AEROTECH

Miniature Hexapod Six-DOF Positioning System

HEX150-125HL

Relentlessly improved. More accessible than ever.

Our HexGen® HEX150-125HL offers numerous improvements and enhancements over other miniature hexapods. Superb peak-to-peak repeatability over a large travel range and industry-leading minimum incremental motion—combined with high speed, compact size and impressive payload-carrying capacity—make this miniature hexapod more capable and reliable than ever. Reduce implementation risk with guaranteed performance specifications and seamless integration with other motion devices, including stages, laser scan heads, gantries and more. Optimized for scalability and cost-effectiveness, HEX150-125HL is easy to acquire and integrate into R&D labs and production lines.

Key Applications

HEX150-125HL is ideal for addressing space-constrained, multiple degree-of-freedom applications requiring fine positioning resolution, including:

- Optics inspection, alignment & bonding
- Photonic device manipulation, alignment & packaging
- Optical wafer probing
- Aerospace & satellite sensor testing
- Electro-optics testing & qualification
- Synchrotron & beamline sample manipulation

KEY FEATURES:

- **COST-EFFECTIVE** design with **GUARANTEED ACCURACY & REPEATABILITY** performance
- **INDUSTRY-LEADING MINIMUM INCREMENTAL MOTION** to 15 nm
- **UP TO 12 KG** payload-carrying capacity
- High speeds up to 30 mm/s & 30 °/s **INCREASE PROCESS THROUGHPUT**
- **EFFICIENT TWO-CABLE DESIGN** simplifies system wiring & integration
- Ultra-robust design provides **OUTSTANDING RELIABILITY** in labs & 24/7 production environments
- **EASILY PERFORM COORDINATED MOTION WITH OTHER AXES** (servo, stepper, galvo & more) with Aerotech controls
- **VACUUM-COMPATIBLE** configurations available

HEX150-125HL SERIES SPECIFICATIONS

Mechanical Specifications		HEX150-125HL					
Axis		**X**	**Y**	**Z**	**A (θ_x)**	**B (θ_y)**	**C (θ_z)**
Travel[1]		42 mm	44 mm	17 mm	16 deg		42 deg
Axis Positioning Accuracy Over Full Travel - ULTRA (-PL4)[2,3,4]		±3 µm		±0.6 µm	±30 µrad		±40 µrad
Resolution (Minimum Incremental Motion)		15 nm			0.2 µrad		
Bidirectional Repeatability, pk-pk[2,3]		±1.5 µm		±0.3 µm	±15 µrad		±20 µrad
Unidirectional Repeatability, pk-pk		±0.75 µm		±0.15 µm	±7.5 µrad		±10 µrad
Maximum Speed[5,6]		30 mm/s		8 mm/s	10 deg/s		30 deg/s
Load Capacity, All Positions[7]	**Vertical**	12 kg					
	Horizontal	5 kg					
Holding Capacity, De-Energized[8]		3 kg					
Stage Mass		3 kg					
Material		Anodized Aluminum and Steel					

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. Translational (X, Y, Z) and angular (A, B, C) on-axis performance certified as standard.
4. Requires the -PL4 metrology option to be configured with the hexapod.
5. Requires the selection of an appropriate amplifier with sufficient voltage and current.
6. Maximum speed in vacuum environments is application dependent. Contact factory for details.
7. With centered loading—consult load curves. Contact factory for payloads exceeding the published values.
8. With vertical mounting orientation (horizontal base plate) and centered loading.

Electrical Specifications	HEX150-125HL
Drive System	Precision Ball Screw, Brushless Servomotor
Feedback	Noncontact Incremental Encoder
Maximum Bus Voltage	48 VDC recommended for typical operation; 80 VDC max
Limit Switches	5 V, Normally Closed

HEX150-125HL SERIES ORDERING OPTIONS

Mounting Plate (Optional)

-MP Adapter plate for HEX150-125HL base mounting

Vacuum Preparation (Optional)

-HV High vacuum preparation to 10^{-6} Torr

Cable Length (Optional)

-xx Cable length in decimeters (4.0 dm is default)

Note: Specify cable length only for vacuum-prepared hexapods (-HV option). Non-vacuum-compatible hexapods are equipped with 4 dm cables. See catalog drawing for details.

Performance Grade (Required)

-PL1 Base performance; includes only bidirectional repeatability plots for X, Y, Z, A, B, C axes

