




**MAINTENANCE INFORMATION** Mi11-68A



DATE : JUNE 2011	SECTION : 12 - Brakes
SUBJECT : VOLVO 9700 BRAKE AIR SYSTEM CHECK	

REV A: General Update


**APPLICATION**

Model	VIN		
Volvo 9700 Coaches Model Year : 2009- Current			
		All 9700 Coaches	

**DESCRIPTION**

The following procedure addresses the inspection and verification of a Volvo 9700 brake air system. The procedure will address the proper functioning of check valves, overflow valves and limiting valves.

**PROCEDURE**



**DANGER**

Park vehicle safely, apply parking brake, stop engine and set battery master switch(es) to the OFF position prior to working on the vehicle.

1. Begin test procedure with full air pressure, parking brake released, engine OFF and ignition ON.



2. Use the cluster display to check third circuit air tank pressure. To do so, press “Enter”, choose “Gauge mode”, go to screen 6/6.



## WARNING

Position yourself clear of all danger zones.

3. Drain the **PRIMARY** air tank (also known as the wet tank) completely. The tank is located at front of the coach, on the R.H. side. Make sure tank has green air lines attached to the tank.



- Pressure in front circuit tank and rear circuit tank should drop to 70 PSI (480 kPa) due to the four-circuit protection valve design. Pressure in third circuit tank should remain at 110 PSI (760 kPa).

### NOTE

*Pressure in suspension system will drop to 0 PSI when the primary air tank is drained because it is directly fed from this tank. Suspension pressure gauge visible through the dash display, Gauges 5/6.*

4. Start coach and fill air system. Drain **PARKING BRAKE** tank. This tank is part of three tanks located above the drive axle, in the middle of the coach. It is the one with yellow hoses connected to it. Pressure in front circuit tank and rear circuit tank should drop to 70 PSI, warning telltale lights come on. Suspension will remain at 70 PSI, third circuit will remain at 110 PSI.



5. Drain **FRONT** circuit tank completely, this tank is located in at front of the coach, on the L.H. side.



- Confirm that the front circuit is at 0 PSI and that the rear circuit is at 70 PSI. Pressure in the third circuit tank should remain at 110 PSI.

6. Have an assistant make and hold a service brake application. Check that the rear brakes are applied and that the stop lights are activated. Release the application.
7. Start the engine and build up full pressure again.
8. Drain the **REAR** circuit tank, this tank is part of three tanks located above the drive axle and is the largest of the three. It is the one with green hoses connected to it.



- Confirm that rear circuit is at 0 PSI and that front circuit is 70 PSI. Pressure in the third axle tank should remain at 110 PSI. Warning telltale lights are ON and parking brake remain released.

