

# **SAFETY RECALL 21E-090**

## **iABS ECU AND VALVE ASSEMBLY INSPECTION**

TECHNICAL BULLETIN

**TP19118**

**WABCO**



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You will find the current edition at: [www.wabco-na.com/literature](http://www.wabco-na.com/literature)

# General Information

## 1 General Information

### 1.1 Symbols Used in this Document

#### **DANGER**

Description of an immediate situation which will result in irreversible injury or death if the warning is ignored.

#### **WARNING**

Description of a possible situation which may result in irreversible injury or death if the warning is ignored.

#### **CAUTION**

Description of a possible situation which may result in irreversible injury if the warning is ignored.

#### **NOTICE**

Description of a possible situation which may result in material damage if the warning is ignored.




Important information, notices and/or tips



Reference to information on the Internet

Descriptive text

- Action step
  1. Action step 1 (in ascending order)
  2. Action step 2 (in ascending order)
    - ⇒ Result of an action
- Listing
-  Indicating the use of a tool / WABCO tool

## General Information

### 1.2 How to Obtain Additional Maintenance, Service and Product

If you have any questions about the material covered in this publication, or for more information about the WABCO product line, please contact WABCO Customer Care Center at 855-228-3203, by email at [wnacustomercenter@wabco-auto.com](mailto:wnacustomercenter@wabco-auto.com), or visit our website: [www.wabco-na.com](http://www.wabco-na.com).

Refer to the Society of Automotive Engineers (SAE) website to find all current SAE documents and standards applicable to WABCO products (such as SAE J447 and SAE J908 at [www.sae.org](http://www.sae.org)).

Refer to the National Highway Traffic Safety Administration (NHTSA) website to find all current documents referenced in the manual at [www.nhtsa.gov](http://www.nhtsa.gov).

### 1.3 How to Obtain Parts and Kits

Contact the WABCO Customer Care Center at 855-228-3203 (United States and Canada); 800-953-0248 (Mexico). Email: [wnacustomercenter@wabco-auto.com](mailto:wnacustomercenter@wabco-auto.com), [wabconorders@wabco-auto.com](mailto:wabconorders@wabco-auto.com) or [wabconaspecs@wabco-auto.com](mailto:wabconaspecs@wabco-auto.com).

### 1.4 WABCO TOOLBOX PLUS™ Software

TOOLBOX PLUS™ Software provides PC diagnostic for WABCO products and can be purchased and downloaded from <https://wabco.snapon.com>.

The software User Guide, MM19047 can be obtained by visiting our Literature Center.



Purchase and Download TOOLBOX PLUS™

<https://wabco.snapon.com>



WABCO Literature Center

[www.wabco-na.com/literature](http://www.wabco-na.com/literature)

### 1.5 WABCO Academy



[www.wabco-academy.com](http://www.wabco-academy.com)

### 1.6 WABCO Online Product Catalog



[www.wabco-customercenter.com/](http://www.wabco-customercenter.com/)

## General Information

### 1.7 Your Direct Contact to ZF CVCS

#### **ZF CV Systems North America LLC**

1220 Pacific Drive  
Auburn Hills, MI 48326

Customer Care Center: (855) 228-3203

[www.wabco-na.com](http://www.wabco-na.com)

# Safety Information

## 2 Safety Information

### Provisions for a safe work environment

- Only trained and qualified automotive technicians and auto mechanics may carry out work on the vehicle.
- Read this publication carefully.
- Follow all warnings, notices and instructions to avoid personal injury and property damage.
- Always abide by the vehicle manufacturer's specifications and instructions.
- Observe all accident regulations of the respective company as well as regional and national regulations.
- The workplace should be dry, sufficiently lit and ventilated.
- Use personal protective equipment if required (safety shoes, protective goggles, respiratory protection and ear protectors).

Read and observe all Danger, Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

#### **WARNING**

To prevent serious eye injury, always wear safe eye protection when you perform vehicle maintenance or service.

#### **WARNING**

Park the vehicle on a level surface. Block the wheels to prevent the vehicle from moving. Support the vehicle with safety stands. Do not work under a vehicle supported only by jacks. Jacks can slip or fall over. Serious personal injury and damage to components can result.

#### **WARNING**

Verify and diagnose all active faults in the system prior to replacing OnGuard components. When diagnosing OnGuard, TOOLBOX™ Software (12.10 or higher) must be used. If you do not have TOOLBOX software, you can obtain it by going to [www.wabco.snapon.com](http://www.wabco.snapon.com) to purchase a subscription to TOOLBOX PLUS software. Be aware that diagnostic devices must be connected prior to keying on the unit to minimize possible OnGuard faults during diagnosis.



