

IR Light Sources

Oriel[®] Infrared Light Source Kits



6363IR
6580IR

6575IR

User's Manual

Oriel[®]
INSTRUMENTS
A Newport Corporation Brand

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1 GENERAL INFORMATION

Thank you for your purchase of this infrared (IR) light source kit from Oriel Instruments.

Please carefully read the following important safety precautions prior to unpacking and operating this equipment. In addition, please refer to the complete User's Manual for additional important notes and cautionary statements regarding the use and operation of the system.

Do not attempt to operate the system without reading all the information provided with each of the components.

2 SAFETY CONSIDERATIONS

IR sources operate at high temperatures and their surfaces are above the flammable point of most materials. They may cause fires. Therefore, do not touch the element or allow any other object to come in contact with it when the element is hot. Be careful not to place any flammable objects or materials in the output light path.

3 ITEMS INCLUDED WITH THIS SYSTEM

The following items are included with Oriel's IR light source kits. Visually inspect all items for defects or damage. If something is missing or damaged, contact your Technical Sales Engineer or call 949-253-1727 as soon as possible.

- This manual
- Bare gold coated off-axis parabolic mirror
- Light shield extension tube
- Q Series Housing adapter
- Q Series Housing adjustable reflector assembly
- Q Series Housing base unit
- Q Series Housing interface kit for infrared emitters/QTH lamps
- 9 to 22 W (6575IR or 6580IR) or 140 W (6363IR) IR emitter socket adapter
- 6580 (6580IR), 6575 (6575IR), or 6363 (6363IR) IR emitter
- Sealed plastic bag containing the following hardware for assembly:
 - 5 pcs 4-40 x 3/8 socket head cap screw, black
 - 5 pcs 6-32 x 3/16 socket set cone point set screw
 - 5 pcs 6-32 x 1/8 socket set flat point set screw
 - 6 pcs 4-40 x 1/2 socket head cap screw

4 ASSEMBLY

This assembly procedure details how to mount the 50331AU off-axis parabolic (OAP) mirror into its mirror mount, and how to assemble the included mechanical components for mounting the parabolic mirror onto the output flange of the Q Series Housing. A prerequisite for this assembly procedure is for the 60000 Q Series Housing base unit, 60090 Q Series Housing Interface Kit for IR Emitters and QTH Lamps, IR emitter, and socket adapter are all properly assembled. See the other individual manuals, also included with this light source kit, for these components for instructions on how to assemble these parts into a single unit.

1. Locate the 50331AU OAP mirror and the OAP mirror mount. On the bottom surface of the OAP mirror there is a hole pattern consisting of three 4-40 screw holes and two un-threaded holes. On an interior wall of the OAP mirror mount, there are two protruding pegs that correspond to the un-threaded holes on the bottom of the OAP mirror. These holes and pegs are circled in red in Figure 1.

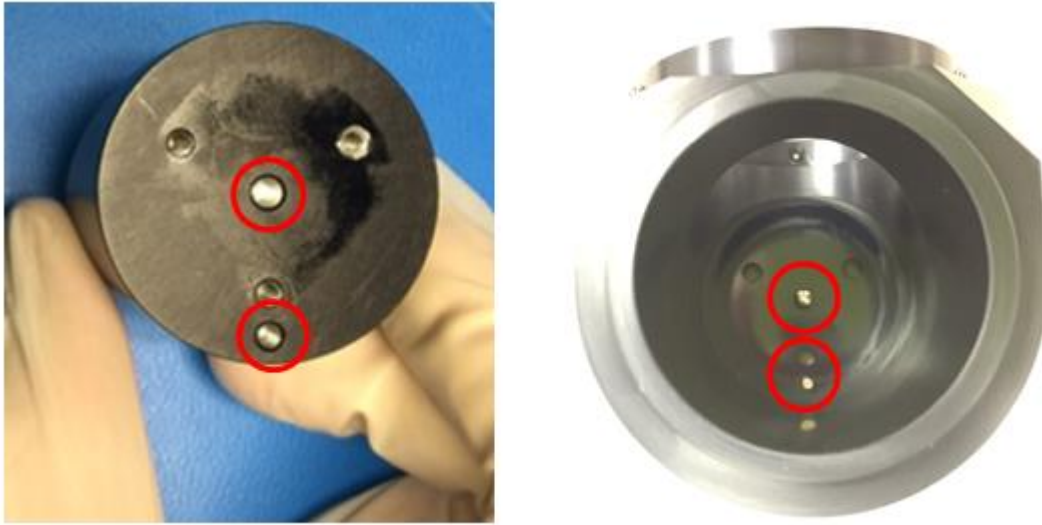


Figure 1: Bottom surface of the OAP mirror and interior wall of OAP mirror mount.

