider
DV/T : Applied at Frame 300~600 Size

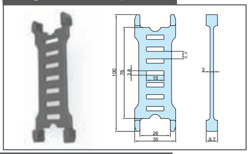
❶ sb-DV075/S



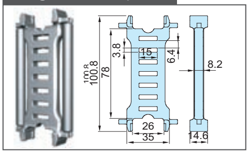
❷ sb-DV075/M



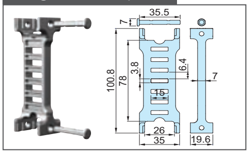
❷ sb-DV075/MS



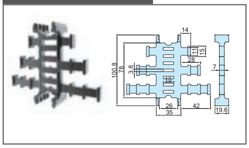
❷ sb-DV075/R



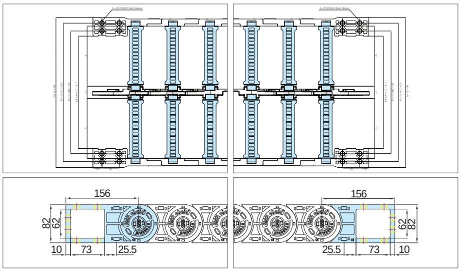
❸ sb-DV075/T



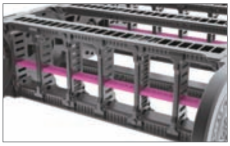
❹ sb-DV075/W



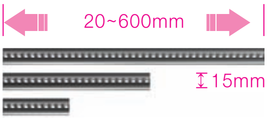
Free End Bracket(FEB)



Separators(SP)



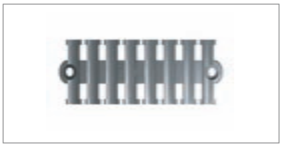
❺ Adjustable Separator length



Chain Type	Ordering NO.
ST120D	sb-SP/400.Frame

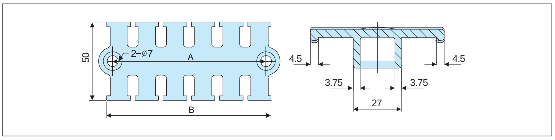
Chain Type	A1 Frame																
ST120D	75	100	115	125	150	175	200	240	250	290	300	350	400	450	500	550	600
Chain Type	A2 Frame																
ST120D	75	100	115	125	150	175	200	240	250	290	300	350	400	450	500	550	600

Tie Wrap(TW)



Chain Type	Ordering NO.	A	B
ST120D	S-TW50	58	65
	S-TW75	75	82
	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

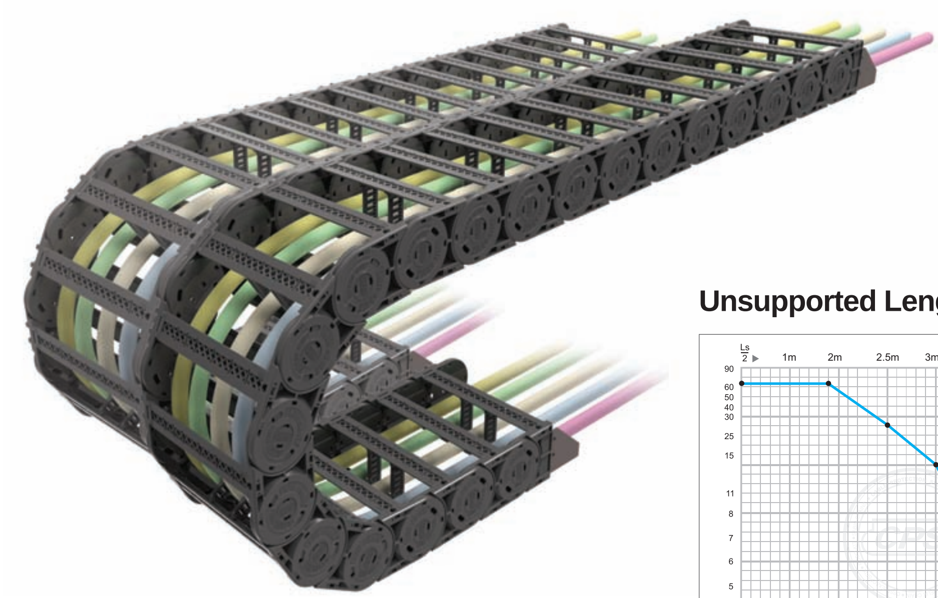
Cable Clamp



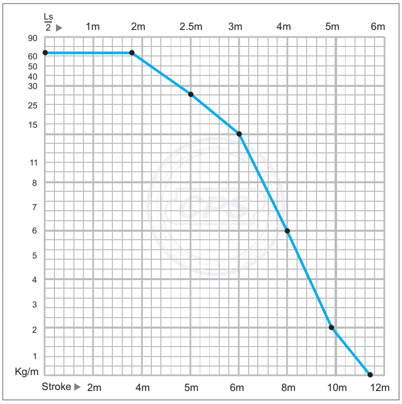
* Please refer to Page.226 for more details of Cable Clamp

※ Dimensions in mm

ST150D

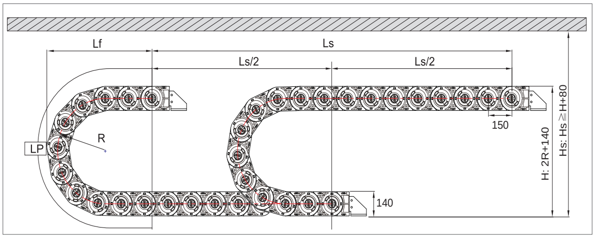


Unsupported Length



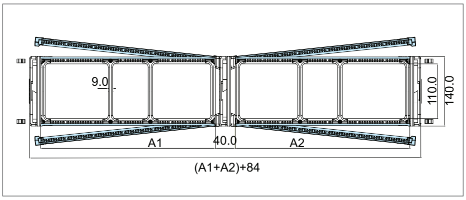
Layout of the Chain

Ls: Stroke Hs: Safe Space



R Bending Radius	Lp Loop Length	Lf Loof Projection	H Moving Height
50	333	157	138
70	396	177	178
90	459	197	218
120	553	227	278
150	648	257	338

Chain Cross Section

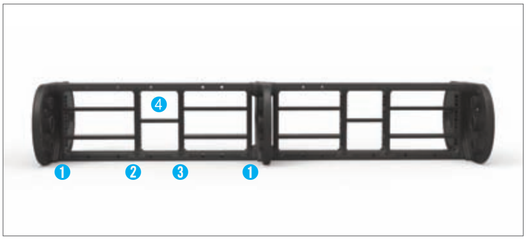


Chain Type	A1 Frame																
ST150D	75	100	115	125	150	175	200	240	250	290	300	350	400	450	500	550	600
Chain Type	A2 Frame																
ST150D	75	100	115	125	150	175	200	240	250	290	300	350	400	450	500	550	600

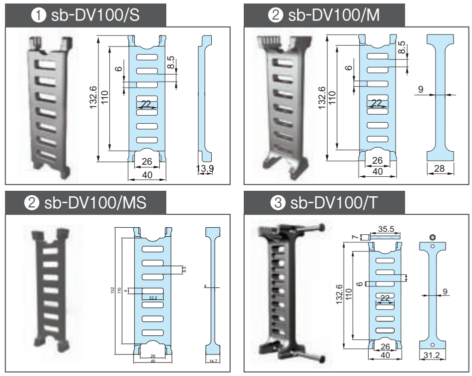
※ Dimensions in mm

Double Chain

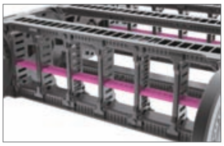
Dividers(DV)

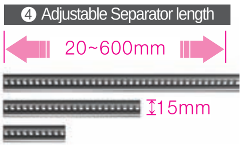


Assemble divider every second frame
DV/M : Normal Divider
DV/T : Applied at Frame 300~600 Size



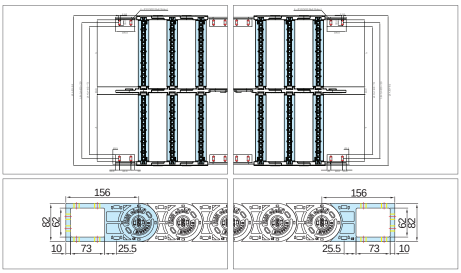
Separators(SP)





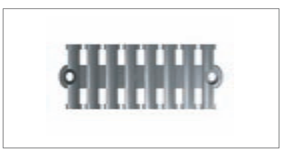
Chain Type	Ordering NO.
ST150D	sb-SP/600.Frame

Free End Bracket(FEB)



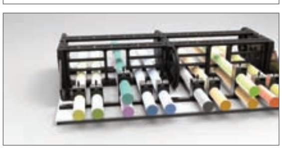
Chain Type	A1 Frame																
ST150D	75	100	115	125	150	175	200	240	250	290	300	350	400	450	500	550	600
Chain Type	A2 Frame																
ST150D	75	100	115	125	150	175	200	240	250	290	300	350	400	450	500	550	600

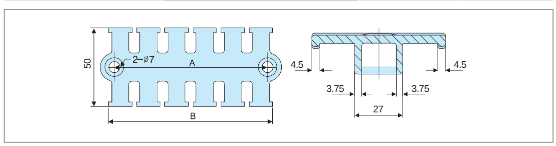
Tie Wrap(TW)



Chain Type	Ordering NO.	A	B
ST150D	S-TW50	58	65
	S-TW75	75	82
	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

Cable Clamp



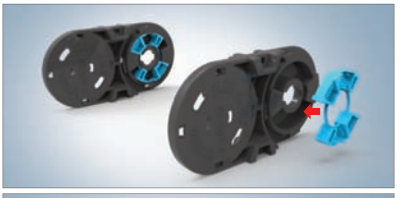


* Please refer to Page.226 for more details of Cable Clamp

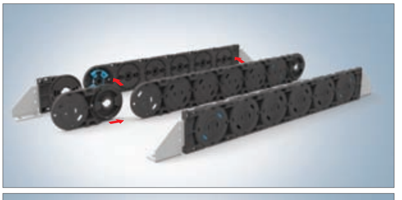
※ Dimensions in mm

Assembly Procedure of Shift Chain Double Type

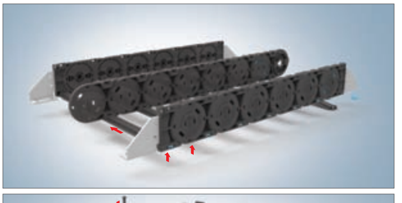
Please follow Assembly procedure of Shift Chain ~ ST-D below
Please use Teflon or Rubber material hammer to not harm any external damage to cable chain.
Please use Divider or Separator when composing section and disassembly procedure is in reverse order of assembly.



1 Insert Blue colored BR into Side Band and make a long connection of Side Band as much as needed

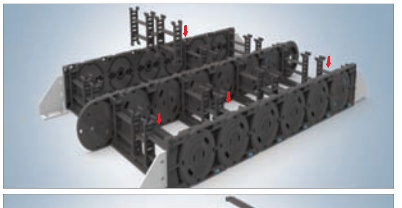


2 Assemble Bracket to end part of Side Band set
Assemble Side Band at the center to connect with each bracket at both side

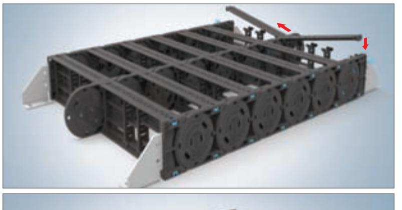


3 Assemble frame at both sides and insert blue colored Frame Pin to complete assembly between Side Band and Frame

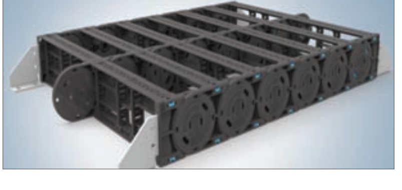
4 Compose section by using Divider, Separator and Separator pin like in the image



5 Place completed section unit onto lower frame like in the image.



6 Assemble frame at both sides and insert blue colored Frame Pin to complete assembly between Side Band and Frame



7 Completion of Shift Chain Double Type

Sabin Chain®

asb CR Clean Room type	nsb CR Clean Room type	nsb N Normal type	nsb E Enclosed type	nsb S Skid type
- asb020CR	- nsb020CR	- nsb028N	- nsb028E	- nsb050S
- asb022CR	- nsb022CR	- nsb035N	- nsb035E	- nsb065S
- asb028CR	- nsb028CR	- nsb045N	- nsb045E	- nsb080S
- asb035CR	- nsb035CR	- nsb060N	- nsb060E	
- asb045CR	- nsb045CR	- nsb075N	- nsb075E	
	- nsb060CR			
	- nsb075CR			

asb Chain-Clean Room Type

Speed/Acceleration value can be different according to amount of cable/hose and travel length.

General Information

Material	CPS-Amide (PA6+G.F)
Noise level	37dB(DIN EN 61672-1) → asb035CR Type
Speed	10㎧
Acceleration	20㎨
Temperature	-30°C ~ +130°C
Special production	ESD, UV, Customized color
Certificate	CE, IPA, ATEX(Ex), TUV, RoHs2

Calculation Table

Length of Cable Chain	L = ½ X Ls + Lp
Bending Radius	Multiply 8~10 of the biggest cable Multiply 15~20 of the biggest hose

Dimension Table

asb Chain CR Type	Pitch	Bending Radius (R)	Weight kg/m	Speed m/s	Temperature °C	Size A	Size B	Size C	Size D	Frame style	Section - composition
asb 020CR asb 020CR.L	20	28,38,48	0.32 0.35	10	-30 ~ +130	34 54	22	20 40	15		
asb 022CR asb 022CR.L	22	35, 45, 75, 100, 120	0.43 0.47 0.51 0.55 0.67 0.69	10	-30 ~ +130	30 41 51 61 81 91	29	16 27 37 47 67 77	22		
asb 028CR asb 028CR.L	28	50, 70, 90, 120, 150	0.90 0.98 1.02 1.12 1.27 1.41 1.59 1.74 1.84	10	-30 ~ +130	55 70 75 95 120 145 170 195 220	38	35 50 55 75 100 125 150 175 200	26		
asb 035CR asb 035CR.L	35	75, 100, 125, 150, 200	1.00 1.06 1.09 1.17 1.29 1.39 1.53 1.65 1.73	10	-30 ~ +130	55 70 75 95 120 145 170 195 220	52	35 50 55 75 100 125 150 175 200	40		
asb 045CR asb 045CR.L	45	72, 100, 120, 140, 200, 250, 300	2.59 2.74 2.90 3.11 3.23 3.31 3.41 3.48 3.90 4.18 4.64 4.76 5.32	10	-30 ~ +130	80 105 130 155 170 180 195 205 220 230 270 280 330	70	50 75 100 125 140 150 165 175 190 200 240 250 300	49		

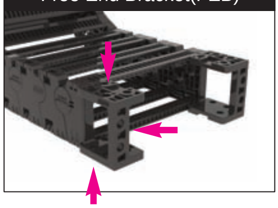
Ordering

asb 028CR. 075. R70 / F - 1000L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - FT : Tie Wrap
  - FST : System Tie wrap
- Bending Radius
- Inside width
- Clean Room type (CR/CR.L)
- Sabin Chain

Bracket Type

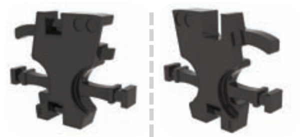
Free End Bracket(FEB)



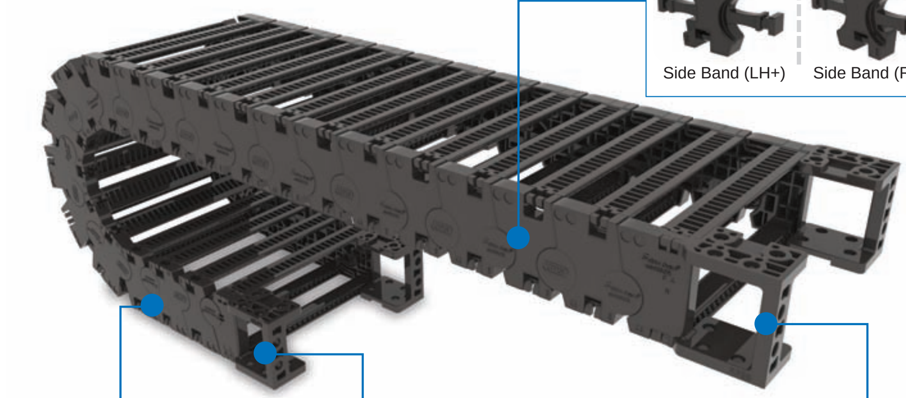
 ※ Dimensions in mm

Characteristics of asb Chain Cleanroom Type

The Quietest Cable Chain!
Low Dust For Cleanroom Area!
CPS' own technology adopted!
Easy Assembly & Disassembly



Side Band (LH+) Side Band (RH+)



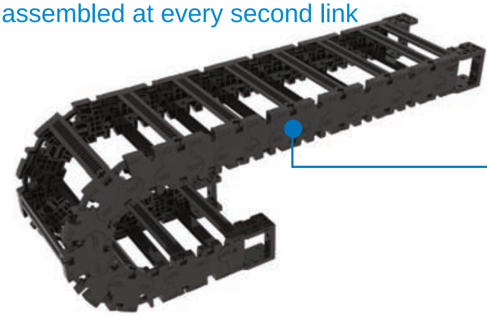
Side Band (LH-) Side Band (RH-)

Moving Bracket (M/LH-) Moving Bracket (M/RH-)

Fixing Bracket (F/LH+) Fixing Bracket (F/RH+) Fixing Bracket (F/LH-) Fixing Bracket (F/RH-)

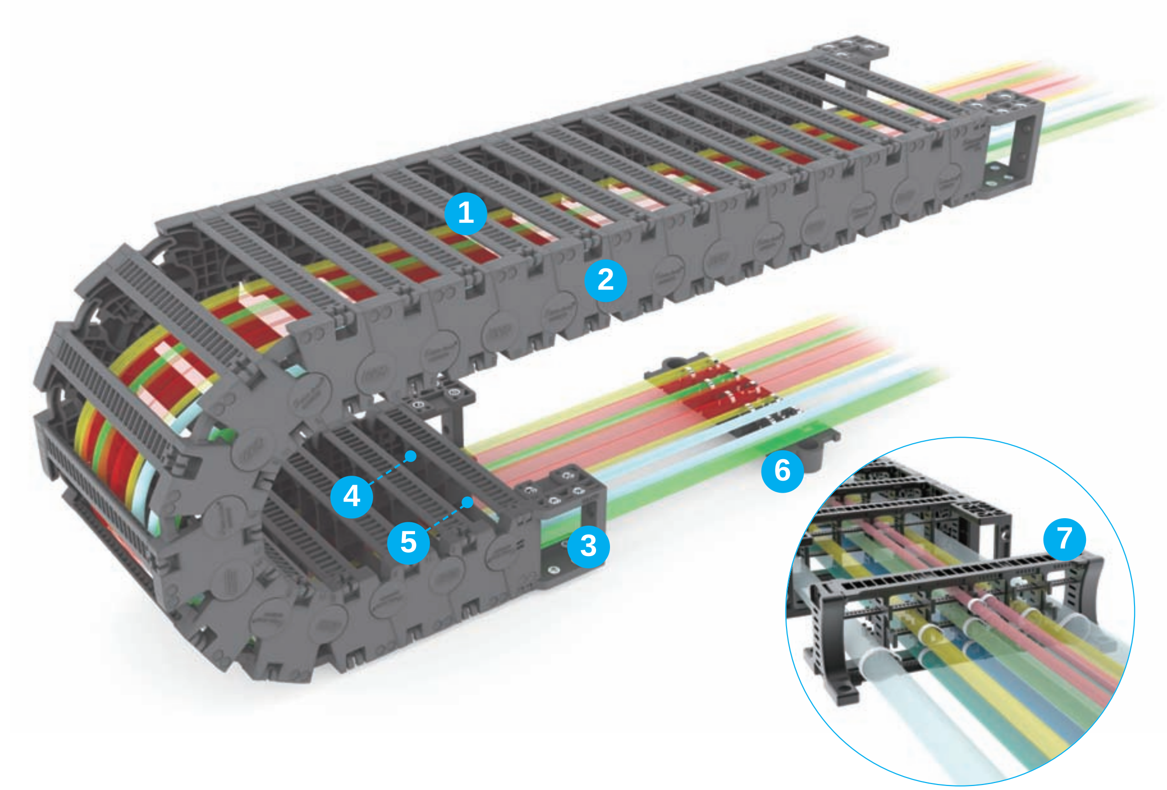
M5 bolt and steel washers are supplied with FEB
All components including frame of nsb CR are compatible with asb CR

CR type : Frames are assembled at every single link
CR.L type : Frames are assembled at every second link



CR.L side band assembly
(Check the stamp)

asb Chain-Clean Room Type



Part of asb Chain Clean Room type

❶ Frame (Hinge Type) (FR)
A part that connects with LH, RH Side Band. There are every 5mm bumps that prevent dividers to be securely positioned at a place. One side of frame has a hinge structure that helps easy assembly and disassembly.

❷ Side Band (SB)
A part that connects upper and lower frame. There are LH and RH type.

❸ Free End Bracket (FEB)
A part that connects to each end of Cable Chain. There are holes are formed where steel washers are inserted to fix FEB to fixing plate securely.

❹ Divider (DV-S, M, R, T)
A part that prevents entanglement risk of cables and hoses by being installed vertically.

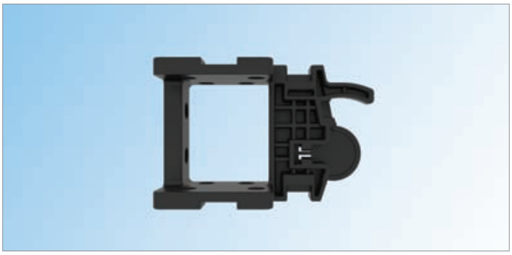
❺ Separator (SP)
A part that prevent entanglement risk of cable and hoses by being installed horizontally.

❻ Tie Wrap (TW)
A part that prevents damage of the cable and hose by twisting & pulling movements. It can be used as assembling with bracket or separating from the bracket at end position of chain.

❼ System Tie Wrap (STW)
A part that connects to first or end of Cable Chain. Cables and hoses are arranged at System Tie Wrap by several layers and being tightened using Cable Tie. There are 2 types. One is separated from FEB and the other one is assembled to FEB.

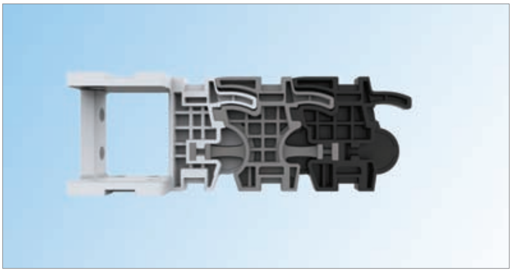
Assembly Procedure

The assembling process of CR-Type of asb Chain is like below and users must use rubber hammer with careful combination of Divider and Separator.



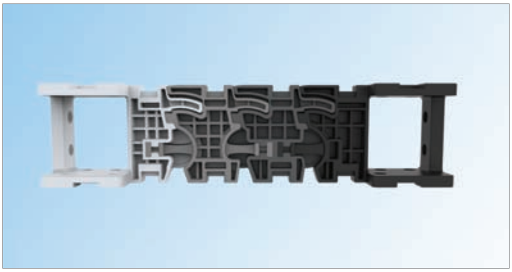
1

Always start assembling from Fixing bracket.



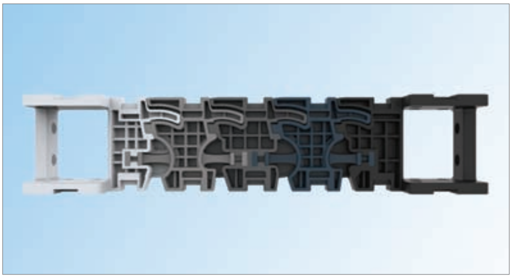
2

Assemble (+)side band and (-)side band in consecutive order.



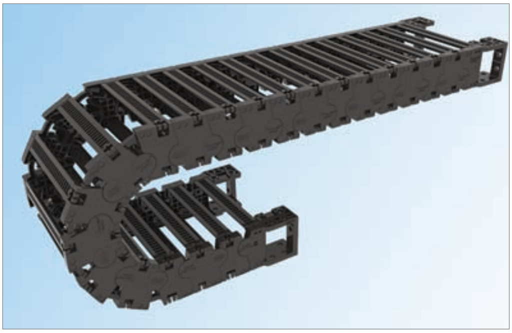
3

Even number of assembled side band :
In case of even number of links, Moving bracket must be (+)bracket.



3-1

Odd number of assembled side band :
In case of odd number of links, Moving bracket must be (-)bracket.



4

Complete to assemble asb Chain CR-Type, Sabin Chain.

- CR Type : Frames are assembled at every single link
- CR.L Type : Frames are assembled at every second link

asb Chain-Clean Room Type

Part list of asb Chain Clean Room type

- Composition of asb Chain Clean Room Type
  = Side band(RH) + Frame + Side band(LH) + Bending radius Unit + Free end bracket
- M divider(normal divider) should be applied every fourth frame to make a section composition.
- CR.L means that you assemble frame every second link instead of every link.

※ Please refer to below part list and description to understand composition of cable chain.

Model	Classification	Part number	Description
asb020CR	SIDE BAND	asb-SB020CR.R*(LH) asb-SB020CR.R*(RH)	Left side band of asb020CR Right side band of asb020CR
	FRAME	sb-FR018CR.20 sb-FR018CR.40	Frame, 20mm Frame, 40mm
	FREE END BRACKET	nsb-FEB020CR	Free End bracket of asb020CR
	DIVIDER	sb-DV018CR	Normal divider, Clean Room Type
	TIE WRAP	sb-TW018CR.20 sb-TW018CR.40	Tie wrap for end bracket to fix cables, 20mm Tie wrap for end bracket to fix cables, 40mm

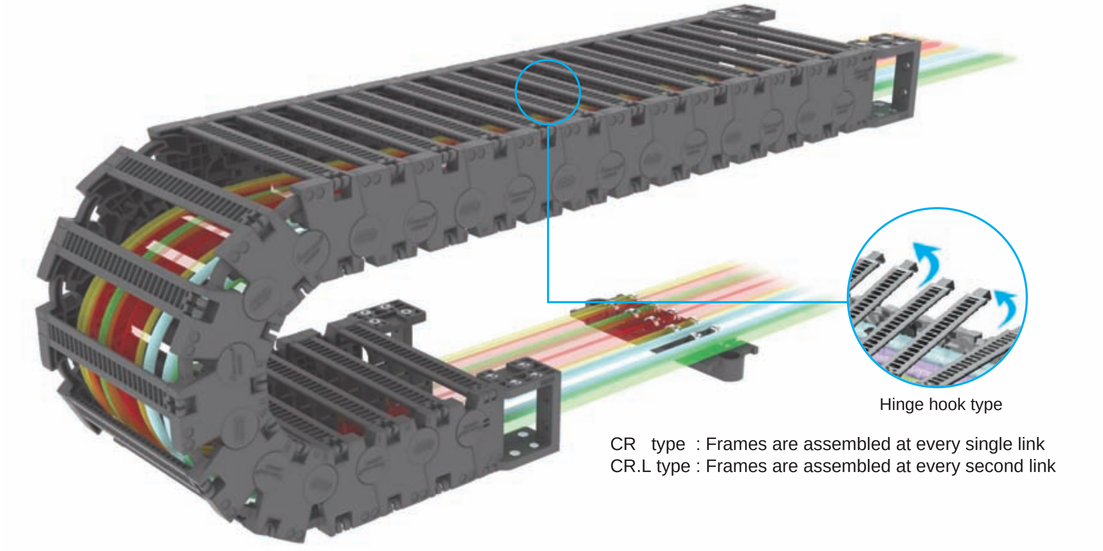
Model	Classification	Part number	Description
asb022CR	SIDE BAND	asb-SB022CR.R*(LH) asb-SB022CR.R*(RH)	Left side band of asb022CR Right side band of asb022CR
	FRAME	sb-FR020CR.16 S-FR033/020CR.27 S-FR033/020CR.37 S-FR033/020CR.47 S-FR033/020CR.67 S-FR033/020CR.77	Frame, 16mm Frame, 27mm Frame, 37mm Frame, 47mm Frame, 67mm Frame, 77mm
	FREE END BRACKET	nsb-FEB022CR	Free End bracket of asb022CR
	DIVIDER	sb-DV020CR	Normal divider, Clean Room Type
	TIE WRAP	sb-TW020CR.16 S-TW033/020CR.27 S-TW033/020CR.37 S-TW033/020CR.47 S-TW033/020CR.67 S-TW033/020CR.77	Tie wrap for end bracket to fix cables, 16mm Tie wrap for end bracket to fix cables, 27mm Tie wrap for end bracket to fix cables, 37mm Tie wrap for end bracket to fix cables, 47mm Tie wrap for end bracket to fix cables, 67mm Tie wrap for end bracket to fix cables, 77mm

Model	Classification	Part number	Description
asb028CR	SIDE BAND	asb-SB028CR.R*(LH) asb-SB028CR.R*(RH)	Left side band of asb028CR Right side band of asb028CR
	FRAME	sb-FR/M.35 sb-FR/M.50 sb-FR/M.55 sb-FR/M.75 sb-FR/M.100 sb-FR/M.125 sb-FR/M.150 sb-FR/M.175 sb-FR/M.200	Frame, 35mm Frame, 50mm Frame, 55mm Frame, 75mm Frame, 100mm Frame, 125mm Frame, 150mm Frame, 175mm Frame, 200mm
	FREE END BRACKET	asb-FEB028CR	Free End bracket of asb028CR
	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.55 S-SP/M.75 S-SP/M.100 S-SP/M.125 S-SP/M.150 S-SP/M.175 S-SP/M.200	Separator, 35mm Separator, 50mm Separator, 55mm Separator, 75mm Separator, 100mm Separator, 125mm Separator, 150mm Separator, 175mm Separator, 200mm
	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

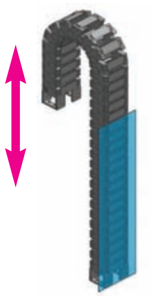
Model	Classification	Part number	Description
asb035CR	SIDE BAND	asb-SB035CR.R*(LH) asb-SB035CR.R*(RH)	Left side band of asb035CR Right side band of asb035CR
	FRAME	sb-FR/M.35 sb-FR/M.50 sb-FR/M.55 sb-FR/M.75 sb-FR/M.100 sb-FR/M.125 sb-FR/M.150 sb-FR/M.175 sb-FR/M.200	Frame, 35mm Frame, 50mm Frame, 55mm Frame, 75mm Frame, 100mm Frame, 125mm Frame, 150mm Frame, 175mm Frame, 200mm
	FREE END BRACKET	asb-FEB035CR	Free End bracket of asb035CR
	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.55 S-SP/M.75 S-SP/M.100 S-SP/M.125 S-SP/M.150 S-SP/M.175 S-SP/M.200	Separator, 35mm Separator, 50mm Separator, 55mm Separator, 75mm Separator, 100mm Separator, 125mm Separator, 150mm Separator, 175mm Separator, 200mm
	TIE WRAP	S-TW050/035N.50 S-TW050/035N.75 S-TW050/035N.100 S-TW050/035N.125 S-TW050/035N.150 S-TW050/035N.175 S-TW050/035N.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
asb045CR	SIDE BAND	asb-SB045CR.R*(LH) asb-SB045CR.R*(RH)	Left side band of asb045CR Right side band of asb045CR
	FRAME	sb-FR/M.50 sb-FR/M.75 sb-FR/M.100 sb-FR/M.125 sb-FR/M.140 sb-FR/M.150 sb-FR/M.165 sb-FR/M.175 sb-FR/M.190 sb-FR/M.200 sb-FR/M.240 sb-FR/M.250 sb-FR/M.300	Frame, 50mm Frame, 75mm Frame, 100mm Frame, 125mm Frame, 140mm Frame, 150mm Frame, 165mm Frame, 175mm Frame, 190mm Frame, 200mm Frame, 240mm Frame, 250mm Frame, 300mm
	FREE END BRACKET	asb-FEB045CR sb-FEB/WH045	Free End bracket of asb045CR Steel washer for end bracket
	DIVIDER	sb-DV045/M sb-DV045/S sb-DV045/T sb-DV045/TP	Normal divider To fix separstors at the both side section T divider T divider pin
	SEPARATOR	sb-SP/400.Frame 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

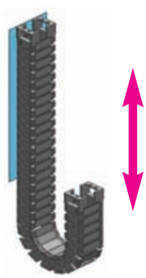
asb020CR / asb020CR.L



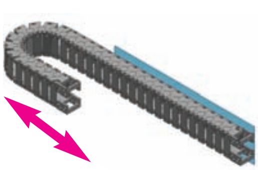
CR type : Frames are assembled at every single link
CR.L type : Frames are assembled at every second link



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

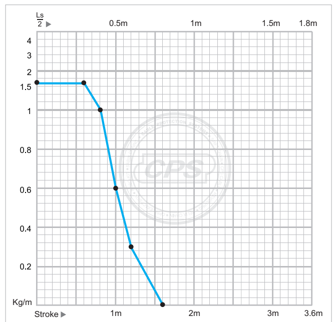
Caculation of the Chain Length

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

Other Length Restrictions

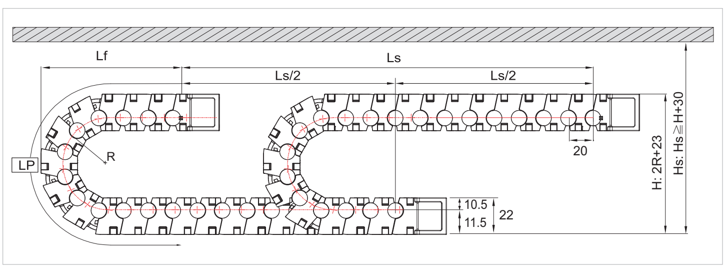
Vertical Standing(Max) = 1.0m
Vertical Hanging(Max) = 5m
Side Mounted Unsupported(Max) = 0.5m

Unsupported Length



Layout of the Chain

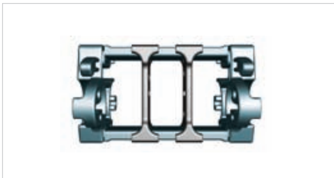
Ls: Stroke Hs: Safe Space

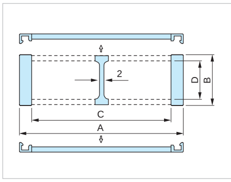


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
28	168	80	79
38	200	90	99
48	231	100	119

 ※ Dimensions in mm

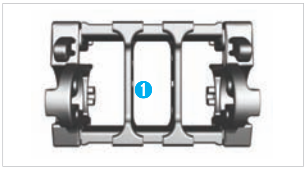
Chain Cross Section





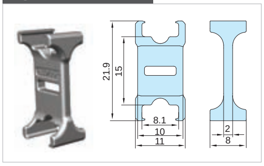
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
asb020CR asb020CR.L	34 54	22	20 40	15	0.32 0.35

Dividers(DV)

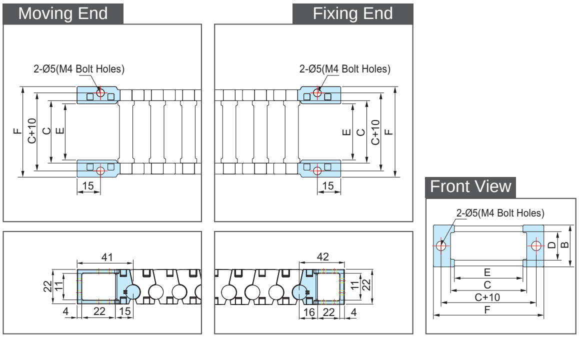


Assemble divider every third links

1 sb-DV018CR

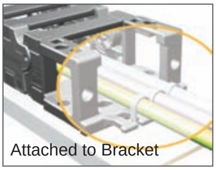


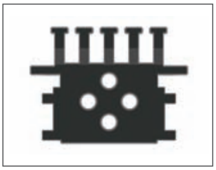
Free End Bracket(FEB)

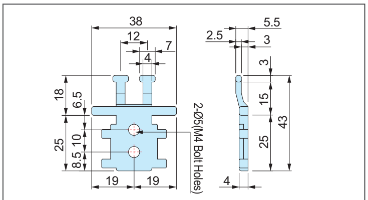


Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M.EB Bolt hole width	Hole Type
asb020CR asb020CR.L	38 58	22	20 40	15	16 36	M4 Bolt hole

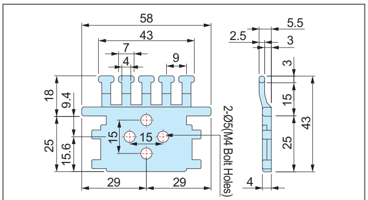
Tie Wrap(TW)







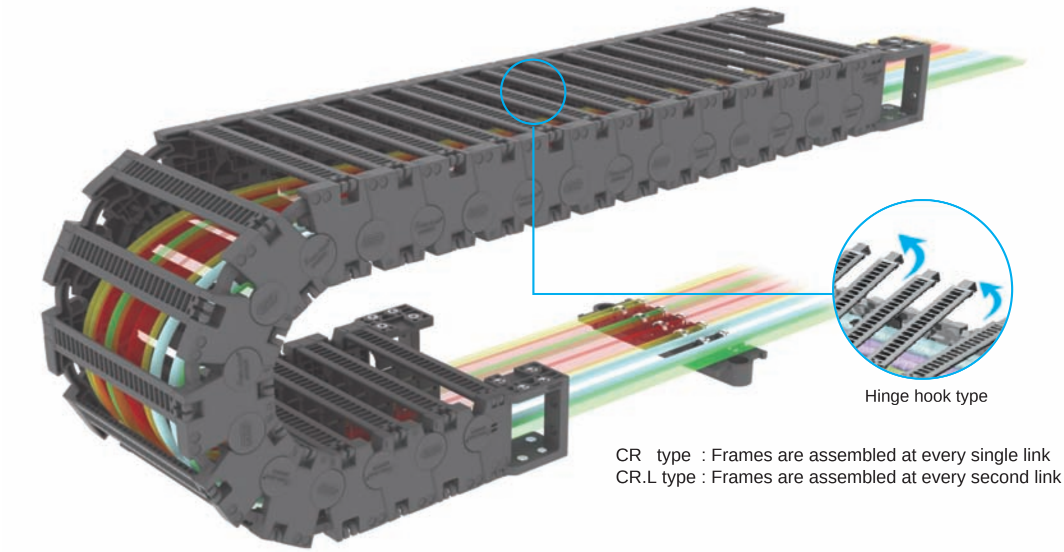
Ordering No. : sb-TW018CR.20



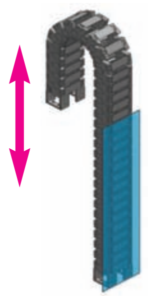
Ordering No. : sb-TW018CR.40

※ Dimensions in mm

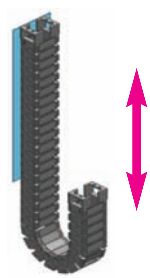
asb022CR / asb022CR.L



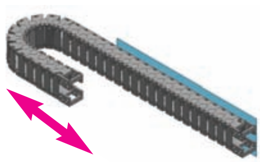
CR type : Frames are assembled at every single link
CR.L type : Frames are assembled at every second link



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

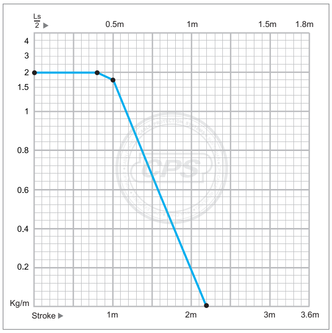
Caculation of the Chain Length

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

Other Length Restrictions

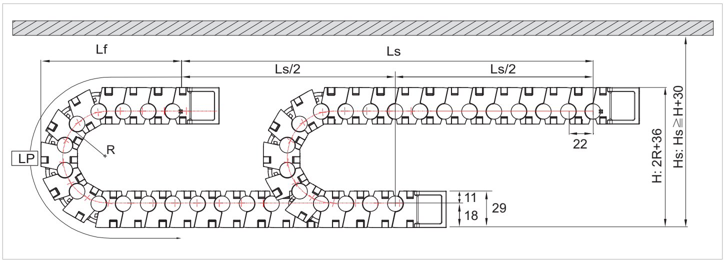
Vertical Standing(Max) = 1.0m
Vertical Hanging(Max) = 5m
Side Mounted Unsupported(Max) = 0.5m

Unsupported Length



Layout of the Chain

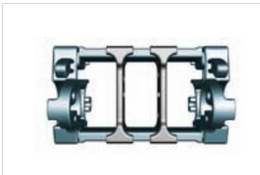
Ls: Stroke Hs: Safe Space

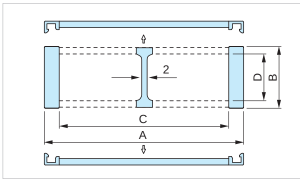


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
35	198	97	106
45	230	107	126
75	324	137	186
100	402	162	236
120	465	182	276

 ※ Dimensions in mm

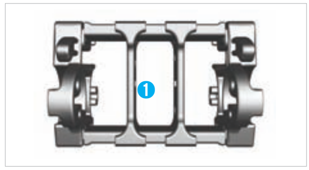
Chain Cross Section





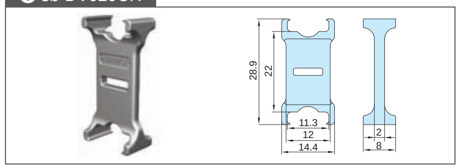
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
asb022CR asb022CR.L	30	29	16	22	0.43
	41		27		0.47
	51		37		0.51
	61		47		0.55
	81		67		0.67
	91		77		0.69
	114		100		0.81

Dividers(DV)



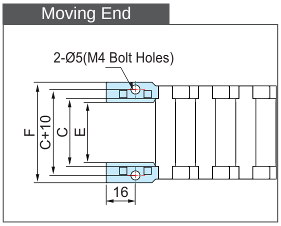
Assemble divider every third links.

1 sb-DV020CR

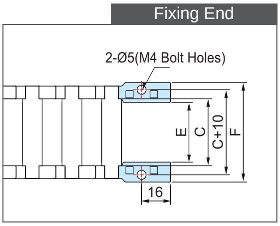


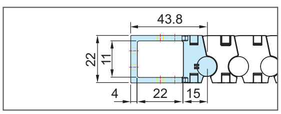
Free End Bracket(FEB)

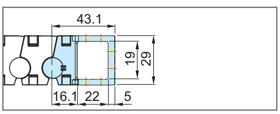
Moving End



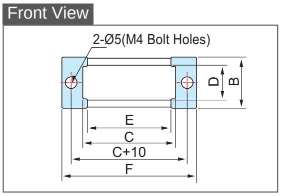
Fixing End





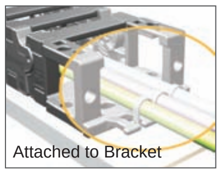


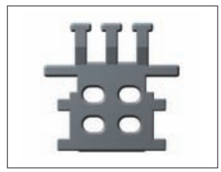
Front View

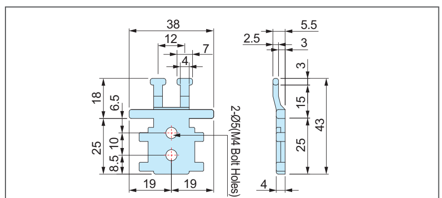


Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M.EB Bolt hole width	Hole Type
asb022CR asb022CR.L	34	29	16	22	12	M4 Bolt hole
	45		27		23	
	55		37		33	
	65		47		43	
	85		67		63	
	95		77		73	
	118		100		96	

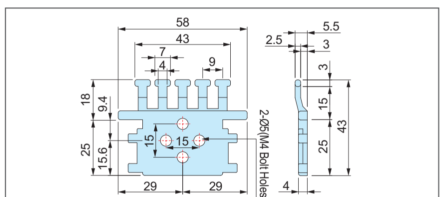
Tie Wrap(TW)







Ordering No. : sb-TW020CR.16

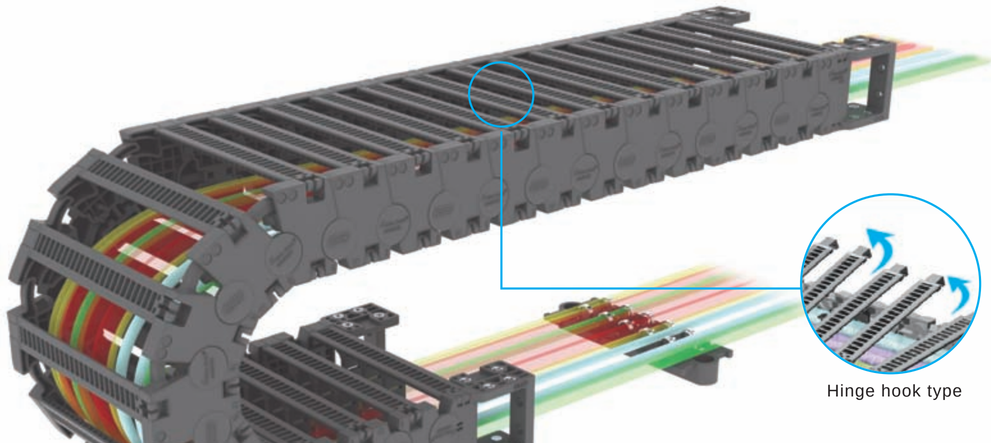


Ordering No. : S-TW033/020CR.27/37/47/67/77

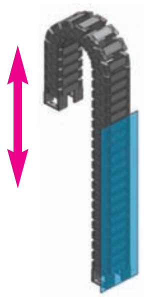
Chain Type	Ordering No.	A	B	C	D
asb022CR asb022CR.L	sb-TW020CR.16	34	-	10.00	-
	S-TW033/020CR.27	45	27.5	10.20	12
	S-TW033/020CR.37	55	41.0	8.50	22
	S-TW033/020CR.47	65	48.0	10.40	32
	S-TW033/020CR.67	85	68.0	10.00	52
	S-TW033/020CR.77	95	78.0	8.87	62

※ Dimensions in mm

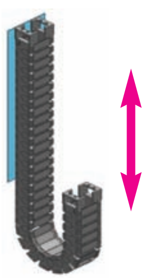
asb028CR / asb028CR.L



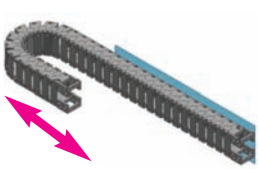
CR type : Frames are assembled at every single link
CR.L type : Frames are assembled at every second link



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

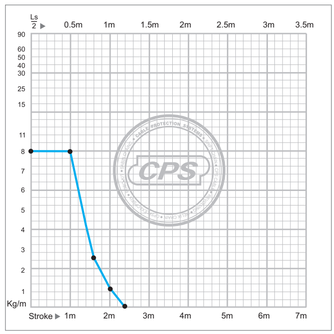
Caculation of the Chain Length

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

Other Length Restrictions

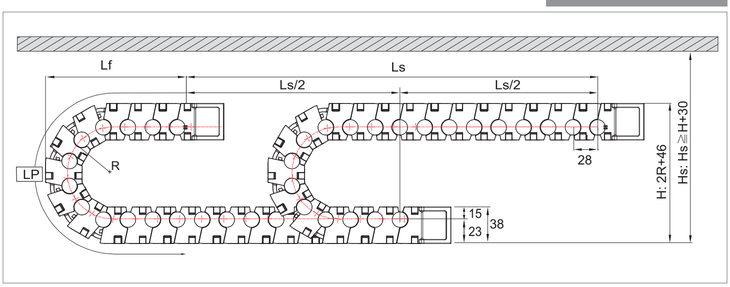
Vertical Standing(Max) = 2.0m
Vertical Hanging(Max) = 40m
Side Mounted Unsupported(Max) = 1.0m

Unsupported Length



Layout of the Chain

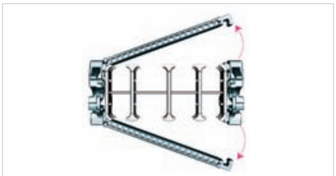
Ls: Stroke Hs: Safe Space

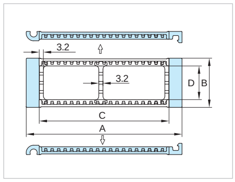


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
50	269	129	146
70	332	149	186
90	395	169	226
120	489	199	286
150	583	229	346

 ※ Dimensions in mm

Chain Cross Section

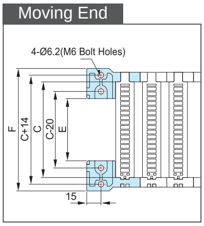




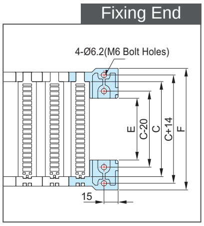
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
asb028CR asb028CR.L	55	38	35	26	0.90
	70		50		0.98
	75		55		1.02
	95		75		1.12
	120		100		1.27
	145		125		1.41
	170		150		1.59
	195		175		1.74
	220		200		1.84

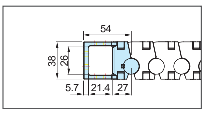
Free End Bracket(FEB)

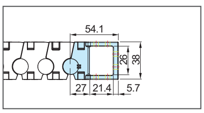
Moving End



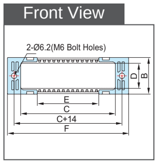
Fixing End





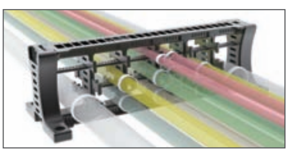


Front View



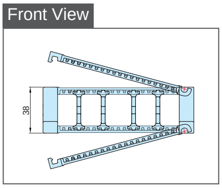
Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M.EB Bolt hole width	Hole Type
asb028CR asb028CR.L	63	38	35	26	0	M5 Bolt hole
	78		50		15	
	83		55		20	
	103		75		40	
	128		100		65	
	153		125		90	
	178		150		115	
	203		175		140	
	228		200		165	

System Tie Wrap(STW)

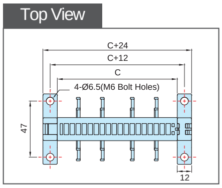


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

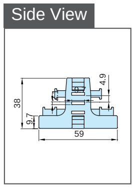
Front View



Top View

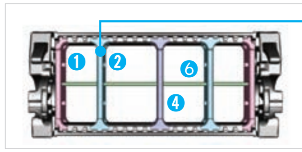


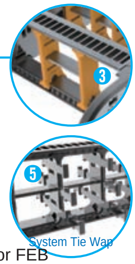
Side View



Chain Type	Ordering No.	C Frame	Hole Type
asb028CR asb028CR.L	S-TW.EB028.35	35	M5 Bolt hole
	S-TW.EB028.50	50	
	S-TW.EB028.55	55	
	S-TW.EB028.75	75	
	S-TW.EB028.100	100	
	S-TW.EB028.125	125	
	S-TW.EB028.150	150	
	S-TW.EB028.175	175	
	S-TW.EB028.200	200	

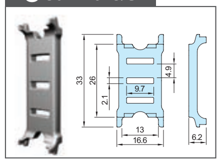
Dividers(DV)



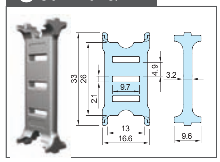


Assemble divider every fourth frame
DV/T : Applied to Frame 125~200
DV/M : Normal Divider
DV/W : Applicable to System Tie Wrap or FEB

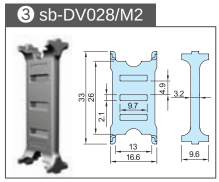
1 sb-DV028/S



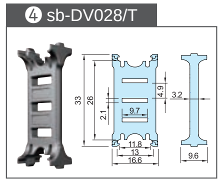
2 sb-DV028/M1



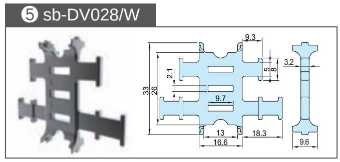
3 sb-DV028/M2



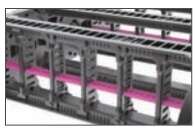
4 sb-DV028/T



5 sb-DV028/W



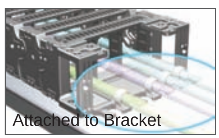
Separators(SP)

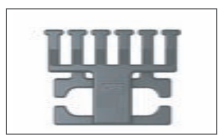


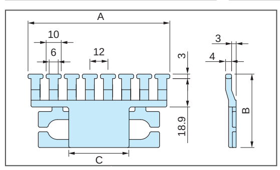
6 Adjustable Separator length

Chain Type	Ordering No.	Frame
asb028CR asb028CR.L	S-SP/M.35	35
	S-SP/M.50	50
	S-SP/M.55	55
	S-SP/M.75	75
	S-SP/M.100	100
	S-SP/M.125	125
	S-SP/M.150	150
	S-SP/M.175	175
	S-SP/M.200	200

Tie Wrap(TW)



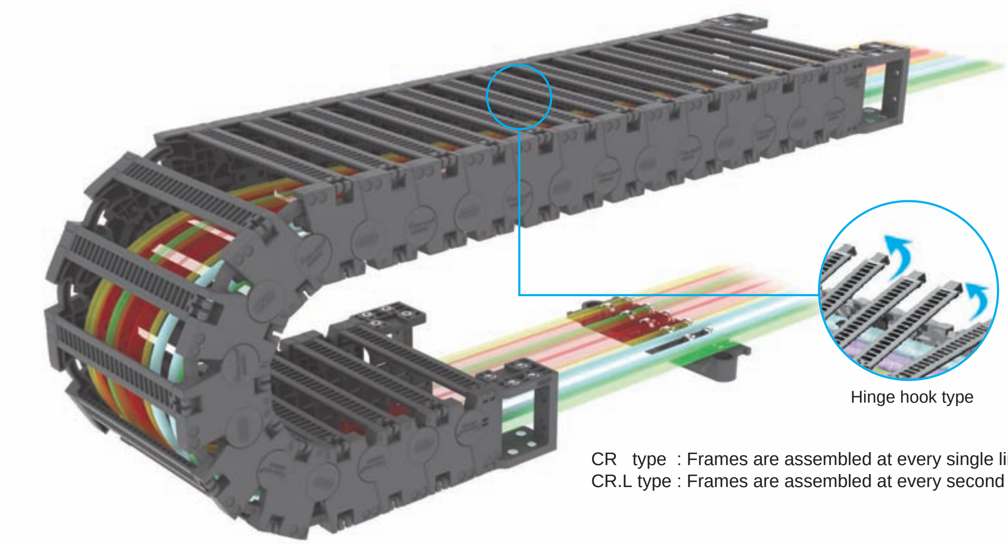




Chain Type	Ordering No.	A	B	C
asb028CR asb028CR.L	S-TW036/025CR.35	46	35.4	-
	S-TW036/025CR.50	69	48.9	15
	S-TW036/025CR.55	70	48.9	20
	S-TW036/025CR.75	94	48.9	40
	S-TW036/025CR.100	118	48.9	65
	S-TW036/025CR.125	142	48.9	90

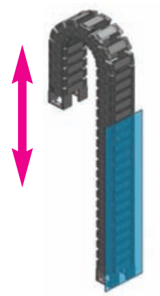
※ Dimensions in mm

asb035CR / asb035CR.L

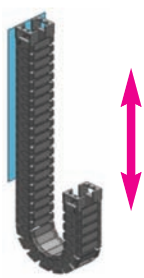


Hinge hook type

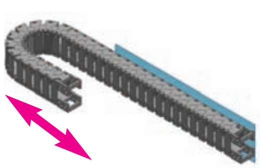
CR type : Frames are assembled at every single link
CR.L type : Frames are assembled at every second link



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

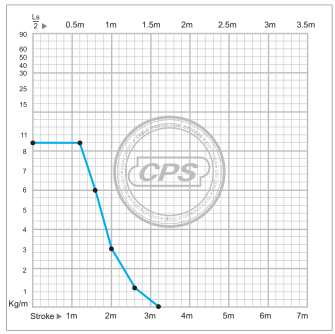
Caculation of the Chain Length

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

Other Length Restrictions

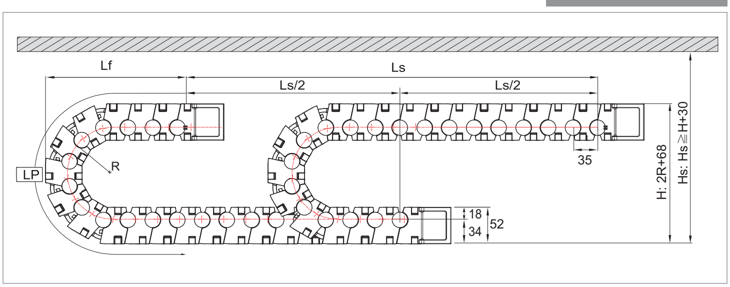
Vertical Standing(Max) = 3.0m
Vertical Hanging(Max) = 50m
Side Mounted Unsupported(Max) = 1.0m

Unsupported Length



Layout of the Chain

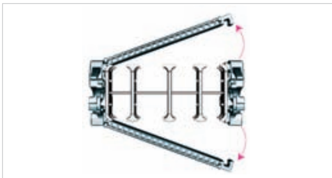
Ls: Stroke Hs: Safe Space

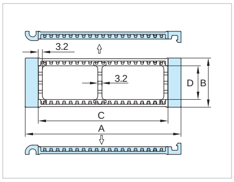


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
75	376	179	218
100	454	204	268
125	533	229	318
150	611	254	368
200	768	304	468

 ※ Dimensions in mm

Chain Cross Section

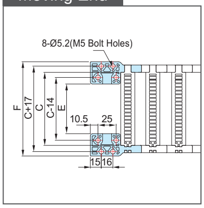




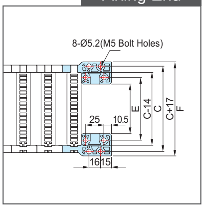
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
asb035CR asb035CR.L	55	52	35	40	1.00
	70		50		1.06
	75		55		1.09
	95		75		1.17
	120		100		1.29
	145		125		1.39
	170		150		1.53
	195		175		1.65
	220		200		1.73

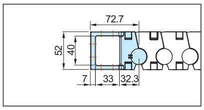
Free End Bracket(FEB)

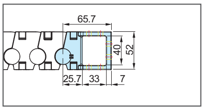
Moving End



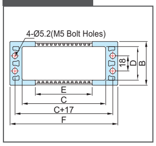
Fixing End





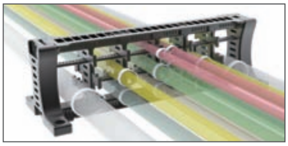


Front View



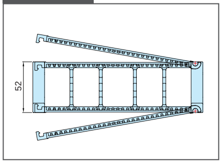
Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M.EB Bolt hole width	Hole Type
asb035CR asb035CR.L	64	52	35	40	3	M6 Bolt hole
	79		50		18	
	84		55		23	
	104		75		43	
	129		100		68	
	154		125		93	
	179		150		118	
	204		175		143	
	229		200		168	

System Tie Wrap(STW)

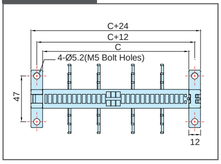


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

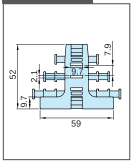
Front View



Top View

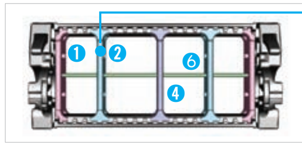


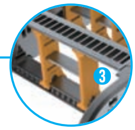
Side View



Chain Type	Ordering No.	C Frame	Hole Type
asb035CR asb035CR.L	S-TW.EB028.35	35	M6 Bolt hole
	S-TW.EB028.50	50	
	S-TW.EB028.55	55	
	S-TW.EB028.75	75	
	S-TW.EB028.100	100	
	S-TW.EB028.125	125	
	S-TW.EB028.150	150	
	S-TW.EB028.175	175	
	S-TW.EB028.200	200	

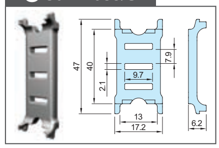
Dividers(DV)



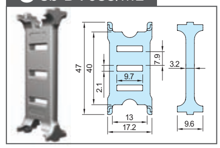


Assemble divider every fourth frame
DV/T : Applied at Frame 125~200 Size
DV/M : There are two types: M1 and M2
DV/W : Assembled at FEB

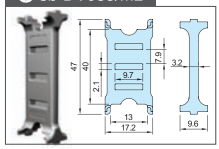
1 sb-DV035/S



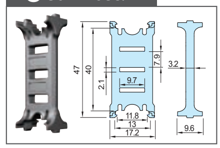
2 sb-DV035/M1



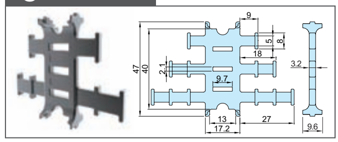
3 sb-DV035/M2



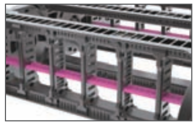
4 sb-DV035/T



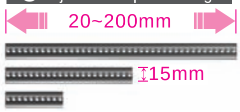
5 sb-DV035/W



Separators(SP)

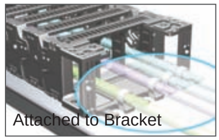


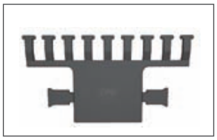
6 Adjustable Separator length

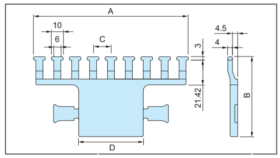


Chain Type	Ordering No.	Frame
asb035CR asb035CR.L	S-SP/M.35	35
	S-SP/M.50	50
	S-SP/M.55	55
	S-SP/M.75	75
	S-SP/M.100	100
	S-SP/M.125	125
	S-SP/M.150	150
	S-SP/M.175	175
	S-SP/M.200	200

Tie Wrap(TW)



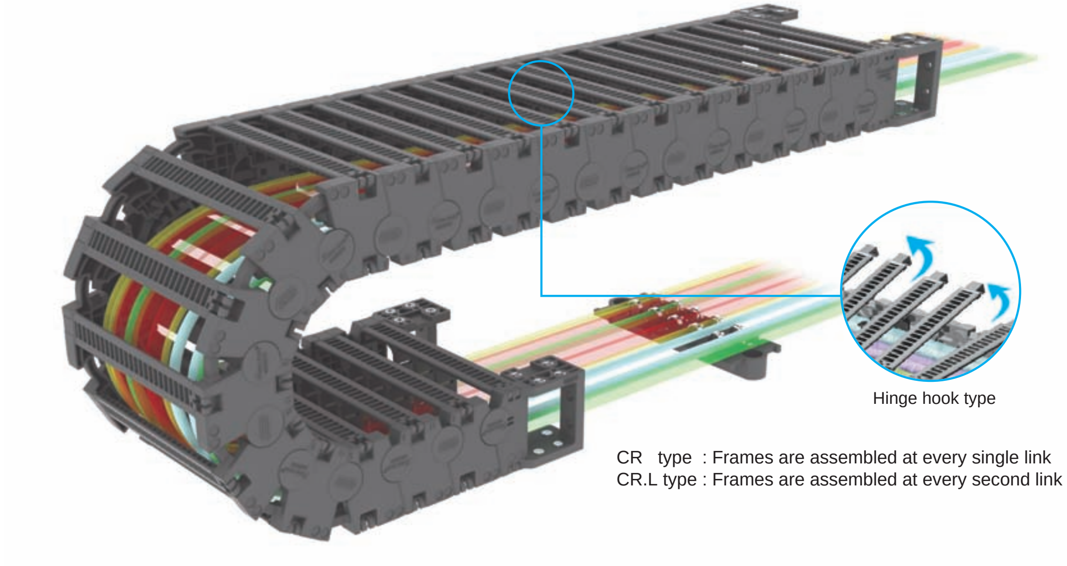




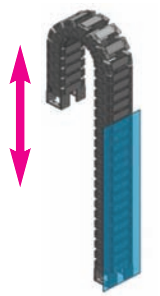
Chain Type	Ordering No.	A	B	C	D
asb035CR asb035CR.L	S-TW050/035N.50	82	64.5	12.00	5
	S-TW050/035N.55	82		12.00	10
	S-TW050/035N.75	107		12.13	30
	S-TW050/035N.100	132		15.25	55
	S-TW050/035N.125	157		14.70	80
	S-TW050/035N.150	182		14.35	105
	S-TW050/035N.175	203		12.31	130
	S-TW050/035N.200	232		13.88	155

※ Dimensions in mm

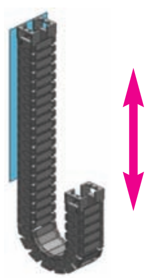
asb045CR / asb045CR.L



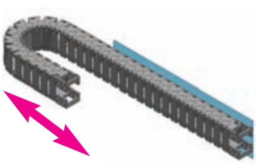
CR type : Frames are assembled at every single link
CR.L type : Frames are assembled at every second link



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

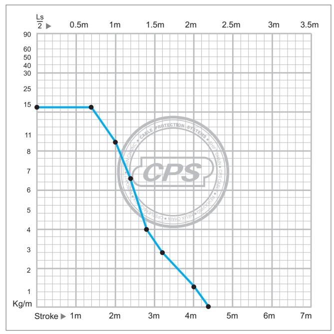
Caculation of the Chain Length

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

Other Length Restrictions

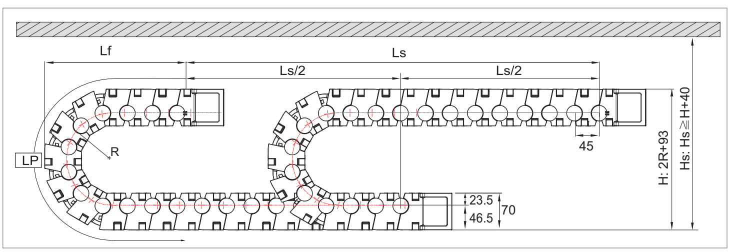
Vertical Standing(Max) = 6.0m
Vertical Hanging(Max) = 100m
Side Mounted Unsupported(Max) = 2.5m

Unsupported Length



Layout of the Chain

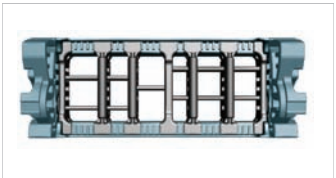
Ls: Stroke Hs: Safe Space

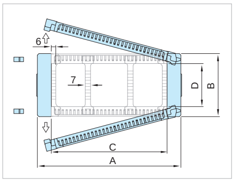


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
75	506	257	243
100	584	282	293
120	647	302	333
140	710	322	373
200	898	382	493
250	1055	432	593
300	1212	482	693

※ Dimensions in mm

Chain Cross Section

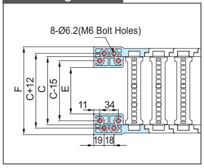




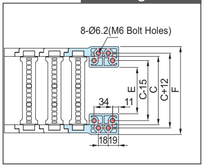
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
asb045CR asb045CR.L	80	70	50	49	2.59
	105		75		2.74
	130		100		2.90
	155		125		3.11
	170		140		3.23
	180		150		3.31
	195		165		3.41
	205		175		3.48
	220		190		3.90
	230		200		4.18
	270		240		4.64
	280		250		4.76
	330		300		5.32

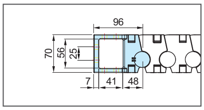
Free End Bracket(FEB)

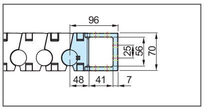
Moving End



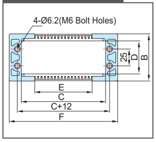
Fixing End





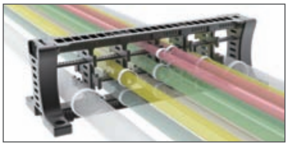


Front View



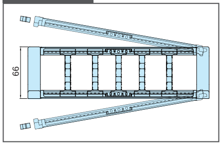
Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M.EB Bolt hole width	Hole Type
asb045CR asb045CR.L	86	70	50	49	10	M6 Bolt hole
	111		75		35	
	136		100		60	
	161		125		85	
	176		140		100	
	186		150		110	
	201		165		125	
	211		175		135	
	226		190		150	
	236		200		160	
	276		240		200	
	286		250		210	
	336		300		260	

System Tie Wrap(STW)

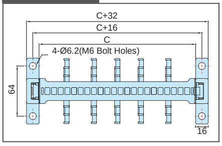


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

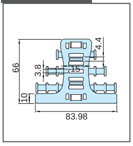
Front View



Top View

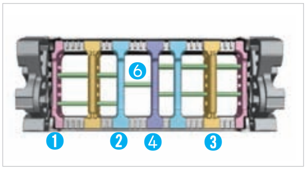


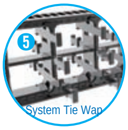
Side View



Chain Type	Ordering No.	C Frame	Hole Type
asb045CR asb045CR.L	S-TW.EB045.50	50	M6 Bolt hole
	S-TW.EB045.75	75	
	S-TW.EB045.100	100	
	S-TW.EB045.125	125	
	S-TW.EB045.140	140	
	S-TW.EB045.150	150	
	S-TW.EB045.165	165	
	S-TW.EB045.175	175	
	S-TW.EB045.190	190	
	S-TW.EB045.200	200	
	S-TW.EB045.240	240	
	S-TW.EB045.250	250	
	S-TW.EB045.300	300	

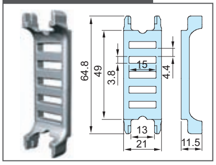
Dividers(DV)



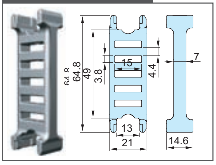


Assemble divider every fourth frame
DV/T : Applied at Frame 200~300 Size
DV/W : It can only be assembled to System Tie wrap (can not be assembled to FEB)

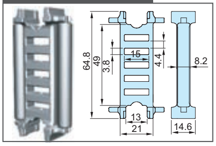
❶ sb-DV045CR/S



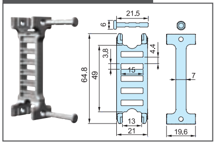
❷ sb-DV045CR/M



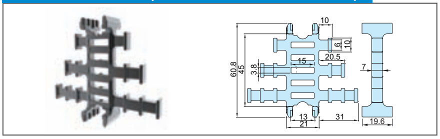
❸ sb-DV045CR/T



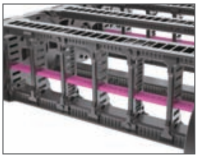
❹ sb-DV045CR/T



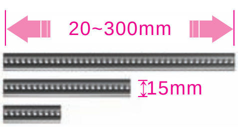
❺ sb-DV045CR/W (can not be assembled to FEB)



Separators(SP)

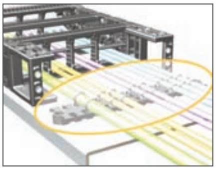


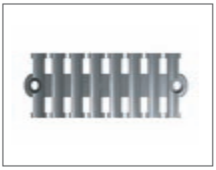
❻ Adjustable Separator length

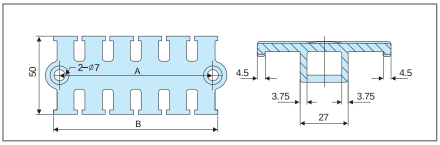


Chain Type	Ordering No.
asb045CR asb045CR.L	sb-SP/400.Frame

Tie Wrap(TW)



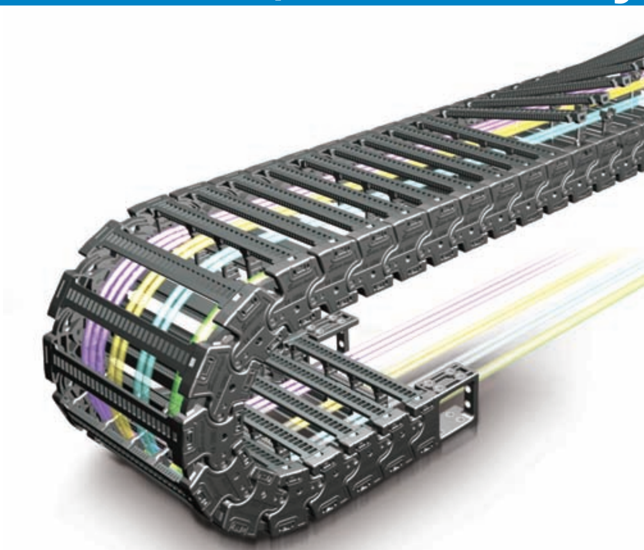


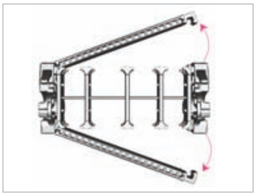


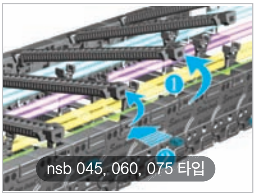
Chain Type	Ordering No.	A	B
asb045CR asb045CR.L	S-TW50	58	65
	S-TW75	75	82
	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

※ Dimensions in mm

Feature of nsb Chain Clearin Room, Normal, Enclosed Type







Convenient Feature of Hinge Type of Frame

One side of Frame is pin type and the other side of Frame is hinge type that makes easy maintenance of assembly and disassembly.
Applicable at new Sabin Chain Cleanroom(nsb020/022CR excluded), Normal and Enclosed Type.
Nsb045/060/075E' frame is Alignment pin applied type
It is convenient to insert cables and hoses by opening upper and lower frame. Frame Alignment pin is applied to nsb045/060/075CR,N type to prevent separation of frame.

Effective Use of Divider

There are various types of Divider such as DV-S, DV-R, DV-M to establish effective section composition.

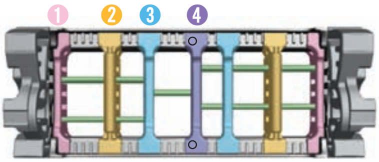
DV/S :
Used to fix a separator that is the same length as the frames

DV/R :
Roller applied Divider to prevent abrasion of cables

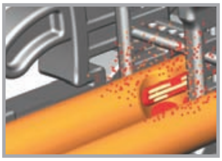
DV/M :
Used to separate individual cables

DV/T :
Used to not be separated from frame. It is used with Divider Pin.

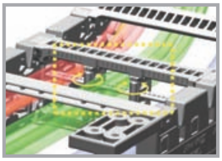
DV/W :
Used to hold the cables in place at both ends of the cable chain



DV-R, DV-M are adopted to nsb045, 060, 075 size of Cable Chain.



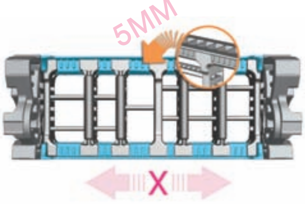
Friction occurred and it causes damage of cable's sheath



DV-R is designed to prevent damage of Cable's sheath. When cables are not securely tightened, they rub surface of Roller. In this case, roller unit prevents damage of Cable's sheath.(When dust is strictly prohibited environment, DV-R is recommended to be used.)

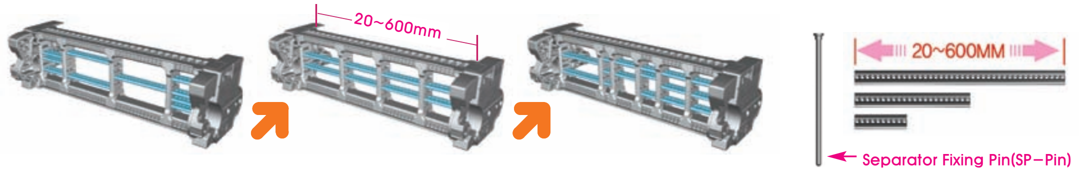
Bumps are formed Frame

Frame with teeth every 5mm makes frame does not move to left and right side but placed firmly.
(Applied to nsb028/035/045/060/075)



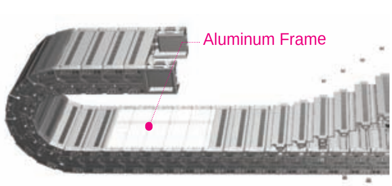
Secure Space by utilizing Divider and Separator

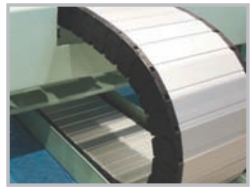
You should make section composition every second frames to make sure long lifetime of cables by preventing from twisting and lost of cables inside. (It's strongly recommended for customers who want to use for long time). It's basic issue and one of the most important factors showing long lifetime of cables.
You can make suitable section composition by using our diverse our dividers and separators that can be modified from 20mm ~ 600mm.



Aluminum Frame Applicable! (Enclosed Type)

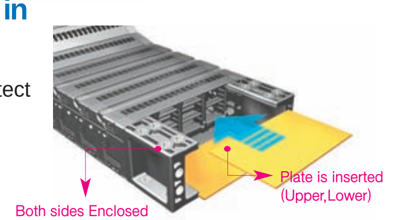
Aluminum Frame is used to protect cable and hose in welding flame occurred environment.
*Applicable size of nsb-E chain: nsb045E, 060E and 075E





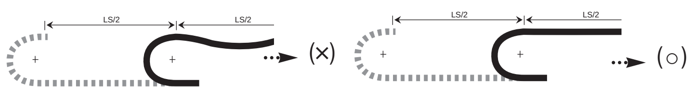
FEB can be fully enclosed by inserting Steel Plate like in the image.(Steel Plate can be ordered separately)

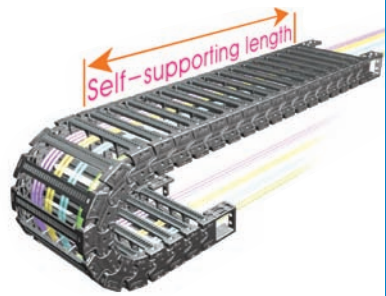
Steel Plate is inserted thru the connecting groove of FEB. It helps to protect cables more securely from external particles.



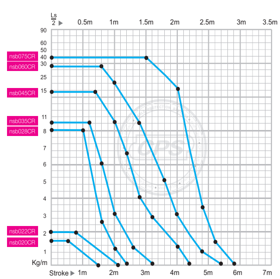
Unsupported Length

Unsupported Length means Cable Chain maintained in rigid linear state while it is moving forward like in the image. Generally, when size of Cable Chain become bigger, its Unsupported Length also become increased. So if Unsupported Length is an important factor to the application, please check each Cable Chain's property of Unsupported Length to select correct Cable Chain model.

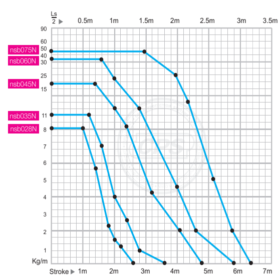




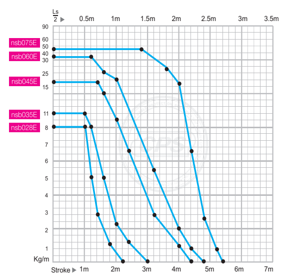
Unsupported Length



nsb Cleanroom Type(CR)



nsb Normal Type(N)

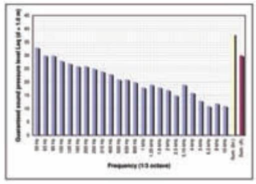


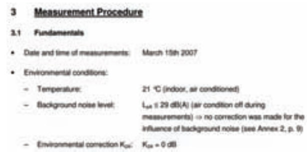
nsb Enclosed Type(E)

Feature of nsb Chain Clearin Room, Normal, Enclosed

The Quietest Cable Chain In The World!

30dB noise level was recorded at TUV testing facility in Germany. Patent obtained!

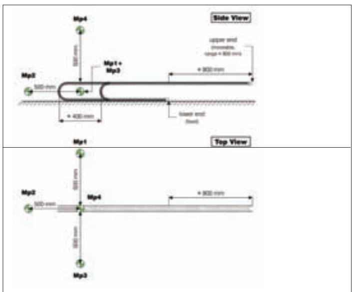




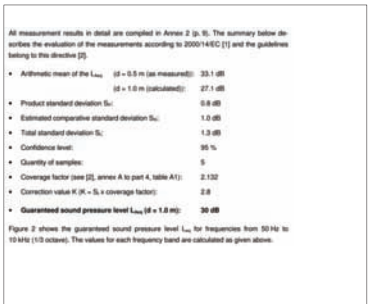
3 Measurement Procedure

3.1 Fundamentals

- Date and time of measurements: March 15th 2007
- Environmental conditions:
  - Temperature: 21 °C (indoor, air conditioned)
  - Background noise level: $L_{pA} \le 29$ dB(A) (air condition off during measurements) ⇒ no correction was made for the influence of background noise (see Annex 2, p. 9)
  - Environmental correction K_{2A}: $K_{2A} = 0$ dB



Test sample & position of measuring points



All measurement results in detail are compiled in Annex 2 (p. 9). The summary below describes the evaluation of the measurements according to 2000/14/EC [1] and the guidelines belong to this directive [2].

- Arithmetic mean of the L_{Aeq} (d = 0.5 m (as measured)): 33.1 dB
  (d = 1.0 m (calculated)): 27.1 dB
- Product standard deviation S_P: 0.8 dB
- Estimated comparative standard deviation S_R: 1.0 dB
- Total standard deviation S_t: 1.3 dB
- Confidence level: 95 %
- Quantity of samples: 5
- Coverage factor (see [2], annex A to part 4, table A1): 2.132
- Correction value K (K = S_t x coverage factor): 2.8
- **Guaranteed sound pressure level L_{Aeq} (d = 1.0 m): 30 dB**

Figure 2 shows the guaranteed sound pressure level L_{eq} for frequencies from 50 Hz to 10 kHz (1/3 octave). The values for each frequency band are calculated as given above.

Measurement results

[1] DIRECTIVE 2000/14/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 May 2000 on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors

[2] Position paper on guidelines for the application of the European Parliament and Council Directive 2000/14/EC on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors, December 2001

[3] DIN EN ISO 3744 (ISO 3744 : 1995), Acoustics – Determination of sound power level of noise sources using sound pressure – Engineering method in an essentially free field over a reflecting plane, November 1995

[4] DIN EN ISO 4871 (ISO 4871 : 1996), Acoustics – Declaration an verification of noise emission values of machinery and equipment, March 1997

[5] DIN EN 61672-1 (IEC 61672-1:2002), Electroacoustics – Sound level meters – Part 1: Specification, October 2003

Reference documents

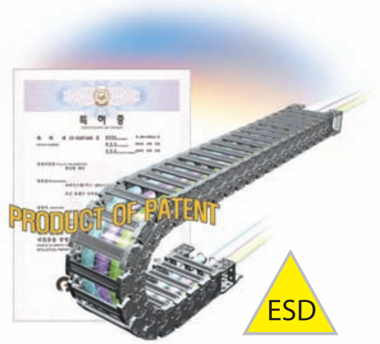
Low Dust Cable Chain That Is Appropriate At Clean Room Environment!

sabin Chain is 'NET' certified product by Ministry of Science and Technology in terms of level of low dust and noise.

Next Cable Chain developed by CPS' Own Technology

Sabin Chain was developed by CPS' independent Technology and patent registered in USA, China, Republic of Korea, Germany and Italy.

* CR-Type: 10-0587499, E-Type: 10-0838583, S-Type: 10-0854053



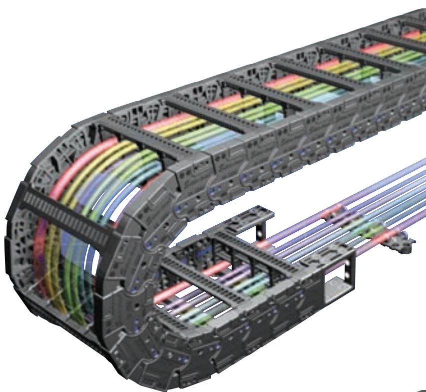
Feature of Each nsb Chain Series

nsb-CR : Cleanroom Type

Cable Chain that performs Low Noise and Low Dust applying to production line of Semiconductors, LCD and PDP where dust and noise is strictly regulated environment.
It can be produced ATEX, ESD retardant type to prevent damage of High Concentration circuit, Explosion and static electricity.

nsb-N : Normal Type

Cable Chain that performs Low Noise and Low Dust as its durability and elastic force improved.



nsb-E : Enclosed Type

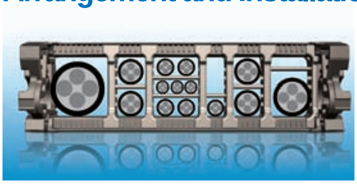
Cable Chain that used in external particle-exposed environment such as Welding Line of Automobile Manufacturer, Painting Shop. It protects cables and hoses by using fully enclosed type of frame.

nsb-S : Sliding Type (for Long Travel)

Cable Chain that is used for Long Travel Operation required environment. It is sliding type of Cable Chain and widely used where Low noise, low dust and Speedy Operation is required.

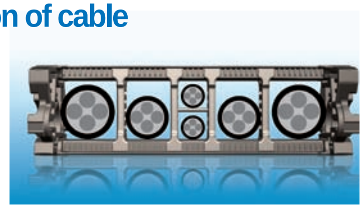
Installation Method of Cable Chain

Arrangement and Installation of cable

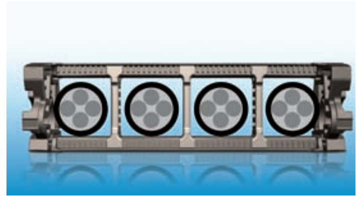


Available Space
Rounded Cable : 10% of space to be guaranteed based on Dia. of cable
Flat Cable : 10% of space to be guaranteed based on thickness of cable
Hose : 20% of space to be guaranteed based on Dia. of hose

10% of space should be secured between cables. When different dia. of cables are inserted, divider should be used. When there is 10% of space between cables, separator should be used.

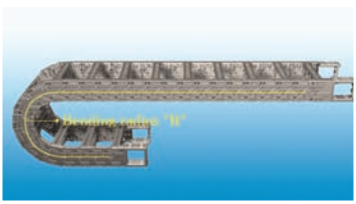


Single layer arrangement of cables are a standard. Big sized cables are placed outside and small sized cables are placed at center. Do not overlap cables but separate them by using separator.



Cables should be placed straightly and arrange them to maintain balance of weight like in the image.

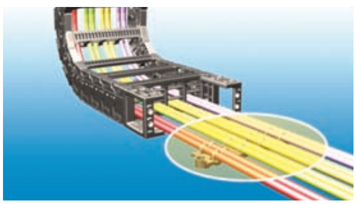
Bending Radius Value, “R”



Minimum "R" Value of Cable :
Multiply 8 to 10 against the biggest cable
Minimum "R" Value of Hose :
Multiply 15 to 20 against the biggest hose

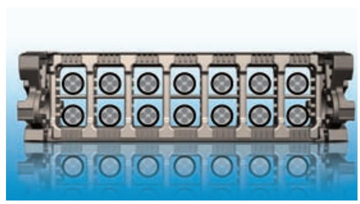
R value of Cable Chain should exceeds the R value of cable or hose.

Fixation of Cable and Hose

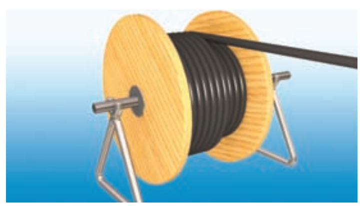


When Tie Wrap is applied, it shall be installed apart from Fixing bracket like in the image.

Arrangement of Cable and Hose

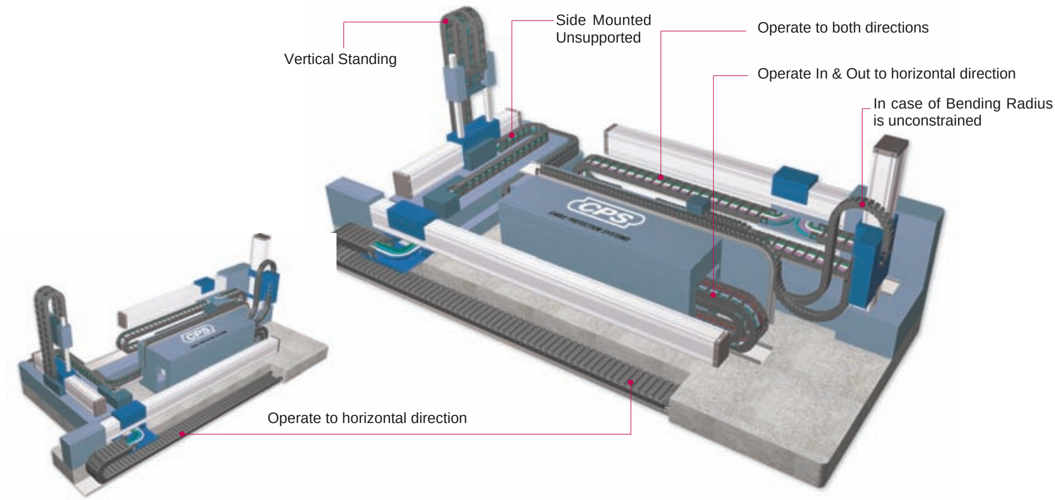


When sum of 2 cables are bigger than X1.2, Inner Height of Cable Chain, Divider does not to be installed. But when it does not exceed X1.2, Divider is recommended to be used.
In case of separator, when cable or hose’ dia is lower than X0.5, separators is recommended to be used.



When cable is inserted inside of Cable Chain, its condition should be maintained straightly to prevent cable that to be entangled.

Images of application
Request Form of Selection of Cable Chain



Request Form of Selection of Cable Chain

DATE. 20 . .

Company	Address
Contact Person	**TEL / FAX / E-mail**

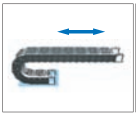
Specification of Cable and Hose

Outer Diameter(Φ)	Quantity	Allowable Bending Radius Value(R)	Weight Per Meter	Part Number	Remark

- Travel Length (S):
- Moving Speed of Machine (S):
- Allowable Bending Radius (R):

- Allowable Space against Cable Chain's Operation:
- Vertical divisional strip: YES ☐ NO ☐
- Horizontal divisional strip: YES ☐ NO ☐

Type of Cable Chain's Application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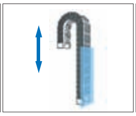
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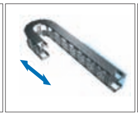
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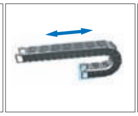
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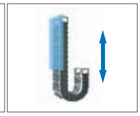
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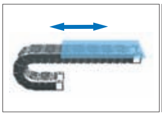
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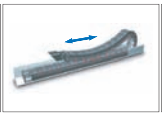
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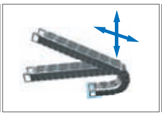
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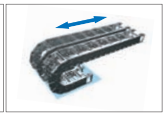
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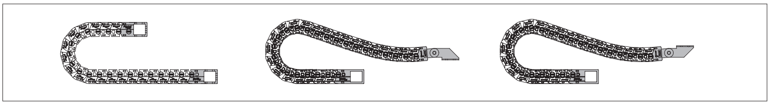


nsb Chain-Clean Room Type

Speed/Acceleration value can be different according to amount of cable/hose and travel length.

General Information

Material	CPS-Amide (PA6+G.F)
Noise level	30dB(DIN EN 61672-1)
Speed	10㎧
Acceleration	20㎨
Temperature	-30℃ ~ +130℃
Special production	ESD, UV, Customized color
Certificate	CE, IPA, ATEX(Ex), TUV, RoHs2

Calculation Table

Length of Cable Chain	L = ½ X Ls +Lp
Bending Radius	Multiply 8~10 of the biggest cable
	Multiply 15~20 of the biggest hose

Dimension Table

nsb Chain Clean Room type	Pitch	Bending Radius (R)	Weight kg/m	Speed m/s	Temperature ℃	Size				Frame style	Section - composition
						A	B	C	D		
nsb020CR	20	28,38,48	0.32 0.35	10	-30 ~ +130	34 54	22	20 40	15		
nsb022CR	22	35, 45, 75, 100, 120	0.43 0.47 0.51 0.55 0.67 0.69	10	-30 ~ +130	30 41 51 61 81 91	29	16 27 37 47 67 77	22		
nsb028CR	28	50, 70, 90, 120, 150	0.90 0.98 1.02 1.12 1.27 1.41 1.59 1.74 1.84	10	-30 ~ +130	55 70 75 95 120 145 170 195 220	38	35 50 55 75 100 125 150 175 200	26		
nsb035CR	35	75, 100, 125, 150, 200	1.00 1.06 1.09 1.17 1.29 1.39 1.53 1.65 1.73	10	-30 ~ +130	55 70 75 95 120 145 170 195 220	52	35 50 55 75 100 125 150 175 200	40		
nsb045CR	45	75, 100, 120, 140, 200, 250, 300	2.59 2.74 2.90 3.11 3.23 3.31 3.41 3.48 3.90 4.18 4.64 4.76 5.32	10	-30 ~ +130	80 105 130 155 170 180 195 205 220 230 270 280 330	70	50 75 100 125 140 150 165 175 190 200 240 250 300	49		
nsb060CR	60	125, 140, 190, 220, 270, 390	3.56 3.66 3.97 4.16 4.33 4.52 4.64 4.98 5.06 5.48 6.09 6.66	10	-30 ~ +130	115 140 165 190 215 230 240 280 290 340 390 440	82	75 100 125 150 175 190 200 240 250 300 350 400	56		
nsb075CR	75	180, 200, 250, 300, 350, 400, 500	5.37 5.57 5.72 5.82 6.01 6.26 6.68 7.11 7.22 7.80 7.94 8.67 9.43 10.01 10.41 11.88 12.17	10	-30 ~ +130	115 140 155 165 190 215 240 280 290 330 340 390 440 490 540 590 640	108	75 100 115 125 150 175 200 240 250 290 300 350 400 450 500 550 600	78		

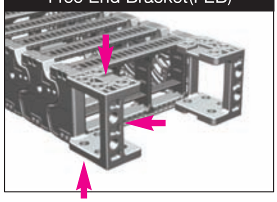
Ordering

nsb 020CR. 20. R48 / F - 600L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - FT : Tie Wrap
  - FST : System Tie wrap
- Bending Radius
- Inside width
- Clean Room type (CR)
- Sabin Chain

Bracket Type

Free End Bracket(FEB)



▶ IPA Test result

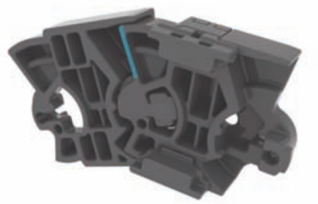
- nsb 020CR.20.R48 : ISO Class1
- nsb 045CR.75.R75 : ISO Class1
- nsb 035CR.55.R75 : ISO Class2

※ Dimensions in mm

Characteristics of nsb Chain Cleanroom

Low Noise due to innovative design of side band.

nsb CR type

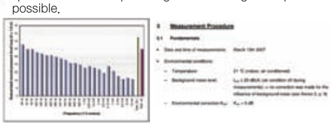


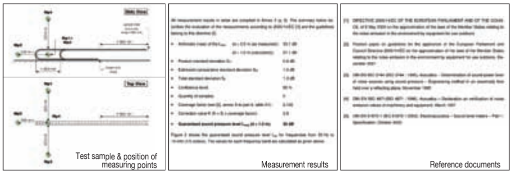
nsb N type

As it's designed differently compared to Normal type that has more friction space when assembled. It means that CR type has less friction space each other when assembled, thus, it makes low noise during operation.

The Quietest Cable Chain in the world

Unsatisfied with only our own internal testing, we sent our cable chain to the experts at the TUV testing facility in Germany and let them decide. The result was 30db noise level. The quietest ever recorded. It is the patented techniques CPS spends so much time perfecting this astounding accomplishment possible.

