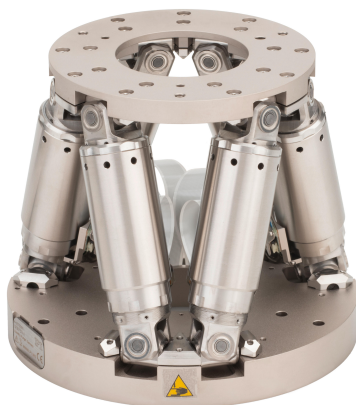


# Miniature Hexapod

Fast, Compact, and Highly Precise



## H-811.I2

- Travel ranges to  $\pm 17$  mm /  $\pm 21^\circ$
- Payload to 5 kg
- Repeatability to  $\pm 0.06$   $\mu$ m
- Velocity to 20 mm/s
- Vacuum model available

### Application fields

Thanks to its small footprint and its proven reliability in applications with high numbers of cycles, the H-811 is typically employed in photonics and in precision assembly. In such areas, it contributes to boosting the productivity of complex manufacturing processes and measuring procedures.

### High dynamics combined with extreme reliability

The parallel-kinematic arrangement enables the hexapod to perform motion in 6 axes in an extremely compact design. Thanks to the use of brushless DC motors and its stiff mechanical design, the H-811 offers the dynamics required for active alignment applications, even if external interference (e.g., in the case of gluing processes) occurs. Extensive software tools provide support by simplifying the system tuning and making automatic routines available for alignment to an external analog control signal.

### Motion simulation for protecting the overall system

The PIVirtualMove software, which can be downloaded free of charge, simulates the travel range, the alignment, and the permissible forces and torques of the H-811 to facilitate an optimum system configuration. In this context, both the chosen center of rotation and the center of gravity of the load are taken into consideration.

Work and tool coordinate systems and an emulation tool are included in the free software package belonging to the scope of delivery of the hexapod controller. The tools provided help to protect critical components such as optical or photonic parts.

Motion	Unit		H-811.I2
Active axes			X   Y   Z   $\theta$ X   $\theta$ Y   $\theta$ Z
Travel range in X	mm		$\pm 17$
Travel range in Y	mm		$\pm 16$
Travel range in Z	mm		$\pm 6.5$
Rotation range in $\theta$ X	°		$\pm 10$
Rotation range in $\theta$ Y	°		$\pm 10$
Rotation range in $\theta$ Z	°		$\pm 21$
Maximum velocity in X	mm/s		20
Recommended velocity in X	mm/s		10
Maximum velocity in Y	mm/s		20
Recommended velocity in Y	mm/s		10
Maximum velocity in Z	mm/s		20
Recommended velocity in Z	mm/s		10
Maximum angular velocity in $\theta$ X	mrad/s		500
Recommended angular velocity in $\theta$ X	mrad/s		250
Maximum angular velocity in $\theta$ Y	mrad/s		500
Recommended angular velocity in $\theta$ Y	mrad/s		250
Maximum angular velocity in $\theta$ Z	mrad/s		500
Recommended angular velocity in $\theta$ Z	mrad/s		250

Positioning	Unit	Tolerance	H-811.I2
Minimum incremental motion in X	$\mu$ m	Typ.	0.2
Minimum incremental motion in Y	$\mu$ m	Typ.	0.2
Minimum incremental motion in Z	$\mu$ m	Typ.	0.08
Minimum incremental motion in $\theta$ X	$\mu$ rad	Typ.	2.5
Minimum incremental motion in $\theta$ Y	$\mu$ rad	Typ.	2.5
Minimum incremental motion in $\theta$ Z	$\mu$ rad	Typ.	5
Unidirectional repeatability in X	$\mu$ m	Typ.	$\pm 0.15$
Unidirectional repeatability in Y	$\mu$ m	Typ.	$\pm 0.15$
Unidirectional repeatability in Z	$\mu$ m	Typ.	$\pm 0.06$
Unidirectional repeatability in $\theta$ X	$\mu$ rad	Typ.	$\pm 2$
Unidirectional repeatability in $\theta$ Y	$\mu$ rad	Typ.	$\pm 2$
Unidirectional repeatability in $\theta$ Z	$\mu$ rad	Typ.	$\pm 3$
Backlash in X	$\mu$ m	Typ.	0.2
Backlash in Y	$\mu$ m	Typ.	0.2
Backlash in Z	$\mu$ m	Typ.	0.06
Backlash in $\theta$ X	$\mu$ rad	Typ.	2
Backlash in $\theta$ Y	$\mu$ rad	Typ.	2
Backlash in $\theta$ Z	$\mu$ rad	Typ.	4

