INSTALLING TAG AXLE SYSTEM WITH ROLL STABILITY SUPPORT (RSS)

TECHNICAL BULLETIN

TP2204

WABCO

Table of Contents

Edition 1
Version 1 (02.2023)
TP2204 (en)

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 Information

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 wabconacustomercare@zf.com, or visit our website: www.zf.com/cv. More information can be found in the Advanced Driver Assistance Systems section at https://zfcvliterature.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).

Refer to the National Highway Traffic Safety Administration (NHTSA) website to find all current documents referenced in the manual at 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: wabconacustomercare@zf.com, naamorders.zf@zf.com or wabconaspecs@zf.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

ZF Commercial Vehicle Literature Center
https://zfcvliterature.com

1.5 WABCO Academy

www.wabco-academy.com

1.6 WABCO Online Product Catalog

www.wabco-customercentre.com

1.7 Your Direct Contact to ZF CVS

ZF CV Systems North America LLC

1220 Pacific Drive
Auburn Hills, MI 48326

Customer Care Center: (844) REACH-ZF

www.zf.com/cv

2 Safety Information

2.1 Provisions for a safer work environment

- Only experienced, trained and qualified automotive technicians may carry out work on the vehicle.
- Read this publication carefully.
- Follow all warnings, notices and instructions to help avoid personal injury and property damage.
- Always abide by the vehicle's Original Equipment Manufacturer (OEM) specifications and instructions.
- Observe all accident regulations of the repair facility 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 help prevent serious eye injury, always wear eye protection when you perform vehicle maintenance or service.

⚠WARNING

Park the vehicle on a level surface. Block the wheels to help 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

This product can expose you to chemicals including Nickel, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

3 Important Information

Use only genuine ZF components. Other manufacturers' parts are not designed for use with the WABCO Tag Axle system and it may not function correctly.

4 Before Installation

This technical bulletin provides you with installation directives and procedures for the installation of WABCO's GIO function. For the entire installation procedure of the tag axle system, including pneumatic and electrical routing with common errors and faults, see MM0888 and MM10168.

4.1 Liability

The installation of ZF's WABCO Tag Axle System with Roll Stability Support (RSS) can be carried out either by a ZF/WABCO Certified Service Partner or by the customer (after ZF training/demo installation). Contact your service partner in case the iABS/RSSplus data still needs to be activated.

Many customers prefer to do the installation themselves: the building-in of the device can then be combined with regular trailer maintenance services, which helps customers use their time more efficiently. To this purpose, ZF provides training for the technical engineers of the installation company. The training consists of a theoretical part which can be illustrated with a demo installation, and further monitoring. Afterwards, the trainees will be qualified to autonomously assemble the other devices in the trailers.

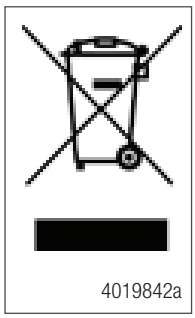
The illustrations and specific data of non-WABCO brand products have been checked thoroughly and have been found correct at the time this manual was composed. However, ZF cannot accept any responsibility for possible adaptations by the manufacturer concerned. ZF aims for a continuous improvement of its products. For the purpose of technical progress, we reserve the right to implement changes at any time, without prior notice.

4.2 Best Practices in Installation

4.2.1 Assembly

The assembly of the parts must be done using the accessories provided. ZF cannot be held responsible for any errors resulting from the use of other materials. ZF wishes to point out that activities which require welding to the trailer can cause damage to the electronics of the device. It is imperative that the device is disconnected when carrying out such activities.

4.2.2 Disposal



Dispose of hazardous waste in an environmentally friendly manner and in compliance with relevant local, state and federal regulations. ZF strives to protect the environment. As with other old devices, all components can be returned to ZF.

4.2.3 Improper Use

In case of damage of any kind, which could affect the ingress protection/waterproofness of the device, the device must be immediately taken out of service. The device's safety may be endangered when:

- The device is not firmly fastened to the trailer
- The device has suffered from transportation damages
- The temperature limits are exceeded
- The device is visibly damaged

⚠WARNING

IF THE DEVICE IS VISIBLY DAMAGED, IT MUST BE TAKEN OFF OF THE VEHICLE IMMEDIATELY AND SENT BACK TO ZF.

5 Introduction

The WABCO Trailer RSS*plus*™ with InfoLink™ Tag Axle Option uses the generic I/O capability to control the tag axle function of a trailer that is in compliance with FMCSA 393.207. It controls the operation of a tag axle by using driver input from the tractor cab as well as wheel speeds to decide when to exhaust air out of the tag axle air bags to maneuver the trailer with ease around corners at low speeds.

A 12-volt switch input from the driver signals the ECU to deflate the tag axle bags when the vehicle is below 10 mph (16 kph). Once the vehicle exceeds 10 mph (16 kph), the bags automatically reinflate to the correct ride height. If the switch is activated and the vehicle speed exceeds 30 mph (48 kph) for 30 seconds or more, the ECU will not allow the driver to deflate the air bags until the switch has been cycled to OFF and then back to ON and the speed is less than 10 mph (16 kph).

6 Kits and Supplies

Kit Part Number 400 850 842 0

Description	Part Number	Quantity
3-meter single port Y-cable	449 810 148 0	1
3/2 solenoid valve	472 170 997 0	1

Kit Part Number 400 850 842 2

Description	Part Number	Quantity
Activation switch extension cable	449 711 150 0	1
Multiple generic I/O cable	449 866 010 0	1
3/2 solenoid valve	472 170 997 0	1
Solenoid valve cable	449 518 030 0	1
Extension cable for indicator lamp	449 711 060 0	1

Kit Part Number 400 853 003 2

Description	Part Number	Quantity
3-meter single port Y-cable	449 810 148 0	1
3/2 solenoid valve	472 170 997 0	1

Kit Part Number 400 853 002 0

Description	Part Number	Quantity
Extension cable for indicator lamp	449 711 060 0	1
3/2 solenoid valve	472 170 997 0	1
Solenoid valve cable	449 518 030 0	1
Multiple generic I/O cable	449 866 010 0	1
Activation switch extension cable	449 711 150 0	1

6.1 Other Components Sold Separately

Description	Part Number
SEALCO lift axle control valve (required)*	110591
Optional – 6-meter solenoid valve cable	449 408 060 0
Optional – Residual pressure valve*	1300-05
Optional – Check valve*	715152
Toggle switch*	TM101
Tag Axle Label	TP11113

* Call SEALCO Commercial Vehicle Products at 602-253-1007 to obtain this part.

7 Installation

⚠ WARNING

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

⚠ WARNING

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

⚠ WARNING

Park the vehicle on a level surface. Block the wheels to help 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.

⚠ WARNING

When you work on an electrical system, the possibility of electrical shock exists, and sparks can ignite flammable substances. You must always disconnect the battery ground cable before you work on an electrical system to help prevent serious personal injury and damage to components.

⚠ WARNING

Ensure the trailer has correct electrical grounding; refer to SAE Specification J1908. Refer to Appendix I page 33 for Vehicle Grounding Guidelines.

⚠ WARNING

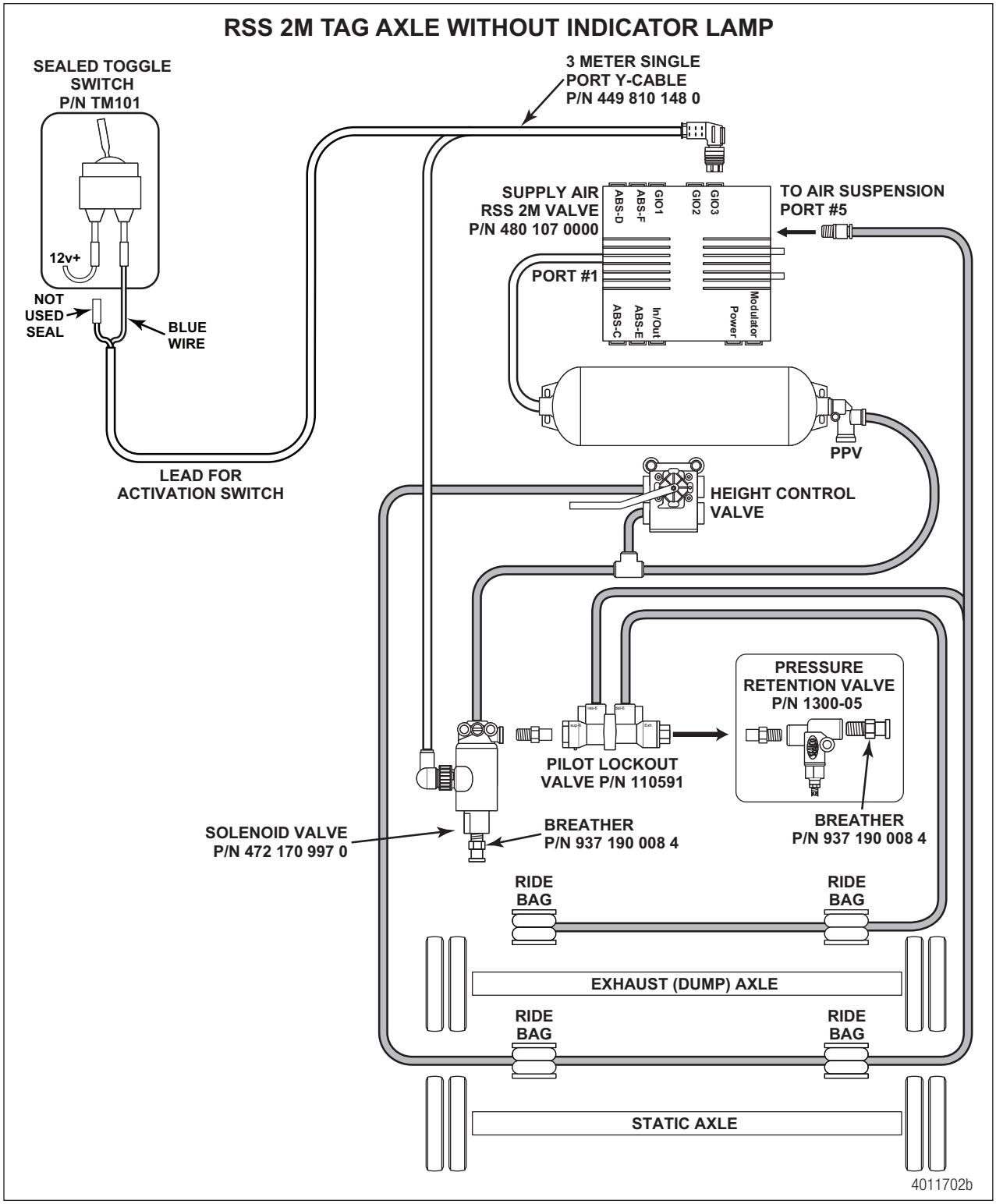
Ensure no cables undergo excessive strain or stress through improper mounting. Refer to Appendix II page 35 for Cable Strain Relief Guidelines.

