



**Electronic Self-Leveling Horizontal
Rotary Laser**

Model No. 40-6535



Instruction Manual

Congratulations on your choice of this Electronic Self-Leveling Horizontal Rotary Laser. 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

Description for Model 40-6535

Description for Model 40-6535	Qty.
Electronic Self-Leveling Horizontal Rotary Laser	1
NiMH Rechargeable Battery Pack	2
6V Battery Adapter	1
Remote Control with 9V Battery	1
Detector with 9V Battery	1
Instruction Manual with Warranty Card	1
Hard-Shell Carrying Case	1

2. Features and Functions

- Large $\pm 5^\circ$ electronic auto-level range. When beyond the leveling range, the laser line will flash, rotation of the beam will stop, and an audible alarm will activate.
- Slope operation function allows user to perform slope 8° in both x and y axis.
- Height of Instrument/TILT alarm function ensures product accuracy.
- Projects a laser horizontal plane.
- Dust and rain resistant.
- Remote power off function.
- Included detector and remote control for more convenient operation.





3. Safety Instructions

Please read and understand all of the following instructions, prior to using this tool. Failure to do so, may void the warranty.

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



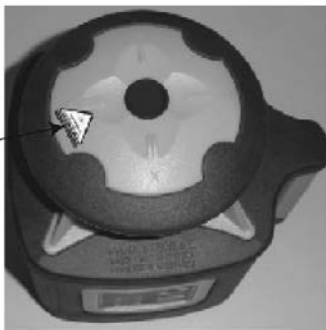
IMPORTANT

- 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.

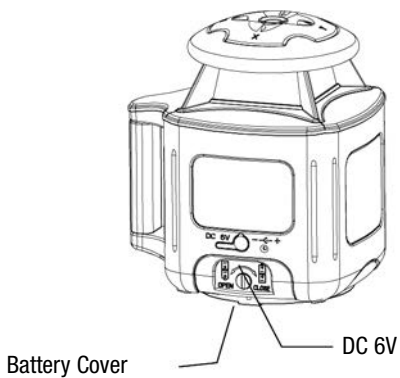
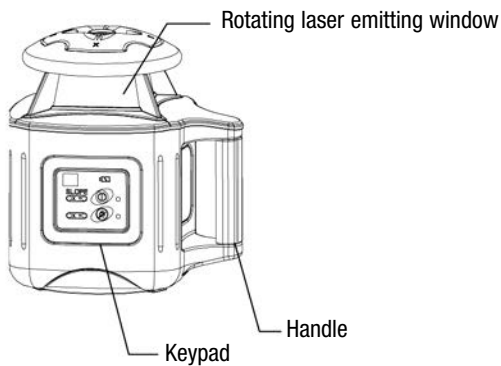




4. Location/Content of Warning Labels



5. Location of Part/Components





6. Operating Instructions

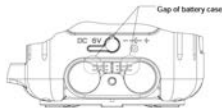
IMPORTANT: It is the responsibility of the user to verify the calibration of the instrument before each use.

Battery Installation

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

Ni-MH Rechargeable Battery Pack Installation

1. Unscrew the battery cover bolt and remove the battery cover.
2. Put 2 rechargeable battery packs into the battery case and then insert the plug of the battery pack lead-wire into the socket at the battery case.
3. Screw the battery cover bolt back on.



Ni-MH Rechargeable Battery Charging

Using the battery adapter (included), charge the rechargeable battery pack through the outlet jack. When the charge indicator lamp turns from red to green (after approximately five hours), the Ni-MH rechargeable battery pack has been fully charged.

Note:

- (1) For the first two charges of new rechargeable batteries, it is necessary to charge for 12 plus hours.
- (2) The unit can still work during charging with the adapter.
- (3) Do not charge alkaline batteries to avoid explosion.
- (4) Used (discharged) batteries are hazardous waste and should be disposed of properly.





Before Using the Laser

When you charge the new battery or one which has not been used for long periods of time, it may not reach full charge until after you have discharged it fully in use and recharge it several times.

