

THE RESULTS ARE IN



IT'S UPTIME

LT
INTERNATIONAL

A26

INTERNATIONAL® LT™ SERIES
FUEL EFFICIENCY TEST



THE NUMBERS DON'T LIE: INTERNATIONAL® LT™ SERIES IS MPG LEADER

The Situation

The recently-launched International A26 engine was born from a new way of thinking. International engineers were given free rein to create the industry's best 12.4L (12-13L) engine, and that's exactly what they did. As with any new product launch, customers want to see proof that the numbers add up before making a decision. Today, we're excited to announce that the proof is in.

International Truck contracted the PIT Group to conduct an unbiased, third-party fuel economy test between the LT Series and its main competitors. PIT Group, a division of FPIInnovations, is a leading research organization with extensive knowledge of the trucking industry, strong engineering capacity, and the ability to provide indisputable test results.

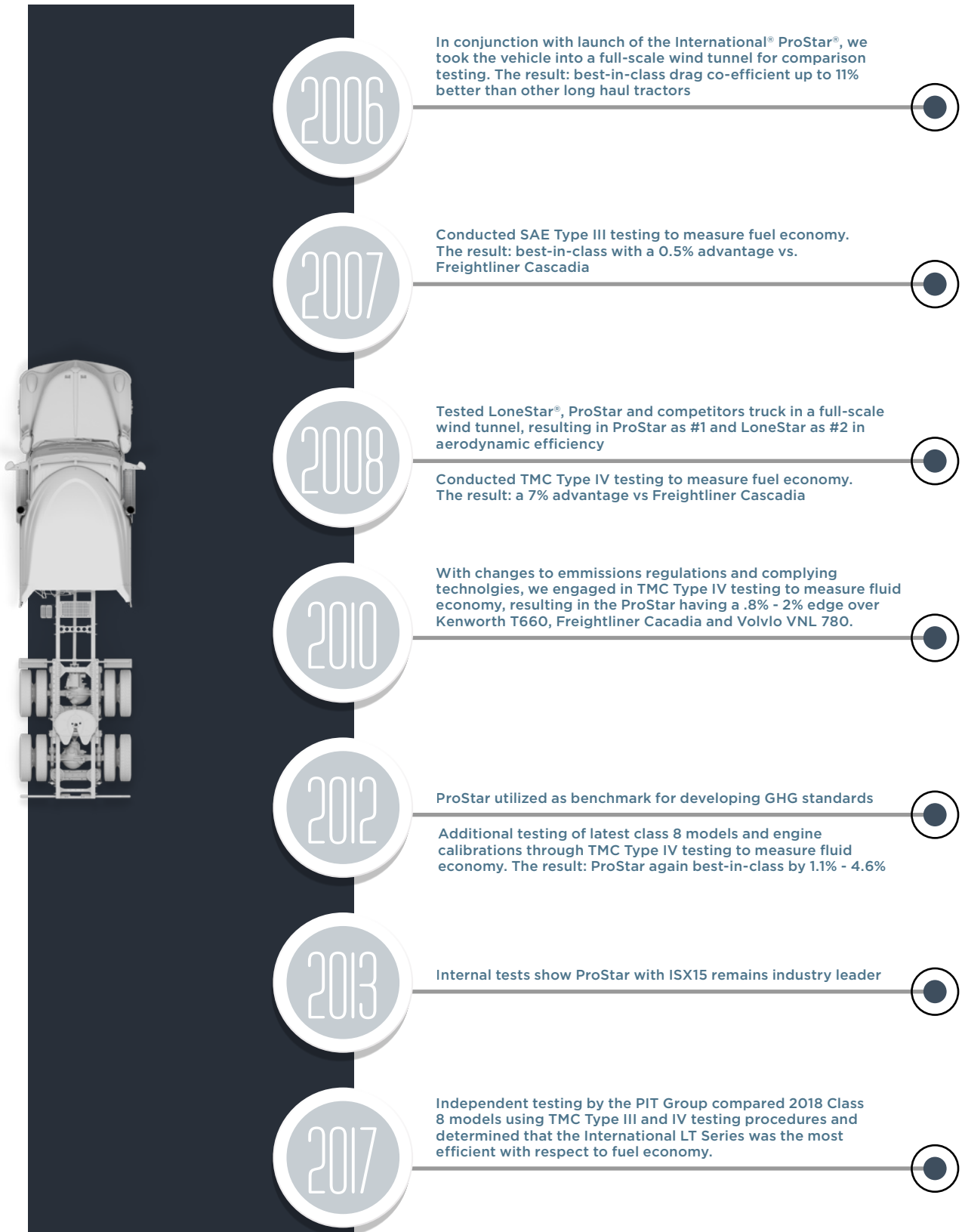
The testing compared the 2018 International LT 625 Class 8 tractor equipped with the 12.4L A26 engine, 2018 Freightliner Cascadia CA126SLP with a DD13, 2018 Kenworth T680 with a PACCAR MX-13 and 2018 Volvo VNL670 equipped with a Volvo D13.

