SERVICE CIRCULAR

TATA MOTORS

All Dealers / TASSs'

SC/ 2013/ 44	Model : LPK 3118TC 8X4 BS-III RMC	Group: 00	Jul'13

Subject: Introduction of LPK 3118TC 8X4 BSIII RMC

We are pleased to inform you about introduction of LPK 3118TC 8X4 model. This is BS-III compliant vehicle. This model is suitable for RMC, Road construction etc application.

Salient features of the model are as following:

- CUMMINS B5.9 180 31 BS-III
- Front both steerable axle
- 7.5 T strong front axle beam
- 9 Speed DD gear box for better traction (Crawler : 12.86 ratio)
- Sleeper Cabin.

Chassis Type Designation:

Model	Chassis Barrel	VC No
LPK 3118TC 8X4 BSIII	MAT466104	50130756000R

We are enclosing following details about the vehicle:

- Technical Specifications (Annexure - 1)
- Body building guideline (Annexure - 2)
- Detailed service interval sheet (Annexure - 3)
- Oil Lubricant ,Warranty and Free Service (Annexure - 4)

Annexure - 1

Technical Specification:

Engine	
Engine	CUMMINS B5.9 180 32 BS-III
Engine Type	Water cooled direct injection Turbo charged intercooled diesel engine
Bore / Stroke (mm)	102 / 120
Engine Capacity (cc)	5883
Capacity Of Cooling System (Ltrs)	27 (Total)
Compression Ratio	17.6 : 1
Coolant	Water & Ethylene Glycol, Ratio 1:1 Pre-mixed
Crankcase Oil Capacity (Ltrs)	Max. 14.3 Min. 12.3
Firing Order	1-5-3-6-2-4
Fuel Filter	Pre and fine filtration with water separator
Fuel Injection Pump	Mico,V14(Rotary type)
Governor	Built in centrifugal
Oil Filter	Full flow spin on paper type
MAX Engine Output	135 KW(183H.P) at 2500rpm
MAX. Torque	680 NM(70mkg) at 1400 rpm
No Of Cylinders	6 Inline
Air Filter	Dry type remote mounted
Radiator Frontal Area (sq cm)	4227
Turbo Charger	HOLSET
Weight Of Engine (Kg)	413 kg (dry)
Engine Fan Type	7 Blades 22" Viscous fan
Clutch	
Outside Diameter of Clutch Lining (mm)	380
Engine Clutch Type	Single plate dry friction type
Type of Actuation	Push type
Transmission	
Model	G1150 - DD
Type	Synchromesh on all forward gears and constant mesh on reverse gear
No. Of Gears	8 Forward 1 Reverse, 1 Crawler.
Gear Ratios	1st-9.13,2nd-6.72,3rd-4.90,4th-3.57,5th-2.55,6th-1.88,7th-1.37,8th-1.00,Rev-13.40.
Rear axle	
Model	RA - 109 SRT
Type	Single reduction,Extra heavy duty,hypoid gears,fully floating axle shafts
Ratio	6.83
Front axle	
Type	Extra heavy duty forged I beam Reverse Elliot type
Electrical Specification	
System Voltage	24
Alternator Capacity (Amp)	55
Battery	2 x 12V, 120Ah