Instrument Usage

1. Put in Ni-MH rechargeable battery pack, or 4 “C” alkaline batteries (not included), or connect with the 6V DC power through the power jack.
2. Place the instrument on a tripod, connect it to the tripod using the 5/8” screw thread at the bottom of the instrument.

Note: If the instrument is inclined beyond the self-leveling range, the instrument will deliver an audible alarm. You will need to re-position the instrument.

3. Press power switch to turn power on. Press buttons on remote control to adjust for slope feature.
4. Press H.I. button to lock in the height of the instrument.
5. After finishing operation or before moving the instrument, turn the power off.

Alkaline Battery Installation

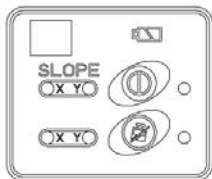
1. Unscrew the battery cover bolt and remove the battery cover.
2. Put in 4 “C” alkaline batteries (not included) according to the illustrated polarity direction.
3. Screw the battery cover bolt and battery cover back on the unit.



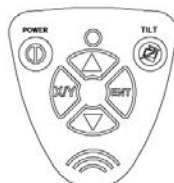


7. Using the Product

Operating Panel



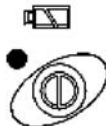
Instrument Panel



Remote Control Panel

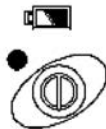
Power On/Off

1. Press the power button to power on. The power indicator lamp will light up and then the instrument will automatically level itself, with rotation occurring once the unit is level.
2. Press the power button again to power off.



Low Battery Indication

If the battery indicator lamp is lit, this means low battery voltage. To ensure normal operation, replace batteries or charge the rechargeable Ni-MH battery pack.



Alarm If Beyond Range

If the instrument is inclined beyond the self-leveling range of $\pm 5^\circ$, it will deliver an audible alarm, and the power indicator lamp will blink. You will need to re-position the instrument until it is within the leveling range.





Height of Instrument (H.I.) - TILT

1. After powering on the instrument and entering into auto-level status, press the tilt button. When the indicator is on (see figure), the instrument enters into TILT mode. If the leveled instrument is moved or bumped, the head will stop rotation and the TILT indicator light and laser beam will flash instead of the unit performing the auto-level function. Press the tilt button on the panel or remote to quit the tilt mode and enter into auto-level status.
2. Press the tilt button on the laser or remote again to enter the tilt mode.



Slope Adjusting Function (SLOPE)

This function must be operated by the remote control (see operating panel shown in fig.1).

1. Select slope adjusting direction

The first press of X/Y button will illuminate the X indicator light (fig. 2). The second press of X/Y button will illuminate the Y indicator light (fig. 3). The third press of the X/Y button will quit the slope-adjusting function and enter the unit into auto-level status.

2. Adjust the slope angle

When in either the x-axis or y-axis, press either of the two up/down arrow keys on remote control (fig.1) to adjust slope angle.

Note: A single press of either key activates fine tuning while a continuous pressing activates quick adjustment.



Fig. 1



Fig. 2



Fig. 3





Adjust the inclination extent of the slope

Pressing the up/down arrow keys on the remote control, will adjust the inclination of the instrument slope. A single press will cause a slight adjustment and a continuous press will cause a quick adjustment. If laser is taken past its slope range ($\pm 8^\circ$), the laser will deliver an audible alarm and the laser beam will flash and stop rotating.

Sleep Mode

1. The first press of the POWER button on the remote control (fig.4) will make the instrument enter sleep mode. The power indicator lamp on the panel is lit (fig.5), the laser beam goes out, and the instrument head stops rotation.

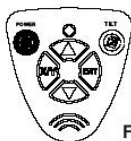


Fig.4

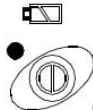


Fig.5

2. The second press of the POWER button on the remote control will make the instrument quit sleep mode and enter auto-level status.

Timed Power-off Function

Power instrument on and press the power key on the remote control, the instrument will enter the sleep mode. Under the sleep mode, if there is no operation for 30 minutes, the instrument will power off automatically. Under sleep mode, press the power key on the remote control to make the instrument start.





