

# WABCO AIR MANIFOLD DISTRIBUTION MODULE ASSEMBLY

## SERVICE INFORMATION

TP0223

**WABCO**



# Table of Contents

<b>1</b>	<b>General Information</b> .....	<b>4</b>
<b>2</b>	<b>Safety Information</b> .....	<b>6</b>
<b>3</b>	<b>Overview</b> .....	<b>7</b>
<b>4</b>	<b>Maintenance</b> .....	<b>7</b>
<b>5</b>	<b>Mounting Specifications</b> .....	<b>7</b>
<b>6</b>	<b>Air Lines</b> .....	<b>8</b>
<b>7</b>	<b>Air Supply</b> .....	<b>8</b>
<b>8</b>	<b>Troubleshooting and Testing</b> .....	<b>8</b>
8.1	Voltage Check .....	9
8.2	Resistance Test .....	9
8.3	Air Leakage Test .....	10
8.4	Valve Check .....	10
<b>9</b>	<b>Replacement Procedures</b> .....	<b>11</b>
9.1	Solenoid Valve .....	11
9.2	Mounting Base/Assembly .....	11

## 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

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

## General Information

### WABCO Academy



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

### WABCO online product catalog



<http://inform.wabco-auto.com/>

### Your direct contact to WABCO

**WABCO North America**  
**1220 Pacific Drive**  
**Auburn Hills, MI 48326**  
**Customer Care Center: (855) 228-3203**  
**[www.wabco-na.com](http://www.wabco-na.com)**

# 2 Safety Information

### Provisions for a safe work environment

- Only trained and qualified technicians 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.

#### **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 prevent serious personal injury and damage to components.

#### **WARNING**

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

## 3 Overview

The air manifold distribution module (AMDM) consists of a mounting base that can hold up to five electrically operated air solenoid valves that can be used to operate air system accessories.

The mounting base provides a common air supply and a common electrical connector to operate the valves. With no electrical power applied, the individual solenoid valves are in a normally closed position (the air supply is isolated and the delivery is vented to atmosphere). When power is applied, the exhaust is closed and air pressure is delivered.

The air pressure may be delivered to a variety of accessories including the fan clutch, air horn, suspension dump, 5th wheel slide and inter-axle differential lock. For applications where more than five functions are controlled, additional AMDMs may be installed.

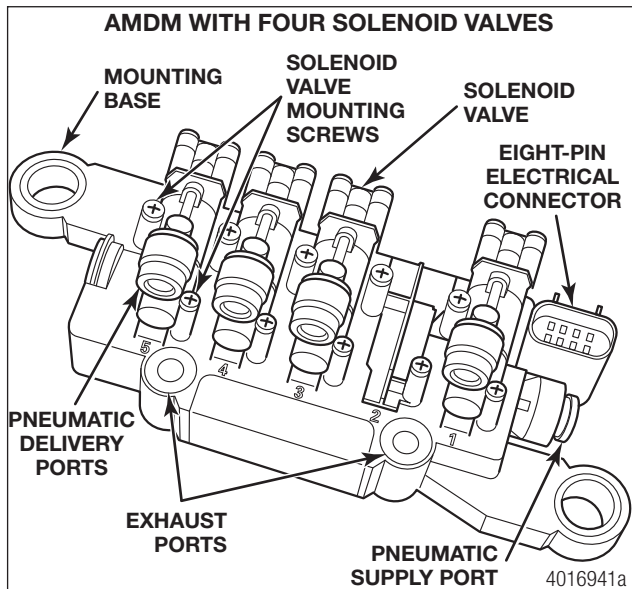
## 4 Maintenance

AMDMs require no regularly scheduled maintenance. However, they must be kept clean and free of debris or ice build-up.

## 5 Mounting Specifications

The mounting location will vary according to the vehicle manufacturer's requirements. In general, the AMDMs must be mounted with the electrical connector in the upper right-hand corner as illustrated in Figure 1. The AMDM must be mounted in a location that is not directly exposed to road splash, debris or direct spray from power washers.

Fig. 1



For technical assistance, contact the WABCO Customer Care Center at (855) 228-3203.

### 6 Air Lines

#### CAUTION

Identify the air lines before disassembly. If air lines are removed, they must be reinstalled in the same location to avoid accidental activation of devices or activation of the wrong device.

#### CAUTION

Never apply voltage to the assembly except by means of the proper connector in the vehicle wire harness.

All delivery ports are identified by number (refer to Figure 1) and delivery fittings may be identified with a color-coded ring. Refer to the manufacturer's service manual for color coding identification.

