



SERVICE BULLETIN

SB1374

ADDRESSEES	: ABC Customer Care and Parts Source Owners and operators of coaches listed under 'Application'
VEHICLE MODEL	: TDX25US 8-wheeler with Allison WTB500R
MANUAL SECTION	: 5.10 Brake system – Compressed-air system
BULLETIN TYPE	: Safety Recall-NHTSA 15V743
DATE	: February 02nd, 2017
SUBJECT	: To correct pneumatic brake installation with push-in line fittings
TERMS & CONDITIONS	: Refer to the warranty section further in this Bulletin.

APPLICATION:

Model	VIN
TDX25US 8-wheeler with Allison WTB500R	42800 → 42813

DESCRIPTION:

The brake release time of the above mentioned vehicles does not meet the specification laid down in S5.3.4 of FMVSS 121. In order to address complaints of air loss, classic brass couplings were replaced by push-in line fittings made of composite material. Due to an inaccurate assessment of this change-over, the brake release time exceeds the requirement laid down in S5.3.4 of FMVSS 121.

To address this issue, Van Hool recalls all affected coaches from model year 2015 to 2016, in order to have the pneumatic brake installation with push-in line fittings corrected. The terms and conditions are explained further on under "Warranty".

Owners and operators of the affected units should contact ABC Companies in order to correct the pneumatic brake installation.

For other affected vehicle models, follow the instructions mentioned in the Service Bulletin applicable to that vehicle model (refer to table below).

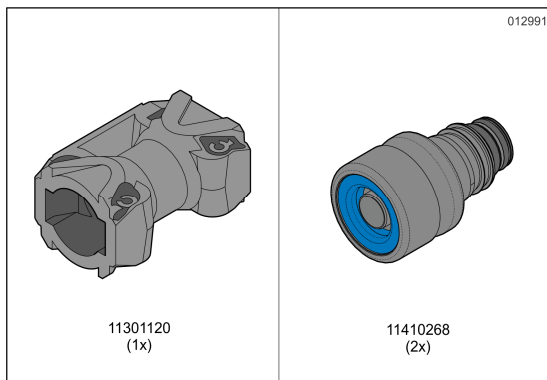
Vehicle model	VIN	Service Bulletin
TD925US 10-wheeler with ZF Astronic	42780 42846 → 42870 42872 → 42876	SB1326
TD925US 10-wheeler with Allison WTB500R	42890 → 42891	SB1375

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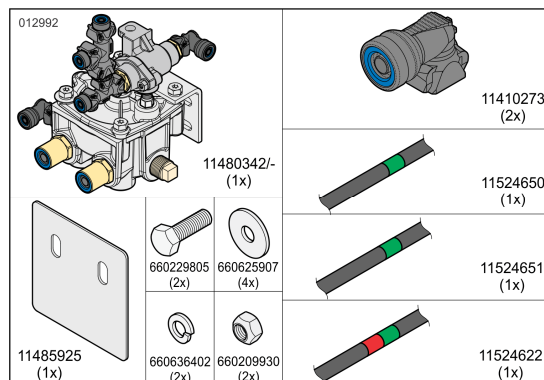
COMPONENTS AND PRODUCTS:

Parts of retrofit kit VH11526162

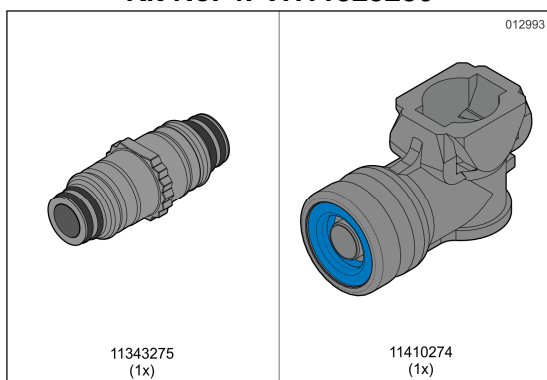
Kit No 2: VH11525284



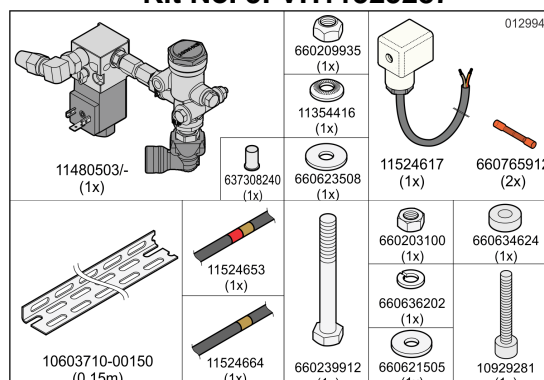
Kit No. 3: VH11525285



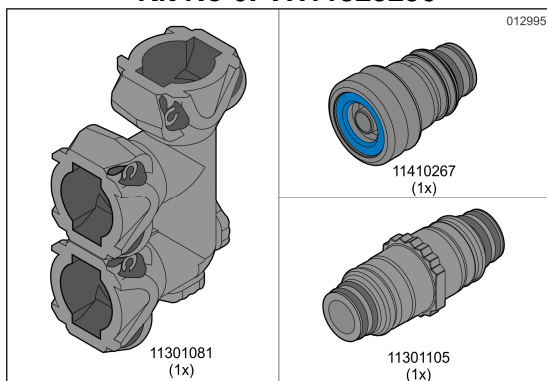
Kit No. 4: VH11525286



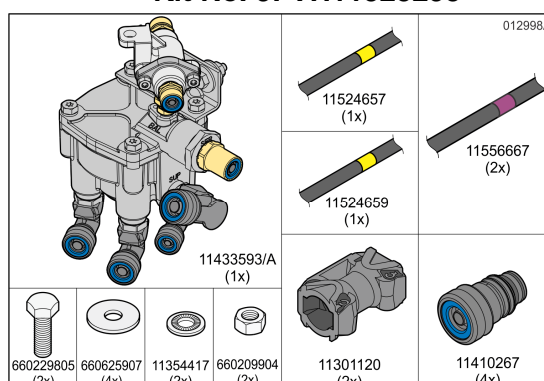
Kit No. 5: VH11525287



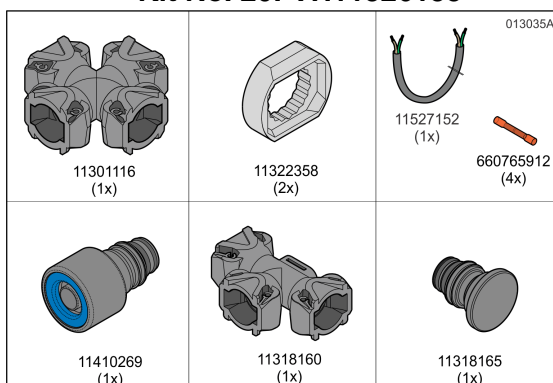
Kit No 6: VH11525290



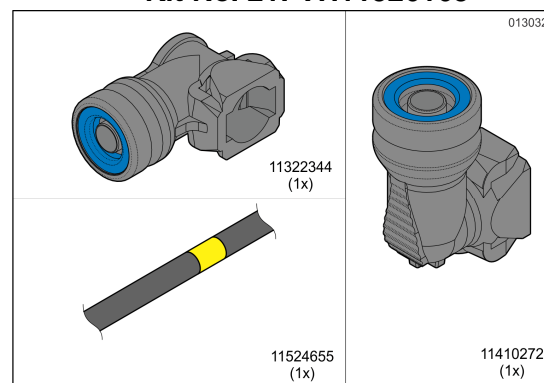
Kit No. 9: VH11525295



Kit No. 20: VH11526155



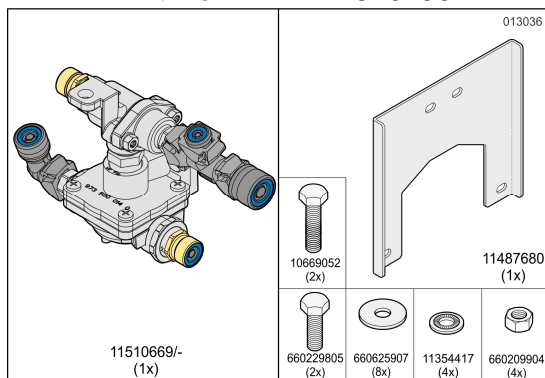
Kit No. 21: VH11526163



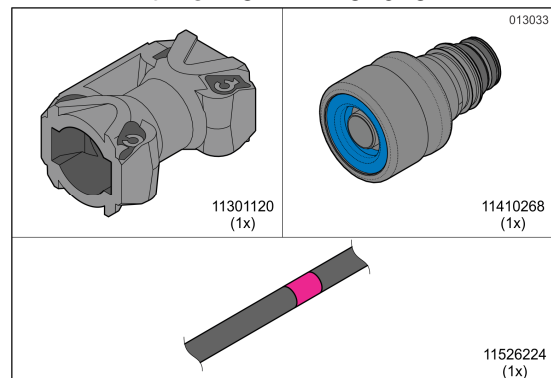
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Parts of retrofit kit VH11526162

