

Installation Manual

PACBRAKE®

www.pacbrake.com 800.663.0096



HP10231 & HP10256

HP10231 PREMIUM SIMULTANEOUS AIR SPRING
ACTIVATION KIT WITH A DIGITAL GAUGE

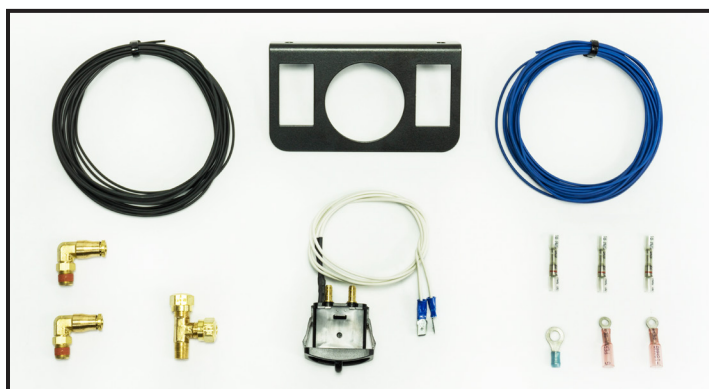
HP10256 PREMIUM INDEPENDENT AIR SPRING
ACTIVATION KIT WITH A DIGITAL GAUGE



FIGURE A: • HP10231 SIMULTANEOUS ACTIVATION KIT CONTENTS
• HP10256 INDEPENDENT ACTIVATION KIT CONTENTS (+ SEE FIGURE B)



FIGURE B: • HP10256 INDEPENDENT ACTIVATION ADDITIONAL KIT CONTENTS



If a HP10231 kit is purchased, ensure that it contains all the items shown in Figure A.

If a HP10256 kit is purchased, ensure that it contains all the items shown in Figure A and Figure B. The HP10256 kit will not contain the single paddle switch gauge bracket that is shown in Figure A.

Some of the items provided in these kits may not be used in all installations.

NOTE: This kit contains “push to connect” airline fittings. They require the end of the airline inserted into the fitting to be round and cut clean/square to ensure the internal seal will not leak. The airline must only be cut with a sharp razor knife or sharp hose cutter. Using scissors or wire cutters will distort the end of the nylon tube causing the connection to leak air past the internal o-ring seal.

Thank you and congratulations on the purchase of a Pacbrake air spring activation kit. This kit was designed to add in-cab adjustment of air springs to the vehicle. This kit contains the items necessary to inflate or deflate both air springs. Air spring kit sold separately.

NOTE: This kit is not recommended for vehicles carrying slide in campers or other loads which the load is above the cab. Air spring inflation kits that simultaneously fill both air springs through one supply / discharge line do not prevent air transfer from one air spring to the other when cornering. If this is a concern to the customer, contact Pacbrake Customer Service @ 800.663.0096 for an independent air spring inflation kit.

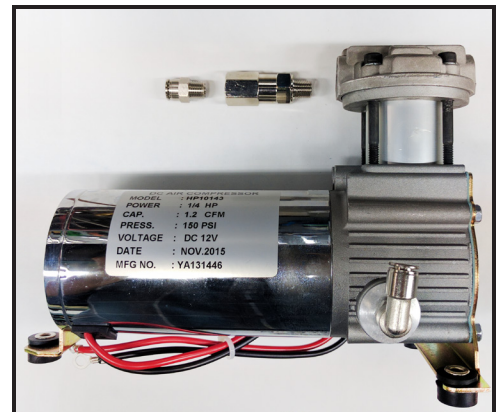
1 ASSEMBLY PREPARATION

- Install the air spring assemblies (if not previously installed). Follow the instructions provided within the air spring kit – with the exception of airline routing.

