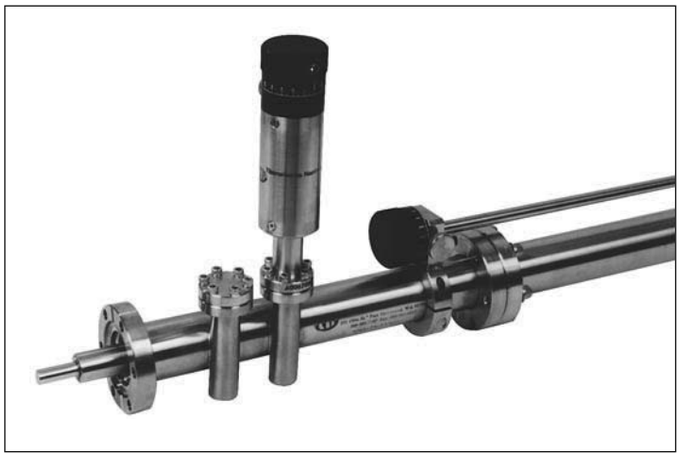
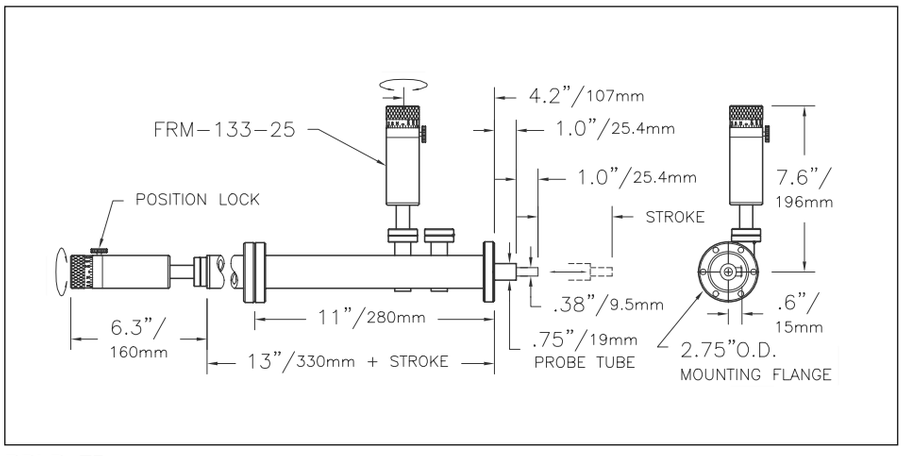
Linear-Rotary Feedthroughs — Rack & Pinion



RPLR-.75/RRO (shown with optional /RRO remote rotary operation)



RPLR-.75

Rack & Pinion Linear-Rotary Feedthrough

RPLR Series

- 3/8" O.D. rotary probe
- 3/4" O.D. linear support shaft
- 2.75" O.D. mounting flange
- Up to 50" linear travel
- Rack and pinion positive drive (rotary bellows sealed feedthrough)
- Adjustable position stop and lock
- Maximum bakeout temperature: 200°C

Options

/MC Mechanical Counter

- 40 counts per feedthrough rotation (approximately 0.034" linear travel per count on RPLR)
- Removable for bakeout
- Retrofit kit allows mounting without breaking vacuum

Price, per axis *on request*

/MS Stepping or /MY Synchronous Motorized Rotary Feedthrough

- With integral motor drive
- /MS stepping or /MY synchronous motor drive
- 50 oz-in holding torque (higher torque motors available)
- Low inertia design
- Manual knob
- Motor controller sold separately

Price *on request*

NOTE: The /MS or /MY motor option is suitable for the rotary actuation on an RPLR and the linear actuation when the operation is horizontal. When the linear travel is other than horizontal, the /MS/W option should be used.

We strongly recommend the use of limit switches on this or any other motor drive being used to actuate the linear drive on the RPLR. The limit switch actuator assembly (or one similar) should be used to protect the RPLR from being over-driven. See the RLS rotary limit switch option on page 2-XX.

