#### Lubricant

Location	Туре	Air temperature -4 14 32 50 68 86 104°F -20 -10 0 10 20 30 40°C	When to replace
Engine oil pan	Diesel engine oil API: CJ-4 or CK-4 class	SAE 10W-30  SAE 15W-40	Every 500 hrs. after the initial 50 hrs.
Hydraulic oil tank	Diesel engine oil API: CD, CE, CF or CK-4 class	SAE 10W-30***	Every 1000 hrs.
Engine cooling system	Cooling water (water + coolant)** SAE: J814C or J1034	Mixture of 50% coolant	Every 1000 hrs.
Travel reduction gear	Gear oil API: GL-4	SAE 90	Every 500 hrs after the initial 250 hrs*.
Working equipment Levers	Lithium based grease EP-2 NLGI No.2	_	Daily or every 10 hrs. When required

<sup>\*:</sup> If the ratio of traveling time to total operating time is high, replace the gear oil earlier than the specified time.

<sup>\*\*:</sup> For water, use tap water (soft). Do not use well or river water. When the ambient temperature drops below 0°C (32°F), add coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.

<sup>\*\*\*:</sup> Ambient temperature when the oil used as hydraulic oil.

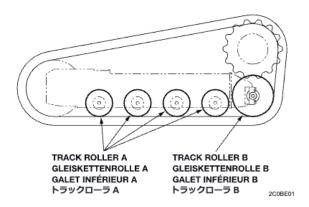
TI 8

- · Regardless of the time specified below, change the oil also if it becomes too dirty or degraded.
- · When adding oil, never mix oils of different brands. If a brand is to be changed, replace all of the fuel/oil.

Part	Туре	Selection by air temperature -4 14 32 50 68 86 104°F -20 -10 0 10 20 30 40°C	When to change/ replenish	Capacity
Engine oil pan	Diesel engine oil API: CJ-4 class or above	SAE 10VV-30	Every 500 hrs. after the first 50 hrs	Upper limit: 11.2 L (11.8 US qt) Lower limit: 8.2 L (8.7 US qt)
Hydraulic tank	Diesel engine oil API: CD, CE, or CF class or above	SAE 10W-30	Every 1000 hrs	Total amount of oil: 58 L (15.3 US gal) Tank capacity: 39 L (10.3 US gal)
Engine cooling system	Cooling water (water + coolant)** SAE: J1814C, J1034	Mixture of 50% coolant	Every 1000 hrs	14 L (14.8 US qt)
Travel reduction gear	Gear oil API: GL-4	SAFUI	Every 500 hrs. after the first 250 hrs*	1.0 L x 2 (1.06 US qt)
Track roller A	Engine oil API: CD class	SAE 30	-	0.18 L (6.09 fl oz)
Track roller B	Mobilegear SHC 680	-	_	0.14 L (4.7 fl oz)
Idler	Engine oil API: CD class	-	-	0.12 L (4.1 fl oz)
Working equip- ment  Levers/pedals	Lithium grease EP-2 NLGI No. 2	-	Daily or every 10 hrs	As required
			As required	

- \* If the ratio of traveling time to total operating time is high, replace the gear oil earlier than the specified time.
- \*\* For water, use (soft) tap water. Do not use well or river water.

  For regions/conditions where the ambient temperature drops below 0°C (32°F), add coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.



#### Lubricant

Туре	Air temperature  -4 14 32 50 68 86 104°F  -20 -10 0 10 20 30 40°C  When to replace
Diesel engine oil API: CJ-4 or CK-4 class	SAE 10W-30****  SAE 15W-40  Every 500 hrs. after the initial 50 hrs.
Diesel engine oil API: CD, CE, CF or CK-4 class	SAE 10W-30*** Every 1000 hrs.
Cooling water (water + coolant)** SAE: J814C or J1034	Mixture of 50% coolant Every 1000 hrs.
Gear oil API: GL-4	SAE 90 Every 500 hrs after the initial 250 hrs*.
Lithium based grease EP-2	Daily or every 10 hrs.  When required
	Diesel engine oil API: CJ-4 or CK-4 class  Diesel engine oil API: CD, CE, CF or CK-4 class  Cooling water (water + coolant)** SAE: J814C or J1034  Gear oil API: GL-4  Lithium based grease

<sup>\*:</sup> If the ratio of traveling time to total operating time is high, replace the gear oil earlier than the specified time.

API standard: American Petroleum Institute

ACEA standard: Association des Constructeurs Européens d'Automobiles

<sup>\*\*:</sup> For water, use tap water (soft). Do not use well or river water. When the ambient temperature drops below 0°C (32°F), add coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.

<sup>\*\*\*:</sup> Ambient temperature when the oil used as hydraulic oil.

<sup>\*\*\*\*\*:</sup> If you use oil with a higher viscosity than 10W-30, the oil will not work properly due to low temperature until the engine is well warmed up. In addition, it could cause excessive wear on the engine or seizing of the engine.

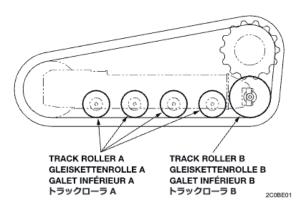
**TL10** 

- Regardless of the specified time, change the oil if it becomes too dirty or degraded.
- · When refilling, never mix oils of different brands. If a brand is to be changed, replace the whole fuel/oil.

Part	Туре	-30	) -:		oe b -10				ature		40°C	When to change/ replenish	Capacity
Engine oil pan	Diesel engine oil API: CJ-4 or higher				S	AE	10V	V-30				Every 250 hrs after the first 50 hrs	Upper limit: 13.2 L (13.9 US qt) Lower limit: 8.8 L (9.3 US qt)
Hydraulic oil tank	Diesel engine oil API: CD, CE or CF class				S	AE	10V	V-30				Every 1000 hrs	Total amount of oil: 74 L (19.6 US gal) Tank capacity: 48 L (12.7 US gal)
Engine cooling system	Cooling water (water + coolant)** SAE: J814C, J1941, J1034 or J2036 ASTM: D6210 or D4985 (USA)		Mixture of 50% coolant									Every 1000 hrs	15.5 L (16.4 US qt)
Travel reduc- tion gear	Gear oil API: GL-4					SA	Æ 9	0				Every 500 hrs after the first 250 hrs*	1.6 L (1.7 US qt)
Track roller A	Engine oil API: CD					SA	Æ 3	0				_	0.18 L (6.09 fl oz)
Track roller B	Mobilegear SHC680 or Bonnoc AX 680		_								_	0.17 L (5.75 fl oz)	
Idler	Mobilegear SHC680 or Bonnoc AX 680		_								_	0.17 L (5.75 fl oz)	
Working equipment Lever/pedal	Lithium grease EP-2 NLGI No.2		_							Daily or every 10 hrs When required	As required		

- \* If the ratio of traveling time to total operating time is high, replace the gear oil earlier than the specified time.
- \*\* For water, use tap water (soft). Do not use well or river water.

