

2S/2M iABS SENSOR AND PLUMBING VERIFICATION INSTRUCTIONS

TECHNICAL BULLETIN

TP19074

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1 General Information

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, notes and/or tips



Reference to information on the internet

1. Action step

- Action step
- ⇒ Consequence of an action

■ List

- List

Note on the use of a tool/WABCO tool

How to Obtain Additional Maintenance, Service and Product Information

Call the WABCO North America Customer Care Center at 855-228-3203. WABCO publications are also available on our website: https://www.wabco-auto.com/americas_en/Get-in-touch/Literature. Refer to MM19001, iABS™ Trailer ABS System with PLC and CAN 2S/1M, 2S/2M, 4S/2M and 4S/3M Standard/Premium, for additional information.

If using TOOLBOX PLUS version 13.2 or prior, refer to TP19073 for instructions on how to download software fix from WABCO website.

General Information

How to Obtain WABCO TOOLBOX PLUS™ Software

The TOOLBOX PLUS™ Software provides PC diagnostics for WABCO products and can be purchased and downloaded from <https://wabco.snapon.com>. For TOOLBOX PLUS™, refer to User's Guide MM19047. To obtain this literature, visit www.wabco-na.com/literature.

WABCO Academy



<https://www.wabco-academy.com/home/>

WABCO online product catalog



<https://www.wabco-customercenter.com>

Your direct contact to WABCO

WABCO North America LLC
WABCO USA LLC
1220 Pacific Drive
Auburn Hills, MI 48326
Customer Care Center: (855) 228-3203
www.wabco-na.com

2 Safety Information

Provisions for a safe work environment

- Only trained and qualified auto technicians and automotive 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 and fall over. Serious personal injury and damage to components can result.

3 2S/2M Verification Instructions without TOOLBOX™ Plus Software

3.1 Inspect the Sensor and Air Line Installation (2S/2M Standard)

3.1.1 Sensor Installation

1. Look at the C and D sensor connectors on the ECU/dual modulator valve assembly. Make sure the connectors are routed to the correct wheel end location, as follows:
 - If the ECU/dual modulator valve assembly is mounted with the control port facing the front of the trailer:
 - Sensor D must be routed to the curbside wheel end location
 - Sensor C must be routed to the roadside wheel end location
 - Refer to Figure 1 and Figure 2
 - If the ECU/dual modulator valve assembly is mounted with control port facing the rear of the trailer:
 - Sensor C must be routed to the curbside wheel end location
 - Sensor D must be routed to the roadside wheel end location
 - Refer to Figure 1 and Figure 2

⚠ CAUTION

If sensors are not correctly installed, make the necessary repairs to route the sensors to the correct ports on the ECU.

