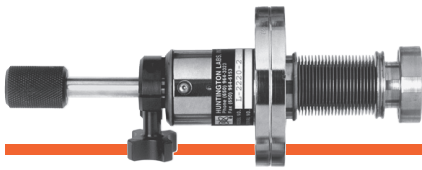




 **Huntington**[®]
Mechanical Laboratories, Inc.

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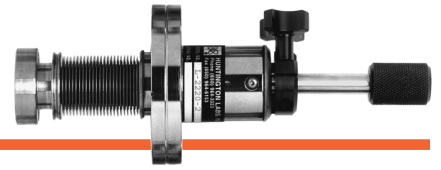
Motion & Positioning Devices **4**



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4 Motion & Positioning Devices



UHV Motion & Positioning Devices

Huntington offers the industry's largest selection of UHV positioning devices. These include angular, linear, and rotational mounting devices, motion feedthroughs, manipulators and accessories.

New Features

A line of long stroke feedthroughs, using rare earth magnets and a much improved version of the VF-169 Series, using Alnico magnets, provides much higher axial force and precision. Huntington patented designs have added improved performance and versatility to manual, pneumatic, and motorized positioners. Standard manipulators have been updated with several functional improvements and some unique new manipulators have been added to the line.

Ultra-high Vacuum Construction

Unless otherwise specified, all Huntington Positioning Devices use AMS type 350 stainless steel welded bellows and permanently lubricated stainless steel bearings. All internal parts exposed to the chamber environment are stainless steel unless indicated otherwise in the specification tables. Huntington products are leak checked on Helium mass spectrometers. Sensitivity is calibrated to be 2×10^{-10} std. Cc/sec.

Flange Options

Positioning devices offered on mini flanges are also available on 2.75 inch Vac-U-Flat flanges, but larger mounting flanges, special custom designed devices or modifications to any standard designs are available upon request.

VF-016 Manual Mini Rotary Feedthrough

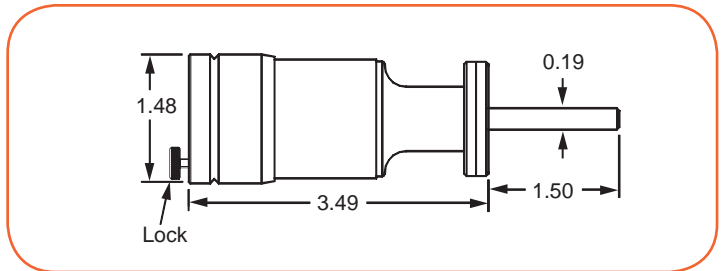


Flange	Description	Wt. Lbs.	Model	Price
1.33	Vac-U-Flat® Flange - Plain Aluminum without dial	0.6	VF-016	\$350.00
2.75	Vac-U-Flat® Flange - Plain Aluminum without dial	1.1	VF-016-A	\$360.00
KF 16	ISO-KF Flange - Plain Aluminum without dial	0.6	VF-016-SF	\$345.00

Note: 0.25 diameter shaft available on request

Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Bakeout Temperature: 200°C
Operating Temperature: -20° to 100°C
Pressure Range: Atmosphere to 1×10^{-11} Torr
Position Lock: Lock screw
Maximum Torque: 100 oz. in.



VF-106 Manual Mini Rotary Feedthrough

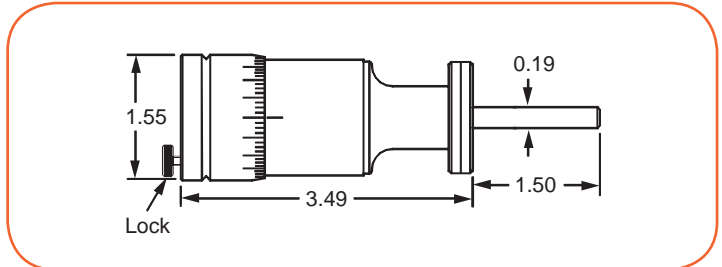


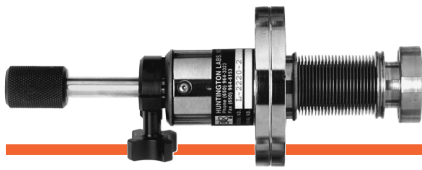
Flange	Description	Wt. Lbs.	Model	Price
1.33	Vac-U-Flat® Flange - Black Anodized Aluminum with Dial	0.6	VF-106	\$395.00
2.75	Vac-U-Flat® Flange - Black Anodized Aluminum with Dial	1.1	VF-106-A	\$400.00
KF 16	ISO-KF Flange - Black Anodized Aluminum with Dial	0.6	VF-106-SF	\$385.00

Note: 0.25 diameter shaft available on request

Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Bakeout Temperature: 200°C
Operating Temperature: -20° to 100°C
Pressure Range: Atmosphere to 1×10^{-11} Torr
Position Lock: Lock screw
Maximum Torque: 125 oz. in.
Resolution: 5°

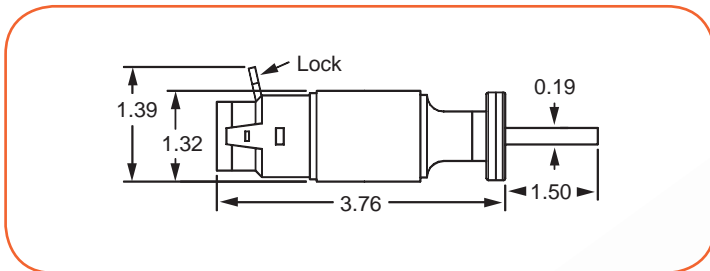




VF-106-3C Manual Mini Rotary Feedthrough

Flange	Description	Wt. Lbs.	Model	Price
1.33	Vac-U-Flat® Flange - Black Anodized Aluminum with Three-Digit Counter	0.6	VF-106-3C	\$450.00
2.75	Vac-U-Flat® Flange - Black Anodized Aluminum with Three-Digit Counter	1.1	VF-106-3C-A-3C	\$460.00
KF 16	ISO-KF Flange - Black Anodized Aluminum with Three-Digit Counter	0.6	VF-106-3C-SF	\$440.00

Note: 0.25 diameter shaft available on request



Specifications

- Sealing Mechanism:** Welded bellows
- Material Exposed to Vacuum:** Stainless Steel
- Bakeout Temperature:** 200°C (with counter removed)
- Operating Temperature:** -20° to 70°C
- Pressure Range:** Atmosphere to 1×10^{-11} Torr
- Position Lock:** Lock screw
- Maximum Torque:** 20 oz. in. (limited by plastic counter)
- Resolution (Counter):** 3.6°



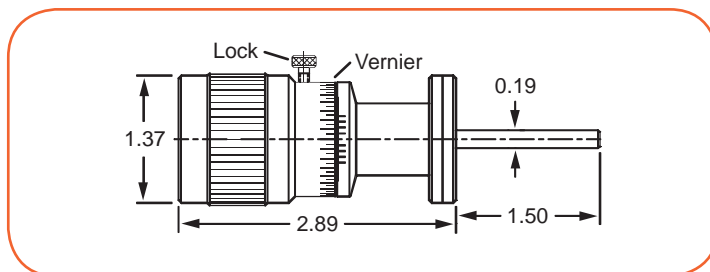
VF-1160 Manual Mini Rotary Feedthrough

Flange	Description	Wt. Lbs.	Model	Price
1.33	Vac-U-Flat® Flange with Dial - All Stainless Steel	0.6	VF-1160	\$490.00
2.75	Vac-U-Flat® with Dial - All Stainless Steel	1.1	VF-1160-A	\$498.00
KF 16	ISO Type Flange with Dial - All Stainless Steel	0.6	VF-1160-SF	\$480.00

Note: 0.25 diameter shaft available on request



The **VF-1160** is the industry's smallest rotary motion feedthrough with the greatest maximum torque capability, and is constructed of stainless steel throughout.

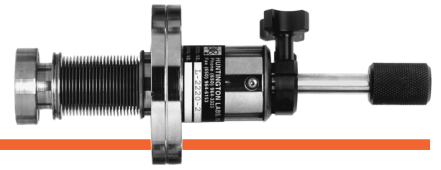


Specifications

- Sealing Mechanism:** Welded bellows
- Material Exposed to Vacuum:** Stainless Steel
- Bakeout Temperature:** 200°C
- Operating Temperature:** -20° to 100°C
- Pressure Range:** Atmosphere to 1×10^{-11} Torr
- Position Lock:** Lock screw
- Maximum Torque:** 175 oz. in.
- Resolution (Vernier):** 1°



4 Motion & Positioning Devices



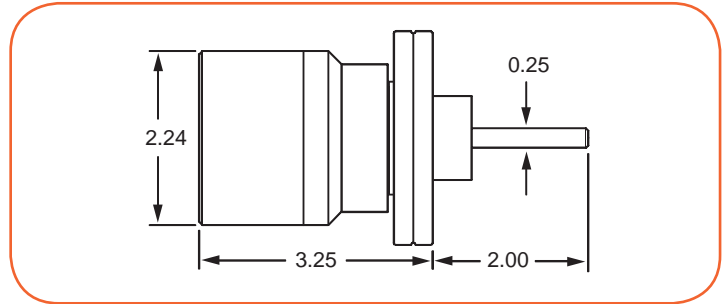
VF-161 Manual Rotary Feedthrough

Flange	Description	Wt. Lbs.	Model	Price
2.75	Vac-U-Flat® Flange	3.00	VF-161	\$700.00
KF 40	ISO-KF Flange	2.25	VF-161-SF	\$695.00

Note: 0.375 diameter shaft available on request

Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Bakeout Temperature: 200°C
Operating Temperature: -20° to 100°C
Pressure Range: Atmosphere to 1×10^{-11} Torr
Maximum Torque: 5 lb. ft.



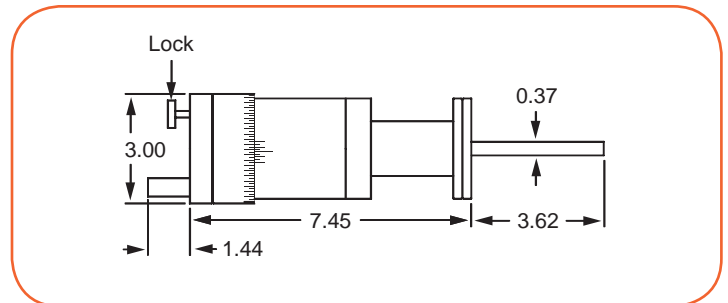
VF-166 Manual Rotary Feedthrough

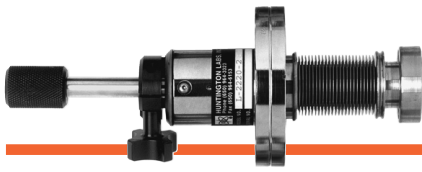
Flange	Description	Wt. Lbs.	Model	Price
2.75	Vac-U-Flat® Flange with Vernier	5.0	VF-166	\$800.00
KF 40	ISO-KF Flange with Vernier	4.25	VF-166-SF	\$795.00

Note: 0.375 diameter shaft available on request

Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Bakeout Temperature: 200°C
Operating Temperature: -20° to 100°C
Pressure Range: Atmosphere to 1×10^{-11} Torr
Position Lock: Lock screw
Maximum Torque: 5 lb. ft.
Resolution (Vernier): 1°

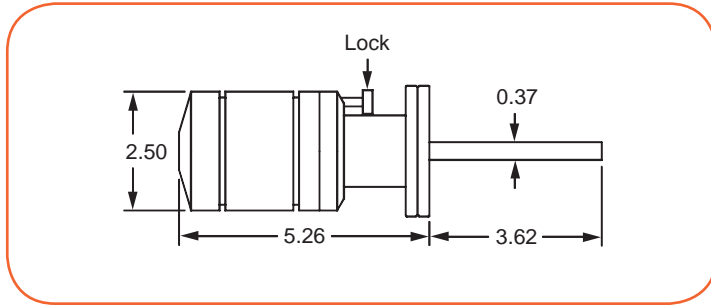




Motion & Positioning Devices 4

VF-167 Manual Rotary Feedthrough

Flange	Description	Wt. Lbs.	Model	Price
2.75	Vac-U-Flat® Flange with Vernier	2.0	VF-167	\$795.00
KF 40	ISO-KF Flange with Vernier	1.75	VF-167-SF	\$790.00

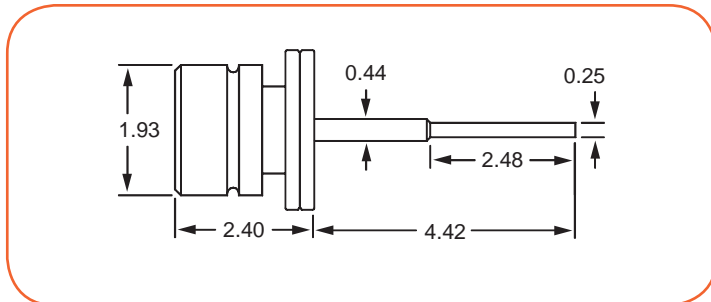


Specifications

- Sealing Mechanism:** Welded bellows
- Material Exposed to Vacuum:** Stainless Steel
- Bakeout Temperature:** 200°C
- Operating Temperature:** -20° to 100°C
- Pressure Range:** Atmosphere to 1×10^{-11} Torr
- Position Lock:** Lock screw
- Maximum Torque:** 1.5 lb. ft.
- Resolution (Vernier):** 1°

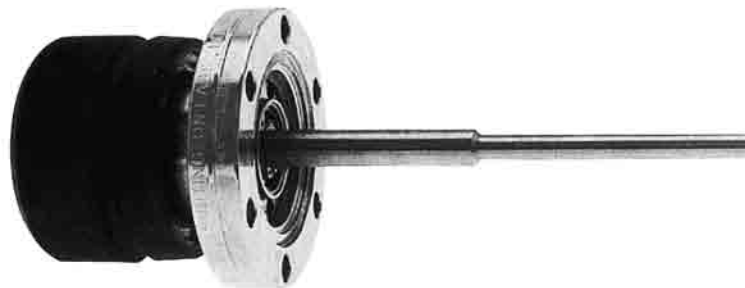
VF-182 Manual Magnetic Rotary Feedthrough

Flange	Description	Wt. Lbs.	Model	Price
2.75	Vac-U-Flat® Flange - Magnetically Coupled	2.00	VF-182	\$895.00
KF 40	ISO-KF Flange - Magnetically Coupled	1.75	VF-182-SF	\$885.00

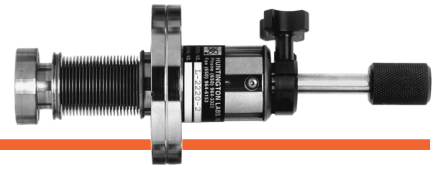


Specifications

- Sealing Mechanism:** Welded tube
- Material Exposed to Vacuum:** Stainless Steel
- Bakeout Temperature:** 200°C (outer magnet ass'y removed)
- Operating Temperature:** -20° to 100°C
- Pressure Range:** Atmosphere to 1×10^{-11} Torr
- Maximum Torque:** 20 oz. in.
- Magnetic Field:** 2 Gaus at flange
- Magnet Type:** Alnico



4 Motion & Positioning Devices



Manual Hollow Shaft Rotary Feedthrough

Flange	Description	Wt. Lbs.	Model	Price
2.75	Rotary Motion, Bellows Sealed with Straight Through Hollow Shaft	4.0	VF-118	Call
4.50	Rotary Motion, Bellows Sealed with Straight Through Hollow Shaft	13.0	VF-118-45	Call

Huntington's patented rotary feedthrough includes a hollow shaft straight through from the atmosphere end to the vacuum end, providing the advantages of an extra coaxial port. A standard 2.75 or 4.50 inch Vac-U-Flat® flange at the atmosphere end of the VF-118 lets you introduce any one of a wide selection of other functions through its hollow rotary shaft, including secondary rotary or linear motion. (For rotary linear motion also see PRC-276 with rotary linear feedthroughs.)

Specifications

Sealing Mechanism: Welded bellows

Material Exposed to Vacuum: Stainless Steel

Standard Mounting:

VF-118: 2.75 Vac-U-Flat® Flange

VF-118-45: 4.50 Vac-U-Flat® Flange

Bakeout Temperature: 200°C

Operating Temperature: -20° to 100°C

Pressure Range: Atmosphere to 1×10^{-11} Torr

Position Lock: Lock screw

Tubular Shaft ID:

VF-118: 0.24 in.

VF-118-45: 0.50 in.

Tubular Shaft OD:

VF-118: 0.37 in.

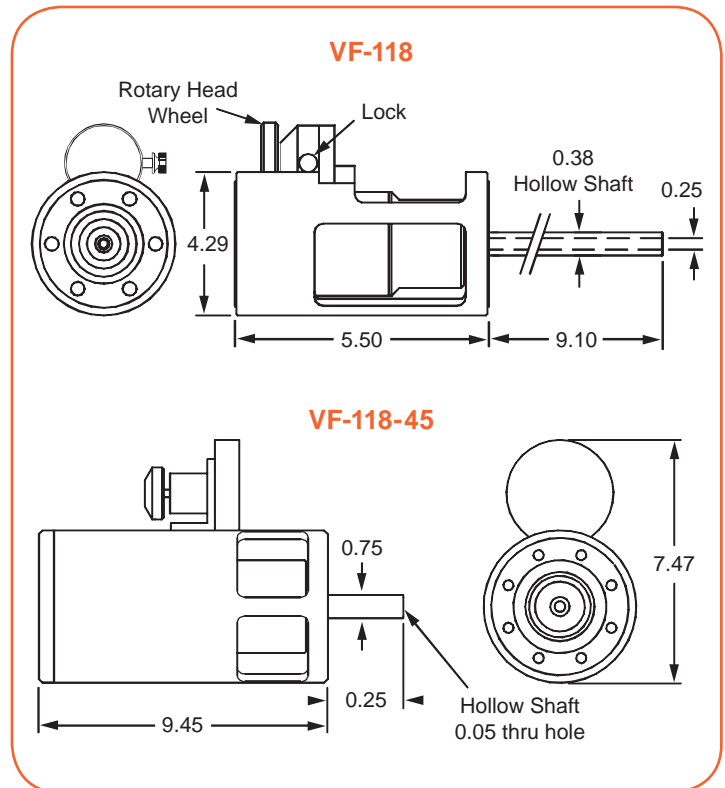
VF-118-45: 0.75 in.

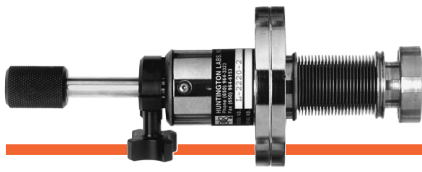
Maximum Torque:

VF-118: 400 oz. in.

VF-118-45: 450 oz. in.

Resolution (Vernier): 0.5°

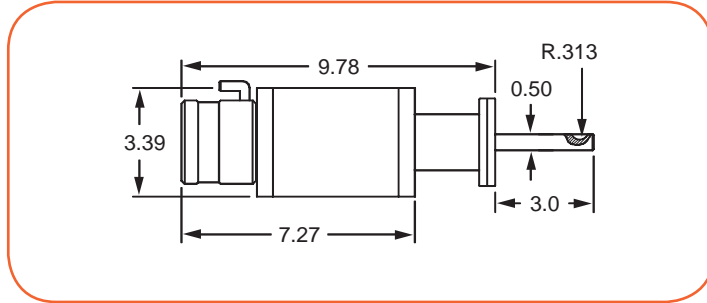




Motion & Positioning Devices 4

Manual Ultra-High Torque Rotary Feedthrough

Description	Wt. Lbs.	Model	Price
2.75 Vac-U-Flat Flange, Manual Turning Knob	4.0	VF-1640	Call

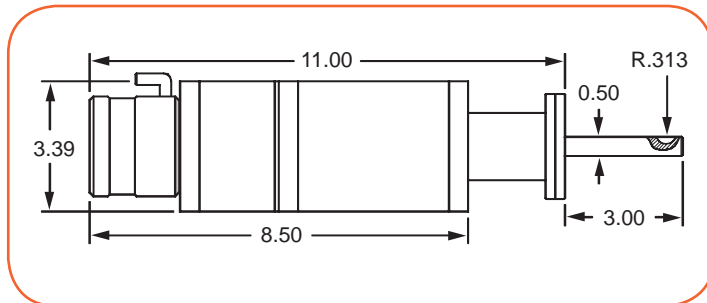


Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Standard Mounting: 2.75 Vac-U-Flat® Flange
Bakeout Temperature: 200°C
Operating Temperature: -20° to 100°C
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr
Position Lock: Lock screw
Maximum Torque: (240 lb. in.) 20 lb. ft.

