Model 77646
Focusing Beam Probe

The 77646 Focusing Beam Probe focuses the output of Oriel’s Fused Silica Fiber Bundles. The fiber bundle is placed one focal length from Lens 1 and is secured using the set screw(s).

Lens 1 is a .5 diameter, 19 mm focal length, F/1.7 fused silica lens. The 77646 is shipped with this lens installed. This lens captures and collimates the diverging output from the fiber bundle.

If using only Lens 1, move the fiber bundle away from the lens to produce a focused image far from the probe. To image at short distances, Lens 2 is required.

When Lens 2 is installed, the collimated beam is focused one focal length from Lens 2. For lens selection, please refer to page 2 of this specification.

**LENS 2 INSTALLATION INSTRUCTIONS**

1. Using a pencil with a soft, clean eraser on the back, push Lens 1, spacer and retaining ring until the retaining ring can be removed from the assembly.

2. Using the pencil’s eraser, slide Lens 1 and the spacer back to their original positions.

3. Place Lens 2 in the probe body as shown in the diagram.

4. Squeeze the retaining ring slightly and slide it into the probe body until it is firmly in contact with Lens 2 and all items are properly secured.

**CAUTION!**

- Do not touch lenses with bare fingers. Use gloves, finger cots or a lint-free tissue when handling.

- Ensure that both lenses are oriented as shown in the diagram. The crowns of Lens 1 and Lens 2 face towards the spacer.
LENS 2 OPTIONS

Lens 2 can be ordered separately from Oriel Instruments at any time. The available options are shown in the table below, and are chosen based upon the image magnification and working distance required.

<table>
<thead>
<tr>
<th>Lens 2 Model</th>
<th>Lens Focal Length (mm)</th>
<th>Working Distance (mm)</th>
<th>Magnification **</th>
<th>Output Beam (F/#) ***</th>
</tr>
</thead>
<tbody>
<tr>
<td>41210</td>
<td>19</td>
<td>12</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>41220</td>
<td>25</td>
<td>18</td>
<td>1.3</td>
<td>2.3</td>
</tr>
<tr>
<td>41230</td>
<td>38</td>
<td>31</td>
<td>2</td>
<td>3.4</td>
</tr>
<tr>
<td>41240</td>
<td>50</td>
<td>43</td>
<td>2.6</td>
<td>4.5</td>
</tr>
<tr>
<td>41250</td>
<td>75</td>
<td>68</td>
<td>3.9</td>
<td>6.8</td>
</tr>
</tbody>
</table>

* The working distance is 7 mm less than the focal length of Lens 2.
** The nominal magnification is defined as the ratio of the focal lengths of Lens 2 to Lens 1.
* To change the working distance and magnification, move the fiber bundle.
*** The value given is based upon the assumption that the beam from the fiber bundle fills Lens 1.

EXAMPLE

Using a 77575 Oriel fiber bundle (1.6 mm dia), the choice of the 25 mm focal length lens [model 41220] results in a 2.1 mm diameter illuminated area.

ACCESSORIES

The 77646 Focusing Beam Probe comes with a separate light baffle and O ring which may be used for additional light shielding, if needed.

REPLACEMENT PARTS

Contact Oriel Instruments in the event that any parts are lost or a different model for Lens 2 is desired.

Set Screw 77643-1-1006
Retaining Ring 77650-2-1008
Spacer 77661-2-1008
O Ring 90-01-029
Light Baffle 77650-2-1009

TECH NOTE

One cannot produce a well-collimated beam from a large aperture fiber bundle. The smallest divergence angle, for a perfect optical system, is given by:

\[ \theta = \tan^{-1} \left( \frac{d}{f} \right) \]

Where:
\[ \theta = \text{Full angle divergence} \]
\[ d = \text{Fiber bundle diameter} \]
\[ f = \text{Lens effective focal length} \]
CONTACTING ORIEL INSTRUMENTS

Newport Corporation proudly serves customers across Canada, Europe, Asia and the United States through 9 international subsidiaries and 24 sales offices worldwide. Every year, the Newport Resource catalog is hailed as the premier sourcebook for those in need of advanced technology products and services. It is available by mail request or through Newport's website. The website is where one will find product updates, interactive demonstrations, specification charts and more.

To obtain information regarding sales, technical support or factory service, United States and Canadian customers should contact Oriel Instruments directly.

Oriel Instruments
1791 Deere Avenue
Irvine, CA 92606 USA

Telephone: 800-222-6440 (toll-free in United States)
Fax: 949-253-1680

Sales: oriel.sales@newport.com
Technical assistance: oriel.tech@newport.com
Repair Service: rma.service@newport.com

Customers outside of the United States must contact their regional representative for all sales, technical support and service inquiries. A list of worldwide representatives can be found on Oriel's website: http://www.newport.com/oriel.

