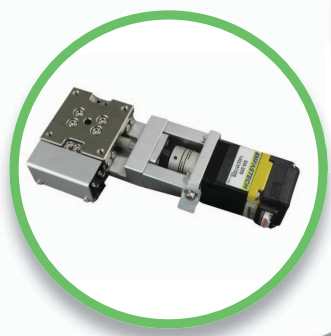
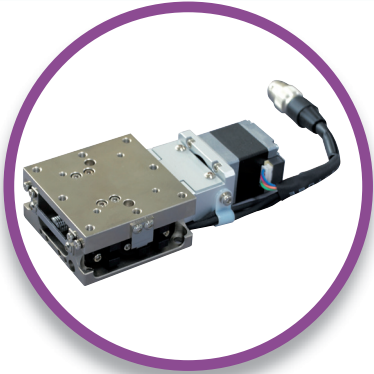
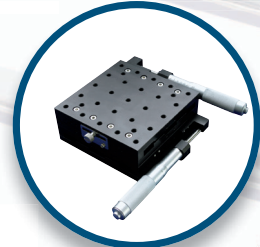
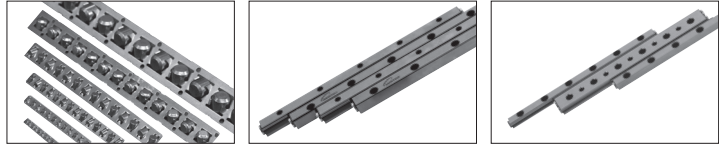


Product Line-Up

Miniature Guide / Cross Roller Slide Guide /
Cross Roller Slide Table / Goniometer Crossed Roller Guide/
Cross Roller Rotary Guide/ Actuator / Motorized Stage /
Manual Stage / Dovetail Stage / Micrometer Head / Support Unit



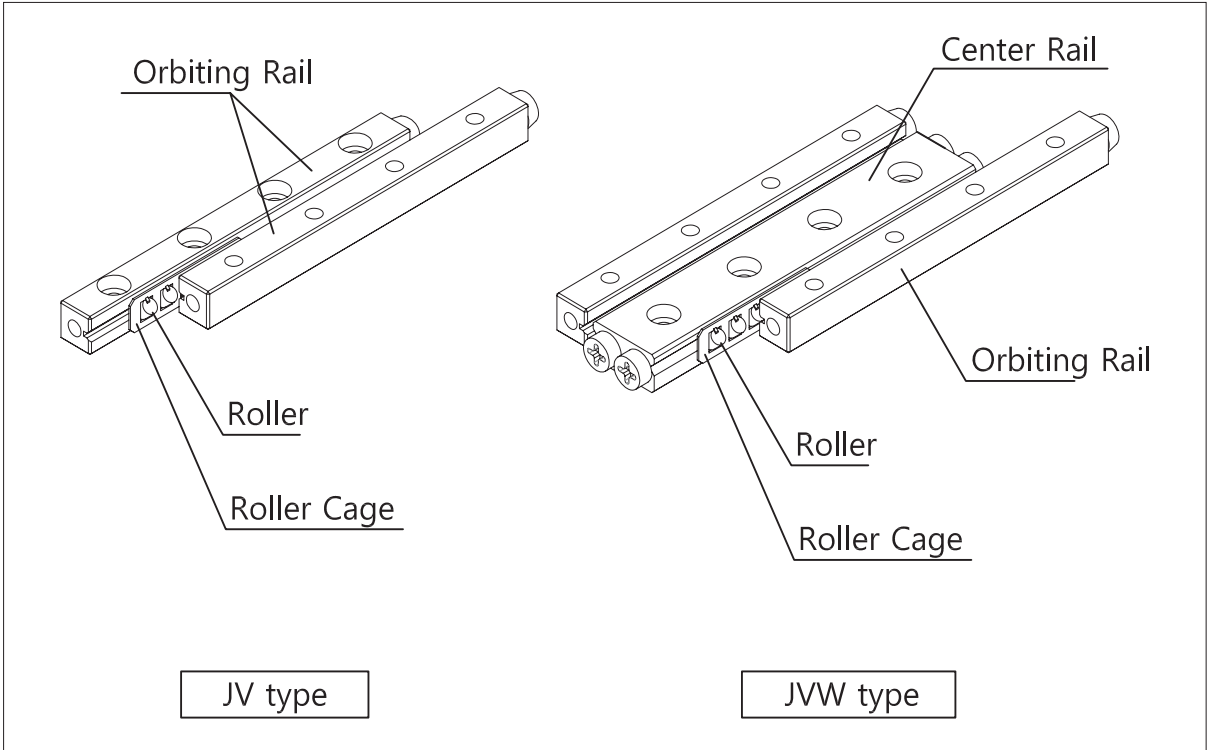
Crossed Roller Slide Guide



JV1/ JV2/ JV3/ JV4/ JV6/ JV9/ JVNB6/ JVNB9
JVW1/ JVW2/ JVW3/ JVW4
JC1/ JC2/ JC3/ JC4/ JC6/ JC9

Cross Roller Slide Guide

〈Fig.1〉 Structure of cross roller guide JV type and JVW type



Structure

MENTOR cross roller guide JV type is a linear guide instrument by assembling cage actively between two-patterned orbiting planes after making V-shaped two-surfaces as an orbiting groove. It is a highly rigid and precise linear motion system of limited type since rollers are arranged orthogonally so it may receive load from various directions, there are various kinds to choose from. It is in a wide range of applications in precision equipments such as OA instruments and peripherals, or in slides such as optical meter, optical stage, and handling equipments.

Features

Cross roller guide JV type is used by combining roller cage, which is assembled by arranging precision roller orthogonally, with the roller surface of 90 V groove which is manufactured onto its specialized rail. Since double-ranged roller guide is attached horizontally, the load from all directions passing through the axle at a right angle can be received.

High rigidity

There is no clearance since applying preload is quite simple. Furthermore, the contact length between the roller and the contact plane is long so that high rigidity can be obtained.

Soft motion

MENTOR cross roller guide JV type is at an orbiting surface of high precision. Plus, the roller with no skew phenomenon and accurate maintenance for its size is assembled into the cage, so that soft rolling motion with low rolling resistance without stick-slips can be acquired.

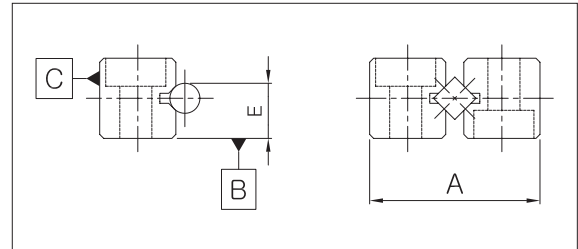
Easy to fix

Fixing holes in the orbiting plane are manufactured with counter and tap process. For fixing onto the orbiting plane, thus, there are two methods; the one is to fix it onto the tap of machine and installments. The other is to push the bolt from the machine and equipments and fix it. So there's no limitation to the fixing structure. Since orbiting plane has uniform structure of two-patterned orbiting planes in the inside, fixing structure is quite simple. Therefore, there is no manufacturing error in fixing part and linear motion of high precision can be obtained.

Accuracy size

Precision of a rail specialized for cross roller guide is classified into highly superior group and precision group according to <Table.1>

<Fig.2>

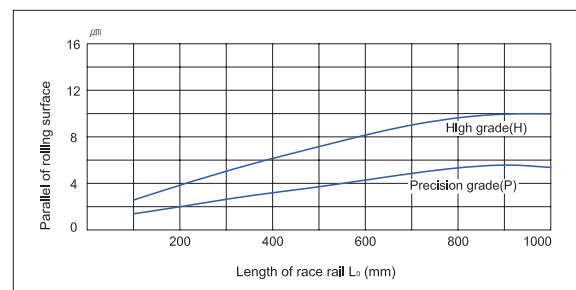


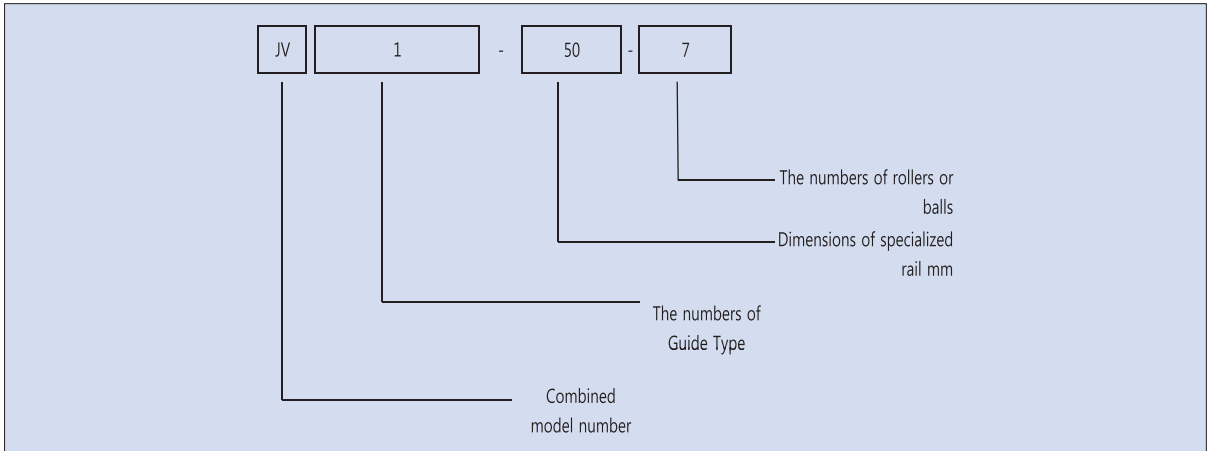
<Table 1>

Grade of precision	Highly superior group	Precision group
Items	H	P
Parallel of rolling surface to the side of B and C	Refer to <Fig.2>	
Permissible deviation in dimensions of height E	±0.02	±0.01
Pair deviation of height E (Note)	0.01	0.005
Permissible deviation in dimensions of width A	0 -0.2	0 -0.1

Note) Pair deviation of height E is applied to four-patterned rail used for the same surface.

<Fig.3> Length of a race rail and parallel of rolling surface





Formation of model number

Cross roller guide is organized as model number as follow. '1 set' in the number mentioned above means combination of four-patterned rail and two-patterned cage.

Basic static load capacity C_0

If excessive load is given to JV type when it is stalled or in motion, there occurs permanent transformation between rolling surface and vibrator. Basic static load capacity (C_0) is the load when the sum of permanent transformation volume of the rolling surface and vibrator is 0.0001 times more the diameter of the latter (Refer to Load capacity of each direction in B-11). If the sum of permanent transformation volume breaks 0.0001 times of the diameter, its motion will be adversely affected. Static safety factor (f_s) to the load should be considered in order to prevent it. (Refer to Static safety factor B-11)

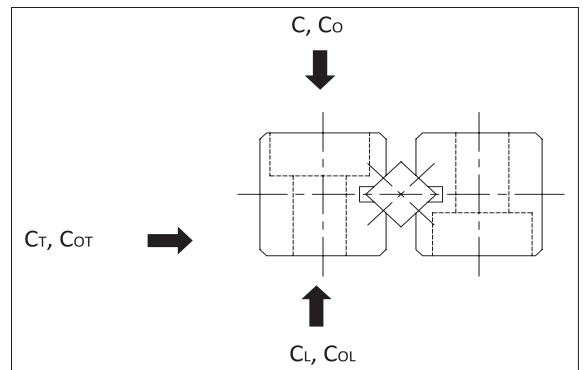
Basic dynamic load capacity

When each of JV types in the first group is in motion, the load that does not transform its size at the direction where 90% of the first group's rated life span reaches $L=100\text{km}$ is called basic dynamic load capacity C , which can be used for calculating life span. (Refer to B-12 rated life span L)

Load capacity in each direction

When each of JV types in the first group is in motion, the load that does not transform its size at the direction where 90% of the first group's rated life span reaches $L=100\text{km}$ is called basic dynamic load capacity C , which can be used for calculating life span. (Refer to B-12 rated life span L)

<Fig.4>



$$C = C_L = \left(\frac{Z}{2}\right)^{\frac{3}{4}} \times C_Z, C_T = 2C$$

$$C_0 = C_{OL} = \left(\frac{Z}{2}\right) \times C_{OZ}, C_{OT} = 2C_0$$

[Remove numbers coming after the decimal point for $\frac{Z}{2}$]
 C_Z : Basic dynamic load capacity in the dimension table (kN)
 C_{OZ} : Basic static load capacity in the dimension table (kN)
 Z : The number of vibrator under use (The number within valid load)

Static safety factor f_s

Sudden external force can be created when JV type stops or is in motion due to vibration, impact or maneuvered stall. For this, static safety factor to the applied load needs to be taken into account.

$$f_s = \frac{C_o}{P_c}$$

f_s : Static Safety factor C_o : Basic static load capacity
 P_c : Calculated load

Machine for use	Load condition	Lower limit of f_s
Standard industrial machine	With vibration or impact	1.0~1.3
	Without vibration or impact	2.0~3.0
Machine tools	With vibration or impact	1.0~1.5
	Without vibration or impact	2.5~7.0

Rated life span L

The life span of cross roller guide can be calculated with the following formula after basic dynamic load capacity is calculated.

$$L = \left(\frac{f_T}{f_W} \cdot \frac{C}{P_c} \right)^{\frac{10}{3}} \times 100$$

L : Rated life span (km)

(It's the total distance where 90% of the first group can reach without flaking when each of the same JV type in the first group is put in motion under the same condition.)

C : Basic dynamic load capacity (kN)

P_c : Calculated load (kN)

f_T : Temperature factor (Refer to picture 5)

f_W : Load factor (Refer to table 3)

When the length and lap number of stroke is uniform, service life can be figured by using the following formula after rated life span (L) is calculated from the formula mentioned above.

$$L_h = \frac{L \times 10^6}{2 \times l_s \times n_1 \times 60}$$

L_h : Life time (h)

l_s : Length of stroke (mm)

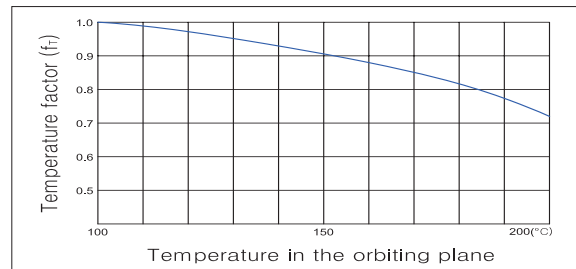
n_1 : Lap number per minute

(min^{-1})

f_T : Temperature factor

When the environment temperature where the direct-acting system is used is over 100°C, temperature factor below should be multiplied considering the possible adverse effect caused by high temperature.

<Fig.4>



Note) In case that environment temperature is over 100°C, contact MENTOR.

f_W : Load factor

Shuffling machines is likely to be affected by vibration or impact during drive. While driving high-speed, particularly, it is a lot more difficult to calculate each value precisely. Therefore, if the load applied to the direct-acting system cannot be calculated or the impact of speed vibration is large, the load factor in the table below should be divided into the basic load capacity (C) and (C_o).

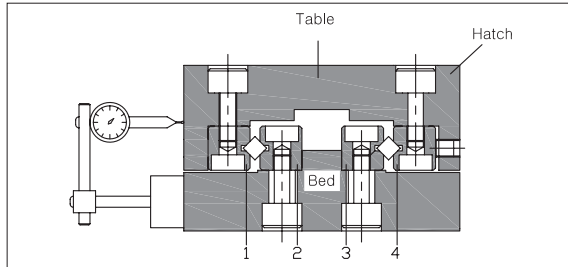
<Table.3>

Vibration • Impact	Velocity (V)	f_W
Meager	For meager speed $V \leq 0.25 \text{ m/s}$	1.0~1.2
Small	For low speed $0.25 < V \leq 1.0 \text{ m/s}$	1.2~1.5
Averager	For average speed $1.0 < V \leq 2.0 \text{ m/s}$	1.5~2.0
Large	For high speed $V > 2.0 \text{ m/s}$	2.0~3.5

Cross roller guide fixing method

When using clearance adjust bolt

〈 Fig.6 〉 Fixing cross roller guide



① Stick rail 2 and 3 to the base and rail 1 to the fixing plane precisely, and then firmly fasten the rail fixing bolt.

② Fasten rail 4 to the table temporarily.

Note) A fixing bolt for rails should be designed to be able to be fastened after being fixed.

③ Locate the base and table according to the 〈 Fig.6 〉 and then, insert the roller cage from the end. In case the cage failed to be inserted due to no clearance, try installing again after moving the rail 4 to the side to adjust bolt.

④ Set the dial gauge according to the 〈 Fig.6 〉. Regulate all adjust bolts uniformly by pushing the table gently on both sides until no vibration can be felt.

⑤ Fix the stopper at the end of a rail.

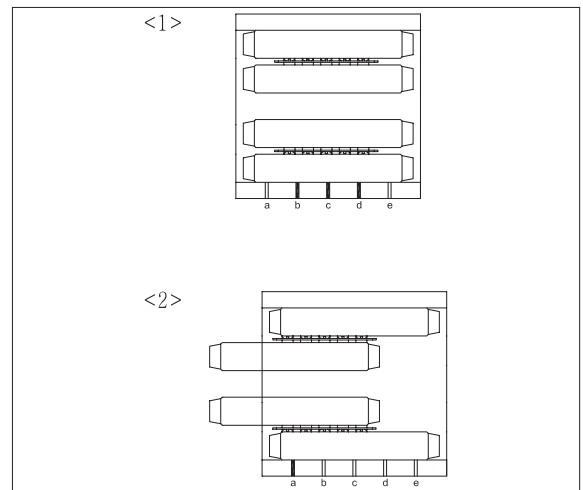
⑥ Rectify the location of the cage in order to obtain some scale of strokes by moving the table.

⑦ Locate the roller cage in the middle of a rail according to the 〈 Fig.7 〉 (1). Fasten the adjust bolts b, c, and d within the range of a roller uniformly by using a torque wrench until the dial gauge displays some displacement. Note) Displacement of the dial gauge is the preload of the roller cage in the first row.

⑧ Follow the procedure in the aforementioned and fasten the rest of the adjust bolts a and e by moving the table according to the 〈 Fig.7 〉 (2).

Note) When assembling several groups, calculate the fastening torque or slide frictional resistance force for the first group of adjust bolt. Then, from the second group, almost the same preload can be applied when assembled with same fastening torque or slide frictional resistance force of the first group.

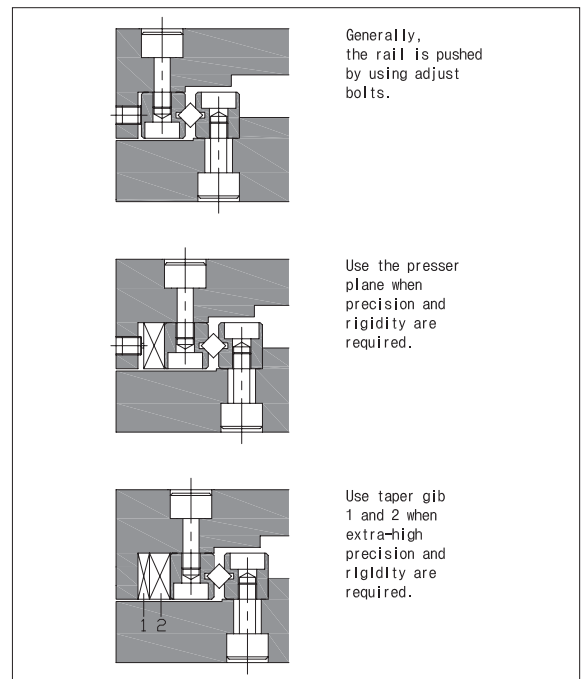
〈 Fig.7 〉 Fastening order of adjust bolts



Examples of clearance adjustment

Please design the adjust bolts in a way to press the same board with roller.

〈 Fig.8 〉 Examples of clearance adjustment



Preload of cross roller guide

Excess preload is the cause of errors such as denting or shortened service life. When fastening the adjust bolts, checking displacement value of the roller's fixing plane is needed. Permissible preload of the roller cage in the first row is displayed in the dimension table.

■ Precision of fixing plane

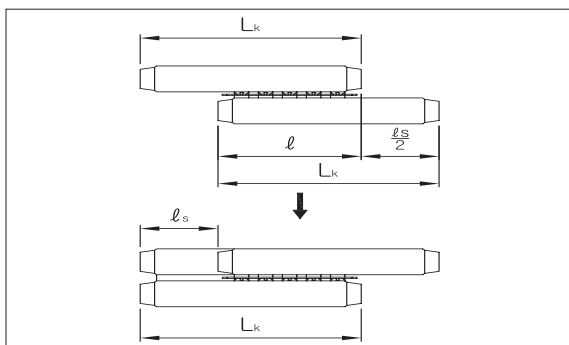
In order to obtain highly accurate driving precision, precision tolerance such as parallel or straightness of the rail fixing plane is required. The parallel and sectional level of the rail fixing plane is recommended to map with more than the equivalent of the parallel of a rail based on the grinding work (B-10 <Fig.3>). Likewise, the rail should be fixed precisely in the fixing plane.

■ Cautions when using

■ Length of a rail

Roller cage moves to the same direction as a half of table movement. Given that the length of a cage l and that of stroke l_s , the length of a rail (L_k) should be

$$L_k \geq l + \frac{l_s}{2} \quad \text{in order for a cage not to be overhung the orbiting plane.}$$



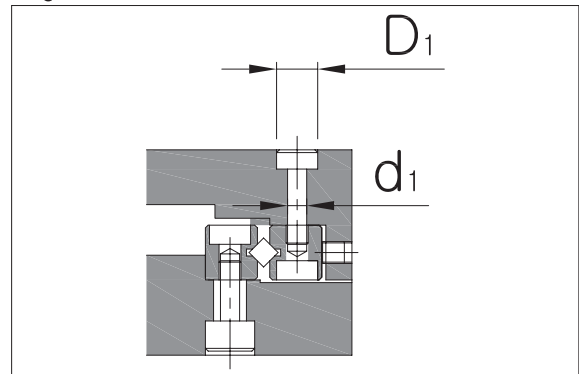
■ About stopper

Stopper is attached to the sectional side of a rail to prevent the cage from omitting. But the cage's frequent collision with the stopper, for example, due to over strokes creates the stopper's wear and loosening of its fixed screws. It certainly leads to the falling of a cage. Therefore, separate stopper needs to be made externally so that the occurrence of over strokes as well as the collision of a cage can be prevented.

■ Component parts

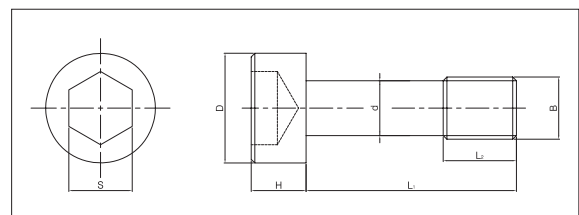
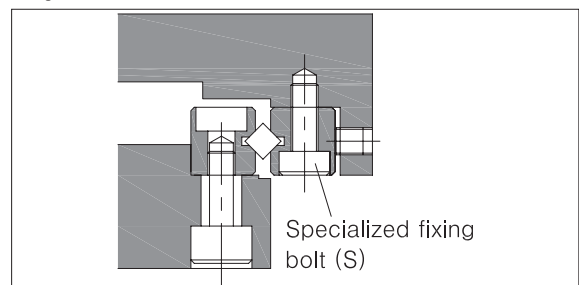
Fixing rails where clearance adjustment is needed should be fixed by using screw holes manufactured in a rail according to <Fig.9>. In this case, bolt holes (d_1), and (D_1) needs to be manufactured in proportion to adjusted quantity.

<Fig.9>



If specific structure calls for fixing like the <Fig.10>, fixing bolt (S) of this rail should have its own fixing bolt just like the one displayed in the <Table.4>

<Fig.10>

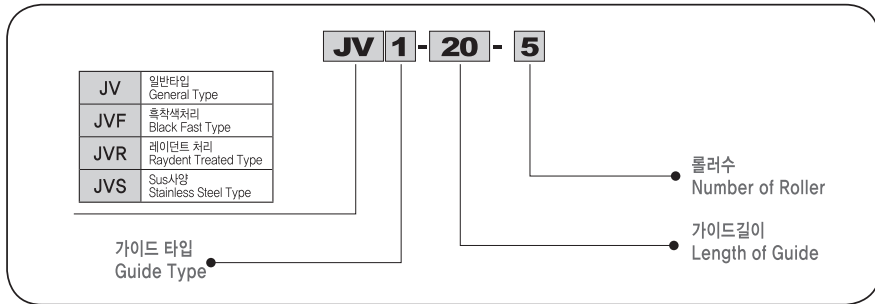
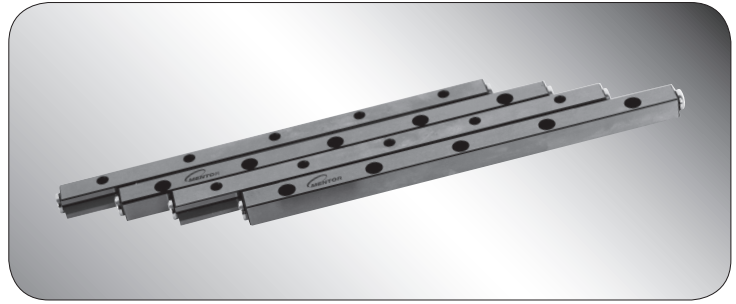


(Unit: mm)

Model No.	B	d	D	H	L1	L2	S	Supported rail
MBT 3	M3X0.5	2.6	5	3	12	5	2.5	MVR 3
MBT 4	M4X0.7	3.5	5.8	4	15	7	3	MVR 4
MBT 6	M5X0.8	4.4	8	5	20	8	4	MVR 6
MBT 9	M6	5.3	8.5	6	30	11	5	MVR 9

JV 1

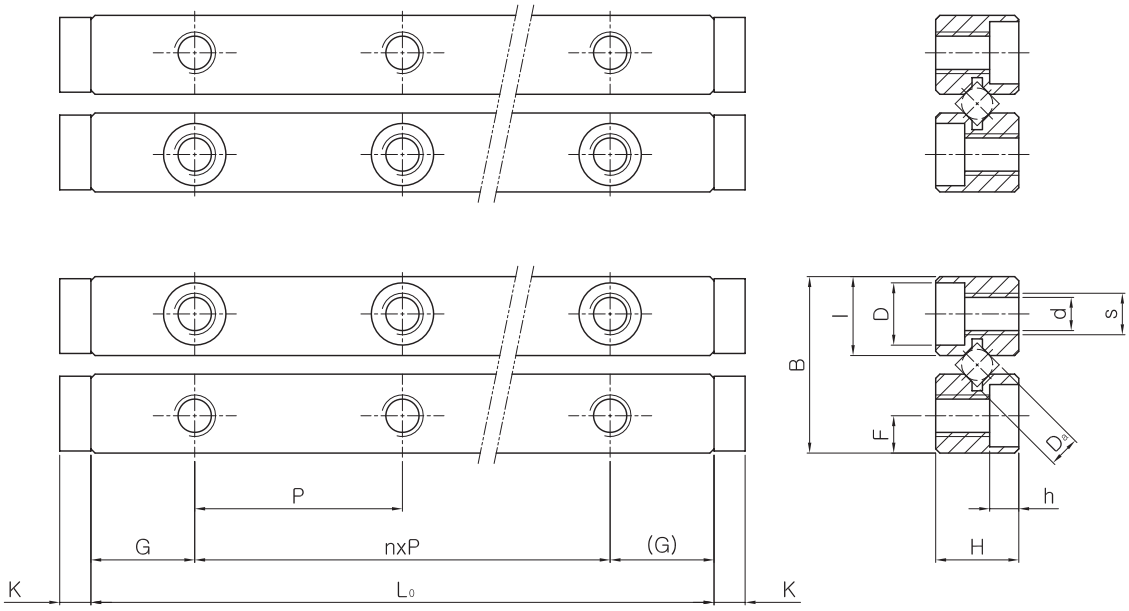
크로스 롤러 슬라이드 가이드
Crossed - Roller Slide Guide



B

Cross Roller

Specification Model	스토로크 Stroke	주요치수							
		조합지수 Combination Dimension			장착치수				
		B	H	Lo	n x P	G	I	F	S
JV 1 - 20 - 5	12	8.5	4	20	1 x 10	5	3.8	1.8	M2 x 0.4
JV 1 - 30 - 7	22			30	2 x 10				
JV 1 - 40 - 10	27			40	3 x 10				
JV 1 - 50 - 13	32			50	4 x 10				
JV 1 - 60 - 16	37			60	5 x 10				
JV 1 - 70 - 19	42			70	6 x 10				
JV 1 - 80 - 21	52			80	7 x 10				