The results were remarkable and will reshape the way the industry thinks about 12-13L engines.

A History of Proof

International has a long history of using third-party validation. We recognize the value our customers place on making decisions that are informed, and results from third-party testing help them do just that.

To date, International Truck is the only Class-8 truck manufacturer to publish company-initiated third-party testing results. Here are a few examples that demonstrate fuel economy leadership.





TEST SITE

The fuel consumption measurement tests were conducted from September 27 to October 20, 2017, in Quebec (Canada), on the test route Mirabel - Gatineau - Maniwaki (mid-point) - Grand-Remours - Mont-Laurier - Mont-Tremblant - Mirabel (Figure 1).

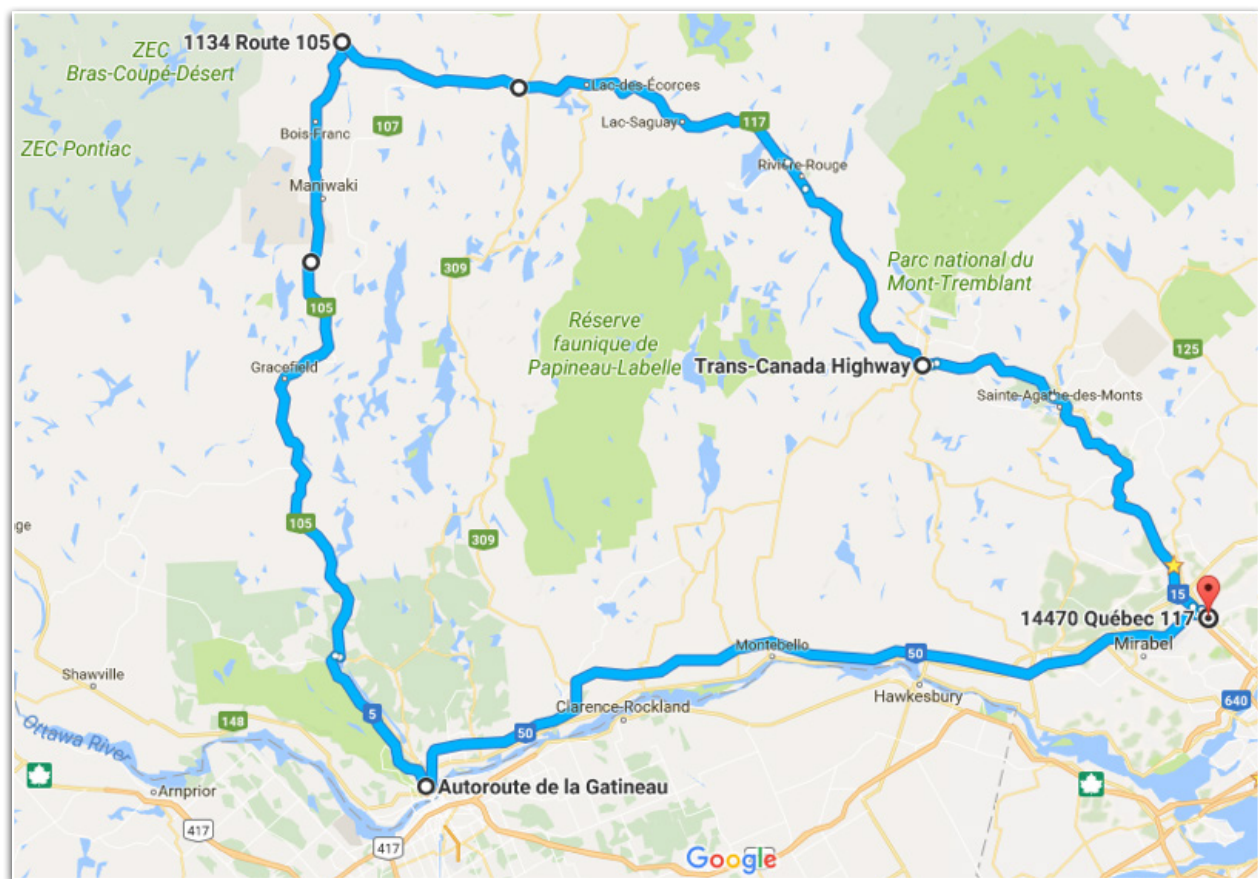


Figure 1. Test route



The test route had a length of 341 miles with an average total duration of 7h 20 min. It was divided into two segments, the midpoint situated 173 miles from the start. The maximum altitude was 1,409 ft., with a maximum elevation difference of 1254 ft. Figure 2 presents the road profile. The test began and ended at the Centre de Formation de Transport Routier de St-Jérôme (CFTR), a truck driver training facility located in Mirabel.

