

Evolving Trailer Technology

Volume • 8 / Issue • 3



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Protecting Cargo and Trailers

Trailers in 3D

CATIA Modeling Software Advances Production

Keeping it Cool

Extend Trailer Life and Maintain Insulation Performance



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News & Trends Trailer Outlook

Trailer Production Through
July 6% ahead of 2005.

Federal Reserve Board

As we approach the end of 2006, all indications are that the trailer market will post another annual growth record. According to the Federal Reserve Board, trailer production through July was 6% ahead of the previous year. Strong demand in 2005 pushed trailer production up 7.8%, which followed increases in the previous two years.

Strong trailer production figures are a reflection of continued economic growth, notes Jim Pines, executive vice president at Great Dane. "The US economy has grown in excess of 3% in each of the past three years," he says. "For 2006, growth is projected to fall just short of 3%. Over the next few years, economists expect growth rates to continue but at a lower rate than those we have recently experienced. Should these growth rates materialize trailer demand should remain healthy."

Among the economic indicators that could continue to fuel demand for new trailers, according to Pines, is growth in non-residential construction and ongoing post hurricane rebuilding in the Southeastern US. This would especially bode well for flatbed trailer production, he adds.

Industrial production, which impacts demand for van and flatbed trailers, rose 0.6% in September and is widely expected to remain on an upward track due to a number of factors. "The global economy matters now more than ever before," Pines states. "While the US dollar is weak, that fuels export growth because the cost of our goods outside of the US drops. Export growth coupled with our country's foreseeable import appetite could have a very beneficial effect on domestic transportation services and equipment demand."

"Trade among the NAFTA countries is expanding as well," Pines adds.

"Economic growth in Canada has outpaced the US for several years and estimates for Canadian Gross Domestic Product (GDP) remain strong. GDP growth in Mexico has outpaced both the US and Canada in the past few years and is projected to grow in 2006 and 2007."

All of this news indicates that trailer production should remain healthy. Data from the US Department of Commerce indicates that steady increases since 2003 will continue. Even the modest growth being projected over the next few years, Pines concludes, would mean stable trailer production for the foreseeable future. 



3D Taking Efficiencies to New Heights

CATIA Modeling Software is Set to Benefit Great Dane and its Customers.

Great Dane's ongoing efforts to enhance production quality are now benefiting from the use of advanced software called CATIA (Cuh-TEE-uh). CATIA uses options selected in Great Dane's sales order entry system to create a 3-D model of the order and output shop floor drawings and a unique list of materials. As a result, communication between engineering, sales and the production staff is improved. By using CATIA, noted www.flyingmag.com, "conflicts and issues that would occur during a traditional manufacturing process are resolved before production begins."

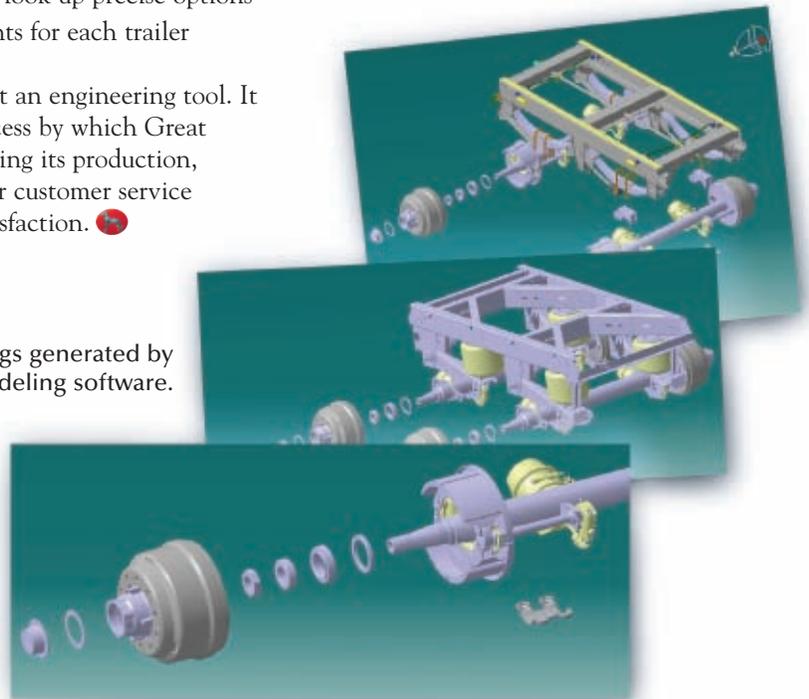
To date, over 20,000 parts for P-Series freight vans and combo flatbeds have been drawn for the CATIA system and the process is underway for Super Seal and Classic product lines. Once fully implemented, CATIA will benefit Great Dane and its customers by:

- Providing order history for returning customers
- Ensuring the integrity of engineering drawings
- Allowing for advance "clash detection" on assemblies prior to production
- Enabling service and aftermarket parts departments to look up precise options and replacements for each trailer

CATIA is not just an engineering tool. It is part of the process by which Great Dane is streamlining its production, providing superior customer service and customer satisfaction. 

Renderings generated by CATIA modeling software.

- Dramatically increasing order accuracy and speed of production by ensuring proper flow of information from the salesperson to the engineer to the factory



Braking Regulations

NPRM 121 or NOT?

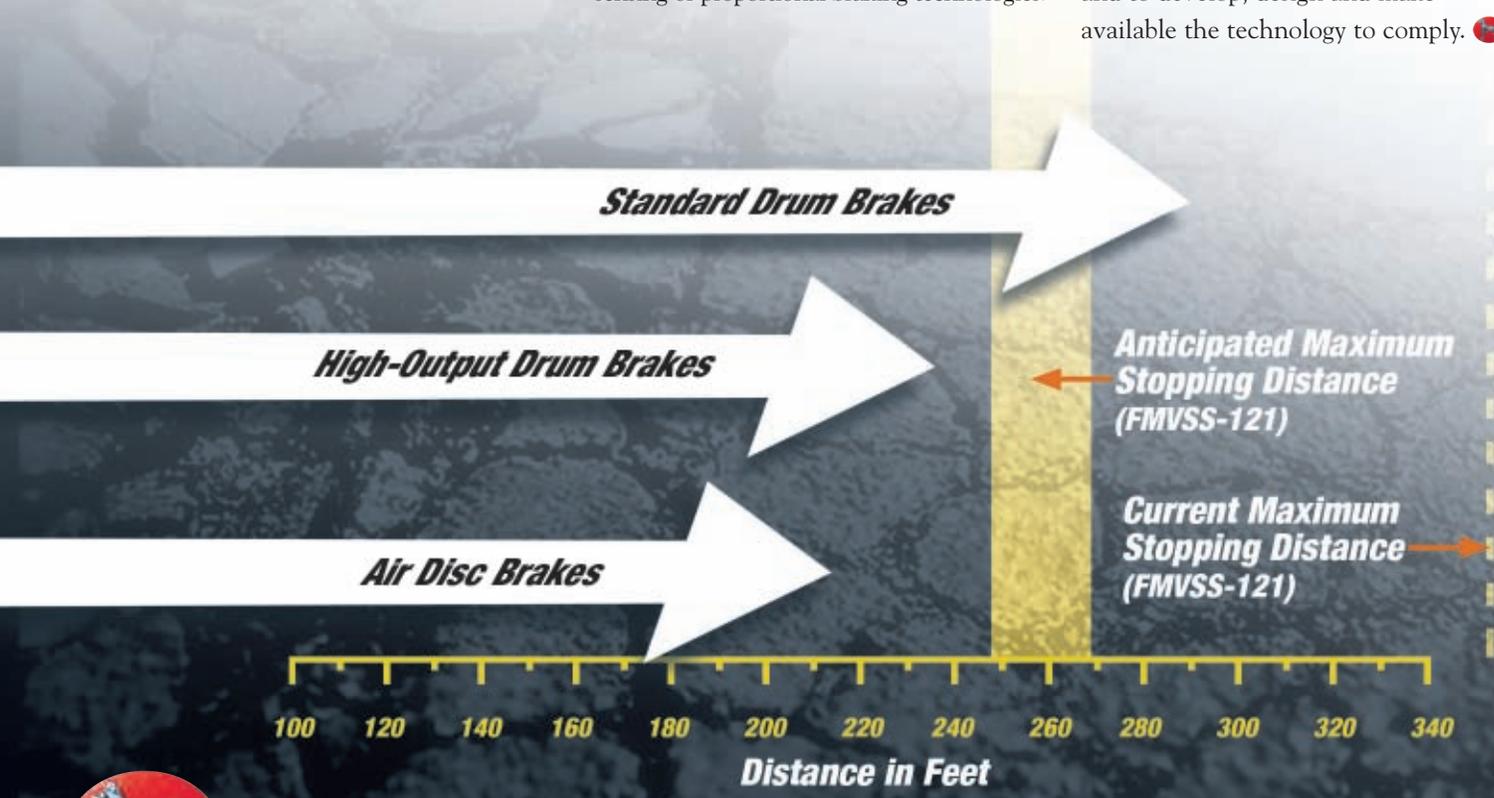
By Dan Carter
Project Engineer
Great Dane Trailers