Manual Ultra-High Torque Rotary Feedthrough

Description	Wt. Lbs.	Model	Price
2.75 Vac-U-Flat Flange, Manual Geared Version	5.0	VFG-1640	Call

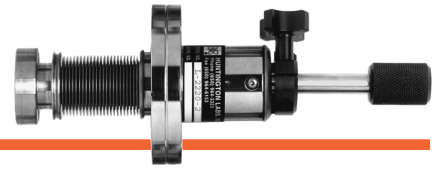


Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Standard Mounting: 2.75 Vac-U-Flat® Flange
Bakeout Temperature: 200°C
Operating Temperature: -20° to 100°C
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr
Position Lock: Lock screw
Maximum Torque: (240 lb. in.) 20 lb. ft.
Gear Ratio: 1:20



4 Motion & Positioning Devices

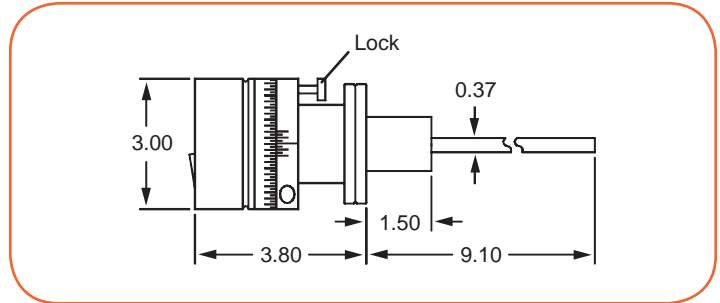


PR-275 Manual Precision Rotary Feedthrough

Description	Wt. Lbs.	Model	Price
2.75 Vac-U-Flat Flange, For use with Precision Manipulator	4.0	PR-275	\$1,995.00

Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Standard Mounting: 2.75 Vac-U-Flat® Flange
Bakeout Temperature: 200°C
Operating Temperature: -20° to 100°C
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr
Position Lock: Lock screw
Maximum Torque: 4 lb. ft.
Resolution (Vernier): 0.1°
Detent Stops: Every 15° or 22.5°



MFR-1330 Motorized Rotary Feedthrough

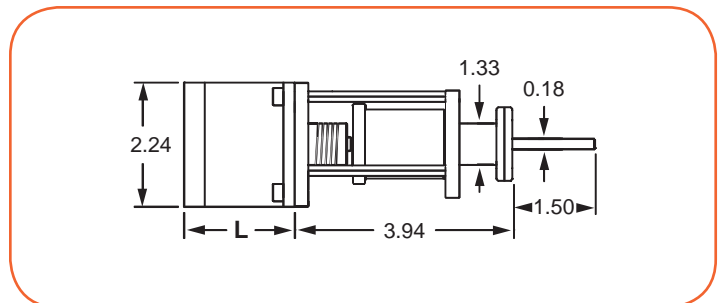


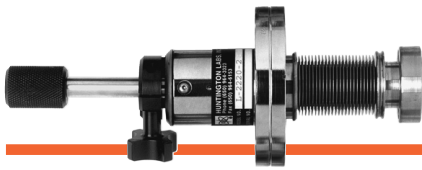
Max. Torque	Description	L	Wt. Lbs.	Model	Price
-	With Motor Mount Only (No Motor)	-	0.7	MFR-1330-00	\$ 825.00
50 oz. in.	Stepper Motor Driven	2.00	1.7	MFR-1330-50	\$ 910.00
100 oz. in.	Stepper Motor Driven	3.00	1.5	MFR-1330-100	\$1,090.00
150 oz. in.	Stepper Motor Driven	4.00	1.5	MFR-1330-150	\$1,100.00

*Note: 0.25 diameter shaft available on request
 Optional stepper motor/encoder/controller is available (see Feedthrough Options, page 158)*

Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Standard Mounting: 1.33 Vac-U-Flat® Flange
Bakeout Temperature: 200°C (with motor removed)
Operating Temperature: -20° to 80°C
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr
Maximum Torque: 175 oz. in.
Maximum Speed: 500 rpm
Motorized Accuracy: 51,200 microsteps/revolution
Stepper Motor: 1.8° full step



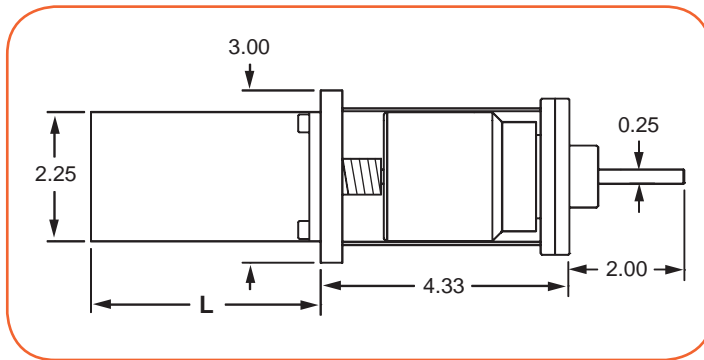


MFR-275 Motorized Rotary Feedthrough

Max. Torque	Description	L	Wt. Lbs.	Model	Price
-	With Motor Mount Only (No Motor)	-	2.20	MFR-275-00	\$1,965.00
50 oz. in.	Stepper Motor Driven	2.00	3.32	MFR-275-50	\$2,094.00
100 oz. in.	Stepper Motor Driven	3.00	4.10	MFR-275-100	\$2,275.00
150 oz. in.	Stepper Motor Driven	4.00	5.28	MFR-275-150	\$2,305.00



Note: 0.375 diameter shaft available on request
 Optional stepper motor/encoder/controller is available (see Motorized Rotary Feedthrough Option)



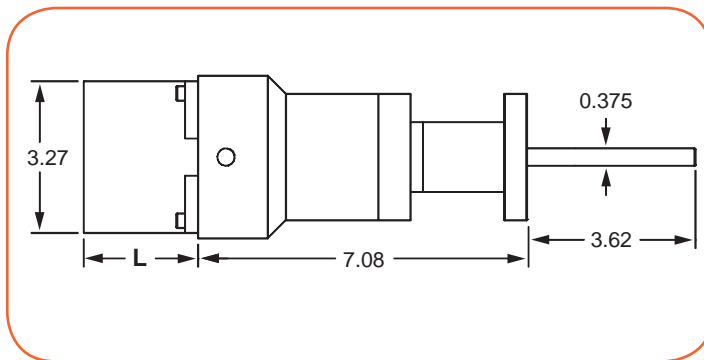
Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Standard Mounting: 2.75 Vac-U-Flat® Flange
Bakeout Temperature: 200°C (with motor removed)
Operating Temperature: -20° to 80°C
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr
Maximum Torque: 175 oz. in.
Maximum Speed: 500 rpm
Motorized Accuracy: 51,200 microsteps/revolution
Stepper Motor: 1.8° full step

MFR-275-HD Motorized Rotary Feedthrough

Max. Torque	Description	L	Model	Price
-	With Motor Mount Only (No Motor)	-	MFR-275-HD-00	\$1,140.00
160 oz. in.	Stepper Motor Driven	2.46	MFR-275-HD-160	\$1,310.00
300 oz. in.	Stepper Motor Driven	3.70	MFR-275-HD-300	\$1,360.00
450 oz. in.	Stepper Motor Driven	5.04	MFR-275-HD-450	\$1,500.00

Optional stepper motor/encoder/controller is available (see Feedthrough Options, page 158)

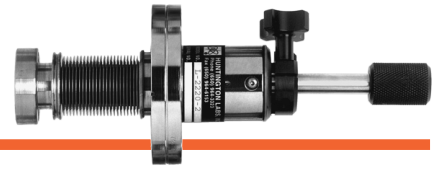


Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Standard Mounting: 2.75 Vac-U-Flat® Flange
Bakeout Temperature: 200°C (with motor removed)
Operating Temperature: -20° to 80°C
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr
Maximum Torque: 5 lb. ft.
Maximum Speed: 500 rpm
Motorized Accuracy: 51,200 microsteps/revolution
Stepper Motor: 1.8° full step



4 Motion & Positioning Devices



Huntington's patented rotary feedthrough includes a hollow shaft straight through from the atmosphere end to the vacuum end, providing the advantages of an extra coaxial port. A standard 2.75 or 4.50 inch Vac-U-Flat® flange at the atmosphere end of the MVF-118 or MVF-118-45 lets you introduce any one of a wide selection of other functions through its hollow rotary shaft.

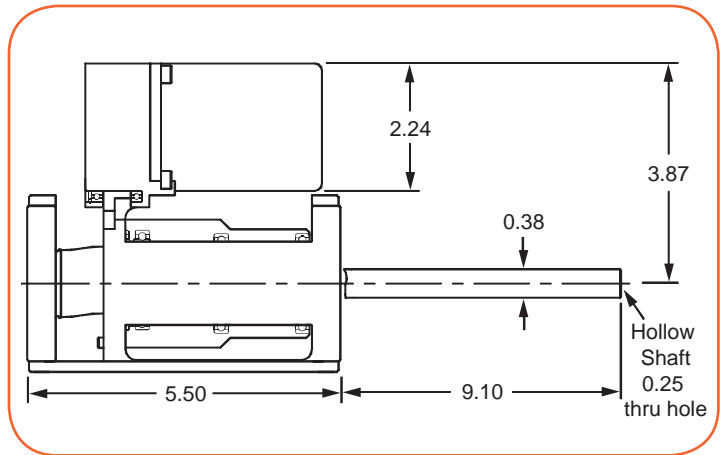
MVF-118 Motorized Hollow Shaft Rotary Feedthrough

Flange	Max. Torque	Description	Wt. Lbs.	Model	Price
2.75	-	No Motor, Bellows Seal with Straight through hollow shaft	25.5	MVF-118-00	Call
	100 oz. in.	Bellows Sealed with Straight through hollow shaft	26.5	MVF-118-100	Call

Optional stepper motor/encoder/controller is available (see Feedthrough Options, page 158)

Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Standard Mounting: 2.75 Vac-U-Flat® Flange
Bakeout Temperature: 200°C (with motor removed)
Operating Temperature: -20° to 80°C
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr
Maximum Torque: 400 oz. in.
Maximum Speed: 500 rpm
Motorized Accuracy: 51,200 microsteps/revolution
Stepper Motor: 1.8° full step



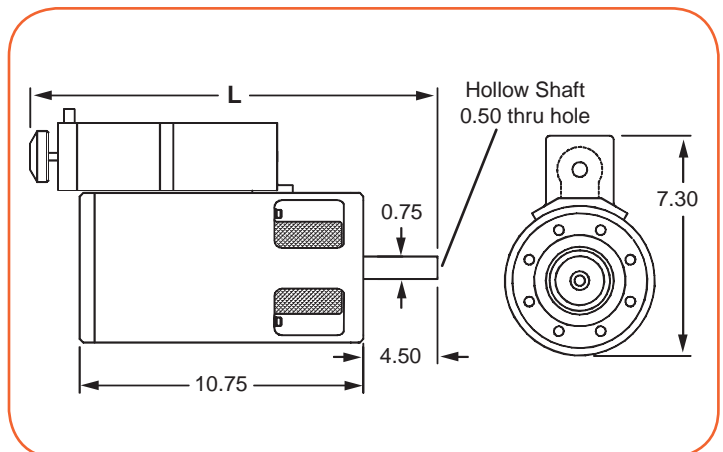
MVF-118-45 Motorized Hollow Shaft Rotary Feedthrough

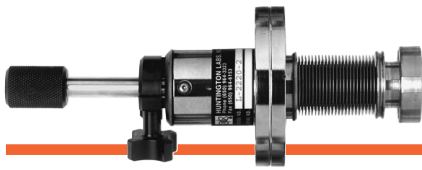
Flange	Max. Torque	Description	L	Model	Price
4.50	-	No Motor, Hollow Shaft Rotary Feedthrough	15.25	MVF-118-45-00	Call
	100 oz. in.	Hollow Shaft Rotary Feedthrough	13.25	MVF-118-45-100	Call
	150 oz. in.	Hollow Shaft Rotary Feedthrough	14.25	MVF-118-45-150	Call
	350 oz. in.	Hollow Shaft Rotary Feedthrough	15.45	MVF-118-45-350	Call

Optional stepper motor/encoder/controller is available (see Feedthrough Options, page 158)

Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Standard Mounting: 4.50 Vac-U-Flat® Flange
Bakeout Temperature: 200°C (with motor removed)
Operating Temperature: -20° to 80°C
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr
Maximum Torque: 400 oz. in.
Maximum Speed: 500 rpm
Motorized Accuracy: 51,200 microsteps/revolution
Stepper Motor: 1.8° full step



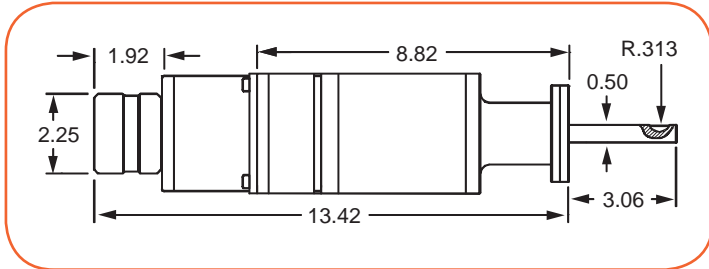


Motion & Positioning Devices 4

Ultra-High Torque Motorized Rotary Feedthrough

Max. Torque	Description	Wt. Lbs.	Model	Price
20 lb. ft. (240 lb. in.)	Motorized Geared Version	10	MVFG-1640	Call

Optional stepper motor/encoder/controller is available (see Feedthrough Options, page 158)



Specifications

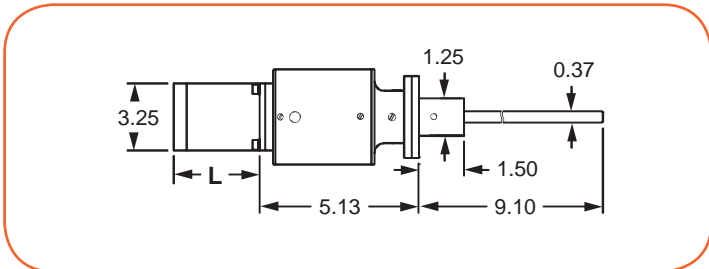
- Sealing Mechanism:** Welded bellows
- Material Exposed to Vacuum:** Stainless Steel
- Standard Mounting:** 2.75 Vac-U-Flat® Flange
- Bakeout Temperature:** 200°C (with motor removed)
- Operating Temperature:** -20° to 80°C
- Pressure Range:** Atmosphere to 1 x 10⁻¹¹ Torr
- Maximum Speed:** 200 rpm
- Motorized Accuracy:** 51,200 microsteps/revolution
- Stepper Motor:** 1.8° full step
- Gear Ratio:** 1:20



Precision Motorized Rotary Feedthrough

Max. Torque	Description	L	Wt. Lbs.	Model	Price
-	No Motor	-	5.00	PR-275-M-00	Call
150 oz. in.	With Stepper Motor	3.00	7.5	PR-275-M	Call

Optional stepper motor/encoder/controller is available (see Feedthrough Options, page 158)



Specifications

- Sealing Mechanism:** Welded bellows
- Material Exposed to Vacuum:** Stainless Steel
- Standard Mounting:** 2.75 Vac-U-Flat® Flange
- Bakeout Temperature:** 200°C (with motor removed)
- Operating Temperature:** -20° to 80°C
- Pressure Range:** Atmosphere to 1 x 10⁻¹¹ Torr
- Maximum Torque:** 4 lb. in.
- Maximum Speed:** 500 rpm
- Motorized Accuracy:** 51,200 microsteps/revolution
- Stepper Motor:** 1.8° full step



4 Motion & Positioning Devices



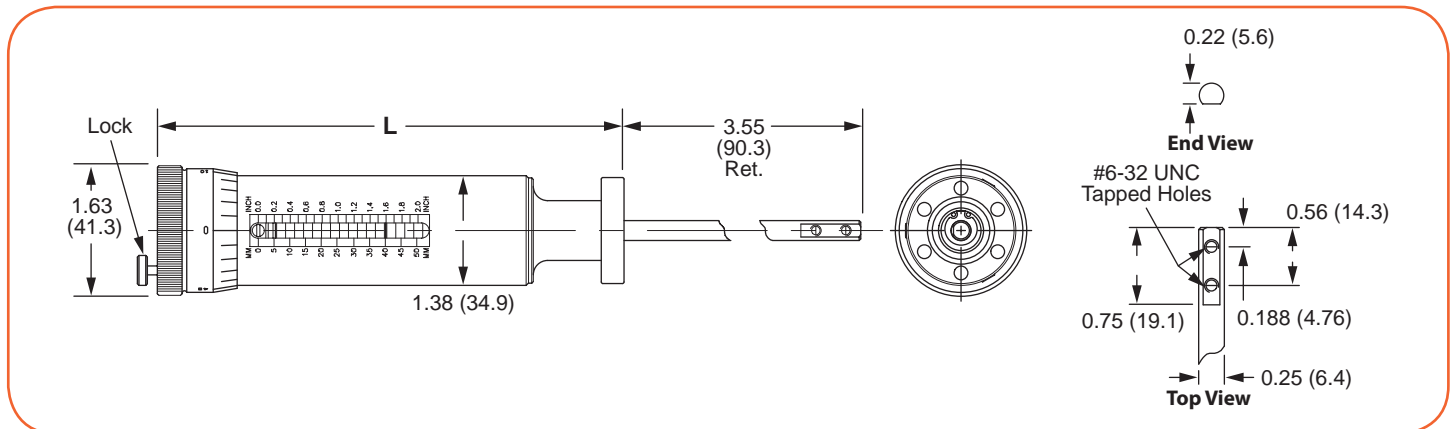
L-Series Linear Motion Feedthroughs

These feedthroughs incorporate a unique modular design which accommodates six interchangeable actuator options on either of two basic shaft/body configurations. Actuators can be easily retrofitted in the field, often without breaking vacuum. Actuator options include one motorized, one pneumatic and four manually operated versions. Body configurations include 1.33 Vac-U-Flat or KF-16, or 2.75 Vac-U-Flat or KF-40 sizes. Each combination of body and actuator configuration is available in four standard stroke lengths or special lengths on request. Optional LL (long life) versions are constructed with million-cycle guaranteed bellows.

Manual Mini Linear Feedthrough with Hand Knob

Flange	Stroke	L	Weight Lbs. (kg)	Model	Price
1.33	1.0 (25.4)	4.47 (113.5)	1.0 (0.5)	L-2111-1	\$ 475.00
	2.0 (50.8)	5.85 (148.6)	1.5 (0.7)	L-2111-2	\$ 595.00
	4.0 (101.6)	8.61 (218.7)	2.5 (1.1)	L-2111-4	\$ 795.00
	6.0 (152.4)	11.37 (288.8)	3.5 (1.6)	L-2111-6	\$ 1,025.00
KF 16	1.0 (25.4)	4.47 (113.5)	1.0 (0.5)	L-2111-1-SF	\$ 465.00
	2.0 (50.8)	5.85 (148.6)	1.5 (0.7)	L-2111-2-SF	\$ 585.00
	4.0 (101.6)	8.61 (218.7)	2.5 (1.1)	L-2111-4-SF	\$ 795.00
	6.0 (152.4)	11.37 (288.8)	3.5 (1.6)	L-2111-6-SF	\$ 1,020.00

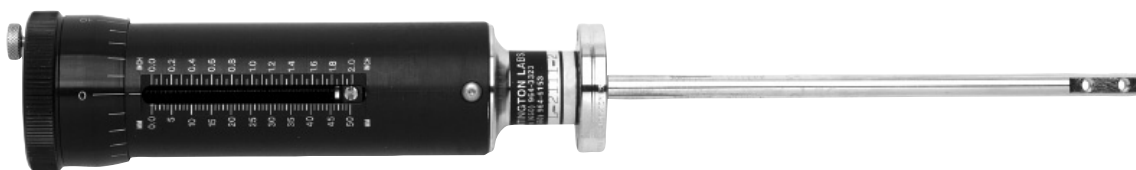
Dimensions in inches (mm). Larger flange sizes available on request.



Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Bakeout Temperature: 200°C (maximum)
Operating Temperature: -20° to 150°C
Pressure Range: Atmosphere to 1×10^{-11} Torr
Position Lock: Thumb screw

Maximum Axial Load: 10 lbs. (4.5 kg) concentric load
Maximum Lateral Load: 3 lbs. (1.36 kg) @ tip in ret. position
Scale Resolution:
 Linear: 0.05 in. and 1mm
 Dial: 0.002 in. (0.05 mm)
Thread Lead: 0.05 (1.3 mm) per revolution



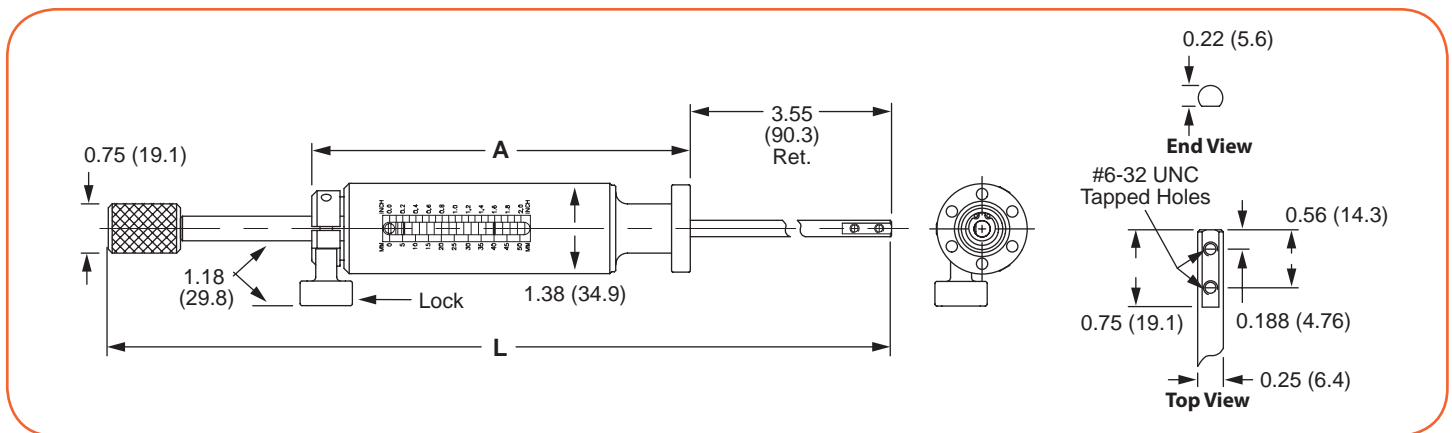


Motion & Positioning Devices 4

Manual Mini Linear Feedthrough with Push-Pull

Flange	Stroke	A	L	Weight Lbs. (kg)	Model	Price
1.33	1.0 (25.4)	4.39 (111.5)	10.04 (255.0)	1.0 (0.5)	L-2121-1	\$ 575.00
	2.0 (50.8)	5.77 (146.5)	12.42 (315.5)	1.5 (0.7)	L-2121-2	\$ 675.00
	4.0 (101.6)	8.53 (216.7)	17.18 (436.4)	2.5 (1.1)	L-2121-4	\$ 800.00
	6.0 (152.4)	11.29 (286.8)	21.94 (557.3)	3.5 (1.6)	L-2121-6	\$1,065.00
KF 16	1.0 (25.4)	4.39 (111.5)	10.04 (255.0)	1.0 (0.5)	L-2121-1-SF	\$ 575.00
	2.0 (50.8)	5.77 (146.5)	12.42 (315.5)	1.5 (0.7)	L-2121-2-SF	\$ 675.00
	4.0 (101.6)	8.53 (216.7)	17.18 (436.4)	2.5 (1.1)	L-2121-4-SF	\$ 800.00
	6.0 (152.4)	11.29 (286.8)	21.94 (557.3)	3.5 (1.6)	L-2121-6-SF	\$1,065.00

Dimensions in inches (mm). Larger flange sizes available on request.



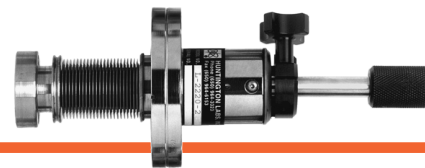
Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Bakeout Temperature: 200°C (maximum)
Operating Temperature: -20° to 150°C
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr

Position Lock: Hand knob
Maximum Axial Load: 10 lbs. (4.5 kg) concentric load
Maximum Lateral Load: 3 lbs. (1.36 kg) @ tip in ret. position
Scale Resolution: 0.05 in. and 1mm



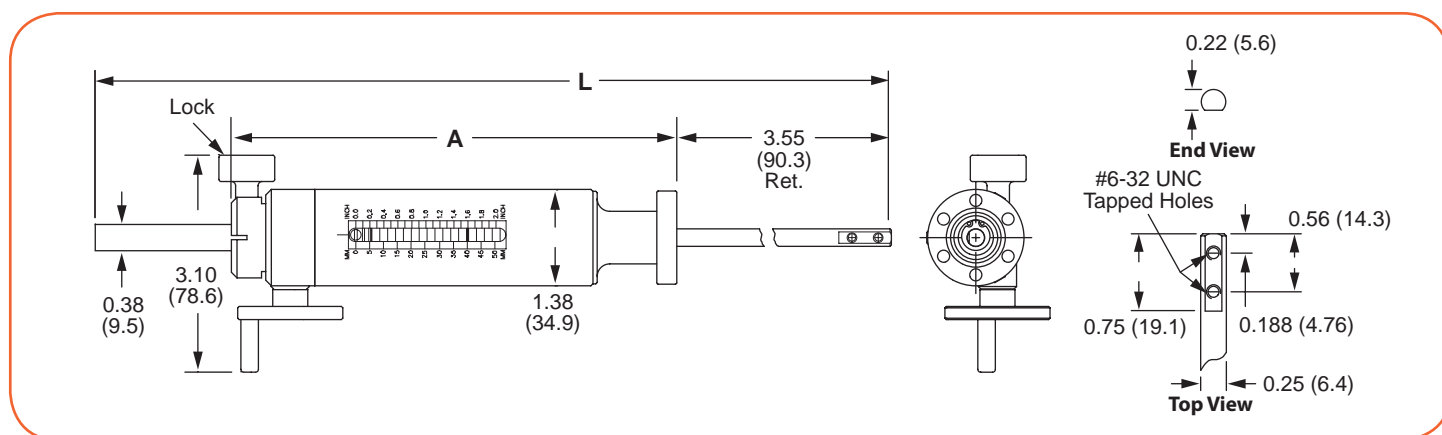
4 Motion & Positioning Devices



Manual Mini Linear Feedthrough with Rack & Pinion

Flange	Stroke	A	L	Weight Lbs. (kg)	Model	Price
1.33	4.0 (101.6)	9.12 (231.6)	16.80 (426.7)	3.5 (1.6)	L-2131-4	\$ 950.00
	6.0 (152.4)	11.88 (301.8)	21.56 (547.6)	4.5 (2.0)	L-2131-6	\$ 1,170.00
	8.0 (203.2)	14.64 (371.9)	26.32 (668.5)	5.5 (2.5)	L-2131-8	\$ 1,295.00
	10.0 (254.0)	17.40 (442.0)	31.08 (789.4)	6.5 (3.0)	L-2131-10	\$ 1,545.00
KF 16	4.0 (101.6)	9.12 (231.6)	16.80 (426.7)	3.5 (1.6)	L-2131-4-SF	\$ 940.00
	6.0 (152.4)	11.88 (301.8)	21.56 (547.6)	4.5 (2.0)	L-2131-6-SF	\$ 1,160.00
	8.0 (203.2)	14.64 (371.9)	26.32 (668.5)	5.5 (2.5)	L-2131-8-SF	\$ 1,285.00
	10.0 (254.0)	17.40 (442.0)	31.08 (789.4)	6.5 (3.0)	L-2131-10-SF	\$ 1,535.00

Dimensions in inches (mm). Larger flange sizes available on request.



