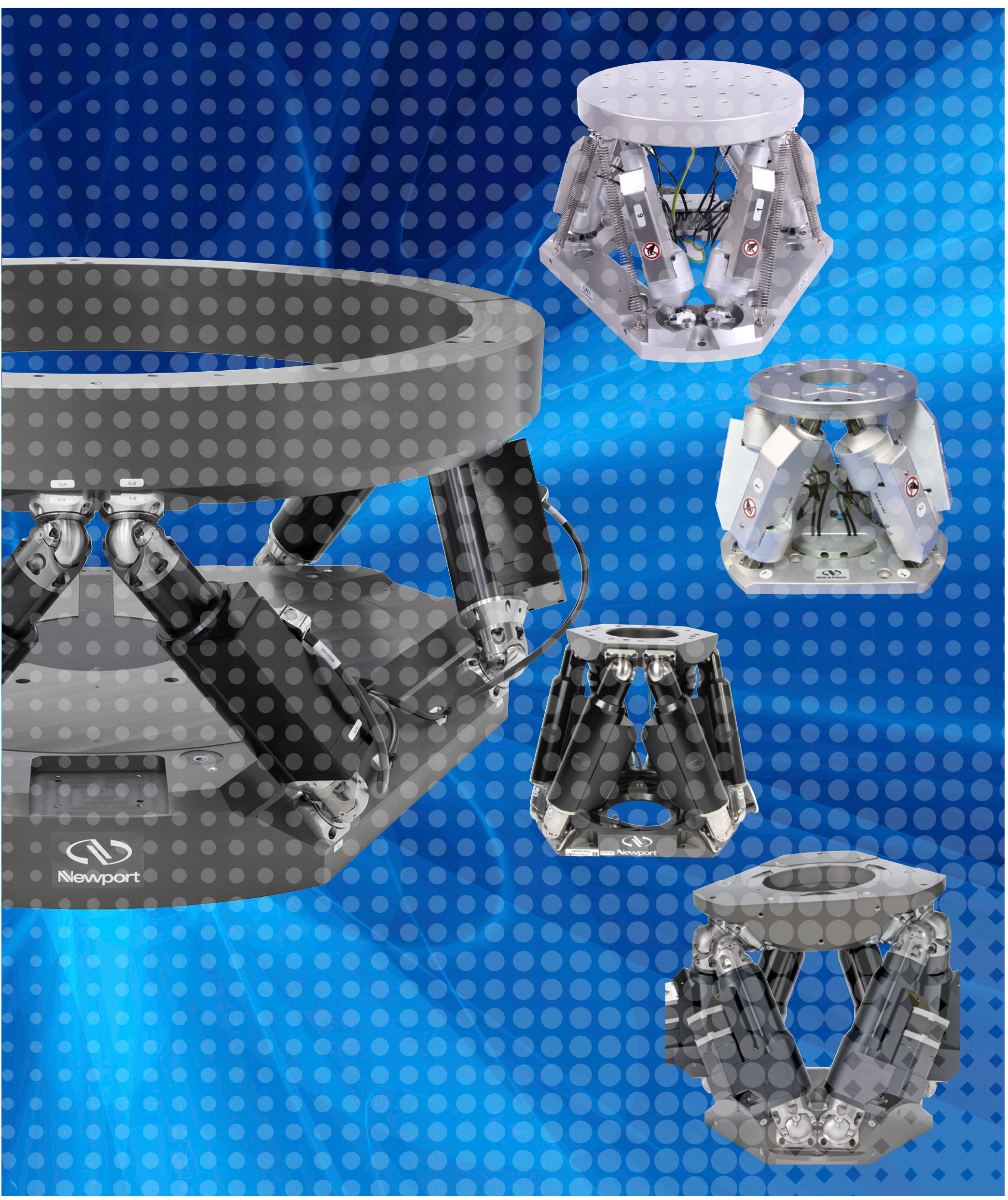
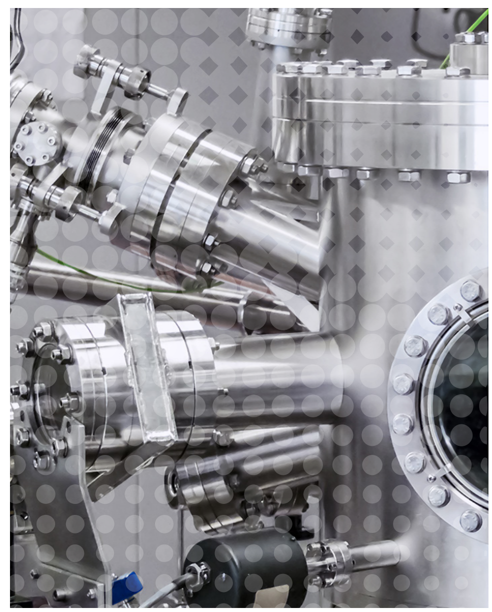
HXP HEXAPODS
6-AXIS-PARALLEL KINEMATIC
POSITIONING SYSTEMS





6 DOF MOTION POSITIONERS

- Compact, integrated 6-axis positioner
- Light but with high stiffness (particularly in z)
- No moving cables
- No accumulation of motion errors
- Two virtual centers of rotation, set by software
- 50 to 4500 N centered load capacity
- Vacuum (10^{-6} hPa) and high accuracy versions available

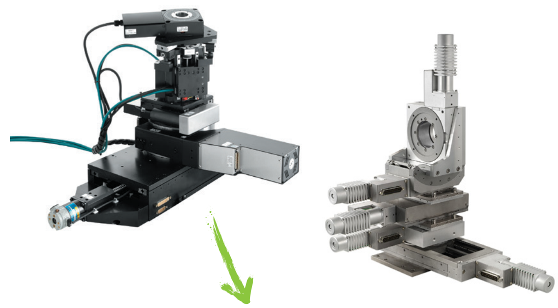
Introduction

A hexapod is a parallel kinematic motion device that provides six degrees of freedom: X, Y, Z, pitch, roll, and yaw. Hexapods are creative and effective solutions to complex motion applications that require high load capacity and accuracy in up to six independent axes.

Newport hexapods are driven by six industry proven, high performance actuators that leverage over 55 years of Newport expertise in actuators. The actuator's quality clearly has a strong impact on the overall motion performance of a hexapod, and of equal importance are the 12 joints connecting the actuators to both the base plate and the moving top plate. Embracing this challenge, our engineers came up with innovative joint designs that provide significantly higher rigidity than ordinary universal joints. The result is a hexapod that is more rigid with a higher load capacity compared to other, similarly-sized hexapods.

Newport hexapods are high performance motion devices, very affordable and extremely easy to use.

