

DIRECTOR GENERAL BORDER ROADS
GENERALS MAINTENANCE INSTRUCTION NO. 91
ON
MAINTENANCE AND LUBRICATION
OF
TRACTOR D-80-A12 KOMATSU

Introduction:-

1. Regular servicing and periodical maintenance are essential to prolong its life of the equipment, ensure timely repairs to arrest defects from developing into majors ones, to work the equipment effectively at all times, minimize inopportune breakdowns and downtime losses

Aim :-

2. (a) To enumerate the details of periodic and preventive maintenance and lubrication of TRACTOR D-80-A12 KOMATSU.
- (b) Issue CHECK CARD for use by Mobile Maintenance Team.

Action By :-

3. (a) User Units :- To carry out periodic Inspection, regular servicing and preventive maintenance tasks as laid down.
- (b) Field Workshops (GREF) :-
 - (i) To check the 'Record of Maintenance and Lubrication' in the log book of the eqpt during its inspection and repairs, if carried out as per Maintenance and Lubrication schedules given in this instruction.
 - (ii) Advise user units in respect of any discrepancy noticed.

Details :-

4. Details of Maintenance and Lubrication alongwith the periodicity have been tabulated in Appendix 'A' to this instruction.

PREVENTIVE MAINTENANCE – TRACTOR D-80 A-12 KOMATSU

S/No.	Item/Assys	Maintenance Instruction	Lubrication	No of points
1	2	3	4	5
		08 HOURS TASK		
1	General	(a) Check oil, water or gas for leaks (b) Check for exhaust smoke colour, noise or vibration (c) Read all gauges & meters (d) Check all bolts and nuts if loose or deficient		
2	Engine	Check oil level in oil sump and top up if necessary	Engine oil	1
3	Main clutch	Check oil level and top up if necessary	Engine oil	1
4	Steering clutch case (Incl transmission case)	Check oil level and top up if necessary	Engine oil	1
5	Fuel tank	Drain water from fuel tank		1
6	Fuel filter	Drain water from fuel tank		1
7	Cooling system	Top up coolant level		1
8	Electrical system	Check wiring for discontinuity, shorting, loose terminals etc.		
9	Under carriage	(a) Remove mud and clean (b) check rollers and idlers for oil leaks (c) Check rollers and idlers for wear.		

Note :-

1. Engine main clutch case. Transmission, Steering clutch cases and final Drive case- Oil Grades

(a)	40 Degree to 0 Degree C	-	SAE 30 (Series 2) or Mil L-2104-A
(b)	0 Degree to 20 Degree C	-	SAE-10W or Indian oil 1130
(c)	Below 20 Degree F	-	SAE-5W or Burma shell Rottela-30
2. Hydraulic Tank – Oil Grade
Use SAE-10W at all temperatures
3. Grease Nipple – Grease Grades

(a)	Above + 15 Degree C	-	Use Grease No 2
(b)	+ 15 Degree to – 15 Degree C		Use Grease No 1
4. Engine oil to be used in the hydraulic system should be of SAE 10W only at all seasons, irrespective of direction mentioned.
5. Even if the atmospheric temperature is expected to rise up to 10 Degree C, use SAE 10W oil when the temperature at the time engine start up is below 0 Degree C.

EVERY 100 HOURS MAINTENANCE TASKS

1	-	Carry out 8 hours maintenance tasks.		
2	Engine	Engine oil	Engine oil	1
3	Oil filter	(a) Change filter element (Full flow) (b) Clean filter element (Screen type)		1
4	Crank case breather	Clean crank case breather/change element		1
5	Air cleaner	(a) Check air and vent tube connections (b) Clean air cleaner element		
6	Fuel system	Check hydraulic governor oil level	Engine oil	1
7	Generator	Lubricate generator	Engine oil	1

Note :-

(a) The air cleaner may be cleaned at an early hours in accordance with dusty working conditions.

(b) Clean air cleaner element by compressed air.