Specifications

Sealing Mechanism: Welded bellows

Material Exposed to Vacuum: Stainless Steel

Bakeout Temperature: 200°C (maximum)

Operating Temperature: -20° to 150°C

Pressure Range: Atmosphere to 1×10^{-11} Torr

Position Lock: Hand knob

Maximum Axial Load: 10 lbs. (4.5 kg) concentric load

Maximum Lateral Load: 3 lbs. (1.36 kg) @ tip in ret. position

Scale Resolution: 0.05 in. and 1mm



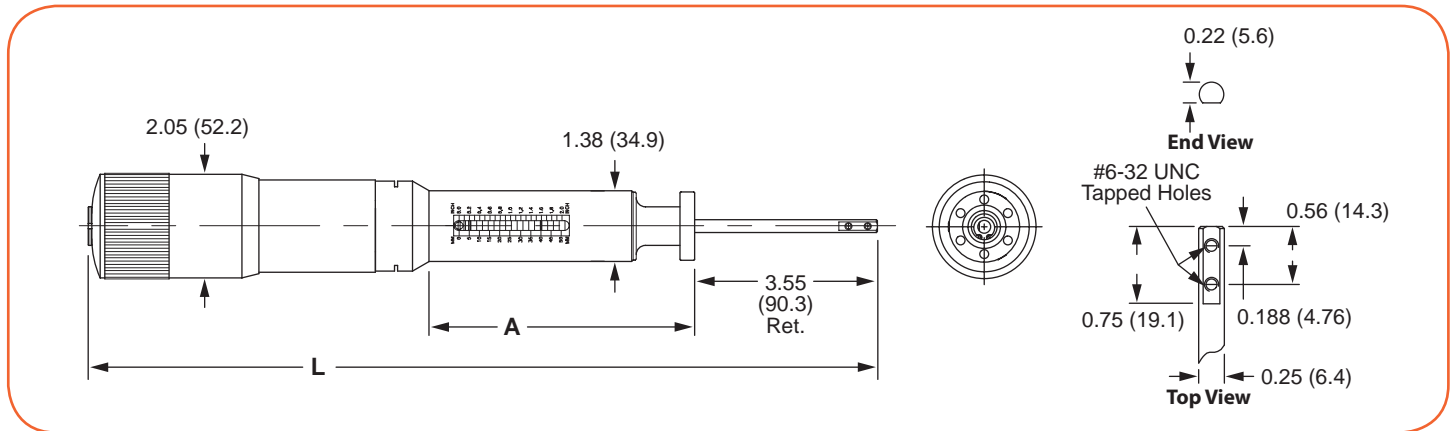


Motion & Positioning Devices 4

Manual Mini Linear Feedthrough with Micrometer

Flange	Stroke	A	L	Weight Lbs. (kg)	Model	Price
1.33	0.98 (25)	3.79 (96.2)	12.00 (304.7)	3.0 (1.4)	L-2141-1	\$2,450.00
	1.97 (50)	5.17 (131.2)	15.35 (389.8)	3.5 (1.6)	L-2141-2	\$2,550.00
KF 16	0.98 (25)	3.79 (96.2)	12.00 (304.7)	3.0 (1.4)	L-2141-1-SF	\$2,440.00
	1.97 (50)	5.17 (131.2)	15.35 (389.8)	3.5 (1.6)	L-2141-2-SF	\$2,540.00

Dimensions in inches (mm). Larger flange sizes available on request.



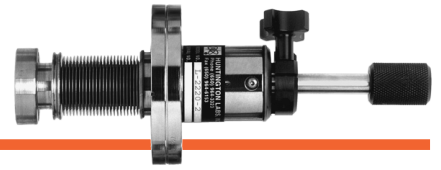
Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Bakeout Temperature: 200°C (max. micrometer removed)
Operating Temperature: -20° to 150°C
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr

Position Lock: Hand knob
Maximum Axial Load: 10 lbs. (4.5 kg) concentric load
Maximum Lateral Load: 3 lbs. (1.36 kg) @ tip in ret. position
Scale Resolution:
 Linear: 0.05 in. and 1mm
 micrometer: 0.002 in.



4 Motion & Positioning Devices



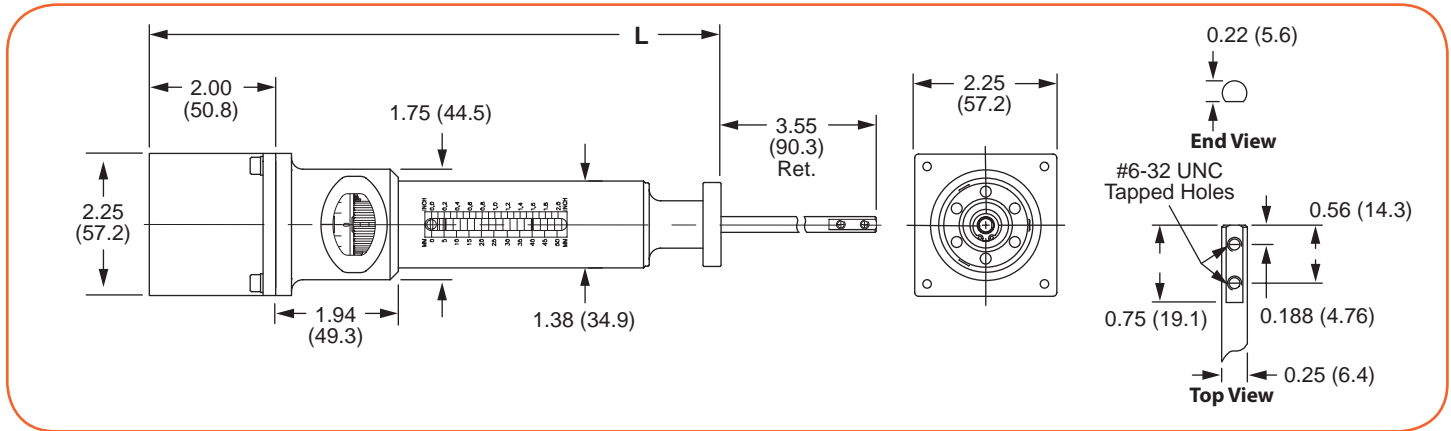
Motorized Mini Linear Feedthrough

Flange	Stroke	L	Weight Lbs. (kg)	Model	Price
1.33	1.0 (25.4)	7.67 (194.8)	4.0 (1.8)	L-2151-1	\$ 975.00
		8.02 (203.7)	4.0 (1.8)	L-2151-1-LL	\$ 1,550.00
	2.0 (50.8)	9.05 (229.9)	5.0 (2.3)	L-2151-2	\$ 1,075.00
		9.75 (247.7)	5.0 (2.3)	L-2151-2-LL	\$ 1,650.00
	4.0 (101.6)	11.81 (300.0)	6.0 (2.7)	L-2151-4	\$ 1,275.00
		13.21 (335.5)	6.0 (2.7)	L-2151-4-LL	\$ 1,895.00
6.0 (152.4)	14.57 (370.1)	7.0 (3.2)	L-2151-6	\$ 1,475.00	
	16.67 (423.4)	7.0 (3.2)	L-2151-6-LL	\$ 2,860.00	
KF 16	1.0 (25.4)	7.67 (194.8)	4.0 (1.8)	L-2151-1-SF	\$ 970.00
		8.02 (203.7)	4.0 (1.8)	L-2151-1-LL-SF	\$ 1,545.00
	2.0 (50.8)	9.05 (229.9)	5.0 (2.3)	L-2151-2-SF	\$ 1,070.00
		9.75 (247.7)	5.0 (2.3)	L-2151-2-LL-SF	\$ 1,645.00
	4.0 (101.6)	11.81 (300.0)	6.0 (2.7)	L-2151-4-SF	\$ 1,270.00
		13.21 (335.5)	6.0 (2.7)	L-2151-4-LL-SF	\$ 1,890.00
6.0 (152.4)	14.57 (370.1)	7.0 (3.2)	L-2151-6-SF	\$ 1,470.00	
	16.67 (423.4)	7.0 (3.2)	L-2151-6-LL-SF	\$ 2,855.00	

Dimensions in inches (mm). Larger flange sizes available on request.

Optional stepper motor/encoder/controller is available (see Feedthrough Options, page 158)

Note: 'LL' part numbers indicate million-cycle guaranteed bellows for Long Life

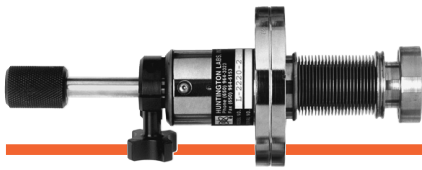


Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Bakeout Temperature: 200°C (max. with motor removed)
Operating Temperature: -20° to 80°C
Pressure Range: Atmosphere to 1×10^{-11} Torr
Maximum Axial Load: 10 lbs. (4.5 kg) concentric load
Maximum Lateral Load: 3 lbs. (1.36 kg) @ tip in ret. position

Scale Resolution:
 Linear: 0.05 in. and 1mm
 Dial: 0.002 (0.05 mm)
Motorized Accuracy: 51,200 microsteps/revolution
Stepper Motor: 1.8° - full step
Thread Lead: 0.05 (1.3 mm) per revolution



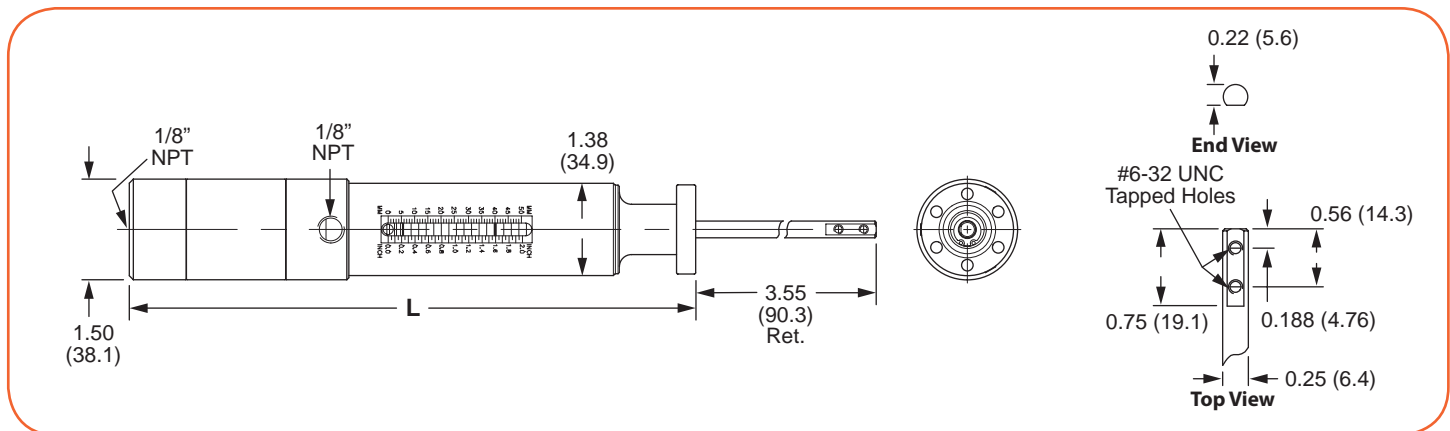


Motion & Positioning Devices 4

Pneumatic Mini Linear Feedthrough

Flange	Stroke	L	Weight Lbs. (kg)	Model	Price
1.33	1.0 (25.4)	6.06 (153.9)	2.0 (0.9)	L-2171-1	\$ 595.00
		6.41 (162.8)	2.0 (0.9)	L-2171-1-LL	\$ 995.00
	2.0 (50.8)	8.44 (214.3)	2.5 (1.1)	L-2171-2	\$ 695.00
		9.14 (232.2)	2.5 (1.1)	L-2171-2-LL	\$1,095.00
	4.0 (101.6)	13.20 (335.3)	3.5 (1.6)	L-2171-4	\$ 895.00
		14.60 (370.8)	3.5 (1.6)	L-2171-4-LL	\$1,295.00
	6.0 (152.4)	17.96 (456.2)	4.5 (2.0)	L-2171-6	\$1,095.00
		20.06 (509.5)	4.5 (2.0)	L-2171-6-LL	\$1,595.00
KF 16	1.0 (25.4)	6.06 (153.9)	2.0 (0.9)	L-2171-1-SF	\$ 590.00
		6.41 (162.8)	2.0 (0.9)	L-2171-1-LL-SF	\$ 985.00
	2.0 (50.8)	8.44 (214.3)	2.5 (1.1)	L-2171-2-SF	\$ 690.00
		9.14 (232.2)	2.5 (1.1)	L-2171-2-LL-SF	\$1,085.00
	4.0 (101.6)	13.20 (335.3)	3.5 (1.6)	L-2171-4-SF	\$ 890.00
		14.60 (370.8)	3.5 (1.6)	L-2171-4-LL-SF	\$1,285.00
	6.0 (152.4)	17.96 (456.2)	4.5 (2.0)	L-2171-6-SF	\$1,090.00
		20.06 (509.5)	4.5 (2.0)	L-2171-6-LL-SF	\$1,590.00

Dimensions in inches (mm). Larger flange sizes available on request.
 Optional solenoids and position switches are available (see Feedthrough Options, page 158)
 Note: 'LL' part numbers indicate million-cycle guaranteed bellows for Long Life
 Call for adjustable stroke versions.



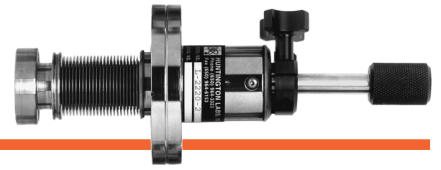
Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Bakeout Temperature: 200°C (maximum)
Operating Temperature: -20° to 150°C
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr
Maximum Axial Load: 10 lbs. (4.5 kg) concentric load

Maximum Lateral Load: 3 lbs. (1.36 kg) @ tip in ret. position
Stroke Speed: No faster than 1 second
Port Size: 1/8" NPT (Solenoid available as option)
Activation: Double acting cylinder
Air Required: 100 psi (6.9 bar) maximum
Quick Reference Position Scale: 0.05 in. and 1 mm



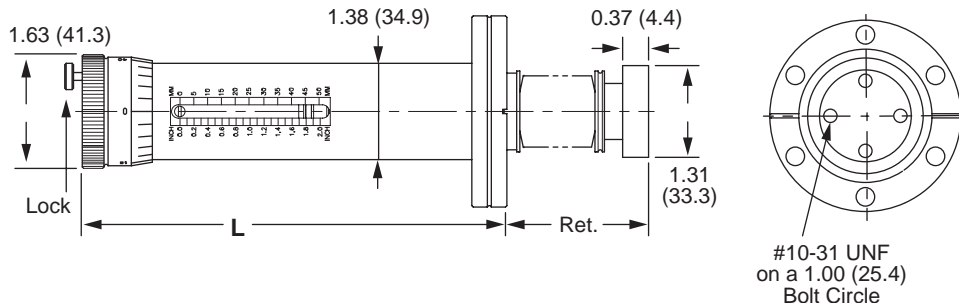
4 Motion & Positioning Devices



Manual Linear Feedthrough with Hand Knob - 0.05 Lead

Flange	Stroke	L	Retracted Length	Weight Lbs. (kg)	Model	Price
2.75	1.0 (25.4)	5.06 (128.5)	1.30 (33.0)	3.0 (1.4)	L-2211-1	\$ 795.00
	2.0 (50.8)	6.06 (153.9)	1.68 (42.7)	3.5 (1.6)	L-2211-2	\$ 995.00
	4.0 (101.6)	8.06 (204.7)	2.44 (62.0)	4.0 (1.8)	L-2211-4	\$1,195.00
	6.0 (152.4)	10.06 (255.6)	3.20 (81.3)	4.5 (2.0)	L-2211-6	\$1,405.00
KF 40	1.0 (25.4)	5.06 (128.5)	1.30 (33.0)	2.8 (1.3)	L-2211-1-SF	\$ 790.00
	2.0 (50.8)	6.06 (153.9)	1.68 (42.7)	3.3 (1.5)	L-2211-2-SF	\$ 990.00
	4.0 (101.6)	8.06 (204.7)	2.44 (62.0)	3.8 (1.7)	L-2211-4-SF	\$1,190.00
	6.0 (152.4)	10.06 (255.6)	3.20 (81.3)	4.3 (1.9)	L-2211-6-SF	\$1,390.00

Dimensions in inches (mm)

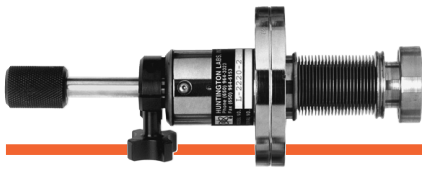


Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Bakeout Temperature: 200°C (maximum)
Operating Temperature: -20° to 150°C
Pressure Range: Atmosphere to 1×10^{-11} Torr
Position Lock: Thumb screw

Maximum Axial Load: 10 lbs. (4.5 kg) concentric load
Maximum Lateral Load: 20 lbs. (9.1 kg) @ tip in ret. position
Scale Resolution:
 Linear: 0.05 in. and 1mm
 Dial: 0.002 in. (0.05 mm)
Thread Lead: 0.05 (1.3 mm) per revolution



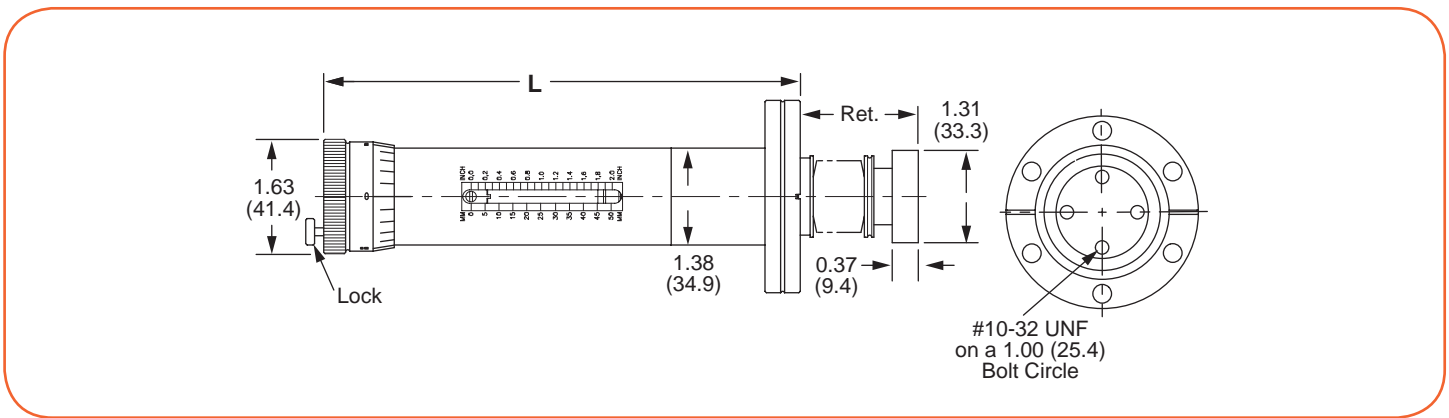


Motion & Positioning Devices 4

Manual Linear Feedthrough with Hand Knob - 0.125 Lead

Flange	Stroke	L	Retracted Length	Weight Lbs. (kg)	Model	Price
2.75	2.0 (50.8)	6.71 (170.4)	1.68 (42.7)	3.5 (1.6)	L-2212-2	\$ 695.00
	4.0 (101.6)	8.71 (221.2)	2.44 (62.0)	4.0 (1.8)	L-2212-4	\$ 775.00
	6.0 (152.4)	10.71 (272.0)	3.20 (81.3)	4.5 (2.0)	L-2212-6	\$ 995.00
	8.0 (203.2)	12.71 (322.8)	3.96 (100.6)	5.0 (2.3)	L-2212-8	\$1,405.00
KF 40	2.0 (50.8)	6.71 (170.4)	1.68 (42.7)	3.3 (1.5)	L-2212-2-SF	\$ 685.00
	4.0 (101.6)	8.71 (221.2)	2.44 (62.0)	3.8 (1.7)	L-2212-4-SF	\$ 765.00
	6.0 (152.4)	10.71 (272.0)	3.20 (81.3)	4.3 (1.9)	L-2212-6-SF	\$ 985.00
	8.0 (203.2)	12.71 (322.8)	3.96 (100.6)	4.8 (2.2)	L-2212-8-SF	\$1,395.00

Dimensions in inches (mm)



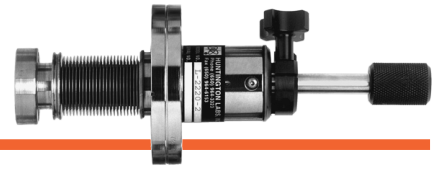
Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Bakeout Temperature: 200°C (maximum)
Operating Temperature: -20° to 150°C
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr
Position Lock: Thumb screw

Maximum Axial Load: 10 lbs. (4.5 kg) concentric load
Maximum Lateral Load: 20 lbs. (9.1 kg) @ tip in ret. position
Scale Resolution:
 Linear: 0.05 in. and 1mm
 Dial: 0.002 in. (0.05 mm)
Thread Lead: 0.125 (3.17 mm) per revolution