NOTE: ALWAYS HANDLE THE OAP MIRROR IN A CLEAN, LOW-DUST ENVIRONMENT WHILE WEARING POWDER-FREE ACETONE-IMPENETRABLE GLOVES OF FINGER COTS. OILS FROM BARE HANDS CAN DAMAGE OPTICAL COATINGS. SOFT METALS SUCH AS GOLD ARE PARTICULARLY VULNERABLE TO THIS TYPE OF DAMAGE. NEVER TOUCH THE GOLD COATED SURFACE OF THE OAP MIRROR.

2. Carefully place the OAP mirror into its mount, so that the pegs of the interior wall of the mirror mount are inserted into the corresponding holes. When the mirror is properly placed within the mirror mount, fix it inside the holder by inserting the three 4-40 x 3/8 black socket head cap screws into the threaded holes from the exterior of the mirror mount. Set this assembly aside.

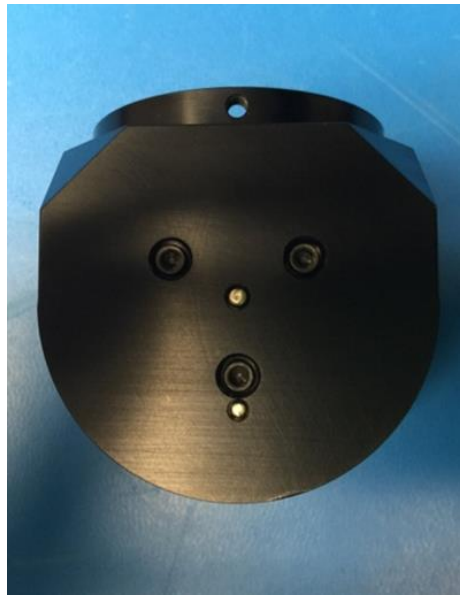


Figure 2: OAP mirror securely mounted in mirror mount.

3. Locate the Q Series Housing adapter. Fix this adapter to the output port of the Q Series Housing base unit using four 4-40 x 1/2 black socket head cap screws.

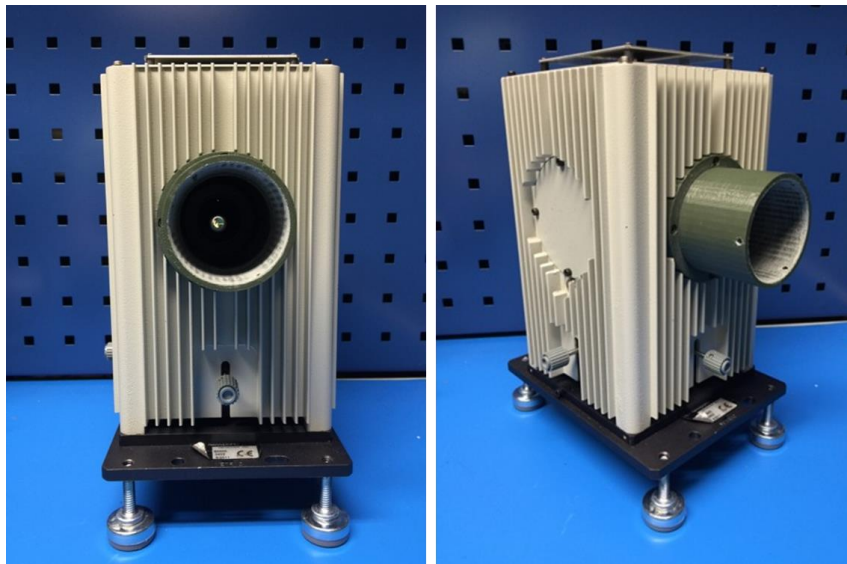


Figure 3: Q Series Housing adapter mounted to Q Series Housing base unit.

