



J-Ray 75

Optical Fiber Use and Care

J-Ray 75 Optical Fiber Use and Care

Dear J-Ray 75 Laser System User,

Thank you for choosing our J-Ray 75 Laser System. Your trust in our technology is greatly appreciated.

While our lasers feature robust quartz fibers, it's important to remember that these fibers incorporate delicate glass strands, making them susceptible to damage if not handled correctly. To ensure optimal performance and longevity of your optical fiber products, proper care is crucial.

This guide provides essential instructions for the handling of optical fiber assemblies and products. By adhering to these procedures, you can significantly reduce the incidence of breakage and avoid unnecessary costs related to fiber damage.

Please note, failure to follow these handling guidelines may void certain warranty protections for damages incurred.

Best regards,

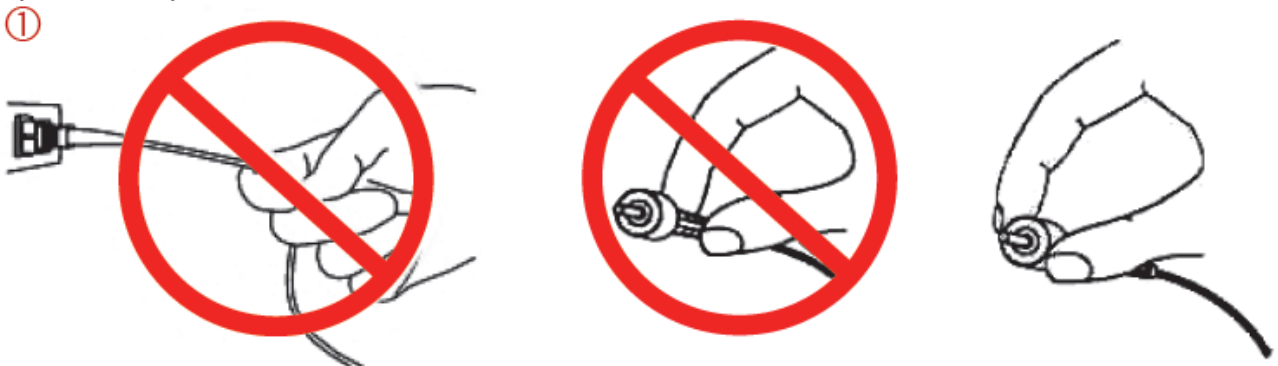


ServiceVet Client Support Team

Product Use Guidelines

When using the Optical Fiber System in your J-Ray 75 Laser, it's crucial to follow these handling precautions to maintain the integrity and performance of your product:

1. **Connecting/Disconnecting the Optical Fiber:** Always handle the connectors directly when plugging in or unplugging the optical fiber. Avoid pulling on the protection jacket or the fiber itself as this can lead to breakage or detachment from the connector. Refer to Figure 1 for proper technique.



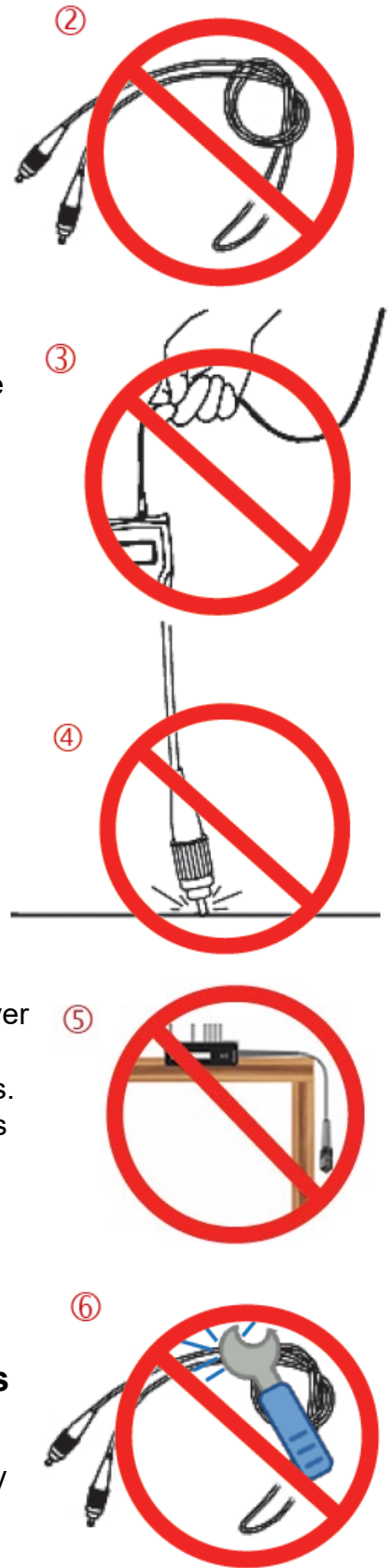
2. **Avoiding Fiber Damage:** Ensure the fiber does not twist, kink, or knot. If you encounter tangles, gently straighten them out without pulling on the fiber. Excessive bending or twisting can break the fiber and impair its ability to transmit light, drastically affecting system performance. See Figure 2 for an example of what to avoid.
3. **Handling the Fiber:** Do not use the fiber to move or lift the device to which it is connected. This can cause internal damage to the fiber. See Figure 3 for more information.
4. **Protecting the Fiber Ends:** The ends of the fiber, particularly the fused ends of ferrules or connectors, are made of glass and can be easily damaged by impact. Avoid dropping or striking the ends against hard surfaces. Reference Figure 4 for an example of what to avoid.
5. **Sharp Edges:** Never let the fiber hang over sharp corners, which can cut or damage the fiber. Observe Figure 5 for an example of what to avoid.
6. **Avoid Mechanical Stress:** Protect the fiber from being stepped on or crushed under heavy objects. This type of mechanical stress can damage both the connectors and the fiber. See Figure 6 for an example of what to avoid.
7. **Keep Connectors Clean:** Any dirt or debris on the connectors can scratch the fiber ends or reduce light transmission. Maintain the cleanliness of all connections.
8. **Using Retaining Clips:** Insert the fiber into any retaining clips gently, without forcing it, to avoid damage.
9. **Handling Rolls of Fiber:** When unrolling fiber, follow the roll's natural curl to prevent twisting and potential internal breakage. Never straighten the fiber forcibly as it can snap the internal fibers.
10. **Disassembly Warning:** Do not disassemble the optical connectors. Disassembling can lead to optical breakage and degrade the fiber's performance.

