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Research, Development and Manufacturing of Precision Measuring Systems

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# LMI

## G-WHIZ



# User Manual

For G-WHIZ Firmware 8.00 and greater

# LMI Corporation

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<b>SECTION 1: PRELIMINARY INFORMATION</b>	<b>4</b>
1.1 Warranty Information	4
1.2 LMI Customer Service	4
1.3 Returns for Service	4
1.4 LMI Technical Support and Training	5
<b>SECTION 2: GAUGE OVERVIEW/FUNCTIONS</b>	<b>6</b>
2.1 Overview	6
2.2 Gauge Layout	7
2.3 How to Take a Measurement – G-WHIZ Quick Start	8
<b>SECTION 3: LMI G-WHIZ SPECIFICS</b>	<b>9</b>
3.1 Navigating the LMI G-WHIZ	9
3.2 Factory Default Models	10
3.3 Charging the LMI G-WHIZ	10
Battery Type and Life	10
G-WHIZ Single Gage In-Line Charger	10
3.4 Mastering	11
<b>SECTION 4: WIRELESS UTILITY SOFTWARE</b>	<b>12</b>
4.1 Wireless Utility System Overview	12
4.2 Wireless Utility License Agreement	13
Minimum Software Requirements	15
4.3 Wireless Utility Installation	16
Installing your LMI Wireless Utility onto your PC	16
4.4 Wireless Utility Operation	19
Launching the Software	19
4.5 Associating the G-WHIZ	20
Associating the G-WHIZ	20
4.6 Editing Gauge Parameters	21
Updating the Models and Parameters within G-WHIZ	21
Global Gage Configurations	23
Load/Update Buttons	25

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<b>SECTION 5: USING THE G-WHIZ</b>	<b>26</b>
<b>5.1 Attaching to the Vehicle</b>	<b>26</b>
<b>5.2 Starting and Performing a Test</b>	<b>27</b>
<b>5.3 G-Whiz Key Functions</b>	<b>28</b>
<b>5.4 Invalid Tests and Buffer Full Messages:</b>	<b>28</b>
<b>5.5 LMI G-Whiz Part Replacement</b>	<b>29</b>
<b>ADDENDUM A – DOWNLOADING A CURVE</b>	<b>31</b>
<b>ADDENDUM B – USE WITH A DM600</b>	<b>33</b>
<b>Using the G-WHIZ with an ASI Datamate DM600</b>	<b>33</b>
<b>ADDENDUM C – POP-OFF TESTING</b>	<b>34</b>
<b>ADDENDUM D – QUICK CHARTING</b>	<b>36</b>

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## **SECTION 1: PRELIMINARY INFORMATION**

### *1.1 Warranty Information*

In the USA, this unit is warranted by LMI against defects in materials and workmanship for 1 year from date of original purchase. If you transfer ownership, the warranty is automatically transferred to the new owner and remains in effect for the original 1-year period. During the warranty period we will repair, or at our option, replace at no charge, product that proves to be defective, provided it is returned, shipping prepaid to LMI.

This warranty does not apply if the product has been damaged by accident or misuse or as a result of service or modification by other than LMI, or by hardware, software, interfacing, or peripherals not provided by LMI.

Please retain this document for your records. No other express warranty is given. The repair or replacement of a product is your exclusive remedy. Any implied warranty of merchantability or fitness is limited to the 1-year duration of this written warranty. Some States do not allow the exclusion or limitations of incidental or consequential damages, so the above exclusion or limitations may not apply to you.

### *1.2 LMI Customer Service*



LMI Customer Service can be reached at **(810) 714-5811** Monday through Friday between 8:00 a.m. and 5:00 p.m. Eastern Standard Time.

Call LMI Customer Service to:

- Place orders
- Return LMI equipment for service
- Inquire about the status of an order or repair

### *1.3 Returns for Service*

- Contact Customer Service for a Return Material Authorization (RMA) number. Include a detailed description of the problem.
- Pack the equipment properly. Use the original shipping container, if possible. LMI cannot assume responsibility for damage caused by improper packaging.
- Send the equipment to the following address:

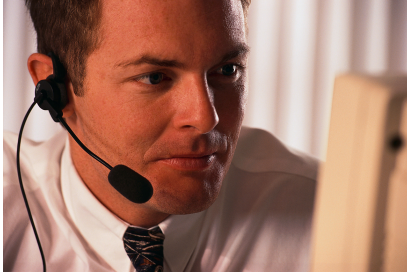
LMI Corporation  
Attn: Repair Department  
101 N. Alloy Drive  
Fenton, MI 48430



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## 1.4 LMI Technical Support and Training



LMI Technical Support experts are only a phone call away. Contact Technical Support at **810-714-5811** Monday through Friday between 8:00 a.m. and 5:00 p.m. Eastern Standard Time for the following reasons:

- To assist in setup and configuring LMI equipment
- To help implement data collection applications
- To troubleshoot LMI equipment

You can also reach LMI Technical Support by Email at [techsupport@lmicorporation.com](mailto:techsupport@lmicorporation.com). You can email your questions anytime. Please include your name, phone number, and a *detailed description* of the problem.

### LMI On-Site Training

LMI Technical Support provides on-site training for all LMI products. Contact LMI Support Services at **810-714-5811** for pricing & scheduling information.

Schedule a day at your facility or at LMI in Fenton, Michigan. Please visit us on the web at [www.lmicorporation.com](http://www.lmicorporation.com) for more information.

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## SECTION 2: GAUGE OVERVIEW/FUNCTIONS

### 2.1 Overview

The LMI G-WHIZ wireless gauge has a simple user interface consisting of (3) buttons, (1) bicolor LED, and (1) suction cup/plunger. It is powered by a long-lasting Lithium-Ion battery that can operate continuously for more than eight hours without recharging.

Using an internal accelerometer, the G-WHIZ can display velocity for quick and easy “on the fly” measurements. When coupled with LMI’s UGI software and MobileCollect USB Base, the user can wirelessly collect and export data for later analysis and tracking.



### There are three methods to utilize the G-WHIZ Closing Effort device:

**Standalone:** This method allows the operator to instantly view readings from the display on the gauge. Simply grab the gauge, take measurements, and go.

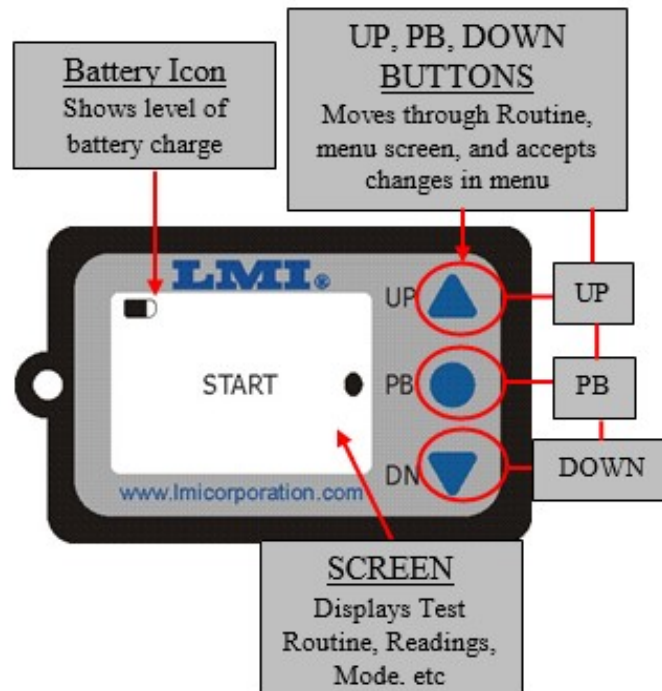
**Note:** To make any configuration changes to the G-WHIZ, the user must have a MobileCollect USB Base unit (*sold separately*).

**Manual data collection:** This method allows the operator to use the gauge in combination with data collection software for tracking and analysis. This requires LMI’s Universal Gauge Interface (UGI) software and MobileCollect USB Base unit (*sold separately*).

**Automated:** This method is used to transmit and capture data on a moving assembly line. The RF range of the gauge in this mode is approximately 20 feet. This requires LMI’s Universal Gauge Interface (UGI) software and MobileCollect USB Base unit (*sold separately*).

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## 2.2 Gauge Layout



### **BUTTONS:**

- Up button – used to scroll through menu options and SEND information.
- Center button – used to enter menu and START a measurement test.
- Down button – used to scroll through menu options and RETAKE information.

### **LED:**

- The LED will flash red to indicate that the gauge is waiting for a test to begin.
- The LED is also used to indicate when the gauge is in the SETUP mode. In this mode, the LED flashes green continuously. The SETUP mode enables the user to change gauge parameters via a PC and LMI Wireless Utility software.

