Ralcam M606X, F408A

Ralcam M606X and F408A Articulating Borescope User Manual

Models: M606X (5" Screen, 4-Way Articulation), F408A (Phone Connected, 2-Way Articulation)

1. INTRODUCTION

Thank you for choosing the Ralcam Articulating Borescope. This manual provides essential instructions for the safe and effective operation of your M606X (5-inch screen, 4-way articulation) and F408A (phone-connected, 2-way articulation) models. These devices are designed for detailed visual inspection in hard-to-reach areas, making them ideal for mechanical, automotive, plumbing, and general household maintenance tasks.
Please read this manual thoroughly before use and retain it for future reference.

2. SAFETY INFORMATION

Always observe the following safety precautions to prevent injury or damage to the device:

- Do not use the borescope in environments with flammable or explosive gases.
- Do not immerse the main unit (screen/handle) in water. Only the camera probe is waterproof (IP67 rated).
- Avoid bending the camera probe excessively or forcing it into tight spaces, which may cause damage.
- Keep the device away from strong magnetic fields.
- Do not attempt to disassemble or modify the device. Repairs should only be performed by authorized personnel.
- Ensure the device is fully charged before extended use to avoid interruptions.
- Keep out of reach of children.

3. PACKAGE CONTENTS

Verify that all items are present in your package:

- Ralcam Articulating Borescope Unit (M606X or F408A model)
- Camera Probe (6.2mm/0.24in for M606X, 8.5mm/0.33in for F408A)
- USB Charging Cable
- User Manual

- Carrying Case (may vary by model)
- Accessories (e.g., hook, magnet, side mirror - specific to model/bundle)

Image 3.1: Ralcam M606X Borescope with its carrying case. The image displays the main unit with a 5-inch screen, the flexible probe, and a black zippered carrying case with the 'RALCAM' logo.

Image 3.2: Ralcam F408A Borescope with its carrying case. This image shows the phone-connected borescope handle, the flexible probe, and a black zippered carrying case with the 'RALCAM' logo.

4. PRODUCT OVERVIEW

4.1 M606X Model (5-inch Screen)

Image 4.1: Overview of both Ralcam borescope models. The left unit is the M606X with an integrated 5-inch screen and joystick control. The right unit is the F408A, designed to connect to a smartphone, featuring a more compact handle.

The M606X model features an integrated 5-inch HD IPS screen for direct viewing and a joystick for precise articulation control. It is equipped with a 6.2mm (0.24in) ultra-slim camera probe.

- **5-inch HD IPS Screen:** Provides clear, vivid visuals for detailed inspections.

- **4-Way 180° Articulation:** Joystick-controlled probe allows for flexible navigation and viewing angles.

- **6.2mm (0.24in) Camera Probe:** Designed for accessing extremely narrow spaces.

- **Integrated Controls:** Buttons for menu, mode, capture, and LED brightness adjustment.

- **Rechargeable Battery:** 4400mAh capacity for extended operation.

Image 4.2: Illustration of the M606X's 4-way 180° joystick articulation. The image shows the borescope handle with a joystick, and a diagram illustrating the camera probe bending in four directions (up, down, left, right) to achieve a 360° full view within a confined space.

Image 4.3: Close-up of the M606X's 5-inch HD IPS large screen. The image highlights the screen's size and clarity, indicating an upgraded display for better visibility during inspections.

Image 4.4: Comparison of the Ralcam M606X's 6.2mm (0.24in) slim camera probe with a larger 8.5mm probe. The image emphasizes the M606X's thinner design, allowing it to explore narrower areas without obstacles.

4.2 F408A Model (Phone Connected)

The F408A model connects to your smartphone (Android 7.0+, iOS 10.0+) for viewing, utilizing its screen and processing power. It features an 8.5mm (0.33in) camera lens with 2-way 180° articulation.

- **Smartphone Connectivity:** Connects via cable to Android and iOS devices for live viewing and recording.
- **2-Way 180° Articulation:** Allows the probe to bend in two directions for flexible inspection.
- **8.5mm (0.33in) Camera Lens:** Suitable for a wide range of inspection tasks.
- **High Definition Video and Image:** Captures 1920x1080p video and images.
- **6 Ring LED Lights:** Adjustable brightness for optimal illumination in dark environments.
- **Rechargeable Battery:** 2200mAh capacity (for the borescope handle) provides power for the probe and LEDs.

Image 4.5: Ralcam F408A compatibility with iPhone and Android devices. The image shows the borescope handle connected to a smartphone, with icons indicating compatibility with Android 7.0+, iOS 10.0+, and iPad. This model offers stable image transmission without Wi-Fi disconnection concerns.

HIGH CAPACITY & RECHARGEABLE

Provides up to 3 hours of continuous use, no need to recharge frequently.

3H

2200mAh

RALCAM
BORESCOPE

Turn the probe back to straight before pulling out

Image 4.6: Internal view of the Ralcam F408A's 2200mAh rechargeable battery. The image highlights the battery's capacity, providing up to 3 hours of continuous use for the borescope's probe and LED lights.

Image 4.7: Illustration of the borescope's IP67 waterproof rating and adjustable LED lights. The image shows the camera probe submerged in water, with indicators for 6 LEDs and adjustable brightness levels (0%, 60%, 80%, 100%), enhancing visibility in dark or wet inspection areas. This feature applies to both M606X and F408A models.

