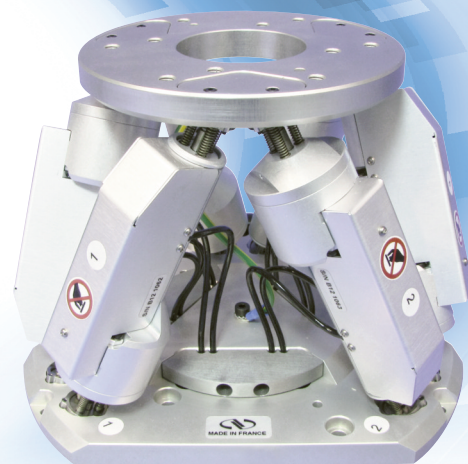


6-Axis-Parallel Kinematic Positioning Systems

HXP50 HEXAPODS



The HXP50 hexapod is a parallel kinematic motion device that provides six degrees of freedom: X, Y, Z, pitch, roll, and yaw. Hexapods are effective solutions for complex motion applications that demand high load capacity and accuracy in up to six independent axes. Newport's Hexapods are not only affordable but extremely easy to use.

The HXP50 is driven by six DC servo motor driven actuators with encoder feedback at the leadscrew nut, providing precise MIM, low backlash and fast speed. To enhance the stiffness of the hexapod, our engineers came up with innovative spherical joints that are not only simple but compact and rigid.

To further ensure positioning performance, the High Accuracy (HA) HXP50HA-MECA is available with guaranteed accuracy values. This enables the use of a Newport Hexapod in positioning applications, where position accuracy is required. In addition to accuracy along an axis, the Pitch and Yaw deviations during axial motion are also monitored and guaranteed. When the HA Hexapod is used with Rightpath™, this combination achieves positioning performance close to standard Newport stages.

The HXP50-ELEC and HXP50HA-ELEC controllers accurately masters the synchronized transformations from Cartesian input coordinates to the motion of the Hexapod legs. In addition, the HXP50-ELEC and HXP50HA-ELEC provide advanced features including instrument grade I/O's, hardware based input triggers, event triggers, high-speed on-the-fly data acquisition, fast TCP/IP communication, and integrated TCL programming language for on-board processes. All these features improve accuracy and throughput, making the programmer's life much easier .

- Integrated 6-axis positioner
- Light, compact and low-profile
- No moving cables
- High stiffness (particular in z)
- No accumulation of motion errors
- Virtual center of rotation, set by software
- RightPath™ trajectory control

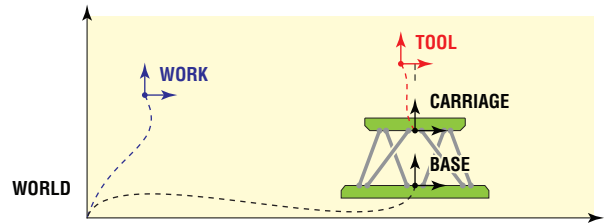
APPLICATIONS

- Optics and satellite assembly and testing
- Alignment (camera to sensor, waveguides)
- Biotechnology, surgery
- X-Ray diffraction
- Micromachining, micro-manipulation

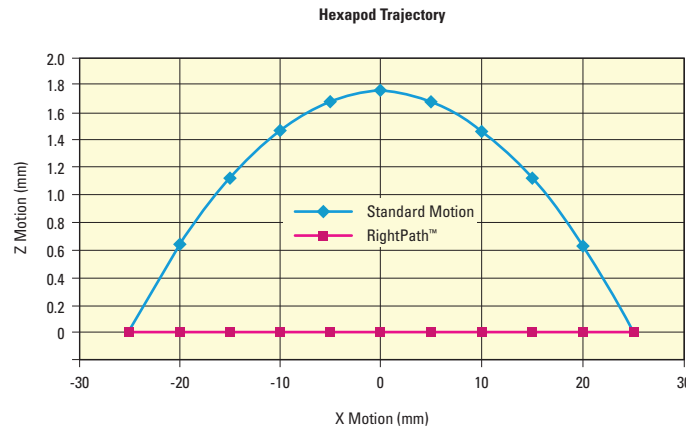


HXP50 HEXAPODS

What distinguishes of the HXP50, as with the other Newport hexapods, is the ability to program two pivot points represented by the Tool and Work coordinate systems. The Tool CS moves with the top plate and the Work is stationary. Imagine a machine tool where one can adjust the orientation of both the cutting tool and workpiece or in photonics, the optical beam and the sample. Incremental displacements are possible in either one in user-friendly Cartesian coordinates, and positions can be easily switched from one system to the other by a function call or by numerical input in the HXP's web site interface. These powerful functions are a completely new way of mastering Hexapod motions without the need for complex external coordinate transformations.



