

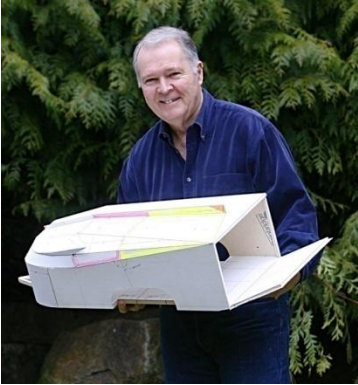
The BRE Orca

a killer whale of a trailer!



lightweight, all aluminum construction
clean semi-monocoque structure
revolutionary aerodynamic design by Peter Brock

My Goal with the Orca



For years I've looked at various car haulers trying to find something fuel efficient (lightweight and low drag), stable and easy for one person to operate. I wasn't interested in taking my entire shop to the track or creating a "second home" at my destination. I wanted something purposeful and sleek; an aero-dynamic, lightweight sheath for whatever track weapon I wanted to haul. A scabbard for a sword; something spare, secure, fast and easy to handle.

Over the course of several years I never found it, and frustrated by the seeming lack of aerodynamic knowledge in the trailer industry I decided to design our own and have them custom built in a special process by an expert fabricator. With current fuel prices we heard constant complaints from fellow racers about the costs of towing their tall, heavy, wind-pushing "bread box" trailers. Everyone seemed to desire the same things we did. Those comments combined with all the "thumbs ups" and shouts of "where do I get one" from fellow drivers as we towed ours down the road, convinced us to make it commercially available. The result is the Orca, a smooth, slippery creature from the wilds of the Great Pacific Northwest.

A handwritten signature in black ink, consisting of a large, stylized 'P' followed by a long horizontal line that tapers off to the right.

Peter Brock
Brock Racing Enterprises LLC

Aerodynamic

Frontal Area

One of the most important aspects of aerodynamic efficiency is frontal area. Some trailer manufacturers make an attempt at reducing drag by simply angling the nose of their trailers into a V shape. That trick doesn't reduce frontal area however. It's an uneducated guess, or at best an attempt in reducing the CD (co-efficient of drag). Believe me... sharp angles don't help much.

If you've ever towed a trailer in the rain you may have noticed the rain doesn't hit the front of a trailer straight on. It's actually deflected towards the sides... the reason being that the trailer is always being towed behind something. The air that hits the trailer has to go around the towing vehicle first. It is only when the air finally clears the towing vehicle and starts to fill in the void just behind it, that it hits the trailer. Unless you have a 10 foot tongue, the air won't fill in around your tow vehicle efficiently enough to hit the nose of the trailer.

More important to reducing frontal area than that pretentious V-shape is the height and shape of the nose of a trailer. If the trailer's nose is higher than your tow vehicle it's sticking up into the oncoming flow of air like a huge air brake. Even if it's lower than your tow vehicle's cab, the air is still hitting the top forward end of the trailer. Getting the whole trailer low, and the nose even lower, so the air can flow over the forward end and around the sides so it sticks to the surface as it goes over the shape, is critical to efficient aerodynamic design and gaining the rewards of reduced fuel consumption and good handling.

Orca's Reduced Frontal Area



The front of the Orca is rounded and smooth so that wherever the air contacts it, it stays attached and follows the shape of the trailer; smooth air flow (boundary layer), as opposed to turbulent air flow, is what contributes to a vehicle's efficiency.

Secondly, not only is the entire trailer low, the front top part is even lower and narrower. In fact, as you can see in this photo, its height matches the top of a standard pick-up truck box. You can also see how that lowered front area then follows back along the top and sides of the trailer. When air comes over the top of the pickup box it strikes the trailer in such a way that the air flows smoothly over and around the top and upper sides. That lack of turbulence is what minimizes the amount of fuel needed to pull the Orca through the air and improves handling. Note also that very little protrudes beyond the sides so the air stays attached, further minimizing turbulence!



Aerodynamic Details



Flush Mounted Side Doors

Everything on the front and sides of the Orca is as flush-mounted as possible. That beautiful curved nose at the front dictates custom made, curved aluminum side doors with flush mounted locking handles. And while we were at it, we made the inside of the left side door a great place to store the trailer jack.



The Oft-Forgotten Underside

Making the underside of a vehicle aerodynamically efficient is an integral component of successful racing. With other trailers it appears to be seldom given a thought. Objects dangling down or exposed chassis structure make it difficult for air to make its way to the rear. One of the worst “performance thieves” is a bare axle shaft hanging in the breeze. These unrefined details all have a cost in terms of fuel and handling. The underside of the Orca is covered, flush and fully-skinned aluminum.

Crosswind

We’ve talked a little about how good aerodynamics improve handling. Another important aspect to hauling a trailer is how it handles in side winds. With the Orca’s low profile, it naturally does well in cross flows. Another aid with side winds are the angled tops of the cargo box sides. In addition to significantly improving air flow from the front, they give a crosswind another way to more easily make its way across the top of the trailer from the side.

