

# HSP type



ESD | 대전 방지 로보체인

자동화기계, 반도체, LED, LCD, PDP, OLED, 전자, 식품기계, 취출로봇, 섬유기계, 특장차 자동차생산설비, 의료기계, 각종 공작기계 및 컴퓨터 관련기계에 적용.

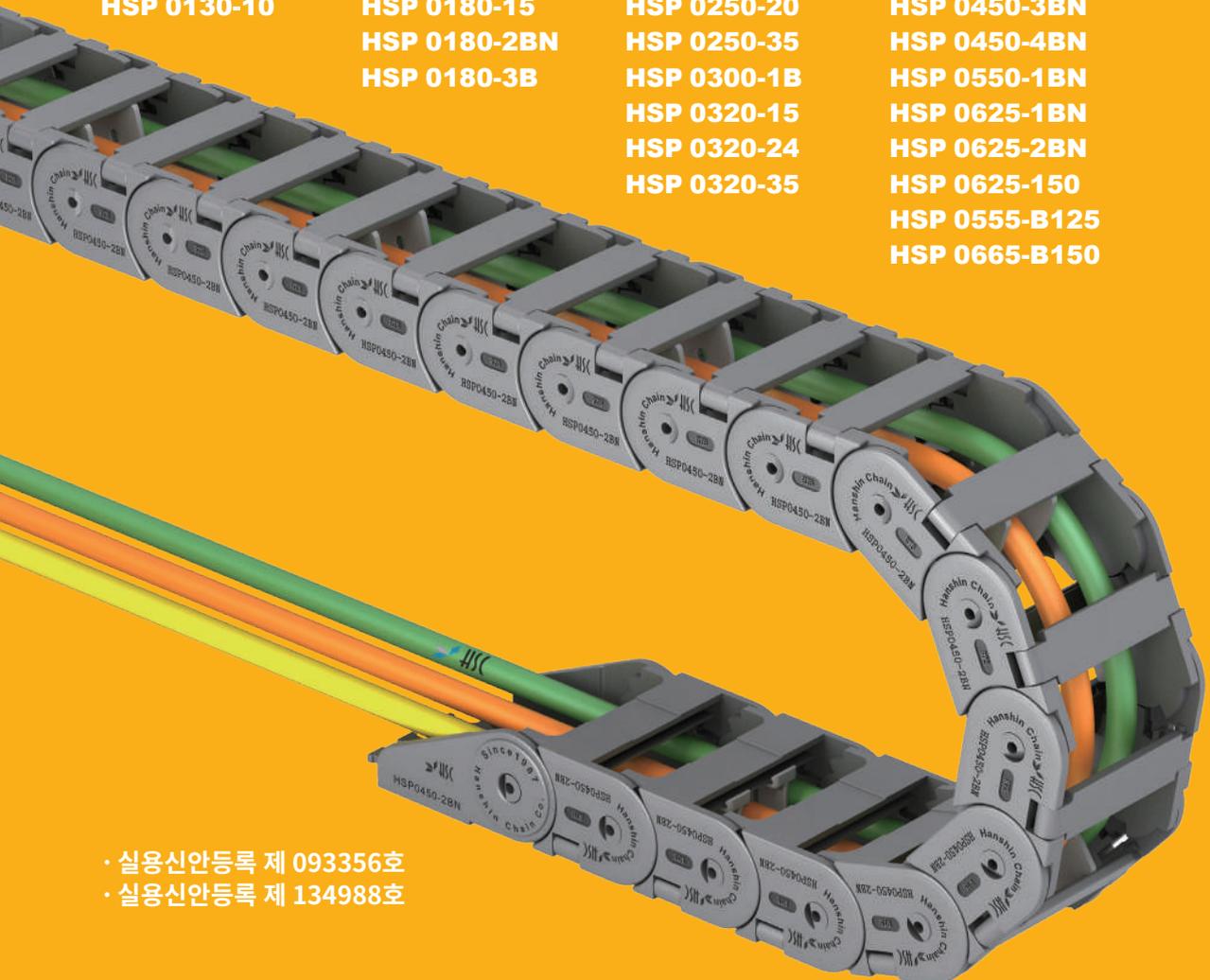
*Factory automation, Wood work machine, Food processing, Grabbing-and-extracting robot, Fabric machine, Special purpose vehicle, Automobile industry, Medical machine, Machining center and Computer related machine*

**HSP 0120-7E**  
**HSP 0120-13E**  
**HSP 0130-1N**  
**HSP 0130-10**

**HSP 0130-2**  
**HSP 0130-2B**  
**HSP 0180-1N**  
**HSP 0180-15**  
**HSP 0180-2BN**  
**HSP 0180-3B**

**HSP 0180-4BN**  
**HSP 0180-50**  
**HSP 0200-1E**  
**HSP 0250-20**  
**HSP 0250-35**  
**HSP 0300-1B**  
**HSP 0320-15**  
**HSP 0320-24**  
**HSP 0320-35**

**HSP 0320-50**  
**HSP 0450-1B [N]**  
**HSP 0450-2B [N]**  
**HSP 0450-3BN**  
**HSP 0450-4BN**  
**HSP 0550-1BN**  
**HSP 0625-1BN**  
**HSP 0625-2BN**  
**HSP 0625-150**  
**HSP 0555-B125**  
**HSP 0665-B150**



- 실용신안등록 제 093356호
- 실용신안등록 제 134988호

## ☑ Features

- 본체는 개폐형으로 Cable, Hose의 설치가 쉽습니다.
- 경량이어서 움직임이 원활합니다.
- Divider가 좌우로 움직입니다.
- 150여종의 다양한 모델과 특수 규격도 주문가능합니다.
- 자동화기계, 목공기계, 식품기계, 산업용로봇 등 다방면에 적합한 모델입니다.
- *HSP type provides cover lead for easy installation of cables and hoses.*
- *Its light weight provides prompt movement.*
- *Divider is adjustable.*
- *Applicable for factory automation, wood work, food processing, industrial robot and many more.*
- *150 various models are manufactured.*
- *Special orders can be made.*

## ☑ Operation

HSP Type은 플라스틱 RoboChain으로 케이블 및 호스의 인입을 용이하게 하는 개폐형으로 설계되어 있습니다. HSP Type의 RoboChain은 모든 구성품이 고강도 엔지니어링 플라스틱으로 설계 제작되어 소음이 적고, 가벼운 장점이 있습니다. 특히 HSP 0450-1BN 이상의 Type은 Divider를 부착하여 사용할 수 있습니다. HSP Type은 전자기계, 산업용 로봇 공작기계 및 다방면에 사용되는 이상적인 장치입니다.

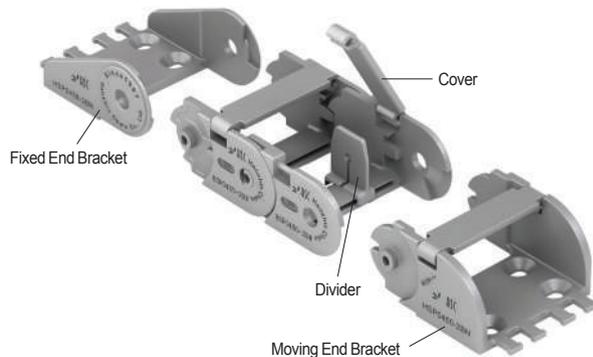
*Cover in HSP Type provides easy access and installation of cables and hoses. All parts are made of highly durable engineering plastic. Therefore, it features less noise, good appearance and light weight. In particular, HSP 0450-1BN and higher types accommodate divider.*

*This type is applicable for many areas such as electronic and electrical machine, industrial robot, machine center and many more.*

## ☑ Properties

- 운동속도 : 180m/min이하
- 케이블 호스의 직경 : 36mm 이하
- 사용온도 : -25 ~ 100°C
- 장력 : 190(건조), 120(공기습도) N/mm<sup>2</sup>
- 인장 팽창 : 4(건조), 6(공기습도) %
- 탄성계수 : 10000(건조), 7000(공기습도) N/mm<sup>2</sup>
- 미끄럼 마찰 : 0.4 (무윤활시)
- 기본색 : Black
- 재질 : 엔지니어링 플라스틱
- *Moving Velocity: below 180m/min*
- *Diameter of Cable Hose: less than 36mm*
- *Operating Temperature: -25 ~ 100°C*
- *Tension: 190(in dry), 120(in moisture) N/mm<sup>2</sup>*
- *Stretch: 4(in dry), 6(in moisture) %*
- *Elasticity: 10000(in dry), 7000(in moisture) N/mm<sup>2</sup>*
- *Sliding Friction: 0.4(non-greased)*
- *Basic Color: Black*
- *Material: Engineering Plastic*

## ☑ Structure

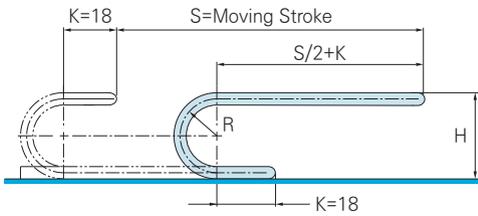
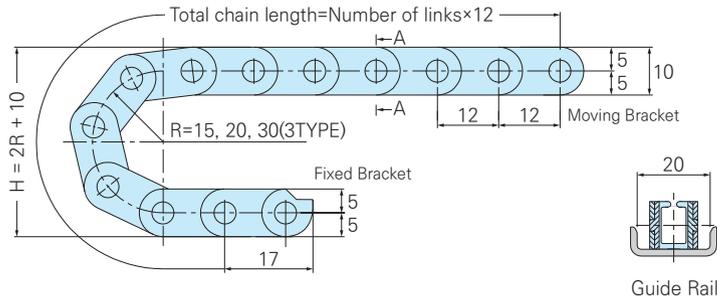


# HSP 0120-7E (국내 최소형)

## ORDER EXAMPLE

HSP0120-7E 15R 1000L 3SETS  
 Type Radius Length Q'ty

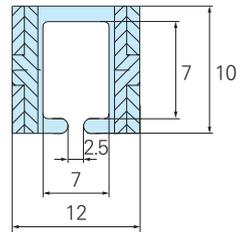
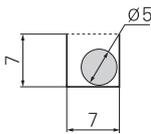
## Chain, Guide Rail



$$\text{Length}(L) = \frac{S}{2} + \pi R + 36$$

Radius(R)	15	20	30
Height(H)	40	50	70

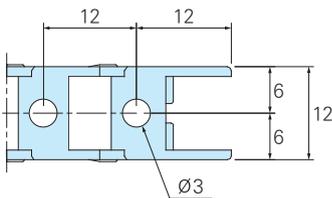
## Max. Cable Diameter Cross Section



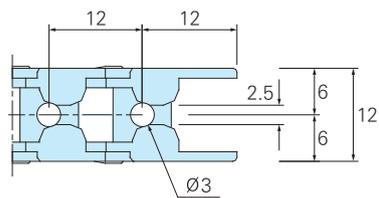
A-A Cross Section

## Brackets

(별도의 END BRACKET이 없이 CHAIN에 취부)



Fixed Bracket

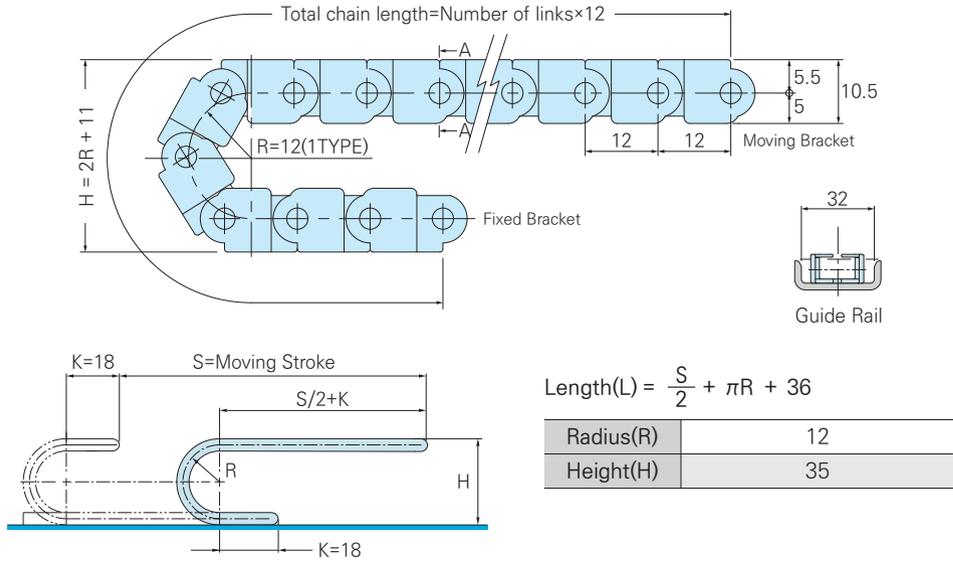


Moving Bracket

# HSP 0120-13E

ORDER EXAMPLE			
HSP0120-13E	12R	1000L	3SETS
Type	Radius	Length	Q'ty

## Chain, Guide Rail

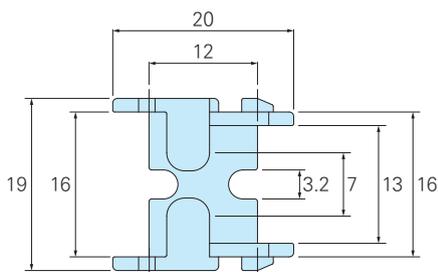


## Max. Cable Diameter Cross Section



## Brackets

(별도의 END BRACKET이 없이 CHAIN에 취부)

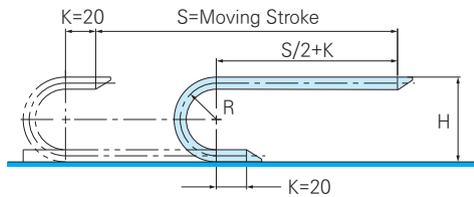
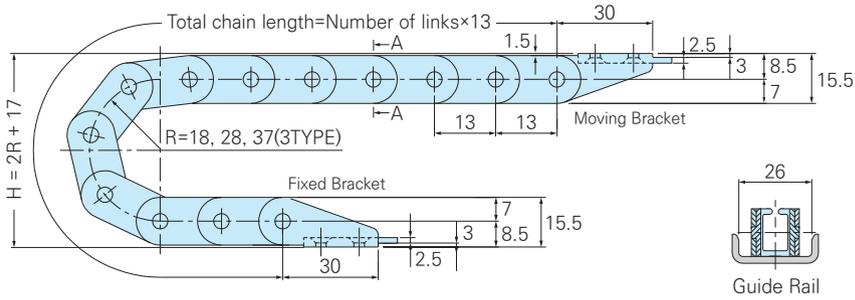


