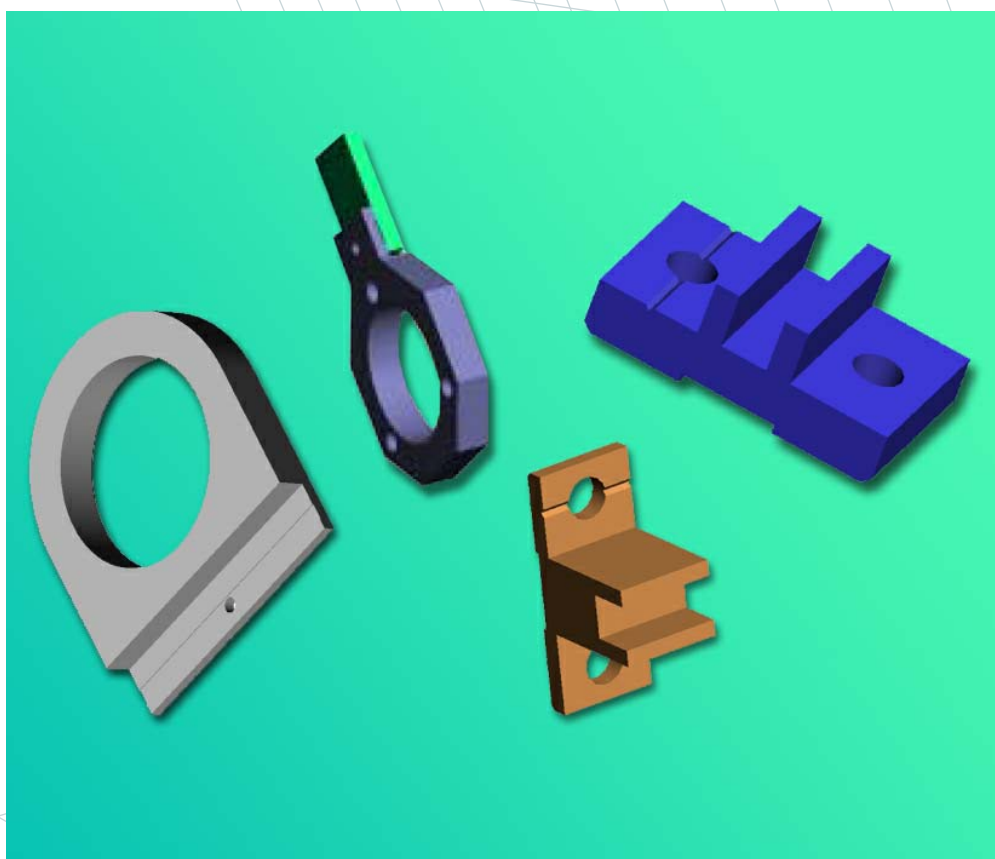


# Mercury™ Encoders: Design Guidelines for Customer Supplied Rotary Scale Segment Holders



# Table Of Contents

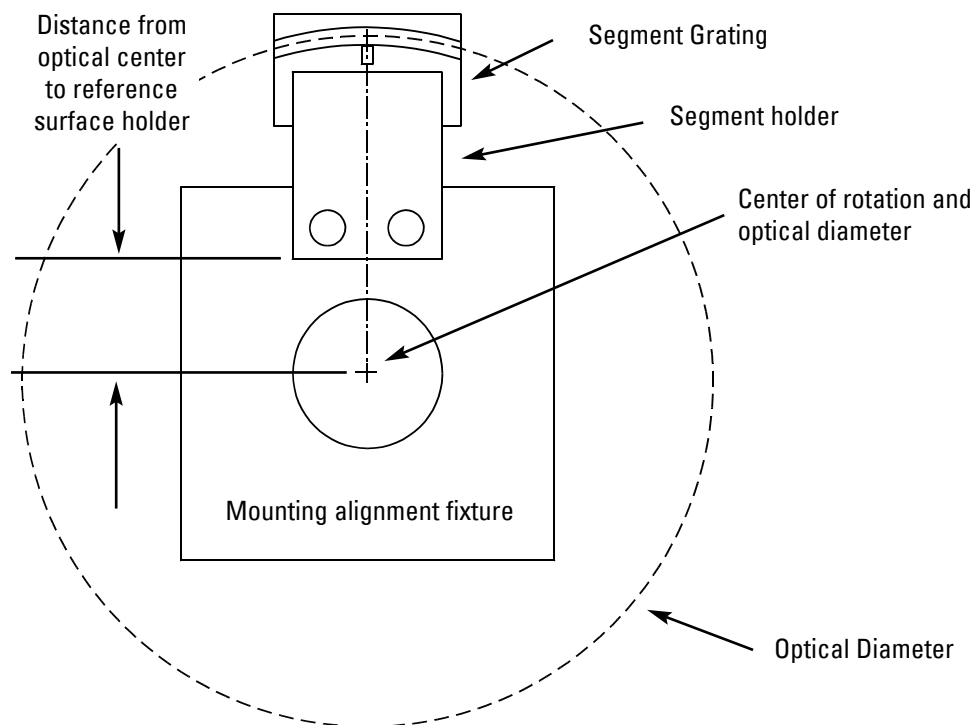
<b>DESIGN CONSIDERATIONS</b>	<b>PAGE</b>
Introduction	2
Mounting and Alignment Fixture	2
Three Segment Designs	3
Check for Clearance	3
Rotary Segment Holder Design: Flat	4
Rotary Segment Holder Design: 90°	5
Contact MicroE Systems	6

