

# Build a Wind Deflector for Your Trailer

By Dick Ray

At nearly every meet someone asks me if the wind screen on the front of my trailer really works. I always answer "yes, it works better than I thought it would."

The reason I built it was not for improved gas mileage, but simply to make it easier to pull. The deciding event was one morning on the New York Thruway when I was passed by a garbage truck! A contributing consideration was an appreciation of the force on the cab and windshield assembly and the desire to preserve its structural integrity.

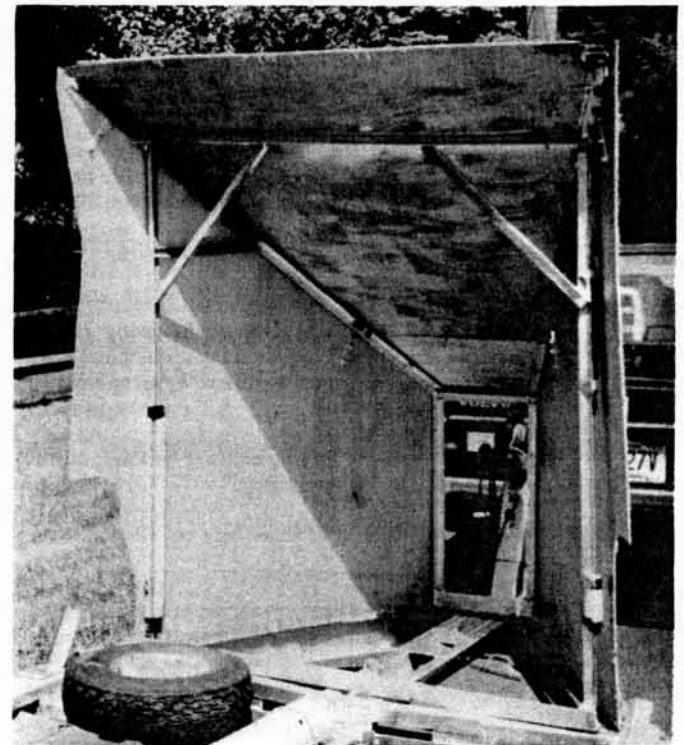
The wind resistance on the front of a motorcar is a function of several things. Speed is important, of course, as is the size of the motorcar cab, but less obvious factors are the trailer tongue length and the size of the towing vehicle. If you are towing an open M19 behind a motorhome on a trailer with a two-foot tongue,

no amount of trailer streamlining will make any detectable difference. My situation in 1983 was towing a full-cab car on a converted boat trailer with a twelve-foot tongue, and using a smallish automobile. While this makes it easy to back up, it was hard to pull.

The solution was obvious. Either reduce the gap between the car and trailer to zero or gently ease the air up and around the motorcar. The first solution is used by long-haul highway trucks where the cab rear is extended backward as close as possible to the trailer. I had the trailer tongue cut down by six feet which seemed to help some. Clearly, streamlining was the next step and I wanted to get the design right the first time.

The design was influenced by the realization that merely deflecting the air up and over the motorcar would do little because air strikes the cab from the sides also. The flat plate air deflectors seen on vehicles pulling travel trailers and the airfoil-shaped air deflector seen on pick-ups pulling race cars are mostly cosmetic. It seemed reasonable that adding air deflectors to the tow vehicle would only add drag to that vehicle and that the trailer, being the culprit, was where the air deflector belonged.

The shape of the air deflector is based on a desire to use no more than two sheets of plywood. Since the motorcar is 62 inches wide, the top



*Plywood and light angle iron were used to make the wind deflector Dick Ray built on a converted boat trailer used to carry his M19. The exterior is shown above and, to the right, the interior supporting structure.*

section will use more than half of one sheet. The sides are sized so that both can be cut from the other sheet with an angle cut across the middle. This angle determines the vertical slope. It helps to make careful measurements and draw scale pictures. I used quarter-inch AC grade Douglas Fir exterior plywood and selected one sheet carefully, since one of the sides has the C-grade side outside.

The taper looking down from the top is simply the taper of the front of the trailer. Once the dimensions of the plywood pieces were worked out, the interior supporting structure was built out of light angle welded together. (See photos on previous page.) The structure was then welded to larger crosswise angles at front and rear which bolt to the trailer frame with only four bolts. The lightweight construction allows me to easily remove the entire unit for hauling other things.

Since interior access is needed for the front tie-downs, I made the sides hinged at the sloped top surface. The sides were also made removable by using loose-pin hinges with the pin replaced by L-shaped pieces of 3/16 steel rod which fit snugly and are long enough that they can't fall out. The L-shape provides a handle for pulling the pin and lays flat against the side when installed. Barrel-bolt latches at the bottom hold the sides closed via holes in the trailer frame.

The top plywood was bolted down with six bolts and then removed for painting. Once the sides were fitted they were also laid out for painting. I should have sealed the plywood better but I was in a hurry to try it out so one coat of sealer and several coats of cheap aluminum paint went on very quickly. I used aluminum paint primarily for visibility, but also because it covers well and the color always matches. One spray can provides a fresh paint job every spring.

So how well did it work? The answer is: Better than I ever expected. After several years of trips to Ontario, Tennessee, New Hampshire, and Virginia I had a reason to tow the motorcar for 20 miles and back with the side pieces left home, and only the top piece in place. The great difference in drag made it clear just how much the side pieces contribute, and reinforced my speculation that the top piece alone is of very limited value.

This aerodynamic saga has one more chapter to it. In the next issue I'll describe another major improvement.



## **How To:** **Build a Wind Deflector** **for Your Trailer, Part II**

By Dick Ray

A previous article described the design and construction of an air deflector for the front of my trailer. This did wonders for making it easier to pull, especially in a headwind. It also isolated the motorcar cab from the force of the air and kept the front of the car clean. Upon arriving at a meet, I no longer had to clean the outside of the windshield. Instead, I had to clean the inside of the windshield, the engine cover, the seats, and everything else. I later tied the seat backs down and put a plastic garbage bag over each of them. This was not really satisfactory since the bag would beat itself to pieces in several trips, despite four bungees over each seat.

While following Fred Fisher home from Kingwood, West Virginia, one evening I noticed how well his full motorcar canvas cover fit and the lack of flapping in the wind. At a rest stop he showed me the heavy bungee cord holding the sides inward using a loop sewn to the inside of the cover. I got his business card (Fisher Canvas Products) and later made an appointment to have a cover fitted to my car. When I picked it up later the cover fit perfectly and had many grommets in the bottom for tiedowns. The cover comes down to within two inches of the bottom of the wheels and is clearly just the thing for keeping the car clean inside and out.

The surprise was that it also made a big reduction in the wind resistance. Coming home on the New Jersey Turnpike I was staying with the traffic at 65 m.p.h. using 5th gear with a 2.3 L (140 cu. in.) non-turbocharged engine. Previously I had used 4th gear at 60 m.p.h. in the same conditions.

Other benefits include being able to carry all the paraphernalia necessary for a meet in the motorcar instead of in the tow vehicle, leaving more free time at the set-on and the load-up times. My canvas motorcar side-curtains can hang free instead of being bound up which causes the plastic windows to chafe and become cloudy. The side and rear curtains themselves stay clean and are protected from the sun and moisture, which cause rot. Finally, the aluminum vehicle stays clean and shiny even when parked under a tree all winter. I don't have to polish the aluminum every spring as before. All in all, the cover is one of the best investments I ever made.