Tata
LP / LPT 613 EURO-II

Operator's Service Book

(The contents given in this book are not binding; are subject to change without notice and are for illustration purposes only)

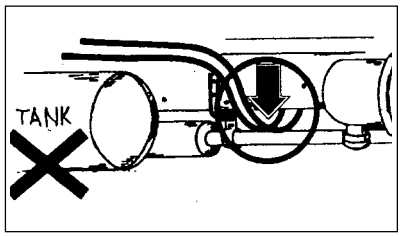
Edition : XLI/NE/J-2007/001-500

TATA MOTORS LIMITED
International Business (CVBU)
Mumbai, INDIA

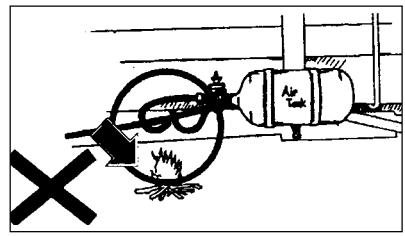
1. Use only recommended oils and lubricants.
2. Always use recommended antifreeze agents in cooling system to avoid deterioration of engine components due to corrosion. After filling coolant, fit auxiliary tank cap firmly, to keep cooling system pressurised.
3. Maintain correct tyre pressure to ensure better tyre life.
4. Always fit genuine radiator cap for pressurised cooling system.
5. New tyres do not give maximum grip straight away and should therefore be run-in at moderate speeds for first 100 km. This will help to make tyres last longer.
6. New brake linings must always be run-in, they do not have optimum friction properties during first 200 kms.
7. Avoid mixing of different grade of lubricants or clutch fluids during top up.
8. Run the engine in low idling speed for atleast three minutes after starting and before shutting off. (Applicable for turbocharged engine)
9. Always start moving the vehicle in first gear.
10. Operate engine in correct temperature range i.e. between 60^{O}C & 100^{O}C.
11. Engine oil / coolant levels have to be checked daily. Drain water from fuel water separator daily.
12. In case of air lock in fuel system, bleeding should be done on high pressure side of fuel filters, drain manifold and high pressure lines. Ensure that lift pump operation is satisfactory and proper fuel delivery takes place while bleeding out air.
13. Avoid cranking of engine for more than 30 seconds. A gap of 2 minutes should be left between successive attempts.
14. Check battery every week and top up electrolyte, if necessary. Keep battery terminals clean and cable joints tight. Apply vaseline/ petroleum jelly on terminals.
15. Watch service indicator of dry type air filter (Euro II). Indication of same is given on instrument cluster. If it blinks continuously then clean the air filter housing and replace primary cartridge.
16. Observe correct polarity while connecting alternator terminals and battery cables.
17. For operating vehicles in extremely cold climates and high altitudes contact Tata authorised workshop to seek advice.
18. Do not use kerosene as fuel. It reduces engine and fuel pump life.

Hot objects

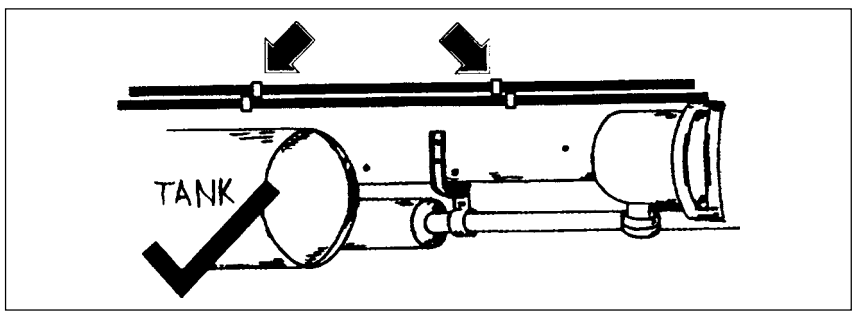
Take care that PA tubes do not touch hot objects such as exhaust pipe. This will avoid burning or melting of PA tube.



