Hexapod for Industrial Applications

Compact, Robust and Precise

H-815

- Safe handling and operation thanks to integrated brakes
- Avoidance of homing motion due to absolute encoder
- Long service life thanks to robust design
- Easy integration due to compact design
- Easy cable management with pluggable cables

Highest Robustness in Compact Installation Space
The parallel-kinematic arrangement enables the hexapod to perform motion in 6 axes in an extremely compact design. The industrial hexapod reaches velocities of up to 20 mm/s and offers high precision: minimum incremental motion of 0.05 µm and repeatability of ±0.06 µm. The maximum travel is ±20 mm in the linear axes and ±16° in the rotary axes. In addition, the system provides reliable positioning with payloads up to 10 kg. Thanks to its integrated brakes, this hexapod offers maximum safety and robustness in a compact installation space. The absolute encoder enables immediate operation without referencing move, increasing efficiency and process reliability with high positioning accuracy.

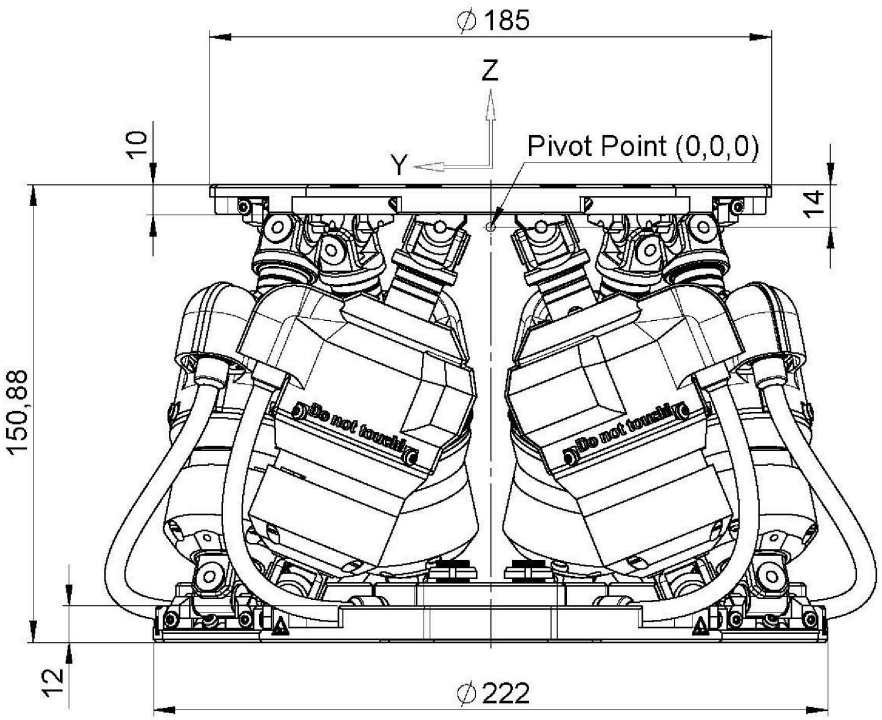
Application fields
The H-815 hexapod is a high-precision, multi-axis motion solution for demanding alignment processes in photonics. With its high precision and repeatability, the H-815 is ideal for aligning the smallest components, such as lenses or other optical components. The hexapod performs complex positioning tasks quickly, accurately, and reproducibly in six degrees of freedom.
The industrial hexapod's robust design provides exceptional durability and reliability. The H-815 is designed for permanent use in industrial automation and assembly processes in demanding environments. At the same time, the H-815 increases the productivity of complex manufacturing and metrology processes.

