



Installation for the Trailair Center Point suspension system is straight forward and requires replacing the equalizer in the standard tandem(2) axle suspension system. Trailair strongly recommends the use of shock absorbers in conjunction with Center Point but they are not required. Trailair does not supply shock absorbers because Center Point is not designed structurally to handle shock absorber mountings. If the coach is not equipped with shock absorbers, please refer to the trailer manufacturer for information on shock absorbers and/or the mountings available for the particular trailer.

1. The first step is to check for fit up and take reference measurements. Please see the EQUALIZER / HANGER FITUP ILLUSTRATION which depicts a standard center hanger, equalizer (also referred to as a "rocker") with spring shackles and the Trailair Center Point Installation Check Template. Utilize the illustration and a Check Template (CP 100001) to determine if adequate clearance is available under the coach and which length shackles are required during installation. Make sure you catalog the "S" dimension measurement for reference in section 9.

2. For a standard installation, your coach must also come equipped with the standard center hanger shape. The hanger may vary in dimension but it must be sized for a 1 3/4" leaf spring width, be at least 2.5" from the equalizer hole to the top of the hanger and be 3" wide or wider. Please refer to the EQUALIZER / HANGER FIT-UP ILLUSTRATION for minimum hanger dimensions. If your coach is not equipped with this style hanger, you may be able to do a non-standard installation (See section 8) or you may have to remove the old hanger from the frame and install the standard center hanger, which can be acquired from Trailair.



3. After safely raising the coach to a level that insures the tires are off the ground, properly position stands to support the coach.



**WARNING: improper raising or lowering of the coach could result in damage to the coach, injury or death. Insure that any points of contact for the stands do not result in damage to any panels or lines under the coach.**

4. Remove the tires and wheels from the coach. The suspension should be free from any loads, except it's own weight at this point. Place another set of jack stands under the axles, very close to the u-bolt plates. This will provide support to the axles and



insure that they do not swing down during disassembly of the shackle components. **NOTE: allowing the axles to drop could result in damage to the wiring for the electric brakes.**

5. With the coach properly raised on jack stands and the axles properly supported by additional jackstands, remove two shackle nuts on the shackle at the rear of the front spring. **NOTE that the bolts are pressed into the shackle plate and should not turn. However, use a properly sized boxed end wrench to insure the bolts do not turn. Loosen the nuts only to remove these shackle plates.**



6. Once the nuts and the plate retained by the nuts are removed, slide the opposite side shackle plate out, with the bolts still pressed into the plate. Also, remove the nut on the cross bolt for the equalizer. Again, the bolt may be pressed into the frame hanger and should not be allowed to rotate. After removing the front spring's shackle at the equalizer, repeat the process for the shackle that mates the rear spring to the equalizer. Then, remove the equalizer.

7. The frame hanger is now ready to receive a Center Point Sub-assembly. Insure that the clamp plates are sufficiently loose to allow the retaining tower to slide up into the frame hanger. Do not remove the clamping plates as there may not be adequate clearance to reinstall after placing the tower into the frame hanger. Remove the retaining cross bolt and nut so the tower will slide into the frame hanger. Do not misplace these bolts and nuts after taking them off the sub-assembly. If the hanger has a cross tube, the cross tube must be removed.



### STANDARD SUB-ASSEMBLY

8. It is suggested that a floor jack supports the Center Point Sub-assembly during this operation. The floor jack allows mobility along with an ease of slowly raising the Center point Sub-assembly into position to install the retaining cross bolt into the frame hanger.

## NON-STANDARD SUB-ASSEMBLY

In specific cases where the side clamping plates cannot be used with a nonstandard size

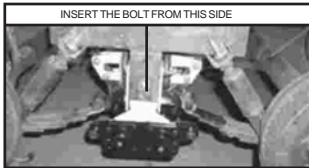
centerhanger, an alternative mounting is possible. If the CP2 sub-unit will fit inside the hanger, and the hanger is tall enough, the sub-unit may be mounted without the side clamping plates if (2) crossbolts are used instead of (1) (An additional pair of 9/16" x 12 x 3" grade 8 bolts with nylock nuts will be needed as only one per sub-unit are provided). The CP2 sub-unit is designed with two crossholes in the tower to give Center Point an additional inch in height adjustment. Both holes can be used for mounting cross bolts (although not needed in a standard installation). The additional hole in the centerhanger of the coach frame will need to be drilled and will correspond with the secondary adjustment hole. A secondary installation is shown with a hanger that was only 2.5" wide.



