Installation Instructions

Revised: 05.05.2017
Model: AF0115

AIR FORCE ONE
SMI Manufacturing, Inc.

SMI

SMI Air Force One

Supplemental Braking System

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 our technicians, certified installers, and individual customers.

Table of Contents

Air Force One Installation

Air Force One Packing List

Inventory of Parts

Towed-Vehicle Installation Kit:







- 1 10’ Length of Brown Wire
- 1 Air Bracket with Male Fitting
- 1 Bundle of Wire Ties
- 1 Breakaway-Switch cable
- **1 <u>L-Bracket Hardware Kit</u>**
  - 2 ¼”-20 Locking Nut
  - 2 ¼”-20 Bolt
  - 2 Flat Washer
- **1 <u>Breakaway Kit</u>**
  - 1 Breakaway Switch With Plug
  - 1 ¼”-20 Locking Nut
  - 1 ¼”-20 Bolt
  - 1 Flat Washer
- **1 <u>Small Parts Kit</u>**
  - 2 Loop Clamps
  - 1 Fuse Holder
  - 1 Barbed Vacuum Tee
  - 2 Check Valve (green/black)
  - 2 Vacuum Hose Adapters
  - 3 Blue Butt Connectors
  - 2 ¼” Ring Terminals
  - 2 Hose Clamps
  - 1 10 Amp Fuse
  - 1 3-Way Crimp Connector
- **1 <u>Hydro-boost Kit</u>**
  - 1 3/8” Barbed Plug
  - 1 Conical Seal
  - 1 Acorn Nut










Actuator Kit:

- 1 Air Force One Actuator
- 1 Floor Anchor
- 1 Self-Drilling Screw
- 1 Reed Switch

Coach Air Connection Assembly

Air Force One Packing List

Inventory of Parts (continued)

Coach Installation Kit:

1	Coach L-Bracket
2	3/8” - 3/8” x 1/4” Tee
2	3/8” - 5/8” x 1/4” Tee
1	3/8” Street Tee
1	3/8” NPT - 1/4” Tube Pushlock Connector
4	3/8” x 16 Flat Washer
2	3/8” x 16 Locknut
2	3/8” x 1 1/2” Bolt
2	1/4” x 20 Bolt
2	1/4” x 20 Locknut
2	1/4” x 1 Flat Washer

Operating Unit

Coiled Air Jumper

Coach Notification Kit:

1	Monitor Light
3	Blue Butt Connectors
1	1/4” Ring Terminal
1	3-Way Crimp Connector
1	Flip-Over T-Tap Connector
1	Male Spade
1	5’ Length of Black Wire
1	5’ Length of Red Wire

40’ Roll of 1/4” DOT Air Line

7’ Length of 3/8” Vacuum Line

Things To Know

Before You Get Started

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 o**perational 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.

Coach Installation

Air Supply & Plumbing

Step 1: Mount the Coach Air Tank Assembly

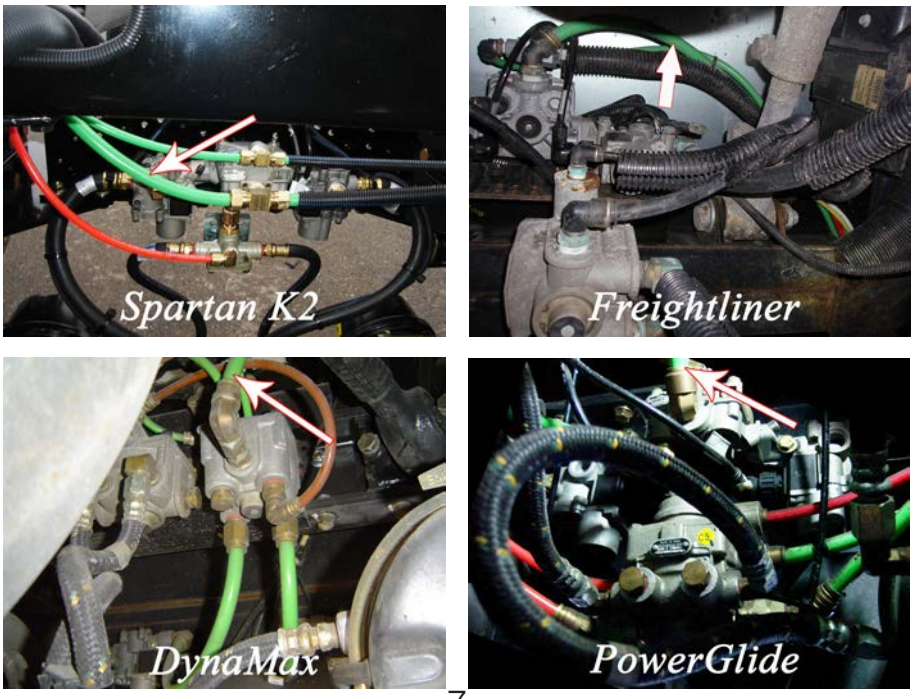
Fig 6.1

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. Note: The diaphragm on the bottom of the relay valve must not face upward.

2. Mount the Coach Air Connection Assembly in this location using the provided hardware or suitable existing hardware. Fig 6.1

Step 2: Supply-Air Connection

Fig 6.2



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. 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

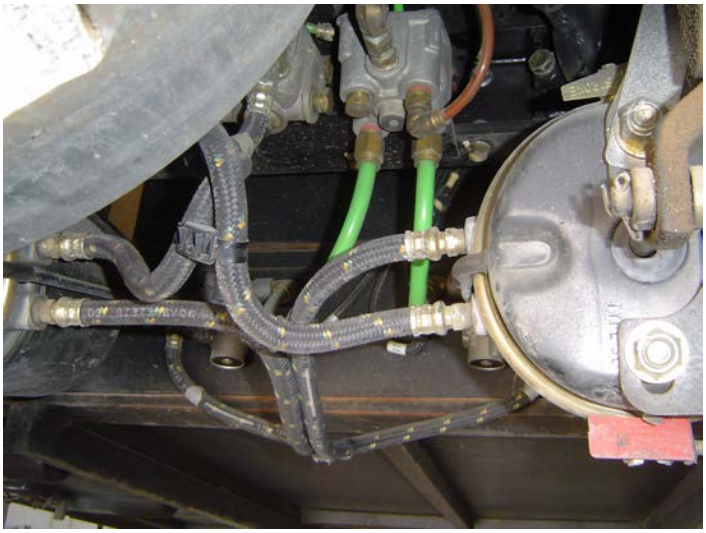
2. Cut this line with an appropriate hose cutter so that the cut is straight and clean. A straight, clean edge is necessary to prevent leaks in the coach's air system. **Remember, you must drain the coach's air tanks before cutting this line.**

3. Attach the provided 3/8" NPT tee with the appropriate connectors. Thread the pushlock connector into the unused port of the 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 SMI assembly).

