

LITE-CHECK CERTIFIER 1200

OPERATIONS MANUAL



LITE-CHECK CERTIFIER FOR FMVSS/CMVSS 121-BRAKE TIMING TEST WITH LIGHTS, AIR AND ABS

DOC# 87013 Version 2.7.1 OCT 12, 2022

CAUTIONS

USE ONLY CLEAN, DRY, OIL FREE, FILTERED AIR

- ▶ **DO NOT** connect tester or release vehicle brakes without **FIRST CHOCKING TIRES** securely to support vehicle. The trailer can move(walk) during testing without being secured.
- ▶ **DO NOT** weld on the vehicle while it is connected tester. Tester is grounded to the vehicle chassis. Welding may damage tester's circuitry.
- ▶ **DO NOT** operate other systems or electrical devices on the vehicle during brake system testing. Doing so may cause inaccurate results.

- ▶ Engines operating near tester may interfere with remote control operation. If difficulty is experienced, install electrical noise suppression on the offending engine.
- ▶ Each tester is matched to one remote control via Bluetooth. If you experience interaction of multiple testers' remotes operated in proximity, contact LITE-CHECK for assistance.
- ▶ For reliable remote control operation, tester antenna must be fully exposed.
- ▶ **EMERGENCY** air must be supplied to the trailer's brakes before the 1200's **SERVICE** brake function will operate. This prevents 'Compounding' and possible structural damage to brake components.
- ▶ Use only air hoses and fittings supplied by Lite-Check. Off brand ones may produce erroneous results during brake timing tests.
- ▶ To safely perform consistent and accurate tests, operators of the LITE-CHECK Certifier 1200 must first familiarize themselves with this manual, this tester, and the brake system being tested.

Any questions, contact LITE-CHECK Technical Support at 800-343-8579.
Hours: 7:00 am – 4:00 PM, Pacific Time, Monday through Friday.

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LITE-CHECK CERTIFIER 1200

Based off Certifier 1200 Application Version 1.2.8.0

Released Date: July 21, 2022

Description:

- ▶ Electronic diagnostic tester for heavy-duty trailers and dollies.
- ▶ Tests 12V, 7pin lighting systems for shorts, chassis shorts, opens, and open grounds.
- ▶ Tests air brake systems for leaks, proper operation, and apply/release timing (FMVSS 121).
- ▶ Tests service/control line pressure differential for trailers/dollies equipped to tow other vehicles.
- ▶ Gathers and interprets 121 brake response data to tester via remote data acquisition hub.
- ▶ Operates via tablet for remote control operation, or personal computer Graphical Use Interface (GUI).
- ▶ Remote tablet provides convenient service brake cycling for slack adjustment verification.
- ▶ Remote tablet allows for efficient verification of vehicle lamp operation.
- ▶ Allows test data, including brake timing, to be saved to the computer and/or to be printed.
- ▶ Performs all ABS tests and configure following manufacturer's procedures.
- ▶ Read and write the following ABS manufacturers; Bendix, Haldex and Meritor-Wabco through the Norgon PLC adaptor.
- ▶ Able to store test results on the cloud (optional).

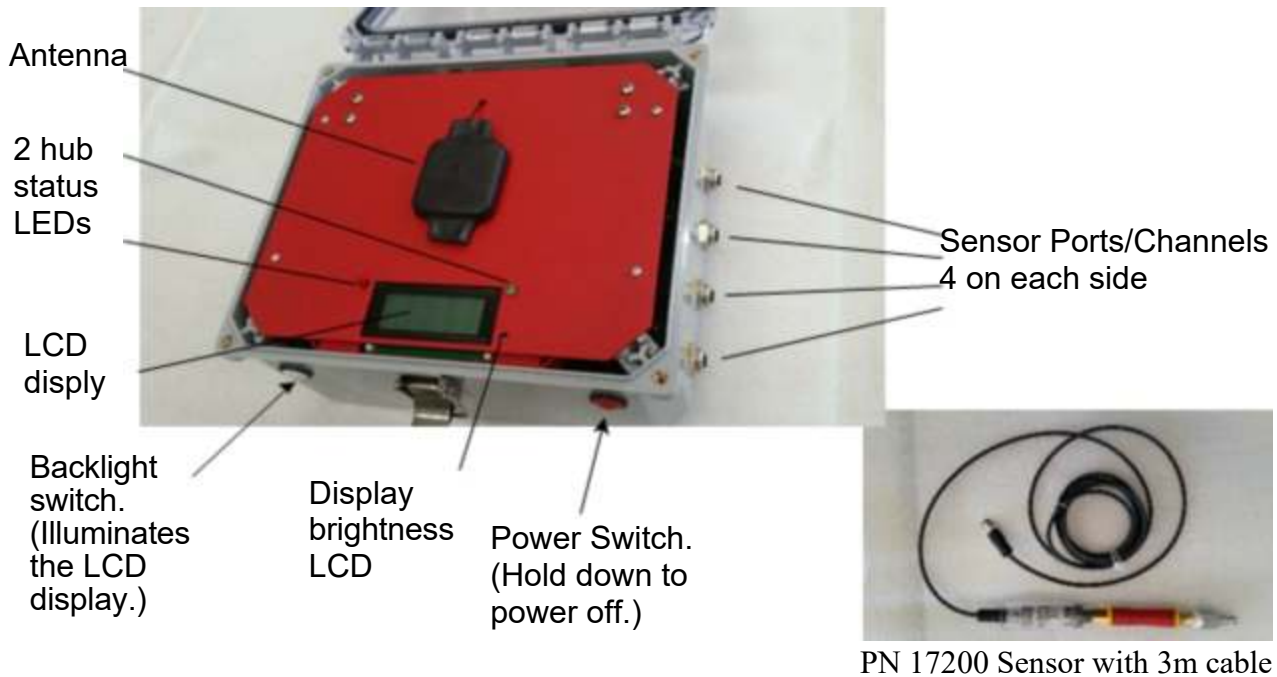
Key Features of the Certifier 1200:

- ▶ GUI display for test results.
- ▶ System voltage display.
- ▶ System amp-draw display.
- ▶ Automatic fault alarm.
- ▶ Tablet for remote control operation provides one-person operation and testing.
- ▶ Overload protection prevents vehicle-wiring damage resulting from shorts to ground.
- ▶ User friendly brake inspections, air-leak tests and 121 brake timing tests.
- ▶ ABS reader (Make/Model, Serial Number, Configuration, Voltage and Faults).
- ▶ "Differential Kit" (for timing-testing dollies and trailers equipped to tow other vehicles).
- ▶ For 121 Timing tests only, a minimum of 2 sensors are required per axle tested outside of the US, and just one is required in the US.)

Set-up Requirements:

Electrical power extension cord, 110 vac
Compressed air, filtered, dry, 110 psi @10 scfm
3/8" air fittings for transducer connection into brake chambers (see page 9)

Certifier 1200 HUB



- 1200 HUB BOX PART NUMBER: 17179
- 1200 HUB DOLLY ASSEMBLY PART NUMBER: 17174

Description:

Hub picture above has the cover open for demonstration purposes only. Hub cover must be closed during testing. Hub's dolly is not shown.

The hub can gather data from eight (8) sensors, interprets that data, then transmits the result to the Certifier 1200. Hub communicates with your Certifier 1200 via antenna mounted under the bottom tray of the 1200.

HUB Status LEDs:

- | | |
|------------------|--------------------------------------|
| ▶ Green LED lit: | Indicates normal operation |
| ▶ Red LED lit: | Indicates error condition in the hub |

LITE-CHECK TABLET PART # 18092



Description:

The Android tablet supplied with your Certifier 1200 permits operation of 11 tester functions from up to 100 feet distance. Its 11 shape-coded buttons match those on the tester GUI and activate the same functions. The tablet communicates with tester via Bluetooth and is non directional.

For best operation, **assure the receiving antenna on the tester is fully exposed and not shrouded by metal.**

LITE-CHECK DIFFERENTIAL KIT PART # 18115

Differential Manifold and the 50 CI Canister Assembly will also be used.



Description:

This Differential Kit is used when comparing the incoming service pressure, front of the trailer, against the outgoing pressure, back of the trailer, and evaluates its difference to FMVSS 121 specifications.

Contains:

- ▶ Differential Manifold with additional atmospheric pressure sensor/transducer and the 50 CI Canister Assembly.

LITE-CHECK SENSOR/TRANSDUCER



- Air pressure sensor/transducer no cable, Part # 11204
- Air pressure sensor/transducer with 9' cable, Part # 17200.
- 30' Sensor cable only, Part # 16129
- Air pressure sensor/transducer with 30' cable, Part # 17228.

Description:

- The Certifier 1200 comes standard with 2 sensors. Additional sensors are recommended for testing additional brake chambers and as back-ups.
- One sensor/transducer is connected to a service-brake chamber. One is connected to an emergency-brake chamber.
- One sensor/transducer is connected to the 50 CI differential chamber at the back of the trailer during differential testing.
- Sensors are connected to the remote hub (17179) with a 9' shielded cable.
- Do not extend or shorten without first contacting Lite-Check.