If either the side clamping plates or the (2) crossbolt method cannot be used because of the size and/or shape of the centerhanger, it is recommended that the frame hanger first be changed to the standard size hanger.

Once the Center Point Sub-assembly is properly positioned and the mounting holes are aligned, install the retaining cross bolt (provided on the tower of each sub-unit). This bolt will have to be inserted from the outside, inward. The air spring on the Center Point Sub-assembly prevents this bolt from being inserted from the under side of the coach. You may now tighten both the retaining plate bolts and the cross bolt. Torque these bolts to 100 foot/pounds.

9. The Center Point Sub-assemblies are pre-adjusted at the factory to insure the cross shaft

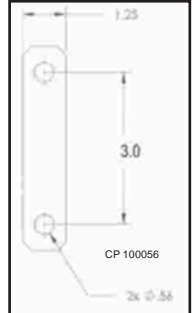


shackle link is parallel to the ground. There are a wide variety of equalizers being used throughout the industry. Due to the fact there are so many, it is normally necessary to replace the original shackles with longer ones. Trailair provides 2 sets of shackle plates (8 plates each) that offer three different length settings as well as (8) replacement shackle bolts and (8) flanged nuts. The check template will give a dimension from the center of the link eye on the Center Point assembly to the center of the spring eye on the springs of the coach. Refer to the EQUALIZER / HANGER FIT-UP ILLUSTRATION attachment in step one for the "S" dimension measurement taken at the beginning of the procedure.

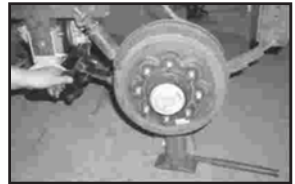
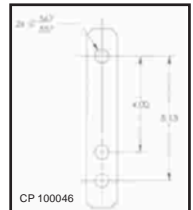
While the slack adjusters allow for adjustment in the relationship of the spring position to the frame, it is not intended to offer a latitude great enough to compensate for the necessity of replacing shackle mounting plates with those that are longer. This is due to the design of the Center Point system and the distances from the riser tower cross bolt to the cross shaft's shackle link mounting position, while in ideal conditions.

It is important to use the correct replacement shackle plates so that the height of the coach does not change more than 1/2". The "S" dimension tells us which shackle to use. If the "S" dimension is 3" or less, use the CP 100056 shackle plates. If the "S"

dimension is between 3" and 4" use the CP 100046 shackle plate (which has two settings) in the short hole set. In the short setting, be sure that the end of the shackle plate with the extra hole is pointed down to the ground and not up toward the frame so that it does not cause interference with the operation of Center Point. If the "S" dimension is more than 4" use the longer setting of holes in the CP 100046 shackle plates.



Upon choosing the correct shackle plates, the shackles can be assembled into the spring eyes and into the cross shaft shackle links. You must drive the knurled shank end of the shackle bolt onto the shackle plate. Use of a standard bottle jack will be of assistance in positioning the axle to align the two bolts of the shackle plate. If a bottle jack is utilized, be sure to position it under the spring mounting plate, below the axle. When the two bolts on the shackle plate will slide easily into both, the cross shaft shackle link and the spring eye, place the other shackle plate on the inside and install the nuts to retain the shackle assembly. Repeat this process on the other spring.



After securing all shackle nuts and bolts to proper torque levels (50 ft/pounds), the opposite side of the coach is ready for the same procedures. Repeat the operations 3 through 9 as described above to install the opposite side.

## PLUMBING

10. Once both Center Point Sub-assemblies are installed onto the frame, the air supply lines must be routed. You should refer to the AIR LINE SCHEMATIC in the appendix. Before planning the air hose routing and placement, verify there is sufficient clearances for the air spring. The air springs already have the air hoses installed and only have to have the loose end secured. In order to insure there is sufficient slack in the air hose, the clip placement (CP 100035) is critical. The air spring will cycle forward and aft as much as 5 inches, during the operation of the suspension in its reaction to extreme road conditions. Therefore, the clip must be secured on the frame with enough slack to allow the movement necessary. It must also be located so that the hose does not contact the air spring to any other moving parts of the suspension. There are 4 self-drilling, self-tapping screws (CP 100020) provided to attach the clip, two per clip.



