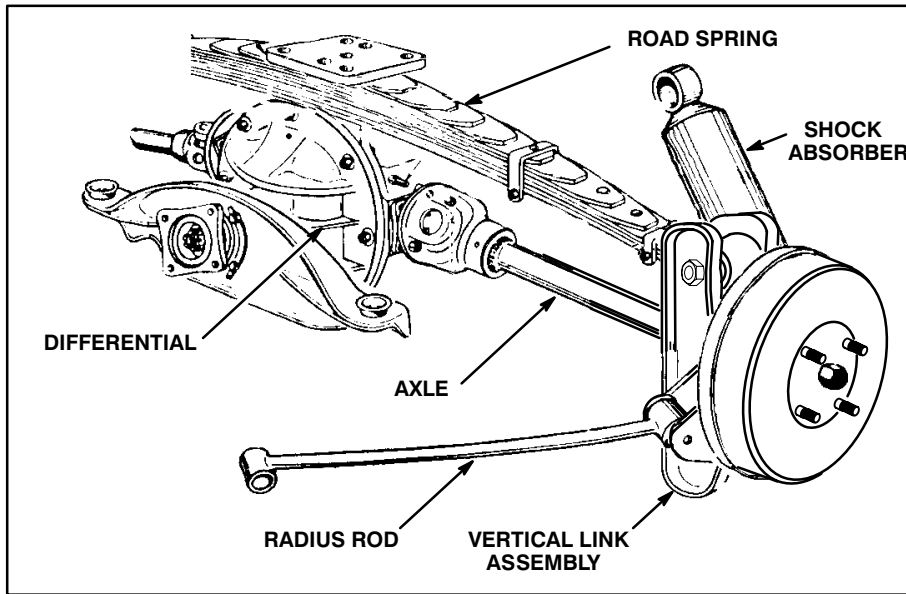


# Camber Compensator Operation

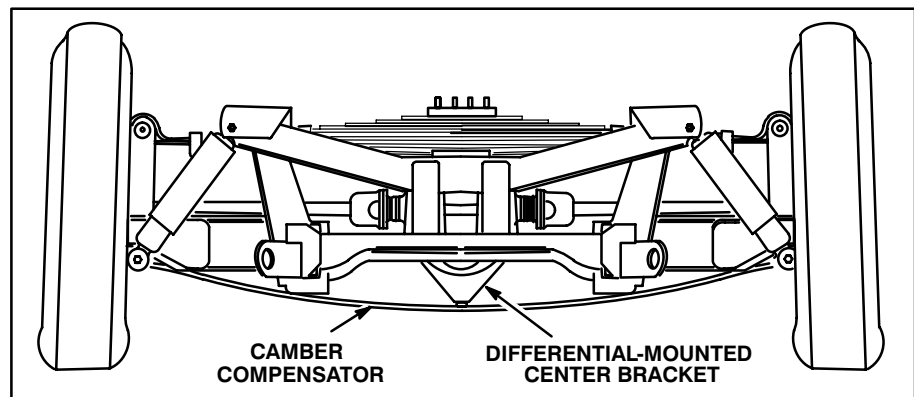


**Figure 1 – Suspension Layout before Installation  
(Forward of Left Side Shown)**

The camber compensator is a device used to minimize the tendency of the Spitfire swing axle suspension to suddenly induce extreme positive camber in hard turns when weight is transferred away from the inner rear wheel. With the stock suspension layout (fig. 1), the road spring is free to push down on the axle and vertical link assembly any time it is relieved of the weight of the car (for example, simply jack up the rear of the car by the frame and watch the angle of the rear wheels).

When the weight of the car shifts suddenly, as in hard turns, the road spring pushes down on the link and hub, and rear camber for the lightly loaded wheel becomes more positive. Less tire surface is in contact with the road and if the camber change is severe enough over several quick turns, as during slalom events, the result is sudden and violent oversteer—the car swaps ends without warning.