4. Using three 6-32 x 1/8 flat point set screws, fix the light shield extension tube inside the Q Series Housing adapter. Do not over-tighten these screws, as the light shield may have to be further inserted or partially removed from the adapter later.



Figure 4: Light shield extension tube mounted.

5. Mount the OAP mirror secured in the mirror mount to the end of the light shield extension tube. Use three 6-32 x 3/16 cone point set screws to secure it in place. For optimum optical placement of the OAP mirror relative to where the IR element is seated within the Q Series Housing, insert or remove the light shield extension tube within the Q Series Adapter mount until the distance between the Q Series Housing Adapter and OAP mirror mount is 0.665 inches or 16.89 mm. A digital caliper may be useful in measuring this distance accurately. When this distance has been achieved, tighten the set screws fixing the light shield extension tube within the Q Series Housing Adapter.

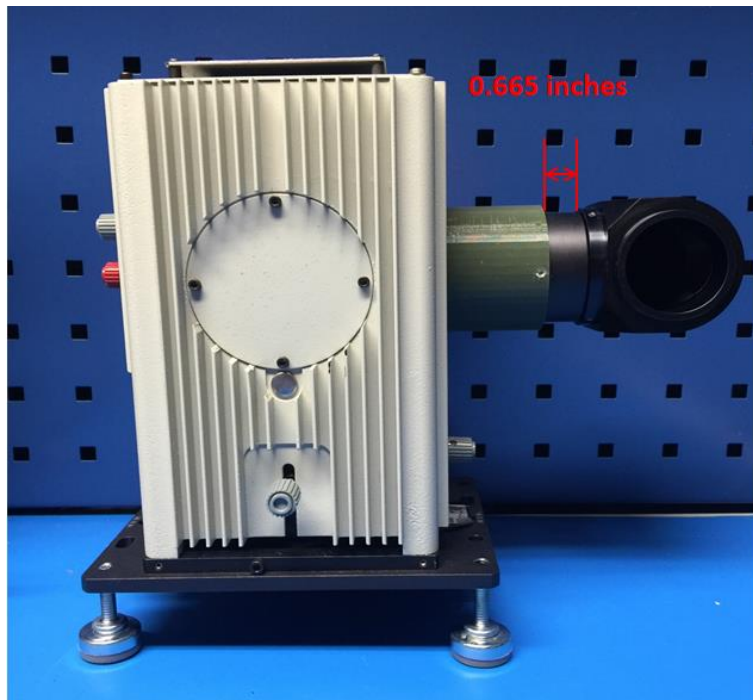


Figure 5: OAP Mirror mounted to Q Series Housing.

