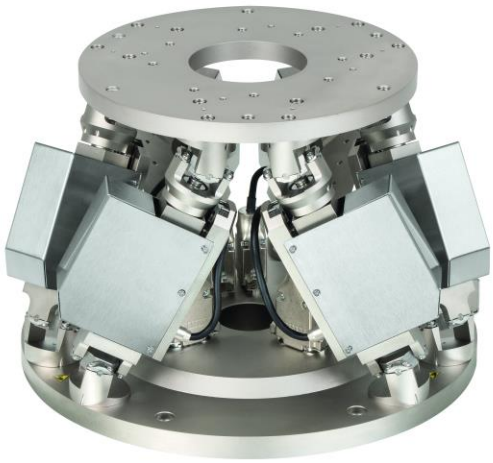
6-Axis Hexapod

Compact and Precise



H-824

- Load capacity to 10 kg, self-locking version
- Travel ranges to 45 mm / 25°
- Min. incremental motion to 0.3 µm
- Repeatability to ±0.1 µm / ±2 µrad
- Velocity to 25 mm/s
- Vacuum-compatible versions available

Precision-class 6-axis positioning system

Parallel-kinematic design for six degrees of freedom making it significantly more compact and stiff than serial-kinematic systems, higher dynamic range, no moved cables: Higher reliability, reduced friction. Vacuum-compatible versions to 10^{-6} hPa are available

Compact due to folded drive design

Fields of application

Research and industry, standard and vacuum environments. For micromanipulation, biotechnology, semiconductor manufacturing

Specifications

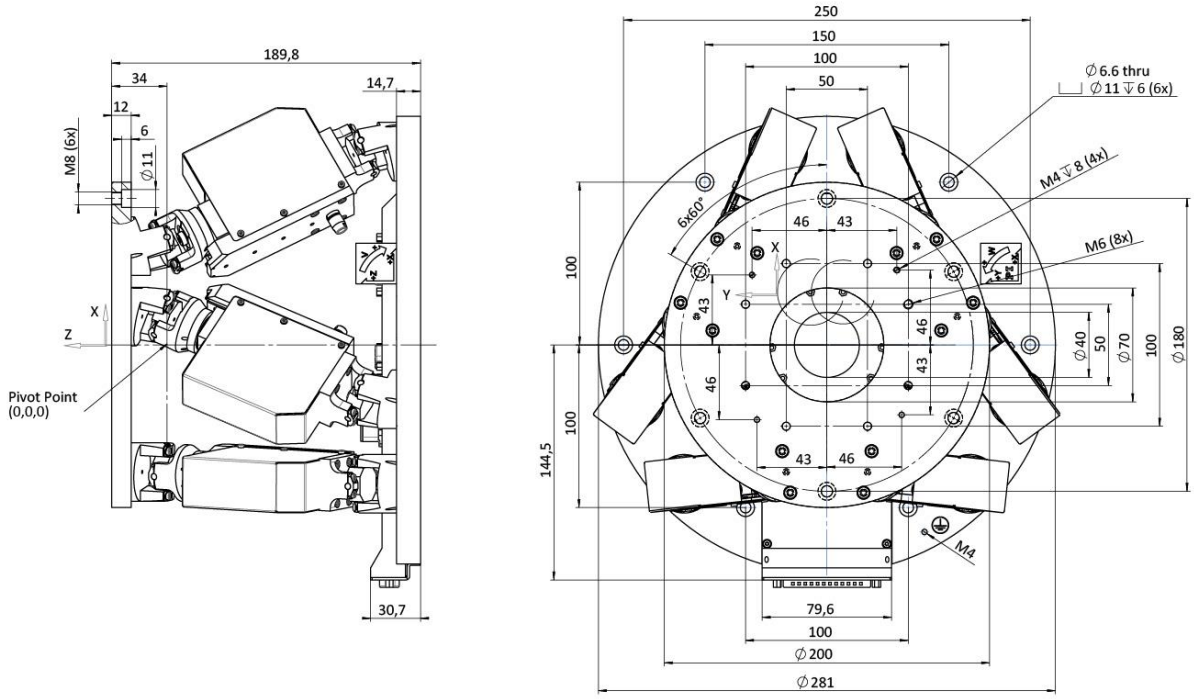
Motion and positioning	H-824.G2 / G2V**	H-824.D2 / D2V**	Unit	Tolerance
	for higher resolution and load	for higher velocity		
Active axes	X, Y, Z, θ_X, θ_Y, θ_Z	X, Y, Z, θ_X, θ_Y, θ_Z		
Travel range* X, Y	±22.5	±22.5	mm	
Travel range* Z	±12.5	±12.5	mm	
Travel range* θ_X, θ_Y	±7.5	±7.5	°	
Travel range* θ_Z	±12.5	±12.5	°	
Actuator design resolution	0.007	0.5	µm	
Minimum incremental motion X, Y, Z	0.3	2; 2; 1	µm	typ.
Minimum incremental motion θ_X, θ_Y, θ_Z	3.5	12; 12; 14	µrad	typ.
Backlash X, Y	2; 2 / 5; 5	1.5 / 3	µm	typ.
Backlash Z	0.7 / 1.5	1 / 1.5	µm	typ.
Backlash θ_X, θ_Y	14 / 30	15 / 20	µrad	typ.
Backlash θ_Z	17 / 45	30 / 60	µrad	typ.
Repeatability X, Y	±0.25 / ±0.4	±0.5	µm	typ.
Repeatability Z	±0.1	±0.15	µm	typ.
Repeatability θ_X, θ_Y	±2	±3	µrad	typ.
Repeatability θ_Z	±2 / ±3	±2.5	µrad	typ.
Max. velocity X, Y, Z	1 / 0.5	25 / 12.5	mm/s	
Max. velocity θ_X, θ_Y, θ_Z	11 / 5.5	270 / 135	mrad/s	
Typ. Velocity X, Y, Z	0.5 / 0.2	10 / 5	mm/s	
Typ. Velocity θ_X, θ_Y, θ_Z	5.5 / 2.3	55 / 28	mrad/s	