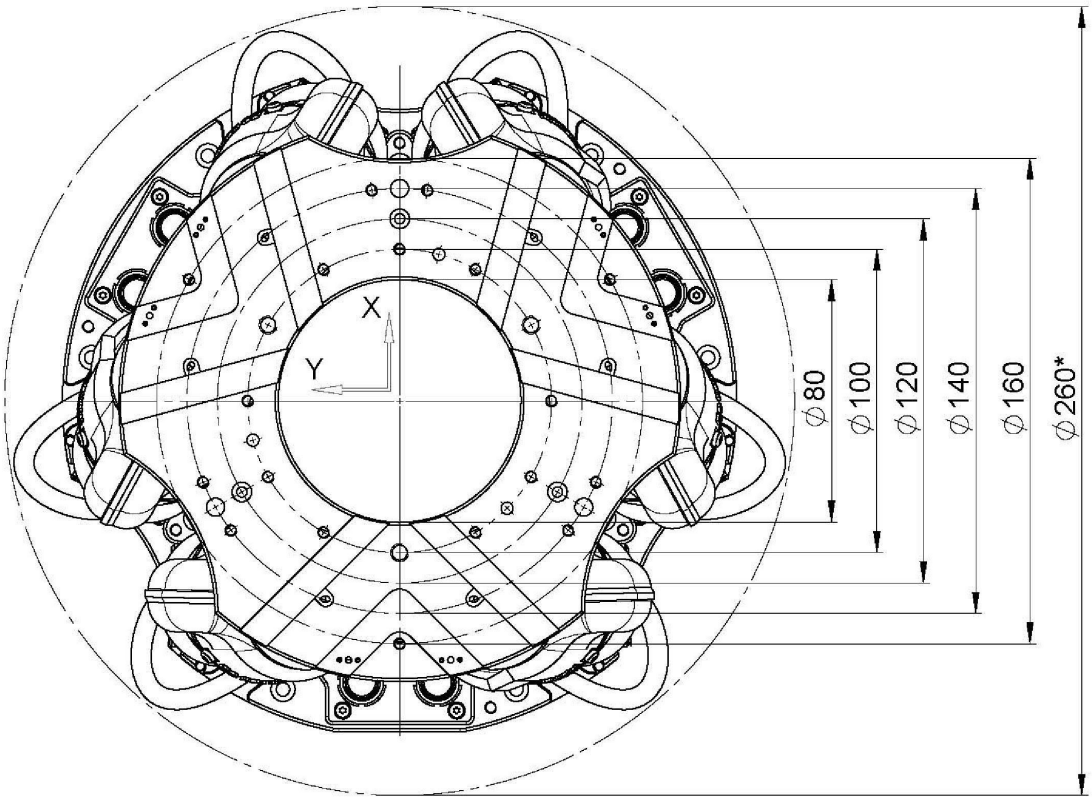
Order Information

H-815.D6A3P
Hexapod for industrial applications; BLDC motor; 10 kg payload; 20 mm/s maximum velocity; absolute measuring encoder. Connecting cables are not included in the scope of delivery and must be ordered separately.

H-815 hexapod with struts 1 to 3 connected to the controller

Drawings





H-815, dimensions in mm, at zero position of nominal travel range. Note that a comma is used in the drawings instead of a decimal point.
*Max. footprint with cables can vary.

Motion	Unit		H-815.D6A3P
Active axes			X | Y | Z | θX | θY | θZ
Travel range in X	mm		±20
Travel range in Y	mm		±20
Travel range in Z	mm		±10
Rotation range in θX	°		±9
Rotation range in θY	°		±9
Rotation range in θZ	°		±16
Maximum velocity in X	mm/s		20
Recommended velocity in X	mm/s		15
Maximum velocity in Y	mm/s		20
Recommended velocity in Y	mm/s		15
Maximum velocity in Z	mm/s		20
Recommended velocity in Z	mm/s		15
Maximum angular velocity in θX	mrad/s		—
Recommended angular velocity in θX	mrad/s		—
Maximum angular velocity in θY	mrad/s		—
Recommended angular velocity in θY	mrad/s		—
Maximum angular velocity in θZ	mrad/s		—
Recommended angular velocity in θZ	mrad/s		—
Amplitude-frequency product in X	mm·Hz		9
Amplitude-frequency product in Y	mm·Hz		8
Amplitude-frequency product in Z	mm·Hz		3.4
Amplitude-frequency product in θX	°·Hz		2.97
Amplitude-frequency product in θY	°·Hz		2.97
Amplitude-frequency product in θZ	°·Hz		6.88
Amplitude-frequency² product in X	mm·Hz²		91.2
Amplitude-frequency² product in Y	mm·Hz²		91.2
Amplitude-frequency² product in Z	mm·Hz²		—
Amplitude-frequency² product in θX	°·Hz²		—
Amplitude-frequency² product in θY	°·Hz²		—
Amplitude-frequency² product in θZ	°·Hz²		—
Amplitude error	%	Max.	—

Positioning	Unit	Tolerance	H-815.D6A3P
Minimum incremental motion in X	µm	Typ.	0.1
Minimum incremental motion in Y	µm	Typ.	0.1
Minimum incremental motion in Z	µm	Typ.	0.05
Minimum incremental motion in θX	µrad	Typ.	3
Minimum incremental motion in θY	µrad	Typ.	3
Minimum incremental motion in θZ	µrad	Typ.	3
Unidirectional repeatability in X	µm	Typ.	±0.15
Unidirectional repeatability in Y	µm	Typ.	±0.15
Unidirectional repeatability in Z	µm	Typ.	±0.06
Unidirectional repeatability in θX	µrad	Typ.	±2
Unidirectional repeatability in θY	µrad	Typ.	±2
Unidirectional repeatability in θZ	µrad	Typ.	±3
Backlash in X	µm	Typ.	2
Backlash in Y	µm	Typ.	2
Backlash in Z	µm	Typ.	0.1
Backlash in θX	µrad	Typ.	—
Backlash in θY	µrad	Typ.	—
Backlash in θZ	µrad	Typ.	—
Integrated sensor			Absolute rotary encoder, multi-turn

Drive Properties	Unit		H-815.D6A3P
Drive type			Brushless DC motor
Nominal voltage	V		24
Maximum power consumption	W		—
Short-term maximum operating frequency	Hz		—