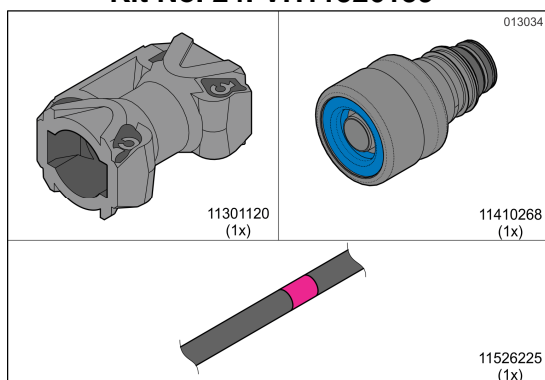
Kit No. 22: VH11526156



Kit No. 23: VH11526157



Kit No. 24: VH11526159



VH reference	Description	Quantity
Parts to remove 3/2 solenoid valve/pressure limiting valve of door brake (kit No.2 - VH11525284)		
11301120	Straight-fitting housing	1
11410268	Plug-in fitting 1/2"	2
Parts to install relay valve/double check valve of front wheel brakes (kit No.3 - VH11525285)		
11480342/-	Pre-assembled relay valve/double check valve	1
11485925	Bracket	1
660229805	Screw M8x1.25x25mm	2
660636402	Coil spring lock washer	2
660625907	Washer M8	4
660209930	Self-locking nut M8X1.25mm	2
11524650	Air line 1/2" with green color ring; length 6 ft.	1
11524651	Air line 1/2" with green color ring; length 3 ft.	1
11524622	Air line 5/8" with red/green color ring; length 20 ft.	1
11410273	L-fitting housing (regular)	2
Parts to retrofit air tank of front axle brakes (kit No.4 - VH11525286)		
11343275	Nipple	1
11410274	L-fitting housing (heavy duty)	1
Parts to install 3/2 solenoid valve/pressure limiting valve of door brake (kit No.5 - VH11525287)		
11480503/-	Pre-assembled 3/2 solenoid valve/pressure limiting valve	1
11524653	Air line 3/8" with red/brown color ring; length 8 ft.	1
11524664	Air line 3/8" with brown color ring; length 23 ft.	1
10603710-00150	Bracket	1
660209935	Self-locking nut M6x1mm	1
11354416	Curved spring washer M6	1
660623508	Washer	1
6600239912	Screw M6x50mm	1
660203100	Nut M5	1

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660636202	Coil spring washer M5	1
660621505	Washer M5	1
660634624	Spacer	1
10929281	Hexagon socket screw M5	1
637308240	Insert 3/8"	1
11524617	Pre-assembled connecting block (brown/red-yellow wires; length 27 ft.)	1
660765912	Cable splice	2
Parts to retrofit air tank of drive wheel service brakes (kit No.6 - VH11525290)		
11301081	F-fitting housing (heavy duty)	1
11410267	Plug-in fitting 3/8"	1
11301105	Nipple	1
Parts to install relay valve/double check valve of trailing axle (kit No.9 - VH11525295)		
11433593/A	Pre-assembled relay valve/double check valve	1
660229805	Screw M8x1.25x25mm	2
660625907	Washer M8	4
11354417	Curved spring washer M8	2
660209904	Nut M8x1.25	2
11524657	Air line 3/8" GE-4 with yellow color ring; length 3 ft.	1
11524659	Air line 3/8" GE-5 with yellow color ring; length 3 ft.	1
11301120	Straight-fitting housing	2
11410267	Plug-in fitting 3/8"	4
11556667	Air line 1/2" with violet color ring; length 6 ft. (not used on 8-wheelers!)	2
Parts to retrofit brake pedal valve (kit No.20 - VH11526155)		
11322358	Blocking ring	2
11527152	Extension cord	1
660765912	Cable splice	4
11410269	Plug-in fitting 5/8"	1
11318160	T-fitting housing (heavy duty)	1
11318165	Plug	1
11301116	Cross-fitting housing (regular)	1
Parts to retrofit ABS-ATC valve block of drive axle (kit No.21 - VH11526163)		
11410272	L-fitting housing (regular)	1
11322344	L-fitting housing (heavy duty)	1
11524655	Air line 3/8" GE-2 with yellow color ring; length 60 inch	1
Parts to install quick release valve/double check valve of drive axle (kit No.22 - VH11526156)		
11510669/-	Pre-assembled quick release valve/double check valve	1
11487680	Bracket	1
660229805	Screw M8x1.25x25mm	2
10669052	Screw M8x1.25x100mm	2
660625907	Washer M8	8
11354417	Curved spring washer M8	4
660209904	Nut M8x1,25	4
Parts to retrofit ABS valve of LH trailing wheel (kit No.23 - VH11526157)		
11301120	Straight-fitting housing	1
11410268	Plug-in fitting 1/2"	1
11526224	Air line 1/2" with violet color ring; length 60 inch	1
Parts to retrofit ABS valve of RH trailing wheel (kit No. 24 - VH11526159)		
11301120	Straight-fitting housing	1
11410268	Plug-in fitting 1/2"	1
11526225	Air line 1/2" with violet color ring; length 70 inch	1

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JOB QUALIFICATION:

Given the complexity, the conversion must be done by ABC Companies.

SPECIAL TOOLS, EQUIPMENT OR SERVICES:

Special tools for working on Raufoss couplings.



Release tool	VH reference
	
1/4"	11329494
3/8"	11329502
1/2"	11329503
5/8"	11329505

PREPARATIONS:

- Park the coach on a level surface with the front wheels straight.
- Apply the parking brake and shut down the engine.
- Switch off all systems and turn off the battery master switch.
- Put a "DO NOT OPERATE" tag on the steering wheel.
- Read the welding information at the back of this Service bulletin before beginning any such procedure.
- Read the grinding information at the back of this Service bulletin before beginning any such procedure.
- Read the entire procedure before beginning to work



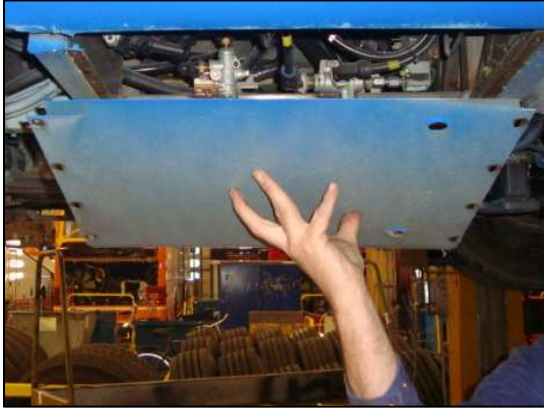
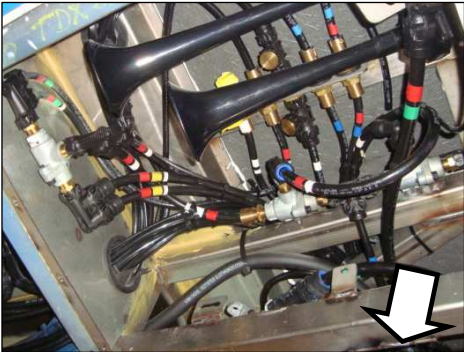
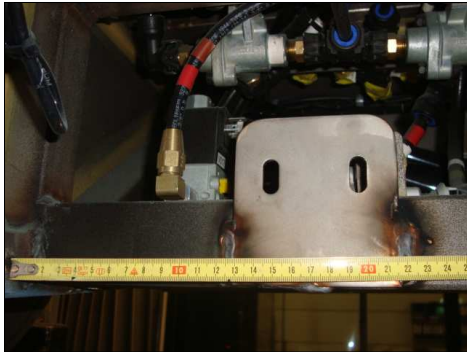
WARNING!