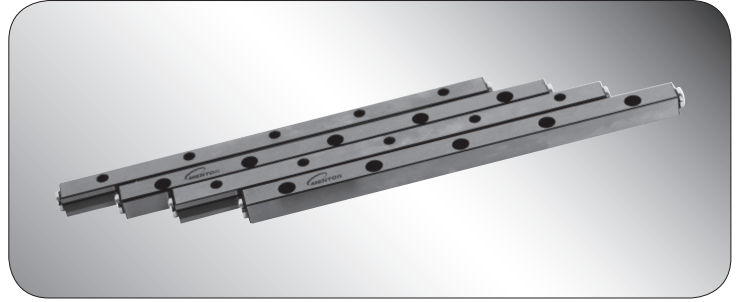
(Unit : mm)

Main Dimension				케이지길이 Length of Cage C	롤러수 The number of roller Z	허용예압량 Permissible Preload δ μm	기본정격하중(롤러 1개당) Basic Proper Load (Per 1 roller)		질량(레일) Weight of Rail Kg/m
Assembling Dimension							Cz KN	Coz KN	
d	D	h	K						
1.65	3	1.4	1.5	14	5	-2	0.152	0.153	0.11
				19	7				
				26.5	10				
				34	13				
				41.5	16				
				49	19				
				54	21				

1kN = 102kgf

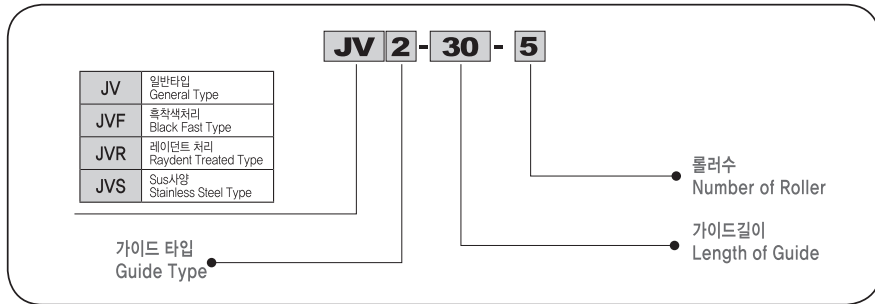
JV 2

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Crossed - Roller Slide Guide

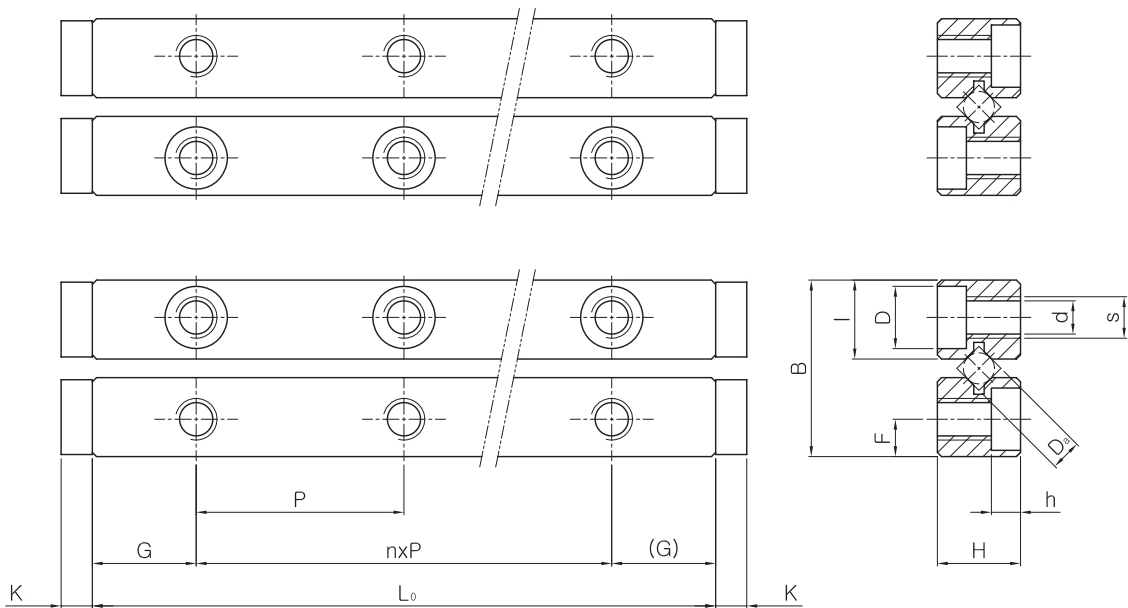


B

Cross Roller



Specification Model	스토로크 Stroke	주요치수							
		조합지수 Combination Dimension			장착치수				
		B	H	Lo	n x P	G	I	F	S
JV 2 - 30 - 5	18	12	6	30	1 x 15	7.5	5.6	2.5	M3 x 0.5
JV 2 - 45 - 8	24			45	2 x 15				
JV 2 - 60 - 11	30			60	3 x 15				
JV 2 - 75 - 13	44			75	4 x 15				
JV 2 - 90 - 16	50			90	5 x 15				
JV 2 - 105 - 18	64			105	6 x 15				
JV 2 - 120 - 21	70			120	7 x 15				
JV 2 - 135 - 23	84			135	8 x 15				
JV 2 - 150 - 26	90			150	9 x 15				
JV 2 - 165 - 29	96			165	10 x 15				
JV 2 - 180 - 32	102			180	11 x 15				

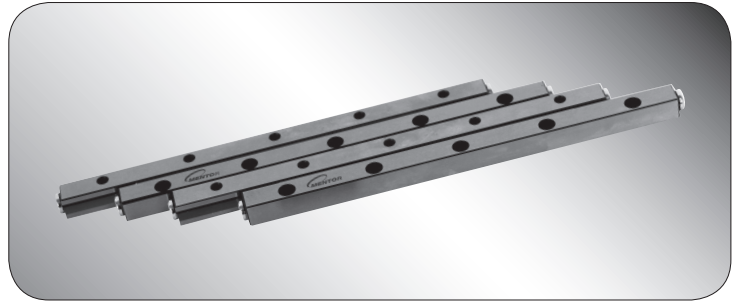


Main Dimension				케이지길이 Length of Cage C	롤러수 The number of roller Z	허용예압량 Permissible Preload δ μm	기본정격하중(롤러 1개당) Basic Proper Load (Per 1 roller)		질량(레일) Weight of Rail Kg/m
Assembling Dimension							Cz KN	Coz KN	
d	D	h	K						
2.55	4.4	2	2	21	5	-3	0.276	0.271	0.23
				33	8				
				45	11				
				53	13				
				65	16				
				73	18				
				85	21				
				93	23				
				105	26				
				117	29				
				129	32				

1kN = 102kgf

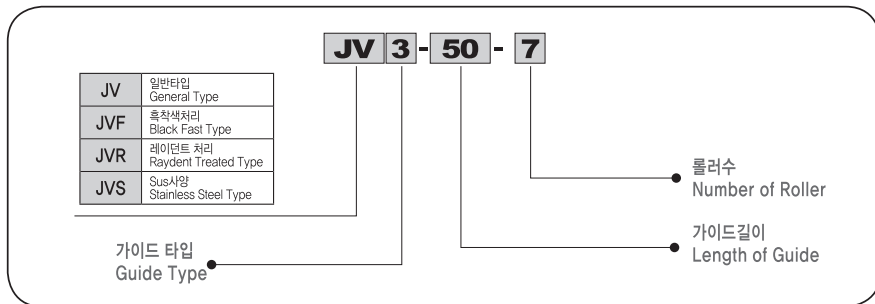
JV 3

크로스 롤러 슬라이드 가이드
Crossed - Roller Slide Guide

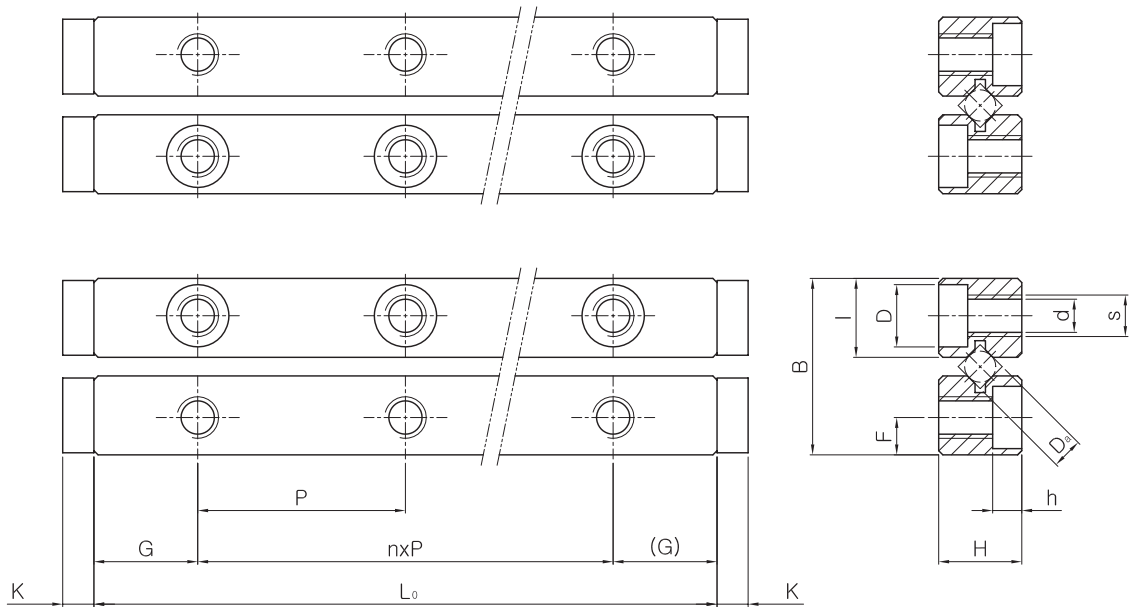


B

Cross Roller



Specification Model	스토로크 Stroke	주요치수							
		조합지수 Combination Dimension			장착치수				
		B	H	Lo	n x P	G	I	F	S
JV 3 - 50 - 7	28	18	8	50	1 x 25	12.5	8.3	3.5	M4 x 0.7
JV 3 - 75 - 10	48			75	2 x 25				
JV 3 - 100 - 14	58			100	3 x 25				
JV 3 - 125 - 17	78			125	4 x 25				
JV 3 - 150 - 21	88			150	5 x 25				
JV 3 - 175 - 24	108			175	6 x 25				
JV 3 - 200 - 28	118			200	7 x 25				
JV 3 - 225 - 31	138			225	8 x 25				
JV 3 - 250 - 35	148			250	9 x 25				
JV 3 - 275 - 38	168			275	10 x 25				
JV 3 - 300 - 42	178			300	11 x 25				



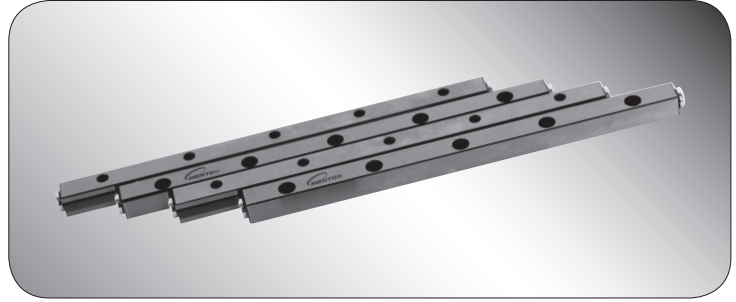
(Unit : mm)

Main Dimension				케이지길이 Length of Cage C	롤러수 The number of roller Z	허용예압량 Permissible Preload δ μm	기본정격하중(롤러 1개당) Basic Proper Load (Per 1 roller)		질량(레일) Weight of Rail Kg/m
Assembling Dimension							Cz KN	Coz KN	
d	D	h	K						
3.3	6	3.1	2.5	36	7	-4	0.639	0.611	0.45
				51	10				
				71	14				
				86	17				
				106	21				
				121	24				
				141	28				
				156	31				
				176	35				
				191	38				
				211	42				

1kN = 102kgf

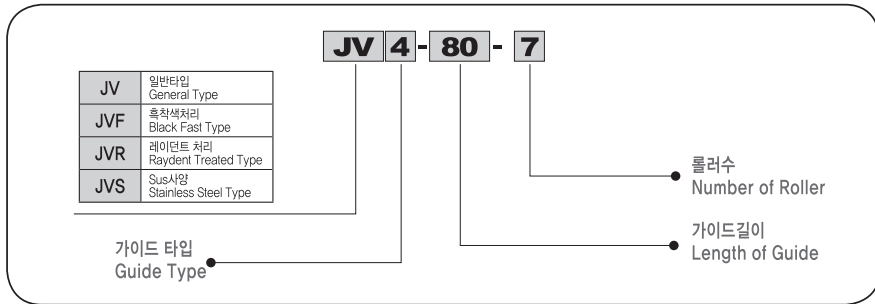
JV 4

크로스 롤러 슬라이드 가이드
Crossed - Roller Slide Guide

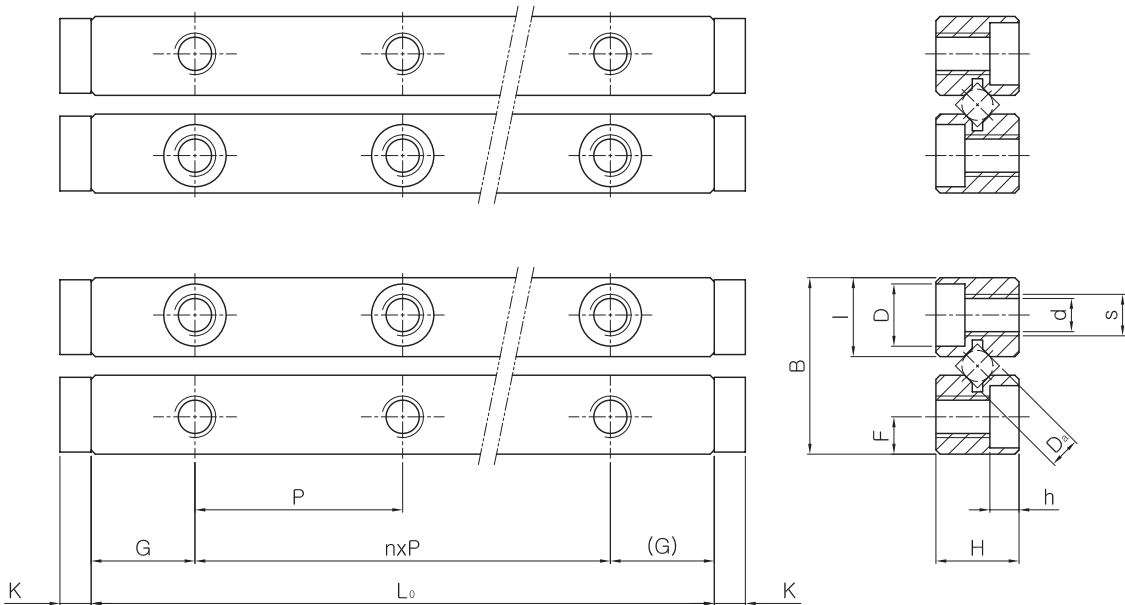


B

Cross Roller



Specification Model	스토로크 Stroke	주요치수							
		조합지수 Combination Dimension			장착치수				
		B	H	Lo	n x P	G	I	F	S
JV 4 - 80 - 7	58	22	11	80	1 x 40	20	10.2	4.5	M5 x 0.8
JV 4 - 120 - 11	82			120	2 x 40				
JV 4 - 160 - 15	106			160	3 x 40				
JV 4 - 200 - 19	130			200	4 x 40				
JV 4 - 240 - 23	154			240	5 x 40				
JV 4 - 280 - 27	178			280	6 x 40				
JV 4 - 320 - 31	202			320	7 x 40				
JV 4 - 360 - 35	226			360	8 x 40				
JV 4 - 400 - 39	250			400	9 x 40				
JV 4 - 440 - 43	274			440	10 x 40				
JV 4 - 480 - 47	298			480	11 x 40				



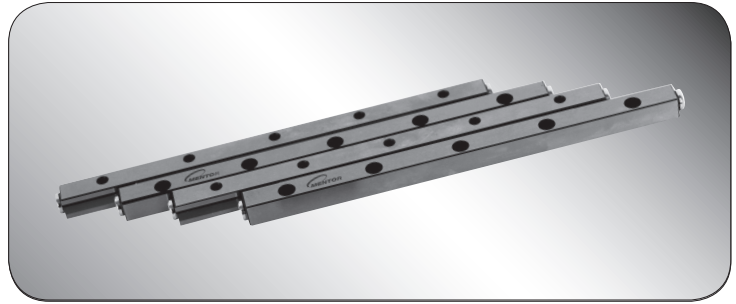
(Unit : mm)

Main Dimension				케이지길이 Length of Cage C	롤러수 The number of roller Z	허용예압량 Permissible Preload δ μm	기본정격하중(롤러 1개당) Basic Proper Load (Per 1 roller)		질량(레일) Weight of Rail Kg/m
Assembling Dimension							Cz KN	Coz KN	
d	D	h	K						
4.3	8	4.2	2.5	51	7	-5	1.38	1.35	0.8
				79	11				
				107	15				
				135	19				
				163	23				
				191	27				
				219	31				
				247	35				
				275	39				
				303	43				
				331	47				

1kN = 102kgf

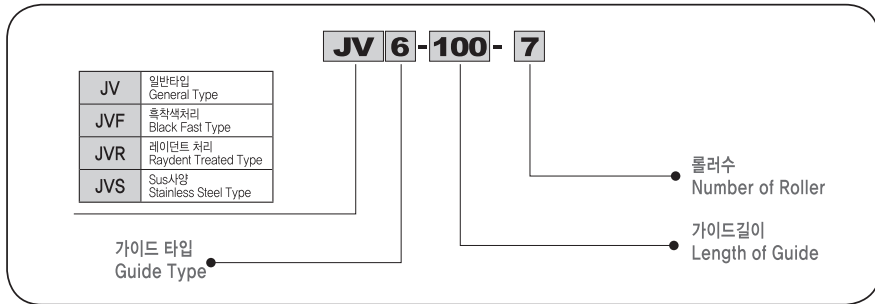
JV 6

크로스 롤러 슬라이드 가이드
Crossed - Roller Slide Guide

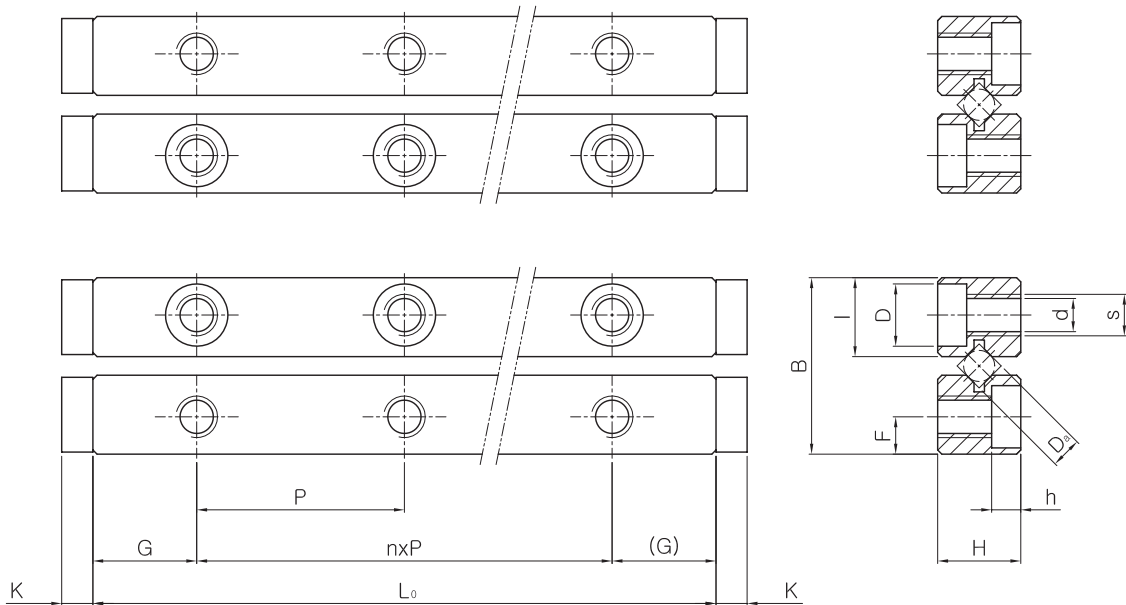


B

Cross Roller



Specification Model	스토로크 Stroke	주요치수							
		조합지수 Combination Dimension			장착치수				
		B	H	Lo	n x P	G	I	F	S
JV 6 - 100 - 7	56	30	15	100	1 x 50	25	14.4	6	M6 x 1.0
JV 6 - 150 - 10	96			150	2 x 50				
JV 6 - 200 - 13	136			200	3 x 50				
JV 6 - 250 - 17	156			250	4 x 50				
JV 6 - 300 - 20	196			300	5 x 50				
JV 6 - 350 - 24	216			350	6 x 50				
JV 6 - 400 - 27	256			400	7 x 50				
JV 6 - 450 - 31	276			450	8 x 50				
JV 6 - 500 - 34	316			500	9 x 50				
JV 6 - 550 - 38	336			550	10 x 50				
JV 6 - 600 - 41	376			600	11 x 50				



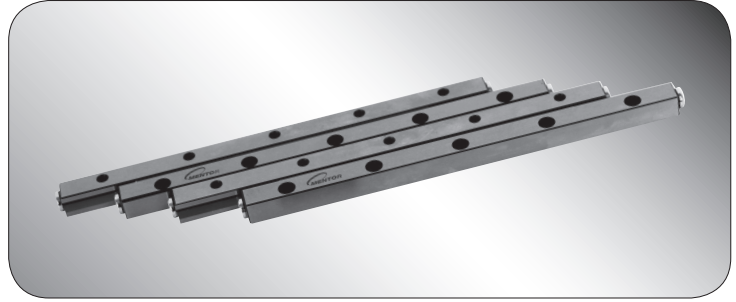
(Unit : mm)

Main Dimension				케이지길이 Length of Cage C	롤러수 The number of roller Z	허용예압량 Permissible Preload δ μm	기본정격하중(롤러 1개당) Basic Proper Load (Per 1 roller)		질량(레일) Weight of Rail Kg/m
Assembling Dimension							Cz KN	Coz KN	
d	D	h	K						
5.2	9.5	5.2	3	72	7	-7	3.78	3.78	1.5
				102	10				
				132	13				
				172	17				
				202	20				
				242	24				
				272	27				
				312	31				
				342	34				
				382	38				
412	41								

1kN = 102kgf

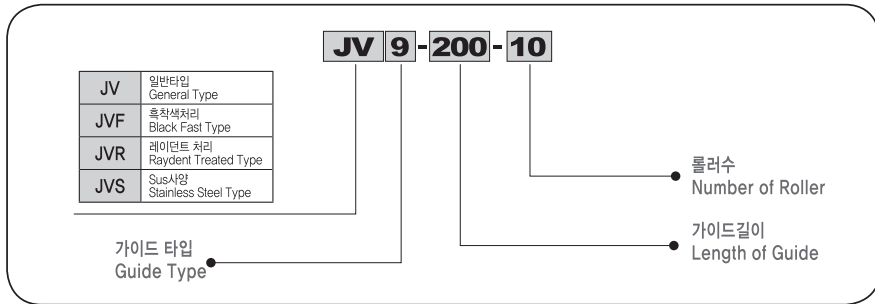
JV 9

크로스 롤러 슬라이드 가이드
Crossed - Roller Slide Guide

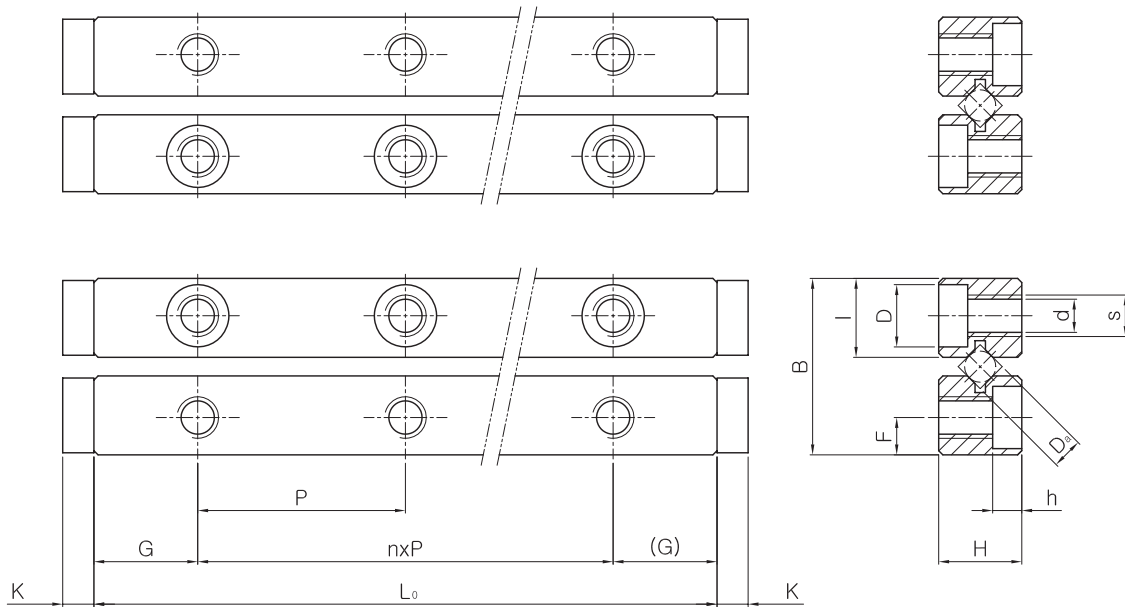


B

Cross Roller



Specification Model	스토로크 Stroke	주요치수							
		조합지수 Combination Dimension			장착치수				
		B	H	Lo	n x P	G	I	F	S
JV 9 - 200 - 10	118	40	20	200	1 x 100	50	19.2	8	M8 x 1.25
JV 9 - 300 - 15	178			300	2 x 100				
JV 9 - 400 - 20	238			400	3 x 100				
JV 9 - 500 - 25	298			500	4 x 100				
JV 9 - 600 - 30	358			600	5 x 100				
JV 9 - 700 - 35	418			700	6 x 100				
JV 9 - 800 - 40	478			800	7 x 100				
JV 9 - 900 - 45	538			900	8 x 100				
JV 9 - 1000 - 50	598			1000	9 x 100				
JV 9 - 1100 - 55	658			1100	10 x 100				
JV 9 - 1200 - 60	718			1200	11 x 100				



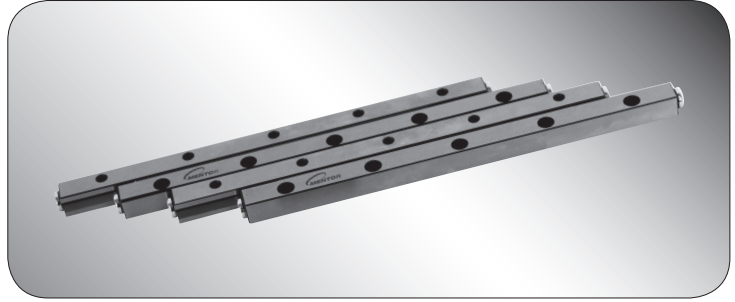
(Unit : mm)

Main Dimension				케이지길이 Length of Cage C	롤러수 The number of roller Z	허용예압량 Permissible Preload δ μm	기본정격하중(롤러 1개당) Basic Proper Load (Per 1 roller)		질량(레일) Weight of Rail Kg/m
Assembling Dimension							Cz KN	Coz KN	
d	D	h	K						
6.8	10.5	6.2	3	141	10	-10	9.53	9.48	3.2
				211	15				
				281	20				
				351	25				
				421	30				
				491	35				
				561	40				
				631	45				
				701	50				
				771	55				
				841	60				