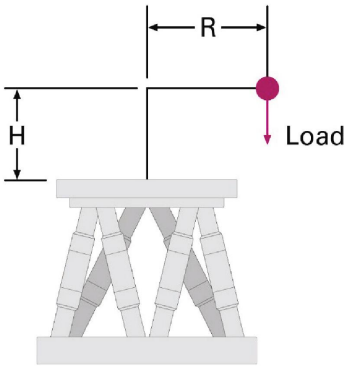
Mechanical Properties	Unit		H-815.D6A3P
Stiffness in X	N/µm		0.7
Stiffness in Y	N/µm		0.7
Stiffness in Z	N/µm		8
Maximum load capacity, base plate horizontal	kg		10
Maximum load capacity, base plate in any orientation	kg		4
Maximum holding force, base plate horizontal	N		100
Maximum holding force, base plate in any orientation	N		40
Overall mass	kg		—
Material			Aluminum

Miscellaneous	Unit		H-815.D6A3P
Operating temperature range	°C		-10 to 50
Vacuum class	hPa		—
Connector for data transmission			HD D-sub 78 (m)
Connector for supply voltage			M12 4-pole (m)
Recommended controllers/ drivers			C-887.5x

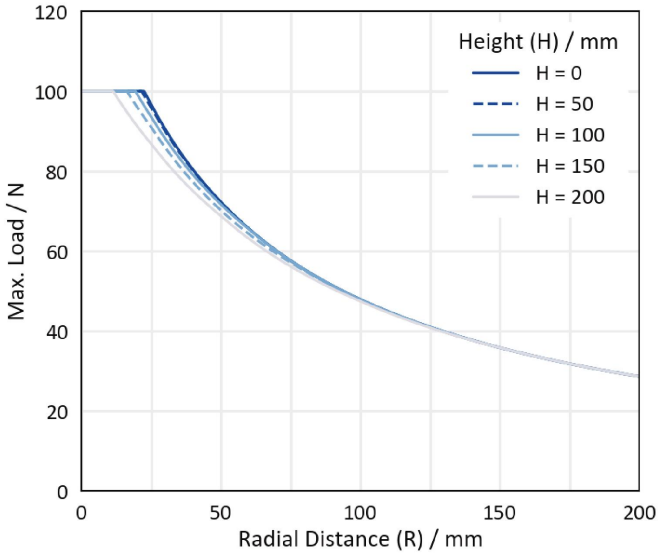
When measuring position specifications, typical velocity is used. The data is included in the delivery of the product in the form of a measurement report and is stored at PI. The maximum travel ranges of the individual coordinates (X, Y, Z, θX, θY, θZ) are interdependent. The data for each axis shows 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