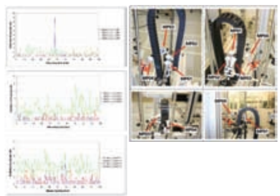




Low Dust Cable Chain

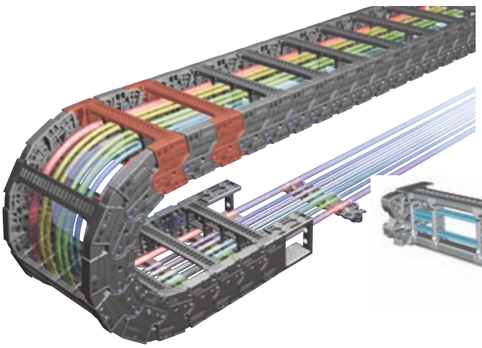
Sabin Chain was given ISO CLASS1 clean room certification according to the Germany IPA Dust Collection Test (VDI 2083 CLASS 1 / DIN EN 14644-1 ISO CLASS 1) It is qualified to be used in semiconductor production lines on automation machine tools and machines requiring quiet and quick applications.

※This test was done by the IPA TEST CENTER for the semiconductor manfacturer equipment and measurement processed with CLASS1 CLEAN ROOM. (US Federal Standard 209E)

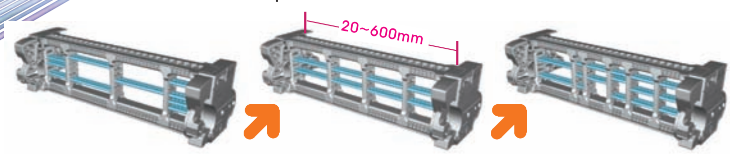


- Clean room environment
  Air speed(0.45 m/s)
  Temperature(+5˚C)
  Humidity (45%)
- Test equipment
  Fraunhofer IPA Test machine
- Measurement Skill
  To checking the dust dimension of ＞0.2㎛, ＞0.3㎛, ＞0.5㎛, use LPSA210 TYPE machine made by PMS.
- Test operation and analysis
  Operated by the guideline of VDI 2083 Part8

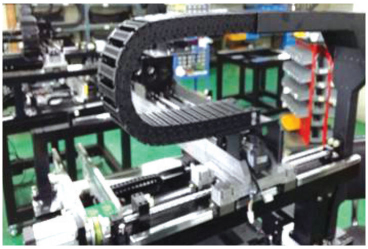
Section composition method



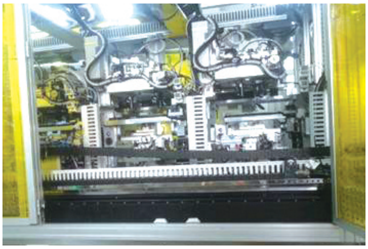
You should make section composition every second frames to make sure long lifetime of cables by preventing from twisting and lost of cables inside. (It's strongly recommended for customers who want to use for long time). It's basic issue and one of the most important factors showing long lifetime of cables.
You can make suitable section composition by using our diverse our dividers and separators that can be modified from 20mm ~ 600mm.



Application of nsb Chain Clean Room type

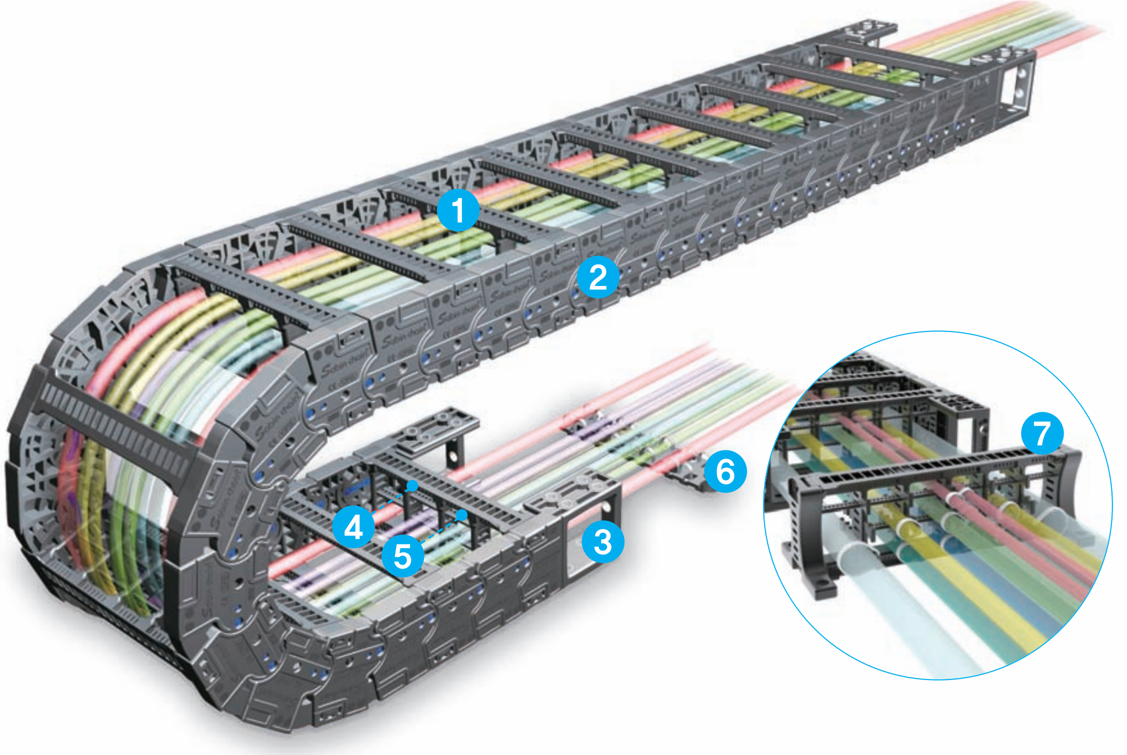


NSB 022CR **Application:** Testing machine for Lead application
Location: Korea



NSB 035CR
Application:
LCD Cleaner Line
Location:
Korea

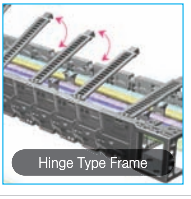
nsb Chain-Clean Room Type



Part of asb Chain Clean Room type

❶ Frame (Hinge Type) (FR)

A part that connects with LH, RH Side Band. There are every 5mm bumps that prevent dividers to be securely positioned at a place. One side of frame has a hinge structure that helps easy assembly and disassembly.



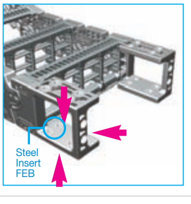
Hinge Type Frame

❷ Side Band (SB)

A part that connects upper and lower frame. There are LH and RH type.

❸ FREE END BRACKET (FEB)

A part that connects to each end of Cable Chain. There are holes are formed where steel washers are inserted to fix FEB to fixing plate securely.



❹ Divider (DV-S, M, R, T)

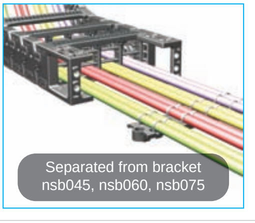
A part that prevents entanglement risk of cables and hoses by being installed vertically.

❺ Separators (SP)

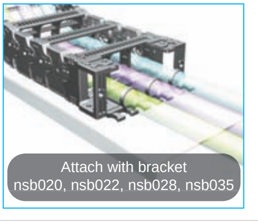
A part that prevent entanglement risk of cable and hoses by being installed horizontally.

❻ Tie wrap (TW)

A part that prevents damage of the cable and hose by twisting & pulling movements. It can be used as assembling with bracket or separating from the bracket at end position of chain.



Separated from bracket
nsb045, nsb060, nsb075



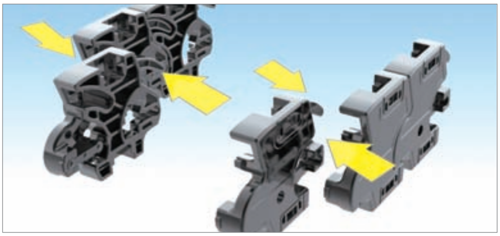
Attach with bracket
nsb020, nsb022, nsb028, nsb035

❼ System tie wrap (STW)

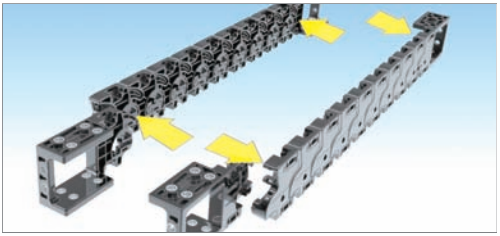
A part that connects to first or end of Cable Chain. Cables and hoses are arranged at System Tie Wrap by several layers and being tightened using Cable Tie. There are 2 types. One is separated from FEB and the other one is assembled to FEB.

Assembly procedure of nsb Chain Clean Room Type

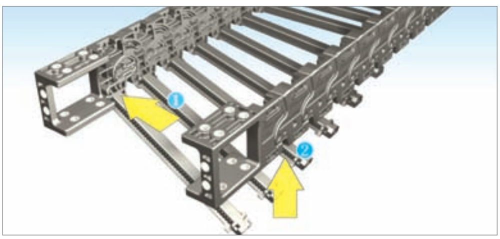
The assembling process of CR-Type of New Sabin Chain is like below and users must use rubber hammer with careful combination of Divider and Separator.



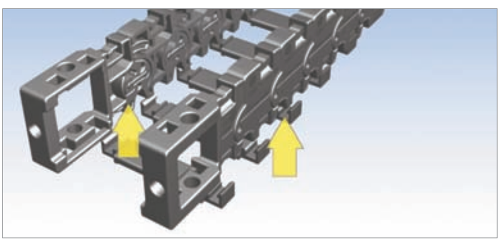
1 Connect each side band as many as you need.



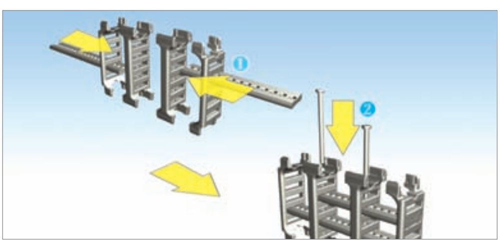
2 Assemble the end brackets on both ends.



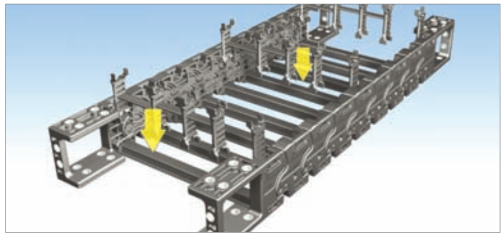
3 Attach frames to one side groove on the frames, then the other side.



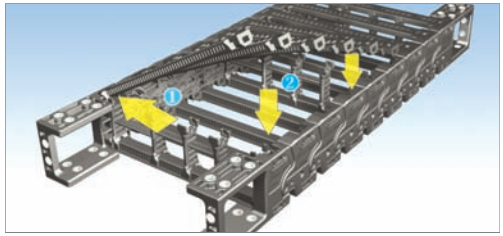
3-1 For nsb020CR and nsb022CR, they are not Hinge Type for method to connect frames, but Hook Type on both sides.



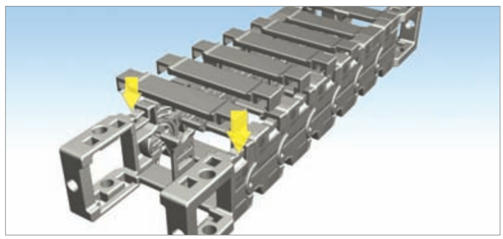
4 For nsb045, 060 and 075, connect the pin of separator in hole of divider after inserting separator in hole of divider. For nsb028 and nsb035, separator fixing pins are not used.



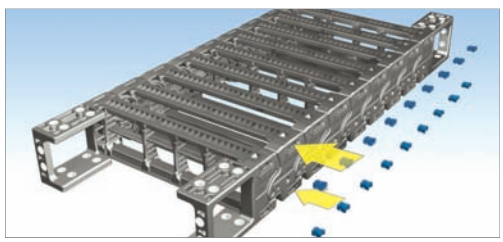
5 Fix the separator and divider patterns to the bottom-side frames as needed.



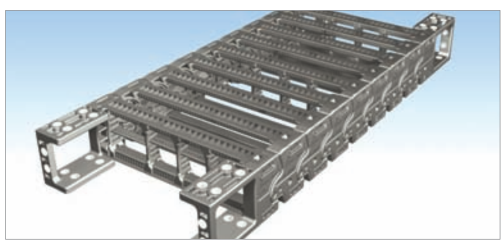
6 Attach frames to one side groove on the frames, then the other side.



6-1 For nsb020CR and nsb022CR, they are not Hinge Type for method to connect frames, but Hook Type on both sides.



7 Insert frame pins to secure the frames and complete carrier. (nsb045, 060, 075 are applied with frame pin, and nsb028, 035 are Hinge Type or Hook Type without frame pin.)



8 Complete to assemble New Sabin CR-Type, Sabin Chain.

nsb Chain-Clean Room Type

Part list of nsb Chain Clean Room type

- Composition of nsb Chain Clean Room Type

= Side Band(RH/LH) + Frame(Upper/Lower) + Free End Bracket

- DV/M is applied at every 4th link

※ Please refer to below part list and description to understand composition of cable chain.

Model	Classification	Part number	Description
nsb020CR	SIDE BAND	nsb-SB020CR.R*(LH) nsb-SB020CR.R*(RH)	Left side band of nsb020CR Right side band of nsb020CR
	FRAME	sb-FR018CR.20 sb-FR018CR.40	Frame, 20mm Frame, 40mm
	FREE END BRACKET	nsb-FEB020CR	Free End bracket of nsb020CR
	DIVIDER	nsb-DV020CR	Normal divider, clean room type
	TIE WRAP	sb-TW018CR.20 sb-TW018CR.40	Tie wrap for end bracket to fix cables, 20mm Tie wrap for end bracket to fix cables, 40mm

Model	Classification	Part number	Description
nsb022CR	SIDE BAND	nsb-SB022CR.R*(LH) nsb-SB022CR.R*(RH)	Left side band of nsb022CR Right side band of nsb022CR
	FRAME	sb-FR020CR.16 S-FR033/020CR.27 S-FR033/020CR.37 S-FR033/020CR.47 S-FR033/020CR.67 S-FR033/020CR.77 sb-FR020CR.100	Frame, 16mm Frame, 27mm Frame, 37mm Frame, 47mm Frame, 67mm Frame, 77mm
	FREE END BRACKET	nsb-FEB022CR	Free End bracket of nsb022CR
	DIVIDER	nsb-DV022CR	Normal divider, cleanroom type
	TIE WRAP	sb-TW020CR.16 S-TW033/020CR.27 S-TW033/020CR.37 S-TW033/020CR.47 S-TW033/020CR.67 S-TW033/020CR.77	Tie wrap for end bracket to fix cables, 16mm Tie wrap for end bracket to fix cables, 27m Tie wrap for end bracket to fix cables, 37mm Tie wrap for end bracket to fix cables, 47mm Tie wrap for end bracket to fix cables, 67mm Tie wrap for end bracket to fix cables, 77mm

Model	Classification	Part number	Description
nsb028CR	SIDE BAND	nsb-SB028CR.R*(LH) nsb-SB028CR.R*(RH)	Left side band of nsb028CR Right side band of nsb028CR
	FRAME	sb-FR/M.35 sb-FR/M.50 sb-FR/M.55 sb-FR/M.75 sb-FR/M.100 sb-FR/M.125 sb-FR/M.150 sb-FR/M.175 sb-FR/M.200	Frame, 35mm Frame, 50mm Frame, 55mm Frame, 75mm Frame, 100mm Frame, 125mm Frame, 150mm Frame, 175mm Frame, 200mm
	FREE END BRACKET	nsb-FEB028CR	Free End bracket of nsb028CR
	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 S-SP/M.125 S-SP/M.150 S-SP/M.175 S-SP/M.200	Separator, 35mm Separator, 50mm Separator, 75mm Separator, 100mm Separator, 125mm Separator, 150mm Separator, 175mm Separator, 200mm
	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

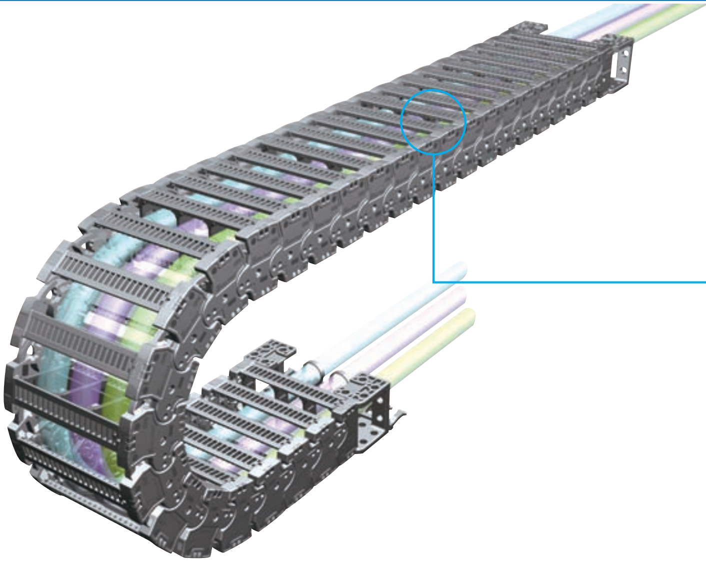
Model	Classification	Part number	Description
nsb035CR	SIDE BAND	nsb-SB035CR.R*(LH) nsb-SB035CR.R*(RH)	Left side band of nsb035CR Right side band of nsb035CR
	FRAME	sb-FR/M.35 sb-FR/M.50 sb-FR/M.55 sb-FR/M.75 sb-FR/M.100 sb-FR/M.125 sb-FR/M.150 sb-FR/M.175 sb-FR/M.200	Frame, 35mm Frame, 50mm Frame, 55mm Frame, 75mm Frame, 100mm Frame, 125mm Frame, 150mm Frame, 175mm Frame, 200mm
	FREE END BRACKET	nsb-FEB035CR	Free End bracket of nsb035CR
	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 S-SP/M.175 S-SP/M.200	Separator, 35mm Separator, 50mm Separator, 75mm Separator, 100mm Separator, 125mm Separator, 150mm Separator, 175mm Separator, 200mm
	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

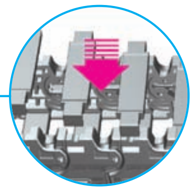
Model	Classification	Part number	Description
nsb045CR	SIDE BAND	nsb-SB045CR.R*(LH)	Left side band of nsb045CR
		nsb-SB045CR.R*(RH)	Right side band of nsb045CR
	FRAME PIN	S-FP/S1	Frame pin
	FRAME	sb-FR045.50	Frame, 50mm
		sb-FR045.75	Frame, 75mm
		sb-FR045.100	Frame, 100mm
		sb-FR045.125	Frame, 125mm
		sb-FR045.140	Frame, 140mm
		sb-FR045.150	Frame, 150mm
		sb-FR045.165	Frame, 165mm
		sb-FR045.175	Frame, 175mm
		sb-FR045.190	Frame, 190mm
		sb-FR045.200	Frame, 200mm
		sb-FR045.240	Frame, 240mm
		sb-FR045.250	Frame, 250mm
		sb-FR045.300	Frame, 300mm
	FREE END BRACKET	nsb-FEB045CR	Free End bracket of nsb045CR
		sb-FEB/WH045	Steel washer for end bracket
	DIVIDER	sb-DV045CR/M	Normal divider
		sb-DV045CR/S	To fix separstors at the both side section
		sb-DV045CR/R	T divider
		sb-DV045CR/T	T divider pin
		sb-DV045/TP	
	SEPARATOR	sb-SP/400.Frame	Separator, 400mm
		SP-PIN045	Separator pin to fix
	TIE WRAP	S-TW50	Tie wrap for end bracket to fix cables, 50mm
		S-TW75	Tie wrap for end bracket to fix cables, 75mm
		S-TW100	Tie wrap for end bracket to fix cables, 100mm
		S-TW125	Tie wrap for end bracket to fix cables, 125mm
		S-TW150	Tie wrap for end bracket to fix cables, 150mm
	SYSTEM TIE WRAP	sb-DV045/W	Divider for fixing cables at end bracket
		S-TW.EB045	System tie wrap to arrange for cables right after moving bracket or fixing bracket

Model	Classification	Part number	Description
nsb060CR	SIDE BAND	nsb-SB060CR.R*(LH)	Left side band of nsb060CR
		nsb-SB060CR.R*(RH)	Right side band of nsb060CR
	FRAME PIN	S-FP/S1	Frame pin
	FRAME	sb-FR060.75	Frame, 75mm
		sb-FR060.100	Frame, 100mm
		sb-FR060.125	Frame, 125mm
		sb-FR060.150	Frame, 150mm
		sb-FR060.175	Frame, 175mm
		sb-FR060.190	Frame, 190mm
		sb-FR060.200	Frame, 200mm
		sb-FR060.230	Frame, 230mm
		sb-FR060.250	Frame, 250mm
		sb-FR060.300	Frame, 300mm
		sb-FR060.350	Frame, 350mm
		sb-FR060.400	Frame, 400mm
	FREE END BRACKET	nsb-FEB060CR	Free End bracket of nsb060CR
		sb-FEB/WH060	Steel washer for end bracket
	DIVIDER	sb-DV060/M	Normal divider
		sb-DV060/S	To fix separstors at the both side section
		sb-DV060/R	Roller divider to reduce friction with cables, Clean room type
		sb-DV060/T	T divider
		sb-DV060/TP	T divider pin
	SEPARATOR	sb-SP/400.Frame	Separator, 400mm
		SP-PIN060	Separator pin to fix
	TIE WRAP	S-TW50	Tie wrap for end bracket to fix cables, 50mm
		S-TW75	Tie wrap for end bracket to fix cables, 75mm
		S-TW100	Tie wrap for end bracket to fix cables, 100mm
		S-TW125	Tie wrap for end bracket to fix cables, 125mm
		S-TW150	Tie wrap for end bracket to fix cables, 150mm
	SYSTEM TIE WRAP	sb-DV060/W	Divider for fixing cables at end bracket
		S-TW.EB060	System tie wrap to arrange for cables right after moving bracket or fixing bracket

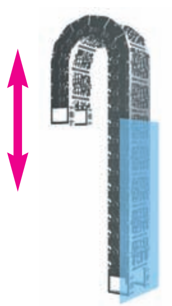
Model	Classification	Part number	Description
nsb075CR	SIDE BAND	nsb-SB075CR.R*(LH)	Left side band of nsb075CR
		nsb-SB075CR.R*(RH)	Right side band of nsb075CR
	FRAME PIN	S-FP/S2	Frame pin
	FRAME	sb-FR075/100.75	Frame, 75mm
		sb-FR075/100.100	Frame, 100mm
		sb-FR075/100.115	Frame, 115mm
		sb-FR075/100.125	Frame, 125mm
		sb-FR075/100.150	Frame, 150mm
		sb-FR075/100.175	Frame, 175mm
		sb-FR075/100.200	Frame, 200mm
		sb-FR075/100.240	Frame, 240mm
		sb-FR075/100.250	Frame, 250mm
		sb-FR075/100.290	Frame, 290mm
		sb-FR075/100.300	Frame, 300mm
		sb-FR075/100.350	Frame, 350mm
		sb-FR075/100.400	Frame, 400mm
		sb-FR075/100.450	Frame, 450mm
		sb-FR075/100.500	Frame, 500mm
		sb-FR075/100.550	Frame, 550mm
		sb-FR075/100.600	Frame, 600mm
	FREE END BRACKET	nsb-FEB075CR	Free End bracket of nsb075CR
		sb-FEB/WH075	Steel washer for end bracket
	DIVIDER	sb-DV075/M	Normal divider
		sb-DV075/S	To fix separstors at the both side section
		sb-DV075/R	Roller divider to reduce friction with cables, Clean room type
		sb-DV075/T	T divider
		sb-DV075/TP	T divider pin
	SEPARATOR	sb-SP/400.Frame	Separator, 400mm
		SP-PIN075	Separator pin to fix
	TIE WRAP	S-TW50	Tie wrap for end bracket to fix cables, 50mm
		S-TW75	Tie wrap for end bracket to fix cables, 75mm
		S-TW100	Tie wrap for end bracket to fix cables, 100mm
		S-TW125	Tie wrap for end bracket to fix cables, 125mm
		S-TW150	Tie wrap for end bracket to fix cables, 150mm
	SYSTEM TIE WRAP	sb-DV075/W	Divider for fixing cables at end bracket
		S-TW.EB075	System tie wrap to arrange for cables right after moving bracket or fixing bracket

nsb020CR

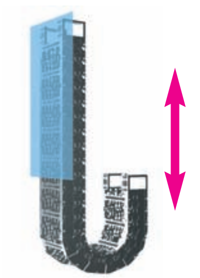




Both side open type



Vertical Standing



Vertical Hanging

Side Mounted Unsupported

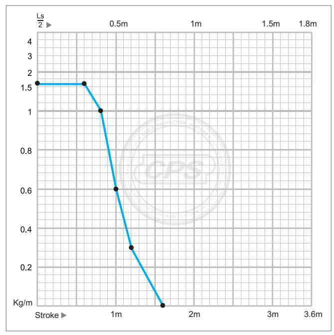
Caculation of the Chain Length

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

Other Length Restrictions

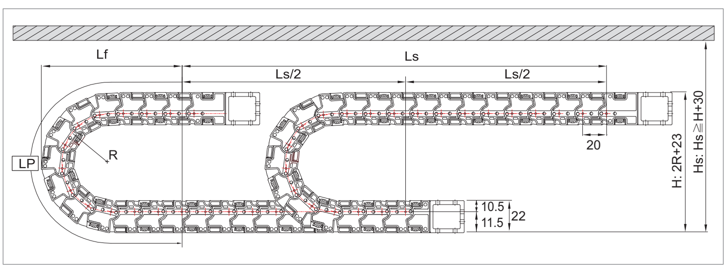
Vertical Standing(Max) = 1.0m
Vertical Hanging(Max) = 5m
Side Mounted Unsupported(Max) = 0.5m

Unsupported Length



Layout of the Chain

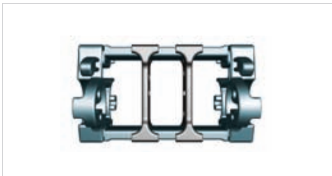
Ls: Stroke Hs: Safe Space

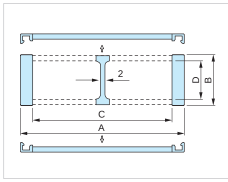


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
28	168	80	79
38	200	90	99
48	231	100	119

※ Dimensions in mm

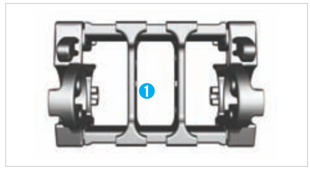
Chain Cross Section





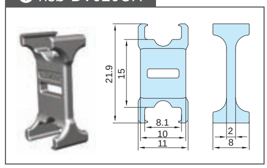
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
nsb020CR	34 54	22	20 40	15	0.32 0.35

Dividers(DV)



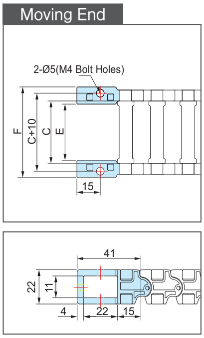
Assemble divider every third links.

❶ nsb-DV020CR

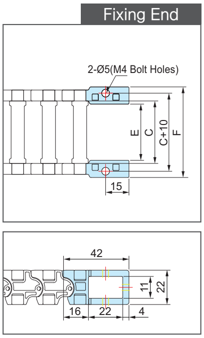


Free End Bracket(FEB)

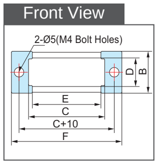
Moving End



Fixing End

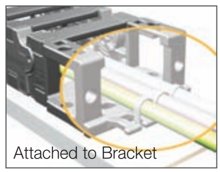


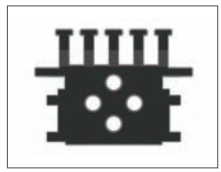
Front View

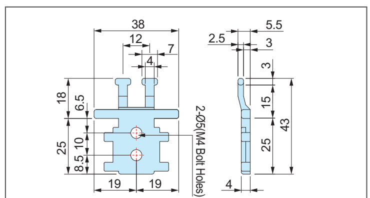


Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M.EB Bolt hole Width	Hole Type
nsb020CR	38 58	22	20 40	15	16 36	M4 Bolt hole

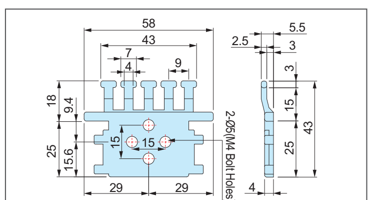
Tie Wrap(TW)







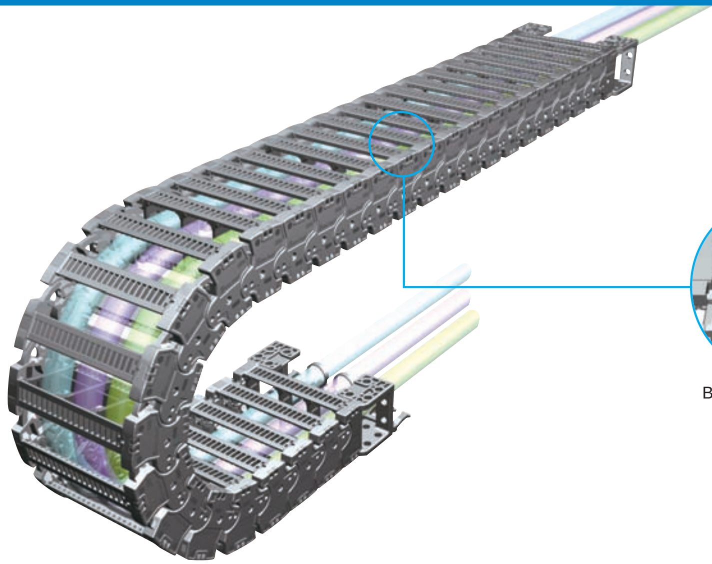
Ordering No. : sb-TW018CR.20

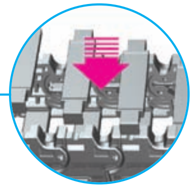


Ordering No. : sb-TW018CR.40

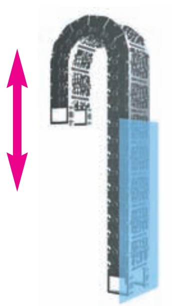
※ Dimensions in mm

nsb022CR

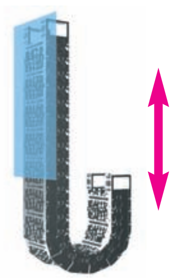




Both side open type



Vertical Standing



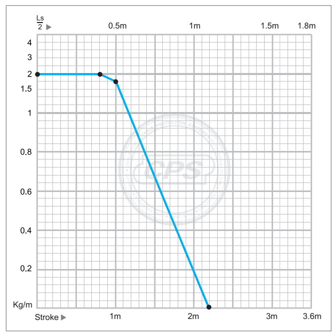
Vertical Hanging

Side Mounted Unsupported

Caculation of the Chain Length

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

Unsupported Length

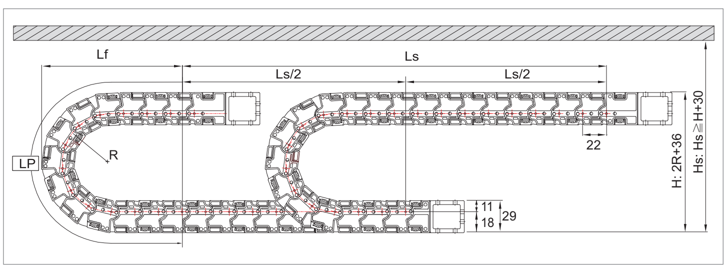


Other Length Restrictions

Vertical Standing(Max) = 1.0m
Vertical Hanging(Max) = 5m
Side Mounted Unsupported(Max) = 0.5m

Layout of the Chain

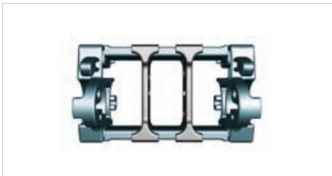
Ls: Stroke Hs: Safe Space

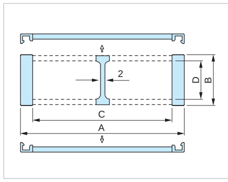


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
35	198	97	106
45	230	107	126
75	324	137	186
100	402	162	236
120	465	182	276

※ Dimensions in mm

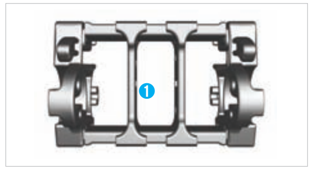
Chain Cross Section





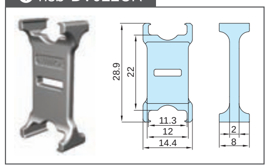
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
nsb022CR	30	29	16	22	0.43
	41		27		0.47
	51		37		0.51
	61		47		0.55
	81		67		0.67
	91		77		0.69
	114		100		0.81

Dividers(DV)

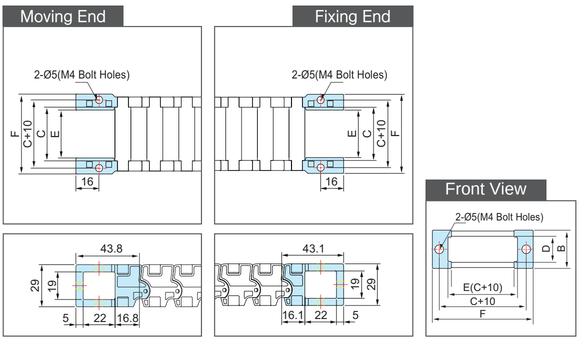


Assemble divider every third links

1 nsb-DV022CR

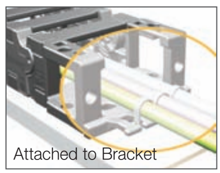


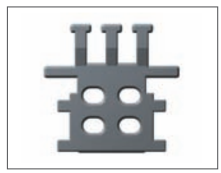
Free End Bracket(FEB)

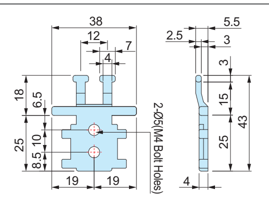


Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E(C+10) M,EB Bolt hole Width	Hole Type
nsb022CR	34	29	16	22	26	M4 Bolt hole
	45		27		37	
	55		37		47	
	65		47		57	
	85		67		77	
	95		77		87	
	118		100		110	

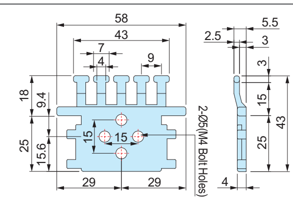
Tie Wrap(TW)







Ordering No. : sb-TW020CR.16

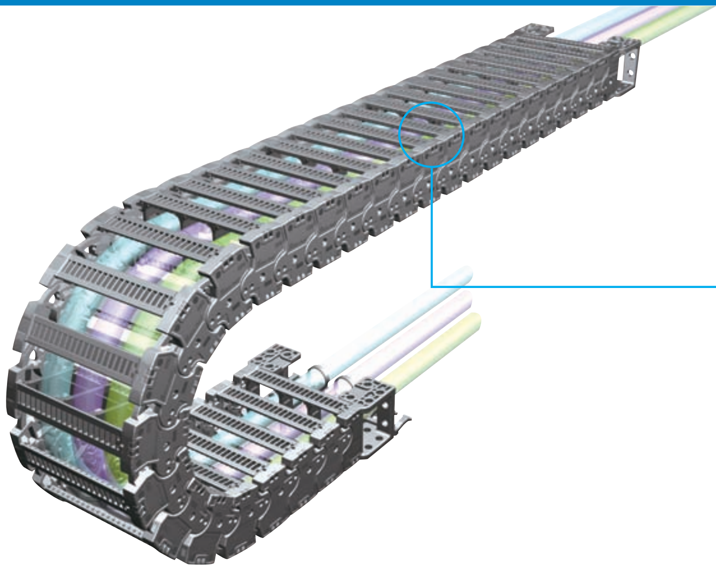


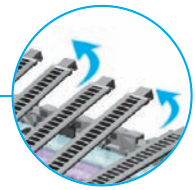
Ordering No. : S-TW033/020CR.27/37/47/67/77

ChainType	Ordering No.	A	B	C	D
nsb022CR	sb-TW020CR.16	34	-	10.00	-
	S-TW033/020CR.27	45	27.5	10.20	12
	S-TW033/020CR.37	55	41.0	8.50	22
	S-TW033/020CR.47	65	48.0	10.40	32
	S-TW033/020CR.67	85	68.0	10.00	52
	S-TW033/020CR.77	95	78.0	8.87	62

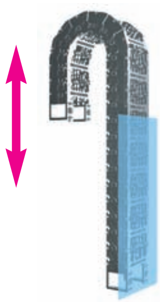
※ Dimensions in mm

nsb028CR

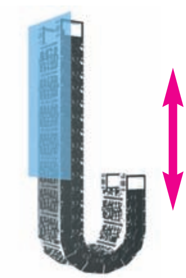




Hinge hook type



Vertical Standing



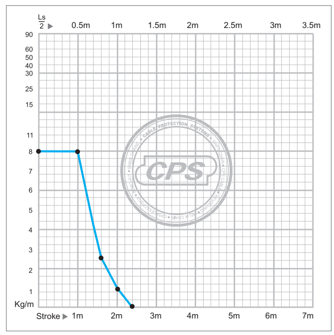
Vertical Hanging

Side Mounted Unsupported

Caculation of the Chain Length

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

Unsupported Length

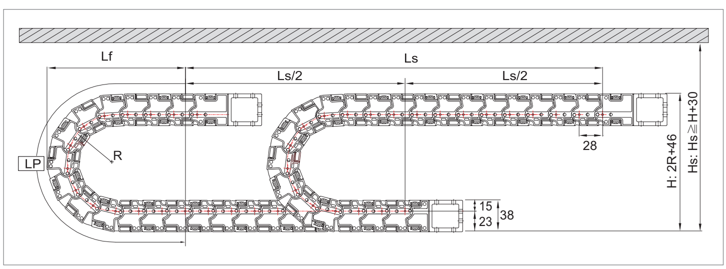


Other Length Restrictions

Vertical Standing(Max) = 2.0m
Vertical Hanging(Max) = 40m
Side Mounted Unsupported = 1.0m

Layout of the Chain

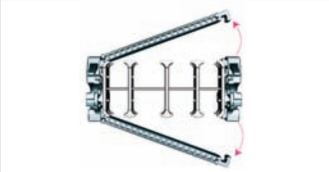
Ls: Stroke Hs: Safe Space

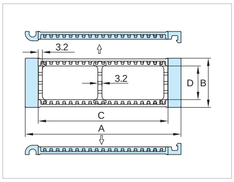


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
50	269	129	146
70	332	149	186
90	395	169	226
120	489	199	286
150	583	229	346

 ※ Dimensions in mm

Chain Cross Section

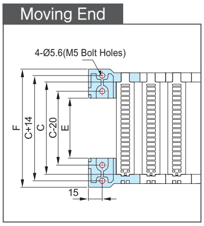




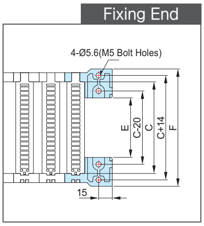
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
nsb028CR	55 70 75 95 120 145 170 195 220	38	35 50 55 75 100 125 150 175 200	26	0.90 0.98 1.02 1.12 1.27 1.41 1.59 1.74 1.84

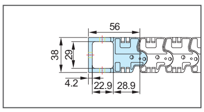
Free End Bracket(FEB)

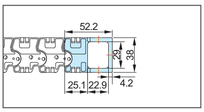
Moving End



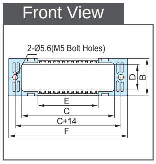
Fixing End





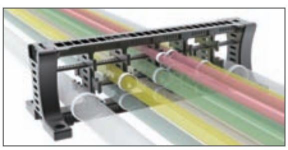


Front View



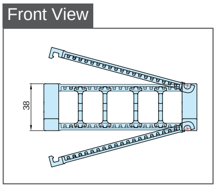
Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M,EB Bolt hole Width	Hole Type
nsb028CR	63 78 83 103 128 153 178 203 228	38	35 50 55 75 100 125 150 175 200	26	0 15 20 40 65 90 115 140 165	M5 Bolt hole

System Tie Wrap(STW)

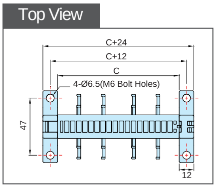


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

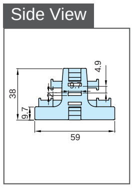
Front View



Top View

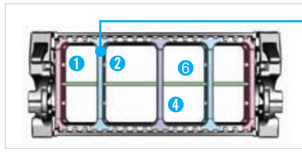


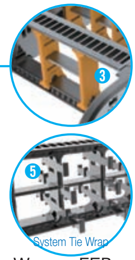
Side View



Chain Type	Ordering No.	C Frame	Hole Type
nsb028CR	S-TW.EB028.35 S-TW.EB028.50 S-TW.EB028.55 S-TW.EB028.75 S-TW.EB028.100 S-TW.EB028.125 S-TW.EB028.150 S-TW.EB028.175 S-TW.EB028.200	35 50 55 75 100 125 150 175 200	M6 Bolt hole

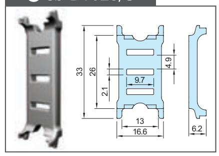
Dividers(DV)



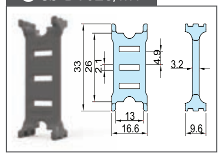


Assemble divider every fourth frame
DV/T : Applied at Frame 125~200 Size
DV/M : There are two types: M1 and M2
DV/W : Can be assembled at System Tie Wrap or FEB

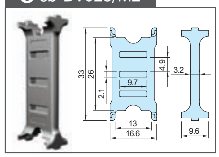
❶ sb-DV028/S



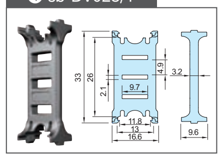
❷ sb-DV028/M1



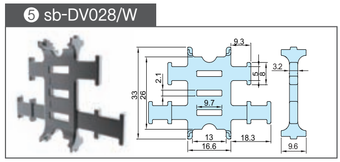
❸ sb-DV028/M2



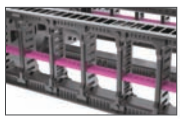
❹ sb-DV028/T



❺ sb-DV028/W



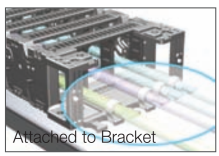
Separators(SP)

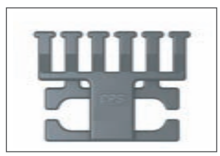


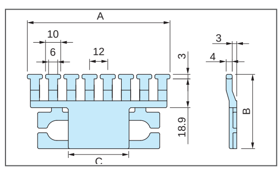
❻ Adjustable Separator length

Chain Type	Ordering No.	Frame
nsb028CR	S-SP/M.35 S-SP/M.50 S-SP/M.55 S-SP/M.75 S-SP/M.100 S-SP/M.125 S-SP/M.150 S-SP/M.175 S-SP/M.200	35 50 55 75 100 125 150 175 200

Tie Wrap(TW)



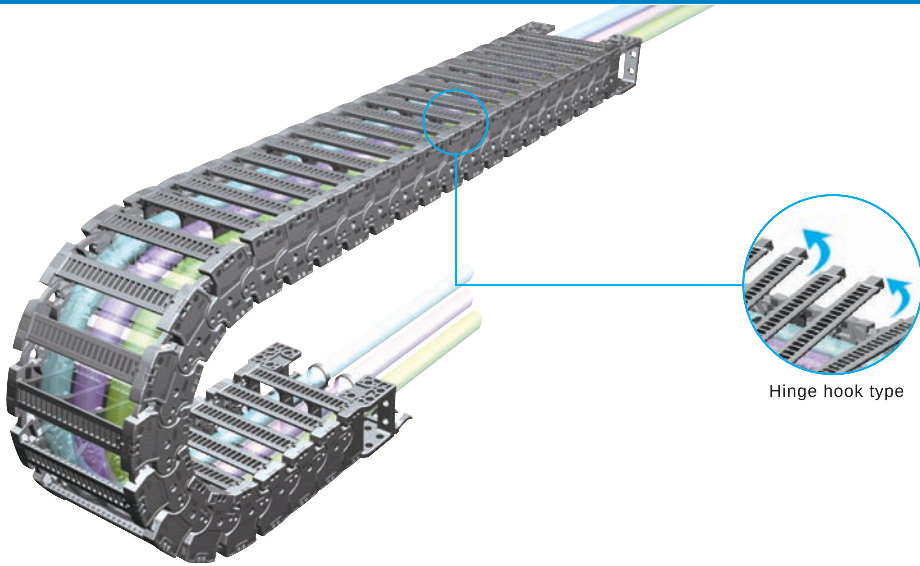


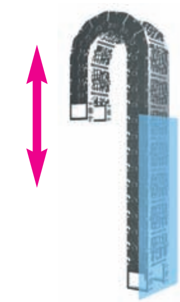


Chain Type	Ordering No.	A	B	C
nsb028CR	S-TW036/025CR.35	46	35.4	-
	S-TW036/025CR.50	69	48.9	15
	S-TW036/025CR.55	70	48.9	20
	S-TW036/025CR.75	94	48.9	40
	S-TW036/025CR.100	118	48.9	65
	S-TW036/025CR.125	142	48.9	90

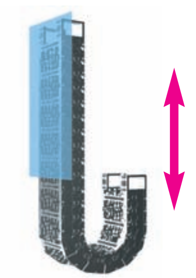
※ Dimensions in mm

nsb035CR

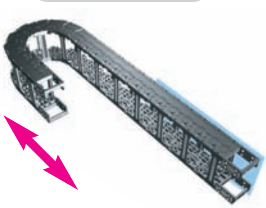




Vertical Standing



Vertical Hanging



Side Mounted Unsupported

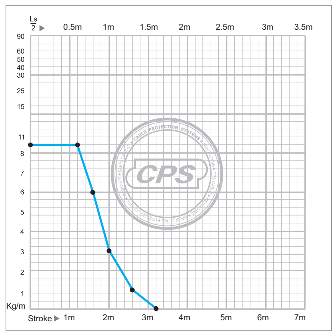
Caculation of the Chain Length

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

Other Length Restrictions

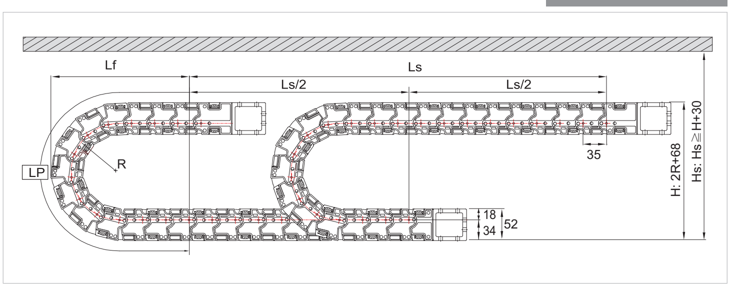
Vertical Standing(Max) = 2.0m
Vertical Hanging(Max) = 40m
Side Mounted Unsupported(Max) = 1.0m

Unsupported Length



Layout of the Chain

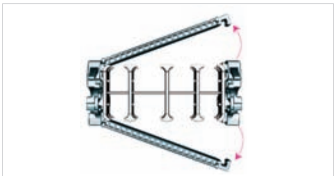
Ls: Stroke Hs: Safe Space

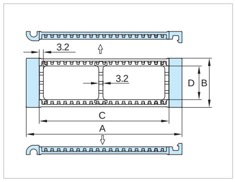


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
75	376	179	218
100	454	204	268
125	533	229	318
150	611	254	368
200	768	304	468

※ Dimensions in mm

Chain Cross Section

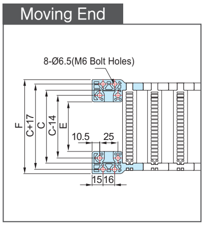




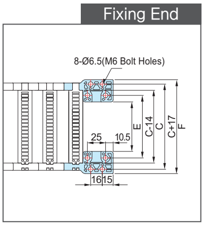
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
nsb035CR	55	52	35	40	1.00
	70		50		1.06
	75		55		1.09
	95		75		1.17
	120		100		1.29
	145		125		1.39
	170		150		1.53
	195		175		1.65
	220		200		1.73

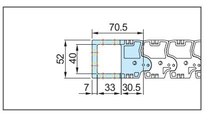
Free End Bracket(FEB)

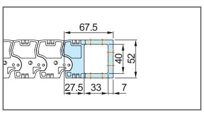
Moving End



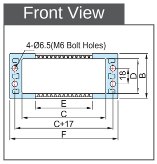
Fixing End





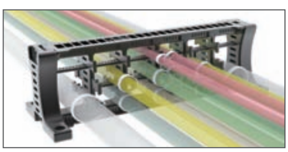


Front View



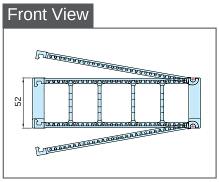
Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M,EB Bolt hole Width	Hole Type
nsb035CR	64	52	35	40	3	M6 Bolt hole
	79		50		18	
	84		55		23	
	104		75		43	
	129		100		68	
	154		125		93	
	179		150		118	
	204		175		143	
	229		200		168	

System Tie Wrap(STW)

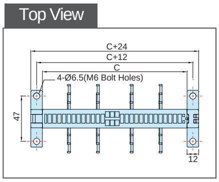


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

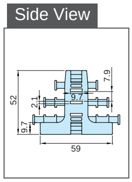
Front View



Top View



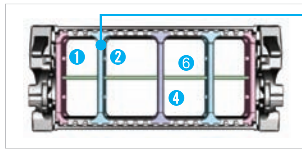
Side View

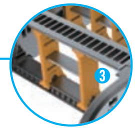


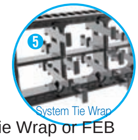
Chain Type	Ordering No.	C Frame	Hole Type
nsb035CR	S-TW.EB035.35	35	M6 Bolt hole
	S-TW.EB035.50	50	
	S-TW.EB035.55	55	
	S-TW.EB035.75	75	
	S-TW.EB035.100	100	
	S-TW.EB035.125	125	
	S-TW.EB035.150	150	
	S-TW.EB035.175	175	
	S-TW.EB035.200	200	

※ Dimensions in mm

Dividers(DV)

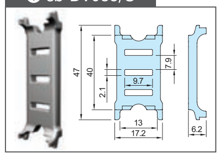




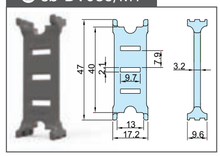


Assemble divider every fourth frame
DV/T : Applied at Frame 125~200 Size
DV/M : There are two types: M1 and M2
DV/W : Can be assembled at System Tie Wrap or FEB

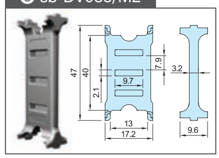
① sb-DV035/S



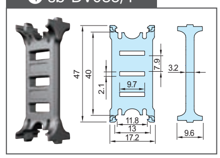
② sb-DV035/M1



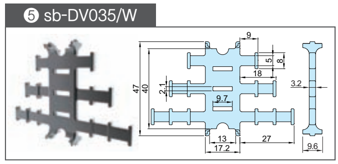
③ sb-DV035/M2



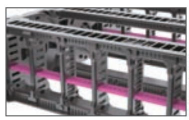
④ sb-DV035/T



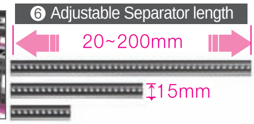
⑤ sb-DV035/W



Separators(SP)

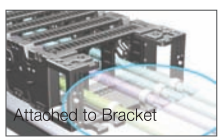


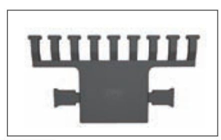
⑥ Adjustable Separator length

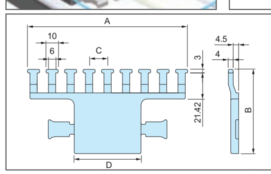


Chain Type	Ordering No.	Frame
nsb035CR	S-SP/M.35	35
	S-SP/M.50	50
	S-SP/M.55	55
	S-SP/M.75	75
	S-SP/M.100	100
	S-SP/M.125	125
	S-SP/M.150	150
	S-SP/M.175	175
	S-SP/M.200	200

Tie Wrap(TW)

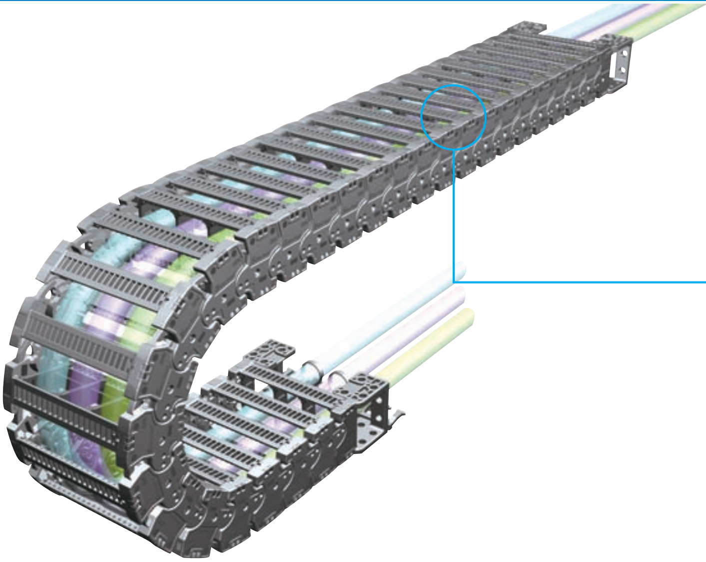


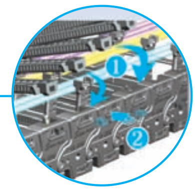


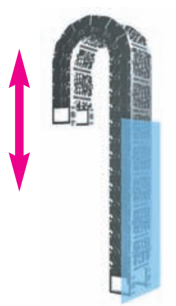


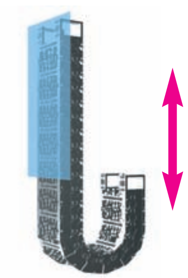
Chain Type	Ordering No.	A	B	C	D
nsb035CR	S-TW050/035N.50	82	64.5	12.00	5
	S-TW050/035N.55	82		12.00	10
	S-TW050/035N.75	107		12.13	30
	S-TW050/035N.100	132		15.25	55
	S-TW050/035N.125	157		14.70	80
	S-TW050/035N.150	182		14.35	105
	S-TW050/035N.175	203		12.31	130
	S-TW050/035N.200	232		13.88	155

nsb045CR




Hinge frame-pin lock type


Vertical Standing


Vertical Hanging


Side Mounted Unsupported

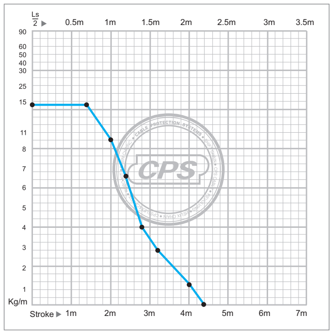
Caculation of the Chain Length

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

Other Length Restrictions

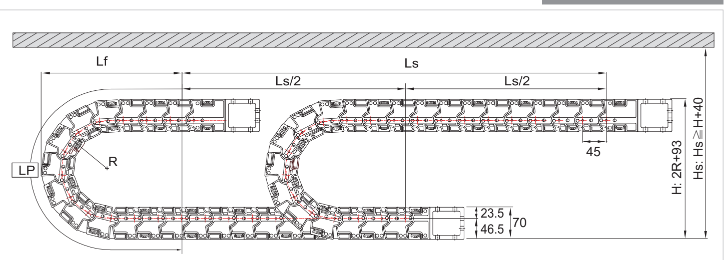
Vertical Standing(Max) = 6.0m
Vertical Hanging(Max) = 100m
Side Mounted Unsupported(Max) = 2.5m

Unsupported Length



Layout of the Chain

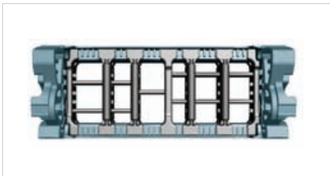
Ls: Stroke Hs: Safe Space

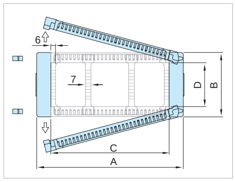


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
75	506	257	243
100	584	282	293
120	647	302	333
140	710	322	373
200	898	382	493
250	1055	432	593
300	1212	482	693

 ※ Dimensions in mm

Chain Cross Section

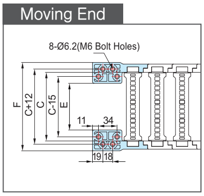




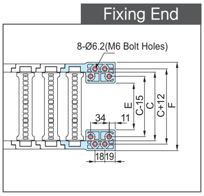
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
nsb045CR	80	70	50	49	2.59
	105		75		2.74
	130		100		2.90
	155		125		3.11
	170		140		3.23
	180		150		3.31
	195		165		3.41
	205		175		3.48
	220		190		3.90
	230		200		4.18
	270		240		4.64
	280		250		4.76
	330		300		5.32

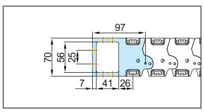
Free End Bracket(FEB)

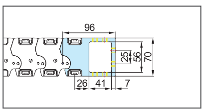
Moving End



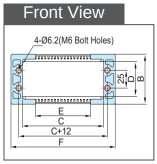
Fixing End





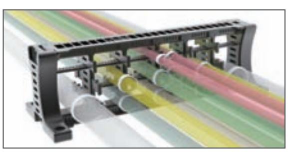


Front View



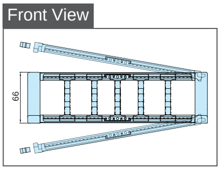
Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M,EB Bolt hole Width	Hole Type
nsb045CR	86	70	50	49	10	M6 Bolt hole
	111		75		35	
	136		100		60	
	161		125		85	
	176		140		100	
	186		150		110	
	201		165		125	
	211		175		135	
	226		190		150	
	236		200		160	
	276		240		200	
	286		250		210	
	336		300		260	

System Tie Wrap(STW)

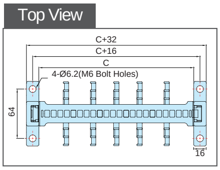


It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.

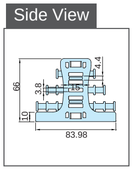
Front View



Top View

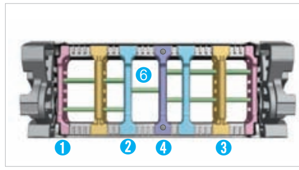


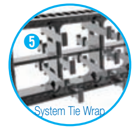
Side View



Chain Type	Ordering No.	C Frame	Hole Type
nsb045CR	S-TW.EB045.50	50	M6 Bolt hole
	S-TW.EB045.75	75	
	S-TW.EB045.100	100	
	S-TW.EB045.125	125	
	S-TW.EB045.140	140	
	S-TW.EB045.150	150	
	S-TW.EB045.165	165	
	S-TW.EB045.175	175	
	S-TW.EB045.190	190	
	S-TW.EB045.200	200	
	S-TW.EB045.240	240	
	S-TW.EB045.250	250	
	S-TW.EB045.300	300	

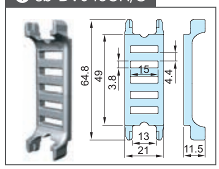
Dividers(DV)



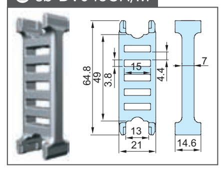


Assemble divider every fourth frame
DV/T : Applied at Frame 200~300 Size
DV/W : Can be assembled at System Tie Wrap or FEB

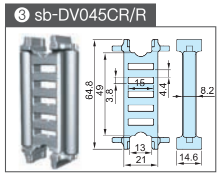
❶ sb-DV045CR/S



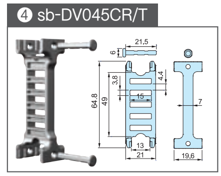
❷ sb-DV045CR/M



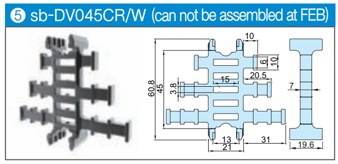
❸ sb-DV045CR/R



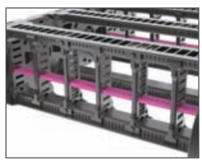
❹ sb-DV045CR/T



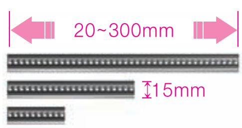
❺ sb-DV045CR/W (can not be assembled at FEB)



Separators(SP)

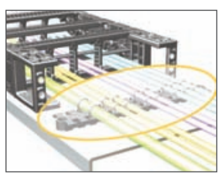


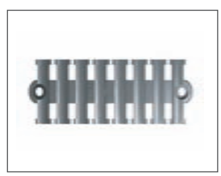
❻ AAdjustable Separator length

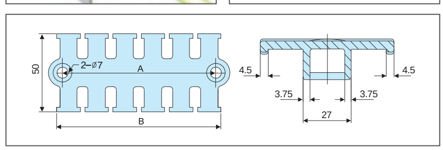


Chain Type	Ordering No.
nsb045CR	sb-SP/400.Frame

Tie Wrap(TW)



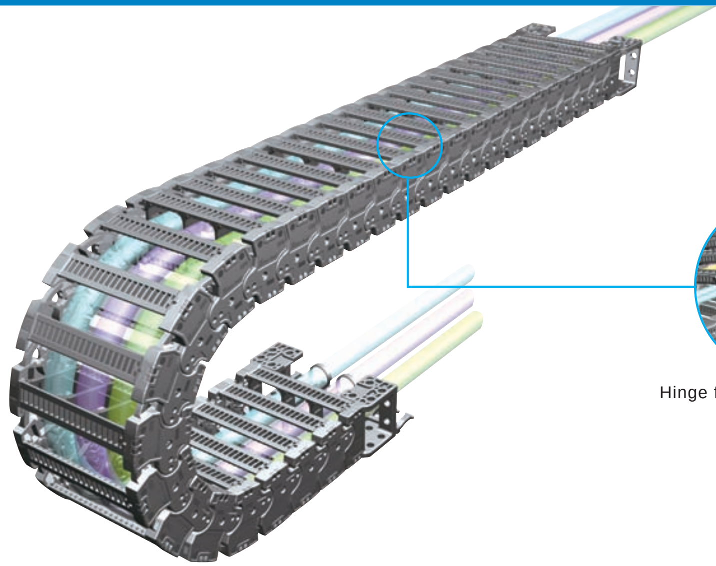


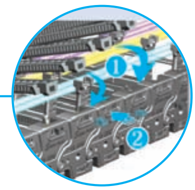


Chain Type	Ordering No.	A	B
nsb045CR	S-TW50	58	65
	S-TW75	75	82
	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

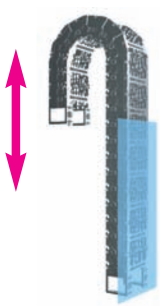
※ Dimensions in mm

nsb060CR

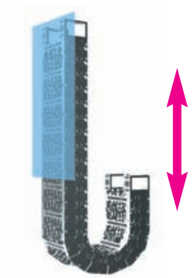




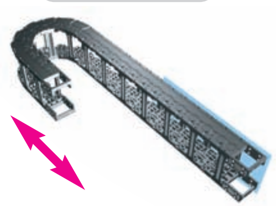
Hinge frame-pin lock type



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

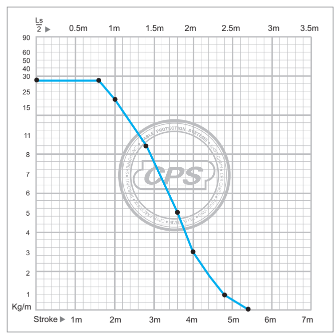
Caculation of the Chain Length

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

Other Length Restrictions

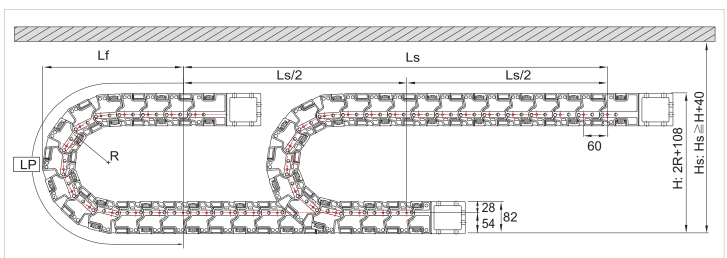
Vertical Standing(Max) = 6.0m
Vertical Hanging(Max) = 100m
Side Mounted Unsupported(Max) = 3.0m

Unsupported Length



Layout of the Chain

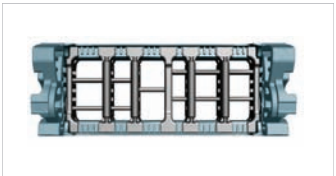
Ls: Stroke Hs: Safe Space

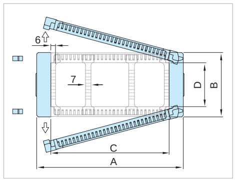


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
125	753	359	358
140	800	374	388
190	957	424	488
220	1051	454	548
270	1208	504	648
390	1585	624	888

※ Dimensions in mm

Chain Cross Section

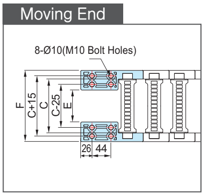




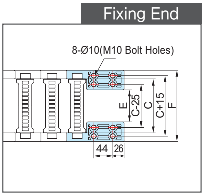
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
nsb060CR	115	82	75	55	3.56
	140		100		3.66
	165		125		3.97
	190		150		4.16
	215		175		4.33
	230		190		4.52
	240		200		4.64
	270		230		4.90
	280		240		4.98
	290		250		5.06
	340		300		5.48
	390		350		6.09
	440		400		6.66

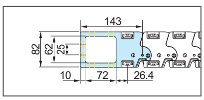
Free End Bracket(FEB)

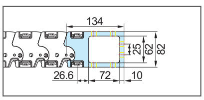
Moving End



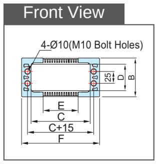
Fixing End







Front View

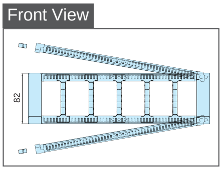


Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M,EB Bolt hole Width	Hole Type
nsb060CR	115	82	75	55	24	M10 Bolt hole
	140		100		49	
	165		125		74	
	190		150		99	
	215		175		124	
	230		190		139	
	240		200		149	
	270		230		179	
	280		240		189	
	290		250		199	
	340		300		249	
	390		350		299	
	440		400		349	

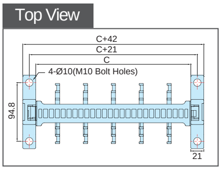
System Tie Wrap(STW)

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.

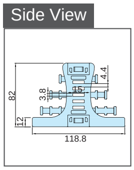
Front View



Top View

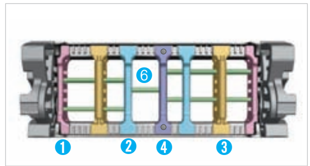


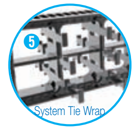
Side View



Chain Type	Ordering No.	C Frame	Hole Type
nsb060CR	S-TW.EB060.75	75	M10 Bolt hole
	S-TW.EB060.100	100	
	S-TW.EB060.125	125	
	S-TW.EB060.150	150	
	S-TW.EB060.175	175	
	S-TW.EB060.190	190	
	S-TW.EB060.200	200	
	S-TW.EB060.230	230	
	S-TW.EB060.240	240	
	S-TW.EB060.250	250	
	S-TW.EB060.300	300	
	S-TW.EB060.350	350	
	S-TW.EB060.400	400	

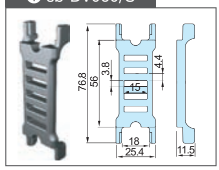
Dividers(DV)



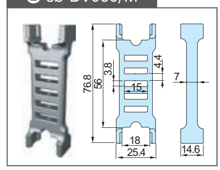


Assemble divider every fourth frame
DV/T : Applied at Frame 250~400 Size
DV/W : Applicable to System Tie Wrap or FEB

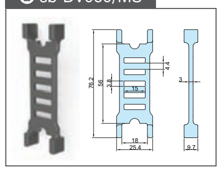
❶ sb-DV060/S



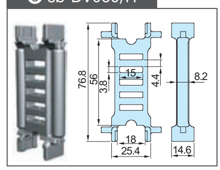
❷ sb-DV060/M



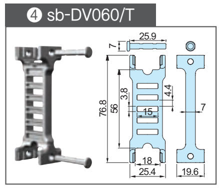
❷ sb-DV060/MS



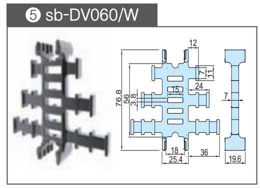
❸ sb-DV060/R



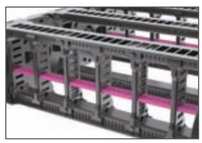
❹ sb-DV060/T



❺ sb-DV060/W



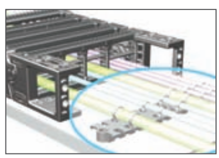
Separators(SP)

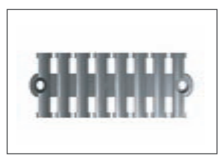


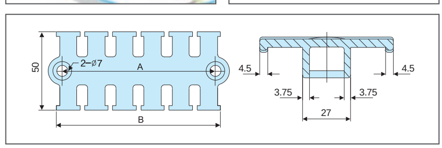
❻ Adjustable Separator length

Chain Type	Ordering No.
nsb060CR	sb-SP/400.Frame

Tie Wrap(TW)



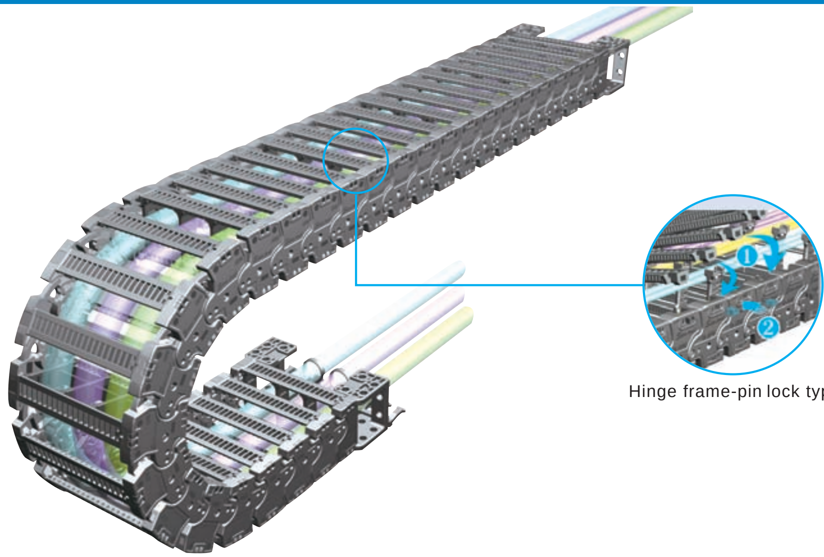




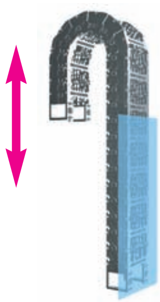
Chain Type	Ordering No.	A	B
nsb060CR	S-TW50	58	65
	S-TW75	75	82
	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

※ Dimensions in mm

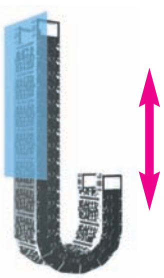
nsb075CR



Hinge frame-pin lock type



Vertical Standing



Vertical Hanging

Side Mounted Unsupported

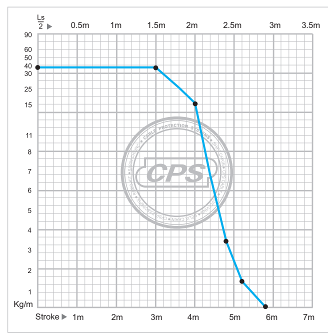
Caculation of the Chain Length

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

Other Length Restrictions

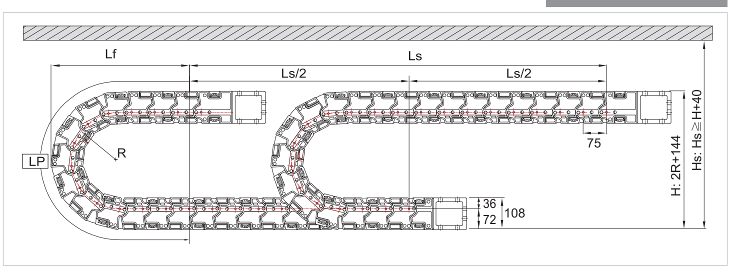
Vertical Standing(Max) = 6.0m
Vertical Hanging(Max) = 100m
Side Mounted Unsupported(Max) = 3.0m

Unsupported Length



Layout of the Chain

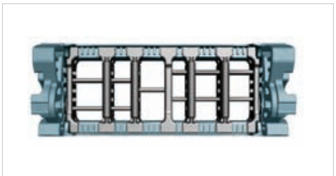
Ls: Stroke Hs: Safe Space

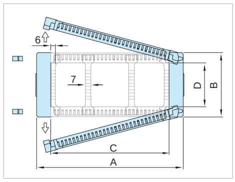


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
180	1016	477	504
200	1078	497	544
250	1235	547	644
300	1392	597	744
350	1549	647	844
400	1706	697	944
500	2020	797	1,144

※ Dimensions in mm

Chain Cross Section

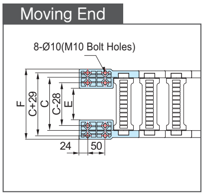




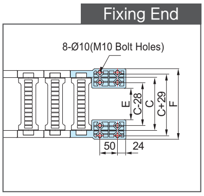
Chain Type	A Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	Weight kg/m
nsb075CR	115	108	75	78	5.37
	140		100		5.57
	155		115		5.72
	165		125		5.82
	190		150		6.01
	215		175		6.26
	240		200		6.68
	280		240		7.11
	290		250		7.22
	330		290		7.80
	340		300		7.94
	390		350		8.67
	440		400		9.43
	490		450		10.01
	540		500		10.41
	590		550		11.88
	640		600		12.17

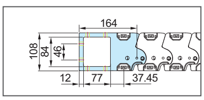
Free End Bracket(FEB)

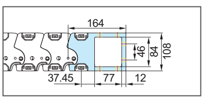
Moving End



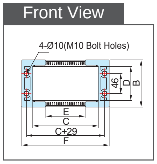
Fixing End





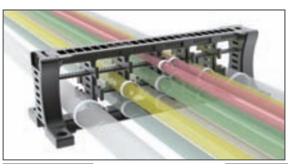


Front View



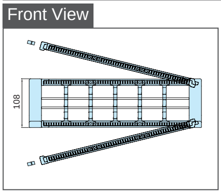
Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M,EB Bolt hole Width	Hole Type
nsb075CR	125	108	75	78	15	M10 Bolt hole
	150		100		40	
	165		115		55	
	175		125		65	
	200		150		90	
	225		175		115	
	250		200		140	
	290		240		180	
	300		250		190	
	340		290		230	
	350		300		240	
	400		350		290	
	450		400		340	
	500		450		390	
	550		500		440	
	600		550		490	
	650		600		540	

System Tie Wrap(STW)

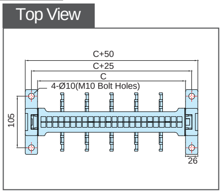


It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.

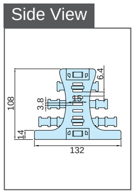
Front View



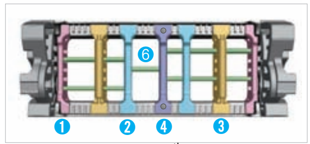
Top View

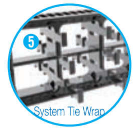


Side View



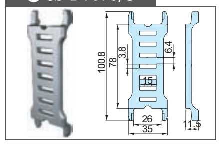
Dividers(DV)



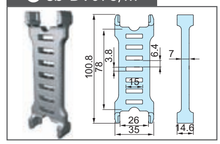


Assembled to every 4th link
DV/T : Applied at Frame 300~600 Size
DV/W : Applicable to System Tie Wrap or FEB

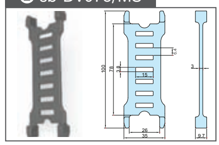
1 sb-DV075/S



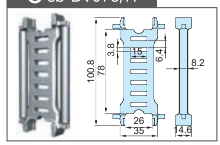
2 sb-DV075/M



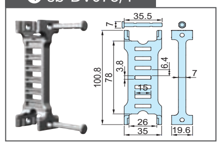
2 sb-DV075/MS



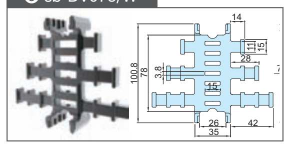
3 sb-DV075/R



4 sb-DV075/T

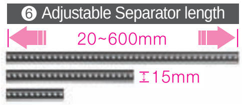


5 sb-DV075/W



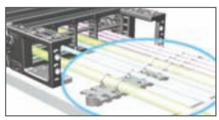
Separators(SP)

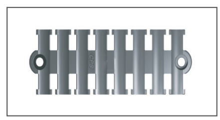
6 Adjustable Separator length

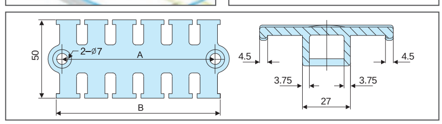


Chain Type	Ordering No.
nsb075CR	sb-SP/600.Frame

Tie Wrap(TW)







Chain Type	Ordering No.	A	B
nsb075CR	S-TW50	58	65
	S-TW75	75	82
	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

Chain Type	Ordering No.	C Frame	Hole Type
nsb075CR	S-TW.EB075.75	75	M10 Bolt hole
	S-TW.EB075.100	100	
	S-TW.EB075.115	115	
	S-TW.EB075.125	125	
	S-TW.EB075.150	150	
	S-TW.EB075.175	175	
	S-TW.EB075.200	200	
	S-TW.EB075.240	240	
	S-TW.EB075.250	250	
	S-TW.EB075.290	290	
	S-TW.EB075.300	300	
	S-TW.EB075.350	350	
	S-TW.EB075.400	400	
	S-TW.EB075.450	450	
	S-TW.EB075.500	500	
	S-TW.EB075.550	550	
	S-TW.EB075.600	600	

※ Dimensions in mm

nsb Chain-Normal Type

Speed/Acceleration value can be different according to amount of cable/hose and travel length.

General Information

Material	CPS-Amide (PA6+G.F)
Speed	10㎧
Acceleration	20㎨
Temperature	-30℃ ~ +130℃
Special production	ESD, UV, Customized color
Certificate	CE, ATEX(Ex), RoHs2

Calculation Table

Length of Cable Chain	L = ½ X Ls + Lp
Bending Radius	Multiply 8~10 of the biggest cable
	Multiply 15~20 of the biggest hose

Dimension Table

nsb Chain **Normal Type**	Pitch	Bending Radius (R)	Weight kg/m	Speed m/s	Temperature ℃	Size A	Size B	Size C	Size D	Frame style	Section - composition
nsb028N	28	46, 66, 86, 116, 146	0.79 0.82 0.85 0.90 0.98 1.08 1.18 1.45 1.59	10	-30 ~ +130	55 70 75 95 120 145 170 195 220	38	35 50 55 75 100 125 150 175 200	26		
nsb035N	35	55, 65, 90, 115, 140, 190	1.10 1.13 1.15 1.18 1.25 1.32 1.41 1.62 1.72	10	-30 ~ +130	55 70 75 95 120 145 170 195 220	52	35 50 55 75 100 125 150 175 200	40		
nsb045N	45	90, 110, 135, 165, 185, 235, 285	2.06 2.14 2.22 2.32 2.38 2.42 2.47 2.51 2.72 2.86 3.09 3.15 3.43	10	-30 ~ +130	80 105 130 155 170 180 195 205 220 230 270 280 330	66	50 75 100 125 140 150 165 175 190 200 240 250 300	45		
nsb060N	60	125, 135, 150, 180 230, 270, 340	3.30 3.35 3.51 3.60 3.69 3.78 3.84 4.01 4.05 4.26 4.57 4.85	10	-30 ~ +130	115 140 165 190 215 230 240 280 290 340 390 440	82	75 100 125 150 175 190 200 240 250 300 350 400	56		
nsb075N	75	160, 180, 230, 280, 330, 380, 480	4.80 4.90 4.97 5.02 5.12 5.25 5.46 5.67 5.72 6.02 6.09 6.45 6.83 7.12 7.32 8.06 8.20	10	-30 ~ +130	115 140 155 165 190 215 240 280 290 330 340 390 440 490 540 590 640	108	75 100 115 125 150 175 200 240 250 290 300 350 400 450 500 550 600	78		

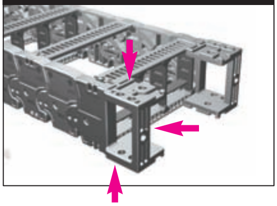
Ordering

nsb 028N. 50. R66 / F - 1000L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - FT : Tie Wrap
  - FST : System Tie wrap
- Bending Radius
- Inside width
- nsb Chain-Normal Type (N)
- Sabin Chain

Bracket Type

Free End Bracket(FEB)



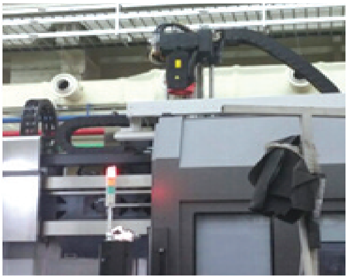
※ Dimensions in mm

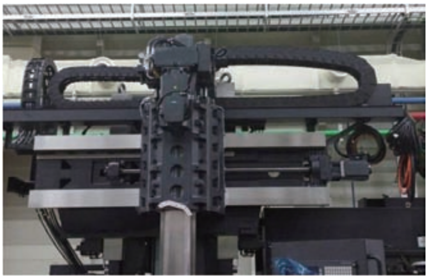
Application of nsb Chain Normal type

nsb Chain can be applied to all kinds of machine tools and factory lines.

nsb045N & 035N

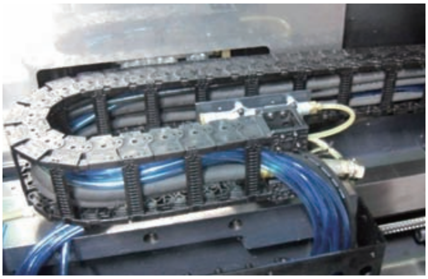
Application
Machine tools
Location
Korea
Remark
2 meters of Stroke





nsb060N

Application
Machine tools
Location
Korea
Remark
2 meters of Stroke



nsb045N

Application
Factory production line
Location
Korea

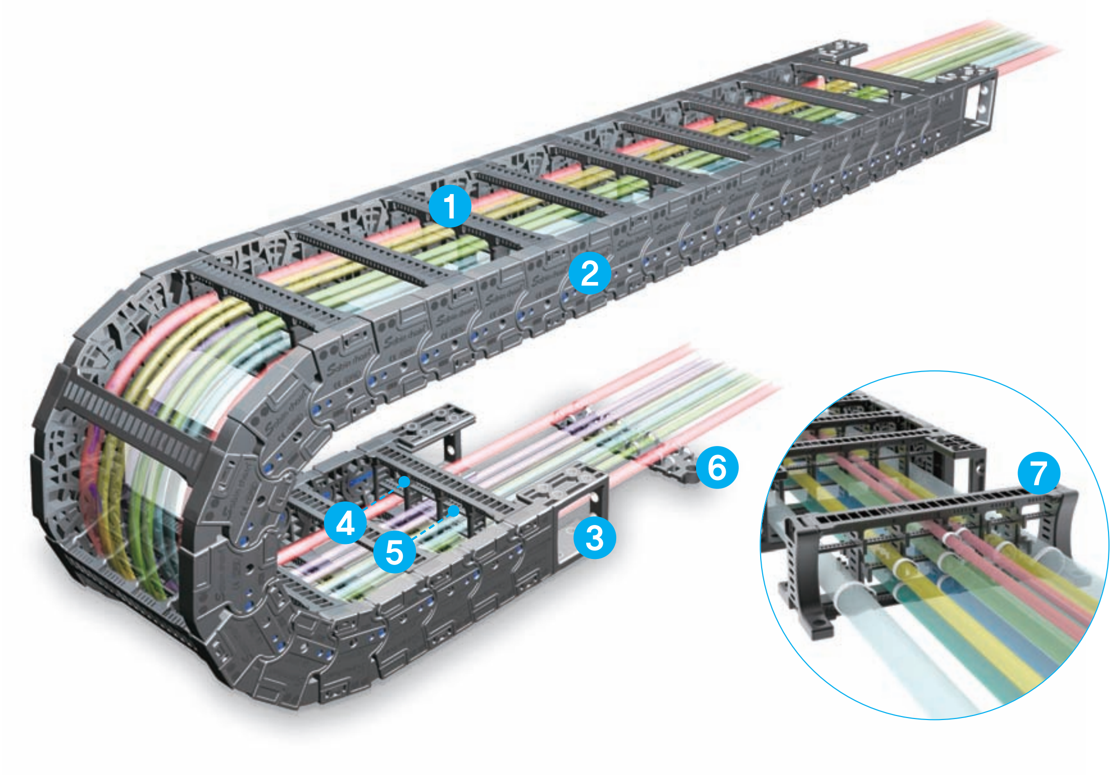
CPS can produce customized product such as ESD type of cable chain and Special color applied type of cable chain.

nsb035N

ESD

Application
PCTC Ship
Location
Korea(H-Heavy Industries)
Remark
ESD,
Orange Color Applied

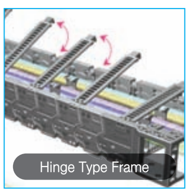
nsb Chain-Normal Type



Part of nsb Chain Normal type

❶ Frame (FR) (Hinge Type)

A part that connects with LH, RH Side Band. There are every 5mm bumps that prevent dividers to be securely positioned at a place. One side of frame has a hinge structure that helps easy assembly and disassembly.

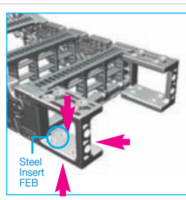

Hinge Type Frame

❷ Side Band (SB)

A part that connects upper and lower frame. There are LH and RH type.

❸ Free End Bracket (FEB)

A part that connects to each end of Cable Chain. There are holes are formed where steel washers are inserted to fix FEB to fixing plate securely.



❹ Divider (DV-S, M, R, T)

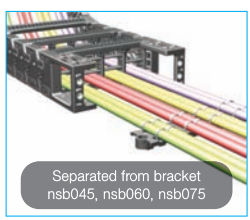
A part that prevents entanglement risk of cables and hoses by being installed vertically.

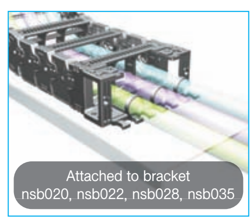
❺ Separator (SP)

A part that prevent entanglement risk of cable and hoses by being installed horizontally.

❻ Tie Wrap (TW)

A part that prevents damage of the cable and hose by twisting & pulling movements. It can be used as assembling with bracket or separating from the bracket at end position of chain.


Separated from bracket
nsb045, nsb060, nsb075

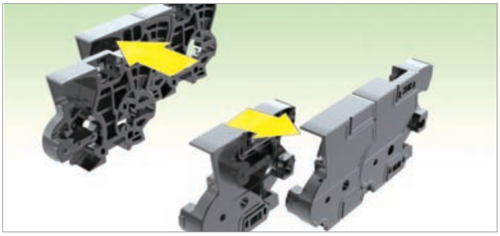

Attached to bracket
nsb020, nsb022, nsb028, nsb035

❼ System Tie Wrap (STW)

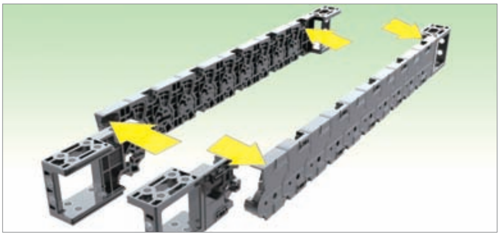
A part that connects to first or end of Cable Chain. Cables and hoses are arranged at System Tie Wrap by several layers and being tightened using Cable Tie. There are 2 types. One is separated from FEB and the other one is assembled to FEB.

Assembly procedure of nsb Chain Normal Type

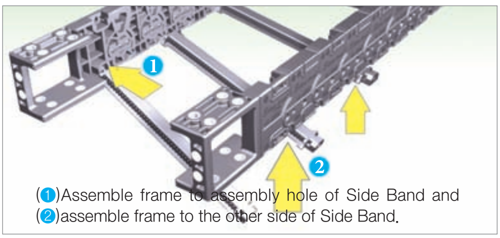
The assembling process of N-Type of New Sabin Chain is like below and user must use rubber hammer with careful combination of Divider and Separator.



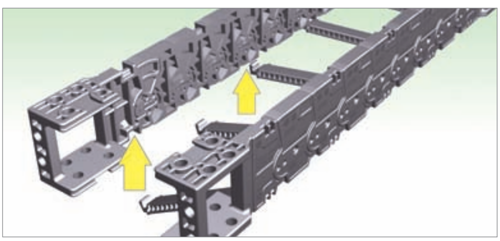
1 Connect each side band as many as you need.



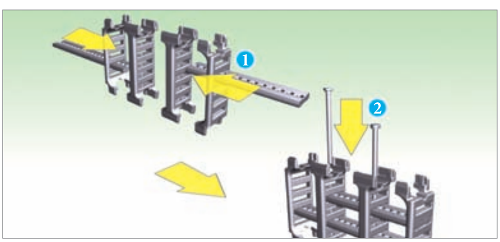
2 Assemble the end brackets on both ends.



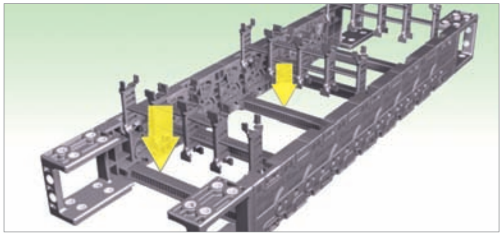
3 Attach frames to one side groove on the frames, then the other side.



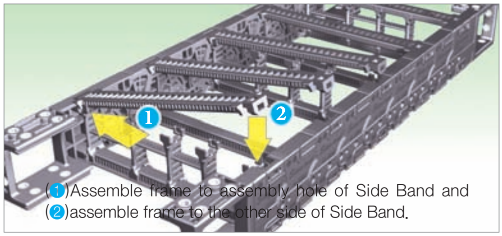
3-1 028N, 035N Type are Hinge Frame Type.



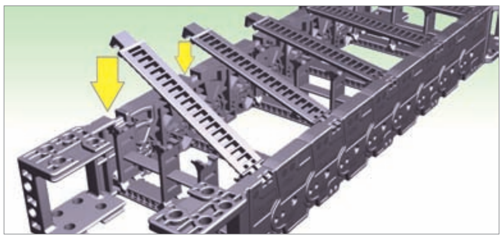
4 For nsb 045, 060, and 075, connect the pin of separator in hole of divider after inserting separator in hole of divider.
For nsb028 and nsb035, separator fixing pins are not used.



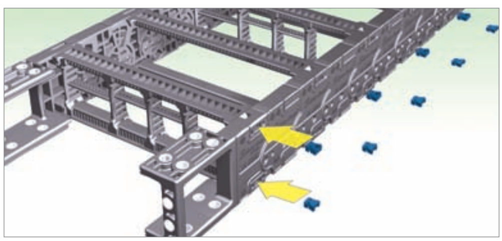
5 Fix the separator and divider patterns to the bottom-side frames as needed.



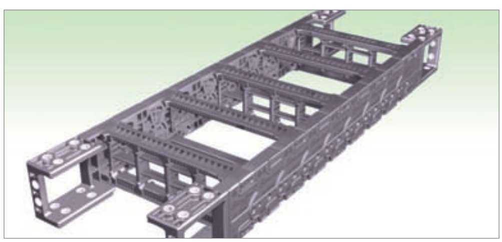
6 Attach frames to one side groove on the frames, then the other side.



6-1 028N, 035N Type are Hinge Frame Type.



7 Insert frame pins to secure the frames and complete carrier. (nsb045, 060, 075 are applied with frame pin, and nsb028, 035 are Hinge Type or Hook Type without frame pin.)



