Miniature Hexapod Six-DOF Positioning System

HEX150-140HL

Precise 6-DOF Motion in a Compact Platform

Our HEX150-140HL delivers significantly better minimal incremental motion and more linear travel than you'll find elsewhere–all in a compact yet stiff platform. The combination of small size and high payload capacity gives you design flexibility, and our peak-to-peak specs mean you know you're getting consistent, reliable six degree-of-freedom (DOF) motion with every use. HEX150-140HL is operated with our powerful motion controllers, which can manage multiple products from one interface and get your complex multi-DOF motion up and running faster and easier.

Key Applications

HEX150-140HL is ideal for addressing space-constrained, multiple degree-of-freedom applications requiring fine positioning resolution, including:

- Photonic device manipulation, alignment and packaging
- Optics inspection and alignment
- Optical wafer probing
- Aerospace and satellite sensor testing
- Synchrotron and beamline sample manipulation

KEY FEATURES:

- Offers **COMPACT SIZE & AMPLE RANGE** of motion for simple integration into complex applications
- **SUPPORTS HIGH PAYLOADS** to 7.5 kg & resists backdriving to 100 N
- Delivers **INDUSTRY-LEADING MINIMUM INCREMENTAL MOTION** of 20 nm in XYZ & 0.04 arc sec in θxθyθz
- **COORDINATES WITH OTHER MOTION AXES** (servo, stepper, piezo & more) using our controllers
- Provides **EASY, CONVENIENT PIVOT-POINT ADJUSTMENT**
- Pairs with **POWERFUL CONTROLS & VISUALIZATION SOFTWARE**

HEX150-140HL SERIES SPECIFICATIONS

Mechanical Specifications		HEX150-140HL					
Axis		**X**	**Y**	**Z**	**A (θx)**	**B (θy)**	**C (θz)**
Travel[1]		40 mm	40 mm	16 mm	16 deg	16 deg	40 deg
Resolution (Minimum Incremental Motion)		20 nm	20 nm	20 nm	0.04 arc sec	0.04 arc sec	0.04 arc sec
Bidirectional Repeatability, pk-pk[2,3]		±1.5 µm	±1.5 µm	±0.4 µm	±3 arc sec	±3 arc sec	±3 arc sec
Unidirectional Repeatability, pk-pk		±0.75 µm	±0.75 µm	±0.15 µm	±1.5 arc sec	±1.5 arc sec	±1.5 arc sec
Maximum Speed[4]		20 mm/s	20 mm/s	8 mm/s	10 deg/s	10 deg/s	30 deg/s
Load Capacity, All Positions[5]	**Vertical**	7.5 kg					
	Horizontal	2 kg					
Holding Capacity, De-Energized[6]		10 kg					
Stage Mass		2.3 kg					
Material		Anodized Aluminum Platform and Base; Steel Used in Joints and Inside Struts					

Notes:
1. Travels are mutually exclusive. Consult our HexGen Hexapod Sizer for detailed workspace sizing.
2. Measured with single-axis moves at a height of 50 mm above the moving platform. Results may vary with loading condition and workpoint location.
3. X, Y, Z performance certified as standard.
4. Requires the selection of an appropriate amplifier with sufficient voltage and current.
5. Centered loading – consult load curves. Contact factory for payloads exceeding the published values.
6. Horizontal base plate, centered loading – consult load curves.

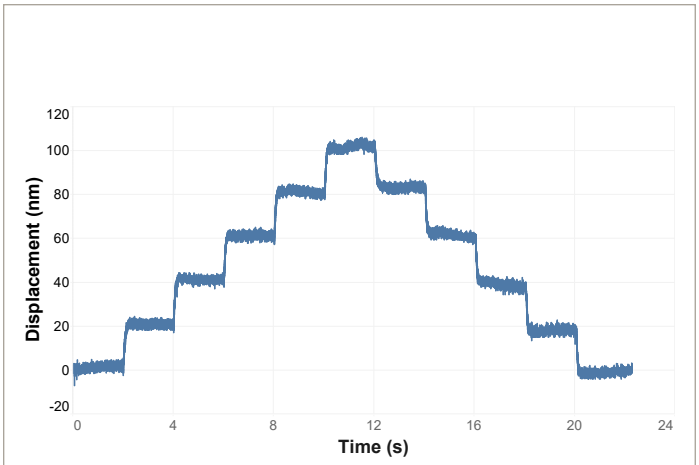
Electrical Specifications	HEX150-140HL
Drive System	Precision Ball Screw, Brushless Servomotor
Feedback	Noncontact Incremental Encoder
Maximum Bus Voltage	80 VDC
Limit Switches	5 V, Normally-Closed (Located on Each Strut)