CP 100035



CP U00020

11. After attaching the clips in a suitable location, the bulkhead fittings w/ 1/4" NPT to push on (CP U00003) can then be attached to the air hoses. The locking nut of the bulkhead fitting can be removed from the fitting and the fitting can be inserted into the mounting clip. Re-install the locking nut and secure the bulkhead fitting to the clip.



CP U00003

This should be done for both sides of the trailer before installing the poly air lines.

the air gauge panel (CP 5007), the poly air lines may be installed. A union tee (CP U00004)

is supplied for joining the two air lines from the bulkhead fittings. Note that all air lines are DOT approved air brake quality suitable for commercial industry applications. The poly air lines must be cut square



CP U00004

and true, in order for these fittings to function properly and retain air pressure.

13. To assist in routing the poly air lines, there are (4) nylon clips (CP U00006), self-drilling / self-tapping screws (CP U00020) and (4) wire ties (CP U00028) provided. Do not drill through any panels under the coach until assuring there is nothing that will be damaged. Remember, there are holding tanks, water



CP U00006

lines and possibly gas lines all mounted within the frame rails of a coach.

### PANEL APPLICATION:

14. The choice of the location of the air gauge panel (CP 5007) is up to the owner / dealer /

installer. Trailair makes no recommendations other than to place it where it will not inhibit the operation of the system and will provide an opportunity to visually check the system pressure easily. External mounting is the preferred method of Trailair, however, the owner may prefer mounting within a compartment. CP5007

consists of the panel mount plate (CP 100030), the air pressure gauge (CP U00033) with female connector (CP U00017) and the access fill valve (CP U00015).



CP 5007



CP U00033



CP U00017



CP U00015

There are two options for external installation. The first option is to install the panel mount plate

provided with the

gauge and fill valve acts as a reinforcing plate. The second option is to mount the air pressure gauge and the access fill valve directly onto the coach body without utilizing the panel. Trailair offers both methods and provides sufficient information for either choice.

### PANEL MOUNTING:

The CP 5007 assembly is intended to serve two functions. One is to provide support for the panel installation in areas that may not be thick enough to attach fasteners. The second function is to provide a template to cut an access mounting hole. Carefully check to insure there are no obstacles nor any components that may incur damage while cutting holes, routing the poly air lines or mounting the panel mount plate. At this point, mount the female connector to the air gauge, mount the air gauge and the access fill valve to the panel mount plate.

