DDC-SVC-MAN-0075

EPA07/10/GHG14 DD Platform Operators Manual

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Specifications are subject to change without notice. Detroit Diesel Corporation is registered to ISO 9001:2001.

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NOTE: If engines are stored where condensation of water in the fuel tank may be a problem, additives containing methyl carbitol or butyl cellusolve may be added to the fuel. Follow manufacturer's instructions for treatment. Where biological contamination of fuel may be a problem, add a biocide such as Biobor® JF (or equivalent) to the fuel. When using a biocide, follow the manufacturer's concentration recommendations and observe all cautions and warnings.

6. Drain the fuel tank. Refill with enough clean No. 1 diesel fuel to permit the engine to operate for about ten (10) minutes. If draining the fuel tank is not convenient, use a separate, portable supply of recommended fuel.
7. Drain the fuel system and remove the fuel filters. Dispose of used filters in an environmentally responsible manner, according to state and/or federal (EPA) recommendations. Fill the new filters with No. 1 diesel fuel or pure kerosene and install on the engine.
8. Operate the engine for five (5) minutes to circulate the clean fuel throughout the engine. Be sure the engine fuel system is full.
9. Stop the engine and allow to cool. Then disconnect the fuel return line and the inlet line at the primary filter and securely plug both to retain the fuel in the engine.
10. Transmission: Follow the manufacturer's recommendations for prolonged storage.
11. Power Take-Off: If equipped, follow manufacturer's recommendations for prolonged storage.

NOTE: Failure to properly seal off the turbocharger air inlet and exhaust outlet openings before engine storage may permit air drafts to circulate through the turbocharger and rotate the turbine/compressor shaft without an adequate flow of lubricating oil to the center housing bearings resulting in severe bearing damage.

12. Turbocharger: Since turbocharger bearings are pressure lubricated through the external oil line leading from the oil filter adaptor while the engine is operating, no further attention is required. However, the turbocharger air inlet and turbine exhaust outlet connection should be sealed off with moisture-resistant tape.

NOTE: Do not apply oil, grease or any wax-base compound to the flywheel. The cast iron will absorb these substances, which can sweat out during operation and cause the clutch to slip.

13. Apply a non-friction rust preventive compound to all exposed engine parts. If convenient, apply the rust preventive compound to the engine flywheel. If not, disengage the clutch mechanism to prevent the clutch disc from sticking to the flywheel.

14. Drain the engine cooling system. If the engine will be exposed to freezing temperatures, install genuine Detroit Power Cool antifreeze or an equivalent ethylene glycol-base or propylene glycol-base antifreeze solution that provides the required freeze, boil over and inhibitor protection. Refer to section "Coolant Requirements"
15. Drain the preservative oil from the engine crankcase. Reinstall and torque the 3/4" – 14 square, magnetic drain plug to 45-50 N·m (33-77 lb·ft).
16. Remove and clean the battery and battery cables with a baking soda-water solution and rinse with fresh water. Do not allow the soda solution to enter the battery. Add distilled water to the electrolyte (if necessary) and fully charge the battery. Store the battery in a cool (never below 0° C or 32° F) dry place. Keep the battery fully charged and check the level and specific gravity of the electrolyte regularly.
17. Insert heavy paper strips between the pulleys and drive belts to prevent sticking.
18. Seal all engine openings, including the exhaust outlet, with moisture-resistant tape. Use cardboard, plywood or metal covers where practical.
19. Clean and dry the exterior painted surfaces of the engine and spray with a suitable liquid automobile body wax, a synthetic resin varnish, or a rust preventive compound.
20. Protect the engine with a good weather-resistant tarpaulin and store it under cover, preferably in a dry building which can be heated during the winter months.

