



## Air Brake System Schematics and Routing VNL Section 5

### Introduction

This document provides information on air brake system schematics and routing in Volvo vehicles.

**Note:** We have attempted to cover as much information as possible. However, this information does not cover all the unique variations that a vehicle may present. Note that illustrations are typical but may not reflect all the variations of assembly.

All data provided is based on information that was current at time of release. However, **this information is subject to change without notice.**

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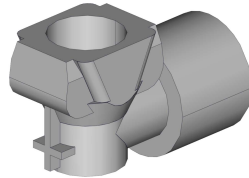
- "Air Tubing and Fittings", page 2
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# Specifications

## General

Type ..... Compressed air brakes  
Working pressure..... 100 to 135 psi (689 to 930 kPa)

## Air Tubing and Fittings



### **TUBING**

Material..... Nylon (polyamide)  
Standard..... SAE J844 & FMVSS 106  
Sizes:  
    Unreinforced..... 1/4 in. OD  
    Reinforced with fiber filament..... 1/2, 1/4, 3/8, and 5/8 in. OD  
Safety factor, minimum..... 5.3:1  
System working pressure, maximum..... 0 - 1250 kPa (181 psi)  
System working temperature range..... -40 °C to +100 °C (-104 to +212 °F)

### **Notes**

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<b>FITTINGS</b>			
<b>Type</b>	<b>End 1 Male Thread</b>	<b>End 2 PTC</b>	<b>Part number</b>
Straight	M12x1,5 ISO 6149	1/4	20510630
	1/8 NPTF	1/4	8397718
	1/8 NPTF	3/8	8085303
	1/4 NPTF	1/4	8397719
	1/4 NPTF	3/8	8397720
	1/4 NPTF	1/2	8397721
	3/8 NPTF	1/4	8397722
	3/8 NPTF	3/8	8397723
	3/8 NPTF	1/2	8397724
	3/8 NPTF	5/8	8397725
	1/2 NPTF	3/8	8397726
	1/2 NPTF	1/2	8397727
	1/2 NPTF	5/8	8397728
	1/2 NPTF	3/4	20864112
	M10x1,0	1/4	8397965
	Straight, High Temp	M10x1,1	1/4
Straight	M12x1,5	1/4	8077358
Straight, High Temp	M12x1,6	1/4	20566049
Straight	M12x1,5	3/8	8397850
	M16x1,5	1/4	20448956
Straight, High Temp	M16x1,6	1/4	20566175
Straight	M16x1,5	3/8	20378448
	M16x1,5	1/2	20378446
	M22x1,5	5/8	20575880
45° Elbow	1/8 NPTF	1/4	8397709
	1/8 NPTF	3/8	8397710
	1/4 NPTF	1/4	8397711
	1/4 NPTF	3/8	8397712
	1/4 NPTF	1/2	8397713
	3/8 NPTF	3/8	8397714
	3/8 NPTF	1/2	8397715
	3/8 NPTF	5/8	8096194
	1/2 NPTF	1/2	8397717
	1/2 NPTF	5/8	8085662
	M22x1,5	1/2	21028656
	M22x1,5	5/8	21390071
	5/8-18 UNF 45°	3/8	20435696

Type	End 1 Male Thread	End 2 PTC	Part number
90° Elbow, Composite	3/8 Stem	3/8	20462708
90° Elbow	1/8 NPTF	1/4	8397697
90° Elbow, Swivel	1/8 NPTF	1/4	8397770
90° Elbow, Long Neck	1/8 NPTF 1/8 NPTF	3/8 1/4	8081382 20377383
90° Elbow	1/8 NPTF 1/4 NPTF	3/8 1/4	8084314 8397699
90° Elbow, Swivel	1/4 NPTF	1/4	8397771
90° Elbow	1/4 NPTF	3/8	8397700
90° Elbow	1/4 NPTF	1/2	8397701
90° Elbow, Swivel	1/4 NPTF	1/2	8397773
90° Elbow	3/8 NPTF	1/4	8397702
90° Elbow	3/8 NPTF	3/8	8397703
90° Elbow, Swivel	3/8 NPTF	3/8	8397775
90° Elbow	3/8 NPTF	1/2	8397704
90° Elbow	3/8 NPTF 1/2 NPTF	5/8 3/8	8397705 8397706
90° Elbow, Swivel	1/2 NPTF	3/8	8397777
90° Elbow	1/2 NPTF	1/2	8397707
90° Elbow	1/2 NPTF 1/2 NPTF	5/8 3/4	8397708 8076767
90° Elbow	M12x1,5 M12x1,5 M16x1,5	1/4 3/8 3/8	8082135 20378450 20414623
90° Elbow, Composite	M16x1,5	3/8	20999390
90° Elbow	M16x1,5 M16x1,5 M22x1,5 M22x1,5 M22x1,5 M22x1,5	1/2 5/8 1/4 3/8 1/2 1/2	20515114 20469783 8082136 20551609 20462690 20999384
90° Elbow, Composite	M22x1,5	1/2	20999384
90° Elbow, w/CV	M22x1,5	1/2	20560349
90° Elbow, w/CV, Comp.	M22x1,5	1/2	20999392
90° Elbow	M22x1,5	5/8	20378449
90° Elbow, Composite	M22x1,5	5/8	20999385
90° Elbow, w/CV	M22x1,5	5/8	20462693

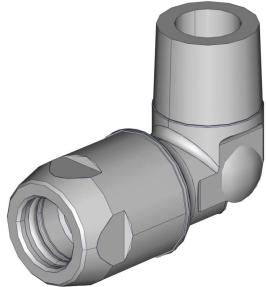
Type	End 1 Male Thread	End 2 PTC	Part number
90° Elbow	M22x1,5	3/4	20462691
90° Elbow, Composite	M22x1,5	3/4	20999388

Type	End 1	End 2	Part number
Straight, Composite	1/4 PTC	1/4 PTC	25155667
	3/8 Stem	1/4 PTC	25154458


Type	End 1 Female Thread	End 2	Part number
Straight	1/8 NPTF	1/4 PTC	25095244
	1/8 NPTF	3/8 PTC	25094466

## Plastic Fittings


### Elbow nipple 90 degree

Size	Part No	 <p style="text-align: right;">T5202370</p>
Small - 1/4	992277	
Small - 6	992024	
Regular - 3/8	991965	
Regular - 1/2	991966	
Heavy duty - 5/8	991967	

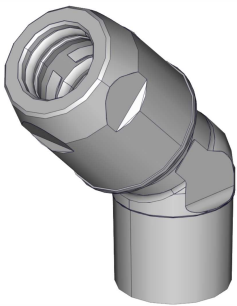
### Connection for tube and building block

Size	Part No	 <p style="text-align: right;">T5195194</p>
Regular - 3/8	60110453	
Regular - 1/2	60113880	
Regular - 12	991075	
Heavy duty - 5/8	60113987	

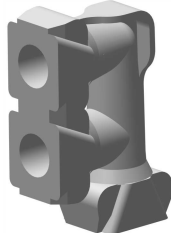
### Elbow nipple 90 degree

Size	Part No	 <p style="text-align: right;">T5195195</p>
Regular - Regular	991184	

