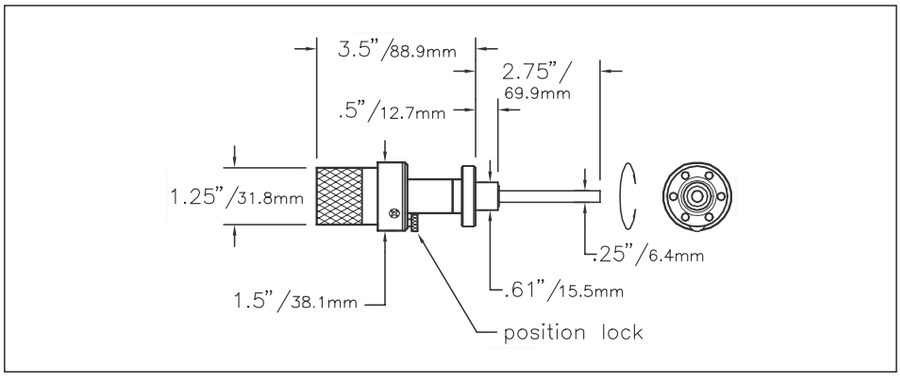
Rotary Feedthroughs — Shutter Actuation

Manual Shutter Feedthrough

FRMC-133-25
- 1/4" O.D. probe
- 1.33" O.D. mounting flange
- Bellows sealed
- Maximum bakeout temperature: 200°C
- Torque limit: 150 oz-in
- This is a coarse positioning device

Price *on request*

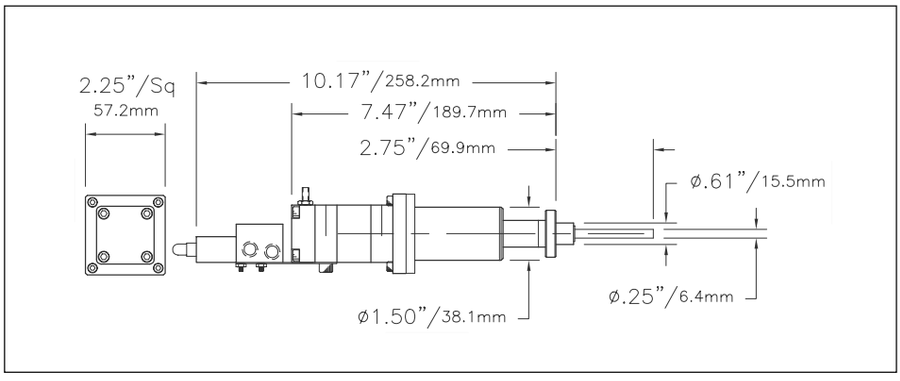


FRMC-133-25

Pneumatic Shutter Feedthrough

FRM-133-25/PNM
- 1/4" O.D. probe
- 1.33" O.D. mounting flange
- Bellows sealed
- Maximum bakeout temperature: 200°C (with air control valve removed)
- Torque limit: 150 oz-in
- 90° rotation
- 180° or 270° rotations available
- Adjustable stops available

Price *on request*



FRM-133-25/PNM (shown with optional /ACV-24 air control valve)

Options

/ACV-24 Air Control Valve

for FRM-133-25/PNM
- Mounted to feedthrough
- Valve-to-rotary actuator plumbing installed
- Control voltage 24 VDC standard or per customer requirements
- With flow controls, both directions

