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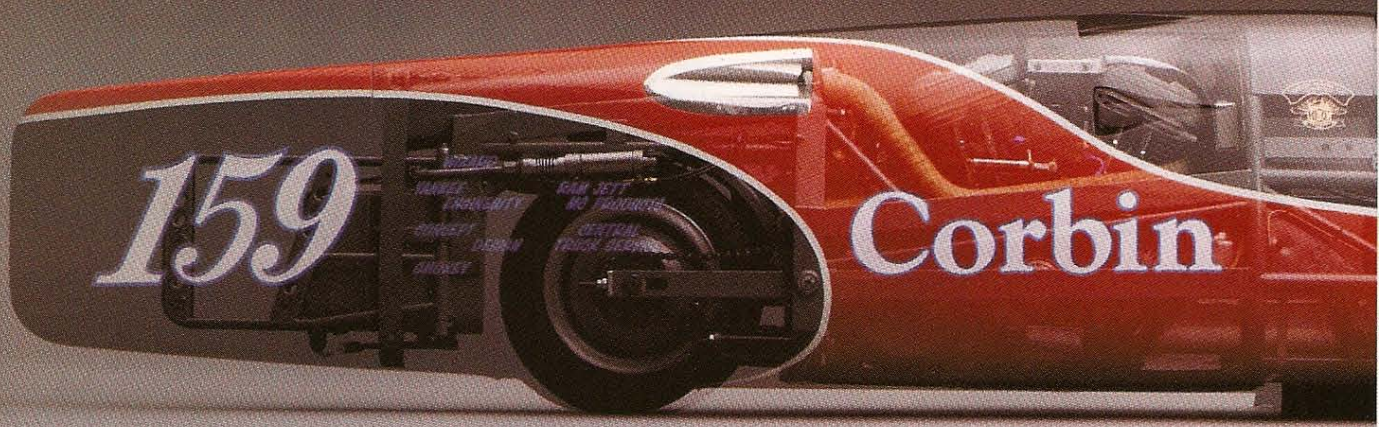
Vance Breese and the Temple of Speed

When God created the Earth, He also created Bonneville—His own dynamometer—and God saw that it was good. So did Vance Breese.

by Joe Minton

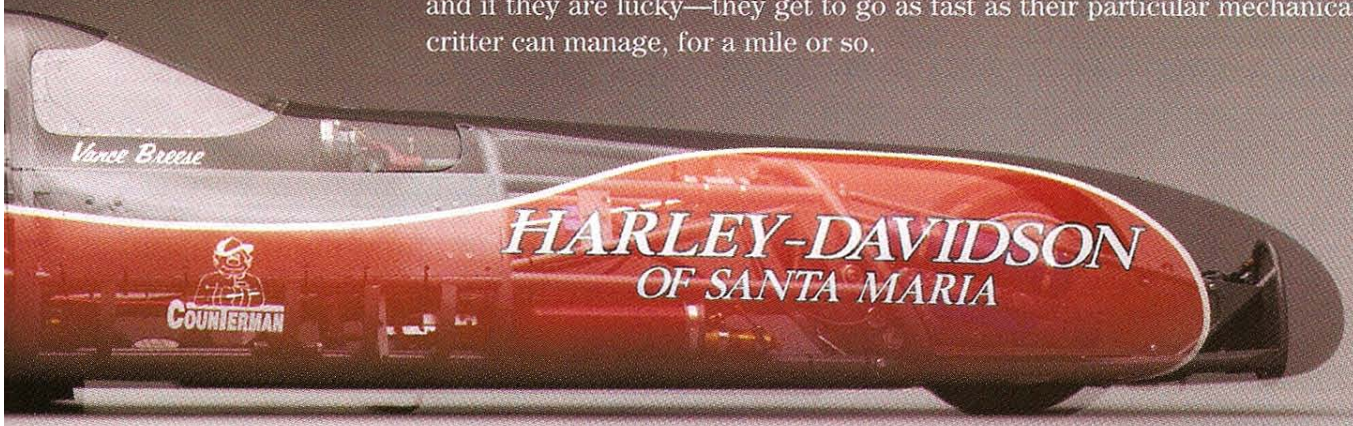
photography by Jim Englund and Mary Meyer



For those who worship speed, speed on the ground, absolute unmitigated speed—Bonneville is the premier altar for their supplications. Men (mostly) have, for decades, arrived from around the world to test their imaginations, or at least the products of their imaginations, on this, God's own dynamometer. Many have gone very fast; few have seen their dreams entirely fulfilled. All have learned lessons, for this place is a great classroom.