Fig. 1

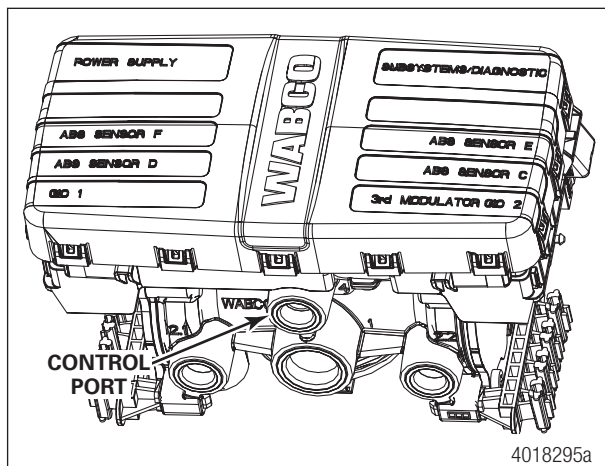
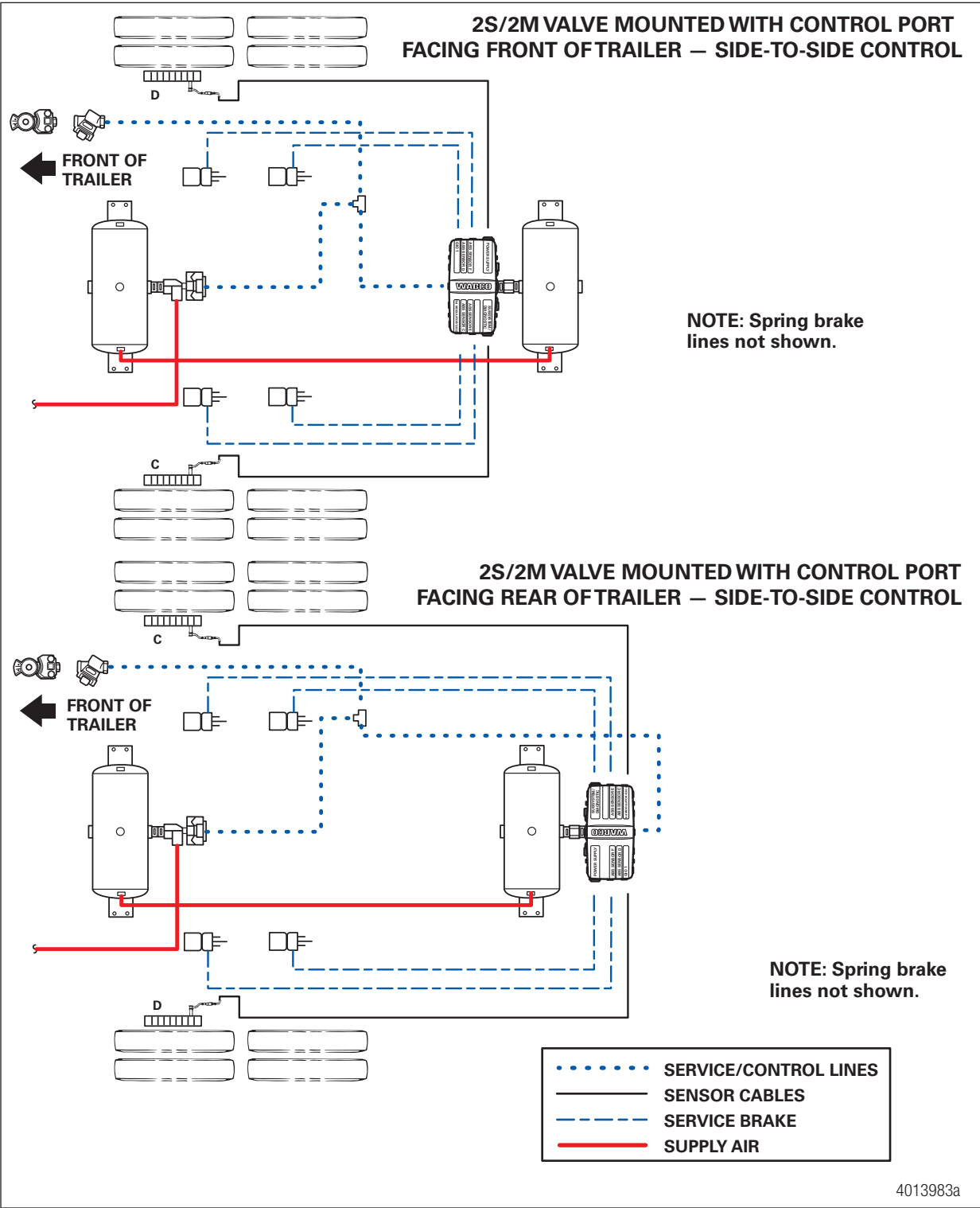