Kit Part Number 400 850 842 0

The trailer must not be loaded during this component installation.

1. Raise the vehicle so the wheels to be serviced are off the ground. Support the axle to be serviced with safety stands.
2. Drain the brake and suspension systems of air before starting this procedure.
3. Disconnect the electrical power before starting this procedure.
4. Refer to the figure for the complete Tag Axle system layout.

Installation



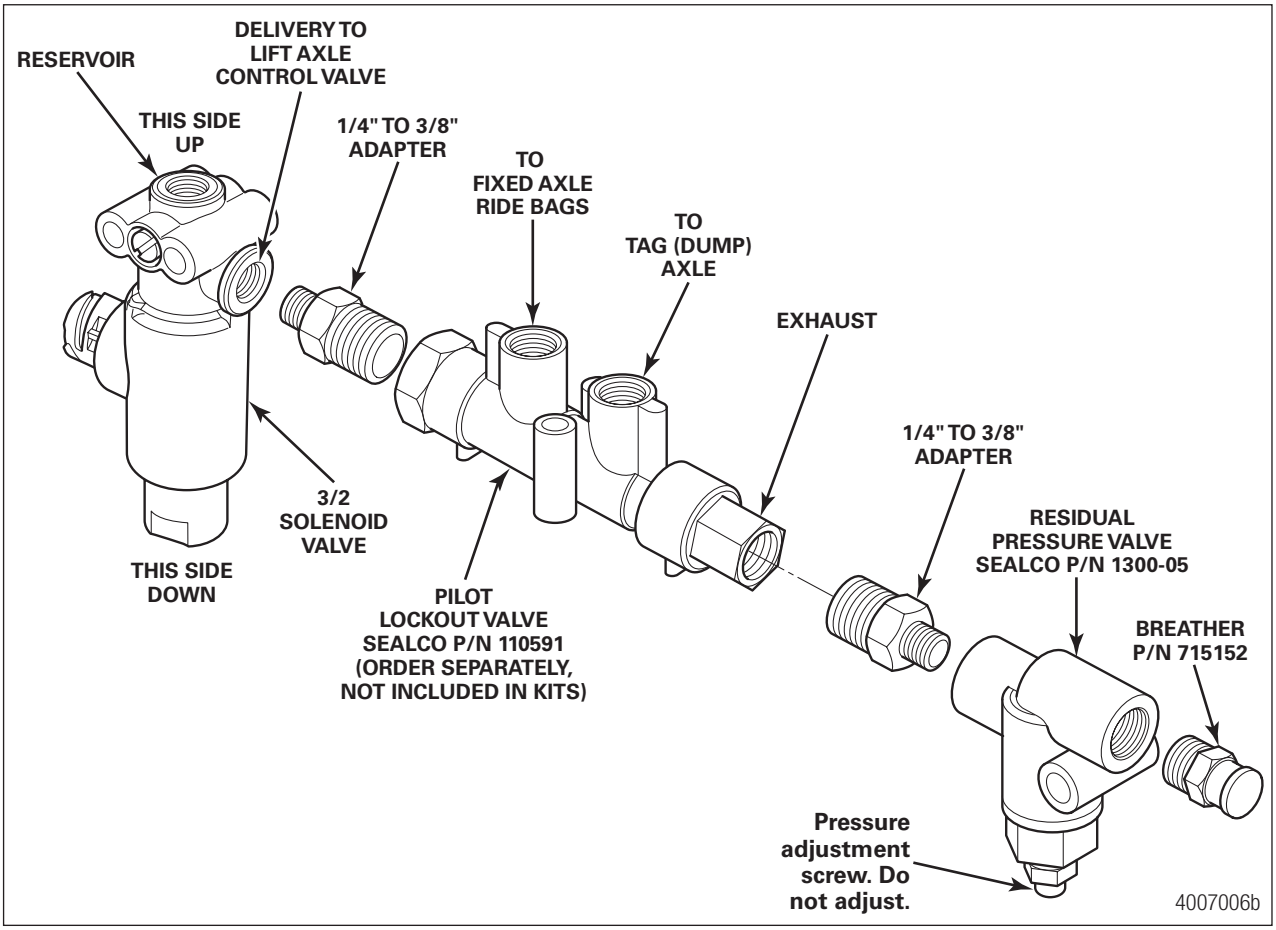
5. Connect the single port Y-cable, part number 449 810 148 0, to the ECU port labeled GIO3 and secure it with the locking tab.
6. Connect the 3/2 solenoid valve, part number 472 170 997 0, to the single port Y-cable. Twist the socket to ensure it locks securely to the valve.
7. Ensure the solenoid is installed correctly.

Installation

8. Apply a thread sealant and install the 1/4-inch to 3/8-inch adapter fitting from the solenoid valve to the pilot lockout valve, SEALCO part number 110591.
9. Connect the blue wire of the blunt-cut leaf on the Tag Axle Y-cable, part number 449 810 148 0, to a wire that leads into the cab of the tractor. This extended blue wire will connect to a single-pole, single-throw switch (not supplied) mounted inside the cab of the tractor. The other side of the switch is attached to a 3-amp fused, 12-volt DC power in the tractor. The brown wire on the blunt-cut lead of the Tag Axle Y-cable is not used and must be capped. All connections and terminations must use some form of weatherproof protection.
10. Apply a thread sealant and install the 1/4-inch to 3/8-inch adapter fitting from the solenoid valve to the lift axle control valve, SEALCO part number 110591. Refer to the figure.
11. Optional: Install the residual pressure valve (SEALCO part number 1300-05) to help prevent air bag damage. This will allow 5 psi (0.34 bar) of air to remain in the air bags of the tag axle.

> Do not attempt to adjust or tamper with the adjustment screw on the residual pressure valve. It is preset to the correct pressure.

12. Optional: Install the check valve (SEALCO part number 715152) onto the residual pressure valve. This should prevent water and contamination from entering into the residual pressure valve.



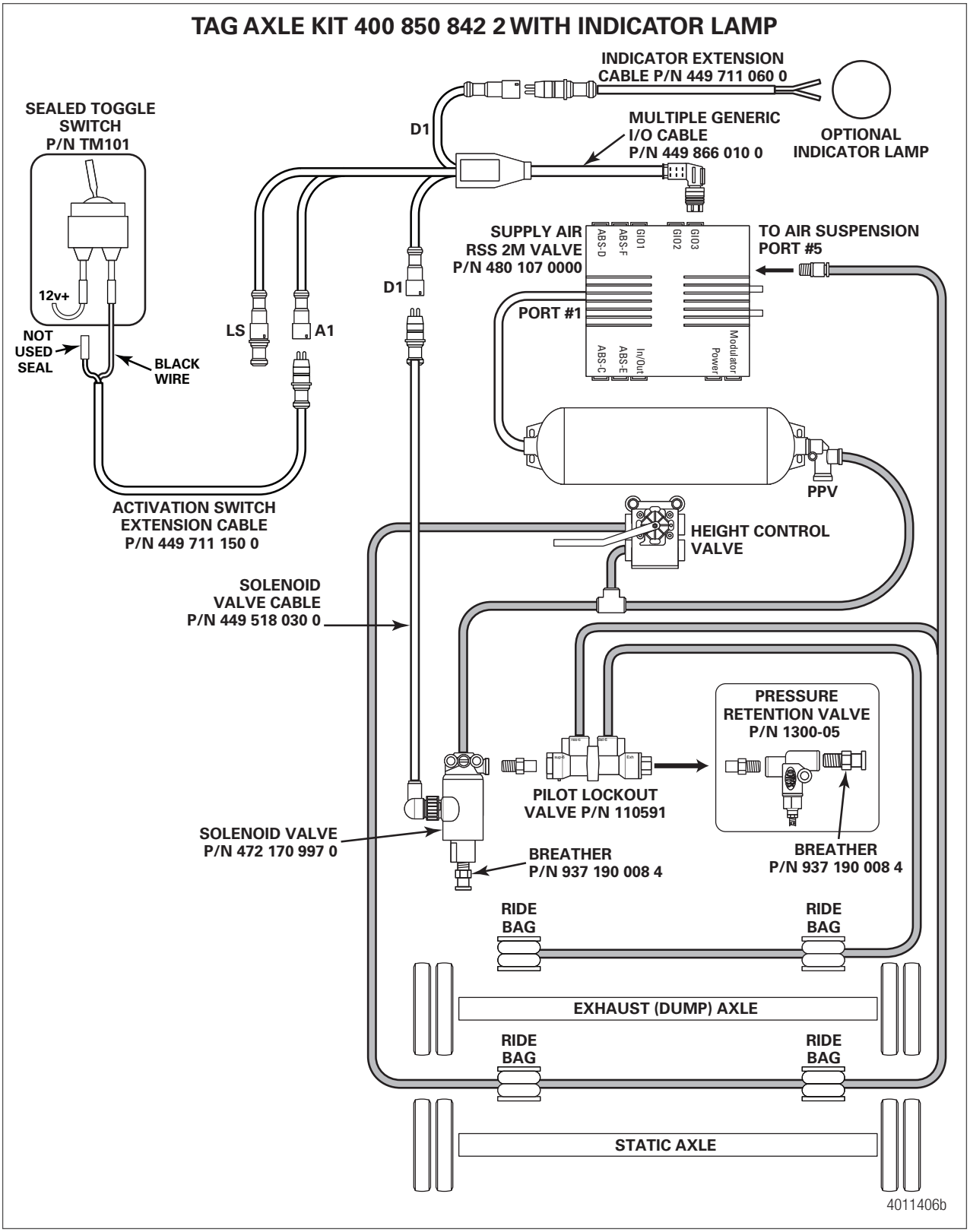
Installation

Kit Part Number 400 850 842 2

> The trailer must not be loaded during this component installation.