The camber compensator (fig. 2) acts as a sort of weak reverse leaf spring which is able to pivot on the center bracket, providing just enough upward pressure on the lightly loaded vertical link to prevent the bottom of the wheel from swinging inward excessively, if that side of the car should rise during a turn. The effect of the compensator is to use the travel of the heavily-loaded outside wheel to put upward force on the lightly loaded side, minimizing the tendency of the lightly loaded wheel to “tuck under.”



**Figure 2 – Camber Compensator (Rear Elevation)**

# Camber Compensator Installation

Installation of the camber compensator is quite straightforward and requires only a jack, jackstands and hand tools to install. As always, use care when working underneath a car supported by jackstands, and never work under a car supported only by a jack.

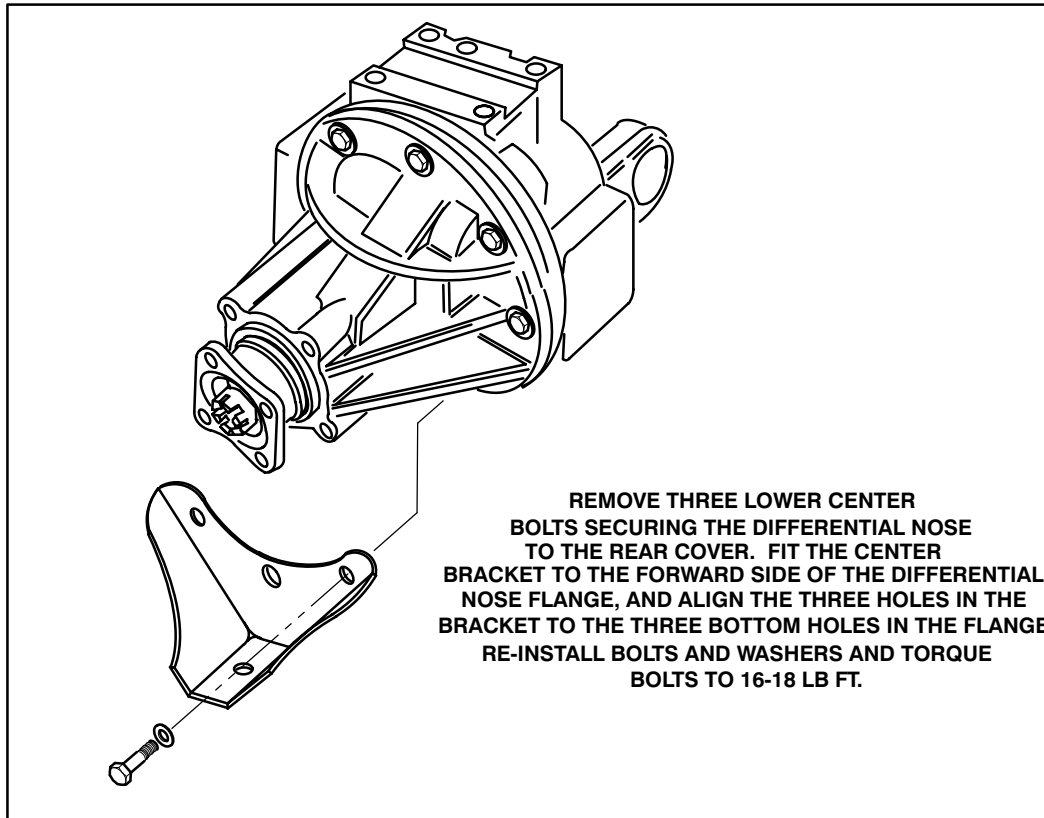


Figure 3 – Center Bracket Installation to Differential

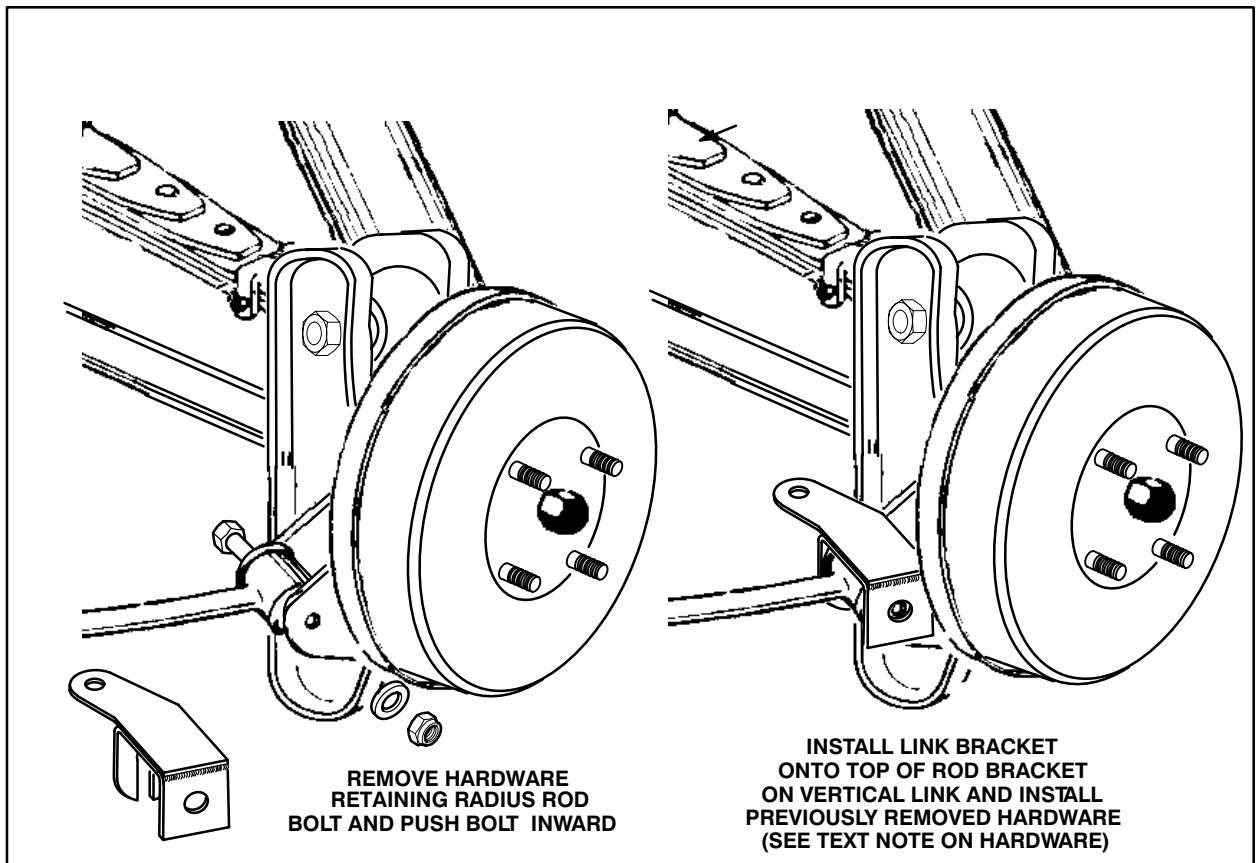
## Center Bracket

Refer to Figure 3.

1. Remove the three bottom bolts from the center section of the differential.
2. Mate the holes in the center bracket to the differential where the bolts were removed. The bracket is mounted so the elongated portion is facing the front of the car.
3. Install the three previously removed bolts and torque to 16-18 lb ft..

## Side Brackets

1. Remove the nut from the bolt that secures the radius rod to the vertical link and push the bolt inward until the bracket can be slipped over the radius rod bracket.
2. Install the side bracket as shown in Figure 4. The side bracket should be located on top of the radius rod end, with the ear toward the centerline of the car and facing slightly forward.



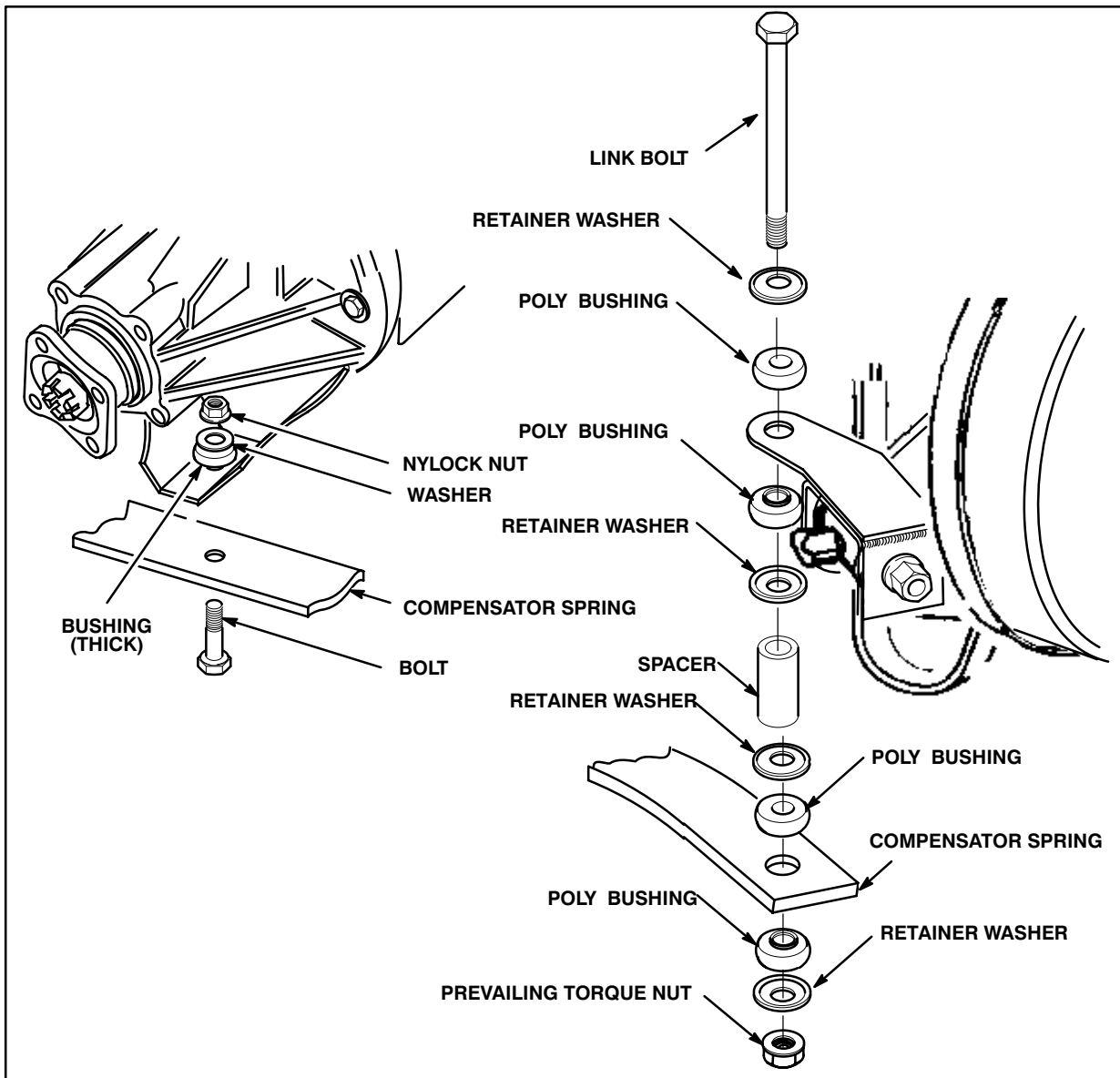
**Figure 4 – Outer Link Side Bracket Installation (Left side shown)**

3. Align the holes in the side bracket with the holes in the radius rod bracket on the vertical link and the radius rod bushing. Push the radius rod mounting bolt through until the head is seated. Some tapping with a rubber or rawhide mallet may be required to align the side bracket and/or to seat the bolt. Take care not to scrub the threads of the mounting bolt on the edges of the mounting holes.
4. Install a new nylock nut (note: as with all prevailing-torque locknuts, a new nut should always be installed and the old nut discarded). If you find the bolt to be too short to fully install the nut (best practice is to ensure that a minimum of three threads extend beyond the face of the nut), replace the existing bolt with a 1/4" longer bolt. Torque nut to 24-26 lb ft.
5. Repeat the procedure for the opposite side.

## Compensator Spring Installation and Final Assembly

Refer to Figure 5.

1. With the car jacked up, the tires off and the vertical links resting on jack stands to keep the car's weight on the road spring, locate one of the link kits (bolt washers, bushings, spacer and nut) and insert one washer, followed by a bushing on the bolt and insert the bolt downward through the eye on either of the outside brackets.
2. Install another bushing, washer, spacer, washer and bushing below the eye in that order.
3. Keeping the above components from sliding off the bolt, install the spring onto the bolt followed by another bushing, washer and locking nut.
4. Tighten the nut until the bushings are compressed and are secure on the bracket.



**Figure 5 – Compensator Spring and Link Installation Details**

5. Repeat steps 1 through 4 for the opposite side.
6. Depending on the strength of the road spring, shocks and other suspension components, the center of the spring should rest about 1/2 to 1 inch below the center bracket. If there is very much more space than this adjustments must be made to the spacing of the link kits on the outside brackets. (See "Tuning the Camber Compensator" below for details.)
7. Using a floor jack (or other jacking device), raise the spring so that it comes into close proximity of the center bracket. (Do not exert pressure on the bracket.)
8. Using a punch or other tool inserted through the two holes, align the two pieces so the 1/4" bolt can be inserted from the bottom. Push the bolt through the hole in the compensator and through the hole in the center bracket.
9. Install the thick rubber bushing, flat washer and nylock nut on the bolt from above the bracket and tighten just enough to bring the compensator spring up to the bracket without compressing the bushing. (The spring must be free to rock on the center bracket when one side of the suspension is loaded.)

10. The installation is complete and the wheels can now be re-installed and the car lowered.

## Tuning the Camber Compensator

The camber compensator can be tuned for greater pressure by adjusting the preload on the compensator spring. Increasing the preload will provide greater pressure on the wheels to prevent wheel tuck. However, the greater pressure will also make for a harsher ride and greater pressure on the outside brackets. More than 2" of preload is not recommended.

A nominal 1/2" is a good starting point and testing should determine whether additional loading is necessary. While testing, be observant not only of changes in cornering performance but distortion in the brackets. If distortion is observed, there is too much loading.

Adjustments to the preload can be made by installing washers between the spacer and the bushing on the links (to increase loading), or by removal of the spacer (to decrease loading) and adding washers until the desired loading is achieved.

Note: Since all suspension systems will vary to a degree, it is necessary to ensure that the camber compensator is adapted to the particular condition of the car's suspension. The 7/8" spacer is expected to be nominal, however, it may need to be removed and replaced by washers. If more than a little of the spacing is removed, it may be necessary to obtain a shorter link bolt, if the prevailing torque nut bottoms out on the bolt threads before there is adequate compression of the bushings to prevent rattling or poor performance. If a shorter link bolt is required, be sure to use a grade 8 bolt for each link.

Caution: Never jack the car using the brackets as jacking points. While the brackets are made of a sturdy material, they are not intended to support the full weight of the car.

## Warranty

The camber compensator is warranted against defects in materials and workmanship for a period of one year from date of purchase. Any defects must be reported to the manufacturer for replacement of the defective part. The manufacturer will in no way be liable for any personal or property damage arising from use, misuse, improper installation or failure of this device.