

Evolving Trailer Technology

Volume • 9 / Issue • 3

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Made to Order

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Running Smarter on Empty

*Using Innovation to Fight
High Fuel Prices*



While high fuel prices do not appear to be fading, that does not mean that motor carriers and suppliers aren't taking up the challenge of developing more fuel-efficient vehicles or adopting more economical and environmentally friendly fuels.

Vocational fleets, for example, are increasingly taking advantage of the latest hybrid truck technologies. In 2004, FedEx launched its first two hybrid trucks— which travel 50 percent further on a gallon of fuel and reduce particulate emissions by over 90 percent and smog-causing NOx emissions by 65 percent — and now has about 100 of these vehicles on the road with more than a million miles in service.

A growing number of other types of fleets are also now evaluating and testing hybrids, in large part backed by the efforts of the Hybrid Truck Users Forum. HTUF, which is a collaboration of over 50 fleets, truck makers and hybrid system suppliers is now working to determine what incentives are needed to move hybrids into the marketplace.

Another fuel saving effort is making a diesel alternative grow in popularity. Biodiesel, which can be manufactured from vegetable oils, animal fats, or recycled restaurant grease, is now being used in blends of 20 percent biodiesel and 80 percent petroleum diesel, known as B20. Engine manufacturers are addressing the growing use of biodiesel by approving its use and the fuel has gained support in Congress where legislation has been introduced to extend federal tax credits.

Great Dane has also been using its expertise to help combat the effects of high fuel prices. For example, efforts have been focused on improving aerodynamics through experimental designs. Included on trailers showcased earlier this year have been side skirts that reduce drag, a tapered aft section to help keep airflow attached to the trailer body, and a “cavity back” that increases pressure behind the trailer. Other technologies employed to smooth airflow and lower fuel consumption include smooth wheel covers to reduce drag, and single, wide-based tires for weight reduction.

Fuel prices have a profound impact on virtually every aspect of our economy, and they directly affect the trucking industry. Fuel saving technologies can provide a distinct advantage and Great Dane will continue to marshal all its resources to help offset the effect of high prices on its customers. 



Strength from *Interior Lining Options* *Build Trailer Muscle* Within

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hich trailer interior lining options are right for your operation? Regardless of the answer, Great Dane has a broad range of offerings designed to meet the needs of all types of freight transportation applications. In addition to traditional hardwood plywood and other lining materials, including Glass Reinforced Polyester from CRANE sold under the Kemlite brand name, Great Dane offers the following:

SSL (Single Sided Laminate) dry freight vans feature a layer of .019-inch steel that wraps the edges of a rigid core to create an anti-sag interior panel that will not wrinkle or crumple. The puncture strength of the SSL lining is nearly six times greater than .25 inch domestic plywood and more than four times greater than MDPE plastic.

i-Van semi-insulated vans are standard with a fiberglass reinforced plastic lining installed full length to the front wall. This flat, smooth, bright interior lining uses minimal fasteners and significantly reduces maintenance time and costs.

P-101 dry freight vans utilize a bright, heavy-duty full height plastic lining in place of plywood that is resilient and provides superior puncture resistance. The lining is secured to logistic posts using Great Dane's unique hook design.

PunctureGuard, available as a scuffband and interior lining, is a durable, lighter weight option offered in several thicknesses for all Great Dane dry freight and refrigerated trailers. The rigid, thin material is manufactured using a unique process that thermally joins woven polypropylene and glass fibers into continuous thermoplastic panels. PunctureGuard remains pliant over time so impacts during loading will not cause the material to set or curl away from walls.

ThermoGuard, a glass-reinforced, thermoplastic liner, is exclusively made for Great Dane refrigerated trailers. The only liner that helps maintain insulation performance for the life of the trailer, ThermoGuard contains a composite layer that seals the trailer's insulation, reducing out gassing effects that cause foam insulation to degrade over time. That helps maintain excess cooling capacity, reducing cooling unit run-time and saving fuel. 