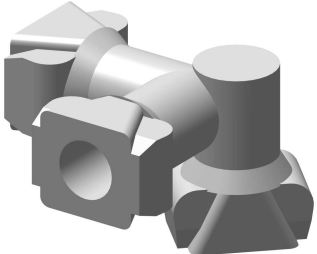
### 45 Degree elbow nipple

Size	Part No	 <p>T5202371</p>
Regular	993859	
Heavy duty	992249	

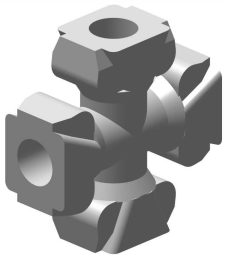
### F - nipples

Size	Part No	 <p>T5202372</p>
Small	992012	
Regular	992013	
Heavy duty	992014	

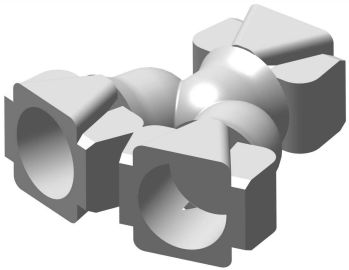
### 3 - Way nipples

Size	Part No	 <p>T5202376</p>
Regular	994117	

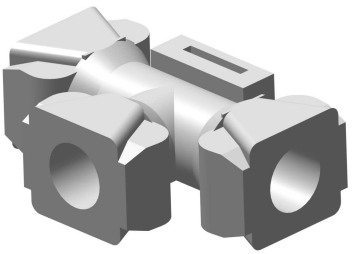
### X - nipples

Size	Part No	 <p>T5202373</p>
Regular	992021	


### Y- nipples

Size	Part No	
Regular	992257	 <p>T5202374</p>


### T- nipples

Size	Part No	
Small	991185	 <p>T5202375</p>
Regular	991980	
Heavy duty	991981	


### Anti - swivel ring

Size	Part No	
Small - 22 X 18	992950	 <p>T5195202</p>
Small - 18 X 18	992265	
Small - 16 X 18	992264	
Regular - Hex 28 X 18	991984	
Regular - Hex 22 X 18	991983	

### Port connection swivel

Size	Part No	
Regular - Regular	991080	 <p>T5195203</p>
Heavy duty - Regular	992270	

**Connection for tube and raufoss port**

Size	Part No	 <p data-bbox="1273 407 1349 426">T5195204</p>
Small	995627	

**Nominal Tubing OD inches (mm)**

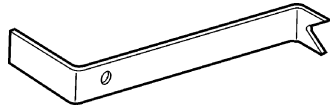
5/32 (4)
3/16 (4.7)
(6)
1/4 (6.4)
5/16 (8)
3/8 (9.5)
(12)
1/2 (12.7)
5/8 (16)
3/4 (19)



# Tools

## Special Tools

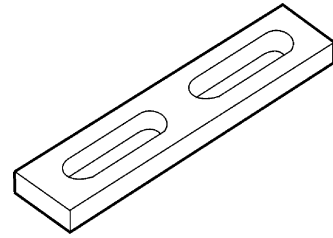
The following special tools are required for fitting repair/replacement. The tool can be ordered from Volvo Trucks North America.



W0001874

**J-44773**

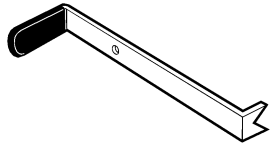
Valve Assembly Fixture



W0001873

**J-44775**

Valve Assembly Fixture



W0001198

**J-42189**

Tubing Release Tool

# Air Tubing and Fittings

Shown is the brake system as a schematic layout or the actual routing in the vehicle on a 4x2 and a 6x4 vehicle, refer to “**Design and Function**”, page 26 or the brake system valves and tubing in separate circuits. All color on tubing conforms to the standardized color scheme. This helps the identification and troubleshooting process with less possibility for mistakes.

## Air Line Numbers and Description

Line No	Description (Engine with mounting and equipment)	Colour	Line Size (inches)
3201	Air supply from the main auxiliary manifold port B to the AVU (Air Valve Unit) on engine	Violet/Red	3/8
3202	Air supply from the main manifold auxiliary port C to the pressure limiting valve port 1	Violet/Red	1/4
3204	Air supply from the pressure limiting valve port 2 to the AHI (Aftertreatment Hydrocarbon Injector) union	Violet/Red	1/4
3205	Air supply from the union AHI to the AHI on engine	Violet/Red	1/4

Line No	Description (Power Transmission)	Colour	Line Size (inches)
3401	Air supply from the main auxiliary manifold port G to the PTO (Power Take-Off) mounted on gearbox	Violet/Red	1/4
3402	Air supply from the rear axle differential lock solenoid valve port 2 to the inter-axle differential lock	Violet/Yellow	1/4
3403	Air supply from the rear wheel differential lock solenoid valve port 2 to the differential lock first driving axle D1	Violet/Yellow	1/4
3404	Air supply from the rear wheel differential lock solenoid valve port 2 to the differential lock second driving axle D2	Violet/Yellow	1/4
3405	Air supply from the APM port 23 to the union gearbox	Violet/Red	1/2
3406	Air supply from the rear wheel differential lock solenoid valve port 2 to the differential lock split driving axle D	Violet/Yellow	1/4
3407	Air supply from differential lock split from driving axle D to the differential lock first driving axle D1	Violet/Yellow	1/4
3408	Air supply from differential lock split from driving axle D to the differential lock second driving axle D2	Violet/Yellow	1/4

## 4\*2

Line No	Description (Brakes)	Colour	Line Size (inches)
5102	Air supply from front EBS (Electronically controlled Brake System) modulator (port 2) to ABS (Anti-lock Braking System) front RHS (Right-Hand Side) (port 1)	Orange/Green	1/2
5070	Air supply from footbrake modulator (port 21) to front EBS modulator (port 4)	Orange/Yellow	3/8
3531	Air supply from front EBS modulator (port 2) to ABS front LHS (Left-Hand Side) (port 1)	Orange/Green	1/2
3532	Air supply from front air circuit tank to front EBS modulator (port 1)	Orange/Red	1/2

3533	Air supply from APM (Air Production Modulator) (port 21) to the footbrake modulator (port 11)	Orange/Red	3/8
3535	Air supply from APM to front air circuit tank (port 4)	Orange/Red	1/2
3501	Air supply from rear air circuit tank (port 2) to rear EBS modulator drive axle (port 1)	Green/Red	5/8
3505	Air supply from the APM (port 22) to rear air circuit tank (port 4)	Green/Red	1/2
3506	Air supply from the APM (port 22) to the footbrake modulator (port 12)	Green/Red	3/8
3508	Air supply from the footbrake modulator (port 22) to rear EBS (port 4)	Green/ Yellow	3/8
3510	Air supply from rear EBS (port 21) to union split rear LHS	Green/Green	5/8
3511	Air supply from rear EBS (port 22) to union split rear RHS	Green/Green	5/8
3512	Air supply from rear EBS (port 21) to union split rear LHS	Green/Green	1/2
3523	Air supply from interface service D1 RHS to brake cylinder RHS (port 11)	Green/Green	5/8
3524	Air supply from interface service D1 LHS to brake cylinder LHS (port 11)	Green/Green	5/8
3525	Air supply from interface parking E1 to brake cylinder RHS (port 12)	Red/Green	1/2
3526	Air supply from interface parking E1 to brake cylinder LHS (port 12)	Red/Green	1/2
3595	Air supply from APM (port 4/29) to compressor (port 4)	Black/Yellow	1/4
3596	Air supply from cooling coil to air drier (port 11)	Black/Red	3/4
3551	Air supply from APM (port 28.1) to interface rear park	Red/Green	5/8
3554	Air supply from interface rear park to union split rear D1 RHS	Red/Green	1/2
3555	Air supply from interface rear park to union split rear D1 RHS	Red/Green	1/2
3571	Air supply from the APM (port 29.3) to firewall union	Red/Red	1/2
3572	Air supply from the firewall union to eTPCM (electronic Trailer Protection Control Module) (port 11)	Red/Red	1/2
3573	Air supply from the footbrake modulator (port 22) to eTPCM (port 41)	Red/Yellow	3/8
3574	Air supply from the APM (port 29.3) to eTPCM (port 11)	Red/Red	1/2
3577	Air supply from the footbrake modulator (port 21) to eTPCM (port 42)	Red/Yellow	3/8
3578	Air supply from Diverter, Del2 to union trailer supply, BOC	Red/Red	1/2
3580	Air supply from RV trailer brake BOC, (port 2) to union trailer control BOC	Blue/Yellow	1/2
3586	Air supply from eTPCM (port 22) to RV trailer brake BOC, (port 1)	Blue/Red	1/2
3589	Air supply from eTPCM (port 21) to diverter supply	Red/Red	1/2
3599	Air supply from RV2 trailer brake EOF (port 2) to trailer control	Blue/Yellow	1/2
3541	Air supply from air drier (port 4) to the APM (port 4.6)	Blue/Yellow	1/4
3542	Air supply from air drier (port 2) to the APM (port 13)	Blue/Red	5/8
3543	Air supply from air drier (port 21) to the APM (port 13)	Blue/Red	5/8