INITIAL SET-UP PROCEDURES

The Certifier 1200 Content:

- Three containers come on a pallet: The Certifier 1200, a printer, and a box with accessories.
- In the accessories box you will find the following:

(2) Coiled Air Line w/Gladhands	Glad-Hand Holder	7-way Cable, 8ft. Long
Air Filter Regulator Assy	Cart Handle	Drain Plug
3ft. USB Cable (for Printer)	HUB Dolly Assembly	Hub Battery Pack
50 ci Air Canister Assy	Warning Sign	(2) Sensor / Cable Assy
Android Tablet & Case		

- The following parts come if a Differential Kit, 18115, was also ordered:

50 ci Air Canister Assy	Differential Manifold with Sensor / Cable Assy
-------------------------	------------------------------------------------

Additional Hardware Needed:

- Verify the Female Quick Disconnect on the 50 ci is the correct style and size used in your location. If not change it.
- Male Quick Disconnect nipple for each Sensor / Cable assemble, the size used in your facility.
- You will need to put together an assembly to connect the sensors into the trailer's brake chamber, Example blow.



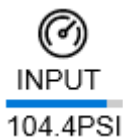
Shop Set-up:

Remove test station from shipping container. Verify condition and check items against content list. Notify carrier of any shipping damage or loss. Notify LITE-CHECK of any item shortages.

1. On the right side of tester, connect blue coiled hose to “Service Air - Blue” bulkhead. Connect red coiled hose to “Emergency Air - Red” bulkhead. Now attach the 7-way cable.
2. Connect at least two sensors to the hub.
3. Unpack the printer. Connect printer AC power cord to the power strip (center-back of the printer shelf). Connect USB cable to print and snake the other end thru the hole in the top-back shelf and connect to the USB extender. Slide printer to the far right side of the middle shelf.
4. Attach the spare battery for the hub into the battery charger (on the bottom tray inside the 1200). Verify the battery charger is plugged into the power strip (center-back of the printer shelf).
5. Install the air filter/regulator to the left side of the tester. Attached a male end of a quick disconnect to the supply side of the regulator. Do not supply air currently; only later when instructed.
6. Connect shop 110 Vac power to test station.

Air Requirements:

Assure shop air supply is capable of supplying and maintaining clean air at 110 psi @ 10 scfm to the tester throughout all tests.



NOTE: The INPUT air for testing needs to be between **100 psi and 105 psi.**

CERTIFIER 1200 SELF-TEST PROCEDURES

Purpose:

To check the Certifier 1200, tester, for internal air leaks and adjust the needle valves for the 121 timing test per FMVSS-121, S6.1.13.

NOTE: Do Not Connect Tester to Vehicle During Any of These Self-Tests

You will perform 3 unique tests in sequence to be sure your Certifier 1200 is ready for use. The 3rd test (Differential test) will only need to be done if you are testing a trailer or dolly which is designed to tow another vehicle. All 3 tests are listed below.

1. Internal Air Leak Self-Test without a Trailer or Dolly
2. 121 Timing Self-Test without a Trailer or Dolly
3. * Differential Self-Test without a Trailer or Dolly (to be ran independently)

*The Differential Test will only be done on vehicles designed to tow other vehicles. The Self-Test is to verify correct functionality of the manifold and sensor.

Perform the Internal Air Leak Self-test:

1. Check that Certifier glad-hands are secure and tightly blocked off (See below). Be sure that the Certifier and hub are powered off whenever a sensor is attached or removed from any test hardware or a trailer.

A.
Connect a sensor to any hub ports and the quick-disconnect of the 50 CI Canister Assembly.

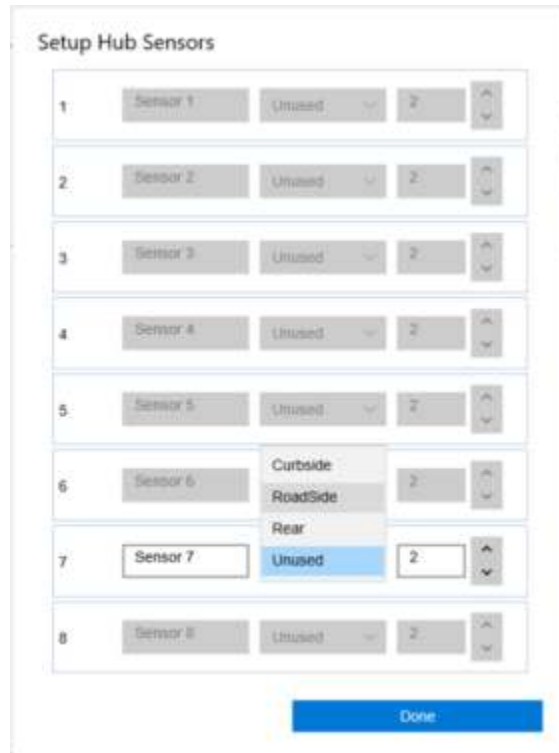
B.
Connect service glad hand to glad hand of the 50 CI Canister Assembly.

C.
Block off the emergency air line from tester using "Glad hand Shutoff with Chain", Part # 20053.



Continues on next page

2. Perform “Normal Power-up Procedure” detailed in the Appendix, starting on page 33.
3. Select “Self Calibration” in the VIN location on the Trailer Information Panel (left side of the display shown on the GUI).
4. On GUI, select “Air Leak”, “121 Timing”. Then click ‘Start’ on the GUI. The Internal Air Leak test will start.
5. At the beginning of testing, the Hub Sensor selector will pop up (see below) to setup the sensors that are plugged into the hub. Select Curbside or Roadside for the sensor on the hub being used for the Self Calibration.



6. If the Internal Air Leak test **FAILS**:

Default Failure Settings:

**SERVICE FAIL = >2 PSI/MIN
EMERGENCY FAIL = >3 PSI/MIN**

1. Select “Retry” on bottom right corner of Air Leak test page in the GUI.
2. If it fails a 2nd time, pick “Cancel All Tests” on the left edge of the GUI and continue.
3. Engage the EMERGENCY and SERVICE air lines to get air into the system. Soap-test the blocked-off glad-hands, external fittings and internal fittings as needed to locate the source of the leak(s). Then continue.
4. Tighten fittings and thread seal as needed and continue.
5. Select ”START” again (as in step 4). If this retry fails, call LITE-CHECK for assistance.

If the Internal Air Leak test passes, the Tester will advance to the 121 Timing Test.

This is the end of Internal Air Leak Self-Test, without being attached to a trailer or dolly.

Perform 121 Timing Self-Test:**NOTE: It is highly recommended that the 121 Timing calibration be performed on a weekly basis.**

Purpose: Verifies that the components of the test system (air supply, hoses, fittings, glad hands, etc.) combined with the tester's inherent **set** and **release** times complies with the maximum permissible times specified in Figure 2 of FMVSS-121, S 6.1.13 as amended (**Set > 0.350 to 0.360 sec and Release > 0.700 to 0.710 sec**).

Do not attempt vehicle brake timing or differential tests if either of the composite times for the test system do not pass. Otherwise you run the risk of failing otherwise 'GOOD' vehicles.

If you are failing vehicles for apply and release timing, re-run this test to verify the test system's performance.

1. The hardware setup needed for the 121 Timing Self-Test is the same as Internal Air Leak Test, which should have just completed.
2. Verify the following LED's status on the hub:
 - ▶ The green LED should be lit indicating a good state.
 - ▶ The red LED will be lit if the hub encountered an error condition. (This can be caused by one of the following. The sensor attached to hub did not self-calibrate and may be defective. There may be air pressure in the line. There may be a low battery condition in the hub.)
 - ▶ To adjust the brightness of the display on the hub, adjust the small screw near the lower right corner of the hub display.
3. The "Setup HUB Sensors" dialog should be displayed. In this dialog, identify the appropriate hub port which has the sensor cable (coming from the 50 CI reservoir) attached to it. On that sensor in the GUI, change "Unused" to "Curbside" to select it for use.
4. Now select "Done" in the lower right hand corner of the "Setup HUB Sensors" dialog popup. The 121 Timing test should immediately start.
5. If the test is successful, the Certifier 1200 GUI **will either:**
 - **Advance to the start of the next test**, which is the Differential Test (if it was selected to run) and a dialog popup should be displayed telling you to connect the Diff Kit.
 - **OR the GUI will indicate the test passes and if you hit 'Continue' a "Certifier Report" will display.**
6. **But if the 121 Timing test fails**, the error will be shown which will identify the failure. The reason for the failure will be given, such as the speed at which portions of the test were completed, or for not selecting a valid sensor, etc.
 - ▶ If the failure is due to a sensor issue, fix the issue and then click on "Retry".
 - ▶ If the failure is due to timing, you may have to adjust one or both valves on the Air Manifold, and then click "Retry". See the next page for how to adjust the two valves.

Please see the pictures on the next page to identify the locations of the two valves.

For SN 1200-077-2208 and lower with

RELEASE time adjustment

To increase the **RELEASE** time, turn the valve on the **FRONT** of the Air Manifold clockwise. To decrease turn the valve counterclockwise.

SET time adjustment

To increase the **SET** time, turn the valve on the **FRONT** of the Air Manifold clockwise. To decrease turn the valve counterclockwise.



For SN 1200-078-2208 and higher with new



RELEASE time adjustment

To increase the **RELEASE** time, turn the valve on the **FRONT** of the Air Manifold clockwise. To decrease turn the valve counterclockwise.

SET time adjustment

To increase the **SET** time, turn the valve on the **FRONT** of the Air Manifold clockwise. To decrease turn the valve counterclockwise.

This is the end of the 121 Timing Self-Test, without using a trailer or dolly.

