



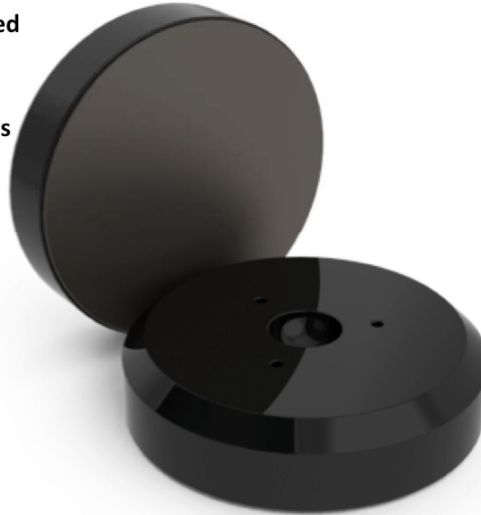
FP Series Flat Pad Air Bearings

Flat Pads

FP Series Flat Pad Air Bearings can be used for modular air bearing construction. Offered in a variety of sizes and load capacities, they are inherently frictionless with no breakaway or running friction.

Applications:

- Positioning
- Scanning
- Metrology
- Inspection
- Calibration
- Clean Rooms



Features:

- Diameters from 1 to 6 in
- Load Capacity from 20 to 900 lbs
- Stictionless/Frictionless
- High Stiffness and Accuracy
- Zero-maintenance - no lubrication
- Cleanroom compatible
- Can be combined for linear, planar or multi-axis positioning
- Nelson Air can offer detailed technical consultations for a variety of applications

Overview

Nelson Air's flat pad air bearings are offered in a variety of sizes, shapes and load capacities, which can easily be used to create custom air bearing systems. Flat pad air bearings operate on flat, nonporous surfaces such as granite, aluminum, glass, and ceramics.

Standard Round Flat Pad Air Bearings

Nelson Air's FP standard round flat pad air bearings are designed for use in any application where frictionless, accurate planar motion is required. The modular nature of flat pad air bearings allow customers to build their own linear and multi-axis air bearing motion systems by combining multiple air bearings. Precision guide surfaces can also be supplied by Nelson Air as well as engineering advice.

Frictionless Motion

The frictionless nature of flat pad air bearings also makes them ideal for planar motion system for satellite simulation. Nelson Air's flat pad air bearings can also be customized to operate at greater flying height, which is ideal for less than perfectly flat surfaces.

Dynamic and Static Performance

Because air bearings are inherently frictionless they do not exhibit breakaway or running friction, even under their maximum loading. Finally, the totally noncontact, clean nature of air bearings means that they are virtually maintenance free and their accuracy won't degrade over time due to wear. Designed to meet the demanding needs of

precision production facilities, these systems are equally suited to laboratory environments where flexibility and ease of use are critical.

Bearing Mounting

Accurate guide surfaces are critical to proper operation of the air bearing. Guide surface flatness must be 0.0002" over the bearing area. Nelson Air offers precision mounting studs for mounting and adjustment of the bearings. For the highest accuracy, we recommend having Nelson Air integrate the bearing onto the mount for testing and adjustment. Nelson Air can also provide accurate guide surfaces made from granite, aluminum, cast iron and other materials.

Customization and Systems

FP Series Flat Pad Air Bearings can be modified with a variety of options to suit any application. In addition, custom size and shapes are available.

Options and Accessories:

- Vacuum Preloading
- Motors, encoders and drives
- XY Multi-Axis Assemblies with precision alignment
- Granite Bases and vibration isolation stands
- Air Handling Assemblies and Fittings

Nelson Air prides itself on providing high quality positioning solutions for its customers. Please contact us for more information.

