

# DETROIT<sup>®</sup> DD13<sup>®</sup> ENGINE

FROM  
**350-505**  
Horsepower

FROM  
**1250-1850**  
lb-ft Torque

DISPLACEMENT  
**12.8**  
Liters

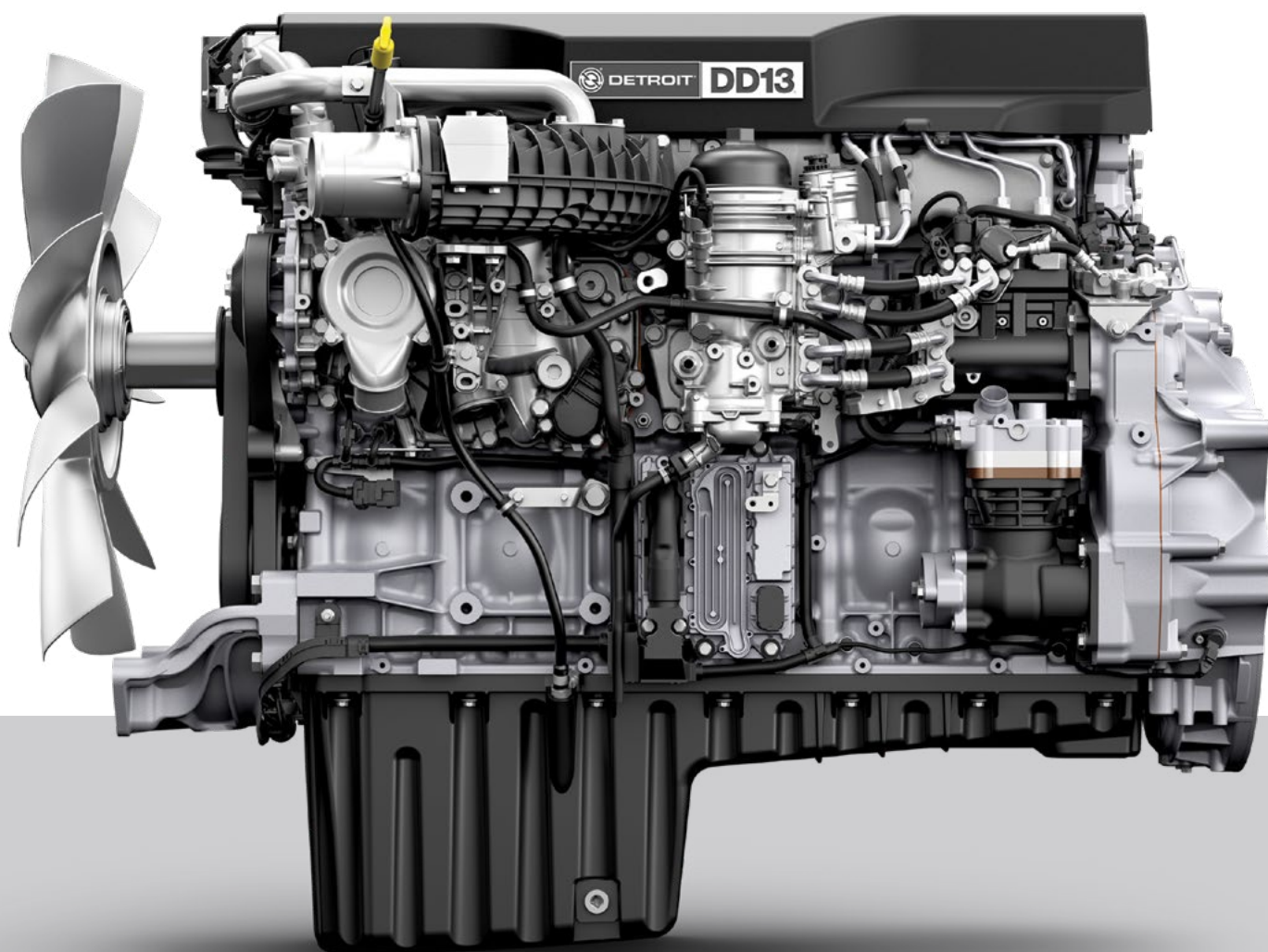


**DETROIT<sup>®</sup>**  
DEMAND PERFORMANCE<sup>™</sup>





**BUILT  
FOR YOUR  
BOTTOM LINE**





## THE DETROIT® DD13® ENGINE OFFERS AN OPTIMAL BLEND OF PERFORMANCE AND EFFICIENCY. IT'S NOT ONLY RIGHT FOR THE JOB, IT'S GREAT FOR YOUR BUSINESS.

