Automatic-Leveling Rotary Laser Level with GreenBrite™ Technology
Model Nos. 40-6540 and 40-6550

Instruction Manual

Congratulations on your choice of this Automatic-Leveling Rotary Laser Level with GreenBrite Technology. 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 or outdoor construction projects. Since the product is equipped with a laser beam detector, visibility of the beam in various lighting conditions is not an issue.

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

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6V Battery Adapter	1
Remote Control with 9V Battery	1
Detector with 3 "AAA" Batteries and Quick Clamp	1
Magnetic Target	1
Tinted Glasses	1
Instruction Manual with Warranty Card	1
Hardshell Carrying Case	1

Description Model No. 40-6550	Qty.
Automatic-Leveling Rotary Laser Level with GreenBrite™ Technology	1
Ni-MH Rechargeable Battery Pack	1
6V Battery Adapter	1
Vertical Mounting Bracket	1
Multi-Function Mount with Carrying Case	1
Remote Control with 9V battery	1
Detector with 3 "AAA" Batteries with Quick Clamp	1
Magnetic Target	1
Tinted Glasses	1
Aluminum Tripod	1
8 ft. Grade Rod with Carrying Case	1
Instruction Manual with Warranty Card	1
Hardshell Carrying Case	1

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2. Features and Functions

- Green beam is 400% brighter than red beam laser levels.
- Large electronic auto-level range: The unit works normally within ±5°. When beyond the ±5° leveling range, the laser line flashes, rotation of the beam stops, and an audible alarm activates.
- Vertical and horizontal working modes: Unit projects one horizontal plane/line and one plumb-up point or, when used with the vertical mount, one plumb plane/line and one horizontal point.
- Adjustable laser rotating speed
- Scan function adjusts the scan line size and scan direction.
- Slope function allows user to perform the slope scan at different inclinations.
- Dust and rain resistant
- Timed auto-off function

3. Safety Instructions

Please read and understand all of the following instructions, prior to using this tool. Failure to do so, may result in bodily injury.

DANGER!

Class IIIa Laser Product
Max. Power Output: ≤ 5mW
Wavelength: 522-542nm

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.
- Use of controls or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- 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, serious injury may result.
- Use only original AccuLine Pro™ parts and accessories purchased from your AccuLine Pro authorized dealer. Use of non-AccuLine Pro parts and accessories will void warranty.

CAUTION: If using this product with any type of tinted goggles, please note safety warning below.

WARNING!
The tinted goggles are designed to enhance the visibility of the laser beam. They DO NOT offer protection to the eyes from direct exposure of the laser beam.

4. Location/Content of Warning Labels

DANGER

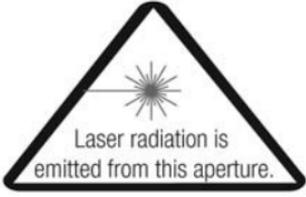**LASER RADIATION AVOID DIRECT EYE EXPOSURE.**

MAXIMUM OUTPUT POWER < 5mW @ 522-542nm

CLASS IIIa LASER PRODUCT. THIS PRODUCT COMPLIES WITH THE APPLICABLE REQUIREMENTS OF 21CFR PARTS 1040.10 & 1040.11.

Mfg. for Johnson Level & Tool Mfg. Co., Inc. 6333 W. Donges Bay Rd., Mequon, WI 53092

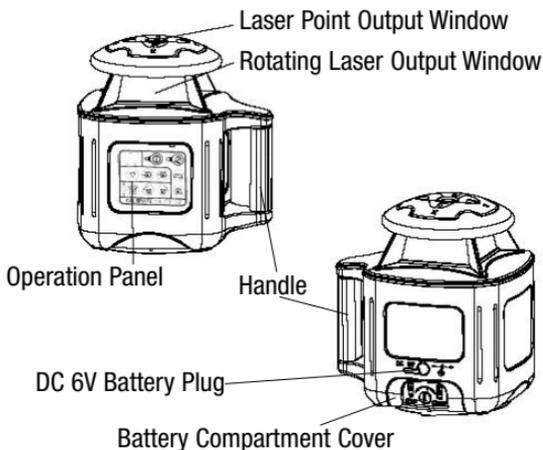Manufactured in China by JLT05 Date (m/y): _____

Laser radiation is emitted from this aperture.

