

ToughCarrier™ TCH10

Ultra High Load Capacity Single Axis Actuator

NEW PRODUCT

PATENT PENDING



Product Features and Benefits

- › An industry first: single axis actuator that uses **rollers** instead of balls for the linear guide rolling element.
- › World's highest load ratings for single axis actuators (of comparable size). More than 2x compared to standard (ball type) Monocarrier™.
- › Rigidity approximately 2x, compression rigidity 4x compared to standard (ball type) Monocarrier™.
- › Monocarrier™, MCH series interchange is possible.
- › Self-lubricating NSK K1™ units (installed as standard).

SPECIFICATIONS

Standard Slider Specifications

Reference Model	Ball Screw Lead (mm)	Shaft Dia. (mm)	Basic Dynamic Load Rating (N)			Basic Static Load Rating (N)		Supporting Unit Limiting Load (N)	Basic Static Moment Load (N)			
			Ball Screw Ca	Linear Guide C		Support Unit Ca	Ball Screw Coa		Linear Guide Co	Rolling M _{RO}	Pitching M _{PO}	Yawing M _{YO}
TCH10-K	10	Ø 20	10 900	62 400	106 700	9 600	21 700	132 000	5 670	3 980	2 150	2 150
	20		7 060		84 600		12 700					

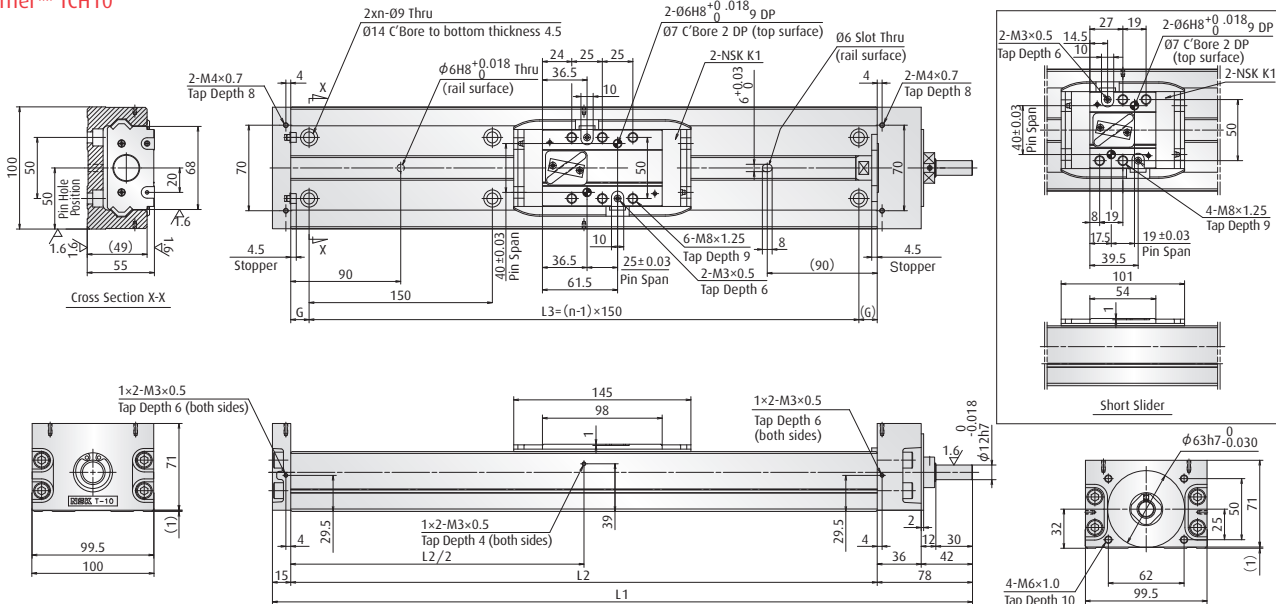
Short Slider Specifications

Reference Model	Ball Screw Lead (mm)	Shaft Dia. (mm)	Basic Dynamic Load Rating (N)			Basic Static Load Rating (N)		Supporting Unit Limiting Load (N)	Basic Static Moment Load (N)			
			Ball Screw Ca	Linear Guide C		Support Unit Ca	Ball Screw Coa		Linear Guide Co	Rolling M _{RO}	Pitching M _{PO}	Yawing M _{YO}
TCH10-A	10	Ø 20	10 900	38 700	66 100	9 600	21 700	71 500	5 670	2 150	630	630
	20		7 060		52 500		12 700					

- › Basic dynamic and static load ratings indicate the values for one slider.
- › Basic dynamic load ratings of the linear guide is based on 50 km fatigue life with unchanging load acting perpendicular to the axis of motion on top of the slider.
- › Basic dynamic load rating of the linear guide is the load in perpendicular direction to the axis of motion that allows 90% of a group of the same Toughcarriers™ to operate equivalent to 1 million revolutions of the ball screw and support unit under the same condition without causing flaking by rolling contact.