Nelson Air Corp.

precision air bearing positioning

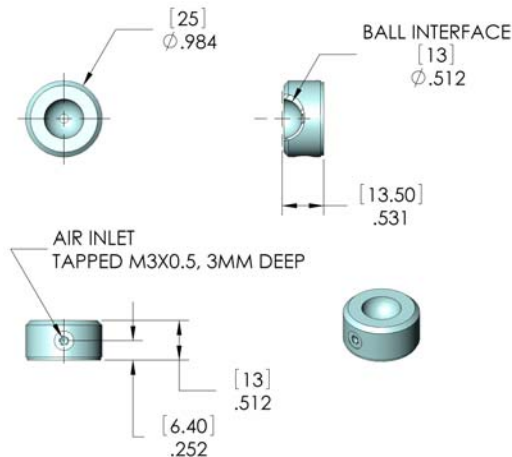
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> Rotary Air Bearing Specifications and Dimensions

Model Number	Diameter	Height	Load Capacity	Stiffness
FP-C-010	1.0" [25mm]	0.5" [12.5mm]	20lbs [88N]	100,000lbs/in [17500 N/mm]
FP-C-015	1.5" [38mm]	0.5" [12.5mm]	50lbs [220N]	160,000lbs/in [28000 N/mm]
FP-C-020	2.0" [50mm]	0.625" [15.8mm]	75lbs [330N]	300,000lbs/in [52500 N/mm]
FP-C-025	2.5" [63mm]	0.625" [15.8mm]	150lbs [660N]	450,000lbs/in [78800 N/mm]
FP-C030	3.0" [76mm]	.875" [22.2mm]	230lbs [1010N]	635,000lbs/in [111200 N/mm]
FP-C-040	4.0" [102mm]	1.0" [25.4mm]	390lbs [1710N]	1,000,000lbs/in [175000 N/mm]
FP-C-050	5.0" [127mm]	1.25" [31.7mm]	625lbs [2780N]	1,450,000lbs/in [254000 N/mm]
FP-C-060	6.0" [152mm]	2.25" [57.2mm]	880lbs [3870N]	2,000,000lbs/in [350000 N/mm]

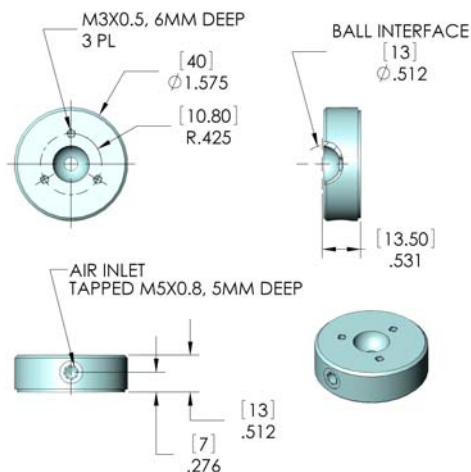
> Bearing Dimensions

FP-C-010



Model	FP-C-010
Load Capacity	20lbs [88N]
Stiffness	100,000lbs/in [17500 N/mm]
Air Consumption	2 scfh
Air Inlet Size	M5-0.8mm
Mounting Hardware	
Mounting Ball Stud	FP-BS-013
Mounting Nut	FP-MN-013
Retainer Plate	FP-RP-013

FP-C-015



Model	FP-C-015
Load Capacity	50lbs [220N]
Stiffness	160,000lbs/in [28000 N/mm]
Air Consumption	2 scfh
Air Inlet Size	M5-0.8mm
Mounting Hardware	
Mounting Ball Stud	FP-BS-013
Mounting Nut	FP-MN-013
Retainer Plate	FP-RP-013

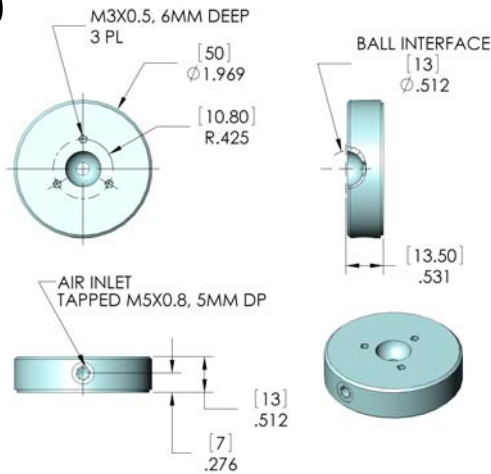
Nelson Air Corp.

