

Mid-Travel Steel Linear Stages

MTN SERIES



The MTN Series linear stages are durable, all-steel construction linear stages with excellent stiffness, load capacity and thermal stability. They are available in DC and Stepper motor versions and are ideal for applications that require moving heavy loads with sub-micron precision (MIM). Available up to 300 mm of travel, MTN stages can bear up to 100 kg with an axial load capacity of up to 200 N. Features include: opposing single-row bearings, a diamond-corrected lead screw, a matched, precision-lapped nut and a non-migrating ball cage design. The nut design includes anti-backlash preloading and a sophisticated decoupling system ensuring little to no carriage movement. The non-migrating ball cage design prevents any ball cage drift, particularly in vertical applications.

SPECIFICATIONS

	MTN-CC	MTN-PP; MTN-PPV6
Travel Range (mm)	100; 200; 300	
Minimum Incremental Motion (μm)	0.6	MTN-PP: 0.1 MTN-PPV6: 0.4
Uni-directional Repeatability (μm)	1.5	
Bi-directional Repeatability ⁽¹⁾ ($^\circ$)	3.0 or ± 1.5	5.5 or ± 2.75
On-Axis Accuracy ⁽¹⁾ ($^\circ$)	5 or ± 2.5	
Maximum Speed (mm/s)	100 (No load)	40; 20 (4)
Pitch ⁽¹⁾⁽²⁾ (μrad) ⁽³⁾	40 or ± 20	
Yaw ⁽¹⁾⁽²⁾ (μrad) ⁽³⁾	35 or ± 17.5	

¹⁾ Shown are peak to peak, guaranteed specifications or \pm half the value as sometimes shown. For the definition of typical specifications which are about 2X better than the guaranteed values, visit www.newport.com for the Motion Control Metrology Primer.

²⁾ For 100 mm travel.

³⁾ To obtain arcsec units, divide mrad value by 4.8.

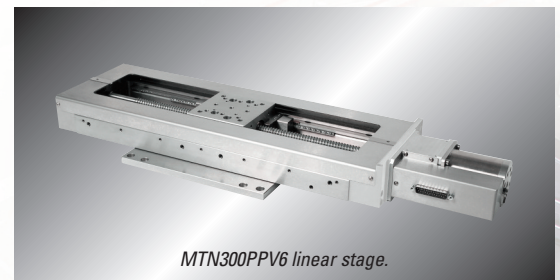
⁴⁾ With the PPV6 version the maximum speed is reduced by a factor of two.



- All-steel construction combines high stiffness and thermal stability with a low profile design
- Supports up to 100 kg load with a high axial load capacity up to 200 N
- Precision, backlash-compensated leadscrew and non-migrating ball cage device
- Vacuum compatible versions down to 10^{-6} hPa

DESIGN DETAILS

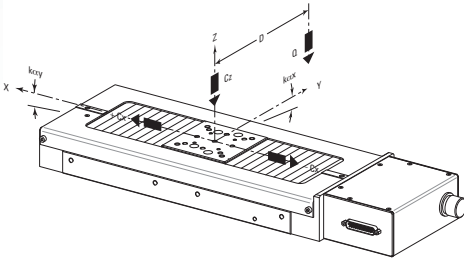
Base Material	Stainless Steel
Bearings	Linear ball bearings with anti-cage migration
Drive Mechanism	Backlash-compensated leadscrew
Drive Screw Pitch	4 mm
Feedback	CC: 20,000 cts/rev. PP: No encoder
Limit Switches	Optical
Origin	Optical, centered
Vacuum Compatibility	MTN-PPV6 version to 10^{-6} hPa
Cable	3 m (included for ambient environment only)



MTN300PPV6 linear stage.