Productivity leads to profitability. Whether you're on the road or at a job site, it's important to operate vehicles that perform efficiently and reliably. That's precisely why Detroit® builds the versatile DD13 engine with proven emissions technology.

Detroit engineers know what works. And what doesn't. That's why the DD13 follows the common base engine design of its successful big brother, the DD15® engine. This engine is everything you need and nothing you don't. In a time when economy means everything, the DD13 makes perfect sense.

Tailored specifically for LTL, regional distribution, and vocational, the DD13 uses the latest in diesel engine technology to create a fuel-saving 12.8-liter workhorse. It's an ideal pairing for a variety of Freightliner trucks, including the 114SD, 122SD, Cascadia®, M2 112, as well as Western Star models like the WS 4700, WS 4800, WS 4900, and WS 5700. And the DD13 is GHG17 compliant.

### LTL

#### **LOADS VARY. PERFORMANCE DOESN'T.**

You drive intracity and intercity. Every day is different. But you can count on the DD13 to offer a smooth, efficient drive, no matter what route, pallet, or load comes your way.

### REGIONAL DISTRIBUTION

#### **GO THE DISTANCE. AND BEYOND.**

You have tight schedules to keep. The DD13 engine keeps you going with proven reliability. It's also highly efficient, so you can minimize fuel and maximize profitability.

### VOCATIONAL

#### **THE HARDER YOU PUSH, THE HARDER IT PERFORMS.**

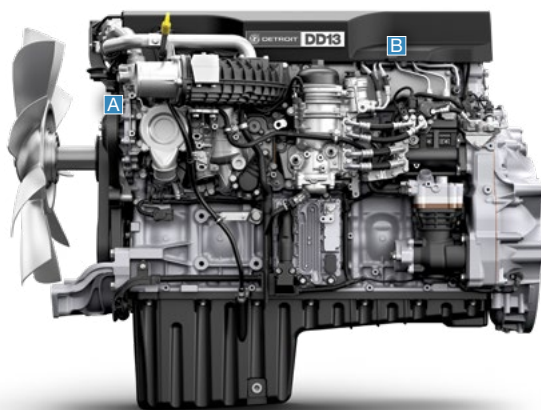
This engine is built tough. Perfect whether you're hauling, dumping, or mixing. Push the DD13 to the limit. It's made to work.

# THE DD13 BOTTOM LINE BENEFITS: ECONOMY, SERVICEABILITY, PERFORMANCE. DEMAND IT ALL.

# ECONOMY

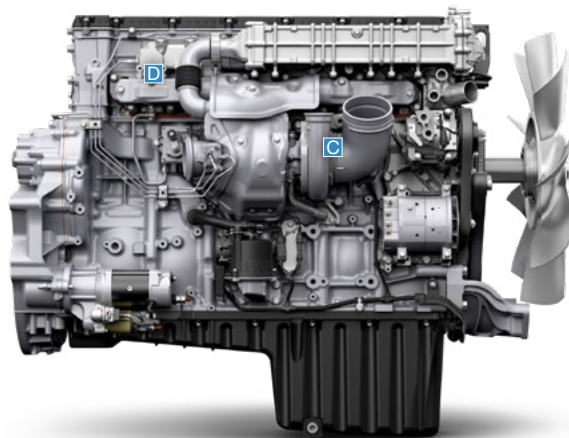
DETROIT ENGINEERS CONTINUE TO DELIVER GREATER FUEL ECONOMY THROUGH INNOVATION. **THIS DD13 ENGINE IS BETTER THAN EVER.**

The fuel-efficient design makes the most of every gallon with the 2nd Generation Amplified Common Rail System (ACRS™) that optimizes each injection event to minimize fuel consumption. Available exclusively in Detroit engines, ACRS works in unison with our DDEC® electronic engine controls to deliver the exact amount of fuel you need at the right moment, creating an optimal combustion event. All that work fine-tuning combustion means lower emissions, less engine noise and vibration, and less wasted time stopping at the pump. Everything, right down to the advanced cooling system that decreases fan on-time, was designed to minimize fuel consumption.