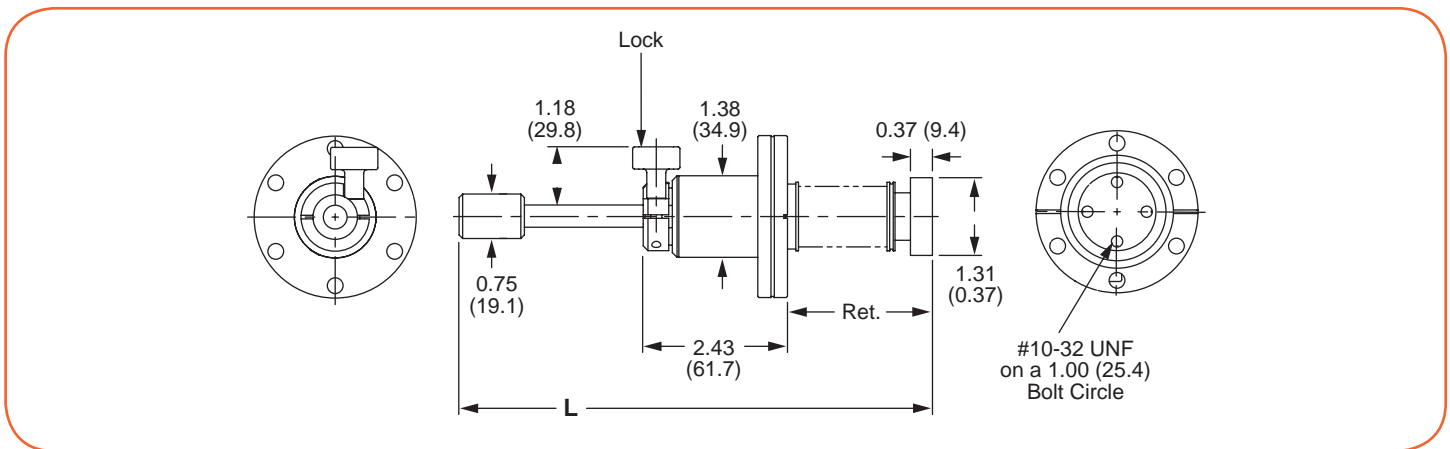
4 Motion & Positioning Devices



Manual Linear Feedthrough with Compact Push-Pull

Flange	Stroke	L	Retracted Length	Weight Lbs. (kg)	Model	Price
2.75	1.0 (25.4)	5.83 (148.1)	1.30 (33.0)	2.5 (1.1)	L-2220-1	\$ 750.00
	2.0 (50.8)	7.21 (183.1)	1.68 (42.7)	2.5 (1.1)	L-2220-2	\$ 965.00
	4.0 (101.6)	9.97 (253.2)	2.44 (62.0)	3.0 (1.4)	L-2220-4	\$1,240.00
	6.0 (152.4)	12.73 (323.3)	3.20 (81.3)	3.5 (1.6)	L-2220-6	\$ 740.00
KF 40	1.0 (25.4)	5.83 (148.1)	1.30 (33.0)	2.3 (1.0)	L-2220-1-SF	\$ 955.00
	2.0 (50.8)	7.21 (183.1)	1.68 (42.7)	2.3 (1.0)	L-2220-2-SF	\$ 955.00
	4.0 (101.6)	9.97 (253.2)	2.44 (62.0)	2.8 (1.3)	L-2220-4-SF	\$1,165.00
	6.0 (152.4)	12.73 (323.3)	3.20 (81.3)	3.3 (1.5)	L-2220-6-SF	\$1,230.00

Dimensions in inches (mm)

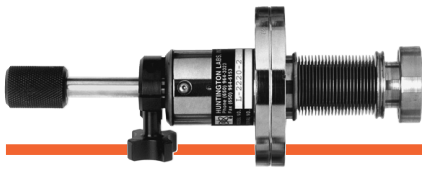


Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Bakeout Temperature: 200°C (maximum)
Operating Temperature: -20° to 150°C

Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr
Position Lock: Hand knob
Maximum Axial Load: 25 lbs. (11.3 kg) concentric load
Maximum Lateral Load: 10 lbs. (4.5 kg) @ tip in ret. position





Motion & Positioning Devices

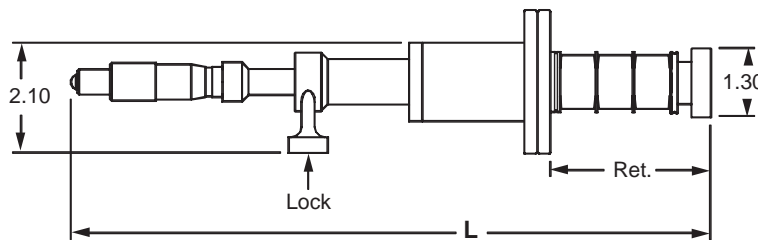
4

Manual Linear Feedthrough with Push-Pull & Micrometer

Flange	Linear Travel		Stroke		L		Weight Lbs. (kg)		Model	Price
2.75	3.00	(76.2)	2.06	(52.3)	12.09	(307.1)	3.5	(1.6)	L-2220-3-M	\$1,195.00
	4.00	(101.6)	2.44	(62.0)	13.47	(342.1)	4.0	(1.8)	L-2220-4-M	\$1,300.00
	6.00	(152.4)	3.20	(81.3)	16.23	(412.2)	5.0	(2.3)	L-2220-6-M	\$1,550.00
	8.00	(203.2)	3.96	(100.6)	18.99	(482.3)	6.0	(2.7)	L-2220-8-M	\$1,795.00
KF 40	3.00	(76.2)	2.06	(52.3)	12.09	(307.1)	3.3	(1.5)	L-2220-3-M-SF	\$1,185.00
	4.00	(101.6)	2.44	(62.0)	13.47	(342.1)	3.8	(1.7)	L-2220-4-M-SF	\$1,290.00
	6.00	(152.4)	3.20	(81.3)	16.23	(412.2)	4.8	(2.2)	L-2220-6-M-SF	\$1,540.00
	8.00	(203.2)	3.96	(100.6)	18.99	(482.3)	5.8	(2.6)	L-2220-8-M-SF	\$1,785.00

Dimensions in inches (mm)

Gross adjustment is accomplished by push-pull action and locked in place as desired. Further fine adjustments are then made by using the micrometer.



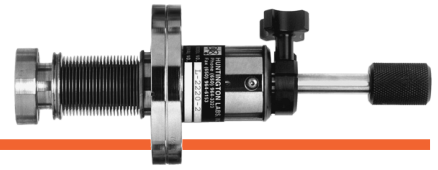
Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Bakeout Temperature: 200°C (maximum)
Operating Temperature: -20° to 50°C
Pressure Range: Atmosphere to 1×10^{-11} Torr

Position Lock: Lock screw
Maximum Axial Load: 5 lbs. (2.3 kg) concentric load
Maximum Lateral Load: 2 lbs. (0.9 kg) @ tip in ret. position
Resolution (Micrometer): 0.01 mm



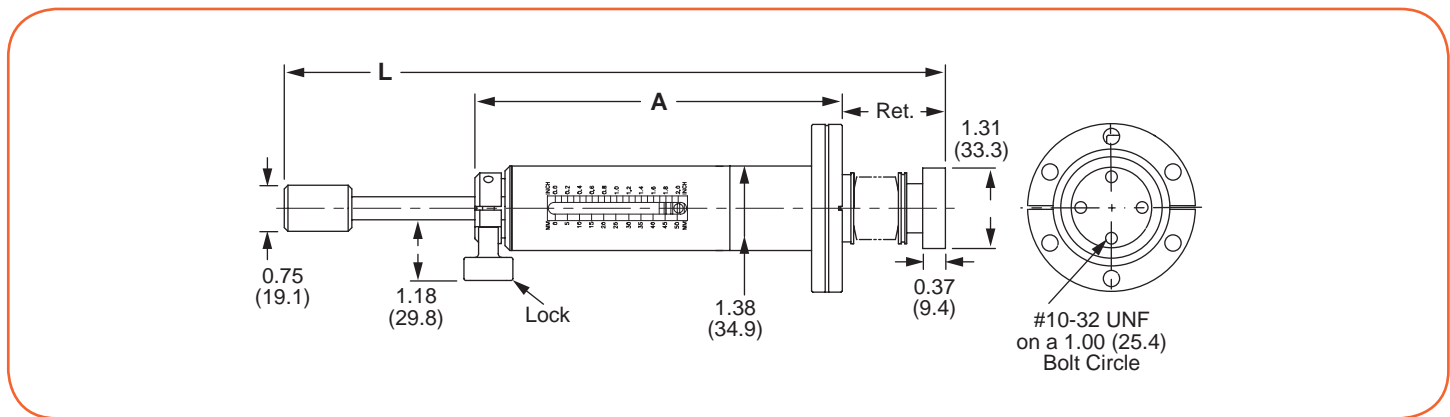
4 Motion & Positioning Devices



Manual Linear Feedthrough with Push-Pull & Scale

Flange	Stroke	A	L	Retracted Length	Weight Lbs. (kg)	Model	Price
2.75	1.0 (25.4)	4.98 (126.5)	8.37 (212.6)	1.30 (33.0)	2.5 (1.1)	L-2221-1	\$ 950.00
	2.0 (50.8)	5.98 (151.9)	10.75 (273.1)	1.68 (42.7)	3.0 (1.4)	L-2221-2	\$1,200.00
	4.0 (101.6)	7.98 (206.7)	15.51 (394.0)	2.44 (62.0)	4.0 (1.8)	L-2221-4	\$1,425.00
	6.0 (152.4)	9.98 (253.5)	20.27 (514.9)	3.20 (81.3)	5.0 (2.3)	L-2221-6	\$1,650.00
KF 40	1.0 (25.4)	4.98 (126.5)	8.37 (212.6)	1.30 (33.0)	2.3 (1.0)	L-2221-1-SF	\$ 940.00
	2.0 (50.8)	5.98 (151.9)	10.75 (273.1)	1.68 (42.7)	2.8 (1.3)	L-2221-2-SF	\$1,190.00
	4.0 (101.6)	7.98 (206.7)	15.51 (394.0)	2.44 (62.0)	3.8 (1.7)	L-2221-4-SF	\$1,415.00
	6.0 (152.4)	9.98 (253.5)	20.27 (514.9)	3.20 (81.3)	4.8 (2.2)	L-2221-6-SF	\$1,640.00

Dimensions in inches (mm)

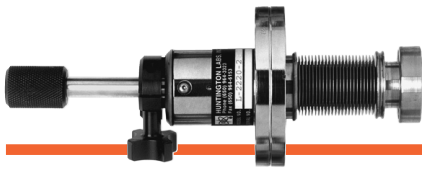


Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Bakeout Temperature: 200°C (maximum)
Operating Temperature: -20° to 50°C
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr

Position Lock: Lock screw
Maximum Axial Load: 25 lbs. (11.3 kg) concentric load
Maximum Lateral Load: 20 lbs. (9.1 kg) @ tip in ret. position
Scale Resolution (Micrometer): 0.05 in. and 1 mm



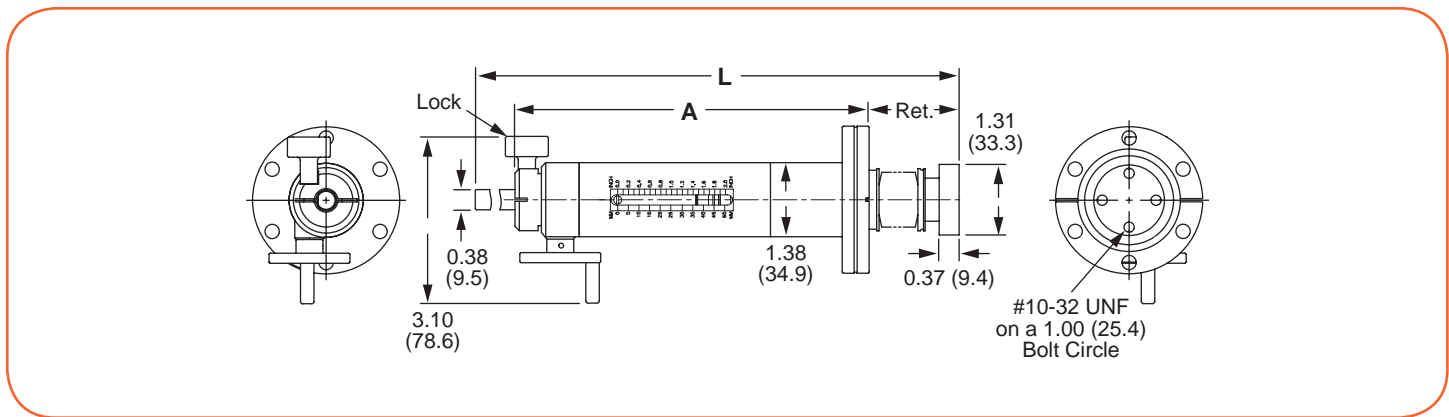


Motion & Positioning Devices 4

Manual Linear Feedthrough with Rack & Pinion

Flange	Stroke	A	L	Retracted Length	Weight Lbs. (kg)	Model	Price
2.75	4.0 (101.6)	8.57 (217.7)	15.14 (384.6)	2.44 (62.0)	3.0 (1.4)	L-2231-4	\$ 1,175.00
	6.0 (152.4)	10.57 (268.5)	19.90 (505.5)	3.20 (81.3)	4.0 (1.8)	L-2231-6	\$ 1,275.00
	8.0 (203.2)	12.57 (319.3)	24.66 (626.4)	3.96 (100.6)	5.0 (2.3)	L-2231-8	\$ 1,375.00
	10.0 (254.0)	14.57 (370.1)	29.42 (747.3)	4.72 (119.9)	6.0 (2.7)	L-2231-10	\$ 1,575.00
KF 40	4.0 (101.6)	8.57 (217.7)	15.14 (384.6)	2.44 (62.0)	3.0 (1.4)	L-2231-4-SF	\$ 1,165.00
	6.0 (152.4)	10.57 (268.5)	19.90 (505.5)	3.20 (81.3)	4.0 (1.8)	L-2231-6-SF	\$ 1,265.00
	8.0 (203.2)	12.57 (319.3)	24.66 (626.4)	3.96 (100.6)	5.0 (2.3)	L-2231-8-SF	\$ 1,365.00
	10.0 (254.0)	14.57 (370.1)	29.42 (747.3)	4.72 (119.9)	6.0 (2.7)	L-2231-10-SF	\$ 1,565.00

Dimensions in inches (mm)



Specifications

Sealing Mechanism: Welded bellows

Material Exposed to Vacuum: Stainless Steel

Bakeout Temperature: 200°C (maximum)

Operating Temperature: -20° to 50°C

Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr

Position Lock: Hand knob

Maximum Axial Load: 25 lbs. (11.3 kg) concentric load

Maximum Lateral Load: 20 lbs. (9.1 kg) @ tip in ret. position

Scale Resolution (Linear): 0.05 in. and 1 mm



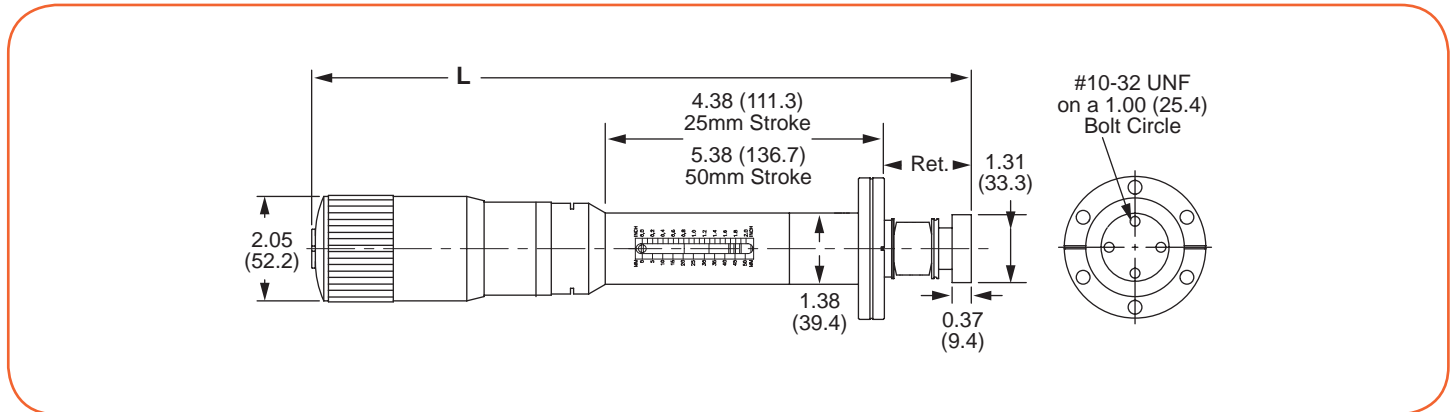
4 Motion & Positioning Devices



Manual Linear Feedthrough with Micrometer

Flange	Stroke	L	Retracted Length	Weight Lbs. (kg)	Model	Price
2.75	0.98 (25)	10.35 (263.0)	1.30 (33.0)	3.0 (1.4)	L-2241-1	\$2,650.00
	1.97 (50)	13.71 (348.3)	1.68 (42.7)	3.5 (1.6)	L-2241-2	\$2,750.00
KF 40	0.98 (25)	10.35 (263.0)	1.30 (33.0)	2.8 (1.3)	L-2241-1-SF	\$2,640.00
	1.97 (50)	13.71 (348.3)	1.68 (42.7)	3.3 (1.5)	L-2241-2-SF	\$2,740.00

Dimensions in inches (mm)



Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Bakeout Temperature: 200oC (maximum)
Operating Temperature: -20o to 50oC
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr

Maximum Axial Load: 10 lbs. (4.5 kg) concentric load
Maximum Lateral Load: 8 lbs. (3.6 kg) @ tip in ext. position
Scale Resolution:
 Linear: 0.05 in. and 1 mm
 Micrometer: 0.002 in.





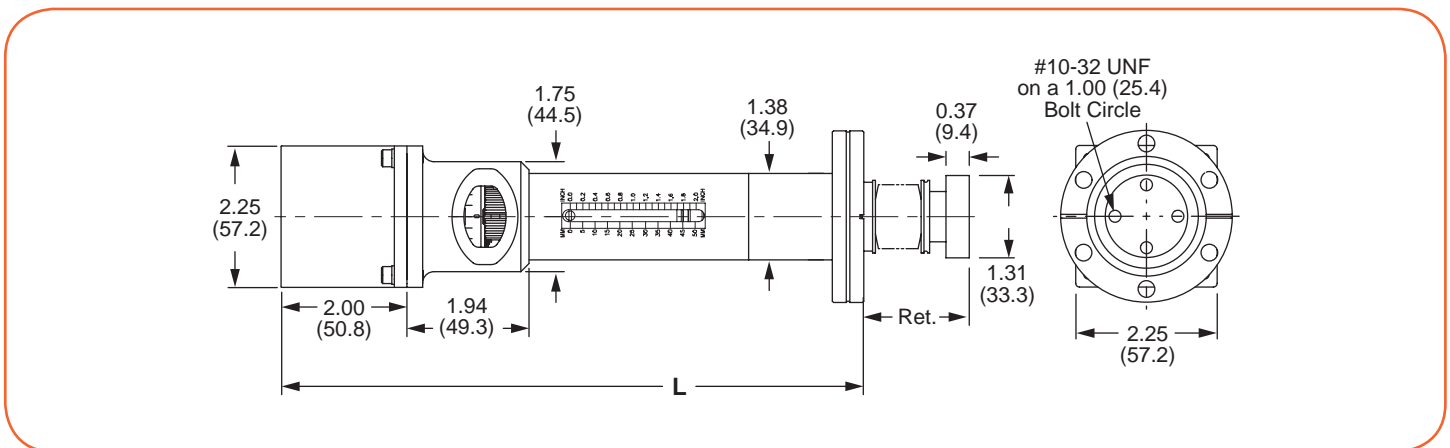
Motion & Positioning Devices 4

Motorized Linear Feedthrough - 0.05 Lead

Flange	Stroke	L	Retracted Length	Weight Lbs. (kg)	Model	Price
2.75	1.0 (25.4)	8.26 (209.8)	1.30 (33.0)	5.0 (2.3)	L-2251-1	\$1,385.00
	2.0 (50.8)	9.26 (235.2)	1.68 (42.7)	5.5 (2.5)	L-2251-2	\$1,585.00
	4.0 (101.6)	11.26 (286.0)	2.44 (62.0)	6.0 (2.7)	L-2251-4	\$1,785.00
	6.0 (152.4)	13.26 (336.8)	3.20 (81.3)	6.5 (2.9)	L-2251-6	\$1,985.00
KF 40	1.0 (25.4)	8.26 (209.8)	1.30 (33.0)	4.8 (2.2)	L-2251-1-SF	\$1,380.00
	2.0 (50.8)	9.26 (235.2)	1.68 (42.7)	5.3 (2.4)	L-2251-2-SF	\$1,580.00
	4.0 (101.6)	11.26 (286.0)	2.44 (62.0)	5.8 (2.6)	L-2251-4-SF	\$1,780.00
	6.0 (152.4)	13.26 (336.8)	3.20 (81.3)	6.3 (2.8)	L-2251-6-SF	\$1,980.00

Dimensions in inches (mm)

Optional stepper motor/encoder/controller available (see Feedthrough Options, page 158)



Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Bakeout Temperature: 200°C (max. with motor removed)
Operating Temperature: -20° to 80°C
Pressure Range: Atmosphere to 1×10^{-11} Torr
Maximum Axial Load: 10 lbs. (4.5 kg) concentric load
Maximum Lateral Load: 20 lbs. (9.1 kg) @ tip in ret. position

Scale Resolution:
 Linear: 0.05 in. and 1 mm
 Dial: 0.002 in. (0.05 mm)
Thread Lead: 0.05 (1.3 mm) per revolution
Motorized Accuracy: 51,200 microsteps/revolution
Stepper Motor: 1.8° - full step



4 Motion & Positioning Devices



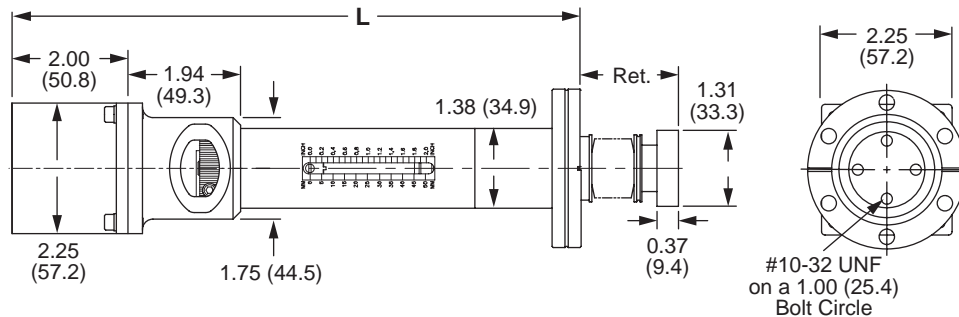
Motorized Linear Feedthrough - 0.125 Lead

Flange	Stroke	L	Weight Lbs. (kg)	Retracted Length	Model	Price
2.75	2.0 (50.8)	9.91 (251.7)	5.5 (2.5)	1.68 (42.7)	L-2252-2	\$ 1,385.00
				2.38 (60.4)	L-2252-2-LL	\$ 2,230.00
	4.0 (101.6)	11.91 (302.5)	6.0 (2.7)	2.44 (62.0)	L-2252-4	\$ 1,585.00
				3.84 (97.5)	L-2252-4-LL	\$ 2,430.00
	6.0 (152.4)	13.91 (353.3)	6.5 (2.9)	3.20 (81.3)	L-2252-6	\$ 1,785.00
				5.30 (134.6)	L-2252-6-LL	\$ 2,630.00
	8.0 (203.2)	15.91 (404.1)	7.0 (3.2)	3.96 (100.6)	L-2252-8	\$ 1,985.00
				6.76 (171.7)	L-2252-8-LL	\$ 2,830.00
KF 40	2.0 (50.8)	9.91 (251.7)	5.3 (2.4)	1.68 (42.7)	L-2252-2-SF	\$ 1,380.00
				2.38 (60.4)	L-2252-2-LL-SF	\$ 2,225.00
	4.0 (101.6)	11.91 (302.5)	5.8 (2.6)	2.44 (62.0)	L-2252-4-SF	\$ 1,580.00
				3.84 (97.5)	L-2252-4-LL-SF	\$ 2,425.00
	6.0 (152.4)	13.91 (353.3)	6.3 (2.8)	3.20 (81.3)	L-2252-6-SF	\$ 1,780.00
				5.30 (134.6)	L-2252-6-LL-SF	\$ 2,625.00
	8.0 (203.2)	15.91 (404.1)	6.8 (3.1)	3.96 (100.6)	L-2252-8-SF	\$ 1,980.00
				6.76 (171.7)	L-2252-8-LL-SF	\$ 2,825.00

Dimensions in inches (mm)