1kN = 102kgf

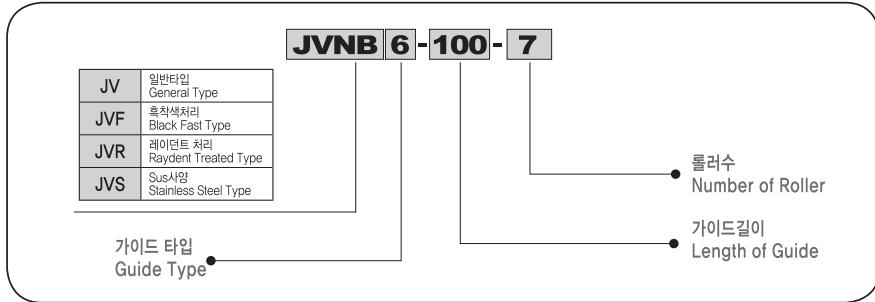
JVNB6

크로스 롤러 슬라이드 가이드
Crossed - Roller Slide Guide

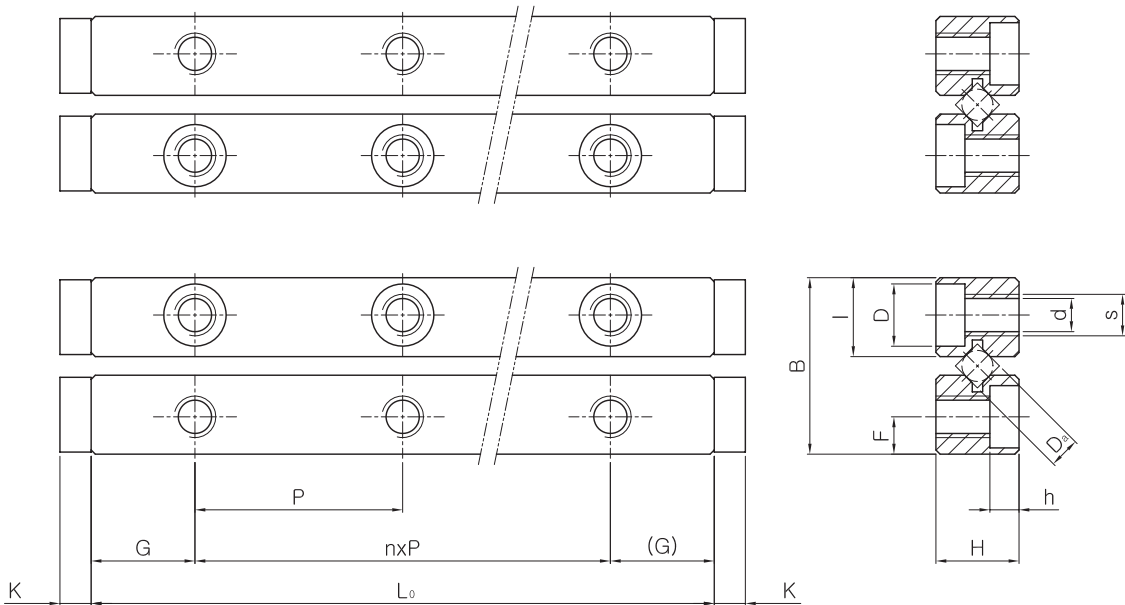


B

Cross Roller



Specification Model	스토로크 Stroke	주요치수							
		조합지수 Combination Dimension			장착치수				
		B	H	Lo	n x P	G	I	F	S
JVNB 6 - 100 - 7	56	31	15	100	1 x 50	25	14.2	6	M6 x 1.0
JVNB 6 - 150 - 10	96			150	2 x 50				
JVNB 6 - 200 - 13	136			200	3 x 50				
JVNB 6 - 250 - 17	156			250	4 x 50				
JVNB 6 - 300 - 20	196			300	5 x 50				
JVNB 6 - 350 - 24	216			350	6 x 50				
JVNB 6 - 400 - 27	256			400	7 x 50				
JVNB 6 - 450 - 31	276			450	8 x 50				
JVNB 6 - 500 - 34	316			500	9 x 50				
JVNB 6 - 550 - 38	336			550	10 x 50				
JVNB 6 - 600 - 41	376			600	11 x 50				



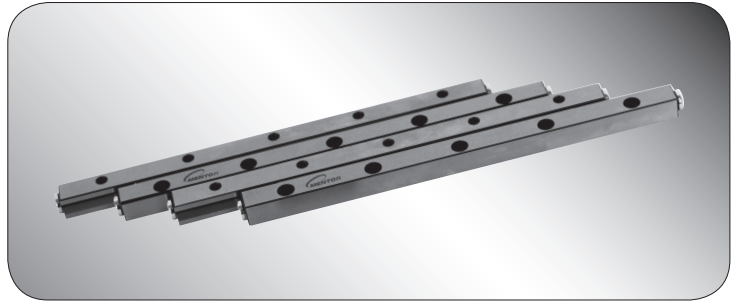
(Unit : mm)

Main Dimension				케이지길이 Length of Cage C	롤러수 The number of roller Z	허용예압량 Permissible Preload δ μm	기본정격하중(롤러 1개당) Basic Proper Load (Per 1 roller)		질량(레일) Weight of Rail Kg/m
Assembling Dimension							Cz KN	Coz KN	
d	D	h	K						
5.2	9.5	5.2	3	72	7	-7	3.78	3.78	1.5
				102	10				
				132	13				
				172	17				
				202	20				
				242	24				
				272	27				
				312	31				
				342	34				
				382	38				
412	41								

1kN = 102kgf

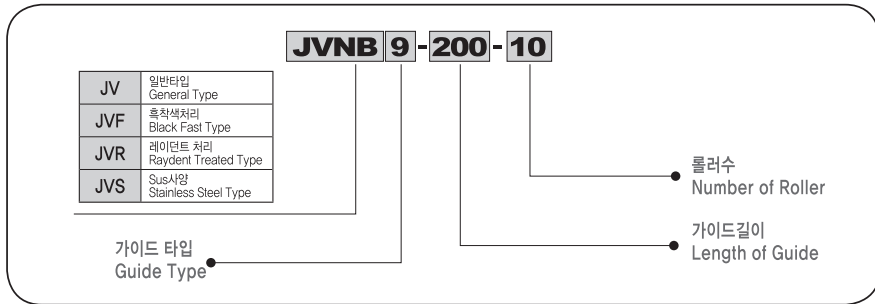
JVNB9

크로스 롤러 슬라이드 가이드
Crossed - Roller Slide Guide

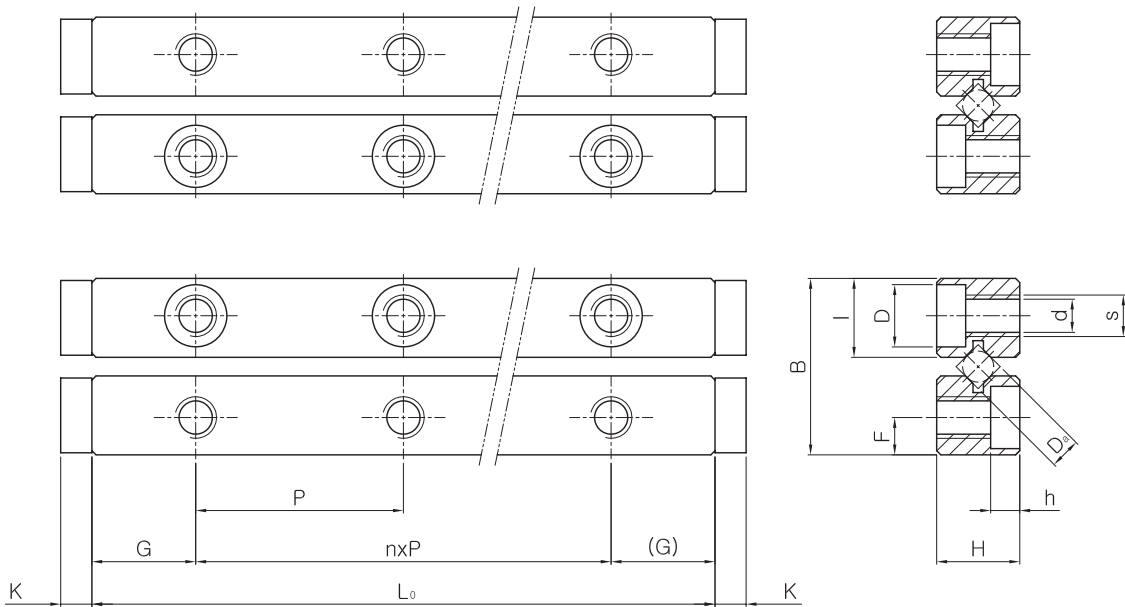


B

Cross Roller



Specification Model	스토로크 Stroke	주요 치수							
		조합치수 Combination Dimension			장착치수				
		B	H	Lo	n x P	G	I	F	S
JVNB 9 - 200 - 10	118	44	22	200	1 x 100	50	20.2	9	M8 x 1.25
JVNB 9 - 300 - 15	178			300	2 x 100				
JVNB 9 - 400 - 20	238			400	3 x 100				
JVNB 9 - 500 - 25	298			500	4 x 100				
JVNB 9 - 600 - 30	358			600	5 x 100				
JVNB 9 - 700 - 35	418			700	6 x 100				
JVNB 9 - 800 - 40	478			800	7 x 100				
JVNB 9 - 900 - 45	538			900	8 x 100				
JVNB 9 - 1000 - 50	598			1000	9 x 100				



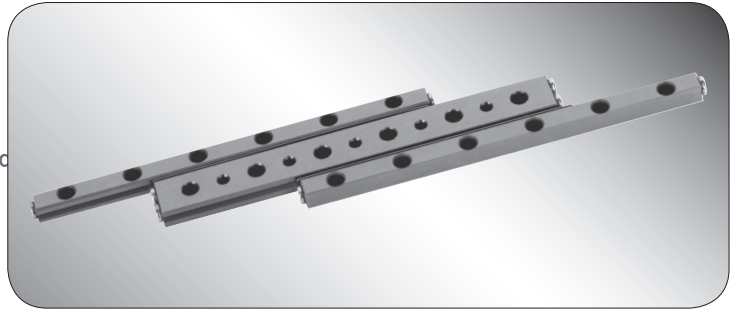
(Unit : mm)

Main Dimension				케이지길이 Length of Cage C	롤러수 The number of roller Z	허용예압량 Permissible Preload δ μm	기본정격하중(롤러 1개당) Basic Proper Load (Per 1 roller)		질량(레일) Weight of Rail Kg/m
Assembling Dimension							Cz KN	Coz KN	
d	D	h	K						
6.8	10.5	6.2	3	141	10	-10	9.53	9.48	3.2
				211	15				
				281	20				
				351	25				
				421	30				
				491	35				
				561	40				
				631	45				
				701	50				

1kN = 102kgf

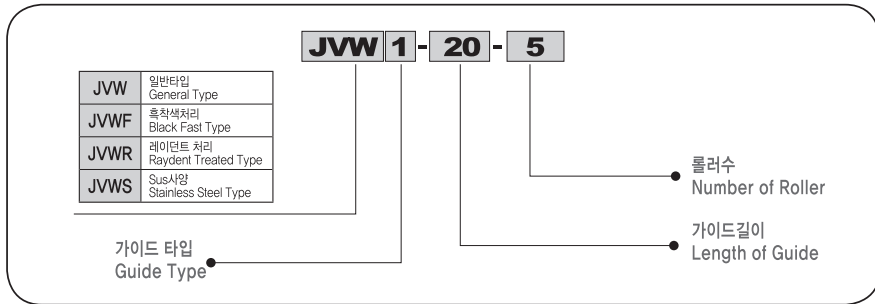
JVW 1

와이드 타입, 크로스 롤러 슬라이드 가이드
Wide Type, Crossed-Roller Slide Guide

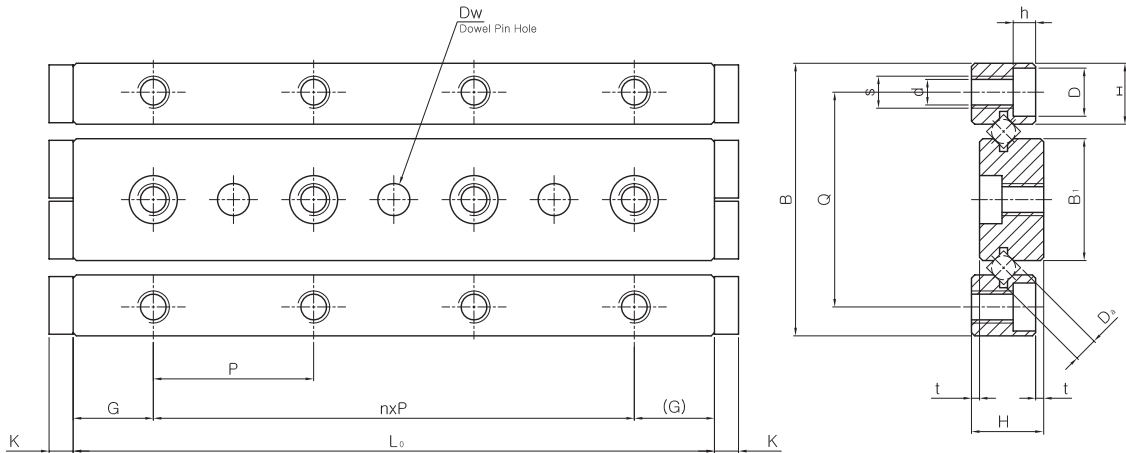


B

Cross Roller



Specification Model	스โตร크 Stroke	D _a	롤러수 The number of roller Z	주요치수						
				Lo	H	t	B	B ₁	I	Q
JVW 1 - 20 - 5	12	1.5	5	20	4.5	0.5	17	7.6	3.8	13.4
JVW 1 - 30 - 7	22		7	30						
JVW 1 - 40 - 10	27		10	40						
JVW 1 - 50 - 13	32		13	50						
JVW 1 - 60 - 16	37		16	60						
JVW 1 - 70 - 19	42		19	70						
JVW 1 - 80 - 21	52		21	80						



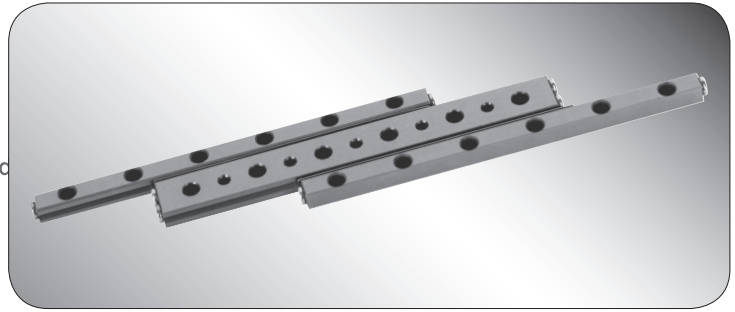
(Unit : mm)

Main Dimension								기본정격하중 Basic Proper Load		질량(레일) Weight of Rail
n x P	G	S	d	D	h	K	Dw	Cz KN	Coz KN	Kg/m
1 x 10								34	31	0.46
2 x 10								46	47	
3 x 10								68	78	
4 x 10	5	M2 x 0.4	1.65	3	1.4	1.5	2 + 0.020	78	94	
5 x 10								96	125	
6 x 10								105	140	
7 x 10								114	156	

1KN = 102kgf

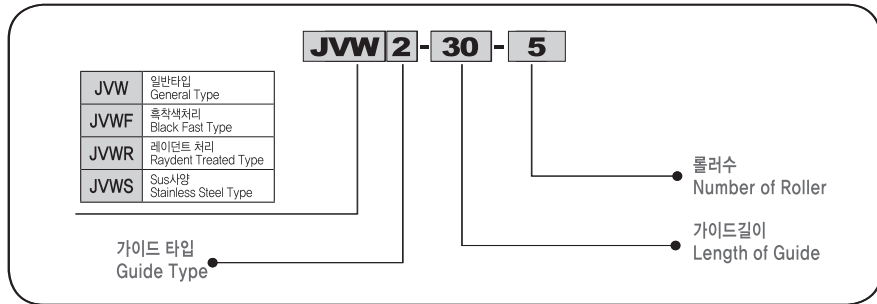
JVW 2

와이드 타입, 크로스 롤러 슬라이드 가이드
Wide Type, Crossed-Roller Slide Guide

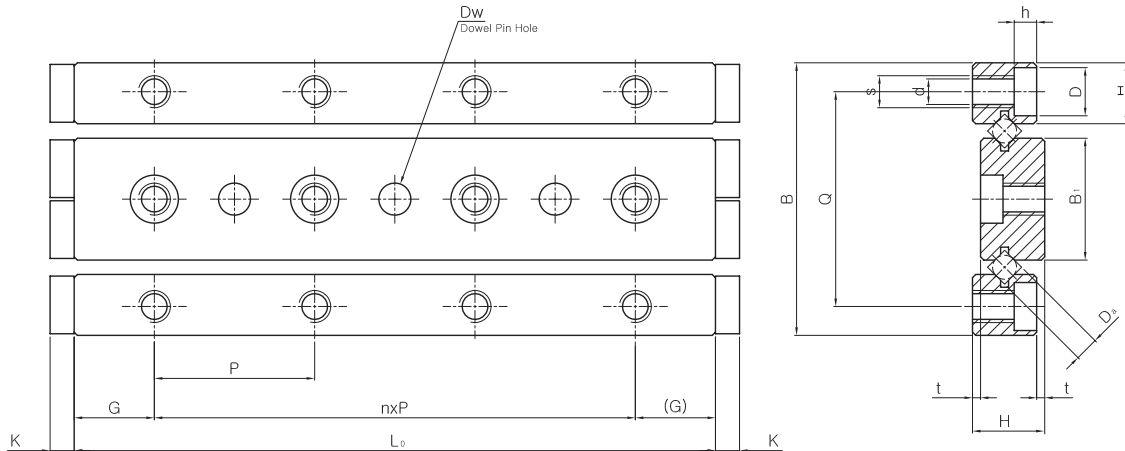


B

Cross Roller



Specification Model	스토로크 Stroke	D _a	롤러수 The number of roller Z	주요치수						
				Lo	H	t	B	B ₁	l	Q
JVW 2 - 30 - 5	18	2	5	30	6.5	0.5	24	11	5.5	19
JVW 2 - 45 - 8	24		8	45						
JVW 2 - 60 - 11	30		11	60						
JVW 2 - 75 - 13	44		13	75						
JVW 2 - 90 - 16	50		16	90						
JVW 2 - 105 - 18	64		18	105						
JVW 2 - 120 - 21	70		21	120						



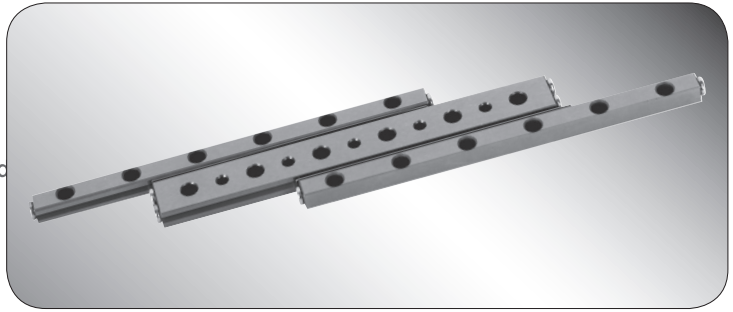
(Unit : mm)

Main Dimension								기본정격하중 Basic Proper Load		질량(레일) Weight of Rail Kg/m
n x P	G	S	d	D	h	K	D _w	C _z KN	C _{oz} KN	
1 x 15								59	59	
2 x 15								100	118	
3 x 15								118	147	
4 x 15	7.5	M3 x 0.5	2.55	4.4	2	2	3 + 0.020	135	176	0.98
5 x 15								168	235	
6 x 15								184	265	
7 x 15								199	294	

1KN = 102kgf

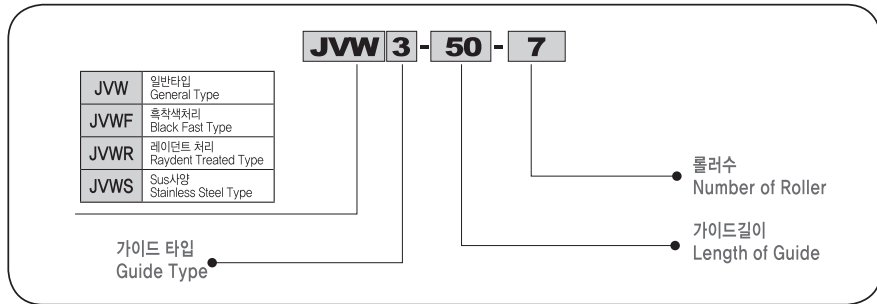
JVW 3

와이드 타입, 크로스 롤러 슬라이드 가이드
Wide Type, Cross-Roller Slide Guide

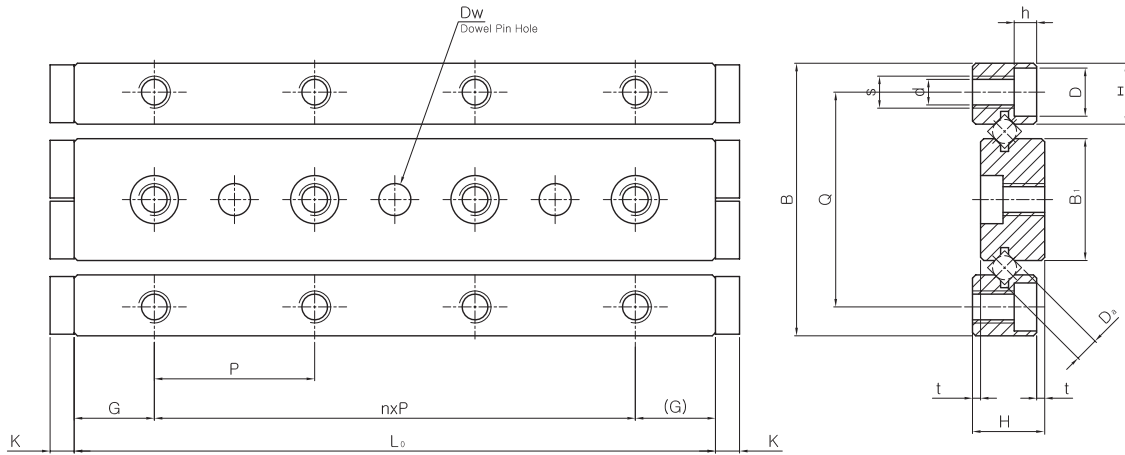


B

Cross Roller



Specification Model	스โตร크 Stroke	D _a	롤러수 The number of roller Z	주요치수						
				Lo	H	t	B	B ₁	l	Q
JVW 3 - 50 - 7	28	3	7	50	8.5	0.5	36	16.6	8.3	29
JVW 3 - 75 - 10	48		10	75						
JVW 3 - 100 - 14	58		14	100						
JVW 3 - 125 - 17	78		17	125						
JVW 3 - 150 - 21	88		21	150						
JVW 3 - 175 - 24	108		24	175						
JVW 3 - 200 - 28	118		28	200						



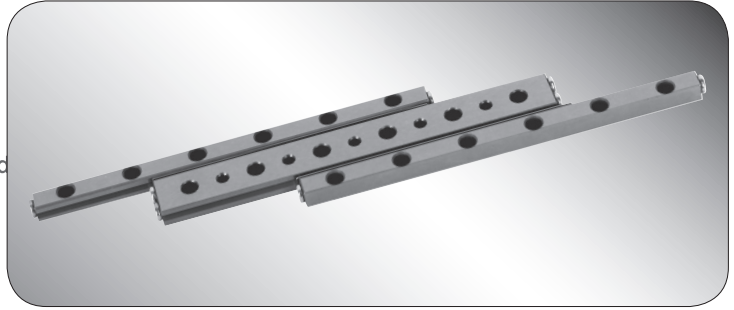
(Unit : mm)

Main Dimension								기본정격하중 Basic Proper Load		질량(레일) Weight of Rail
n x P	G	S	d	D	h	K	D _w	C _z KN	C _{oz} KN	Kg/m
1 x 25								180	212	
2 x 25								264	353	
3 x 25								340	494	
4 x 25	12.5	M4 x 0.7	3.3	6	3.1	2.5	4	376	565	1.94
5 x 25								444	706	
6 x 25								510	847	
7 x 25								572	988	

1KN = 102kgf

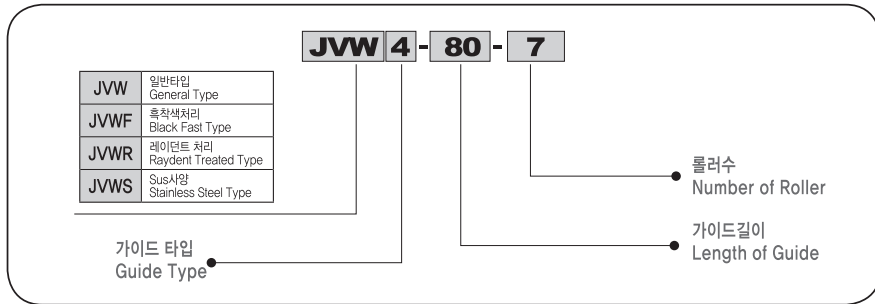
JVW 4

와이드 타입, 크로스 롤러 슬라이드 가이드
Wide Type, Crossed-Roller Slide Guide

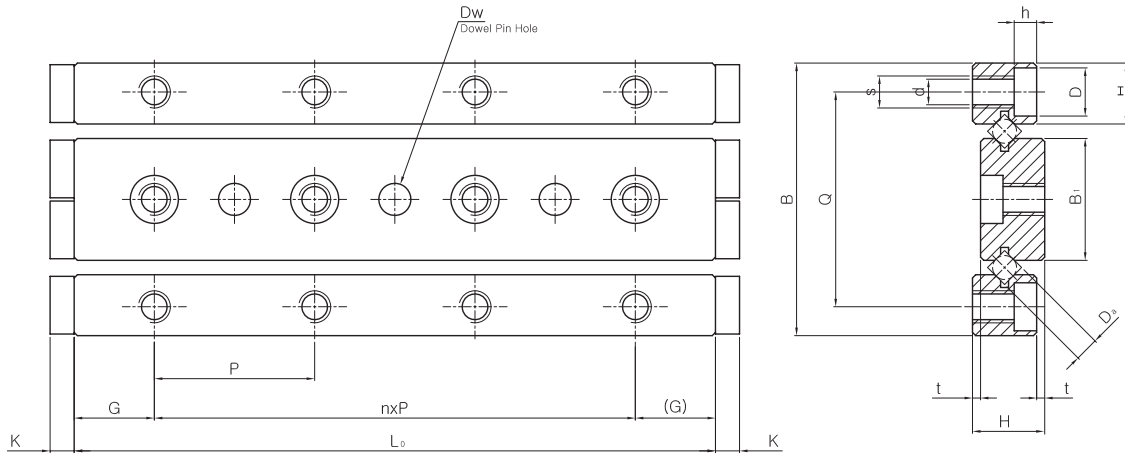


B

Cross Roller



Specification Model	스토로크 Stroke	D _a	롤러수 The number of roller Z	주요치수						
				Lo	H	t	B	B ₁	l	Q
JVW 4 - 80 - 7	58	4	7	80	11.5	0.5	44	20.4	10.2	35
JVW 4 - 120 - 11	82		11	120						
JVW 4 - 160 - 15	106		15	160						
JVW 4 - 200 - 19	130		19	200						
JVW 4 - 240 - 23	154		23	240						
JVW 4 - 280 - 27	178		27	280						



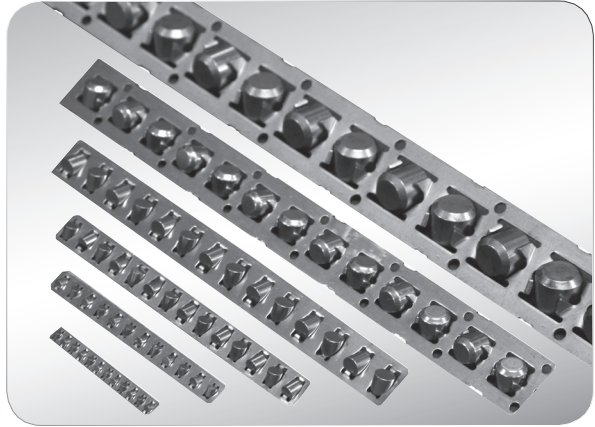
(Unit : mm)

Main Dimension								기본정격하중 Basic Proper Load		질량(레일) Weight of Rail Kg/m
n x P	G	S	d	D	h	K	D _w	C _z KN	C _{oz} KN	
1 x 40	20	M5 x 0.8	4.3	8	4.5	2.5	5	356	435	3.36
2 x 40								522	725	
3 x 40								672	1020	
4 x 40								812	1310	
5 x 40								943	1600	
6 x 40								1070	1890	

1KN = 102Kgf

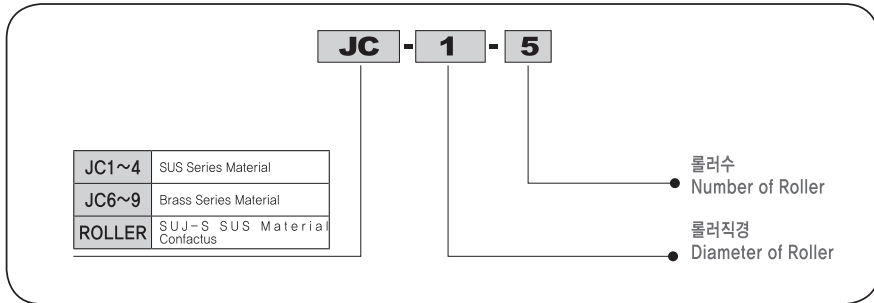
JC

롤러 케이지
Roller Cage



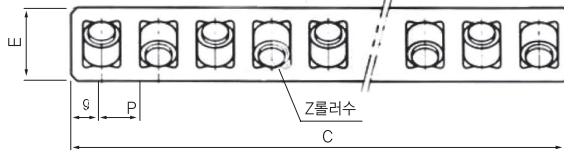
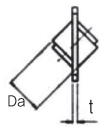
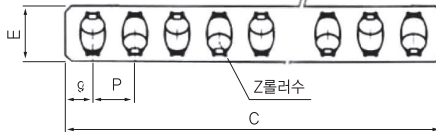
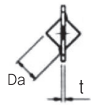
B

