DETROIT DIESEL

SERIES 60®

The ONLY Motor Coach Choice

Since 1992, More Have Selected The SERIES 60® Than Any Other Heavy-D

Why Is The Series 60 So Popular?

Because It Offers Motor Coach Operators The Best Combination Of:

- **Performance**
- **Fuel Economy**
- **Low Cost Of Operation**
- **Reliability**
- **Long Life To Overhaul**
- **Driver Satisfaction**
- **Ease of Service**
- **Warranty Satisfaction**
- **Ratings Flexibility**
- **Electronic Controls**
- **Lightweight**
- **Residual Value**

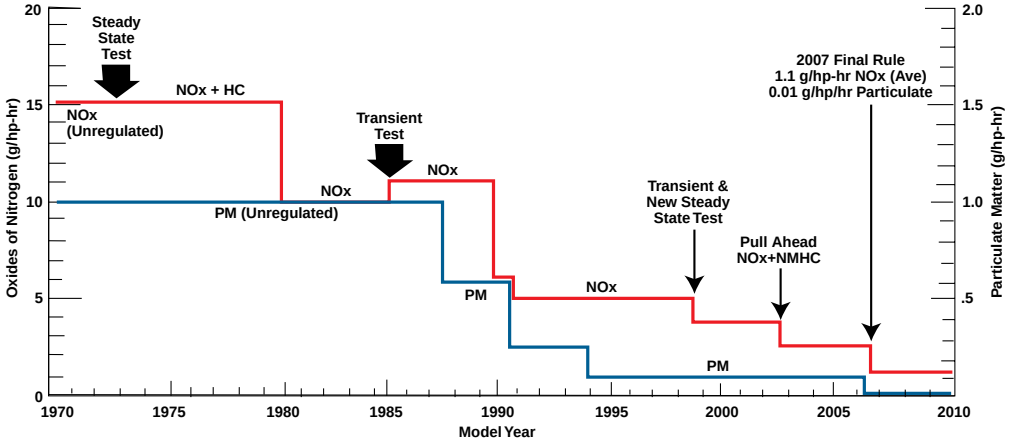
Coach Operators

uty Engine

And The Tradition Carries On Into 2003

Effective October 1, 2002, all heavy-duty on-highway diesel engines built in North America must meet new emission standards. The following chart shows the history of emission reductions in heavy-duty diesels since 1970, the new standards effective October 1, and the next emission reductions set for 2004. It's worth noting that the emissions levels of modern heavy-duty diesel engines are approaching zero.

EPA Heavy-Duty Engine Emission Standards



Exhaust Gas Recirculation (EGR)

What is EGR?

Exhaust gas recirculation (EGR) is the technology chosen by all but one major engine maker in North America.

EGR has been in use on automobile engines worldwide since the mid-1970's, and on Detroit Diesel engines since 2000. Between 2000 and 2002, Detroit Diesel placed over 3000 EGR engines into service and they accumulate over 30,000,000 miles of service each year.

EGR is a simple concept. The October 2002 regulations require a reduction of oxides of nitrogen (NOx) to 2.5 g/hp-hr. NOx is a by-product of high temperatures in the combustion chamber. The higher the temperature, the higher the production of NOx.

The challenge faced by Detroit Diesel and the other engine makers is how to reduce NOx without affecting fuel economy, performance, durability and other factors of engine operation.

EGR has proven to be the best way to reduce NOx while maintaining excellent driveability, fuel economy and engine life.

How Does EGR Work?

During certain conditions of engine operation, the EGR valve is opened and measured amounts of exhaust gas are routed to the intake manifold. The exhaust gas mixes with the incoming fresh air and displaces some of the oxygen. Since there is now slightly less oxygen in the air, the peak temperatures created in the cylinder during combustion are reduced, and the levels of NOx are also reduced.

A major advantage of EGR is that engine timing can be optimized, which further enhances performance and fuel economy.

Non-EGR engines have to rely on retarded timing, which has a negative effect on fuel economy, performance, and acceleration, and leads to the production of more soot in the engine oil.

Series 60
Program Goals

- **Comply with the Emission Standards**
- **Demonstrate Equal or Better Reliability and Durability**
- **Maintain Fuel Economy**
- **Leadership**
- **Minimize Vehicle Impact**

Series 60 EGR Reliability Growth
Total Plan = 8 Million Miles

Supplier Testing	330,000 Miles
Durability Testing	2,700,000 Miles
Probe Testing	300,000 Miles
Vehicle Durability Testing	500,000 Miles
Total Miles to Date	3,830,000 Miles
Fleet Evaluation Testing	2,500,000 Miles
Durability & Vehicle Testing	1,770,000 Miles

"We have utilized Cummins, Detroit Diesel and Caterpillar diesel engines over the past 13 years and have found the Detroit Diesel to be the most trouble free and efficient."

Series 50 Experience...
What Did We Learn?

EGR technology is not new to Detroit Diesel. In 2000, we applied this same technology to our Series 50 engines to meet the emission regulations in the Bus and Coach industry.

Today, we have more than 3000 buses running with EGR. We have been able to gain the experience of operating these engines in demanding stop-and-go operations, and have also been able to develop a highly qualified supplier base.

We found there are two ways to meet tougher emission standards. One way is to retard engine timing which reduces fuel economy, hurts performance and places excess soot in the lube oil.

A much better way is to use proven EGR technology. Our experience with EGR on Series 50 is: low soot in the oil, low oil consumption, lower cylinder temperatures for longer component life, excellent acceleration and improved fuel economy compared to engines with retarded timing.

