

WORKBOOK

**WABCO**

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You will find the current edition at: <https://zf.com/cvliterature>

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 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 wabconacustomercenter@zf.com, or visit our website: www.zf.com/cv.

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: wabconacustomercenter@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://zf.com/cvliterature>

1.5 WABCO Academy



www.wabco-academy.com

1.6 WABCO Online Product Catalog



www.wabco-customercenter.com

General Information

1.7 Your Direct Contact to ZF CVS

ZF CV Systems North America LLC

1220 Pacific Drive
Auburn Hills, MI 48326

Customer Care Center: (855) 228-3203

www.zf.com/cv

wabconacustomer care@zf.com

Safety Information

2 Safety Information

2.1 Provisions for a safe 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 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 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

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.

Introduction

3 Introduction

The purpose of an air brake system on heavy duty vehicles is to convert air pressure to mechanical energy to activate the foundation brakes. Federal Motor Vehicle Safety Standard 121 dictates how this is to be done for over-the-road vehicles.

The purpose of this book is to help you construct WABCO Truck and Tractor air systems. It will also help you identify air system components and understand how they relate to FMVSS-121.



The systems described in this workbook are generic air brake systems.

Included in this book are:

Truck Systems

- Air Supply
- Secondary Service
- Primary Service
- Parking
- Anti-Compounding
- Emergency (Prior to 3/1/98)
- Emergency (After 3/1/98)
- Tractor/Trailer Systems
- Tractor Parking & Trailer Air Supply
- Trailer Control

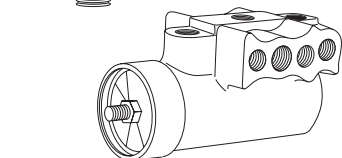
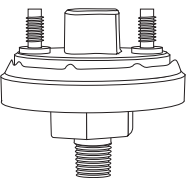
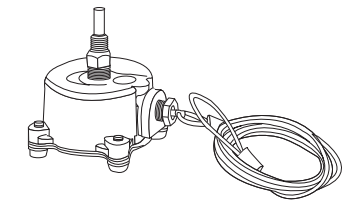
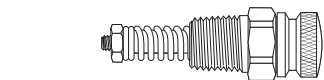
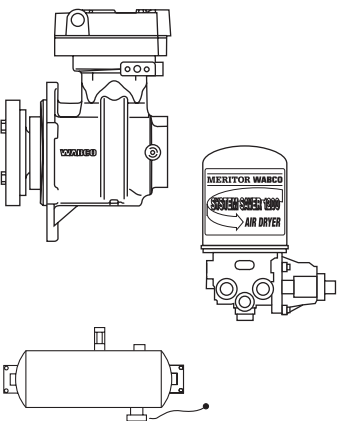
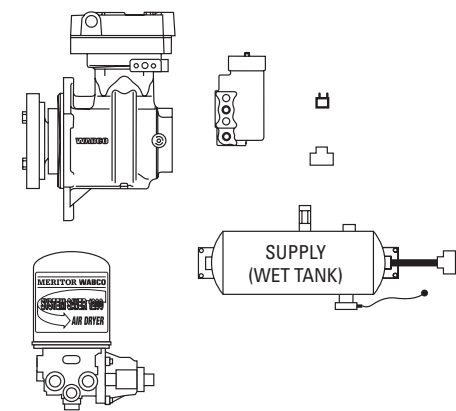
For additional information, call WABCO Customer Care Center at 855-228-3203.

Air Brake System Color Key

	Supply
	Secondary
	Primary
	Park/Emergency
	ABS Electrical
	Trailer Control
	Trailer Supply