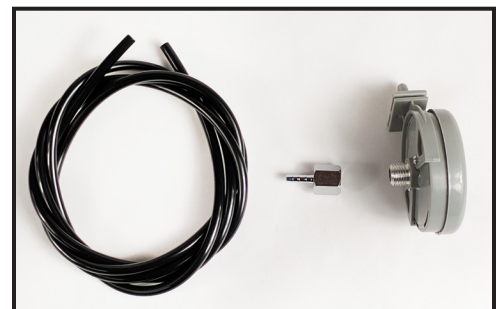
2 COMPRESSOR MOUNTING

NOTE: Thread sealant or teflon tape must be applied to all the fitting threads installed throughout the installation to prevent air leaks.

- Install the check valve into the compressor head as shown in figure 2A.
- If a **simultaneous** air spring activation kit is being installed, install the straight tube fitting into the check valve as shown in figure 2A.
- If an **independent** air spring activation kit is being installed, install the brass tee fitting into the check valve.
- The compressor makes an audible pumping noise when activated. Consider this when choosing a mounting location. The location should be in a clean, dry area to maintain a long compressor life.
- Using the compressor as a template, mark and drill three $\frac{13}{64}$ " diameter holes. Secure the compressor to the desired location using three #10 socket head cap screws, three nuts and six flat washers provided in the kit.
- Install the air filter by inserting one end of the $\frac{1}{4}$ " black nylon hose into the elbow fitting on the inlet of the compressor.
- Insert a barbed tube to the NPT fitting into the other end of the hose and screw the it into the air filter
- Secure the air filter in a dry location, away from heat sources and any debris. To maximize air filter life and prevent blockages, ensure that the air filter inlet slots are not facing upwards.



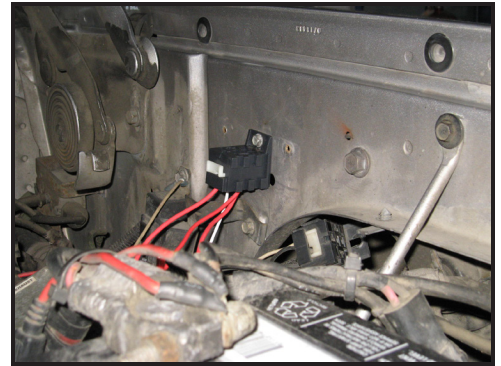
2A



2B

3 MOUNT THE RELAY RECEPTACLE

- Provided in the kit is a pre-wired relay receptacle. Locate it and find a convenient location to mount the relay receptacle close to the positive battery terminal.
- Use the provided self-tapping screw to secure the relay receptacle to the chosen location. See figure 3A.
- Install the relay into the relay receptacle.



3A

4 WIRING THE RELAY, COMPRESSOR & PADDLE SWITCH

- Refer to the wiring and plumbing diagrams on pages 10-11 for the following instructions.
- Provided in the harness are two red 14 gauge wires connected to the relay receptacle. Locate one of the wires, route it to the positive terminal of the battery and cut it to length.
- Use the supplied blue heat shrinkable butt connector to connect the large 30 Amp fuse holder to the end of the red wire. Heat the connector to create a sealed connection. Insert a 30 Amp fuse into the fuse holder.
- Connect the other end of the fused link to the positive terminal of the battery with a yellow ring terminal.
- Locate the other red 14 gauge wire and route it to the compressor. Cut it to length and use a blue heat shrinkable butt connector to attach it to the red compressor wire. Heat the connector to create a sealed connection.
- Locate the black wire of the compressor and use a yellow ring terminal to connect it to a good chassis ground or the negative terminal of the battery.
- Use the supplied convoluted loom to cover the exposed wires.
- Locate the 18 gauge red with white stripe wire of the relay harness. Route it into the cab through the firewall boot.
- Use a red heat shrinkable butt connector to attach the end of the red with white stripe wire to the 5 Amp fuse holder. Heat the connector to create a sealed connection.
- Insert a 5 Amp fuse into the fuse holder.
- Attach a red spade terminal to the other end of the fuse holder.
- Use either the blue (16-14 AWG) or red (22-18 AWG) T-tap connector to tap into a 12 VDC ignition power source.
- Connect the red spade terminal on the end of the fuse holder to the T-tap.

