

## ... It's Not What You Might Think!

**W**ho would have thought that a 350,000 to 450,000-mile heavy truck would be classified as moderately low mileage. Times change, don't they? And products do, too. Engines are computerized and tell us everything except the driver's birthday. Brakes are on engines as well as wheels. Air-ride suspensions allow a truck's electrical systems to ride smoothly instead of vibrating to pieces.

Transmissions and rear ends are warranted to 750,000 miles and, with synthetic lube, trucks now run 250,000 miles between changes. Some engines are designed to go well over 1,000,000 miles. One million miles!

The key to extended vehicle life is regular, proper maintenance and inspections. As all of a truck's components are capable of having longer life periods, the operating life of Class 8 trucks has been extended tremendously.

Along with these developments is a change in the used truck buyer's perception of what is a low-mileage truck. Used truck buyers today cannot look at trucks the way they did 15 years ago. No longer can a buyer walk on a lot and ask for a 1-2-year old truck and expect 150,000 miles on it.

The fact is we have to change how we look at things - life in general and trucks in particular. We've learned how to use digital message centers and cruise control, haven't we? **We have to change our thinking to catch up with the changes in technology.**

Time was, when warranties were 1-year/100,000 miles, a truck with 400,000-500,000 miles was perceived as a high-mileage truck, and would probably have to be overhauled. Typically the owner would trade in his trucks at 200,000-300,000 miles. These days, it's not unusual to see 1-year-old trucks with that kind of mileage on them.

### THEORY VS. REALITY

**T**heoretically, a truck with 750,000 miles on it can be called a high-mileage truck. **But the numbers of miles actually have nothing to do with a truck's dependability and roadworthiness.** When we look at a used truck today, mile-for-mile, driving a truck 250,000 miles 15 years ago is equivalent to driving one 500,000 miles today.

Years ago, the belief was that when the warranty period ran out, the truck was considered a high-mileage truck. In fact, the warranty period has nothing to do with the dependability of the truck. In the days before extended warranties, when a truck reached 100,000 miles, there was a stigma attached the closer it got to 200,000-300,000 miles. The rule of thumb used by most truck buyers and truck salespeople was that a truck with three times the warranty period mileage was a high-mileage truck.

If this same theory runs true today, a truck warranted to 500,000 miles would have to have logged 1,500,000 before being considered a high-mileage truck. As we all know, just because something seems logical, it doesn't necessarily make it true. But we can't discount this theory, considering the incredible changes to the powertrains and other components of Class 8 trucks.

Most used truck buyers still think a 500,000-mileage truck is high mileage. Actually, it is equivalent to about a 200,000-300,000-mile truck of 15 years ago. Today, we can buy a 500,000-600,000-mile truck and still have factory-offered extended warranties on parts of the powertrain that are transferable to new owners. Consequently, second, third and even fourth owners are enjoying factory-extended new truck warranties. Interestingly, one of the first companies to offer an extended warranty on used truck engines was a diesel engine repair business in 1983. Today, dependable and reputable used truck warranties are readily available and a great benefit to truck owners.

Although this is the beginning of a new century, perceptions about used trucks have lagged behind the incredible advances in technology and its impact on trucks and trucking. The major changes over the past few years to engines, transmissions, rear ends, suspensions, other components and lubricants and coolants seem more like a revolution than an evolution. If we could have the improvements to our major components and operating systems that trucks have had, our mileage would be extended, too.

### ENGINES

**W**ith the birth of electronically controlled engines in 1987, a new era in diesel engine manufacturing, operation and maintenance began. What a work of art-the electronic engine. **Engine computerization is the most obvious and major change in technology that has improved engines and provided extended life of Class 8 trucks.** Engine protection systems not only sense and protect the engine from failure but also keep a complete record of engine performance data as electronic sensors send a constant stream of information back to control panels.

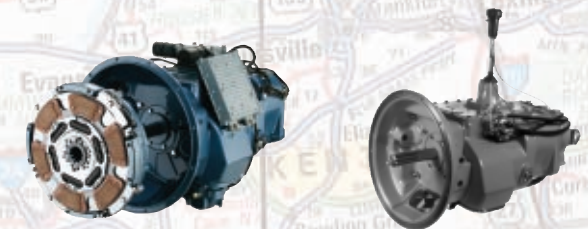
The electronically-controlled combinations of power and fuel economy fine tune the efficiency of engines resulting in improved safety records, improved driver performance and recorded and reduced maintenance expense. All five major engine manufacturers-Caterpillar, Cummins, Detroit, Volvo and Mack-build their engines with this controlled management approach that has virtually eliminated catastrophic failures for the first year, at least.

Transit bus engines started using the electronic engine in 1985 as they were subject to emissions regulations first. These engines came along to manage emissions of the fuel-air mixtures. In the process, a new concept for designing engines was created: intense testing and research was completed to determine component breaking points. This approach gave manufacturers the information to redesign robust, efficient and comprehensive engines. Testing to the weakest link is called the Probe Concept. Children know about this one. They test plenty of stuff. How many electric gadgets in your home made it to the recycling bin? As these new designs and changes were translated into totally integrated electronics, engine protection was the natural outcome.