4 Truck

4.1 Air Supply System



Compressor _____

Air Dryer _____

Supply Tank _____

Pressure Relief Valve _____

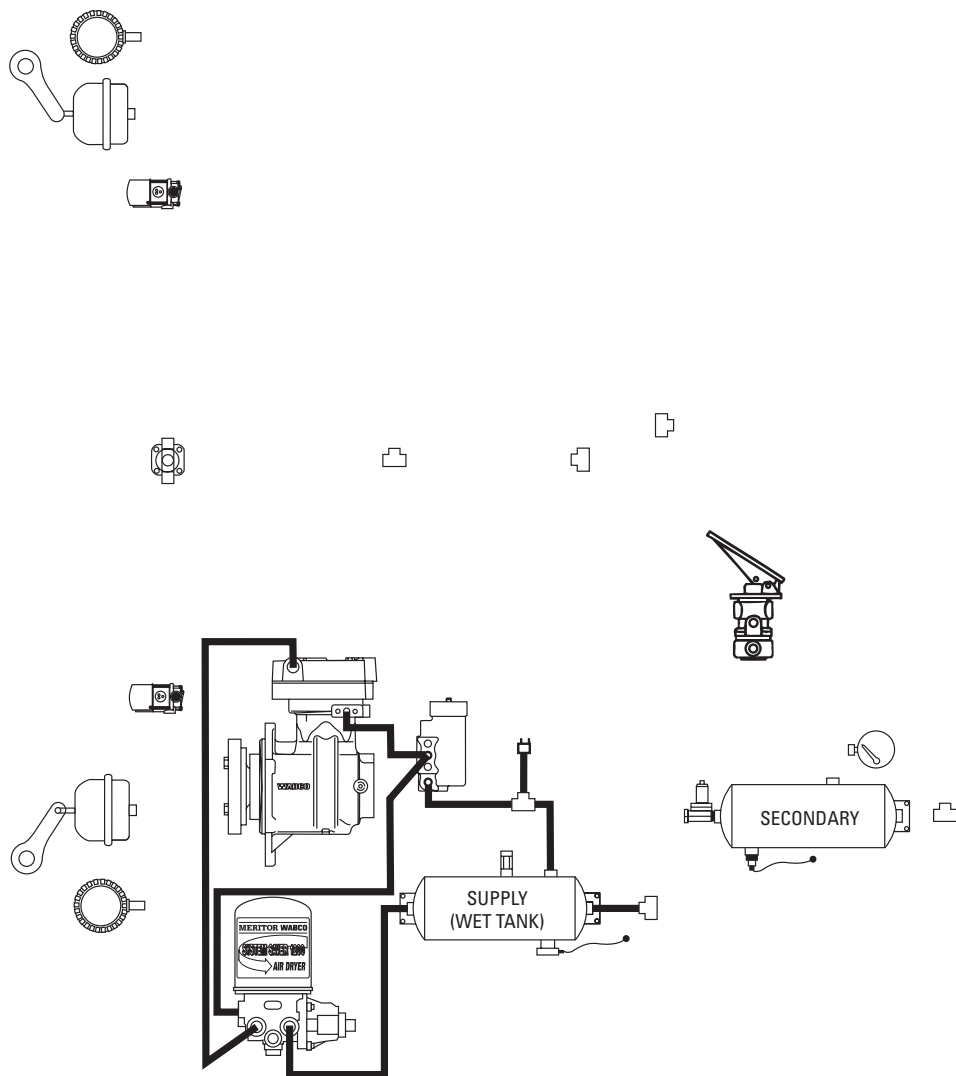
Automatic/Manual Drain Valve _____

Low Pressure Switch _____

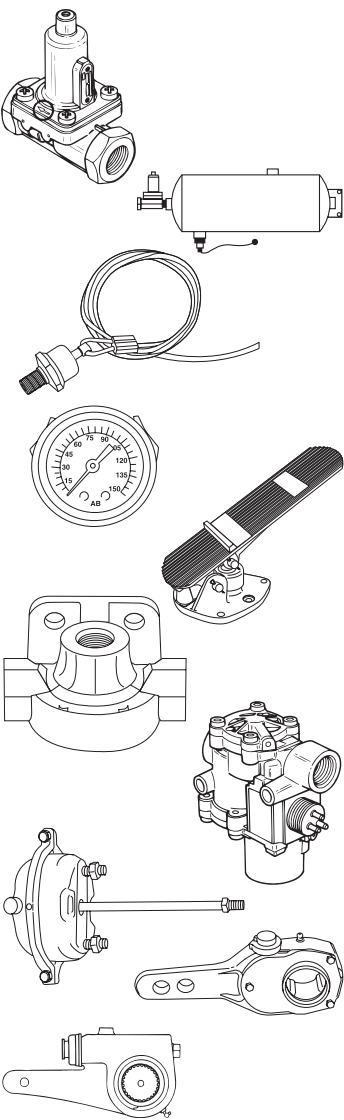
Governor _____

Truck

4.2 Secondary Service System



Truck



Pressure Control Check Valve _____

Secondary Service Tank _____

Manual Drain Valve _____

Air Gauge _____

Dual Foot Control Valve _____

Quick Release Valve _____

ABS Modulator Valve _____

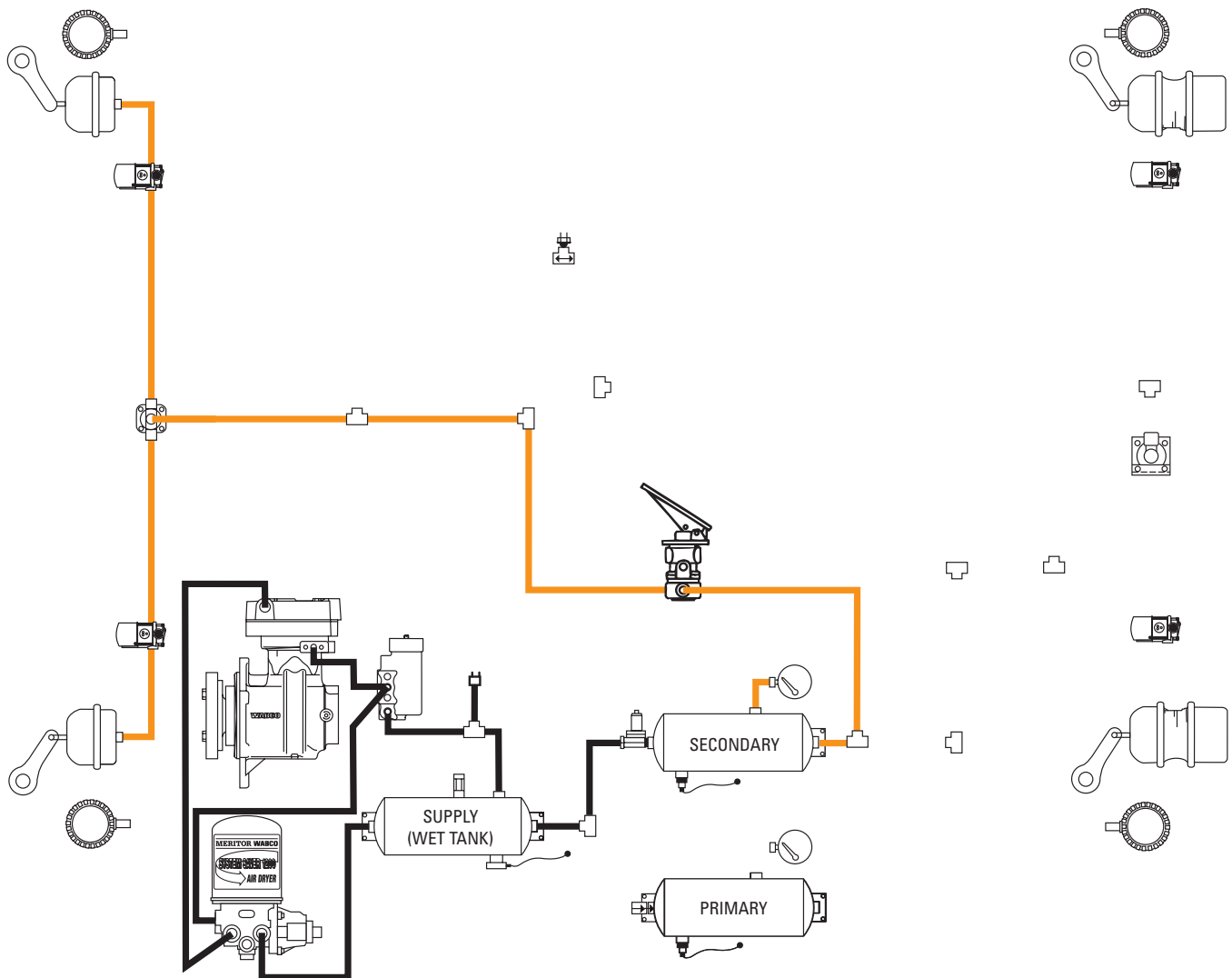
Service Chambers _____

Manual Slack Adjusters _____

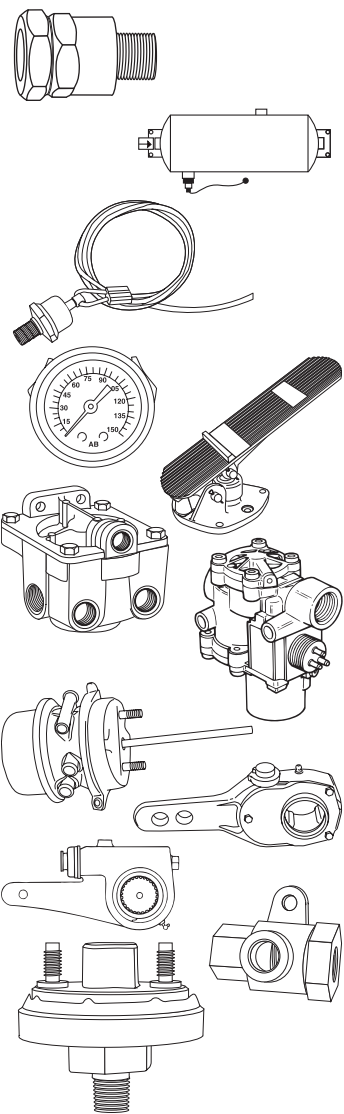
Automatic Slack Adjusters _____

Truck

4.3 Primary Service System



Truck



One-Way Check Valve _____

Primary Service Tank _____

Manual Drain Valve _____

Air Gauge _____

Dual Foot Control Valve _____

Service Relay Valve _____

ABS Modulator Valve _____

Spring Brakes _____

Manual Slack Adjusters _____

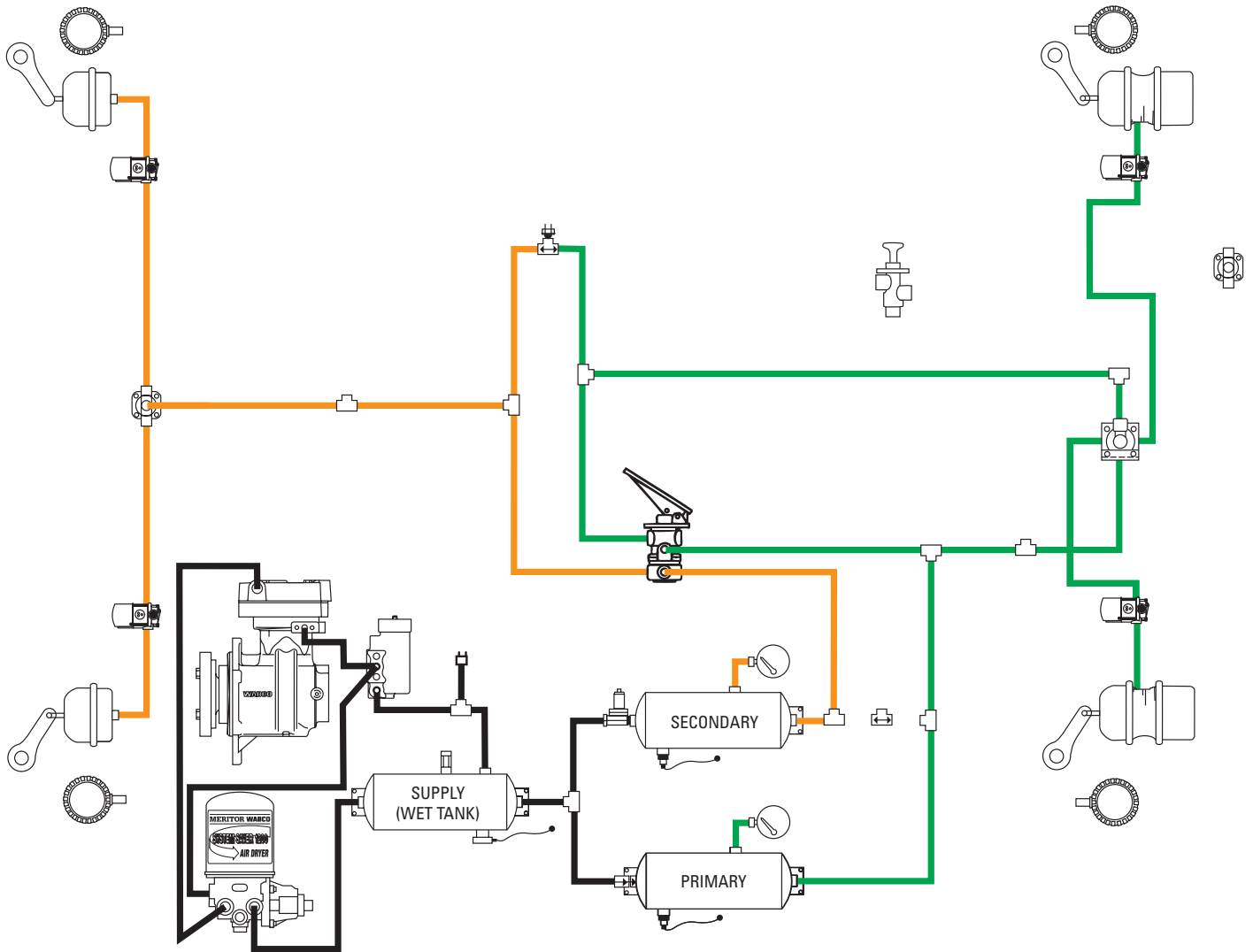
Automatic Slack Adjusters _____

Two-Way Check Valve _____

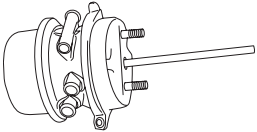
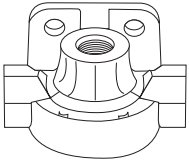
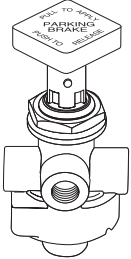
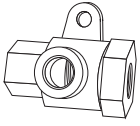
Stoplight Switch _____