Integration (Required)

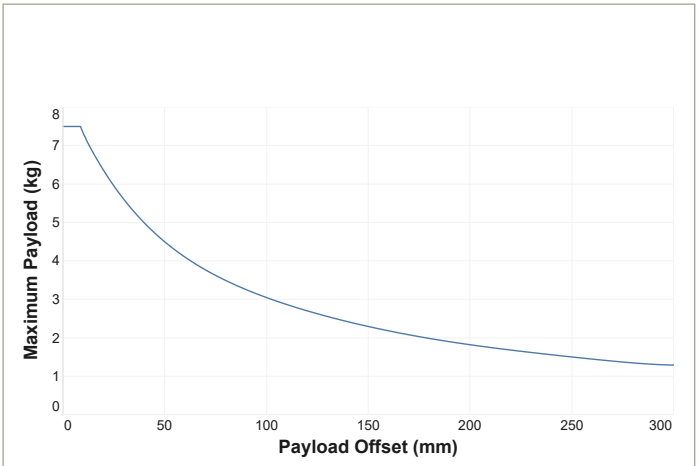
Aerotech offers both standard and custom integration services to help you get your system fully operational as quickly as possible. The following standard integration options are available for this system. Please consult Aerotech if you are unsure what level of integration is required, or if you desire custom integration support with your system.

-TAS **Integration - Test as system**
Testing, integration, and documentation of a group of components as a complete system that will be used together (ex: drive, controller and stage). This includes parameter file generation, system tuning and documentation of the system configuration.

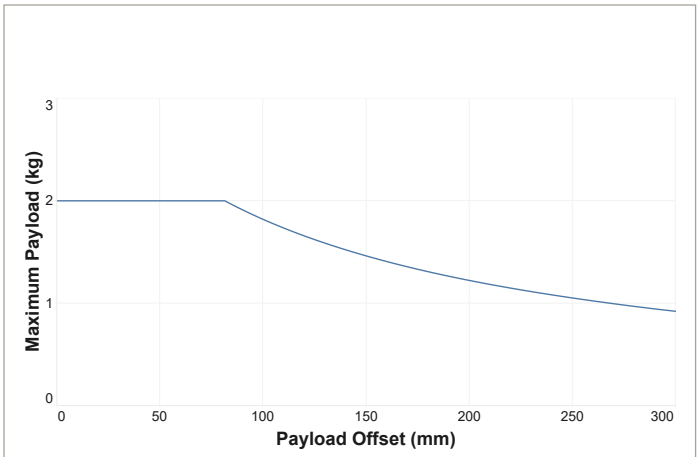
HEX150-140HL SERIES PERFORMANCE



Minimum incremental step plot of the X-axis of HEX150-140HL. All axes of HEX150-140HL provide industry-leading resolutions, enabling higher-resolution processes.