Optional stepper motor/encoder/controller available (see Feedthrough Options, page 158)

Note: 'LL' part numbers indicate million-cycle guaranteed bellows for Long Life

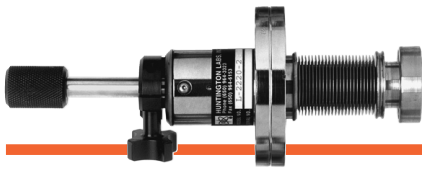


Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Bakeout Temperature: 200°C (max. with motor removed)
Operating Temperature: -20° to 80°C
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr
Maximum Axial Load: 25 lbs. (11.3 kg) concentric load
Maximum Lateral Load: 20 lbs. (9.1 kg) @ tip in ret. position

Scale Resolution:
 Linear: 0.05 in. and 1 mm
 Dial: 0.002 in. (0.05 mm)
Thread Lead: 0.125 (3.17 mm) per revolution
Motorized Accuracy: 51,200 microsteps/revolution
Stepper Motor: 1.8° - full step





Motion & Positioning Devices

4

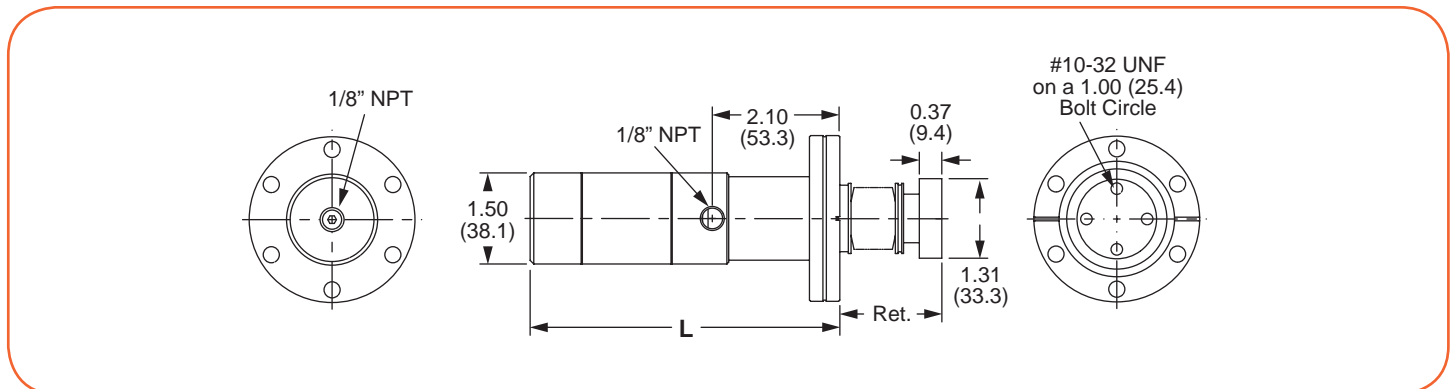
Compact Pneumatic Linear Feedthrough

Flange	Stroke	L	Weight Lbs. (kg)	Retracted Length	Model	Price
2.75	1.0 (25.4)	4.10 (104.1)	3.0 (1.4)	1.30 (33.0)	L-2270-1	\$ 725.00
				1.65 (41.9)	L-2270-1-LL	\$ 875.00
	2.0 (50.8)	5.10 (129.5)	3.5 (1.6)	1.68 (42.7)	L-2270-2	\$ 825.00
				2.38 (60.4)	L-2270-2-LL	\$ 925.00
	4.0 (101.6)	7.10 (180.3)	4.0 (1.8)	2.44 (62.0)	L-2270-4	\$ 1,175.00
				3.84 (97.5)	L-2270-4-LL	\$ 1,275.00
6.0 (152.4)	9.10 (231.1)	4.5 (2.0)	3.20 (81.3)	L-2270-6	\$ 1,375.00	
			5.30 (134.6)	L-2270-6-LL	\$ 1,675.00	
KF 40	1.0 (25.4)	4.10 (104.1)	2.8 (1.3)	1.30 (33.0)	L-2270-1-SF	\$ 715.00
				1.65 (41.9)	L-2270-1-LL-SF	\$ 815.00
	2.0 (50.8)	5.10 (129.5)	3.3 (1.5)	1.68 (42.7)	L-2270-2-SF	\$ 815.00
				2.38 (60.4)	L-2270-2-LL-SF	\$ 970.00
	4.0 (101.6)	7.10 (180.3)	3.8 (1.7)	2.44 (62.0)	L-2270-4-SF	\$ 1,165.00
				3.84 (97.5)	L-2270-4-LL-SF	\$ 1,275.00
6.0 (152.4)	9.10 (231.1)	4.3 (1.9)	3.20 (81.3)	L-2270-6-SF	\$ 1,365.00	
			5.30 (134.6)	L-2270-6-LL-SF	\$ 1,675.00	

Dimensions in inches (mm)

Optional solenoids and micro switches available (see Feedthrough Options, page 158)

Note: 'LL' part numbers indicate million-cycle guaranteed bellows for Long Life



Specifications

Sealing Mechanism: Welded bellows

Material Exposed to Vacuum: Stainless Steel

Bakeout Temperature: 200°C (maximum)

Operating Temperature: -20° to 150°C

Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr

Maximum Axial Load: 25 lbs. (11.3 kg) concentric load

Maximum Lateral Load: 10 lbs. (4.5 kg) @ tip in ret. position

Stroke Speed: No faster than 1 second

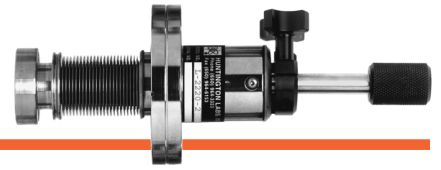
Port Size: 1/8" NPT (Solenoid available as option)

Activation: Double acting cylinder

Air Required: 100 psi (6.9 bar) maximum



4 Motion & Positioning Devices



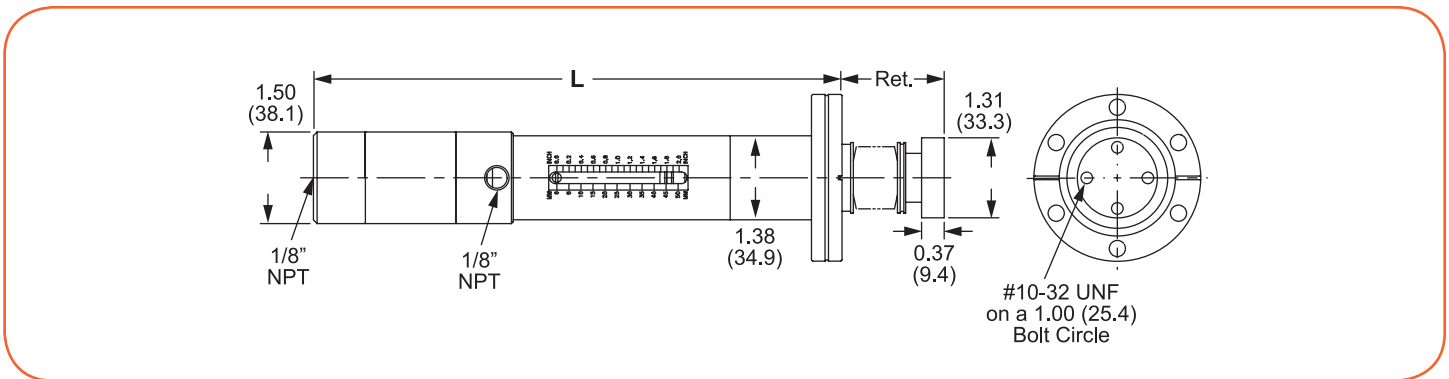
Pneumatic Linear Feedthrough with Scale

Flange	Stroke	L	Retracted Length	Weight Lbs. (kg)	Model	Price
2.75	1.0 (25.4)	6.65 (168.9)	1.30 (33.0)	3.5 (1.6)	L-2271-1	\$ 895.00
	2.0 (50.8)	8.65 (219.7)	1.68 (42.7)	4.0 (1.8)	L-2271-2	\$ 995.00
	4.0 (101.6)	12.65 (321.3)	2.44 (62.0)	4.5 (2.0)	L-2271-4	\$ 1,195.00
	6.0 (152.4)	16.55 (422.9)	3.20 (81.3)	5.0 (2.3)	L-2271-6	\$ 1,395.00
KF 40	1.0 (25.4)	6.65 (168.9)	1.30 (33.0)	3.3 (1.5)	L-2271-1-SF	\$ 885.00
	2.0 (50.8)	8.65 (219.7)	1.68 (42.7)	3.8 (1.7)	L-2271-2-SF	\$ 985.00
	4.0 (101.6)	12.65 (321.3)	2.44 (62.0)	4.3 (1.9)	L-2271-4-SF	\$ 1,185.00
	6.0 (152.4)	16.55 (422.9)	3.20 (81.3)	4.8 (2.2)	L-2271-6-SF	\$ 1,385.00

Dimensions in inches (mm)

Optional solenoids and micro switches available (see Feedthrough Options, page 158)

Call for adjustable stroke versions.



Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Bakeout Temperature: 200°C (maximum)
Operating Temperature: -20° to 150°C
Pressure Range: Atmosphere to 1×10^{-11} Torr
Maximum Axial Load: 25 lbs. (11.3 kg) concentric load

Maximum Lateral Load: 20 lbs. (9.1 kg) @ tip in ret. position
Stroke Speed: No faster than 1 second
Port Size: 1/8" NPT (Solenoid available as option)
Activation: Double acting cylinder
Air Required: 100 psi (6.9 bar) maximum
Quick Reference Position Scale: 0.05 in. and 1 mm





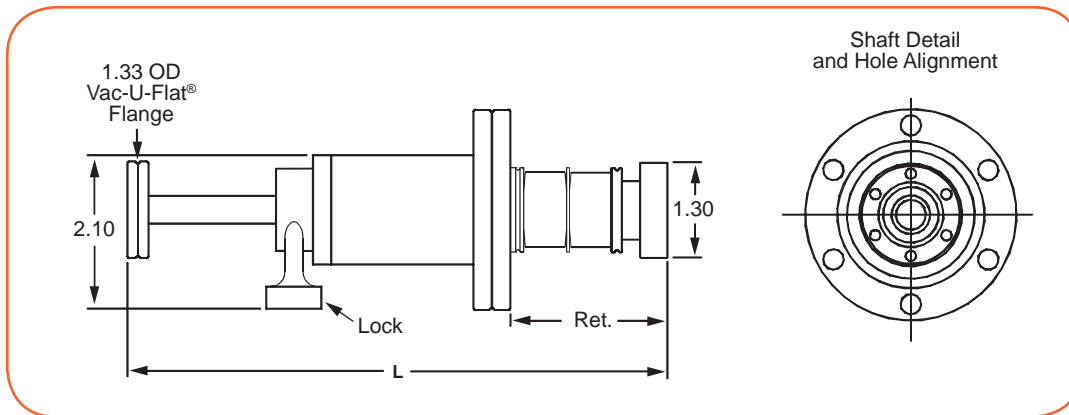
Motion & Positioning Devices 4

Manual Linear with Push-Pull Hollow Tube

Flange	Linear Travel	Retracted Length	L	Weight Lbs.	Model	Price
2.75	1.00	1.30	5.83	2.0	L-2220-1-T	\$ 900.00
	2.00	1.68	7.21	2.5	L-2220-2-T	\$ 1,000.00
	4.00	2.44	9.97	3.0	L-2220-4-T	\$ 1,400.00
	6.00	3.20	12.73	4.0	L-2220-6-T	\$ 1,600.00
KF 40	1.00	1.30	5.83	1.8	L-2220-1-T-SF	\$ 890.00
	2.00	1.68	7.21	2.3	L-2220-2-T-SF	\$ 990.00
	4.00	2.44	9.97	2.8	L-2220-4-T-SF	\$ 1,390.00
	6.00	3.20	12.73	3.8	L-2220-6-T-SF	\$ 1,590.00



A straight through hollow shaft can be used for liquid, electrical, instrumentation feedthrough, or a linear or rotary action feedthrough can be added to give coaxial motion.



Specifications

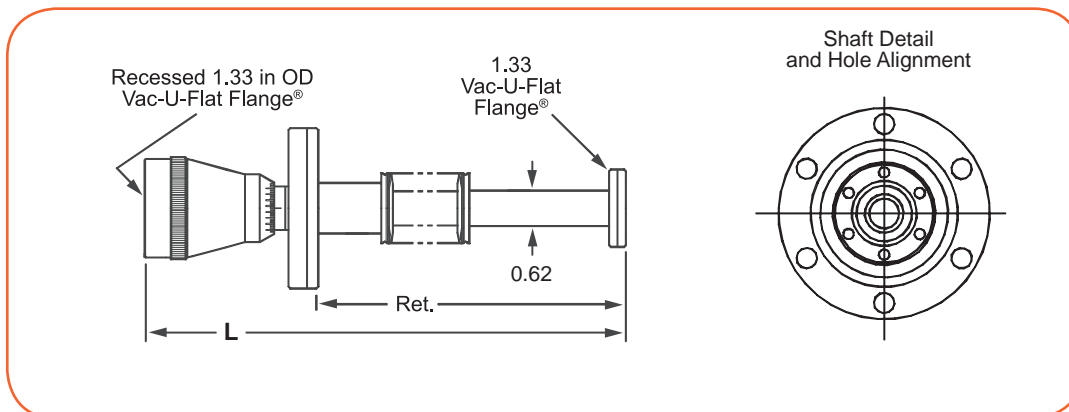
- Sealing Mechanism:** Welded bellows
- Mat'l Exposed to Vacuum:** Stainless Steel
- Bakeout Temperature:** 200°C (maximum)
- Operating Temperature:** -20° to 150°C
- Pressure Range:** Atm. to 1 x 10⁻¹¹ Torr
- Position Lock:** Lock screw
- Maximum Axial Load:** 20 lbs. concentric load
- Maximum Lateral Load:** 6 lbs. @ tip in ret. position
- Tubular Shaft ID:** 0.30 in.

Manual Linear with Micrometer & Hollow Tube

Flange	Linear Travel	Retracted Length	L	Weight Lbs.	Model	Price
2.75	1.0	4.20	8.13	2.0	VF-111-1	\$ 1,075.00
	2.0	4.20	10.14	2.0	VF-111-2	\$ 1,275.00
KF 40	1.0	4.20	8.13	1.75	VF-111-1-SF	\$ 1,070.00
	2.0	4.20	10.14	1.75	VF-111-2-SF	\$ 1,270.00



A straight through hollow shaft can be used for liquid, electrical, instrumentation feedthrough, or a linear or rotary action feedthrough can be added to give coaxial motion.



Specifications

- Sealing Mechanism:** Welded bellows
- Mat'l Exposed to Vacuum:** Stainless Steel
- Bakeout Temperature:** 200°C (maximum)
- Operating Temperature:** -20° to 150°C
- Pressure Range:** Atm. to 1 x 10⁻¹¹ Torr
- Maximum Axial Load:** 20 lbs. concentric load
- Maximum Lateral Load:** 6 lbs. @ tip in ret. position
- Tubular Shaft ID:** 0.43 in.
- Micrometer Resolution:** 0.01 mm



4 Motion & Positioning Devices



Motorized Linear Feedthrough with Hollow Tube

Specifications

Sealing Mechanism:

Welded bellows

Mat'l Exposed to Vacuum:

Stainless Steel

Bakeout Temperature:

200°C (motor removed)

Operating Temperature:

-20° to 80°C

Pressure Range:

Atm. to 1×10^{-11} Torr

Maximum Axial Load:

20 lbs. concentric load

Maximum Lateral Load:

6 lbs. @ tip in ret. position

Tubular Shaft ID: 0.30 in.

Thread Lead: 0.125 in.

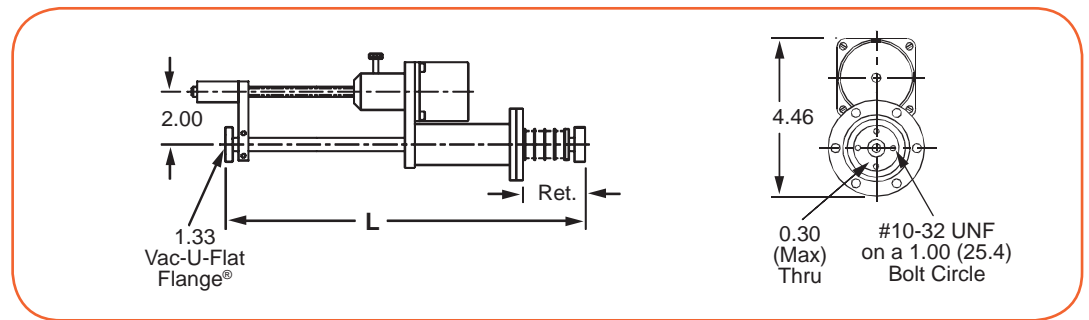
Motorized Accuracy:

51,200 microsteps/revolution

Stepper Motor: 1.8° full step

Flange	Linear Travel	Retracted Length	L	Weight Lbs.	Model	Price
2.75	2.00	1.68	10.74	8.0	L-2250-2-T	\$ 1,580.00
	4.00	2.44	13.50	9.0	L-2250-4-T	\$ 1,780.00
	6.00	3.20	16.26	10.0	L-2250-6-T	\$ 1,980.00
	8.00	3.96	19.02	11.0	L-2250-8-T	\$ 2,180.00
KF 40	2.00	1.68	10.74	7.8	L-2250-2-T-SF	\$ 1,575.00
	4.00	2.44	13.50	8.8	L-2250-4-T-SF	\$ 1,775.00
	6.00	3.20	16.26	9.8	L-2250-6-T-SF	\$ 1,975.00
	8.00	3.96	19.02	10.8	L-2250-8-T-SF	\$ 2,175.00

Optional stepper motor/encoder/controller is available (see Feedthrough Options, page 158)



Pneumatic Linear Feedthrough with Hollow Tube

Specifications

Sealing Mechanism:

Welded bellows

Mat'l Exposed to Vacuum:

Stainless Steel

Bakeout Temperature:

200°C (maximum)

Operating Temperature:

-20° to 150°C

Pressure Range:

Atm. to 1×10^{-11} Torr

Maximum Axial Load:

20 lbs. concentric load

Maximum Lateral Load:

6 lbs. @ tip in ret. position

Tubular Shaft ID: 0.30 in.

Stroke Speed:

No faster than 1 second

Port Size:

1/8" NPT (Solenoid optional)

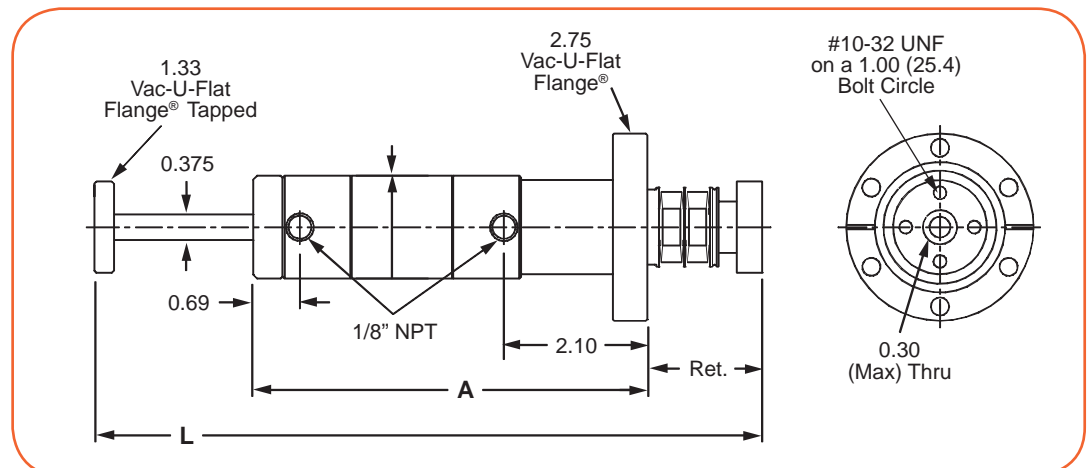
Activation:

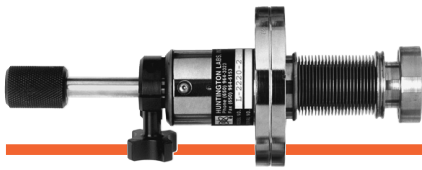
Double acting cylinder

Air Required: 100 psi max.

Flange	Linear Travel	Retracted Length	A	L	Weight Lbs.	Model	Price
2.75	2.00	1.68	5.64	10.27	3.0	L-2270-2-T	\$ 1,300.00
	4.00	2.44	7.64	15.03	3.5	L-2270-4-T	\$ 1,500.00
	6.00	3.20	9.64	19.74	4.0	L-2270-6-T	\$ 1,700.00
	8.00	3.96	11.64	24.55	4.5	L-2270-8-T	\$ 1,900.00
KF 40	2.00	1.68	5.64	10.27	2.8	L-2270-2-T-SF	\$ 1,290.00
	4.00	2.44	7.64	15.03	3.3	L-2270-4-T-SF	\$ 1,490.00
	6.00	3.20	9.64	19.74	3.8	L-2270-6-T-SF	\$ 1,690.00
	8.00	3.96	11.64	24.55	4.3	L-2270-8-T-SF	\$ 1,890.00

Optional solenoids and position switches are available (see Feedthrough Options)

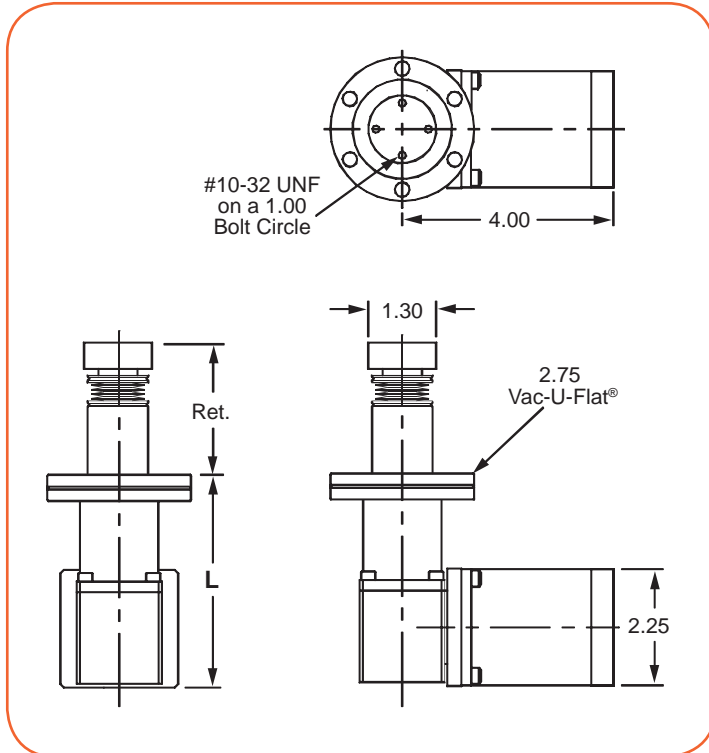




Motorized High Load Lifter

Flange	Stroke	Retracted Length	L	Weight Lbs.	Model	Price
2.75	1.0	2.5	4.0	4.0	MFHL-275-1	\$ 2,150.00
	2.0	3.0	5.0	4.5	MFHL-275-2	\$ 2,250.00
	3.0	3.5	6.0	4.8	MFHL-275-3	\$ 2,350.00
	4.0	4.0	7.0	5.0	MFHL-275-4	\$ 2,450.00

Optional stepper motor/encoder/controller is available (see Feedthrough Options)



Specifications

Sealing Mechanism:

Welded bellows

Mat'l Exposed to Vacuum:

Stainless Steel

Bakeout Temperature:

200°C (motor removed)

Operating Temperature:

-20° to 80°C

Pressure Range:

Atm. to 1×10^{-11} Torr

Maximum Axial Force:

75 lbs.