Cab/ Cowl	
Cabin Type	Sleeper Cab
Wheels and Tyres	
No. Of Wheels/Tyres	Front front - 2 Front rear -2 Drive front -4 Drive rear - 4 Spare- 1
Tyres	10.00x20-16PR
Wheel Rims	7.5 X 20
Frame	
Type	Ladder type with riveted/bolted cross members.Depth : 285 mm (max) Width : 65 mm
Width (mm)	888
Brakes	
Brake Drum Diameter (mm)	410
Lining Area (cm2)	Front -2470,Rear front -2470 ,Rear rear-2470
Service Brakes	Dual circuit full air S-cam brake
Parking Brake Description	Hand operated
Type	Spring actuated parking brake acting on rear wheels
Engine Exhaust Brake	Pneumatically operated butterfly valve type.
Steering	
Type	Hydraulic power steering.
Ratio	26.2:1(ZF)
Suspension	
Type	Parabolic Spring at front Semi elliptical leaf spring at front and rear antiroll bar at front axle only.
Leaf Width (mm)	Front - 90 Rear - 78
Shock absorber	Hydraulic double acting telescopic type at front only.
Spring Span (mm)	Front-1600 Rear-1290
Fuel tank	
Type	Rectangular
Capacity (Ltrs)	300
Performance	
Max. Geared Speed in Top Gear (Kmph)	70.2 kmph.
Max. Climbing Ability in 1st Gear	22.61%- 1st & 32.73%-Crwl
Minimum Turning Circle Dia. (mm)	19000
Main chassis dimension (mm)	
Wheel Base	5580
Front Overhang	1232
Rear Overhang	1612
Overall Length	8819
Max. Width	2542
Front Track	2025
Rear Track	1817
Weights (Kg)	
Kerb Weight (unladen weight)	8480
Max. Permissible FAW	6000 + 6000
Max. Permissible RAW	19000
Max. Permissible GVW	31000

Annexure – 2

Body building guideline

It is important to ensure that the RMC is fitted in vehicle chassis in such a way that the load imposed is transmitted correctly at the same time rigidly mounted body flex with frame. Care should be taken to ensure that the body and the chassis are compatible. An example of the bad selection would be the construction in which a short body is made on a long wheel base vehicle. In this case, it becomes the necessary to shorten the chassis rear overhang to accommodate the body. As a result the center of gravity moves forward and a greater load than the desirable is imposed on the front axle.

It is also essential that careful consideration be given to movement or modification of electrical wiring, electrical equipment, brake piping, frame modification like chassis extension and other chassis component to ensure good performance in the operation.

Bridge structure at rear axle region

Bridge structure construction should be made over the rear axle area for the 60% overhang vehicle chassis for cross bearing mountings.

The rear axle area of the long member should be re enforced with 6 mm thick L Channel / Z Channel.

Post to waist rail joints

Attachments plates are welded to U Channel/Z channel waist rail. The welding of the attachments to the waist rail should be intermittent.

Wheel arch dimensions

To accommodate the wheels, the side frame is formed to a suitable shape called the wheel arch. To avoid the tyre hitting the body while operation, the recommended dimensions of the wheel arch should be maintained.

Sub frame

The sub frame is the marriage point between the bodywork and the chassis. The sub frame itself has low strength requirements and must therefore have flexible attachments at the front Torsion sensitive body work.

A part of the bodywork

The sub frame distributes the load on the chassis and gives sufficient strength to the bodywork. The sub frame is part of the bodywork and does not reinforce the chassis.

Adapted attachments

Depending on the bodywork and driving condition, the front section of the sub frame is secured to the chassis by means of various kinds of jointed fasteners (pivoted, one way, flexible etc.) The rear part of the sub frame is to be secured by attachment plates.

Mounting

The attachment plates are fixed to the chassis using M12 bolts 10.9 grade bolt. The attachments plates are to be welded to the sub frame.

Recommended attachments

Bodywork must be secured so that the complete vehicle:

- Have good driving characteristics.
- Has sufficient stability and strength.
- Is capable of carrying out the transport work safety.

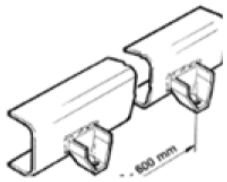
Twisting and sideways movements are more common behind the cab but diminish the further back along the truck one goes. In addition, lengthways and sideways forces must be

absorbed by the attachments along the front part of the sub frame/helper-frame. The attachments should be pivoted as much as possible so as to allow maximum chassis movement in relation to the road / ground.

