



**Self-Leveling Rotary Laser**  
**Model No. 40-6527, 40-6532 & 40-6539**



# Instruction Manual

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

This tool emits one rotating laser beam plus one plumb beam and is ideal for laying out indoor and outdoor construction projects.

This is a Class IIIa laser tool and is manufactured to comply with CRF 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 40-6527**

	<b><u>Qty.</u></b>
Self-Leveling Rotary Laser	1
Tinted Glasses	1
Alkaline Battery Compartment	1
“C” Alkaline Batteries	4
Instruction Manual	1
Soft-Sided Carrying Case	1

#### **Description for Model 40-6532 & 40-6539**

	<b><u>Qty.</u></b>
Self-Leveling Rotary Laser	1
Ni-MH Rechargeable Battery Pack	1
6.4V Battery Charger	1
Alkaline Battery Compartment (batteries not included)	1
Detector with Clamp and 9V Battery	1
Remote Control with 9V Battery	1
Tinted Glasses	1
Instruction Manual	1
Hard-Shell Carrying Case	1



## 2. Features and Functions

- Self leveling in the horizontal plane
- Locking mechanism protects inner pendulum during transportation
- Manual leveling in the vertical plane with 90° split beam
- Range-scan modes include dot and two adjustable line lengths
- Visual and audible alarms when beyond leveling range
- Dust and rain resistant

## 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.**





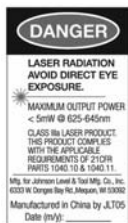
## ATTENTION



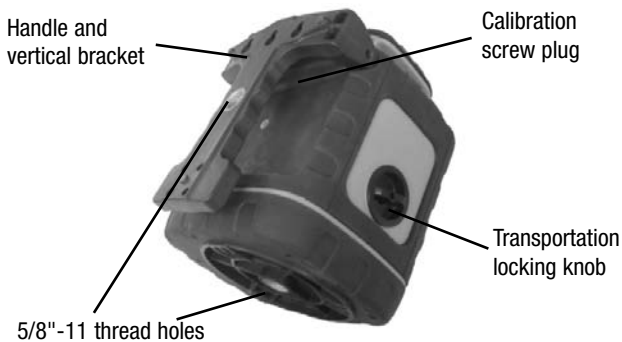
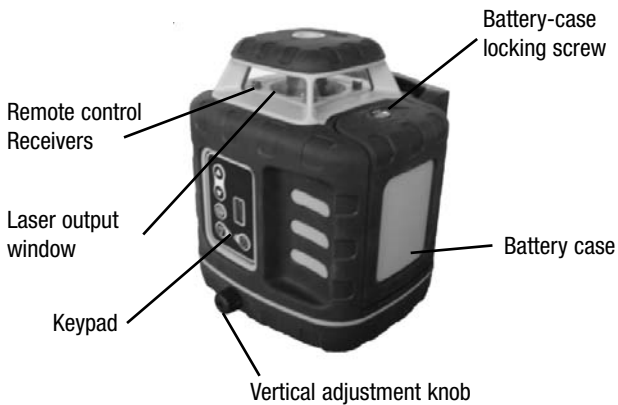
## IMPORTANT

- 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.

#### Usage for Rechargeable (40-6532 & 40-6539) & Alkaline Battery Cases

1. Put 4 “C” alkaline batteries into the battery case according to the polarity indication shown in the battery case.
2. Put the battery case on the instrument and tighten the locking screw.
3. If using the rechargeable (40-6532 & 40-6539) battery pack, put the battery box on the instrument and tighten the locking screw.

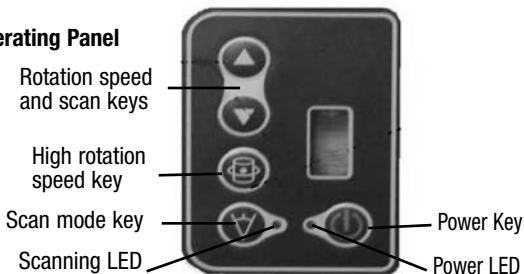




#### Note (40-6532 & 40-6539):

- For the first two charges of a new rechargeable battery pack, it is necessary to charge for 12-plus hours.
- The instrument will still work even if it is being charged with the charger.
- Do not charge alkaline batteries.
- Used (discharged) batteries are hazardous waste and should be disposed of properly.

