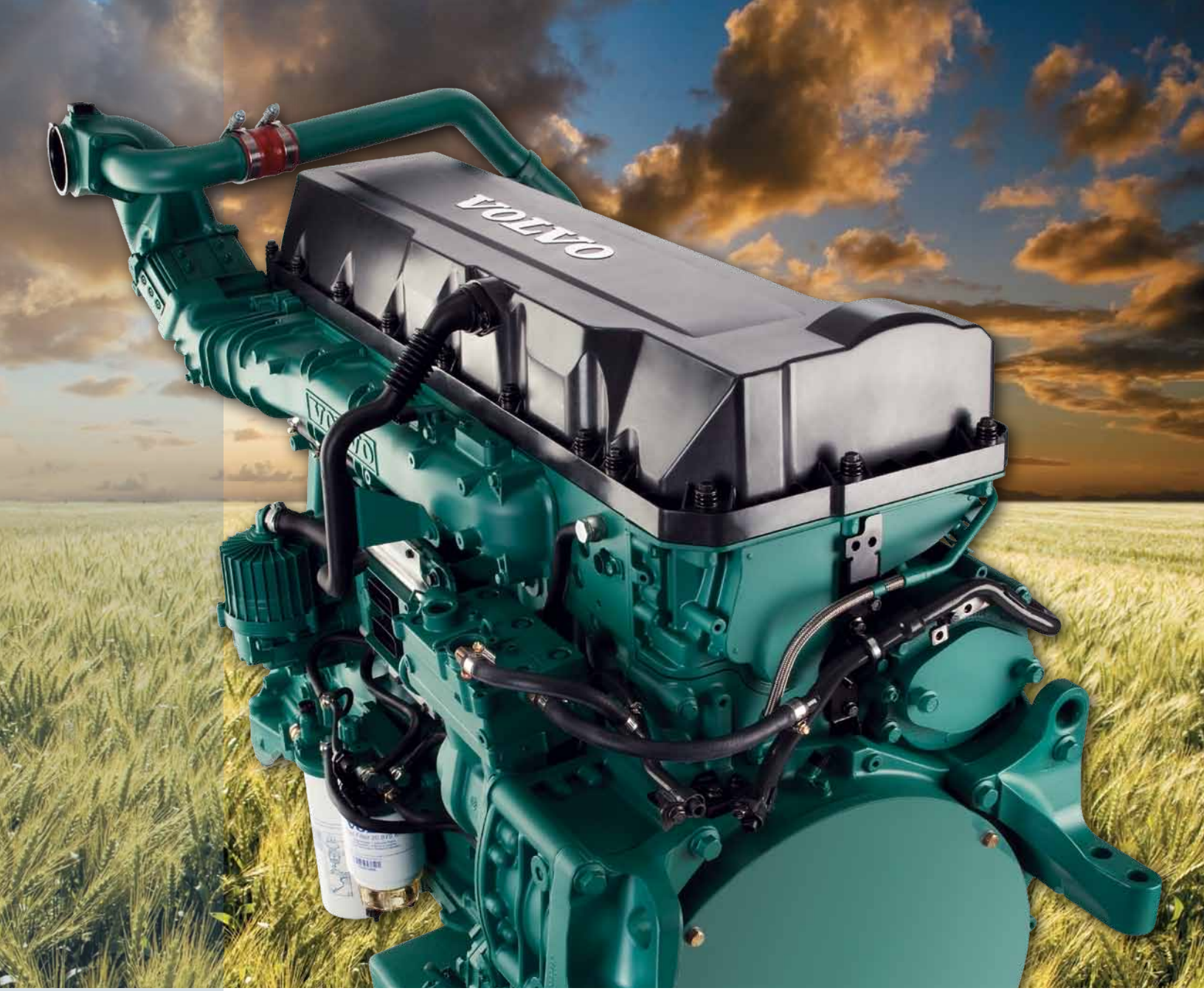


THE VOLVO D13
POWERTRAIN PRODUCT TOUR

Power and fuel efficiency. The best of both worlds.

