

TREKK360 Kit Setup and Use

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1. Introduction

This manual provides step-by-step instructions for safely and effectively setting up and operating the TREKK360 kit to capture high-quality 360° scans in confined spaces. It is intended for field technicians and inspectors. The kit supports two deployment methods:

- **Tripod Deployment:** For stable, ground-level access.
- **Pole Deployment:** For vertical or overhead access.



2. Safety Considerations

- **Confined Space Entry:**
Follow all established procedures. If the manhole is fully open, ensure fall protection is in place.
- **Overhead Hazards:**
Be aware of power lines and other overhead risks when extending the pole. Maintain a safe distance.
- **Tripod Stability:**
Set up on stable, level ground. Fully extend or adjust legs to ensure stability.
- **Equipment Handling:**
Handle all components carefully to avoid damage and ensure safe operation.

3. Equipment Overview

A standard TREKK360 kit includes the following to perform two types of deployment:

Tripod Deployment Kit Includes:

- Rolling hard case – for transporting all components.
- Tripod with motorized lowering rig (aka “downrigger”) – enables controlled descent of the camera.
- Project board with scaling targets – double-sided for marking orientation.
 - Chalkboard side – for liquid chalk markers.
 - Whiteboard side – for dry erase markers.
- Two 360° lights (1500 lumens each), batteries and charger.
- TREKK-Certified 360° camera – with protective cradle and sleeve.
- Battery pack and charger – powers the motorized rig.
- Markers – liquid chalk and dry erase.
- USB cables – for data transfer and charging.
- Paint pole adapter – for attaching to a user-supplied, pole with threaded end.
- Secondary light adapter – for structures >6 ft in diameter.

Pole Deployment Kit Includes:

- Telescoping carbon fiber pole – extends up to 10 ft.
- Quick-connect gimbal adapter – maintains vertical camera orientation.

4. Setting Up the Tripod (4.1 - 4.6)

4.1. Deploying the Tripod:

1. Remove the tripod from the carrying case and place it on stable ground.
2. Fully extend each leg of the tripod by rotating the clamping grips. Adjust individual legs if necessary for uneven terrain or to achieve a near-level top.

Locate the pull-out stops at the top of each leg. Extend them as needed to allow the legs to reach wider angles, providing extra stability on uneven terrain, elevated surfaces, or near walls.



4.2. Attaching the Motorized Lowering Rig:

1. Align the downrigger so the tether line will be able to be lowered between the tripod legs to hook onto the carabiner in the next step.
2. Slide the rig into the opening until it snaps securely into place.
3. Secure the clamp to the rig by placing the clamp in the down position to prevent accidental rotation during scans.



4.3. Preparing the Battery Pack:

1. Locate the battery pack and ensure the power switch is off.
2. Connect the battery power cable to the corresponding port on the lowering rig.
3. Turn the power switch on the battery pack to the "on" position.
4. Verify the green lights on the battery pack indicate a full charge (5 lights).



4.4. Preparing the Tether Line:

1. Flip the directional rocker switch on the lowering rig to the "down" position.
2. Slowly turn the speed control knob clockwise to *spool out* approximately 3 feet of tether line, then turn the knob back to the off position.
3. Pass the metal O-ring through the opening in the pulley as shown in the image below.
4. Lift the metal O-ring to the carabiner located under the speed controller.

5. Attach the metal O-ring to the carabiner.



4.5. Connecting the Camera and Light Assembly:

1. Ensure the quick-connects on the camera and light are clean and free of debris.
2. Pull down the red quick-connect sleeve on the camera frame and press the hex-bit end of the light into the red sleeve on the camera.
3. Fully retract the sleeve, ensuring that the quick-connect is fully engaged and locked.



4.6. Connecting the Light to the Pulley Assembly:

1. Ensure the quick-connects on the camera and light are clean and free of debris.
2. Place the square end of the quick-connect on the light into the square quick-connect of the pulley, firmly until you hear a “click.”
3. Verify a solid connection before letting go of the light.
4. If adjustments are needed, remove by pressing the black and red buttons simultaneously and re-adjust. (Note: the red button slides to lock and unlock.)



Once all connections are made, the camera assembly should look like this.

5. Capturing Photos and Videos

Note: Section 5 procedures are *recommendations*. Actual field workflows will vary by organization and desired outcomes.

5.1. Taking Video (Tripod Method):

1. Before deploying the camera, write the project name and structure ID on the project board (see Figure 1 below).

IMPORTANT: The project board is essential when a Measurable 3D model of the structure is a desired outcome. Do not add stickers, tape, or other items that may cover the reference markers. Only write in the space designated CITY/PROJECT NAME.

