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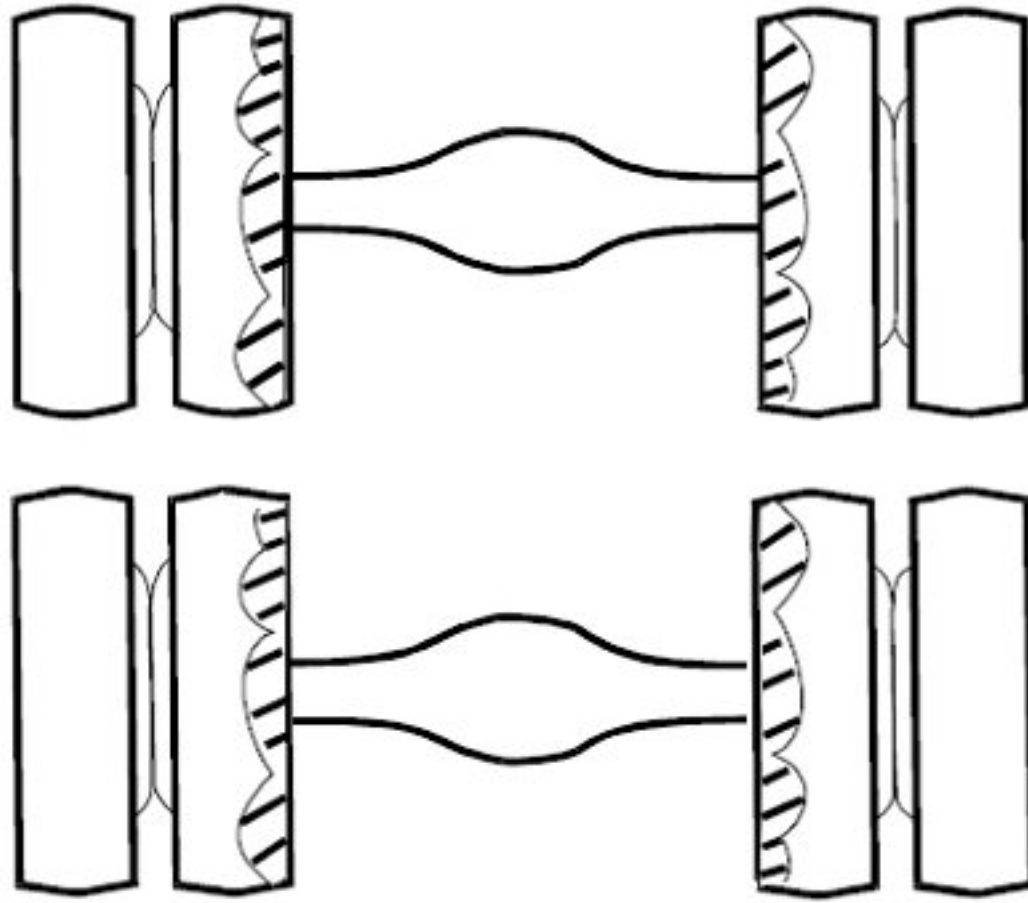
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Trailer Suspension's Impact on Tire Wear

This presentation will show you why persistent tire wear issues can be related to air ride suspension design.