Cross Roller



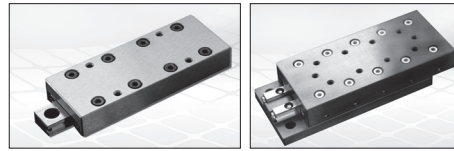
Roller Cage $\phi 1\sim 4$
Roller Cage $\phi 6\sim 9$

Roller Cage $\phi 1\sim 4$
JC1~4
JC6~9



Specification Model	적용가이드 Applicable Guide	주요치수 Main Dimension					기본정격하중 Basic Proper Load	
		D_a	t	E	P	g	C_z KN	Co_z KN
JC 1	JV1	1.5	0.2	3.5	2.5	2	0.069	21.6
JC 2	JV2	2	0.3	5	4	2.5	0.127	39.2
JC 3	JV3	3	0.4	7	5	3	0.275	87.3
JC 4	JV4	4	0.4	9	7	4.5	0.637	155
JC 6	JV6	6	0.8	13	10	6	1.76	353
JC 9	JV9	9	1.2	18	14	7.5	4.36	784

Crossed Roller Slide Table



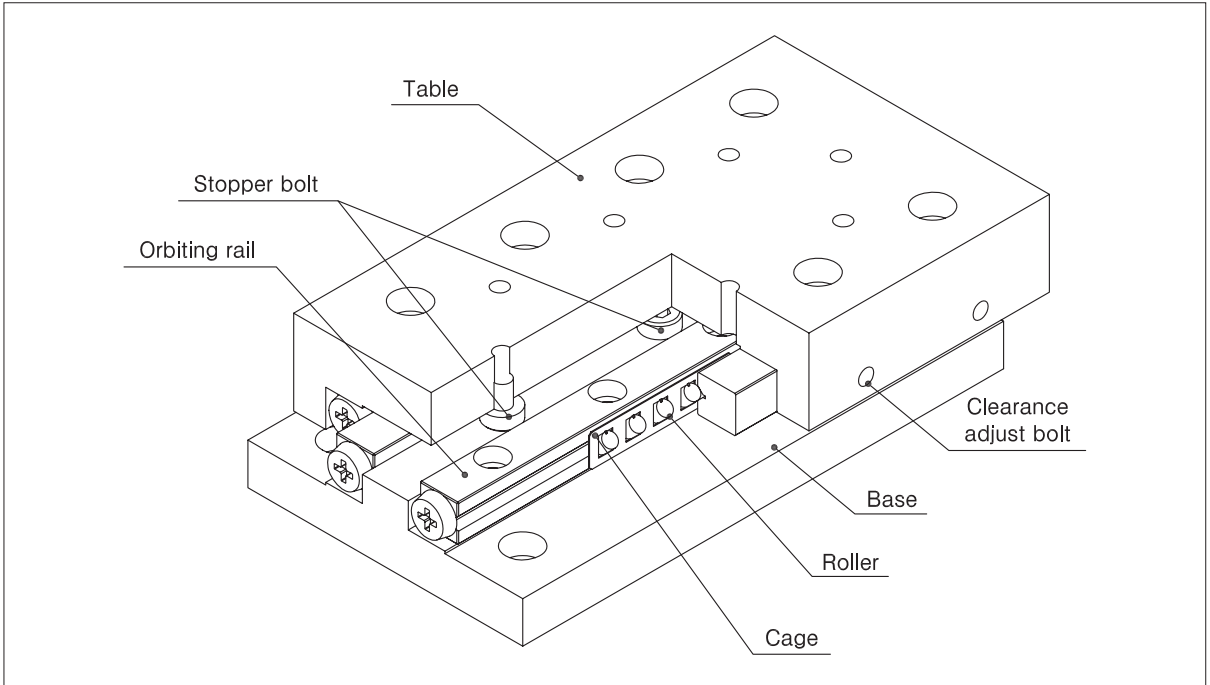
JVT 1/ 2/ 3
JVT 1-A/ 2-A/ 3-A
JVU 1/ 2/ 3/ 4/ 6/ 9

B

Cross Roller

Cross Roller Slide Table Guide

〈Fig.1〉 Structure of cross roller rotary guide model



Structure

Cross roller table is of high-precision, compact and linear guide instrument through addembling MENTOR cross roller linear guide JVU type between the table and base manufactured with superior precision. Rigidity and soft linear motion can be acquired since there's no elastic displacement against the load from each direction. There are JVU type and miniature version of JVT type for limited cross roller table. It is widely used for OA instruments and peripherals, precision equipments such as meters, printed circuit board hole manufacturer or slides including universal center lathe, tool grinders, internal grinding machine, small-sized surface grinder, and computerized wire-cut.

Features

High precision

High precision with stable linear motion can be achieved by mounting uniformly-structured orbiting plane to the base of simple structure with no manufacture errors. For opposite table side, stable linear motion with high precision can be achieved by assembling MENTOR cross roller linear guide JVU type.

High rigidity

The rigidity of table and base is made to be high by integrating the component parts. Moreover, the elastic displacement is small so that high rigidity is obtained for the load from each direction.

Wide range of permissible load

A roller with heavy load rating is assembled with fine pitch. Hence it resists heavy load and has such longevity by consisting of linear guide machine with high rigidity.

Simple Installation

As the cross roller guide is assembled between the table and the base that have been processed with high precision level, the linear guide of high precision can be obtained.

Outstanding resistance to corrosion

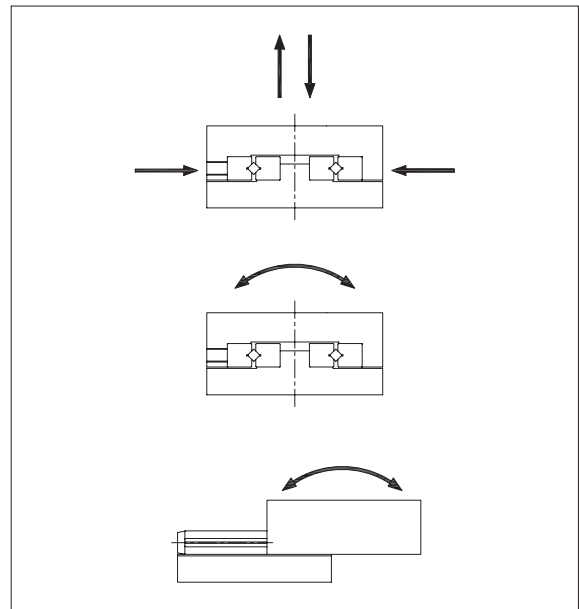
- Stainless + light-type aluminum
(JVWS, JVTS, JVTS-A type)

the table of JVWS type and JVTS-A type adopts aluminum material. Furthe, the rail and roller gauge adopts stainless, making it possible that product is light and highly resistant to corrosion.

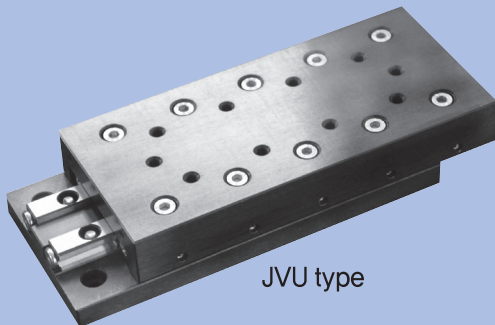
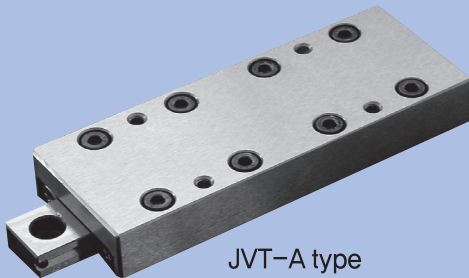
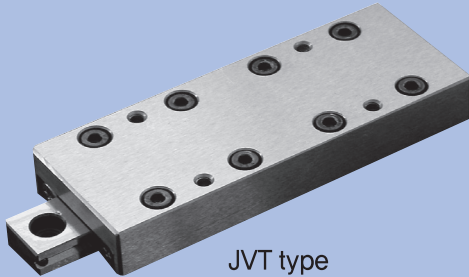
Various kinds of using methods

Since the rollers are arranged orthogonally by turns, loads from every direction applied to the table are uniformly carried.

〈Fig.2〉 Load direction



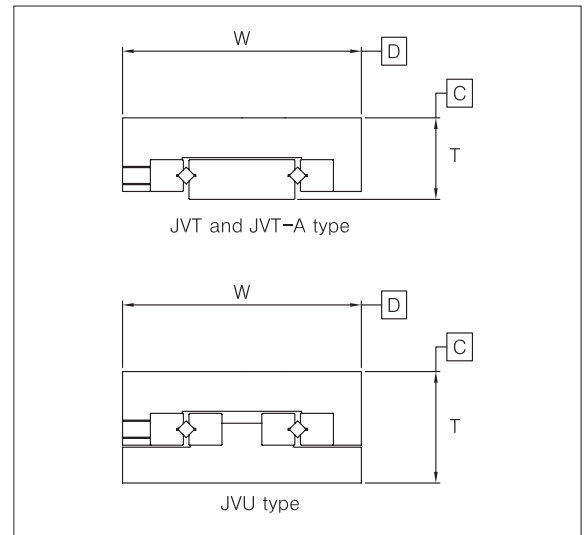
Features



Accuracy standards

The height of cross roller table(T). Permissible width(W) and the level of distance of C and D sides to the fixing plane of the base are written in the dimension table.

〈Fig.3〉 Standard size



Basic static load rating C_0

If excessive load or impact is given to JVT and JVU type when it is stalled or in motion, there occurs permanent transformation between rolling surface and roller. Basic static load rating(C_0) is the load when the sum of permanent transformation volume of the rolling surface and roller is 0.0001 times more the diameter of the latter. (Refer to Load rating of each direction). If the sum of permanent transformation volume breaks 0.0001 times of the roller's diameter, its motion will be adversely affected. Static safety factor(f_s) to the load should be considered in order to prevent it. (Refer to Static safety factor)

Basic dynamic load rating C

High precision

When each of JVT and JTV types in the first group is in motion, the load that does not transform its size at the direction where 90% of the first group's rated life span reaches L=100km is called basic dynamic load rating(C), which can be used for calculate life span. (Refer to Rated Life span)

Load ratings in each direction

Load rating of JVT and JTV type is equal from all four direction including radial, reverse radial, and horizontal side. The value is written in (C) and (C₀) in the dimension table.

Static safety factor F_s

Sudden external force can be created when direct-acting system stops or is in motion due to vibration, impact or maneuvered stall. That's why the static safety factor to the applied load needs to be taken into account.

$$f_s = \left(\frac{C_0}{P_c}\right) \text{ or } f_s = \left(\frac{M_0}{M}\right)$$

f_s : Static safety factor

C₀ : Basic static load rating

M₀ : Static-permissible moment (MP₀ · MR₀ · Mr₀)

P_c : Applied load

M : Applied moment

Reference value of static safety factor

Static safety factor written in the <Table.1> should be used as the minimum reference value depending on each for use.

<Table.1> Reference value of static safety factor(f_s)

Machine for use	Load condition	Lower limit of f _s
Standard industrial machine	With vibration or impact	1.0~1.3
	Without vibration or impact	2.0~3.0
Machine tools	With vibration or impact	1.0~1.5
	Without vibration or impact	2.5~7.0

Rated life span L

The life span of cross roller table can be calculated with the following formula.

$$L_0 = \left(\frac{f_T}{f_W} \cdot \frac{C}{P_C}\right)^{\frac{10}{3}} \times 100$$

L : Rated life span (km)

(It's the total distance where 90% of the first group can reach without flaking when each of the same JVT · JTV type in the first group is put in motion under the same condition.)

C : Basic dynamic load rating (kN)

P_c : Applied load (kN)

f_T : Temperature factor refer to <Fig.4>

f_W : Load factor refer to <table.2>

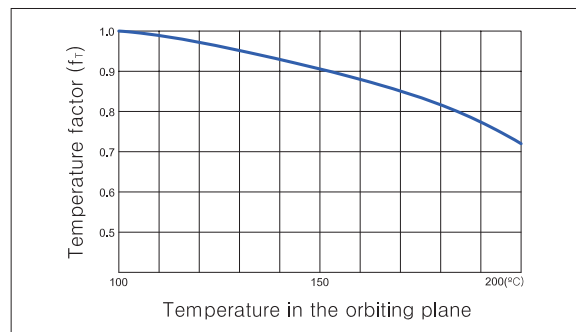
When the length and lap number of stroke is uniform, service life can be figured by using the following formula after rated life span(L) is calculated from the formula mentioned above.

$$L_h = \left(\frac{L \times 10^6}{2 \times \ell_s \times n_l \times 60}\right)$$

f_T : Temperature factor

When the environment temperature where the linear motion system is used is over 100°C, temperature factor below should be multiplied considering the possible adverse effect caused by high temperature.

<Fig.4>Temperature factor (f_T)



Note)In case that environment temperature is over 100°C contact MENTOR

■ f_w : Load factor

Shuffling machine is likely to be affected by vibration or impact during drive. While driving highspeed, particularly, it is a lot more difficult to calculate each value precisely. Therefore, when the load applied to the JVT and JVU type cannot be calculated or the impact of speed vibration is large, the load factor in the table below should be divided into the basic load rating(C) and (C_0).

〈Table.2〉 Load factor (f_w)

Vibration • Impact	Velocity (V)	f_w
Meager	For meager speed $V \leq 0.25\text{m/s}$	1.0 ~ 1.2
	For low speed $0.25 < V \leq 1.0\text{m/s}$	1.2 ~ 1.5
Standard industrial machine	For average speed $1.0 < V \leq 2.0\text{m/s}$	1.5 ~ 2.0
Machine tools	For high speed $V > 2.0\text{m/s}$	2.0 ~ 3.5

Cautions when using

■ Lubrication

- 1) To lubricate a cross roller table, use lithium soap grease or properly just like with the standard bearing.
- 2) Completely eliminate a rust preventive oil and apply a lubricant to the product before using a product.
- 3) Do not mix lubricants having different physical properties.
- 4) General lubricants may not be used at clean rooms or places exposed to regular vibrations, or under special environments such as vacuum, low temperatures and high temperatures.
- 5) Please consult with MENTOR before using the lubricants when special lubricants are to be used.

■ Handling

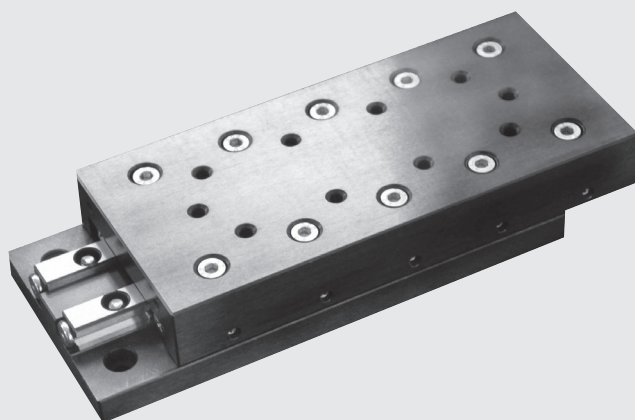
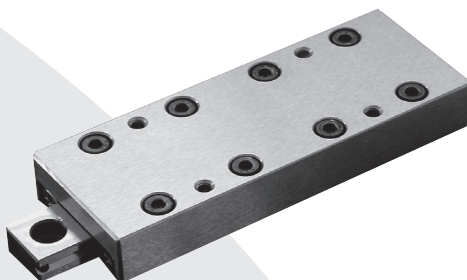
- 1) Please do not disassemble a product as the separation of components from product is responsible for inflow of dust into the product or poor assembling accuracy in mounting faces of the respective components.
- 2) The cross coller table may be damaged if a cross coller table is dropped or impacted. Please be careful not to impact the product as the impact may damage functions of the product although the product looks normal when an impact is applied to a product.

■ Additional process of table & base

- 1) Be careful not to let any chips put into the cross roller guide parts.
- 2) Fixing holes should be blocked, not penetrated. It also can be manufactured according to specific designation.
Clearance of the cross roller table is already adjusted with appropriate preload, thus do not touch the clearance adjust screws.

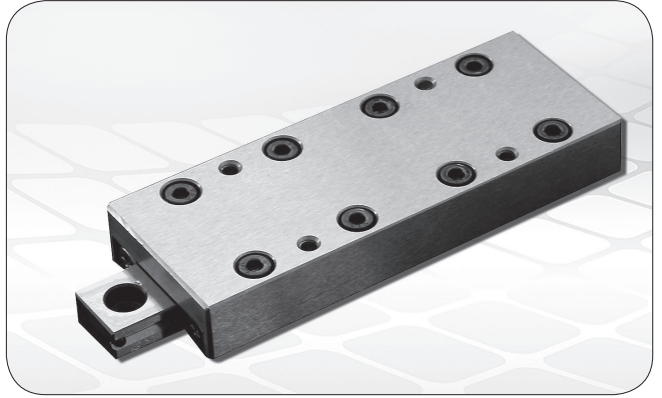
■ Distortion of a cage

Although roller-sustaining cage moves with sharp accuracy, distortion can occur due to a moment or mechanic vibrations. When such distortion is the problem, using miniature version of linear rail system is recommended.



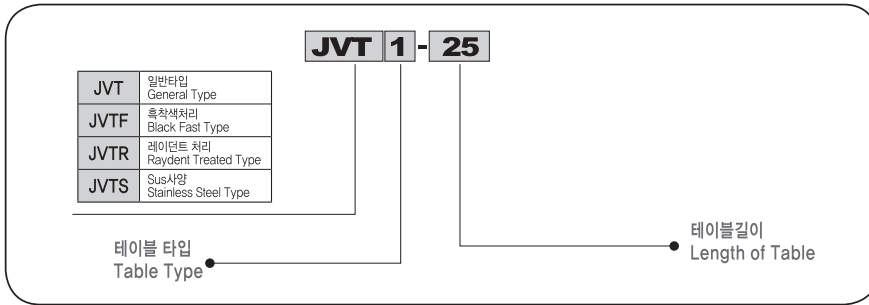
JVT 1

베이스 탭 타입
Base Tap Type

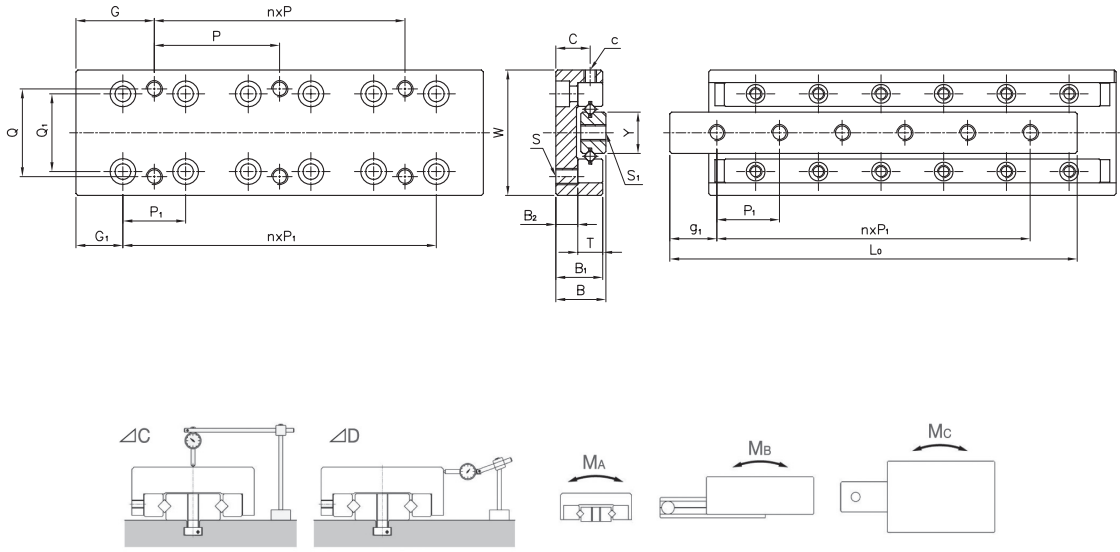


B

Cross Roller



Specification Model	주요 치수 Main Dimension					테이블면 치수 Table Surface Dimension								
	최대 스트로크 Max Stroke	폭 Width W ±0.1	높이 Height B ±0.1	길이 Length L _o	질량 Weight g	테이블장착탭위치 Table Tap Position					P ₁	n X P ₁	Q ₁	G ₁
						Q	P	n X P	G	S				
JVT 1- 25	12	20	8	25	23	14	18	1 x 18	3.5	M2.6 x 0.45	10	1 x 10	12.4	7.5
JVT 1- 35	18			35	33		28	1 x 28				2 x 10		
JVT 1- 45	25			45	43		20	1 x 20				3 x 10		
JVT 1- 55	32			55	53		30	1 x 30	4 x 10					
JVT 1- 65	40			65	63		20	2 x 20	5 x 10					
JVT 1- 75	45			75	73		30	1 x 30	6 x 10					
JVT 1- 85	50			85	83		30	2 x 30	7 x 10					



정도 Accuracy

각방향의 모멘트 Moment in each direction

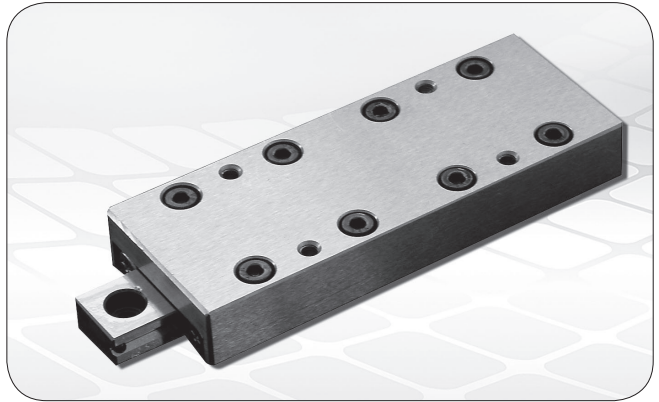
(Unit : mm)

측면치수 Side Dimension						베이스면 치수 장착구멍 위치 Base Dimension & Hole Position				기본정격하중 Basic Proper Load		정격허용모멘트 Regular Permissible Momnet			정도 μm Accuracy									
B ₁	B ₂	T	Y	C	c	S ₁	P ₁	n X P ₁	g ₁	롤러수 The number of roller Z	C KN	Co KN	MA N.m	MB N.m	Mc N.m	C	D							
7.5	3.5	4	6.6	5.5	M2	M2.6 X 0.45	10	7.5	2 x 7.5	5	5	0.46	0.61	2.29	1.52	1.25	4	2						
									2 x 10		7	0.63	0.92	3.44	2.62	2.32								
									3 x 10		10	0.95	1.53	5.73	4.14	4.53								
																7.5	12		1.09	1.83	6.87	5.92	6.41	5
																14	1.23		2.14	8.02	8.08	8.62		
																	18		1.50	2.75	10.3	13.3	14.0	
																	20		1.63	3.05	11.5	16.4	17.2	

1KN \approx 102kgf 1N · m \approx 0.102Kgf

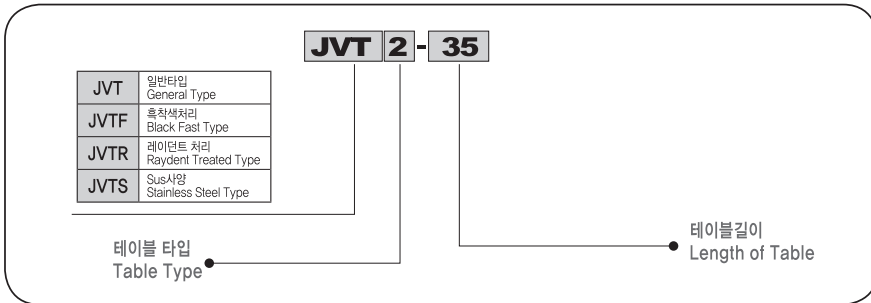
JVT 2

베이스 탭 타입
Base Tap Type

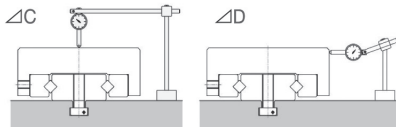
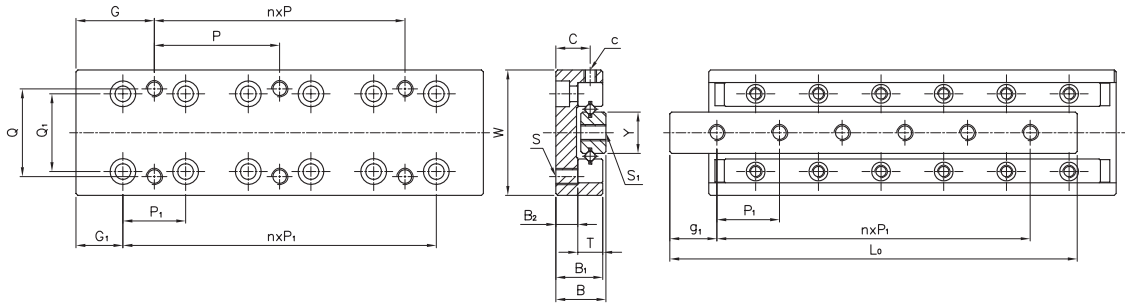


B

Cross Roller



Specification Model	주요 치수 Main Dimension					테이블면 치수 Table Surface Dimension									
	최대 스트로크 Max Stroke	폭 Width W ±0.1	높이 Height B ±0.1	길이 Length L ₀	질량 Weight g	테이블장착탭위치 Table Tap Position					P ₁	n X P ₁	Q ₁	G ₁	
						Q	P	n X P	G	S					
JVT 2- 35	18			35	78		28	1 x 28	3.5	M3 x 0.5	15	1 x 15	20	10	
JVT 2- 50	30			50	114		43	1 x 43				2 x 15			
JVT 2- 65	40			65	150		30	1 x 30				3 x 15			
JVT 2- 80	50	30	12	80	186	22	45	1 x 45				17.5			4 x 15
JVT 2- 95	60			95	222		30	2 x 30				5 x 15			
JVT 2- 110	70			110	258		45	1 x 45				32.5			6 x 15
JVT 2- 125	80			125	294		45	2 x 45				17.5			7 x 15



정도 Accuracy



각방향의 모멘트 Moment in each direction

(Unit : mm)

측면치수 Side Dimension						베이스면 치수 장착구멍 위치 Base Dimension & Hole Position					기본정격하중 Basic Proper Load		정격허용모멘트 Regular Permissible Momnet			정도 μm Accuracy	
B ₁	B ₂	T	Y	C	c	S ₁	P ₁	n X P ₁	g ₁	롤러수 The number of roller Z	C KN	Co KN	MA N.m	MB N.m	Mc N.m	C	D
11.5	5.5	6	12	8.5	M2	M3 x 0.5	20	1 x 20	7.5	5	0.84	1.09	7.06	4.32	3.55	4	2
										7	1.16	1.63	10.6	7.45	6.59		
										9	1.46	2.17	14.1	11.8	10.5		
										12	2.01	3.26	21.2	16.8	18.2	5	
										14	2.26	3.80	24.7	23.0	24.5		
										17	2.51	4.34	28.2	37.9	35.7		
										19	2.76	4.89	31.8	46.7	44.3		