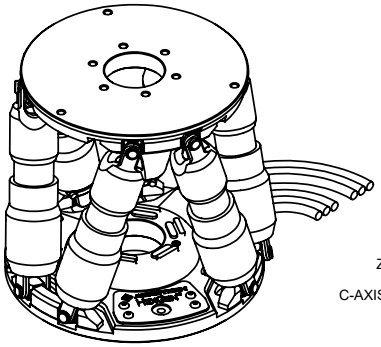


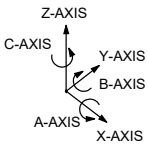
HEX150-140HL vertical load capacity

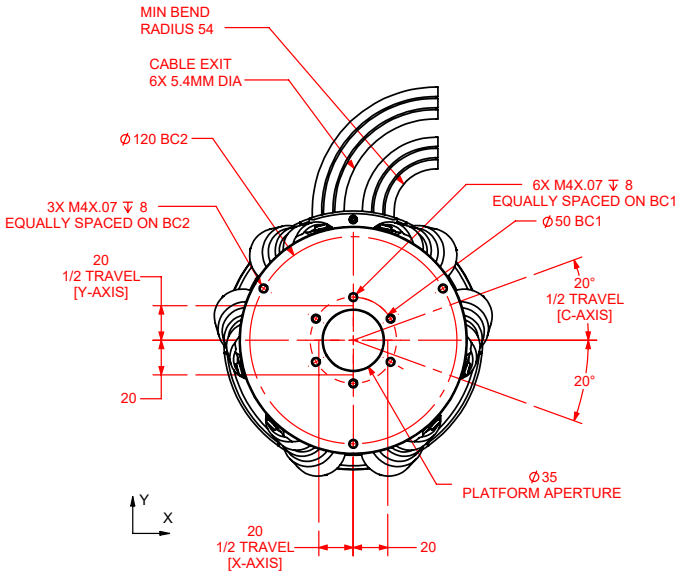


HEX150-140HL horizontal load capacity

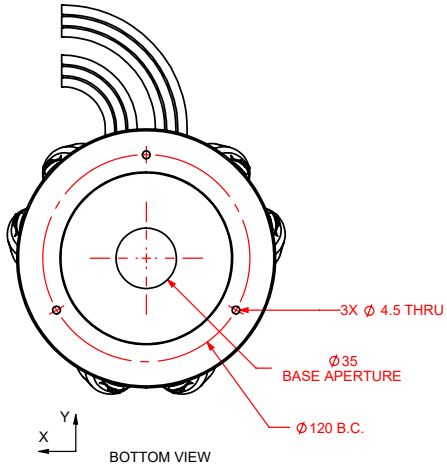
HEX150-140HL SERIES DIMENSIONS



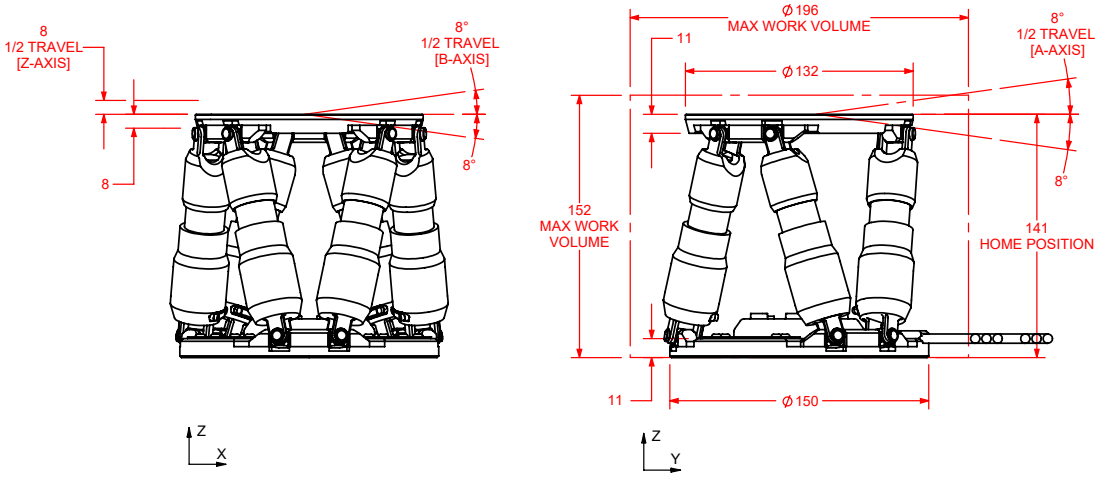




NOTE: ALL TRAVEL SPECIFIED AS SINGLE-AXIS MOVES FROM HOME POSITIONS



BOTTOM VIEW



DIMENSIONS: MILLIMETERS