# HSP 0130-1N (Cover 일체형)

## ORDER EXAMPLE

HSP0130-1N 37R 1000L 3SETS  
 Type Radius Length Q'ty

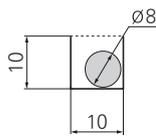
## Chain, Guide Rail



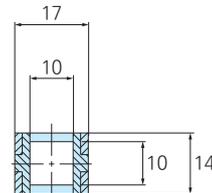
$$\text{Length}(L) = \frac{S}{2} + \pi R + 40$$

Radius(R)	18	28	37
Height(H)	53	73	91

## Max. Cable Diameter Cross Section

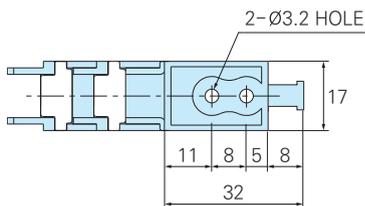


(Cover 일체형)

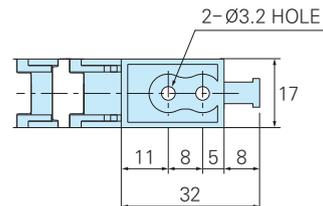


A-A Cross Section

## Brackets



Fixed Bracket



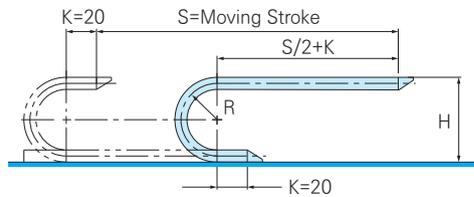
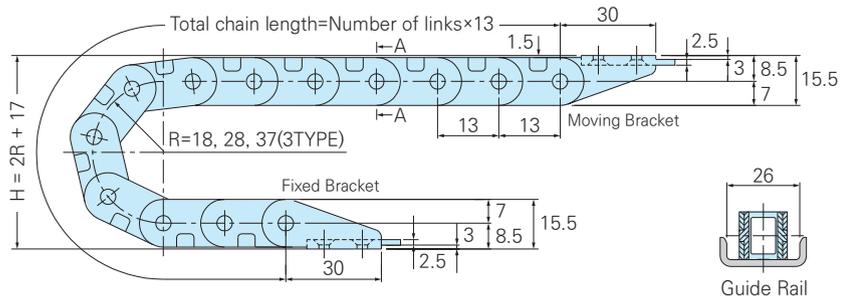
Moving Bracket

# HSP 0130-10 (HSP 0130-1BN)

ORDER EXAMPLE

HSP 0130-10 37R 1000L 3SETS  
 Type Radius Length Q'ty

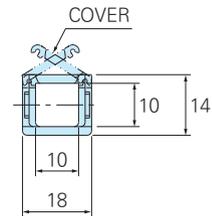
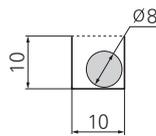
## Chain, Guide Rail



$$\text{Length}(L) = \frac{S}{2} + \pi R + 40$$

Radius(R)	18	28	37
Height(H)	53	73	91

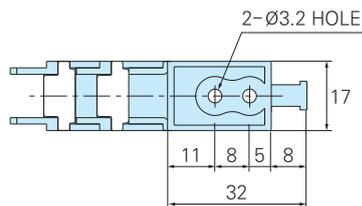
## Max. Cable Diameter Cross Section



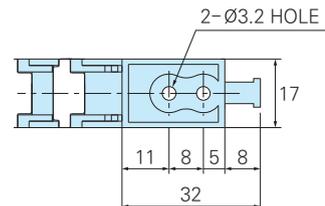
A-A Cross Section

## Brackets

(Hole 간격 8mm)



Fixed Bracket



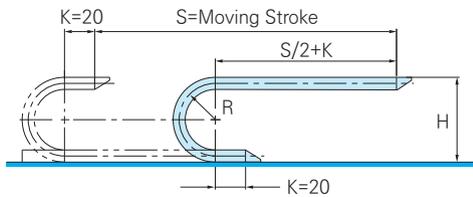
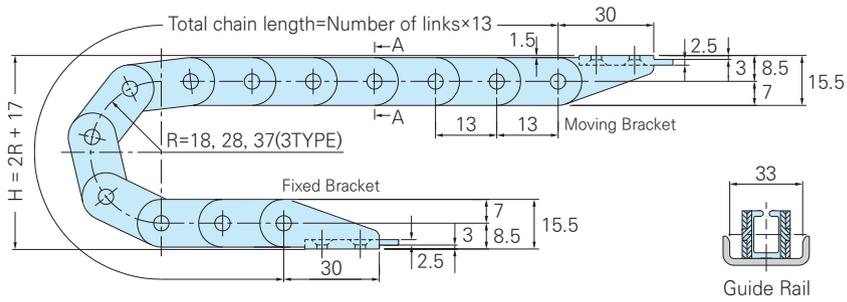
Moving Bracket

# HSP 0130-2 (Cover 일체형)

## ORDER EXAMPLE

HSP0130-2    28R    2000L    10SETS  
 Type          Radius    Length    Q'ty

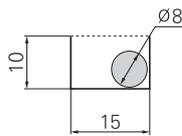
## Chain, Guide Rail



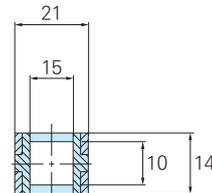
$$\text{Length}(L) = \frac{S}{2} + \pi R + 40$$

Radius(R)	18	28	37
Height(H)	53	73	91

## Max. Cable Diameter Cross Section

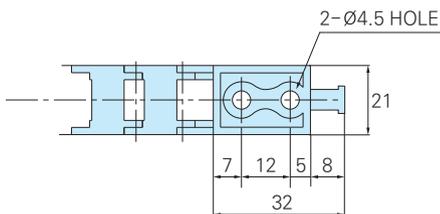


(Cover 일체형)

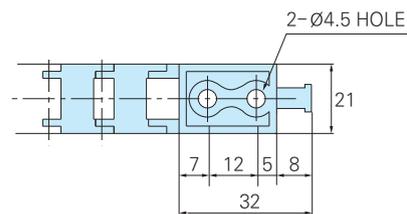


A-A Cross Section

## Brackets



Fixed Bracket



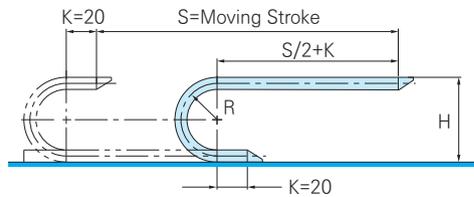
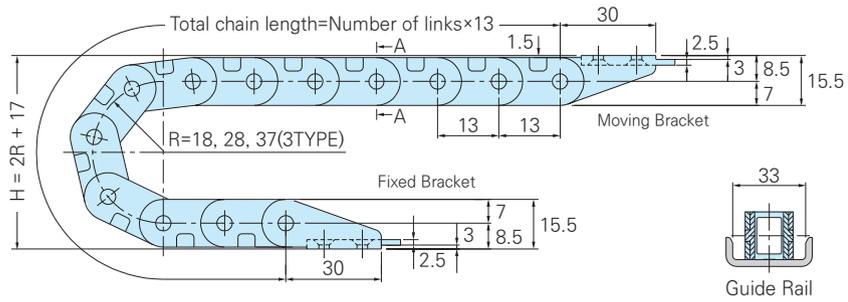
Moving Bracket

# HSP 0130-2B

## ORDER EXAMPLE

HSP0130-2B 28R 1000L 7SETS  
 Type Radius Length Q'ty

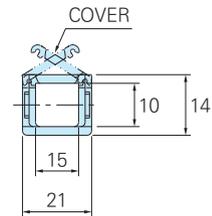
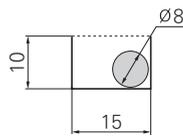
## Chain, Guide Rail



$$\text{Length}(L) = \frac{S}{2} + \pi R + 40$$

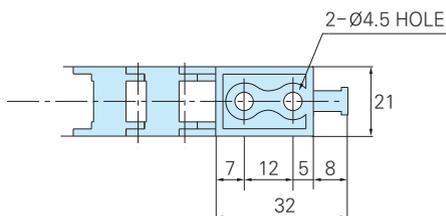
Radius(R)	18	28	37
Height(H)	53	73	91

## Max. Cable Diameter Cross Section

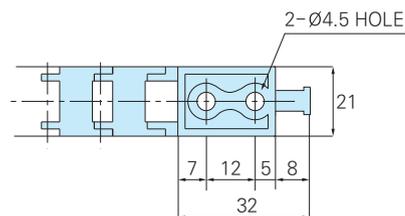


A-A Cross Section

## Brackets



Fixed Bracket



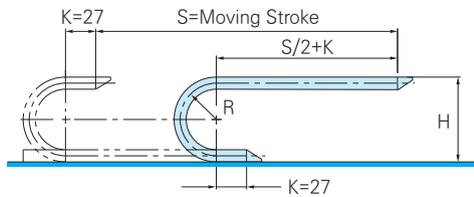
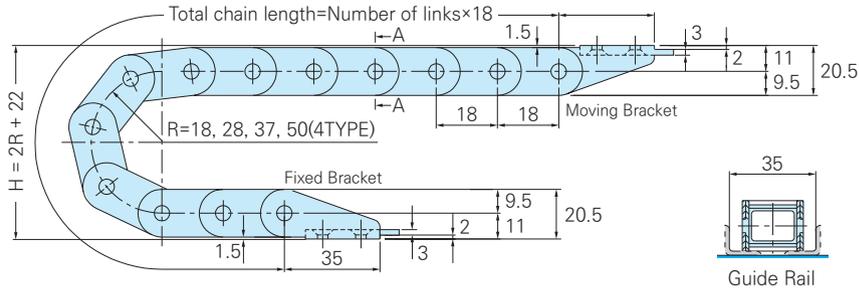
Moving Bracket

# HSP 0180-1N (Cover 일체형)

## ORDER EXAMPLE

HSP0180-1N 50R 1000L 3SETS  
 Type Radius Length Q'ty

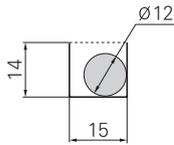
## Chain, Guide Rail



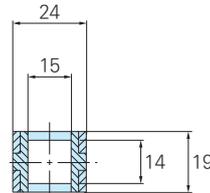
$$\text{Length}(L) = \frac{S}{2} + \pi R + 54$$

Radius(R)	18	28	37	50
Height(H)	58	78	96	122

## Max. Cable Diameter Cross Section

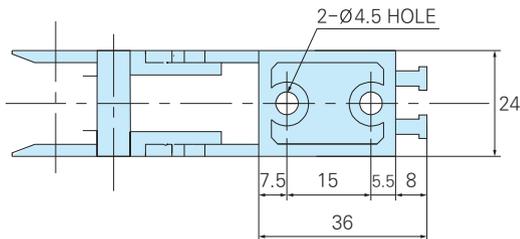


(Cover 일체형)

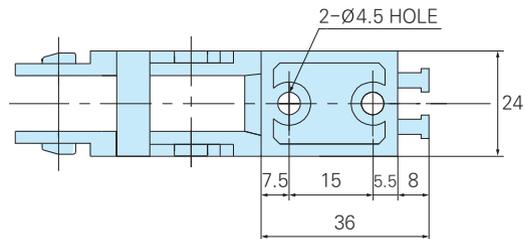


A-A Cross Section

## Brackets



Fixed Bracket



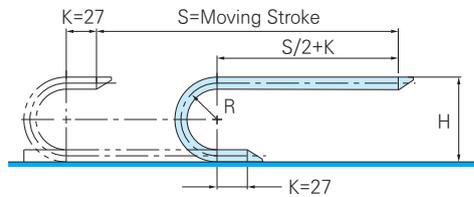
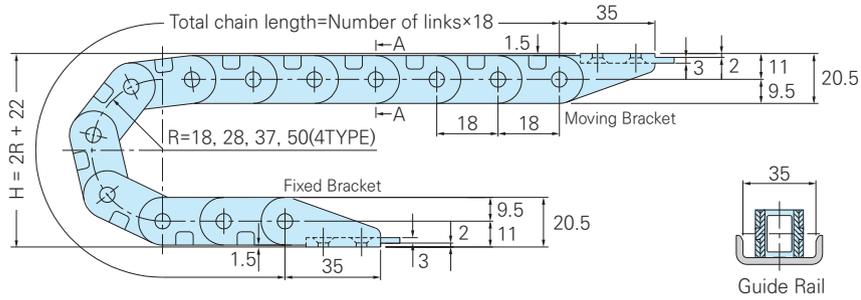
Moving Bracket

# HSP 0180-15 (HSP 0180-1BN)

ORDER EXAMPLE

HSP 0180-15 28R 1000L 3SETS  
 Type Radius Length Q'ty

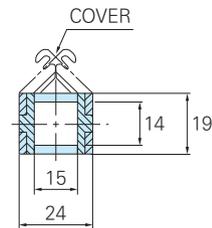
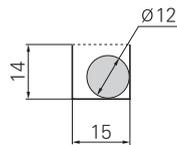
## Chain, Guide Rail



$$\text{Length}(L) = \frac{S}{2} + \pi R + 54$$

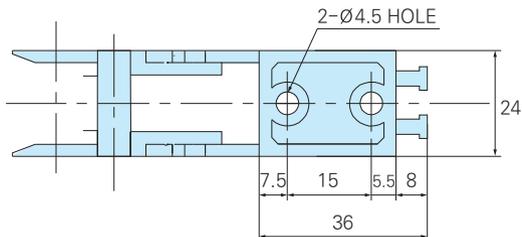
Radius(R)	18	28	37	50
Height(H)	58	78	96	122

## Max. Cable Diameter Cross Section

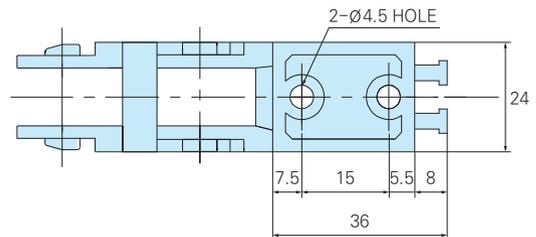


A-A Cross Section

## Brackets



Fixed Bracket



Moving Bracket

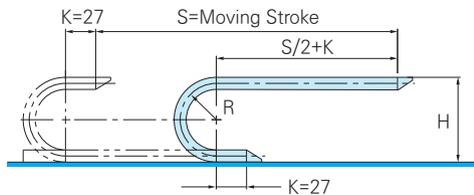
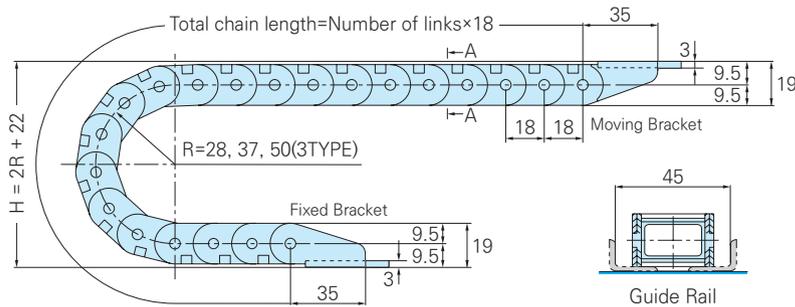
HSP TYPE