Drive Properties			H-811.I2
Drive type			Brushless DC motor

Mechanical Properties	Unit	H-811.I2
Stiffness in X	N/μm	0.7
Stiffness in Y	N/μm	0.7
Stiffness in Z	N/μm	8
Maximum load capacity, base plate in any orientation	kg	2.5
Maximum load capacity, base plate horizontal	kg	5
Maximum holding force, base plate in any orientation	N	2.5
Maximum holding force, base plate horizontal	N	15
Overall mass	kg	2.2
Material		Stainless steel, aluminum

Miscellaneous	Unit	H-811.I2
Operating temperature range	°C	0 to 50
Connector for data transmission		HD D-sub 78 (m)
Connector for supply voltage		M12 4-pole (m)
Cable length	m	0.5
Outer diameter power supply cable	mm	4.95
Minimum bending radius for fixed installation, power supply	mm	25
Outer diameter data transmission cable	mm	9.5
Minimum bending radius for fixed installation, data transmission	mm	95
Recommended controllers/drivers		C-887.5x

The cables fixed to the H-811.I2 are 0.5 m long respectively.

The cables fixed to the H-811.I2 are not drag chain compatible.

Connecting cables are not included in the scope of delivery and must be ordered separately.

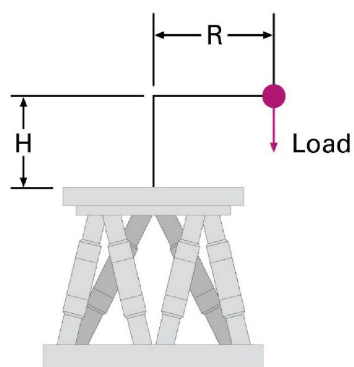
Ask about customized versions.

When measuring position specifications, typical velocity is used. The data is included in the delivery of the product in the form of a measurement report and is stored at PI.

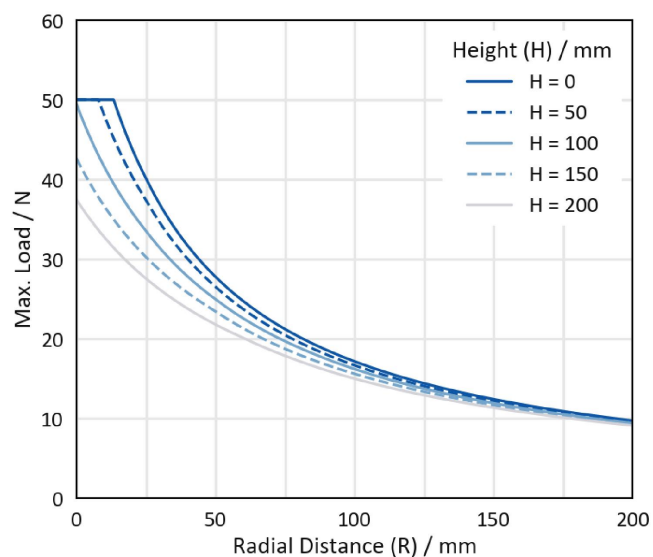
The maximum travel ranges of the individual coordinates (X, Y, Z, θX, θY, θZ) are interdependent. The data for each axis shows its maximum travel range when all other axes are in the zero position of the nominal travel range and the default coordinate system is in use, or rather when the pivot point is set to 0,0,0.

At PI, technical data is specified at 22 ±3 °C. Unless otherwise stated, the values are for unloaded conditions. Some properties are interdependent. The designation "typ." indicates a statistical average for a property; it does not indicate a guaranteed value for every product supplied. During the final inspection of a product, only selected properties are analyzed, not all. Please note that some product characteristics may deteriorate with increasing operating time.

