CEBM000401

Shop Manual

KOMATSU®

WA450-3

WHEEL LOADER

SERIAL NUMBERS **WA450-3LE - A30001** and up

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THE PUBLICATIONS LISTED BELOW ARE AVAILABLE FOR THIS PARTICULAR MACHINE(S).

DESCRIPTION	FORM NUMBER
PARTS BOOK - PAPER:	
Engine and Chassis	BEPB000600
PARTS BOOK - MICROFICHE:	
Engine and Chassis	BEPM000600
OPERATION & MAINTENANCE MANUAL:	
Chassis	CEAM000201
Engine	3666117
SHOP MANUAL:	
Chassis	CEBM000401
Engine:	
Shop Manual	3666075
Alternative Repair Manual	3810310
Trouble Shooting and Repair	3661396
Specifications Manual	3666076
Standard Repair Time Manual (SRT Manual)	3666083
SAFETY MANUAL	WLT70-1

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COOLANT SPECIFICATIONS

GENERAL

Selection and maintenance of the engine coolant is important to long engine life. The following information provides recommendations for selecting the engine coolant and maintaining the coolant inhibitors.

Heavy duty diesel engines require a balanced coolant mixture of water, antifreeze, and supplemental coolant additives. Supplemental coolant additive recommendations are included in the section entitled Inhibitors Conditioners. The coolant mixture **must** be drained and replaced at the specified service interval shown in the OPERATION & MAINTENANCE MANUAL, or every two years of operation, whichever comes first.

WATER

Use water which has a low mineral content. Water used in conjunction with antifreeze, coolant filters and inhibited water must meet the following standards:

Total Hardness - Not to exceed 170 parts per million (10 grains/gallon maximum) to prevent scale deposits. Water containing dissolved magnesium and calcium (the usual reason for water hardness) above the specified amount will cause scale deposits to develop in the engine.

Chlorides - Not to exceed 40 parts per million (2.5 grains/gallon maximum) to prevent corrosion.

Sulfites - Not to exceed 100 parts per million (5.8 grains/gallon maximum) to prevent corrosion.

Dissolved Solids - Not to exceed 340 parts per million (20 grains/gallon maximum) to minimize sludge deposits, scale deposits, corrosion or a combination of these.

If any of the above requirements cannot be met, use distilled, de-ionized, or de-mineralized water. To determine if local water supplies meet these standards, water samples can be tested by water treatment laboratories. Softened water that is prepared using common salt (sodium chloride) contains excessive amounts of chlorides and should not be used.

★ Never use water alone in the cooling system because corrosion will occur.

ANTIFREEZE

In climates where the temperature is above -37°C (34°F), use a coolant mixture that contains 50 percent antifreeze. **Antifreeze is essential in any climate**. It broadens the operating temperature range by lowering the coolant freezing point and by raising its boiling point. Do **not** use more than 50 percent antifreeze in the mixture unless additional freeze protection is required. **Never** use more than 68 percent antifreeze under any condition.

An antifreeze concentration greater than 68% will adversely affect freeze protection and heat transfer rates. Antifreeze concentrations between 68 and 100% actually have a higher freezing point than a 68% antifreeze concentration and should not be used due to reduced heat transfer rates.

Low silicate ethylene glycol antifreeze is recommended. The antifreeze should contain no more than 0.1% anhydrous alkali metasilicate. Low silicate antifreeze is recommended to avoid the formation of silica-gel (hydro-gel). This gel formation can occur when the cooling system contains an over concentration of high silicate antifreeze and/or supplemental coolant additive. DO NOT use methanol or alcohol as an antifreeze because of its low boiling point.

Antifreeze may retain its freeze protection for more than one season but coolant conditioners must be added to maintain corrosion protection.

Antifreeze formulated with methoxy propanol, or propylene glycol, is not recommended for this system.

★ Do not mix types of antifreeze solutions. Mixed solutions make it impossible to determine the protection against freezing. Antifreeze containing sealer or anti-leak additives should NOT be used in this system. Sealer or anti-leak additives will cause plugging problems in the cooling system.

Check the solution periodically and at normal operating temperature, to be sure the cooling system has sufficient protection against freezing.

The following table shows the approximate percentage of antifreeze solution required for various temperatures.