EVERY 250 HOURS MAINTENANCE TASKS

1	-	Carry out 8 hours and 100 hrs maintenance tasks.		
2	Final drive cases	Check oil level and top up if necessary	Engine oil	1
3	Hydraulic tank	Check oil level and top up if necessary	Engine oil (SAE 10W only)	1
4	Crank case breather	Clean crank case breather/change element		1
5	Generator belt	Check and adjust tension 10 mm (0.4")		1
6	Fuel tank strainer	Clean strainer on the bottom of the fuel tank		1
7	Steering clutch oil filter element	Change steering clutch oil filter element		1
8	Oil filter	Change bypass filter element		1
9	Air cleaner	Clean and check air cleaner		1
10	Batteries`	Check and correct electrolyte level in batteries. It should be 10 to 12mm above the plates	Distilled water	
11	Track	Check and adjust track tension (30 to 40 mm)		2
12	Track shoe	Check and tighten loose track shoe mounting bolts.		

13. Lubricate the following points :-

(a)	Transmission pulley		Grease	Grease No. 2
(b)	Water pump		-do-	-do-
(c)	Idler adjusting rod		-do-	-do-
(d)	Cylinder support shaft (H)		-do-	-do-
(e)	Cylinder support yoke (H)		-do-	-do-
(f)	Cylinder ball joint (H)	-do-		-do-
(g)	Brace		-do-	-do-
(h)	P.C.U. Steering lever shaft (C)	-do-		-do-
(j)	P.C.U Swivel arm shaft (C)		-do-	-do-
(k)	P.C.U Roller shaft (C)		-do-	-do-
(l)	P.T.O Universal joint (C)		-do-	-do-
(m)	Sleeve bracket support (C)		-do-	-do-
(n)	Sheave shaft (C)		-do-	-do-
(o)	Arm ball joint (T)		-do-	-do-
(P)	Brace ball joint (T)		-do-	-do-
(q)	Tilt cylinder ball joint (T)		-do-	-do-

(H) : Hydraulic control type.

(C) : Cable control

(T) : Tilt Dozer

Note :-

- 1 When operating the machine in a site where dusty conditions are severe, reduce the air cleaner element service interval to half.
- 2 Change the hydraulic filter element and oil in all the reservoirs after first 250 hours of operation of a new machine
3. Engine main clutch case. Transmission, Steering clutch cases and final Drive case
 - (a) 40 Degree to 0 Degree C - Use SAE 30
 - (b) 0 Degree to 20 Degree C - Use SAE-10W
 - (c) Below 20 Degree F - Use SAE-5W
4. Hydraulic Tank –Use SAE LOW at all temperature.
5. Grease Nipple – Grease Grades
 - (a) Above + 15 Degree C - Use Grease No 2
 - (b) + 15 Degree to – 15 Degree C Use Grease No 1
6. Engine oil to be used in the hydraulic system should be of SAE 10W only at all seasons, irrespective of direction mentioned.
7. Even if the atmospheric temperature is expected to rise up to 10 Degree C, use SAE 10W oil when the temperature at the time engine start up is below 0 Degree C.

EVERY 500 HOURS TASKS

1	-	Carry out 8 hours, 100 hrs and 250 hours tasks.		
2	Engine	Drain oil sump and refill oil	Engine oil	1
3	P.T Pump and magnet	Clean PT pump screw and magnet		1
4	Radiator	Check and clean Radiator fins. Change water		1
5	Starting motor	Lubricate the starter motor with engine oil	Engine oil	1
6	Resister element	Change corrosion resister element		

Note :-

1. If dusty conditions are severe, service the air cleaner inner element every 500 hrs of operation.
2. Change the oil in final drive case every 500 hrs when operating the machine in muddy ground or in water.
3. Engine main clutch case. Transmission, Steering clutch cases and final Drive case – Oil grades
 - (a) 40 Degree to 0 Degree C - Use SAE 30
 - (b) 0 Degree to 20 Degree C - Use SAE-10W
 - (c) Below 20 Degree F - Use SAE-5W
4. Hydraulic Tank –Use SAE LOW at all temperature.
5. Grease Nipple – Grease Grades
 - (a) Above + 15 Degree C - Use Grease No 2
 - (b) + 15 Degree to – 15 Degree C Use Grease No 1

6. Engine oil to be used in the hydraulic system should be of SAE 10W only at all seasons, irrespective of direction mentioned.
7. Even if the atmospheric temperature is expected to rise up to 10 Degree C, use SAE 10W oil when the temperature at the time engine start up is below 0 Degree C.