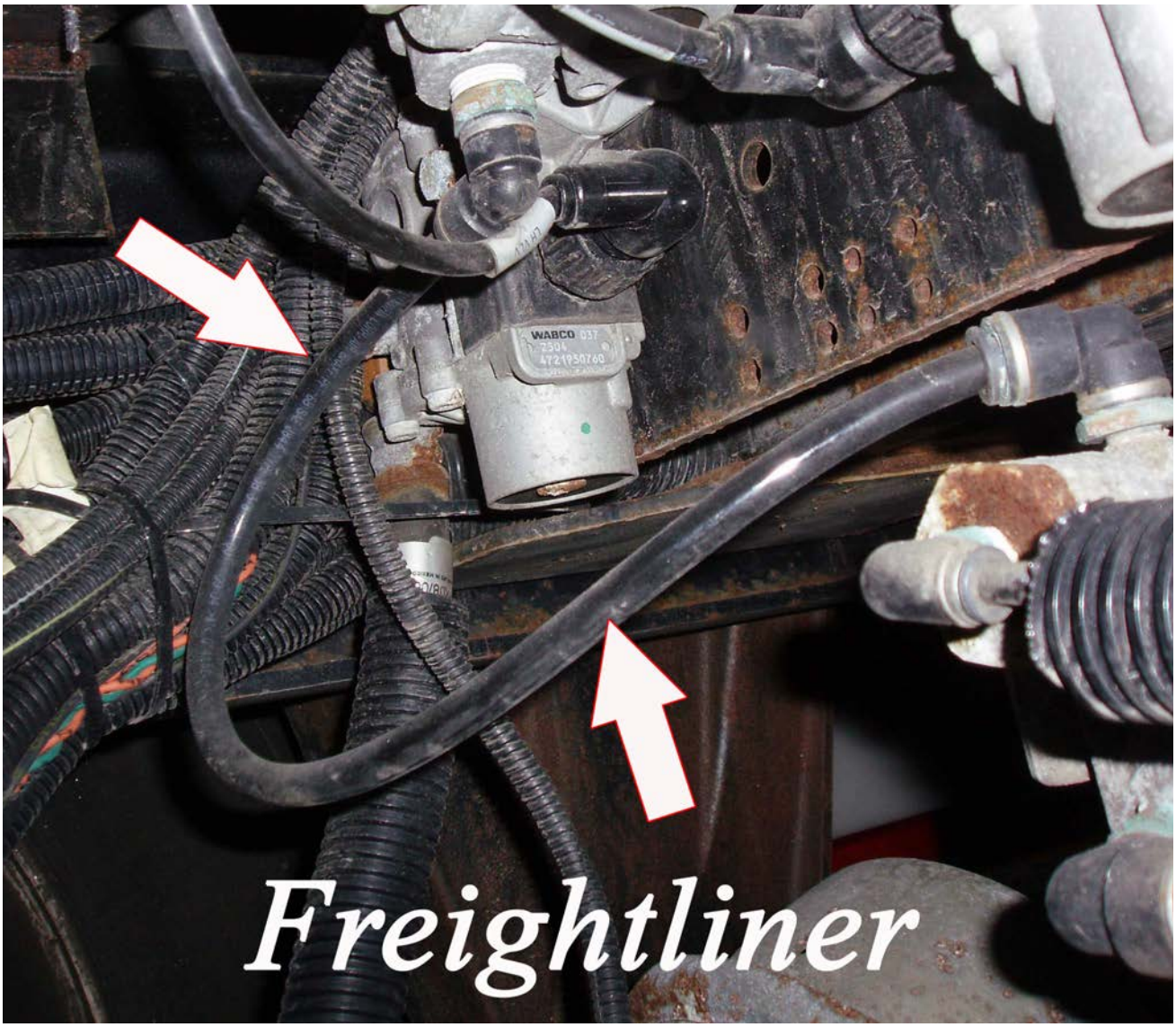
The spring-brake/quick-release valve can be quickly identified by locating the port on the air can labeled "spring" or "emergency" and following the rubber hose up to the valve.



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” NPT tee with the appropriate connectors. Thread the pushlock connector into the unused port of the tee.

Fig 7.1

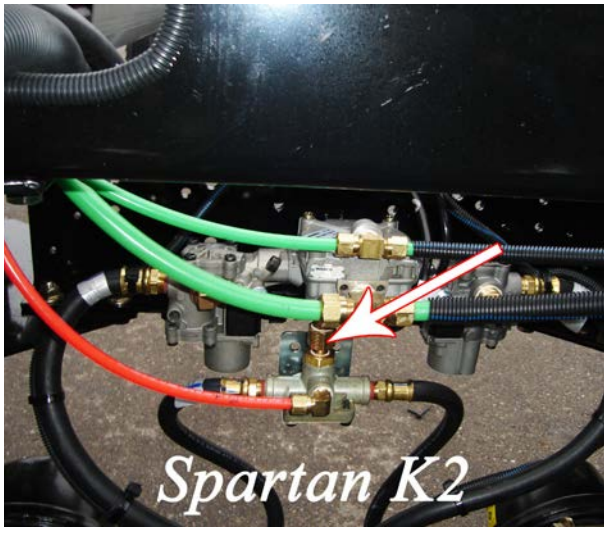


Spartan:

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.