Rack & Pinion Linear-Rotary Feedthroughs — RPLR Series

Flange O.D.	Probe Diameter	Stroke	Model No.	Base Price	Motorization Options* /MS[1]	/MY[1]	/SCC[1,2]	/MS/W	/MY/W
2.75"	0.38"	10"	**RPLR-.75-10**	*on request*			*on request*		
		20"	**RPLR-.75-20**	*on request*			*on request*		
		30"	**RPLR-.75-30**	*on request*			*on request*		
		40"	**RPLR-.75-40**	*on request*			*on request*		
		50"	**RPLR-.75-50**	*on request*			*on request*		
Additional stroke, per inch				*on request*					

Note: Custom strokes between those listed are available.

** Add motorization option price to base price.*

[1] Price, per axis

[2] Price includes controller. Other options do not include controller.

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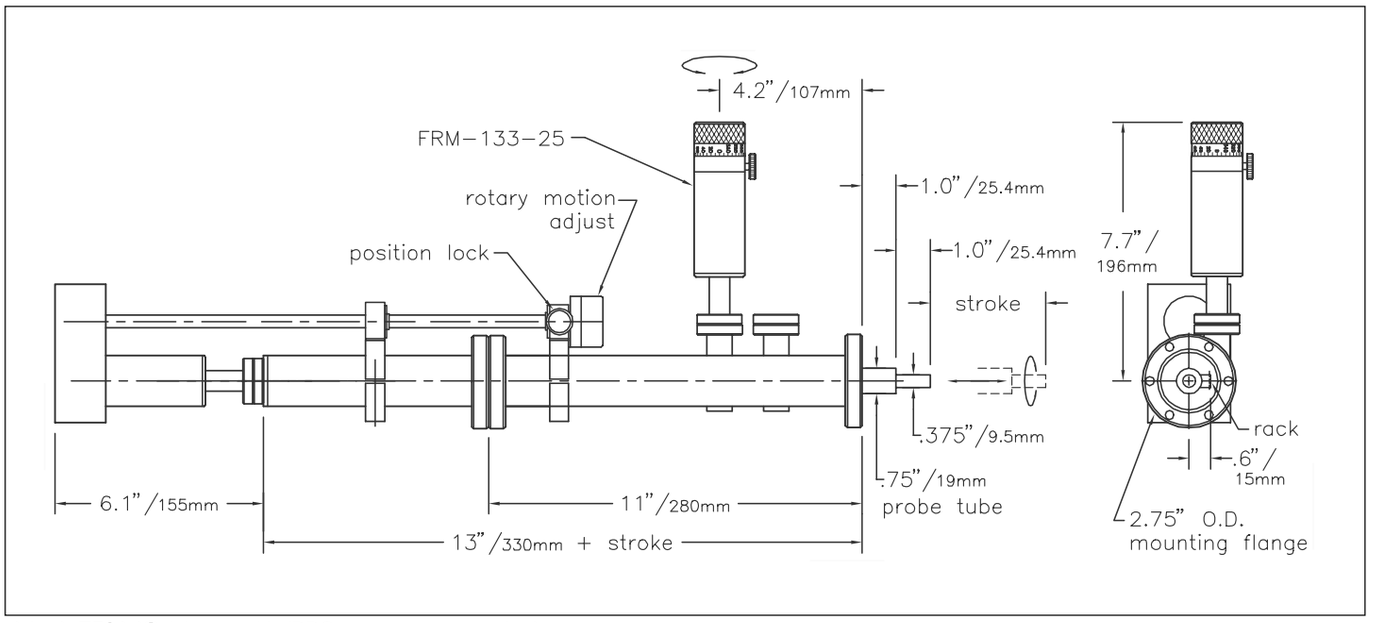
Linear-Rotary Feedthroughs — Rack & Pinion



RPLR-.75/RRO (shown with /RRO remote rotary option)

Options (cont.)

/MS/W Stepping or /MY/W Synchronous Motorization

- Anti-backlash worm gear drive
- Self-locking
- /MS stepping or /MY synchronous motor drive
  - Supplied with motor
  - Without controller
- Capable of driving up to 16"/min minimum at 1,000 pps
- Motor controller sold separately
- May be field-mounted without breaking vacuum, or returned to the factory for installation

Price *on request*

NOTE: This motor drive is self-locking. This is necessary to protect the probe and associated equipment from spinning down if the power is removed from the motor. However, because of the self-locking design, the drive can generate signifi-cant torque at the FRM, and thus do damage if overdriven.