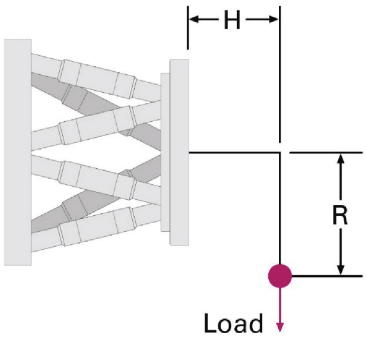


H-815.D6A3P

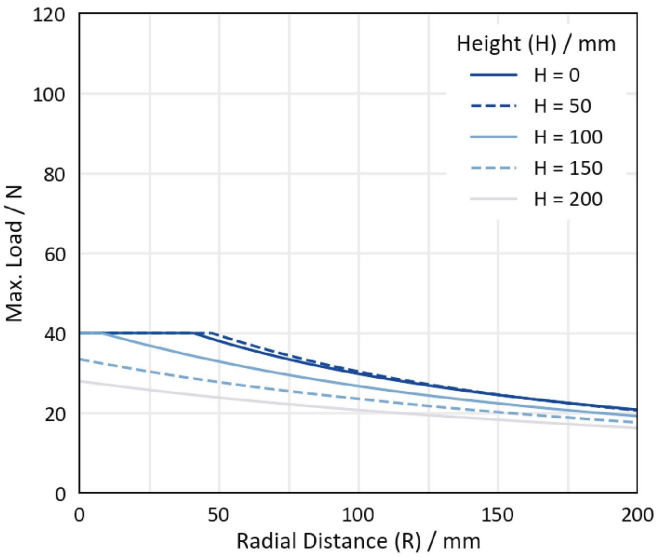


Maximum loads on the H-815.D6A3P when mounted horizontally

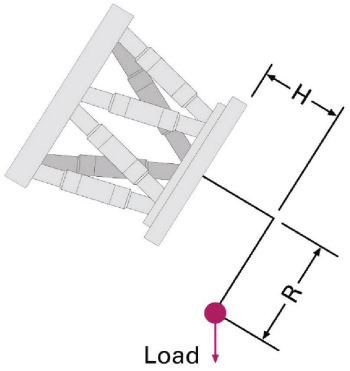
Drawings / Images



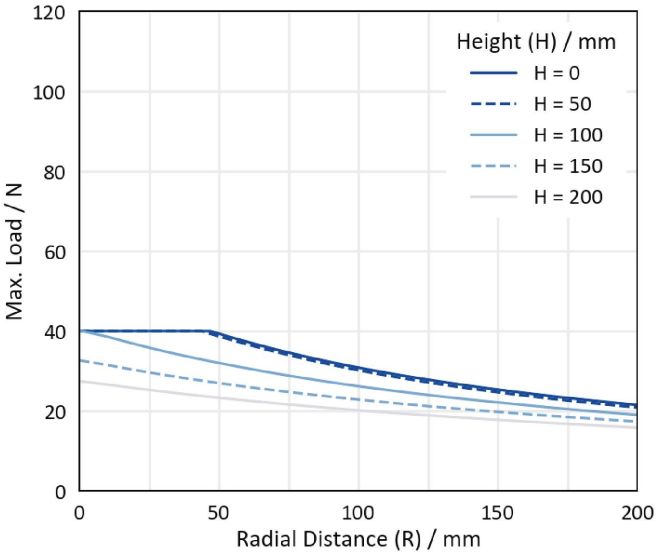