## Background

### 3 Background

WABCO USA, LLC has determined that a defect which relates to motor vehicle safety exists in certain iABS-2M trailer ABS units that were manufactured between September 19, 2019 and October 6, 2021. WABCO subsequently initiated a recall of the subject iABS-2M units (NHTSA Recall No. 21E090).

# Introduction

## 4 Introduction

This Technical Bulletin covers how to identify and replace the iABS ECU and Valve Assembly (“iABS”) if required pursuant to NHTSA Safety Recall 21E-090.

Please file claims directly with ZF Group/WABCO using one of the following:

- Call WABCO Customer Center direct at (855)-228-3203 – Option 1, or (800) 953-0248 (Mexico)
- File a claim electronically using online submission form Warranty Submission Form (formsite.com)  
Link <https://fs10.formsite.com/t9NwJT/swhcg5mz2k/index.html>

If a facility has never filed any warranty claim with us in the past, they will need to be set-up as an authorized repair facility. The process can be initiated online at the following Facility Creation Form Link: <https://fs10.formsite.com/t9NwJT/ahaqmoo2hy/index.html>

Action	SRT (Standard Repair Time)
Section 5 (Identify iABS)	0.5 hrs
Section 6 (Replace iABS)	2.0 hrs

## Identifying if the iABS needs to be replaced

### 5 Identifying if the iABS needs to be replaced

To identify if the iABS needs to be replaced, check the identification tag on the electronic control unit (ECU). The part numbers for iABS systems are:

- 400 500 420 0 (2S/2M, 4S/2M Standard)
- 400 500 430 0 (2S/2M, 4S/2M and 4S/3M Premium)

The serial number for the parts affected is an 8-digit number as clarified in Section 5.1. The number is a combination of the date of manufacture and the serial number as can be seen in the following images. A table with all affected serial numbers can be found in Section 5.1.

If the serial number from the part matches a serial number in Section 5.1, proceed to Section 6.

If the serial number does not match any serial number in Section 5.1, your part does not need to be replaced and the trailer can be placed back into service. Refer to Section 4 for filing claim.

If you are not able to identify if the iABS should be replaced, contact WABCO Customer Care Center at 855-228-3203.

# Identifying if the iABS needs to be replaced

## 5.1 Serial Numbers Affected



Serial Number	Serial Number	Serial Number	Serial Number	Serial Number
01216561	14219360	20211144	28214157	40204038
01216619	15219521	20211159	28214186	40204041
03201003	17219591	21201644	29201898	40219554
03217027	17219619	21211276	29214409	41204264
03217158	17219680	21211285	29214414	41204270
04201111	17219723	21211318	29214449	41204335
04201120	18210020	21211399	29214545	41204345
04217260	18210037	21211437	29214713	41204372
04217297	18210048	21211514	29214738	41204375
04217393	19210057	21211575	29214779	41204377
05201138	19210069	21211612	29214785	41204425
05201171	19210080	21211613	29214794	41204449
05201221	19210104	21211718	30215149	41204498
06217493	19210107	22201733	30215417	42204538
06217495	19210108	22211836	30215547	42204595
07217713	19210112	22211854	31215773	42204718
07217791	19210113	22211866	31215790	45204825
07217818	19210154	23212183	31215810	45204837
07217829	19210196	24212344	31215911	45204887
08201273	19210228	24212406	31216002	45204944
08201276	19210311	24212467	31216021	46205020
08217940	19210358	24212477	32216305	46205090
08217983	19210376	24212524	32216311	46205105
08218056	19210426	24212527	32216400	47205183
08218084	19210526	24212534	32216727	47205190
08218140	19210587	24212560	33190472	47205253

