General Maintenance Instruction No. 203
On JCB Excavator Cum Loader

Introduction

The escorts JCB 3DX excavator loader is powered by Kirloskar RB-44 diesel engine fitted with turbo charger developing 90 BHP at 2200 RPM. The machine is fitted with torque converter, syncro shuttle, fully syncromesh gear box and 4x4 wheel drive. The equipment has got separate excavating mechanism and clam shovel loading device fitted on same chassis.

Aim

Aim of issuing this GMI is to enumerate the details of periodic and preventive maintenance of JCB 3DX excavator loader machines.

Action by

(a) USER UNIT. To carry out periodic inspection, regular servicing and preventive maintenance tasks as laid down.

(b) FIELD WORKSHOP (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 lubrications schedules given in this instructions.

(ii) Advice user units in respect of any discrepancy/short coming noticed.

(c) MOBILE MAINTENANCE TEAM- To ensure and lubrication maintenance is carried out and report accordingly to OC field workshop for necessary action.

Details

This instruction cover the following :-

(a)	Periodic maintenance tasks	Appx- 'A'
(b)	Oil and lubrication capacity, periodicity and check card	Appx- 'B'
(c)	Coolant capacity, antifreeze ratio	Appx- 'C'

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Appendix ‘A’

Periodic Maintenance Schedule: JCB 3DX Excavator Cum Loader

Every 10 hrs or daily maintenance task

1. Check the hyd fluid level and replenish it up to level if required.
2. Check hyd system for any hyd oil leakage and rectify.
3. Check the operation of all hyd systems/sub system for correct functioning.
4. Check the water/antifreeze coolant level in radiator and replenish if required.
5. Check leaks in radiator and rectified if required.
6. Observe the engine smoke emitting from exhaust pipe and report workshop if excessive smoke coming from engine exhaust.
7. Check for normal working of all electrical/electronic devices, report to workshop in respect of defective devices.
8. Check for correct working of all instruments panel meters if defective, report workshop for repair/replacement.
9. Check for correct working of transmission system and listen to any abnormal sound. Report workshop if found leaking or abnormal sound coming from components.
10. Check torque converter oil level and replenish if required.
11. Check correct working of steering system.
12. Clean air filter pre cleaner if fitted on eqpt.
13. Check the tyre inflation and any abnormal wear/tear of tyre. Report to workshop if any abnormal wear/tear noticed.
14. Check wheel nuts for tightness if found loose tighten them.
15. Check the brake fluid level and replenish if required .
16. Check for correct functioning of parking brake and foot brake operation.
17. Following parts should be greased :-
    - (i) steer axle yoke pivot.
    - (ii) king pins and bushes.
    - (iii) hubs (2WD only)
    - (iv) track rod ends.
    - (v) universal joints (4WD only)
    - (vi) steer ram grease nipple.
    - (vii) all pivot pins.
    - (viii) propeller shaft 4WD
    - (ix) king post and carriage.

50 hrs maintenance

1. Carry out complete maintenance schedule specified for 10 hrs maintenance.
2. Check fan belt tension pressed sagging should not increase 8 – 10 mm. If incorrect tighten or replace fan belt.
3. Check radiator hoses and their condition if found perished or leaking replace.
4. Check oil level in the following :-
   (i) oil cooler transmission
   (ii) Oil cooler hydraulic
5. Check axle oil level and replenish if required with correct grade of lubricant oil rectify if any leakage found.
6. Check slewing actuator oil and replenish if required.
7. Check for fuel sediments trapped and drains them out.
8. Drain fuel filter.
9. Grease propeller shaft from gear box to rear axle.
10. Grease propeller shaft of 4 wheel drive.
11. Grease extending dipper.

100 hrs maintenance

The 100 hourly maintenance schedules should be carried out at either 100 hrs of continuous operation or 1 month which ever is earlier.

1. Carry out maintenance schedule specified for 10 hrs and 50 hrs maintenance.
2. Check for any damage to ram piston rods
3. Check for correct functioning of pump drive and listen to any abnormal sound coming from drive. Report workshop if any abnormal sound coming.
4. Check all hydraulic oil carrying pipes for leakage/chaffing/damage. Replace if required.
5. Get following checked from workshop :-
   (i) Engine cylinder head torque settings.
   (ii) Idling speed, it should be 550-600 rpm if required adjust.
   (iii) Max speed it should be 2200 rpm it required adjust.
   (iv) Pulled down speed it should be 1200 rpm.
   (v) Value clearance it should be as under when engine is cold.
      (a) Inlet valve .30mm
      (b) exhaust valve .25mm
6. Check fuel system for leakage and rectify.
7. Check mounting bolts for tightness if loose tighten.
8. Check electrical wiring for chafing insulate/replace if required.
9. Check for screen washer bottle and change water.
10. Check clutch oil pressure and torque converter main line pressure following is the limit, if less notify wksp.

