SERVICE BULLETIN

SB1599

ADDRESSEES	**:** Owners and operators ABC Customer Care and Parts Source
VEHICLE MODEL	**:** TDX25
SYSTEM/SUBSYSTEM	**:** 05.10 Brakes – Compressed-air brakes
BULLETIN TYPE	**:** Service Information
DATE	**:** January 25th, 2019
SUBJECT	**: Compressed-air brake system functional check**
TERMS & CONDITIONS	**:** This service bulletin does not entitle to any reimbursement.

DESCRIPTION

These tests are designed to identify the cause(s) of a sluggish performance and/or leaks in the system. The tests give you a general idea of the system condition. The procedures described in this service bulletin are applicable to TDX25 vehicles.

JOB QUALIFICATION:

The task has to be carried out by a technician trained in the operations at hand. If you are not sure that you're qualified, contact ABC Customer Care.

EQUIPMENT CONDITION:

- Park the coach on a level-surfaced service pit.
- Apply the parking brake and shut down the engine.
- Put a "DO NOT OPERATE" tag on the instrument panel.
- **Read the entire procedure before starting to work.**

WARNING!

Observe safe shop practices at all times.

SAFETY INFORMATION ABOUT SYSTEMS UNDER PRESSURE:

- Do not tighten or loosen pipe or hose connections while the pipe or hose is under pressure.
- Do not check pressurized lines for leaks with your hands.
- Safely depressurize devices containing compressed air under pressure before opening them.

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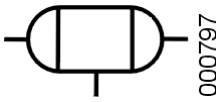
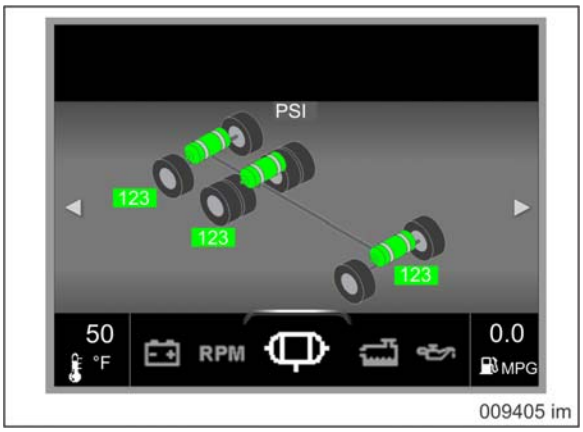
RETRIEVAL OF COMPRESSED-AIR TANK PRESSURES THROUGH DASHBOARD DISPLAY:

Step	Action
1	Turn the joystick of the multifunctional control until this symbol lights at the bottom of the dashboard display.  **Figure 1**
2	Press the joystick to open the menu
3	Turn the joystick of the multifunctional control until this symbol lights at the bottom of the dashboard display.  **Figure 2**
4	Press the joystick to open the screen. The pressures in the service brakes tanks are shown.  **Figure 3**

TO OVERRIDE BUS-STOP BRAKE OPERATION:

The bus-stop brake is an automatic brake and operates by adding compressed air to the service part of the brake cylinders on the drive and trailing axles.

The bus-stop brake is applied when you:

- *open a passenger door;*
- *open the luggage compartment access door;*
- *switch on the suspension kneeling system.*

It is released again if you press the accelerator pedal provided that all entrance doors are closed and the vehicle is no longer kneeled.

NOTE: Service switch S546 is located in the rear junction box (EK2).

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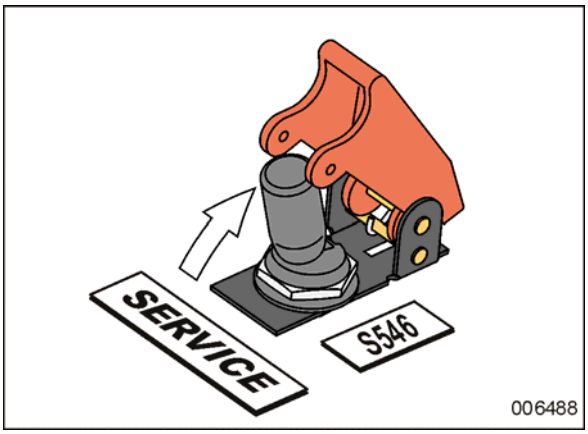
NOTE: The actions below must be repeated every time you have switched off the vehicle ignition.