The Federal Motor Vehicle Safety Standard (FMVSS) 121 governing heavy-duty truck braking system performance is set to change. In December 2005, a National Highway Traffic Safety Administration (NHTSA) Notice of Proposed Rulemaking (NPRM) called for a 20 to 30 percent reduction in the required stopping distance for large trucks. Currently, the industry is anticipating a Notice of Proposed Rulemaking (NPRM) concerning FMVSS 121 by next May and a new rule could take affect as early as 2008.

New stopping distance requirements will not affect trailers initially, but depending on the final form of the rule there may be several secondary effects that come in to play. For example, if the NPRM results in significant changes to tractor drive axle brakes it may become prudent to adjust the braking performance of trailers to help maintain a balance similar to that which is experienced today. This may take the form of increasing the standard trailer brake size up to 16.5x8.63 inches, use of more responsive Electronically Controlled Braking Systems (ECBS), evolution of more advanced foundation brake components, and/or use of load sensing or proportional braking technologies.

The primary result of increased tractor braking may include increased life of trailer friction materials and an impact on driver comfort. What does the future hold? While we will have to wait until the actual NPRM is issued, testing is already underway to determine the feasibility of developing separate standards for "trailer only" vehicle braking regulations. That being said, there is a lot of work yet to be done before vehicle testing standards can be applied to trailers.

As always, you can count on Great Dane to stay on top of emerging regulations and to develop, design and make available the technology to comply. 🐕



ThermoGuard

Keeping it Cool

Extend Trailer Life and Maintain Insulation Performance.

By John Jones
Research Engineer, P.E.
Great Dane Trailers

With record high diesel fuel prices impacting the profit margins of trucking companies it pays to look for every possible savings. For refrigerated motor carriers that means understanding something most in the industry realize—that as insulation in a refrigerated trailer ages, it degrades, adding to fuel costs because the trailer's cooling unit has to work harder, run longer and consume more fuel to keep the trailer at the desired temperature.

Most refrigerated trailers today are insulated with polyurethane foam because it is lightweight, cost effective, versatile in the manufacturing process, and allows for a wide variety of applications. Sounds good, but there's a catch: While polyurethane initially provides excellent insulating performance, as a trailer ages the foam inevitably loses its ability to insulate effectively.

One method of preventing this effect might be to use a less permeable interior liner. FRP, the liner of choice in the North American marketplace, is permeable and does not completely seal the insulation, allowing the "out gassing" effect to occur.

To resolve this problem, Great Dane Trailers introduced ThermoGuard in 2005, a product that addresses this challenge very effectively by combining the advantages of an FRP liner with the sealing ability of a metal skin. The patented interior liner for refrigerated trailers is constructed like traditional FRP, but with an added composite layer to seal the insulation and significantly reduce insulation degradation.

Trailers with ThermoGuard have already shown a significant decrease in loss of insulation performance and have demonstrated the ability to maintain internal temperatures for longer periods of time, reducing the cooling unit's run time. In this era of unprecedented fuel prices, Great Dane is again bringing innovative products to the marketplace to extend the useful life of a trailer, reduce maintenance costs and generate more income for you. 

The ThermoGuard patented interior liner for refrigerated trailers utilizes an added composite layer to seal the insulation and reduce degradation.





Robert Heath Trucking

Selling Service with Great Dane Durability and Integrity.