/RLS Rotary Limit Switch Actuator Assembly

On request

SMC Stepping or YMC Synchronous Motor Controller

On request

/MC Mechanical Counter — Motorized Operation

- Mounts to rear of stepping or synchronous drive motors
- Maximum motor speed: 2,500 pps
- 5 digit Veeder Root mechanical counter, metal case
  - 2:1 ratio gear drive
  - Adjustable counter orientation
  - Removes with motor for bakeout
  - Retrofit kit available

Price, per axis *on request*

/SCC Speed Control Motor Drive

- Variable speed
- Switchable direction
- 5–95 rpm with 50 oz-in torque
- Options: Higher torque motors
  - Different speed ranges
- Includes controller

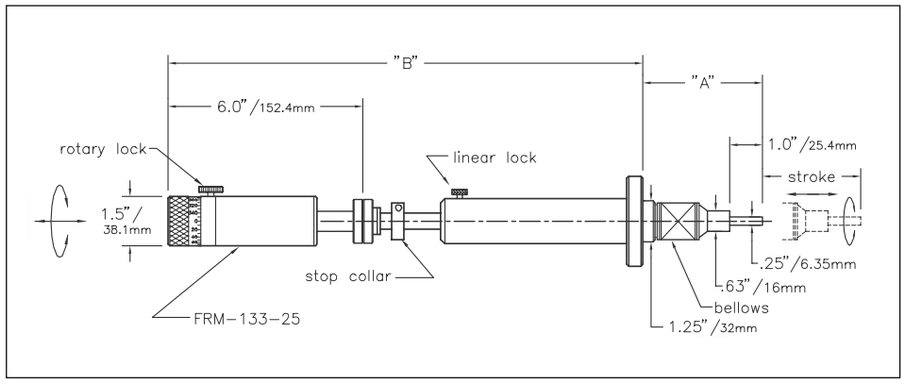
Price *on request*

/RRO Remote Rotary Operation

- For use on long stroke RPLRs
- Locates a rotary actuator knob near the linear actuator feedthrough
- Position lock

Price *on request*

Linear-Rotary Feedthroughs — Push-Pull



FLRM-275-1

Push-Pull Linear-Rotary Feedthroughs — FLRM-275 Series

Flange O.D.	Probe O.D.	Stroke	A	B	Model No.	Base Price	Motorization Options* /MS	/MY	/SCC**
2.75"	0.25"	2"	3.32"	11.33"	**FLRM-275-2**	*on request*		*on request*	
		4"	4.11"	13.33"	**FLRM-275-4**	*on request*		*on request*	
		6"	4.89"	17.58"	**FLRM-275-6**	*on request*		*on request*	
		10"	6.47"	21.58"	**FLRM-275-10**	*on request*		*on request*	
		12"	7.25"	23.58"	**FLRM-275-12**	*on request*		*on request*	
Additional stroke, per inch						*on request*			

* *Add motorization option price to base price.*

** *Price includes controller. Other motorization options do not include motor controller.*

Push-Pull Linear-Rotary Feedthrough

FLRM-275 Series

- 1/4" O.D. probe
- 2.75" O.D. mounting flange
- Up to 36" stroke
- Position lock
- Stainless steel bellows sealed
- Stainless steel linear shaft bearing
- Maximum bakeout temperature: 200°C

Options

ROTARY OPTIONS

/MS Stepper Motor Drive

- 200 steps per revolution
- 50 oz-in holding torque (higher torque motors available)
- Maximum speed 300 rpm
- Low inertia design
- Manual knob
- Motor controller sold separately

Price *on request*

/MY Synchronous Motor Drive

- Single speed, 72 rpm
- 2 directions
- 50 oz-in holding torque (higher torque motors available)
- Low inertia design
- Manual knob
- Motor controller sold separately

Price *on request*

SMC Stepping or YMC Synchronous Motor Controller

On request

/SCC Speed Control Motor Drive

- Variable speed
- Switchable direction
- 5–95 rpm with 50 oz-in torque
- Options:
  - Higher torque motors
  - Different speed ranges
- Includes controller

Price *on request*

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Linear-Rotary Feedthroughs — Precision

