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## INSIDE:

### COACH TALK

- VACUUM MODULATOR
- Y-PIPE HANGER
- TIRE TRUING
- AFTERMARKET PARTS
- LOOK BEFORE YOU LEAP
- PROPANE LAW DOT TANKS ONLY
- SHOWER DRAIN INSTALLATION
- STRAINER WRENCH
- SPUD-NUT WRENCH
- BROKEN SHOCK ABSORBER
- WATER HEATER REPLACEMENT
- ONAN REPLACEMENT
- GENERAC NP66G
- NO DASHBOARD HEAT
- WHEEL WEIGHTS

### CLASSIFIED ADVERTISEMENTS

## ANOTHER ENGINEER'S PERSPECTIVE

by Frank Condos

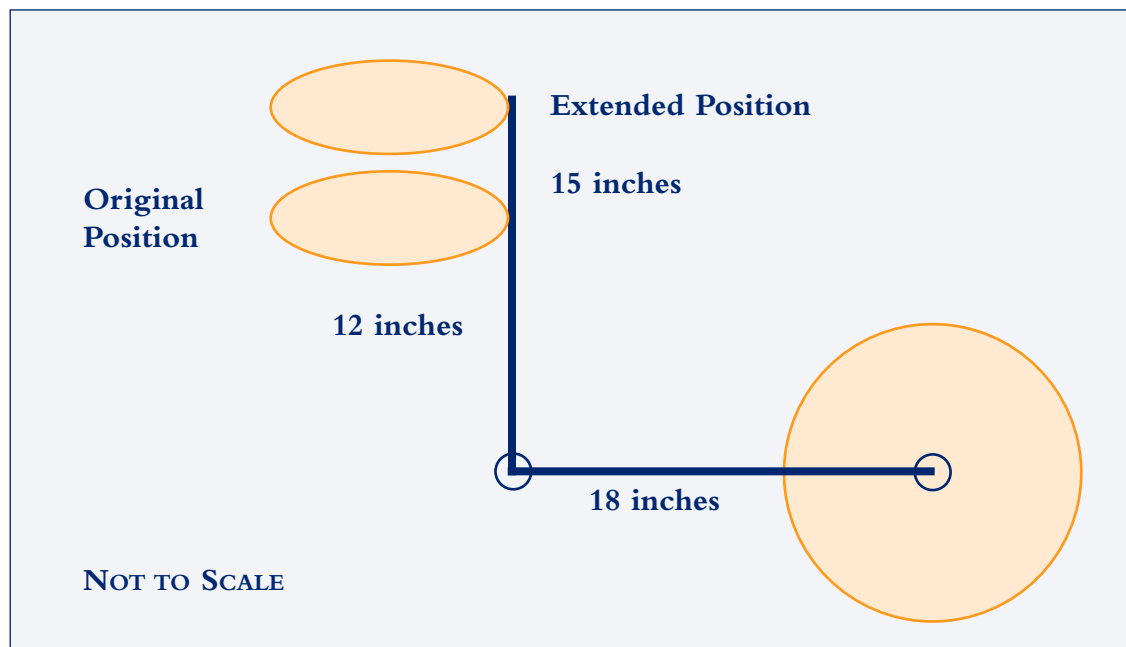
Air-bag lifters are brackets that raise GMC Motorhome air bags approximately three inches above the original equipment manufacturer (OEM) position by extending the control arms. The purpose of this article is to discuss the possible advantages and any disadvantages of such a change.

The original idea was developed to support the additional weight of a stretched motorhome while maintaining normal air pressure and ride height.

the load. Current designs extend the arm about three inches or 25 percent. This is illustrated schematically for one wheel.

Total wheel travel is controlled by the shock absorber, and it is a little bit more than 7 inches. The resulting air-bag flex on one side is 4.7 inches. With a lifter, air-bag flex increases more than one inch to almost 6 inches.

Remember, the supporting force is directly



*A schematic diagram of the relationship between the air-bag lever and the wheel lever before and after the control arm is extended and the air bag is lifted.*

The control-arm extensions are fabricated from steel stock and bolted on the control arms using the original air-bag mounting holes. Owners have fabricated their own extensions, and there is at least one commercial version available.

What do the lifters accomplish? The control arm is really a lever pivoting around a pin. Lengthening the air-bag end of the lever means that less force will be required at the air bag end to support

related to the pressure in the air bag. As a result, air-bag pressure is either reduced on an OEM motorhome or remains close to OEM when the load is increased up to 25 percent.

But what other effect does extending the control arms have on the motorhome? We will examine some claims and the physics of the change.

Ride quality is affected by the change in the

*Continued on Page 2*