



**Electronic Self-Leveling Dual Grade Horizontal
Rotary Laser Level
Model No. 40-6580**



Instruction Manual

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

This is a Class IIIa laser tool and is manufactured to comply with CFR 21, parts 1040 .10 and 1040 .11 as well as international safety rule IEC 285.

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1. Kit Contents

Description Model No. 40-6580

	Qty.
Electronic Self-Leveling Dual Grade Horizontal Rotary Laser Level	1
Ni-MH Rechargeable Battery Pack	1
9V Battery Adapter	1
Remote Control with 9V Battery	1
Detector with 9V Battery and Clamp	1
Sighting Scope	1
Instruction Manual with Warranty Card	1
Hardshell Carrying Case	1

2. Features and Functions

- Large $\pm 5^\circ$ electronic auto-level range. When beyond the leveling range, the laser beam will flash, rotation of the beam will stop, and an audible alarm will activate.
- Electronic beam shield to turn the laser beam off in one to three quadrants, when multiple lasers are being used.
- Programmable dual slope operation function allows user to perform slope at different inclinations in both x and y axis.
- Height of Instrument/Tilt alarm function ensures product accuracy.
- Dust and rain resistant.
- Operates with Remote control.
- LCD display with backlight illumination.
- Adjustable rotation speeds of 0, 300, 600 and 1100 rpm.

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: $\leq 5\text{mW}$
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 AccuLine Pro[®] parts and accessories purchased from your AccuLine Pro[®] authorized dealer. Use of non-AccuLine Pro[®] parts and accessories will void warranty.

4. Location/Content of Warning Labels

DANGER

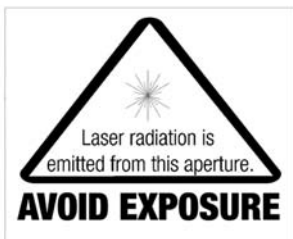
**LASER RADIATION
AVOID DIRECT EYE
EXPOSURE.**

 **MAXIMUM OUTPUT POWER
< 5mW @ 625-645nm**

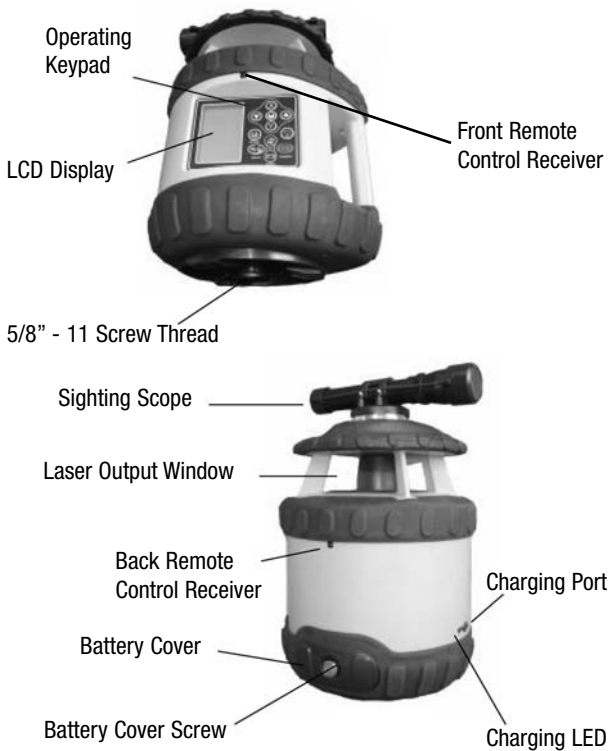
**CLASS IIIa LASER PRODUCT.
THIS PRODUCT COMPLIES
WITH THE APPLICABLE
REQUIREMENTS OF 21CFR
PARTS 1040.10 & 1040.11.**

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

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



5. Location of Part/Components



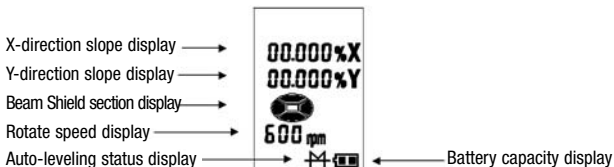
6. Operating Instructions

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



Power On/Off:

Press the key  to power on/off the instrument.



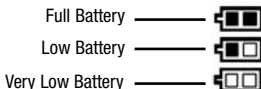
The instrument is in Auto-leveling status when powered on.


Default rotate speed is 600 rpm;

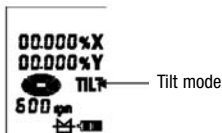
Default beam shield is off in all four quadrants;

Default grade for X-axis and Y-axis is 0.