Precision Linear-Rotary Feedthrough

FRLC-275 Series
- With coaxial linear-rotary probes
- 3/8" O.D. tube
- 1/8" O.D. probe, micrometer adjust for 1/2" or 1" linear travel
- 9" tube length standard
- 0.1° resolution, 1° graduations
- Position lock
- Maximum bakeout temperature: 200°C

FRLC-275-0.5 & 1

Options

/FA Fine Adjust
- Utilizes a precision Klinger stage for rotary actuation
- One minute Vernier reading

Price *on request*

/CL Custom Length Probe
- Up to 24", flange face-to-tip

Price *on request*

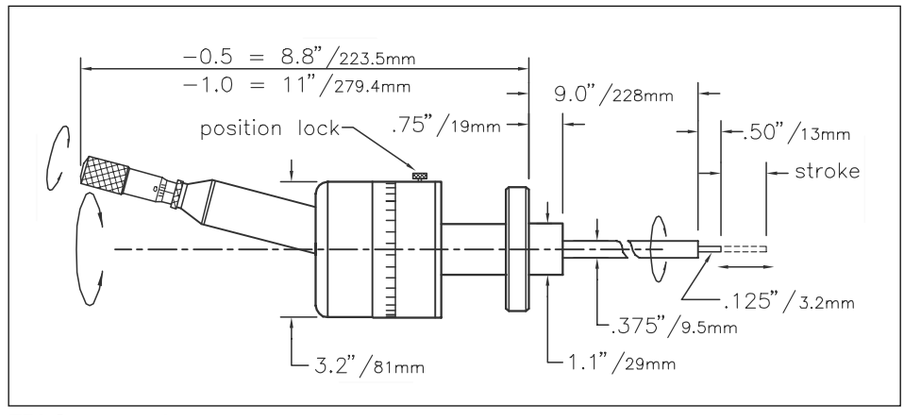
ROTARY OPTIONS
/MS/W Stepping or
/MY/W Synchronous Motor Drive
with High Precision Worm Drive
- Anti-backlash worm gear drive
- Self-locking
- Manual knob
- Motor controller sold separately

Price *on request*

SMC Stepping or YMC Synchronous Motor Controller
On request

LINEAR OPTIONS
/MS/L or /MY/L Motor Drive
- For linear actuation of FRLC
- Manual knob
- Requires limit switch knob
- Motor controller sold separately

Price *on request*



FRLC-275-0.5 & 1

Precision Linear-Rotary Feedthroughs — FRLC-275 Series

Flange O.D.	Probe Diameter	Linear Travel	Model No.	Base Price	Motorization Options* /MS/W**	/MY/W**	/MS/L**	/MY/L**
2.75"	0.38"	0.5"	**FRLC-275-0.5**	*on request*			*on request*	
2.75"	0.38"	1.0"	**FRLC-275-1.0**	*on request*			*on request*	

** Add motorization option price to base price.*

*** Price does not include controller.*

Retrofit Shaft Extensions

EXTS-FRLC-0.5 Shaft Extension
- Precision 3/8" O.D. stainless steel tube
- Includes 1/8" O.D. center push rod extension with return spring
- 1/2" push rod range
- Split clamp attachment to existing shaft
- Shaft extension length 3" to 24", as per customer requirements
- Simple field installation or removal
- Mounts to 3/8" O.D. shaft FRLC-275-0.5 and others