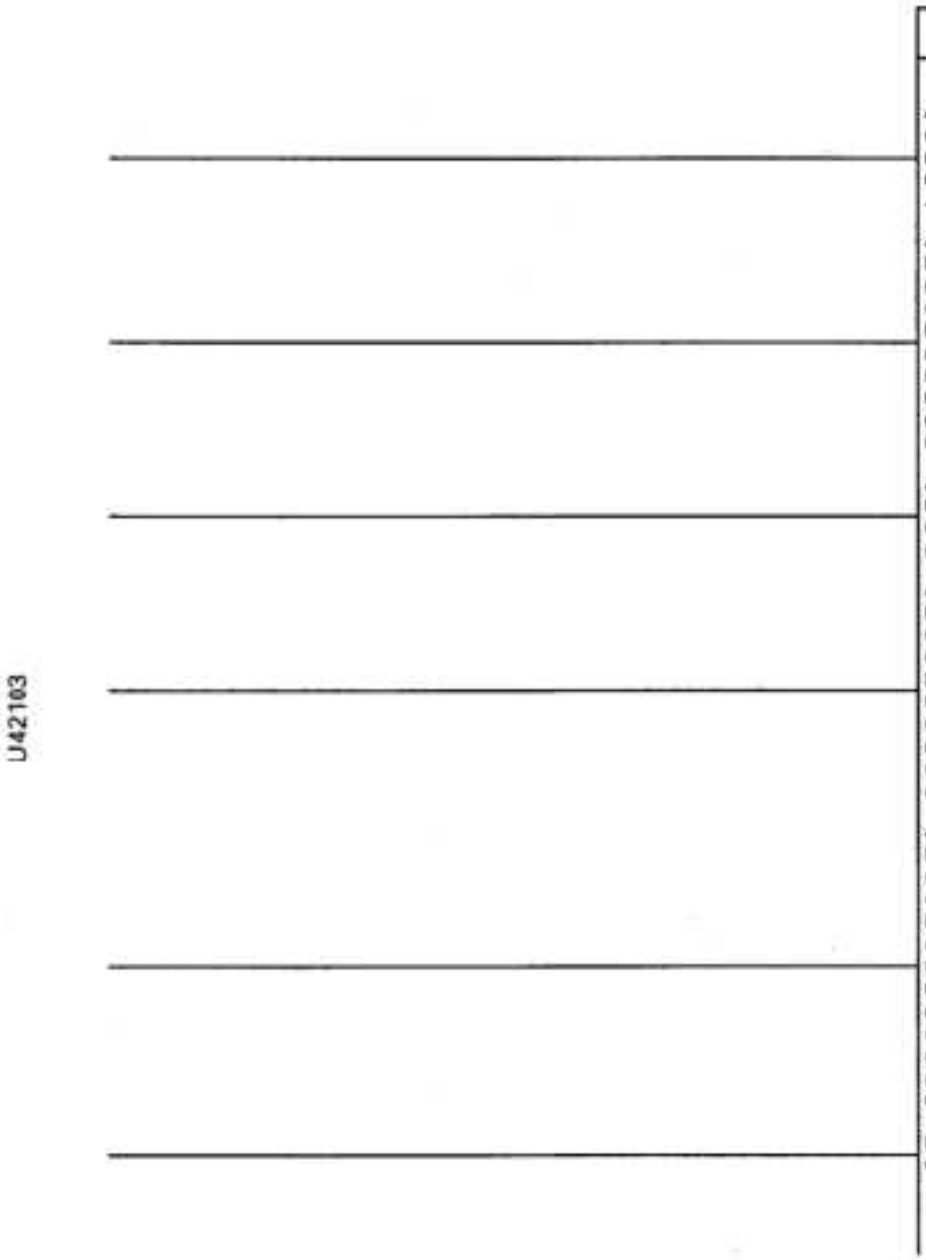
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CHECKS BEFORE TROUBLESHOOTING

		Item	Judgement standard	Remedy
Checks before starting	Lubricant, coolant	1. Check fuel level, type of fuel	—	Add fuel
		2. Check for dirt or water in fuel	—	Clean, drain
		3. Check hydraulic oil level	—	Add oil
		4. Check filter (hydraulic, transmission, torque converter)	—	Replace
		5. Check oil level	—	Add oil
		6. Check engine oil	—	Add oil
		7. Check coolant level	—	Add water
		8. Check clogging of dust indicator	—	Clean or check
	Electrical components	9. Check for loose or corroded battery terminals or wiring	—	Tighten or replace
		10. Check for loose or corroded alternator terminals or wiring	—	Tighten or replace
		11. Check for loose or corroded starting motor terminals or wiring	—	Repair or replace
		12. Check operation of gauges	—	Repair or replace
Other check items	Hydraulic, mechanical components	13. Check for abnormal noise or smell	—	Repair
		14. Check for oil leakage	—	Repair
		15. Bleed air from system	—	Bleed air
		16. Check effect of brakes	—	Adjust or repair
	Electrical components	17. Check battery voltage (engine stopped)	24 – 26V	Repair or replace
		18. Check battery electrolyte level	—	Add electrolyte or replace
		19. Check for discolored, burned, or bare wiring	—	Replace
		20. Check for missing wiring clamps, hanging wires	—	Repair
		21. Check for water on wiring (check carefully for water at connectors and terminals)	—	Dry place affected by water
		22. Check for broken or corroded fuses	—	Replace
		23. Check alternator voltage (engine running at over half throttle)	—	Replace
		(If the battery charge is low, it may reach approx. 25 V immediately after starting)	28.5 – 29.5V	Repair or check
		24. Noise when battery relay is operated (turn starting switch ON-OFF)	—	Replace