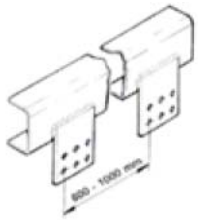
For the most rigid bodywork, flexible two- way attachments are used along the whole length of the frame .The bodywork must have the freedom to move in relation to the chassis frame. The more rigid the bodywork, the greater the movement in the attachment is required with the exception of the most rigid bodywork, attachment plates are used along the rear section of the sub frame/helper- frame.

Distance between attachments unit

2 Hole groups (resonance mounting): Aprox 500 mm

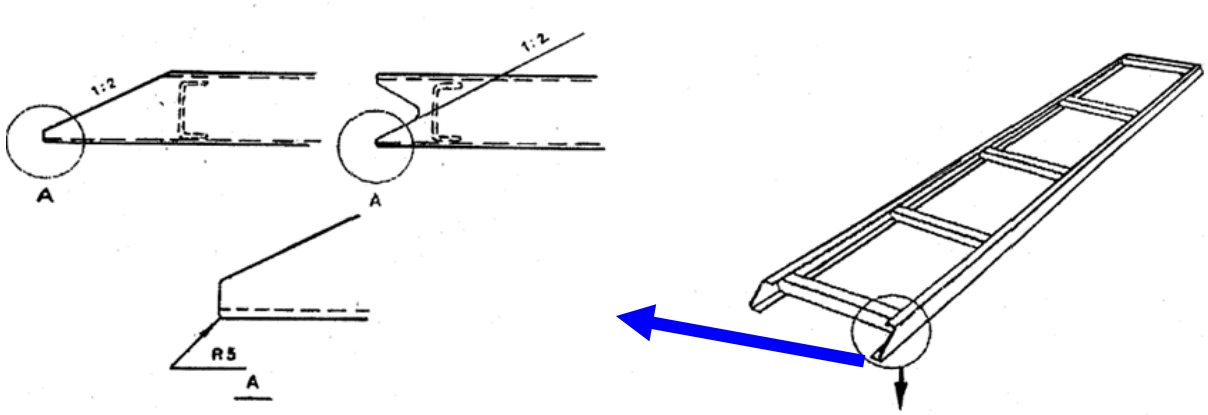


4/6 Hole groups (Attachment plate): Aprox 800-1000 mm



Sub frame nose angle requirement

Sub frame front end should have nose design with 1:2 ratio and R5 radius as shown below

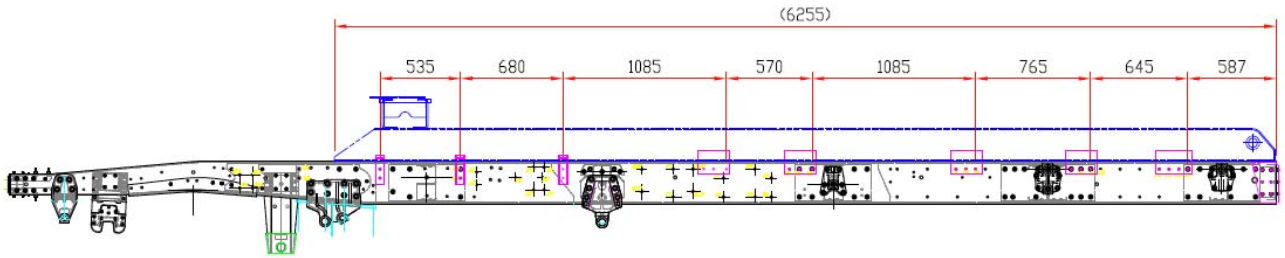


Sub frame mounting guideline

RMC Body should be mounted on the sub frame with guideline of RMC manufacture and the sub frame should be mounted with long member by the attachment plat and resonance type mounting. Distance between the two mounting should be maintained as dimension given below drawing.

Sub frame should not be fixed with help of bolts/nuts by drilling holes in the chassis frame. This weakens the chassis frame which is liable to crack. Do not re enforce weld or drill holes in the chassis frame. Use 6 attachment plate and 3 resonance mounting to mount the sub frame on the chassis frame on each side of the chassis frame. Tighten attachment plate bolt & Nut (M12 10.9 Grade) to 12 mkg torque.

