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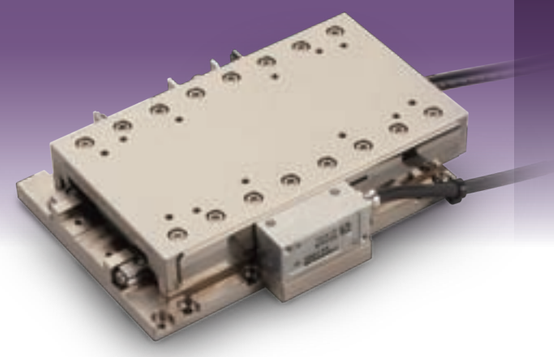
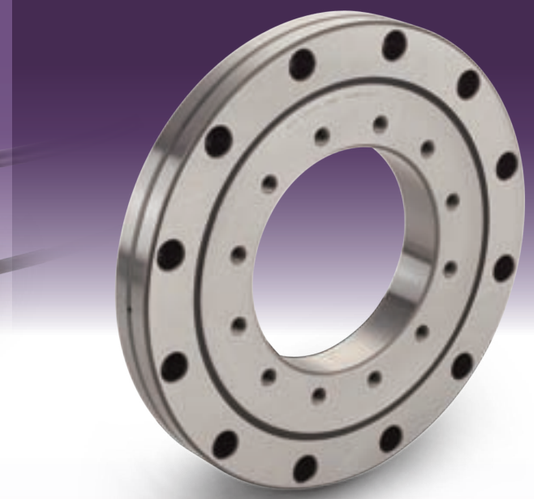
NEW PRODUCTS GUIDE

ALL NEW 2013





NIPPON THOMPSON CO., LTD.

ALL NEW 2013

New Products

Evolving unique IKO product.

IKO C-Lube Maintenance Free Series

C-Lube Linear Way MLV
MLV (Size: 9 and 12)

P5-8

Super small-size linear motion rolling guide with simple two-row four-point contact structure and original small sizing technology.

- New series with excellent cost performance!
- Long term maintenance free!
- Stainless steel material for excellent corrosion resistance!
- Ball retained type for easy handling!

IKO C-Lube Maintenance Free Series

C-Lube Linear Way
New series released!

Revolutionary linear motion rolling guide with super high load capacity and long term maintenance free with the very low cross sectional height and light weight!

- Weight reduction by about 40% on slide unit and about 30% on track rail!
- Super low cross sectional height!

IKO C-Lube Maintenance Free Series

C-Lube Linear Way MH Ultra Seal Specification
MH•••M (Size: 25 and 30)

P9-12

Linear motion rolling guide with superior rigidity and load capacity incorporating a large-diameter steel ball.

- Excellent dust protection performance with dedicated track rail and slide unit!

Stainless Steel Cam Followers
CF•••FB

P13-16

Bearings with a stud and needle rollers in a thick outer ring designed for outer ring rotation.

- Great addition of new sizes!

High Rigidity Cross Roller Bearing with Mounting Holes
CRBF•••A

P17-20

Bearing suitable for complex load in any direction at the same time and easy and rigid mounting with mounting holes.

- Great addition of new sizes inner diameter of 90 and 115 mm!

Nano Linear High Accuracy Type
NT•••H

P21-22

High-accuracy linear motor table with high rigidity, smooth operation and positioning accuracy and running straightness below 1 µm.

- Stroke length 25 mm is released!
- 10 nm resolution specification is added for higher accuracy!

Nano Linear NT Driver
ADVA

P23-26

- High-accuracy automatic tuning function!
- Motion network EtherCAT is supported!

Programmable Controller
CTN481G

P27-28

- Both high speed and high resolution controls are achieved with high speed pulse output!
- Various automation protocols can be supported!

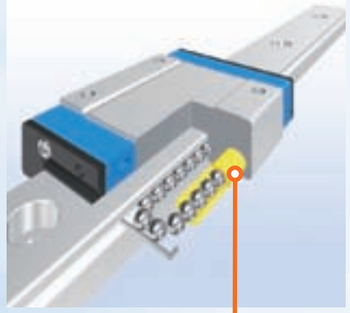
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Our pursuit of Oil Minimum has led to the creation of IKO's proprietary family of lubrication parts as "C-Lube".

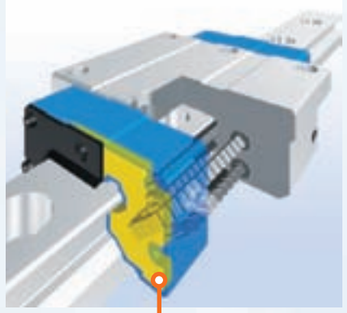
IKO C-Lube Maintenance-free

"C-Lube" minimizes usage of lubrication oil and supplies the optimal amount of lubrication oil for long period of time. So it realizes long term maintenance free and contributes to the global environment preservation.

C-Lube Linear Way



C-Lube Linear Roller Way

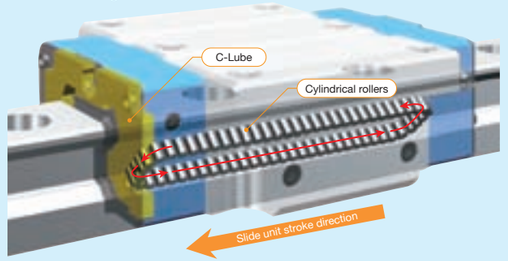


C-Lube Linear Ball Spline

C-Lube integrated

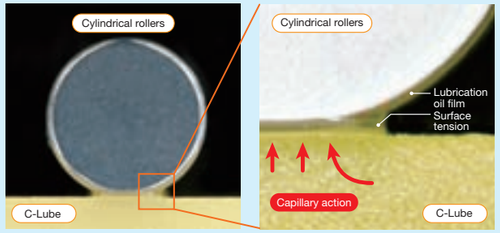
Lubrication oil is carried through circulation of rolling elements

The lubrication oil is supplied directly to the rolling elements, not to the track rail.
When rolling elements make contact with the capillary lubricating element integrated with the circulation path of slide unit rolling elements, the lubrication oil is supplied to surfaces of rolling elements and carried to the loading area through circulation of rolling elements.
This results in adequate lubrication oil being properly maintained in the loading area and lubrication performance will last for a long time.



Lubrication oil is directly supplied to surfaces of the rolling elements

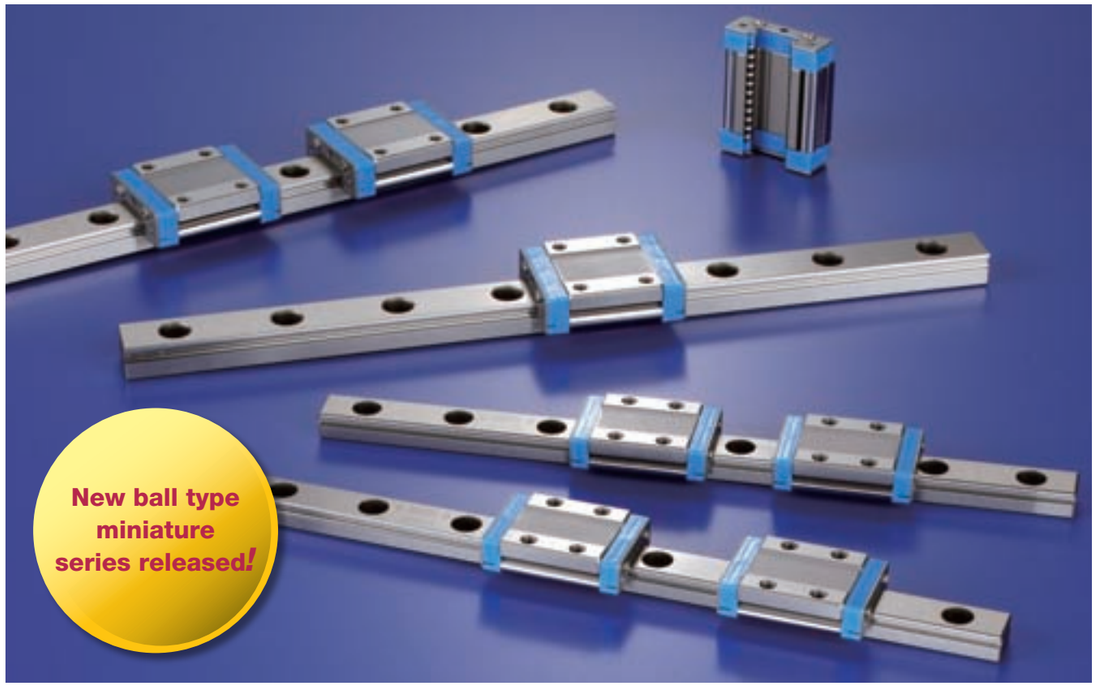
The surface of capillary lubricating element is always covered with the lubrication oil.
Lubrication oil is continuously supplied to the surface of rolling elements by surface tension in the contact of capillary lubricating element surface and rolling elements.
On the surface of capillary lubricating element with which the rolling elements make contact, new lubrication oil is always supplied from the other sections.