8 Complete to assemble New Sabin N-Type, Sabin Chain.

nsb Chain-Normal Type

Part list of nsb Chain Normal type

● Composition of nsb Chain Normal
= Side Band(RH/LH) + Frame(Upper/Lower) + 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
nsb028N	SIDE BAND	nsb-SB028N.R*(RH)	Left side band of nsb028N
		nsb-SB028N.R*(LH)	Right side band of nsb028N
	FRAME	sb-FR/M.35	Frame, 35mm
		sb-FR/M.50	Frame, 50mm
		sb-FR/M.55	Frame, 55mm
		sb-FR/M.75	Frame, 75mm
		sb-FR/M.100	Frame, 100mm
		sb-FR/M.125	Frame, 125mm
		sb-FR/M.150	Frame, 150mm
		sb-FR/M.175	Frame, 175mm
		sb-FR/M.200	Frame, 200mm
	FREE END BRACKET	nsb-FEB028N	Free End bracket of nsb028N
	DIVIDER	sb-DV028/M	Normal divider
		sb-DV028/S	To fix separstors at the both side section
	SEPARATOR	S-SP/M.35	Separator, 35mm
		S-SP/M.50	Separator, 50mm
		S-SP/M.75	Separator, 75mm
		S-SP/M.100	Separator, 100mm
		S-SP/M.125	Separator, 125mm
		S-SP/M.150	Separator, 150mm
		S-SP/M.175	Separator, 175mm
		S-SP/M.200	Separator, 200mm
	TIE WRAP	S-TW036/025CR.35	Tie wrap for end bracket to fix cables, 35mm
		S-TW036/025CR.55	Tie wrap for end bracket to fix cables, 55mm
		S-TW036/025CR.75	Tie wrap for end bracket to fix cables, 75mm
		S-TW036/025CR.100	Tie wrap for end bracket to fix cables, 100mm
		S-TW036/025CR.125	Tie wrap for end bracket to fix cables, 125mm
	SYSTEM TIE WRAP	sb-DV028/W	Divider for fixing cables at end bracket
		S-TW.EB028	System tie wrap to arrange for cables right after moving bracket or fixing bracket

Model	Classification	Part number	Description
nsb035N	SIDE BAND	nsb-SB035N.R*(LH)	Left side band of nsb035N
		nsb-SB035N.R*(RH)	Right side band of nsb035N
	FRAME	sb-FR/M.35	Frame, 35mm
		sb-FR/M.50	Frame, 50mm
		sb-FR/M.55	Frame, 55mm
		sb-FR/M.75	Frame, 75mm
		sb-FR/M.100	Frame, 100mm
		sb-FR/M.125	Frame, 125mm
		sb-FR/M.150	Frame, 150mm
		sb-FR/M.175	Frame, 175mm
		sb-FR/M.200	Frame, 200mm
	FREE END BRACKET	nsb-FEB035N	Free End bracket of nsb035N
	DIVIDER	sb-DV035/M	Normal divider
		sb-DV035/S	To fix separstors at the both side section
	SEPARATOR	S-SP/M.35	Separator, 35mm
		S-SP/M.50	Separator, 50mm
		S-SP/M.75	Separator, 75mm
		S-SP/M.100	Separator, 100mm
		S-SP/M.125	Separator, 125mm
		S-SP/M.150	Separator, 150mm
		S-SP/M.175	Separator, 175mm
		S-SP/M.200	Separator, 200mm
	TIE WRAP	S-TW050/035N.50	Tie wrap for end bracket to fix cables, 50mm
		S-TW050/035N.75	Tie wrap for end bracket to fix cables, 75mm
		S-TW050/035N.100	Tie wrap for end bracket to fix cables, 100mm
		S-TW050/035N.125	Tie wrap for end bracket to fix cables, 125mm
		S-TW050/035N.150	Tie wrap for end bracket to fix cables, 150mm
		S-TW050/035N.175	Tie wrap for end bracket to fix cables, 175mm
		S-TW050/035N.200	Tie wrap for end bracket to fix cables, 200mm
	SYSTEM TIE WRAP	sb-DV035/W	Divider for fixing cables at end bracket
		S-TW.EB035	System tie wrap to arrange for cables right after moving bracket or fixing bracket

Model	Classification	Part number	Description
nsb045N	SIDE BAND	nsb-SB045N.R*(LH)	Left side band of nsb045N
		nsb-SB045N.R*(RH)	Right side band of nsb045N
	FRAME PIN	S-FP/S1	Frame pin
	FRAME	sb-FR/M.50	Frame, 50mm
		sb-FR/M.75	Frame, 75mm
		sb-FR/M.100	Frame, 100mm
		sb-FR/M.125	Frame, 125mm
		sb-FR/M.140	Frame, 140mm
		sb-FR/M.150	Frame, 150mm
		sb-FR/M.165	Frame, 165mm
		sb-FR/M.175	Frame, 175mm
		sb-FR/M.190	Frame, 190mm
		sb-FR/M.200	Frame, 200mm
		sb-FR/M.240	Frame, 240mm
		sb-FR/M.250	Frame, 250mm
		sb-FR/M.300	Frame, 300mm
	FREE END BRACKET	nsb-FEB045N	Free End bracket of nsb045N
		sb-FEB/WH045	Steel washer for end bracket
	DIVIDER	sb-DV045/M	Normal divider
		sb-DV045/S	To fix separstors at the both side section
		sb-DV045/T	T divider
	SEPARATOR	sb-SP/400.Frame	Separator, 400mm
		SP-PIN045	Separator pin to fix
	TIE WRAP	S-TW50	Tie wrap for end bracket to fix cables, 50mm
		S-TW75	Tie wrap for end bracket to fix cables, 75mm
		S-TW100	Tie wrap for end bracket to fix cables, 100mm
		S-TW125	Tie wrap for end bracket to fix cables, 125mm
		S-TW150	Tie wrap for end bracket to fix cables, 150mm
	SYSTEM TIE WRAP	sb-DV045/W	Divider for fixing cables at end bracket
		S-TW.EB045	System tie wrap to arrange for cables right after moving bracket or fixing bracket

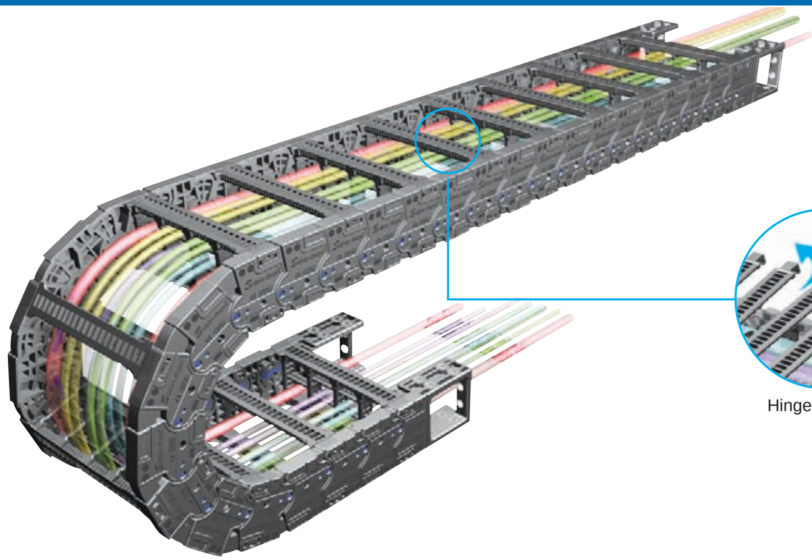
※ Dimensions in mm

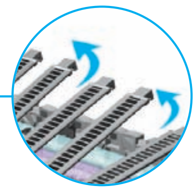
Model	Classification	Part number	Description
nsb060N	SIDE BAND	nsb-SB060N.R*(LH) nsb-SB060N.R*(RH)	Left side band of nsb060N Right side band of nsb060N
	FRAME PIN	S-FP/S1	Frame pin
	FRAME	sb-FR/M.75 sb-FR/M.100 sb-FR/M.125 sb-FR/M.150 sb-FR/M.175 sb-FR/M.190 sb-FR/M.200 sb-FR/M.230 sb-FR/M.240 sb-FR/M.250 sb-FR/M.300 sb-FR/M.350 sb-FR/M.400	Frame, 75mm Frame, 100mm Frame, 125mm Frame, 150mm Frame, 175mm Frame, 190mm Frame, 200mm Frame, 230mm Frame, 240mm Frame, 250mm Frame, 300mm Frame, 350mm Frame, 400mm
	FREE END BRACKET	nsb-FEB060N sb-FEB/WH060	Free End bracket of nsb060N Steel washer for end bracket
	DIVIDER	sb-DV060/M sb-DV060/S sb-DV060/R sb-DV060/T sb-DV060/TP	Normal divider To fix separstors at the both side section Roller divider to reduce friction with cables, Clean room type T divider T divider pin
	SEPARATOR	sb-SP/400.Frame 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
nsb075N	SIDE BAND	nsb-SB075N.R*(LH) nsb-SB075N.R*(RH)	Left side band of nsb075N Right side band of nsb075N
	FRAME PIN	S-FP/S2	Frame pin
	FRAME	sb-FR075/100.75 sb-FR075/100.100 sb-FR075/100.115 sb-FR075/100.125 sb-FR075/100.150 sb-FR075/100.175 sb-FR075/100.200 sb-FR075/100.240 sb-FR075/100.250 sb-FR075/100.290 sb-FR075/100.300 sb-FR075/100.350 sb-FR075/100.400 sb-FR075/100.450 sb-FR075/100.500 sb-FR075/100.550 sb-FR075/100.600	Frame, 75mm Frame, 100mm Frame, 115mm Frame, 125mm Frame, 150mm Frame, 175mm Frame, 200mm Frame, 240mm Frame, 250mm Frame, 290mm Frame, 300mm Frame, 350mm Frame, 400mm Frame, 450mm Frame, 500mm Frame, 550mm Frame, 600mm
	FREE END BRACKET	nsb-FEB075N sb-FEB/WH075	Free End bracket of nsb075N Steel washer for end bracket
	DIVIDER	sb-DV075/M sb-DV075/S sb-DV075/R sb-DV075/T sb-DV075/TP	Normal divider To fix separstors at the both side section Roller divider to reduce friction with cables, Clean room type T divider T divider pin
	SEPARATOR	sb-SP/400.Frame 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

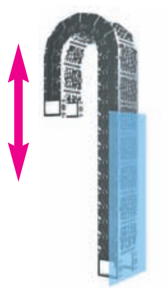
※ Dimensions in mm

nsb028N

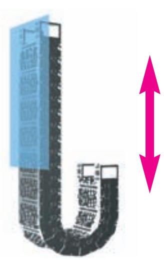




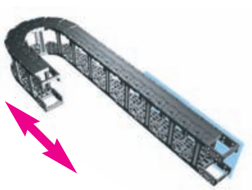
Hinge hook type



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

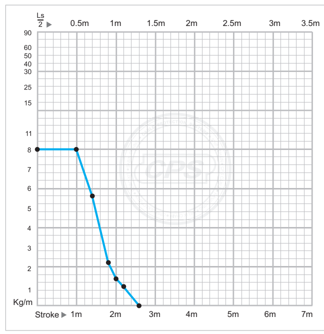
Caculation of the Chain Length

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

Other Length Restrictions

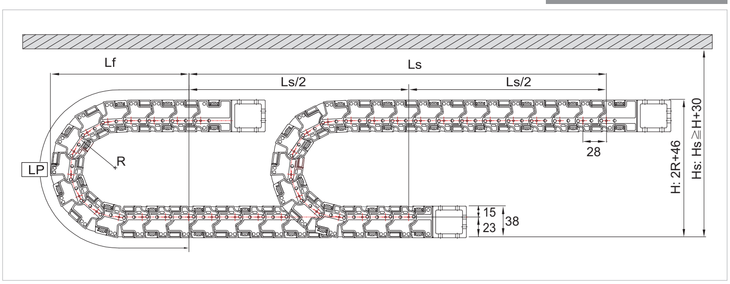
Vertical Standing(Max) = 2.0m
Vertical Hanging(Max) = 40m
Side Mounted Unsupported(Max) = 1.0m

Unsupported Length



Layout of the Chain

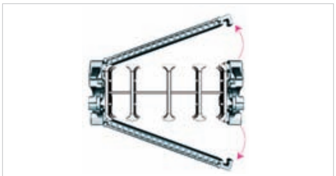
Ls: Stroke Hs: Safe Space

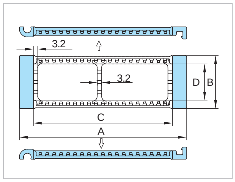


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
46	257	125	138
66	320	145	178
86	383	165	218
116	477	195	278
146	571	225	338

※ Dimensions in mm

Chain Cross Section

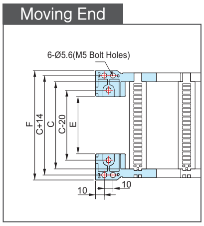




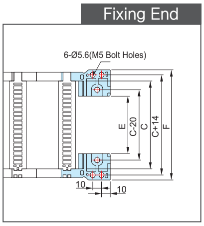
Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	Weight kg/m
nsb028N	55	38	35	26	0.79
	70		50		0.82
	75		55		0.85
	95		75		0.90
	120		100		0.98
	145		125		1.08
	170		150		1.18
	195		175		1.45
	220		200		1.59

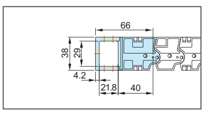
Free End Bracket(FEB)

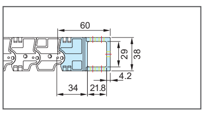
Moving End



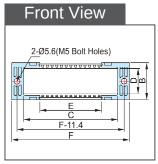
Fixing End





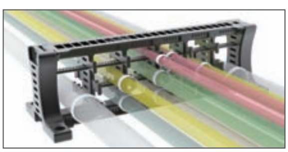


Front View



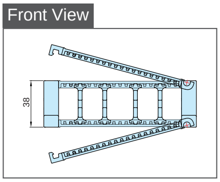
Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M,EB Bolt hole Width	Hole Type
nsb028N	60.4	38	35	26	0.4	M5 Bolt hole
	75.4		50		15.4	
	80.4		55		20.4	
	100.4		75		40.4	
	125.4		100		65.4	
	150.4		125		90.4	
	175.4		150		115.4	
	200.4		175		140.4	
	225.4		200		165.4	

System Tie Wrap(STW)

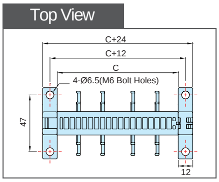


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

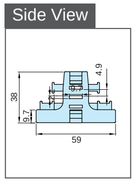
Front View



Top View

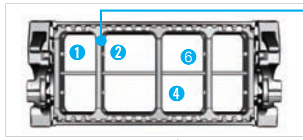


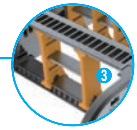
Side View

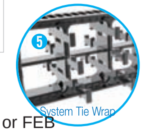


Chain Type	Ordering No.	C Frame	Hole Type
nsb028N	S-TW.EB028.35	35	M6 Bolt hole
	S-TW.EB028.50	50	
	S-TW.EB028.55	55	
	S-TW.EB028.75	75	
	S-TW.EB028.100	100	
	S-TW.EB028.125	125	
	S-TW.EB028.150	150	
	S-TW.EB028.175	175	
	S-TW.EB028.200	200	

Dividers(DV)

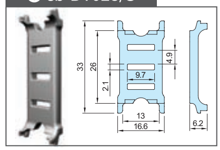




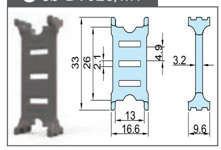


Assembled to every 4th link
DV/T : Applied to Frame 125~200
DV/M : There are two types: M1 and M2
DV/W : Applicable to System Tie Wrap or FEB

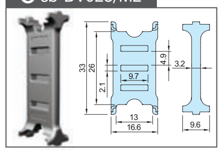
❶ sb-DV028/S



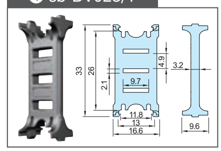
❷ sb-DV028/M1



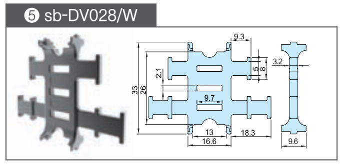
❸ sb-DV028/M2



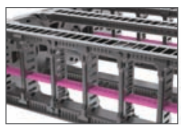
❹ sb-DV028/T



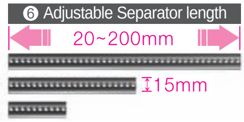
❺ sb-DV028/W



Separators(SP)

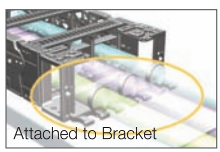


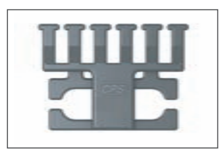
❻ Adjustable Separator length

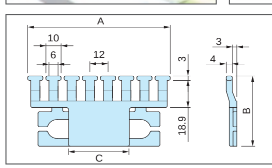


Chain Type	Ordering No.	Frame
nsb028N	S-SP/M.35	35
	S-SP/M.50	50
	S-SP/M.55	55
	S-SP/M.75	75
	S-SP/M.100	100
	S-SP/M.125	125
	S-SP/M.150	150
	S-SP/M.175	175
	S-SP/M.200	200

Tie Wrap(TW)



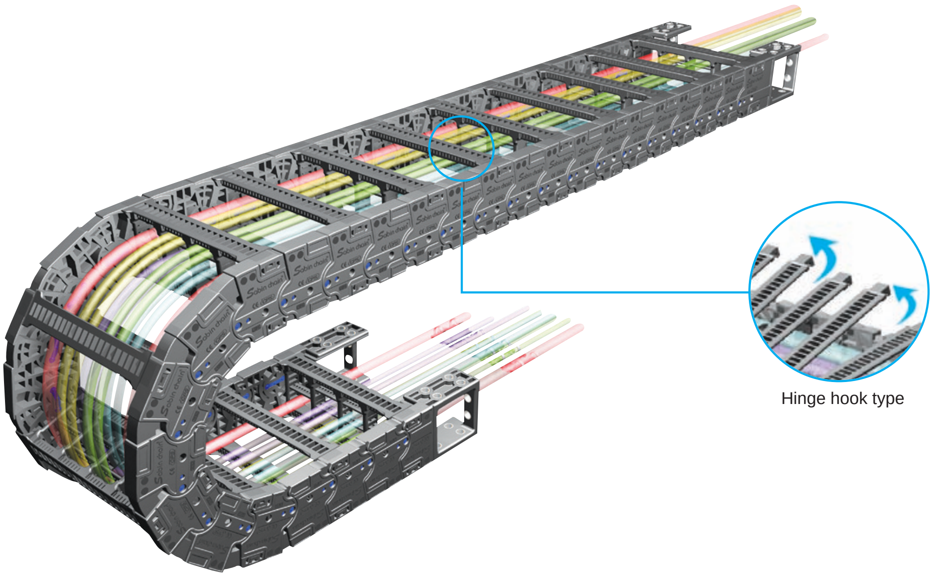


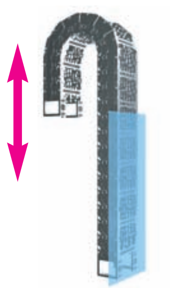


Chain Type	Ordering No.	A	B	C
nsb028N	S-TW036/025CR.35	46	35.4	-
	S-TW036/025CR.50	69	48.9	15
	S-TW036/025CR.55	70	48.9	20
	S-TW036/025CR.75	94	48.9	40
	S-TW036/025CR.100	118	48.9	65
	S-TW036/025CR.125	142	48.9	90

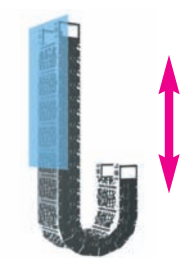
※ Dimensions in mm

nsb035N

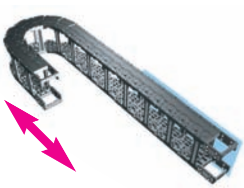




Vertical Standing



Vertical Hanging



Side Mounted Unsupported

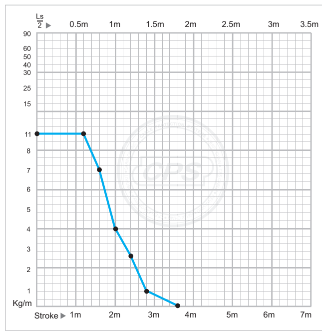
Caculation of the Chain Length

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

Other Length Restrictions

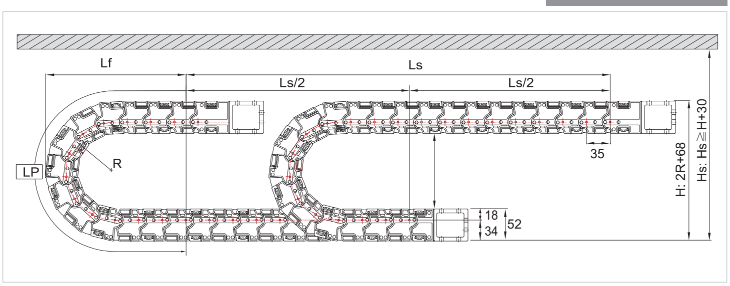
Vertical Standing(Max) = 2.0m
Vertical Hanging(Max) = 40m
Side Mounted Unsupported(Max) = 1.0m

Unsupported Length



Layout of the Chain

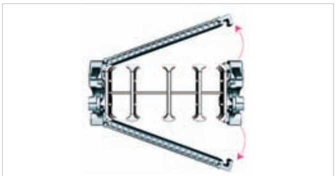
Ls: Stroke Hs: Safe Space

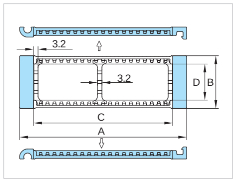


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
55	313	159	178
65	345	169	198
90	423	194	248
115	502	219	298
140	280	244	348
190	737	294	448

※ Dimensions in mm

Chain Cross Section

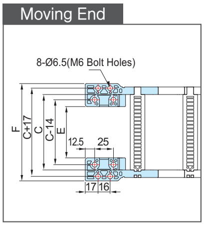




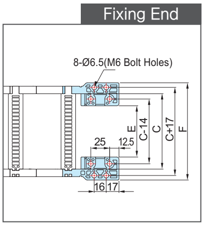
Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	Weight kg/m
nsb035N	55	52	35	40	1.10
	70		50		1.13
	75		55		1.15
	95		75		1.18
	120		100		1.25
	145		125		1.32
	170		150		1.41
	195		175		1.62
	220		200		1.72

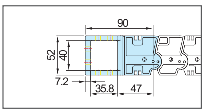
Free End Bracket(FEB)

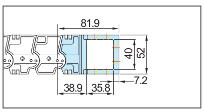
Moving End



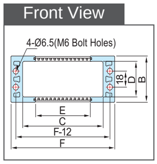
Fixing End





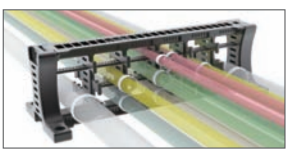


Front View



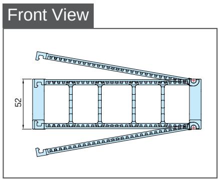
Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M.EB Bolt hole Width	Hole Type
nsb035N	64	52	35	40	3	M6 Bolt hole
	79		50		18	
	84		55		23	
	104		75		43	
	129		100		68	
	154		125		93	
	179		150		118	
	204		175		143	
	229		200		168	

System Tie Wrap(STW)

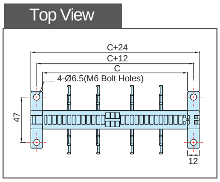


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

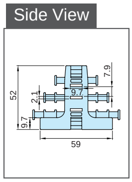
Front View



Top View

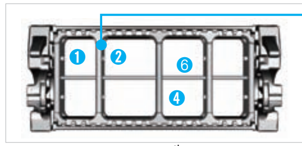


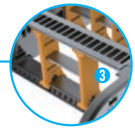
Side View



Chain Type	Ordering No.	C Frame	Hole Type
nsb035N	S-TW.EB028.35	35	M6 Bolt hole
	S-TW.EB028.50	50	
	S-TW.EB028.55	55	
	S-TW.EB028.75	75	
	S-TW.EB028.100	100	
	S-TW.EB028.125	125	
	S-TW.EB028.150	150	
	S-TW.EB028.175	175	
	S-TW.EB028.200	200	

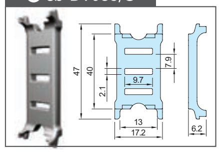
Dividers(DV)



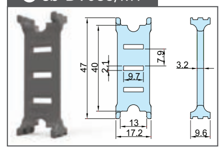


Assembled to every 4th link
DV/T : Applied to Frame 125 ~ 200
DV/M : There are two types: M1 and M2
DV/W : Applicable to System Tie Wrap or FEB

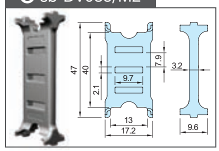
① sb-DV035/S



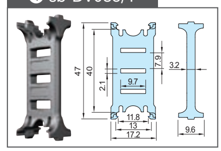
② sb-DV035/M1



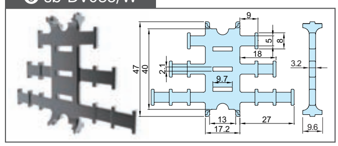
③ sb-DV035/M2



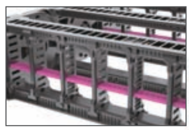
④ sb-DV035/T



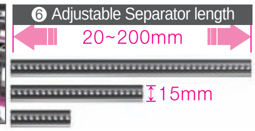
⑤ sb-DV035/W



Separators(SP)

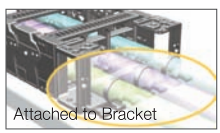


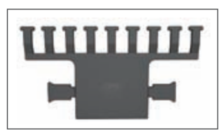
⑥ Adjustable Separator length

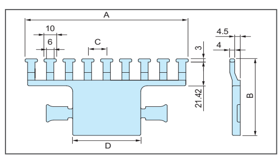


Chain Type	Ordering No.	Frame
nsb035N	S-SP/M.35	35
	S-SP/M.50	50
	S-SP/M.55	55
	S-SP/M.75	75
	S-SP/M.100	100
	S-SP/M.125	125
	S-SP/M.150	150
	S-SP/M.175	175
	S-SP/M.200	200

Tie Wrap(TW)



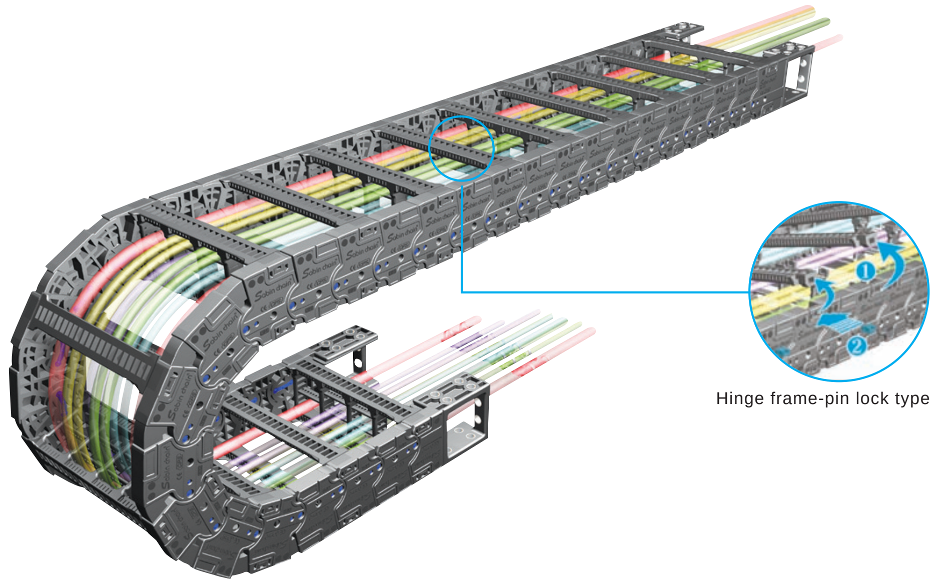




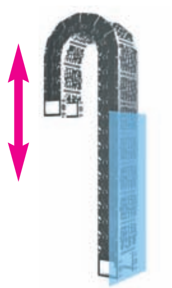
Chain Type	Ordering No.	A	B	C	D
nsb035N	S-TW050/035N.50	82	64.5	12.00	5
	S-TW050/035N.55	82		12.00	10
	S-TW050/035N.75	107		12.13	30
	S-TW050/035N.100	132		15.25	55
	S-TW050/035N.125	157		14.70	80
	S-TW050/035N.150	182		14.35	105
	S-TW050/035N.175	203		12.31	130
	S-TW050/035N.200	232		13.88	155

※ Dimensions in mm

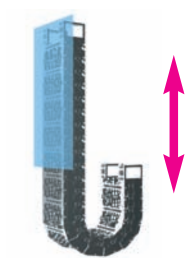
nsb045N



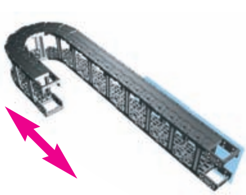
Hinge frame-pin lock type



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

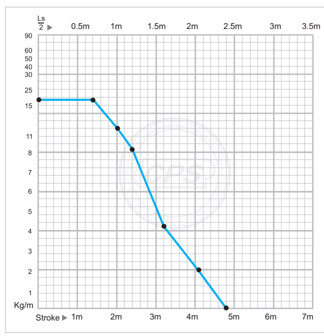
Caculation of the Chain Length

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

Other Length Restrictions

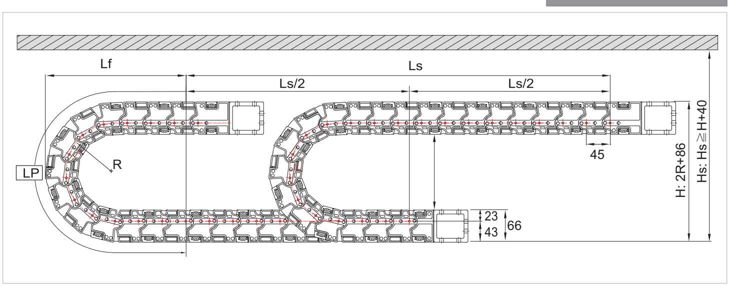
Vertical Standing(Max) = 6.0m
Vertical Hanging(Max) = 100m
Side Mounted Unsupported(Max) = 2.5m

Unsupported Length



Layout of the Chain

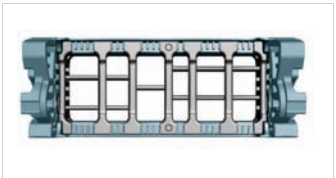
Ls: Stroke Hs: Safe Space

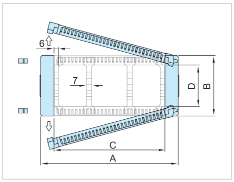


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
90	633	553	266
110	695	616	306
135	774	694	356
165	868	789	416
185	931	851	456
235	1,088	1008	556
285	1,245	1165	656

※ Dimensions in mm

Chain Cross Section

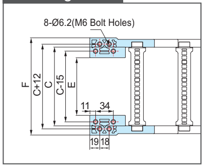




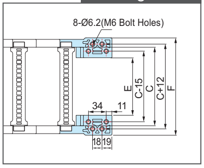
Chain Type	A Width(Outer)	B Height(Outer	C Frame/Width(Inner)	D Height(Inner)	Weight kg/m
nsb045N	80 105 130 155 170 180 195 205 220 230 270 280 330	66	50 75 100 125 140 150 165 175 190 200 240 250 300	45	2.06 2.14 2.22 2.32 2.38 2.42 2.47 2.51 2.72 2.86 3.09 3.15 3.43

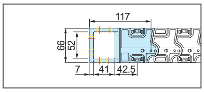
Free End Bracket(FEB)

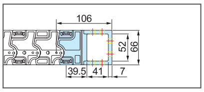
Moving End



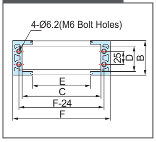
Fixing End





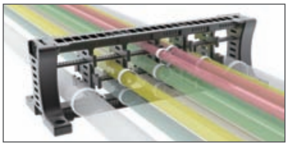


Front View



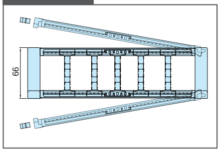
Chain Type	F Width(Outer)	B Height(Outer	C Frame Width(Inner)	D Height(Inner)	E M,EB Bolt hole Width	Hole Type
nsb045N	86 111 136 161 176 186 201 211 226 236 276 286 336	66	50 75 100 125 140 150 165 175 190 200 240 250 300	45	10 35 60 85 100 110 125 135 150 160 200 210 260	M6 Bolt hole

System Tie Wrap(STW)

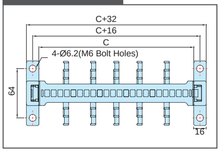


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

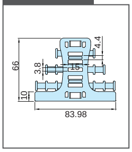
Front View



Top View

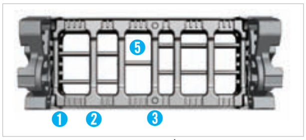


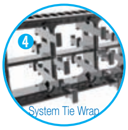
Side View



Chain Type	Ordering No.	C Frame	Hole Type
nsb045N	S-TW.EB045.50 S-TW.EB045.75 S-TW.EB045.100 S-TW.EB045.125 S-TW.EB045.140 S-TW.EB045.150 S-TW.EB045.165 S-TW.EB045.175 S-TW.EB045.190 S-TW.EB045.200 S-TW.EB045.240 S-TW.EB045.250 S-TW.EB045.300	50 75 100 125 140 150 165 175 190 200 240 250 300	M6 Bolt hole

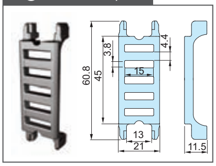
Dividers(DV)



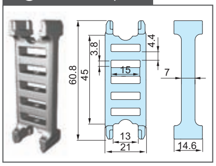


Assembled to every 4th link
DV/T : Applied to Frame 200 ~ 300(Connects Upper and Lower Frame)
DV/W : Applicable to System Tie Wrap or FEB

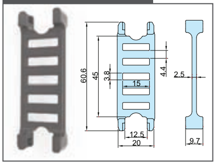
❶ sb-DV045/S



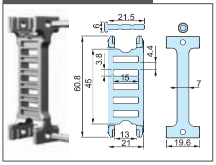
❷ sb-DV045/M



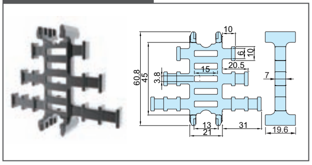
❷ sb-DV045/MS



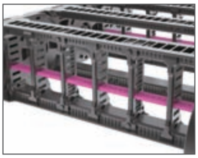
❸ sb-DV045/T



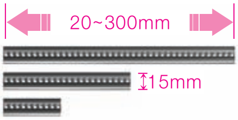
❹ sb-DV045/W



Separators(SP)

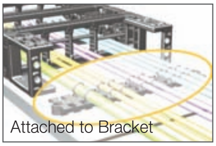


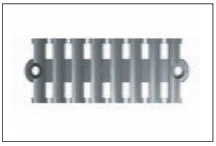
❺ Adjustable Separator length

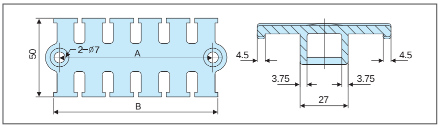


Chain Type	Ordering No.
nsb045N	sb-SP/400.Frame

Tie Wrap(TW)



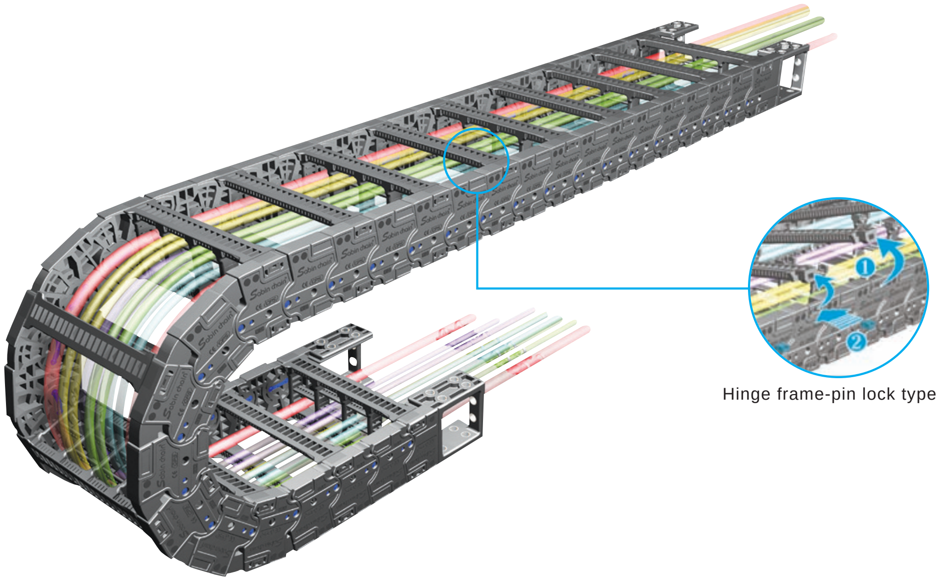




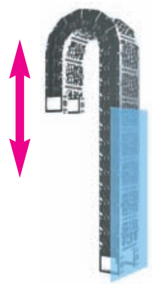
Chain Type	Ordering No.	A	B
nsb045N	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

※ Dimensions in mm

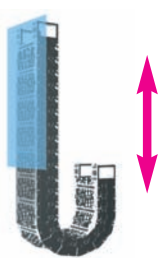
nsb060N



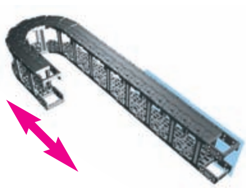
Hinge frame-pin lock type



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

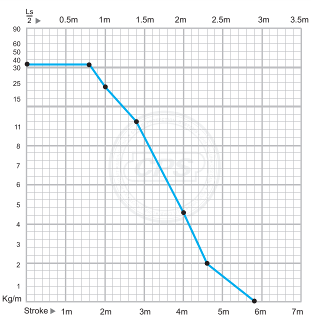
Caculation of the Chain Length

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

Other Length Restrictions

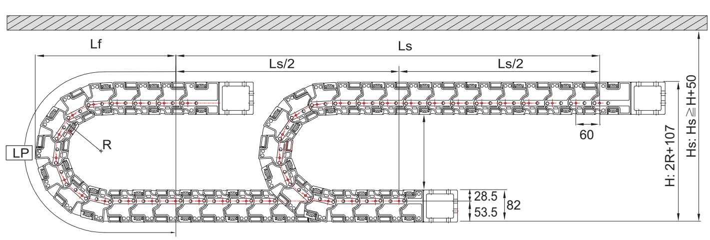
Vertical Standing(Max) = 6.0m
Vertical Hanging(Max) = 100m
Side Mounted Unsupported(Max) = 3.0m

Unsupported Length



Layout of the Chain

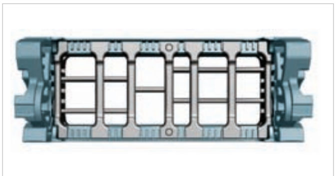
Ls: Stroke Hs: Safe Space

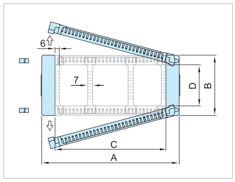


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
125	753	359	357
135	784	369	377
150	831	384	407
180	926	414	467
230	1083	464	567
270	1208	504	647
340	1428	574	787

※ Dimensions in mm

Chain Cross Section

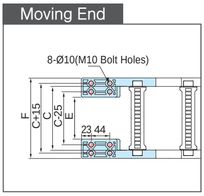




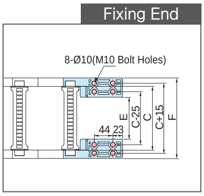
Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	Weight kg/m
nsb060N	115	82	75	55	3.30
	140		100		3.35
	165		125		3.51
	190		150		3.60
	215		175		3.69
	230		190		3.78
	240		200		3.84
	270		230		3.97
	280		240		4.01
	290		250		4.05
	340		300		4.26
	390		350		4.57
	440		400		4.86

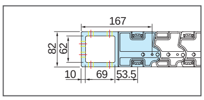
Free End Bracket(FEB)

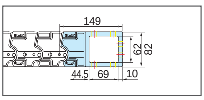
Moving End



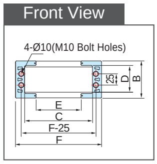
Fixing End





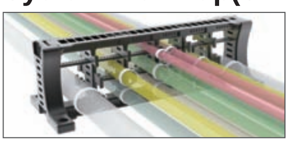


Front View



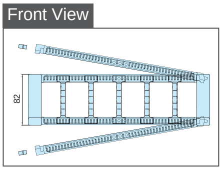
Chain Type	F Width(Outer)	B Height(Outer)	C Frame Width(Inner)	D Height(Inner)	E M,EB Bolt hole Width	Hole Type
nsb060N	115	82	75	55	24	M10 Bolt hole
	140		100		49	
	165		125		74	
	190		150		99	
	215		175		124	
	230		190		139	
	240		200		149	
	270		230		179	
	280		240		189	
	290		250		199	
	340		300		249	
	390		350		299	
	440		400		349	

System Tie Wrap(STW)

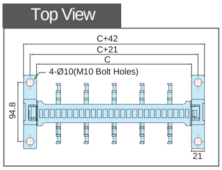


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

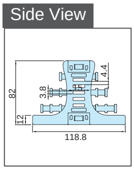
Front View



Top View

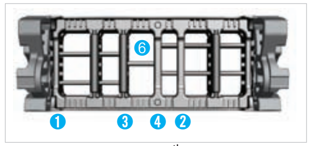


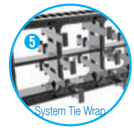
Side View



Chain Type	Ordering No.	C Frame	Hole Type
nsb060N	S-TW.EB060.75	75	M10 Bolt hole
	S-TW.EB060.100	100	
	S-TW.EB060.125	125	
	S-TW.EB060.150	150	
	S-TW.EB060.175	175	
	S-TW.EB060.190	190	
	S-TW.EB060.200	200	
	S-TW.EB060.230	230	
	S-TW.EB060.240	240	
	S-TW.EB060.250	250	
	S-TW.EB060.300	300	
	S-TW.EB060.350	350	
	S-TW.EB060.400	400	

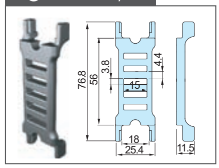
Dividers(DV)



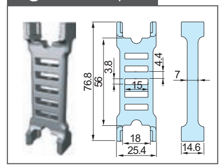


Assembled to every 4th link
DV/T : Applied to Frame 250 ~ 400(Connects Upper and Lower Frame)
DV/W : Applicable to System Tie Wrap or FEB

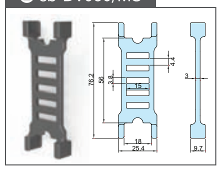
❶ sb-DV060/S



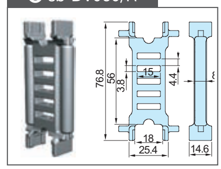
❷ sb-DV060/M



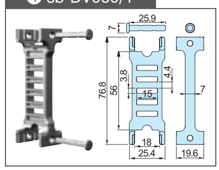
❷ sb-DV060/MS



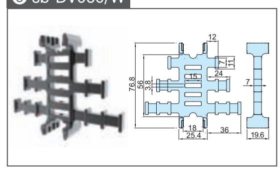
❸ sb-DV060/R



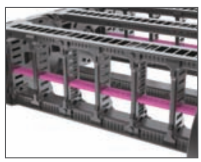
❹ sb-DV060/T



❺ sb-DV060/W



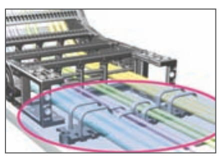
Separators(SP)

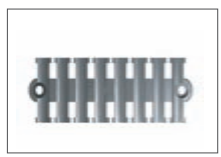


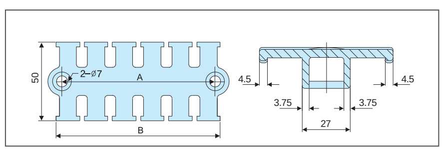
❻ Adjustable Separator length

Chain Type	Ordering No.
nsb060N	sb-SP/400.Frame

Tie Wrap(TW)



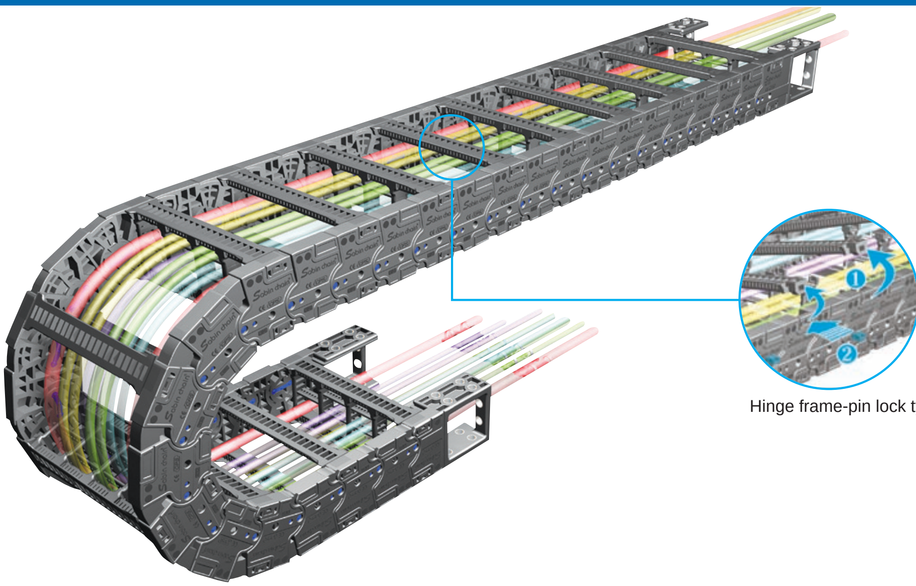




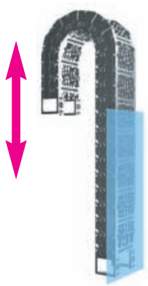
Chain Type	Ordering No.	A	B
nsb060N	S-TW50	58	65
	S-TW75	75	82
	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

※ Dimensions in mm

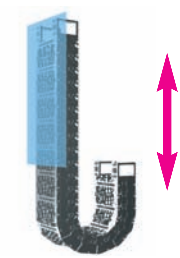
nsb075N



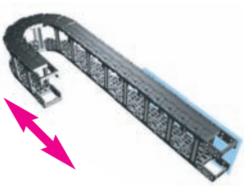
Hinge frame-pin lock type



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

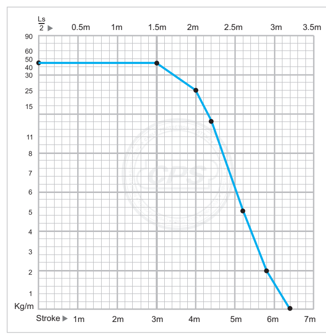
Caculation of the Chain Length

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

Other Length Restrictions

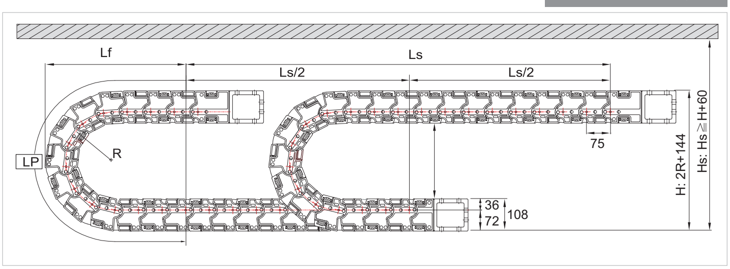
Vertical Standing(Max) = 6.0m
Vertical Hanging(Max) = 100m
Side Mounted Unsupported(Max) = 3.0m

Unsupported Length



Layout of the Chain

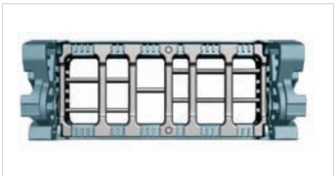
Ls: Stroke Hs: Safe Space

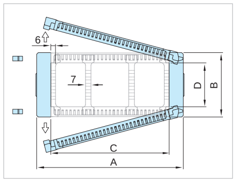


Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
160	953	457	464
180	1016	477	504
230	1173	527	604
280	1330	577	704
330	1487	627	804
380	1644	677	904
480	1958	777	1,104

※ Dimensions in mm

Chain Cross Section

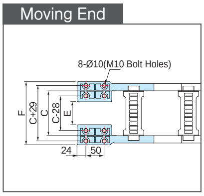




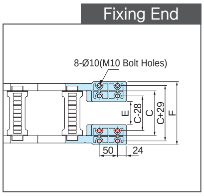
Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	Weight kg/m
nsb075N	115	108	75	78	4.80
	140		100		4.90
	155		115		4.97
	165		125		5.02
	190		150		5.12
	215		175		5.25
	240		200		5.46
	280		240		5.67
	290		250		5.72
	330		290		6.02
	340		300		6.09
	390		350		6.45
	440		400		6.83
	490		450		7.12
	540		500		7.32
	590		550		8.06
	640		600		8.20

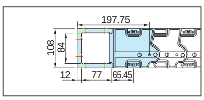
Free End Bracket(FEB)

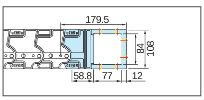
Moving End



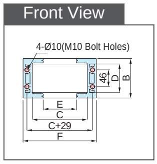
Fixing End





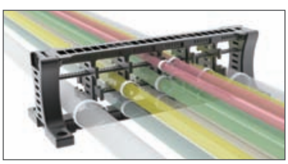


Front View



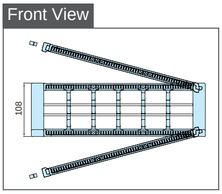
Chain Type	A Width(Outer)	B Height(Outer)	C Frame/Width(Inner)	D Height(Inner)	E M,EB Bolt hole Width	Hole Type
nsb075N	125	108	75	78	15	M10 Bolt hole
	150		100		40	
	165		115		55	
	175		125		65	
	200		150		90	
	225		175		115	
	250		200		140	
	290		240		180	
	300		250		190	
	340		290		230	
	350		300		240	
	400		350		290	
	450		400		340	
	500		450		390	
	550		500		440	
	600		550		490	
	650		600		540	

System Tie Wrap(STW)

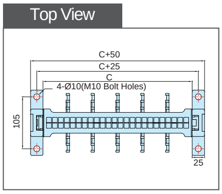


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

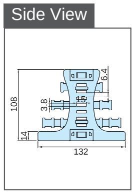
Front View



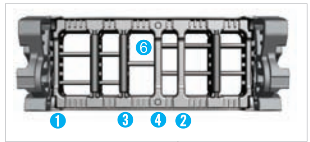
Top View

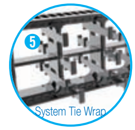


Side View



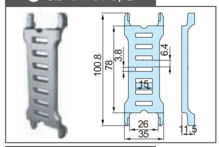
Dividers(DV)



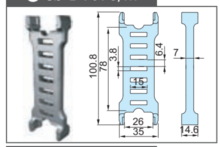


Assembled to every 4th link
DV/T : Applied to Frame 300 ~ 600(Connects Upper and Lower Frame)
DV/W : Applicable to System Tie Wrap or FEB

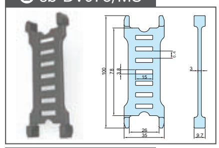
① sb-DV075/S



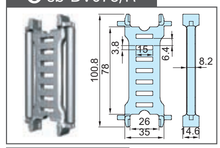
② sb-DV075/M



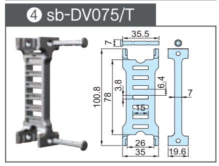
② sb-DV075/MS



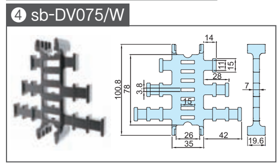
③ sb-DV075/R



④ sb-DV075/T

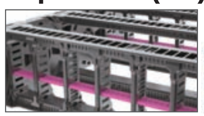


④ sb-DV075/W



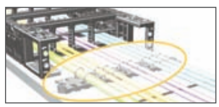
Separators(SP)

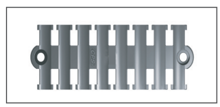
⑥ Adjustable Separator length

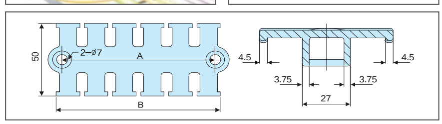


Chain Type	Ordering No.
nsb075N	sb-SP/600.Frame

Tie Wrap(TW)







Chain Type	Ordering No.	A	B
nsb075N	S-TW50	58	65
	S-TW75	75	82
	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

Chain Type	Ordering No.	C Frame	Hole Type
nsb075N	S-TW.EB075.75	75	M10 Bolt hole
	S-TW.EB075.100	100	
	S-TW.EB075.115	115	
	S-TW.EB075.125	125	
	S-TW.EB075.150	150	
	S-TW.EB075.175	175	
	S-TW.EB075.200	200	
	S-TW.EB075.240	240	
	S-TW.EB075.250	250	
	S-TW.EB075.290	290	
	S-TW.EB075.300	300	
	S-TW.EB075.350	350	
	S-TW.EB075.400	400	
	S-TW.EB075.450	450	
	S-TW.EB075.500	500	
	S-TW.EB075.550	550	
	S-TW.EB075.600	600	

※ Dimensions in mm

nsb Chain-Enclosed Type

Speed/Acceleration value can be different according to amount of cable/hose and travel length.

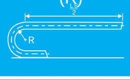
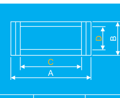
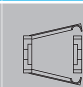
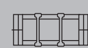
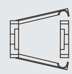
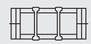
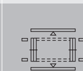
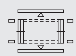
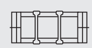
General Information

Material	CPS-Amide (PA6+G.F)
Speed	10㎧
Acceleration	20㎨
Temperature	-30℃ ~ +130℃
Special production	ESD, UV, Customized color
Certificate	CE, ATEX(Ex), RoHs2

Calculation Table

Length of Cable Chain	L = ½ X Ls + Lp
Bending Radius	Multiply 8~10 of the biggest cable
	Multiply 15~20 of the biggest hose

Dimension Table

nsb Chain E Type	Pitch	Bending Radius (R) 	Weight kg/m	Speed m/s	Temperature ℃	Size 				Frame style	Section - composition
						A	B	C	D		
nsb028E	28	66, 86, 116, 146	1.00 1.13 1.30 1.50	10	-30 ~ +130	55 75 95 120	38	35 55 75 100	26		
nsb035E	35	90, 115, 140, 190	1.45 1.64 1.83 2.06 2.28	10	-30 ~ +130	70 95 120 145 170	52	50 75 100 125 150	40		
nsb 045E	45	90, 110, 135, 165, 185, 235, 285	2.78 3.07 3.35 3.58	10	-30 ~ +130	105 130 155 180	66	75 100 125 150	45		
nsb060E	60	125, 135, 150, 180, 230, 270, 340	4.32 4.86 5.41	10	-30 ~ +130	140 190 240	82	100 150 200	56		
nsb075E	75	160, 180, 230, 280, 330, 380, 480	7.01 7.97 9.48	10	-30 ~ +130	190 240 340	108	150 200 300	78		

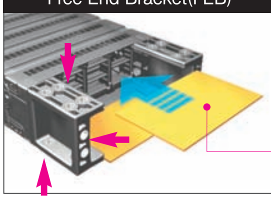
Ordering

nsb 028E. 50. R66 / F - 1000L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type F : Free End Bracket / FT : Tie Wrap / FST : System Tie wrap
- Bending Radius
- Inside width
- Enclosed (E)
- Sabin Chain

Bracket Type

Free End Bracket(FEB)

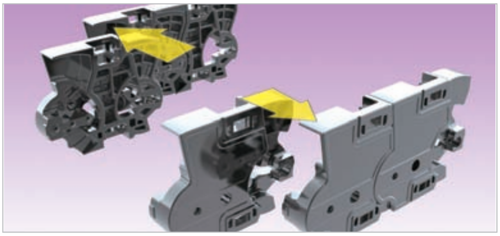


Steel Plate

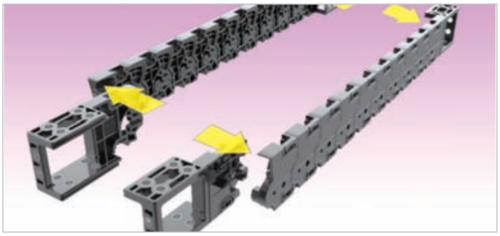
FEB can be fully enclosed by inserting Steel Plate like in the image. (Steel Plate can be ordered separately))

Assembly procedure of nsb Chain Enclosed Type

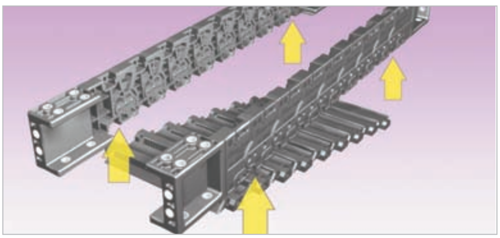
The assembling process of E-Type of New Sabin Chain is like below and user must use rubber hammer with careful combination of Divider and Separator.



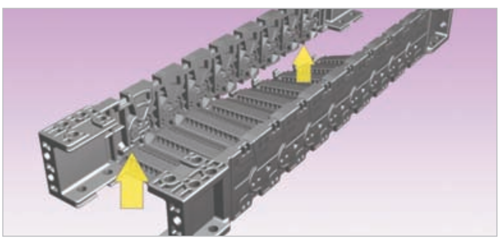
1 Connect each side band as many as you need.



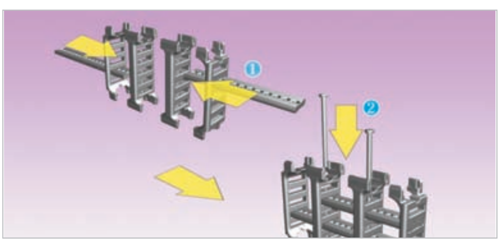
2 Assemble the end brackets on both ends.



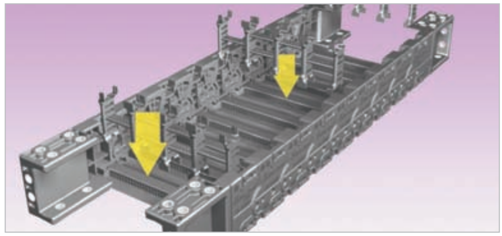
3 Attach frames starting with the bottom side of the carrier.



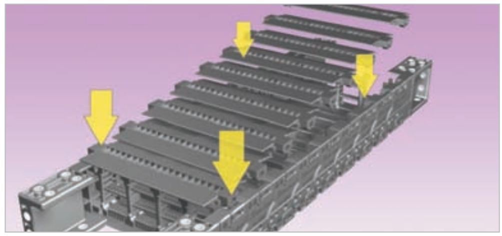
3-1 028E, 035E Type are Hinge Frame Type.



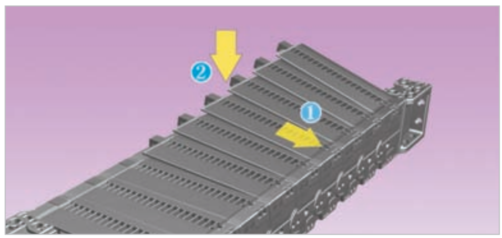
4 For nsb 045, 060, and 075, connect the pin of separator in hole of divider after inserting separator in hole of divider. For nsb028 and nsb035, separator fixing pins are not used.



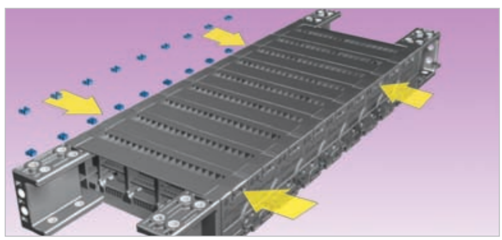
5 Fix the separator and divider patterns to the bottom-side frames as needed.



6 Fix the topside frames to the carrier.



6-1 028E, 035E Type are Hinge Frame Type.



7 Insert frame pins to secure the frames and complete carrier. (nsb045, 060, 075 are applied with frame pin, and nsb028, 035 are Hinge Type or Hook Type without frame pin.)

8 Complete to assemble New Sabin E-Type, Sabin Chain.

nsb Chain-Enclosed Type

Part list of nsb Chain Enclosed Type

- Composition of nsb Chain Enclosed Type
  = Side band (RH/LH) + Frame (Upper/Lower) + 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
nsb028E	SIDE BAND	nsb-SB028E.R*(LH)	Left side band of nsb028E
		nsb-SB028E.R*(RH)	Right side band of nsb028E
	FRAME(DOWN) FRAME(UP)	sb-FRD028.35	Inside frame, 35mm
		sb-FRU028.35	Outside frame, 35mm
		sb-FRD028.55	Inside frame, 55mm
		sb-FRU028.55	Outside frame, 55mm
		sb-FRD028.75	Inside frame, 75mm
		sb-FRU028.75	Outside frame, 75mm
		sb-FRD028.100	Inside frame, 100mm
		sb-FRU028.100	Outside frame, 100mm
	FREE END BRACKET	nsb-FEB028E	Free End bracket of nsb028E
	DIVIDER	sb-DV028/M	Normal divider
		sb-DV028/S	To fix separstors at the both side section
	SEPARATOR	S-SP/M.35	Separator, 35mm
		S-SP/M.55	Separator, 55mm
		S-SP/M.75	Separator, 75mm
		S-SP/M.100	Separator, 100mm
	TIE WRAP	S-TW036/025CR.35	Tie wrap for end bracket to fix cables, 35mm
		S-TW036/025CR.55	Tie wrap for end bracket to fix cables, 55mm
		S-TW036/025CR.75	Tie wrap for end bracket to fix cables, 75mm
		S-TW036/025CR.100	Tie wrap for end bracket to fix cables, 100mm
	SYSTEM TIE WRAP	sb-DV028/W	Divider for fixing cables at end bracket
		S-TW.EB028	System tie wrap to arrange for cables right after moving bracket or fixing bracket

Model	Classification	Part number	Description
nsb035E	SIDE BAND	nsb-SB035E.R*(LH)	Left side band of nsb035E
		nsb-SB035E.R*(RH)	Right side band of nsb035E
	FRAME(DOWN) FRAME(UP)	sb-FRD035.50	Inside frame, 50mm
		sb-FRU035.50	Outside frame, 50mm
		sb-FRD035.75	Inside frame, 75mm
		sb-FRU035.75	Outside frame, 75mm
		sb-FRD035.100	Inside frame, 100mm
		sb-FRU035.100	Outside frame, 100mm
		sb-FRD035.125	Inside frame, 125mm
		sb-FRU035.125	Outside frame, 125mm
		sb-FRD035.150	Inside frame, 150mm
		sb-FRU035.150	Outside frame, 150mm
	FREE END BRACKET	nsb-FEB035E	Free End bracket of nsb035E
	DIVIDER	sb-DV035/M	Normal divider
		sb-DV035/S	To fix separstors at the both side section
	SEPARATOR	S-SP/M.35	Separator, 35mm
		S-SP/M.50	Separator, 50mm
		S-SP/M.75	Separator, 75mm
		S-SP/M.100	Separator, 100mm
		S-SP/M.125	Separator, 125mm
		S-SP/M.150	Separator, 150mm
	TIE WRAP	S-TW050/035N.50	Tie wrap for end bracket to fix cables, 50mm
		S-TW050/035N.75	Tie wrap for end bracket to fix cables, 75mm
		S-TW050/035N.100	Tie wrap for end bracket to fix cables, 100mm
		S-TW050/035N.125	Tie wrap for end bracket to fix cables, 125mm
		S-TW050/035N.150	Tie wrap for end bracket to fix cables, 150mm
	SYSTEM TIE WRAP	sb-DV035/W	Divider for fixing cables at end bracket
		S-TW.EB035	System tie wrap to arrange for cables right after moving bracket or fixing bracket

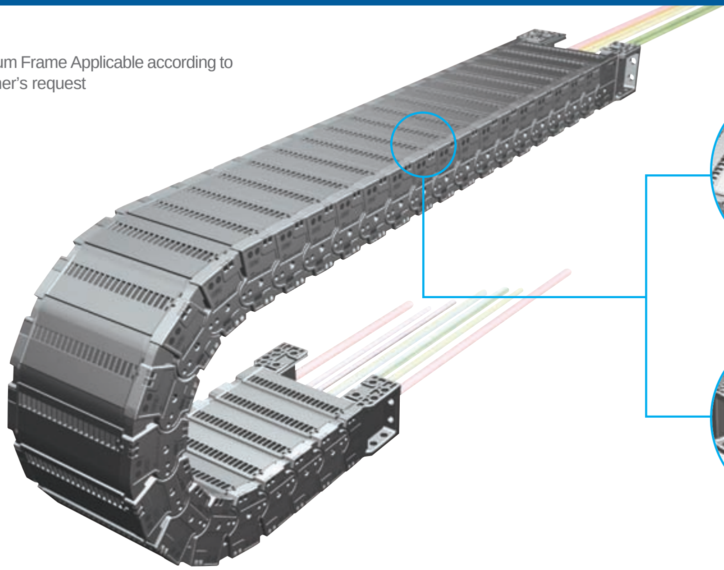
Model	Classification	Part number	Description
nsb045E	SIDE BAND	nsb-SB045E.R*(LH)	Left side band of nsb045E
		nsb-SB045E.R*(RH)	Right side band of nsb045E
	FRAME PIN	S-FP/S1	Frame pin
	FRAME(DOWN) FRAME(UP)	sb-FRD045.75	Inside frame, 75mm
		sb-FRU045.75	Outside frame, 75mm
		sb-FRD045.100	Inside frame, 100mm
		sb-FRU045.100	Outside frame, 100mm
		sb-FRD045.125	Inside frame, 125mm
		sb-FRU045.125	Outside frame, 125mm
		sb-FRD045.150	Inside frame, 150mm
		sb-FRU045.150	Outside frame, 150mm
	FREE END BRACKET	nsb-FEB045E	Free End bracket of nsb045E
		sb-FEB/WH045	Steel washer for end bracket
	DIVIDER	sb-DV045/M	Normal divider
		sb-DV045/S	To fix separstors at the both side section
		sb-DV045/T	T divider
	SEPARATOR	sb-SP/400.Frame	Separator, 400mm
		SP-PIN045	Separator pin to fix
	TIE WRAP	S-TW50	Tie wrap for end bracket to fix cables, 50mm
		S-TW75	Tie wrap for end bracket to fix cables, 75mm
		S-TW100	Tie wrap for end bracket to fix cables, 100mm
		S-TW125	Tie wrap for end bracket to fix cables, 125mm
		S-TW150	Tie wrap for end bracket to fix cables, 150mm
	SYSTEM TIE WRAP	sb-DV045/W	Divider for fixing cables at end bracket
		S-TW.EB045	System tie wrap to arrange for cables right after moving bracket or fixing bracket

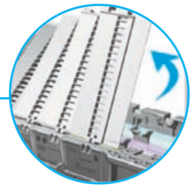
Model	Classification	Part number	Description
nsb060E	SIDE BAND	nsb-SB060E.R*(LH) nsb-SB060E.R*(RH)	Left side band of nsb060E Right side band of nsb060E
	FRAME PIN	S-FP/S1	Frame pin
	FRAME(DOWN) FRAME(UP)	sb-FRD060.100 sb-FRU060.100 sb-FRD060.150 sb-FRU060.150 sb-FRD060.200 sb-FRU060.200	Inside frame, 100mm Outside frame, 100mm Inside frame, 150mm Outside frame, 150mm Inside frame, 200mm Outside frame, 200mm
	FREE END BRACKET	nsb-FEB060E sb-FEB/WH060	Free End bracket of nsb060E Steel washer for end bracket
	DIVIDER	sb-DV060/M sb-DV060/S sb-DV060/R sb-DV060/T sb-DV060/TP	Normal divider To fix separstors at the both side section Roller divider to reduce friction with cables, Clean room type T divider T divider pin
	SEPARATOR	sb-SP/400.Frame 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
nsb075E	SIDE BAND	nsb-SB075E.R*(LH) nsb-SB075E.R*(RH)	Left side band of nsb075E Right side band of nsb075E
	FRAME PIN	S-FP/S2	Frame pin
	FRAME(DOWN) FRAME(UP)	sb-FRD075.150 sb-FRU075.150 sb-FRD075.200 sb-FRU075.200 sb-FRD075.300 sb-FRU075.300	Inside frame, 150mm Outside frame, 150mm Inside frame, 200mm Outside frame, 200mm Inside frame, 300mm Outside frame, 300mm
	FREE END BRACKET	nsb-FEB075E sb-FEB/WH075	Free End bracket of nsb075E Steel washer for end bracket
	DIVIDER	sb-DV075/M sb-DV075/S sb-DV075/R sb-DV075/T sb-DV075/TP	Normal divider To fix separstors at the both side section Roller divider to reduce friction with cables, Clean room type T divider T divider pin
	SEPARATOR	sb-SP/400.Frame 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

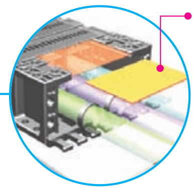
nsb028E

Aluminum Frame Applicable according to Customer's request





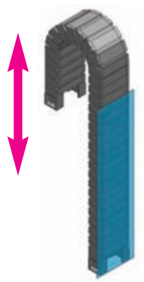
Hinge hook type



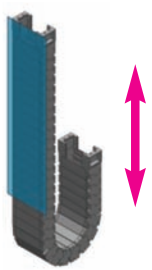
Steel Plate

FEB can be fully enclosed by inserting Steel Plate like in the image.
(Steel Plate can be ordered separately, ST044/055/072/095/120E also applicable

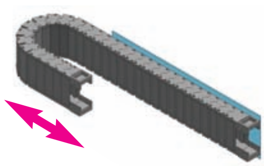
Free End Bracket



Vertical Standing



Vertical Hanging

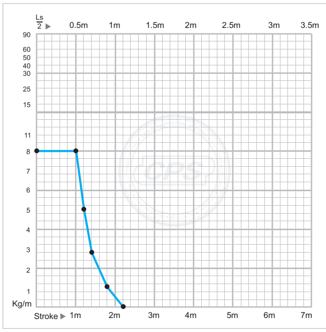


Side Mounted Unsupported

Caculation of the Chain Length

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

Unsupported Length

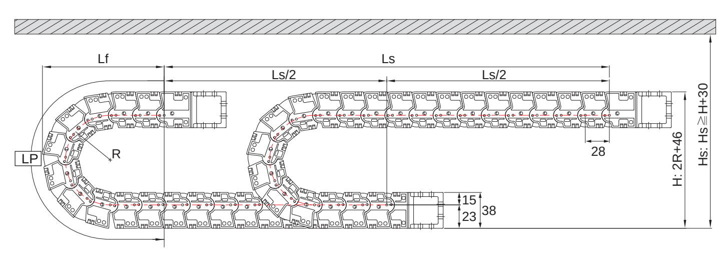


Other Length Restrictions

Vertical Standing(Max) = 2.0m
Vertical Hanging(Max) = 40m
Side Mounted Unsupported(Max) = 1.0m

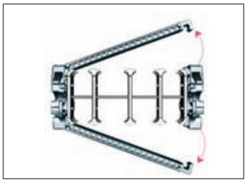
Layout of the Chain

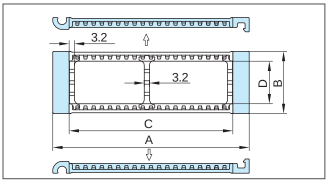
Ls: Stroke Hs: Safe Space



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
66	320	145	178
86	383	165	218
116	477	195	278
146	571	225	338

Chain Cross Section

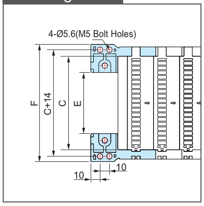




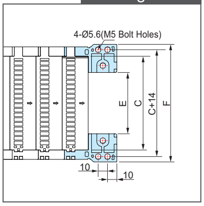
Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	Weight kg/m
nsb028E	55 75 95 120	38	35 55 75 100	26	1.00 1.13 1.30 1.50

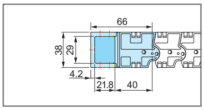
Free End Bracket(FEB)

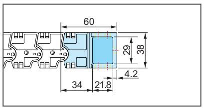
Moving End



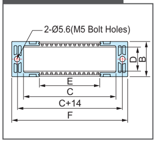
Fixing End





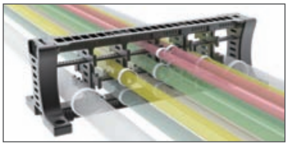


Front View



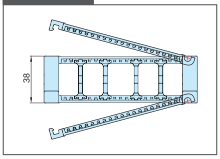
Chain Type	F Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	E M,EB Bolt Holes Width	Hole Type
nsb028E	60.4 80.4 100.4 125.4	38	35 55 75 100	26	0.4 20.4 40.4 65.4	M5 Bolt Holes

System Tie Wrap(STW)

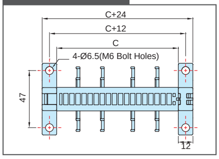


It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.

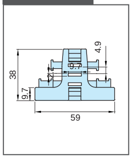
Front View



Top View

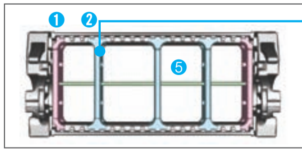


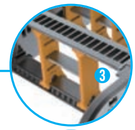
Side View

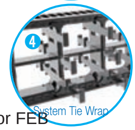


Chain Type	Ordering No.	C Frame	Hole Type
nsb028E	S-TW.EB028.35 S-TW.EB028.55 S-TW.EB028.75 S-TW.EB028.100	35 55 75 100	M6 Bolt Holes

Dividers(DV)

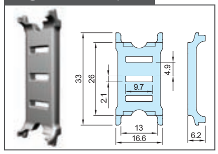




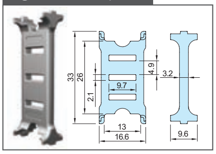


Assembled to every 4th link
DV/M : There are two types: M1 and M2
DV/W : Applicable to System Tie Wrap or FEB

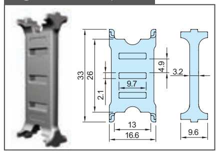
❶ sb-DV028/S



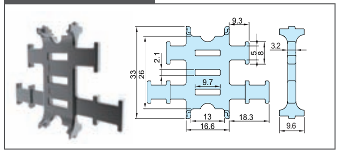
❷ sb-DV028/M1



❸ sb-DV028/M2



❹ sb-DV028/W

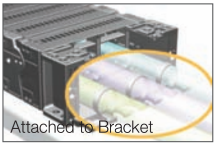


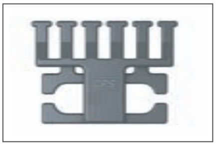
Separators(SP)

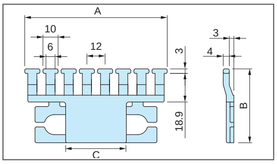
❺ Adjustable Separator length

Chain Type	Ordering No.	Frame
nsb028E	S-SP/M.35 S-SP/M.55 S-SP/M.75 S-SP/M.100	35 55 75 100

Tie Wrap(TW)



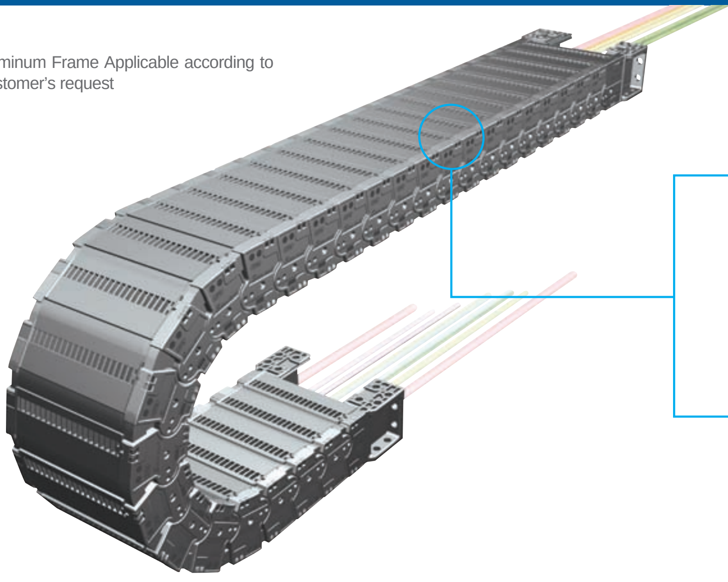




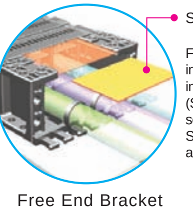
Chain Type	Ordering No.	A	B	C
nsb028E	S-TW036/025CR.35 S-TW036/025CR.55 S-TW036/025CR.75 S-TW036/025CR.100	46 70 94 118	35.4 48.9 48.9 48.9	- 20 40 65

nsb035E

Aluminum Frame Applicable according to Customer's request



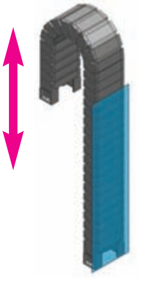
Hinge hook type



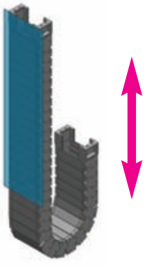
Free End Bracket

Steel Plate

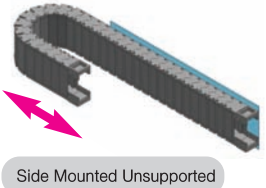
FEB can be fully enclosed by inserting Steel Plate like in the image.
(Steel Plate can be ordered separately, ST044/055/072/095/120E also applicable



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

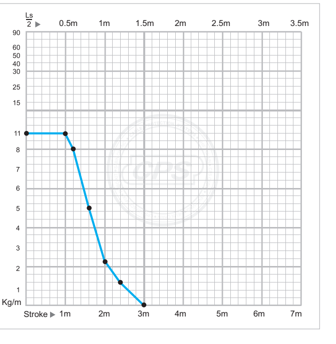
Caculation of the Chain Length

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

Other Length Restrictions

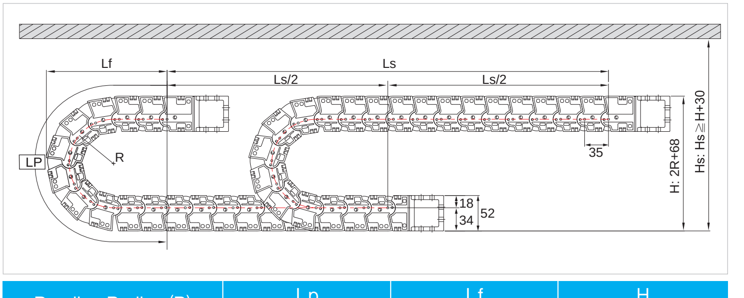
Vertical Standing(Max) = 3.0m
Vertical Hanging(Max) = 50m
Side Mounted Unsupported(Max) = 1.0m

Unsupported Length



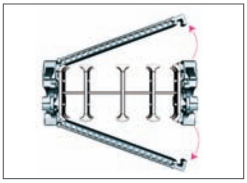
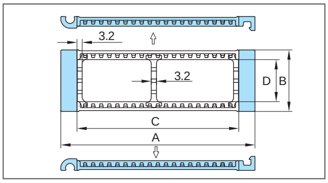
Layout of the Chain

Ls: Stroke Hs: Safe Space



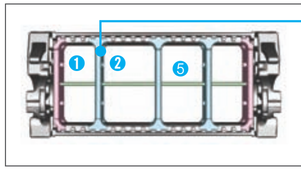
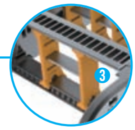
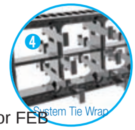
Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
90	423	194	248
115	502	219	298
140	580	244	348
190	737	294	448

Chain Cross Section

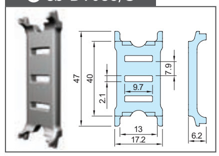
Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	Weight kg/m
nsb035E	70 95 120 145 170	52	50 75 100 125 150	40	1.45 1.64 1.83 2.06 2.28

Dividers(DV)

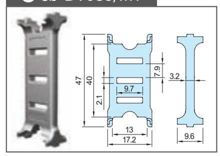




Assembled to every 4th link
DV/M : There are two types: M1 and M2
DV/W : Applicable to System Tie Wrap or FEB

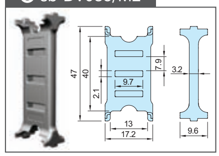
❶ sb-DV035/S



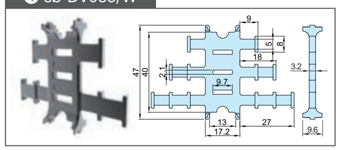
❷ sb-DV035/M1



❸ sb-DV035/M2

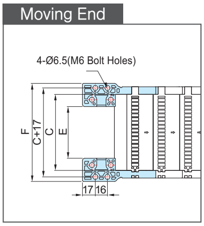


❹ sb-DV035/W

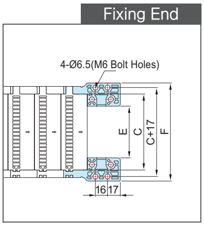


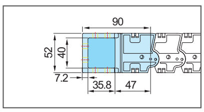
Free End Bracket(FEB)

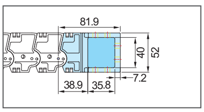
Moving End



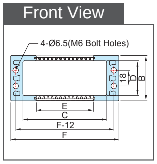
Fixing End





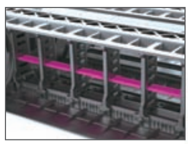


Front View



Chain Type	F Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	E M,EB Bolt Holes Width	Hole Type
nsb035E	79 104 129 154 179	52	50 75 100 125 150	40	18 43 68 93 118	M6 Bolt Holes

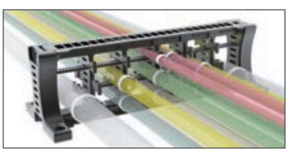
Separators(SP)



❺ Adjustable Separator length

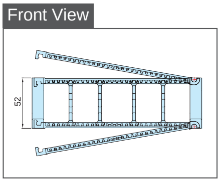
Chain Type	Ordering No.	Frame
nsb035E	S-SP/M.50 S-SP/M.75 S-SP/M.100 S-SP/M.125 S-SP/M.150	50 75 100 125 150

System Tie Wrap(STW)

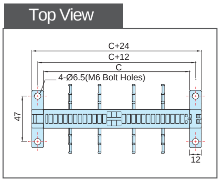


It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.

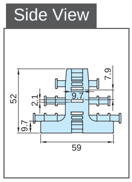
Front View



Top View

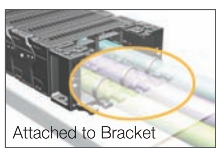


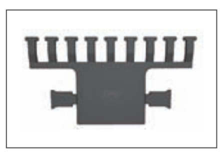
Side View

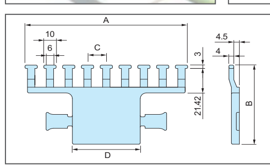


Chain Type	Ordering No.	C Frame	Hole Type
nsb035E	S-TW.EB035.50 S-TW.EB035.75 S-TW.EB035.100 S-TW.EB035.125 S-TW.EB035.150	50 75 100 125 150	M6 Bolt Holes

Tie Wrap(TW)



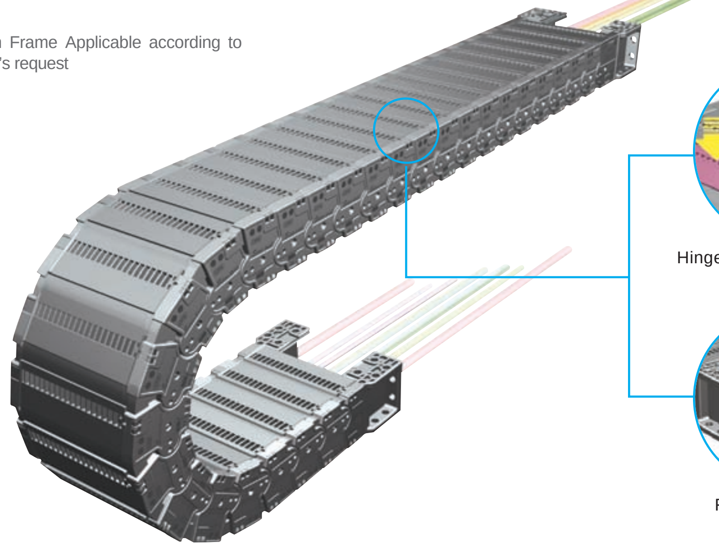


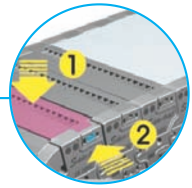


Chain Type	Ordering No.	A	B	C	D
nsb035E	S-TW050/035N.50 S-TW050/035N.75 S-TW050/035N.100 S-TW050/035N.125 S-TW050/035N.150	82 107 132 157 182	64.5	12.00 12.13 15.25 14.70 14.35	5 30 55 80 105

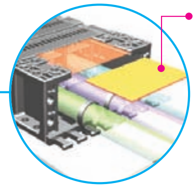
nsb045E

Aluminum Frame Applicable according to Customer's request





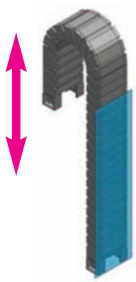
Hinge frame-pin lock type



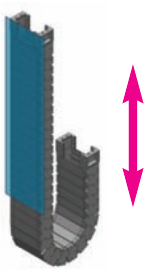
Steel Plate

FEB can be fully enclosed by inserting Steel Plate like in the image.
(Steel Plate can be ordered separately, ST044/055/072/095/120E also applicable

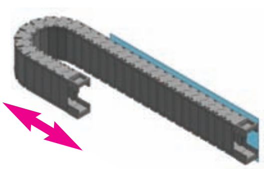
Free End Bracket



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

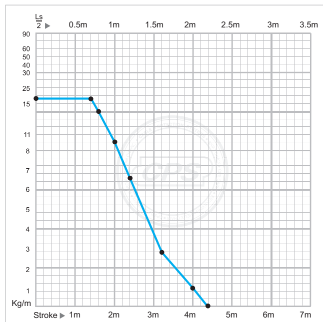
Caculation of the Chain Length

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

Other Length Restrictions

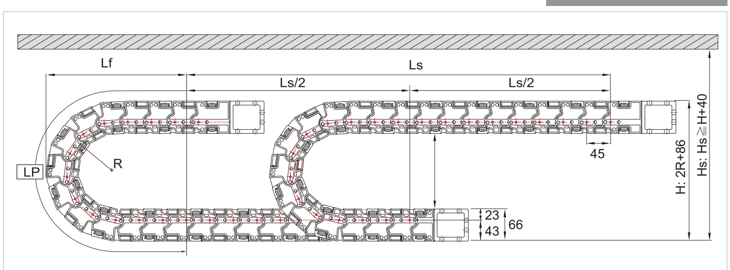
Vertical Standing(Max) = 6.0m
Vertical Hanging(Max) = 100m
Side Mounted Unsupported(Max) = 2.5m

Unsupported Length



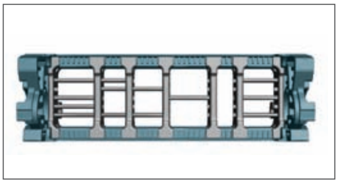
Layout of the Chain

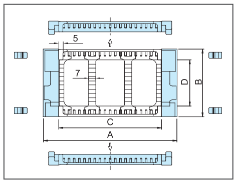
Ls: Stroke Hs: Safe Space



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
90	553	272	266
110	616	292	306
135	694	317	356
165	789	347	416
185	851	367	456
235	1008	417	556
285	1165	467	656

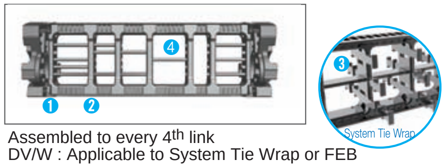
Chain Cross Section





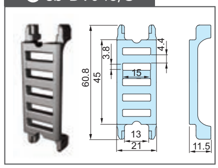
Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	Weight kg/m
nsb 045E	105 130 155 180	66	75 100 125 150	45	2.78 3.07 3.35 3.58

Dividers(DV)

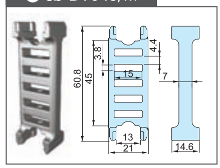


Assembled to every 4th link
DV/W : Applicable to System Tie Wrap or FEB

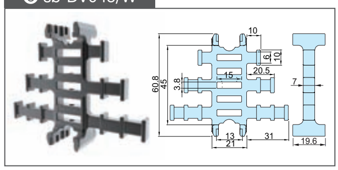
1 sb-DV045/S



2 sb-DV045/M

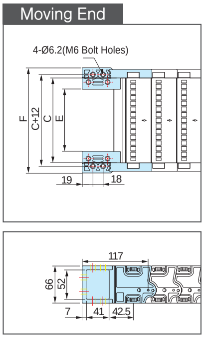


3 sb-DV045/W

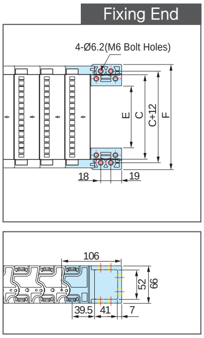


Free End Bracket(FEB)

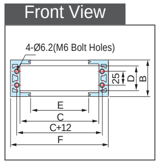
Moving End



Fixing End

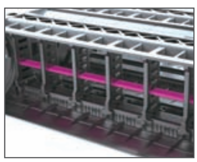


Front View

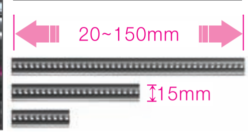


Chain Type	F Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	E M,EB Bolt Holes Width	Hole Type
nsb 045E	111 136 161 186	66	75 100 125 150	45	35 60 85 110	M6 Bolt Holes

Separators(SP)

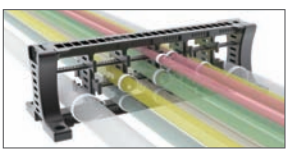


4 Adjustable Separator length



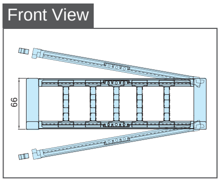
Chain Type	Ordering No.
nsb 045E	sb-SP/400.Frame

System Tie Wrap(STW)

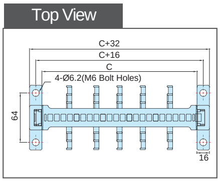


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

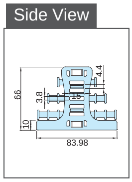
Front View



Top View

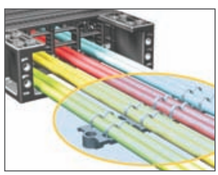


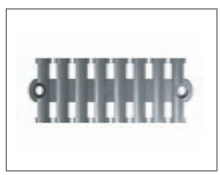
Side View

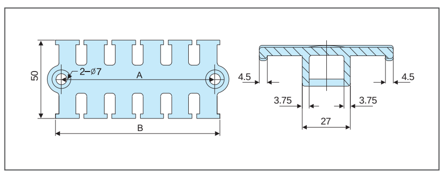


Chain Type	Ordering No.	C Frame	Hole Type
nsb 045E	S-TW.EB045.75 S-TW.EB045.100 S-TW.EB045.125 S-TW.EB045.150	75 100 125 150	M6 Bolt Holes

Tie Wrap(TW)



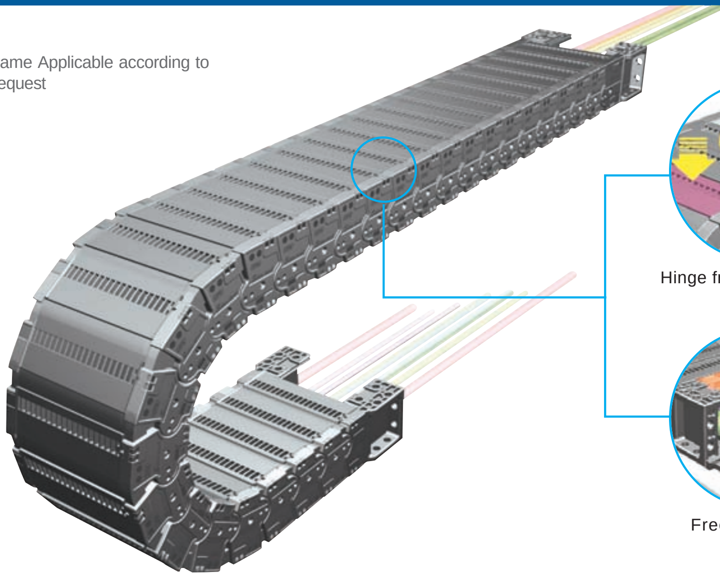


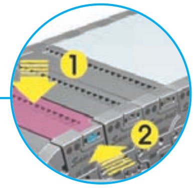


Chain Type	Ordering No.	A	B
nsb 045E	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

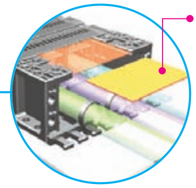
nsb060E

Aluminum Frame Applicable according to Customer's request





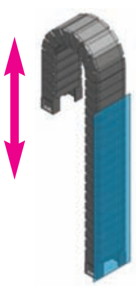
Hinge frame-pin lock type



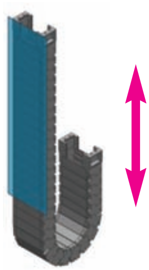
Steel Plate

FEB can be fully enclosed by inserting Steel Plate like in the image.
(Steel Plate can be ordered separately, ST044/055/072/095/120E also applicable

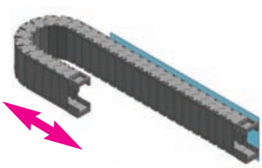
Free End Bracket



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

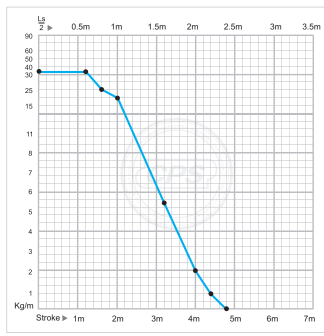
Caculation of the Chain Length

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

Other Length Restrictions

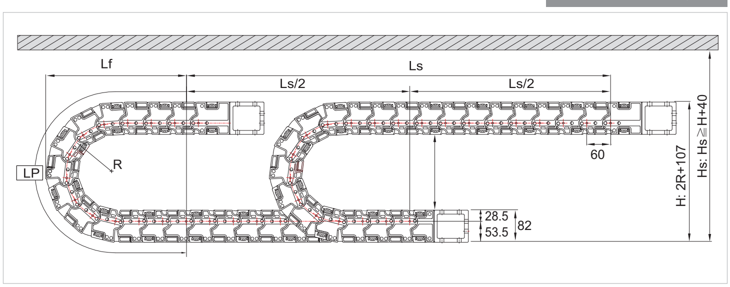
Vertical Standing(Max) = 6.0m
Vertical Hanging(Max) = 100m
Side Mounted Unsupported(Max) = 3.0m

Unsupported Length



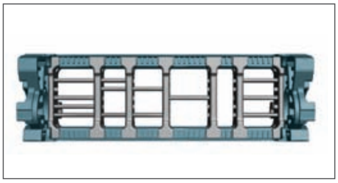
Layout of the Chain

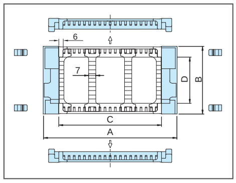
Ls: Stroke Hs: Safe Space



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
125	753	359	357
135	784	369	377
150	831	384	407
180	926	414	467
230	1083	464	567
270	1208	504	647
340	1427	574	787

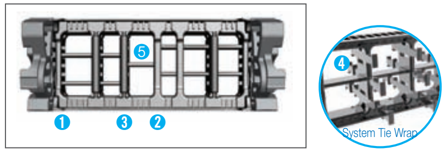
Chain Cross Section





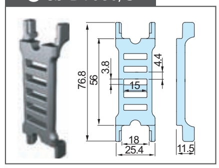
Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	Weight kg/m
nsb060E	140 190 240	82	100 150 200	56	4.32 4.86 5.41

Dividers(DV)

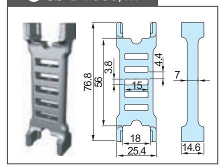


Assembled to every 4th link
DV/W : Applicable to System Tie Wrap or FEB

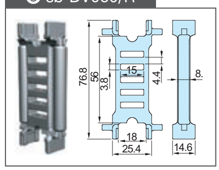
❶ sb-DV060/S



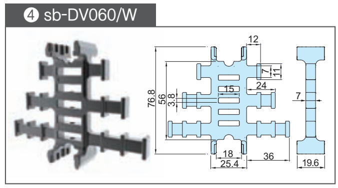
❷ sb-DV060/M



❸ sb-DV060/R

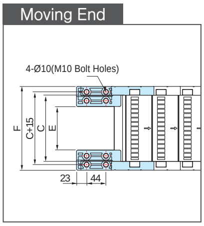


❹ sb-DV060/W

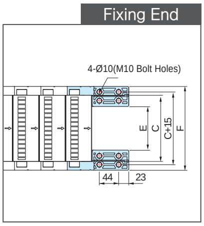


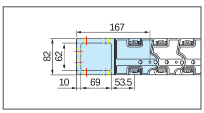
Free End Bracket(FEB)

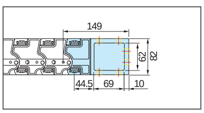
Moving End



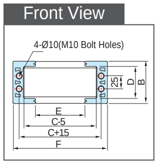
Fixing End





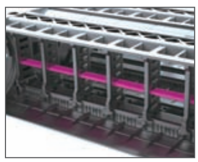


Front View



Chain Type	F Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	E M.EB Bolt Holes Width	Hole Type
nsb060E	140 190 240	82	100 150 200	56	49 99 149	M10 Bolt Holes

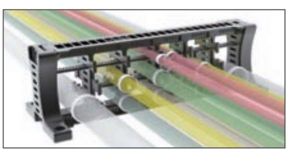
Separators(SP)



❺ Adjustable Separator length

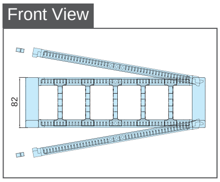
Chain Type	Ordering No.
nsb060E	sb-SP/400.Frame

System Tie Wrap(STW)

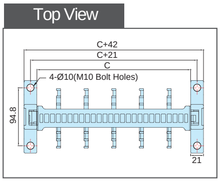


It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.