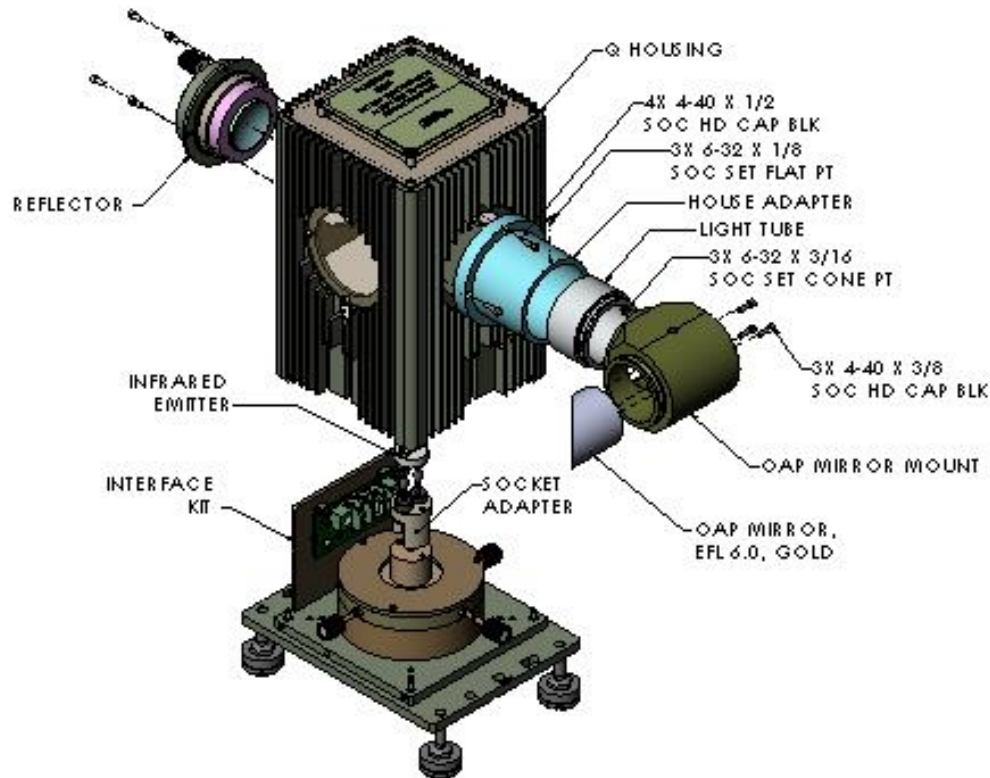


Figure 6: Exploded IR Light Source Assembly.

5 ALIGNMENT

In order to ensure the maximum light output is being achieved from the IR light source, it is necessary to perform a quick alignment procedure before use. This alignment procedure should be followed after assembling the IR light source, any time the IR emitter is removed and re-inserted (such as when transporting the IR light source), and when installing a replacement IR light source.

An IR sensor card is especially helpful in making the IR light output of the light source visible to the human eye. These can be purchased at www.Newport.com. It is important that the IR sensor card be sensitive to the wavelength emission of the IR emitter being used. If assistance is required in selecting an IR sensor card, contact your Newport Technical Sales Engineer or call 949-253-1727. If an IR sensor card is not available a flat, non-reflective vertical surface is required as a backdrop to image the output of the IR light source during this procedure. Ensure the surface is non-flammable and will not be damaged by the heat produced from the lamp. To view the image clearly, it may be necessary to turn off the room lighting.

Prior to starting the IR light source, the system must be inspected to confirm the IR emitter and its socket adapter are installed, the interface kit and adjustable reflector assembly are firmly fixed to the housing

base unit, and the lamp housing interconnection cable is firmly connected to both the interface kit and the power supply.

1. Turn on the 68938 Constant Current Power supply and supply an appropriate amount of current for the IR emitter being used. Place the IR sensor card or backdrop a distance from the off-axis parabolic mirror so that the circular output profile of the IR light source and the profile of the IR emitter itself can clearly be seen. If the profile of the IR emitter is not initially visible, it may be necessary for the IR emitter to warm up for 15-30 minutes while current is being supplied.
2. As shown in Figure 7, there will be a circular output emitted from the flange. Within that circular output there will be a pronounced profile of the IR emitter caused by its reflection within the off-axis parabolic mirror. There will also be a less pronounced profile, with less light intensity than the primary image. This is caused by the IR emitter's reflection from the adjustable reflector assembly, and will be referred to as the secondary image.

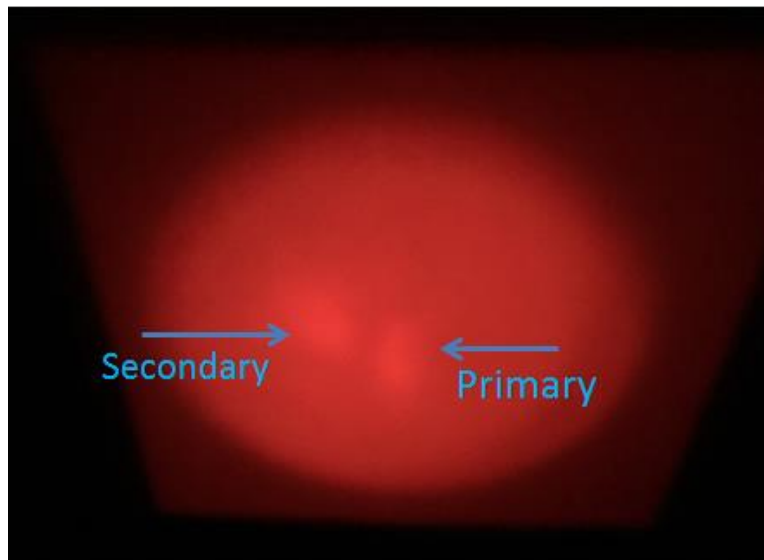


Figure 7: The secondary and primary image output of an IR light source.

