



Self-Leveling Rotary Laser Level
Model Nos. 40-6515, 40-6516 and 40-6517



Instruction Manual

Congratulations on your choice of this Self-Leveling Rotary Laser Level. We suggest you read this instruction manual thoroughly before using the instrument. Save this instruction manual for future use.

This is a Class IIIa laser tool and is manufactured to comply with CFR 21, parts 1040.10 and 1040.11 as well as international safety rule IEC 285.

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1. Kit Contents

For Model No. 40-6515

Description	Qty.
Self- Leveling Rotary Laser Level	1
"AA" Alkaline Batteries	4
Tinted Glasses	1
Instruction Manual with Warranty Card	1
Soft Sided Carrying Case	1

For Model No. 40-6516

Description	Qty.
Self- Leveling Rotary Laser Level	1
"AA" Alkaline Batteries	4
Tinted Glasses	1
Detector with 9V Battery and Clamp	1
Instruction Manual with Warranty Card	1
Hard Shell Carrying Case	1

For Model No. 40-6517

Description	Qty.
Self- Leveling Rotary Laser Level	1
"AA" Alkaline Batteries	4
Tinted Glasses	1
Detector with "AAA" Batteries and Clamp	1
Magnetic Target	1
Elevating Tripod	1
Wall/Ceiling Mount	1
8" Grade Rod	1
Instruction Manual with Warranty Card	1
Hard Shell Carrying Case	1



2. Features and Functions

- Self-leveling with magnetically dampened compensation system.
- If laser is out of its self-leveling range, rotation stops and alarm sounds.
- Projects a horizontal laser plane.
- Projects a vertical laser plane with a simultaneous 90° split beam.
- Laser rotation speed is 200 (L), 400 (M), 600 (H) RPM.
- Illuminated vertical vial.
- Water and dust resistant.

3. Safety Instructions

Please read and understand all of the following instructions, prior to using this tool.

DANGER!

Class IIIa Laser Product
Max. Power Output: $\leq 5\text{mW}$
Wavelength: 625-645nm

**THIS TOOL EMITS LASER RADIATION.
DO NOT STARE INTO BEAM.
AVOID DIRECT EYE EXPOSURE.**



**ATTENTION****IMPORTANT**

- Read all instructions prior to operating this laser tool. Do not remove any labels from tool.
- Do not stare directly at the laser beam.
- Do not project the laser beam directly into the eyes of others.
- Do not set up laser tool at eye level or operate the tool near a reflective surface as the laser beam could be projected into your eyes or into the eyes of others.
- Do not place the laser tool in a manner that may cause someone to unintentionally look into the laser beam. Serious eye injury may result.
- Do not operate the tool in explosive environments, i.e. in the presence of gases or flammable liquids.
- Keep the laser tool out of the reach of children and other untrained persons.
- Do not attempt to view the laser beam through optical tools such as telescopes as serious eye injury may result.
- Always turn the laser tool off when not in use or left unattended for a period of time.
- Remove the batteries when storing the tool for an extended time (more than 3 months) to avoid damage to the tool should the batteries deteriorate.
- Do not attempt to repair or disassemble the laser tool. If unqualified persons attempt to repair this tool, warranty will be void.
- Use only original Johnson® parts and accessories purchased from your Johnson® authorized dealer. Use of non-Johnson® parts and accessories will void warranty.



4. Location/Content of Warning Labels



5. Location of Part/Components





6. Operating Instructions

IMPORTANT: It is the responsibility of the user to verify the calibration of the laser before each use.

Alkaline Battery Installation

Note: Always check to be sure that the on/off switch is in the off position before removing and replacing batteries.



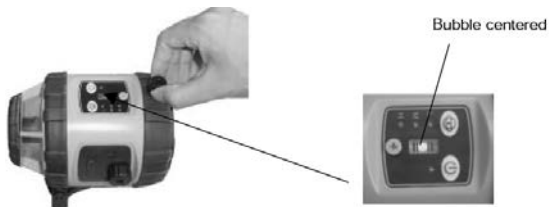
1. Install alkaline batteries into the battery case according to the polarity illustrated in the battery compartment.
2. Place the battery door back and tighten the screw.

Bubble Adjustment While in Use Vertically

1. Turn the lock knob counter-clockwise to off position to “LOCK” the compensator. **The laser is now operating in a “manual mode” and is not self-leveling.**

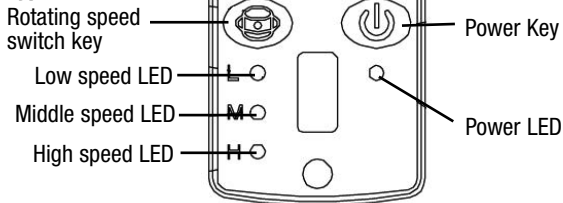


- Turn the vertical adjustment knob to center the bubble in the vertical vial.