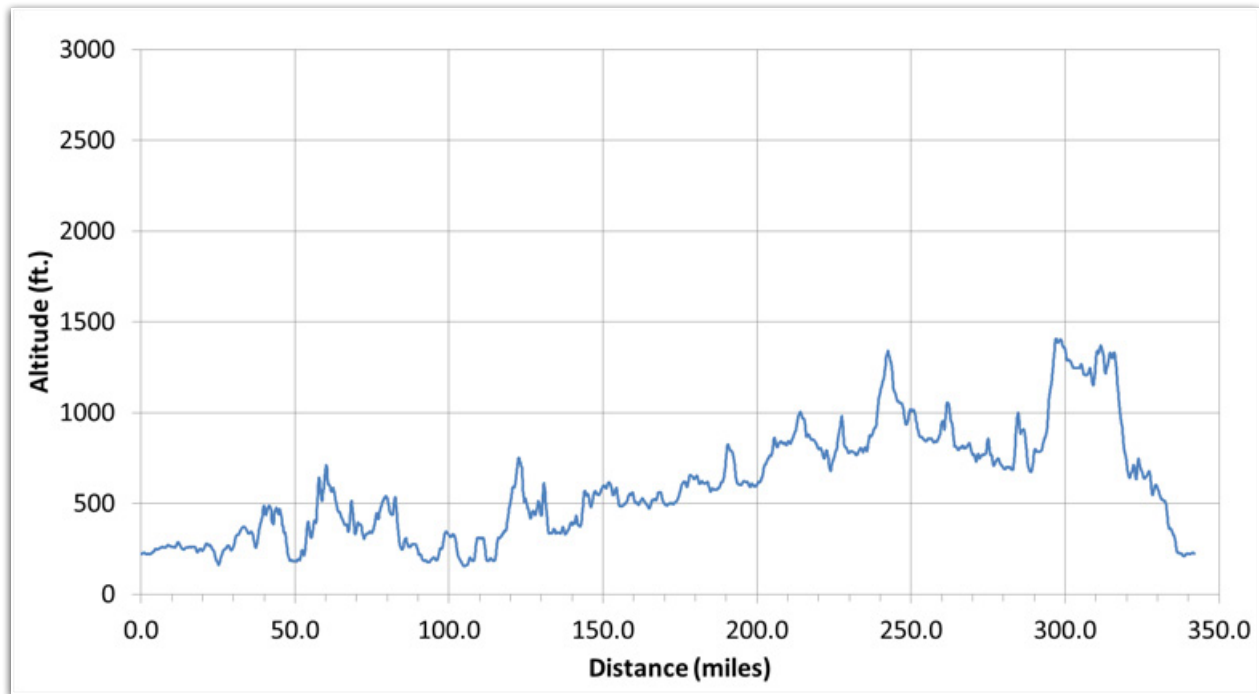


Figure 2. Road profile

Speed limits are presented in Table 1. Highway exits and access ramps might have varying speed limits for a short distance, and multiple roundabouts on Trans-Canada Hwy have varying speed limits prior to the intersection.

Table 1. Test route speed limits

| Segment | Approximative distance (miles) | Speed limit (km/h) | Speed limit (mph) |
|---|--------------------------------|--------------------|-------------------|
| From CFTR to Highway 50 West | 2 | 50 | 31 |
| Highway 50 West | 96 | 100 | 62.5 |
| From Highway 50 West to Highway 5 | 7 | 50 | 31 |
| Highway 5 and Highway 105 | 95 | 100 | 62.5 |
| Highway 117 (Trans-Canada Hwy) and Highway 15 South | 140 | 100 | 62.5 |
| Highway 15 South to CFTR | 1 | 50 | 31 |



TEST VEHICLES

Vehicle configurations and benchmark data are presented in Table 2.

Table 2. Vehicle data

| Tractors | | | | |
|-----------------------|---|-------------------------------|--|--|
| Vehicle test ID | C1 | C2 | | |
| Test Group | Pool A, B, C | Pool A | Pool B | Pool C |
| Make and model | International LT 625 | Volvo VNL64T670 | Kenworth T680 | Freightliner Cascadia CA126SLP |
| Build (model) year | 2017 (2018) | 2017 (2018) | 2017 (2018) | 2017 (2018) |
| Odometer reading | 5592 mi | 59827 mi | 32406 mi | 5025 mi |
