Andhra Pradesh State Road Transport Corporation
Mechanical Engineering Department
Office of the VC&MD, Bus Bhavan, Hyderabad-624

No. OP2/760(2)/2009-MED

CIRCULAR NO. 19/2009-MED, Date: 20-08-2009

Subject: **MAINTENANCE** – Introduction of TATA 1613 SUPERMILO model vehicles – Reg

M/s Tata Motors have introduced ***1613 SuperMilo*** chassis in place of earlier 1510 model. We have been receiving these chassis from March,2009 onwards. There are certain modifications in the 1613 Supermilo model compared to the earlier version of 1510 BS-II model. The salient features are furnished hereunder.

ENGINE

Type	:	697 TCIC BS-II
Max Power	:	130HP @2400 rpm
Max Torque	:	410 Nm @ 1400 – 1700 rpm

AIR CLEANER : Bigger air intake system with **15 cubic meter capacity** is introduced in 1613 model vehicles.

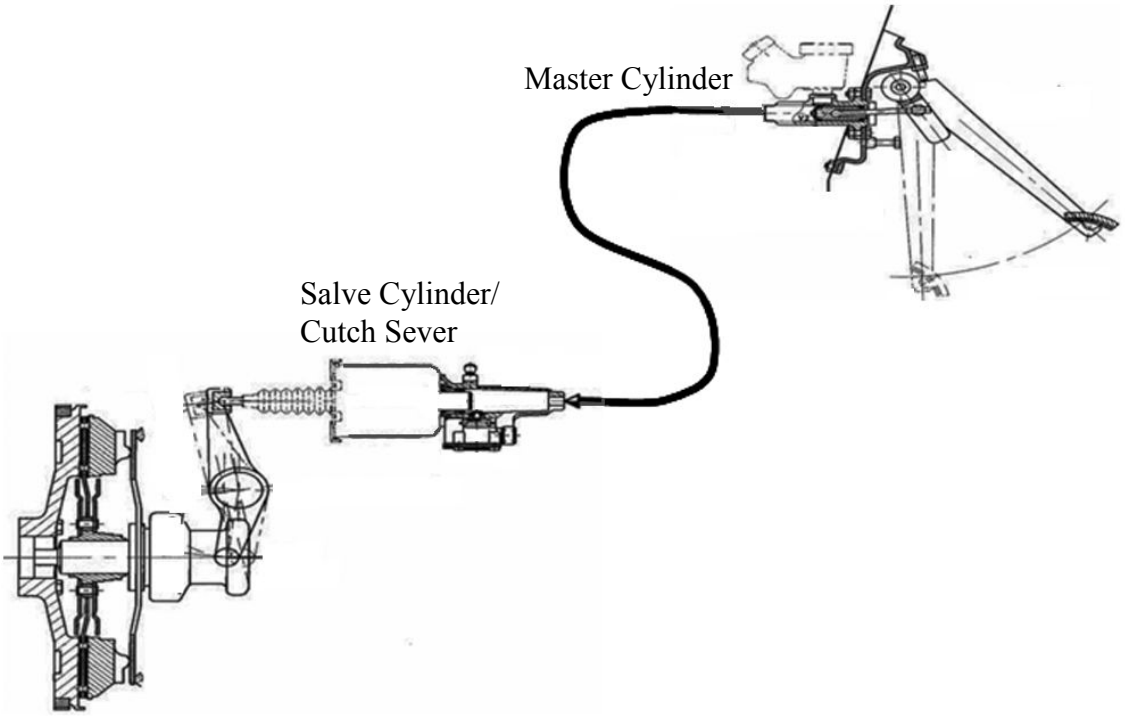
Smaller Filter Assy in 1510 model

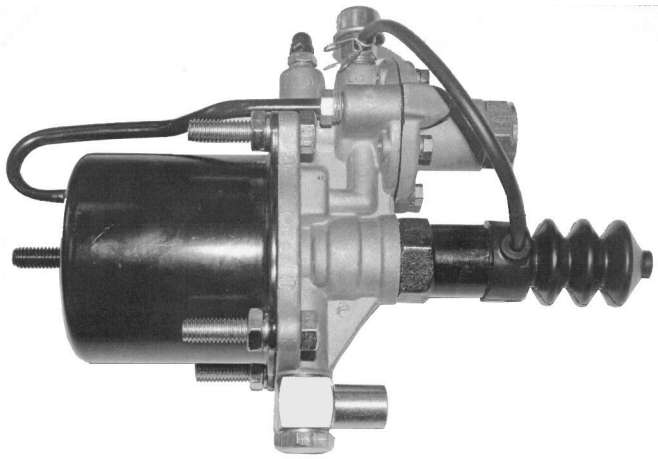
Bigger Filter Assy in 1613 SuperMilo

CLUTCH: Pneumatically Assisted Hydraulic actuation is provided for operation of Clutch. The Clutch Booster Assembly increases the output force while operating the clutch to disengage or engage. The salient features are