Truck

4.4 Parking System



Truck



Two-Way Check Valve _____

Dash Valve (Yellow Diamond Knob) _____

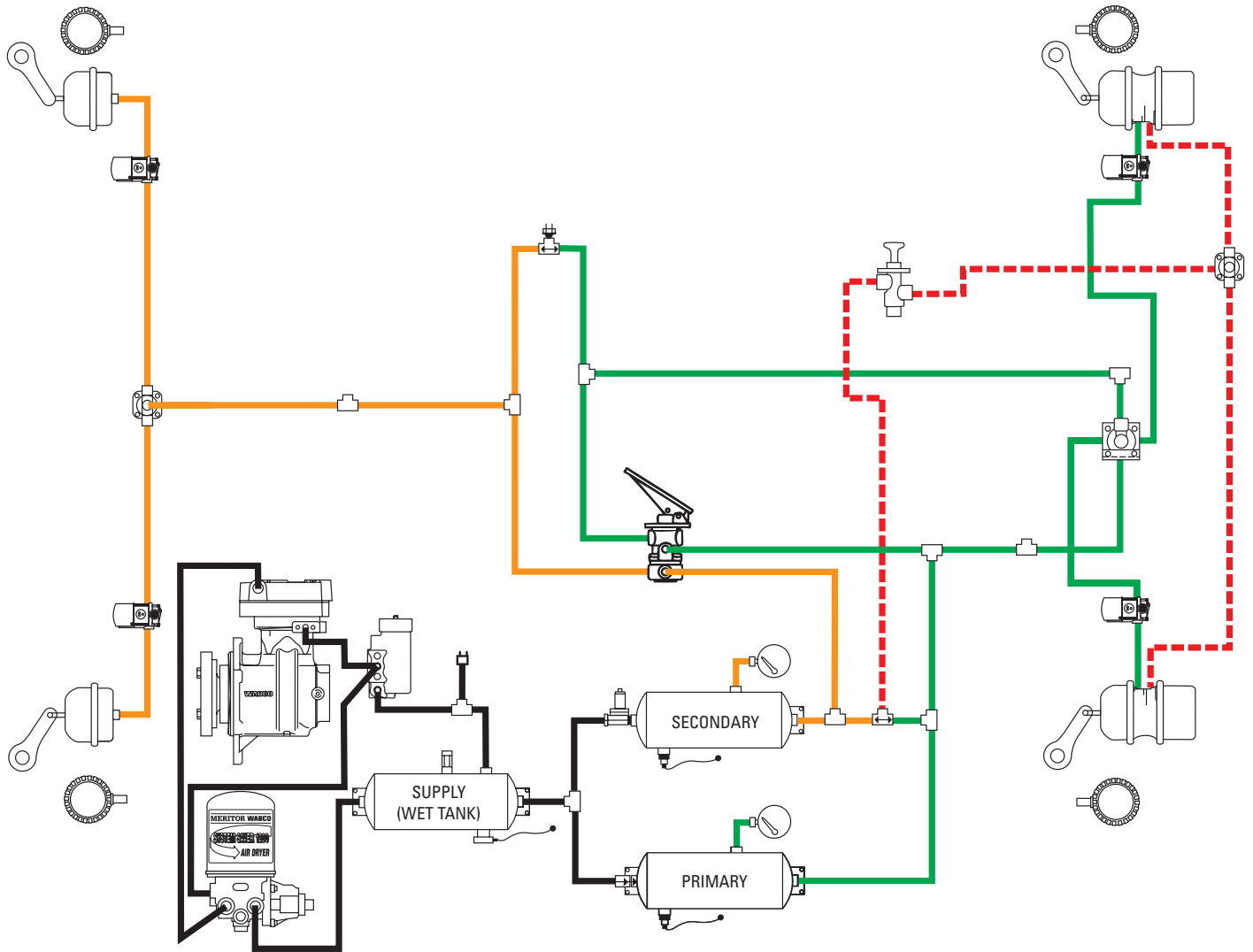
[illegible]

Quick Release Valve _____

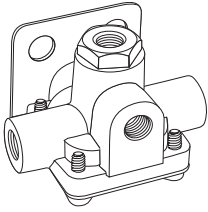
Spring Brakes

Truck

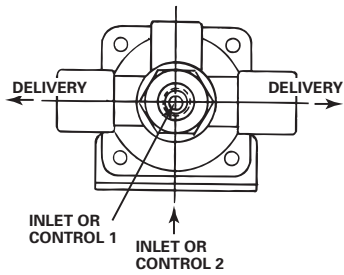
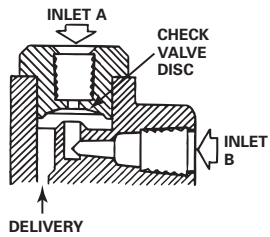
4.5 Anti-Compounding System



Truck

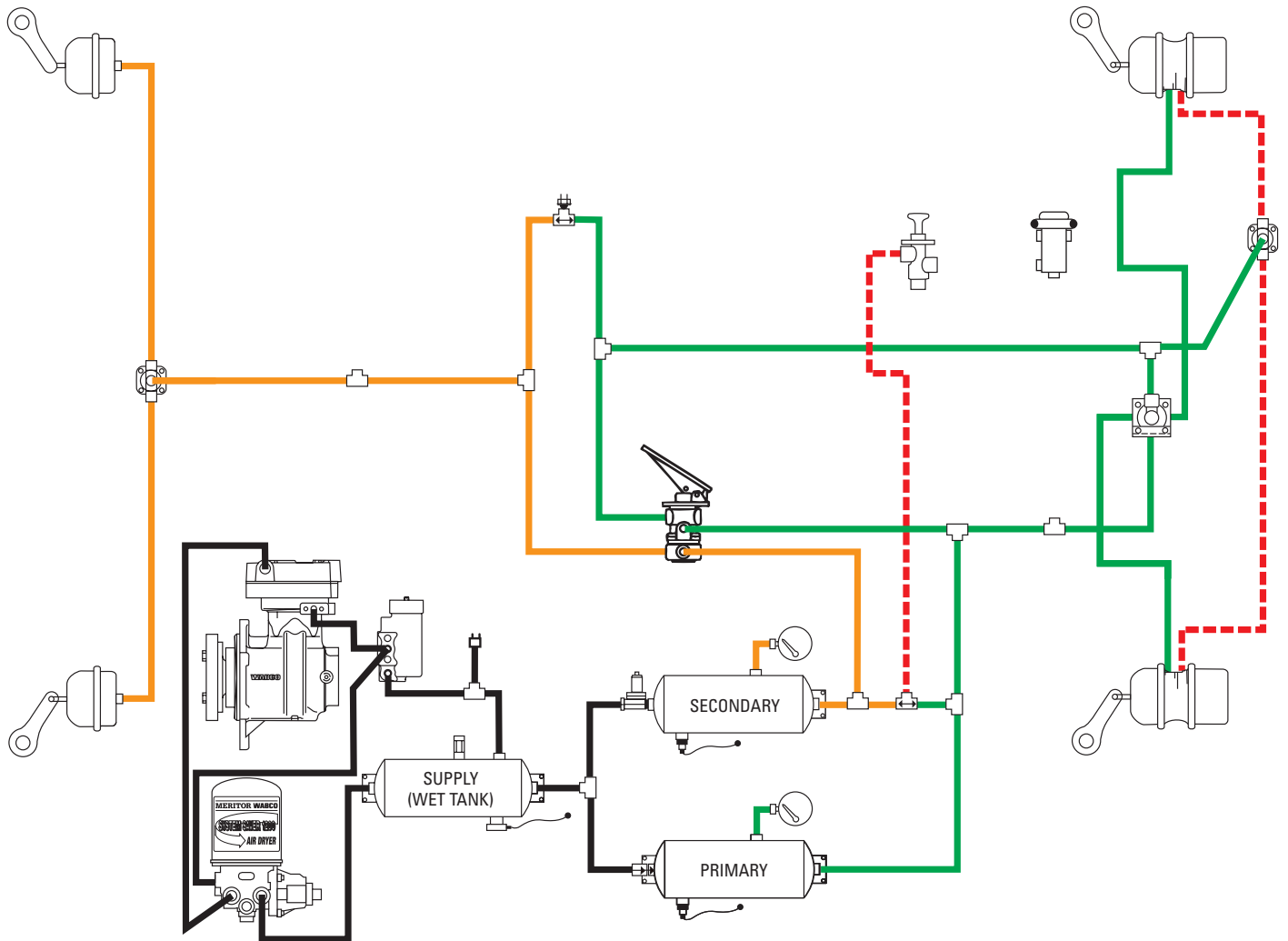


Quick Release with Two-Way Check Valve _____

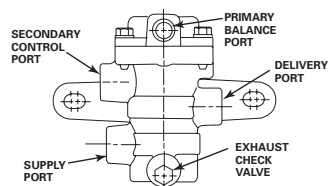
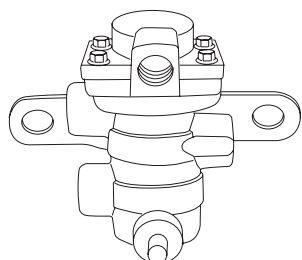
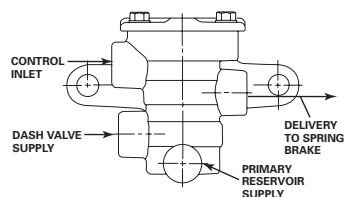
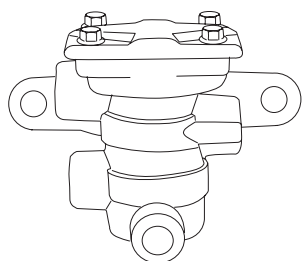


Truck

4.6 Emergency System (Prior to March 1, 1998)



Truck



Inversion Valve (Prior to March 1, 1998)
WABCO Production Part Number 9718990010
WABCO Service Part Number RKN28030 _____

