From: gmclist-bounces@temp.gmcnet.org on behalf of Charles Aulgur
To: GMCnet
Subject: [GMCnet] JUST WONDERING
Date: Tuesday, October 06, 2009 7:03:21 PM

Date: Tue, 6 Oct 2009 11:05:18 -0400
From: Rick Denney <rick@rickdenney.com>

Randy writes...

> Are you trying to pin the rear wheel to the ground without letting
> it skid?
>

The problem is that the front bogie acts as a lever when the brakes are applied. That lever raises the coach. The rear bogie is only being pushed down by its own weight, if the coach it's attached to is being raised. It's quite possible for the front bogie to reduce the weight on the rear bogie by 90% under maximum braking. With so little weight on the rear wheel, it skids too easily.

Even with my light 23' coach, I've smoked the rear (rear) tires during hard braking.

The reaction rod eliminates the lever effect on the front bogie by providing a link that pushes it back. At that point, the rear bogie maintains its normal weight.

When you ride a bike, if you nail the front brakes too hard, the rear wheel will actually lift off the ground. That's because the weight of the bike and rider is higher than the braking force on the front wheel, which is applied at the pavement. If the resultant of all those forces ends up in front of the front tire's contact patch, the rear wheel will lift right off the ground. I understand the science, and I've also experienced it, with the scars to prove it. Chuck's reaction rod eliminates the bogie as a lever, and now the whole coach becomes a lever with normal weight shift to the front wheels. The rear wheels still unload a bit, but they do it together.

The sticking point for me is that the brakes have to be able to rotate with respect to the bogie arm for it to work. That means disk brakes, because nobody has come up with a rotating brake backing plate for drum brakes. That makes it an expensive modification--you have to convert to disk brakes on the rear at the same time.

Rick "liking the idea and wishing it was cheaper" Denney

'73 230 Ex-Glacier "Jaws"
Northern Virginia

Rick,

Thanks for helping explain how my reaction bars system works. That is the kind of help I was hoping for in by JUST WONDERING post. However, I need to add a little clarification. If you have good rear brakes and apply full brake pressure,the mid axle will lift the rear wheels completely off the ground when the front brakes are also

causing the front of the coach to dive. With normal braking, there is always approximately 1/2 of the braking energy on the mid axle is being dissipated by adding weight to the mid axle, which does not help slow the vehicle. However, by adding weight to its-self (lifting the rear of the coach), the mid axle is capable of providing additional braking with out sliding.

The rear wheel brakes are a different story. When the brakes are applied on the rear wheels they act just opposite to the mid axle. The brake torque is applied to the suspension arm in a clock wise direction with approximately 1/2 of the braking torque being dissipated by pushing down on the suspension arm rotation pen. It cannot lower the rear of the coach because the mid axle has much more lifting capability then the rears have pushing down. The net affect is the rear wheel has to take weight off itself to react the brake torque and when the braking torque around the axle approaches the opposite torque generated by the tire friction with the road surface, the wheel stops turning. If you look at by videos frame-by-frame you can hear the rear tire screeching long before it is lifted off the ground. The bottom line is the rear tires on a non-modified GMC does very little braking of the vehicle during a hard stop, but you hear the rear tire screeching and think you have good brakes. With the braking torque being dissipated by pushing or pulling on the bogie frame, all of the braking energy is being dissipated by slowing your vehicle, and both rear wheels provide similar braking ability. That is why I say the reaction arm system provide approximately 150 % more braking capability; 50 % on the mid axle and approximately 100 % on the rear during hard braking.

Chuck Aulgur
La Mesa, CA
76 Royale with great brakes