Price *on request*

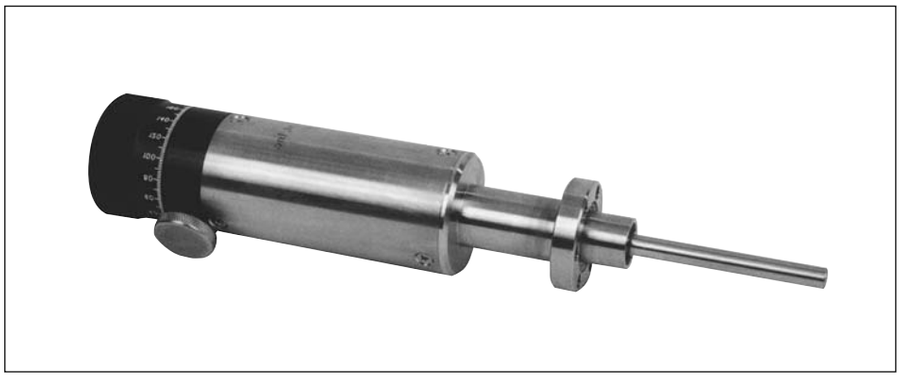
/CL Custom Length Probe

Price *on request*

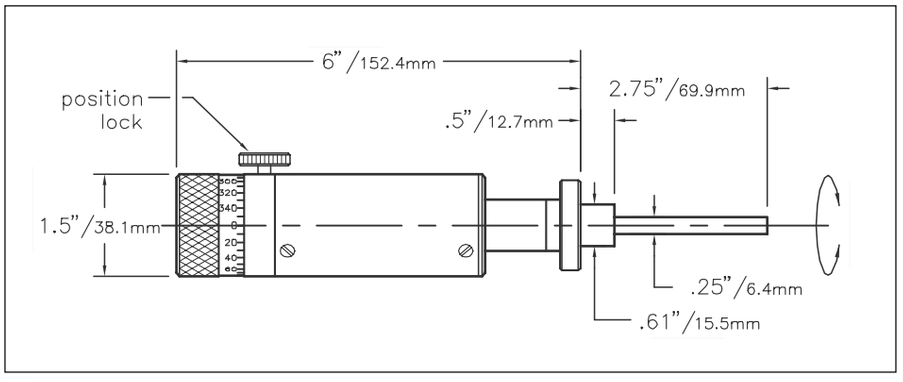
/TM Tip Modification

Price *on request*

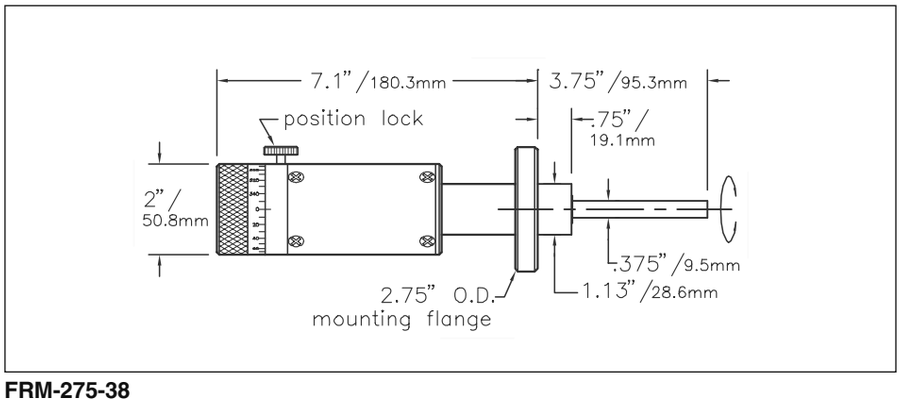
Rotary Feedthroughs — Standard



FRM-133-25



FRM-133-25



FRM-275-38

Standard Rotary Feedthroughs — FRM-133-25 and -275-38 Series

Flange O.D.	Probe Diameter	Model No.	Base Price	Motorization Options* /MS	/MY	/MS/W	/MY/W	/SCC**
1.33"	0.25"	**FRM-133-25**	*on request*			*on request*		
2.75"	0.25"	**FRM-133(275)-25**	*on request*			*on request*		
2.75"	0.38"	**FRM-275-38**	*on request*			*on request*		
Custom length probe			*on request*					

** Add motorization option price to base price.*

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

Hositrad manufactures a full line of metal-sealed rotary motion feedthroughs. These feedthroughs are designed and manufactured to the highest standard of quality and care in the industry. Our design is conservative, utilizing the same principles as those of our precision feedthrough line. We use welded bellows and all ball bearing construction.