Line No	Description (Brakes)	Colour	Line Size (inches)
5102	Air supply from front EBS (Electronically controlled Brake System) modulator (port 2) to ABS (Anti-lock Braking System) front RHS (Right-Hand Side) (port 1)	Orange/ Green	1/2
5070	Air supply from footbrake modulator (port 21) to front EBS modulator (port 4)	Orange/ Yellow	3/8
3531	Air supply from front EBS modulator (port 2) to ABS front LHS (Left-Hand Side) (port 1)	Orange/ Green	1/2
3532	Air supply from front air circuit tank to front EBS modulator (port 1)	Orange/Red	1/2
3533	Air supply from APM (Air Production Modulator) (port 21) to the footbrake modulator (port 11)	Orange/Red	3/8
3535	Air supply from APM to front air circuit tank (port 4)	Orange/Red	1/2
3501	Air supply from rear air circuit tank (port 2) to rear EBS modulator drive axle (port 1)	Green/Red	5/8
3503	Air supply from rear air circuit tank (port 3) to rear second EBS modulator (port 1)	Green/Red	5/8
3504	Air supply from rear air circuit tank (port 3) to rear first EBS modulator (port 1)	Green/Red	5/8
3505	Air supply from the APM (port 22) to rear air circuit tank (port 4)	Green/Red	1/2
3506	Air supply from the APM (port 22) to the footbrake modulator (port 12)	Green/Red	3/8
3510	Air supply from rear EBS (port 21) to union split rear LHS	Green/Green	5/8
3511	Air supply from rear EBS (port 22) to union split rear RHS	Green/Green	5/8
3516	Air supply from rear first EBS (port 2) to union split rear LHS	Green/Green	5/8
3517	Air supply from rear first EBS (port 2) to union split rear RHS	Green/Green	5/8
3518	Air supply from the footbrake modulator (port 22) to rear quick release valve (port 1)	Green/ Yellow	3/8
3519	Air supply from rear quick release valve (port 2) to rear second EBS (port 4)	Green/ Yellow	3/8
3521	Air supply from rear quick release valve (port 2) to rear first EBS (port 4)	Green/ Yellow	3/8
3523	Air supply from interface service D1 RHS to brake cylinder RHS (port 11)	Green/Green	5/8
3524	Air supply from interface service D1 LHS to brake cylinder LHS (port 11)	Green/Green	5/8
3525	Air supply from interface parking E1 to brake cylinder RHS (port 12)	Red/Green	1/2
3526	Air supply from interface parking E1 to brake cylinder LHS (port 12)	Red/Green	1/2
3595	Air supply from APM (port 4/29) to compressor (port 4)	Black/Yellow	1/4
3596	Air supply from cooling coil to air drier (port 11)	Black/Red	3/4
3551	Air supply from APM (port 28.1) to interface rear park	Red/Green	5/8
3552	Air supply from APM (port 28.2) to interface rear park	Red/Green	5/8
3553	Air supply from interface rear park to union split rear T/P RHS	Red/Green	1/2
3554	Air supply from interface rear park to union split rear D1 RHS	Red/Green	1/2
3555	Air supply from interface rear park to union split rear D1 RHS	Red/Green	1/2
3559	Air supply from interface rear park to union split rear T/P LHS	Red/Green	1/2

3571	Air supply from the APM (port 29.3) to firewall union	Red/Red	1/2
3572	Air supply from the firewall union to eTPCM (electronic Trailer Protection Control Module) (port 11)	Red/Red	1/2
3573	Air supply from the footbrake modulator (port 22) to eTPCM (port 41)	Red/Yellow	3/8
3574	Air supply from the APM (port 29.3) to eTPCM (port 11)	Red/Red	1/2
3577	Air supply from the footbrake modulator (port 21) to eTPCM (port 42)	Red/Yellow	3/8
3578	Air supply from Diverter, Del2 to union trailer supply, BOC	Red/Red	1/2
3580	Air supply from RV trailer brake BOC, (port 2) to union trailer control BOC	Blue/Yellow	1/2
3586	Air supply from eTPCM (port 22) to RV trailer brake BOC, (port 1)	Blue/Red	1/2
3589	Air supply from eTPCM (port 21) to diverter supply	Red/Red	1/2
3599	Air supply from RV2 trailer brake EOF (port 2) to trailer control	Blue/Yellow	1/2
3541	Air supply from air drier (port 4) to the APM (port 4.6)	Blue/Yellow	1/4
3542	Air supply from air drier (port 2) to the APM (port 13)	Blue/Red	5/8
3543	Air supply from air drier (port 21) to the APM (port 13)	Blue/Red	5/8

**6\*4**

Line No	Description (Brakes)	Colour	Line Size (inches)
5102	Air supply from front EBS (Electronically controlled Brake System) modulator (port 2) to ABS (Anti-lock Braking System) front RHS (Right-Hand Side) (port 1)	Orange/ Green	1/2
5070	Air supply from footbrake modulator (port 21) to front EBS modulator (port 4)	Orange/ Yellow	3/8
3531	Air supply from front EBS modulator (port 2) to ABS front LHS (Left-Hand Side) (port 1)	Orange/ Green	1/2
3532	Air supply from front air circuit tank to front EBS modulator (port 1)	Orange/Red	1/2
3533	Air supply from APM (Air Production Modulator) (port 21) to the footbrake modulator (port 11)	Orange/Red	3/8
3535	Air supply from APM to front air circuit tank (port 4)	Orange/Red	1/2
3501	Air supply from rear air circuit tank (port 2) to rear EBS modulator drive axle (port 1)	Green/Red	5/8
3502	Air supply from rear air circuit tank (port 3) to rear first EBS modulator (port 1)	Green/Red	5/8
3503	Air supply from rear air circuit tank (port 3) to rear second EBS modulator (port 1)	Green/Red	5/8
3504	Air supply from rear air circuit tank (port 3) to rear first EBS modulator (port 1)	Green/Red	5/8
3505	Air supply from the APM (port 22) to rear air circuit tank (port 4)	Green/Red	1/2
3506	Air supply from the APM (port 22) to the footbrake modulator (port 12)	Green/Red	3/8
3508	Air supply from the footbrake modulator (port 22) to rear EBS (port 4)	Green/ Yellow	3/8
3510	Air supply from rear EBS (port 21) to union split rear LHS	Green/Green	5/8
3511	Air supply from rear EBS (port 22) to union split rear RHS	Green/Green	5/8
3512	Air supply from rear EBS (port 21) to union split rear LHS	Green/Green	1/2
3513	Air supply from rear EBS (port 21) to union split rear RHS	Green/Green	1/2