## Identifying if the iABS needs to be replaced

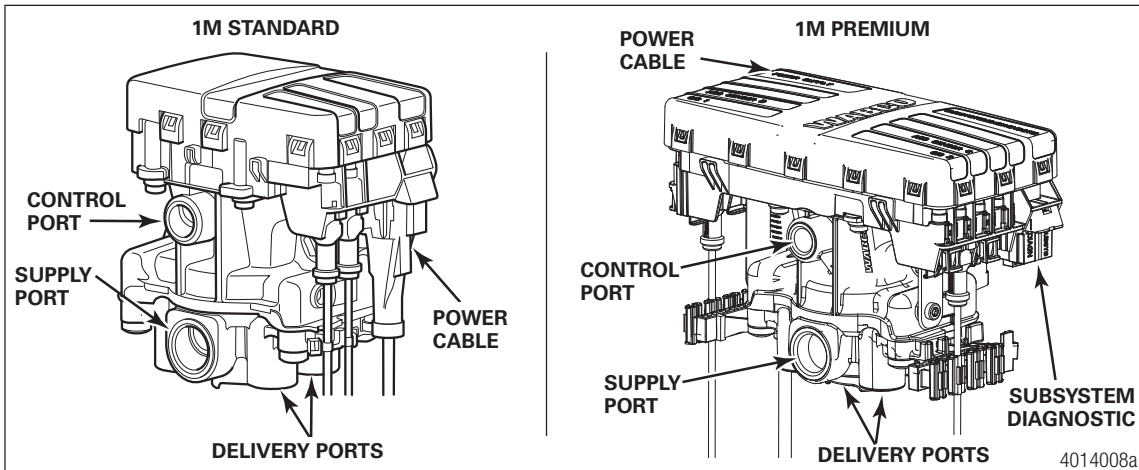
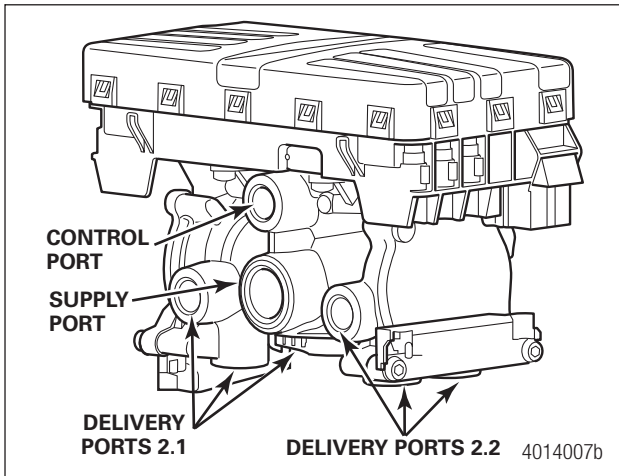
Serial Number	Serial Number	Serial Number	Serial Number	Serial Number
08218141	19210592	24212602	33190475	48205337
08218146	20210624	25212696	33190476	48205432
09201306	20210646	25212712	33202030	48205459
09201325	20210648	25212758	34202077	48205462
09201342	20210649	25212814	35202187	48205496
09218233	20210653	25212826	35202247	48205633
09218256	20210721	25212841	35202300	48205643
09218257	20210723	25212849	36202314	48205766
09218320	20210744	25212856	36202364	48205767
10201357	20210747	25212857	36202372	48205793
10201439	20210784	25212867	36202412	49190850
10218441	20210785	25212954	36202540	49205903
12218693	20210787	25212993	37202681	50206049
12218755	20210791	26201833	37202798	50206055
12218792	20210794	26201855	37202803	50206117
12218836	20210905	26213305	37202816	51206173
12218856	20210984	27213567	37202857	51206198
13201513	20210985	28213619	38203327	51206216
13201524	20211080	28213696	38203506	
13219073	20211083	28213902	39203689	
13219106	20211107	28213969	39203692	
13219179	20211109	28214025	39203767	
14219264	20211128	28214091	39203835	
14219349	20211136	28214128	40204032	

# ECU/Valve Assembly

## 6 ECU/Valve Assembly

### DANGER

Release all pressure from the air system before you disconnect any components. Pressurized air can cause serious personal injury.



### 6.1 How to Remove the ECU/Valve Assembly

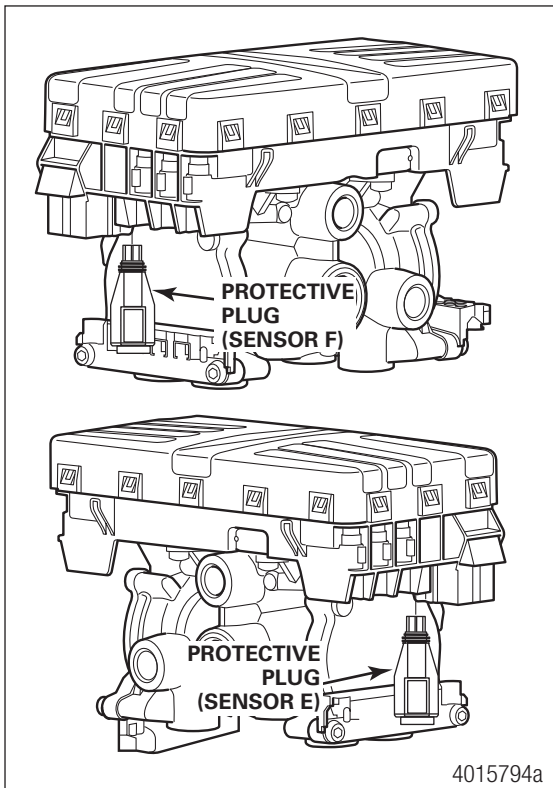
1. Release all pressure from the air system.
2. Attach labels to identify all air lines.
3. Disconnect the air lines from the ECU/Valve Assembly.
4. Disconnect the power cable, additional relay valve cable (if used), and all sensor cables from the ECU/Valve Assembly.
5. Remove the ECU/Valve Assembly from its mounting location:
  - A. Bracket-mounted: Loosen and remove the two mounting bolts and lock nuts that hold the assembly to the cross member. Remove the assembly.
  - B. Nipple-mounted to Air Tank: Unscrew the assembly from the air tank.
6. If the assembly being replaced is under warranty, please return it to the trailer OEM for replacement.