Perform a Differential Self-Test:

National Highway Traffic Safety Admin., DOT

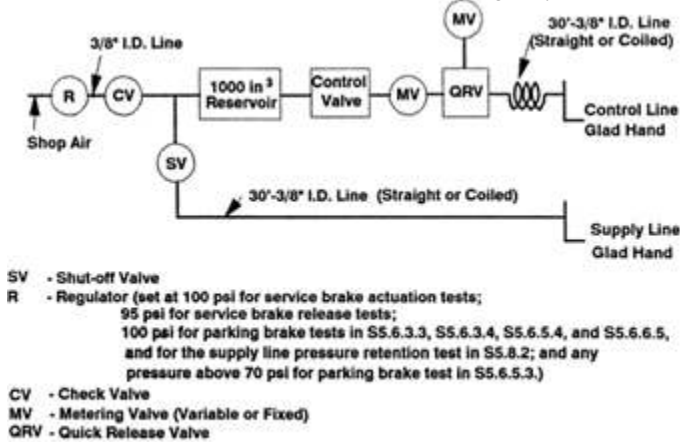


Figure 1. Trailer Test Rig.

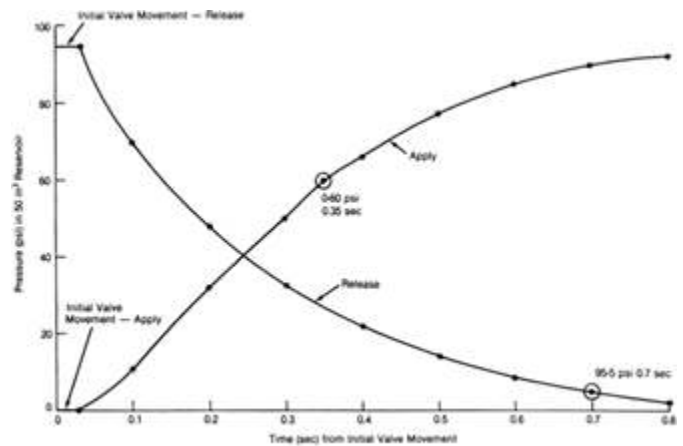


Figure 3. Pressure vs. Time for 50 in³ Test Reservoir.

Set-up and perform the Brake Differential Self-Test:

This Differential Self-Test is performed to verify your Certifier 1200 is functioning properly so that when a Differential Test is performed on an actual trailer or dolly in the future, the user will know that the results are accurate.

The Differential Test only applies to vehicles equipped to tow other air brake vehicles, such as dollies, short semi-trailers (for doubles and triples) and B-train front semi-trailers. The test requirements are specified in FMVSS-121, Paragraph S5.3.5.

The purpose of a Differential Test is to verify the control signal passed through the rear SERVICE glad-hands of a trailer being tested, to another towed trailer or dolly, varies no more than the permitted amount from the signal controlling the brakes on the vehicle being tested. This permitted difference depends on the SERVICE/Control input pressure to the vehicle being tested.

5 psi to less than 20 psi	1 psi difference or less
20 psi to less than 40 psi	2 psi difference or less
40 psi or greater	5% of the input pressure or less

This test requires attachment of the double glad-hand fitting assembly, also known as the “Differential Kit” or “Diff Kit” (PN 18115). The Diff Kit is an option which can be purchased separately from the Certifier 1200.

1. Now that the Air Leak and 121 Timing self-tests have passed, a popup should be displayed telling you to **connect the Differential Kit**. Before that can be done, **disconnect the 50 CI tank from the SERVICE glad-hand**. Leave all the other connections intact.
2. The Differential Kit now needs to be attached to the SERVICE glad-hand. To do this properly, **notice the “Air Flow” direction sticker on the Diff Kit**. Connect the SERVICE glad-hand from the Certifier 1200 to the correct glad-hand on the Diff Kit, which is identified by being sure the Air Flow will be flowing out of the SERVICE glad-hand and into the Diff Kit. Then click on “Continue” in the popup.

Set-up and perform the Differential Self-Test (continued):

NOTE: Immediately after that glad-hand in the Diff Kit is a brass nipple which has an orifice inside to allow air flow into the Diff Kit at a specific rate. The size of the FMVSS-121 specified orifice is 0.0180 inches diameter (about diameter of a pin). Air must flow through this orifice before getting to any sensors being used for this test.

1. Verify that a cable (attached earlier) is still connected to the “Sensor Port” on the right side of the Tester. This cable and sensor are part of the Diff Kit.
2. **Attach the 50 CI reservoir** to the open glad-hand on the Diff Kit.
3. A sensor and cable assembly (PN 17200) **should still be connected** to the quick disconnect on the 50 CI canister assembly. The sensor should still be connected to a port on the hub.
4. The “**Setup Hub Sensors**” view will now be shown. The sensor attached to the hub was selected to be “Curbside” for the Air Leak and 121 Timing Tests. This sensor needs to be changed from “Curbside” to “Rear”. Then click on “Continue” in the box below the list of Sensors. **The Differential Test will now start and run.**
5. **If the Test Passes**, another popup will be shown notifying you to “Disconnect the Differential Kit”. But you don’t technically have to disconnect it at this time to successfully complete this test. This popup just shows up at the end of a successful Differential Test.
6. **Now click on “Continue”** on the popup. You will be shown a “Certifier Report” with the results of the tests that have been run: The Air Leak Test and 121 Timing Test results are in the “AIR CONDITIONS” portion of the Report. The Differential Test results are shown in the “DIFFERENTIAL TEST” portion.
7. **If the Test Fails**, hit “Retry” to run the Differential Test again. If it fails a second time, call LITE- CHECK for assistance.
8. **If the Test Passes**, remove the Diff Kit and save the data from the Certifier Report if desired.

LITE-CHECK CERTIFIER SOFTWARE

(PC Graphical User Interface or “GUI”)

General:

Your Certifier 1200 system includes the capability to operate the tester from the PC via the Certifier software, GUI. This software allows convenient insertion of vehicle and work data such as VIN, Customer Name and Order Number into the test record, so this information becomes a permanent part of the record.

Once a auto test has been run (or a set of tests if more than one test was requested to run) the test results are saved automatically in a report.

Saved data files (Reports) are stored on the PC’s hard drive and can be viewed and printed via **ADOBE or other PDF viewers**. The user will specify a VIN Number into the Trailer Information Panel just before the start of a test. (See page 20 for a sample of this Panel.) This VIN number will be **incorporated into part of the PDF file name** of the Report. For example, if a user entered “1234ABC” for the VIN number of a vehicle under test, the PDF file which will be generated when the user saves the “Certifier Results” will be named “**Report 1234ABC [Date].PDF**”.

Upgrading Certifier 1200 Software/Firmware

Update Certifier 1200 Application:

The Certifier 1200 has the software already installed on the provided PC. Updates to any of the software/firmware for the Certifier 1200 (GUI app, Tablet app or Controller and Hub firmware)



The Certifier 1200 application is found on the Microsoft Store. Search for “LC Certifier” Then select “Update”. It will over right the version installed on the PC.

● Link:

<https://www.microsoft.com/store/productId/9NZ15BH66GLJ>

Update Android Tablet Application:



The Android Tablet application is found on the Google Play Store. Search for “Certifier Remote” Then select “Install”.

● Link:

<https://play.google.com/store/apps/details?id=com.litecheck.certifierremote>

Update Controller Board Firmware:

Updating the Certifier's Controller Firmware is done from the Certifier 1200 Application on the PC.

- In the "Help" tab select "Update Firmware". Then click on "Update Using Available Version".

Controller

Send "Enable Bootloader" Command (Leave it unless you know what you are doing)

Update Using Available Version

Pick File

Controller Firmware Version In Use: 1.1.18

Available Controller Firmware Version: 1.1.18

If Updating Using Available Version allow the process to finished, do not interrupt.

Update Hub Firmware:

Updating the Certifier's Hub Firmware is done from the Certifier 1200 Application on the PC.

- Using the USB cable stored in the Hub, Connect the hub to the USB port on the right side on the Certifier 1200.
- In the "Help" tab select "Update Firmware". Then click on "Update Using Available Version".

Hub

Send "Enable Bootloader" Command (Leave it unless you know what you are doing)

Update Using Available Version

Pick File

Hub Firmware Version In Use: -

Available Hub Firmware Version: 1.0.5

← For Hub Firmware Version to show up, the Hub will need to have connected to the controller:
(See page 22, Hub Menu Drop Down:)

Verify the Tablet is charged and functional:

- ▶ Start the “Certifier” app on the tablet by clicking on the proper icon.
- ▶ Only one electrical circuit operates at one time. Pressing a different 2nd key cancels the previous. Pressing the same key 2 times without hitting any other key cancels that function.
- ▶ The actions of the tablet parallel that of the tester’s GUI.
- ▶ Activating a function via the tablet will illuminate the respective LED on the 1200 GUI display.
- ▶ The tablet can be programmed to operate with only one tester at a time.
If you experience interference between tester systems and the tablet, contact LITE-CHECK Technical Support for assistance at 1-800-343-8579.

INTERPRETING DISPLAY INDICATORS AND ALARMS

General:

The Certifier 1200 utilizes two on-board means of communicating with its operator:

1. Graphical User Interface (GUI) of the Certifier 1200 application loaded onto the PC
2. Audio Alarm with pitch-coded sound for faults

Switch Indicators, LED:

Indicators on the GUI will be activated whether circuit is activated by the Tablet or from the GUI.

- ▶ Steady indicator: Switch and circuit activated.
- ▶ Flashing indicator: Fault condition found in circuit being tested.