Absolute moves and positions are defined in the work coordinate system. Incremental moves can be done in the tool or in the work coordinate systems.



RightPath™ Trajectory Control enables minimal runout in linear and arc trajectories.

SPECIFICATIONS

	HXP50-MECA & HXP50HA-MECA						HXP50V6-MECA ⁽⁵⁾					
	X	Y	Z	U (Rx)	V (Ry)	W (Rz)	X	Y	Z	U (Rx)	V (Ry)	W (Rz)
Travel range ⁽¹⁾	±17 mm	±15 mm	±7 mm	±9°	±8.5°	±18°	±17 mm	±15 mm	±7 mm	±9°	±8.5°	±18°
MIM, Minimum incremental motion	0.1 μm	0.1 μm	0.05 μm	0.05 mdeg	0.05 mdeg	0.1 mdeg	0.2/0.8 μm ⁽⁶⁾	0.2/0.8 μm ⁽⁶⁾	0.1/0.4 μm ⁽⁶⁾	0.1/0.4 mdeg ⁽⁶⁾	0.1/0.4 mdeg ⁽⁶⁾	0.2/0.8 mdeg ⁽⁶⁾
Uni-directional repeatability, typical	±0.1 μm	±0.1 μm	±0.05 μm	±0.05 mdeg	±0.05 mdeg	±0.1 mdeg	±0.2 μm	±0.2 μm	±0.1 μm	±0.4 mdeg	±0.4 mdeg	±0.2 mdeg
Bi-directional repeatability, typical ⁽²⁾	±0.6 μm (±0.2 μm)	±0.6 μm (±0.2 μm)	±0.3 μm (±0.1 μm)	±0.3 mdeg (±0.1 mdeg)	±0.3 mdeg (±0.1 mdeg)	±0.6 mdeg (±0.2 mdeg)	±1 μm	±1 μm	±0.5 μm	±0.5 mdeg	±0.5 mdeg	±1 mdeg
Max. speed	14 mm/s	12 mm/s	5 mm/s	6 °/s	6 °/s	15 °/s	2 mm/s	1.9 mm/s	0.8 mm/s	2.4 °/s	2.4 °/s	6 °/s
Stiffness ⁽³⁾	2 N/μm	2 N/μm	25 N/μm	—	—	—	2 N/μm	2 N/μm	25 N/μm	—	—	—
Centered load capacity ⁽⁴⁾	50 N						50 N					

¹⁾ Travel ranges are interdependent. The listed values are max. travels per axis when all other axis are in their centered position.

²⁾ With standard setting (with hysteresis compensation).

³⁾ Stiffness depends on Hexapod position. Values are given for all axis in their centered position.

⁴⁾ For allowable cantilevered loads, see "Max. Cantilever Distance of the Load" next page.

⁵⁾ Vacuum version to 10⁻⁶ hPa.

⁶⁾ Values in Open-loop/Closed-loop.

Guaranteed Specifications

	HXP50HA-MECA		
	X	Y	Z
Uni-directional repeatability	±0.15 μm	±0.15 μm	±0.075 μm
Bi-directional repeatability	±1.5 μm	±1.5 μm	±1.25 μm
Absolute Accuracy	±5 μm	±5 μm	±2.5 μm
Pitch	±50 μrad	±50 μrad	±25 μrad
Yaw	±50 μrad	±50 μrad	±25 μrad

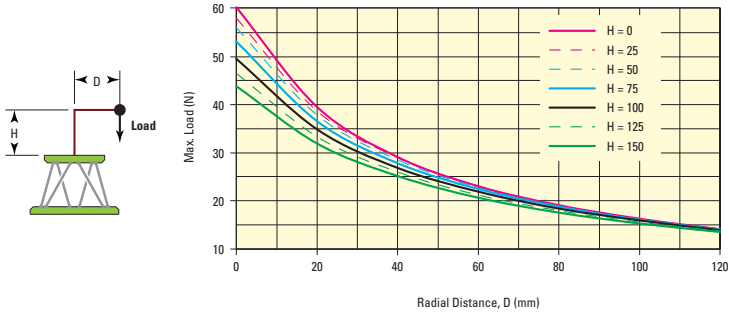


Note: Typical values, travel range, MIM, max speed, stiffness and load capacity are the same as the standard HXP's.

