

# MERITOR WABCO

## Technical Bulletin

### Cable Strain Relief Guidelines for Meritor WABCO Trailer ABS/RSS

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

If you have any questions about the material covered in this technical bulletin, contact the Meritor OnTrac™ Customer Call Center at 866-OnTrac1 (668-7221), or visit our website: [meritorwabco.com](http://meritorwabco.com).

#### Introduction

This technical bulletin provides correct cable strain relief guidelines for Meritor WABCO trailer ABS/RSS cables. It is important that cabling follow good strain relief practices to ensure maximum 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 may be in motion. A small amount of slack also eases access to other system components.

A taut cable can affect the lifespan of the cable. Cables without adequate strain relief can potentially stress a cable connection enough that moisture could intrude. Unnecessary wear at bend points can be the result of a cable under tension.

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

#### Cable Strain Relief Guidelines

##### Excess Cable Length

In cases where the length of cable exceeds what is required, the excess must be bundled in an efficient manner. It should not be draped or wrapped around components or left unsecured. Any slack remaining in the cable once the connections are made can be gathered up in a Z-shaped loop. Do not coil the cable and pinch into a bowtie or dog-bone shape. All cable zip ties should be tightened in a manner only to the extent that the cable is held sufficiently in place. Fasten the excess cable to an area that is free of sharp edges and moving components.

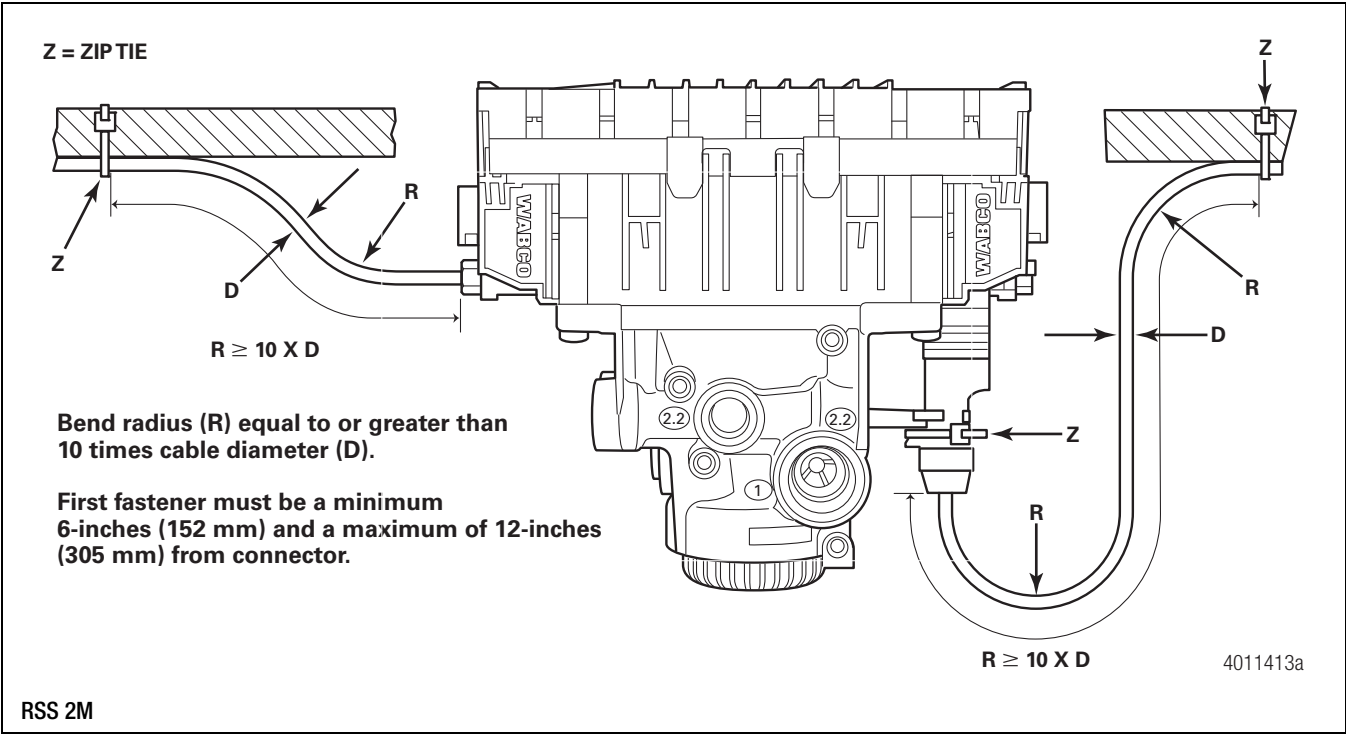
Meritor WABCO has many lengths of cables available so it is a best practice to obtain a length that best suits the requirements of the installation.