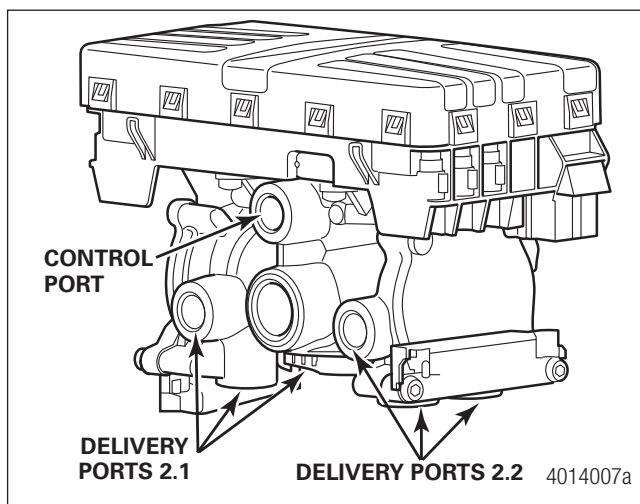
Fig. 2



3.1.2 Air Line Installation

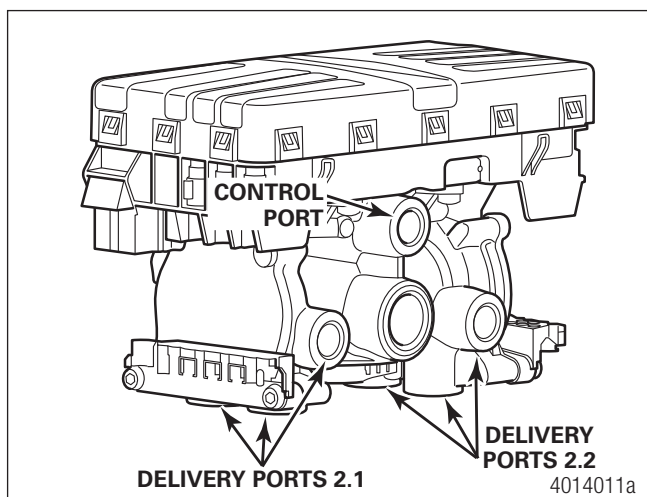
1. Ensure that all unused air ports are plugged and that the exhaust port is facing DOWN.
2. Look at the air line installation to verify that all air lines are correctly installed.
 - If the ECU/dual modulator valve assembly is mounted with the control port facing the FRONT of the trailer, the air lines for the three delivery ports labeled 2.1 must be routed to CURBSIDE; the air lines for the three delivery ports labeled 2.2 on the opposite side of the valve must be routed to ROADSIDE. See Figure 3 below.
 - If the ECU/dual modulator valve assembly is mounted with the control port facing the REAR of the trailer, the air lines for the three delivery ports labeled 2.2 must be routed to CURBSIDE, the air lines for the three delivery ports on the opposite side of the valve labeled 2.1 must be routed to ROADSIDE. See Figure 4 below.

Fig. 3



Control Port Facing Forward

Fig. 4



Control Port Facing Rear

⚠ CAUTION

If the air lines are not correctly routed, perform the necessary repairs to route the air lines to correct ports on the valve.

4 2S/2M Verification Instructions with TOOLBOX™ PLUS Software

WARNING

If using TOOLBOX PLUS™ version 13.2 or prior, refer to TP19073 for instructions on how to download software fix from WABCO website.