5. SETUP

5.1 Initial Charging

Before first use, fully charge your borescope. Connect the provided USB charging cable to the charging port on the device and to a standard 5V/1A USB power adapter (not included). The charging indicator will show the charging status. A full charge typically takes 3-4 hours.

5.2 M606X Model Setup

1. Ensure the device is charged.
2. Press and hold the Power button to turn on the borescope. The 5-inch screen will display the live camera feed.
3. Adjust the LED brightness using the dedicated button on the handle as needed.

5.3 F408A Model Setup (Phone Connected)

1. Download the companion application from your smartphone's app store (search for "Ralcam Borescope" or refer to the QR code in the quick start guide).

2. Ensure the F408A unit is charged.

3. Connect the F408A borescope to your smartphone using the appropriate USB cable (USB-C, Micro USB, or Lightning adapter may be required, depending on your phone and the cable provided).

4. Open the downloaded application. The live camera feed should appear on your phone screen.

5. Adjust the LED brightness using the control on the F408A handle.

6. OPERATING INSTRUCTIONS

6.1 Navigating the Camera Probe

Gently insert the camera probe into the inspection area. For articulating models (M606X and F408A), use the joystick (M606X) or articulation wheel/lever (F408A) to bend the probe tip and navigate around obstacles or view different angles.

- **M606X (4-Way Articulation):** Move the joystick in the desired direction (up, down, left, right) to articulate the probe tip. The probe can bend up to 180° in each direction.

- **F408A (2-Way Articulation):** Use the articulation control on the handle to bend the probe tip up to 180° in two opposing directions.

Avoid sudden or forceful movements to prevent damage to the articulation mechanism.

6.2 Capturing Images and Videos

Both models allow you to capture still images and record videos.

- **M606X:** Press the **Capture** button (usually marked with a camera icon) to take a photo. Press the **Record** button (usually marked with a video camera icon) to start/stop video recording. Captured media is saved to the internal memory or an inserted SD card (if applicable).

- **F408A:** Use the controls within the companion smartphone application to take photos and record videos. Media will be saved directly to your smartphone's storage.

6.3 Adjusting LED Brightness

The camera probe is equipped with adjustable LED lights to illuminate dark inspection areas. Locate the LED brightness control button or wheel on your device's handle and adjust as needed for optimal visibility.

7. MAINTENANCE

7.1 Cleaning the Camera Probe

After each use, especially in dirty or oily environments, gently wipe the camera probe with a soft, damp cloth. For stubborn grime, a small amount of isopropyl alcohol can be used. Ensure the probe is dry before storage.
Caution: Do not use abrasive cleaners or solvents that may damage the lens or probe material.

7.2 Cleaning the Main Unit/Screen

Wipe the main unit (M606X screen and body, F408A handle) with a soft, dry cloth. Avoid getting liquids into ports or buttons.

7.3 Storage

Store the borescope in its carrying case in a cool, dry place, away from direct sunlight and extreme temperatures. Ensure the camera probe is not sharply bent during storage.

7.4 Battery Care

To prolong battery life, avoid fully discharging the battery frequently. If storing for an extended period, charge the battery to approximately 50-70% every few months.

8. TROUBLESHOOTING

Problem	Possible Cause	Solution
Device does not power on.	Low battery.	Charge the device fully.
No image on screen (M606X) or phone (F408A).	Device not powered on. F408A: Incorrect app or connection issue. F408A: Phone not compatible or app permissions missing.	Ensure device is powered on. F408A: Verify correct app is installed and connected properly. F408A: Check phone compatibility and grant necessary app permissions (camera, storage).
Image is too dark/bright.	LED brightness not adjusted.	Adjust the LED brightness using the control button/wheel.
Probe articulation is stiff or unresponsive.	Debris in articulation mechanism. Excessive force applied. Internal damage.	Gently clean the probe tip. Avoid forcing the probe. Contact customer support if damage is suspected.
F408A: App crashes or freezes.	App bug or incompatibility. Phone resource issues.	Restart the app and your phone. Check for app updates. Ensure your phone meets minimum system requirements.

9. SPECIFICATIONS

9.1 M606X Model

Feature	Detail
Articulation	4-Way 180° Joystick Control
Screen	5-inch HD IPS Display
Camera Lens Diameter	6.2mm (0.24in)
Cable Length	5.0FT Semi-rigid Cable
Battery Capacity	4400mAh Rechargeable

Feature	Detail
Waterproof Rating	IP67 (Probe only)
LED Lights	6 Adjustable LEDs

9.2 F408A Model

Feature	Detail
Articulation	2-Way 180°
Connectivity	Connects with Phone (Android 7.0+, iOS 10.0+)
Camera Lens Diameter	8.5mm (0.33in)
Cable Length	3.0FT Flexible Cable
Video/Image Resolution	1920x1080p
Battery Capacity	2200mAh Rechargeable (for borescope handle)
Waterproof Rating	IP67 (Probe only)
LED Lights	6 Adjustable Ring LEDs

10. WARRANTY AND SUPPORT

Ralcam products are designed for reliability and performance. For warranty information, please refer to the warranty card included with your product or visit the official Ralcam website.

If you encounter any issues or have questions regarding your borescope, please contact Ralcam Customer Support. Our team is available to assist you with troubleshooting, parts, and general inquiries.

Contact Information:

- **Website:** www.ralcam.com (*Note: This is a placeholder URL, please refer to your product documentation for the actual support website.*)

- **Email:** support@ralcam.com (*Note: This is a placeholder email, please refer to your product documentation for the actual support email.*)