3514	Air supply from rear second EBS (port 21) to union split rear LHS	Green/Green	5/8
3515	Air supply from rear second EBS (port 22) to union split rear RHS	Green/Green	5/8
3516	Air supply from rear first EBS (port 2) to union split rear LHS	Green/Green	5/8
3517	Air supply from rear first EBS (port 2) to union split rear RHS	Green/Green	5/8
3518	Air supply from the footbrake modulator (port 22) to rear quick release valve (port 1)	Green/ Yellow	3/8
3519	Air supply from rear quick release valve (port 2) to rear second EBS (port 4)	Green/ Yellow	3/8
3520	Air supply from rear quick release valve (port 2) to rear second EBS (port 4)	Green/ Yellow	3/8
3521	Air supply from rear quick release valve (port 2) to rear first EBS (port 4)	Green/ Yellow	3/8
3523	Air supply from interface service D1 RHS to brake cylinder RHS (port 11)	Green/Green	5/8
3524	Air supply from interface service D1 LHS to brake cylinder LHS (port 11)	Green/Green	5/8
3525	Air supply from interface parking E1 to brake cylinder RHS (port 12)	Red/Green	1/2
3526	Air supply from interface parking E1 to brake cylinder LHS (port 12)	Red/Green	1/2
3527	Air supply from interface service D2 RHS to brake cylinder RHS (port 11)	Green/Green	5/8
3528	Air supply from interface service D2 LHS to brake cylinder LHS (port 11)	Green/Green	5/8
3529	Air supply from interface parking E to brake cylinder RHS (port 12)	Red/Green	1/2
3530	Air supply from interface parking E to brake cylinder LHS (port 12)	Red/Green	1/2
3595	Air supply from APM (port 4/29) to compressor (port 4)	Black/Yellow	1/4
3596	Air supply from cooling coil to air drier (port 11)	Black/Red	3/4
3551	Air supply from APM (port 28.1) to interface rear park	Red/Green	5/8
3552	Air supply from APM (port 28.2) to interface rear park	Red/Green	5/8
3553	Air supply from interface rear park to union split rear T/P RHS	Red/Green	1/2
3554	Air supply from interface rear park to union split rear D1 RHS	Red/Green	1/2
3555	Air supply from interface rear park to union split rear D1 RHS	Red/Green	1/2
3556	Air supply from interface rear park to union split rear D2 LHS	Red/Green	1/2
3557	Air supply from interface rear park to union split rear D2 RHS	Red/Green	1/2
3559	Air supply from interface rear park to union split rear T/P LHS	Red/Green	1/2
3571	Air supply from the APM (port 29.3) to firewall union	Red/Red	1/2
3572	Air supply from the firewall union to eTPCM (electronic Trailer Protection Control Module) (port 11)	Red/Red	1/2
3573	Air supply from the footbrake modulator (port 22) to eTPCM (port 41)	Red/Yellow	3/8
3574	Air supply from the APM (port 29.3) to eTPCM (port 11)	Red/Red	1/2
3577	Air supply from the footbrake modulator (port 21) to eTPCM (port 42)	Red/Yellow	3/8
3578	Air supply from Diverter, Del2 to union trailer supply, BOC	Red/Red	1/2
3580	Air supply from RV trailer brake BOC, (port 2) to union trailer control BOC	Blue/Yellow	1/2
3586	Air supply from eTPCM (port 22) to RV trailer brake BOC, (port 1)	Blue/Red	1/2

3589	Air supply from eTPCM (port 21) to diverter supply	Red/Red	1/2
3599	Air supply from RV2 trailer brake EOF (port 2) to trailer control	Blue/Yellow	1/2
3541	Air supply from air drier (port 4) to the APM (port 4.6)	Blue/Yellow	1/4
3542	Air supply from air drier (port 2) to the APM (port 13)	Blue/Red	5/8
3543	Air supply from air drier (port 21) to the APM (port 13)	Blue/Red	5/8

Line No	Description (Wheel, Suspension, Steering)	Colour	Line Size (inches)
3600	Air supply from etpcm (port 21) to the trailer supply union	Red/Red	1/2
3601	Air supply from etpcm (port 22) to the trailer control union	Blue/Yellow	1/2
3602	Air supply from diverter del2 to RV1 trailer brake EOF, P1	Red/Yellow	1/2
3603	Air supply from diverter del2 to union split trailer supply	Red/Red	1/2
3604	Air supply from diverter del1 to RV trailer brake BOC (port 4)	Red/Yellow	3/8
3606	Air supply from union split trailer supply to trailer supply	Red/Red	1/2
3608	Air supply from eTPCM (port 22) to RV1 trailer brake EOF (port 4)	Blue/Red	3/8

#### 4\*2 RSI-VGR

Line no	Description (Frames, Springs, Damping and Wheels)	Colour	Line Size (inches)
3701	Air supply from the APM (Air Production Modulator), P25 to the rear ECS (Electronically Controlled Suspension) solenoid valve, P11	Violet/Red	1/2
3721	Air supply from the rear ECS solenoid valve, P22 to the driving axle RHS (Right-Hand Side) front air spring	Violet/Green	3/8
3722	Air supply from the RHS front air spring to the LHS (Left-Hand Side) front air spring	Violet/Green	3/8
3723	Air supply from the driving axle LHS front air spring to the LHS rear air spring	Violet/Green	3/8
3724	Air supply from the rear ECS solenoid valve, P22 to the driving axle RHS rear air spring	Violet/Green	3/8

#### 6\*2 RSI-VGR

Line no	Description (Frames, Springs, Damping and Wheels)	Colour	Line Size (inches)
3707	Air supply from the APM (Air Production Modulator), P25 to the rear ECS (Electronically Controlled Suspension) solenoid valve, P11	Violet/Red	1/2
3708	Air supply from the pusher axle ECS solenoid valve, P11 to the first driving axle ECS solenoid valve, P11	Violet/Red	1/2
3709	Air supply from the pusher axle ECS solenoid valve, P22 to the pusher axle RHS (Right-Hand Side) air spring	Violet/Green	3/8
3710	Air supply from the pusher axle RHS air spring to the LHS (Left-Hand Side) air spring	Violet/Green	3/8
3711	Air supply from the pusher axle ECS solenoid valve, P23 to the interface lift bellow	Violet/Green	3/8
3721	Air supply from the first driving axle ECS solenoid valve, P22 to the first driving axle RHS front air spring	Violet/Green	3/8

3722	Air supply from the first driving axle RHS front air spring to the LHS front air spring	Violet/Green	3/8
3723	Air supply from the first driving axle LHS front air spring to the LHS rear air spring	Violet/Green	3/8
3724	Air supply from the first driving axle ECS solenoid valve, P22 to the first driving axle RHS rear air spring	Violet/Green	3/8