IKO C-Lube Maintenance Free Series

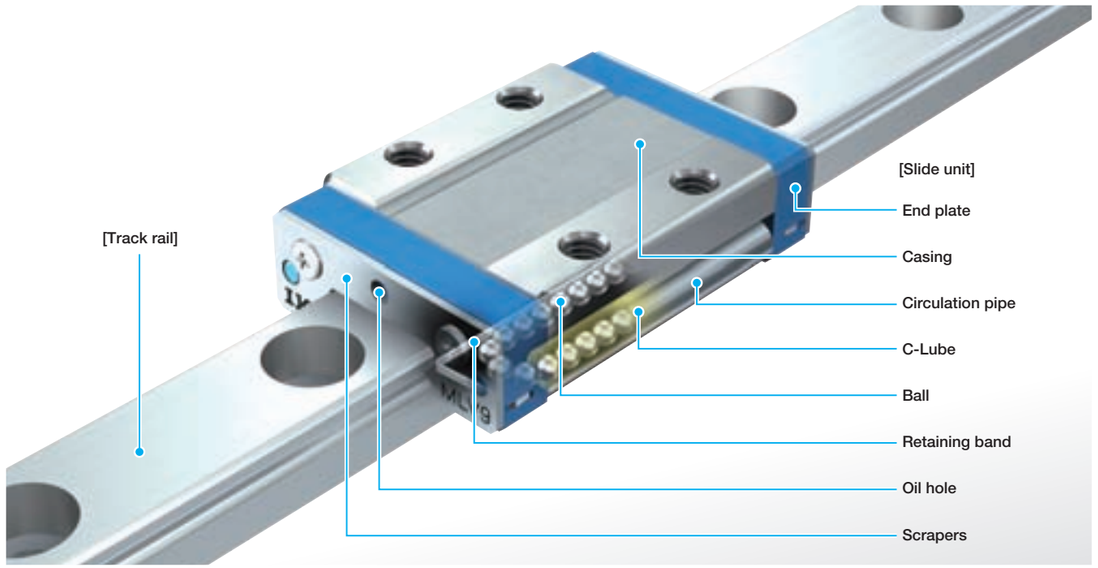
C-Lube Linear Way MLV

MLV (Size: 9 and 12)



MLV series is a super small-size linear motion rolling guide produced by original small sizing technology.
Thanks to the structure with two rows of balls to contact with the way at four points, stable accuracy and rigidity can be achieved even in applications where load has variable direction and size or complex load is applied, despite its very small body and light weight.

MLV Structure



Features

1 Extremely small size

Super small-size produced with simple four-points contact in two-row raceways structure and original small sizing technology.

2 Cost performance

Price reduction achieved by redesigning of the structure including ball circulation section with excellent performance.

3 Long term maintenance free

The lubrication part "C-Lube" integrated in the slide unit. As lubrication oil in C-Lube is supplied by the amount necessary to maintain lubrication performance of the rolling guide parts, the consumption is reduced and lubrication performance is maintained. Furthermore, grease is pre-packed in the slide unit so long term maintenance free is realized.

4 Stainless steel material for excellent corrosion-resistant

Corrosion resistant stainless steel is used, so that the products are suitable for applications where rust prevention oil is not preferred, such as in cleanroom environment.

5 Ball retained type for easy assembling

The slide unit incorporates the ball retaining band, which prevents the ball from dropping when the slide unit is removed from the track rail. This convenient structure brings you an easy instration to the machines / equipment.

Example of an Identification Number

MLV	9	C1	R160	_	T0	H	S	/US
❶	❷	❸	❹	❶	❺	❻	❼	❽

❶ Model

MLV	Indicate "LWL···B" for the model code of the single track rail.

❷ Size

9, 12

❸ Number of slide unit (C○)

For an assembled set, indicates the number of slide units assembled on a track rail. For a single slide unit, only "C1" is specified.

❹ Length of track rail (R○)

Indicate the length of track rail in mm.
For standard and maximum lengths, see Table 1 in the following page.
"No symbol" is indicated for single slide unit.

❺ Preload amount

For details of the preload amount, see Table 2 in the following page.
"No symbol" is indicated for single track rail.

❻ Accuracy class

For details of clasification symbol, see Table 3 in the following page.

❼ Interchangeable

S	S specification (applicable to clearance specification)
S1	S1 specification (applicable to standard preload amount specification)
S2	S2 specification (applicable to standard preload amount specification)
No symbol	Non-interchangeable specification

This is specified for the interchangeable specifications.
Assemble a track rail and a slide unit with the same "S1" or "S2" interchangeable code. However, in case of "S", use either "S1" or "S2" track rail.
Performance and accuracy of "S", "S1" and "S2" are the same.
"No symbol" is indicated for non-interchangeable specification.

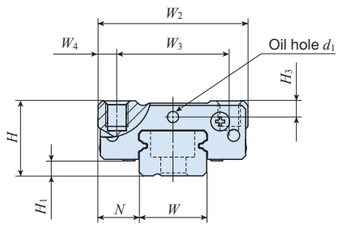
❽ Special Specification

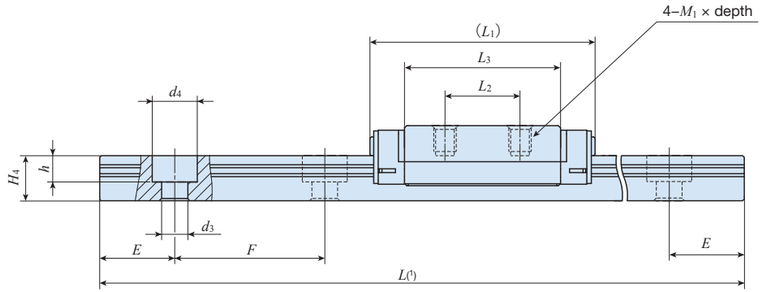
/D	Opposite reference surfaces arrangement
/E	Specified rail mounting hole positions
/MN	Without track rail mounting bolt
/US	End seal
/W○	A group of multiple assembled sets
/YCG	Specified grease (Low Dust-Generation Grease for Clean Environment CG2)

Remark: For details of special specification, please contact IKO.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Dimension and Specification





Identification Number	Interchangeable	Mass (Ref.) g		Dimensions of assembly mm			Dimensions of slide unit mm								
		Slide unit	Track rail (per 100 mm)	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	M_1 × depth	H_3	d_1
MLV 9	○	17	35	10	2	5.5	20	15	2.5	30	10	20.8	M3×3	2.2	1.5
MLV 12	○	31	65	13	3	7.5	27	20	3.5	34	15	21.6	M3×3.5	2.7	2

Dimensions of track rail mm							Track rail Appended mounting bolt (2) mm	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
W	H_4	d_3	d_4	h	E	F	Bolt size × ℓ	C N	C_0 N	T_0 N·m	T_X N·m	T_Y N·m
9	6	3.5	6	3.5	10	20	M3×8	1 810	2 760	12.8	9.1 51.1	7.6 42.9
12	8	3.5	6.5	4.5	12.5	25	M3×8	3 330	4 290	26.6	15.4 93.1	12.9 78.2

Notes (1) Track rail length L is shown in Table 1.
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176.
(3) Basic dynamic load rating (C), basic static load rating (C_0), static moment rating (T_0, T_X, and T_Y) are values for the direction indicated in the right figure.
The upper values of T_X and T_Y are for one slide unit and the lower values are for two slide units sticking.

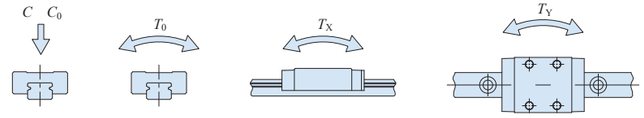


Table 1 Standard and maximum lengths of track rail

unit: mm

Item \ Identification Number		MLV 9	MLV 12
Standard length L (1)		60(3)	100(4)
		80(4)	150(6)
		120(6)	200(8)
		160(8)	275(11)
		220(11)	350(14)
		280(14)	475(19)
Pitch of mounting holes F		20	25
E		10	12.5
E reference dimensions	higher	4.5	5
	below	14.5	17.5
Maximum length (2)		860 (1 200)	1 000 (1 450)

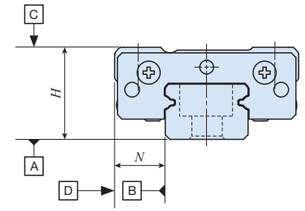
Notes (1) The value in ( ) indicates the number of mounting holes.
(2) Length up to the value in ( ) can be produced. If needed, please contact IKO.
Remarks 1 Indicate "LWL···B" for the model code of the single track rail.
2 If not directed, E dimensions for both ends will be the same within the range of E reference dimensions.
To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification.

Table 2 Preload amount

Preload amount type	Preload amount symbol	Preload amount N	Operational conditions
Clearance	T_0	0(1)	Very light motion
Standard	(No symbol)	0(2)	Light and very precise motion

Notes (1) There is zero or minimal amount of clearance.
(2) Indicates zero or minimal amount of preload amount.

Table 3 Tolerance and allowance



unit: mm

Item \ Class (classification symbol)	High (H)
Dim. H tolerance	±0.020
Dim. N tolerance	±0.025
Dimension variation of H (1)	0.015
Dimension variation of N (1)	0.020
Dimension variation of H for multiple assembled sets (2)	0.030
Parallelism in operation of the slide unit C surface to A surface	See Fig. 1
Parallelism in operation of the slide unit D surface to B surface	See Fig. 1

Notes (1) It means the size variation between slide units mounted on the same track rail.
(2) Applicable to the interchangeable specifications.