Custom probe lengths, probe extensions, and tip modifications are available.

Standard Rotary Feedthrough

FRM-133-25 Series
- 1/4" O.D. probe
- 1.33" or 2.75" O.D. mounting flange
- 360° continuous rotation
- Manual or motorized operation
- Bellows sealed
- Maximum bakeout temperature: 200°C
- Torque limit: 150 oz-in
- 2° graduations, 0° to 360°
- Uses 7 ball bearings
- Position lock

FRM-275-38 Series
- 3/8" O.D. probe
- 2.75" O.D. mounting flange
- 360° continuous rotation
- Manual or motorized operation
- Bellows sealed
- Maximum bakeout temperature: 200°C
- Torque limit: 1,100 oz-in
- 2° graduations, 0° to 360°
- Uses 8 ball bearings
- Position lock

Options

/2.75" Flange
Model No. FRM-133(275)-25
Price *on request*

/CL Custom Length Probe
Price *on request*

/TM Tip Modification
Price *on request*

/MC Mechanical Counter
- 5 digit Veeder Root mechanical counter, metal case
- 3.6:1 spur gear drive
- Adjustable counter orientation
- 36 counts per feedthrough rotation
- Removable for bakeout
- Retrofit kit allows mounting without breaking vacuum

Price *on request*

See drawing top of next page

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Motorization Options

/MS Stepper Motor Drive

Applications: precise positioning, positioning multiple axes at one time, computer-controlled actuation

- 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

Applications: coarse positioning, continuous rotation

- 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*

/MS/W Stepping or /MY/W Synchronous Motor Drive with High Precision Worm Drive

- Anti-backlash worm gear drive
- Gear ratio 100:1 (standard); 50:1, 25:1 optional gear ratios
- Self-locking
- Manual knob
- Motor controller sold separately

Price *on request*

SMC Stepping or YMC Synchronous Motor Controller

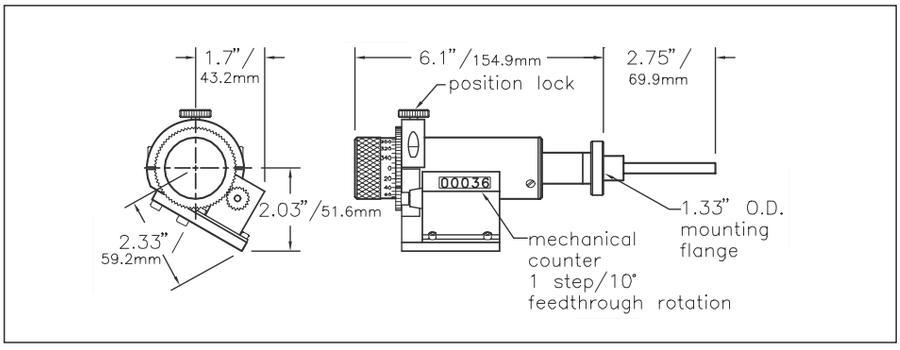
On request

/SCC Speed Control Motor Drive

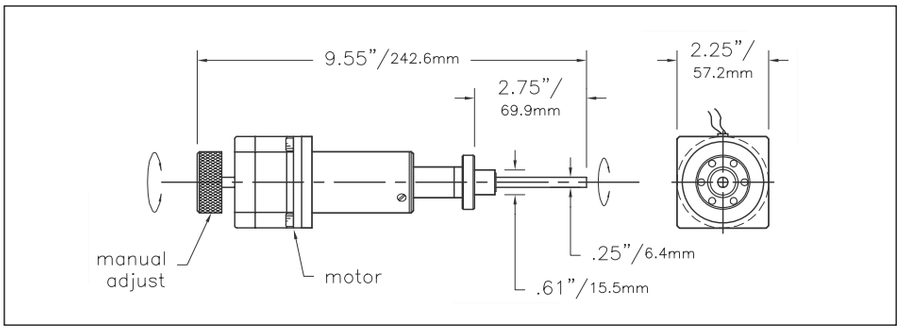
Application: continuous rotation with variable speed, no position feedback