AVOID EXPOSURE

5. Location of Part/Components

Laser Point Output Window

Rotating Laser Output Window

Operation Panel

Handle

DC 6V Battery Plug

Battery Compartment Cover

6. Operating Instructions

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

Notes:
- Always check to make sure that the on/off switch is in the off position (when power indicator lamp is not lit) before removing and replacing batteries.
- Both Ni-MH and "C" alkaline batteries (not included) can be used in the unit's battery compartment.
- Unit ships with Ni-MH battery packs installed.

Alkaline Battery Installation

1. Remove battery compartment cover by loosening the bolt with a coin. Remove the Ni-MH battery packs from the chambers inside the battery compartment, making sure to disconnect the two-pin connectors. Then, insert "C" alkaline batteries into the chambers, noting polarity as shown on chamber bottoms or cover of battery compartment.

Two-pin connector receptacles
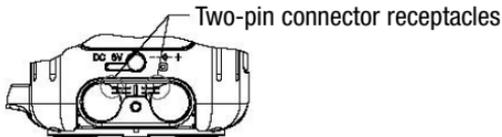
Notes:

- When the battery case is filled with "C" alkaline batteries, the power adapter should not be used to charge these batteries.
- Charging alkaline batteries can result in explosion.
- Used (discharged) batteries are hazardous waste and should be disposed of properly.

Charging Ni-MH Rechargeable Batteries

1. Remove black rubber plug above the battery compartment cover and insert the 6V battery adapter. Plug adapter into 115V AC wall socket to begin charging. During the first charge of the batteries, the charge indicator lamp is red. After 5 hours or so, the indicator lamp will turn green showing that the battery pack has been fully charged.

Notes:

(1) Even after battery pack appears to be full charged, we suggest users continue to charge for 2 more hours to ensure the battery-pack's maximum charge capacity.

(2) We also suggest charging a new battery during its initial charge for at least ten hours.

(3) The instrument will still work even if it being charged with adapter.

Instrument Usage

1. Put in Ni-MH rechargeable battery pack, or 4 "C" alkaline batteries (not included), or connect the 6V DC battery adaptor to the unit's power jack.

2. Place the instrument on a platform or tripod, connecting with tripod to the 5/8" screw thread at the bottom of the instrument.
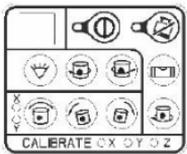
   Note: If the instrument is inclined beyond the self-leveling range, the instrument will deliver an audible alarm. You will need to re-position the instrument until it can be leveled.

3. Press power switch to turn power on, and press operation buttons on control panel or use remote control to adjust to your desired working status.

4. After finishing operation or before moving the instrument, turn the power off.

7. Using the Product

Place the unit on a relatively level surface like a table, floor, etc during operation.

Operating Panels

operating panel for calibration (located beneath the sliding nameplate panel of the remote control) to be used by service personnel only

Instrument Panel   Remote Control Panel

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Note: Calibration buttons on instrument operation panel and remote control panel must only be used by an authorized AccuLine Pro™ service center.

Power On/Off

1. Press the power button to power on. The power indicator lamp should 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 Indicator

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 auto-leveling range of $\pm5°$, it will deliver an audible alarm, and the power indicator lamp will flash. You will need to re-position the instrument until it is within the leveling range.

Safety Mode (TILT)

1. After powering on the instrument and entering into auto-level status, press the safety mode (TILT) button. When the indicator lamp illuminates (see figure), the instrument enters into safety mode.
2. If the leveled instrument is moved or bumped, the head will stop rotation and the safety mode indicator lamp will flash instead of the unit performing the auto-level function. At this time, you must press the level vial button (see figure).

