

13. MAINTENANCE

- For each of the checkpoints listed below, check and service at the intervals indicated in the table.
- For the inspection and maintenance procedures, for details, see "Chapter 14. PERIODIC SERVICE" on page 14-1.

Table 13-1

1. Maintenance Check List

Topic		Time	Service Intervals																	
			Daily	If Necessary	Every 50 hours	Every 250 hours	Every 500 hours	Every 1000 hours	Every 1500 hours	Every 2000 hours	Every 1 year	Every 2 years								
													✓: By user ●:By authorized Yanmar dealer or distributor							
Engine Oil Level	Check	Daily	✓																	
Transmission Hydraulic Oil Level	Check	Daily	✓																	
Tire Air Pressure	Check	Daily	✓																	
Grille	Check	Daily	✓																	
Fuel Tank	Check/Refill	Daily	✓																	
Rubber Dust Unloading Valve	Check	Daily	✓																	
Radiator Hose and Clamp	Check	Daily Every 500hr or 2 years whichever occurs first	✓					●*1												●*1
	Replace	If Necessary		●																
Radiator Cooling Screen	Check	Daily	✓																	
Safety Systems	Check	Daily	✓																	
Radiator Cooling Fins	Clean	Every 50 hr			✓															
Cooling System	Check	Daily	✓																	
Coolant	Flush/Change	Every 2000hr or 2 years whichever occurs first												●*1						●*1
Fuel Line	Check	Daily Every 500hr or 2 years whichever occurs first	✓					●*1												●*1
	Replace	If Necessary		●																
Power Steering Line	Check	Daily Every 500hr or 2 years whichever occurs first	✓					●*1												●*1
	Replace	If Necessary		●																
Seatbelt	Check	Daily Every 500hr or 2 years whichever occurs first	✓					●*1												●*1
	Replace	If necessary		●																
Roll-Over Protective Structure (ROPS)	Check	Daily Every 500hr or 2 years whichever occurs first	✓					●*1												●*1
	Replace	If necessary		●																
Headlights, Hazard Lights, and all other lights (lights and/or bulbs).	Check	Daily Every 500hr or 2 years whichever occurs first	✓					●*1												●*1
	Replace	If necessary		✓																
Fan and Alternator Belt	Inspect	Every 50 hr			✓															
	Adjust	50/250 hr and every 250hr after or every year whichever occurs first			● 1 st time		●*1													●*1
	Replace	If Necessary		●																
Air Cleaner Element	Check/Clean	Every 250 hr and if necessary	✓					●*3												
	Replace	Every 500 hr or every year whichever occurs first and if necessary		●				●*1												●*1
Fuses	Replace	If necessary		●																
Battery Condition	Check	Every 50hr			✓															
Fuel Filter	Replace	Every 500 hr or every 2 years whichever occurs first						●*1												●*1

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Topic		Time	✓: By user ●:By authorized Yanmar dealer or distributor											
			Service Intervals											
			Daily	If Necessary	Every 50 hours	Every 250 hours	Every 500 hours	Every 1000 hours	Every 1500 hours	Every 2000 hours	Every 1 year	Every 2 years		
Fuel/Water Separator	Check	Daily	✓											
	Drain	Every 50 hr and if necessary		✓	✓									
	Replace	Every 500 hr or every 2 years whichever occurs first					●*1							●*1
Wheel Bolt Tightening Torque	Check	After one hour of break -in and every 50 hr Every 250 hr or every 1 year whichever occurs first			✓*2	●*1								●*1
Engine Oil	Change	Every 250 hr or every year whichever occurs first				●*1								●*1
Engine Oil Filter	Replace	Every 250 hr or every year whichever occurs first				●*1								●*1
Transmission Hydraulic Oil	Change	50/500 hr and every 500hr after			●1 st time		●							
Transmission Hydraulic Oil Filter	Replace	50/500 hr and every 500hr after			●1 st time		●							
HST Hydraulic filter	Replace	50/500 hr and every 500hr after			●1 st time		●							
Hydraulic hose	Check	Daily Every 500hr or 2 years whichever occurs first	✓				●*1							●*1
	Replace	If Necessary		●										
Grease fittings	Grease	Every 50 hr			✓*4									
Front Axle Pivot	Grease	Every 50hr			✓*4									
Air Intake Hoses and Clamps	Check	50/250 hr and every 250hr after or every year whichever occurs first			●1 st time	●*1								●*1
	Replace	If Necessary		●										
Front Axle Gear Oil	Check	Every 50hr			✓									
	Change	Every 500hr					●							
Brake	Check	Daily	✓											
	Adjust	Every 500hr					●							
	Replace	If necessary		●										
Engine Valve Clearance*6	Adjust	Every 1000hr						●						
Fuel Injection Nozzle*6	Check	Every 1500hr							●					
Intake/exhaust valve seats*6	Clean	Every 2000hr								●				
Governer lever and engine speed control*6	Check and adjust	Every 250hr				●								
Crankcase breather system*6	Inspect	Every 1500hr								●				

For assistance in periodic maintenance procedures, contact YOUR LOCAL YANMAR TRACTOR DEALER.