## WE'VE MADE SEVERAL IMPROVEMENTS TO THE DD13, INCLUDING:

- An optional **variable-speed water pump [A]** controls flow, based on engine speed and coolant temperature for reduced load on the engine and improved fuel economy.
- The **2nd Generation Amplified Common Rail Fuel System (ACRS) [B]**, which enables higher injector pressure and optimized combustion control, delivering the exact amount of fuel you need at the right moment.
- Made in Detroit, the **proprietary asymmetric turbocharger [C]** reduces weight and complexity while contributing to improved performance.
- A **friction-optimized piston design [D]** contributes to improved fuel economy and reduced oil consumption.



## OPTIMIZED DRIVETRAIN EFFICIENCY

When it comes to maximizing the return on your Detroit-powered drivetrain, vehicle gearing is an important thing to consider. Spec'ing the right axles also is a critical factor in the fuel economy equation. To get the most out of each gallon of fuel, simply consult your local Detroit representative. Our engine experts and vast support network will ensure that you get the perfect engine and drivetrain combination to meet your needs. With the Detroit Spec Manager tool, we'll analyze your specifications and make sure that all performance and economy needs are not only met, but exceeded.

Here's what you can expect for typical on-highway tractor-trailer applications of 80,000 lb. or less.

- For maximum fuel economy at typical cruise speeds, gear for an engine speed of 1300 RPM.
- When you need extra performance, gear for an engine speed of 1400 RPM at 65 mph.
- For gearing recommendations specific to heavy-haul or vocational applications, please consult your local Detroit representative.



# PERFORMANCE

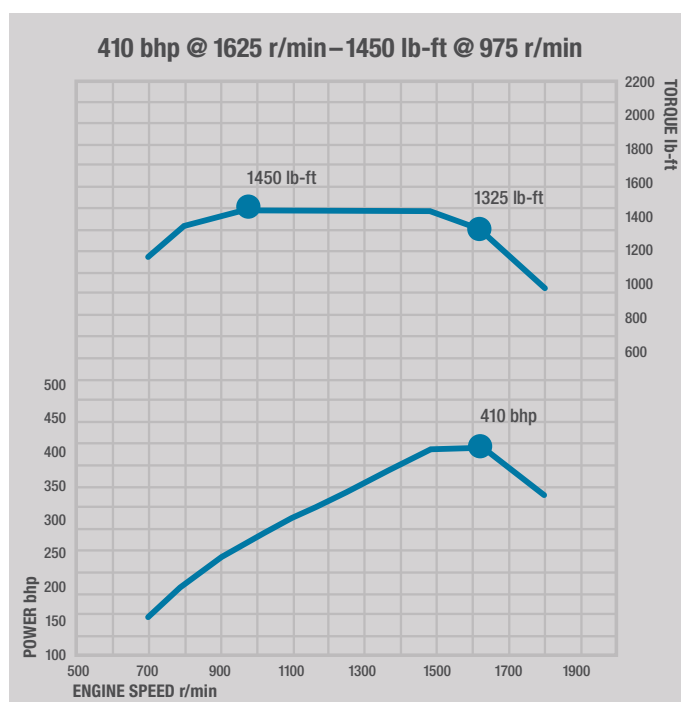
**TORQUE RESPONSE IS THE KEY TO PERFORMANCE.** THIS ENGINE WILL HAUL, CLIMB, PULL, MIX, AND DUMP WHEN AND WHERE YOU NEED IT.

An extremely wide and flat torque curve maintains the power to keep the driver's foot off the clutch and hands on the wheel for less shifting and fatigue.

With the DD13, drivers also will get a wider sweet spot that makes it easier to cruise along in the fuel-saving range. So, whether you're navigating traffic or maneuvering through a construction site, the DD13 delivers great fuel economy. A three-stage integrated Jacobs® engine brake gives you more stopping power and quieter engine braking than ever before. And, thanks to its exceptional braking power, the Jake Brake also extends the service brake life.