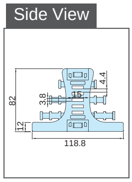
Front View



Top View

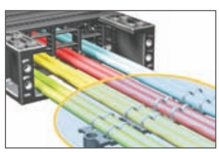


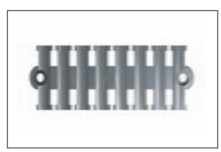
Side View

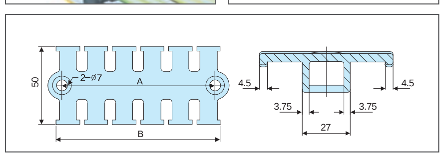


Chain Type	Ordering No.	C Frame	Hole Type
nsb060E	S-TW.EB060.100 S-TW.EB060.150 S-TW.EB060.200	100 150 200	M10 Bolt Holes

Tie Wrap(TW)



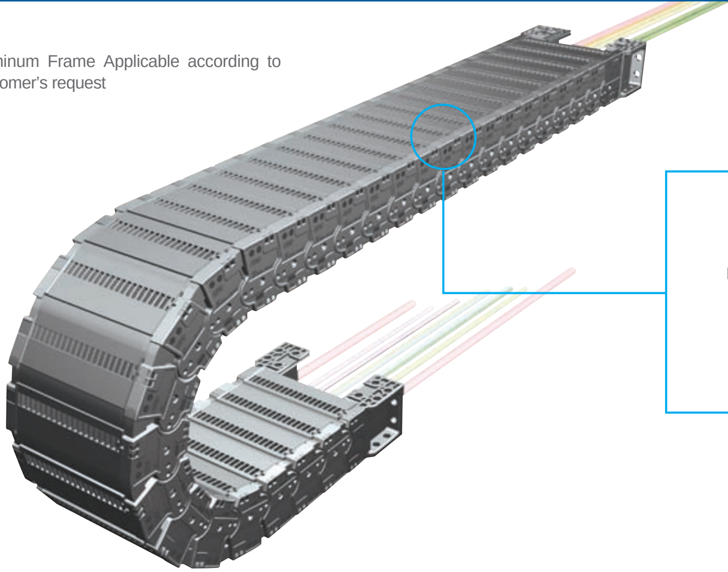


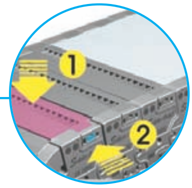


Chain Type	Ordering No.	A	B
nsb060E	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148

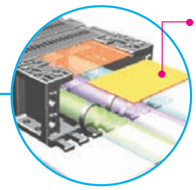
nsb075E

Aluminum Frame Applicable according to Customer's request





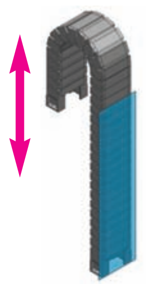
Hinge frame-pin lock type



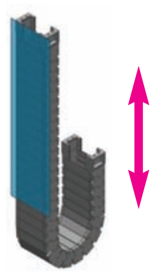
Steel Plate

FEB can be fully enclosed by inserting Steel Plate like in the image.
(Steel Plate can be ordered separately, ST044/055/072/095/120E also applicable

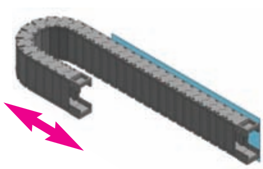
Free End Bracket



Vertical Standing



Vertical Hanging



Side Mounted Unsupported

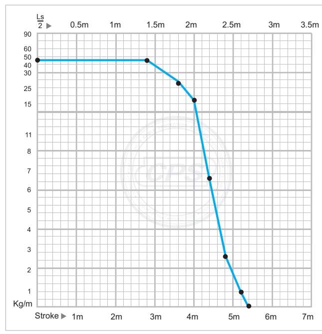
Caculation of the Chain Length

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

Other Length Restrictions

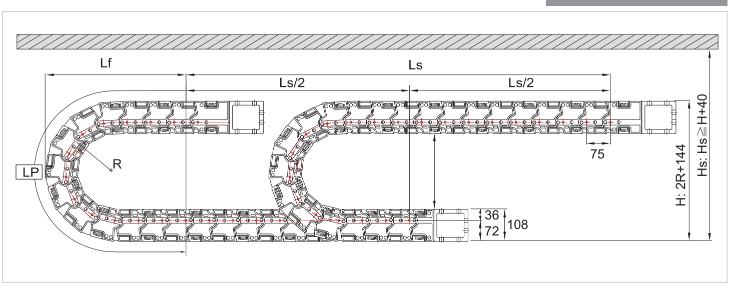
Vertical Standing(Max) = 6.0m
Vertical Hanging(Max) = 120m
Side Mounted Unsupported(Max) = 3.0m

Unsupported Length



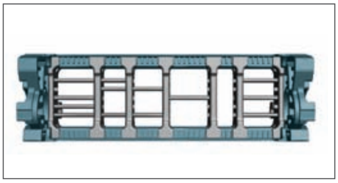
Layout of the Chain

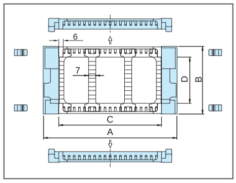
Ls: Stroke Hs: Safe Space



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
160	953	457	464
180	1016	477	504
230	1172	527	604
280	1329	577	704
330	1487	627	804
380	1644	677	904
480	1958	777	1,104

Chain Cross Section

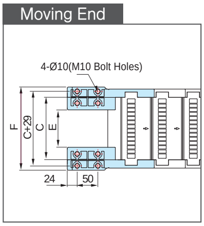




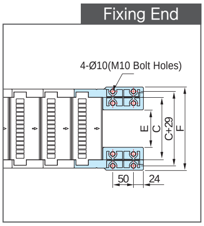
Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	Weight kg/m
nsb075E	190 240 340	108	150 200 300	78	7.01 7.97 9.48

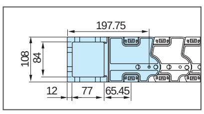
Free End Bracket(FEB)

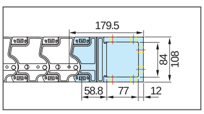
Moving End



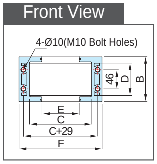
Fixing End





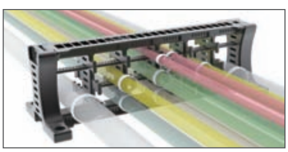


Front View



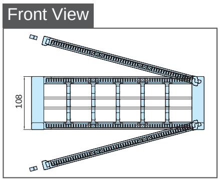
Chain Type	F Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	E M.EB Bolt Holes Width	Hole Type
nsb075E	200 250 350	108	150 200 300	78	90 140 240	M10 Bolt Holes

System Tie Wrap(STW)

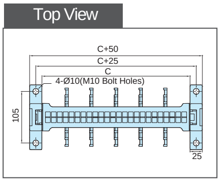


It is a unit to classify each cable for preventing entanglement of cables. It can either be installed to free end bracket or installed separately according its application environment.

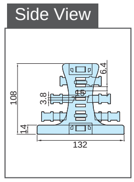
Front View



Top View

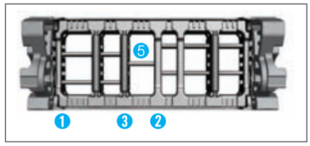


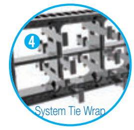
Side View



Chain Type	Ordering No.	C Frame	Hole Type
nsb075E	S-TW.EB075.150 S-TW.EB075.200 S-TW.EB075.300	150 200 300	M10 Bolt Holes

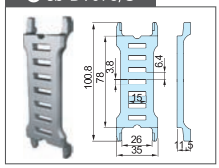
Dividers(DV)



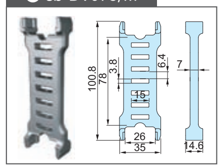


Assembled to every 4th link
DV/W : Applicable to System Tie Wrap or FEB

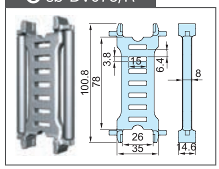
❶ sb-DV075/S



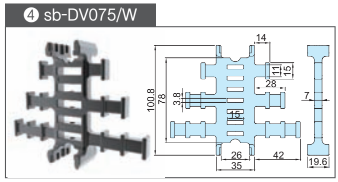
❷ sb-DV075/M



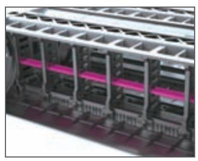
❸ sb-DV075/R



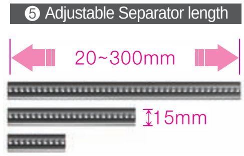
❹ sb-DV075/W



Separators(SP)

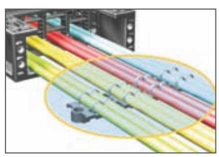


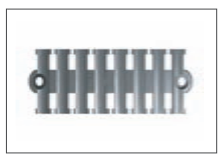
❺ Adjustable Separator length

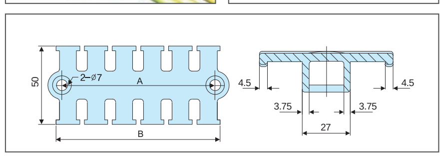


Chain Type	Ordering No.
nsb075E	sb-SP/400.Frame

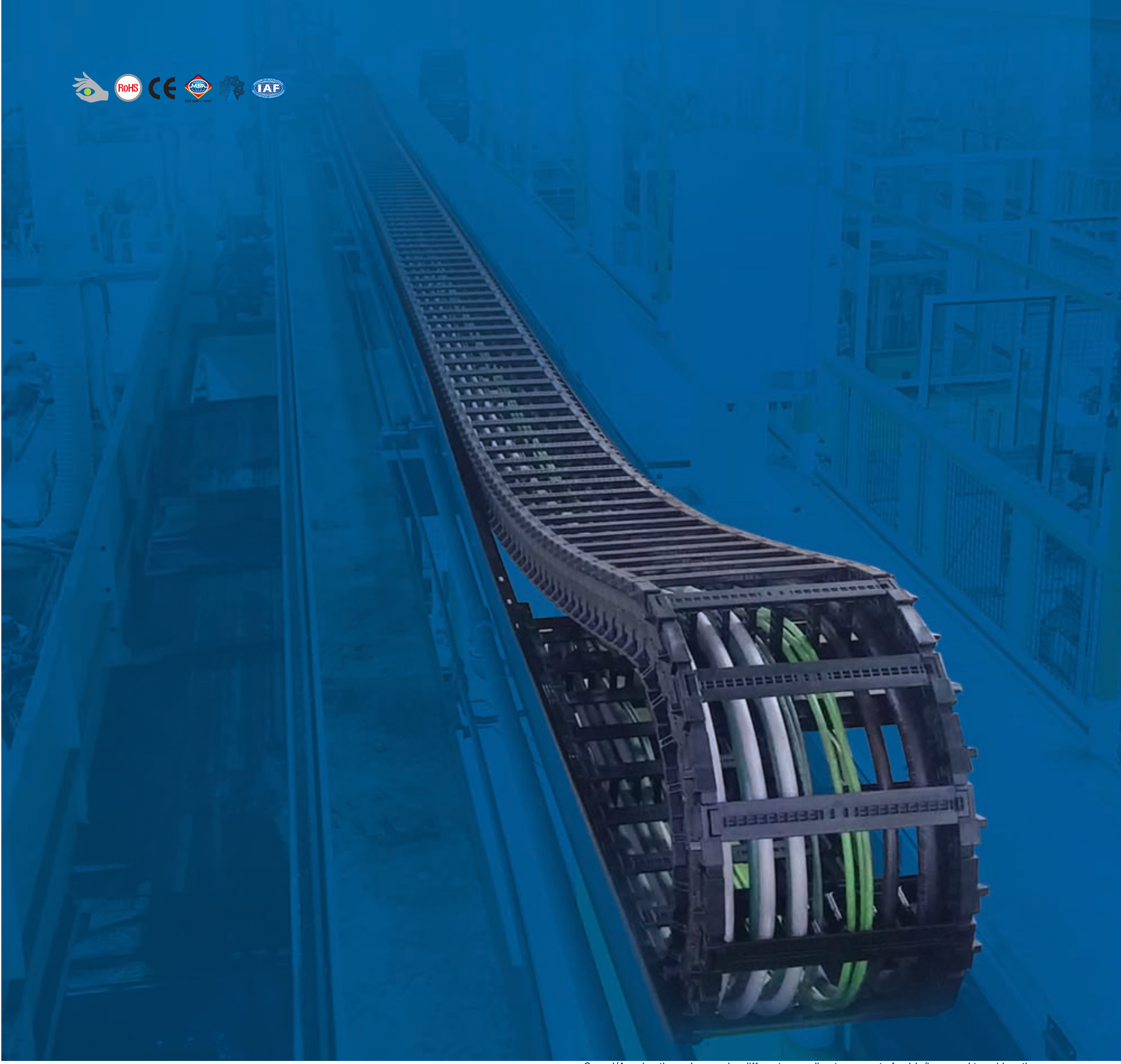
Tie Wrap(TW)







Chain Type	Ordering No.	A	B
nsb075E	S-TW50 S-TW75 S-TW100 S-TW125 S-TW150	58 75 98 122 141	65 82 105 129 148



Speed/Acceleration value can be different according to amount of cable/hose and travel length.

nsb Chain
Sliding Type

nsb S
nsb Chain-Sliding Type

- nsb050S
- nsb065S
- nsb080S

General Information

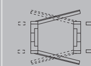
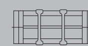
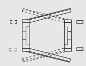
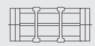
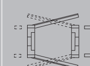
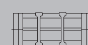
Material	CPS-Amide (PA6+G.F)
Speed	6㎧
Acceleration	15㎨
Temperature	-30℃ ~ +130℃
Certificate	CE, ATEX(Ex), RoHs2

Calculation Table

Length of Cable Chain	L = ½ X Ls + Lp
Bending Radius	Multiply 8~10 of the biggest cable
	Multiply 15~20 of the biggest hose

nsb Chain-Sliding Type

Dimension Table

nsb Chain S Type	Pitch	Bending Radius (R)	Weight kg/m	Speed m/s	Temperature ℃	Size A	Size B	Size C	Size D	Frame style	Section - composition
nsb050S	50	110, 135, 165, 185, 235, 285	2,38 2,44 2,51 2,61 2,67 2,71 2,76 2,80 2,97 3,09 3,32 3,38 3,63	6	-30 ~ +130	104 129 154 179 194 204 219 229 244 254 294 304 354	71.5	50 75 100 125 140 150 165 175 190 200 240 250 300	45		
nsb065S	65	140, 190, 220, 270, 390	3,29 3,34 3,49 3,58 3,68 3,76 3,82 3,99 4,03 4,24 4,53 4,85	6	-30 ~ +130	137 162 187 212 237 252 262 302 312 362 412 462	89	75 100 125 150 175 190 200 240 250 300 350 400	56		
nsb080S	80	180, 200, 250, 300, 350, 400, 500	4,27 4,36 4,43 4,47 4,57 4,67 4,85 5,03 5,07 5,33 5,40 5,71 6,09 6,28 6,45 7,08 7,20	6	-30 ~ +130	143 168 183 193 218 243 268 308 318 358 368 418 468 518 568 618 668	115	75 100 115 125 150 175 200 240 250 290 300 350 400 450 500 550 600	78		

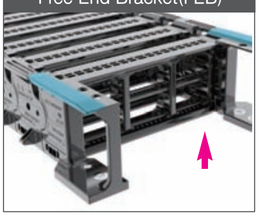
Ordering

nsb 050S. 175. R185 / B1 - 10000L : (DV:2)

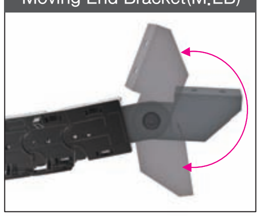
- Quantity of Divider(Link)
- Length(mm)
- Bracket Type : B1,B2
  - FT : Tie Wrap
  - FST : System Tie wrap
- Bending Radius
- Inside width
- nsb Chain-Sliding type (S)
- Sabin Chain

Bracket Type

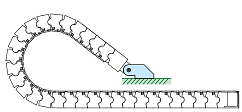
Free End Bracket(FEB)



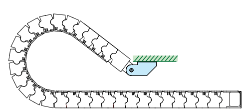
Moving End Bracket(M.EB)



The moving bracket is designed to move up and down according to movement of cable chain, or application requires.
Fixing holes are formed widely for its convenience to be applied to other brand of cable chain. There are 2 tpye of bracket; B1,B2.



B1



B2

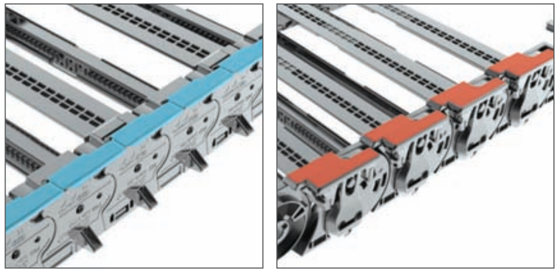
nsb Chain-Sliding Type

Characteristics of nsb chain Sliding Type

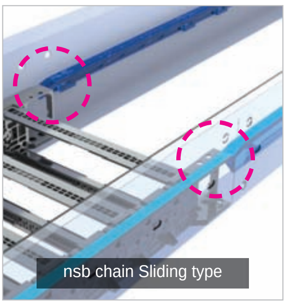
Minimized noise level!

nsb sliding chain is also Holding band structure

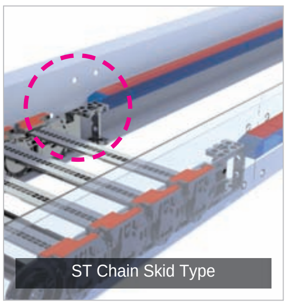
Feature-1



Feature-2



nsb chain Sliding type



ST Chain Skid Type

There are 3 factors for minimizing noise level of nsb sliding chain.

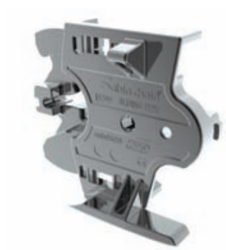
Firstly, it can minimize noise level than other sliding types including other brand due to Holding band inserted structure.
You can refer “feature-1”

Secondly, by reducing interval between skid to skid of side band. If you refer “feature-2”, you can find out that it’s minimum gap between each side band which makes low noise when sliding part is moving on fixing part. If creates some interval, it makes noise.

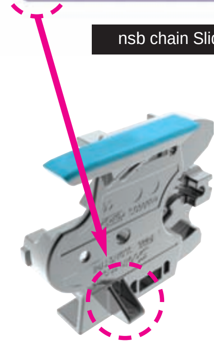
In third, by making it equal height between height of FEB and height of Nylon bar installed for chain movement.

Easy to assemble and disassemble!

Skid and Side Band Integral Type which helps to reduce Assembly & Disassembly time. Specialized for High Speed Operation!

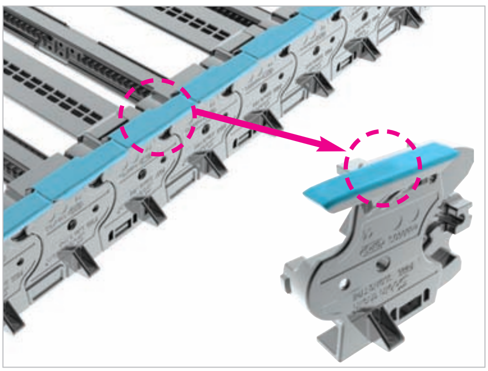


Stable operation and Suitable for high speed !



•Supporting Unit is applied to make a stable balance in cable chain's operation
•Specialized Cable chain for High Speed Operation(ex. Generally applied at Gantry Loader)

Minimized Dust !



Feature-1

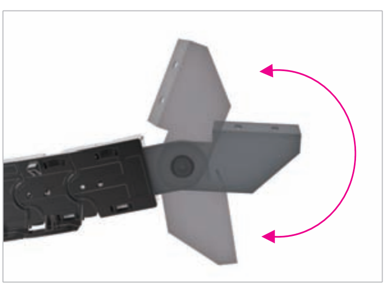
new nylon bar made of same material like cable chain for minimize dust.

Feature-2

Minimize Dust!

Adopt same material of Cable chain to Nylon bar to minimize coefficient of friction

Can be substituted for other Brand of Cable Chain !

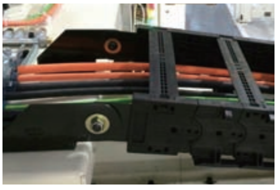


Can be substituted for other Brand

The moving bracket is designed to move up and down according to movement of cabel chain. Or application requires. Fixing holes are form widely for its convenience to be applied to other brand of cable chain. There are 2 tpye of bracket; B1, B2.

nsb Chain-Sliding Type

Application of nsb Chain Sliding type



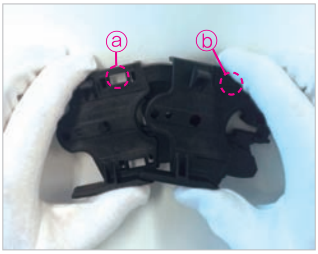

nsb050S
Application : Gantry Loader
Location : Korea, China,
USA and India


nsb065S
Application : Crane(54m/Stroke)
Location : Korea
Remark:
Section composition with dividers and sperators
System tie-wrap dividers(DV/W) at fixing end brackets

nsb080S
Application : Robot carriage
Location :
Korea, China, Mexico, Brazil


Assembly procedure of nsb Chain Sliding type

The assembling process of S-Type of New Sabin Chain is like below and user must use rubber hammer with careful combination of Divider and Separator.



1

Classify LH and RH first, then assemble the Side band.
(Assemble from ⓐ to ⓑ according to priority)

2

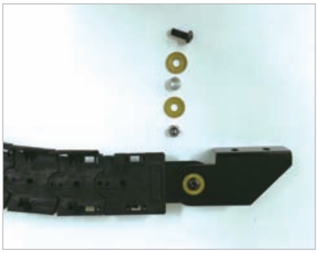
Connect the Side Band according to required length.

3

Install F.EB to the right and left direction.

4

Install M.EB to the right and left direction.



5

Assemble the Steel Bracket on the M.EB by tightening bolt and nut.
(Bolt → flat washer → insert steel → flat washer → Nut)

6

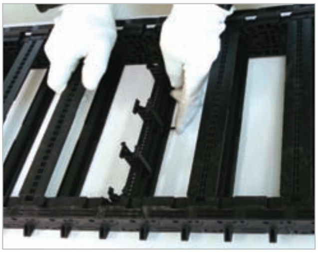
Assemble the left and right Side Band with specified frame.

7

Frame of the opposite side also assemble in the same manner.

8

Assemble dividers and spearators considering inserted number of cables.



9

Fix the dividers on lower frame.
(Assemble divider every Four links)

10

Combine the upper frame exactly on the groove of sideband and divider.

11

Fix the frame with side band by using the frame pin.

12

Complete by inserting the reinforce washer to fit in fixing hole of F.EB.

nsb Chain-Sliding Type

Part list of nsb Chain Sliding type

- Composition of nsb Chain Sliding Type
  = Side Band (RH/LH) + Frame (Upper/Lower) + Holding Pin + Free End Bracket
- M divider(normal divider) should be applied every second frames to make a section composition.

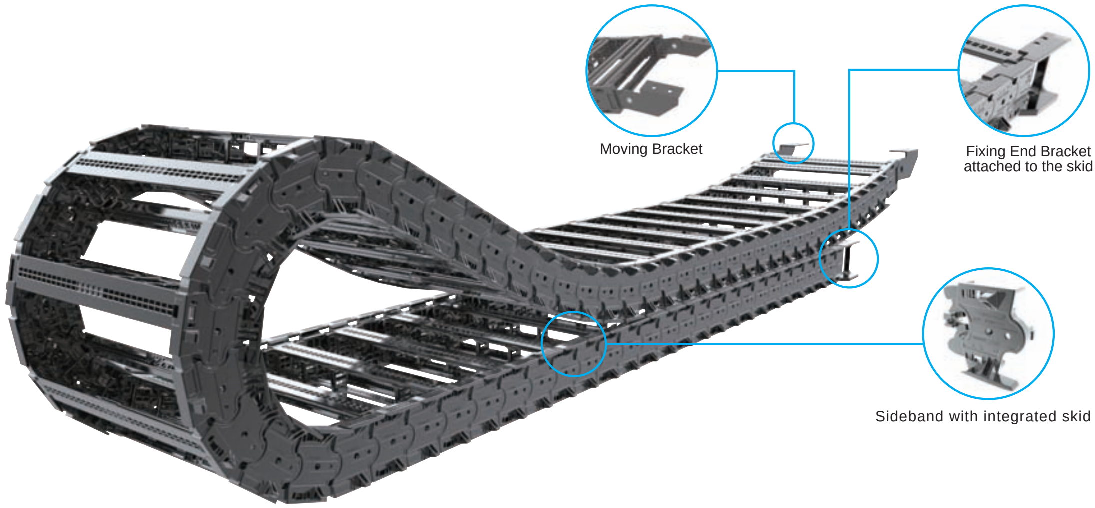
※ Please refer to below part list and description to understand composition of cable chain.

Model	Classification	Part number	Description
nsb050S	SIDE BAND	nsb-SB050S.R*(LH) nsb-SB050S.R*(RH)	Left side band of nsb050S Right side band of nsb050S
	FRAME PIN	S-FP/S1	Frame pin
	FRAME	sb-FR045.50 sb-FR045.75 sb-FR045.100 sb-FR045.125 sb-FR045.140 sb-FR045.150 sb-FR045.165 sb-FR045.175 sb-FR045.190 sb-FR045.200 sb-FR045.240 sb-FR045.250 sb-FR045.300	Frame, 50mm Frame, 75mm Frame, 100mm Frame, 125mm Frame, 140mm Frame, 150mm Frame, 165mm Frame, 175mm Frame, 190mm Frame, 200mm Frame, 240mm Frame, 250mm Frame, 300mm
	FREE END BRACKET	NSB-FEB050S /F NSB-FEB050S /M(SEB) nsb-FEB/WH050	Free end bracket of nsb050S, Fixing Steel end bracket of nsb050S, Moving Steel washer for end bracket
	DIVIDER	sb-DV045/M sb-DV045/S sb-DV045/T sb-DV045/TP	Normal divider To fix separstors at the both side section T divider T divider pin
	SEPARATOR	sb-SP/400.Frame 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
nsb065S	SIDE BAND	nsb-SB065S.R*(LH) nsb-SB065S.R*(RH)	Left side band of nsb050S Right side band of nsb050S
	FRAME PIN	S-FP/S1	Frame pin
	FRAME	sb-FR060.75 sb-FR060.100 sb-FR060.125 sb-FR060.150 sb-FR060.175 sb-FR060.190 sb-FR060.200 sb-FR060.230 sb-FR060.250 sb-FR060.300 sb-FR060.350 sb-FR060.400	Frame, 75mm Frame, 100mm Frame, 125mm Frame, 150mm Frame, 175mm Frame, 190mm Frame, 200mm Frame, 230mm Frame, 250mm Frame, 300mm Frame, 350mm Frame, 400mm
	FREE END BRACKET	NSB-FEB065S /F NSB-FEB065S /M(SEB) nsb-FEB/WH065	Free end bracket of nsb065S, Fixing Steel end bracket of nsb065S, Moving Steel washer for end bracket
	DIVIDER	sb-DV060/M sb-DV060/S sb-DV060/R sb-DV060/T sb-DV060/TP	Normal divider To fix separstors at the both side section Roller divider to reduce friction with cables T divider T divider pin
	SEPARATOR	sb-SP/400.Frame 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

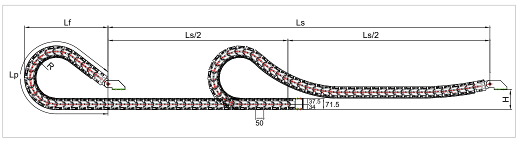
Model	Classification	Part number	Description
nsb080S	SIDE BAND	nsb-SB080S.R*(LH) nsb-SB080S.R*(RH)	Left side band of nsb080S Right side band of nsb080S
	FRAME PIN	S-FP/S2	Frame pin
	FRAME	sb-FR075/100.75 sb-FR075/100.100 sb-FR075/100.115 sb-FR075/100.125 sb-FR075/100.150 sb-FR075/100.175 sb-FR075/100.200 sb-FR075/100.240 sb-FR075/100.250 sb-FR075/100.290 sb-FR075/100.300 sb-FR075/100.350 sb-FR075/100.400 sb-FR075/100.450 sb-FR075/100.500 sb-FR075/100.550 sb-FR075/100.600	Frame, 75mm Frame, 100mm Frame, 115mm Frame, 125mm Frame, 150mm Frame, 175mm Frame, 200mm Frame, 240mm Frame, 250mm Frame, 290mm Frame, 300mm Frame, 350mm Frame, 400mm Frame, 450mm Frame, 500mm Frame, 550mm Frame, 600mm
	FREE END BRACKET	NSB-FEB080S /F NSB-FEB080S /M(SEB) nsb-FEB/WH080	Free end bracket of nsb080S, Fixing Steel end bracket of nsb080S, Moving Steel washer for end bracket
	DIVIDER	sb-DV075/M sb-DV075/S sb-DV075/R sb-DV075/T sb-DV075/TP	Normal divider To fix separstors at the both side section Roller divider to reduce friction with cables T divider T divider pin
	SEPARATOR	sb-SP/400.Frame 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

nsb050S



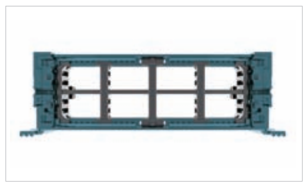
Layout of the chain

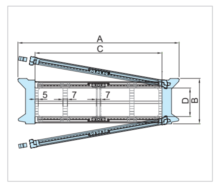
Ls: Stroke



Bending Radius(R)	Lp Loop Length	Lf Loof Projection	H Moving Height
110	916	380	180
135	1,068	430	
165	1,255	490	
185	1,382	530	
235	1,703	630	
285	2,029	730	

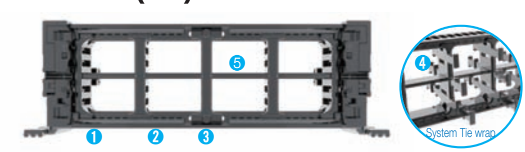
Chain cross section





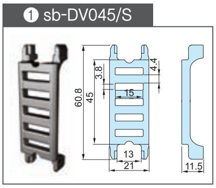
Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	Weight kg/m
nsb050S	104	71.5	50	45	2.38
	129		75		2.44
	154		100		2.51
	179		125		2.61
	194		140		2.67
	204		150		2.71
	219		165		2.76
	229		175		2.80
	244		190		2.97
	254		200		3.09
	294		240		3.32
	304		250		3.38
	354		300		3.63

Dividers(DV)

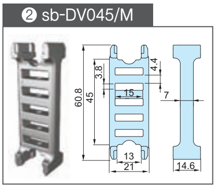


Assembled to every 4th link
DV/T : Applied to Frame 200~300
DV/T : Normal divider
DV/W : Applicable to System Tie Wrap or FEB

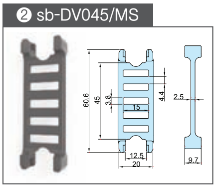
① sb-DV045/S



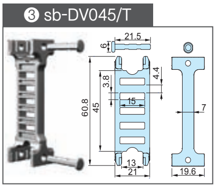
② sb-DV045/M



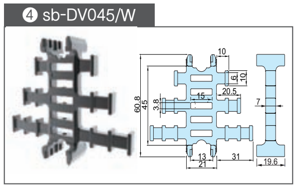
② sb-DV045/MS



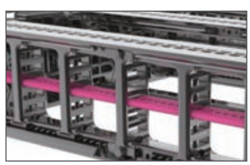
③ sb-DV045/T



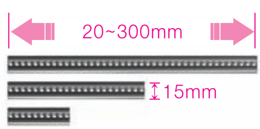
④ sb-DV045/W



Separators(SP)

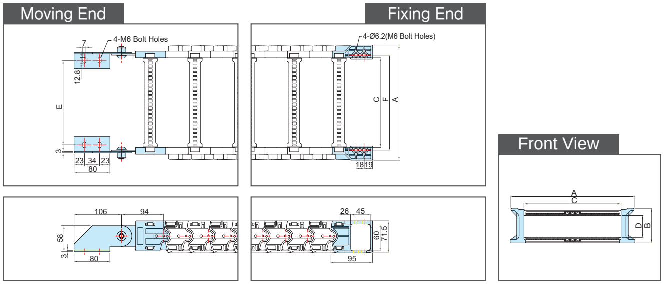


⑤ Adjustable Separator length



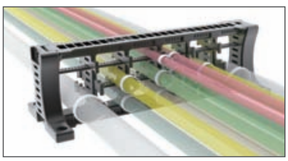
Chain Type	Ordering NO.
nsb050S	sb-SP/400.Frame

Free End Bracket(FEB)

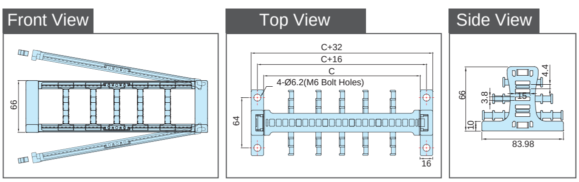


Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	E M.EB Bolt hole width	F F.EB Bolt hole width
nsb050S	104	71.5	50	45	38.7	62
	129		75		63.7	87
	154		100		88.7	112
	179		125		113.7	137
	194		140		128.7	152
	204		150		138.7	162
	219		165		153.7	177
	229		175		163.7	187
	244		190		178.7	202
	254		200		188.7	212
	294		240		228.7	252
	304		250		238.7	262
	354		300		288.7	312

System Tie Wrap(STW)

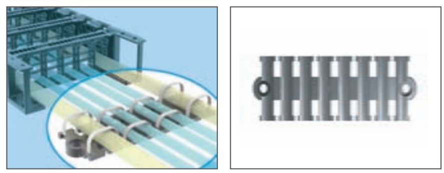


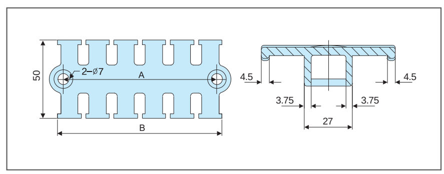
It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.



Chain Type	Ordering NO.	C Frame	Hole Type
nsb050S	S-TW.EB045.50	50	M6 Bolt Holes
	S-TW.EB045.75	75	
	S-TW.EB045.100	100	
	S-TW.EB045.125	125	
	S-TW.EB045.140	140	
	S-TW.EB045.150	150	
	S-TW.EB045.165	165	
	S-TW.EB045.175	175	
	S-TW.EB045.190	190	
	S-TW.EB045.200	200	
	S-TW.EB045.240	240	
	S-TW.EB045.250	250	
	S-TW.EB045.300	300	

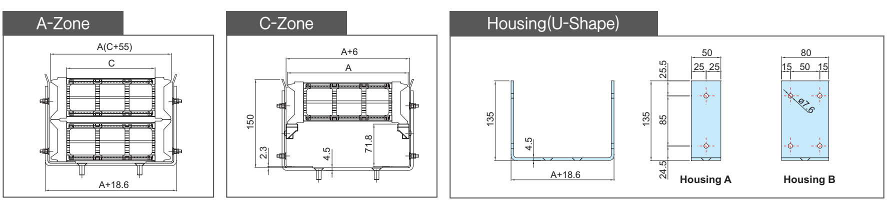
Tie Wrap(TW)

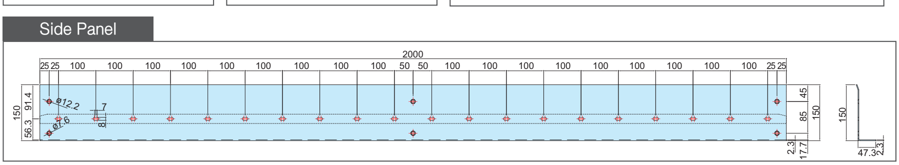




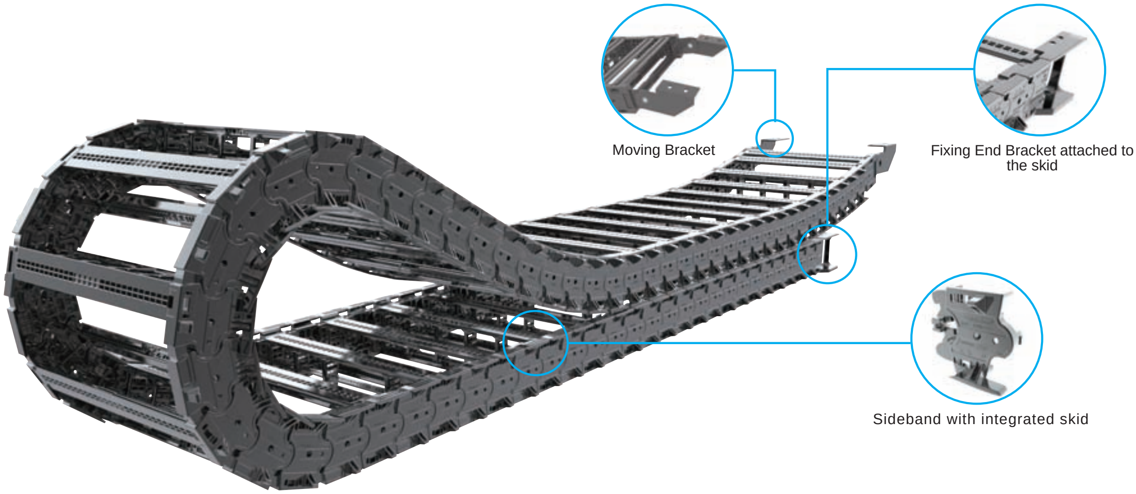
Chain Type	Ordering NO.	A	B
nsb050S	S-TW50	58	65
	S-TW75	75	82
	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

Guide Channel



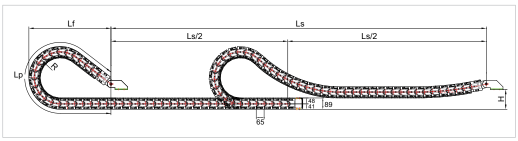


nsb065S



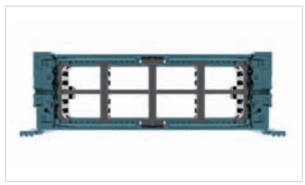
Layout of the chain

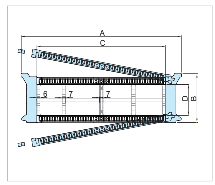
Ls: Stroke



Bending Radlus (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
140	1,225	615	210
190	1,543	715	
220	1,734	775	
270	2,052	875	
390	2,814	1,115	

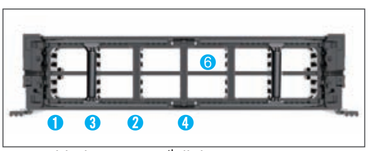
Chain cross section

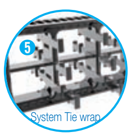




Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	Weight kg/m
nsb065S	137	89	75	56	3.29
	162		100		3.34
	187		125		3.49
	212		150		3.58
	237		175		3.68
	252		190		3.76
	262		200		3.82
	292		230		3.94
	302		240		3.99
	312		250		4.03
	362		300		4.24
	412		350		4.53
	462		400		4.85

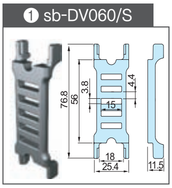
Dividers(DV)



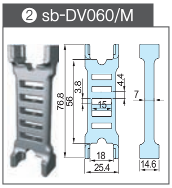


Assembled to every 4th link
DV/T : Assembled to every 4th link
DV/W : Applicable to System Tie Wrap or FEB

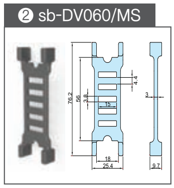
❶ sb-DV060/S



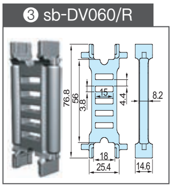
❷ sb-DV060/M



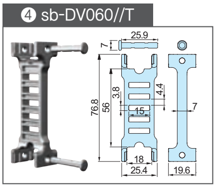
❷ sb-DV060/MS



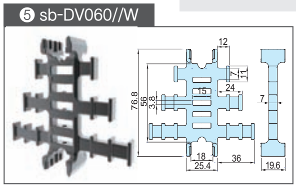
❸ sb-DV060/R



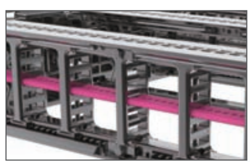
❹ sb-DV060//T



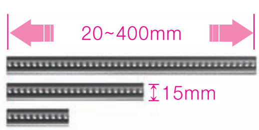
❺ sb-DV060//W



Separators(SP)



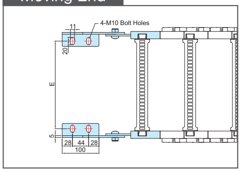
❻ Adjustable Separator length



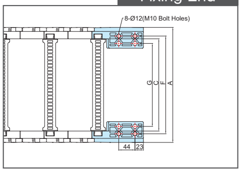
Chain Type	Ordering NO.
nsb065S	sb-SP/400.Frame

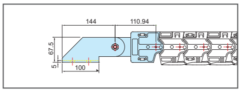
Free End Bracket(FEB)

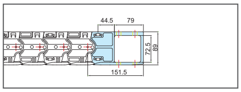
Moving End



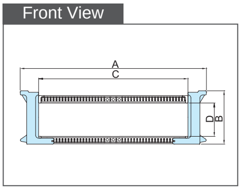
Fixing End





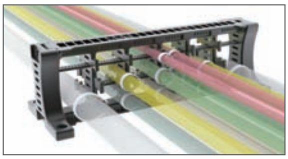


Front View



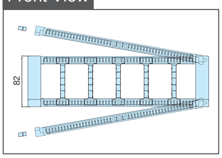
Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	E M.EB Bolt hole width	F F.EB Bolt hole width	G F.EB Bolt width
nsb065S	137	89	75	56	62.6	90	50
	162		100		87.6	115	75
	187		125		112.6	140	100
	212		150		137.6	165	125
	237		175		162.6	190	150
	252		190		177.6	205	165
	262		200		187.6	215	175
	292		230		217.6	245	205
	302		240		227.6	255	215
	312		250		237.6	265	225
	362		300		287.6	315	275
	412		350		337.6	365	325
	462		400		387.6	415	375

System Tie Wrap(STW)

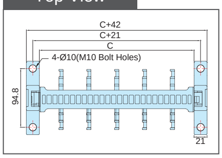


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

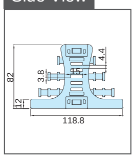
Front View



Top View

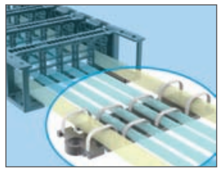


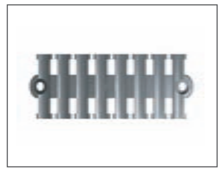
Side View

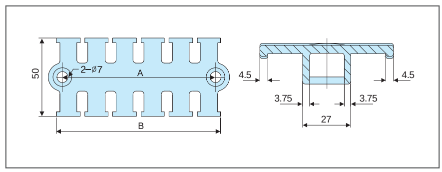


Chain Type	Ordering NO.	C Frame	Hole Type
nsb065S	S-TW.EB060.75	75	M10 Bolt Holes
	S-TW.EB060.100	100	
	S-TW.EB060.125	125	
	S-TW.EB060.150	150	
	S-TW.EB060.175	175	
	S-TW.EB060.190	190	
	S-TW.EB060.200	200	
	S-TW.EB060.230	230	
	S-TW.EB060.240	240	
	S-TW.EB060.250	250	
	S-TW.EB060.300	300	
	S-TW.EB060.350	350	
	S-TW.EB060.400	400	

Tie Wrap(TW)



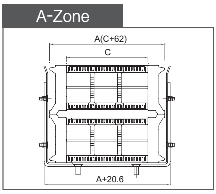




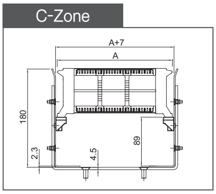
Chain Type	Ordering NO.	A	B
nsb065S	S-TW50	58	65
	S-TW75	75	82
	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

Guide Channel

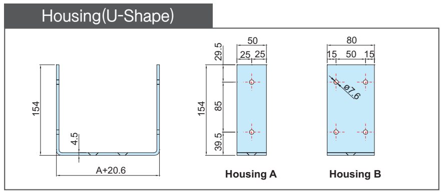
A-Zone



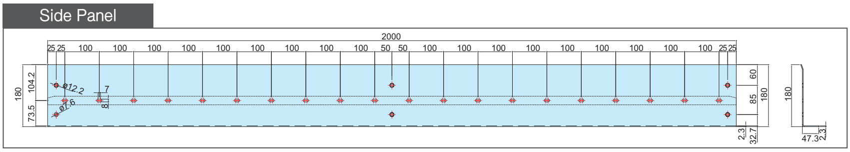
C-Zone



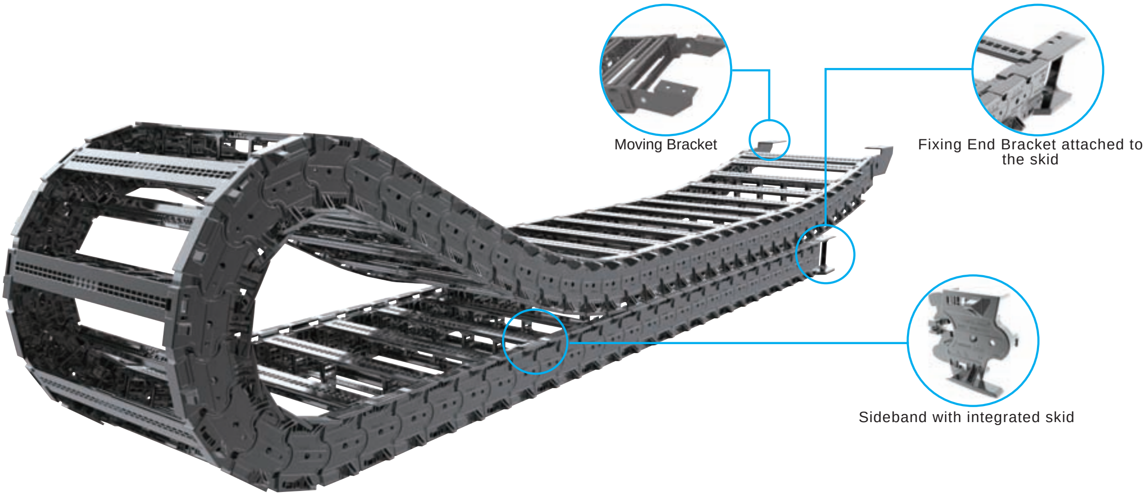
Housing(U-Shape)



Side Panel

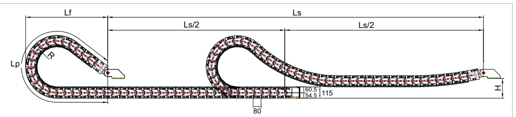


nsb080S



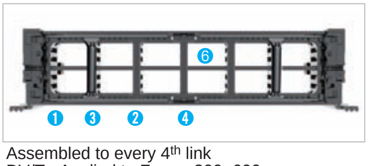
Layout of the chain

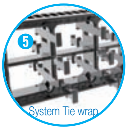
Ls: Stroke



Bending Radlus (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
180	1,490	690	260
200	1,617	730	
250	1,935	830	
300	2,253	930	
350	2,571	1,030	
400	2,889	1,130	
500	3,524	1,330	

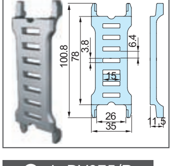
Dividers(DV)



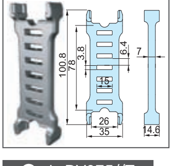


Assembled to every 4th link
DV/T : Applied to Frame 300~600
DV/T : Normal divider
DV/W : Applicable to System Tie Wrap or FEB

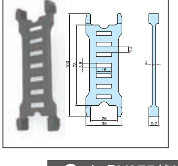
1 sb-DV075/S



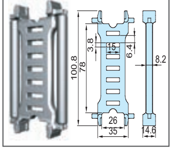
2 sb-DV075/M



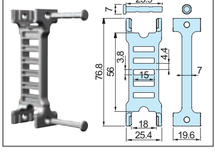
2 sb-DV075/MS



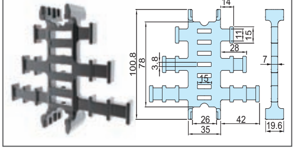
3 sb-DV075/R



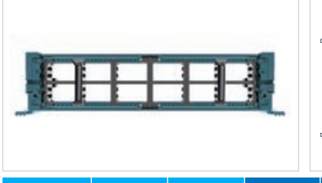
4 sb-DV075//T

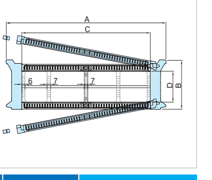


5 sb-DV075//W



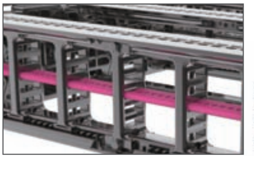
Chain cross section



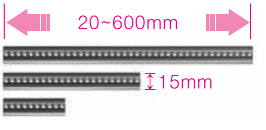


Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	Weight kg/m
nsb080S	143	115	75	78	4.27
	168		100		4.36
	183		115		4.43
	193		125		4.47
	218		150		4.57
	243		175		4.67
	268		200		4.85
	308		240		5.03
	318		250		5.07
	358		290		5.33
	368		300		5.40
	418		350		5.71
	468		400		6.09
	518		450		6.28
	568		500		6.45
	618		550		7.08
	668		600		7.20

Separators(SP)



6 Adjustable Separator length

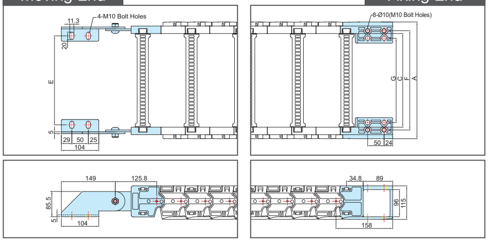


Chain Type	Ordering NO.
nsb080S	sb-SP/600.600

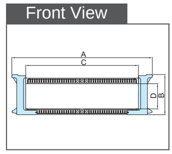
Free End Bracket(FEB)

Moving End

Fixing End

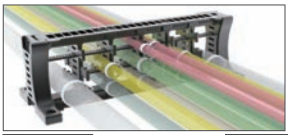


Front View



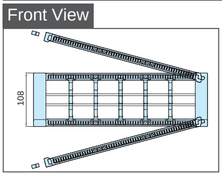
Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	E M.EB Bolt hole width	F F.EB Bolt hole width	G F.EB Bolt width
	143		75		63	104	47
	168		100		88	129	72
	183		115		103	144	87
	193		125		113	154	97
	218		150		138	179	122
	243		175		163	204	147
	268		200		188	229	172
	308		240		228	269	212
nsb080S	318	115	250	78	238	279	222
	358		290		278	319	262
	368		300		288	329	272
	418		350		338	379	322
	468		400		388	429	372
	518		450		438	479	422
	568		500		488	529	472
	618		550		538	579	522
	668		600		588	629	572

System Tie Wrap(STW)

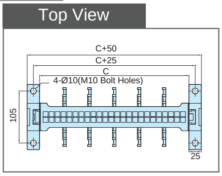


It is a unit to classify each cable for preventing entanglement of cables.
It can either be installed to free end bracket or installed separately according its application environment.

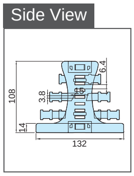
Front View



Top View

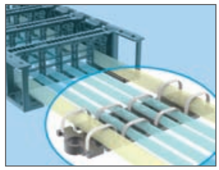


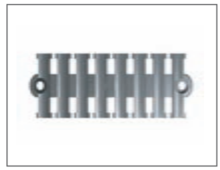
Side View

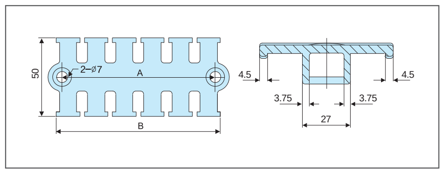


Chain Type	Ordering NO.	C Frame	Hole Type
	S-TW.EB075.75	75	
	S-TW.EB075.100	100	
	S-TW.EB075.115	115	
	S-TW.EB075.125	125	
	S-TW.EB075.150	150	
	S-TW.EB075.175	175	
	S-TW.EB075.200	200	
	S-TW.EB075.240	240	
nsb080S	S-TW.EB075.250	250	M10 Bolt Holes
	S-TW.EB075.290	290	
	S-TW.EB075.300	300	
	S-TW.EB075.350	350	
	S-TW.EB075.400	400	
	S-TW.EB075.450	450	
	S-TW.EB075.500	500	
	S-TW.EB075.550	550	
	S-TW.EB075.600	600	

Tie Wrap(TW)



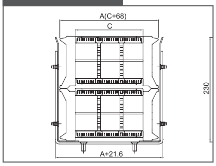




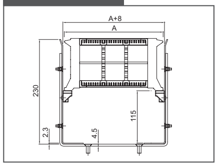
Chain Type	Ordering NO.	A	B
	S-TW50	58	65
	S-TW75	75	82
nsb080S	S-TW100	98	105
	S-TW125	122	129
	S-TW150	141	148

Guide Channel

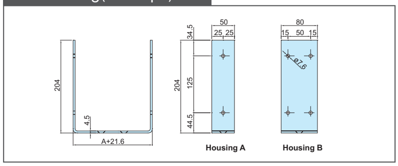
A-Zone



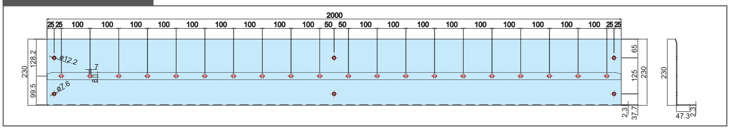
C-Zone

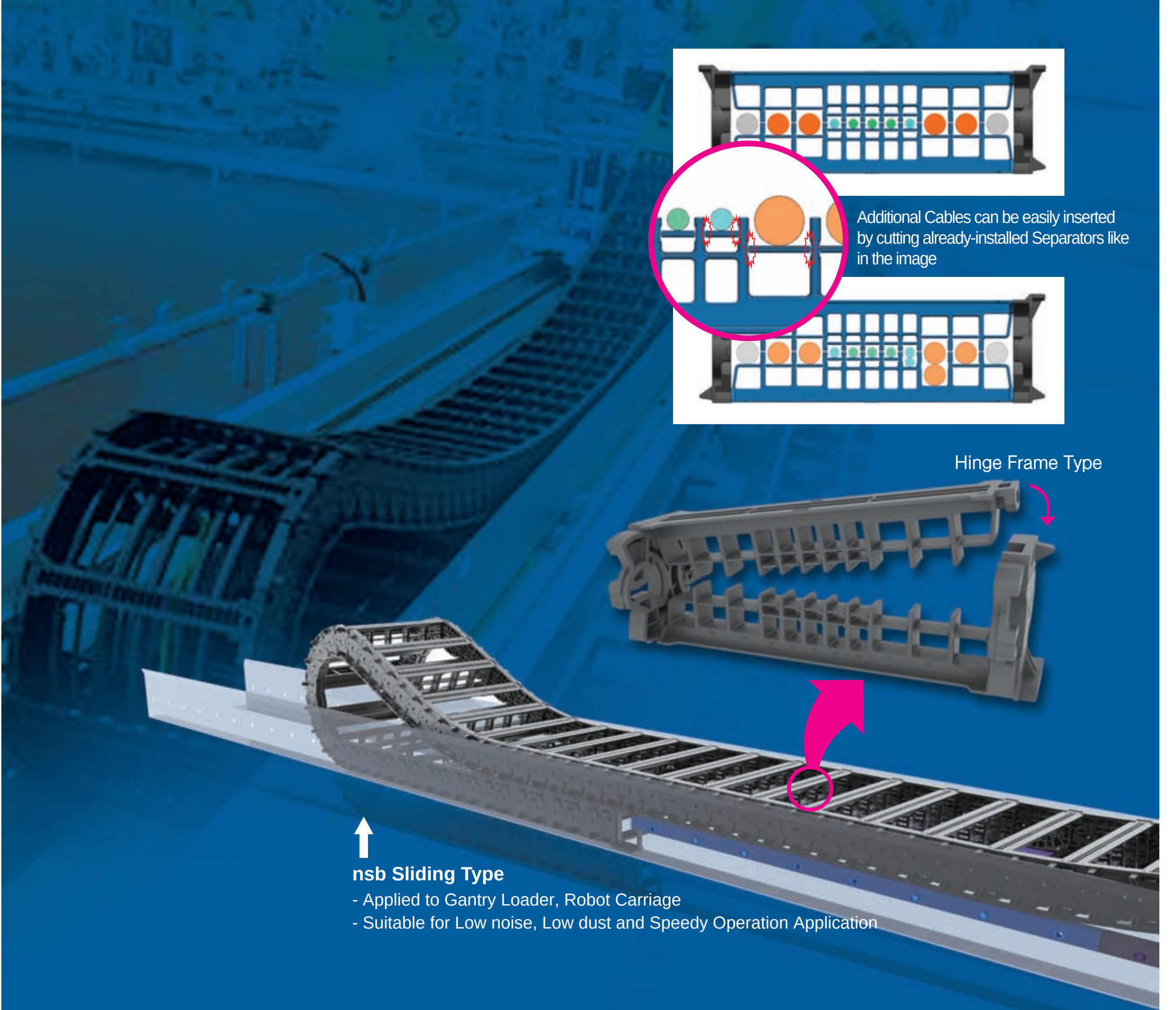


Housing(U-Shape)



Side Panel





Specialized for Robot Carriage & Gantry Loader

Applicable to nsb050S and nsb080S

Integral Frame

Divider, Separator

- Essential to compose section composition for each cable
- Prevention of abrasion and entanglement of cable!
- Reduce Installation Time!
- Section Composition is completed at a time!

Speed/Acceleration value can be different according to amount of cable/hose and travel length.

General Information

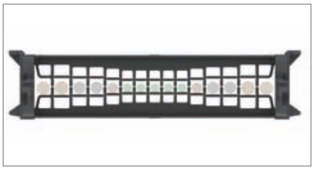
Material	CPS-Amide (PA6+G.F)
Speed	6㎧
Acceleration	15㎨
Temperature	-30℃ ~ +130℃
Certificate	CE, ATEX(Ex), RoHs2

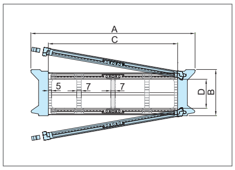
Calculation Table

Length of Cable Chain	L = ½ X Ls + Lp
Bending Radius	Multiply 8~10 and the biggest cable
	Multiply 15~20 and the biggest hose

nsb050S

Chain Cross Section

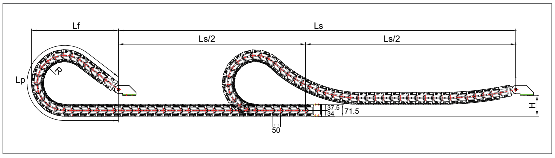




Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	Weight kg/m
nsb050S	254 304	71.5	200 250	45	4.5 5.2

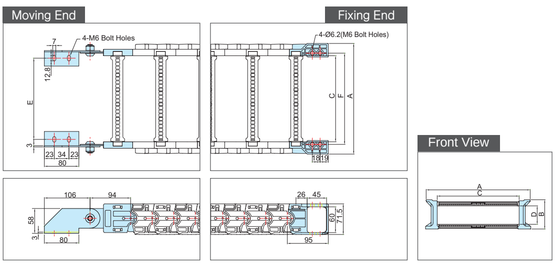
Layout of The Chain

Ls: Stroke



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
235 285	1,703 2,029	630 730	180

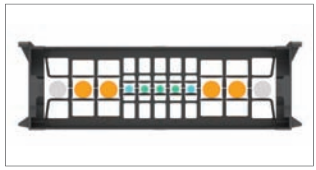
Steel End Bracket(SEB)

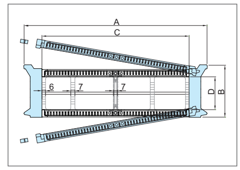


Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	E M,EB Bolt Holes Width	F F,EB Bolt Holes Width
nsb050S	254 304	71.5	200 250	45	188.7 238.7	212 262

nsb080S

Chain Cross Section

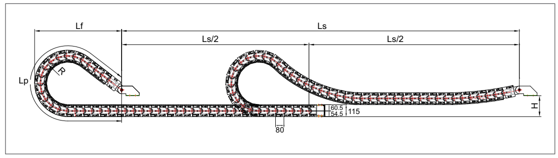




Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	Weight kg/m
nsb080S	358 368	115	290 300	78	8.1 8.2

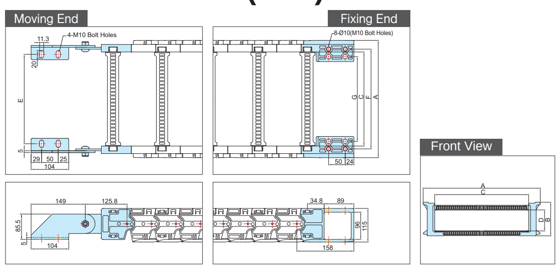
Layout of The Chain

Ls: Stroke



Bending Radius (R)	Lp Loop Length	Lf Loof Projection	H Moving Height
250 300	1,935 2,253	830 930	260

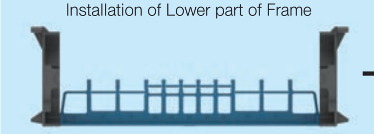
Steel End Bracket(SEB)



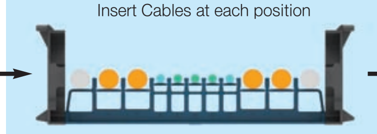
Chain Type	A Width(Outer)	B Height(Outer)	C Frame	D Height(Inner)	E M,EB Bolt Holes Width	F F,EB Bolt Holes Width	G F,EB Bolt Width
nsb080S	358 368	115	290 300	78	278 288	319 329	262 272

Installation Order of Integral Frame

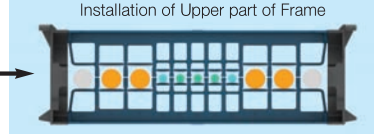
Installation of Lower part of Frame



Insert Cables at each position



Installation of Upper part of Frame



Ordering nsb 050S. 200RC. R185 / B1 - 10000L : (DV:2)

- Sabin Chain
- Sliding Type (S)
- Inside width
- Bending Radius
- Bracket Type : B1,B2
- Length (mm)
- Quantity of Divider(Link)

FT : Tie Wrap
FST : System Tie wrap

• Excellent durability, quick and accurate installation is possible!
• Marked product no on each part, for convenient check the specifications!
• Simplify the work of assembly & disassembly with sliding type of Clamp Support
• Minimize damage of cable when it is tightened
• Improved reliability by using high strength steel

Cable Clamp

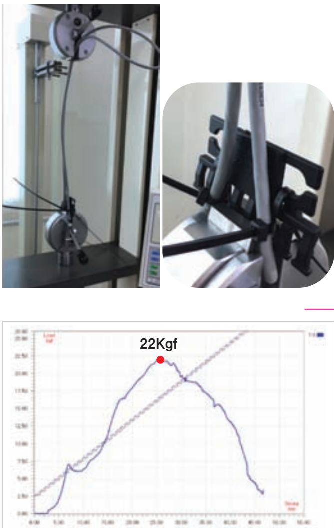
Benefits and Features of Cable Clamp

• Customized design makes possible to fix cable effectively
• Cable's life extension & Space saving effect
• Time reduction of assembly and installation
• Various composition; Single, Double, Triple & Multi type is available
• Performance certified by internal test at CPS

Comparison of Test Report for Cable's Tensile Force

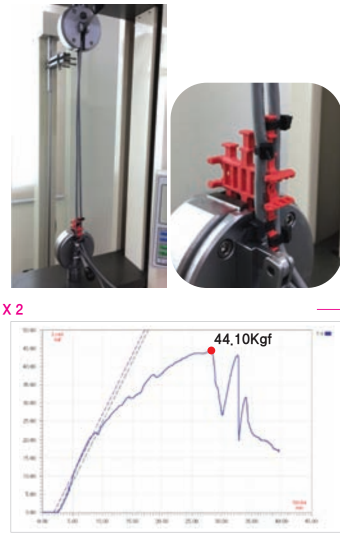
comparision Item : Tie Wrap - W divider - Cable Clamp

Tie Wrap



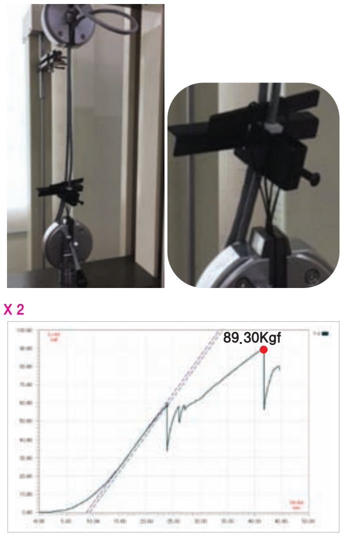
X 2

W Divider + Cable Tie

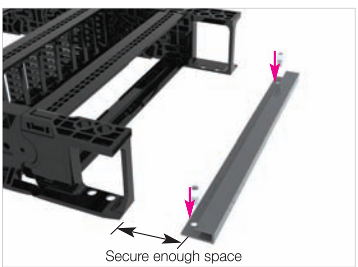


X 2

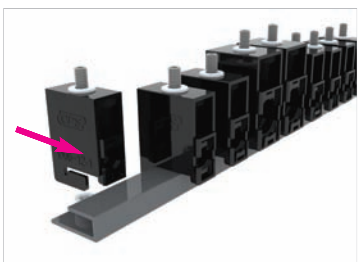
Cable Clamp



Installation of Cable Clamp

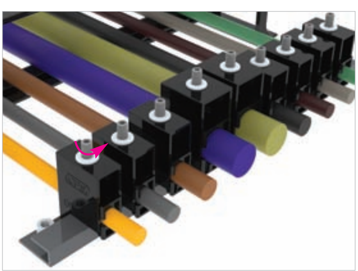


1 Locate cable clamp' support at right position and fix with M5 bolt



2 Insert clamp on the fixed Clamp Support

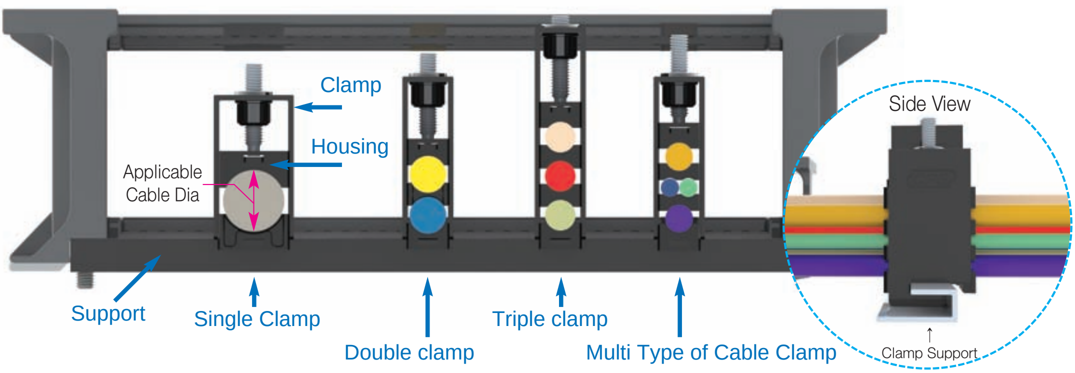
3 Insert cable through hole of housing



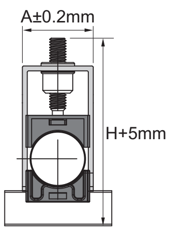
4 Fix cable by tightening bolts

5 Completion!

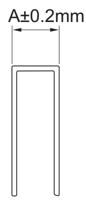
Type of Cable Clamp and Composition



Single Clamp Dimension



Clamp ASM(CA1)

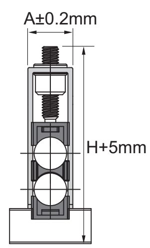


Clamp(C1)

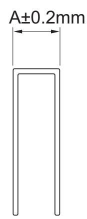
Part No		Range of Applicable cable (Ø)	A	H
Assy'	Part			
CA1.0612	C1.0612	06~12	16.5	49.0
CA1.1214	C1.1214	12~14	17.5	51.0
CA1.1416	C1.1416	14~16	20.0	53.0
CA1.1618	C1.1618	16~18	22.0	55.5
CA1.1820	C1.1820	18~20	24.0	57.0
CA1.2022	C1.2022	20~22	26.0	59.0
CA1.2226	C1.2226	22~26	30.0	63.0
CA1.2630	C1.2630	26~30	34.0	67.0
CA1.3034	C1.3034	30~34	38.0	71.0
CA1.3438	C1.3438	34~38	42.0	75.0
CA1.3842	C1.3842	38~42	46.5	80.0

Dimension : mm

Double Clamp Dimension



Clamp ASM(CA2)

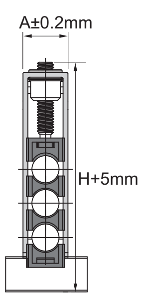


Clamp(C2)

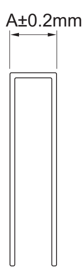
Part No		Range of Applicable cable (Ø)	A	H
Assy'	Part			
CA2.0612	C2.0612	06~12	16.5	65.0
CA2.1214	C2.1214	12~14	17.5	69.0
CA2.1416	C2.1416	14~16	20.0	73.0
CA2.1618	C2.1618	16~18	22.0	77.0
CA2.1820	C2.1820	18~20	24.0	81.0
CA2.2022	C2.2022	20~22	26.0	85.0
CA2.2226	C2.2226	22~26	30.0	94.5
CA2.2630	C2.2630	26~30	34.0	101.0
CA2.3034	C2.3034	30~34	38.0	110.0

Dimension : mm

Triple Clamp Dimension



Clamp ASM(CA3)



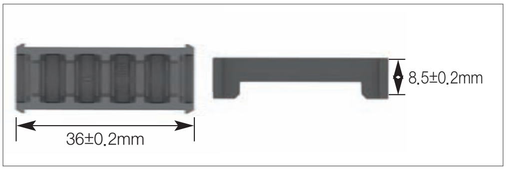
Clamp(C3)

Part No		Range of Applicable cable (Ø)	A	H
Assy'	Part			
CA3.0612	C3.0612	06~12	16.5	80.5
CA3.1214	C3.1214	12~14	17.5	87.5
CA3.1416	C3.1416	14~16	20.0	94.5
CA3.1618	C3.1618	16~18	22.0	100.0
CA3.1820	C3.1820	18~20	24.0	105.5
CA3.2022	C3.2022	20~22	26.0	111.5

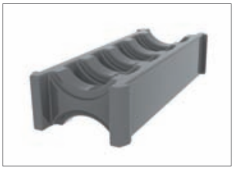
Dimension : mm

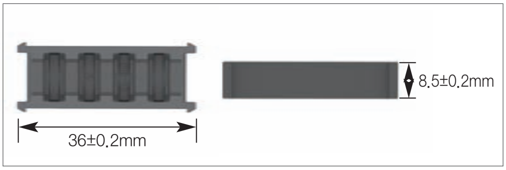
Dimension & Composition of Housing

Single upper / lower housing



Double, Triple / Middle housing



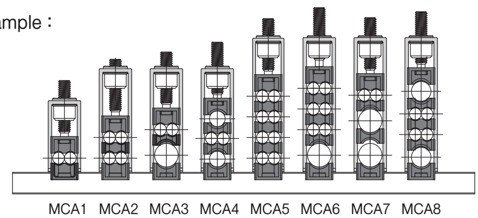


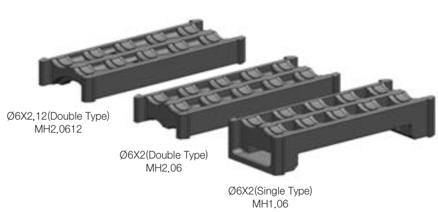
Range of Applicable cable (Ø)	Part No of Upper/Lower Housing	Part No of Middle Housing
06~12	H.1.1	H.2.1
12~14	H.1.2	H.2.2
14~16	H.1.3	H.2.3
16~18	H.1.4	H.2.4
18~20	H.1.5	H.2.5
20~22	H.1.6	H.2.6
22~26	H.1.7	H.2.7
26~30	H.1.8	H.2.8
30~34	H.1.9	H.2.9
34~38	H.1.10	-
38~42	H.1.11	-
Part No of Multi Housing	MH1.06 MH2.06 MH2.0612	

Composition of Multi Type of Cable Clamp

※ Multi Housing is a special type. Refer to the specifiations of applicable cable below.

Example :

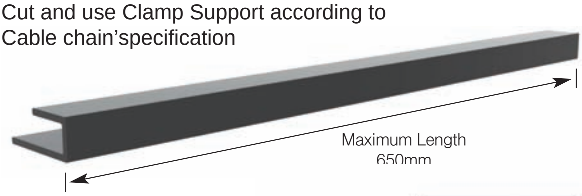




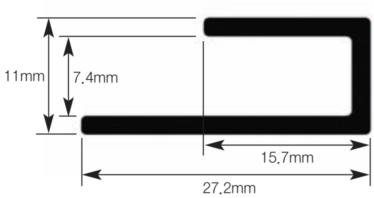
Part No	Range of Applicable cable (Ø)	Upper/Lower Housing		Middle Housing		
		MH1.06 (Ø06X2)	H1.0612 (Ø06~12)	H2.0612 (Ø06~12)	MH2.0612	MH2.06
MCA1 (C1.0612)	06	2ea	-	-	-	-
MCA2 (C2.0612)	06	2ea	-	-	-	1ea
MCA3 (C2.0612)	06, 12	1ea	1ea	-	1ea	-
MCA4 (C2.0612)	06, 08	-	2ea	-	2ea	-
MCA5 (C3.0612)	06	2ea	-	-	-	3ea
MCA6 (C3.0612)	06, 12	1ea	1ea	-	1ea	2ea
MCA7 (C3.0612)	06, 12	1ea	1ea	1ea	1ea	-
MCA8 (C3.0612)	06, 12	-	1ea	-	2ea	1ea

Clamp Support

Cut and use Clamp Support according to Cable chain'specification



Dimension of Clamp Support



Part No (CS650,Length of Frame)	Length of Clamp Support (Length of Frame + 20mm)
CS650.50	70
CS650.75	95
CS650.100	120
CS650.125	145
CS650.150	170
CS650.175	195
CS650.200	220
CS650.250	270
CS650.300	320
CS650.350	370
CS650.400	420
CS650.450	470
CS650.500	520
CS650.550	570
CS650.600	620
CS650.650	670

Customized specification can be produced

Dimension : mm

Unity System

- ST044N
- ST055N
- ST072N
- ST095N
- ST120N
- ST044E
- ST055E
- ST072E
- ST095E
- ST120E
- nsb020CR
- nsb022CR
- nsb028CR
- nsb035CR
- nsb045CR
- nsb060CR
- nsb075CR
- nsb035N
- nsb035N
- nsb045N
- nsb060N
- nsb075N
- nsb028E
- nsb035E
- nsb045E
- nsb060E
- nsb075E

General Information

Material	CPS-Amide (PA6+G.F)
Speed	6~10m/s
Acceleration	15~20m/s^2
Temperature	-30℃ ~+130℃
Color of Unity Systems	Yellow, Black
Certificate	CE, ATEX(Ex), RoHs2

Available Product list with Unity systems

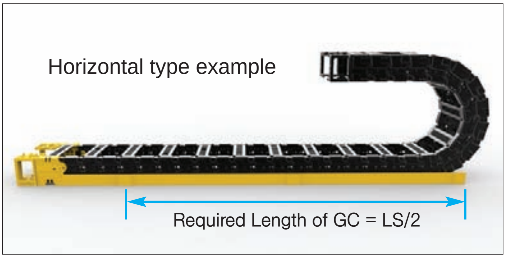
Shift Chain Normal	ST044N, ST055N, ST072N, ST095N, ST120N
Shift Chain Enclosed	ST044E, ST055E, ST072E, ST095E, ST120E
nsb Chain Clean Room Type	nsb020CR, nsb022CR, nsb028CR, nsb035CR, nsb045CR, nsb060CR, nsb075CR
nsb Chain Normal	nsb028N, nsb035N, nsb045N, nsb060N, nsb075N
nsb Chain Enclosed	nsb028E, nsb035E, nsb045E, nsb060E, nsb075E

Unity system Application method

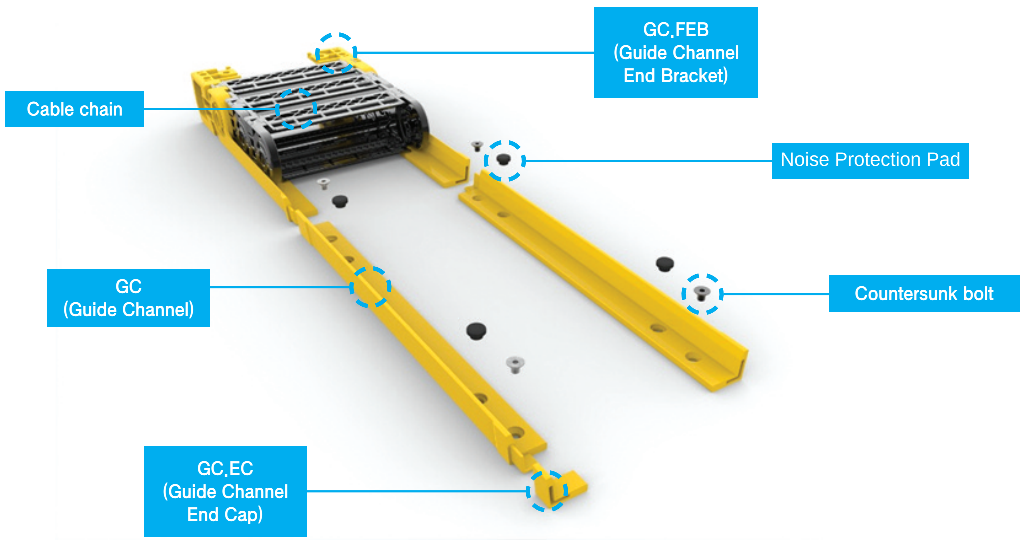
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)

Calculation Table

Length of Cable Chain	L = ½ X Ls + Lp
Bending Radius	Multiply 8~10 of the biggest cable
	Multiply 15~20 of the biggest hose



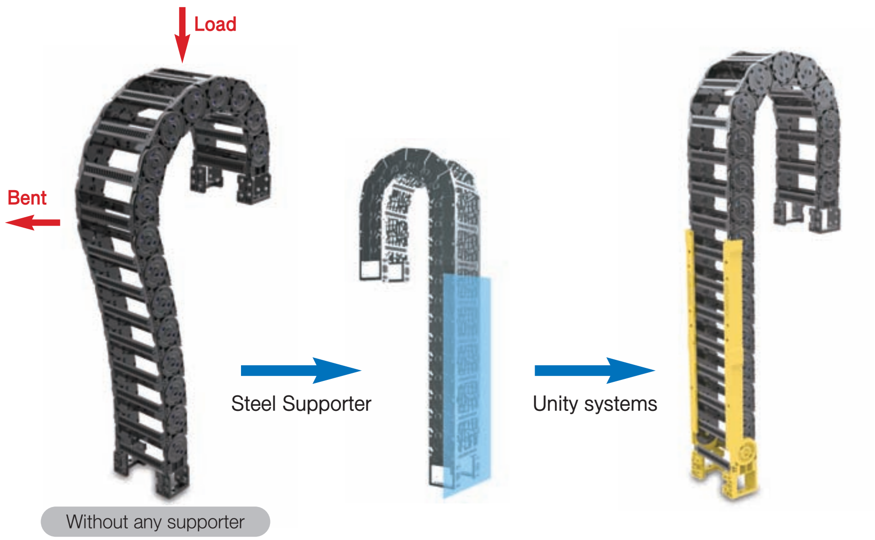
Part list of Unity systems



ST044N

Characteristics of Unity systems

To protect cable at vertical application!



Cost saved as it's made by high quality PA6 to replace steel supporter or steel guide channel!

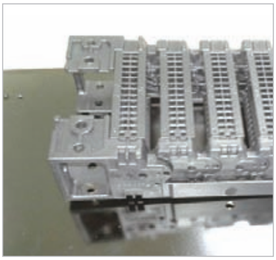
- Cost-saving effect by using the plastic material, compared to previous expensive material such as stainless steel & aluminium.
- Time-saving effect of installation by all-in-one composition.
- No need to spend extra cost when connecting it with cable chain.
- Can shorten delivery because the extra designing process is unnecessary.
- Installation with only the parts is feasible.

Assembly procedure of Unity systems

The assembling procedure of Unity Systems Chain is like below and you must use rubber hammer with careful combination of Divider and Separator.

1

Prepare cable chain that guide channel attached end bracket is assembled to.
It is a same assembling method between existing cable chain and FEB.



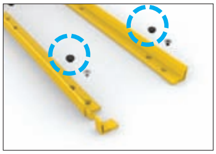
2

Connect cable chain that guide channel attached end bracket is assembled to extended form of guide channel and equipment where end cap is assembled. And connect them with bolts.

3

Completed figure of cable chain.

Can attach rubber pad for noise protection to the surface of guide channel.



Unity system Application method

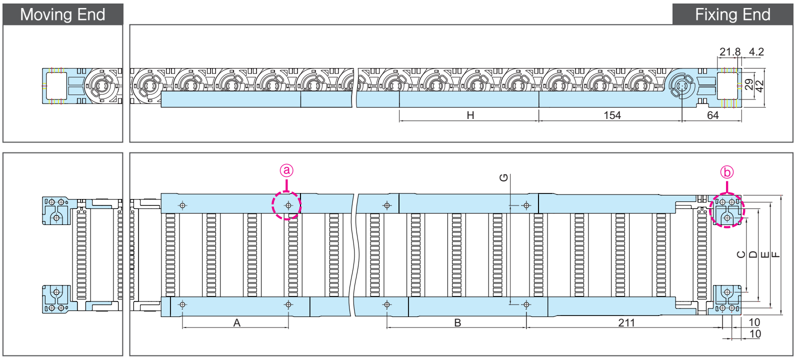
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)


Vertical type

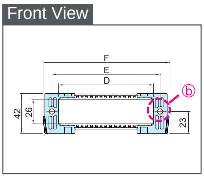

Horizontal type

Moving End

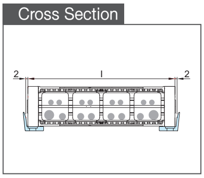
Fixing End



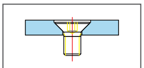
Front View

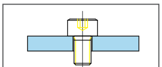


Cross Section



Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
ST044N	15	35	49	68	41.8	56
	30	50	64	83	56.8	71
	35	55	69	88	61.8	76
	55	75	89	108	81.8	96
	80	100	114	133	106.8	121
	105	125	139	158	131.8	146
	130	150	164	183	156.8	171
	155	175	189	208	181.8	196
	180	200	214	233	206.8	221


ⓐ M4 Flush Bolt


ⓑ M5 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC hole
GC150	150	151	114
GC250	250	251	214

Ordering ST 044N. 100. R120 / G - 1500L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending radius
- Inside width
- Normal type (N)
- Shift Chain

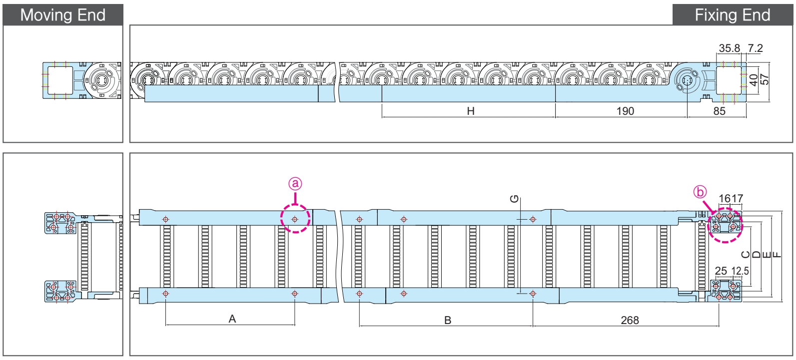
ST055N

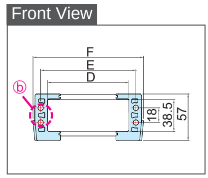
Unity System Application Method

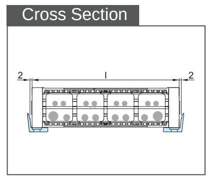
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)


Vertical type

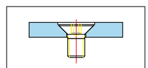

Horizontal type

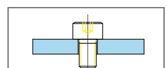






Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
ST055N	21	35	52	71	42	56
	36	50	67	86	57	71
	41	55	72	91	62	76
	61	75	92	111	82	96
	86	100	117	136	107	121
	111	125	142	161	132	146
	136	150	167	186	157	171
	161	175	192	211	182	196
	186	200	217	236	207	221


ⓐ M5 Flush Bolt


ⓑ M6 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC250	250	251	186
GC400	400	401	336

Ordering

ST 055N. 150. R150 / F - 1800L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Normal type (N)
- Shift Chain

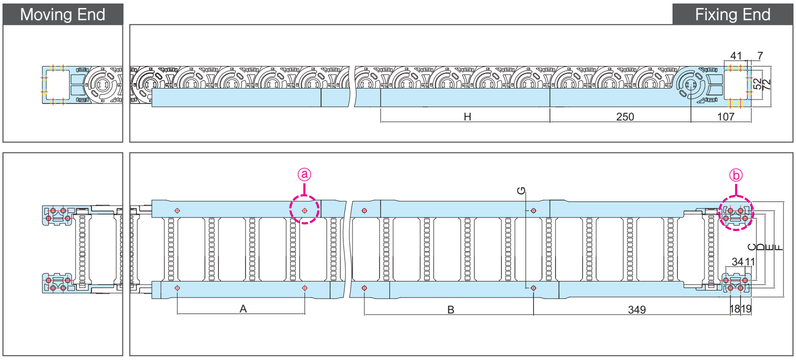
ST072N

Unity System Application Method

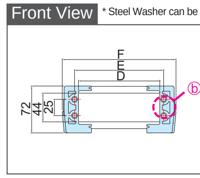
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)

Vertical type

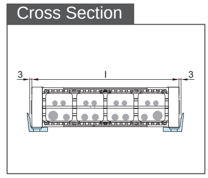
Horizontal type



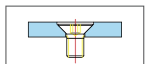
Front View * Steel Washer can be applied



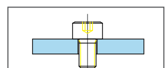
Cross Section



Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
ST072N	35	50	62	100	62	82
	60	75	87	125	87	107
	85	100	112	150	112	132
	110	125	137	175	137	157
	125	140	152	190	152	172
	135	150	162	200	162	182
	150	165	177	215	177	197
	160	175	187	225	187	207
	175	190	202	240	202	222
	185	200	212	250	212	232
	225	240	252	290	252	272
	235	250	262	300	262	282
	285	300	312	350	312	332



ⓐ M6 Flush Bolt



ⓑ M6 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC300	300	301	226
GC500	300	501	426

Ordering

ST 072N. 175. R200 / F - 2000L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Normal type (N)
- Shift Chain

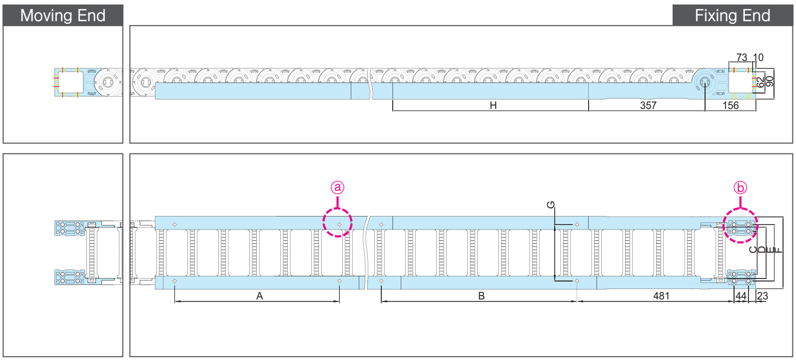
ST095N

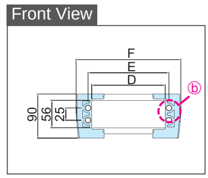
Unity System Application Method

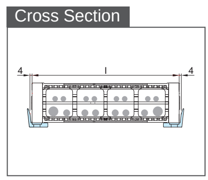
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)


Vertical type

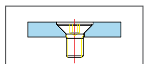

Horizontal type

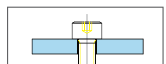






Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
ST095N	50	75	90	135	90	113
	75	100	115	160	115	138
	100	125	140	185	140	163
	125	150	165	210	165	188
	150	175	190	235	190	213
	165	190	205	250	205	228
	175	200	215	260	215	238
	200	230	245	280	245	268
	215	240	255	290	255	278
	225	250	265	310	265	288
	275	300	315	360	315	338
	325	350	365	410	365	388
	375	400	415	460	415	438


ⓐ M8 Flush Bolt


ⓑ M10 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC600	600	601	505
GC800	800	801	705

Ordering

ST 095N. 200. R230 / F - 2500L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Normal type (N)
- Shift Chain

ST120N

Unity Systems

Unity System Application Method

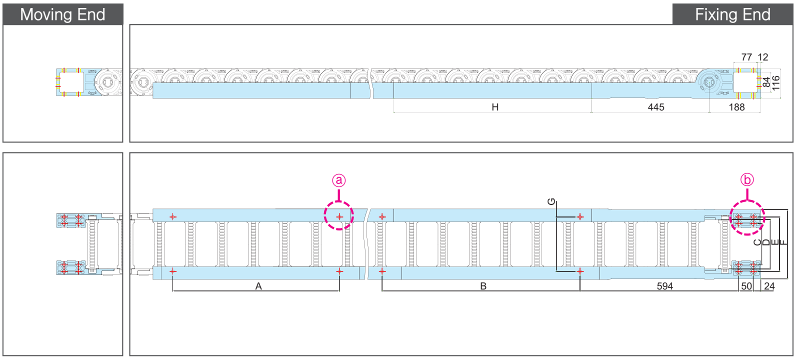
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)

Vertical type

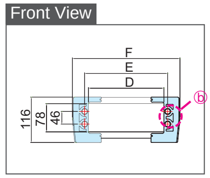
Horizontal type

Moving End

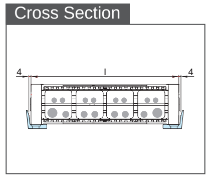
Fixing End



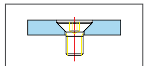
Front View



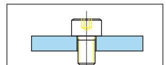
Cross Section



Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
	47	75	104	139	94	117
	72	100	129	164	119	142
	87	115	144	179	134	157
	97	125	154	189	144	167
	122	150	179	214	169	192
	147	175	204	239	194	217
	172	200	229	264	219	242
	212	240	269	304	259	282
ST120N	222	250	279	314	269	292
	262	290	319	354	309	332
	272	300	329	364	319	342
	322	350	379	414	369	392
	372	400	429	464	419	442
	422	450	479	514	469	492
	472	500	529	564	519	542
	522	550	579	614	569	592
	572	600	629	664	619	642



ⓐ M8 Flush Bolt



ⓑ M10 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC600	600	601	505
GC800	800	801	705

Ordering

ST 120N. 400. R300 / F - 3000L : (DV:2)

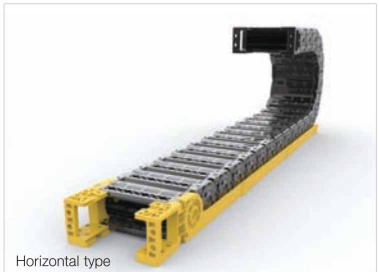
- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Normal type (N)
- Shift Chain

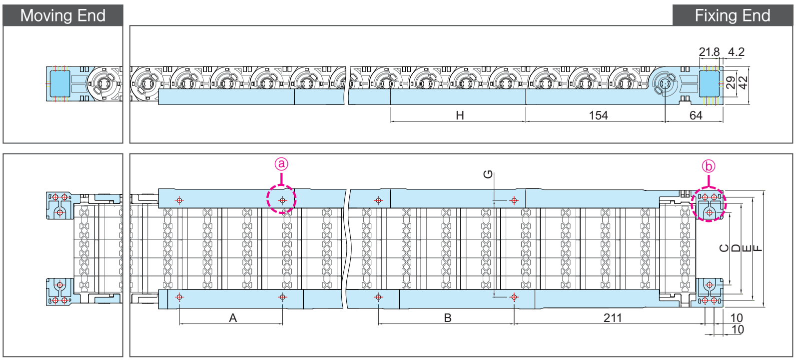
ST044E

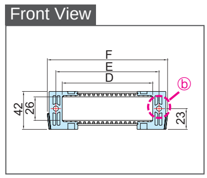
Unity System Application Method

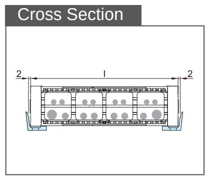
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)


Vertical type

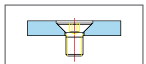

Horizontal type

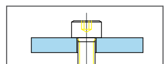






Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
ST044E	15	35	49	68	41.8	56
	35	55	69	88	61.8	76
	55	75	89	108	81.8	96
	80	100	114	133	106.8	121


ⓐ M4 Flush Bolt


ⓑ M5 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC150	150	151	114
GC250	250	251	214

Ordering

ST 044E. 100. R120 / F - 1500L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Enclosed Type (E)
- Shift Chain

ST055E

Unity System Application Method

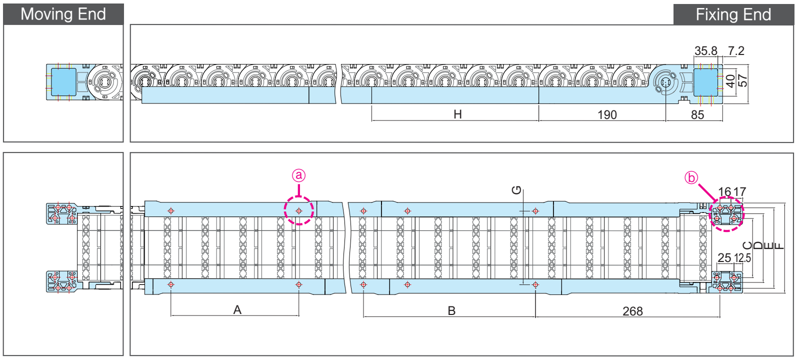
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)

Vertical type

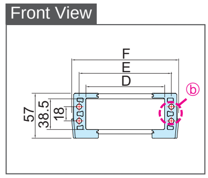
Horizontal type

Moving End

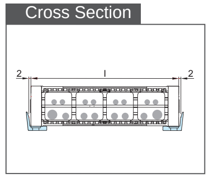
Fixing End



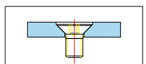
Front View



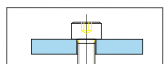
Cross Section



Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
ST055E	36	50	67	67	57	71
	61	75	92	92	82	96
	86	100	117	117	107	121
	111	125	142	142	132	146
	136	150	167	167	157	171



ⓐ M5 Flush Bolt



ⓑ M6 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC250	250	251	186
GC400	400	401	336

Ordering

ST 055E. 150. R150 / F - 1800L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Enclosed Type (E)
- Shift Chain

Unity System Application Method

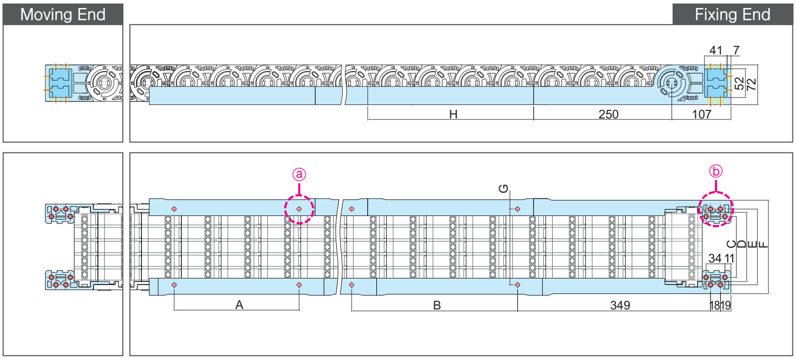
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)

Vertical type

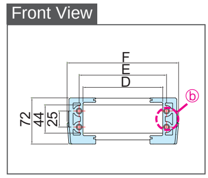
Horizontal type

Moving End

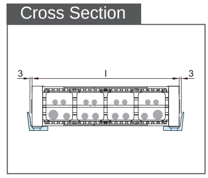
Fixing End



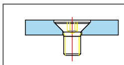
Front View



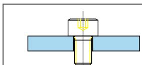
Cross Section



Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
ST072E	35	50	62	100	62	82
	60	75	87	125	87	107
	85	100	112	150	112	132
	110	125	137	175	137	157
	135	150	162	200	162	182



ⓐ M6 Flush Bolt



ⓑ M6 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC300	300	301	226
GC500	500	501	426

Ordering

ST 072E. 150. R200 / F - 3000L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Enclosed Type (E)
- Shift Chain