##### Strain Relief at the ECU — Bracket Mounting

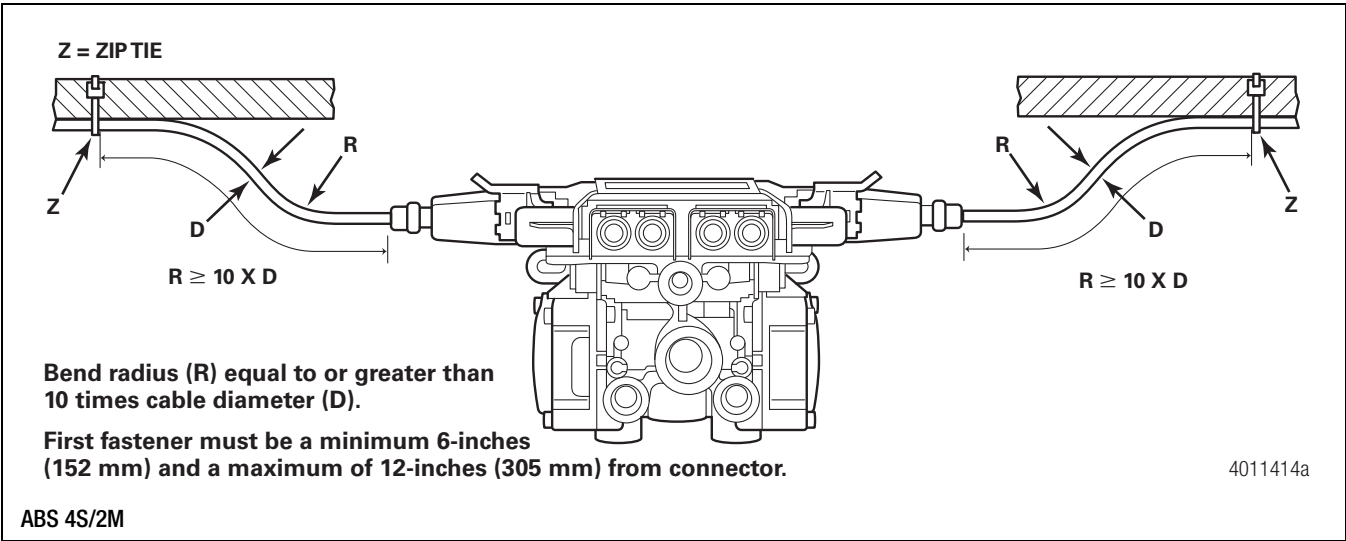
Meritor WABCO recommends that cable connections to a component, such as an ECU valve assembly, display a visible amount of slack in the cable up to the first tie or clip that secures the cable to trailer structure or air line. This first anchor point should be a minimum 6-inches (152 mm) of cable length from the cable/component connection and maximum of 12-inches (305 mm). 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 not greater than 18-inches (457 mm) to avoid cable vibration.