NOTE: Test the ignition power source with a voltmeter prior to attaching the T-tap. Some ignition circuits are less than 12 VDC which may not be enough to activate the relay coil.

NOTE: This wire can be connected through an ON/OFF switch to override the compressor activation and operate the compressor independent of the ignition switch. (Optional, switch not provided in the kit. Available separately)

- Insert the paddle switch(es) into the supplied bracket.
- Locate the white wire on the relay harness and route it into the cab through the firewall boot.
- Use a red heat shrinkable butt connector to connect the white wire on the relay to one of the white wires from each of the paddle switches. Heat the connector to create a sealed connection.
- Crimp a white wire from each paddle switch and a black wire from the digital air gauge to a blue ring terminal. Connect the ring terminal to a good chassis ground or the negative terminal of the battery.

NOTE: The negative terminal of the battery is the preferred location for the ground.

5 ASSEMBLE & MOUNT THE MANIFOLD

CAUTION: The manifold utilizes NPT fittings. Finger tighten the fittings and turn an extra 1.5-3.0 turns to tighten the fittings. Never back off an installed NPT fitting as it will corrupt the seal and contribute to leakage and failure.

NOTE: Apply thread sealant or Teflon tape to all the fitting threads installed into the manifold to prevent air leaks.

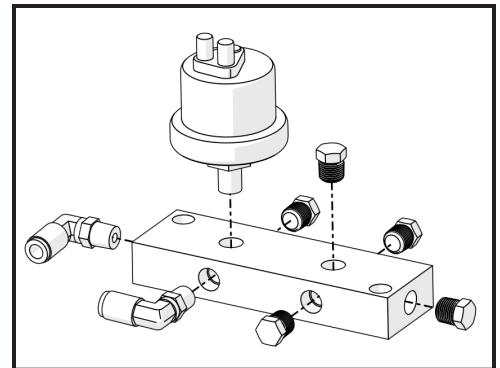
- If a **simultaneous** air spring activation kit is being installed, complete step 5A and then proceed onto step 6.
- If an **independent** air spring activation kit is being installed skip step 5A, complete step 5B and then proceed onto step 6.

5A Simultaneous Air Spring Activation Manifold Assembly

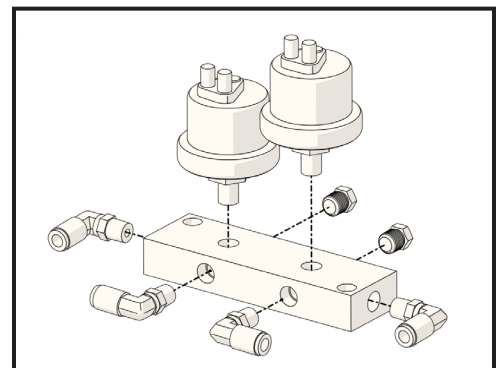
- Install the pressure sensor into the top port of the manifold.
- Install two 1/8" 90° air fittings into the side ports.
- Provided in the kit are five 1/8" brass plugs. Install them into the remaining ports of the manifold.

5B Independent Air Spring Activation Manifold Assembly

- Install the pressure sensors into the top ports of the manifold as shown in Figure 5B.
- Install four 1/8" 90° air fittings into the manifold.
- Install two 1/8" brass plugs into the remaining ports.



5A



5B

6 MOUNT THE MANIFOLD

- Choose a location on the frame to mount the manifold. Preferably near the air springs and away from any debris, moving components or heat sources.

NOTE: The manifold must be mounted in a location where a 12 ft length of wire can reach the manifold from the pressure gauge.

- Using the manifold as a template, mark and drill two $\frac{13}{64}$ " holes.
- Secure the manifold to the chosen location using two #10-32 x 1 $\frac{1}{4}$ " socket head cap screws, two #10 flat washers, and two #10 nyloc nuts.