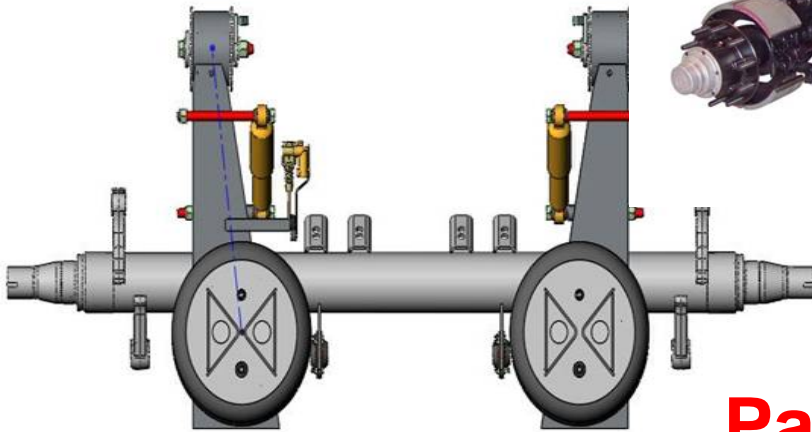
Tire Wear Problem



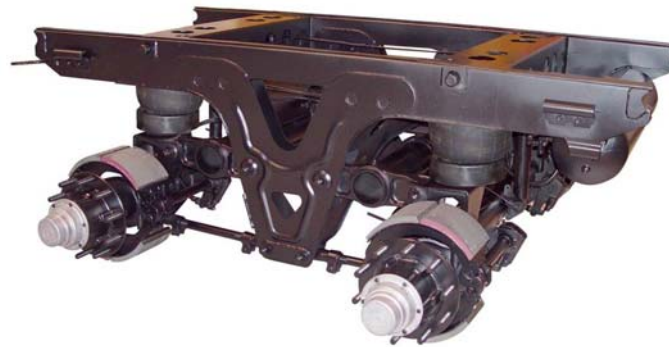
FACT

- Irregular tire wear is a reflection of the tire “deflection” from the road surface
- If you experience any type of irregular tire wear on duals, it will be **MAGNIFIED** on wide-base tires