**NOTE**

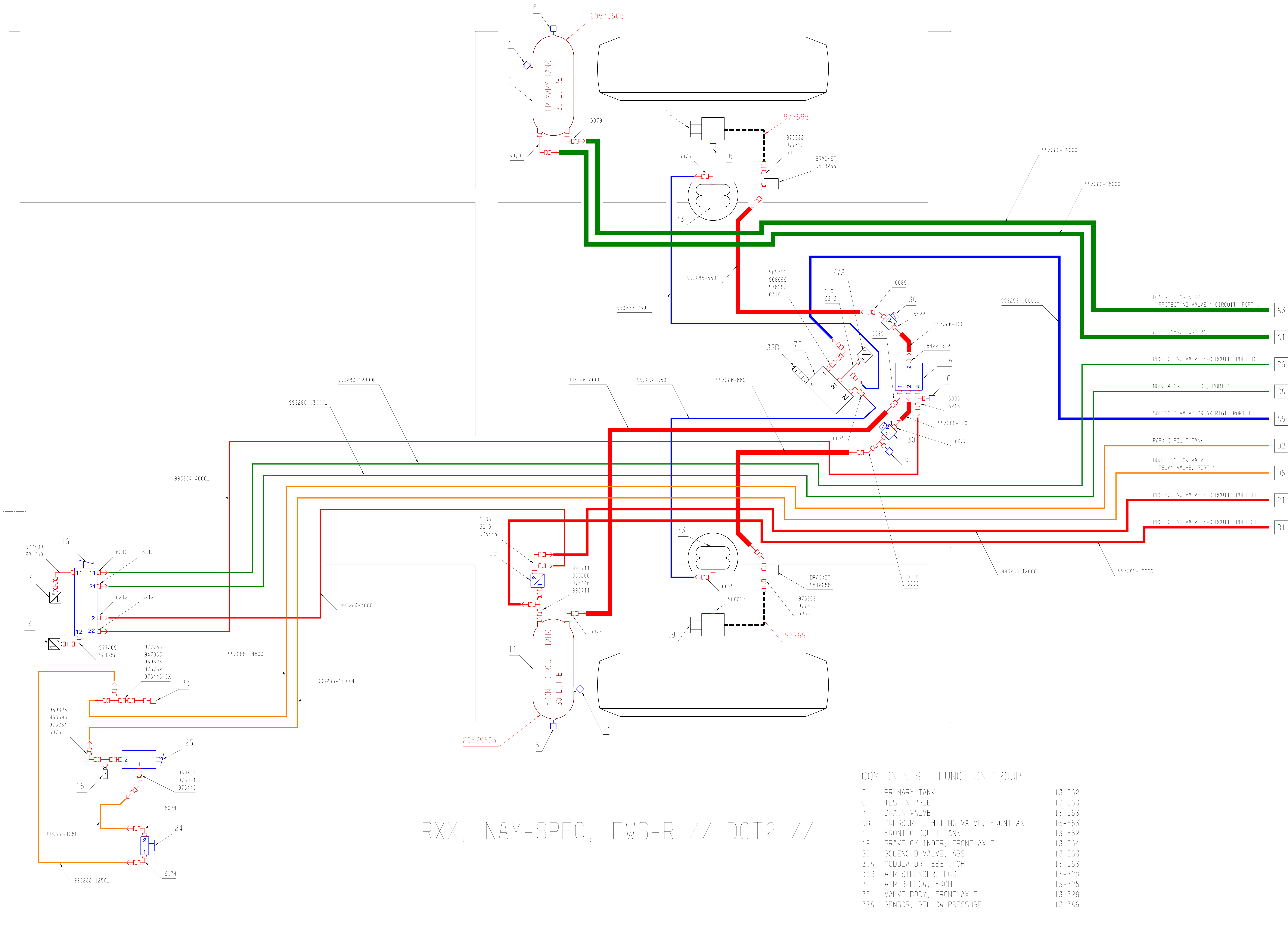
*Draining via the four-circuit protection valve is quite normal and should not be interpreted as leakage. Refer to Description, Design and Function/B13R, Four-Circuit Protection Valve annexed hereafter.*

9. Have an assistant make and hold a service brake application. Confirm that the front brakes and rear spring brakes are applied.
10. Release the application and confirm that the rear spring brakes release completely. Make a second application; two applications are required to confirm adequate reservoir reserve capacity.
11. Start the engine and build up full pressure again.
12. Drain the **THIRD** circuit tank, this tank is part of three tanks located above the drive axle in the middle of the coach. Confirm that the third circuit tank is at 0 PSI and that front and rear circuit pressure is 70 PSI due to four-circuit protection valve design.



13. Start coach and fill air system completely. Apply foot brake repeatedly until blocking valve opens. Blocking valve is located at driver's position lower right below the parking brake. Blocking valve should release at 58 PSI (400 kPa). This safety function compares to the PP1 valve function required for the DOT brake test.