H-815.D6A3P



Maximum loads on the H-815.D6A3P when mounted vertically

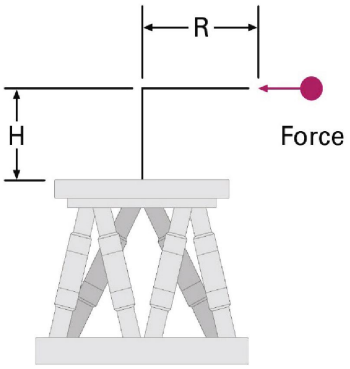


H-815.D6A3P

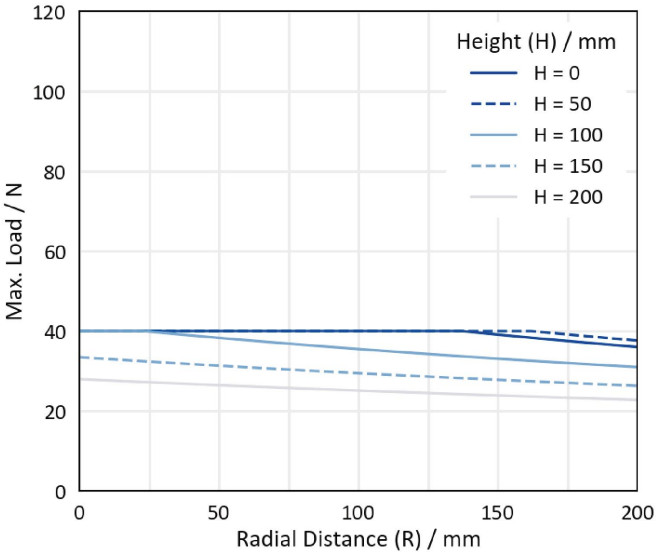


Maximum loads on the H-815.D6A3P when mounted at the most unfavorable angle