“We sell service,” says Jimmy Shankle, CEO of Robert Heath Trucking. “That’s what we’re all about and that’s why we’re still in business. It’s also why we operate Great Dane Super Seal refrigerated trailers exclusively in our fleet. The manufacturer’s products are very reliable and effective in our operation. We’re partners with Great Dane because the way they service our needs is excellent.”

Based in Lubbock, Texas, with a second terminal in San Antonio, Robert Heath Trucking was founded by its namesake with a single tractor-trailer 67 years ago. Today the carrier fields 150 power units and 300 reefers, hauling refrigerated freight primarily between Texas and the west coast as well as to points in the Midwest. The company’s loads consist mainly of meat, produce and beer for producers, distributors and retailers for well-known names.

Robert Heath Trucking’s relationship with Great Dane began in 1997 when the company brought the carrier’s management team to its Wayne, Nebraska manufacturing facility to tour the plant and meet engineers and sales staff. “They began by asking us what they could do to help us, what our needs were in a refrigerated trailer,” Shankle relates. “By the time we were finished touring the plant they had assembled drawings and specifications for us to review. From the start, Great Dane worked closely with us to come up with trailers for our operation, not just simply offered us standard models.”

Impressed with the vehicles and the extra effort by Great Dane, Robert Heath Trucking immediately ordered ten reefers. Since then the carrier has spec’ed only 53-foot Super Seal models with Carrier refrigeration units for its operation. Other specifications include Great Dane Model 60 Fast Gear support gear, Hendrickson axles and air ride suspensions with the manufacturer’s HXS extended life brake linings, Eaton Outrunner wheel seals, Meritor WABCO Easy Stop ABS and Meritor automatic slack adjusters, and TSE brake chambers. In addition, the carrier specs

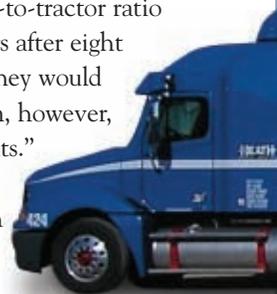
Sealco brake valves, Phillips electrical systems, Grote LED lights and Michelin XT-1 low-profile radials.

Over the past eight years, Robert Heath Trucking has replaced its entire trailer fleet with Great Dane Super Seals at a rate of 35 to 40 units annually. “Durability and integrity are paramount to us,” Shankle says, “in part because we spot trailers at customer facilities for loading and maintain a two-to-one trailer-to-tractor ratio to meet those needs. While we replace our trailers after eight years of service, the Great Danes are so durable they would easily last longer in our operation. We trade them, however, based on the hours of use on the refrigeration units.”

A very important consideration for Robert Heath Trucking is weight savings. Hauling heavy loads meant that every pound saved could be turned into revenue generating payload. “This is an area where Great Dane really went the extra mile for us,” Shankle states. “They helped us specify trailers with a number of weight saving components and have continually brought us other ideas to lighten trailers. Today, our newest 53-foot by 102-inch models weigh in under 15,000 pounds.”

A long list of lightweight specifications can be found on Robert Heath Trucking’s Super Seal reefers. Among them are many aluminum components, including hat section crossmembers ahead of the landing gear and five-inch I beams on in the bay area, 1.13-inch “J” wall posts, roof bows and roof and wall panels, front corner sheets and 1.63-inch “Z” uprights, rear tire protector plates, rear frame wedging, scuffbands and dock plates. For weight savings and to enhance air flow there is a 1.38-inch “PI” aluminum duct floor with aluminum inserts. Also specified are aluminum wheels and Walther EMC Dura-Light hubs.

Additional weight is cut in the Robert Heath Trucking Super Seal reefers by spec’ing .060-inch GRP fiberglass interior lining and sub floor. Urethane insulation in the trailers as well include



two inches in the floor and sides, 2.88 inches in the roof, 3 inches in rear doors and 3.5 inches in the front wall. Also specified is less than full length “A” logistics track to save weight while still providing for effective cargo distribution.

A unique application at Robert Heath Trucking is the dozen 48-ft Super Seals in its fleet configured as meat railers. Designed to haul swinging meat, the units are fitted with seven ceiling mounted rails. As the only manufacturer to offer meat railers, Great Dane designed the 48-ft vehicles with additional insulation in the roof, floor and walls to add support to the ceiling.