NOTE

- Check the wheel bolt tightening torque after one hour of break-in.

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CAB type

Periodic inspection list (CAB type)

Topic		Time	✓: By user ●:By authorized Yanmar dealer or distributor											
			Service Intervals											
			Daily	If Necessary	Every 50 hours	Every 250 hours	Every 500 hours	Every 1000 hours	Every 1500 hours	Every 2000 hours	Every 1 year	Every 2 years		
External air introduction filter	Clean	Every 250 hr and if necessary		✓			● ^{*3}							
	Replace	Every 500hr or 2 years whichever occurs first						● ^{*1}						● ^{*1}
Warm water piping	Check	Every 500hr or 2 years whichever occurs first						● ^{*1}						● ^{*1}
	Replace	If Necessary		●										
Wascher Liquid tank	Check/refill	Daily	✓											

Attachments^{*6}

Periodic inspection list (Attachments^{*6})

Topic		Time	✓: By user ●:By authorized Yanmar dealer or distributor											
			Service Intervals											
			Daily	If Necessary	Every 50 hours	Every 250 hours	Every 500 hours	Every 1000 hours	Every 1500 hours	Every 3000 hours	Every 1 year	Every 2 years		
Front Lift hydraulic lines. Check for leakages	Check	Daily 50/500 hr and every 500 hr after	✓		● ^{1st time}		●							
Front lift	Grease	Every 50 hr			✓ ^{*4}									
Front Lift and front PTO bolts on torque	Check	50/500 hr and every 500 hr after			● ^{1st time}		● ^{*1}							● ^{*1}
Front PTO grease nipples	Grease	Every 500 hr					●							
Front PTO gear oil ^{*5}	Check	Every 250 hr				●								
	Replace	Every 500hr or every year whichever occurs first						● ^{*1}					● ^{*1}	
Front PTO oil filter ^{*5}	Clean	Every 500hr or every year whichever occurs first						● ^{*1}					● ^{*1}	
	Replace	If Necessary		●										
Drawbar	Grease	Every 50 hr			✓									
	Check	50/500 hr and every 500hr after			● ^{1st time}		●							

*1 Whichever occurs first.

*2 Check the Wheel bolt Tightening torque after one hour of break -in

*3 At Dusty Conditions: Clean filter once every 50 operating hours.

*4 Extremely Wet or Muddy Conditions: Lubricate the grease fittings once every 10 operating hours or once a day.

*5 For SA424 only

*6 Dealer can find descriptions of this maintenance on YDS (Manual, Bulletin or Service News)

2. Diesel Fuel Specifications

2-1. Diesel fuel regulation

Diesel fuel should comply with the EN590:96.

2-2. Additional technical fuel requirement

- Sulphur content not greater than 10 mg/kg (15 mg/kg at point of final distribution)
- Cetane number not less than 45

2-3. Bio-diesel fuel

In consistency with other global diesel engine manufacturers and diesel fuel injection equipment manufacturers, Yanmar encourages the development of renewable compression ignition fuels and wishes to clarify our position on the use of biodiesel fuels in Yanmar Industrial Engines.

Non-mineral oil based fuel resources such as RME (Rapeseed Methyl Ester) and SOME (Soybean Methyl Ester), collectively known as FAME (Fatty Acid Methyl Esters), are being used as extenders for mineral oil derived diesel fuels.

After Yanmar conducted the applicability evaluation, Yanmar approves the use of B7 (up to 7 % FAME) Diesel which shall not exceed a blend of 7 % (by volume) of FAME with 90 % (by volume) of approved mineral oil derived diesel fuel in Yanmar Industrial Engines.

Yanmar's limited warranty conditions in case certain engines manufactured by Yanmar are operated with B7 Diesel are as follows:

1. Yanmar accepts the use of B7 Diesel only on the conditions that:
 - B7 Diesel must comply with "the European standard EN14214 and EN590-2009 (for Oxidation stability)" in Europe.
2. Please purchase B7 Diesel only from recognized and authorized diesel fuel suppliers.
3. Please use only B7 Diesel including methanol as the above relevant regulations state; otherwise, it may cause corrosion in aluminum and zinc fuel injection equipment components.
4. Please use only B7 Diesel contained certain water level as the above relevant regulations state; otherwise, it may cause fuel filters plugged and also may increase bacterial growth.
5. Please use only B7 Diesel with low viscosity at high temperatures; otherwise, it may cause problems on fuel delivery, injection pump seizures and poor injection nozzle spray atomization.

