Self-Leveling Cross and Line Laser *Model Nos. 40-6647, 40-6648, 40-6649, 40-6612*

Instruction Manual

Congratulations on your choice of this Self-Leveling Cross and Line Laser. We suggest you read this instruction manual thoroughly before using the tool and save this instruction manual for future use.

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

Table of Contents

1. Kit Contents

Description for Model 40-6648 (Red)	**Qty.**
Self-Leveling Cross and Line Laser	1
"AA" Alkaline Batteries	2

Description for Model 40-6647 (Green) & 40-6649 (Red)	**Qty.**
Self-Leveling Cross and Line Laser	1
Magnetic Bracket	1
Tinted Glasses	1
Magnetic Target	1
"AA" Alkaline Batteries	2
Hard-Shell Carrying Case	1

Description for Model 40-6612 (Green)	**Qty.**
Self-Leveling Cross and Line Laser	1
Magnetic Bracket	1
Tinted Glasses	1
Magnetic Target	1
"AA" Alkaline Batteries	2
Soft-Sided Carrying Case	1

2. Features and Functions

- Projects up to three laser beams simultaneously to plot both crosslines and a plumb line, or either line individually.
- Tilt mode can be used to plot orthogonal reference lines at any angle.
- Magnetically dampened compensator system stabilizes the pendulum quickly and accurately, and stays level even with nearby jobsite vibration.
- Status light alerts when the tool is beyond its leveling range.
- Locking mechanism protects the pendulum during transportation.
- 1/4″-20 tripod thread for use with most common tripods.

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!

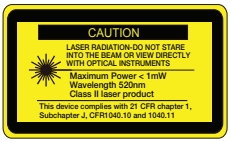
Class II Laser Product
Max. Power Output: ≤ 1mW
Wavelength: 635nm (40-6648 & 40-6649)

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

DANGER!

Class II Laser Product
Max. Power Output: ≤ 1mW
Wavelength: 520nm (40-6647 & 40-6612)

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

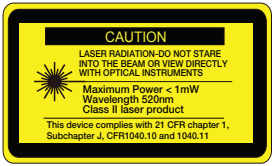


ATTENTION  IMPORTANT

- 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.

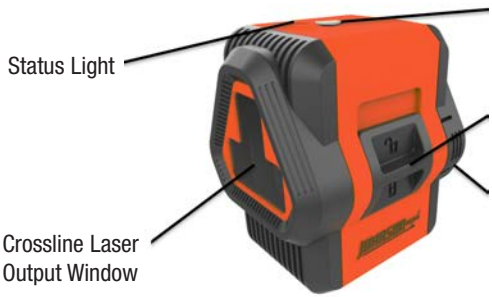
4. Location/Content of Warning Labels

40-6648
40-6649



40-6647
40-6612

5. Location of Parts/Components



6. Operating Instructions

IMPORTANT: It is the responsibility of the user to ensure proper maintenance of the Self-Leveling Cross and Line Laser. Conduct periodic test measurements to ensure the tool is measuring accurately and consistently. This is most important if the tool has been exposed to extreme temperatures or moisture. Keep the Self-Leveling Cross and Line Laser optic lens clean and inspect for damage.

Battery Installation

1. Remove the battery cover, which is located at the back of the tool, by pressing the battery cover release tabs found on the left and right side of the tool and pulling the cover back.
2. Insert 2 “AA” batteries into the battery compartment according to the polarity illustrated inside.
3. Replace the battery cover. Press in the release tabs as you insert them into the tool housing.

Note:

- Always check that the locking compensator/power switch is in the locked position before removing and replacing batteries.
- Use only alkaline batteries.
- 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.

Using the Product in Self-Leveling Mode

1. Slide the locking compensator up to the unlocked position to power on the tool. The status light will illuminate, and the tool will emit both a crossline and a 90° vertical (plumb) line.
2. Press the tilt mode button once to produce only the crossline.
3. Press the tilt mode button a second time to produce only the 90° vertical (plumb) line.
4. Press the tilt mode button a third time to again produce both a crossline and a 90° vertical (plumb) line.
5. Slide the locking compensator down to the locked position to power off the tool.