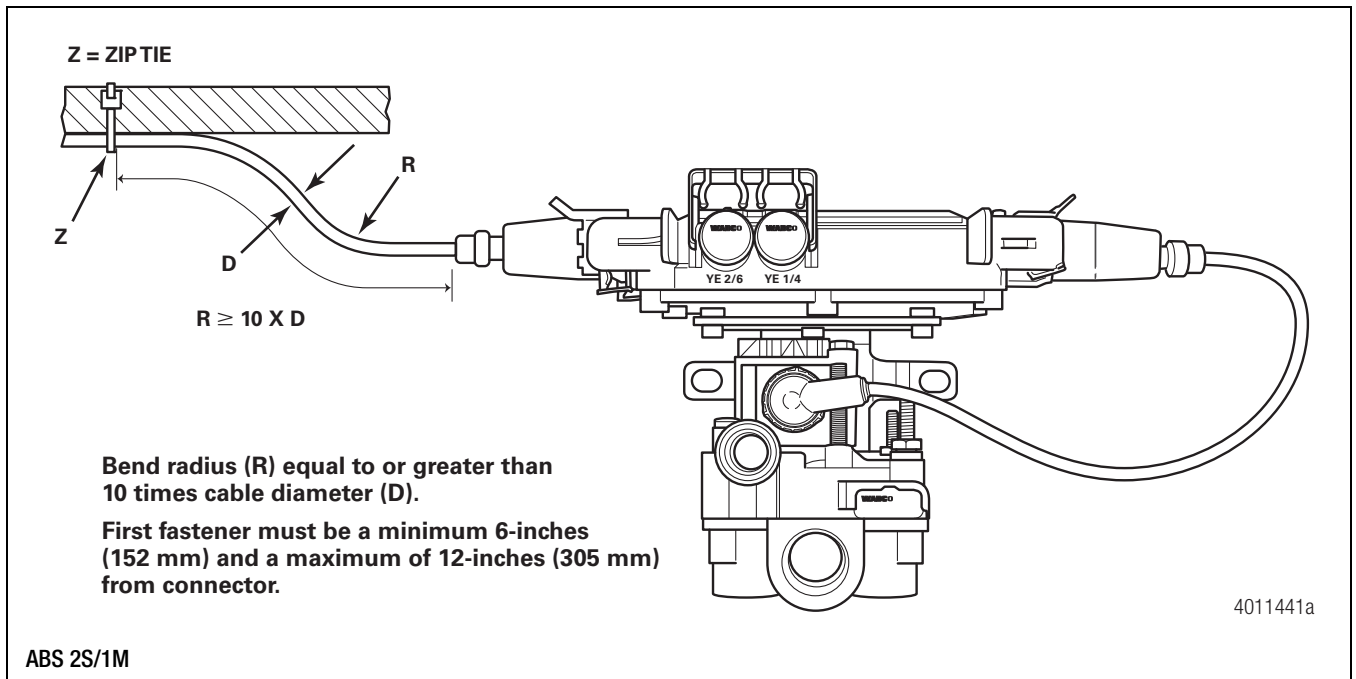
Ideally, cables should be affixed to the rigid structure of the trailer. A good rule of thumb is to have the bend of the cable, also known as bend radius, be greater than or equal to ten times the diameter of the cable. If the cable is 1/4-inch (6.35 mm) in diameter, then the bend should be a minimum of 2-1/2-inches (64 mm). Refer to Figure 1 for RSS 2M, Figure 2 for 4S/2M ABS and Figure 3 for 2S/1M ABS.