- 330mm dia push type organic clutch.
- Hydraulic Slave Cylnider
- Control Valve
- Pneumatic Servo Cylinder

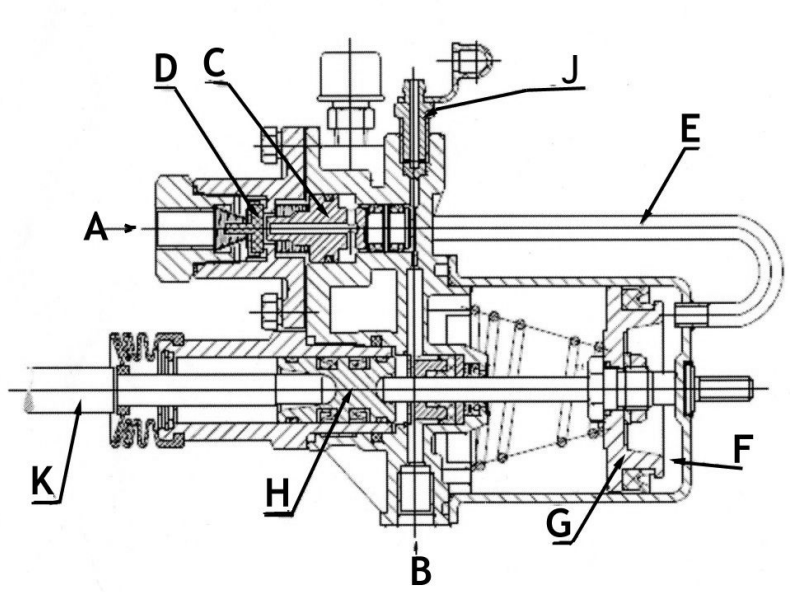
TYPICAL ARRANGEMENT OF CLUTCH OPERATING MECHANISM





<u>Operating Principle</u>: When Driver presses the Clutch pedal, clutch fluid goes from Master Cylinder to the oil chamber in the Clutch booster through Port-B. The oil acts on Piston-H and also flows through a passage to act on Relay Piston-C where the compressed air is readily available for actuation. As the pressure increases, the Pushrod-K starts moving in forward direction. When the Pushrod meets resistance, the oil pressure will increase and move the Relay Piston-C, which in turn will lift the Poppet Valve-D to open. Air then flows from Port-A through Transfer pipe-E and acts on the main piston-G, thus compounding the force already on the Pushrod by Hydraulic Piston-H

When Driver releases the pedal, the Oil volume goes back to Master cylinder; Air vented through exhaust port and Air & Oil pressure gets depleted in the Clutch Booster whereby the Clutch engages.



A – Air Inlet Port
B – Hydraulic inlet Port
C – Relay Piston
D – Air Poppet Valve
E – Air Transfer Pipe
F – Air Cylinder
G – Main Piston
H – Hydraulic Piston
J – Bleed Screw
K – Push rod

Note : Even if **No air pressure** is available in the air port of the clutch servo, It functions as that of the Hydraulic **slave cylinder** without hampering the clutch actuation.

Clutch Servo should always installed in such away that **exhaust facing upward.**

The recommended clearance of 0.5mm (Free play at Master Cylinder) shall be maintained by adjusting the pushrod. After adjusting the clearance, the unit shall be bled in the normal manner using the clutch pedal or a pressure bleeder. The clearance shall be checked and adjusted during every Sch-III maintenance.

TROUBLE SHOOTING GUIDE

S.No	Problem	Cause	Remedy
1	Soft pedal – no clutch	Air in the control line	Bleed the hydraulic system
		Master Cylinder bypassing	Replace or repair the Master cylinder
2	Hard peal	Insufficient air pressure to supply port	Check air supply and maintain a minimum air pressure of 5.0 bar
		Blocked/ obstructed hydraulic line	Clean or replace the hydraulic line
3	Clutch does not clear (grating gears)	Too much play between pushrod and clutch mechanism	Adjust and maintain correct clearance
		Clutch mechanism faulty	Replace/ repair the clutch mechanism
4	Clutch slipping	In sufficient clearance between pushrod and clutch mechanism	Adjust and maintain correct clearance
		Clutch mechanism faulty	Replace/ repair the clutch mechanism
5	Hydraulic oil leak from the unit	Worn seals	Overhaul or replace the servo
6	Air leaks from unit	Worn seals	Overhaul or replace the servo

ANTIROLL BAR: Front Anti roll bar is provided on LPO variants for better stability. This is similar to the one that was fitted to TATA 1512 TC model vehicles earlier.