2. Place the project board to the north side of the access opening. (Best practice to help orient the viewers.)
3. Ensure that the camera is set to 360 Video Mode and a Live Preview is visible on your mobile device.
4. Align the camera lens facing north (*toward the project board*).
5. On the motorized lowering rig, ensure the battery's power switch is set to the "on" position.
6. With the directional rocker switch of the lowering rig in the "down" position Use the speed control knob to lower and stop the camera. (See Figure 2 below).
7. Turning the speed control knob to lower the camera and monitoring its progress on your mobile device, position the camera as close as possible to the bottom of the structure (but above the water line if present).
8. With the Speed Control Knob at "Zero", set the Rocker Switch to the "Up" position.
9. Press "Record" on your mobile device and adjust the Speed Control Knob to approximately 50% to record a steady ascent.
10. As the camera approaches the structure entrance, slow the ascent of the camera with the Speed Control Knob, stopping when the camera is 6-12 inches from the motorized downrigger.

Make certain that the camera has an unobstructed view of the Project Board and that the board is in a fixed, stable position. (See Figure 3 below)

11. If satisfied with the inspection, turn off the camera, lights, and downrigger motor, disassemble the kit and proceed to your next structure if applicable.



Figure 1: Write the Structure ID on the Project Board in the space provided. One side of the board is meant for a dry-erase marker, and the other side is meant for chalk. Place the Project Board in a stable, fixed location that is clearly visible in the camera frame.



Figure 2: The Rocker Switch (left) determines ascent or descent of the camera. The Speed Control Knob (right) adjusts the speed of the ascent/descent.



Figure3: Make certain the Project Board is in a fixed position and clearly visible in the camera frame before stopping the recording process.

5.2. Capturing Photos (Tripod Method):

1. Switch the camera app to **360 Photo Mode**.
2. Ensure the camera has a clear view of the project board, with the shutter button facing away from it.
3. Take a photo **18–24 inches** above the access opening with the project board visible in the frame.
4. Begin descent of the camera, stopping to capture photos every **2–4 feet** as needed.

6. Tips for Packing Tripod & Rig (6.1 - 6.2)

6.1. Tripod/Rig Disassembly:

- Release the tripod clamp lever to unlock the rig.
- Press the silver button at the base of the tripod frame while lifting the rig handle to detach it.
- Swing the carabiner hook to the adjacent magnet for secure storage.
- Return all components to the carrying case in their designated compartments.



6.2. Battery Charging of the Motorized Rig and Lights:

- If the battery shows **3 or fewer green lights**, recharge before the next use.
- With the battery switch in the "**Off**" position:
 1. Disconnect the power cable.
 2. Connect the charging cable.
- Plug the AC adapter into a wall outlet.

1. **Red light** = Charging
 2. **Green light** = Fully charged
- Once charged, reconnect the power cable and store the battery safely.



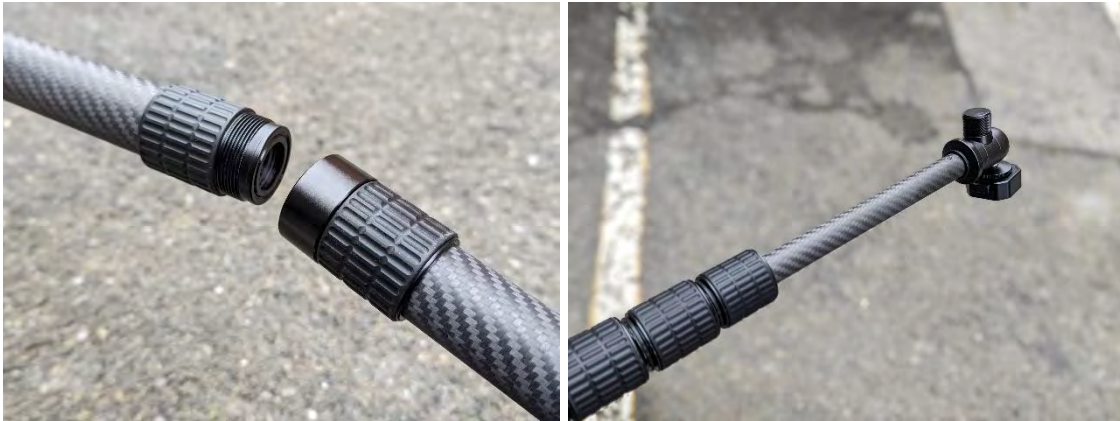
The rechargeable batteries for the light can be found by unscrewing the cap on the light cylinder. Up to four batteries can be charged simultaneously in the supplied charger.



7. Setting Up the Pole

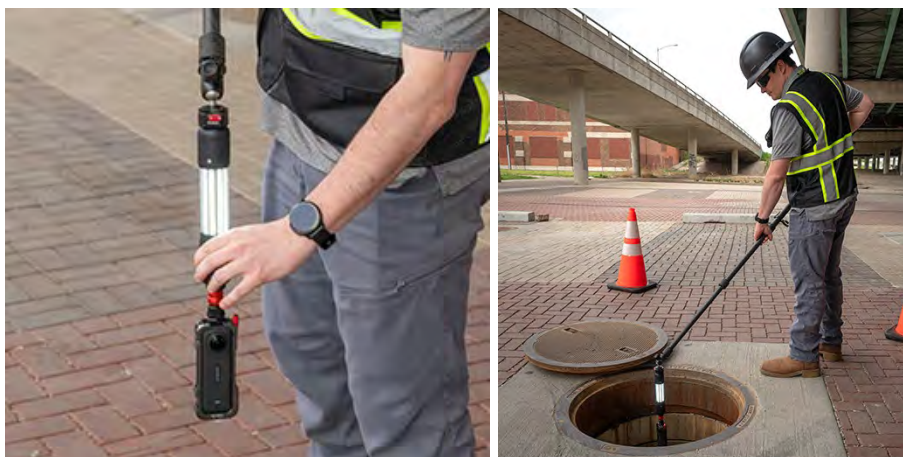
7.1. Assembling the Carbon Fiber Pole:

1. Remove the carbon fiber pole from its bag.
2. Firmly screw the two segments together using the threaded connectors.
3. Extend each section by rotating the rubber grips at the designated stops.
4. Safety Check: Ensure the area is clear of overhead hazards before full extension



7.2. Connecting Light and Camera Assembly:

1. Follow Step 4.5 from the tripod setup to connect the light and camera.
2. Attach the assembly to the pole's gimbal quick-connect until it clicks.
3. Adjust the gimbal:
 - o Vertical use: Loosen the knob to allow free hanging.
 - o Horizontal use: Tighten the knob to fix the angle.
4. Turn on the inspection light.



7.3. Special Applications Using Pole:

1. **Confined Spaces (e.g., grated inlets):**
 - o Enter slowly and steadily.
 - o Confirm all fittings are secure before insertion.
2. **Angled or Horizontal Access:**
 - o Clamp the gimbal at the desired angle.
 - o Maintain visibility of the project board and structure interior.



Camera and App Connection

7.4. Camera Orientation:

1. Always ensure one camera lens faces the project board, which should be positioned on the north side of the access point. This standard orientation helps maintain consistency during review.

7.5. Turning On the Equipment:

1. Turn on the inspection light.
2. Press the camera's power button.
3. Confirm the camera is powered on and connected.

8. Capturing Photos and Videos (Pole Method):

1. Ensure the camera has a clear view of the project board, with the shutter button facing away from it.
2. Take a photo **18–24 inches** above the access opening.
3. Continue capturing photos every **2–4 feet** as needed.
4. Switch to **Video Mode** at the bottom of the structure.
5. Keep the camera **18–48 inches** from the project board at the start or end of the video.
6. Operate the pole slowly and steadily, avoiding sudden movements, and moving in a vertical line from top to bottom.

7. Maintain at least **24 inches** between your body and the camera for optimal image quality.
8. Stay alert to overhead and nearby hazards.



8.1. Additional Considerations:

Structures Exceeding 6 Feet in Diameter:

- For larger structures, use the additional light adapter to connect a second light. To do this, screw the adapter into the bottom of the camera frame and attach the second light using the same quick-connect method as the first.

Note: The second light, positioned below the camera, may slightly obstruct the downward view. For this reason, it is not recommended for standard manholes smaller than 6 feet in diameter. This setup is better suited for larger environments such as vaults, interceptors, and diversion structures where additional lighting is necessary.

9. Additional Information:

3D Model Generation:

While the TREKK360 kit captures high-quality scans, generating 3D Models from these scans requires specialized software or services. For guidance or recommendations on optional TREKK-provided or third-party solutions, please contact us.

Feedback and Support:

We are committed to continuously improving our products and value your feedback. For questions, suggestions, or support, feel free to reach out or visit our website at gotrekk360.com.

10. Field Tips for Better Scans:

- **Shade the Camera and Project Board:**

Use an umbrella to shield both the camera and the project board from direct sunlight. Avoid creating a mix of sun and shade, as inconsistent lighting can negatively affect 3D model processing - especially when virtual measurements are required.

Below is an example illustrating what to avoid (left) and what to aim for (right). In the right-hand image, an umbrella is effectively used to block sunlight.



- **Umbrella Safety:** Clamping an umbrella to the tripod may work on calm days, but this method is unsafe in windy conditions, as even a light draft can cause the tripod rig to tip over unexpectedly. For better safety and control of shading, it's recommended to have a second person hold the umbrella.



ADDENDUM 1

Insta360 X4/X5

Operational Notes:

- The Insta360 X4 and X5 produce very high-quality, high-resolution (up to 8K) images and video. Most users will find that even at a 4K setting for video capture, images extracted from the video are sufficient for many applications and use-cases. In other words, users may not need to capture still photos in addition to video.
- Images and video are stored directly on the camera. For most users, the easiest way to retrieve files is to connect the camera to a PC with a USB-C cable. The camera will appear as an external drive, allowing files to be dragged and dropped into the appropriate local folder.

ADDENDUM 2

(Legacy) Ricoh Theta SC2

Operational Note:

The Ricoh Theta SC2 is *not* waterproof. Use caution when operating near water, sewage, etc...

The Ricoh Theta app is free to download and will provide the user with all of the photo and video functionality necessary to perform an inspection.

Recommended Camera Settings**Photo Mode:**

- Change the exposure value ("EV") to 0.3 for optimal results.
- Leave all other settings in automatic mode (no custom white balance or HDR needed).

Video Mode:

- Leave the exposure value ("EV") at 0.
- Keep all other settings in automatic mode.