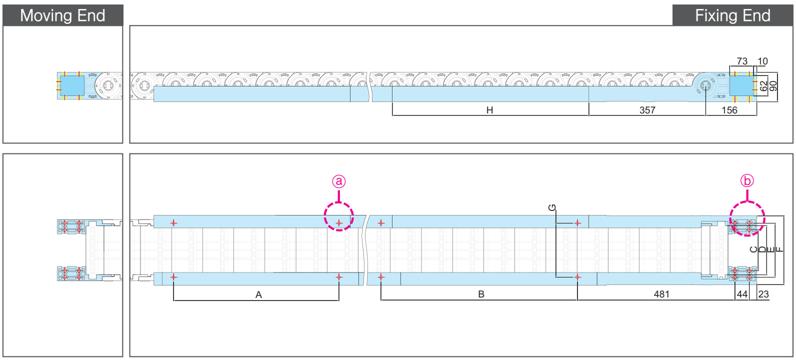
ST095E

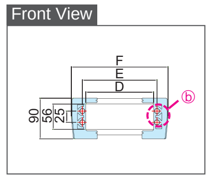
Unity System Application Method

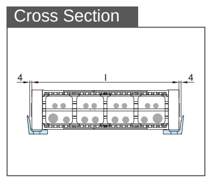
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)

Vertical type

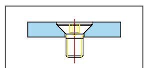
Horizontal type



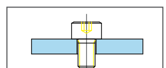




Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
ST095E	75	100	115	160	115	138
	100	125	140	185	140	163
	125	150	165	210	165	188
	150	175	190	235	190	213
	175	200	215	260	215	238



ⓐ M8 Flush Bolt



ⓑ M10 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC600	600	601	505
GC800	800	801	705

Ordering

ST 095E. 200. R200 / F - 3000L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Enclosed Type (E)
- Shift Chain

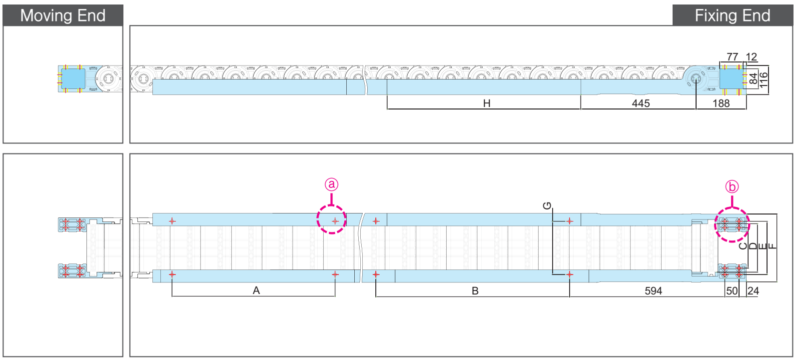
ST120E

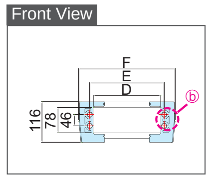
Unity System Application Method

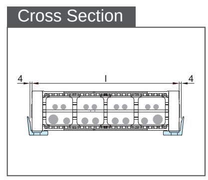
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)

Vertical type

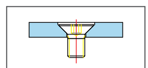
Horizontal type



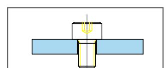




Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
ST120E	122	150	179	214	169	192
	172	200	229	264	219	242
	222	250	279	314	269	292
	272	300	329	364	319	342



ⓐ M8 Flush Bolt



ⓑ M10 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC600	600	601	505
GC800	800	801	705

Ordering

ST 120E. 200. R200 / F - 3000L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Enclosed Type (E)
- Shift Chain

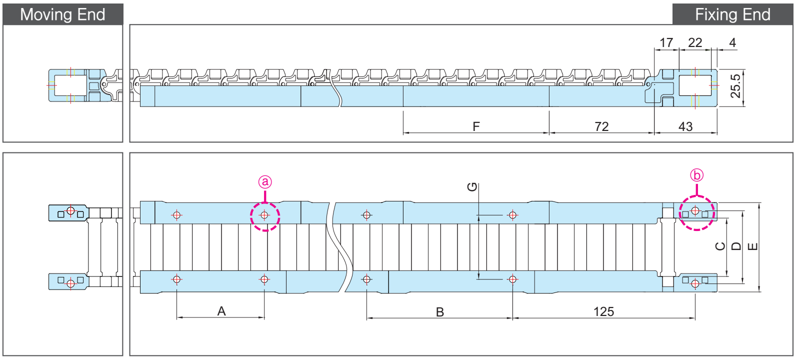
nsb020CR

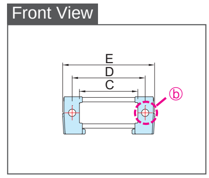
Unity System Application Method

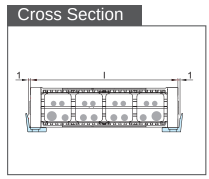
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)


Vertical type

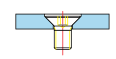

Horizontal type

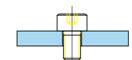






Chain Type	C FEB fix hole(inner)	D Frame	E FEB width	G GC hole width	I Outer Width of Chain
nsb020CR	20	30	44	24	34
	40	50	64	44	54


ⓐ M4 Flush Bolt


ⓑ M4 Hexagon Socket head Screw

GC Type	F GC length	B GC fixing hole	A GC Hole
GC100	100	101	60
GC200	200	201	160

Ordering

nsb 020CR. 20. R48 / F - 600L : (DV:2)

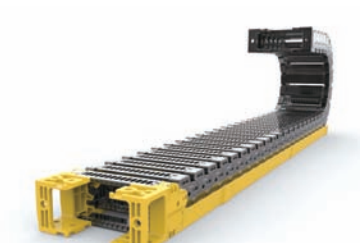
- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Clean Room Type (CR)
- Sabin Chain

nsb022CR

Unity System Application Method

Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)

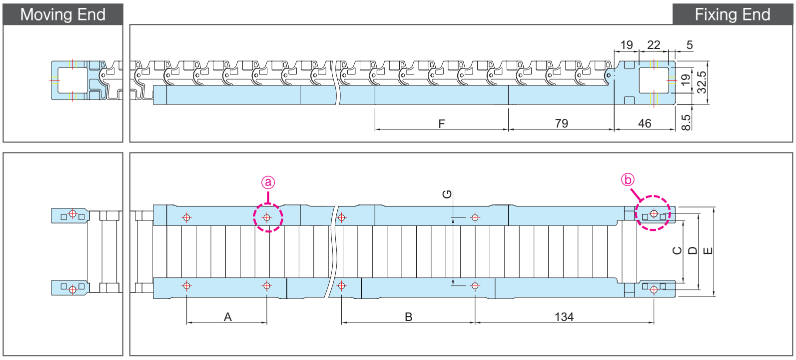
Vertical type



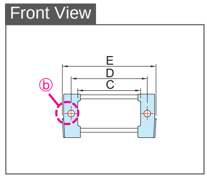
Horizontal type

Moving End

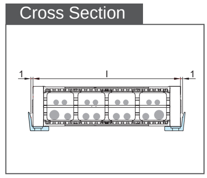
Fixing End



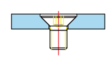
Front View



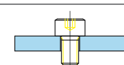
Cross Section



Chain Type	C FEB fix hole(inner)	D Frame	E FEB width	G GC hole width	I Outer Width of Chain
nsb022CR	16	26	40	20	30
	27	37	51	31	41
	37	47	61	41	51
	47	57	71	51	61
	67	77	91	71	81
	77	87	101	81	91
	100	110	124	104	114



ⓐ M4 Flush Bolt



ⓑ M4 Hexagon Socket head Screw

GC Type	F GC length	B GC fixing hole	A GC Hole
GC100	100	101	60
GC200	200	201	160

Ordering

nsb 022CR. 47. R45 / F - 846L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Clean Room Type (CR)
- Sabin Chain

nsb028CR

Unity System Application Method

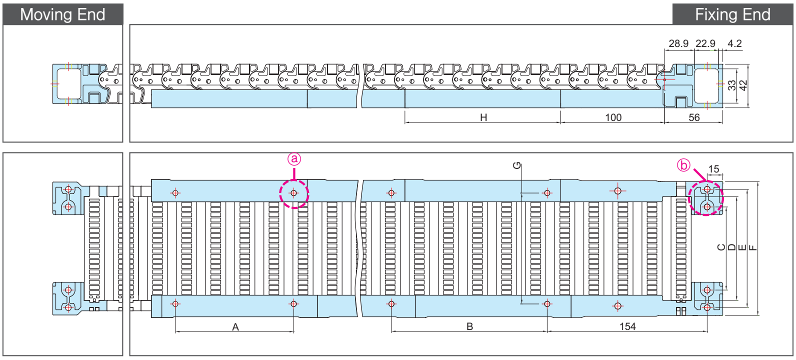
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)


Vertical type

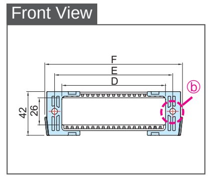

Horizontal type

Moving End

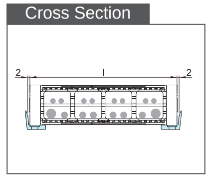
Fixing End



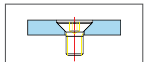
Front View

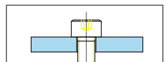


Cross Section



Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
nsb028CR	15	35	49	68	41.8	55
	30	50	64	83	56.8	70
	35	55	69	88	61.8	75
	55	75	89	108	81.8	95
	80	100	114	133	106.8	120
	105	125	139	158	131.8	145
	130	150	164	183	156.8	170
	155	175	189	208	181.8	195
	180	200	214	233	206.8	220


ⓐ M4 Flush Bolt


ⓑ M5 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC150	150	151	114
GC250	250	251	214

Ordering

nsb 028CR. 75. R70 / F - 1000L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Clean Room Type (CR)
- Sabin Chain

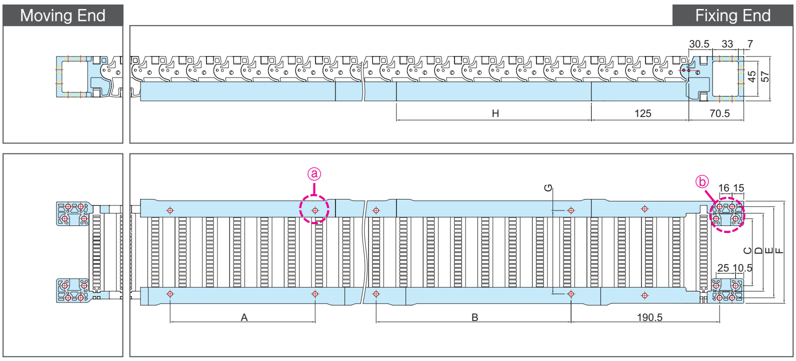
nsb035CR

Unity System Application Method

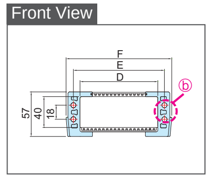
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)


Vertical type

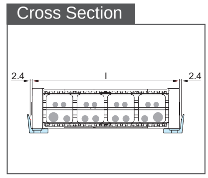

Horizontal type



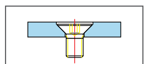
Front View

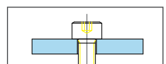


Cross Section



Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
nsb035CR	21	35	52	71	42	55
	36	50	67	86	57	70
	41	55	72	91	62	75
	61	75	92	111	82	95
	86	100	117	136	107	120
	111	125	142	161	132	145
	136	150	167	186	157	170
	161	175	192	211	182	195
	186	200	217	236	207	220


ⓐ M5 Flush Bolt


ⓑ M6 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC250	250	251	186
GC400	400	401	336

Ordering

nsb 035CR. 100. R75 / F - 1200L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Clean Room Type (CR)
- Sabin Chain

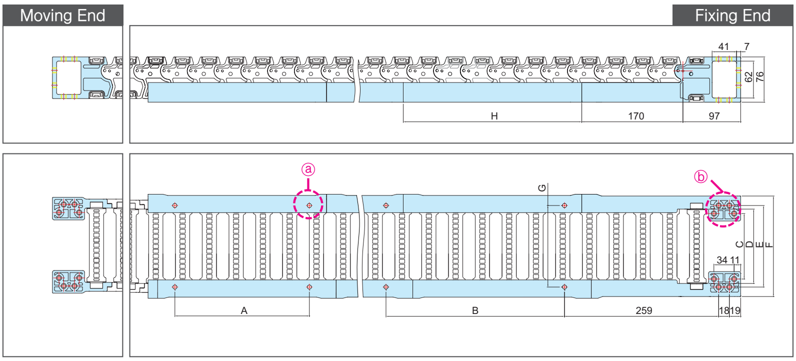
nsb045CR

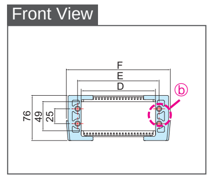
Unity System Application Method

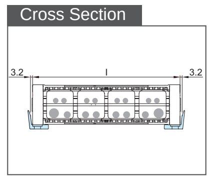
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)

Vertical type

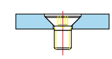
Horizontal type



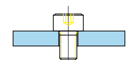




Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
nsb045CR	35	50	62	100	62	80
	60	75	87	125	87	105
	85	100	112	150	112	130
	110	125	137	175	137	155
	125	140	152	190	152	170
	135	150	162	200	162	180
	150	165	177	215	177	195
	160	175	187	225	187	205
	175	190	202	240	202	220
	185	200	212	250	212	230
	225	240	252	290	252	270
	235	250	262	300	262	280
	285	300	312	350	312	330



ⓐ M6 Flush Bolt



ⓑ M6 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC300	300	301	226
GC500	500	501	426

Ordering

nsb 045CR. 100. R75 / F - 2000L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Clean Room Type (CR)
- Sabin Chain

nsb060CR

Unity System Application Method

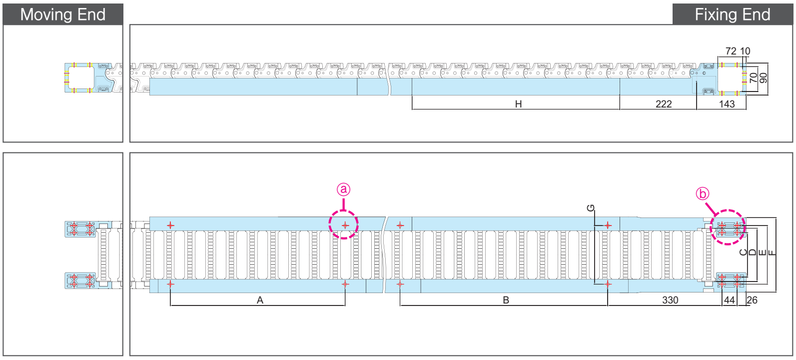
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)


Vertical type

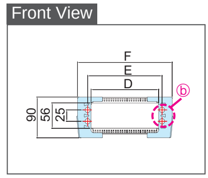

Horizontal type

Moving End

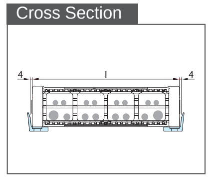
Fixing End



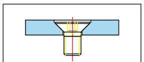
Front View

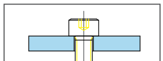


Cross Section



Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
nsb060CR	50	75	90	139	94	115
	75	100	115	164	119	140
	100	125	140	189	144	165
	125	150	165	214	169	190
	150	175	190	239	194	215
	165	190	205	254	209	230
	175	200	215	264	219	240
	205	230	245	294	249	270
	215	240	255	304	259	280
	225	250	265	314	269	290
	275	300	315	364	319	340
	325	350	365	414	369	390
	375	400	415	464	419	440


ⓐ M8 Flush Bolt


ⓑ M10 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC600	600	601	505
GC800	800	801	705

Ordering nsb 075CR. 150. R140 / F - 2500L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Clean Room Type (CR)
- Sabin Chain

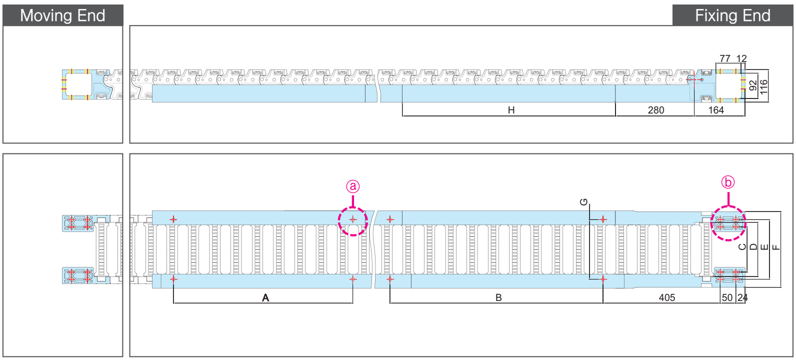
nsb075CR

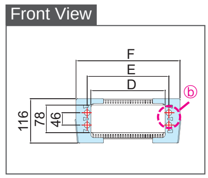
Unity System Application Method

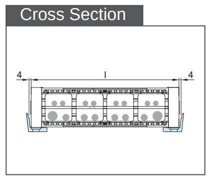
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)


Vertical type

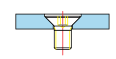

Horizontal type

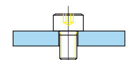






Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
nsb075CR	47	75	104	139	94	115
	72	100	129	164	119	140
	87	115	144	179	134	155
	97	125	154	189	144	165
	122	150	179	214	169	190
	147	175	204	239	194	215
	172	200	229	264	219	240
	212	240	269	304	259	280
	222	250	279	314	269	290
	262	290	319	354	309	330
	272	300	329	364	319	340
	322	350	379	414	369	390
	372	400	429	464	419	440
	422	450	479	514	469	490
	472	500	529	564	519	540
	522	550	579	614	569	590
	572	600	629	664	619	640


ⓐ M8 Flush Bolt


ⓑ M10 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC fixing hole
GC600	600	601	505
GC800	800	801	705

Ordering

nsb 075CR. 300. R200 / F - 3000L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Clean Room Type (CR)
- Sabin Chain

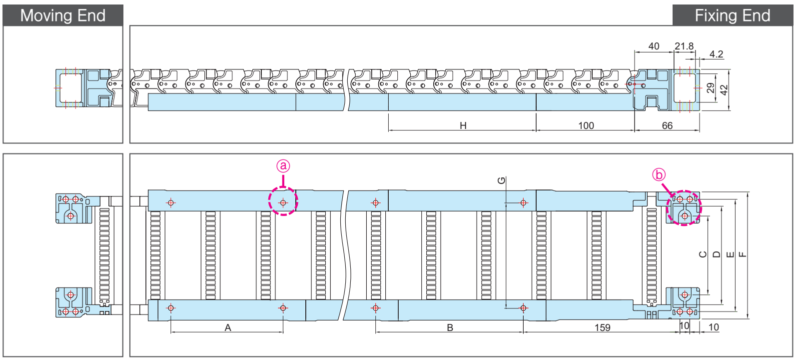
nsb028N

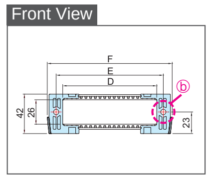
Unity System Application Method

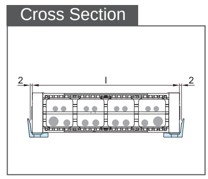
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)


Vertical type

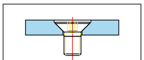

Horizontal type

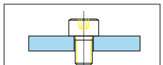






Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
nsb028N	15	35	49	68	41.8	55
	30	50	64	83	56.8	70
	35	55	69	88	61.8	75
	55	75	89	108	81.8	95
	80	100	114	133	106.8	120
	105	125	139	158	131.8	145
	130	150	164	183	156.8	170
	155	175	189	208	181.8	195
	180	200	214	233	206.8	220


ⓐ M4 Flush Bolt


ⓑ M5 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC150	150	151	114
GC250	250	251	214

Ordering

nsb 028N. 50. R66 / F - 1000L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Normal type (N)
- Sabin Chain

nsb035N

Unity System Application Method

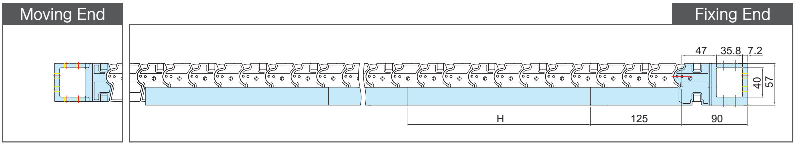
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)

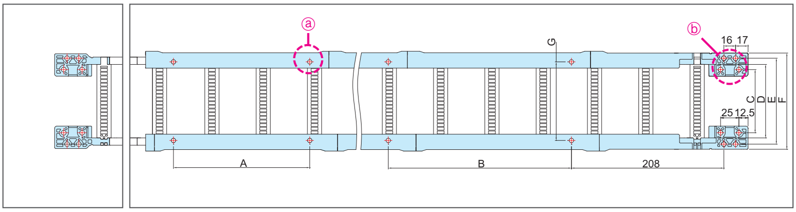
Vertical type

Horizontal type

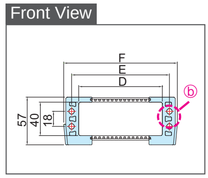
Moving End

Fixing End

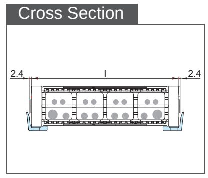




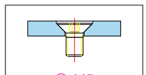
Front View



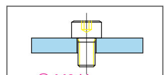
Cross Section



Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
nsb035N	21	35	52	71	42	55
	36	50	67	86	57	70
	41	55	72	91	62	75
	61	75	92	111	82	95
	86	100	117	136	107	120
	111	125	142	161	132	145
	136	150	167	186	157	170
	161	175	192	211	182	195
	186	200	217	236	207	220



ⓐ M5 Flush Bolt



ⓑ M6 Hexagon Socket Head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC250	250	251	186
GC400	400	401	336

Ordering

nsb 035N. 75. R90 / F - 1000L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Normal type (N)
- Sabin Chain

nsb045N

Unity System Application Method

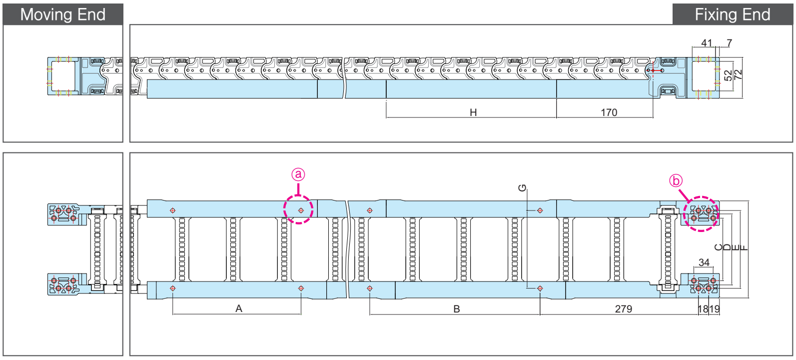
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)


Vertical type

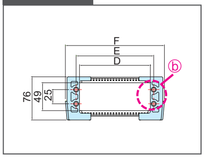

Horizontal type

Moving End

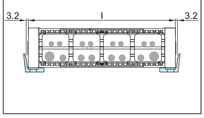
Fixing End



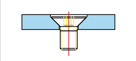
Front View

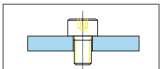


Cross Section



Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
nsb045N	35	50	62	100	62	80
	60	75	87	125	87	105
	85	100	112	150	112	130
	110	125	137	175	137	155
	125	140	152	190	152	170
	135	150	162	200	162	180
	150	165	177	215	177	195
	160	175	187	225	187	205
	175	190	202	240	202	220
	185	200	212	250	212	230
	225	240	252	290	252	270
	235	250	262	300	262	280
	285	300	312	350	312	330


ⓐ M6
Flush Bolt


ⓑ M6Hexagon Socket
Head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC250	250	251	186
GC400	400	401	336

Ordering

nsb 045N. 125. R165 / F - 2000L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Normal type (N)
- Sabin Chain

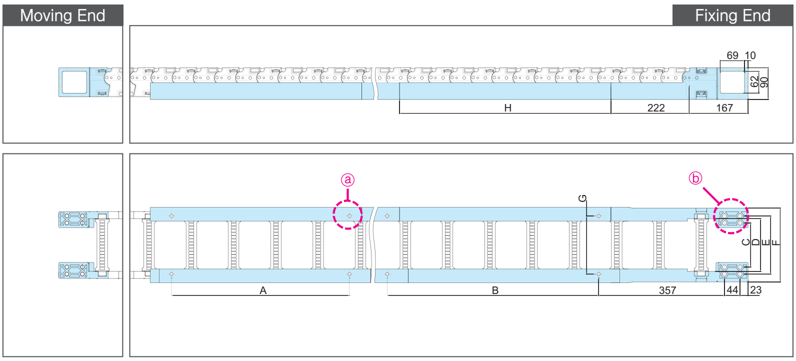
nsb060N

Unity System Application Method

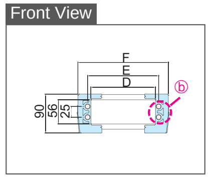
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)


Vertical type

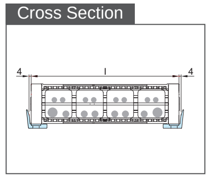

Horizontal type



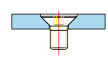
Front View

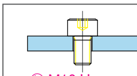


Cross Section



Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
nsb060N	50	75	90	139	94	115
	75	100	115	164	119	140
	100	125	140	189	144	165
	125	150	165	214	169	190
	150	175	190	239	194	215
	165	190	205	254	209	230
	175	200	215	264	219	240
	205	230	245	294	249	270
	215	240	255	304	259	280
	225	250	265	314	269	290
	275	300	315	364	319	340
	325	350	365	414	369	390
	375	400	415	464	419	440


ⓐ M8 Flush Bolt


ⓑ M10 Hexagon Socket Head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC600	600	601	505
GC800	800	801	705

Ordering

nsb 060N. 150. R180 / F - 2500L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Normal type (N)
- Sabin Chain

nsb075N

Unity System Application Method

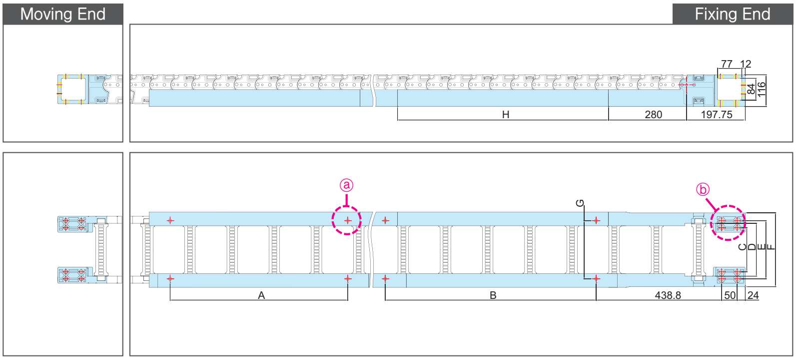
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)


Vertical type

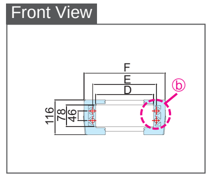

Horizontal type

Moving End

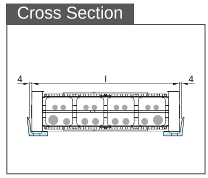
Fixing End



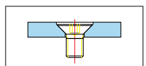
Front View

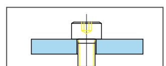


Cross Section



Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
nsb075N	47	75	104	139	94	115
	72	100	129	164	119	140
	87	115	144	179	134	155
	97	125	154	189	144	165
	122	150	179	214	169	190
	147	175	204	239	194	215
	172	200	229	264	219	240
	212	240	269	304	259	280
	222	250	279	314	269	290
	262	290	319	354	309	330
	272	300	329	364	319	340
	322	350	379	414	369	390
	372	400	429	464	419	440
	422	450	479	514	469	490
	472	500	529	564	519	540
	522	550	579	614	569	590
	572	600	629	664	619	640


ⓐ M8 Flush Bolt


ⓑ M10 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC600	600	601	505
GC800	800	801	705

Ordering

nsb 075N. 125. R165 / F - 2000L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Normal type (N)
- Sabin Chain

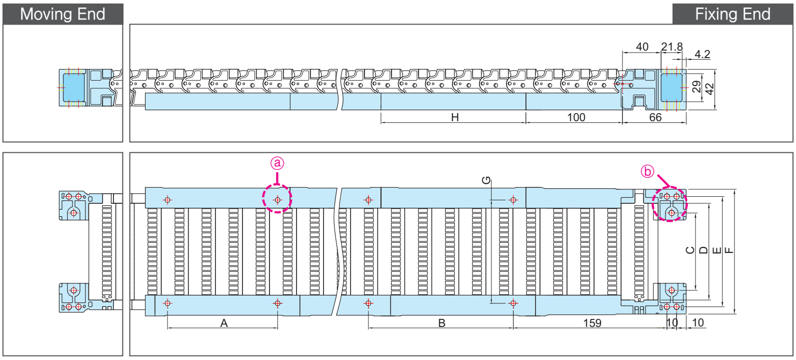
nsb028E

Unity System Application Method

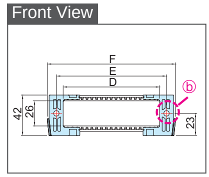
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)


Vertical type

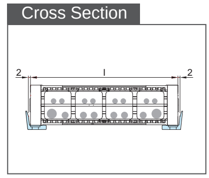

Horizontal type



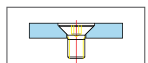
Front View

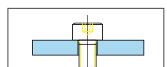


Cross Section



Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
nsb028E	15	35	49	68	41.8	55
	35	55	69	88	61.8	75
	55	75	89	108	81.8	95
	80	100	114	133	106.8	120


ⓐ M4 Flush Bolt


ⓑ M5 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC150	150	151	114
GC250	250	251	214

Ordering

nsb 028E. 50. R66 / F - 1000L : (DV:2)

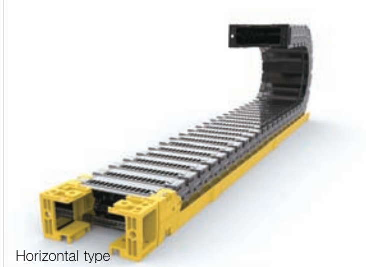
- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Enclosed Type (E)
- Sabin Chain

nsb035E

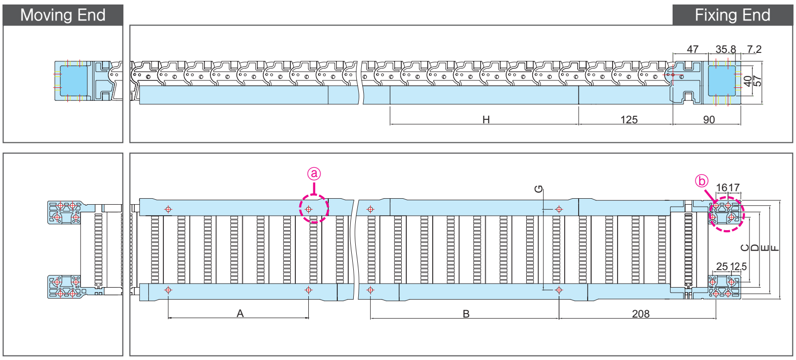
Unity System Application Method

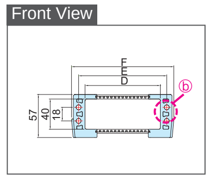
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)

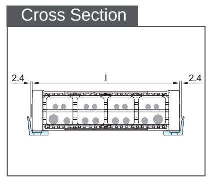
Vertical type



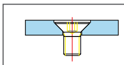
Horizontal type



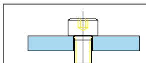




Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
nsb035E	36	50	67	86	57	70
	61	75	92	111	82	95
	86	100	117	136	107	120
	111	125	142	161	132	145
	136	150	167	186	157	170



ⓐ M5 Flush Bolt



ⓑ M6 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC250	250	251	186
GC400	400	401	336

Ordering

nsb 035E. 100. R90 / F - 1500L : (DV:2)

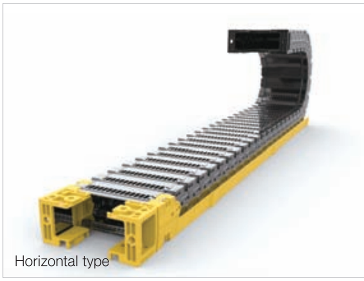
- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Enclosed Type (E)
- Sabin Chain

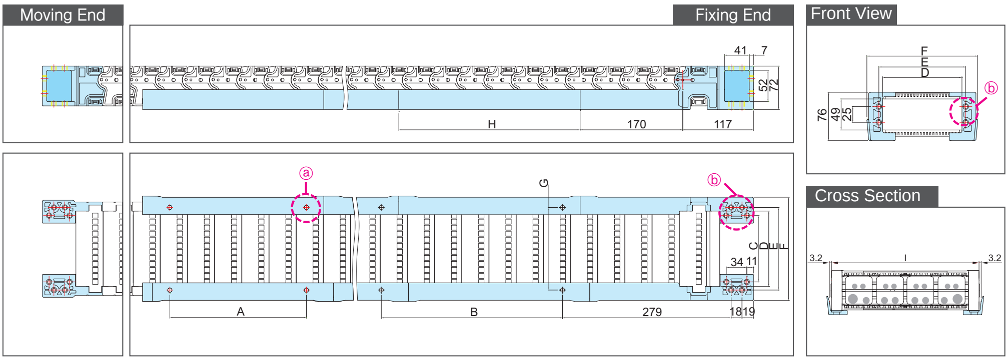
nsb045E

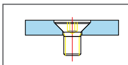
Unity System Application Method

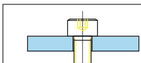
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)


Vertical type


Horizontal type




ⓐ M6 Flush Bolt


ⓑ M6 Hexagon Socket head Screw

Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
nsb045E	60	75	87	125	87	105
	85	100	112	150	112	130
	110	125	137	175	137	155
	135	150	162	200	162	180

GC Type	H GC length	B GC fixing hole	A GC Hole
GC300	300	301	226
GC500	500	501	426

Ordering

nsb 045E. 100. R135 / F - 2000L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Enclosed Type (E)
- Sabin Chain

nsb060E

Unity System Application Method

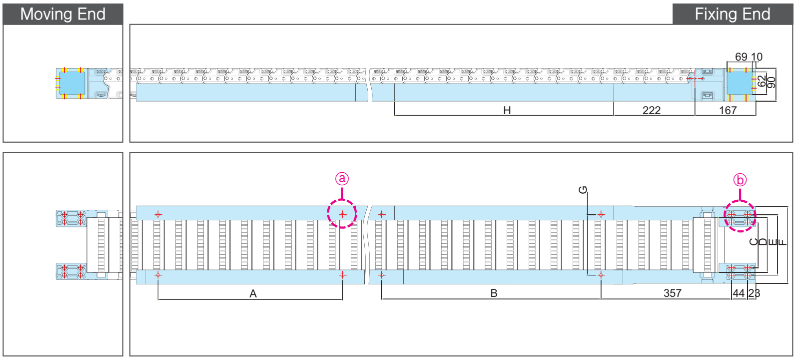
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)


Vertical type

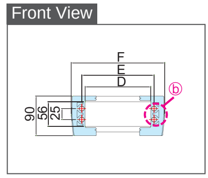

Horizontal type

Moving End

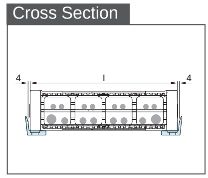
Fixing End



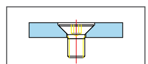
Front View

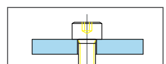


Cross Section



Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
nsb060E	75	100	115	164	119	140
	125	150	165	214	169	190
	175	200	215	264	219	240


ⓐ M8 Flush Bolt


ⓑ M10 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC600	600	601	505
GC800	800	801	705

Ordering nsb 060E. 200. R230 / F - 2000L : (DV:2)

- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Enclosed Type (E)
- Sabin Chain

nsb075E

Unity System Application Method

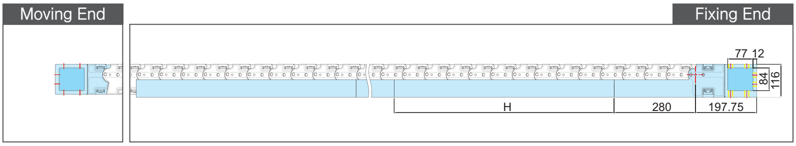
Vertical type	Only 1 set of GC.FEB (End bracket) and 1pcs of GC.EC(End cap)
Horizontal type	1set of GC.FEB + 1pcs of GC.EC(End cap) + ½LS of GC(Guide channel)

Vertical type

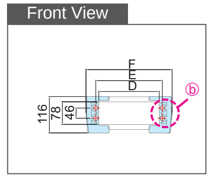
Horizontal type

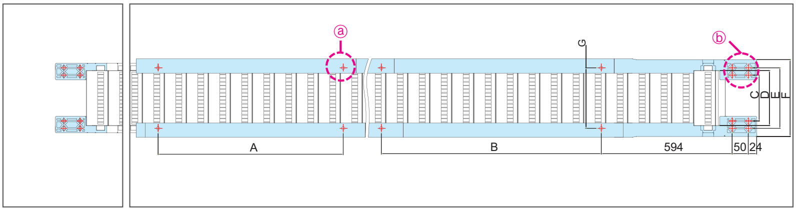
Moving End

Fixing End

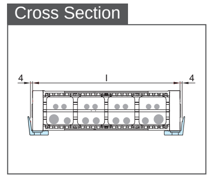


Front View

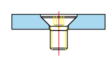




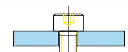
Cross Section



Chain Type	C FEB fix hole(inner)	D Frame	E FEB hole width	F FEB width	G GC hole width	I Outer Width of Chain
nsb075E	122 172 272	150 200 300	179 229 329	214 264 364	169 219 319	190 240 340



ⓐ M8 Flush Bolt



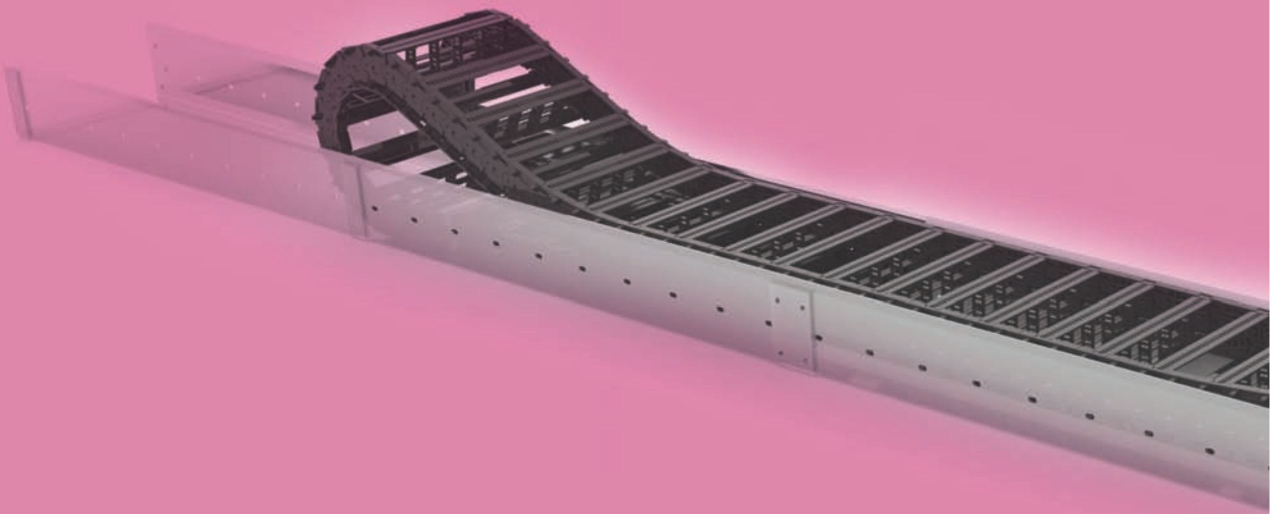
ⓑ M10 Hexagon Socket head Screw

GC Type	H GC length	B GC fixing hole	A GC Hole
GC600	600	601	505
GC800	800	801	705

Ordering

nsb 075E. 300. R330 / F - 2500L : (DV:2)

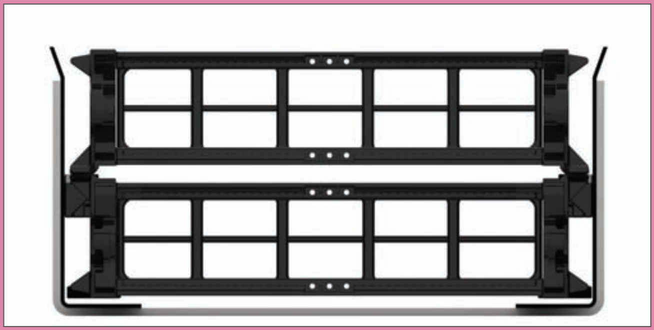
- Quantity of Divider(Link)
- Length(mm)
- Bracket Type
  - F : Free End Bracket
  - G : Horizontal Guide Channel Type End Bracket
  - V : Vertical Guide Channel Type End Bracket
  - GT : Tie Wrap
  - GST : System Tie Wrap
- Bending Radius
- Inside width
- Enclosed Type (E)
- Sabin Chain



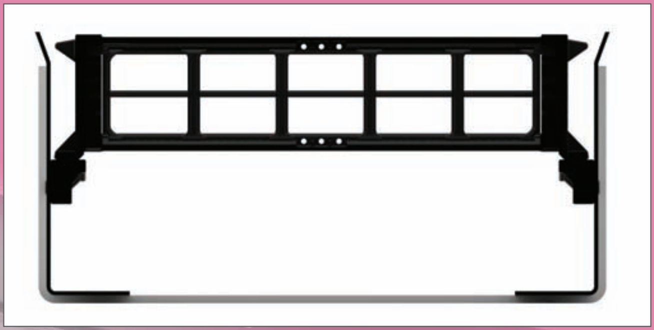
Guide Channel System

- ST044S, ES, RS, ERS
- ST072RS, ERS
- ST095RS, ERS
- ST120RS, ERS
- ST150RS, ERS
- nsb050S
- nsb065S
- nsb080S

A-zone



C-zone



General Information

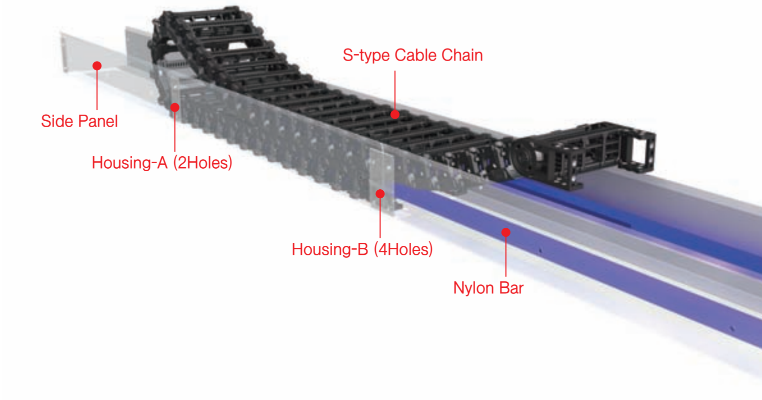
Material	Steel or SUS
Standard-1	Steel + Zn plating
Standard-2	Steel + Zn plating + Powder coating
Color	Silver, Black, Ivory

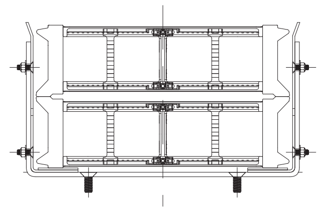
Available Product list with Guide Channel

Product Model	Product type
Shift Chain	ST044S ST044ES, ST072ES, ST095ES, ST120ES ST044RS, ST072RS, ST095RS, ST120RS, ST150RS ST044ERS, ST072ERS, ST095ERS, ST120ERS
nsb Chain	nsb050S, nsb065S, nsb080S

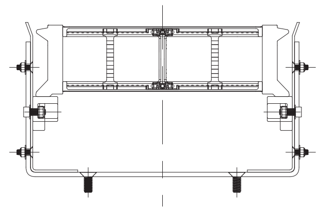
Guide Channel System

For long stroke applications the guide channel is applied to ensure that the nsb chain S-Type stays on track safely during operation.



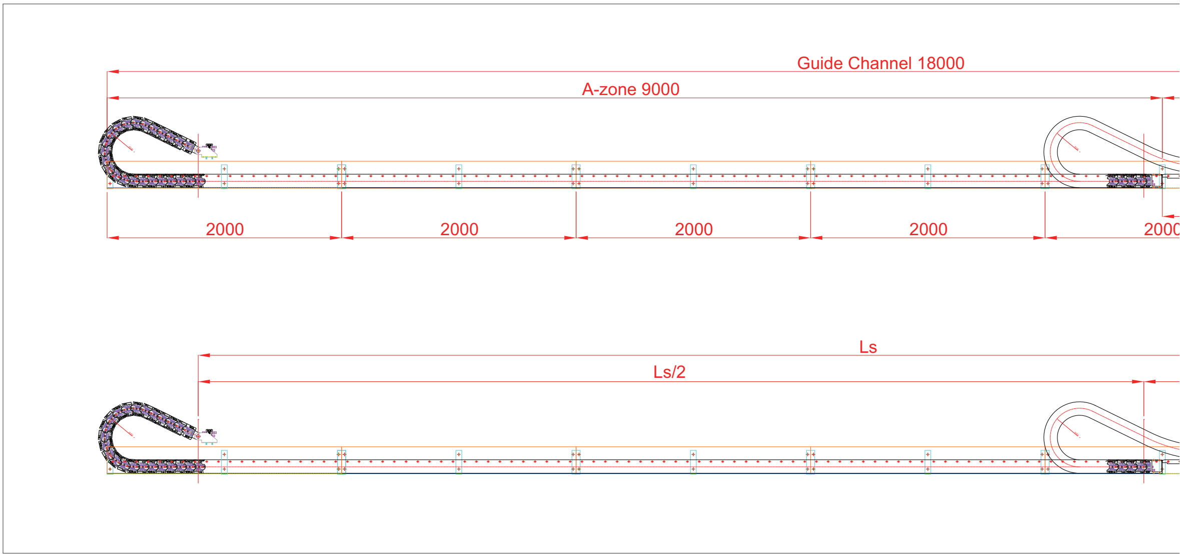


A-zone
Section of touching upper and below each other.



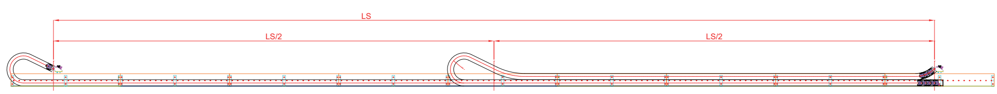
C-zone
Section of touching upper chain and only nylon bar.

Understanding of Guide channel drawing

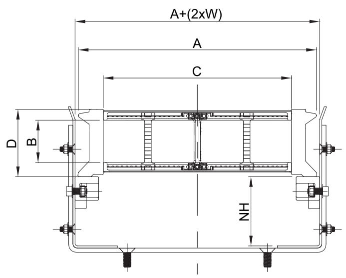


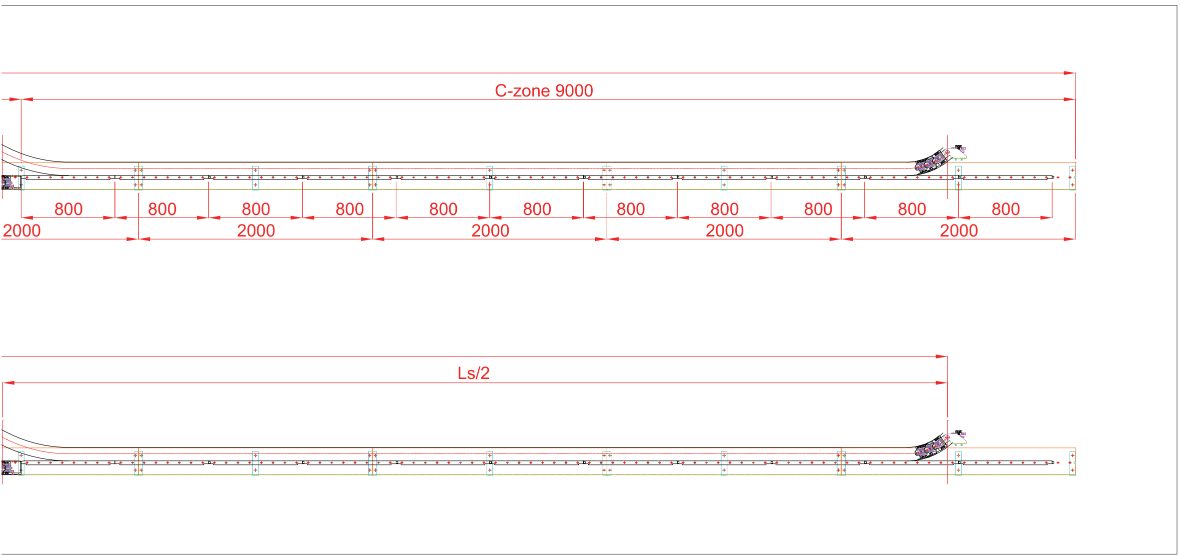
Diverse application of guide channel

Single Chain application : Fixing bracket should be at the end of guide channel.



Understanding of Guide channel drawing

Section Drawing (C-Zone)	Dim	Contents
	A	Outer width of cable chain
	B	Inner height of cable chain
	C	Inner width of cable chain(=Frame size)
	D	Outer height of cable chain
	W	Space between cabel chain and guide channel
	NH	Height between surface of nylon bar and guide channel.

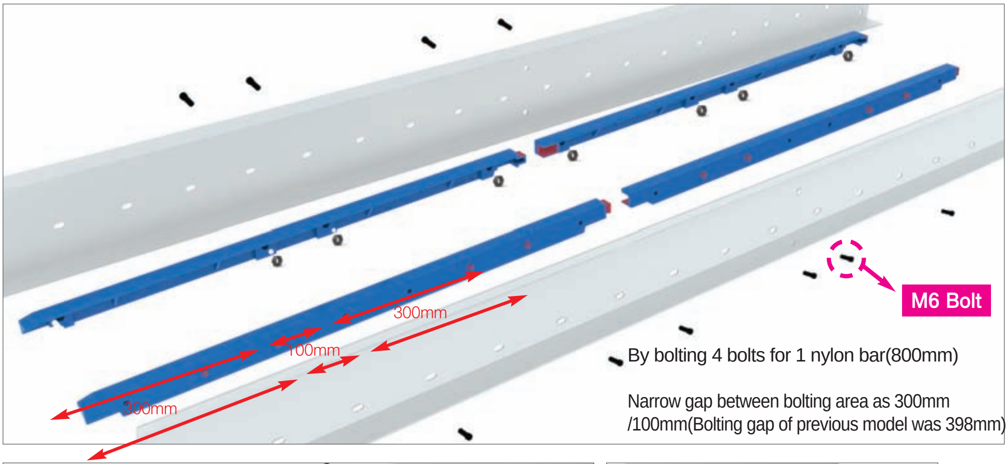


Nylon Bar

It is a supporting unit for cable chain, when cable chain comes to C-Zone, it has a role of supporting upper cable chain.

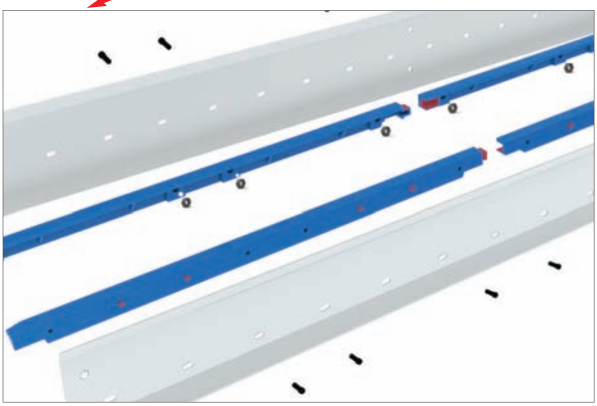
Characteristic of nylon bar

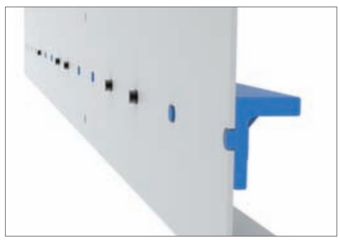
1. Secure and stable structure!



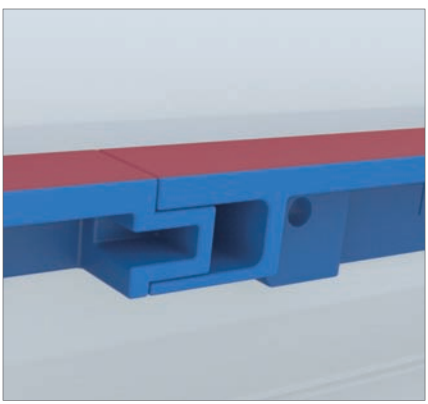
By bolting 4 bolts for 1 nylon bar(800mm)

Narrow gap between bolting area as 300mm /100mm(Bolting gap of previous model was 398mm)

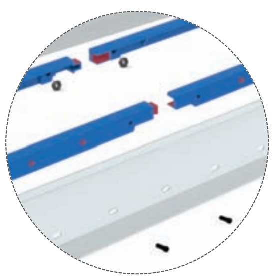




4 numbers of bump are formed at 1 number of nylon bar(Prevents sagging down risk of nylon bar)



- As each nylon bar gets connected each other, it is more stable than previous one.
- Its design has been changed for being easy to assemble.
- Moreover, as there’s no interval(gap), it can make smooth sliding as well.



Characteristic of nylon bar

2. Low dust!

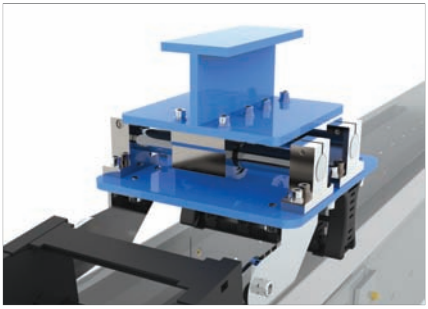
Same material with chain.

It is low dust and anti-abrasively due to its raw material which is same with chain(Polyamide6+GF30%)

By reducing narrow cross-section, abrasion part could be fixed regularly. It can make cable chain move smoothy and stably.

It creats long life span compared to pervious model.

Moving Bracket (Special moving arm)



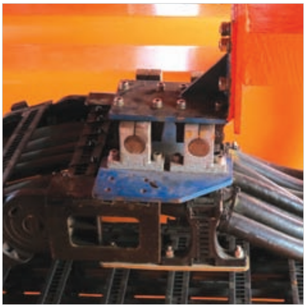
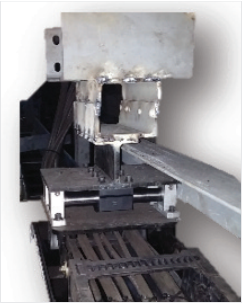
There are several types of moving brackets and moving arm.

For over 80meters crane and any kinds of strokes, special moving arm should be considerede to prevent breakage during operation. When you need special moving arm design, please contact to *overseas_info@cpsystem.kr*

Standard Moving bracket


Standard Moving bracket with System tie wrap(STW)

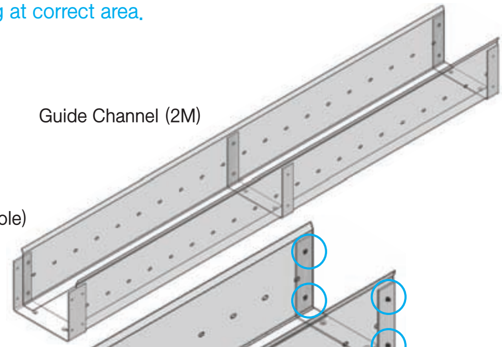
Special Moving arm


Assembly procedure of Guide Channel

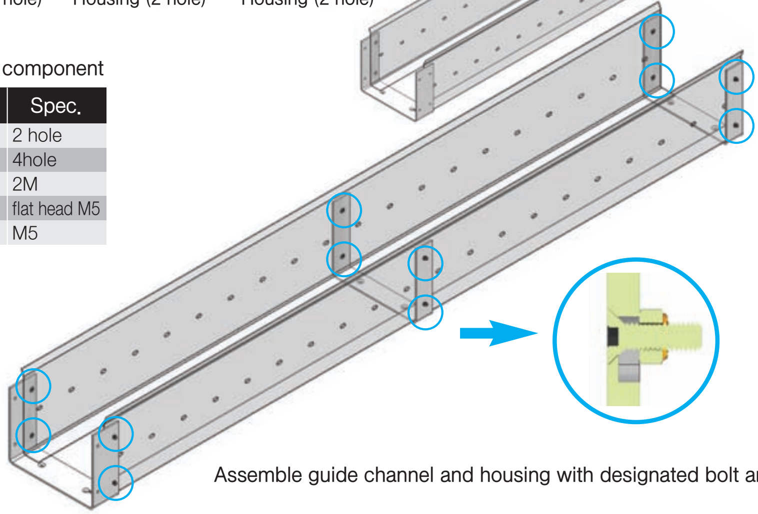
A-1 Section

Position guide channel and housing at correct area.



necessary component

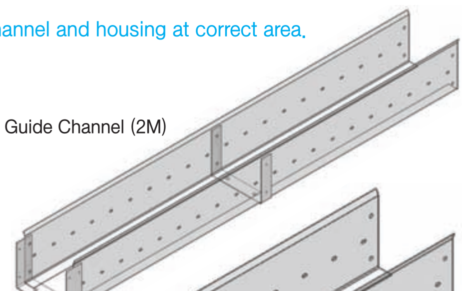
Name	Spec.
Housing	2 hole
Housing	4hole
Guide Channel	2M
Bolt	flat head M5
Nut	M5



Assemble guide channel and housing with designated bolt and nut.

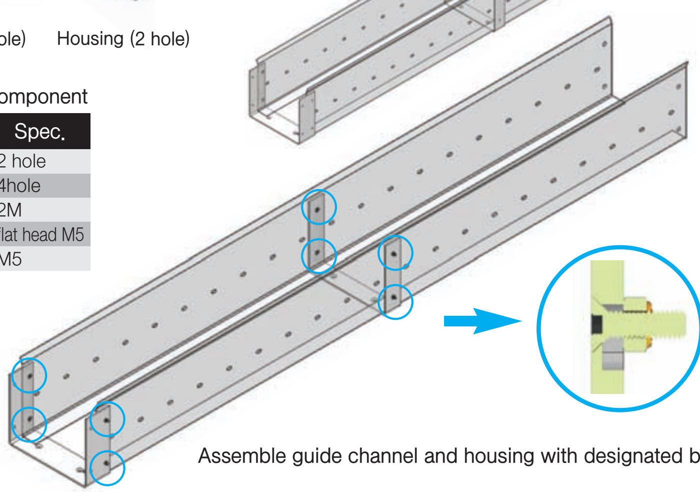
A-2, A-3 Section

Position guide channel and housing at correct area.



necessary component

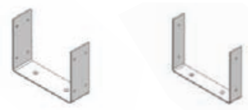
Name	Spec.
Housing	2 hole
Housing	4hole
Guide Channel	2M
Bolt	flat head M5
Nut	M5



Assemble guide channel and housing with designated bolt and nut.

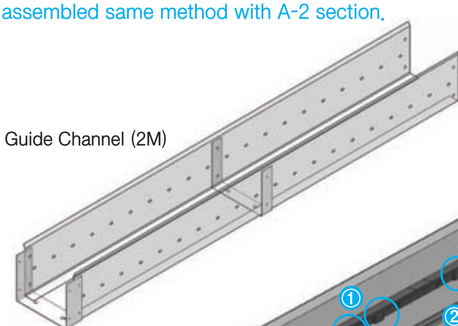
C-1, C-2 Section

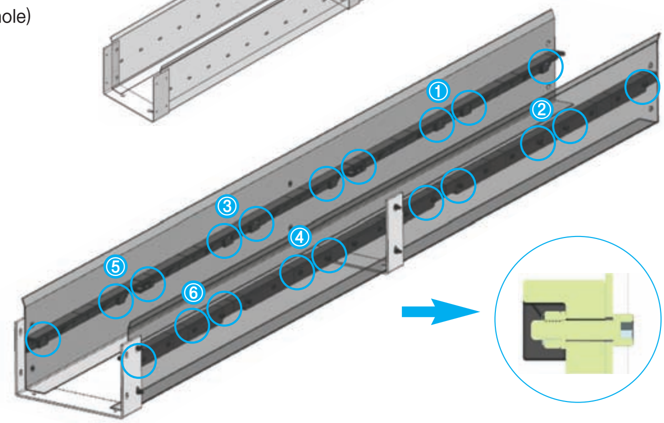
Prepare guide channel 1 set assembled same method with A-2 section.



Housing (4 hole) Housing (2 hole)

Guide Channel (2M)





necessary component

Name	Spec.
Housing	2 hole
Housing	4hole
Guide Channel	2M
Bolt	Flat head M5
Nut	M5
Bolt	Hexagon M6
Nut	M6
Washer	Ø20XØ7X3T
Nylon bar	RH
Nylon bar	LH
Nylon bar	Normal type

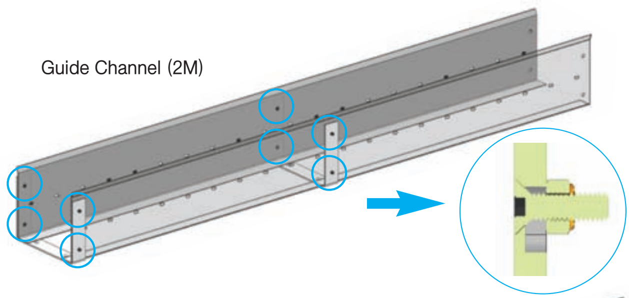
Assemble nylon bar from ① to ⑥ but do not cut the extra 400mm of nylon bar from each ⑤ and ⑥
They will be assembled with C2 section's guide channel

C-3 Section

Assemble guide channel and housing with designated bolt and nut.

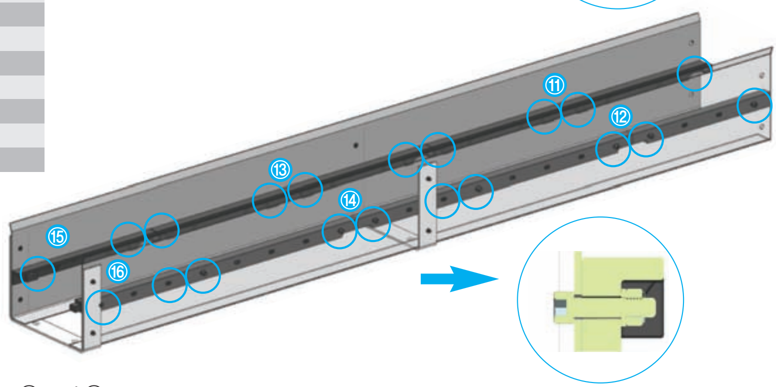
Housing (2 hole) Housing (2 hole)

Guide Channel (2M)



necessary component

Name	Spec.
Housing	2 hole
Guide Channel	2M
Bolt	Flat head M5
Nut	M5
Bolt	Hexagon M6
Nut	M6
Washer	Ø20XØ7X3T
Nylon bar	Normal type

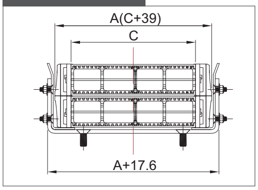


Cut the extra 400mm of nylon bar at ⑮ and ⑯
12M Guide channel assembly sequence from A-1 , A-2 , A-3 , C-1 , C-2 , and finally C-3

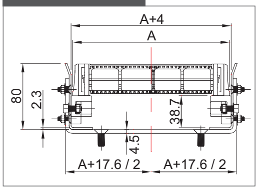
ST044S, ES, RS, ERS

Guide channel

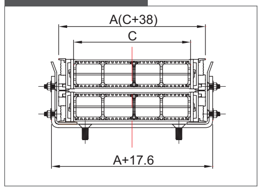
ST044S, ES
A - ZONE



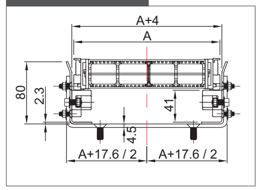
ST044S, ES
C - Zone



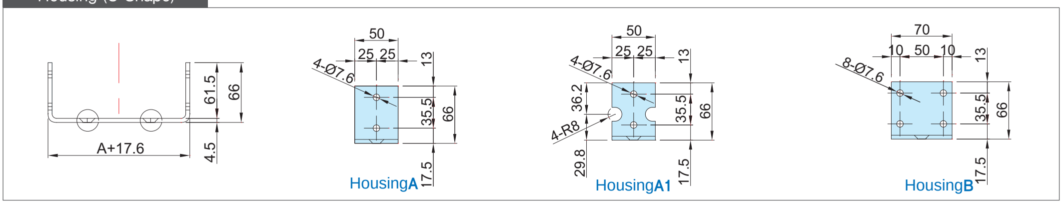
ST044RS, ERS
A - Zone



ST044RS, ERS
C - Zone

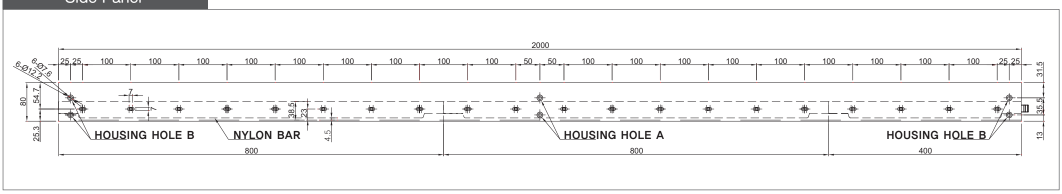


Housing (U-Shape)



Assemble at the beginning & end part of guide channel

Side Panel



Guide Channel Dimension

ST044S		ST044ES		ST044RS		ST044ERS	
C	A	C	A	C	A	C	A
35	74	35	74	35	73	35	73
50	89	55	94	50	88	55	93
55	94	75	114	55	93	75	113
75	114	100	139	75	113	100	138
100	139			100	138		
125	164			125	163		
150	189			150	188		
175	214			175	213		
200	239			200	238		

C : Frame Width
A : Outer width of cable chain

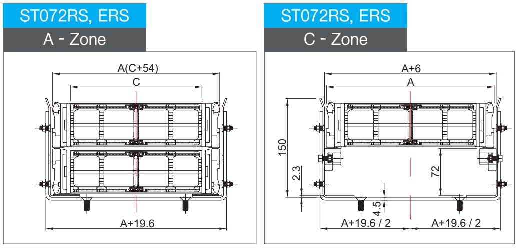
Ordering

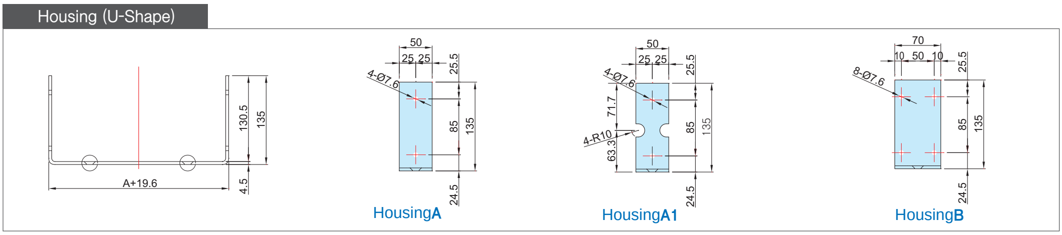
ST-GCS 044S. 100 : 200M

- Length(mm)
- Inside Width
- Skid Type
- Steel Guide Channel
- Shift Chain

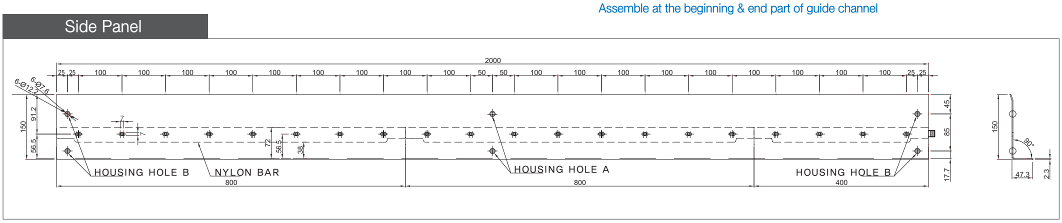
ST072RS, ERS

Guide channel





Assemble at the beginning & end part of guide channel



Guide Channel Dimension

ST072RS		ST072ERS	
C	A	C	A
50	104	50	104
75	129	75	129
100	154	100	154
125	179	125	179
140	194	150	204
150	204		
165	219		
175	229		
190	244		
200	254		
240	294		
250	304		
300	354		

C : Frame Width
A : Outer width of cable chain

Ordering

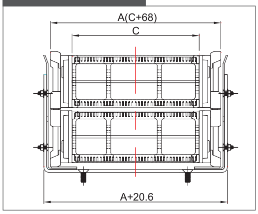
ST-GCS 072RS. 150 : 200M

- Length(mm)
- Inside Width
- Skid Type
- Steel Guide Channel
- Shift Chain

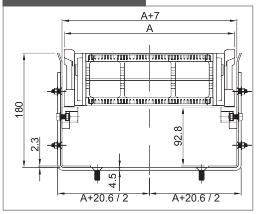
ST095RS, ERS

Guide Channel

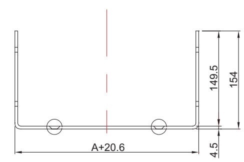
ST095RS, ERS
A - Zone

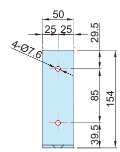


ST095RS, ERS
C - Zone

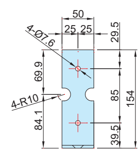


Housing (U-Shape)

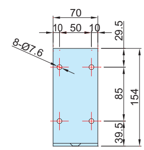




HousingA



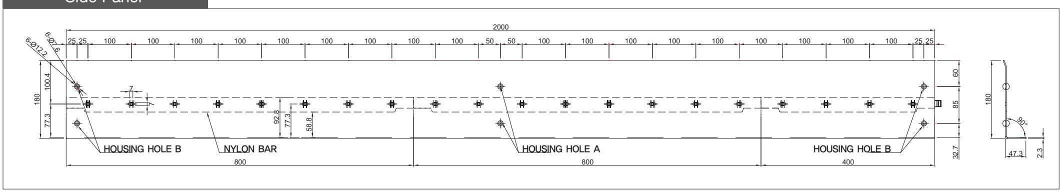
HousingA1



HousingB

Assemble at the beginning & end part of guide channel

Side Panel



Guide Channel Dimension

ST095RS		ST095ERS	
C	A	C	A
75	143	100	168
100	168	125	193
125	193	150	218
150	218	175	243
175	243	200	268
190	258		
200	268		
240	308		
250	318		
300	368		
350	418		
400	468		

C : Frame Width
A : Outer width of cable chain

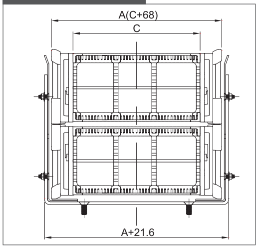
Ordering

ST-GCS 095RS. 175 : 200M

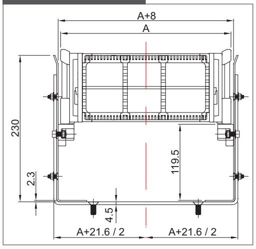
- Length(mm)
- Inside Width
- Skid Type
- Steel Guide Channel
- Shift Chain

Guide Channel

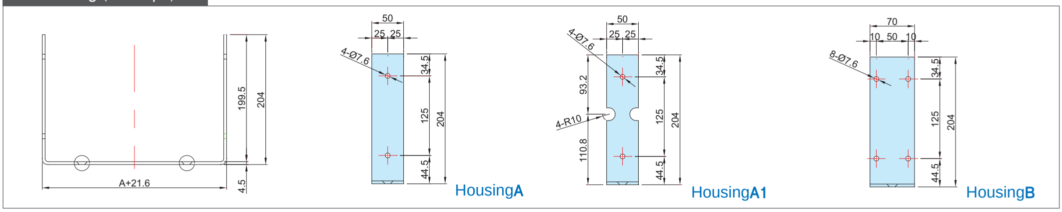
ST120RS, ERS
A - Zone



ST120RS, ERS
C - Zone

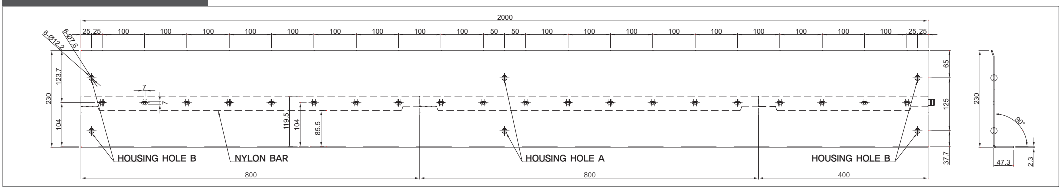


Housing (U-Shape)



Assemble at the beginning & end part of guide channel

Side Panel



Guide Channel Dimension

ST120RS		ST120ERS	
C	A	C	A
75	143	150	218
100	168	200	268
115	183	250	318
125	193	300	368
150	218		
175	243		
200	268		
240	308		
250	318		
290	358		
300	368		
350	418		
400	468		
450	518		
500	568		
550	618		
600	668		

C : Frame Width
A : Outer width of cable chain

Ordering

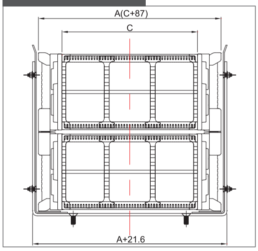
ST-GCS 120RS. 175 : 200M

- Length(mm)
- Inside Width
- Skid Type
- Steel Guide Channel
- Shift Chain

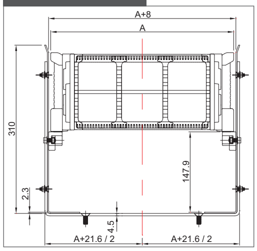
ST150RS, ERS

Guide Channel

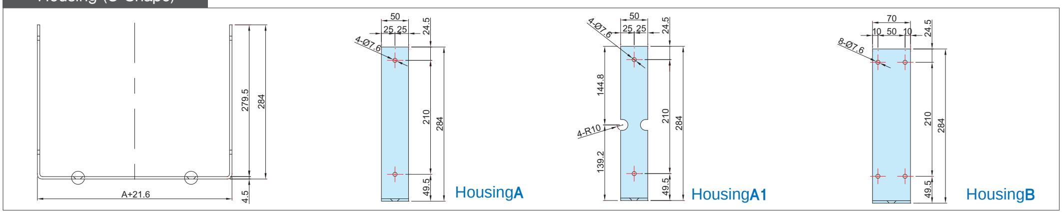
ST150RS, ERS
A - Zone



ST150RS, ERS
C - Zone

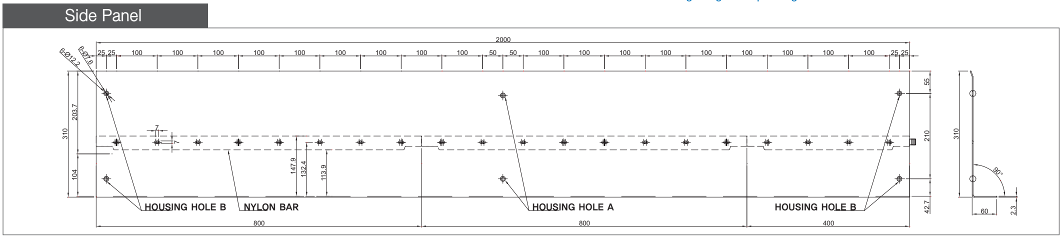


Housing (U-Shape)



Assemble at the beginning & end part of guide channel

Side Panel



Guide Channel Dimension

ST150RS		ST150ERS	
C	A	C	A
75	162	200	287
100	187	250	337
115	202	300	387
125	212	350	437
150	237	400	487
175	262		
200	287		
240	327		
250	337		
290	377		
300	387		
350	437		
400	487		
450	537		
500	587		
550	637		
600	687		

C : Frame Width
A : Outer width of cable chain

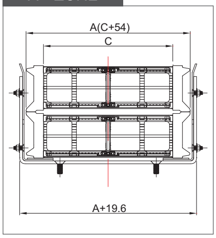
Ordering

ST-GCS 150RS. 200 : 200M

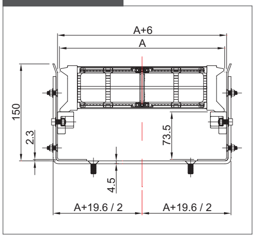
- Length(mm)
- Inside Width
- Skid Type
- Steel Guide Channel
- Shift Chain

Guide Channel

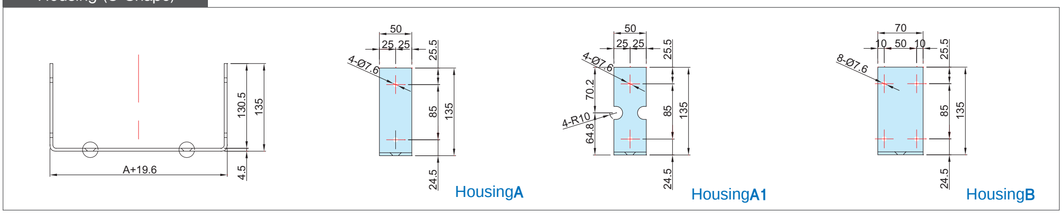
A - ZONE



C - ZONE

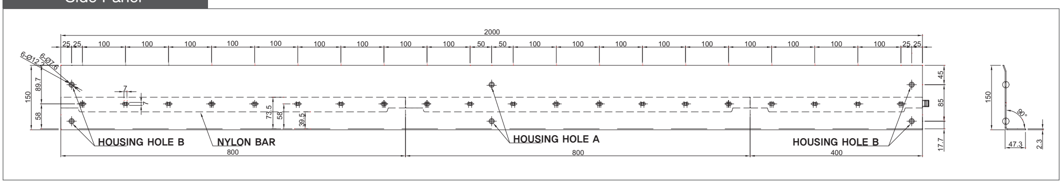


Housing (U-Shape)



Assemble at the beginning & end part of guide channel

Side Panel



Guide Channel Dimension

nsb050S	
C	A
50	104
75	129
100	154
125	179
140	194
150	204
165	219
175	229
190	244
200	254
240	294
250	304
300	354

C : Frame Width
A : Outer width of cable chain

Ordering

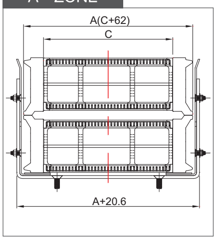
nsb-GCS 050S. 100 : 200M

- Length(mm)
- Inside Width
- Skid Type
- Steel Guide Channel
- Shift Chain

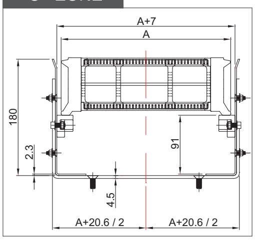
nsb065S

Guide Channel

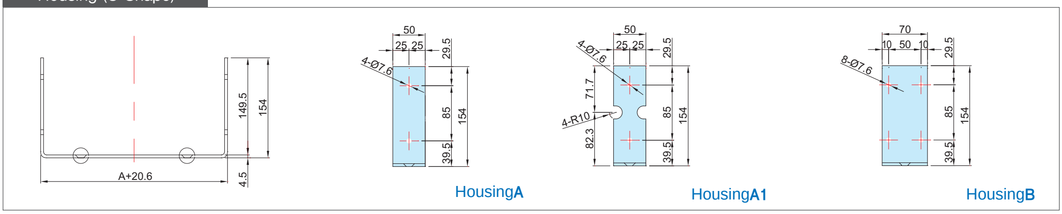
A - ZONE



C - ZONE

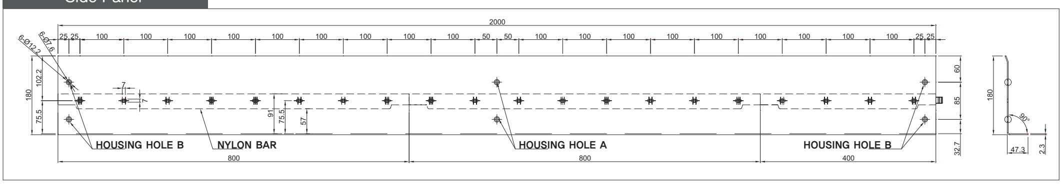


Housing (U-Shape)



Assemble at the beginning & end part of guide channel

Side Panel



Guide Channel Dimension

nsb065S	
C	A
75	137
100	162
125	187
150	212
175	237
190	252
200	262
230	292
240	302
250	312
300	362
350	412
400	462

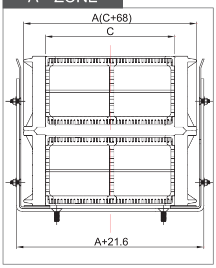
C value : Frame width
A value : Outer width of cable chain

Ordering nsb-GCS 065S. 100 : 200M

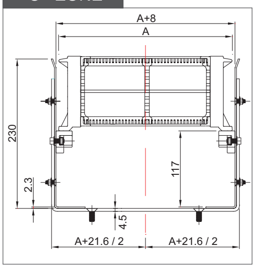
- Length(mm)
- Inside width
- Skid Type
- Steel Guide Channel
- Shift Chain

Guide Channel

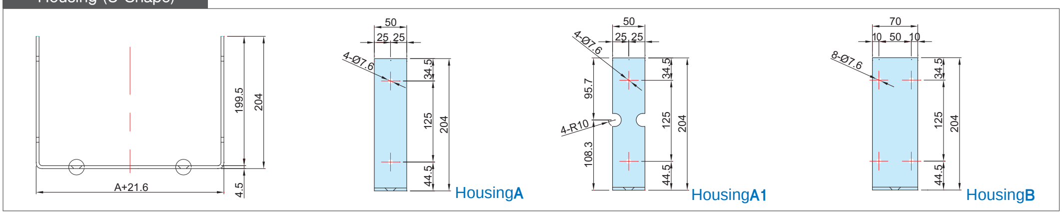
A - ZONE



C - ZONE

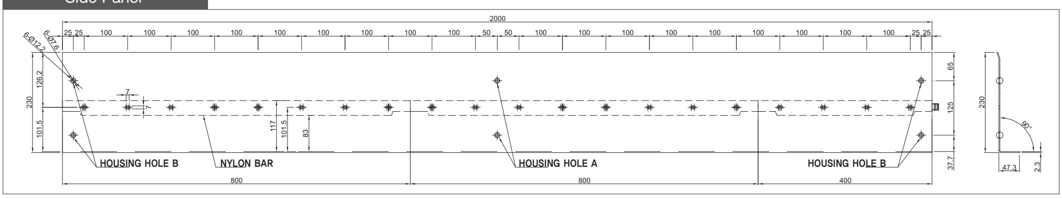


Housing (U-Shape)



Assemble at the beginning & end part of guide channel

Side Panel



Guide Channel Dimension

nsb080S	
C	A
75	143
100	168
115	183
125	193
150	218
175	243
200	268
240	308
250	318
290	358
300	368
350	418
400	468
450	518
500	568
550	618
600	668

C : Frame Width
A : Outer width of cable chain

Ordering

nsb-GCS 080S. 100 : 200M

- Length(mm)
- Inside Width
- Skid Type
- Steel Guide Channel
- Shift Chain

Nylon Bar Type

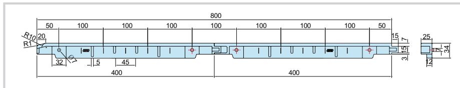
GC.NB-400

➡ GC.NB-400(Normal)

➡ GC.NB-400(RH)

➡ GC.NB-400(LH)

※ Bilateral symmetry for both RH, LH



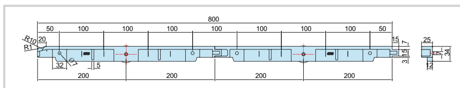
GC.NB-400R(Roller Type)

➡ GC.NB-400R(Normal)

➡ GC.NB-400R(RH)

➡ GC.NB-400R(LH)

※ Bilateral symmetry for both RH, LH



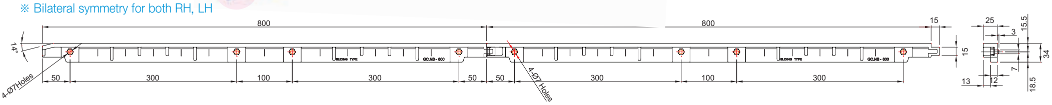
GC.NB-800

➡ GC.NB-800(Normal)

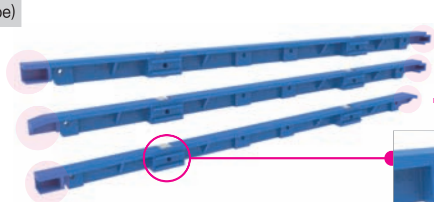
➡ GC.NB-800(RH)

➡ GC.NB-800(LH)

※ Bilateral symmetry for both RH, LH



GC.NB-800R(Roller Type)

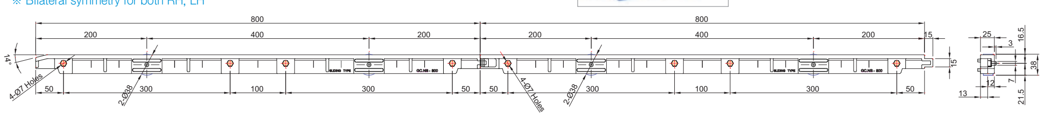


➡ GC.NB-800R(Normal)

➡ GC.NB-800R(RH)

➡ GC.NB-800R(LH)

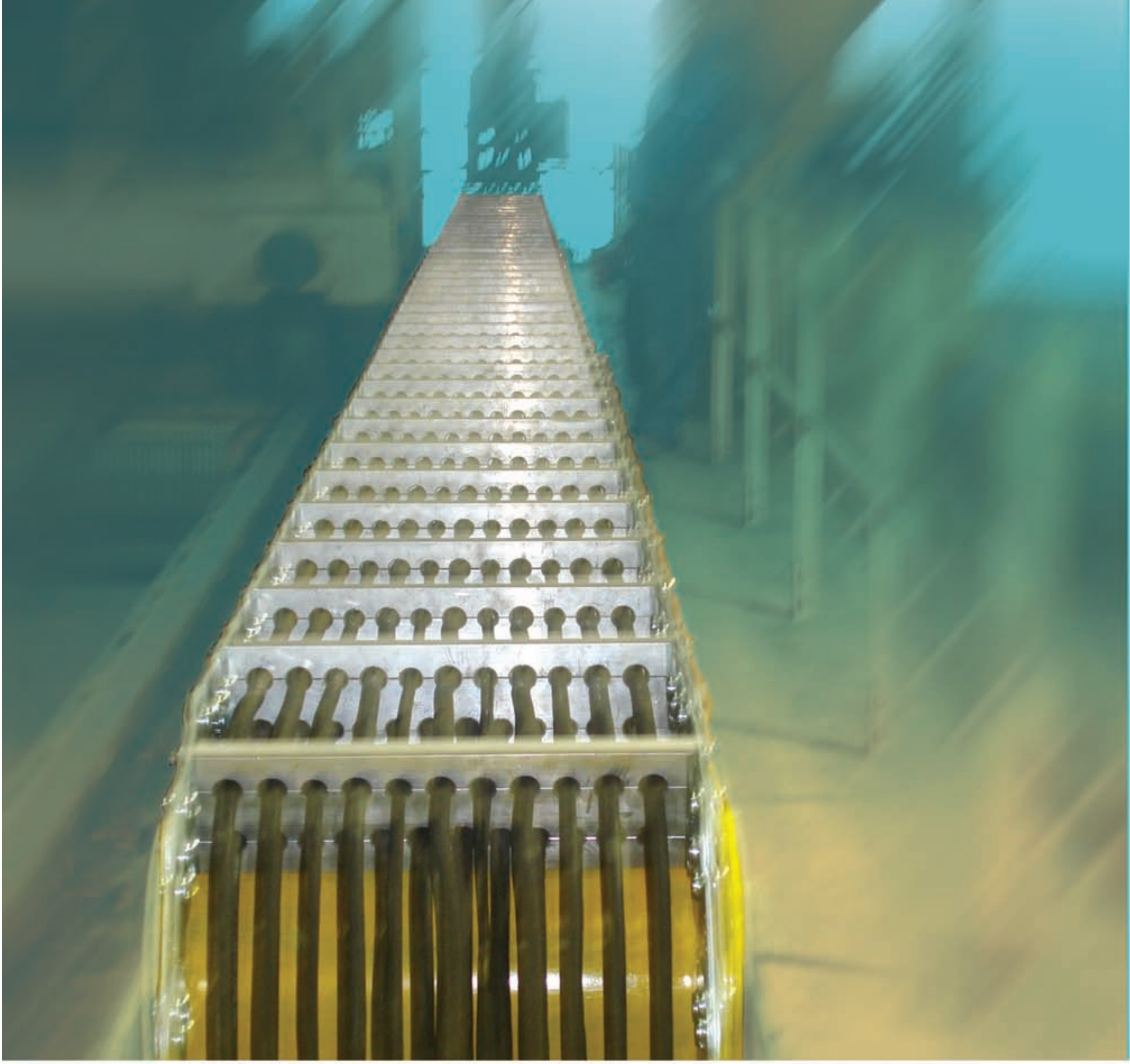
※ Bilateral symmetry for both RH, LH



Ordering

GC.NB-800 R / N : 10ST

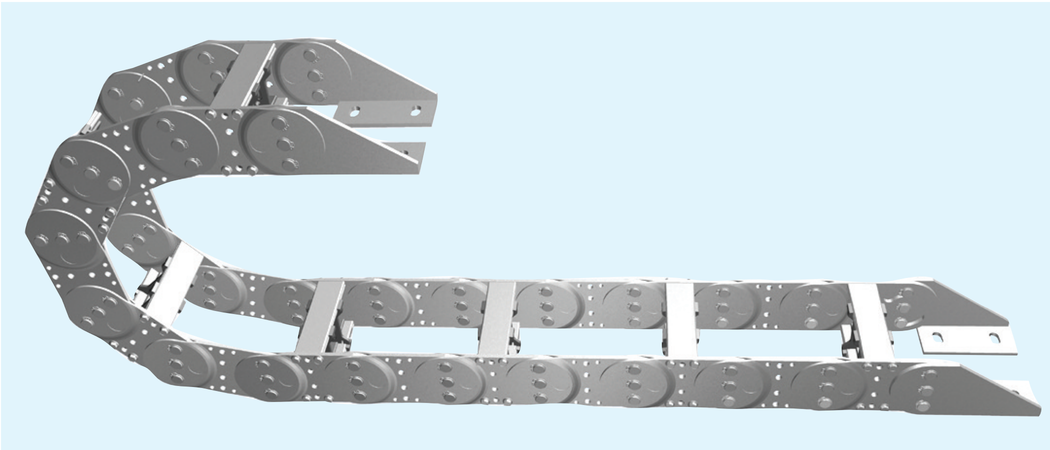
- Q'ty(set)
- Nylon Bar Type N : Normal, R : RH, L : LH
- Length(mm) 400, 800
- Guide Channel Nylon Bar



Steel Cable Chain

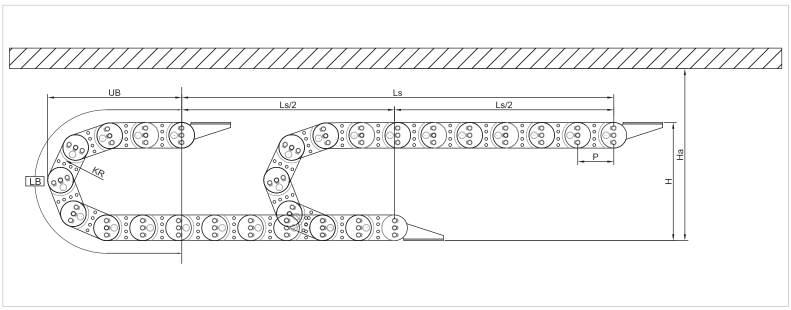
- SK70
- SK95
- SK130
- SK180
- SK250

SK70



Ls: Stroke UB: Loop Projection

Layout of the Chain



Bending Radius (KR)	LB Loop Length	Ha Safe Space	H Moving Height
75	515	210	200
90	560	240	230
125	670	310	300
145	735	350	340
200	910	460	450

Caculation of the Chain Length

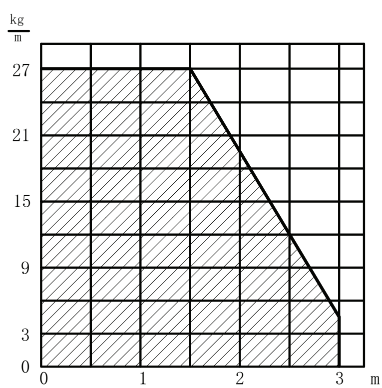
$$L = \frac{Ls}{2} + LB$$

Ordering

SKS 70. BST84. KR125 / F-700L

- Steel Chain
- Pitch(mm)
- Inside width
- Bending Radius
- Length(mm)

Unsupported Length

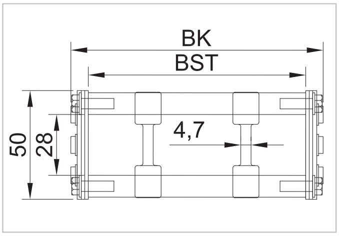


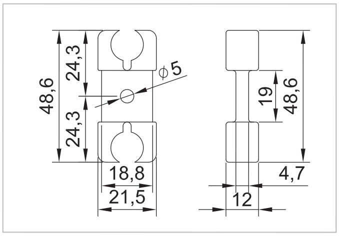
Steel Cable Chain

Frame of Standard Application

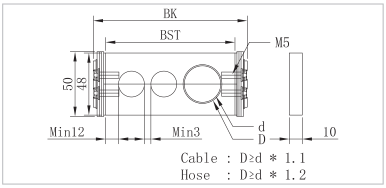
BK Outside width	Q'ty of Divider	BST Frame width
100	2	84
125	2	109
150	3	134
175	3	159
200	4	184
250	5	234
300	6	284
350	7	334

Solid Type



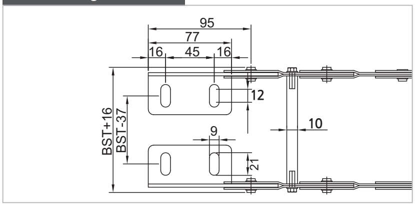


Hole Type

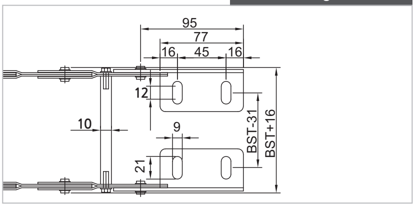


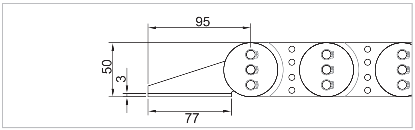
Bracket Type

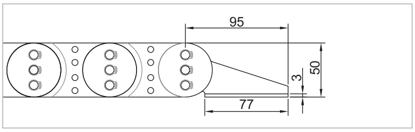
Fixing End



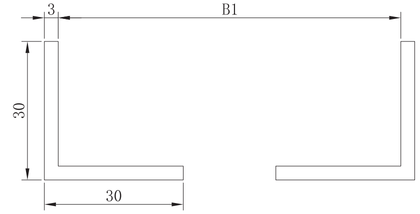
Moving End





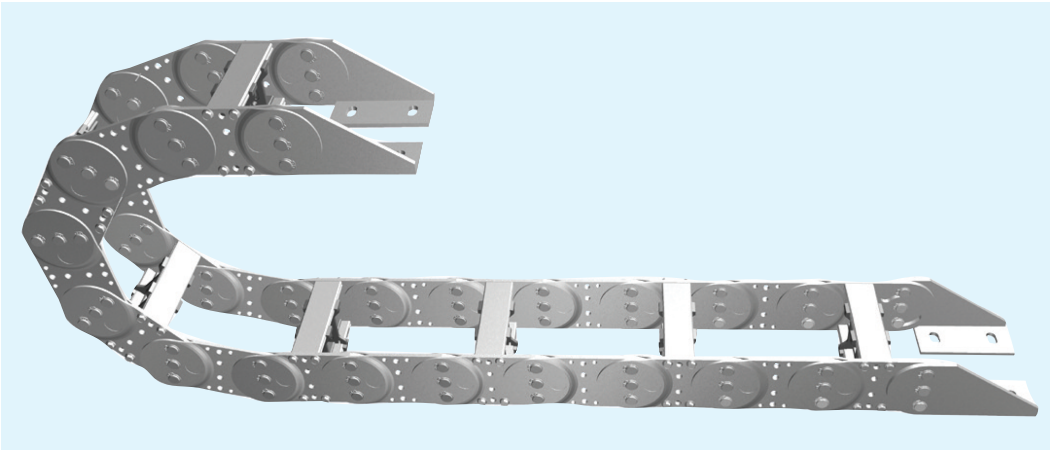


Guide Channel



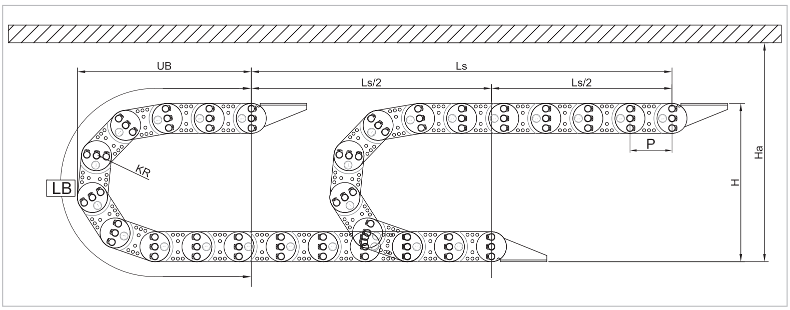
- B1 = BK + 15mm
- Angle 30 X 30 X 3T

SK95



Layout of the Chain

Ls: Stroke UB: Loop Projection



Bending Radius (KR)	LB Loop Length	Ha Safe Space	H Moving Height
125	770	330	318
145	835	370	358
200	1,000	480	468
250	1,165	580	568
300	1,320	680	668