- › Basic dynamic load rating of the ball screw is a load to 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.
- › Basic static load rating is a load that results when combined permanent deformations at the contact points of balls and ball grooves is 0.01% of the diameter.
- › In case of moment loading when using short slider, use of 2 sliders (double short slider specification) is recommended.

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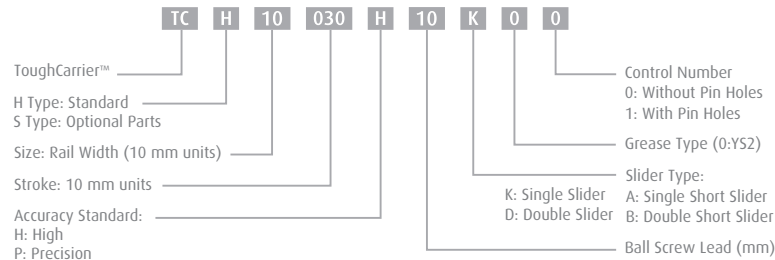


TCH10: Dimension Table

Reference Number	Nominal Stroke (mm)	Stroke Limit (mm)	Ball Screw Lead (mm)	Body Length (mm)				# of Mounting Holes n	Inertia X10 ⁵ (kg·m ²)	Weight (kg)
				L ₁	L ₂	L ₃	G			
TCH10010(15)H10K(A)00	100 (150)	126 (170)	10	373	280	150	65	2	4.27 (4.13)	9.6 (8.9)
TCH10010(15)H20K(A)00			20						5.34 (4.74)	
TCH10020(25)H10K(A)00	200 (250)	226 (270)	10	473	380	300	40	3	5.49 (5.35)	11.5 (10.9)
TCH10020(25)H20K(A)00			20						6.56 (5.96)	
TCH10030(35)H10K(A)00	300 (350)	326 (370)	10	573	480	450	15	4	6.72 (6.58)	13.5 (12.8)
TCH10030(35)H20K(A)00			20						7.79 (7.19)	
TCH10040(45)H10K(A)00	400 (450)	426 (470)	10	673	580	450	65	4	7.94 (7.80)	15.4 (14.8)
TCH10040(45)H20K(A)00			20						9.01 (8.41)	
TCH10050(55)H10K(A)00	500 (550)	526 (570)	10	773	680	600	40	5	9.17 (9.03)	17.4 (16.7)
TCH10050(55)H20K(A)00			20						10.24 (9.64)	
TCH10060(65)H10K(A)00	600 (650)	626 (670)	10	873	780	750	15	6	10.40 (10.26)	19.3 (18.6)
TCH10060(65)H20K(A)00			20						11.47 (10.87)	
TCH10070(75)H10K(A)00	700 (750)	726 (770)	10	973	880	750	65	6	11.62 (11.48)	21.2 (20.6)
TCH10070(75)H20K(A)00			20						12.69 (12.09)	
TCH10080(85)H10K(A)00	800 (850)	826 (870)	10	1 073	980	900	40	7	12.85 (12.71)	23.2 (22.6)
TCH10080(85)H20K(A)00			20						13.92 (13.32)	
TCH10090(95)H10K(A)00	900 (950)	926 (970)	10	1 173	1 080	1 050	15	8	14.07 (13.93)	25.2 (24.5)
TCH10090(95)H20K(A)00			20						15.14 (14.54)	
TCH10100(105)H10K(A)00	1 000 (1 050)	1 026 (1 070)	10	1 273	1 180	1 050	65	8	15.29 (15.15)	27.1 (26.5)
TCH10100(105)H20K(A)00			20						16.36 (15.76)	
TCH10110(115)H10K(A)00	1 100 (1 150)	1 126 (1 170)	10	1 373	1 280	1 200	40	9	16.52 (16.38)	29.1 (28.4)
TCH10110(115)H20K(A)00			20						17.59 (16.99)	
TCH10120(125)H10K(A)00	1 200 (1 250)	1 270 (1 270)	10	1 473	1 380	1 350	15	10	17.74 (17.60)	31.1 (30.4)
TCH10120(125)H20K(A)00			20						18.81 (18.21)	

1) Parentheses indicate short slider, reference number and dimensions. 2) For double slider: specifications, part number and dimensions, contact NSK. 3) For strokes not listed, contact NSK. 4) Dimensions above show optional 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

Grade	Stroke (mm)	High		
		Repeatability	Running Parallelism	Backlash
±10	~200	±10	14	20 or less
	~400		16	
	~600		20	
	~700		23	
	~1 000		30	
	~1 200			

Grade	Stroke (mm)	Precision			
		Repeatability	Running Parallelism	Positioning Accuracy	Backlash
±3	~200	±3	8	20	3 or less
	~400		10	25	
	~600		12	30	
	~700		15	35	
	~1 000		20	40	
	~1 200				