3. There are three knobs on the base of the Q Series Housing that move the installed light source within the housing and thus, its primary image within the output profile. Using Figure 8 for reference, use knobs B and C to move the primary image of the IR emitter in the center of the circular output profile. Turning knob A clockwise moves the IR emitter farther from the parabolic mirror and closer to the rear reflector assembly. Likewise, turning knob A counter-clockwise moves the IR emitter closer to the parabolic mirror and farther from the rear reflector assembly. Knob A is used to obtain a sharper primary image of the IR emitter, as the IR emitter is moved relative to the focal point of the parabolic mirror. Adjust knob A until the position at which the sharpest primary image obtainable has been obtained.

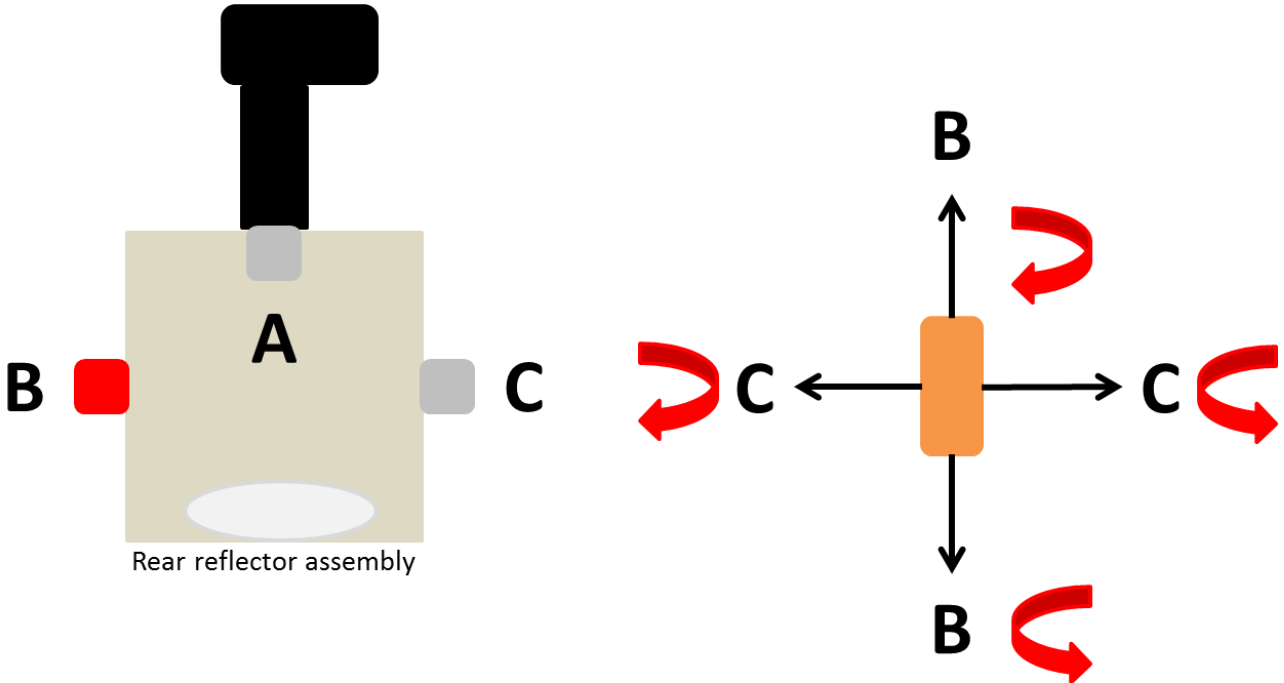


Figure 8: Q Series lamp housing adjustment knob diagram.

- 4. To move the secondary image, use the three knobs located on the rear reflector assembly to overlap the secondary image over the primary image. Use Figure 9 for reference as to how to adjust each knob in order to move the secondary image into its required position. See Figure 10 for the final output of a properly aligned IR light source.