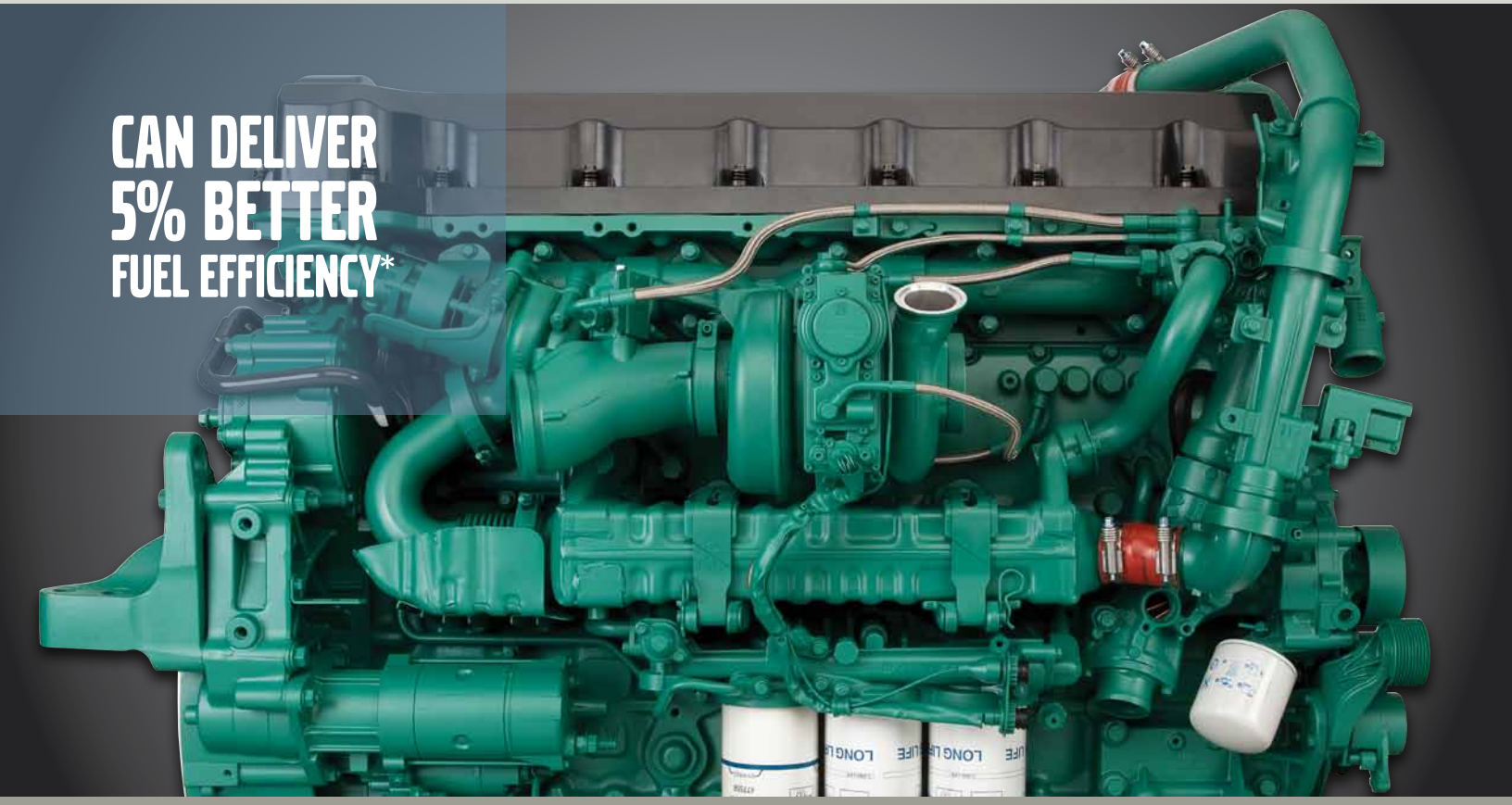
VOLVO D13

OVERVIEW

The proven Volvo D13 represents a giant step forward in terms of fuel efficiency, emissions compliance and driver convenience. Best of all, the same proven Volvo technology is used around the world in a variety of heavy-duty diesel applications. Today's EPA 2010 Volvo D13 builds upon the design, functionality and serviceability of our existing 2007 platform. And with the addition of Volvo's advanced Selective Catalytic Reduction (SCR) system, it maintains its power and performance without the need for active regenerations.

POWER AND EFFICIENCY

Fuel-efficient, powerful and lightweight. That's the Volvo D13. Designed to meet current and future EPA regulations while improving reliability and lowering operating costs. The variable geometry turbo keeps the engine responsive while improving fuel economy. Available in 435 and 500 horsepower models, the D13 delivers excellent low-end torque and responsiveness with minimal noise and vibration.



Fact: Volvo D13 engine for EPA 2010 and beyond delivers the best fuel economy of any 13-liter coach engine out there. It's ready to work with our innovative I-Shift transmission and I-VEB engine brake. And it's ready to help drive operational savings right to your bottom line. Which is exactly what you'd expect from one of the world's leading manufacturers of heavy-duty diesel engines.

*Testing shows that under everyday driving conditions, this new generation of Volvo engines can deliver 5% better fuel efficiency than our highly efficient EPA '07 engines.

VOLVO D13 SCR AND THE ENVIRONMENT.

SCR WAS A GREAT SOLUTION.
NOW WE'VE MADE IT EVEN BETTER.

When the EPA imposed new heavy-duty diesel emission standards, Volvo chose Selective Catalytic Reduction (SCR) as the technology that most efficiently solved the problem of nitrogen oxides. Our SCR approach—already well proven in Europe—combines the best aspects of Exhaust Gas Recirculation (EGR) with a Diesel Particulate Filter (DPF) and selective catalytic reduction to provide the best possible solution.

TECHNOLOGY THAT MAKES A DIFFERENCE.