## 7. Using the Product

### Operating Panel



- Power Key**
  - Press this key to turn on and off the power 
- Power LED**
  - When the LED is lit the unit is connected to the power
  - When the LED is off the unit is not receiving power
  - When the LED is flashing the battery is low
- Scanning LED**
  - When the LED is lit the unit is in rotation mode
  - When the LED is flashing the unit is in scan mode
- Scan mode key**
  - With the first press of this button, the instrument emits a short laser line. 
  - With a second press of this button, the instrument emits a longer laser line.
  - With a third press of this button, the instrument emits a laser point.



### 5. High rotation speed key

Press this key, the instrument will rotate in its highest speed



### 6. Rotation speed and scan keys

In rotation mode

- Press the up arrow to increase rotation speed
- Press the down arrow to decrease rotation speed



In scan mode

- Press the up arrow to rotate the scan counterclockwise
- Press the down arrow to rotate the scan clockwise

### Out of level alarm

Set the transportation locking knob to the unlocked/on position. Turn the power on and the instrument will self-level. During the process of self-leveling, if the instrument is tilted to exceed its self-leveling range, it will stop rotating and the unit will give a sound alarm.

### Transportation lock knob operation

When the lock knob is turned to “ON”, the compensator is unlocked. When the lock knob is turned to “OFF”, the compensator is locked.



Use on a platform



Connected to a  
5/8" x 11 tripod

### Usage for Horizontal Application

1. Put in the Ni-MH battery pack (40-6532 & 40-6539) or alkaline batteries, or connect with 6.4V charger (40-6532 & 40-6539) through power jack.





2. Place the instrument on a platform or tripod, connect to the tripod using the 5/8" thread at the bottom of laser.

**Note:** If instrument is inclined beyond its self-leveling range, it will deliver an audible alarm. Re-position the instrument until level.

3. Rotate the transportation locking knob counter-clockwise to "ON", then turn power on. Press the keys on control panel or remote control (40-6532 & 40-6539) to adjust to your desired working status.
4. After finishing operation or before moving the instrument, turn power off and return locking knob to the "OFF" position.

**Note:** If transportation locking knob is not turned to the lock position it will deliver an audible alarm when the unit is returned to its case.

**It is important that the locking knob is turned to the locked position prior to returning the unit to its case.**



**Note:** Remote control operating panel is similar to laser operating panel (40-6532 & 40-6539).



## Usage for vertical application

**IMPORTANT:** Keep the transportation “Locking Knob” in the “Locked/Off” position.

1. Install batteries or battery pack.
2. Set the laser down on its vertical bracket.
3. Turn on the power by pressing the Power Key. The vertical vial will now be backlit.
4. Turn the vertical “Adjusting Knob” until the vertical vial bubble is centered.
5. Select the work state that you need by pressing the buttons on the operating panel or remote control (40-6532 & 40-6539).
6. Power the instrument off when you finish work and keep the transportation lock in the locked/off position.



Use on a platform



Connected to a  
5/8" x 11 tripod





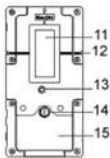
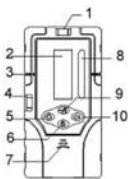
## Detector Usage (included in Model No. 40-6532)

### 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 $\geq 492\text{ ft. (150m)}$
	Coarse 2: $\pm 0.394''$ ( $\pm 10\text{mm}$ ) when range $\geq 492\text{ ft. (150m)}$
Automatic Shut-off	6 min $\pm 1\text{min}$
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) Structure

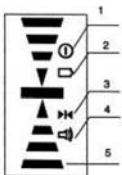


- 1) Horizontal vial
- 2) Front display window
- 3) Front on grade mark
- 4) Vertical vial
- 5) LED key
- 6) Power key
- 7) Beeper
- 8) Reception window
- 9) Fine/Coarse accuracy key
- 10) Beeper key
- 11) Back display window
- 12) Back on grade mark
- 13) Bracket screw thread
- 14) Battery cover screw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

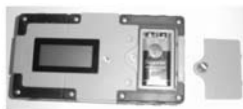


Figure 1

- 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.