For the bulk of its fleet, Robert Heath Trucking continues to buy Great Dane Super Seal reefers and upgrade its specifications as new technologies become available. One addition that is clearly paying dividends, Shankle reports, are the Meritor Tire Inflation Systems (MTIS) by PSI that use compressed air from the trailer

to inflate any tire that falls below the system air pressure setting. “The Meritor systems are especially helpful where we spot trailers for customers because they ensure that all tires are inflated when the tractor is connected to a unit that has been standing,” Shankle notes. “More importantly, though, we have seen some real savings with these systems. In the first year on one group of trailers, tire wear improved by 30%.

“While Great Dane and its technology have helped us in many ways, most important to us are the relationships we have with the company, and especially with our outstanding local dealer, James Kinsey at Lubbock Truck Sales,” Shankle concluded. “They are the reason we switched our entire fleet from another manufacturer’s product to Super Seal reefers and haven’t looked back. There may be a lot of good products available but for us it’s all about service. Robert Heath Trucking and its customers couldn’t ask for better partners than Lubbock Truck Sales and Great Dane.”



Great Dane Super Seal Reefer



FEATURE	BENEFIT
Modular design combined with a controlled panel foaming process	Provides the flattest interior walls in the industry with minimum interior fasteners
Exceptional strength and longevity in a lightweight refrigerated trailer	Extends the useful life of the trailer while offering the opportunity for increased payload and consistently high resale value
Submerged roof bows on 32-inch centers	The roof bows do not contact the roof skin, reducing heat transfer and providing maximum strength and thermal efficiency
All standard crossmembers (steel and aluminum) have aluminum end clips	Eliminates the possibility of electrolysis between crossmembers and bottom rails
Extruded aluminum breakaway rear door hinges	Hinge includes a phenolic bushing to reduce hinge wear and the possibility of door damage
7-gauge stainless steel external rear frame combined with a 14-gauge internal reinforcement	Provides one of the strongest rear frame connections available and gives maximum rear dock impact protection
Available with ThermoGuard lining, exclusively from Great Dane Super Seal Reefers	Helps maintain insulation performance as the trailer ages, lowering cooling unit run-time hours and helps maintain excess capacity. Saves on cooling unit fuel

Proven Tire Inflation System Helps Detect Elevated Wheel-End Temperatures

In 2005, a trucking industry research survey conducted by CK Marketing and Communications concluded that over half the fleets surveyed have experienced problems with wheel-end heat build up. To address this concern, which can lead to component failure and unsafe operating conditions, ArvinMeritor and P.S.I. have introduced ThermALERT™. The exclusive patented wheel-end heat sensor is now available as a value-added option on the Meritor Tire Inflation System (MTIS) by P.S.I.

MTIS uses compressed air from the trailer to inflate any tire that falls below the system air pressure setting during operation. MTIS with ThermALERT reduces downtime, risk, and costs by helping alert drivers to stop for repairs before damage can occur due to elevated wheel-end temperatures.

MTIS with ThermALERT detects air that is escaping from the axle's thermal plug and out through the hubcap tee vent, which occurs if a wheel-end is operating at an abnormally high temperature. If a ThermALERT equipped wheel-end reaches high temperatures, the system sound will be heard at the wheel-end and an indicator light located on the trailer (which is clearly visible from the cab) comes on to alert the driver.

For MTIS with ThermALERT, ArvinMeritor supplies complete kits that incorporate a new control box, outfitted with a gray control switch, specially designed spindle press plugs, a new LED light, and a system warning decal, which outlines operating guidelines for the driver. The system also utilizes newly designed six vent hubcaps. For more information, visit www.meritorhvs.com.

Meritor WABCO's New PLC Display

A new PLC Display from Meritor WABCO enables monitoring of trailer-mounted systems by linking trailers and tractors and providing drivers with information concerning the status of a range of systems. The PLC Display's viewing screen mounts to the tractor's instrument panel for easy visibility.