**Figure 1**



**Figure 2**

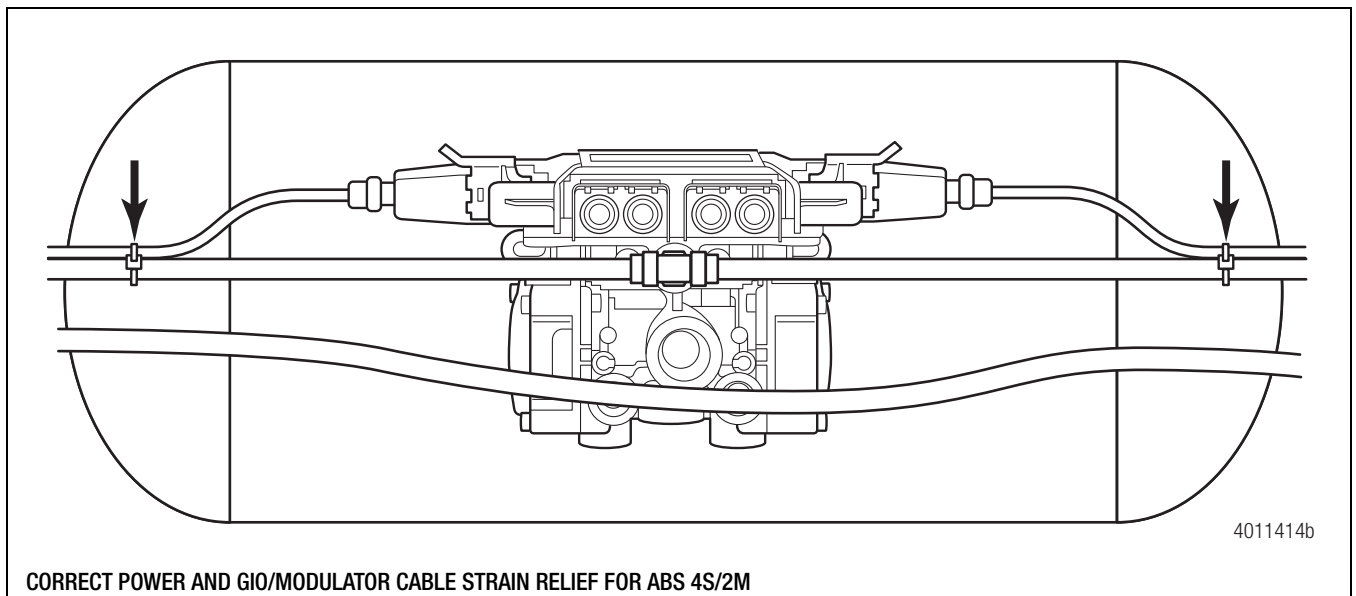


**Figure 3**

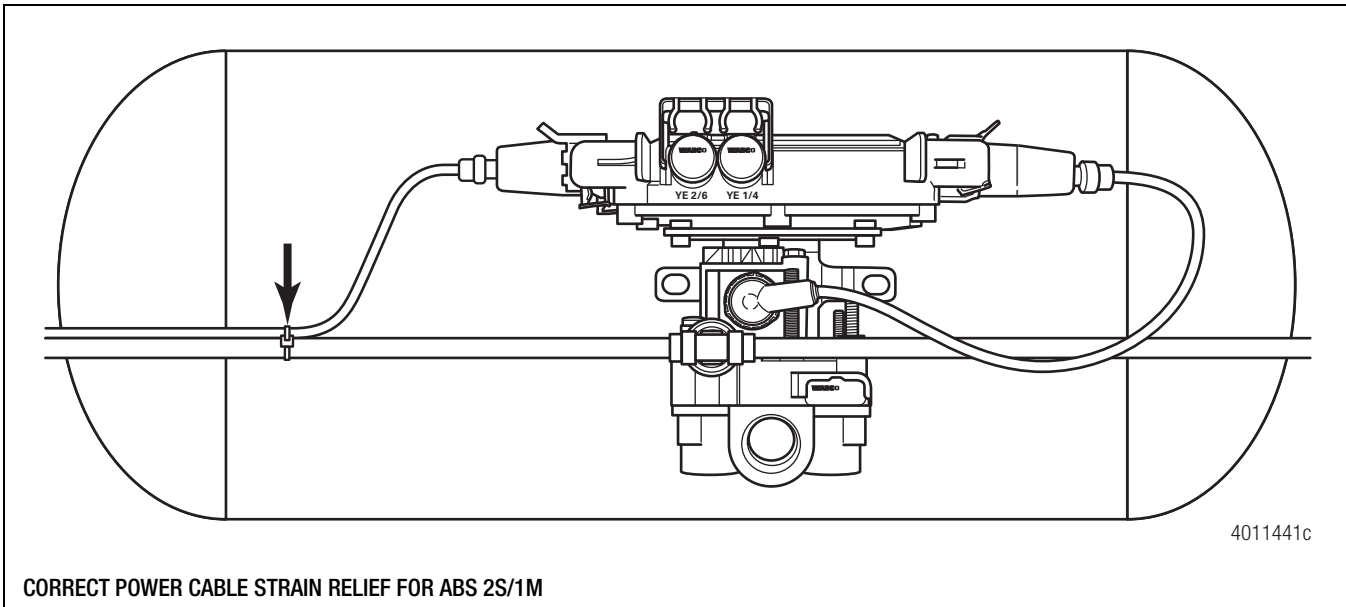
### Strain Relief at the ECU — Tank Mounting