#### 6\*4 RSI-VGR

Line number	Description (Frames, Springs, Damping and Wheels)	Colour	Line Size (inches)
3701	Air supply from the APM (Air Production Modulator), P25 to the rear ECS (Electronically Controlled Suspension) solenoid valve, P11	Violet/Red	1/2
3721	Air supply from the rear ECS solenoid valve, P22 to the first driving axle RHS (Right-Hand Side) front air spring	Violet/Green	3/8
3724	Air supply from the rear ECS solenoid valve, P22 to the first driving axle RHS rear air spring	Violet/Green	3/8
3725	Air supply from the RHS rear air spring to the LHS (Left-Hand Side) rear air spring	Violet/Green	3/8
3726	Air supply from the rear ECS solenoid valve, P23 to the second driving axle RHS front air spring	Violet/Green	3/8
3727	Air supply from the second driving axle RHS front air spring to the RHS rear air spring	Violet/Green	3/8
3728	Air supply from the rear ECS solenoid valve, P23 to the second driving axle LHS front air spring	Violet/Green	3/8
3729	Air supply from the second driving axle LHS front air spring to the LHS rear air spring	Violet/Green	3/8
3730	Air supply from the first driving axle LHS rear air spring to the LHS front air spring	Violet/Green	3/8

#### 4\*2 RSI-VAS

Line number	Description (Frames, Springs, Damping and Wheels)	Colour	Line Size (inches)
3701	Air supply from the APM (Air Production Modulator), P25 to the rear ECS (Electronically Controlled Suspension) solenoid valve, P11	Violet/Red	1/2
3703	Air supply from the rear ECS solenoid valve, P22 to the driving axle LHS (Left-Hand Side) air spring	Violet/Green	3/8
7160	Air supply from the rear ECS solenoid valve, P22 to the driving axle RHS (Right-Hand Side) air spring	Violet/Green	3/8

#### 6\*2 RSI-VAS

Line number	Description (Frames, Springs, Damping and Wheels)	Colour	Line Size (inches)
3703	Air supply from the first driving axle RHS (Right-Hand Side) air spring to the LHS (Left-Hand Side) air spring	Violet/Green	3/8
3707	Air supply from the APM (Air Production Modulator), P25 to the rear ECS (Electronically Controlled Suspension) solenoid valve, P11	Violet/Red	1/2
3708	Air supply from the pusher axle ECS solenoid valve, P11 to the first driving axle ECS solenoid valve, P11	Violet/Red	1/2



3709	Air supply from the pusher axle ECS solenoid valve, P22 to the pusher axle RHS air spring	Violet/Green	3/8
3710	Air supply from the pusher axle RHS air spring to the LHS air spring	Violet/Green	3/8
3711	Air supply from the pusher axle ECS solenoid valve, P23 to the interface lift bellow	Violet/Green	3/8
7160	Air supply from the first driving axle ECS solenoid valve, P22 to the first driving axle RHS air spring	Violet/Green	3/8

#### 6\*4 RSI-VAS

Line number	Description (Frames, Springs, Damping and Wheels)	Colour	Line Size (inches)
3701	Air supply from the APM (Air Production Modulator), P25 to the rear ECS (Electronically Controlled Suspension) solenoid valve, P11	Violet/Red	1/2
3704	Air supply from the first driving axle RHS (Right-Hand Side) air spring to the LHS (Left-Hand Side) air spring	Violet/Green	3/8
3705	Air supply from the rear ECS solenoid valve, P23 to the second driving axle RHS air spring	Violet/Green	3/8
3706	Air supply from the rear ECS solenoid valve, P23 to the second driving axle LHS air spring	Violet/Green	3/8
7160	Air supply from the rear ECS solenoid valve, P22 to the first driving axle RHS air spring	Violet/Green	3/8

#### 6\*4 RSI-HAS

Line number	Description (Frames, Springs, Damping and Wheels)	Colour	Line Size (inches)
3701	Air supply from the APM (Air Production Modulator), P25 to the rear ECS (Electronically Controlled Suspension) solenoid valve, P11	Violet/Red	1/2 inch
3704	Air supply from the first driving axle RHS (Right-Hand Side) air spring to the LHS (Left-Hand Side) air spring	Violet/Green	3/8 inch
3705	Air supply from the rear ECS solenoid valve, P23 to the second driving axle RHS air spring	Violet/Green	3/8 inch
3706	Air supply from the rear ECS solenoid valve, P23 to the second driving axle LHS air spring	Violet/Green	3/8 inch
7160	Air supply from the rear ECS solenoid valve, P22 to the first driving axle RHS air spring	Violet/Green	3/8 inch

Line No	Description (Cab)	Colour	Line Size (inches)
3871	Air supply from the pneumatic port 5 to driver seat	Violet/Red	1/4
3872	Air supply from the pneumatic port 5 to the air blower	Violet/Red	1/4
3873	Air supply from the pneumatic port 5 to the passenger seat	Violet/Red	1/4
3874	Air supply from the pneumatic pass through interface port 5 to the LHS (Left-Hand Side) seat union	Violet/Red	1/4
3851	Air supply from the pneumatic pass through interface port 3 to roof horn LHS port (HOR-R2S2 variant)	Violet/Red	1/4

3852	Air supply from the roof horn LHS port to the roof horn RHS (Right-Hand Side) port (HOR-R2S2 variant)	Violet/Red	1/4
3861	Air supply from the pneumatic pass through interface port 3 to the under floor horn (HORN-U1T variant)	Violet/Red	1/4
3801	Air supply from the pneumatic pass through interface port5 to the rear cab levelling valve supply port	Violet/Red	1/4
3802	Air supply from the rear cab levelling valve suspension port to the main cabin union split	Violet/Green	1/4
3803	Air supply from the cabin main union split to the cabin rear air bellow LHS	Violet/Green	1/4
3804	Air supply from the main cabin union split to the cabin air bellow rear RHS	Violet/Green	1/4
3809	Air supply from the main auxiliary manifold port D to the pneumatic pass through interface port 5	Violet/Red	3/8
3811	Air supply from the pneumatic pass through interface port 5 to the pneumatic pass through interface port 1	Violet/Red	3/8
3813	Air supply from APM (Air Production Modulator) port 29.3 to the inversion valve fifth wheel lock port 4	Violet/Yellow	1/4
3859	Air supply from the horn solenoid valve to the pneumatic pass through interface port 3	Violet/Red	1/4
3862	Air supply from the main auxiliary manifold port F to the horn solenoid valve port 1	Violet/Red	1/4

Line No	Description (Miscellaneous, Special Functions)	Colour	Line Size (inches)
3901	Air supply from the solenoid valve inversion port 2 to the inversion valve fifth wheel lock port 1	Violet/Red	1/4
3902	Air supply from the inversion valve fifth wheel lock to the solenoid valve fifth wheel lock port 1	Violet/Red	1/4
3903	Air supply from the solenoid valve fifth wheel lock port 2 to the fifth wheel lock interface	Violet/Green	1/4
3904	Air supply from the solenoid valve fifth wheel slide port 2 to the fifth wheel air slide	Violet/Green	1/4

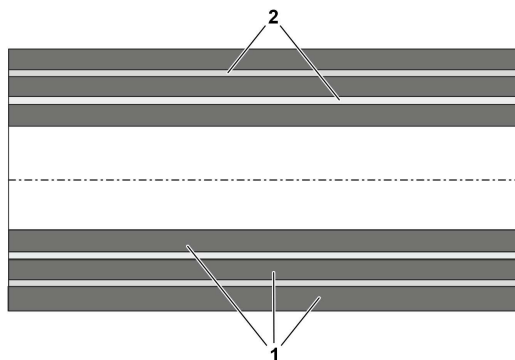
The nylon pipe has a solid core with a single-ply extrusion. The nylon pipe with an outer diameter (D) greater than 6.35 mm has a solid core covered with protective colored layers and has fiber reinforcement between the layers. The cover is resistant to heat and sunlight.