| Engine make and model | International A26 | Volvo D13 | Paccar MX-13 | DD13 |
| Emissions | EPA 2017 | | | |
| Rated power | 400 HP / 1700 rpm | 455 HP / 2100 rpm | 455 HP / 1600 rpm | 400 HP / 1625 rpm |
| Peak torque | 1550-1750 lb.-ft. / 975 rpm | 1550-1850 lb.-ft. / 900 rpm | 1650 lb.-ft. / 900 rpm | 1750 lb.-ft. / 975 rpm |
| Governed speed | 1800 rpm | 2100 rpm | 2000 rpm | 1900 rpm |
| Transmission | Automated | | | |
| | FAOM-15810S-EN3 10 sp-Fully Automated Manual, Overdrive | VOLVO I-SHIFT ATO2612F, 12 sp | FLR ADV Automated FAO-16810S-EP3 10 sp | DT12-1750-DH1 Heavy Duty 12 sp Direct Drive Automated Manual |
| Differential ratio | 2.47 | 2.79 | 2.64 | 2.28 |
| Tires | Continental 295/75 R22.5 Eco Plus HS3; Hybrid HD3 | | | |
| Tire pressure | 100 psi | | | |
| Test weight | 18938 lb. | 20260 lb. | 19533 lb. | 20944 lb. |
| Tractor-trailer gap | 48 in. | 48 in. | 47 in. | 48 in. |
| Aerodynamic gap | 27 in. | 27 in. | 27 in. | 24 in. |

| Trailers | |
|--------------------|-----------------------|
| Vehicle test ID | T1 T2 |
| Test Group | Pool A, B, C |
| Make and model | Utility VS2DX |
| No. of axles | 2 |
| Build (model) year | 2016 (2017) |
| Type | 53-foot Cube Van |
| Tires | Michelin 275/80 R22.5 |
| Tire pressure | 100 psi |
| King Pin Setting | 36 in. |
| Bogey position | 40 ft., California |
| Test weight | 46099 lb. 46165 lb. |



