

OWNER'S MANUAL

ATTENTION INSTALLER

This manual **MUST** accompany the owner of this AIR FORCE ONE



DEMCO

**IMPORTANT
WARRANTY REGISTRATION HERE:**



SERIAL NUMBER

INTRODUCTION

Thank you for purchasing Air Force One: the most advanced supplemental braking system available. When installed correctly, this system will provide years of maintenance and adjustment-free service. These installation instructions are designed to guide you through the installation of your new braking system. The installation is vitally important to the proper operation and safety of both the end user, and those on the road. **It is imperative that these instructions be read in their entirety before any part of the installation is attempted.** This will allow for a proper understanding of the system as a whole, and will also result in a much neater, professional installation. We have compiled these instructions based on the feedback from technicians, installers, and individual customers. If at any time you do not feel 100% comfortable and confident throughout the installation, you must contact the Demco toll-free tech support line immediately at 800-543-3626 to either receive an answer to your questions or obtain the location of the nearest qualified technician for assistance.

WARRANTY POLICY, OPERATOR MANUALS & REGISTRATION

Go online to www.demco-products.com to review Demco warranty policies, operator manuals and register your Demco product.

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AFO Breakaway

In the event of a breakaway, the reserve-air supply (located within the operating unit) is used to apply the towed vehicle’s brakes. The towed vehicle’s brakes remain applied until the breakaway pin is replaced. To be sure that the breakaway tank is charged, it is imperative that you apply the coach’s brake pedal completely for 3 seconds, 3-4 times after the coach has been allowed to completely ‘air-up.” **This must be done every time you hook up to flat tow.**

6248 QUICK CONNECT KIT F/ COACH

ITEM	PART #	QTY	DESCRIPTION
1	02772	2	NUT, .25NC LOCK NYLON INSERT
2	04055	2	.25-20NC X 1 GR5 HEX
3	16068	1	AFO PLUG LARGE
4	16100	1	L BRACKET
5	16120	1	FTG ELBOW PUSHLOCK .25 TUBE X .125 MALE NPT
6	16121	1	QUICK DISCONNECT f/ AFO
7	16122	2	WASHER .25 FENDER

Please order replacement parts by PART NO. and DESCRIPTION



6238 COACH INSTALL KIT

ITEM	PART #	QTY	DESCRIPTION
1	00059	4	WASHER, FLAT .375
2	00914	2	BOLT, .375 NC X 1.50 HEX HEAD GR5
3	02592	2	NUT, .375NC NYLON LOCK
4	16129	1	FTG PUSHLOCK .25 X .375
5	16130	1	FTG TEE PUSHLOCK .375 X .375 X .25
6	16131	1	FTG TEE PUSHLOCK .625 X .625 X .25
7	16132	1	FTG TEE .375 STREET EXTRUDED
8	6248	1	QUICK CONNECT KIT f/ COACH

Please order replacement parts by PART NO. and DESCRIPTION

6236 AIR FORCE ONE AIR TANK ASSEMBLY



16114



28' - 1/4" DOT Air Line
(sold per foot)

Air Force One is designed to provide proportionate braking effort in the towed vehicle by applying proportioned air based on the pressure in the coach's braking system to the Air Force One braking system.

Be sure to have your towed vehicle's brakes inspected for wear before towing. In most cases towed vehicles do not accrue mileage on the odometer while in tow, resulting in the brakes needing to be serviced before the odometer would dictate. For most vehicles it is recommended to have the brakes inspected/replaced every 20,000-30,000 miles. **You must combine towing and driving mileage when determining the interval.**

Federal Motor Vehicle Safety Standard (FMVSS) 121 requires that a separate air circuit and flow protection valve be installed when the towing vehicle's air supply is used for a supplemental braking system. Air Force One is the only air brake system that supplies these components as part of the installation kit. Should there be any breach in the supplemental air connection, the air supply will be shut off: allowing you to stop your coach safely in every situation, even during a breakaway.

The provided coach installation was designed in cooperation with Mike O'Neil at Spartan Chassis and meets the operational requirements of **Spartan** (per Mike O'Neil) and **Freightliner** (per Tony Sipple). At time of publication, Spartan and Freightliner are the only chassis with specific guidelines other than FMVSS 121.

In the event of a breakaway, the reserve-air supply (located within the operating unit) is used to apply the towed vehicle's brakes. The towed vehicle's brakes remain applied until the break-away pin is replaced. To be sure that the breakaway tank is charged, you should apply the **coach's brake pedal** completely for **3 seconds** after the coach has been allowed to completely 'air-up."

