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› Topcon AT-B Series Automatic Level User Manual (24X Zoom)

Topcon AT-B Series

Topcon AT-B Series Automatic Level User Manual

Model: AT-B Series (24X Zoom)

1. INTRODUCTION

The Topcon AT-B Series Automatic Level is a precision optical instrument designed for accurate leveling in surveying, engineering, and construction applications. This manual provides essential information for the safe and effective use of your AT-B Series automatic level, ensuring optimal performance and longevity.

The AT-B Series features enhanced reliability under various environmental conditions, including an IPX6 rating for protection against powerful water jets. Its finely tuned magnetic damping system quickly stabilizes the line of sight, even in environments with fine vibrations.

2. SAFETY INFORMATION

Always observe the following safety precautions to prevent injury and damage to the instrument:

- **Eye Protection:** Never look directly at the sun through the telescope, as this can cause severe eye damage.
- **Handling:** Handle the instrument with care. Avoid dropping or subjecting it to strong impacts, which can affect its calibration and internal components.
- **Tripod Stability:** Ensure the tripod is securely set on stable ground before mounting the level. An unstable tripod can cause the instrument to fall.
- **Environmental Conditions:** While the instrument is IPX6 rated for water resistance, avoid prolonged exposure to extreme conditions or submerging it in water.
- **Cleaning:** Use only recommended cleaning materials for lenses and surfaces to prevent scratches or damage.

3. PACKAGE CONTENTS

Verify that all items are present in the package:

- Topcon AT-B Series Automatic Level
- Hard-Shell Carry Case
- Lens Cleaning Cloth
- Allen Wrench

- Operator's Manual (this document)

4. PRODUCT OVERVIEW

The Topcon AT-B Series Automatic Level consists of several key components designed for precise measurement. Familiarize yourself with these parts before operation.



Figure 1: Topcon AT-B Series Automatic Level. This image displays the compact and robust design of the automatic level, highlighting its main body, telescope, and base plate with leveling screws.

Key Components:

- **Telescope:** For sighting targets and reading the staff. Features 24X magnification.
- **Focus Knob:** Adjusts the clarity of the target image.
- **Circular Bubble (Spirit Level):** Used for rough leveling of the instrument.
- **Leveling Screws:** Three screws on the base for fine leveling.
- **Horizontal Circle:** A graduated circle for measuring horizontal angles (360-Degree).
- **Sighting Guide:** For quick initial alignment to the target.
- **Compensator:** An internal magnetic damping system that automatically levels the line of sight once the instrument is roughly leveled.

5. SETUP

Proper setup is crucial for accurate measurements.

5.1 Mounting the Instrument

1. Extend the tripod legs to a suitable height and ensure they are firmly planted on the ground.
2. Place the automatic level onto the tripod head.
3. Secure the instrument by tightening the tripod's mounting screw into the base of the level. Do not overtighten.

5.2 Rough Leveling

1. Adjust the length of the tripod legs until the circular bubble is approximately centered.
2. For finer adjustment, rotate the instrument so the telescope is parallel to two of the leveling screws.
3. Turn these two leveling screws simultaneously in opposite directions until the bubble moves to the center.
4. Rotate the instrument 90 degrees and use the third leveling screw to bring the bubble to the center.
5. Rotate the instrument 180 degrees to check the bubble's position. If it moves off-center, repeat the process.

6. OPERATING INSTRUCTIONS

Once the instrument is set up and leveled, you can begin taking measurements.

6.1 Focusing the Telescope

1. Point the telescope towards a bright background (e.g., the sky).
2. Adjust the eyepiece until the reticle (crosshairs) is sharp and clear. This adjustment is personal and should be done each time a different operator uses the instrument.
3. Point the telescope towards the measuring staff.
4. Use the focus knob to bring the image of the staff into sharp focus. Ensure there is no parallax (apparent movement between the reticle and the staff image when moving your eye). The AT-B Series has a short focus capability of 1.6 feet (0.5 meters).

6.2 Taking a Reading

1. Use the sighting guide for quick initial alignment to the staff.
2. Look through the telescope and fine-tune the horizontal aiming using the tangent screw (if present) or by gently rotating the instrument.
3. Read the value on the staff where the horizontal crosshair intersects. The 24X magnification provides clear visibility for precise readings.
4. The instrument also features 1:100 Stadia lines, which can be used for approximate distance measurements.

6.3 Using the Horizontal Circle

The 360-Degree Horizontal Circle allows for measuring horizontal angles between points. Rotate the circle to set a zero reference or read the angle directly.

7. MAINTENANCE

Regular maintenance ensures the accuracy and longevity of your automatic level.

- **Cleaning Lenses:** Use the provided lens cleaning cloth or a soft, lint-free cloth specifically designed for optical lenses. Breathe lightly on the lens to create condensation, then gently wipe. Avoid using harsh chemicals or abrasive materials.
- **Cleaning the Body:** Wipe the instrument body with a soft, damp cloth. For stubborn dirt, a mild soap solution can be used, followed by a clean, damp cloth.
- **Storage:** Always store the instrument in its hard-shell carry case when not in use. Store in a dry, temperature-controlled environment, away from direct sunlight and extreme temperatures.
- **Water Resistance (IPX6):** While the AT-B Series is protected against powerful water jets, it is not designed for submersion. After exposure to water, wipe the instrument dry before storing it.
- **Calibration Check:** Periodically check the instrument's calibration (e.g., two-peg test) to ensure accuracy. If adjustments are needed, it is recommended to have them performed by a qualified service technician.

8. TROUBLESHOOTING

Refer to the following table for common issues and their solutions:

Problem	Possible Cause	Solution
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Problem	Possible Cause	Solution
Image is blurry or out of focus.	Improper focus adjustment or eyepiece adjustment.	Adjust the eyepiece for reticle clarity, then use the main focus knob for the target image. Eliminate parallax.
Circular bubble not centered after rough leveling.	Tripod legs not adjusted correctly or ground is unstable.	Re-adjust tripod legs. Ensure tripod is on firm, stable ground. Repeat rough leveling steps.
Compensator appears stuck or not leveling.	Instrument not roughly leveled, or severe impact.	Ensure the circular bubble is centered. Gently tap the side of the instrument. If the issue persists, seek professional service.
Readings are inconsistent.	Instrument not properly leveled, or calibration error.	Re-level the instrument carefully. Perform a calibration check (e.g., two-peg test). If out of calibration, professional service is required.

9. SPECIFICATIONS

Key technical specifications for the Topcon AT-B Series Automatic Level:

- **Magnification:** 24X
- **Waterproof Rating:** IPX6 (Protected against powerful water jets)
- **Minimum Focus Distance:** 1.6 feet (0.5 meters)
- **Damping System:** Magnetic
- **Horizontal Circle:** 360-Degree
- **Sighting Guide:** Included
- **Stadia Ratio:** 1:100
- **Approximate Range:** 250 feet (76 meters)
- **Operation Mode:** Automatic
- **Material:** Plastic (housing)
- **Color:** Yellow

10. WARRANTY INFORMATION

Topcon products are manufactured to high standards and are backed by a manufacturer's warranty. Please refer to the warranty card included with your product or visit the official Topcon website for detailed warranty terms and conditions, including coverage period and claim procedures. Keep your purchase receipt as proof of purchase.

11. SUPPORT AND CONTACT INFORMATION

For technical assistance, service, or inquiries regarding your Topcon AT-B Series Automatic Level, please contact Topcon customer support or an authorized Topcon dealer. Contact information can typically be found on the official Topcon website or in the documentation accompanying your product.