DDEC Electronic

Ordinary Diesel Engines Have Electronic Controls

DDEC takes electronic engine management to a whole new level with a sophisticated control system that provides the ability to customize the engine to your application for peak efficiency.

DDEC electronic control optimizes fuel injection in real time to maximize fuel economy, performance and emissions. It diagnoses your Series 60 on the fly, using onboard diagnostics. It even protects the engine from damage by directing system shutdowns to prevent catastrophic failures.

- Sensors signal operations outside of preset engine parameters
- Auto shutdown will prevent engine damage
- Data can be downloaded to fleet managers
- Multiple performance and fuel economy reports are available
- Built-in electronic redundancies for superior reliability

Fully electronic, fully automatic and fully reliable, with fewer moving parts than less sophisticated engine management systems

- **Self-diagnosing and self-protecting** to eliminate guesswork and accidental damage
- **Modular components** can be replaced easily and inexpensively
- **Data collection/sharing enabled** for fleet management
- **Supported by Detroit Diesel Distributors, the world's most experienced engine electronics service network**

ProDriver® DC

ProDriver DC is a dashboard-mounted display with data card extraction capabilities. It provides real time and summary information on vehicle and engine operation, as well as graphic displays of driver performance relative to fleet goals. ProDriver DC is a second generation display product. It delivers all the functionality provided by the original ProDriver display, along with many new features and capabilities.

Effective coach management starts with quick performance data retrieval. The key benefit of ProDriver DC is instant feedback on fuel economy so that the operator can adjust driving habits to maximize mpg and thereby reduce costs.

ProDriver DC works to:

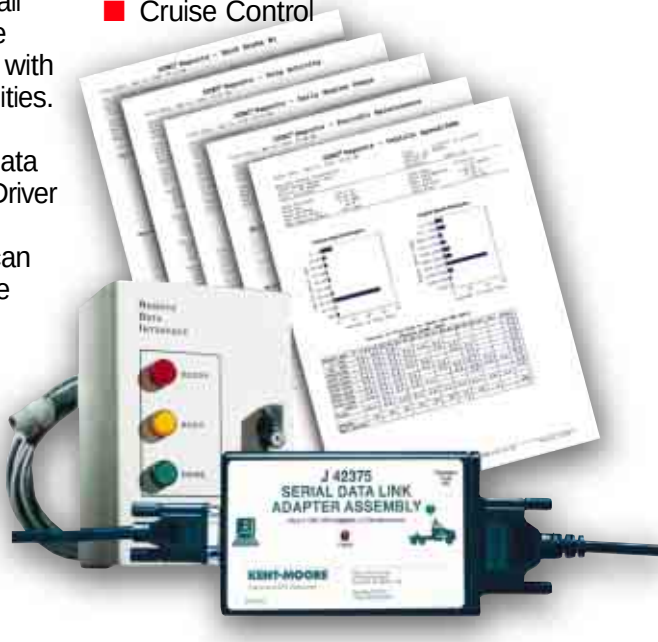
- Increase fuel economy
- Improve driver performance
- Increase driver satisfaction
- Lower operating costs
- Improve safety records
- Reduce maintenance expenses

Diagnostic Link™ Software

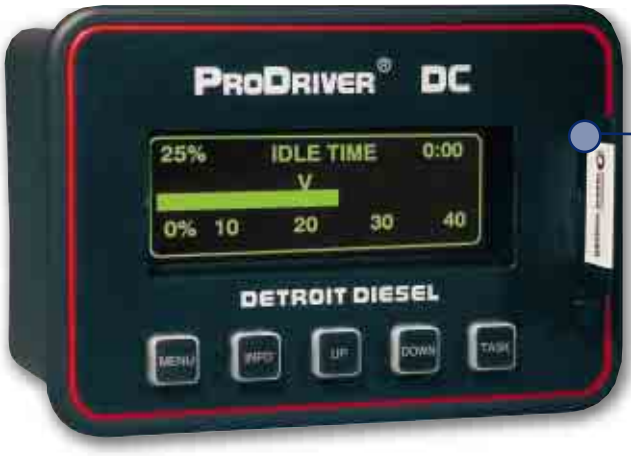
Detroit Diesel Diagnostic Link is a PC Windows® based software engine troubleshooting tool that includes a built-in service manual and can aid in extracting data, analyzing and managing information from ECMs.

This tool can view or change:

- Engine Configurations
- Fault Codes
- Vehicle Speed Settings
- Total Engine and Trip Data
- Engine Protection Options
- Information From DDEC Data
- Idle Shutdown
- Cruise Control



Diagnostic Link™



ProDriver® DC

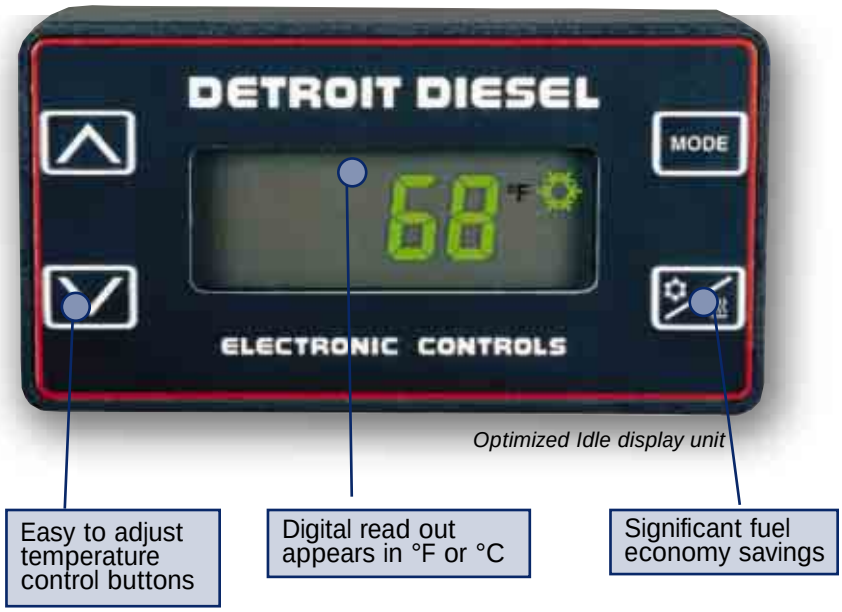
The immediate feedback from ProDriver® DC allows the driver to take a more active role in meeting coach goals.