Be sure to place the provided dust cap on the vehicles' air connections. Failure to do so **WILL** result in improper functioning of the braking unit. Note: If a different cap is used on towed vehicle it must be allowed to vent, allowing heated air to escape during normal driving. Failure to do so **WILL** result in damage to the towed vehicle. The brass couplers may corrode depending on the environment in which it was operated. Should they become difficult to operate, lubricate with spray silicone and cycle until the couplers move freely.

Corroded couplers may not seat properly resulting in disconnect while in tow.

Step 1: Mount the Coach Air Tank Assembly

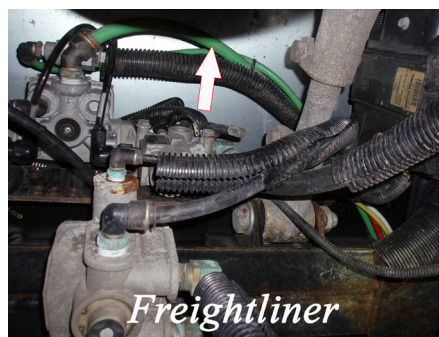
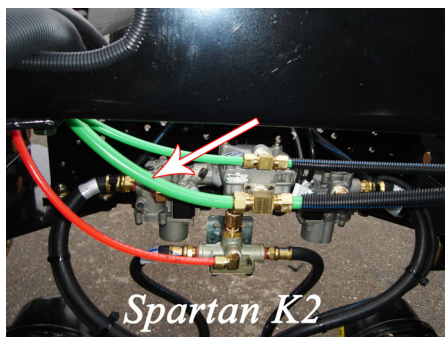
Fig 6.1



1. Select an appropriate location for the Coach Air Connection Assembly. The air lines to be connected must not be near any direct heat source or moving parts and must not be routed in such a manner that they will kink. In many cases the Coach Air Connection Assembly may be mounted to the same cross-member as the coach's relay-valve assembly (See Fig 6.1).

Step 2: Supply-Air Connection

Fig 6.2



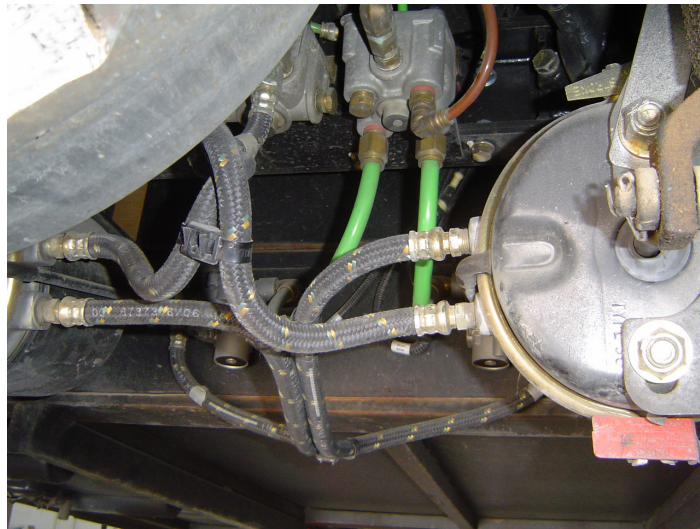
COACH INSTALLATION

1. Locate the coach's supply air hose. This line goes from the service relay valve to the braking air tank. It is 5/8" in outside diameter. Some newer Freightliner Super C chassis use 1/2" line, be certain of the size of the line before cutting the line. If you have a 1/2" line, you can purchase the 1/2" x 1/2" x 1/4" tee from Demco or you will need to source locally a 1/2" x 1/2" x 1/4" tee. Although it is normally green, it may be any color. Do not confuse this hose with the treadle-valve hose. This line is only 3/8" in outside diameter and should not be tampered with. Fig 6.2
2. Cut this line with an appropriate hose cutter so that the cut is straight and clean. A straight, clean edge is necessary to prevent leaks in the coach's air system. **Remember, you must drain the coach's air tanks before cutting this line.**
3. Attach the provided 5/8" push lock tee.

Step 3: Metered-Air Connection

Locate the spring-brake/quick-release valve. In most applications it is mounted directly below the service brake relay. In most applications, the metered-air port is directly in the center of the top of the valve (just like on the Demco assembly).