Worth the Weight

*Choosing a
Floor to Carry
the Load*

Have you ever wondered how floor systems in a van trailer really work? Why crossmembers are spaced the way they are, or why floorboards are shaped the way they are? Or how about whether it's better to add crossmembers to upgrade a floor rating instead of installing a thicker top floor? The answers to these questions can be found by examining how the floor system in a trailer distributes loads throughout the vehicle's structure.

In general, trailer floors consist of floorboards running lengthwise on top of crossmembers running between the bottom rails. Floors are typically made of eight or nine one-foot wide wood or aluminum boards spread across the width of the trailer. Crossmembers, generally made of steel or aluminum I-beams, are typically 12 inches apart but may be spaced down to as little as six inches apart on some models depending on the floor system strength requirement.

Floorboards spread the load to the crossmembers down their length and across the width of the trailer. The floorboards and crossmembers spread and share the load to allow the weight to be transferred to the bottom rails, walls and eventually to the upper coupler and running gear crossmembers. At that point the load is transferred to the tractor and trailer suspensions, and eventually to the ground.

To raise a trailer floor's rating, customers may choose to install a thicker floor. Closer crossmember spacing may be preferable, however, because with more crossmembers the crossmembers and floorboards bend less and end connections are stressed less as well. This is particularly important for when forklift loads create the possibility of end connection failure.

The critical elements of a floor system are the strengths of the floorboards, crossmembers and their connection to the bottom rail. Choosing a floor system that minimizes stresses on these components will lead to the appropriate rating, less failures and longer trailer service life. 🚛



Made to Order

*When Spec'ing a Trailer,
the Operation Counts*

There are a number of reasons to correctly specify trailers to fit each particular type of trucking operation. “While needs for different applications vary,” states Adam Hill, Director, Customer Technical Services, “the goals are the same. To maintain the quality and integrity of the goods they are hauling, boost productivity and cost efficiency to the highest possible levels and realize long service life from equipment, trailers must be specified correctly for each type of operation.”

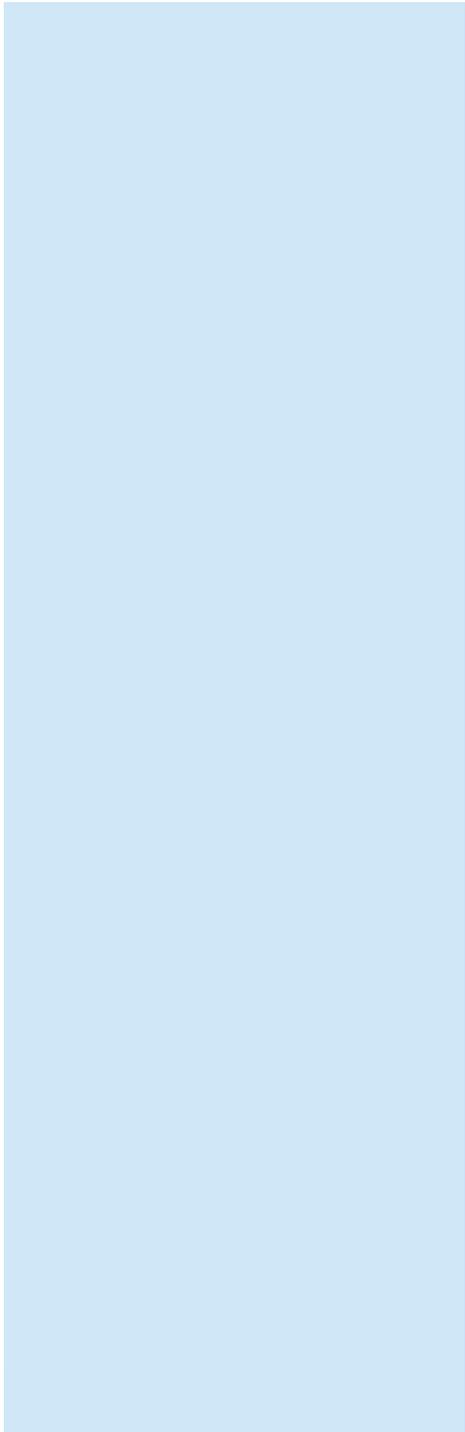
Hill goes on to note that there is a wide range of applications for which Great Dane builds durable and effective trailers. Among the most important considerations for customers, depending on their type of operation and the cargo they haul, include:

- **Air Freight Package**—Floor roller systems to move air freight containers
- **Automotive Parts**—Reinforced walls and ceilings to offset damage caused by forklift-loaded, full-width, stackable steel racks
- **Batteries**—Steel floors with integral sidewall protection and welded joints to contain acid spills
- **Beverage**—Lightweight specs to offset very heavy loads; floor ratings to handle high volume loading and unloading of palletized freight
- **Carpet**—Sidewall strength to handle loads of rolled carpet that settle and expand when transported; front walls designed to handle impacts when loading
- **Double Deck**—Specialized systems for high cube, lightweight freight that can be accessed easily and stored at the ceiling when not in use
- **Electronics**—Shallower drop vans for large mainframe computers; air suspensions
- **Food Service (Broad Line)**—Distribution center to store loading dock delivery operations requiring interior compartment flexibility with moveable bulkheads
- **Food Service (Customized)**—High stop frequency operations requiring flexibility to adjust for a large number of product types, ramps or lift gates for dock to ground distribution, roll up rear doors and side doors
- **Furniture**—Deep drop frame vans with wheel boxes for high cube, lightweight loads; air suspensions and maximum logistic capability
- **Garments**—Interior ceiling mounted rack systems for hanging clothing items
- **Grocery**—Multi-temp or single-temp insulated reefers for dock to dock dry, refrigerated and deep frozen goods; durable interiors
- **Meat**—Specialized units with overhead rails and racks for swinging meat goods
- **Paper**—Floor capacity; sidewall durability; weight carrying capacity
- **Piggy Back**—Intermodal trailers with lifting pads, top rail protectors; American Association of Railroads

requirements can include specs for front and side wall and door strength, support gear capacity

- **Temperature Sensitive Freight**—Insulated vans, heater boxes to keep loads of non-refrigerated but perishable goods from overheating or freezing
- **Tires**—Sidewall strength to handle bulging loads and maximum interior dimensions

“A one size fits all concept is not the right answer when it comes to trailer buying,” Hill concludes. “Spec'ing trailers correctly leads to higher productivity, lower operating costs, longer service life and enhanced customer service.”



B.A.H. Express, Inc.

*Great Dane SSL
Delivers Durability to a
Growing Business*



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ith decades of trucking industry experience behind him, Waymon D. Hemmings, CEO of B.A.H. Express, Inc., knows exactly what it takes to operate a successful transportation company. Among the choices he makes for his family-owned and operated company is a fleet made up almost exclusively of Great Dane trailers. B.A.H. Express specializes in serving the Northeast, Southeast and Midwest, providing service to time sensitive customers as a Super Regional and Inter-Regional truckload, volume less than truckload and local carrier.

"We've been buying only Great Dane SSL Dry Freight Vans since 2002," Hemmings relates. "We've purchased about 100 of them every year because they offer the durability we require to be able to serve our customers effectively. The Great Dane SSL provides more cubic capacity than standard plate and composite wall trailers, and it has all the advantages of conventional sheet and post construction, including ease of repair."

What makes the SSL the right trailer for B.A.H. Express is its unique interior lining. The highly durable single-sided laminate is constructed from a layer of steel over a rigid core that creates an anti-slag surface and ensures the interior will not suffer forklift damage. The puncture strength of the SSL lining, in fact, is nearly six times greater than .25-inch domestic plywood and over four times greater than MDPE plastic.

"With this lining and by specifying hardwood scuffbands on our Great Dane SSL trailers, we have no interior repairs," Hemmings says. "That keeps our costs low. The SSL is the ideal trailer for our operation."

B.A.H. Express also specifies stainless steel rear frames on its Great Dane SSL trailers, which Hemmings says reduce maintenance because they don't rust. "It's about cost, durability and image," he notes. "We keep our trailers for about seven years and don't want units that look 10 years old after just three years of service. With these rear frames we don't have that problem."

Other specifications for the Great Dane SSL models at B.A.H. Express include installing three skylights per side to add visibility inside the trailers. The fleet also specs vents on the front wall and rear doors to provide ventilation during warmer weather.