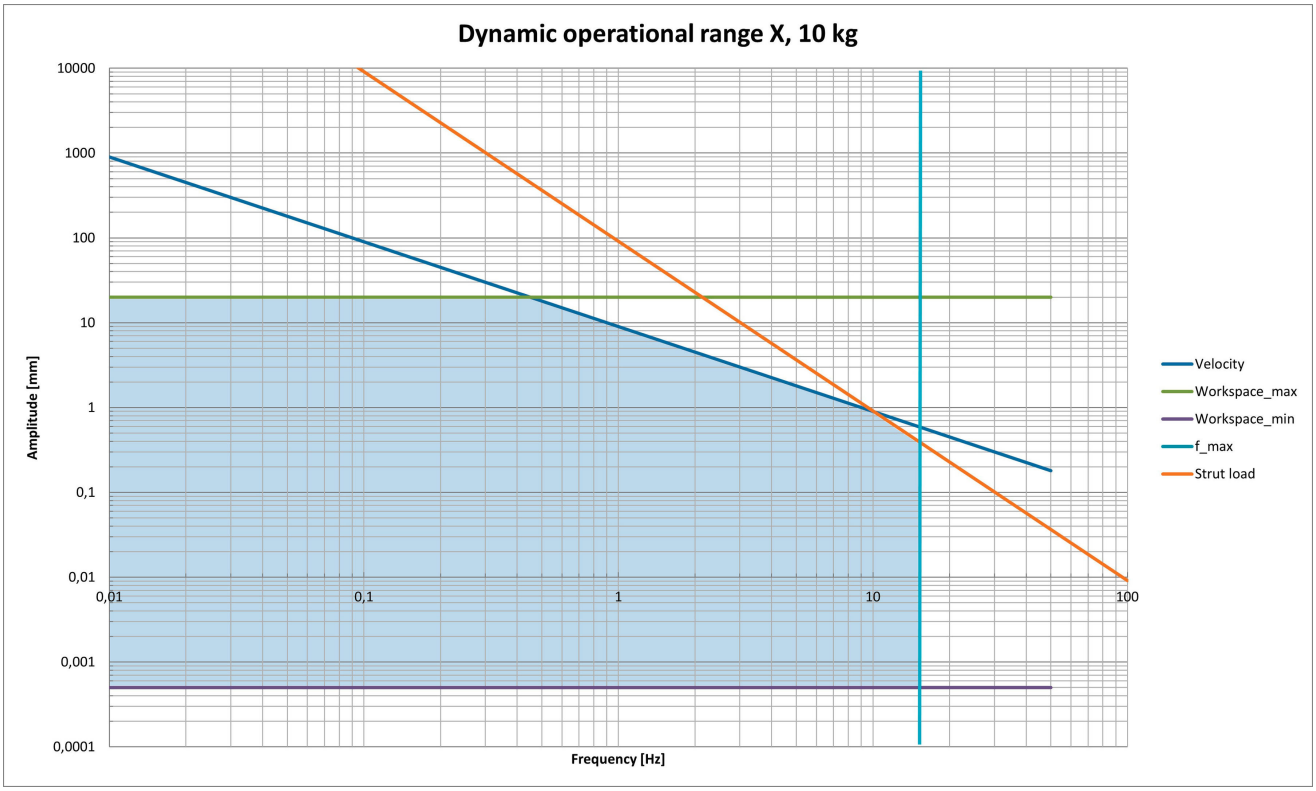
Drawings / Images



H-815.D6A3P

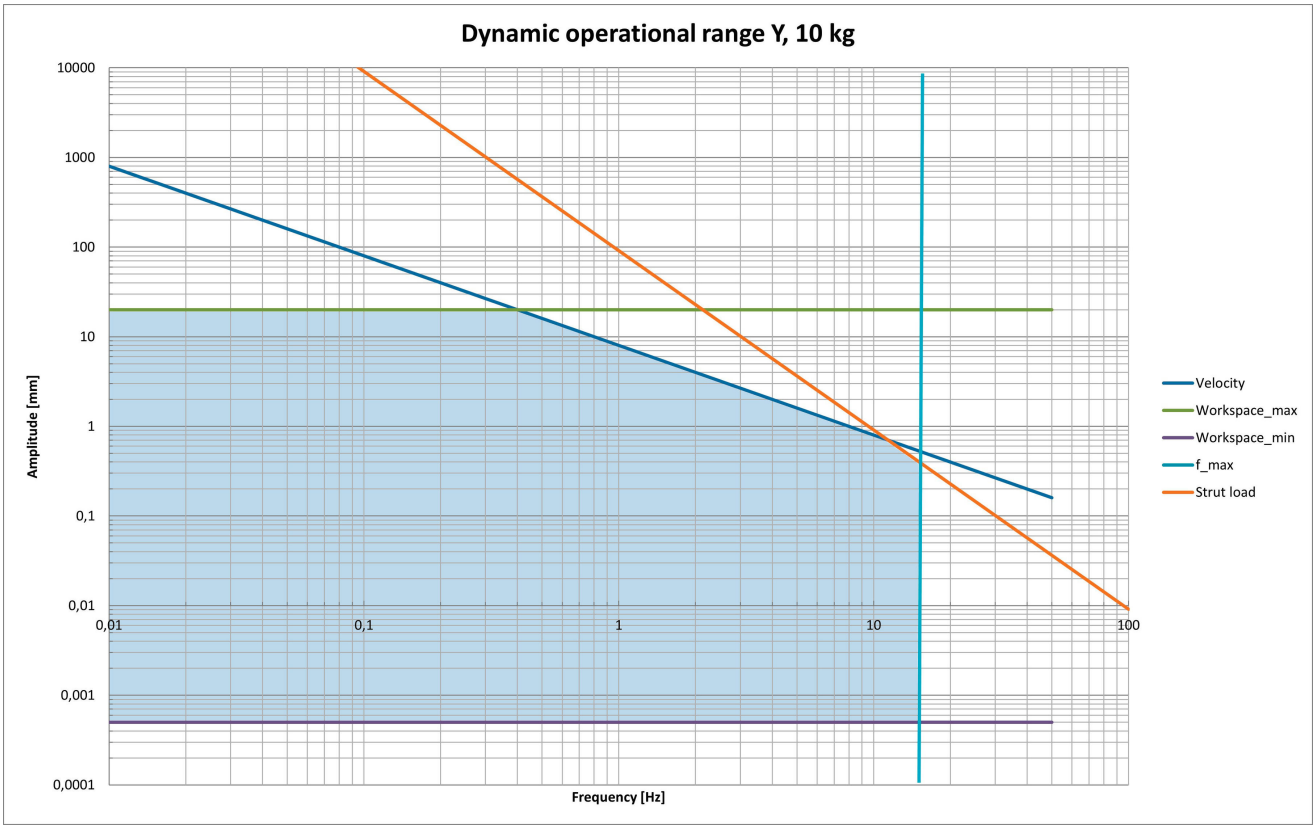


Maximum permissible force acting on the H-815.D6A3P when mounted horizontally

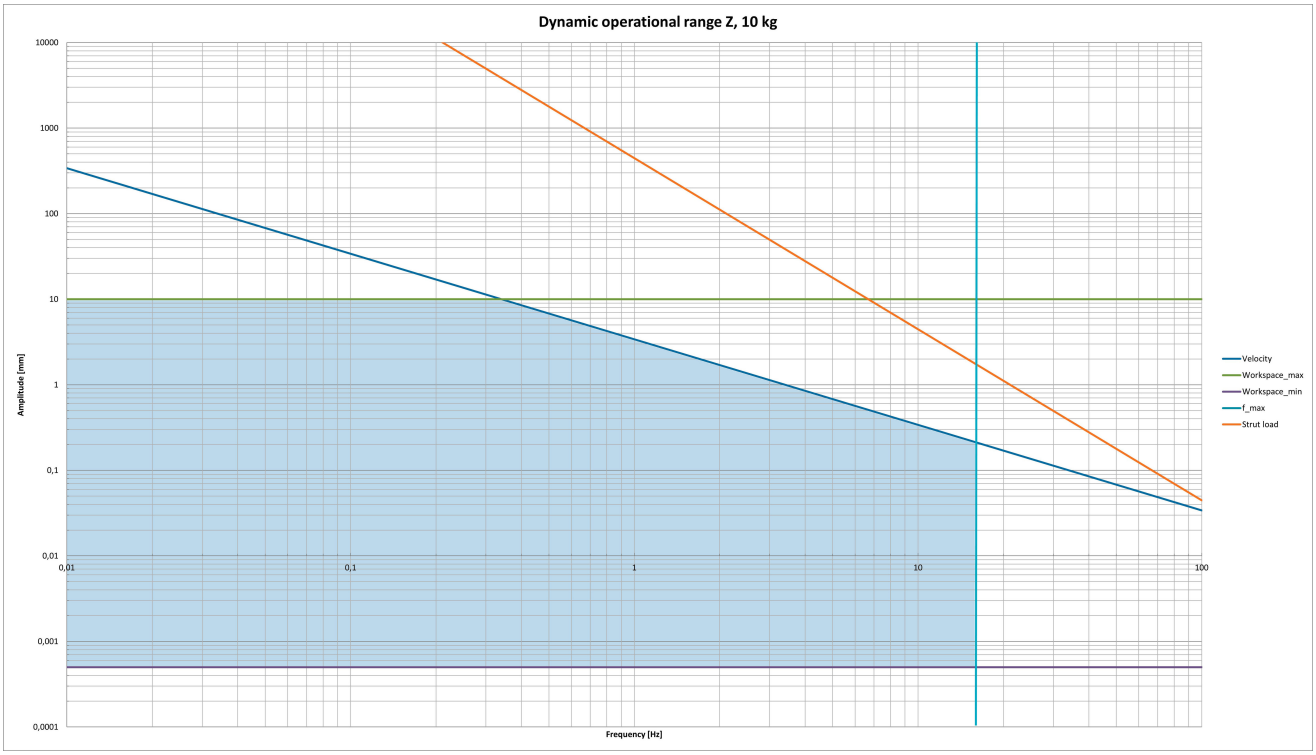