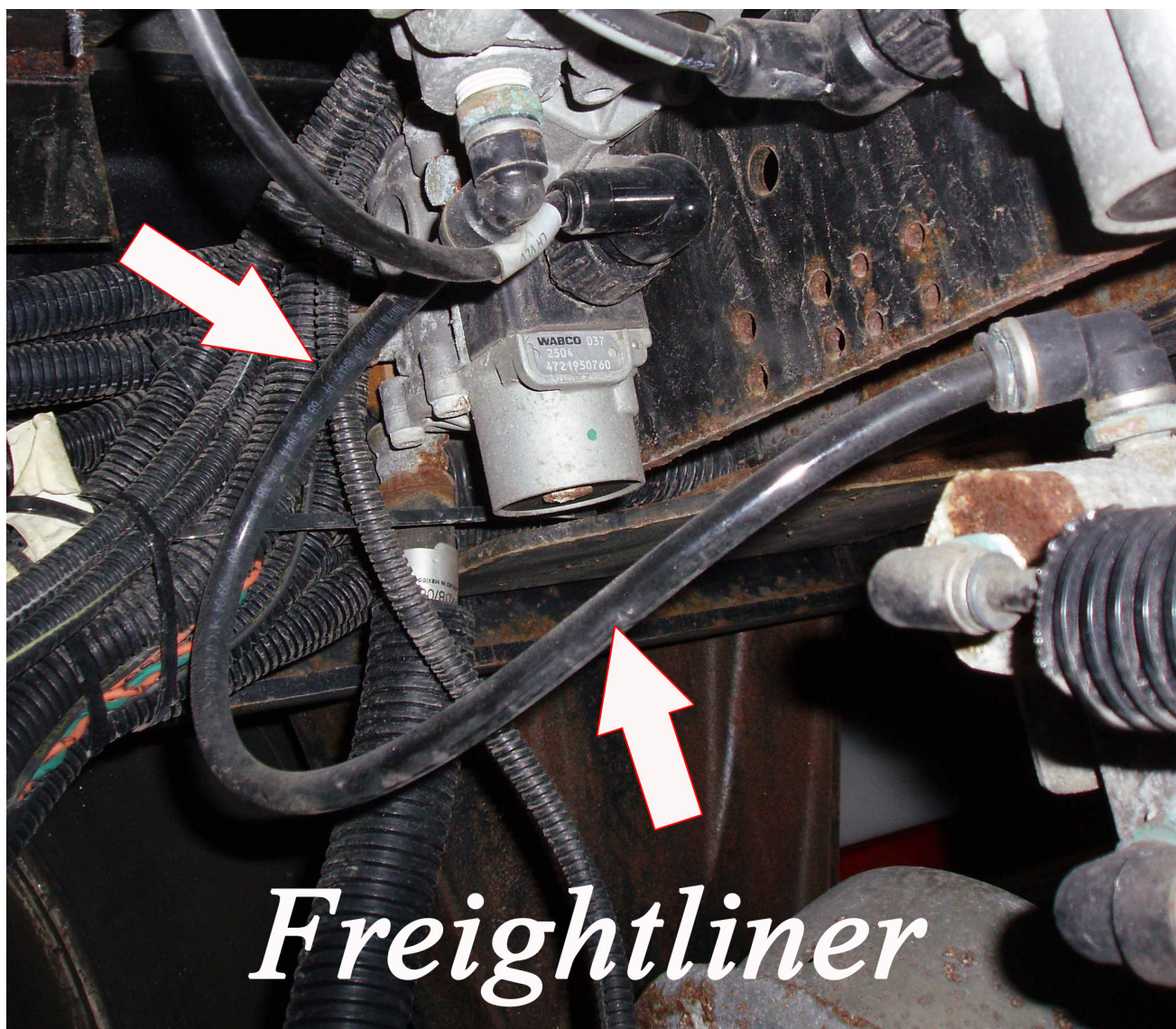
The spring-brake/quick-release valve can be quickly identified by locating the port on the air can labeled "spring" or "emergency" and following the rubber hose up to the valve.



MOST FREIGHTLINERS:

The valve is connected via a 3/8" airline below the service-brake relay valve, simply cut the hose and insert the tee using the provided pushlock fittings. Fig 7.1. Attach the provided 3/8" push lock tee.

