COOLANT SPECIFICATIONS

DIESEL AND GASOLINE ENGINE COOLANT – NORTH AMERICA

The engine cooling system when filled with a proper dilution mixture of anti-freeze and deionized or distilled water provides year-round protection against corrosion, cylinder or liner pitting, and winter freeze protection down to –37°C (–34°F).

The following John Deere coolant is **PREFERRED:**

- **PRE-DILUTED DIESEL ENGINE ANTI-FREEZE/ SUMMER COOLANT™ (TY16036)**.

This coolant satisfies specifications for "Automobile and Light Duty Engine Service" and is safe for use in John Deere Lawn and Grounds Care/Golf and Turf Division equipment, including aluminum block gasoline engines and cooling systems.

The above preferred pre-diluted anti-freeze provides:

- adequate heat transfer
- corrosion-resistant chemicals for the cooling system
- compatibility with cooling system hose and seal material
- protection during extreme cold and extreme hot weather operations
- chemically pure water for better service life
- compliance with ASTM D4656 (JDM H24C2) specifications

If above preferred pre-diluted coolant is not available, the following John Deere concentrate is **recommended**:

- **DIESEL ENGINE ANTI-FREEZE/SUMMER COOLANT CONCENTRATE™ (TY16034).**

If either of above recommended engine coolants are available use any Automobile and Light Duty Engine Service **ethylene glycol base coolant**, meeting the following specification:

- ASTM D3306 (JDM H24C1).

Read container label completely before using and follow instructions as stated.

IMPORTANT: To prevent engine damage, DO NOT use pure anti-freeze or less than a 50% anti-freeze mixture in the cooling system. DO NOT mix or add any additives/conditioners to the cooling system in Lawn and Grounds Care/Golf and Turf Division equipment. Water used to dilute engine coolant concentrate must be of high quality—clean, clear, potable water (low in chloride and hardness–Table 1) is generally acceptable. DO NOT use salt water. Deionized or distilled water is ideal to use. Coolant that is not mixed to these specified levels and water purity can cause excessive scale, sludge deposits, and increased corrosion potential.

Water Quality

Property	Requirements
Total Solids, Maximum	340 ppm (20 grns/gal)
Total Hardness, Max.	170 ppm (10 grns/gal)
Chloride (as Cl), Max.	40 ppm (2.5 grns/gal)
Sulfate (as SO_4), Max.	100 ppm (5.8 grns/gal)

Mix 50 percent anti-freeze concentrate with 50 percent distilled or deionized water. This mixture and the pre-diluted mixture (TY16036) will protect the cooling system down to -37°C(-34°F) and up to 108°C (226°F).

Certain geographical areas may require lower air temperature protection. See the label on your anti-freeze container or consult your John Deere dealer to obtain the latest information and recommendations.

DIESEL AND GASOLINE ENGINE COOLANT DRAIN INTERVAL – NORTH AMERICA

When using **John Deere Pre-Diluted (TY16036)** Automobile and Light Duty Engine Service coolants, drain and flush the cooling system and refill with fresh coolant mixture every **36 months or 3,000 hours** of operation, whichever comes first.

When using **John Deere Concentrate (TY16034)** Automobile and Light Duty Engine Service coolants, drain and flush the cooling system and refill with fresh coolant mixture every **24 months or 2,000 hours** of operation, whichever comes first.

If above John Deere Automobile and Light Duty Engine Service coolants **are not** being used; drain, flush, and refill the cooling system according to instructions found on product container or in equipment operator's manual or technical manual.

DIESEL ENGINE COOLANT – EUROPE

The engine cooling system when filled with a proper dilution mixture of anti-freeze and deionized or distilled water provides year-round protection against corrosion, cylinder liner pitting, and winter freeze protection down to –37°C (–34°F).

The following John Deere coolant is **PREFERRED:**

- **COOL–GARD COOLANT CONCENTRATE™.**

If above preferred coolant is not available, use any Automobile and Light Duty Engine Service **ethylene glycol base coolant**, meeting the following specification:

- ASTM D3306 (JDM H24C1).

Read container label completely before using and follow instructions as stated.

IMPORTANT: To prevent engine damage, DO NOT use pure anti-freeze or less than a 50% anti-freeze mixture in the cooling system. DO NOT mix or add any additives/conditioners to the cooling system in Lawn and Grounds Care/Golf and Turf Division equipment. Water used to dilute engine coolant concentrate must be of high quality—clean, clear, potable water (low in chloride and hardness–Table 1) is generally acceptable. DO NOT use salt water. Deionized or distilled water is best to use. Coolant that is not mixed to these specified levels and water purity can cause excessive scale, sludge deposits, and increased corrosion potential.

Water Quality

Property	Requirements
Total Solids, Maximum	340 ppm (20 grns/gal)
Total Hardness, Max.	170 ppm (10 grns/gal)
Chloride (as Cl), Max.	40 ppm (2.5 grns/gal)
Sulfate (as SO_4), Max.	100 ppm (5.8 grns/gal)

Mix 50 percent anti-freeze concentrate with 50 percent distilled or deionized water. This mixture will protect the cooling system down to -37°C(-34°F) and up to 108°C (226°F).

Certain geographical areas may require lower air temperature protection. See the label on your anti-freeze container or consult your John Deere dealer to obtain the latest information and recommendations.