precision air bearing positioning

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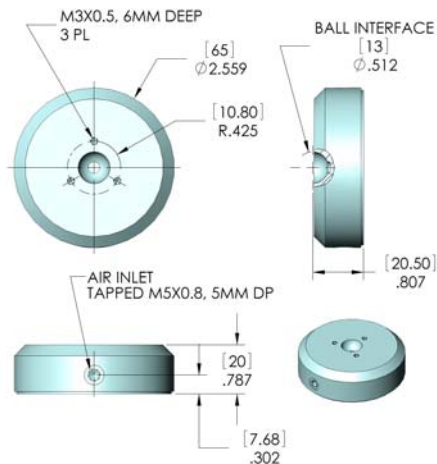
> Bearing Dimensions

FP-C-020



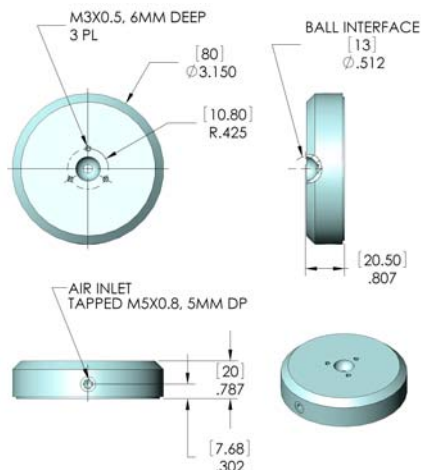
Model	FP-C-020
Load Capacity	75lbs [330N]
Stiffness	300,000lbs/in [52500 N/mm]
Air Consumption	3 scfh
Air Inlet Size	M5-0.8mm
Mounting Hardware	
Mounting Ball Stud	FP-BS-013
Mounting Nut	FP-MN-013
Retainer Plate	FP-RP-013

FP-C-025



Model	FP-C-025
Load Capacity	150lbs [660N]
Stiffness	450,000lbs/in [78800 N/mm]
Air Consumption	4 scfh
Air Inlet Size	M5-0.8mm
Mounting Hardware	
Mounting Ball Stud	FP-BS-013
Mounting Nut	FP-MN-013
Retainer Plate	FP-RP-013

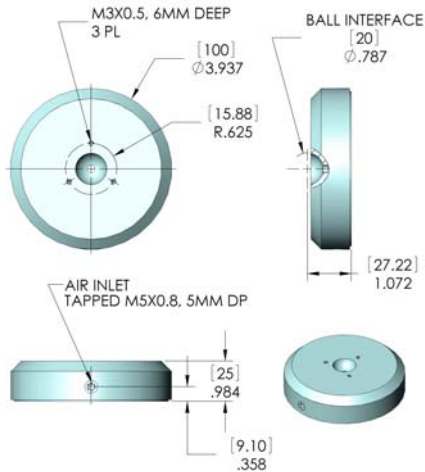
FP-C-030



Model	FP-C-030
Load Capacity	230lbs [1010N]
Stiffness	635,000lbs/in [111200 N/mm]
Air Consumption	6 scfh
Air Inlet Size	M5-0.8mm
Mounting Hardware	
Mounting Ball Stud	FP-BS-013
Mounting Nut	FP-MN-013
Retainer Plate	FP-RP-013