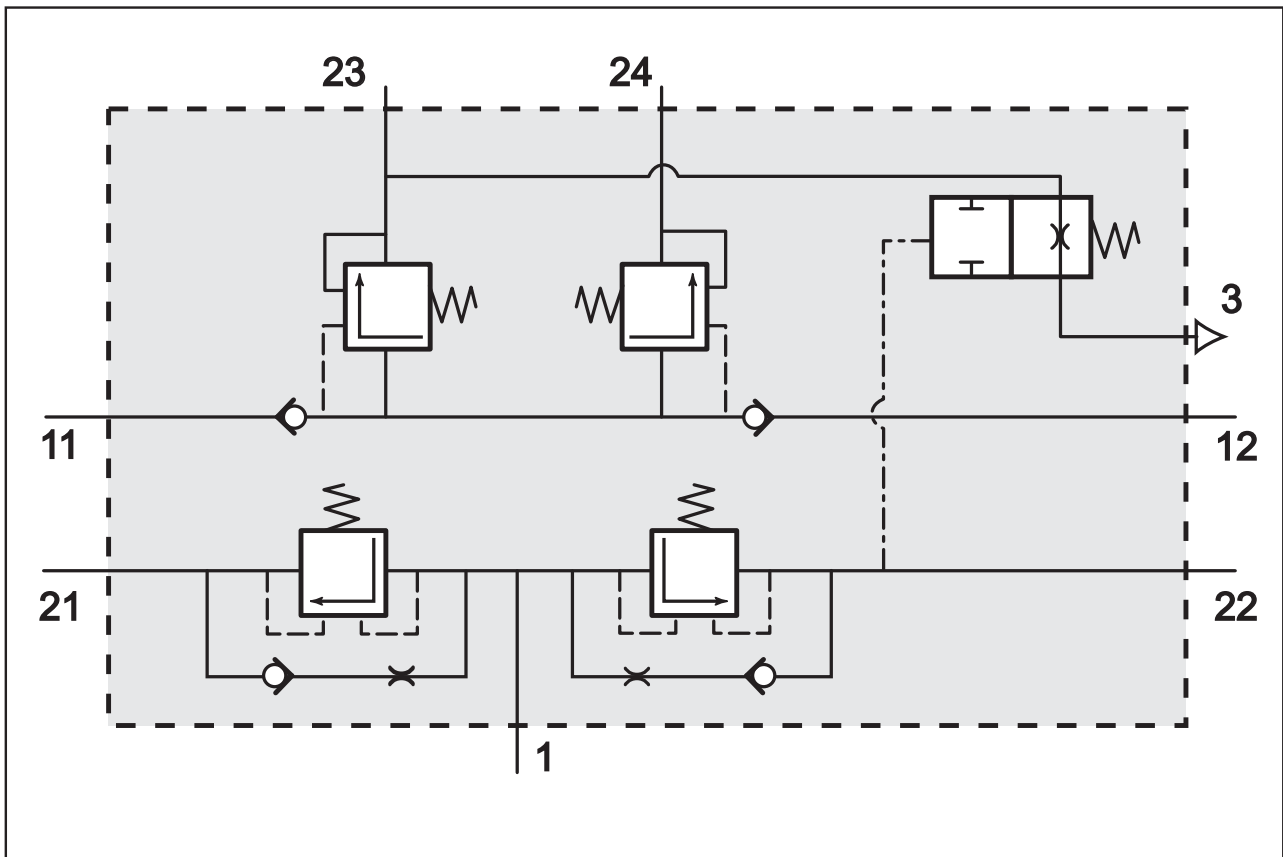




RXX, NAM-SPEC, FWS-R // DOT2 //

COMPONENTS - FUNCTION GROUP		
5	PRIMARY TANK	13-562
6	TEST NIPPLE	13-563
7	DRAIN VALVE	13-563
9B	PRESSURE LIMITING VALVE, FRONT AXLE	13-563
11	FRONT CIRCUIT TANK	13-562
19	BRAKE CYLINDER, FRONT AXLE	13-564
30	SOLENOID VALVE, ABS	13-563
31A	MODULATOR, EBS 1 CH	13-563
33B	AIR SILENCER, ECS	13-728
73	AIR BELLOWS, FRONT	13-725
75	VALVE BODY, FRONT AXLE	13-728
77A	SENSOR, BELLOWS PRESSURE	13-386





## 8 Four-circuit safety valve

1 Inlet

3 Evacuation

11 Front wheel circuit, 760±10 kPa

12 Drive wheel circuit, 760±10 kPa

21 To circuit tank, front wheel circuit, 1200 kPa

22 To circuit tank, drive wheel circuit, 1200 kPa

23 Parking brake circuit, 760±10 kPa

24 Other equipment, 760±10 kPa

The four-circuit safety valve in combination with EBS is a valve with 7 ports. Its task is to provide the various circuits with compressed air and in the event of a falling off in a circuit, close the supply of air to the leaking circuit and thus secure the functions of the other circuits. The valve also has the task of evacuating the parking brake circuit tank when the pressure is less than 310 kPa in the drive wheel circuit (22)

When the bus is not charged with air and the engine is started, the compressor feeds air via the air drier and the wet tank to the inlet (1). The four-circuit safety valve regulates filling of the compressed air tanks in the following order.

First, both the main brake circuits are filled; when filling during low idling they are filled via the restrictors and the non-return valves. At 630 kPa the overflow valves for each respective circuit open. The air exits via outlets 21 and 22 to the respective circuit tank.

On the outlet of the front and drive gear circuit tanks is a reduction valve which reduces the pressure out to the pneumatic system. The reduced air pressure (760 kPa) goes from the circuit tanks to inlets 11 and 12 in order to be distributed to the circuit for the parking brake 23 and other equipment 24. The tolerance of the overflow valve and adjustment of the setting pressure determines which of them is filled first. The opening pressure for these overflow valves is 580 kPa. In order to make it impossible for the parking brake to be released before sufficient air pressure is present in the main brake system, a safety valve has been added in the form of the four-circuit safety valve.

Air is led from the drive wheel circuit via a duct in the valve to the safety valve and keeps this valve