1. Raise the vehicle so the wheels to be serviced are off the ground. Support the axle to be serviced with safety stands.
2. Drain the brake and suspension systems of air before starting this procedure.
3. Disconnect the electrical power before starting this procedure.
4. Refer to the figure for the complete Tag Axle system layout.

Installation



Installation

5. Connect the multiple generic I/O able, part number 449 866 010 0, to the ECU port labeled GIO3 and secure it with the locking tab.
6. Connect the indicator lamp cable, part number 449 711 060 0, to the lead labeled “D1” on the multiple generic I/O cable, part number 449 866 010 0.
7. Connect the indicator lamp cable leads to a 12-volt incandescent or load resisted LED light. This OWM supplied lamp should be mounted on the trailer in the view of the driver. Connect the black wire to the power lead and the brown wire to ground.
8. Connect the activation switch cable, part number 449 711 150 0, to the lead labeled “A1” on the multiple generic I/O cable, part number 449 866 010 0.
9. Connect the black wire of the blunt-cut lead on the activation switch extension cable, part number 449 711 150 0, to a wire that leads into the cab of the tractor. This extended black wire will connect to a single-pole, single-throw switch (not supplied) mounted on the dashboard in the cab of the tractor. The other side of the switch is attached to 3-amp fused, 12-volt DC power in the tractor. The brown wire on the blunt-cut lead of the activation switch extension cable is not used and must be capped.

> Connect the black wire to its extension lead within a junction box if possible. If a junction box is not available, ensure that the connection is weatherproofed and electrically insulated.

10. Connect the 3/2 solenoid valve cable, part number 449 518 030 0, to the lead labeled “D1” on the multiple generic I/O cable, part number 449 866 010 0.
11. Connect the solenoid valve cable socket to the 3/2 solenoid valve, part number 472 170 997 0. Twist the socket until it locks securely to the valve.
12. Ensure that the solenoid valve is installed correctly.

> A plastic or mylar barrier must be installed between the solenoid valve and it’s mounting surface to help protect against corrosion. Ensure the thread sealant does not enter inside any of the ports as it could damage the solenoid valve and affect system performance. Damage to components and serious personal injury can result.

13. Apply a thread sealant and install the 1/4-inch to 3/8-inch adapter fitting from the solenoid valve to the pilot lockout valve, SEALCO part number 110591.
14. Optional: Install the residual pressure valve (SEALCO part number 1300-05) to help prevent air bag damage. This will allow 5 psi (0.34 bar) of air to remain in the air bags of the tag axle.

> Do not attempt to adjust the pressure adjustment screw on the residual pressure valve. It is preset to the correct pressure.

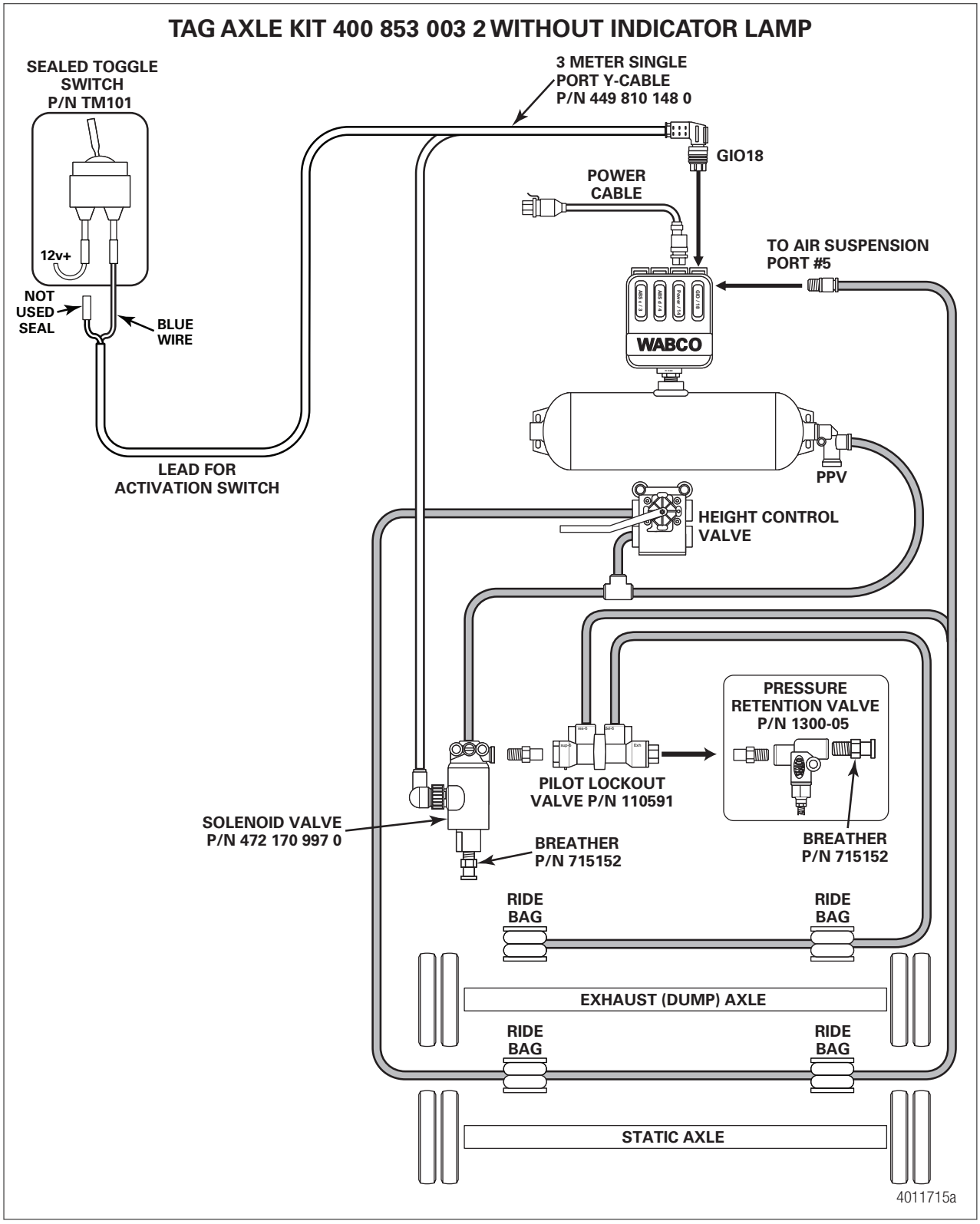
15. Install the optional breather (SEALCO part number 715152) onto the residual pressure valve. This will prevent water and contamination from entering the residual pressure valve.

Kit Part Number 400 853 003 2

> The trailer must not be loaded during this component installation.

1. Raise the vehicle so the wheels to be serviced are off the ground. Support the axle to be serviced with safety stands.
2. Drain the brake and suspension systems of air before starting this procedure.
3. Disconnect the electrical power before starting this procedure.
4. Refer to the figure for the complete Tag Axle system layout.

Installation



5. Connect the single port Y-cable, part number 449 810 148 0, to the ECU port labeled GIO18 and secure it with the locking tab.
6. Connect the single-port Y-cable socket to the 3/2 solenoid valve, part number 472 170 997 0. Twist the socket until it locks securely to the valve.
7. Ensure that the solenoid valve is installed correctly.

> A plastic or mylar barrier must be installed between the solenoid valve and it's mounting surface to help protect against corrosion.

⚠ WARNING

Ensure the thread sealant does not enter inside any of the ports as it could damage the solenoid valve and affect system performance. Damage to components and serious personal injury can result.

8. Apply a thread sealant and install the 1/4-inch to 3/8-inch adapter fitting from the solenoid valve to the pilot lockout valve, SEALCO part number 110591.
9. Connect the blue wire of the blunt-cut lead on the Tag Axle "Y" cable, part number 449 810 148 0, to a wire that leads into the cab of the tractor. This extended blue wire will connect to a single-pole, single-throw switch (not supplied) mounted inside the cab of the tractor. The other side of the switch is attached to 3-amp fused, 12-volt DC power in the tractor. The brown wire on the blunt-cut lead of the Tag Axle "Y" cable is not used and must be capped.

> Connect the blue wire to its extension lead within a junction box if possible. If a junction box is not available, ensure that the connection is weatherproofed and electrically insulated.

10. Optional: Install the residual pressure valve (SEALCO part number 1300-05) to help prevent air bag damage. This will allow 5 psi (0.34 bar) of air to remain in the air bags of the tag axle.

> Do not attempt to adjust the pressure adjustment screw on the residual pressure valve. It is preset to the correct pressure.

11. Install the optional breather (SEALCO part number 715152) onto the residual pressure valve. This will help prevent water and contamination from entering into the residual pressure valve.