It is necessary 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 tie or clip that secures the cable to trailer structure or air line. This first anchor point should be a minimum 6-inches (152 mm) of cable length from the cable/component connection and a maximum of 12-inches (305 mm). 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 not greater than 18-inches (457 mm) to avoid cable vibration.

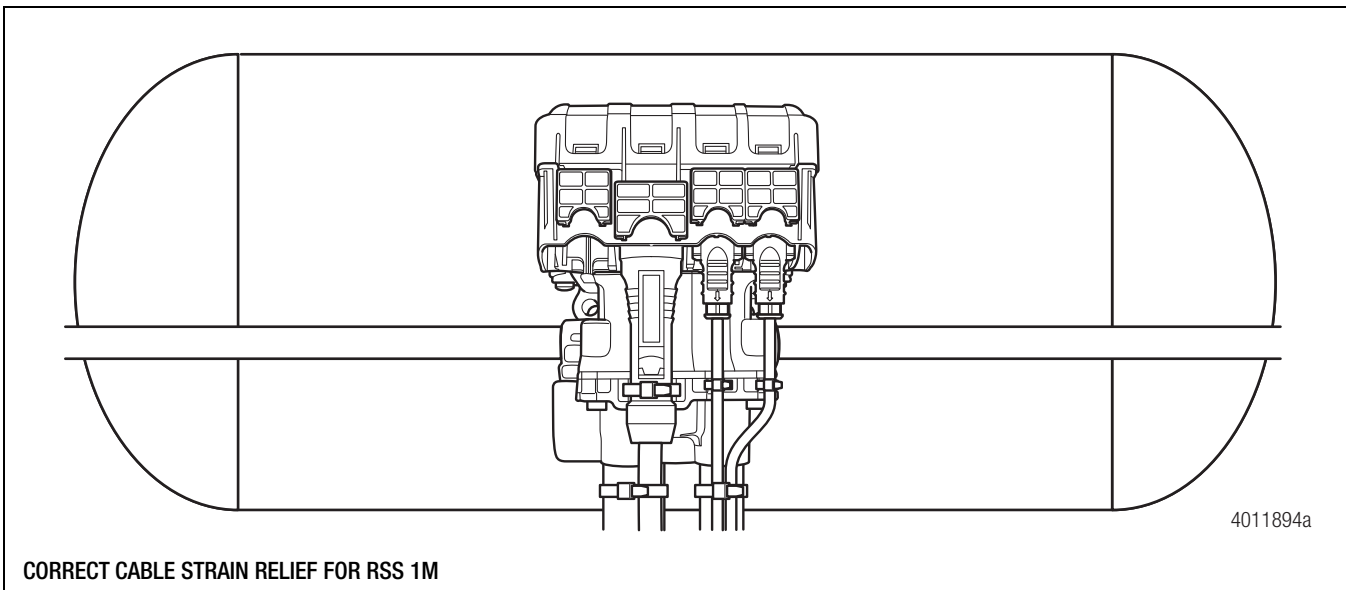
Ideally, cables should be affixed to the rigid structure of the trailer. However, structure is not always available on tank-mounted installations. In these cases, securing the cable may be accomplished by fastening the cable to nearby air lines. It is important to note that cables should be secured only to the extent that the cable is held sufficiently in place. Refer to Figure 4 for 4S/2M ABS, Figure 5 for 2S/1M ABS, and Figure 6 for RSS 1M.