State-of-the-art diagnostics for critical engine functions, complete with clock, calendar and data recorder, troubleshoot the engine so the driver is less likely to tinker with it. (The manufacturers didn't want anyone messing with their toys.) Attention is increasingly directed to make the diagnosis and repair quickly, thereby reducing maintenance costs and downtime. Trucks come off the road for scheduled preventative maintenance and unscheduled maintenance and/or breakdowns. To allow a truck to be maintained at a lower cost and be on the road more, parts had to be redesigned to extend maintenance intervals without compromising the overall life.

The changes to engines are many and varied. More efficient air handling and cleaner combustion, electronically-controlled fuel systems and power cylinder components such as ring pack, pistons and liners were improved. Consequently, rod and main bearing technology had to change. Moreover, improved parts simplified analysis techniques of oil flow in the bearings.

Customer demand and competitive pressures continue to drive improvements in the electronic engine. Various components such as overhead camshafts, turbochargers and electronic fuel injectors reduced emissions, increased fuel economy and added performance. The newspaper reporter's guide is who, what, where, when, why and how. These engines give us almost the same amount of information so that if we only maintain them properly, we can easily drive a million miles. Why with all this new technology, a truck can't be happy unless it's cranking out 150,000-200,000 miles a year. What do you bet that in the future, engine readouts will tell us when and where to change the truck's oil and coolant to prevent it from ever getting low or the pressure getting too high?



### TRANSMISSIONS

**T**ransmissions are more versatile, smoother shifting and quieter than ever before. Better bearings, seals and lubrication translate to better performance and add to better fuel economy. The introduction of synthetic lubricants in the late '80s reduced change intervals and improved maintenance costs. **We used to have to change the rear end lubes every 50,000 miles; now we can go 250,000 miles.** The move to soft damped clutches isolates the drivetrain from damaging torsional vibration. Torsional, you say? Remember when you sassed your mom and she said that if you did it again she would shake you 'till your teeth rattled? Well, that's torsional! With these changes, transmission warranties have been extended to 5 years/750,000 miles. Technology in design and manufacturing will continue to develop automated products and remove driver influence by improvements to automatic and synchronized shifting systems and automated mechanicals.

## REAR ENDS

**T**he trend in the last 15 years has been an increase of torque coming from the new engines. This challenged the rear end manufacturers to design and build products to withstand that power. Faster ratios were built and numerous changes were made for greater torque capacity. Differential locks came into being for maximum traction in adverse driving conditions. Improved lube pumps provide optimum lubrication for longer life and improved sealing systems reduce oil leakage problems to provide better protection against costly internal contamination.

We truly have to look at the big picture in all of the components, as the global economy will require manufacturers to build products that extend their capabilities for various vocational applications. Manufacturers fully expect axles to go to 1 million miles.



## BRAKES

**A**s you may have been warned, "Before you go buy a truck with all that power, you best be thinking about how you're going to stop it." Well thanks to Clessie Cummins, you can go downhill on a crowded freeway with 80,000 pounds at your back and never break a sweat. The story goes he was on a long downhill grade with brakes overheating and that he barely slowed that truck down before a train crossed the tracks in front of him. The idea came to him that if all that power could be harnessed to take a truck up a hill, it ought to be able to be used to help it go down. The idea of an engine brake began. Whatever you can conceive to believe you can achieve is what my Daddy always said. Guess it works!

Engine brakes not only prolong the life of the truck but also the driver and everyone else on the road. Engine brakes give the driver more control, extend the life of service brakes up to five times, reduce costs of drums, linings and components and help eliminate tire burning, wheel hopping and flat spots.

Anti-lock braking systems (ABS) also enhance vehicle performance of big trucks by reducing drivetrain shock damage and improving tire life. What's more ABS contributes to safer operation. These systems monitor and control wheel speed during braking and offer improved steering control and vehicle stability even on split-coefficient surfaces.

## LONGER LIFE

**D**o these changes, additions, subtractions and deletions extend the life of a Class 8 truck? Absolutely. Long life coolants extend seal life of water pumps, brushless alternators and improved starters help electrical systems and even batteries last longer. Air conditioning systems have new designs, compressors and fittings. Some of A/C systems have monitoring and protection systems that help reduce this component expense. Quality lubricants, coolants, filters and filtration have been improved tremendously.

Just because the powertrains and other components can go 500,000 miles and still be covered under extended warranty, we are not so foolish as to expect the rest of the pieces and parts to hang in there unaffected. Wheel bearings, brakes, shackles, pins, bushings-lots of items like these-are maintenance jobs and need to be considered as such. They are replaced as needed during normal operations.

There are, obviously, different vocations that have different impacts on mileage. A line-haul tractor and a refuse truck may each have 200,000 miles on them, but clearly the tractor's miles are "easier" miles. It's like when your doctor says: "At your age..." and then explains that your major components are still kicking and just need a little adjustment and maintenance. Any way you look at it, even with the wear and tear, a used truck is a whole lot cheaper than buying a new one. **With a record of proper maintenance, care and inspections, a high mileage truck can be a good investment.**

Are we learning more than we really need to know? Not if we want to understand how we can drive a 3-year-old, 600,000-mile truck off a lot and be okay with it. A truck today will run longer, smoother, cleaner and more efficient than ever before.

As all the manufacturers improve their products and give extended warranties to put their money where their mouths are, there is no reason why we can't look at a truck with 600,000 miles on it and be comfortable and confident with its dependability and roadworthiness.

## Happy Trails!

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Revised October 2004



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# What Is A Low Mileage Truck?



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