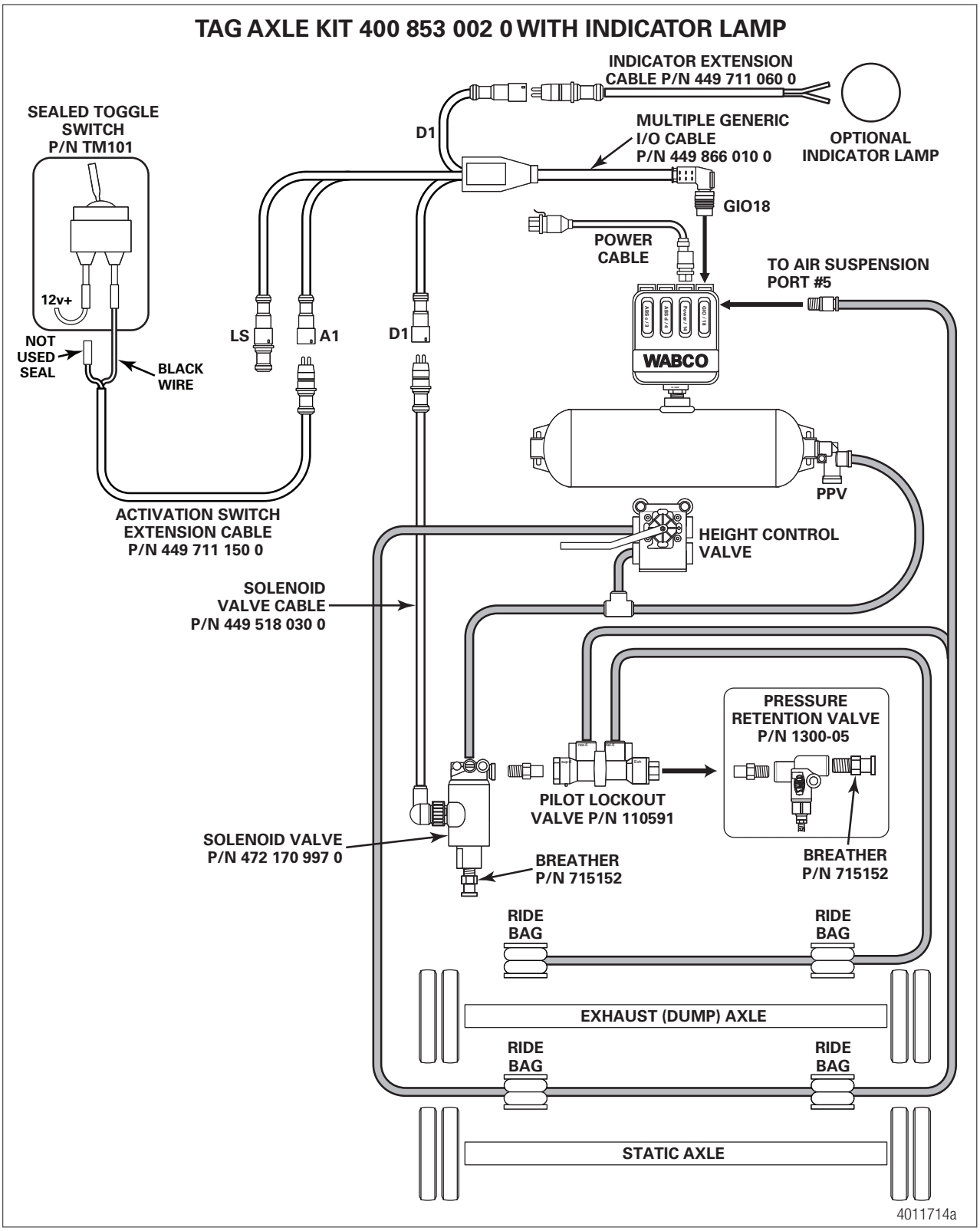
Kit Part Number 400 853 002 0

> The trailer must not be loaded during this component installation.

1. Raise the vehicle so the wheels to be serviced are off the ground. Support the axle to be serviced with safety stands.
2. Drain the brake and suspension systems of air before starting this procedure.
3. Disconnect the electrical power before starting this procedure.
4. Connect the multiple generic I/O cable, part number 449 866 010 0, to the ECU port labeled GIO18 and secure it with the locking tab.

Installation

5. Refer to the figure for the complete Tag Axle system layout.



6. Connect the indicator lamp cable, part number 449 711 060 0, to the lead labeled “D1” on the multiple generic I/O cable, part number 449 866 010 0.
7. Connect the indicator lamp cable leads to a 12-volt incandescent or load resisted LED light. This OEM supplied lamp should be mounted on the trailer in the view of the driver. Connect the black wire to the power lead and the brown wire to ground.
8. Connect the activation switch cable, part number 449 711 150 0, to the lead labeled “A1” on the multiple generic I/O cable, part number 449 866 010 0.
9. Connect the black wire of the blunt-cut lead on the activation switch extension cable, part number 449 711 150 0, to a wire that leads into the cab of the tractor. This extended black wire will connect to a single-pole, single-throw switch (not supplied) mounted on the dashboard in the cab of the tractor. The other side of the switch is attached to 3-amp fused, 12-volt DC power in the tractor. The brown wire on the blunt-cut lead of the activation switch extension cable is not used and must be capped.

> Connect the black wire to its extension lead within a junction box if possible. If a junction box is not available, ensure that the connection is weatherproofed and electrically insulated.

10. Connect the 3/2 solenoid valve cable, part number 449 518 030 0, to the lead labeled “D1” on the multiple generic I/O cable, part number 449 866 010 0.
11. Connect the solenoid valve cable socket to the 3/2 solenoid valve, part number 472 170 997 0. Twist the socket until it locks securely to the valve.
12. Ensure that the solenoid valve is installed correctly.

> A plastic or mylar barrier must be installed between the solenoid valve and it’s mounting surface to help protect against corrosion.

⚠ WARNING

Ensure the thread sealant does not enter inside any of the ports as it could damage the solenoid valve and affect system performance. Damage to components and serious personal injury can result.

13. Apply a thread sealant and install the 1/4-inch to 3/8-inch adapter fitting from the solenoid valve to the pilot lockout valve, SEALCO part number 110591.

Double Tag Axle

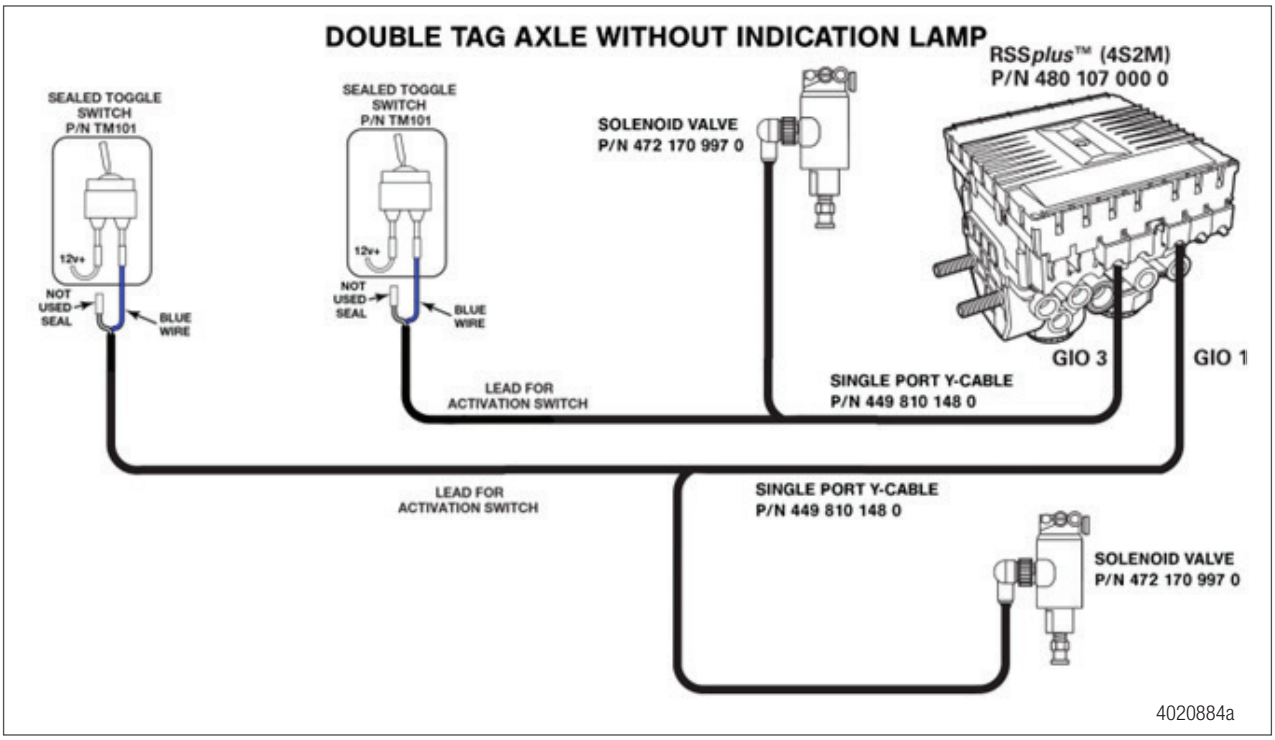
> Double Tag Axle configurations can only be implemented with 2M RSS systems.

> The trailer must not be loaded during this component installation.

1. Raise the vehicle so the wheels to be serviced are off the ground. Support the axle to be serviced with safety stands.
2. Drain the brake and suspension systems of air before starting this procedure.
3. Disconnect the electrical power before starting this procedure.

Installation

4. Refer to the figure for the complete Double Tag Axle system layout.



5. Connect the single port Y-cable, part number 449 810 148 0, to the ECU port labeled GIO1 and secure it with the locking tab.
6. Connect the single-port Y-cable socket to the 3/2 solenoid valve, part number 472 170 997 0. Twist the socket to ensure it locks securely to the valve.
7. Ensure that the solenoid valve is installed correctly.

A plastic or mylar barrier must be installed between the solenoid valve and it's mounting surface to help protect against corrosion.

⚠ WARNING

Ensure the thread sealant does not enter inside any of the ports as it could damage the solenoid valve and affect system performance. Damage to components and serious personal injury can result.

8. Apply a thread sealant and install the 1/4-inch to 3/8-inch adapter fitting from the solenoid valve to the pilot lockout valve, SEALCO part number 110591.
9. Connect the blue wire of the blunt-cut lead on the Tag Axle "Y" cable, part number 449 810 148 0, to a wire that leads into the cab of the tractor. This extended blue wire will connect to a single-pole, single-throw switch (not supplied) mounted inside the cab of the tractor. The other side of the switch is attached to 3-amp fused, 12-volt DC power in the tractor. The brown wire on the blunt-cut lead of the Tag Axle "Y" cable is not used and must be capped.