Audio Alarms:

- ▶ Fault alarm (Unique pitch assigned to each specific fault type)




TESTER OPERATION

General:







The system provides two means of tester operation: The Android tablet and the computer's Graphical User Interface (GUI) from the Certifier Application. The keys, on the right side of the GUI, names and functions are listed below:

Functions of Keys, Panel, and Tablet:



Air System: Manual Test Mode

<u>GUI Buttons</u>	<u>Tablet Buttons</u>		<u>Action / Function</u>
EMER	EMER		Pressurizes trailer Emergency/Supply system
AIR LEAK-TEST	AIR LEAK-TEST		Blocks air supply to trailer and reads air loss in system.
SERVICE	SERVICE		Activates trailer Service/Control system (Only activated after EMER is charged)

Electrical System: Manual Test Mode

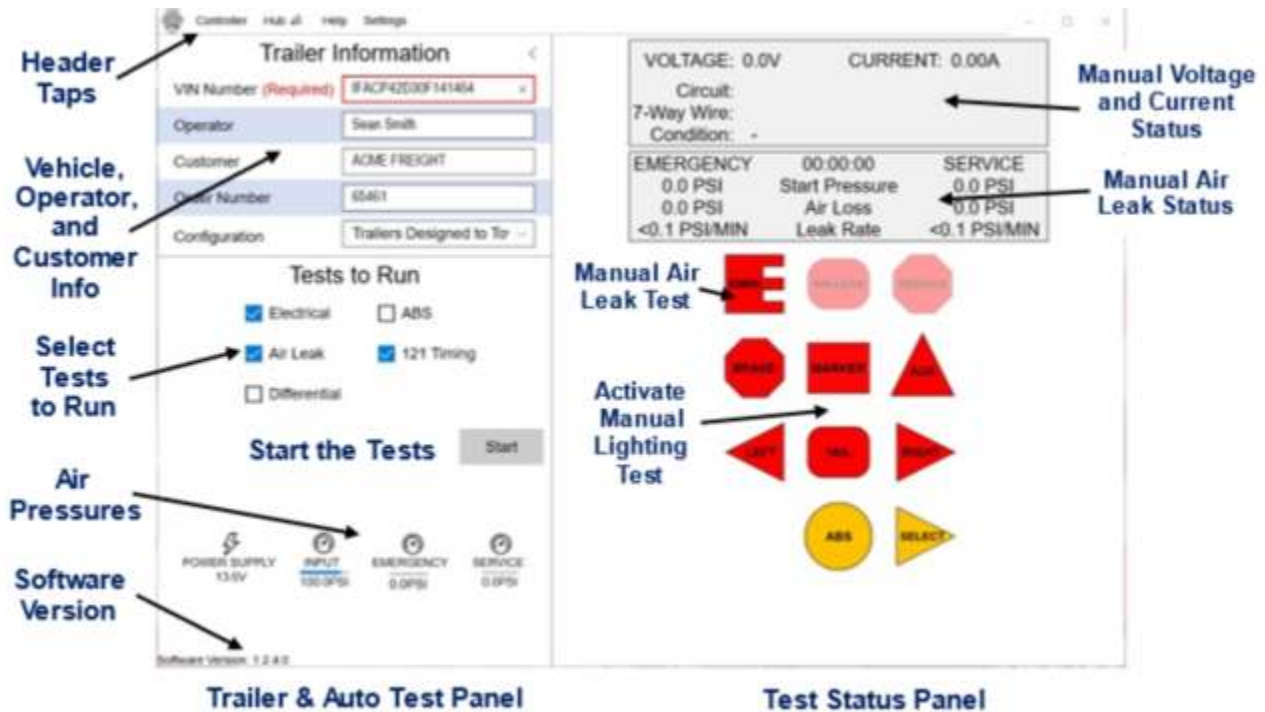
<u>GUI Buttons</u>	<u>Tablet Buttons</u>		<u>Action / Function</u>
BRAKE	BRAKE		Tests brake light circuit
MARKER	MARKER		Tests marker light circuit
AUX	AUX		Tests auxiliary power circuit & power to ABS
LEFT	LEFT		Tests left turn circuit
TAIL	TAIL		Tests tail light circuit
RIGHT	RIGHT		Tests right turn circuit

Special Function Keys: Manual Test Mode

<u>GUI Buttons</u>	<u>Tablet Buttons</u>		<u>Action / Function</u>
ABS	ABS		Powers the ABS to allow programming and activation of the ABS using the ABS's program
SELECT	SELECT		Selects test mode: To be able to test multiple lighting circuit together

THE CERTIFIER 1200 GUI SCREENS

MAIN 1200 STARTUP SCREEN: (General overview)



Header Tap section: Drop down menus under each item. (The 'HUB' icon shows the battery charge which is left in the Hub. The Radio Signal Strength with the Hub is shown next to the battery icon.)

Trailer Information section:

- VIN Number** = (Required) VIN of Trailer or Dolly to be tested
- Operator** = The current user of this test system
- Customer** = Whoever is purchasing the vehicle (or the owner of the vehicle)
- Order Number** = As needed, for tracking of test data for specific customers
- Configuration** = Type of Trailer / Dolly being tested.
 1. Trailers Not Designed to Tow Another Vehicle
 2. Trailers Designed to Tow Another Vehicle
 3. Trailer conversion dolly
 4. Truck with Manual Test
 5. Self Calibration

Tests to Run section:

These are the Auto Tests: 1. Electrical 2. ABS 3. Air Leak 4. 121 Timing 5. Differential

NOTE: The Air Leak Test will be selected and run immediately before the 121 Timing or the Differential test. After selection(s) are made.

Click "START" to initiate. Tests will run sequentially until they all pass, or a failure is encountered.

Test Status section: Displays the results of each test as it happens. If a failure is encountered, all testing will stop, and the failure will be displayed. When not running air tests, you can also activate individual manual electrical tests here.

Controller Menu Drop Down:

CONTROLLER STATUS

SERIAL NUMBER	C-12045-YYWW-xxx
FIRMWARE VERSION	1.1.18
INPUT/SUPPLY SENSOR STATUS	Good Offset: 501mV Pressure: 100.0PSI
EMERGENCY SENSOR STATUS	Good Offset: 501mV Pressure: 0.0PSI
SERVICE SENSOR STATUS	Good Offset: 501mV Pressure: 0.0PSI
DIFFERENTIAL SENSOR STATUS	Good Offset: 501mV Pressure: 0.0PSI
SYSTEM CHANNEL	3
SYSTEM SIGNAL STRENGTH	-40 dBm
SYSTEM VOLTAGE	13.6 Volts
RELAY VOLTAGE	13.8 Volts

Set Controller Channel Number

Set Channel

Controller Drop down options:
(Click on “Controller” to see this Controller status view.)

SERIAL NUMBER: The Serial Number of this Certifier 1200.

FIRMWARE VERSION: Firmware on the Controller Board.

INPUT/SUPPLY SENSOR STATUS: Sensor status and air pressure on the INPUT

EMERGENCY SENSOR STATUS: Sensor status and air pressure on Emergency glad hand.

SERVICE SENSOR STATUS: Sensor status and air pressure on Service glad hand.

DIFFERENTIAL SENSOR STATUS: Sensor status and air pressure in diff sensor is plugged in.

SYSTEM CHANNEL: The Channel the Hub communicates on.

SYSTEM SIGNAL STRENGTH: The strength of communication between the Certifier 1200 and the Hub.

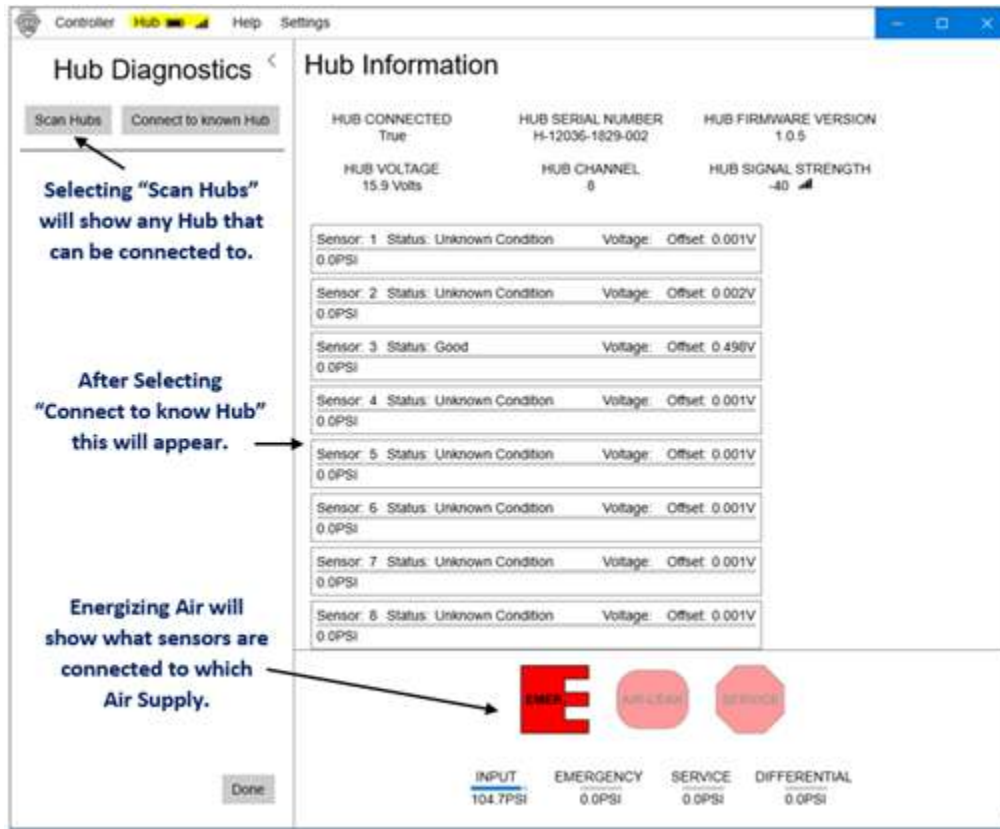
SYSTEM VOLTAGE: Voltage available at this location.