  When the ambient temperature drops below 0°C, add coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.



**TL10V2** 

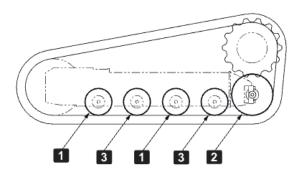
Select the appropriate fuel, lubricant, and grease according to temperature by referring to the table below.

- · Regardless of the amount of time specified, change the oil if it becomes too dirty or degraded.
- · When refilling, never mix oils of different brands. If a brand is to be changed, replace all of the fuel/oil.

Part	Туре	-4 -20	Select 14 -10	32	oy ai 2 50 10	) 6	8	86	10	0°C	When to change/ replenish	Capacity
Engine oil pan	Diesel engine oil API: CJ-4 class or above		S	SAE	10W	/-30					Every 500 hrs. after the first 50 hrs.	Upper limit: 11.2 L (11.8 US qt.) Lower limit: 8.2 L (8.7 US qt.)
Hydraulic tank	Diesel engine oil API: CD, CE, or CF class or above		S	SAE	10W	/-30					Every 1000 hrs.	Total amount of oil: 65 L (17.2 US gal.) Tank level capacity: 36 L (9.5 US gal.)
Engine cooling system	**Cooling water (water + coolant) SAE-J814C, J1034	N	Mixtur	e of	50%	6 CO	olan	ıt			Every 1000 hrs.	15 L (15.9 US qt.)
Travel reduction gear	Gear oil API: GL-4				SAE	90					Every 500 hrs. after the first 250 hrs.*	1.6 L × 2 (1.7 US qt. × 2)
Track roller A and C	Engine oil API: CD class or above			;	SAE	30					-	0.185 L (6.26 fl. oz)
Track roller B	Mobil SHC Gear 680				_						-	0.185 L (6.26 fl. oz)
Idler	Mobil SHC Gear 680				_						-	0.125 L (4.23 fl. oz)
Working equipment Lever/pedal	Lithium grease EP-2 NLGI No. 2	-								Daily or every 10 hrs. When required	As required	

- \* If the ratio of traveling time to total operating time is high, replace the gear oil earlier than the specified time.
- \*\* For water, use tap water (soft). Do not use well or river water.

  When the ambient temperature drops below 0°C (32°F), add coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.



2C0BQ01

- 1 Track roller A
- 2 Track roller B
- 3 Track roller C

**TL12** 

- · Regardless of the time specified below, change the oil also if it becomes too dirty or degraded.
- · When adding oil, never mix oils of different brands. If a brand is to be changed, replace all of the fuel/oil.

Part	Туре	-4 -4 -20 -4	• • •	32		68	86	re 104°F 40°C	renlenish	Capacity	
Engine oil pan	Diesel engine oil API: CJ-4 class or above		SAE	≣ 10	)W-3	30			Every 250 hrs after the first 50 hrs	Upper limit: 13.2 L (13.9 US qt) Lower limit: 8.8 L (9.3 US qt)	
Hydraulic tank	Diesel engine oil API: CD, CE, or CF class or above		SAE	≣ 10	)W-3	30			Every 1000 hrs	Total amount of oil: 95 L (25.1 US qt) Tank capacity: 60 L (15.9 US gal)	
Engine cooling system	Cooling water (water + coolant)**		ture o					olant	Every 1000 hrs	16.5 L (17.4 US qt)	
Travel reduction gear	Gear oil API: GL-4		•	SA	AE 9	0			Every 500 hrs. after the first 250 hrs*	1.6 L (1.7 US qt)	
Track roller A	Engine oil API: CD class			SA	ΑE 3	0			_	0.18 L (6.09 fl oz)	
Track roller B	Mobilegear SHC 680 or Bonnoc AX 680		_						_	0.17 L (5.75 fl oz)	
Idler	Mobilegear SHC 680 or Bonnoc AX 680				_				_	0.17 L (5.75 fl oz)	
Working equipment	Lithium grease EP-2 NLGI No. 2				_				Daily or every 10 hrs	As required	
Levers/pedais	.evers/pedals								As required	]	

<sup>\*</sup> If the ratio of traveling time to total operating time is high, replace the gear oil earlier than the specified time.

<sup>\*\*</sup> For water, use (soft) tap water. Do not use well or river water.

For regions/conditions where the ambient temperature drops below 0°C (32°F), add coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.

**TL12R2** 

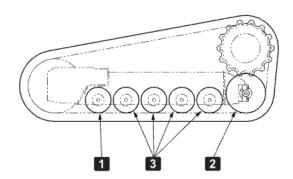
Select the appropriate fuel, lubricant, and grease according to temperature by referring to the table below.

- · Regardless of the amount of time specified, change the oil if it becomes too dirty or degraded.
- · When refilling, never mix oils of different brands. If a brand is to be changed, replace all of the fuel/oil.

		S	elec	tior	ı by	air	ter	npe	era	tur	e	When to change/	
Part	Туре	-4		•		50	_	_			)4°F	replenish	Capacity
		-20	-1	0	0	10	2	0 :	30	4	0°C	-	
	Diesel engine oil												Upper limit:
Engine oil pan	API: CJ-4 class or above			SA	E 1	ow-	30					Every 500 hrs. after the first 50 hrs.	13.2 L (13.9 US qt)
	JASO: DH-2				Τ	T			1			ter the mat 30 ms.	8.8 L (9.3 US qt)
	Diesel engine oil												Total amount of oil:
Hydraulic tank	API: CD, CE, or			SA	E 1	ow-	30					Every 1000 hrs.	79 L (20.9 US gal) Tank level capacity:
	CF class or above				Т	Т			1				50 L (13.2 US gal)
	**Cooling water												
Engine cooling	(water + coolant)		Mixtu	ıre	of 5	0%	COC	olan	t		1	Every 1000 hrs.	18 L (19 US qt)
system	SAE-J814C, J1034			١	∕lixtı	ure (	of 3	0%	CO	ola	int	2.01, 1000 1110.	
	31034												
Travel reduction gear	Gear oil API: GL-4				S	AE 9	90					Every 500 hrs. after the first 250 hrs.*	1.6 L × 2 (1.7 US qt × 2)
	Engine oil											alter the mst 250 ms.	(1.7 03 qt ~ 2)
Track roller A and C	API: CD class or above				S	AE :	30					_	0.18 L (6.09 fl oz)
Track roller B	Mobil SHC Gear												0.17 L (5.75 fl oz)
Track foller b	680					_						_	0.17 L (5.75 11 02)
Idler	Mobil SHC Gear 680					-						_	0.17 L (5.75 fl oz)
Working equipment	Lithium grease EP-2											Daily or every 10 hrs.	As required
Lever/pedal	NLGI No. 2					_						When required	As required

- \* If the ratio of traveling time to total operating time is high, replace the gear oil earlier than the specified time.
- \*\* For water, use tap water (soft). Do not use well or river water.