When powered on, the instrument will automatically check the battery capacity and show the following status.

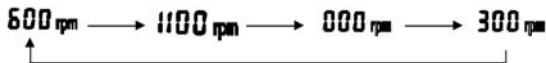


When powering on the instrument it will enter into the Auto-leveling mode. 30 seconds after the instrument begins to rotate, the instrument will enter into the TILT mode and the LCD will show the following. Pressing the tilt keypad  prior to the Tilt display will result in no response.




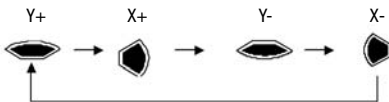
Adjust Rotation Speed



Switch rotation speed by pressing the key . The LCD will show the corresponding rotation speeds.







Beam Shield Mode


When turning on the laser, the beam shield will be off in all four quadrants. Press the key  to select the quadrant to be shielded. The corresponding quadrant on the LCD will flash. The order for selecting shield quadrant to be shielded:










Press the key   to add or remove the shield quadrant.

Press the key  and the shield quadrant display is  meaning this quadrant will shield the laser beam.


Press the key  and the shield quadrant display is  meaning quadrant will not shield the laser beam.


Press the key  to activate the established shield display.

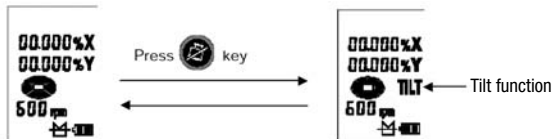
Note:


1. One, two or three quadrants can be shielded from the laser beam simultaneously.
2. Before pressing the key , only these four keys     and the power key  are enabled, the other keys are disabled.
3. At 0 rpm, the beam shield mode is disabled. Pressing the key  will result without a response.

Tilt Function


After the laser has been turned on, has self-leveled and has rotated for 30 seconds, the Tilt display will be shown on the LCD. Pushing the key  prior to the tilt display will not produce a result.

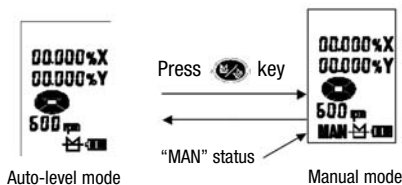
Press the Tilt key  to enter or exit the TILT mode, the LCD shows the sign "TILT".



If the instrument is bumped in the “TILT” mode, the instrument will stop rotating, the laser will flash and the LCD sign “TILT” will begin blinking. Press the key  to have the instrument auto-leveling.

Manual Mode

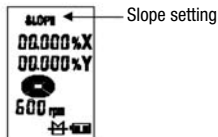
Press the key  to enter or exit manual mode. The LCD shows the sign “MAN” when in manual mode. When entering the “MAN” status, the instrument will not auto-level. If the Tilt key is pressed in “MAN” mode, the instrument will re-enter auto-leveling mode.



Slope Setting



“SLOPE” setting range: -7.999% to +7.999%


With the press of the key  or , the instrument enters “SLOPE” mode as shown in the following figure.





X-direction SLOPE setting


Press the key  once to make the first position in X-direction flash.


This position is the positive/negative slope position. Press the key  for positive slope indicated by a “0” sign. Press the key  for negative slope indicated by a “-” sign.


Press the key  a second time to make the second position in X-direction flash.


Press the key , the digit in this position increases to a maximum of 7.


Press the key , the digit in this position decreases to a minimum of 0.


Press the key  a third time to make the third position in X-direction flash.


Press the key , the digit in this position increases to a maximum of 9.


Press the key , the digit in this position decreases to a minimum of 0.


Press the key  a fourth time to make the fourth position in X-direction flash.



Press the key , the digit in this position increases to a maximum of 9.

Press the key , the digit in this position decreases to a minimum of 0.

Press the key  a fifth time to make the fifth position in X-direction flash.

Press the key , the digit in this position increases to a maximum of 9.








Press the key , the digit in this position decreases to a minimum of 0.


Press the key  a sixth time to repeat setting steps. When all the digits are determined, press the key  to enter the X-direction grade setting.

Y-direction SLOPE Setting


Press the key  to switch digital positions, the operation is the same as the X-direction “SLOPE” setting.

Note:

Before pressing the key  only five keys for grade setting      and the power key  are enabled. The other keys are disabled.

After pressing the key  the “SLOPE” display on the LCD will flash. While flashing all the keys are disabled except the power key.

Backlight

Press and hold the key  for 2 seconds, the backlight on the keypad can be turned on and off.

Remote Control Function

Most operations of the laser 40-6580 can be controlled by the remote control.