Note: The tool must be within ±4° of level for the self-leveling feature to function properly. If the tool is beyond its 4° self-leveling range, the laser will not self-level, the laser will flash and the status light will turn red. Once the tool has been adjusted to within its 4° self-leveling range, the laser will self-level, the status light will turn green and the laser light will stop flashing and remain solid.

Using the Product in Tilt (Manual Level) Mode

The tool can be used to project laser beams at any angle desired, such as when projecting a line for stairs or a railing. This mode produces the best results when the tool is mounted on a tripod.

1. With the locking compensator down in the locked position, tap the tilt mode button to power on the unit. The status light will

illuminate in red, and the unit will emit both a crossline and a 90° vertical (plumb) line.

Note: Relative orthogonal alignment of each of the beams will not change from self-leveling mode, but the entire laser assembly will not self-level.

2. Press the tilt mode button a second time to produce only the crossline.
3. Press the tilt mode button a third time to produce only the vertical (plumb) line.
4. Press the tilt mode button a fourth time to power off the unit.

Tips from the Pros

- Increasing the beams' visibility – When working in bright conditions, such as when working near windows or outside walls, the visibility of the laser beams can be maximized by following these steps:
    - Work towards the laser.
    - Use a freestanding target (included with some models).
    - Wear laser glasses (included with some models).

Note: Laser glasses enhance beam visibility but should never be used to stare into the beam or be used as safety glasses. Eye damage may result if these directions are not followed.

Care and Handling

- This laser is a precision tool that must be handled with care.
- Avoid exposing unit to shock vibrations and extreme temperatures.
- 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.
- 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 unit.

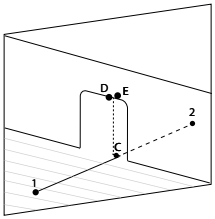
7. Checking Accuracy

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

Plumb Accuracy Check

Plumb accuracy can be checked in two ways. The easier, though less accurate method is to project the beam on a flat wall and use a plumb bob to check the plumb of the beam.

The more accurate method to check the plumb line accuracy is to follow these steps:

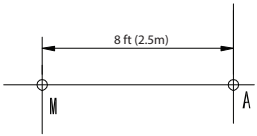


1. Place the laser on the floor in a fairly dark room, approximately 10′ from a doorway.
2. Project the plumb beam through the doorway.
3. Mark the plumb beam's closet point to the tool on the floor as Point 1.
4. Mark a spot 20′ away as Point 2.
5. Mark directly under the doorway as Point C.
6. Mark a spot directly above Point C, but on the doorway, as point D.
7. Move the laser to Point 2, and aim the plumb beam directly through Point 1 and Point C.
8. Mark on the doorway Point E.
9. Measure the distance between Point D and Point E. If this distance is < 1/8" for a 10' high doorway, then the tool is properly calibrated.

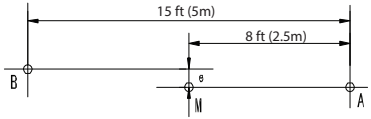
Horizontal Line Transverse Accuracy Check

Transverse accuracy refers to the accuracy of the horizontal laser beam projected along the wall and ensures the beam is level from left to right.

1. Set the tool on a tripod and place approximately 15′ from a wall.
2. Unlock and power the unit on.
3. Face the laser line to the wall, and set the center as Point A.
4. Make a mark on the wall for Point A.
5. Make another mark on the wall 8′ from Point A and mark on the wall as Point M.



6. Rotate the tool 90° and make a mark on the wall 15′ from Point A. Label this mark as Point B.

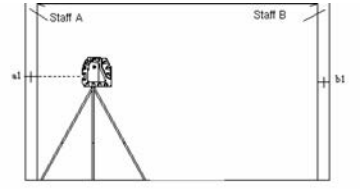


7. Measure the distance ‘e’ from Point M to the laser line, as per the figure. If ‘e’ < 3/16″, then the tool is properly calibrated.

