

## Fluids and lubricants

By using appropriate fluids and lubricants the excavator can operate in ambient temperatures ranging from **-20 °C (-4 °F)** to **45 °C (113 °F)**. Refer to the list of fluids and lubricants contained in this manual.

**NOTICE:** When operating the machine in ambient temperatures outside the above mentioned range, consult your **CASE CONSTRUCTION Dealer** for specific machine provision and for specific fluids and lubricants to be used.

Application	Capacity	Product name	Specifications
Fuel tank	<b>250 L (66 US gal)</b>	—	<b>ASTM D975</b>
<b>DEF/AdBLUE®</b> tank	<b>60 L (16 US gal)</b>	—	<b>ISO 22241-1</b>
Engine	<b>10.8 L (2.9 US gal)</b>	<b>No.1 ENGINE OIL™ SAE 10W-40 CK-4 SEMI-SYNTHETIC</b>	<b>SAE 10W40 ACEA E9 API CK-4</b>
Swing reduction unit	<b>2.2 L (0.6 US gal)</b>	<b>HYPOID GEAR OIL EP SAE 80W-90</b>	<b>SAE 80W/90 API GL-5</b>
Travel reduction unit	<b>2.3 L (0.6 US gal)</b>	<b>HYPOID GEAR OIL EP SAE 80W-90</b>	<b>SAE 80W/90 API GL-5</b>
Engine cooling system	<b>20 L (5.3 US gal)</b>	<b>EXTENDED LIFE OAT COOLANT/ANTIFREEZE CONCENTRATE (*)</b>	<b>ASTM D6210 TYPE I-FF</b>
		<b>EXTENDED LIFE OAT COOLANT/ANTIFREEZE 50/50 PREMIXED</b>	<b>ASTM D6210 TYPE III-FF</b>
Hydraulic oil tank (**)	<b>82 L (21.7 US gal)</b>	<b>PREMIUM HYDRAULIC OIL HV46 MULTI-GRADE ANTIWEAR</b>	<b>ISO 11158 L-HV46</b>
Grease	—	<b>MULTI-PURPOSE GREASE EP / AW / NLGI 2</b>	<b>NLGI 2</b>

(\*) Concentrate antifreeze to be mixed 50/50 with distilled (deionized) water.

(\*\*) The total capacity of the hydraulic system is **157 L (41.5 US gal)**.

## Engine coolant

**EXTENDED LIFE OAT COOLANT/ANTIFREEZE** is the reference genuine product for machine service.

**NOTICE:** *Never add Supplemental Coolant Additives (SCA) when using EXTENDED LIFE OAT COOLANT/ANTIFREEZE.*

**EXTENDED LIFE OAT COOLANT/ANTIFREEZE** has to be used if refilling of the cooling system is needed. Refer to the dedicated procedure and recommendations described in Chapter 6.

**EXTENDED LIFE OAT COOLANT/ANTIFREEZE** shall be used for the replacement of engine coolant according to the maintenance program of the machine. The replacement shall also be tackled in case of repair or replacement of components of the cooling system. Refer to the dedicated procedure described in Chapter 6.

The engine cooling system shall always be refilled with coolant solution made by mixture of antifreeze and distilled (deionized) water.

**NOTICE:** *Never refill the cooling system with only antifreeze. Never refill the cooling system with only water.*

Using **EXTENDED LIFE OAT COOLANT/ANTIFREEZE**, a 50/50 mixture of antifreeze and distilled (deionized) water grants proper performance of the engine cooling system in the above mentioned operating temperature range of the machine.

**EXTENDED LIFE OAT COOLANT/ANTIFREEZE** is available as:

- 50/50 PREMIXED coolant solution ready for usage.
- CONCENTRATE antifreeze to be mixed 50/50 with distilled (deionized) water.

**NOTICE:** *If operating in extreme winter climate, a coolant solution made by 60/40 antifreeze/distilled (deionized) water mixture shall be used in order to grant proper performance of the engine cooling system.*

**NOTICE:** *Never use coolant solution with more than 60% of antifreeze. This affects the cooling capacity of the mixture.*

When the coolant solution is prepared starting from the CONCENTRATE product, the antifreeze concentration in the mixture of antifreeze and distilled (deionized) water can be determined with a refractometer designed to measure ethylene glycol content.

**If distilled (deionized) water is not available, use water for dilution with the following properties:**

Property	Maximum limit
Total Solids	<b>340 ppm</b>
Total Hardness	<b>170 ppm</b>
Chloride (Cl)	<b>40 ppm</b>
Sulfate (SO <sub>4</sub> )	<b>100 ppm</b>
Acidity pH	5.5 to 9.0

**NOTICE:** *Never use hard water, sea water and softened sea water that has been conditioned with salt. The minerals and salts present in potable water can cause corrosion and deposits resulting in shortened engine life.*

## Fuel

Use only No. 2-D Ultra-Low Sulfur Diesel ( S15 ) that meets **ASTM D975** specifications.

Using other types of fuel may lead to stalled engine output or deterioration in fuel economy.

**NOTICE:** *The warranty should be invalid if any serious defect is caused by usage of any other fuel. Using any fuel other than the prescribed type will cause damages to the fuel supply system, to the fuel injection system, to the engine block, and to the exhaust after treatment system. CASE CONSTRUCTION will not be responsible to any of such damages.*

If the temperature drops below the fuel cloud point, output deficiency or engine start problems may occur due to wax crystals. During cold weather, lower than **-7 °C (19.4 °F)**, it is temporarily acceptable to use a mixture of No. 1-D (S15) and No. 2-D (S15).

**NOTICE:** *If operating in severe winter climate, consult the fuel supplier or the CASE CONSTRUCTION dealer for specific diesel fuel to be used.*

The diesel fuel to be used on the machine should:

- be free from dust particles, even minute ones.
- have the proper viscosity.
- have a high cetane number.
- present great fluidity at low temperatures.
- have low sulfur content.
- have very little residual carbon.

**NOTICE:** *Never use a mix of diesel fuel and old engine oil. The fuel injection system and the exhaust after treatment system will be severely damaged.*

**NOTICE:** *consult the fuel supplier or the CASE CONSTRUCTION Dealer regarding appropriate use of fuel additives.*

**NOTICE:** *in order to prevent condensation during cold weather, fill the fuel tank to full after completing the day's work.*

Fuel storage:

Long storage can lead to the accumulation of impurities and condensation in the fuel. Engine trouble can often be traced to the presence of water in the fuel. The storage tank must be placed outside and the temperature of the fuel should be kept as low as possible. Drain off water and impurities regularly.

## Disposal of fluids, lubricants, and spare parts

Fluids, lubricants and spare parts used on the machine are not fully compatible with the environment. Make sure to carry out all maintenance operations using appropriate tools, in order to avoid any risk of damaging the environment.

**NOTE:** *for example, make sure that the receptacle for collecting oil to be replaced is not leaking.*

Never spread fluids or lubricants on the ground or into water. Consult the CASE CONSTRUCTION Dealer or the Local Environmental Agency in order to obtain information on the correct method of disposing fluids and lubricants used on the machine.

Never throw away spare parts as filters or batteries. Consult the CASE CONSTRUCTION Dealer or the Local Environmental Agency in order to obtain information on the correct method of disposing filters, batteries or other spare parts used on the machine.