Fig 7.1

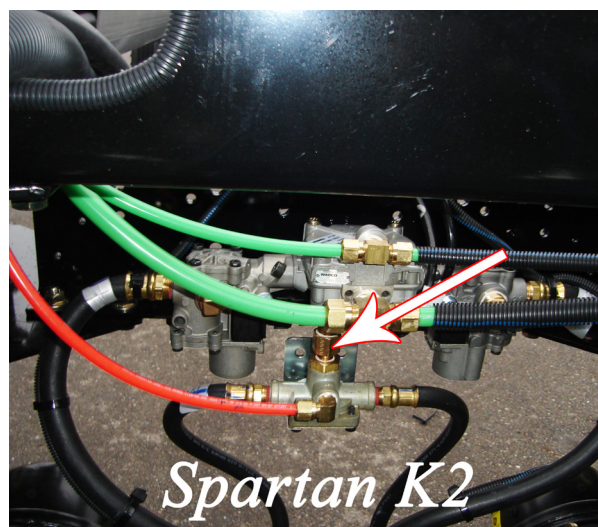


Spartan:

Some Spartans have a similar setup to most Freightliners. Some (such as the K2) thread the valve directly into the bottom of the service relay valve Fig 7.2. In this case, the Spartan recommended procedure is to remove the connection between the relay-valve assembly and the quick-release valve and insert the tee with the 3/8" close nipple between them. To do this, remove the two lines going from the spring-brake valve to the air cans on either side of the drive axle. Caution - It is possible for the quick release valve to un-thread incorrectly resulting in disassembly of the valve. It is safest to use a wrench on the hex nipple to loosen them. The nipple should remain connected to the quick release valve. It is usually necessary to first remove the lines from the air cans when removing the valve, as this will allow it to freely turn. Caution - If you remove both lines from the air can, be sure to replace them correctly. Note: The right and left air-can hose locations are reversed.

Important: We have observed cases where the addition of the tee and nipple as prescribed by the Spartan Recommended Procedure has lowered the quick release valve to the point of impacting the drive-shaft or other drivetrain components. Such impact could cause non-warranted catastrophic failure in the braking system. Be sure there is sufficient clearance after the addition of the tee and nipple. Remember to take into consideration suspension travel over sharp bumps and terrain, and also the air suspension dropping. As a general rule 2.5" or greater is acceptable. If sufficient clearance is not available between the quick-release valve and other chassis components when the air is released from the air bags of the coach, or if you are uncomfortable with the Spartan Recommended Procedure, you must call the Demco Help Line at 800-543-3626 or Spartan Chassis at 517-543-6400.

Fig 7.2



Locate the tag axle relay valve. The Valve is normally directly above the tag axle. Remove the 3/8" NPT pipe plug and thread the provided 3/8" NPT x 1/4" tube push lock fitting in its place Fig. 7.3.