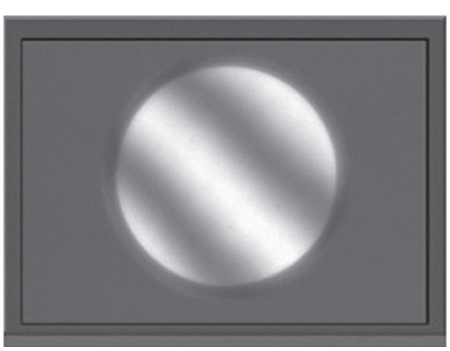
Hexapod versus Stack of Stages



Integrated 6-axis positionerf freedom	Configurable to the exact needs
Light, compact and low-profile	Longer travel ranges possible
No moving cables	Versatile and re-configurable
High performance tip/tilt	Superior linear motion
High stiffness (particular in z)	Manual positioning possible (depending on stage type)
No accumulation of motion errors	Superior performance per axis
Virtual centers of rotation, set by software	Superior trajectory accuracy (in particular for Cartesian motion)
Cost effective for 4 to 6 degrees of freedom with emphasis on rotation	Cost effective for 1 to 4 degrees o

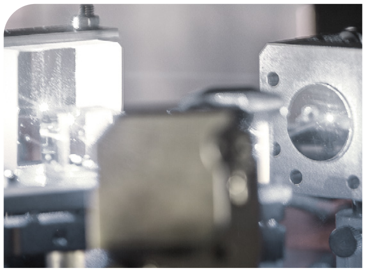
Hexapod Applications

Newport hexapods are widely used solutions to a comprehensive range of applications that require high precision motion in 4 or more degrees of freedom. Hexapods are traditionally used for adjustments. The introduction of High Accuracy (HA) hexapod versions enable their use in accurate positioning, where the final position must be known and exact.



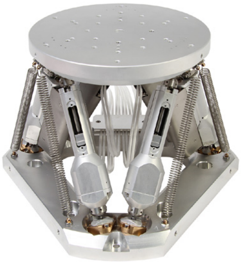
Interferometry

Generally, interferometry is a family of techniques in which waves, usually electromagnetic, are superimposed in order to extract information. Interferometry can illustrate the flatness of optical surfaces to a very high resolution. Newport offers an extensive range of hexapod sizes that enable high precision interferometry. Our motion experts can also custom engineer a hexapod to meet your specifications, even for optics larger than 1.5 m in diameter.



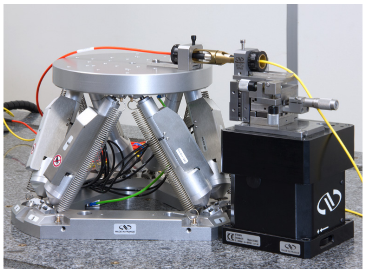
Mirror or Optic Positioning

Optical assemblies often require strict alignment and holding position tolerance of sensitive optical elements to accurately direct beams. Hexapods offer the advantage of high precision and repeatable motion in six degrees of freedom. In conjunction with feedback systems, hexapod-based optical systems will meet even the highest requirements.



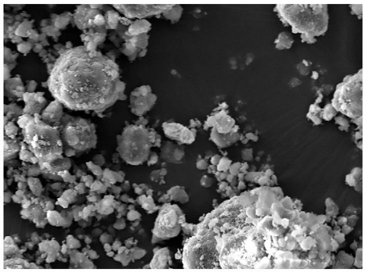
Vacuum Applications

Remote positioning of a component inside a vacuum chamber is typically accomplished with a motion system. For particular applications that require more than 4 axis of motion, Newport offers standard, off-the-shelf vacuum compatible hexapods (up to 10^{-6} Torr) to meet this demand.



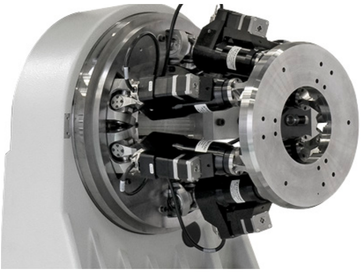
Optical Fiber or Device Alignment

For alignment of optical fibers or optical devices (single or multi-mode, single to multi-channel, Si photonics) it is critical that motion is controlled not just in X, Y, and Z but also in tip and tilt. When coupled with alignment software such as APOGEE, the solution becomes a turnkey automated alignment system.



Imaging and Microscopy

Optical and electron imaging/microscopy involve the diffraction, reflection, or refraction of light/electron beams interacting with the specimen. The scattered radiation or electrons are measured and used in the construction of an image. When imaging small complex structures, Newport hexapods offer a competitive advantage with high precision, six degree of freedom and motion control in a compact solution.



Diffractometers

Newport's expertise in the design of advanced diffractometry solutions for synchrotrons is second to none. Sample position at beam ends can best be solved with hexapods. These solutions serve fundamental and applied research in areas such as life health sciences, physics and materials sciences.

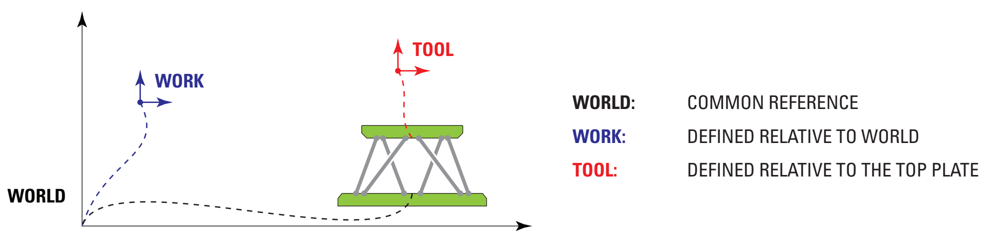
Other Applications Include

Astronomy, Wafer Positioning, Simulation, Automated Manufacturing, etc.

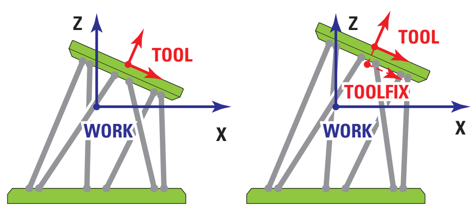
DIFFERENTIATORS – THE NEWPORT HEXAPOD ADVANTAGE

Work and Tool Coordinate Systems

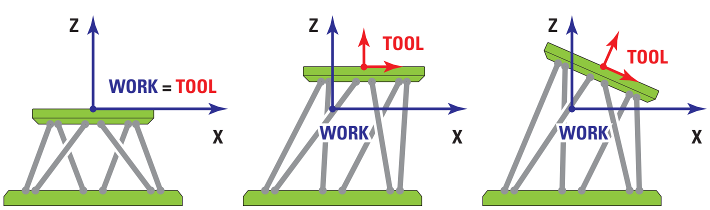
Hexapod motion is defined by a global coordinate system and a local coordinate system, making programming motion more intuitive for standard research, metrology and manufacturing applications. By defining motion in two coordinate systems, global Work and local Tool, users get the added benefit of having two, reprogrammable virtual centers of rotation.



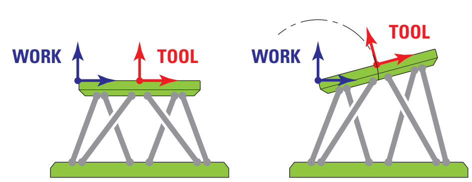
Translation Along Tool



Rotation Around Tool

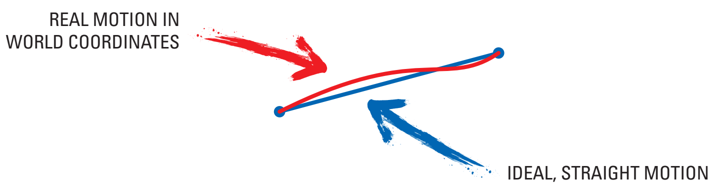


Rotation Around Work



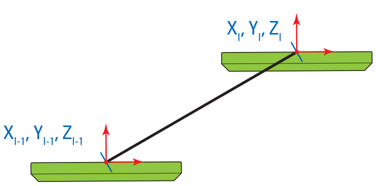
RightPath™ Trajectory Control

In parallel kinematic devices, motion is synchronized on the hexapod legs; all legs start and stop at the same time and always complete the same part of the trajectory. As a result, the motion does not necessarily translate into a straight trajectory in the World coordinate system. For small motion the effect is negligible, but for larger motion it could become noticeable.