1KN \approx 102Kgf 1N · m \approx 0.102Kgf

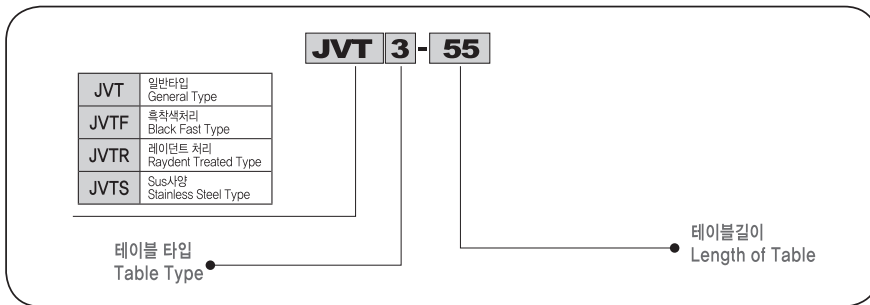
JVT 3

베이스 탭 타입
Base Tap Type

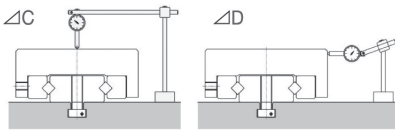
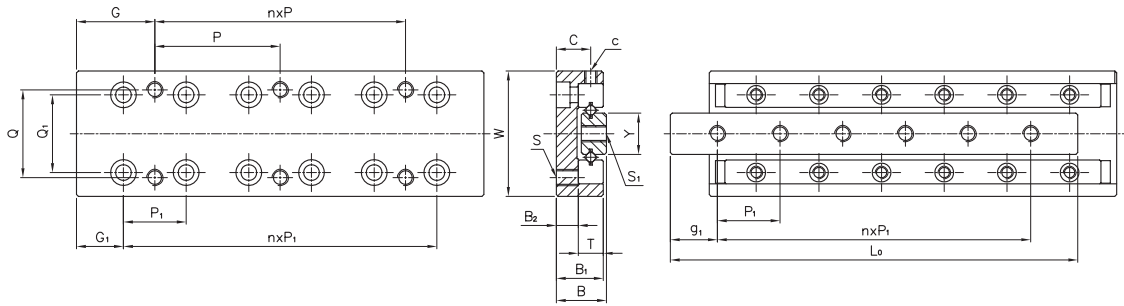


B

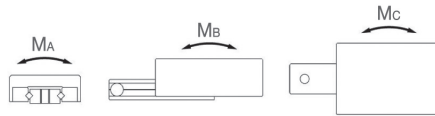
Cross Roller



Specification Model	주요 치수 Main Dimension					테이블면 치수 Table Surface Dimension								
	최대 스트로크 Max Stroke	폭 Width W ±0.1	높이 Height B ±0.1	길이 Length L _o	질량 Weight g	테이블장착탭위치 Table Tap Position					P ₁	n X P ₁	Q ₁	G ₁
	Q	P	n X P	G	S									
JVT 3 - 55	30	40	16	55	229	30	40	1 x 40	7.5	M4 x 0.7	25	1 x 25	28.4	15
JVT 3 - 80	45			80	337		65	1 x 65				2 x 25		
JVT 3 - 105	60			105	445		50	1 x 50				3 x 25		
JVT 3 - 130	75			130	553		75	1 x 75	27.5			4 x 25		
JVT 3 - 155	90			155	661		50	2 x 50	5 x 25					
JVT 3 - 180	105			180	769		75	1 x 75	52.5			6 x 25		
JVT 3 - 205	130			205	877		75	2 x 75	27.5			7 x 25		



정도 Accuracy



각방향의 모멘트 Moment in each direction

(Unit : mm)

측면치수 Side Dimension							베이스면 치수 장착구멍 위치 Base Dimension & Hole Position					기본정격하중 Basic Proper Load		정격허용모멘트 Regular Permissible Momnet			정도 μ m Accuracy	
B ₁	B ₂	T	Y	C	c	S ₁	P ₁	n X P ₁	g ₁	롤러수 The number of roller Z	C KN	Co KN	MA N.m	MB N.m	Mc N.m	C	D	
15.5	7.5	8	16	11.5	M2	M4 x 0.7	35	1 x 35	10	6	2.71	3.67	31.9	12.2	13.9	2	5	
											4.06	6.11	53.1	33.1	36.2			
											4.68	7.33	63.8	64.6	59.8	3	6	
											5.87	9.77	85	107	100			
											6.98	12.2	106	131	138			
											8.05	14.7	128	189	196			
											8.57	15.9	138	222	230			

1KN \approx 102Kgf 1N \cdot m \approx 0.102Kgf

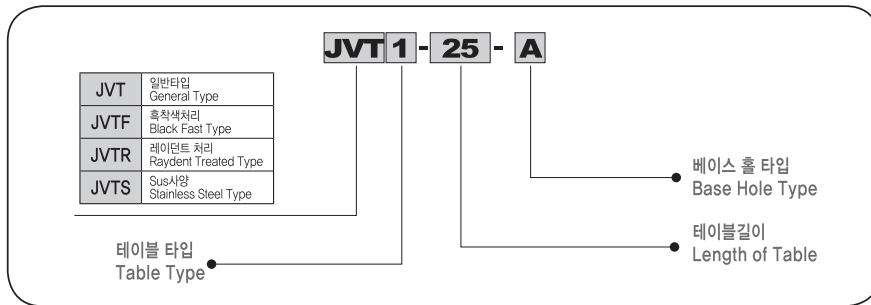
JVT 1-A

베이스 홀 타입
Base Hole Type

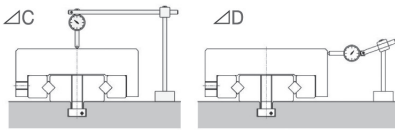
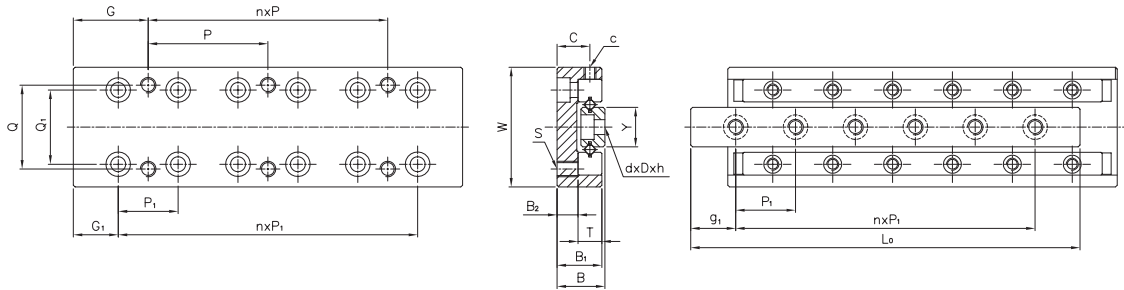


B

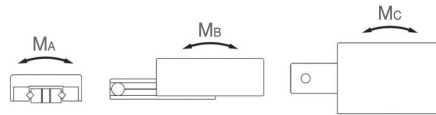
Cross Roller



Specification Model	주요 치수 Main Dimension					테이블면치수 Table Surface Dimension								
	최대 스트로크 Max Stroke	폭 Width W ±0.1	높이 Height B ±0.1	길이 Length L _o	질량 Weight g	테이블장착탭위치 Table Tap Position					P ₁	n X P ₁	Q ₁	G ₁
						Q	P	n X P	G	S				
JVT 1 - 25 - A	12	20	8	25	23	14	18	1 x 18	3.5	M2.6 x 0.45	10	1 x 10	12.4	7.5
JVT 1 - 35 - A	18			35	32		28	1 x 28				2 x 10		
JVT 1 - 45 - A	25			45	42		20	1 x 20				3 x 10		
JVT 1 - 55 - A	32			55	52		30	1 x 30	4 x 10					
JVT 1 - 65 - A	40			65	62		20	2 x 20	5 x 10					
JVT 1 - 75 - A	45			75	72		30	1 x 30	6 x 10					
JVT 1 - 85 - A	50			85	82		30	2 x 30	7 x 10					



정도 Accuracy



각방향의 모멘트 Moment in each direction

(Unit : mm)

측면치수 Side Dimension						베이스면 치수 장착구멍 위치 Base Dimension & Hole Position					기본정격하중 Basic Proper Load		정격허용모멘트 Regular Permissible Momnet			정도 μm Accuracy	
B ₁	B ₂	T	Y	C	c	d x D x h	P ₁	n X P ₁	g ₁	롤러수 The number of roller Z	C KN	Co KN	MA N.m	MB N.m	Mc N.m	C	D
7.5	3.5	4	6.6	5.5	M2	2.5 x 4.1 x 2.2	-	18	3.5	5	0.46	0.61	2.29	1.52	1.25	2	4
							-	25	5	7	0.63	0.92	3.44	2.62	2.32		
							25	38	3.5	10	0.95	1.53	5.73	4.14	4.53	5	
							29	48	3.5	12	1.09	1.83	6.87	5.92	6.41		
							31	55	5	14	1.23	2.14	8.02	8.08	8.62		
							35	65	5	18	1.50	2.75	10.3	13.3	14.0		
							40	75	5	20	1.63	3.05	11.5	16.4	17.2		

1KN \approx 102Kgf 1N · m \approx 0.102Kgf

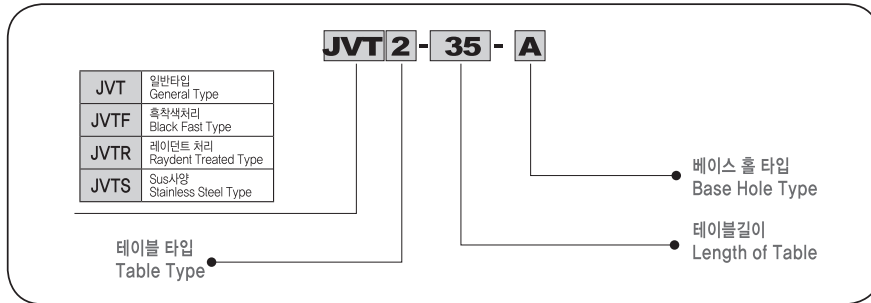
JVT 2-A

베이스 타입
Base Hole Type

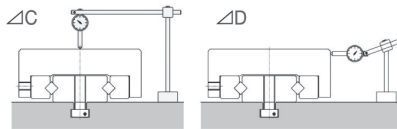
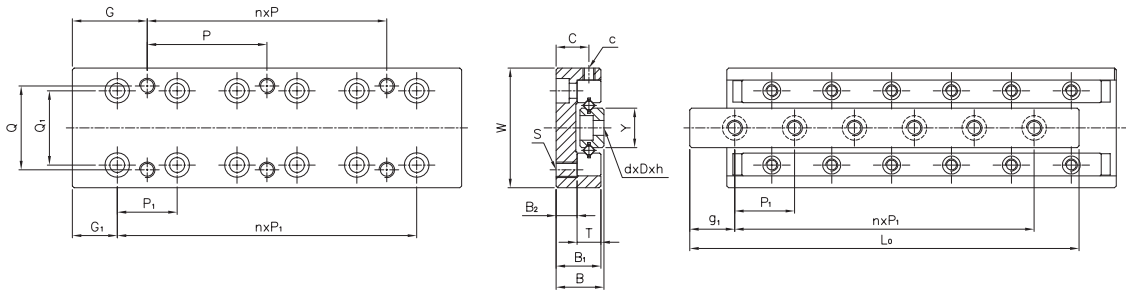


B

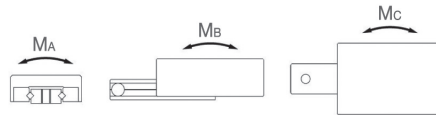
Cross Roller



Specification Model	주요 치수 Main Dimension					테이블면 치수 Table Surface Dimension								
	최대 스트로크 Max Stroke	폭 W ±0,1	높이 Height B ±0,1	길이 Length L _o	질량 Weight g	테이블장착탭위치 Table Tap Position					P ₁	n X P ₁	Q ₁	G ₁
	Q	P	n X P	G	S									
JVT 2 - 35 - A	18			35	78	28	1 x 28	3.5	M3 x 0.5	15	1 x 15	20	10	
JVT 2 - 50 - A	30			50	113	43	1 x 43				2 x 15			
JVT 2 - 65 - A	40			65	147	30	1 x 30				3 x 15			
JVT 2 - 80 - A	50	30	12	80	186	22	45				1 x 45			4 x 15
JVT 2 - 95 - A	60			95	217	30	2 x 30				5 x 15			
JVT 2 - 110 - A	70			110	254	45	1 x 45				32.5			6 x 15
JVT 2 - 125 - A	80			125	287	45	2 x 45				17.5			7 x 15



정도 Accuracy



각방향의 모멘트 Moment in each direction

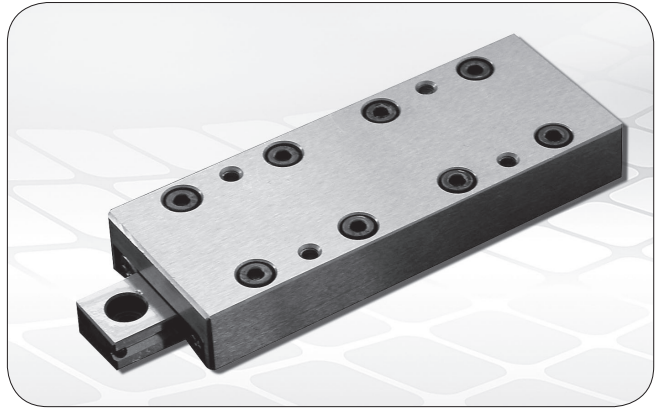
(Unit : mm)

측면치수 Side Dimension						베이스면 치수 장착구멍 위치 Base Dimension & Hole Position					기본정격하중 Basic Proper Load		정격허용모멘트 Regular Permissible Momnet			정도 μm Accuracy	
B ₁	B ₂	T	Y	C	c	d x D x h	P ₁	n X P ₁	g ₁	롤러수 The number of roller Z	C KN	Co KN	MA N.m	MB N.m	Mc N.m	C	D
11.5	5.5	6	12	8.5	M2	3.5 x 6 x 3.2	-	25	5	5	0.84	1.09	7.06	4.32	3.55	2	4
							-	35	7.5	7	1.16	1.63	10.6	7.45	6.59		
							33	55	5	9	1.46	2.17	14.1	11.8	10.5	5	
							40	70	5	12	2.01	3.26	21.2	16.8	18.2		
							45	85	5	14	2.26	3.80	24.7	23.0	24.5		
							50	95	7.5	17	2.51	4.34	28.2	37.9	35.7		
							55	100	7.5	19	2.76	4.89	31.8	46.7	44.3		

1KN \approx 102Kgf 1N · m \approx 0.102Kgf

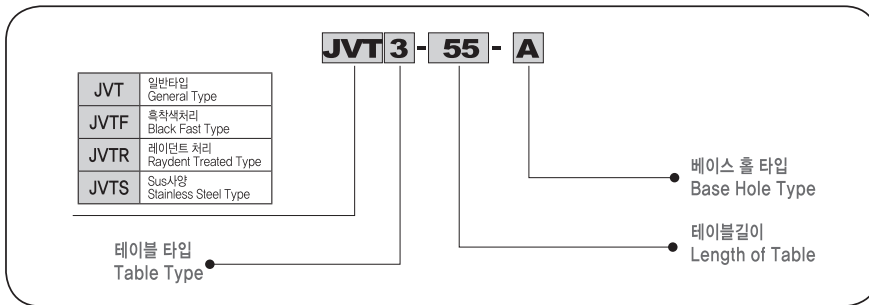
JVT 3-A

베이스 홀 타입
Base Hole Type

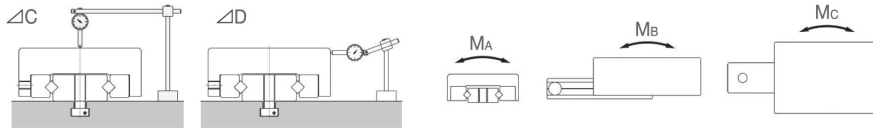
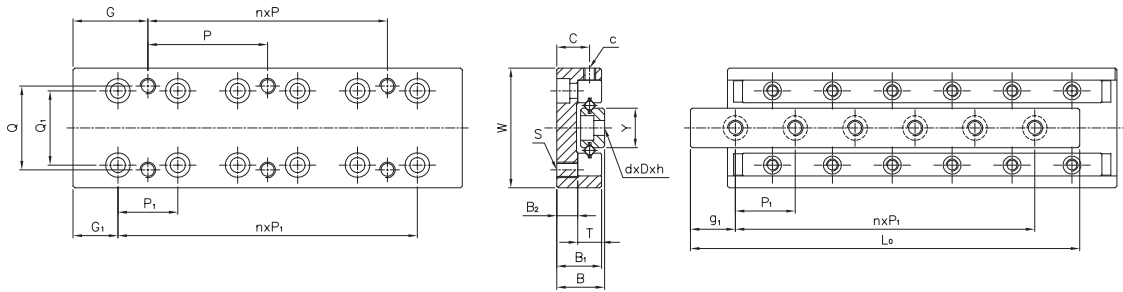


B

Cross Roller



Specification Model	주요 치수 Main Dimension					테이블면치수 Table Surface Dimension								
	최대 스트로크 Max Stroke	폭 Width W ±0,1	높이 Height B ±0,1	길이 Length L ₀	질량 Weight g	테이블장착탭위치 Table Tap Position					P ₁	n X P ₁	Q ₁	G ₁
						Q	P	n X P	G	S				
JVT 3 - 55 - A	30			55	226		40	1 X 40	7.5	M4 x 0.7	25	1 x 25	28.4	15
JVT 3 - 80 - A	45			80	334		65	1 x 65				2 x 25		
JVT 3 - 105 - A	60			105	442		50	1 x 50	27.5	M4 x 0.7	25	3 x 25	28.4	15
JVT 3 - 130 - A	75	40	16	130	550	30	75	1 x 75				4 x 25		
JVT 3 - 155 - A	90			155	658		50	2 x 50	52.5	M4 x 0.7	25	5 x 25	28.4	15
JVT 3 - 180 - A	105			180	766		75	1 x 75				6 x 25		
JVT 3 - 205 - A	130			205	874		75	2 x 75	27.5	M4 x 0.7	25	7 x 25	28.4	15



정도 Accuracy

각방향의 모멘트 Moment in each direction

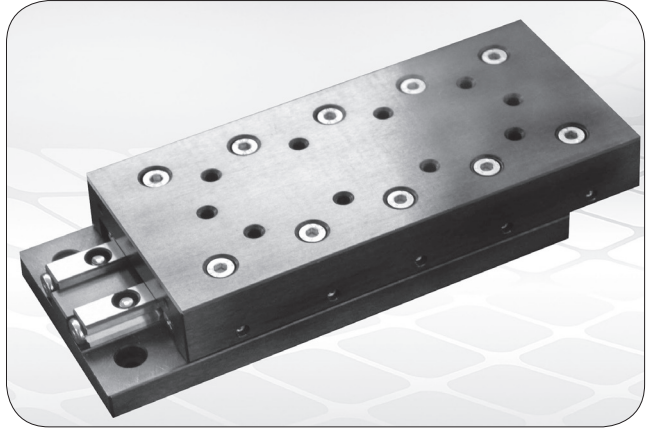
(Unit : mm)

측면치수 Side Dimension						베이스면 치수 장착구멍 위치 Base Dimension & Hole Position				기본정격하중 Basic Proper Load		정격허용모멘트 Regular Permissible Momnet			정도 μm Accuracy		
B ₁	B ₂	T	Y	C	c	d x D x h	P ₁	n X P ₁	g ₁	롤러수 The number of roller Z	C KN	Co KN	MA N.m	MB N.m	Mc N.m	C	D
15.5	7.5	8	16	11.5	M2	4.5 x 7.5 x 4.2	-	40	7.5	6	2.71	3.67	31.9	12.2	13.9	2	5
							43	68	6	10	4.06	6.11	53.1	33.1	36.2		
							55	90	7.5	13	4.68	7.33	63.8	64.6	59.8	3	6
							65	115		17	5.87	9.77	85	107	100		
							95	140		20	6.98	12.2	106	131	138		
							85	165		24	8.05	14.7	128	189	196		
90	190	26	8.57	15.9	138	222	230										

1KN \approx 102Kgf 1N \cdot m \approx 0.102Kgf

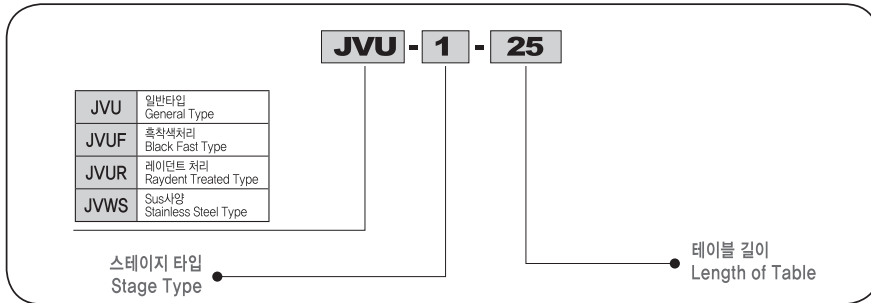
JVU 1

소형 스테이지
Miniature Stage

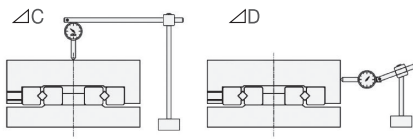
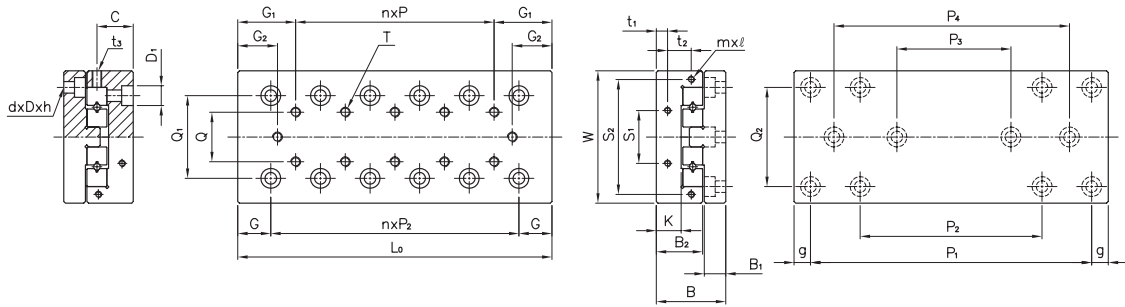


B

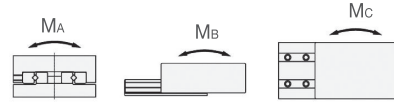
Cross Roller



Specification Model	주요 치수 Main Dimension					테이블면치수 Table Surface Dimension														
	최대 스트로크 Max Stroke	폭 Width W ±0.1	높이 Height B ±0.1	길이 Length L _o	질량 Weight g	테이블장착탭위치 Table Tap Position					테이블장착탭위치 Table Tap Position									
						Q	n X P	G ₁	G ₂	T	Q ₁	n X P ₂	G	s ₁	t ₂	m x l				
JVU 1 - 25	12			25	85	-			2.5					1 x 10						
JVU 1 - 35	18			35	117	1 x 10		4.5						2 x 10						
JVU 1 - 45	25			45	149	2 x 10		6						3 x 10						
JVU 1 - 55	32	30	17	55	181	10	3 x 10	12.5	7.5	M2 x 0.4	18	4 x 10	7.5	12.0	2.5				M2 x 4	
JVU 1 - 65	40			65	213		4 x 10		8.5			5 x 10								
JVU 1 - 75	45			75	245		5 x 10		11			6 x 10								
JVU 1 - 85	50			85	277		6 x 10		13.5			7 x 10								



정도 Accuracy



각방향의 모멘트 Moment in each direction

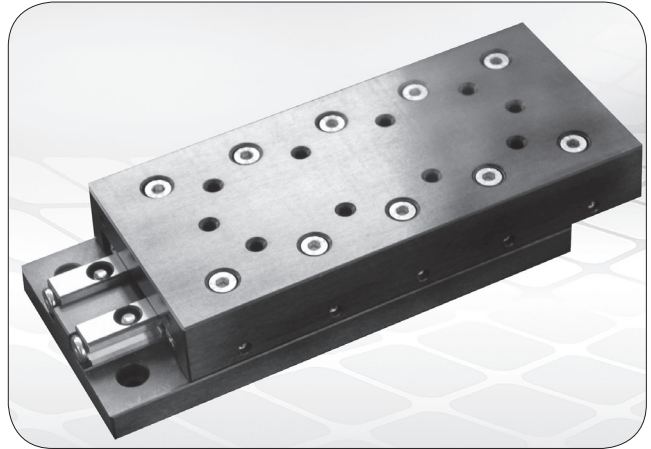
(Unit : mm)

Table Surface Dimension							베이스면 치수 장착구멍 위치 Base Dimension & Hole Position						롤러수 The number of roller Z	기본정격하중 Basic Proper Load		정격허용모멘트 Regular Permissible Moment			정도 μ m Accuracy								
B_2	B_1	K	$d \times D$ $x \times h$	D_1	C	t_3	Q_2	P_1	P_2	P_3	P_4	g		C KN	C_o KN	M_A N.m	M_B N.m	M_C N.m	C	D							
11	5.5	6.5	2.55 x 4.1 x 2.5	4.1	9	M2	22	48	18	-	-	-	3.5	5	0.46	0.61	4.12	1.52	1.25	2	4						
									28	-	-	-										7	0.63	0.92	6.18	2.62	2.32
									38	-	-	-										10	0.95	1.53	10.3	4.14	4.53
									48	28	-	-										12	1.09	1.83	12.4	5.92	6.41
									58	38	-	-										14	1.23	2.14	14.4	8.08	8.62
									68	48	-	-										18	1.50	2.75	18.6	13.3	14.0
									78	58	-	-										20	1.63	3.05	20.6	16.4	17.2

1KN \approx 102Kgf 1N · m \approx 0.102Kgf

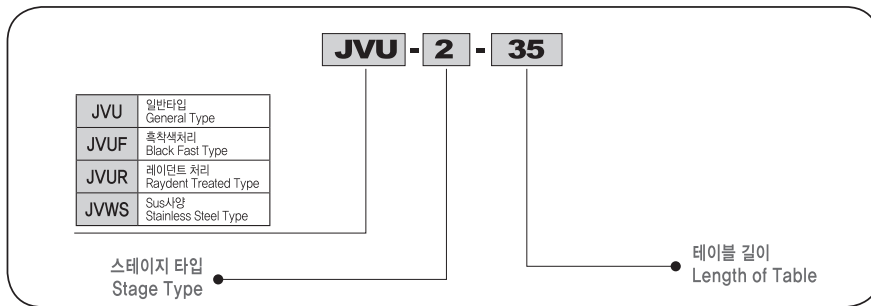
JVU 2

소형 스테이지
Miniature Stage

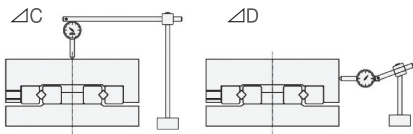
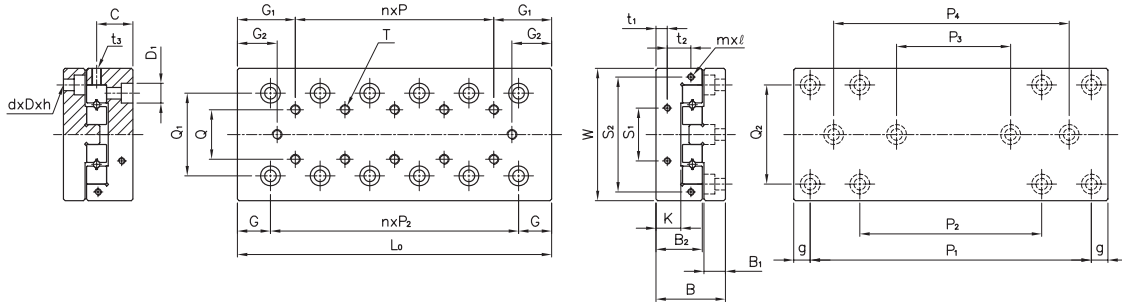


B

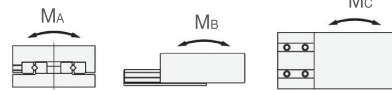
Cross Roller



Specification Model	주요 치수 Main Dimension					테이블면 치수 Table Surface Dimension												
	최대 스트로크 Max Stroke	폭 W ±0.1	높이 B ±0.1	길이 L _o	질량 g	테이블장착탭위치 Table Tap Position					테이블장착탭위치 Table Tap Position							
						Q	n X P	G ₁	G ₂	T	Q ₁	n X P ₂	G	s ₁	t ₂	m x l		
JVU 2 - 35	18			35	199		-		3				1 x 15					
JVU 2 - 50	30			50	278		1 x 15		4.5				2 x 15					
JVU 2 - 65	40			65	357		2 x 15		7				3 x 15					
JVU 2 - 80	50	40	21	80	436	15	3 x 15	17.5	9.5	M3 x 0.5	25	4 x 15	10	16.0	3.4		M2 x 4	
JVU 2 - 95	60			95	515		4 x 15		12			5 x 15						
JVU 2 - 110	70			110	594		5 x 15		14.5			6 x 15						
JVU 2 - 125	80			125	673		6 x 15		17			7 x 15						