7 AIRLINE CONNECTIONS

NOTE: Before cutting the airline ensure that there's enough red and black airline to complete the following steps. Adjust the manifold, compressor, relay, or gauge mounting locations if there is not enough airline.

- If a **simultaneous** air spring activation kit is being installed, complete step 7A and then proceed onto step 8.
- If an **independent** air spring activation kit is being installed skip step 7A, complete step 7B, and then proceed onto step 8.

7A Simultaneous Air Spring Activation Airline Connections

- Refer to the wiring and plumbing diagram on page 10 for the following instructions.
- Install the paddle switch into the supplied control panel bracket. The switch must be installed such that the delivery (DEL) port is above the supply (SUP) port.
- Connect one end of the red airline to the paddle switch port marked "DEL"
- Connect one end of the black airline to the paddle switch port marked "SUP"
- Route the other end of both the red and black airlines through the firewall boot and into the engine compartment.
- Route the black airline to the compressor, cut it to length and connect it to the air fitting on the outlet port of the compressor.
- Route the red airline to the manifold, cut it to length, and connect it to the air fitting on the manifold.
- Attach the remaining red airline to the air fitting on the manifold and route it near the air springs.



- The red airline is connected to both air springs using the supplied tee fitting.
- Use the tie straps provided in the kit to secure all the airlines away from any moving components, debris, or heat sources.

7B Independent Air Spring Activation Airline Connections

- Refer to the wiring and plumbing diagram on page 11 for the following instructions.
- Install both paddle switches into the supplied control panel bracket. The switches must be installed such that the delivery (DEL) port is above the supply (SUP) port.
- Locate the 30 ft. length of black airline and connect it to one of the paddle switch ports marked "SUP"
- Locate the 50 ft. length of red airline and connect it to one of the of the paddle switch ports marked "DEL"
- Route both red and black airlines through the firewall and into the engine bay.
- Route the black airline to the compressor. Cut it to length with the provided tube cutter, and connect it to the tee fitting on the outlet of the compressor.
- Route the red airline to where the manifold was installed. Cut the airline to length and connect it to one of the air fittings on the manifold.
- Connect the remaining black airline to the to the other paddle switch port marked "SUP"
- Connect the remaining red airline to the other paddle switch port marked "DEL"
- Route both red and black airlines through the firewall and into the engine bay.
- Route the black airline to the compressor. Cut it to length and connect it to the tee fitting on the outlet of the compressor.
- Route the red airline to the manifold and connect it to the air fitting on the manifold as shown on the diagram on page 11.
- Use the remaining red airline to connect the air fittings on the manifold to each air spring.

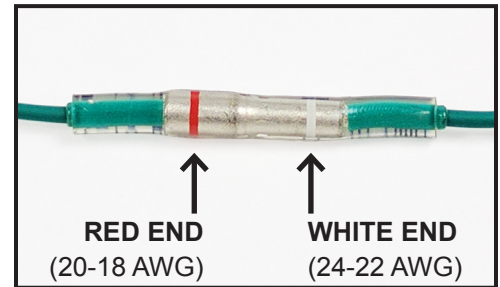
NOTE: In order to ensure that the system operates correctly it is imperative that the red airline attached to the left paddle switch is connected to the air fitting that supplies air to the left air spring, and vice versa for the other side. See the diagram on page 11.