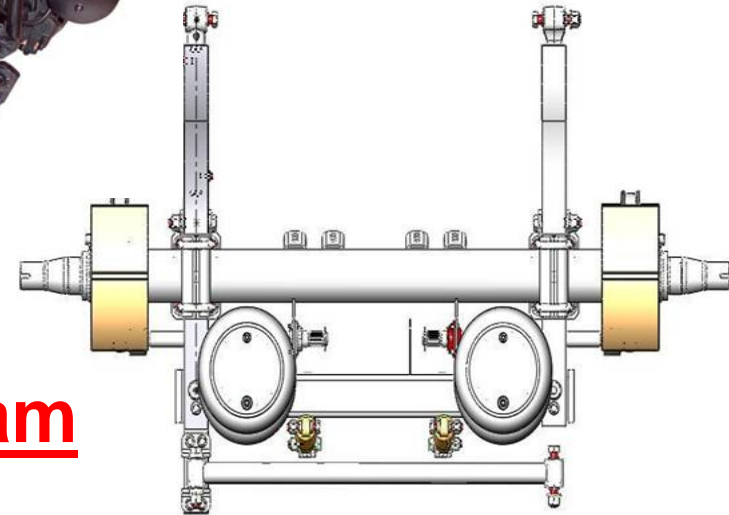
Three Common Suspensions



Trailing Arm



Parallelogram



Air over Spring

Suspension Differences

1. Use of Dampers
2. Length of Spring Centers
3. Use of Track Rod
4. Alignment

Importance of Dampers

Role is to maintain tire contact with the road

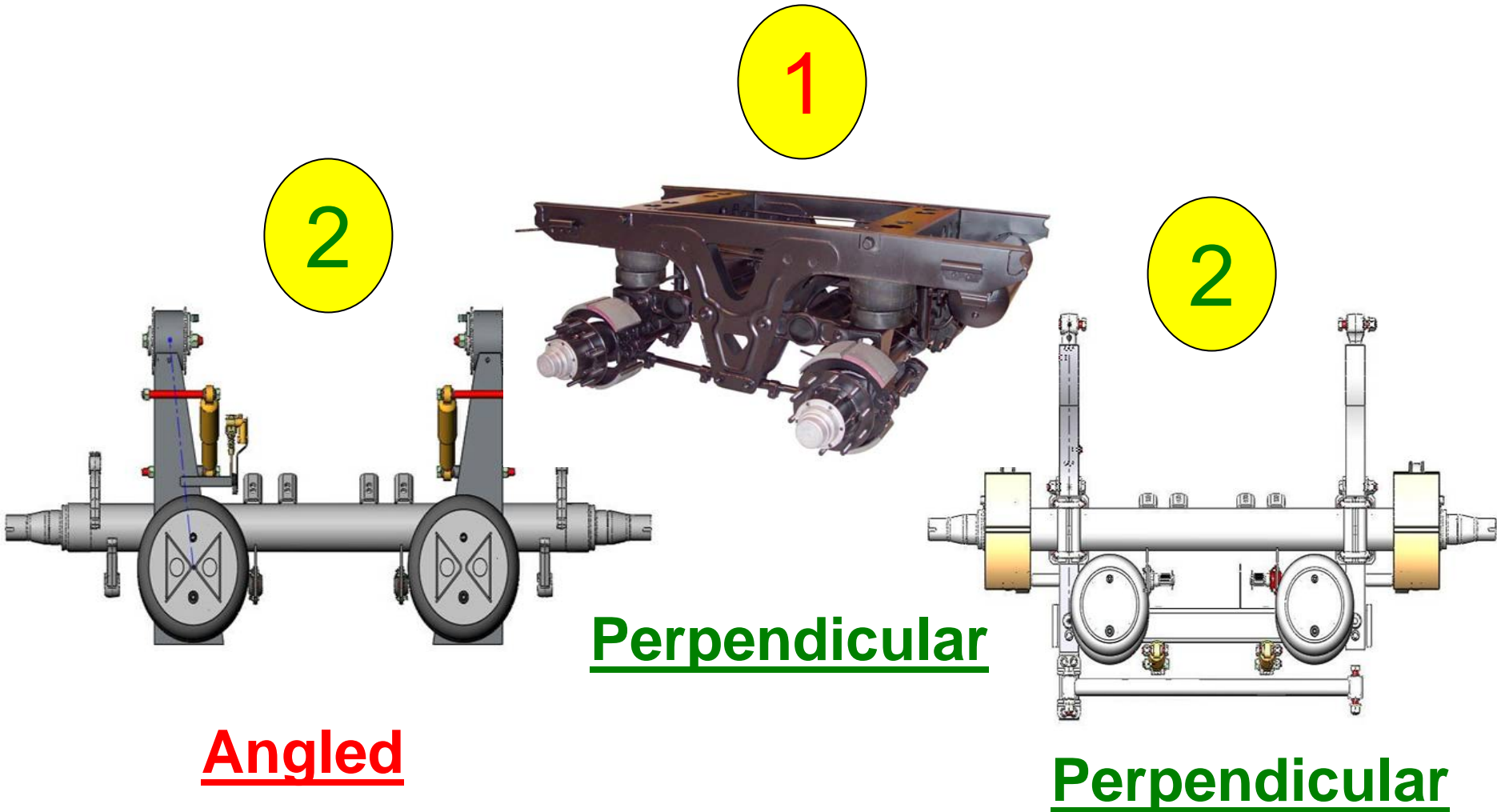
Function at maximum efficiency when:

- Mounted as close to the tire as possible
- Mounted exactly perpendicular to the suspension travel

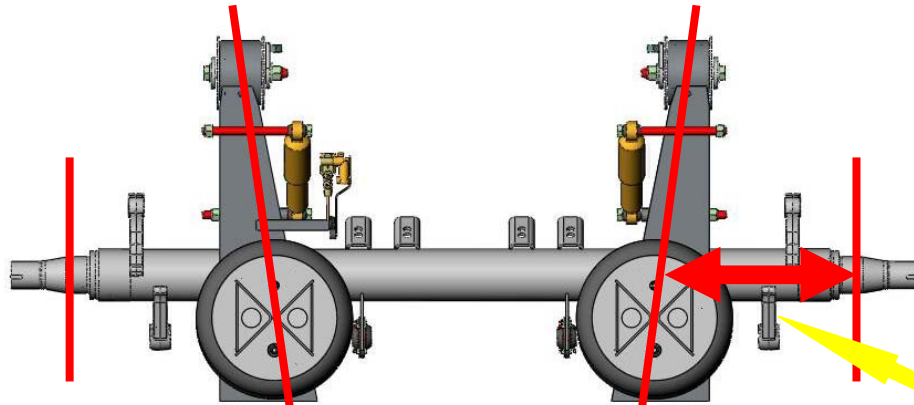


	Percentage of Effectiveness
Perpendicular	100 %
+ / - 10 degrees	98 %
+ / - 20 degrees	92 %
+ / - 30 degrees	86 %
+ / - 40 degrees	74 %
+ / - 50 degrees	68 %