Thread Lead: 0.083 in.

Motorized Accuracy:

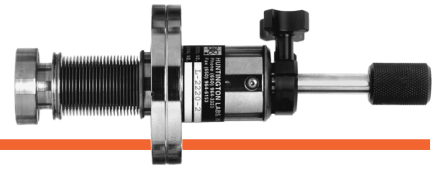
51,200 microsteps/revolution

Stepper Motor: 1.8° full step

Gear Box Reduction:

2 to 1 reduction





Pneumatic High Load Lifter

Flange	Linear Travel	L	Retracted Length	Weight Lbs.	Model	Price
2.75	1.00	5.47	2.50	2.5	PFHL-275-1	\$ 995.00
	2.00	7.47	3.00	3.0	PFHL-275-2	\$ 1,150.00
	3.00	9.47	3.50	3.7	PFHL-275-3	\$1,300.00
	4.00	11.47	4.00	4.2	PFHL-275-4	\$1,450.00

Optional solenoids and position switches are available (see Feedthrough Options, page 158)

Specifications

Sealing Mechanism:

Welded bellows

Mat'l Exposed to Vacuum:

Stainless Steel

Standard Mounting:

2.75 Vac-U-Flat® flange

Bakeout Temperature:

200°C (maximum)

Operating Temperature:

-20° to 150°C

Pressure Range:

Atm. to 1×10^{-11} Torr

Maximum Axial Force:

110 lbs. concentric load

Stroke Speed:

No faster than 1 second

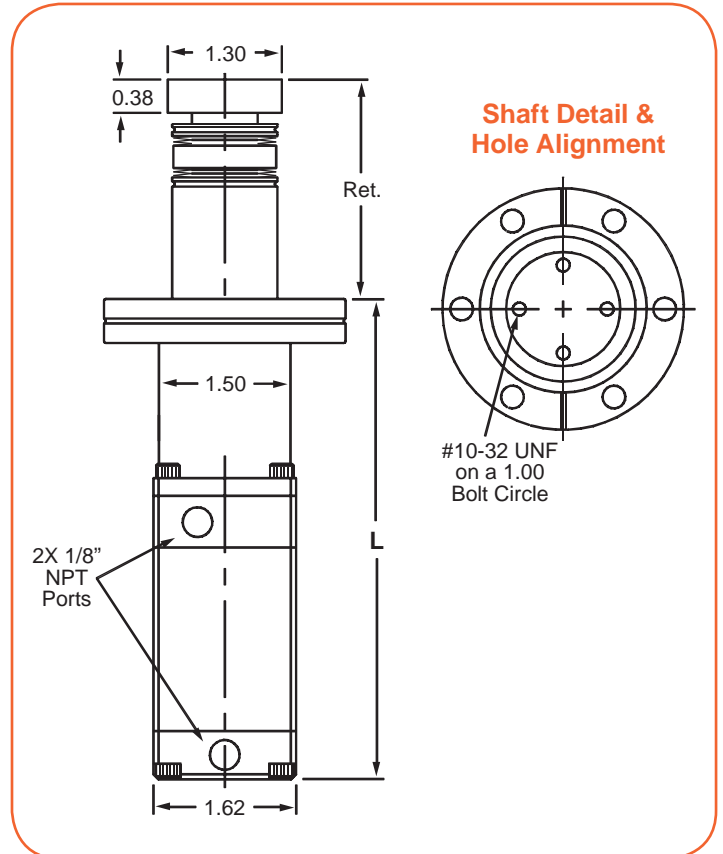
Port Size:

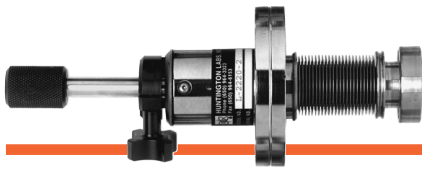
1/8" NPT (Solenoid optional)

Activation:

Double acting cylinder

Air Required: 120 psi max.



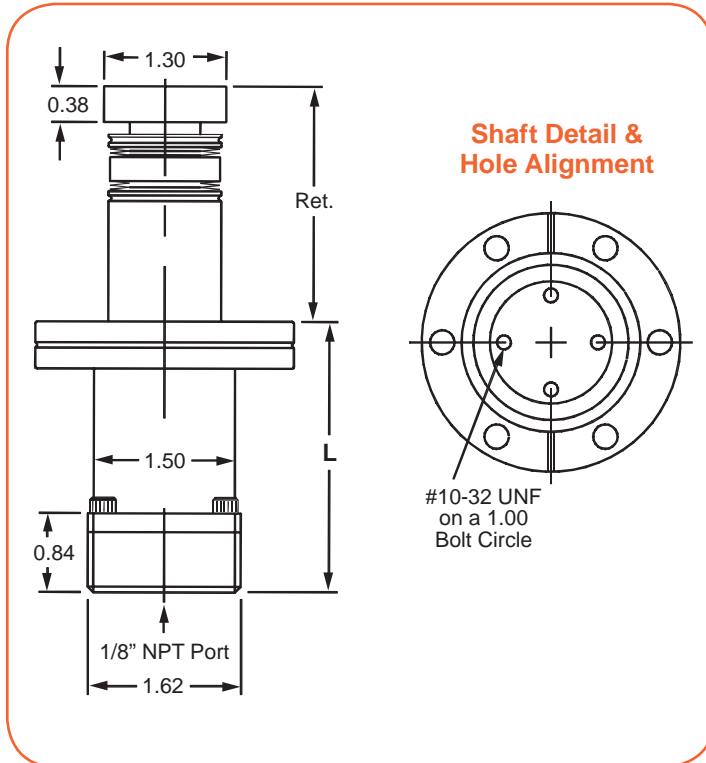


Motion & Positioning Devices 4

Pneumatic High Load Lifter - Single Acting

Flange	Linear Travel	L	Retracted Length	Weight Lbs.	Model	Price
2.75	1.00	2.88	2.50	2.0	PFHL-275-1-LR	\$ 795.00
	2.00	3.88	3.00	2.3	PFHL-275-2-LR	\$ 845.00
	3.00	4.88	3.50	2.8	PFHL-275-3-LR	\$ 955.00
	4.00	5.88	4.00	3.1	PFHL-275-4-LR	\$1,075.00

Optional solenoids and position switches are available (see Feedthrough Options, page 158)

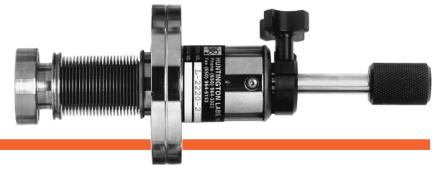


Specifications

- Sealing Mechanism:**
Welded bellows
- Mat'l Exposed to Vacuum:**
Stainless Steel
- Standard Mounting:**
2.75 Vac-U-Flat® flange
- Bakeout Temperature:**
200°C (maximum)
- Operating Temperature:**
-20° to 150°C
- Pressure Range:**
Atm. to 1 x 10⁻¹¹ Torr
- Maximum Axial Force:**
110 lbs. concentric load
- Stroke Speed:**
No faster than 1/2 second
- Port Size:**
1/8" NPT (Solenoid optional)
- Activation:**
Air-to-lift, Load-to-return
- Air Required:** 120 psi max.



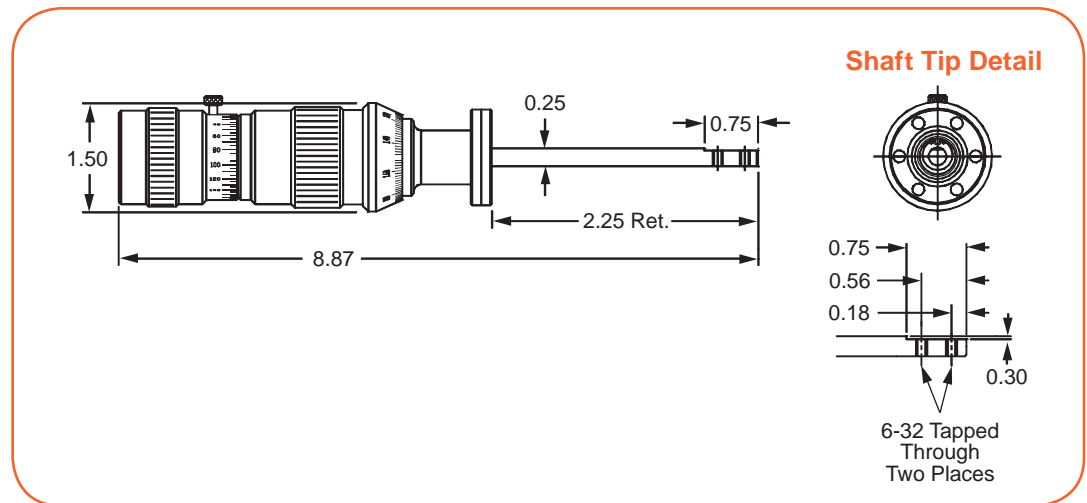
4 Motion & Positioning Devices



The patented design of the **VF-187** Mini Rotary Linear feedthrough provides the highest torque in the smallest envelope of any UHV compatible Linear-Rotary feedthrough. The special vernier design provides excellent resolution for both the rotary and linear movements. Designed specifically for use in STM (Scanning Tunnel Microscopes), this versatile positioning device is suitable for a wide variety of applications. This feedthrough provides long life, high accuracy, and smooth operation.

Manual Mini Rotary/Linear Feedthrough

Flange	Linear Travel	Weight Lbs.	Model	Price
1.33	1.20 (30 mm)	1.2	VF-187	\$1,280.00
2.75	1.20 (30 mm)	1.7	VF-187-A	\$1,285.00
KF 16	1.20 (30 mm)	1.2	VF-187-SF	\$1,275.00



Specifications

- Sealing Mechanism:** Welded bellows
- Material Exposed to Vacuum:** Stainless Steel
- Bakeout Temperature:** 200°C (maximum)
- Operating Temperature:** -20° to 100°C
- Pressure Range:** Atmosphere to 1×10^{-11} Torr
- Position Lock:**
 - Radial: Lock screw
 - Linear: Hand knob
- Maximum Torque:** 175 oz. in.
- Maximum Axial Load:** 20 lbs. concentric load
- Rotary Resolution (Vernier):** 1°

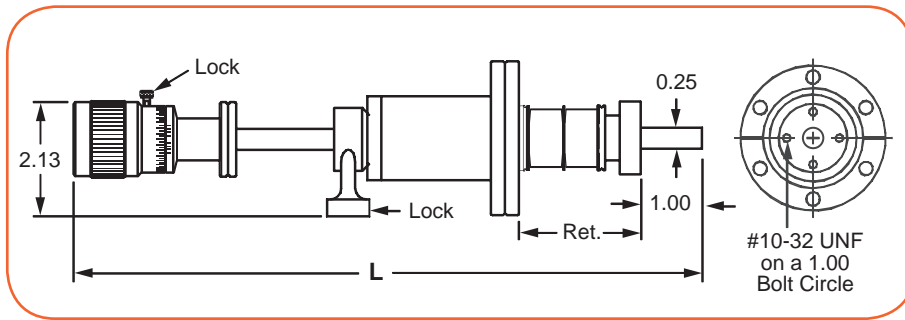




Motion & Positioning Devices 4

Manual Rotary/Linear Feedthrough

Flange	Linear Travel	Retracted Length	L	Weight Lbs.	Model	Price
2.75	1.00	1.30	9.72	5.00	LR-2220-1	\$1,300.00
	2.00	1.68	11.10	5.50	LR-2220-2	\$1,500.00
	4.00	2.44	13.56	6.50	LR-2220-4	\$1,700.00
	6.00	3.20	16.63	7.00	LR-2220-6	\$1,900.00
	8.00	3.96	19.38	9.00	LR-2220-8	\$2,100.00
KF 40	1.00	1.30	9.72	4.75	LR-2220-1-SF	\$1,490.00
	2.00	1.68	11.10	5.25	LR-2220-2-SF	\$1,490.00
	4.00	2.44	13.56	6.25	LR-2220-4-SF	\$1,690.00
	6.00	3.20	16.63	6.75	LR-2220-6-SF	\$1,890.00
	8.00	3.96	19.38	8.75	LR-2220-8-SF	\$2,090.00

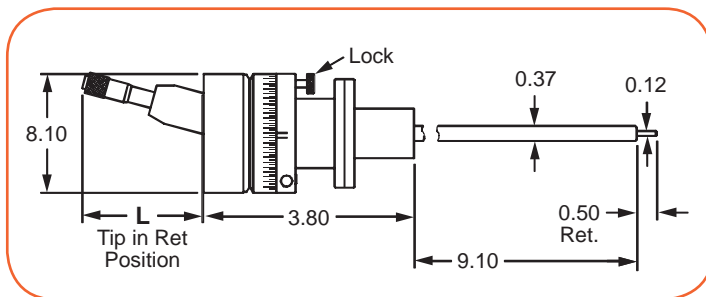


Specifications

- Sealing Mechanism:** Welded bellows
- Mat'l Exposed to Vacuum:** Stainless Steel
- Bakeout Temperature:** 200°C (maximum)
- Operating Temperature:** -20° to 100°C
- Pressure Range:** Atm. to 1×10^{-11} Torr
- Position Lock:**
 - Radial: Lock screw
 - Linear: Hand knob
- Max. Torque:** 175 oz. in.
- Max. Axial Load:** 20 lbs. concentric load
- Rotary Resolution (Vernier):** 1°

Manual Precision Rotary/Linear Feedthrough

Flange	Description	Coaxial Linear Stroke	L	Weight Lbs.	Model	Price
2.75	Precision Rotary Motion with 12.5 mm Coaxial Linear Motion	0.5	3.06	5.0	PRC-276	\$3,100.00
	Precision Rotary Motion with 25.0 mm Coaxial Linear Motion	1.0	3.86	5.0	PRC-276-1	\$3,200.00



Specifications

- Sealing Mechanism:** Welded bellows
- Material Exposed to Vacuum:** Stainless Steel
- Standard Mounting:** 2.75 inch Vac-U-Flat® flange
- Bakeout Temperature:** 200°C (maximum)
- Operating Temperature:** -20° to 100°C
- Pressure Range:** Atmosphere to 1×10^{-11} Torr
- Position Lock:** Lock screw
- Maximum Torque:** 4 lbs. ft.
- Maximum Axial Load:** 2 lbs. concentric load
- Resolution:**
 - Rotary (Vernier): 0.5°
 - Linear (micrometer): 0.1 mm
- Detent Stops:** Every 15° or 22.5°



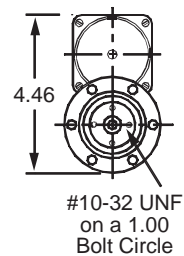
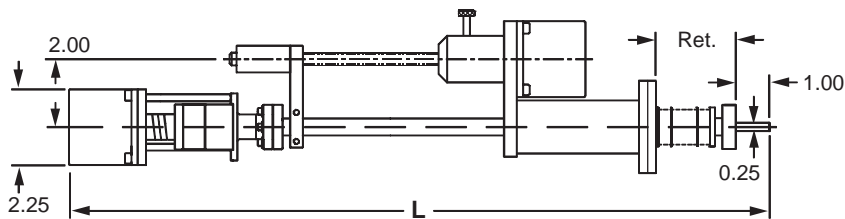
4 Motion & Positioning Devices



Motorized Rotary/Linear Feedthrough

Flange	Linear Travel	Retracted Length	L	Weight Lbs.	Model	Price
2.75	2.00	1.68	17.68	13.50	LRM-2250-2	\$2,350.00
	4.00	2.44	20.44	14.00	LRM-2250-4	\$2,550.00
	6.00	3.20	23.20	15.00	LRM-2250-6	\$2,750.00
	8.00	3.96	25.96	17.00	LRM-2250-8	\$2,950.00
KF 40	2.00	1.68	17.68	13.25	LRM-2250-2-SF	\$2,345.00
	4.00	2.44	20.44	13.75	LRM-2250-4-SF	\$2,545.00
	6.00	3.20	23.20	14.75	LRM-2250-6-SF	\$2,745.00
	8.00	3.96	25.96	16.75	LRM-2250-8-SF	\$2,945.00

Optional stepper motor/encoder/controller available (see Feedthrough Options, page 158)



Specifications

Sealing Mechanism: Welded bellows
Material Exposed to Vacuum: Stainless Steel
Standard Mounting: 2.75 inch Vac-U-Flat® flange
Bakeout Temperature: 200°C (with motors removed)
Operating Temperature: -20° to 80°C
Pressure Range: Atmosphere to 1×10^{-11} Torr

Maximum Torque: 50 oz. in.
Maximum Axial Load: 20 lbs. concentric load
Maximum Motor Speed: 250 rpm
Motorized Accuracy: 51,200 microsteps/revolution
Stepper Motor: 1.8° full step
Thread Lead (Linear Drive): 0.125





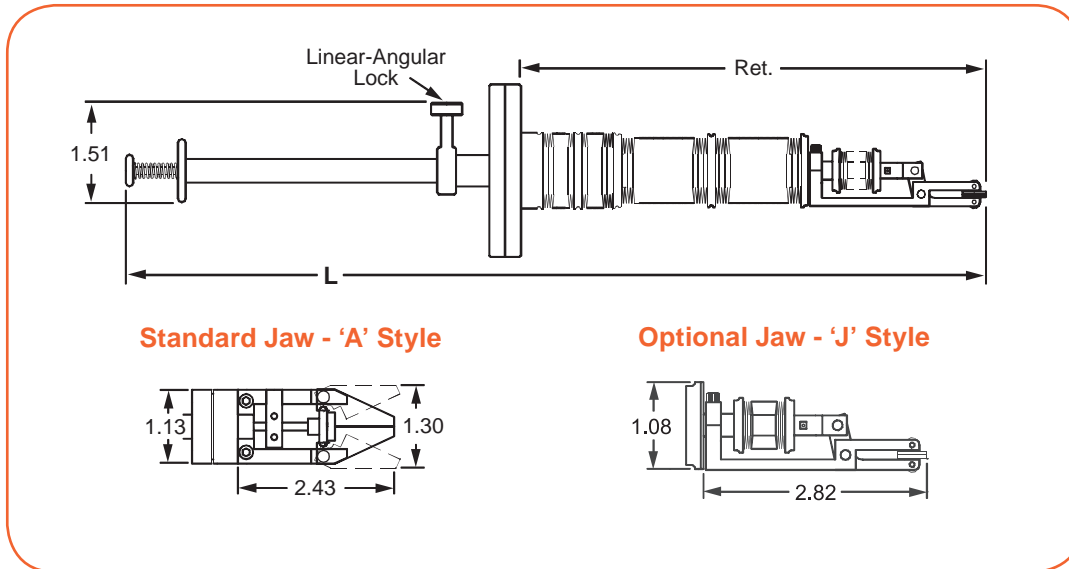
Motion & Positioning Devices 4

Linear/Angular Wobble Stick

Flange	Linear Travel	Retracted Length	L	Weight Lbs.	Model	Price
2.75	5.00	5.01	15.06	3.0	VF-176-5	\$1,595.00
		5.01	15.06	3.0	VF-176-5-J	\$1,950.00
	10.00	5.95	21.04	6.0	VF-176-10	\$2,595.00
		5.95	21.04	6.0	VF-176-10-J	\$2,695.00

Models with longer strokes and without jaws quoted on request

Versatility is the word that best describes the Huntington Series **VF-176** wobble sticks. A thumb driven plunger activates the grabber jaws, which are capable of holding or picking up and repositioning samples or other objects within the vacuum chamber. This ultra-high vacuum positioning device is welded bellows sealed, has angular motion capability of up to 45°, and has a standard stroke of four inches. Much longer strokes of up to 40 inches and an interchangeable jaw (option 'J') is available upon request. The thumb screw locks linear and angular movement.



Specifications

- Sealing Mechanism:** Welded bellows
- Material Exposed to Vacuum:** Stainless Steel
- Standard Mounting:** Rotatable 2.75 inch Vac-U-Flat® flange
- Bakeout Temperature:** 200°C (maximum)
- Operating Temperature:** -20° to 100°C
- Pressure Range:** Atmosphere to 1 x 10⁻¹¹ Torr
- Position Lock (Linear & Angular):** Lock screw
- Maximum Axial Load:** 10 lbs.
- Angular Motion:** 45° included angle
- Jaw Grip Force:** 1 lb.
- Standard Jaw:** Jaw style 'A'



4 Motion & Positioning Devices

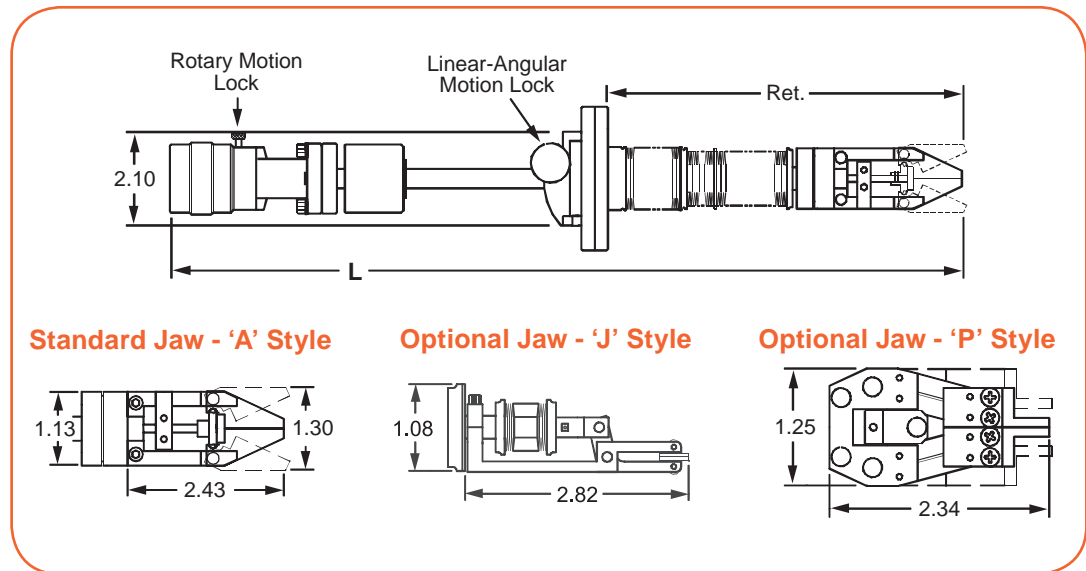


Positive control of the jaw pressure is accomplished with a turn sleeve thimble-like jaw activator. A rotary dial and lock enables rotary position to be repeatable and secure. A specially designed rotatable thumb screw slot lock allows both angular and linear positioning to be locked in place. Longer versions providing up to 40 inches of stroke are available upon request. Model VF-176-4-R is shown in the photo and drawing above with the standard jaw in place. Upon request it can also be supplied with custom jaws or either of the other two jaw styles shown.