Observe safe shop practices at all times.

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PROCEDURE:

NOTE: Refer to the pneumatic schematic 11429105 at the end of this Service bulletin for the location of the components mentioned in this procedure.

Step	Action
1	Ensure that the steps mentioned under "Preparations" are well executed.
2	Depressurize the compressed-air tanks of the brake circuits by opening the drain cock at the bottom of the tanks. Refer to pneumatic schematic 11429105 for the exact location of the air tanks.
3	Remove underneath the vehicle the protection panel located under the driver's seat to get access to the pneumatic parts. 
4	Remove the 3/2 solenoid valve/pressure limiting valve of the door brake as explained under "STEP 4 IN DETAIL".
5	Retrofit the brake pedal valve as explained under "STEP 5 IN DETAIL".
6	Retrofit the parking brake circuit as explained under "STEP 6 IN DETAIL".
7	Weld bracket 11485925 from kit No. 3 at a distance of 8.3 inch from the back on the opposite side of the tube where the valves removed in step 6.1 were located.  
8	Install the pre-assembled relay valve/double check valve of the front axle brakes as explained under "STEP 8 IN DETAIL".
9	Open the wiring tunnel at the LHS of the lower deck aisle as explained under "STEP 9 IN DETAIL".
10	Route the 5/8" air line connected in step 8 and the electrical wiring of the pre-assembled connecting block from kit No.5 as explained under "STEP 10 IN DETAIL".
11	Retrofit the air tank of the front wheel brakes as explained under "STEP 11 IN DETAIL".

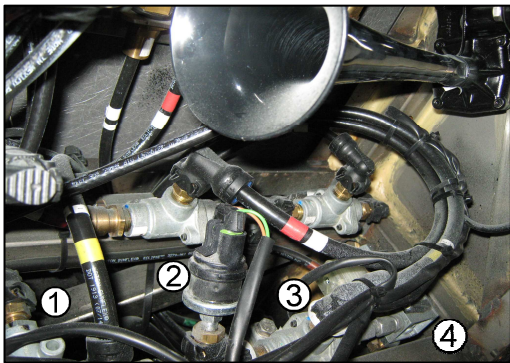
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<p>12</p>	<p>Weld the bracket 10603710-00150 from kit No. 5 to the chassis in front of the parking brake emergency release air tank. Position the bracket as far as possible to the left (refer to figure 4).</p> <div data-bbox="595 264 1098 607" data-label="Image"> </div> <p style="text-align: right;">Figure 4</p>
<p>13</p>	<p>Install the pre-assembled 3/2 solenoid valve/pressure limiting valve of the door brake as explained under “STEP 13 IN DETAIL”.</p>
<p>14</p>	<p>Retrofit the air tank of the drive axle service brakes as explained under STEP 14 IN DETAIL”.</p>
<p>15</p>	<p>Retrofit the ABS-ATC valve block of the drive axle brakes as explained under “STEP 15 IN DETAIL”.</p>
<p>16</p>	<p>Secure the bracket 11487680 included in kit No. 22 with the screws 10669052 (2x), the washers 660625907(4x), the curved spring washers 11354417(2x) and the nuts 660209904(2x) from kit No. 22 to the ABS-ATC valve block of the drive axle.</p> <div data-bbox="622 943 1048 1361" data-label="Image"> </div> <p style="text-align: right;">Figure 5</p>
<p>17</p>	<p>Disconnect the 3/8” air lines GE-1, GE-4 and GE-5 from the double check valve located above the air-dryer regeneration tank. This valve is not used anymore and should be put aside. Route the air lines GE-4 and GE-5 to the relay valve of the trailing axle brakes and remove air line GE-1.</p> <div data-bbox="595 1518 1090 1883" data-label="Image"> </div> <p style="text-align: right;">Figure 6</p>
<p>18</p>	<p>Install the pre-assembled relay valve/double check valve of the trailing axle brakes as explained under “STEP 18 IN DETAIL”.</p>

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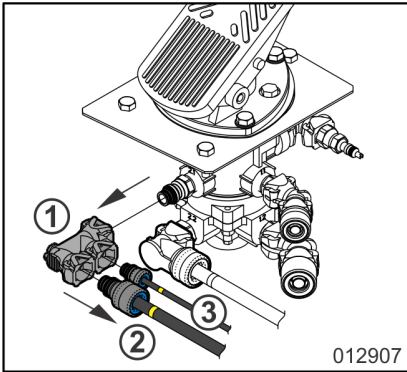
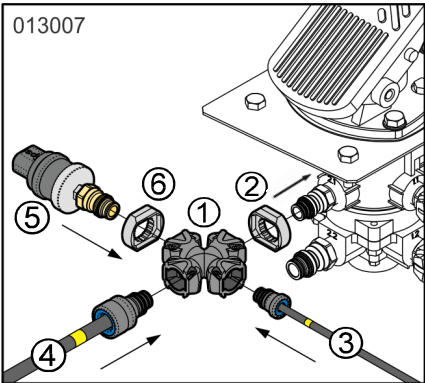

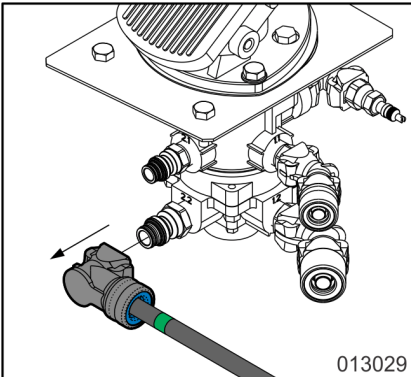
19	Install the pre-assembled quick release valve/double check valve of the drive axle brakes as explained under "STEP 19 IN DETAIL".
20	Retrofit the ABS valve of the LH trailing wheel as explained under "STEP 20 IN DETAIL".
21	Retrofit the ABS valve of the RH trailing wheel as explained under "STEP 21 IN DETAIL".
22	Restore the air pressure in the system and test all brake circuits for air-tightness.
23	Test the functioning of the brake system on a roller test bench.