7. Using the Product

Keypad



When the laser is in the horizontal position, the laser will not power on until the compensator/transportation lock knob is turned to the "On" position.

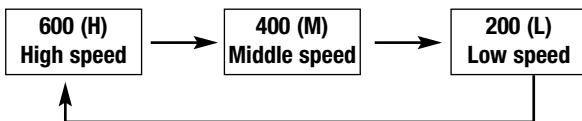


Power Key: Press this key to power on/off the laser.

Power LED: Lighted LED mean power-on
 Extinguished LED means power-off
 Flashing LED means weak battery voltage



Rotating speed switch key



Note: When starting the unit, the laser will be in the high-speed rotating status. When switching the rotating speed, the corresponding LED will light up.

Out of Level

Set the lock knob to the on position. Power on. During the process of self-leveling, if the laser is tilted to exceed its self-leveling range, it will stop rotating and will give a sound alarm.



Application Methods

Install the alkaline batteries into the instrument. Put the laser on a platform or connect the laser to a tripod using the 5/8" - 11 screw thread.



Use on a platform



Connect the laser with the tripod using the 5/8" - 11 screw thread

Note:

1. To use the laser in the self-leveling status, please set the lock knob to the on position.
2. While the laser is in the vertical status (manual mode), please set the lock knob to off position.
3. Power on the laser and select your desired speed by pressing the keys on the keypad.
4. After operations or before moving the unit, please power off and lock the laser first.





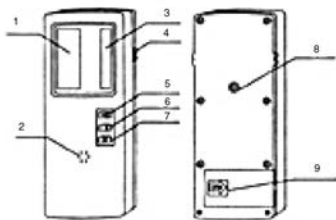
Detector Usage (included in Model No. 40-6516)

1. Technical Specifications

Detecting precision	Fine: $\pm 0.039''$ ($\pm 1\text{mm}$) Coarse: $\pm 0.098''$ ($\pm 2.5\text{mm}$)
Turn-off timer	10 minutes
Three types of sound	
Size	6.614" x 2.677" x 0.905" (168 X 68 X 23mm)

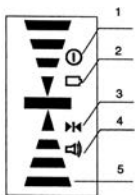
2. Components

(a) Structure



1. Display window
2. Buzzer
3. Receiving window
4. Reference rabbit
5. Sound button
6. Coarse/Fine detection button
7. Power button
8. Threaded hole
9. Battery-box cap

(b) Display



1. Power symbol
2. Low battery symbol
3. Coarse/Fine detection symbol
4. Sound symbol
5. Detecting position symbol





3. Operation Guide

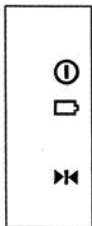
(a) Installation of battery

- Open the battery-box cap and connect the cable inside with the two polarities of the 9V battery.

Note: Take the battery out if the detector is not used for a long time.

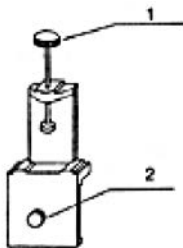
- Put the 9V battery into the battery box and close the battery-box cap.

(b) Turn on/off



- Press the on/off button. When Power symbol is displayed, the detector is ready for coarse detection.
- When low battery symbol is displayed, change the battery.
- Press the on/off button again to turn off the detector.

(c) Using the clamp holder



1. clamp bolt
2. screw

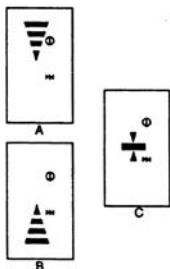
- Position the detector on the clamp holder using the screw of the clamp holder.
- Position the clamp holder on rod using the clamp bolt of the clamp holder.





(d) Detection

1. Coarse detection



- Aim the receiving window at the rotating laser. Loosen the clamp bolt and move the detector up and down to receive the laser scanning signals transmitted by the rotating laser.
- When the detector displays like Fig. (A), move the detector slightly down as indicated by the arrow. When it displays like Fig. (B), move it slightly up as indicated by the arrow.

- When Fig. (C) is displayed, the detector is level with the rotating laser beam.
- Tighten the clamp bolt and note the position on the grade rod by the rabbit. This mark will be the horizontal reference in the coarse mode.