  When the ambient temperature drops below 0°C (32°F), add coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.



2C0BO01

- Track roller A
- 2 Track roller B
- 3 Track roller C

#### Lubricant

		Type by air temperature		
Location	Туре	-4 -14 32 50 68 86 104°F -20 -10 0 10 20 30 40°C	When to replace	
Engine oil pan	API: CJ-4 class ACEA: E6 class JASO: DH2 class	SAE 10W-30 SAE 15W-40	Every 500 hrs. or once a year (whichever comes first)	
	Takeuchi genuine hy- draulic oil 46	ISO VG46	Every 4000 hrs.***	
Hydraulic oil tank	Anti-wear hydraulic oil	ISO VG32 ISO VG46 ISO VG68	Every 2000 hrs.***	
Engine cooling system	Cooling water (water + coolant)** SAE: J814C or J1034 ASTM: D3306 JIS: K2234	Mixture of 50% coolant  Mixture of 30% coolant	Every 2000 hrs. or every two years (whichever comes first)	
Travel reduction gear	Gear oil API: GL-4	SAE 90	Every 1000 hrs after the initial 250 hrs*.	
Slew bearing	Lithium based grease		Every 50 hrs.	
Working equipment	EP-2 NLGI No.2	_	Daily or every 10 hrs.	
Carrier roller	Engine oil API: CD	SAE 30	-	
Track roller	Gear oil API: GL-3	-	-	
Idler	Engine oil API: CD	SAE 30	-	

### TABLE OF FUEL AND LUBRICANT

TB280FR

Use fuel, lubricant, and grease depending on temperature, referring to the table below.

- · When fuel, lubricant, or grease is severely dirty or deteriorated, replace it as soon as possible.
- Do not use a different type of oil for replenishment. When changing the brand of fuel, lubricant, or grease, replace the total amount of it. Do not mix the brand with a different one.

Replenishment		Use depending on temperature					npe	ratı	ıre	Replacement or		
part	Туре	-4 -20	• • •	32 0	50 10	68 20			04°F ∤0°C	replenishment period	Capacity	
Engine oil pan	Diesel engine oil API: CJ-4 class or above	I	S	AE 1		30 5W-4	0			Every 250 hours	Upper limit: 9.4 L (9.9 US qt) Lower limit:	
	ACEA: E6 class		T								5.0 L (5.3 US qt)	
	Takeuchi genuine hydraulic oil 46				ISC	) VG	46			Every 4000 hours***	Total amount of oil:	
Hydraulic oil tank	Anti-wear hydrau-			ISO	ISC	VG			L	Every 2000 hours***	147 L (38.83 US gal) Tank capacity: 70.6 L (18.65 US gal)	
						ISO	VG	58				
Engine cooling system	Cooling water (water + coolant)** SAE-J814C,		50%			nixtur		eti ir.		Every 2000 hours	11 L (2.91 US gal)	
System	J1034			307	/6 CO	Olan	Liniz	xtur				
Travel reduction gear	Gear oil API: GL-4			s	AE 9	90				Every 1000 hours after the first 250 hours*	1.1 L (1.2 US qt) × 2	
Carrier roller	Engine oil API: CD class			S	AE 3	30				_	0.140 L (4.73 fl oz)	
Track roller	Gear oil			ISC	) VG	220				_	0.180 L (6.1 fl oz)	
Idler	Engine oil API: CD class			S	AE 3	30				_	0.150 L (5.07 fl oz)	
Slew bearing	Lithium grease									Every 50 hours		
Work equipment	EP-2 NLGI No.2	_				Daily or every 10 hours	As required					
Lever										When necessary		

<sup>\*</sup> If the travel time accounts for a large portion of the total operating time, replace the gear oil before the specified time.

API standard: American Petroleum Institute

ACEA standard: European Automobile Manufacturers' Association

<sup>\*\*</sup> Use tap water (soft water). Do not use well water or river water.
When the ambient temperature drops below 0°C (32°F), add coolants (antifreeze). Decide a mixture ratio according to the instruction manual of the coolant manufacturer.

<sup>\*\*\*</sup> The replacement period of hydraulic oil depends on the type of the hydraulic oil used. Takeuchi genuine hydraulic oil 46 is used in new vehicles. This manual also explains the replacement period assuming that Takeuchi genuine hydraulic oil 46 is used. When conventional anti-wear hydraulic oil is used, replace the hydraulic oil every 2000 hours.

**TL12V2** 

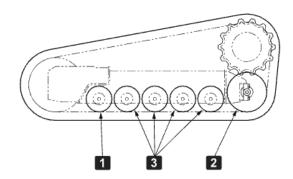
Select the appropriate fuel, lubricant, and grease according to temperature by referring to the table below.

- · Regardless of the amount of time specified, change the oil if it becomes too dirty or degraded.
- · When refilling, never mix oils of different brands. If a brand is to be changed, replace all of the fuel/oil.

		S	elec	tior	ı by	air	tem	per	atu	re	When to change/	Capacity	
Part	Туре	-4 -20		4 0	32 0	50 10	68 20	-	-	04°F 10°C	replenish		
Engine oil pan	Diesel engine oil API: CJ-4 class or above			SA	E 10	)W-:	30				Every 500 hrs. after the first 50 hrs.	Upper limit: 13.2 L (13.9 US qt) Lower limit: 8.8 L (9.3 US qt)	
Hydraulic tank	Diesel engine oil API: CD, CE, or CF class or above			SA	E 10	)W-:	30				Every 1000 hrs.	Total amount of oil: 78 L (20.6 US gal) Tank level capacity: 50 L (13.2 US gal)	
Engine cooling system	**Cooling water (water + coolant) SAE-J814C, J1034	Mixture of 50% coolant  Mixture of 30% coolant						ool	Every 1000 hrs.	18 L (19 US qt)			
Travel reduction gear	Gear oil API: GL-4	'			S	AE 9	90				Every 500 hrs. after the first 250 hrs.*	1.6 L × 2 (1.7 US qt × 2)	
Track roller A and C	Engine oil API: CD class or above	SAE 30				-	0.18 L (6.09 fl oz)						
Track roller B	Mobil SHC Gear 680	-						-	0.17 L (5.75 fl oz)				
Idler	Mobil SHC Gear 680	-									-	0.17 L (5.75 fl oz)	
Working equip- ment Lever/pedal	Lithium grease EP-2 NLGI No. 2	-								Daily or every 10 hrs. When required	As required		

- \* If the ratio of traveling time to total operating time is high, replace the gear oil earlier than the specified time.
- \*\* For water, use tap water (soft). Do not use well or river water.