6. Please check the engine oil level daily. If the oil level rises above the oil level of the previous day, the engine oil needs to be immediately replaced.
7. Please check and confirm the quality of B7 Diesel and other fuel tanks before you will start to use it. Please keep daily maintenance during the use of B7 Diesel and do not forget to regularly flush the fuel system and fuel storage containers. You may only use B7 Diesel at least within two (2) months from the time of filling the tank or three (3) months from the time of production by the said fuel suppliers, whichever comes first.

Yanmar does not warrant and is not responsible for any problems caused by the use of the deteriorated B7 Diesel or by the use of the B7 Diesel which do not comply with the above relevant regulations.

Consult your YANMAR tractor dealer before using the recommended biodiesel.

The engine of this machine uses precision parts in the fuel injection parts to comply with emission regulations. When storing fuel to be used, avoid using containers made of zinc plated steel sheet, but use resin or stainless metal containers. If the zinc or lead material melt into the fuel, it may cause engine malfunction.

3. Lubricants

Table 13-2

No.	Locations		Capacities			Lubricants	
			UNIT	SA221	SA424		
1	Fuel		L	23.0		No.2-D diesel fuel No.1-D diesel fuel if temperature is below -10°C (14°F)	
2	Coolant		L	CAB: 3.3 ROPS: 2.8		High Quality Permanent Type Antifreeze (Ethylene Glycol with corrosion and rust inhibitor chemicals) Coolant Mixture Ratio Distilled Water 50%: Antifreeze 50%	
3	Engine crankcase (with filter)		L	2.9	3.4	ACEA Service Categories E3, E4, or E5 SAE 10W-30 or SAE 10W-40	
4	Transmission hydraulic oil		L	15.5		Hydraulic/Transmission Fluid (TF500A)	
5	Front axle gear oil		L	3.0		SAE 80W-90 gear oil	
6	Greasing	Tie rod	No. of greasing point	2		Until grease overflows	NLGI GRADE No.2
		Brake pedal	No. of greasing point	1		Until grease overflows	NLGI GRADE No.2
		HST pedal	No. of greasing point	1		Until grease overflows	NLGI GRADE No.2

(Specifications and design are subject to change without prior notice for improvement.)

***NOTE**

- Immediately after purchasing the tractor:
 - adjust the coolant mixture ratio of the coolant and water to suite the local climate
 - the preceding practice assists in making the tractor function efficiently
- The coolant can remain unchanged for a period of 2 years:
 - if during the period the tractor is operated for less than 2000 hours
 - if the tractor is operated for more than 2000 hours during the period, the coolant has to be replaced during flushing of the system
- After pouring the coolant, run the engine for a short period to mix the two fluids thoroughly.

4. Replacement Parts

■ Technical Document

For a copy of the Illustrated Parts List or the Technical Manual of the tractor, contact YOUR LOCAL YANMAR TRACTOR DEALER.

■ Parts

Use Yanmar lubricants available from YOUR LOCAL YANMAR TRACTOR DEALER.

NOTE

- Only use the Yanmar authentic parts. Non-authentic parts can cause serious damage and accidents.

When ordering a part, tell YOUR LOCAL YANMAR TRACTOR DEALER the tractor serial number and engine serial number. For details, see "Chapter 2. SERVICE THE TRACTOR" on page 2-1.

Part Numbers

Table 13-3

Item	Part Number	
	SA221	SA424
Engine Oil Filter	119305-35160	
Transmission Hydraulic Oil Filter	198119-48310	
HST Oil Filter	198167-24900	
Air Cleaner Outer Filter	1A8330-05110	
Fuel Filter Element	119810-55650	
Alternator Belt	25152-003500	25152-003600
1 Amp Fuse	1A8426-52800	
5 Amp Fuse	198535-52110	
10 Amp Fuse	198535-52120	
15 Amp Fuse	198535-52130	
20 Amp Fuse	198535-52140	
50 Amp Slow Blow Fuse	1E8720-83120	
80 Amp Slow Blow Fuse	198153-51700	
Battery	1A842E-51510	
Headlights Bulb	1A8330-53250	
Front Turn Signal Lights Bulb (CAB)		
Front Turn Signal Lights Bulb (ROPS)	1A8060-53420	
Rear Turn Signal Lights Bulb (CAB)		
Rear Turn Signal Lights Bulb (ROPS)	1A7400-53530	
Tail Lights Bulb (CAB)		
Tail Lights Bulb (ROPS)	1E9170-81270	
Width Indicator Lamp Bulb (CAB)		
Width Indicator Lamp Bulb (ROPS)	1A8060-53410	