End of Line Testing Procedure Using TOOLBOX PLUS™ Software

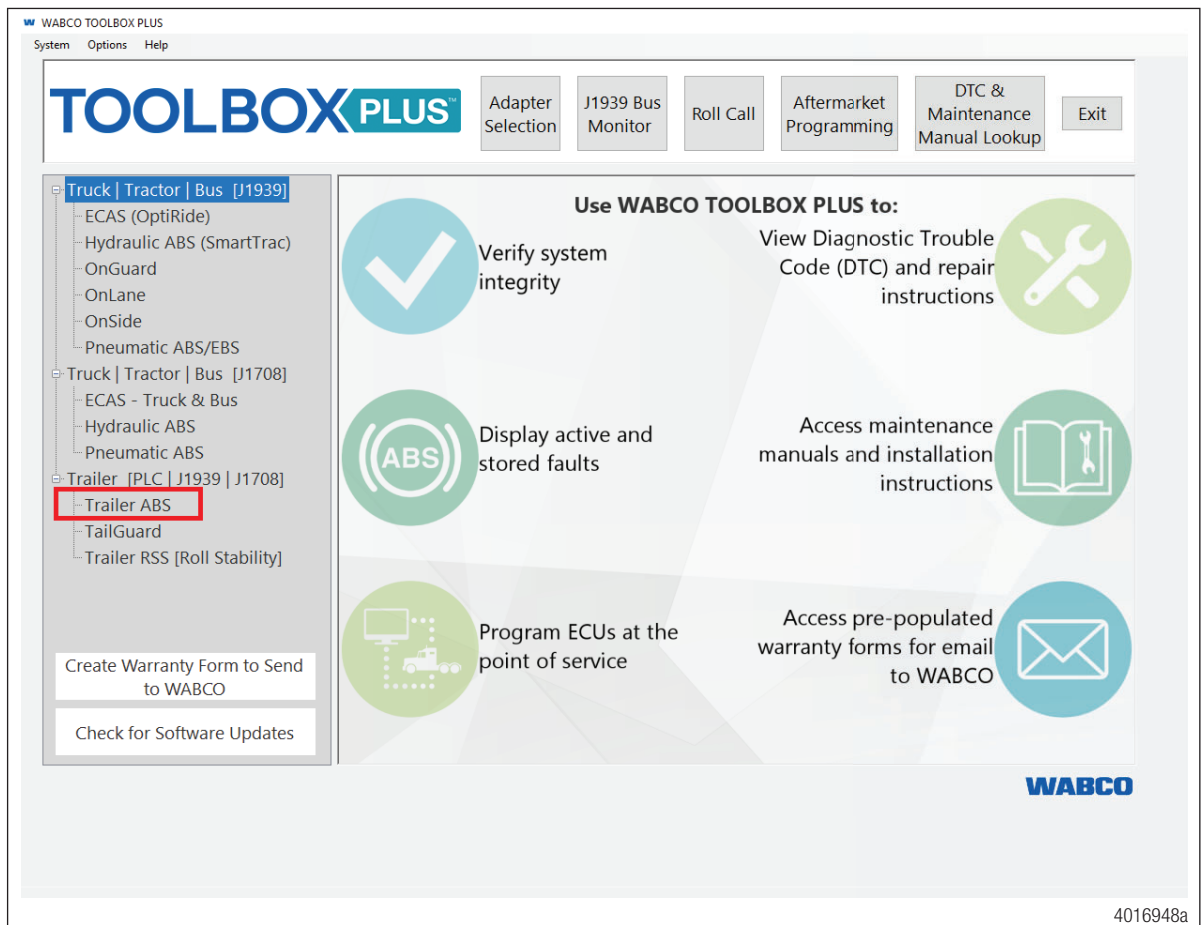
1. Connect the PLC diagnostic adapter to the J560 adapter and the USB cable to the computer with the WABCO TOOLBOX PLUS™ Software.



Refer to the MM19047 Use Guide for instructions for running TOOLBOX PLUS™ Software. The manual can be found at www.wabco-na.com in the literature section.

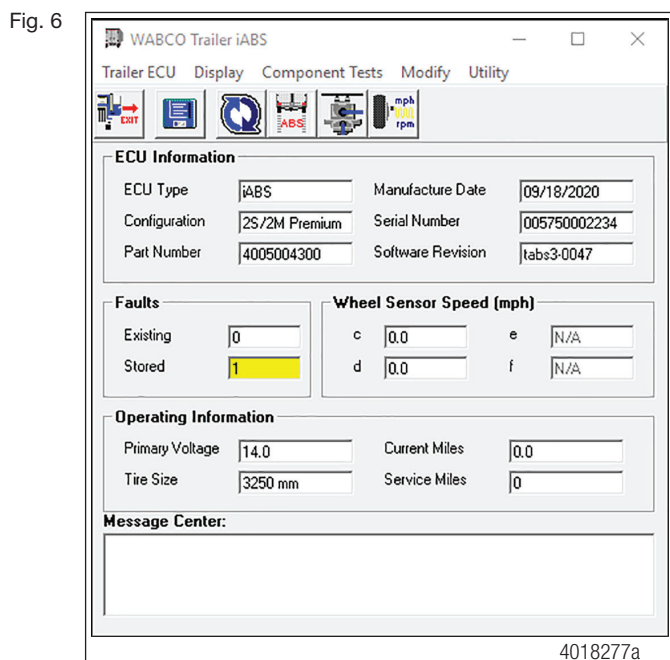
2. Open the i-ABS Diagnostics from the TOOLBOX PLUS™ Main Screen. Figure 5.

Fig. 5



3. Verify power supply as follows.

- Apply 12 volts DC (9.5 to 14 is acceptable) to the blue wire (constant power). Check the screen for the correct voltage. It is displayed in the Primary Voltage Field. Figure 6.