### **SUCTION CUP/PLUNGER:**

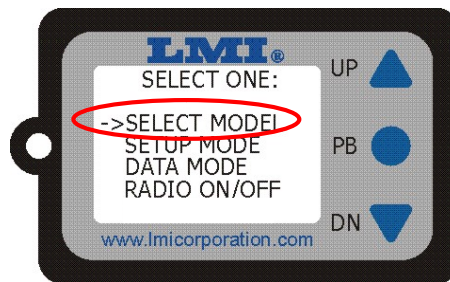
- The G-WHIZ is attached to the door by use of a suction cup and plunger. Attach the suction cup to the car by pumping the plunger until the red line cannot be seen.

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## 2.3 How to Take a Measurement – G-WHIZ Quick Start

The LMI G-WHIZ ships with one preset door model. To configure additional models, please consult *Section 4: Wireless Utility Software*.

1. “Wake up” the gage by pressing the “PB” button (center round button) on the display.
2. Press and hold the center button for three seconds. The LED will stop flashing. Press the down button to enter the Menu screen. Press the middle button again to enter the SELECT MODEL SCREEN. Use the up and down buttons to select the appropriate model to be tested. Press the center push button again.



3. Attach the gauge to the door using the suction cup plunger. Push the lever in five or six times until a firm seal against the door is established. The red line on the plunger should not be visible.
4. Open the door to the first detent. Press the center button to start the test. When the green LED turns on, push the door closed with a fluid motion. Do not keep your hand on the door throughout the push.

**Note:** For a video demonstration of proper testing technique, please visit [youtube.com/lmicorporation101](https://www.youtube.com/lmicorporation101)

5. The results will appear on the display. Press the Up button to accept the test results and start a new test or press the Down button to retake the test point.
6. To remove the gauge from the vehicle, squeeze the top and bottom edges of the suction cup.

**Note:** For more details on measuring with the G-WHIZ Closing Effort device, please see Section 5.

**Note:** In the rare event that the G-WHIZ becomes unresponsive, the operator can reset the device by pressing and holding the Down button until the red LED stops flashing (about three seconds) and then pressing the Center button. The LMI wireless icon will briefly appear on the display indicating that the process was successful.

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## SECTION 3: LMI G-WHIZ SPECIFICS

### 3.1 Navigating the LMI G-WHIZ

#### The Test Display Screen

After “waking up” the G-WHIZ gauge by pressing the center button, the screen should look similar to the following, depending upon how the part file is configured:



When the LED is flashing red, the Menu Select screen is accessed by pressing and holding the center button for three seconds followed by the down button. The screen will look like the following:



Press the Down and Up buttons to navigate the menu. Push the Center button to enter a choice.

SELECT MODEL	Allows the operator to select one of ten user-defined models (see section 3.2) stored internally within the G-WHIZ. This is used in both Standalone and Manual Data Collection modes.
SETUP MODE	Allows the user to change settings and send readings wirelessly to a PC.
DATA MODE	Diagnostic mode that outputs live data throughout the test procedure for troubleshooting.
RADIO ON/OFF	Used to communicate with the MobileCollect USB Base unit in an inline system only.

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## 3.2 Factory Default Models

The G-WHIZ comes from LMI with 10 default models so that the unit can be used right out of the box without the need for the optional MicroRidge MobileCollect base station. See the table below for the differences between the default model types.

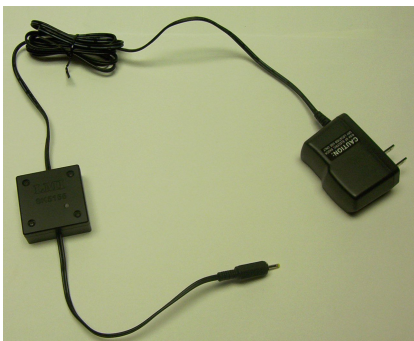
Model Name	Door Name	Velocity Algorithm	Difference and Default Use
MD1	DF	400 Hz Vpeak	Reports the peak velocity of the push at 400Hz. Useful for small doors and short detents. Sample time of .62 sec.
MD2	DF	200 Hz Vclosing	Report's velocity of the push at 102mm (approximately four inches) from the latch. Useful for matching legacy systems that measure at a set distance from the latch. Sample time of 1.25 sec.
MD3	DF	400 Hz Vclosing	Reports velocity at 400Hz of the push at 102mm (approximately four inches) from the latch.
MD4	DF	400 Hz Vpeak	Reports the peak velocity of the push at 400Hz. Useful for small doors and close to latch detents. Sample time of .62 sec.
MD5	DF	400 Hz Vpeak	
MD6	DF	400 Hz Vpeak	
MD7	DF	400 Hz Vpeak	
MD8	DF	100 Hz Vpeak	Reports peak velocity at 100Hz. Used for large heavy doors, such as cargo vans and semis. Sample time of 2.5 sec.
MD9 SLDR	SLDR	100 Hz Vclosing, Slider enabled	Report's velocity of the push at a 100 Hz sample rate on a sliding door 10mm from the latch position. Sample time of 2.5 sec.
MD10	DF	200 Hz Vpeak	Reports peak velocity of the push at a 200 Hz sample rate. Used for standard size automotive doors. Sample time of 1.25 sec.

## 3.3 Charging the LMI G-WHIZ

### Battery Type and Life

The LMI G-WHIZ unit is powered by a re-chargeable Lithium-Ion battery, which can operate **continuously** for seven to eight hours. If a test is not sampled for five minutes, the gauge will go into a low power mode and the screen will go blank to conserve battery power. To “wake up” the gauge, press the middle push button. If a low power situation is present, the screen will display the message **BATTERY LOW**. **It is highly recommended that the gage be charged at the end of every shift to preserve battery life.** Li-ion batteries will last longer when kept charged.

### G-WHIZ Single Gage In-Line Charger



The LMI inline charger is designed to charge one LMI G-WHIZ unit at a time. The charger uses a single cell Li-ion smart recharging circuit to guarantee correct charging levels and safety.

Plug the round connector into side of the G-WHIZ gauge and plug the power pack into a standard power outlet. The LED on the charger will glow red when the unit is charging and turn green when fully charged.



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Fig. 3.2 In-line Charger

***WARNING: Using any other charger not supplied by LMI may cause damage to the gauge and void all warranties.***

Should the gauge become too discharged (possibly due to leaving it off the charger over the weekend) the charging LED will not illuminate when the unit is first plugged in. This is a pre-charge, low current condition. After a few minutes, the LED on the charging cable will glow red, and normal charging resumes. A fully discharged battery will take about 3-4 hours to recharge.

### ***3.4 Mastering***

**All LMI wireless G-WHIZ gauges come calibrated from the factory. There is no need for the user to perform calibration on the G-WHIZ.** This calibration is stored in the microprocessor of the gauge, even if batteries are removed or replaced.

Calibration of axes ensures the accuracy of all 6 axes (+/-x, +/- y, +/-z) relative to the earth's axis. Calibration consists of reading and storing the offsets and sensitivities for each axis. The offset is the reading from a channel when that channel is in the zero-gravity field (perpendicular to the earth's surface). Then each axis is put parallel to the earth's surface in both the +1g and -1g orientation to capture the sensitivities.

Calibration can be verified by pressing and holding the Up button for three seconds, then pressing the Center button. This starts an "All Axes Test." Hold the gauge steady at any angle and verify that A is within +/- .02 of 1.00g. Press the up button to return to the default screen.

## SECTION 4: Wireless Utility Software

### 4.1 Wireless Utility System Overview

*The LMI Wireless Utility (WU) is a software program that allows users to associate and de-associate gages, edit and save gage parameters, and edit model information.*

The software will allow users to load custom configurations, view live readings, and adjust gauge parameters for each of the ten models within the G-WHIZ gauge.

If you have additional wireless LMI gauges, the Wireless Utility software can be used to set these devices up as well. Currently, WU can be used to:

- Configure LMI wireless gauges.
- Calibrate the LMI 1200, 241, TP series, and Seal Gap system gauges.
- View live readings in the test screen.



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## 4.2 Wireless Utility License Agreement

**PLEASE READ CAREFULLY:** THE USE OF THIS SOFTWARE IS SUBJECT TO THE SOFTWARE LICENSE TERMS OF LMI Corporation, INC., AND OTHER LICENSORS WHO'S SOFTWARE MAY BE BUNDLED WITH THIS PRODUCT. BY YOUR USE OF THE SOFTWARE INCLUDED WITH THIS PRODUCT YOU AGREE TO THE LICENSE TERMS REQUIRED BY THE LICENSOR OF THAT SOFTWARE, AS SET FORTH BELOW. IF YOU DO NOT AGREE TO THE LICENSE TERMS APPLICABLE TO THE SOFTWARE, YOU MAY RETURN THE ENTIRE UNUSED PRODUCT TO THE SOURCE FROM WHICH YOU OBTAINED IT.