T5202108

D. Outer diameter

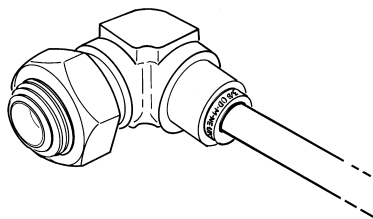
In areas where great flexibility is needed, air is routed through rubber hoses, for example, between the frame and the axles. The rubber hose has about three layers of rubber (1) and two layers of reinforcement (2). The rubber hose is made for a specific purpose with the correct length, which is crimped to the fittings on either end.



T5202103

- 1. Rubber
- 2. Reinforcement

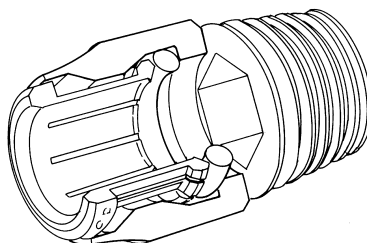
Fittings are typically of the push-connect type. To connect or disconnect tubing is very easy, which simplifies troubleshooting in the air system. New, simple test gauges have been introduced for testing the valves and pressures.



W5000377

The fitting body is made of brass and plastic. An internal O-ring seals on the outside diameter of the tubing and the retaining collar holds the tubing firmly in place. Straight fittings have an internal hex grip, most others have external hex grip. A number of valves also come with push-type connectors already installed in the valve body.

The fitting is designed for letting the tubing rotate to eliminate kinks. The fitting is not designed for locations with continuous movement, such as, between the frame and axle. Threads are pre-applied with sealant. A fitting can be reused in the same port up to five times before new sealant needs to be applied.



W5000378

## Air Tubing Installation

- 1 Install the fitting on the component.
- 2 Ensure that the component is fixed firmly.
- 3 Ensure that the tube is free from dust and other contaminants.
- 4 Ensure that there is no visual damage to the tube.
- 5 Ensure that the tube ends are straight.
- 6 Ensure that the tubes are fitted straight into the fittings.
- 7 Torque tighten the fittings.

Tightening torque		
Air tube fitting	1.	M10x1
		15 ±3 Nm
	2.	M12x1.5
		25 ±5 Nm
	3.	M16x1.5
		40 ±8 Nm
	4.	M22x1.5
		40 ±8 Nm

Push the tube into the fitting until it stops.

When the tube is properly inserted into the fitting for the first time, a locking sound is heard.

Pull the tube to ensure that the tube is fitted properly into the fitting.

**Note:** A fitting can be used for a maximum of five times for removal or installation.

### Insertion depth for different tube diameters:

Pipe diameter in (inch)	Push-in depth in (mm)
1/4	19.5 mm
1/2	25.5 mm
3/8	23.5 mm
5/8	27.5 mm

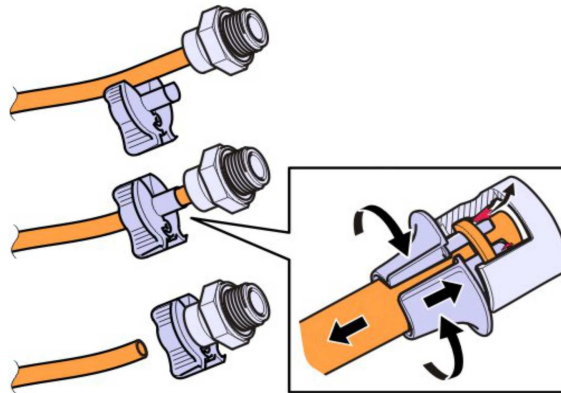
## Air Tubing Removal

Prior to removal, make sure the vehicle is parked on a level surface and that the wheel chocks are installed.

### Before removal

- 1 Release the pressure completely from the system before releasing the pipe.
- 2 Remove the cable ties close to the coupling. The pipe must be accessible and as straight as possible.
- 3 Refer to the service tips, it helps to remove the component before removing the pipe.
- 4 The special removal tool must be used only on clean pipes and nipples to ensure that no dirt is pushed into the nipple.

### During removal



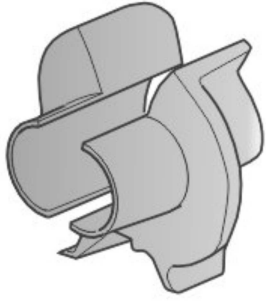
T5202386

- 1 Use the release tool to remove the tube.
- 2 Position the release tool on the tube.
- 3 Push the tube into the fitting to loosen the connection between the tube and the grip ring.
- 4 Rotate and push the release tool to secure it fully into the fitting.
- 5 The release tool will open the grip ring and prevent the locking of the tube.
- 6 While holding the tool in position, pull the pipe out of the coupling. Keep the tool pressed into the coupling during the entire procedure.
- 7 Remove the release tool.

### Disassembly tool

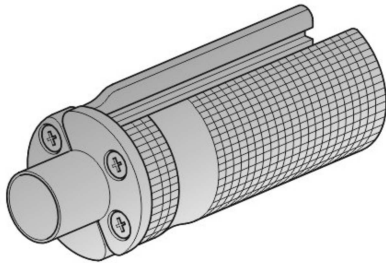
**Note:** The disassembly tool can be ordered from Volvo.

Standard part number	Professional part number	Pipe diameter in (inch)
992302	88880084	1/4
992304	88880086	1/2
992305	88880087	5/8
992949	NA	3/8



T5202387

Standard kit: 88800233



T5202388

Professional kit: 88800414

To make removal easier, remove tubing when valve or component is still in place.

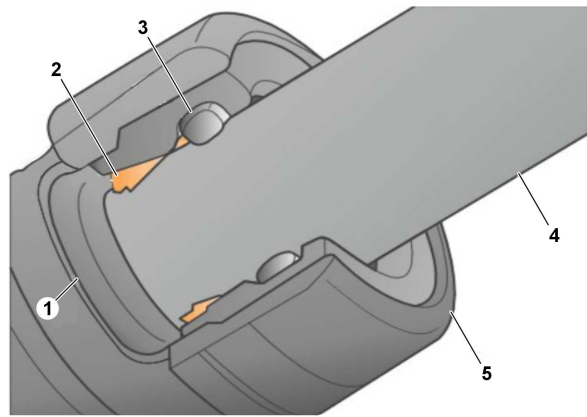


## WARNING

Always make sure that all compressed air is removed from the air system before removing tubing or components. Compressed air has great force and can create serious personal injury.

To disconnect, push the tube (4) into the fitting (5) until it touched the bottom of the fitting. Use the release tool J42189 to push in the collar and then pull out the tubing while holding the collar in.

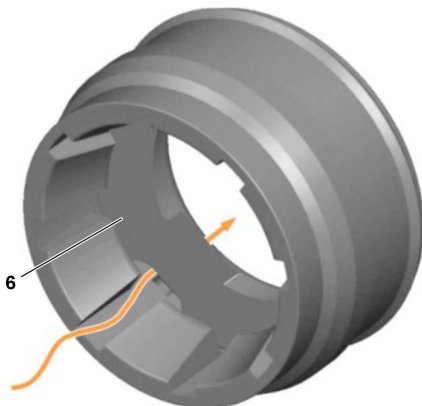
## Push-In fitting system



T5202383

1	Main seal
2	Grip ring
3	Dust seal
4	Polyamide tube
5	Fitting

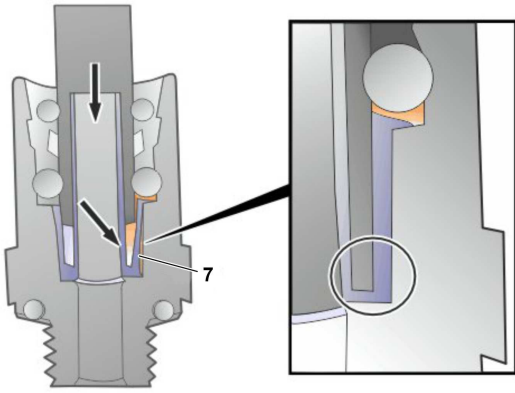
The fitting (5) has the dust seal (3) to prevent the entry of the dust and other contaminants.