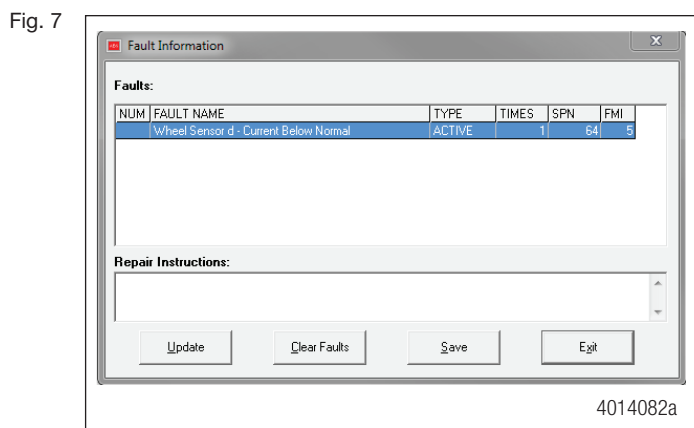


4. Check the Faults field on the Main Screen:

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. Figure 7.



Valve Activation Test

To verify valve and lamp installations with TOOLBOX™ Software:

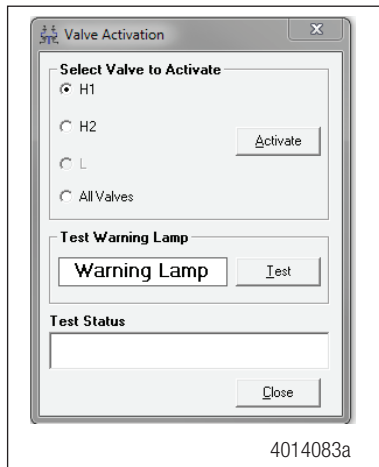
1. Apply 12 volts DC to the ABS.

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. Figure 8.



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

Fig. 8



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. Check to confirm air lines are connected from the ABS/dual modulator valve ports 2.1 to the curbside service brake chamber ports.
 - 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. Check to confirm air lines are connected from the ABS/dual modulator valve ports 2.1 to the curbside service brake chamber ports.



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

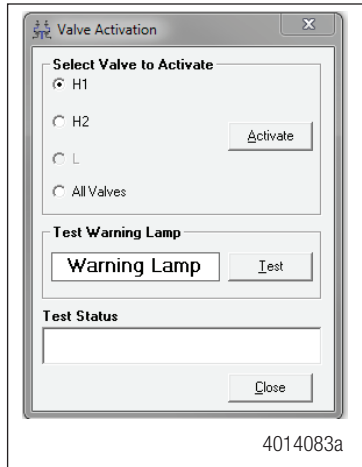
7. Repeat this test for the H2 valve.
 - A. Repeat Steps 1-4.
 - B. Select the H2 valve from the valve activation screen.
 - C. Click on the activate button to verify correct valve installation (H2).
 - D. Check for correct air line installation. To do this, observe the slack adjusters.
 - If the control 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. Check to confirm air lines are connected from the ABS/dual modulator valve ports 2.2 to the curbside service brake chamber ports.

- 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. Check to confirm air lines are connected from the ABS/dual modulator valve ports 2.2 to the curbside service brake chamber ports.

Lamp Activation Test

1. 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. Figure 9.

Fig. 9



2. Click on **Close** to exit.

4.1 Sensor Orientation Test

This following test is specific for the 2S/2M iABS configuration.