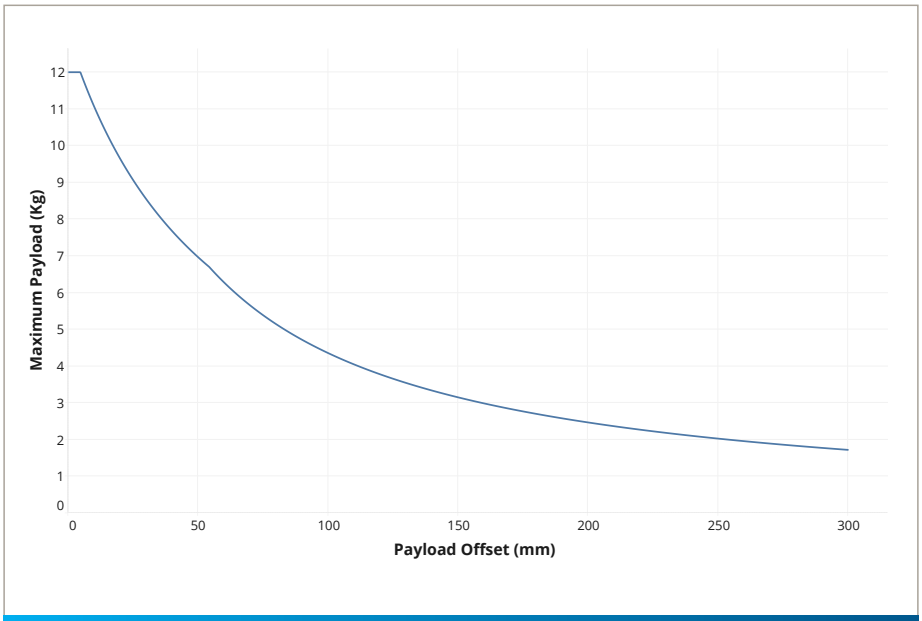
-PL4 Ultra high-accuracy performance; includes mapping and calibration with accuracy & bidirectional repeatability plots for X, Y, Z, A, B, C axes

Integration (Required)

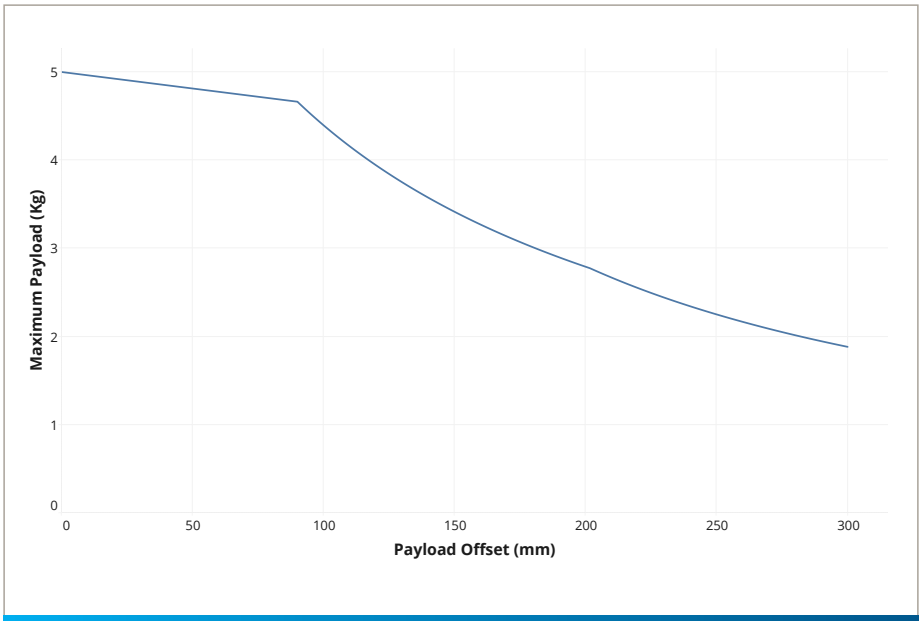
Aerotech offers both standard and custom integration services to help you get your system fully operational as quickly as possible. The following standard integration options are available for this system. Please consult Aerotech if you are unsure what level of integration is required, or if you desire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