Avoid PA tube to touch exhaust pipe



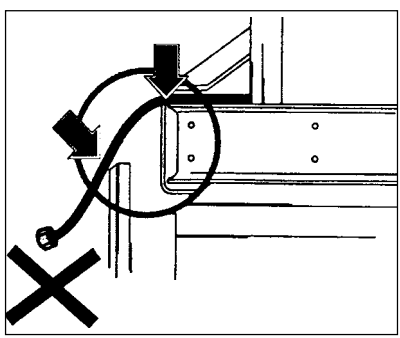
Do not light fire near PA tube



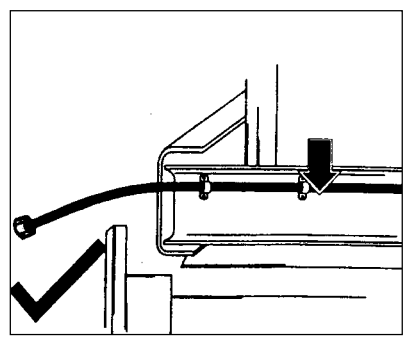
Clamp PA tubes properly to avoid coming in contact with hot objects

Sharp objects

Take care that PA tubes do not come in contact with sharp objects. This will avoid cutting of PA tubes.

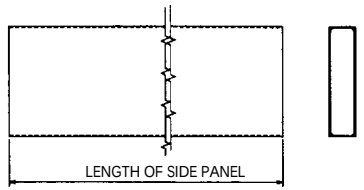


PA tubes should not touch sharp objects



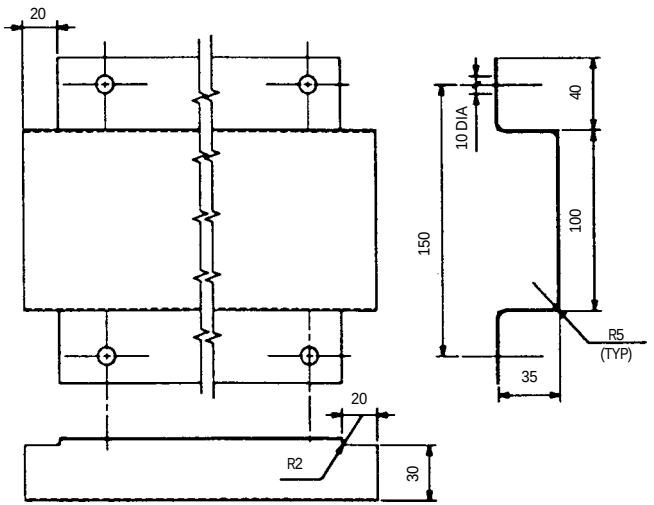
Follow original routing of PA tubes

ITEM NO. 3a - PROPOSAL - A



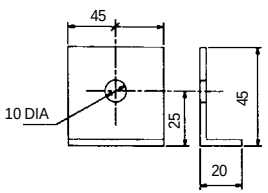
MATERIAL - RECTANGULAR TUBE 100x25x1.5 THK (MINIMUM) HF YST 210 IS : 4923