Procedure for Restoring to Service an Engine that Has Been in Extended Storage

If an engine has been in extended storage, prepare it for service as follows:

1. Remove the covers and tape from all the openings of the engine, fuel tank and electrical equipment. Do not overlook the exhaust outlet.
2. Remove the plugs from the inlet and outlet fuel lines and reconnect the lines to their proper positions.
3. Wash the exterior of the engine with fuel oil to remove the rust preventive. Do not wash electrical components.
4. Remove the rust preventive from the flywheel. Flush any soluble oil rust inhibitor (if used) in the cooling system.
5. Remove the paper strips from between the pulleys and drive belts.
6. Fill the crankcase to the proper level with the required grade of lubricating oil. Use a pressure lubricator to insure all bearings and rocker shafts are lubricated.
7. Fill the fuel tank with the required fuel.

8. Close all drain cocks and fill the engine cooling system with clean, soft water and required inhibitors. If the engine is to be exposed to freezing temperatures, install genuine Detroit Power Cool antifreeze or an equivalent ethylene glycol-base or propylene glycol-base antifreeze solution which provides required freeze, boil over, and inhibitor protection. Refer to section "How to Select Coolant"
9. Install and connect the battery. Make sure the average specific gravity of the battery is 1.260 or higher. Charge the battery, if necessary.
10. Service the air cleaner, if required.
11. Transmission: Follow the manufacturer's recommendations covering the return of the transmission to service.
12. Power Take-Off: If equipped, follow the manufacturer's recommendations covering the return of the power take-off to service.
13. Turbocharger: Remove the covers from the turbocharger air inlet and turbine outlet connections. Reconnect piping as required. Pre-lube the turbocharger center bearing housing. Refer to section "Lubrication System Checks"
14. Fill the cooling system. Refer to section "Cooling System Fill Procedure"

WARNING: ENGINE EXHAUST

To avoid injury from inhaling engine exhaust, always operate the engine in a well-ventilated area. Engine exhaust is toxic.

15. After all preparations are completed, start the engine.

NOTE: The small amount of rust preventive which remains in the fuel system will cause smoky exhaust for a few minutes.

NOTE: Before subjecting the engine to a load or high speed, allow it to reach normal operating temperature.

16. Check for trouble codes.
    a. If there are no codes, perform a parked regeneration.
    b. If there are codes, repair what is necessary then perform a parked regeneration.

Customer Assistance

The satisfaction and goodwill of the owners of Detroit™ engines are of primary concern to Detroit™ and its distributor/dealer organizations. Contact the Customer Support Center at **1-800-445-1980.**

Using Road Service in the U.S. or Canada

If you require road service for any reason in the U.S. or Canada, you may call the 1-800-445-1980 customer assistance phone number. An operator will assist you in determining what type of service is required. Not all problems are engine related and not all problems are covered by engine or vehicle warranties. **YOU MAY BE RESPONSIBLE FOR REPAIR EXPENSES.**

Before calling Customer Assistance, please do the following:

- Check the coolant level.
- Check the fuel level.
- Check the DDEC fuses.
- Check for fuel leaks.
- Make sure manual shutoff valve (if installed) on the fuel filter adaptor or fuel supply line is open.
- Check the oil level on the dipstick.
- Check the diagnostic codes.

If you call, have the following information available:

- Engine serial number
- Vehicle make, model, and VIN
- Odometer mileage (kilometers) or hour meter hours
- Vehicle owner/company name

Availability of Detroit™ Service Outlets

As the owner of a Detroit™ product, you have a complete network of Detroit™ service outlets in the U.S. and Canada, plus many outlets worldwide that are prepared to meet your parts and service needs:

- Service by trained personnel
- Sales team to help determine your specific power requirements
- In many areas, emergency service 24 hours a day
- Complete parts support
- Product information and literature

We recognize however, that despite the best intentions of everyone concerned, misunderstandings may occur. Normally, any situation that arises in connection with the sale, operation or service of your product will be handled by the authorized

service outlet in your area (in the U.S. and Canada, check the Yellow Pages or the service locator at www.demanddetroit.com for Detroit™ service outlet nearest you).

Detroit Genuine Coolant Engine Products

Maintenance of the cooling system requires the chemical makeup of the system to be balanced.

Detroit Genuine Fully Formulated Inhibited Ethylene Glycol Coolants

The part numbers and sizes of concentrated and pre-blended 50:50 Detroit Genuine Coolants are listed in the following Tables.

