

DETROIT DIESEL
DEMAND PERFORMANCE™



STARTING THE ENGINE

Before operating the engine, do the work described under "Preparation for a First-Time Start." Start the engine as follows.

Notice

Never attempt to start MBE 900 engine using ether or any other starting fluid. Serious engine damage could result.

1. Turn on the ignition switch.
2. With the accelerator pedal in the idle position, start the engine.
3. Check the engine for leaks. Check all hoses, hose clamps and pipe unions on the engine for tightness. Shut down the engine and tighten them if necessary. Check the oil feed and return lines at the turbocharger for tightness. Shut down the engine and tighten them if necessary.
4. Shut down the engine.
5. Approximately five minutes after shutdown, check the engine oil level. If necessary, add oil up to the maximum fill level on the oil dipstick. Do not overfill.
6. Check all mounting fasteners and belts on the engine for tightness.

OPERATIONS

The following sections cover normal operations.

Battery Charge

The battery charge indicator light must go out once the engine starts.

If the indicator light comes on while the engine is running, do the following.

1. Shut down the engine.
2. Check the poly-V belt for tightness.
3. Do a load test on the batteries. Charge or replace the batteries as needed.
4. If necessary, visit the nearest authorized dealer to have the alternator voltage and output checked.

Oil Pressure

When the engine has reached its normal operating temperature, the engine oil pressure must not drop below the following values:

- 250 kPa (36 psi) at rated speed
- 50 kPa (7 psi) at idling speed

If oil pressure drops below these values, stop the engine and determine the cause.

FUEL

Only use Ultra Low Sulfur Diesel (USLD, 15 ppm sulfur max).

Fuel additives are not required. Using fuel additives may affect your warranty.

LUBRICATING OIL

The engine is delivered from the factory filled with an approved engine oil.

Notice

The use of non-approved engine oils could affect warranty rights and cause engine damage.

To ensure long and trouble-free service, it is important to select oil of the correct viscosity and service designation. Only multigrade oils of American Petroleum Institute service designation CJ-4 will achieve proper performance.

COOLANT

Coolant is a mixture of water and antifreeze. Under normal conditions, it is a mixture of 50 percent water and 50 percent antifreeze but, under extreme cold weather conditions, as much as 60 percent antifreeze may be added. Mixtures above 60 percent may reduce cooling effectiveness and reduce heat transfer capability of the coolant. For anticorrosion protection and to raise the boiling point, the coolant must remain in the cooling system all year round.

Regardless of mileage, replace the coolant every two years, since the degree of corrosion protection gradually drops with time.

	Description	Capacity 6 Cylinder Quarts (Liters)
Engine Coolant Capacity (All Vehicles)	Engine Capacity	12.7 (12.0)
	Total Capacity	25.0 (23.7)
Business Class Coolant System Capacity	Antifreeze Quantity @ 50%	12.5 (11.8)
	Antifreeze Quantity @ 55%	13.8 (13.1)

Fully-Formulated Antifreeze

Antifreeze approved for use in the MBE 900 engine is a mixture of ethylene glycol and corrosion inhibitors. Antifreeze containing ethylene glycol and corrosion inhibitors is known as fully-formulated antifreeze.

NOTE: Do not use propylene glycol.

Fully-formulated antifreeze has the following properties:

- It protects the radiator and engine from freezing.
- It provides protection against corrosion and cavitations for all components in the cooling system.
- It raises the boiling point of the coolant. This slows the rate of evaporation, avoiding coolant loss at high temperatures.

STORAGE

Required protective measures for the MBE 900 engine depend on the following:

- The length of time the engine will be out of service
- The climate and conditions where the engine is stored

If the engine is to be out of service 12 months or less, anticorrosion measures are not necessary, provided the place of storage is dry and well-ventilated as described above.

If the engine is to be out of service for more than 12 months, or under extraordinary storage or transportation conditions, special protective measures are necessary.

Maintenance Operation Description	M1	M2	M3
Engine Inspecting		✓	✓
Valve Lash Checking and Adjusting			✓
Fuel Pre-Filter Element Cleaning		✓	✓
Main Fuel Filter Element Changing		✓	✓
Engine Oil and Filter Changing	✓	✓	✓
Oil Centrifuge Cartridge	✓	✓	✓
Coolant Concentration Checking		✓	✓
Coolant Flushing and Changing			✓
Cooling System Inspecting		✓	✓

SCHEDULED INTERVALS

When performed on a regular basis, changing the engine oil and filters is the least costly way to ensure safe and reliable vehicle operation. Added benefits and savings occur when you check that the valves, fuel injectors and oil and cooling circuits are in good working order during oil changes.

All service intervals and maintenance operations are based on the parts and accessories expressly approved for your engine.

Maintenance Schedule	Maintenance Interval Operation	Maintenance Intervals		
		Frequency	Miles	km
Vehicles that annually travel up to 60,000 mi. (96,000 km)	Maintenance 1 (M1)	Every	15,000	24,000
	Maintenance 2 (M2)	Every	60,000	96,500
	Maintenance 3 (M3)	Every	75,000	121,000

VEHICLE INSPECTION

Check the following concerns before starting any troubleshooting.

- Walk around the vehicle and look for obvious problems such as leaks (air or liquid).
- Check fuel filters to ensure they are secure and tight.
- Check for a restricted air filter.
- Ensure the fuel tank level is at least 1/4 full.
- Look for any vehicle damage that could affect vehicle performance or fuel economy.
- Investigate any prior repairs that could affect vehicle performance.
- Verify that alternator and battery grounds are clean and making good contact.
- Wiggle wires and harnesses to try to make the concern active, or recur.

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For more information, call 1-800-445-1980. www.DetroitDiesel.com

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