Things happen at Bonneville that, seemingly, could never have been anticipated back in the world. Electricity mysteriously stops flowing through wires and across plug gaps. Unbreakable metal fractures for no obvious reason. Chute doors won't open because the Utah sun has expanded the body shell and bound the hinges. You run out of water, out of shade and someone leaves the sun block back at the motel in Wendover. There is never enough iced tea. Murphy's Law is in full effect at Bonneville, complete with all subsections and corollaries. It might have been written there.

There is, however, a plentitude of men (boys at heart, one and all) who represent that unique American phenomenon: the ground-pounding, earthumping, chest-shaking, pedal-to-the-metal American Hot Rodder. It is an informal club with the sole membership requirement being an interest in going fast on wheels. The boys are helpful, friendly/competitive, intelligent. If they were to salute anything or anyone they would probably do it with three fingers, thumb and little finger crossed. They'd likely help little old ladies cross streets; but, since that isn't possible at Bonneville, they must satisfy themselves with doing what they go there for: checking out the machinery, telling lies, breaking things, running out of time and iced tea. Then, if they work very hard, if they are actually well prepared and if they are lucky—they get to go as fast as their particular mechanical critter can manage, for a mile or so.



The Breese streamliner may appear large, but it is tiny! Barely two feet tall and 20 inches wide, the 15-foot liner defines how small one can make a Harley-powered land-speed vehicle. It might, one day, exceed 350 mph—if is aerodynamically clean enough, and the Sportster engine can be coaxed into making the power required.

Bonneville is a "run whatcha brung" kind of place. And the machinery varies amazingly. A bicycle speed record (138 mph) was set there. There have been monster cars with four big V-8s and things like jet planes minus wings. Anything with more than one wheel is welcome, as long as it is safe to operate. Safe operation is everyone's concern and is the one area in which otherwise laid-back hot rodders get very hard-nosed indeed.

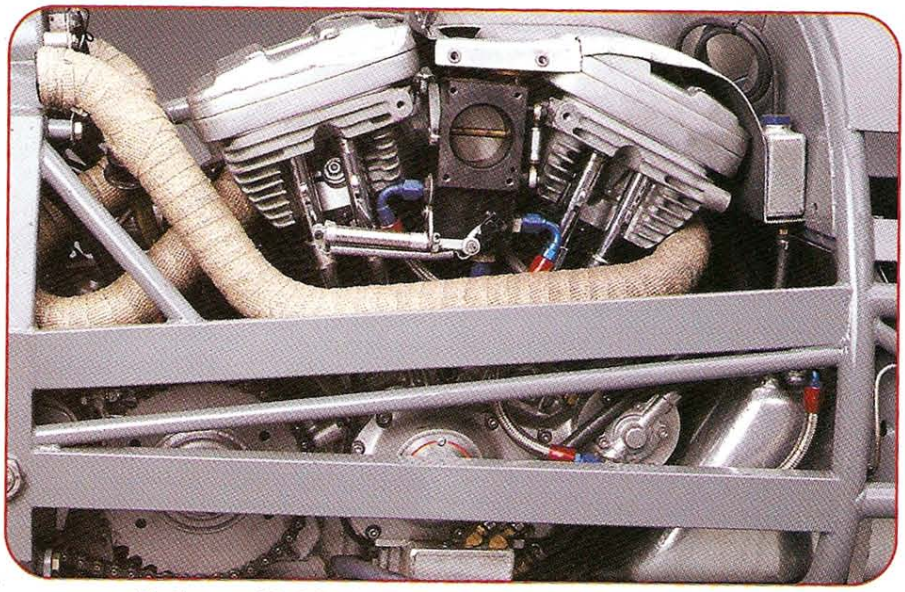
Streamliners ("liners" to the initiate) are the kings of the Salt Flats. They are the ultimate focus and expression of the hot rodders' search for speed. Anyone who chooses to build and pilot a liner is very, very serious about going fast. Each machine is unique, experimental, complicated, expensive and fraught with difficulties. You get to build only one; the prototype is the finished product. The time required is enormous. Liner builders garner great respect at the Salt Flats because their fellows understand the depth of the commitment.

Vance Breese is a liner builder and pilot. He also owns Santa Maria Harley-Davidson in California. Perhaps his name is familiar. Breese was once notable for being able to win races on a Moto Guzzi Sport that spent a significant portion of its track time pointed in a direction (or directions) other than that desired by its pilot. It was awesome to see. He built and rode the Sportster-powered road racer that was faster around Willow Springs raceway than anything this side of a genuine 180-mph Yamaha TZ750 road racer.