정도 Accuracy



각방향의 모멘트 Moment in each direction

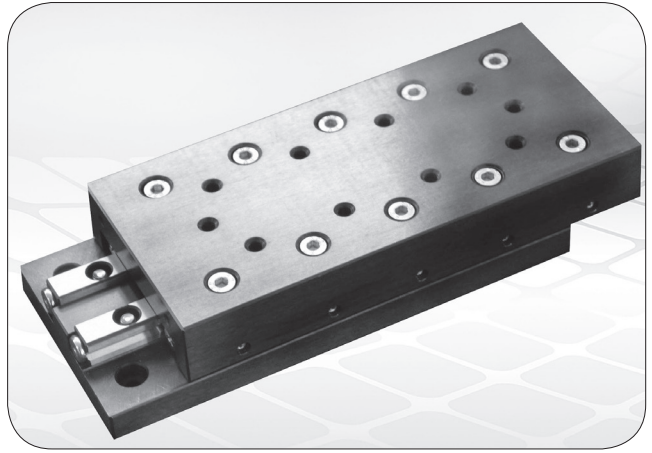
(Unit : mm)

Table Surface Dimension							베이스면 치수 장착구멍 위치 Base Dimension & Hole Position							롤러수 The number of roller Z	기본정격하중 Basic Proper Load		정격허용모멘트 Regular Permissible Momnet			정도 μm Accuracy	
B ₂	B ₁	K	$\frac{d \times D}{x \times h}$	D ₁	C	t ₃	Q ₂	P ₁	P ₂	P ₃	P ₄	g	C		Co	MA	MB	Mc	C	D	
14	6.5	7.5	$\frac{3.5}{6} \times \frac{D}{3.5}$	6	11	M3	30	25	-	-	-	5	5	0.84	1.09	9.77	4.32	3.55	2	4	
								40	-	-	-		7	1.16	1.63	14.7	7.45	6.59			
								55	-	-	-		9	1.46	2.17	19.5	11.8	10.6	5		
								70	40	-	-		12	2.01	3.26	29.3	16.9	18.2			
								85	55	-	-		14	2.26	3.80	34.2	23	24.5			
								100	70	-	-		17	2.51	4.34	39.1	37.9	35.7	3	6	
								115	85	-	-		19	2.76	4.89	44.0	46.7	44.3			

1KN ≅ 102Kgf 1N · m ≅ 0.102Kgf

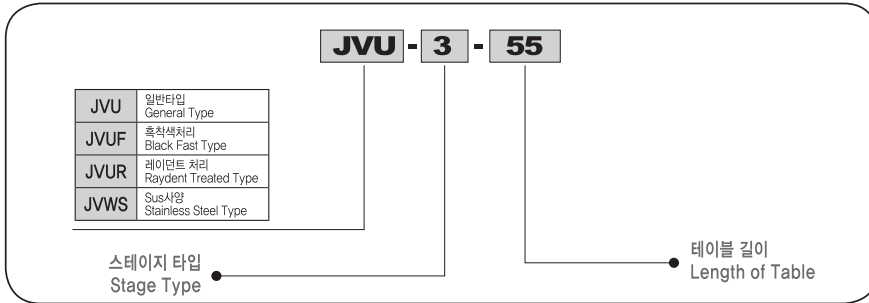
JVU 3

소형 스테이지
Miniature Stage

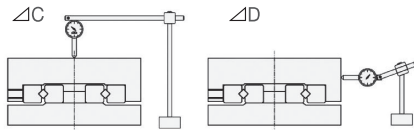
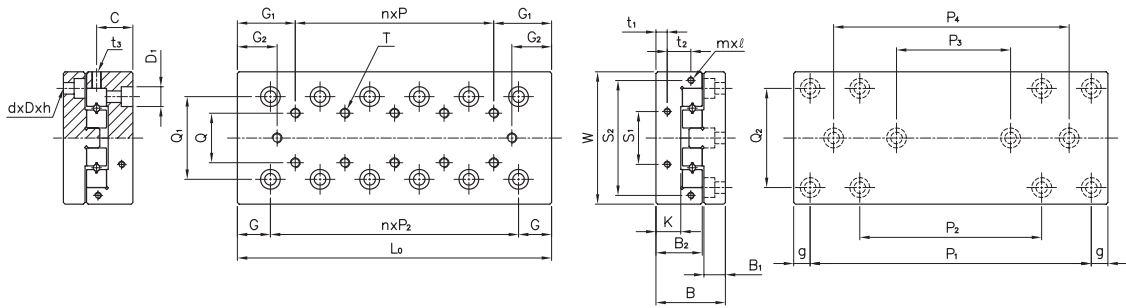


B

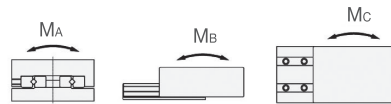
Cross Roller



Specification Model	주요 치수 Main Dimension					테이블면 치수 Table Surface Dimension													
	최대 스트로크 Max Stroke	폭 Width W ±0.1	높이 Height B ±0.1	길이 Length L _o	질량 Weight g	테이블장착탭위치 Table Tap Position					테이블장착탭위치 Table Tap Position								
						Q	n X P	G ₁	G ₂	T	Q ₁	n X P ₂	G	s ₁	t ₂	m x l			
JVU 3 - 55	30			55	570		-		5.5				1 x 25						
JVU 3 - 80	45			80	825		1 x 25		10.5				2 x 25						
JVU 3 - 105	60			105	1080		2 x 25		15.5				3 x 25						
JVU 3 - 130	75	60	28	130	1335	25	3 x 25	27.5	20.5	M4 x 0.7	39	4 x 25	15	40	5.5			M3 x 6	
JVU 3 - 155	90			155	1590		4 x 25		25.5			5 x 25							
JVU 3 - 180	105			180	1845		5 x 25		30.5			6 x 25							
JVU 3 - 205	130			205	2100		6 x 25		30.5			7 x 25							



정도 Accuracy



각방향의 모멘트 Moment in each direction

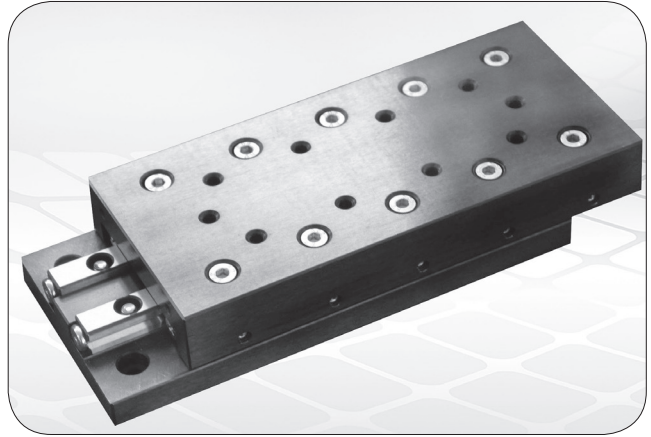
(Unit : mm)

Table Surface Dimension							베이스면 치수 장착구멍 위치 Base Dimension & Hole Position							롤러수 The number of roller Z	기본정격하중 Basic Proper Load		정격허용모멘트 Regular Permissible Momnet			정도 μm Accuracy									
B ₂	B ₁	K	$\frac{d \times D}{x \times h}$	D ₁	C	t ₃	Q ₂	P ₁	P ₂	P ₃	P ₄	g	C		Co	MA	MB	Mc	C	D									
18.5	9	10	4.5 x 7.5 x 5	7.5	15	M4	40	35	-	-	-	10	6	2.71	3.67	51.3	12.2	13.9	2	5									
								60	-	-	-		10	4.06	6.11	85.5	33.1	36.2											
								85	-	-	-		13	4.68	7.33	103	64.6	59.8	3	6									
								110	-	-	-		17	5.87	9.77	137	107	100											
								135	-	85	-		20	6.98	12.2	171	131	138											
																	160	-	110	-		24	8.05	14.7	205	189	196	7	
																	185	85	135	-		26	8.57	15.9	222	222	230		

1KN \approx 102Kgf 1N · m \approx 0.102Kgf

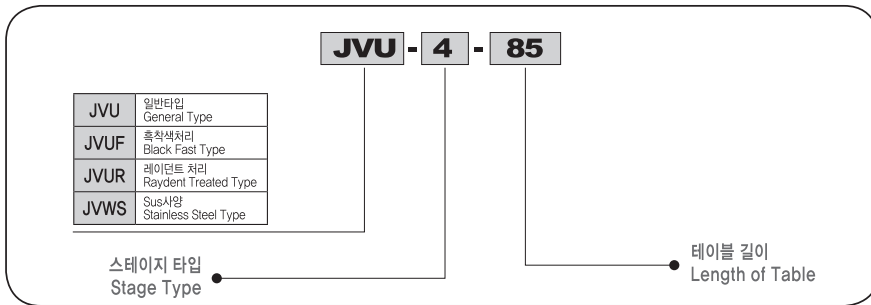
JVU 4

소형 스테이지
Miniature Stage

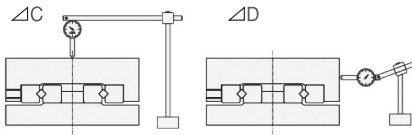
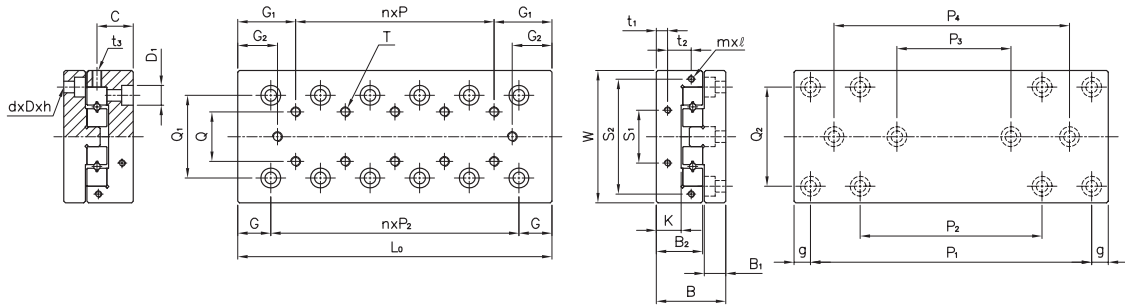


B

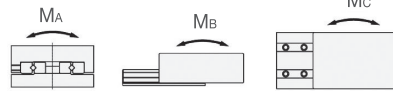
Cross Roller



Specification Model	주요치수 Main Dimension					테이블면치수 Table Surface Dimension										
	최대 스트로크 Max Stroke	폭 Width W ±0.1	높이 Height B ±0.1	길이 Length L _o	질량 Weight g	테이블장착탭위치 Table Tap Position					테이블장착탭위치 Table Tap Position					
	Q	n X P	G ₁	G ₂	T	Q ₁	n X P ₂	G	s ₁	t ₂	m x l					
JVU 4 - 85	50	80	35	85	1500	-	40	42.5	10.5	M5 x 0.8	53	1 x 40	22.5	55	6.5	M3 x 6
JVU 4 - 125	75			125	2310	1 x 40			18			2 x 40				
JVU 4 - 165	105			165	3120	2 x 40			23			3 x 40				
JVU 4 - 205	135			205	3930	3 x 40			30.5			4 x 40				
JVU 4 - 245	155			245	4740	4 x 40			38			5 x 40				
JVU 4 - 285	185			285	5550	5 x 40			43			6 x 40				



정도 Accuracy



각방향의 모멘트 Moment in each direction

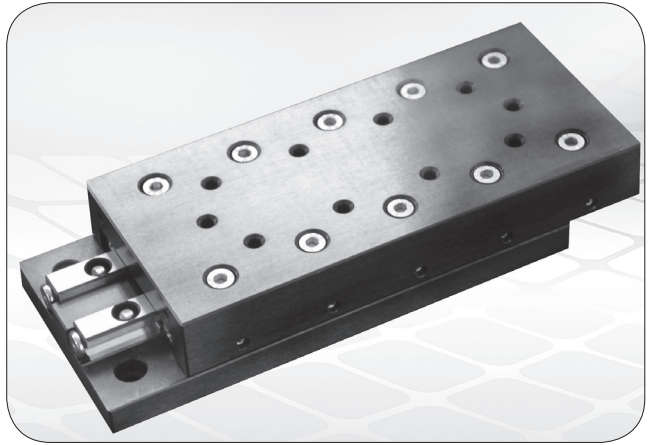
(Unit : mm)

Table Surface Dimension							베이스면 치수 장착구멍 위치 Base Dimension & Hole Position						롤러수 The number of roller Z	기본정격하중 Basic Proper Load		정격허용모멘트 Regular Permissible Momnet			정도 μ m Accuracy					
B ₂	B ₁	K	$\frac{d \times D}{x \times h}$	D ₁	C	t ₃	Q ₂	P ₁	P ₂	P ₃	P ₄	g		C KN	Co KN	MA N.m	MB N.m	Mc N.m	C	D				
								65	-	-	-	10	7	5.90	8.11	162	64.9	57.4	2	5				
								80	-	-	-		11	8.82	13.5	270	147	134		6				
			5.5 x 9.5 x 6	9.5	18.5	M4	60	120	-	-	-		14	11.5	18.9	378	200	214						
24	10.5	12.5						160	80	-	-	22.5	18	14.0	24.3	486	330	347	3					
								200	120	-	-		22	16.3	29.7	594	492	513						
								240	160	-	-		26	18.6	35.1	703	687	711						

1KN \approx 102Kgf 1N · m \approx 0.102Kgf

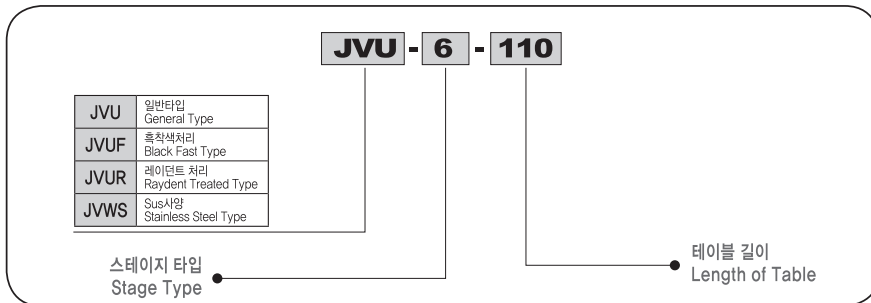
JVU 6

소형 스테이지
Miniature Stage

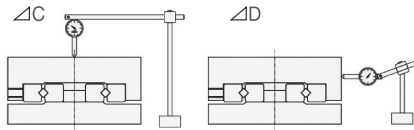
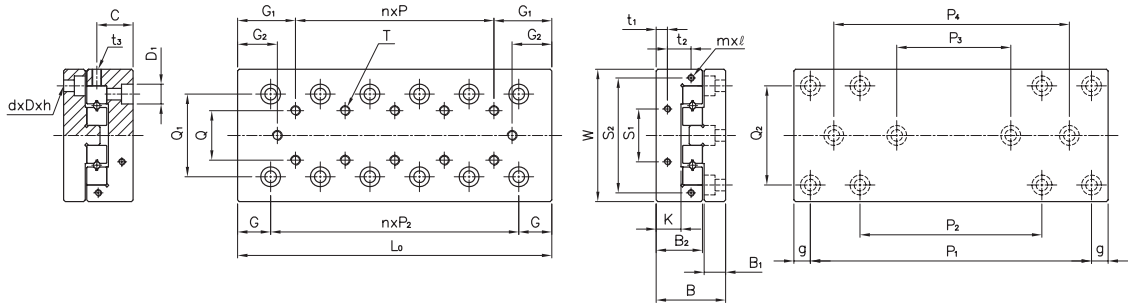


B

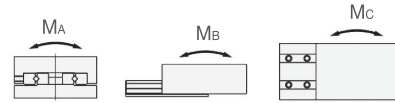
Cross Roller



Specification Model	주요 치수 Main Dimension					테이블면 치수 Table Surface Dimension																
	최대 스트로크 Max Stroke	폭 Width W ±0.1	높이 Height B ±0.1	길이 Length L _o	질량 Weight kg	테이블장착탭위치 Table Tap Position					테이블장착탭위치 Table Tap Position											
						Q	n X P	G ₁	G ₂	T	Q ₁	n X P ₂	G	s ₁	t ₂	m x l						
JVU 6 - 110	60			110	3.2		-		16						1 x 50							
JVU 6 - 160	95			160	4.6		1 x 50		23.5						2 x 50							
JVU 6 - 210	130			210	6		2 x 50		31						3 x 50							
JVU 6 - 260	165	100	45	260	7.4	50	3 x 50	55	38.5	M6	63	4 x 50	30	60	92	8	15				M4 x 8	
JVU 6 - 310	200			310	8.7		4 x 50		46			5 x 50										
JVU 6 - 360	235			360	10.1		5 x 50		53.5			6 x 50										
JVU 6 - 410	265			410	11.5		6 x 50		63			7 x 50										



정도 Accuracy



각방향의 모멘트 Moment in each direction

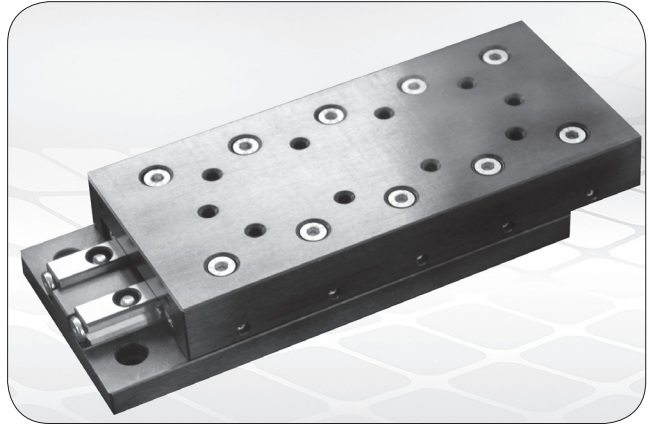
(Unit : mm)

Table Surface Dimension							베이스면 치수 장착구멍 위치 Base Dimension & Hole Position						롤러수 The number of roller Z	기본정격하중 Basic Proper Load		정격허용모멘트 Regular Permissible Momnet			정도 μm Accuracy	
B_2	B_1	K	$d \times D$ $x \times h$	D_1	C	t_3	Q_2	P_1	P_2	P_3	P_4	g		C KN	C_o KN	M_A N.m	M_B N.m	M_C N.m	C	D
31	13	15	7 x 11 x 7	11	23.5	M5	60	90	-	-	-	10	6	16.4	22.7	510	150	172	3	6
								140	-	-	-		9	20.5	30.2	680	410	367	3	6
								190	-	90	-		13	28.2	45.3	1020	800	740	3	7
								240	-	140	-		16	35.3	60.5	1360	1040	1100	3	7
								290	-	190	-		19	38.8	68.0	1530	1630	1540	4	8
								340	140	240	-		22	45.3	83.1	1870	1970	2050	4	8
								390	190	290	-		26	51.6	98.3	2210	2750	2840	4	8

1KN \approx 102Kgf 1N · m \approx 0.102Kgf

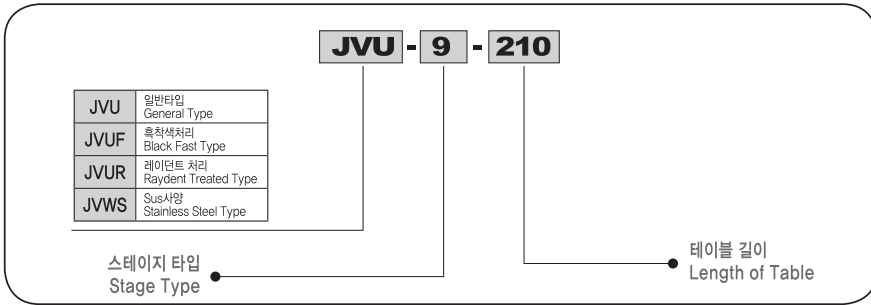
JVU 9

소형 스테이지
Miniature Stage

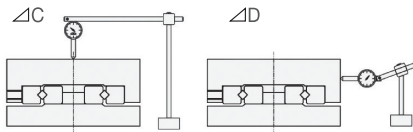
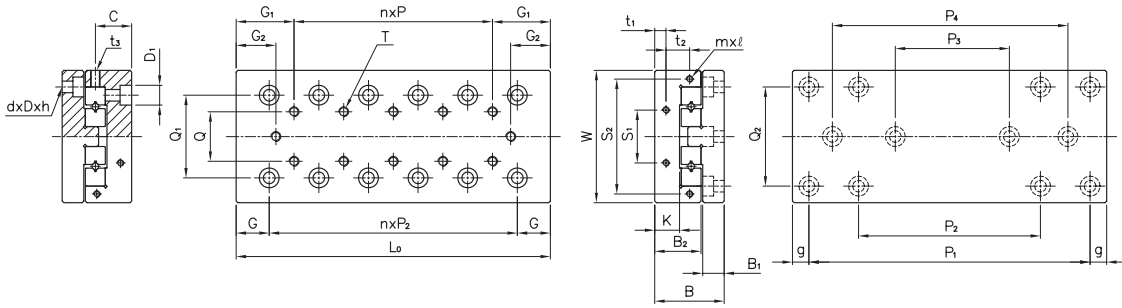


B

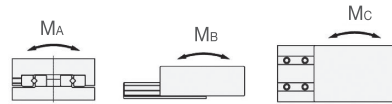
Cross Roller



Specification Model	주요 치수 Main Dimension					테이블면 치수 Table Surface Dimension															
	최대 스트로크 Max Stroke	폭 Width W ±0.1	높이 Height B ±0.1	길이 Length L _s	질량 Weight kg	테이블장착탭위치 Table Tap Position					테이블장착탭위치 Table Tap Position										
						Q	n X P	G ₁	G ₂	T	Q ₁	n X P ₂	G	s ₁	t ₂	m x l					
JVU 9 - 210	130			210	12		-		27				1 x 100								
JVU 9 - 310	180			310	17.6		1 x 100		52				2 x 100								
JVU 9 - 410	350			410	23.2		2 x 100						3 x 100								
JVU 9 - 510	450	145	60	510	28.8	85	3 x 100	105		M8	96	4 x 100	55	90	135	11	20			M4 x 8	
JVU 9 - 610	550			610	34.4		4 x 100		17			5 x 100									
JVU 9 - 710	650			710	40		5 x 100					6 x 100									
JVU 9 - 810	750			810	45.6		6 x 100					7 x 100									



정도 Accuracy



각방향의 모멘트 Moment in each direction

(Unit : mm)

Table Surface Dimension							베이스면 치수 장착구멍 위치 Base Dimension & Hole Position					롤러수 The number of roller Z	기본정격하중 Basic Proper Load		정격허용모멘트 Regular Permissible Momnet			정도 μ m Accuracy		
B ₂	B ₁	K	d x D x h	D ₁	C	t ₃	Q ₂	P ₁	P ₂	P ₃	P ₄		g	C KN	Co KN	MA N.m	MB N.m	Mc N.m	C	D
43	16	21	9 x 14 x 9	14	32	M6	90	100	-	-	-	55	9	52.3	75.8	2730	1440	1290	3	7
								200	-	-	-		14	81.1	133	4780	2810	2990	3	7
								300	-	100	-		15	81.1	133	4780	3660	3420	4	8
								400	-	200	-		19	98.7	171	6140	5710	5410	4	8
								500	100	300	-		22	115	208	7500	6910	7200	4	9
								600	200	400	-		26	131	246	8870	9640	9980	4	9
								700	300	500	100		29	139	265	9550	12800	12400	5	10

1KN \approx 102Kgf 1N · m \approx 0.102Kgf

Goniometer Crossed Roller Guide



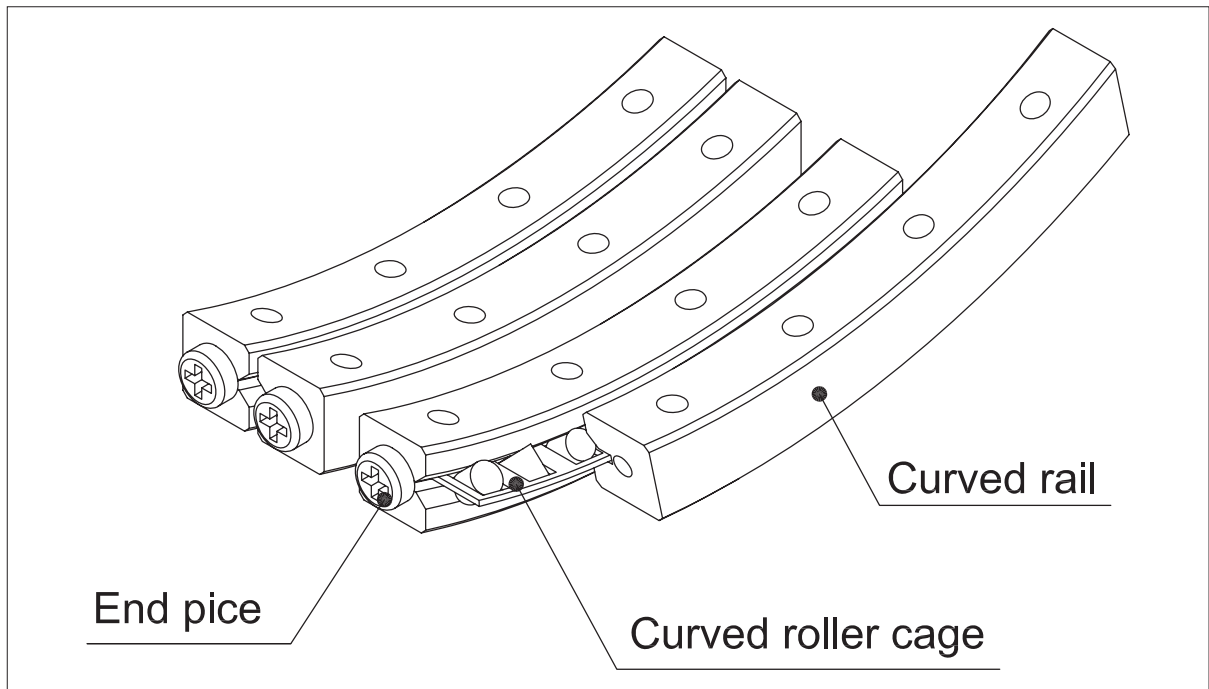
JRV

B

Cross Roller

Goniometer Crossed Roller Guide

〈Fig.1〉 Structure of goniometer crossed roller guide model JRV



Structure

MENTOR's goniometer crossed roller guide JRV is a non re-circulating crossed roller bearing providing low friction radius movement. The JRV is ideal for applications where sweeping movement or precise angular positioning is required without changing rotation center, such as in optical equipment and measuring devices.

Features

MENTOR goniometer crossed roller guide JRV consists of precision ground, hardened, curved, "V" shape rails, and curved roller cages in which cross rollers are fitted. Precision cross roller design minimizes frictional resistance providing for stabilized curved movement with extremely low friction.

Low friction, precise movement

Precision grinding and curved roller cage allow for low elements friction with negligible difference between static and dynamic friction. This feature provides for precise curved movement and fine feed.

High rigidity, high load

Greater surface contact area from cross roller design and provides hardened ground rails allow for less elastic deformation and provides high rigidity and load capacity.

Easy of installation

MENTOR's unique curved roller cage retains precision cross roller easing in the installation process. MENTOR goniometer crossed roller guide consists of four rails, two cages, and eight end pieces as one set.

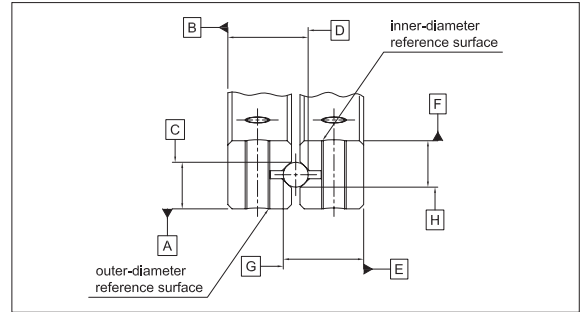
Low noise

The non re-circulating design and non-contact between rollers for extremely low noise.

Accuracy standards

Accuracy for overall length is measured as shown in <Fig.2>.