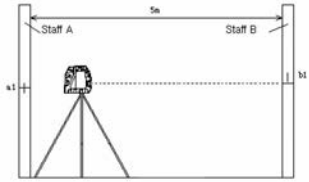
Horizontal Pitch Accuracy Check

Pitch accuracy refers to the accuracy of the laser between the tool and the wall and ensures that the horizontal beam is level between the tool and the wall.

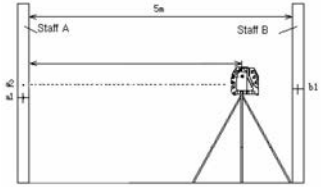
1. Set up two survey-staffs OR use two walls, both a minimum of 15′ from each other.
2. Set the tool on a level tripod as close as possible to staff/wall A.
3. Power on all laser lines and move the laser until the cross dot projects on the staff/wall A. Make a mark and label as A1.



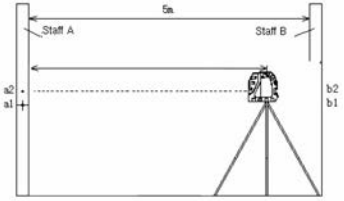
4. Rotate the tool 180° and make the cross dot project on the staff/wall B. Make a mark and label as B1.



5. Move the tripod as close as possible to wall B, and make the cross dot project on the staff/wall A. Make a mark and label as A2.



6. Rotate the tool by 180° and move the cross dot to project on the staff/wall B. Make a mark and label as B2.



7. Calculate the vertical distance (A1-A2) – (B1-B2) = e
8. If e < 3/16″ at 15′, the tool is properly calibrated.

8. Application Examples

Crossline lasers are extremely versatile devices that have many useful applications designed to help you work more efficiently and effectively. The additional orthogonal vertical reference line also simplifies layout work. Applications include:

- Plumb layout of studs
- Squaring of walls, beams or posts
- Level layout of chair rails, wainscoting, baseboards, etc.
- Installing photographs plumb or level
- Plumb layout of wallpaper, pinstriping, plumbing and electrical conduit, etc.
- As a level reference for setting the slope of drainage piping
- In tilt mode to layout railings, photographs and other wall art at any angle
- Installing tile or other flooring on walls and floors
- Installing partitions, windows or doorways
- Fixing cabinetry
- As a measuring reference for checking spacing or the angle of objects

9. Troubleshooting Guide

This section is designed to help you diagnose and troubleshoot common problems that prevent the laser from working properly.

Symptom	Possible Cause	Solution
Will not turn on	Batteries missing or depleted	Change the batteries
	Polarity reversed	Check battery polarity
Turns off after a short time	Batteries depleted	Change the batteries
Laser light is dim	Batteries depleted	Change the batteries
Laser light is blinking	Laser is out of self-leveling range	Position laser within 4° of level so that it can self-level
Laser will not self-level	Laser is out of self-leveling range	Position laser within 4° of level so that it can self-level
	Compensator is locked	Unlock compensator to allow the pendulum to self-level; operating with the compensator locked is for tilt/manual level mode at unique angles

10. Technical Specifications

Laser Wavelength	635 nm (40-6648 & 40-6649)
Laser Wavelength	520 nm (40-6647 & 40-6612)
Laser Classification	II
Maximum Power Output	≤1mW
Self-Leveling Range	±4°
Accuracy	±5/32″/30′
Measuring Range	0′ - 50′
Power Supply	2 “AA” alkaline batteries (included)
Battery Life*	30 hours/10 hours (40-6648 & 40-6649) 10 hours/5 hours (40-6647 & 40-6612)
Operating Temperature Range	32°F - 104°F
Storage Temperature Range	0°F - 120°F
Dimensions	3″ x 3.5″ x 2.5″
Weight	0.725 lbs.
Tripod Thread	1/4″ – 20
IP Rating	IP 50

* Battery life reported with all beams enabled, as tested with lithium AA/Alkaline AA.

11. Product Warranty

Johnson Level & Tool offers a two 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 tool 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 service@johnsonlevel.com or 888-953-8357.

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

12. 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.