of Dampers per Axle

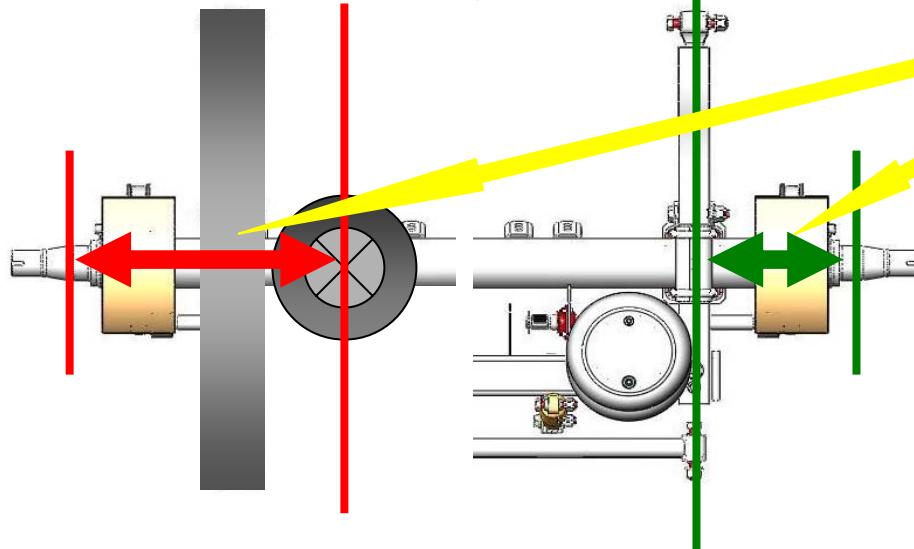


Spring Center Comparison



Trailing Arm

Compare the distances between where each design carries the weight of the load

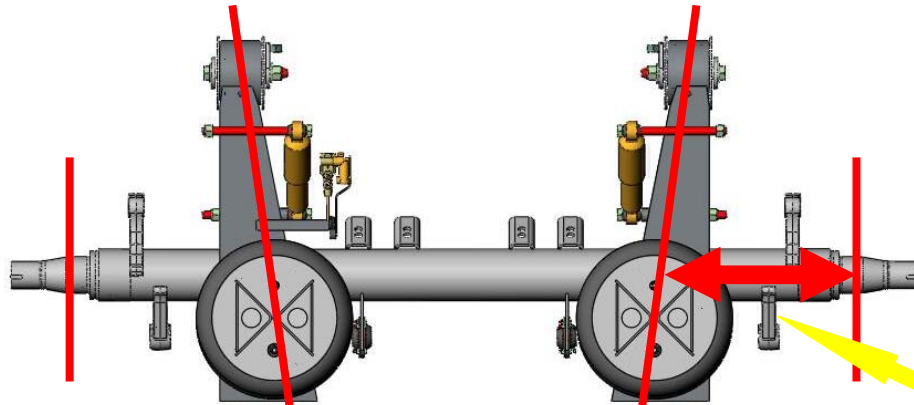


Parallelogram

Air over Spring

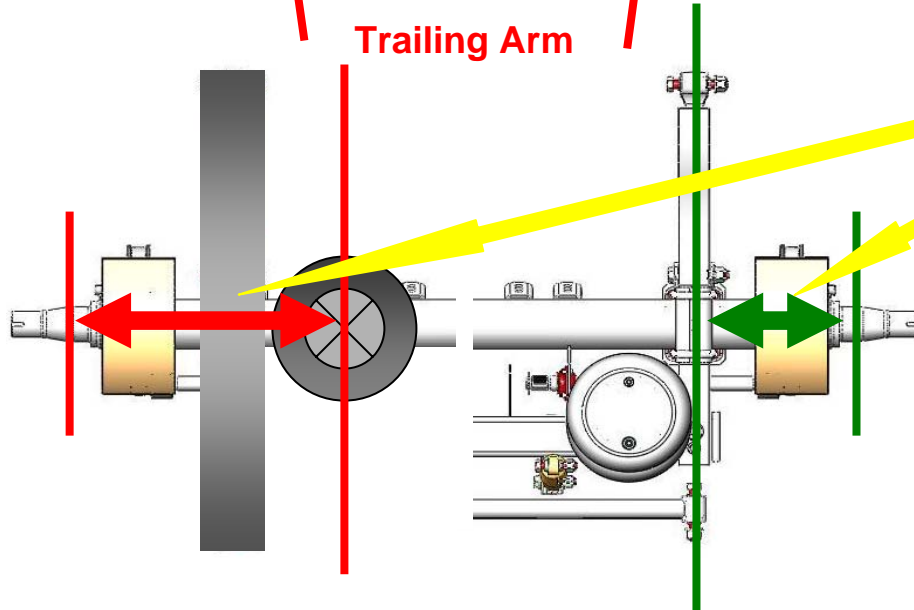
On average, A-o-S has at least 3" less distance than others

Spring Center Comparison



Trailing Arm

Can you now see why some air ride suspension designs allow axles to flex more than others?