  When the ambient temperature drops below 0°C (32°F), add coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.



2C0BO

- Track roller A
- 2 Track roller B
- 3 Track roller C

#### **TABLE OF LUBRICANT**

**TB20E** 

Use lubricant and grease depending on temperature, referring to the table below.

- If lubricant or grease becomes very dirty or significant performance decrease is found, replace them as soon as possible.
- Do not add a different type of oil. When changing the brand of lubricant or grease, replace the total amount of it. Do
  not mix the brand with a different one.

#### Lubricant

Where the lubricant		Us	e de	per	din	g o	n te	When to replace or re-				
is replenished	Туре	-20				50 10			86 30	104°F 40°C		When to replace or re- plenish the lubricant
	Takeuchi genuine hydraulic oil 46					ISC	) VC	346	<b>5</b>			Every 4000 hours**
Hydraulic oil tank	Bio-oil recommended by Takeuchi*** Mobil EAL Envirosyn H 46, Panolin HLP Synth 46				IS		ISO VG		46			Every 4000 hours
	Anti-wear hydraulic oil			IS	SO V		) V	346 O \		68		Every 2000 hours**
Travel reduction gear	Gear oil API: GL-4				SA	λE	90					Every 1000 hours after the first 250 hours*
Slew motor pinion												Every 50 hours
Slew bearing	Lithium grease EP-2					_						Every 50 hours
Work equipment	NLGI No.2					_						Every day or every 10 hours
Lever												When necessary
Track roller	Gear oil API: GL-4				SA	AΕ	90					_
ldler	Gear oil API: GL-4				SA	Æ	90					_

If the travel time accounts for a large portion of the total operating time, replace the gear oil before the specified time.

API standard: American Petroleum Institute SAE standard: Society of Automotive Engineers

<sup>\*\*</sup> The replacement period of hydraulic oil depends on the type of the hydraulic oil used. Takeuchi genuine hydraulic oil 46 is used at the shipment of new vehicles. This manual also explains the replacement period assuming that Takeuchi genuine hydraulic oil 46 is used. When conventional anti-wear hydraulic oil is used, the hydraulic oil is replaced every 2000 hours.

<sup>\*\*\*</sup> When replacing mineral oil with bio-oil, the amount of mineral oil left in the machine should be no more than 2%, in accordance with ISO 15380.

**TB240** 

- · Regardless of the specified time, change the oil if it becomes too dirty or degraded.
- When refilling, never mix oils of different brands. If a brand is to be changed, replace all of the fuel/oil.

		S	Selection	on by	/ air t	emp	eratı	ıre	When to change/	Capacity	
Part	Type	-4 -20		32 0	50 10	68 20		104°F 40°C	replenish		
Engine oil pan	Diesel engine oil API: CJ-4 class ACEA: E6 class JASO: DH2 class		S.	AE 10	0W-3		)		500 hours or every one year***	Upper limit: 7.4 L (7.8 US qt.) Lower limit: 4.0 L (4.2 US qt.)	
	Takeuchi genuine hydraulic oil 46				ISO	VG4	16		Every 4000 hrs.***	Total amount of oil:	
Hydraulic tank	Anti-wear hydrau- lic oil			ISO		VG4		3	Every 2000 hrs.***	74 L (19.5 US gal.) Tank capacity: 41 L (10.8 US gal.)	
Engine cooling system	**Cooling water (water + coolant) SAE-J814C, J1034	Mixture of 50% coolant  Mixture of 30% coolar						olant	Every 2000 hrs.	9 L (9.5 US qt)	
Travel reduction gear	Gear oil API: GL-4	•	·	S	AE 9	0			Every 1000 hrs. after the first 250 hrs.*	0.6 L×2 (0.63 US qt.×2)	
Carrier roller	Engine oil API: CD class			S	AE 3	0			-	0.150 L (5.07 fl. oz.)	
Track roller	Engine oil API: CD class			S	AE 3	0			-	0.180 L (6.1 fl. oz)	
Idler	Engine oil API: CD class	SAE 30							-	0.150 L (5.07 fl. oz.)	
Slew bearing Working equipment Levers	Lithium grease EP-2 NLGI No. 2	-							Every 50 hrs. Daily or every 10 hrs. When required	As required	

<sup>\*</sup> If the ratio of traveling time to total operating time is high, replace the gear oil earlier than the specified time.

<sup>\*\*</sup> For water, use tap water (soft). Do not use well or river water.
When the ambient temperature drops below 0°C (32°F), add coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.

<sup>\*\*\*</sup> The replacement interval for hydraulic oil depends on the oil type being used. New machines are shipped from the factory with the Takeuchi genuine hydraulic oil 46. This manual describes when to replace the hydraulic oil assuming that this Takeuchi oil is used. When a conventional anti-wear hydraulic oil is used, replace it every 2000 hours.

<sup>\*\*\*\*</sup> Replace the engine oil and the oil filter if the machine has been operated for one year, even if the total machine operating time is less than 500 hours. Additionally, the engine oil and the oil filter need to be replaced when the total machine operating time reaches 500 hours, even if the machine has not been operated for one year.

TB290

Select the appropriate fuel, lubricant, and grease according to temperature by referring to the table below.

- · Regardless of the specified time, change the oil if it becomes too dirty or degraded.
- · When refilling, never mix oils of different brands. If a brand is to be changed, replace all of the fuel/oil.