ITEM NO. 3b - PROPOSAL - B



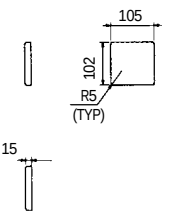
MATERIAL - SHEET 1 THK. D 513 SS : 4010

ITEM NO. - 4

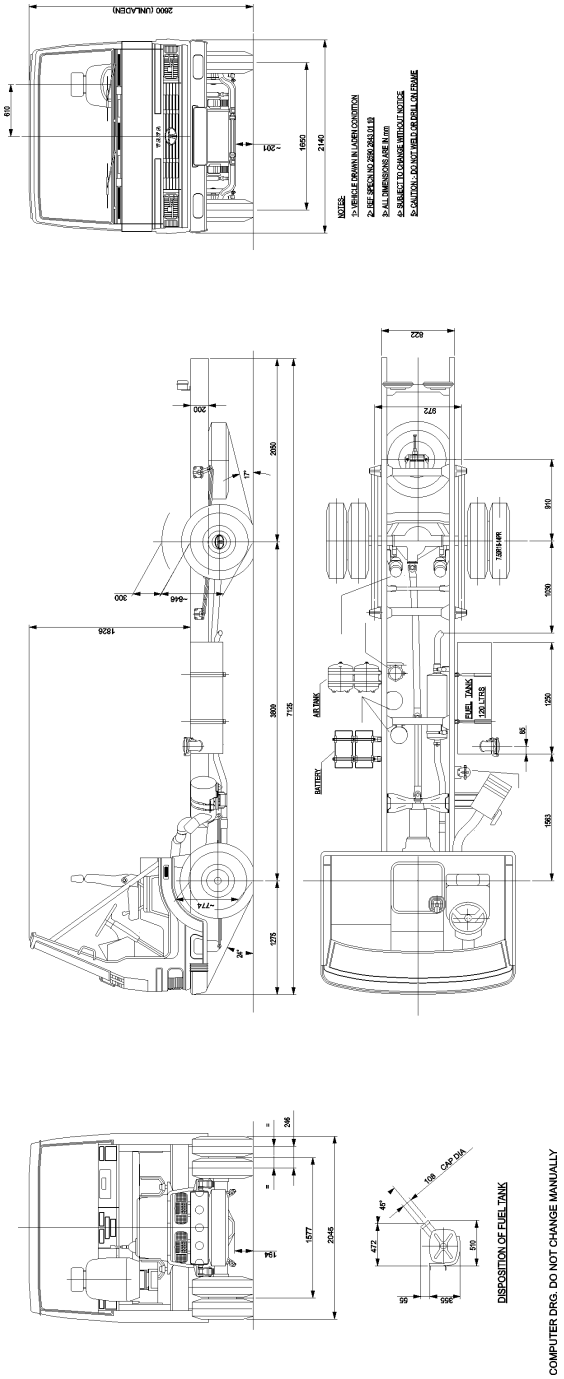


MATERIAL - SHEET 3THK. Fe410 -1079 SS : 4013A

ITEM NO. - 5



MATERIAL - SHEET 1 THK. D 513 SS : 4010

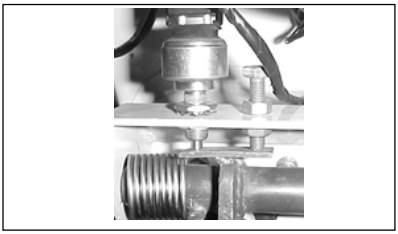


LP 613 CHASSIS WITH COWL 38 WB EURO- II (LHD)

Rear fog lamp switch

Rear fog lamp switch:

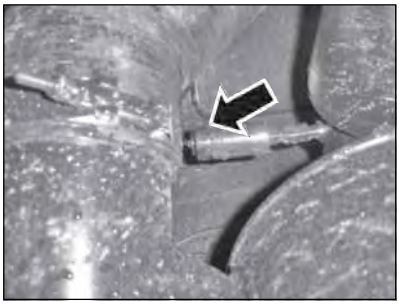
This switch is provided to switch on Rear fog lamps. Rear fog lamps are operative only when the park lamps along with Head lamps (Hi beam/ Low beam) or Front fog lamps are switched ON.



Mechanical stop light switch

Mechanical stop light switch

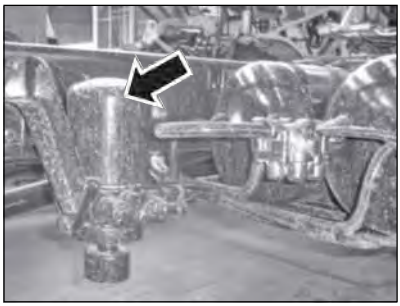
A mechanical stop light switch is mounted above brake control lever. Whenever brake pedal is depressed for applying brakes, stop light switch comes into operation and lights at rear tail lamp glow. This also activates engine exhaust brake solenoid valve for exhaust brake application.



Electric service indicator switch

Electric service indicator switch

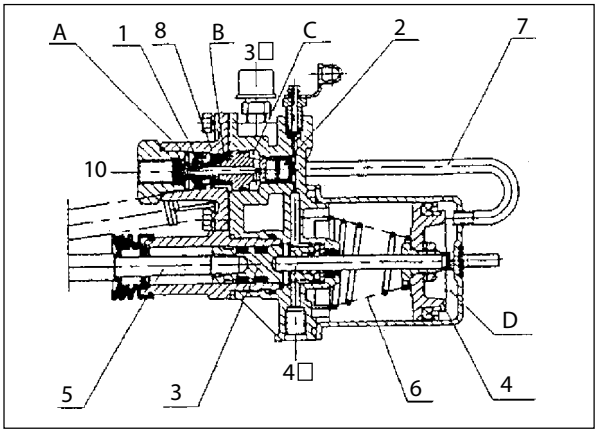
This switch is provided on air cleaner. Switch contact takes place only when the filter get chocked.



Air dryer heater

Air dryer heater

This heater is a part of air dryer assy. This heater is provided to heat the moisture if any in the air brake lines. This heater gets switched ON at 7^0 C of air temperature and OFF at 29^0 C automatically.