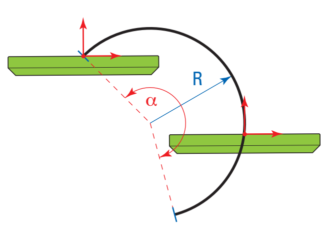
Newport engineers devised a solution to minimize the runout of hexapods through RightPath™ Trajectory Control. This firmware feature is unique to Newport hexapods and enables scanning motion along three types of trajectory functions - line, arc or rotation - in either Work or Tool.

LINEAR TRAJECTORY



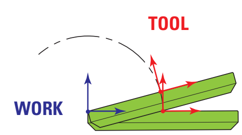
THE LINE TRAJECTORY IS A TRAJECTORY DEFINED BY A STRAIGHT LINE SEGMENT.

ARC TRAJECTORY



THE ARC TRAJECTORY IS A TRAJECTORY DEFINED BY A CURVE SEGMENT.

ROTATION

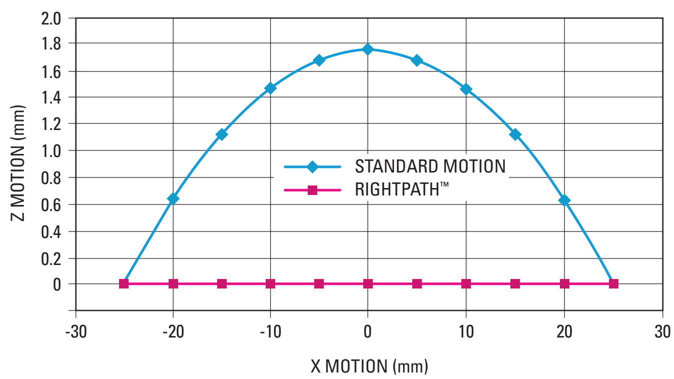


THE ROTATION TRAJECTORY IS A TRAJECTORY DEFINED BY A ROTATION AROUND X, Y OR Z AXIS.

These trajectory functions facilitate motion with:

- Minimal runout (deviation from the trajectory) during the move
- Continuous multi-dimensional motion path
- Constant velocity along the trajectory path
- Equal trajectory acceleration at start and end of move: acceleration = deceleration
- Calculations are performed before motion so there is no lag time

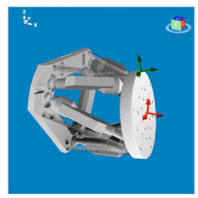
RIGHTPATH™ TRAJECTORY IMPROVES RUNOUT BY OVER A FACTOR OF 10



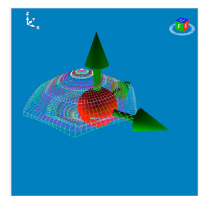
HexaViz Hexapod Simulator

This simulator provides an easy-to-use tool to check if any of the Newport hexapods is suitable for your application, in terms of travel range and load capacity.

- Select the hexapod from the data base
- Check the travel range
  - Configure the coordinate systems
  - Display the hexapod (realistic view) and frames
  - Display the travel range: Axis by axis, 2D views or XYZ 3D view
- Check the load capacity
  - Apply loads, forces or torque
  - Search worst case position
  - Verify if actuators are overloaded
- Save configuration
- 3D file import or creation using an existing library
- Collision Simulation
  - Between hexapods and objects
  - Between objects on hexapods and fixed objects



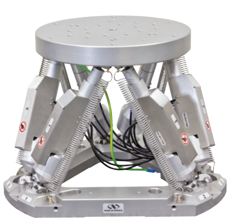
HXP Orientation, Coordinate System Adjustments, Motion Simulation



Workspace Limits

Loading:
Loads, Forces, Torque

Guaranteed Accuracy and Repeatability



Newport engineers developed a patent pending process to deliver Newport hexapods with guaranteed translation accuracy and repeatability.
Newport's actuators are based on fifty five years of experience in design, manufacturing and testing. The combination of these industry proven actuators with a new patent pending process results in hexapods with 10x improved accuracy and repeatability - **guaranteed**.
Metrology reports are included at no additional cost.
Guaranteed accuracy and guaranteed repeatability translation specifications give customers a cutting edge advantage at a time when good needs to be better.

Available High Accuracy Model Numbers

- HXP50HA-MECA
- HXP100PHA-MECA
- HXP100HA-MECA

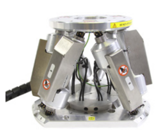
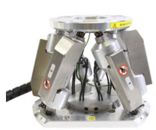
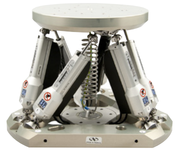
GUARANTEED SPECIFICATIONS

HEXAPOD SELECTION GUIDE

KEY FEATURES

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

Standard Versions

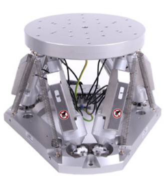
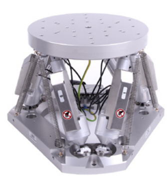

			HXP50-MECA	HXP50HA-MECA	HXP100-MECA	HXP100HA-MECA
Size		H [in. (mm)]	5.94 (151)	5.94 (151)	8.23 (209)	8.23 (209)
		Ø [in. (mm)]	7.87 (200)	7.87 (200)	11.81 (300)	11.81 (300)
Mass		[lb (kg)]	4.9 (2.2)	4.9 (2.2)	15.9 (7.2)	15.9 (7.2)
Travel Range		X, Y, Z (mm)	±17, ±15, ±7	±17, ±15, ±7	±27.5, ±25, ±14	±27.5, ±25, ±14
		U, V, W (°)	±9, ±8.5, ±18	±9, ±8.5, ±18	±11.5, ±10.5, ±19	±11.5, ±10.5, ±19
MIM *		X, Y, Z (µm)	0.1, 0.1, 0.05	0.1, 0.1, 0.05	0.5, 0.5, 0.25	0.5, 0.5, 0.25
		U, V, W (mdeg)	0.05, 0.05, 0.1	0.05, 0.05, 0.1	0.25, 0.25, 0.5	0.25, 0.25, 0.5
Uni-Dir. Repeatability	Typical	X, Y, Z (µm)	±0.1, ±0.1, ±0.05	±0.1, ±0.1, ±0.05	±0.25, ±0.25, ±0.125	±0.14, ±0.13, ±0.05
	Guarenteed	X, Y, Z (µm)	–	±0.15, ±0.15, ±0.075	–	±0.25, ±0.25, ±0.125
	Typical	U, V, W (mdeg)	±0.05, ±0.05, ±0.1	±0.05, ±0.05, ±0.1	±0.125, ±0.125, ±0.25	±0.125, ±0.125, ±0.25
Accuracy	Guaranteed	XYZ (µm)	–	±5.0, ±5.0, ±2.5	–	±10, ±10, ±5
Max. Velocity		X, Y, Z (mm/s)	14, 12, 5	14, 12, 5	2.5, 2, 1	2.5, 2, 1
		U, V, W (°/s)	6, 6, 15	6, 6, 15	1.8, 1.7, 3	1.8, 1.7, 3
Stiffness		X, Y, Z (N/µm)	2, 2, 25	2, 2, 25	5, 5, 40	5, 5, 40
Max. Load [1]		(N)	50	50	200	200
Cable length		(m)	3	3	1.5	1.5