### 7 Air Supply

#### CAUTION

Air supply must be confirmed prior to attempting any repair or replacement of an AMDM. The air supply is provided through a pressure protection valve. Air will not be available to the AMDM if the supply pressure is less than the pressure protection valve setting.

Follow the standard shop procedures for your service area to confirm air supply.

### 8 Troubleshooting and Testing

#### CAUTION

When troubleshooting and testing the AMDM, do not damage the connector pins.

#### CAUTION

The mounting base contains diodes that are polarity sensitive and can be damaged if power is incorrectly applied. To avoid damaging the diodes, apply power using the vehicle manufacturer's wire harness connector.

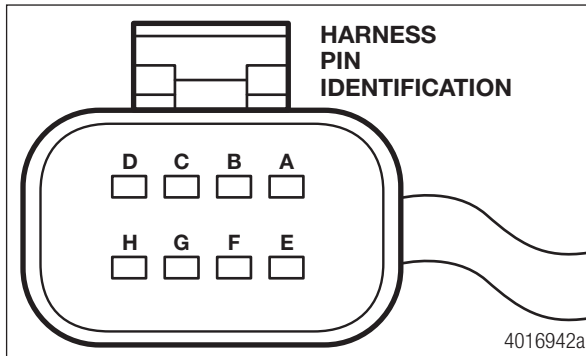


## 8.1 Voltage Check

If one of the solenoid valves on the AMDM does not operate, test the vehicle to ensure proper voltage. Measure the voltage on the vehicle harness connector at the vehicle connector pins, as illustrated in Figure 2.

- Voltage must be between 9.5 and 15.0 volts.
- The ignition must be turned ON for this test.

Fig. 2



## 8.2 Resistance Test

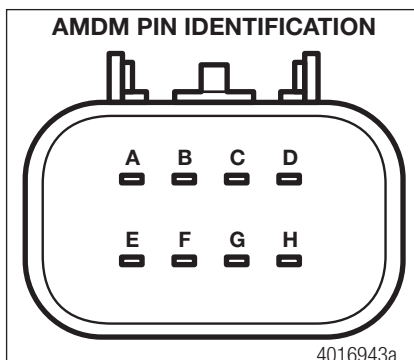
If the voltage is within the acceptable range of 9.5 to 15 volts but the valve still does not operate, test the solenoid. Use a volt-ohm meter to check the resistance of both the valve and the module base as follows:

1. Remove the electrical connector from the module base. Select the appropriate pin numbers from Table A and Figure 3.

**Table A: Electrical Connector Pins**

Station Number	Positive Connector Pin	Negative Connector Pin	Resistance
1	E	B	35-60 ohms
2	F	G	
3	D	H	
4	C	H	
5	A	H	

Fig. 3



2. Connect the volt-ohm meter to the appropriate pins and measure the resistance. Coil resistance must be between 35 and 60 ohms.
3. If the resistance is less than 35 ohms, the circuit may be shorted. Identify which station is causing the short and remove the solenoid from that station. If that connector circuit remains shorted, the base must be replaced.  
If the base connector pins are no longer shorted, the solenoid valve is likely causing the short. Check the resistance across its pins. If that check results in a resistance less than 35 ohms, the solenoid valve must be replaced.

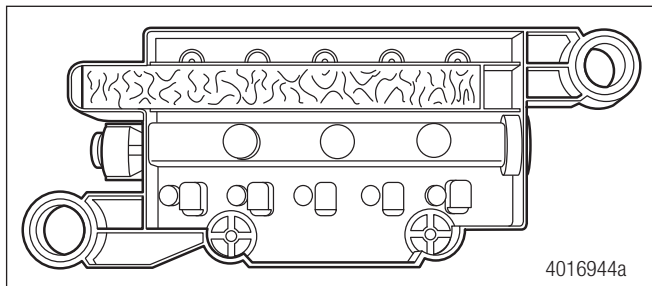
### 8.3 Air Leakage Test

If the voltage and resistance are within the acceptable ranges (9.5-15 volts/35-60 ohms resistance) but the valve does not deliver air, inspect the air supply. A pressure-protected air circuit provides air to the valve and the valve will not function unless the reservoir pressure exceeds the pressure protection setting, typically 85 psi (585 kPa).

Excessive leakage may also be a reason for replacing the solenoid valve module. The source of a supply line leak may not be readily apparent because all valves are vented through two common exhaust ports. Check for air leakage from the assembly as follows:

1. Apply a soap and water leakage detection fluid to all potential leakage sites on the front and sides of the valve.
2. If no leakage is found on the front and sides of the valve, loosen the two mounting screws that attach the assembly to the vehicle and inspect for leaks from the back side of the assembly. Figure 4.