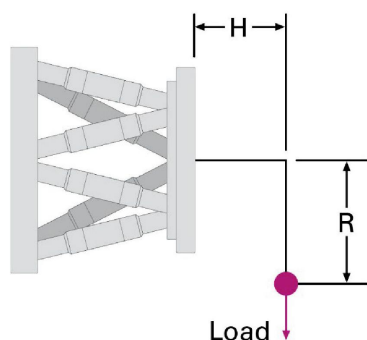
## Drawings / Images



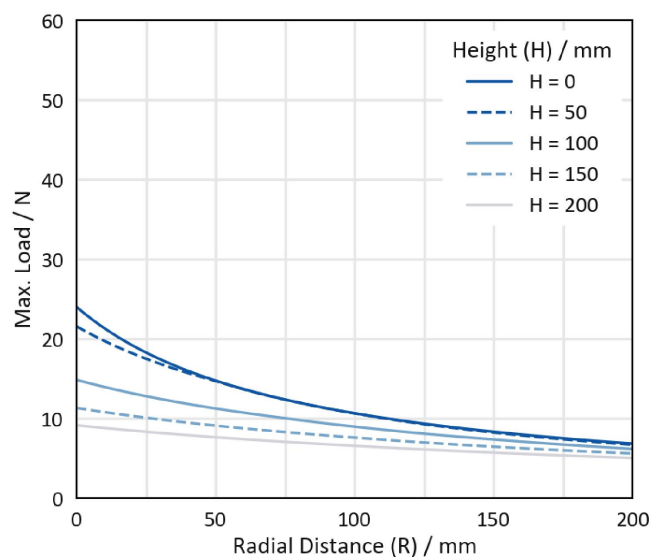
H-811.I2



Maximum loads on the H-811.I2 when mounted horizontally

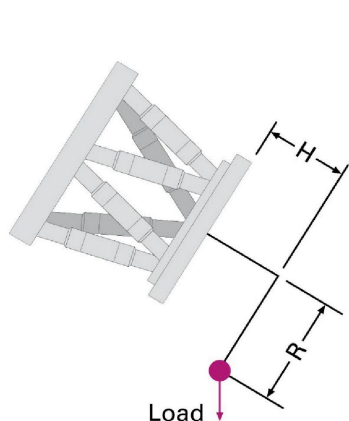


H-811.I2

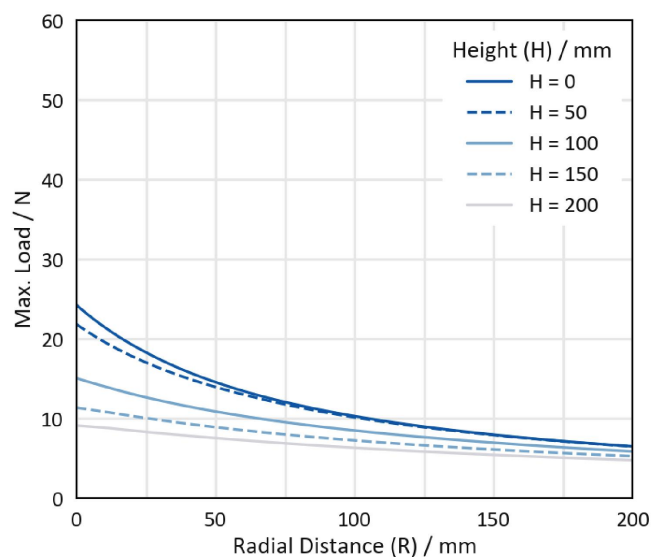


Maximum loads on the H-811.I2 when mounted vertically

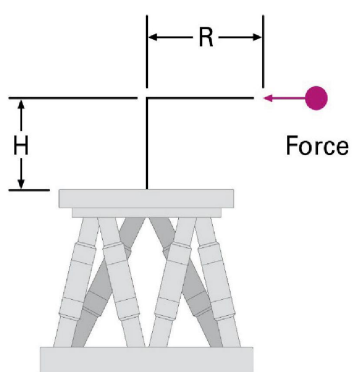
## Drawings / Images



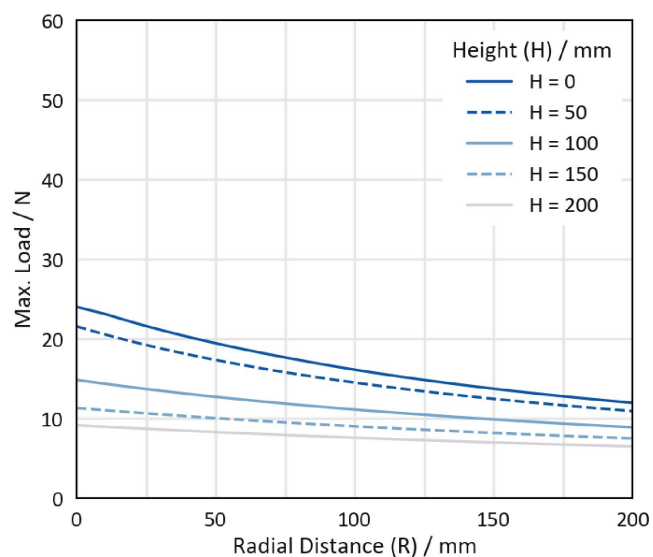
H-811.I2



Maximum loads on the H-811.I2 when mounted at the most unfavorable angle

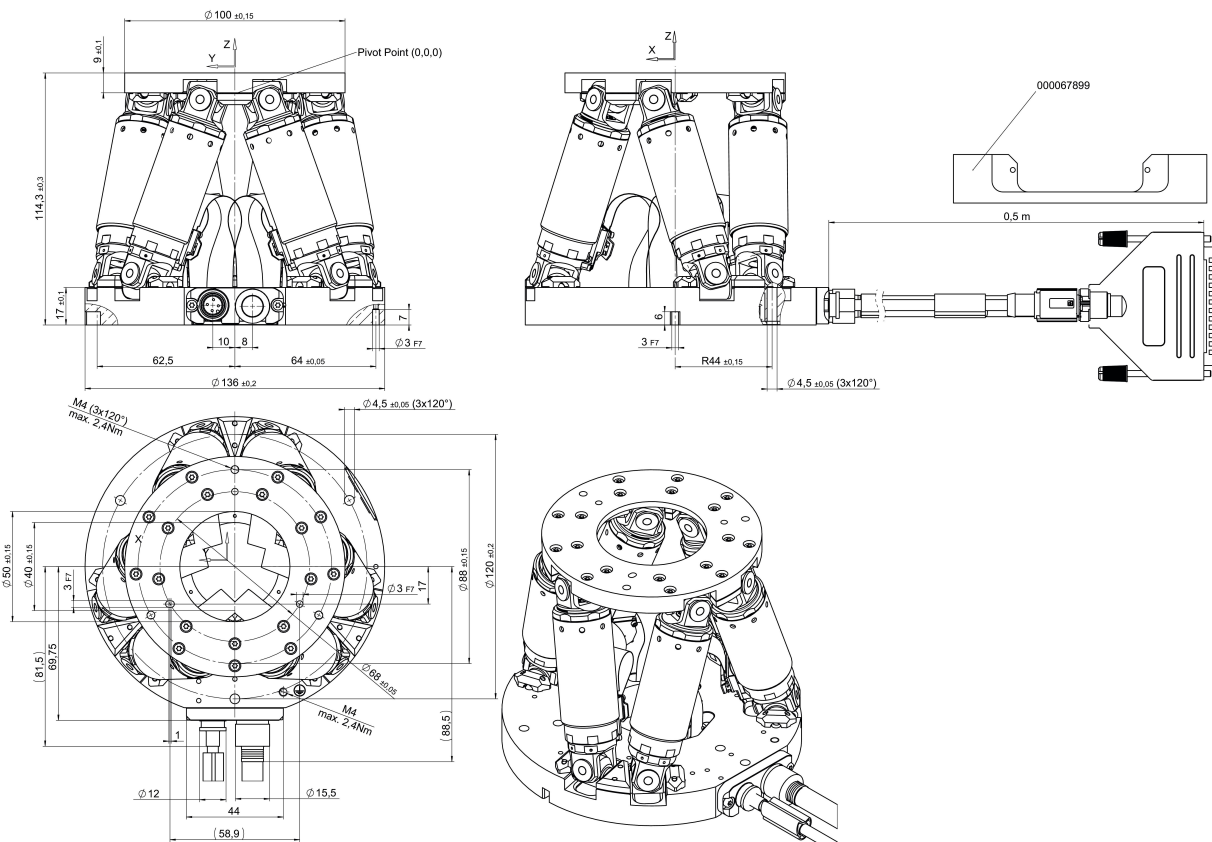