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

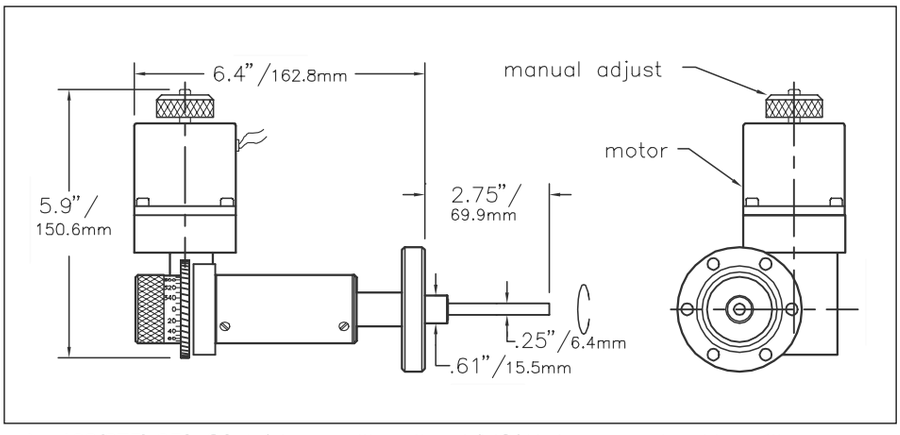
Price *on request*



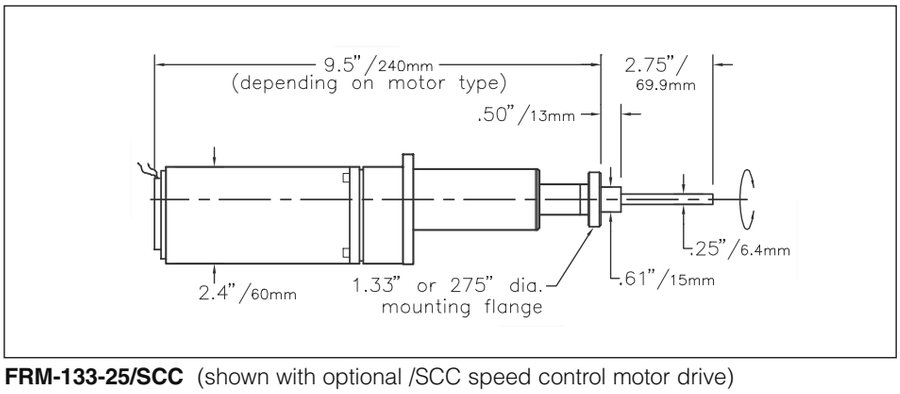
FRM-133-25/MC (shown with optional /MC mechanical counter)



FRM-133-25/MS (shown with optional /MS stepper motor drive)



FRM-133(275)-25/MS/W (shown with optional /MS/W stepper motor drive with high precision worm drive)

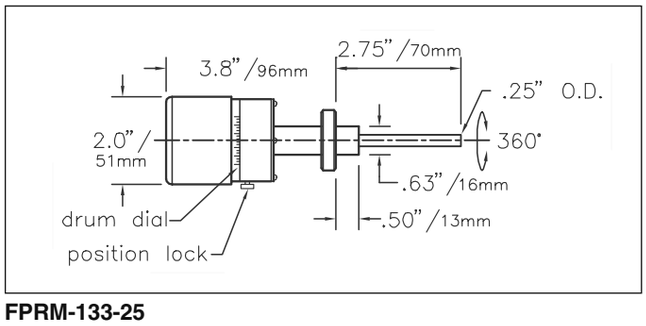


FRM-133-25/SCC (shown with optional /SCC speed control motor drive)