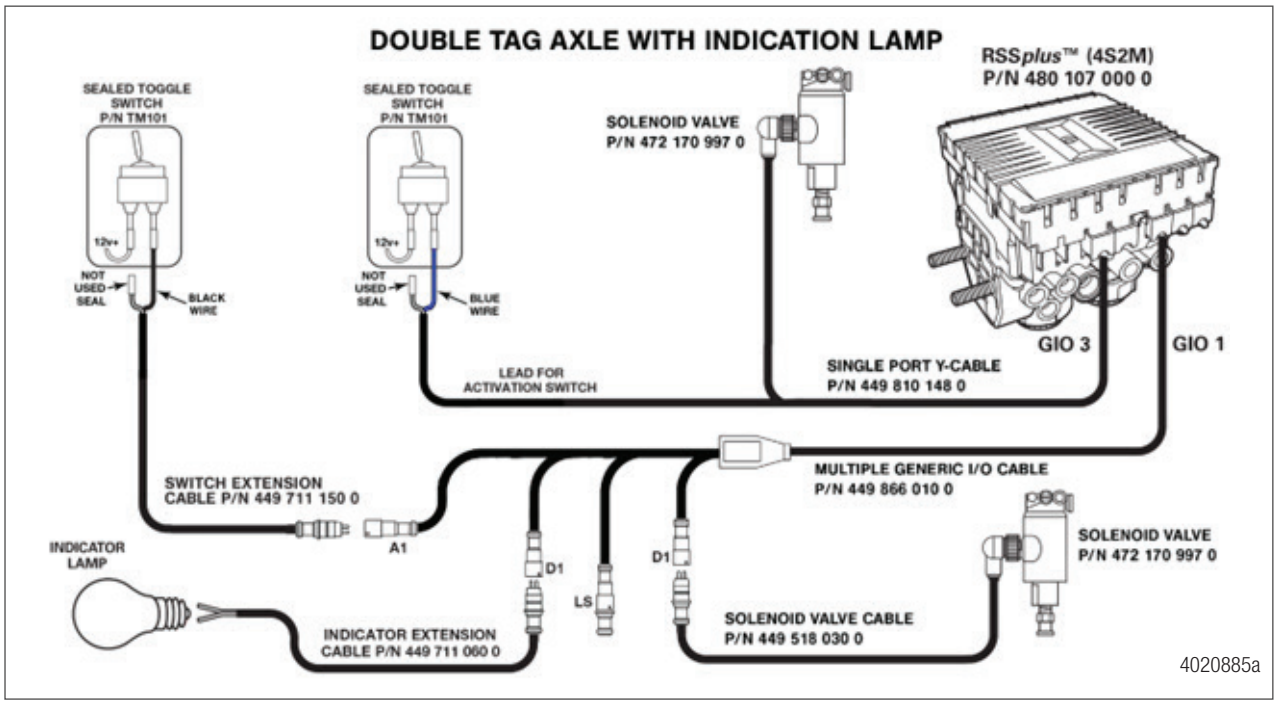
10. Repeat steps 7 through 11 for the second tag axle. The single port Y-cable for the second tag axle connects to the ECU port labeled GIO3.

Double Tag Axle with Indication Lamp

> Double Tag Axle configurations can only be implemented with 2M RSS systems.

> The trailer must not be loaded during this component installation.

1. Raise the vehicle so the wheels to be serviced are off the ground. Support the axle to be serviced with safety stands.
2. Drain the brake and suspension systems of air before starting this procedure.
3. Disconnect the electrical power before starting this procedure.
4. Refer to the figure for the complete Double Tag Axle system layout.



5. Connect the multiple generic I/O cable, part number 449 866 010 0, to the ECU port labeled GIO1 and secure it with the locking tab.
6. Connect the indicator lamp cable, part number 449 711 060 0, to the lead labeled “D1” on the multiple generic I/O cable, part number 449 866 010 0.
7. Connect the indicator lamp cable leads to a 12-volt incandescent or load resisted LED light. This OEM supplied lamp should be mounted on the trailer in the view of the driver. Connect the black wire to the power lead and the brown wire to ground.
8. Connect the activation switch cable, part number 449 711 150 0, to the lead labeled “A1” on the multiple generic I/O cable, part number 449 866 010 0.

9. Connect the black wire of the blunt-cut lead on the activation switch extension cable, part number 449 711 150 0, to a wire that leads into the cab of the tractor. This extended black wire will connect to a single-pole, single-throw switch (not supplied) mounted on the dashboard in the cab of the tractor. The other side of the switch is attached to 3-amp fused, 12-volt DC power in the tractor. The brown wire on the blunt-cut lead of the activation switch extension cable is not used and must be capped.

> Connect the black wire to its extension lead within a junction box if possible. If a junction box is not available, ensure that the connection is weatherproofed and electrically insulated.

10. Connect the 3/2 solenoid valve cable, part number 449 518 030 0, to the lead labeled “D1” on the multiple generic I/O cable, part number 449 866 010 0.
11. Connect the solenoid valve cable socket to the 3/2 solenoid valve, part number 472 170 997 0. Twist the socket until it locks securely to the valve.
12. Ensure that the solenoid valve is installed correctly.

> A plastic or mylar barrier must be installed between the solenoid valve and it’s mounting surface to help protect against corrosion.

⚠ WARNING

Ensure the thread sealant does not enter inside any of the ports as it could damage the solenoid valve and affect system performance. Damage to components and serious personal injury can result.

13. Apply a thread sealant and install the 1/4-inch to 3/8-inch adapter fitting from the solenoid valve to the pilot lockout valve, SEALCO part number 110591.
14. Connect the single port Y-cable, part number 449 810 148 0, to the ECU port labeled GIO3 and secure it with the locking tab.
15. Connect the single-port Y-cable socket to the 3/2 solenoid valve, part number 472 170 997 0. Twist the socket until it locks securely to the valve.
16. Ensure that the solenoid valve is installed correctly.

> A plastic or mylar barrier must be installed between the solenoid valve and it’s mounting surface to help protect against corrosion.

⚠ WARNING

Ensure the thread sealant does not enter inside any of the ports as it could damage the solenoid valve and affect system performance. Damage to components and serious personal injury can result.

17. Apply a thread sealant and install the 1/4-inch to 3/8-inch adapter fitting from the solenoid valve to the pilot lockout valve, SEALCO part number 110591.
18. Connect the blue wire of the blunt-cut lead on the Tag Axle “Y” cable, part number 449 810 148 0, to a wire that leads into the cab of the tractor. This extended blue wire will connect to a single-pole, single-throw switch (not supplied) mounted inside the cab of the tractor. The other side of the switch is attached to 3-amp fused, 12-volt DC power in the tractor. The brown wire on the blunt-cut lead of the Tag Axle “Y” cable is not used and must be capped.

> Connect the blue wire to its extension lead within a junction box if possible. If a junction box is not available, ensure that the connection is weatherproofed and electrically insulated.

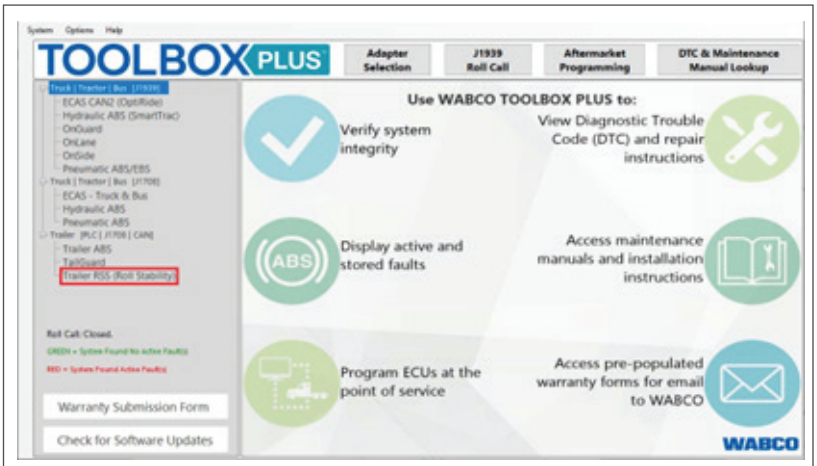
19. Optional: Install the residual pressure valve (SEALCO part number 1300-05) to prevent air bag damage. This will allow 5 psi (0.34 bar) of air to remain in the air bags of the tag axle.

> Do not attempt to adjust the pressure adjustment screw on the residual pressure valve. It is preset to the correct pressure.

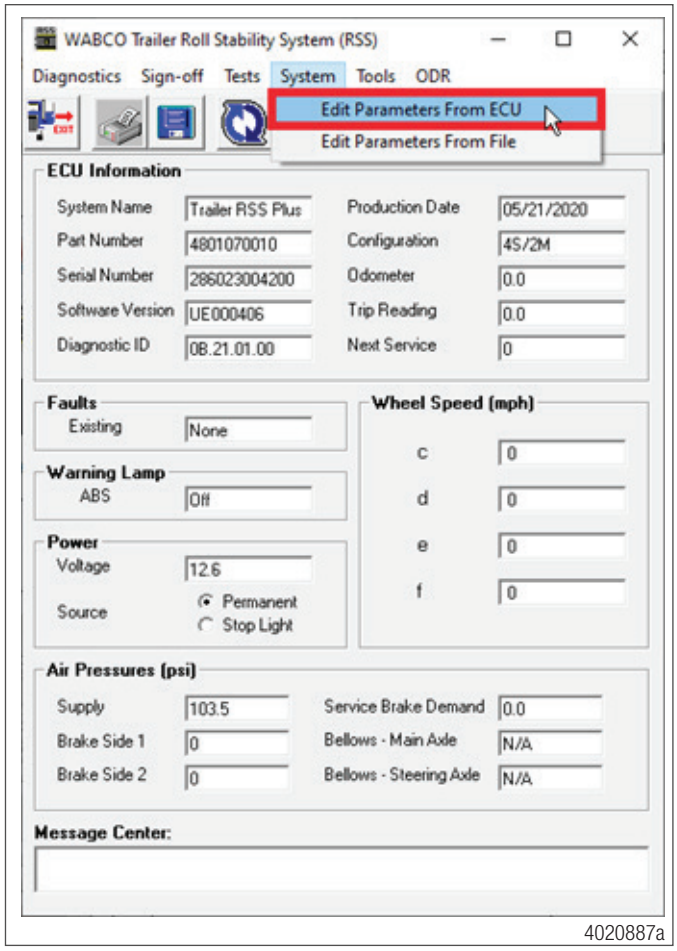
20. Install the optional breather (SEALCO part number 715152) onto the residual pressure valve. This will prevent water and contamination from entering the residual pressure valve.