**Figure 4**



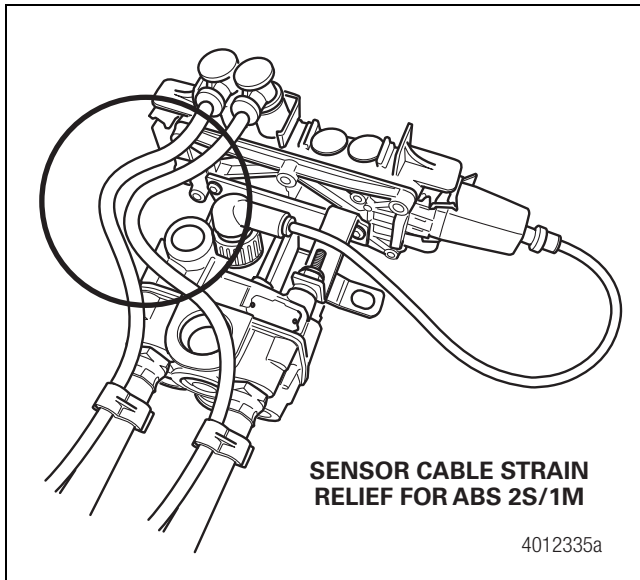
**Figure 5**



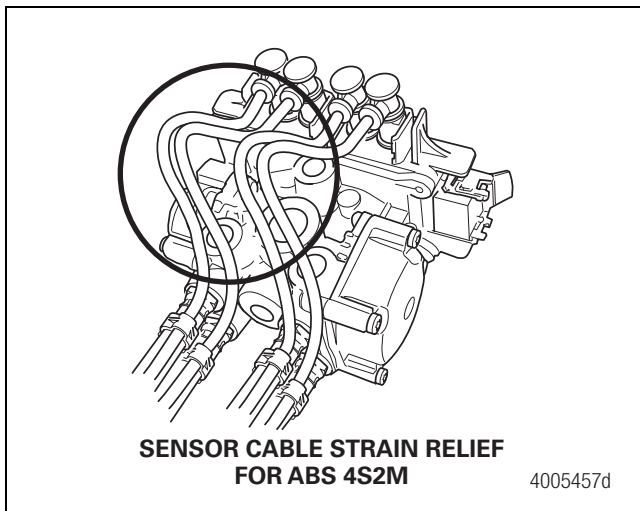
**Figure 6**

**Sensor Extension Cables at the ECU**

On valves that are tank mounted with no trailer structure nearby, or have remote-mounted cables, 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. Figure 7 and Figure 8 illustrate correct amount of slack in the sensor extension cables and correct attachment to the air delivery lines for ABS ECUs.