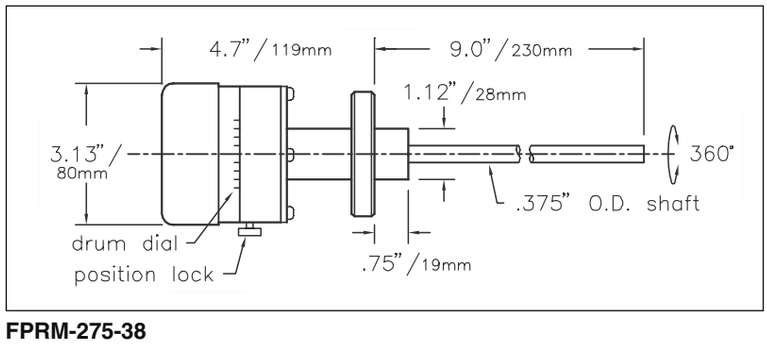
Rotary Feedthroughs — Precision

(shown with optional /MS/W stepper motor drive with high precision worm drive)

FPRM-275-38/MS/W



FPRM-133-25



FPRM-275-38

Precision Rotary Feedthroughs — FPRM-133-25 and -275-38 Series

Flange	Probe		Base	Motorizati	
Options*					
O.D.	**Diameter**	**Model No.**	**Price**	**/MS/W****	**/MY/W****
1.33"	0.25"	**FPRM-133-25**	*on request*	*on request*	
2.75"	0.25"	**FPRM-133(275)-25**	*on request*	*on request*	
2.75"	0.38"	**FPRM-275-38**	*on request*	*on request*	

** Add motorization option price to base price.*

*** Price does not include controller.*

SMC Stepping or YMC Synchronous Motor Controller
On request

/RLS Rotary Limit Switch Actuator Assembly
On request

/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 See table

Precision rotary feedthroughs are commonly used to define a polar axis for a sample or probe. They provide 360° continuous rota-tion and are mounted on top of XYZ manipulators and other stages to provide polar axis freedom. They are also used separately where precision angular orientation is needed.

These feedthroughs are available with custom probe lengths for your specific appli-cation. Field-mountable shaft extensions are also available. All are available with fine adjust and motor drive options.

Precision Rotary Feedthrough

FPRM Series
- For sample rotation
- 1/4" or 3/8" O.D. probe
- 1.33" or 2.75" O.D. mounting flange
- 360° continuous rotation
- Manual or motorized operation
- Bellows sealed
- 0.1° resolution, 1° graduations
- Torque limit: 1/4" probe, 150 oz-in
  3/8" probe, 1,100 oz-in
- Maximum bakeout temperature: 200°C
- Position lock

Motion Specifications

Angular resolution	<0.1°
Shaft run-out	0.005"

Three seconds with Klinger stage

Readability Specifications

Standard scale	1° graduations
/FA with Vernier	1 minute

Options

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

Price *on request*

/TM Tip Modification

Price *on request*

/FA Fine Adjust
- Utilizes a precision Klinger stage for rotary actuation
- Three seconds on Klinger stage

Price *on request*

/FA/W Fine Adjust Worm Drive
- Adds a precision worm gear to rotary feedthrough
- Anti-backlash worm gear drive
- Manual knob
- FPRM-275-38 gear ratio 96:1 (standard); 48:1, 24:1 optional gear ratios
- FPRM-133-25 gear ratio 100:1 (standard); 50:1, 25:1 optional gear ratios

Price *on request*

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Rotary Feedthroughs — Precision Open Axis

The WOA rotary feedthrough is an all metal-sealed, precision, open axis feedthrough with unique features and exceptional performance.

Open Axis

The WOA feedthrough has a 3/4" rotary tube with a clear axis diameter of 0.55". The top of the rotary tube has a fixed 1.33" O.D. flange (2.75" O.D. optional).

This open axis feature allows a multi-axis feedthrough to be constructed by stacking multiple linear or rotary feedthroughs onto the WOA feedthrough. A variety of coaxial rotary and/or linear drives can be produced.