Technology

IRIS - Infrared Information System

IRIS – Infrared Information System

The IRIS system consists of simple infrared transmitters and receivers (transceivers). One transceiver is mounted on the vehicle. Another transceiver is mounted at the location (or locations) where the vehicle owner wants to extract information, such as the entrance to the shop or the fuel island. IRIS provides a wireless connection between vehicle systems and off-board PC software applications.



Optimized Idle display unit

Optimized Idle®

Optimized Idle is an engine controlled management tool that automatically starts and stops the engine based on:

- Battery Voltage
- Engine Temperature
- Cab/Sleeper Temperature

When these variables fall below predetermined values, DDEC will start the engine and allow it to idle until the parameters are brought to in-range values. Optimized Idle provides benefits of:

- Less Fuel Used
- Extended Battery Life
- Reduced Idle Time
- Safety

"We had to switch to the Series 60 because the residual value is higher."

By Using EGR, The Series 60 Will Be The Only Heavy-Duty Coach Engine After October 2002 That Is Fully Certified To The New Standards, Is Based On The Most Proven Design, And Has The Highest Level Of Acceptance In The Industry.

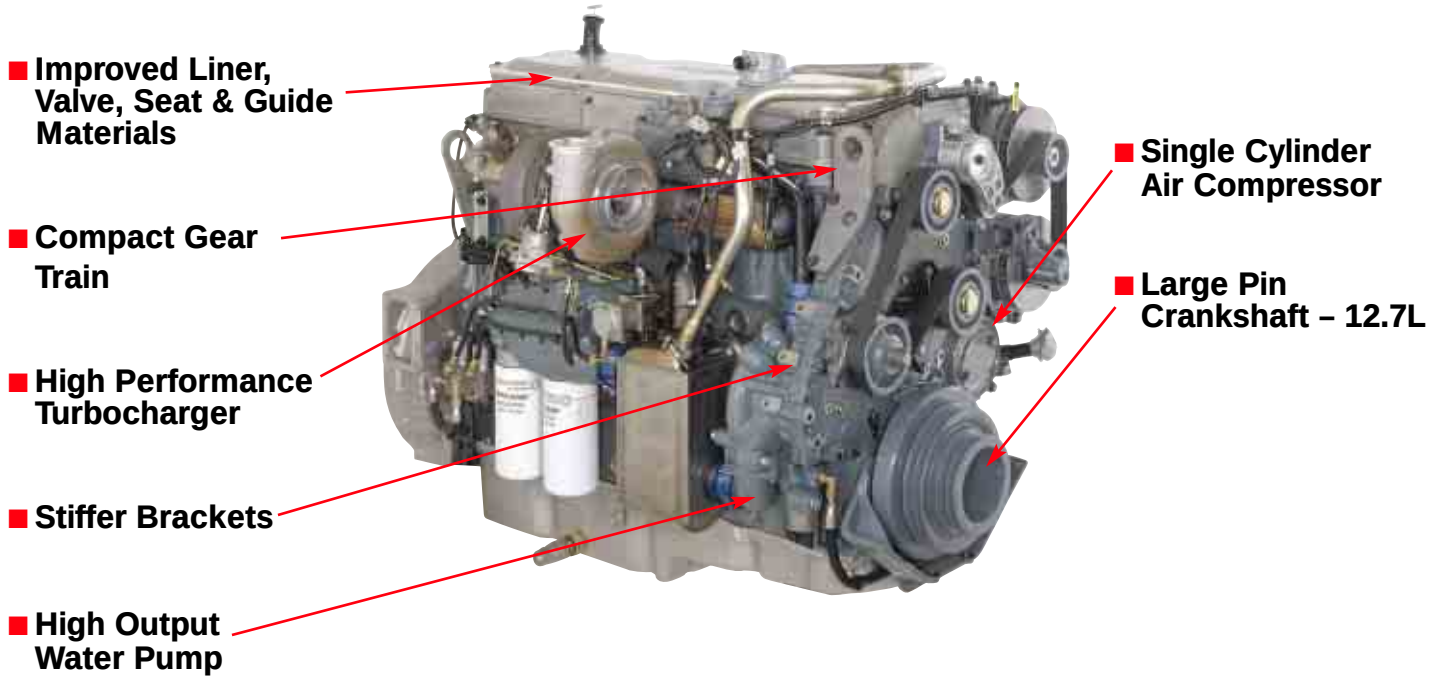
SERIES 60

PROVEN - POPULAR - CERTIFIED

The ONLY Choice for Motor Coaches

In Addition To EGR, Additional Refinements Have Been Made To The Series 60's Proven Design.