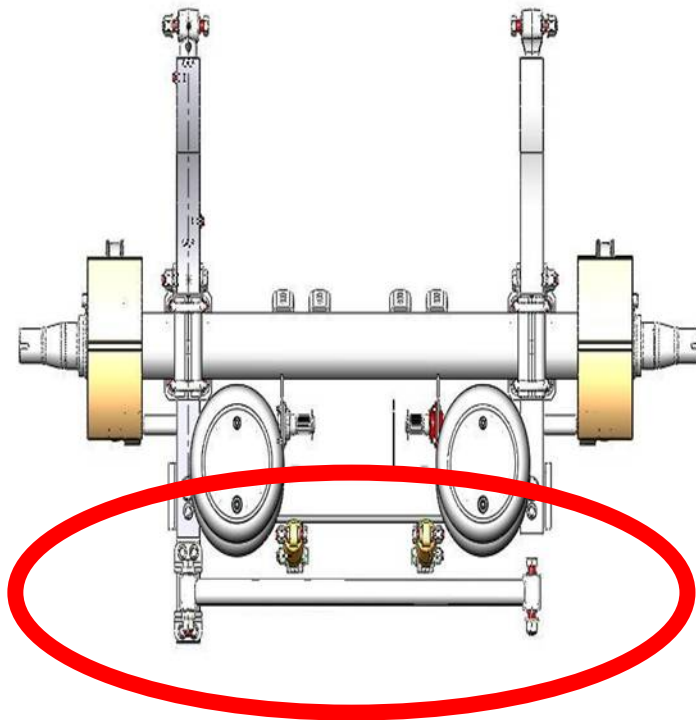


Parallelogram

Air over Spring

Un-even weight distribution & longer distances promote axle deflection which shows up as un-even tire wear