Fig 7.2



Spartan with tag axle:

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.

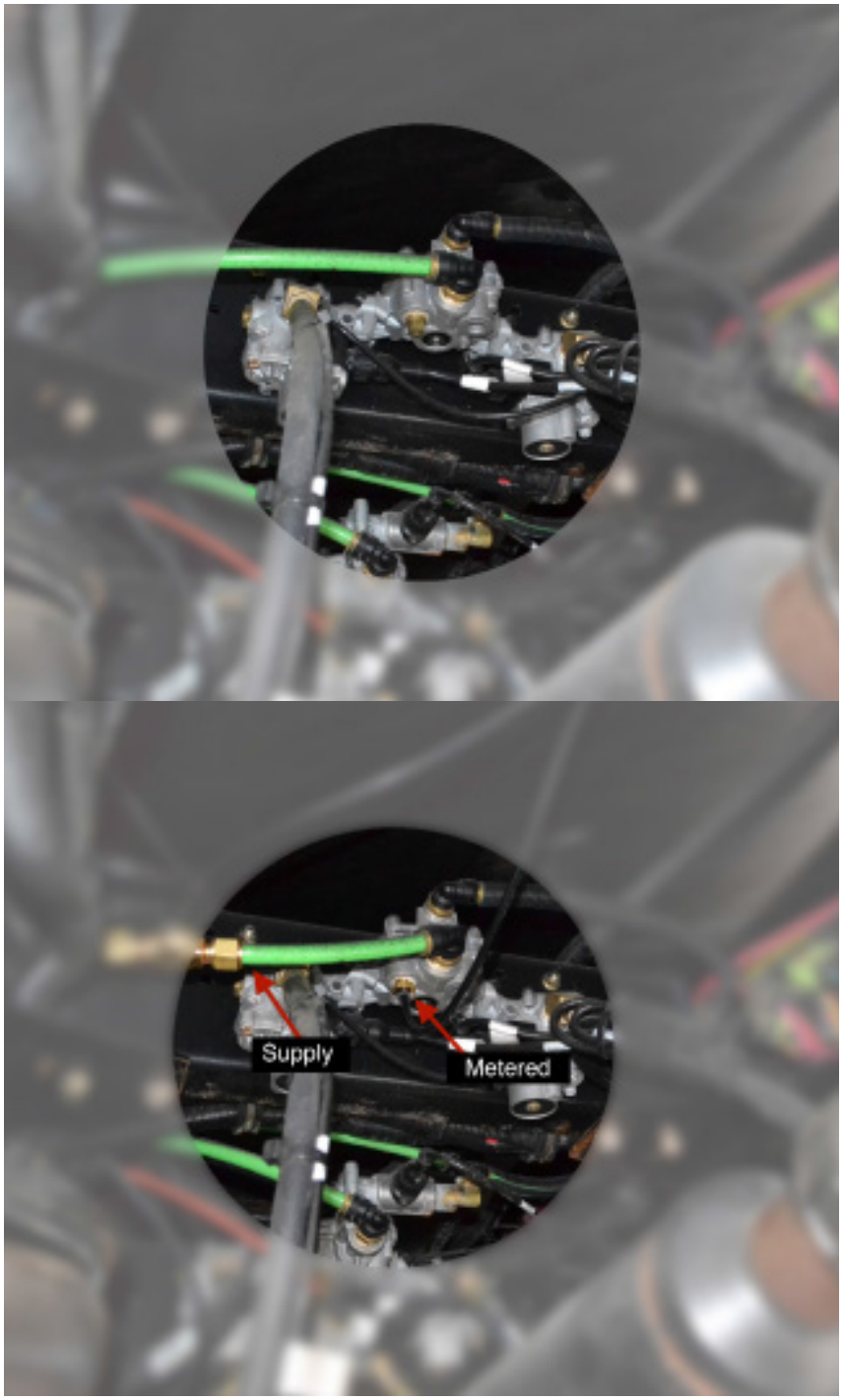


Fig. 7.3

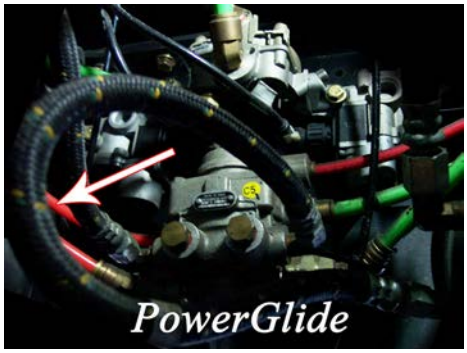
Roadmaster:

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 SMI Help Line at 800-893-3763, 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.

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.

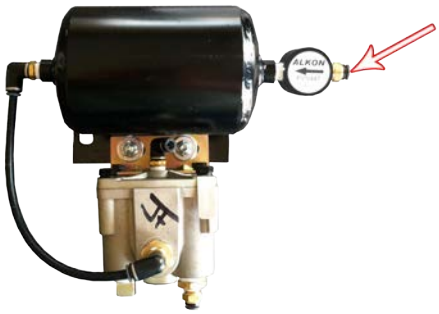
Step 5: Plumbing

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.

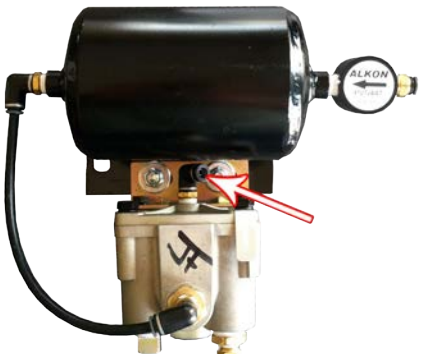
1. Using the provided ¼" DOT air hose, connect the supply air (from Step 2) to the pushlock fitting on the pressure-protection valve on the "Coach Air Connection Assembly" Fig 9.1.