Founded in 1990 by Waymon and Barbara Hemmings with just seven tractor-trailers, B.A.H. Express has grown 25 percent per year. Today the company that is managed by the Hemmings and their children, Mike and Kathy, fields about 225 tractors and approximately 565 trailers. Its 300 employees are based at a 70-door terminal and full-service maintenance facility in Conley, Ga., and a 48-door warehouse and distribution facility in Concord, N.C. The carrier also has drop yards in Tennessee, Louisiana, Maryland and Georgia.

CASE STUDY

"They have assisted us in spec'ing the right trailers, and they always follow through, which allows us to focus on our business,"

Waymon D. Hemmings,
CEO of B.A.H. Express, Inc.



Great Dane SSL trailer interior, showing the durable single-sided construction of a layer of steel over a rigid core.

Over the past 17 years, Hemmings relates, B.A.H. Express has also prospered because of the support it has received from Great Dane and from its relationship with the Atlanta Branch and Brent Beasley, National Accounts Sales Representative. "They have assisted us in spec'ing the right trailers, and they always follow through, which allows us to focus on our business," he states. "We have no issues with Great Dane and that's the way we like it."

With over 100 years of combined experience in the transportation industry, the management team at B.A.H. Express clearly understands the importance of providing superior customer service by fielding the most reliable and cost effective equipment for its operation. Great Dane SSL trailers are part of that effort, or as Hemmings says, "We're as proud to carry the red dog logo as we are to have our name on our trailers." 



Double Dex Custom Solutions for Customer Needs

Double decking freight has become an increasingly popular way to maximize useable trailer cube, and now Great Dane has developed an innovative technology that helps eliminate potential damage to the trailer and valuable cargo. Traditional track and beam systems extend into trailers and reduce capacity.

But Great Dane's **Double Dex** eliminates the captive beams that are typically attached to the trailer sidewall or post and require supports that protrude from the wall and can snag freight, even if it is wrapped on pallets or in sealed cartons. A first of its kind, **Double Dex** is different because its track is completely recessed and can be easily stored at the highest position when not in use.

While **Double Dex** adds approximately 500 to 600 lbs to the tare weight of a 53-ft trailer, its rated capacity of 500 lbs per liner foot provides for considerable additional cubic capacity. **Double Dex** not only reduces cargo damage, but it can also improve load averages and increase revenue per mile.



Prolam PuR

*Trailer Floor Undercoating Leaves
Competition All Wet*

PROLAM

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ater intrusion in trailers resulting in cargo and vehicle damage can be costly. On Great Dane trailers, however, a new solution is available. Designed to provide a superior moisture barrier, increase durability and reduce floor maintenance costs, Prolam hot-melt polyurethane reactive (PuR) coating resists moisture intrusion from underneath the trailer by eliminating the limitations of standard water-based paint coatings.

PuR provides protection for wood trailer floors. Especially in climates with extreme weather conditions, water-based paint systems used to protect the underside of trailer floors can break down when subjected to intense water spray and road debris. Specific areas, like trailer wheel locations, are more prone to degradation. Once water-based paint breaks down, the wood absorbs moisture, causing warping, swelling and deterioration of glue bonds.

PuR has superior moisture resistance and outperforms water-based coatings because it has a thickness of .010-inches compared to .0035 inches for water-based coating.

Its viscosity allows it to adhere perfectly to wood laminate, creating a solid bond and providing a single uniform sheet barrier against moisture under laminated hardwood floors. PuR can even “bridge” wood defects, knots and critical areas like butt-end joints.

In sandblast tests, PuR was 11 times more abrasion-resistant than water-based coating. In the following standardized tests, PuR outperformed water-based trailer coatings:

ELONGATION

Measures the force required to break a sample material and the extent to which the specimen stretches or elongates to that breaking point.

ABRASION

Determines resistance to abrasion, or the ability of a material to withstand rubbing, scraping, or erosion; measured by the number of cycles needed to create weight loss.

ADHESION

Measures adhesion of a coating to metallic samples by applying and removing pressure-sensitive tape over cuts made in the material.

WATER ABSORPTION

Measures amount of water absorbed after sample material is exposed to moisture.