Relay Voltage: Voltage available at this location.

Set Controller Channel Number: User input to change the System channel the Hub will communicate on.

NOTE: The **Set Controller Channel Number** is the only item modifiable directly by the user in the ‘Controller Status’ section. All the others are only data points about the status of the Controller.

Hub Menu Drop Down:



Hub Drop Down options: (Click on "Hub" to see this Hub information view.)

NOTE: None of this data is modifiable directly by the user. They are only status values reported by the Hub.

Hub Diagnostics:

Scan Hubs: Search for any, turned on, Hubs that the Certifier can communicate with.

Connect to known Hub: Will connect to the last Hub used with the Certifier 1200.

After a Hub is connected:

HUB Connected: Indicates if the Hub is communicating with the Certifier 1200. True or False.

HUB Serial Number: Serial Number of the Hub.

HUB Firmware Version: Firmware version installed in the Hub.

HUB Voltage: Voltage of the battery in the Hub.

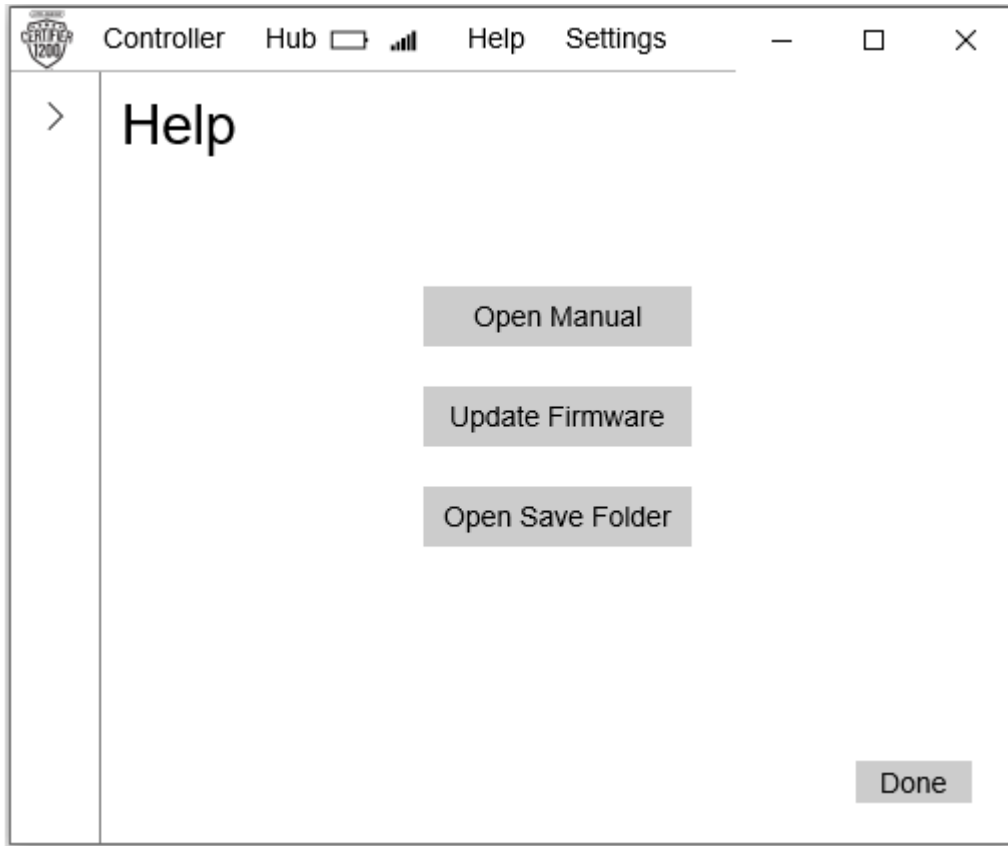
HUB Channel: The Channel the Hub is using currently to communicate with the Certifier 1200.

HUB Signal Strength: The strength of communication between the Certifier 1200 and the Hub.

HUB Status Sensor 1 through Sensor 8: Status of the 8 Sensor ports on the Hub.

For troubleshooting sensors you can energize the EMERGENCY Air and SERVICE Air.

Help Menu Drop Down:



Help Drop Down options:

Clicking on “Help” in the Header Bar will populate the right portion of this GUI showing two Help choices:

Open Manual: Opens this CERTIFIER 1200 OPERATIONS MANUAL PDF

Update Firmware: Please verify with a Lite-Check representative if you have question.
Refer to page 17 for Firmware Update procedures.

Open Save Folder: Will open the folder where “Submitted” PDF test reports are saved.

Done: Will take you back to the Startup Screen.

Settings Menu Drop Down (Page 1 of 3):

Click on 'Settings' to display the data in the right side of this screen shot.

Controller Hub [signal icon] Help Settings

Settings

System Settings

PDF Save Location
Pick Location

Company Information

Company Name
[Grayed out]

Address
[Grayed out]

City
[Grayed out]

State/Providence
[Grayed out]

Zip/Postal Code
[Grayed out]

Test Options

Continue testing if a test fails.

Electrical Test

Bypass Load Test

Allow Marker-Tail Short

Allow Open Marker (Black)

Chassis Short Software Threshold (Amps)
20

Unlock Manager Options Done

Clicking “Unlock Manager Options” allows you to type in information in the shaded gray sections. Pin: 1234

After Logging In, using the Manager Option PIN, all the fields on the ‘Settings’ page may be edited. Clicking Done will save changes and return to the main screen.

PDF Save Location: This setting will be a location for the test results to be stored. Once selected, the location of the folder will be typed out next to the “Pick Location” selection box.

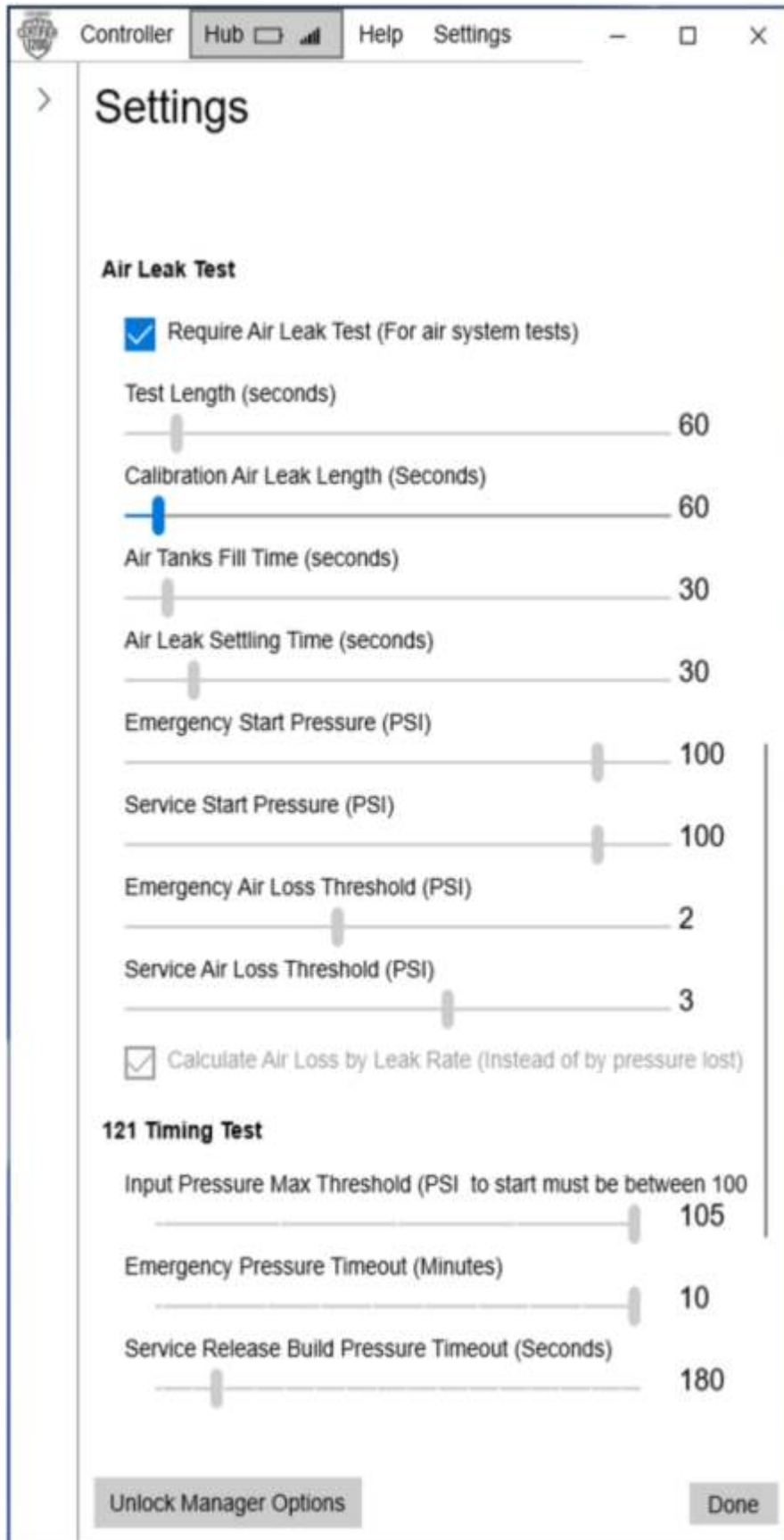
Company Information: After filling them in, you may select “Done” to ‘lock’ them in, or you may fill in more fields on this page and select “Done” when you are ready. You may return to this page anytime, unlock, and modify fields as needed.

Test Option: “Continue Testing if a test fails” does not need to Unlock Manager Option.