2. Fine detection

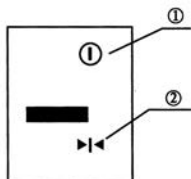


Figure 6

1. power symbol
2. fine detection symbol

- Press coarse/fine detection button. The detector is ready for fine detection.
- Move the detector slightly up and down like the coarse detection procedure.
- When the detector displays like Fig 6, it is level with the rotating laser beam.
- Tighten the clamp bolt and note the position on the grade rod by the rabbit. This mark will be the horizontal reference in the fine detection.





e) Sound function

- If the detector is working in a circumstance that makes it difficult to use the display function, the sound function can be used instead.
- Press the sound function button. The sound symbol is displayed which means it is in sound mode.
- When the sound signal has a rapid sound, move the detector slightly up.
- When the detector has a short sound, move it slightly down.
- When the detector makes a continuous sound, it is level with the rotating laser beam.
- If there is no sound heard, the detector is not receiving a laser signal.

(f) Turn-off timer

- The detector will automatically turn off if it has not received laser signal for 10 minutes

(g) Detector Maintenance

- When you are done using the detector, return it to its carrying case.
- Keep the detector, particularly the detecting window, clean. If detector becomes dusty, use a clean cloth to gently wipe it clean.
- Avoid knocking the detector over or allowing it to fall on the ground.
- Although the detector is rain resistant, you should avoid submerging the unit in water or other liquids. If the detector comes into contact with water or other liquids, wipe it dry immediately.
- Do not use detector around fire or expose it to fire in any way.





Detector Usage (included in Model No. 40-6517)

1. Technical Specifications

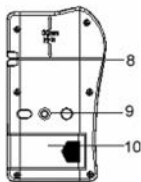
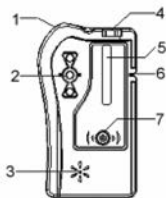
Detecting accuracy:	$\pm 1.5\text{mm}$ (<50m) $\pm 2.5\text{mm}$ (>50m)
Turn-off timer	6 min $\pm 1\text{min}$
Power	2 “AAA” Batteries
Battery life	45 hours of continuous use
Sound function	Short sound and solid sound
LED indication	Upper red, middle orange, middle green, down red
Size	4.645” x 2.637” x 0.984” (118mm x 67mm x 25mm)
Weight	0.253 lbs. (115g)





2. Components

(a) Exterior Instruction



- 1) Holding Cord
- 2) Signal Indicator
- 3) Horn
- 4) Horizontal Vial
- 5) Detecting Window
- 6) Reference Front Marker
- 7) Power Key
- 8) Reference Back Marker
- 9) Connection Port
- 10) Battery Door

(b) Display



When first turning the detector on, the middle signal indicator turns red first and then turns green. If the horn gives two short sounds and the detector powers off automatically, it means that the battery voltage is seriously low and it is necessary to replace the battery immediately. When turning the power on and the down signal indicator flashes, it means that the battery is low and it is necessary to replace the battery.



Power Key: Turn on/off the detector





3. Operation Guide

Battery Installation

1. Open the battery cover and put the batteries into the battery case according to the polarity shown in the battery slot.
2. Slide the battery cover back.








Note: Take the batteries out when the unit is not in use for a long time.

4. Detecting Methods

1. This detector can detect a red rotating laser beam.
2. Press the Power Key once, the middle signal indicator will quickly turn red first and then turns green. It will beep once to indicate that the detector is ON.

While detecting, the signal indicators show as follows:

The lower red LED is on	The upper red LED is on	The middle LED is orange	The middle LED is green	All LEDs are off
 <p>Laser Line</p> <p>The laser beam is up</p>	 <p>Laser Line</p> <p>The laser beam is down</p>	 <p>Laser Line</p> <p>The laser beam is close to center</p>	 <p>Laser Line</p> <p>The laser beam is exactly to center</p>	 <p>No laser beam is detected</p>
Sound: Single short sound	Sound: Single short sound	Sound: Single short sound	Sound: Solid sound	Sound: No Sound



**Note:**

1. While detecting a horizontal laser beam, it is necessary to have the horizontal bubble vial centered, as the tilt of the detector will influence its receiving accuracy.

Horizontal Vial



2. Keep the detecting window facing the rotating laser.
3. Keep the detector still while detecting the laser beam
4. When the laser beam is centered, mark at the front reference marker.

5. When the detector does not receive a laser signal for 6 minutes, and there are no buttons pushed during these 6 minutes, the middle signal indicator will turn green first and then turn red. The horn will give two short sounds and the detector will power off automatically.





