

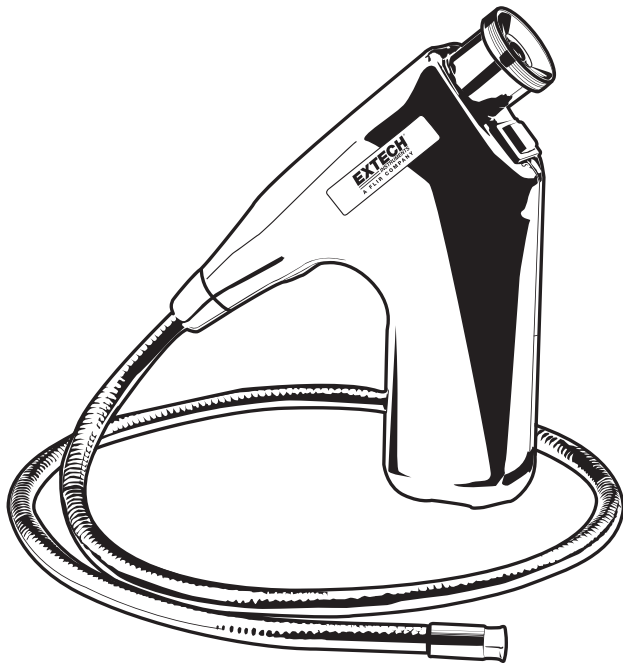
User's Guide

EXTECH[®]
INSTRUMENTS

A FLIR COMPANY

Flexible Borescope

Model BR146



Introduction

Congratulations on your purchase of the Extech BR146. This product is used for inspection of areas generally inaccessible to the naked eye, such as internal inspection of engines, gear train components, interior structures of walls, and industrial applications. Illumination is provided by two solid state LEDs which are controlled by a three position switch, giving low, off, and high output. Lighting is powered by 4 "AA" batteries located in the handle. The adjustable eyepiece focus allows the user to fine tune for object distance. The scope comes in a protective case for storage. An accessory mirror allows the user to see 90 degrees to the axis of the shaft. The Magnet accessory will pick up approx 1/4 lb. This device is shipped fully tested and, with proper use, will provide years of reliable service

Safety

STOP IMPORTANT:
PLEASE READ THESE INSTRUCTIONS CAREFULLY. NOTE THE SAFE OPERATIONAL REQUIREMENTS, WARNINGS AND CAUTIONS. USE THIS PRODUCT CORRECTLY AND WITH CARE FOR THE PURPOSE FOR WHICH IT IS INTENDED. FAILURE TO DO SO COULD CAUSE DAMAGE AND/OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY. PLEASE KEEP THESE INSTRUCTIONS FOR FUTURE USE.

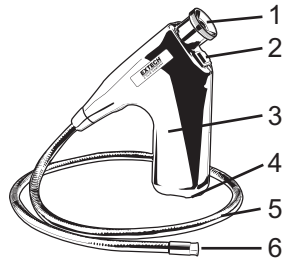
- **DO NOT** use flexible inspection scope if damaged
- Do not point the tip toward the Sun or other intense source of light while viewing. Permanent eye damage may occur.
- Maintain your scope in new condition as detailed in **MAINTENANCE** for long service
- Be aware of your surrounding environment while using your inspection scope
- Account for all tools and parts being used or serviced and do not leave loose parts near moving parts of an engine

Specifications

Viewing distance:	0.4"(10mm) to infinity
Viewing Angle	48°
Side View Adaptor:	90°
Tip Diameter	0.39" (10mm)
Working Length:	46" (1168mm)
Maximum bend radius	3" (7.62cm)
Optical system:	fiber optic (7400 fibers)
Illumination	LED (2) (High/Low intensity selection)
Max probe temperature	158°F / 70°C
Shaft material	HDPF
Housing material	Nylon
Compatibility	Water, diesel, gasoline, brake fluid, antifreeze, motor oil, gear oil and other liquids
Power	4 AA batteries
Weight:	1.15lb (0.52kg)
Carrying Case Dimensions:	17 x 13 x 4.5" (432mm x 330mm x 114mm)

Description

1. Eyepiece and Focus
2. LED ON and intensity switch
3. Handle
4. Battery compartment
5. Shaft
6. Tip and Light source



Operation

WARNING! Be careful when inserting or removing the scope shaft from the equipment under inspection.

WARNING! Use extra care when using mirror or magnet accessories. Accessories may detach if snagged.

DO NOT bend any part of the shaft tighter than a 3 inch radius (6 inch diameter).

DO NOT expose the scope housing to water or other fluids.

DO NOT insert the scope shaft and tip into locations whose temperature is greater than 158°/F70°C.

1. Note the location and distance of the object to be inspected and determine the best route to it. Bend the shaft to follow the route.
2. View the object through the eyepiece. Adjust the focus as necessary by turning the eyepiece.
3. Press the switch below the eyepiece to turn on the LED light. A left press is high intensity, right press is low intensity (extends battery life).
4. Attach the side view mirror or retrieval magnet to the tip as shown. Make sure the spring clip is fully secure in the recessed groove provided.

NOTE: The base of the mirror or magnet should be aligned over the flat side of the tip.



Maintenance

BATTERY REPLACEMENT

WARNING ! Make sure switch is in the off position prior to maintenance and/or battery replacement.

1. Remove the battery housing door with a Phillips screwdriver.
2. Un-clip the connector - if required - and replace batteries in the pack. Dispose of batteries properly.
3. Re-attach connector and re-insert battery pack into bottom of handle.
4. Re-assemble battery door. Do not over tighten screw.

CLEANING AND STORAGE

After each use, wipe down the tip and shaft with a clean, dry cloth to remove fluids and residue. If needed, clean the shaft with a cloth dampened with a mild soap detergent. Gently clean the lens and eyepiece with a cotton swab dampened with a lens cleaner such as isopropyl alcohol.

NOTE: Your inspection scope **MUST** be completely dry before returning it to the storage case.

Warranty

EXTECH INSTRUMENTS CORPORATION (A FLIR COMPANY) warrants this instrument to be free of defects in parts and workmanship for **one year** from date of shipment (a six month limited warranty applies to sensors and cables). If it should become necessary to return the instrument for service during or beyond the warranty period, contact the Customer Service Department at (781) 890-7440 ext. 210 for authorization or visit our website www.extech.com for contact information. A Return Authorization (RA) number must be issued before any product is returned to Extech. The sender is responsible for shipping charges, freight, insurance and proper packaging to prevent damage in transit. This warranty does not apply to defects resulting from action of the user such as misuse, improper wiring, operation outside of specification, improper maintenance or repair, or unauthorized modification. Extech specifically disclaims any implied warranties or merchantability or fitness for a specific purpose and will not be liable for any direct, indirect, incidental or consequential damages. Extech's total liability is limited to repair or replacement of the product. The warranty set forth above is inclusive and no other warranty, whether written or oral, is expressed or implied.

Calibration and Repair Services

Extech offers repair and calibration services for the products we sell. Extech also provides NIST certification for most products. Call the Customer Care Department for information on calibration services available for this product. Extech recommends that annual calibrations be performed to verify meter performance and accuracy.



Support line (781) 890-7440

Technical Support: Extension 200; E-mail: support@extech.com

Repair & Returns: Extension 210; E-mail: repair@extech.com

Product specifications subject to change without notice

For the latest version of this User Guide, Software updates, and other up-to-the-minute product information, visit our website: www.extech.com
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