Fig. 4



3. Replace the leaking solenoid valve (refer to Replacement Procedures).

### 8.4 Valve Check

#### **CAUTION**

The mounting base contains diodes that are polarity sensitive and can be damaged if power is incorrectly applied. To avoid damaging the diodes, apply power using the vehicle manufacturer's wire harness connector.

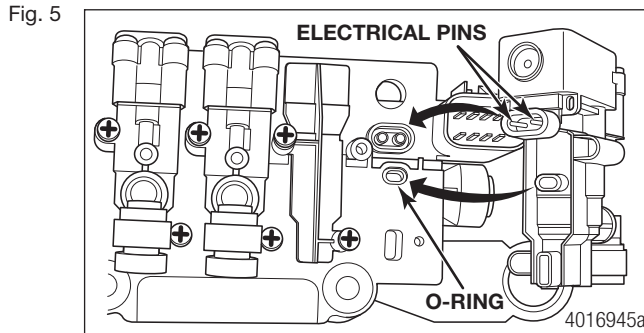
Solenoid valves mounted on the module base may be inspected individually as follows:


1. Drain the air from the system.
2. Disconnect the air supply and electrical connector.
3. Remove the two screws that hold the solenoid valve to the mounting base. Pull the solenoid valve directly off the base. Be careful to locate the air supply and electrical connector O-rings.
4. Test the solenoid function by applying voltage to the two electrical pins on the valve. With voltage (9.5-15 vdc) applied, listen for the solenoid actuation. Do not disassemble further.
5. If the solenoid valve does not function, replace the entire solenoid valve. Refer to Replacement Procedures.

# 9 Replacement Procedures

## 9.1 Solenoid Valve


1. Follow the removal procedure above to remove the valve from the module.
2. Position the air supply and electrical connector O-rings in the proper location on the base of the module. Figure 5.



3. Install the new solenoid valve by engaging the electrical pins first. Press the solenoid valve assembly onto the mounting base.
4. Use a Phillips head screwdriver to install the two self-tapping screws. Tighten to 8-11 lb-in (0.9-1.2 Nm). 

## 9.2 Mounting Base/Assembly

Replace the mounting base if it is broken or cracked.

1. Drain the reservoirs to eliminate air pressure.
2. Disconnect the battery.
3. Remove and carefully identify each air line.
4. Remove the electrical connector.
5. Remove the two bolts that mount the base plate to the vehicle.
6. Remove any solenoid valves that are to be reused. Take care to collect the two O-rings between the individual solenoid valves and the mounting base for reuse when assembling solenoid valves to the mounting base.
7. Reinstall the solenoid valves (if they are to be reused) or attach replacement valves as required.
8. Position the module on the vehicle with the eight-pin electrical connector in the upper right-hand corner. Figure 1.
9. Replace the two mounting bolts that attach the module to the vehicle. Tighten the screws to  $103.2 \pm 18$  lb-ft ( $140 \pm 25$  Nm). 
10. Reconnect the pneumatic lines and electrical connector. Air lines must be reinstalled in the same location they were in before they were removed. Refer to the vehicle manufacturer's service manual for complete instructions.
11. Connect the battery and pressurize the air system to 100 psi (689 kPa) minimum. Test each device controlled by the assembly to verify that the air lines have been installed in the correct position.

# WABCO

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## About WABCO

WABCO (NYSE: WBC) is the leading global supplier of braking control systems and other advanced technologies that improve the safety, efficiency and connectivity of commercial vehicles. Originating from the Westinghouse Air Brake Company founded 150 years ago, WABCO is powerfully “Mobilizing Vehicle Intelligence” to support the increasingly autonomous, connected and electric future of the commercial vehicle industry. WABCO continues to pioneer innovations to address key technology milestones in autonomous mobility and apply its extensive expertise to integrate the complex control and fail-safe systems required to efficiently and safely govern vehicle dynamics at every stage of a vehicle’s journey – on the highway, in the city and at the depot. Today, leading truck, bus and trailer brands worldwide rely on WABCO’s differentiating technologies. Powered by its vision for accident-free driving and greener transportation solutions, WABCO is also at the forefront of advanced fleet management systems and digital services that contribute to commercial fleet efficiency. In 2018, WABCO reported sales of over \$3.8 billion and has more than 16,000 employees in 40 countries. For more information, visit [www.wabco-na.com](http://www.wabco-na.com).



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