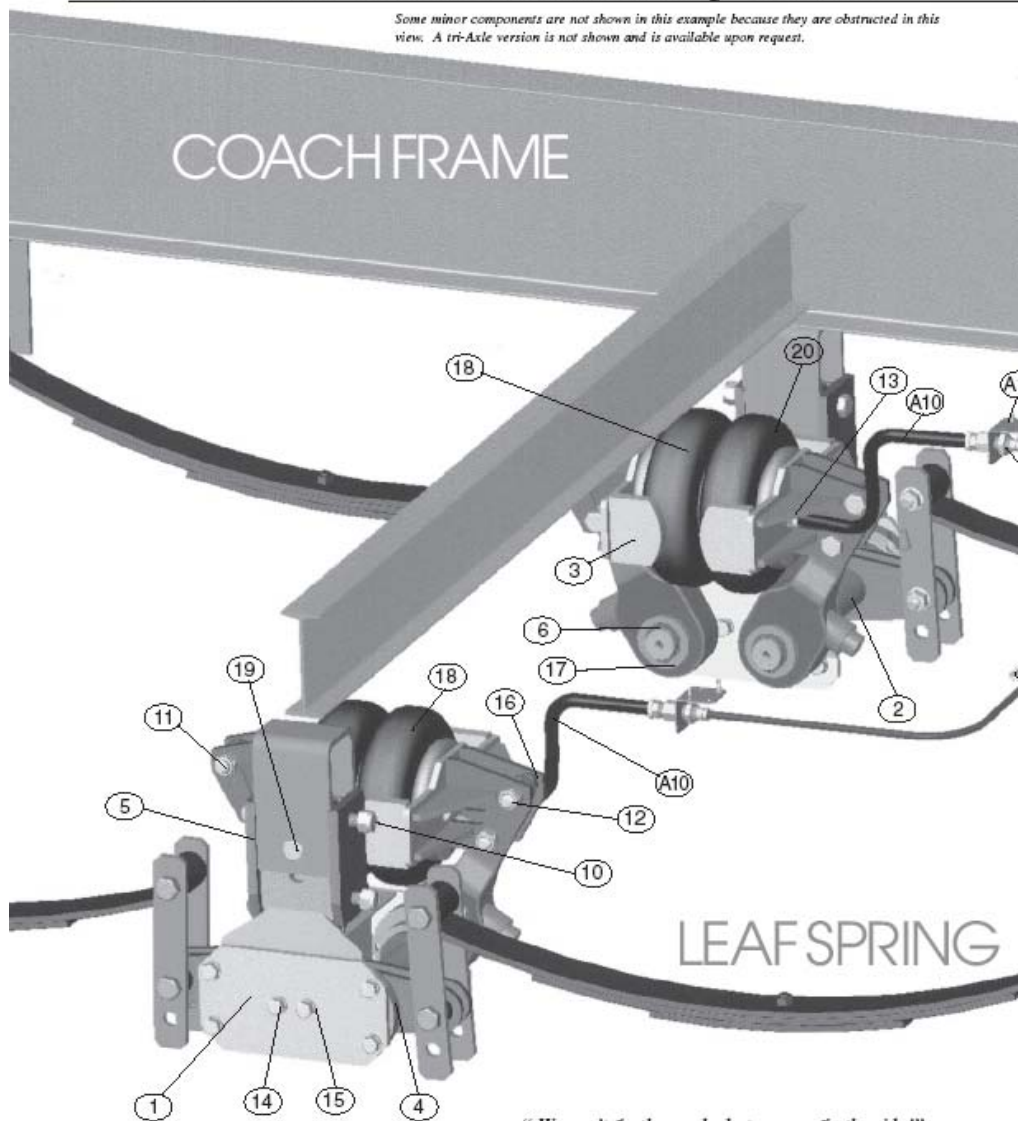
Determine the location of the CP 5007 assembly and mark two holes, 1 3/4" diameter, 3 3/8" apart from each other. With a suitable tool cut the opening for the air gauge and the fill valve. Place the CP 5007 assembly into the openings, level and square the assembly, mark the four hole locations to mount the panel. Install the assembly using (4) self-tapping screws (CP U00020), through the holes in the panel.

### DIRECT AIR GAUGE MOUNTING:

Once location is determined, use the air gauge without the bezel and the access air fill valve without the bulkhead nut as a template to drill the holes needed. Be sure to check for potential interference and or possible damage to other components before cutting any access holes. Once the holes are cut, mount the air gauge with the female connector attached and the access fill valve to the coach sidewall.

# Center Point Tandem Assembly Guide

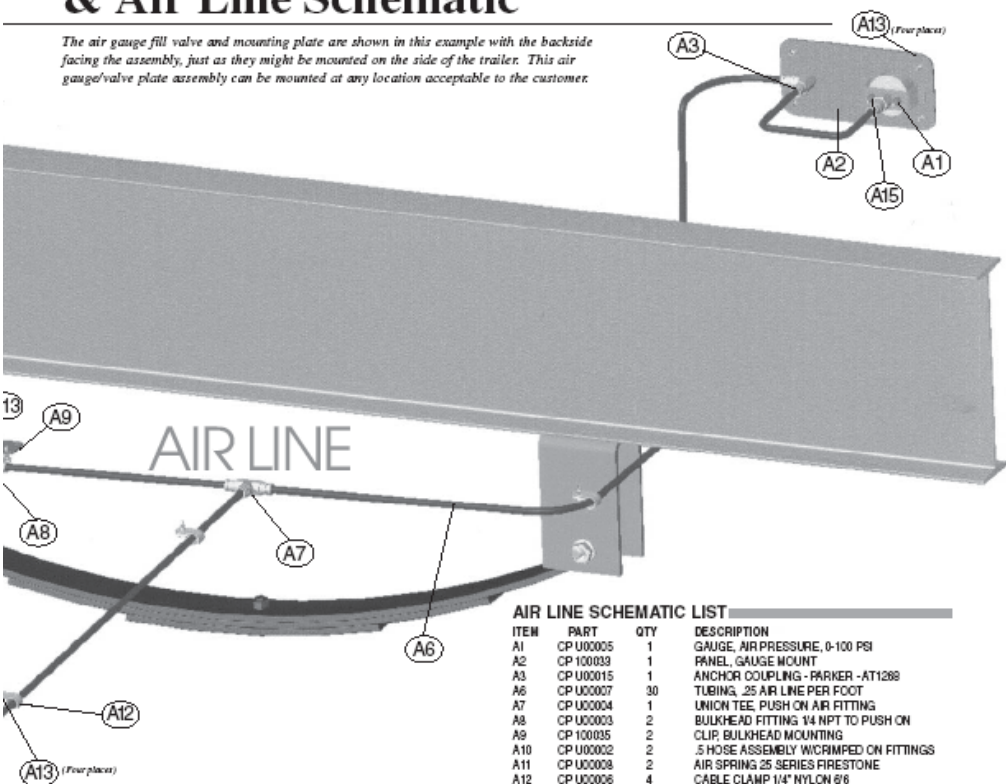
*Some minor components are not shown in this example because they are obstructed in this view. A tri-Axle version is not shown and is available upon request.*