Linear/Angular Wobble Stick with Rotation

Flange	Linear Travel	Retracted Length	L	Weight Lbs.	Model	Price
2.75	5 in.	5.76	17.82	8.0	VF-176-5-R	\$ 2,550.00
		5.76	17.82	8.0	VF-176-5-R-J	\$ 2,950.00
		5.76	17.82	8.0	VF-176-5-R-P	\$ 3,150.00
	10 in.	6.74	23.80	8.5	VF-176-10-R	\$ 3,100.00
		6.74	23.80	8.5	VF-176-10-R-J	\$ 3,500.00
		6.74	23.80	8.5	VF-176-10-R-P	\$ 3,885.00

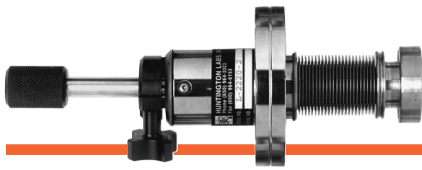
Models with longer strokes and without jaws quoted on request



Specifications

- Sealing Mechanism:** Welded bellows
- Material Exposed to Vacuum:** Stainless Steel
- Standard Mounting:** Rotatable 2.75 inch Vac-U-Flat® flange
- Bakeout Temperature:** 200°C (maximum)
- Operating Temperature:** -20° to 100°C
- Pressure Range:** Atmosphere to 1 x 10⁻¹¹ Torr
- Position Lock:** Lock screw
- Maximum Torque:** 175 oz. in.
- Maximum Axial Load:** 10 lb. concentric load
- Rotary Resolution (Vernier):** 1°
- Angular Motion:** 45° included angle
- Jaw Grip Force:** 1 lb.
- Standard Jaw:** Jaw style 'A'





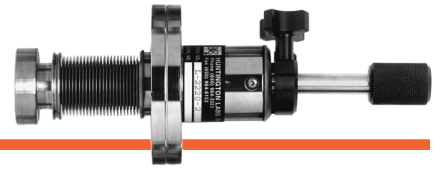
Magnetic Feedthrough Specification Comparison

Model	VF-169/1695	VFC-169	VFS-169	VFS-1690	VFS-169-R	VFS1690-R
Rotary	X	X			X	X
Linear	X	X	X	X	X	X
Welded Tube Seal	Linear Motion	Linear Motion	Linear Motion	Linear Motion	Linear Motion	Linear Motion
Welded Bellows Seal	N/A	N/A	N/A	N/A	Rotary Motion	Rotary Motion
Magnet Type	Alnico	Samarium Cobalt	Samarium Cobalt	Samarium Cobalt	Samarium Cobalt	Samarium Cobalt
Maximum Axial Force	5 Lbs.	25 Lbs.	70 Lbs.	200 Lbs.	70 Lbs.	200 Lbs.
Torque	60 oz. in.	128 oz. in.	N/A	N/A	200 oz. in.	200 oz. in.
Bakeout Temp.	200° C	200° C	200° C	200° C	200° C	200° C
Standard Mounting	2.75 in. Vac-U-Flat® Flange	2.75 in. Vac-U-Flat® Flange	2.75 in. Vac-U-Flat® Flange	4.50 in. Vac-U-Flat® Flange	2.75 in. Vac-U-Flat® Flange	4.50 in. Vac-U-Flat® Flange
Shaft Diameter	.25/.50	0.625	0.375	0.625	0.375	0.625
Shaft Tip Diameter	.25/.50	0.625	0.375	0.50	0.25	0.50
Standard Strokes Available	10, 14, 18, 24, 36	12, 18, 24, 36, 42, 48	12, 18, 24, 36	12, 18, 24, 36, 48	12, 18, 24, 30, 36	12, 18, 24, 30, 36, 48

Some models available in motorized versions



4 Motion & Positioning Devices



Alnico Magnetic Linear/Rotary Transporter

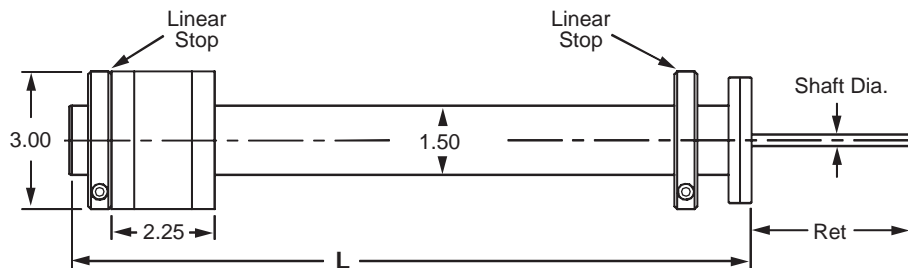
Shaft	Linear Travel	Retracted Length	L	Weight Lbs.	Model	Price
0.25 OD Solid	10.0	3.50	15.10	10	VF-169-10	\$1,100.00
	12.0	3.50	17.10	10	VF-169-12	\$1,225.00
	14.0	3.50	19.10	10	VF-169-14	\$1,225.00
	18.0	3.50	23.10	12	VF-169-18	\$1,225.00
0.50 OD 0.065 wall Hollow	18.0	3.50	17.10	14	VF-1695-18	\$1,345.00
	24.0	3.50	29.10	14	VF-1695-24	\$1,525.00
	36.0	3.50	41.10	16	VF-1695-36	\$1,825.00

Models with other strokes lengths and shaft diameters quoted on request.

Note: For rough positioning only. For more precise positioning see the VFC or VFS Series of rare earth magnetic transporters. Call for guide rail option.

The VF-169 Series has been the “workhorse” of the long stroke feedthroughs for over 35 years. Designed as a low cost option for visual positioning, it is not intended for applications requiring very controlled or precise movement. Huntington continues to offer this widely used feedthrough in the most popular stroke lengths as indicated above.

For much greater precision and/or longer strokes, we recommend the new patented VFC-169 Series of long stroke magnetically coupled feedthroughs. This series features Samarium Cobalt rare earth magnets, more precisely machined components, and best available bearing systems, which make them the smoothest operating and most precise magnetically coupled feedthroughs to be found anywhere.



Shaft End Detail (for VF-1695 only)



Specifications

Sealing Mechanism: Welded tube

Material Exposed to Vacuum: Stainless Steel

Standard Mounting: 2.75 inch Vac-U-Flat® flange

Bakeout Temperature: 200°C (with magnet removed)

Operating Temperature: -20° to 100°C

Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr

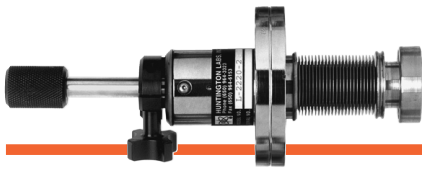
Maximum Torque: 60 oz. in.

Maximum Axial Load: 5 lbs. concentric load

Magnet Type: Alnico

Linear Stops: 2 locking rings



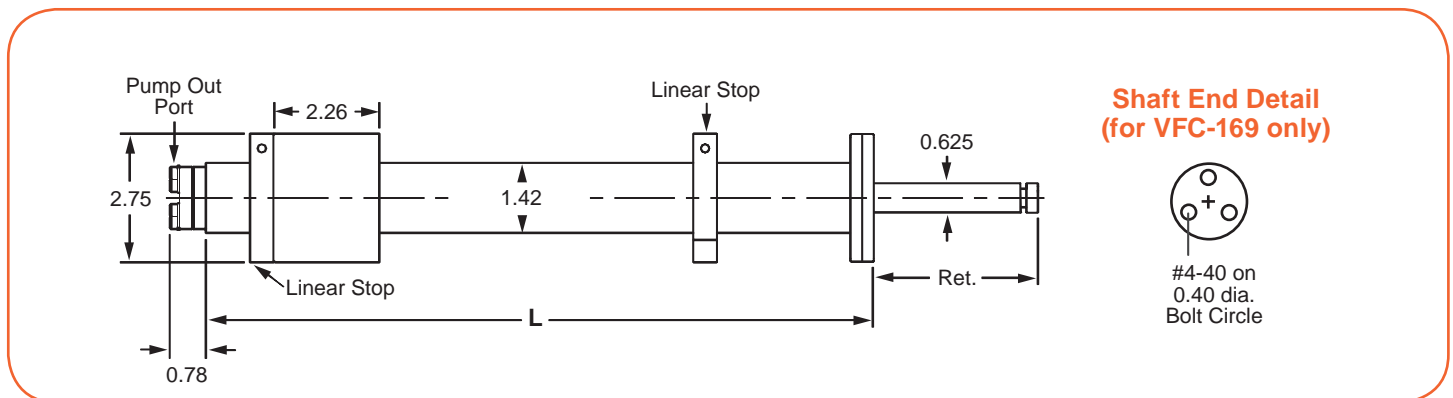


Motion & Positioning Devices 4

Rare Earth Magnetic Linear/Rotary Transporter

Shaft	Linear Travel	Retracted Length	L	Weight Lbs.	Model	Price
0.625 OD Solid	12.00	3.50	19.56	11	VFC-169-12	\$3,425.00
	18.00	3.50	25.56	13	VFC-169-18	\$3,485.00
	24.00	3.50	31.56	15	VFC-169-24	\$3,545.00
	36.00	3.50	43.56	18	VFC-169-36	\$3,665.00
	42.00	3.50	49.56	19	VFC-169-42	\$3,725.00
	48.00	3.50	55.56	21	VFC-169-48	\$3,785.00

The **VFC Series** of feedthroughs features a multi-patented design which includes Rare Earth (Samarium Cobalt) magnets totally encapsulated in a stainless steel housing for UHV use. This series of magnetically coupled transfer devices are more precise and smoother operating than the lower cost Alnico® magnet feedthroughs.



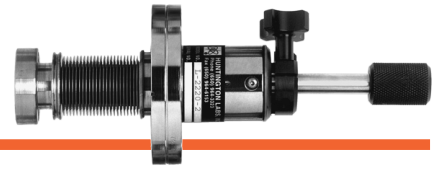
Specifications

Sealing Mechanism: Welded tube
Material Exposed to Vacuum: Stainless Steel
Standard Mounting: 2.75 inch Vac-U-Flat® flange
Bakeout Temperature: 200°C (30 minutes maximum - longer bakeouts may reduce magnet strength.)
Operating Temperature: -20° to 100°C

Pressure Range: Atmosphere to 1×10^{-11} Torr
Maximum Torque: 128 oz. in.
Maximum Axial Load: 25 lbs. concentric load
Rotary Resolution (Vernier): 1°
Magnet Type: Samarium Cobalt (Rare Earth)
Linear Stops: 2 locking rings



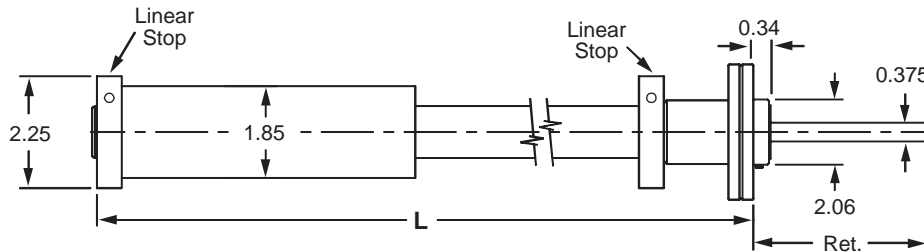
4 Motion & Positioning Devices



Rare Earth Magnetic Linear Transporter - 0.375 OD Shaft

Shaft	Linear Travel	Retracted Length	L	Weight Lbs.	Model	Price
0.375 OD Solid	12.00	3.50	20.71	12	VFS-169-12	\$3,510.00
	18.00	3.50	26.71	14	VFS-169-18	\$3,640.00
	24.00	3.50	32.71	16	VFS-169-24	\$3,770.00
	36.00	3.50	44.71	19	VFS-169-36	\$3,900.00

The **VFS Series** are much more precise than the VF-169. The 70 lb. axial force allows repeatability within 0.005 inches.



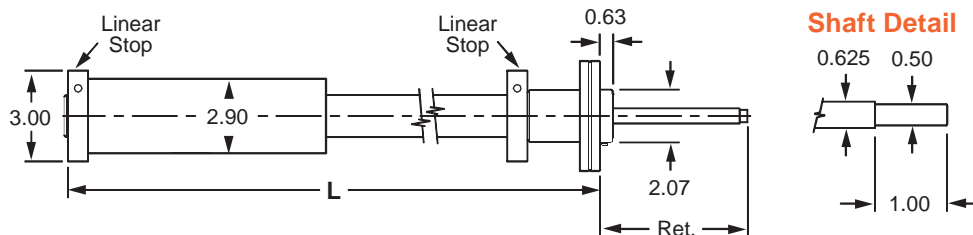
Specifications

Sealing Mechanism: Welded tube
Material Exposed to Vacuum: Stainless Steel
Standard Mounting: 2.75 inch Vac-U-Flat® flange
Bakeout Temperature: 200°C (30 minutes maximum - longer bakeouts may reduce magnet strength.)

Operating Temperature: -20° to 100°C
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr
Maximum Axial Load: 70 lbs. concentric load
Magnet Type: Samarium Cobalt (Rare Earth)
Linear Stops: 2 locking rings

Rare Earth Magnetic Linear Transporter - 0.625 OD Shaft

Shaft	Linear Travel	Retracted Length	L	Weight Lbs.	Model	Price
0.625 OD Solid	12.00	3.50	21.88	13	VFS-1690-12	\$4,500.00
	18.00	3.50	27.88	15	VFS-1690-18	\$4,800.00
	24.00	3.50	33.88	17	VFS-1690-24	\$5,100.00
	36.00	3.50	45.88	20	VFS-1690-36	\$5,700.00
	48.00	3.50	57.88	24	VFS-1690-48	\$6,000.00



Specifications

Sealing Mechanism: Welded tube
Material Exposed to Vacuum: Stainless Steel
Standard Mounting: 2.75 inch Vac-U-Flat® flange
Bakeout Temperature: 200°C (30 minutes maximum - longer bakeouts may reduce magnet strength.)

Operating Temperature: -20° to 100°C
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr
Maximum Axial Load: 200 lbs. concentric load
Magnet Type: Samarium Cobalt (Rare Earth)
Linear Stops: 2 locking rings



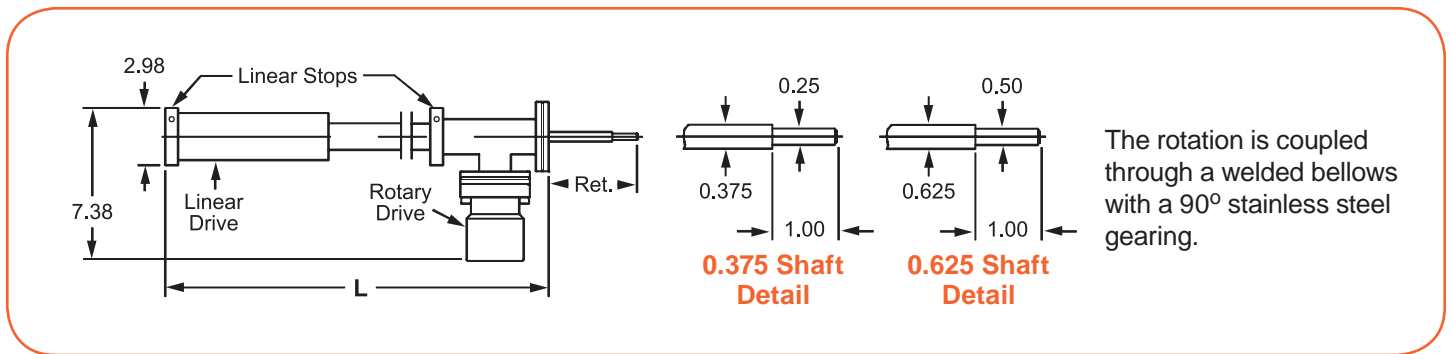


Motion & Positioning Devices 4

Rare Earth Magnetic Linear/Rotary Transporter - Geared Rotation

Shaft	Linear Travel	Retracted Length	L	Weight Lbs.	Model	Price
0.375 OD Solid	12.00	3.50	23.06	15	VFS-169-12-R	\$ 5,160.00
	18.00	3.50	29.06	17	VFS-169-18-R	\$ 5,385.00
	24.00	3.50	35.06	19	VFS-169-24-R	\$ 5,604.00
	30.00	3.50	41.06	21	VFS-169-30-R	\$ 5,825.00
	36.00	3.50	47.06	25	VFS-169-36-R	\$ 6,045.00
0.625 OD Solid	12.00	3.50	26.59	16	VFS-1690-12-R	\$ 5,605.00
	18.00	3.50	32.59	18	VFS-1690-18-R	\$ 5,935.00
	24.00	3.50	38.59	20	VFS-1690-24-R	\$ 6,375.00
	30.00	3.50	44.59	23	VFS-1690-30-R	\$ 6,650.00
	36.00	3.50	50.59	26	VFS-1690-36-R	\$ 6,925.00
	48.00	3.50	62.59	30	VFS-1690-48-R	\$ 7,930.00

These are the most precise of all the Huntington magnetically coupled rotary-linear feedthroughs. The linear motion is coupled magnetically through an external set and followed by an internal set of encapsulated samarium cobalt magnets. The rotation is coupled through a welded bellows sealed, patented, "flat cam" design feedthrough turning the shaft with 90° stainless steel gearing.



Specifications

Sealing Mechanism: Welded bellows & tube

Material Exposed to Vacuum: Stainless Steel

Standard Mounting:

0.375 Shaft: 2.75 inch Vac-U-Flat® flange

0.625 Shaft: 4.50 inch Vac-U-Flat® flange

Bakeout Temperature: 200°C (30 minutes maximum - longer bakeouts may reduce magnet strength.)

Operating Temperature: -20° to 100°C

Pressure Range: Atmosphere to 1×10^{-11} Torr

Maximum Torque: 200 oz. in.

Maximum Axial Load:

0.375 Shaft: 70 lbs. concentric load

0.625 Shaft: 200 lbs. concentric load

Rotary Resolution (Vernier): 1°

Magnet Type: Samarium Cobalt (Rare Earth)

Linear Stops: 2 locking rings



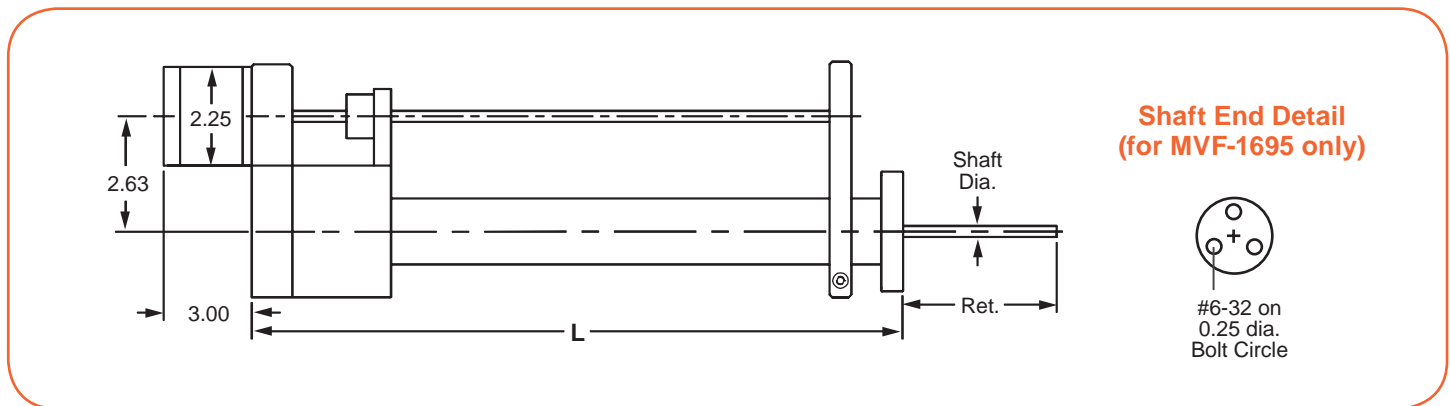
4 Motion & Positioning Devices



Motorized Alnico Magnetic Linear Transporter

Shaft	Linear Travel	Retracted Length	L	Weight Lbs.	Model	Price
0.25 OD Solid	10.0	3.50	15.10	14	MVF-169-10	\$3,650.00
	12.0	3.50	17.10	16	MVF-169-12	\$3,750.00
	18.0	3.50	23.10	18	MVF-169-18	\$3,850.00
0.50 OD 0.065 wall Hollow	24.0	3.50	29.10	20	MVF-1695-24	\$3,995.00
	36.0	3.50	41.10	22	MVF-1695-36	\$4,595.00

Optional stepper motor/encoder/controller available as option (see Feedthrough Options, page 158)

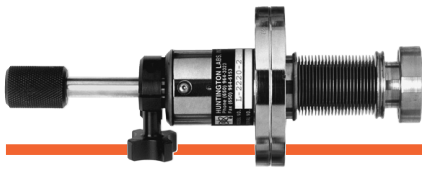


Specifications

Sealing Mechanism: Welded tube
Material Exposed to Vacuum: Stainless Steel
Standard Mounting: 2.75 inch Vac-U-Flat® flange
Bakeout Temperature: 200°C (with magnet removed)
Operating Temperature: -20° to 80°C
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr
Maximum Torque: 60 oz. in.

Maximum Axial Load: 5 lbs. concentric load
Thread Pitch: 0.100
Magnet Type: Alnico
Linear Stops: 2 locking rings
Motorized Accuracy: 51,200 microsteps per revolution
Stepper Motor: 1.8° full step



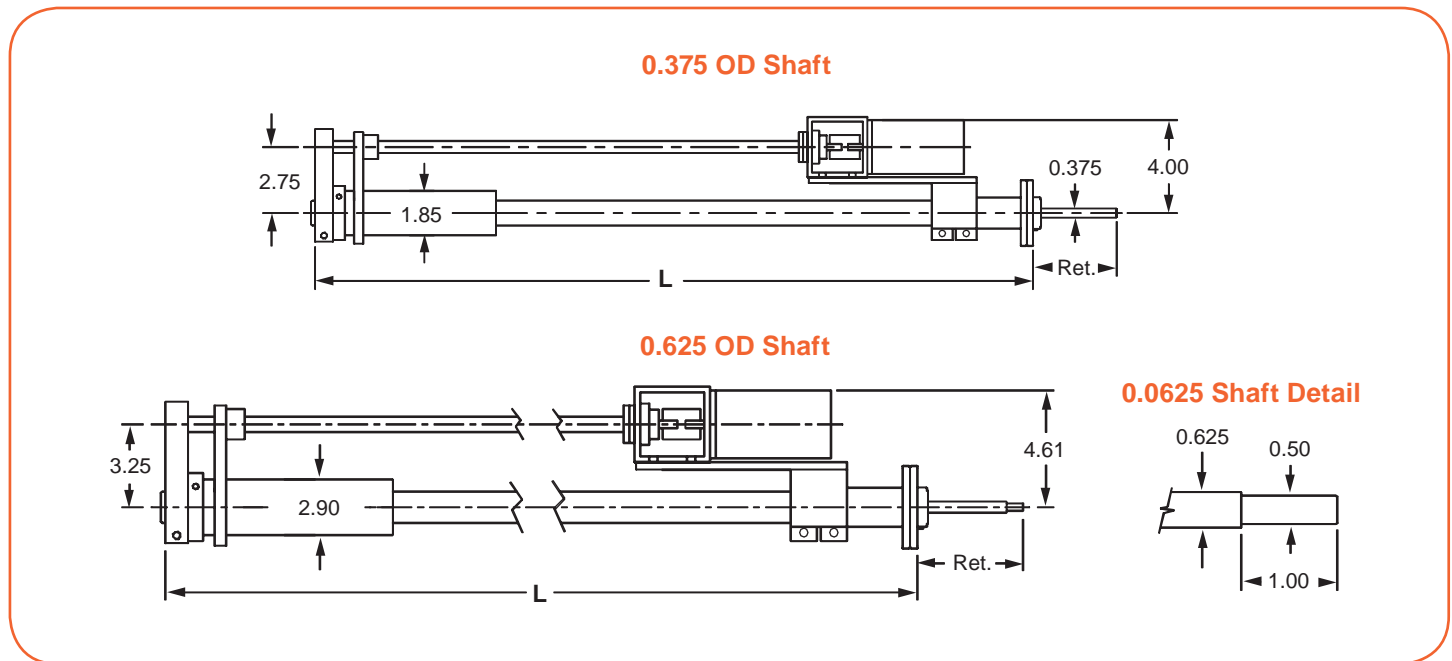


Motion & Positioning Devices 4

Motorized Rare Earth Magnetic Linear Transporter

Shaft	Linear Travel	Retracted Length	L	Weight Lbs.	Model	Price
0.375 OD Solid	12.00	3.50	24.54	17	MVFS-169-12	\$4,595.00
	18.00	3.50	30.54	19	MVFS-169-18	\$4,895.00
	24.00	3.50	36.54	21	MVFS-169-24	\$5,195.00
	36.00	3.50	48.54	24	MVFS-169-36	\$5,795.00
0.625 OD Solid	12.00	3.50	26.10	18	MVFS-1690-12	\$6,395.00
	18.00	3.50	32.10	20	MVFS-1690-18	\$6,695.00
	24.00	3.50	38.10	22	MVFS-1690-24	\$6,995.00
	36.00	3.50	50.10	25	MVFS-1690-36	\$7,595.00
	48.00	3.50	62.10	30	MVFS-1690-48	\$8,195.00

Optional stepper motor/encoder/controller available as option (see Feedthrough Options, page 158)



Specifications

Sealing Mechanism: Welded tube

Material Exposed to Vacuum: Stainless Steel

Standard Mounting: 2.75 inch Vac-U-Flat® flange

Bakeout Temperature: 200°C (30 minutes maximum - longer bakeouts may reduce magnet strength.)