Caculation of the Chain Length

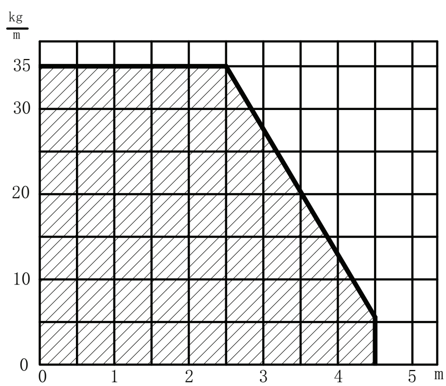
$$L = \frac{Ls}{2} + LB$$

Ordering

SKS 95. BST82. KR125 / F-700L

- Steel Chain
- Pitch(mm)
- Inside width
- Bending Radius
- Length(mm)

Unsupported Length

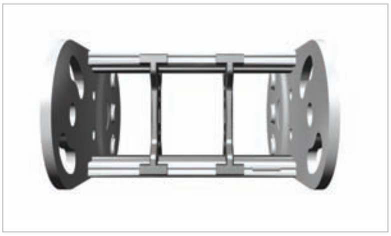


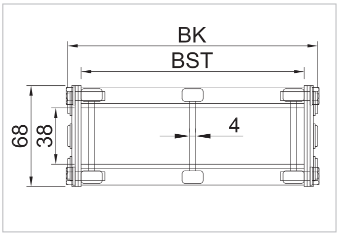
Steel Cable Chain

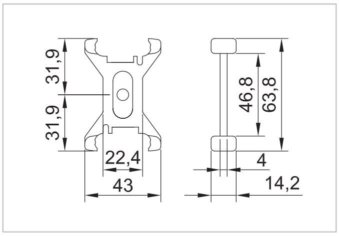
Frame of Standard Application

BK Outside width	Q'ty of Divider	BST Frame width
100	1	82
125	1	107
150	2	132
175	3	157
200	4	182
250	5	232
300	6	282
350	7	332
400	8	382
450	9	432
500	10	482
550	11	532
600	12	582

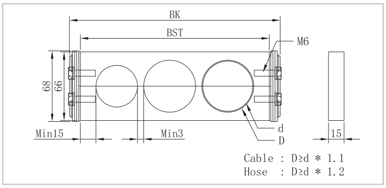
Solid Type





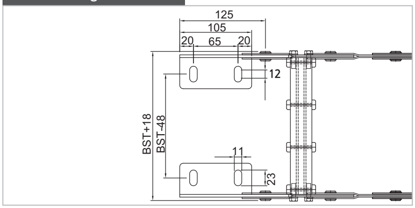


Hole Type

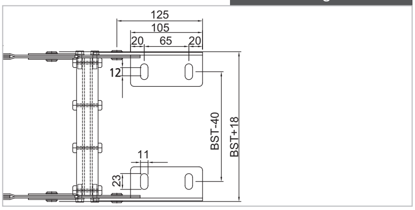


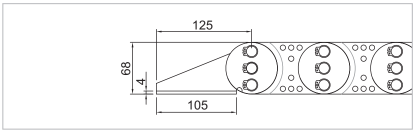
Bracket Type

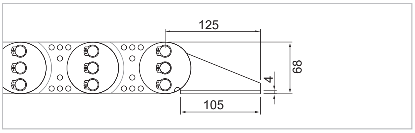
Fixing End



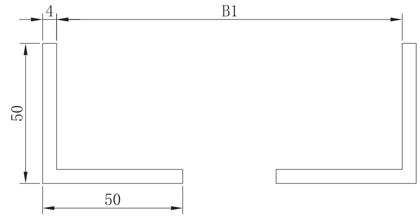
Moving End





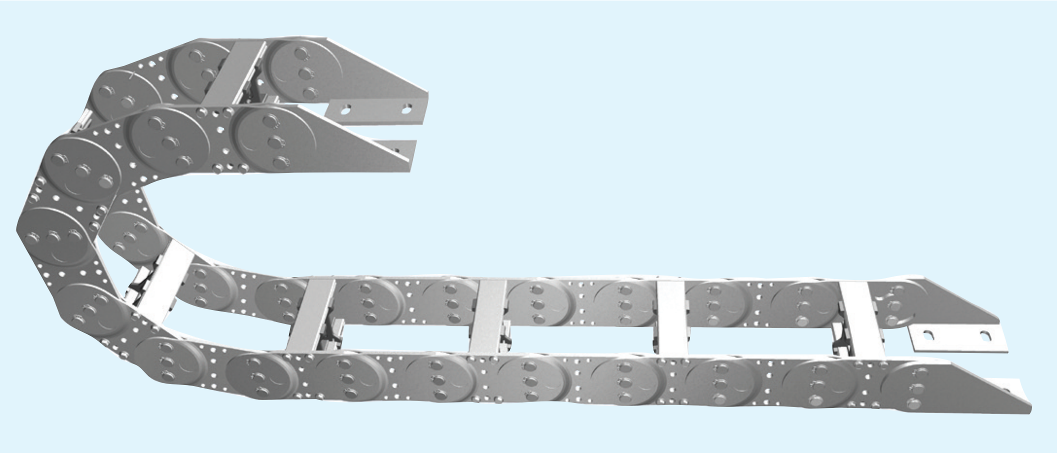


Guide Channel



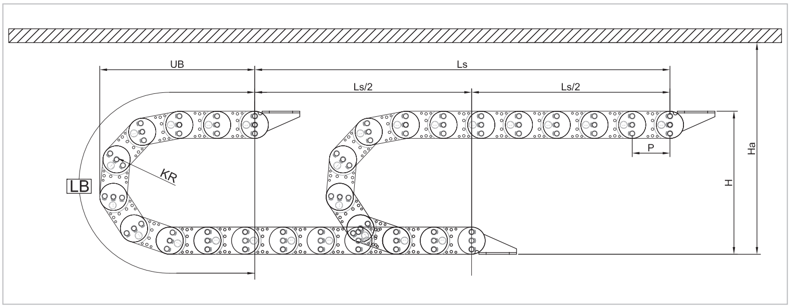
- B1 = BK + 15mm
- Angle 50 X 50 X 4T

SK130



Ls: Stroke UB: Loop Projection

Layout of the Chain



Bending Radius (KR)	LB Loop Length	Ha Safe Space	H Moving Height
150	990	410	394
200	1140	510	494
250	1300	610	594
300	1460	710	694
340	1580	790	774
400	1770	910	894
500	2100	1110	1094

Caculation of the Chain Length

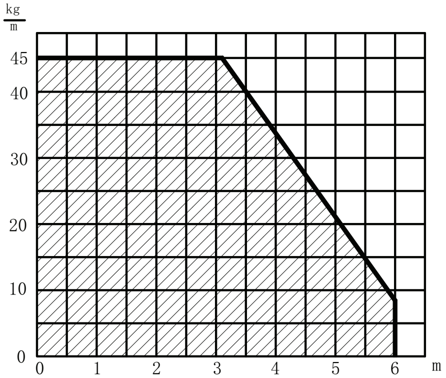
$$L = \frac{Ls}{2} + LB$$

Ordering

SKS 130. BST176. KR150 / F-700L

- Steel Chain
- Pitch(mm)
- Inside width
- Bending Radius
- Length(mm)

Unsupported Length

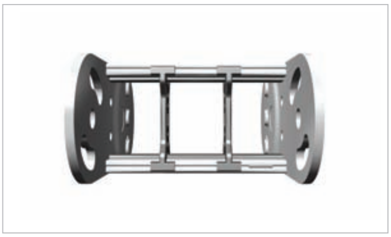


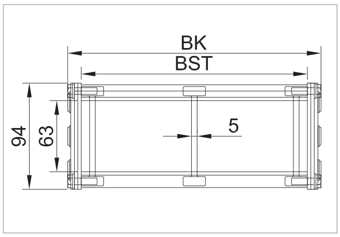
Steel Cable Chain

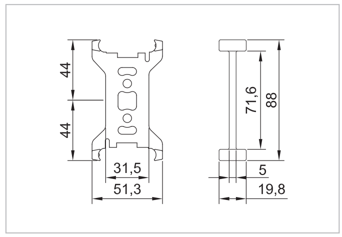
Frame of Standard Application

BK Outside width	Q'ty of Divider	BST Frame width
200	3	176
250	4	226
300	5	276
350	5	326
400	6	376
450	6	426
500	7	476
550	8	526
600	9	576
650	10	626
700	11	676
750	12	726
800	12	776

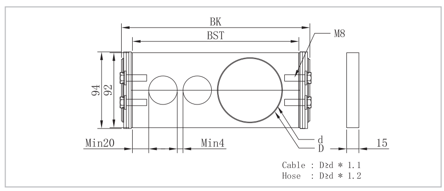
Solid Type





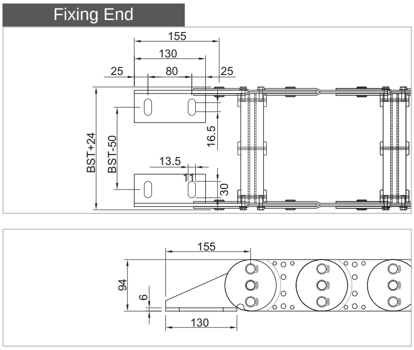


Hole Type

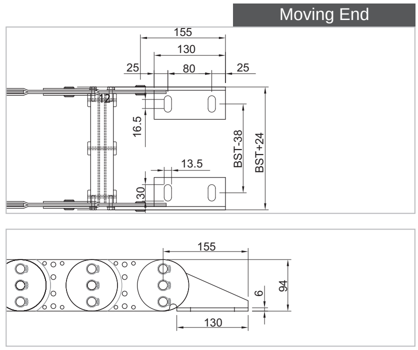


Bracket Type

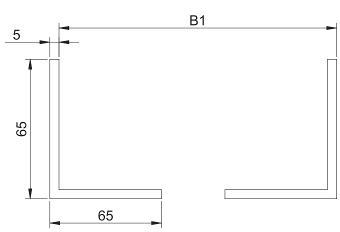
Fixing End



Moving End

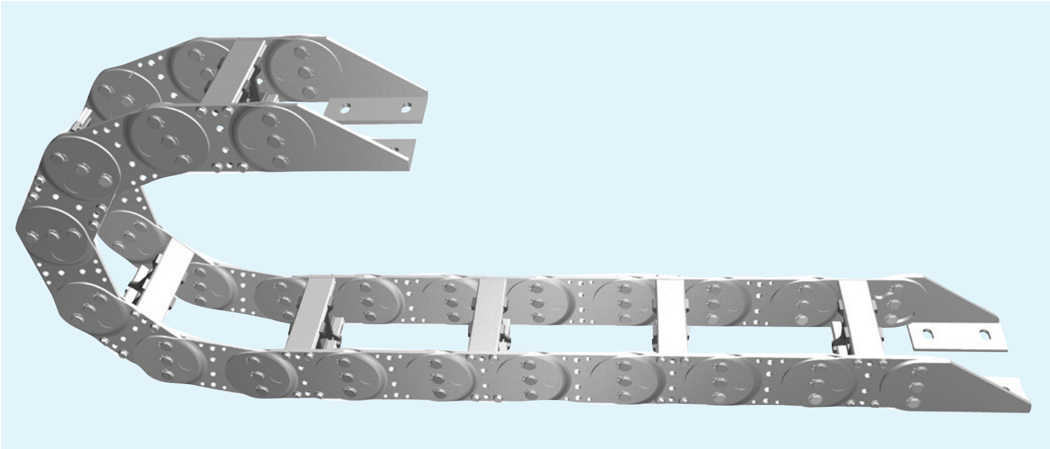


Guide Channel



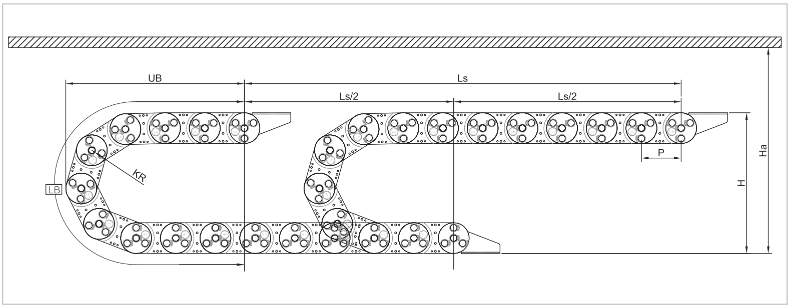
- B1 = BK + 20mm
- Angle 65 X 65 X 5T

SK180



Ls: Stroke UB: Loop Projection

Layout of the Chain



Bending Radius (KR)	LB Loop Length	Ha Safe Space	H Moving Height
250	1,500	650	640
300	1,660	750	740
400	1,980	950	940
500	2,290	1,150	1,140
600	2,600	1,350	1,340
700	2,920	1,550	1,540
800	3,230	1,750	1,740

Caculation of the Chain Length

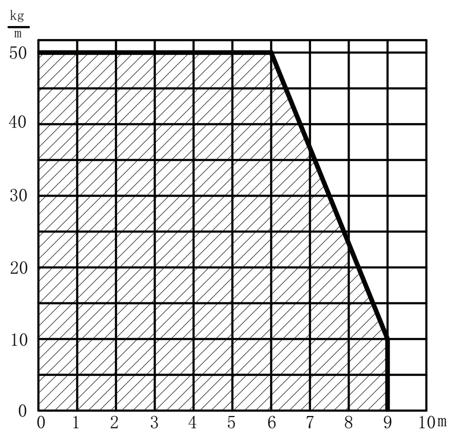
$$L = \frac{Ls}{2} + LB$$

Ordering

SKS 180. BST171. KR250 / F-700L

- Steel Chain
- Pitch(mm)
- Inside width
- Bending Radius
- Length(mm)

Unsupported Length

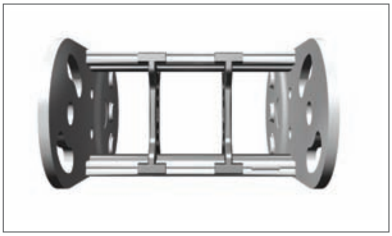


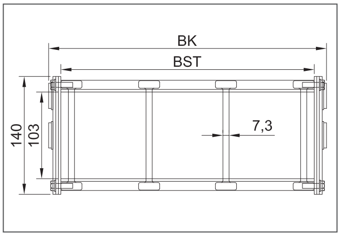
Steel Cable Chain

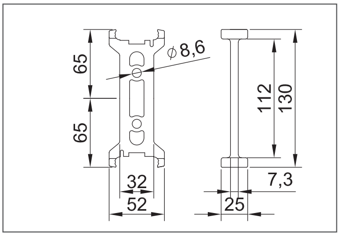
Frame of Standard Application

BK Outside width	Q'ty of Divider	BST Frame width
200	2	171
250	3	221
300	4	271
350	5	321
400	6	371
450	7	421
500	8	471
600	9	571
700	10	671
800	11	771
900	12	871
1,000	13	971
1,100	14	1,071

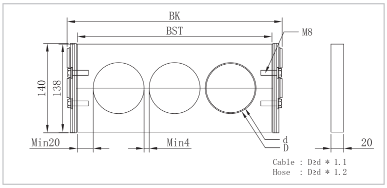
Solid Type







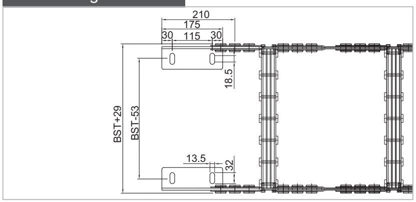
Hole Type

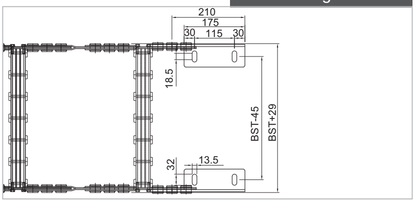


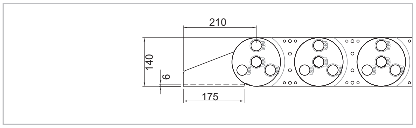
Bracket Type

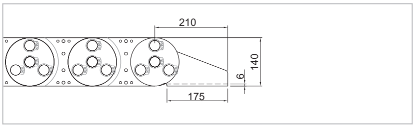
Fixing End

Moving End

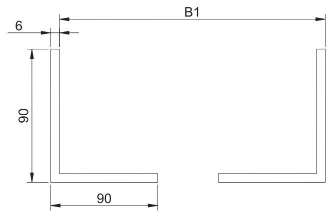






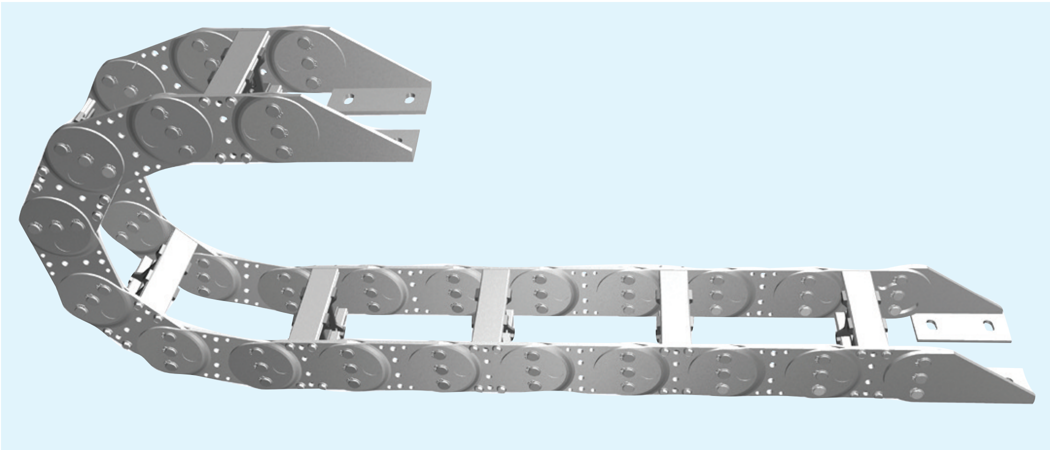


Guide Channel



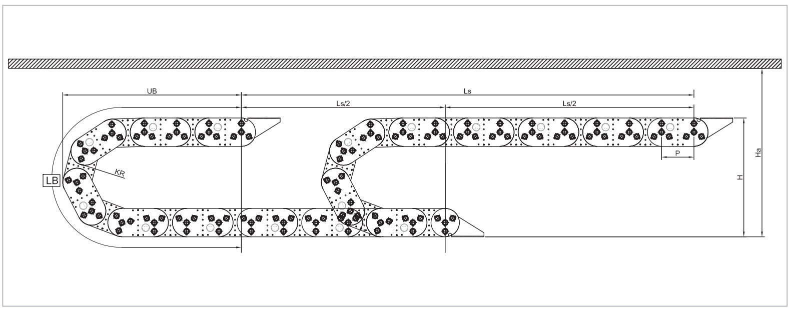
- B1 = BK + 20mm
- Angle 90 X 90 X 6T

SK250



Ls: Stroke UB: Loop Projection

Layout of the Chain



Bending Radius (KR)	LB Loop Length	Ha Safe Space	H Moving Height
350	2100	950	950
400	2255	1050	1020
450	2410	1150	1120
600	2880	1450	1420
750	3350	1750	1720

Caculation of the Chain Length

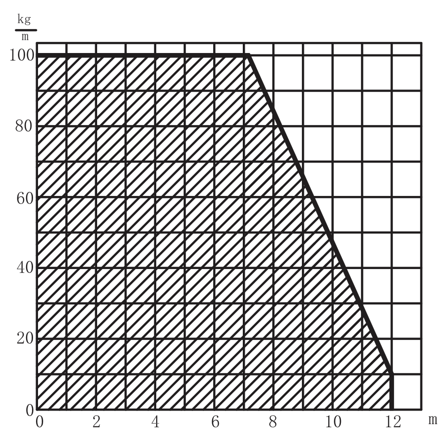
$$L = \frac{Ls}{2} + LB$$

Ordering

SKS 250. BST164. KR250 / F-700L

- Steel Chain
- Pitch(mm)
- Inside width
- Bending Radius
- Length(mm)

Unsupported Length

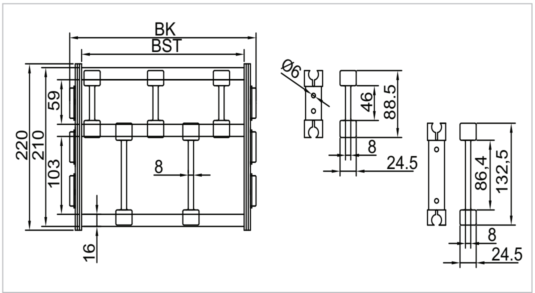


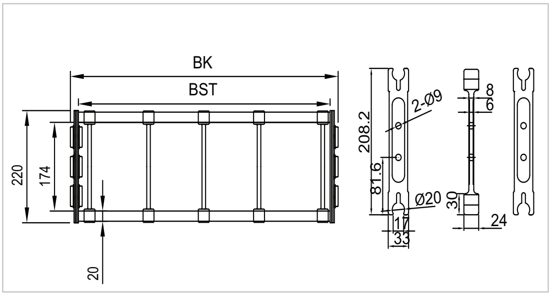
Steel Cable Chain

Frame of Standard Application

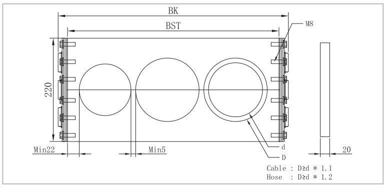
BK Outside width	Q'ty of Divider(up)	Q'ty of Divider(down)	BST Frame width
300	3	2	264
400	4	3	364
500	5	4	464
600	6	5	564
700	7	6	664
800	8	7	764
900	9	8	864
1000	10	9	964
1100	11	10	1064
1200	12	11	1164

Solid Type

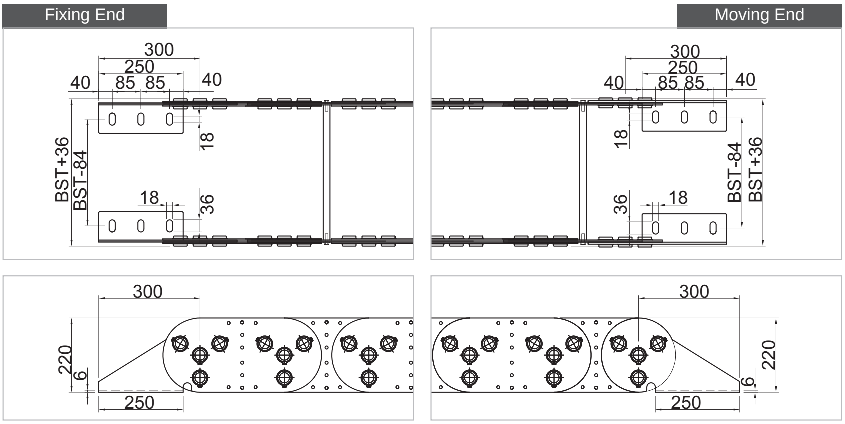




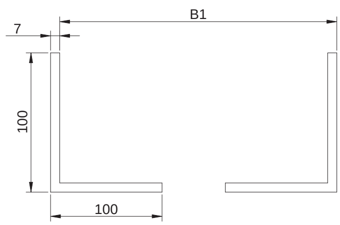
Hole Type



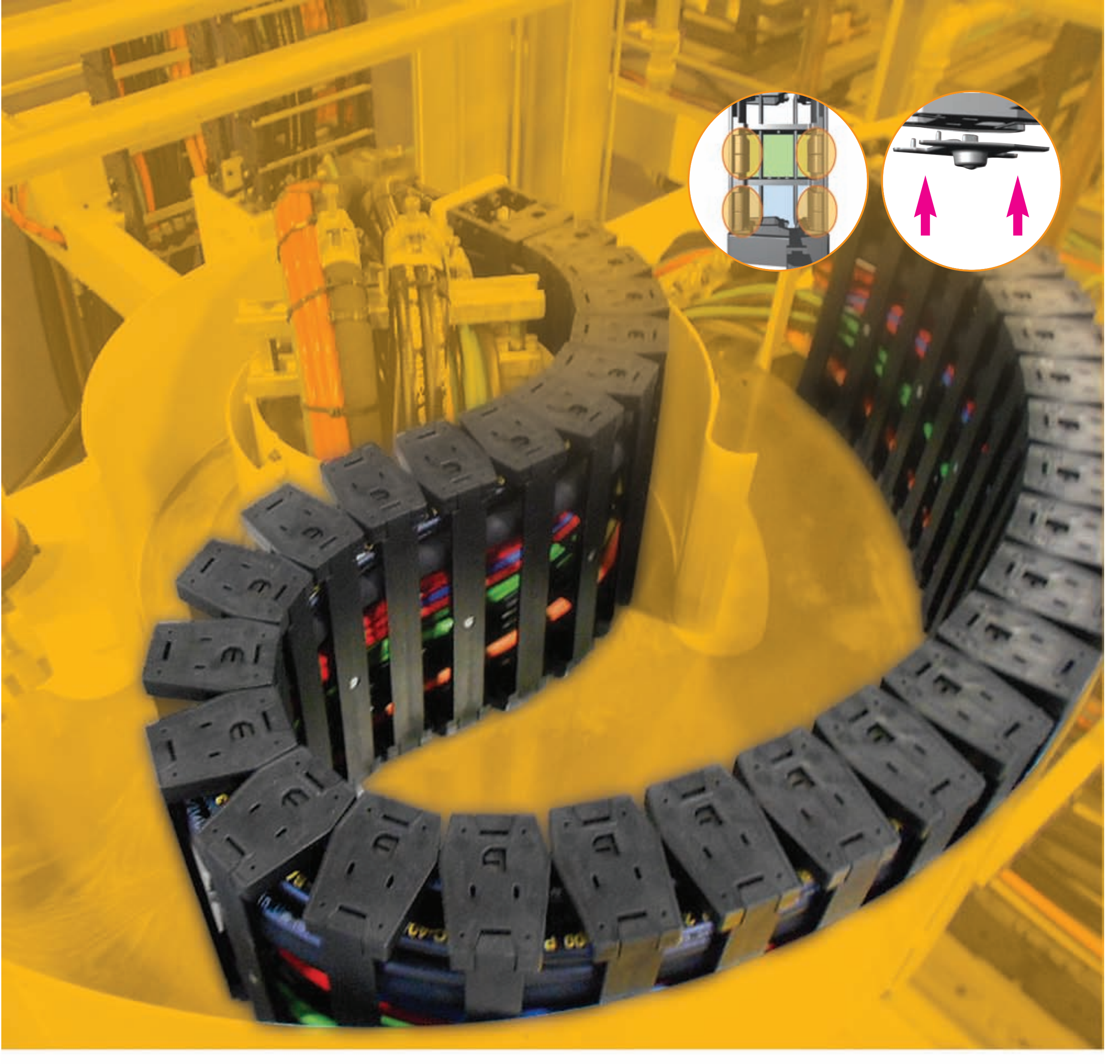
Bracket Type



Guide Channel



- B1 = BK + 20mm
- Angle 100 X 100 X 7T



Revolving Chain

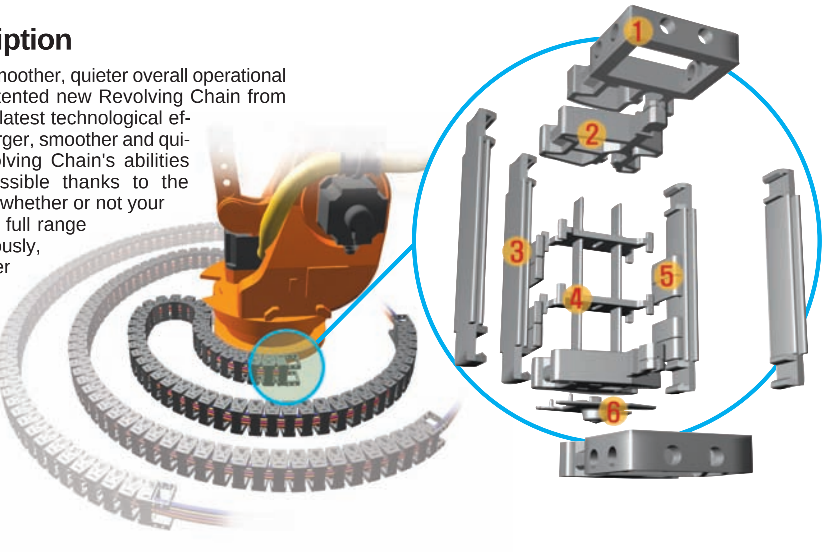
Revolving chain

Automatically control the bending radius and reverse bending radius
Maximize the mobility of bending radius
Apply to the rotating Machine or Robot
Low dust and low noise realization
Boost the productivity with more secured cable protection system

- RV020CR
- RV028CR
- RV040CR
- RV048CR
- RV060CR

Part name and description

Safer equipment management. Smoother, quieter overall operational movement. Easy installation. Patented new Revolving Chain from CPS. Revolving Chain adopt the latest technological efforts with customer requests for larger, smoother and quieter ranges of movement. Revolving Chain's abilities stretch even further, made possible thanks to the patented free-bending radius. So whether or not your operating equipment is moving a full range of more than 360degrees continuously, or if it is moving in different shorter movements, Revolving Chain protects your cables while allowing the equipment to move freely throughout the full range of motion.



❶ FEB

The end of the cable chain, used to mount the application to the operating machinery or moving apparatus. CPS has improved the end bracket by making it possible to mount the cable chain from the front, side, bottom or top.

❷ Side Band

Developed and patented by CPS. As a result of the sideband connection method, virtually no noise is produced during operation. Which is possible by eliminating all points of friction.

❸ Frame (FR)

It is a unit that connects to side band and inner surface is smoothly machined to protect cables from fiction.

❹ Dividers(DV) & Separators(SP)

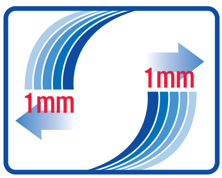
Used to separate the cables inside of the cable chain and protect them from twisting and breaking.

❺ Stopper

It is a unit to adjust the divider's posistion by considering number of cables in cable chain.

❻ Ball Caster

Attached to the bottom of the sidebands, ball casters help to facilitate smooth and quiet movement of the cable chain. CPS ball casters are used every 8 link. (Can be changed according to application environment)

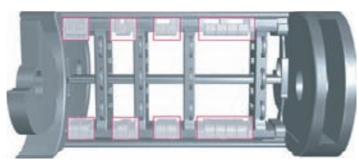


Adjustable Bending Radius per 1mm!

Revolving Chain adjusts to the machine or application movement by creating various bending radius automatically. It can be adjusted by a unit of 1mm.

Stopper System

Stoper decides the location of divider which is settled in side of cable chain and control the position of divider according to the inserted cable's size and quantity.
The items are classified as ST-M1, ST-M2, ST-S1, ST-S2 and please refer following drawings.



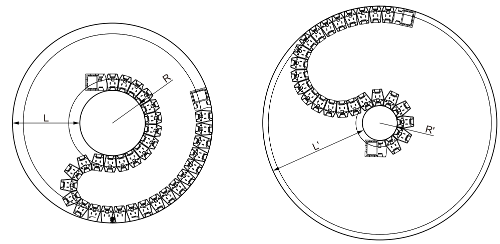
Ordering

RV 048CR. 200. A / F - 1000L : (DV:2)

- RV: Revolving Chain
- 048CR: Chain Type (RV020, RV028, RV040, RV048, RV060CR)
- 200: Inner Height of Chain
- A: Application Type of Ball Caster
- F: Free End Bracket
- 1000L: Length (mm)
- (DV:2): Q'ty of Divider (Link)

RV020CR

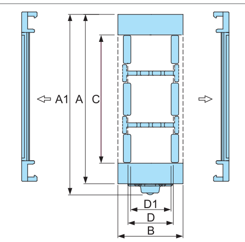
Chain Cross Section



A Type B Type

A Type	Minimum distance (L)	130
	Minimum reverse bending (R))	40
B Type	Minimum distance (L')	150
	Minimum reverse bending (R')	30

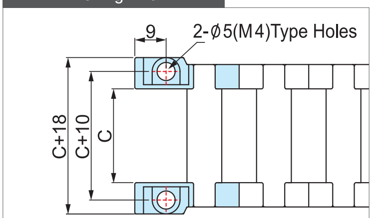
There are two installation choices, A or B corresponding with the bending radius of the side band. Choose A or B installation when there is insufficient distance between R, R' (Inner Bending Radius) and L, L' (Reverse)



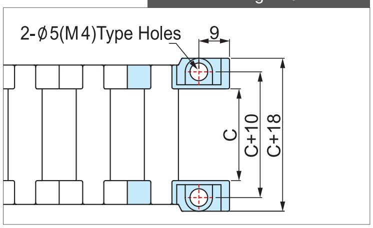
Chain Type	A (A1)	B	C	D (D1)
RV020CR	30 41 51 61 81 91	28	16 27 37 47 67 77	22

Bracket Type

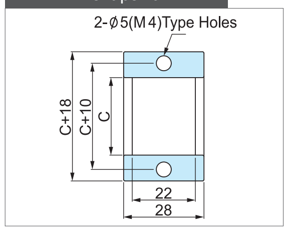
Moving End

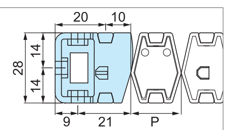


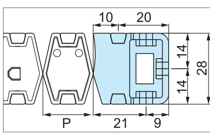
Fixing End



Front point



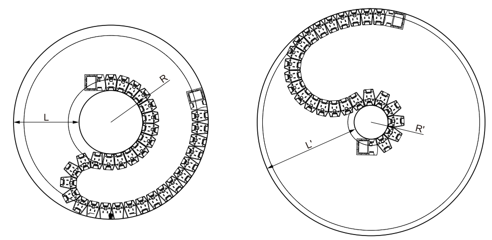




Chain Type	Pitch	C
RV020CR	20	16 27 37 47 67 77

※ Ball Caster, Divider and Stopper are not applied to RV020CR

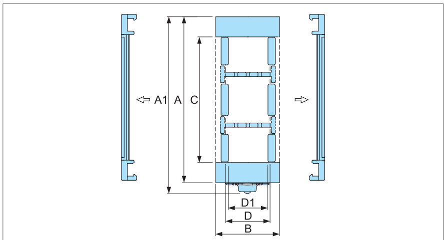
Chain Cross Section



A Type B Type

A Type	Minimum distance (L)	170
	Minimum reverse bending (R))	70
B Type	Minimum distance (L')	200
	Minimum reverse bending (R')	50

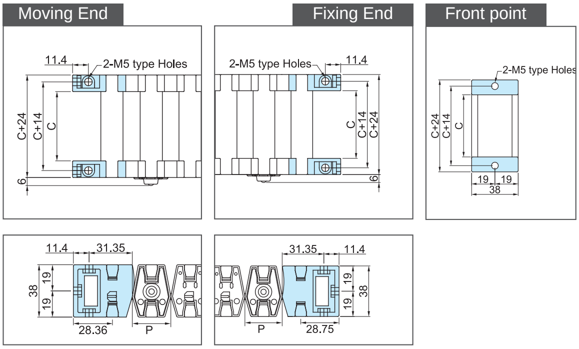
There are two installation choices, A or B corresponding with the bending radius of the side band. Choose A or B installation when there is insufficient distance between R, R' (Inner Bending Radius) and L, L' (Reverse)



Chain Type	A (A1)	B	C	D (D1)
RV028CR	59(65) 79(85) 99(105) 124(130) 149(155)	38	35 55 75 100 125	28(25)

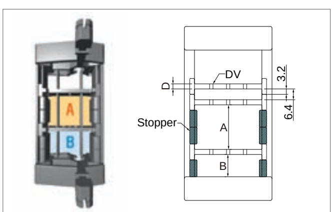
Bracket Type

Moving End Fixing End Front point



Chain Type	Pitch	C
RV028CR	28	35 55 75 100 125

Application Method of Stopper

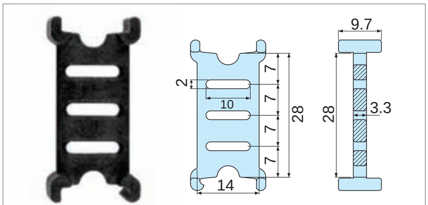


A = 6.4+10XStopper Q'ty
B = 3.2+10XStopper Q'ty

D = RV028CR : 3.3mm
RV040CR : 3.2mm
RV048CR : 3.5mm

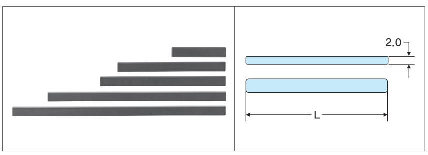
Dividers(DV)

Divider is used when there are more than 2 cables are inserted, which protects twisting and beaking problem.



Ordering NO. : S-DV036/025CR/028CR

Separators(SP)

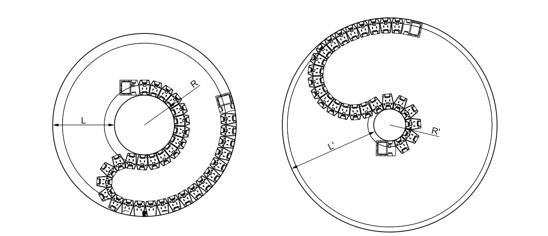


The inserted separators into dividers have the function to separate cables, and lessen the interference of cables, so as it is also used for efficient use of inner chamber space.

Ordering NO.	Length (L)
S-SP/M.35	35
S-SP/M.55	55
S-SP/M.75	75
S-SP/M.100	100
S-SP/M.125	125

RV040CR

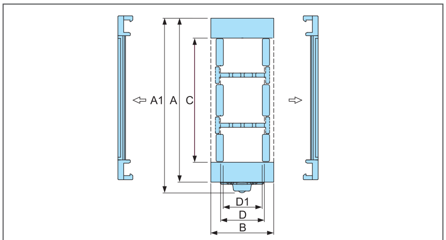
Chain Cross Section



A Type　　B Type

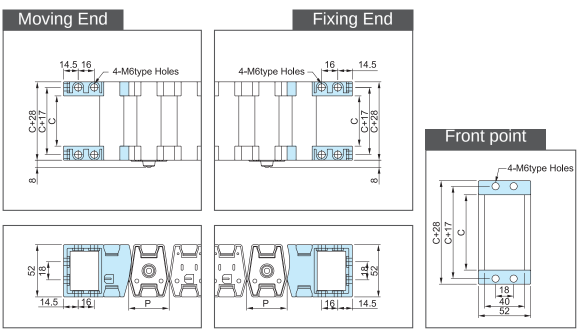
A Type	Minimum distance (L)	230
	Minimum reverse bending (R))	120
B Type	Minimum distance (L')	340
	Minimum reverse bending (R')	70

There are two installation choices, A or B corresponding with the bending radius of the side band. Choose A or B installation when there is insufficient distance between R, R' (Inner Bending Radius) and L, L' (Reverse)



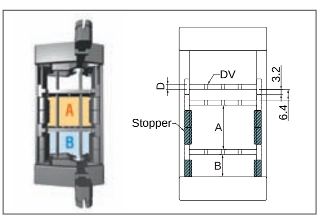
Chain Type	A (A1)	B	C	D (D1)
RV040CR	78 (86) 103 (111) 128 (136) 138 (146) 153 (161) 178 (186) 203 (211) 228 (236)	52	50 75 100 110 125 150 175 200	40(37)

Bracket Type



Chain Type	Pitch	C
RV040CR	40	50 75 100 110 125 150 175 200

Application Method of Stopper

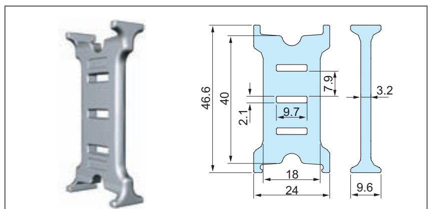


A = 6.4+10XStopper Q'ty
B = 3.2+10XStopper Q'ty

D = RV028CR : 3.3mm
RV040CR : 3.2mm
RV048CR : 3.5mm

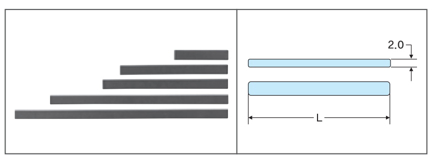
Dividers(DV)

Divider is used when there are more than 2 cables are inserted, which protects twisting and beaking problem.



Ordering NO. : S-DV050N/035CR/040CR

Separators(SP)

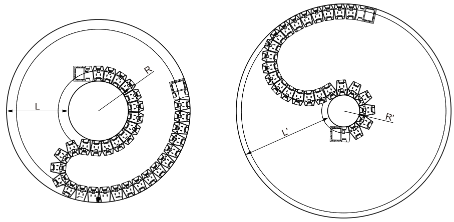


The inserted separators into dividers have the function to separate cables, and lessen the interference of cables, so as it is also used for efficient use of inner chamber space.

Ordering NO.	Length (L)
S-SP/M.50	50
S-SP/M.75	75
S-SP/M.100	100
S-SP/M.110	110
S-SP/M.125	125
S-SP/M.150	150
S-SP/M.175	175
S-SP/M.200	200

RV048CR Revolving Chain

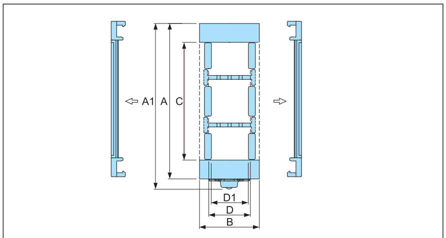
Chain Cross Section



A Type B Type

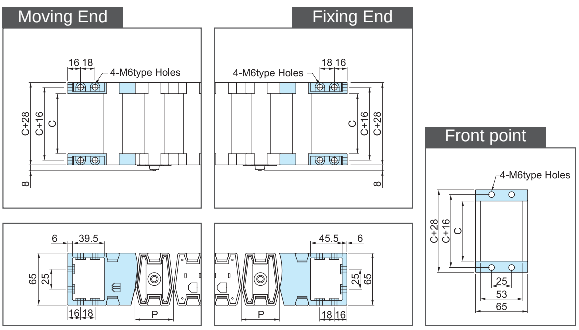
A Type	Minimum distance (L)	300
	Minimum reverse bending (R))	160
B Type	Minimum distance (L')	450
	Minimum reverse bending (R')	90

There are two installation choices, A or B corresponding with the bending radius of the side band. Choose A or B installation when there is insufficient distance between R, R' (Inner Bending Radius) and L, L' (Reverse)



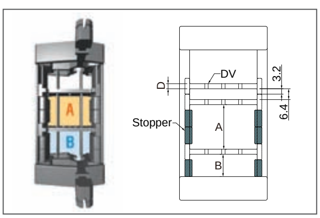
Chain Type	A (A1)	B	C	D (D1)
RV048CR	78(86)	65	50	53(50)
	103(111)		75	
	128(136)		100	
	153(161)		125	
	178(186)		150	
	203(211)		175	
	228(236)		200	

Bracket Type



Chain Type	Pitch	C
RV048CR	48	50 75 100 125 150 175 200

Application Method of Stopper

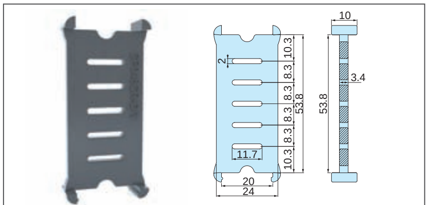


A = 6.4+10XStopper Q'ty
B = 3.2+10XStopper Q'ty

D = RV028CR : 3.3mm
RV040CR : 3.2mm
RV048CR : 3.5mm

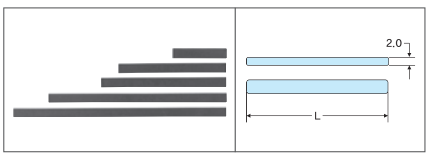
Dividers(DV)

Divider is used when there are more than 2 cables are inserted, which protects twisting and beaking problem.



Ordering NO. : S-DV048CR

Separators(SP)

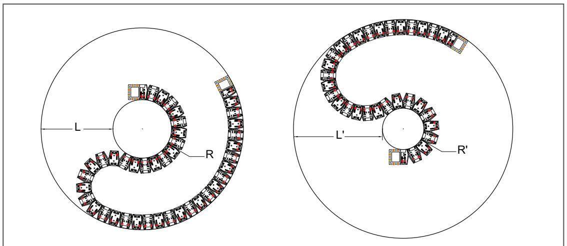


The inserted separators into dividers have the function to separate cables, and lessen the interference of cables, so as it is also used for efficient use of inner chamber space.

Ordering NO.	Length (L)
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
S-SP/M.175	175
S-SP/M.200	200

RV060CR

Chain Cross Section

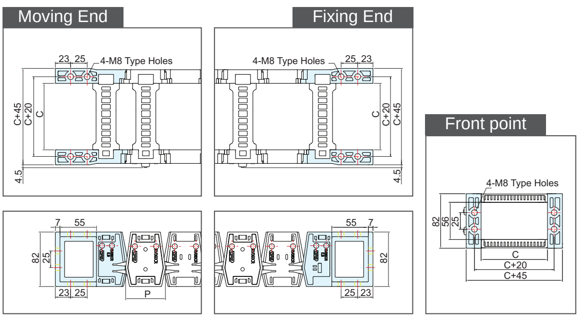


A Type B Type

A Type	Minimum distance (L)	400
	Minimum reverse bending (R))	165
B Type	Minimum distance (L')	485
	Minimum reverse bending (R')	120

There are two installation choices, A or B corresponding with the bending radius of the side band. Choose A or B installation when there is insufficient distance between R, R' (Inner Bending Radius) and L, L' (Reverse)

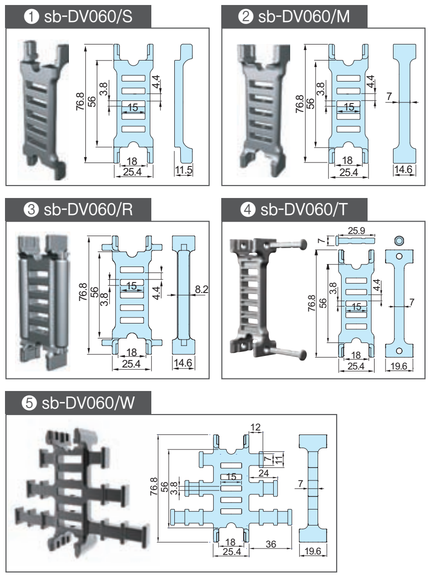
Bracket Type



Chain Type	Pitch	C
RV060CR	60	75 100 125 150 175 190 200 240 250 300 350 400

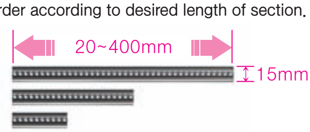
Dividers(DV)

Installed vertically, these dividers separate the carrier's inner chamber and prevent cables from twisting or tangling during operation.



Separators(SP)

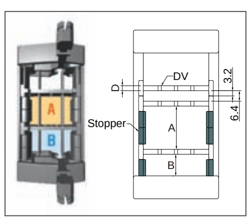
Can order according to desired length of section.



The inserted separators into dividers have the function to separate cables, and lessen the inter ference of cables, so as to prevent them tangle and disconnection, as well as make the efficient use of inner chamber space.

Ordering NO.	Length (L)
S-SP/M.75	75
S-SP/M.100	100
S-SP/M.125	125
S-SP/M.150	150
S-SP/M.175	175
S-SP/M.200	200
S-SP/M.250	250
S-SP/M.300	300
S-SP/M.350	350
S-SP/M.400	400

Application Method of Stopper



A = 6.4+10XStopper Q'ty
B = 3.2+10XStopper Q'ty

D = RV028CR : 3.3mm
RV040CR : 3.2mm
RV048CR : 3.5mm

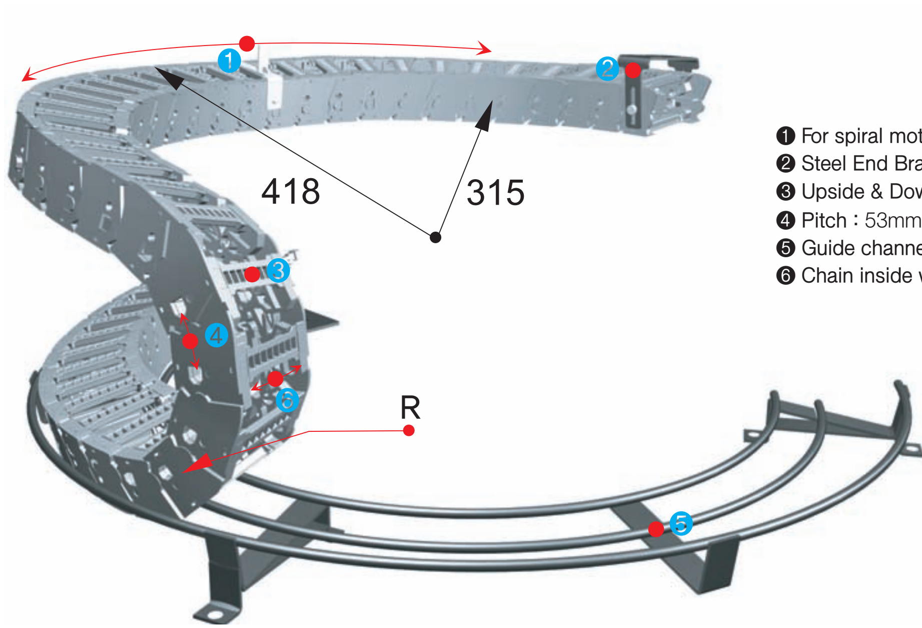
Stoppers control divider position and lock the dividers into place during operation.
They are fixed directly to the frames between the dividers at recommended width.

Helix Chain

Helix chain

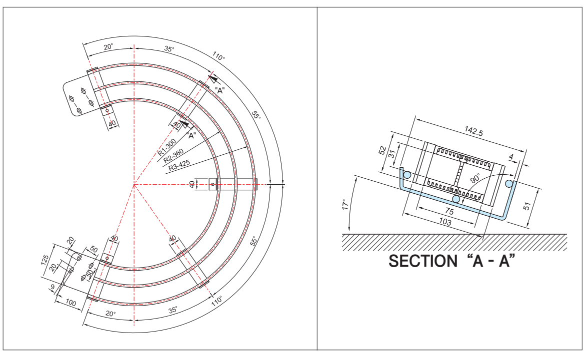
Helix chain is applied to the application with a spiral rotary motion in limited space where 360 degrees robots, roating machines are operated.
It protects cables from external damage and keeps the rotating angles safely.

- HX3553
- HX6075



❶ For spiral motion up to 360˚
❷ Steel End Bracket
❸ Upside & Downside open frame
❹ Pitch : 53mm
❺ Guide channel
❻ Chain inside width : 75mm

Guide Channel



Bending Radius (R)	
90	140

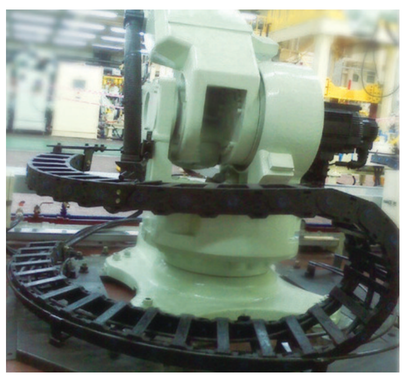
Calculation of required Number of Links

$$N = \left(\frac{\pi \times Or \times B}{360^\circ \times P} \right) + \frac{Lp}{P}$$

N : Number of Links
Or : Outer Radius
B : Rotation angle
P : Chain pitch
Lp : π R+6p

Application

Robot, Rotating Machine

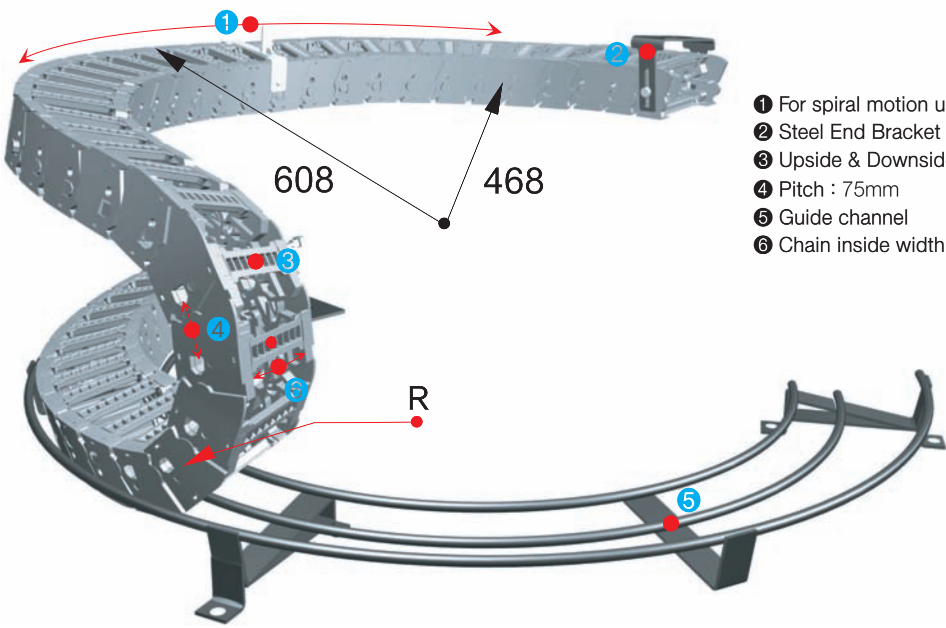


Ordering

HX 3553. 075. R90 - 1000L : (DV:2)

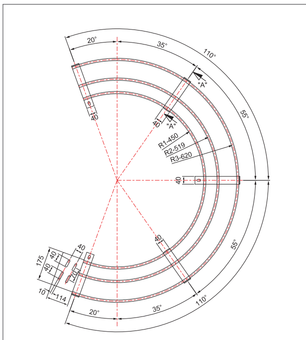
- Helix Chain
- Inside width
- Bending Radius
- Length(mm)
- Q'ty(set)

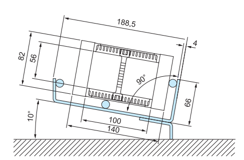
HX6075



❶ For spiral motion up to 360˚
❷ Steel End Bracket
❸ Upside & Downside open frame
❹ Pitch : 75mm
❺ Guide channel
❻ Chain inside width : 100mm

Guide Channel





SECTION “A - A”

Bending Radius (R)			
110	135	185	235

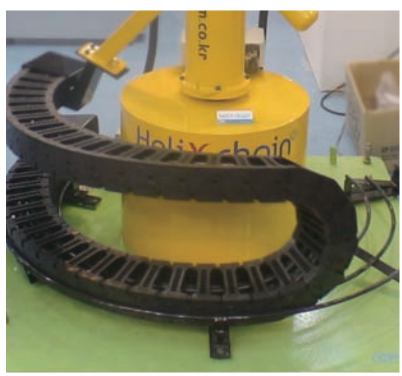
Calculation of required Number of Links

$$N = \left(\frac{\pi \times Or \times B}{360^\circ \times P} \right) + \frac{Lp}{P}$$

N : Number of Links
Or : Outer Radius
B : Rotation angle
P : Chain pitch
Lp : π R+6p

Application

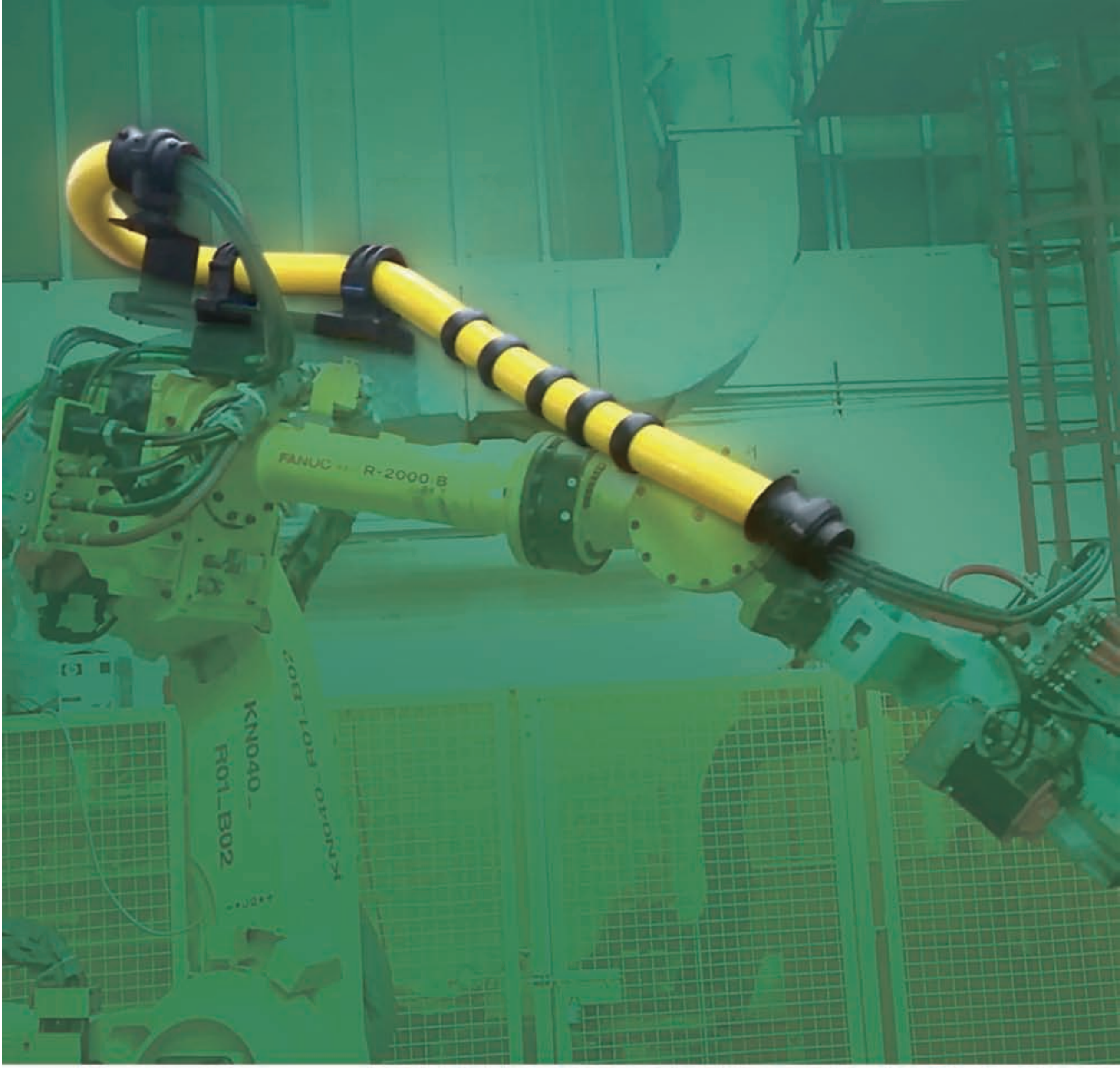
Robot, Rotating Machine



Ordering

HX 6075. 100. R110 - 1000L : (DV:2)

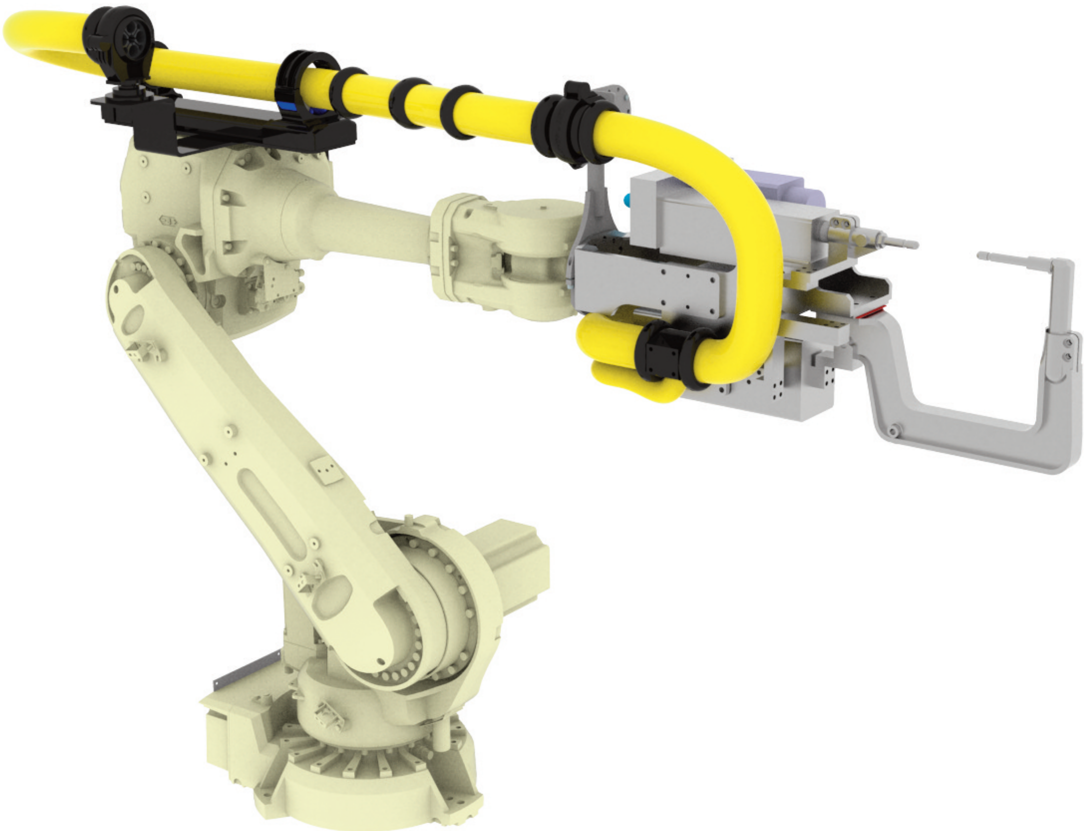
- HX 6075: Helix Chain
- 100: Inside width
- R110: Bending Radius
- 1000L: Length(mm)
- (DV:2): Q'ty(set)



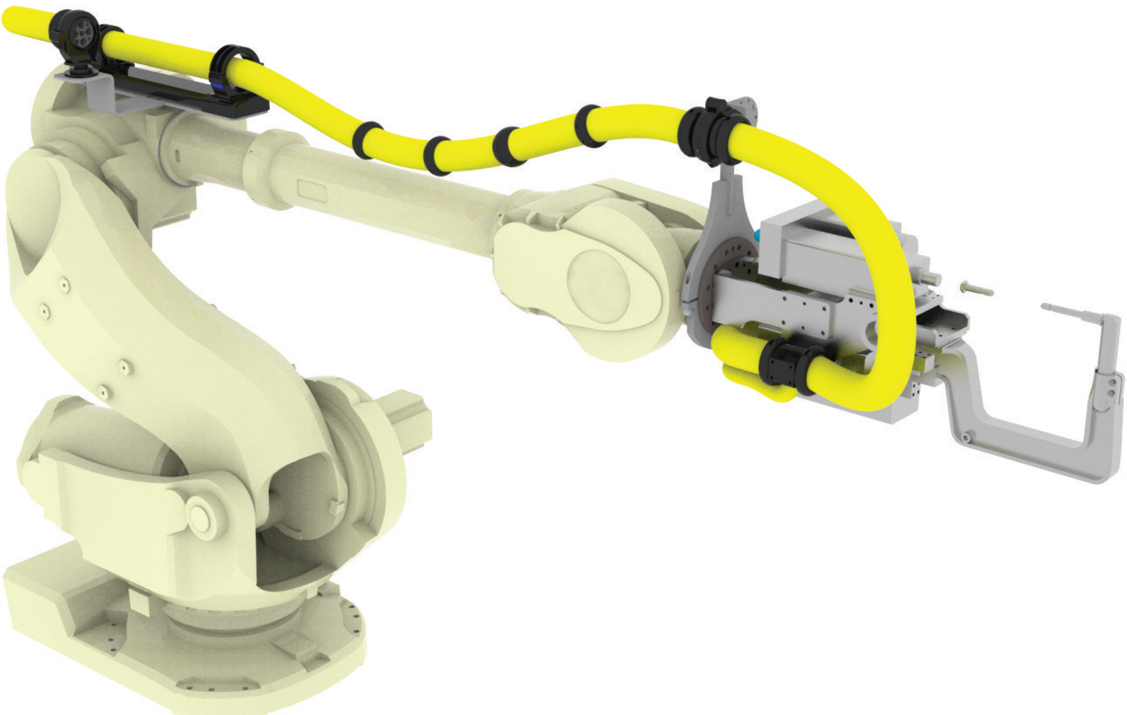
Roboway

Roboway® RW ROBO-KIT UR. BAND

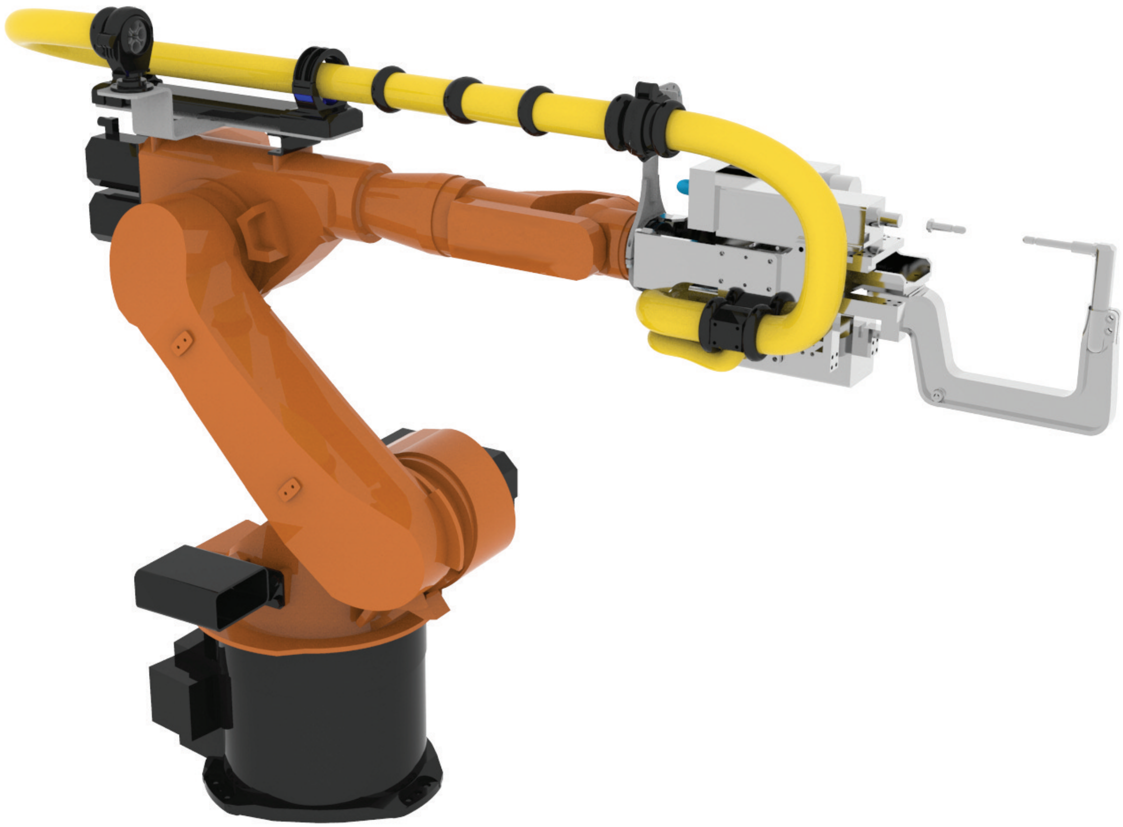
Protection system for robot cables/hoses
Made in Korea
Passed reliability test!



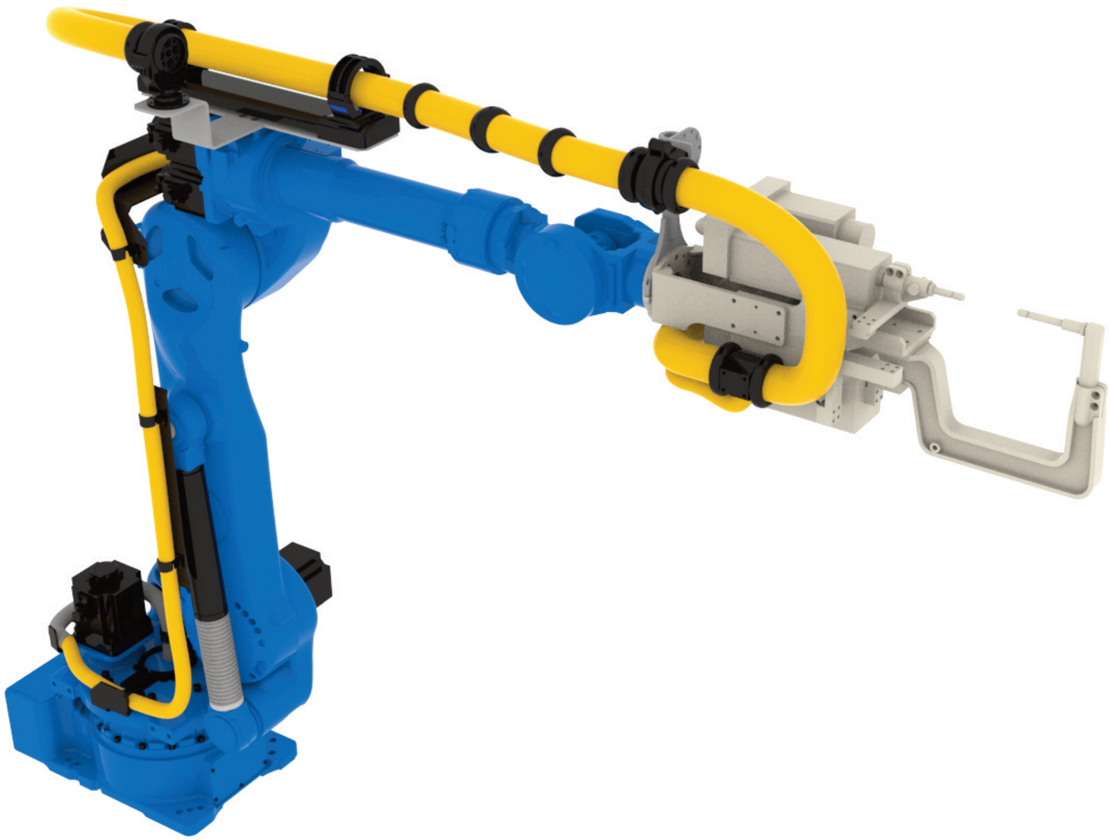
Part Number	Robot Specification	Description
Roboway-70	ABB IRB 4600	ABB 4600 with RW-70Y (450mm)



Part Number	Robot Specification	Description
Roboway-70	ABB IRB 7500	IRB 7500 with RW-70Y (450mm)



Part Number	Robot Specification	Description
Roboway-70	KR60-3	KR60-3 with RW-70Y (450mm)



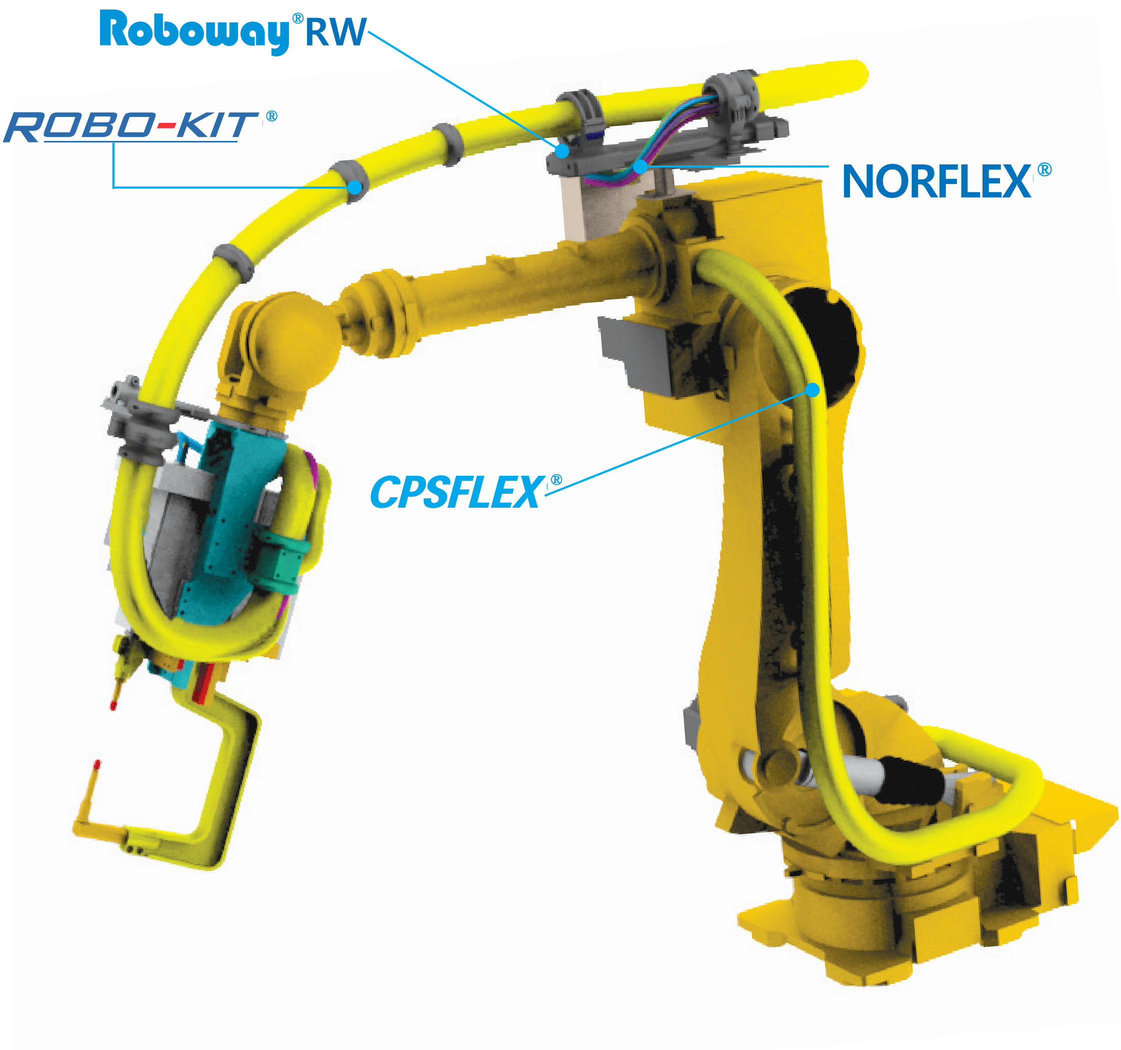
Part Number	Robot Specification	Description
Roboway-70	MH180	MH180 with RW-70Y (450mm)

Part Number	Robot Specification	Description
ROBOWAY-70Y	HS-180	HS-180 with Roboway-70Y (450mm)

Complex System composed of RW, ROBO-KIT, CPSFLEX, NORFLEX, etc

Feature of Roboway

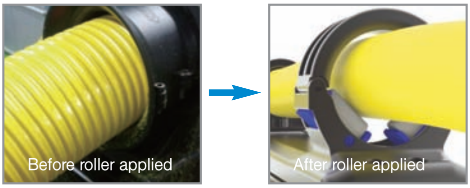
Industrial Robot contains variety types of cables and hoses that connect to 'Head' part of Robot Robot operates to various directions and severe angles repeatedly. When this happens, cables are hoses are twisted and they can be damaged in repeated tension-compression operation. Roboway System is a device that protects the cables and hosed by conducting movement of contraction and relaxation in severe movement of Robot.



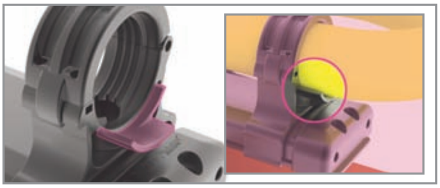
Roboway RW Strong Point

Roboway® can protect cables effectively by making tube's movement to one direction while robot arm operates to various angle of direction.

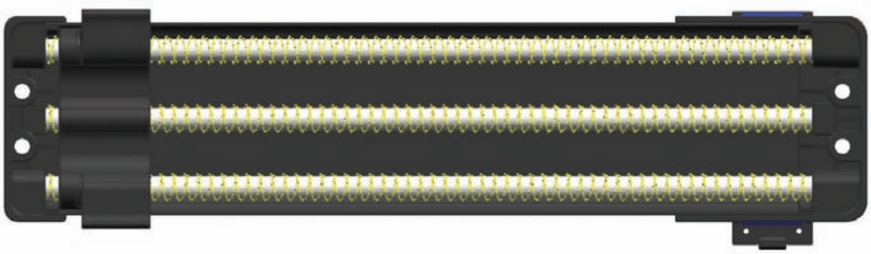
1 Minimized dust by attaching rollers!



2 Design the guide unit to prevent tube's sagging problem.

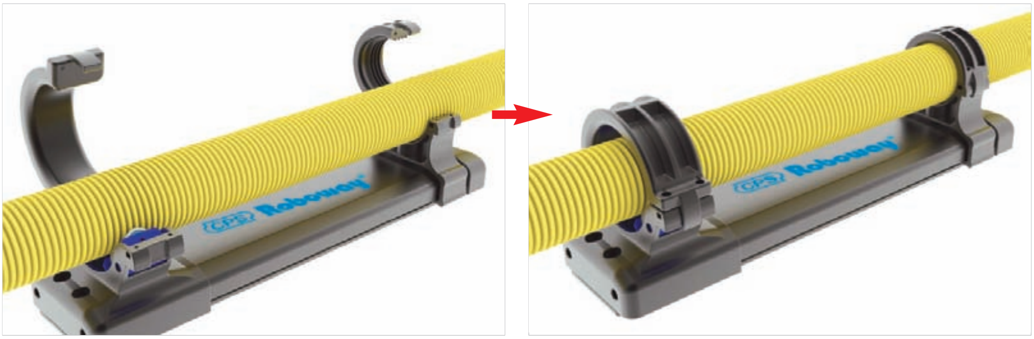


3 Freely adjustable stroke by 1mm unit.

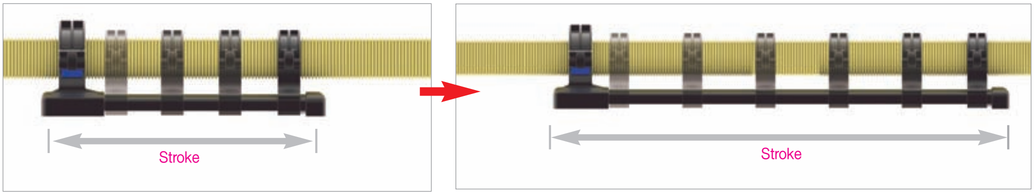


* 2~3 Special springs are applied

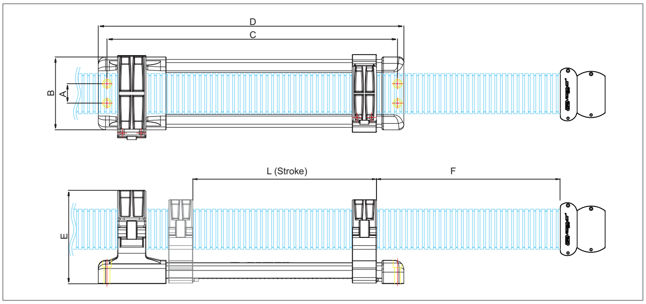
4 Convenient structure with Hinge & Hook unit to install fast



5 Tube Tension is maintained by its freely adjustable stroke



Roboway Dimension



Type	A Bolt hole width	B Width	C Bolt hole width	D Length	E Height	F Length	L Stroke
RW-36	30	96	L+202	L+222	137	650~700	300 / 400 / 500 / 600
RW-48	30	96	L+202	L+222	137		
RW-56	40	150	L+249	L+280	192	700~750	350 / 450 / 550 / 650
RW-70	40	150	L+249	L+280	192		
RW-95	40	150	L+249	L+280	192		

Ordering

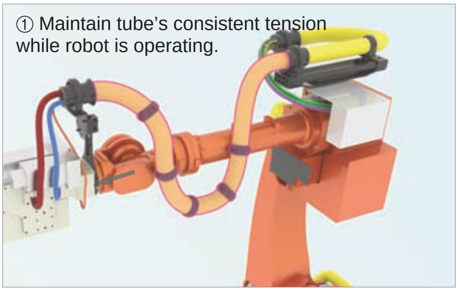
RW-48 400L : 10ST

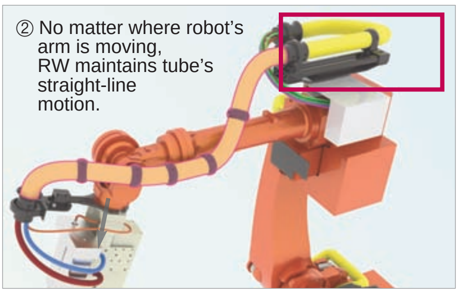
- Q'ty(set)
- Length
- Size 36, 48, 56, 70, 95
- Roboway®

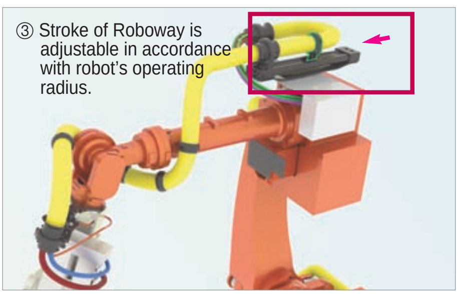
※ Dimensions in mm

Roboway® Comparison with other brand

CPS Roboway® in operation





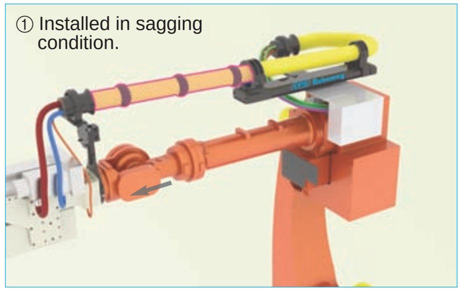


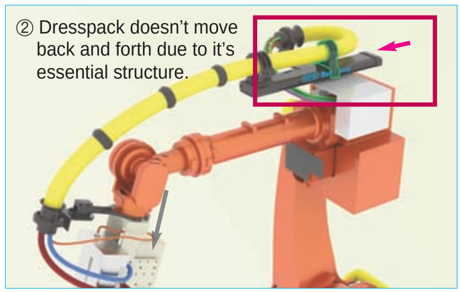
Other Brands' Dresspack :

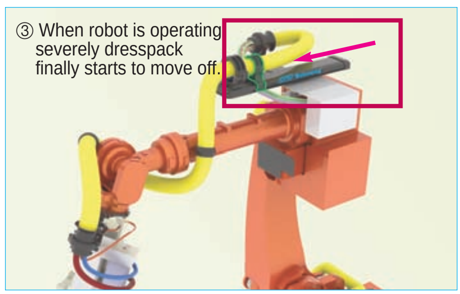
① Dress-pack does not fully operate be-cause to much flexible tube are installed

② Hence, flexible tube touches repeatedly to certain areas of Robot, which occurs damage to flexible tubes and finally broken.

Other Products in operation







Roboway RW :

① Apply only necessary amount of flexible tube, meanwhile maintain constant tension according to robot's complicated movement.

② RW(Roboway) maintains linear motion in Robot's severe movement.

Assembly Composition

Assembly Composition

RKR + RKC + RKS + RKSC + VCG + RKTC + RKTP

ROBO-KIT® Components

ROBO-KIT 22 / 28 / 36 size

RKTP - Preventive unit of abrasion of tube
RKTP is made of strong wear-resistant material and it is installed where tube and part of Robot meets to protect tube. It lengthens life of tube and is convenient to assemble and disassemble.

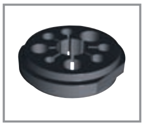
RKS - Fixed unit installed at the end part of tube
It is installed at the end part of tube and is assembled with RKC. It is a ball joint structure which is used to variable movement of robot.

RKD - Fixed unit to support tube
It is installed to support tube's variable movement of Robot. It is a ball joint structure and operate well in condition of robot's variable movement.

RKC - Connection clamp of tube
It is installed with RKS and RKD and is fixed to specific area of robot with RCS and RKR. It is designed to bear robot's high speedy operation and great strength.

RKSC - Rotating unit to release fatigue degree
It protects friction between cable or hose and RKS while robot is operating. It is fixed with VCG in RKS.

RKR - Supporting unit
It is installed with RKC and it helps RKC rotates well in accordance with robot's movement.



VCG - Fixed unit for cable and hose
It is installed at the end part of tube in RKS as combined with RKSC. It holds cable and hose to not move. There are several size of hole' dimension in accordance with specification of cable and tube to be used.

NEW ROBO-KIT 48 / 56 / 70 / 95 size

Strong wear-resistant material

RKTP - Preventive unit of abrasion of tube
RKTP is made of strong wear-resistant material and it is installed where tube and part of Robot meets to protect tube. It lengthens life of tube and is convenient to assemble and disassemble.

RKS - Fixed unit installed at the end part of tube
It is installed at the end part of tube and is assembled with RKC. It is a ball joint structure which is used to variable movement of robot.

Strong wear-resistant material

RKTC - Connection ring of tube
It is made of strong wear-resistant material and installed to where tube and body of robot meets. In case of tube damaged, it is used to connect tube in urgent. It also installed to guide tube with RKC. It is a ball joint type of unit which moves freely so appropriate to be used in robot's variable movement.

RKC - Connection clamp of tube
It is installed with RKS and RKD and is fixed to specific area of robot with RCS and RKR. It is designed to bear robot's high speedy operation and great strength.

RKSC - Rotating unit to release fatigue degree
It protects friction between cable or hose and RKS while robot is operating. It is fixed with VCG in RKS.

RKR - Supporting unit
It is installed with RKC and it helps RKC rotates well in accordance with robot's movement.

VCG - Fixed unit for cable and hose
It is installed at the end part of tube in RKS. It holds cable and hose to not move. There are several size of hole' dimension in accordance with specification of cable and tube to be used.

Dimension & Ordering

Product	Conduit Size	Width	Height	Length	Outer Diameter
RKTP	22 28 36 48 56 70 95	28.0 30.0 30.0 30.0 40.0 40.0 45.0	46.4 53.0 62.0 80.0 93.2 108.0 131.5	-	46.4 53.0 62.0 80.0 93.2 108.0 131.5
RKTC	48 56 70 95	50.0 60.0 60.0 65.0	78.0 90.2 105.0 128.5	-	78.0 90.2 105.0 128.5
RKC	22 28 36 48 56 70 95	30.0 30.0 45.0 49.5 40.0 40.0 50.0	50.0 59.5 88.3 105.0 138.1 145.5 169.3	49.0 58.8 90.2 128.2 150.1 164.9 190.9	45.0 53.5 76.0 98.0 116.2 131.0 154.5
RKS	22 28 36 48 56 70 95	50.0 60.0 100.3 89.0 102.0 102.0 120.0	23.0 27.0 80.5 92.3 105.3 120.1 144.2	23.0 27.0 80.5 92.3 105.3 120.1 144.2	23.0 27.0 80.5 92.3 105.3 120.1 144.2
RKD	22 28 36	50.0 60.0 120.0	23.0 27.0 83.0	23.0 27.0 83.0	23.0 27.0 83.0
RKSC	22 28 36 48 56 70 95	10.5 13.0 20.6 22.0 26.0 26.0 35.0	29.5 34.5 44.6 67.5 81.2 96.0 119.5	-	29.5 34.5 44.6 67.5 81.2 96.0 119.5
RKR	22 28 36 48 56 70 95	56.0 56.0 98.0 98.0 98.0 98.0 120.0	25.7 25.7 42.0 42.0 42.0 42.0 37.0	-	56.0 56.0 98.0 98.0 98.0 98.0 120.0
VCG	22 28 36 48 56 70 95	10.5 13.0 20.6 24.0 34.0 34.0 43.0	25.5 30.5 40.6 62.5 75.8 90.0 113.5	-	25.5 30.5 40.6 62.5 75.8 90.0 113.5

ROBO-KIT® Ordering

RKC-70 : 10EA

Q'ty

Size 22, 28, 36, 48, 56, 70, 95

ROBO-KIT® RKC / RKD / RKTP / RKTC / RKSC / RKR / VCG / RKS

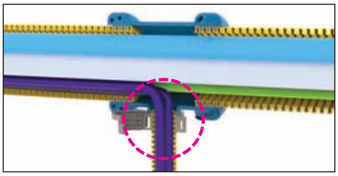
※ Dimensions in mm

Distributor

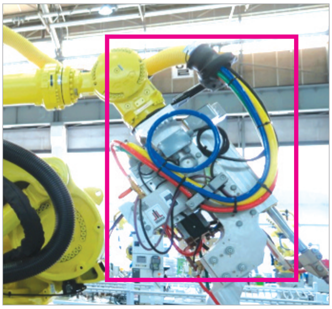
Feature of Distributor

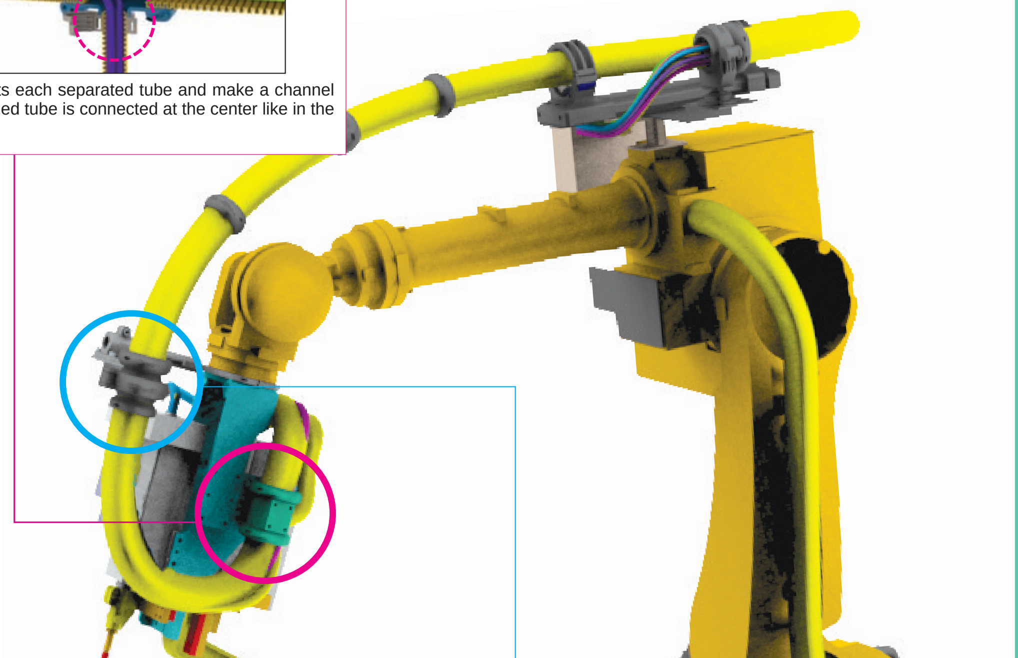
Distributor protects cables and hoses that connect to very end part, Robot gun where welding flame fled up. There are two types of Distributor. One is RKDC and the other one is RKTD('T' shape)

RKTD-702



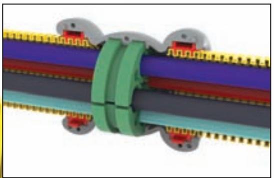
※ It connects each separated tube and make a channel where 22 sized tube is connected at the center like in the image.





RKDC-70

It connects each separated tube with RKSC.

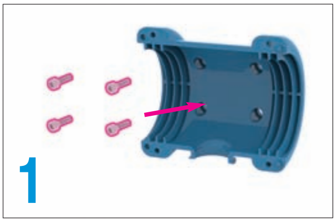


Each 2 of VCG and RKSC are inserted inside of RKDC like in the image.

Details of Dimension

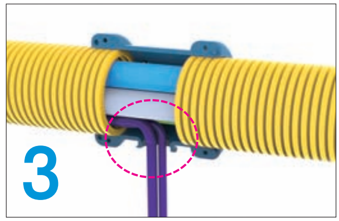
Product	Conduit Size	Width	Height	Length	Outer Diameter
RKTD	70	120	140	-	140
RKDC	70	110	129	-	129

Installation Method of RKTD-702

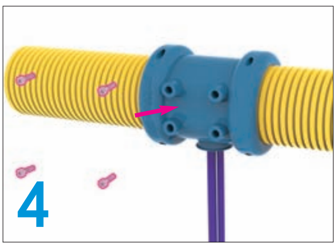


Fix a half RKTD to Robot

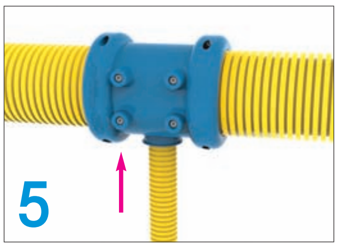
Place Tubes in the right place of RKTD.



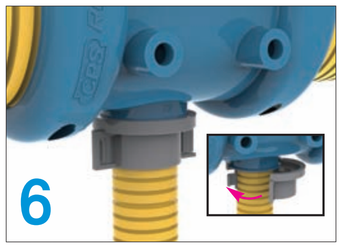
Insert Cables and hoses. Arrange necessary cables at the exit hole of RKTD like in the image.



Put the other half of RKTD and tight with Hex Socket head Cap Screw.

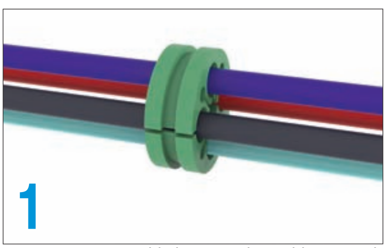


Inset Tube to the center hole of RKTD

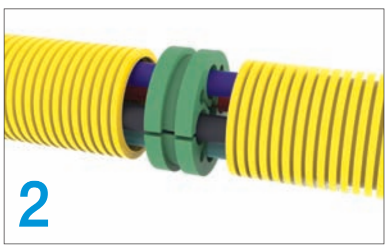


Fix tube to RKTD' center hole by assembling Hinge/Hook type of Cap like in the image.