*"We can't fix the roads, but we can fix the ride!"™*

# & Air Line Schematic

The air gauge fill valve and mounting plate are shown in this example with the backside facing the assembly, just as they might be mounted on the side of the trailer. This air gauge/valve plate assembly can be mounted at any location acceptable to the customer.



## AIR LINE SCHEMATIC LIST

ITEM	PART	QTY	DESCRIPTION
A1	CP U00005	1	GAUGE, AIR PRESSURE, 0-100 PSI
A2	CP U00039	1	PANEL, GAUGE MOUNT
A3	CP U00015	1	ANCHOR COUPLING - PARKER - AT1288
A6	CP U00007	30	TUBING, .25 AIR LINE PER FOOT
A7	CP U00004	1	UNION TEE, PUSH ON AIR FITTING
A8	CP U00003	2	BULKHEAD FITTING 1/4 NPT TO PUSH ON
A9	CP U00035	2	CLIP, BULKHEAD MOUNTING
A10	CP U00002	2	.5 HOSE ASSEMBLY W/CRIMPED ON FITTINGS
A11	CP U00008	2	AIR SPRING 25 SERIES FIRESTONE
A12	CP U00006	4	CABLE CLAMP 1/4" NYLON 6/6
A13	CP U00020	14	#8 X 1/2 SELF TAPPING HEX HEAD SCREW
A14	CP U 00028	4	TE WRAP WIRE TE, BLACK, 8 INCH
A15	CP U00017	1	FEMALE CONNECTOR PARKER #86PMT-4-2

## CENTER POINT SUB ASSEMBLY

ITEM	PART	QTY	DESCRIPTION
1	CP 5001	1	WELDMENT MAIN BODY
2	CP 5002	2	WELDMENT SHAFT, CROSS
3	CP 5004	2	WELDMENT AIR SPRING MTG W-STOP
4	CP 5005	4	BEARING ASSEMBLY
5	CP 100090	2	PLATE, CLAMP RISER
6	CP 100091	2	MACHINE BUSHING
10	CP U00025	2	1/2-13 X 4 1/2 LG HEX HEAD BOLT GRADE 5
11	CP U00040	4	1/2-13 X 2 1/4 LG HEX HEAD BOLT GRADE 5
12	CP U00028	6	1/2-13 HEX NUT - NYLON
13	CP U00022	3	3/8-16 HEX NUT - NYLON
14	CP U00021	12	3/8-16 X 1 1/4 LG HEX HEAD BOLT GRADE 5
15	CP U00029	12	3/8" SPLIT RING LOCK WASHER
16	CP 100098	4	SPACER, BAG MOUNT
17	CP U00014	2	SNAP RING
18	CP U00008	1	AIR SPRING - FIRESTONE
19	CP U00041	4	9/16-12X3 LG HEX HEAD BOLT GRADE 5
20	CP U00042	1	9/16"-12 NYLON NUT



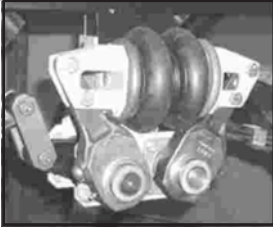
Direct mounting of air pressure gauge and access fill valve are shown.

15. After installing the components, the poly air lines can be routed. Make sure the air lines can not rub on the wall of the coach and create a leak. Install the instructional decal provided.

**ADJUSTMENT INSTRUCTIONS**

The principle of the Center Point design is to allow totally independent axle reaction to road conditions and to also allow adjustability in equalizing coach height, in side-to-side relationship. The sub-units are assembled at the factory at with the shackle links pre-set. The ride height of the coach should be achieved with the selection of the shackle, not adjusting the shafts. However, in some cases the link eyes need to be adjusted for clearance purposes.