Operating Temperature: -20° to 80°C

Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr

Maximum Axial Load: 70 lbs. concentric load

Lead Screw Pitch:

Standard: 0.20 (5 per inch)

Slow: 0.20 (10 per inch)

Fast: 0.50 (2 per inch)

Magnet Type: Samarium Cobalt (Rare Earth)

Linear Stops: 2 locking rings

Motorized Accuracy: 51,200 microsteps per revolution

Stepper Motor: 1.8° full step



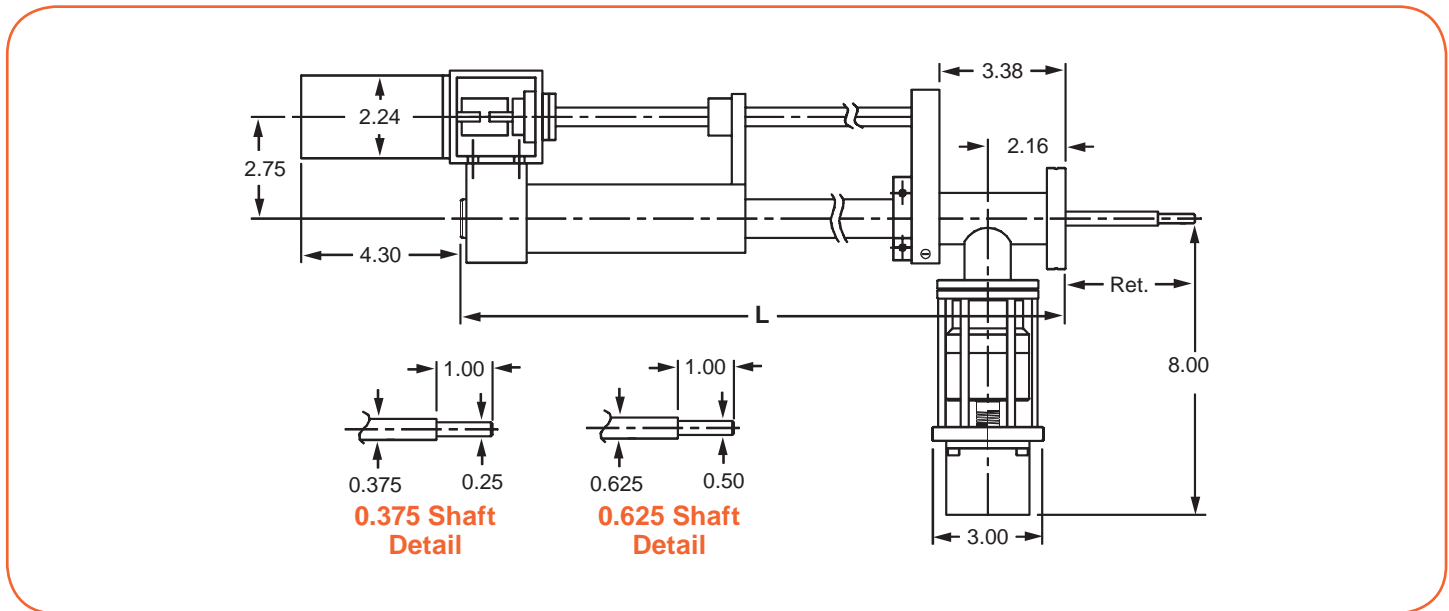
4 Motion & Positioning Devices



Motorized Rare Earth Magnetic Linear/Rotary Transporter

Shaft	Linear Travel	Retracted Length	L	Weight Lbs.	Model	Price
0.375 OD Solid	12.00	3.50	23.06	23	MVFS-169-12-RM	\$ 9,300.00
	18.00	3.50	29.06	26	MVFS-169-18-RM	\$ 9,600.00
	24.00	3.50	35.06	28	MVFS-169-24-RM	\$ 9,900.00
	36.00	3.50	47.06	34	MVFS-169-36-RM	\$10,200.00
0.625 OD Solid	12.00	3.50	26.59	25	MVFS-1690-12-RM	\$ 8,095.00
	18.00	3.50	32.59	27	MVFS-1690-18-RM	\$ 8,495.00
	24.00	3.50	38.59	29	MVFS-1690-24-RM	\$ 8,895.00
	36.00	3.50	50.59	35	MVFS-1690-36-RM	\$ 9,595.00
	48.00	3.50	62.59	39	MVFS-1690-48-RM	\$10,295.00

Optional stepper motor/encoder/controller available as option (see Feedthrough Options, page 158)

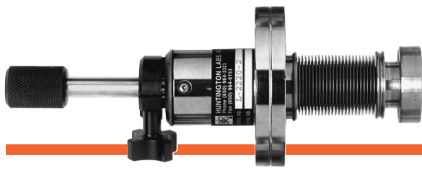


Specifications

Sealing Mechanism: Welded bellows & tube
Material Exposed to Vacuum: Stainless Steel
Standard Mounting: 4.50 inch Vac-U-Flat® flange
Bakeout Temperature: 200°C (30 minutes maximum - longer bakeouts may reduce magnet strength.)
Operating Temperature: -20° to 80°C
Pressure Range: Atmosphere to 1 x 10⁻¹¹ Torr
Maximum Torque: 200 oz. in.

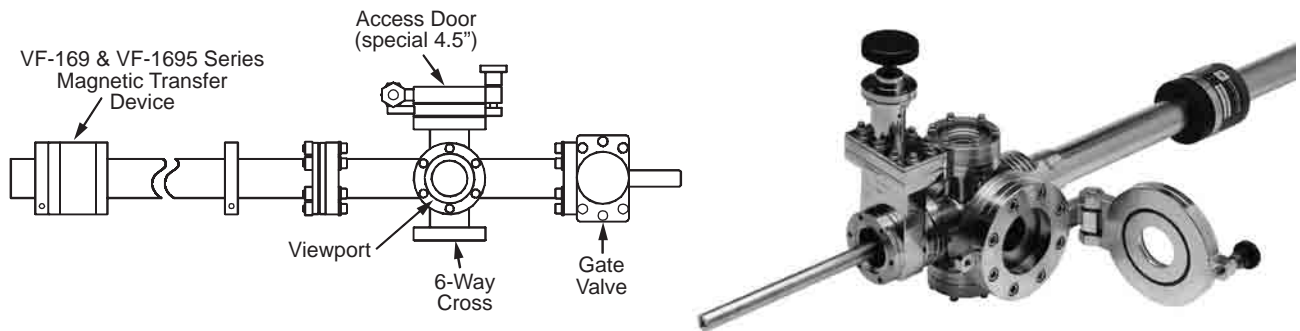
Maximum Axial Load:
 0.375 Shaft: 70 lbs. concentric load
 0.625 Shaft: 200 lbs. concentric load
Thread Lead: 0.100
Magnet Type: Samarium Cobalt (Rare Earth)
Linear Stops: 2 locking rings
Motorized Accuracy: 51,200 microsteps per revolution
Stepper Motor: 1.8° full step





Motion & Positioning Devices 4

Load Lock Kits



Features & Benefits

- Fast sample transfer from atmosphere to vacuum
- Will handle sample sizes up to 3.87 in dia.
- Sample insertion chamber (6-way Cross)
- Quick access door
- Easily customized
- Type 304 Stainless Steel construction
- Bakeable to 200 degrees C
- Modular concept
- Can be mounted on any plane

Huntington's Load Locks are available as user assembled kits for sample sizes up to 3.87 inches in diameter. Special sizes and configurations can be supplied upon request. Each kit contains the following parts:

- Six-Way Spherical Cross
- Viewport
- Access Door (optional viewport door)
- Manual Gate Valve (Pneumatic Optional)
- Magnetically Coupled Rotary/Linear Transfer Rod

Six-Way Crosses

The size of the access door, load lock chamber and gate valve are determined by the sample size chosen. All other ports will have 2.75 inch Vac-U-Flat flanges unless otherwise requested.

Magnetically Coupled Rotary/Linear Transfer Rod

The **Standard Load Lock kits** feature the **VF-1695 Series Transporters**, which have the capability of supporting an axial load up to 5 lbs.

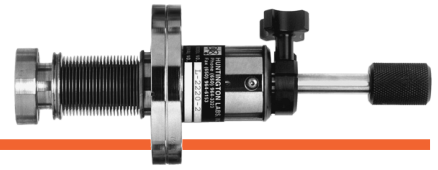
The **Heavy Duty Load Lock Kits** feature the high axial load **VFS-169 Series Transporters** in 10 through 18 inches of linear travel with 70 lbs axial load capability. The **VFS-1690 Series Transporters** for strokes greater than 18 inches with 200 lbs axial load capability.

Assemblies

All load lock kits include the necessary gaskets, bolts and nuts for connecting the kit components together. See options for fully assembled versions.



4 Motion & Positioning Devices



Standard Load Lock Kits

Max. Size Sample	Door/Gate Min. ID	Door/Gate Flange OD	Transfer Distance	Weight Lbs.	Model	Price
1.36	1.37	2.75	10	20.0	LL-150-10	\$3,575.00
			12	21.0	LL-150-12	\$3,895.00
			18	21.5	LL-150-18	\$4,275.00
			24	22.0	LL-150-24	\$4,625.00
			36	24.0	LL-150-36	\$4,975.00
2.36	2.37	4.5	12	37.0	LL-250-12	\$5,150.00
			18	37.5	LL-250-18	\$5,300.00
			24	38.0	LL-250-24	\$5,450.00
			36	40.0	LL-250-36	\$5,600.00
3.86	3.87	6.0	18	56.0	LL-400-18	\$5,918.00
			24	57.0	LL-400-24	\$6,068.00
			36	59.0	LL-400-36	\$6,218.00

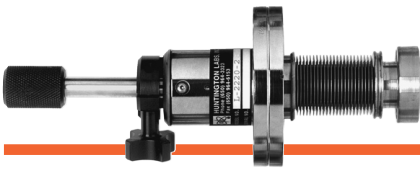
All standard kits are provided with a VF-1695 Series Transporter.

Heavy Duty Load Lock Kits

Max. Size Sample	Door/Gate Min. ID	Door/Gate Flange OD	Transfer Distance	Weight Lbs.	Model	Price
1.36	1.37	2.75	12	24.0	LL-1500-12	Call
			18	24.5	LL-1500-18	Call
			24	25.0	LL-1500-24	Call
			36	28.0	LL-1500-36	Call
2.36	2.37	4.5	12	40.0	LL-2500-12	Call
			18	40.5	LL-2500-18	Call
			24	41.0	LL-2500-24	Call
			36	44.0	LL-2500-36	Call
3.86	3.87	6.0	18	59.0	LL-4000-18	Call
			24	60.0	LL-4000-24	Call
			36	63.0	LL-4000-36	Call

Price is dependent on the transporter model selected for heavier loads.





Specifying Load Lock Options

Various Load Lock Options can be specified by adding the desired code to the appropriate location in the part number.

Examples:

Basic Load Lock with 12 inch stroke and 6-Way Cross: **LL-150-12**

Load Lock with 12 inch stroke and Viewport Door: **LL-150-12-VD**

Load Lock with 12 inch stroke, Viewport Door and Guide Rails: **LL-150-12-VD-GR**

Load Lock with 12 inch stroke, Viewport Door, Guide Rails and Shipped Assembled: **LL-150-12-VD-GR-SA**

LL-150-12-VD-GR-SA

Viewport Door Option

Option	Code	Add to Price
Solid Door	None	-
LL-150 or LL-1500	VD	+\$100.00
LL-250 or LL-2500		+\$150.00
LL-400 or LL-4500		+\$250.00
LL-600 or LL-6000		+\$350.00

Assembly Option

Option	Code	Add to Price
Customer to Assemble	None	-
Shipped Assembled	SA	+\$495.00

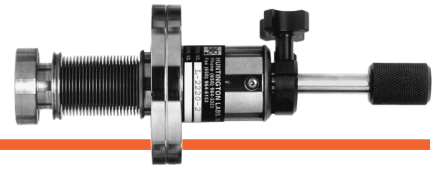
Guide Rail Option

Option	Code	Add to Price
No Rails	None	-
Guide Rails	GR	+\$595.00

**Not required with Heavy Duty Load Locks*

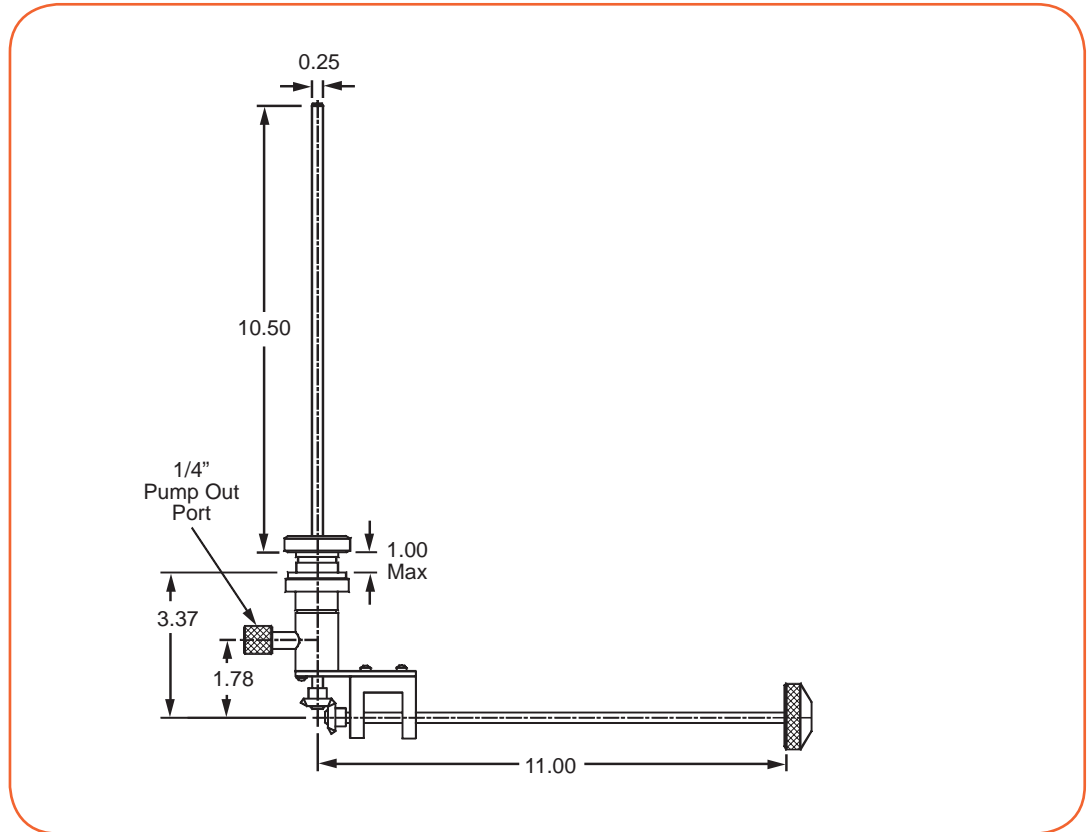


4 Motion & Positioning Devices



Right Angle Rotary Baseplate Feedthrough

Description	Weight Lbs.	Model	Price
Right angle rotary baseplate feedthrough	1.6	BP-115-R	\$975.00



Specifications

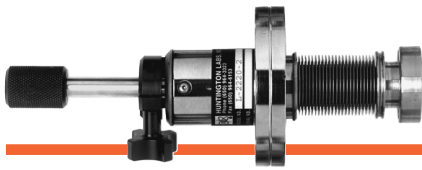
Standard Mounting: 1 inch ID, through hole

Materials Exposed to Vacuum: Viton® and Stainless Steel

Bakeout Temperature: 200°C

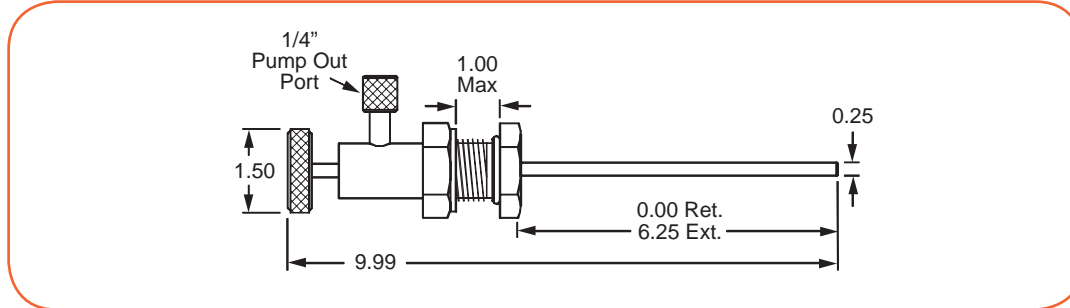
Sealing Mechanism: Differentially pumped, pre-loaded Viton® O-rings





Rotary/Linear Baseplate Feedthrough

Description	Weight Lbs.	Model	Price
Rotary/linear baseplate feedthrough	1.2	BP-115	\$495.00



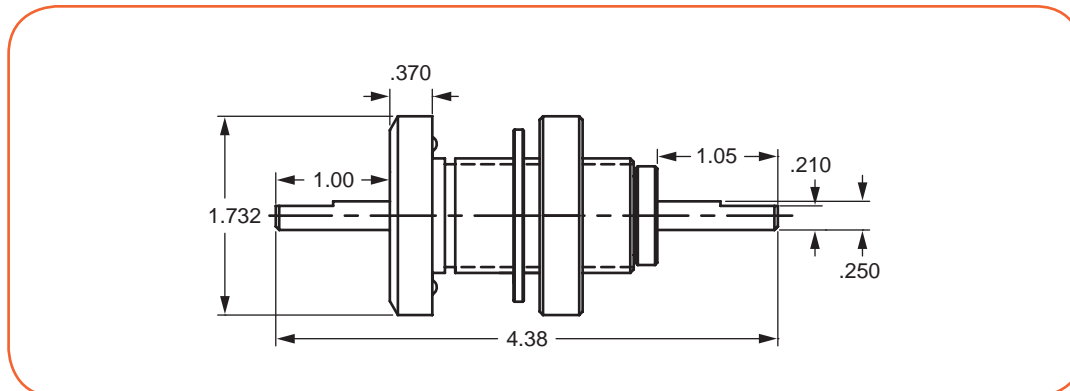
Specifications

- Standard Mounting:** 1 inch ID, through hole
- Materials Exposed to Vacuum:** Viton® and Stainless Steel
- Bakeout Temperature:** 200°C
- Sealing Mechanism:** Differentially pumped, pre-loaded Viton® O-rings



Direct Drive Rotary Baseplate Feedthrough

Description	Weight Lbs.	Model	Price
Direct drive rotary feedthrough	0.75	BP-20	\$375.00

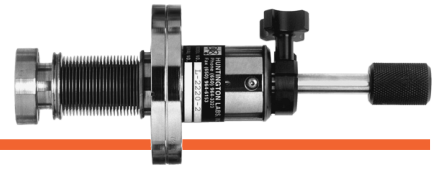


Specifications

For standard 1 inch through-hole mounting, constructed of type 304 Stainless Steel, and sealed with a pre-loaded Viton® O-ring, this feedthrough has a ¼ inch shaft supported by two ball bearings for smooth operation. It is designed for either manual or motorized operation at intermittent speeds up to 500 rpm, and is virtually impossible to over or under torque.

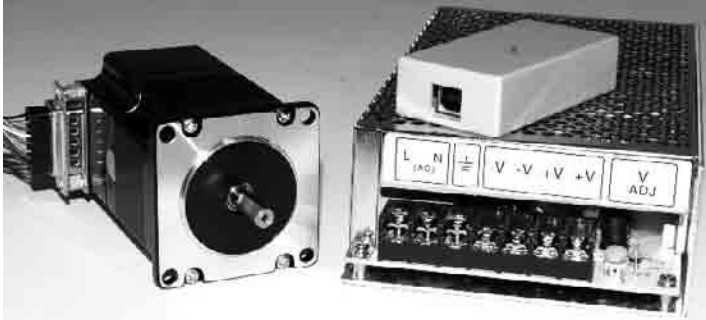


4 Motion & Positioning Devices



Motorized Feedthrough Option

You can order any motorized feedthrough with the stepper motor/encoder/controller option rather than with the standard stepper motor by consulting the factory prior to ordering. The integrated motor/controller will be shipped attached to the feedthrough. In order to complete the package you must order the the power supply and USB or RS-232 card separately. Any of these items can also be ordered separately as stand alone items.



Stepper Motor/Encoder/Controller Option

Description	Dimensions	Model	Unit Price
Optional stepper motor, encoder, driver and controller integrated into one unit and attached to feedthrough. Includes one DB-15 cable, 3 ft. long.	NEMA 23 Frame Size	Call	+\$795.00
Stepper motor, encoder, driver and controller sold separately. Includes one DB-15 cable, 3 ft. long. Other lengths, double ended shaft and fail safe brake are available.	NEMA 23 Frame Size	MTR-5718-M	\$795.00
24 VDC power supply for one to four motors. Ordered separately. Includes one 3-prong 110 VAC power cord, six feet long.	8" l x 4 ³ / ₈ " w x 2" h	PW-150-24	\$375.00
USB card with 3-pin to 3-pin cable. Ordered separately.	3 ¹ / ₈ " l x 1 ⁵ / ₈ " w x ³ / ₄ " h	USB-485	\$295.00
RS-232 connector card with cable.	3 ¹ / ₈ " l x 1 ⁵ / ₈ " w x ³ / ₄ " h	RS-232	\$295.00

Specifying Pneumatic Feedthrough Options

To order any pneumatic feedthrough with solenoid or position switch options, add the desired code to the model number in the appropriate location.

Examples:

Standard Linear Feedthrough 2 inch stroke: **L-2270-2**

Same feedthrough with 12 VDC solenoid and Reed switches: **L-2270-2-1D-SR**

L-2270-2-XX-XX

Solenoid Options

Option	Code	Add to Price
No solenoid - 1/8" NPT ports	None	-
110 VAC	1A	+\$75.00
240 VAC	2A	
24 VDC	1D	
240 VDC	2D	

Position Switch Options

Option	Code	Add to Price
No position switches	None	-
Reed Switch	SR	+\$165.00
Micro Switch	SM	
Hall Effect - Sinking	SH1	
Hall Effect - Sourcing	SH2	