Distance (in mm) between the attachment plate, resonance mounting and its location is given below. First 3 are the resonance mounting and after ward 6 are attachment plate mounting, mounting location is shown below.



Chassis preparation:

1. **Clean chassis:** Especially long member before mounting
2. **Extension of Chassis** is not permitted. Do not weld or drill on the original chassis frame

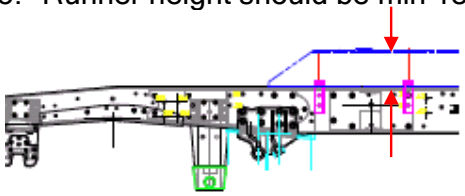
General guideline:

1. Keep body weight minimum by selecting the proper material and design. This will save the fuel and increase the tyre life.
2. Select the body dimension to comply with current government regulations.
3. The cab and RMC to mounted in such a manner that the RMC and air intake duct are separated by at least 70 mm. This is to ensure the adequate clearance with air intake system of the engine against likely damage and air restriction.
4. Service indicator for air cleaner is fitted to air filter to indicate the serviceability of the air cleaner element. Ensure that the service indicator is approachable for service check and it is not tempered.
5. Also during the painting care to exercised so that the service indicator/ pipes are not coated with paints.
6. No restriction should be placed beneath the remote mounted air filter. Provide sufficient clearance for fitment and removal of air cleaner.
7. The air intake hoses are not be disturbed during body building. How ever, If hoses are removed for any reason, cover the turbo charger and intake manifold openings with the suitable plastic caps to avoid the dust foreign particle entry, till the time hoses are corrected back. The clamp should be properly tightened during this operation.
8. The service indicator fitted on the air cleaner should not be tempered with, by way of painting etc.
9. Do not re route the air intake, coolant and fuel lines.
10. No modification to the front side of cowl/cab should be attempted which would restrict the air flow to the radiator and air cleaner. Reducing the height/width of the center flap or closing the louvers provided on the cowl/cab front face to be avoided.
11. Do not keep the radiator cap open to avoid the contamination of coolant with dust and forign matter.
12. Use curve window glass, avoid sharp corners and protruding out destination boards to reduce the resistance.
13. Ensure ease of removal and assembly of various aggregates like gear box, suspension, rear axle, battery, spare wheel etc. Provide the flaps /cut out for servicing, where ever required.
14. De-rust phosphate and apply the primer to the body skeleton before fixing panels.
15. Use Zink plated hardware of proper standard quality for various body joints.
16. Protect instrument panel, steering wheel, driver/ co driver seat , brake fluid container, hoses etc from damage while carrying out the structural work.
17. Do not drill, weld or remove any chassis rivet . Do not use chassis or leaf spring as earthing point during welding.
18. Do not clamp body cross bearers to the chassis cross member.
19. Avoid eccentric mounting of cross bearers.
20. No body mounting should foul with any chassis aggregate or cross member.

21. Avoid practice of cutting cross member for mounting or any other purpose
22. Do not extend chassis rear over hang. Incase it is required, contact us.
23. Do not use balata packing more than 6mm thick for cross bearer mounting. This will result in pre mature perishing and damage to the chassis long member. Incase thicker packing is required, use steel plate to compensate along with 6 mm balata packing
24. As far as possible, avoid post location over wheel arch.
25. Disconnect the battery , alternator, DC-DC convertor connection before starting the electrical welding on the chassis/body

Critical guideline load body mounting:

1. Mounting of RMC body to be on the runner over the long member, it should not be directly on the long members.
2. Runner to be continuous through out the length, spitted/welded runner are not desirable.
3. Runner to start from front end, as close to the front axle as possible, beneath the cab or immediately after the cab.
4. Attachment plate and resonance mounting positions strictly to be adhered as per location given in the above drawing.
5. Runner height should be min 180 mm as shown below



6. Area of bell crank lever of tandem suspension should be clear to allow movement of the linkage e freely

Annexure - 3

Detailed service interval sheet:

S.N	OPERATION/CHECK POINTS	Checks by customer			Dealers Checks												
		Daily	Weekly	Monthly	PDI	500hrs	1000hrs	1500hrs	2000Hrs	2500hrs	3000hrs	3500hrs	4000hrs	4500hrs	5000hrs	5500hrs	6000hrs
	ENGINE																
1	Check oil level in the sump and top up, if necessary, Check oil leakage and rectify, if any	●															
2	Check coolant level in radiator and top up, if necessary. Check coolant leakage and rectify if any	●															
3	Drain Fuel water separator.	●															
4	Check fan and fan belt visually and replace, if damaged			●			●		●		●		●		●		●
5	Lubricate with oil can : control to fuel injection pump and exhaust brake linkage ball joints.			●			●		●		●		●		●		●
6	Change oil in sump. Drain off while hot. Clean drain plug. Change oil filter.					●	●		●		●		●		●		●
7	Check and if necessary, tighten the following (a) Injector pressure lines. (b) Leak of fuel line banjo bolts. (c) Heat exchanger bolt, (d) oil sump Screws, (e) Oil pressure transducer at engine block. (f) Exhaust manifold mounting bolt. (f) Flywheel housing mounting bolts. (g) Turbo charger mounting fasteners (h) Clutch housing mounting bolts.						●		●		●		●		●		●
8	Check & Tighten, if necessary the following : (a) Push rod chamber cover, (b) Timing gear cover, (c) Cylinder Head cover, (d) Radiator mounting, (e) Radiator hose connections, (f) Fuel tank brackets, (g) Fuel filter head bracket, (h) Fuel filter mounting bolts, (i) Air ducting hose connections, (j) Engine mounting hose, (k) Engine breather rubber hose clamp,						●		●		●		●		●		●
9	Remove strainer in fuel tank, clean and refit, replace at 40000 kms/1000 hours						●		●		●		●		●		●
10	Drain cooling system - reverse flush. Check thermostat for proper operation. Refill system with fresh coolant water. Use mixture of clean water & recommended anti freeze agent in specified ratio																●
11	Remove and clean exhaust outlet elbow, exhaust valve, shaft and refit. (Do not lubricate).						●		●		●		●		●		●
12	Check end play of turbocharger shaft and radial clearance between turbine wheel & housing.						●		●		●		●		●		●
13	Check air intake piping, hoses, clamps. Replace damaged hoses. Tightened if required.			●			●		●		●		●		●		●
14	Check service indicator. Change primary filter, if red band is in raised position. Check secondary filter. Change secondary filter after every 3rd primary element.						●		●		●		●		●		●
15	Check charge air cooler (if fitted). Remove, wash, clean with water and solvent, if necessary.						●		●		●		●		●		●
16	Check anti-freeze concentration.						●		●		●		●		●		●
17	Change fuel filter and'O'ring. Bleed the fuel system.					●	●	●	●	●	●	●	●	●	●	●	●
18	Check drive belt tension and replace Belt if deflection is more than specified value.						●		●		●		●		●		●
19	Check Water pump pulley for free rotation ,excess axial play,coolant leakage ,replace Water pump if defective						●		●		●		●		●		●
20	Check fan hub and drive belt tensioner bearing replace if axial/radial play is excess .						●		●		●		●		●		●
21	Check valve clearance and adjust, if necessary.						●		●		●		●		●		●