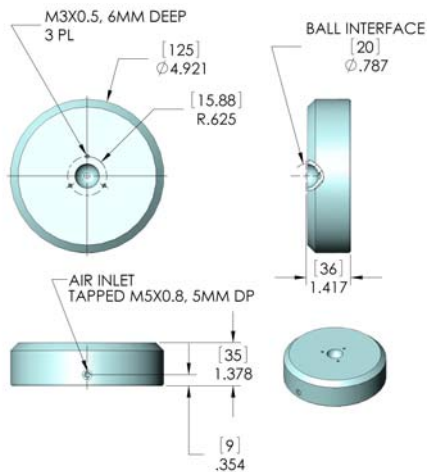
> Bearing Dimensions

FP-C-040



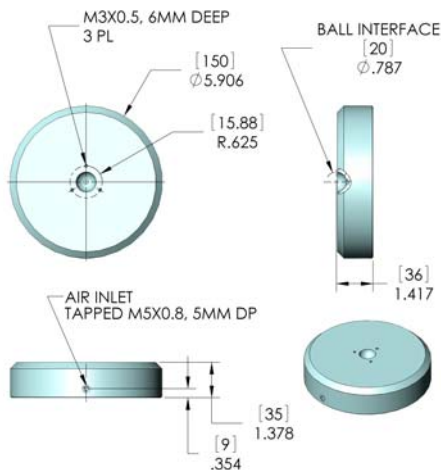
Model	FP-C-040
Load Capacity	390lbs [1710N]
Stiffness	1,000,000lbs/in [175000 N/mm]
Air Consumption	6 scfh
Air Inlet Size	M5-0.8mm
Mounting Hardware	
Mounting Ball Stud	FP-BS-020
Mounting Nut	FP-MN-020
Retainer Plate	FP-RP-020

FP-C-050



Model	FP-C-050
Load Capacity	625lbs [2780N]
Stiffness	1,450,000lbs/in [254000 N/mm]
Air Consumption	8 scfh
Air Inlet Size	M5-0.8mm
Mounting Hardware	
Mounting Ball Stud	FP-BS-020
Mounting Nut	FP-MN-020
Retainer Plate	FP-RP-020

FP-C-060



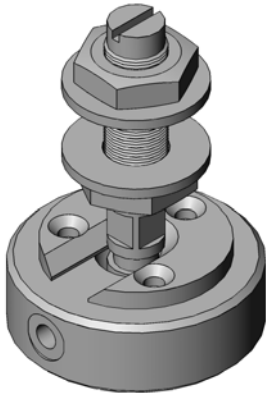
Model	FP-C-060
Load Capacity	880lbs [3870N]
Stiffness	2,000,000lbs/in [350000 N/mm]
Air Consumption	10 scfh
Air Inlet Size	M5-0.8mm
Mounting Hardware	
Mounting Ball Stud	FP-BS-020
Mounting Nut	FP-MN-020
Retainer Plate	FP-RP-020

> Mounting Hardware Dimensions

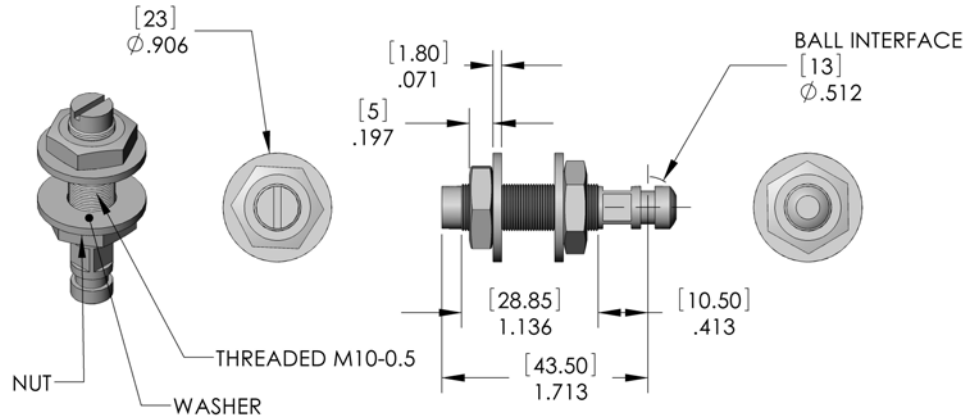
13mm Ball Interface Flat Pad Mounting Hardware

13mm Ball Stud Assembly - FP-BS-013

Custom manufactured fine threaded mounting ball stud allows precision adjustment of the flat pad position.

