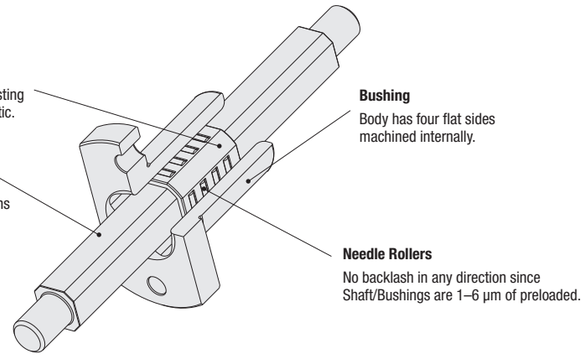
High Rigidity Needle Guide Sets

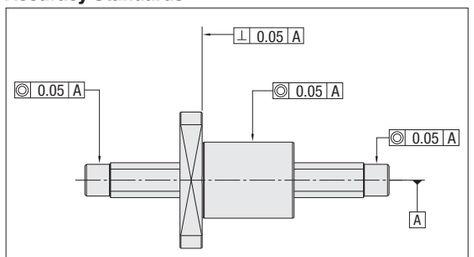
Overview

Features

– High accuracy needle rollers are arranged in four directions against the square shafts. Shafts / Bushings are designed to be 1–6 µm preloaded.
– Widely used in parts of semiconductor, liquid crystal manufacturing equipment and inspection device, lift/slide stages, robotic systems, press machines and transfer mechanism as the guide with high rigidity, straightness and high speed.
– Capable of torque loading without rotation due to square cross section with low yawing and pitching, maintaining smooth rotation and stable accuracy.



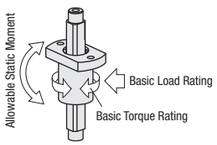
Accuracy Standards

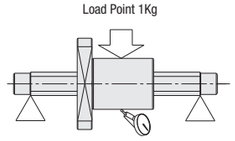


Datum axis A=Defined as a center axis of four flat rolling surfaces.
Straightness of bushings=±5µm or less.

Load Rating Chart

D	Basic Rated Torque		Basic Load Rating		Allowable Static Moment
	CT Dynamic (N-m)	CoT Static (N-m)	C Dynamic (kN)	Co Static (kN)	Mo (N-m)
6	12.3	21.0	3.4	5.0	10.6
10	48.7	84.4	6.8	10.0	23.0
12	91.3	162.9	11.9	17.4	76.4
16	115.7	212.0	11.9	17.4	83.6

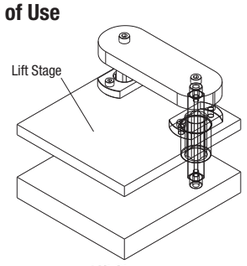




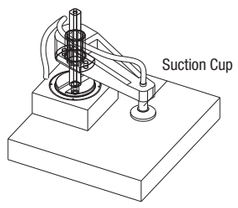
Displacement Measuring Point

D	Deflection (L is max.)
6	6 µm
10	2 µm
12	2 µm
16	1 µm

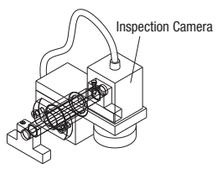
Example of Use



Lift Stage



Swiveling Arm



Slide Stage

Cautions

– Apply lubrication maintenance as needed.
– When designing, position the bushing where the retainer does not fall out from the bushing at stroke ends.
– As the preload is still applied when inserting retainers, assemble and fit carefully in order not to apply any off-center insertion force as that may cause the damage to the retainers as well as damages on the rolling surfaces.
– Protect it with covers if any foreign objects or dust may adhere to the rolling surfaces.
– Avoid using in high temperature environments, keep below 80°C.
– Do not cold shrink fit the bushings and shafts. Residual austenite will transform into martensite and will expand inner/outer dimension of bushings and shafts, rendering them unusable.

High Rigidity Needle Roller Guide Sets

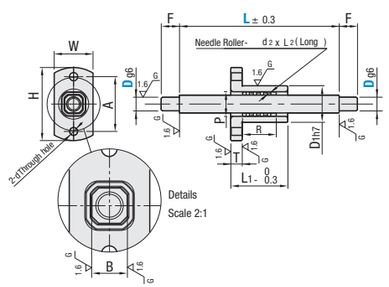
Needle Roller Guide Sets

RoHS 10

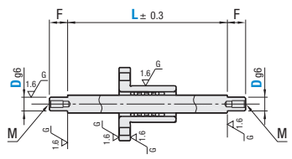
Cut-Away View

Type	Shaft / Bushing		Retainer	Needle Rollers		Ambient Operating Temp.
	Material	Hardness	Material	Material	Hardness	
RGPFN RGPFT	52100 Bearing Steel	58 HRC min.	Polyacetal	52100 Bearing Steel	54 HRC min.	-20–80°C

RGPFN
Both Ends Stepped and Tapped Type



RGPFT
Both Ends Stepped and Tapped Type



Part Number			L 10 mm Increment	Effective Stroke (Reciprocating)	Shafts				Bushing								Retainer			
Type	Dg6				F	B	d_1	M	D_1	L_1	T	H	W	P	d	A	R	d_2	L_2 (Length)	Needle Quantity
RGPFN RGPFT	6	-0.004 -0.012	50–70	20	8	7.8	2.5	M3 x 6	16	25	5	32	17	10.8	3.4	24	15	1.5	4.8	16
	10	-0.005 -0.014	60–80	30	8	11.0	4.2	M5 x 10	24	36	7	43	25	15.0	4.5	33	19	2	4.8	20
	12	-0.006 -0.017	90–120	40	10	14.6	5	M6 x 12	31	50	7	50	32	18.6	5.5	40	30	2	6.8	24
	16		100–130	50	10	18.9	6.8	M8 x 16	32	60	7	55	33	22.9	6.6	43	33	2	6.8	24

Part Number Example

Part Number	-	L
RGPFN10	-	60