Port 1. Inlet port (for compressed air)
Port 3. Vent (for compressed air) Port 4. Control port (for clutch fluid)
2. Piston
3. Piston
4. Piston
5. Push rod
6. Return spring
7. Wind pipe
8. Return spring
A.
B. Cavity
C.
D. Cavity

Clutch Booster

Hydraulic clutch actuation system with pneumatically operated clutch booster has been provided to reduce clutch pedal effort.In this system, clutch booster replaces the function of clutch slave cylinder.

Compressed air connection to operate clutch booster has been tapped from port No. 24 of system protection valve.

Output rod of clutch booster is connected to clutch release fork.

When there is no force on clutch pedal, push rod (5), pistons (3 & 4) are in stand still position due to the force exerted by return springs (6 & 8).

When pedal is pressed to disengage clutch, clutch fluid under pressure enters throught port no. 4 and acts on piston (3). due to this piston (3) moves leftwards.

At the same time fluid under pressure acts on controlling piston (2) due to which piston (2) moves leftwards to close air outlet and to open air inlet (1) compressed air flows into air cylinder via wind pipe (7).

Piston (4) moves leftwards and exert force on piston (3) which in turn pushes output rod to actuate push rod (5). The force on piston (4 & 3) is proportional to the pressure exerted by clutch fluid on piston (2).

When pedal is released to engage clutch, clutch fluid pressure drops to zero. By the action of return spring (8) and air pressure at cavity B, piston (2) moves rightwards to close air inlet and to open air outlet. Compressed air in cavity D is exhausted to atmosphere. Return springs (6 & 8) bring back pistons (2 & 4) to stand still position and hence push rod (5) retracts to its original position.

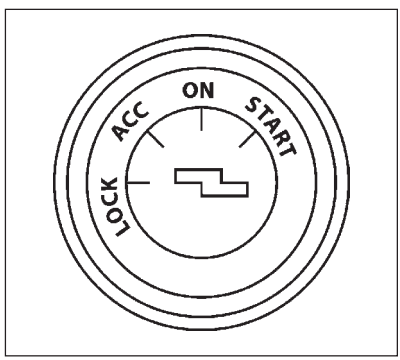
Technical Data

Operating pressure : Clutch fluid 4 Mpa, compressed air 0.8 Mpa

Max. pressure : Clutch fluid 12 Mpa, compressed air 1 Mpa

Operating Temp. range -40^{O}C to +80^{O}C.

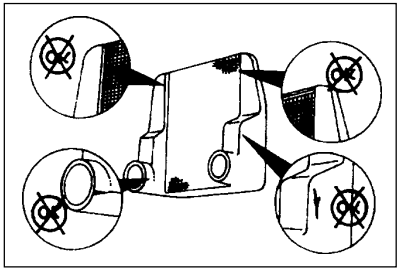
Steering lock cum ignition key



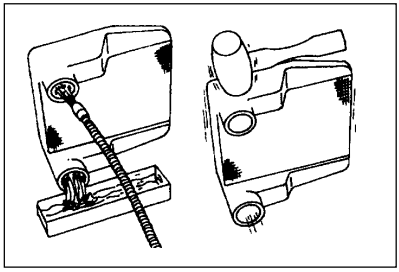
Steering lock cum ignition switch-key positions

1. Ensure that parking brake is applied.
2. Move gear shift lever to neutral position.
3. Insert ignition key in steering lock cum ignition switch. Steering wheel will be in locked condition. Turn the key to "ACC" position. Steering wheel gets unlocked, and accessories will be ON.
4. Turn the key further to ON position. Lamp of battery charging indicator, low oil pressure will come on.
5. Do not press the accelerator pedal. Turn the key further clockwise to "START" position (spring loaded) to operate starter motor. As soon as engine starts, release ignition key so that key can come back to ON position and starter motor disengages.
6. If engine misfires and stops, wait for 2 minutes before operating starter motor once again. This practice should be strictly adhered to, otherwise it will damage starter motor.
7. Once engine starts, lamps of battery charging indicator and low oil pressure should go off.
8. Allow engine to warm up - until cooling system temperature reaches at least 40° C.
9. Release parking brake.
10. Now the vehicle is ready to move.