Fig 9.1



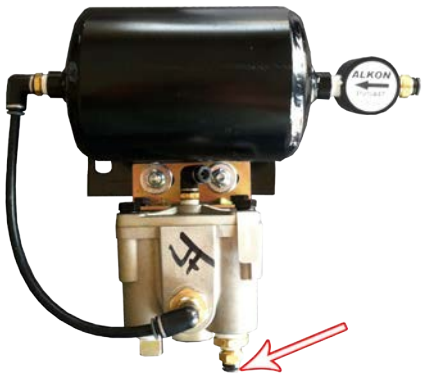
2. Connect the metered air (from Step 3) to the pushlock connector on the Air Force One relay valve labeled "SER." Fig 9.2.

Fig 9.2



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

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.

Towed Vehicle Installation

Mounts & Connections

Step 1: Mount the Operating Unit

1. Select a suitable location for the operating unit in the engine compartment. It must be away from any extreme heat source and the connections must be easily accessible. The unit can often be installed behind the grill provided it doesn't restrict air flow to the radiator. Moisture will not harm the unit, but it should not be in the direct path of rainwater or road spray. Figures 10.1 & 10.2.

2. Secure the box with wire ties through the mounting flanges on the box. Be sure that the weight of the box is supported, and secured tightly in place.

Fig 10.1

Fig 10.2

Step 2: Mount the Male "L" Bracket

1. Using the provided hardware, mount the male "L" bracket to front of the towed vehicle as close to the center as possible. If the coach's "L" bracket was offset, offset the towed's to the same side if possible.

2. Route a length of DOT air hose from the "L" bracket to the operating unit and connect it to the pushlock connector that is labeled "Air In".

Step 3: Mount the Breakaway Switch

1. Mount the breakaway switch to the front of the towed vehicle as close to the center of the towed vehicle as possible using the provided hardware. In many cases it can be mounted to the front fascia in a manner that allows it to turn 90* when not in tow. Figures 10.2 & 10.3

Fig 10.2

Fig 10.3

1. Insert the plug into the switch. This will prevent dirt and water from getting into the switch.

2. Using the provided 3-way crimp-connector, attach the orange/black wire to the fuse holder. The other side of the 3-way crimp connector will be used to power the reed switch in step 7. Attach the other end of the fuse holder to a 12 volt power source in the towed vehicle.

3. The blue wire is attached to one of the black wires from the operating unit.

4. At this time attach the other black wire from the operating unit to a frame ground. ***The breakaway system will not function until the operating unit has been charged with air from the coach.***

Step 4: Go Through the Firewall

Locate the main-wire-harness grommet of the car or another suitable place and route the ¼" air hose into the passenger compartment Fig 11.1. One end of this hose will go to the actuating cylinder, and the other end will go to the connector labeled "output" on the operating unit under the hood.

Fig 11.1

Step 5: Make the Vacuum Connection

First, locate the vacuum line coming from the brake booster and determine its size. Then, select from one of the following options.

Note: This portion of the installation is for vehicles with vacuum-assisted brakes ONLY. If you have hydra-boost brakes or are uncertain of your vehicle's braking configuration, call the SMI Help Line for assistance.

Some newer Ford products incorporate two vacuum lines from the booster and require an addition check valve. Contact the SMI Help Line for details.

SPECIAL CONCERNS

1. There are **TWO** check valves that are going to be installed.
   a. The Engine Check Valve will be installed in the following orientation: Engine, Engine Check Valve [black/green], Tee, Booster. Fig 12.2
   b. The Unit Check Valve will be installed in the following orientation: Operating Unit, Unit Check Valve [black/green], Tee.
2. Exercise care in routing the hose so that no kinks, sharp edges, heat, etc., will effect the operation of the system.
3. Lubricate the check valve and tee with a small drop of dish soap or silicone spray. This will help them slide easily into the vacuum hose.

Fig 12.1

Fig 12.2

11/32 - 3/8 I.D. Hose Size (does not require hose clamps)

1. Locate the towed vehicle's existing vacuum hose and determine where the check valve and the tee will be inserted.
2. Cut the towed's existing vacuum hose where the Engine Check Valve will be inserted and install the check valve. Take care not to cut too close to a bend in the hose that will not allow the check valve to be fully inserted into the hose. (Black end toward the motor).
3. Cut the hose where the tee will be inserted and install the tee. Take care not to cut too close to a bend in the hose that will not allow the tee to be fully inserted into the hose.

4. Slide the provided vacuum hose onto the barbed tee, route the vacuum hose to the operating unit, and slide it over the barbed fitting on the operating unit. (stay away from sharp edges, heat sources, and kinks)
5. Lastly, cut the vacuum line approximately 3 inches from the operating unit and insert the Unit Check Valve in line (Black end toward the operating unit).

HARD PLASTIC VACUUM LINES

1. Cut a two inch length of hose from the provided 3/8” vacuum hose. Slide one end onto the green end of the check valve. Insert the tee into the other end.
2. Cut another two inch length of hose and insert the open end of the tee into it. (The open end of the hose will slip over the smaller hard plastic tubing). Cut another length of hose and insert the open (black end) of the check valve.
3. Cut out a portion of the existing hard plastic tubing and slip the open ends of the hose and hose clamps over the plastic tubing. Make sure the black end of the check valve is toward the motor.
4. Put the enclosed clamps on the hose that the hard plastic tubing is inserted into (do not overtighten).
5. Slide the provided vacuum hose onto the barbed tee, route the vacuum hose to the operating unit, and slide it over the barbed fitting on the operating unit. (stay away from sharp edges, heat sources, and kinks)
6. Lastly, cut the vacuum line approximately 3 inches from the operating unit and insert the Unit Check Valve in line (Black end toward the operating unit).