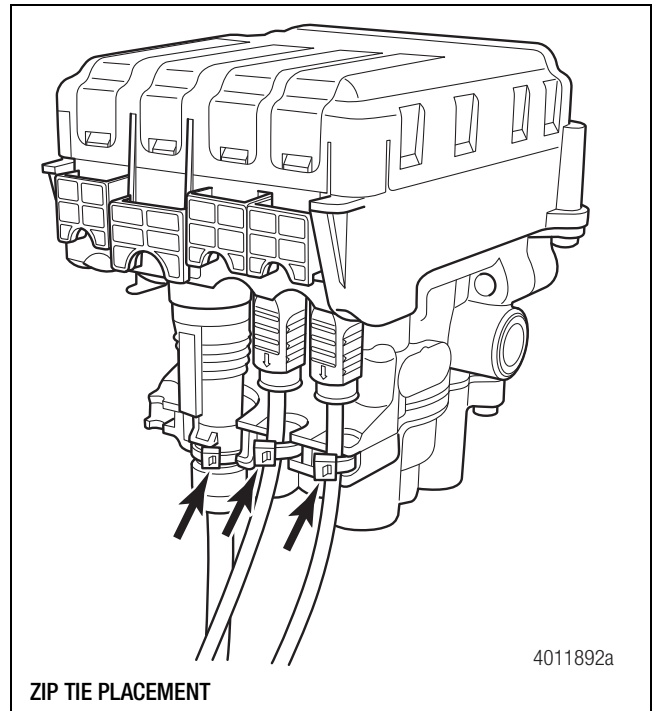


**Figure 7**



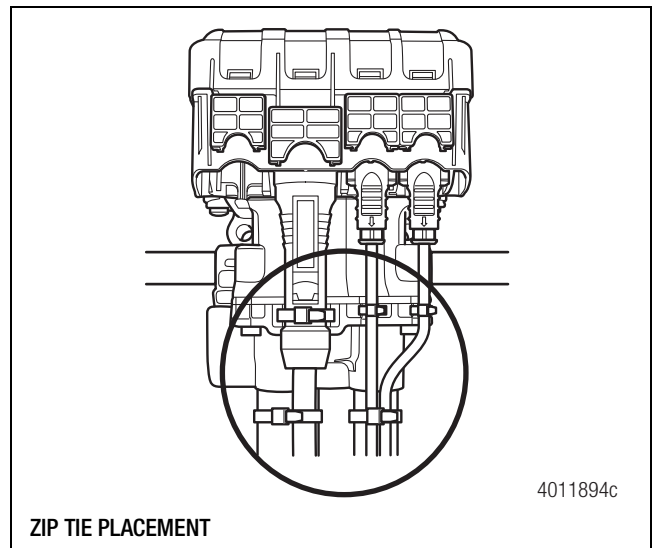
**Figure 8**

On RSS 1M valves that are tank mounted, there are small channels on the valve assembly that are specifically for securing the power and sensor extension cables. Once the cables have been installed on the ECU and the securing clips pushed into the locked position, use zip ties to anchor the cables to the valve. Slide the zip tie through the valve assembly's channel and then secure the cable. Figure 9.



**Figure 9**

Once anchored to the ECU assembly, secure the cables to the air delivery lines using zip ties or cable clamps. Figure 10.



**Figure 10**

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. Figure 11.