* *Minimum Incremental Motion.*

[1] *Horizontal base plate.*

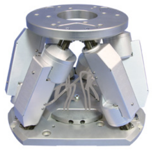
The hexapods are driven by six actuators with encoder feedback, providing precise MIM, low backlash and fast speed. To enhance the stiffness of the hexapod, our engineers came up with innovative joints that are not only simple but also compact and rigid. Another unique feature of Newport hexapods are the programmable pivot points, Work and Tool, allowing easy manipulation of the sample (Work) relative to a laser source or detector (Tool). There is no need to power down the controller or recalculate transformations.
To further ensure positioning performance, some High Accuracy (HA) versions are available with guaranteed accuracy values. This enables the use of a Newport hexapod in applications where position accuracy is required. In addition to accuracy along an axis, the pitch and yaw deviations during axial motion are also guaranteed.

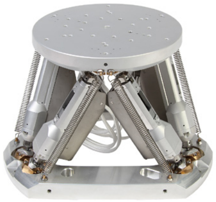
Combining an HA hexapod with RightPath™ will result in a positioning performance that is close to standard Newport stages.
The HXP-ELEC controllers accurately master the synchronized transformations from Cartesian input coordinates to the motion of the hexapod legs. In addition, the controllers provide 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.
The HXP-ELEC can also drive two Newport stages independently, if longer travel is required. Contact Newport for this feature.


HXP100P-MECA	HXP100PHA-MECA	HXP200-MECA	HXP200S-MECA	HXP1000-MECA
8.23 (209)	8.23 (209)	12.17 (309)	11.81 (300)	15.56 (395)
11.81 (300)	11.81 (300)	13.19 (335)	16.14 (410)	21.65 (550)
15.9 (7.2)	15.9 (7.2)	34.2 (15.5)	54.9 (24.9)	132 (60)
±27.5, ±25, ±14	±27.5, ±25, ±14	±59, ±54, ±25	±40, ±45, ±27	-62/+93, ±69, ±39.5
±11.5, ±10.5, ±19	±11.5, ±10.5, ±19	±15, ±14.5, ±30	±9, ±8, ±15	±11, ±10, ±19.5
0.1, 0.1, 0.05	0.1, 0.1, 0.05	0.2, 0.2, 0.1	0.15, 0.15, 0.15	0.3, 0.3, 0.16
0.05, 0.05, 0.1	0.05, 0.05, 0.1	0.1, 0.1, 0.2	0.1, 0.1, 0.1	0.06, 0.06, 0.1
±0.1, ±0.1, ±0.05	±0.1, ±0.1, ±0.05	±0.125, ±0.125, ±0.1	±0.1, ±0.1, ±0.1	±0.15, ±0.15, ±0.08
–	±0.15, ±0.15, ±0.075	–	–	–
±0.05, ±0.05, ±0.1	±0.05, ±0.05, ±0.1	±0.1, ±0.1, ±0.125	±0.1, ±0.1, ±0.1	±0.03, ±0.03, ±0.05
–	±5.0, ±5.0, ±2.5	–	–	–
12, 10, 5	12, 10, 5	81, 70, 26	47, 54, 29	9, 9, 4
8, 8, 16	8, 8, 16	16, 15, 41	10, 9.3, 16.5	1.4, 1.4, 2.8
3, 3, 24	3, 3, 24	3, 3, 40	6, 6, 30	10, 10, 100
60	60	500	850	4500
3	3	5	5	3

Vacuum Versions





		HXP50V6-MECA	HXP100V6-MECA
Size	H [in. (mm)]	5.94 (151)	8.23 (209)
	Ø [in. (mm)]	7.87 (200)	11.81 (300)
Mass	[lb (kg)]	5.9 (2.7)	15.9 (7.2)
Travel Range	X, Y, Z (mm)	±17, ±15, ±7	±27.5, ±25, ±14
	U, V, W (°)	±9, ±8.5, ±18	±11.5, ±10.5, ±19
MIM *	X, Y, Z (µm)	0.2, 0.2, 0.1	0.5, 0.5, 0.25
	U, V, W (mdeg)	0.1, 0.1, 0.2	0.25, 0.25, 0.5
Uni-Dir. Repeatability	X, Y, Z (µm)	±0.2, ±0.2, ±0.2	±0.5, ±0.5, ±0.5
Repeatability	U, V, W (mdeg)	±0.4, ±0.4, ±0.2	0.25, 0.25, 0.5
Max. Velocity	X, Y, Z (mm/s)	2, 1.9, 0.8	0.5, 0.5, 0.25
	U, V, W (°/s)	2.4, 2.4, 6	0.2, 0.2, 0.4
Rigidity	X, Y, Z (N/µm)	2, 2, 25	5, 5, 40
Max. Load [1]	(N)	50	200
Cable length	(m)	1.5	1.5

* *Minimum Incremental Motion.*

[1] *Horizontal base plate.*

NEWPORT HEXAPOD FEATURES

Easy Code Development

The **HXP-ELEC** controllers drive Newport hexapods and offer several features that facilitate rapid user testing and code development.

- The firmware of Newport hexapods features two programmable coordinate systems: **Tool and Work**. Tool is a local reference system defined relative to Work, a fixed reference. Tool and Work are the **two virtual pivot points** users can easily redefine in code or in the GUI. Controller restart is not required.
- **RightPath Trajectory Control** easily defines three types of trajectories, linear, arc and rotary motions with minimal run out, constant velocity along the motion path and equal acceleration and deceleration.
- The controller has an extensive number of **preconfigured APIs** to command motion, gather data, or interface with other devices.
- The Terminal window of HXP GUI allows selecting API's from a drop down menu and converting the command history into a TCL script by simply clicking on the **TCL Generator** button.