Precision

The WOA feedthrough demonstrates unique rotary precision. Tests confirm resolution of better than 0.003° with a backlash of less than 0.005° for positioning (no torque load) applications.

Readability

Standard scale	1° graduations
/FA with Vernier	1 minute

Open Axis Rotary Feedthrough

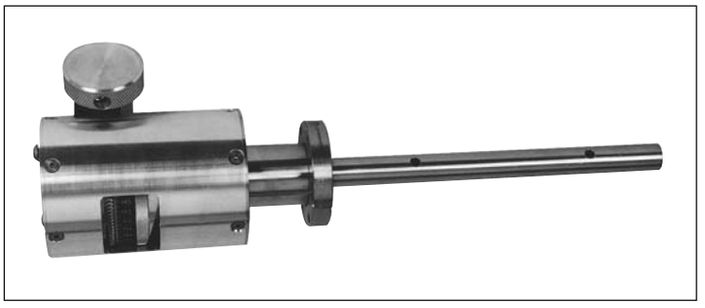
WOA-550

- 2.75" O.D. mounting flange
- 1.33" O.D. top flange
- 3/4" O.D. stainless steel tube
- 0.55" clear axis through feedthrough

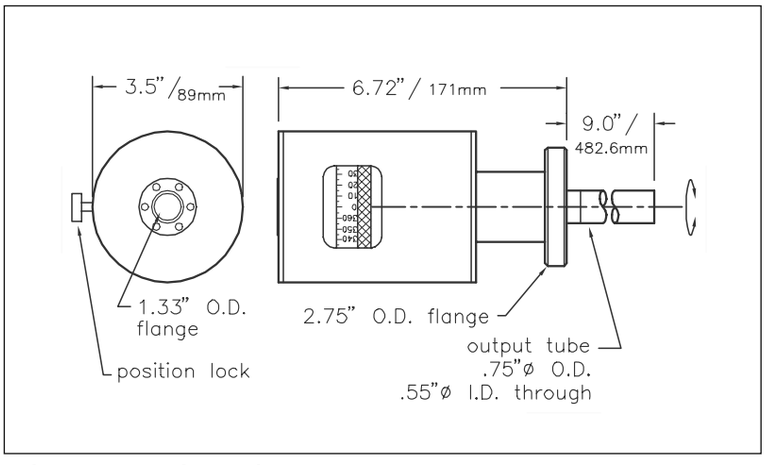
Precision Rotary Feedthrough

WOA-550/B

- 2.75" O.D. mounting flange
- 3/4" O.D. stainless steel tube
- Without clear axis



WOA-550/FA/W (shown with optional /FA/W fine adjust worm drive)



WOA-550 and WOA-550/B

Open Axis Rotary Feedthroughs — WOA-550 and -550/B Series

Flange O.D.	Open Axis	Model No.	Base Price	Motorization Options* /MS/W**	/MY/W**
2.75"	Yes	**WOA-550**	*on request*	*on request*	
2.75"	No	**WOA-550/B**	*on request*	*on request*	

* *Add motorization option price to base price.*

** *Price does not include controller.*

Options

/T-275 Top Flange

- 2.75" O.D. top flange replaces the 1.33" O.D. flange

Price *on request*

/FA Fine Adjust

- Utilizes a precision Klinger stage for rotary actuation
- Three seconds on Klinger stage
- One minute Vernier reading

Price *on request*

/CL Custom Length Tube

- 3/4" O.D. stainless steel tube
- Up to 24", flange face-to-tip

Price *on request*

/FA/W Fine Adjust Worm Drive

- Adds a precision worm gear
- 96:1 (standard), 48:1, 24:1 optional gear ratios

Price *on request*

/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

EXTS-WOA Shaft Extension

- Precision 3/4" O.D. stainless steel tube
- Split clamp attachment to existing shaft
- Shaft extension length 3" to 24", as per customer requirements
- With end guide bearing, as required
- Simple field installation or removal
- Mounts to 3/4" O.D. shaft WOA and others