Volvo's D13 engine with advanced SCR is a highly efficient solution that reduces diesel emissions and improves air quality in accordance with EPA '10 regulations. This is healthy news for motorcoach drivers, passengers and everyone on the planet. It's also good news for the environment.

Environmental care is a Volvo Group core value that supports our long-standing policy of conserving energy and protecting natural resources. We are deeply committed to minimizing the impact of our products and processes on the environment. And thanks to Volvo engines with SCR exhaust gas aftertreatment, we're able to drastically lower emission of air pollutants, with better performance and lower fuel consumption.

A CLEANER, BRIGHTER VIEW.

Volvo's SCR technology is part of a total vehicle solution that supports environmental care on many levels. Our manufacturing processes are designed to minimize waste and reduce consumption of energy and the use of raw materials. We are committed to cleaner air, a healthier environment and to conserving resources whenever possible.

BASE ENGINE

FUEL FILTER

The five-micron fuel filter traps the smallest impurities, providing clean fuel and extending injector life.

OIL FILTER

Volvo full-flow and bypass oil filters are manufactured to have the correct balance between flow rate and size. This ensures that oil flow saturates the entire filter media, and provides for extreme oil cleanliness throughout the service interval.

COOLANT FILTER

The coolant filter protects the integrity of the coolant system, the water pump and thermostat, and their respective seals by removing impurities and contaminates.

CAMSHAFT DAMPER AND REAR DRIVE

The Volvo engine's reputation for its smooth, quiet operation is not by accident. Unique to the D13 is a camshaft damper which absorbs camshaft torsionals induced by the ultra-high fuel injection pressure. Additionally, as a member of the engine gear train, the large mass of the flywheel absorbs inputs from the other gears for a smoother operating engine and extended component reliability and life.

POWER CYLINDER

At the heart of the power cylinder is a stiff connecting rod with wide journals and four-bolt attachment for superior strength and a rifle drilled oil passage for pressurized lubrication of the piston pin. For maximum strength under high temperatures, the piston is oil-cooled and utilizes a one-piece monotherm design. The top piston ring uses a proprietary PVD coating process, which when mated with the plateau honed cylinder liners provides excellent oil control and minimizes bore wear for long engine life.

ENGINE MANAGEMENT SYSTEM

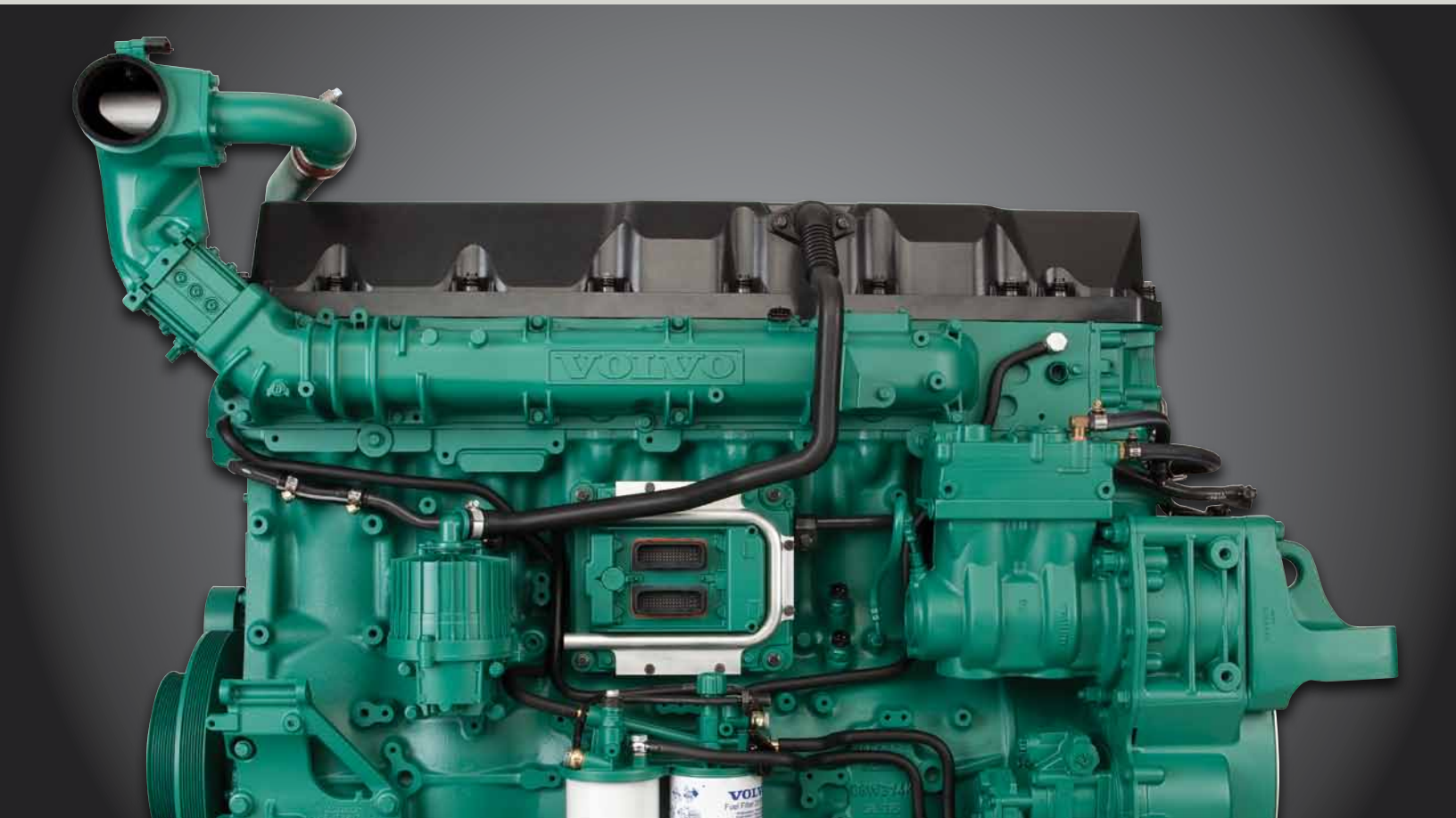
The EMS is located on the cold side of the engine with positive lock/quick disconnect harness clamps. Fuel is passed around the EMS to cool the unit. Volvo's state-of-the-art processor and smart engine optimization help improve performance and fuel economy over '07 engines.