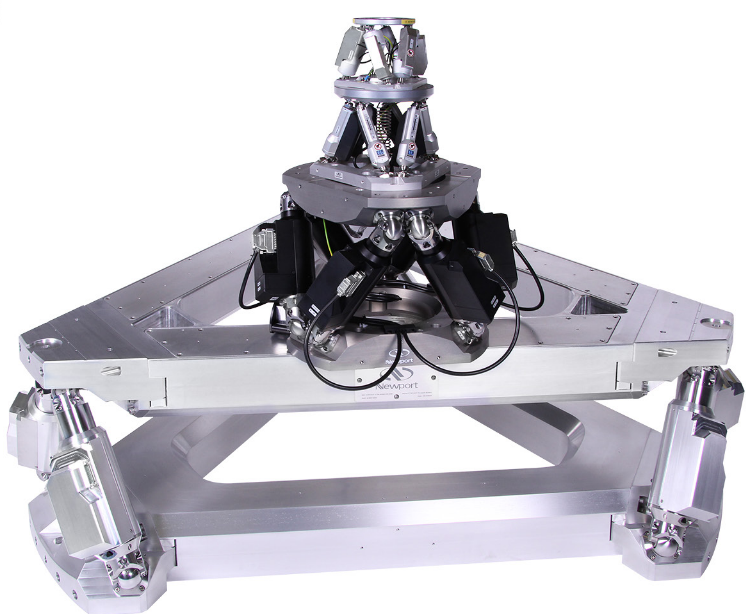
Additional Controller Features

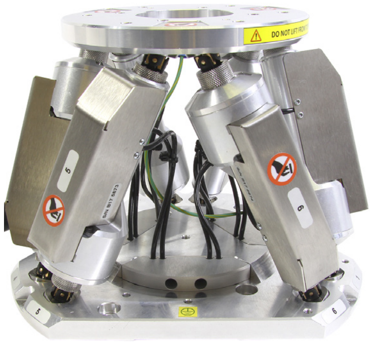
- Fast Ethernet communication
- Multi-user capability
- Data gathering
- Sockets for parallel processes
- 30 TTL inputs and outputs
- 4 analog inputs and outputs
- Automatic script execution upon boot up
- Rack mountable
- HXP+2-- Drive 2 axis in addition to the hexapod (optional)
- Manual Joystick (optional)

Additional 2 axis slots for long travel stages, load/ unload for example.

HXP-JOYSTICK

Joystick Control Software





HXP50 HEXAPODS

Additional Applications

- Alignment (fiber, camera to sensor, waveguides)
- X-Ray diffraction

Specifications

	HXP50-MECA	HXP50HA-MECA	HXP50V6-MECA
Travel Range X, Y, Z (1)	±17, ±15, ±7 mm	±17, ±15, ±7 mm	±17, ±15, ±7 mm
Travel Range ΘX, ΘY, ΘZ	±9, ±8.5, ±18°	±9, ±8.5, ±18°	±9, ±8.5, ±18°
Minimum Incremental Motion X, Y, Z (2)	0.10, 0.10, 0.05 µm	0.10, 0.10, 0.05 µm	0.2, 0.2, 0.1 µm
Minimum Incremental Motion ΘX, ΘY, ΘZ	0.05, 0.05, 0.10 mdeg	0.05, 0.05, 0.10 mdeg	0.1, 0.1, 0.2 mdeg
Uni-directional Repeatability X, Y, Z, Typical	±0.10, ±0.10, ±0.05 µm	±0.10, ±0.10, ±0.05 µm	±0.20, ±0.20, ±0.20 µm
Uni-directional Repeatability X, Y, Z, Guaranteed	–	±0.15, ±0.15, ±0.075 µm	–
Uni-directional Repeatability ΘX, ΘY, ΘZ, Typical	±0.05, ±0.05, ±0.10 mdeg	±0.05, ±0.05, ±0.10 mdeg	±0.40, ±0.40, ±0.20 mdeg
Accuracy XYZ, Guaranteed	–	±5.0, ±5.0, ±2.5 µm	–
Maximum Speed X, Y, Z	14, 12, 5 mm/s	14, 12, 5 mm/s	2, 1.9, 0.8 mm/s
Maximum Speed ΘX, ΘY, ΘZ	6, 6, 15 °/s	6, 6, 15 °/s	2.4, 2.4, 6 °/s
Rigidity X, Y, Z (3)	2, 2, 25 N/µm	2, 2, 25 N/µm	2, 2, 25 N/µm
Pitch X, Y, Z, Guaranteed	–	±50, ±50, ±25 µrad	–
Yaw X, Y, Z, Guaranteed	–	±50, ±50, ±25 µrad	–
Centered Load Capacity (4)	50 N	50 N	50 N
Cable Length	3 m	3 m	1.5 m
Motor	DC Servo	DC Servo	Stepper motor
Weight	2.2 kg	2.2 kg	2.2 kg

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

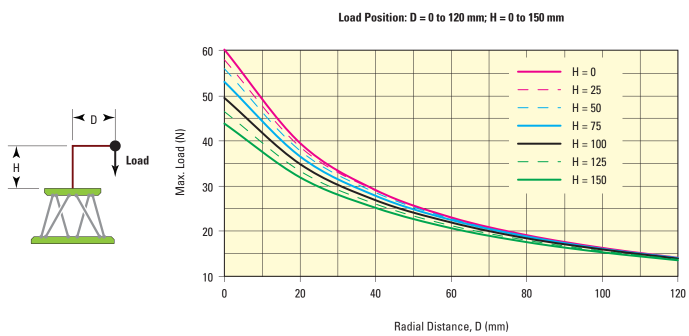
2) Open loop values shown.

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

4) For Value shown for horizontal base plate. See graphs for maximum payload height and cantilever distance on next page.