By observing these guidelines, you can ensure the durability and efficiency of your Optical Fiber System in the J-Ray 75 Laser.

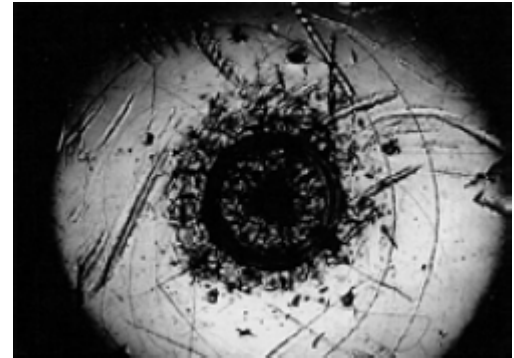
Always Read and Comply with These Handling Instructions

For optimal performance and to avoid damage, adhere strictly to the following guidelines when handling the Optical Fiber System in your J-Ray 75 Laser:

- **Inspect Upon Receipt:** Before removing the product from its packaging, ensure that neither the packaging nor the product has been compromised during transport.
- **Prepare for Use:** Always remove any protective end caps from the Light Guide before use.



- **Maintain Cleanliness:** Avoid touching the fiber ends or the fused end faces with your bare hands, as they are highly sensitive to contaminants. Always keep the end faces and the optical connectors clean.
- **Handle with Care:** The fused parts of the connectors are delicate and can be damaged in ways that are not always visible, but which can severely impact the product's performance. Be aware that any degradation of the ferrule or fiber end face, including contamination from particles or oils, can significantly impair connectivity.
- **Monitor for Damage:** Be cautious of broken or damaged glass within the connector. Such damage can cause performance issues typically mistaken for other problems and can further damage any fiber that is connected to it. This is considered severe misuse.
- **Avoid Repeated Mistakes:** Connecting and disconnecting the fiber without first cleaning off particles, or using improper tools, can cause physical damage to the glass fiber end face, as illustrated below.

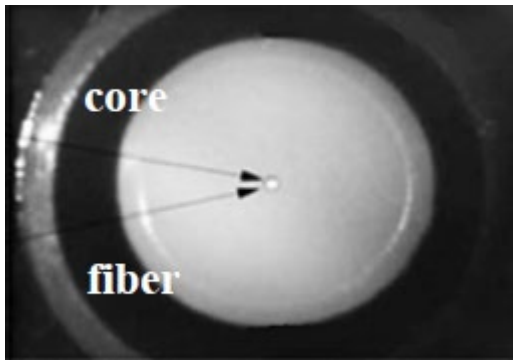


Optical Fiber System Cleaning

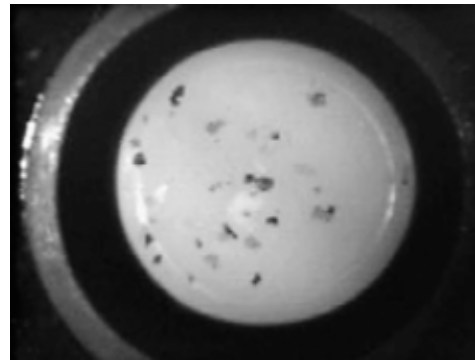
Ensuring the cleanliness of your optical fiber system is critical for optimal performance. Follow these guidelines meticulously:

- **Pre-Connection Cleaning:** Always clean connectors before making any interconnections. Even microscopic contaminants can cause damage to the connector or degrade its performance. In high-power systems, such dirt can act as a lens, focusing the power and potentially burning the connection.
- **Clean Before Insertion:** The fiber end face and ferrule must be spotless before insertion into a transmitter, receiver, or any other device. Contaminants like dust, lint, and oils from handling can obstruct the end face, similarly to how dirt on a window can block light, affecting the optical signal's integrity.
- **Particle Awareness:** Fiber cores are typically 60 μm in diameter—comparable to a strand of human hair, which measures between 50-75 μm . Dust particles, often larger than 20 μm , can obscure the fiber core significantly. Even particles as small as 1 μm , which can remain airborne indefinitely, may land on the core and cause up to 1 dB of signal loss.
- **Routine Cleaning:** It is crucial to clean fiber optic connectors each time they are mated and unmated. Developing a disciplined approach to always clean the connectors prior to mating will prevent most common issues.