INJECTOR

The centrally located unit injector is driven from the cam and controlled by the EMS. Ultra-high fuel injection pressure—as high as 35,000 psi—for more efficient injection, atomization and combustion enables the Volvo engine to strike a balance between fuel economy, performance and emissions control.

VOLVO ENGINE BRAKE

The engine brake has been improved from the 2007 version and along with excellent response, now delivers 500 HP and 350 HP at 2200 and 1500 RPM respectively, making coach speed control easier for operators.



BASE ENGINE

EXHAUST GAS RECIRCULATION (EGR) VALVE

The EGR valve delivers just the right amount of EGR—no more, no less—for optimum emission reduction and performance. Smart application of EGR—combined with SCR—is key to maximizing fuel efficiency in the 2010 era. Volvo's Precision-Flow Cooled EGR delivers the optimum amount of EGR to your engine, to lower fuel consumption and operating costs.

MIXING CHAMBER

The mixing chamber thoroughly mixes the cooled exhaust gas with the air from the Charge Air Cooler (CAC) before going into the intake manifold.

EXHAUST GAS COOLER

The EGR cooler, a stainless-steel, high-density, tube and fin design, is critical for fuel economy, lowering exhaust gas temperatures prior to reintroduction to the intake system. The dual-chamber stainless-steel exhaust gas cooler efficiently cools exhaust gases up to 932°F (500°C).

DELTA-P FLOW SENSOR

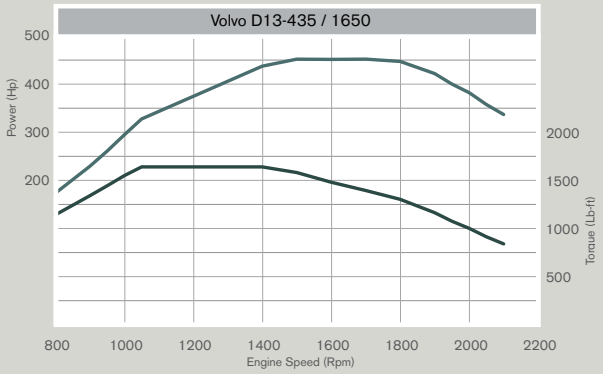
The Delta-P flow sensor, part of Volvo's Precision-Flow Cooled EGR system, provides a flow signal to the VECTRO Engine Management System (EMS). This integrates the turbo-charger back pressure with EGR valve flow rate to provide exactly the right amount of EGR for maximum fuel economy.

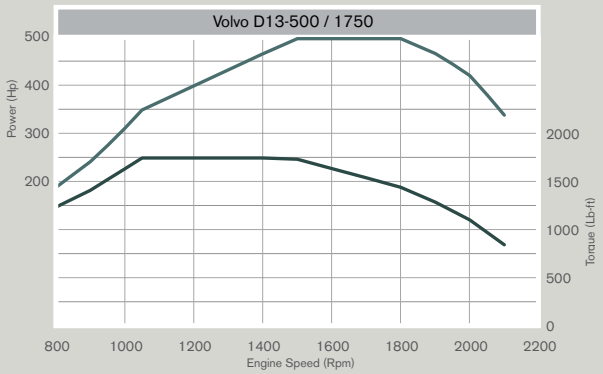
TURBOCHARGER

The single, variable geometry turbocharger compresses and moves the intake air while providing the correct back pressure to drive the EGR process. The water-cooled bearing housing and actuator ensure long life by protecting bearings, pushrods seals, sensors and electronics from heat. With only one moving part, the simplicity of the sliding vane design ensures reliability.