## (b) 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.

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



Figure 2

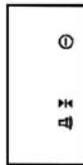


Figure 3

## (c) 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

## (d) Volume Key

Power on and press the volume key, the unit will cycle between a high sound, low sound and mute. The sound symbol displayed on the LCD will change accordingly.



High sound



Low sound







Mute

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

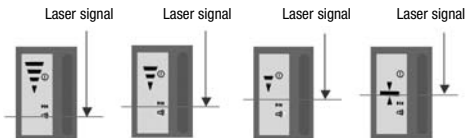


**(e) Detecting Laser Level Signals**

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

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

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.
- (f) LED Function  
Power on and press the LED key, the LCD will now be backlit.
- (g) Automatic Shut-off Function  
When the unit does not receive a laser signal for 6 minutes, the unit will power off automatically.
- (h) 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.
- (i) Rod Clamp



Connecting to the rod clamp.



Connecting to the grade rod.





(j) Detector Maintenance

- When you are done using the detector, return it to its packing case.
- 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 the detector around fire or expose it to fire in any way.





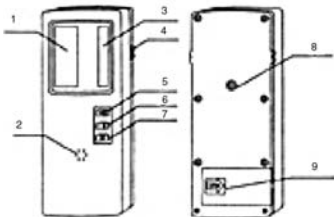
## Detector Usage (included in Model No. 40-6539)

### 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)

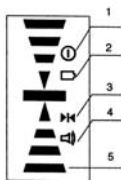
### 2. Components

(a) Structure



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

(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) Battery Installation

- Open the battery-box cap and connect the cords inside with the two polarities of the 9V battery. **Note:** Take the battery out if detector is not used for a long time.
- Put the 9V battery into the battery box and close the battery-box cap.

#### (b) Power on



- 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) Rod Clamp

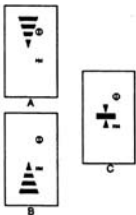


1. clamp bolt
2. screw

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

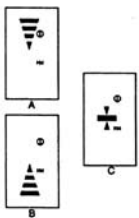
#### (d) Detecting Laser Level Signals

##### 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 signals transmitted by the rotating laser.





- When the detector displays like Fig. (A), move the detector slightly downwards as indicated by the arrow. When it displays like Fig. (B), move it slightly upwards as indicated by the arrow.
- When Fig. (C) is displayed, the detector is at the right position.
- Tighten the clamp bolt and note the position by the rabbit. This position will be the horizontal reference in the coarse detection.

## 2. Fine detection

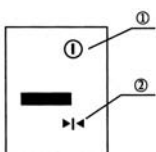


Figure 6

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 at the right position.
- Tighten the clamp bolt and note the position by the rabbit. This position will be the horizontal reference in the fine detection.

## (e) Volume Key

- If the detector is working in an area that makes it difficult to see the display function, the sound function can be used instead.
- Press the sound function button. The sound symbol is displayed which means it is ready for sound function. The detector then sounds coarse/fine and on grade detection through sound (buzz) signals.



- When the sound signal is a fast beep, move the instrument slightly upwards.
- When the detector makes a short beep, move it slightly downwards.
- When the detector makes a continuous sound, it is on grade with the laser beam.
- If there is no beep heard, the detector has not received the laser signal.

(f) Automatic Shut-off Function

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

(g) Detector Maintenance

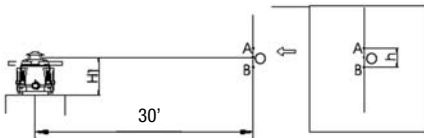
- When you are done using the detector, return it to its packing case.
- Keep the detector, particularly the detecting window, clean. If unit becomes dusty, use a clean cloth to gently wipe it clean.
- Avoid knocking the detector over or allowing it to fall on the ground.
- Although the detector is rain 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 the detector around fire or expose it to fire in any way.