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9. Export. You acknowledge that the laws and regulations of the United States and other countries may restrict the export and re-export of the

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Software. You agree that you will not export or re-export the Software or documentation in any form in violation of applicable United States and foreign law.

10. Indemnity. You agree that LMI Corporation shall have no liability whatsoever for any use you make of the Software. You shall indemnify and hold harmless LMI Corporation from any third-party claims, damages, liabilities, costs, and fees (including reasonable attorney fees) arising from your use of the Software as well as from your failure to comply with any term of this Agreement.

11. Government Restricted Rights. The Software is subject to restricted rights as follows. If the Software is acquired under the terms of a GSA contract: use, reproduction or disclosure is subject to the restrictions set forth in the applicable ADP Schedule contract. If the Software is acquired under the terms of a DoD or civilian agency contract, use, duplication, or disclosure by the Government is subject to the restrictions of this Agreement in accordance with 48 C.F.R. 12.212 of the Federal Acquisition Regulations and its successors and 49 C.F.R. 227.7202-1 of the DoD FAR Supplement and its successors.

12. General. You acknowledge that you have read this Agreement, understand it, and that by using the Software you agree to be bound by its terms and conditions. You further agree that it is the complete and exclusive statement of the agreement between LMI Corporation and you, and supersedes any proposal or prior agreement, oral or written, and any other communication between LMI Corporation and you relating to the subject matter of this Agreement. No additional or any different terms will be enforceable against LMI Corporation unless LMI Corporation gives its express consent, including an express waiver of the terms of this Agreement, in writing signed by an officer of LMI Corporation. You assume full responsibility for the use of the Software and agree to use the Software legally and responsibly. This Agreement shall be governed by California law, except as to copyright matters, which are covered by Federal law. This Agreement is deemed entered into at Milpitas, California by both parties. Should any provision of this Agreement be declared unenforceable in any jurisdiction, then such provision shall be deemed severable from this Agreement and shall not affect the remainder hereof. All rights in the Software not specifically granted in this Agreement are reserved by LMI Corporation.

Should you have any questions concerning this Agreement, you may contact LMI Corporation by writing to:

LMI Corporation  
101 N. Alloy Dr  
Fenton, Michigan 48430

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## **Minimum Software Requirements**

Below are **minimum** and **recommended** specifications in order to run LMI Wireless Utility 6.0.x effectively on any local computer:

### **Minimum Computer Specifications:**

- Operating System: Windows 10
- Screen Resolution: 1280x800
- Memory needed: 8GB
- Processor Speed needed: Intel i3 1.8GHz
- 2 USB 2.0 Ports

### **Recommended Computer Specifications:**

- Operating System: Windows 10
- Screen Resolution: 1280x800
- Memory needed: 16 GB
- Processor Speed needed: Intel i7 3.4GHz
- 3 USB 2.0 ports

### **Recommended User Requirements:**

- Administrative Rights are necessary for installation purposes
- Basic User Rights are necessary for application use

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## 4.3 Wireless Utility Installation

### Installing your LMI Wireless Utility onto your PC

Proper administrative or user rights are required in order to install this software on the PC.

**Please note that Wireless Utility must have the MicroRidge Mobile Collect USB Base drivers installed in order to function properly. These can be found on the MicroRidge utilities disc that ships with each USB base.**

**Also note that the Microsoft .NET framework must be installed in order for Wireless Utility to be installed. Most modern PCs have this included; however, if your computer does not, the framework has been included on the Wireless Utility install disc. You will need to install it before proceeding to the Wireless Utility install.**

Place the Wireless Utility Software installation CD in the CD ROM Drive.

- Drive D:\ will be used for this example.
- The CD should automatically enter the setup. In the case that this does not occur, follow the next two steps.
  - Click the **Start** button and select the **Run** Option.
  - Type D:\Setup and click Enter.

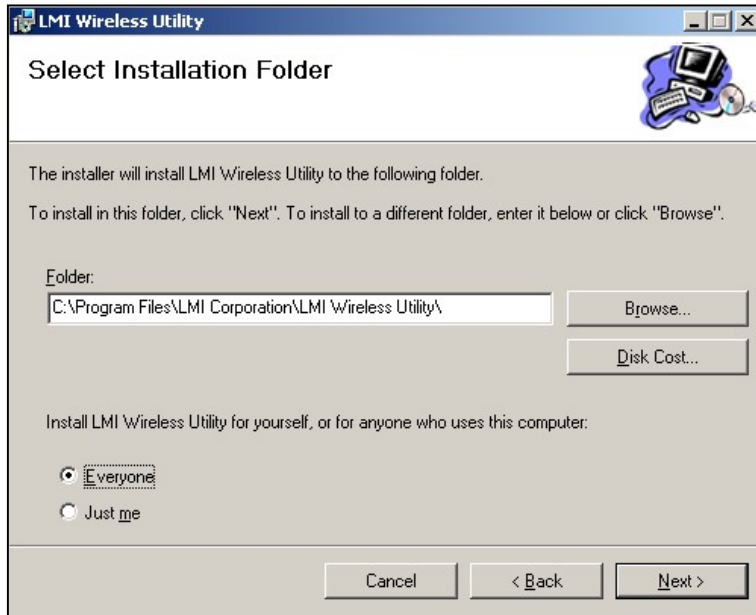
When the following Screen appears, click “Next.”



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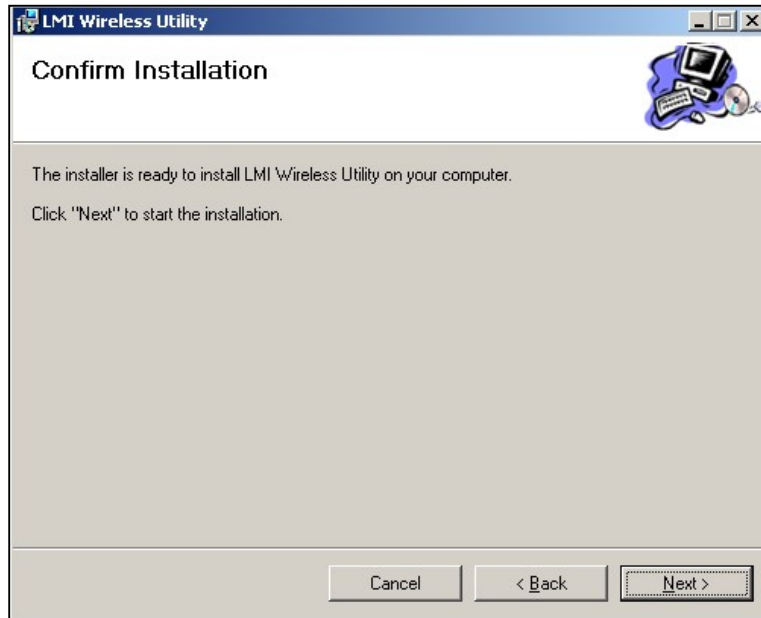
Choose the folder you wish to install this program into on your PC.

- The Default location is recommended.
- Click on *Next* at the bottom of the window when folder is decided on.

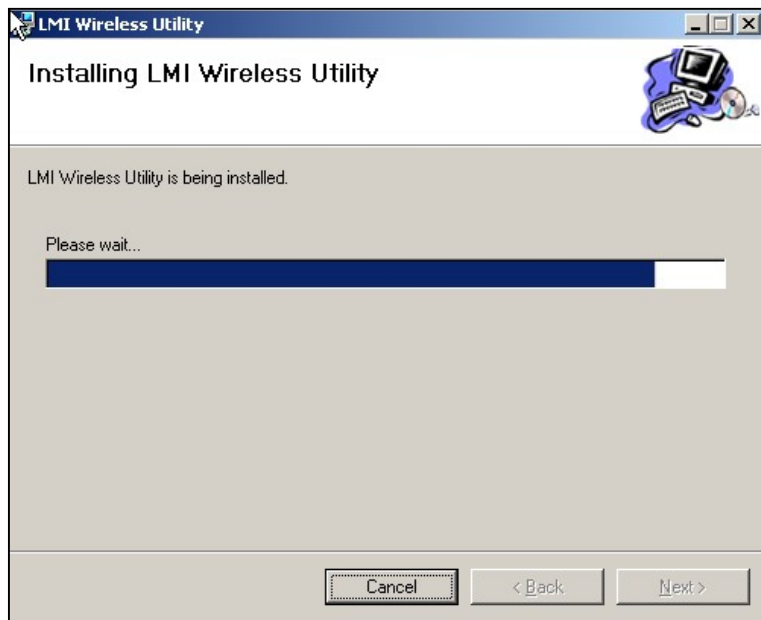


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Click on *Next* Button at the bottom:



Window showing status of install will appear next:



When the install is complete, click *Close*.