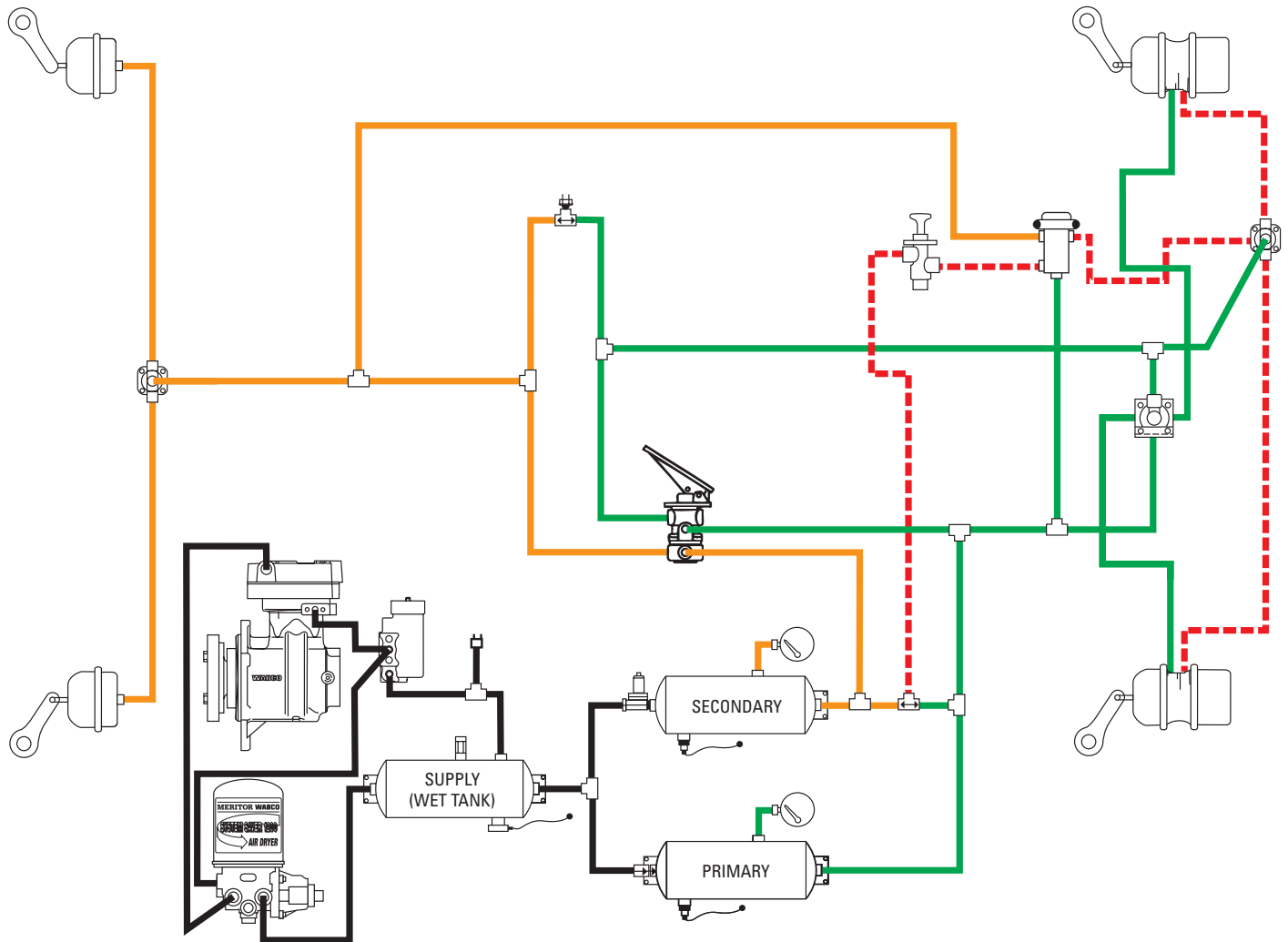
[illegible]

New Inversion Valve (Used After March 1, 1998)
WABCO Production Part Number 9718990020
WABCO Service Part Number RKN28032

[illegible]