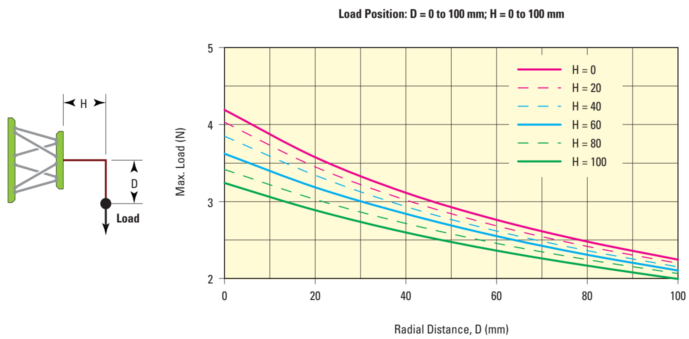
Max. Cantilever Distance of the Load

Horizontal Base Plate

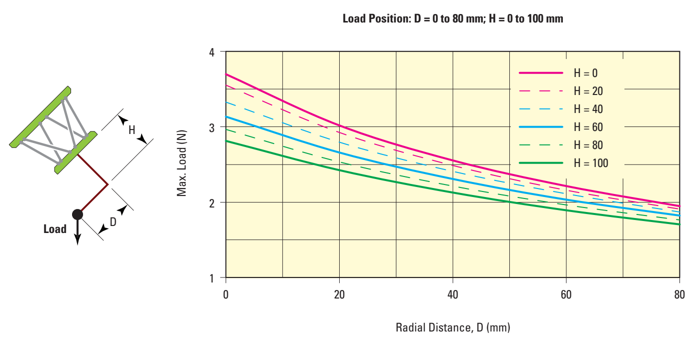


Base Plate Upside-Down

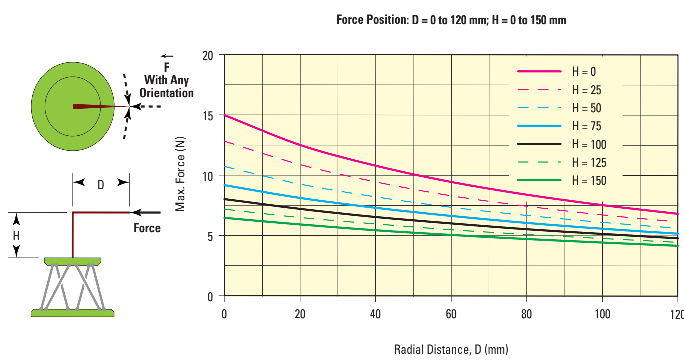
Vertical Base Plate



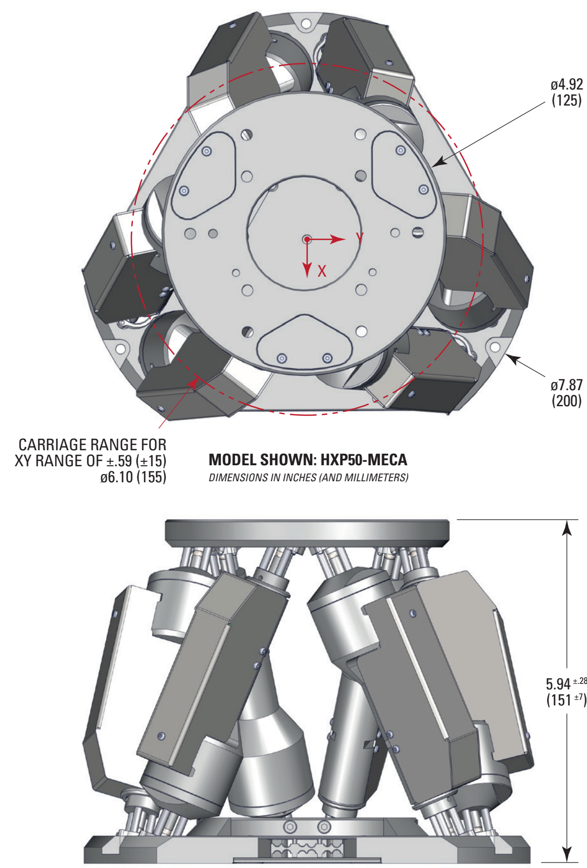
Base Plate at Any Position



Horizontal Base Plate, Lateral Force



Dimensions

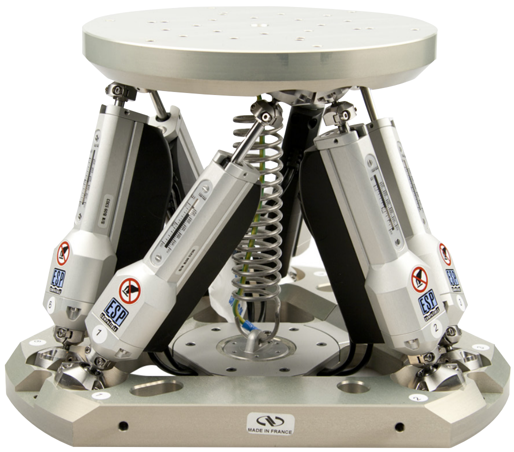


Ordering Information

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.



HXP100 HEXAPODS

Additional Applications

- AED simulation
- Astronomy
- X-Ray diffraction

Specifications

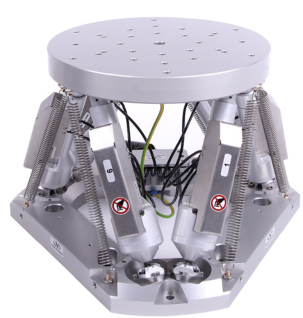
	HXP100-MECA	HXP100HA-MECA	HXP100P-MECA	HXP100PHA-MECA	HXP100V6-MECA
Travel Range X, Y, Z [1]	±27.5, ±25, ±14 mm	±27.5, ±25, ±14 mm	±27.5, ±25, ±14 mm	±27.5, ±25, ±14 mm	±27.5, ±25, ±14 mm
Travel Range ΘX, ΘY, ΘZ	±11.5, ±10.5, ±19 °	±11.5, ±10.5, ±19 °	±11.5, ±10.5, ±19 °	±11.5, ±10.5, ±19 °	±11.5, ±10.5, ±19 °
Minimum Incremental Motion X, Y, Z [2]	0.5, 0.5, 0.25 µm	0.50, 0.50, 0.25 µm	0.10, 0.10, 0.05 µm	0.10, 0.10, 0.05 µm	0.5, 0.5, 0.25 µm
Minimum Incremental Motion ΘX, ΘY, ΘZ	0.25, 0.25, 0.5 mdeg	0.25, 0.25, 0.5 mdeg	0.05, 0.05, 0.10 mdeg	0.05, 0.05, 0.10 mdeg	0.25, 0.25, 0.5 mdeg
Uni-directional Repeatability X, Y, Z, Typical	±0.25, ±0.25, ±0.125 µm	±0.14, ±0.13, ±0.05 µm	±0.10, ±0.10, ±0.05 µm	±0.10, ±0.10, ±0.05 µm	±0.50, ±0.50, ±0.50 µm
Uni-directional Repeatability X, Y, Z, Guaranteed	–	±0.25, ±0.25, ±0.125 µm	–	±0.15, ±0.15, ±0.075 µm	–
Uni-directional Repeatability ΘX, ΘY, ΘZ, Typical	±0.125, ±0.125, ±0.25 mdeg	±0.125, ±0.125, ±0.25 mdeg	±0.05, ±0.05, ±0.10 mdeg	±0.05, ±0.05, ±0.10 mdeg	±0.25, ±0.25, ±0.50 mdeg
Accuracy XYZ, Guaranteed	–	±10, ±10, ±5 µm	–	±5.0, ±5.0, ±2.5 µm	–
Maximum Speed X, Y, Z	2.5, 2, 1 mm/s	2.5, 2, 1 mm/s	12, 10, 5 mm/s	12, 10, 5 mm/s	0.5, 0.5, 0.25 mm/s
Maximum Speed ΘX, ΘY, ΘZ	1.8, 1.7, 3 °/s	1.8, 1.7, 3 °/s	8, 8, 16 °/s	8, 8, 16 °/s	0.2, 0.2, 0.4 °/s
Rigidity X, Y, Z [3]	5, 5, 40 N/µm	5, 5, 40 N/µm	3, 3, 24 N/µm	3, 3, 24 N/µm	5, 5, 40 N/µm
Pitch X, Y, Z, Guaranteed	–	±75, ±75, ±75 µrad	–	±37.5, ±37.5, ±37.5 µrad	–
Yaw X, Y, Z, Guaranteed	–	±75, ±75, ±75 µrad	–	±37, ±37, ±37 µrad	–
Centered Load Capacity [4]	200 N	200 N	60 N	60 N	200 N
Cable Length	1.5 m	1.5 m	3 m	3 m	1.5 m
Motor	DC Servo	DC Servo	DC Servo	DC Servo	Stepper motor
Weight	7.2 kg	7.2 kg	7.2 kg	7.2 kg	7.2 kg

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

2) Open loop values shown.

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

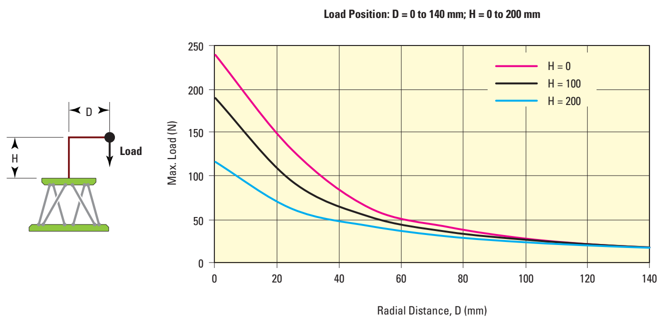
4) For Value shown for horizontal base plate. See graphs for maximum payload height and cantilever distance on next page.