Electrical Test: “Bypass Load Test” does not need to Unlock Manager Option. The other choices need Manager Option PIN.

“Allow Marker-Tail Short” and “Allow Open Marker” will need to Unlock Manager Option.

Settings Menu drop down (Page 2 of 3):



Air Leak Test: Set your preferred values for testing. (Values originally set to logical defaults)

Test Length (s): Default = 60. Allowable range = 10 - 600 seconds.

Calibration Air Leak Length (s): Default = 60. Allowable range = 30 - 600 seconds. Used only when doing Self Calibration

Air Tank Fill Time (s): Default = 30. Allowable range = 10 - 300 seconds

Air Tank Settling Time (s): Default = 30. Allowable range = 10 - 180 seconds

Emergency Start Pressure (PSI): Default = 100. Allowable range = 65 - 105 PSI.

Service Start Pressure (PSI): Default = 100. Allowable range = 65 - 105 PSI.

Emergency Air Loss Threshold: (Default =2). Range: 1 - 5 PSI. PSI loss at which the test is marked "FAIL".

Service Air Loss Threshold: (Default =3). Range: 1 - 5 PSI. PSI loss at which the test is marked "FAIL".

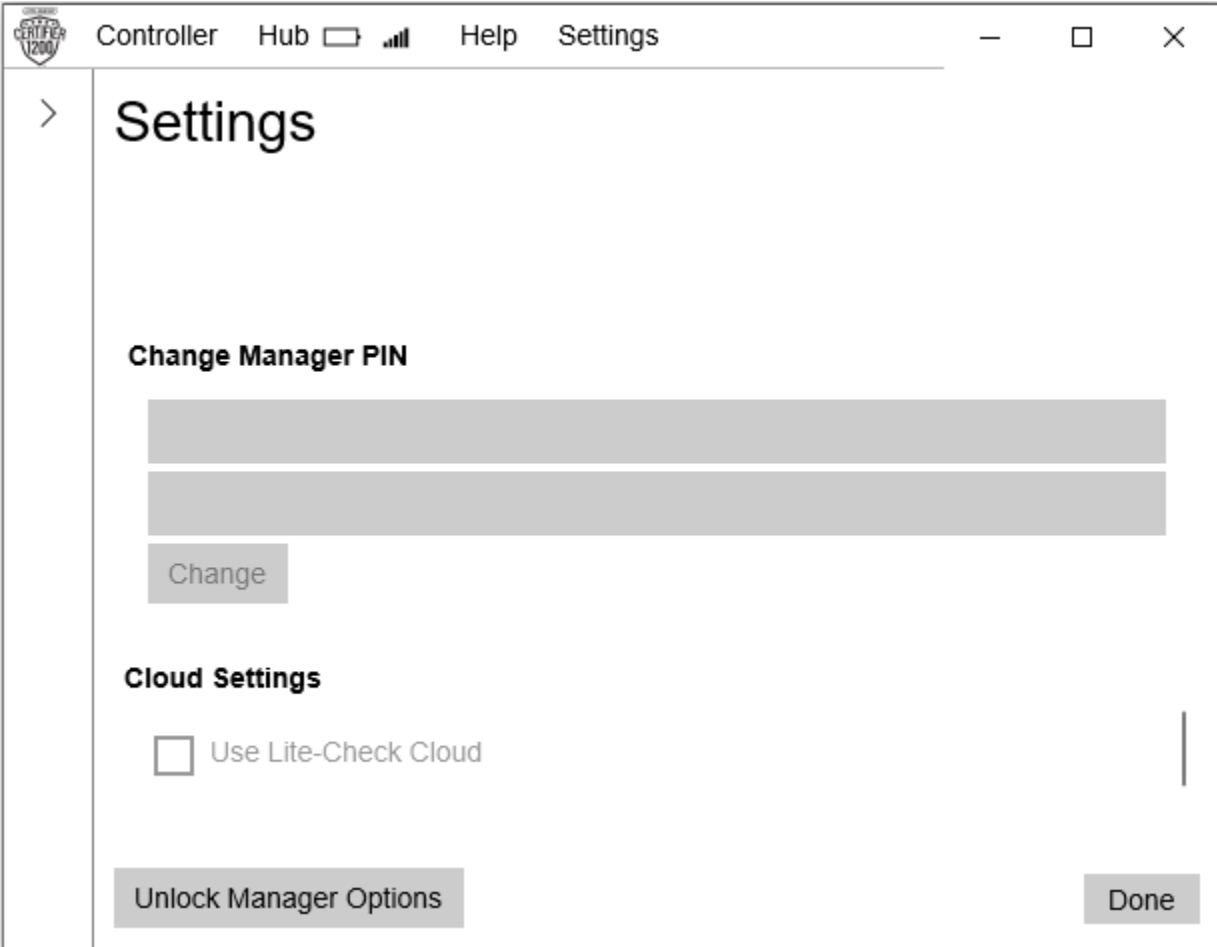
21 Timing Test: This test will perform the brake response time and display the results. Settings are adjustable by using the blue slider on each of the three available items:

Input Pressure Max Threshold: (Default = 102 PSI). Allowed range:= 101 – 105 PSI.

Emergency Pressure Timeout (M): (Default = 5 minutes). Allowed range: 1 – 10 minutes.

Service Release Build Pressure Timeout (S): (Default = 10 s).

Settings Menu drop down (Page 3 of 3):



Change Manager PIN:

Change the default “Unlock Manager Option pin”. You will need the default PIN to change.

Cloud Settings:

WARNING:
DO NOT CHANGE
IF YOU DO NOT HAVE A LITE-CHECK CLOUD ACCOUNT

This will save a copy of the test results off site on the Lite-Check cloud server for all company locations.

Saves each time a test is ran even if it has failed. This is to do annalistic and find recurring issues to address and fix them. Having this data also helps with warranty problems.

Contact Lite-Check for more information on advantages of the Cloud option.

800-343-8579

Hours: 7:00 am – 4:00 PM, Pacific Time, Monday through Friday.

AUTO TESTS ON A TRAILER OR DOLLY

Connecting to the Trailer/Dolly:

1. Attach the EMERGENCY Air output glad hand from the tester to the EMERGENCY glad hand port on the front of the vehicle under test.

WARNING: Failure to connect the Emergency air can cause brake “compounding” and damage the brake chamber!

2. Attach the SERVICE Air output glad-hand from the tester to the SERVICE glad hand port on the front of the vehicle under test.
3. Connect the 7-way cable from the Certifier to the front of the trailer.
4. Follow NORMAL POWER-UP PROCEDURE (on page 33)
5. Attached three sensors to the Hub.
 - ▶ Connect one sensor to the SERVICE side of the farthest brake chamber. For 121 brake trimming test.
 - ▶ Connect one sensor to the EMERGENCY side of the farthest brake chamber. For Park brake set pressure test.
 - ▶ If Differential Test is to be done, connect a sensor to the 50 CI canisters which is on the SERVICE Rear glad hand.
6. Verify the following LED’s status on the Hub:
 - ▶ The Green LED should be lit indication a good state.
 - ▶ The Red LED will be lit if the Hub encountered an error condition. (Likely the sensor attached to the Hub did not self-calibrate and may be defective. Or there may be air pressure in the line. Or there may be a low battery condition in the Hub.)
 - ▶ To change the brightness of the display on the Hub, you can adjust the small screw near the lower right corner of the Hub display.

Running Automatic Tests:

The screenshot shows the Certifier software interface. At the top, there are navigation tabs: Controller, Hub, Help, and Settings. The main window is titled 'Trailer Information' and contains several input fields:

- VIN Number (Required): VIN1234
- Operator: John Smith
- Customer: Acme LLC
- Order Number: 66723
- Configuration: Trailers Designed to Tow (dropdown menu)

 Below this is the 'Tests to Run' section, which has five checkboxes, all of which are checked:

- Electrical
- Air Leak
- Differential
- ABS
- 121 Timing

 At the bottom right of the form is a 'Start' button.

- Input the necessary Trailer Information. VIN Number is required. Include optional information if desired.
- Select the Trailer Configuration:
 - Trailer Designed Not to Tow Another Vehicle
 - Trailer Designed to Tow Another Vehicle
 - Trailer Converter Dolly
- Select the desired Tests to Run.

NOTE: Differential is only for Trailers Designed to Tow

- Then select Start to perform the requested tests.

Sensor Setup for 121 Timing Test and Differential Test:

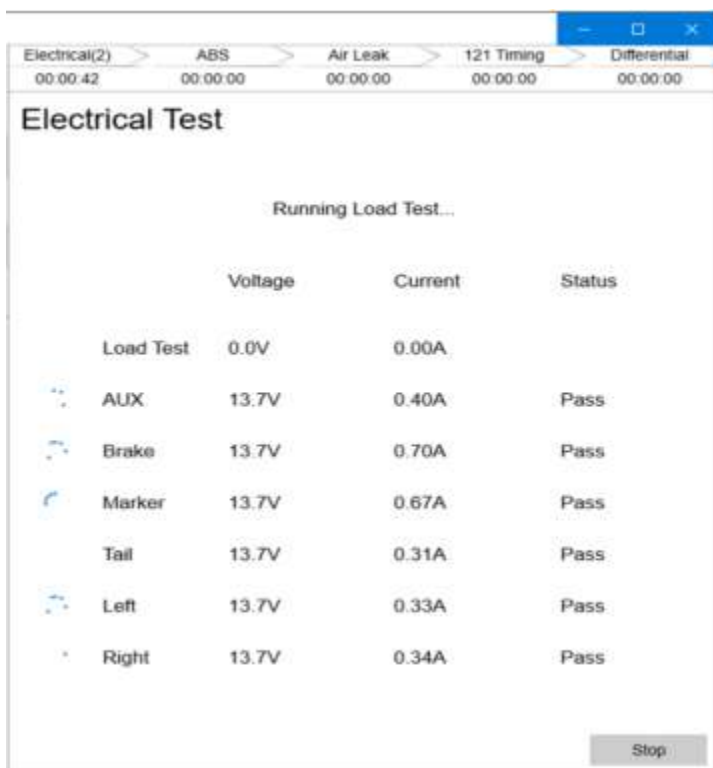
- At the beginning of testing, the Hub Sensor selector will pop up (see below) to setup the sensors that are plugged into the hub.