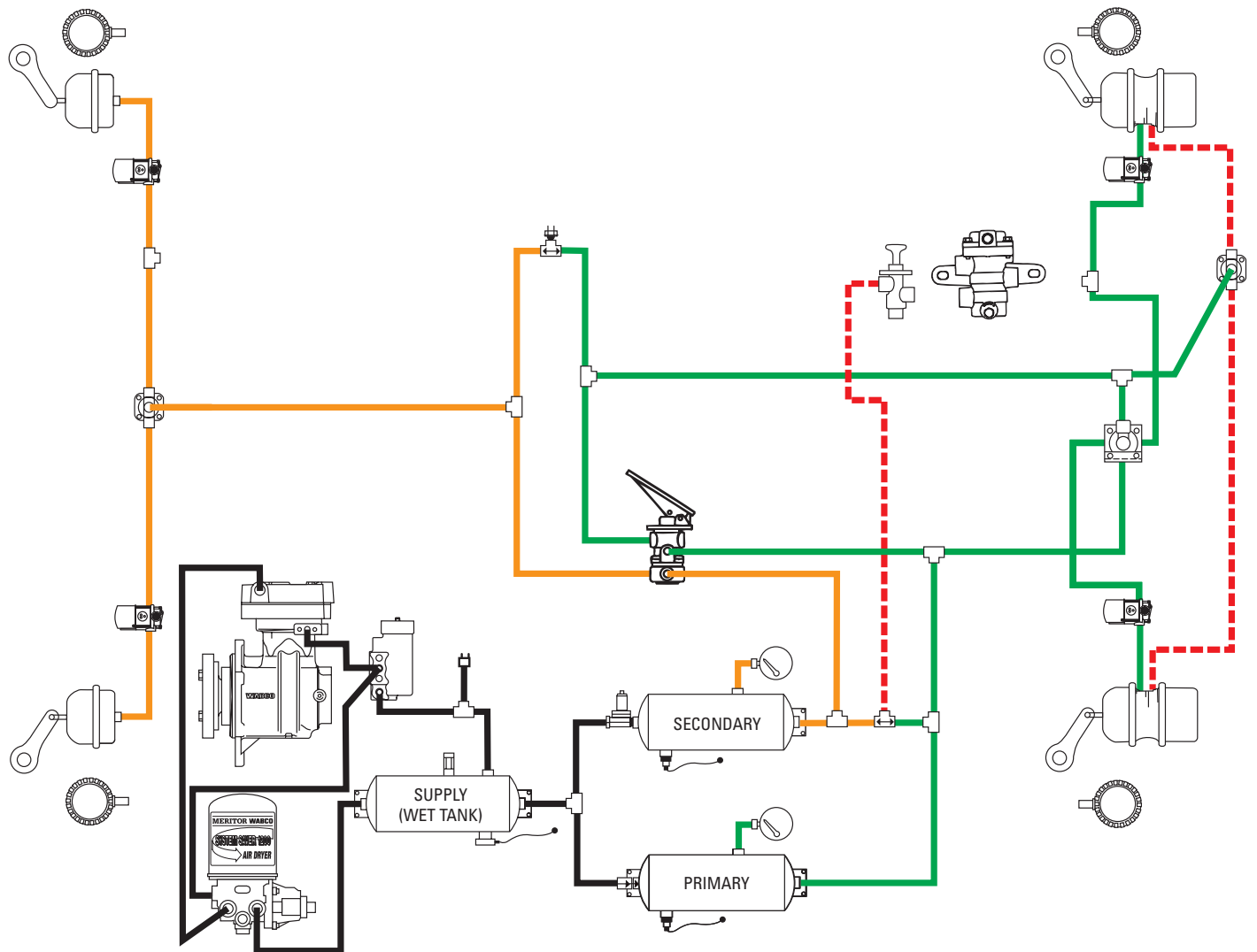
Truck

4.7 Emergency System Complete (Prior to March 1, 1998)



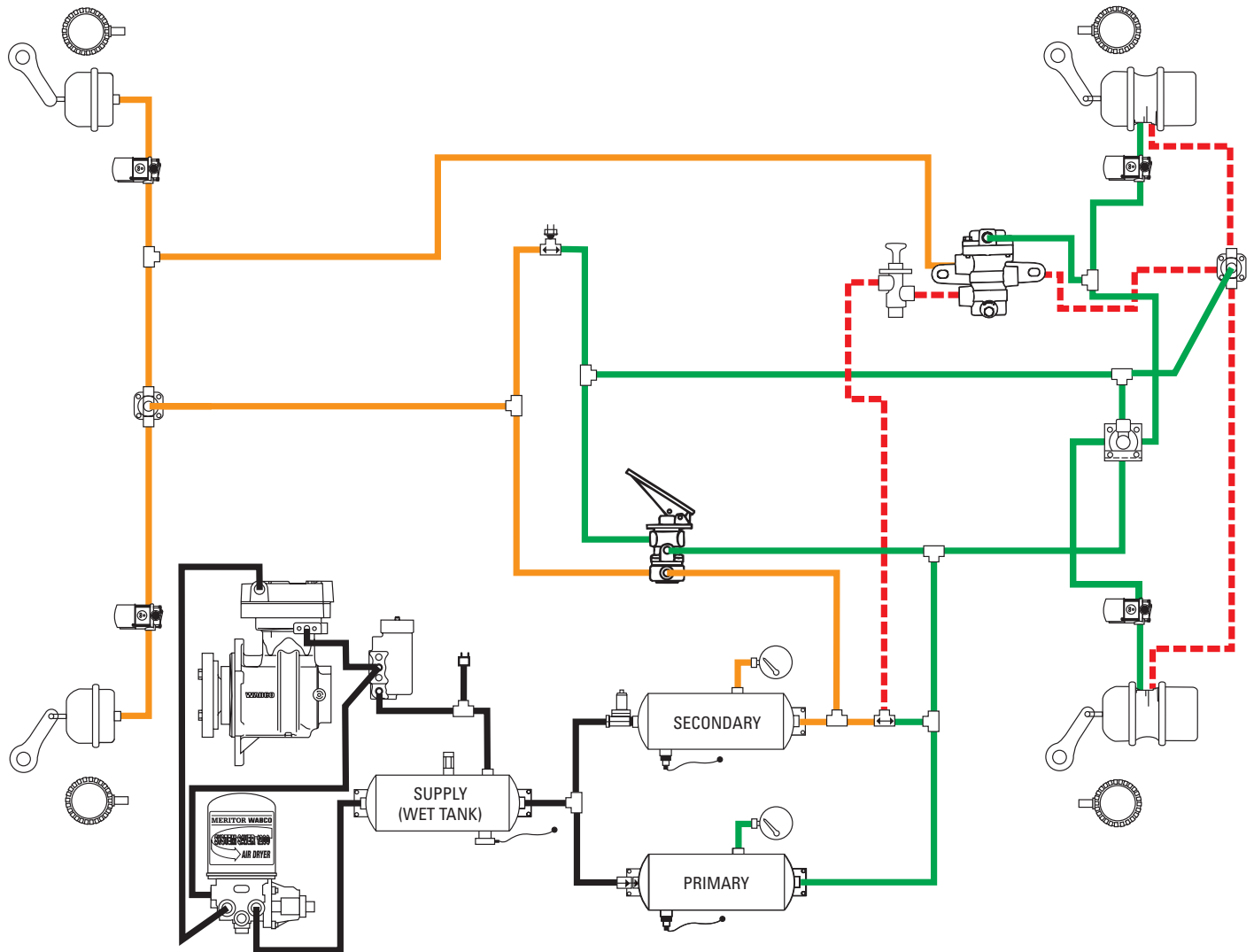
Truck

4.8 Emergency System (After March 1, 1998)



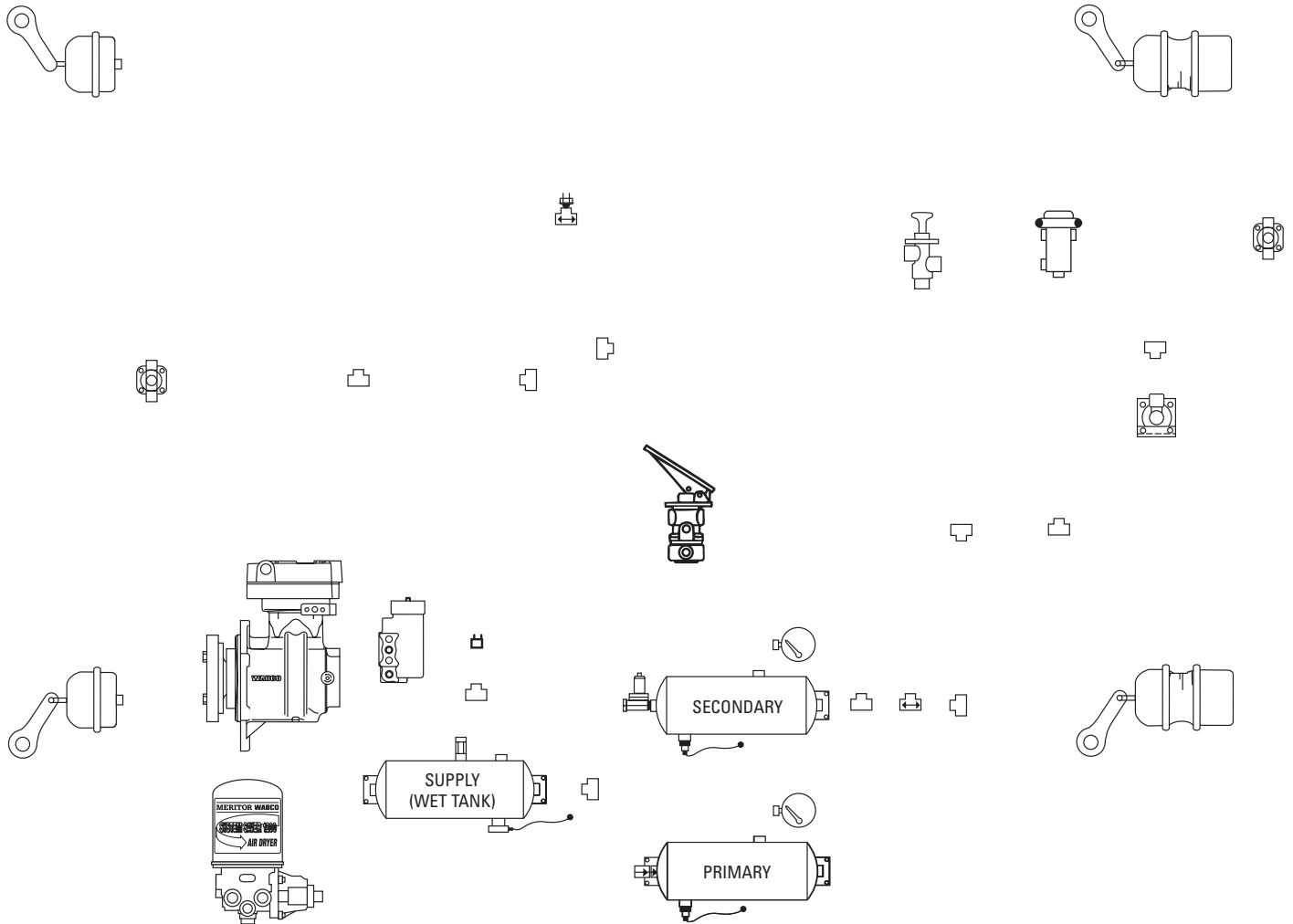
Truck

4.9 Emergency System Complete (After March 1, 1998)



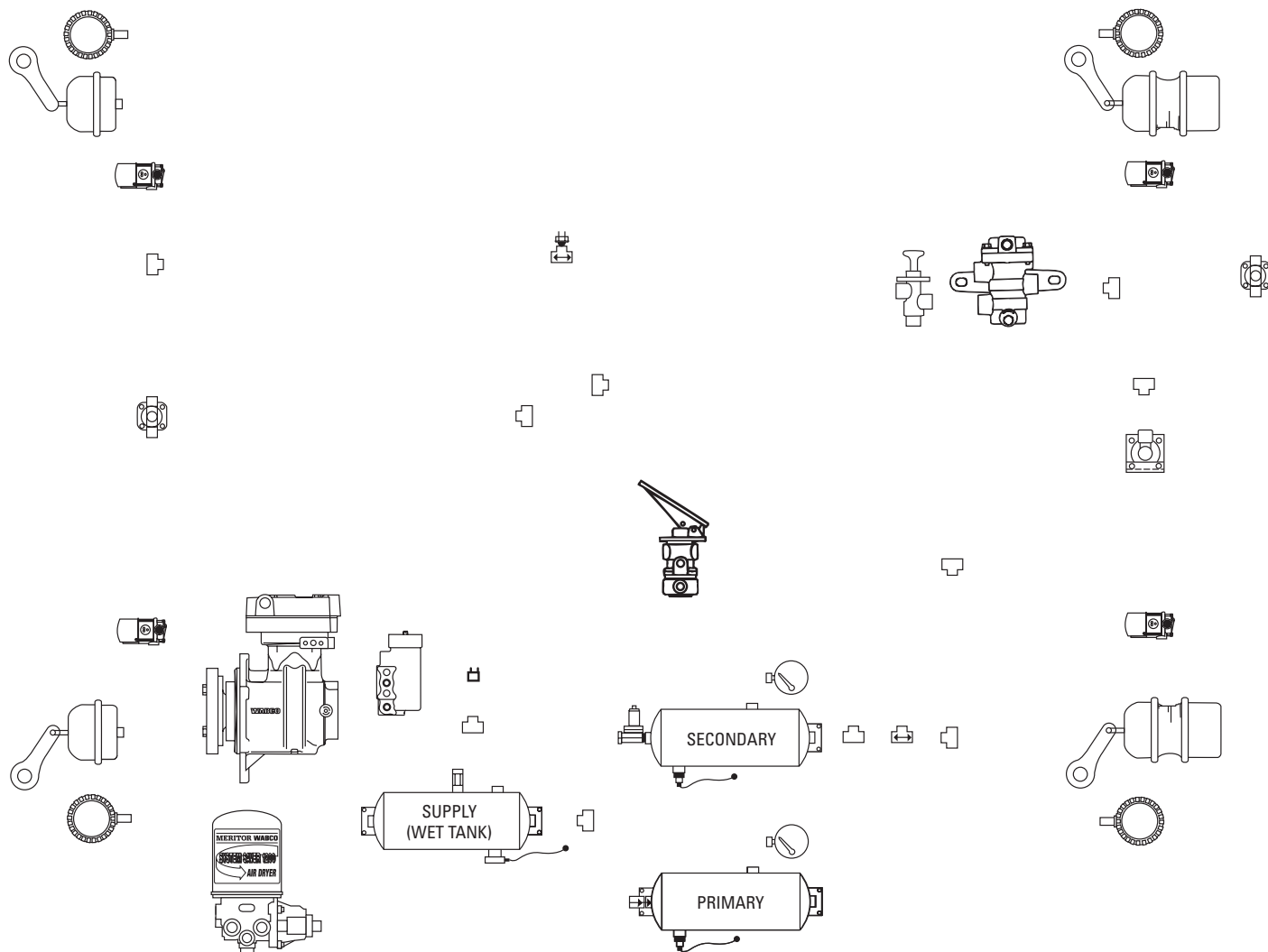
Truck

4.10 Self Test (Prior to March 1, 1998)



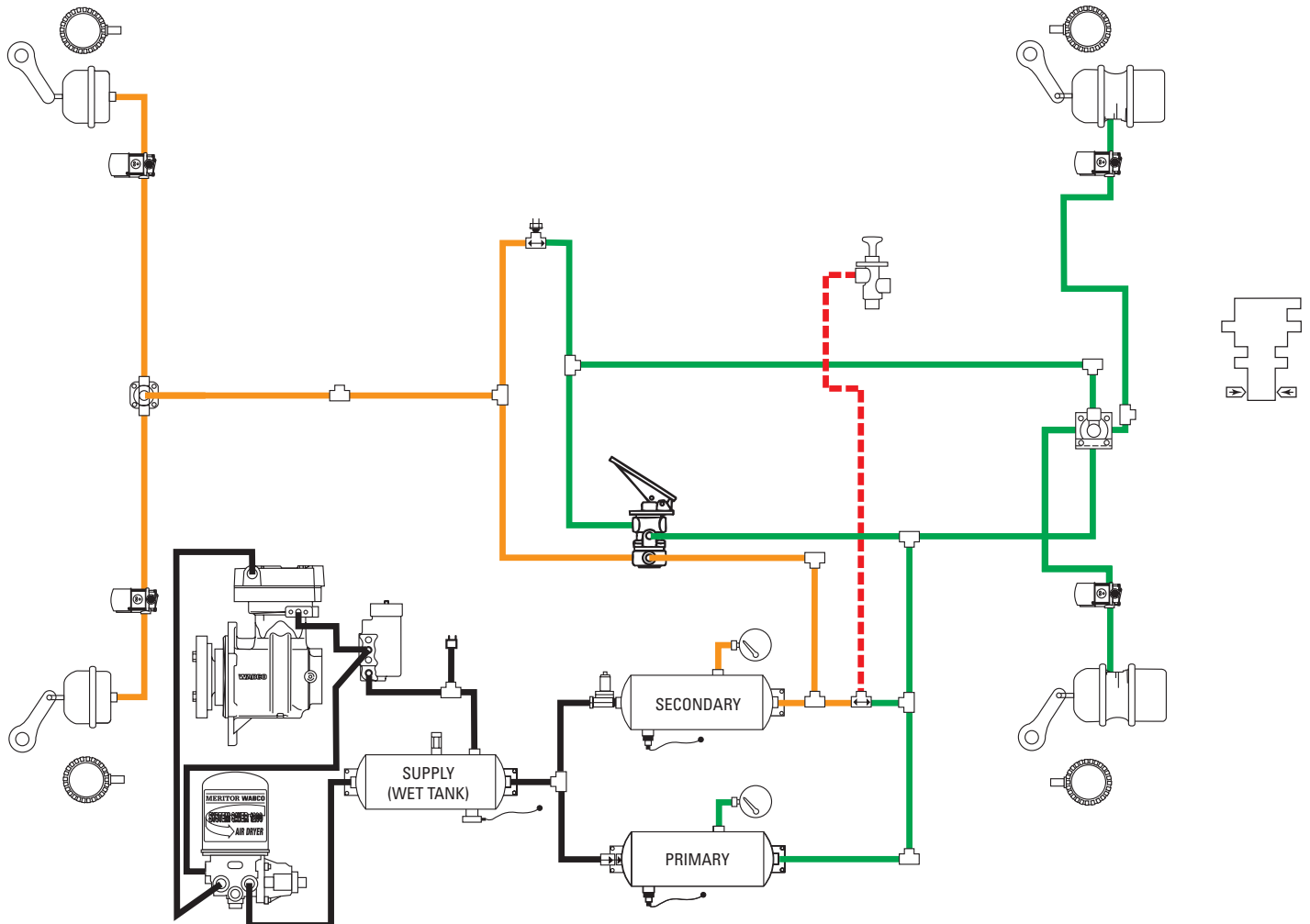