The DD13 design is based on a sturdy rear gear train and ribbed cast iron block to minimize noise, vibration, and harshness (NVH). The robust design provides a B50 life of one million miles. And, the proprietary, asymmetrical turbocharger has fewer moving parts than a VGT design, which improves performance and reliability. The turbocharger also applies constant back-pressure to efficiently enable the EGR system, all of which add up to a dependable engine that gets drivers where they need to go, and makes work seem a little less like work.

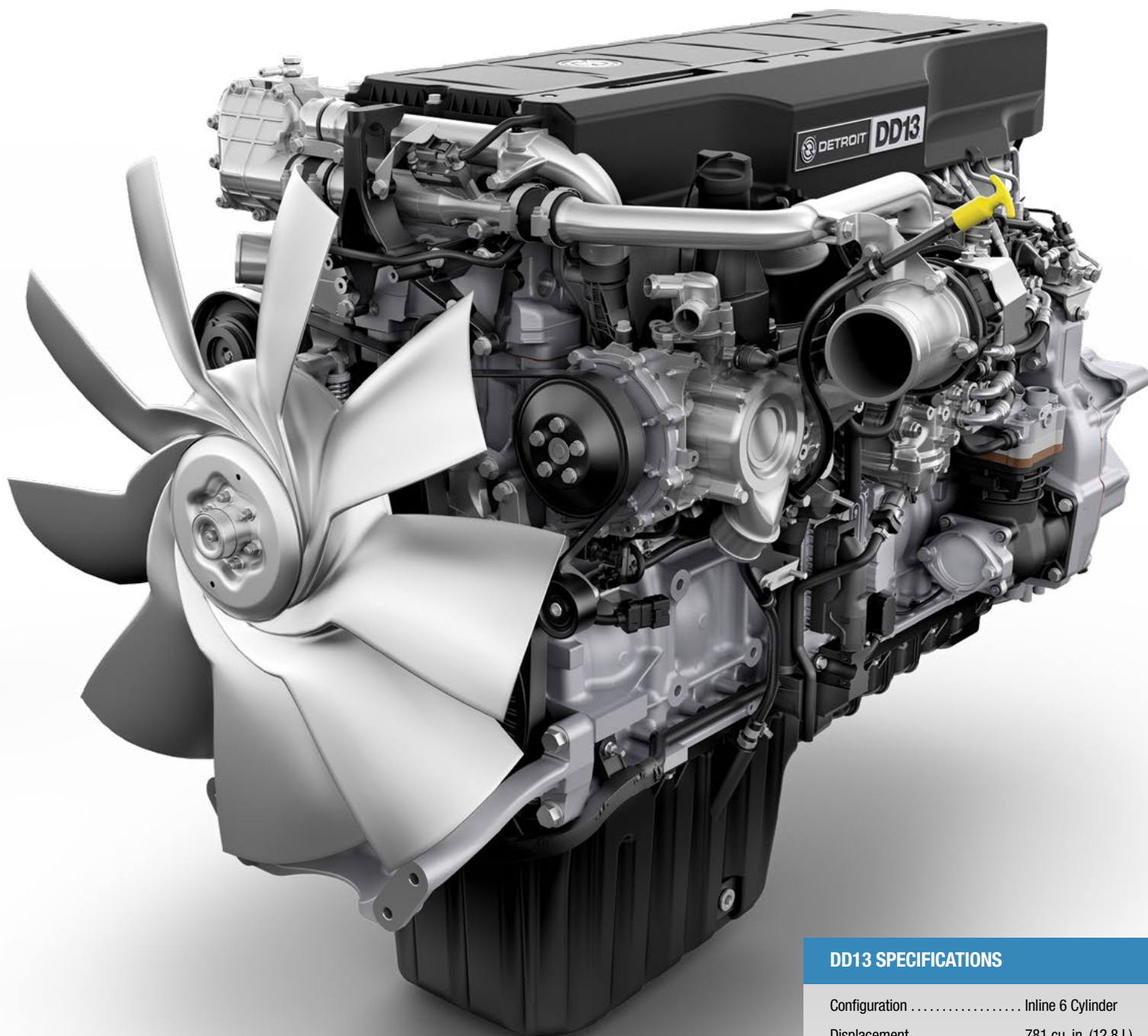
## Horsepower and Torque Curve



## Power Ratings

| DD13 Engine Power Ratings              |                           |
|--|---------------------------|
| 350 HP @ 1625 RPM                      | 1350 lb-ft @ 975 RPM      |
| 370 HP @ 1625 RPM                      | 1250 lb-ft @ 975 RPM      |
| 380 HP @ 1625 RPM                      | 1450 lb-ft @ 975 RPM      |
| 400 HP @ 1625 RPM*                     | 1750 lb-ft @ 975 RPM*     |
| 410 HP @ 1625 RPM                      | 1450 lb-ft @ 975 RPM      |
| 410 HP @ 1625 RPM                      | 1550 lb-ft @ 975 RPM      |
| 410 HP @ 1625 RPM                      | 1650 lb-ft @ 975 RPM      |
| 435 HP @ 1625 RPM                      | 1550 lb-ft @ 975 RPM      |
| 450 HP @ 1625 RPM                      | 1550 lb-ft @ 975 RPM      |
| 450 HP @ 1625 RPM                      | 1650 lb-ft @ 975 RPM      |
| 470 HP @ 1625 RPM                      | 1650 lb-ft @ 975 RPM      |
| 505 HP @ 1625 RPM                      | 1850 lb-ft @ 975 RPM      |
| DD13 Engine Multi-Torque Power Ratings |                           |
| 410 HP @ 1625 RPM                      | 1450/1650 lb-ft @ 975 RPM |

\*Integrated Detroit Powertrain only.



#### DD13 SPECIFICATIONS

|                                       |                      |
|---------------------------------------|----------------------|
| Configuration .....                   | Inline 6 Cylinder    |
| Displacement .....                    | 781 cu. in. (12.8 L) |
| Compression Ratio .....               | 18.4:1               |
| Bore .....                            | 5.20 in. (132 mm)    |
| Stroke .....                          | 6.15 in. (156 mm)    |