Table 32.

Detroit Genuine Fully Formulated Inhibited Ethylene Glycol Coolants		
Coolant Type	**Part Number**	**Description**
Concentrated	23512138	One Gallon Jug – 6 Per Case
	23512139	55 Gallon Drum
	23529295	330 Gallon Tote
	23512140	Bulk Delivery – 1,000 Gallon Min.
Pre-blended 50:50	23528203	One Gallon Jug – 6 Per Case
	23518918	55 Gallon Drum
	23528544	330 Gallon Tote
	23513503	Bulk Delivery – 1,000 Gallon Min.

Detroit Genuine Supplemental Coolant Additive Need Release Filters

Detroit Genuine Supplemental Coolant Additive Need Release Filters are shown below.

Table 33.

Detroit Genuine Supplemental Coolant Additive Need Release Filters		
Coolant Type	**Part Number**	**Description**
Detroit Genuine Inhibited Ethylene Glycol Coolant	NF2091	For 0 – 8 Gallon Systems
	23516489	For 8 – 20 Gallon Systems

Detroit Genuine Cooling System Cleaners

Detroit Genuine Cooling System Cleaners are shown below.

Table 34.

Detroit Genuine Cooling System Cleaners		
Coolant Type	**Part Number**	**Description**
On-Line Cleaner	200164	One-Half Gallon Jug – 6 Per Case
	200105	5 Gallon Pail
	200155	55 Gallon Drum
Twin Pack	201549	Twin Pack – 2 Per Case

Detroit Genuine Fluid Analysis Products

Detroit Genuine Fluid Analysis Products are shown below.

Table 35.

Detroit Genuine Fluid Testing and Analysis Products		
Application	**Part Number**	**Description**
Indicates Nitrite, Molybdate & Glycol Levels	23519401	3-Way Coolant Test Strips (Single Foil Packs)
Indicates Nitrite, Molybdate & Glycol Levels	23519402	3-Way Coolant Test Strips (Bottle of 50)
Indicates Nitrite, Molybdate & Glycol Levels	23522774	3-Way Coolant Test Strips (Bottle of 10)
Complete Inhibited Ethylene Glycol Coolant Analysis	23516921	Coolant Analysis Bottle (Carton of 6)
Organic Coolant Analysis	23539088	Laboratory Coolant Analysis

Engine Oil Capacities

Consult with a Detroit distributor to obtain the proper engine oil filters.

The engine oil capacities for the DD Platform Engine On-Highway Vehicle application are listed in the following tables. Contact your local Detroit service center if you need more specific information.

NOTE: There are approximately 5.0 L (5.2 qts) of oil represented from the fill mark to the full mark.

NOTICE: Overfilling the oil pan can cause engine damage.

Table 36.

Engine Oil Capacities			
Truck	**DD13**	**DD15**	**DD16**
Total Dry Engine Oil Volume	44.0 L (46.5 qt)	49.0 L (51.8 qt)	49.0 L (51.8 qt)
Oil and Filter Change	38.0 L (40.1 qt)	43.0 L (45.4 qt)	43.0 L (45.4 qt)
Remaining in Engine after Oil Drain (Includes Filter Removal)	6.0 L (6.3 qt)	6.0 L (6.3 qt)	6.0 L (6.3 qt)
Dip Stick Min. to Max. Range	5.0 L (5.2 qt)	5.0 L (5.2 qt)	5.0 L (5.2 qt)
Sump Oil Volume	35.0 L (37.0 qt)	40.0 L (42.3 qt)	40.0 L (42.3 qt)

Table 37.

Engine Oil Capacities			
Coach	**DD13**	**DD15**	**DD16**
Total Dry Engine Oil Volume	51.0 L (53.8 qt)	NA	NA
Oil and Filter Change	45.0 L (47.6 qt)	NA	NA
Remaining in Engine after Oil Drain (Includes Filter Removal)	6.0 L (6.3 qt)	NA	NA
Dip Stick Min. to Max. Range	5.0 L (5.2 qt)	NA	NA
Sump Oil Volume	42.0 L (44.4 qt)	NA	NA