MAX. CANTILEVER DISTANCE OF THE LOAD

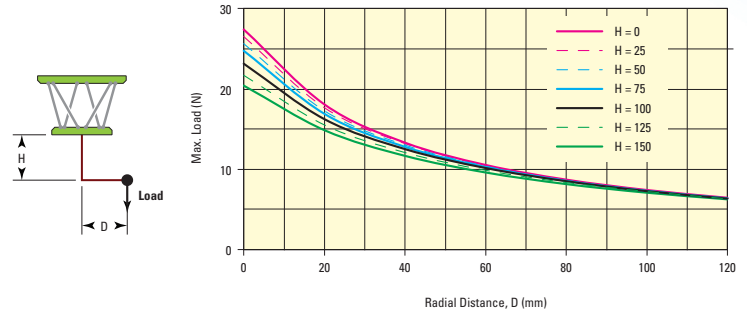
Horizontal Base Plate

Load Position: D = 0 to 120 mm; H = 0 to 150 mm



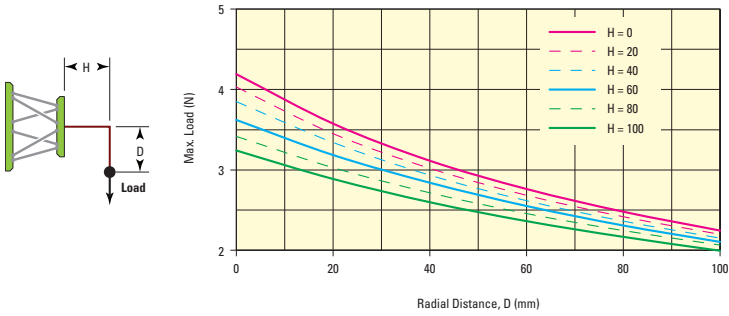
Base Plate Upside-Down

Load Position: D = 0 to 120 mm; H = 0 to 150 mm



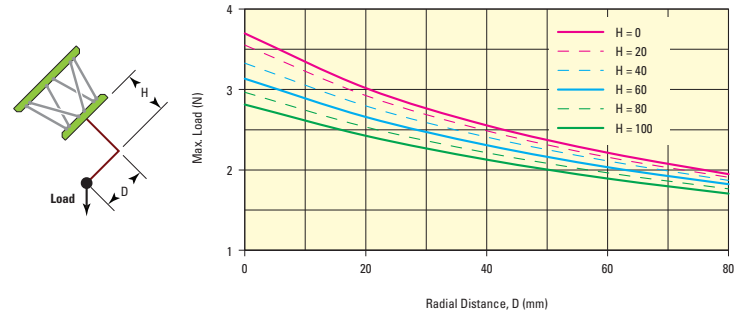
Vertical Base Plate

Load Position: D = 0 to 100 mm; H = 0 to 100 mm



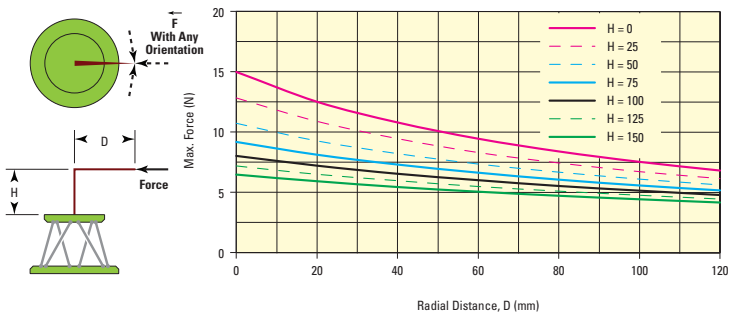
Base Plate at Any Position

Load Position: D = 0 to 80 mm; H = 0 to 100 mm

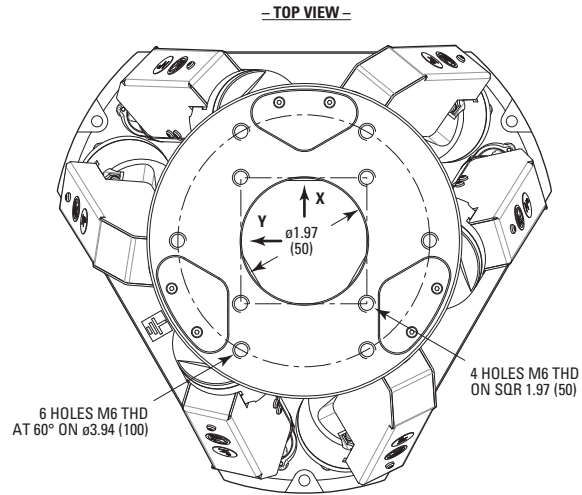
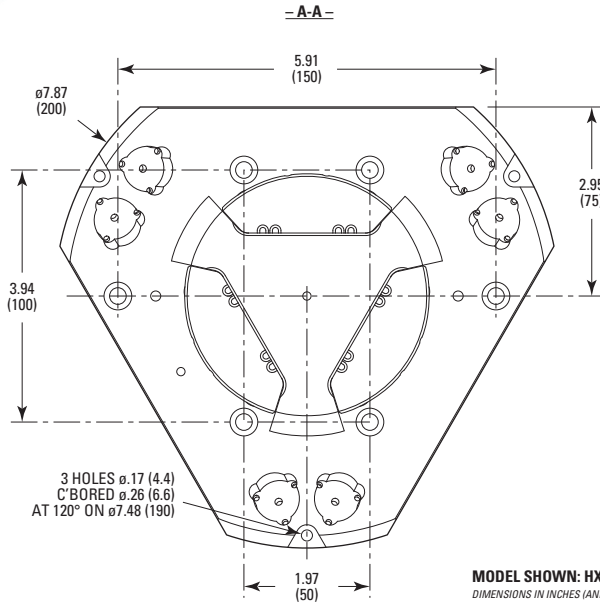


Horizontal Base Plate Lateral Force

Force Position: D = 0 to 120 mm; H = 0 to 150 mm