# ECU/Valve Assembly

## 6.2 How to Install the ECU/Valve Assembly

**i** The ECU/Valve Assembly is supplied with black protective plugs only with the 2M valves in sensor ports E and F.

**i** When a sensor cable is not plugged into a sensor connector, the black plug must remain on the connector to protect it from dirt and contamination.



### **! DANGER**

You must use Schedule 80 pipe nipple (3/4-inch NPT) to nipple mount the ECU/Valve Assembly securely to the air tank to avoid possible serious personal injury and damage to components.

### 6.2.1 Tank-Mounted

### **! DANGER**

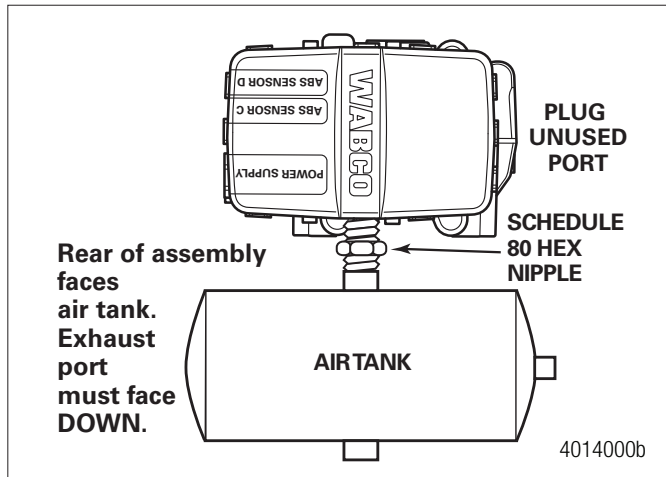
You must use Schedule 80 pipe nipple (3/4-inch NPT) to mount the ECU/single modulator valve securely to the air tank to avoid possible serious personal injury and damage to the components.

1. Use a 3/4-inch Schedule 80 hex nipple to attach ECU/single modulator valve assembly to a reinforced air tank. Do not overtighten.

**i** WABCO does not recommend use of a vise when installing the hex nipple. Use of a vise may cause overclamping. Overclamping may damage the internal components of the ECU/single modulator valve assembly.

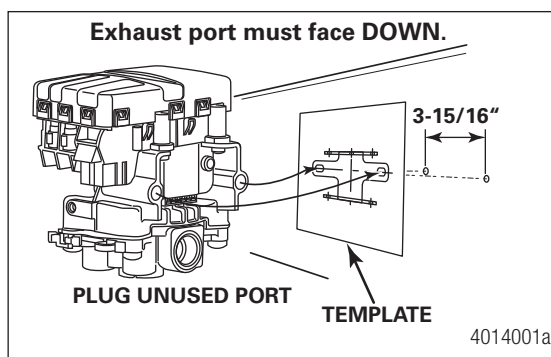
## ECU/Valve Assembly

2. Use a 3/4-inch pipe plug to plug unused supply port (Port 1). Apply SAE-standard, DOT-approved paste-type thread sealant to all pipe threads beyond the first two threads. Pipes with pre-applied thread sealant may also be used.
3. Rotate and tighten the ECU/single modulator valve assembly until the exhaust port faces down and the connection is secure. Use a torque wrench or ratchet with extension at the 3/4-inch pipe plug installed on the front supply port (Port 1).



### 6.2.2 Bracket-Mounted to Cross Member of Vehicle (2S/1M Standard)

1. Install a 3/4-inch NPT fitting in supply port (Port 1). Use a 3/4-inch pipe plug to plug unused supply port (Port 1).
    - Use a 3/4-inch pipe plug to plug unused supply port (Port 1). Apply SAE-standard, DOT-approved sealing paste to either the first few threads or over the whole length. Pipes with pre-applied thread sealant may also be used.
  2. Locate a position for mounting the assembly to the vehicle cross member midway between the side rails, close to the brake chambers the valve serves.
    - Drill two 3/8-inch mounting holes. The distance between the two holes (O.D.) must be 3-25/32-inches (96 mm) and mount directly to the cross member.
- OR
- Build a mounting bracket with two 3/8-inch mounting holes spaced 3-25/32-inches (96 mm) O.D. apart.
3. Use two 3/8-inch Grade 8 bolts with prevailing torque nuts and washers to attach assembly to the vehicle cross member. Tighten bolts to 20 lb-ft (27 N•m).