EVERY 1000 HOURS TASKS

1	-	Carry out 8 hours, 100 hrs, 250 hours and 500 hours tasks.		
2	Main clutch case	Change oil and clean oil strainer	Engine oil	1
3	Steering clutch case (Including transmission case)	Change oil and clean oil strainer	Engine oil	1
4	Final drive case	Change oil		
5	Hydraulic tank (H)	Change oil		
6	Hydraulic filter	Change hydraulic filter element		
7	Fuel tank	Clean fuel tank and strainer		
8	Air cleaner	Check and clean air cleaner inner element		
9	Cooling system	Flush out cooling system		
10	P.C.U Gear case (C)	Change oil	Gear oil	1
11	P.C.U Planetary gear case	Change oil	-do-	1
12	Generator/starter	Check charging generator and starting motor for condition		2
13	Diagonal brace	Grease	Grease No.2	2

Note :-

1. Engine main clutch case. Transmission, Steering clutch cases and final Drive case
 - (a) 40 Degree to 0 Degree C - Use SAE 30
 - (b) 0 Degree to 20 Degree C - Use SAE-10W
 - (c) Below 20 Degree F - Use SAE-5W
2. Hydraulic Tank –Use SAE 10W at all temperature.
3. Grease Nipple – Grease Grades
 - (a) Above + 15 Degree C - Use Grease No 2
 - (b) + 15 Degree to – 15 Degree C Use Grease No 1
4. Engine oil used in the hydraulic system should be of SAE 10W only at all seasons, irrespective of direction mentioned.
5. Even if the atmospheric temperature is expected to rise up to 10 Degree C, use SAE 10W oil when the temperature at the time engine start up is below 0 Degree C.

EVERY 2000 HOURS TASKS

1	-	Carry out 8 hours, 100 hrs, 250 hours, 500 hours and 1000 hours tasks.		
2	Rocker arm	Check rocker arm (exhaust side) for lubricating oil passage.		1
3	Valve clearance	Check and adjust engine valve clearance		12
		Inlet .014" to .016"		
		Exhaust .0278" to .029"		
4	Injectors	(a) Clean injectors (b) Adjust injector timing		6
5	Main clutch lever	Grease	Grease No. 2	4
6	Brake pedal shaft	Grease	-do-	3
7	Steering clutch lever shaft	Grease	-do-	3
8	Fuel control lever shaft	Grease	-do-	3
9	Universal joint	Grease	-do-	2
10	Air cleaner	Change air cleaner inner and outer element once a year, irrespective of the hours of operation		

Note :-

1. For serial No. 2 to 4 consult KOMATSU distributor for service or refer to service/shop manual for correct adjustment.
2. Engine main clutch case. Transmission, Steering clutch cases and final Drive case

(a)	40 Degree to 0 Degree C	-	Use SAE 30
(b)	0 Degree to 20 Degree C	-	Use SAE-10W
(c)	Below 20 Degree F	-	Use SAE-5W
3. Hydraulic Tank –Use SAE 10W at all temperature.
4. Grease Nipple – Grease Grades

(a)	Above + 15 Degree C	-	Use Grease No 2
(b)	+ 15 Degree to – 15 Degree C		Use Grease No 1
5. Engine oil used in the hydraulic system should be of SAE 10W only at all seasons, irrespective of direction mentioned.
6. Even if the atmospheric temperature is expected to rise up to 10 Degree C, use SAE 10W oil when the temperature at the time engine start up is below 0 Degree C.

**CHECK CARD : PREVENTIVE MAINTENANCE
(ORIGINAL/DUPLICATE)**

- | | |
|--------------------|---|
| 1. Project | 4. Make & Type TRACTOR
D-80A-12KOMATSU |
| 2. Task Force..... | 5. BA/EM NO. |
| 3. Unit | 6. Location |

Action

After carrying out the preventative Mobile maintenance team will maintenance Task, IC enter its date in the month's column below and initial.

Srl No.	Tasks	J	F	M	A	M	J	J	A	S	O	N	D
1	08 Hours												
	(a)												
	(b)												
	(c)												
	(d)												
	(e)												
	(f)												
	(g)												
	(h)												
	(i)												
	(j)												
2	100 Hours												
	(a)												
	(b)												
	(c)												
	(d)												
3	250 Hours												
	(a)												
	(b)												
	(c)												
4	500 Hours												
5	1000 Hours												
6	2000 Hours												

Signature of SO1/SO2 EME Project

Date

Remarks

Note : Column 'J' to 'D' stands for months of the year.