Locate the Sensors in the list which are being used for the testing.

- If a sensor is connected to the hub, but is not used for testing select “Unused”
- If a sensor is being used in the brake chambers, select “Roadside” or “Curbside” according to what side of the trailer the brake chamber is on.
- If a Differential test is being performed, select for that sensor “Rear”
- Then click “Done”.



Electrical test of all circuits is in progress:



The duration in time the test has run so far is 42 seconds.

Voltage and current of all circuits are displayed. A Load test on all circuits is performed.

The ABS test will start after all the electrical tests pass. If any electrical circuit test fails, all testing will stop. Then the user will be given a chance to locate and correct the problem.

After fixing the issue, the user may click on “Retry” to retry the test. The “Retry” option will only show up if there is a failure.

ABS Test is in progress:

The ABS test queries the ABS For the following Information:

- ▶ Make/Model
- ▶ The Configuration
- ▶ Serial Number
- ▶ Input Voltage
- ▶ ECU Voltage
- ▶ Active Faults
- ▶ Stored Faults

The Noregon PLC is not needed for this test.

This test failed because the ABS has Active and Stored faults.

ABS Conditions

MAKE/MODEL: WABCO EASY STOP INPUT VOLTAGE: 13.7V
 CONFIG: 2S/2M ECU VOLTAGE: 13.6V
 SERIAL: 3010563867 VIN:
 STATUS: Fail

our	SID	FM	Description
250	9	5	MOD VALVE BLUE OPEN CIRCUIT
250	10	5	ECU/VALVE YELLOW OPEN CIRCUIT
250	11	5	INTERNAL SOLENOID OPEN CIRCUIT

our	SID	FM	Description
31	4	5	YELLOW 1 SENSOR OPEN CIRCUIT
31	3	5	BLUE 1 SENSOR OPEN CIRCUIT
31	10	5	ECU/VALVE YELLOW OPEN CIRCUIT
31	9	5	MOD VALVE BLUE OPEN CIRCUIT
31	11	5	INTERNAL SOLENOID OPEN CIRCUIT

Comm Log

Reading ABS Unit...
 Detecting PLC signal
 PLC signal detected
 Checking for Multiple ECUs.
 Determining ECU Manufacturer
 Identified ECU Manufacturer
 Retrieved ABS Active Faults
 Retrieved WABCO Stored Faults
 Retrieved ABS Configuration
 Retrieved ABS Total Mileage
 Retrieved ABS Trip Mileage
 TRIP: 168.3
 Retrieved Wabco Serial Number
 Retrieved ECU Voltage
 ECU Voltage: 13.40 Volts
 Retrieved ECU Revision
 ECU Revision: fchf
 DONE
 Getting Active Faults...
 DONE
 Getting Stored Faults...
 DONE
 Turning Off ABS.
 DONE
 !!! ABS TEST STOPPED !!!

Retry

Performing the Air Leak Test:

Air Leak Test

EMERGENCY		SERVICE	
Pressure	100.6 PSI	Pressure	99.2 PSI
Start Pressure	100.7 PSI	Start Pressure	99.4 PSI
End Pressure	0.0 PSI	End Pressure	0.0 PSI
Air Loss	0.1 PSI	Air Loss	0.2 PSI
Leak Rate	0.1 PSI/MIN	Leak Rate	0.1 PSI/MIN

Test Running...

Graph showing Pressure (PSI) vs Time (s). The y-axis ranges from 94 to 102 PSI, and the x-axis ranges from 0s to 60s. Two lines are plotted: a red line (EMERGENCY) and a blue line (SERVICE). Both lines show a slight downward trend over time, indicating a leak.

Stop

If the Internal Air Leak test FAILS:

Default:
FAIL = >2 PSI/MIN SERVICE
FAIL = >3 PSI/MIN EMERGENCY

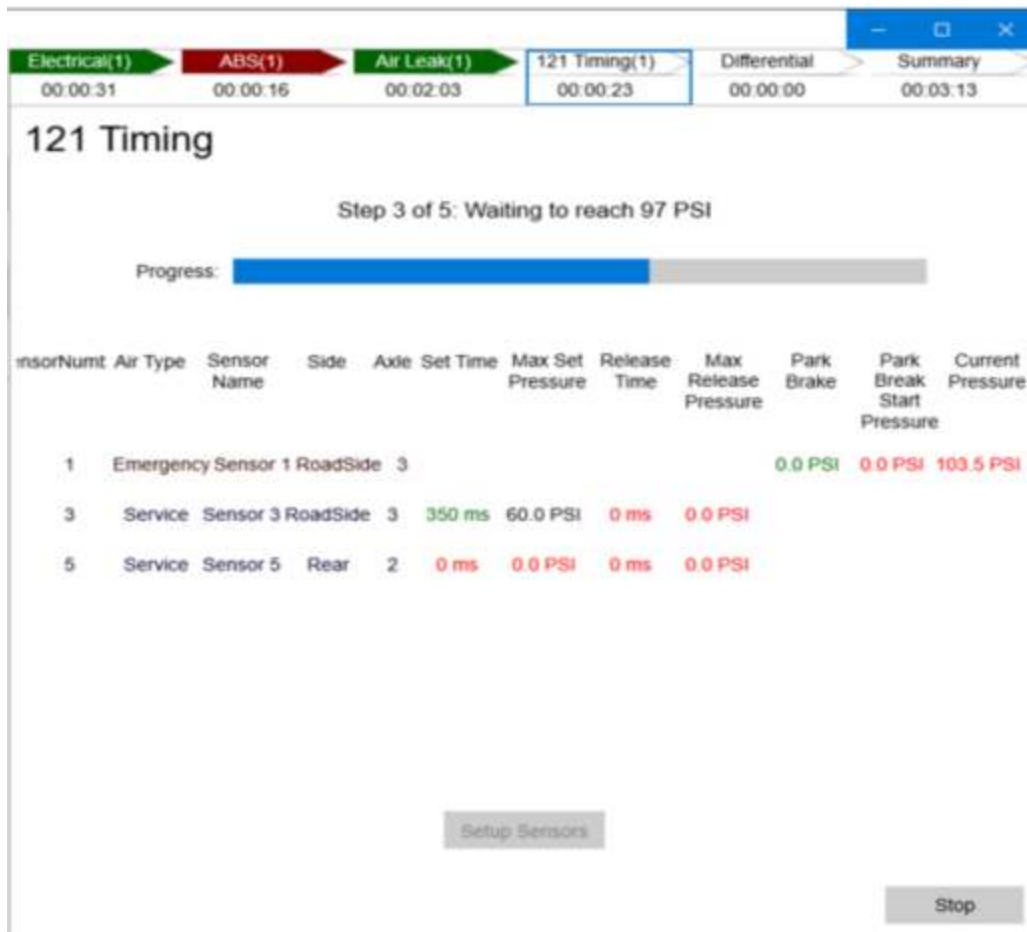
- Select "Retry" on bottom right corner of Air Leak test page in the GUI.
- If it fails a 2nd time, pick "Cancel All Tests" on the left edge of the GUI and continue.
- Engage the EMERGENCY and SERVICE air lines to get air into the system.
- Soap-test the blocked-off glad hands, external fittings and internal fittings as needed to locate the source of the leak(s). Then continue.
- Tighten fittings and thread seal as needed and continue.
- Select "START" again.
 If this retry fails, call LITE-CHECK for assistance.

Performing the 121 Timing Test:

PURPOSE:

This test is used to verify that components of the trailer or dolly under test (air supply, hoses, fittings, glad-hands, brake cans, etc.) are in satisfactory condition to ensure the tester's inherent **set** and **release** times complies with the maximum permissible times specified in FMVSS-121 **for the specific type of vehicle being tested**. Various types of vehicles are selectable on the “Main 1200 Startup Screen” under the “Configuration” drop down. (See page 20 for the vehicle choices.)