To adjust the link eye on the cross shafts, use a 9/16" wrench to turn the worm



gear in the slack adjuster. If lowering the coach, it may not be necessary to have the weight off the the axles. However, if raising the coach height the weight of the coach will have to be lifted off the axles to turn the worm gear in the slack adjuster.

**ADJUSTMENT POINT**

Angles of 30 degrees or less from a horizontal position are acceptable, in compensating for differences in height. Both arms on a sub-unit should be equal when adjusting coach height. Do not exceed 30 degrees of adjustment. Angles greater than 30 degrees require using different shackle plate lengths. Do not use a shackle longer than the CP 100056 shackle provided by Trailair.

**SETTING AIR PRESSURE**

Air pressure levels should be 5 PSI per 1,000 pounds of coach weight at 70 degrees ambient temperature. This will vary according to individual personal belongings and effects that the owner wishes to place in the coach. Once a satisfactory air pressure (yielding a compliant ride for the coach) is established, the air pressure gauge will allow quick and easy verification of operating pressure levels. Always make sure the fill valve cap is secure so that the seal in the cap will function properly and assist in sealing the system.

Keep in mind that three natural factors will effect the air pressure in a self contained air system. The following conditions will cause the air pressure reading in the gauge to

fluctuate more than 2-3 psi up or down from the conditions the coach is set at upon installation; A change in altitude of 3000 to 4000 feet or more, a change in temperature of 50 degrees or more and 500 pounds or more of weight differential. What does that mean? If one or more of these conditions change for a prolonged period after the initial installation, an adjustment to the air pressure may be required. If these are temporary fluctuations, changes in the air pressure are most likely not needed.

Note that once the coach is moved, the air spring may return to a position other than centered. This is not abnormal. It only illustrates the fact that the axles are reacting to torque of acceleration, deceleration or turning input. The only way to return to an absolute centered position of the air spring is to lift the coach and allow the axles to seek a neutral condition, having no residual torque input.

**HELPFUL HINTS**

If the system is leaking, add air to 100psi and begin trouble shooting at the fitting connections with soapy water. If the leak cannot be traced to a fitting connection, the air gauge and the fill valve are the most likely pneumatic parts to leak. The most unlikely component to leak is the air bags themselves and Trailair recommends checking those last upon a fresh installation. If the leak cannot be found and fixed, call Trailair for assistance. Once the leak is found, reset the air pressure to the setting for your coach.

There is no lubrication required for CenterPoint as it is designed to perform best dry. The only maintenance would be for the brass in the link-eyes of the shafts and standard maintenance required for the spring eyes of the standard suspension.

For clarity purposes, Center Point is shown in the manual without the mechanical bag stops that are standard on the sub-units. This allows Center Point to be operated on your coach without air in cases where travel is necessary. So if you have an air leak or a complete loss of air in the system, you can still travel. It should be noted that prolonged use in this condition can potentially accelerate the wear of the stop plates. The parts are easily replaced if overly worn.

A full listing of all replacement parts can be found on page 5 of the manual on the air line schematic print. Please contact Trailair for all your replacement parts needs.

**TECHNICAL SERVICE:**

Direct any and all technical service questions to:

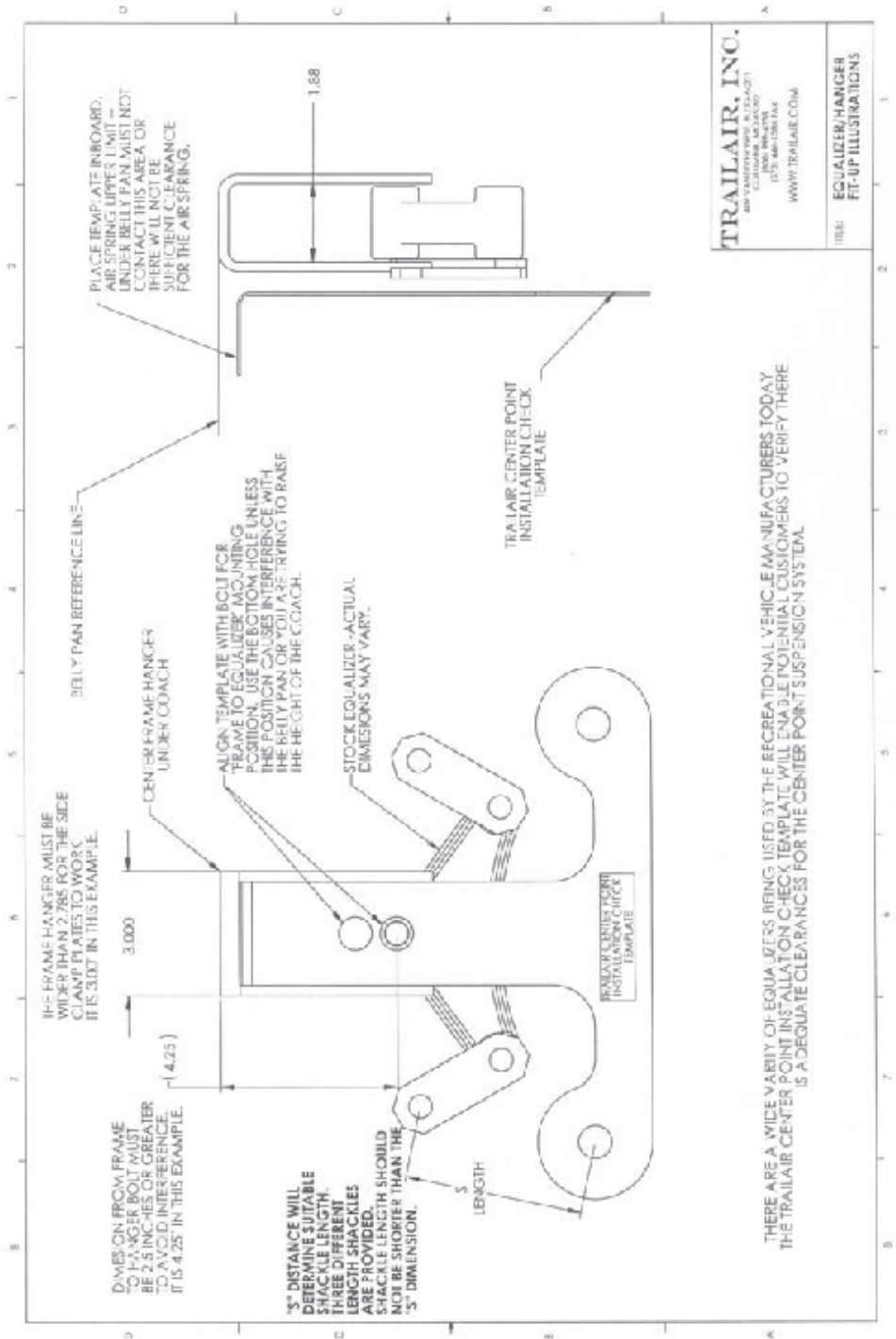
**Trailair, Inc Corporate Office.**

409 Vandiver West, Bldg 6-201

Columbia, MO 65202

**800/998-4238** email: [info@trailair.com](mailto:info@trailair.com)

573/446-1086 (fax) [www.trailair.com](http://www.trailair.com)



**TRAILAIR, INC.**  
 200 WASHINGTON ROAD, BIRDACT, VT  
 COLTSVILLE, VT 05422  
 (855) 441-1261 FAX  
 WWW.TRAILAIR.COM

TITLE: EQUALIZER/HANGER FIT-UP ILLUSTRATIONS

THERE ARE A WIDE VARIETY OF EQUALIZERS BEING USED BY THE RECREATIONAL VEHICLE MANUFACTURERS TODAY. THE TRAILAIR CENTER POINT INSTALLATION CHECK TEMPLATE WILL ENABLE POTENTIAL CUSTOMERS TO VERIFY THERE IS A DEQUATE CLEARANCES FOR THE CENTER POINT SUSPENSION SYSTEM.

**The Leader in RV, Air-Ride Technology**

Trailair's National sales and business office in Goshen, IN is your location to place orders, order literature, follow up on orders and other inventory maintenance issues.

**Contact information:**

LIPPERTCOMPONENTS, INC.  
Service & Warranty; Plant #39  
2703 College Ave.  
Goshen, IN 46528  
Toll Free: (866) 524-7821  
Phone: (574) 537-8900  
Fax: (574) 534-7161

**[www.lci1.com](http://www.lci1.com)**  
**email: [warranty@lci1.com](mailto:warranty@lci1.com)**

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