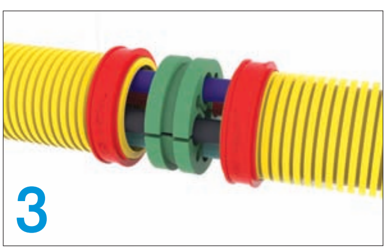
Installation Method of RKDC-70



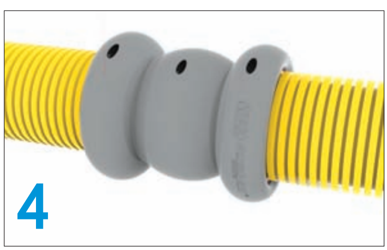
Connect VCG to cable by arranging cables at each hole of VCG.



Connect tubes at both sides of VCG like in the image.



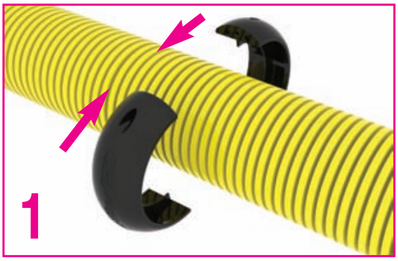
Place RSSC to outside of tubes like in the image.



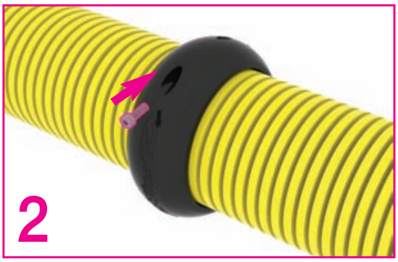
Complete assembly by covering RKDC and tight it with screw bolts.

ROBO-KIT

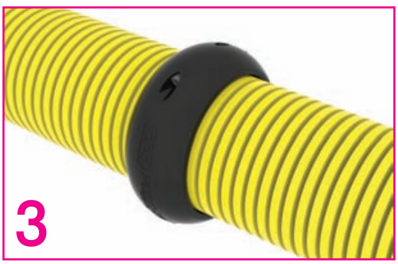
Assembly Procedure of RKTP



Assemble 1 set of RKTP by matching bolt insert area to insert tap area.

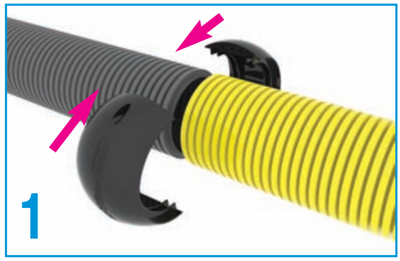


Fix them by using L wrench

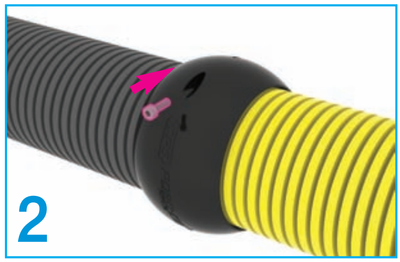


Screw bolts are supplied together when RKTC is ordered.
※ Insert Tap unit is released in assembly condition

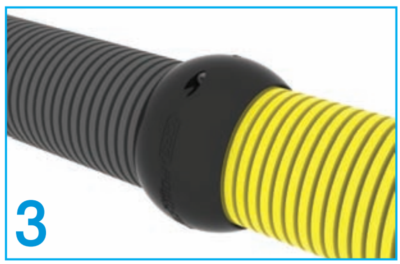
Assembly Procedure of RKTC



Assemble 1 set of RKTC by matching bolt insert area to insert tap area.
※RKTC connects two separated tube like in the image

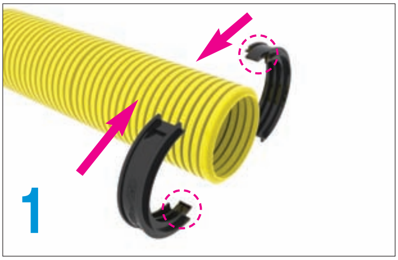


Assemble RKTC and tight by inserting Hex. Socket Screw

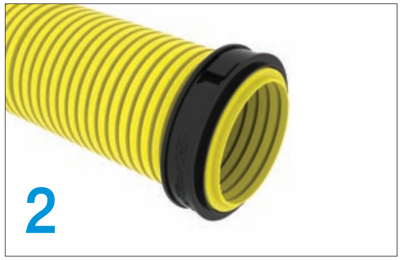


Hex. Socket Screw is initially supplied with RKTC.
※ Insert Tap unit is released in assembly condition

Assembly Procedure of RKSC

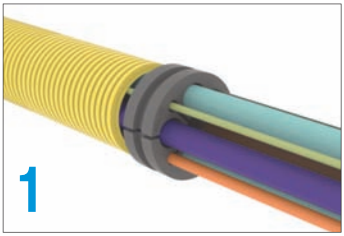


Place a set of RSKC to the end area of tube like in the image.

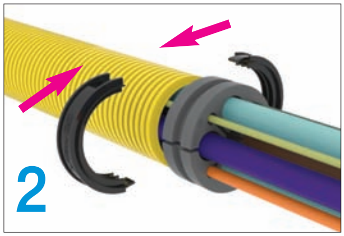


When assemble RKSC, match Hook and Hook assembly part

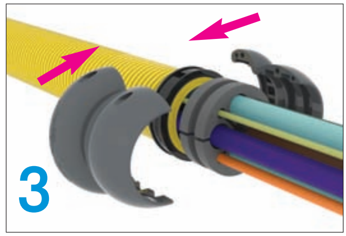
Assembly Procedure of ROBO-KIT



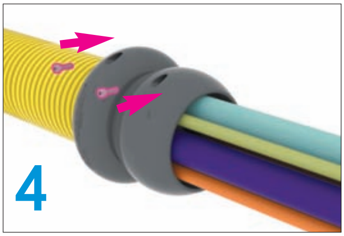
Arrange cables and hoses at each hole of VCG



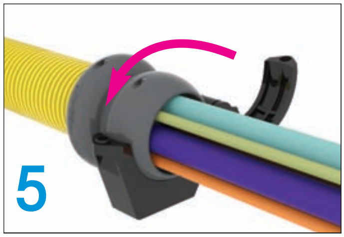
Assemble 1 set of RKSC by placing it to end part of tube



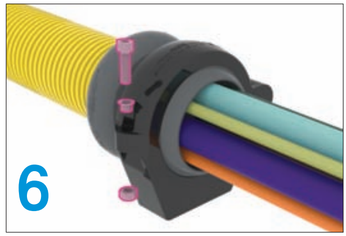
Assemble 1 set of RKS by covering RKSC and VCG



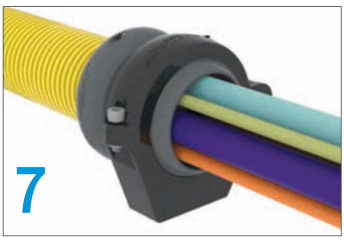
Fix RKS by using Screw Bolts.



Place RKS to RKC like in the image.

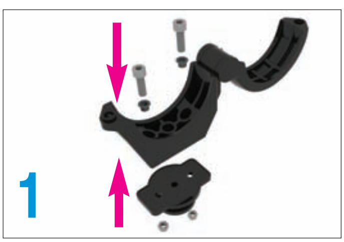


Fix RKC by using bolt, nut and insert washer like in the image.



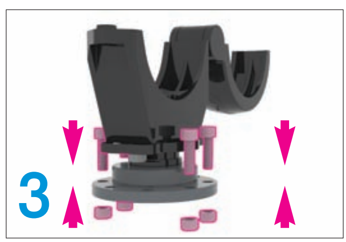
Completion!

Assembly Procedure of RKR / RKC / RKTC

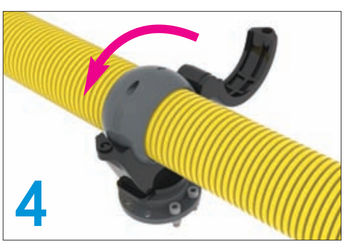


Assemble RKC and RKR(M) by using bolt and nut

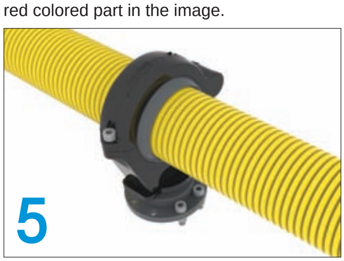
Assemble 1 set of RKR(F) by adjusting it to red colored part in the image.



Fix RKR to the fixing plate by using bolt and nut.



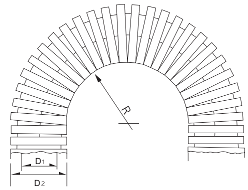
Follow the same procedure of RKC and RKS as mentioned above.



Completion!

Roboway CPSFLEX(PAM / PAR / PUR)

CPSFLEX® – PAM Specification



- Material : High Quality Polyamide 11/12 (PAM)
  : High Quality Polyamide 12 (PAR)
- Construction : Inside & Outside Corrugated Plastic tube
- Degrees of Protection : IP 68
- The max. Instantaneous Temperature : -50℃ to +95℃
- Short Term : up to +150℃
- Self-Extinguishing : UL94-V2, Halogen-Free
- Color : Black & Yellow
- Connections : Roboway, Robo-kit, CPSFIX
- Application : Robots (Welding robot, Handling robot, Rotating machinery)

Black	Yellow	Inner Diameter (D1)	Outer Diameter (D2)	Bending Radius (R)mm ±10%	Packing meter / roll
PAM / PAR - 22B	PAM / PAR - 22Y	21.7	28.5	45	50
PAM / PAR - 28B	PAM / PAR - 28Y	27.8	34.5	55	50
PAM / PAR - 36B	PAM / PAR - 36Y	36.0	42.5	60	30
PAM / PAR - 48B	PAM / PAR - 48Y	46.5	54.5	70	30
PAM / PAR - 56B	PAM / PAR - 56Y	56.3	67.2	110	30
PAM / PAR - 70B	PAM / PAR - 70Y	70.0	82.5	160	10
PAM / PAR - 95B	PAM / PAR - 95Y	91.5	106.0	210.0	10

NORFLEX® PUR Tube

- Material : Special premium polyurethane(Pre-PUR®)
- Properties : Fabric reinforced / highly abrasion-proof
  highly flexible / crush resistant
  good resistance to oil, gasoline and chemicals
  comply with RoHs guideline
- Color : Transparent, blue, gray, black, red, green, yellow
  (TR, BL, GR, BK, RE, GN, YE)
- Application : Industrial robot, automatic welding facility, excellent resistance at high temperature welding flame.
  Injection molding, high pressure air or cooling water hose.
  Flexible & high anti-abrasion.

Inner Diameter (in/mm)	Outer Diameter (mm)	min. Burst Pressure (bar)	Bending Radius (mm)	Weight (kg/m)	Packing meter / roll
● 3/8" (9.4)	16.0	80	55.3	0.153	50
● 1/2" (12.8)	19.5	80	68.8	0.230	50

NORFLEX® Ordering

PUR - 9.4 BK : 100M

- Q'ty (Length)
- Color (TR, BL, GR, BK, RE, GN, YE)
- Size 9.4 / 12.8 (Inner dia.)
- NORFLEX®

※ Dimensions in mm

Roboway® Component Parts

Roboway Composition (36, 48, 56, 70, 95 SIZE)

※ Roboway® Components can be composed in accordance with customer requirements.

● RW (1set)

● PAM (4~5M)

● Cable, Hose (5~10M)

● RKTP (4pcs)

● RKS (2pcs)

● RKC (2pcs)

● RKSC (3pcs)

● RKR (1pcs)

● VCG (2pcs)

● RKTC (2pcs)

● DISTRIBUTOR : RKTD-702 (1pcs)

● DISTRIBUTOR : RKDC-70 (1pcs)

● Column Support RCS (1EA)

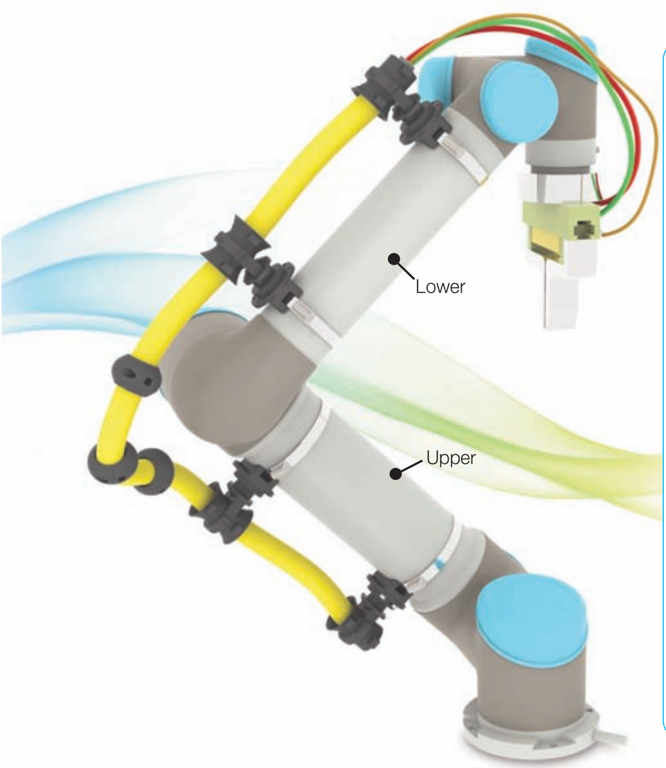
● Main Bracket RMB (1pcs)

● Sub Bracket RSB (1pcs)

Universal Robot Band

Feature

22/28 sized ROBO-KIT is applied to Compact Universal Robot to protect external cables and hoses.



Steel band dimension for UNIVERSAL ROBOT

Type	Inner Diameter		Applicable products
UR3.BAND	Lower arm	Ø54	ROBO-KIT 22/28
	Upper arm	Ø66	
UR5.BAND	Lower arm	Ø75	
	Upper arm	Ø85	
UR10.BAND	Lower arm	Ø86	
	Upper arm	Ø108	

Velcro Type dimension for UNIVERSAL ROBOT

Type	Inner Diameter		VelcroType	Applicable products
UR3.BAND	Lower arm	Ø52~Ø66	A	ROBO-KIT 22/28
	Upper arm			
UR5.BAND	Lower arm	Ø66~Ø90	B	
	Upper arm			
UR10.BAND	Lower arm	Ø66~Ø90	B	
	Upper arm	Ø108~Ø145	C	

Steel band ordering (ROBO–KIT is ordered separately)

UR5.BAND 085 : 2EA

- Q'ty
- Inner Diameter of Robot's arm Order after checking the upper and lower robot arm's diameter
- Steel band for UNIVERSAL ROBOT UR3 / UR5 / UR10

※ Dimensions in mm

CPSFLEX

Flexible Plastic Tube

CPSFLEX is Flexible Tube that is harmless to humans by using Quality Polyamide 6 material and also can be recycled.

There are various flame retardant grade from UL94-HB to Vo according to its usage environment.

Feature

CPSFLEX can be cut by a cutter, which reduces working hours.

※ Please use exclusive cutter when much cutting work is required

It has flame retardant grade from UL94-HB to Vo.

RoHS Directive 2002/95/EC

Raw materials for CPSFLEX are toxic-free, and have passed the test by designated test institute.
In addition, CPS products have been produced according to the directive that Europe regulates.

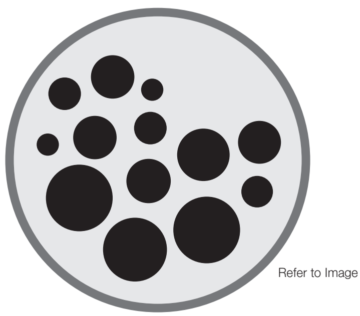
Standard Size of CPSFLEX based on amount of cables and hoses

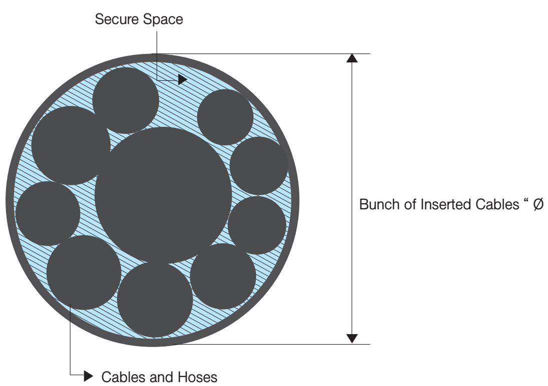
CPSFLEX List

* Same size applied to all types of CPSFLEX

Black	Gray	Ultraviolet Block UV-R	Inner Diameter(D1)	Outer Diameter (D2)	Bending Radius(R) mm ± 10%	Packing meter / roll
CPS-07B	CPS-07G	CPS-07U	6.4	10.0	15.0	50/100
CPS-10B	CPS-10G	CPS-10U	9.6	13.0	20.0	50
CPS-12B	CPS-12G	CPS-12U	11.8	15.8	30.0	50
CPS-16B	CPS-16G	CPS-16U	15.9	21.2	40.0	50
CPS-22B	CPS-22G	CPS-22U	21.7	28.5	45.0	50
CPS-28B	CPS-28G	CPS-28U	27.8	34.5	55.0	50
CPS-36B	CPS-36G	CPS-36U	36.0	42.5	60.0	30
CPS-48B	CPS-48G	CPS-48U	46.5	54.5	70.0	30
CPS-56B	CPS-56G	CPS-56U	56.3	67.2	110.0	30
CPS-70B	CPS-70G	CPS-70U	70.0	82.5	160.0	10
CPS-95B	CPS-95G	CPS-95U	91.5	106.0	210.0	10

Secure 20% of empty space inside of CPSFLEX





How much Empty space of CPSFLEX should be secured

Please secure a 20% of empty space inside of Flexible Tube (CPSFLEX) by calculating Dia. of a bunch of inserted all cables like in the image.

RAH! RAH for Railway! EN45545-2, R22(HL2), R23(HL3) / Flame Test Certification Acquired!

- Oxygen index to TO1 EN ISO 4589-2
- Flue gas density to T 10.03 EN ISO 5659
- Oxygen index to T 12 NF X70-100-1 and-2

Test Method

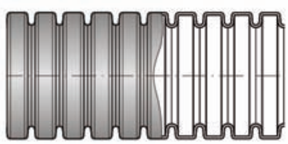
① Measure time of Carbonized Length, Area and Flame stayed
② Measure burning time based on certain length of tube
③ Measure value of smoke concentration
④ Measure existence of toxic gases and its degree
⑤ Measure value of oxygen concentration that is required to combust

Ordering NEW

PAH T -10B : 100M Black and Gray is a basic color. Different color of tube can be supplied according to customer's request.

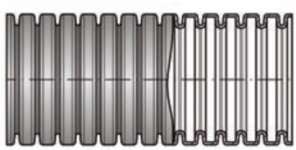
- Q'ty (m)
- Color B : Black / G : Gray
  U : Ultraviolet Block (Black only)
- Size (07, 10, 12, 16, 22, 28, 36, 48, 56, 70, 95)
- Type of Pitch

Standard Pitch: Excellent Pull-out Performance



Standard Pitch

Narrow Pitch: Excellent Flexibility Performance



'T' follows after model name(ex. CPST, PAHT, etc)

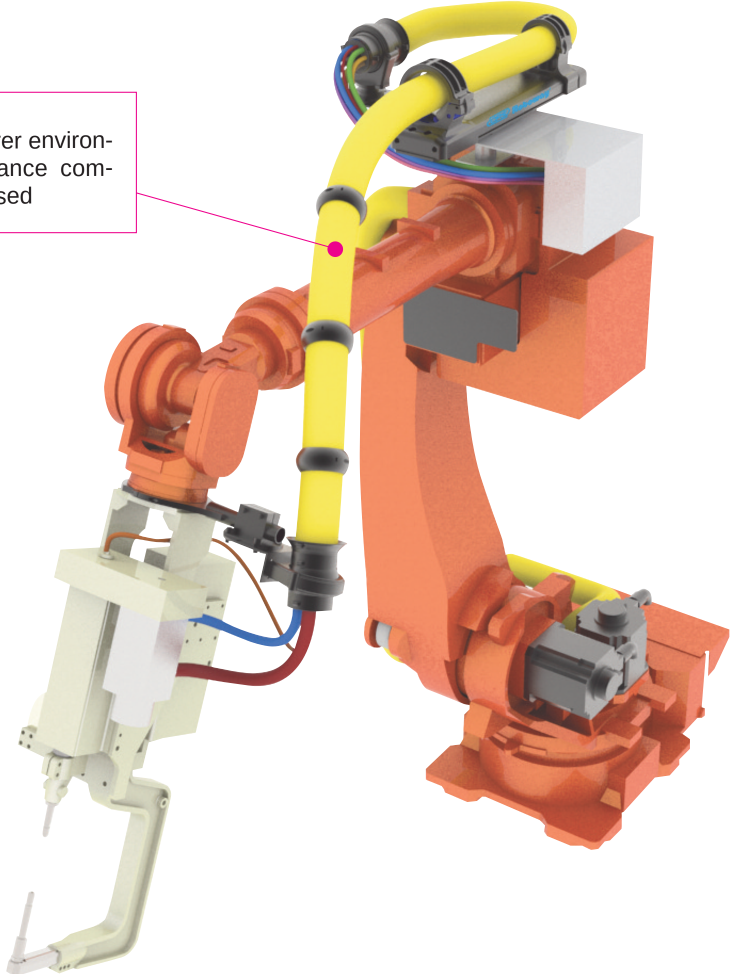
* Applicable CPSFLEX models : CPS/PAH/RAH/POH/PAM/PAR

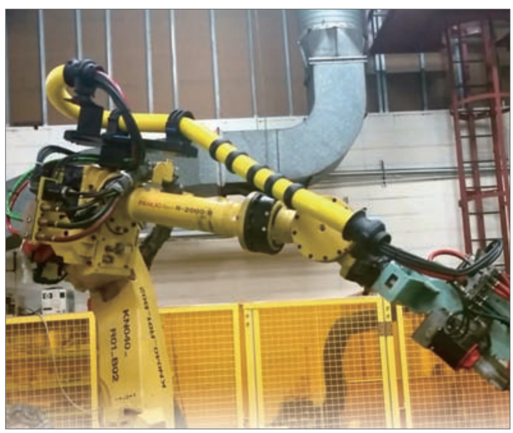
- Type (CPS / PAH / RAH / POH / PES / CPSS / PESS / PAR / PAM)

Flexible Tube, Specialized for Roboway System

PAM

PAM is designed for using in severer environment with upgraded wear resistance compared to PAR. PA12 material is based





Eco-Friendly All products of CP SYSTEM CO.,LTD comply with RoHS Regulation.

ROHS COMPLIANT · COMPLIANT · COMPLIANT

RoHS compliant

RoHS COMPLIANT

Pb Pb-Free

Restriction of the use of Specific Pollutants (RoHS)

RoHS stands for Restriction of Hazardous Substances, and impacts the entire electronics industry and many electrical products as well. The original RoHS, also known as Directive 2002/95/EC, originated in the European Union in 2002 and restricts the use of six hazardous materials found in electrical and electronic products. All applicable products in the EU market since July 1, 2006 must pass RoHS compliance.

The substances banned under RoHS are lead (Pb), mercury (Hg), cadmium (Cd), hexavalent chromium (CrVI), polybrominated biphenyls (PBB), polybrominated diphenyl ethers (PBDE), and four different phthalates (DEHP, BBP, BBP, DIBP).

IM Beauty	RoHS(2002/95/EC)	RoHS II(2011/65/EU)
Time of Application	1 July 2006	2 Jan. 2013
Product Family	5 EEE products among 10 EEE products	All Electrical and Electronic Equipment - Medical device, Observation/Control Instrument(After 22 July 2014) - Medical device(After 22 July 2016) - Observation/Control Instrument - Electrical/Electronic Equipment except for 10 EEE products
CE Marking	N/A	CE Marking Compulsory
Performance of obligation Party	No Legal Provision	Performance of obligation Regulation to Manufacturer, Importer, Distributor
Technical Document	Recommended	Compulsory (EN 50581)

AE) Other harmful substance except for RoHS – Halogen Free (Br, Cl, F, I, AE)

Halogens are a group in the periodic table consisting of five chemically related elements: fluorine (F), chlorine (Cl), bromine (Br), iodine (I), and astatine (At).
Halogen-free, a substance must consist of less than 900 parts per million (ppm) of chlorine or bromine and also have less than 1500 ppm of total halogens.
Green Peace emphasizes harmfulness of Halogen substance and publish grade of each enterprise by conducting Green Peace Self Evaluation.

Reliability Test Verification

Test of Compression and Decompression (IEC 61386)

1. Measure outer dia. of 200mm long tube at 23°C temperature before conducting test.
2. Place specimen between flat plate and compression plate.
3. Compress specimen gradually for 30 seconds based on designated compression value. And then, compress specimen for 60 sec. again and check value of deformation. It must not exceed 25% of deformation in regard to outer diameter from initial status.
4. Remove specimen from the plates and leave it for 60 seconds. And then measure its outer diameter of specimen again. It must not exceed 10% of deformation in regard to outer diameter from initial status.

Impact Test after keeping Low Temperature (IEC 61386)

1. Give impact to the center position of or the weakest position of flexible tube by using standard hammer.
2. Give impact to the other flexible tube that is exactly a same spec. after putting it into a low temperature chamber.
3. There must not any mark of deformation or split at those 2 specimens above.

UL 1696) Tensile/Pull Out/Load Test(iec 61386, UL 1696)

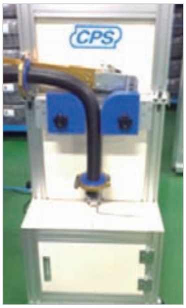
1. Connect 500mm long flexible tube and connector and fix them to fixing device. Pull for 60 seconds and check its deformation value.
2. Flexible tube and Connector must not have damage after test conducted.

Heat-resisting Exothermic Test(IEC 61386)

1. Leave 100mm flexible tube in a chamber for 4 hours in a state of designated temperature.
2. Add weight onto the flexible tube for 24 hours after test. Check whether there is a change of outer diameter of the tube or not.

Vertical Flame Test (Self-Extinguish ability Test / UL 1696)

1. Combust 330mm long flexible tube for 15 seconds and leave it for 15 sec in the air. And then combust it for 15 seconds again.
2. After second combustion, if flame of specimen remains over 60 seconds or the tube is completely burned to ashes, it is failed. Spark must not drop at cotton ball



Bending Test or Flexibility Test (IEC 61386)

1. Bend Flexible tube to right and left direction by 90°. The tube must maintain its specified R value and there should be no deformation or split mark.
2. CPSFLEX like PAR and PAM must endure until it reaches more than 2 million times of Bending Test.

ASTM D 1148-88, UV-Test

Certificate of Test

Korea Institute of Footwear & Leather Technology Address : 152, DangGamSeo-Ro, BusanJin-Ku, Busan, Korea Tel.:(051)897-9701~4,FAX:(051) 897-9766	Certificate No.: T-17-0317-1 Page(1)/(1)Pages	KIFLT

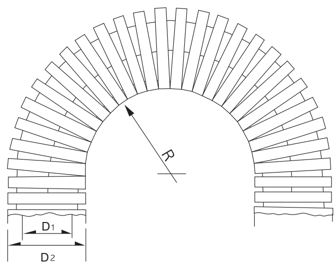
1. Client
   - Name : CP SYSTEM CO., LTD.
   - Address : 27-37, JEONGGWANSANGGOK 1-GIL, JEONGGWAN-EUP, GIJANG-GUN, BUSAN, KOREA
2. Reception Date: MAR . 7 , 2017
3. Completion Date: MAR . 8 , 2017
4. Use of Report : QUALITY CONTROL
5. Test Sample : PLASTIC / #2 FLEXIBLE TUBE(CPS-48U)
6. Test Results :

TEST ITEM	UNIT	R E S U L T S	TEST METHOD
Color fastness to Light (U-V Test)	grade	5	ASTM D 1148-88 300 W, 10 inch, (40±1) ℃, 24 h

CPSFLEX CPSFLEX Specification

Type	Material	Version	Temperature range	Self-extinguishing UL-94	Color	Application
CPS 	PA6	standard version medium-wall, very flexible	-40°C ~ +105°C short term +130°C	UL94-HB	Black Gray UV-Resistant	Machine tool, Industrial & Automatic Machinery etc.
PAH 	PA6	standard version medium-wall, very flexible	-40°C ~ +105°C short term +150°C	UL94-VO	Black Gray Light Gray UV-Resistant	Machine tool, industrial & Automatic Machinery, Rolling Stock etc.
RAH 	PA6	standard version medium-wall, very flexible	-40°C ~ +105°C short term +150°C	UL94-VO EN45545-2 (HL3)	Black Gray	Railroad cars
POH 	PA6	reinforced version thick-wall, flexible	-40°C ~ +105°C short term +150°C	UL94-VO	Black Gray UV-Resistant	Machinery
PES 	PE	simple version light-weight, flexible	-15°C ~ +60°C short term +80°C	UL94-HB	Black Gray	Chemical Apparatus (Acid Resistance, Alkali-Resistance)
CPSS 	PA6	standard version medium-wall, very flexible	-40°C ~ +105°C short term +130°C	UL94-HB	Black Gray	Machinery
PESS 	PE	simple version light-weight, flexible	-15°C ~ +60°C short term +80°C	UL94-HB	Black Gray	Chemical Apparatus (Acid Resistance, Alkali-Resistance)
PAR 	PA12	medium-wall very flexible to highly flexible	-40°C ~ +105°C short term +130°C	UL94-V2	Black Yellow	High Speed Machine, Industrial Robot
PAM 	PA12	medium-wall very flexible to highly flexible	-40°C ~ +105°C short term +130°C	UL94-V2	Black Yellow	Industrial Robot (for Roboway)

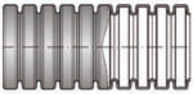
CPS



- Material : High Quality Polyamide 6
- Construction : Inside & Outside Corrugated Plastic Hose
- Degrees of Protection : IP 68 acc. EN 60529
- Temperature : -40℃ ~ +105℃
- Short Term : +130℃
- Self-Extinguishing : UL94-HB
- Color : Black, Gray
- Connections : CPSFIX
- Application : Machinery, Automobile, Power plant

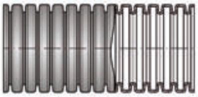
Product Size

● Standard Pitch : Excellent Pull-out Performance



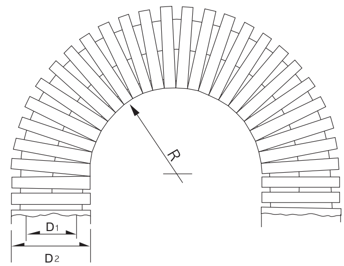
Black	Gray	Ultraviolet Block UV-R	Inner Diameter (D1)	Outer Diameter (D2)	Bending Radius(R) mm±10%	Packing meter / roll
CPS-07B	CPS-07G	CPS-07U	6.4	10.0	15.0	50/100
CPS-10B	CPS-10G	CPS-10U	9.6	13.0	20.0	50
CPS-12B	CPS-12G	CPS-12U	11.8	15.8	30.0	50
CPS-16B	CPS-16G	CPS-16U	15.9	21.2	40.0	50
CPS-22B	CPS-22G	CPS-22U	21.7	28.5	45.0	50
CPS-28B	CPS-28G	CPS-28U	27.8	34.5	55.0	50
CPS-36B	CPS-36G	CPS-36U	36.0	42.5	60.0	30
CPS-48B	CPS-48G	CPS-48U	46.5	54.5	70.0	30
CPS-56B	CPS-56G	CPS-56U	56.3	67.2	110.0	30
CPS-70B	CPS-70G	CPS-70U	70.0	82.5	160.0	10
CPS-95B	CPS-95G	CPS-95U	91.5	106.0	210.0	10

● Narrow Pitch(T) : Excellent Flexibility Performance



CPST-22B	CPST-22G	CPST-22U	21.7	28.5	45.0	50
CPST-28B	CPST-28G	CPST-28U	27.8	34.5	55.0	50
CPST-36B	CPST-36G	CPST-36U	36.0	42.5	60.0	30
CPST-48B	CPST-48G	CPST-48U	46.5	54.5	70.0	30
CPST-70B	CPST-70G	CPST-70U				
CPST-95B	CPST-95G	CPST-95U				

PAH



- Material : High Quality Polyamide 6
- Construction : Inside & Outside Corrugated Plastic Hose
- Degrees of Protection : IP 68 acc. EN 60529
- Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-VO
- Color : Black & Gray / Light gray
- Connections : CPSFIX
- Application : Machinery, Automobile, Offshore Plant, Railroad cars
- International Specification :

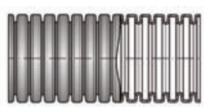
Product Size

● Standard Pitch : Excellent Pull-out Performance

Black	Gray	Ultraviolet Block UV-R	Inner Diameter (D1)	Outer Diameter (D2)	Bending Radius(R) mm±10%	Packing meter / roll
PAH-07B	PAH-07G	PAH-07U	6.4	10.0	15.0	50/100
PAH-10B	PAH-10G	PAH-10U	9.6	13.0	20.0	50
PAH-12B	PAH-12G	PAH-12U	11.8	15.8	30.0	50
PAH-16B	PAH-16G	PAH-16U	15.9	21.2	40.0	50
PAH-22B	PAH-22G	PAH-22U	21.7	28.5	45.0	50
PAH-28B	PAH-28G	PAH-28U	27.8	34.5	55.0	50
PAH-36B	PAH-36G	PAH-36U	36.0	42.5	60.0	30
PAH-48B	PAH-48G	PAH-48U	46.5	54.5	70.0	30
PAH-56B	PAH-56G	PAH-56U	56.3	67.2	110.0	30
PAH-70B	PAH-70G	PAH-70U	70.0	82.5	160.0	10
PAH-95B	PAH-95G	PAH-95U	91.5	106.0	210.0	10

※ Available in Light Gray(LG) production, PAHS Type can be produced

● Narrow Pitch(T) : Excellent Flexibility Performance

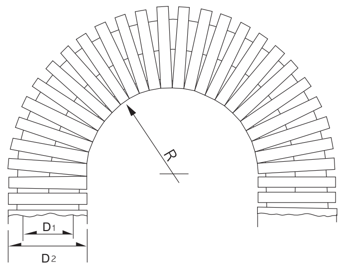


PAHT-22B	PAHT-22G	PAHT-22U	21.7	28.5	45.0	50
PAHT-28B	PAHT-28G	PAHT-28U	27.8	34.5	55.0	50
PAHT-36B	PAHT-36G	PAHT-36U	36.0	42.5	60.0	30
PAHT-48B	PAHT-48G	PAHT-48U	46.5	54.5	70.0	30

※ VDE Certification Excluded

RAH

- Black
- Gray
- Light Gray



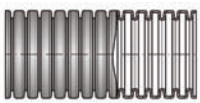
- Material : High Quality Polyamide 6
- Construction : IP 68 acc. EN 60529
- Degrees of Protection : Inside & Outside Corrugated Plastic Hose
- Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-VO
- Color : Black, Gray
- Connections : CPSFIX
- Application : Railroad cars, , Machinery
- International Specification : , EN45545-2,HL2(R22)/HL3(R23)
- Certification : RoHs2, CE

Product Size

• Standard Pitch : Excellent Pull-out Performance

Black	Gray	Ultraviolet Block UV-R	Inner Diameter (D1)	Outer Diameter (D2)	Bending Radius(R) mm±10%	Packing meter / roll
RAH-07B	RAH-07G	RAH-07U	6.4	10.0	15.0	50/100
RAH-10B	RAH-10G	RAH-10U	9.6	13.0	20.0	50
RAH-12B	RAH-12G	RAH-12U	11.8	15.8	30.0	50
RAH-16B	RAH-16G	RAH-16U	15.9	21.2	40.0	50
RAH-22B	RAH-22G	RAH-22U	21.7	28.5	45.0	50
RAH-28B	RAH-28G	RAH-28U	27.8	34.5	55.0	50
RAH-36B	RAH-36G	RAH-36U	36.0	42.5	60.0	30
RAH-48B	RAH-48G	RAH-48U	46.5	54.5	70.0	30
RAH-56B	RAH-56G	RAH-56U	56.3	67.2	110.0	30
RAH-70B	RAH-70G	RAH-70U	70.0	82.5	160.0	10
RAH-95B	RAH-95G	RAH-95U	91.5	106.0	210.0	10

※ Gray Color – No certification of UL

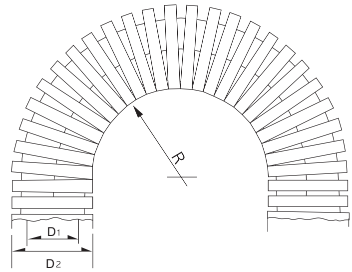


• Narrow Pitch(T) : Excellent Flexibility Performance

RAHT-22B	RAHT-22G	RAHT-22U	21.7	28.5	45.0	50
RAHT-28B	RAHT-28G	RAHT-28U	27.8	34.5	55.0	50
RAHT-36B	RAHT-36G	RAHT-36U	36.0	42.5	60.0	30
RAHT-48B	RAHT-48G	RAHT-48U	46.5	54.5	70.0	30

※ Only CE Certificate is obtained

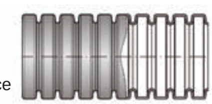
POH



- Material : High Quality Polyamide 6
- Construction : Inside & Outside Corrugated Plastic Hose
- Degrees of Protection : IP 68 acc. EN 60529
- Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-VO
- Color : Black, Gray
- Connections : CPSFIX
- Application : Machinery
- International Specification : RoHs2, CE

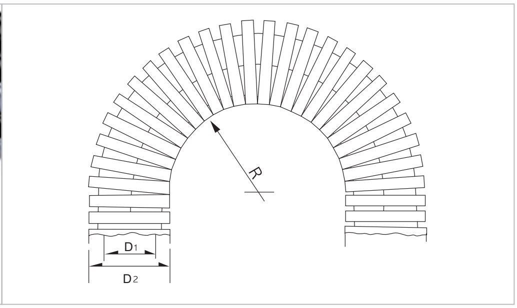
Product Size

● Standard Pitch : Excellent Pull-out Performance



Black	Gray	Ultraviolet Block UV-R	Inner Diameter (D1)	Outer Diameter (D2)	Bending Radius(R) mm± 10%	Packing meter / roll
POH-07B	POH-07G	POH-07U	6.0	10.0	20.0	50/100
POH-10B	POH-10G	POH-10U	9.0	13.0	25.0	50
POH-12B	POH-12G	POH-12U	11.5	15.8	35.0	50
POH-16B	POH-16G	POH-16U	15.5	21.2	45.0	50
POH-22B	POH-22G	POH-22U	21.3	28.5	50.0	50
POH-28B	POH-28G	POH-28U	26.8	34.5	60.0	50
POH-36B	POH-36G	POH-36U	35.2	42.5	70.0	30
POH-48B	POH-48G	POH-48U	46.0	54.5	80.0	30
POH-56B	POH-56G	POH-56U	55.3	67.2	110.0	30
POH-70B	POH-70G	POH-70U	69.0	82.5	160.0	10
POH-95B	POH-95G	POH-95U	91.5	106.0	210.0	10

PES

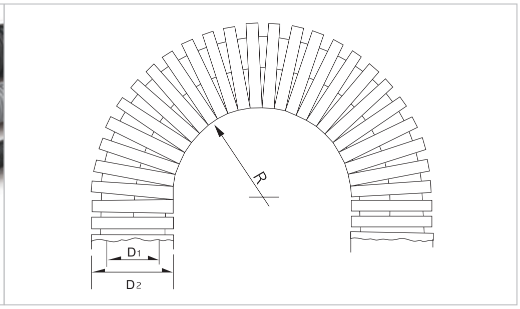


- Material : Soft Polyethylene (PE)
- Construction : Inside & Outside Corrugated Plastic Hose
- Degrees of Protection : IP 68
- Temperature : -15℃ ~ +60℃
- Short Term : +80℃
- Color : Black, Gray
- Connections : CPSFIX
- Application : Chemical Apparatus(Acid Resistance, Alkali-Resistance)
- International Specification : RoHs2, CE

Product Size

Black	Gray	Inner Diameter (D1)	Outer Diameter (D2)	Bending Radius(R) mm ±10%	Packing meter / roll
PES-07B	PES-07G	6.4	10.0	15.0	50/100
PES-10B	PES-10G	9.6	13.0	20.0	50
PES-12B	PES-12G	11.8	15.8	30.0	50
PES-16B	PES-16G	15.9	21.2	40.0	50
PES-22B	PES-22G	21.7	28.5	45.0	50
PES-28B	PES-28G	27.8	34.5	55.0	50
PES-36B	PES-36G	36.0	42.5	60.0	30
PES-48B	PES-48G	46.5	54.5	70.0	30
PES-56B	PES-56G	56.3	67.2	110.0	30
PES-70B	PES-70G	70.0	82.5	160.0	10
PES-95B	PES-95G	91.5	106.0	210.0	10

CPSS

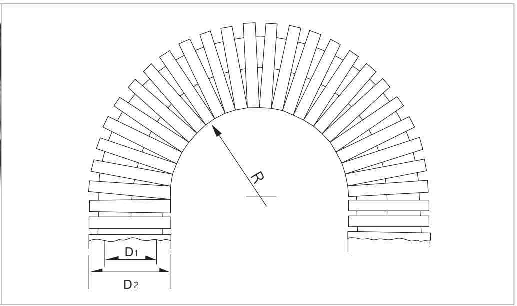


- Material : High Quality Polyamide 6
- Construction : Inside & Outside Corrugated Plastic Hose
- Temperature : -40℃ ~ +105℃
- Short Term : +130℃
- Self-Extinguishing : UL94-HB
- Color : Black, Gray
- Connections : CPSFIX
- Application : Machinery
- International Specification : RoHs2, CE

Product Size

Black	Gray	Inner Diameter (D1)	Outer Diameter (D2)	Bending Radius(R) mm1 ± 0%	Packing meter / roll
CPSS-07B	CPSS-07G	6.4	10.0	15.0	50/100
CPSS-10B	CPSS-10G	9.6	13.0	20.0	50
CPSS-12B	CPSS-12G	11.8	15.8	30.0	50
CPSS-16B	CPSS-16G	15.9	21.2	40.0	50
CPSS-22B	CPSS-22G	21.7	28.5	45.0	50
CPSS-28B	CPSS-28G	27.8	34.5	55.0	50
CPSS-36B	CPSS-36G	36.0	42.5	60.0	30
CPSS-48B	CPSS-48G	46.5	54.5	70.0	30
CPSS-56B	CPSS-56G	56.3	67.2	110.0	30
CPSS-70B	CPSS-70G	70.0	82.5	160.0	10
CPSS-95B	CPSS-95G	91.5	106.0	210.0	10

PESS



- Material : Soft Polyethylene (PE)
- Construction : Inside & Outside Corrugated Plastic Hose
- Temperature : -15℃ ~ +60℃
- Short Term : +80℃
- Self-Extinguishing : UL94-HB
- Color : Black, Gray
- Connections : CPSFIX
- Application : Chemical Apparatus(Acid Resistance, Alkali-Resistance)
- International Specification : RoHs2, CE

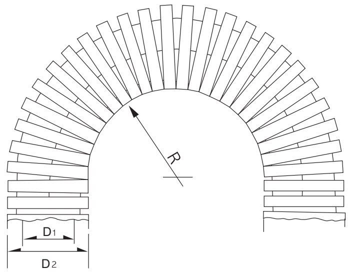
Product Size

Black	Gray	Inner Diameter (D1)	Outer Diameter (D2)	Bending Radius(R) mm ± 10%	Packing meter / roll
PESS-07B	PESS-07G	6.4	10.0	15.0	50/100
PESS-10B	PESS-10G	9.6	13.0	20.0	50
PESS-12B	PESS-12G	11.8	15.8	30.0	50
PESS-16B	PESS-16G	15.9	21.2	40.0	50
PESS-22B	PESS-22G	21.7	28.5	45.0	50
PESS-28B	PESS-28G	27.8	34.5	55.0	50
PESS-36B	PESS-36G	36.0	42.5	60.0	30
PESS-48B	PESS-48G	46.5	54.5	70.0	30
PESS-56B	PESS-56G	56.3	67.2	110.0	30
PESS-70B	PESS-70G	70.0	82.5	160.0	10
PESS-95B	PESS-95G	91.5	106.0	210.0	10

PAR

The best quality
robot tube.

● Black
● Yellow

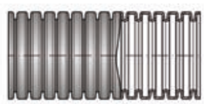


- Material : High Quality Polyamide 12
- Construction : Inside & Outside Corrugated Plastic Hose
- Degrees of Protection : IP 68
- Temperature : -40℃ ~ +105℃
- Short Term : +130℃
- Self-Extinguishing : UL94-V2
- Color : Black, Yellow
- Connections : CPSFIX
- Application : High Speed Machine, Industrial Robot
- International Specification : RoHs2, CE

Product Size

● Standard Pitch : Excellent Pull-out Performance

Black	Yellow	Ultraviolet Block UV-R (Only Black)	Inner Diameter (D1)	Outer Diameter (D2)	Bending Radius(R) mm ± 10%	Packing meter / roll
PAR-07B	PAR-07Y	PAR-07U	6.4	10.0	15.0	50/100
PAR-10B	PAR-10Y	PAR-10U	9.6	13.0	20.0	50
PAR-12B	PAR-12Y	PAR-12U	11.8	15.8	30.0	50
PAR-16B	PAR-16Y	PAR-16U	15.9	21.2	40.0	50
PAR-22B	PAR-22Y	PAR-22U	21.7	28.5	45.0	50
PAR-28B	PAR-28Y	PAR-28U	27.8	34.5	55.0	50
PAR-36B	PAR-36Y	PAR-36U	36.0	42.5	60.0	30
PAR-48B	PAR-48Y	PAR-48U	46.5	54.5	70.0	30
PAR-56B	PAR-56Y	PAR-56U	56.3	67.2	110.0	30
PAR-70B	PAR-70Y	PAR-70U	70.0	82.5	160.0	10
PAR-95B	PAR-95Y	PAR-95U	91.5	106.0	210.0	10



● Narrow Pitch(T) : Excellent Flexibility Performance

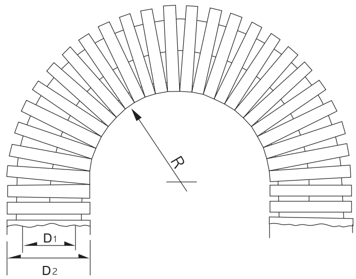
PART-22B	PART-22G	PART-22U	21.7	28.5	45.0	50
PART-28B	PART-28G	PART-28U	27.8	34.5	55.0	50
PART-36B	PART-36G	PART-36U	36.0	42.5	60.0	30
PART-48B	PART-48G	PART-48U	46.5	54.5	70.0	30

PAM

※ Much Improved Elecsticity & Flexibility compared with PAR

The best quality robot tube.

● Black
● Yellow



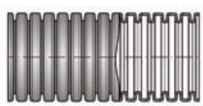
- Material : High Quality Polyamide 12
- Construction : Inside & Outside Corrugated Plastic Hose
- Degrees of Protection : IP 68
- Temperature : -40℃ ~ +105℃
- Short Term : +130℃
- Self-Extinguishing : UL94-V2
- Color : Black, Yellow
- Connections : CPSFIX
- Application : Industrial Robot(for Roboway)
- International Specification : RoHs2, CE

Product Size

● Standard Pitch : Excellent Pull-out Performance

Black	Yellow	Inner Diameter (D1)	Outer Diameter (D2)	Bending Radius(R) mm ± 10%	Packing meter / roll
PAM-07B	PAM-07Y	6.4	10.0	15.0	50/100
PAM-10B	PAM-10Y	9.6	13.0	20.0	50
PAM-12B	PAM-12Y	11.8	15.8	30.0	50
PAM-16B	PAM-16Y	15.9	21.2	40.0	50
PAM-22B	PAM-22Y	21.7	28.5	45.0	50
PAM-28B	PAM-28Y	27.8	34.5	55.0	50
PAM-36B	PAM-36Y	36.0	42.5	60.0	30
PAM-48B	PAM-48Y	46.5	54.5	70.0	30
PAM-56B	PAM-56Y	56.3	67.2	110.0	30
PAM-70B	PAM-70Y	70.0	82.5	160.0	10
PAM-95B	PAM-95Y	91.5	106.0	210.0	10

● Narrow Pitch(T) : Excellent Flexibility Performance



PAMT-22B	PAMT-22U	21.7	28.5	45.0	50
PAMT-28B	PAMT-28U	27.8	34.5	55.0	50
PAMT-36B	PAMT-36U	36.0	42.5	60.0	30
PAMT-48B	PAMT-48U	46.5	54.5	70.0	30

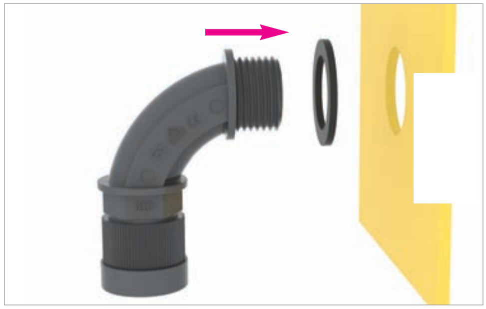
CPSFIX

CONNECTOR

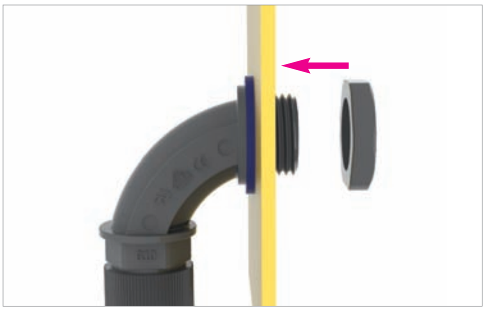
CPSFIX has a wide range of series to fit each different environment. It helps users to assemble and disassemble conveniently with its One-Touch Type of structure. In the meanwhile, CPSFIX can protect cables and hoses efficiently and has waterproof performance, which makes CPSFIX apply to general industrial sectors.

Installation Procedure of Connector (PWC, PNC, TWC, TNC)

1 Prepare Connector, Rubber Washer, Nut like in the Image



2 Insert Rubber Washer at thread part of Connector

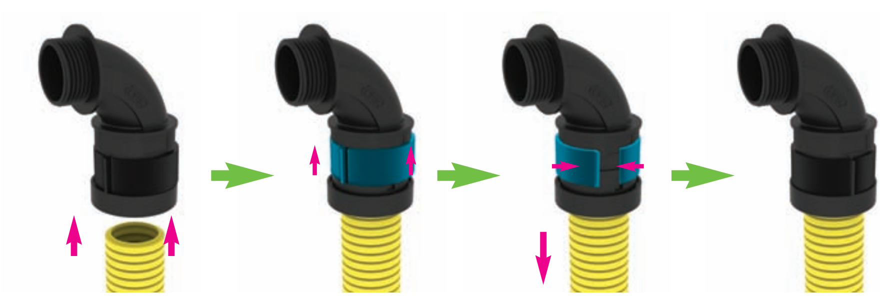


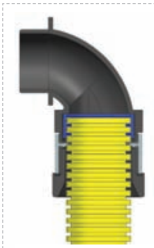
3 Place a Connector with Rubber Washer at a plate and Insert Nut to tight

When you assemble Connector by using Nut, please rotate Nut until it is securely fixed. Do not rotate Connector part to prevent damage at Rubber Washer.

4 Completion

Assembly Procedure of Flexible Tube





Inner Image after Assembling Flexible Tube and Connector

① Insert Tube to Connector

② Hand Cover moves up by inserting Flexible Tube

③ While grabbing extended Hand Cover and pull Flexible Tube down, Hand Cover is securely fixed

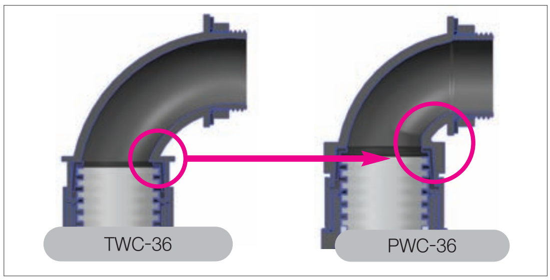
④ Completion

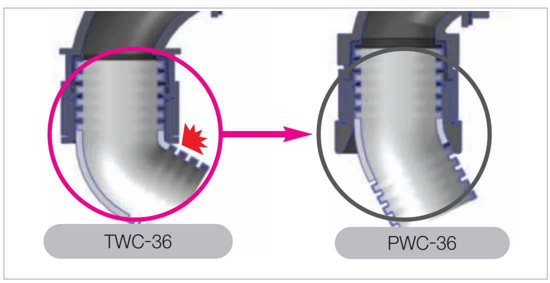
P Connector Series for Railroad cars

- Connector for Railroad cars
- EN45545-2(HL3) Obtained

One Touch Connector for Convenient Assembly & Disassembly!
No Special Tool Required!

Assembly	Disassembly		
① Push tube to connector side.	② HCV is unlocked.	③ Rotate HCV to left side at an angle of 90°	④ Pull tube against connector





Ordering

PNC-G10B : 100EA

- Q'ty
- Color (B : Black / G : Gray)
- SIZE
- Thread Specification(G(PF)/inch, P/pg, N/NPT, M/mm, U/UNEF)
- Type (PNC/PWC/PAC and others)


Plug Gauge Inspection

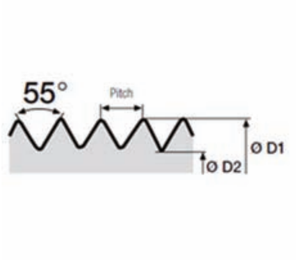

Ring Gauge Inspection

Thread

CPS is capable to respond international standard Thread types such as PF, PG, M, NPT, UNEF, etc. Also maintains quality Connector by inspecting Thread Condition by using gauges above.

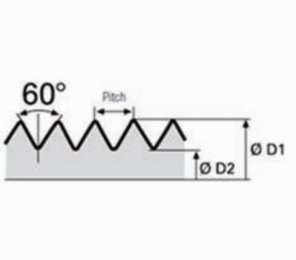
PF thread (JIS B0202)

GAS	Pitch	Øi D1	Øi D2	Hole
1/4"	1.337mm	1.337mm	11.445mm	13.4mm
3/8"	1.337mm	1.337mm	14.905mm	17.0mm
1/2"	1.814mm	1.814mm	18.631mm	21.3mm
3/4"	1.337mm	1.337mm	24.117mm	26.8mm
1"	2.309mm	2.309mm	30.291mm	33.7mm
1 1/4"	2.309mm	2.309mm	39.952mm	42.4mm
1 1/2"	2.309mm	2.309mm	44.845mm	48.3mm
2"	2.309mm	2.309mm	56.656mm	60.2mm



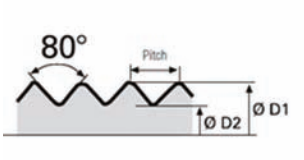
Metric fine thread (EN 60423)

Metric	Pitch	Øi D1	Øi D2	Hole -0/+0.3
12	1.5mm	12mm	10.16mm	12.0mm
16	1.5mm	16mm	14.16mm	16.0mm
20	1.5mm	20mm	18.16mm	20.0mm
25	1.5mm	25mm	23.16mm	25.0mm
32	1.5mm	32mm	30.16mm	32.0mm
40	1.5mm	40mm	38.16mm	40.0mm
50	1.5mm	50mm	48.16mm	50.0mm



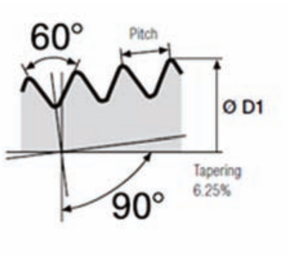
PG thread (DIN 40430)

PG	Pitch	Øi D1	Øi D2	Hole
07	1.270mm	12.5mm	11.28mm	12.7mm
09	1.411mm	15.2mm	13.86mm	15.4mm
11	1.411mm	18.6mm	17.26mm	18.8mm
13	1.411mm	20.4mm	19.06mm	20.7mm
16	1.411mm	22.5mm	21.16mm	22.8mm
21	1.588mm	28.3mm	26.78mm	28.6mm
29	1.588mm	37.0mm	35.48mm	37.4mm
36	1.588mm	47.0mm	45.48mm	47.5mm
48	1.588mm	59.3mm	57.78mm	59.8mm



American standard taper pipe thread (ANSI/ASME B1.20)

NPT	Pitch	Øi D1	Hole D2
12	1.814mm	21.336mm	12.0mm
16	1.814mm	26.670mm	16.0mm
20	2.209mm	33.401mm	20.0mm



Torque Table according to each Thread Spec. of Lock Nut

Tightening Torque Metric thread

(EN 50262)

Thread	Outer Diameter (mm)	Tightening Torque (N/m)	
		Polymer	Metal
M12x1.5	12.0	1.5	8.0
M16x1.5	16.0	3.0	10.0
M20x1.5	20.0	6.0	12.0
M25x1.5	25.0	8.0	12.0
M32x1.5	32.0	10.0	18.0
M40x1.5	40.0	13.0	18.0
M50x1.5	50.0	15.0	20.0
M63x1.5	63.0	16.0	20.0

Tightening Torque Metric thread

(DIN / VDE 0619)

Thread	Outer Diameter (mm)	Tightening Torque (N/m)	
		Polymer	Metal
PG7	12.5(0.492)	2.5	6.25
PG9	15.5(0.610)	3.75	6.25
PG11	18.6(0.732)	3.75	6.25
PG13.5	20.4(0.803)	5.0	6.25
PG16	22.5(0.886)	7.5	7.5
PG21	28.3(1.114)	7.5	10.0
PG29	37.0(1.457)	7.5	10.0
PG36	47.0(1.850)	7.5	10.0
PG42	54.0(2.126)	7.5	10.0
PG48	59.3(2.335)	7.5	10.0

Waterproof/Dustproof Grade Table(IEC 60529)

Marking of IP code

IP **6** **8**

- 8: Protection against Liquids
- 6: Protection against Solid Object
- IP: International Protection (TEST)

Level	Protection Level against Solid Object	Protection Level against Liquid Object
1	Protection from contact with any large surface of the body, such as the back of a hand, but no protection against deliberate contact with a body part	Protection against vertically dripping water
2	Protection from fingers or similar objects	Protection against vertically dripping water when device is tilted at an angle up to 15 degrees
3	Protection from tools, thick wires or similar objects	Protection against direct sprays of water when device is tilted at an angle up to 60 degrees
4	Protection from most wires, screws or similar objects	Protection from sprays and splashing of water in all directions.
5	Partial protection from contact with harmful dust	Protection from low-pressure water projected from a nozzle with a 6.3mm diameter opening in any direction
6	Protection from contact with harmful dust	Protection from water projected in powerful jets from a nozzle with a 12.5mm diameter opening in any direction
7		Protected from immersion in water with a depth of up to 1 meter (or 3.3 feet) for up to 30 mins
8		Protected from immersion in water with a depth of more than 1 meter (manufacturer must specify exact depth)

CPSFIX Specification

Type	Material	Temperature range	Self-extinguishing	Thread	07	10	12	16	22	28	36	42	48	56	70	95
PNC IP68 For railroad cars, Male thread, Straight, One touch type  Black Gray	High Quality Polyamide 6	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB Free of Halogen/ cadmium	G 1/4"	●											
				G 1/2"		●	●	●								
				G 3/4"					●							
				G 1"						●						
				G 1 1/4"							●					
				G 1 1/2"									●			
				G 2"									●	●		
				G 2 1/2"											●	
				G 4"												●
				M 12×1,5	●	●	●									
				M 16×1,5	●	●	●	●								
				M 20×1,5	●	●	●	●								
				M 25×1,5				●	●							
				M 32×1,5					●	●						
				M 40×1,5						●	●					
				M 50×1,5							●		●			
				M 63×1,5									●			
				Pg 7	●	●										
				Pg 9	●	●	●									
				Pg 11	●	●	●									
				Pg 13,5	●	●	●	●								
				Pg 16		●	●	●	●							
				Pg 21				●	●							
				Pg 29						●						
				Pg 36							●					
				Pg 48									●			
				NPT 1/2"		●	●	●								
				NPT 3/4"					●							
				NPT 1"						●						
TNC IP55 For railroad cars, Male thread, Straight, One touch type  Black Gray	High Quality Polyamide 6	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB, Free of Halogen/ cadmium	G 2"									●	●		
				G 2 1/2"											●	
				G 4"												●
PWC IP68 For railroad cars, Male thread, 90˚bent, One touch type  Black Gray	High Quality Polyamide 6	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB Free of Halogen/ cadmium	G 1/2"		●	●	●								
				G 3/4"					●							
				G 1"						●						
				G 1 1/4"						●	●					
				G 1 1/2"									●			
				G 2"									●			
				M 12×1,5	●	●										
				M 16×1,5			●									
				M 20×1,5			●	●								
				M 25×1,5					●							
				M 32×1,5						●						
				M 40×1,5							●					
				M 50×1,5									●			
				Pg 7	●											
				Pg 9	●	●										
				Pg 11		●	●									
				Pg 13,5		●	●	●								
				Pg 16			●	●	●							
				Pg 21					●							
				Pg 29						●						
				Pg 36							●					
				Pg 48									●			

Type	Material	Temperature range	Self-extinguishing	Thread	07	10	12	16	22	28	36	42	48	56	70	95
PAC IP68 For railroad cars, Male thread, 45˚bent, One touch type  Black Gray	High Quality Polyamide 6	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB Free of Halogen/ cadmium	G 1/2"		●	●	●								
				G 3/4"					●							
				G 1"						●						
				G 1 1/4"							●					
				G 1 1/2"									●			
				G 2"									●			
				M 12×1.5		●										
				M 16×1.5			●									
				M 20×1.5				●								
				M 25×1.5					●							
				M 32×1.5						●						
				M 40×1.5							●					
				M 50×1.5									●			
				Pg 9		●										
				Pg 11		●	●									
				Pg 13.5		●		●								
				Pg 16				●								
				Pg 21					●							
				Pg 29						●						
				Pg 36							●					
				Pg 48									●			
PIC IP68 For railroad cars, Female thread, Straight, One touch type  Black Gray	High Quality Polyamide 6	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB Free of Halogen/ cadmium	1/2-28 UNEF		●										
				5/8-24 UNEF		●	●									
				3/4-20 UNEF		●	●									
				1-20 UNEF			●	●								
				7/8-20 UNEF				●								
				1 3/16-18 UNEF			●	●	●							
				1 3/8 -8 UNEF				●								
				1 7/16-18 UNEF				●	●	●						
				2-18UNS					●	●	●					
				1 3/4-18UNEF						●						
				M16×1.5			●									
				M25×1.5				●								
				Pg 11			●									
				Pg 13.5			●									
				Pg 16				●								
				Pg 21					●							
PNCC IP68 For railroad cars, Male thread, Straight, One touch type in which cable gland is inserted  Black Gray	High Quality Polyamide 6	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB Free of Halogen/ cadmium	G 1/2"		●	●	●	●							
				G 3/4"					●	●						
				G 1"						●						
				G 1 1/4"							●					
				G 2"									●			
				M 12×1.5		●	●									
				M 16×1.5		●	●	●								
				M 20×1.5			●	●	●							
				M 25×1.5					●	●						
				M 32×1.5						●						
				M 40×1.5							●					
				M 50×1.5									●			
				Pg 7		●	●									
				Pg 9		●	●	●								
				Pg 11			●	●	●							
				Pg 13.5			●	●	●							
				Pg 16			●	●	●							
				Pg 21					●	●						
				Pg 29						●						
				Pg 36							●					
				Pg 48									●			
PNCCL IP68 For railroad cars, Short male thread, Straight, One touch type in which cable gland is inserted  Black Gray	High Quality Polyamide 6	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB, Free of Halogen Phosphorous and cadmium	G 1/2"		●	●	●								
				Pg 9		●	●									
				Pg 11			●	●								
				Pg 13.5			●	●								
				Pg 16			●	●								
				M 12×1.5		●	●									
				M16×1.5		●	●	●								
				M 20×1.5			●	●								
				M 25×1.5			●									

CPSFIX Specification

Type	Material	Temperature range	Self-extinguishing	Thread	Tube Size 07	10	12	16	22	28	36	42	48	56	70	95
PNCL IP68 For railroad cars, Short male thread, Straight, One touch type  Black Gray	High Quality Polyamide 6	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB Free of Halogen/ cadmium	G 1/2"		●	●	●								
				M 12×1,5		●	●									
				M 16×1,5		●	●	●								
				M 20×1,5		●	●	●								
				M 25×1,5				●								
				Pg 9		●	●									
				Pg 11			●									
				Pg 13,5				●								
				Pg 16		●		●								
PWCL IP68 For railroad cars, Short male thread, 90˚bent, One touch type  Black Gray	High Quality Polyamide 6	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB Free of Halogen Phosphorous and cadmium	G 1/2"		●	●	●								
				M 12×1,5		●										
				M 16×1,5			●									
				M 20×1,5			●	●								
				Pg 9		●										
				Pg 11		●	●									
				Pg 13,5		●	●	●								
				Pg 16			●	●								
PACL IP68 For railroad cars, Short male thread, 45˚bent, One touch type  Black Gray	High Quality Polyamide 6	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB Free of Halogen Phosphorous and cadmium	G 1/2"		●	●	●								
				M 12×1,5		●										
				M 16×1,5			●									
				M 20×1,5				●								
				Pg 9		●										
				Pg 11		●	●									
				Pg 13,5		●		●								
				Pg 16				●								
PIPC IP68 For railroad cars, Female thread, Straight, One touch type  Black Gray	High Quality Polyamide 6	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB Free of Halogen Phosphorous and cadmium	G 1/2"				●								
				G 3/4"					●							
				G 1"						●						
				G 1 1/4"							●					
				G 1 1/2"									●			
				G 2"									●			
TIS IP67  For detecting sensor, Female, Straight, Transparent one touch type	High Quality Polyacrbonate	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB Free of Halogen Phosphorous and cadmium	M 8×1		●										
				M 12×1		●										
				M 18×1		●										
				M 30×1,5		●										

PNOC IP68

For railroad cars, Flange fixed, Straight, One touch type

Black
Gray

Material	High Quality Polyamide 6
Temperature range	-40℃ ~ +105℃
Short Term	150℃
Self-extinguishing	UL94-HB, Free of Halogen Phosphorous and cadmium

TNOC IP55

Flange Type, Straight, One Touch Type

Black
Gray

Material	High Quality Polyamide 6
Temperature range	-40℃ ~ +105℃
Short Term	150℃
Self-extinguishing	UL94-HB, Free of Halogen Phosphorous and cadmium

CPSFIX

Type	Material	Temperature range	Self-extinguishing	Thread	07	10	12	16	22	28	36	42	48	56	70	95
TNRC IP55 Male thread, Straight, For rotating movement  ● Black ● Gray	High Quality Polyamide 6	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB Free of Halogen/ cadmium	G3/4"					•							
				G1"						•						
				G1 1/4"							•					
				G2"									•			

PWOC IP68		
For railroad cars, Flange fixed, 90˚bent, One touch type  ● Black ● Gray	Material	High Quality Polyamide 6
	Temperature range	-40℃ ~ +105℃
	Short Term	150℃
	Self-extinguishing	UL94-HB, Free of Halogen Phosphorous and cadmium

TWOC IP55		
Flange Type, 90˚ bent, One Touch Type  ● Black ● Gray	Material	High Quality Polyamide 6
	Temperature range	-40℃ ~ +105℃
	Short Term	150℃
	Self-extinguishing	UL94-HB, Free of Halogen Phosphorous and cadmium

Type	Material	Temperature range	Self-extinguishing	Thread	07	10	12	16	22	28	36	42	48	56	70	95
SPNC IP67 For railroad cars, Steel and male thread, Straight, One touch type  ● Black ● Gray	High Quality Polyamide 6 + Brass Nickel plated	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB, Free of Halogen Phosphorous and cadmium	M 12×1,5		•										
				M 16×1,5			•									
				M 20×1,5				•								
				M 25×1,5					•							
				M 32×1,5						•						
				M 40×1,5							•					
				M 50×1,5									•			
				Pg 9		•										
				Pg 11			•									
				Pg 13,5			•	•								
				Pg 16				•								
				Pg 21					•							
				Pg 29						•						
				Pg 36							•					
				Pg 48									•			
SPWC IP67 For railroad cars, Steel and male thread, 90˚bent, One touch type  ● Black ● Gray	High Quality Polyamide 6 + Brass Nickel plated	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB, Free of Halogen Phosphorous and cadmium	M 12×1,5	•	•										
				M 16×1,5			•									
				M 20×1,5				•								
				M 25×1,5					•							
				M 32×1,5						•						
				M 40×1,5							•					
				M 50×1,5									•			
				Pg 7	•											
				Pg 9		•										
				Pg 11			•									
				Pg 13,5				•								
				Pg 16				•								
				Pg 21					•							
				Pg 29						•						
				Pg 36							•					
				Pg 48									•			

CPSFIX Specification

Type	Material	Temperature range	Self-extinguishing	Thread	07	10	12	16	22	28	36	42	48	56	70	95
SPAC IP67 For railroad cars, Steel and male thread, 45˚bent, One touch type  ● Black ● Gray	High Quality Polyamide 6 + Brass Nickel plated	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB, Free of Halogen Phosphorous and cadmium	M 12×1.5		●										
				M 16×1.5			●									
				M 20×1.5				●								
				M 25×1.5					●							
				M 32×1.5						●						
				M 40×1.5							●					
				M 50×1.5									●			
				Pg 9		●										
				Pg 11			●									
				Pg 13.5				●								
				Pg 16				●								
				Pg 21					●							
				Pg 29						●						
				Pg 36							●					
				Pg 48									●			
SNIC IP67 Steel Male Thread, Straight, One Touch Type  ● Black ● Gray	High Quality Polyamide 6 + Brass Nickel plated	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB, Free of Halogen Phosphorous and cadmium	M 12×1.5		●										
				M 16×1.5			●									
				M 20×1.5				●								
				M 25×1.5					●							
				M 32×1.5						●						
				M 40×1.5							●					
				M 50×1.5									●			
				Pg 9		●										
				Pg 11			●									
				Pg 13.5			●	●								
				Pg 16				●								
				Pg 21					●							
				Pg 29						●						
				Pg 36							●					
				Pg 48									●			
SICC IP67 Steel Female Thread, Straight, One Touch Type  ● Black ● Gray	High Quality Polyamide 6 + Brass Nickel plated	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB, Free of Halogen Phosphorous and cadmium	1/2-28 UNEF		●										
				5/8-24 UNEF		●	●									
				3/4-20 UNEF		●	●									
				1-20 UNEF			●	●								
				7/8-20 UNEF			●	●								
				1 3/16-18 UNEF				●	●							
				1 3/8-18 UNEF				●								
				1 7/16-18 UNEF				●	●	●						
				1 3/4-18 UNEF						●						
				2-18 UNS					●	●	●					
PICC IP67 For railroad cars, Female thread, Straight, One touch type in which cable gland is inserted  ● Black ● Gray	High Quality Polyamide 6	-40℃ ~ +105℃ 150℃ Short Term	UL94-HB, Free of Halogen Phosphorous and cadmium	1/2-28 UNEF		●										
				5/8-24 UNEF		●	●									
				3/4-20 UNEF		●	●									
				1-20 UNEF			●	●								
				7/8-20 UNEF				●								
				1 3/16-18 UNEF				●	●							
				1 7/16-18 UNEF				●	●	●						
				1 3/4-18 UNEF						●						
				2-18 UNS						●	●					

TYC IP67

Y shape tube separator

- Black
- Gray

Material	High Quality Polyamide 6
Feature	CPS distributors guarantee elegant layout and save on cost instead of using distribution boxes. Nominal width from 28, reduceable to 10.

TTC IP67

T shape tube separator

- Black
- Gray

Material	High Quality Polyamide 6
Feature	CPS distributors guarantee elegant layout and save on cost instead of using distribution boxes. Nominal width from 28, reduceable to 10.

NFH

Flip type connector

- Black
- Gray

Material	High Quality Polyamide 6
Temperature range	-40℃ ~ +105℃
Short Term	150℃
Self-extinguishing	UL94-HB, Free of Halogen Phosphorous and cadmium

FEC

End finishing connector

- Black
- Gray

Material	N.B.R (Nitrile-Butadiene Rubber)
Feature	Cutting edge of FEC according to external Diameter of cable

Type

FCG IP68

Male thread, Rubber gland type connector

- Black
- Gray

Material	High Quality Polyamide 6
Temperature range	-40℃ ~ +105℃
Short Term	150℃
Self-extinguishing	UL94-HB, Free of alogen Phosphorous and cadmium

Thread	External Diameter of inserted Cable(Min.~Max.)	Thread	External Diameter of inserted Cable(Min.~Max.)	Thread	External Diameter of inserted Cable(Min.~Max)
G1/2"	3.5~6.5	M 12×1.5	3.5~6.5	Pg 7	3.5~6.5
G1/2"	4.0~8.0	M 16×1.5	3.5~6.5	Pg 9	3.5~6.5
G1/2"	7.0~12.3	M 12×1.5	4.0~7.1	Pg 7	4.0~8.0
G1/2"	12.0~15.2	M 16×1.5	4.0~8.0	Pg 9	4.0~8.0
G3/4"	12.0~18.0	M 20×1.5	4.0~8.0	Pg 11	4.0~8.0
G3/4"	18.0~20.3	M 16×1.5	7.0~10.9	Pg 13.5	4.0~8.0
G1"	18.0~26.0	M 20×1.5	7.0~12.3	Pg 16	4.0~8.0
G1/4"	22.0~33.0	M 20×1.5	12.0~14.5	Pg 9	7.0~10.6
G2"	36.0~42.0	M 25×1.5	12.0~18.0	Pg 11	7.0~12.3
		M 25×1.5	18.0~19.5	Pg 13.5	7.0~12.3
		M 32×1.5	18.0~26.0	Pg 16	7.0~12.3
		M 40×1.5	22.0~33.0	Pg 11	12.0~13.9
		M 50×1.5	36.0~42.0	Pg 13.5	12.0~14.8
				Pg 16	12.0~17.3
				Pg 21	12.0~18.0
				Pg 21	18.0~22.5
				Pg 29	18.0~26.0
				Pg 36	22.0~33.0
				Pg 48	36.0~42.0

FCGL IP68

Short thread FCG connector

- Black
- Gray

Material	High Quality Polyamide 6
Temperature range	-40℃ ~ +105℃
Short Term	up+150℃
Self-extinguishing	UL94-HB, Free of alogen Phosphorous and cadmium

Thread	External Diameter of inserted Cable(Min.~Max.)	Thread	External Diameter of inserted Cable(Min.~Max.)	Thread	External Diameter of inserted Cable(Min.~Max)
G1/2"	3.5~6.5	M 12×1.5	3.5~6.5	Pg 9	3.5~6.5
G1/2"	4.0~8.0	M 16×1.5	3.5~6.5	Pg 9	4.0~8.0
G1/2"	7.0~12.3	M 12×1.5	4.0~7.1	Pg 11	4.0~8.0
		M 16×1.5	4.0~8.0	Pg 13.5	4.0~8.0
		M 20×1.5	4.0~8.0	Pg 16	4.0~8.0
		M 16×1.5	7.0~10.9	Pg 11	7.0~12.3
		M 20×1.5	7.0~12.3	Pg 13.5	7.0~12.3
		M 25×1.5	7.0~12.3	Pg 16	7.0~12.3

CPSFIX Specification

PNSC IP67

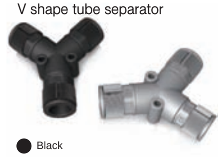
For railroad cars, Straight,
Both sides connected to tubes

Black
Gray

Material	High Quality Polyamide 6
Temperature range	-40℃ ~ +105℃
Short Term	150℃
Self-extinguishing	UL94-HB, Free of Halogen Phosphorous and cadmium

TVC IP67

V shape tube separator



Black
Gray

Material	High Quality Polyamide 6
Feature	CPS distributors guarantee elegant layout and save on cost instead of using distribution boxes. Nominal width from 28, reduceable to 10.

TICG IP68

Female thread, rubber gland type connector

Black
Gray

Material	High Quality Polyamide 6
Temperature range	-40℃ ~ +105℃
Short Term	150℃
Self-extinguishing	UL94-HB, Free of Halogen Phosphorous and cadmium

Thread	External Diameter of inserted Cable(Min.~Max)
1/2-28UNEF	3.5~6.5
5/8-24UNEF	3.5~6.5
3/4-20UNEF	3.5~6.5
7/8-20UNEF	3.5~6.5
1-20UNEF	3.5~6.5
1 3/16-18UNEF	3.5~6.5
1 7/16-18UNEF	3.5~6.5
5/8-24UNEF	4.0~8.0
3/4-20UNEF	4.0~8.0
7/8-20UNEF	4.0~8.0
1-20UNEF	4.0~8.0
1 3/16-18UNEF	4.0~8.0
1 7/16-18UNEF	4.0~8.0
7/8-20UNEF	7.0~12.3
1-20UNEF	7.0~12.3
1 3/16-18UNEF	7.0~12.3
1 7/16-18UNEF	7.0~12.3
1 3/16-18UNEF	12.0~18.0
1 7/16-18UNEF	12.0~18.0
1 3/4-18UNS	12.0~18.0
2-18UNS	12.0~18.0
1 3/4-18UNS	18.0~26.0
2-18UNS	18.0~26.0
2-18UNS	22.0~26.0

BBS

Connector hole cover

White
Gray

Material	High Quality Polyamide 6
Temperature range	-30℃ ~ +80℃
Short Term	150℃

FLN

Black
Gray

Antireleasing Nut

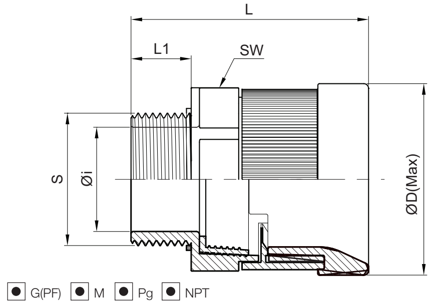
Material	High Quality Polyamide 6

SLN

Antireleasing Steel Nut
Steel nut

Material	Steel

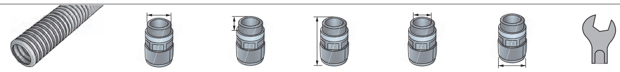
● Black
● Gray



• Material	:	High Quality Polyamide 6
• Degrees of Protection	:	IP 68 (EN 60529)
• The max. Instantaneous Temperature	:	-40℃ ~ +105℃
• Short Term	:	+150℃
• Self-Extinguishing	:	UL94-HB / Free of Halogen Phosphorous and cadmium
• Color	:	Black & Gray
• Application	:	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector
• Certification	:	

Product Size

Ordering No.

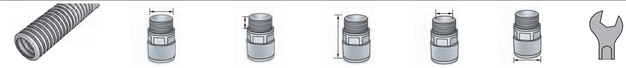


PF Thread (JIS B0202)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	S	L1	L	Øi	ØD	SW
PNC-G07B	PNC-G07G	G1/4"	07	12.9	11.0	34.0	8.5	25.0	14.0
PNC-G10B	PNC-G10G	G1/2"	10	20.5	13.0	43.5	12.0	25.0	19.7
PNC-G12B	PNC-G12G	G1/2"	12	20.5	13.0	43.1	15.0	27.6	22.8
PNC-G16B	PNC-G16G	G1/2"	16	20.5	13.0	45.0	15.2	33.0	28.0
PNC-G22B	PNC-G22G	G3/4"	22	26.4	15.0	54.7	22.0	43.0	37.5
PNC-G28B	PNC-G28G	G1"	28	32.6	15.0	62.4	27.0	48.8	43.0
PNC-G36B	PNC-G36G	G1 1/4"	36	41.7	19.0	76.0	34.1	60.6	52.2
PNC-G42B	PNC-G42G	G1 1/2"	48	47.4	21.0	81.4	42.0	71.8	64.0
PNC-G48B	PNC-G48G	G2"	48	59.0	20.7	80.5	50.0	71.8	64.0

※ Available in Light Gray production.

Ordering No.	

Metric Thread (EN 60423)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	S	L1	L	Øi	ØD	SW
PNC-M107B	PNC-M107G	M12 X 1.5	07	11.8	11.0	34.0	8.5	25.0	14.0
PNC-M127B	PNC-M127G	M16 X 1.5	07	15.8	11.0	34.0	8.5	25.0	14.0
PNC-M167B	PNC-M167G	M20 X 1.5	07	19.8	11.0	34.0	8.5	25.0	14.0
PNC-M10B	PNC-M10G	M12 X 1.5	10	11.8	13.0	43.5	7.5	25.0	19.7
PNC-M120B	PNC-M120G	M16 X 1.5	10	15.8	13.0	43.5	10.0	25.0	19.7
PNC-M20B	PNC-M20G	M20 X 1.5	10	19.8	13.0	43.5	12.0	25.0	19.7
PNC-M102B	PNC-M102G	M12 X 1.5	12	11.8	13.0	43.1	8.0	27.6	22.8
PNC-M12B	PNC-M12G	M16 X 1.5	12	15.8	13.0	43.1	12.0	27.6	22.8
PNC-M202B	PNC-M202G	M20 X 1.5	12	19.8	13.0	43.1	15.2	27.6	22.8
PNC-M126B	PNC-M126G	M16 X 1.5	16	15.8	13.0	45.0	12.0	33.0	28.0
PNC-M16B	PNC-M16G	M20 X 1.5	16	19.8	13.0	45.0	15.2	33.0	28.0
PNC-M226B	PNC-M226G	M25 X 1.5	16	24.7	13.0	45.0	17.5	33.0	28.0
PNC-M22B	PNC-M22G	M25 X 1.5	22	24.7	15.0	54.7	20.5	43.0	37.5
PNC-M3222B	PNC-M3222G	M32 X 1.5	22	31.7	15.0	54.7	22.0	43.0	37.5
PNC-M28B	PNC-M28G	M32 X 1.5	28	31.7	15.0	62.4	27.0	48.8	43.0
PNC-M4028B	PNC-M4028G	M40 X 1.5	28	39.6	15.0	62.4	30.5	48.8	43.0
PNC-M36B	PNC-M36G	M40 X 1.5	36	39.6	19.0	76.0	33.0	60.6	52.2
PNC-M5036B	PNC-M5036G	M50 X 1.5	36	49.6	19.0	76.6	41.3	60.6	52.2
PNC-M48B	PNC-M48G	M50 X 1.5	48	49.6	21.0	81.4	42.0	71.8	64.0
PNC-M6348B	PNC-M6348G	M63 X 1.5	48	62.6	21.0	81.4	50.0	71.8	64.0

Pg Thread (DIN 40430)

Black	Gray	Thread	Tube Size	S	L1	L	Øi	ØD	SW
PNC-P077B	PNC-P077G	Pg 07	07	12.2	11.0	34.0	8.5	16.8	14.0
PNC-P097B	PNC-P097G	Pg 09	07	14.9	11.0	34.0	8.5	25.0	14.0
PNC-P117B	PNC-P117G	Pg 11	07	18.4	11.0	34.0	8.5	25.0	14.0
PNC-P137B	PNC-P137G	Pg 13.5	07	20.2	11.0	34.0	8.5	25.0	14.0
PNC-P070B	PNC-P070G	Pg 07	10	12.2	13.0	43.5	7.5	25.0	19.7
PNC-P09B	PNC-P09G	Pg 09	10	14.9	13.0	43.5	10.0	25.0	19.7
PNC-P110B	PNC-P110G	Pg 11	10	18.4	13.0	43.5	12.0	25.0	19.7
PNC-P130B	PNC-P130G	Pg 13.5	10	20.2	13.0	43.5	12.0	25.0	19.7
PNC-P160B	PNC-P160G	Pg 16	10	22.3	13.0	43.5	12.0	25.0	19.7
PNC-P0912B	PNC-P0912G	Pg 09	12	14.9	13.0	43.1	12.0	27.6	22.8
PNC-P11B	PNC-P11G	Pg 11	12	18.4	13.0	43.1	14.0	27.6	22.8
PNC-P132B	PNC-P132G	Pg 13.5	12	20.2	13.0	43.1	15.0	27.6	22.8
PNC-P162B	PNC-P162G	Pg 16	12	22.3	13.0	43.1	15.0	27.6	22.8
PNC-P136B	PNC-P136G	Pg 13.5	16	20.2	13.0	45.0	15.2	33.0	28.0
PNC-P16B	PNC-P16G	Pg 16	16	22.3	13.0	45.0	15.2	33.0	28.0
PNC-P216B	PNC-P216G	Pg 21	16	28.0	13.0	45.0	17.5	33.0	28.0
PNC-P163B	PNC-P163G	Pg 16	22	22.3	15.0	54.7	18.0	43.0	37.5
PNC-P21B	PNC-P21G	Pg 21	22	28.0	15.0	54.7	22.0	43.0	37.5
PNC-P29B	PNC-P29G	Pg 29	28	36.8	15.0	62.4	30.5	48.8	43.0
PNC-P36B	PNC-P36G	Pg 36	36	46.7	19.0	75.0	40.9	60.6	52.2
PNC-P48B	PNC-P48G	Pg 48	48	59.0	21.0	81.4	50.0	71.8	64.0

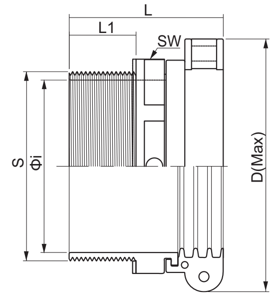
NPT Thread (ANSI/ASME B1.20.1)

Black	Gray	Thread	Tube Size	S	L1	L	Øi	ØD	SW
PNC-N10B	PNC-N10G	NPT 1/2"	10	20.5	13.0	43.5	12.0	25.0	19.7
PNC-N12B	PNC-N12G	NPT 1/2"	12	20.5	13.0	43.1	15.0	27.6	22.8
PNC-N16B	PNC-N16G	NPT 1/2"	16	20.5	13.0	45.0	15.2	33.0	28.0
PNC-N22B	PNC-N22G	NPT 3/4"	22	26.0	15.0	54.7	22.0	43.0	37.5
PNC-N28B	PNC-N28G	NPT 1"	28	32.7	15.0	62.4	27.0	48.8	43.0

TNC IP55

CPSFIX

● Black
● Gray



■ G(PF)

- Material : High Quality Polyamide 6
- Degrees of Protection : IP55(EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector

Product Size

Ordering No.

PF Thread (JIS B0202)

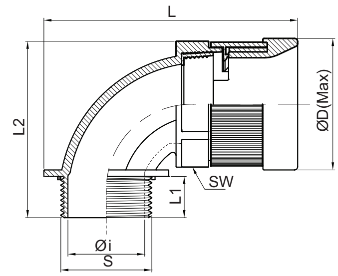
(Dimensions in mm)

Black	Gray	Thread	Tube Size	S	L1	L	Øi	ØD	SW
TNC-G56B	TNC-G56G	G2"	56	59.6	24.0	64.3	49.6	93.0	78.0
TNC-G70B	TNC-G70G	G2 1/2"	70	75.1	30.0	75.2	67.0	121.0	94.5
TNC-G95B	TNC-G95G	G4"	95	113.0	40.0	92.2	98.0	151.0	118.5

※ Available in Light Gray production.

PWC IP68

● Black
● Gray

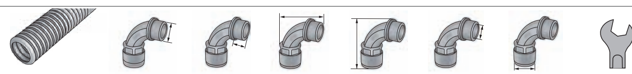


■ G(PF) ■ M ■ Pg

- Material : High Quality Polyamide 6
- Degrees of Protection : IP 68 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector
- Certification :

Product Size

Ordering No.



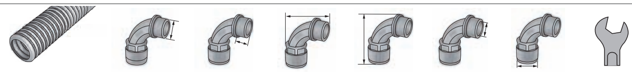
PF Thread (JIS B0202)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
PWC-G10B	PWC-G10G	G1/2"	10	20.5	13.0	50.3	66.2	15.0	25.0	19.7
PWC-G12B	PWC-G12G	G1/2"	12	20.5	13.0	50.5	64.9	15.0	27.6	22.8
PWC-G16B	PWC-G16G	G1/2"	16	20.5	13.0	55.3	71.6	15.3	33.0	28.0
PWC-G22B	PWC-G22G	G3/4"	22	26.2	15.0	66.1	88.4	20.6	43.0	37.5
PWC-G28B	PWC-G28G	G1"	28	32.6	15.0	76.0	104.8	27.1	48.8	43.0
PWC-G368B	PWC-G368G	G1 1/4"	28	41.3	15.0	76.0	104.8	30.4	48.8	43.0
PWC-G36B	PWC-G36G	G1 1/4"	36	41.5	19.0	96.6	131.4	33.8	60.6	52.2
PWC-G42B	PWC-G42G	G1 1/2"	48	47.4	19.0	109.1	147.6	41.2	71.8	64.0
PWC-G48B	PWC-G48G	G2"	48	59.0	19.0	108.4	147.1	50.2	71.8	64.0

※ Available in Light Gray production.

Ordering No.



Metric Thread (EN 60423)

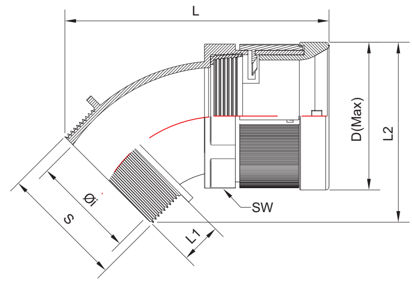
(Dimensions in mm)

Black	Gray	Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
PWC-M107B	PWC-M107G	M12 X 1.5	07	11.8	11.0	36.6	47.0	7.5	18.0	14.0
PWC-M10B	PWC-M10G	M12 X 1.5	10	11.8	13.0	50.2	66.4	8.0	24.9	19.7
PWC-M12B	PWC-M12G	M16 X 1.5	12	15.8	13.0	50.2	64.9	12.0	27.6	22.8
PWC-M202B	PWC-M202G	M20 X 1.5	12	19.8	13.0	50.2	64.7	12.0	27.6	22.8
PWC-M16B	PWC-M16G	M20 X 1.5	16	19.8	13.0	55.5	71.6	15.2	33.0	28.0
PWC-M22B	PWC-M22G	M25 X 1.5	22	24.7	15.0	66.4	88.2	18.0	43.0	37.5
PWC-M28B	PWC-M28G	M32 X 1.5	28	31.7	15.0	76.0	105.1	27.0	48.8	43.0
PWC-M36B	PWC-M36G	M40 X 1.5	36	39.6	19.0	96.5	130.4	33.8	60.6	52.2
PWC-M48B	PWC-M48G	M50 X 1.5	48	49.6	19.0	109.1	145.7	42.0	71.8	64.0

Pg Thread (DIN 40430)

Black	Gray	Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
PWC-P077B	PWC-P077G	Pg07	07	12.2	11.0	36.8	47.0	7.5	18.0	14.0
PWC-P097B	PWC-P097G	Pg09	07	14.9	11.0	36.8	47.0	8.5	18.0	14.0
PWC-P09B	PWC-P09G	Pg09	10	14.9	13.0	50.5	66.4	11.0	24.9	19.7
PWC-P110B	PWC-P110G	Pg11	10	18.4	13.0	50.0	66.4	13.0	24.9	19.7
PWC-P130B	PWC-P130G	Pg13.5	10	20.2	13.0	50.2	66.4	15.0	25.0	19.7
PWC-P11B	PWC-P11G	Pg11	12	18.4	13.0	50.4	64.7	13.0	27.6	22.8
PWC-P132B	PWC-P132G	Pg13.5	12	20.2	13.0	50.6	64.9	15.0	27.6	22.8
PWC-P162B	PWC-P162G	Pg16	12	22.3	13.0	50.9	64.8	15.0	27.6	22.8
PWC-P136B	PWC-P136G	Pg13.5	16	20.2	13.0	55.7	70.3	15.2	33.0	28.0
PWC-P16B	PWC-P16G	Pg16	16	22.3	13.0	55.7	70.6	17.5	33.0	28.0
PWC-P163B	PWC-P163G	Pg16	22	22.3	15.0	66.4	88.4	18.0	43.0	37.5
PWC-P21B	PWC-P21G	Pg21	22	28.0	15.0	66.4	87.5	22.3	43.0	37.5
PWC-P29B	PWC-P29G	Pg29	28	36.8	15.0	76.0	105.0	30.5	48.8	43.0
PWC-P36B	PWC-P36G	Pg36	36	46.7	19.0	96.8	130.5	34.6	60.6	52.2
PWC-P48B	PWC-P48G	Pg48	48	59.0	19.0	109.0	147.5	50.3	71.8	64.0

Black
Gray

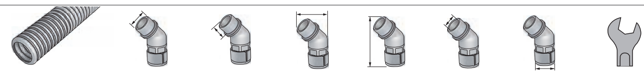


G(PF) M Pg

- Material : High Quality Polyamide 6
- Degrees of Protection : IP 68 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector
- Certification : CE

Product Size

Ordering No.

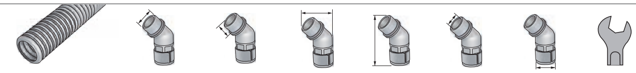


PF Thread (JIS B0202)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
PAC-G10B	PAC-G10G	G1/2"	10	20.5	13.0	35.0	61.6	15.0	25.0	19.7
PAC-G12B	PAC-G12G	G1/2"	12	20.5	13.0	36.9	62.7	15.0	27.6	22.8
PAC-G16B	PAC-G16G	G1/2"	16	20.5	13.0	40.4	66.3	15.2	33.0	28.0
PAC-G22B	PAC-G22G	G3/4"	22	26.2	15.0	50.1	80.9	22.0	43.0	37.5
PAC-G28B	PAC-G28G	G1"	28	33.0	15.0	54.4	93.5	27.1	48.8	43.0
PAC-G36B	PAC-G36G	G1 1/4"	36	41.6	19.0	71.3	111.5	34.1	60.6	52.2
PAC-G42B	PAC-G42G	G1 1/2"	48	47.4	19.0	80.1	121.9	41.1	71.8	64.0
PAC-G48B	PAC-G48G	G2"	48	59.0	19.0	84.1	125.9	50.0	71.8	64.0

※ Available in Light Gray production.

Ordering No.	

Metric Thread (EN 60423)

(Dimensions in mm)

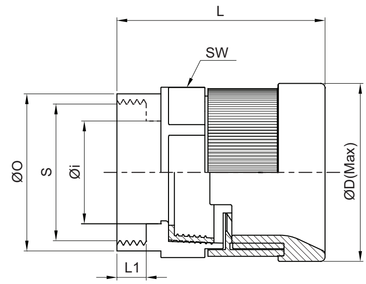
Black	Gray	Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
PAC-M10B	PAC-M10G	M12 X 1.5	10	11.8	13.0	31.5	58.4	8.0	24.9	19.7
PAC-M12B	PAC-M12G	M16 X 1.5	12	15.8	13.0	35.6	61.0	12.0	27.6	22.8
PAC-M202B	PAC-M202G	M20 X 1.5	12	19.8	13.0	37.2	62.7	15.1	27.6	22.8
PAC-M16B	PAC-M16G	M20 X 1.5	16	19.8	13.0	39.7	66.2	15.3	33.0	28.0
PAC-M22B	PAC-M22G	M25 X 1.5	22	24.7	15.0	50.0	80.0	20.4	43.0	37.5
PAC-M28B	PAC-M28G	M32 X 1.5	28	31.7	15.0	56.3	92.5	27.2	48.8	43.0
PAC-M36B	PAC-M36G	M40 X 1.5	36	39.6	19.0	70.5	111.5	34.0	60.6	52.2
PAC-M48B	PAC-M48G	M50 X 1.5	48	49.6	19.0	81.3	122.5	42.0	71.8	64.0

Pg Thread (DIN 40430)

Black	Gray	Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
PAC-P09B	PAC-P09G	Pg09	10	14.9	13.0	31.3	59.6	11.1	24.9	19.7
PAC-P110B	PAC-P110G	Pg11	10	18.4	13.0	33.5	60.6	15.0	24.9	19.7
PAC-P130B	PAC-P130G	Pg13.5	10	20.2	13.0	35.4	61.5	15.1	25.0	19.7
PAC-P11B	PAC-P11G	Pg11	12	18.4	13.0	36.2	62.0	14.1	27.6	22.8
PAC-P136B	PAC-P136G	Pg13.5	16	20.2	13.0	41.1	66.0	15.3	33.0	28.0
PAC-P16B	PAC-P16G	Pg16	16	22.3	13.0	41.8	67.3	17.6	33.0	28.0
PAC-P21B	PAC-P21G	Pg21	22	28.0	15.0	51.7	81.7	22.2	43.0	37.5
PAC-P29B	PAC-P29G	Pg29	28	36.8	15.0	57.8	94.1	31.0	48.8	43.0
PAC-P36B	PAC-P36G	Pg36	36	46.7	19.0	73.3	114.0	40.3	60.6	52.2
PAC-P48B	PAC-P48G	Pg48	48	58.8	19.0	84.6	125.9	50.1	71.8	64.0

PIC IP68

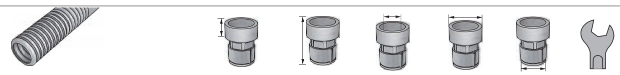
- Black
- Gray



- Material : High Quality Polyamide 6
- Degrees of Protection : IP 68 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector
- Certification : CE

Product Size

Ordering No.