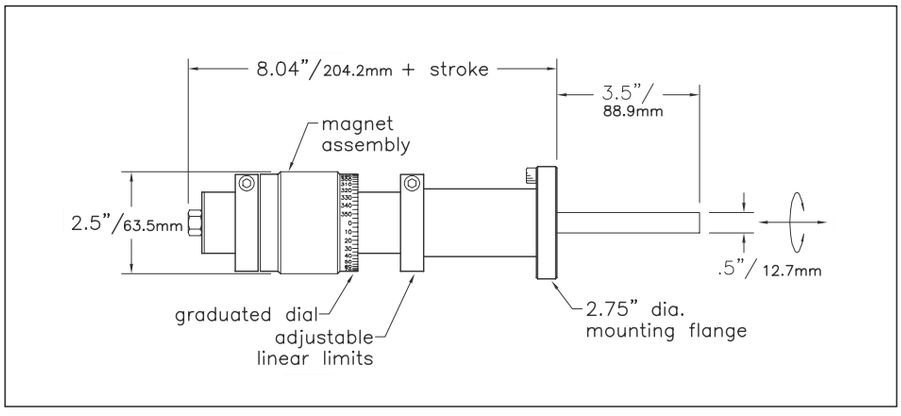
Price *on request*

EXTS-FRLC-1 Shaft Extension
- Precision 3/8" O.D. stainless steel tube
- Includes 1/8" O.D. center push rod extension with return spring
- 1" push rod range
- Split clamp attachment to existing shaft
- Shaft extension length 3" to 24", as per customer requirements
- Simple field installation or removal
- Mounts to 3/8" O.D. shaft FRLC-275-0.5 and others

Price *on request*

Linear-Rotary Feedthroughs — Magnetically Coupled

FLLRE-275-38/LD (shown with optional /LD linear magnet driver)



FLLRE-275-50

The FLLRE modular magnetic linear-rotary feedthroughs offer exceptional coupling with a small magnetic driver package. The driver is only 2.75'' O.D. and 2'' long. It provides more than 150 oz-in of torque and four lbs of linear force. Because of its small size, two drivers can be added together to double coupling strengths. Linear force can also be enhanced with the addition of the linear driver. The linear driver is a separate module that has been developed for its exceptional linear force.

The FLLRE stainless steel probe tube has a polished I.D. The inside traveler has no magnets, but it is made of magnetically-permeable material. The design uses eight all stainless steel bearings for long life even with repeated bakeout to 200°C (with magnets removed).

Four probe sizes are available. The selection of the probe diameter will depend on the travel distance, mass of the sample, and physical constraints of the chamber and related equipment. Please call the factory to discuss your specific requirements.

Magnetically Coupled Linear-Rotary Feedthroughs — FLLRE-275

Flange O.D.	Probe O.D.	Stroke*	Model No.	Price
2.75"	0.38"	12"	**FLLRE-275-38-12**	*on request*
		18"	**FLLRE-275-38-18**	*on request*
		24"	**FLLRE-275-38-24**	*on request*
2.75"	0.50"	18"	**FLLRE-275-50-18**	*on request*
		24"	**FLLRE-275-50-24**	*on request*
		30"	**FLLRE-275-50-30**	*on request*
		36"	**FLLRE-275-50-36**	*on request*

** Other strokes available*

For longer stroke applications, please see MCLR series magnetically coupled feedthroughs on page 3-20.

Linear-Rotary Magnetically Coupled Feedthrough

FLLRE-275 Series

- 3/8" and 1/2" O.D. probe sizes
- 2.75" O.D. mounting flange
- Up to 36" stroke (1/2" O.D. probe model)
- Mechanical torque limit: 150 oz-in
- Linear force: 4 lbs
- Eight all stainless steel bearings
- Maximum bakeout temperature: 200°C (magnetic drive removed)
- Removeable neodymium iron boron magnetic drive

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Linear-Rotary Feedthroughs — Magnetically Coupled

Options

Optional Force Packages

Available on all units and recommended for high mass payloads and longer strokes.

/LD Linear Magnet Driver
- Adds 11 lbs linear force

Price *on request*

/RD Rotary Magnet Driver
- Adds 150 oz-in torque

Price *on request*

/REM Remote Rotary Operation
- Linear and rotary actuation can be performed from several feet away
- Allows practical single operator sample transfer

Price *on request*

/FLS-1.5-2 Dual Axis Adjust Stage
- Micrometer actuated dual axis support for end of FLLRE
- Adjusts angular position ±5°
- 1.5" I.D. bellows-sealed tilt at mounting flange
- 2.75" O.D. tapped mounting flange on tilt
- Maximum bakeout temperature: 200°C