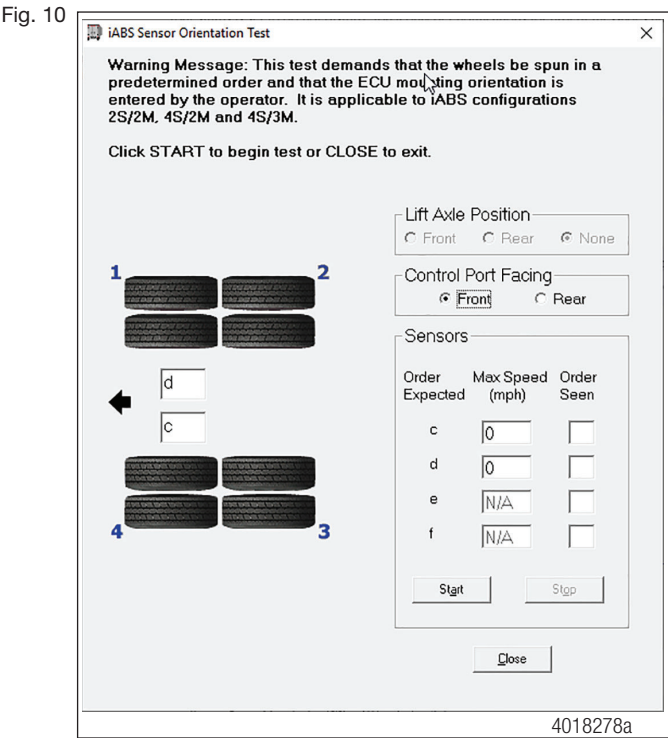
4.1.1 Sensor Orientation Test Screen

The sensor orientation test must be performed as part of the end of line testing procedure. Sensor Orientation Test Screen Before beginning this test, look at the control port to see if it faces the front or rear of the trailer. TOOLBOX PLUS™ will ask for this information to start the test (Step 5). To perform the sensor orientation test:

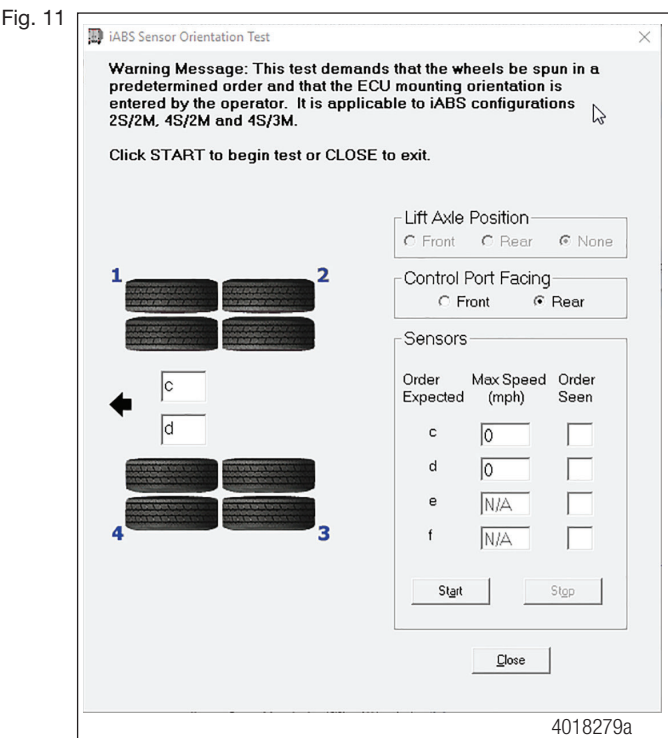
1. Raise the sensed wheel ends off the ground.
2. Apply air to the emergency line to fill the air tanks and release the spring brakes so that the wheels can be rotated.
3. Apply 12 volts DC to the ABS.

- 4. At the Trailer Main Menu, click on Component Test, then select Sensor Orientation Test to display the Sensor Orientation Test screen. Figure 10.

When the Sensor Orientation Test screen first appears, the Control Port Facing field will display the default—Front. This will occur regardless of the actual control port orientation of the installation being tested.



- 5. Click on Front or Rear in the Control Port Facing field to select the mounting orientation of the ECU/ dual modulator valve assembly. Figure 11.



Refer to Figure 10 and Figure 11 for illustrations of the ECU/dual modulator assembly mounted with the control port facing forward and rear. The correct mounting orientation must be selected prior to starting the test (Step 5).



2S/2M installations use C and D sensor locations only.