Technology Leadership



Base Engine Improvements

Power Assembly

- **Piston**
  - — Enhance Combustion Piston Bowl
- **Fire Ring**
  - — Increase Thickness from 2.5 mm to 3.0 mm
  - — Base Material and Face Coating Material Enhancements
- **Connecting Rod**
  - — 12.7L Common Rod with 14L
  - — 12% More Rod Bearing Area
- **Crankshaft**
  - — 12.7L “Big Pin” 95 mm Rod Journals
- **Higher Output Water Pump**
  - — Improved Cooling

Cylinder Head Assembly

- **Cylinder Head Modifications**
  For Long Life and Fuel Efficiency
  - — Head Bolt Bosses
  - — Top Deck Thickness
  - — Intake Manifold Bolt Pattern
  - — Intake Port Machining
  - — Recessed Exhaust Valves
- **Valves, Guides & Seals**
  For Long Life
  - — Nickel Chrome Intake Valves
  - — Pyromet Exhaust Valves
  - — Nickel Based Valve Seat Material
  - — Powdered Metal Valve Guides

Next Generation Gear Train

- **Less Vibration and Noise**
- **Decreased Frontal Area for Improved Under Hood Air Flow**
- **Improvements in Component Bracketry**
- **Higher Water Pump Flow**
- **Less Weight (53 lbs)**

Single Cylinder Air Compressor

- **Bendix Model DF-359**
- **Same Output as TF-750 (16CFM)**
- **Naturally Aspirated**
- **Less Friction**
- **Reduced Oil Consumption (up to 60% less)**
- **Less Weight (20 lbs)**

“We ran Series 60 for years and then other guys made us a deal we couldn’t refuse. We’re trading them in and going back to the Series 60.”

Engine Weight

2002 Series 60 Weight

- Highest Big Bore Engine

Next Generation Gear Train

- Less Weight (53 lbs)

Single Cylinder Air Compressor

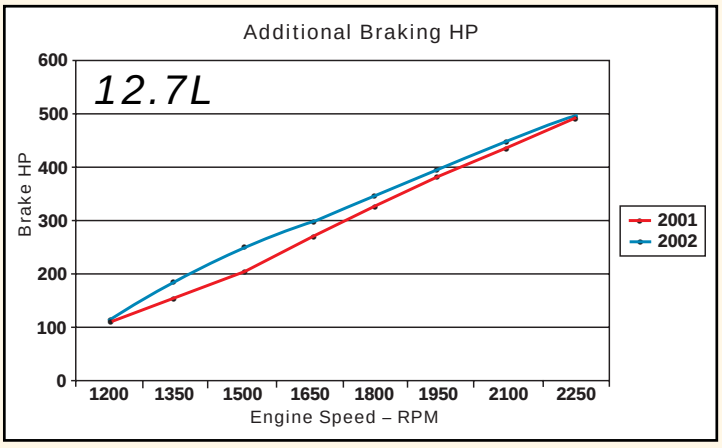
- Less Weight (20 lbs)

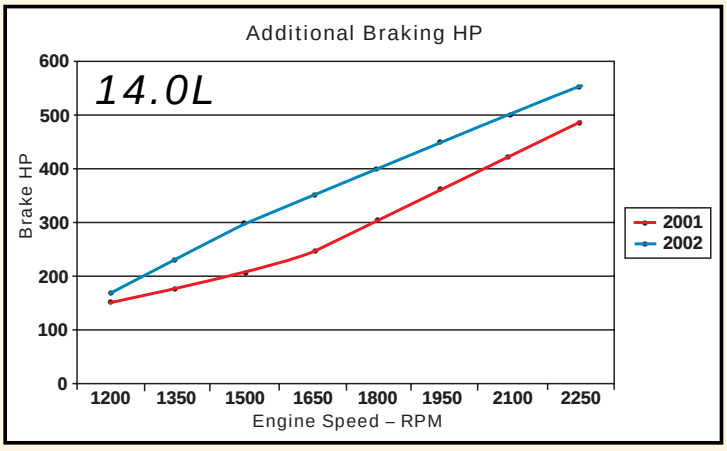
Vehicle Driveability

The Series 60 Is Known For Excellent Performance & Driveability … The 2002 With The High Performance Turbo is Even Better!

- Excellent Clutch Engagement Torque
- Improved Acceleration
- Improved Torque Response
- More Engine Braking

Series 60 2002 Engine Braking





Fuel Injection System

Electronic Unit Injector

- **Higher Injection Pressure For Lower Emissions And Better Fuel Economy**
- **Oxidize Particulates Late In The Combustion Event For Reduced Emissions And Better Fuel Economy**
- **NAFTA-Wide Parts Availability And Service Support**

"To be Number 1 takes a great engine...To be Number 1 eleven years in a row takes a Series 60

The Fourth Generation Detroit Diesel Electronic Control System (DDEC IV) Is The Most Powerful And Proven System Available

Oil Drain Intervals

Maintain Current Oil Drain Intervals with CI-4 Oils

- **Compared to CH-4 Oil, CI-4 Oils will have:**
  - — Greater Acid Neutralization Capability (Higher TBN)
  - — Increased Soot Dispersancy
  - — Increased Anti-wear Properties (Additional Shear Capability)
- **Most Oil Companies Have Already Introduced CI-4 Oils**