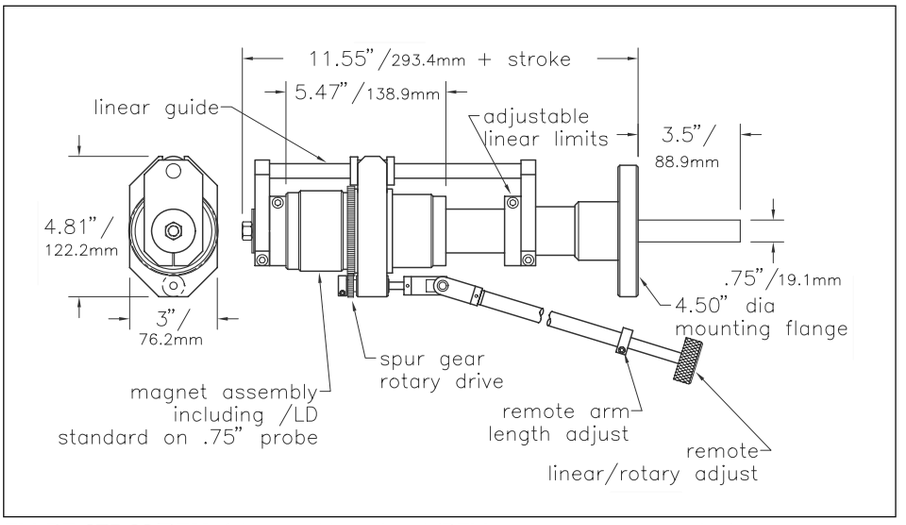
Price *on request*

/RL Adjustable Rotation Limits
- Provides adjustable rotation stops

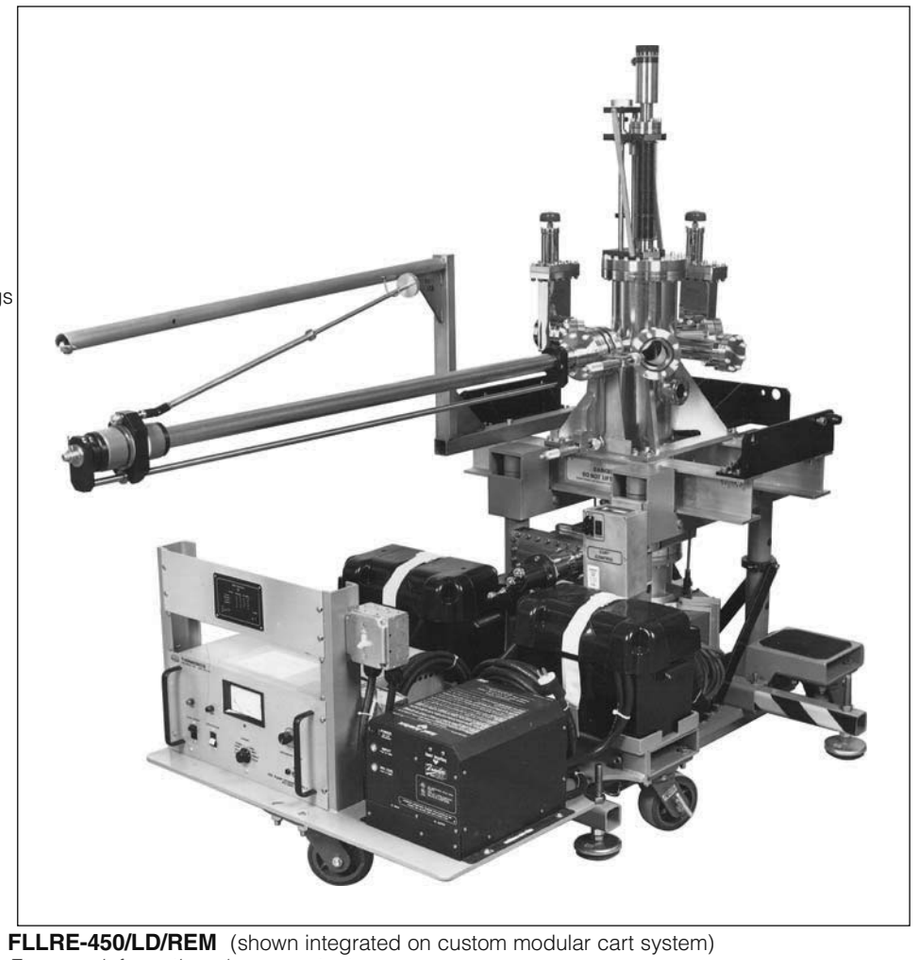
/EZ Transfer *on request*
- Includes ball bearings and linear ball bushings to increase tactile feedback
- Does not include position locks
- Includes linear driver magnet