# HSP 0180-2BN

## ORDER EXAMPLE

HSP0180-2BN 50R 1500L 3SETS  
 Type Radius Length Q'ty

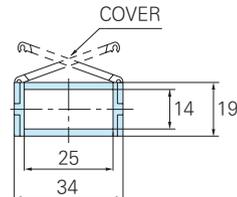
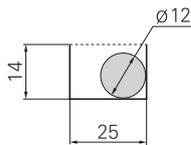
## Chain, Guide Rail



$$\text{Length}(L) = \frac{S}{2} + \pi R + 54$$

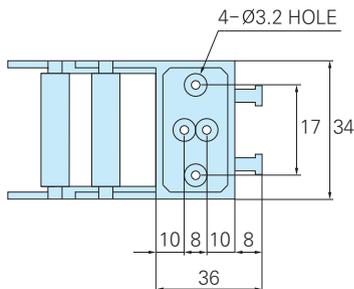
Radius(R)	28	37	50
Height(H)	78	96	122

## Max. Cable Diameter Cross Section

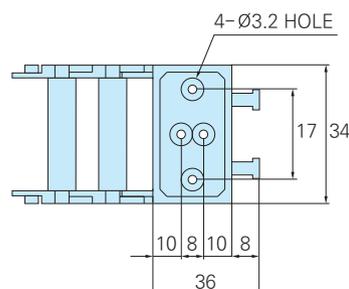


A-A Cross Section

## Brackets



Fixed Bracket



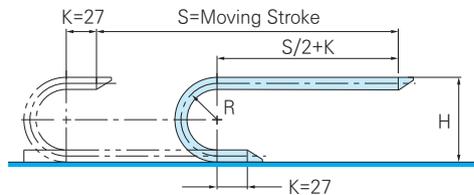
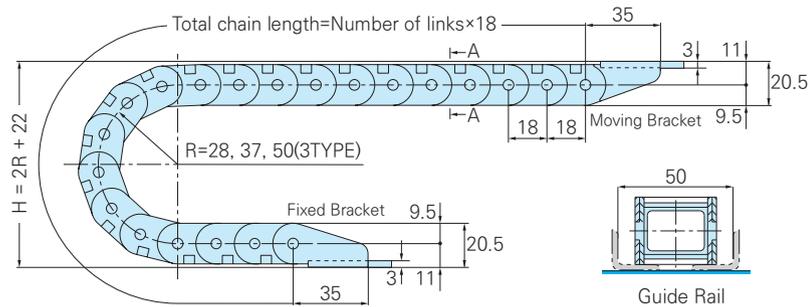
Moving Bracket

# HSP 0180-3B

## ORDER EXAMPLE

HSP0180-3B 50R 1000L 3SETS  
 Type Radius Length Q'ty

## Chain, Guide Rail



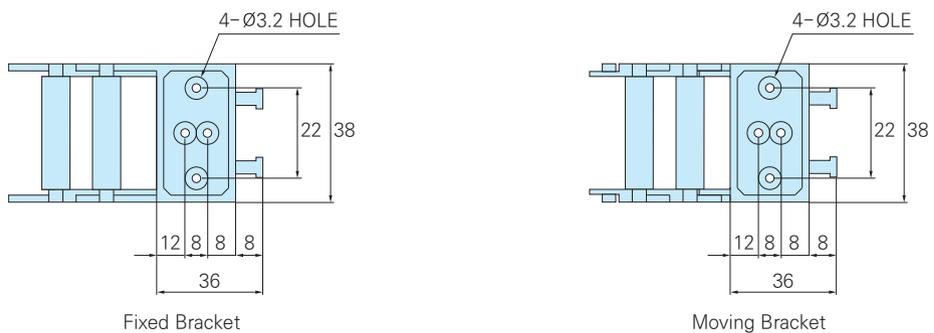
$$\text{Length}(L) = \frac{S}{2} + \pi R + 54$$

Radius(R)	28	37	50
Height(H)	78	96	122

## Max. Cable Diameter Cross Section



## Brackets

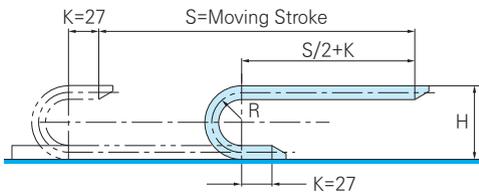
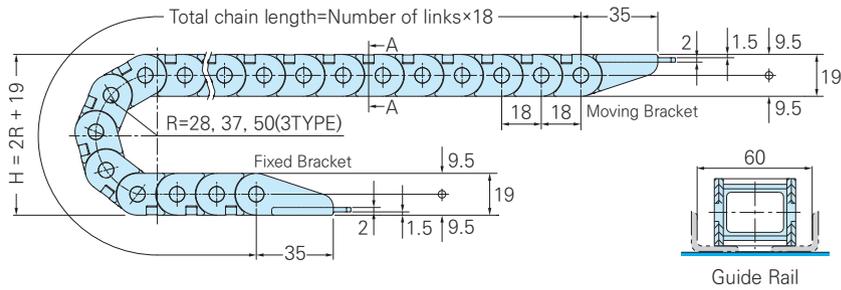


# HSP 0180-4BN

## ORDER EXAMPLE

HSP0180-4BN 50R 1500L 3SETS  
 Type Radius Length Q'ty

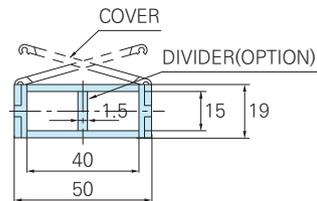
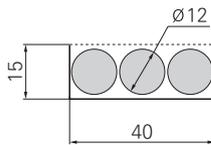
## Chain, Guide Rail



$$\text{Length}(L) = \frac{S}{2} + \pi R + 54$$

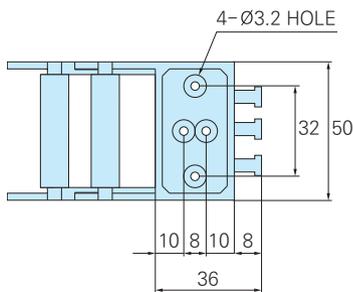
Radius(R)	28	37	50
Height(H)	75	93	119

## Max. Cable Diameter Cross Section

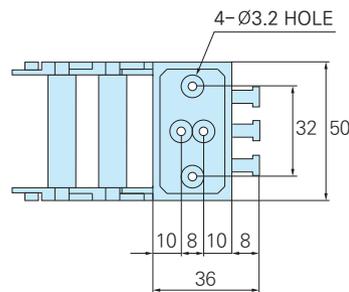


A-A Cross Section

## Brackets



Fixed Bracket

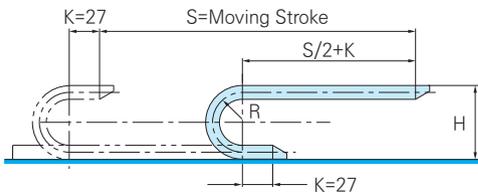
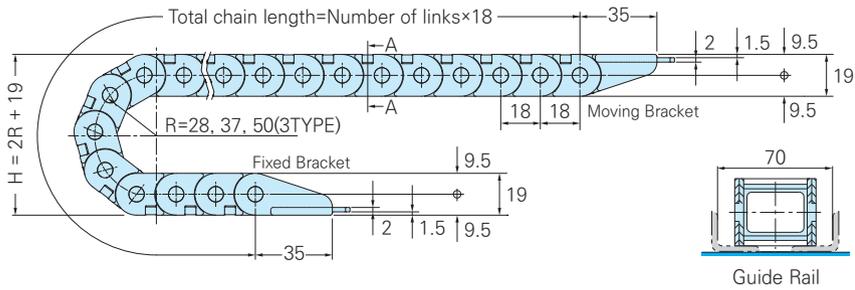


Moving Bracket

# HSP 0180-50 *NEW*

ORDER EXAMPLE			
HSP0180-50	50R	1500L	3SETS
Type	Radius	Length	Q'ty

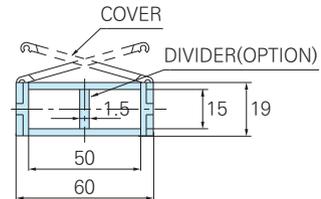
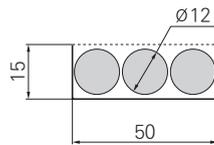
## Chain, Guide Rail



$$\text{Length}(L) = \frac{S}{2} + \pi R + 54$$

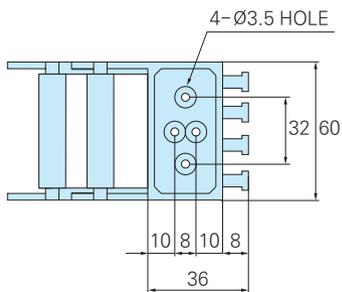
Radius(R)	28	37	50
Height(H)	75	93	119

## Max. Cable Diameter Cross Section

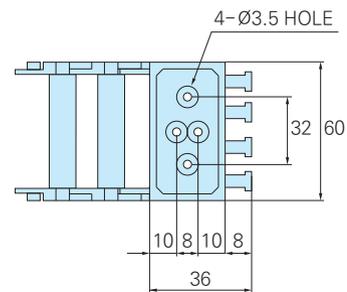


A-A Cross Section

## Brackets



Fixed Bracket



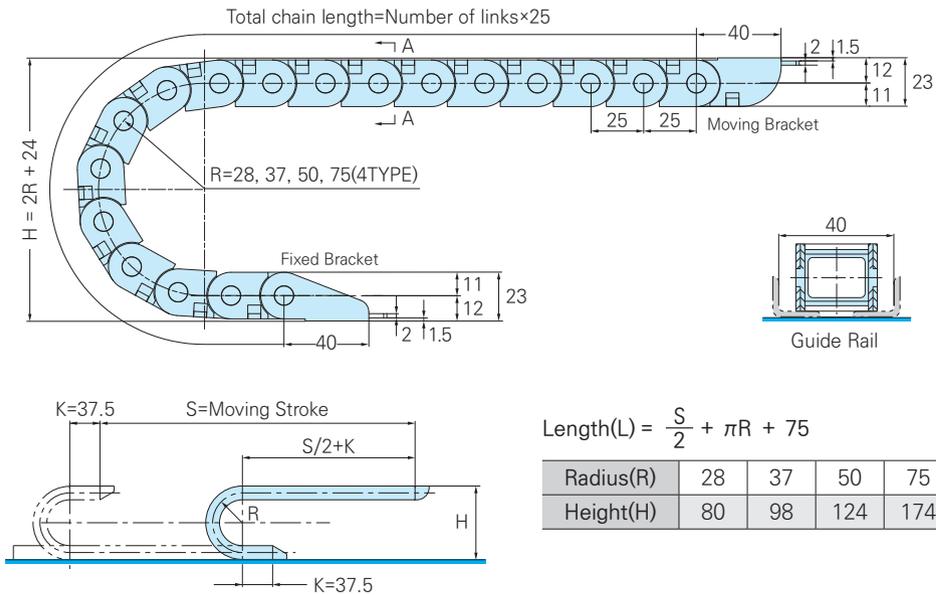
Moving Bracket



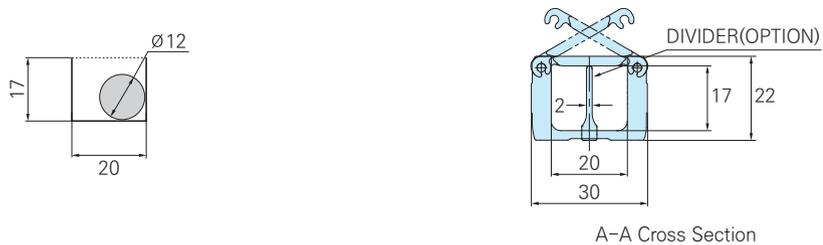
# HSP 0250-20 *NEW*

ORDER EXAMPLE			
HSP0250-20	28R	1000L	3SETS
Type	Radius	Length	Q'ty

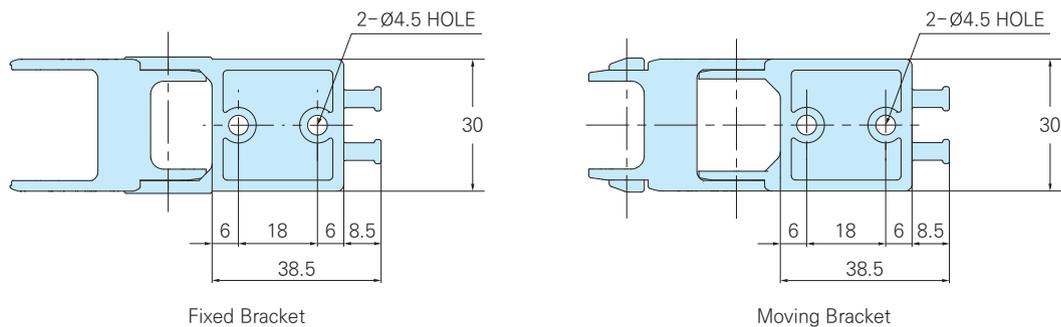
## Chain, Guide Rail



## Max. Cable Diameter Cross Section



## Brackets

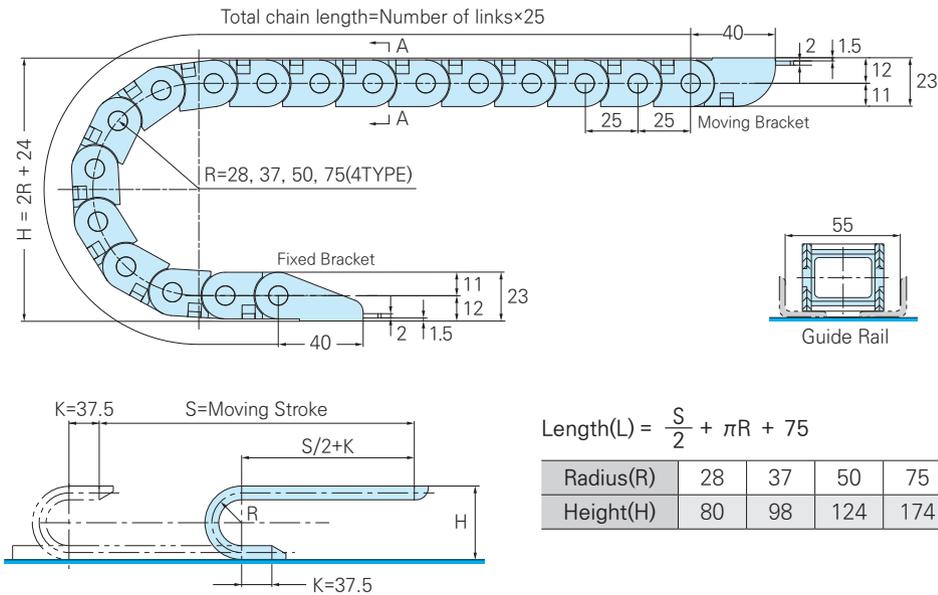


# HSP 0250-35 *NEW*

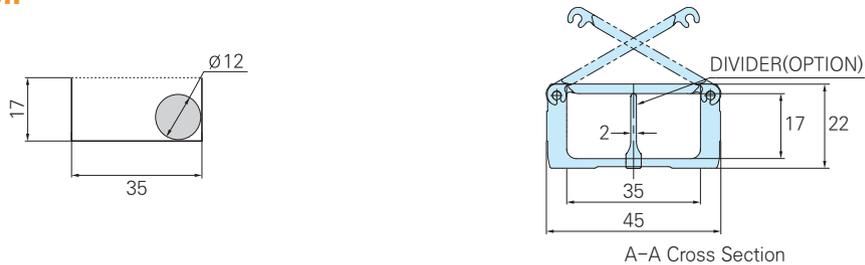
## ORDER EXAMPLE

HSP0250-35	28R	1000L	3SETS
Type	Radius	Length	Q'ty

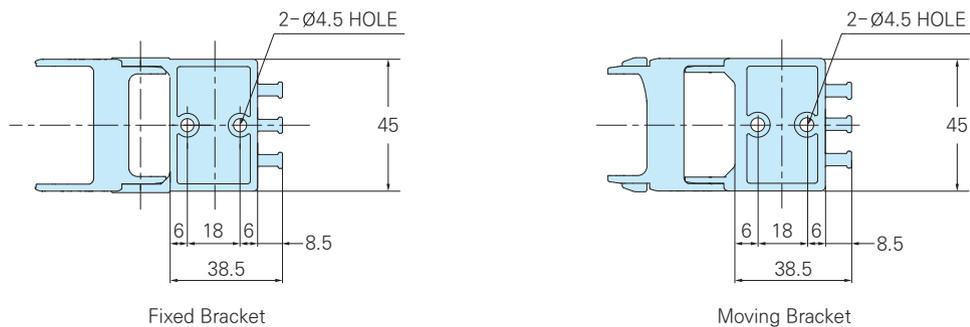
## Chain, Guide Rail



## Max. Cable Diameter Cross Section



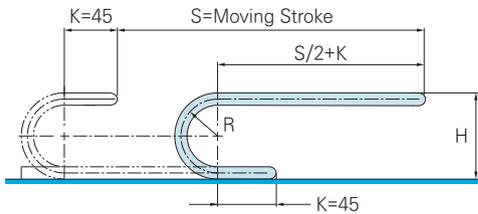
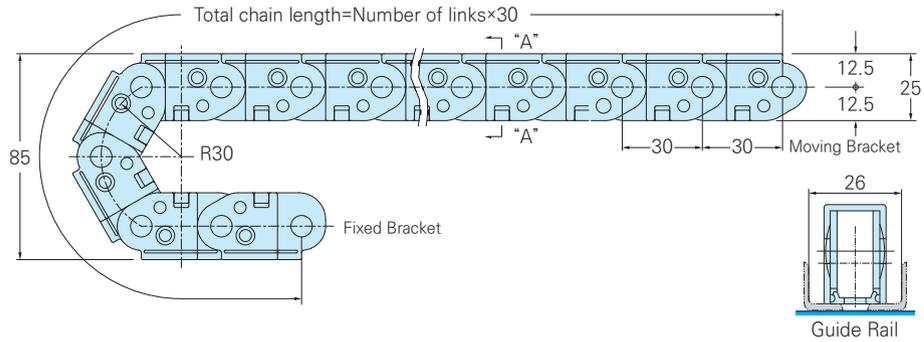
## Brackets



# HSP 0300-1B

ORDER EXAMPLE			
HSP0300-1B	30R	1000L	3SETS
Type	Radius	Length	Q'ty

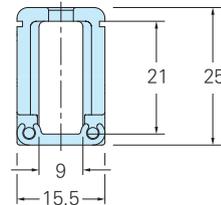
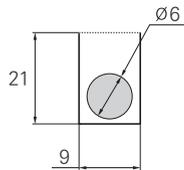
## Chain, Guide Rail



$$\text{Length}(L) = \frac{S}{2} + \pi R + 90$$

Radius(R)	30
Height(H)	85

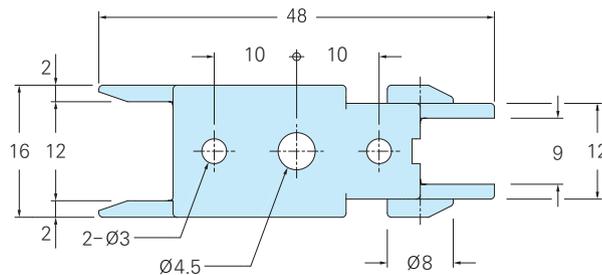
## Max. Cable Diameter Cross Section



A-A Cross Section

## Brackets

(별도의 END BRACKET이 없이 CHAIN에 취부)

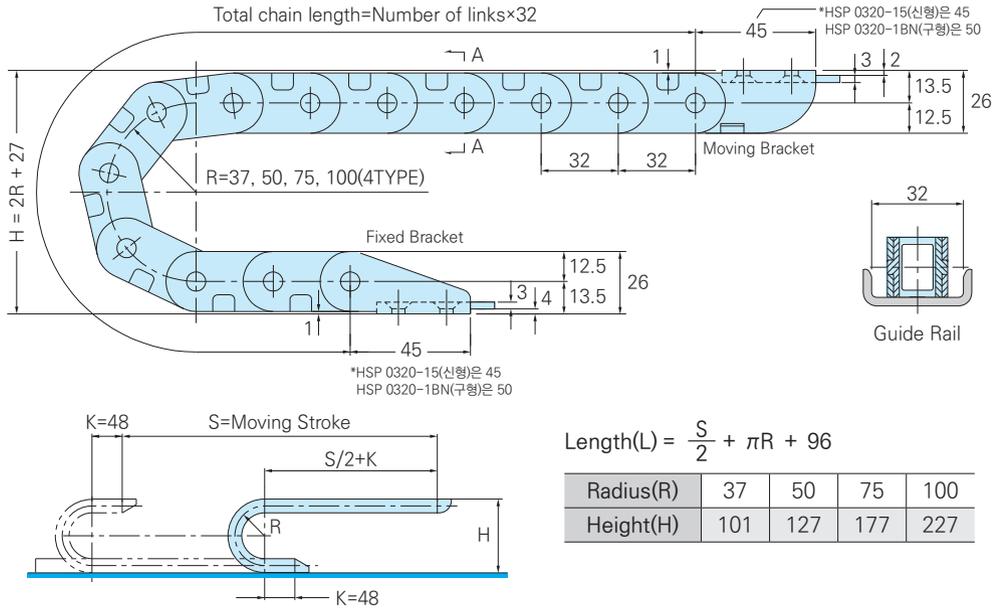


# HSP 0320-15 (HSP 0320-1BN)

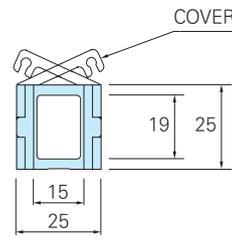
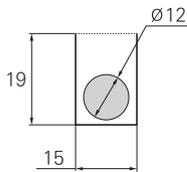
## ORDER EXAMPLE

HSP0320-15 50R 2000L 3SETS  
 Type Radius Length Q'ty

## Chain, Guide Rail



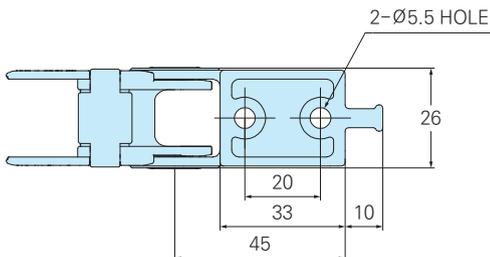
## Max. Cable Diameter Cross Section



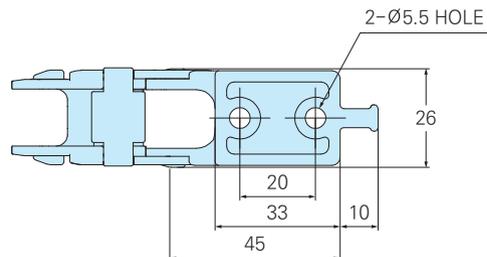
A-A Cross Section

\*HSP 0320-15(신형) B폭 15, HSP 0320-1BN(구형) B폭 13.5

## Brackets



Fixed Bracket

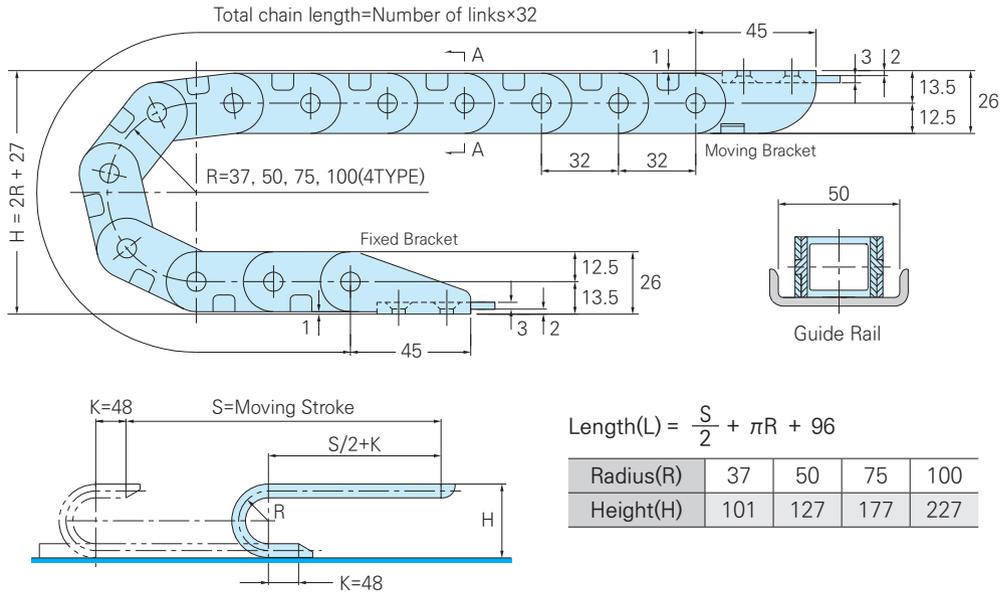


Moving Bracket

# HSP 0320-24 (HSP 0320-2BN)

ORDER EXAMPLE			
HSP0320-24	75R	1000L	3SETS
Type	Radius	Length	Q'ty

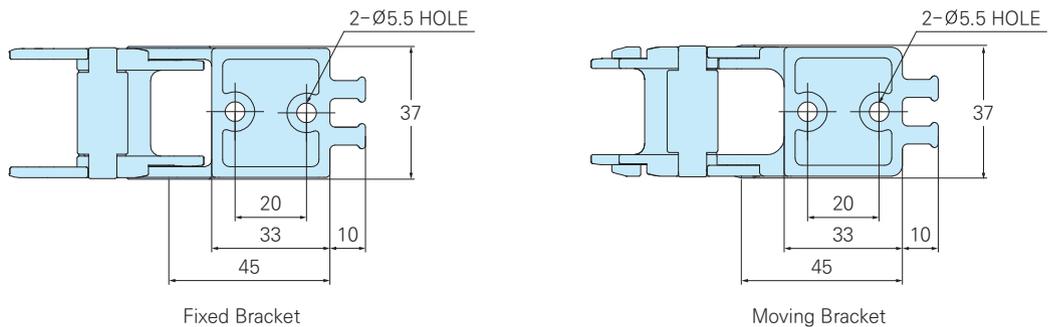
## Chain, Guide Rail



## Max. Cable Diameter Cross Section



## Brackets

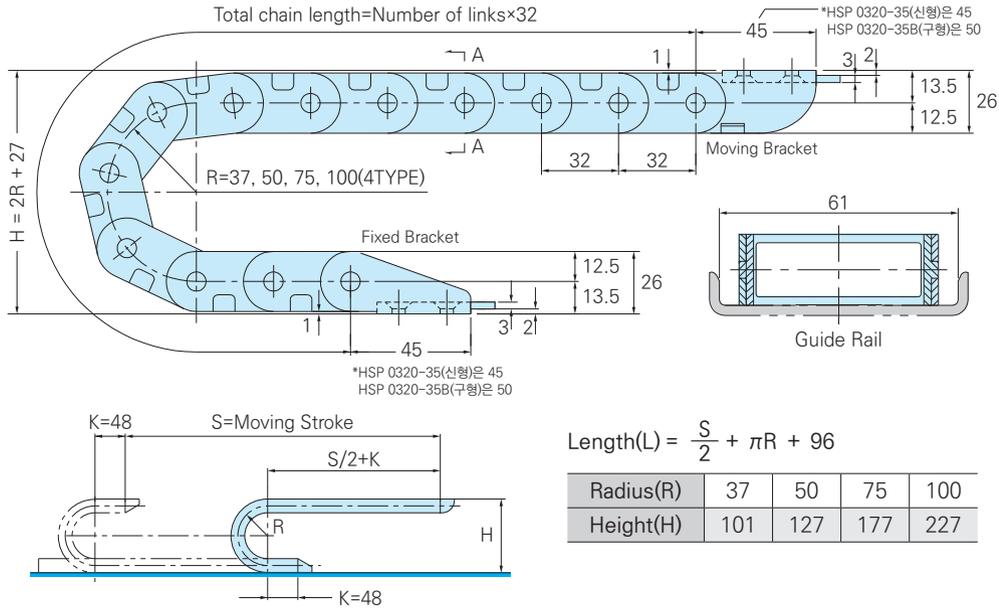


# HSP 0320-35 (HSP 0320-35B)

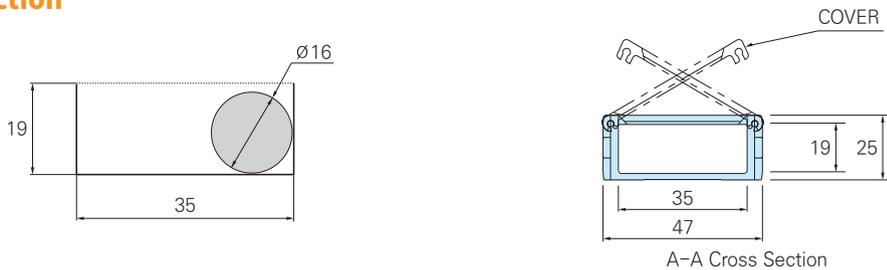
## ORDER EXAMPLE

HSP0320-35 37R 2000L 10SETS  
 Type Radius Length Q'ty

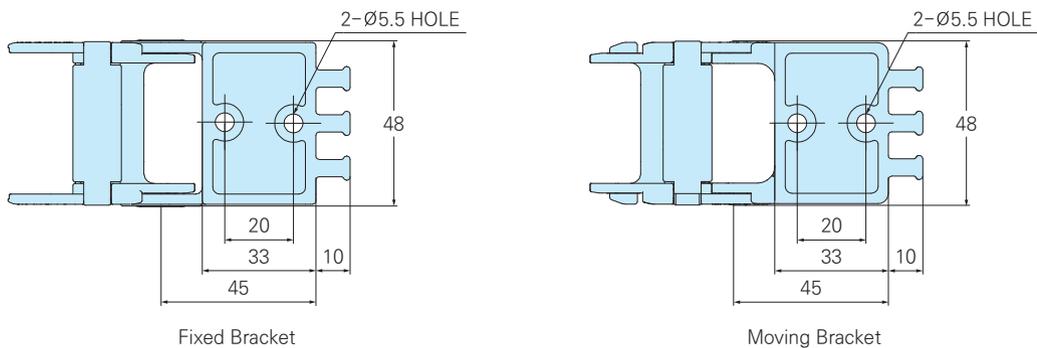
## Chain, Guide Rail



## Max. Cable Diameter Cross Section



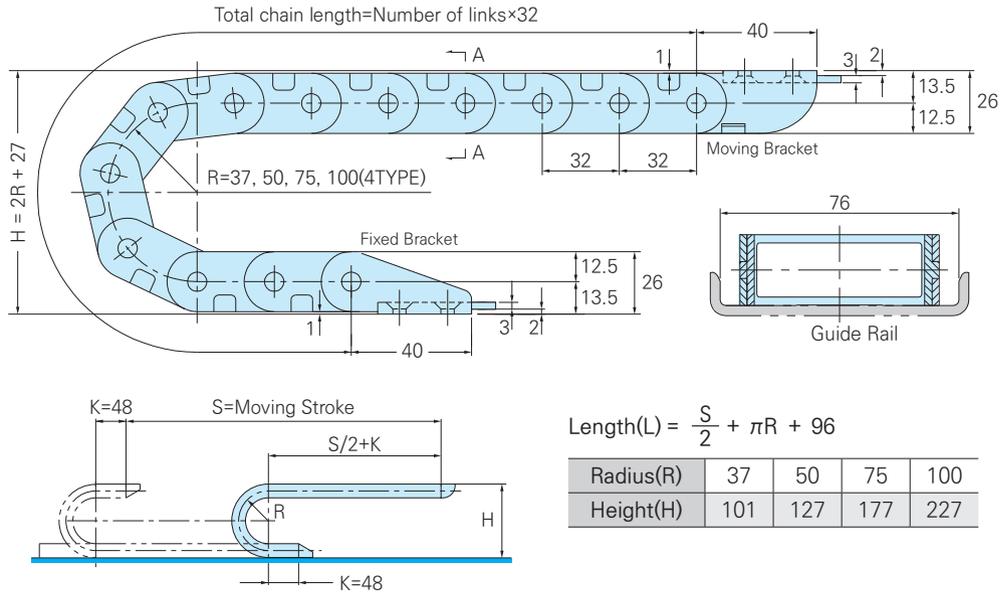
## Brackets



# HSP 0320-50 (HSP 0320-3BN)

ORDER EXAMPLE			
HSP0320-50	50R	1000L	3SETS
Type	Radius	Length	Q'ty

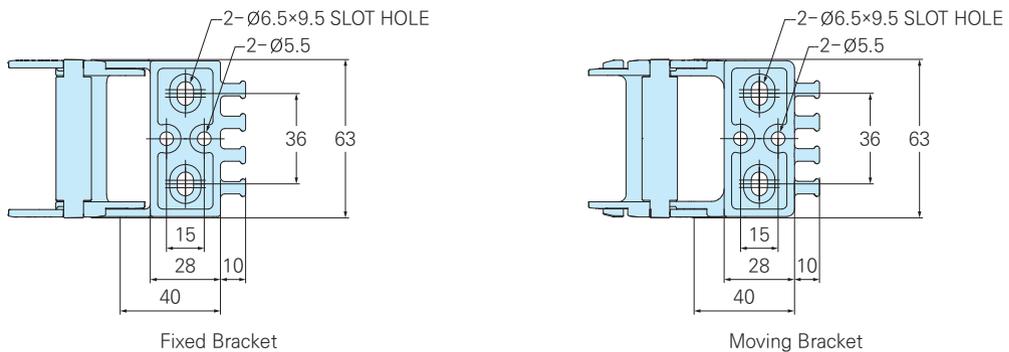
## Chain, Guide Rail



## Max. Cable Diameter Cross Section



## Brackets

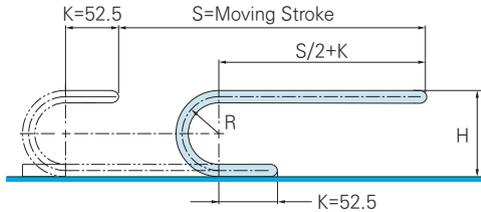
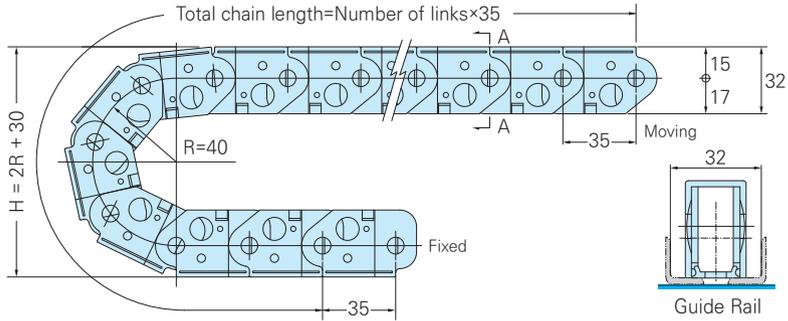


# HSP 0350-1B

## ORDER EXAMPLE

HSP0350-1B 40R 2000L 10SETS  
 Type Radius Length Q'ty

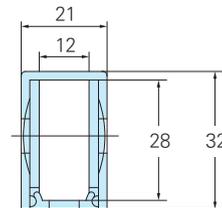
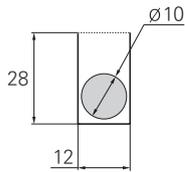
## Chain, Guide Rail



$$\text{Length}(L) = \frac{S}{2} + \pi R + 105$$

Radius(R)	40
Height(H)	110

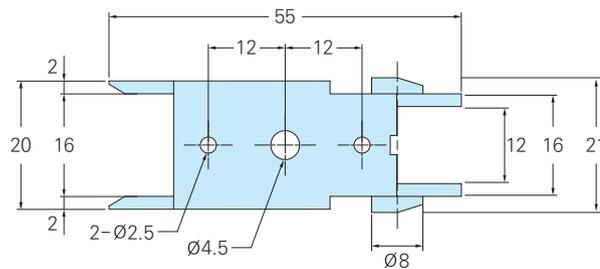
## Max. Cable Diameter Cross Section



A-A Cross Section

## Brackets

(별도의 END BRACKET이 없이 CHAIN에 취부)

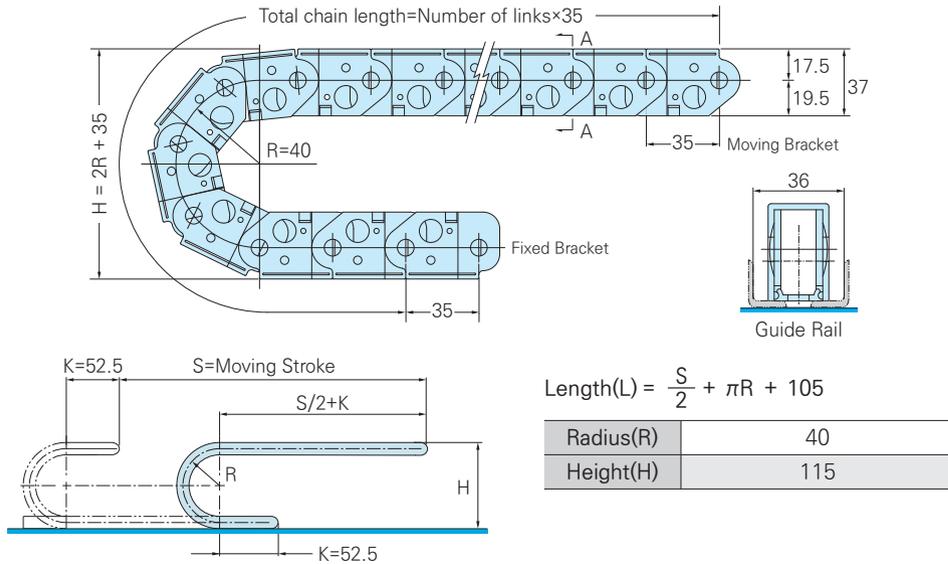


# HSP 0350-2B

ORDER EXAMPLE

HSP0350-2B 40R 1000L 3SETS  
 Type Radius Length Q'ty

## Chain, Guide Rail

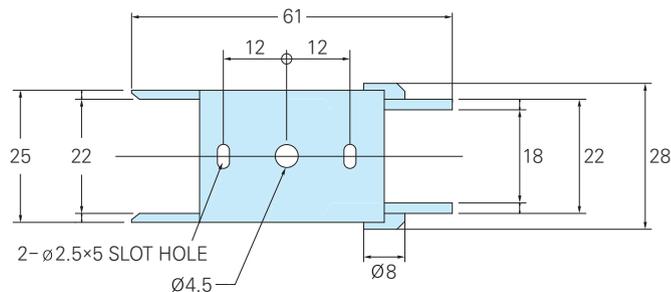


## Max. Cable Diameter Cross Section



## Brackets

(별도의 END BRACKET이 없이 CHAIN에 취부)

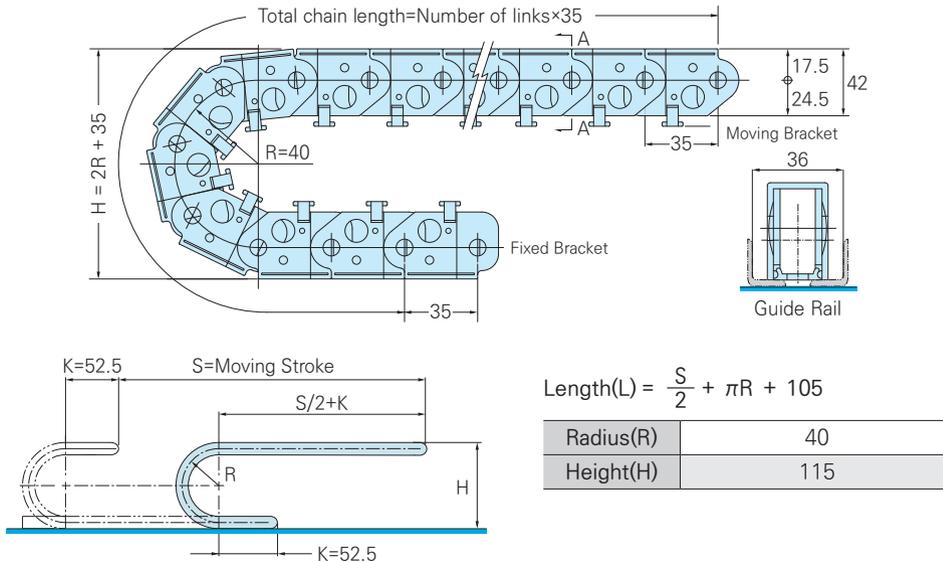


# HSP 0350-2BW

## ORDER EXAMPLE

HSP0350-2BW 40R 1000L 3SETS  
 Type Radius Length Q'ty

## Chain, Guide Rail

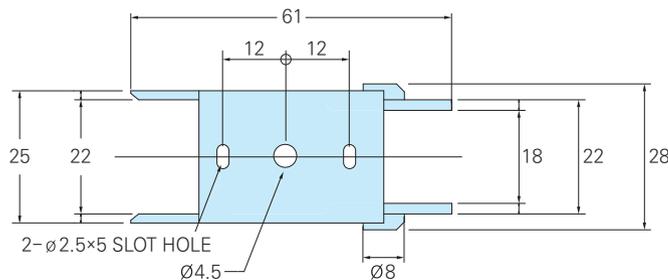


## Max. Cable Diameter Cross Section



## Brackets

(별도의 END BRACKET이 없이 CHAIN에 취부)



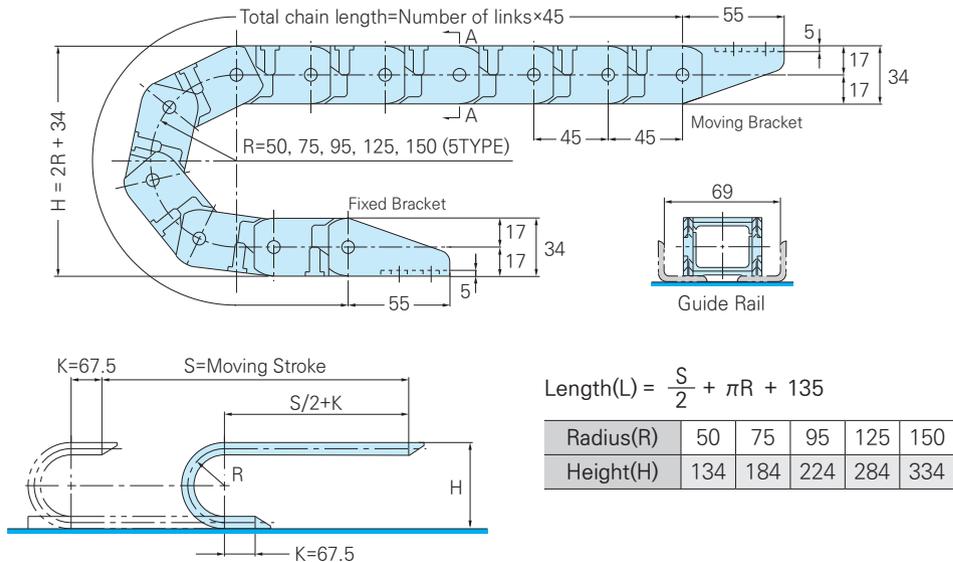
# HSP 0450-1B

HSP 0450-1B 제품은 기존제품으로  
신형인 HSP 0450-1BN으로 권장합니다.

## ORDER EXAMPLE

HSP0450-1B 150R 2000L 3SETS  
Type Radius Length Q'ty

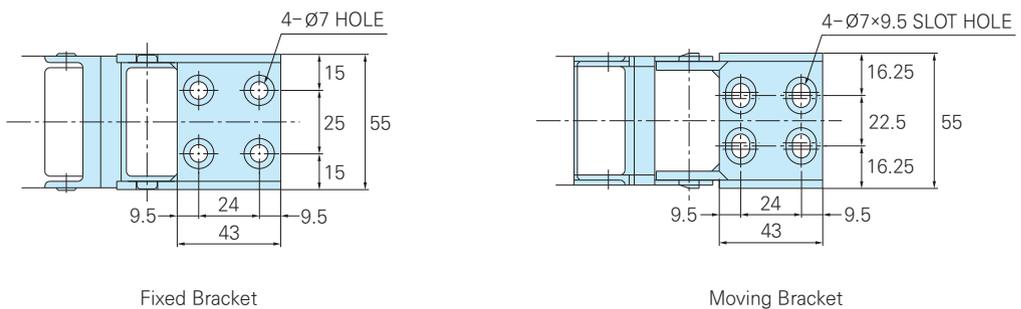
## Chain, Guide Rail



## Max. Cable Diameter Cross Section



## Brackets

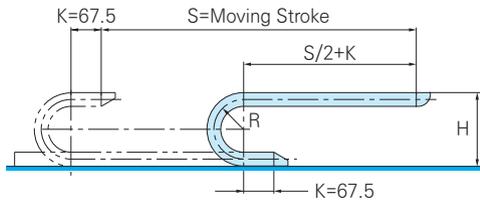
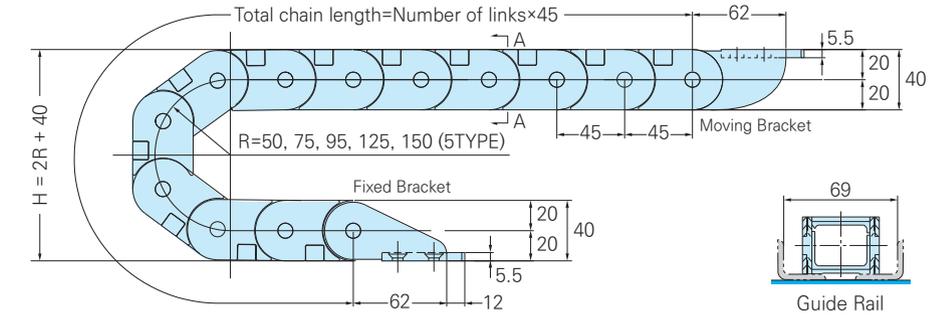


# HSP 0450-1BN

## ORDER EXAMPLE

HSP0450-1BN 150R 2000L 3SETS  
 Type Radius Length Q'ty

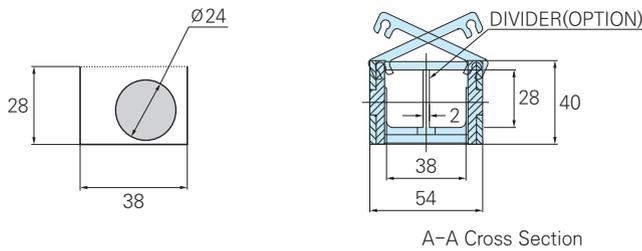
## Chain, Guide Rail



$$\text{Length}(L) = \frac{S}{2} + \pi R + 135$$

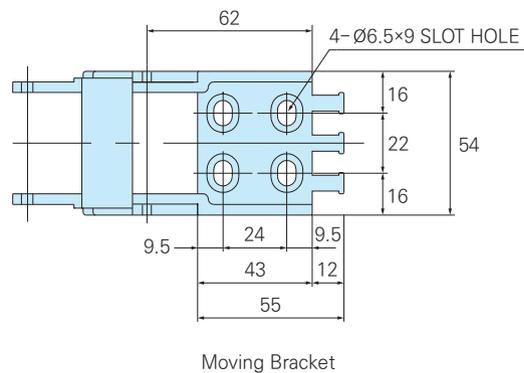
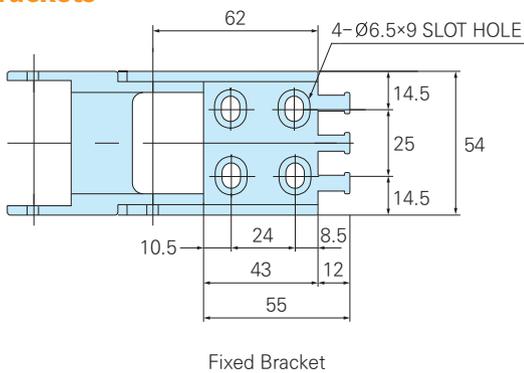
Radius(R)	50	75	95	125	150
Height(H)	140	190	230	290	340

## Max. Cable Diameter Cross Section



HSP 0450-1BNC  
 See page 86

## Brackets



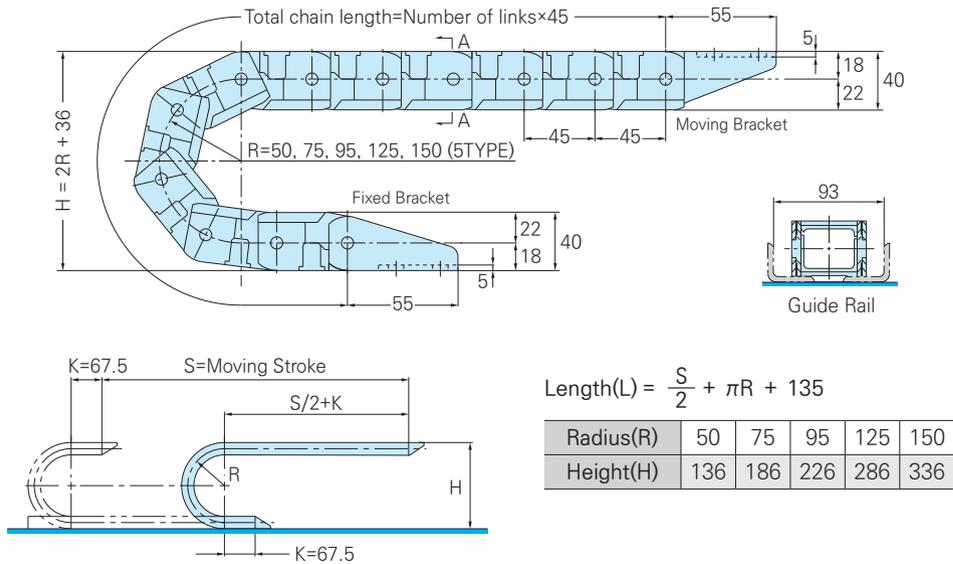
# HSP 0450-2B

HSP 0450-2B 제품은 기존제품으로  
신형인 HSP 0450-2BN으로 권장합니다.

## ORDER EXAMPLE

HSP0450-2B 150R 2000L 3SETS  
Type Radius Length Q'ty

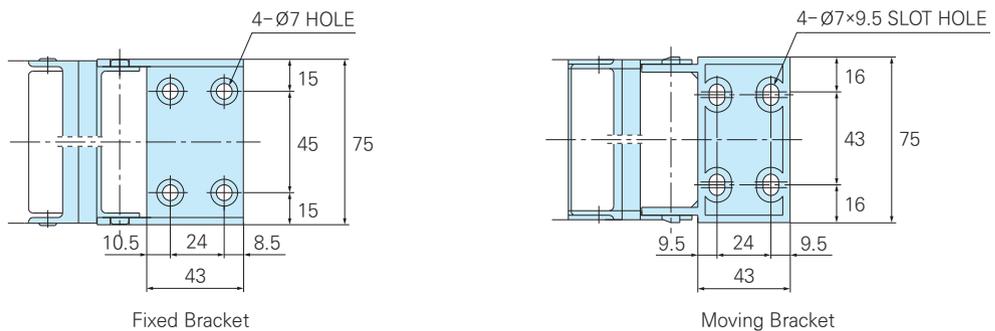
## Chain, Guide Rail



## Max. Cable Diameter Cross Section



## Brackets

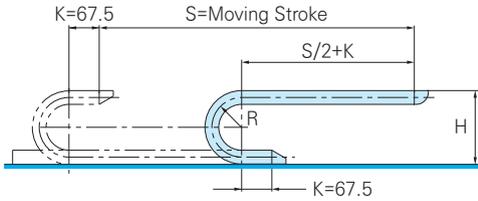
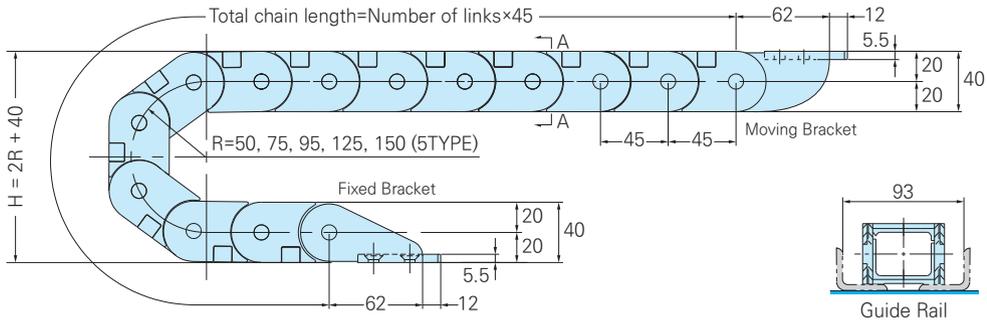


# HSP 0450-2BN

## ORDER EXAMPLE

HSP0450-2BN 150R 2000L 3SETS  
 Type Radius Length Q'ty

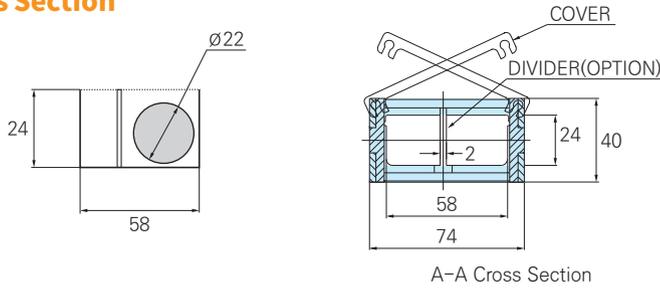
## Chain, Guide Rail



$$\text{Length(L)} = \frac{S}{2} + \pi R + 135$$

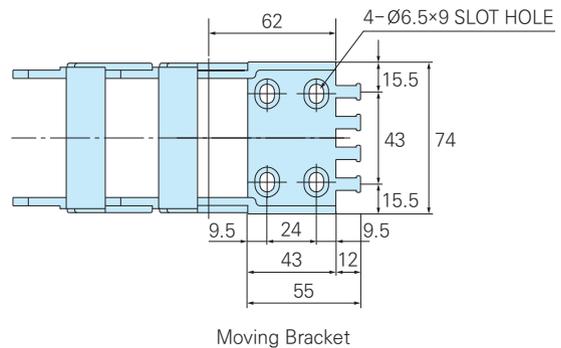
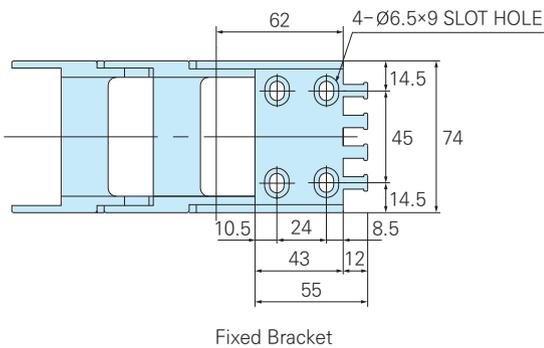
Radius(R)	50	75	95	125	150
Height(H)	140	190	230	290	340

## Max. Cable Diameter Cross Section



HSP 0450-2BNC  
 See page 87

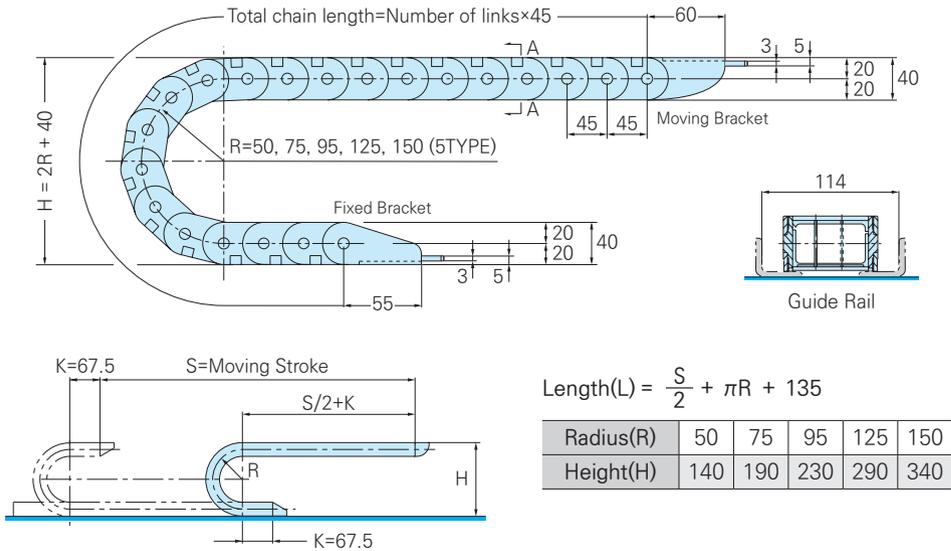
## Brackets



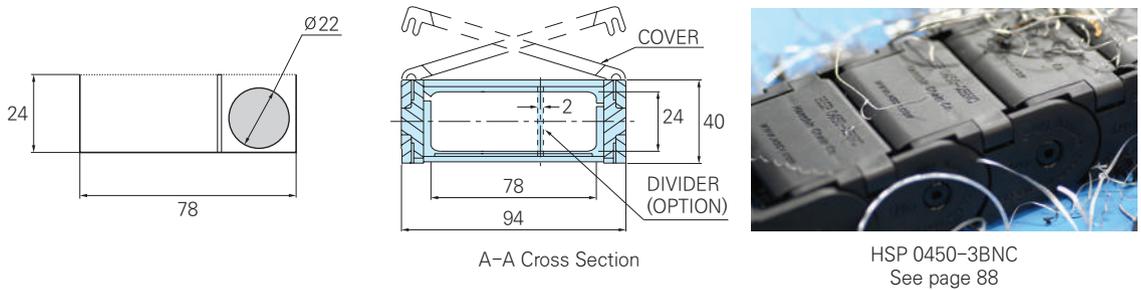
# HSP 0450-3BN

ORDER EXAMPLE			
HSP0450-3BN	50R	2000L	3SETS
Type	Radius	Length	Q'ty

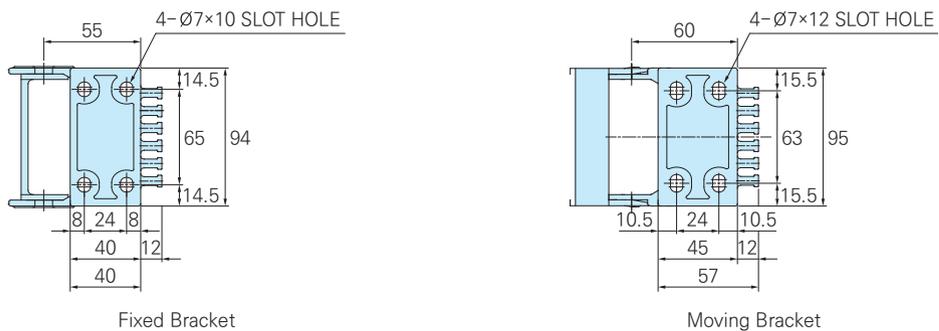
## Chain, Guide Rail



## Max. Cable Diameter Cross Section



## Brackets

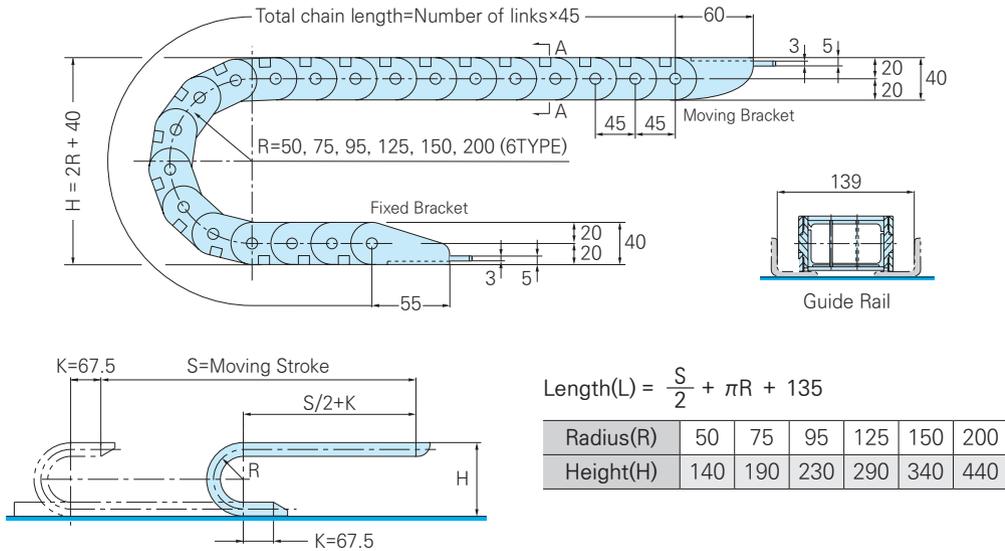


# HSP 0450-4BN

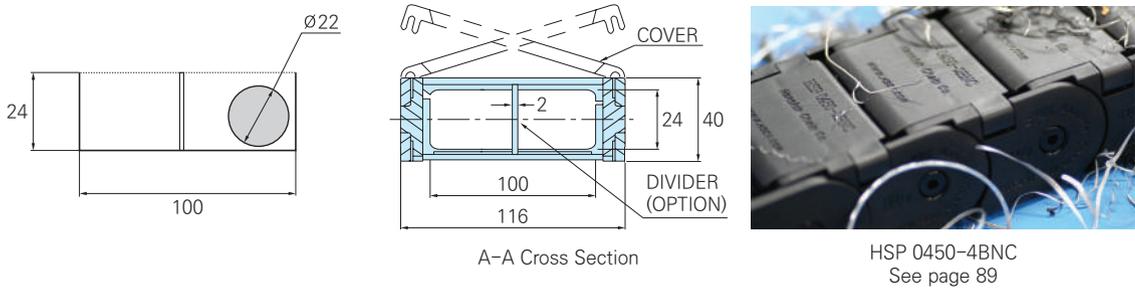
## ORDER EXAMPLE

HSP0450-4BN 150R 3000L 3SETS  
 Type Radius Length Q'ty

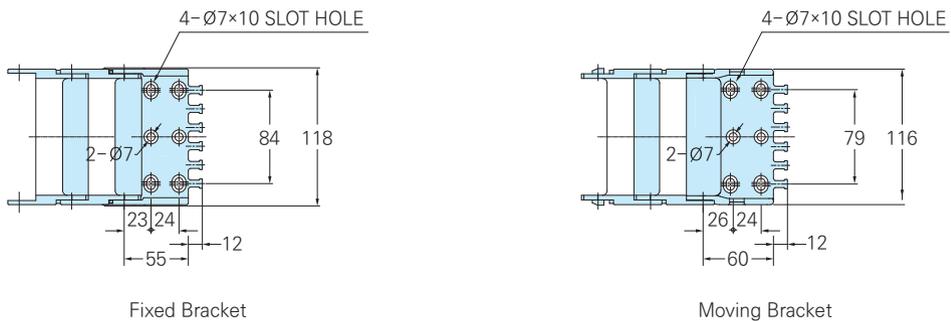
## Chain, Guide Rail



## Max. Cable Diameter Cross Section



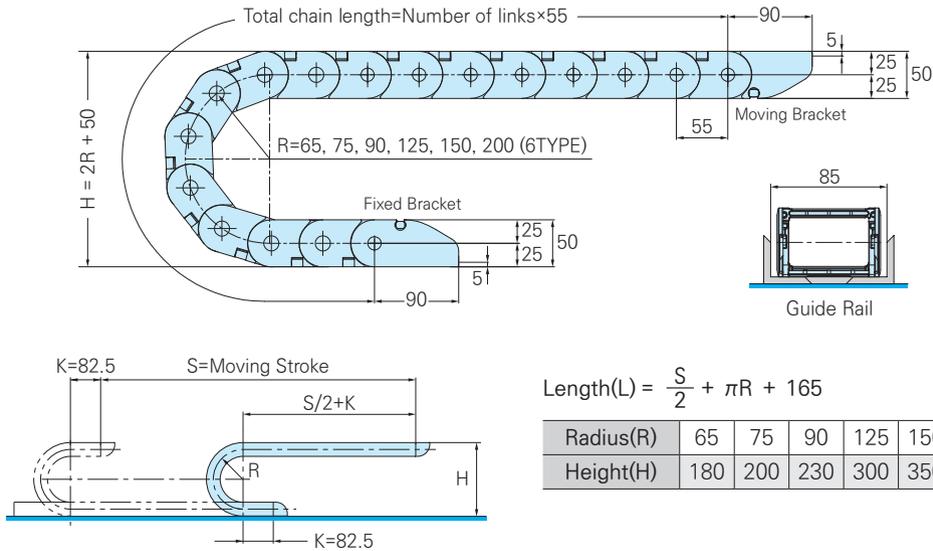
## Brackets



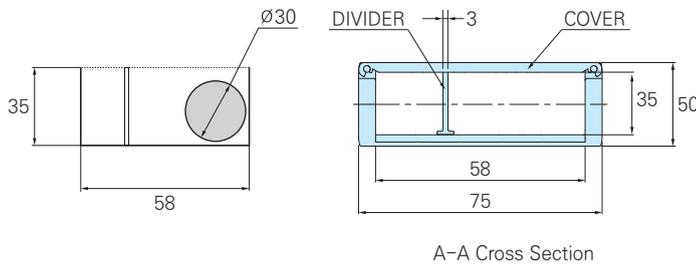
# HSP 0550-1BN

ORDER EXAMPLE			
HSP0550-1BN	90R	2000L	3SETS
Type	Radius	Length	Q'ty

## Chain, Guide Rail



## Max. Cable Diameter Cross Section



## How to assemble



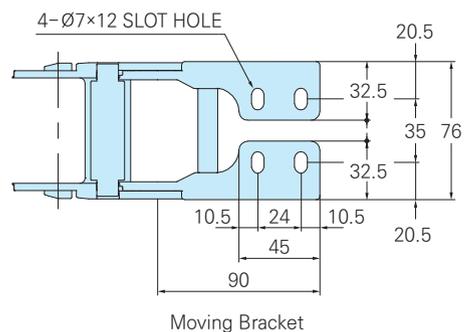
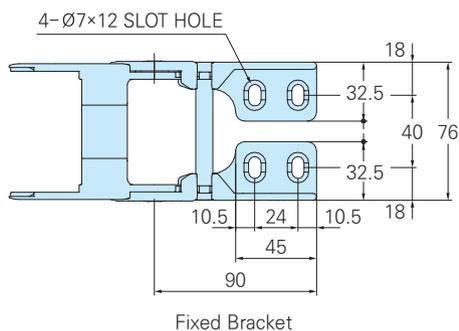
1. 우레탄 망치 등을 사용하여 동봉된 PL-BAR를 엔드 브라켓 홈에 끼워줍니다.



2. 전용 렌치나 기타 공구를 사용하여 90도로 돌려 PL-BAR를 고정 시켜 줍니다.

\* 전용 렌치는 요청하시면 제품 출고 시 무상으로 동봉됩니다.

## Brackets

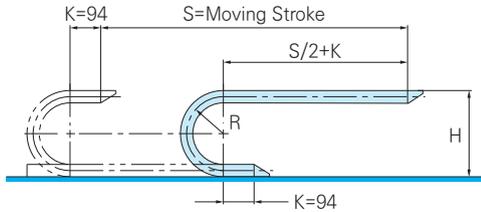
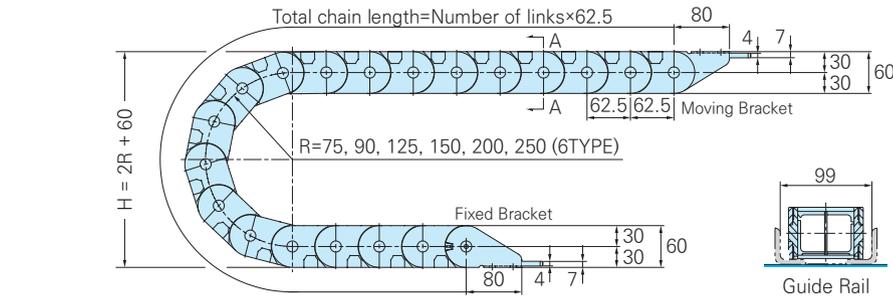


# HSP 0625-1BN

## ORDER EXAMPLE

HSP0625-1BN 90R 2000L 3SETS  
 Type Radius Length Q'ty

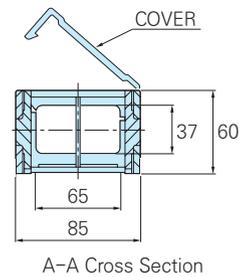
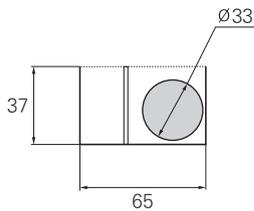
## Chain, Guide Rail



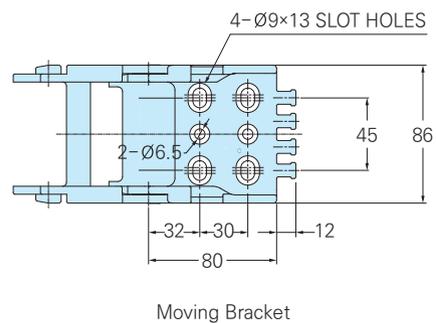
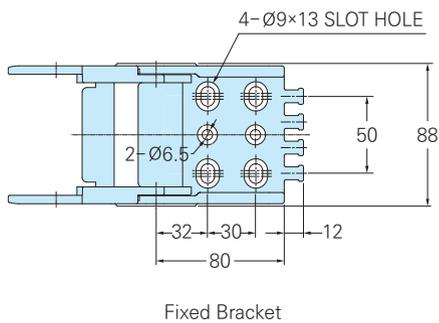
$$\text{Length}(L) = \frac{S}{2} + \pi R + 188$$

Radius(R)	75	90	125	150	200	250
Height(H)	210	240	310	360	460	560

## Max. Cable Diameter Cross Section



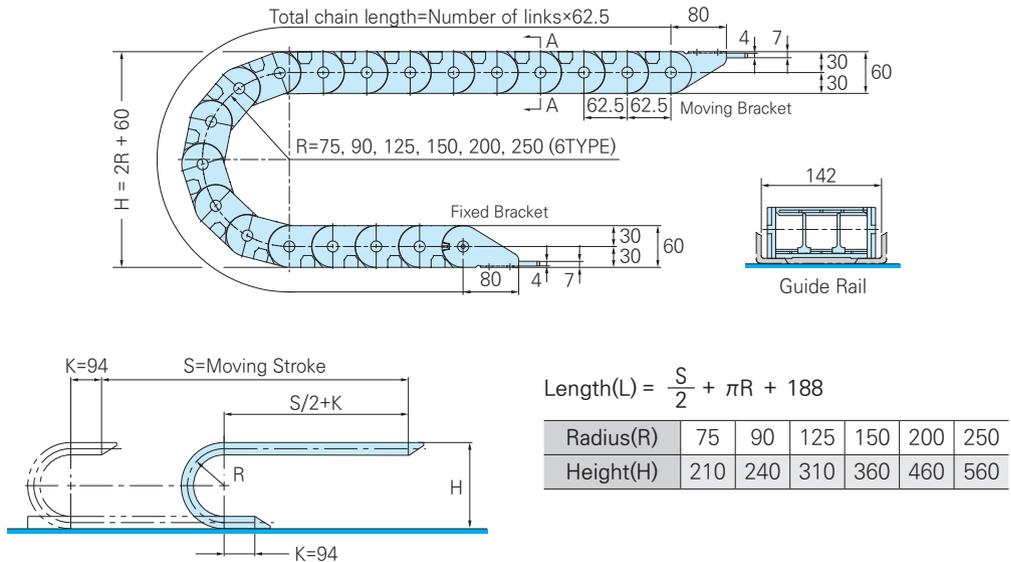
## Brackets



# HSP 0625-2BN

ORDER EXAMPLE			
HSP0625-2BN	90R	2000L	3SETS
Type	Radius	Length	Q'ty

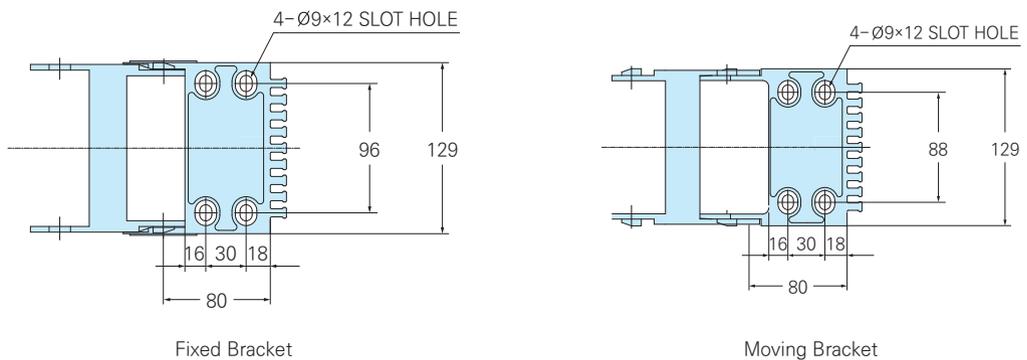
## Chain, Guide Rail



## Max. Cable Diameter Cross Section



## Brackets

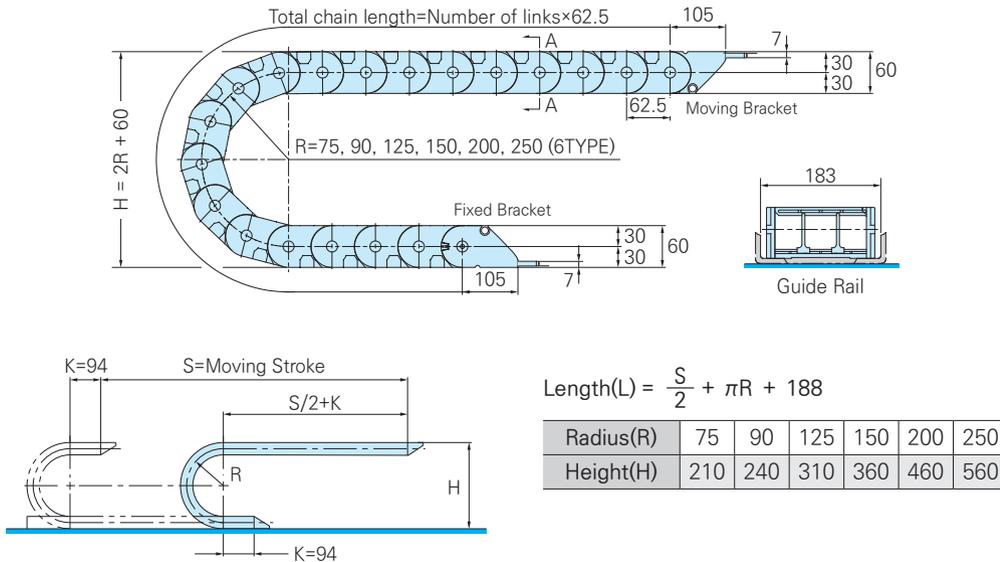


# HSP 0625-150 *NEW*

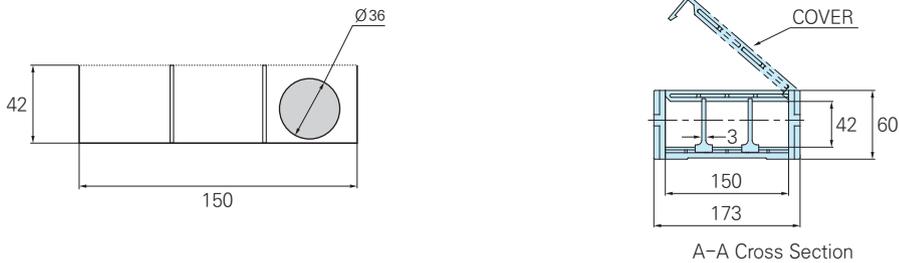
## ORDER EXAMPLE

HSP 0625-150 90R 2000L 3SETS  
 Type Radius Length Q'ty

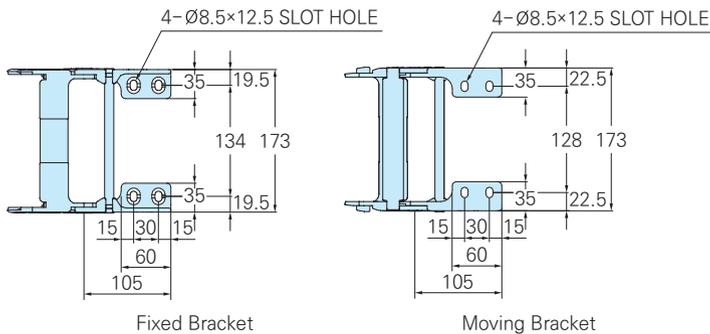
## Chain, Guide Rail



## Max. Cable Diameter Cross Section



## Brackets



1. 우레탄 망치 등을 사용하여 동봉된 PL-BAR를 엔드 브라켓 홈에 끼워줍니다.

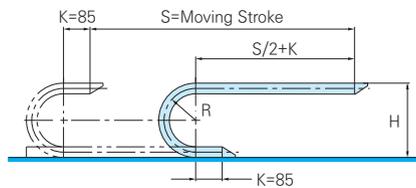
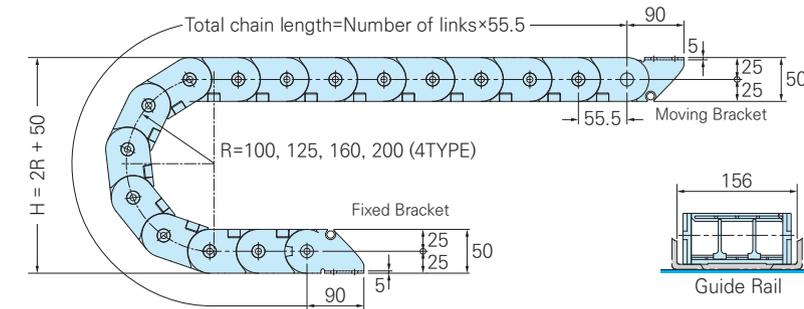


2. 전용 렌치나 기타 공구를 사용하여 90도로 돌려 PL-BAR를 고정 시켜 줍니다.  
 \* 전용 렌치는 요청하시면 제품 출고 시 무상으로 동봉됩니다.

# HSP 0555-B125

ORDER EXAMPLE			
HSP0555-B125 100R	2000L	3SETS	
Type	Radius	Length	Q'ty

## Chain, Guide Rail

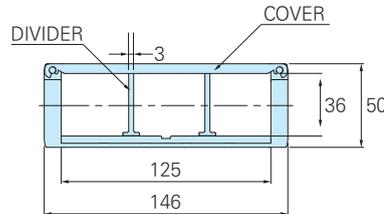
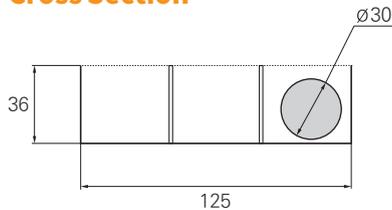


$$\text{Length}(L) = \frac{S}{2} + \pi R + 170$$

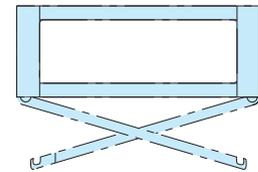
Radius(R)	100	125	160	200
Height(H)	250	300	370	450

\*HSP 0555, 0665(왼쪽)는 반밀폐이며 HSC 0555, 0665(오른쪽)는 완전 밀폐입니다.  
\*두 타입 모두 커버가 안쪽에서 열립니다.  
\*두 타입 모두 바깥 부분은 완전 밀폐입니다.

## Max. Cable Diameter Cross Section



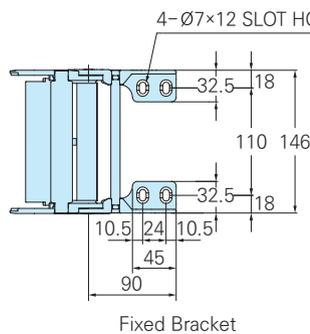
A-A Cross Section



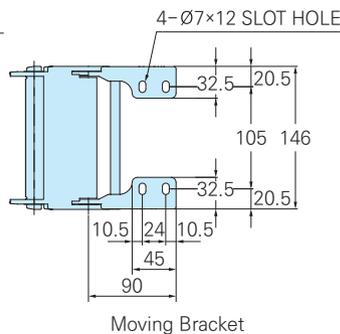
Openable Lower Cover

## Brackets

(Plastic)



Fixed Bracket



Moving Bracket



1. 우레탄 망치 등을 사용하여 동봉된 PL-BAR를 엔드 브라켓 홈에 끼워줍니다.

2. 전용 렌치나 기타 공구를 사용하여 90도로 돌려 PL-BAR를 고정 시켜 줍니다.

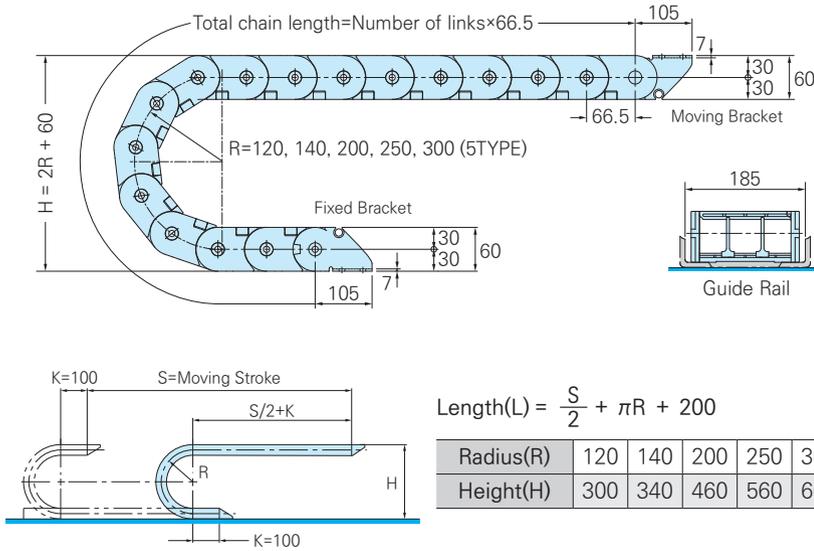
\* 전용 렌치는 요청하시면 제품 출고 시 무상으로 동봉됩니다.

# HSP 0665-B150

## ORDER EXAMPLE

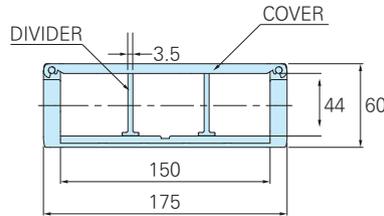
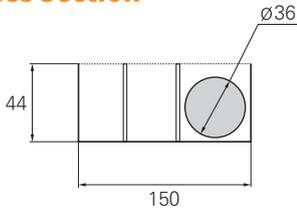
HSP0665-B150 120R 2000L 3SETS  
 Type Radius Length Q'ty

## Chain, Guide Rail

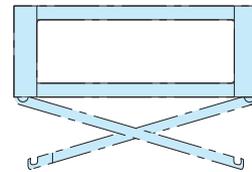


\*HSP 0555, 0665(왼쪽)는 반밀폐이며  
 HSC 0555, 0665(오른쪽)는 완전 밀폐입니다.  
 \*두 타입 모두 커버가 안쪽에서 열립니다.  
 \*두 타입 모두 바깥 부분은 완전 밀폐입니다.

## Max. Cable Diameter Cross Section



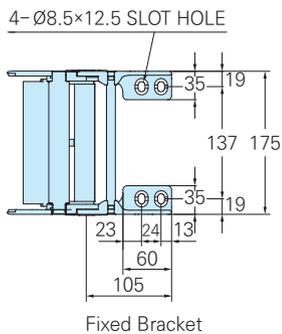
A-A Cross Section



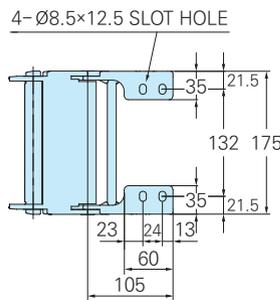
Openable Lower Cover

## Brackets

(Plastic)



Fixed Bracket



Moving Bracket



1. 우레탄 망치 등을 사용하여 동봉된 PL-BAR를 엔드 브래킷 홈에 끼워줍니다.

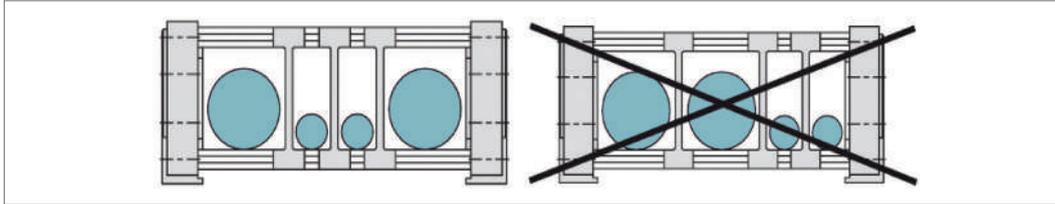


2. 전용 렌치나 기타 공구를 사용하여 90도로 돌려 PL-BAR를 고정 시켜 줍니다.  
 \* 전용 렌치는 요청하시면 제품 출고 시 무상으로 동봉됩니다.

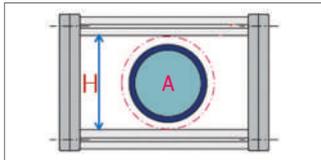
## 기술 노트 Technical Note

### ▶ 중량 밸런스

Cable 및 Hose 삽입 시 직경과 중량을 고려하여 배치하여야 안정적인 주행을 보장할 수 있습니다. 밸런스가 맞지 않을 경우 구동 중 쓸림이 발생하거나, 이탈할 수 있으므로 Cable 포설 전 반드시 확인하여야 합니다.



### ▪ Cable 및 Hose의 적절한 용적률



	Cable	Pneumatic Hose (공압 호스)	Hydraulic Hose (유압 호스)
H(height)	$H \geq A \times 1.1$	$H \geq A \times 1.15$	$H \geq A \times 1.2$

### ▪ RoboChain 전용소재 Robo-S Mate(POLYAMID) 내 화학성 Report

약품		약품	
아세트(수용성)	○	포름알데히드(수용성)	△
포름산(수용성)	△	수용성기름	○
가솔린	○	메틸아세테이트	○
벤젠	○	우유	○
붕산(수용성)	△	탄산나트륨	○
염수소	X	기름, 윤활유	○
크롬산(수용성)	△	프로판가스	○
디젤유	○	수은	○
아세트산	○	염산	△
식용유	○	잉크, 인쇄잉크	○

○ : 우수 △ : 조건부 사용 X : 사용불가

# 응용예 Application Examples



# 능력선도(HSP) Capability Graph