5. Accessories Usage

- Connecting to the grade rod bracket



- Connecting to the grade rod





6. Maintenance

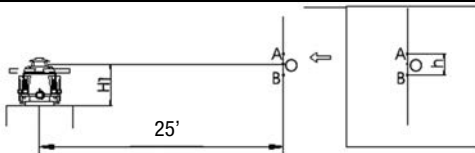
- Keep the detector, particularly the detecting window, clean. If unit becomes dusty, use a clean cloth to gently wipe it clean.
- Avoid knocking the detector over or allowing it to fall on the ground.
- Although the detector is rain resistant, you should avoid submerging the unit in water or other liquids. If detector comes into contact with water or other liquids, wipe it dry immediately.
- Do not use detector around fire or expose it to fire in any way.





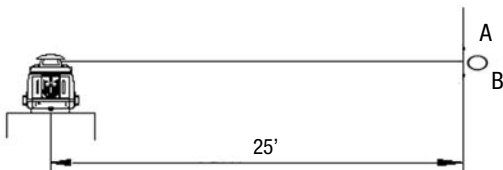
8. Self-Check and Calibration

IMPORTANT: It is the responsibility of the user to verify the calibration of the instrument before each use.



X&Y-Direction Accuracy Self-Check

1. Note X & Y-direction as indicated on top of laser.
2. Place the laser on a platform that is 25' away from a wall indoors. Position the laser so the X-direction is facing the wall. Unlock the laser and set to low speed.
3. Mark on the wall where the beam hits the wall and mark that as A. (**Note:** This test should be done indoors with dim lighting. It's critical that the laser mark is easily seen.)
4. Turn the laser by 180 degrees, mark the beam as point B.
5. Measure the vertical distance between point A and point B. If A & B are more than 1/16" apart at 25', the laser is out of calibration.





6. Turn the laser 90° and place it on the platform. Position the laser so the Y-direction is facing the wall. Perform Y-direction self-check with the same method as X-direction self-check, and mark point C and point D by turns.
7. If point C and point D are within 1/16" at 25', the accuracy is within tolerance.

Accuracy Calibration

1. As shown in the following figures, screw off the adjustment-hole bolt with the cross screwdriver, and adjust the fine-adjustment bolt in the instrument core with a flat head screwdriver until the laser line is within 1/8" at 50'.
2. Adjust the X-direction and the Y-direction with the same method.



Calibration of X-direction



Calibration of Y-direction

Note: The laser should be turned off and the compensator must be locked prior to making any adjustments. If the accuracy is beyond tolerance, calibrate the X-direction through the adjustment hole as shown.

3. After X is calibrated, rotate the instrument 90° to calibrate the Y-direction.

Note: The alkaline batteries must be removed to access the instrument core with a flat head screwdriver.

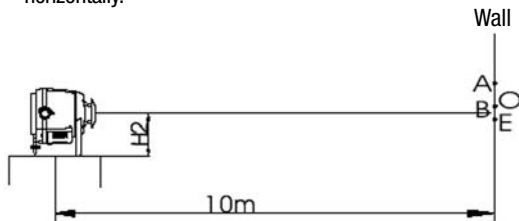
4. Reinstall the adjustment-hole bolt.





Accuracy Self-Check for Vertical Output Status

1. Follow the prior operations, and measure the distance H1 between the laser rotating plane and the platform surface.
2. Set the locking knob to locking position, and place the instrument horizontally.



3. Adjust the adjusting screw to center the bubble.
4. Measure the distance H2 between the top laser beam and the platform surface.
5. Mark out E in the position that is $(H1 - H2)$ lower than point O.
6. If $e - \text{point O} < 0.394''$ (10mm), the accuracy is within tolerance.

Vertical Bubble Calibration

1. Use a screwdriver to screw out the bubble-adjustment-hole bolt.
2. Insert the Allen wrench into the adjustment hole to adjust the Allen screw.
3. Rotate the Allen wrench to center the bubble.
4. After adjustment operation, please install the bubble-adjustment-hole bolt back to its original position.





Screw off the self-calibration-hole bolt



Calibrate the bubble

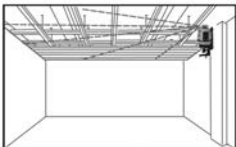
Note: If you fail to calibrate the accuracy according to the above steps, please contact Johnson Level & Tool for service.