APL All position lock *on request*
- Independent position lock for linear and rotary shafts

/3.38 Mounting Flange *on request*
/4.50 Mounting Flange *on request*
/6.00 Mounting Flange *on request*



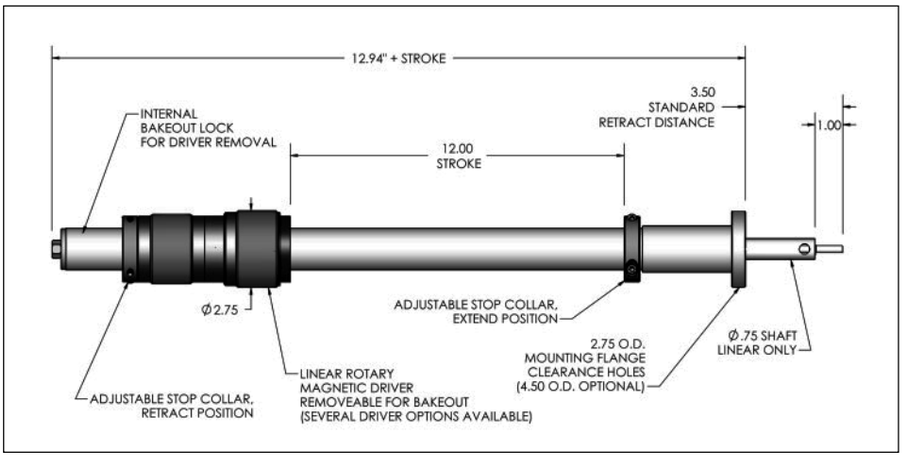
FLLRE-275-38/REM (shown with optional /REM remote rotary operation)



FLLRE-450/LD/REM (shown integrated on custom modular cart system)
For more information please contact us.

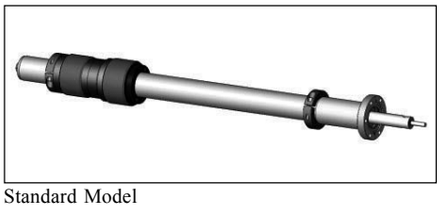
Magnetically Coupled, Coaxial Linear-Rotary Feedthrough

The MCLR Series linear-rotary feedthrough offers remarkably smooth rotary motion for sample introduction and transfer. The new coaxial, magnetically coupled feedthrough features independent linear and rotary axes. The 3/4" linear support tube includes a rotary bearing in the tip to guide the 1/4" rotary probe. Ultra-smooth motion is available with the EZ option below. Other options include all-position lock and linear guidance of the 3/4" support tube for precise orientation of jaws, gearboxes or pincers.



FEATURES

- Independent linear and rotary probes
- ¾" linear support shaft
- ¼" rotary probe
- 2.75" mounting flange
- Up to 48" stroke
- Mechanical torque limit: 150 oz in
- Linear force: 15 lbs
- Internal precision guide bearings for rotary probe
- Maximum bakeout temperature: 200°C (with magnetic drive removed)
- Removable neodymium iron boron magnetic drive



Standard Model

ORDERING INFORMATION

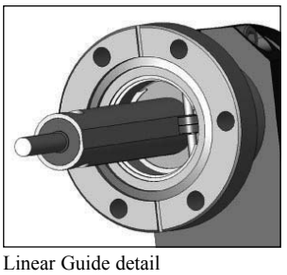
Stroke	Model No.	Price
18"	MCLR-275-18	*on request*
24"	MCLR-275-24	*on request*
30"	MCLR-275-30	*on request*
36"	MCLR-275-36	*on request*
42"	MCLR-275-42	*on request*
48"	MCLR-275-48	*on request*

Other strokes available.
Custom probe lengths available.