REQUEST FOR ASSISTANCE / SERVICE

Please have the following information available when requesting assistance or service:

Contact information for the owner of the product.
Instrument model number (located on the product label).
Product serial number and date of manufacture (located on the product label).
Description of the problem.

If the product needs to be returned, a Return Material Authorization (RMA) number must be obtained prior to shipment to Oriel Instruments. This RMA number must appear on both the shipping container and the package documents.

Return the product to Oriel Instruments, freight prepaid, clearly marked with the RMA number and it will either be repaired or replaced it at Oriel's discretion.

Oriel is not responsible for damage occurring in transit. The Owner of the product bears all risk of loss or damage to the returned Products until delivery at Oriel's facility. Oriel is not responsible for product damage once it has left the facility after repair or replacement has been completed.

Oriel is not obligated to accept products returned without an RMA number. Any return shipment received by Oriel without an RMA number may be reshipped by Newport, freight collect, to the Owner of the product.

WARRANTY INFORMATION

If there are any defects in material or workmanship or a failure to meet specifications, notify Oriel Instruments promptly, prior to the expiration of the warranty.
Except as otherwise expressly stated in Oriel's quote or in the current operating manual or other written guarantee for any of the Products, Oriel warrants that, for the period of time set forth below with respect to each Product or component type (the "Warranty Period"), the Products sold hereunder will be free from defects in material and workmanship, and will conform to the applicable specifications, under normal use and service when correctly installed and maintained. Oriel shall repair or replace, at Oriel's sole option, any defective or nonconforming Product or part thereof which is returned at Buyer's expense to Oriel facility, provided, that Buyer notifies Oriel in writing promptly after discovery of the defect or nonconformity and within the Warranty Period. Products may only be returned by Buyer when accompanied by a return material authorization number ("RMA number") issued by Oriel, with freight prepaid by Buyer. Oriel shall not be responsible for any damage occurring in transit or obligated to accept Products returned for warranty repair without an RMA number. Buyer bears all risk of loss or damage to the Products until delivery at Oriel's facility. Oriel shall pay for shipment back to Buyer for Products repaired under warranty.

WARRANTY PERIOD
Lamps, gratings, optical filters and other consumables / spare parts (whether sold as separate Products or constituting components of other Products) are warranted for a period of ninety (90) days from the date of shipment.

WARRANTY EXCLUSIONS
The above warranty does not apply to Products which are (a) repaired, modified or altered by any party other than Oriel; (b) used in conjunction with equipment not provided or authorized by Oriel; (c) subjected to unusual physical, thermal, or electrical stress, improper installation, misuse, abuse, accident or negligence in use, storage, transportation or handling, alteration, or tampering, or (d) considered a consumable item or an item requiring repair or replacement due to normal wear and tear.

DISCLAIMER OF WARRANTIES; EXCLUSIVE REMEDY
THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES. EXCEPT AS EXPRESSLY PROVIDED HEREIN, ORIEL MAKES NO WARRANTIES, EITHER EXPRESS OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, REGARDING THE PRODUCTS, SOFTWARE OR SERVICES. NEWPORT EXPRESSLY DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE FOR THE PRODUCTS, SOFTWARE OR SERVICES. THE OBLIGATIONS OF ORIEL SET FORTH IN THIS SECTION SHALL BE ORIEL'S SOLE LIABILITY, AND BUYER'S SOLE REMEDY, FOR BREACH OF THE FOREGOING WARRANTY. Representations and warranties made by any person including distributors, dealers and representatives of Oriel / Newport Corporation which are inconsistent or in conflict with the terms of this warranty shall not be binding on Oriel unless reduced to writing and approved by an expressly an authorized officer of Newport.

LOANER / DEMO MATERIAL
Persons receiving goods for demonstrations or temporary use or in any manner in which title is not transferred from Newport shall assume full responsibility for any and all damage while in their care, custody and control. If damage occurs, unrelated to the proper and warranted use and performance of the goods, recipient of the goods accepts full responsibility for restoring the goods to their original condition upon delivery, and for assuming all costs and charges.

First printing 1990

© 2015 by Newport Corporation, Irvine, CA. All rights reserved.
No part of this manual may be reproduced or copied without the prior written approval of Newport Corporation.

This manual has been provided for information only and product specifications are subject to change without notice. Any change will be reflected in future printings.

Newport Corporation 1791 Deere Avenue Irvine, CA, 92606 USA

Part No. 77646 Rev B