T5202384

The fitting also has the non-return valve (6), which allows the air to escape when the fitting is under pressure. The non-return valve also ensures that the tube is properly inserted into the fitting.

**Note:** If the tube is not fitted properly, the air leak happens.



T5202385

The fitting has the plastic arm (7), which breaks when the tube is not installed properly.

**Note:** When the tube is properly inserted into the fitting for the first time, a locking sound is heard.

*Notes*

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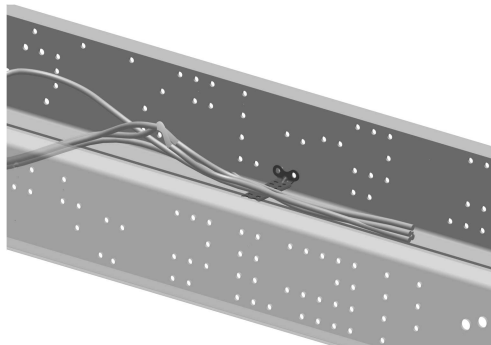
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# Air Tubing Repair

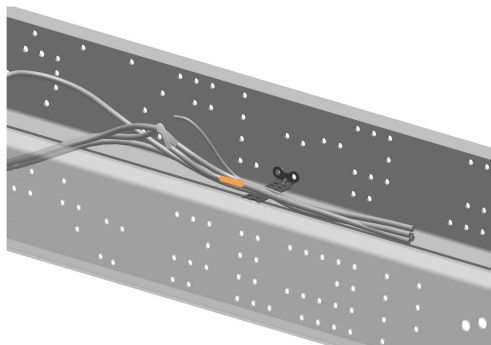
In the event that tubing has been severed as the result of an accident or if tubing needs to be lengthened for rerouting, there are certain procedures that must be followed.

In general, there are no restrictions against repairing tubing versus replacing it. A repaired tubing has the same integrity as the rest of the system if the repairs are done properly. Tube to tube fittings are available for 1/2, 1/4, 3/8 and 5/8 in. tubing.



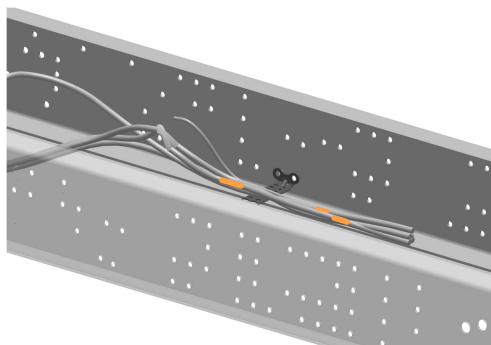
T5204332

When any one of the tube is repaired, make sure that the installed fitting is close to the support bracket of the tube. Prepare the tubing as outlined on the previous page. Push the tubing ends into the fitting. Leak test fitting at full pressure after system pressure has been established again.



T5204333

If a whole bundle of tubing needs to be repaired or lengthened, make sure that the fittings are staggered instead of installing them near to each other. Place the larger fittings close to the support bracket and the smaller fittings away.

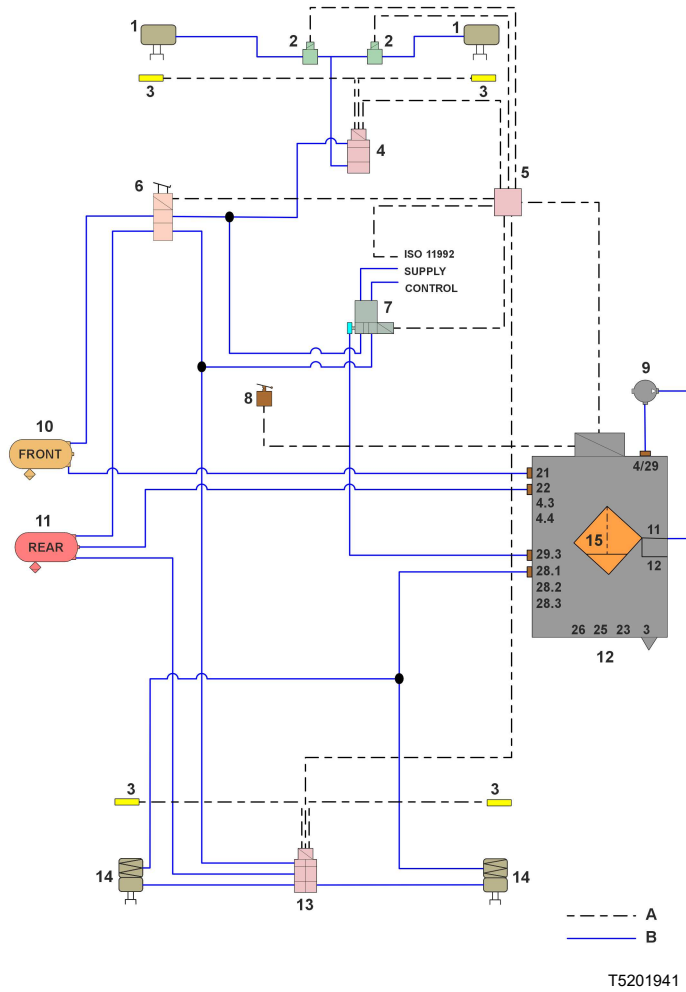


T5204334

# Design and Function

## Air Brake System

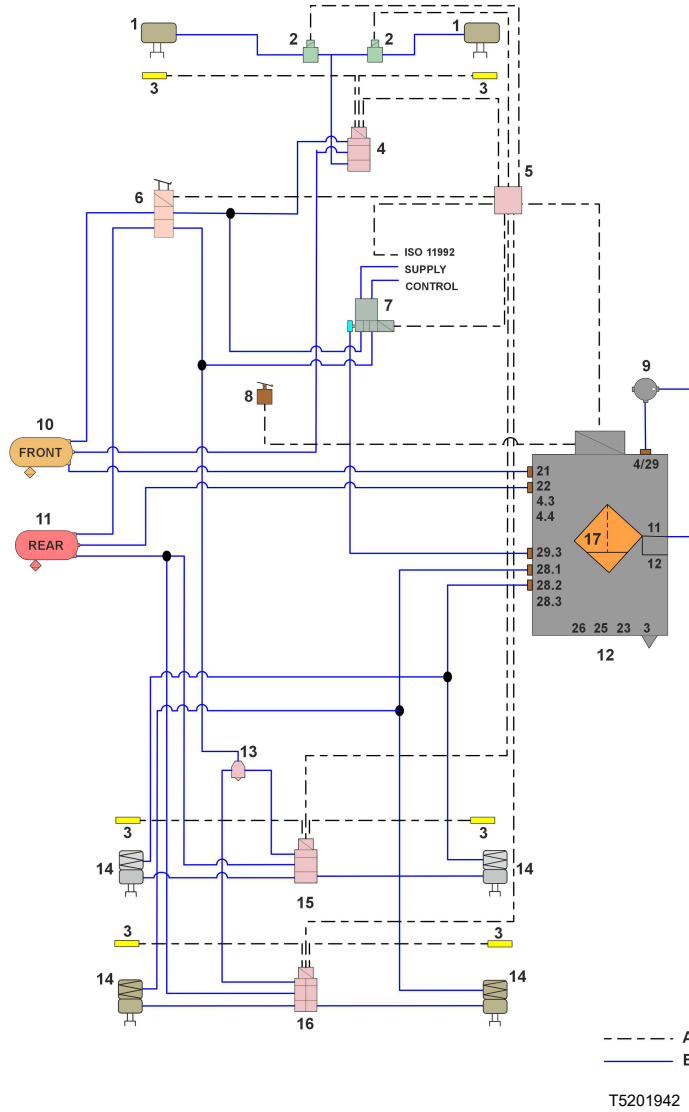
4\*2



A	Electric line
B	Pneumatic line
1	Service brake cylinder
2	ABS (Anti-lock Braking System) solenoid valve
3	Wheel speed sensor
4	EBS modulator (front axle)
5	EBS control unit
6	Footbrake valve
7	eTPCM (electronic Trailer Protection Control Module)
8	HCU (Hand Control Unit) (handbrake)
9	Air compressor
10	Air tank (front brake circuit)
11	Air tank (rear brake circuit)