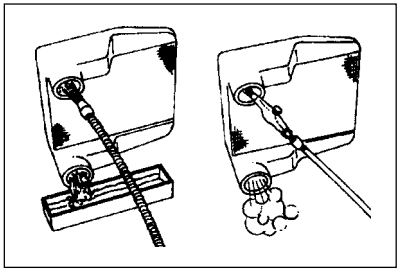
Charge air cooler



Charge air cooler



Cleaning with solvent



Cleaning with hot water/compress air

Charge air cooler (CAC) (with Euro II engine)

Inspection

If engine experiences a turbocharger failure or any other occasion where oil or debris has entered into CAC, the CAC must be cleaned.

Remove CAC from vehicle.

Visually inspect CAC for cracks, holes and damage.

Inspect tubes, fins and welds for tear, breakage or other damage.

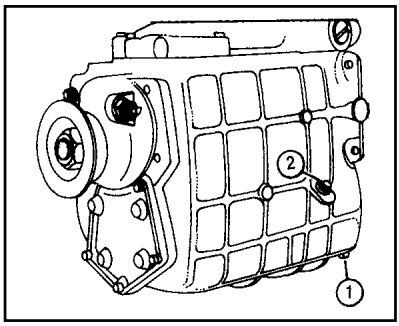
Cleaning

Flush CAC internally first with trichloro ethane (solvent) in the opposite direction of normal air flow. Shake the CAC and lightly tap on the end tanks with a rubber mallet to dislodge trapped debris.

Caution : *Do not use caustic cleaners to clean CAC. Damage to CAC will result.*

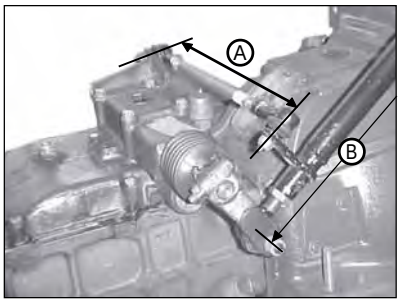
After the CAC has been thoroughly cleaned of all oil and debris with solvent, wash CAC internally with industrial soap solution to remove remaining solvent. Rinse thoroughly with clean water.

Blow compressed air into the CAC in the opposite direction of normal air flow until the CAC is dry internally.



Gear box (GBS - 40)

1. *Oil drain plug*
2. *Oil level plug*



Remote gear shifting arrangement

Gear box oil checking

Check level of gear box oil. Top up if necessary.

Gear box oil change

Drain while hot.
Fill the gear box with new oil.
Capacity : 5.2 Litres
: 5.8 Litres

Recommended oil

Grade SYN gear EP 75 W 90 GL 4 Gulf grade.

Dimension A

Link rod adjustment

Either increasing or decreasing the length or link rod assembly can adjust dimension A. Loosen lock nuts on both sides of connecting tube & adjust the length by turning connecting tube with the help of DE spanner clockwise / anti clockwise. When desired dimension is achieved, tighten lock nuts on both sides & re-check dimension A. The adjustment needs to be carried out in installed condition of link rod.

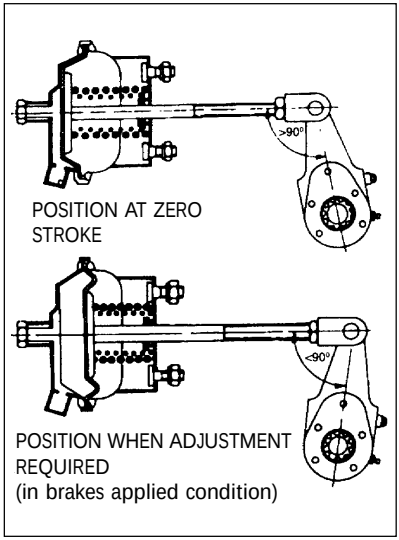
Dimension B

Turning tube adjustment

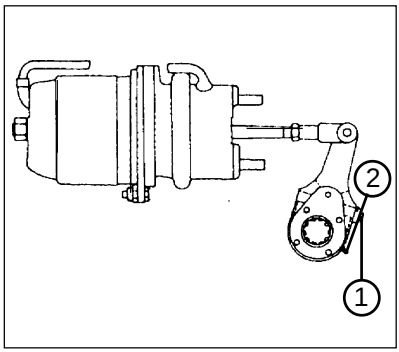
This adjustment is to be carried out after disconnecting ball joint from gearshift lever. Loosen the lock nut from connecting flange & rotate ball joint clockwise /anti clockwise to obtain desired dimension. Tighten the lock nut. Assemble ball joint nut. Re-check dimension of turning tube assembly (Dimension B).