The unit will re-level automatically and enter into primary working status.

3. Press the safety mode (TILT) button again to quit safety mode and activate auto-level mode.

Speed Adjustment

After unit automatically-levels, it rotates at its highest speed. Press the speed adjustment button (see figure) to change the rotating speed.

**Note:** During the auto-leveling sequence, this key is not functional.

Range Scan Mode

1. Press the range scan mode button (see figure) to activate range scan mode.
2. With the second press of this button, the unit emits a long bright laser line.
3. With the third press of this button, the unit emits a bright laser point.
4. To return to rotating, press the speed adjustment button.
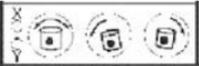
Adjusting the Scan Range

1. Press the first button to the right of the range scan mode button and the scan area moves counter-clockwise.
2. Press the second button to the right of the range scan mode button and the scan area moves clockwise.
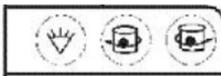
Slope Adjusting Function

1. Press the slope adjusting mode button (see figure) to enter into the slope setting mode and select X direction slope.
   - Press the first button to the right of the slope adjusting mode button to shift the slope angle to the left.

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- Press the second button to the right of the slope adjusting mode button to shift the slope angle to the right.

2. Press the slope adjusting mode button again to select Y direction slope.
   - Press the first button to the right of the slope adjusting mode button to shift the slope angle to the left.
   - Press the second button to the right of the slope adjusting mode button to shift the slope angle to the right.
3. Another press of the slope adjusting mode button changes back to X direction slope selection. However, pressing and holding the button returns the unit to normal operation.

Notes:

• When the unit is in safety mode, press the slope adjusting mode button to exit from the safety mode and into the slope adjusting mode.

• Using the unit in the vertical position, the X direction slope can be adjusted while the Z direction slope is automatically adjusted. This means that the horizontal laser point is in a fixed, level (Z) position but can be adjusted to the left or right.

• In the vertical position, the unit cannot rotate or enter into range scan mode immediately. It must first be level in the Z direction before you can select rotation or range scan mode.

• The maximum adjusting angle is 5 degrees.

Timed Auto-off Function

Turn the unit on using the power button on the instrument operating panel. Then, press the power button once on the remote control. The unit is now in sleep mode.

If the unit is in sleep mode for 30 continuous minutes, the unit turns off

automatically. With a second press of the power button on remote control, the unit exits sleep mode and enters auto-level mode.

Using the Vertical Mounting Bracket
The vertical mounting bracket allows the unit to be used in the vertical position on a table or tripod, but it can also be hung on a wall for horizontal leveling (see drop ceiling application drawing example on page 22).

To use the unit with the vertical mounting bracket (see figure):

Locking knob

Circular bull's-eye level vial
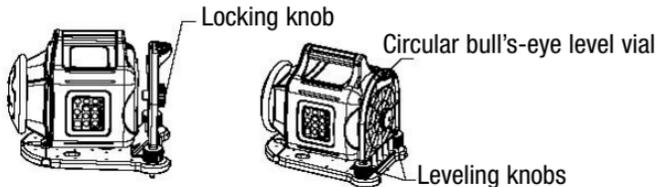
Leveling knobs

1. Place the unit on its side with the handle up and the bottom facing the bracket surface with the locking-knob. Attach the bracket to the unit by screwing the locking knob thread into the base of the unit.
2. Adjust the two leveling knobs on the base of the vertical mounting bracket so that the bubble of the circular bull's-eye level vial (located on top of vertical mounting bracket) is centered.