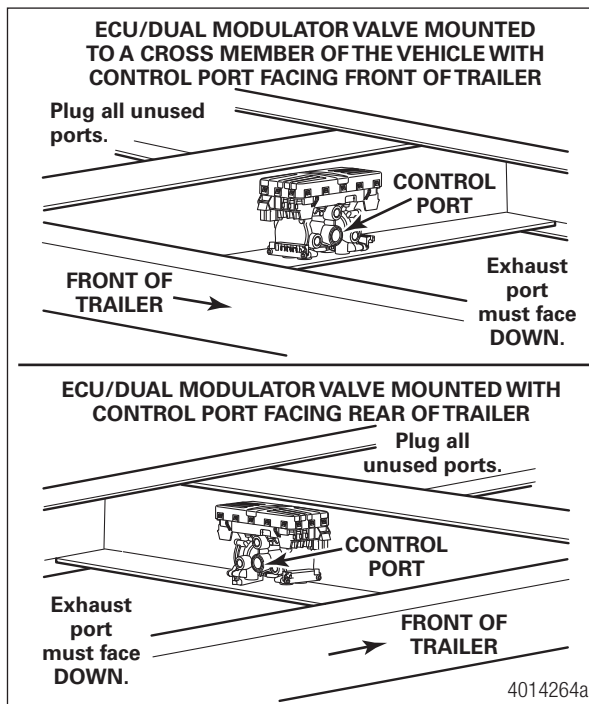




## ECU/Valve Assembly

### 6.2.3 Mounted to Cross Member of Vehicle — 2S/2M, 4S/3M Standard and Premium Mounting Bracket Not Supplied

1. Install a 3/4-inch NPT fitting in supply port. Use a 3/4-inch pipe plug to plug unused supply port (Port 1).
  - Apply SAE-standard, DOT-approved sealing paste to either the first few threads or over the whole length. Pipes with pre-applied thread sealant may also be used.



2. Locate a position for mounting the assembly to the vehicle cross member midway between the side rails, close to the brake chambers the valve serves.
  - Drill two 3/8-inch mounting holes. The distance between the two holes (O.D.) must be 3-13/16-inches (97.2 mm) and mount directly to the cross member.

OR

- Build a mounting bracket with two 3/8-inch mounting holes spaced 3-13/16-inches (97.2 mm) O.D. apart.
3. Connect the air lines to the ports. Follow the label markers installed when the air lines were disconnected.
4. Connect the sensor cables, external relay valve cable (if used), and power cable to the ECU/Valve Assembly. Use the black protective connector caps included with the replacement assembly to cover unused cable connections.
5. Perform End of Line Check before returning the trailer to service.

# End of Line Testing

## 7 End of Line Testing

End of line testing is required on all iABS installations. To run these tests, WABCO recommends you use TOOLBOX PLUS™ Software.

TOOLBOX PLUS™ Software and general test procedures are included in this manual.

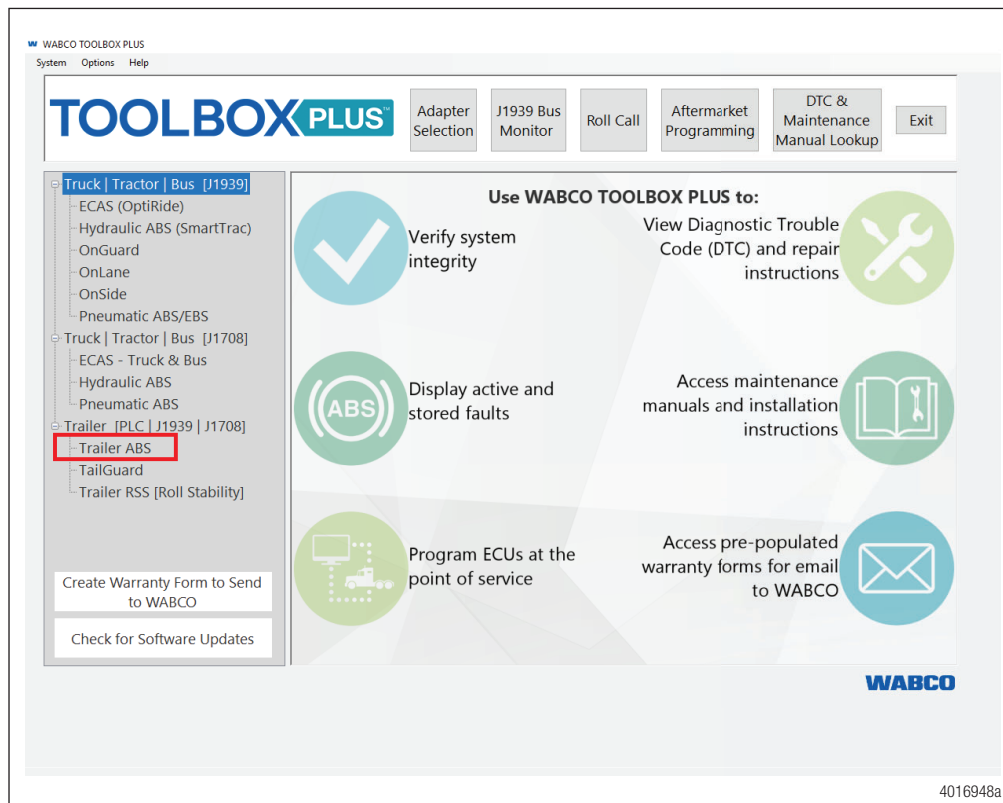
### 7.1 End of Line Testing Procedure Using TOOLBOX PLUS™ Software (All Installations)