SPECIFICATIONS

Ratings:	435 hp with 1650 lb-ft peak torque 500 hp with 1750 lb-ft peak torque
Base Engine Configuration	4 cycle / Inline Six
2010 Emissions	SCR Selective Catalytic Reduction
Aftertreatment	Diesel Particulate Filter with Oxidation Catalyst
Aspiration	Sliding Nozzle Variable Geometry Turbocharger
Cam / Valve Configuration	SOHC / 4 Valves per Cylinder
Cylinder Head	One-Piece Rigid Deck Cylinder Head
Injection System	Dual Solenoid Electronic Unit Injection
Displacement, cu. in. (L)	780 (12.8)
Compression Ratio	16.0:1
Bore & Stroke, in. (mm)	5.16 x 6.22 (131 x 158)
Cylinder Spacing, in. (mm)	6.61 (168)
Full Dress Dry Weight, lb. (kg)	2676 (1214)
Fuel and Lubrication:	
Fuel Specification	Ultra Low Sulfur Diesel, 15 ppm
Fuel Filters	Primary plus Secondary
Total Lube Oil Capacity, qts. (L)	38 (36)
Oil Filtration	Two Full Flow, One Bypass
Oil Specification	Volvo VDS-4, SAE 5W-30
Engine Equipment:	
Air Compressor, CFM	Two Cylinder, 31.8
Engine Brake	VEB7
Engine Brake Rating at 2200 rpm	500 hp @ 2200 rpm
Engine Brake Rating at 1500 rpm	350 hp @ 1500 rpm
Electronic Oil Level Indicator	Standard
Air Intake Preheater, Electrical	Optional
Engine Block Heater	Optional
Fuel Heater	Optional





Advertised Power, HP	500
Peak Power, HP	500
Peak Torque, lb-ft@rpm	1750@1050
Governed rpm	2100
Recommended cruise speed range, rpm	1300–1500
Start engagement torque, lb-ft@rpm	850@800

FEATURE	BENEFIT
"No-Regen" DPF strategy, regenerating soot with only Passive (NO_2-based) Regeneration; no 7th injector fueling for regeneration	Eliminates Active (oxygen-based) DPF Regenerations and the diesel fuel usage they require to help reduce operating costs
Available "Early Upshift" software encourages progressive shifting	Lower total engine revs; better fuel economy
Volvo D13 is the only EPA '10 diesel using the same base engine and EGR system as in 2007	Systems proven over time operate with greater durability for reduced cost of operation
Eight headbolts around each piston; four bolts on each connecting rod	Higher number of bolts assures more even clamping and greater clamping force for longer design life
Ultra-high 35,000 psi fuel injection pressure	Finer fuel atomization for cleaner burn, reduced emissions and better fuel economy
Damper on camshaft	Reduced injection system generated torsional vibration and high-frequency "buzz," for longer component life
Precision-Flow Cooled Exhaust Gas Recirculation with Delta-P sensor for accurate EGR measurement	Together with accurate turbocharger and EGR valve, this closed-loop system is tuned to give just the EGR flow needed, no more, no less, for optimum fuel consumption
Hydraulically actuated EGR valve with dual-port design	Consistent temperature and accurate flow; balanced pressure design with reduced opening force for high reliability and stick resistance
Available I-VEB engine brake—strongest in class engine brake at cruise rpm	Exceptional retardation at the rpm you drive
I-VEB intelligently modulates the engine brake power for "downhill cruise" to maintain a steady vehicle speed during descent	Greater driving comfort; improved safety
'Performance Bonus Guide' software helps the driver operate in the most efficient zone	By altering the driver's behavior through incentives, fuel savings can be significant, and driver retention can be increased

2010 SCR SOLUTION: "NO REGEN ENGINE"

THE GOAL: GETTING RID OF NOX.
Volvo D13 engines produced to meet the 2007 standards effectively reduced oxides of nitrogen (NOx) emissions by 50%, and reduced particulate matter (soot) by 90%. New EPA regulations for 2010 call for a further reduction in NOx emissions—a full 90% lower. Volvo engineers met this challenge by creating a system that will deliver near-zero emissions of particulates and NOx.

FACING A COMPLEX PROBLEM.
When a diesel engine combusts fuel, it produces NOx, a pollutant. It also puts out soot. But if an engine is designed to produce very little soot, it will, in turn, produce even more NOx. This dilemma brought out the best in Volvo's engineers.

FROM TWO POLLUTANTS TO NEARLY ZERO.
The Volvo D13 SCR solution delivers a highly efficient engine that provides increased fuel efficiency and low particulate emissions. To combat the resultant NOx emissions, the Volvo system injects Diesel Exhaust Fluid (DEF) downstream from the DPF. The exhaust gas combines with the DEF, which turns the NOx into harmless nitrogen gas and water vapor.

WHERE THERE IS DIESEL FUEL, THERE IS DEF.
The DEF is fed into the system from an onboard tank that is simple to fill. Truck stops and fueling stations all across North America—and our Volvo service providers—offer DEF, and the number is growing every day. But you won't be stopping for DEF very often. While a motorcoach traveling from New York to Los Angeles might need to fill its fuel tank twice, it would make the trip on a single tank of DEF.