8 GAUGE HARNESS CONNECTIONS

- If a **simultaneous** air spring activation kit is being installed, complete step 8A before proceeding onto step 9.
- If an **independent** air spring activation kit is being installed skip step 8A, and complete step 8B before proceeding onto step 9

8A Simultaneous Air Spring Activation Gauge Harness Connections

- Refer to the wiring diagram on page 10.
- Install the pressure gauge into the control panel bracket. Insert the supplied gauge harness into the back of it. Refer to Figure 10A.
- Locate two black wires and one blue wire attached to the pressure gauge wiring harness. Insert all three wires into one end of the red heat shrinkable butt connector. Insert the supplied 20 AWG black wire into the other end. Crimp and apply heat to both ends to create a sealed connection.
- Route the 20 AWG black wire to the pressure sensor that was attached to the manifold in Step 5.
- Crimp a red heat shrinkable ring terminal to the end of the 20 AWG black wire. Apply heat to the terminal to create a sealed connection.
- Attach the ring terminal to the 'M' post of the pressure sensor. Torque the knob to 0.1 N•m (0.9 lbf-in).
CAUTION: Over torquing the knob can cause it to break and thus void the warranty.
- Locate the green wire on the pressure gauge wiring harness and insert it into the white end of the clear heat shrinkable butt connector. Insert the supplied 20 AWG green wire into the red end of the connector. Crimp and heat both ends (see figure 8A).
- Crimp a red heat shrinkable ring terminal to the end of the green wire. Apply heat to the terminal to create a sealed connection.
- Attach the ring terminal to the 'G' post of the pressure sensor. Torque the knob to 0.1 N•m (0.9 lbf-in).
CAUTION: Over torquing the knob can cause it to break and thus void the warranty.
- Use the supplied loom to cover the exposed wires.



8A

8B Independent Air Spring Activation Gauge Harness Connections

- Refer to the wiring diagram on page 11.
- Install the pressure gauge into the panel control bracket. Insert the supplied gauge harness into the back of it. Refer to figure 10A.
- The wires on the gauge harness need to be extended in order to reach the pressure sensors on the manifold. Locate the blue, green and two black wires on the gauge wiring harness.
- Provided in the kit are four clear heat shrink butt connectors, and 12ft of black, green, and blue 20 AWG wire.
- Insert the green wire on the pressure gauge wiring harness into the white end of the clear heat shrinkable butt connector. Insert the supplied 20 AWG green wire into the red end of the connector. Crimp and heat both ends to create a sealed connection (see figure 8A). Repeat this step for the two black wires and one blue wire on the wiring harness.
- Crimp a red heat shrinkable ring terminal to the end of each wire that was extended. Heat the connector to create a sealed connection.

- Use the supplied loom to cover the exposed wires and route the wires to the pressure sensor on the manifold.
- Attach each ring terminal to the pressure sensors as shown in the diagram on page 11.
- Torque each of the knobs on the pressure sensor to 0.1 N.m (0.9 lbf-in) to secure the ring terminal in place.

CAUTION: Over torquing the knob can cause it to break and thus void the warranty.

9 GAUGE HARNESS CONNECTIONS CONTINUED

- Locate the red wire on the pressure gauge wiring harness and insert it into the white end of the clear heat shrinkable butt connector. Insert a fuse holder into the red end of the connector. Crimp and heat both ends. Insert a 3 amp fuse into the fuse holder.
- Attach a red spade terminal to the free end of the fuse holder. Use either a red (22-18 AWG) or blue (16-14 AWG) T-tap connector to connect to a 12 VDC switched ignition.
- Connect the orange wire to the headlight switch for auto dimming of the gauge. (optional)
- Connect one black wire from the gauge harness to the ground.

NOTE: If additional wire is needed use 24-20 AWG wire to extend the wiring harness.

