



**In order to comply with EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE):**

This product may contain material which could be hazardous to human health and the environment. DO NOT DISPOSE of this product as unsorted municipal waste. This product needs to be RECYCLED in accordance with local regulations, contact your local authorities for more information. This product may be returnable to your distributor for recycling - contact the distributor for details.

**Para obedecer con EU Directiva 2002/96/EC en el Desecho el Equipo Eléctrico y Electrónico (WEEE):**

Este producto puede contener la materia que podría ser la salud humana perjudicial para y el ambiente. NO se DESHAGA de este producto el desecho municipal como no clasificado. Estas necesidades del producto para SER RECICLADAS de acuerdo con las regulaciones locales, contactan su administración local para más información. Este producto puede ser retornable a su distribuidor para reciclar - contacta el distribuidor para detalles.

**Afin de respecter la directive européenne 2002/96/EC sur l'Équipement Electronique et les Déchets Electriques :**

Ce produit pourrait contenir des matières qui peuvent être dangereuses pour la santé de l'homme et de l'environnement. Ne pas jeter ce produit dans un container municipal inapproprié. Ce produit doit être recyclé en accord avec les arrêtés locaux; contacter les autorités locales pour plus de renseignements. Ce produit peut être renvoyé au distributeur pour recyclage - Contacter votre distributeur pour plus de details.

**Um den Vorschriften der EU-Direktive 2002/96/EC bezüglich elektrischer und elektronischer Abfallstoffe (WEEE) nachzukommen:**

Dieses Produkt kann Materialien enthalten, welche gesundheitsgefahrnd und umweltschädlich sind. Dieses Produkt DARF NICHT wie unsortierter Hausmuell entsorgt werden. Dieses Produkt muss gemaess den oertlichen Bestimmungen recycled werden, bitte kontaktieren Sie die lokalen Behoerden fuer weitere Informationen. Sie koennen dieses Produkt zum Recycling an Ihren Haendler zurueckgeben, bitte kontaktieren Sie den Haendler fuer weitere Details.

Printed in the U.S.A.  
Copyright 2005 Monarch Instrument, all rights reserved

**1071-8319-110**



# MONARCH INSTRUMENT

## *Instruction Manual*



## Monarch Fiberscopes FSI and FSX models



### MONARCH INSTRUMENT

15 Columbia Drive  
Amherst, NH 03031 USA  
www.64817.com

# TABLE OF CONTENTS

FIBERSCOPE MODELS ..... 1

BASIC SPECIFICATIONS (All Models)..... 1

FSI Models ..... 1

    Main Features ..... 1

FSI-XX-10-L Models ..... 2

    Batteries and Replacement ..... 2

    Lighting ..... 2

FSI-XX-6-H Models ..... 2

    Batteries and Replacement ..... 2

    Lighting ..... 3

    Halogen Lamp Replacement ..... 3

FSX Models ..... 3

    Main Features ..... 3

    Lighting and Attachment ..... 3

Accessories ..... 4

    Mirror ..... 4

    Magnet ..... 4

General Operation, Checks, and Care of all Scopes ..... 4

    General Scope Checks before and after each use ..... 4

    Operation ..... 4

    Eyepiece Focusing ..... 5

    Cleaning and Storage ..... 5

    Precautions ..... 5

## SAFEGUARDS AND PRECAUTIONS



Read and follow all instructions in this manual carefully, and retain this manual for future reference.

Do not use this instrument in any manner inconsistent with these operating instructions or under any conditions that exceed the environmental specifications stated.

These instruments are not user serviceable. For technical assistance, contact the sales organization from which you purchased the product.

Monarch Instrument's Limited Warranty applies. See [www.monarchinstrument.com](http://www.monarchinstrument.com) for details.

Warranty Registration and Extended Warranty coverage available online at [www.monarchinstrument.com](http://www.monarchinstrument.com).

- 6. Never use the scope near moving parts such as gears and fan blades or moving belts.