Detector Usage

Two-Sided Laser Detector with Clamp Model No. 40-6715

The 40-6715 laser detector is an indispensable accessory when using rotary laser levels. The main function of the detector is to detect the position of the laser signals that are transmitted by rotary lasers. This detection quickly and precisely provides the user with the horizontal and vertical references.

This product features high sensitivity, a double-faced display, low power consumption, good reliability and easy manipulation. It can be used with most types of rotating lasers.

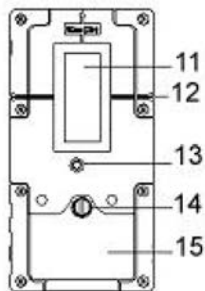
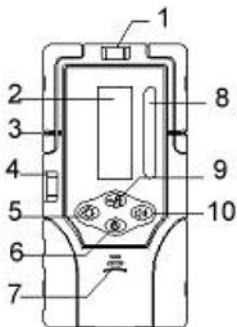
1. Technical Specifications

Detecting accuracy:	Fine: $\pm 0.039''$ ($\pm 1\text{mm}$) Coarse 1: $\pm 0.098''$ ($\pm 2.5\text{mm}$) when range ≥ 492 ft. (150m) Coarse 2: $\pm 0.394''$ ($\pm 10\text{mm}$) when range ≥ 492 ft. (150m)
Automatic Shut-off:	6 minutes ± 1 minute
Power Supply:	9V battery, 30 hrs continuous use (with LCD illumination off)
Sound indicator:	slow short beep, rapid short beep and continuous sound
LED display:	down arrow, up arrow, horizontal on grade bar
Dimensions:	6.30" x 3.35" x 1.10" (160 x 85 x 28mm)
Weight:	1 lb. (0.45kg)
Others:	Rain and dust resistant



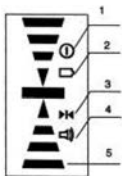
2. Components

(a) Exterior Instruction



- 1) Horizontal vial
- 2) Front display window
- 3) Front on grade mark
- 4) Vertical vial
- 5) LED key
- 6) Power key
- 7) Beeper
- 8) Reception window
- 9) Fine/Coarse accuracy key
- 10) Beeper key
- 11) Back display window
- 12) Back on grade mark
- 13) Bracket screw thread
- 14) Battery cover screw
- 15) Battery cover

(b) Display



1. Power on symbol
2. Low battery indicator
3. Fine/Coarse symbol
4. Beeper symbol
5. Position indication arrows



Power Key: Turn on/off the power



Fine/Coarse Accuracy Key: Switch detecting accuracy



LED Key: Turn on/off the LCD's light



Volume Key: Cycles between high, low and off

3. Operation Guide

(a) Battery Installation

- Open the battery cover door by turning the battery cover screw counter-clockwise.
Put the battery into the battery case noting the polarity shown in the battery compartment.
- Put the battery cover door back, and tighten the screw.



Figure 1

- Note:**
- 1) Remove the battery when the unit is being stored for a long time.
 - 2) When the low battery indicator is displayed, change the battery soon.



4. Operating Instructions

Power On

Press the power key to turn the unit on. The LCD display will illuminate all the indicator segments for 0.5 second (Fig.2). When the indicator segments are no longer illuminated, the detector is ready for use.



Figure 2

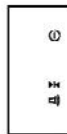


Figure 3

Note: The LCD display will still have the power, detection and sound indicators illuminated (Fig. 3).

Fine/Coarse accuracy key

Power on and press the fine/coarse accuracy key, the unit will cycle between three accuracy options: fine, coarse 1, coarse 2. The accuracy symbol displayed on the LCD will change.



Fine



Coarse 1



Coarse 2

Volume Key

Power on and press the volume key, the unit will cycle between a high sound, low sound and mute.



High sound



Low sound



Mute

The sound symbol displayed on the LCD will change accordingly.





Note: There will be two beeps when turning the unit on and off. There will be one beep when changing functions.