Truck

4.11 Self Test (After March 1, 1998)

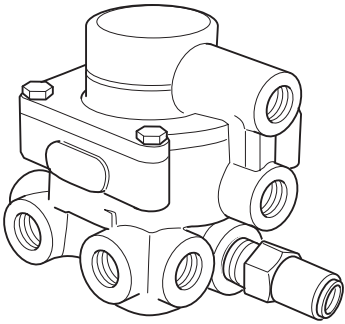


Truck

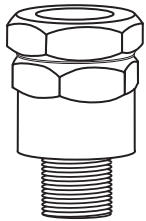
4.12 Anti-Compounding/Emergency System



Truck



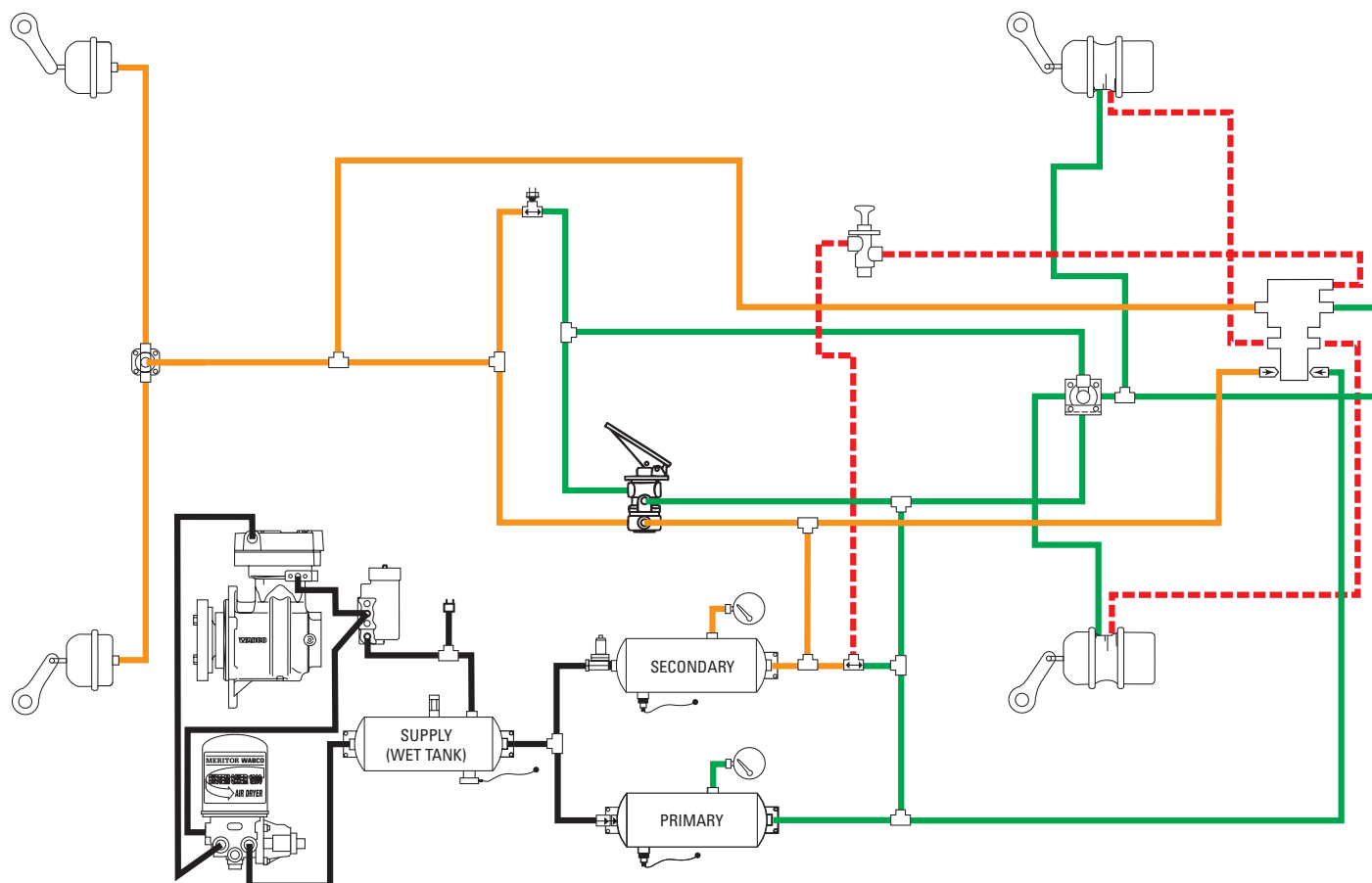
Inversion Relay Valve With Anti-Compounding _____

[illegible]

One-Way Check Valve _____

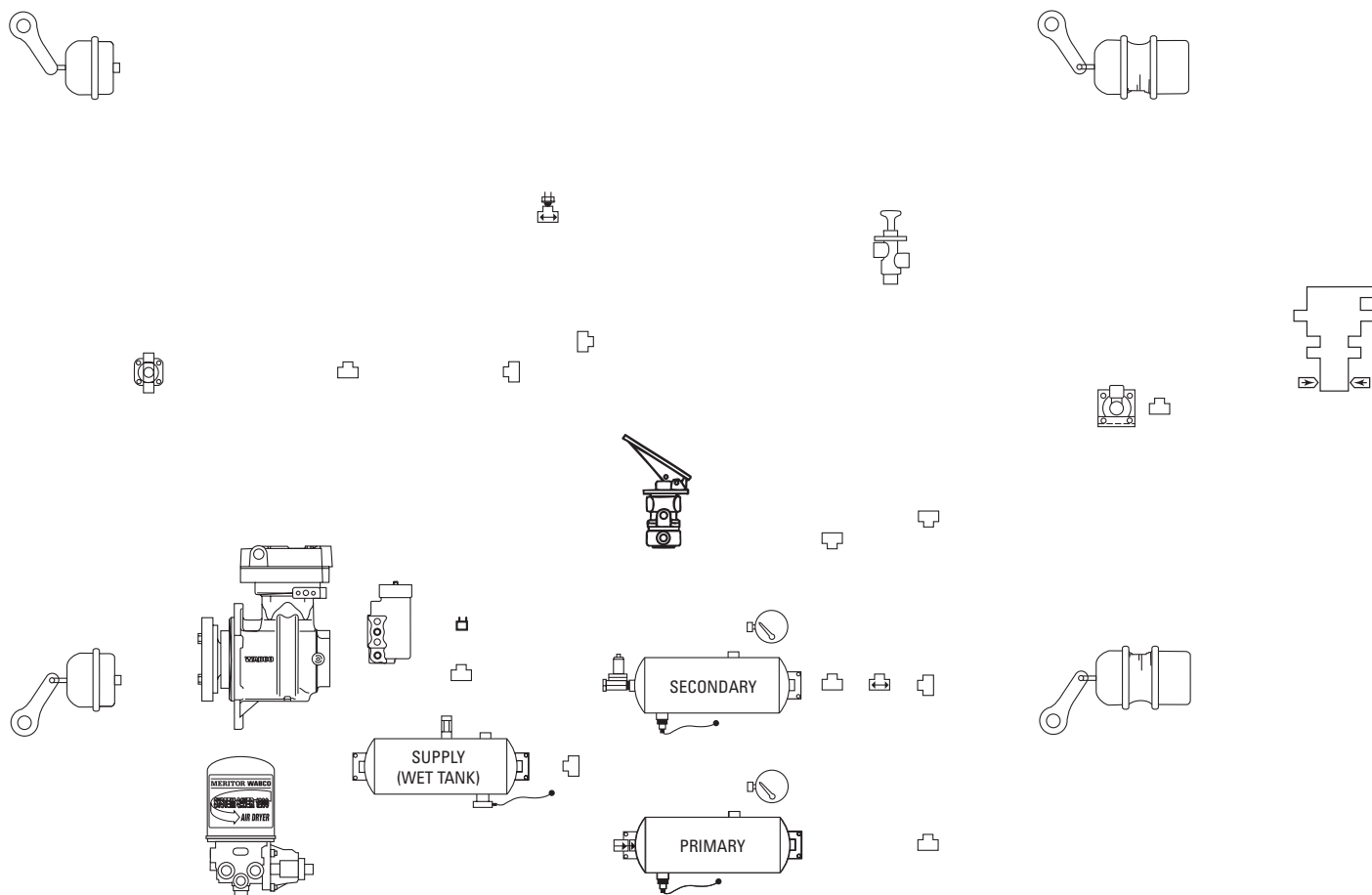
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Truck