Step	Action
1	Make sure the vehicle ignition is on.
2	Lift the cap of service switch S546.
3	Momentarily tilt the handle against the spring pressure upwards as far as it will go. The bus-stop brake is now released.  **Figure 4**

PROCEDURE:

Step	Action
1	Prior to performing any test, check the condition of all air lines. Check the pipes for kinks or dents, the hoses for signs of wear or overheating.
2	Put chocks in front of and behind the front-axle wheels.
3	Test the compressed-air supply system as explained in “STEP 3 IN DETAIL”.
4	Test the tank supply circuit for leakage as indicated in “STEP 4 IN DETAIL”.
5	Test the parking brake operation as indicated in “STEP 5 IN DETAIL”.
6	Test the service brake delivery circuits for leakage as indicated in “STEP 6 IN DETAIL”.
7	Test the bus-stop brake operation as indicated in “STEP 7 IN DETAIL”.
8	Test the one way check valves operation as indicated in “STEP 8 IN DETAIL”.
9	Test the operation of the dual air system as indicated in “STEP 9 IN DETAIL”.

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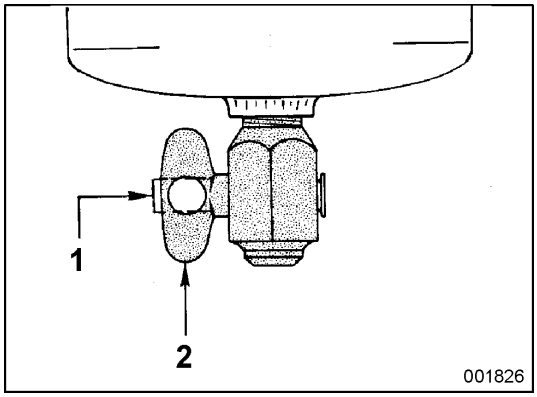
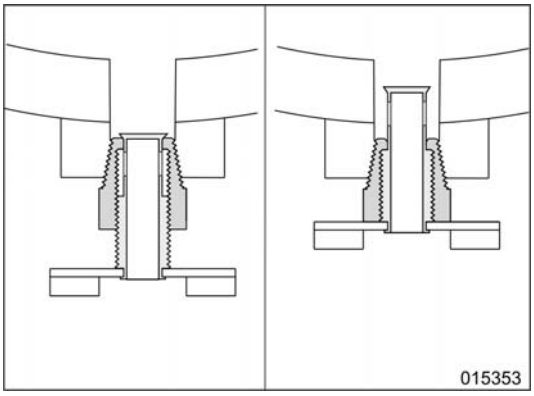
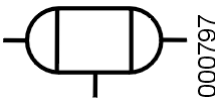
STEP 3 IN DETAIL: To test compressed-air supply system (pressure build-up, low pressure warning, governor operation)

Step	Action
3.1	Connect an accurate pressure gauge to the test fitting (identified by two red adhesive tapes) behind the front bumper.
3.2	**WARNING!** **Use appropriate hearing protection while draining the air tanks.** Completely drain the entire air system by using the drain cocks on the air tanks. Refer to figure 9 at the end of this service bulletin for air tanks location.  **Figure 5a: Compressed-air tank drain cock, previous model** **1.Closed** **2. Open**  **Figure 5b: Compressed-air tank drain cock, current model** **Left: closed** **Right: open**
3.3	Close the air tanks cocks if the compressed-air system is drained.
3.4	Turn the vehicle ignition on. Low air warning on dashboard display should appear and low air buzzer should sound. If not so, check installation.  **Figure 6: Low air warning on dashboard display**
3.5	Start the engine and run at 1,600 rpm. Low air warning should disappear and buzzer should stop when pressure reaches 80 psi. If not so, check installation.
3.6	Start timing as system pressure reaches 85 psi and stop at 100 psi. Air build-up time should be 45 seconds or less. If the build-up time is excessive, check: • for excessive air system leakage; • for restrictions in the air compressor inlet or discharge lines (carbon build-up); • Air compressor condition (excessive wear on piston rings and/or cylinders); • operation of air compressor inlet and discharge valves.