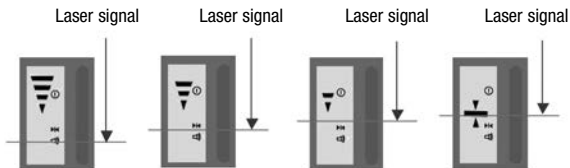


Detecting Laser Level Signals

While detecting laser signals, the LCD will display as follows: (take the set-up state of high sound and fine detection as an example)

 <p>Laser signal</p>	 <p>Laser signal</p>	 <p>Laser signal</p>	 <p>No laser signal is detected</p>
<p>The laser signal is down</p>	<p>The laser signal is up</p>	<p>Horizontal bar indicated on-grade</p>	<p>No laser signal is detected</p>
<p>Sound: rapid short beeps</p>	<p>Sound: slow short beeps</p>	<p>Sound: continuous sound</p>	<p>Sound: no sound</p>

When the laser signal is near the on-grade mark, the displayed up and down arrows will decrease as the distance to the on-grade mark decreases.



1. When detecting a horizontal laser signal, it is important to have the bubble vial centered, as the deflection of the receiver will influence its receiving accuracy.



2. When detecting a vertical laser signal, it is important to have the bubble vial centered, as the deflection of the receiver will influence its receiving accuracy.
3. Keep the reception window facing the laser while detecting.
4. Hold the unit stable while detecting.



LED Function

Power on and press the LED key, the LCD will now be backlit.

Automatic Shut-off Function

When the unit does not receive a laser signal for 6 minutes, the unit will power off automatically.

Low Battery Display Function

When the battery sign blinks on the LCD, the battery is low and needs to be replaced. If the battery is very low, the unit will power off automatically. Replace the battery.



Rod Clamp

Connecting to the rod clamp.



Connecting to the grade rod.



5. Detector Maintenance

- Keep the unit, particularly the reception window, clean. If it does get dirty, use a cloth to wipe it clean.

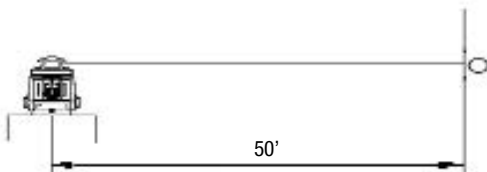
8. Self-Check and Fine Calibration

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

The instrument must be self-checked before operation. If the accuracy is found beyond tolerance, user can make adjustment according to directions as follows.

X-Direction Accuracy Self-Check

1. For clarity, we define the direction of handle as Y-direction, and another direction as X-direction
2. Place the unit on a platform or tripod that is 50' away from a wall indoors, with the handle facing the wall head-on. Turn the unit on.
3. Using the detector mark on the wall where the beam hits the wall and mark that as A.
4. Turn the instrument 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 1/32" apart at 50', the unit is out of calibration.
6. As shown, turn the instrument by 90° and place it on the platform, with the operating panel facing you. Perform





X-direction self-check with the same method as Y-direction self-check, and mark point C and point D by turns.

7. If point C and point D are within 1/32" at 50', the accuracy is within tolerance. Otherwise reference section 12 of this document.

Fine Calibration via Remote Control

1. Access calibration mode by simultaneously pressing the "Power" and "Tilt" keys on the keypad.
2. While continuing to hold the "Tilt" key, release the "Power" key. When releasing the "Power" key, all red LED's on the unit's keypad display will light up. After 10 seconds, all LED's, except the power LED will go off.
3. Release the "Tilt" key. Note that the rotating head of the laser is not rotating and the laser is flashing. The unit is now in calibration mode and all other operations will be performed with the unit's remote control.
4. Use the remote control to access the calibration.

Pressing the "X/Y" button changes calibration control between the X-axis and Y-axis as indicated on the lasers x and y, LED's located on the lasers keypad. Once the desired axis has been selected, the "UP Arrow" and "Down Arrow" buttons are used to adjust the position on the laser beam plane.