1. Connect the PLC diagnostic adapter to the J560 adapter and the USB cable to the computer with the WABCO TOOLBOX PLUS™ Software.



Refer to the Software Owner's Manual, OM1618, for instructions for running TOOLBOX PLUS™ Software. The manual can be found at [www.wabco-auto.com](http://www.wabco-auto.com) in the literature section.

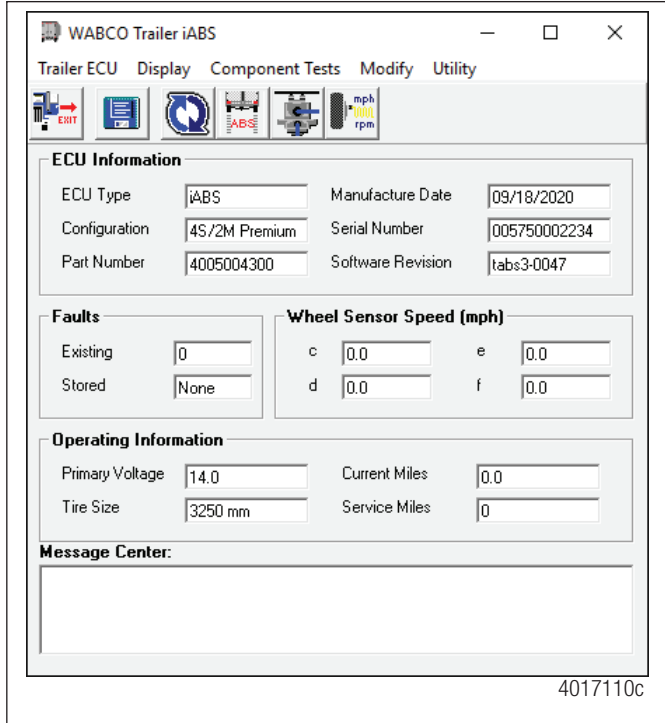
2. Open the iABS Diagnostics from the TOOLBOX PLUS™ Main Screen.



3. Verify power supply:

- Apply 12 (9.5 to 14 is acceptable) volts DC to the blue wire (constant power). Check the screen for the correct voltage it is displayed in the Primary Voltage field.

# End of Line Testing

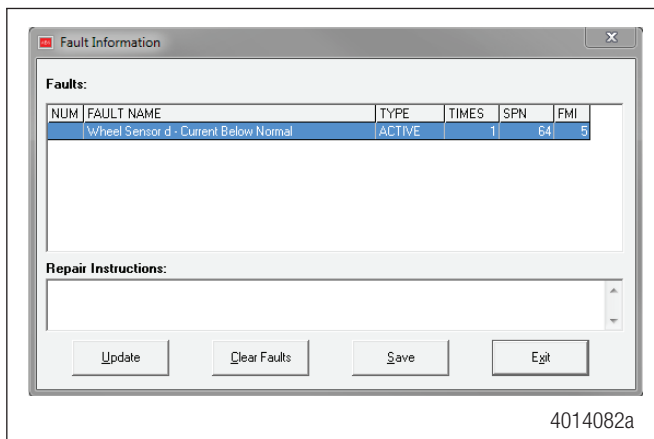


4. Check the Faults field on the Main Screen:

**NONE** = No faults present, proceed with end of line test.

**YES** = Faults present, double-click on "YES" to bring up the fault information screen.

Use the information in the **Repair Instructions** field to make the necessary repairs.