Mechanical properties	H-824.G2 / G2V**	H-824.D2 / D2V**	Unit	Tolerance
Stiffness X, Y	1.7	1.7	N/µm	
Stiffness Z	7	7	N/µm	
Load capacity, horizontal base plate	10 / 5	5 / 2.5	kg	max.
Load capacity, base plate in any orientation	5 / 2.5	2.5 / 1.25	kg	max.
Holding force, power off, horizontal base plate	100 / 50	15	N	max.
Holding force, power off, base plate in any orientation	50 / 25	5	N	max.
Motor Type	DC gear motor	DC motor		

Miscellaneous	H-824.G2 / G2V**	H-824.D2 / D2V**	Unit	Tolerance
Operating temperature range	-10 to 50	-10 to 50	°C	
Material	Aluminum	Aluminum		
Mass	8	8	kg	±5 %
Cable length	3	3	m	±10 mm
Recommended controller	C-887.5x	C-887.5x		

Technical data specified at 20±3 °C.
* The travel ranges of the individual coordinates (X, Y, Z, θ_X, θ_Y, θ_Z) are interdependent. The data for each axis in this table shows its maximum travel range, where all other axes and the pivot point are at the reference position.
** For continuous operation in a vacuum, restrictions on operating parameters may be necessary due to heat generation.
Ask about customized versions.

Drawings / Images



H-824, dimensions in mm

Ordering Information

H-824.G2
Compact hexapod microrobot, gearhead, 1 mm/s, 10 kg load, Sub-D connector, cable set 3 m

H-824.D2
Compact hexapod microrobot, direct drive, 25 mm/s, 5 kg load, Sub-D connector, cable set 3 m

H-824.G2V
Compact hexapod microrobot, gearhead, 0.5 mm/s, 5 kg load, vacuum compatible to 10^{-6} hPa, Sub-D connector, 2 m vacuum-side cable, feedthrough, 3 m air-side cable

H-824.D2V
Compact hexapod microrobot, direct drive, 12.5 mm/s, 2.5 kg load, vacuum compatible to 10^{-6} hPa, Sub-D connector, 2 m vacuum-side cable, feedthrough, 3 m air-side cable