330-550 HP

The Most Complete Power Range In A Single Engine Package

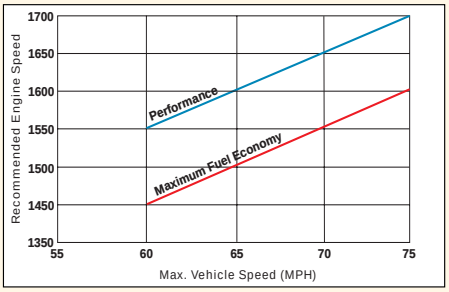
12.7L

Maximum HP @ RPM	Peak Torque @ RPM
330 HP @ 2100 RPM	1350 LB-FT @ 1200 RPM
350 HP @ 2100 RPM	1350 LB-FT @ 1200 RPM
330/350 HP @ 2100 RPM	1350 LB-FT @ 1200 RPM
375 HP @ 2100 RPM	1450 LB-FT @ 1200 RPM
400 HP @ 2100 RPM	1450 LB-FT @ 1200 RPM
430 HP @ 2100 RPM	1450 LB-FT @ 1200 RPM
375/430 HP @ 2100 RPM	1450 LB-FT @ 1200 RPM

14.0L

Maximum HP @ RPM	Peak Torque @ RPM
435 HP @ 2100 RPM	1550 LB-FT @ 1200 RPM
475 HP @ 2100 RPM	1550 LB-FT @ 1200 RPM
500 HP @ 2100 RPM	1550 LB-FT @ 1200 RPM
435/500 HP @ 2100 RPM	1550 LB-FT @ 1200 RPM
435 HP @ 2100 RPM	1650 LB-FT @ 1200 RPM
475 HP @ 2100 RPM	1650 LB-FT @ 1200 RPM
500 HP @ 2100 RPM	1650 LB-FT @ 1200 RPM
435/500 HP @ 2100 RPM	1650 LB-FT @ 1200 RPM
550 HP @ 2100 RPM	1650 LB-FT @ 1200 RPM

Gearing Recommendations Remain the Same



"Another engine maker was going to give me a fuel economy guarantee, but they backed off when they discovered how well the Series 60 was doing."

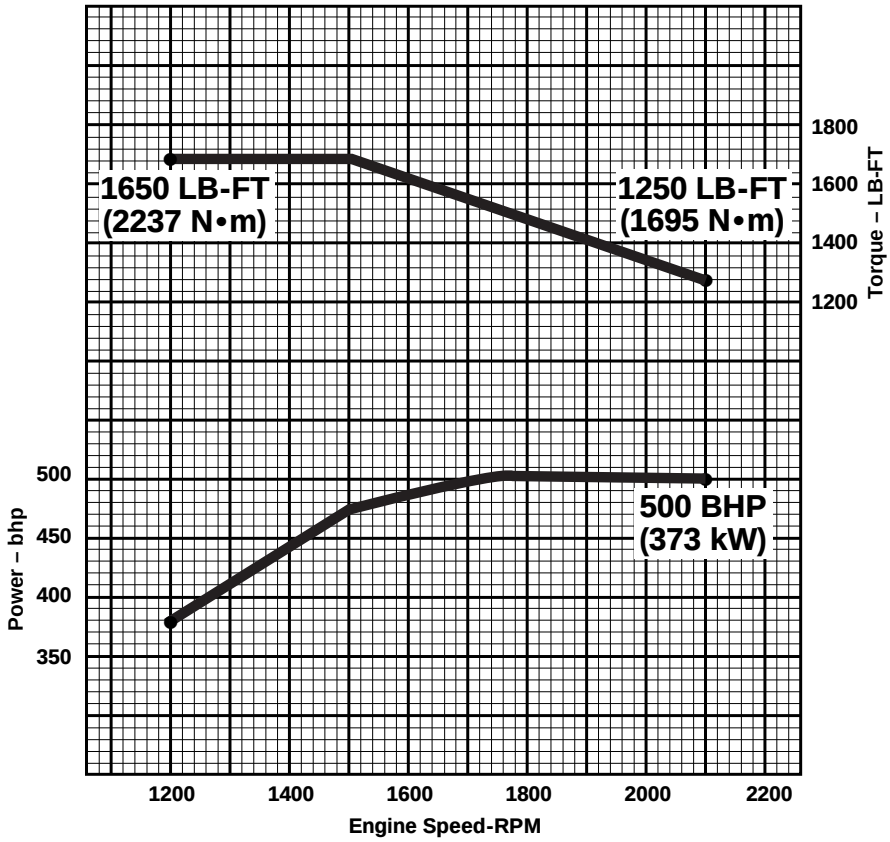
Big Power With All The Other Benefits Of A Series 60 Engine

With more than 15 different power ratings to choose from, it's easy to match a Series 60 engine to the exact needs of any coach operator. But sometimes their needs change. That's not a problem with the Series 60 engine! The power chart on the left shows the groups of engine ratings within each family.

The families contained in each of the shaded sections have identical hardware. The groups displayed in each family show the preprogrammed horsepower range in a single engine. A simple electronic tool is all that is required to change power within a group. Power changes from one group to another within the same family simply require reprogramming of the engine's electronic control module.

It is possible to change power from one group to another (just make sure the coach cooling, air intake and exhaust systems and the driveline can handle the change). Upping the horsepower to the maximum limit at time of trade-in is an easy way to increase both the resale value and desirability of any coach.

500 BHP



Want To Know More?

Take A Look At The Simple Design Of The Engine. The One-Piece Cylinder Head Contains The Overhead Camshaft. This Camshaft Arrangement Provides A Variety Of Benefits:

- Intake and exhaust passages are straight for easy entry and exit of air from the cylinder. The engine doesn't waste fuel "pumping" air in and out.
- Intake and exhaust passages are also short. Intake air is not overly heated as it passes through the head. The resulting cooler air in the cylinder improves economy. And the hot exhaust gases don't transfer too much heat into the head as they exit, saving more energy to operate the turbo and increase fuel economy.
- The overhead cam allows for direct actuation of the fuel injectors without push rods or push tubes. The result is high fuel injection pressure and better fuel economy.
- The overhead cam also allows for the use of 38 head bolts, providing over 1,000,000 pounds of clamp load on the head gasket.