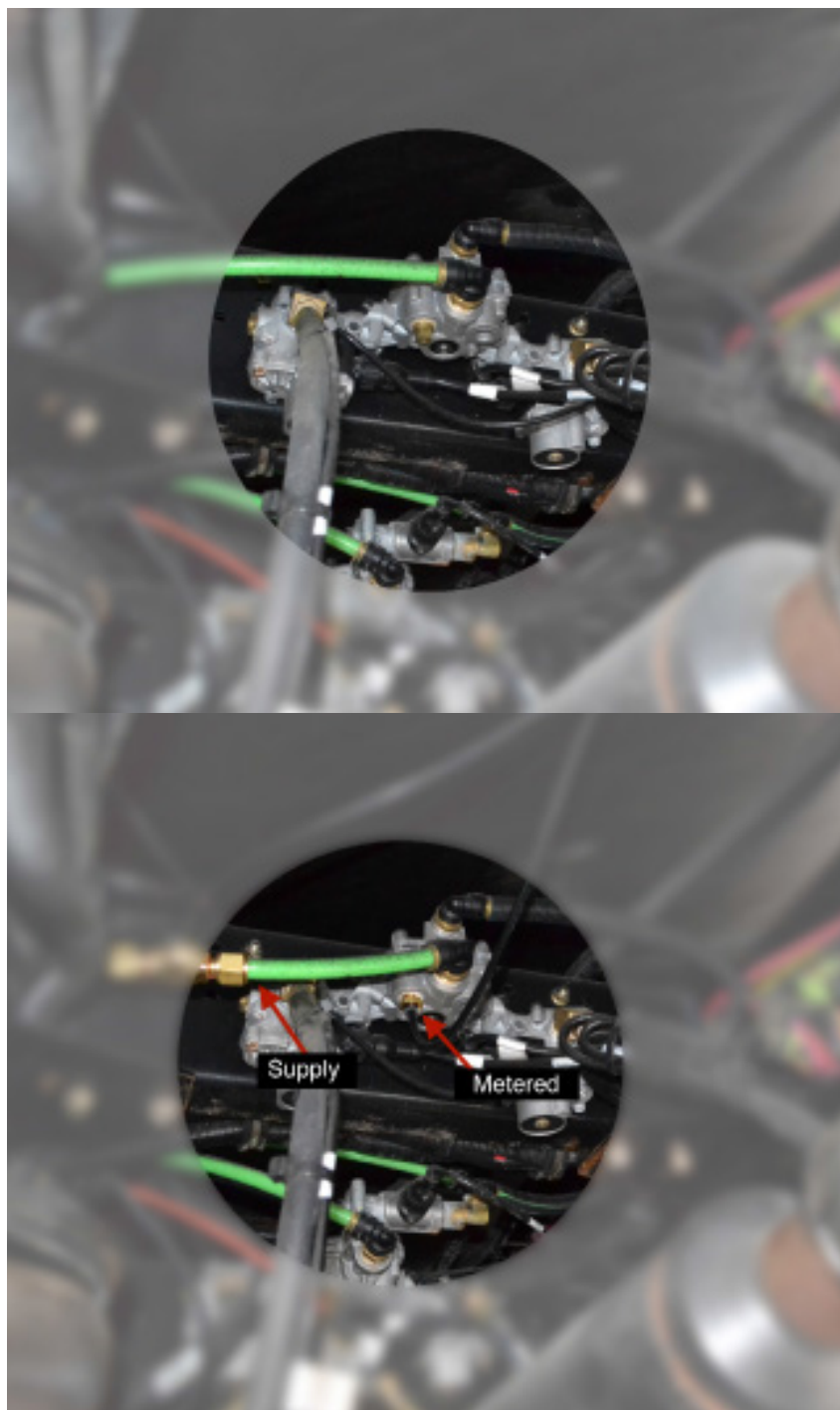


Fig. 7.3

COACH INSTALLATION

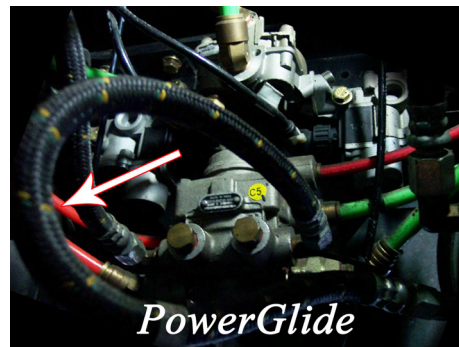
Roadmaster:

Some Roadmasters (especially older models) have a similar configuration to the Freightliners. Most (especially newer models) have the service relay valve (for the supply air connection) in front of the drive axle and the spring brake valve behind the drive axle. In this case the spring brake valve is mounted to the frame cross member. The correct line goes from the top surface of the relay valve directly to the driver's side frame rail. It is a 3/8" line and is normally red in color.

Tiffin:

Starting in 2008 Tiffin Motorhomes began using their own proprietary chassis on many of their coaches. Tiffin coaches incorporate an inversion relay valve rather than a conventional spring brake valve. The ports on the valve are numbered. Either port 41 or 42 will work for the Air Force One system. In this case the port is NOT on the top of the valve. Select the line in either port that is 3/8" so it will work with the provided fittings Fig 8.1. Any further questions may be directed to the Demco Help Line at 800-543-3626, or Brad Warner of Tiffin at 256-356-8661 ext. 2267.

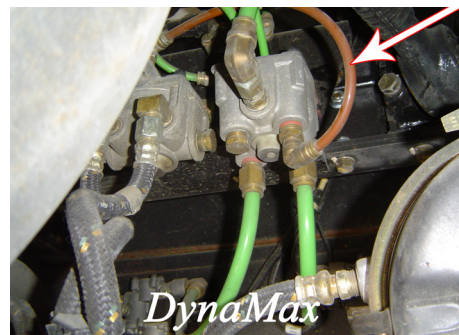
Fig 8.1



DynaMax:

In most cases the DynaMax (Country Coach) chassis has two valves mounted side-by-side. In some cases the service brake relay is on the right (Fig 8.2) and other times it's on the left. In either case the metered line goes from the bottom of the service valve to the top of the spring-brake valve.

Fig 8.2



Others:

Virtually all other chassis will fall into one of the above configurations; however, if there are any questions or concerns contact the Demco Help Line at 800-543-3626.