X-axis Calibration

1. Place the unit into calibration mode as discussed above.
2. Position the unit so that the X-axis is directing to the target.
3. Press “X/Y” key on the remote control to toggle calibration control to the X-axis.
4. Press the “UP Arrow” and “Down Arrow” keys, respectively to adjust the laser height to coincide with the zero position of the target.
5. Press the “Enter” key on the remote control to accept the calibration value, noting that the status indicator goes “off”.
6. After calibration is completed, make sure to power off the unit and then power on again to activate the calibration.

Note: Certain 40-6535's sold after 2011 may need the following Procedure for Calibration:

1. Place the unit into calibration mode as discussed above.
2. Position the unit so that the X-axis is directing to the two targets.
3. Press “X/Y” key on the remote control to toggle calibration control to the X-axis.
4. Press the “UP Arrow” and “Down Arrow” keys, respectively to adjust the laser height to coincide with the zero position of the target.
5. Press the “Enter” key on the remote control, next press the “Tilt” key to accept the calibration value, and then press the “Enter” key once more to finalize calibration, noting that the status indicator goes “off”.
6. After calibration is completed, make sure to power off the unit and then power on again to activate the calibration.





Y-axis Calibration

1. Place the unit into calibration mode as discussed above.
2. Position the unit so that the Y-axis is directing to the two targets.
3. Press “X/Y” key on the remote control to toggle calibration control to the Y-axis.
4. Press the “UP Arrow” and “Down Arrow” keys, respectively to adjust the laser height to coincide with the zero position of the target.
5. Press the “Enter” key on the remote control to accept the calibration value, noting that the status indicator goes “off”.
6. After calibration is completed, make sure to power off the unit and then power on again to activate the calibration.

Note: Certain 40-6535’s sold after 2011 may need the following Procedure for Calibration:

1. Place the unit into calibration mode as discussed above.
2. Position the unit so that the Y-axis is directing to the two targets.
3. Press “X/Y” key on the remote control to toggle calibration control to the Y-axis.
4. Press the “UP Arrow” and “Down Arrow” keys, respectively to adjust the laser height to coincide with the zero position of the target.
5. Press the “Enter” key on the remote control, next press the “Tilt” key to accept the calibration value, and then press the “Enter” key once more to finalize calibration, noting that the status indicator goes “off”.
6. After calibration is completed, make sure to power off the unit and then power on again to activate the calibration.





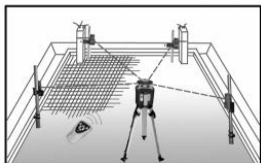
9. Technical Specifications

Laser Wavelength	635nm±10nm
Laser Classification	Class IIIa
Maximum Power Output	≤5mW
Accuracy	±1/16"/100 ft. (±1.5mm/30m)
Interior Range	Up to 200 ft. (60m) diameter depending on light conditions
Exterior Range	Up to 2000 ft. (600m) diameter with detector
Remote Range	Up to 200 ft. (60m) diameter
Auto-Leveling Range	±5°
Slope	±8°
Power Supply	Rechargeable battery pack, or 6V adapter (included) 4 "C" alkaline batteries (not included).
Battery Life	Approx. battery life is 28 hours continuous use with the rechargeable battery pack; Approx. battery life is 33 hours continuous use with the alkaline batteries
Dimensions	7.4" x 5.91" x 8.15" (188 x 150 x 207mm)
Weight	5.51 lbs. (2.1Kg)
Working Temperature	14°F to 113°F (-10°C to 45°C)
Center Screw Thread	5/8" – 11
Rotation Speed	700 rpm
IP Protection Class	66





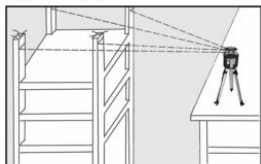
10. Application Demonstrations



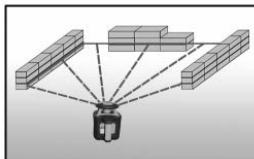
Squaring Leveling



Grading



Elevation



Set Forms





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.