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## 4.4 Wireless Utility Operation

### Launching the Software

To start the LMI Wireless Utility, select the Desktop Icon or select the program name from the listed program files under the Start Menu.



**NOTE: If your version of Wireless Utility is older than 5.0.17.5, you will need to download the latest version found at [www.lmicorporation.com/wirelessutilitydownload](http://www.lmicorporation.com/wirelessutilitydownload).**

The Wireless Utility will open up in the main Gage Search Page with two (2) tabs. The first tab is the default Wireless Base tab that will list all information from the Wireless Base Device.

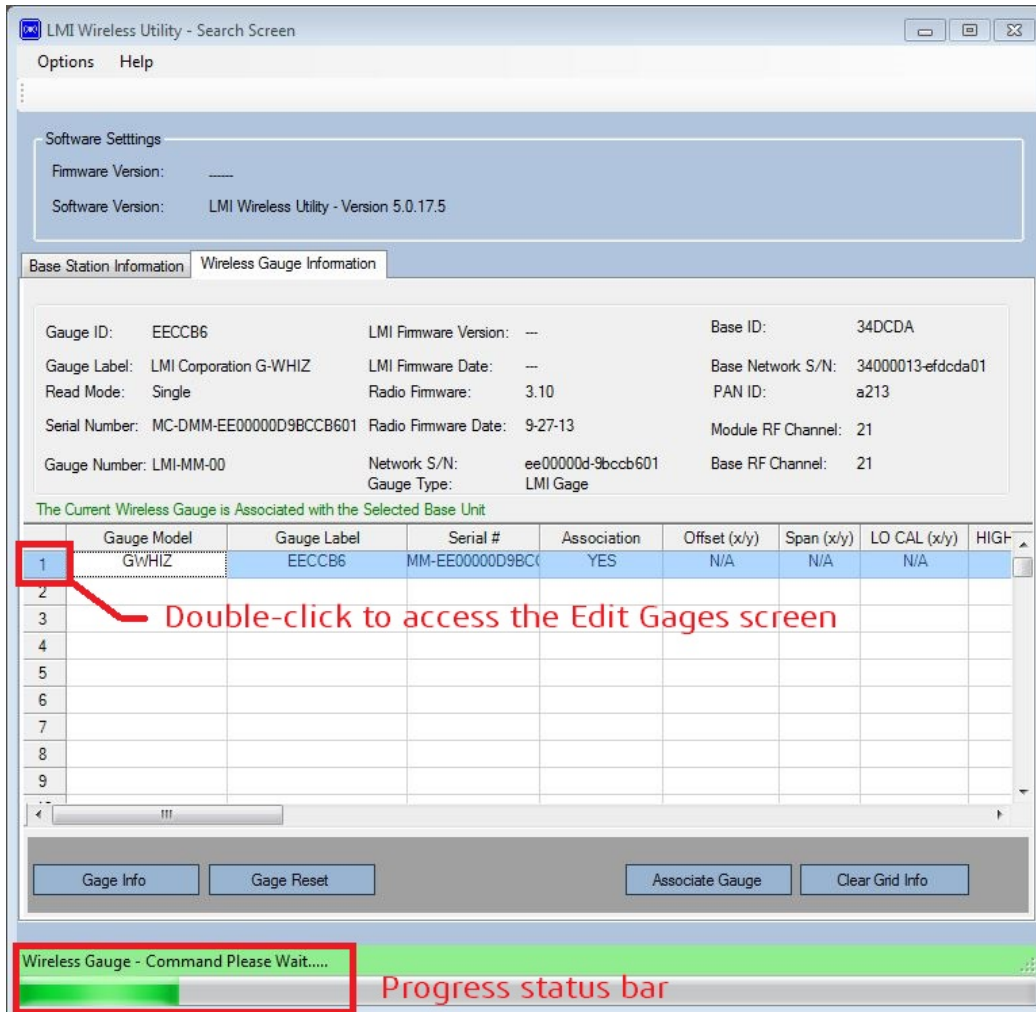
You should see a message in a green box at the bottom of the window that says *A COM Port was found and the Wireless Base is now active...*

Next, put the G-WHIZ in setup mode.

- To put a G-WHIZ in setup mode, push and hold the Center button until it stops flashing and push the down arrow button. Use the down arrow to select SETUP MODE from the menu and push the center button. Press and release the center button again to bring up the Wireless Gage Information window.

From the Wireless Gage Information window, you will be able to associate your gage and enter the Edit Gauges screen to configure your gage.

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Wireless Gauge Information Screen

## 4.5 Associating the G-WHIZ

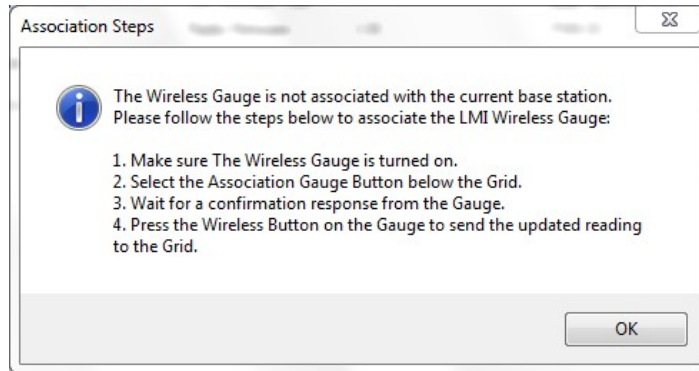
If using the LMI G-WHIZ wireless gauge in Manual Data Collection or Inline modes, the gauge must first be associated to a MobileCollect USB base unit and LMI's UGI software (both sold separately) in order to communicate properly with your software package. To do this, the gauge(s) must be placed into "Set-Up" mode first (see *previous page*).

### Associating the G-WHIZ

With the LMI G-WHIZ in "Set-Up" mode, the user must send gage-specific information from the G-WHIZ to the MobileCollect base and PC in order to associate the gage with the Wireless Utility software. If the G-WHIZ is not associated to the USB Base, the following pop-up will appear:




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1. Click on OK to clear the pop-up, then press the blue Associate Gage button.
2. A green status bar at the bottom of the window will fill from left to right.
3. Another pop-up will appear saying that Association is complete. Click on OK to clear the pop-up.
4. Press and release the center button on the G-WHIZ to confirm the association and fill the first row of the grid.

**Note: The final step in association may take a minute to complete.** After 20 or 30 seconds, the user should see the status lights on the MobileCollect base flash as information is transmitted.

The Current Wireless Gauge is Associated with the Selected Base Unit								
	Gauge Model	Gauge Label	Serial #	Association	Offset (x/y)	Span (x/y)	LO CAL (x/y)	HIGH
1	E2D584	E2D584	MM-E200000D9BD	YES	N/A	N/A	N/A	
2								
3								

 **Gage successfully associated**

If the G-WHIZ is successfully associated with the Wireless Base Unit, the Gauge Model will appear in the grid with the current G-WHIZ information listed. If it does not appear within the grid, make sure the gauge is in set-up mode and repeat the listed steps above.

The grid will display only the current associated G-WHIZ. The grid will also show the listed association type as “YES” if the G-WHIZ is associated.

## 4.6 Editing Gauge Parameters

### Updating the Models and Parameters within G-WHIZ

Once the gauge is associated with the Wireless Utility, double-click on the “1” to the left of the Gauge ID found under the Gauge Model column in the grid to bring up the Edit Gauges window. This window is divided into two sections. The blue top half allows the user to change gauge parameters, choose what data will be displayed on the gauge screen, and choose what data will be written to a file (requires LMI’s UGI software). The bottom half of the window is where the user changes model specifications and decides what models will be active in the gauge.