Fig 13.1

1/2-5/8 I.D. VACUUM LINES

1. Cut a two inch length of hose from the provided 3/8” vacuum hose. Slide one end onto the green end of the check valve. Insert the tee into the other end.
2. Cut another two inch length of hose and insert the open (black) end of the check valve. Slide the hose adaptor into the other end.
3. Cut another two inch length of hose and insert the open end of the tee into it. Slide the other hose adaptor into the other end.
4. Cut out a portion of the existing larger vacuum hose out and slip adaptors and hose clamps into the open ends of the hose. Make sure the black end of the check valve is toward the motor.
5. Slide the provided vacuum hose onto the barbed tee, route the vacuum hose to the operating unit, and slide it over the barbed fitting on the operating unit. (stay away from sharp edges, heat sources, and kinks)
6. Lastly, cut the vacuum line approximately 3 inches from the operating unit and insert the Unit Check Valve in line (Black end toward the operating unit).

Fig 13.2

No Vacuum Booster On Towed-Vehicle

Non-Vacuum Brakes (Hydro-boost)

Locate the Hydro-boost Kit in the Installation Kit.
Insert the cone shaped seal into the Venturi exhaust port and tighten the acorn nut.
Fig. 13.3

Fig. 13.3

Cut a two inch length from the provided vacuum hose. Insert the plug in one end and slide the other end over the vacuum port of the Air Force One Unit.
Fig. 13.4

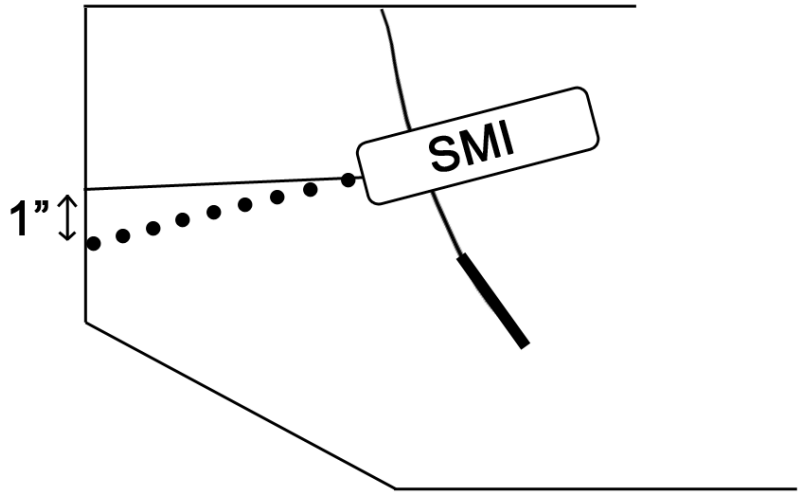
Fig. 13.4

Step 6: Mount the Cylinder

Special attention must be given to vehicles with adjustable pedals. Check for proper clearance in all positions. When adjusting the cable, be sure that the pedals are positioned closest to the driver's seat. This will allow normal operation of the adjustable pedals. Be sure to return the pedals closest to the driver's seat when preparing to tow, or the braking system will not function properly. As an option, the pedals may be moved to the desired position and disabled. **Do not depend on the fact that "no one moves them."**

1. Find a location on the brake arm that will position the cylinder as low as possible but as high as necessary not to interfere with normal driving. The higher the cylinder is mounted, the less effective it is. Note: Some vehicles are equipped with a "hush panel" under the dash which may need to be removed or modified. The cylinder should be about 1-2" above the driver's foot location while operating the vehicle. Remember, during normal operation the brake pedal is depressed with the ball of the foot.
2. Position the actuator. Place the actuator on the brake arm, slide the backplate over the bolts, and position the actuator so that the brake arm is in the middle of the bracket. Loosely thread the nuts on the bolts. The actuator should be mounted so that when the brake pedal is depressed about two inches the actuator is perpendicular to the firewall. This equates to about 1 inch above straight in line (See Fig 14.1). Now tighten the nuts finger tight to temporarily hold the actuator in place. Note: Be sure to cut away any sound deadening material before attempting to mount the clamp.

Fig 14.1



3. Mark the anchor location on the firewall. Thread the cable through the anchor and position the anchor on the firewall so that the cable has a direct line to the actuator throughout the swing of the brake arm. Once the location is determined go ahead and remove the slack in the cable leaving about 1/4” - 1/2” of slack. Hold the cable in place, thread the cable around and through the anchor causing it to be “double looped” (Fig 14.2), and tighten the set screw to **15 inch-pounds**. (About 1 full turn after contact). The amount of slack has no effect on the amount of pressure or proportionality of the systems. It only reduces the available stroke of the actuator. Excessive slack will result in premature wear of the actuator cable. Important: The set screw has teeth designed to grip the cable preventing slippage. Depending on the wrench used it is possible to over-tighten and damage or even sever the cable. Bear in mind that with a 5” wrench only 3 lbs of force is required, with a 7.5” wrench only 2 lbs., etc.

Fig 14.2

4. Using the provided self-drilling screw mount the anchor to the firewall. Visually verify from the engine side of the firewall that the proposed location is acceptable for the self-drilling screw. Often, a small pilot hole can be helpful in verifying the location. Mount the clamp. If the firewall is found to be too thin to properly secure the anchor, a nut and bolt may be needed to firmly secure the anchor.

5. Secure the Actuator. Verify that there is still only 1/4” - 1/2” of slack in the cable. It may be necessary to move the actuator forward or backward if the amount of slack changed during fitment. Tighten the bolts in a cross pattern until the backplate begins to bend around the brake arm. This will “lock”the nuts and keep them from loosening Figures 14.3 & 14.4 & 14.5 on the following page.

6. Route a length of 1/4” DOT air line from the cylinder to the Air Force One Unit and connect it to the pushlock connector labeled “Air Out”.

Fig 14.3

Fig 14.4

Fig 14.5

**Cable breakage can only occur if there is an improper angle or if the cable is overtightened in the anchor. Review this step carefully after the cylinder is mounted to ensure proper installation. The actuator cable is a stranded steel aviation cable with a tensile strength of 460lbs. The actuator is mechanically unable to break the cable by force.*

Step 7: Install the Monitor Light

Note: The reed switch attached to the actuator will power the LED. The brake switch will no longer be providing the signal for the monitor Light.

Note: Exercise caution when installing the reed switch. If the reed switch arcs to ground, it will either no longer work or cause the LED to stay illuminated at all times.