<Fig.2> Moment rigidity



<Table.1>Accuracy

Model no.	Accuracy
JRV 2040-50-7Z	10
JRV 2060-60-12Z	
JRV 3050-50-8Z	
JRV 3050-68-7Z	
JRV 3060-50-10Z	
JRV 3060-68-10Z	
JRV 3060-100-8Z	
JRV 3070-70-12Z	
JRV 3070-90-11Z	
JRV 3070-96-10Z	
JRV 3070-110-10Z	
JRV 3070-122-10Z	
JRV 3100-160-14Z	

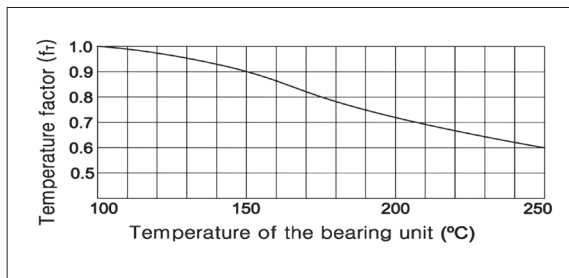
Rated life span L

The life of a goniometer crossed roller guide is obtained using the following equations.

$$L = \frac{90}{\theta} \times \frac{f_t}{f_w} \times \frac{C}{P}^{\frac{10}{3}}$$

- L : Rated life span (10⁶ cycles)
- θ : Rotating angle (°)
- C : Basic dynamic load rating (kN)
- Pc : Applied load (kN)
- fT : Temperature factor refer to <Fig.3>
- fW : Load factor refer to <table.2>

<Fig.3> Temperature factor (fT)



Note) In case that environment temperature is over 100°C, contact MENTOR

fw : Load factor

Shuffling machines is likely to be affected by vibration or impact during drive. While driving highspeed, particularly, it is a lot more difficult to calculate each value precisely. Therefore, if the load applied to the curved linear motion system cannot be calculated or the impact of speed vibration is large, the load factor in the table below should be divided into the basic load rating(C) and (C₀).

<Table.2> Load factor (f_w)

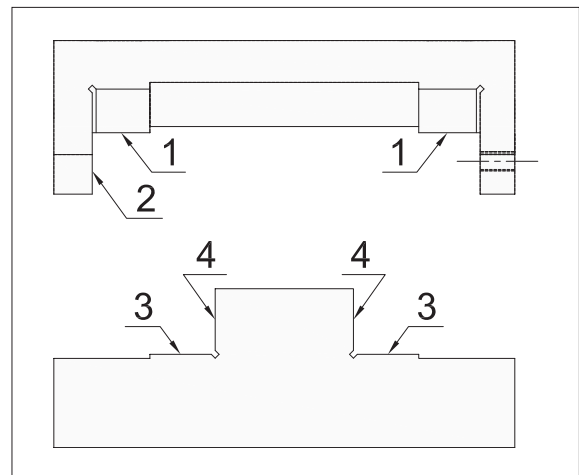
Vibration · Impact	Velocity (V)	f _w
No	More than 15m/min	1.0~1.5
Small	More than 60m/min	1.5~2.0
Large	More than 60m/min	2.0~3.5

Installation

Accuracy of Mounting Surface

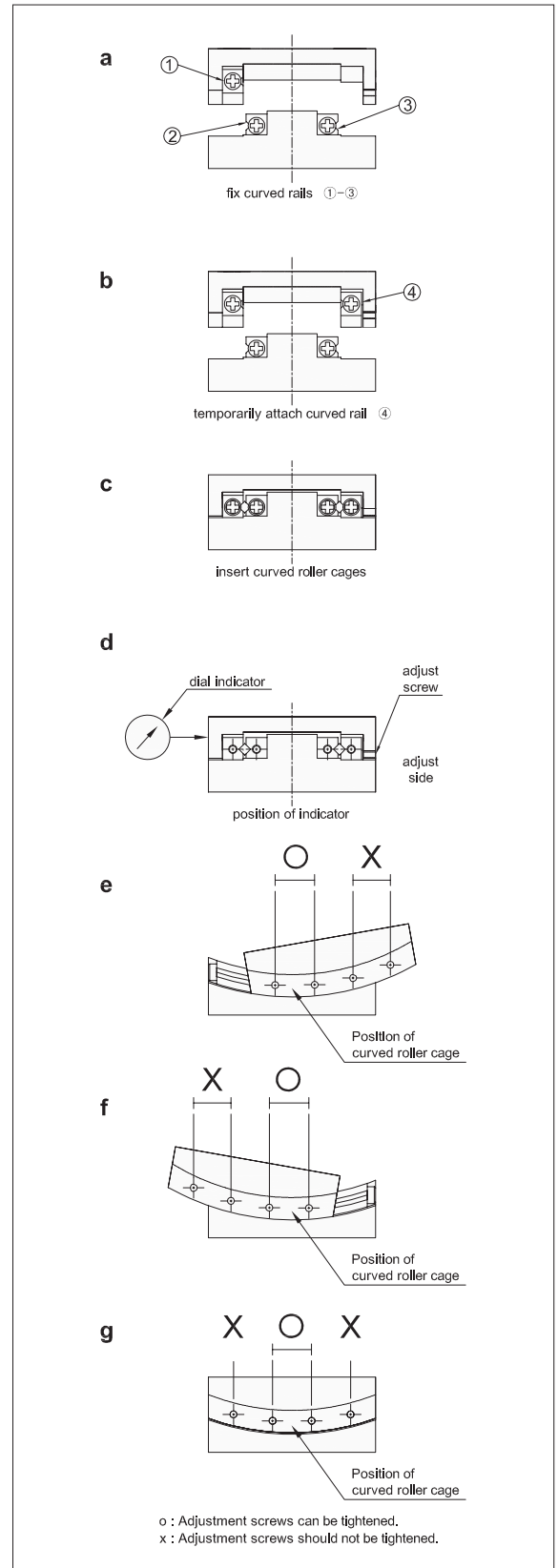
To achieve sufficient performance of MENTOR's goniometer crossed roller guide JRV, it is advised to finish installation surface in same or higher accuracy to that of JRV type.

<Fig.4> Accuracy of installation surfaces



Installation procedure

- (1) Remove burr, flaw, and debris on curved installation surface of table and bed to keep clean from foreign material while installation work is conducted.
- (2) Stabilize rails shown as ①, ② and ③ by tightening torque as instructed. <Fig.5>
- (3) Tighten rail shown as ④ temporarily. <Fig.5 b>
- (4) Remove the end pieces from one end, insert curved roller cage slowly until it reaches middle position. <Fig.5 c>
- (5) Replace the end pieces once fitted above.
- (6) Move the table to maximum stroke end to left and right and adjust curved roller cage come to the center of the rail assembly.
- (7) Fit indicator to side of the table. (reference plane side) <Fig.5 d>
- (8) Move the table to stroke end of one side and tighten adjust screw on curved roller cage lightly. <fig.5 e>
- (9) Move the table to stroke end of the opposite side and tighten adjust screw slightly. <Fig.5 f>
- (10) Move the table to the center position and tighten adjust screw at center position slightly. <Fig.5 g>
- (11) Repeat above procedures from (8) through (10) until no play is confirmed. Once no more play exists, oscillation of the indicator becomes stabilized at minimum value, when the table is moved to left and right. Please take caution not to apply excessive preload.
- (12) Conduct final adjustment for preload. In the manner described on above procedures from (8) through (10), tighten adjust screw by torque wrench following the torque recommended in <Table.3>
- (13) Finally, stabilize rail ④, which is fitted temporarily. Installation bolts for rail ④ should be tightened in same sequence as adjust screws.



Rated life span L

Lubrication

MENTOR's goniometer crossed roller guide JRV contains a lithium soap-based grease and can be used as delivered. As use continues of lubricate as required depending upon operating conditions.

Dust prevention

Depending upon the operating environment, dust and debris may be able to invade goniometer crossed roller guide and disrupt the ideal operating performance. Therefore it is advised to protect the gonio guide with covers or bellows if such a harsh environment exists.

Operating environment (temperature)

For goniometer crossed roller guide JRV, the recommended ambient working temperature is between -20° and 110° .

Adjustment

Install and adjust goniometer crossed roller guide carefully. When accuracy of installation surfaces and or adjustment of preload are insufficient, cross roller gonio guide motion accuracy can be deteriorated and thus, can cause to skew movement and may reduce performance and life.

Cage creep

When the goniometer crossed roller guide is used in an application where high speed, vibration, or an unbalanced load is present, the cage would go out of position. To minimize cage creep, allow for extra stroke distance prevent from excess of preload.

Stoper

End pieces are fitted at both ends of cross roller gonio guide rail to prevent the cross roller gonio guide roller cage from existing out.

Careful handling

Rough handling will affect the precision performance of the gonio guide. Handle as a precision components.

Use as set

Goniometer crossed roller guide is supplied as a set of rails (4), roller cages (2), and stoppers (8), and should not be mixed with other sets.

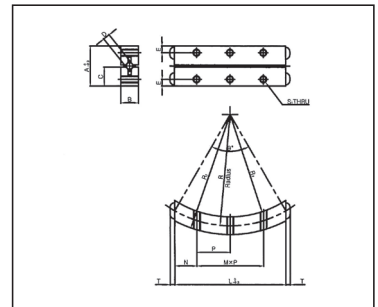
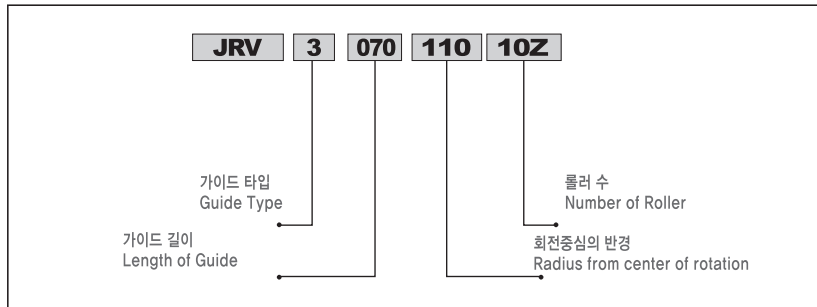
Custom specification

MENTOR accepts custom requests of goniometer crossed roller guide such as, length of rail, radius of rotation, radius stroke range, number of rollers fitted and so on. If custom goniometer crossed roller guide JRV are required, please contact MENTOR for further assistance.

Goniometer Crossed Roller Guide

B

Cross Roller



Specification Model	회전범위 Rotating Range	롤러외경 Roller Dia. D	롤러수 The Number of Rollers Z	주요치수 Main Dimension													기본정격하중 Basic Load Rating		질량 Weight
				L	R ₁	R	R ₂	A	B	C	M x P	N	E	s ₁	T	θ	C _N	C _{0N}	
JRV 2040 - 50 - 7Z	±10°	2	7	40	50	53	47	15	6	7.25	2 X 12.5	7.5	2.5	M3	1.5	47.3°	802	813	49
JRV 2060 - 60 - 12Z			12	60	60	63	57				3 X 12.5	11.25				60.0°	1240	1530	75
JRV 3050 - 50 - 8Z	±10°	2	8	50	50	50	46	18	8	8.5	2 X 15	10	3	M3	2	60.0°	1870	2480	96
JRV 3050 - 68 - 7Z			7	50	68	72	64				2 X 15	10				43.0°	1720	2350	96
JRV 3060 - 50 - 10Z			10	60	50	54	46				2 X 15	15				74.0°	2530	3310	107
JRV 3060 - 68 - 10Z			10	60	68	72	64				2 X 15	15				52.0°	2530	3310	107
JRV 3060 - 100 - 8Z			8	60	100	104	96				2 X 15	15				35.0°	2040	2560	107
JRV 3070 - 60 - 12Z			12	70	70	74	66				3 X 15	12.5				60.0°	2900	3840	138
JRV 3070 - 90 - 11Z			11	70	90	94	86				3 X 15	12.5				45.8°	2630	3510	138
JRV 3070 - 96 - 10Z			10	70	96	100	92				3 X 15	12.5				43.0°	2420	3200	138
JRV 3070 - 110 - 10Z			10	70	110	114	106				3 X 15	12.5				37.1°	2630	3510	138
JRV 3070 - 110 - 10Z			10	70	122	126	118				3 X 15	12.5				33.0°	2420	3200	138
JRV 3100 - 160 - 14Z			14	100	160	164	156				3 X 15	12.5				33.4°	3380	4920	193

Crossed Roller Rotary Guide



JRA
JRB
JRU
JRE

B

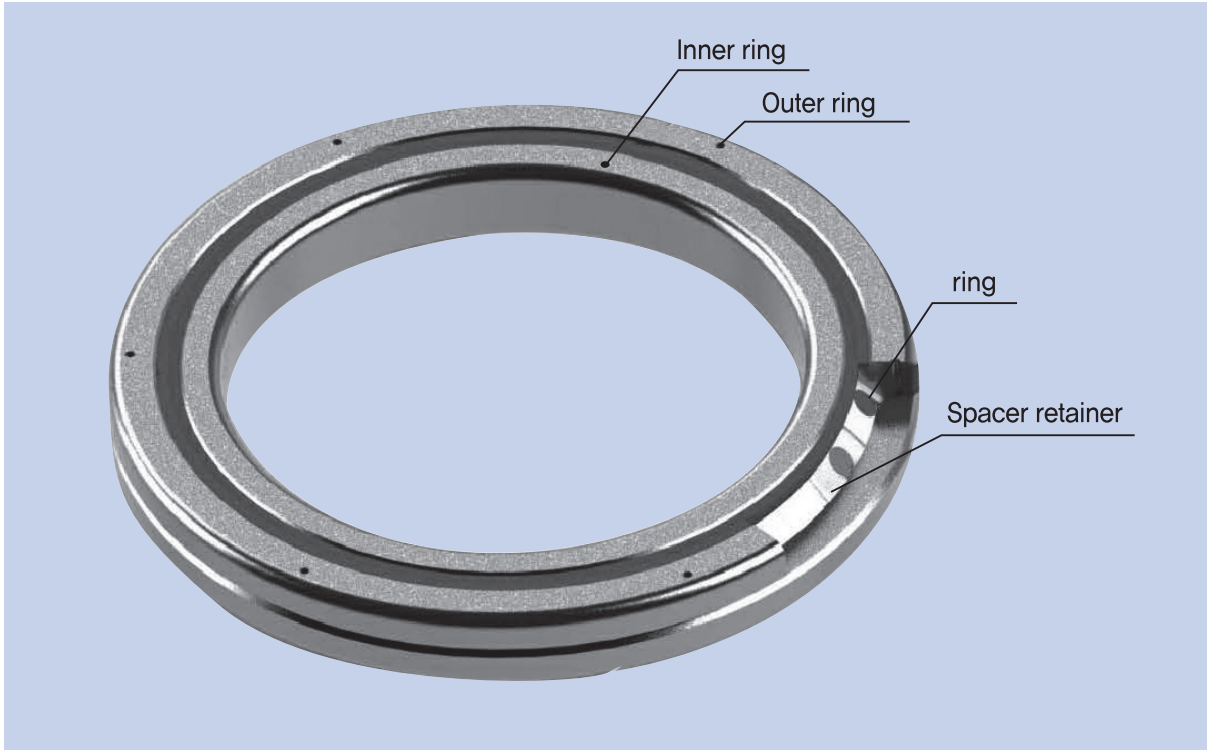
Cross Roller

Cross Roller Rotary Guide

B

Cross Roller

〈Fig.1〉 Structure of cross roller rotary guide model ARB



Structure

With the cross roller rotary guide, cylindrical rollers are arranged with each roller perpendicular to the adjacent roller, in a 90° V groove, separated from each other by a spacer retainer. This design allows just one bearing to receive loads in all directions including radial, axial and moment loads. Since the cross roller rotary guide achieves high rigidity despite the minimum possible dimensions of the inner and outer rings, it is optimal for applications such as joints and swiveling units of industrial robots, swiveling tables of machining centers, precision rotary tables, medical equipment, measuring instruments and IC manufacturing machines.

Features

High rotation accuracy

The spacer retainer fitting among cross-arrayed rollers prevents rollers from skewing and the rotational torque from increasing due to friction between rollers. Unlike conventional types using steel sheet retainers, the cross roller rotary guide does not cause unilateral contact of roller or seize. Thus, even under a preload, the cross roller rotary guide provides stable rotation. Since the inner and outer rings are designed to be separable, the bearing clearance can be adjusted. In addition, a preload can be applied. These features enable accurate rotation.

Easy handling

The inner and outer rings, which are separable, are secured to the cross roller rotary guide body after being installed with rollers and spacer retainers in order to prevent the rings from separating from each other. Thus, it is easy to handle the rings when installing the cross roller rotary guide.

Skewing prevention

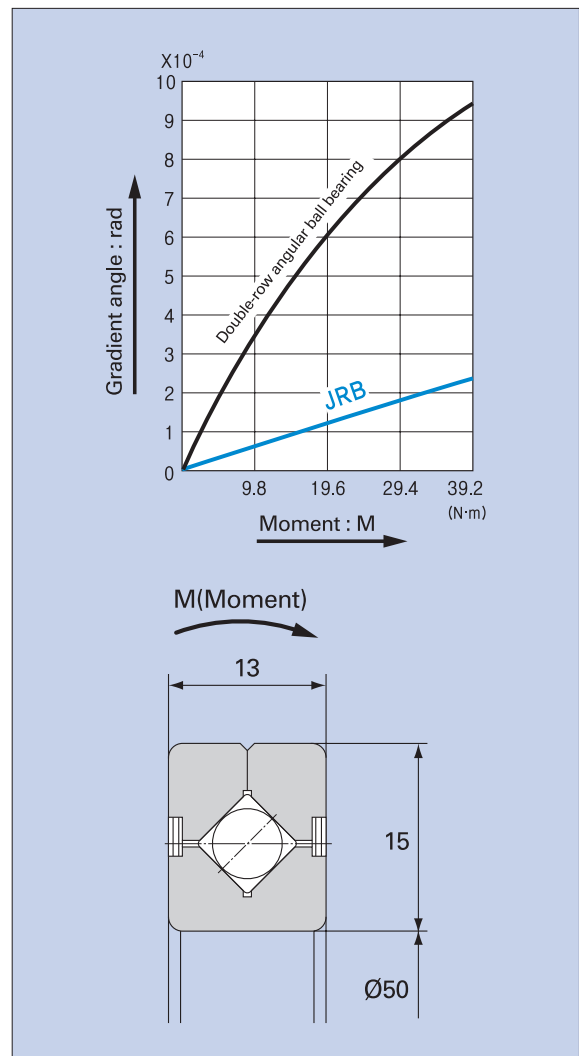
The spacer retainer keeps rollers in their proper position, thereby preventing them from skewing (tilted rollers). This eliminates friction between rollers, and therefore secures a stable rotational torque.

Increased rigidity

(Three to four times greater than the conventional type)

Unlike the thin angular ball bearings installed in double rows, the cross array of rollers allows a single cross roller rotary guide unit to receive loads in all directions, increasing the rigidity to three to four times greater than the conventional type. rollers, and therefore secures a stable rotational torque.

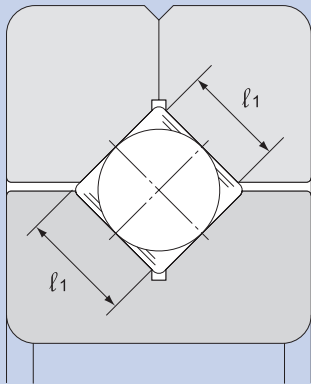
〈Fig.2〉 Moment rigidity



Large load capacity

1) Compared with conventional steel sheet retainers, the spacer retainer allows a longer effective contact length of each roller, thus significantly increasing the load capacity. The spacer retainer guides rollers by supporting them over the entire length of each roller, whereas the conventional type of retainer supports them only at a point at the center of each roller. Such one-point contact cannot sufficiently prevent skewing.

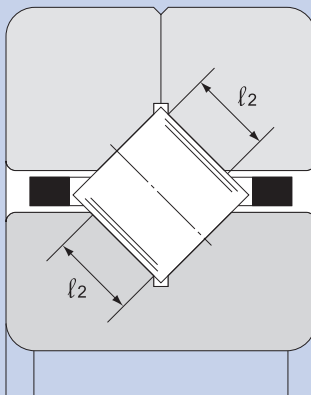
2) In conventional types, the loaded areas asymmetrical between the outer ring and the inner ring sides around the roller longitudinal axis. The greater the applied load is, the greater the moment becomes, leading end-face contact to occur. This causes frictional resistance, which hinders smooth rotation and quickens wear.



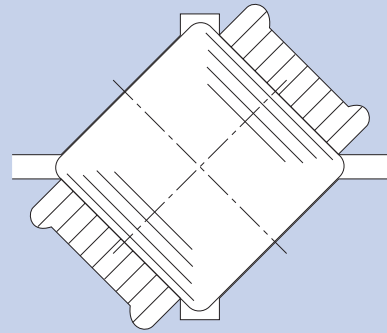
With a spacer retainer

Roller contact length

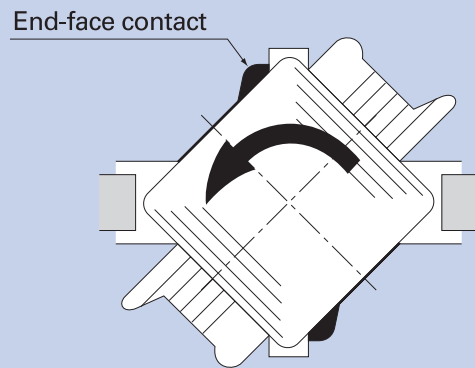
$$l_1 > l_2$$



With a steel sheet retainer(conventional type)



Loaded areas symmetrical
With a spacer retainer



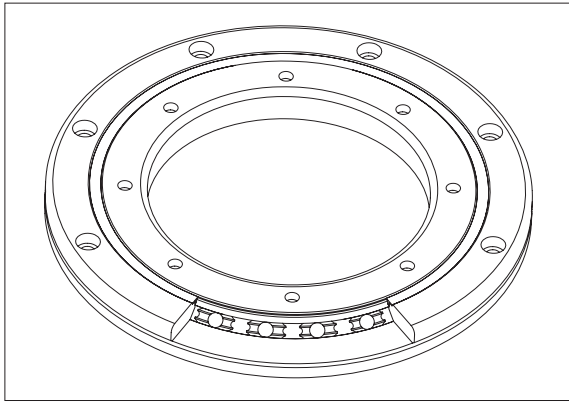
Loaded areas asymmetrical
With a steel sheet retainer(conventional type)

Types

JRU-type

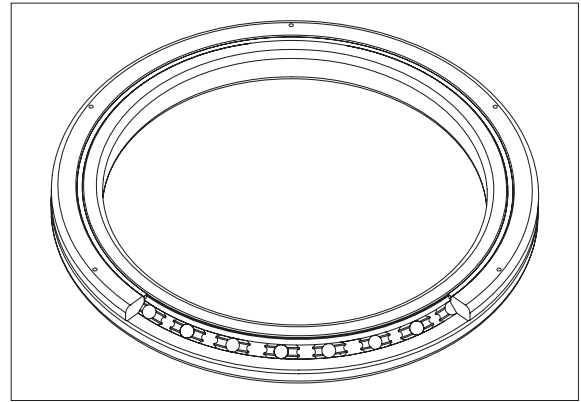
(integrated inner/outer ring type)

As fixing hole is placed, no push flange or housing is required. Integrated inner/outer ring type barely affects the performance due to its structure and provides stabilized running accuracy and torque. Rotation in both ways (inner/outer) can be performed.



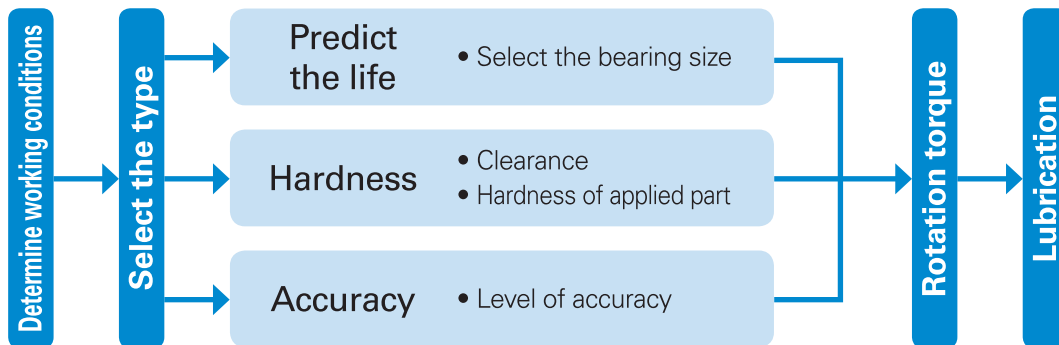
JRB-type(separable outer ring type)

Basic structure of cross roller rotary guide, which separated the outer ring into two parts and integrated the inner ring. It can be used at a place, which requires the running accuracy of inner ring. Its intended use includes the index table turning part of machine tool.



Select cross roller rotary guide

The following diagram shows general steps of selecting AIN cross roller rotary guide.



- Integrated inner/outer rings JRA type
- Outer ring rotation JRU type

Rated life span L

Large load capacity

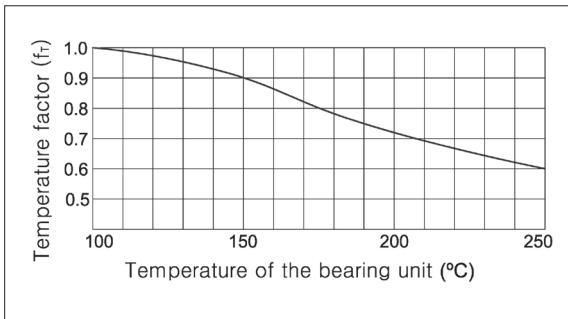
Calculate the life of cross roller rotary guide using the following formula:

$$L = \left(\frac{f_T \cdot C}{f_w \cdot P_C} \right)^{\frac{10}{3}} \times 10^6$$

- L : Rated life span (km)
 (when each cross roller rotary guide works under same conditions. The total number of rotation that 90% of cross roller rotary guide reach without flaking)
- C : Basic dynamic load rating (N)
- P_C : Dynamic equivalent radial load (N)
- f_T : Temperature factor refer to <Fig.3>
- f_w : Load factor refer to <table.1>

Temperature factor (f_T)

<Fig.3> Temperature factor (f_T)



Note) In case that environment temperature is over 80℃, contact MENTOR

Load factor (f_w)

<Table.1> Load factor (f_w)

Load conditions	f _w
Smooth work without impact	1.0~1.2
Normal work	1.2~1.5
Work with significant impact	1.5~3.0

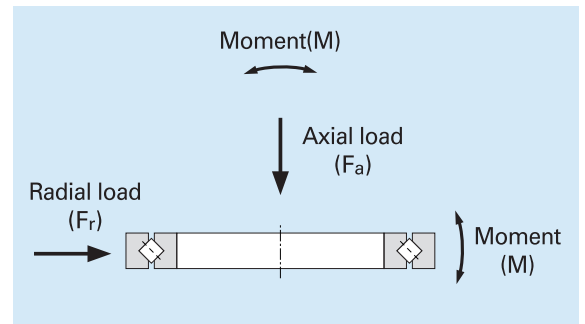
Dynamic equivalent radial load (P_C)

Calculate the dynamic equivalent radial load of cross roller rotary guide using the following formula:

$$P_C = X \cdot \left(F_r + \frac{2M}{dP} \right) + Y \cdot F_a$$

- P_C : Dynamic equivalent radial load (N)
- F_r : Radial load (N)
- F_a : Axial load (N)
- M : moment (N·mm)
- X : Dynamic radial load refer to <Table.2>
- Y : Dynamic axial radial load refer to <Table.2>
- dP : Roller pitch diameter (mm)

<Fig.4> Equivalent radial load (P_C)



<Table.2> Dynamic radial coefficient & dynamic axial coefficient

Classification	X	Y
$\frac{F_a}{F_r + 2M / dp} \leq 1.5$	1	0.45
$\frac{F_a}{F_r + 2M / dp} > 1.5$	0.67	0.67

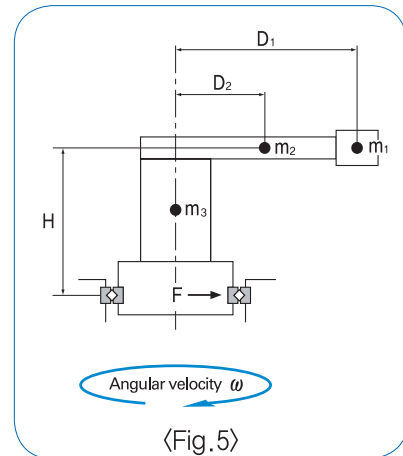
Note) (1) When F_r = 0 N, M = 0 N·mm, apply X = 0.67 and Y = 0.67

(2) Please contact MENTOR for calculating the life of preload Product.

- Example of calculating the rated life

JRB24025 type used in the following conditions if the static safety factor(f_s) is calculated.