Step 4: Route the Air Line

1. Straighten out the ¼" DOT air hose behind the coach.
2. Route the air hose to the "Coach Air Tank Assembly" being careful to avoid sharp bends, moving parts, and any heat source. Secure it with ties. NOTE: It is often helpful to follow existing wiring harnesses that are typically on the passenger-side frame rail.

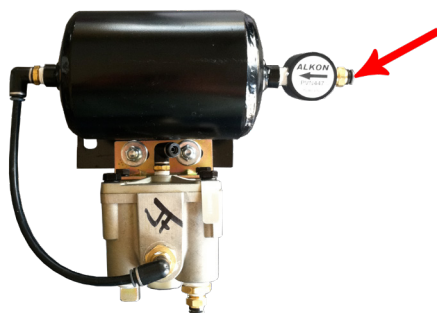
Step 5: Plumbing

When connecting the pushlock connectors, use the following method: **1.** Push the air hose in until there is resistance. **2.** Press firmly to be sure that the air line locks fully into place. These fittings are tight, and the hose will snap into place with two "clicks."

Note: Should you find it necessary to remove an air hose, push the air hose in with one hand, push on the outside ring of the pushlock connector with the other hand, and then pull the air hose out. The ring will release the air hose.

1. Using the provided ¼" DOT air hose, connect the supply air (from Step 2) to the pushlock fitting on the pressure-protection valve on the "Coach Air Connection Assembly" Fig 9.1.

Fig 9.1



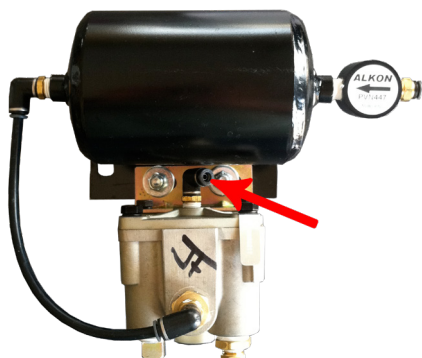
R12 Style



New Style

2. Connect the metered air (from Step 3) to the pushlock connector on the Air Force One relay valve labeled "SER." Fig 9.2.

Fig 9.2

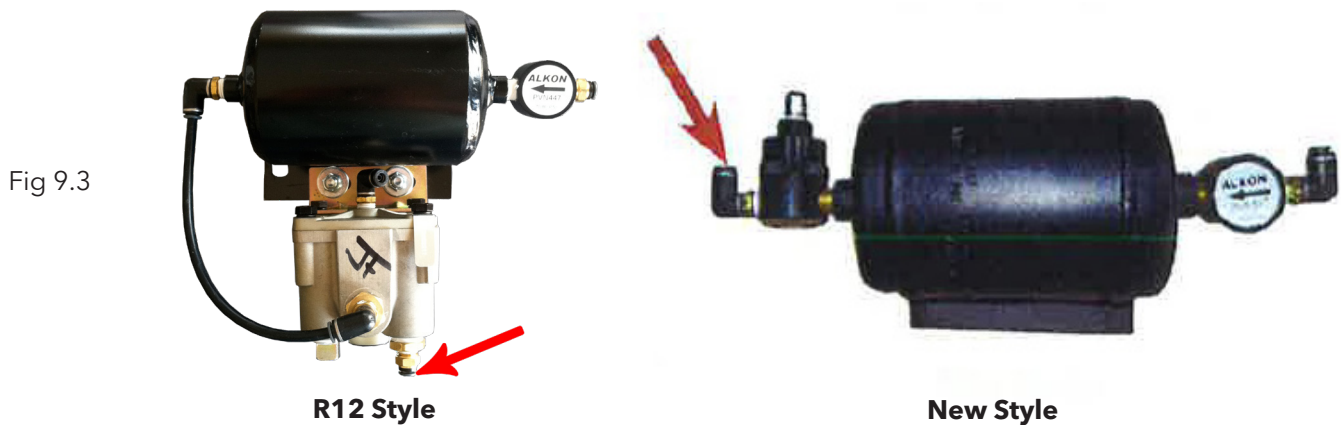


R12 Style



New Style

3. Connect the towed-vehicle air hose (from Step 4) to the pushlock connector on the relay valve labeled "DEL." Fig 9.3



Step 6: Mount the Female "L" Bracket

1. Using the provided hardware, mount the female "L" bracket to the back of the coach as close to the center as possible. Make sure it is not the lowest point so that it is protected from being bottomed-out.



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**Demco warranty policies, operator manuals, and product registration
can be found online:**

www.demco-products.com