Detector Usage

Note: This green laser level uses a specific detector for the green beam and will not perform accurately with standard detectors.
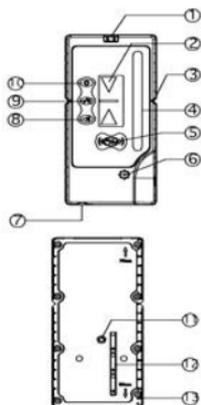
1. Product Description

A laser detector is an indispensable accessory when using rotary laser levels. The main function of the detector is to locate the position of laser signals transmitted by rotary lasers. This detection quickly and precisely provides the user with the horizontal and vertical references. This product features a high level of sensitivity, a double-faced display, low power consumption, good reliability and easy manipulation.

2. Technical Specifications

Detecting range	≥656 ft. (200m)	
Detecting accuracy	Fine	±0.08" (±2mm) when range is < 492 ft. (150m)
	Coarse	±0.16" (+4mm) when range is < 492 ft. (150m)
	Fine	±0.12" (±3mm) when range is > 492 ft. (150m)
	Coarse	±0.24" (+6mm) when range is > 492 ft. (150m)
Turn-off time	6 minutes ±1 minute	
Power	DC 3.3V or 3 "AAA" batteries	
Sound indicator	slow short sounds, rapid short sounds and a continuous sound	
LED indicator	up, mid, down	
Dimensions	7.087" x 3.228" x 0.236" (180 x 82 x 26mm)	
Weight	0.485 lb. (220g)	
Others	Rain and dust resistant	

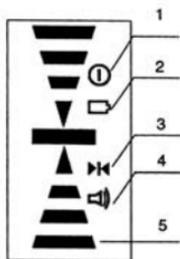### *3. Components*

(a) Structure

1) Horizontal vial
2) Right-faced display window
3) Lineation slot
4) Receiving window
5) Power button
6) Buzzer
7) Battery-box
8) Sound switch
9) Coarse/Fine detection switch
10) Illumination switch
11) Mounting hole
12) Battery installation symbol
13) Scale

(b) Display

1. Power indicator
2. Low battery indicator
3. Detection indicator
4. Sound indicator
5. Detected position (grade) indicator

4. Operation Guide

(a) Battery Installation

1) Rotate battery-box cap counterclockwise to open it. (A coin fits easily into this slot.)
2) Insert 3 AAA batteries (note polarity) and then rotate battery-box cap clockwise to close it.
3) When the battery voltage is low, the unit will display a low battery indicator and there will be a buzzing "reminder" sound every 2-4 seconds. You will still be able to use the instrument for a short period of time, but should change the battery soon. (Note: When the low battery indicator is displayed, the illumination function cannot be used. (See "Using the Illumination Function.)
   Note:
   a) Remove the batteries when the unit is being stored for a long time.
   b) When the low battery indicator is displayed, change the battery soon.
   c) Turning off the sound and illumination functions will allow you to use the unit longer.

(b) General Detector Usage

Note: Always keep the instrument stable when detecting.

1) Press the power key to turn the unit on. The LCD display will illuminate all the indicator segments for 0.5 second (Fig. 6). 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. 7).

Fig. 6   Fig. 7

2) Detecting horizontal laser level signals
• Place the unit in a vertical position (verify by checking the horizontal vial bubble).
• Make sure the receiving window (on front of detector) is facing the laser level unit and is receiving the laser signal.
- If the LCD shows a "down" arrow and emits rapid short sounds, this indicates that the laser level signal is located below the detector (Fig. 8).
- If the LCD shows an "up" arrow and emits slow short sounds, this indicates that the laser level signal is located above the detector (Fig. 9).
- If the LCD shows the "center" mark and emits a continuous sound, this indicates that the laser level signal is located in the center position on the detector.
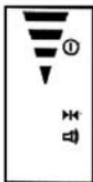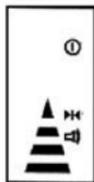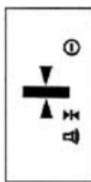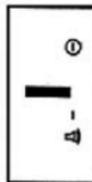
Fig. 8   Fig. 9   Fig. 10-1   Fig. 10-2