## Introduction

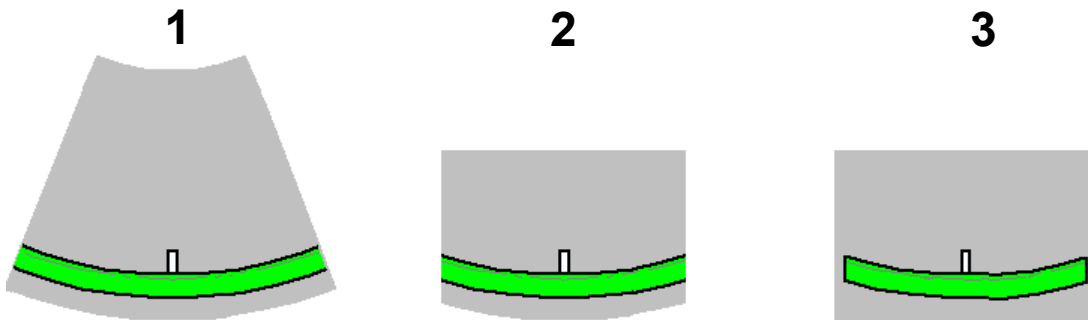
This document will guide customers through the key design elements for a successful segment holder design. Once the holder has been designed, a copy of the design should be sent to MicroE for review.

## Mounting and Alignment Fixture for Segment Holder

Please provide a fixture for the Mounting and Alignment of the segment onto the holder. Otherwise provide dimensional information so MicroE can build a fixture. The key information is the distance from the center of rotation or the optical center to the reference surface of the holder.



## Three Styles Available for Segment Gratings

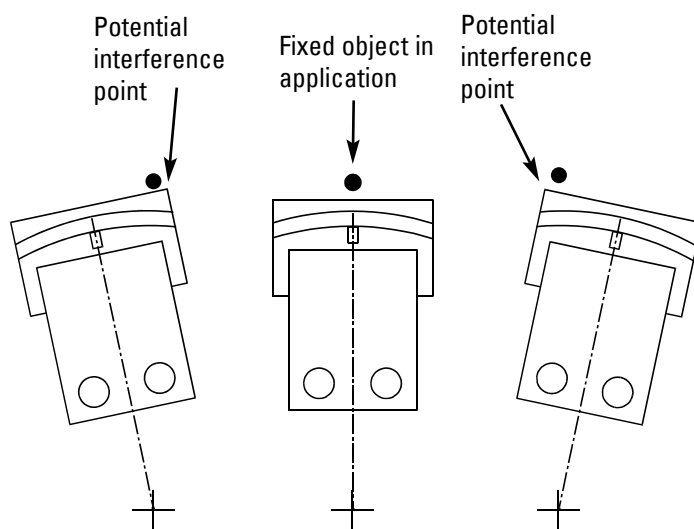


**1)** Angular segment cut from 360° rotary grating. Completed in RCR lab, not recommended for applications that have the potential for high volume.