A significant addition to the PLC Display's communications capabilities is the transmission of critical information from the Meritor Tire Inflation System (MTIS) by P.S.I. Examples of other tractor-trailer-oriented communications and control that are possible with the PLC Display include wheel-end temperature, ABS diagnostics, air supply, wheel drag warning, lift axle status, trailer back-up lights and steer axle lockouts, reefer zone temperature and fuel warnings, slider control, trailer dome light status, suspension weight and trailer mileage.

The Meritor WABCO PLC Display also provides fleets with telematics capability to monitor equipment status, critical events and service requirements. In particular, its InfoLink™ communications gateway allows more complete monitoring of ABS and integrates functions such as brake control, sensor inputs and output drivers, and provides a communications link to the existing tractor data bus. For more information, www.meritorwabco.com.

This information was presented in ETT Volume 8 Issue 2 with the incorrect photo. The new Meritor WABCO PLC display is correctly shown above.



PLC Display provides valuable wheel-end and ABS data.



Air-Weigh Innovative Designs Reduce Waste

On-board Scales Worth Their Weight in Time and Cost Savings.

Engineered to work with trailer equipment, the Air-Weigh 5800 Series Trailer Scale can be installed at the factory or as aftermarket equipment by Great Dane corporate branches and independent dealers. Each Air-Weigh Self-Weighing Trailer Scale includes a full-function keypad and LCD weight display, so trailer axle weight is always displayed even if the tractor is not equipped with a scale.

Air-Weigh's patented technology accurately indicates the weight by precisely calibrating, then measuring the suspension air pressure. For a better understanding of why this is important, ETT offers the following excerpts from "On-board Scales Put You 'Weigh' Ahead," an article by Heavy Duty Trucking Senior Editor, Steve Sturgess*:

"The efficient loading of freight takes on new importance in these days of new driver hours and higher fuel prices. You absolutely have to get a truck loaded in the shortest time possible, loaded correctly and loaded to the maximum. Doing so will eliminate out-of-route mileage, not to mention the time taken

to check the weight to make sure the load is legal both on gross weight and on axle loadings."

"One solution is to measure weight on a combination's axles in real time using on-board weighing. How does the real-time scale offer such a fast payback? There are several reasons that can be quantified in hard savings, such as the elimination of check weighing. Then there's the opportunity to maximize revenue if the vocation pays by the hundredweight. But there are also the less tangible savings on overweight or over-dimension tickets."

"Other soft benefits include not having to return to the loading point to drop off excess freight-especially when that check weigh is at the end of the day and the next opportunity to offload is the following morning." For more information, visit www.air-weigh.com.

*Reprinted with permission from Heavy Duty Trucking



Trailer kit makes installation fast and easy.



Rosenau Transport

Leading by Example:
Carl Rosenau and Great Dane Trailers.



When Carl Rosenau, President and CEO of Edmonton, Alberta-based Rosenau Transport, Ltd., reflects on the Great Dane trailers in his company's operation, he immediately thinks about a famous advertising slogan. "They take a licking and keep on ticking," he says. "We've been using Great Dane trailers since the mid 1980s and we haven't retired one yet. Their long term durability is unmatched in our operation."

Family owned and operated since 1957, Rosenau is one of the largest regional carriers in Western Canada. Today, the company provides LTL and truckload service in Alberta, Saskatchewan, British Columbia and Manitoba and commodity services through connections to and from eastern Canada and the US. Rosenau mainly hauls general freight, including consumer and manufactured goods and raw materials, as well as petrochemicals and agricultural materials.

Rosenau fields a mix of Great Dane trailers, including all-steel Sentry (GP) platform models as well as SSL dry vans and refrigerated and insulated units. In the past year, the fleet has added 60 new vans and flat decks. Most are equipped with Hendrickson slider/suspension/axle assemblies, Great Dane Longlife Light Systems with LED lamps for their reliability and low maintenance needs, and Bridgestone tires.

"Great Dane flat decks are strong in all the right places," Rosenau states, "especially the pintle hook set up. It's one of the strongest available, which is very important because we often pull doubles combinations that can reach gross weights of 140,000 pounds. Those combinations can include two 53-foot trailers-- vans, flat decks or one of each-- or Rocky Mountain

doubles, which consist of a 53 footer plus a 32-foot trailer. The only thing keeping them coupled securely is the pintle hook assembly."