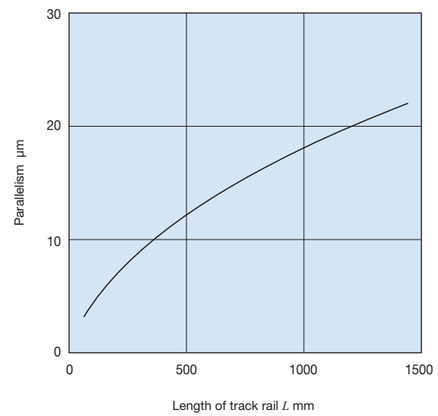


Fig. 1 Parallelism in operation

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

NEW PRODUCTS GUIDE

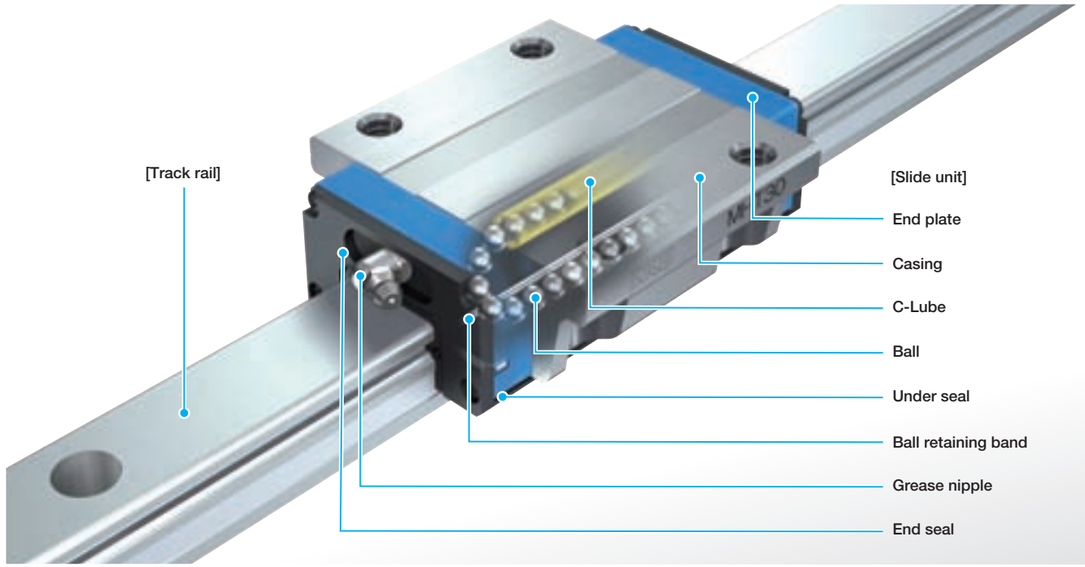
IKO C-Lube Maintenance Free Series

C-Lube Linear Way MH Ultra Seal Specification

MH•••M (Size: 25 and 30)

C-Lube Linear Way MH realizes long period maintenance free thanks to the incorporated large-diameter ball and using the built-in lubrication parts C-Lube in the Linear Way H series slide unit with large load rating and rigidity.
Further, Ultra seal specification is released with optimal sealing performance suitable for use in environment with foreign particles.

MH•••M Structure



MH•••M Variation

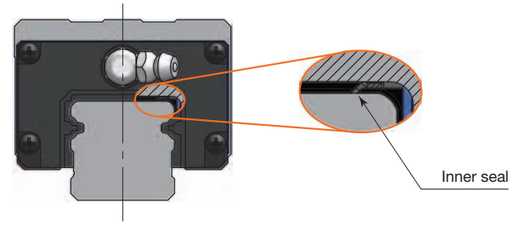
Shape	Length of slide unit	Model	Size 25	Size 30
Flange type mounting from bottom	Standard	MH•••M(U)	☆	☆ NEW
Flange type mounting from top	Standard	MHT•••M(U)	☆	☆
Block type mounting from top	Standard	MHD•••M(U)	☆	☆
Compact block type mounting from top	Standard	MHS•••M(U)	☆	☆

Remark: Only standard slide unit length is available.

Features

1 Ultra seal specification with optimal sealing performance

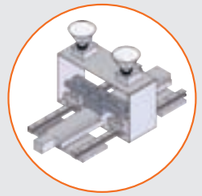
It has excellent dust protection performance thanks to the combination of the dedicated track rail finished with special grinding process and slide unit with end seal and under seal of optimal shapes.
If you specify special specification / UR with inner seal, the inner seal can be attached to the inside of the slide unit.
Inner seal improves dust protection property of the ball circulation section against foreign particles from the upper surface of the track rail.

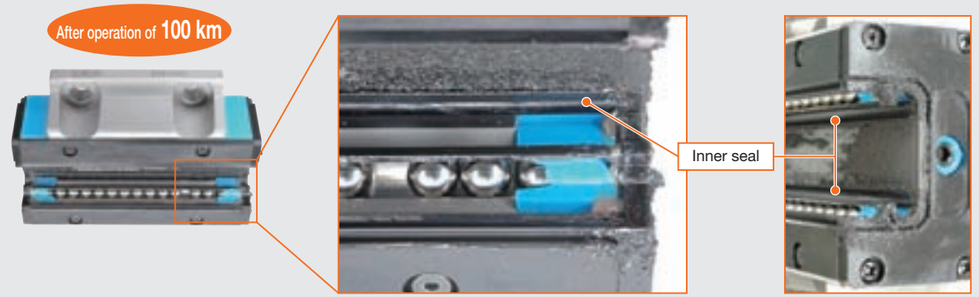


Durability test in environment with foreign particles

Test conditions

Test portion	MH30M standard preload amount / caps for rail mounting hole and inner seal attached	
Maximum velocity	18 m/min	
Stroke length	500 mm	
Foreign substances	Fine metal particles Particle diameter lower than 125 μm	Hardness HRC40 ~ 50 Application dose 20 g/h (total dose: 2 kg)





2 Long term maintenance free

Long term maintenance free is realized by using the built-in capillary lubrication parts "C-Lube" for the circulation path of rolling elements. The lubrication workload is reduced and the reliability of machine or device can be improved.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

NEW PRODUCTS GUIDE

Example of an Identification Number

MHD ❶ 25 ❷ C2 ❸ R840 ❹ M ❺ T1 ❻ P ❼ /UR ❽

❶ Model

MH	Flange type mounting from bottom
MHT	Flange type mounting from top
MHD	Block type mounting from top
MHS	Compact block type mounting from top

❷ Size

25, 30

❸ Number of slide unit (C○)

Specifies the number of slide units assembled on a track rail.

❹ Length of track rail (R○)

Indicate the length of track rail in mm.
For standard and maximum lengths, see Table 1.

❺ Dust protection specification

M	Ultra seal specification
MU	Ultra seal specification with bottom mount track rail

❻ Size of preload amount

For details of the preload amount, see Table 2.

❼ Accuracy class

For accuracy class, see Table 3.

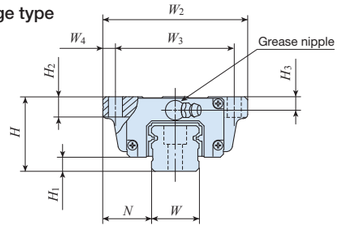
❽ Special Specification

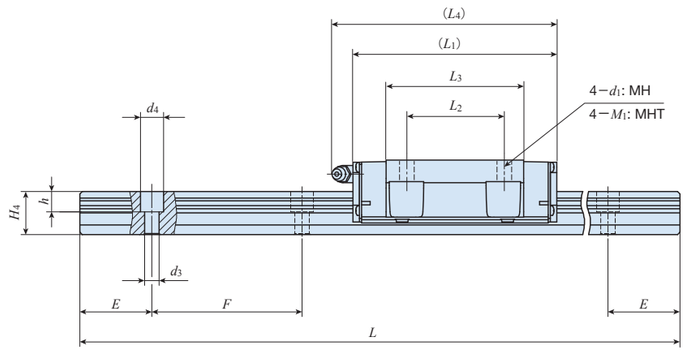
/A	Butt-jointing track rails
/D	Opposite reference surfaces arrangement
/E	Specified rail mounting hole positions
/F	Caps for rail mounting holes
/I	Inspection sheet
/J	Female threads for bellows
/L	Black chrome surface treatment
/LF	Fluorine black chrome surface treatment
/MA(1)	With track rail mounting bolt
/UR	Inner seal
/V	Double end seals
/W○	A group of multiple assembled sets
/YCG	Specified grease (Low Dust-Generation Grease for Clean Environment CG2)
/Z	Scrapers

Note (1) Not applicable to MH (T, D, and S)···MU.
Remark: For details of special specification, please see the Linear Motion Rolling Guide Series General Catalog CAT-1552④.

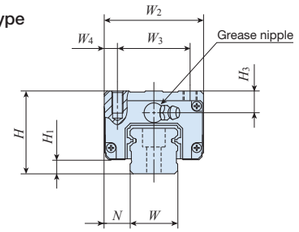
Dimension

Flange type

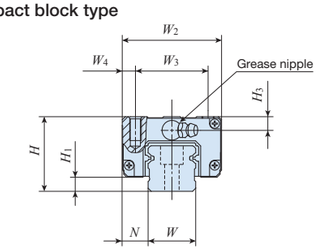


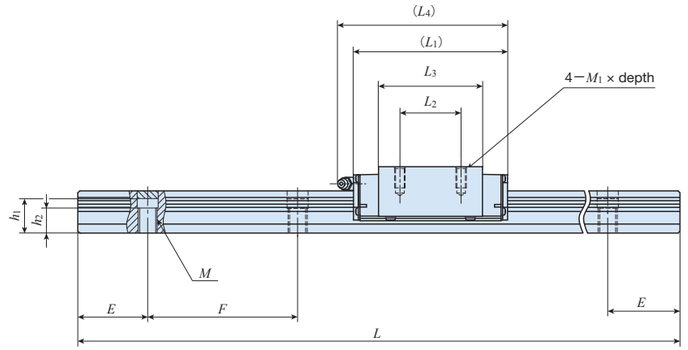


Block type



Compact block type





Highly dust protection track rail mounting from bottom

Remark: For details of specifications such as each dimension and load rating, please see the Linear Motion Rolling Guide Series General Catalog CAT-1552④.