Convector Pressure (in natural position)

RPM	TEMPRATURE ^{o}C	PRESSURE KG/CM2
IN PRESSURE		
1000	50	2.5-3.5
2000	50	5.3-6.7
1000	100	1.4-2.1
2000	100	5.3-60
OUT PRESSURE		
1000	50	1.1-1.8
2000	50	2.0 (max)
1000	100	0.3-0.6
2000	100	1.1-1.8
MAINT LINE PRESSURE (NEUTRAL)		
1000	50	9.5-10.5
2000	50	10.9-12.0
1000	100	9.5-10.5
2000	100	9.5-10.5
CLUTCH PRESSURE (FORWARD & REVERSE)		
1000	50	8.4-9.1
2000	50	9.1-10.2
1000	100	8.4-9.1
2000	100	8.4-9.1

11. Grease wheel hub bearing and king pin bushes.
12. Grease pump drive shaft and all linkages.
13. Clean battery terminal. Wash corroded material with ammonia solution consisting 115 gm. Of baking soda added to 1 liter of water.
14. Clean fuel lift pump.
15. For changing of lubricating oil refer appendix ‘a’

200 hr maintenance schedule

1. Carry out 10, 50 & 100 hrs maintenance schedule checks.
2. For change of lubricating oil and filters refer appendix-‘a'

400 hrs maintenance task

1. Carry out 100 & 200 hrs maintenance tasks specified.
2. Check following pressure.

MRV Pressure

(i) MRV pressure (excavator) ---210 kg/cm^2
(ii) MRV pressure (loader) ---183 kg/cm^2

ARV Pressure Loader

(i)	Shovel ram head side	---176 kg/ cm^2
(ii)	Shovel ram rod side	---245 kg/ cm^2
(iii)	Shovel ram rod side	---316 kg/ cm^2

ARV Pressure Excavator

(i)	Bucket ram head side	---245 kg/ cm^2
(ii)	Dipper ram head side	---245 kg/ cm^2
(iii)	Dipper ram rod side	---245 kg/ cm^2
(iv)	Boom ram dead side	---245 kg/ cm^2

3. Check pivot pins and bushes for damage and grease if required any.
4. Check for parking brakes and adjust suitable.
5. Check engine injector pressure and calibrate suitably.

800 hrs maintenance task

1. Carry out 400 hrs maintenance task.

1600 hrs maintenance task

1. Carry out 800 hrs maintenance task.

Appendix- 'B'

PERIODICITY OF LUBRICANTS & OIL FILTER ELEMENTS E JCB 3DX EXCAVATOR CUM LOADER

NOTE: - GMI NO. 202 MAY BE REFFERED FOR PREDIODICITY OF OIL & FILTER ELEMENTS IN RESPECT OF KIRLOSKAR RB-44 ENG FITTED ON ABOVE EQPT

S/No	System	Amb temp	Type of IOC lubricant	Capacity	Replacing Period	Change periodicity			Remarks
		^{o}C		Ltrs	Hrs	Lubricant	Filter	Strainer	
						Hrs	Hrs	Hrs	
1	Trans JCB synchre Shuttle	-20^{o}C to 50^{o}C	Servo transmission fluid F 10	21	10 hrs/Daily	800	400	Clean at 800	
2.	Axle drive	-20^{o}C to 50^{o}C	Servo trans T-20	26	50	500	NA	NA	
3	Brake system	-20^{o}C to 50^{o}C	* Castrol Hypsin AWH-15	1.2	10 hrs/Daily	NA	NA	NA	
4	Hydraulic system	-20^{o}C to 50^{o}C	HLP-32	140	10 hrs/Daily	1600	400	1000	
5	Slow actuator	-20^{o}C to 5^{o}C	Servo Gear super 80W	4.3	50	200	NA	NA	
6	Slow actuator	-5^{o}C to 50^{o}C	Servo Gear super 90W	4.3	50	200	NA	NA	
7	Front axle	-20^{o}C to 5^{o}C	Servo Gear super 80W	17.0	50	1000	NA	NA	
8	Grease points		* CASTROL LCG2*		10 hrs/Daily				
* PRODUCT OF CASTROL COMPANY									

Appendix-‘C’

ENGINE COOLANT / ANTIFREZEE DATA						
Srl No	System	Amb Temp	% & Type of Coolant	Capacity	Oh Antifreeze required	Remarks
1	Cooling System & Radiator	-36.4^{o} C to 30^{o} C	55% Etylene Glyool	15	8.25	
		-30.4^{o} C to 5^{o} C	15% Etylene Glyool	15	4	
		5^{o} C to 50^{o} C	Etylene Glyool	15	0.3	