H-811.I2

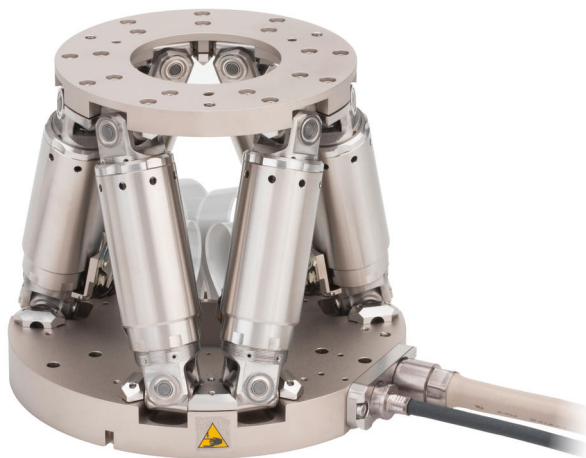


Maximum permissible force acting on the H-811.I2 when mounted horizontally

## Drawings / Images



H-811.I2, dimensions in mm, at zero position of nominal travel range. Note that a comma is used in the drawings instead of a decimal point.



View of H-811 with cable outlet

## Order Information

### **H-811.I2**

Miniature hexapod; BLDC motor; 5 kg payload; 20 mm/s maximum velocity; 0.5 m cable length. Connecting cables are not included in the scope of delivery and must be ordered separately.