HEX150-125HL SERIES PERFORMANCE

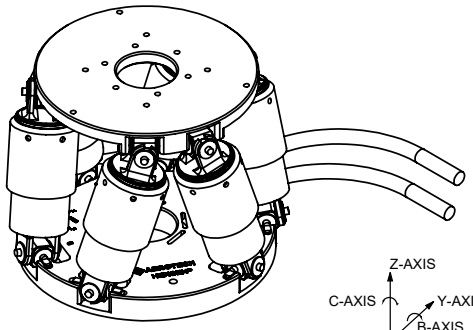


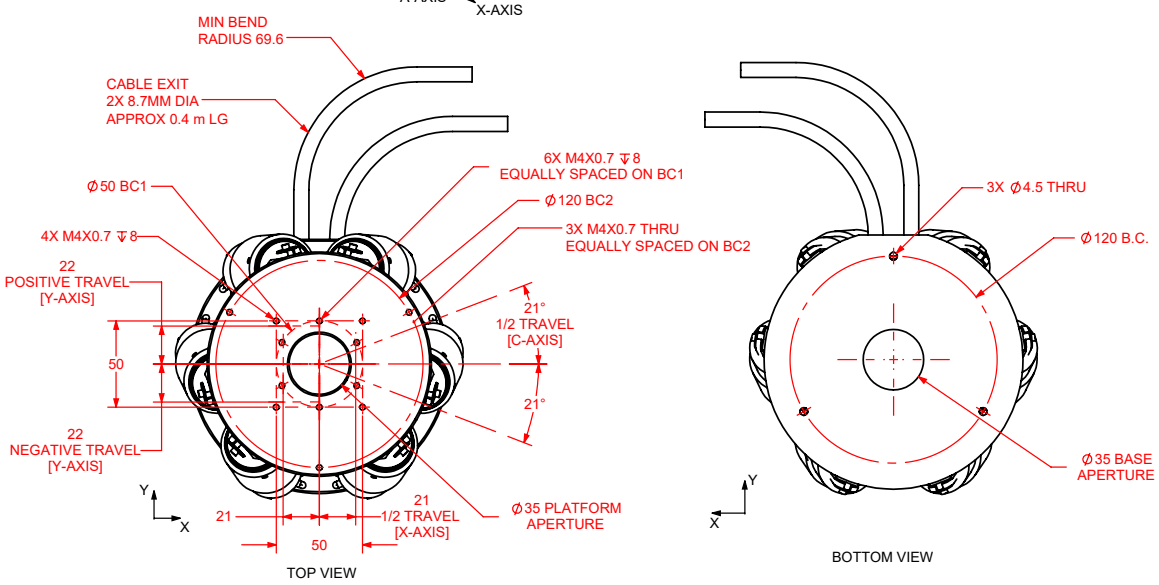
HEX150-125HL vertical load capacity



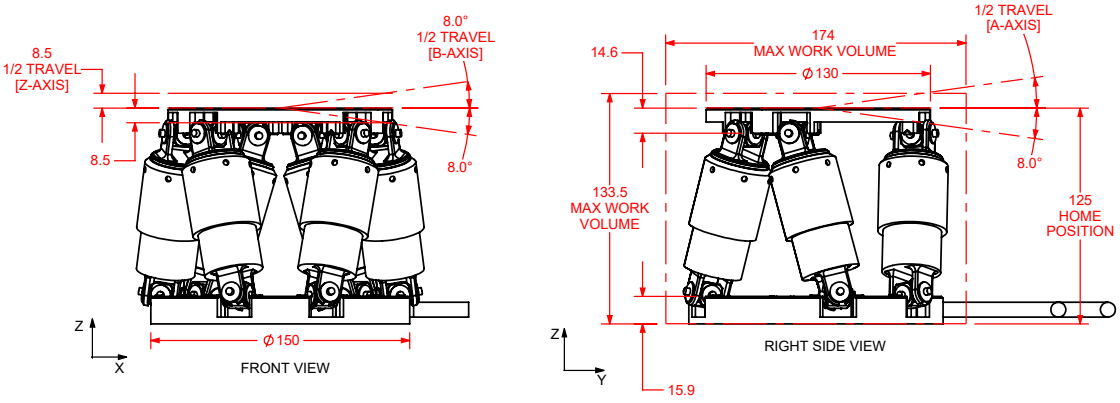
HEX150-125HL horizontal load capacity

HEX150-125HL SERIES DIMENSIONS





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



DIMENSIONS: MILLIMETERS

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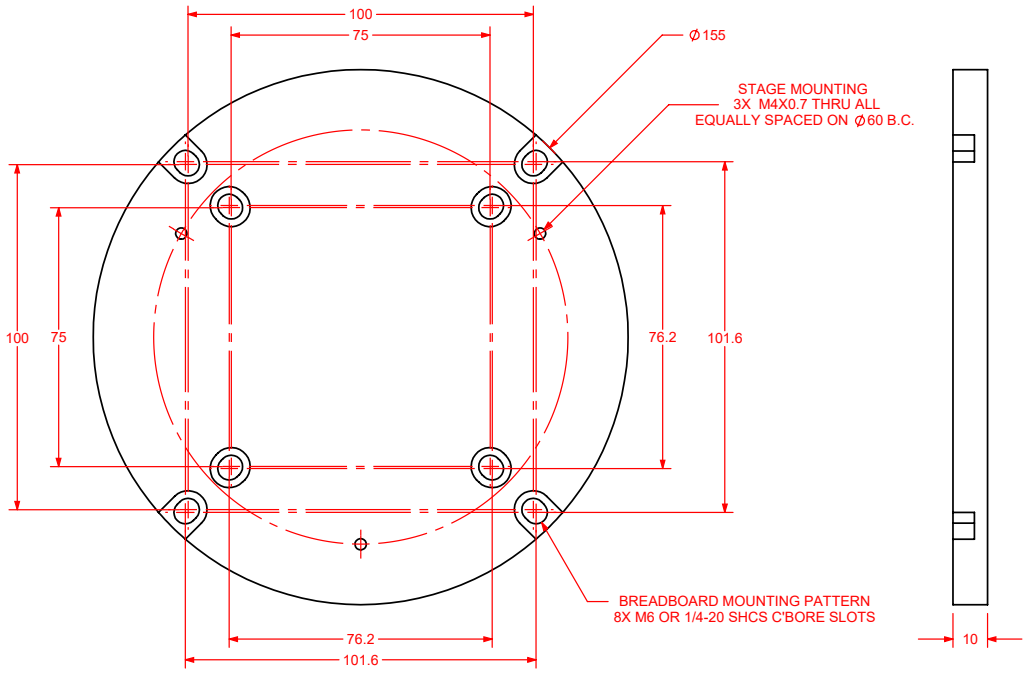

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