Dynamic working range of the H-815.D6A3P,X, 10 kg

Drawings / Images

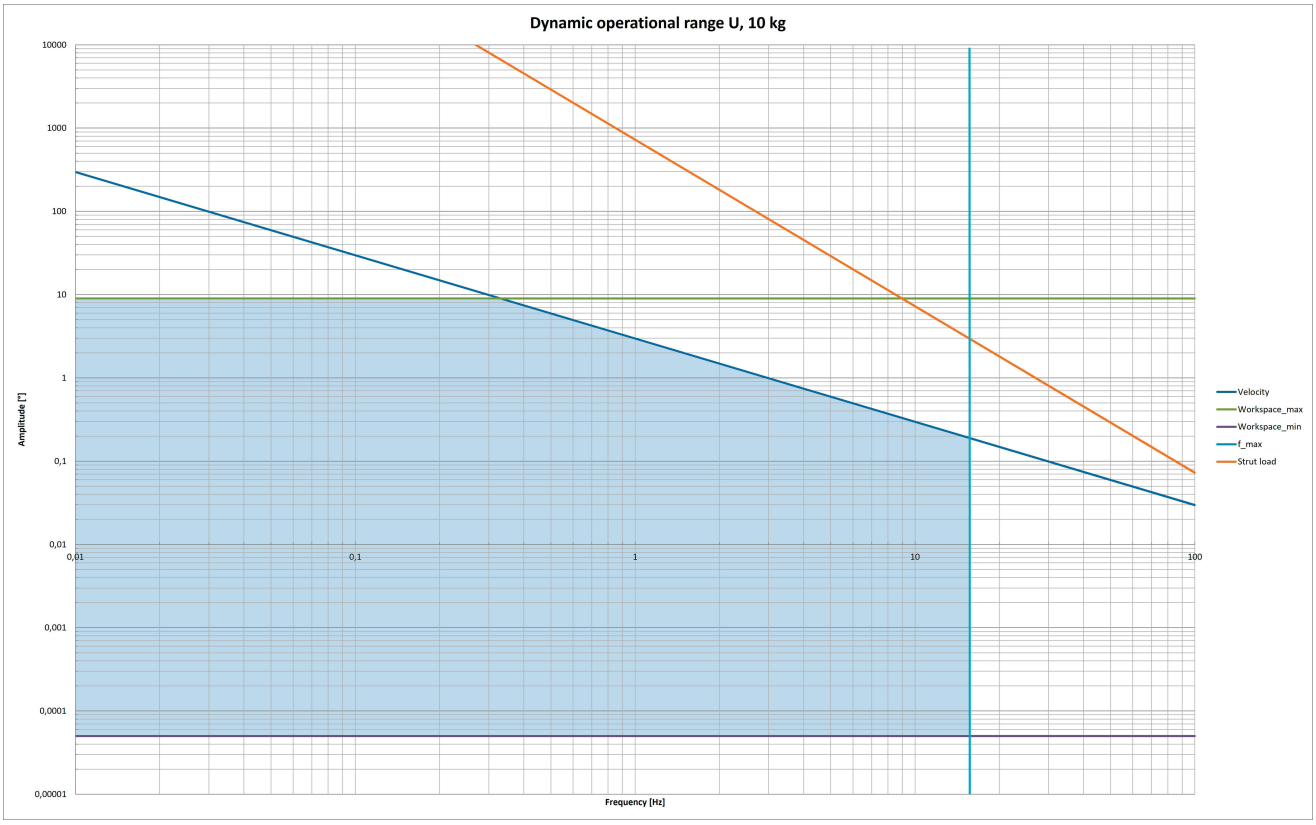


Dynamic working range of the H-815.D6A3P, Y, 10 kg



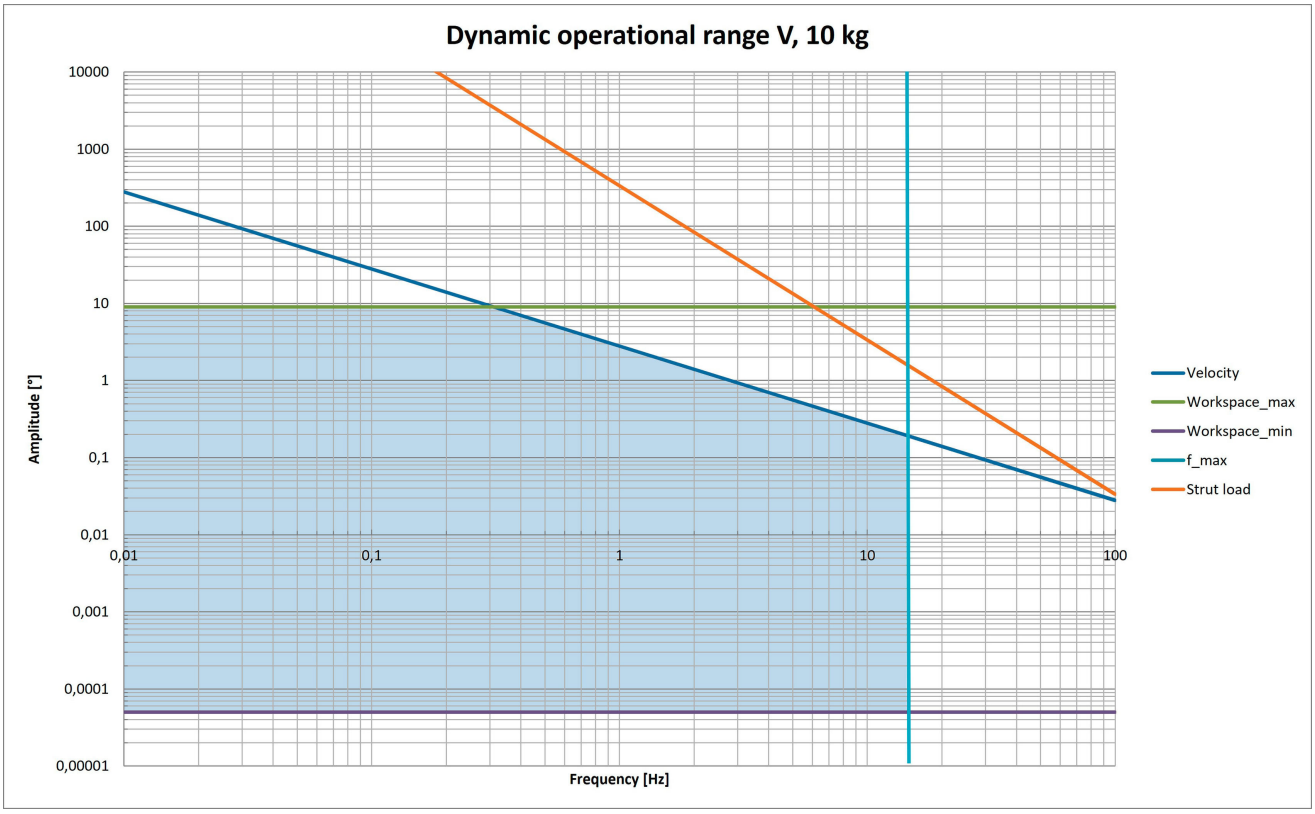
Dynamic working range of the H-815.D6A3P, Z, 10 kg

