

# How I improved my mileage, while towing.

**We found out a little “air control” paid off, big time.**

Words and photos by Jok Nicholson



This shows the simple framework we built for the wind deflector and the adjustable struts we used. We lowered the deflector almost 2" from where we started. The less angle the less wind resistance. We used the "bug debris" to get the angle as low as possible.

When we picked up our new trailer I was instantly aware that it was about 18" taller than my motor home. It was proof of some poor planning on my part but now we had to deal with it. The roof of the trailer stuck up above the roof line of the motor home and it was far enough back that it was going to catch a lot of wind.

We towed with it for about three months without doing anything special. The Trailer Toad weight-bearing hitch moved the trailer back 24" and we had ordered the trailer with the longer tongue option (50" from trailer front wall to coupler). This longer distance let the air to come off the roof of the motor home and get between the coach and the trailer. This created a lot of wind resistance and robbed power due to the increased resistance. The end result was that the mileage was worse than we had expected.

I wanted to describe what we tow with and what we are towing so you can compare it to what you or a friend use. We are using a 38' diesel pusher motor home with the 340 H.P. Cummins engine and 6-speed Allison. The trailer is the aforementioned 26' stacker trailer that weighs in at 9800 lbs empty and sits at about 15,000 lbs when we hit the road. The best mileage I was able to get out of this combination for the first three months was 5.9 mpg, and normally it was about 5.7 mpg. I could really tell there was a lot of wind resistance holding us back if the wind was a head wind or, the worst

of all, a wind that was coming at us at about a 45-degree angle. I think what was happening when it came in from the side is that it hit the front of the coach, the side of the coach, and trailer, as well as getting in between the coach and trailer. The other thing that hurt mileage was that the transmission just would not stay in 6th gear, so we ran more RPMs than we should have needed to.



From the front, you can see the wind deflector is just two pieces of flat aluminum that are bolted to a hinge (so it can be raised and lowered). The Air-Tabs on the upper edge assure us the air flow is directed in as straight a line as possible. The Air-Tabs allowed us to run less angle, and thus there is less drag while still getting the air up and over the front of the trailer.

When we finally had a couple weekends off, we decided to look into ways we could improve the mileage. The first thing that came to mind was we needed to control the air hitting the front of the trailer. During my Internet search for wings and such that could be mounted to the roof, I stumbled across a product call "The Air-Tab". Originally designed for the aircraft industry this company was using it to help tractor-trailer rigs get better mileage and better control by installing Air-Tabs on the rear edge of trailers and semi-tractors. If you tow an enclosed trailer with a motor home you know how a tractor-trailer rig pushes the trailer around when they pass you, right? That feeling of being pushed around all but disappeared with the Air-Tabs on the rear edge of my trailer. It is a much better handling trailer after the installation of the Air-Tabs. According to the company, it is because the vacuum behind the trailer is now reduced. For a little more than \$150.00, I purchased enough Air-Tabs to get them on the rear edges of the trailer, and I got a few to put on the rear edge of the "wind-deflector" I was going to build.

After talking to Jack at Air-Tab, and doing some measurements of how far back the trailer was from the motor home, we came up with a plan. We decided we had to get the air to go over the front edge of the trailer. This would require a wind deflector to be made. What we came up with was simple and

effective. Two-pieces, 16"x40" and some galvanized angle bracing. I did my normal "backyard engineering" and used the correct caulking for the screws we put into the motor home rubber roof. The support struts that hold the wind deflector up in the rear are some engine limiters we had left over from a project years ago. This will let us make angle adjustments to the wind deflector. We wanted the angle of the wind deflector to be just steep enough to get the wind (and bugs) over the front of the trailer. If you use too much angle, you're just creating unnecessary wind drag. We started with the angle at about 45 degrees and kept lowering it on each trip until the "bug debris" just started to show on the front of the trailer. At that point I raised it about ¼" and the front of the trailer very seldom shows any bug debris now.



The rear corner of the trailer shows the Air-Tabs located along the rear edge of the trailer. These straighten out the air and prevent the swirling and vacuum normally produced by trailers. The Air-Tabs also eliminated the "side push" we experienced when a semi-tractor/trailer would pass us on the highway.

Were the wind deflector and the Air-Tabs worth the time and money? DEFINITELY! First, it reduced the wind drag so much that the coach now pretty much cruises in 6th gear most of the time. This has reduced rpms and mileage has gotten much better. Since we installed the wind deflector and Air-Tabs the average mileage we have achieved is 8.2 mpg (remember it was 5.9 before). On a calm day or with a bit of a tailwind, we have averaged 9.1 mpg. Actually, the trip from Norwalk, OH to St. Louis, MO was our best ever. No tailwind to help but it was as close to calm conditions as you can find in the Midwest. We averaged 9.3 mpg for that particular trip. I know that a lot of people don't get excited about 8.2 mpg but when you go from 5.9 to 8.2 mpg, it is a significant gain. That is a gain of almost 55% in miles per gallon. I know, it sounds unreal but the facts and fuel receipts back up what I experienced.



This is about the best photo I could get to show the angle of the wind deflector on the roof of the motor home.

I was so impressed with the Air-Tabs I contacted them about becoming a dealer. Now I can help other trailer owners improve their towing experience. The last time I found a product that worked this good, it was the Trailer Toad and now we manufacture that product. It was a simple modification and we did it in our small shop. You might benefit looking into “controlling the air” around your tow vehicle and trailer. It will save us over \$1000.00 in fuel costs this year alone.