**2)** Square segment cut from 360 rotary grating. Completed in RCR lab, ideally suited for prototype evaluation orders that will eventually lead to high volume applications. Difficult to make from R1919 and R3213 because of the small size.

**3)** Square segment cut from plate of segments. Recommend for all production segment gratings. Requires new master and is best for standard production. Processed by manufacturing. Designers need to ensure sufficient clearance for the corners that are only present on segments cut from plates.

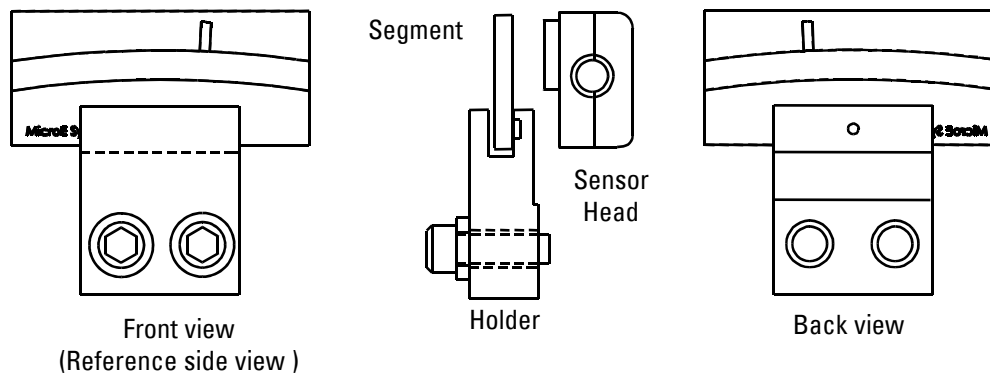
## Checking for Clearance



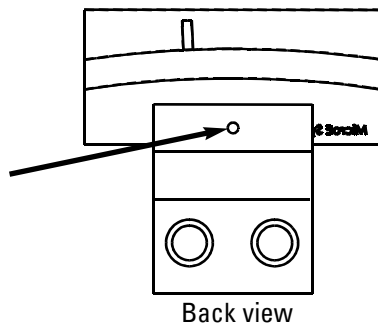
If the application is using a segment grating cut from a plate of segments, rather than from a 360° rotary grating, be sure that the corners of the segment do not interfere with any fixed objects in the application.

# Holder Design

## Rotary Segment Holder Design: Flat holder



**1** Injection hole for epoxy



Note: For segments less than 8 mm wide no epoxy holes are needed. For larger segments, add an epoxy hole for every 20 mm of epoxy groove length. For example, if the epoxy groove is 21 mm long, two epoxy holes should be evenly spaced over the length of the epoxy groove.

**9** Back tab used during the mounting process

**8** The epoxy groove should be approximately 2.5 mm wide and 0.15 mm deep

**7** Gap between segment and bottom of holder is needed during alignment of segment.

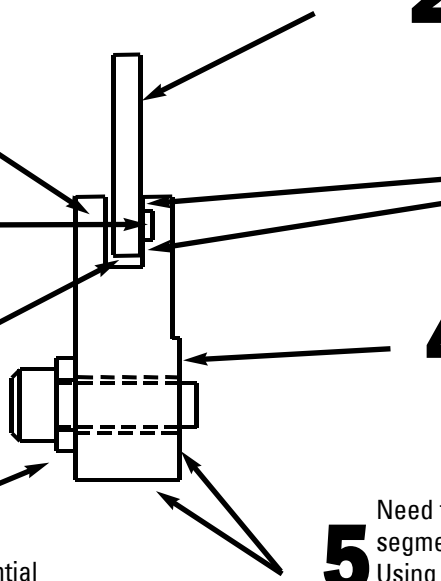
**6** Consider countersinking screws to minimize potential interference of screw head