Breese is a talented man, deeply so, who enjoys challenge. He solves problems by asking the fundamental questions (like how do you go fast at Bonneville) with that rare tool—an open mind. The design and structure of his liner reflects this. One of Vance Breese's talents, perhaps the key one, is his ability to bring out the best in those around him. The Breese liner is not a sole effort; it is an amalgam of the best work of a select group of fellow speed freaks—all friends of Vance Breese.

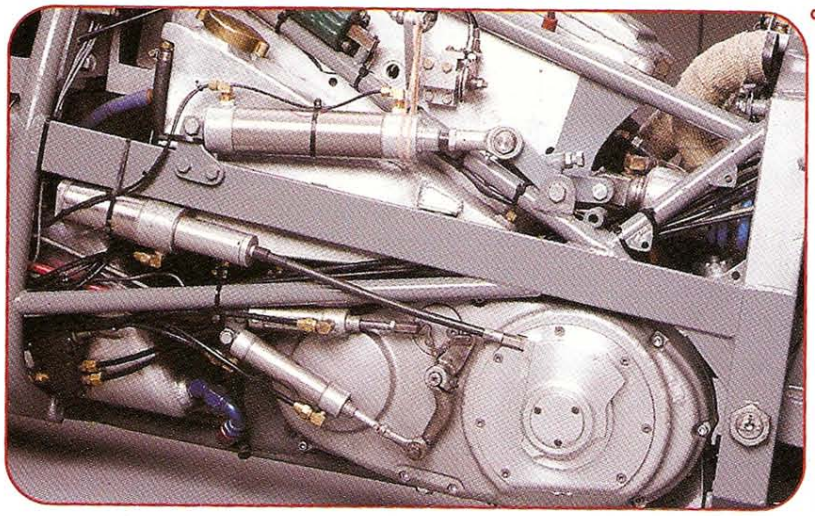
Each of the many times I have talked with Breese about his liner, he has emphasized the value of the folks who are helping him with the project. Yes, it is his money and his inspiration, but he credits their talents and dedication with the actual success of the project.

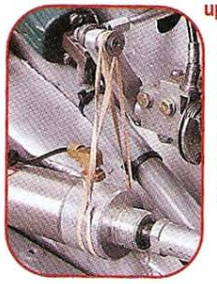
An example of how he goes about things can be found in his clever



The five-speed Evolution Sportster engine displaces 91 cubic inches using a bore of 3.8125 inches with a stroke of 4.5 inches. The S&S crankshaft uses special Carillo rods, and the cylinders are Axtell. Andrews supplied BV cams and Roger Shatelle manufactured the fuel-injection system. Additional work is planned when the bike eventually switches from burning alcohol to nitromethane fuel.

Below: Left-hand view of chassis and engine shows two (lower) air cylinders that operate the shifting linkage. Upper cylinder raises and lowers rear wheel. With wheel in upper position, the Breese liner can be rested on its fairing, thus eliminating the troublesome skids seen on all previous two-wheeled streamliners. Rubber bands on upper cylinder remove play and damp rattle.



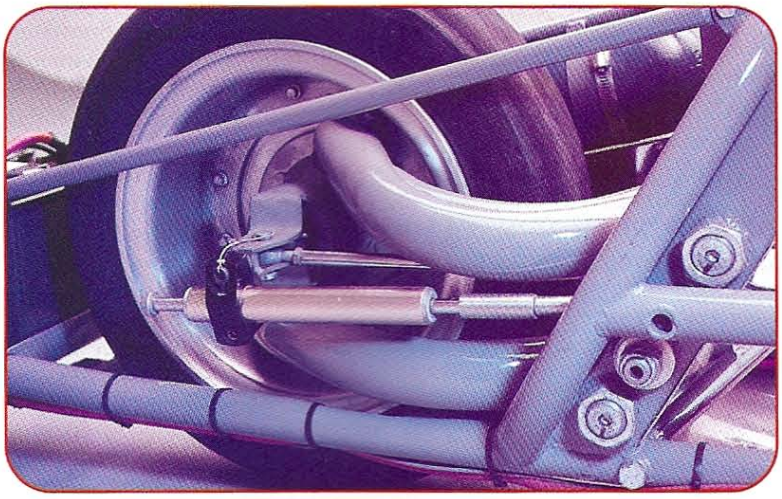


Right: A tachometer is the sole instrument—at high speeds there is little time to glance at more. Various switches dispatch parachutes, raise and lower the rear wheel, operate the fire extinguisher and kill the ignition.

and effective solution to the skid problem. Motorcycles fall over when they're stopped unless the rider puts his foot down. Liner pilots are strapped inside; they can't do that. The traditional answer is to fit retractable skids. Until now, every two-wheeled liner I know of has had them. The Breese machine did, too, until they caused it to tip over at 100-plus. Skids have caused most everybody some trouble. Breese simply took them off.