Link measurement (in mm)

Drive	A	B
RHD	330 ± 1.5	1000 ± 2
LHD	350 ± 1.5	986 ± 2



Position of slack adjuster



1. *Adjuster screw*
2. *Locking sleeve*

Adjustment of service brakes/ slack adjusters

In order to ensure efficient operation, 4 wheel brakes must be set during every lining change or whenever brake drum open for maintenance.

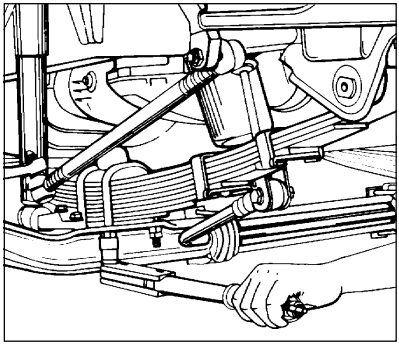
All normal setting should be made only by means of adjuster screw to slack adjuster. Brake adjustment is to be done when drums are cold and not when they are hot. Improper brake adjustments can cause brake grabbing, more air consumption or low brake efficiency.

Procedure

1. Jack the wheels. Release hand brake if it is in ON condition.
2. Position a box spanner or a ring spanner (12 mm A/F) over the adjuster hexagon. By depressing the locking sleeve, turn adjuster screw clockwise until shoe begins to bind drum. Then turn adjuster screw anticlockwise 270O

Note

It is possible to check clearance between the drum and lining by using a feeler gauge through inspection hole after removing rubber grommet.



Tightening spring 'U' bolt at front axle

Springs

U-bolt nuts and check nuts of front/ rear springs should be regularly tightened with a torque wrench or with a socket wrench and a handle of atleast 60 cm length. Specified torques are given below :

'U' bolt nuts	:	21 mkg
'U' bolt check nuts	:	21 mkg

Dismantle front / rear spring packs at every 72000 kms. Clean, apply graphite grease & reassemble. Check eye bushes & replace, if necessary.

Anti roll bars (bus chassis)

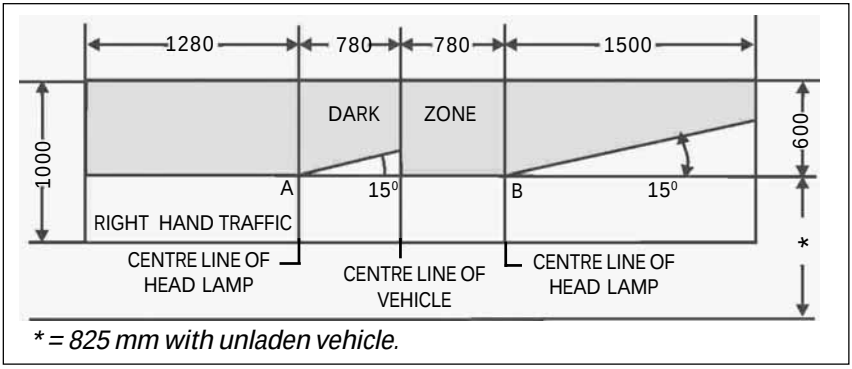
Check anti roll bar mountings at every 9000 kms & tighten, if necessary. Check condition of bushes and replace, if necessary.

Wheel alignment

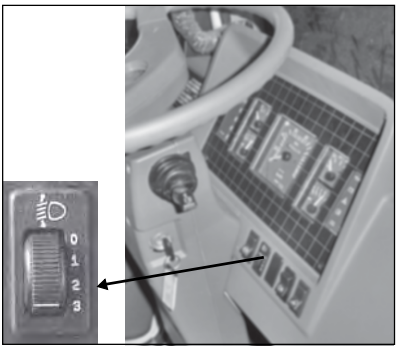
Check toe-in at every 36000 kms & adjust, if necessary. Specified toe-in 0 to 3 mm.

Shock absorbers

Check condition of shock absorbers / shock absorber bushes at every 9000 km & replace, if necessary.



Screen for adjusting head lamps focusing - LHD Vehicles



Head lamp levelling switch

The Dark Zone', and the area below it is called 'The Illuminated Zone'.