The Depot Managers and Maintenance Incharges are advised to transmit the salient features of the 1613 SuperMilo vehicles among the maintenance staff and see that the vehicles are properly maintained.

The Dy.CMEs are advised to ensure stocking of unique spares required for maintenance at Depots (as furnished at annexures) in consultation with the Controllers of Stores.

EXECUTIVE DIRECTOR (E&IT)

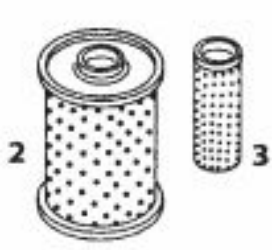
Encl: As above

To
All Depot Managers of Tata Depots.

Copy to: Dir (V&S), ED (E&IT), ED (O&MS), ED (A&P), FA, CAO, ED (T&C) for infn.
Copt to: ED (AM&HCZ), ED (HYD), ED (KRMR), ED (V&V), ED (K&N) for information.
Copy to: All RMs for necessary action.
Copy to: CME (O), CCOS, CA, CFM, CME(C&B), CE (IT), for information.
Copy to: DyCME (O), DyCME (P), DyCME(C&B), DyCME (IED), COS(C) I & II for n.action
Copy to: All DyCMEs, WMs, COSs & DyCAOs for necessary action.
Copy to: All Principals of ZSTCs, BTC, HPT & TA/HPT for information.
Copy to: All Maintenance In-charges of Tata depots for necessary action.
Copy to: In-charge, Manual Section for record.

ANNEXURE

AIR CLEANER



1. ASSY AIR FITER – 2786 0913 0134
2. PRIMARY FILTER ELEMENT – 2786 0913 9908
3. SECONDARY FILTER ELEMENT – 2786 0913 9909

ANTIROLL BAR ASSY

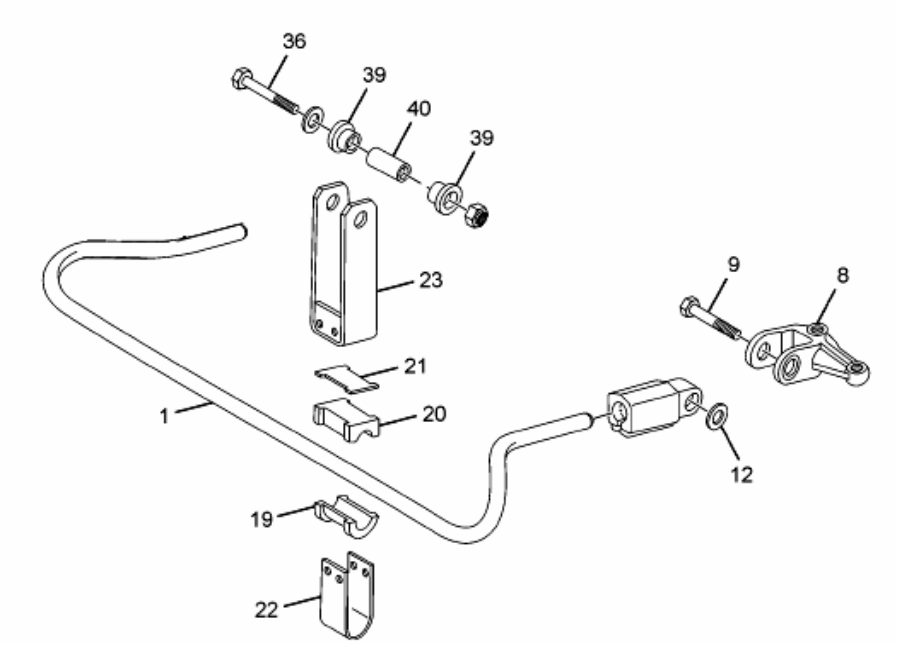


Fig No	Description	Part Number
19	BUSH HALF BOTTOM (SUB ASSY ANTIROLL BAR TO CONNECTING LINK)	257132803401
20	BUSH HALF TOP (SUB ASSY ANTI ROLLBAR TO CONNECTING LINK)	257132803402
39	RUBBER BUSH	257632807502
40	SLEEVE	257632808402

CLUTCH PARTS TO BE STOCKED AT DEPOT :