S.N	OPERATION/CHECK POINTS	Checks by customer			Dealers Checks												
		Daily	Weekly	Monthly	PDI	500hrs	1000hrs	1500hrs	2000Hrs	2500hrs	3000hrs	3500hrs	4000hrs	4500hrs	5000hrs	5500hrs	6000hrs
	BRAKES																
1	Drain Off condensate Water from Air Tank	●															
2	Check and if necessary, tighten: (1) mounting of air tanks, (2) air line clamps (3) Other Brake valves			●			●		●		●		●		●		●
3	Check free movement of plunger in dual brake valve.						●		●		●		●		●		●
4	Check brake system for leaks and rectify, if necessary.	●					●		●		●		●		●		●
5	check for proper functioning of engine exhaust brake, free movement of plunger of exhaust brake valve mounting bolts for loosening if necessary.			●			●		●		●		●		●		●
6	Check brake rubber hoses / air pipes for damages / leak and replace if necessary.			●			●		●		●		●		●		●
7	Dismantle pneumatic aggregates of brake system, clean, inspect and replace parts if necessary. Apply grease to components while reassembling.						5000hrs or 3 years										
8	Lubricate with oil can: brake chamber fork & pin, leakages of foot brake, ball joints of exhaust brake linkage-hand & foot brake linkages.			●			●		●		●		●		●		●
9	Check condition of gaiter in different brake valves (both for front and rear brakes chamber). Replace if found damaged / deteriorated.						●		●		●		●		●		●
10	Check mounting bolts of brake chambers, different valve mountings, air tank mounting, air cylinders mounting, , air line clamps pipes & tighten necessary.			●			●		●		●		●		●		●
11	Conduct brake system routine checks - I (Check for leakage, LP switches and Gauges, fill up time)	●					●		●		●		●		●		●
12	Conduct brake system routine checks - II (Check opening/ Closing pressure of SPV, check valves for leakage, damage etc)						5000hrs or 3 years										
13	Check condition of rubber boots / bellows in different brake valves, exhaust flap in dual brake valve, exhaust diaphragm in valve, Replace if found damaged/deteriorated.								●				●				
14	Check condition of nylon breather tube and clips of spring brake actuator. Replace if found damaged/deteriorated.						●		●		●		●		●		●
15	Check purge tank, piping's and its connection, rectify if leakage is observed.				●		●		●		●		●		●		●
16	Check for air dryer pressure and ensure the pressure difference between 0.6bar to 1.3 bar						●		●		●		●		●		●
17	Check for proper positioning of dust cover.						●		●		●		●		●		●
18	Check mounting of Relay Valve, Solenoid valve and its connection						●		●		●		●		●		●
	Foundation brake																
19	Grease with Grease Gun auto Slack Adjuster.			●			●		●		●		●		●		●
20	Grease with Grease Gun S Cam shaft Bushes.			●			●		●		●		●		●		●
21	Check travel of brake chambers push rod, brake lining wear. End clearance with brake drum, Adjust Service brake, If necessary.			●			●		●		●		●		●		●
22	Check brake torque plate mounting bolts, shoe assembly, dust shield, chamber brackets, roller and fulcrum pin as per service instructions and tighten if necessary.(At every lining change also)						●		●		●		●		●		●
23	Remove brake drums, inspect brake lining, brake drums,etc.rectify defects if any.						Every lining changes										
24	Check and if necessary replace brake linings.(When worn up to indicator slot or 1mm over the rivet heads)			●			●		●		●		●		●		●
25	Overhaul foundation brakes.						Every second brake shoe relining or as required										