The following instructions are written with a labor-saving installation method of the monitor light. At the customer's preference the provided monitor light or any other 12v light may be installed on the dash of the coach. A wireless radio set is also available (PN 99945). Contact the SMI Help Line for specifics if needed.

** All parts needed for this step are located in the "Coach Notification Bag"*

1. Decide on a location for the LED Strip. The provided LED strip is extremely bright and can be placed in any location on the towed vehicle that is viewable in the rear camera of the coach. Many have found that the back side of the rear view mirror provides a good backdrop for the LED and is easily viewable in the coach's rear camera. The following steps are written with this in mind.
2. Using the provided double sided tape, attach the LED to the rear view mirror of the towed vehicle.
   Note: During tow it may be helpful to angle the rear view mirror toward the rear camera of the coach.
3. Conceal the wire by routing it along the top of the windshield and down the side of the A-pillar on the driver's side of the towed vehicle. The A-pillar can be removed if needed, but exercise caution as some models have side curtain air bags. Most A-pillar covers are secured with 1-2 screws (in the handle area) and hidden pop connectors. Remove the screws and gently pull the cover away from the pillar.
   Note: It may be necessary to extend the wires of the LED.

4. Attach the red wire of the LED to the black wire of the reed switch located on the actuator.
5. Using the provided 3-Way Crimp Connector, attach the black wire of the LED and the blue wire of the reed switch to a suitable frame ground.
   Note: If there is not a suitable ground easily accessible under the dash, the ground wires can be routed through the firewall with the airline and the reed switch's brown wire in Step 4 of this Installation Manual
6. Route the brown wire from the Reed Switch through the firewall and connect it to the 3-way crimp connector as stated in Step 3.

Step 8: Verify Cylinder Switch Position

The switch on the actuator is a Reed Switch. It detects the presence of a magnet on the inner part of the actuator. When the magnet is near the switch the light is off. When the magnet moves away (i.e. activation) the light turns on.

Note: The switch must be connected to power and ground prior to checking the position. The switch is preset from the factory so in most cases adjustment is not necessary.

1. Press the brake pedal to create slack in the cable.
2. With the other hand pull the outer part of the actuator back (this will pull slack from the cable.)
3. Watch the switch to see when the integrated LED illuminates. It should illuminate at 0.010" of travel or just under an 1/8".
4. To make the LED come on sooner, slide the switch and bracket back toward the airline. To make the LED come on later, slide the switch and bracket away from the airline.

Testing The Installation

Air Force One Installation

1. Connect the air hose between the car. Start the coach and allow the air to build completely. It will take longer than usual, as the tanks are completely empty.

2. Apply the coach brake about ¼ of the way down. Have an assistant verify the brakes are being applied in the towed vehicle, and verify the notification light is on and visible from the backup camera in the coach. If not, and the brakes are applied in the towed vehicle, verify the notification light connections.

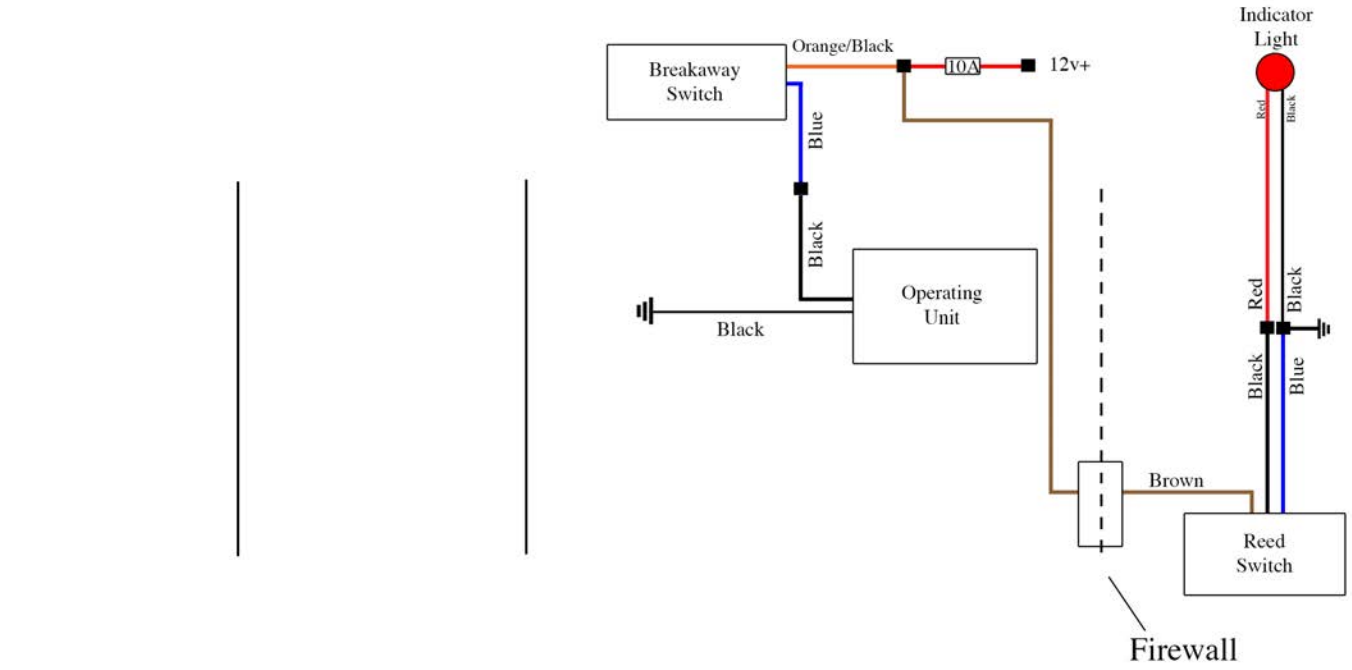
3. Apply increasingly more pressure to about ½ of the way down. Verify that the brakes are applied in the towed vehicle by an increasing amount.