7.1 Activating Tag Axle with TOOLBOX PLUS™ Software

1. Open TOOLBOX PLUS™ Software.
2. Select Trailer RSS (Roll Stability).



3. From the top menu bar, go to the system pull-down menu and select **Edit Parameters from ECU**.



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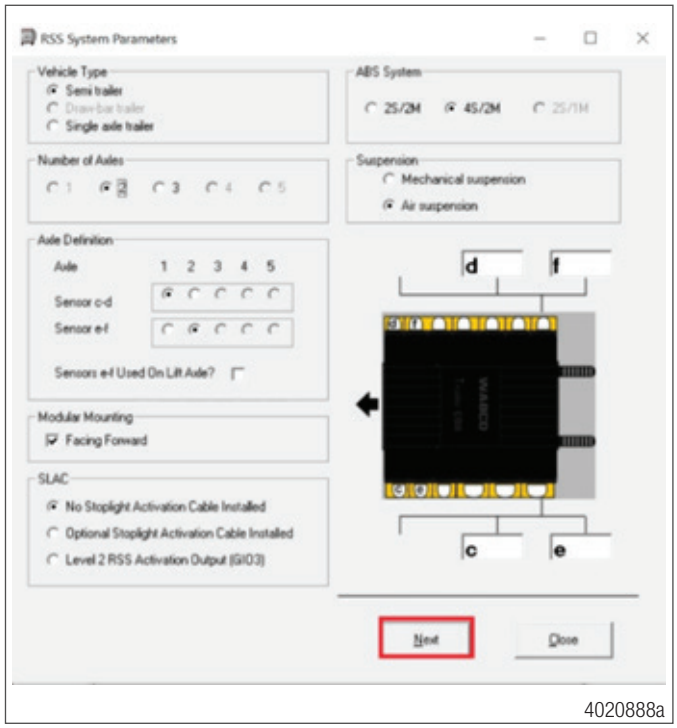
4. From the first parameter screen labeled RSS System Parameters, press the Next button located at the bottom of the window. There is no change in parameters at this screen.



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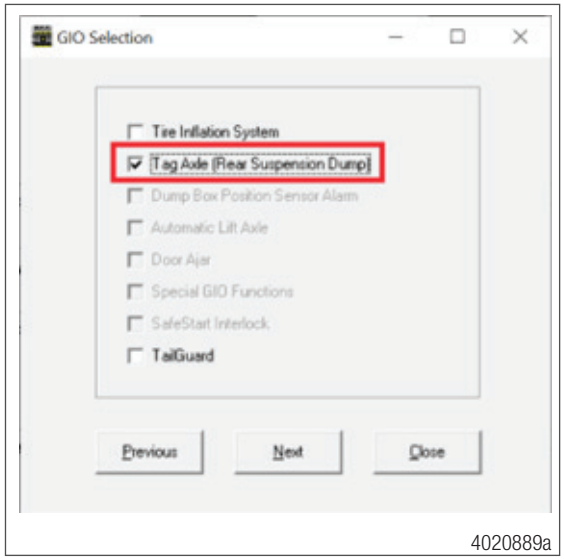
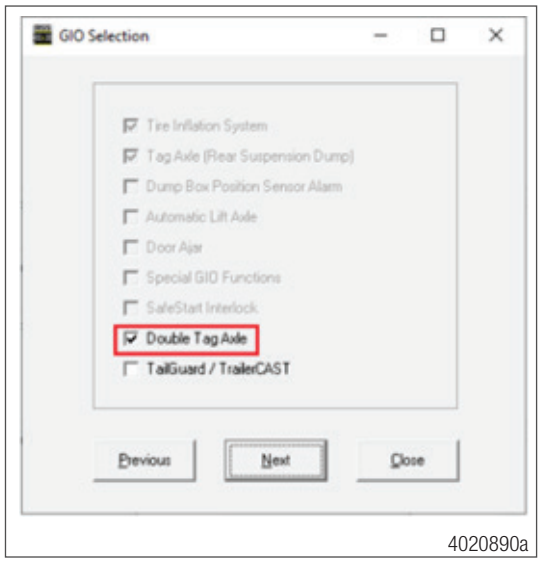
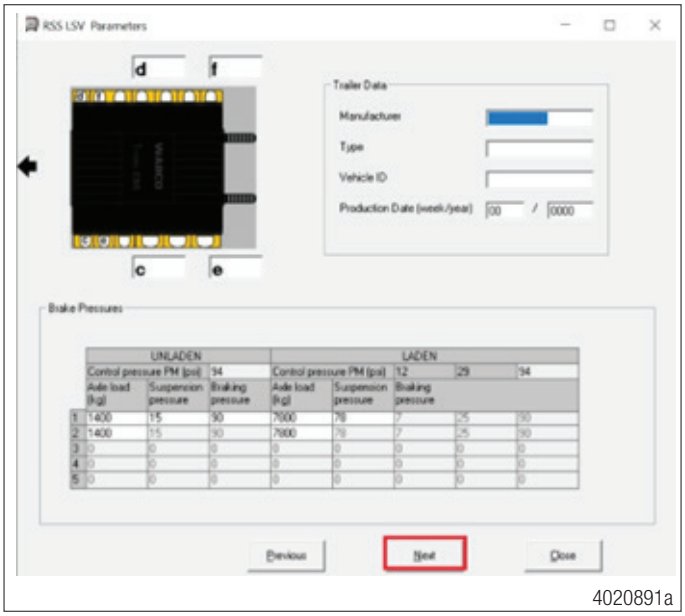
5. The GIO Selection screen appears. Click the Tag Axle (Rear Suspension Dump) check box. Ensure that a check mark appears in the box. Then, press the Next button at the bottom.



If using a Double Tag Axle configuration, select Double Tag Axle and then press the Next button at the bottom.



6. From the parameter screen labeled RSS LSV Parameters, press the Next button located at the bottom of the window. There is no change in parameters at this screen.



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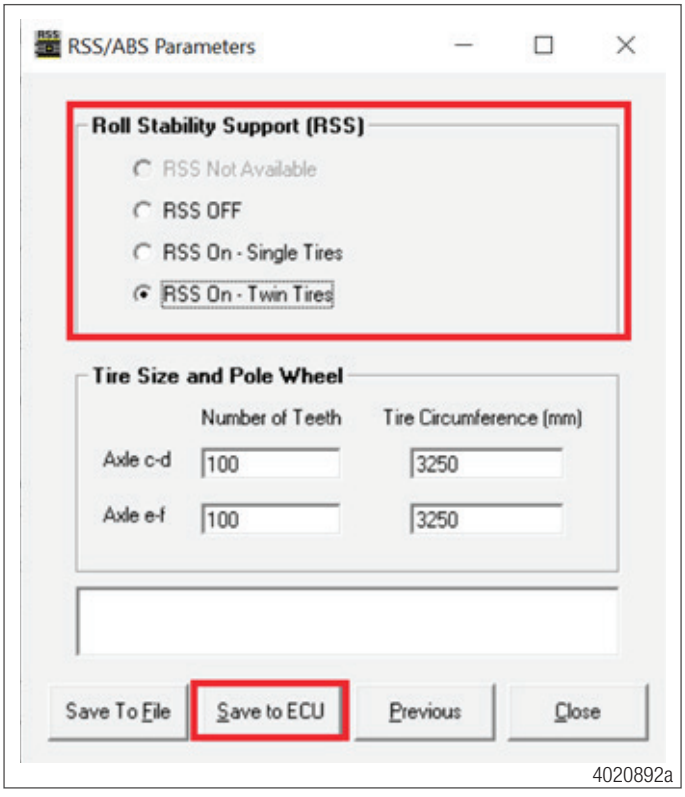
7. From the parameter screen labeled RSS/ABS Parameters, press the Save To ECU button located at the bottom of the window. There is no change in parameters at this screen.

> Ensure that “RSS On – Twin Tires” or “RSS On – Single Tires” is selected.



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8. Once a message appears confirming a successful save, you may exit the TOOLBOX™ Software. Be sure to reset the power on the trailer in order to recycle the ECU. The programming is now finished.