STEP 4 IN DETAIL: To remove 3/2 solenoid valve/pressure limiting valve of door brake (kit No. 2)

4.1	<p>a. Remove the connecting block of door brake 3/2 solenoid valve (4).</p> <p>b. Remove the two L-fitting housings at double check valve (3).</p> <p>c. Remove 3/2 solenoid valve (4) together with double check valve (3) and pressure limiting valve (1) from the vehicle. These valves are not used anymore and should be put aside.</p> <p>d. Remove pressure switch (2) together with its nipple after disconnecting the connector. Keep these parts apart for re-use in the next step.</p>
	 <p style="text-align: right;">Figure 7</p>
4.2	<p>Extend the electrical wiring from the pressure switch mentioned in previous step:</p> <p>a. Cut the two electrical wires (brown and green) at approximately 4 inches far from the connector.</p> <p>b. Strip back both ends of the two cut electrical wires over a distance of 0.29 inch.</p> <p>c. Strip back the electrical wires of extension cord 11527152 from kit No.20 over a distance of 0.29 inch.</p> <p>d. Crimp the electrical wires of the vehicle wiring onto the electrical wires of the extension cord by using two cable splices 660765912 from kit No.20.</p> <p>e. Crimp the electrical wires of the extension cord to the electrical wires of the pressure switch connector by using two cable splices 660765912 from kit No.20.</p> <p>f. Heat the splices with a hot-air blower until the ends snug around the electrical wiring to create a waterproof connection.</p> <p>g. Route the extension cord to the brake pedal valve.</p>
4.3	<p>Disconnect the L-fitting housings from both ½" air lines with yellow color rings previously connected to the double check valve. Connect the GE-1 and GE-2 air lines by using straight-fitting housing 11301120 and plug-in fittings 11410268 (2x) from the kit.</p> <p><i>NOTE: After connecting the air line GE-1 with GE-2, the air line GE-1 will continue as GE-2. To avoid confusion afterwards, the marking GE-2 must be changed into GE-1 at both ends of this air line. This means also at the pre-assembled quick release valve/double check valve of the drive axle which will be installed in step 19.</i></p> <p><i>NOTE: The wiring of the connecting block removed will further on be connected to the wiring of the pre-assembled connecting block 11524617 from kit No.5.</i></p>

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STEP 5 IN DETAIL: To retrofit brake pedal valve (kit No. 20)

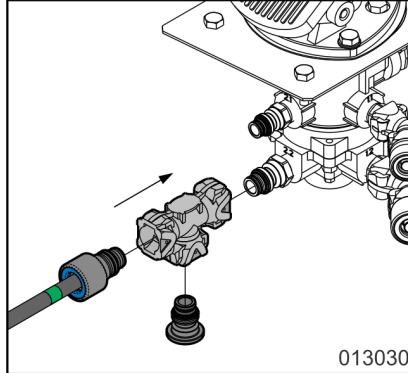
Step	Action
5.1	<p>On port 21:</p> <ol style="list-style-type: none"> Disconnect F-fitting housing (1) from the brake pedal valve. Disconnect plug-in fittings (2) and (3) from the F-fitting housing.  <p style="text-align: right;">012907 Figure 8</p>
5.2	<p>On port 21:</p> <ol style="list-style-type: none"> Connect cross-fitting housing 11301116 (1) and blocking ring 11322358 (2) from the kit to the brake pedal valve. Introduce plug-in fittings (3) and (4) into cross-fitting housing (1). Connect pressure switch (5) removed in step 4 and blocking ring 11322358 (6) from the kit. Reconnect the connector of the pressure switch.  <p style="text-align: right;">013007 Figure 9</p>  <p style="text-align: right;">013037 Figure 10: Pay attention to the angle position of the pressure</p>
5.3	<p>On port 22:</p> <ol style="list-style-type: none"> Disconnect the L-fitting housing from the brake pedal valve. Disconnect the air line with the green color ring from the L-fitting housing.  <p style="text-align: right;">013029 Figure 11</p>

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5.4

On port 22:

- Connect T-fitting housing 11318160 from the kit to the brake pedal valve.
- Introduce plug 11318165 from the kit into the T-fitting housing.
- Introduce the plug-in fitting 11410269 from the kit into the T-fitting housing.
- Connect the air line with the green color ring to the plug-in fitting. Make sure not to damage the air line!

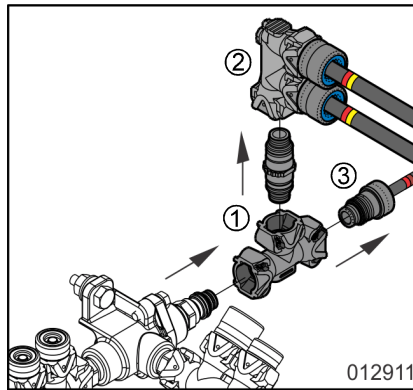


013030 **Figure 12**

STEP 6 IN DETAIL: To retrofit parking brake circuit

6.1

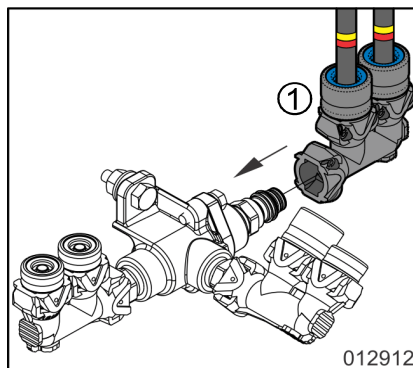
- Remove T-fitting housing (1) from the two-way valve.
- Remove F-fitting housing (2) from the T-fitting housing.



012911 **Figure 13**

6.2

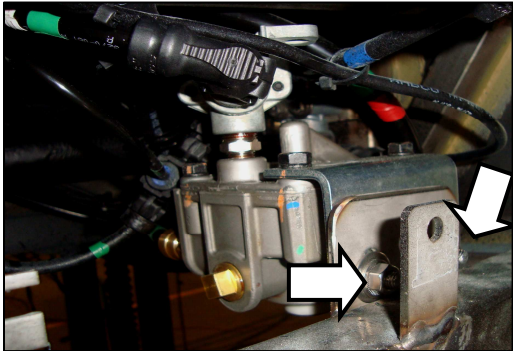
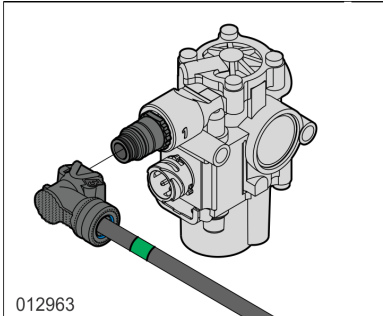
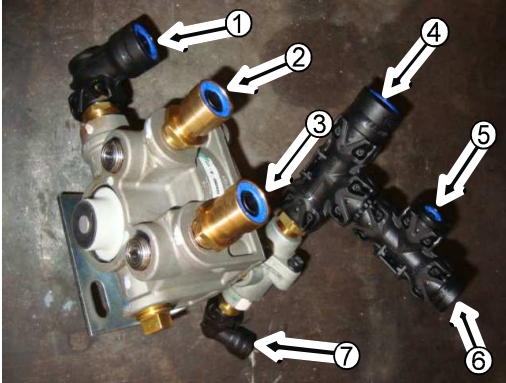
Connect F-fitting housing (1) directly to the double check valve. The 3/8" air line with red/brown color rings (3, figure 13) will not be used anymore and shall be removed further on.



012912 **Figure 14**


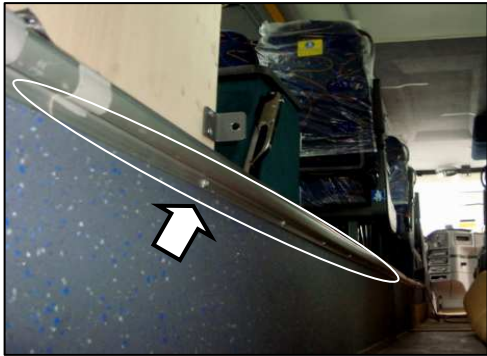
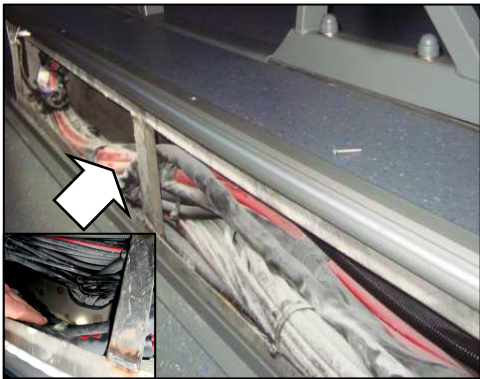
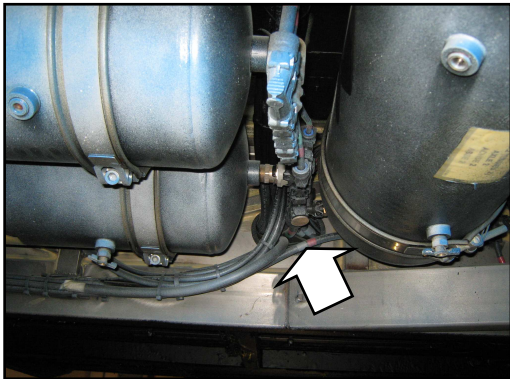
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STEP 8 IN DETAIL: To install pre-assembled relay valve/double check valve of front axle brakes (kit No. 3)