| Weight (Dry) .....                    | 2487 lb. (1128 kg)   |
| Electronics .....                     | DDEC®                |
| Service Fill (Oil & Filter Change) .. | 40 qt. (38L)         |
| Horsepower Range .....                | 350-505              |
| Torque Range .....                    | 1250-1850 lb-ft      |
| Rear-Engine Power Take-Off ....       | Optional             |

**ENHANCED FUEL ECONOMY FOR A  
LOWER TOTAL COST OF OWNERSHIP.**

# TECHNOLOGY

## THE BEST ENGINES HAVE THE BEST TECHNOLOGY. DETROIT INNOVATION BENEFITS OUR CUSTOMERS AND LEADS THE INDUSTRY FORWARD.

### VIRTUAL TECHNICIAN

Detroit Connect®, a suite of proprietary connected vehicle solutions, is designed to improve your bottom line. Detroit Connect provides fleets and owner-operators services and tools to improve uptime, fuel efficiency, safety, and performance. These tools provide them information about their vehicle they can't get anywhere else to better manage their business operations.

The Detroit Connect Virtual Technician® remote diagnostic service takes the guesswork out of engine repair. When a truck's check engine light illuminates, data is collected immediately, providing a technical snapshot of the engine's status before, during, and after a fault code event. This information is sent to you and to the Detroit Customer Support Center (CSC), where a trained representative can diagnose the issue, recommend service, and even contact the nearest authorized locations with parts in stock. The CSC can tell you if you need to pull over so you don't cause further damage, or if you can stay on the road. Put simply, it's like having a technician in every truck.

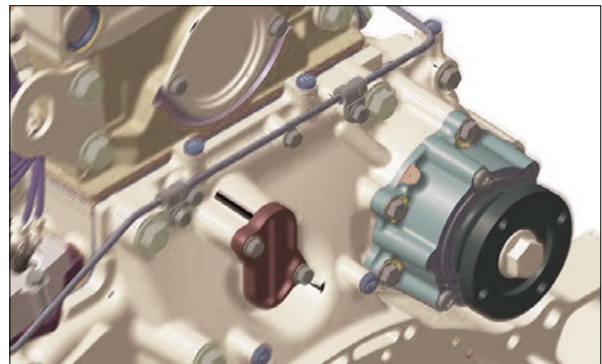
### DDEC

Detroit DDEC® is a suite of innovative features that allow you to better manage fuel economy, engine performance, driving efficiency, and maintenance. You can utilize this technology to better control speed, assist in passing, optimize idle efficiency, and even reward your drivers for reaching fuel economy targets. With DDEC, there are also several options available to fleet managers that will help drivers better control engine idling, shifting techniques, and aftertreatment management. To learn more, contact your local Detroit dealer, distributor, or representative.