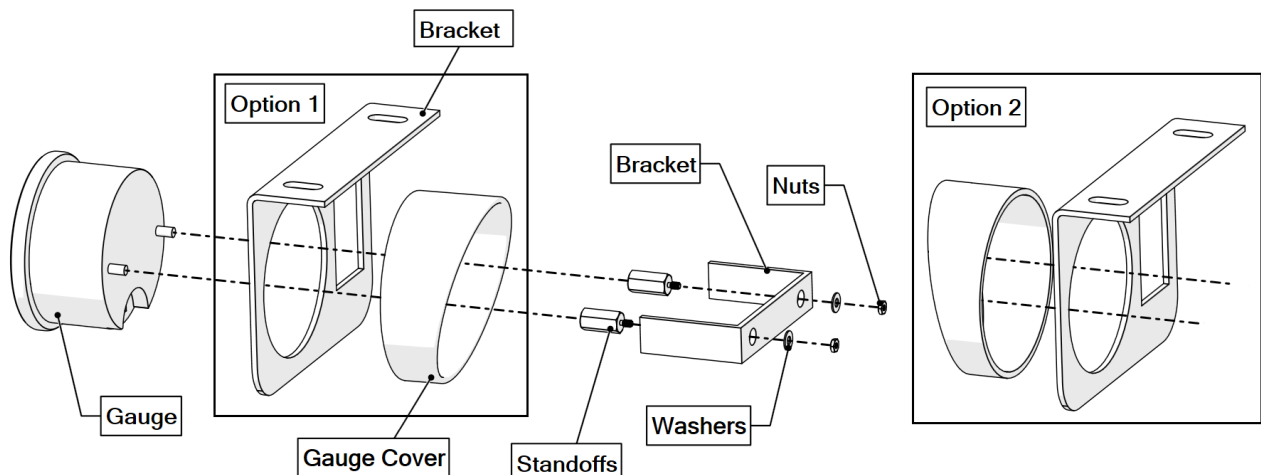
10 MOUNT THE CONTROL PANEL

- The control panel consists of a digital air gauge, paddle switch(es), control panel bracket and its associated fasteners.
- Mount the gauge according to the diagram below.
- Use two #10 Phillips head screws, four flat washers and two nuts to secure the control panel to the chosen mounting location.

NOTE: When installing the gauge cover ensure that the flat face is flush against the bracket.

NOTE: If you do not wish to use the gauge cover assemble the kit according to option 1. If glare is affecting the legibility of the digital gauge, assemble the kit according to option 2 (see figure 10A).

- The installation for this kit is complete. Proceed to the next page to test the system.



10A



TESTING THE SYSTEM

Turn the ignition ON, move the paddle switch to the UP position. The gauge should show air pressure being delivered to the air springs raising the vehicle. Then move the paddle switch to the lower position. The gauge should show the air pressure dropping and lowering the vehicle. If the pressure gauge cannot read the pressure sensor signal the gauge will count down to "0" and begin flashing. Check to ensure that the system is wired correctly.

AIR LEAK CHECK

Inflate the air springs to 90 PSI. Use a dish soap and water mixture on all airline connections to detect air leaks. Repair as necessary and retest. Inflate the air springs to a predetermined value and then the following day recheck the pressure. If the air springs have lost pressure, a leak is present. The leak must be repaired and then retest the vehicle until no leaks exist. **DO NOT EXCEED 100 PSI TO THE AIR SPRINGS AT ANY TIME.**