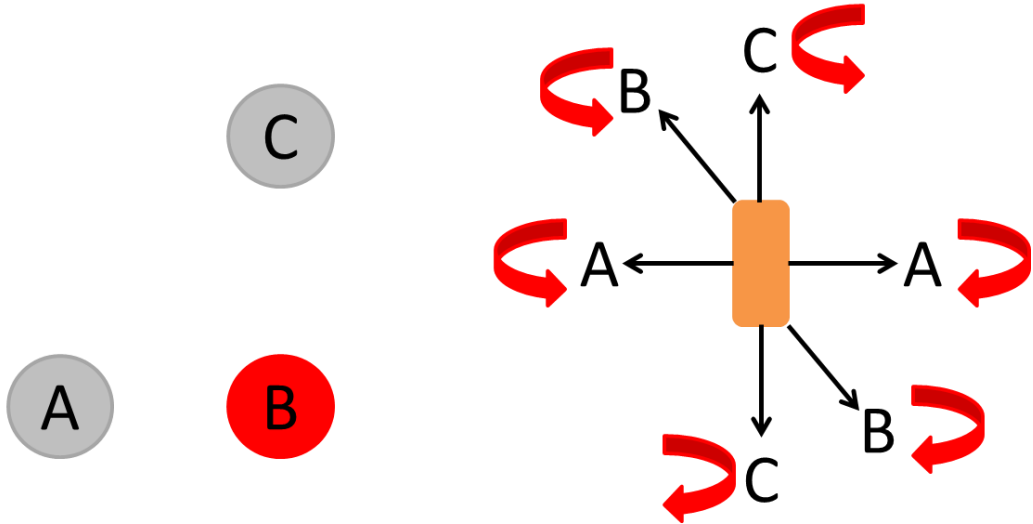


Figure 9: Rear reflector knob adjustment (left) and secondary image displacement (right).

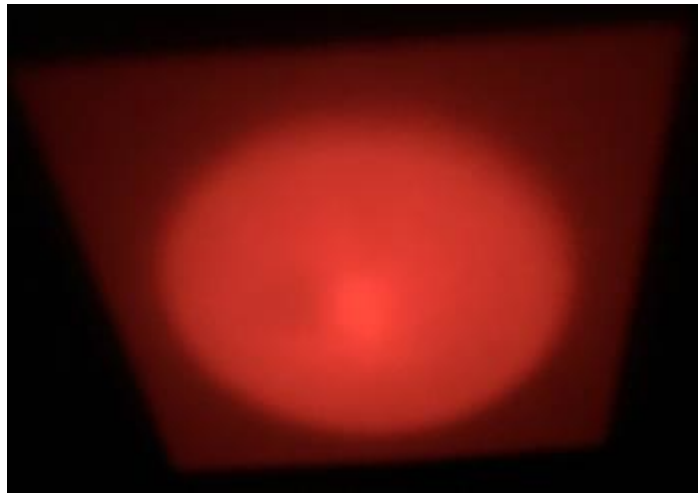


Figure 10: A properly aligned IR light source.

6 CARING FOR THE 50331AU MIRROR

Dust and stains on the gold coated, 50331AU off-axis parabolic mirror can cause light scattering. Proper handling and cleaning of the 50331AU ensures optimum light reflection quality of the mirror with continued use.

Before cleaning the 50331AU, hold the mirror near a bright, visible light source and inspect the mirror for dust and stains. Viewing the mirror at different angles allows the scattering from dust and stains to be visible. If the mirror is not dirty, do not clean it! Bare metal optics are especially vulnerable to becoming dirty or damaged when being handled. Minimizing how often they are handled minimizes the probability the mirror will become dirty or damaged.

Always handle the 50331AU in a clean, low-dust environment while wearing powder-free, acetone-impenetrable gloves or finger cots. Oil and debris from bare hands or lens tissues can stain or even damage optical coatings. Therefore, do not touch the reflective surface and never reuse a lens tissue.

1. Use canned air duster or low-pressure compressed and filtered air or nitrogen to remove any dust that is on the surface. This will always be the first step in cleaning the mirror, as wiping the mirror with existing dirt on the surface can scratch the surface. If no dust or stains are visible on the mirror after this step, the mirror is clean. Continuing to clean the mirror with solvent and lens tissue will only increase the likelihood the mirror becomes damaged.
2. If additional cleaning is required, a reagent or spectrophotometric grade methanol and low-lint tissue manufactured for cleaning optics is required. Fold a new piece of the optical cleaning tissue several times so that there is a square corner with an edge that is at least the width of the mirror.
3. Generously wet the edge of the tissue with methanol.
4. Place the corner of the tissue in the center of the mirror and without exerting direct pressure on the mirror through the tissue, slowly drag the edge of the tissue outward and over the edge of the mirror.
5. Repeat Step 4, cleaning a tissue's width of the mirror each time, until the surface of the mirror meets the cleanliness requirement. Use the compressed air or nitrogen to remove any lint from the tissue.