8 RSS*plus*™ Parts List

Part Number	Nomenclature	Detail
100 001 012 4	RSS Label	Adhesive
100 400 004 0	Axle Clamp	5.8” Diameter
431 700 001 0	Pressure Switch Over Ride	70 psi
432 500 005 0	In-Line Filter	
441 044 106 0	Transducer	15 bar (1/4″ NPTF)
441 050 100 0	Distance Sensor	
441 050 712 2	Distance Sensor Linkage	
441 050 718 2	Extension Lever	Old Style
441 901 715 4	Extension Lever	Current Style
449 351 010 0	Power Cable	1 Meter
449 351 047 0	Power Cable	4.7 Meters
449 443 030 0	ATC Generic I/O Cable	3 Meters
449 446 020 0	Generic I/O Cable	2 Meters
449 535 020 0	Generic I/O Cable	2 Meters
449 535 040 0	Generic I/O Cable	4 Meters
449 535 060 0	Generic I/O Cable	6 Meters
449 639 030 0	Diagnostic Cable	3 Meters
449 639 050 0	Diagnostic Cable	5 Meters
449 723 018 0	Sensor Extension Cable	1.8 Meters
449 723 030 0	Sensor Extension Cable	3 Meters
449 723 051 0	Sensor Extension Cable	5.1 Meters
449 723 120 0	Sensor Extension Cable	12 Meters
449 723 170 0	Sensor Extension Cable	17 Meters
449 810 148 0	Solenoid Y Cable	3 Meters
449 811 020 0	Distance Sensor Cable	2 Meters
449 812 100 0	Transducer Cable	10 Meters
480 102 931 2	Cable Clip Repair Kit	1 Large, 1 Small
480 107 001 0	RSS*plus*™ ECU	4S/2M-2S/2M
884 490 443 0	Tire Inflation I/O Cable	1 Meter
894 590 062 2	LA “Y” Cable	0.4 Meter

RSSplus™ Parts List

Part Number	Nomenclature	Detail
894 607 434 0	Stoplight Activation Cable	1 Meter
898 020 462 2	ECU Cable Port Plug	Large
898 020 463 2	ECU Cable Port Plug	Small
899 201 833 4	Power Label	Adhesive
934 099 010 0	Double Check QRV Combination Valve	
934 099 025 0	Select High Double Check Valve	
934 190 008 4	Breather Valve	
TP95172	ABS Label	Adhesive

9 Appendix I

9.1 Trailer Ground and Protection from Electrostatic Discharge (ESD)

⚠ CAUTION

Unintended voltages induced into the electronic control unit can damage the ECU. Disconnect all connectors from the ECU before you perform any welding, electrostatic painting, or any other activity that applies high voltage to the vehicle frame. Refer to the equipment manufacturer's recommended instructions for correct procedures.

Prevent potential resistance differences in grounding between components (such as axles) and the vehicle frame (chassis).

Make sure that the resistance between metallic parts of the components connected to the trailer frame is less than 10 Ohm (< 10 Ω).

Connect moving or insulated vehicle parts (such as axles) in a electrically conductive manner with the frame.

Ensure a secure and adequate chassis ground at the J560 seven-way connector ground pin on the trailer.

Use electrically conductive bolted connections when fastening the ECUs to the trailer frame.

9.2 Welding Work on the Trailer

Disconnect power to the trailer.

Disconnect all cable connections to devices and components and protect the plug-ins and connections from contamination and humidity.

Always connect the grounding electrode directly with the metal next to the welding position when welding, to help prevent magnetic fields and current flow via the cable or components.

Make sure that grounding connections are robust by removing paint or rust at the connection points.

Prevent heat influences from the welding activity on devices and cabling when welding.

9.3 Note During Electrostatic Painting the Trailer Frame or Bogie

Disconnect all cable connections to devices and components and protect the plug-ins and connections from contamination and humidity.

9.4 Dielectric Grease

All Enhanced Easy-Stop ECUs and ECU/valve assemblies with a production date of 1515 or later have NyoGel 760G grease applied. NyoGel 760G is the only grease approved for use on the power, modulator and sensor extension cables of the Enhanced Easy-Stop ABS System. The grease is pre-applied to the ECU sensor O-ring, the power/modulator cable terminals and the sensor extension cable terminals. Additional grease must not be applied to the ECU's sensor input connectors at a manufacturing or service facility level.

Appendix I

On ECUs manufactured prior to production date 1515, a thin coating of NyoGel 760G can be applied to the 8-pin terminals of the power and modulator cables as well as the male terminal pins on the sensor extension cable. Ensure the greased cables are free from dirt and debris before installation, as the grease readily collects dirt, debris or dust, which may inhibit functionality.

9.5 Vehicle Electrical Grounding Guidelines

Ensure that the vehicle includes a correct common chassis ground point. A common chassis ground point connects the trailer frame/ chassis to the ground pin of the J560 seven-way connector and will protect the vehicle electrical system from unwanted electrical noise.

Common chassis ground can be verified by measuring the resistance between the J560 ground pin and the vehicle chassis (or frame) and confirming that the resistance is less than 10 ohm (< 10 Ω). If this is not the case, the electrical contact at the common chassis ground point is not sufficient or not present. If a common chassis ground point is present, but not sufficient, ensure that there is no paint or debris inhibiting electrical contact at the ground point. If a common chassis ground point is not present, WABCO requires adding one. Consult your trailer manufacturer (OEM) for further instructions on how to perform this task. This helps ensure that the trailer OE warranty is not voided.

Do not add more than one common chassis ground point (connecting the J560 ground pin to the chassis) to help avoid potential ground shifts within the vehicle electrical system.

Additionally, all standard trailer components, such as axles, should also be electrically connected to the common chassis ground. If the axles are not correctly grounded to the chassis, a ground strap electrically connecting the axle to the chassis must be added to ensure adequate protection from unwanted electrical noise. This can be verified by measuring the maximum resistance between the vehicle chassis/frame and the other trailer component, then confirming that the resistance is less than 10 ohm (< 10 Ω).

For more details concerning correct vehicle grounding, reference SAE standard J1908.

10 Appendix II

10.1 Cable Strain Relief Guidelines

10.1.4 Introduction

It is important that cabling follows good strain relief practices to help ensure better performance and durability. Failure to provide adequate strain relief on the cables can result in future maintenance that is not covered under warranty.

Strain relief is defined as a small amount of slack in the cable at the area of connection. This lack of cable tension allows for slight movement of the cable during times when components of the suspension and air system are in motion. A small amount of slack also eases access to other system components.

A taut cable can negatively affect the lifespan of the cable and attached component. Cables without adequate strain relief can potentially stress a cable connection enough that moisture could intrude into the cable connector. Internal wire stress at bend points can be the result of a cable under tension.

Cable strain relief is a universal practice. It applies to all WABCO product lines from Anti-Lock Brake (ABS) systems to Roll Stability Systems (RSS).

10.2 Excess Cable Length

In cases where the length of cable exceeds what is required, the excess must be bundled in an efficient manner.

- Cables should not be draped or wrapped around components or left unsecured.
- All slack remaining in the cable once the connections are made can be bundled in a Z-shaped loop. Do not coil the cable into a circular bundle.
- The bend at the end of the bundled cable should be greater than or equal to ten times the diameter of the cable.
- All cable fasteners should be tightened in a manner only to the extent that the cable is held sufficiently in place. Over tightening can result in damage to the cable.
- Fasten the excess cable to an area that is free of sharp edges and moving components.

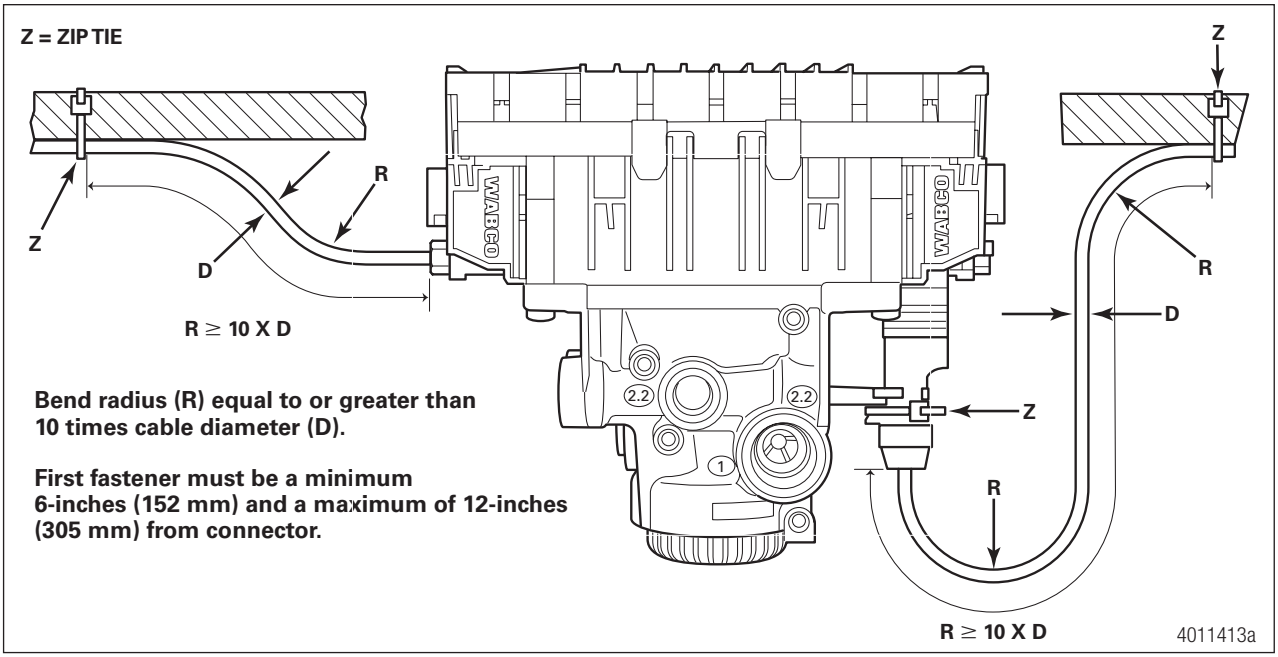
WABCO has many lengths of cables available so it is a best practice to obtain a length that suits the requirements of the installation.

10.3 Strain Relief at the ECU – Bracket Mounting

It is recommended that cable connections to a component, such as an ECU valve assembly, display a visible amount of slack in the cable up to the first fastener, that secures the cable to trailer structure or air line. This applies to both zip ties or cable clips. This first anchor point should be a minimum 6-inches and a maximum 12-inches of cable length from the cable/component connection. This applies to all sensor, power, valve and GIO cables. Regardless of whether zip ties or cable clips are used, cables should be secured at intervals of a maximum of 18-inches to help avoid cable vibration or excess cable that could potentially snag with external objects.