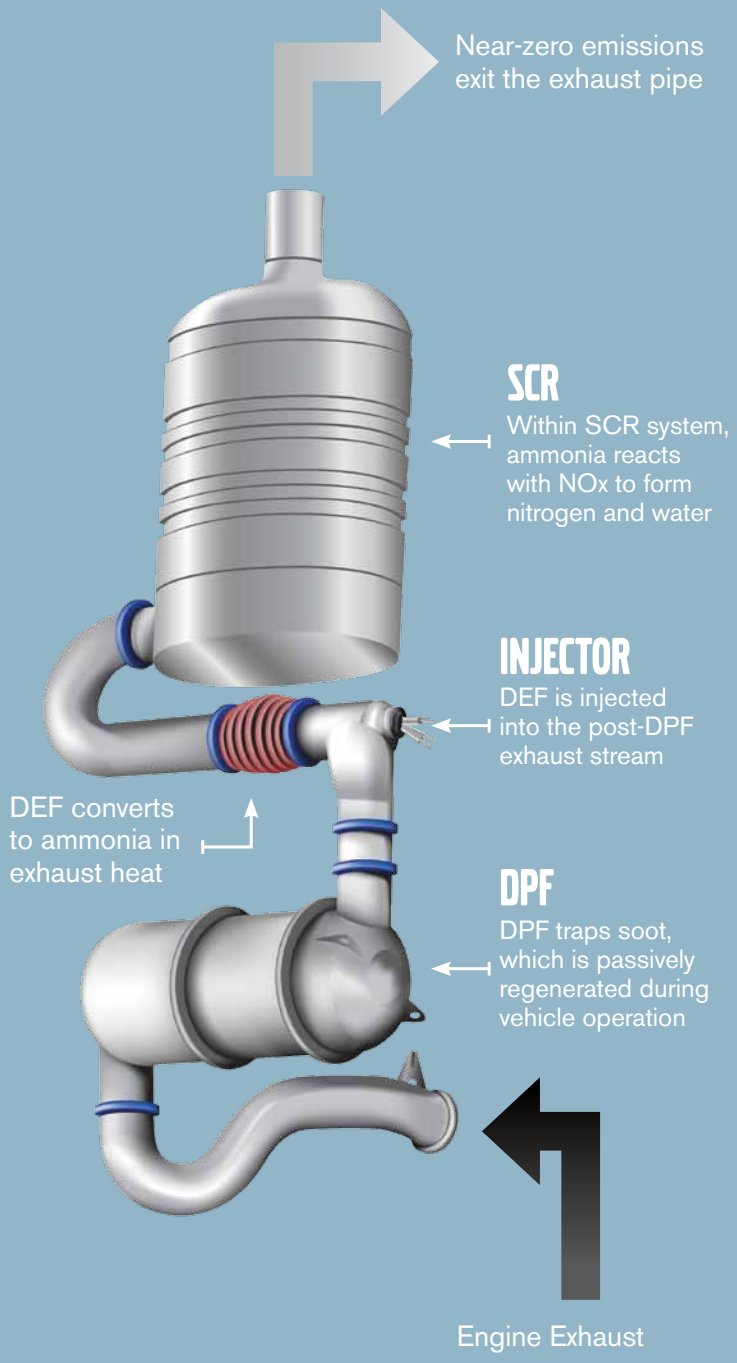
LESS SOOT, NO ACTIVE REGENERATION AND GREATER FUEL EFFICIENCY.
The D13 engine's unparalleled SCR system not only meets environmental regulations, it relieves drivers of concern about regeneration, and it also provides improved fuel efficiency over previous D13 engines.

ACTIVE REGENERATION IS A THING OF THE PAST.
A DPF accumulates particulate matter that periodically must be burned off using a process called regeneration. With Volvo's 2010 SCR technology, this regeneration occurs automatically—and the driver proceeds without even being aware the process is taking place. Under normal driving conditions, there's never a need to park and perform an "active" regeneration.

FULL EPA COMPLIANCE MAKES LIFE BETTER FOR EVERYONE.
This new system is the only one industry-wide that meets the EPA's near-zero NOx emissions requirement while at the same time relieving the driver from ever having to worry about active regeneration. It all happens seamlessly.

HOW SCR WORKS

Our vertical DPF/SCR configuration saves valuable passenger space.



ALL THE ADVANTAGES OF VERTICAL INSTALLATION.

Thanks to our unique vertical installation and rooftop diffuser mount, the SCR and DPF system produces less heat in the engine compartment. It also provides easier accessibility for safer maintenance. In this vertical configuration, the DPF and SCR components and sensors are better protected from damaging dirt, dust, water, etc. The innovative diffuser system reduces exhaust peak temperature by 50% at 6 inches and prevents water from infiltrating the exhaust line. The roof flush mount improves the appearance of the coach.

DPF

DIESEL PARTICULATE FILTER (DPF)

Volvo Power engines feature a Diesel Particulate Filter (DPF) that filters soot from the exhaust. Exhaust gases exiting the DPF meet or exceed EPA 2010 clean air standards for particulate matter.