### Eyepiece Focusing

The Eyepiece has been factory set to be in focus and should need very little adjustment in the field. You should only need to turn the eyepiece by several turns in either direction to be in focus. If you feel resistance in adjustment, do not exert force. Reverse direction. Continue until the image is in focus.

### Cleaning and Storage

- 1. Always wipe the tip, shaft, and housing down with a soft clean cloth to remove residue and moisture.
- 2. Use a proper cleaning liquid (diluted dishwashing soap) and rinse tip and shaft with water. Dry.
- 3. When needed, gently clean the distal tip lens and eyepiece surfaces with a lens cleaner such as isopropyl alcohol and a cotton tip swab.
- 4. When needed, clean the condenser lens with a clean cotton tissue (FSX Models).
- 5. **The scope should be completely dry before storing in case.**

### Precautions

- 1. **The flexible shaft of the scope can be immersed into appropriate fluids for short periods. Always clean and dry after use.**
- 2. **Never immerse handles into fluids. The handle assembly is splash resistant and designed to prevent dust infiltration – NOT LIQUIDS.**

If any problems occur with your scope, do not attempt to open the scope housing. If you encounter any problems, call Monarch as soon as possible for corrective action.

To attach the flashlight:

1. Remove the 1.25" diameter standard Condenser coupler from the case and screw onto the connector fitting (See Figure 3). **Do Not Over tighten.**
2. While holding the coupler firmly in hand, push the head of the flashlight into the coupler until seated.

**Tip:** The coupler has a Nitril O-ring which may need a thin film of silicone grease or Vaseline from time to time. This will facilitate the flashlight to slide in.



Figure 3 FSX Flashlight Attachment

Accessories

45° Mirror

The clip on mirror (5.8mm - P/N 7831-0953, 10mm - P/N 7831-0954) provides for viewing 90 degrees to the direction of the shaft.

Magnet

The clip on magnet (5.8mm - P/N 7831-0955, 10mm - P/N 7831-0956) can pick up all ferrous metals up to approximately ¼ lbs.

To attach the mirror or magnet: grasp the clip as shown in Figure 4, tilt while aligning against flat of the distal tip and push down into the recessed area.



Figure 4 Mirror/Magnet Attachment

General Operation, Checks, and Care of all Scopes

General Scope Checks before and after each use

1. Before and after each use, check scope for rips, tears, and abrasions.
2. Check for proper operation of lighting. If dim or not lighting, first replace batteries.
3. Check for smooth rotation of eyepiece.

General Operation

1. Always exercise care when inserting and removing the shaft of the scope into and from the hole of the object you are inspecting.
2. Try to pre-determine the route and location of the area you are inspecting. With this you can pre-bend the 10 mm shaft in the direction you require to facilitate viewing.
3. Never bend the shaft length tighter than 3 inches [7.62 cm] diameter.
4. Never expose the housing to water or liquids.
5. Never insert the shaft into hot locations greater than 60 °C [140 °F].

Congratulations on buying a high quality product from Monarch Instrument. We take pride in not only selling our products but also serving and reacting to the needs of our present and future customers.

The Fiberscopes from Monarch Instrument will pay for themselves over and over again in reduced labor costs and virtually eliminating the guesswork when investigating so many inaccessible areas.

FIBERSCOPE MODELS

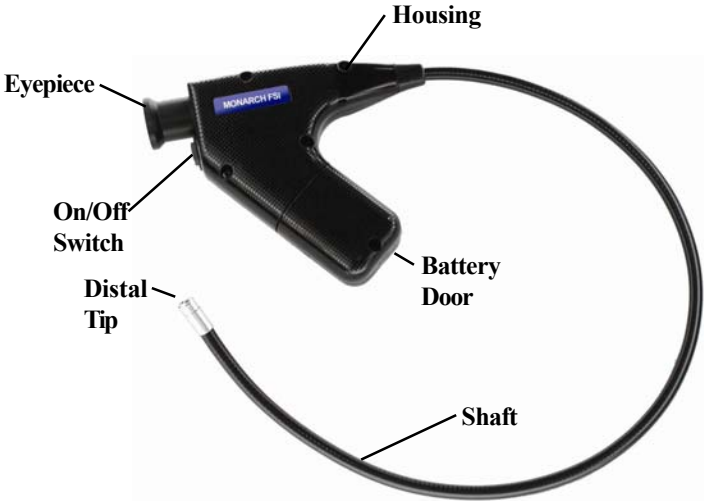
This manual covers all the FSI and FSX Fiberscope models and variations. This manual is divided into the FSI and FSX models and each model is addressed pertaining to the features including shaft type, lighting, switching, and batteries.