### POWER TAKE-OFF (PTO)

The DD13 also offers rear-engine power take-off as an option for certain applications.

- DD13 PTO provides power while the vehicle is moving or stationary. The Rear-Engine PTO (REPTO) flange, an integral part of the flywheel housing, receives power through the gear train and does not depend on the transmission to receive its power.
- The DD13 is also available with Front-Engine PTO (FEPTO).
- PTOs are used in many applications.
  - Concrete mixers
  - Vacuum trucks
  - Brick and block trucks
  - Log haulers equipped with loading cranes
  - Snow plows



Rear-Engine PTO (REPTO)

### COMPLIANCE

The DD13 is compliant with 2017 Greenhouse Gas (GHG17) requirements.

# SERVICEABILITY

## GETTING YOUR ENGINE SERVICED QUICKLY AND EASILY CAN MAKE A POSITIVE IMPACT ON YOUR TOTAL COST OF OWNERSHIP.

The DD13 can go up to 65,000 miles between oil drain, oil filter, and fuel filter changes. That's the longest scheduled maintenance interval in its class. And better yet, it's easy to keep an eye on those important maintenance items like the cartridge-style filters, which are conveniently located above the frame rails along with the oil fill. This makes it easy to replace the filters when it's time and to get you back on the road quickly.

When you need genuine parts and expert service, the Detroit support network will get you back on the road fast. The DD13 drives down your cost of ownership at every turn, sharing service procedures and many of the same parts as the DD15. And you are supported by the network: hundreds of authorized service outlets, an award-winning technician training program, an extensive parts distribution network, and expert engine support from our technical support center. Detroit combines all this to give you the genuine parts and expert service you need to succeed.

## FACTORY-BACKED WARRANTY

Detroit engine owners enjoy comprehensive warranty coverage, including a fast, hassle-free process and expedited parts and service for critical downtime situations.

### Maintenance Intervals\*

| Item                           | Mi /Km /Hr†   | Severe-Duty   | Short-Haul | Long-Haul | Efficient Long-Haul |
|--------------------------------|---|---|------------|-----------|---------------------|
| Engine Oil and Filter Change** | Miles   | 35,000  | 40,000     | 55,000    | 65,000              |
|                                | Kilometers  | 56,000  | 64,000     | 89,000    | 105,000             |
|                                | Hours   | 750   | 1000       | —         | —                   |
| Fuel Filter Change             | Miles   | 35,000  | 40,000     | 55,000    | 65,000              |
|                                | Kilometers  | 56,000  | 64,000     | 89,000    | 105,000             |
|                                | Hours   | 750   | 1000       | —         | —                   |
| Valve Lash Adjustment          | Miles   | Adjust at 100,000, at 500,000, and then every 500,000 thereafter. |            |           |                     |
|                                | Kilometers  | Adjust at 160,000, at 800,000, and then every 800,000 thereafter. |            |           |                     |
| Diesel Particulate Filter      | A check engine light will illuminate when ash requires removal. Normal DPF ash clean interval is: |   |            |           |                     |
|                                | Miles   | 500,000 to 550,000  |            |           |                     |
|                                | Kilometers  | 800,000 to 880,000  |            |           |                     |
|                                | Hours   | 11,000 to 11,500  |            |           |                     |
| DEF Pump Filter                | Replace filter every 3 years or 500,000 (800,000 km) miles, whichever comes first.                |   |            |           |                     |

\* Maintenance intervals using Detroit Fluids Specification 93K222 (CK-4) or 93K223 (FA-4) Approved Oils.

\*\* Recommended based on using Detroit's lube oil and oil analysis program.

Severe-duty is up to 30,000 annual miles (48,000 kilometers) and a vehicle that averages less than 5 miles per gallon (mpg).

Short-haul is between 30,000 and 60,000 annual miles (48,000-96,000 kilometers) and a vehicle that averages between 5.1 and 5.9 mpg.