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3.7	Idle the engine. Observe reading on the air pressure gauge when governor cuts out the compressor. The reading should be as shown in table 2. **Table 2: Governor setting** Cut-in pressure (psi) | Cut-out pressure (psi) 115 +0/-5psi | 135 ± 5 psi
3.8	With the engine still running, slowly reduce air pressure in the system by applying and releasing the brakes. Observe reading on pressure gauge when governor cuts in the compressor. The reading should be as shown in table 2. If not so, check the operation of the governor and the unloading mechanism on the compressor.

STEP 4 IN DETAIL: To test tank supply circuit for leakage

Step	Action
4.1	Connect an accurate pressure gauge to the test fitting (identified by two red adhesive tapes) behind the front bumper.
4.2	Fully charge the air system and stop the engine.
4.3	Allow pressure to stabilize for at least 1 minute.
4.4	Observe the pressure gauge for 2 minutes, and note any pressure drop. Pressure drop should not be more than 3 psi per minute. If not so, coat all air line connections and pneumatic components with a water and soap solution. Bubbles will indicate an air leak, and none should be permissible. Repair or replace defective parts.

STEP 5 IN DETAIL: To test parking brake operation

Step	Action
5.1	Connect accurate pressure gauges to: • the test fitting in the air line leading to the spring brake part of the brake cylinder of the left-hand drive wheel. • the test fitting in the air line leading to the spring brake part of the brake cylinder of the left-hand trailing wheel.
5.2	Fully charge the air system and stop the engine.
5.3	Pull the parking brake button to apply the parking brake. The pressure gauge should indicate no pressure.  **Figure 7: Parking brake button**

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5.4	Push and hold the emergency parking brake release button to release the parking brake. The pressure gauge(s) should indicate pressure.  **Figure 8: Emergency parking brake release button**
5.5	Release the emergency parking brake release button.
5.6	Push the parking brake button to release the parking brake. The pressure gauge(s) should indicate pressure.
5.7	Reduce air pressure in the system by applying and releasing the foot brake. Low air warning on dashboard display should appear and low air buzzer should sound when pressure drops to 80 psi. Drive axle spring brakes should apply when pressure drops to approximately 60 psi.

STEP 6 IN DETAIL: To test service brake delivery circuits for leakage

Step	Action
6.1	Connect accurate pressure gauges to: • the test fitting in the air line leading to the brake cylinder of a front axle wheel; • the test fitting in the air line leading to the service part of a brake cylinder of a drive axle wheel; • the test fitting in the air line leading to (the service part of) a brake cylinder of a trailing axle wheel;
6.2	Override the bus-stop brake operation as explained earlier in this document.
6.3	Fully charge the air system and stop the engine.
6.4	Apply the foot brake pedal, allow pressure to stabilize for at least 1 minute.
6.5	Hold down the foot brake pedal for 2 minutes while observing the pressure gauges. Pressure drop should not be more than 4 psi per minute. If not so, coat all brake air line connections and pneumatic components with a water and soap solution. Bubbles will indicate an air leak, and none should be permissible. Repair or replace defective parts.

STEP 7 IN DETAIL: To test bus-stop brake operation

Step	Action
7.1	Connect accurate pressure gauges to: • the test fitting in the air line leading to the service part of a brake cylinder of a drive axle wheel; • the test fitting in the air line leading to (the service part of) a brake cylinder of a trailing axle wheel.
7.2	Fully charge the air system.
7.3	Operate the kneeling system. The pressure gauges should indicate pressure.