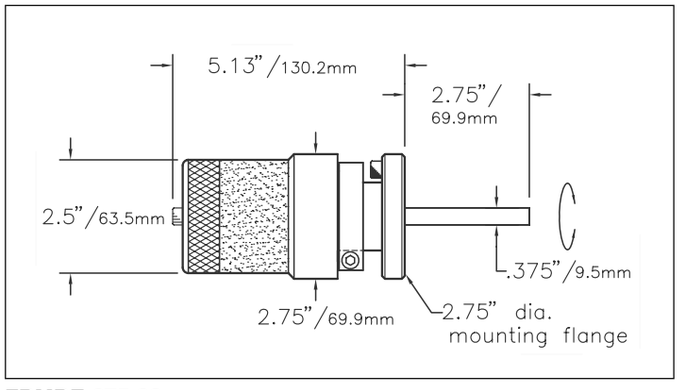
Price *on request*

Rotary Feedthroughs — Magnetically Coupled Drive

FRMRE-275-38/SCC (shown with optional /SCC speed control motor drive)

The rare earth magnetic series single and dual rotary drives are designed to provide exceptional, long life performance. They are UHV compatible and are an excellent option to conventional bellows-sealed and other rotary devices. They can be adapted to PLD target clocking and continuous rotation of targets and substrates, as well as applications which require small profiles and high performance.

There are no sliding seals or magnets in vacuum and stray magnetic fields are virtually nonexistent. The in-vacuum armature is made of paramagnetic materials with stainless steel and silicon nitride bearings and is capable of repeated bake-out to 200°C (with magnets removed). Out-of-vacuum bearings are ac-cessible for lubrication and the magnet drive is easily removable.



FRMRE-275-38

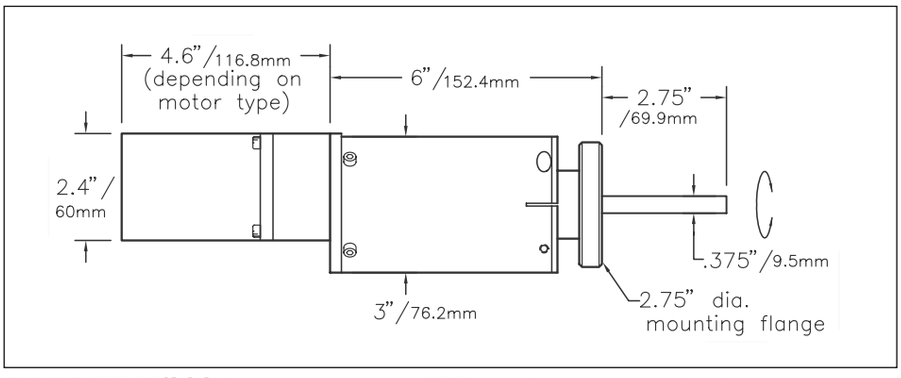
Single Axis Magnetically Coupled Rotary Feedthrough

FRMRE-275-38

- 3/8" O.D. rotating probe
- 2.75" O.D. mounting flange
- Manual drive knob with position lock
- 4,000,000 revolutions before internal bearing service
- Maximum bakeout temperature: 200°C (magnetic drive removed)
- Mechanical torque limit: 150 oz-in
- Maximum speed: 500 rpm
- Removable neodymium iron boron magnetic drive for bake-out

Price *on request*

Higher torque drives available.



FRMRE-275-38/SCC (shown with optional /SCC speed control motor drive)

Options

See motorization options on page 3-7.