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**LMI Wireless Utility - Edit Gauges**

Options

Gauge ID: \*\*\*\*\*

LMI G-WHIZ Gauge

Gauge Configurations  
Firmware Version: 8.28 - De

Gauge Model: G-WHIZ      Velocity (m/e): m/sec(m)

Gauge Label: \*\*\*\*\*      Parameters: Velocity(v)

Gauge ID: \*\*\*\*\*       Description Text: <ON>

Time Out (min): 9 in Minutes     

Models

	Description (4 max)	Models (8 max)	Active	Velocity	Slider (Y/N)	LSL	USL
1	DF	MD1	<input checked="" type="checkbox"/>	200 Hz Vpeak	<input type="checkbox"/>	0.00	1.22
2	DR	MD1	<input checked="" type="checkbox"/>	200 Hz Vpeak	<input type="checkbox"/>	0.00	1.44
3	PF	MD1	<input checked="" type="checkbox"/>	200 Hz Vpeak	<input type="checkbox"/>	0.00	1.22
4	PR	MD1	<input checked="" type="checkbox"/>	200 Hz Vpeak	<input type="checkbox"/>	0.00	1.44
5	LG	MD1	<input type="checkbox"/>		<input type="checkbox"/>	0.00	1.50
6	DF	MD2	<input checked="" type="checkbox"/>	200 Hz Vpeak	<input type="checkbox"/>	0.00	1.22
7	DR	MD2	<input type="checkbox"/>		<input type="checkbox"/>	0.00	1.44
8	PF	MD2	<input type="checkbox"/>		<input type="checkbox"/>	0.00	1.22
9	PR	MD2	<input type="checkbox"/>		<input type="checkbox"/>	0.00	1.44
10	LG	MD2	<input type="checkbox"/>		<input type="checkbox"/>	0.00	1.50
11	DF	MD3	<input checked="" type="checkbox"/>	100 Hz Vclosing	<input type="checkbox"/>	0.00	1.22

Messages:

If changes are made to the Global Configurations portion of the window, the changes will not be saved until the **Update Parameters** button is pressed. A confirmation window will appear once the changes have been received by the gauge and the Edit Gauge window has been closed. If changes are made to the doors/models in the grid below the blue Gauge Configurations box, these changes will not be saved until the Update Models button is pressed and the confirmation message is displayed, and the user closes out the Edit Gages window. **This will also remove the G-WHIZ from Setup Mode.**

If changes are not desired, exit the screen and no changes will be saved.

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## Global Gauge Configurations

The blue section at the top of the Edit Gauges window allows the user to configure the global settings of the G-WHIZ. **Gauge Model**, **Gauge Label**, and **WG ID** cannot be changed.

<b>Velocity (m/e)</b>	Allows the user to choose between seeing Velocity results in meters per second (mps) or feet per second (fps).
<b>Time Out (min)</b>	Amount of time a G-WHIZ gauge can be left unattended in set-up mode before automatically exiting setup. This is done to preserve battery life.
<b>Description Text</b>	Determines if the door text will be sent with the measurement and gage ID. This must be turned off for use with the ASI Datamate Wireless DM600 data collector.
<b>Send and Display</b>	Send determines what result is sent to UGI and Display determines what result(s) will be displayed on the G-WHIZ.

## Model Parameter Descriptions

	Description (4 max)	Models (8 max)	Active	Velocity	Slider (Y/N)	LSL	USL
1	DF	MD1	<input checked="" type="checkbox"/>	200 Hz Vclosing	<input type="checkbox"/>	0.00	1.22
2	DR	MD1	<input type="checkbox"/>		<input type="checkbox"/>	0.00	1.44
3	PF	MD1	<input type="checkbox"/>		<input type="checkbox"/>	0.00	1.22
4	PR	MD1	<input type="checkbox"/>		<input type="checkbox"/>	0.00	1.44
5	LG	MD1	<input type="checkbox"/>		<input type="checkbox"/>	0.00	1.50
6	DF	MD2	<input checked="" type="checkbox"/>	400 Hz Vpeak	<input type="checkbox"/>	0.00	1.22
7	DR	MD2	<input type="checkbox"/>		<input type="checkbox"/>	0.00	1.44

The follow table (page 24) lists the characteristics associated with each door. These characteristics are used to define the parameters of *each model* within the G-WHIZ.

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<b>Description</b>	Four-character maximum user-defined description. Example: ABCD, LHFD, RR, etc.
<b>Models</b>	<p>Assigns the attributes in the row to a particular model number. Up to ten models can be configured within one G-WHIZ gauge.</p> <p>Each Model can be identified by an 8-character description. This only needs to be done for the first door in each model. After changing the name, the user must single-click on another part of the grid for the change to be activated.</p>
<b>Active</b>	Determines whether or not the door will be available for testing within the gauge.
<b>Velocity</b>	<p>This determines the sample rate measurement method used by the G-WHIZ. After changing the desired algorithm, the user must single-click on another part of the grid for the change to be activated.</p> <p><b>400 Hz Peak</b> – Data collected at 400 Hz sample rate. Peak velocity is returned. This is most common setting for car doors and lift gates.</p> <p><b>400 Hz Closing</b> – Data collected at 400 Hz sample rate. Velocity at a set distance from latch is returned.</p> <p><b>200 Hz Peak</b> – Determines peak velocity at 200 Hz sample rate.</p> <p><b>200 Hz Closing</b> – Data collected at 200 Hz sample rate. Velocity at a set distance from latch is returned.</p> <p><b>100 Hz Peak</b> – Data collected at 100 Hz sample rate. Peak velocity is returned. Useful for sliding doors.</p> <p><b>100 Hz Closing</b> – Data collected at 100 Hz sample rate. Velocity at a set distance from latch is returned.</p> <p><b>800 Hz Peak, 1600 Hz Peak, and 3200 Hz Peak</b> are for door pop-off testing. Please consult Addendum E for information on pop-off testing set up.</p>
<b>Slider (Y/N)</b>	Check this box if the door to be measured is a slider. If not, leave this box blank.
<b>Rank in Order</b>	Determines which door is measured first, second, third, etc. For all applications, this should be left as 1-5 in sequential order. The first door to be tested will be 1, the second door will be 2, etc.
<b>LSL</b>	User-inserted lower-spec parameter limit. For most applications, this will be set to 0.
<b>USL</b>	User-inserted upper-spec parameter limit. Maximum is 99.99. Any reading that falls below this value and above the LSL will result in a green LED upon completion of a test.
<b>Mass</b>	The weight of the door in kilograms.
<b>Center of Mass</b>	Ratio of the total length of the door to the length from the door hinge to the center of gravity of the door.
<b>V@D (Velocity at Distance)</b>	Determines how far back from the latch the measurement will be reported if using Closing velocity. This is useful when comparing the G-WHIZ to legacy systems that report from a given distance away from the latch (e.g., four inches off the latch).
<b>Time Constant</b>	<p>Amount in tenths of a second that the operator's hand is pushing the door. Default is 33 (.33 seconds). This field is not applicable in G-Whiz firmware versions higher than 8.0.</p> <p><b>Note:</b> If 0 is entered in this field, the time will become <b>dynamic</b>, meaning that the operator's influence will be calculated into the equation. This is primarily used for testing and troubleshooting purposes.</p>

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## Load/Update Buttons



<b>Charts</b>	Allows the user to download the Velocity curve for the last sent test. See Appendix 1 for more details on curves.
<b>Set Defaults</b>	Loads the factory default model settings into the G-WHIZ.
<b>Load Models</b>	Loads the models currently on the G-WHIZ into the Wireless Utility.
<b>Update Models</b>	Loads the models displayed in the Wireless Utility into the G-WHIZ.

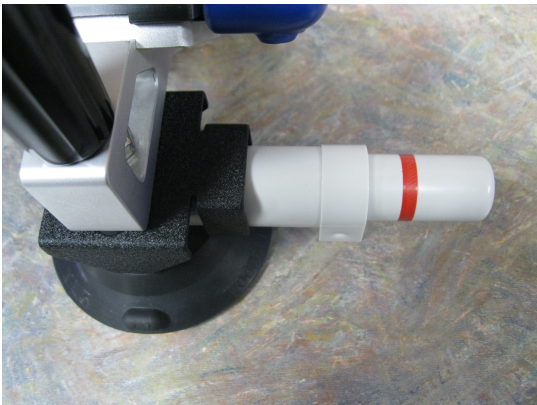
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## SECTION 5: USING THE G-WHIZ

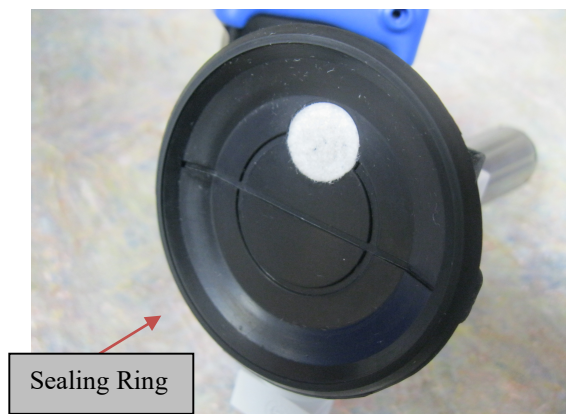
For a video demonstration of the following, please visit LMI's YouTube channel. Simply type "LMI Corporation G-WHIZ" into the YouTube search bar.

### 5.1 Attaching to the Vehicle

Choose a spot on the door close to the edge or the lift gate. Push the vacuum cup firmly against the vehicle and pump the vacuum plunger. This operation is complete when the unit draws down against the panel and the red band on the plunger disappears.