Table 1 Standard and maximum lengths of track rail

unit: mm

Item \ Identification Number		MH25···M MH25···MU	MH30···M MH30···MU
Standard length L (1)		240(4) 480(8) 660(11) 840(14) 1 020(17) 1 200(20) 1 500(25)	480(6) 640(8) 800(10) 1 040(13) 1 200(15) 1 520(19)
Pitch of mounting holes F		60	80
E		30	40
E reference dimensions (2)	or higher	9	10
	below	39	50
Maximum length		3 000	2 960
Maximum number of butt-jointing track rails		3	3
Maximum length of butt-jointing track rail		8 700	8 480

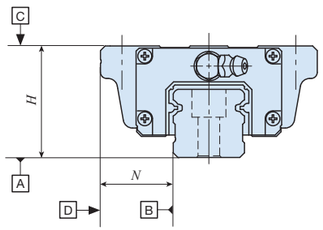
Notes (1) The value in ( ) indicates the number of mounting holes.
(2) Not applicable to the track rail with female threads for bellows (supplemental code "/J").
Remarks: 1. A typical identification number is indicated, but is applied to all models of the same size.
2. If not directed, E dimensions for both ends will be the same within the range of E reference dimensions.
To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification.

Table 2 Preload amount

Item \ Preload amount type	Preload amount symbol	Preload amount N	Operational conditions
Standard	(No symbol)	0(1)	· Light and precise motion
Light preload amount	T1	$0.02C_0$	· Almost no vibrations · Load is evenly balanced · Light and precise motion
Medium preload amount	T2	$0.05C_0$	· Medium vibration · Medium overhung load applied
Heavy preload amount	T3	$0.08C_0$	· Operation with vibration and / or shock · Overhanging load applied · Heavy cutting

Note (1) Indicates zero or minimal amount of preload amount.
Remark: C_0 indicates the basic static load rating.

Table 3 Tolerance and allowance



unit: mm

Item \ Class (classification symbol)	High (H)	Precision (P)	Super precision (SP)
Dim. H tolerance	±0.040	±0.020	±0.010
Dim. N tolerance	±0.050	±0.025	±0.015
Dimension variation of H (1)	0.015	0.007	0.005
Dimension variation of N (1)	0.020	0.010	0.007
Slide unit against the A surface Parallelism during running on the C surface	See Fig. 1		
Slide unit against the B surface Parallelism during running on the D surface	See Fig. 1		

Note (1) The value shows variation of slide units incorporated in the same track rail.

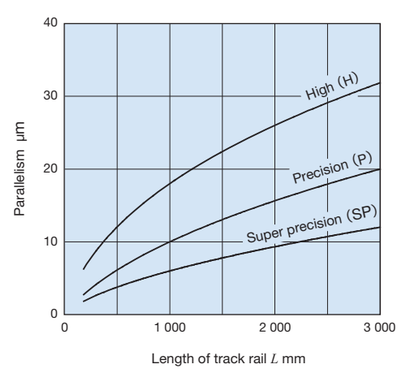


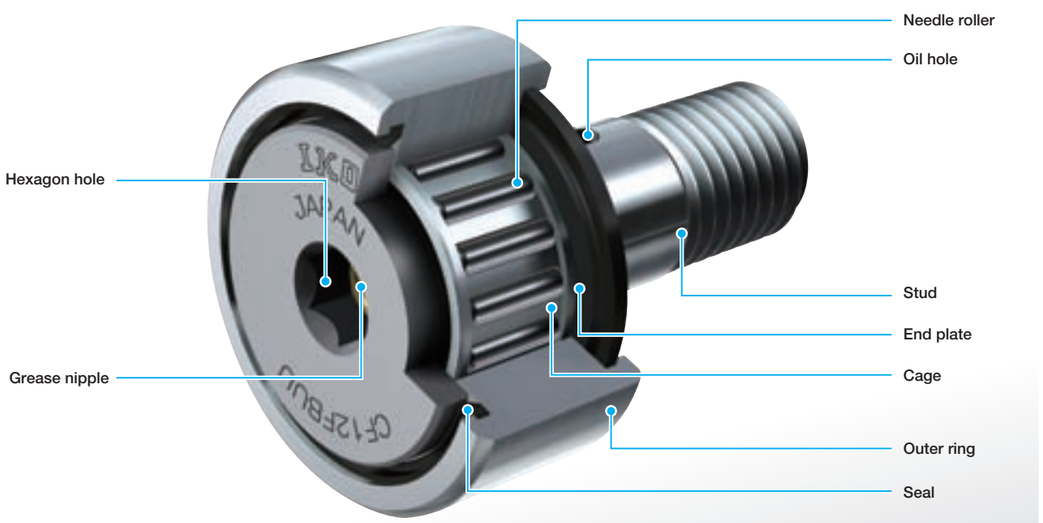
Fig. 1 Parallelism in operation

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Stainless Steel Cam Followers
CF···FB

Cam Followers are the bearing with a stud and needle rollers incorporated in a thick-walled outer ring designed for outer ring rotation.
Stainless Steel Cam Followers are suitable for applications where water exists nearby or rust preventive oil shall be avoided such as in cleanroom.

CF···FB Structure



CF···FB

Model of bearing	Shape of outer ring outer diameter surface	Seal structure	Identification Number	Size												
				3	4	5	6	8	10	10-1	12	12-1	16	18	20	20-1
Stainless steel standard cam followers CF···FB	Crowned outer ring	Shield type	CF···FBR	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
		Sealed type	CF···FBUUR	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
	Cylindrical outer ring	Shield type	CF···FB	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
		Sealed type	CF···FBUU	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆

NEW

Remark: Roller guide type is only available for lineup of caged type.

Features

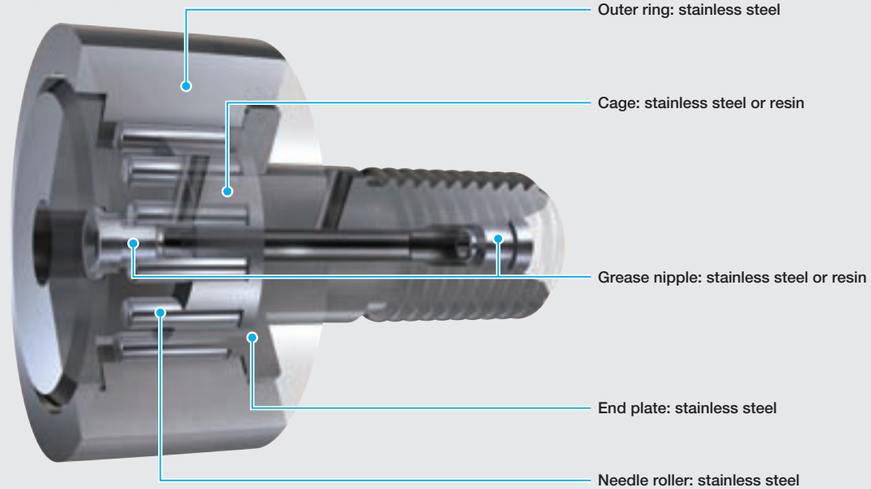
1 Stainless steel material for excellent corrosion resistance

Corrosion resistant stainless steel is used so that the products are suitable for applications where rust prevention oil is not preferred, such as in cleanroom environment.

2 Special specification suitable for secondary battery production etc.

Special specification available for special environment. This is suitable for secondary battery production facilities etc that require low dust generation, rust prevention, special packaging of product and elimination of certain materials such as Copper, Zinc and Nickel.