DIESEL ENGINE COOLANT DRAIN INTERVAL – EUROPE

When using **John Deere Cool-Gard Coolant Concentrate** for Automobile and Light Duty Engine Service, drain and flush the cooling system and refill with fresh coolant mixture every **24 months or 2,000 hours** of operation, whichever comes first.

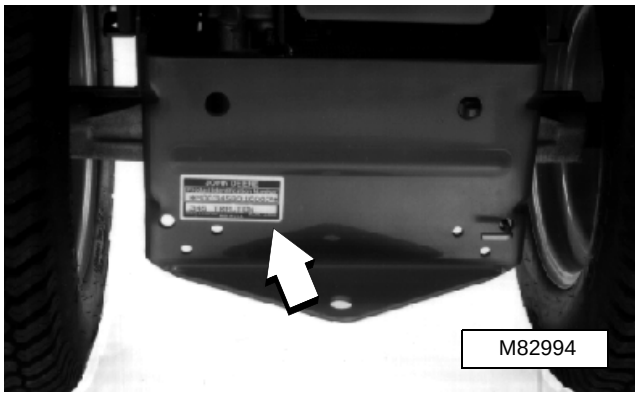
If above John Deere Automobile and Light Duty Engine Service coolant **is not** being used; drain, flush, and refill the cooling system according to instructions found on product container or in equipment operator's manual or technical manual.

SERIAL NUMBER LOCATION

When ordering parts or submitting a warranty claim, it is IMPORTANT that the machine product identification number and component serial numbers are included.

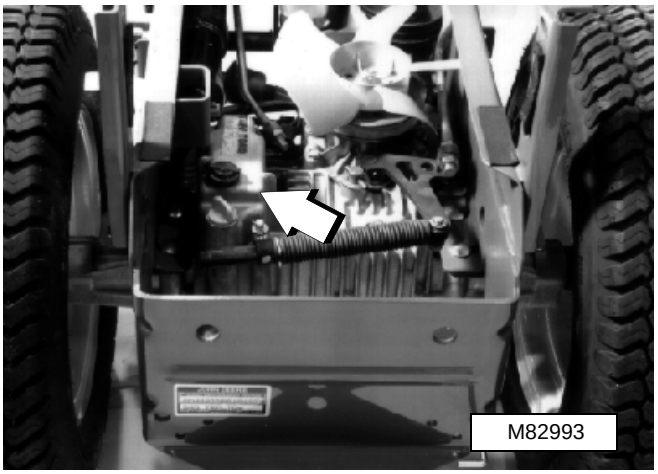
The location of the machine identification number and component serial numbers are shown.

MACHINE IDENTIFICATION NUMBER



ENGINE SERIAL NUMBER

HYDROSTATIC TRANSMISSION SERIAL NUMBER



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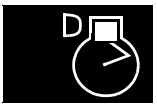
DIESEL ENGINE



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SPECIFICATIONS

GENERAL ENGINE SPECIFICATIONS

Engine Model	2V78 - 2008D001
Type	V-Twin, Vertical Shaft, 4-Cycle, Aluminum Block, Isolated Mount, Liquid Cooled, Diesel Engine
Number of Cylinders	2 OHV
Cylinder Bore x Stroke	78 mm (3.071 in.) x 78.4 mm (3.087 in.)
Displacement	0.749 L (45.7 cu. in.)
Rated Output	12.0 kW (16.1 hp) at 2800 rpm 12.8 kW (17.2 hp) at 3000 rpm 13.5 kW (18.1 hp) at 3200 rpm 14.2 kW (19.0 hp) at 3400 rpm 14.9 kW (20.0 hp) at 3600 rpm
Engine Lubricating System	Pressure lubrication with trochoid pump
Applicable Lubrication	API grade CC, CD or CF class or higher
Crankcase Lubricant Capacity	2.27 L (2.4 qt)
Cooling System	Liquid cooled
Coolant Capacity	3.6 L (3.8 U.S. qt)
Coolant Recovery Tank Capacity	0.3 L (0.3 U.S. qt)

TESTS AND ADJUSTMENTS SPECIFICATIONS

Engine:

Standard Compression	3040 ± 196 kPa (441 ± 28 psi)
Maximum Difference between Cylinders	294 kPa (43 psi)
Minimum Cranking Speed	250 rpm
Slow Idle Speed	1000 ± 50 rpm
Valve Lifter Travel	6.86 mm (0.270 in.) minimum
Valve Clearance (cold)	0.1 ± 0.05 mm (0.004 ± 0.002 in.)
Cooling System Pressure	88 kPa (12.8 psi) minimum
Thermostat	
Opening Temperature	80.5—85.5°C (177—182°F)
Fully Open Temperature	95°C (203°F)
Oil Pressure	241 kPa (35 psi) @ 3250 rpm

Starter:

Brush Length	7.70 mm (0.303 in.) minimum

REPAIR SPECIFICATIONS

Cylinder Head:

Combustion Surface Distortion	
Standard	0.05 mm (0.002 in.)
Limit	0.15 mm (0.006 in.)
Valve Sink Below Head Surface (Intake and Exhaust)	
Standard	0.5 mm ± 0.1 (0.02 in. ± 0.04 in.)
Limit	1.0 mm (0.039 in.)
Valve Seat Angle (Intake and Exhaust)	45°

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Thank you so much for reading