

3. FUEL, COOLANT AND LUBRICANTS

1) NEW MACHINE

New machine used and filled with following lubricants.

Description	Specification
Engine oil	SAE 15W-40(API CI-4)
Hydraulic oil	ISO VG 46(SAE 10W)
Swing reduction gear oil	SAE 85W-140(API GL-5)
Gear box oil	SAE 85W-90(API GL-5)
Axle and differential oil	SAE 85W-90(API GL-5)
Grease	Lithium base grease NLGI No. 2
Fuel	ASTM D975-No. 2(Low sulfur fuel or ultra low sulfur fuel)
Coolant	Mixture of 50% ethylene glycol base antifreeze and 50% water.

SAE : Society of Automotive Engineers

API : American Petroleum Institute

ISO : International Organization for Standardization

NLGI : National Lubricating Grease Institute

ASTM : American Society of Testing and Material

- Low sulfur fuel : sulfur content $\leq 500\text{ppm}$
- Ultra low sulfur fuel : sulfur content $\leq 15\text{ppm}$

2) RECOMMENDED OILS

Use only oils listed below or equivalent.

Do not mix different brand oil.

Service point	Kind of fluid	Capacity l (U.S. gal)	Ambient temperature °C(°F)						
			-20 (-4)	-10 (14)	0 (32)	10 (50)	20 (68)	30 (86)	40 (104)
Engine oil pan	Engine oil	11.6(3.1)	SAE 30						
			SAE 10W						
			SAE 10W-30						
			SAE 15W-40						
Swing drive	Gear oil	1.5(0.4)	SAE 85W-140						
	Grease	0.2(0.05)	NLGI NO.1						
			NLGI NO.2						
Gear box case	Gear oil	1.85(0.49)	SAE 85W-90						
Front axle		Center : 4.5(1.19) Hub : 0.4 × 2 (0.11 × 2)							
Rear axle		Center : 4.5(1.19) Hub : 0.4 × 2 (0.11 × 2)							
Hydraulic tank	Hydraulic oil	Tank: 70(18.5) System: 120(31.7)	ISO VG 32						
			ISO VG 46						
			ISO VG 68						
Fuel tank	Diesel fuel	120(31.7)	ASTM D975 NO.1						
			ASTM D975 NO.2						
Fitting (Grease nipple)	Grease	As required	NLGI NO.1						
			NLGI NO.2						
Radiator (Reservoir tank)	Mixture of antifreeze and water 50 : 50	10(2.6)	Ethylene glycol base permanent type						

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