Example of special specification



1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Example of an Identification Number

CF ❶ 12 ❷ F ❸ B ❶ UU ❹ R ❺

❶ Model

CF···B	Standard cam followers

❷ Dimension

Represents stud diameter. (unit: mm)

❸ Material type

F	Stainless steel made

❹ Seal structure

No symbol	Shield type
UU	Sealed type

❺ Shape of outer ring outer diameter surface

No symbol	Cylindrical outer ring
R	Crowned outer ring

Accuracy and Clearance

Table 1 Tolerance

unit: μm

Name	Class	
	Crowned outer ring	Cylindrical outer ring
Dimension D of external ring outer diameter	0 −50	Obtain from Table 2
Dimension d_1 tolerance of stud diameter	h7	
Dimension C tolerance of outer ring width	0 −120	

Table 2 Tolerance and allowance of outer ring

unit: μm

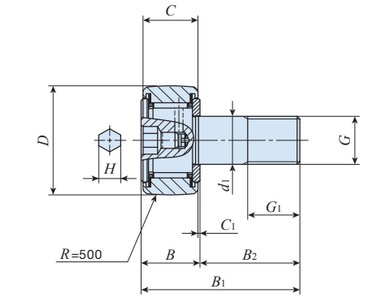
D Nominal external ring outer diameter mm		ΔDmp Dim. tolerance of mean outer diameter within a single surface		$VDsp$ Outer diameter variation within a single surface (maximum)	$VDmp$ Mean outer diameter variation within a single surface (maximum)	Kea Radial parallelism (maximum)
Above	or lower	H	L			
6	18	0	− 8	10	6	15
18	30	0	− 9	12	7	15
30	50	0	−11	14	8	20
50	80	0	−13	16	10	25

Table 3 Internal radial clearance

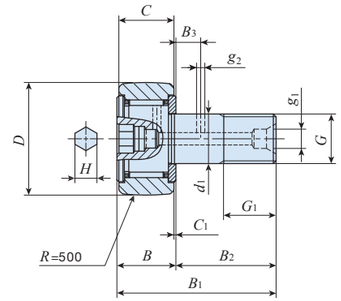
unit: μm

Stud diameter mm	Internal radial clearance	
	Minimum	Maximum
3, 4, 5	3	17
6	5	20
8, 10, 12	5	25
16, 18, 20	10	30

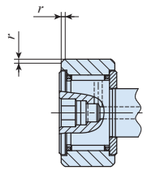
Dimension



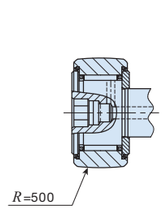
CF···FBR (1)
Stud diameter d_1 3 ～ 10 mm



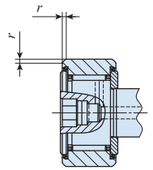
CF···FBR (2)
Stud diameter d_1 12 ～ 30 mm



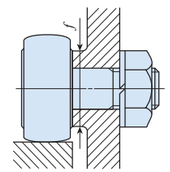
CF···FB



CF···FBUUR



CF···FBUU



Stud Diameter mm	Identification Number	Mass (Ref.) g	Nominal dimensions mm									Mounting related dimensions f Minimum mm	Maximum tightening torque N·m	Basic dynamic load rating C N	Basic static load rating C0 N	Maximum Static allowable Load N
			D	C	d1	G	G1	B	B1	B2	H					
3	CF 3 FB(UU)(R)	4.3	10	7	3	M 3×0.5	5	8	17	9	2	6.8	0.34	1 200	813	384
4	CF 4 FB(UU)(R)	7.4	12	8	4	M 4×0.7	6	9	20	11	2.5	8.3	0.78	1 650	1 270	834
5	CF 5 FB(UU)(R)	10.3	13	9	5	M 5×0.8	7.5	10	23	13	3	9.3	1.6	1 930	1 730	1 260
6	CF 6 FB(UU)(R)	18.5	16	11	6	M 6×1	8	12.2 max	28.2 max	16	3	11	2.7	2 930	2 920	1 950
8	CF 8 FB(UU)(R)	28.5	19	11	8	M 8×1.25	10	12.2 max	32.2 max	20	4	13	6.5	3 400	3 790	3 790
10	CF 10 FB(UU)(R)	45	22	12	10	M10×1.25	12	13.2 max	36.2 max	23	5	16	13.8	4 340	5 510	5 510
	CF 10-1 FB(UU)(R)	60	26													
12	CF 12 FB(UU)(R)	95	30	14	12	M12×1.5	13	15.2 max	40.2 max	25	6	21	21.9	6 330	7 830	7 830
	CF 12-1 FB(UU)(R)	105	32													
16	CF 16 FB(UU)(R)	170	35	18	16	M16×1.5	17	19.6 max	52.1 max	32.5	6	26	58.5	9 620	14 700	14 700
18	CF 18 FB(UU)(R)	250	40	20	18	M18×1.5	19	21.6 max	58.1 max	36.5	8	29	86.2	11 800	20 200	20 200
20	CF 20 FB(UU)(R)	460	52	24	20	M20×1.5	21	25.6 max	66.1 max	40.5	8	34	119	16 500	27 700	27 700
	CF 20-1 FB(UU)(R)	385	47													

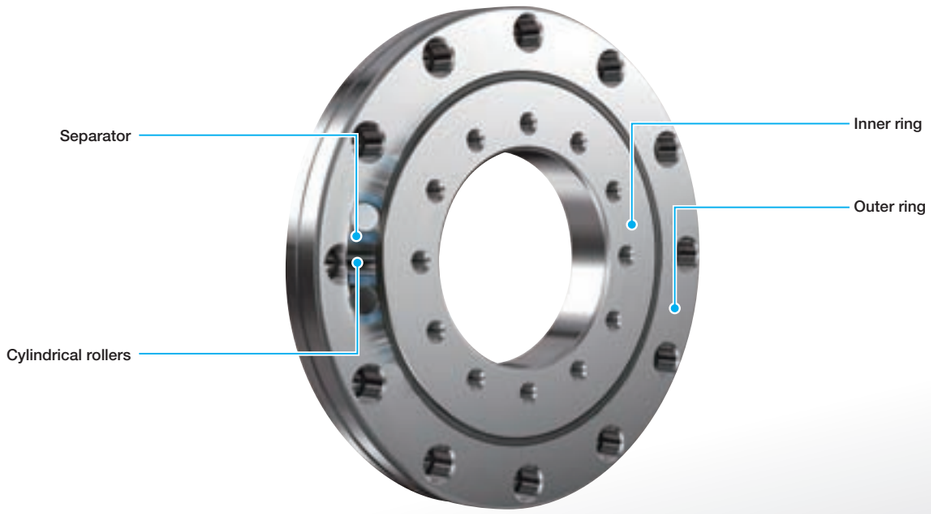
Notes (1) No oil hole is provided if the stud diameter d_1 is 4 mm or less. Grease can be fed from the grease feed plug located inside the hexagon socket on the head if the stud diameter d_1 is between 5 and 10 mm.
(2) The grease nipple is integrated in the hexagon socket on the head. Grease can be fed from the head and stud end by spiking the supplied grease nipple into the oil hole on the stud end.
Remark: Grease is pre-packed if the stud screw diameter d_1 of the shield type is 10 mm or less or if the seal structure is the sealed type. As for the others, grease is not pre-packed. Use the product with appropriate lubrication.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

High Rigidity Cross Roller Bearing with Mounting Holes
CRBF···A

High rigidity crossed roller bearing with mounting holes is a compact, high rigidity and high accuracy bearing that can receives complex loads in any direction at the same time. This can be easily installed to the device with the mounting holes of the inner and outer rings. It is less subject to peripheral structures such as housing pressure plate and realizes high rigidity and high-accuracy operation.

CRBF···A Structure



CRBF···A Variation

Model of bearing	Mounting hole	Seal structure	Model and size	Size							
				10	20	25	35	55	80	90	115
CRBF···A	Tapped hole on inner ring, Counterbore on outer ring	Open type	CRBF···AT	☆	☆	☆	☆	☆	☆	☆	☆
		Sealed type	CRBF···ATUU	☆	☆	☆	☆	☆	☆	☆	☆
	Counterbore on inner and outer ring, same direction	Open type	CRBF···A	—	—	—	—	—	☆	☆	☆
		Sealed type	CRBF···AUU	—	—	—	—	—	☆	☆	☆
	Coutnerbore on inner and outer ring, opposite direction	Open type	CRBF···AD	—	—	—	—	—	☆	☆	☆
		Sealed type	CRBF···ADUU	—	—	—	—	—	☆	☆	☆

NEW

Features

1 High rigidity, load capacity and accuracy

High rigidity and high load capacity with small elastic deformation are realized by using cylindrical roller as rolling elements.
Both inner and outer rings are one-piece structure that minimize installation error.
Mounting holes for direct fixing on the mating mounting surface are provided, high rigidity and high accuracy guidance is realized being free from effects of housing structure and accuracy.

2 Compact

Compact design around bearing is possible, as housing and pressure plate are not necessary and installation is easy bolt-on type.
The number of parts and assembly processes can be reduced and miniaturization and weight reduction of the device is promoted.

3 Smooth rotation performance

It is suitable for relatively higher rotation speed, as a separator is integrated between the rollers.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Example of Identification Number

CRBF ❶ 90 ❷ 25 ❸ A ❶ T ❹ UU ❺ C1 ❻ P6 ❼

❶ Model code

CRBF···A	High rigidity cross roller bearing with mounting holes (with separator)

❷ Dimension

Indicates the bearing inner diameter. (unit: mm)

❸ Dimension

Indicates the bearing width. (unit: mm)

❹ Supplemental code–1

T	Inner ring threaded mounting hole
No symbol	Inner and outer rings counterbore in the same configuration
D	Inner and outer rings counterbore in reverse configuration

❺ Supplemental code–2

No symbol	Open type
UU	Sealed type
U	With seal on counterbore side of the outer ring
UD	With seal on opposite counterbore side of the outer ring

❻ Supplemental code–3 See Table 3.

T1	T1 Clearance
C1	C1 Clearance
C2	C2 Clearance

❼ Classification symbol See Table 1 and 2.