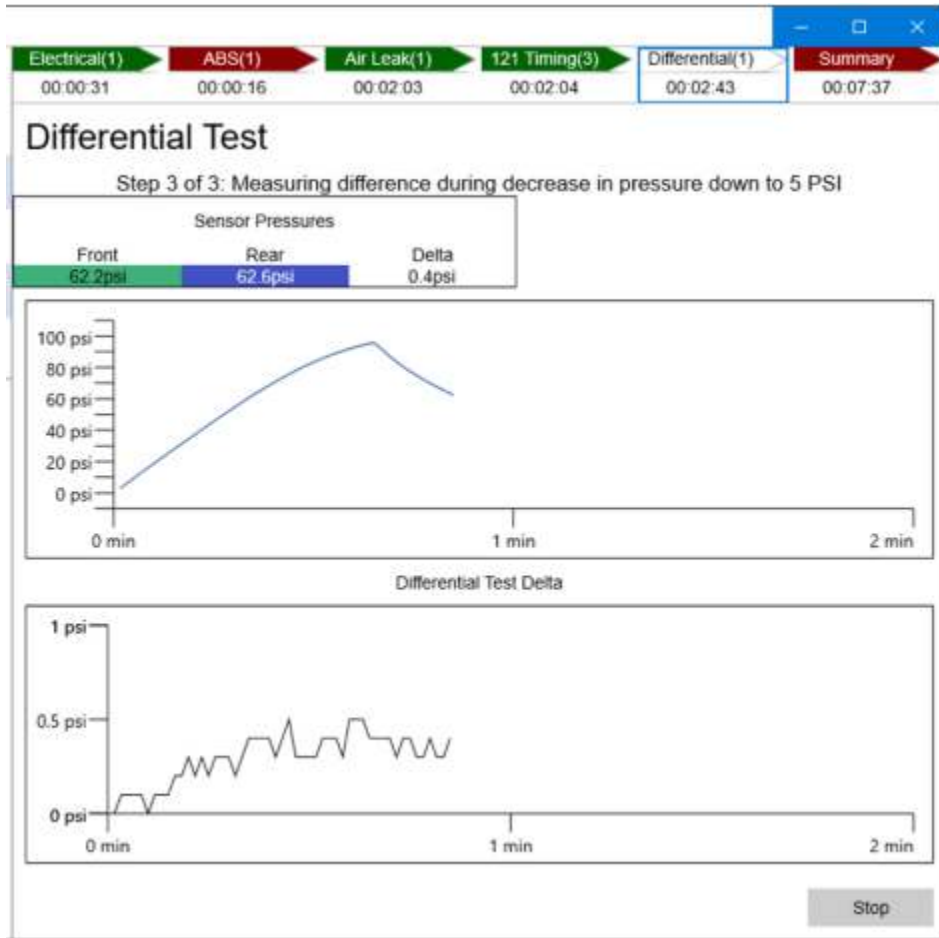
If you are failing vehicles for apply and release timing, re-run the “**121 Timing Self-Test**” (on page 10) to verify the test system's performance and re-calibrate if needed.



If the 121 Timing test fails, the error will be shown which will identify the failure. The reason for the failure will be given, such as the speed at which portions of the test were completed, or for not selecting a valid sensor, etc.

- ▶ If the failure is due to a sensor issue, fix the issue and then click on “Retry”.
- ▶ If the failure is due to timing, you may have to run the 121 Timing Self-Test (see page 10).
- ▶ If the failure is due to timing and the Self Calibration was completed. Check and see if there has been any part replacements or design changes in the air system that would have added 90 dec angles or untested valves.

Performing the Differential Test:



The Differential test only applies to vehicles equipped to tow other air brake vehicles, such as dollies, short semi-trailers (for doubles and triples) and B-train front semi-trailers. The test requirements are specified in FMVSS-121, Paragraph S5.3.5.

The purpose of a Differential test is to verify the control signal passed through the rear SERVICE glad hands of a trailer being tested, varies no more than the permitted amount from the signal controlling the brakes on the vehicle being tested. This permitted difference depends on the SERVICE/Control input pressure to the vehicle being tested.

- 5 psi to less than 20 psi
 - 1 psi difference or less
- 20 psi to less than 40 psi
 - 2 psi difference or less
- 40 psi or greater
 - 5% of the input pressure or less

This test requires attachment of the double glad hand fitting assembly, also known as the “Differential Kit” or “Diff Kit” (PN 18115) when directed to at the beginning of the Differential test. The Diff Kit is an option which can be purchased separately from the Certifier 1200.

1. On the Diff Kit, **notice the “Air Flow” direction sticker.** Connect the Service Air line from the Certifier 1200 tester to the correct Diff Kit glad hand. The correct glad hand is identified by being sure the Air Flow will be flowing away from the tester and into the Diff Kit.

Summary Report Page of Auto Tests:

The screenshot displays the 'Summary' page of the Lite-Check Certifier software. At the top, a navigation bar shows test categories and their durations: Electrical(1) [00:00:31], ABS(1) [00:00:16], Air Leak(1) [00:02:03], 121 Timing(3) [00:02:04], Differential(1) [00:03:40], and Summary [00:08:34]. A 'Print' button is located below the navigation bar. The main report area is titled 'CERTIFIER REPORT' and shows a 'FAIL' status. It includes a 'Trailer Information Panel' with fields for DATE, DURATION, VIN Number, Customer, and Order Number. Below this is a 'Detailed test results for each test ran' section with a table of test results for various circuits (LOAD TEST, BRAKE, MARKER, AUX, LEFT, TAIL, RIGHT). To the right of this table is a graph showing 'AIR: PASS' with 'Leak Duration: 00:01:00' and a table of 'EMER' and 'SERV' test results. Below the graph is a '121 TIMING: PASS' section with a table of test results for different positions (1, 3, 5) and locations (RoadSide, Rear). At the bottom of the report area, there is a 'DIFFERENTIAL: PASS' section. A scroll bar is visible on the right side of the report area, with an annotation pointing to it. At the bottom right of the interface, there are 'RE-TEST' and 'SUBMIT' buttons.

“Summary Page = “CERTIFIER REPORT”

Test Durations: Top of the page. Shows elapsed times of each test, and the cumulative total time of all tests.

Trailer Information data: Taken from the user inputs made earlier on the Main 1200 Startup Screen (page 20).

Customer Information data: Specific customer data entered earlier on the “Settings” drop down.

Detailed Test Results: All tests run has been summarized: Electrical, Air Leak, 121 Timing and Differential.

APPENDIX

NORMAL POWER-UP PROCEDURE

1. Normal Power-up Procedure:

- ▶ If you will be adding a sensor to the test configuration, be sure the tester and Hub are turned off prior to doing so.
- ▶ If you will be testing a vehicle designed to tow other vehicles, if it's not already attached, you will need to attach a sensor to the quick disconnect on the Differential Kit and attach the other end of this cable to the "Sensor Port" on the right side of the tester.

NOTE: If you will never test a vehicle used to tow another vehicle, skip the above bullet entirely.

- ▶ If not already powered up, turn the Hub on by using its red button.
- ▶ Supply 110 VAC to the Tester and turn on the Tester using the switch on the left side.
- ▶ Connect the air source. Minimum pressure for the air source is 110 psi at 10 SCFM.
- ▶ Wait about 30 seconds to allow the air tank inside the Tester to pressurize and stabilize.
- ▶ At this time, the "Main 1200 Startup Screen" should be displayed. (A screen shot is shown below.) Near the bottom of the left side of this view, there is an "Input" air pressure reading.
- ▶ Adjust the regulator on the outside of the left side of the 1200 Tester so the input pressure displayed on this screen is between 100 and 105 psi. We recommend >104 psi.
- ▶ The Certifier 1200 Tester is now ready for use.



PERFORMING ABS INITIALIZATION AND PROGRAMMING:

SETUP:

- ▶ A NOREGON PLC ADAPTOR is installed in the CERTIFIER 1200 for operation with the computer.
- ▶ **The ABS software programs can be obtained from their respective company representative.**

ABS configuration process.

1. Connect 7-way cable to trailer.
2. Click on ABS key in the right side GUI or on the tablet which will activate power to the ABS and light up the SELECT and AUX buttons.
3. Open the ABS program on the PC for configuration and operation of the ECU in the vehicle under test such as Bendix, Haldex, or Wabco, etc.
4. To spin the tire in order to activate the ABS. Press the EMER. key once to charge the emergency line.
5. Proceed with ABS recommended process.
Press the ABS key to cancel the ABS Test routine.
6. Close the ABS program on the PC.

NOTE: END-OF-THE-LINE test can be performed with the LITE-CHECK tablet.

For any information on the ABS manufactures applications
please get a hold of their representative.

CERTIFIER 1200 PARTS LIST:

Other parts can also be ordered, these are just the more common.

Email: service@lite-check.com for price and availability

Electronics

12045 CONTROLLER BOARD. PCBA
18092 ANDROID TABLET
18096 TABLET AND CASE ASSEMBLY
18117 COMPUTER

Air System

17211 1200 MANIFOLD FINAL ASSEMBLY
17139 GLAD HAND ASSEMBLY AIR HOLE RED AND BLUE
18025 50 CI CANISTER ASSEMBLY

Cables and Harnesses

17207 NOREGON PLC POWER CABLE ASSEMBLY
18015 VEHICLE 7 WAY CABLE ASSEMBLY
16118 SMA JACK PLUG RG174 24" CABLE ASSEMBLY FOR ANTENNA

Differential Sensor Port

14122 DIFF SENSOR/CONNECTOR/ADAPTOR
16121 CABLE, M12 FEMALE TO WIRE LEADS 90 DEGR SHIELED
14089 CONNECTOR, RECEPTICAL, 4 POSITION, 22 AWG

Hub and Sensors

17174 1200 HUB DOLLY ASSEMBLY
17179 1200 HUB BOX ASSEMBLY
15091 SMART CHARGER (1.5A) FOR 14.8V LI-ION/
15090 LI-ION BATTERY: 14.4V 2.6AH,
16105 USB CABLE A-B, 3'
12036 PCB, 1200 HUB, REV. 3
18113 ANTENNA, 915 MHZ ADHESIVE MOUNTED
11204 AIR PRESSURE SENSOR, NO CABLE
17200 AIR PRESSURE SENSOR WITH 9' CABLE
16129 30' SENSOR CABLE ONLY
17228 AIR PRESSURE SENSOR WITH 30' CABLE

Optional

18160 ANTENNA, 2.4GHZ PUCK RP-SMA MALE,
18156 ANTENNA, 915 MHZ, PUCK STYLE
18118 LCD MONITOR, 18.5", 16:9,VGA
17169 SWITCHING POWER SUPPLY