FRMRE feedthroughs and FRRMRE motor drives are manufactured and protected under one or more of the following patents: 5,514,925

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Rotary Feedthroughs — Magnetically Coupled Dual Axis Drive

Dual Axis Magnetically Coupled Rotary Feedthrough

FRRMRE-275-75/38

Ideal for PLD target gearboxes

- 3/4" and 3/8" O.D. rotating probes
- 2.75" O.D. mounting flange
- One or both rotary probes can be motorized (see options below)
- Manual adjustment of 3/4" diameter probe with position lock
- 4,000,000 revolutions before internal bearing service
- Maximum bakeout temperature: 200°C (magnetic drive removed)
- Mechanical torque limit: 150 oz-in
- Removable neodymium iron boron magnetic drive for bake-out

Price *on request*

FRRMRE-275-75/38/SCC (shown with optional /SCC speed control motor drive)

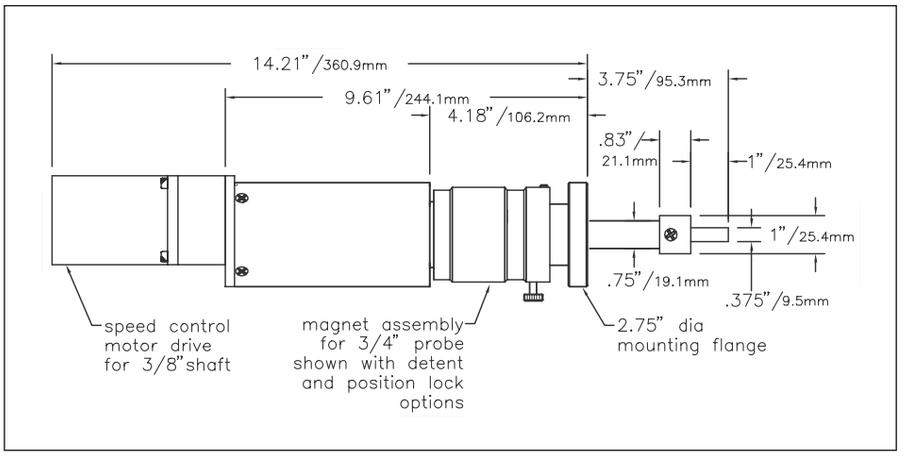
Motorization Options

/MS Stepper Motor Drive

Applications: precise positioning, positioning multiple axes at one time, computer-controlled actuation

- 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, per axis *on request*



FRRMRE-275-75/38/SCC (shown with optional /SCC speed control motor drive)

/MY Synchronous Motor Drive

Applications: coarse positioning, continuous rotation

- 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, per axis *on request*

SMC Stepping or YMC Synchronous Motor Controller

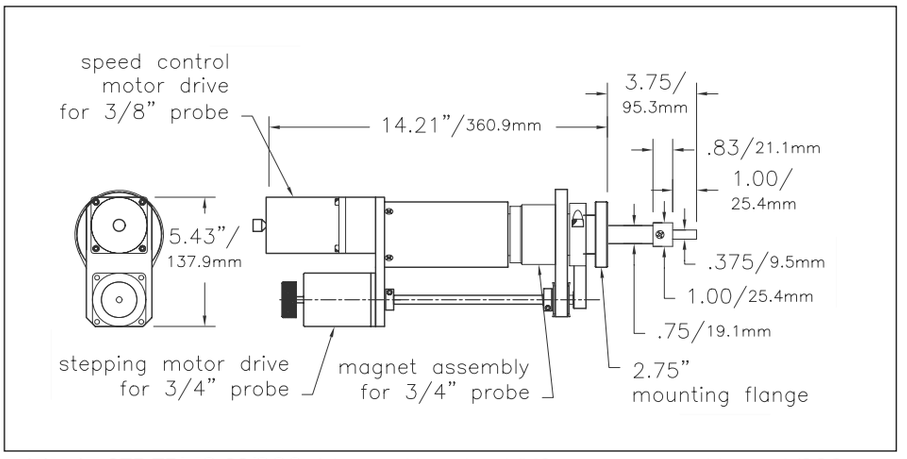
See page 2-XX

/SCC Speed Control Motor Drive

Application: continuous rotation with variable speed, no position feedback

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

Price, per axis *on request*



FRRMRE-275-75/MS-38/SCC (shown with optional /MS stepper motor drive and /SCC speed control motor drive)(commonly used for PLD applications)

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