40-6747



Sleep Mode

Pressing the power key on the remote control will make the instrument enter or exit the Sleep mode. When the instrument is in Sleep mode, the LCD is shown as the following figure.



When the instrument is in Sleep mode, except for the power key, all the other keys are disabled.

Note:

In the Sleep mode, the instrument will keep the current setting value.

When the instrument is turned on, it will be in the same setting as before entering Sleep mode.

All other remote key pad functions operate the same as the keypad functions on the laser.

Beyond-tolerance Alarm

The auto-leveling range of the instrument is $\pm 5^\circ$.

When the instrument is auto-leveling, if the instrument is tilted to exceed the auto-leveling range, it will give a sound alarm, simultaneously the sign "LEV" on the LCD will blink, as shown in the figure.



While the sign "LEV" is blinking, if the "X" sign is flashing, it means the X-direction exceeds the auto-leveling range. If the "Y" sign is flashing it means the Y-direction exceeds the auto-leveling range. If the "X" and "Y" signs are flashing, it means the X-axis and Y-axis both exceed the auto-leveling range.

Note: The instrument will automatically power off if it is beyond its self-leveling range for three minutes.

Application Methods

Install Ni-MH battery pack or alkaline batteries into the instrument, or connect the instrument to the 9V DC charger. Put the instrument on a 5/8 x 11 tripod.



Connected to a 5/8 x 11 tripod



Connect the Sighting Scope

Note: If the instrument is tilted to exceed the auto-leveling range, it will give a sound alarm. Readjust the instrument.

Power on the instrument, and select your desired working status by pressing the keys on the operating keypad or remote control. Power off the instrument after operation or during movement.

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 reference.

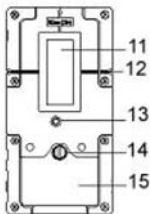
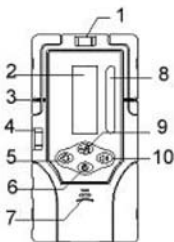
This product features high sensitivity, a double-faced display, low power consumption, good reliability and easy manipulation. It can be used with most types of rotating laser levels.

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

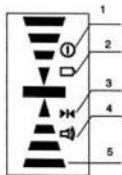
2. Components

(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.

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



Figure 2

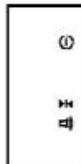


Figure 3

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.

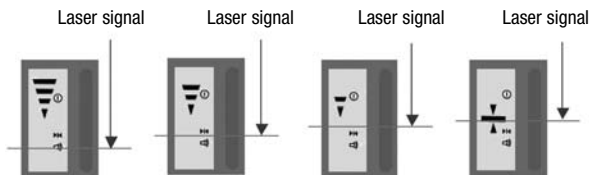
Note: There will be two beeps when turning the unit on and off. There will be one beep when changing functions.



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)

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.

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.

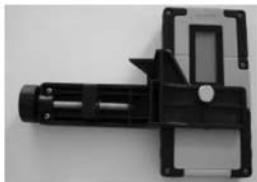
Low Battery Display Function

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.

7. Using the Product

Ni-MH Battery

The 40-6580 is equipped with a large-capacity battery compartment available for both Ni-MH batteries and 4 "D" alkaline batteries.

Battery Plug



Rechargeable Batteries



Screw the battery cover loose and open the battery cover



Install the battery pack and insert the battery plug.



Replace the battery cover and tighten the battery cover screw.

Alkaline Batteries



4 "D" Alkaline Batteries



Positive

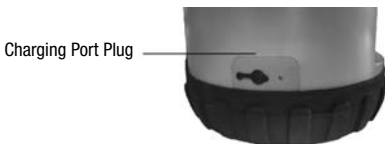
Negative

Install alkaline batteries into the battery compartment noting the polarity of batteries



Replace the battery cover and tighten the battery cover screw.

9V Adapter



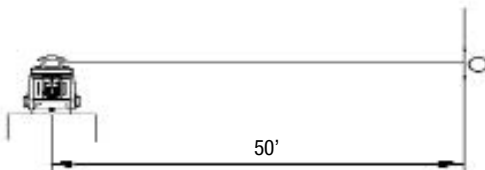
Unplug the charging port plug and insert the 9V adapter to supply power to the instrument. If there are rechargeable batteries in the battery compartment, they will be charged by the 9V adapter. In the course of charging, the charging LED displays red, after charging for about eight hours, the LED will turn green, this means the batteries have been fully charged. If there are alkaline batteries in the battery compartment the LED will display green and the batteries will not charge.

Note: After the batteries have been fully charged, keep charging for another two hours to ensure its capacity. Continuously charging for 12 hours is advised for the first charge of new battery pack. The instrument can operate while the batteries are recharging.