These Features Combine To Produce The Economy, Durability And Performance The Series 60 Engine Is Known For

Inside each cylinder liner is the DDC™ Steel Two-Piece Piston. Unlike aluminum, which requires a special cast insert, this steel piston provides a hard surface for the rings to seal against…another Series 60 engine durability enhancement.

Outside, the cylinder liner is cooled all the way to the top, using a patented DDC feature called top liner cooling. This reduces ring temperatures by 100ºF, another reason Series 60 engines live so long.

Main and rod bearings are big. That's why the Series 60 engine has no requirement to roll out bearings—it's just not necessary.

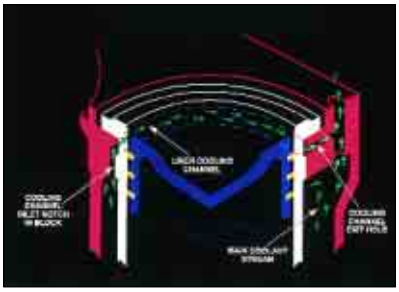
The Series 60 engine block, with no camshaft, is a simple, trouble-free design.

The Series 60 engine features a high performance variable output turbocharger for improved low speed performance, economy and excellent driveability.

Another benefit is the Pad Mounted Alternator System with a Poly V belt and self tensioner. It's strong, rugged and simple.

Add the gear train to drive the accessories and the camshaft, and you have a complete Series 60 engine.

- Simple
- Rugged
- Easy to work on
- Key components are right under the rocker cover
- Fewer parts



DDEC Engine Management Technology

More Reasons The Series 60 Engine Is Number One

Every Series 60 engine is equipped with Detroit Diesel Electronic Controls (DDEC). DDEC® is the most popular electronic control system available. DDEC IV, the fourth generation of DDEC, is now standard equipment on all Series 60 engines. In addition to precisely controlling fuel injection, DDEC offers all of the following:

- Three levels of engine protection
  - — Warning only
  - — Power ramp down
  - — Automatic shutdown
- Cruise control
- Auto resume cruise control
- Multiple hp ratings
- Three levels of engine braking
- Engine fan braking
- Progressive shifting
- Vehicle speed limiting
- Vehicle overspeed diagnostics
- Low gear torque limiting
- Starter lockout
- Remote PTO control
- Communication capability with electronically controlled transmissions
- Idle speed adjustment
- Droop adjustment
- Idle timer shutdown
- Air temperature shutdown
  - — High or low
- Warnings for:
  - — Low voltage
  - — Low coolant
  - — High oil temperature
  - — Low oil pressure
- Self diagnosis
- Four levels of security

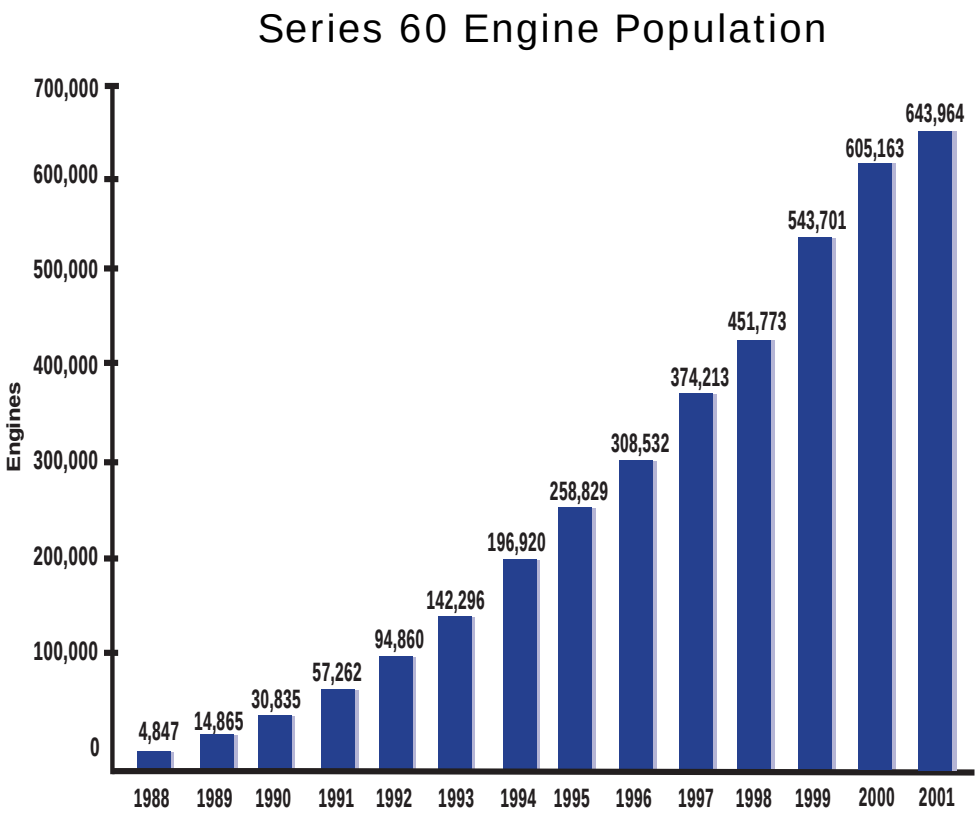
New for DDEC IV is the addition of more memory, a built-in clock and calendar and built-in battery backup.

“Our Driver Acceptance Is At The Highest Level I Can Remember.”

Coach Fleets Want To Attract And Keep Good Drivers.