Figures 3 to 6 represents photos of the actual test vehicles.



Figure 3. International LT 625



Figure 4. Volvo VNL64T670



Figure 5. Kenworth T680



Figure 6. Freightliner Cascadia CA126SLP



Test Procedure

The test procedure was based on TMC Fuel Economy Test Procedure – Type IV, RP 1109B and TMC Fuel Consumption Test Procedure – Type III, RP 1102A.

- One test consisted of three valid test runs.
- One test run consisted of one complete test route, which was divided in two segments, the midpoint being situated at 173 miles from the start.
- Trailers and drivers paired with tractors in the first test segment were consequently switched to the other tractors during the following test segment.
- Fuel consumption was accurately measured by weighing portable tanks before and after each run. Two portable tanks were used for each vehicle, one for each test segment of the run. The test vehicles were also instrumented with flowmeters and onboard computers for obtaining supplementary data.
- Gravimetric measurement of fuel consumption according to TMC Type III procedure is more precise and accurate than volumetric measurement, and it is not affected by temperature variances.
- The total fuel consumed by the tractors when pulling each semi-trailer and being driven by each driver was calculated. The results of the complete test were expressed as fuel efficiency in miles per US gallon (MPG) and as a fuel savings percentage.

Test Results

The LT Series equipped with an A26 engine proved to be the most fuel-efficient truck and engine combination in the test. International beat out the Freightliner Cascadia by 0.35%, the Kenworth T680 by 2.44% and the Volvo VNL by 9.57%.

Table 3 presents the test results.

Table 3: Test Results

| Pool | Make and model | MPG | Fuel savings |
|------|-------------------------------------|------|--------------|
| A | International LT 625 with 12.4L A26 | 7.74 | 9.57 % |
| | Volvo VNL64T670 with Volvo D13 | 7.00 | - |
| B | International LT 625 with 12.4L A26 | 7.85 | 2.44 % |
| | Kenworth T680 with PACCAR MX-13 | 7.66 | - |
| C | International LT 625 with 12.4L A26 | 7.71 | 0.35% |
| | Freightliner Cascadia 126 with DD13 | 7.69 | - |



ADVANTAGE: INTERNATIONAL LT SERIES

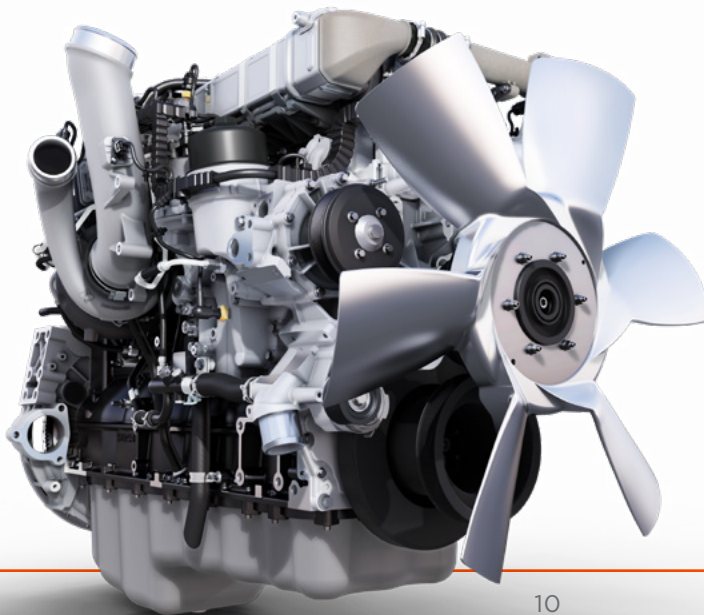
The LT Series fuel-efficiency advantage is due to a variety of factors including reduced weight, aerodynamic improvements and especially the advanced A26 engine. Our commitment to modern engine design, combined with excellent aerodynamic performance, has resulted in a truck that performs at the top of its class.