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7.4	Return to normal ride height and press the accelerator pedal. The pressure gauges should indicate no pressure.
7.5	Open the front passenger door. The pressure gauges should indicate pressure.
7.6	Close the front entrance door and press the accelerator pedal. The pressure gauges should indicate no pressure.
7.7	Repeat steps 7.5 and 7.6 by operating the rear passenger door.
7.8	Repeat steps 7.5 and 7.6 by operating the luggage compartment access door.

STEP 8 IN DETAIL: To test operation of one way check valves

WARNING!

Use appropriate hearing protection while draining the air tanks.

Step	Action
8.1	Fully charge the air system and stop the engine.
8.2	Retrieve the compressed-air tank pressures screen on the dashboard display as explained earlier in this document.
8.3	Drain the wet tank. The compressed-air tank pressures screen on the dashboard display should not indicate a loss of pressure.
8.4	Close the wet tank drain cock.

STEP 9 IN DETAIL: To test operation of dual air system

WARNING!

Use appropriate hearing protection while draining the air tanks.

Step	Action
9.1	Connect accurate pressure gauges to: • the test fitting in the air line leading to the brake cylinder of a front axle wheel; • the test fitting in the air line leading to the service part of a brake cylinder of a drive axle wheel; • the test fitting in the air line leading to the service part of a brake cylinder of a trailing axle wheel;
9.2	Fully charge the air system and stop the engine.
9.3	Override the bus-stop brake operation as explained earlier in this document.
9.4	Drain the drive axle service brakes tank.
9.5	Make a service brake application and check whether the pressure gauges connected to the front and trailing axle brakes indicate pressure.
9.6	Close the drain valve of the drive axle service brakes tank.
9.7	Start the engine and fully charge the air system again.
9.8	Stop the engine.
9.9	Override the bus-stop brake operation as explained earlier in this document.
9.10	Drain the front axle brakes tank.
9.11	Make a service brake application and check whether the pressure gauges connected to the drive and trailing axle brakes indicate pressure.
9.12	Close the drain valve of the front axle brakes tank.
9.13	Start the engine and fully charge the air system again.
9.14	Stop the engine.

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9.15	Override the bus-stop brake operation as explained earlier in this document.
9.16	Drain the trailing axle brakes tank.
9.17	Make a service brake application and check whether the pressure gauges connected to the front and drive axle brakes indicate pressure.
9.18	Close the drain valve of the trailing axle brakes tank.
9.19	Start the engine and fully charge the air system again.
9.20	Stop the engine.