		S	electi	on by	y air	temp	eratı	ure	When to change/		
Part	Туре	-4 -20	14 -10	32 0	50 10	68 20		104°I 40°0	replenish	Capacity	
Engine oil pan	Diesel engine oil API: CJ-4 class or above ACEA: E6 class	SAE 10W-30 SAE 15W-40							Every 250 hrs.	Upper limit: 9.4 L (9.9 US qt) Lower limit: 5.0 L (5.3 US qt)	
	Takeuchi genuine hydraulic oil 46				ISO	VG <sup>2</sup>	16		Every 4000 hrs.***	Total amount of oil:	
Hydraulic tank	Anti-wear hydrau- lic oil			ISO		32 VG <sup>2</sup> ISO		8	Every 2000 hrs.***	140 L (37.0 US gal) Tank capacity: 73 L (19.3 US gal)	
Engine cooling system	Cooling water (water + coolant)** ASTM-D6210 or D4985 JIS K-2234 SAE-J814C,	Mixture of 50% coolant  Mixture of 30% coolant						olant	Every 2000 hrs.	14 L (14.8 US qt)	
Travel reduction gear	J1941, J1034, or J2036 Gear oil API: GL-4	SAE 90							Every 1000 hrs. after the first 250 hrs.*	1.1 L (1.16 US qt)	
Carrier roller	Engine oil API: CD class	SAE 30							-	0.150 L (5.07 fl oz)	
Track roller	Engine oil API: CD class			S	AE 3	80			-	0.180 L (6.1 fl oz)	
Idler	Engine oil API: CD class	SAE 30							-	0.150 L (5.07 fl oz)	
Slew bearing Working equipment Levers	Lithium grease EP-2 NLGI No. 2	_							Every 50 hrs.  Daily or every 10 hrs.  When required	As required	
									<u> </u>		

<sup>\*</sup> If the ratio of traveling time to total operating time is high, replace the gear oil earlier than the specified time.

API standard: American Petroleum Institute

ACEA standard: European Automobile Manufacturers' Association

<sup>\*\*</sup> For water, use tap water (soft). Do not use well or river water.

When the ambient temperature drops below 0°C (32°F), add coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.

<sup>\*\*\*</sup> The replacement interval for hydraulic oil depends on the oil type being used. New machines are shipped from the factory with the Takeuchi genuine hydraulic oil 46. This manual describes when to replace the hydraulic oil assuming that this Takeuchi oil is used. When a conventional anti-wear hydraulic oil is used, replace it every 2000 hours.

Lubricant TB335R

140			e d	eper	din	g o	n te					
Where the lubricant is replenished	Туре	-20	1 -		32 0			8 8				When to replace or re- plenish the lubricant
Engine oil pan	Diesel engine oil API: CF, CG, CH-4, CI-4 class			SA	SAE 15W-							Every 250 hours after the first 50 hours
	Takeuchi genuine hy- draulic oil 46					ISC	) V(	G46	 			Every 4000 hours***
Hydraulic oil tank	Bio-oil recommended by Takeuchi**** Mobil EAL Envirosyn H 46, Panolin HLP Synth 46					ISO VG4		G46	46			Every 4000 hours
	Anti-wear hydraulic oil		ISO VG32 ISO VG46 ISO VG68							Every 2000 hours***		
Engine cooling system	Cooling water (water + coolant)** SAE: J814C or J1034		Mix	ture	of 5	0%	cod	olan	t			Every 2000 hours or every 2 years, whichever is earlier
Travel reduction gear	Gear oil API: GL-4				S	SAE 90						Every 1000 hours after the first 250 hours*
Slew bearing	Lithium grease											Every 50 hours
Work equipment	NLGI No.2					_						Every day or every 10 hours
Carrier roller	Gear oil API: GL-4				S	AE 9	90					_
Track roller	Gear oil API: GL-4				SAE 90							_
Idler	Gear oil API: GL-4				S	AE 9	90					_

<sup>\*</sup> If the travel time accounts for a large portion of the total operating time, replace the gear oil before the specified time.

API standard: American Petroleum Institute SAE standard: Society of Automotive Engineers

<sup>\*\*</sup> Use tap water (soft water). Do not use well water or river water. When the outside temperature drops below 0°C, add coolants (antifreeze). Decide a mixture ratio according to the instruction manual of the coolant manufacturer.

<sup>\*\*\*</sup> The replacement period of hydraulic oil depends on the type of the hydraulic oil used. Takeuchi genuine hydraulic oil 46 is used at the shipment of new vehicles. This manual also explains the replacement period assuming that Takeuchi genuine hydraulic oil 46 is used. When conventional anti-wear hydraulic oil is used, the hydraulic oil is replaced every 2000 hours.

<sup>\*\*\*\*</sup> When replacing mineral oil with bio-oil, the amount of mineral oil left in the machine should be no more than 2%, in accordance with ISO 15380.

Lubricant TB350R

		Us	se d	lepe	ndiı	ng	on t					
Where the lubricant is replenished	Туре		-	14 ·10						104 40		When to replace or re- plenish the lubricant
Engine oil pan	Diesel engine oil API: CJ-4 or CK-4 class		T	SA			0W-30 E 15W-40					After 50 hours for the first time, then every 250 hours thereafter
	Takeuchi genuine hy- draulic oil 46					IS	0 V	G4	6			Every 4000 hours***
Bio-oil recommended b Takeuchi**** Mobil EAL Envirosyn H 46, Panolin HLP Synth 46						IS	0 V	G4	6			Every 4000 hours
	Anti-wear hydraulic oil			IS	so '		32 O VG46 ISO VG		_	668		Every 2000 hours***
Engine cooling system	Cooling water (water + coolant)** SAE: J814C or J1034		Mix	ture	of 5	50%	6 CO	olaı	nt			Every 2000 hours or every 2 years, whichever is earlier
Travel reduction gear	Gear oil API: GL-4				S	SAE	90					After 250 hours for the first time, then every 1000 hours thereafter*
Slew bearing  Work equipment	Lithium grease EP-2 NLGI No.2				_			_				Every 50 hours Every day or every 10 hours
Carrier roller	Engine oil API: CD				S	SAE	30					_
Track roller	Gear oil EP 220 HK oil or equiva- lent				S	SAE	90					_
Idler	Engine oil API: CD				S	SAE	30					_

- \* If the travel time accounts for a large portion of the total operating time, replace the gear oil before the specified time.
- \*\* Use tap water (soft water). Do not use well water or river water. When the ambient temperature drops below 0°C (32°F), add coolants (antifreeze). Decide a mixture ratio according to the instruction manual of the coolant manufacturer.
- \*\*\* The replacement period of hydraulic oil depends on the type of the hydraulic oil used. Takeuchi genuine hydraulic oil 46 is used in new vehicles. This manual also explains the replacement period assuming that Takeuchi genuine hydraulic oil 46 is used. When conventional anti-wear hydraulic oil is used, replace the hydraulic oil every 2000 hours.
- \*\*\*\* When replacing mineral oil with bio-oil, the amount of mineral oil left in the machine should be no more than 2%, in accordance with ISO 15380.