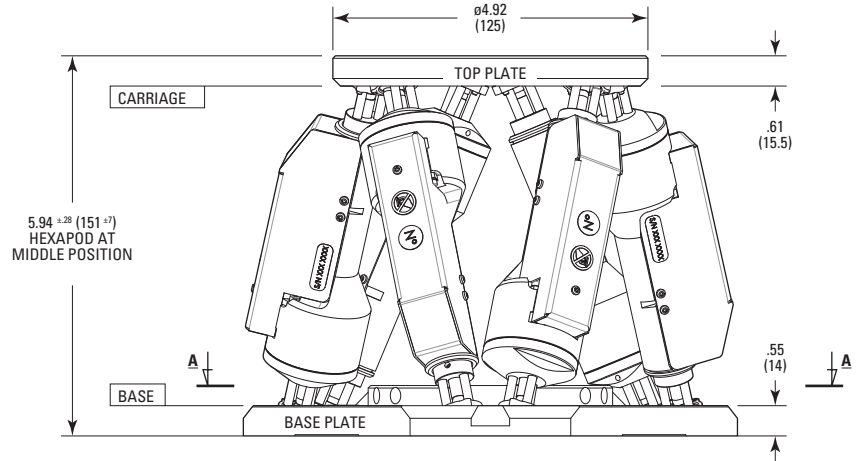


DIMENSIONS



MODEL SHOWN: HXP50-MECA
DIMENSIONS IN INCHES (AND MILLIMETERS)

Note: Other top plate hole patterns or a center aperture are available upon request.



ORDERING INFORMATION

Model	Description
HXP50-MECA	Hexapod, 50 N load capacity
HXP50-ELEC ⁽¹⁾	Hexapod controller for HXP50-MECA
HXP50HA-MECA	Hexapod with guaranteed specifications, 50 N load capacity
HXP50HA-ELEC ⁽¹⁾	Hexapod controller for HXP50HA-MECA

⁽¹⁾ Contact Newport for the two additional SingleAxis drive capability.

Note: Call Newport for quotes on the 10⁻⁶ hPa vacuum version.



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.

www.newport.com