No symbol	Accuracy class 0
P6	Accuracy class 6
P5	Accuracy class 5
P4	Accuracy class 4
P2	Accuracy class 2

Accuracy and Clearance

Table 1 Tolerance and allowance of inner ring

unit: μm

Model and size	*Δdmp* Single plane mean bore dia. deviation								*ΔBs* Deviation of a single inner ring width		*Kia* Radial run-out of assembled bearing inner ring					*Sia* Assembled bearing innner ring face run-out with raceway				
	Class 0		Class 6		Class 5		Class 4 and 2				Class 0	Class 6	Class 5	Class 4	Class 2	Class 0	Class 6	Class 5	Class 4	Class 2
	H	L	H	L	H	L	H	L	H	L	Maximum					Maximum				
CRBF 9025 A	0	−20	0	−15	0	−10	0	−8	0	−75	25	13	6	5	2.5	25	13	6	5	2.5
CRBF 11528 A	0	−20	0	−15	0	−10	0	−8	0	−75	30	18	8	6	2.5	30	18	8	6	2.5

Table 2 Tolerance and allowance of outer ring

unit: μm

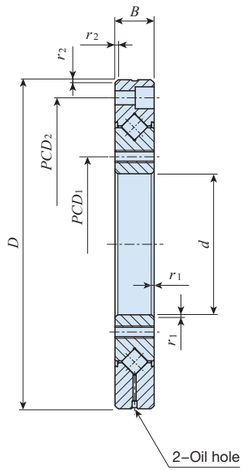
Model and size	*ΔDmp* Single plane mean bore dia. deviation								*ΔCs* Deviation of a single outer ring width		*Kea* Radial run-out of assembled bearing outer ring					*Sea* Assembled bearing outer ring face run-out with raceway				
	Class 0		Class 6		Class 5		Class 4 and 2				Class 0	Class 6	Class 5	Class 4	Class 2	Class 0	Class 6	Class 5	Class 4	Class 2
	H	L	H	L	H	L	H	L	H	L	Maximum					Maximum				
CRBF 9025 A	0	−30	0	−20	0	−15	0	−11	0	−75	45	23	13	8	5	45	23	13	8	5
CRBF 11528 A	0	−30	0	−20	0	−15	0	−11	0	−75	50	25	15	10	7	50	25	15	10	7

Table 3 Internal radial clearance

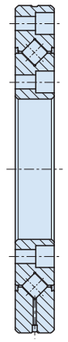
unit: μm

Model and size	Radial internal clearance					
	T1		C1		C2	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
CRBF 9025 A	−15	0	0	15	15	35
CRBF 11528 A	−15	0	0	20	20	50

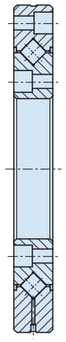
Dimension



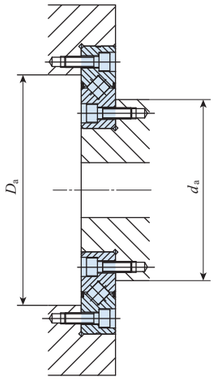
CRBF···AT

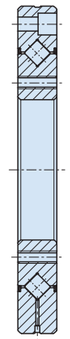


CRBF···A

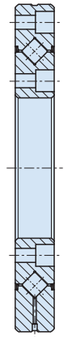


CRBF···AD

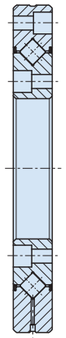




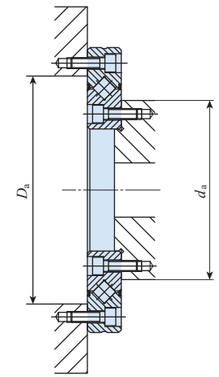
CRBF···ATUU



CRBF···AUU



CRBF···ADUU



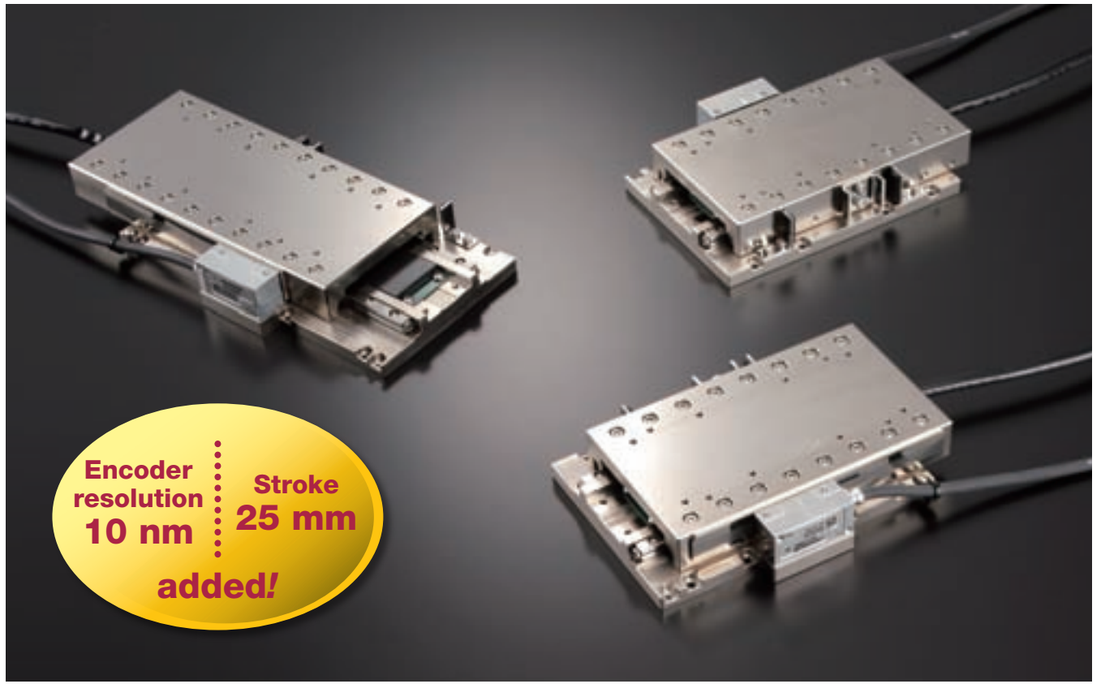
Shaft diameter mm	Model and size	Mass (Ref.) kg	Nominal dimensions mm					Basic dynamic load rating	Basic static load rating	Mounting hole mm				Mounting dimensions mm	
										Inner ring		Outer ring			
			d	*D*	*B*	(1) *r*1min	(1) *r*2min	*C* N	*Co* N	*PCD*1	Mounting hole	*PCD*2	Mounting hole	*da*	*Da*
90	CRBF 9025 AT	4.83	90	210	25	1.5	1.5	73 400	108 000	112	12–M8 through	187	12–φ9 through φ14 Counterbore depth 12	132	168
	CRBF 9025 A	4.67									12–φ9 through φ14 Counterbore depth 12				
	CRBF 9025 AD														
115	CRBF 11528 AT	6.81	115	240	28	1.5	1.5	84 300	138 000	139	12–M8 through	217	12–φ9 through φ14 Counterbore depth 13.5	162	198
	CRBF 11528 A	6.63									12–φ9 through φ14 Counterbore depth 13.5				
	CRBF 11528 AD														

Note (1) This represents the minimum tolerance single surface mounting dimensions of the chamfer dimensions r_1 and r_2.
Remark: An oil groove and 2 oil holes are provided for the outer ring.
Grease is not pre-packed on the open type. Use the product with appropriate lubrication. Grease is pre-packed on sealed type.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

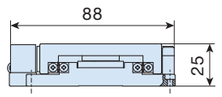
NEW PRODUCTS GUIDE

Nano Linear NT
NT...H



NT···H is a linear motor driven positioning table that has realized high rigidity, smooth motions and positioning accuracy and running straightness below 1μm, comparative with air bearing by using built-in rack and pinion crossed roller way. Specification of resolution 10 nm and stroke 25 mm is added and more accurate positioning and higher speed stability are realized.

Nano Linear NT88H Basic Specification

	High accuracy type NT···H			
Model and size	NEW NT88H25		NT88H65	
				
Sectional shape	 NEW			
Maximum thrust N	25		25	
Rated thrust N	5		5	
Maximum load mass kg	5		5	
Effective stroke length mm	25		65	
Resolution μm	0.01	0.05	0.01	0.05
Maximum speed mm/s	90	400	90	400
Positioning repeatability μm	±0.1		±0.1	

Features

1 Superior speed stability

Speed stability at 40 mm/s achieved from ±0.27%⇨± 0.14%! NEW

2 Excellent following response and high accuracy positioning

Even with 0.2 μm step, accurate step realized! NEW

Example of Identification Number

NT ❶ 88 ❷ H ❶ 25 ❸ / 05 ❹ L ❺

❶ Model

NT···H

❷ Size

88	Width 88 mm

❸ Stroke

25	25mm	NEW
65	65mm	

❹ Resolution of linear encoder

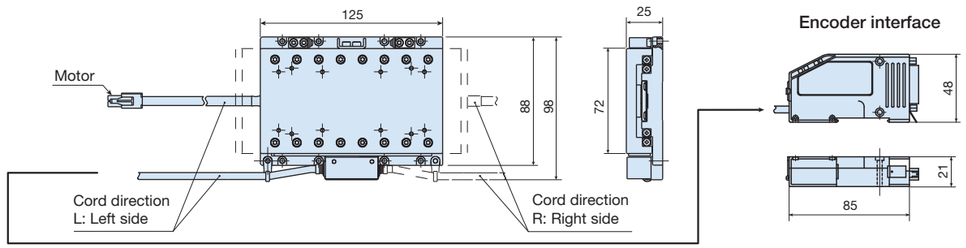
01	0.01μm	NEW
05	0.05μm	

❺ Cord direction

L	Left side
R	Right side

Select from the cord direction indicated in Fig. 1.
(direction for pulling out a cord when placing an encoder on the lower side)

Dimensional Figure

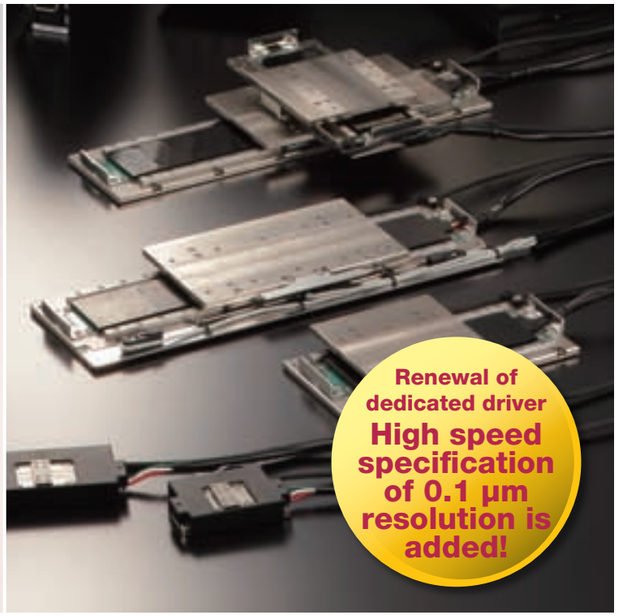


Remark: For dimensional figure of NT88H65 and other detailed dimensions of NT88H25 refer to CAT-1556E.