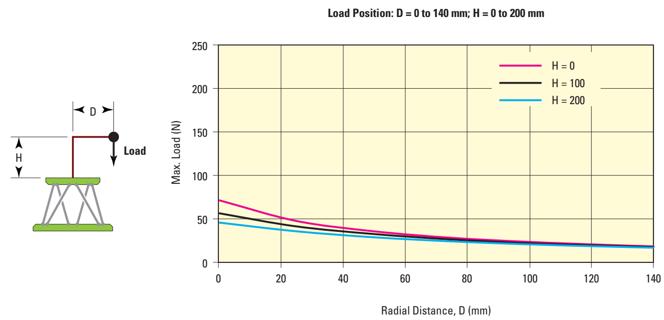
HXP100P-MECA hexapod.

Max. Cantilever Distance of the Load

HXP100 Horizontal Base Plate

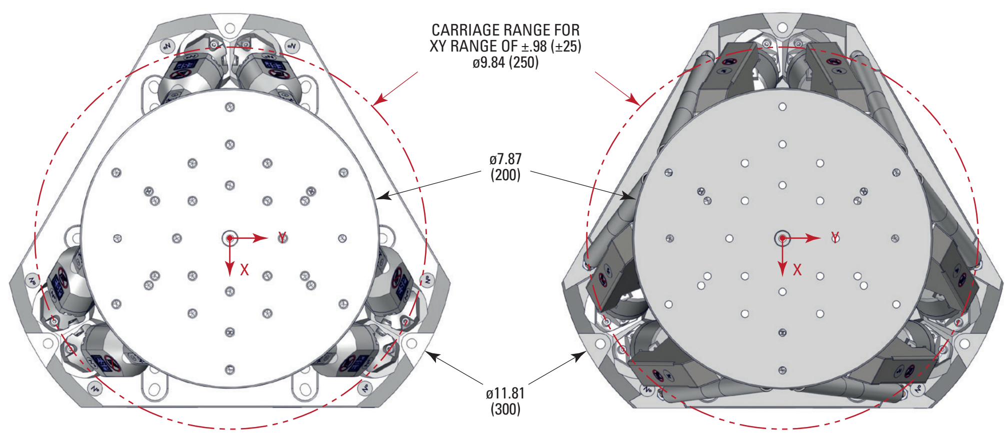


HXP100P Horizontal Base Plate



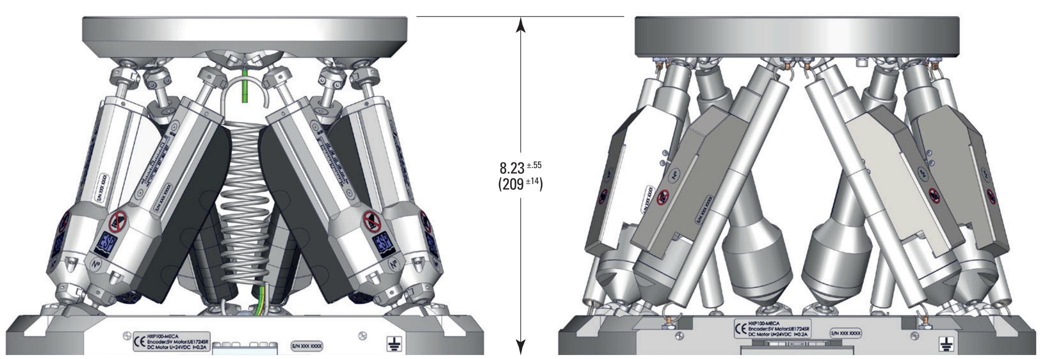
Dimensions

For CAD files, visit
www.newport.com



MODEL SHOWN: HXP100-MECA & HXP100HA-MECA
DIMENSIONS IN INCHES (AND MILLIMETERS)

MODEL SHOWN: HXP100P-MECA & HXP100PHA-MECA
DIMENSIONS IN INCHES (AND MILLIMETERS)



Ordering Information

Model	Description
HXP100-MECA	Hexapod, 200 N load capacity
HXP100-ELEC (1)	Hexapod controller for HXP100-MECA
HXP100P-MECA	Hexapod Precision, 60 N load capacity
HXP100P-ELEC (1)	Hexapod controller for HXP100P-MECA

Model	Description
HXP100HA-MECA	Hexapod with guaranteed specifications, 200 N load capacity
HXP100HA-ELEC (1)	Hexapod controller for HXP100HA-MECA
HXP100PHA-MECA	Hexapod Precision with guaranteed specifications, 60 N load capacity
HXP100PHA-ELEC (1)	Hexapod controller for HXP100PHA-MECA

[1] *Contact Newport for the two additional SingleAxis drive capability.*

Note: Call Newport for quotes on the 10^{-6} hPa vacuum version.

HXP200 HEXAPODS

Additional Applications

- Telescope M2 mirror holders
- Piece holder for automotive industry
- Alignment and bonding
- Material analysis
- Sensor calibration and simulation

Specifications

	HXP200-MECA	HXP200S-MECA
Travel Range X, Y, Z (1)	±59, ±54, ±25 mm	±40, ±45, ±27 mm
Travel Range θX, θY, θZ	±15, ±14.5, ±30°	±9, ±8, ±15°
Minimum Incremental Motion X, Y, Z (2)	0.2, 0.2, 0.1 µm	0.15, 0.15, 0.15 µm
Minimum Incremental Motion θX, θY, θZ	0.1, 0.1, 0.2 mdeg	±0.1, 0.1 0.1 mdeg
Uni-directional Repeatability X, Y, Z, Typical	±0.125, ±0.125, ±0.1 µm	±0.1, ±0.1, ±0.1 µm
Uni-directional Repeatability θX, θY, θZ, Typical	±0.1, ±0.1, ±0.125 mdeg	±0.1, ±0.1, ±0.1 mdeg
Maximum Speed X, Y, Z	81, 70, 26 mm/s	47, 54, 29 mm/s
Maximum Speed θX, θY, θZ	16, 15, 41 °/s	10, 9.3, 16.5 °/s
Rigidity X, Y, Z (3)	3, 3, 40 N/µm	6, 6, 30 N/µm
Centered Load Capacity (4)	500 N	850 N
Weight	15.5 kg	24.9 kg

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

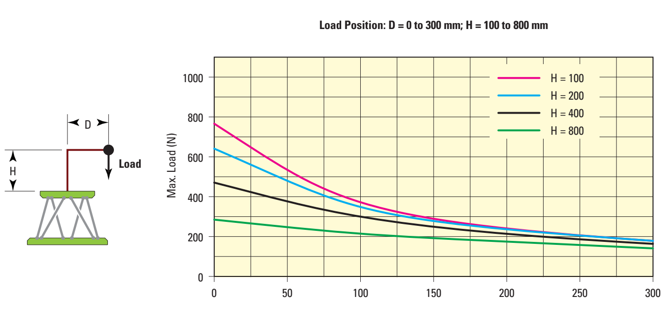
2) Open loop values shown.

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

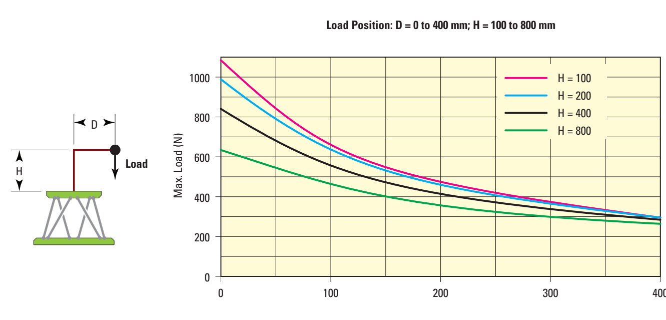
4) For Value shown for horizontal base plate. See graphs for maximum payload height and cantilever distance on next page.