- **Detailed Cleaning Procedure:** Follow the cleaning procedure outlined below for all optical fiber product connectors before installation. Whenever possible, inspect each connector with a 100x illuminated microscope (fiberscope) before connecting it to its mating device to ensure cleanliness. Visual comparisons between a clean and a dirty fiber can help identify issues that may compromise performance, as shown below.



Clean Fiber
dust;



Same Fiber with
attenuation >15dB

Basics of Optical Fiber Cleaning:

Effective cleaning of optical fibers is straightforward but essential for optimal functionality. Follow these steps closely every time you connect the optical fiber end of the therapy handpiece or the surgical fiber to the optical fiber port on the side of the J-Ray 75 Laser System:

1. **Cleaning:** If the Optical Connector is clean, use the Optical Fiber Connector Cleaner to clean off any dust or particulates. If any debris is left on the Optical Fiber Connector Cleaner or the Optical Connector has come in contact with foreign material, use a high-purity isopropyl alcohol applied to a clean, lint-free tissue (lens cleaning tissues are suitable) to wipe the end face, ferrule, and connector. Aim to clean the tip thoroughly and as much of the external ferrule as you can. Please use the recommended wipes below.
2. **Drying Process:** Following the wet cleaning, immediately wipe down the surfaces with a dry, lint-free tissue or the Optical Fiber Connector Cleaner. Allowing the fluid to air dry can result in residues from dissolved oils forming puddles, which disrupt proper physical contact.
3. **Inspection and Repetition:** Always inspect the ferrule end-face after cleaning. If any residue or dirt remains, repeat the cleaning process to ensure the fiber is completely clean and ready for use.

PLEASE watch the J-Ray Laser Training Video on cleaning the Optical Fiber Connector at https://servicevet.vet/laser/j-ray_75_training.htm

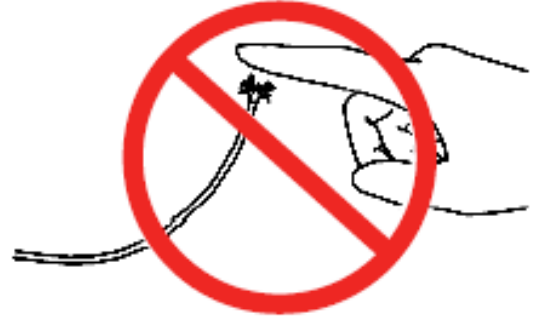
MUST READ: Critical Cleaning and Safety Information

Important Cleaning Guidelines:

Purity of Cleaning Solvent: Ensure you use only industrial-grade isopropyl alcohol that is 99% pure for cleaning the optical fibers. Common medicinal isopropyl alcohol is not suitable as it contains water and light mineral oil which can leave residues. For optimal cleaning results, only industrial-grade isopropyl alcohol should be used. An example of the best cleaning wipes is shown below.

Safety Warning:

Handling Broken Fibers: Never touch the end of a broken optical fiber. Broken fibers are sharp and can easily pierce the skin, leading to injury.



Included Cleaning Tools:

Optical Fiber Connector Cleaner: Your J-Ray Laser System case includes a specialized optical fiber connector cleaner. Two examples are pictured below. Utilize this tool as part of your routine maintenance to ensure the best performance and longevity of your optical fibers.



Recommended Wipes for the Therapy Handpiece:

To Clean the Optical Connector:

Cleanse 99.9% Isopropyl Alcohol Handy Wipes, Lint Free Non-Abrasive No Water Residue Ideal for Electronics, Household, Work Equipment Safe for Tech Cleaning & Screens (6 x 5 inches)

https://www.amazon.com/gp/product/B0934FTVC4/ref=ewc_pr_img_1?smid=A1IR89ENA9JLXU&psc=1

To Clean the Lens of the Therapy Handpiece:

ZEISS Pre-Moistened Alcohol Wipes, Glasses Cleaner

https://www.amazon.com/s?k=zeiss+lens+wipes+for+eyeglasses&i=hpc&crd=1FL7ZVB5M0R6J&sprifix=%2Chpc%2C154&ref=nb_sb_ss_recent_1_0_recent

Helpful Hints and Observations

1. ALWAYS wear your laser safety glasses when using J-Ray 75 Laser.
2. You should use the Therapy Handpiece for most laser therapy and laser acupuncture treatments.
3. If you are unsure how to use the J-Ray Laser System or what protocol to use for a specific treatment, please contact us!
4. We are here to help you use the J-Ray Laser to its full potential for your practice, so let us help!