In addition, the Sentry flatbeds at Rosenau are fitted with a unique system for securing loads designed by the carrier and installed by Great Dane. The mechanism incorporates a mechanical slider, hammerlock device and 20 ft chain with a hook to ensure that every load can be secured safely and properly.





Equally impressive to Rosneau is the care taken by his Great Dane salesperson at Edmonton's Maxim Trailers dealership. "Norm Chabot is a sales guy who sticks with you," Rosenau says. "He fostered this relationship with us and has worked hard to make it successful for both parties over the past 15 years."

A believer in leading by example, Rosenau still takes to the road to deliver and pick up loads. The runs he makes about every two weeks, he says, allow him to see firsthand how well his equipment choices work for drivers and customers. "We chose Great Dane trailers because their all around design is better than anything else we have seen," he states. "As a driver and an owner, it's comforting to know that when we hook up to a Great Dane trailer we can go about our business and not have to worry." 



Great Dane *Sentry* Steel Platforms



FEATURE

One-piece, all steel fabricated main beams at 25-inch overall depth, with Great Dane's exclusive "doubler plates" in critical high stress areas

6-inch Structural Channel Side Rails: 6.5 pounds per foot steel channel standard with stake pockets and pipe spools on 24-inch centers. 1/4 by 2-inch rub rails

Steel front crossmember assembly is reinforced

4-inch steel I-beam crossmembers attached to the mainbeam web with Great Dane exclusive attachment clips

1.13-inch Apitong floor

Steel surfaces are shot blasted and pre-coated prior to application of two-part epoxy primer with urethane topcoat

BENEFIT

Minimum 100,000-pound PSI top and bottom flanges; provides reinforcement if crossmember punches and transition area

Offers the very best in strength and durability

Provides easy aftermarket installation of DOT rated bulkheads; includes bulkhead acceptance pockets

Fastening in lieu of welding prevents stress from cracking and twisting

Road and load tested, finger jointed, full-length flooring provided by Overseas Hardwood, the ultimate in wood flooring

Ensures superior adhesion, protection and corrosion resistance

Did You Know?

Composite Doors

The Best Possible Protection for Cargo and Trailer.

Did you know . . . that when it comes to protecting freight and improving the useful life expectancy of rear trailer doors, composite doors provide optimum protection and durability? Great Dane's composite doors offer all of the functionality of traditional wood core doors and the longevity and resiliency of moisture-resistant materials.

Did you know . . . that composite trailer doors help eliminate the costly degradation associated with wood core doors, which are prone to decay? Composite core door technology resists water absorption, which protects against moisture seepage and the damage it can cause.

Did you know . . . that moisture absorbed by wood core doors adds weight to the vehicle? Composite trailer doors constructed with a polymer core prevent incremental water weight gain and loss of payload capacity.

Did you know . . . that composite trailer doors hold up under all weather and road conditions? Composite doors provide a

strong, durable barrier that protects the cargo and the trailer from abuse caused by operating conditions.

Did you know . . . that composite trailer doors provide the resistance needed to avoid moisture contamination? Composite doors use galvanized steel exterior and interior skins to protect against corrosion. Great Dane Trailers' composite doors are also constructed with a bonded gasket installed around the perimeter of the door to ensure a watertight closure. The dual durometer gasket has two functions with a rigid channel bonded around the door's edge, and static flexible extensions that provide a tight seal around the door's frame.