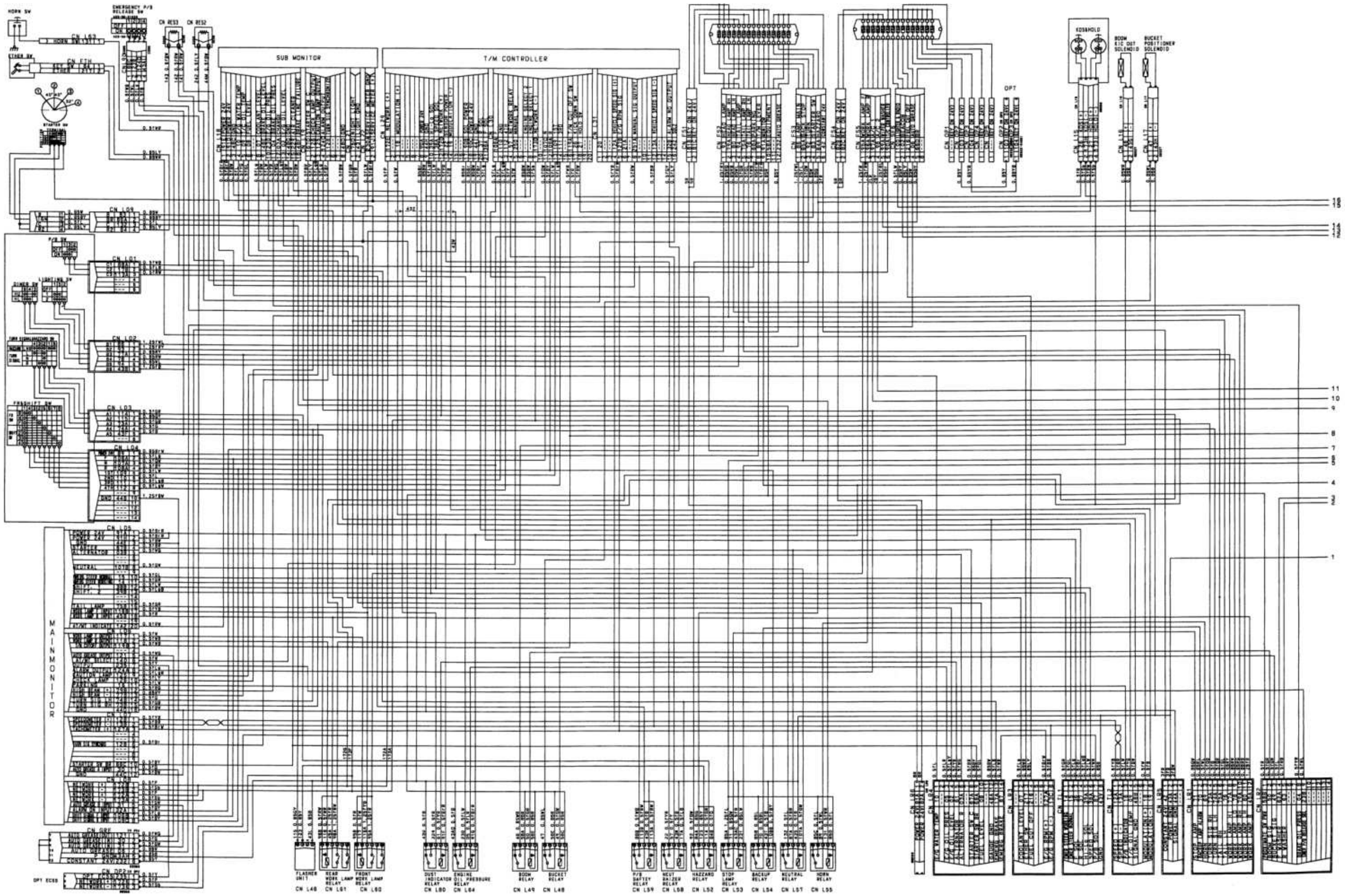
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Cause	Remedy
Abnormal contact of wiring harness between CNT03 (female) (1) and CNTL1 (female) (5) with +24V wiring harness	After inspection, repair or replace
Abnormal contact of wiring harness between CNTL1 (female) (5) and CNT03 (female) (1) with wiring harness between CNTL1 (female) (3) – CNT01 (female) (1), CNTL1 (female) (4) – CNT02 (female) (1), CNTL1 (female) (6) – CNT04 (female) (1)	After inspection, repair or replace
Abnormal contact of wiring harness between CNTL1 (male) (5) and CNL04 (male) (7) with +24V wiring harness	After inspection, repair or replace
Abnormal contact of wiring harness between CNTL1 (male) (5) and CNL04 (female) (7) with wiring harness between CNTL1 (male) (3) – CNL66 (female) (2), CNTL1 (male) (4) – CNL67 (female) (2), CNTL1 (male) (6) – CNL04 (female) (5)	After inspection, repair or replace
Abnormal contact of wiring harness between CNL04 (female) (7) and CNTL1 (male) (5) with wiring harness between CNL04 (male) (1) – CNFS2 (female) (8) or CNL04 (female) (2) – CNL66 (female) (5) or CNL04 (female) (3) – CNL57 (female) (1) or CNL04 (female) (4) – CNL67 (female) (5) or CNL04 (female) (6) – CNL66 (3)	After inspection, repair or replace
Defective transmission control switch	Replace

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