8.1	Disconnect the air lines at the quick release valve of the front axle brakes and remove the quick release valve.
8.2	<p>Secure the pre-assembled relay valve 11480342/- from the kit to the bracket welded in step 7 by using screws 660209805 (2x), washers 660625907(4x), coil spring lock washers 660636402(2x) and nuts 660209930(2x) from the kit.</p>  <p style="text-align: right;">Figure 15</p>
8.3	<p>a. Disconnect the L-fitting housings at both ABS valves and remove both air lines. b. Install the longer ½" air lines with green color ring from the kit and route them between the ABS valve and the relay valve. For the RHS, use the 6 ft. air line; for the LHS the 3 ft. air line. Use the new L-fittings housings 11410273 from the kit to fit the air lines to the ABS valves.</p>  <p style="text-align: right;">Figure 16</p>
8.4	<p>NOTE: The 5/8" air line with red-green color ring from the kit, which will be connected to port "sup" (1, figure 17) of the relay valve, will further on be routed to the air tank of the front axle brakes.</p> <p>NOTE: Cut the air lines to the proper length!</p> <p>Connect the air lines to the pre-assembled relay valve/double check valve as follows:</p> <p>At the relay valve (new air lines):</p> <ol style="list-style-type: none"> 1. Red-green 5/8" (R-GN) 2. Green 1/2" (GN) 3. Green 1/2" (GN) <p>At the double check valve:</p> <ol style="list-style-type: none"> 4. Green 5/8" (GN) 5. Green 1/4" (GN) 6. Green 3/8" (GN) 7. Green 3/8" (GN-1)  <p style="text-align: right;">Figure 17</p>

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STEP 9 IN DETAIL: To open wiring tunnel at LHS of lower deck aisle

<p>9.1</p>	<p>To remove the side panel in front of the LH front wheel housing:</p> <ul style="list-style-type: none"> • Remove the fixing screws of the wiring tunnel trim profile. • Remove the fixing screws of the side panel and take away the panel.  <p style="text-align: right;">Figure 18</p>
<p>9.2</p>	<p>To remove the rearmost side panel: remove the fixing screws and take away the panel.</p>  <p style="text-align: right;">Figure 19</p> <p>The wiring tunnel is provided with a hole at 2 ft. from the end to pass air lines/electrical wiring.</p> <div style="display: flex; justify-content: space-around;">   </div> <div style="display: flex; justify-content: space-around;"> <p style="text-align: center;">Figure 20</p> <p style="text-align: center;">Figure 21</p> </div>

STEP 10 IN DETAIL: To route 5/8" air line and electrical wiring of pre-assembled connecting block of kit No.5

<p>10.1</p>	<p>Route the 5/8" air line with red-green color ring, connected in step 8, through the wiring tunnel to the front axle brakes air tank.</p>
<p>10.2</p>	<p>Route the electrical wiring of the pre-assembled connecting block from kit No.5 through the wiring tunnel from the front axle brakes air tank to the front of the vehicle.</p>

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STEP 11 IN DETAIL: To retrofit air tank of front axle brakes (kit No. 4)

11.1

Remove the plug from the T-fitting housing at the front axle brakes air tank.

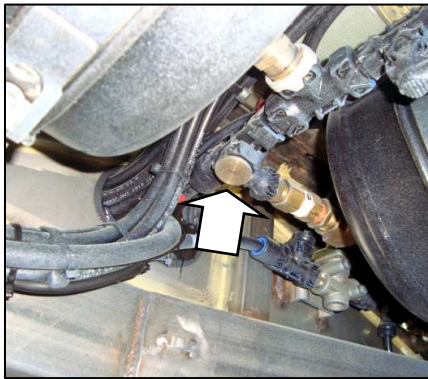


Figure 22

11.2

- a. Introduce the nipple 11343275 from the kit into the T-fitting housing.
- b. Connect the 5/8" air line with red-green color ring coming from the front axle relay valve to the nipple by using the L-fitting housing 11410274 from the kit. Cut the air line to the proper length!

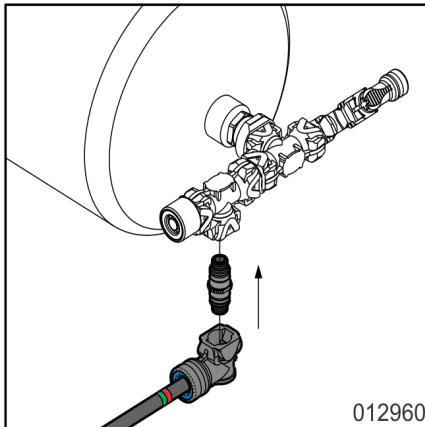


Figure 23

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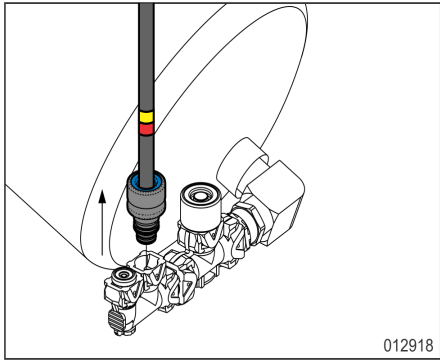
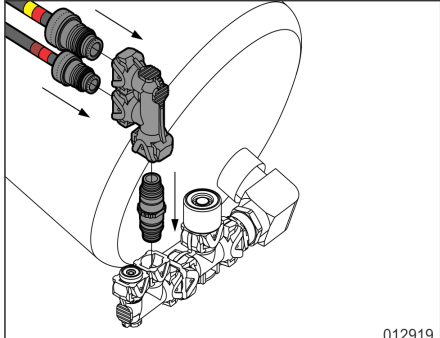
STEP 13 IN DETAIL: To install pre-assembled 3/2 solenoid valve/pressure limiting valve of door brake (kit No. 5)

13.1	<p>Secure the pre-assembled 3/2 solenoid valve/pressure limiting valve 11480503/- from the kit to the bracket installed in step 12 as follows:</p> <ol style="list-style-type: none"> Secure the 3/2 solenoid valve to the bracket by using screw 10929281, spacer 660634624, washer 660621505, coil spring lock washer 660636202 and nut 660203100 from the kit. Secure the pressure limiting valve to the bracket by using screw 660239912, washer 660623508, curved spring washer 11354416 and nut 660209935 from the kit.
13.2	<p>Connect the air lines as follows:</p> <ol style="list-style-type: none"> Connect 3/8" air line (8, figure 24) with the red-brown color ring 11524653 from the kit to the L-fitting housing at port "supl" of pressure limiting valve. Route this air line to the drive axle service brakes air tank. Connect 3/8" air line (6, figure 24) with brown color ring 11524664 from the kit to the 3/2 solenoid valve as follows: <ul style="list-style-type: none"> Slide coupling nut (2) onto air line (1). Slide clamping ring (3) onto air line (1). Push new insert 637308240 (4) from the kit into air line (1). Screw coupling nut (3) on fitting (5) Route this air line through the wiring tunnel hole (refer to figure 21) to the quick release valve/double check valve of the drive axle which will be installed on the bracket of step 16. <div data-bbox="584 1019 1102 1449" data-label="Image"> </div>
13.3	<p>Connect the pre-assembled connecting block 11524617 routed in step 10 as follows:</p> <ol style="list-style-type: none"> At the parking brake emergency release tank: secure the connecting block to the 3/2 solenoid valve installed in step 13.1. At the front of the vehicle: cut the connecting block from the vehicle wiring. At the front of the vehicle: strip back the ends of both cut electrical wires over a distance of 0.29 inch. At the front of the vehicle: strip back the ends of the brown and red/yellow electrical wires of the pre-assembled connecting block. At the front of the vehicle: crimp the vehicle electrical wires onto the wires of the pre-assembled connecting block by using the cable splices 660765912 from the kit. At the front of the vehicle: heat the splices with a hot-air blower until the ends snug around the electrical wiring to create a waterproof connection.