VEHICLE AND DRIVETRAIN IMPROVEMENTS

- Sophisticated new electronic control systems use programmable parameters to optimize efficiency. Predictive cruise control recognizes when the vehicle should accelerate or decelerate before grades to avoid downshifts and minimize braking.
- A number of measures contribute to a weight reduction of over 400 lbs. vs. the previous model. The suspension and single canister after-treatment system are refined. Plus, mounting hardware for the fuel tank and exhaust system has been streamlined.
- The LT Series uses efficient new lubricants for the drivetrain and axles to reduce parasitic losses from friction.

The A26 Engine was specifically designed to enhance fuel efficiency:

- Maximized fuel injection pressure from the 2500 bar (36,300 psi) HPCR fuel system reduces both fuel consumption and emissions
- New cylinder head coolant passages are 50% less restrictive to reduce parasitic loss to the water pump
- A simplified air management system with the new Variable Geometry Turbocharger delivers optimal fuel economy and performance
- An oil cooler thermostat bypass allows oil to bypass the oil cooler in colder weather to improve fuel economy



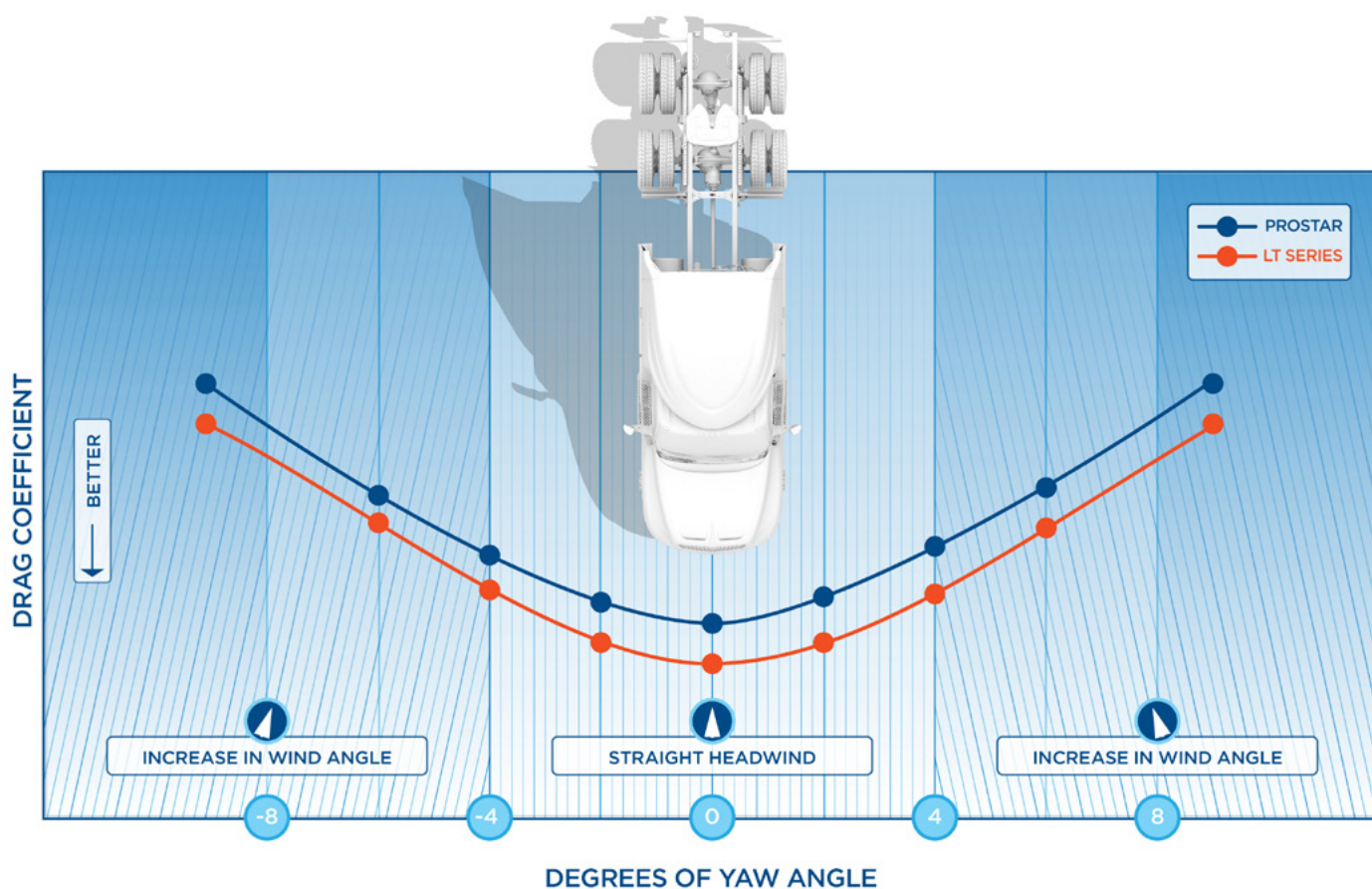


EXTENSIVE AERODYNAMIC IMPROVEMENTS OPTIMIZE AIRFLOW AND REDUCE DRAG BOTH AROUND AND THROUGH THE LT SERIES

- Pedestal mirrors reduce drag and wind noise
- The hood top and shoulder are redesigned to enhance air flow
- New longer 125" BBC hood better directs and smooths out airflow around the cab
- All-new fender shape optimizes airflow
- 22" cab extenders close the gap between cab and trailer to limit air turbulence
- An aero-enhanced 3-piece bumper and front wheel openings are contoured to minimize resistance