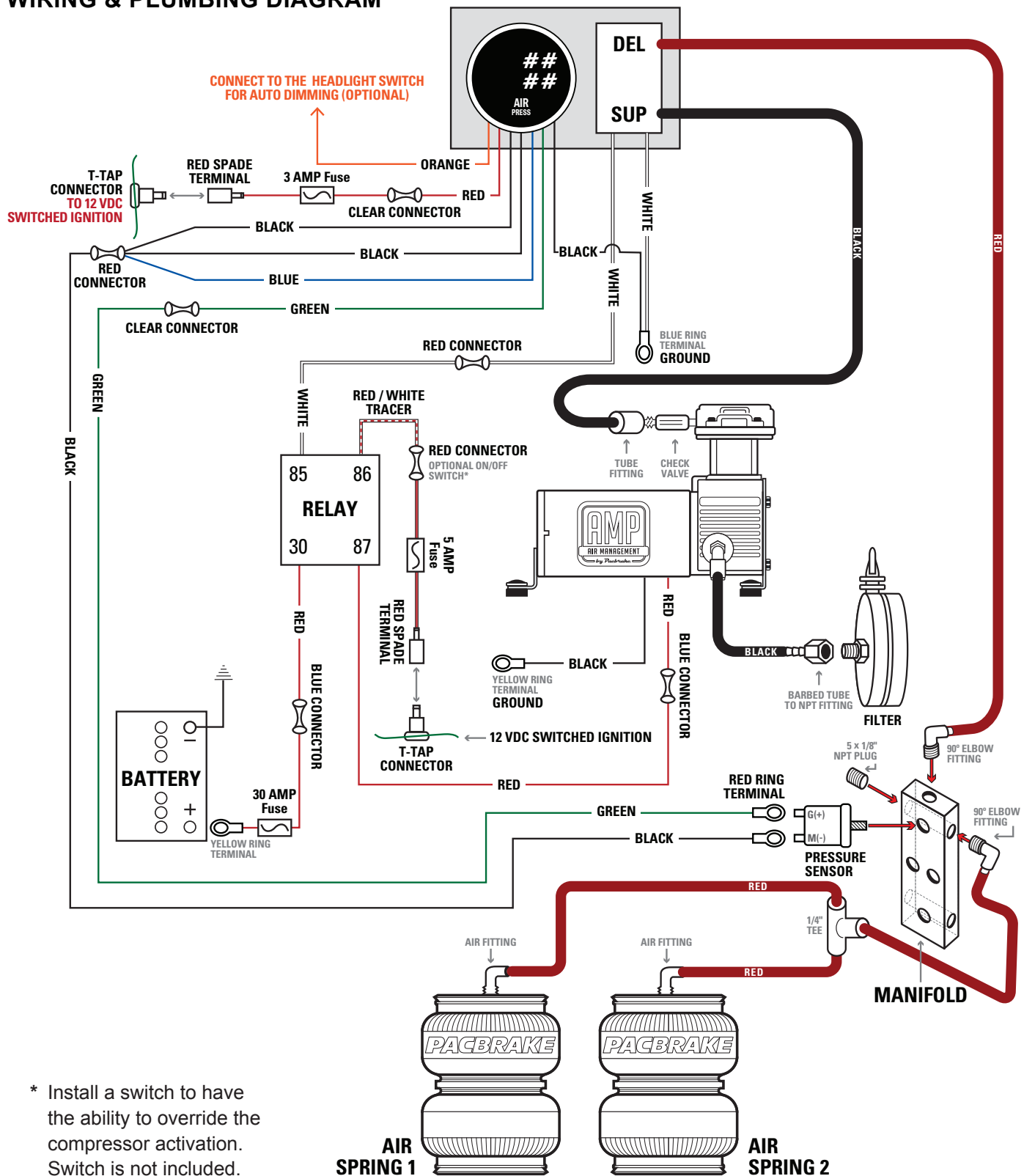
OPERATING YOUR VEHICLE WITH PACBRAKE AIR SUSPENSION

Air springs have minimum and maximum pressure requirements. Never operate your vehicle with less than 10 PSI in the air spring and never inflate the air springs over 100 PSI. Damage to the air springs will result. Check the air pressure in the air springs daily for the first couple of days to ensure a leak does not develop. The air springs are designed to maintain the vehicles stock ride height with a load. Do not use the air springs as a means to lift the vehicle with no load. A rough ride will result.