API standard: American Petroleum Institute SAE standard: Society of Automotive Engineers

Lubricant TB210R

Location	Туре	Type by air temperature -4 14 32 50 68 86 104°F -20 -10 0 10 20 30 40°C	When to replace
Engine oil pan	Diesel engine oil API: CF, CF-4, CG-4, CH-4 or CI-4 class	SAE 10W-30 SAE 15W-40	Every 250 hrs. after the initial 50 hrs.
Hydraulic oil	Biodegradable oil recommended by Takeuchi*** Mobil EAL Envirosyn 46H Panolin HLP Synth 46	ISO VG46	Every 2000 hrs.
tank	Anti-wear hydraulic oil	ISO VG32 ISO VG46 ISO VG68	Every 2000 Tills.
Engine cooling system	Cooling water (water + coolant)** SAE: J814C or J1034	Mixture of 50% coolant  Mixture of 30% coolant	Every 1000 hrs.
Travel reduction gear	Gear oil API: GL-4	SAE 90	Every 1000 hrs after the initial 250 hrs*.
Slew motor pinion			Every 50 hrs.
Slew bearing	Lithium based grease		Every 50 hrs.
Working equipment	EP-2 NLGI No.2	_	Daily or every 10 hrs.
Levers			When required

<sup>\*:</sup> If the ratio of traveling time to total operating time is high, replace the gear oil earlier than the specified time.

API standard: American Petroleum Institute

ACEA standard: Association des Constructeurs Européens d'Automobiles

<sup>\*\*:</sup> For water, use tap water (soft). Do not use well or river water. When the ambient temperature drops below 0°C (32°F), add coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.

<sup>\*\*\* :</sup>When replacing a mineral oil with a biodegradable oil, the residual mineral oil in the machine should be about 2% or less, as complying with the ISO 15380. For details, refer to "Biodegradable oil" on page 8-8.

Lubricant TB370

Where the lubricant is replenished	Туре	Use depending on temperature -4 -14 32 50 68 86 104°F -20 -10 0 10 20 30 40°C	When to replace or replenish the lubricant
Engine oil pan	Diesel engine oil API: CJ-4 class	SAE 10W-30 SAE 15W-40	The first 50 hours Every 500 hours after the 50 hours
	Takeuchi genuine hydraulic oil 46	ISO VG46	Every 4000 hours***
Hydraulic oil tank	Anti-wear hydraulic oil	ISO VG32 ISO VG46 ISO VG68	Every 2000 hours***
Engine cooling system	Cooling water (water + coolant)** SAE: J814C or J1034 ASTM: D3306 JIS: K2234	50 % coolant mixture	Every 2000 hours or every two years, whichever is earlier
Travel reduction gear	Gear oil API: GL-4	SAE 90	Every 1000 hours after the first 250 hours*
Slew bearing Work equipment	Lithium grease EP-2 NLGI No.2	-	Every 50 hours Every day or every 10 hours
Carrier roller	Engine oil API: CD	SAE 30	-
Track roller	Gear oil API: GL-3	-	-
Idler	Engine oil API: CD	SAE 30	-

TB225

Select the appropriate fuel, lubricant, and grease according to temperature by referring to the table below.

- Regardless of the specified time, change the oil if it becomes too dirty or degraded.
- · When refilling, never mix oils of different brands. If a brand is to be changed, replace all of the fuel/oil.

		S	electi	on by	air t	temp	erat	ure		When to change/		
Part	Туре	-4	14		50	68			4°F	replenish	Capacity	
		-20	-10	0	10	20	30	4	0°C			
	Diesel engine oil					$\perp$	_				Upper limit:	
Engine oil pan	API: CD class	SAE 10W-30 SAE 15W-40							Every 250 hrs	3.4 L (3.6 US qt)		
	ACEA: E-3, E-4 or E-5			SA	E 15	W-4	0			-	Lower limit: 1.8 L (1.9 US qt)	
	Takeuchi genuine				ISO	VG4	16			Every 4000 hrs***		
	hydraulic oil 46			$\top$		7040				2007 4000 1110	Total assessment of ails	
				+	+	+	+				Total amount of oil: 36 L (9.5 US gal)	
Hydraulic oil tank				SO \	/G32	2					Tank capacity:	
	Anti-wear hydrau-		$\top$		ISO	VG	16			Every 2000 hrs***	26 L (6.9 US gal)	
	IIC OII			Т		ISC	VG	68				
					Т	Т	Т					
	Cooling water											
Engine cooling	(water + coolant)**		4: .		-00/	Ц.				2000 hours or ev-		
system	SAE-J814C or	I	/lixture					-1-	4	ery 2 years	4 L (4.2 US qt)	
	-J1034			IVIIX	ure o	1 30	% CC	ola	ınt			
Travel reduction gear	Gear oil API: GL-4			S	AE 9	0				Every 1000 hrs af- ter the first 250 hrs*	0.33 L (0.35 US qt)	
Carrier roller	Engine oil			S	AE 9	0				_	0.010~0.020 L	
- Carrier	API: GL-4										(0.338~0.676 fl oz)	
Track roller	Gear oil API: GL-4	SAE 90								-	0.040~0.050 L (1.353~1.691 fl oz)	
Idler	Engine oil API: GL-4	SAE 90								-	0.040~0.050 L (1.353~1.691 fl oz)	
Slew bearing	Lithium grease									Every 50 hrs		
Working equipment	I				-					Daily or every 10 hrs	As required	
Levers	NLGI No. 2									When required		

<sup>\*</sup> If the ratio of traveling time to total operating time is high, replace the gear oil earlier than the specified time.

API Standards: American Petroleum Institute

ACEA Standards: European Automobile Manufacturers' Association

<sup>\*\*</sup> For water, use tap water (soft). Do not use well or river water.

When the ambient temperature drops below 0°C (32°F), add coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.

<sup>\*\*\*</sup> The replacement interval for hydraulic oil depends on the type of oil being used. New machines are shipped from the factory with the Takeuchi genuine hydraulic oil 46. This manual describes when to replace the hydraulic oil assuming that this Takeuchi oil is used. When a conventional anti-wear hydraulic oil is used, replace it every 2000 hours.

TB1140

- Regardless of the specified time, change the oil if it becomes too dirty or degraded.
- · When refilling, never mix oils of different brands. If a brand is to be changed, replace all of the fuel/oil.