9. Technical Specifications

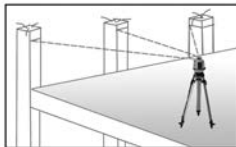
Laser Wavelength	635nm±10nm
Laser Classification	Class IIIa
Maximum Power Output	≤5mW
Accuracy	±1/8"/50 ft. (±2mm/10m)
Interior Range	Up to 200 ft (60m) diameter depending upon light conditions
Exterior Range	Up to 800 ft (240 m) diameter with detector
Self-Leveling Range	±3°
Power Supply	4 "AA" alkaline batteries (included)
Battery Life	Approx. battery life 20 hours continuous use
Dimensions	5" x 6 1/2" x 6 1/2" (126x170x168mm)
Weight	3.3 lbs (1.5 Kg)
Working Temperature	14°F to 113°F (-10°C to +45°C)
Center screw thread	5/8" – 11
Rotation Speed	200 rpm, 400 rpm, 600 rpm
IP protection class	54



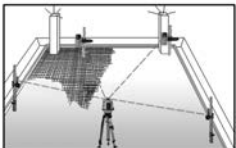
10. Application Demonstrations



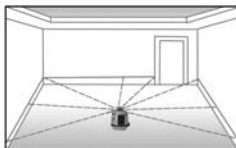
Ceiling installation



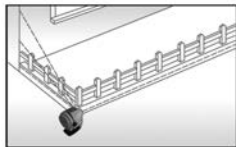
Wall or footing construction



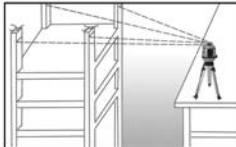
Squaring and leveling



Baseboard installation



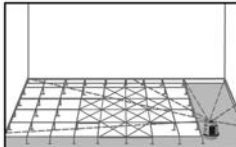
Fence installation



Cement floor installation



Window installation



Anti-static flooring installation





11. Care and Handling

- This laser unit is a precision tool that must be handled with care.
- Avoid exposing unit to shock vibrations and extreme temperatures.
- Before moving or transporting the unit, make sure that the unit is turned off.
- Remove the batteries when storing the unit for an extended time (more than three months) to avoid damage to the unit should the batteries deteriorate.
- Always store the unit in its case when not in use.
- Avoid getting the unit wet.
- Keep the laser unit dry and clean, especially the laser output window. Remove any moisture or dirt with a soft, dry cloth.
- Do not use harsh chemicals, strong detergents or cleaning solvents to clean the laser unit.

12. Product Warranty

Johnson Level & Tool offers a three year limited warranty on each of its products. You can obtain a copy of the limited warranty for a Johnson Level & Tool product by contacting Johnson Level & Tool's Customer Service Department, as provided below, or by visiting our web site at www.johnsonlevel.com. The limited warranty for each product contains various limitations and exclusions.

Do not return this product to the store/retailer or place of purchase. Non-warranty repairs and course calibration must be done by an authorized Johnson® service center or Johnson Level & Tool's limited warranty, if applicable, will be void and there will be NO WARRANTY. Contact one of our service centers for all non-warranty repairs. A list





of service centers can be found on our web site at www.johnsonlevel.com or by calling our Customer Service Department. Contact our Customer Service Department for Return Material Authorization (RMA) for warranty repairs (manufacturing defects only). Proof of purchase is required.

NOTE: The user is responsible for the proper use and care of the product. It is the responsibility of the user to verify the calibration of the instrument before each use.

For further assistance, or if you experience problems with this product that are not addressed in this instruction manual, please contact our Customer Service Dept.

In the U.S., contact Johnson Level & Tool's Customer Service Department at 888-9-LEVELS.

In Canada, contact Johnson Level & Tool's Customer Service Department at 800-346-6682.



13. Warranty Registration

Enclosed with this instruction manual you will find a warranty registration card to be completed for your product. You will need to locate the serial number for your product that is located on the bottom of the unit. **PLEASE NOTE THAT IN ADDITION TO ANY OTHER LIMITATIONS OR CONDITIONS OF JOHNSON LEVEL & TOOL'S LIMITED WARRANTY, JOHNSON LEVEL & TOOL MUST HAVE RECEIVED YOUR PROPERLY COMPLETED WARRANTY CARD AND PROOF OF PURCHASE WITHIN 30 DAYS OF YOUR PURCHASE OF THE PRODUCT OR ANY LIMITED WARRANTY THAT MAY APPLY SHALL NOT APPLY AND THERE SHALL BE NO WARRANTY.**





14. Accessories

Johnson® accessories are available for purchase through authorized Johnson® dealers. Use of non-Johnson® accessories will void any applicable limited warranty and there will be **NO WARRANTY**. If you need any assistance in locating any accessories, please contact our Customer Service Department.

In the U.S., contact Johnson Level & Tool's Customer Service Department at 888-9-LEVELS.

In Canada, contact Johnson Level & Tool's Customer Service Department at 800-346-6682.

