

The rolling elements have been changed from balls to rollers
Super High Load Capacity Single-Axis Actuator

MOTION & CONTROL™

NSK

RoHS
compliant

Toughcarrier™ TCH09

Features

- With rollers as rolling elements, the single-axis actuator can bear a greatly increased load.
- Compared with standard Monocarrier, both load ratings and rigidity are more than double (up to 4x. in a compressed direction.)
- Interchangeable with MCH series to serve as substitute.



Patent Pending



Specifications

Standard slider specifications

Figures marked with * explained in notes below chart.

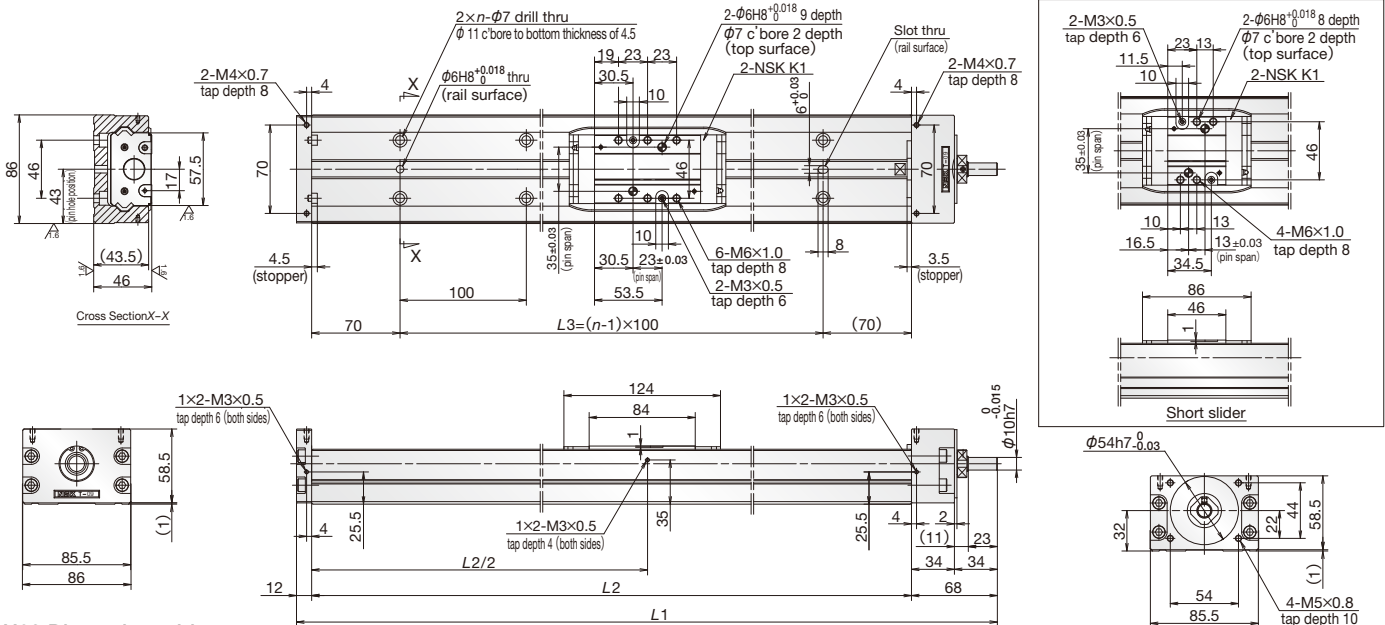
Model No.	Ball screw lead (mm)	Shaft dia. (mm)	Basic dynamic load rating (N)			Basic static load rating (N)		Support unit load limit (N)	Basic static moment load (N·m)			
			Ball screw C_a	Linear guide C	Support unit C_a	Ball screw C_{oa}	Linear guide C_o		Rolling M_{Fo}	Pitching M_{Po}	Yawing M_{Yo}	
TCH09-K	5	φ 15	7 100	44 900	*96 800	13 000	96 900	5 090	2 510	1 340	1 340	
	10		7 060		*76 800							12 700
	20		4 560		*60 900							

Short slider specifications

Model No.	Ball screw lead (mm)	Shaft dia. (mm)	Basic dynamic load rating (N)			Basic static load rating (N)		Support unit load limit (N)	Basic static moment load (N·m)			
			Ball screw C_a	Linear guide C	Support unit C_a	Ball screw C_{oa}	Linear guide C_o		Rolling M_{Fo}	Pitching M_{Po}	Yawing M_{Yo}	
TCH09-A	5	φ 15	7 100	27 900	*60 100	13 000	52 500	5 090	1 350	390	390	
	10		7 060		*47 700							12 700
	20		4 560		*37 800							

- Basic dynamic and static load ratings indicate values for one slider.
- Basic dynamic load rating of linear guide is a load that allows for a 50-km rating fatigue life and is a vertical and constant load on the ball slide mounting surface.
- Basic dynamic load rating of linear guide is load of perpendicular direction to the axis that allows 90% of a group of the same Toughcarriers to operate "Rated running distance" in table, which is equivalent to 1million revolutions of ball screw and support unit under the same conditions without causing flaking by rolling contact fatigue. (*)
- Basic dynamic load rating of ball screw is load in the axial direction that allows 90% of ball screws of a group of the same Toughcarriers to rotate 1 million revolutions under the same condition without causing flaking by rolling contact fatigue.
- Basic static load rating is load that results in combined permanent deformations at contact points of rolling elements and rolling surfaces of respective parts at a diameter of 0.01%.
- In case of moment loading when using short slider, use of two sliders (double short slider specification) is recommended.