(Fig. 10-1) LCD indicating center position of coarse detection
(Fig. 10-2) LCD indicating center position of fine detection

Note: As the laser signal gradually nears the center position on the detector, the arrow displayed will decrease in length until just the center position signal is displayed (Fig. 11, 12, 13-1, 13-2).
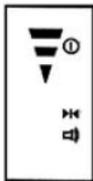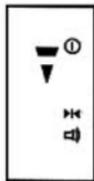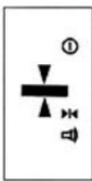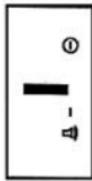

Fig. 11   Fig. 12   Fig. 13-1   Fig. 13-2

3) Detecting vertical laser level signals

• Place the unit in a horizontal position.

• Make sure the receiving window (on front of detector) is facing the laser level unit and is receiving the laser signal.

- If the LCD shows a "left" arrow and emits rapid short sounds, this indicates that the laser level signal is located to the right of the detector (Fig. 14).

Fig. 14

- If the LCD shows a "right" arrow and emits slow short sounds, this indicates that the laser level signal is located to the left of the detector (Fig. 15).

Fig. 15

- If the LCD show the "center" mark and emits a continuous sound, this indicates that the laser level signal is located in the center position on the detector.
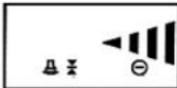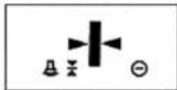
Fig. 16-1

(Fig. 16-1) LCD indicating center position of coarse detection

(Fig. 16-2) LCD indicating center position of fine detection

Fig. 16-2

4) When you are finished using the detector, press the power key to turn the unit off.

(c) Using the Sound Function

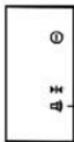With the detector turned ON, press the sound switch to alternate between sound-on and sound-off.

Sound   Silence

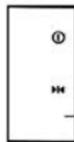Fig. 17   Fig. 18

Note: The sound indicator will also turn on and off in the LCD screen (Fig. 17, 18).

With the sound function turned on:
- If the laser signal is above the detector, a slow short sound is emitted.
- If the laser signal is below the detector, a rapid short sound is emitted.
- If the laser signal is aligned on the mid portion of the detector, a continuous sound is emitted.

Note: Whether or not the sound function is in use, there is still indicator sound when you press the key.

(d) Using the Coarse/Fine Detecting Switch

With the detector turned ON, press the coarse/fine switch. This switch alternates the unit between coarse and fine detecting. The detector has different check and measure precision.
(Fig. 19) LCD indicating coarse detection
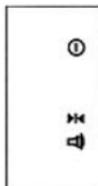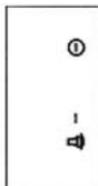(Fig. 20) LCD indicating fine detection

Fig. 19   Fig. 20

(e) Using the Illumination Function

With the detector turned ON, press the illumination switch. This switch turns the background illumination of the LCD on and off.

(f) Power Saving Function

When the instrument cannot receive the laser signal for 6 continuous minutes, and there is no detection occurring during this 6 minutes, the unit will shut off automatically to prolong the battery's life.

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(g) Low Battery Indicator

If the LCD shows a blinking battery sign, it is indicating that you have low charge on your batteries and that you need to change them soon (Fig. 21).
If the battery power is too low, the instrument will shut off automatically. At this time, you must change the batteries in order to continue using the detector.
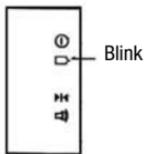

Fig. 21

5. Detector Maintenance

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

8. Accuracy Self-Check

1. Set up the instrument on a table 65 ft. (20m) away from an indoor wall, with one of the X-axes facing the wall as indicated by the "X" marked on the top of the unit.

2. Press the power button to turn the unit on. After the unit auto-levels, press the range scan button (on either the unit or the remote control) to put the unit in range scan mode.