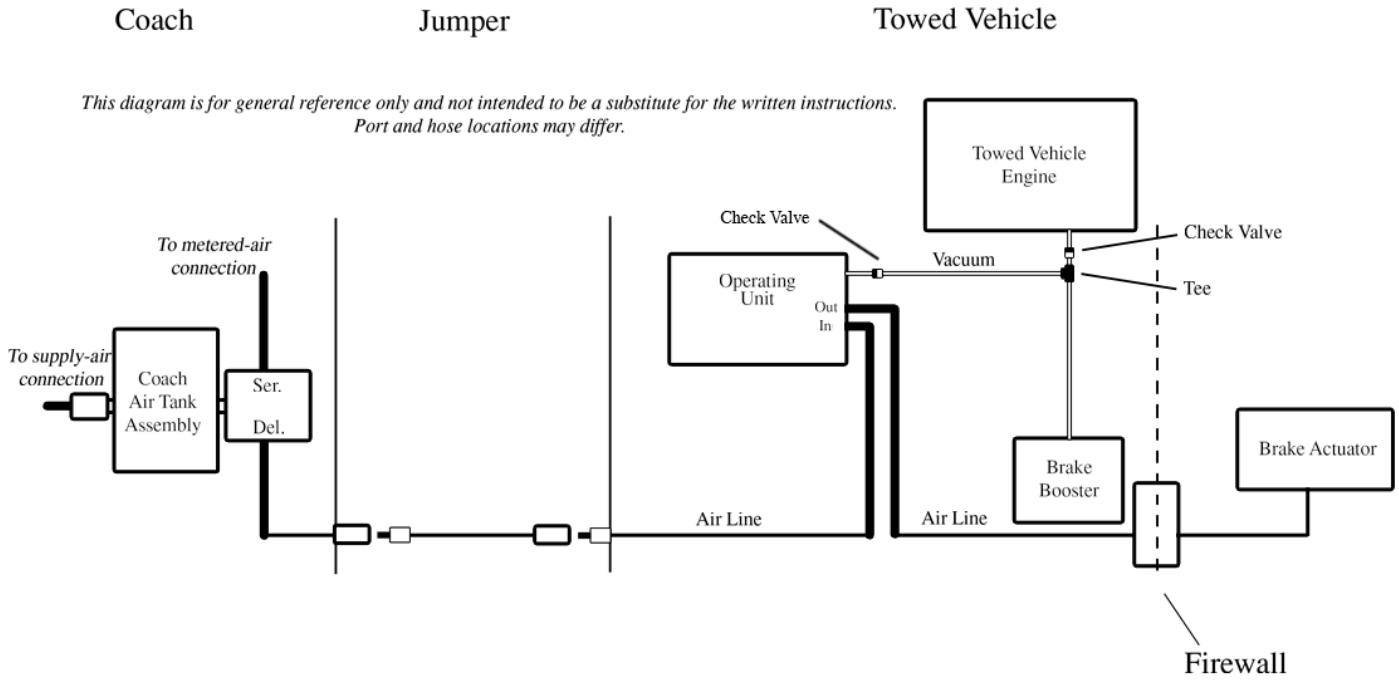
4. While in a safe location, release the parking brake without depressing the service brake. Verify the towed brake is not active. If it is, the Coach Air Connection Assembly is incorrectly configured.

5. The application of the brake in the above steps has now charged the breakaway tank. Pull the breakaway pin and verify that the brakes are applied in the towed vehicle.

Operation

The SMI Air Force One requires no adjustments or maintenance. Under all circumstances and in all towed vehicles it will always mirror the brake pedal of the coach. When preparing to tow, connect the Air Force One jumper, breakaway cable, and the notification light. Start the coach and allow it to air-up completely. After the coach's tanks are at full pressure, depress the Coach's brake pedal completely and hold it for at least three seconds. This will do two things: allow you to verify that the unit is connected properly and fully charge the breakaway-reserve tank. This completes the setup and pretest of the Air Force One system.


Coach
Jumper
Towed Vehicle
Indicator Light
Orange/Black
Breakaway Switch
10A
12v+
Blue
Black
Operating Unit
Black
Red
Black
Black
Blue
Brown
Reed Switch
Firewall


Coach
Jumper
Towed Vehicle
This diagram is for general reference only and not intended to be a substitute for the written instructions.
Port and hose locations may differ.
Towed Vehicle Engine
Check Valve
Check Valve
Vacuum
Tee
To metered-air connection
To supply-air connection
Coach Air Tank Assembly
Ser.
Del.
Operating Unit
Out
In
Brake Booster
Brake Actuator
Air Line
Air Line
Firewall

Warranty Information

Refund Policy

SMI has a 30 day return policy on the original date of purchase. Items must have an SMI invoice with corresponding part number to be eligible for refund and are subject to the return authorization policy. All returns are subject to a variable restocking fee not to exceed 20% (not including missing components).

Limited Five (5) Year Warranty

We are confident that our product will preform well and therefore warrant the original purchaser, that the new product will be free from mechanical and electrical defects in material and workmanship during the warranty period. The Warranty period begins on the original purchase date. The warranty is for current production models and the original purchaser only. SMI does not warrant any part of the installation nor failure related to improper installation.

The Warranty Period

1st Year
If, during the first 12 months of the warranty period, your SMI product should be found defective, SMI will repair or replace the product at its discretion. SMI will refund to the original purchaser freight charges incurred in returning the product to the factory during this portion of the warranty period. (This does not include repackaging charges incurred to a third party) All warranty shipping & freight charges are for normal delivery, expedited freight charges are not included. SMI may choose, at its sole discretion, to allow usage of other new parts for the purpose of warranty repair. Such approval requires prior authorization and is subject to the return authorization policy.

Labor pertaining to warranty repair will be covered with prior approval from SMI and is subject to the return authorization policy. Warranty performed prior to approval will be reviewed and assessed by SMI on a case by case basis.

2nd - 3rd Year
If, during the 2nd through the 3rd year of the warranty period, the SMI product should be found defective, SMI will, upon receipt of post prepaid product, repair or replace the product at its discretion. The SMI product will be returned via standard delivery free of charge.

Outside labor pertaining to warranty repair is not covered.