LOCATION OF COMPRESSED-AIR TANKS

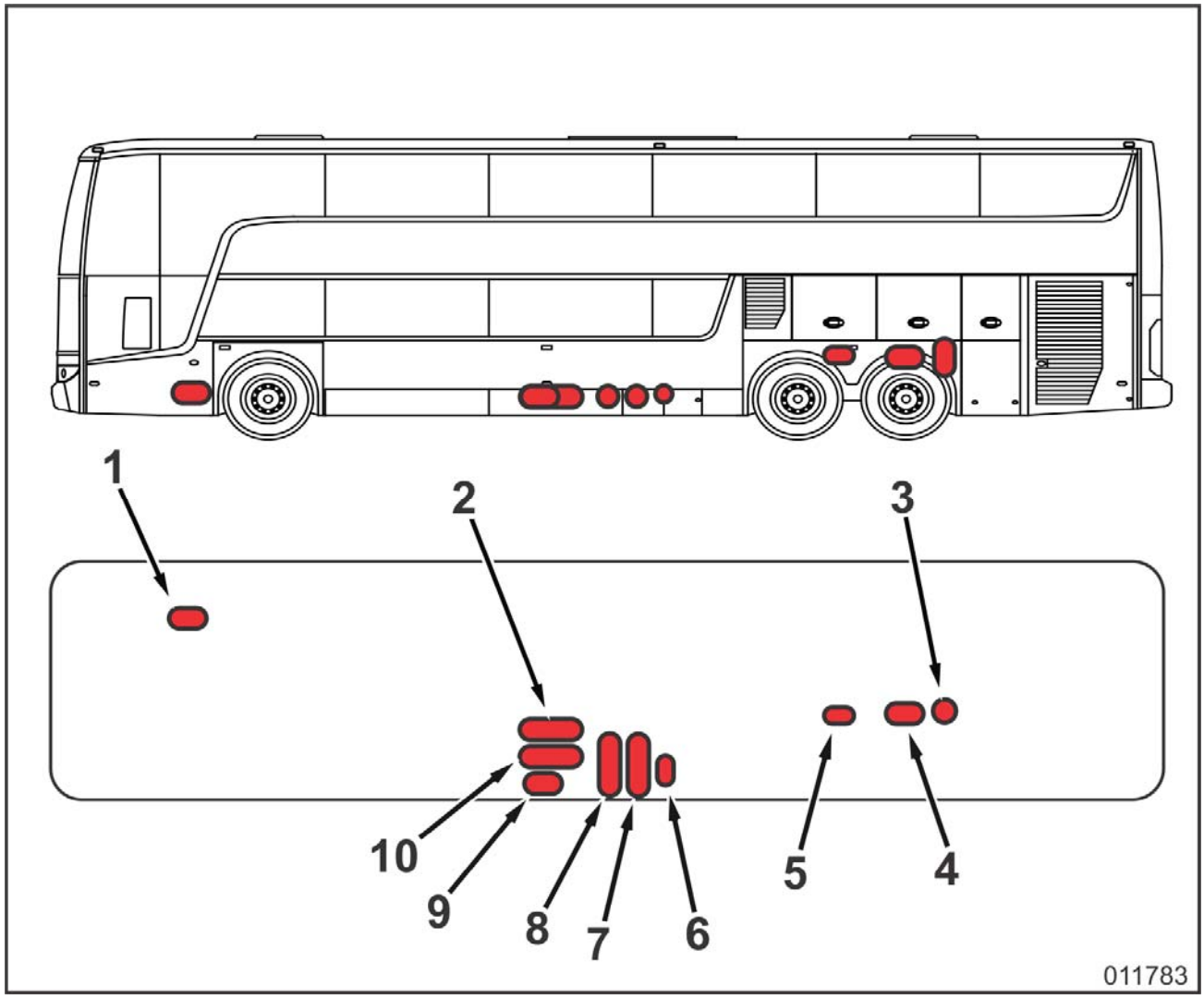

Figure 9: Location of compressed-air tank on TDX25

1. **Kneeling system**
2. **Front axle brakes**
3. **ZF Astronic (vehicles with ZF Astronic transmission only)**
4. **Trailing axle service brakes**
5. **Air-dryer regeneration**
6. **Wet tank**
7. **Rear raising**
8. **Drive axle service brakes**
9. **Parking brake emergency release**
10. **Accessories**

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HELP DESK:

Consult ABC Customer Care & Parts Source toll-free for guidance on 1-877-427-7278. Listen for the prompts for warranty and select that option.

DISCLAIMER:

The procedures contained herein are not exclusive. Van Hool cannot possibly know, evaluate, or advise the transportation industry of all conceivable ways in which a procedure may be undertaken or of the possible consequences of each such procedure. Other procedures may be as good, or better, depending upon the particular circumstances involved. Each carrier who uses the procedures herein must first satisfy itself thoroughly that neither the safety of its employees or agents, nor the safety or usefulness of any products, will be jeopardized by any procedure selected.

INFORMATION HANDLING:

Important supplements to and modifications of technical information not yet included in the manual, are communicated by means of Service Bulletins.

VAN HOOL CUSTOMER PORTAL:

Consult the customer portal regularly for the latest service documentation. Beside the maintenance manual, you will also find the operating manual and the spare parts catalogue of your vehicle on the customer portal. The customer portal is accessible through www.vanhool.be, and only with a code (password) from Van Hool. If you do not have a password yet, request it by using the link on the Van Hool website.