He reasoned that the tough Kevlar-reinforced shell itself would make an excellent skid. He modified the rear suspension so that the wheel could be raised (and the body therefore lowered), allowing the long, well-rounded shell to act as a prop. The idea was condemned by all who saw it at a recent Bonneville meet. It worked perfectly and seems obvious in retrospect. Really smart solutions often do.

Breese spent considerable time addressing the fundamental question: What does it take to go like the dickens at Bonneville using an Evolution Sportster motor?



Center-hub steering with equal-length upper and lower suspension arms give the Breese streamliner a degree of sophistication normally found only in racing automobiles. While unusual in design for a motorcycle, the suspension and steering give complete and accurate control. Breese finds the steering easy enough to putt around the pits. The tire is from the nose wheel of the Air Force T38 jet trainer; the 'skinned' (tread removed) tires are safe at speeds well over 350 mph. A lack of purpose-built land speed record tires forced Breese to search for alternatives.

Speed, real speed, is limited by air and mechanical friction. It is a cube function; doubling speed requires eight times more power. A reasonably good Sportster engine can deliver a solid 150 horsepower running nitromethane. With the available power temporarily fixed, what does one do? If he is Vance Breese, he builds a very clean (aerodynamically speaking) and very small motorcycle.

And small it is. Breese's liner is two feet high, 20 inches wide and 15 feet long. It is hard to believe that Breese can get into it at all. It is clean, too. The aerodynamic shell was designed by Kevin Cooper from Ottawa, Canada. Cooper has had considerable experience with motorcycle shapes in wind tunnels. The coefficient of drag for this machine is .10, a remarkably low value, one that many will find hard to accept. According to Cooper, the Breese liner should exceed 350 mph with the projected 150 available horsepower. Breese has been talking about finding 200.

Corbin Saddle built the finely crafted shell. It is constructed using Kevlar instead of the more usual fiberglass. Kevlar is tougher, less brittle and much lighter. Mike Corbin is a dedicated participant at Bonneville. He once set a record with an electric-powered liner.

Tires are a serious problem. Tire makers haven't made any tires suitable for 300-plus-mph motorcycles for a couple of

Bonneville's vastness makes the Breese liner seem almost comically small. Note the bent knees and backs; perhaps Breese should issue knee pads for the crew. The exhaust outlet (above) exemplifies the machine's attention to detail. Enormous numbers of thoughtful hours have gone into this bike.

decades. There are no special Bonneville tires for motorcycles—or so we thought.

Re-enter the Breese factor. Vance Breese went looking for tires that could take the loads and rpm. He reasoned that military aircraft needed similar tires and that, perhaps, one of them might work. The liner is now wearing a set of "skinned" T38 (Northrop F5) nose wheel tires. They're rated for 450 mph; good enough.

The engine work has been done (a never-ending chore) by Duncan Keeler of Yankee Ingenuity. It is an early five-speed Evolution Sportster fitted with Axtell 3 13/16-inch diameter pistons and a welded S&S 4.5-inch crank set using long Carillo rods. The cylinder heads came from STD and were ported by Carl's Speed Shop. An Andrews BV cam set makes the valves go up and down.

Roger Chatilea, owner of Ramjett, builds the fuel-injection system (another never-ending task) used on the Breese liner. It is so well calibrated that Breese can cruise the bike in first gear at 20 mph around the pits. At present, the Sportster motor has been run on straight methanol only. There is enough power for close to 300 mph. After max speed has been developed with alky, the bike will be adapted to nitro fuel. There is no hurry.

In a program precisely similar to aircraft prototype development, Breese has refined the handling characteristics of his liner to the point that he can keep it upright down to about five mph. It is so stable and easy to get underway that the crew launches the liner by pushing it up to about seven mph, and then Breese simply rides away.

Breese is treating his liner effort as an on-going project with the ultimate goal of setting a new open motorcycle record, currently 322 mph. But—and this is remarkable—clearly the development process is as important to him as the goal. I have this notion that breaking the record, should he be able to do that, might bring some regret as there would then be nothing more for him to do. Whether he sets a new record or not (and I'm laying odds that he will), Vance Breese is having a terrific time making the effort. So are his many friends.