Long-haul is over 60,000 annual miles (96,000 kilometers) and a vehicle that averages between 6.0 and 6.9 mpg.

Efficient long-haul is over 60,000 annual miles (96,000 kilometers) and a vehicle that averages greater than 7 mpg.

Fuel economy represents overall fuel economy (including idle time).

†Miles/Kilometers or Hours, whichever occurs first.

### Standard Warranty

| Item  | Warranty Limits (Whichever Occurs First) |                          | Repair Charge (Paid by Owner) |             |
|---|--|--------------------------|-------------------------------|-------------|
|   | Months                                   | Miles/<br>Kilometers     | Parts                         | Labor       |
| Engine  | 0-24                                     | Unlimited                | No charge                     | No charge   |
| Injectors   | 0-24                                     | 200,000 mi<br>320,000 km | No charge                     | No charge   |
| Upon expiration of the 24-month warranty coverage, but within 500,000 mi/800,000 km of use, the warranty continues to apply as follows: |  |                          |                               |             |
| Major Components  | 25-60                                    | 500,000 mi<br>800,000 km | No charge                     | Not covered |





## DETROIT GENUINE PARTS

Authorized Detroit service outlets are staffed with factory-trained technicians who exclusively use Detroit genuine parts. Our technicians, graduates of our award-winning training program, know your powertrain inside and out. They're the experts who will make sure that, with normal maintenance at regular intervals, all components continue to perform at optimum power and efficiency for years to come. You can find expert technicians at hundreds of authorized Detroit service locations. Whether it's a new or remanufactured part, Detroit genuine parts precisely fit your engine, axles, and transmission, giving you the performance, reliability, and durability you count on from Detroit.

Detroit genuine parts are covered by a factory-backed nationwide warranty so you never have to worry about unexpected repair costs.

## EXTENDED ENGINE COVERAGE

Keeping your truck on the road longer, operating efficiently and profitably, is our greatest priority. Extended Coverage plans for Detroit engines are designed to prevent downtime and costly repairs by extending your warranty protection for time and mileage above and beyond the factory warranty period.

Multiple time/distance plans are available for up to 6 years/600K miles for on-highway or 7 years/250K miles for vocational applications. Each coverage level ensures that critical engine parts and labor costs are completely covered.

Extended Coverage eliminates potentially long waiting times for out-of-pocket repairs to be authorized. In addition, our exceptional parts availability means the engine components you need will be on hand so you're serviced quickly.

Ease your budget challenges by rolling the cost of your Extended Coverage into your truck's monthly payment.

- Protects your most important business investment long after your engine's base warranty expires.
- Safeguards you from those large, unexpected repair costs as your engine ages, including plans covering aftertreatment.
- Service at a factory-authorized facility is never far, with more than 750 locations throughout the U.S. and Canada.
- All repairs are performed by Detroit-certified technicians and include a nationwide guarantee on parts and labor.
- Extended Engine Coverage can be passed on to subsequent owners without fees, enhancing your truck's resale value.

**UPTIME IS MONEY. THAT'S WHY  
SERVICEABILITY IS ESSENTIAL TO ACHIEVE  
A LOWER TOTAL COST OF OWNERSHIP.**



---

## EMPOWERED BY DETROIT

Here at Detroit, we've built our reputation by building high-quality products that perform beyond expectations. Today, you'll find our engines in Freightliner® and Western Star® trucks on roads and at job sites around the globe.

The secret to our success goes beyond the engines we build. Our people and our continuous pursuit of innovation are powerful driving forces. Our engineering and manufacturing expertise are world-class. Our service network is expansive and responsive. That's why we continue to grow and evolve. That's also why we now offer a full line of products: engines, axles, transmissions, and advanced technologies. That's right. The company that makes the heart of the truck now gives you the arms, legs, and backbone to go with it. So, if you demand it all, demand Detroit.

---

**DEMANDDETROIT.COM**

DDC-EMC-BRO-0191-0820. Specifications are subject to change without notice. Detroit Diesel Corporation is registered to ISO 9001:2016. Copyright © 2020 Detroit Diesel Corporation. All rights reserved. Detroit® is a brand of Detroit Diesel Corporation, a Daimler company.