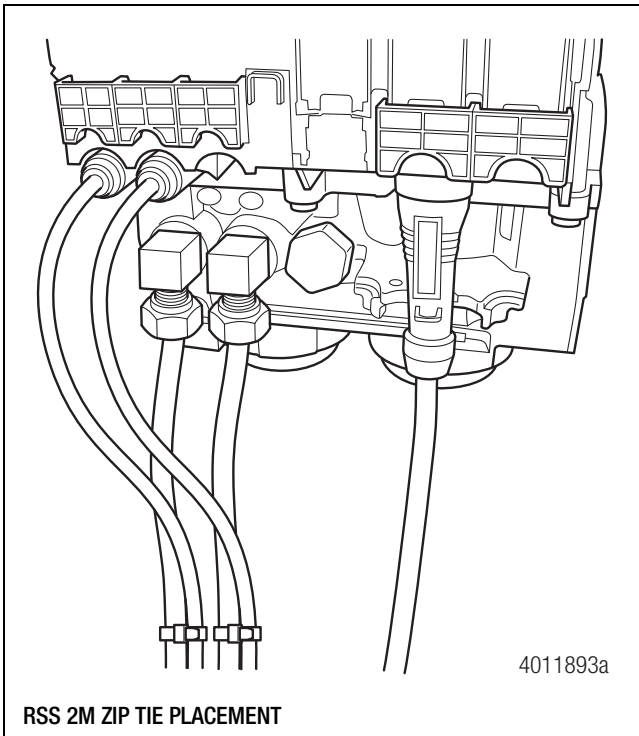


Figure 11

### Placement of Cables and Fittings at the ECU

Routing of air lines near the ECU assembly requires careful consideration. Selection of the optimum fitting also has an impact on strain relief. It can affect the integrity of the connection's sealing capability and, as shown in Figure 12, the style of fitting can adversely impact strain relief. Correct positioning of the cables is shown in Figure 8.

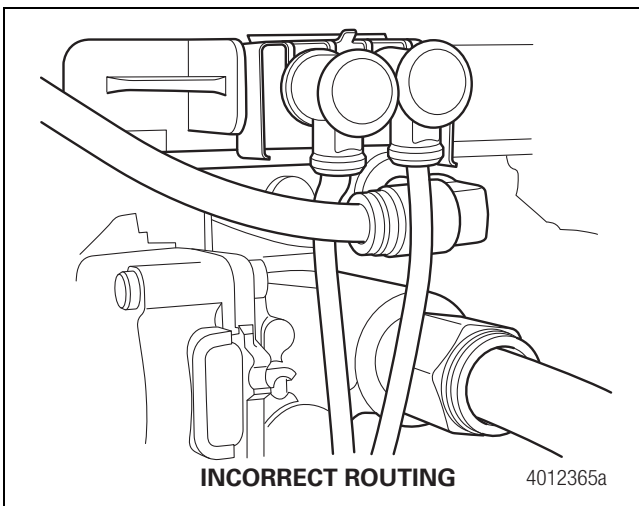


Figure 12

### 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 avoid cable vibration. Refer to Figure 13 for air line attachment and Figure 14 for axle attachment.

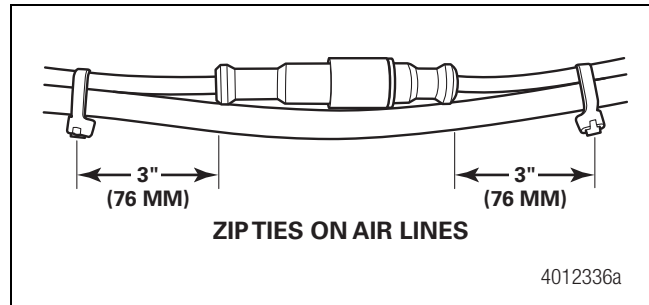


Figure 13

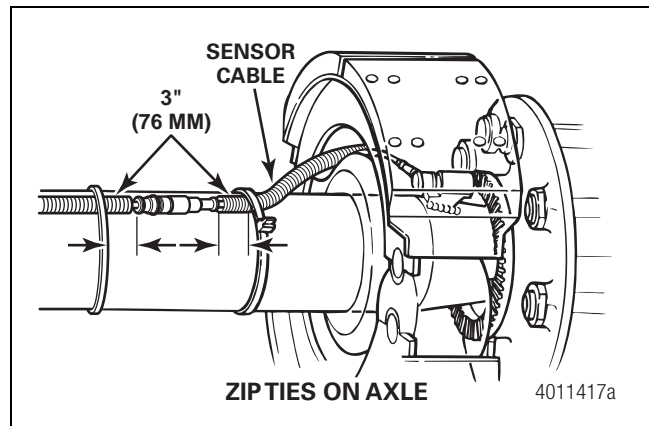


Figure 14

## MERITOR WABCO

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