CERAMIC SUBSTRATE

The DPF uses a ceramic substrate. Exhaust gas that enters flows through the porous ceramic wall and comes out the other end, leaving soot in the filter. Through passive regeneration, the soot is removed and all that remains is an ash of low volume, resulting in long maintenance intervals.

DEF FREQUENTLY ASKED QUESTIONS

Q. WHAT IS DIESEL EXHAUST FLUID, OR DEF?

A. Diesel Exhaust Fluid (DEF) is a reactant that's key to the SCR process. It's a nontoxic, aqueous solution of 32.5% urea and 67.5% water. To assure quality, DEF should be purchased only from a certified supplier.

Q. WHAT IS UREA?

A. Urea is a compound of nitrogen that turns to ammonia when heated. It is used in a variety of industries, perhaps most commonly as a fertilizer in agriculture. Urea is often added to hand and foot creams.

Q. HOW MUCH DEF WILL BE REQUIRED?

A. DEF is injected only when needed. Consumption will be approximately 2% of fuel consumption, depending on how and where you operate your motorcoach (duty cycle, passenger capacity, terrain, etc.).

Q. HOW MANY MILES CAN A MOTORCOACH TRAVEL ON A SINGLE GALLON OF DEF?

A. Again, DEF consumption is related to fuel consumption. A motorcoach averaging 7 MPG will be able to travel 233 miles or more on one gallon of DEF (U.S. gallons).

Q. HOW MUCH WILL I PAY FOR DEF?

A. At the time DEF goes on sale, it is anticipated that pricing will be at or below the cost of diesel fuel.

Q. HOW DOES OUTSIDE TEMPERATURE AFFECT DEF?

A. DEF will begin to form a frozen slush at -11° C / 12° F. When the engine is running, the vehicle coolant system provides heating for the DEF tank and supply lines. DEF thaws very quickly. If it freezes when the motorcoach is not operating, start-up and normal operation of the vehicle will not be affected. The vehicle coolant system will heat the DEF to liquid form, and vehicle operation can continue normally. When frozen, DEF expands by about 7%. DEF tanks are designed to accommodate this expansion.

Q. WHAT HAPPENS IF A DRIVER RUNS OUT OF DEF?

A. DEF indicators on the dash will alert the driver regarding DEF status. A gauge much like a fuel gauge will indicate the level of DEF in the tank. A DEF low-level warning will activate when the DEF tank is low. If a driver runs out of DEF completely, vehicle power will be reduced to derate mode. When the DEF tank is refilled, the engine will resume normal power. Error codes will be logged into the computer for future analysis of operation history.

Q. HOW SHOULD DEF BE STORED?

A. Store DEF in a cool, dry and ventilated area, away from direct sunlight. Recommended storage temperature is up to 25° C / 77° F, though brief exposure to higher temperatures will not be a problem.

Q. WHAT IS THE SHELF LIFE OF DEF?

A. This is largely a factor of storage temperature. DEF degrades over time depending on temperature and exposure to sunlight. If stored at recommended temperatures (not exceeding 25° C / 77° F) shelf life will be around two years.

Q. ARE THERE ANY HANDLING CONCERNS WITH DEF?

A. DEF is nontoxic, nonhazardous and nonflammable. It is nonpolluting and meets strict international standards for purity and composition. DEF poses no serious risk to drivers or equipment when handled properly. Always buy DEF from a certified supplier. Always keep DEF in original certified containers. To prevent contamination and damage to the filter or pump, do not transfer DEF to other containers. Be sure to add DEF to the DEF tank only—do not add DEF to oil, coolant, gas or other tanks.

Q. IS DEF CORROSIVE?

A. DEF is corrosive to steel, copper, aluminum and lower-grade plastics or plastics with additives in them. DEF tanks and dispensing equipment are made of heavy-duty plastic with no additives.

Q. HOW DOES DEF AFFECT SERVICE AND MAINTENANCE?

A. Coaches with a Volvo SCR system require no change to service and maintenance intervals. The DEF filter can be changed in minutes.

Q. HOW IS DEF PACKAGED?

A. DEF will be available in 2.5-gallon containers, 55-gallon drums, 275-gallon IBC and in bulk storage for fleet locations, truck stops and dealerships.

Q. WHERE WILL DEF BE AVAILABLE?

A. DEF will be everywhere drivers are. All major truck stops, dealers and distributors will carry DEF.

I-SHIFT: BETTER FOR YOU AND YOUR BOTTOM LINE.

Volvo I-Shift is a 12-speed, two-pedal, lightweight automated manual transmission (AMT) that delivers an exceptional level of productivity by simultaneously maximizing comfort, safety and fuel efficiency. I-Shift is designed to integrate seamlessly with Volvo engines. It represents the fourth generation of proven Volvo AMT technology that requires minimum service and virtually no maintenance. Volvo I-Shift has become the new transmission standard in terms of fuel economy, safety and ease of operation.