BASIC SPECIFICATIONS (All Models)

- Viewing Angle: 40 degrees
- Viewing Distance: 0.4 inch [10.16 mm] to Infinity
- Housing Material: Nylon 6
- Bending Radius: 3 inches [7.62 cm] Minimum
- Operating and Storage Temp: -40 °C [-104 °F] to 60 °C [140 °F]
- Tip Diameter: 10mm shaft: 0.41 inch  
6mm shaft: 0.228 inch

FSI Models

Main Features



## FSI-XX-10-L Models

### Batteries and Replacement

The FSI-XX-10-L series are powered by AA batteries (4). The batteries are held within a removable battery pack just beneath the battery door. See Figure 1.

To replace the batteries:

1. Remove the battery door with a Phillips screwdriver.
2. Tilt battery pack up from the bottom of handle and remove the batteries from the battery pack. Do not put unnecessary strain on the wire leads and never pick up the scope by the leads.
3. Un-clip the connector if desired.
4. Replace the batteries, reattach the connector and replace in reverse order. Please make sure not to pinch any wires when closing the cover.



**Figure 1 FSI-XX-10-L Battery Pack**

### Lighting

The FSI-XX-10-L series are equipped with service free integrated solid-state LED lamps. Simply, these lamps never need servicing for the life of the scope.

**NOTE:** Please refer to “General Operation, Checks, and Care of all Scopes” section within this manual for trouble free service.

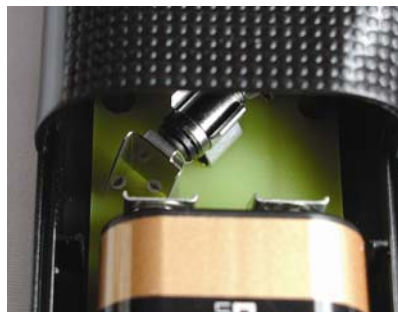
## FSI-XX-6-H Models

### Batteries and Replacement

The FSI-XX-6-H models are powered by a DL-223 6V Lithium battery pack (P/N 7831-0958) located just beneath the battery door. See Figure 2.

To replace the batteries:

1. Remove the battery door with a Phillips screwdriver.
2. Tilt the battery pack up from the base of the handle and pull the battery pack out.
3. Replace with a new battery pack in reverse order.



**Figure 2 FSI-XX-6-H Battery Pack and Halogen Lamp**

### Lighting

The FSI-XX-6-H models are equipped with a replaceable halogen lamp located just beneath the battery door. See Figure 2.

The halogen lamp life is 15 - 20 hrs.

### Halogen Lamp Replacement

In the event the lamp needs replacement:

1. Remove the battery door with a Phillips screwdriver and set aside.
2. Remove the battery pack and set aside.
3. Using a small screwdriver, needle-nose pliers, or similar, tilt the lamp up out of the base clip and remove.
4. Replace with Monarch lamp P/N 7831-0957. Lay lamp body in clip and press down.
5. Replace the battery pack and test for proper illumination by activating switch.
6. Replace the battery door.

**NOTE:** Never touch the lamp body just after operation. The halogen lamp operates at a high temperature and needs time to cool down.

## FSX Models

### Main Features



### Lighting and Attachment

The FSX models use an optional detachable flashlight for their illumination source.

Because the FSX scopes are rugged instruments but contain precision optical components, never use the flashlight solely as a handle. Always keep hold of the FSX housing when in use.