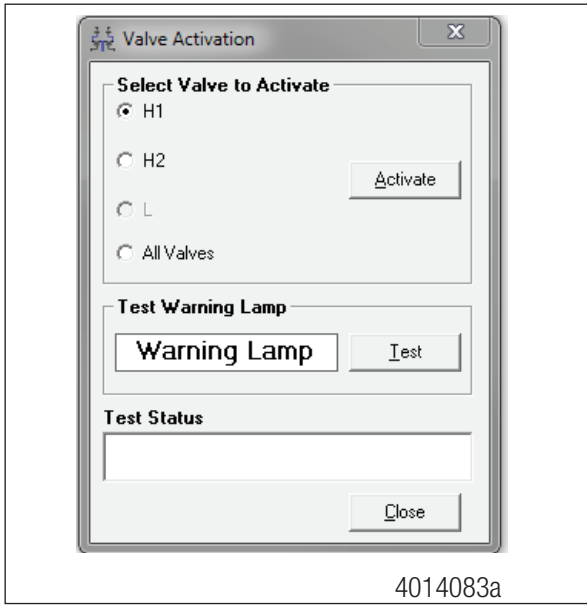


# End of Line Testing

## 7.2 Verify Correct Valve and Lamp Installation (2S/1M Standard)

To verify valve and lamp installations with TOOLBOX PLUS™ Software:

1. At the Trailer Main Screen click on **Component Test**, then select **Valves/Lamp** to display the Valve Activation Screen.



2. The H1 valve indicator will be selected. Click on the **Activate** button and listen for the valve to click, indicating a good installation. The Test Status box at the bottom of the menu will also display the status of this test.
3. Click on the **Test** button to activate the ABS indicator lamp — this is the lamp that is mounted on the side of the trailer. The lamp will flash multiple times, indicating lamp installation is OK. The Test Status box at the bottom of the menu will also display the status of this test.
4. Click on **Close** to exit.

### 7.2.1 2S/2M, 4S/2M, 4S/3M (Standard and Premium)

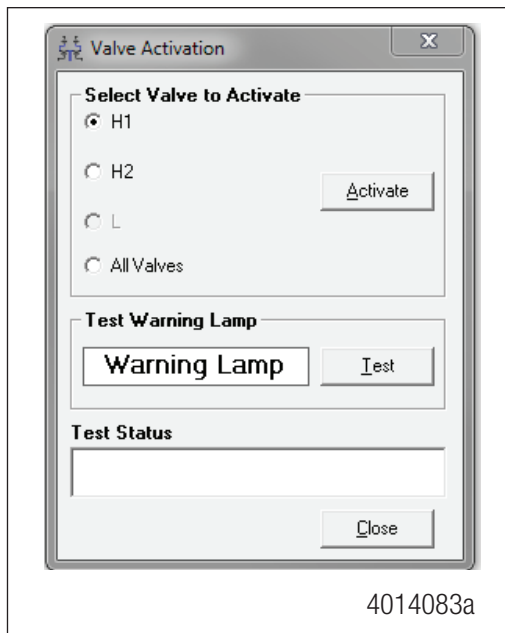
To verify valve and lamp installations with TOOLBOX™ Software:

1. Apply 12 volts DC to the ABS.
2. Apply air to the emergency line to fill the air tanks and release the spring brakes.
3. Apply air to the control line.
4. At the Trailer Main Screen click on **Component Test**, then select **Valves/Lamp** to display the Valve Activation Screen. The H1 valve indicator will be highlighted.



Selecting “All Valves” will sequence all of the valves beginning with the H1 valve.

## End of Line Testing



5. Click on the **Activate** button.
6. Check for correct air line installation. To do this, observe the slack adjusters:
  - If the control port faces the **front of the trailer**, the slack adjusters will move in and out as the **curbside** portion of the dual modulator valve cycles. If this does not happen, the air lines are not correctly connected. Make the necessary repairs.
  - If the control port faces the **rear of the trailer**, the slack adjusters will move in and out as the **roadside** portion of the dual modulator valve cycles. If this does not happen, the air lines are not correctly connected. Make the necessary repairs.



The Test Status box at the bottom of the menu will display the status of this test.