$m_1 = 100 \text{ kg}$
 $m_2 = 200 \text{ kg}$
 $m_3 = 300 \text{ kg}$
 $D_1 = 300 \text{ mm}$
 $D_2 = 150 \text{ mm}$
 $H = 200 \text{ mm}$
 $C = 69.3 \text{ kN}$
 $C_0 = 150 \text{ kN}$
 $dp = 277. \text{kN}$
 $F = 100 \text{ N}$
 $\omega = 2 \text{ rad/s}(\omega: \text{Angular velocity})$



$$\begin{aligned}
 \text{Radial load : } F_r &= F + m_1 \cdot D_1 \times 10^{-3} \cdot \omega^2 + m_2 \cdot D_2 \times 10^{-3} \cdot \omega^2 \\
 &= 100 + 100 \cdot 300 \times 10^{-3} \cdot 2^2 + 200 \cdot 150 \cdot 10^{-3} \cdot 2^2 \\
 &= 340 \text{ N}
 \end{aligned}$$

$$\begin{aligned}
 \text{Axial load : } F_a &= (m_1 + m_2 + m_3) \times g \\
 &= (100 + 200 + 300) \times 9.807 \\
 &= 5884.2 \text{ N}
 \end{aligned}$$

$$\begin{aligned}
 \text{Moment : } M &= m_1 \cdot g \times D_1 + m_2 \cdot g \times D_2 + (m_1 \cdot D_1 \times 10^{-3} \cdot \omega^2 + m_2 \cdot D_2 \times 10^{-3} \cdot \omega^2) \times H \\
 &= 100 \cdot 9.807 \times 300 + 200 \cdot 9.807 \times 150 + (100 \cdot 300 \times 10^{-3} \cdot 2^2 + 200 \cdot 150 \times 10^{-3} \cdot 2^2) \times 200 \\
 &= 636420 \text{ N} \cdot \text{mm}
 \end{aligned}$$

$$\frac{F_a}{F_r + 2M / dp} = \frac{5884.2}{240 + 2 \times 636420 / 277.5} = 1.22 \leq 1.5$$

$$\therefore X = 1, Y = 0.45$$

Therefore, the dynamic equivalent radial load(P_c) is as follows

$$P_c = X \left(F_r + \frac{2M}{dp} \right) + Y \cdot F_a = 1 \times 340 + \left(\frac{2 \cdot 636420}{277.5} \right) + 0.45 \times 5884.2 = 7574.7 \text{ N}$$

$f_w = 1.2$, is calculated as follows: If the rated life(L) 9.1×10^8 number of revolutions.

$$L = \left(\frac{f_t \cdot C}{f_w \cdot P_c} \right)^{\frac{10}{3}} = \left(\frac{1 \times 69.3 \times 10^3}{1.2 \times 7574.7} \right)^{\frac{10}{3}} \times 10^6 = 9.1 \times 10^8 \text{ revolutions.}$$

■ Calculate the life (L_n)

• In case of rotary motion

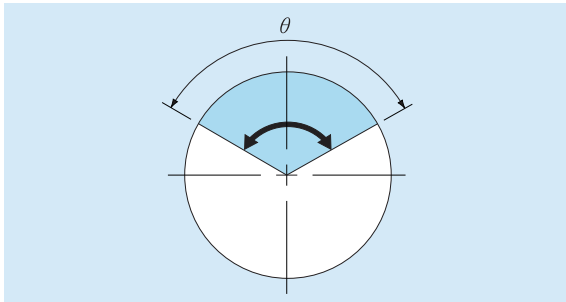
$$L_n = \left(\frac{L}{n_1 \times 60} \right)$$

- L_n : Rating life in hours (h)
- θ : Pitching accuracy refer to <fig.6> (°)
- n₀ : Number of reciprocation per minute (min-1)

• In case of pitching motion

$$L_n = \left(\frac{360 \times L}{2 \times \theta \times n_0 \times 60} \right)$$

- L_n : Rating life in hours (h)
 - θ : Pitching accuracy refer to <fig.6> (°)
 - n₀ : Number of reciprocation per minute (min-1)
- <Fig.6> Pitching accuracy (θ)



Note) Pitching accuracy: when is small, an oil film between the orbiting wheel and contact surface is not created and thereby causes plating. Please contact MENTOR for use cross roller rotary guide under these condition.

Static safety factor f_s

Basic static load rating(C₀) is a stationary load with fixed direction and size, of which contact stress between the roller and the electric plane at the center of contact part is 4000MPa and if the contract stress exceeds this value, an error occurs in rotation. This load is expressed in (C₀) and the static safety coefficient should be considered for statically or dynamically loaded weight.

$$\frac{C_0}{P_0} = f_s$$

- f_s : Static safety factor refer to <Table.3>
- C₀ : Basic static load rating (N)
- P₀ : Static equivalent radial load (N)

<Table.3> Static safety factor (f_s)

Load conditions	Lower limit of f _s
Normal load	1~2
Impact load	2~3

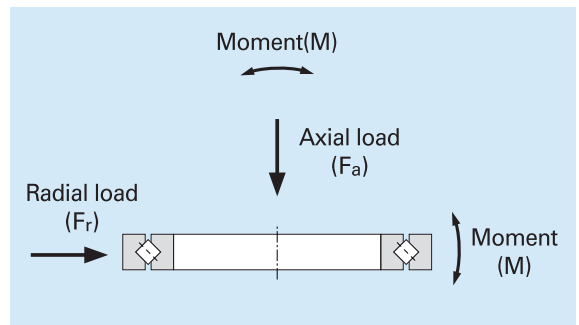
■ Static equivalent radial load (P₀)

Calculate this static equivalent radial load of cross roller rotary guide using the following formula:

$$P_c = X_0 \cdot \left(F_r + \frac{2M}{dp} \right) + Y_0 \cdot F_a$$

- P₀ : Static equivalent radial load
- F_r : Radial load
- F_a : Axial load
- M : Moment
- X₀ : Static radial load
- Y₀ : Static axial radial load
- dp : Roller pitch diameter

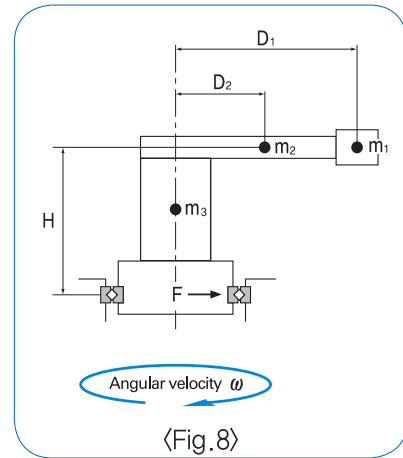
<Fig.7> Static equivalent radial load (P₀)



- Example of calculating the rated life

JRB24025 type used in the following conditions if the static safety factor(f_s) is calculated.

$m_1 = 100 \text{ kg}$
 $m_2 = 200 \text{ kg}$
 $m_3 = 300 \text{ kg}$
 $D_1 = 300 \text{ mm}$
 $D_2 = 150 \text{ mm}$
 $H = 200 \text{ mm}$
 $C = 69.3 \text{ kN}$
 $C_0 = 150 \text{ kN}$
 $dp = 277. \text{kN}$
 $F = 100 \text{ N}$
 $\omega = 19.1 \text{ rpm}$



$$\begin{aligned}
 \text{Radial load : } F_r &= F + m_1 \cdot D_1 \times 10^{-3} \cdot \omega^2 + m_2 \cdot D_2 \times 10^{-3} \cdot \omega^2 \\
 &= 100 + 100 \cdot 300 \times 10^{-3} \cdot 2^2 + 200 \cdot 150 \cdot 10^{-3} \cdot 2^2 \\
 &= 340 \text{ N}
 \end{aligned}$$

$$\begin{aligned}
 \text{Axial load : } F_a &= (m_1 + m_2 + m_3) \times g \\
 &= (100 + 200 + 300) \times 9.807 \\
 &= 5884.2 \text{ N}
 \end{aligned}$$

$$\begin{aligned}
 \text{Moment : } M &= m_1 \cdot g \times D_1 + m_2 \cdot g \times D_2 + (m_1 \cdot D_1 \times 10^{-3} \cdot \omega^2 + m_2 \cdot D_2 \times 10^{-3} \cdot \omega^2) \times H \\
 &= 100 \cdot 9.807 \times 300 + 200 \cdot 9.807 \times 150 + (100 \cdot 300 \times 10^{-3} \cdot 2^2 + 200 \cdot 150 \times 10^{-3} \cdot 2^2) \times 200 \\
 &= 636420 \text{ N} \cdot \text{mm}
 \end{aligned}$$

Therefore, the dynamic equivalent radial load(P_0) is as follows

$$P_0 = X \left(F_r + \frac{2M}{dp} \right) + Y \cdot F_a = 1 \times \left(340 + \frac{2 \cdot 636420}{277.5} \right) + 0.44 \times 5884.2 = 7515.8 \text{ N}$$

$$\therefore f_s = \frac{150 \times 10^3}{7515.8} = 20$$

Static safety factor(f_s) is 20.

Static permissible moment M_0

Fit of JRU type

Though RU type basically does not need the fit, h7 and H7 are recommended if the accuracy of location determination is required.

Fit of JRB type

Recommend to follow

〈Table.13〉 for fit of RB type

Radial clearance	Working conditions		Axial	Housing
C0	Inner ring rotational load	Normal load	h5	H7
		When impact and moment are hug	h5	H7
	Outer ring rotational load	Normal load	g5	Js7
		When impact and moment are hug	g5	Js7
C1	Inner ring rotational load	Normal load	j5	H7
		When impact and moment are hug	k5	Js7
	Outer ring rotational load	Normal load	g6	Js7
		When impact and moment are hug	h5	K7

Design of housing and push flange

As cross roller rotary guide is thin and compact in size, the hardness of housing or push flange/bolt should be carefully considered. When the outer ring is separated into 2 and the hardness of housing or push flange/bolt is not good enough, it is not impossible to adhere the inner ring or the outer ring, or it modifies the bearing, irregulates the contact part of roller and thereby significantly reduces the performance of the bearing, if the moment load is loaded. 〈Fig.13〉 shows an example of installing cross roller rotary guide.

Housing

The thickness of housing should be based on above 60% of the cross section height of bearing.

Thickness of housing: above
$$T = \frac{D-d}{2} \times 0.6$$

T : Thickness of housing

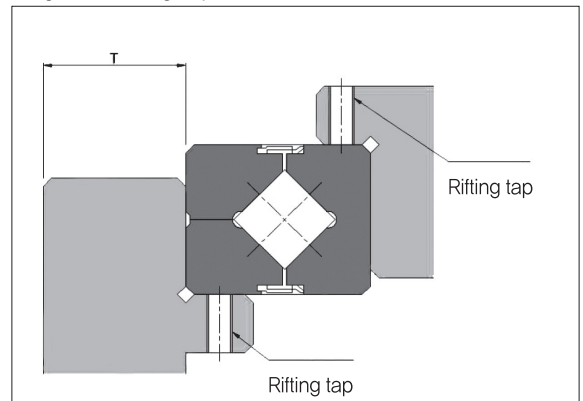
D : external diameter of outer ring

d : internal diameter of inner ring

Lifting tap

If the lifting tap of inner ring is designed as in 〈Fig.14〉, the bearing can be detached without any damage. For detached the outer ring, do not push or pull the inner ring. Plus, refer to the shoulder height for the adhesion dimension of side plane.

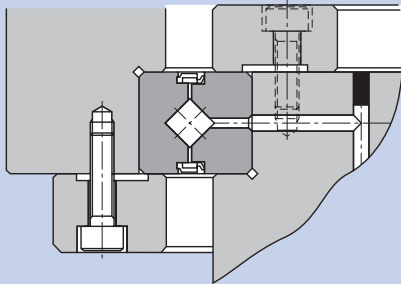
〈Fig.14〉 Lifting tap



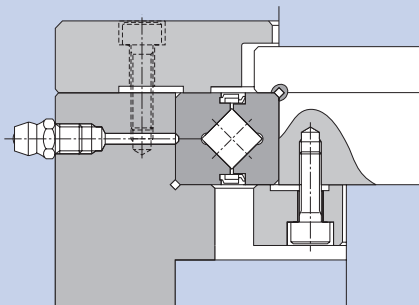
Example of assembly

〈Fig.15 to 16〉 show an example of assembling cross roller rotary guide.

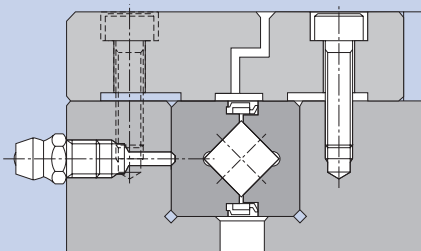
〈Fig.15〉 Example of assembling RB type



a. Outer ring of rotation part example of assembling the body after entering the inner/outer ring



b. Inner ring of rotation part (seal attached)



c. Entering inner/outer ring into the rotation part in same direction (seal attached)

Push flange and push bolt

The thickness of push flange(F) and clearance of flange(S) should be based on following dimensions. The more number of push bolt is likely to stabilize the part, arrange the push bolt based on 〈Table.14〉.

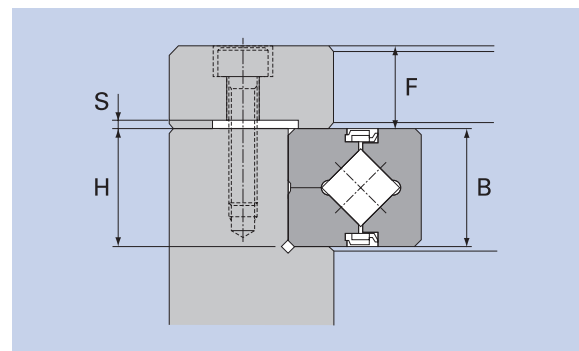
$$F = B \times 0.5 \text{ from } B \times 1.2$$

$$H = B \begin{matrix} 0 \\ -0.1 \end{matrix}$$

$$S = 0.5 \text{ mm}$$

If the material used for axis and housing is a light alloy, it is recommended to use the push flange made of steel. For RU type, use fixing hole or tap hole placed on the inner/outer ring to attach the parts (RU type does not need the push flange with a torque wrench or other tool to not be loosened. If the material used for housing or push flange is a steel with medium hardness, refer to 〈Table.15〉 for clamp torque.

〈Fig.16〉 Push flange and push bolt



〈Table.14〉 Numbers size of push bolt

External diameter of outer ring (D)		Number of bolt	Bolt size (reference)
Above	Below		
-	100	more than 8	M3~M5
100	200	more than 12	M4~M8
200	500	more than 16	M5~M12
500	-	more than 24	more than M12

(Unit: μm)

〈Table.15〉 Clamp torque of bolt

Nominal size of screw	Clamp torque	Nominal size of screw	Clamp torque
M3	2	M10	70
M4	4	M12	120
M5	9	M16	200
M6	14	M20	390
M8	30	M22	530

(Unit: N·m)

Assembling order

Follow the steps below for assembling cross roller rotary guide.

■ Check the parts before assembling

Clean the housing and order parts to check any stain or damaged.

■ insert cross roller rotary guide into the housing or the axis

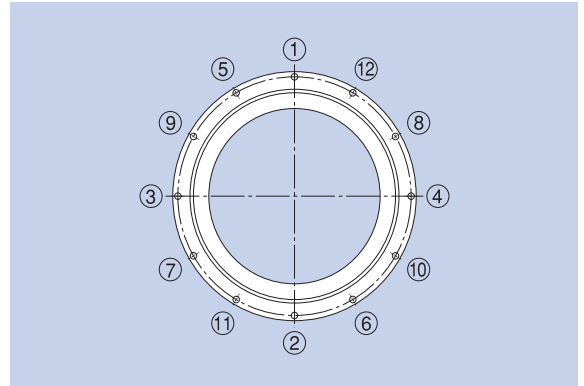
As cross roller rotary guide is a thin walled bearing, it tends to tilt while installing. To prevent this, maintain level, hit cross roller rotary guide with a plastic hammer and then slowly insert into the housing or the axis. Continue hammering until you hear a click sound.

■ Installation of push flange

- 1) When attached the push flange, attach it to the integrated rotation ring (i.e., inner ring of model JRB) first.
- 2) Place the push flange onto the cross roller rotary guide. Rock the flange several times to match the bolt holes.
- 3) insert the push bolts into the holes. Manually turn the bolts and make sure they do not display skewing caused by misalignment of the holes.

- 4) Clamp the push bolts in three to four steps from light to full tightening by repeatedly securing the bolts in diagonal order. When clamp the separable inner or outer ring, slightly turning The integral outer or inner ring will correct the dislocation between the ring and the body.

〈Fig.17〉 Clamp order



Precautions for use

■ Handling

- 1) Separated inner / outer ring is clamped to not be separated by bolt and nut with special rivet. If the space retainer is not properly assembled, it significantly affects the rotation performance. Do not disassemble the bearing.
- 2) If the inner / outer ring is not properly located, loosen the bolt, adjust the location using a plastic hammer and then assemble the parts (fixing rivet is attached on the housing).
- 3) Do not conduct any assembly or separation that may have impact on the fixing rivet or the bolt. Be careful with dimensional tolerance of assembling parts, so that the push flange firmly fixed the inner ring onto the side plane.
- 4) Be careful not to drop or tap on cross roller rotary guide and if an impact is made, the functional damage can be done without showing any damage on the appearance.

■ Lubrication

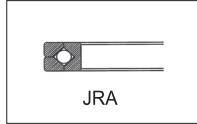
- 1) Cross roller contains a high-quality lithium soap-based grease (no.2) and can be used as delivered. However, it has smaller space inside compared to the roller bearing and structured in roller bearing contact, which is difficult to lubricate, so it needs regular fueling. Design the fueling of grease to be connected to the oil supply inlet on the inner ring and even if the frequency of rotation is low, supply the same kind of grease to be spread onto the entire bearing inside in 6 months or one-year intervals. If the grease is fully filled up, the initial rotation torque increases temporarily due to the grease resistance, but when the rest of grease comes out following the seal part, it comes back to its normal torque within a short period of time. Plus, make the oil inlet on the housing inner ring as the thin walled type has on oil inlet.
- 2) Do not use the grease with different property.
- 3) In case of vibrating place, clean room vacuum, high temperature or other special conditions, the general grease cannot be used. In this case, please contact MENTOR.
- 4) Please contact MENTOR, if you are willing to use a special type of grease.

■ Cautions for use

- 1) If foreign substances go inside, the functional problem may occur. Prevent any cutting chip or other substances to go inside the device.
- 2) Please contact MENTOR, if you are willing to use the device under the ambient temperature higher than 80° C
- 3) Please contact MENTOR, if the device is used under the condition that the coolant flows inside cross roller rotary guide.
- 4) If any dust, cutting chip or other substances are located, clean the device with industrial alcohol and then seal the grease.
- 5) In case of the device is used in vibrating place, clean room, vacuum, high temperature or other special conditions, please contact MENTOR.

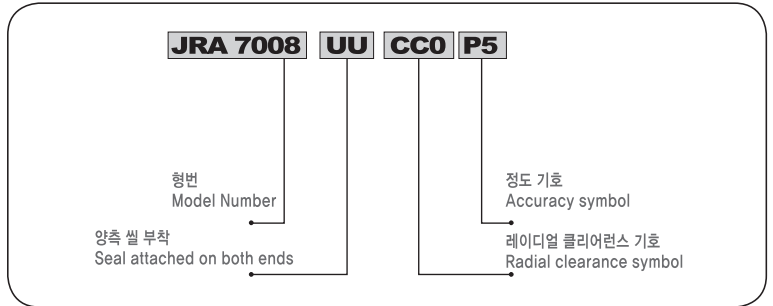
JRA

크로스 롤러 로터리 가이드
Crossed - Roller Rotary Guide



외륜분할, 내륜회전형

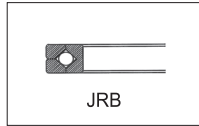
JRA형
내외륜의 두께를 최소한으로 얇게 한
경량 콤팩트한 타입



Specification Model	주요치수 Main Dimensions			
	내경 Inner Diameter d	외경 Outer Diameter D	롤러피치원경 Roller Pitch Circle Diameter dp	내경 Width B B ₁
JRA 5008	50	66	57	8
JRA 6008	60	76	67	8
JRA 7008	70	86	77	8
JRA 8008	80	96	87	8
JRA 9008	90	106	97	8
JRA 10008	100	116	107	8
JRA 11008	110	126	117	8
JRA 12008	120	136	127	8
JRA 13008	130	146	137	8
JRA 14008	140	156	147	8
JRA 15008	150	166	157	8
JRA 16013	160	186	172	13
JRA 17013	170	196	182	13
JRA 18013	180	206	192	13
JRA 19013	190	216	202	13
JRA 20013	200	226	211	13

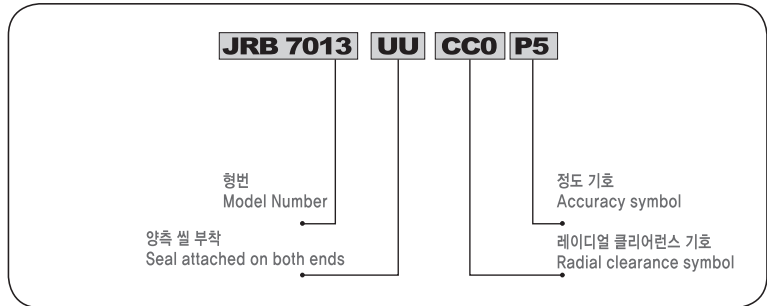
JRB

크로스 롤러 로터리 가이드
Crossed - Roller Rotary Guide



외륜분할, 내륜회전형

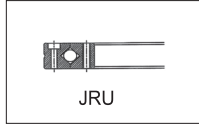
JRB형
외륜을 2분할하여, 내륜을 일체화한
크로스 롤러링의 기본 형식,
내륜의 회전정도가 필요한 곳에 최적 타입.



Specification Model	주요 치수 Main Dimensions			
	내경 Inner Diameter d	외경 Outer Diameter D	롤러피치원경 Roller Pitch Circle Diameter dp	내경 Width B B ₁
JRB 2008	20	36	27	8
JRB 2508	25	41	32	8
JRB 3010	30	55	41.5	10
JRB 3510	35	60	46.5	10
JRB 4010	40	65	51.5	10
JRB 4510	45	70	56.5	10
JRB 5013	50	80	64	13
JRB 6013	60	90	74	13
JRB 7013	70	100	84	13
JRB 8016	80	120	98	16
JRB 9016	90	130	108	16
JRB 10016	100	140	119.3	16
JRB 10020		115	123	20
JRB 11012	110	135	121.8	12
JRB 11015		145	126.5	15
JRB 11020		160	133	20
JRB 12016	120	150	134.2	16
JRB 12025		180	148.7	25
JRB 13015	130	160	144.5	15
JRB 13025		190	158	25
JRB 14016	140	175	154.8	16
JRB 14025		200	168	25
JRB 15013	150	180	164	13
JRB15025		210	178	25
JRB 15030		230	188	30
JRB 16025	160	220	188.6	25
JRB 17020	170	220	191	20
JRB 18025	180	240	210	25
JRB 19025	190	240	211.9	25
JRB 20025	200	260	230	25
JRB 20030		280	240	30
JRB 20035		295	247.7	35
JRB 22025		220	280	250.1
JRB 24025	240	300	269	25

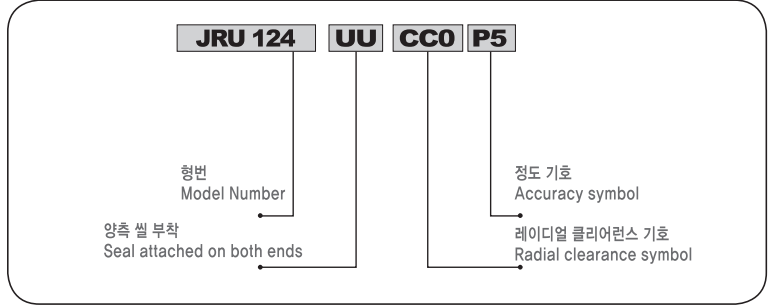
JRU

크로스 롤러 로터리 가이드
Crossed - Roller Rotary Guide



내륜과 일체형

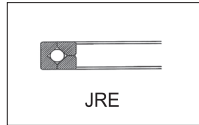
JRU형
내외륜의 일체형 구조로 조립에 의한 성능의 영향이 거의 없고, 안정된 회전 정도 및 토크 사용
내륜, 외륜회전 양방향 사용가능.



Specification Model	주요 치수 Main Dimensions			
	내경 Inner Diameter d	외경 Outer Diameter D	롤러피치원경 Roller Pitch Circle Diameter dp	내경 Width B
JRU 42	20	70	41.5	12
JRU 66	35	95	66	15
JRU 85	55	120	85	15
JRU 124 (G)	80	165	124	22
JRU 124X				
JRU 148 (G)	90	210	147.5	25
JRU 148X				
JRU 178 (G)	115	240	178	28
JRU 178X				
JRU 228 (G)	160	295	227.5	35
JRU 228X				
JRU 297 (G)	210	380	297.3	40
JRU 297X				
JRU 445 (G)	350	540	445.4	45
JRU 445X				

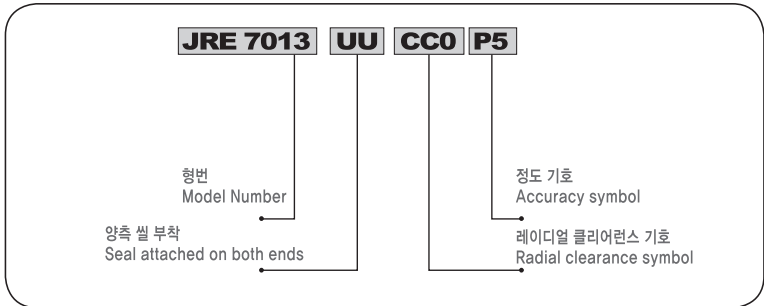
JRE

크로스 롤러 로터리 가이드
Crossed - Roller Rotary Guide

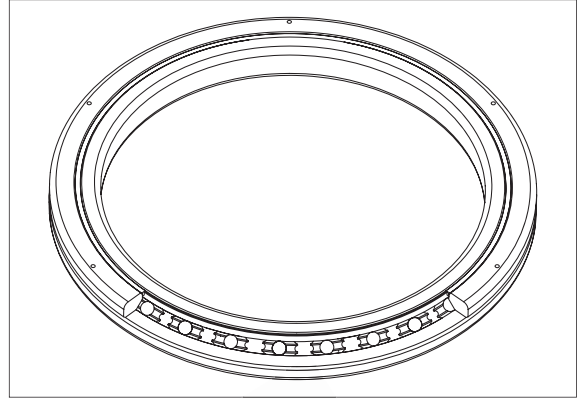
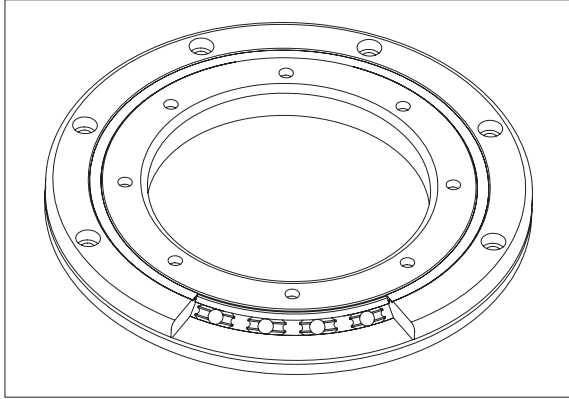


내륜분할, 외륜회전형

JRB형
RB형과 주요치수 동일,
외륜의 회전정도가 필요한 곳에 최적 타입.



Specification Model	주요 치수 Main Dimensions			
	내경 Inner Diameter d	외경 Outer Diameter D	롤러피치원경 Roller Pitch Circle Diameter dp	내경 Width B, B _i
JRE 2008	20	36	29	8
JRE 2508	25	41	34	8
JRE 3010	30	55	43.5	10
JRE 3510	35	60	48.5	10
JRE 4010	40	65	53.5	10
JRE 4510	45	70	58.5	10
JRE 5013	50	80	66	13
JRE 6013	60	90	76	13
JRE 7013	70	100	86	13
JRE 8016	80	120	101.4	16
JRE 9016	90	130	112	16
JRE 10016	100	140	121.1	16
JRE 10020		115	127	20
JRE 11012	110	135	123.3	12
JRE 11015		145	129	15
JRE 11020		160	137	20
JRE 12016	120	150	136	16
JRE 12025		180	152	25
JRE 13015	130	160	146	15
JRE 13025		190	162	25
JRE 14016	140	175	160	16
JRE 14025		200	172	25
JRE 15013	150	180	166	13
JRE 15025		210	182	25
JRE 15030		230	192	30
JRE 16025	160	220	192	25
JRE 17020	170	220	196.1	20
JRE 18025	180	240	210	25
JRE 19025	190	240	219	25
JRE 20025	200	260	230	25
JRE 20030		280	240	30
JRE 20035		295	247.7	35
JRE 22025	220	280	250.1	25
JRE 24025	240	300	272.5	25



B Cross Roller

Rotary Guide

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2016. 04. 개정판

Miniature Guide / Cross Roller Slide Guide /
Cross Roller Slide Table / Goniometer Crossed Roller Guide/
Cross Roller Rotary Guide/ Actuator / Motorized Stage /
Manual Stage / Dovetail Stage / Micrometer Head / Support Unit



주식회사 멘토

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