8. Self-Check and Calibration

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

Accuracy Check





1. Put the laser on a tripod 50' away from the wall. Put the laser on the tripod with X+ axis towards wall.
2. Power on and after self-leveling, using the detector, make a mark "A" on the wall where the detector indicates on grade with the laser beam.
3. Turning the instrument 90°, Y+, X-, Y-, after the laser self-levels, mark "B" for Y+, "C" for X- and "D" for Y- on the front wall. Make sure points B, C, D are in the same vertical line as point A.
4. Measure the vertical distance between the highest and lowest points between A, B, C, D and mark that "h".
5. If "h" is less than $\frac{1}{32}$ ", the accuracy is good. If it is more than $\frac{1}{32}$ ", the accuracy is beyond its tolerance and the laser needs to be recalibrated.

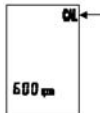
Re-calibration

Referencing the results of the self-check and using the “h” mark (the mid-point between the highest and the lowest point among A, B, C, D).

1. Enter self-calibration mode

a. Power off the instrument and face the X-axis towards the wall.


b. Press  button and  button simultaneously. Then release the power button while still pressing the manual button. Release the manual button after 10 seconds. The laser will enter self-calibration mode and the LCD is shown as figure.

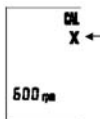



2. X-axis calibration


a. Open the cover on the remote control as shown below.



b. Press  button to select the X-direction AUTO-calibration, the LCD will display as the following figure. The instrument will rotate and the laser beam line will show on the wall.



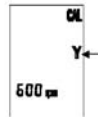
c. Press the  button to make the laser beam line move up and downwards until it coincides with the “h” mark.


d. Press the  button to confirm the X-direction calibration value. The laser will stop rotating and the X-axis calibration sign will turn off.


3. Y-axis calibration

a. Turn off the instrument and turn the instrument 90° and make the Y-axis face the wall.


b. Repeat steps 2a-2d of the X-axis. The LCD will show as the following figure when the Y-direction self-calibration is selected.



c. Press the  button to make the laser beam line move up and downwards until it coincides with the “h” mark.

d. Press the  button to confirm the Y-direction calibration value. The laser will stop rotating and the Y-axis calibration sign will turn off.

4. Self-calibration confirmation

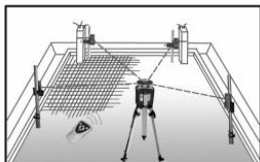
Press  key after finishing re-calibration on both X and Y axis. The re-calibration LED turns off and the value of the re-calibration will be stored. The laser has now exited re-calibration mode.

Note: In order to make the saved calibration effective, you must power off the instrument after calibration, and then power it on again. Y-axis accuracy check is a necessity after the X-axis calibration, and X-axis accuracy check is also a necessity after the Y-axis calibration. Laser re-calibration will not be finished until both X-axis and Y-axis accuracy meet the specifications.

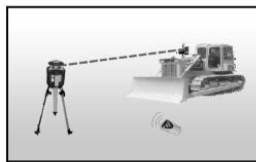
9. Technical Specifications

Laser Wavelength	635nm \pm 10nm
Laser Classification	Class IIIa
Maximum Power Output	\leq 5mW
Accuracy	\pm 1/16"/100 ft. (\pm 1.5mm/30m)
Exterior Range	Up to 2000 ft. (600m) diameter
Remote Range	Up to 200 ft. (60m) diameter with remote
Auto-Leveling Range	\pm 5 $^{\circ}$
Grade Setting	Single axis +7.999% to 7.999% Double axis X + Y = 12.00%
Scan Speed	0, 300, 600, and 1100 rpm
Power Supply	Rechargeable battery pack, or 9V adapter (included), or 4 "D" alkaline batteries (not included)
Battery Life	Approx. 50 hours with rechargeable battery pack (included), 100 hours with 4 "D" alkaline batteries (not included)
Dimensions	8.66" x 8.66" x 11.02" (220 x 220 x 280mm)
Weight	11 lbs. (5Kg)
Working Temperature	14 $^{\circ}$ F to 113 $^{\circ}$ F (-10 $^{\circ}$ C to 45 $^{\circ}$ C)
Center Screw Thread	5/8" – 11
IP Protection Class	66

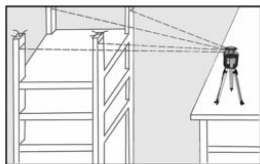
10. Application Demonstrations



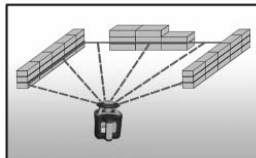
Squaring Leveling



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 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 Department.

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.

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