Max. Cantilever Distance of the Load

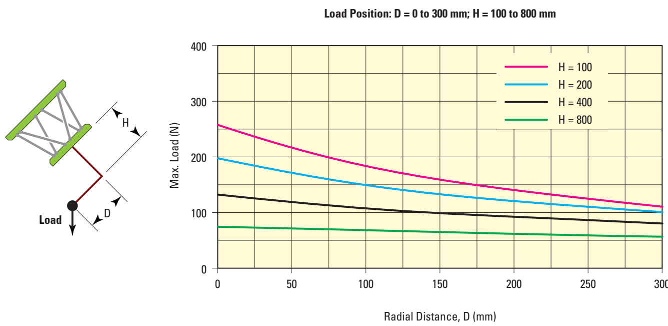
HXP200 Horizontal Base Plate



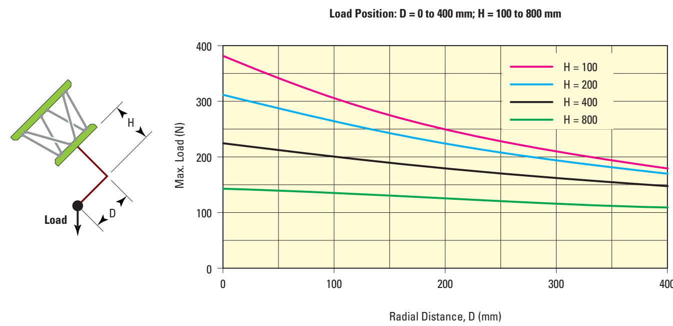
HXP200S Horizontal Base Plate



HXP200 Base Plate at Any Position

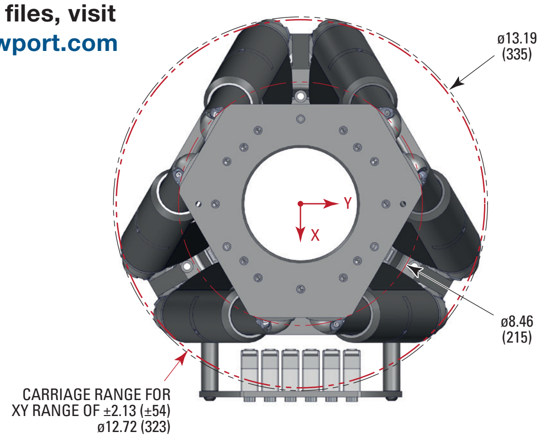


HXP200S Base Plate at Any Position

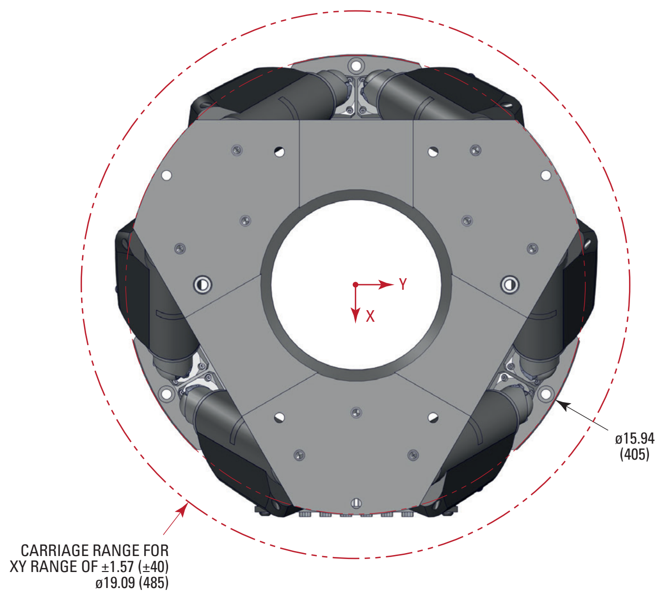


Dimensions

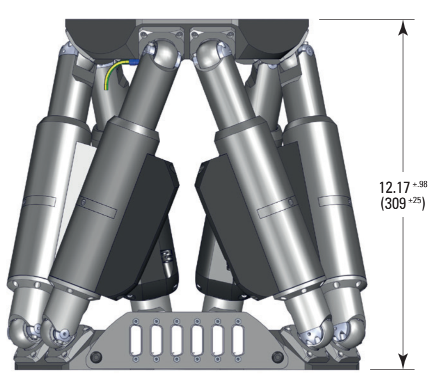
For CAD files, visit
www.newport.com

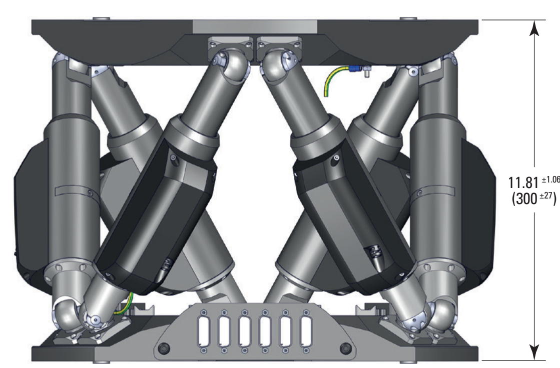


MODEL SHOWN: HXP200-MECA
DIMENSIONS IN INCHES (AND MILLIMETERS)



MODEL SHOWN: HXP200S-MECA
DIMENSIONS IN INCHES (AND MILLIMETERS)





Ordering Information

Model	Description
HXP200-MECA	Hexapod, 500 N load capacity
HXP200-ELEC [1]	Hexapod controller for HXP200-MECA

[1] *Contact Newport for the two additional SingleAxis drive capability.*

Model	Description
HXP200S-MECA	Hexapod, 850 N load capacity
HXP200S-ELEC [1]	Hexapod controller for HXP200S-MECA

MKS | Newport

WHY MKS?

CRITICAL TECHNOLOGIES

World-class technology and development capabilities for leading-edge processes

PROVEN PARTNER

Recognized leader delivering innovative, reliable solutions for our customers' most complex problems

OPERATIONAL EXCELLENCE

Consistent execution across all aspects of our business

COMPREHENSIVE PORTFOLIO

Largest breadth of product and service solutions for the markets we serve

Newport Corporation
1791 Deere Ave.
Irvine, CA 92606
+1 949-877-9620
www.NEWPORT.COM
Sales: +1 877-835-9620

MKS Corporate Headquarters
2 Tech Drive, Suite 201
Andover, MA 01810
+1 978-645-5500
+1 800-227-8766 (in USA)

Newport is a brand within the MKS Instruments Light & Motion division. The Newport product portfolio consists of a full range of solutions including precision motion control, optical tables and vibration isolation systems, photonic instruments, optics and opto-mechanical components. Our innovative Newport solutions leverage core expertise in vibration isolation and sub-micron positioning systems and opto-mechanical and photonics subsystems, to enhance our customers' capabilities and productivity in the semiconductor, industrial technologies, life and health sciences, research and defense markets.

For further information please visit **www.newport.com**