A TRANSMISSION WITH INTELLIGENCE.

The I-Shift transmission management system employs a next-generation microprocessor to deliver "intelligent" features that improve driveability, safety and fuel efficiency. For example, I-Shift knows the efficiency map for each Volvo engine. By continuously monitoring the changing grade, vehicle speed, acceleration, torque demand, weight, rolling and air resistance, the I-Shift can instantly predict and select the most efficient utilization of the engine. In other words, it knows when and where a shift would be beneficial.

ENHANCE PRODUCTIVITY.

Lower Operating Costs

I-Shift lets every driver shift like a fuel efficiency expert, reducing your fuel costs. Smooth shifting puts less stress on the driveline and the tires, and can extend the useful life of the driveline and minimize maintenance.

Easy Operation

No driver intervention is needed, because you can trust I-Shift to always select the right gear. This level of ease helps with driver retention on the road.

Increased Safety

Easier operation means less wear and tear on drivers. I-Shift reduces fatigue and improves concentration, allowing drivers to give their full attention to maneuvering the vehicle.

SOLUTIONS THAT DRIVE SUCCESS.

The I-Shift transmission is backed by a warranty of two years or 250,000 miles (whichever comes first) on parts and labor. Troubleshooting is done with Volvo's diagnostic tools, VCADS and Guided Diagnostics, included in Premium Tech Tool. Fault codes can also be accessed through Volvo's sophisticated built-in Driver Display, and through Prevost Liaison.

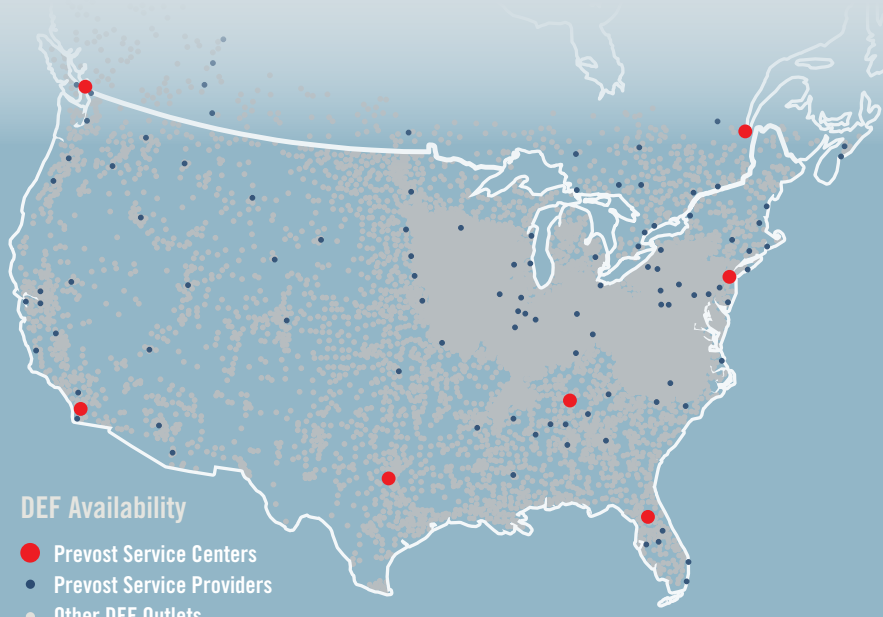
PREVOST. NORTH AMERICA'S LEADING PREMIUM INTERCITY TOURING COACH MANUFACTURER.

Prevost takes your transport operation to a new level of excellence, with passenger coaches that deliver the ultimate in comfort, performance and dependability. Multiple safety features, including advanced braking, stability and monitoring systems, provide peace of mind for you and your passengers. Prevost's exclusive offering of the Volvo D13 engine and the automated Volvo I-Shift transmission provides an integrated powertrain solution that saves fuel, delivers outstanding performance, reduces pollution and makes driving a pleasure. Our service specialists are certified for expert maintenance and repair on all Prevost and Volvo coaches and Volvo powertrains. And our broad support network includes seven strategically located Prevost Service Centers and over 100 Prevost Service Providers across North America.

The finest motorcoach design and construction, powered by the best engines and backed by superior service. That's what you expect from a leader. That's what you get from Prevost.

To find out more, talk to your Prevost Regional Sales Manager (RSM).

Your Prevost RSM can answer any questions you may have. To request more information, contact your Prevost RSM or nearest Service Center by calling 877.773.8678 in the U.S. or 418.883.3391 in Canada.



DEF Availability

- **Prevost Service Centers**
- **Prevost Service Providers**
- **Other DEF Outlets**

*For a current list of DEF outlets, go to www.volvobusscr.com

PREVOST PARTS & SERVICE CENTERS

Quebec City, QC	866.870.2046
Delta, BC	604.940.3306
South Plainfield, NJ	800.223.0830
Goodlettsville, TN	877.299.8881
Jacksonville, FL	800.874.7740
Fort Worth, TX	866.773.8678
Mira Loma, CA	800.421.9958

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