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		Daily	Weekly	Monthly	PDI	500hrs	1000hrs	1500hrs	2000Hrs	2500hrs	3000hrs	3500hrs	4000hrs	4500hrs	5000hrs	5500hrs	6000hrs
	Clutch and Transmission																
1	Check clutch pedal free play & adjust if necessary.(wherever provision is there).				•		•		•		•		•		•		•
2	Grease with grease gun :(i) Accelerator pedal bush-LP, (ii) Clutch pedal bushing, (iii) Remote Gear shifting Linkage where fitted, (iv) Propeller shaft U joints, sliding yoke & Centre bearing where fitted.			•	•		•		•		•		•		•		•
3	Remove Grease cup for lubricating clutch release bearing repack 3/4th full eith grease & Tighten by a few turns.						•		•		•		•		•		•
4	Lubricate with Oil can :Clutch linkage & felt pad of clutch releasing Bearing sleeve.(few drops only)						•		•		•		•		•		•
5	Check clutch fluid level & top up if necessary	•			•												
6	Over haul clutch master & slave cylinder												•				
7	Check oil level in gear box & top up if necessary.						•		•		•		•		•		•
8	Change oil in gear box. Drain while hot.Clean drain plug.				KINDLY REFER ANNEXURE 2												
9	Check & tighten, if necessary : (a) Gear box mounting bolts, (b) Propeller shaft coupling flange bolts, (c) Propeller shaft centre bearing support bracket bolts)						•		•		•		•		•		•
10	Clean breather on gear box								•				•				•
11	Clutch booster service kit replacement						4000hrs										
12	Check centre bearing rubber conditions						•		•		•		•		•		•
13	Check for free movement of clutch and brake pedal						•		•		•		•		•		•
14	Check and replace universal joint kit and centre bearing kit if required						•		•		•		•		•		•
	FRONT & REAR AXLE																
1	Grease with grease gun : (a) Kingpins, (b) Tie rod ends , (c) Drag link ends. (if geasable type)			•													
2	Check oil level in rear axle, and top up if necessary		•	•	•		•		•		•		•		•		•
3	Change oil level in rear axle RA 109RR . Drain while hot. Clean drain plug and breather								•				•				•
4	Check crown wheel thrust pad & adjust, if necessary			•			•		•		•		•		•		•
5	Check & tighten, If necessary, carrier and rear cover mounting nuts. Also tighten axle shaft cover mounting bolts. rear axle (banjo type) career mounting studs.			•			•		•		•		•		•		•
6	Remove front hub cap, fill 3/4th full with wheel bearing grease & refit								•				•				
7	Check wheel alignment & if necessary, adjust				After every 250hrs												
8	Remove front & rear wheel hubs. Dismantle and clean bearing and other components. Replace with fresh wheel bearing grease ,and refit. Adjust wheel hub Bearing play						•		•		•		•		•		•

S.N	OPERATION/CHECK POINTS	Checks by customer			Dealers Checks											
		Daily	Weekly	Monthly	PDI	500hrs	1000hrs	1500hrs	2000Hrs	2500hrs	3000hrs	3500hrs	4000hrs	4500hrs	5000hrs	5500hrs	6000hrs
	STEERING & SUSPENSION																
1	Check oil level in steering gear housing (where fitted). Top up , if necessary	●			●		●		●		●		●		●		●
2	Change oil in steering gear box / power steering system								●				●				
3	Check Oil in Power steering hydraulic tank & top up, if neessary.Check hydraulic piping connection for leakage & rectify	●			●		●		●		●		●		●		●
4	Check steering wheel free play. Adjust if necessary						●		●		●		●		●		●
5	Check & tighten,if necessary: (a) pitman arm. (b) Drag link rod, (c) Tie rod (iv) Steering gear box mounting brackets & bolts (v) Steering gear box mounting bolts						●		●		●		●		●		●
6	Check & tighten,if necessary: (a) U bolts of front & rear spring (b) Nuts of spring pin wedge bolts, (c) Anti roll bar bracket mounting bolts		●		●		●		●		●		●		●		●
7	Grease with grease gun :(a) front spring pins , (b) Rear spring pins. Apply grease on helper spring brackets and free end of cab spring			●	●		●		●		●		●		●		●
8	Check mounting of spare wheel career and tighten, if necessary						●		●		●		●		●		●
9	Check & tighten , if necessary, mounting of shock absorber				●		●		●		●		●		●		●
10	Check condition of shock absorber rubber bushes and replace , if necessary						●		●		●		●		●		●
11	Dismantle front & rear spring & cab mounting spring clean and inspect leaves.Check and replace eye bushes , if necessary .Apply graphite grease on leaves & re assembles.								●				●				●
12	Check power steering hydraulic limiter valve setting and peak pressure								●				●				●
	WHEELS & TYRES																
1	Check tyre pressure			●	●												
2	Check wheel mounting nuts and tighten if necessary.				●		●		●		●		●		●		●
3	Check and tighten spare wheel carrier mountings.						●		●		●		●		●		●
4	Tyre rotation.			●													
	ELECTRICALS																
1	Check & tighten if necessary : Mounting bolts of alternator, starter motor and wiper motor. Battery mounting bolts. All electrical wire connections. Head lamp mounting screws.			●			●		●		●		●		●		●
2	Check battery cells with cell tester and specific gravity of electrolyte with hydrometer. Service battery if necessary.		●				●		●		●		●		●		●
3	Check head lamp focus. Adjust if necessary.	●		●			●		●		●		●		●		●
4	Check electrical gadgets for proper functioning. Rectify if necessary	●					●		●		●		●		●		●
5	Check electrolyte level in battery and add distilled water if necessary.	●					●		●		●		●		●		●
6	Check battery mountings, clean battery posts and terminals, tighten terminals and smear Vaseline/petroleum jelly.			●			●		●		●		●		●		●
7	Lubricate with oil can : Pinion bushing of starter motor and wiper and motor linkages.						●		●		●		●		●		●
8	Check alternator carbon brushes and replace if necessary.						●		●		●		●		●		●