## 8. Calibration

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



### X-Direction Accuracy Check

1. Place the unit on a platform that is 30 feet away from a wall, with the battery case facing towards the wall. Turn the locking knob to “ON”, power on the unit in the high-speed rotating status.
2. Draw a vertical line on the wall, and mark the intersection between the laser line and the vertical line as point A. Note this test should be done indoors with dim lighting. Its critical that the laser beam is easily seen.
3. Turn the instrument 180 degrees, mark point B on the wall at the intersection of the laser beam and vertical line. Also mark the center between point A and point B as point O.
4. Measure the vertical distance (h) between point A and point B.
5. If  $h \leq 1/16"$ , accuracy is within specification. If not, the accuracy is beyond the specification. If beyond the specification, the unit can be calibrated as follows.





### X-Direction Accuracy Calibration

1. Turn the lock knob to the "OFF" position.
2. Remove the rubber plug from the X-direction self-calibration aperture inside the battery compartment. Adjust the weight screw inside the instrument core with a flathead screwdriver.
3. If point A is above point O, rotate the screwdriver counterclockwise. If point A is under the point O, rotate the screwdriver clockwise. (Rotating the screwdriver 1 rotation will adjust the laser line 1mm).
4. Check the accuracy again following the X direction accuracy self-check. If the accuracy is still beyond specification, readjust the weight screw again until the accuracy is correct.



X-direction Self-calibration aperture



### Y-Direction Accuracy Check

1. Rotate the instrument 90 degrees and place it on the platform.
2. Check the accuracy of Y-direction with the same method as that of X-direction (mark the point as C and D).
3. If the accuracy is beyond specification the unit can be calibrated as follows.





## Y-Direction Accuracy Calibration

1. Turn the lock knob to the “OFF” position.
2. Screw off the Y-direction self-calibration aperture bolt located behind the handle. Adjust the weight screw inside the instrument core with a flathead screwdriver.
3. If point C is above point O, rotate the screwdriver counterclockwise. If point C is under the point O, rotate the screwdriver clockwise.



**Note:** After the unit is adjusted in either direction, repeat both X and Y accuracy check to ensure both axis are within specifications.

**Note:** Install the self-calibration aperture screw and rubber stopper after finishing the accuracy self-check and calibration.

## Accuracy Check for Plumb Beam

1. After completing the above steps to field adjust the rotary laser output, double check the plumb beam output. Because the optics for the plumb beam are shared with the optics for the rotary, if the rotary is in calibration, the plumb beam should also be in calibration, so this step is really a redundant check; no further adjustment to the plumb beam is possible.
2. Place the instrument horizontally on a rotating tripod head so that the plumb beam strikes the ceiling. The higher the ceiling, the more accurate the check will be. We recommend a minimum height of 10'; 25' is preferred.
3. Mark the point on the ceiling where the plumb beam hits.
4. Rotate the laser 90 degrees and again mark the spot where the plumb beam hits.





5. Repeat step 4 twice, resulting in a total of 4 marks on the ceiling.
6. The four points should form a circle. Measure its diameter. If this diameter is less than 1/16" at 25', the laser is in calibration. If the plumb beam is out of calibration, and the rotary beam is within calibration, the laser must be serviced by an authorized Johnson dealer. No further user adjustments are possible. If both rotary and plumb beams are out of calibration, follow the steps above for Accuracy Calibration. It's possible that damage to the laser head has caused alignment issues beyond what can be field repaired, for example if the laser is dropped. In this case, return the laser to your Johnson dealer for service, as specialty equipment is needed to recalibrate the laser.







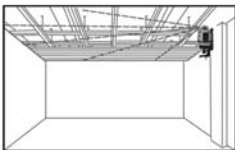
## 9. Technical Specifications

Laser Wavelength	635nm±10nm
Laser Classification	Class IIIa
Maximum Power Output	≤5mW
Accuracy	±1/8"/100 ft. (±1mm/10m)
Interior Range	Up to 200 ft. (60m) diameter depending upon light conditions
Exterior Range	Up to 2,000 ft. (600m) diameter with detector
Remote Range	Up to 200 ft. (60m) diameter with remote (40-6532 & 40-6539)
Self-Leveling Range	±3.5°
Power Supply	Rechargeable battery pack and 6.4V charger (40-6532 & 40-6539) 4 "C" alkaline batteries (not included)
Battery Life	Approx. battery life 15 hours continuous use with 40-6532 & 40-6539 rechargeable battery pack; 20 hours with 4 "C" alkaline batteries
Dimensions	7.087" x 6.378" x 7.953" (180 x 162 x 202mm)
Weight	4.409lbs (2Kg)
Working Temperature	32°F to 104°F (0°C to +40°C)
Center screw thread	5/8" – 11
Scanning Modes	0°, 30°, 60°
Rotation Speed	150, 200, 250, 300 rpm
IP Protection Class	66