Once a trailer floor coating has been breached, water can migrate into the trailer, resulting in cargo damage, high repair costs and reduced service life. With PuR from Prolam, Great Dane is offering an effective and efficient solution to what could otherwise be a costly problem. 



Greatec Trailer Radials

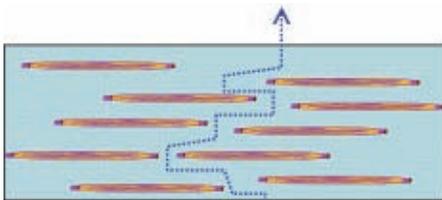
Innerliner Helps Prevent Air from Seeping Out

BRIDGESTONE

Bridgestone has developed a mineral-based additive that improves the ability of its truck tire innerliners to keep air from seeping out through the tire.

Truck tires can lose up to 2 psi per month, just as a result of air finding its way through the rubber of the tire to the outside world. Basically, it's been unavoidable.

This innovative design adds a special component to the innerliner compound. The tiny particles of this additive are long and thin and, using a special processing method, lie more or less parallel to each other. As a result, a maze-like path is formed that slows down air molecules trying to get out of the tire as much as 30 percent.



New Greatec innerliner uses specially shaped and aligned mineral additive to slow leakage of air through tire.

You will still need to check and put air in your Greatec trailer tires regularly, but Bridgestone is doing a better job of keeping that air inside, where it belongs.

Stronger bead design

Bridgestone is also introducing a revolutionary new bead design for its Greatec wide base radials. The T.I.P.[™] (Turn-In Ply) innovation increases bead durability and reduces ply-end stress.

The bead can be a vulnerable area of a truck tire. With each revolution of the tire, the sidewall flexes in and out, creating heat build up. If a tire is underinflated or overloaded, the heat build up is extreme and the end of the body ply can separate from the rubber surrounding it. If the separation grows too large, the tire must be scrapped.

The T.I.P. innovation removes the ply from harm's way, wrapping it around the bead bundle. Soft bead filler volume is increased for smoother handling. Plus, this design reduces the number of additional nylon chafers needed to protect the bead structure.

Though Greatec trailer tires need to be regularly checked and maintained, Bridgestone is doing a better job of keeping the air inside, where it belongs. 

Exclusive T.I.P.[™] design wraps body ply around bead bundle to help reduce ply end stress and enhance durability.



Great Dane P-101's Impress Top Canadian Trucking Company



"We used to specify plywood lining but we've found out quickly that the plastic lining in the P-101 resists contamination and withstands impacts very well."

Alban Gaudet, Head of Vehicle Maintenance Programs

One of the top 50 best managed trucking companies in Canada, Armour Transportation Systems has earned its well-deserved reputation by delivering transportation solutions for more than 50 years. The things that distinguish us as one of Canada's leading freight transportation and logistics specialists are our people and our fleet," says Alban Gaudet, "and the latest Great Dane trailers we've added to our operation for several years have added to our success."

refrigerated, platform, food grade tanker and curtain-sided trailers, and containers and chassis. Headquartered in Moncton, New Brunswick, the company operates from 23 terminals in Atlantic Canada, provides truckload general freight service across North America and has strategic alliances with less-than-truckload partners in Canada, the U.S. and Mexico. In addition, it provides warehousing and distribution services in three provinces, and operates a courier division servicing all of Atlantic Canada.

Gaudet, who heads up all of Armour's vehicle and maintenance programs, refers specifically to the hundreds of Great Dane P-101 dry freight vans it has purchased over the past three to four years. "We expect to see 12 to 15 years of reliable service from our trailers," he relates, "and with the P-101 we've found a vehicle that is performing very effectively in our operation. We've seen for ourselves how well these trailers are built. Now that we've had them on the road for some time, we're also learning how well they meet our trailer needs."



With its range of customers in a variety of industries, of particular interest to Armour is the Great Dane P-101's full height, heavy-duty plastic interior lining that is secured to logistic posts using a unique "hook" design. "We used to specify plywood lining but we've found out quickly that the plastic lining in the P-101 resists contamination and withstands impacts very well," Gaudet states. "With that superior level of puncture resistance, the need for lining replacement is greatly reduced, and in turn so are our trailer maintenance costs."