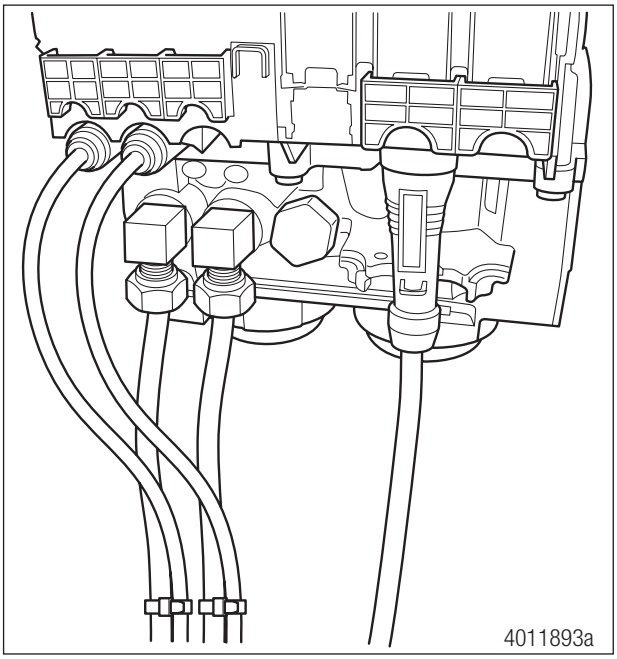
Ideally, cables should be affixed to the rigid structure of the trailer. It is a requirement to have the bend of the cable, also known as bend radius, be greater than or equal to ten times the diameter of the cable. If the cable is one-quarter-inch in diameter, then the bend should be a minimum of 2-1/2-inches.

Appendix II



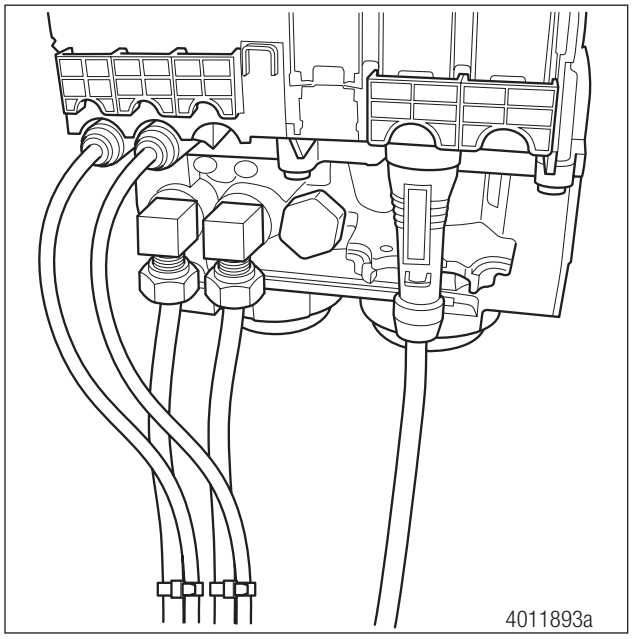
10.3.1 Sensor Extension Cables at the ECU

On valves with no trailer structure nearby, the sensor extension cables are attached to the air lines. Cable clips are preferred to zip ties. It is important to remember that cables should be fastened in a manner where the cable is secured enough where the cable will not move or chafe against what it is mounted to. A small amount of slack should be present to ensure that the cables do not become taut after installation or the servicing of components. The figure below illustrates correct amount of slack in the sensor extension cables and correct attachment to the air delivery lines for RSS*plus* ECUs.



Appendix II

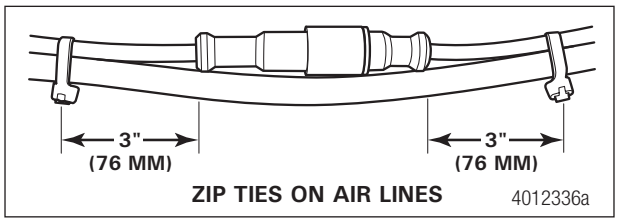
RSS 2M ECU valve assemblies have a zip tie channel on the valve assembly to secure the power cable. Slide the zip tie through the valve assembly's channel and then secure the power cable. When installing a RSS 2M ECU valve assembly, secure the sensor extension cables by fastening them to nearby air lines. It is important to note that an appropriate amount of slack is left in the cables and that cables are secured only to the extent that the cable is held sufficiently in place.



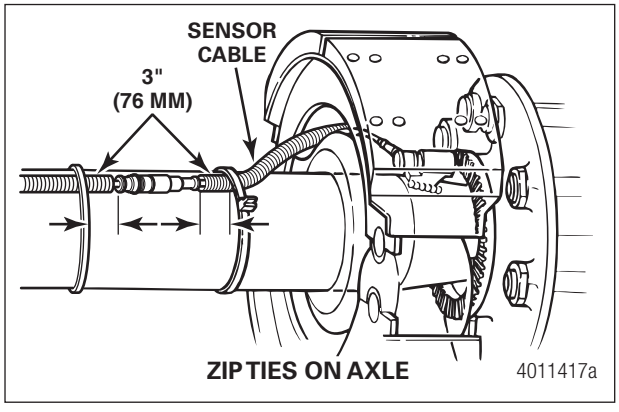
RSS 2M ZIP TIE REPLACEMENT

10.3.2 Placement of Cables on Air Lines — Cable-to-Cable Connections

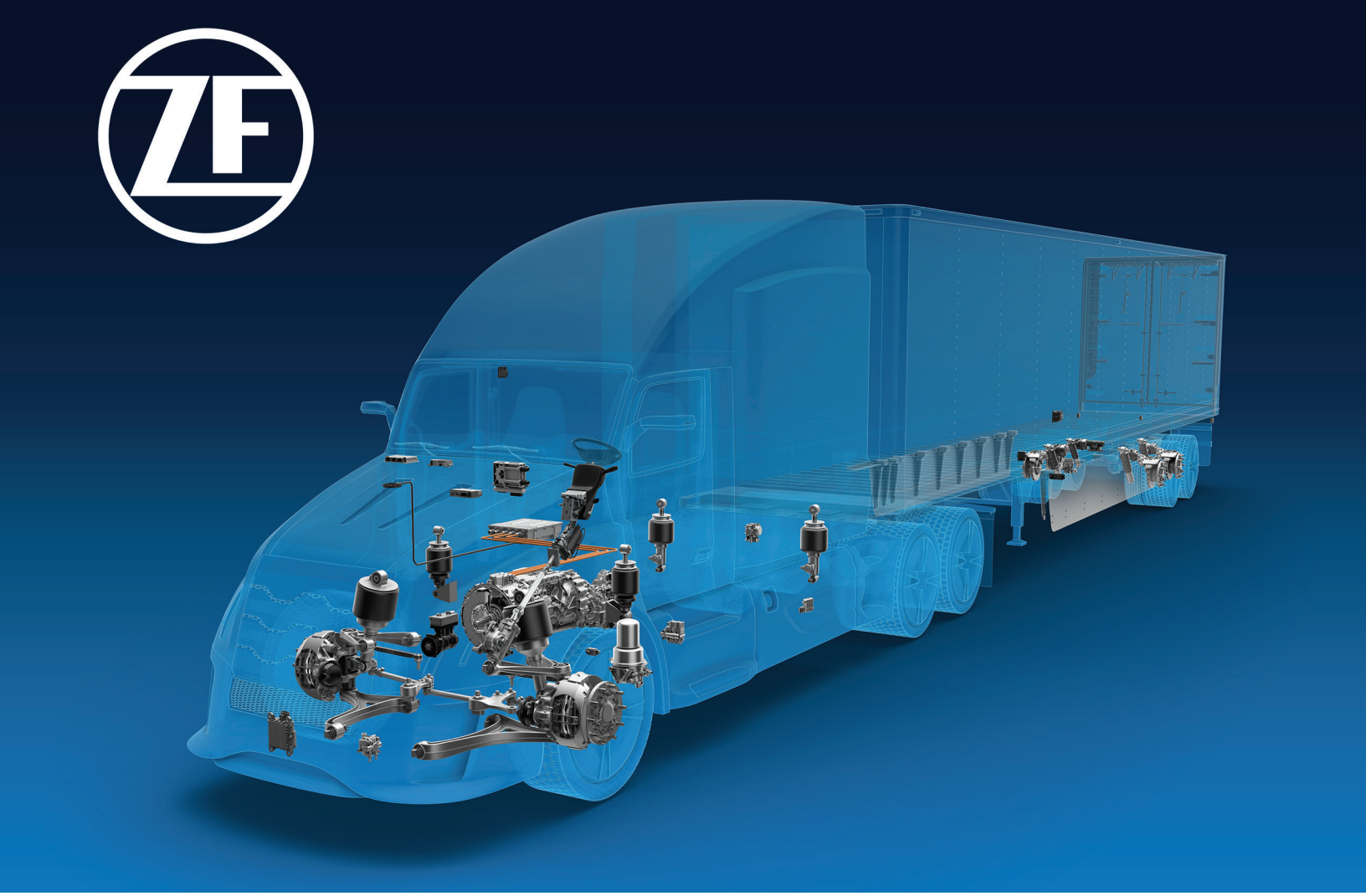
It is important to ensure all cable-to-cable connections maintain good strain relief. Cable restraints must be placed between two- and four-inches (51-102 mm) from the cable connector to ensure correct strain relief. Regardless of whether zip ties or cable clips are used, cables should be secured at intervals not greater than 18-inches (457 mm) to help avoid cable vibration. Refer to the figures below for air line attachment and axle attachment.



ZIP TIES ON AIR LINES



ZIP TIES ON AXLE



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

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ZF's Commercial Vehicle Solutions (CVS) division is helping shape the future of commercial transportation ecosystems. Our mission is to be the preferred global technology partner to the commercial vehicle industry. Powerfully combining ZF's commercial vehicle systems expertise, extensive technology portfolio and global operations, the division serves the full commercial vehicle industry value chain. As the automotive industry progresses towards an increasingly autonomous, connected, and electrified (ACE) future, ZF's CVS division innovates, integrates and supplies components and advanced control systems that help make commercial vehicles and fleets operate more safely and sustainably. CVS unites ZF's former Commercial Vehicle Technology and Commercial Vehicle Control Systems divisions, the latter being formed following ZF's acquisition of WABCO in Spring 2020.

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