Drawings / Images



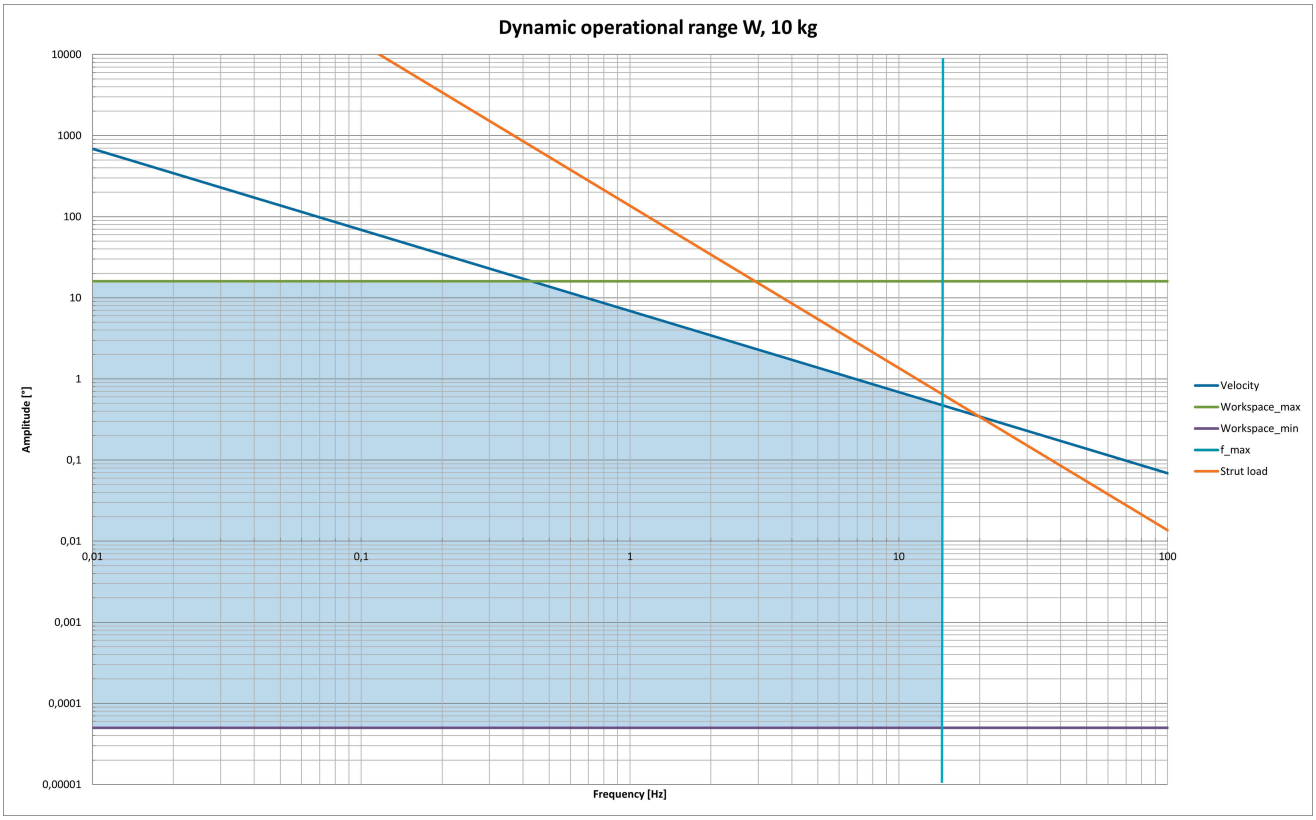
Dynamic working range of the H-815.D6A3P, U (ΘX), 10 kg

Drawings / Images



Dynamic working range of the H-815.D6A3P, V (ΘY), 10 kg

Drawings / Images



Dynamic working range of the H-815.D6A3P, W (ϴZ), 10 kg