SERVICING YOUR VEHICLE WITH PACBRAKE AIR SUSPENSION

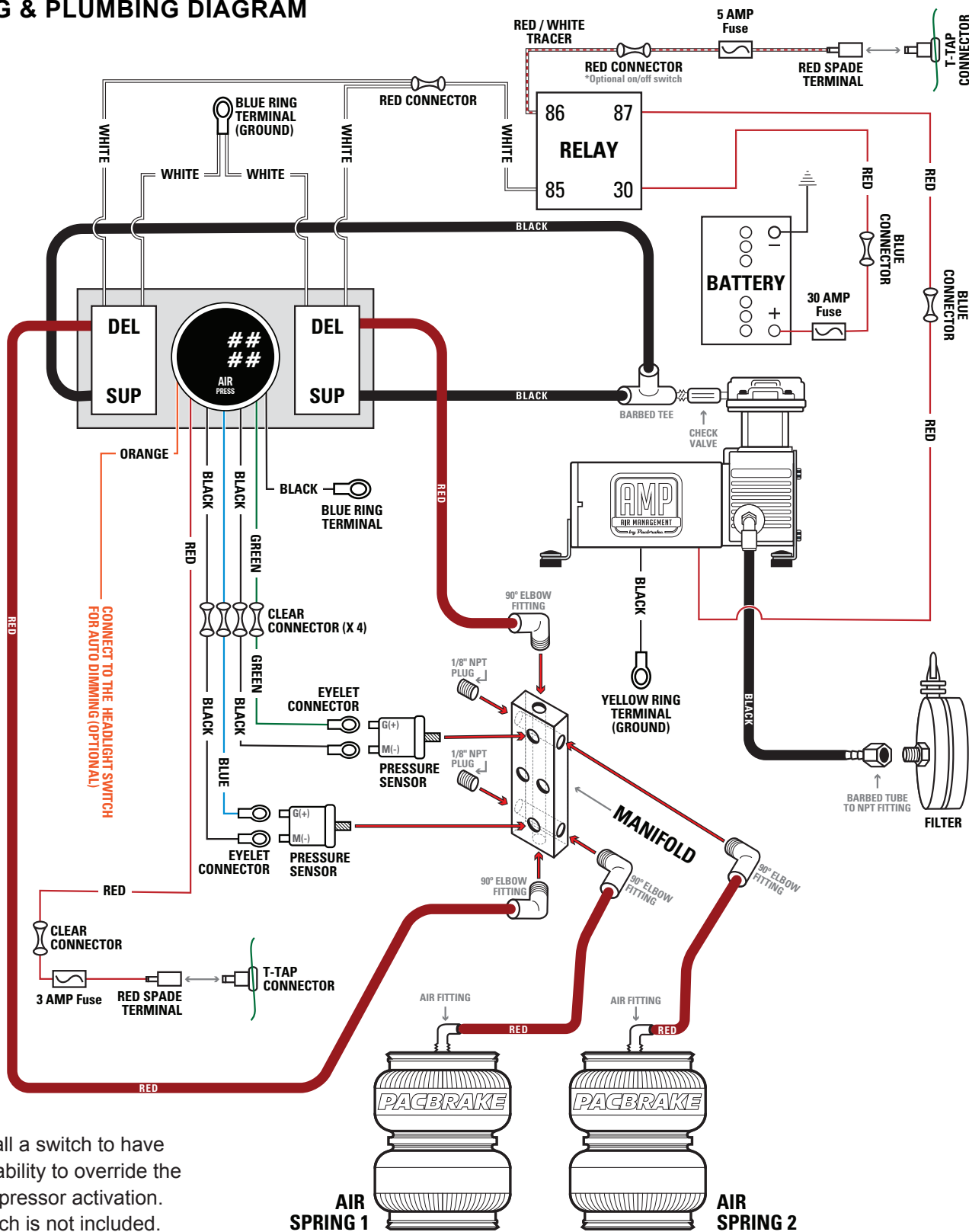
When lifting the vehicle with a floor jack or hoist on the frame, never allow the air spring to limit the travel of the axle. Try to always jack the vehicle on the axle. Suspending the axle with the air spring limiting the axle travel will damage the air spring and void the air spring warranty.

SIMULTANEOUS AIR SPRING ACTIVATION WIRING & PLUMBING DIAGRAM



* Install a switch to have the ability to override the compressor activation. Switch is not included.

INDEPENDENT AIR SPRING ACTIVATION WIRING & PLUMBING DIAGRAM



- * Install a switch to have the ability to override the compressor activation. Switch is not included.