The narrow sealing ring surface on the contact side of the vacuum cup needs to be kept clean and free of cuts and gouges. Any imperfections present around the perimeter can keep the unit from sealing properly. As mentioned above, the red ring on the vacuum plunger should stay hidden through the entire test. If it does not, inspect the surface and clean it with soap or alcohol. Harsh chemicals capable of eating rubber cannot be used. There is a seal inside the plunger also. If the sealing ring is inspected and appears to have no issues, yet is still not maintaining suction, the plunger may be failing and will need replacement.

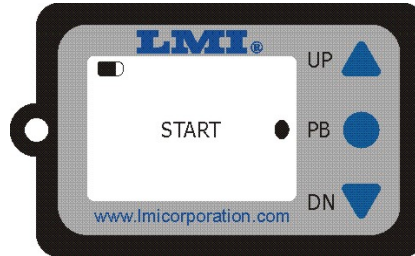




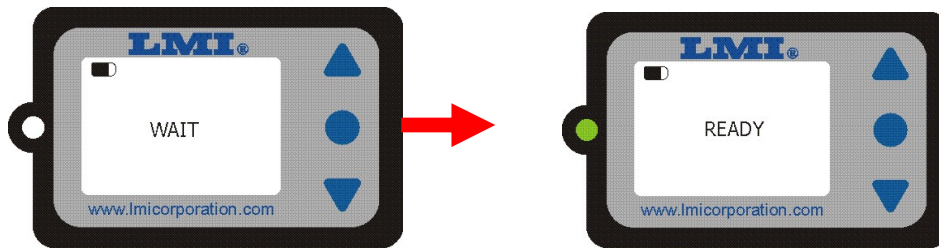
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## 5.2 Starting and Performing a Test

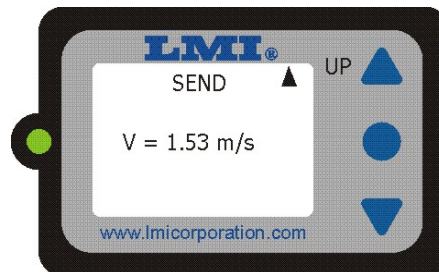
With the door open to the first detent, press the PB to start a test.



The unit will display “WAIT” on the screen, followed by “READY.” The green LED will come on as well. This indicates that the device is ready for the test to begin.



At this time, give the door a crisp, firm push to close it. **Be sure your hand comes off the door before the door starts to engage the latch.** The velocity in meters per second (this is the default) will appear on the display.



The user can then send the reading to the PC or retest the door. If the reading should be sent, press the “Up” Arrow, if a retest is required, press the DOWN arrow, and repeat the steps above.

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## 5.3 G-Whiz Key Functions

Key Press Combination	Result
Press and hold down arrow until LED goes out, then press center button.	Resets the G-WHIZ and turns off the radio.
Press and hold down center button until LED goes out, then press down button.	Pulls up Selection menu (the up and down arrows can then be used to scroll to a menu option; the center button selects the option).
Press and hold up arrow until LED goes out, then press the center button.	Enters “All Axes Test” mode. Press and hold up arrow to exit the test.

## 5.4 Invalid Tests and Buffer Full Messages:

Under certain conditions the G-WHIZ will display INVALID TEST after a test is run. The primary reason for this message is that the operator begins to close the door before the READY message appeared.

The G-WHIZ has buffer times based on the sampling rates of 400 HZ, 200 HZ, and 100 HZ. This roughly translates to a test runtime of 0.64, 1.28 and 2.56 seconds, respectively. For some larger doors – such as sliding doors on minivans or cargo vans, the time it takes to for the test to complete will be longer than a sample rate of 400 HZ or 200 HZ can provide. This will generate a BUFFER FULL message. For these particular models, a sample rate of 100 HZ works best.

It is also important to keep in mind that LMI recommends that the door be open only to the first detent. If the door is open past the first detent, the time it takes for the door to shut may exceed the amount of time within the buffer, thus generating the BUFFER FULL message.

Sample rate:	Total test time:	Time per sample “slot”
400 HZ	0.64 sec	2.5ms
200 HZ	1.28 sec	5ms
100 HZ	2.56 sec	10ms



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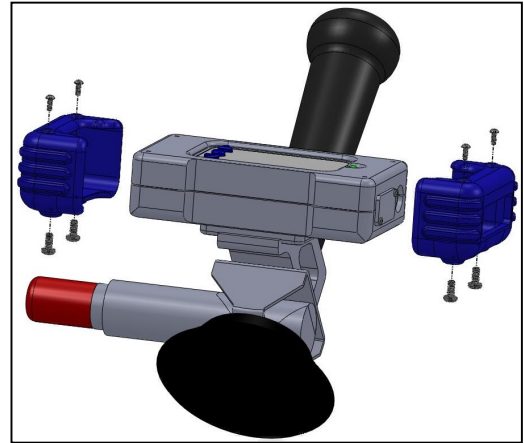
## 5.5 LMI G-Whiz Part Replacement

End Cover: LMI G-Whiz End Cover (2) #7645, #4 Screws (4) #6137, #1 Screws (4) #6188

Tools required – Small Phillips screwdriver, & T10 Torx driver

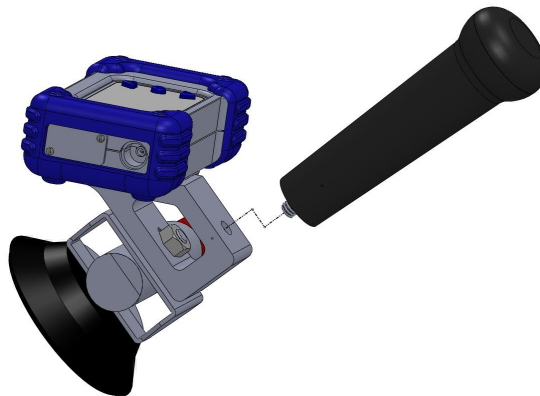
Remove (8) screws on existing unit (2) #1 screws on top of each end cover, and (2) #4 screws on bottom of each end cover. The end cover should simply slide off each end. Push new end covers on as the old ones came off, or as illustrated below. Align holes and reinstall screws or use new screws provided with the end covers. Do not turn the screws all the way down until they tighten to the black plastic casing below.

Just run the screw down into the counter bored holes in the end cover until they become flush with the highest point of the boss (you will feel a slight resistance, stop there). The end cover material is very soft. The screws are only there to keep them from sliding off easily.



Handle: LMI G-Whiz Handle

Remove the handle by turning counterclockwise until it comes out of the aluminum bracket. The handle is secured with a small amount of Loctite 222MS thread locker. We recommend you apply the same Loctite only to secure the new handle or simply tighten the new handle securely in place. Thread locker is optional.

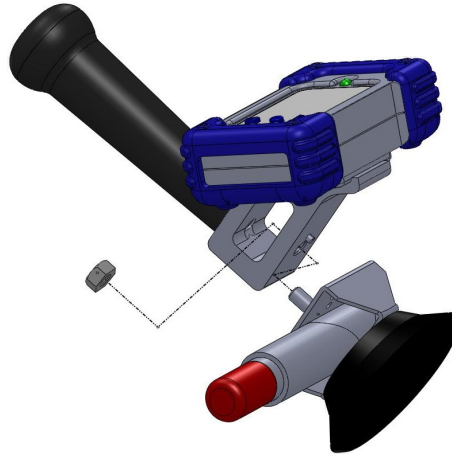


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## Vacuum Cup: LMI G-Whiz Vacuum Cup #7832, Hex Nut #4741

Keeping track of which direction, the current vacuum cup is facing, remove the 7/16" hex nut securing the vacuum cup to the mounting bracket. The vacuum cup comes standard with an alignment pin to keep it from turning in the device. Notice there are two holes if you need to turn the cup 180 degrees for your application. Arrange the new cup in the proper direction, add and tighten the hex nut that secures it on the mounting bracket. Loctite 222MS can also be used as an option here to secure the hex nut.