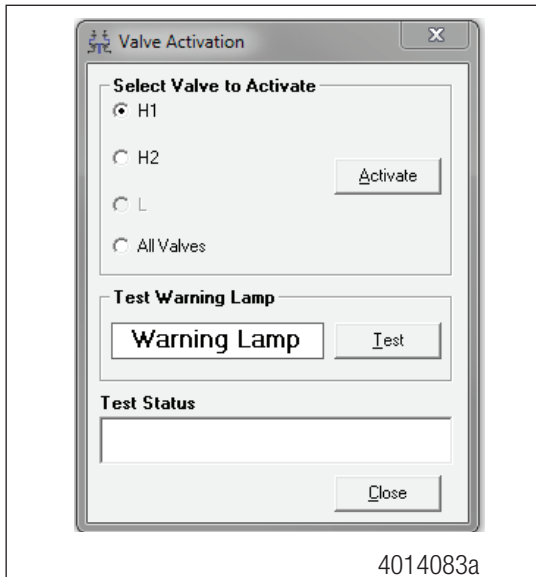
Repeat this test for the H2 valve.

- A. Repeat Steps 1-4.
  - B. Select the H2 valve from the valve activation screen.
  - C. Click on the activate button to verify correct valve installation (H2).
  - D. Check for correct air line installation. To do this, observe the slack adjusters.
    - If the control port faces the **front of the trailer**, the slack adjusters will move in and out as the **roadside** portion of the dual modulator valve cycles. If this does not happen, the air lines are not correctly connected. Make the necessary repairs.
    - If the control port faces the **rear of the trailer**, the slack adjusters will move in and out as the **curbside** portion of the dual modulator valve cycles. If this does not happen, the air lines are not correctly connected. Make the necessary repairs.
7. For 4S/3M installations: Repeat this test for the L valve.

L Valve: The external relay valve designated L is an axle control valve. It controls brake chambers on one or two axles. It is important that delivery lines from port #2 are plumbed as shown on the installation drawings. The 4S/3M system is designed to be used with a variety of trailer configurations.

## End of Line Testing

- Click on the **Test** button to activate the ABS indicator lamp — this is the lamp that is mounted on the side of the trailer. The lamp will flash multiple times, indicating lamp installation is OK. The Test Status box at the bottom of the menu will display the status of this test.



- Click on **Close** to exit.

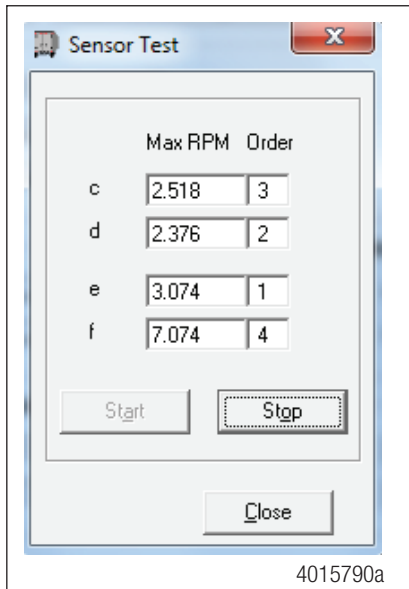
### 7.2.2 Sensor Installation Test (All Installations)

To test the sensor installation:

- Raise all sensed wheel ends off of the ground.
- Apply air to the emergency line to fill the air tanks and release the spring brakes so that the wheels can be rotated.
- Apply 12 volts DC to the ABS.
- At the Trailer Main Menu, click on **Component Test**, then select **Sensor Test** to display the Sensor Test screen.
- Click on the **Start** button to start the test.
- Rotate the sensed wheel ends at a rate of 1/2 revolution per second. This rate equals a wheel speed of approximately 4 mph (7 kph).

## End of Line Testing

7. Check the screen for sensor output.



- Make sure there is sensor output. If sensor output is displayed, sensor test is complete.
  - If there is no sensor output, verify that a tone ring has been installed and that the sensor is pushed all the way in against the tone ring. Make the necessary repairs and repeat the sensor test. If the problem persists, contact WABCO.
8. Check **Order** fields to verify sensors were installed in the right location based on orientation of the valves.
9. Refer to Section 4 for filing claim.

**i** Refer to the sensor locations in this section.





**For further product details contact your distributor or the  
WABCO Customer Care Center at 855-228-3203.**

### **About ZF Group**

ZF is a global technology company and supplies systems for passenger cars, commercial vehicles and industrial technology, enabling the next generation of mobility. ZF allows vehicles to see, think and act. In the four technology domains Vehicle Motion Control, Integrated Safety, Automated Driving, and Electric Mobility, ZF offers comprehensive solutions for established vehicle manufacturers and newly emerging transport and mobility service providers. ZF electrifies different kinds of vehicles. With its products, the company contributes to reducing emissions and protecting the climate.

ZF, which acquired WABCO Holdings Inc. on May 29, 2020, now has 162,000 employees worldwide with approximately 260 locations in 41 countries. In 2019, the two then-independent companies achieved sales of €36.5 billion (ZF) and \$3.4 billion (WABCO).

For more information, visit: [www.wabco-na.com](http://www.wabco-na.com)

# **WABCO**