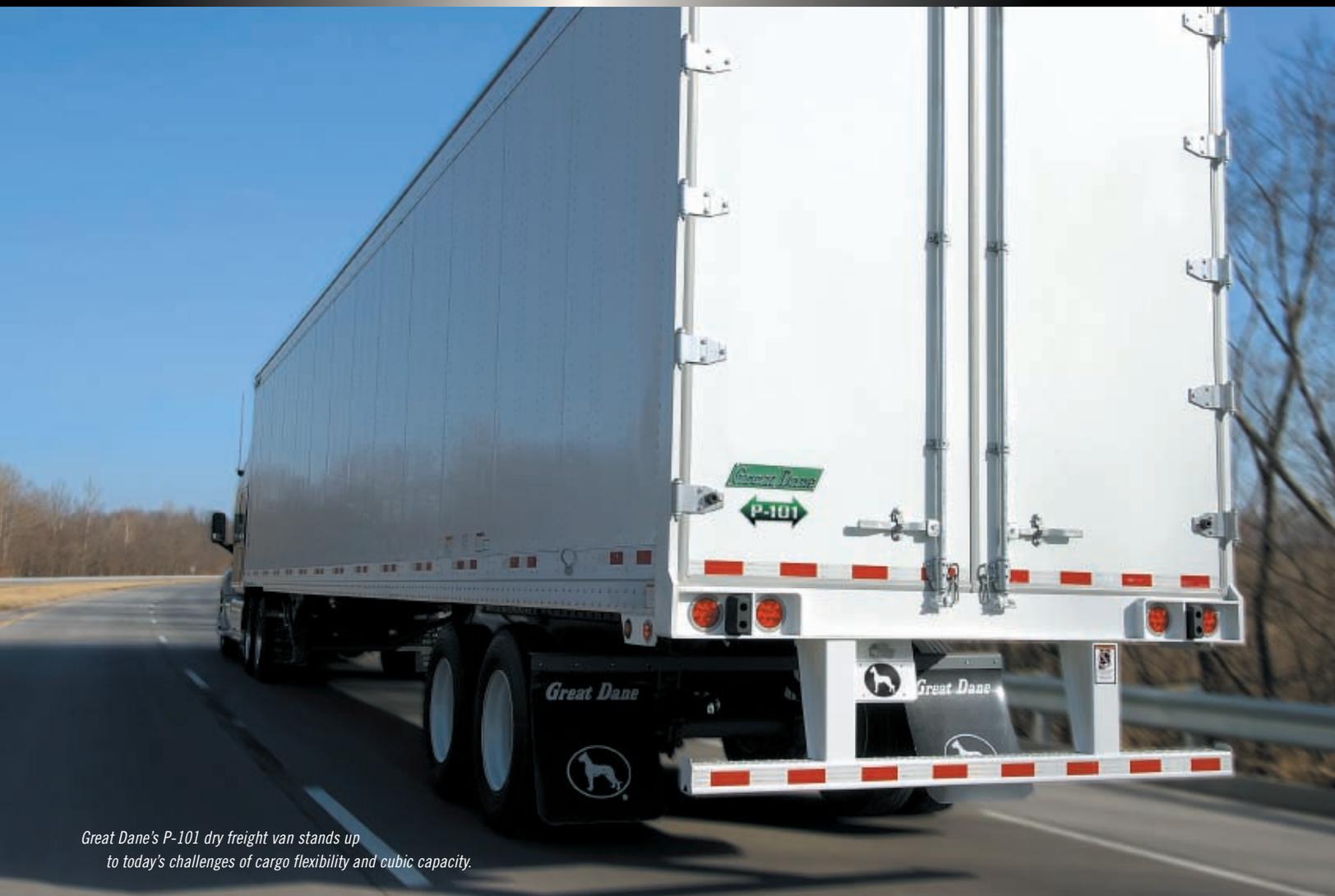
Did you know . . . that Great Dane's composite trailer doors accept hinge and lock-rod hardware better than honeycomb core doors? Great Dane's composite doors accept hardware well because of the greater compressive strength of the polymer core as compared to

a honeycomb core, and torque can be applied to fasteners without the danger of crushing the core.

Great Dane's composite doors are designed and engineered specifically to keep water outside the cargo area and outside the door structure. Composite doors are standard on Great Dane Trailers dry freight vans because they have the technology to provide the kind of protection our customers expect and deserve. 🐾



W E ' R E D R I V E N



*Great Dane's P-101 dry freight van stands up
to today's challenges of cargo flexibility and cubic capacity.*

The P-101 Delivers More.

With up to 80 cubic feet more interior space than traditional sheet and post trailers, Great Dane's P-101 dry freight van stands up to today's challenges of cargo flexibility and cubic capacity. With a nominal inside width of 101" and single-panel proprietary design, the P-101 requires no special tooling, is simple to maintain and repair, and allows for the possibility of retrofitting interior liners down the road. The durable and roomy P-101 — ***delivering more so you can too.***



Great Dane

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