1. CLUTCH DISC (ORGANIC) – 2763 2520 0112
2. CLUTCH COVER ASSY. SUITABLE FOR ORGANIC CLUTCH – 2763 2540 0112
3. CLUTCH BOOSTER ASSTY – 2641 2920 0112
4. ASSY. PUSH ROD – 2632 2930 0104
5. ASSY. MAJOR REPAIR KIT – 2641 2920 0114
6. ASSY. MINOR REPAIR KIT – 2641 2920 0115

CLUTCH BOOSTER (RUILLLI make) PARTS

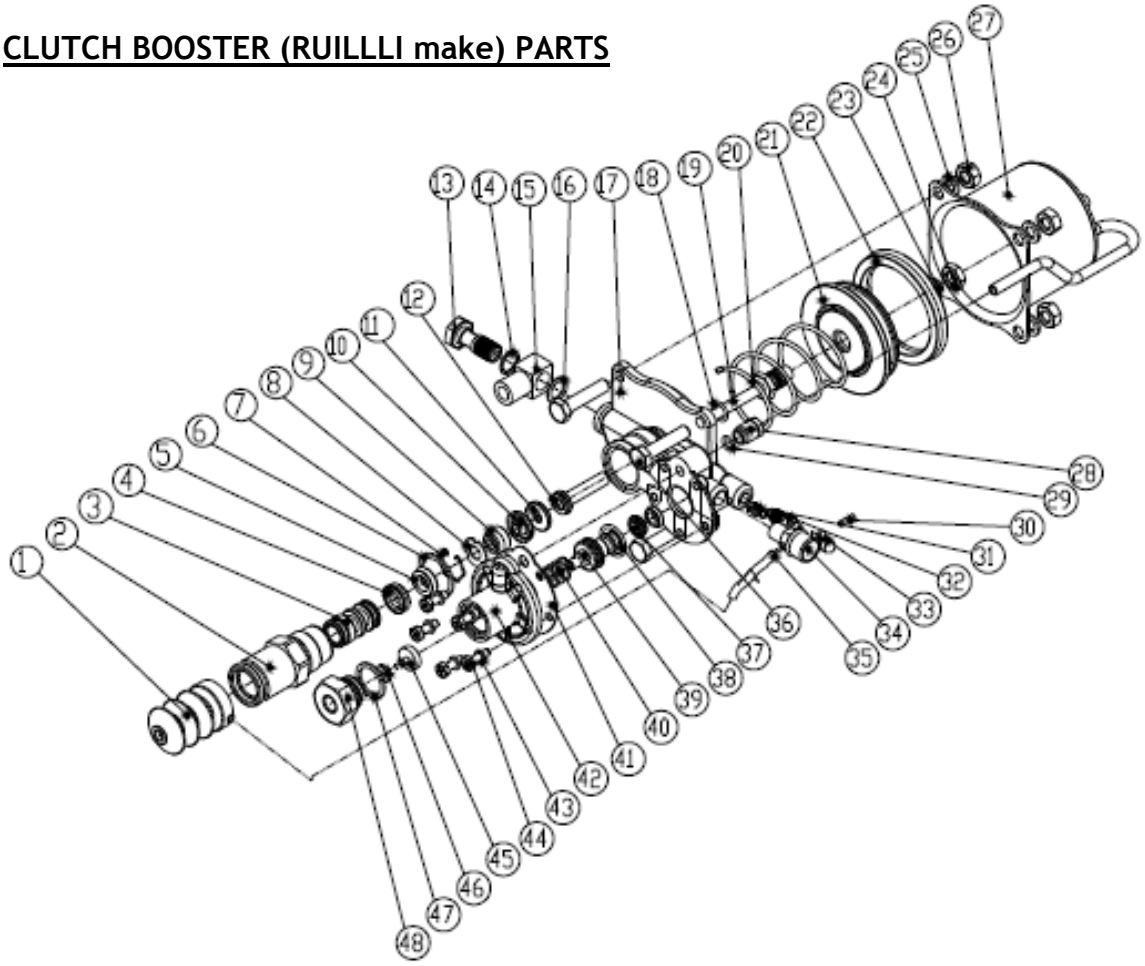


Fig No.	Part Name	Qty/ Veh
1	Guard	1
2	Front - Body	1
3	Hydraulic Piston	1
4	Packing - Cup	1
5	Packing - Cup	1
6	O-Ring 26x3.4	1
7	Snap Ring	1
8	Gasket	1
9	Retainer Assy	1
10	Packing - Cup	1
11	Gasket	1
12	Airproof Ring	1
13	Bolt - