

# RACK JACK

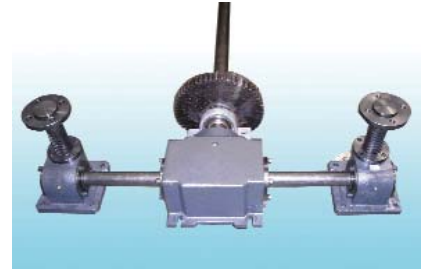
(Motorized Linear Unit)



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# 1. 구조및성능(Structure and Efficiency)

- 1) Rack gear와 pinion gear로 이루어져 있으며, pinion gear를 회전 운동 시키면 rack gear가 직선운동을 하는 구조이다.
- 2) 동력 손실이 거의 없으므로, 높은 기계 효율을 얻을 수 있다.
- 3) 구조가 간단하며 하자 요인이 적고, 하자보수가 용이하다.
- 4) Screw jack은 jack 자체에서 감속이 이루어져 승하강 속도가 늦어 정밀한 중간 제어나 고 중량물의 승하강시 적합한 구조인 반면, rack jack은 rack gear와 pinion gear가 직접 연결되어 고속의 직선 운동을 얻을 수 있으며, Servo motor 를 사용하면 정밀한 중간 제어도 가능하다. 또한, screw jack에 비하여 제품 단가가 낮아 경제적이다.



- 1) It is composed of Rack and pinion gear and how it works is that the pinion gear's rotation makes straight move of rack gear.
- 2) Most of power from the machine can be used so its efficiency can be obtained as its maximum
- 3) Simple structure, easy maintenance
- 4) Screw jack rotating rate decrease is occurred in itself so up-down velocity is slower therefore it is recommended to use in precise controlling in the middle of process or moving up and down of heavy objects. Rack jack: direct connection between rack and pinion gears makes available to obtain high speed straight work and it also can be used in precise control in the middle of the process with servo motor, besides, the price of screw is lower than screw jack's

# 2. Rack jack의 종류(Type of Rack jack)

■ Rack jack은 크게 일반 type과 clean type으로 나눈다

- 일반 TYPE : 일반적인 산업용 설비에 사용되는 model로 외관은 painting과 흑착색으로 되어 있다.
- CLEAN TYPE : 반도체, LCD, PDP 생산 설비, 의료, 식품 생산설비에 사용되는 model로 부품의 다양한 후처리 방법이 있으며 clean room의 조건에 따라 다양한 model이 있다.

- 1) RJ Series : 기본적인 분리형 model로 RJ 10~RJ 40 까지의 표준 model이 있으며 입력축의 방향에 따라 세가지로 나눈다 cylinder대용 actuator로 사용하며 자체 감속이 없어 빠른 속도의 이송이 가능하다.
- 2) RJ-4S Series : 기본적인 조합형 model로 RJ10-4S~RJ40-4S 까지의 표준 model이 있으며 사용조건에 따라 다양한 응용을 할 수 있다. power base의 SPM model의 허용 하중보다 많은 중량물을 승하강시킬때 사용한다.
- 3) RJ-4SB Series : RJ-4S model의 구동축에 miter box를 설치하여 motor를 직결로 사용할때 사용하는 model로, spur gear 나 sprocket이 사용되지 않으므로 clean room 환경에 적합하다.
- 4) RJ-4SH Series : RJ-4S model의 구동축에 worm reducer를 부착하여 motor를 직결로 취부하여 사용하는 model로, worm reducer의 감속비가 있으므로 일반 motor나 servo motor의 사용이 가능하다.

■ Rack jack is divided into two types of model: Clean and General

- General type: the model used in general industry device, is painted with black
- Clean type: the model used in facilities producing semi-conductor, LCD, PDP, medical and edible goods has a variety of disposal and it could be freely adapted by the form of the clean room

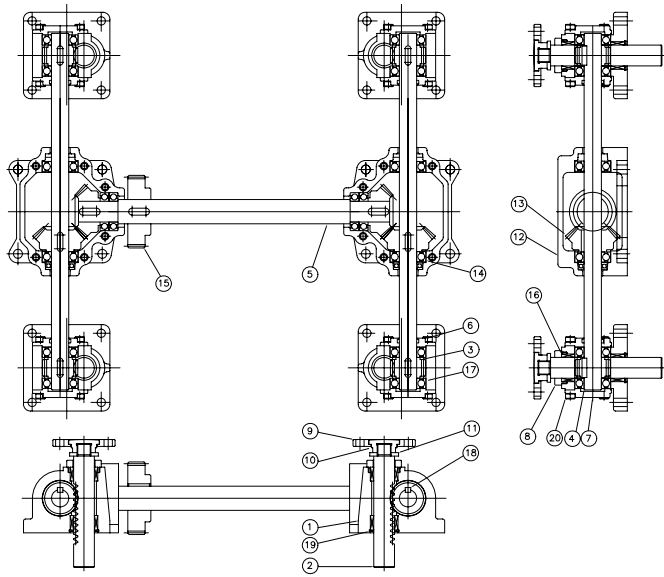
- 1) RJ series: basic separation available model. already introduced standardized model No. RJ 10~40 It is divided into 3 types. available for using as actuator of alternate for cylinder and also available for fast transform without speed reduction
- 2) RJ 4S series: basic assembling model Already introduced standardized model No. RJ 10-4S~40-4S It can be transformed in various ways. It is right for moving heavier one than its limitation of SPM model of power base.
- 3) RJ 4SB series: a model when using the motor in direct way with installation of miter box on drive shaft of RJ-4S model. Suitable for clean room due to the fact that sprocket or spur gear is not used in process
- 4) RJ-4SH Series: a model when using the motor in direct way with installation of worm reducer on drive shaft of RJ-4S model. Available for ordinary motor or servo motor can be used due to the fact that there is reducing rate of the worm reducer

# 3. 내부구조도 (Inside constructional draw)

[RJJOOR(L)]

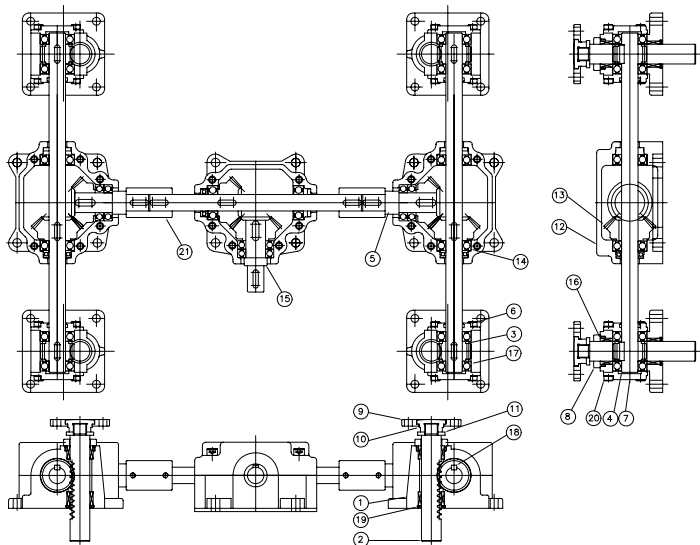
NO	품명 (Names of goods)	재질 (The material)	수량 (Q'ty)
1	Gear box	AL/FCD25	1
2	Rack gear	S45C	1
3	Pinion gear	S45C	1
4	Shaft	S45C	1
5	Shaft cover	AL/S45C	1
6	Bearing cover	AL/S45C	1
7	Rack gear cover	S45C	1
8	Flange	S45C	1
9	Flange joint	S45C	1
10	Lock nut	S45C	1
11	Oiless bearing/DU bush	#500	2
12	Ball bearing	SUJ	2
13	Key	S45C	1
14	Key	S45C	1
15	Stop ring	SWP	1
16	Wrench bolt	S45C	6

[RJOO-4S]



NO	품명 (Names of goods)	재질 (The material)	수량 (Q'ty)
1	Gear box	AL/FCD25	4
2	Rack gear	S45C	4
3	Pinion gear	S45C	4
4	Shaft B	S45C	2
5	Shaft A	S45C	1
6	Shaft cover	AL/S45C	4
7	Bearing cover	AL/S45C	4
8	Rack gear cover	S45C	4
9	Flange	S45C	4
10	Flange joint	S45C	4
11	Lock nut	S45C	4
12	Bevel gear box	AL/FCD25	2
13	Bevel gear	S45C/SCM21	4
14	Bearing	SUJ	10
15	Spur gear/sprocket	S45C	1
16	Oiless bearing/DUbush	#500	8
17	Ball bearing	SUJ	8
18	Key	S45C	9
19	Stop ring	SWP	4
20	Wrench bolt	S45C	36

[RJOO-4SB]



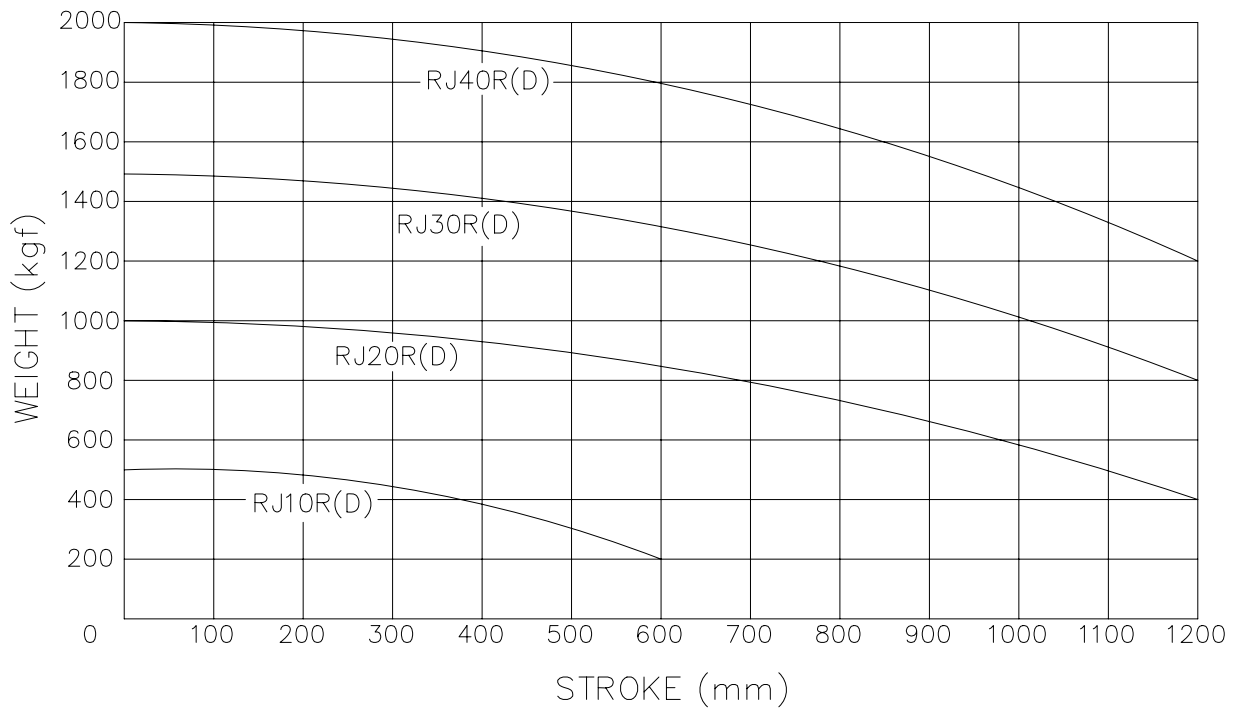
NO	품명 (Names of goods)	재질 (The material)	수량 (Q'ty)
1	Gear box	AL/FCD25	4
2	Rack gear	S45C	4
3	Pinion gear	S45C	4
4	Shaft B	S45C	2
5	Shaft A	S45C	1
6	Shaft cover	AL/S45C	4
7	Bearing cover	AL/S45C	4
8	Rack gear cover	S45C	4
9	Flange	S45C	4
10	Flange joint	S45C	4
11	Lock nut	S45C	2
12	Bevel gear box	AL/FCD25	3
13	Bevel gear	S45C/SCM21	6
14	Bearing	S45C	15
15	Input shaft	S45C	1
16	Oiless bearing/DUbush	#500	8
17	Ball bearing	SUJ	8
18	Key	S45C	11
19	Stop ring	SWP	4
20	Wrench bolt	S45C	42
21	Coupling	S45C	2

## 4. 사용용도(USE)

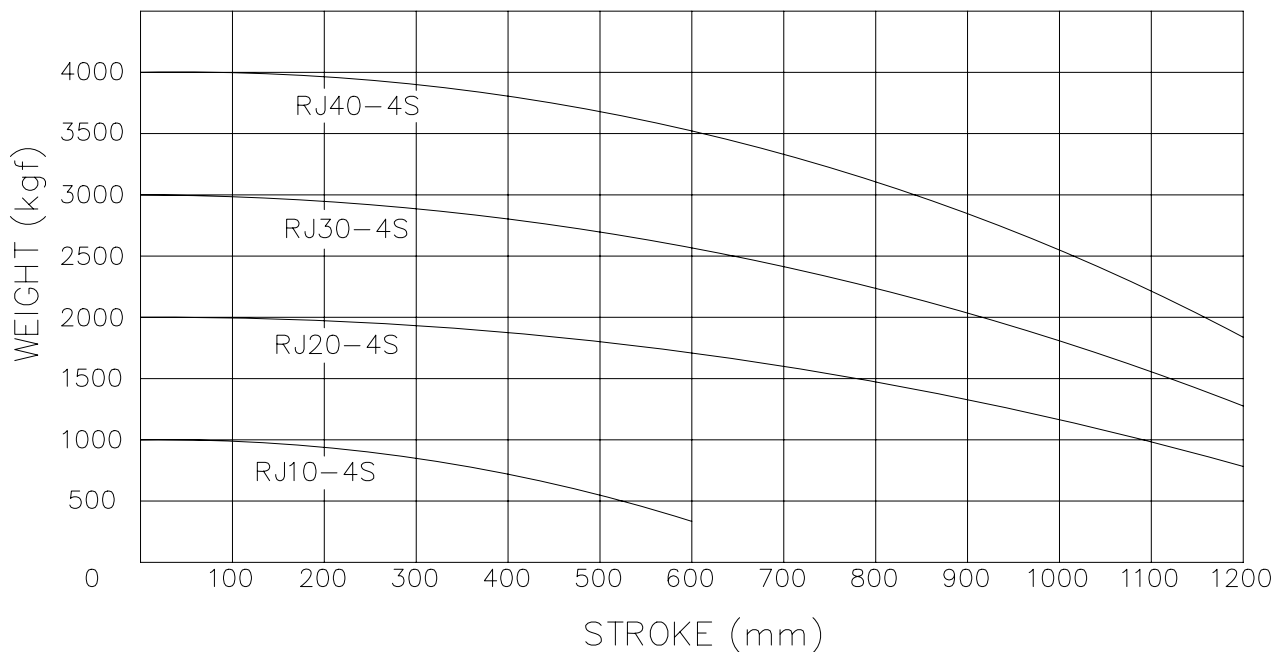
일반 TYPE(GENERAL TYPE)	CLEAN TYPE
1) Conveyor up-down diverter 2) Table lifter 3) 일반(General) up-down lifter 4) 자동창고용 입.출고 home position lifter (in/out home position lifter for automatic cargo) 5) Fork lifter 6) 유압 cylinder 대용actuator (hydraulic cylinder substitution actuator) 7) 기타산업기기(Etc.. industrial equipment)	1) FPD Conveyor up-down unit 2) Glass pin up/down unit 3) Clean room, in up/down unit 4) 의약품 제조설비 (medical supplies making equipment) 5) 식품제조설비(Food supplies making equipment)

## 5. RJ Series 선정표(Selecting method)

(1) RJOOR(D) TYPE



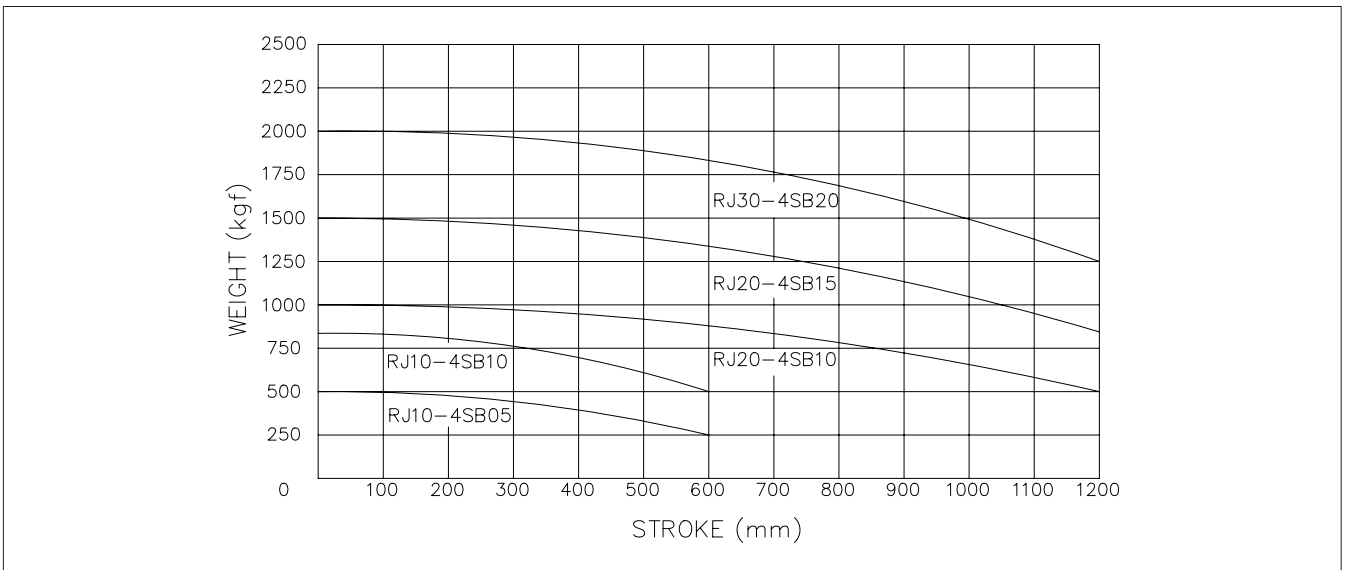
(2) RJO0-4S TYPE



### ■ 그래프를 이용한 선정방법(Product Selection Using a Graph)

사 양(Specification)	선정방법(Selecting method)
1. 하중(Weight) : 1500 (kgf) 2. Stroke : 280 (mm) 3. 축간거리 (Shaft Pitch) (L×W): 800 × 600 (mm) 4. 속도(Speed): 4 (m/min) 5. RJO0-4S type	RJO0-4S type 그래프를 보면 하중 1500kg과 280 stroke의 교차점이 그래프 하측에 위치 하므로, RJ20-4S model을 선정한다.  Looking at graph of RJO0-4S type, intersection point of 1500kg and 280 strokes is located on the under the graph therefore, RJ20-4S is selected

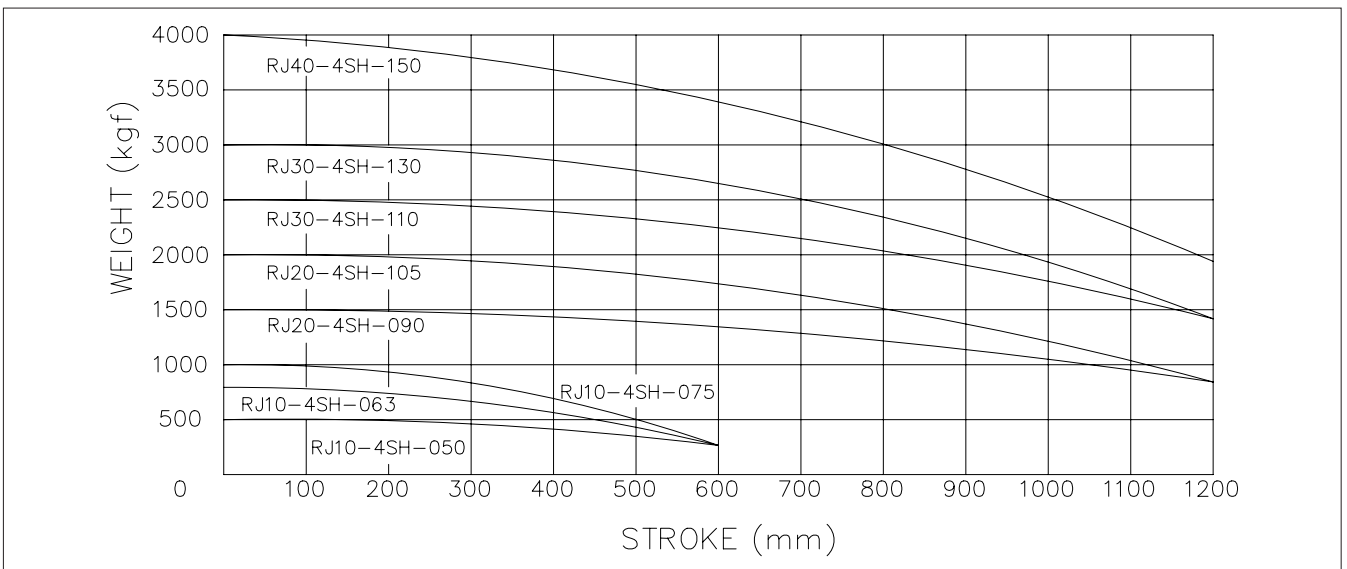
## 6. RJ-B Series 선정표(Selecting method)



### ■ 그래프를 이용한 선정방법(Product Selection Using a Graph)

사 양(Specification)	선정방법(Selecting method)
1. 하중 (Weight) : 1000 (kgf) 2. Stroke : 300 (mm) 3. 축간거리 (Shaft Pitch) (L × W): 1200 × 1000 (mm) 4. 속도 (Speed): 3 (m/min) 5. RJ-B type	위의 그래프를 보면 1000kg과 300 stroke의 교차점이 RJ20-4SB10 model 그래프의 하측에 위치하므로 RJ20-4SB10 model 을 선정한다.  Looking above, intersection point of 1000kg and 300 strokes is located on the under RJ20-4SB10 model graph, therefore, RJ20-4SB10 is selected

## 7. RJ-H Series 선정표(Selecting method)



### ■ 그래프를 이용한 선정방법(Product Selection Using a Graph)

사 양(Specification)	선정방법(Selecting method)
1. 하중 (Weight): 1400 (kgf) 2. Stroke : 200 (mm) 3. 축간거리 (Shaft Pitch) (L × W): 1300 × 1000 (mm) 4. 속도 (Speed): 4 (m/min) 5. RJ-H type	위의 그래프를 보면 1400kg과 200Stroke의 교차점이 RJ20-4SH-090 model 그래프의 하측에 위치하므로 RJ20-4SH-090 model 을 선정한다.  Looking above, intersection point of 1400kg and 200 strokes is located on the under the graph therefore, RJ20-4SH-090 is selected

## 8. Motor 선정방법(Selection mode of Motor)

[사 양(Spec)]

① 하 중(Weight): 1200(kgf)

② 속도(Speed): 4(m/min)

P=POWER(kw)	m=중량(Weight)kgf	V=속도(Speed)m/sec	n=효율(Efficiency)	g=9.81
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$$\text{HOISTING P} = \frac{m \times g \times v}{n \times 1000}$$

$$P = \frac{1200 \times 9.81 \times 0.0667}{0.8 \times 1000}$$

P = 0.98(kw) 이므로 Geared motor는 그 이상 용량의 break type으로 사용한다.

P=0.98(kw) so break type of geared motor having capability more than 0.98 is used

## 9. 속도 계산식(Speed Calculation)

예) RJ20-4S model을 사용하여 속도는 4m/min으로 하고 Geared Motor는 감속비 1/60로 하고 Spur Gear를 사용한다  
[계 산 식]  $V = 1750 \times 1/60 \times 39/48 \times 0.169 = 4.0\text{m/min}$  이므로 Rack Jack 구동 shaft의 spur gear는 Z=48로 선정하고, Motor측 spur gear는 Z=39로 선정한다.(0.169은 shaft 1회전당 상승거리(mm)를 m로 환산한 치수임)

Ex) Assuming that using RJ20-4S, speed is 4m/min and speed reduce rate is 1/60 then use spur gear

[Calculation]  $V = 1750 \times 1/60 \times 39/48 \times 0.169 = 4.0\text{m/min}$  so the value (Z) on spur gear of rack jack drive is fixed to 48 and the value (Z) on spur gear of motor is fixed to 39 (0.169 is converted value from rising range (mm) per a rotation to meter)

## 10. Rack Jack과 Power base의 차이점(Comparison)

Rack Jack은 직접적인 구동원으로 설계되어있어 Gear의 Size가 Power Base에 비해 크며, Rack Jack의 단품 Model(RJ00R, RJ00L, RJ00D)로도 사용이 가능하다. 또한 Geared Motor나 Servo Motor를 부착하여 사용하는 Motor 구동방식이다. 이에 비해 Power Base는 직접적인 구동원이 아닌 LM Guide나 Ball Bush의 대용품으로 Up/Down의 Guide역할만을 하는 Guide Unit이며 1개의 Gear Box로는 Guide 역할을 하지 못한다. Rack Jack은 최소 용량이 max 1,000kg(RJ10-4S-100ST)이어서 300kg 미만의 화물을 Motor 방식으로 Up/Down 시키기에는 Over Spec 이고 화물 중량에 비해 Lifter의 구성 비용이 많이 들어 이를 보완하기 위해 Power Base의 Up/Down Gear Box를 그대로 사용하고 추가로 Rack Jack 의 Bevel Gear Box를 부착하여 만든 Model이 SPM, SPMB Model이다. 여기에 상승후 자중으로의 낙하방지를 위해 Bevel gear box가 아닌 Worm Reducer를 부착한 Model이 SPMH Model이다. 결론적으로 구동원을 Air Cylinder나 Hydraulic Cylinder를 사용할경우는 Power Base Model을 사용하고, Motor를 사용할 경우에는 Rack Jack을 사용한다. 하지만 화물중량 300kg 미만의 용도로 사용할경우는 Rack Jack에 비해 상대적으로 저렴한 Power Base의 SPM, SPMB, SPMH Model을 사용한다. 여기서 주의할점은 SPM, SPMB, SPMH Model은 Guide 용도로 사용시의 허용하중하고는 많은 차이가 있으므로 선정시 필히 선정 그래프나 선정방법을 확인하고 선정하여야한다. 예를들어 Power Base의 SP900F-100ST은 허용하중이 900kg이지만 SPM900F-100ST은 허용하중이 120kg 이다.

Rack jack is designed as an actuator so the size of gear is bigger than power base's and also it is used in independent way such as RJ00R, RJ00L, RJ00D And also motor driving system which is patched with geared or servo motor. On the other hands, power base is not an actuator but alternative of LM guide or Ball bush so it plays just a role of guidance to move an object up and down therefore, a gear box can't be fully functioned as a guidance by its own. The minimum capacity of Rack jack is max 1000kg (RJ10-4S-100ST) so objects less than 300 kg can't be moved up and down and also the cost to making lifter is much higher. To add up to the flaws, use the up and down gear box on power base unchanged and add bevel gear box to rack jack of SPM, SPMB model. Attaching worm reducer not bevel gear box to the model explained above is SPMH to avoid drop by itself after rising. In other words, when using actuator as air cylinder or hydraulic cylinder, power base model is appropriate and when using motor, rack jack is appropriate. But when the object weighs less than 300kg, SPM, SPMB and SPMH is more helpful for economic aspect than rack jack. **Caution here!** When using SPM, SPMB, SPMH as a guide there are huge gap between capable weight limit and limit used as guide so referring graph or selection manual is strongly required. For example, capable weight limit of SP900F-100ST of power base is 900kg but capable weight limit of SP900F-100ST is 120kg.

구조 (Structure)	 Rack/Pinion Gear 방식으로 Pinion Gear를 회전 운동 시키면 Rack Gear가 직선운동을 하는 구조이다. Making pinion gear rotate by how Rack/pinion gear works then rack gear works through straight way.	 Rack/Pinion Gear 방식으로 별도의 구동원 (Cylinder, Jack)이 Power Base의 Rack Gear를 Up/Down시키면, Power Base의 Torque Bar가 회전하며 동조를 맞추어주는 구조이다. Extra actuator (cylinder, Jack) moves rack gear on power base up and down with the way how rack/pinion gear works, and then torque bar balances in between by rotating
효율 (Efficient)	동력 손실이 거의 없으므로 높은 기계 효율을 얻을 수 있다. Work loss is hardly occurred so it is very efficient.	LM Guide나 Ball Bush보다 마찰계수가 높아 Actuator의 선정시 이론효율의 70% 이하로 선정한다. Because its friction coefficient is higher than LM guide or Ball bush when selecting the model, choose the model less than 70% of theoretical efficiency.
SPEED	권장 Speed : 8 m/min 이내 (Encouragement Speed : 8 m/min) Max Speed : 15 m/min Recommended speed: less than 8m/min Maximum speed: 15m/min It is Rack & Pinion form so the faster the speed the more noisy it is.	
하자보수성 (Maintenance)	구조가 간단하여 분해 조립이 쉽고, 규격품으로 부품은 재고를 항상 보유하고 있어 빠른 대응이 가능하다. Simple structure, Easy to dis/assemble, Parts can be always substituted swiftly because it is standardized.	
장점 (Merits)	Rack Gear가 수직으로 Up/Down을 하므로 승하강시 하자 발생 요인이 적고 정확한 승하강 및 위치 제어에도 용이하다. 또한 다양한 응용방법으로 Lifter를 구성할 수 있다. Because the rack gear moves up and down in perpendicular way, the possibility of damage is minimized and fixing the location of lifting or loading is easy. And also there are a lot of ways of applications in composing the lifter.	편리함을 받는 조건에서도 좌우 동조가 이루어지며 원활한 Up/Down을 할 수 있다. Lifter의 구성시 Power Base 외에 별도의 Guide 장치물이 필요없어 설계가 쉬우며 Lifter의 구조가 간단해져 보수시에도 용이하다. Even partial weighing on a side, its balance is never broken so smooth up and down move is available. Composing of the lifter, nothing is necessary but power base so design is much easier and also maintenance is easier
단점 (Demerits)	빠른 Speed에는 부적합하며 자체 높이가 Stroke+기름 높이가 있어 이므로 공간 차지가 많으며 Rack Gear의 특성상 2.5m 이상의 Stroke에는 적용이 불가능하다. It not appropriate for fast speed and lots of rooms is needed because of the need for extra room for stroke, in particular, it can't be applied to the rack gear having over 2.5 m length	LM Guide에 비해 부드러운 작동, 진동, 소음면이 떨어진다. Comparing LM guide, smooth driving, but vibration and noise can be more than LM guide

## 11. 외관 및 후처리 (Exterior & After treatment)

품명 Names of goods	표준 Standard	녹방지용 Blunt prevention	크린룸용 Clean room	반도체장비용 Semiconductor equipment	식품회사용 Food company
Rack gear box Bevel gear box	소부도장 (painting)		분체도장 (painting)		
Rack gear	흑착색 (black coloring)	크롬도금 (chrom plating)	경질크롬도금/레이던트 (hard chrom plating/Raydent)	sus	
Shaft	흑착색 (black coloring)	크롬도금 (chrom plating)	경질크롬도금 (hard chrom plating) 무전해 니켈도금 (non-electrolytic nickel plating)	sus	
Flange	흑착색 (black coloring)	크롬도금 (chrom plating)	무전해 니켈도금 (non-electrolytic nickel plating)	sus	
Pinion gear	열처리 (heat treatment)	열처리 (heat treatment)	열처리/레이던트 (heat treatment/Raydent)	sus	
Bearing	일반 (general)	일반 (general)	일반 (general)	일반/sus (general/sus)	sus
Bolt	일반 (general)	도금볼트 (plating)	sus bolt	sus bolt	sus bolt

## 12. 표준 사양 (General Specification)

[RJ Series]

MODEL	RJ10R(D)	RJ20R(D)	RJ30R(D)	RJ40R(D)	RJ10-4S	RJ20-4S	RJ30-4S	RJ40-4S
구동원 (Drive)	MOTOR							
랙축경및모듈 (mm) (Diameter of rack gear and module)	Φ30×M2	Φ40×M3	Φ50×M3.5	Φ60×M4	Φ30×M2	Φ40×M3	Φ50×M3.5	Φ60×M4
Pinion gear 잇수 (value) (z)	21	18	20	20	21	18	20	20
Bevel gear module × 잇수 (value) (z)					M3×25T	M3×25T	M4×25T	M5×30T
Spur gear module					M3	M4	M5	M5
효율 (Efficiency)	0.90				0.80		0.70	
최대속도 (Max speed)	8,000				7,000			
입력축 1회전당 랙축진행 (1 rev' lead)	131.9	169.6	219.9	251.4	131.9	169.6	219.9	251.4
Stroke 여유 (Stroke limit) (mm)	+10 over							

[RJ00-4SB Series]

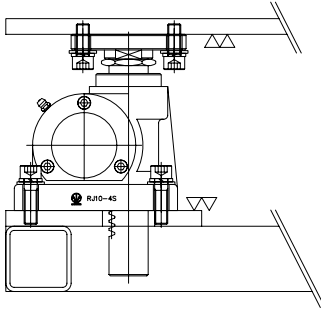
MODEL	RJ10-4SB05	RJ10-4SB10	RJ20-4SB10	RJ20-4SB15	RJ30-4SB20
구동원 (Drive)	MOTOR				
랙축경및모듈 (mm) (Diameter of rack gear and module)	Φ30×M2	Φ40×M3	Φ50×M3.5	Φ60×M4	Φ30×M2
Pinion gear 잇수 (value) (z)	21	21	18	18	20
Bevel gear module × 잇수 (value) (z)/main	M3×25T	M3×25T (SCM21)	M3×25T (SCM21)	M4×25T	M6×20T
Bevel gear module × 잇수 (value) (z)/sub	M3×25T	M3×25T	M3×25T (SCM21)	M3×25T	M5×20T
효율 (Efficiency)	0.7			0.6	
최대속도 (Max speed)	7,000				
입력축 1회전당 랙축진행 (1 rev' lead)	131.9	131.9	169.6	169.6	219.9
Stroke limit (여유) (mm)	+10 over				

[RJ00-4SH Series]

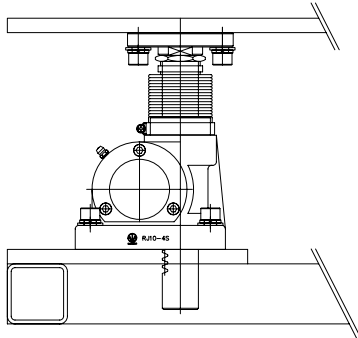
MODEL	RJ10-4SH			RJ20-4SH		RJ30-4SH		RJ40-4SH	
Worm reducer model	050	063	075	075	090	105	110	130	150
구동원 (Drive)	MOTOR / HANDLE								
랙축경및모듈 (Diameter of rack Gear and module)	Φ30×M2			Φ40×M3		Φ50×M3.5		Φ60×M4	
Pinion gear × 잇수 (value) (z)	21			18		20		20	
Bevel gear module × 잇수 (value) (z)	M3×25T			M3×25T (SCM21)		M4×25T		M5×30T	
효율 (Efficiency)	0.7			0.6					
최대속도 (Max speed)	7,000								
입력축 1회전당 랙축진행 (1 rev' lead)	131.9			169.6		219.9		251.4	
Stroke 여유 (stroke limit) (mm)	+10 over								

### 13. 조립시 유의사항(Attention Fact)

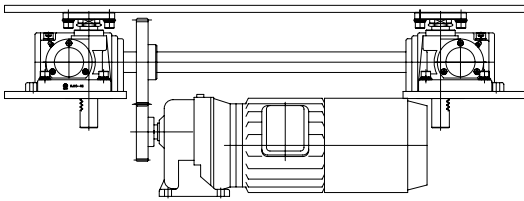
Rackjack의 취부면은 가공을 하는 것이 제품의 수평, 수직을 잘 맞출 수 있습니다.  
Cutting and grinding on attaching side can fix the product balance in parallel and perpendicular.



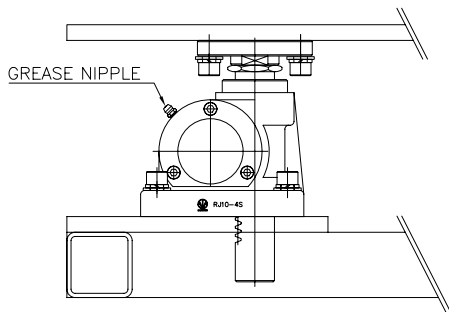
분진이나 먼지가 많은 사용조건에서는 자바라를 사용하여 gear box 내부로의 유입을 막아줍니다.  
For using bellows, it protects the particle and dust that can flow into gearbox.



사용횟수가 많거나, 보다 정밀한 중간제어를 원할시는 chain 구동 방법 보다는 gear대 gear방법이 안정적 입니다.  
If frequent use or precise controlling is required, gear-gear drive is more stable than driven by chain.

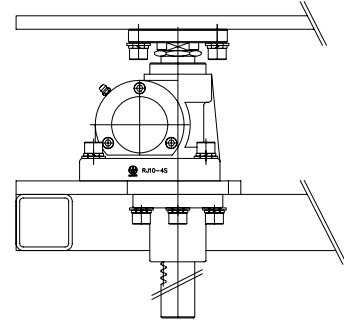


Rack Jack의 급유는 grease를 사용하며 일반사양에는 bearing grease를 사용하고 clean사양에는 silicon계 grease를 사용한다. 급유주기는 사용빈도에 따라 차이가 있으나 기본적으로 3개월에 한번 점검 및 보충하여 준다  
Greasing on rack jack is needed. Bearing grease for General one, grease made up of silicon for clean one Period of greasing is once in 3 months



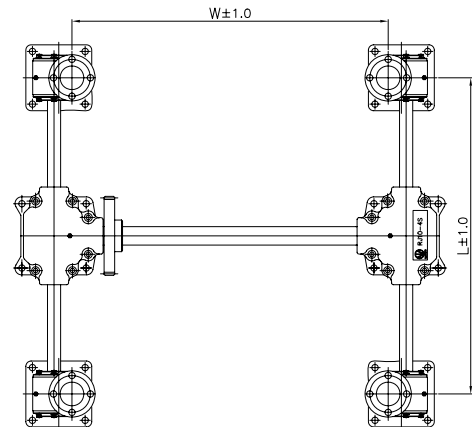
600 mm 이상의 stroke를 사용할때에는 그림과 같이 rackjack의 보조 Guide bush를 사용하면, 상승시 rack gear의 흔들림을 최소화 할 수 있습니다.

When using over 600mm stroke, as showing the picture, with sub guide bush of rack jack the shivering of rack gear on the move upward can be minimized.



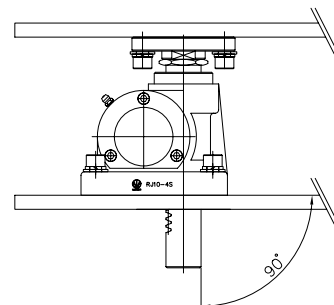
Rack Jack 간의 축간거리는 model에 따라 차이가 있지만  $\pm 1$ mm 이상의 조절범위가 있으므로 취부축간 거리가 맞지 않을시는 shaft를 고무망치로 벌리거나 줄여서 거리를 맞춘후 조립한다. 이때 볼트를 강제적으로 조이면 Rack 축의 직진도가 틀어질 수 있으므로 주의하여 조립한다.

Although differences between shafts of rack jack exists,  $\pm 1$ mm regulating range can be managed by widening or narrowing shaft. At this time, forced tightening the bolt can be damaged to the straightness.



Rack jack의 조립시 rack gear 수직이 안맞은 상태로 사용을 하면 rack gear와 pinion gear의 마모가 빨리되어 수명이 단축되며, gear의 마찰계수가 높아져 motor의 효율이 저하 됩니다. 이때에는 상, 하면 flange bolt를 조금 풀어 놓은 상태에서 up-down test를 한 후 취부 bolt를 조여줍니다.

Assembling rack jack, if the perpendicular of rack gear is not fixed, its durability is getting weaker by abrasion of gears and also the efficiency can be damaged. At this time, tighten the bolts after up-down testing with little loosened the up/down flange bolt.

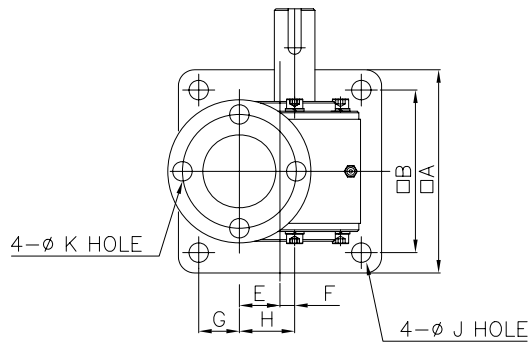




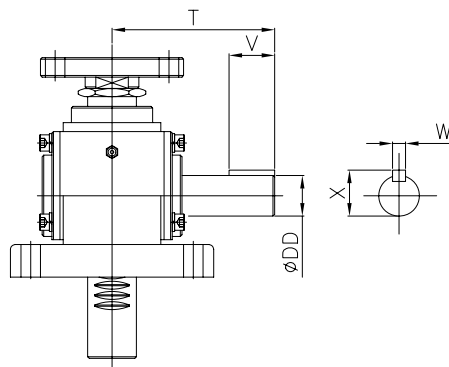
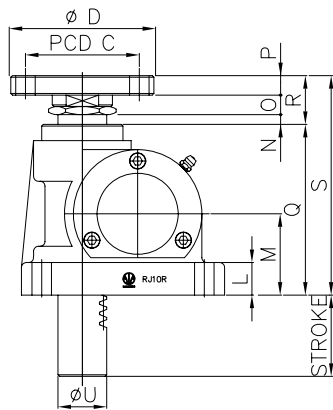


## 15. Dimension 일반형(General Type)

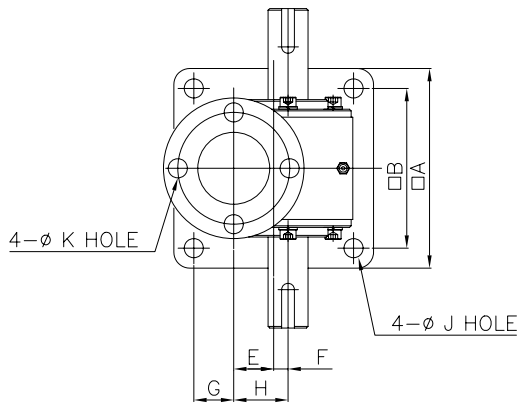
[RJOOR]



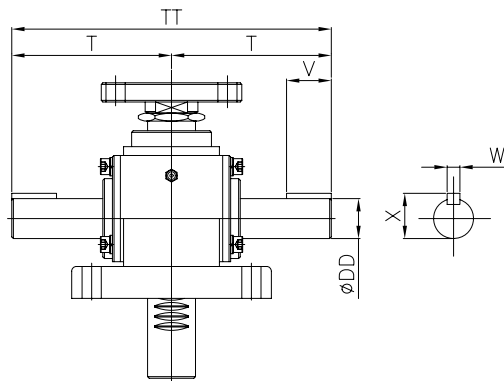
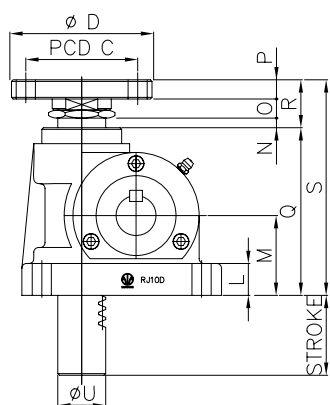
MODEL	□A	□B	PCDC	φD	φDD	E	F	G	H	φJ	φK	L
RJ10R	125	100	70	88	25	25	9	25	34	12	12	20
RJ20R	150	125	80	105	30	30	14	32.5	44	14	14	20
RJ30R	190	160	95	128	40	43	13.5	37	56.5	16	16	25
RJ40R	220	175	110	148	50	48	18	39.5	66	18	18	25
MODEL	M	N	O	P	Q	R	S	T	φU	V	W	X
RJ10R	50	6	12	12	105	30	135	100	30	28	8	28
RJ20R	55	10	12	13	115	35	150	110	40	30	10	33
RJ30R	70	12	23	20	150	55	205	150	50	50	14	43.5
RJ40R	85	12	23	20	175	55	230	180	60	60	16	54



[RJOOD]

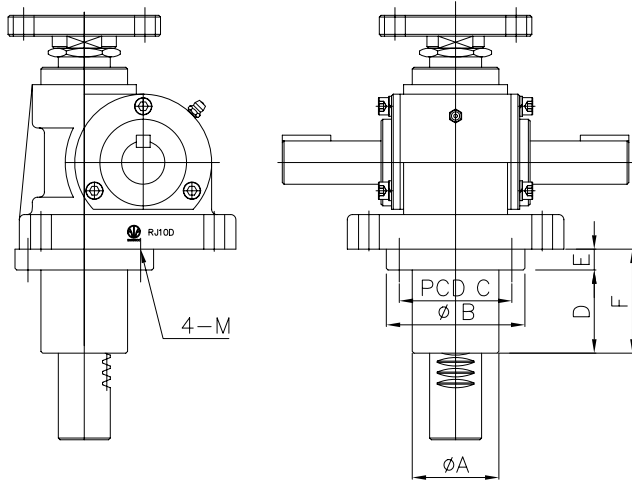


MODEL	□A	□B	PCDC	φD	φDD	E	F	G	H	φJ	φK	L
RJ10D	125	100	70	88	25	25	9	25	34	12	12	20
RJ20D	150	125	80	105	30	30	14	32.5	44	14	14	20
RJ30D	190	160	95	128	40	43	13.5	37	56.5	16	16	25
RJ40D	220	175	110	148	50	48	18	39.5	66	18	18	25
MODEL	M	N	O	P	Q	R	S	T	φU	V	W	X
RJ10D	50	6	12	12	105	30	135	100	30	28	8	28
RJ20D	55	10	12	13	115	35	150	110	40	30	10	33
RJ30D	70	12	23	20	150	55	205	150	50	50	14	43.5
RJ40D	85	12	23	20	175	55	230	180	60	60	16	54



## Dimension 일반형(General Type)

[보조 Guide Bush 부착Type(Sub guide bush sticking type)]



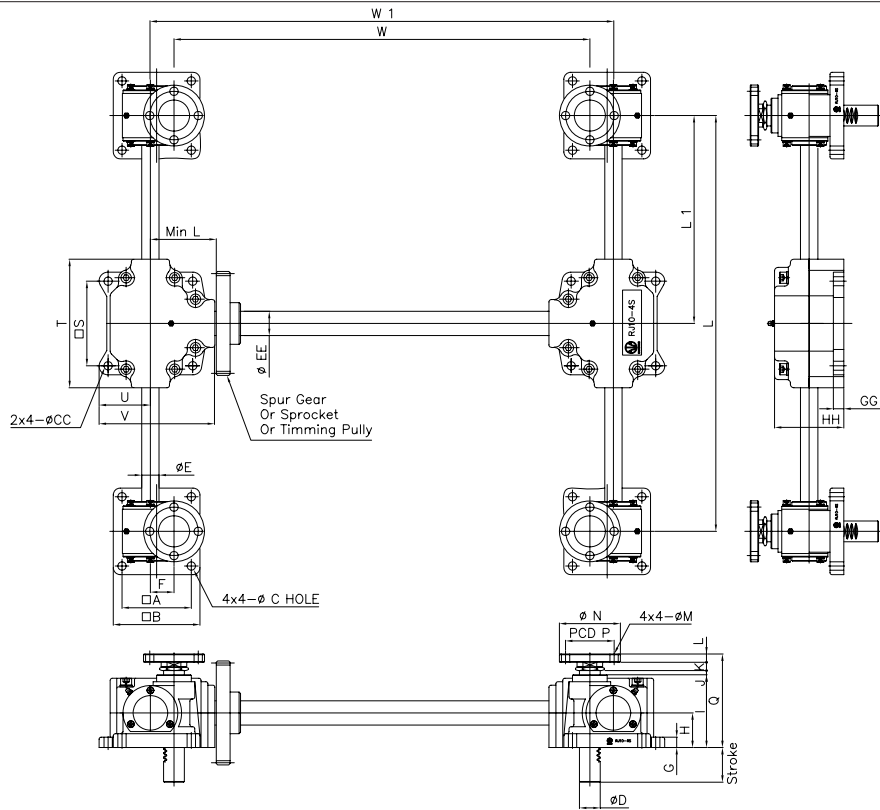
MODEL	Ø A	Ø B	PCD C	D
RJ10	Ø 50	Ø 80	Ø 65	48
RJ20	Ø 60	Ø 90	Ø 75	48
RJ30	Ø 75	Ø 110	Ø 95	65
RJ40	Ø 90	Ø 130	Ø 110	85
MODEL	E	F	M	
RJ10	12	60	M8TAP	
RJ20	12	60	M8TAP	
RJ30	15	80	M10TAP	
RJ40	15	100	M12TAP	

\* NOTE \*

1. STROKE를 600 mm 이상 사용할때는 보조 Guide bush type을 권장합니다.

(Sub guide bush type is recommended if the length of stroke is over 600 mm)

[RJ00-4S Series]



MODEL	□A	□B	Ø C	Ø CC	Ø D	Ø E	Ø EE	F	G	GG	H	HH	I	J
RJ10-4S	100	125	Ø 12	Ø 12	Ø 30	Ø 25	Ø 35	34	20	15	50	100	105	6
RJ20-4S	125	150	Ø 14	Ø 12	Ø 40	Ø 30	Ø 40	44	20	15	55	105	115	10
RJ30-4S	160	190	Ø 16	Ø 12	Ø 50	Ø 40	Ø 50	56.5	25	15	70	140	150	12
RJ40-4S	175	220	Ø 18	Ø 14	Ø 60	Ø 50	Ø 60	66	25	25	85	185	175	12
MODEL	K	L	MINL	Ø M	Ø N	PCDP	Q	□S	T	U	V	W1		
RJ10-4S	12	12	100	Ø 12	Ø 88	Ø 70	135	122	185	74	167	W+68		
RJ20-4S	12	13	125	Ø 14	Ø 105	Ø 80	150	122	188	74	167	W+88		
RJ30-4S	23	20	145	Ø 16	Ø 128	Ø 95	205	150	241	95	217	W+113		
RJ40-4S	23	20	210	Ø 18	Ø 148	Ø 110	230	230	340	143	315	W+132		

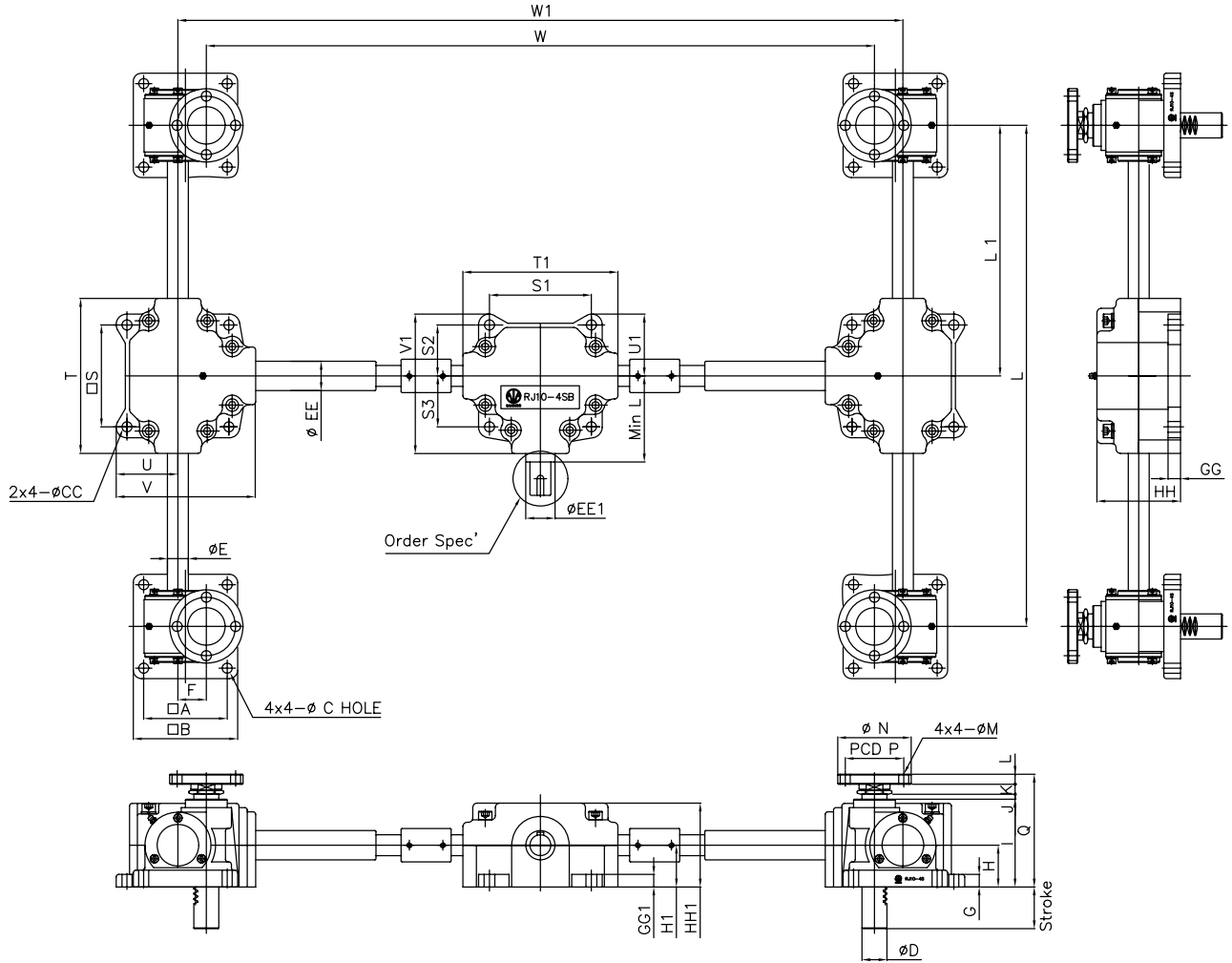
\* NOTE \*

1. MIN L Size는 최소 치수이며 설계자의 임의로 변경가능 (Min L size is minimum and can be tuned by the designer)

2. Spur Gear 또는 Sprocket는 설계자의 임의로 선정 가능 (Spur gear or sprocket can be selected by the designer's intention)

## Dimension 일반형(General Type)

[RJ00-4SB Series]

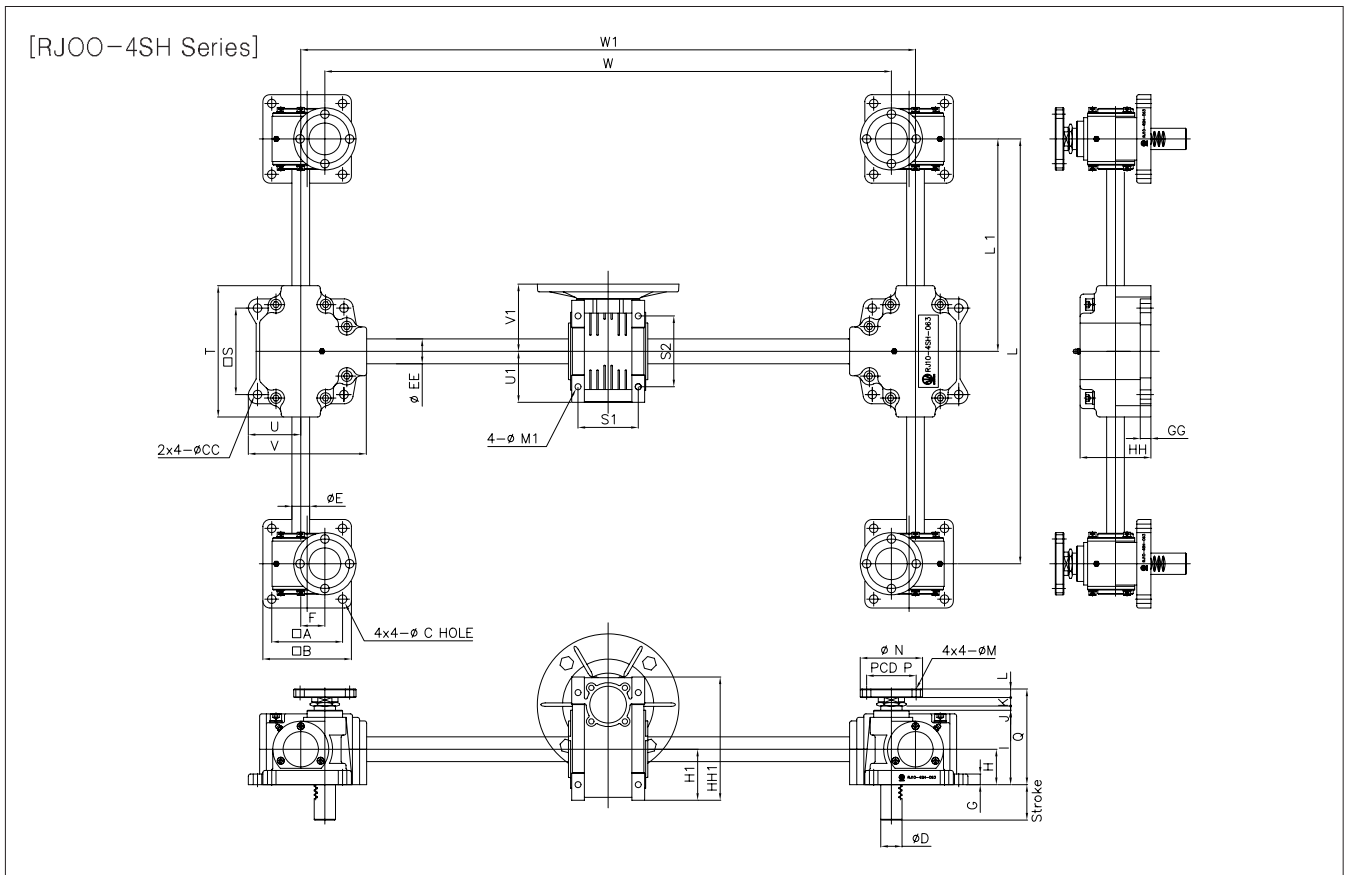


MODEL	□A	□B	φC	φCC	φD	φE	φEE	φEE1	F	G	GG	GG1	H	H1	HH	HH1	I	J	K
RJ10-4SB05	100	125	φ12	φ12	φ30	φ25	φ35	φ35	34	20	15	15	50	50	100	100	105	6	12
RJ10-4SB10	100	125	φ12	φ12	φ30	φ25	φ35	φ40	34	20	15	15	50	55	100	115	105	6	12
RJ20-4SB10	125	150	φ14	φ12	φ40	φ30	φ40	φ40	44	20	15	15	55	55	105	115	115	10	12
RJ20-4SB15	125	150	φ14	φ12	φ40	φ30	φ40	φ50	44	20	15	20	55	70	105	140	115	10	12
RJ30-4SB20	160	190	φ16	φ12	φ50	φ40	φ50	φ50	56.5	25	20	20	70	70	140	155	150	12	23
MODEL	L	φM	φN	PCDP	Q	□S	S1	S2	S3	T	T1	U	U1	V	V1	MINL	W1		
RJ10-4SB05	12	φ12	φ88	φ70	135	122	122	61	61	185	185	74	74	167	167	95	W+68		
RJ10-4SB10	12	φ12	φ88	φ70	135	122	150	75	75	188	178	74	95	167	190	110	W+68		
RJ20-4SB10	13	φ14	φ105	φ80	150	122	150	75	75	188	178	74	95	167	190	110	W+88		
RJ20-4SB15	13	φ14	φ105	φ80	150	122	150	75	75	188	241	74	95	167	237	145	W+88		
RJ30-4SB20	20	φ16	φ128	φ95	205	150	300	67.5	92.5	272	243	130	85	266	227	145	W+113		

※ NOTE ※

1. MIN L size는 최소 치수이며 설계자의 임의로 변경가능(Min L size is minimum and can be tuned by the designer)
2. Miter gear box 입력축의 치수는 주문사양임(Miter gear box input spindle size is order specification)

## Dimension 일반형(General Type)



MODEL	□A	□B	φC	φCC	φD	φE	φEE	F	G	H	H1
RJ10-4SH-050	100	125	φ12	φ12	φ30	φ25	φ35	34	20	50	60
RJ10-4SH-063	100	125	φ12	φ12	φ30	φ25	φ35	34	20	50	72
RJ10-4SH-075	100	125	φ12	φ12	φ30	φ25	φ35	34	20	50	86
RJ20-4SH-090	125	150	φ14	φ12	φ40	φ30	φ40	44	20	55	103
RJ20-4SH-105	125	150	φ14	φ12	φ40	φ30	φ40	44	20	55	127.5
RJ30-4SH-110	160	190	φ16	φ12	φ50	φ40	φ50	56.5	25	70	127.5
RJ30-4SH-130	160	190	φ16	φ12	φ50	φ40	φ50	56.5	25	70	147.5
RJ40-4SH-150	175	220	φ18	φ14	φ60	φ50	φ60	66	25	85	170
MODEL	HH	HH1	I	J	K	L	φM	φM1	φN	PCDP	Q
RJ10-4SH-050	100	144	105	6	12	12	φ12	8.5	φ88	φ70	135
RJ10-4SH-063	100	174	105	6	12	12	φ12	8.5	φ88	φ70	135
RJ10-4SH-075	100	205	105	6	12	12	φ12	11.5	φ88	φ70	135
RJ20-4SH-090	105	238	115	10	12	13	φ14	13	φ105	φ80	150
RJ20-4SH-105	105	295	115	10	12	13	φ14	14	φ105	φ80	150
RJ30-4SH-110	140	295	150	12	23	20	φ16	14	φ128	φ95	205
RJ30-4SH-130	140	335	150	12	23	20	φ16	16	φ128	φ95	205
RJ40-4SH-150	185	400	175	12	23	20	φ18	18	φ148	φ110	230
MODEL	□S	S1	S2	T	U	U1	V	V1	W1		
RJ10-4SH-050	122	70	80	185	74	60	167	80	W+68		
RJ10-4SH-063	122	85	100	185	74	72	167	95	W+68		
RJ10-4SH-075	122	90	120	185	74	86	167	112.5	W+68		
RJ20-4SH-090	122	100	140	188	74	103	167	129.5	W+88		
RJ20-4SH-105	122	115	170	188	74	127.5	167	160	W+88		
RJ30-4SH-110	150	115	170	241	95	127.5	217	160	W+113		
RJ30-4SH-130	150	120	200	241	95	147.5	217	180	W+113		
RJ40-4SH-150	230	145	240	340	143	170	315	210	W+132		

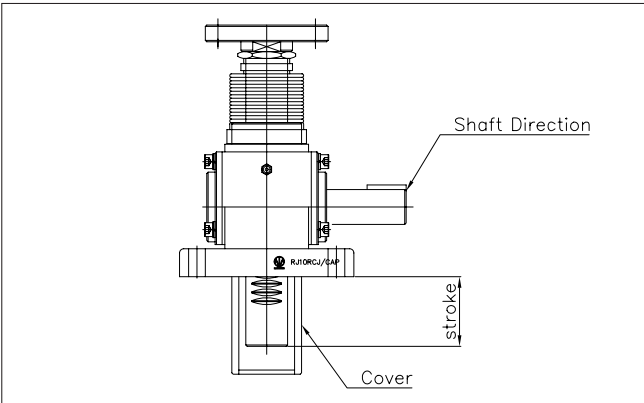
※ NOTE ※ 1. Worm reducer의 motor 취부 flange는 motor의 종류에 따라 취부 hole size가 틀려진다.  
(Worm reducer's motor flange is been mistaken hole size according to motor's kind)

## 16. 형식표시방법-클린Type(Product Serial No-Clean type)

[RJ00-C TYPE]

### RJ 20 R C J R - 150ST / CAP

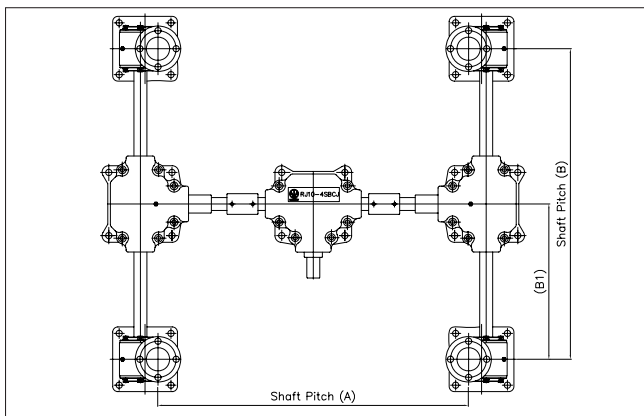
① Rack Jack	② Model	10	20	30	40
③ 입력 Shaft 방향 (Shaft direction)					
R	Right	L	Left	D	Double
④ C	Clean type	Non	일반 (General type)		
⑤ J	Silicon bellows 부착 (With silicon bellows)				
Non	Silicon bellows 미부착 (Without silicon bellows)				
⑥ R	Gear raydent coating	Non	크롬도금 (Chrom plating)		
⑧ CAP	하부 Cover 부착 (With lower cover)		⑦ Stroke (mm)		
무기호 (Non)	하부 Cover 미부착 (Without lower cover)				



[RJ00-4SCB TYPE]

### RJ 20 - 4S C J R B10 - 1000×600-300-400ST/CAP

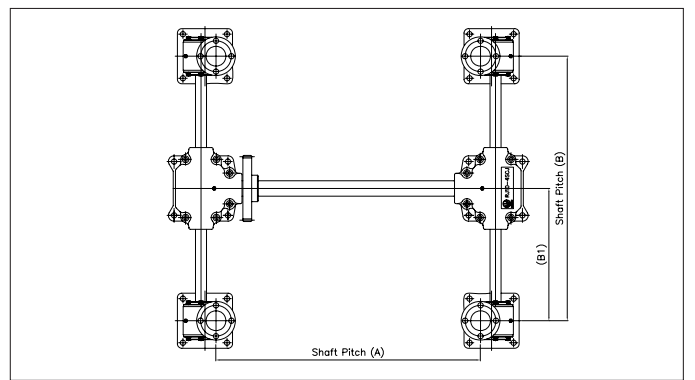
① Rack Jack	② Model	10	20	30	
③ Rack Jack 조합 (Unit)					
2S	2Set 조합 (unit)	3S	3 Set 조합 (unit)	4S	4Set 조합 (unit)
6S	6Set 조합 (unit)	8S	8 Set 조합 (unit)		
④ C	Clean type	Non	일반 (General type)		
⑤ J	Silicon bellows 부착 (With silicon bellows)				
Non	Silicon bellows 미부착 (Without silicon bellows)				
⑥ R	Gear raydent coating	Non	크롬도금 (Chrom plating)		
⑦ Miter box model	B05	B10	B15	B20	
⑧ Shaft A 축간거리: Shaft A Pitch (mm)	⑨ Shaft B 축간거리: Shaft B Pitch (mm)				
⑩ 구동 Shaft 축간거리 (B1) mm: Drive Shaft Pitch (B1) mm	⑪ Stroke (mm)				
⑫ CAP	하부 Cover 부착 (With lower cover)				
무기호 (Non)	하부 Cover 미부착 (Without lower cover)				



[RJ00-4SC TYPE]

### RJ 10 - 4S C J R - 1000×800-400-300ST / CAP

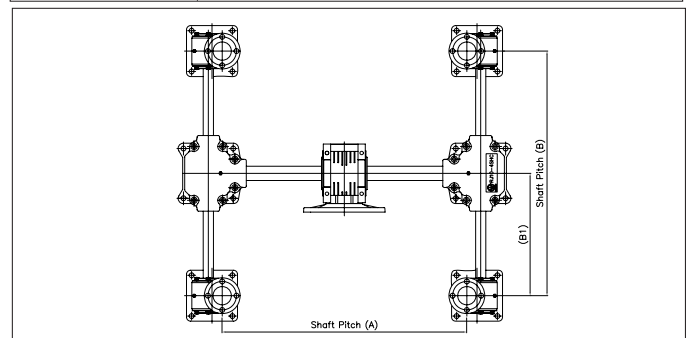
① Rack Jack	② Model	10	20	30	40
③ Rack Jack 조합 (Unit)					
2S	2Set 조합 (unit)	3S	3 Set 조합 (unit)	4S	4Set 조합 (unit)
6S	6Set 조합 (unit)	8S	8 Set 조합 (unit)		
④ C	Clean type	Non	일반 (General type)		
⑤ J	Silicon bellows 부착 (With silicon bellows)				
Non	Silicon bellows 미부착 (Without silicon bellows)				
⑥ R	Gear raydent coating	Non	크롬도금 (Chrom plating)		
⑦ Shaft A 축간거리: Shaft A Pitch (mm)	⑧ Shaft B 축간거리: Shaft B Pitch (mm)				
⑨ 구동 Shaft 축간거리 (B1) mm: Drive Shaft Pitch (B1) mm	⑩ Stroke (mm)				
⑪ CAP	하부 Cover 부착 (With lower cover)				
무기호 (Non)	하부 Cover 미부착 (Without lower cover)				



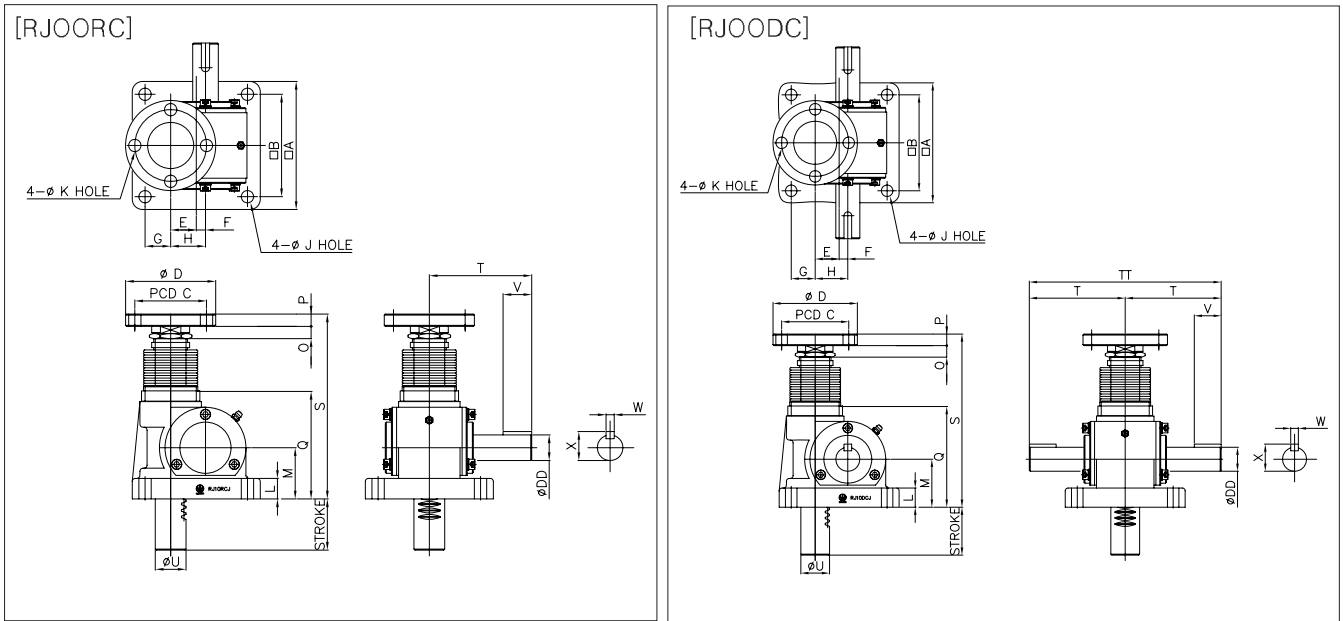
[RJ00-4SHC TYPE]

### RJ 10-4S H C J R - 800×800-400-150ST-050- 1/50-CAP

① Rack Jack	② Model	10	20	30	40					
③ Rack Jack 조합 (Unit)										
2S	2Set 조합 (unit)	3S	3 Set 조합 (unit)	4S	4Set 조합 (unit)					
6S	6Set 조합 (unit)	8S	8 Set 조합 (unit)							
④ H	Worm reducer 부착형 (with worm reducer)									
⑤ C	Clean type	Non	일반 (General type)							
⑥ J	Silicon bellows 부착 (With silicon bellows)									
Non	Silicon bellows 미부착 (Without silicon bellows)									
⑦ R	Gear raydent coating	Non	크롬도금 (Chrom plating)							
⑧ Shaft A 축간거리: Shaft A Pitch (mm)	⑨ Shaft B 축간거리: Shaft B Pitch (mm)									
⑩ 구동 Shaft 축간거리 (B1) mm: Drive Shaft Pitch (B1) mm	⑪ Stroke (mm)									
⑫ Worm reducer model	050	063	075	090	105	110	130	150		
⑬ 감속비 (Deceleration ratio)	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60	1/80	1/100
⑭ CAP	하부 Cover 부착 (With lower cover)									
무기호 (Non)	하부 Cover 미부착 (Without lower cover)									



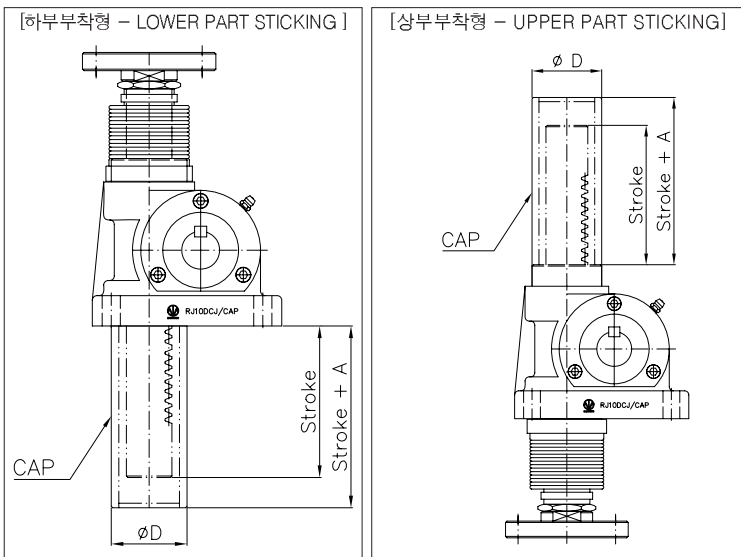
## 17. Dimension (Clean Type)



MODEL	□A	□B	PCDC	φD	φDD	E	F	G	H	φJ	φK	L	M	O	P	Q
RJ10RCJ	125	100	70	88	25	25	9	25	34	12	12	20	50	12	12	105
RJ20RCJ	150	125	80	105	30	30	14	32.5	44	14	14	20	55	12	13	115
RJ30RCJ	190	160	95	128	40	43	13.5	37	56.5	16	16	25	70	23	20	150
MODEL	T	φU	V	W	X	S						300ST OVER				
						50ST	100ST	150ST	200ST	250ST	300ST					
RJ10RCJ	100	30	28	8	28	180	195	210	210	230	230	150+(STROKE/4)				
RJ20RCJ	110	40	30	10	33	200	210	210	230	250	250	170+(STROKE/4)				
RJ30RCJ	150	50	50	14	43.5	260	270	270	290	310	310	230+(STROKE/4)				
MODEL	□A	□B	PCDC	φD	φDD	E	F	G	H	φJ	φK	L	M	O	P	
RJ10DCJ	125	100	70	88	25	25	9	25	34	12	12	20	50	12	12	
RJ20DCJ	150	125	80	105	30	30	14	32.5	44	14	14	20	55	12	13	
RJ30DCJ	190	160	95	128	40	43	13.5	37	56.5	16	16	25	70	23	20	
MODEL	Q	T	TT	φU	V	W	X	S						300ST OVER		
								50ST	100ST	150ST	200ST	250ST	300ST			
RJ10DCJ	105	100	200	30	28	8	28	180	195	210	210	230	230	150+(STROKE/4)		
RJ20DCJ	115	110	220	40	30	10	33	200	210	210	230	250	250	170+(STROKE/4)		
RJ30DCJ	150	150	300	50	50	14	43.5	260	270	270	290	310	310	230+(STROKE/4)		

※ NOTE - Rj 40 model은 별도문의 (Further question is required about models after RJ 40)

### ■ Cover 부착형 (Cover Sticking Type)



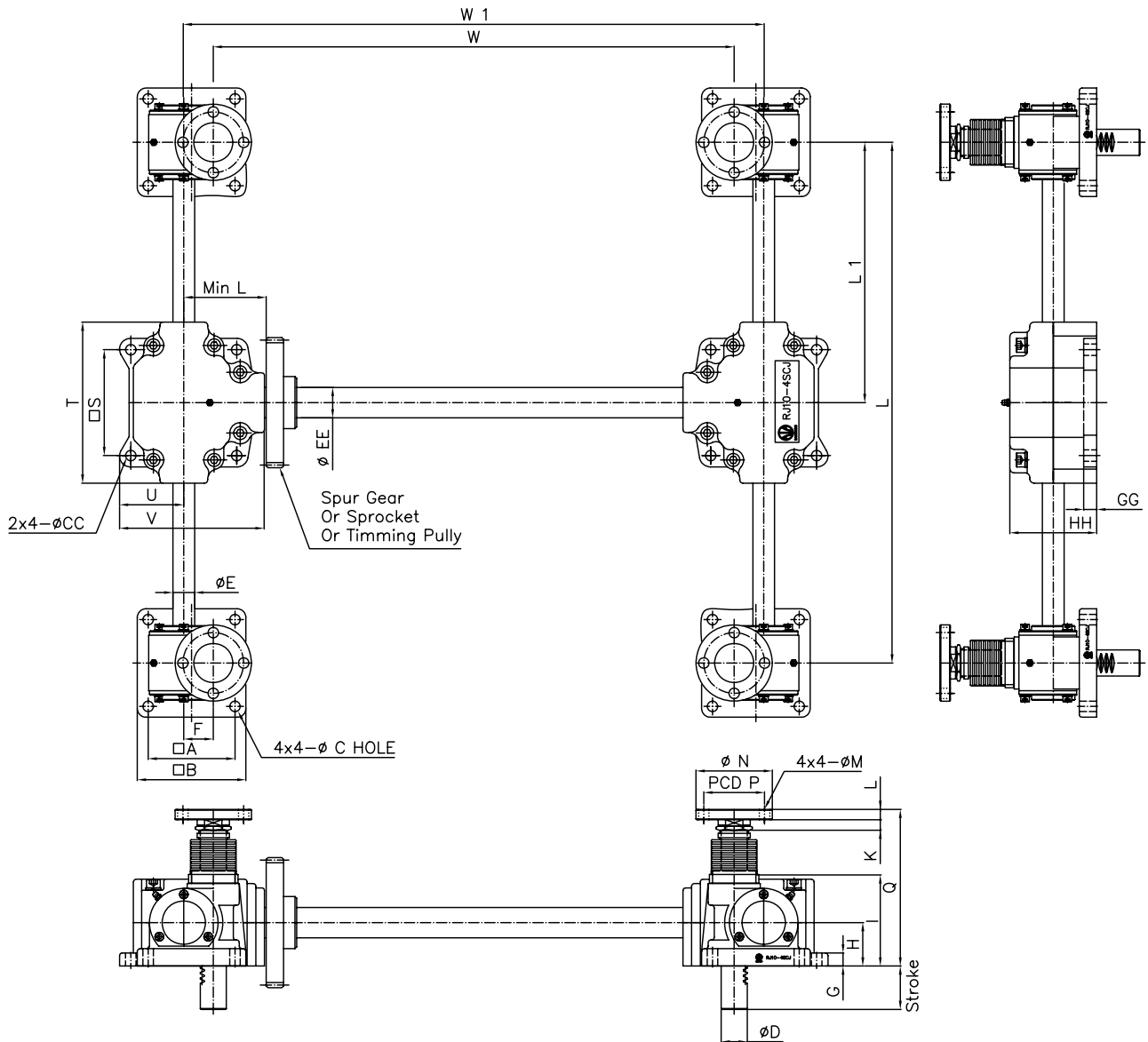
※ NOTE

- COVER부착 Model 은 RJ-4SC, RJ-4SCB, RJ-4SCH 모델에도 동일하게 적용된다.  
(The model with cover is adapted by the same way to RJ-4SC, RJ-4SCB, RJ-4SCH)
- RJ 40 mode은 별도문의  
(Further question is required about models after RJ 40)

MODEL	A	φD	재 질 (The material)
RJ10-CJ/CAP	20	50	AL PIPE ANODIZING
RJ20-CJ/CAP	20	60	
RJ30-CJ/CAP	30	70	

## Dimension (Clean Type)

[RJ00-4SC Series]



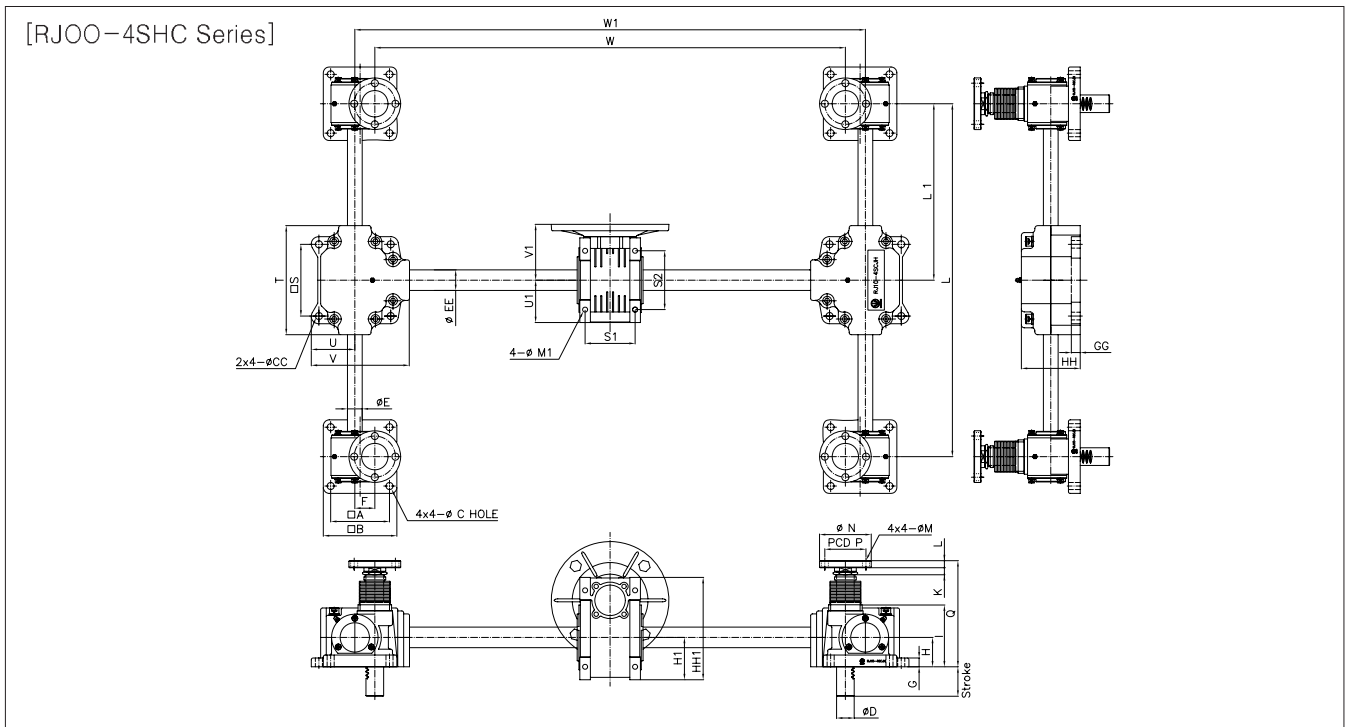
MODEL	□A	□B	φC	φCC	φD	E	φEE	F	G	GG	H	HH	I	K	L	φM
RJ10-4SC	100	125	φ12	φ12	φ30	φ25	φ35	φ34	20	15	50	100	105	12	12	12
RJ20-4SC	125	150	φ14	φ12	φ40	φ30	φ40	φ44	20	15	55	105	115	12	13	14
RJ30-4SC	160	190	φ16	φ12	φ50	φ40	φ50	φ56.5	25	20	70	140	150	23	20	16
MODEL	φN	PCDP	□S	T	U	V	W1	Q								
								50ST	100ST	150ST	200ST	250ST	300ST	300ST OVER		
RJ10-4SC	φ88	φ70	122	185	74	167	W+68	180	195	210	210	230	230	150+(STROKE/4)		
RJ20-4SC	φ105	φ80	122	188	74	167	W+88	200	210	210	230	250	250	170+(STROKE/4)		
RJ30-4SC	φ128	φ95	150	241	95	217	W+113	260	270	270	290	310	310	230+(STROKE/4)		

※ NOTE ※

1. MINL size는 최소 치수이며 설계자의 임의로 변경가능 (Min L size is minimum and can be tuned by the designer)
2. Bellows 미부착 dimension은 일반사양의 dimension 참조  
(When do not use bellows in Clean type, seem general type dimension course.)
3. RJ40 model은 별도문의 ( Further question is required about models after RJ 40)



## Dimension (Clean Type)

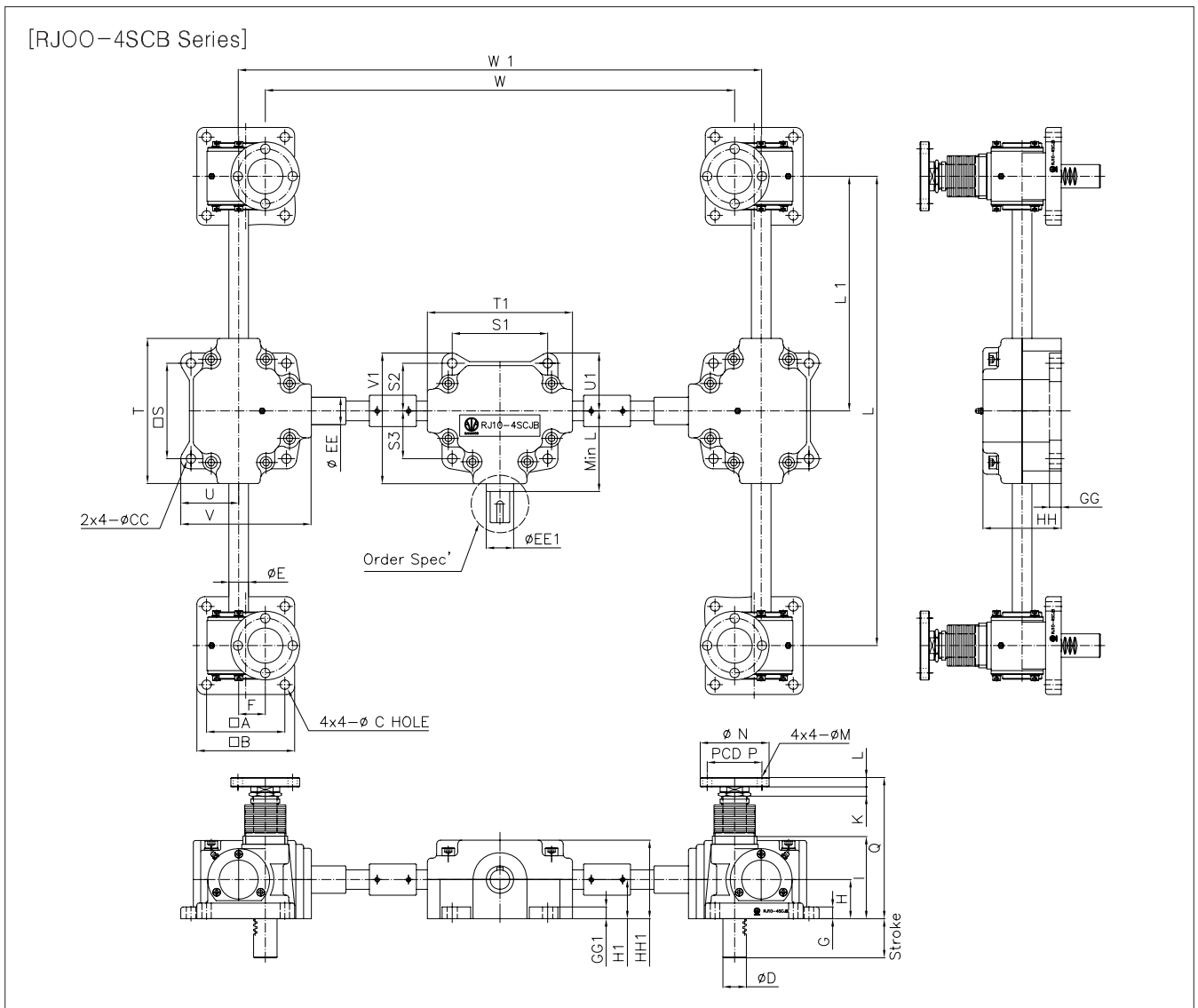


MODEL	□A	□B	φC	φCC	φD	φE	φEE	F	G	H	H1	HH	HH1
RJ10-4SHC-050	100	125	φ12	φ12	φ30	φ25	φ35	34	20	50	60	100	144
RJ10-4SHC-063	100	125	φ12	φ12	φ30	φ25	φ35	34	20	50	72	100	174
RJ10-4SHC-075	100	125	φ12	φ12	φ30	φ25	φ35	34	20	50	86	100	205
RJ20-4SHC-090	125	150	φ14	φ12	φ40	φ30	φ40	44	20	55	103	105	238
RJ20-4SHC-105	125	150	φ14	φ12	φ40	φ30	φ40	44	20	55	127.5	105	295
RJ30-4SHC-110	160	190	φ16	φ12	φ50	φ40	φ50	56.5	25	70	127.5	140	295
RJ30-4SHC-130	160	190	φ16	φ12	φ50	φ40	φ50	56.5	25	70	147.5	140	335
MODEL	I	K	L	φM	φM1	φN	PCDP	□S	S1	S2	T	U	U1
RJ10-4SHC-050	105	12	12	φ12	8.5	φ88	φ70	122	70	80	185	74	60
RJ10-4SHC-063	105	12	12	φ12	8.5	φ88	φ70	122	85	100	185	74	72
RJ10-4SHC-075	105	12	12	φ12	11.5	φ88	φ70	122	90	120	185	74	86
RJ20-4SHC-090	115	12	13	φ14	13	φ105	φ80	122	100	140	188	74	103
RJ20-4SHC-105	115	12	13	φ14	14	φ105	φ80	122	115	170	188	74	127.5
RJ30-4SHC-110	150	23	20	φ16	14	φ128	φ95	150	115	170	241	95	127.5
RJ30-4SHC-130	150	23	20	φ16	16	φ128	φ95	150	120	200	241	95	147.5
MODEL	V	V1	W1	Q									
				50ST	100ST	150ST	200ST	250ST	300ST	300ST OVER			
RJ10-4SHC-050	167	80	W+68	180	195	210	210	230	230	150+(STROKE/4)			
RJ10-4SHC-063	167	95	W+68	180	195	210	210	230	230	150+(STROKE/4)			
RJ10-4SHC-075	167	112.5	W+68	180	195	210	210	230	230	150+(STROKE/4)			
RJ20-4SHC-090	167	129.5	W+88	200	210	210	230	250	250	170+(STROKE/4)			
RJ20-4SHC-105	167	160	W+88	200	210	210	230	250	250	170+(STROKE/4)			
RJ30-4SHC-110	217	160	W+113	260	270	270	290	310	310	230+(STROKE/4)			
RJ30-4SHC-130	217	180	W+113	260	270	270	290	310	310	230+(STROKE/4)			

※ NOTE

- Bellows 미부착 dimension 은 일반사양의 dimension참조.  
(It is dimension reference of general specification when do not use bellows.)
- Worm reducer의 motor 취부 flange는 motor 의 종류에 따라 취부 HOLE SIZE가 틀려진다.  
(Worm reducer's motor flange is been mistaken hole size according to motor's kind.)
- RJ4-4SCH model은 별도문의 (Further question is required about models after RJ40)

## Dimension (Clean Type)



MODEL	□A	□B	φC	φCC	φD	φE	φEE	φEE1	F	G	GG	GG1	H	H1	HH
RJ10-4SCJB05	100	125	φ12	φ12	φ30	φ25	φ35	φ35	34	20	15	15	50	50	100
RJ10-4SCJB10	100	125	φ12	φ12	φ30	φ25	φ35	φ40	34	20	15	15	50	55	100
RJ20-4SCJB10	125	150	φ14	φ12	φ40	φ30	φ40	φ40	44	20	15	15	55	55	105
RJ20-4SCJB15	125	150	φ14	φ12	φ40	φ30	φ40	φ50	44	20	15	20	55	70	105
RJ30-4SCJB20	160	190	φ16	φ12	φ50	φ40	φ50	φ50	56.5	25	20	20	70	70	140
MODEL	HH1	I	K	L	φM	φN	PCDP	□S	S1	S2	S3	T	T1	U	U1
RJ10-4SCJB05	100	105	12	12	φ12	φ88	φ70	122	122	61	61	185	185	74	74
RJ10-4SCJB10	115	105	12	12	φ12	φ88	φ70	122	150	75	75	188	178	74	95
RJ20-4SCJB10	115	115	12	13	φ14	φ105	φ80	122	150	75	75	188	178	74	95
RJ20-4SCJB15	140	115	12	13	φ14	φ105	φ80	122	150	75	75	188	241	74	95
RJ30-4SCJB20	155	150	23	20	φ16	φ128	φ95	150	300	67.5	92.5	272	243	130	85
MODEL	V	V1	MINL	W1	Q										
					50ST	100ST	150ST	200ST	250ST	300ST	300ST OVER				
RJ10-4SCJB05	167	167	95	W+68	180	195	210	210	230	230	150+(STROKE/4)				
RJ10-4SCJB10	167	190	110	W+68	180	195	210	210	230	230	150+(STROKE/4)				
RJ20-4SCJB10	167	190	110	W+88	200	210	210	230	250	250	170+(STROKE/4)				
RJ20-4SCJB15	167	237	145	W+88	200	210	210	230	250	250	170+(STROKE/4)				
RJ30-4SCJB20	266	227	145	W+113	260	270	270	290	310	310	230+(STROKE/4)				

※ NOTE ※

1. MINL size는 최소 치수이며 설계자의 임의로 변경가능

(MIN L size increasing lower limit and designer of random alteration possibility.)

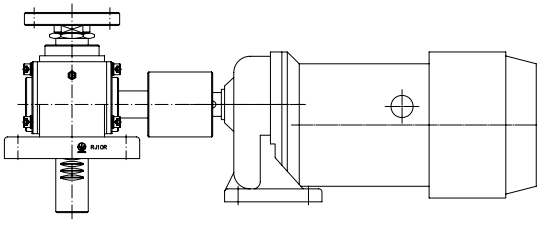
2. MITER GEAR BOX 입력축의 치수는 주문사양임 (Miter gear box input spindle size is order specification)

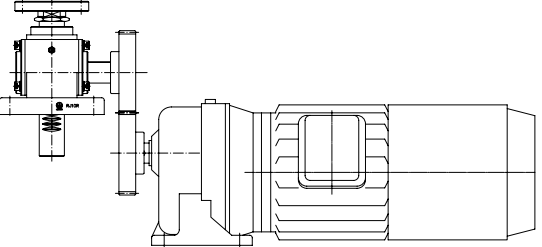
3. BELLOWS 미부착 DIMENSION은 일반사양의 DIMENSION 참조

(When do not use bellows in Clean type, seem general type dimension course.)

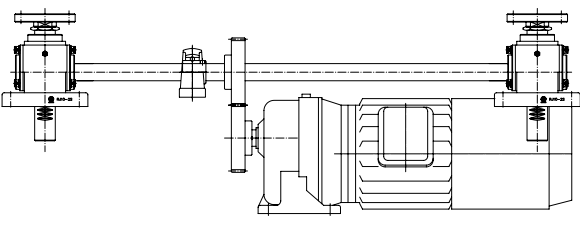
## 18. 응용방법(Application Method)

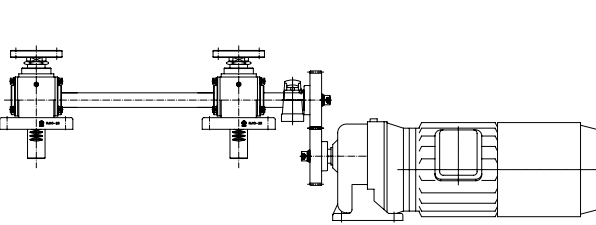
### (1) RJOOR(D)

	<p>[직결사용-motor direct connection use]</p> <p>Rack jack의 입력축과 motor의 출력축을 coupling을 이용하여 직결로 연결한 구조이다. 구조가 간단하며 빠른속도를 얻을 수 있다.</p> <p>It is a form that connecting in direct way output shaft on motor and input shaft on Rack jack with coupling. It is simple and can obtain good speed.</p>
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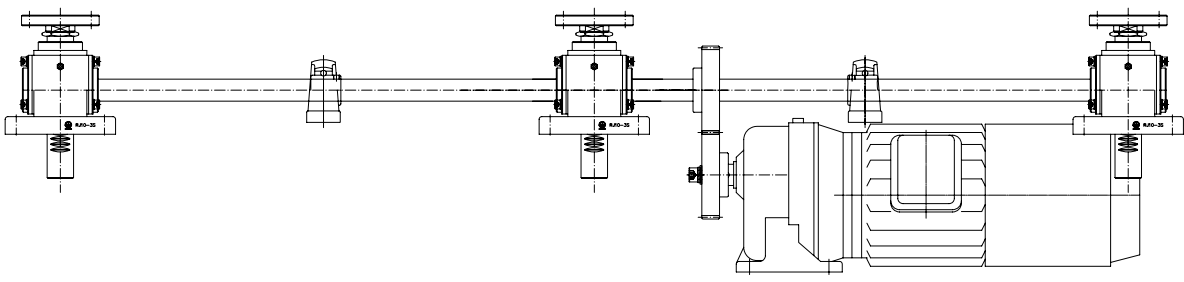
	<p>[간접연결사용-motor Indirectness connection use]</p> <p>Rack jack과 motor의 연결은 spur gear나 sprocket, timing pully를 사용하여 연결한 구조이다. up-down 속도를 감속비로 맞출 수 있으며, 하자보수가 용이하다</p> <p>The connection between rack jack and motor takes advantage of spur gear, sprocket and timing pully. The speed of up/down can be fixed by reduce rate of the speed and it is easy to repair and maintain.</p>
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### (2) RJOO-2S

	<p>[중간부분 구동-Shaft Intermediate part drive]</p> <p>구동 shaft에 spur gear나 sprocket를 사용하여 motor와 연결한 구조이다. spur gear 나 sprocket이 rack jack gear box와의 거리가 멀 때에는 UCP bearing을 설치하여 shaft의 변형을 최소화 한다.</p> <p>Drive shaft is connected with motor by spur gear or sprocket. When the distance between spur gear or sprocket and rack jack gear box is too far to install, transforming of shaft should be minimized by using UCP bearing.</p>
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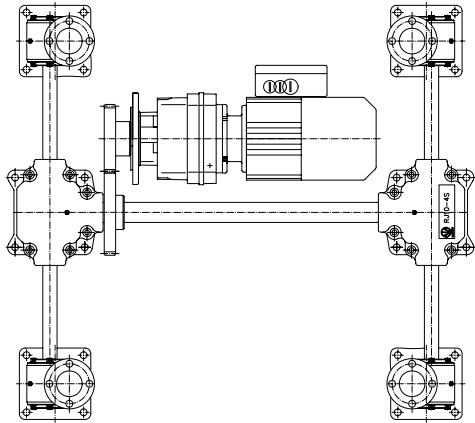
	<p>[끝부분 구동-Shaft end part drive]</p> <p>중간부분에 motor의 설치가 곤란할 경우 rack jack의 바깥부분에 motor를 연결한 구조이다. 이때, rack jack 간의 center 거리가 2m를 초과할 경우나 빠른 속도를 사용할 때는 shaft의 비틀림이 발생하여 2개의 rack jack 이 작동시 약간의 오차가 생길 수 있다.</p> <p>When it is difficult to install motor in the middle of the machine, it explains how to connect motor to outside of rack jack. If the distance between centers of rack jack is more than 2m or using it too fast, distortion of shaft would cause slight error on the operation of 2 shafts.</p>
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### (3) RJOO-3S

	<p>Rack jack의 center간 거리가 2.5m 이상일 경우 중간에 rack jack 1개를 추가 사용한 구조이다. 이 구조는 rack jack shaft의 처짐과 변형을 방지하여 제품 수명을 연장 시킬 수 있다.</p> <p>It shows how to use one more rack jack when the distance is more than 2.5m.This kind of connecting can make the machine live longer by protecting it from drop and transformation.</p>
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## ■ 응용방법(Application Method)

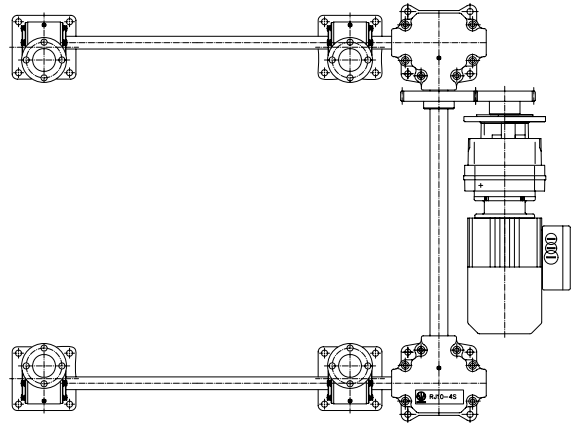
### (4) RJ00-4S



[중간부분구동-Shaft Intermediate part drive]

가장 기본적인 구조로서 일반적인 lifter에 적용할 수 있다. bevel gear box로 양쪽 shaft를 연결하여 rack jack 4EA가 동시에 up-down이 이루어진다.

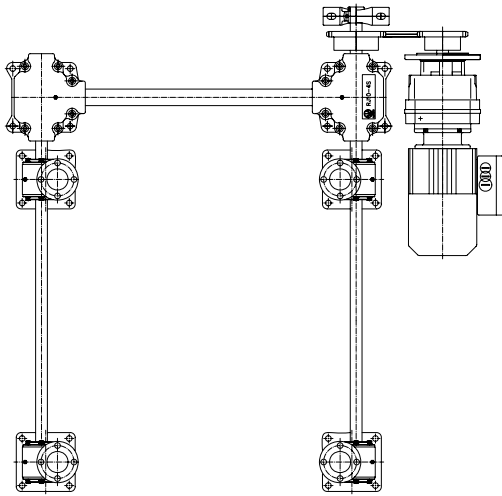
It is most basic form of the connecting and it can also be adapted to general lifter. Connecting both shafts with bevel gear box, 4ea rack jacks work up and down ward at the same time.



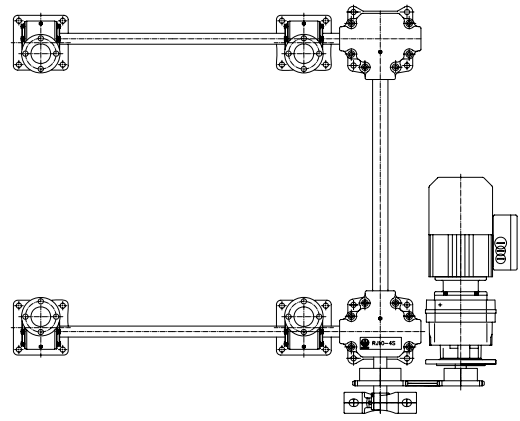
[끝부분 구동-Shaft end part drive]

Rack jack 중간 부분으로의 motor 설치가 곤란 할 경우 Rack jack 의 끝부분에 bevel gear box로 연결하여 구성하면 다른 기구의 간섭을 피할 수 있다.

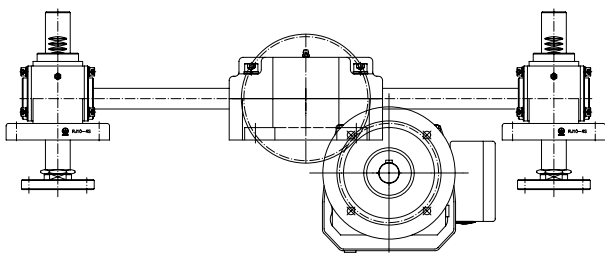
When it is difficult to install the motor in the middle of rack jack, it is recommended that the motor connect to the edge of the rack jack with bevel gear box to avoid interference from other machines.



[끝부분 구동-Shaft end part drive]

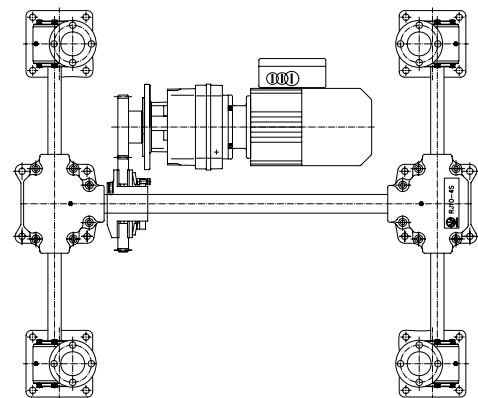


[끝부분 구동-Shaft end part drive]



[거꾸로 사용-Shaft Intermediate part drive]

Rack jack의 상부 flange를 하부에 부착하여 사용할 수 있다. Upper flange of rack jack can be attached to below side.



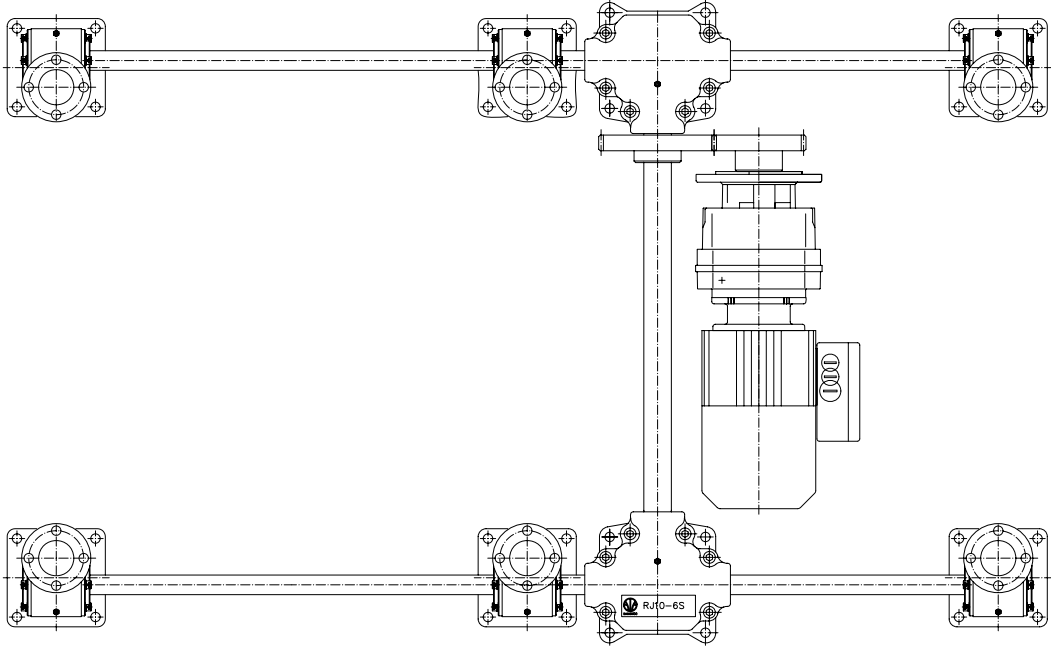
[Torque Limit]

Torque limit를 사용하여 작동중 과부하시나 정지센서의 오작동으로 한계 Stroke이상 동작시 motor 및 rack jack의 파손을 막을 수 있다.

Using torque limit, overload on operation, limit stroke error caused by false working of cease sensor and damage of motor or rack jack can be deterred

## □ 응용방법(Application Method)

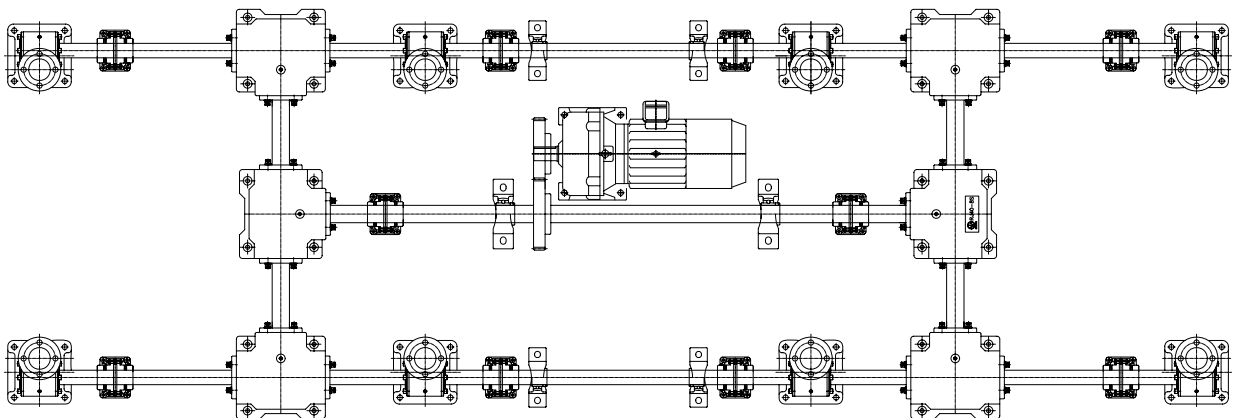
(5) RJ00-6S



Up-down frame의 길이가 2.5M 이상이거나, 고 중량물을 승하강시에는 Rack jack을 6EA 사용하여 구성한다

(When the length of the frame is less than 2.5m or lifting and loading heavy goods, compose rack jack of 6ea )

(6) RJ00-8S

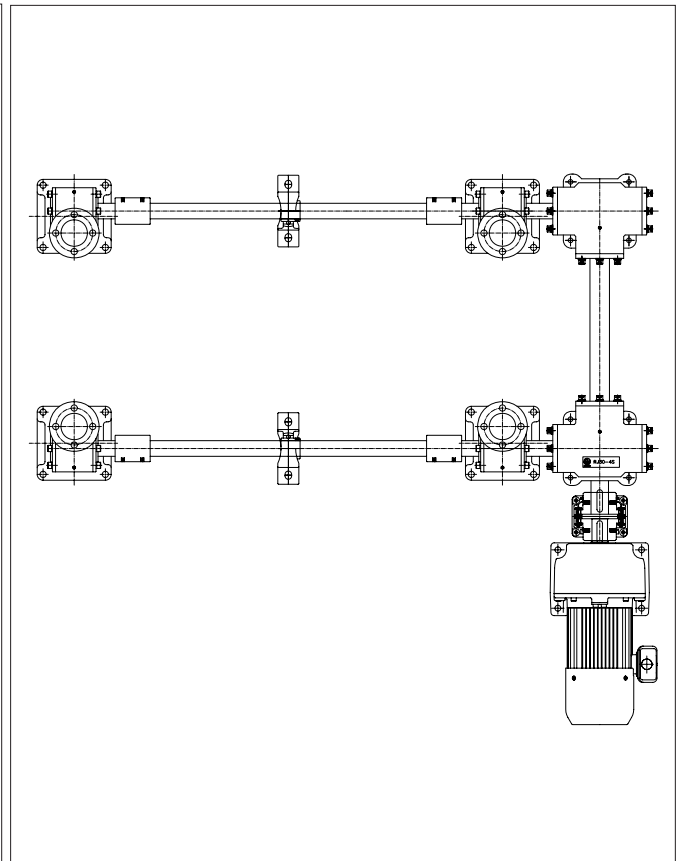
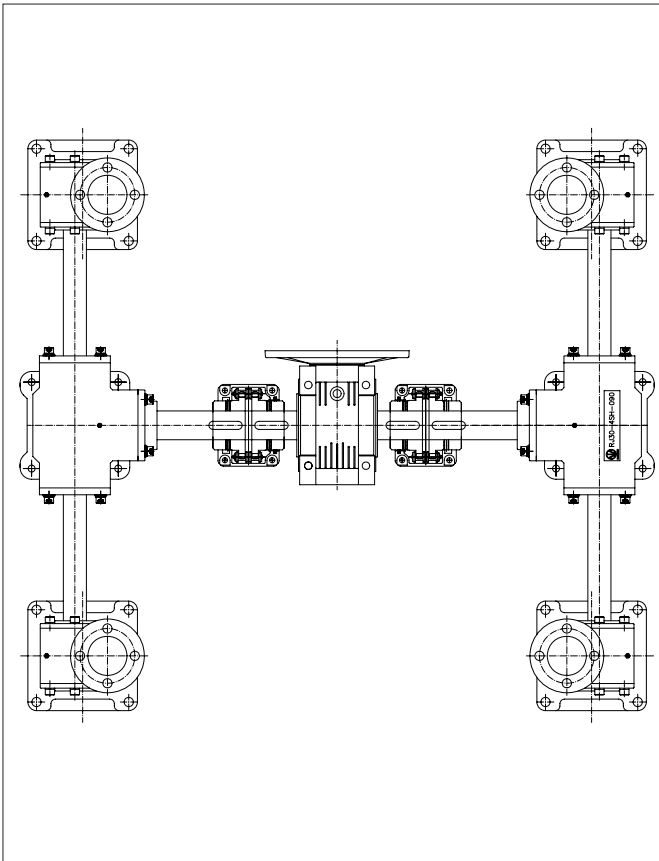
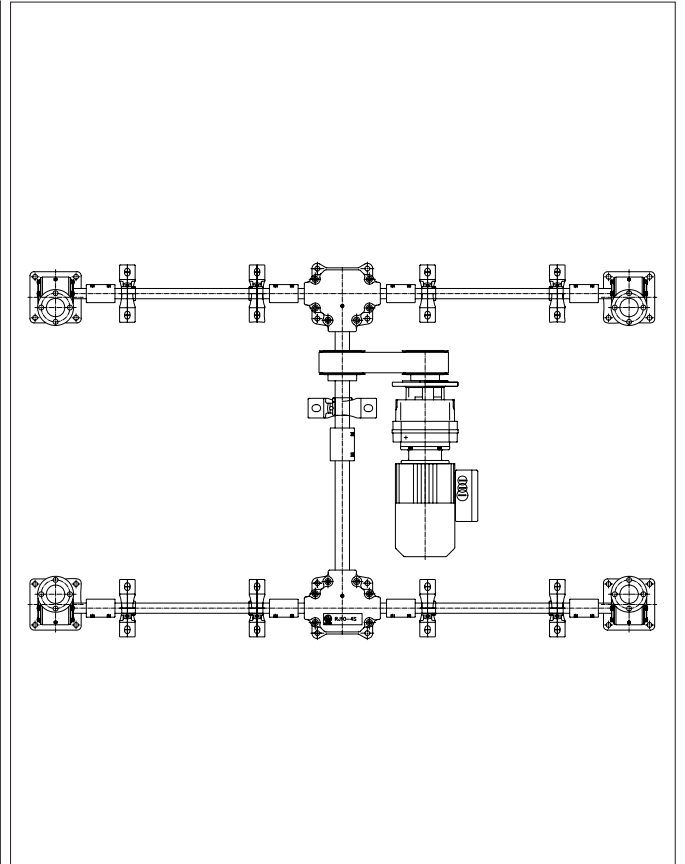
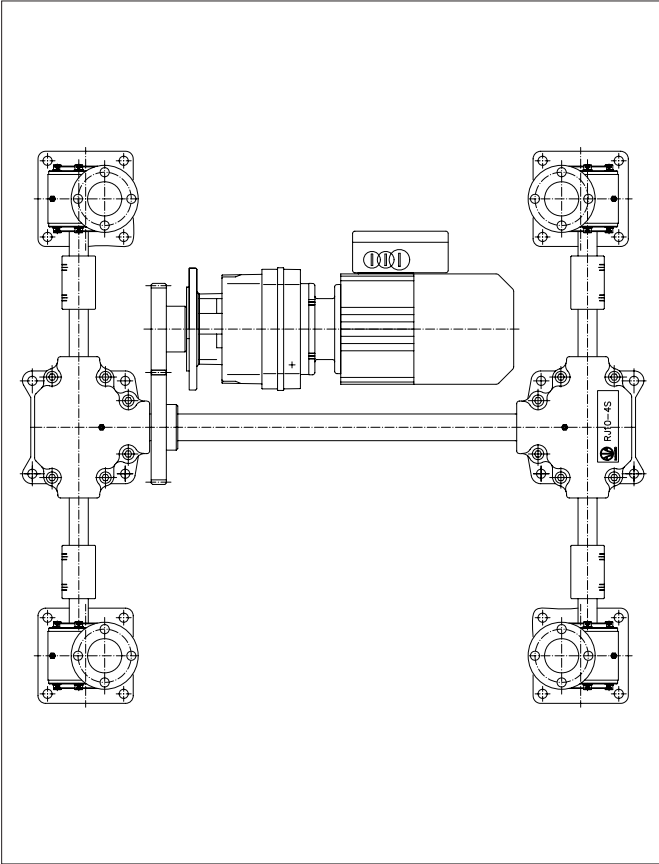


Up-down frame의 길이가 5m 이상일때 rack jack을 8EA 사용하여 구성한다.

(When the length of the frame is less than 5m, compose rack jack of 8ea)

## □ 응용방법(Application Method)

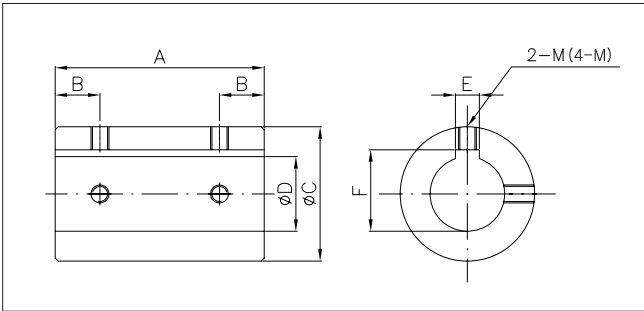
### (7) COUPLING



※ Maintenance의 용이함을 위해 coupling으로 연결 구성할 수 있다  
 (To make the maintenance easier, the assembling can be done with coupling)

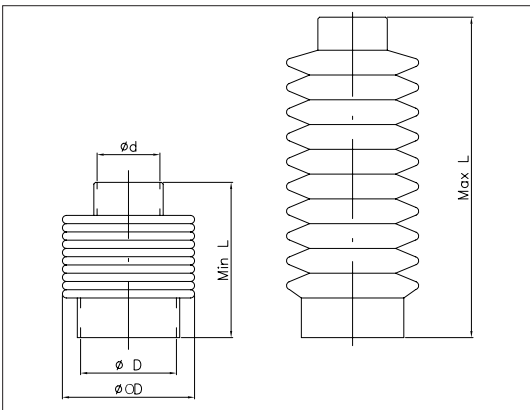
## 19. Accessories

### ■ COUPLING



MODEL	A	B	φC	φD	E	F	M
C2545-8	70	15	φ44	φ25	8	28.3	M8 TAP
C3055-10	80	15	φ55	φ30	10	33.3	M8 TAP
C4070-12	90	20	φ68	φ40	12	43.3	M8 TAP
C4070-14	90	20	φ68	φ40	14	44	M10 TAP
C5080-14	100	20	φ78	φ50	14	64.3	M10 TAP
C60100-16	110	20	φ98	φ60	16	64.3	M10 TAP

### ■ BELLOWS

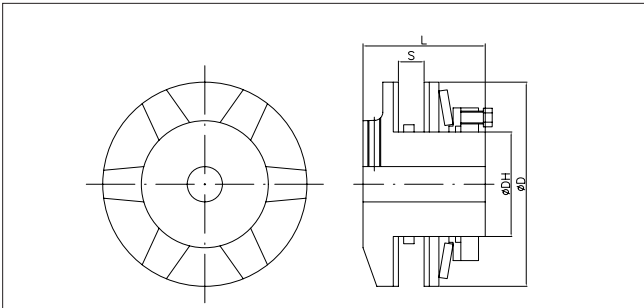


MODEL	Color	φd	φD	φOD	MIN L	MAX L	Application
B3050-80	Black	φ25	φ45	φ55	55	135	RJ10-CJ
W3050-80	White						
B3050-150	Black	φ30	φ50	φ52	70	250	RJ10-CJ
W3050-150	White						
B4065-200	Black	φ40	φ65	φ67	90	300	RJ10-CJ
W4065-200	White						RJ20-CJ
B5060-200	Black	φ50	φ60	φ78	80	300	RJ20-CJ
W5060-200	White						RJ30-CJ

※ NOTE

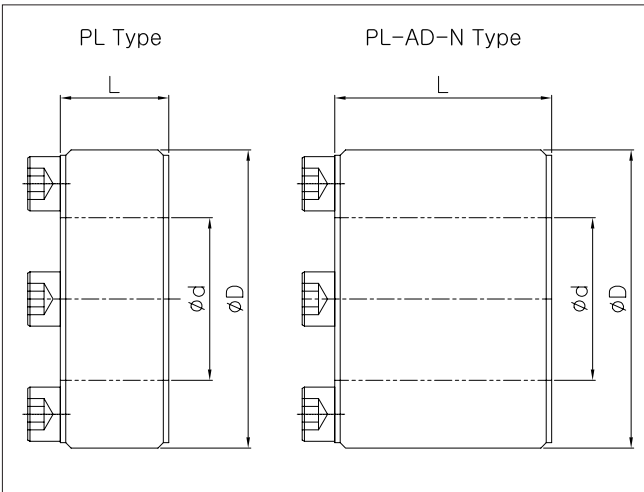
- Bellows의 재질은 silicon이며 검정색과 유백색 두 종류가 있다  
(The bellows is made up of silicon and its colors are black and white)
- Bellows의 1개의 기본 stroke보다 길게 사용시는 silicon 전용 접착제로 여러개를 연결하여 사용한다.  
(When using more than one stroke, connect them with glue made from Loctite only for silicon )

### ■ Torque Limit



MODEL	φDH	φD	L	S Max	Application
TL500-1	65	127	76	16	RJ10
TL500-2					
TL700-1	95	178	98	29	RJ20
TL700-1					

### ■ Power Lock



MODEL	φd	φD	L	Application
PL025×050	25	50	20	RJ10-4S
PL035×060AD-N	35	60	50	RJ10-6S
PL030×055	30	55	20	RJ20-4S
PL040×065AD-N	40	65	57	RJ20-6S
PL040×065	40	65	20	RJ30-4S
PL050×080AD-N	50	80	64	RJ30-6S
PL050×080	50	80	24	RJ40-4S
PL060×090AD-N	60	90	64	RJ40-6S

사진자료(Photo data)