Truck

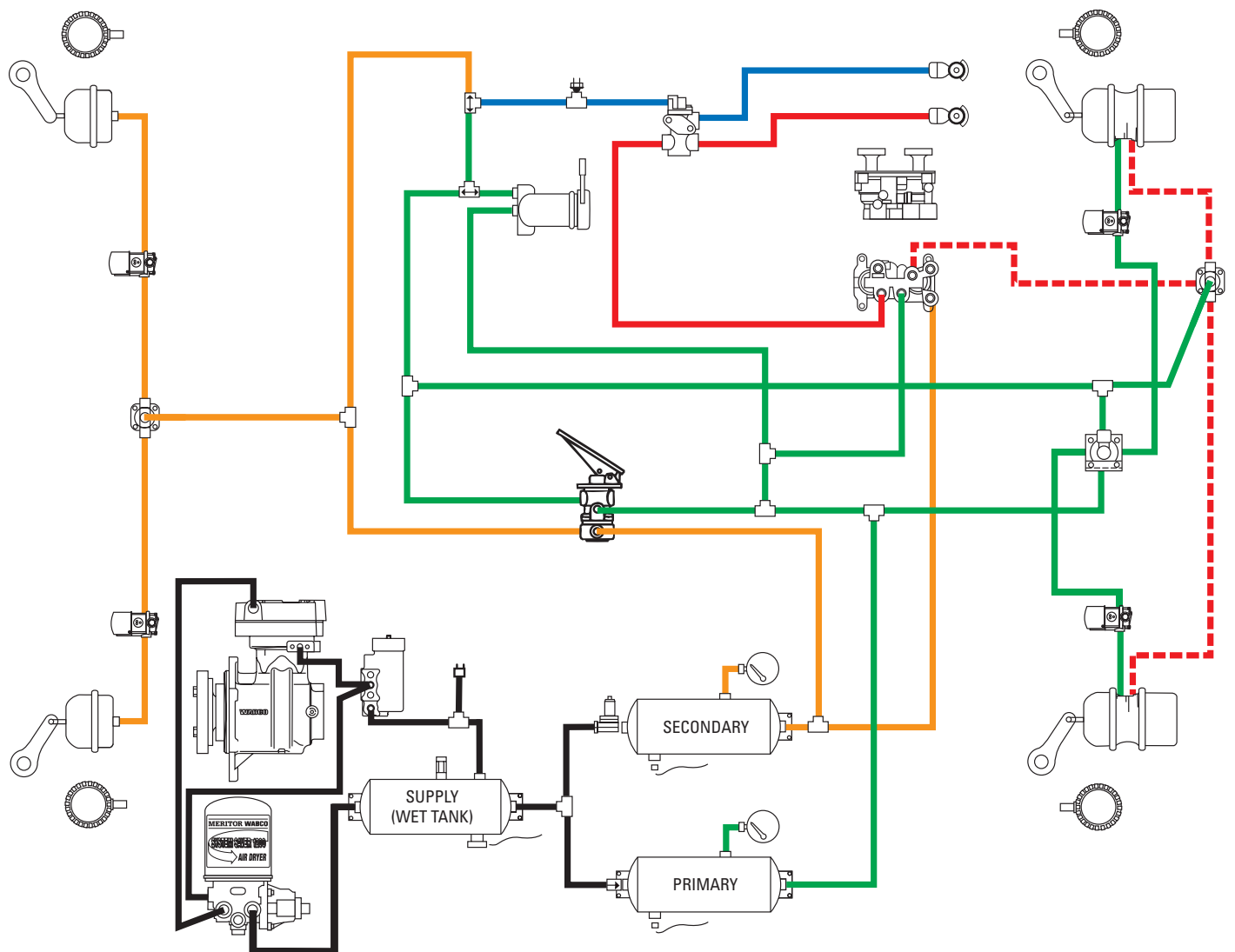
4.13 Anti-Compounding/Emergency System Test



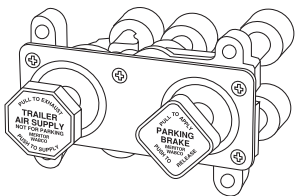
Tractor

5 Tractor

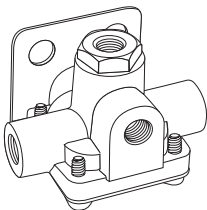
5.1 Parking and Trailer Air Supply System



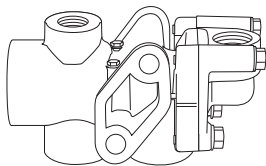
Tractor



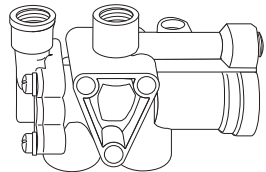
Module Dash Control (Yellow Diamond Knob & Red Octagon Knob) _____



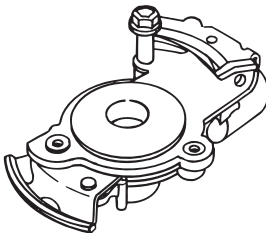
Quick Release With Two-Way Check Valve _____