Good Drivers Take An Interest In Their Coach Power Because Its Performance Affects Their Performance.

Together They Have Made The Series 60 Engine Their Top Choice.



In Addition To Everything Else, The Series 60 Engine Is The Lightest Of The Current Big Block Engines

Weighing 30 pounds less than its predecessor, the next generation Jacobs Engine Brake™ is now available on Series 60 engines. We achieved the 30-pound weight reduction through a simplified design and the use of higher strength, lighter weight components. The new brake provides improved braking performance and is easier to assemble, ensuring higher quality. This weight reduction solidifies the Series 60 engine as the lightest of the full-size heavy-duty engines available for the North American on-highway market.

And There Is More … Fuel Economy

The Series 60 engine is the acknowledged fuel economy leader. Fuel economy is one of the main reasons coach operators buy Series 60 engines. Coach operators track the fuel economy down to the third decimal, and know what works and what doesn't. And they buy more Series 60 engines than any other engine.

Series 60 Production Engine Mileage

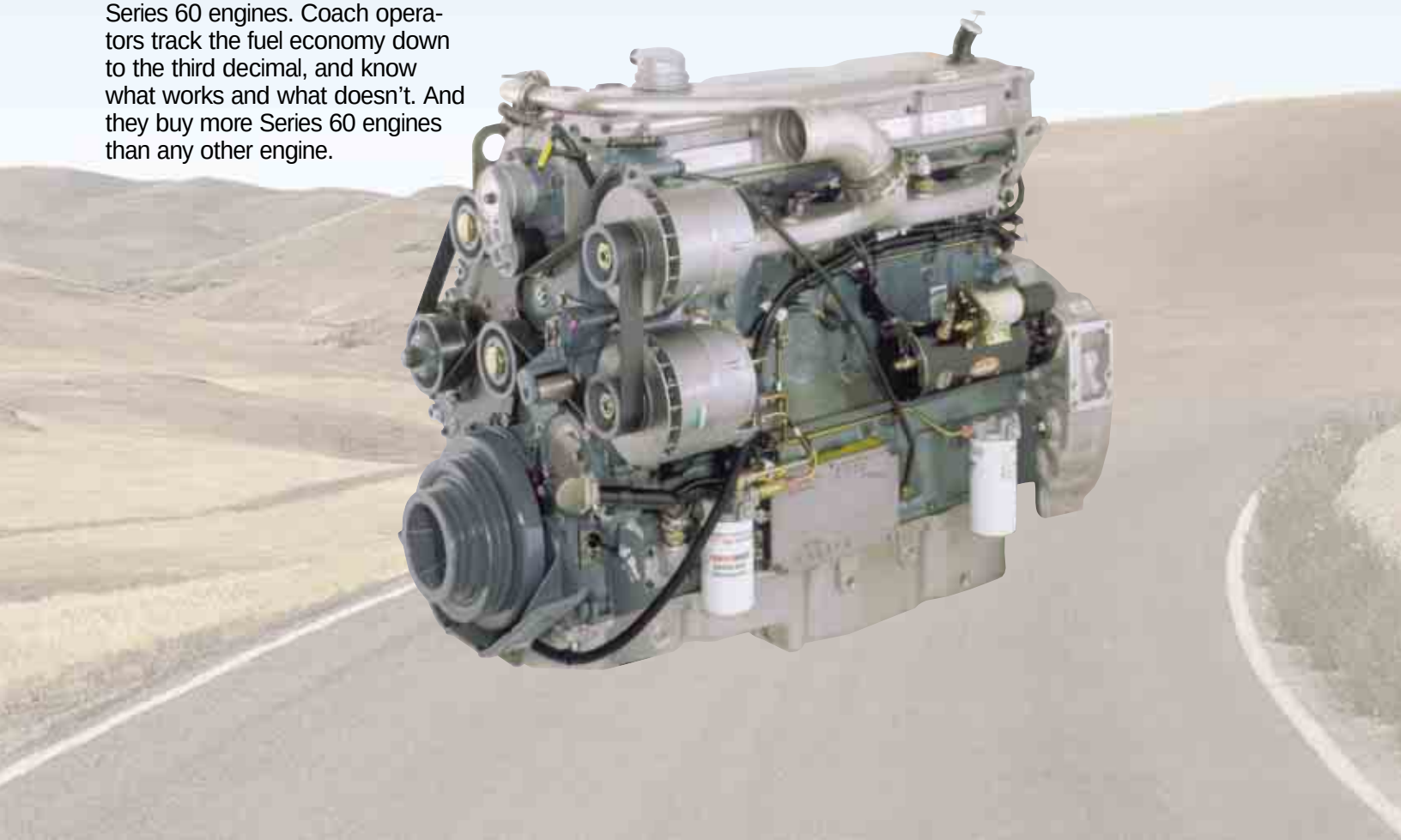
December, 2001 – Engines in Service

Mileage Interval	Number of Engines	Mileage Interval	Number of Engines
0-100,000	38,214	800,000- 900,000	36,204
100,000-200,000	48,059	900,000-1,000,000	33,121
200,000-300,000	58,220	1,000,000-1,100,000	28,421
300,000-400,000	57,267	1,100,000-1,200,000	25,300
400,000-500,000	52,723	1,200,000-1,300,000	21,711
500,000-600,000	46,210	1,300,000-1,400,000	18,881
600,000-700,000	41,543	1,400,000-1,500,000	12,043
700,000-800,000	38,657	1,500,000-1,600,000	35,516
		TOTAL	592,090

Durability

A million miles is a long way. The top coach operators with the longest hauls choose Series 60 engines. That's why, even though the Series 60 engine will celebrate its 15th birthday this year, over 141,872 Series 60 engines have gone over the million mark!