Lower Still

Low is good, lower is better. In addition to the “standard” Orca which has 61” interior height (suitable for 60” sedans), we also offer a “low-line” Orca suitable for sports roadsters. The low-line was originally designed for our own Superformance Cobra Coupe. The low-line Orca has just 51” of interior height. This is the ultimate in streamlined, efficient trailers.

Lightweight

Drag and inertia are the enemies of fuel efficiency. The lighter the load the better the performance. Light weight plus good aero saves money.

Materials

The Orca is made completely of aluminum. It weighs in at an impressively light 2430 pounds.

Construction

The Orca's semi-monocoque design eliminates the need for the numerous internal braces and framing systems typically seen on other trailers. This gives the interior as much headroom as possible with no obstacles on which to hit your head. There are just a couple of side frame members to give as much sidewall clearance as possible. The interior not only looks good but it's extremely easy to clean.

The Orca "Fin"

You may have noticed the interesting dorsal fin that runs the length of the Orca's roofline. This unique structural member is one of the Orca's defining design elements. It adds tremendous strength to the roof without requiring any internal bracing. The inspiration came from one of my favorite automotive designs of all time, the 57SC Bugatti "Atlantique". A killer whale with a prominent dorsal fin became the inspiration for the "Orca" name.

Use

Loading and Unloading



The Orca comes equipped with a commercial grade, remote controlled winch. Attach the hook to your car and walk it in, one hand on the steering wheel, the other on the wireless remote to control speed. It's that easy. Once in, it's a simple matter of using the four flush-mounted "D" rings in the floor to secure your car with ratchet tie-downs. The two front doors give easy access to the front of your car while the rear is wide open through the ramp.

Storage

The Orca is focused on the task at hand, hauling your car with just the tools a person may need for a weekend of fun. There's a broad aluminum shelf in the front where a full set of spare wheels and tires can be stored as well as a jack, jack stands and tools. Convenient side channels along the inside walls in front and behind the wheel wells easily help secure those difficult to store slim-shaped items such as tables, chairs, ladders, tie-downs, etc. We use a variety of rubber tarp straps to secure items to the numerous attachment rings on the walls.



Shelter

As is apparent by now, the Orca is streamlined and low. The standard version however is still a comfortable place to be if you want to escape the weather. Just pull out those chairs and table you stowed in the side channels and relax inside a racer's dream, surrounded by shiny aluminum.

Angled Driveways

Ever had that terrible experience of pulling into a highly angled driveway or parking lot and hearing the back of your trailer scrape across the pavement? The Orca comes with two small dolly wheels on each corner of its backside. The wheels contact the pavement and glide the trailer across without a scratch.

BRE Orca Specifications

Construction	Aluminum, semi-monocoque
Weight	2430 lbs
Frontal Area	39.8 sq feet (standard trailer) 34.7 sq ft (optional "low-line" trailer)
Underside	Flush, fully-skinned in aluminum to eliminate drag. Rear dolly wheels eliminate scraping on angled driveways.
Length	Total 21' 3" (box 18' 7" plus 3' tongue)
Ext Tire-to-Tire Width	8' 6" (102")
Int Wall-to-Wall	7' 10" (94")
Int Fender-to-Fender	6' 5" (77")
Inside Height	Standard 5'1" (61") suitable for small sedans and high-winged sports racers up to 60" high Optional 4'3" (51") "low line" trailer suitable for open sports cars and GT Coupes up to 50" high
Ramp	Width 7' 1" (85"). Length 4'9" (57"). Spring loaded, lower pivot external springs. No cables or loss of head space due to an overhead roller drum with cable springs and side cables
Loading/Floor Height	13" / 13"
Side Doors	Two aluminum, curved front side access doors, 20"x20" each with flush locking handles
Axles	Twin 3500lb Torsion Flex axles
Tires; Wheels	Four 275/75R15 load range H (130mph); 5 stud, steel modular wheels
Tie Down System	4 flush-mount "D" rings in floor to secure car with ratchet tie-downs (tie-downs not provided)
Floor/Ramp	Aluminum. Smooth or optional diamond plate at no additional cost
Loading Aids	Remote control winch w/easy to handle synthetic cable plus attachment hook (3000 lb capacity)
Interior Amenities	<ul style="list-style-type: none"> ▪ Fore and aft interior lights ▪ Aluminum shelf in front for storing spares, jack, stands, tools and for track work ▪ Four 5" wide channels along bottom of walls in front and behind fender wells for easy storage
Brakes	Integrated electric drum brakes
Maximum load	7000 lbs gross weight
Payload	4540 lbs
Price	Introductory price \$14,900. 50% deposit to place order



Peter Brock's "Datzilla",
a Datsun 510 with a Chevy V8 ZZ3, 550hp engine,
being loaded into the BRE Orca



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