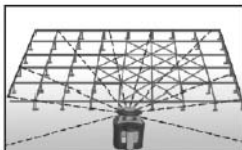




## 10. Application Demonstrations



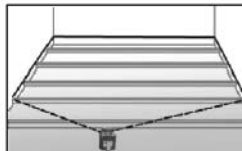
Plumb reference for ceiling installation



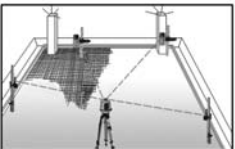
Reference for anti-static flooring installation



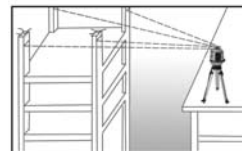
Reference for window installation



Reference for flooring



Reference for squaring and leveling



Reference for cement floor 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](http://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](http://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

Please register within 30 days of purchase. Registering ensures we have your information on file for warranty service even if you lose your receipt, and lets us contact you if there is ever a product recall. We will never sell your information and only send you marketing information if you opt-in.

To register, go to [www.johnsonlevel.com/register](http://www.johnsonlevel.com/register).

### 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.






## 15. Troubleshooting



Symptom	Possible Cause	Solution
Will not turn on	<p>Horizontal position: Compensator locked</p> <p>Vertical position: Compensator unlocked</p> <p>Batteries missing or depleted</p> <p>Polarity reversed</p>	<p>Unlock compensator fully for horizontal operation</p> <p>Lock compensator for vertical operation</p> <p>Change the batteries</p> <p>Charge the batteries (if equipped with rechargeable battery pack)</p> <p>Check polarity</p>
Turns off after a short time	<p>Batteries depleted</p> <p>Battery pack required reconditioning (rechargeable batteries only)</p> <p>Rechargeable battery pack has exceeded its useful life</p>	<p>Change or charge the batteries</p> <p>Fully discharge batteries by operating tool. Fully charge batteries (12-14 hrs.) Repeat two more times.</p> <p>Replace rechargeable battery pack.</p>




Symptom	Possible Cause	Solution
Laser will not spin	Batteries depleted  Horizontal position: Compensator locked  Vertical position: Compensator unlocked	Change or charge the batteries  Unlock compensator fully for horizontal operation  Lock compensator for vertical operation
Flashing or Beeping	Laser is beyond leveling range  Laser is out of calibration  Beeping during transport: Compensator unlocked	Place on surface within 3.5° of level  Perform calibration check and calibrate laser if needed  Lock compensator to transport laser
Laser is not accurately reading level	Laser is out of calibration LESS THAN 1/4" per 100'  Laser is out of calibration MORE THAN 1/4" per 100'	Calibrate laser (procedure in the manual) or return to Johnson dealer for calibration  Return to Johnson dealer for service



<b>Symptom</b>	<b>Possible Cause</b>	<b>Solution</b>
Laser will not calibrate	Laser core parts may be misaligned beyond the limit of field calibration	Return to Johnson dealer for service
Laser light appears dim	Batteries are weak Improper battery type  Speed too high (indoor)  Ambient temperature too high/low	Replace batteries Ensure high quality Alkaline batteries are used  For indoor operation, operate on lowest speed to give the most visible beam  Ensure temperature is within operating range listed under specifications
Beam is difficult to detect with laser detector	Speed too low	Turn laser onto higher speed





<b>Symptom</b>	<b>Possible Cause</b>	<b>Solution</b>
Laser battery will not take a charge	Non-rechargeable batteries	Verify that the battery pack installed into the unit is the rechargeable battery pack.
	Power source or power charger failure	Ensure charging indicator LED comes on to RED. If not, contact a Johnson dealer for service.
	Battery pack requires reconditioning	Fully discharge batteries by operating tool. Fully charge batteries (12-14 hrs.) Repeat two more times.
	Rechargeable battery pack has exceeded its useful life	Replace rechargeable battery pack.