- Each lamp can be aligned individually by masking the other lamp. The head lamp is first adjusted for the proper height of the dipped beam by adjusting the screw at it's bottom below motor. The light from dipped beam should fall below the horizontal and inclined lines. No light should fall above these lines i.e., in 'the dark zone'.

Caution : Setting screw on motor should be used for fine adjustment only, otherwise motorised adjusting mechanism will be damaged

- Lateral adjustment can be done by adjusting screw at the other end of bottom so that contour of the dipped beam coincides with the contour formed by horizontal & inclined lines below 'The Dark Zone'.
- When properly aligned the most brightly illuminated area will be below the intersection (point A) of two lines.
- The second head lamp can be adjusted in a similar manner without disturbing the position of the vehicle and the screen.
- Operate the leveling switch to '1', '2' & '3' positions & ensure symmetrical movement of cut-off beams vertically.

Focusing should be done, preferably in the dark.

Gear Ratios	:	1st-6.34 2nd-3.37 3rd-2.11 4th-1.28 5th-1.00 Rev-5.85 With PTO Provision & PTO Fitment optional. for LPT
REAR AXLE		
	:	Single reduction, hypoid gear, fully floating axle shafts.
Ratio	:	3.111 : 1 (28/9)
FRONT AXLE		
	:	Heavy duty Forged I beam reverse Elliot type
STEERING		
Steering Gear Box	:	Power assisted hydraulic steering.
BRAKES		
Service Brakes	:	Dual circuit full air S-Cam brake, ABS system with valve silencer and suitable for -40 deg. ambient (for LPT).
	:	Dual circuit full air S-Cam brake (Fitment of ABS - Optional) (For LP)
Brake Drum Diameter	:	325 mm
Lining Area	:	Front - 1236 sq cm Rear - 1236 sq cm Total - 2472 sq cm
Parking Brake	:	Spring actuated parking brake acting on rear wheels
Engine Exhaust Brake	:	Coupled with service brake (For LP)
FRAME		
	:	Ladder type frame with rivetted/bolted cross members Side members are of channel section Depth : 200 mm (max) Width : 60 mm with rear under-run protection
SUSPENSION		
Type	:	Semi elliptical leaf spring at front and rear with auxiliary springs at rear only.

6. Fuel, Lubricants and Coolant

6.1 Fuel 149

6.2 Lubricants 150

6.3 Coolant 152

D : Daily service to be performed by the driver/operator

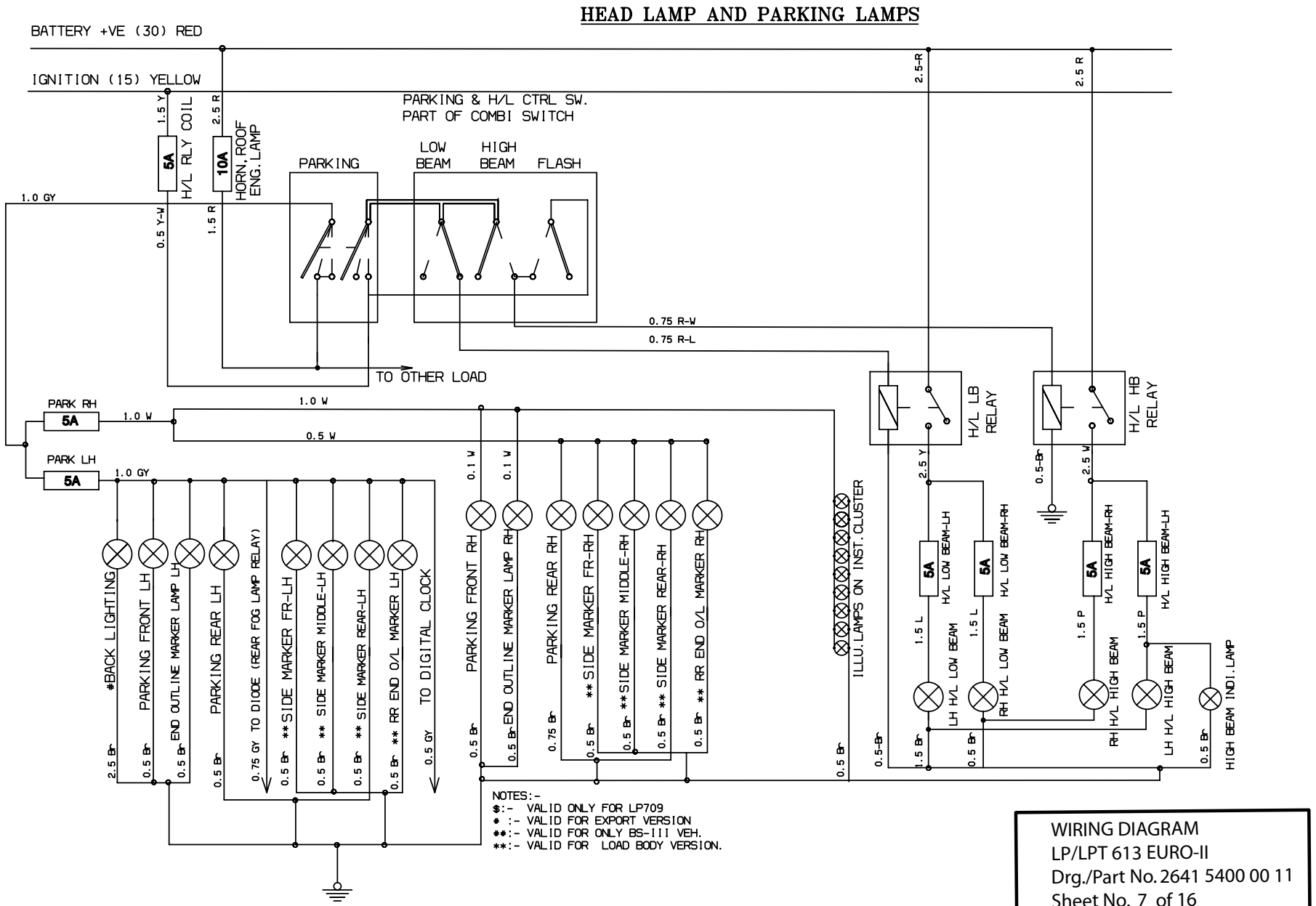
O : Service to be performed at every 1000 kms by the driver/operator