12	APM (Air Production Modulator)
13	EBS modulator (rear axle)
14	Spring brake cylinder (rear)
15	Air drier

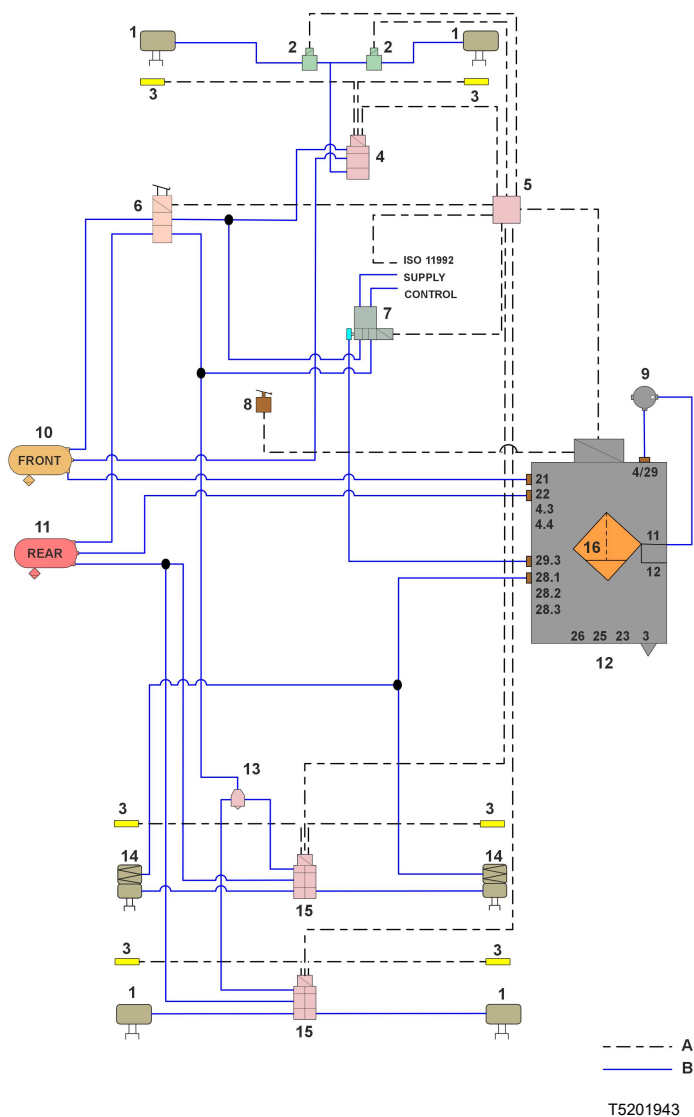
6\*2



A	Electric line
B	Pneumatic line
1	Service brake cylinder
2	ABS (Anti-lock Braking System) solenoid valve
3	Wheel speed sensor
4	EBS modulator (front axle)
5	EBS control unit
6	Footbrake valve

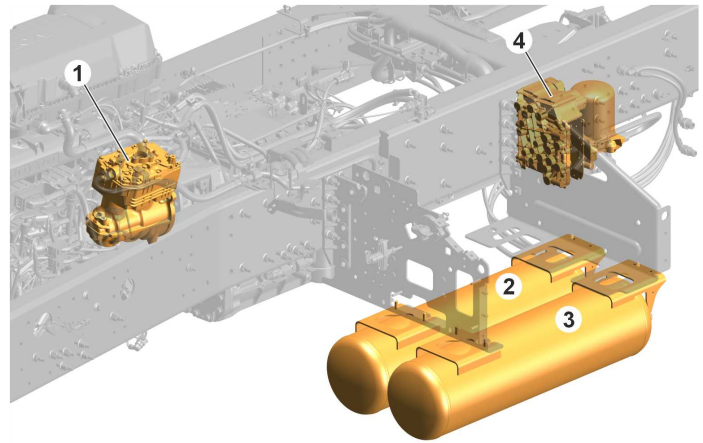
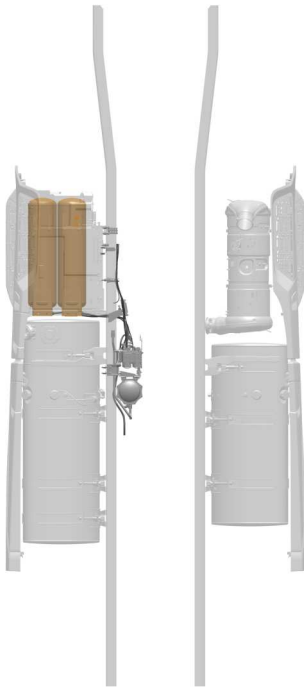
7	eTPCM (electronic Trailer Protection Control Module)
8	HCU (Hand Control Unit) (handbrake)
9	Air compressor
10	Air tank (front brake circuit)
11	Air tank (rear brake circuit)
12	APM (Air Production Modulator)
13	Quick release valve
14	Spring brake cylinder (rear)
15	EBS modulator (pusher axle)
16	EBS modulator (rear axle)
17	Air drier

6\*4



A	Electric line
B	Pneumatic line
1	Service brake cylinder
2	ABS (Anti-lock Braking System) solenoid valve
3	Wheel speed sensor
4	EBS modulator (front axle)
5	EBS control unit
6	Footbrake valve
7	eTPCM (electronic Trailer Protection Control Module)
8	HCU (Hand Control Unit) (handbrake)
9	Air compressor
10	Air tank (front brake circuit)
11	Air tank (rear brake circuit)
12	APM (Air Production Modulator)
13	Quick release valve
14	Spring brake cylinder (rear axle)
15	EBS modulator (driving and trailing axle)
16	Air drier

# In Frame Air Tank Examples



T5202099

1. Air compressor
2. Air tank (rear brake circuit)
3. Air tank (front brake circuit)
4. APM (Air Production Modulator)

T5202098

**Note:** The above image shows information for one variant of this product. The APM (Air Production Modulator) can vary depending on the variant of the product.

# Brake Literature

## Bendix

Copies of service literature for Bendix components can now be accessed directly from the official internet site of the Bendix Corporation.

To review and download Bendix service literature, please visit:

- <http://www.bendix.com>

## Meritor

Copies of service literature for Meritor components can now be accessed directly from the official internet site of the Arvin Meritor Corporation.

To review and download Meritor service literature, please visit:

- <https://www.meritor.com>

## Notes

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**V O L V O**

**Volvo Trucks North America**

<http://www.volvotrucks.com>