3. Press the range scan button two more times to emit a bright laser point.

4. Mark the center of this point on the wall and label it as point "A".

5. Rotate the unit clockwise by 90 degrees and use the second button to the right of the range scan button to jog the laser point back toward the wall and the point marked as "A".

   Note: The laser points might not line up exactly on the same horizontal plane, but they should be on the same vertical plane (i.e., in a straight vertical line).

6. Mark the center of this second point on the wall and label it as point "B".

7. Repeat steps 5 and 6, marking centers of new points "C" and "D".

8. Now, measure the distance between the highest and lowest points. This measurement = "h".

   **Note:** The maximum distance between any two points should not exceed the stated accuracy of ≤0.157" (4mm).

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9. If h ≤0.157" (4mm), the unit's accuracy is within tolerance.
If h >0.157" (4mm), but <0.394" (10mm), OR h ≥0.394" (10mm),
please reference Section 12 of this document.

Note: The above procedure using a distance of 65 ft. (20m) from a
wall is suggested due to the difficulty of precisely marking the center
of laser points at shorter distances.

9. Technical Specifications

|	
Laser Wavelength	532nm±10nm
Laser Classification	Class IIIa
Maximum Power Output	≤5mW
Accuracy	Horizontal Rotation = ±1/8"/100 ft. (±0.1mm/10m)
	Vertical Rotation = ±3/16"/100 ft. (±1.5mm/10m)
Working Range	Maximum 100 ft. (30m), depending upon light conditions
Measuring Range	656 ft. radius (200m) with detector 33 ft. (10m) with remote
Auto-Leveling Range	±5° (delivers an alarm if beyond range, and stops rotation simultaneously)
Power Supply	4 "C" alkaline batteries (not included), rechargeable battery pack, or 6V adapter (included)
Dimensions	7.4" x 5.91" x 8.15" (188 x 150 x 207mm)
Weight	5.512 lbs. (2.5Kg)
Working Temperature	32°F to 104°F (0°C to 40°C)
Center Screw Thread	5/8" – 11
Rotation Speeds	200 and 600 rpm
Range Scan Area	Continuous, small range, large range, point
Enclosure	Dust and rain resistant

10. Application Demonstrations
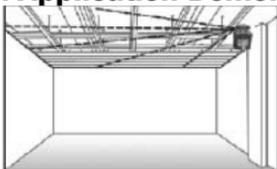
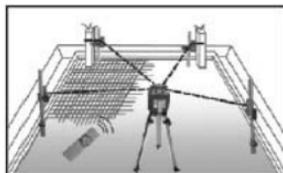Plumb reference for ceiling installation
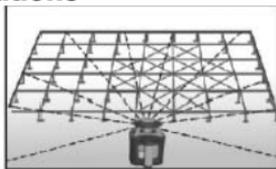
Reference for anti-static flooring installation

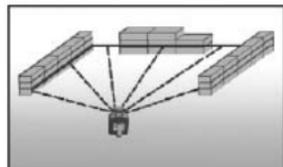Reference for window installation
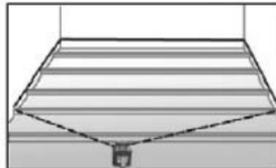
Reference for flooring

Reference for squaring and leveling

Reference for cement floor installation

Reference for fence and retailing wall construction

Reference for grading

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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 one year limited warranty on each 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 us online 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. Required repair/calibration must be done by an authorized AccuLine Pro™ service center or Johnson Level & Tool's limited warranty, if applicable, will be void and there will be NO WARRANTY. Contact our Customer Service Department to obtain a Return Material Authorization (RMA) number for return to an authorized service center. 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 800-563-8553.

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

13. Product Registration

Enclosed with this instruction manual you will find a warranty card to be completed for product warranty registration. Product warranty registration can also be completed online at our web site www.johnsonlevel.com. 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 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

AccuLine Pro™ accessories are available for purchase through authorized AccuLine Pro dealers. Use of non-AccuLine Pro 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 800-563-8553.

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