Annexure – 4

Oil Lubricant , Warranty and Free Service

Oils & Lubricants:

Aggregate	Filling capacity in Ltrs.	Oil Change Frequency Hrs	Grade	Brand of Lubricants & Coolants			
				CASTROL	BPCL	Shell	IOCL
Engine Oil and Oil Filter Change (6BT BS-III)	Max :15.3 Min :13.3	1st & 2nd after 500 hrs, sunsequently 1000 hrs	CI4 Plus	CASTROL RX TURBO 15W40 CI4 PLUS	MAK Tata Motors CI4 Plus 15W40	Shell Rimula T415W40 CI4 Plus	-----
Gear Box (G1150)	Gear Box :11.5 System Capacity : 13	2000	SAE 75W85 7.0% wt Anglamol 6097	Castrol Oil Syntro S 75W85	MAK SPIROL Synth 75W85		Semi Synthetic Gearbox oil SAE75W85 MTFA
Rear Axle (109 SRT)	RFD :18 RWD :14	2000	SAE 80W140 Long Drain				✓
Clutch	As required (300ml System Capacity)	4000	DOT 4	M/s APCL & M/s Sunstar.			
Power Steering Fluid	5	2000	ATF Dextron II,IID.III or Mercon Colour RED	CASTROL TQD	MAK Tata Motors/ Autran II	Shell Spirax T2 ATF	Servotransdex II
Coolant (Total)	23	6000	50% Water +50% Ethlene Glycol	Castrol Long Life Coolant	MAK Tata Motors Super Kool	-----	Servo Kool TM
Wheel Bearing Grease (gms / hub)	Both Front Axle : 600 (3/4 Grease in the Cap)	1000	SKF VGK X/180	SKF Grease			
	Rear Drive Axle : 650		RR3	Castrol AP Super Grease	MAK Tata Motors RR3 Grease	Shell Gadus T1	Servo gem TM3
General Purpose/Chassis Grease	As Required	As Required	Lithium MP Grease	Castrol AP2 Grease	MAK Tata Motors Univex A Grease	-----	Servo Grease TM

PDI:

Vehicles will be eligible for 5 free labour services apart from Pre Delivery Inspection (PDI)

Free Service	Hrs	Period
PDI		
1st	500	8 months
2nd	1,000	20 months
3rd	2,000	30 months
4th	3,000	40 months
5th	4,000	48 months

Warranty:

Vehicle Warranty:

Vehicle warranty for M&HCV with Cummins engine is (24 Months or 2000 hours from date of sale whichever is earlier).

Driveline Warranty:

Driveline warranty includes Engine, Transmission and Rear Axle warranty which is (48 Months or 4000 hours or from date of sale whichever is earlier).

Note: - In free service only labour is free and material is chargeable. Additional fuel filters shall be billed to customer at the time of service for replacement by customer at every 500 hrs.