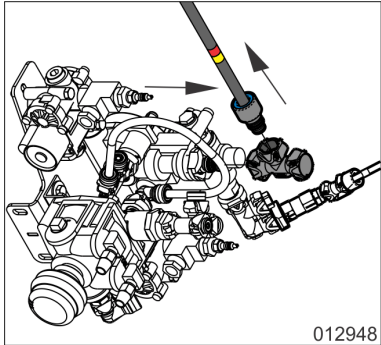
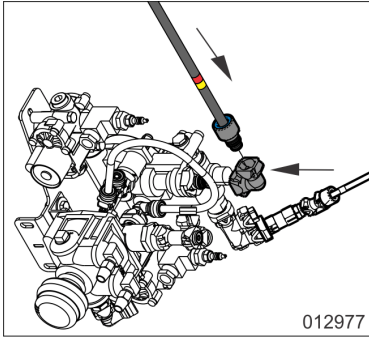
Figure 24

Continued on next page.

STEP 14 IN DETAIL: To retrofit drive axle service brakes tank (kit No. 6)

14.1	<p>Disconnect the plug-in fitting connecting the ½" air line with red/yellow color rings from the F-fitting housing.</p>  <p>012918</p> <p>Figure 25</p>
14.2	<p>a. Introduce the nipple 11301105 from the kit into the existing F-fitting housing. b. Connect the F-fitting housing 11301081 from the kit to the nipple. c. Introduce the plug-in fitting removed in step 14.1 into the new F-fitting housing. d. Introduce the plug-in fitting 11410267 from the kit into the new F-fitting housing. e. Connect the 3/8" air line with the red/brown color rings installed in step 13.2 to the plug-in fitting.</p>  <p>012919</p> <p>Figure 26</p>

STEP 15 IN DETAIL: To retrofit ABS-ATC valve block of drive axle (kit No. 21)

15.1	<p>At port 1:</p> <p>a. Disconnect the plug-in fitting of the 5/8" air line with red/yellow color ring (refer to figure 27). b. Disconnect the T-fitting housing with plug from the valve (refer to figure 27). c. Connect the L-fitting housing 11322344 from the kit to the valve (refer to figure 28). d. Introduce the plug-in fitting of the 5/8" air line with red/yellow color ring into the L-fitting housing (refer to figure 28).</p> <div data-bbox="371 1585 753 1928"><p>012948</p><p>Figure 27</p></div> <div data-bbox="908 1585 1278 1928"><p>012977</p><p>Figure 28</p></div>
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15.2

At port 4:

- Disconnect T-fitting housing.
- Disconnect the plug-in fittings of the 1/4" GE-2, the 1/2" GE-1 and the 3/8" GE-4 air lines.
- Connect the L-fitting housing 11410272 from the kit (refer to figure 30).
- Connect the 3/8" GE-2 air line 11524655 from the kit to the L-fitting housing and route this air line to the quick release valve/double check valve which will be installed in step 19.

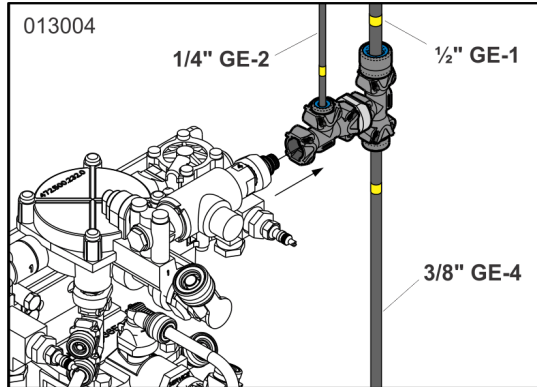


Figure 29

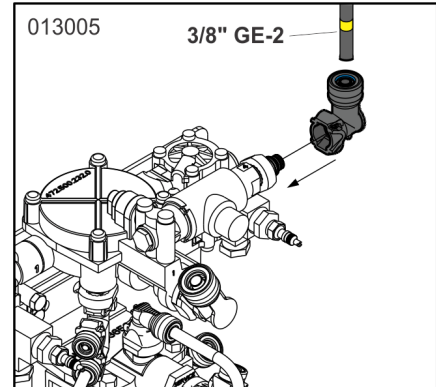


Figure 30

STEP 18 IN DETAIL: To install pre-assembled relay valve/double check valve of trailing axle brakes (kit No. 9)

18.1

NOTE: The air lines with violet color rings connected to the ABS valves of the trailing axle will be changed by new longer air lines as mentioned in steps 20 and 21.

- Note the position of the air lines with violet and red/violet color rings as reference for later. They have to be reconnected on the same ports of the new relay valve.
- Remove all the fitting houses from the relay valve.
- Remove the relay valve.

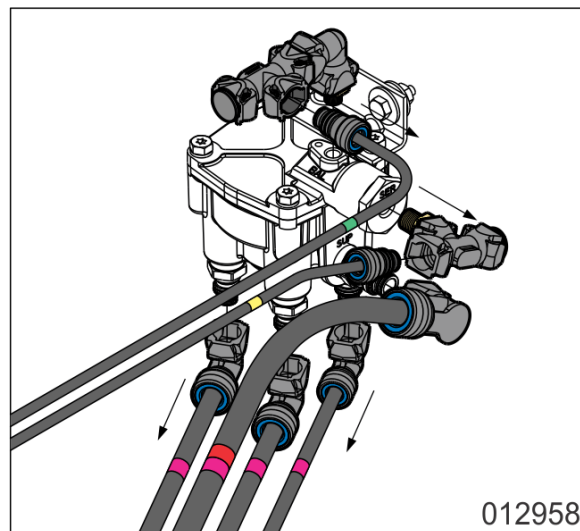


Figure 31

Continued on next page.

18.2

Install the pre-assembled relay valve/double check valve 11433593/A from the kit as follows:

- a. Secure the pre-assembled relay valve/double check valve to the bracket by using screws 660229805(2x), washers 660625907(4x), curved spring washers 11354417(2x) and nuts 660209904(2x) from the kit.
- b. Connect the 3/8" GE-5 air line mentioned in step 17 to the double check valve. Extend this air line with the air line 11524659 from the kit. Connect both air lines by using plug-in fittings 11410267 and the straight-fitting housing 11301120 from the kit.
- c. Connect the 3/8" GE-4 air line mentioned in step 17 to the double check valve. Extend this air line with the air line 11524657 from the kit. Connect both lines by using plug-in fitting 11410267 and the straight-fitting housing 11301120 from the kit.
- d. Disconnect the plug-in fitting from the 3/8" GN air line. Connect this air line to port "serv" of the relay valve.
- e. Refit the four remaining air lines with violet and red/violet color rings to their initial positions.

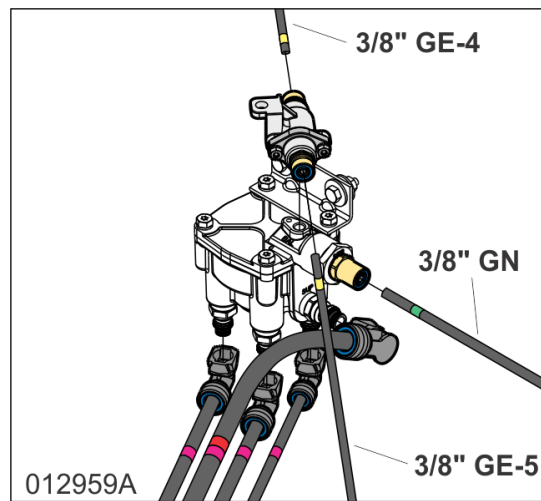


Figure 32

Continued on next page.