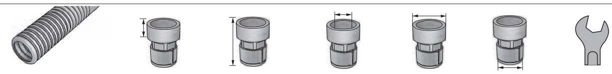


UNEF Thread (ASME B1.1)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	Shell Size	L1	L	Øi	ØO	ØD	SW
PIC-U1010B	PIC-U1010G	1/2-28UNEF	10	8S, 10S	12.1	44.8	10.0	18.6	25.0	19.7
PIC-U1210B	PIC-U1210G	5/8-24UNEF	10	10SL, 12S	12.1	44.9	13.0	20.6	25.0	19.7
PIC-U1410B	PIC-U1410G	3/4-20UNEF	10	14, 14S	12.1	44.9	13.0	23.3	25.0	19.7
PIC-U1212B	PIC-U1212G	5/8-24UNEF	12	10SL, 12S	10.0	43.3	13.0	20.6	27.6	22.8
PIC-U1412B	PIC-U1412G	3/4-20UNEF	12	14, 14S	10.0	43.6	13.0	24.0	27.6	22.8
PIC-U1812B	PIC-U1812G	1-20UNEF	12	18	10.0	43.8	13.0	31.0	27.6	22.8
PIC-U2012B	PIC-U2012G	1 3/16-18UNEF	12	20, 22	10.0	43.3	13.0	35.5	27.6	22.8
PIC-U1616B	PIC-U1616G	7/8-20UNEF	16	16, 16S	10.0	46.4	17.5	28.0	33.0	28.0
PIC-U1816B	PIC-U1816G	1-20UNEF	16	18	10.0	46.4	17.5	31.0	33.0	28.0
PIC-U2016B	PIC-U2016G	1 3/16-18UNEF	16	20,22	10.0	46.0	17.5	35.5	33.0	28.0
PIC-U2316B	PIC-U2316G	1 3/8-8UNEF	16	20,22	10.0	44.7	17.5	40.0	33.0	28.0
PIC-U2816B	PIC-U2816G	1 7/16-18UNEF	16	24, 28	10.0	45.9	17.5	42.0	33.0	28.0
PIC-U2222B	PIC-U2222G	1 3/16-18UNEF	22	20, 22	9.5	55.2	20.0	35.2	43.0	37.5
PIC-U2822B	PIC-U2822G	1 7/16-18UNEF	22	24,28	9.5	55.2	20.0	41.7	43.0	37.5
PIC-U3622B	PIC-U3622G	2-18UNS	22	36	9.5	54.7	19.7	56.2	43.0	37.5
PIC-U2828B	PIC-U2828G	1 7/16-18UNEF	28	24,28	9.2	62.8	28.0	42.0	48.8	43.0
PIC-U3228B	PIC-U3228G	1 3/4-18UNS	28	32	9.4	62.5	28.0	50.3	48.8	43.0
PIC-U3628B	PIC-U3628G	2-18UNS	28	36	10.0	62.5	28.0	56.5	48.8	43.0
PIC-U3636B	PIC-U3636G	2-18UNS	36	36	19.3	76.2	35.0	54.5	60.6	52.2

Ordering No.



Metric Thread (EN 60423)

(Dimensions in mm)

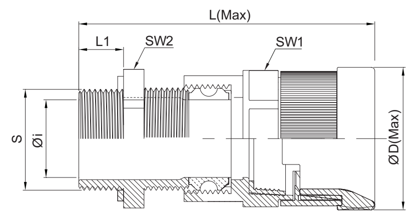
Black	Gray	Thread	Tube Size	L1	L	Øi	ØO	ØD	SW
PIC-M12B	PIC-M12G	M16 X 1.5	12	10.0	43.8	13.0	20.6	27.6	22.8
PIC-M226B	PIC-M226G	M25 X 1.5	16	10.2	44.9	17.5	35.5	33.0	28.0

Pg Thread (DIN 40430)

Black	Gray	Thread	Tube Size	L1	L	Øi	ØO	ØD	SW
PIC-P11B	PIC-P11G	Pg11	12	10.0	43.0	13.0	20.6	27.6	22.8
PIC-P132B	PIC-P132G	Pg13.5	12	10.0	43.0	13.0	30.8	27.6	22.8
PIC-P16B	PIC-P16G	Pg16	16	10.0	44.7	17.5	28.0	33.0	28.0
PIC-P21B	PIC-P21G	Pg21	22	9.5	53.1	20.0	35.5	43.0	37.5

PNCC IP68

● Black
● Gray

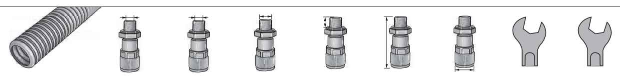


● G(PF) ● M ● Pg

- Material : High Quality Polyamide 6
- Degrees of Protection : IP 68 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector, Connector to avoid the cutoff of the cable in the machine.

Product Size

Ordering No.

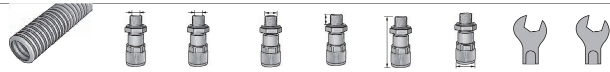


PF Thread (JIS B0202)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	Øi(Min)	Øi(Max)	S	L1	L	ØD	SW1	SW2
PNCC-G10B	PNCC-G10G	G1/2"	10	3.5	6.5	20.9	15.0	72.3	25.0	19.7	22.6
PNCC-G12B	PNCC-G12G	G1/2"	12	4.0	8.0	20.9	15.0	72.4	27.6	22.8	25.5
PNCC-G16B	PNCC-G16G	G1/2"	16	7.0	12.3	20.9	15.0	75.1	33.0	28.0	25.4
PNCC-G1622B	PNCC-G1622G	G1/2"	22	12.0	15.2	20.9	15.0	87.4	43.0	37.5	34.0
PNCC-G22B	PNCC-G22G	G3/4"	22	12.0	18.0	26.4	15.0	87.4	43.0	37.5	34.0
PNCC-G228B	PNCC-G228G	G3/4"	28	18.0	20.3	26.4	15.0	87.4	43.0	43.0	43.4
PNCC-G28B	PNCC-G28G	G1"	28	18.0	26.0	33.2	15.0	95.2	48.8	43.0	43.4
PNCC-G36B	PNCC-G36G	G1 1/4"	36	22.0	33.0	41.9	19.0	120.2	60.6	52.2	51.6
PNCC-G48B	PNCC-G48G	G2"	48	36.0	42.0	60.0	19.0	130.0	71.8	64.0	67.0

Ordering No.



Metric Thread (EN 60423)

(Dimensions in mm)

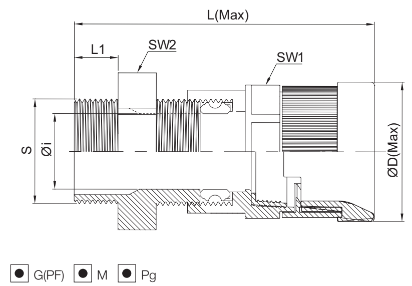
Black	Gray	Thread	Tube Size	Øi(Min)	Øi(Max)	S	L1	L	ØD	SW1	SW2
PNCC-M10B	PNCC-M10G	M12 X 1.5	10	3.5	6.5	12.0	15.0	72.3	25.0	19.7	22.6
PNCC-M120B	PNCC-M120G	M16 X 1.5	10	3.5	6.5	16.0	15.0	72.3	25.0	19.7	22.6
PNCC-M102B	PNCC-M102G	M12 X 1.5	12	4.0	7.1	12.0	15.0	72.4	27.6	22.8	25.5
PNCC-M12B	PNCC-M12G	M16 X 1.5	12	4.0	8.0	16.0	15.0	72.4	27.6	22.8	25.5
PNCC-M162B	PNCC-M162G	M20 X 1.5	12	4.0	8.0	20.0	15.0	72.4	27.6	22.8	25.5
PNCC-M126B	PNCC-M126G	M16 X 1.5	16	7.0	10.9	16.0	15.0	75.1	33.0	28.0	25.4
PNCC-M16B	PNCC-M16G	M20 X 1.5	16	7.0	12.3	20.0	15.0	75.1	33.0	28.0	25.4
PNCC-M1622B	PNCC-M1622G	M20 X 1.5	22	12.0	14.5	20.0	15.0	87.4	43.0	37.5	34.0
PNCC-M22B	PNCC-M22G	M25 X 1.5	22	12.0	18.0	25.0	15.0	87.5	43.0	37.5	34.0
PNCC-M228B	PNCC-M228G	M25 X 1.5	28	18.0	19.5	25.0	15.0	95.3	48.8	43.0	43.4
PNCC-M28B	PNCC-M28G	M32 X 1.5	28	18.0	26.0	32.0	15.0	95.3	48.8	43.0	43.4
PNCC-M36B	PNCC-M36G	M40 X 1.5	36	22.0	33.0	40.0	19.0	120.2	60.6	52.2	51.6
PNCC-M48B	PNCC-M48G	M50 X 1.5	48	36.0	42.0	50.0	19.0	122.8	71.8	64.0	67.0

Pg Thread (DIN 40430)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	Øi(Min)	Øi(Max)	S	L1	L	ØD	SW1	SW2
PNCC-P07B	PNCC-P07G	Pg07	10	3.5	6.5	12.5	15.0	72.3	25.0	19.7	22.6
PNCC-P09B	PNCC-P09G	Pg09	10	3.5	6.5	15.2	15.0	72.3	25.0	19.7	22.6
PNCC-P072B	PNCC-P072G	Pg07	12	4.0	8.0	20.9	15.0	72.4	27.6	22.8	25.5
PNCC-P092B	PNCC-P092G	Pg09	12	4.0	8.0	20.9	15.0	72.4	27.6	22.8	25.5
PNCC-P11B	PNCC-P11G	Pg11	12	4.0	8.0	20.9	15.0	72.4	27.6	22.8	25.5
PNCC-P132B	PNCC-P132G	Pg13.5	12	4.0	8.0	20.9	15.0	72.4	27.6	22.8	25.5
PNCC-P162B	PNCC-P162G	Pg16	12	4.0	8.0	20.9	15.0	72.4	27.6	22.8	25.5
PNCC-P096B	PNCC-P096G	Pg09	16	7.0	10.6	15.2	15.0	75.1	33.0	28.0	25.4
PNCC-P116B	PNCC-P116G	Pg11	16	7.0	12.3	18.6	15.0	75.1	33.0	28.0	25.4
PNCC-P13B	PNCC-P13G	Pg13.5	16	7.0	12.3	20.4	15.0	75.1	33.0	28.0	25.4
PNCC-P16B	PNCC-P16G	Pg16	16	7.0	12.3	22.5	15.0	75.1	33.0	28.0	25.4
PNCC-P122B	PNCC-P122G	Pg11	22	12.0	13.9	18.6	15.0	87.5	43.0	37.5	34.0
PNCC-P1322B	PNCC-P1322G	Pg13.5	22	12.0	14.8	20.4	15.0	87.5	43.0	37.5	34.0
PNCC-P1622B	PNCC-P1622G	Pg16	22	12.0	17.3	22.5	15.0	87.5	43.0	37.5	34.0
PNCC-P21B	PNCC-P21G	Pg21	22	12.0	18.0	28.3	15.0	87.5	43.0	37.5	34.0
PNCC-P218B	PNCC-P218G	Pg21	28	18.0	22.5	28.3	15.0	95.3	48.8	43.0	43.4
PNCC-P29B	PNCC-P29G	Pg29	28	18.0	26.0	37.0	15.0	95.3	48.8	43.0	43.4
PNCC-P36B	PNCC-P36G	Pg36	36	22.0	33.0	47.0	19.0	120.2	60.6	52.2	51.6
PNCC-P48B	PNCC-P48G	Pg48	48	36.0	42.0	59.3	19.0	122.8	71.8	64.0	67.0

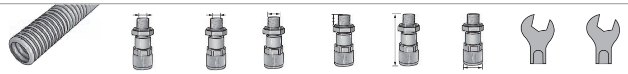
PNCCL IP68



- Material : High Quality Polyamide 6
- Degrees of Protection : IP 68 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector, Connector to avoid the cutoff of the cable in the machine.

Product Size

Ordering No.

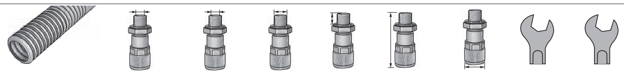


PF Thread (JIS B0202)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	Øi(Min)	Øi(Max)	S	L1	L	ØD	SW1	SW2
PNCCL-G10B	PNCCL-G10G	G1/2"	10	3.5	6.5	20.9	9.0	64.7	25.0	19.7	22.6
PNCCL-G12B	PNCCL-G12G	G1/2"	12	4.0	8.0	20.9	9.0	66.4	27.6	22.8	25.5
PNCCL-G16B	PNCCL-G16G	G1/2"	16	7.0	12.3	20.9	9.0	69.1	33.0	28.0	25.4

Ordering No.



Metric Thread (EN 60423)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	Øi(Min)	Øi(Max)	S	L1	L	ØD	SW1	SW2
PNCCL-M10B	PNCCL-M10G	M12 X 1.5	10	3.5	6.5	12.0	9.0	64.7	25.0	19.7	22.6
PNCCL-M120B	PNCCL-M120G	M16 X 1.5	10	3.5	6.5	16.0	9.0	64.7	25.0	19.7	22.6
PNCCL-M102B	PNCCL-M102G	M12 X 1.5	12	4.0	7.1	12.0	9.0	66.4	27.6	22.8	25.5
PNCCL-M12B	PNCCL-M12G	M16 X 1.5	12	4.0	8.0	16.0	9.0	66.4	27.6	22.8	25.5
PNCCL-M162B	PNCCL-M162G	M20 X 1.5	12	4.0	8.0	20.0	9.0	66.4	27.6	22.8	25.5
PNCCL-M126B	PNCCL-M126G	M16 X 1.5	16	7.0	10.9	16.0	9.0	69.1	33.0	28.0	25.4
PNCCL-M16B	PNCCL-M16G	M20 X 1.5	16	7.0	12.3	20.0	9.0	69.1	33.0	28.0	25.4
PNCCL-M216B	PNCCL-M216G	M25 X 1.5	16	7.0	12.3	25.0	9.0	69.1	33.0	28.0	25.4

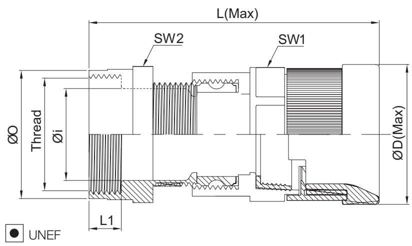
Pg Thread (DIN 40430)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	Øi(Min)	Øi(Max)	S	L1	L	ØD	SW1	SW2
PNCCL-P09B	PNCCL-P09G	Pg09	10	3.5	6.5	15.2	9.0	64.7	25.0	19.7	22.6
PNCCL-P092B	PNCCL-P092G	Pg09	12	4.0	8.0	20.9	9.0	66.4	27.6	22.8	25.5
PNCCL-P11B	PNCCL-P11G	Pg11	12	4.0	8.0	20.9	9.0	66.4	27.6	22.8	25.5
PNCCL-P132B	PNCCL-P132G	Pg13.5	12	4.0	8.0	20.9	9.0	66.4	27.6	22.8	25.5
PNCCL-P162B	PNCCL-P162G	Pg16	12	4.0	8.0	20.9	9.0	66.4	27.6	22.8	25.5
PNCCL-P116B	PNCCL-P116G	Pg11	16	7.0	12.3	18.6	9.0	69.1	33.0	28.0	25.4
PNCCL-P13B	PNCCL-P13G	Pg13.5	16	7.0	12.3	20.4	9.0	69.1	33.0	28.0	25.4
PNCCL-P16B	PNCCL-P16G	Pg16	16	7.0	12.3	22.5	9.0	69.1	33.0	28.0	25.4

PICC IP68

● Black
● Gray

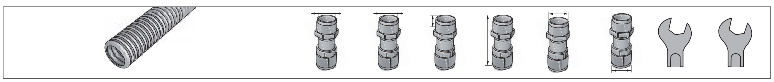


■ UNEF

- Material : High Quality Polyamide 6
- Degrees of Protection : IP 68 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector, Connector to avoid the cutoff of the cable in the machine.

Product Size

Ordering No.

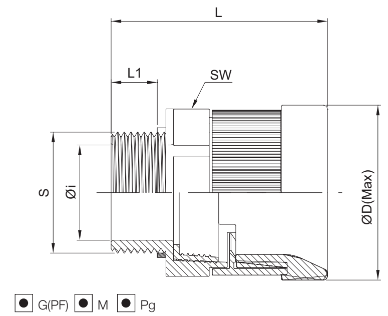


UNEF Thread (ASME B1.1)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	Shell Size	Øi(Min)	Øi(Max)	L1	L	ØO	ØD	SW1	SW2
PICC-U1010B	PICC-U1010G	1/2-28UNEF	10	8S, 10S	3.5	6.5	10.0	70.7	17.4	25.0	19.7	22.6
PICC-U1210B	PICC-U1210G	5/8-24UNEF	10	10SL, 12S	3.5	6.5	10.0	70.7	19.6	25.0	19.7	22.6
PICC-U1410B	PICC-U1410G	3/4-20UNEF	10	14, 14S	3.5	6.5	10.0	70.7	23.0	25.0	19.7	22.6
PICC-U1212B	PICC-U1212G	5/8-24UNEF	12	10SL, 12S	4.0	8.0	10.0	72.4	19.6	27.6	22.8	25.5
PICC-U1412B	PICC-U1412G	3/4-20UNEF	12	14, 14S	4.0	8.0	10.0	72.4	23.0	27.6	22.8	25.5
PICC-U1812B	PICC-U1812G	1-20UNEF	12	18	4.0	8.0	10.0	72.4	30.0	27.6	22.8	25.5
PICC-U1616B	PICC-U1616G	7/8-20UNEF	16	16, 16S	7.0	12.3	10.0	75.1	27.0	33.0	28.0	25.4
PICC-U1816B	PICC-U1816G	1-20UNEF	16	18	7.0	12.3	10.0	75.1	30.0	33.0	28.0	25.4
PICC-U2016B	PICC-U2016G	1 3/16-18UNEF	16	20, 22	7.0	12.3	10.0	75.1	34.5	33.0	28.0	25.4
PICC-U2816B	PICC-U2816G	1 7/16-18UNEF	16	24, 28	7.0	12.3	10.0	75.1	41.0	33.0	28.0	25.4
PICC-U2222B	PICC-U2222G	1 3/16-18UNEF	22	20, 22	12.0	18.0	10.0	87.5	34.5	43.0	37.5	34.0
PICC-U2822B	PICC-U2822G	1 7/16-18UNEF	22	24, 28	12.0	18.0	10.0	87.5	41.0	43.0	37.5	34.0
PICC-U2828B	PICC-U2828G	1 7/16-18UNEF	28	24, 28	18.0	26.0	10.0	94.8	41.0	48.8	43.0	43.4
PICC-U3228B	PICC-U3228G	13/4-18UNS	28	32	18.0	26.0	10.0	94.8	49.0	48.8	43.0	43.4
PICC-U3628B	PICC-U3628G	2-18UNS	28	36	18.0	26.0	10.0	94.8	55.5	48.8	43.0	43.4
PICC-U3636B	PICC-U3636G	2-18UNS	36	36	22.0	33.0	14.0	120.1	55.5	60.6	52.2	53.0

● Black
● Gray

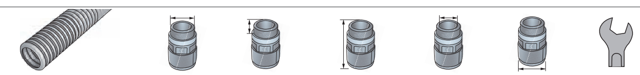


■ G(PF) ■ M ■ Pg

- Material : High Quality Polyamide 6
- Degrees of Protection : IP 68 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector, Connector for jointing into Limit-Switch.

Product Size

Ordering No.



PF Thread (JIS B0202)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	S	L1	L	Øi	ØD	SW
PNCL-G10B	PNCL-G10G	G1/2"	10	20.5	8.0	43.5	12.0	25.0	19.7
PNCL-G12B	PNCL-G12G	G1/2"	12	20.5	8.0	43.1	15.0	27.6	22.8
PNCL-G16B	PNCL-G16G	G1/2"	16	20.5	8.0	45.0	15.2	33.0	28.0

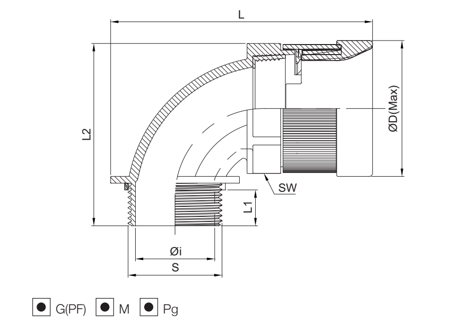
Metric Thread / Straight (EN 60423)

Black	Gray	Thread	Tube Size	S	L1	L	Øi	ØD	SW
PNCL-M10B	PNCL-M10G	M12 X 1.5	10	11.8	8.0	43.5	7.5	25.0	19.7
PNCL-M120B	PNCL-M120G	M16 X 1.5	10	15.8	8.0	43.5	10.0	25.0	19.7
PNCL-M20B	PNCL-M20G	M20 X 1.5	10	19.8	8.0	43.5	12.0	25.0	19.7
PNCL-M102B	PNCL-M102G	M12 X 1.5	12	11.8	8.0	43.1	8.0	27.6	22.8
PNCL-M12B	PNCL-M12G	M16 X 1.5	12	15.8	8.0	43.1	12.0	27.6	22.8
PNCL-M202B	PNCL-M202G	M20 X 1.5	12	19.8	8.0	43.1	15.2	27.6	22.8
PNCL-M126B	PNCL-M126G	M16 X 1.5	16	15.8	8.0	45.0	12.0	33.0	28.0
PNCL-M16B	PNCL-M16G	M20 X 1.5	16	19.8	8.0	45.0	15.2	33.0	28.0
PNCL-M226B	PNCL-M226G	M25 X 1.5	16	24.7	8.0	45.0	17.5	33.0	28.0

Pg Thread / Straight (DIN 40430)

Black	Gray	Thread	Tube Size	S	L1	L	Øi	ØD	SW
PNCL-P09B	PNCL-P09G	Pg09	10	14.9	8.0	43.5	10.0	25.0	19.7
PNCL-P160B	PNCL-P160G	Pg16	10	22.3	8.0	43.5	12.0	25.0	19.7
PNCL-P0912B	PNCL-P0912G	Pg09	12	14.9	8.0	43.1	12.0	27.6	22.8
PNCL-P11B	PNCL-P11G	Pg11	12	18.4	8.0	43.1	14.0	27.6	22.8
PTNCL-P136B	PNCL-P136G	Pg13.5	16	20.2	8.0	45.0	15.2	33.0	28.0
PNCL-P16B	PNCL-P16G	Pg16	16	22.3	8.0	45.0	15.2	33.0	28.0

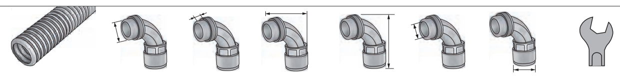
PWCL IP68



- Material : High Quality Polyamide 6
- Degrees of Protection : IP 68 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector, Connector for jointing into Limit-Switch.

Product Size

Ordering No.



PF Thread (JIS B0202)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
PWCL-G10B	PWCL-G10G	G1/2"	10	20.5	8.0	50.3	66.2	15.0	25.0	19.7
PWCL-G12B	PWCL-G12G	G1/2"	12	20.5	8.0	50.5	64.9	15.0	27.6	22.8
PWCL-G16B	PWCL-G16G	G1/2"	16	20.5	8.0	55.3	71.6	15.3	33.0	28.0

Metric Thread / 90°Elbow (EN 60423)

Black	Gray	Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
PWCL-M10B	PWCL-M10G	M12 X 1.5	10	11.8	8.0	50.2	66.4	8.0	24.9	19.7
PWCL-M12B	PWCL-M12G	M16 X 1.5	12	15.8	8.0	50.2	64.9	12.0	27.6	22.8
PWCL-M202B	PWCL-M202G	M20 X 1.5	12	19.8	8.0	50.2	64.7	12.0	27.6	22.8
PWCL-M16B	PWCL-M16G	M20 X 1.5	16	19.8	8.0	55.5	71.6	15.2	33.0	28.0

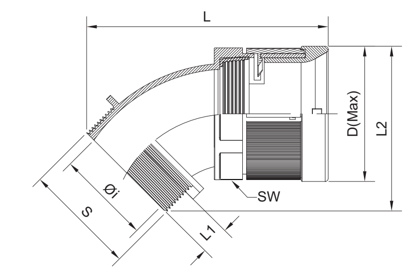
Pg Thread / 90°Elbow (DIN 40430)

Black	Gray	Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
PWCL-P09B	PWCL-P09G	Pg09	10	14.9	8.0	50.5	66.4	11.0	24.9	19.7
PWCL-P110B	PWCL-P110G	Pg11	10	18.4	8.0	50.0	66.4	13.0	24.9	19.7
PWCL-P130B	PWCL-P130G	Pg13.5	10	20.2	8.0	50.2	66.4	15.0	24.9	19.7
PWCL-P11B	PWCL-P11G	Pg11	12	18.4	8.0	50.4	64.7	13.0	27.6	22.8
PWCL-P132B	PWCL-P132G	Pg13.5	12	20.2	8.0	50.6	64.9	15.0	27.6	22.8
PWCL-P162B	PWCL-P162G	Pg16	12	22.3	8.0	50.9	64.8	15.0	27.6	22.8
PWCL-P136B	PWCL-P136G	Pg13.5	16	20.2	8.0	55.7	70.3	15.2	33.0	28.0
PWCL-P16B	PWCL-P16G	Pg16	16	22.3	8.0	55.7	70.6	17.5	33.0	28.0

PACL IP68

CPSFIX

● Black
● Gray

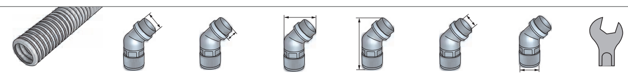


■ G(PF) ■ M ■ Pg

- Material : High Quality Polyamide 6
- Degrees of Protection : IP 68 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector, Connector for jointing into Limit-Switch.

Product Size

Ordering No.



PF Thread / 45°Elbow (JIS B0202)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
PACL-G10B	PACL-G10G	G1/2"	10	20.5	8.0	35.0	61.6	15.0	25.0	19.7
PACL-G12B	PACL-G12G	G1/2"	12	20.5	8.0	36.9	62.7	15.0	27.6	22.8
PACL-G16B	PACL-G16G	G1/2"	16	20.5	8.0	40.4	66.3	15.2	33.0	28.0

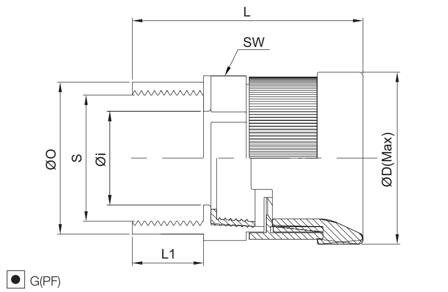
Metric Thread / 45°Elbow (EN 60423)

Black	Gray	Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
PACL-M10B	PACL-M10G	M12 X 1.5	10	11.8	8.0	31.5	58.4	8.0	24.9	19.7
PACL-M12B	PACL-M12G	M16 X 1.5	12	15.8	8.0	35.6	61.0	12.0	27.6	22.8
PACL-M16B	PACL-M16G	M20 X 1.5	16	19.8	8.0	39.7	66.2	15.3	33.0	22.8

Pg Thread / 45°Elbow (DIN 40430)

Black	Gray	Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
PACL-P09B	PACL-P09G	Pg09	10	14.9	8.0	31.3	59.6	11.1	24.9	19.7
PACL-P110B	PACL-P110G	Pg11	10	18.4	8.0	33.5	60.6	15.0	24.9	19.7
PACL-P130B	PACL-P130G	Pg13.5	10	20.2	8.0	35.4	61.5	15.1	25.0	19.7
PACL-P11B	PACL-P11G	Pg11	12	18.4	8.0	36.2	62.0	14.1	27.6	22.8
PACL-P136B	PACL-P136G	Pg13.5	16	20.2	8.0	41.1	66.0	15.3	33.0	28.0
PACL-P16B	PACL-P16G	Pg16	16	22.3	8.0	41.8	67.3	17.6	33.0	28.0

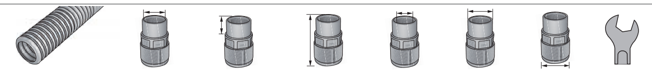
PIPC IP68



- Material : High Quality Polyamide 6
- Degrees of Protection : IP 68 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Pipe with connector.

Product Size

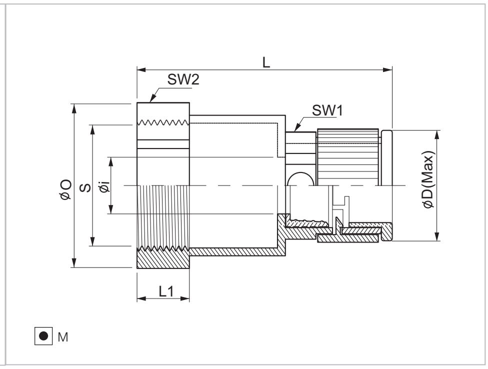
Ordering No.



PF Thread (JIS B0202)

(Dimensions in mm)

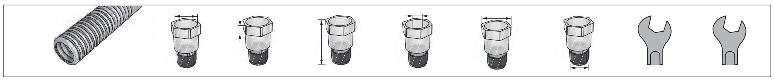
Black	Gray	Thread	Tube Size	S	L1	L	Øi	ØO	ØD	SW
PIPC-G16B	PIPC-G16G	G1/2"	16	18.6	10.0	44.7	17.5	28.0	33.0	28.0
PIPC-G22B	PIPC-G22G	G3/4"	22	24.1	10.0	53.1	20.0	35.0	43.0	37.5
PIPC-G28B	PIPC-G28G	G1"	28	30.2	10.0	61.4	28.0	41.5	48.8	43.0
PIPC-G36B	PIPC-G36G	G1 1/4"	36	38.9	19.5	74.5	31.3	53.0	60.6	52.2
PIPC-G42B	PIPC-G42G	G1 1/2"	48	44.8	27.6	87.8	36.0	53.0	71.8	64.0
PIPC-G48B	PIPC-G48G	G2"	48	56.6	27.6	87.8	45.0	66.0	71.8	64.0



- Material : High Quality Polycarbonate
- Degrees of Protection : IP 67 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Transparency
- Application : Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Sencer with connector.

Product Size

Ordering No.



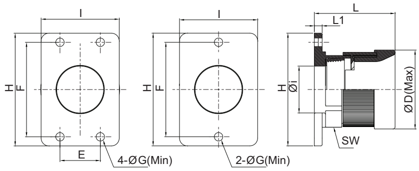
Metric Thread (EN 60423)

(Dimensions in mm)

Black	Gray	Tube Size	S	L1	L	Øi	ØO	ØD	SW1	SW2
TIS-M08T	M8 X 1.0	10	7.7	12.8	61.5	5.0	17.5	23.0	20.0	16.0
TIS-M12T	M12 X 1.0	10	11.6	12.8	61.5	9.0	20.0	23.0	20.0	18.3
TIS-M18T	M18 X 1.0	10	17.7	12.8	61.5	9.0	24.0	23.0	20.0	22.0
TIS-M30T	M30 X 1.5	10	28.5	12.8	61.5	9.0	38.0	23.0	20.0	34.0

PNOC IP68

Black
Gray



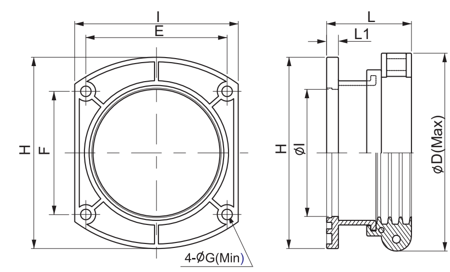
- Material : High Quality Polyamide 6
- Degrees of Protection : IP 68 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Pipe with connector.

Product Size

(Dimensions in mm)

Ordering No.

Black	Gray	Tube Size	E	F	G	H	I	L1	L	Øi	ØD	SW
PNOC-12B	PNOC-12G	12	-	36.5	5.5	46.0	32.0	5.0	35.1	15.0	27.6	22.8
PNOC-16B	PNOC-16G	16	-	36.5	5.5	46.0	32.0	5.0	37.0	17.5	33.0	28.0
PNOC-22B	PNOC-22G	22	30.5	53.5	5.5	65.0	45.0	5.0	44.7	22.0	43.0	37.5
PNOC-28B	PNOC-28G	28	31.0	54.8	6.5	64.8	45.0	6.0	53.4	27.0	48.8	43.0
PNOC-36B	PNOC-36G	36	31.0	73.2	6.5	86.6	60.0	6.0	63.1	40.1	60.6	52.2
PNOC-48B	PNOC-48G	48	30.5	73.2	6.5	86.6	73.0	6.0	66.4	50.0	71.8	64.0



- Material : High Quality Polyamide 6
- Degrees of Protection : IP 55 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Pipe with connector.

Product Size

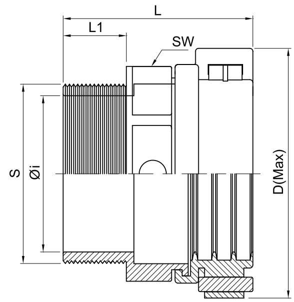
(Dimensions in mm)

Ordering No.

Black	Gray	Tube Size	E	F	G	H	I	L1	L	Øi	ØD	SW
TNOC-56B	TNOC-56G	56	67.0	61.0	7.0	96.0	81.0	4.0	39.2	56.0	93.0	-
TNOC-70B	TNOC-70G	70	84.0	78.0	7.0	113.0	98.0	9.0	52.0	70.0	121.0	-
TNOC-95B	TNOC-95G	95	108.0	94.0	8.0	146.0	125.0	9.0	64.7	92.0	151.0	-

TNRC IP55

● Black
● Gray

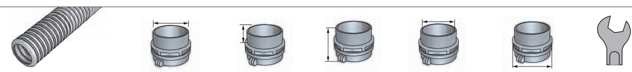


G(PF)

- Material : High Quality Polyamide 6
- Degrees of Protection : IP 55 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Applied in control box or moving point.

Product Size

Ordering No.



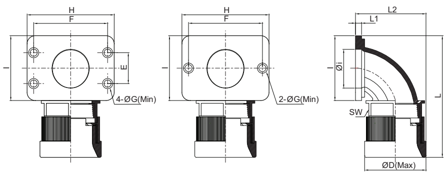
PF Thread (JIS B0202)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	S	L1	L	Øi	ØD	SW
TNRC-G22B	TNRC-G22G	G3/4"	22	26.4	15.0	50.8	19.4	50.6	37.5
TNRC-G28B	TNRC-G28G	G1"	28	33.2	15.0	47.4	26.2	57.7	43.0
TNRC-G36B	TNRC-G36G	G1 1/4"	36	41.6	19.0	60.0	35.0	70.0	52.2
TNRC-G48B	TNRC-G48G	G2"	48	58.7	21.0	63.3	51.0	85.0	64.1

PWOC IP68

CPSFIX

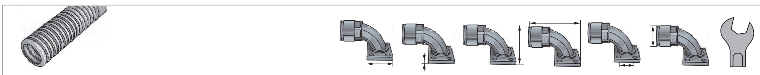


- Material : High Quality Polyamide 6
- Degrees of Protection : IP 68 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Control box with connector.

Product Size

(Dimensions in mm)

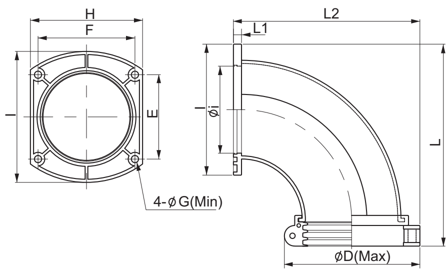
Ordering No.



Black	Gray	Tube Size	E	F	G	H	I	L1	L2	L	Øi	ØD	SW
PWOC-12B	PWOC-12G	12	-	36.5	5.5	45.0	32.0	5.2	42.5	68.1	15.0	27.6	22.8
PWOC-16B	PWOC-16G	16	-	36.5	5.5	44.0	32.0	5.2	47.2	72.1	17.5	33.0	28.0
PWOC-22B	PWOC-22G	22	30.5	53.5	5.5	65.0	45.0	5.2	55.8	90.0	22.0	43.0	37.5
PWOC-28B	PWOC-28G	28	31.0	55.0	6.0	65.0	45.0	6.0	66.2	104.5	30.5	48.8	43.0
PWOC-36B	PWOC-36G	36	30.5	72.6	7.0	86.0	64.0	6.0	84.5	134.4	34.0	60.6	52.2
PWOC-48B	PWOC-48G	48	30.5	73.0	7.0	86.0	78.0	6.0	95.6	150.8	50.0	71.8	64.0

TWOC IP55

Black
Gray

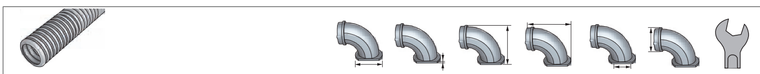


- Material : High Quality Polyamide 6
- Degrees of Protection : IP 55 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Control box with connector.

Product Size

(Dimensions in mm)

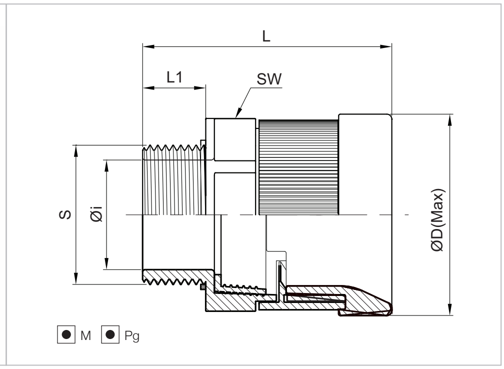
Ordering No.



Black	Gray	Tube Size	E	F	G	H	I	L1	L2	L	Øi	ØD	SW
TWOC-56B	TWOC-56G	56	61.0	67.0	7.0	81.0	96.0	6.0	117.5	139.2	63.0	93.0	-
TWOC-70B	TWOC-70G	70	78.0	84.0	7.0	98.0	113.0	9.0	171.5	191.6	77.0	121.0	-
TWOC-95B	TWOC-95G	95	94.0	108.0	8.0	125.0	146.0	9.0	195.0	225.0	97.0	151.0	-

SPNC IP68

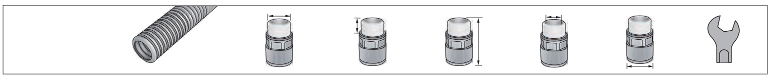
CPSFIX



- Material : High Quality Polyamide 6 + Brass Nickel plated
- Degrees of Protection : IP 68 (EN 60529)
- The max. Instantaneous Temperature : -40°C ~ +105°C
- Short Term : +150°C
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Railroad cars that vibrate severely

Product Size

Ordering No.



Pg Thread (DIN 40430)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	S	L1	L	Øi	ØD	SW
SPNC-P09B	SPNC-P09G	Pg09	10	15.2	14.0	43.0	10.0	25.0	19.7
SPNC-P11B	SPNC-P11G	Pg11	12	18.6	14.0	43.0	14.0	27.6	22.8
SPNC-P132B	SPNC-P132G	Pg13.5	12	20.4	14.0	43.0	15.0	27.6	22.8
SPNC-P136B	SPNC-P136G	Pg13.5	16	20.4	14.0	44.0	15.2	33.0	28.0
SPNC-P16B	SPNC-P16G	Pg16	16	22.5	16.0	44.0	15.2	33.0	28.0
SPNC-P21B	SPNC-P21G	Pg21	22	28.3	16.0	52.0	22.0	43.0	37.5
SPNC-P29B	SPNC-P29G	Pg29	28	37.0	16.0	56.0	30.5	48.8	43.0
SPNC-P36B	SPNC-P36G	Pg36	36	47.0	20.0	68.0	36.0	60.6	52.2
SPNC-P48B	SPNC-P48G	Pg48	48	59.3	22.0	75.0	52.4	71.8	64.0

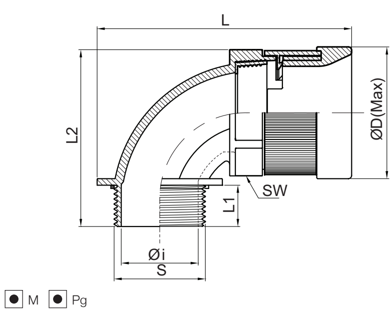
Metric Thread (EN 60423)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	S	L1	L	Øi	ØD	SW
SPNC-M10B	SPNC-M10G	M12 X 1.5	10	12.0	14.0	43.0	7.5	25.0	19.7
SPNC-M12B	SPNC-M12G	M16 X 1.5	12	16.0	14.0	43.0	12.0	27.6	22.8
SPNC-M16B	SPNC-M16G	M20 X 1.5	16	20.0	14.0	44.0	15.2	33.0	28.0
SPNC-M22B	SPNC-M22G	M25 X 1.5	22	25.0	16.0	52.0	20.6	43.0	37.5
SPNC-M28B	SPNC-M28G	M32 X 1.5	28	32.0	16.0	56.0	27.0	48.8	43.0
SPNC-M36B	SPNC-M36G	M40 X 1.5	36	40.0	20.0	77.0	33.0	60.6	52.2
SPNC-M48B	SPNC-M48G	M50 X 1.5	48	50.0	22.0	75.0	42.0	71.8	64.0

SPWC IP68

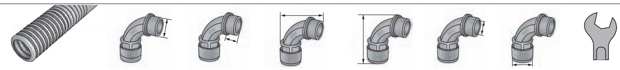
※ Under Development



- Material : High Quality Polyamide 6 + Brass Nickel plated
- Degrees of Protection : IP 68 (EN 60529)
- The max. Instantaneous Temperature : -40°C ~ +105°C
- Short Term : +150°C
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Railroad cars that vibrate severely

Product Size

Ordering No.



Pg Thread (DIN 40430)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
SPWC-P077B	SPWC-P077G	Pg07	07	12.5	12.0	37.8	47.0	6.0	18.0	14.0
SPWC-P09B	SPWC-P09G	Pg09	10	15.2	14.0	51.5	66.4	10.0	24.9	19.7
SPWC-P11B	SPWC-P11G	Pg11	12	18.6	14.0	51.4	64.7	14.0	27.6	22.8
SPWC-P136B	SPWC-P136G	Pg13.5	16	20.4	14.0	56.7	70.3	15.0	33.0	28.0
SPWC-P16B	SPWC-P16G	Pg16	16	22.5	14.0	56.7	70.6	15.2	33.0	28.0
SPWC-P21B	SPWC-P21G	Pg21	22	28.3	16.0	67.4	87.5	22.0	43.0	37.5
SPWC-P29B	SPWC-P29G	Pg29	28	37.0	16.0	77.0	105.0	30.5	48.8	43.0
SPWC-P36B	SPWC-P36G	Pg36	36	47.0	20.0	97.8	130.5	36.0	60.6	52.2
SPWC-P48B	SPWC-P48G	Pg48	48	59.3	20.0	110.0	147.5	52.4	71.8	64.0

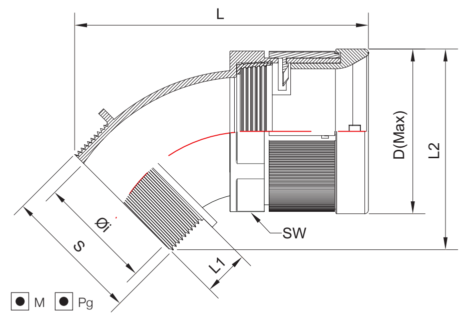
Metric Thread (EN 60423)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
SPWC-M107B	SPWC-M107G	M12 X 1.5	07	12.0	12.0	37.6	47.0	7.5	18.0	14.0
SPWC-M10B	SPWC-M10G	M12 X 1.5	10	12.0	14.0	51.2	66.4	7.5	24.9	19.7
SPWC-M12B	SPWC-M12G	M16 X 1.5	12	16.0	14.0	51.2	64.9	12.0	27.6	22.8
SPWC-M16B	SPWC-M16G	M20 X 1.5	16	20.0	14.0	56.5	71.6	15.2	33.0	28.0
SPWC-M22B	SPWC-M22G	M25 X 1.5	22	25.0	16.0	67.4	88.2	20.6	43.0	37.5
SPWC-M28B	SPWC-M28G	M32 X 1.5	28	32.0	16.0	77.0	105.1	27.0	48.8	43.0
SPWC-M36B	SPWC-M36G	M40 X 1.5	36	40.0	20.0	97.5	130.4	33.0	60.6	52.2
SPWC-M48B	SPWC-M48G	M50 X 1.5	48	50.0	20.0	110.1	145.7	42.0	71.8	64.0

CPSFIX

※ Under Development



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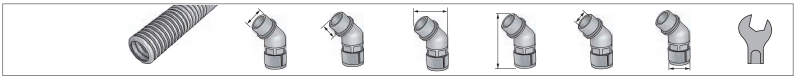
- Color : Black & Gray
- Application : Railroad cars that vibrate severely

Product Size

Ordering No.



Pg Thread (DIN 40430)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
SPAC-P09B	SPAC-P09G	Pg09	10	15.2	14.0	32.3	60.6	10.0	24.9	19.7
SPAC-P11B	SPAC-P11G	Pg11	12	18.6	14.0	37.2	63.0	14.0	27.6	22.8
SPAC-P136B	SPAC-P136G	Pg13.5	16	20.4	14.0	42.1	67.0	15.0	33.0	28.0
SPAC-P16B	SPAC-P16G	Pg16	16	22.5	14.0	42.8	68.3	15.2	33.0	28.0
SPAC-P21B	SPAC-P21G	Pg21	22	28.3	16.0	52.7	82.7	22.0	43.0	37.5
SPAC-P29B	SPAC-P29G	Pg29	28	37.0	16.0	58.8	95.1	30.5	48.8	43.0
SPAC-P36B	SPAC-P36G	Pg36	36	47.0	20.0	74.3	115.0	36.0	60.6	52.2
SPAC-P48B	SPAC-P48G	Pg48	48	59.3	20.0	85.6	126.9	52.4	71.8	64.0

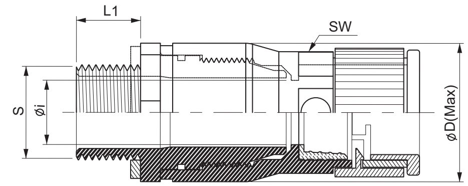
Metric Thread (EN 60423)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
SPAC-M10B	SPAC-M10G	M12 X 1.5	10	12.0	14.0	32.5	59.4	7.5	24.9	19.7
SPAC-M12B	SPAC-M12G	M16 X 1.5	12	16.0	14.0	36.6	62.0	12.0	27.6	22.8
SPAC-M16B	SPAC-M16G	M20 X 1.5	16	20.0	14.0	40.7	67.2	15.2	33.0	28.0
SPAC-M22B	SPAC-M22G	M25 X 1.5	22	25.0	16.0	51.0	81.0	20.6	43.0	37.5
SPAC-M28B	SPAC-M28G	M32 X 1.5	28	32.0	16.0	57.3	93.5	27.0	48.8	43.0
SPAC-M36B	SPAC-M36G	M40 X 1.5	36	40.0	20.0	71.5	112.5	33.0	60.6	52.2
SPAC-M48B	SPAC-M48G	M50 X 1.5	48	50.0	20.0	82.3	123.5	42.0	71.8	64.0

SNIC IP67

● Black
● Gray

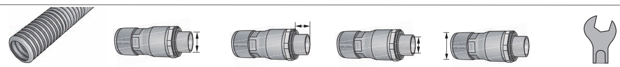


■ M ■ Pg

- Material : High Quality Polyamide 6 + Brass Nickel plated
- Degrees of Protection : IP 67 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Railroad cars that vibrate severely. Protect cables from electrical signal, electromagnetic waves

Product Size

Ordering No.



Pg Thread (DIN 40430)

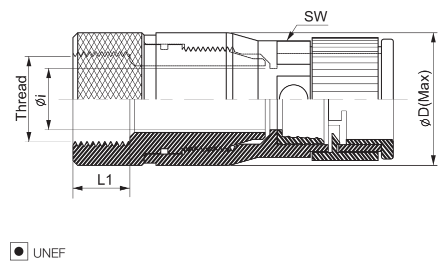
(Dimensions in mm)

Black	Gray	Thread	Tube Size	S	L1	Øi	ØD	SW
SNIC-P09B	SNIC-P09G	Pg09	10	15.2	13.0	10.0	25.0	19.8
SNIC-P11B	SNIC-P11G	Pg11	12	18.6	13.0	12.0	25.0	22.7
SNIC-P136B	SNIC-P136G	Pg13.5	16	20.4	13.0	14.0	30.0	28.0
SNIC-P16B	SNIC-P16G	Pg16	16	22.5	13.0	15.0	30.0	28.0
SNIC-P21B	SNIC-P21G	Pg21	22	28.3	15.0	19.0	41.0	37.5
SNIC-P29B	SNIC-P29G	Pg29	28	37.0	15.0	26.0	47.0	43.0
SNIC-P36B	SNIC-P36G	Pg36	36	47.0	17.0	33.0	56.0	52.2
SNIC-P48B	SNIC-P48G	Pg48	48	59.3	17.0	48.0	68.0	64.1

Metric Thread (EN 60423)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	S	L1	Øi	ØD	SW
SNIC-M10B	SNIC-M10G	M12 X 1.5	10	12.0	13.0	7.0	25.0	19.8
SNIC-M12B	SNIC-M12G	M16 X 1.5	12	16.0	13.0	10.0	25.0	22.7
SNIC-M16B	SNIC-M16G	M20 X 1.5	16	20.0	13.0	14.0	30.0	28.0
SNIC-M22B	SNIC-M22G	M25 X 1.5	22	25.0	15.0	16.0	41.0	37.5
SNIC-M28B	SNIC-M28G	M32 X 1.5	28	32.0	15.0	23.0	47.0	43.0
SNIC-M36B	SNIC-M36G	M40 X 1.5	36	40.0	17.0	31.0	56.0	52.2
SNIC-M48B	SNIC-M48G	M50 X 1.5	48	50.0	17.0	40.0	68.0	64.1



- Material : High Quality Polyamide 6 + Brass Nickel plated
- Degrees of Protection : IP 67 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
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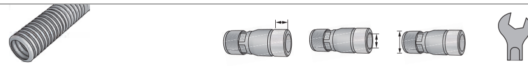
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Railroad cars that vibrate severely. Protect cables from electrical signal, electromagnetic waves

Product Size

Ordering No.



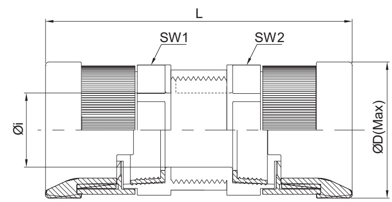
UNEF Thread (ASME B1.1)

(Dimensions in mm)

Black	Gray	Thread	Tube Size	Shell Size	L1	Øi	ØD	SW
SICC-U1010B	SICC-U1010G	1/2-28UNEF	10	8S, 10S	10.0	9.0	25.0	19.8
SICC-U1210B	SICC-U1210G	5/8-24UNEF	10	10SL, 12S	10.0	9.0	25.0	19.8
SICC-U1410B	SICC-U1410G	3/4-20UNEF	10	14, 14S	10.0	9.0	25.0	19.8
SICC-U1212B	SICC-U1212G	5/8-24UNEF	12	10SL, 12S	10.0	11.0	25.0	22.7
SICC-U1412B	SICC-U1412G	3/4-20UNEF	12	14, 14S	10.0	11.0	25.0	22.7
SICC-U1612B	SICC-U1612G	7/8-20UNEF	12	16, 16S	10.0	11.0	25.0	22.7
SICC-U1812B	SICC-U1812G	1-20UNEF	12	18	10.0	11.0	25.0	22.7
SICC-U1616B	SICC-U1616G	7/8-20UNEF	16	16, 16S	10.0	13.0	30.0	28.0
SICC-U1816B	SICC-U1816G	1-20UNEF	16	18	10.0	13.0	30.0	28.0
SICC-U2016B	SICC-U2016G	1 3/16-18UNEF	16	20, 22	10.0	13.0	30.0	28.0
SICC-U2316B	SICC-U2316G	1 3/8-18UNEF	16	20, 22	10.0	13.0	30.0	28.0
SICC-U2816B	SICC-U2816G	1 7/16-18UNEF	16	24, 28	10.0	13.0	30.0	28.0
SICC-U2222B	SICC-U2222G	1 3/16-18UNEF	22	20, 22	10.0	18.0	41.0	37.5
SICC-U2822B	SICC-U2822G	1 7/16-18UNEF	22	24, 28	10.0	18.0	41.0	37.5
SICC-U2828B	SICC-U2828G	1 7/16-18UNEF	28	24, 28	10.0	25.0	47.0	43.0
SICC-U3622B	SICC-U3622G	2-18UNS	22	36	10.0	18.0	41.0	37.5
SICC-U3228B	SICC-U3228G	13/4-18UNS	28	32	10.0	25.0	47.0	43.0
SICC-U3628B	SICC-U3628G	2-18UNS	28	36	10.0	25.0	47.0	43.0
SICC-U3636B	SICC-U3636G	2-18UNS	36	36	10.0	32.0	56.0	52.2

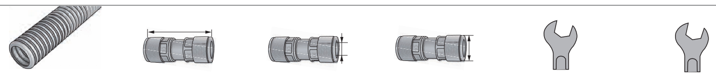
PNSC IP67

- Black
- Gray



- Material : High Quality Polyamide 6
- Degrees of Protection : IP 67 (EN 60529)
- The max. Instantaneous Temperature : -40℃ ~ +105℃
- Short Term : +150℃
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Railroad cars that vibrate severely. Used for connecting Tubes at each end side

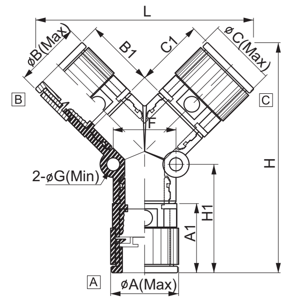
Product Size



(Dimensions in mm)

Black	Gray	Tube Size	L	Øi	ØD	SW1	SW2
PNSC-10B	PNSC-10G	10 + 10	78.4	8.0	25.0	19.7	19.7
PNSC-12B	PNSC-12G	12 + 12	78.9	11.0	27.6	22.8	22.8
PNSC-16B	PNSC-16G	16 + 16	82.7	12.5	33.0	28.0	28.0
PNSC-22B	PNSC-22G	22 + 22	109.2	19.0	43.0	37.5	37.5
PNSC-28B	PNSC-28G	28 + 28	117.2	22.0	48.8	43.0	43.0
PNSC-36B	PNSC-36G	36 + 36	140.6	30.0	60.6	52.2	52.2
PNSC-48B	PNSC-48G	48 + 48	149.8	42.0	71.8	64.0	64.0

● Black
● Gray



• Feature : CPS distributors guarantee elegant layout and save on cost instead of using distribution boxes.
Available to use not only their basic shape TYC, TTC & TVC but also various configurations.
One Standard model can be changed into 6 different shapes.
Nominal width from 28, reduceable to 10.

Ordering

TVC - 10 10 10B : 100EA

- Q'ty
- Color (B : Black / G : Gray)
- Divided Hole 2 C
- Divided Hole 1 B
- Basic Hole A
- CPSFIX

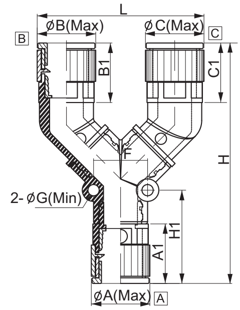
Product Size

(Dimensions in mm)

Black	Gray	A	B	C	ØA	A1	ØB	B1	ØC	C1	ØG	F	H1	H	L
TVC-101010B	TVC-101010G	10	10	10	23	26.6	23	26.6	23	26.6	5.0	24	41.6	86	80.0
TVC-121010B	TVC-121010G	12	10	10	25	26.5	23	26.6	23	26.6	5.0	24	41.5	86	80.0
TVC-121210B	TVC-121210G	12	12	10	25	26.5	25	26.5	23	26.6	5.0	24	41.5	88	83.0
TVC-121212B	TVC-121212G	12	12	12	25	26.5	25	26.5	25	26.5	5.0	24	41.5	88	83.0
TVC-161010B	TVC-161010G	16	10	10	30	28.5	23	26.6	23	26.6	5.0	24	43.5	88	83.0
TVC-161210B	TVC-161210G	16	12	10	30	28.5	25	26.5	23	26.6	5.0	24	43.5	90	81.0
TVC-161212B	TVC-161212G	16	12	12	30	28.5	25	26.5	25	26.5	5.0	24	43.5	90	83.0
TVC-161616B	TVC-161616G	16	16	16	30	28.5	30	28.5	30	28.5	5.0	24	43.5	93	89.8
TVC-222222B	TVC-222222G	22	22	22	41	33.3	41	33.3	41	33.3	5.6	39	48.2	112	112.0
TVC-282222B	TVC-282222G	28	22	22	47	39.0	41	33.3	41	33.3	5.6	39	53.9	118	112.0
TVC-282822B	TVC-282822G	28	28	22	47	39.0	47	39.0	41	33.3	5.6	39	53.9	124	118.0
TVC-282828B	TVC-282828G	28	28	28	47	39.0	47	39.0	47	39.0	5.6	39	53.9	124	124.0

TYC IP67

Black
Gray



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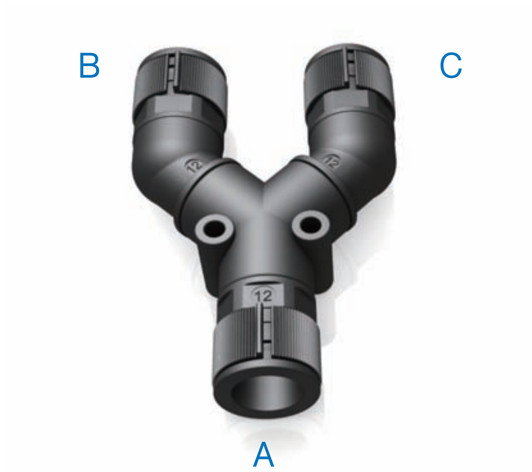
One Standard model can be changed into 6 different shapes.
Nominal width from 28, reduceable to 10.

Ordering

TYC - 10 10 10 B : 100EA

- Q'ty
- Color (B : Black / G : Gray)
- Divided Hole 2 C
- Divided Hole 1 B
- Basic Hole A
- CPSFIX

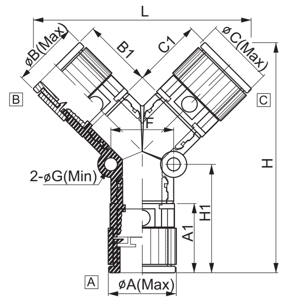


Product Size

(Dimensions in mm)

Black	Gray	A	B	C	ØA	A1	ØB	B1	ØC	C1	ØG	F	H1	H	L
TYC-101010B	TYC-101010G	10.0	10.0	10.0	23.0	26.6	23.0	24.0	23.0	24.0	5.0	24.0	41.6	104.0	67.0
TYC-121010B	TYC-121010G	12.0	10.0	10.0	25.0	26.5	23.0	24.0	23.0	24.0	5.0	24.0	41.5	104.0	67.0
TYC-121210B	TYC-121210G	12.0	12.0	10.0	25.0	26.5	25.0	24.4	23.0	24.0	5.0	24.0	41.5	107.0	69.7
TYC-121212B	TYC-121212G	12.0	12.0	12.0	25.0	26.5	25.0	24.4	25.0	24.4	5.0	24.0	41.5	107.0	73.5
TYC-161010B	TYC-161010G	16.0	10.0	10.0	30.0	28.5	23.0	24.0	23.0	24.0	5.0	24.0	43.5	105.7	67.0
TYC-161210B	TYC-161210G	16.0	12.0	10.0	30.0	28.5	25.0	24.4	23.0	24.0	5.0	24.0	43.5	108.7	69.7
TYC-161212B	TYC-161212G	16.0	12.0	12.0	30.0	28.5	25.0	24.4	25.0	24.4	5.0	24.0	43.5	108.7	73.0
TYC-161616B	TYC-161616G	16.0	16.0	16.0	30.0	28.5	30.0	26.0	30.0	26.0	5.0	24.0	43.5	110.8	83.0
TYC-222222B	TYC-222222G	22.0	22.0	22.0	41.0	33.3	41.0	33.5	41.0	33.5	5.6	39.0	48.2	134.5	108.0
TYC-282222B	TYC-282222G	28.0	22.0	22.0	47.0	39.0	41.0	33.5	41.0	33.5	5.6	39.0	53.9	142.0	108.0
TYC-282822B	TYC-282822G	28.0	28.0	22.0	47.0	39.0	47.0	39.5	41.0	33.5	5.6	39.0	53.9	150.0	111.0
TYC-282828B	TYC-282828G	28.0	28.0	28.0	47.0	39.0	47.0	39.5	47.0	39.5	5.6	39.0	53.9	150.0	114.0

● Black
● Gray



• Feature : CPS distributors guarantee elegant layout and save on cost instead of using distribution boxes.
Available to use not only their basic shape TYC, TTC & TVC but also various configurations.
One Standard model can be changed into 6 different shapes.
Nominal width from 28, reduceable to 10.

Ordering

TTC - 10 10 10 B : 100EA

- Q'ty
- Color (B : Black / G : Gray)
- Divided Hole 2 C
- Divided Hole 1 B
- Basic Hole A
- CPSFIX

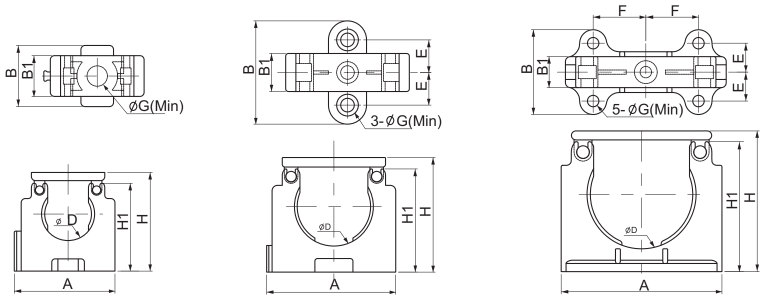
Product Size

(Dimensions in mm)

Black	Gray	A	B	C	ØA	A1	ØB	B1	ØC	C1	ØG	F	H1	H	L
TTC-101010B	TTC-101010G	10.0	10.0	10.0	23.0	26.6	23.0	24.0	23.0	24.0	5.0	24.0	41.6	81.0	114.0
TTC-121010B	TTC-121010G	12.0	10.0	10.0	25.0	26.5	23.0	24.0	23.0	24.0	5.0	24.0	41.5	81.0	114.0
TTC-121210B	TTC-121210G	12.0	12.0	10.0	25.0	26.5	25.0	24.4	23.0	24.0	5.0	24.0	41.5	83.0	118.0
TTC-121212B	TTC-121212G	12.0	12.0	12.0	25.0	26.5	25.0	24.4	25.0	24.4	5.0	24.0	41.5	83.0	120.0
TTC-161010B	TTC-161010G	16.0	10.0	10.0	30.0	28.5	23.0	24.0	23.0	24.0	5.0	24.0	43.5	82.0	114.0
TTC-161210B	TTC-161210G	16.0	12.0	10.0	30.0	28.5	25.0	24.4	23.0	24.0	5.0	24.0	43.5	85.0	118.0
TTC-161212B	TTC-161212G	16.0	12.0	12.0	30.0	28.5	25.0	24.4	25.0	24.4	5.0	24.0	43.5	85.0	120.0
TTC-161616B	TTC-161616G	16.0	16.0	16.0	30.0	28.5	30.0	26.0	30.0	26.0	5.0	24.0	43.5	90.0	124.0
TTC-222222B	TTC-222222G	22.0	22.0	22.0	41.0	33.3	41.0	33.5	41.0	33.5	5.6	39.0	48.2	110.0	156.0
TTC-282222B	TTC-282222G	28.0	22.0	22.0	47.0	39.0	41.0	33.5	41.0	33.5	5.6	39.0	53.9	116.0	156.0
TTC-282822B	TTC-282822G	28.0	28.0	22.0	47.0	39.0	47.0	39.5	41.0	33.5	5.6	39.0	53.9	120.0	165.0
TTC-282828B	TTC-282828G	28.0	28.0	28.0	47.0	39.0	47.0	39.5	47.0	39.5	5.6	39.0	53.9	120.0	174.0

NFH

- Material : High Quality Polyamide 6
- Degrees of Protection : -40°C ~ +105°C
- The max. Instantaneous Temperature : +150°C
- Short Term : UL94-HB, Free of Halogen Phosphorous and cadmium
- Self-Extinguishing : Black & Gray
- Color : Fixing tubes
- Application By making more screw holes, the clip is more stable and the hinge cover is easy to use. This new clip was developed to facilitate straight arrangement and be installable at any size.



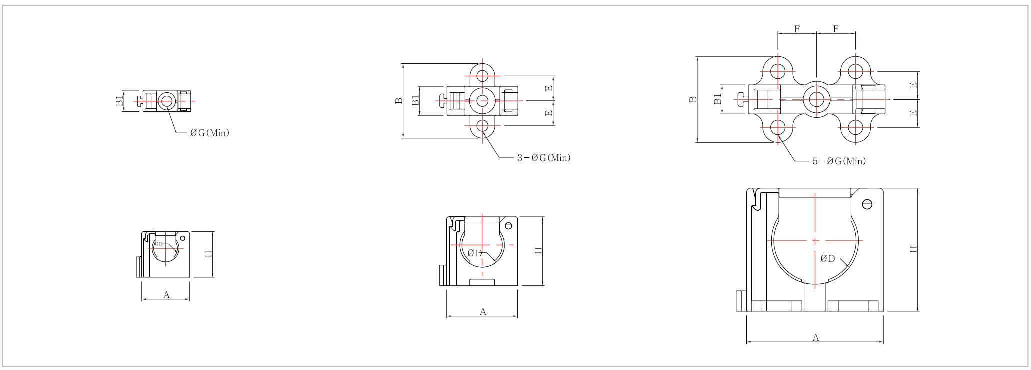
Product Size

(Dimensions in mm)

Black	Gray	Tube Size	ØD	A	H	H1	B	B1	E	F	ØG	Bolt
NFH-07B	NFH-07G	07	10.0	16.6	20.5	17.9	14.5	10.0	-	-	5.0	1-M4
NFH-56B	NFH-56G	56	66.8	98.6	86.3	79.7	52.0	19.0	17.75	32.30	6.4	5-M6
NFH-70B	NFH-70G	70	82.0	121.0	105.8	97.6	63.0	23.0	21.50	39.50	8.4	5-M8
NFH-95B	NFH-95G	95	105.6	155.4	136.3	125.8	82.0	30.0	28.00	51.70	8.4	5-M8

NFH

- Material : High Quality Polyamide 6
- Degrees of Protection : -40°C ~ +105°C
- The max. Instantaneous Temperature : +150°C
- Short Term : UL94-HB, Free of Halogen Phosphorous and cadmium
- Self-Extinguishing : Black & Gray
- Color : Fixing tubes
- Application By making more screw holes, the clip is more stable and the hinge cover is easy to use. This new clip was developed to facilitate straight arrangement and be installable at any size.



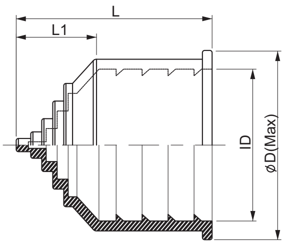
Product Size

(Dimensions in mm)

Black	Gray	Tube Size	ØD	A	H	B	B1	E	F	ØG	Bolt
NFH-10B	NFH-10G	10	13.0	23.0	22.0	-	10.0	-	-	5.0	1-M4
NFH-12B	NFH-12G	12	16.0	27.5	25.0	33.0	14.0	11.3	-	5.4	3-M5
NFH-16B	NFH-16G	16	21.5	34.3	33.0	35.9	14.0	12.0	-	5.4	3-M5
NFH-22B	NFH-22G	22	29.0	45.5	41.7	38.0	14.0	12.0	-	6.4	3-M6
NFH-28B	NFH-28G	28	35.0	55.0	49.8	37.0	14.0	12.5	17.0	6.4	5-M6
NFH-36B	NFH-36G	36	42.0	66.0	59.3	41.5	14.0	13.5	18.75	6.4	5-M6
NFH-48B	NFH-48G	48	53.6	84.9	72.7	41.5	14.0	13.5	28.0	6.4	5-M6

FEC

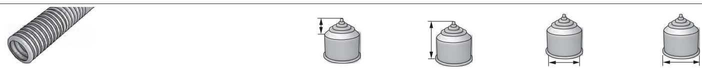
● Black
● Gray



- Material : N.B.R(Nitrile-Gutadiene Rubber) / C.R (Chloroprene Rubber)
- Degrees of Protection : IP66 (EN 60529)
- Color : Black & Gray
- Application : Finishing touches for cables to be exposed externally1

Product Size

Ordering No.



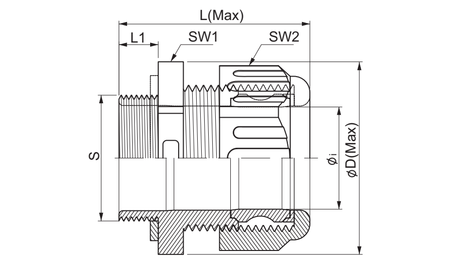
(Dimensions in mm)

Black	Gray	Tube Size	Øi(Min)	Øi(Max)	L1	L	ID	ØD
FEC-07B	FEC-07G	07	2.0	7.0	8.0	24.0	10.0	16.0
FEC-10B	FEC-10G	10	3.0	10.0	11.0	33.0	12.5	17.0
FEC-12B	FEC-12G	12	4.2	12.0	11.0	33.0	16.0	23.5
FEC-16B	FEC-16G	16	6.0	16.0	12.5	34.5	21.2	29.0
FEC-22B	FEC-22G	22	6.0	22.0	16.0	43.0	28.5	37.0
FEC-28B	FEC-28G	28	6.0	28.0	16.0	43.0	34.5	43.0
FEC-36B	FEC-36G	36	6.0	36.0	24.0	58.5	42.5	52.0
FEC-48B	FEC-48G	48	6.0	48.0	24.0	58.5	54.5	64.0
FEC-56B	FEC-56G	56	9.0	56.0	29.0	71.0	67.2	76.7
FEC-70B	FEC-70G	70	10.0	70.0	36.0	86.0	82.5	92.0
FEC-95B	FEC-95G	95	13.0	95.0	45.0	110.0	106.0	115.5

FCGL IP68

CPSFIX

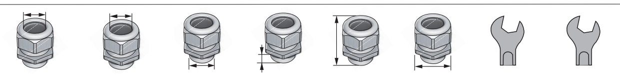
● Black
● Gray



• Material	:	High Quality Polyamide 6
• Degrees of Protection	:	IP 68 (EN 60529)
• The max. Instantaneous Temperature	:	-40°C ~ +105°C
• Short Term	:	up +150°C
• Self-Extinguishing	:	UL94-HB, Free of Halogen Phosphorous and cadmium
• Color	:	Black & Gray
• Application	:	Connector for control box radio box or cables from electric machine. Water & Dust, Oil proof halogen free.

Product Size

Ordering No.



PF Thread (JIS B0202)

(Dimensions in mm)

Black	Gray	Thread	Øi(Min)	Øi(Max)	S	L1	L	ØD	SW1	SW2
FCGL-G10B	FCGL-G10G	G1/2"	3.5	6.5	20.9	9.0	37.9	25.4	22.6	18.0
FCGL-G12B	FCGL-G12G	G1/2"	4.0	8.0	20.9	9.0	40.2	28.8	25.5	21.3
FCGL-G16B	FCGL-G16G	G1/2"	7.0	12.3	20.9	9.0	41.2	28.6	25.4	25.4

Metric Thread (EN 60423)

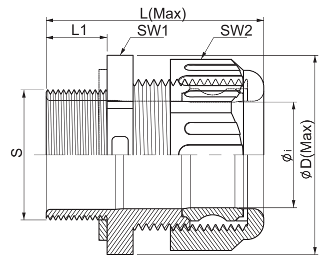
Black	Gray	Thread	Øi(Min)	Øi(Max)	S	L1	L	ØD	SW1	SW2
FCGL-M10B	FCGL-M10G	M12 X 1.5	3.5	6.5	12.0	9.0	37.9	25.4	22.6	18.0
FCGL-M120B	FCGL-M120G	M16 X 1.5	3.5	6.5	16.0	9.0	37.9	25.4	22.6	18.0
FCGL-M102B	FCGL-M102G	M12 X 1.5	4.0	7.1	12.0	9.0	40.2	28.8	25.5	21.3
FCGL-M12B	FCGL-M12G	M16 X 1.5	4.0	8.0	16.0	9.0	40.2	28.8	25.5	21.3
FCGL-M162B	FCGL-M162G	M20 X 1.5	4.0	8.0	20.0	9.0	40.2	28.8	25.5	21.3
FCGL-M126B	FCGL-M126G	M16 X 1.5	7.0	10.9	16.0	9.0	41.2	28.6	25.4	25.4
FCGL-M16B	FCGL-M16G	M20 X 1.5	7.0	12.3	20.0	9.0	41.2	28.6	25.4	25.4
FCGL-M216B	FCGL-M216G	M25 X 1.5	7.0	12.3	25.0	9.0	41.2	28.6	25.4	25.4

Pg Thread (DIN 40430)

Black	Gray	Thread	Øi(Min)	Øi(Max)	S	L1	L	ØD	SW1	SW2
FCGL-P09B	FCGL-P09G	Pg09	3.5	6.5	15.2	9.0	37.9	25.4	22.6	18.0
FCGL-P092B	FCGL-P092G	Pg09	4.0	8.0	15.2	9.0	40.2	28.8	25.5	21.3
FCGL-P11B	FCGL-P11G	Pg11	4.0	8.0	18.6	9.0	40.2	28.8	25.5	21.3
FCGL-P132B	FCGL-P132G	Pg13.5	4.0	8.0	20.4	9.0	40.2	28.8	25.5	21.3
FCGL-P162B	FCGL-P162G	Pg16	4.0	8.0	22.5	9.0	40.2	28.8	25.5	21.3
FCGL-P116B	FCGL-P116G	Pg11	7.0	12.3	18.6	9.0	41.2	28.6	25.4	25.4
FCGL-P13B	FCGL-P13G	Pg13.5	7.0	12.3	20.4	9.0	41.2	28.6	25.4	25.4
FCGL-P16B	FCGL-P16G	Pg16	7.0	12.3	22.5	9.0	41.2	28.6	25.4	25.4

FCG IP68

● Black
● Gray

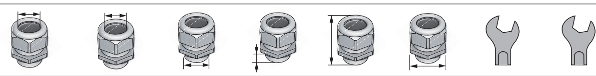


■ G(PF) ■ M ■ Pg

- Material : High Quality Polyamide 6
- Degrees of Protection : IP 68 (EN 60529)
- The max. Instantaneous Temperature : -40°C ~ +105°C
- Short Term : +150°C
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Connector for control box radio box or cables from electric machine. Water & Dust, Oil proof halogen free.

Product Size

Ordering No.

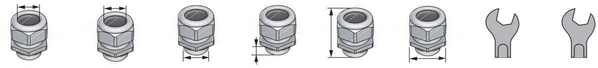


PF Thread (JIS B0202)

(Dimensions in mm)

Black	Gray	Thread	Øi(Min)	Øi(Max)	S	L1	L	ØD	SW1	SW2
FCG-G10B	FCG-G10G	G1/2"	3.5	6.5	20.9	15.0	43.9	24.4	22.6	18.0
FCG-G12B	FCG-G12G	G1/2"	4.0	8.0	20.9	15.0	46.2	28.8	25.5	21.3
FCG-G16B	FCG-G16G	G1/2"	7.0	12.3	20.9	15.0	47.2	28.6	25.4	25.4
FCG-G1622B	FCG-G1622G	G1/2"	12.0	15.2	20.9	15.0	53.4	38.2	34.0	34.0
FCG-G22B	FCG-G22G	G3/4"	12.0	18.0	26.4	15.0	53.4	38.2	34.0	34.0
FCG-G228B	FCG-G228G	G3/4"	18.0	20.3	26.4	15.0	53.4	49.0	43.4	43.4
FCG-G28B	FCG-G28G	G1"	18.0	26.0	33.2	15.0	53.4	49.0	43.4	43.4
FCG-G36B	FCG-G36G	G1 1/4"	22.0	33.0	41.9	19.0	67.7	59.0	53.0	51.6
FCG-G48B	FCG-G48G	G2"	36.0	42.0	59.6	19.0	69.7	74.0	66.5	67.0

Ordering No.



Metric Thread (EN 60423)

(Dimensions in mm)

Black	Gray	Thread	Øi(Min)	Øi(Max)	S	L1	L	ØD	SW1	SW2
FCG-M10B	FCG-M10G	M12 X 1.5	3.5	6.5	12.0	15.0	43.9	25.4	22.6	18.0
FCG-M120B	FCG-M120G	M16 X 1.5	3.5	6.5	16.0	15.0	43.9	25.4	22.6	18.0
FCG-M102B	FCG-M102G	M12 X 1.5	4.0	7.1	12.0	15.0	46.2	28.8	25.5	21.3
FCG-M12B	FCG-M12G	M16 X 1.5	4.0	8.0	16.0	15.0	46.2	28.8	25.5	21.3
FCG-M162B	FCG-M162G	M20 X 1.5	4.0	8.0	20.0	15.0	46.2	28.8	25.5	21.3
FCG-M126B	FCG-M126G	M16 X 1.5	7.0	10.9	16.0	15.0	47.2	28.6	25.4	25.4
FCG-M16B	FCG-M16G	M20 X 1.5	7.0	12.3	20.0	15.0	47.2	28.6	25.4	25.4
FCGM1622B	FCGM1622G	M20 X 1.5	12.0	14.5	20.0	15.0	53.4	38.2	34.0	34.0
FCG-M22B	FCG-M22G	M25 X 1.5	12.0	18.0	25.0	15.0	53.4	38.2	34.0	34.0
FCG-M228B	FCG-M228G	M25 X 1.5	18.0	19.5	25.0	15.0	53.4	49.0	43.4	43.4
FCG-M28B	FCG-M28G	M32 X 1.5	18.0	26.0	32.0	15.0	53.4	49.0	43.4	43.4
FCG-M36B	FCG-M36G	M40 X 1.5	22.0	33.0	40.0	19.0	67.7	59.0	53.0	51.6
FCG-M48B	FCG-M48G	M50 X 1.5	36.0	42.0	50.0	19.0	69.7	74.0	66.5	67.0

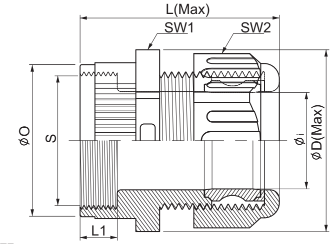
Pg Thread (DIN 40430)

(Dimensions in mm)

Black	Gray	Thread	Øi (Min)	Øi (Max)	S	L1	L	ØD	SW1	SW2
FCG-P07B	FCG-P07G	Pg07	3.5	6.5	12.5	15.0	43.9	25.4	22.6	18.0
FCG-P09B	FCG-P09G	Pg09	3.5	6.5	15.2	15.0	43.9	25.4	22.6	18.0
FCG-P072B	FCG-P072G	Pg07	4.0	8.0	12.5	15.0	46.2	28.8	25.5	21.3
FCG-P092B	FCG-P092G	Pg09	4.0	8.0	15.2	15.0	46.2	28.8	25.5	21.3
FCG-P11B	FCG-P11G	Pg11	4.0	8.0	18.6	15.0	46.2	28.8	25.5	21.3
FCG-P132B	FCG-P132G	Pg13.5	4.0	8.0	20.4	15.0	46.2	28.8	25.5	21.3
FCG-P162B	FCG-P162G	Pg16	4.0	8.0	22.5	15.0	46.2	28.8	25.5	21.3
FCG-P096B	FCG-P096G	Pg09	7.0	10.6	15.2	15.0	47.2	28.6	25.4	25.4
FCG-P116B	FCG-P116G	Pg11	7.0	12.3	18.6	15.0	47.2	28.6	25.4	25.4
FCG-P13B	FCG-P13G	Pg13.5	7.0	12.3	20.4	15.0	47.2	28.6	25.4	25.4
FCG-P16B	FCG-P16G	Pg16	7.0	12.3	22.5	15.0	47.2	28.6	25.4	25.4
FCG-P122B	FCG-P122G	Pg11	12.0	13.9	18.6	15.0	53.4	38.2	34.0	34.0
FCG-P1322B	FCG-P1322G	Pg13.5	12.0	14.8	20.4	15.0	53.4	38.2	34.0	34.0
FCG-P1622B	FCG-P1622G	Pg16	12.0	17.3	22.5	15.0	53.4	38.2	34.0	34.0
FCG-P21B	FCG-P21G	Pg21	12.0	18.0	28.3	15.0	53.4	38.2	34.0	34.0
FCG-P218B	FCG-P218G	Pg21	18.0	22.5	28.3	15.0	53.4	49.0	43.4	43.4
FCG-P29B	FCG-P29G	Pg29	18.0	26.0	37.0	15.0	53.4	49.0	43.4	43.4
FCG-P36B	FCG-P36G	Pg36	22.0	33.0	47.0	19.0	67.7	59.0	53.0	51.6
FCG-P48B	FCG-P48G	Pg48	36.0	42.0	59.3	19.0	69.7	74.0	66.5	67.0

TICG IP67

● Black
● Gray

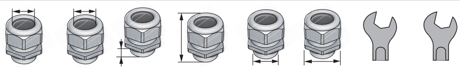


● UNEF

- Material : High Quality Polyamide 6
- Degrees of Protection : IP 67 (EN 60529)
- The max. Instantaneous Temperature : -40°C ~ +105°C
- Short Term : +150°C
- Self-Extinguishing : UL94-HB, Free of Halogen Phosphorous and cadmium
- Color : Black & Gray
- Application : Connector for control box radio box or cables from electric machine.
  Water & Dust, Oil proof halogen free.

Product Size

Ordering No.



UNEF Thread (ASME B1.1)

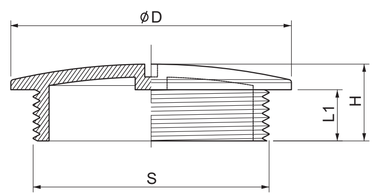
(Dimensions in mm)

Black	Gray	Thread	Shell Size	Øi(Min)	Øi(Max)	L1	L	ØO	ØD	SW1	SW2
TICG-U1010B	TICG-U1010G	1/2-28UNEF	8S, 10S	3.5	6.5	10.0	43.9	18.4	25.4	22.6	18.0
TICG-U1210B	TICG-U1210G	5/8-24UNEF	10SL, 12S	3.5	6.5	10.0	43.9	20.6	25.4	22.6	18.0
TICG-U1410B	TICG-U1410G	3/4-20UNEF	14, 14S	3.5	6.5	10.0	43.9	24.0	25.4	22.6	18.0
TICG-U1610B	TICG-U1610G	7/8-20UNEF	16, 16S	3.5	6.5	10.0	43.9	28.0	25.4	22.6	18.0
TICG-U1810B	TICG-U1810G	1-20UNEF	18	3.5	6.5	10.0	43.9	31.0	25.4	22.6	18.0
TICG-U2010B	TICG-U2010G	1 3/16-18UNEF	20, 22	3.5	6.5	10.0	43.9	35.5	25.4	22.6	18.0
TICG-U2810B	TICG-U2810G	1 7/16-18UNEF	24, 28	3.5	6.5	10.0	43.9	42.0	25.4	22.6	18.0
TICG-U1212B	TICG-U1212G	5/8-24UNEF	10SL, 12S	4.0	8.0	10.0	46.2	20.6	28.8	25.5	21.3
TICG-U1412B	TICG-U1412G	3/4-20UNEF	14, 14S	4.0	8.0	10.0	46.2	24.0	28.8	25.5	21.3
TICG-U1612B	TICG-U1612G	7/8-20UNEF	16, 16S	4.0	8.0	10.0	46.2	28.0	28.8	25.5	21.3
TICG-U1812B	TICG-U1812G	1-20UNEF	18	4.0	8.0	10.0	46.2	31.0	28.8	25.5	21.3
TICG-U2012B	TICG-U2012G	1 3/16-18UNEF	20, 22	4.0	8.0	10.0	46.2	35.5	28.8	25.5	21.3
TICG-U2812B	TICG-U2812G	1 7/16-18UNEF	24, 28	4.0	8.0	10.0	46.2	42.0	28.8	25.5	21.3
TICG-U1616B	TICG-U1616G	7/8-20UNEF	16, 16S	7.0	12.3	10.0	47.2	28.0	28.6	25.4	25.4
TICG-U1816B	TICG-U1816G	1-20UNEF	18	7.0	12.3	10.0	47.2	31.0	28.6	25.4	25.4
TICG-U2016B	TICG-U2016G	1 3/16-18UNEF	20, 22	7.0	12.3	10.0	47.2	35.5	28.6	25.4	25.4
TICG-U2816B	TICG-U2816G	1 7/16-18UNEF	24, 28	7.0	12.3	10.0	47.2	42.0	28.6	25.4	25.4
TICG-U2222B	TICG-U2222G	1 3/16-18UNEF	20, 22	12.0	18.0	10.0	53.4	35.5	38.2	34.0	34.0
TICG-U2822B	TICG-U2822G	1 7/16-18UNEF	24, 28	12.0	18.0	10.0	53.4	42.0	38.2	34.0	34.0
TICG-U3222B	TICG-U3222G	1 3/4-18UNS	32	12.0	18.0	10.0	53.4	50.0	38.2	34.0	34.0
TICG-U3622B	TICG-U3622G	2-18UNS	36	12.0	18.0	10.0	53.4	56.5	38.2	34.0	34.0
TICG-U3228B	TICG-U3228G	1 3/4-18UNS	32	18.0	26.0	10.0	53.4	50.0	49.0	43.4	43.4
TICG-U3628B	TICG-U3628G	2-18UNS	36	18.0	26.0	10.0	67.7	56.5	59.0	53.0	51.6
TICG-U3636B	TICG-U3636G	2-18UNS	36	22.0	33.0	10.0	69.7	56.5	74.0	66.5	67.0

BBS CPSNUT

CPSFIX

White
Gray



Pg

- Material : High Quality Polyamide 6
- The max. Instantaneous Temperature : -30°C ~ +80°C
- Short Term : +150°C
- Color : White, Gray

Product Size

Ordering No.

Pg Thread (DIN 40430)

(Dimensions in mm)

White	Gray	Thread	S	L1	H	ØD
BBS-P07W	BBS-P07G	Pg07	12.5	6.0	8.0	15.0
BBS-P09W	BBS-P09G	Pg09	15.2	6.0	9.0	19.0
BBS-P11W	BBS-P11G	Pg11	18.6	6.0	10.0	22.0
BBS-P13W	BBS-P13G	Pg13.5	20.4	6.0	10.0	25.0
BBS-P16W	BBS-P16G	Pg16	22.5	6.0	10.0	27.0
BBS-P21W	BBS-P21G	Pg21	28.3	8.0	12.0	33.0
BBS-P29W	BBS-P29G	Pg29	37.0	8.0	12.0	44.0
BBS-P36W	BBS-P36G	Pg36	47.0	10.0	15.0	55.0

FWH CPS WASHER

PF(G) Thread	Metric Thread	Pg Thread
-	-	FWH-P07
FWH-G10	FWH-M10	FWH-P09
FWH-G12	FWH-M12	FWH-P11
FWH-G16	FWH-M16	FWH-P13
FWH-G22	FWH-M22	FWH-P16
FWH-G28	FWH-M28	FWH-P21
FWH-G36	FWH-M36	FWH-P29
FWH-G42	-	FWH-P36
FWH-G48	FWH-M48	FWH-P48

(Dimensions in mm)

FLN / SLN

FLN

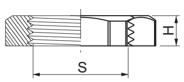
• Material : High Quality Polyamide 6

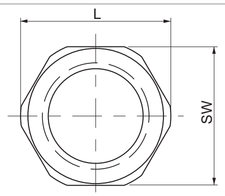
Black
Gray

SLN

• Material : High Quality Polyamide 6

Steel





G(PF) M Pg

Product Size

PF Thread (JIS B0202)

(Dimensions in mm)

Black	Gray	Thread	S	H	L	SW	
FLN-G07B	FLN-G07G	G1/4"	13.0	6.0	20.7	19.0	SLN-G07
FLN-G10B	FLN-G10G	G1/2"	20.9	6.0	29.5	27.3	SLN-G10
FLN-G12B	FLN-G12G	G1/2"	20.9	6.0	29.5	27.3	SLN-G12
FLN-G16B	FLN-G16G	G1/2"	20.9	6.0	29.5	27.3	SLN-G16
FLN-G22B	FLN-G22G	G3/4"	26.4	6.8	38.4	36.0	SLN-G22
FLN-G28B	FLN-G28G	G1"	33.2	6.8	47.8	44.0	SLN-G28
FLN-G36B	FLN-G36G	G1 1/4"	41.9	8.0	52.3	49.0	SLN-G36
FLN-G42B	FLN-G42G	G1 1/2"	47.8	8.0	72.3	65.0	SLN-G42
FLN-G48B	FLN-G48G	G2"	59.6	8.0	76.5	70.0	SLN-G48

Metric Thread (EN 60423)

(Dimensions in mm)

Black	Gray	Thread	S	H	L	SW	
FLN-M10B	FLN-M10G	M12 X 1.5	12.0	6.0	18.6	17	SLN-M10
FLN-M12B	FLN-M12G	M16 X 1.5	16.0	6.0	24.0	22	SLN-M12
FLN-M16B	FLN-M16G	M20 X 1.5	20.0	6.0	28.0	26	SLN-M16
FLN-M22B	FLN-M22G	M25 X 1.5	25.0	6.8	35.6	33	SLN-M22
FLN-M28B	FLN-M28G	M32 X 1.5	32.0	6.8	43.6	40	SLN-M28
FLN-M36B	FLN-M36G	M40 X 1.5	40.0	8.0	54.0	50	SLN-M36
FLN-M48B	FLN-M48G	M50 X 1.5	50.0	8.0	65.4	60	SLN-M48

Pg Thread (DIN 40430)

(Dimensions in mm)

Black	Gray	Thread	S	H	L	SW	
FLN-P07B	FLN-P07G	Pg07	12.5	4.0	21.1	19.0	SLN-P07
FLN-P09B	FLN-P09G	Pg09	15.2	4.0	23.9	22.0	SLN-P09
FLN-P11B	FLN-P11G	Pg11	18.6	6.0	25.8	24.0	SLN-P11
FLN-P13B	FLN-P13G	Pg13.5	20.4	6.0	28.7	27.0	SLN-P13
FLN-P16B	FLN-P16G	Pg16	22.5	6.0	32.1	30.3	SLN-P16
FLN-P21B	FLN-P21G	Pg21	28.3	6.8	38.5	36.0	SLN-P21
FLN-P29B	FLN-P29G	Pg29	37.0	6.8	49.7	46.0	SLN-P29
FLN-P36B	FLN-P36G	Pg36	47.0	8.0	66.5	60.0	SLN-P36
FLN-P48B	FLN-P48G	Pg48	59.3	8.0	78.1	70.2	SLN-P48

CHEMICAL TEST

Chemical resistance of Polyamide Detailed information on request

acetone	resistant	phosphoric acid, watery	resistantpoash lye,
ammonia	resistant	potashlye, watery	resistant
aresenic acid, water	resistant	propane, liquid	resistant
beer	resistant	sel solution, watery	resistant
benzol	resistant	sea water	resistant
borax, watery	resistant	sebum	resistant
boron acid, watery	conditional resistant	silicic acid, watery	resistant
butance, gaseous	resistant	skydrol	resistant
		soap suds	resistant
calcium chloride, watery	resistant	sodium chloride	resistant
carbon disulphide	resistant	sodium hydroxide	resistant
carbonic acid	resistant	sparks erosion liquids	resistant
copper sulphate, watery	conditional resistant	starch, white	resistant
		stearin acid	resistant
diesel oil, watery	resistant	sulphuric acid	non-resistant
ethyl acetate	resistant	terpentine	resistant
ethyl ether	resistant	toluol	resistant
ethyl alcohol	conditional resistant	transformer oil	resistant
fatty acid conditional	resistant	urine	resistant
fruit juice	resistant		
formic acid, watery	non-resistant	vinegar and acetic acid, watery	resistant
glucose, watery	resistant	wine acid, watery	non-resistant
glycerine	resistant		
		xylol	resistant
heating oil	resistant		
hydraulics oil	resistant	zinc sulphate, watery	conditional resistant
hydrogen	resistant	zyan potash, watery	resistant
hydrogen sulphide	resistant	Oil and Grease	
		- mineral without additive, at20℃	resistant
iron chloride	conditional resistant	- ASTM oil no1, 20℃	resistant
		- ASTM oil no2, 20℃	resistant
lactic acid, watery	conditional resistant	- ASTM oil no3, 20℃	resistant
		- animal	resistant
methyl acetate	resistant	- vegetable	resistant
methyl alcohol	resistant	- transformer oil(pyranole)	resistant
mineral oil	resistant	- on silicone basis	resistant
		- diesel oil	resistant
nitric acid, hydrochloride acid, watery	non-resistant	- heating	resistant
		- hydraulic oil based on	
ozone	conditional resistant	- mineral oil	resistant
		- phoshate ester	resistant
paraffin	resistant	- drilling oil	resistant
petrol	resistant	- cutting oil	resistant

Made of Protection

code Degree of Protection (Water)

Protection against contacting and penetrating foreign materals

FIRST INDEX

CODE	Degree of Protection (contact and foreign materials)	
0	no protection	no contact protection, no protection against. solid foreign materials.
1	protection against arge foreign materials	protection against large contact area with hands, protection against foreign materials with ∮ >50mm.
2	protection against medium-sized foreign materials	protection against contact with fingers, protection against foreign materials with ∮ >12mm.
3	protection against small foreign materials	protection against tool contact, wire or the like with ∮ >12mm, protection against foreign material with ∮ >2.5mm.
4	protection against foreign grains	see 3, but ∮ >1mm.
5	protection against dual deposits.	full contact protection, protection against dust deposits inside.
6	protection against penetration	full contact protection, protection against dust penetration.

Protection against fluids

SECOND INDEX

CODE	Degree of Protection (contact and foreign materials)	
0	no protection	no protection against water
1	protection against dripping water	protection against vertical water drops
2	protection against inclined water drops	protection against inclined water drops (any < up to 15° to vertical line)
3	protection against spray water	protection against splash water from all directions, 60° to vertical line
4	protection against splash water	protection against splash water from all directions.
5	protection against jet water	protection against water jets from any <
6	protection against flooding	protection against temporary flooding.
7	protection against immersion	protection against water penetration 1m below water
8	protection against submersion	protection against pressure water for an indefinite time(customer tailored)

example : code IP67

All techincal details without engagement. All dimensions in mm. Changes without announcement, Range of tolerance : ±10%

MEMO

MEMO

MEMO