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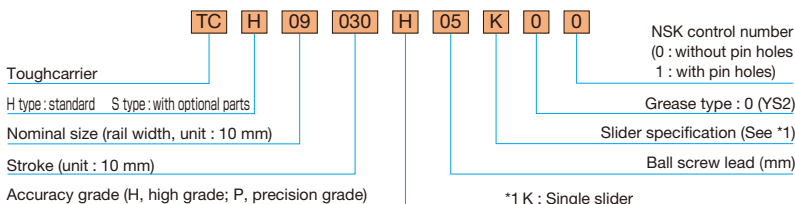


TCH09 Dimension table

Reference number	Nominal stroke (mm)	Stroke limit (mm)	Ball screw lead (mm)	Body length (mm)			No. of mounting hole n	Inertia $X10^6$ (kg·m ²)	Mass (kg)
				L ₁	L ₂	L ₃			
TCH09010 (14) H05K (A) 00	100 (140)	108 (146)	5	320	240	100	2	9.13 (8.9)	6.5 (6.1)
TCH09010 (14) H10K (A) 00			10					11.0 (10.1)	
TCH09010 (14) H20K (A) 00			20					18.6 (14.6)	
TCH09020 (24) H05K (A) 00	200 (240)	208 (246)	5	420	340	200	3	14.2 (13.9)	7.9 (7.5)
TCH09020 (24) H10K (A) 00			10					16.0 (15.1)	
TCH09020 (24) H20K (A) 00			20					23.6 (19.6)	
TCH09030 (34) H05K (A) 00	300 (340)	308 (346)	5	520	440	300	4	18.1 (17.8)	9.4 (9.0)
TCH09030 (34) H10K (A) 00			10					19.9 (18.9)	
TCH09030 (34) H20K (A) 00			20					27.5 (23.5)	
TCH09040 (44) H05K (A) 00	400 (440)	408 (446)	5	620	540	400	5	21.9 (21.7)	10.8 (10.4)
TCH09040 (44) H10K (A) 00			10					23.8 (22.8)	
TCH09040 (44) H20K (A) 00			20					31.4 (27.4)	
TCH09050 (54) H05K (A) 00	500 (540)	508 (546)	5	720	640	500	6	25.9 (25.6)	12.3 (11.9)
TCH09050 (54) H10K (A) 00			10					27.7 (26.7)	
TCH09050 (54) H20K (A) 00			20					35.3 (31.3)	
TCH09060 (64) H05K (A) 00	600 (640)	608 (646)	5	820	740	600	7	29.4 (29.2)	13.6 (13.2)
TCH09060 (64) H10K (A) 00			10					31.3 (30.3)	
TCH09060 (64) H20K (A) 00			20					38.9 (34.9)	
TCH09070 (74) H05K (A) 00	700 (740)	708 (746)	5	920	840	700	8	33.5 (33.3)	15.0 (14.6)
TCH09070 (74) H10K (A) 00			10					35.4 (34.4)	
TCH09070 (74) H20K (A) 00			20					43.0 (39.9)	
TCH09080 (84) H05K (A) 00	800 (840)	808 (846)	5	1 020	940	800	9	37.4 (37.2)	16.4 (16.0)
TCH09080 (84) H10K (A) 00			10					39.3 (38.3)	
TCH09080 (84) H20K (A) 00			20					46.9 (42.8)	

Note 1) Reference number and dimensions in parentheses are for short slider specifications. 2) For double slider specifications, reference numbers and dimensions, contact NSK. 3) For strokes not listed in the table, contact NSK. 4) Figures above show specifications with pin holes.

Reference number coding



Application

Automotive manufacturing equipment, general industrial machinery

Optional parts

Cover units, sensor units and motor brackets are available as standard parts. For special requests, contact NSK.

Accuracy grades

High grade (H)				
Accuracy	Stroke (mm)	Repeatability	Running parallelism (vertical)	Backlash
±10	~200	±10	14	20 or less
	~400		16	
	~600		20	
	~700		23	
	~800			

Precision grade (P)					
Accuracy	Stroke (mm)	Repeatability	Running parallelism (vertical)	Positioning accuracy	Backlash
±3	~200	±3	8	20	3 or less
	~400		10	25	
	~600		12	30	
	~700		15		
	~800				

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