Warranty Information Cont.

4th - 5th Year Extended Warranty

In order to receive 4th and 5th years of warranty, the SMI product must be registered within 30 days of purchase. Consideration for special cases may be addressed on a case-by-case basis at SMI's discretion. If, during the 4th and 5th years of the warranty period, the SMI product should be found defective, SMI will, upon receipt of post prepaid product, repair or replace the product at its discretion. SMI reserves the right to charge for labor on required repairs of the SMI product depending on condition of the product received. Customer will be responsible for return shipping during this portion of the warranty period.

Outside labor pertaining to warranty repair is not covered.

What is Not Covered

Our warranty for your product will not cover damage resulting from set-up for towing, installation, neglect or misuse, use contrary to operating instructions, charges associated with removal/replacement of components, distortion and/or damage caused by weather or heat, or disassembly, repair, or alteration by any person other than an authorized service center. Any implied warranty of merchantability or fitness for a particular purpose of your product is limited to the duration of this written warranty. We shall not be liable for any incidental or consequential damages for breach of any express or implied warranty.

Your State Laws

Some states do not allow limitation on how long an implied warranty lasts or the exclusion or limitations of incidental or consequential damages, so the above may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

AFO Installation Video Transcript

We have a 2016 Jeep Grand Cherokee. We're going to be installing the Air Force One system on this vehicle. The Air Force One system includes the Air Force One operating unit, the towed vehicle installation kits, coach notification kit, the coiled air jumper, coach air connection assembly, coach installation kit, the actuator kit, seven foot length of vacuum hose, 40-foot roll of quarter-inch DOT airline, installation instructions and the warranty information. Before installing the system read over the packing stuff to familiarize yourself with all the parts.

We'll start by finding a good location for the Air Force One operating unit. We'll need to keep the operating it away from any significant heat sources such as exhaust manifold on our 2016 jeep grand cherokee we have plenty of room right on top of the fuse box we're going to hear the unit into place with some velcro. Next piece of hardware we'll mount the air actuator. The actuator secures over the brake arm just over the brake pedal and secures to the firewall with an anchor. We'll start by setting the actuator up against the brake arm above the pedal and checking where the anchor will be installed on the firewall. Finding a straight line shot or an angle that's going to work and the cable still be able to pull straight before drilling through the firewall be sure to check the backside of the firewall to make sure there's not any instructions or anything that you'll hit. Setting the cable tension is very important; you will want to first set the cable tension at the anchor then you can fine-tune the setting by moving the actuator front-to-back for tightening it down on the brake arm. Once everything's tightened up we're going to move the brake pedal through its range of motion and make sure that the cylinder moves freely along the actuator.

The Air Force One system including LED indicator that notifies when the brakes are activated. Connecting the factory wire to the extended wire in the kit is a good idea to go ahead and reinforce that connection with some electrical tape. We'll mount this in a location that is visible on the coaches backup camera. This LED indicator can also be located on the coach dash by running a wire the length of the motorhome. On this jeep grand cherokee we'll locate the LED on the rearview mirror; we'll route the wire across the top of the headliner and down the A-pillar. We will connect the black wire from the LED indicator to the blue wire on the reed switch we will connect the red wire from the LED indicator to the black wire on the reed switch and also run up another wire off this connection to a frame ground. We'll extend the brown wire from the reed switch and route it through the firewall with the airline. If you cannot find a factory grommet with enough space, you may need to drill an additional hole through the firewall. Be sure to seal any new holes with silicone.

Now that we're through the firewall we'll go ahead and route the airline to the operating unit and the brown wire to our battery connection. Locate the brake booster so we can find the vacuum line running between the booster and the engine. Route the three-eighths inch vacuum line from the operating unit over to the vacuum line on the break booster using the tee and supplied fittings. Follow the instructions and orientate to clear or green side of the check valve towards the tee and the black side of the check valve towards the engine. Install the second check valve with the black side facing the operating unit and the clear green side facing the tee. When the base plate was installed we went ahead and installed the breakaway switch and the airline connection we routed our airline and breakaway wires behind the bumper up towards operating unit. There are two black wires coming from the air force one operating unit. One of these wires will connect to the blue wire from the breakaway switch and the other will run to a frame ground. The orange with black stripe wire from the breakaway switch will connect to one side of the three-way crimp terminal. The brown wire that we ran through the firewall from the reed switch which will connect to the one side of the threeway crimp terminal and the fuse holder will connect to the other side of the threeway crimp terminal. The other end of the fuse holder will connect to a battery connection which we found in the fuse box. The procedure for properly setting the reed switch is outlined in the instruction manual.

With the towed vehicle side of the air force one installed we'll move on to the coach installation. We'll start by locating the supply connection and a metered airline connection. The valve assemblies will be looking for are right in front of the rear axle. Once the appropriate airlines are located go ahead and make your connection with the supplied fittings, if the tanks have not been drained the supply line will be pressurized. With the tee connections in place we'll go ahead and find a good location for the co-chair assembly. Assembly can be installed in virtually any location under the coach, just be sure to keep it as close to the airline connections as possible. Also make sure that it is not mounted next to any excessive heat source. Last piece of hardware to mount is the coach L bracket. Mount this on the rear bumper area with all the hardware mounted, we'll go ahead and route the quarter inch DOT airline and connect everything together. The line from the L bracket goes to the delivery port on the coach assembly. The line for the metered connection goes to the elbow between the tank in the relay valve. Supply air connection goes to the pressure detection valve on the end of the tank. To test system for leaks, start by running coach they are supplied the backup will use a spray bottle with a mixture of soap and water. Hook the towed vehicle up the RV and apply the brakes and already the brakes in the tow vehicle should be applied proportionately. Using the supplied LED indicator should see the LED light up on the rear camera the motorhome. If using the wireless coach link, you should be able to see the brakes applied indicator light up on the receiver. The receiver is equipped with a buzzer that will activate after seven seconds of continuous breaking. This buzzer can be toggled on. Depress the brake pedal on the motor on three to four times to fully test the system and then double check to make sure that the cable tension is still proper.