OPTIONS

4.5" O.D. Flange

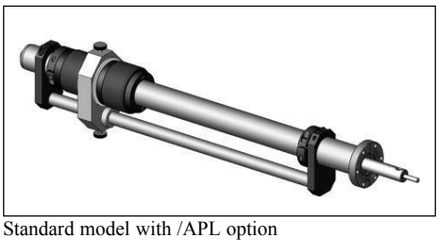
Change 2.75" O.D. mounting flange to 4.50" O.D. flange
(when ordering, change 275 to 450 in model number)
Price *on request*



Linear Guide detail

/LG Linear Guide

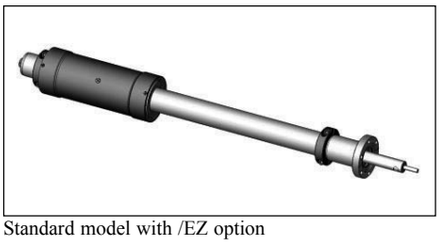
Eliminates rotational stray of the linear shaft. Useful for sample fork gearbox or pincer applications. Available with all other options.
Price *on request*



Standard model with /APL option

/APL All Position Lock

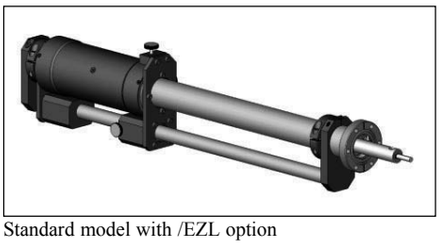
Independent position lock for linear and rotary shafts.
Price *on request*



Standard model with /EZ option

/EZ EZ Transfer

Includes ball bearings and linear ball bushings to increase tactile feedback. Does not include position locks.
Price *on request*



Standard model with /EZL option

/EZL EZ Transfer with Position Lock

Includes ball bearings and linear ball bushings to increase tactile feedback. Also includes independent position lock for linear and rotary shafts.
Price *on request*

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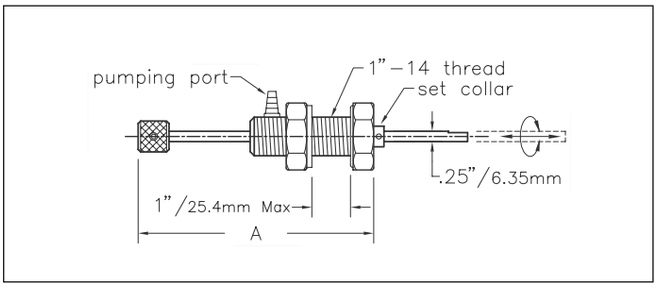
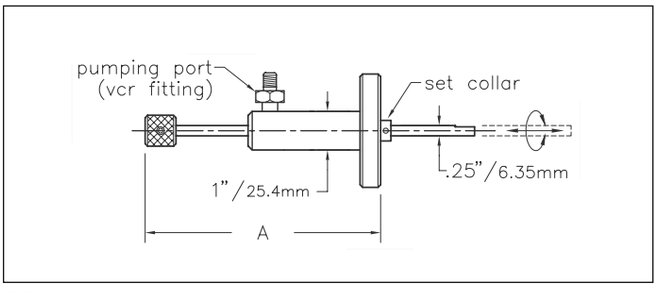
Push-Pull Linear-Rotary Baseplate Feedthrough

BPLR Series for HV Applications

- Baseplate mount
  For 1" I.D. hole
  Maximum baseplate thickness: 1"
- 1/4" O.D. probe
  With clamp type stop collar
  Hand knob
- Linear travels to 24"
- Differentially pumped Viton O-ring sealed linear-rotary action
- Stainless steel construction
- Teflon body insert
  Insert removable for O-ring service without removal of body
- Not intended for Ultra High Vacuum applications



BPLR-10



BPLR-275-10

Push-Pull Linear-Rotary Feedthroughs — BPLR Series

Elastomer-sealed

Stroke	A	Model No.	Price
10"	15"	**BPLR-10**	*on request*
14"	19"	**BPLR-14**	*on request*
20"	25"	**BPLR-20**	*on request*
24"	29"	**BPLR-24**	*on request*

Push-Pull Linear-Rotary Feedthroughs — BPLR-275 Series

Elastomer-sealed
2.75" O.D. mounting flange
with VCR-type differential pumping port

Stroke	A	Model No.	Price
10"	15.2"	**BPLR-275-10**	*on request*
14"	19.2"	**BPLR-275-14**	*on request*
20"	25.2"	**BPLR-275-20**	*on request*
24"	29.2"	**BPLR-275-24**	*on request*