- Chassis skirts have been refined to reduce aerodynamic drag
- The new cooling module is sealed to smooth airflow under the hood
- The front air dam design reduces drag by efficiently pushing air down, under and around the truck

THE WIND AVERAGED DRAG ADVANTAGE

In real-world conditions, wind almost always hits the truck at an angle, not head on. The LT Series was designed with this in mind and is a leader in wind averaged drag. The higher the yaw angle, the better the LT Series performs against the competition.





PUTTING EFFICIENCY TO THE TEST

The design of the LT Series was honed using industry-leading testing and retesting processes - including wind tunnel testing of scale models, full-size trucks and coast-down testing. With every 1% of aerodynamic improvement netting a .5% improvement in fuel economy, the LT Series delivers sizable fuel savings that consumers will appreciate mile after mile, year after year.



The design of the LT Series was honed using state-of-the-art wind tunnel testing





WHAT DOES IT MEAN TO THE CUSTOMER?

To the customer better fuel economy means one thing: lower operating costs so they can make more money in profit.

As an example, if you had a 100 truck fleet and assumed:

- Each truck driven 120,000 miles per year
- Plug in your current average MPG per truck
 - » 7.69 MPG for Freightliner
 - » 7.71 MPG for LT with A26
- Diesel price \$2.50/gallon

If each fleet drove a total of 12,000,000 miles per year, the results would be:

- The Freightliner fleet would buy 1,560,468 gallons of diesel per year
- The International fleet would buy only 1,556,420 gallons of diesel per year or 4,048 gallons less

Conclusion:

- The Freightliner fleet would pay \$10,120 more in fuel costs per year than the International fleet

