thermionics laboratory, inc.

INSTRUCTION MANUAL

FPRM-275 SERIES PRECISION ROTARY FEEDTHROUGHS

Version 2

SERIAL # _____

11.2023
231 B Otto Street - Port Townsend, WA 98368 - (360)385-7707

Preface

Congratulations! You have purchased a precision vacuum positioning device from Thermionics. This unit is capable of many years of use with minimal care and maintenance. This manual is a tool to aid you in obtaining this service.

We at Thermionics encourage your comments and suggestions on this manual.

Product Description

The FPRM-275 Series Precision Rotary Feedthroughs are rotary positioning devices with 3/8" diameter rotating shaft. The feedthrough mechanism is capable of 0.1° resolution.

The feedthrough is supplied with a 360° calibrated dial, with 1° increments and a 3" diameter knob. Optional fine adjust stage is required to effectively make use of this high resolution.

The optional fine adjust rotary stage utilizes a tangential adjustment screw. This stage offers the user unparalleled fine adjustment capability. Both the standard and fine adjustment rotary stages come with position locks, standard.

The FPRM Series are available with standard or custom shaft lengths. The feedthrough may be fitted with custom sample mounts, or those available from other vacuum equipment manufacturers.

The rotational axis may be motor driven as an option. Stepping, speed control or synchronous motors may be used, depending upon application.

Unpacking

FPRM Feedthroughs are shipped in custom foam-in-place packing if not mounted to a manipulator or translator. We have found this the only system to provide adequate protection for shipment. The foam is separated approximately halfway inside the box with thin blue plastic. We strongly recommend the packing box with packing be saved for possible future shipment or equipment storage.

Installation

The feedthrough can be installed directly from the crate. As usual, care should be exercised to protect the knife seal edge. The standard unit mounts to a 2.75" OD flange. (other flanges are available as required). Proper tightening technique should be observed whenever tightening a metal sealed flange. We recommend a small quantity of high temperature anti-seize lubricant be used on all mounting bolts. This is especially important if the unit will be subject to bakeouts.

Many FPRM feedthroughs are ordered with long output shafts. The shaft is straightened to provide <+/- 0.005" runout at the tip when used in the vertical orientation, knobs up. Because of the lengths, high probe rigidity is not available. Use care so as not to bend this shaft when installing or working on the instrument.

Adjustments

Your Feedthrough is correctly adjusted prior to shipment. There are no user adjustments available.

Lubrication

All exterior bearings are lubricated with Molycoat high temperature dry film lubricant from Dow Industries. In manual use, additional lubricant is not normally required.
With motor drive use, the user may need to add more lubricant from time to time. Please contact the factory if this action is required.

The internal bearings are lubricated with Tungsten disulfide.

MOTOR DRIVE UNITS
Motor drive unit gear trains are lubricated with GAH-2 high temperature lubricant. Additional lubricant will need to be added from time to time depending upon use, bakeout temperature and frequency, and operation conditions.

*** WARNING ***

GAH-2 lubricant has been tested to 230°C. We recommend limiting the temperature of the lubricant to 200°C or less.

Avoid inhalation of decomposition products formed above 300°C.

This material may give off **toxic gases** at elevated temperatures.

Bakeout Procedure:

We recommend continuous bakeout temperatures up to 200 degrees C for maximum service life.
Automatic temperature control with the sensor (s) correctly located in the top of the area being heated is highly recommended.

Remove motor drives from the feedthrough prior to bakeout. See lubricant temperature warning in the **"Lubrication"** section above.

We at Thermionics have a large stake in your new equipment operating up to your expectations. If you experience difficulty with this unit, or any other aspect of your endeavor where our experience might be of value, we want to hear from you. We want to be part of your success.

END