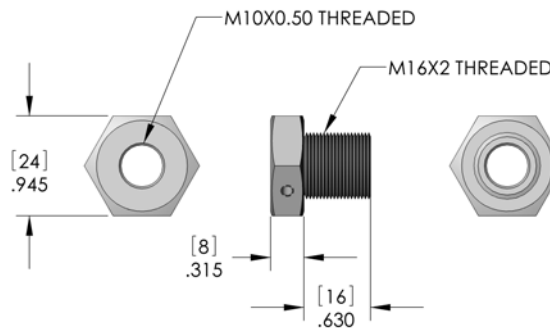


Mounting Assembly for 13mm Ball Interface



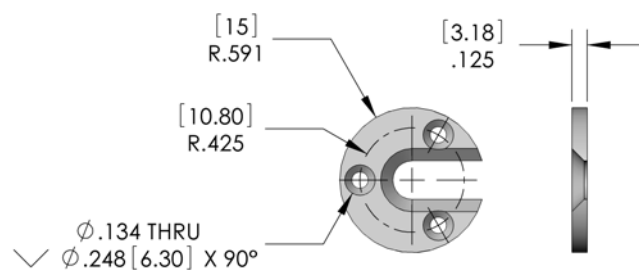
13mm Mounting Nut Assembly - FP-MN-013

Custom mounting nut for fine threaded ball stud threads directly into your mounting bracket and allows precision adjustment of the flat pad position.



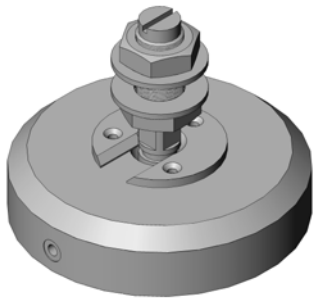
13mm Mounting Nut Assembly - FP-RP-013

Bolts onto the top of the flat pad to hold the flat pad to the ball stud. Not necessary for most applications.



> Mounting Hardware Dimensions

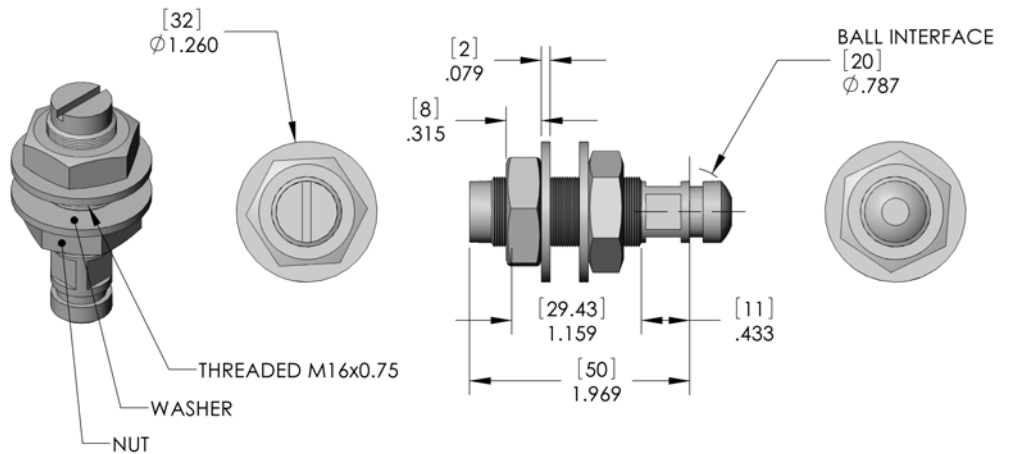
20mm Ball Interface Flat Pad Mounting Hardware



Mounting Assembly for
20mm Ball Interface

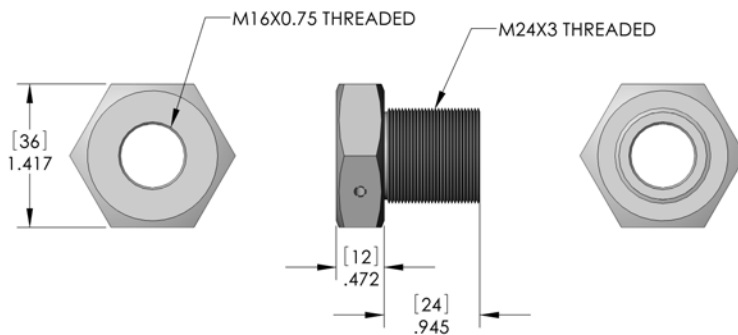
20mm Ball Stud Assembly - FP-BS-020

Custom manufactured fine threaded mounting ball stud allows precision adjustment of the flat pad position.



20mm Mounting Nut Assembly - FP-MN-020

Custom mounting nut for fine threaded ball stud threads directly into your mounting bracket and allows precision adjustment of the flat pad position.



20mm Mounting Nut Assembly - FP-RP-020

Bolts onto the top of the flat pad to hold the flat pad to the ball stud. Not necessary for most applications.