(2 Line) Tractor Protection Valve _____



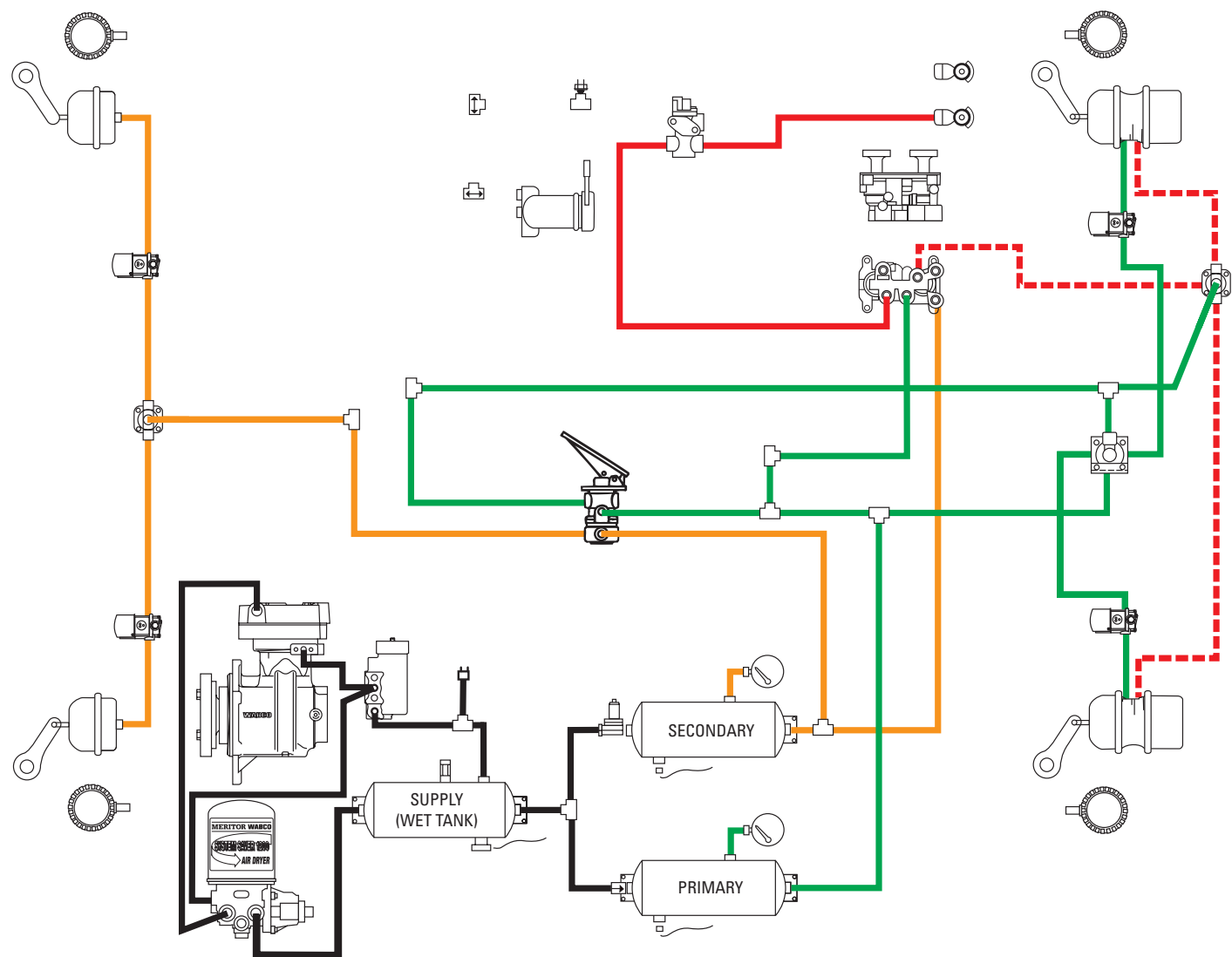
(3 Line) Tractor Protection Valve _____



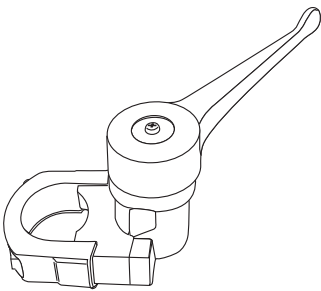
(Trailer Supply) Gladhand _____

Tractor

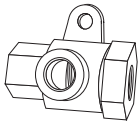
5.2 Trailer Control System



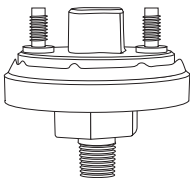
Tractor



Hand Control Valve _____



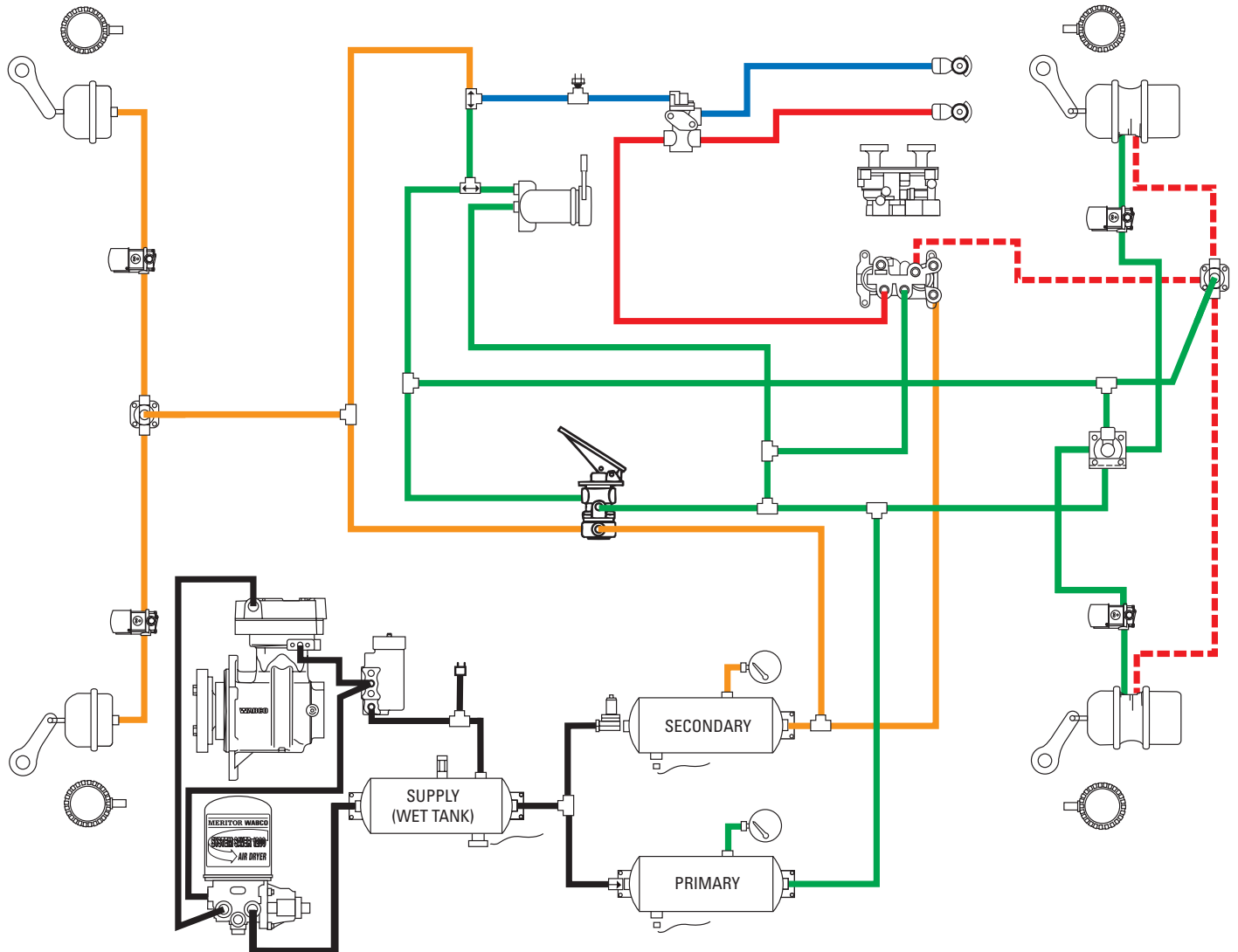
(2) Two-Way Check Valves _____



Stoplight Switch _____

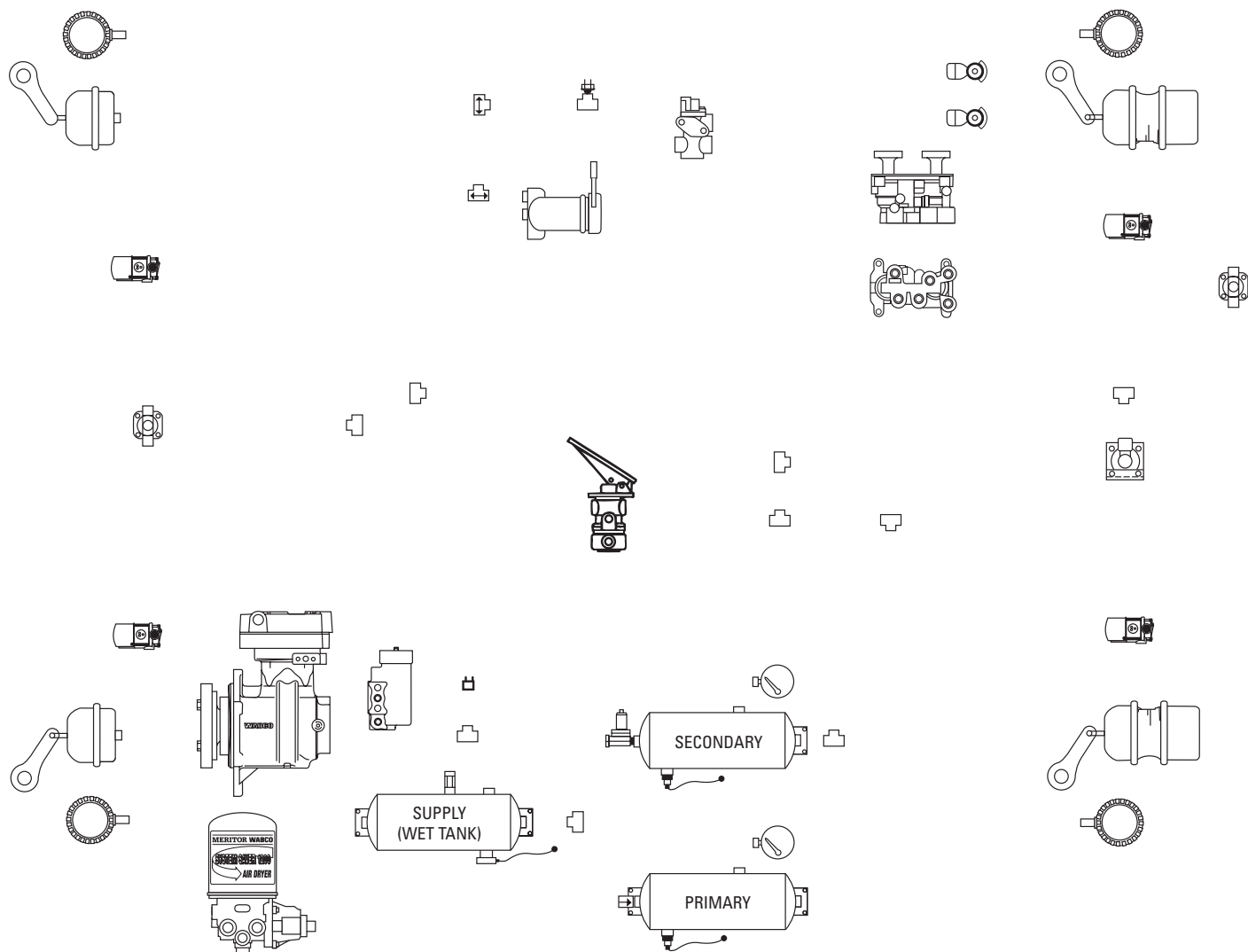
Tractor

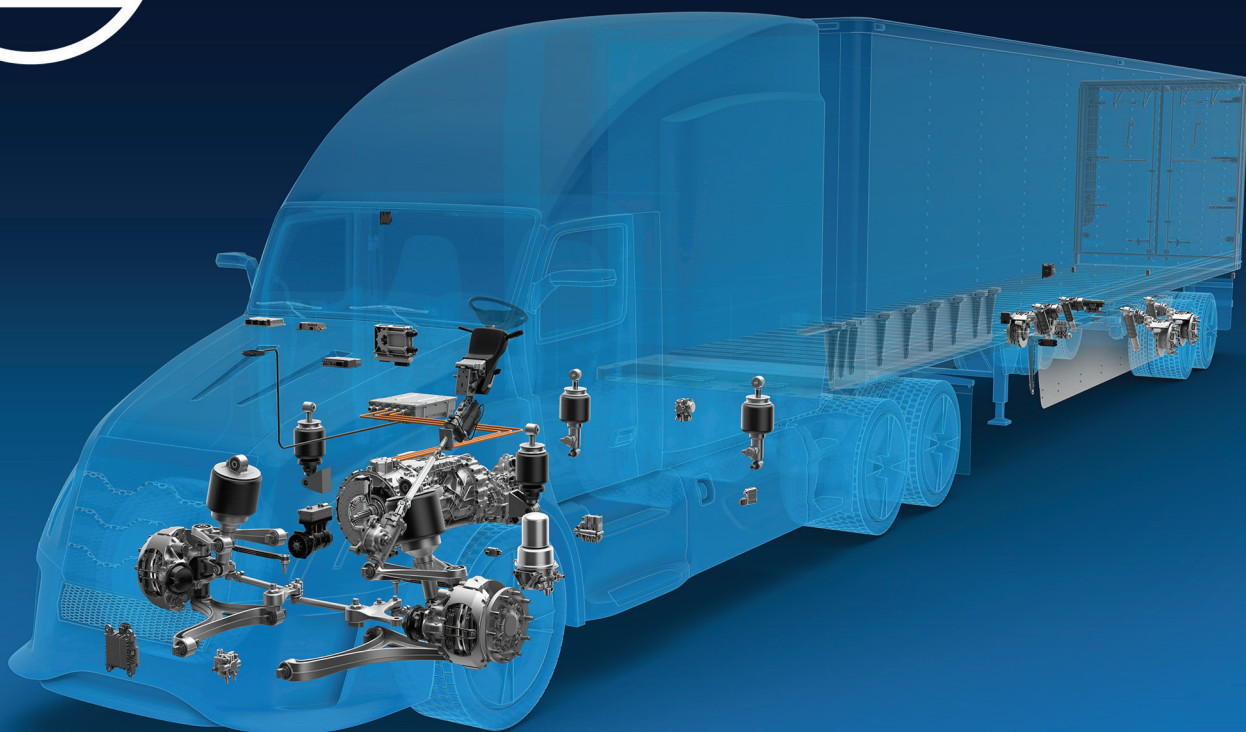
5.3 Air System Complete



Tractor

5.4 Self Test





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

About CVS Division

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.

For more information, visit: www.zf.com/cv

WABCO