		Sele	ection	by air	temp	erati	ure	When to change/		
Part	Type	-4 -20 -		32 50 0 10			104°F 40°C	replenish	Capacity	
Engine oil pan	Diesel engine oil API: CJ-4		SAE	10W-	30			Every 500 hrs. after the first 50 hrs.	Upper limit: 17 L (18.0 US qt.) Lower limit: 13 L (13.7 US qt.)	
	Takeuchi genuine hydraulic oil 46			ISC	) VG	16		Every 4000 hrs.***	Total amount of oil:	
Hydraulic tank	Anti-wear hydrau- lic oil		15	SO VG	32 0 VG4 ISO		<u> </u>	Every 2000 hrs.***	215 L (56.8 US gal.) Tank capacity: 95 L (25.1 US gal.)	
Engine cooling system	Cooling water (water + coolant)** SAE-J814C, J1941, J1034, or J2036 ASTM-D6210 or D4985 (USA)	Mix	_	of 50%			olant	Every 1000 hrs.	18.5 L (19.5 US qt.)	
Slew reduction gear	Gear oil API: GL-4	·		SAE	90			Every 1000 hrs. after the first 250 hrs.*	5.3 L (5.6 US qt.)	
Travel reduction gear	Gear oil API: GL-4			SAE	90			Every 1000 hrs. after the first 250 hrs.*	2.1 L (2.2 US qt.)	
Carrier roller	Engine oil API: CD class			SAE	30			-	0.05 L (1.7 fl. oz.)	
Track roller	Gear oil API: GL-3		18	SO VG	220			_	0.29 L (9.8 fl. oz.)	
Idler	Engine oil API: CD class		S	AE 10	W-30			_	0.20 L (6.8 fl. oz.)	
Slew bearing Working equipment Levers	Lithium grease EP-2 NLGI No. 2			_				Every 500 hrs.  Daily or every 10 hrs.  When required	As required	
	+								-	

<sup>\*</sup> If the ratio of traveling time to total operating time is high, replace the gear oil earlier than the specified time.

<sup>\*\*</sup> For water, use tap water (soft). Do not use well or river water.

When the ambient temperature drops below 0°C (32°F), add coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.

<sup>\*\*\*</sup> The replacement interval for hydraulic oil depends on the type of oil being used. New machines are shipped from the factory with the Takeuchi genuine hydraulic oil 46. This manual describes when to replace the hydraulic oil assuming that this Takeuchi oil is used. When a conventional anti-wear hydraulic oil is used, replace it every 2000 hours.

TB230

- Regardless of the specified time, change the oil if it becomes too dirty or degraded.
- When refilling, never mix oils of different brands. If a brand is to be changed, replace all of the fuel/oil.

		5	Selecti	on by	/ air t	emp	erati	ure	When to change/		
Part	Type	-4 -20			50 10			104°F 40°C	replenish	Capacity	
Engine oil pan	Diesel engine oil API: CF class or higher ACEA: E3/E4/E5 class JASO: DH1 class		S	AE 1	0W-3		)		Every 250 hrs.	Upper limit: 4.7 L (3.8 US qt.) Lower limit: 2.9 L (2.5 US qt.)	
	Takeuchi genuine hydraulic oil 46				ISO	VG <sup>2</sup>	16		Every 4000 hrs.***	Total amount of oil:	
Hydraulic tank	Anti-wear hydrau- lic oil			ISO		VG4	16 VG68	3	Every 2000 hrs.***	56 L (14.8 US gal.) Tank capacity: 35 L (9.2 US gal.)	
Engine cooling system	**Cooling water (water + coolant) SAE-J814C, J1034		Mixture					olant	Every 2000 hrs.	4 L (4.2 US qt)	
Travel reduction gear	Gear oil API: GL-4	SAE 90							Every 1000 hrs. after the first 250 hrs.*	0.5 L×2 (0.53 US qt.×2)	
Carrier roller	Engine oil API: GL-4			S	AE 9	0			-	0.045 L (1.5 fl. oz.)	
Track roller	Engine oil API: GL-4	SAE 90							-	0.070 L (2.4 fl. oz)	
Idler	Engine oil API: GL-4	SAE 90							_	0.040 L (1.4 fl. oz.)	
Slew bearing Working equipment Levers	Lithium grease EP-2 NLGI No. 2	_							Every 50 hrs.  Daily or every 10 hrs.  When required	As required	

<sup>\*</sup> If the ratio of traveling time to total operating time is high, replace the gear oil earlier than the specified time.

<sup>\*\*</sup> For water, use tap water (soft). Do not use well or river water.

When the ambient temperature drops below 0°C (32°F), add coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.

<sup>\*\*\*</sup> The replacement interval for hydraulic oil depends on the oil type being used. New machines are shipped from the factory with the Takeuchi genuine hydraulic oil 46. This manual describes when to replace the hydraulic oil assuming that this Takeuchi oil is used. When a conventional anti-wear hydraulic oil is used, replace it every 2000 hours.

TB2150

Select the appropriate fuel, lubricant, and grease according to temperature by referring to the table below.

- · Regardless of the specified time, change the oil if it becomes too dirty or degraded.
- · When refilling, never mix oils of different brands. If a brand is to be changed, replace all of the fuel/oil.

		S	elect	ion by	/ air	temp	eratı	ure	T		
Part	Туре	-4 -20	14	32		68	86	104°F 40°C	replenish	Capacity	
Engine oil pan****	Diesel engine oil Shell Rimula R6 LM 10W-40	20		nell Ri		a R6	1		500 hours or every 1 year	Upper limit: 10 L (10.6 US qt.) Lower limit:	
	2111 1011 10									9 L (9.5 US qt.)	
	Takeuchi genuine hydraulic oil 46				ISO	VG <sup>2</sup>	16		Every 4000 hrs.***	Total amount of oil:	
Hydraulic tank	Anti-wear hydrau- lic oil			ISO		32 VG4 ISO		8	Every 2000 hrs.***	234 L (61.8 US gal.) Tank capacity: 107 L (28.1 US gal.)	
Engine cooling system	Cooling water (water + coolant)** SAE-J814C, J1941, J1034, or J2036 ASTM-D6210 or D4985 (USA)	N	⁄lixtur	re of 5	- / -			olant	1000 hours or every 2 years	27 L (28.5 US qt.)	
Slew reduction gear	Gear oil API: GL-4			S	AE 9	90			Every 1000 hrs. af- ter the first 250 hrs.*	5.3 L (5.6 US qt.)	
Travel reduction gear	Gear oil API: GL-4			s	AE 9	90			Every 1000 hrs. after the first 250 hrs.*	2.1 L (2.2 US qt.)	
Carrier roller	Engine oil API: CD class			S	AE 3	80			-	0.05 L (1.7 fl. oz.)	
Track roller	Gear oil API: GL-3			ISO	VG	220			-	0.29 L (9.8 fl. oz.)	
Idler	Engine oil API: CD class			SAE	10V	V-30			-	0.20 L (6.8 fl. oz.)	
Slew bearing Working equipment Levers	Lithium grease EP-2 NLGI No. 2				-				Every 500 hrs.  Daily or every 10 hrs.  When required	As required	

<sup>\*</sup> If the ratio of traveling time to total operating time is high, replace the gear oil earlier than the specified time.

API Standards: American Petroleum Institute

ACEA Standards: European Automobile Manufacturers' Association

DQC: An abbreviation of DEUTZ Quality Class.