STEP 19 IN DETAIL: To install pre-assembled quick release valve/double check valve of drive axle (kit No. 22)

19.1

Secure the pre-assembled quick release valve/double check valve 11510669/- from the kit to the bracket installed in step 16 by using screws 660229805(2x), washers 660625907(4x), curved spring washers 11354417(2x) and nuts 660209904(2x) from the kit.

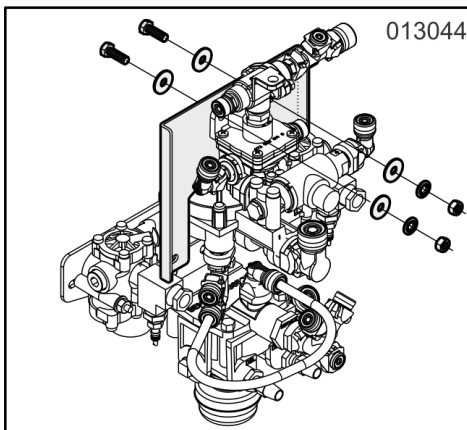


Figure 33

19.2

Connect the pre-assembled quick release valve/double check valve kit as follows (refer to figure 34):

- Connect the 3/8" BR air line coming from the 3/2 solenoid valve installed in step 13 to the double check valve.
- Connect the 1/4" GE-2 air line disconnected in step 15.2 to the double check valve.
- Connect the 1/2" GE-1 air line (renamed from GE-2 to GE-1 in step 4) disconnected in step 15.2 to the double check valve.
- Connect the 3/8" GE-4 air line disconnected in step 15.2 to the quick release valve.
- Connect the 3/8" GE-2 air line installed in step 15.2 to the quick release valve.

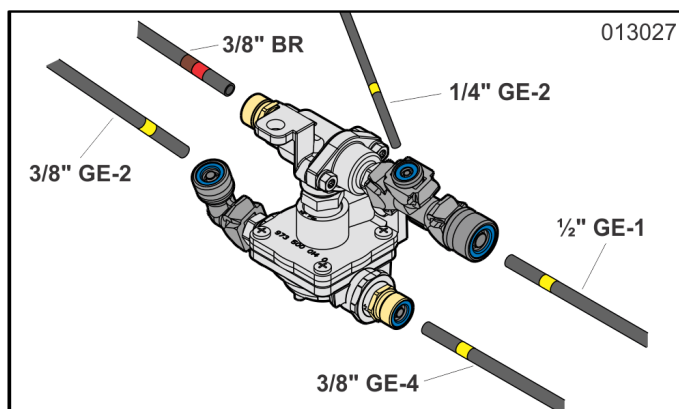
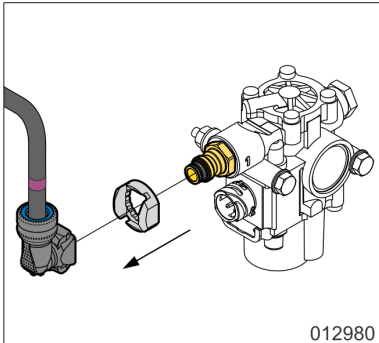
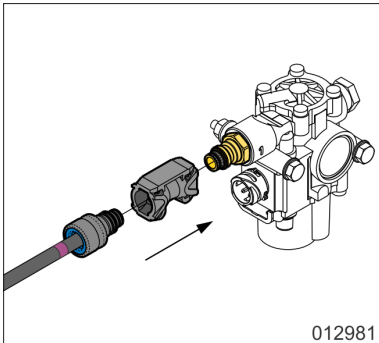


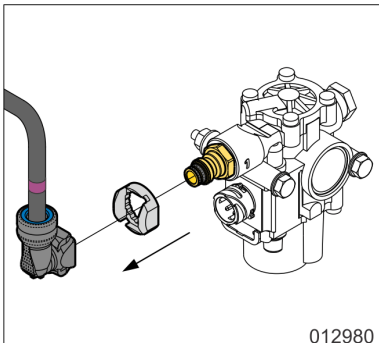
Figure 34

Continued on next page.

STEP 20 IN DETAIL: To retrofit ABS valve of LH trailing wheel (kit No. 23)

20.1	<p>On port 1:</p> <ol style="list-style-type: none">Remove the L-fitting housing together with the blocking ring from the valve.Disconnect the air line with the violet color ring from the L-fitting housing.  <p>012980 Figure 35</p>
20.2	<p>On port 1:</p> <ol style="list-style-type: none">Connect the straight-fitting housing 11301120 from the kit to the valve.Introduce the plug-in fitting 11410268 from the kit into the fitting housing.Connect the 1/2" air line with violet color ring 11526224 from the kit to the plug-in fitting.Route this air line to the relay valve of the trailing axle.  <p>012981 Figure 36</p>

STEP 21 IN DETAIL: To retrofit ABS valve of RH trailing wheel (kit No. 24)

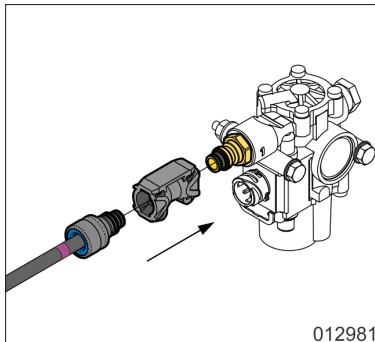
21.1	<p>On port 1:</p> <ol style="list-style-type: none">Remove the L-fitting housing together with the blocking ring from the valve.Disconnect the air line with the violet color ring from the L-fitting housing.  <p>012980 Figure 37</p>
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21.2

On port 1:

- a. Connect the straight-fitting housing 11301120 from the kit to the valve.
- b. Introduce the plug-in fitting 11410268 from the kit into the fitting housing.
- c. Connect the ½" air line with violet color ring 11526225 from the kit to the plug-in fitting.
- d. Route this air line to the relay valve of the trailing axle.

**Figure 38**

End of the procedure.

Continued on next page.

PNEUMATICS - safety rules and installation recommendations:

To avoid personal injury when working on or around the air system and its components, the following precautions should be taken:

- If lines need to be disconnected, make sure to completely de-pressurize the system affected.
- Unless you are certain that all system air pressure has been vented, never connect or disconnect a pressurized line. It may whip, as air escapes. Also, never remove a component or open a line unless you are certain that all system air pressure has been vented.
- Switch off all systems and turn off the battery master switch.



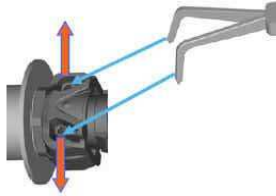
CAUTION!

Avoid deformation of the air lines. Adjust them to the correct length!

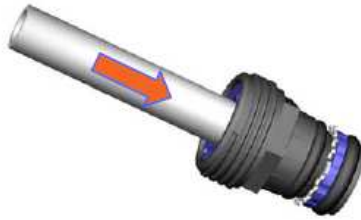
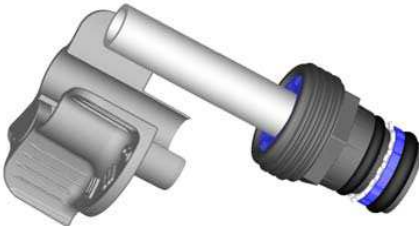
PNEUMATICS - Raufoss couplings:

Air lines and valves are connected with Raufoss couplings. Please find some extra information about this specific technology.


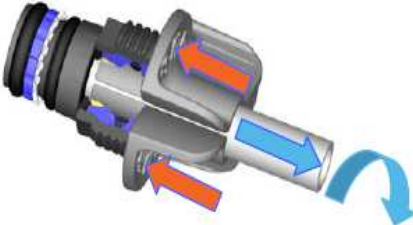
a. To separate fitting housing from nipple

Step	Action
1	Open the snap arms on the fitting housing by using an ordinary snap ring pliers.  Figure 39
2	Pull the housing from the nipple.

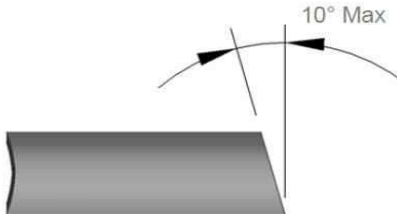
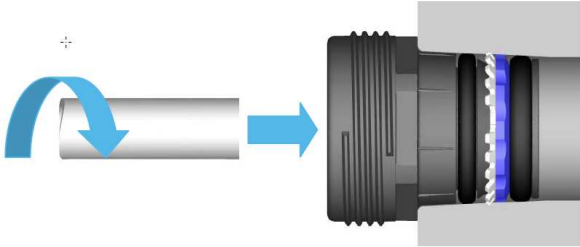
b. To separate air line from fitting housing

Step	Action
1	Push the air line to the bottom of the fitting housing.  Figure 40
2	Apply the release tool to the air line by opening the slit.  Figure 41

Continued on next page.

3	<p>Close the slit when applied on the air line and press the release tool into the housing. Use silicone spray to ease the insert of the tool.</p>  <p style="text-align: right;">Figure 42</p>
4	<p>Pull the air line out while pushing the tool. Turning the air line can ease the action.</p>  <p style="text-align: right;">Figure 43</p>

c. To connect air line to fitting

Step	Action
1	<div data-bbox="300 1093 387 1182" data-label="Image"> </div> <p>CAUTION! Never insert a damaged or dirty tube end into the fitting!</p> <p>Cut the air line at 90°. A maximum deviation of 10° is allowed. Secure the air line cutting process to avoid scratches, burrs, ovality or dirt.</p>  <p style="text-align: right;">Figure 44</p>
2	<p>Insert the air line into the fitting housing by pushing and turning it simultaneously.</p>  <p style="text-align: right;">Figure 45</p>

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3

Push the air line far enough until it has passed the main seal O-ring into the housing to avoid slipping out. The connection is sealed now.

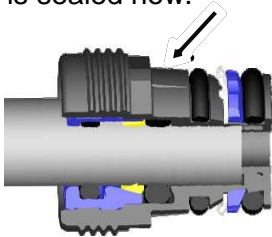


Figure 46

If the air line is not fully assembled, a local slot in the blue cone element will give space for a displacement of the environmental seal O-ring. When pressurized this will give a clear whistle sound. The air line can be re-pushed under pressure. When the whistle sound is gone, the air line is fully assembled.

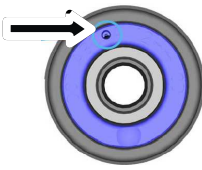

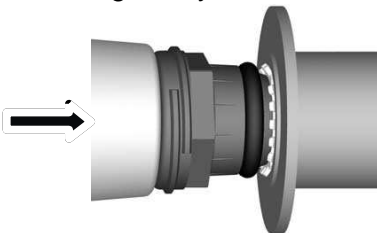


Figure 47: Local slot in the blue cone element

d. To connect fitting housing to nipple

Step	Action
1	<div style="display: flex; align-items: flex-start;"> <div style="width: 50px; text-align: center; margin-right: 10px;">  </div> <div> <p>Never force the nipple into the housing with an obviously angled position.</p> <p>Enter the nipple in a straight position in the housing during press-in operation. Push the nipple far enough into the housing until you hear 2 ‘clicks’.</p> <div style="text-align: center; margin: 10px 0;">  <p>Figure 48: Push the nipple far enough into the housing</p> </div> </div> </div>

PNEUMATICS – air line codation:

For example: ½” air line GE-2 = 1/2” diameter air line with yellow color ring and text “GE-2”

Z	BR	R	O	GE	GN	B	V	GS	W	T
Black	Brown	Red	Orange	Yellow	Green	Blue	Violet	Grey	White	Transparent

Continued on next page.

WELDING - data:

Table 1: Welding data for stainless steel (according to AWS A 5.9-93 ER 309LSi)
<ul style="list-style-type: none">• Welding wire section: 1.0 mm (0.039 inch)• Welding wire feed speed: 2.9-8.4 m/min (115-330 inch/min)<ul style="list-style-type: none">• Current: 80-190 Amps• Welding gas: 88% Argon + 10% Helium + 2% CO2

WELDING - safety rules:

- The following information pertaining to welding should be read before beginning any such procedure. The prohibitions and requirements contained herein must be followed during such procedure.
- Welding must be done only by a qualified and experienced person. It is the responsibility of the welder to make sure that his/her personal safety equipment and the welding equipment he/she is using are in a condition that the welding equipment he/she is using are in a condition that will not endanger his/her health and safety or the health and safety of others.
- Adequate ground contact and barriers must be positioned as required to protect components (wiring, air-lines, hydraulic lines, fuel lines etc.) from damage due to heat, contact by weld spatter, arcing or other potentially damaging events associated with welding.
- The following precautions must be taken to protect the vehicle's electronic equipment:
 - FIRST disconnect the wires from the GND (ground) terminal of the battery equalizer.
 - Disconnect the batteries (disconnect ground cable first, reconnect ground cable last).
 - Disconnect all ECU's.
 - Disconnect the MUX nodes.
 - On shell units, also disconnect the suspension ECU if the vehicle is equipped with an electronic control unit.
 - For any other electronic equipment (radio, video, ICE...) refer to the OEM prescriptions.
 - Keep the ground clamp as close as possible to the work and make sure the clamp makes perfect contact with the drive axle housing.
- Make certain the welder is properly grounded will not endanger his/her health and safety or the health and safety of others.
- Never look at the arc unless wearing a suitable helmet or face shield.
- Wear protective clothing and gloves.
- Do not permit bystanders, unless they are wearing protective gear.
- Never weld while standing in water or on damp ground.
- Have adequate ventilation.
- Do not adjust machine settings while the machine is under load.
- Keep cables tight in the sockets.
- Do not touch hot metal.
- Do not allow the welding rod/wire to touch anything but the work.
- Make sure there is nothing flammable near the working area.
- Always have a fire extinguisher of the correct type available.

Continued on next page.

GRINDING - safety rules:

Grinders can be dangerous. When improperly used, they are responsible for many serious and lasting injuries to the eyes, hands, face and body. Therefore you must always observe the following safety rules:

- Always wear eye protection (safety goggles, face shield). Wear leather gloves.
- Adequate barriers must be positioned as required to protect components (glass, wiring, airlines, hydraulic lines, fuel lines, drive shaft etc.) from damage by grinding sparks.
- Before doing any grinding on the coach, thoroughly clean the affected area.
- Keep abrasive discs tight, clean and true.
- Allow grinder to reach full rpm before using.
- Do not put aside the grinder until the wheel has completely stopped revolving.
- Never strike a grinding wheel while revolving. It may shatter and explode.
- Do not grind in the presence of explosive vapors (gasoline, paint thinner, batteries...)
- Before installing a new grinding disc, disconnect the electric mains or air supply line.
- When installing a new disc make certain:
 - It is designed for the rpm of the grinder.
 - It has the correct size.
 - It is properly fixed.
- Never remove the grinding disc guard.

AFTERTREATMENT:

Coat the reinforcing parts and bare metal with primer + undercoating. Allow to dry.

Continued on next page

WARRANTY:

1. Terms and conditions:

Van Hool will accept warranty claims for this repair as follows:

Parts: parts will be supplied through regular channels, free of charge.

Labor allowance: 11 hours for labor will be awarded per coach repaired.

Campaign expiration date: Service Bulletin issue date + 1 year.

2. Claim references:

Job code: O06048N

Claim submission: Contact ABC Customer Care Warranty Department for guidance.

Monitoring and performance: The claim records pertaining to this Bulletin will be used to determine that the remedy has been executed in accordance with the manufacturer's instructions and to evaluate the status of this Field Change Program.

INFORMATION HANDLING:

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

VAN HOOL CUSTOMER PORTAL:

Consult the Van Hool customer portal 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.