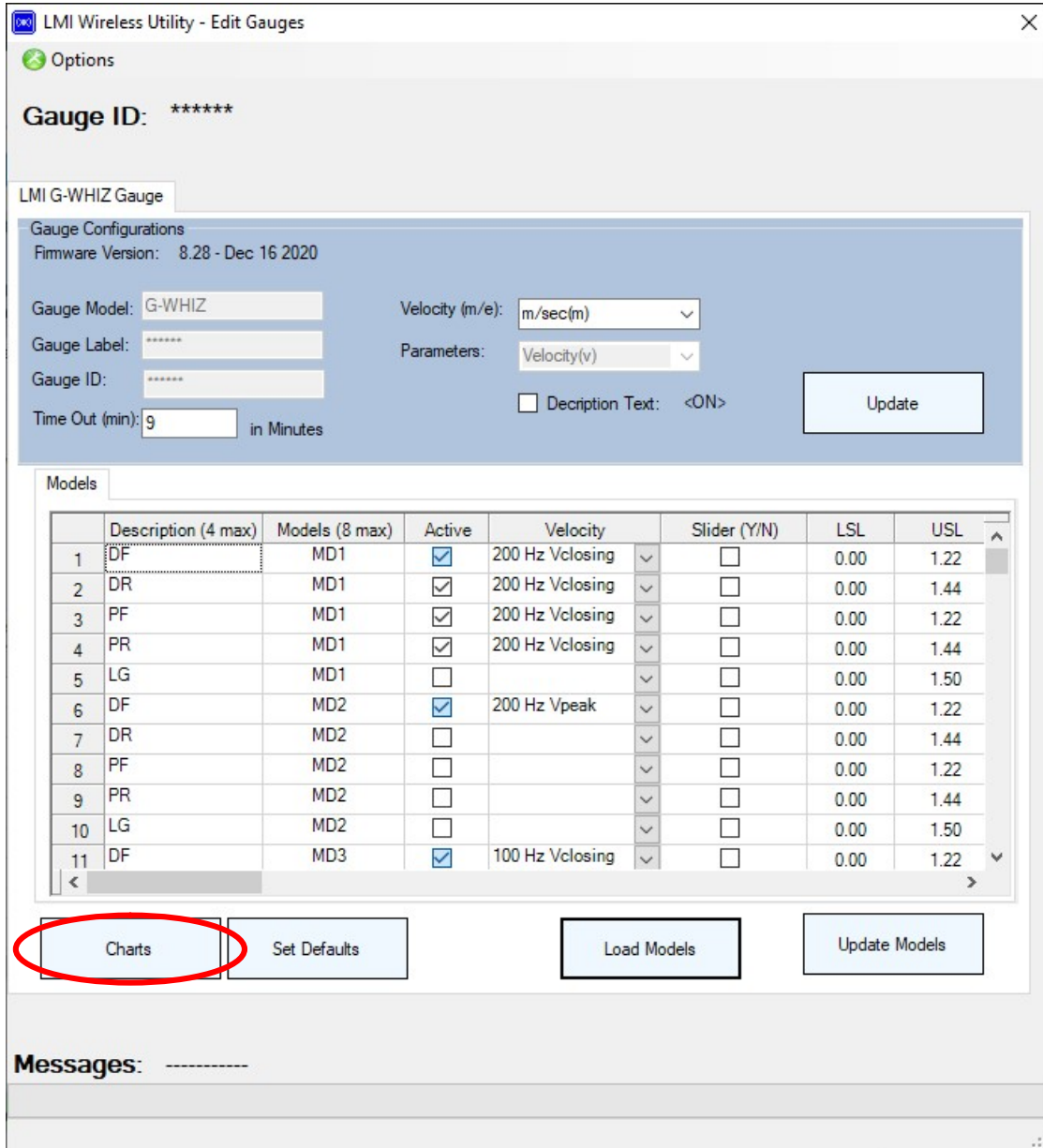


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## Addendum A – Downloading A Curve

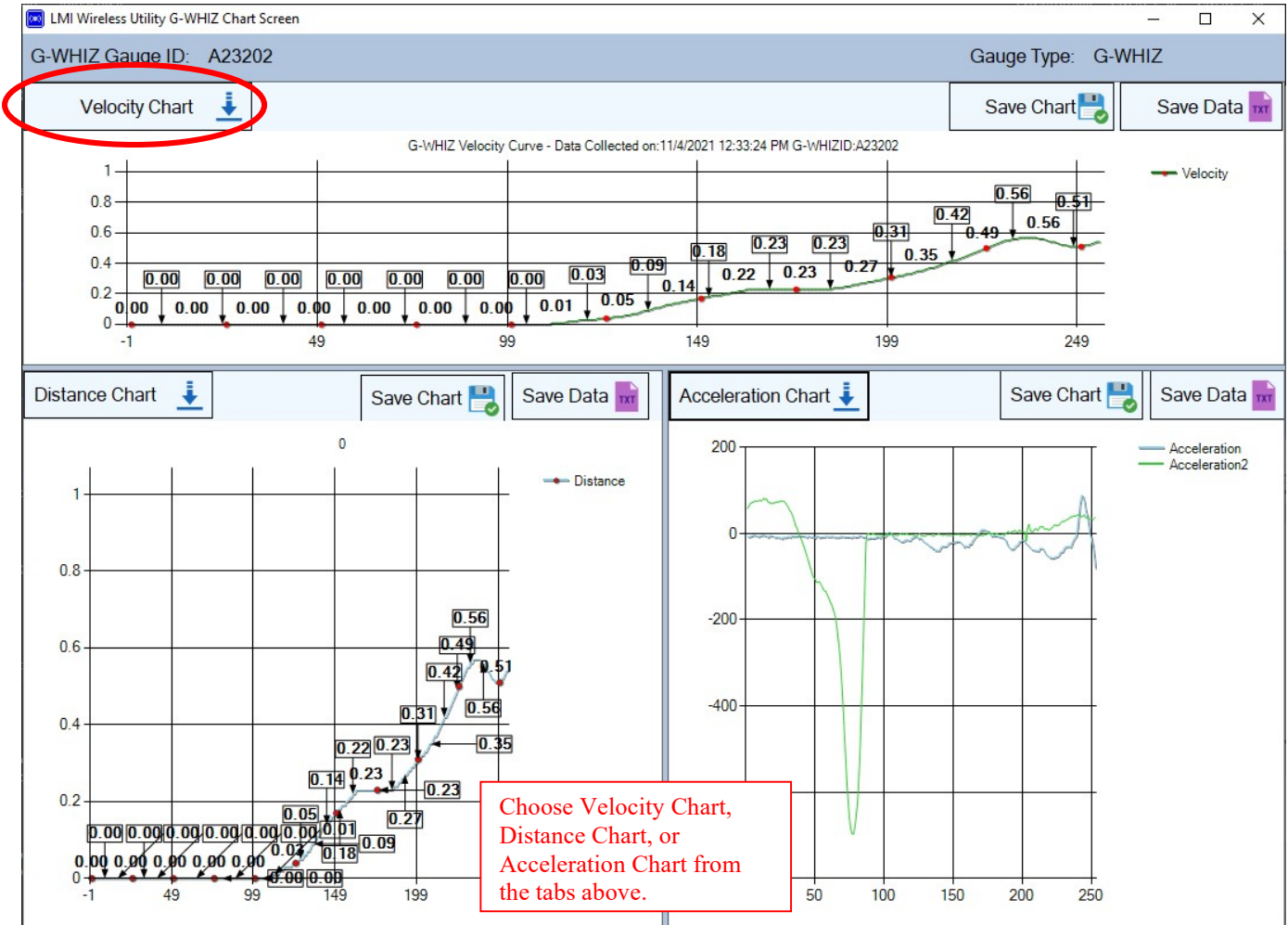
If you would like to view a graphic representation of the last push taken with the G-WHIZ, you can download the Velocity, Distance, and/or Acceleration Curves from the Edit Gages screen of Wireless Utility. Note the G-WHIZ only saves the last push in memory.

1. From within the Edit Gauges screen, click on the Charts button.



2. Verify that the G-WHIZ is in Set-Up Mode and click on the OK button.
3. Click on the Charts button. To download the Velocity Chart, click on the button in the upper left-hand corner.

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4. To download the Distance or Acceleration Curve, click on the respective tabs in each section.

**Note: Downloading the Acceleration curve deletes the data from the G-WHIZ. To get both curves, be sure to always download the Velocity curve and/or data before the Acceleration curve data.**

5. The user can also save an image file of the chart or a .txt file of the raw data by clicking on the Save Chart and Save Data buttons respectively after the download is complete.

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## Addendum B – Use with a DM600

### *Using the G-WHIZ with an ASI Datamyte DM600*

To use the G-WHIZ with a DM600, open Wireless Utility and associate the G-WHIZ following the instructions on page 18. Double-click the appropriate Gauge Model in the grid to bring up the Edit Gauges page. **Uncheck** the *Description Text:* box in the Gauge Configurations panel to put the G-WHIZ in DM600 mode. Click on the *Update* button and close the window to save the configuration.