<sup>\*\*</sup> For water, use tap water (soft). Do not use well or river water.

When the ambient temperature drops below 0°C (32°F), add coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.

<sup>\*\*\*</sup> The replacement interval for hydraulic oil depends on the type of oil being used. New machines are shipped from the factory with the Takeuchi genuine hydraulic oil 46. This manual describes when to replace the hydraulic oil assuming that this Takeuchi oil is used. When a conventional anti-wear hydraulic oil is used, replace it every 2000 hours.

<sup>\*\*\*\*</sup> Shows the engine oil when the machine was shipped. When using other types of oil, see "Diesel engine oil list DQC IVLA". (Refer to the Engine Instruction Manual )

TB235-2

Select the appropriate fuel, lubricant, and grease according to temperature by referring to the table below.

- · Regardless of the specified time, change the oil if it becomes too dirty or degraded.
- · When refilling, never mix oils of different brands. If a brand is to be changed, replace all of the fuel/oil.

		5	Selecti	on by	/ air	temp	erat	ure		When to change/		
Part	Туре	-4 -20		32 0	50 10	68 20		-	4°F 0°C	replenish	Capacity	
Engine oil pan	Diesel engine oil API: CF class or above ACEA: E3/E4/E5 class JASO: DH-1 class				10V 15V					Every 250 hr	Upper limit: 4.7 L (5 US qt) Lower limit: 2.9 L (3.1 US qt)	
	Takeuchi genuine hydraulic oil 46				ISO	VG	46			Every 4000 hr***	Total amount of oil:	
Hydraulic tank	Anti-wear hydrau- lic oil			ISO	_	VG4		8		Every 2000 hr***	68 L (18 US gal) Tank capacity: 35 L (9.2 US gal)	
Engine cooling system	Cooling water (water + coolant)** SAE-J814C, J1941, J1034, or J2036 ASTM-D6210 or D4985 (USA)		Mixtur	e of 5				oola	nt	Every 2000 hr or 2 years	4 L (4.2 US qt)	
Travel reduction gear	Gear oil API: GL-4			S	AE 9	00				Every 1000 hr after the first 250 hr*	0.5 L (0.53 US qt)	
Carrier roller	Gear oil			S	AE 9	0				_	0.045 L (1.5 fl oz)	
Track roller	Gear oil		SAE 90							-	0.070 L (2.4 fl oz)	
Idler	Gear oil API: GL-4	SAE 90								-	0.035 L (1.2 fl oz) to 0.045 L (1.5 fl oz)	
Slew bearing Working equipment Levers	Lithium grease EP-2 NLGI No. 2	_								Every 50 hr Daily or every 10 hr When required	As required	

- \* If the ratio of traveling time to total operating time is high, replace the gear oil earlier than the specified time.
- \*\* For water, use tap water (soft). Do not use well or river water.

  When the ambient temperature drops below 0°C (32°F), add coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.
- \*\*\* The replacement interval for hydraulic oil depends on the type of oil being used. New machines are shipped from the factory with the Takeuchi genuine hydraulic oil 46. This manual describes when to replace the hydraulic oil assuming that this Takeuchi oil is used. When a conventional anti-wear hydraulic oil is used, replace it every 2000 hours.

API Standards: American Petroleum Institute

ACEA Standards: European Automobile Manufacturers' Association

JASO Standards: Society of Automotive Engineers of Japan

SAE Standards: SAE International (Society of Automotive Engineers)

**TB2150R** 

Select the appropriate fuel, lubricant, and grease according to temperature by referring to the table below.

- · Regardless of the specified time, change the oil if it becomes too dirty or degraded.
- · When refilling, never mix oils of different brands. If a brand is to be changed, replace all of the fuel/oil.

		S	electi	ion by	/ air						
Part	Туре	-4	14	32	50	68	86	104°F	When to change/ replenish	Capacity	
		-20	-10	0	10	20	30	40°C			
Engine oil pan****	Diesel engine oil Shell Rimula R6 LM 10W-40		Sh	nell Ri	imula 0W-4		LM		500 hours or every 1 year	Upper limit: 10 L (10.6 US qt) Lower limit: 9 L (9.5 US qt)	
	Takeuchi genuine hydraulic oil 46		ISO VG46 Every						Every 4000 hrs.***		
Hydraulic tank	Anti-wear hydrau- lic oil			ISO	_	32 VG4		<u> </u>	Every 2000 hrs.***	Total amount of oil: 235 L (62.1 US gal) Tank capacity: 102 L (26.9 US gal)	
Engine cooling system	Cooling water (water + coolant)** SAE-J814C, J1941, J1034, or J2036 ASTM-D6210 or D4985 (USA)	N	/lixtur					olant	1000 hours or ev- ery 2 years	27 L (28.5 US qt)	
Slew reduction gear	Gear oil API: GL-4	'		s	AE 9	90			Every 1000 hrs. after the first 250 hrs.*	5.3 L (5.6 US qt)*1 2.0 L (2.1 US qt)*2	
Travel reduction gear	Gear oil API: GL-4			s	AE 9	90			Every 1000 hrs. after the first 250 hrs.*	2.1 L (2.2 US qt)	
Carrier roller	Engine oil API: CD class			S	AE 3	80			_	0.05 L (1.7 fl oz)	
Track roller	Gear oil API: GL-3			ISO	VG	220			-	0.29 L (9.8 fl oz)	
Idler	Engine oil API: CD class			SAE	10V	V-30			-	0.20 L (6.8 fl oz)	
Slew bearing	Lithium grease								Every 500 hrs.		
Working equipment		-						Daily or every 10 hrs.	As required		
Levers	NLGI No. 2								When required		

- \* If the ratio of traveling time to total operating time is high, replace the gear oil earlier than the specified time.
- \*\* For water, use tap water (soft). Do not use well or river water.

  When the ambient temperature drops below 0°C (32°F), add coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.
- \*\*\* The replacement interval for hydraulic oil depends on the type of oil being used. New machines are shipped from the factory with the Takeuchi genuine hydraulic oil 46. This manual describes when to replace the hydraulic oil assuming that this Takeuchi oil is used. When a conventional anti-wear hydraulic oil is used, replace it every 2000 hours.
- \*\*\*\* Shows the engine oil when the machine was shipped. When using other types of oil, see "Diesel engine oil list DQC IVLA". (Refer to the Engine Instruction Manual)

API Standards: American Petroleum Institute

ACEA Standards: European Automobile Manufacturers' Association

DQC: An abbreviation of DEUTZ Quality Class.

- \*1 **SN** 514800002 to 514800667
- \*2 SN 514800668 or later