**2** Grating pattern and reference surface of segment

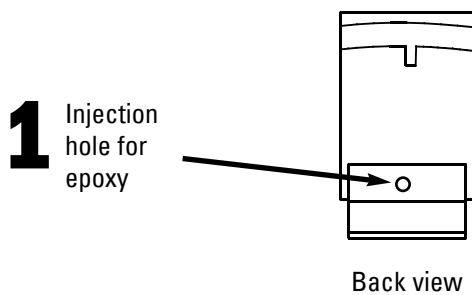
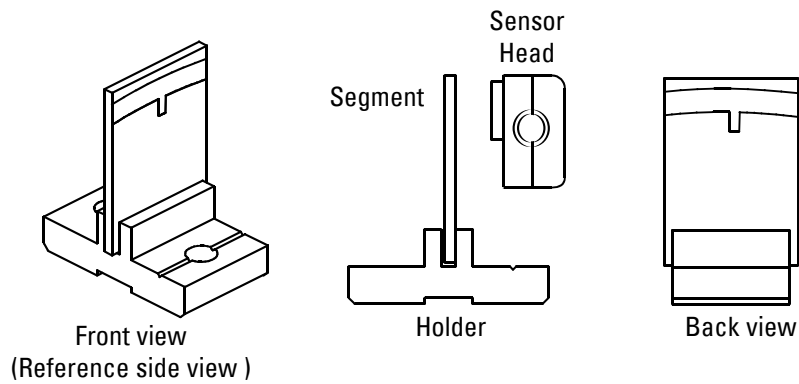
**3** The shoulders on either side of the epoxy groove should be a minimum of 1.5 mm wide

**4** Mounting surface has been reduced to ease manufacturing flat surface

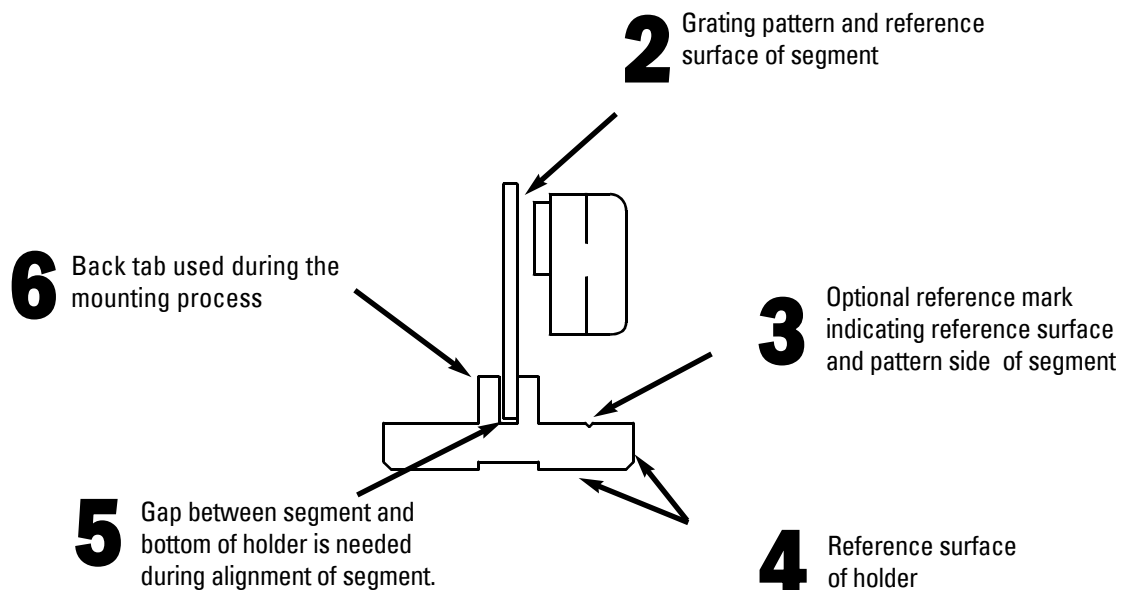
**5** Need three reference surfaces for segment holder WRT mounting surface. Using screws as reference is not recommended.



## Rotary Segment Holder Design - 90° Holder



Note: For segments less than 8 mm wide no epoxy holes are needed. For larger segments, add an epoxy hole for every 20 mm of epoxy groove length. For example, if the epoxy groove is 21 mm long, two epoxy holes should be evenly spaced over the length of the epoxy groove.



## Contact MicroE Systems

Thank you for purchasing a MicroE product. You should expect the highest level of quality and support from MicroE. If you want to download the Mercury Encoder Installation Manual, Data Sheet or Interface Drawing, or have any questions, browse [www.microesys.com](http://www.microesys.com) to find the information you need. Refer to the Mercury Data Sheets and User's Guide sections.