Gauge Configurations  
Firmware Version: 8.28 - Dec 16 2020

Gauge Model: G-WHIZ  
Gauge Label: \*\*\*\*\*  
Gauge ID: \*\*\*\*\*  
Time Out (min): 9 in Minutes

Velocity (m/e): m/sec(m)  
Parameters: Velocity(v)  
 Description Text: <ON>

Update

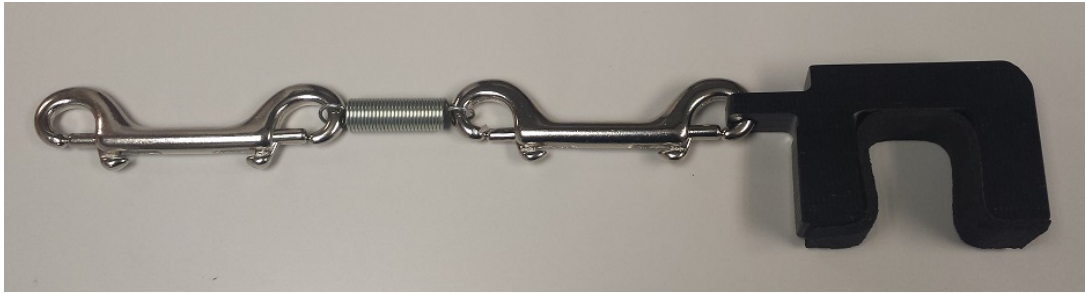
You will then need to follow the association instructions from ASI Datamyte to send readings to the DM600.

Output when Desc box is checked.	DF ,0.62,D062BE{CR}
Output when Desc box is unchecked.	0.58,D062BE{CR}

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## Addendum C – Pop-off Testing

G-WHIZ Firmware version 7.0 allows the user to perform a door “pop-off” – or opening – test. Below are the instructions to properly configure your G-WHIZ and perform this type of test. In addition to the G-WHIZ, the operator will need Micro Ridge’s ComTestSerial program installed on the PC and a door latch release mechanism like the one shown in the photo below.



Example of a Door Latch Release Mechanism

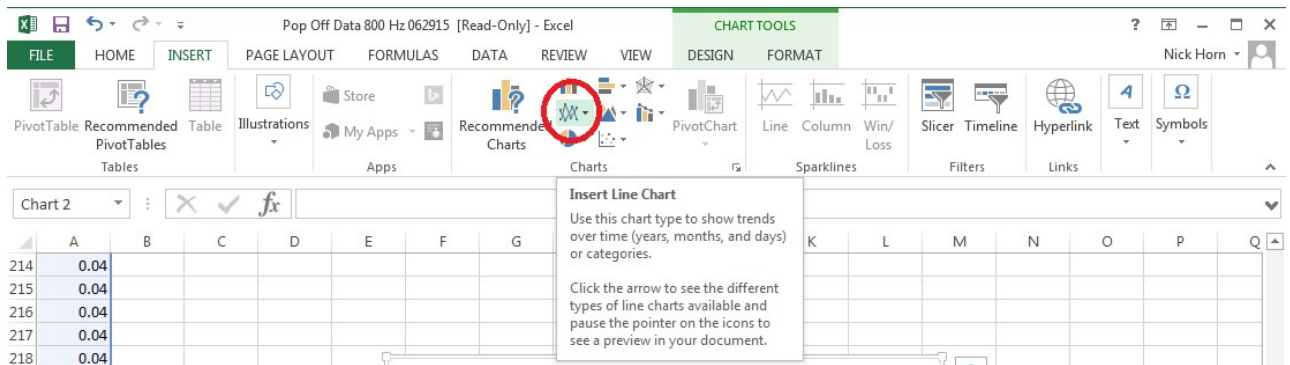
1. Using Wireless Utility, select 800 Hz VPeak for the model you will be testing. Update the models within the G-WHIZ and close out Wireless Utility. Select the 800 Hz VPeak model in the G-WHIZ.
2. The red LED on the G-WHIZ should be blinking. Press and hold down on the middle button until the LED turns off. Press the down button to enter the Select menu. Press the down arrow to navigate to DATA MODE. Press the middle button, then press the up button to turn DATA MODE ON. Press the middle button to return to the test screen.
3. You should now see a “D” on the left-hand side of the G-WHIZ Start Test screen. Press the middle button to start the test. In one fluid motion, pull on the door latch release mechanism until the door opens. The G-WHIZ will then display the start test screen again. Unlike the door closure mode, no value will display at this time.



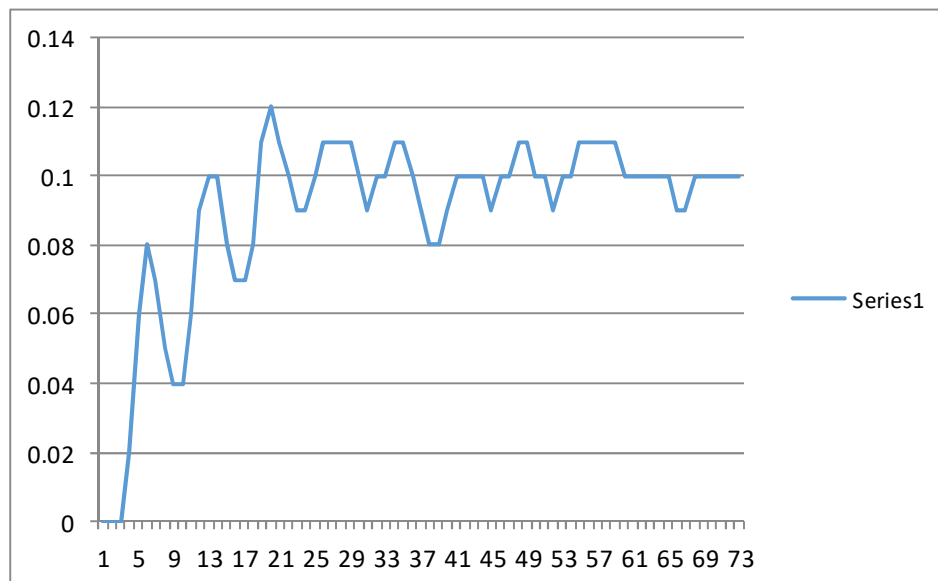


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- When the test is complete, open up MicroRidge's ComTestSerial program.
- Press and hold the middle button on the G-WHIZ for three seconds (until the red LED goes out), then press the up arrow. This will dump the data into ComTestSerial.
- Excluding the zeroes (0.00) in the list, copy and paste this data into an Excel spreadsheet.
- With the data still highlighted, click on the INSERT tab in Excel and click on the Insert Line Chart icon (found within the Charts section of the ribbon bar).



- This will create a chart that looks similar to the image below; however, it is important to note that all differing door models will have different opening profiles.

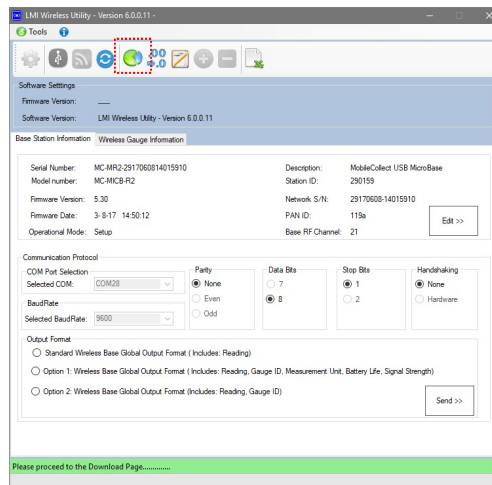


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## Addendum D – Quick Charting

Wireless Utility can now “quick chart” data from the G-WHIZ without entering the Gauge Edit screen. Listed below are direction of how to chart data using the Quick Chart feature. The user will need to be using Wireless Utility 6.0 or higher and have the G-WHIZ associated with the base. **NOTE:** This feature must be turned on in the Masterfile to work correctly. Go to Tools > Options and enter the password *admin*.

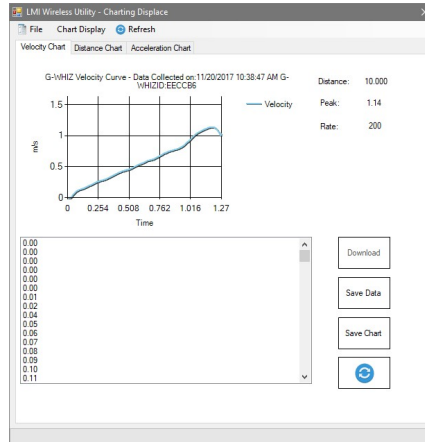
1. Take a reading with the G-WHIZ and press send.
2. Place the G-WHIZ into setup mode by holding the power button down for 4 seconds until the red LED stops flashing then press the down arrow twice.



3. With Quick Chart activated in the Masterfile, click on the Quick Chart Download icon at the top of the Wireless Utility screen.
4. When prompted, send the Gauge ID to Wireless Utility.
5. Wireless utility will process the last reading that was taken and automatically chart it (this may take up to a minute).



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6. Once the Chart has been downloaded, the user has the option to save the data shown, save the chart, and restart the reading.

**Note:** The Type of chart shown is determined by the setup of the G-WHIZ and will be shown in the corresponding tab of the Quick Chart window.