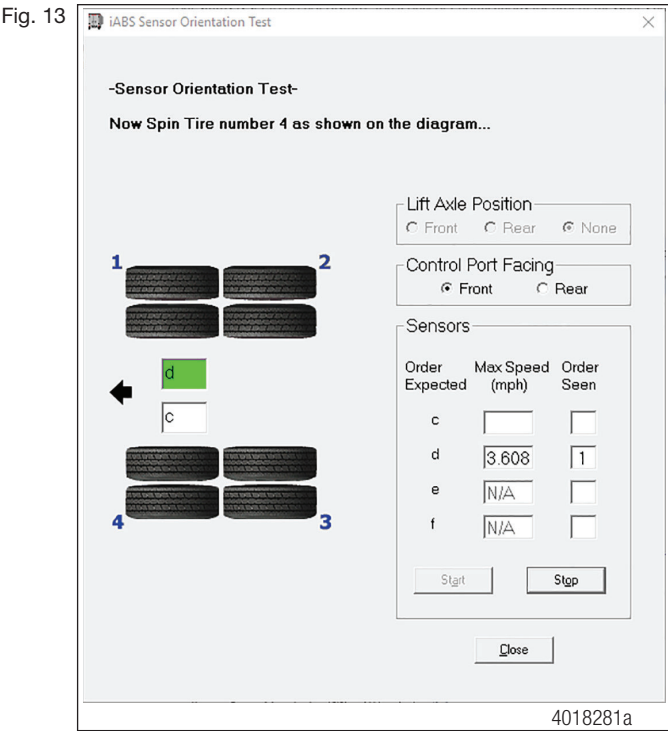
6. Click on Start to begin the test. Figure 12.

Fig. 12

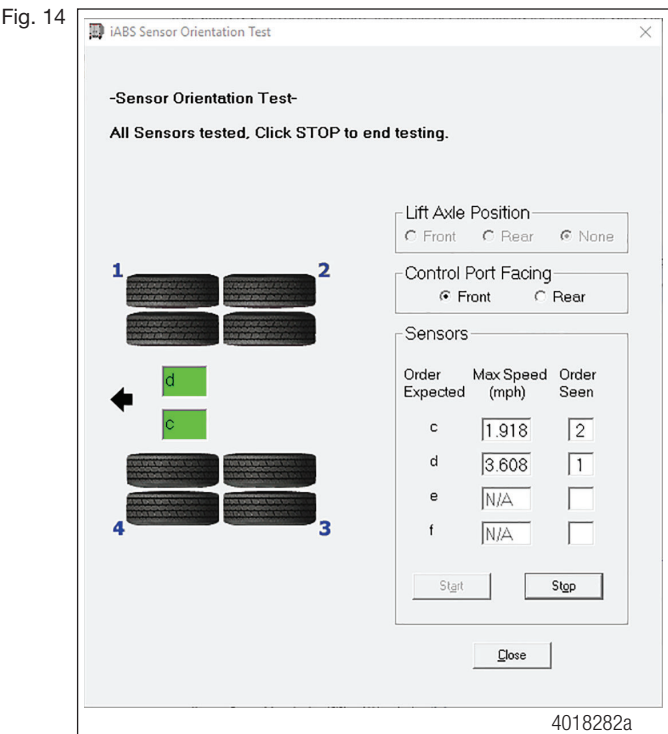
Order Expected	Max Speed (mph)	Order Seen
c		
d		
e	N/A	
f	N/A	

7. Follow the screen prompts, starting with 1, to rotate each sensed wheel end at a rate of 1/2 revolution per second. This rate equals a wheel speed of approximately 4 mph (7 kph). As each sensed wheel is rotated, check the color of the sensor identification block on the screen for results. The Sensor identification boxes are in the bottom left part of the Sensor Orientation Test screen. Figure 13.

- Green background: Correct sensor location. Spin the next sensed wheel as shown by the screen prompt.
- Red background: Incorrect sensor location. If you get a red background, you must stop the test (click on stop). Check sensor wire routing and confirm it matches the schematic shown in Figure 2, depending on valve orientation front or rear facing and repeat Steps 6 through 7.



8. To finish the Sensor Orientation Test, click on Stop, then on Close. Figure 14.



WARNING

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, and repeat the test. If the problem persists, contact the WABCO Customer Care Center at 855-228-3203. Sensor output appears in the Sensors field located in the bottom right portion of the Sensor Orientation Test screen. Figure 11.



For further details contact the
WABCO Customer Care Center at 855-228-3203.

About ZF Friedrichshafen AG

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.

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