W : Service to be performed weekly or at every 2000 kms. whichever is earlier by driver / operator

SR. NO.	OPERATION	FREQUENCY IN KM	DAILY	Every 1,000 km	9,000-9,500 km	18,000-18,500 km	27,000-27,500 km	36,000-36,500 km	45,000-45,500 km	54,000-54,500 km	63,000-63,500 km	72,000-72,500 km
1.	Wash vehicle.	9,000			●	●	●	●	●	●	●	●
	ENGINE											
1.	Check oil level in the sump and top up, if necessary. Check oil leaks and rectify, if any.	DAILY	D		●	●	●	●	●	●	●	●
2.	Check coolant level in auxiliary tank and top up, if necessary. Check coolant leakages and rectify, if any.	DAILY	D		●	●	●	●	●	●	●	●
3.	Drain water trapped in fuel water separator.	DAILY		O	●	●	●	●	●	●	●	●
4.	Check thermostat for proper functioning and replace if necessary.	18000				●		●		●		●
5.	Lubricate with oil can : Controls to fuel injection pump and exhaust brake linkage ball joints. Pinion bush of the starter motor.	9000		O	●	●	●	●	●	●	●	●
6.	Change oil in sump. Drain off while hot. Clean magnetic drain plug.	18000				●		●		●		●
7.	Clean engine oil filter housing and cover. Replace oil filter cartridge and 'O' ring.	18000				●		●		●		●
8.	Clean oil bath air filter (Euro I) and fill to correct level with recommended engine oil. Check condition of sealing rings, replace if necessary.	9000			●	●	●	●	●	●	●	●
9.	Remove drain plugs of fuel filters. Drain off sediments. Bleed the fuel system.	9000			●	●	●	●	●	●	●	●

7.4 Record of services performed Service Recommendations

Recommended Service		Date	Odometer reading Kms.	Repair Order No.	Servicing Dealer's Signature & Stamp
At km	Type				
1,80,000	4				
1,89,000	2				
1,98,000	3				
2,07,000	2				
2,16,000	5				
2,25,000	2				
2,34,000	3				
2,43,000	2				
2,52,000	4				
2,61,000	2				
2,70,000	3				
2,79,000	2				
2,88,000	5				
2,97,000	2				
3,06,000	3				
3,15,000	2				
3,24,000	4				
3,33,000	2				
3,42,000	3				



WIRING DIAGRAM
LP/LPT 613 EURO-II
Drg./Part No. 2641 5400 00 11
Sheet No. 7 of 16