Fig. 1 Dimensional figure of NT88H25

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Nano Linear NT···V Driver
ADVA



Nano Linear NT is a moving magnet type linear motor table with extremely low sectional height. Combination with the renewed dedicated driver ADVA shortens the positioning time. In addition, 1000 mm/s high speed operation is made possible even with 0.1 µm resolution. Automatic tuning function is added and the motion network EtherCAT that realizes high speed communication and high accuracy inter-node synchronization is supported.

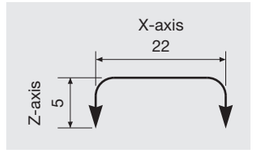
››› ADVA Basic Specification (target model number: NT55V, NT80V, NT80XZ, and NT90XZH)

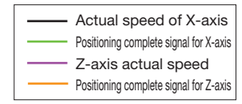
Item \ Model		ADVA-01NL (ADVA-01NLEC)	ADVA-R5ML (ADVA-R5MLEC)
Basic specification	Input power	Single-phase / Three-phase AC200 ～ 230 V, −15% ～ +10% 50 / 60 Hz ±5%	Single-phase AC100 ～ 115 V, −15% ～ +10% 50 / 60 Hz ±5%
	Rated current / momentary current	1.2 Arms / 3.6 Arms	1.2 Arms / 3.6 Arms
	Power plant capacity	0.3kVA	0.3kVA
	Protective structure	Open type IP00	
	Control mode	Position control / Speed control / Thrust force control	
Input & output relation function	Speed command	Analog input: 0 ～ ±10 V / Maximum speed (gain configurable) or EtherCAT	
	Thrust force command	Analog input: 0 ～ ±10 V / Highest thrust force (gain configurable) or EtherCAT	
	Position command	Line driver signal: 20 Mpps (non-isolated input) 2 Mpps (insulated input) or EtherCAT	
	Contact input / output	[Input] Intelligent terminal selects 10 input terminal (6 input terminal for EtherCAT specification) function by parameter DC12 / 24 V Contact signal / Open collector signal input (with internal DC24 V power supply) [Output] Intelligent terminal selects 6 output terminal (4 output terminal for EtherCAT specification) function by parameter (Open collector signal output: sink output)	
Operating environment	Ambient temperature in operation / Storage temperature	0 ～ 55℃／−10 ～ 70℃	
	Operating humidity	20 ～ 90% RH (keep dewdrop free)	
	Vibration resistance	5.9 m/s² (0.6 G) 10 ～ 55 Hz	
	Service space	Altitude of 1000 m or below, indoor (no corrosive gas and dust)	
Mass		0.7 kg	

Features

1 Settling time is reduced! It contributes to further improvement of productivity.

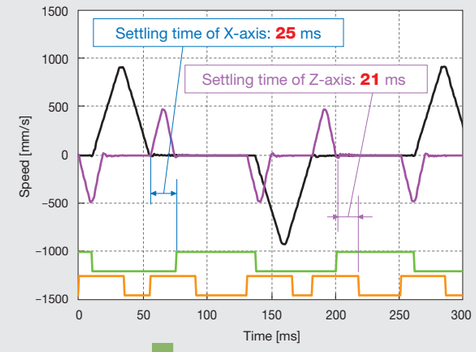
Operation example
Model: NT90XZH2510/5 (resolution 0.5 µm)
Operation: pick and place
Condition: pick and place time: 20 ms
Carrying mass: 150 g
Positioning complete width: ±5 µm
Stroke: X-axis; 22 mm, Z-axis; 5 mm





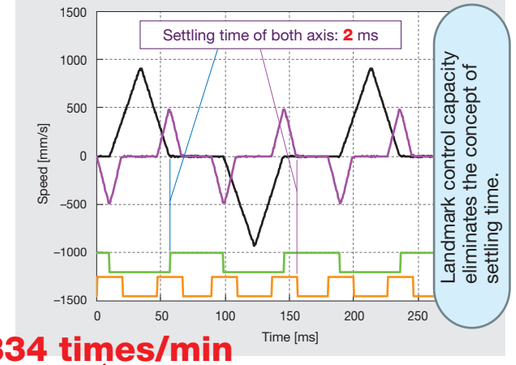
ADAX (oil driver)

	X-axis	Z-axis
Maximum speed	920mm/s	486mm/s
Acceleration / deceleration time	21ms	8ms
Effective thrust force	13.4N	15.4N



ADVA NEW

	X-axis	Z-axis
Maximum speed	912mm/s	488mm/s
Acceleration / deceleration time	24ms	9ms
Effective thrust force	14.8N	15.7N



334 times/min

240 times/min

Number of cycles

As the settling time is extremely short, energy can be saved assuming the same cycle time.

Improvement of production efficiency by 39%

Relative to the old driver's effective thrust force of 28.8 N (sum of X and Z axes), ADVA's effective thrust force is 13.3 N (sum of X and Z axes), demonstrating 54% energy-savings.

ADVA NEW Effective thrust force reduction by 54%!

	X-axis	Z-axis
Maximum speed	650mm/s	250mm/s
Acceleration / deceleration time	26ms	15ms
Effective thrust force	7.9N	5.4N

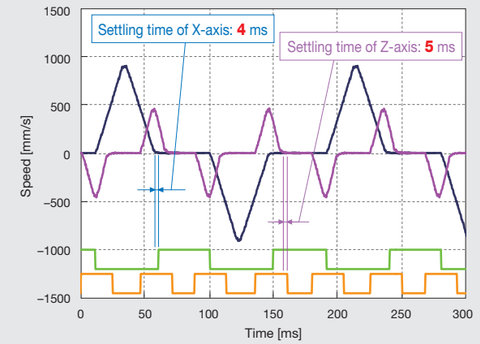
2 High speed specification of 0.1 µm resolution is added!

Higher accuracy is realized with the same tact.

Model: NT90XZH2510/1F (resolution 0.1 µm)
Condition: Pick and place time: 20 ms
Positioning complete width: ±2 µm

ADVA NEW

	X-axis	Z-axis
Maximum speed	902mm/s	462mm/s
Acceleration / deceleration time	24ms	13ms
Effective thrust force	14.8N	15.7N
Number of cycles	334 times/min	



1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Model and size

Example of an identification number for NT···V

NT ❶ 55 ❷ V ❶ 25 ❸ / 5 ❹ _ ❺ L ❻ SC ❼ 1 ❽

❶ Model

NT…V	

❷ Size

38	Width 38 mm
55	Width 55 mm
80	Width 80 mm

❸ Stroke

10	10 mm (applicable to NT38V)
18	18 mm (applicable to NT38V)
25	25 mm (applicable to NT55V and NT80V)
65	65 mm (applicable to NT55V and NT80V)
120	120 mm (applicable to NT80V)

❹ Resolution of linear encoder

1	0.1 µm
1F	0.1 µm; high speed specification (Applicable to NT55V and NT80V) NEW
5	0.5 µm

* When 1F is selected, combination with dedicated driver ADVA is necessary.

❺ Cover

No symbol	Without cover
D	With cover (applicable to NT38V)

❻ Cord direction

L	Leftward
R	Rightward

Select from the cord direction indicated in Fig. 1.
(direction for pulling out a cord when placing an encoder on the lower side)

❼ Designation of sensor

No symbol	Without sensor
SC	Sensor (limit and pre-origin), With sensor bracket (applicable to NT55V and NT80V)

Two types of dedicated drivers, ADVA and MR–J3–10B, are available for Nano Linear NT55V and NT80V. If MR–J3–10B is used, SC must be selected.

❽ Specification number

1	Specification number 1 (specification number is 1 only.)

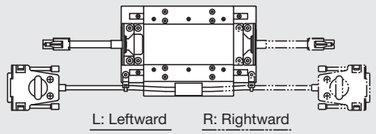


Fig. 1 NT···V cord direction

Example of an identification number for NT···XZ and NT···XZH

NT ❶ 90 ❷ XZH ❶ 25 ❸ 10 ❹ / 5 ❺ CA ❻

❶ Model

NT···XZ	Nano Linear NT···XZ
NT···XZH	Nano Linear NT···XZH

❷ Size

80	Z-axis width of 80 mm (applicable to NT···XZ)
90	Z-axis width of 90 mm (applicable to NT···XZH)

❸ X-axis stroke length

25	25 mm (applicable to NT···XZH)
45	45 mm (applicable to NT···XZ)

❹ Z-axis stroke length

10	10mm

❺ Resolution of linear encoder

1	0.1 µm
1F	0.1 µm; high speed specification NEW
5	0.5 µm

* When 1F is selected, combination with dedicated driver ADVA is necessary.