Founded in the early 1930s with a single farm truck, the Armour fleet now numbers over 3,300 pieces of equipment consisting of tractors and straight trucks, dry vans,

Also proving valuable to the carrier is the 101-inch inside width of the Great Dane P-101. In effect, the single-panel proprietary design provides the P-101 with all the interior capacity of composite wall trailers in a sheet and post

design. That means up to 80 more cubic feet of interior space than a traditional sheet and post trailer, and the flexibility to load two 48-inch wide pallets side-by-side with less chance of interior damage. It is also easy to repair because recessed sidewall rivets are exposed on the interior, allowing for the replacement of side sheets without needing to remove the interior plastic lining.

Gaudet goes on to list several other features of the P-101 that make the Great Dane dry freight van a highly effective choice for Armour. He also points out that service behind the sale is very important to the ongoing success of the long standing, diversified motor carrier.

"About seven years ago we started working with Nova Enterprises, the Great Dane dealer in Truro, Nova Scotia, and in particular with Bill Yorke," Gaudet says. "While the dealership provides us with parts and service, what's most important is that they are always very helpful and are conscientious of our needs."

"We already knew what kind of service to expect from Great Dane and its dealer in Atlantic Canada when we bought our first P-101 dry freight vans," Gaudet concludes. "Now we're also impressed with the product."

Extend the Life of Your Trailer



It all adds up to better performance. After an overwhelming response from customers confirmed that PunctureGuard scuffbands are a more durable and a lighter weight option for trailer protection, the unique Great Dane offering is available as an interior lining as well on all dry freight and refrigerated trailers.

More than 40 percent lighter than the weight of .090-inch and tapered FRP linings, PunctureGuard is a rigid, thin material manufactured using a unique process that thermally joins woven polypropylene and glass fibers into continuous thermoplastic panels.

The result is a material that unlike FRP liners needs no surface treatment to resist stains and abrasion, has a uniform surface-to-core composite structure that remains scuff and scratch resistant throughout its thickness, remains pliant so impacts from loading equipment will not cause it to set or curl away from walls, is easier to keep bright and clean, and can be repaired cost effectively with common plastic welders.





Did You Know?

i-Van Maintains Ideal Temperatures

*Versatile, Semi-Insulated
Van Protects Delicate Cargo*

Combining the traditional sheet and post construction of a dry freight van with the press-panel insulated technology of a refrigerated trailer, the innovative design of the Great Dane i-Van offers the versatility needed to handle and deliver temperature-sensitive loads.

In place of traditional plywood, the i-Van features a fiberglass reinforced plastic liner installed full length to the front wall. Offering an advantage over other semi-insulated vans, this flat, smooth, bright interior lining uses minimal fasteners and significantly reduces maintenance time and costs. Additional lining thicknesses and options are available, including Great Dane's PunctureGuard.

The i-Van incorporates modular insulated side and roof panels with a standard van floor. The i-Van's roof is constructed with a one-piece 0.040-inch aluminum sheet. One-inch thick insulation is standard, with two-inch thick insulation available as an option. Insulated floors are optional with 4.25-inch upper coupler heights, limited to one-inch insulation, which replaces the option for spray foam between crossmembers.

On the i-Van, radius corners are insulated to the front corner post, and interior corners are square to reduce cargo damage. Post cavities that are created as a result of the hat-shaped geometry are insulated to resist heat transfer as well.

Great Dane's comb-style rear frame runs full-height for superior stiffness and rack resistance on the i-Van. Specially designed to protect hinges, lights, lock rods and door hardware, its aluminum hinges break away in the event of severe impact to prevent structural damage to the trailer.

Great Dane also offers a wide variety of scuffbands on the i-Van, including laminated hardwood, roll-formed steel, extruded aluminum or a thermoplastic composite. Each is installed as one piece running the full length of the trailer, and can also be installed across doors and the front wall.

Whatever loads you carry, the i-Van is the perfect solution for fleets operating semi-insulated and heater box vans. With the i-Van, delicate cargo is kept at ideal temperatures at all times, all in an innovative trailer that weighs less, is built stronger and has lower maintenance costs. 