LOAD CHARACTERISTICS AND STIFFNESS

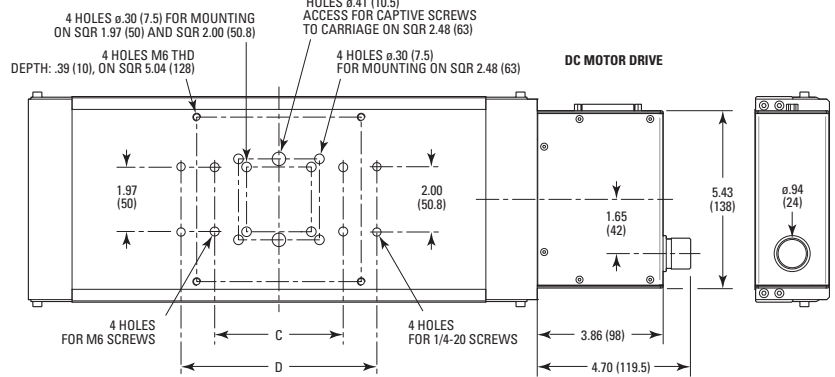
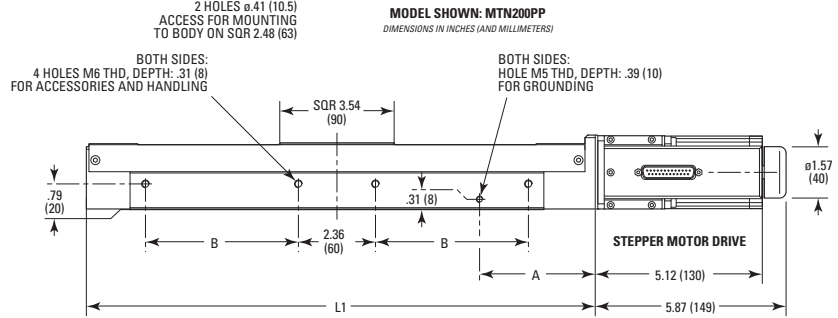
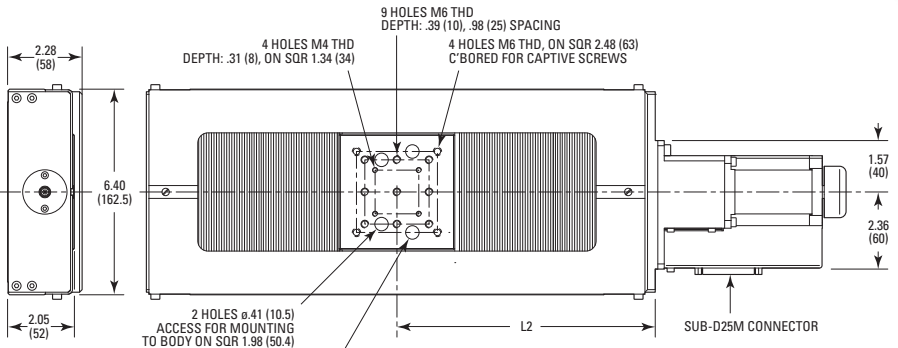
DIMENSIONS



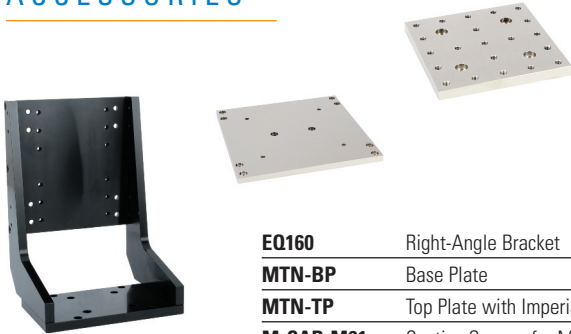
Cz, Normal centered load capacity on bearings	1000 N
Cx, Direct load capacity on X axis	200 N
-Cx, Inverse load capacity on X axis	21 N
k _{cx} , Compliance in roll	4 μrad/Nm
k _{cy} , Compliance in pitch	6 μrad/Nm
k _{cz} , Compliance in yaw	5 μrad/Nm
Q, Off-center load	$Q \leq Cz \div (1 + D/100)$

where: D = Cantilever distance in mm

MODEL	A	B	C	D	L1	L2
MTN100CC	2.95 (75)	2.20 (56)	-	-	11.69 (297)	5.94 (151)
MTN100PP	3.03 (77)	-	-	-	-	-
MTN200CC	3.54 (90)	4.69 (119)	3.94 (100)	6.00 (152.4)	15.63 (397)	7.91 (201)
MTN200PP	3.62 (92)	-	-	-	-	-
MTN300CC	3.54 (90)	6.14 (156)	9.84 (250)	8.00 (203.2)	19.57 (497)	9.88 (251)
MTN300PP	3.62 (92)	-	-	-	-	-



ACCESSORIES



EQ160	Right-Angle Bracket
MTN-BP	Base Plate
MTN-TP	Top Plate with Imperial Hole Pattern
M-CAP-M61	Captive Screws for MTN XY Mounting

Use EQ160 right-angle bracket for vertical mounting configurations.

Note: A base plate comes with MTN-PPV6 versions.

ORDERING INFORMATION

Series	Travel (mm)	Drive	Vacuum Prep. ⁽¹⁾
MTN	100	CC PP	V6
	200		
	300		

⁽¹⁾ Vacuum compatible to 10⁻⁶ hPa. In this case max. speed and load capacity are divided by two.

Example: The **MTN200PP** is an MTN stage with 200 mm travel and a stepper motor drive.

RECOMMENDED CONTROLLERS/DRIVERS

XPS	Universal High-Performance Motion Controller/Driver
ESP301	3 Axis Motion Controller/Driver



Newport Corporation, Global Headquarters
1791 Deere Avenue, Irvine, CA 92606, USA

PHONE: 1-800-222-6440 1-949-863-3144 FAX: 1-949-253-1680 EMAIL: sales@newport.com
Complete listings for all global office locations are available online at www.newport.com/contact

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