"Great acceleration throughout a full day of stop and go driving."



What About Warranty?

The Series 60 engine is covered by a standard warranty of two years, unlimited miles with 100% parts and labor coverage, and 5 years or 500,000- mile..

Want more coverage? Custom-tailor a support package to fit your needs. Extended service coverage is available from 3 years or 300,000 miles or as much as 5 years or 500,000 miles.

And Everything Is Backed Up With A Parts And Service Organization Of Over 1300 Outlets In North America.

What Can You Expect From The 2002 Series 60?

Heavy-duty diesel engines produced in North America after October 1, 2002, must meet new emission standards. The proven Detroit Diesel Series 60 engine, newly-equipped with a simple EGR system, meets these new standards. The same design that has made the Series 60 the most popular engine with coach operators for the past decade will continue for years to come.

"Maintenance is a substantial savings."

The Series 60 Engine Will Continue To Provide Coach Operators With The Best Combination Of:

- **Performance**
- **Fuel Economy**
- **Reliability**
- **Low Cost Of Operation**
- **Proven Durability**
- **Driver Satisfaction**
- **High Residual Value**
- **Proven Electronics – DDEC**
- **Flexible Power Ratings**
- **Excellent Parts And Service Support**
- **Exhaust Gas Recirculation**

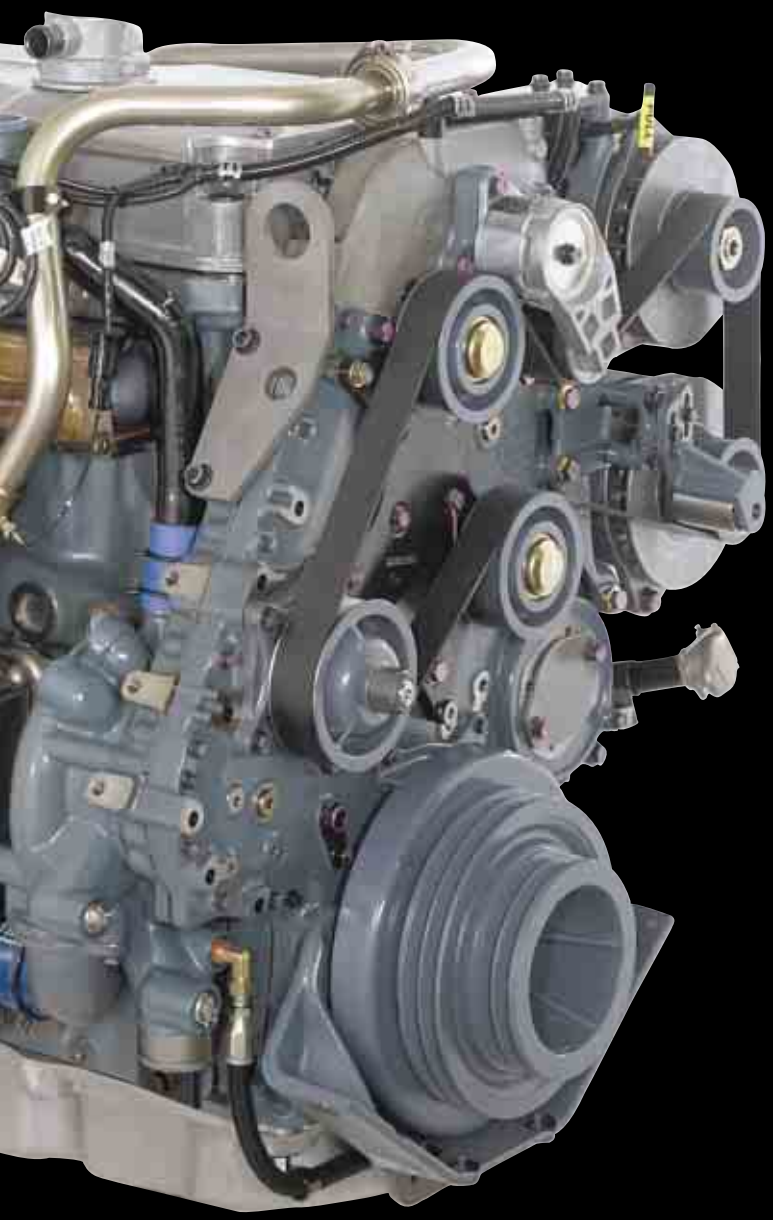
1-800-445-1980

Series 60 24-Hour Hotline

Why Should Series 60

- A complete power range in a common package
- Easy to change horsepower settings
- The choice of the top fleets
- The choice of those who want big power
- Lightweight
- Low cost per mile
- Unaided cold starts to 20º F
- DDEC-controlled automatic Ether Starts™ to –30º F
- Maximum revenue
- 141,872 million-mile engines

You Buy A Engine?



- **Simple design**
- **Easy to service**
- **Dozens of DDEC features as standard equipment**
- **The complete DDEC System**
- **ProDriver® DC**
- **Data Summaries**
- **Optimized Idle®**
- **Fuel Economy Incentive**
- **1-800-445-1980 direct line to support**
- **Customized warranties**
- **Service throughout North America**
- **Diagnostic Link**

Series 60
24-Hour Hot Line
Phone 1-800-445-1980

DETROIT DIESEL

A DaimlerChrysler Company

13400 Outer Drive, West, Detroit, Michigan 48239-4001
Telephone 313-592-5000
www.detroitdiesel.com

6SA0581 0209 As technical advancements continue, specifications may change. Printed in U.S.A.