Re-wet the edge of the tissue with methanol as required. If necessary, use a new, wet tissue. Do not use the other side of a previously used tissue.

6. Never use a scrubbing motion or apply pressure on the mirror with the tissue. The least amount of wiping is the safest for a bare cold coating.

7 WARRANTY AND SERVICE

7.1 CONTACTING ORIEL INSTRUMENTS

Oriel Instruments belongs to Newport Corporation's family of brands. Thanks to a steadfast commitment to quality, innovation, hard work and customer care, Newport is trusted the world over as the complete source for all photonics and laser technology and equipment.

Founded in 1969, Newport is a pioneering single-source solutions provider of laser and photonics components to the leaders in scientific research, life and health sciences, photovoltaics, microelectronics, industrial manufacturing and homeland security markets.

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)
949-253-1727

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>.

7.2 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.

To help Oriel's Technical Support Representatives diagnose the problem, please note the following:

- Is the system used for manufacturing or research and development?
- What was the state of the system right before the problem?
- Had this problem occurred before? If so, when and how frequently?
- Can the system continue to operate with this problem, or is it non-operational?
- Were there any differences in the application or environment before the problem occurred?

7.3 REPAIR SERVICE

This section contains information regarding factory service for this product. The user should not attempt any maintenance or service of the system beyond the procedures outlined in this manual. This product contains no user serviceable parts other than what is noted in this manual. Any problem that cannot be resolved should be referred to Oriel Instruments.

If the instrument needs to be returned for service, 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 either will be repaired or replaced 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.

7.4 NON-WARRANTY REPAIR

For Products returned for repair that are not covered under warranty, Newport's standard repair charges shall be applicable in addition to all shipping expenses. Unless otherwise stated in Newport's repair quote, any such out-of-warranty repairs are warranted for ninety (90) days from date of shipment of the repaired Product.

Oriel will charge an evaluation fee to examine the product and determine the most appropriate course of action. Payment information must be obtained prior to having an RMA number assigned. Customers may use a valid credit card, and those who have an existing account with Newport Corporation may use a purchase order.

When the evaluation had been completed, the owner of the product will be contacted and notified of the final cost to repair or replace the item. If the decision is made to not proceed with the repair, only the evaluation fee will be billed. If authorization to perform the repair or provide a replacement is obtained, the evaluation fee will be applied to the final cost. A revised purchase order must be submitted for the final cost. If paying by credit card, written authorization must be provided that will allow the full repair cost to be charged to the card.

7.5 WARRANTY REPAIR

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

All Products (except consumables such as lamps, filters, etc.) described here are warranted for a period of twelve (12) months from the date of shipment or 3000 hours of operation, whichever comes first.

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.

7.6 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.

Confidentiality & Proprietary Rights

Reservation of Title:

The Newport programs and all materials furnished or produced in connection with them ("Related Materials") contain trade secrets of Newport and are for use only in the manner expressly permitted. Newport claims and reserves all rights and benefits afforded under law in the Programs provided by Newport Corporation.

Newport shall retain full ownership of Intellectual Property Rights in and to all development, process, align or assembly technologies developed and other derivative work that may be developed by Newport. Customer shall not challenge, or cause any third party to challenge the rights of Newport.

Preservation of Secrecy and Confidentiality and Restrictions to Access:

Customer shall protect the Newport Programs and Related Materials as trade secrets of Newport, and shall devote its best efforts to ensure that all its personnel protect the Newport Programs as trade secrets of Newport Corporation. Customer shall not at any time disclose Newport's trade secrets to any other person, firm, organization, or employee that does not need (consistent with Customer's right of use hereunder) to obtain access to the Newport Programs and Related Materials. These restrictions shall not apply to information (1) generally known to the public or obtainable from public sources; (2) readily apparent from the keyboard operations, visual display, or output reports of the Programs; 3) previously in the possession of Customer or subsequently developed or acquired without reliance on the Newport Programs; or (4) approved by Newport for release without restriction.

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Newport Corporation 1791 Deere Avenue Irvine, CA, 92606 USA