❻ Cooling type

No symbol	Natural air cooling
CA	Air cooling (NT···XZH)

System configuration

The dedicated driver ADVA is applicable to NT···V (excluding NT38V), NT···XZ and NT···XZH, and 2 types of command are available: pulse train command and high-speed network EtherCAT command.

Identification number for ADVA

ADVA ❶ – 01NL ❷ EC ❸ / NT55V25 ❹

❶ Model

ADVA	

❷ Current and voltage

01NL	Single-phase / Three-phase 200 V
R5ML	Single-phase 100 V

❸ Command type

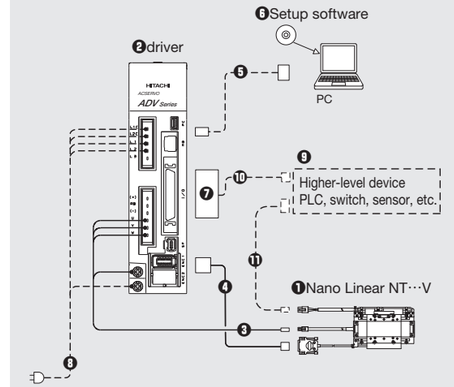
No symbol	Pulse train command
EC	EtherCAT

❹ Applicable Nano Linear model

NT55V25	NT55V25
NT55V65	NT55V65
NT80V25	NT80V25
NT80V65	NT80V65
NT80V120	NT80V120
NT80XZ-X	NT80XZ X-axis
NT80XZ-Z	NT80XZ Z-axis
NT90XZH	For both NT90XZH X-axis and Z-axis

System configuration example for NT55V and NT80V

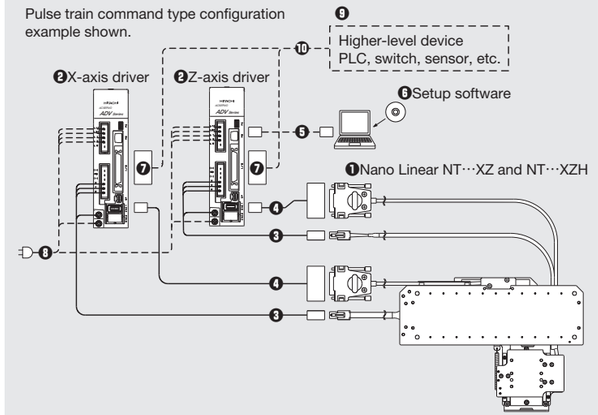
Pulse train command type configuration example shown.



No.	Name	Model and size
❶	Nano Linear NT···V	NT55V25
❷	driver	ADVA-01NL/NT55V25
❸	Motor relay cord	TAE20V3-AM03
❹	Encoder relay cord	TAE20V4-EC02
❺	PC connection cable	USB mini B cable This must be prepared by customer.
❻	Setup software	ProDriveNext To be provided on Web site.
❼	I/O connector	TAE20R5-CN
❽	Power cord	This must be prepared by customer.
❾	Higher-level device	
❿	I/O connector connection cable	
⓫	Sensor relay cord	

System configuration example for NT80XZ and NT90XZH

Pulse train command type configuration example shown.



No.	Name	Model and size
❶	Nano Linear NT···XZ	NT80XZ4510
❷	driver	ADVA-01NL/NT80XZ-X ADVA-01NL/NT80XZ-Z
❸	Motor relay cord	TAE20V3-AM03
❹	Encoder relay cord	TAE20V4-EC02
❺	PC connection cable	USB mini B cable This must be prepared by customer.
❻	Setup software	ProDriveNext To be provided on Web site.
❼	I/O connector	TAE20R5-CN
❽	Power cord	This must be prepared by customer.
❾	Higher-level device	
❿	I/O connector connection cable	

EtherCAT

EtherCAT is Ethernet-based network and Ethernet cable available on the market can be used. Therefore, cable standardization and simplification are possible and cost of startup processes and wiring can be reduced.

* *EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.*

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO Programmable Controller
CTN481G (RoHS Compliant)

IKO -Programmable controller is a controller for positioning control with high functionality and operability, and CTN481G is a high-end model with additional functions and compatibility with conventional CTN480G products.
As the external appearance dimensions, mounting dimensions and connector specifications are the same as those of conventional CTN480G products, this may simply replace CTN480G. Drivers and connection cords of conventional CTN480G products can be used.

Features

1 High speed and high resolution controls

Both high speed and high resolution controls superior to conventional products are realized with high speed pulse output up to 8 MHz!

Resolution of positioning table (μm/pulse)	Table traveling speed (mm/s)	
	CTN480G (Conventional) Maximum pulse output frequency: 6 MHz	CTN481G Maximum pulse output frequency: 8 MHz
0.01	60	80 NEW
0.05	300	400
0.1	600	800
0.5	3 000	4 000
1	6 000	8 000

2 Rich functionality and operability!

●USB1.1 interface as standard equipment

With dedicated commands, data editing, controller operations and direct execution from PC are allowed!

Item \ Model	CTN480G (Conventional)	CTN481G
Communication specifications	USB (virtual COM)	USB1.1 NEW
Communication speed	Up to 38.4 kbps	Up to 12 Mbps

●Data can be stored and transferred via USB memory available on the market!

Item \ Model	CTN480G (Conventional)	CTN481G
Data storage media	CompactFlash	USB memory NEW

●Super high function type that enables to program input up to 10,000 steps.

●By using integrated I/O sequence function, timer, counter and calculation function, a system can be configured easily without any sequencer.

●As absolute encoders of YASKAWA ELECTRIC CORPORATION, Panasonic Corporation, and Mitsubishi Electric Corporation are supported, return to origin operation at the startup is not required.

●The synchronization control function allows for simultaneous execution and shutdown of 2 axes possible (gantry mechanism control is possible).

●Multi-tasking function allows for simultaneous execution of up to 5 programs.

●You can correct the positioning accuracy control by entering positioning correction data in advance.

●Up to 4 controllers (sixteen-axis control) can be connected through RS485 connection.

●Thanks to RS422 interface as standard equipment, LAN cable available on the market can be used and streamlined wiring by touch panel or sequencer data communication is possible.

●With optional units, streamlined wiring system using MECHATROLINK, SSCNET and EtherCAT can be supported (to be supported).

Specification (abstract)

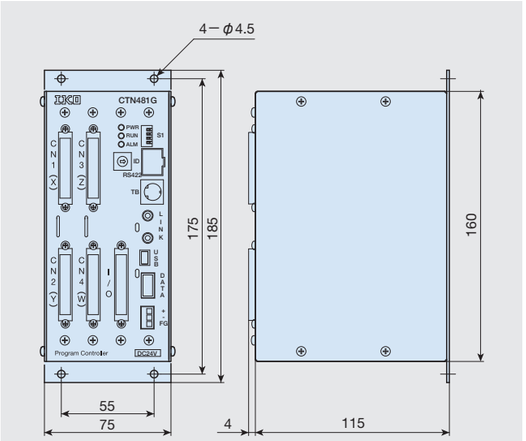
General specifications and external appearance dimensions are as follows. For details of other specifications, contact IKO.

Table 1 General specification

Item \ Model	CTN481G
Power supply voltage	DC24V ±10%
Max. current consumption	4.5 A
Ambient temperature	0 ~ 50℃ storage −10 ~ 60℃
Ambient humidity	20 ~ 85% RH (keep dewdrop free)
Measure against power outage	Flash memory
Mass (Ref.)	Body : 1.2 kg Teaching box : 0.5 kg I/O add-in unit : 0.4 kg

Remark: Model number of the dedicated teaching box (separately sold) is TAE10M5-TB.

External appearance dimensions for CTN481G



1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

NEW PRODUCTS GUIDE

IKO General Catalog

For a brochure version of general catalog of each series, please request on IKO web site, or contact your nearest branch or sales office.
PDF files are available to download in IKO web site.

Linear motion rolling guide series

IKO Linear motion rolling guide series general catalog consists of **BLUE** and **RED**

BLUE

- Linear Way
- Linear Roller Way

RED

- Crossed Roller Way
- Linear Slide Unit
- Linear Ball Spline
- Linear Bushing
- Stroke Rotary Bushing
- Roller Way & Flat Roller Cage

Mechatronics Series

IKO Website

Wide variety of product information are available on IKO website. CAD data, PDF catalogs, and even trade show schedule are available on the website.

IKO 検索 Click! **http://www.ikont.co.jp/eg/**

Product information

You can search for products by product series and bearing motion direction. Features of products are described in individual product pages in an easy-to-understand way.

Download

〈CAD data〉

CAD data of each product can be downloaded. 2-dimensional and 3-dimensional CAD data are available.

〈Product catalog〉

Product catalogs can be downloaded in PDF format.

Exhibition information

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IKO Technical Service Site is available on IKO website with registration. This site is to provide the technical information and tools related to IKO products, such as calculation tools, configuration of product's identification nombers, catalogs, CAD files, and instruction manuals.

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