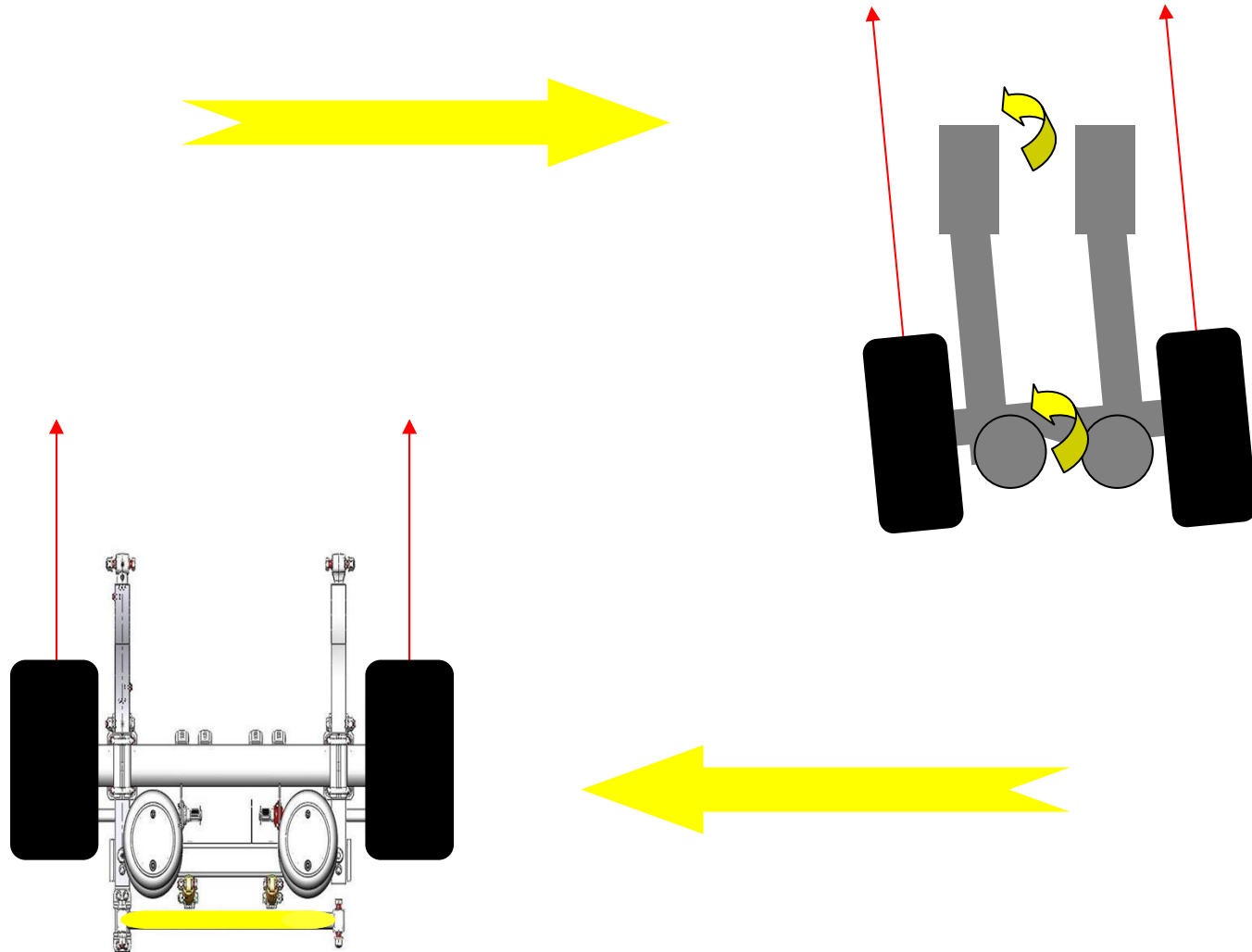
One Design Uses Track Rod



Harness lateral force:

- Control tire “roll”
- Re-distributes force to keep tires flat against the road
- Maintain parallel track
- Keep tire track parallel with trailer

Lateral Forces @ Work



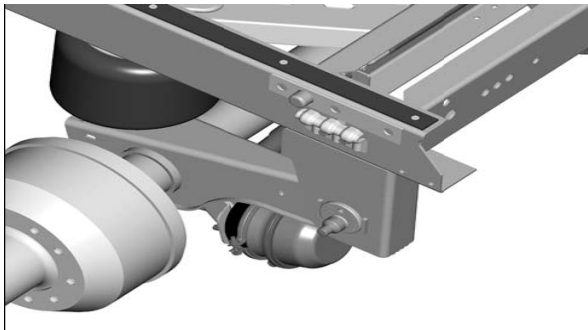
Ease of Alignment / Adjustment



Loosen Upper Control Arm
Loosen Lower Control Arm
Re-torque = 590-610 ft.lbs.









Loosen Torque Arm clamp bolt
Re-torque = 125 ft.lbs.



Loosen Pivot Bolt
Replace Pivot Bolt
Re-torque = 550 ft.lbs.

Comparison Summary

	Trailing Arm	Parallelogram	Air over Spring
# Shock per Axle	2	1	2
- Close to Tire			
- Perpendicular			
Short Spring Center			
Use of Track Rod			
Ease of Alignment	550 ft.lbs.	~ 600 ft.lbs.	125 ft.lbs.



Trailer Tire Wear Experience

- Common fleet experience = 17,000 -20,000 miles per $1/32^{\text{nd}}$ of tread wear
- ☺ A-o-S customers regularly report getting more than **30,000** miles per $1/32^{\text{nd}}$ of tread wear
- ☺ Independent testing is recording that A-o-S design delivers more than a **20%** reduction in tire wear versus competing designs on identical equipment in identical duty cycle

Tire Wear Savings

20,000 miles X 8/32nds per tire = 160,000 miles / tire

8 tires X \$260.00 cost per tire = \$2,080 total tire cost

\$2,080 / 160,000 = \$.013 / mile

Industry
Average

30,000 miles X 8/32nds per tire = 240,000 miles / tire

8 tires X \$260.00 cost per tire = \$2,080 total tire cost

\$2,080 / 240,000 = \$.0087 / mile

Air over Spring
Experience

50,000 miles/yr X \$.0043 difference = \$215 / yr Savings

\$1,505

“We switched to Reyco Granning and our tire wear problem disappeared.”

Mr. Duane Harney
Director of Maintenance
Barr Nunn Transportation, Inc.

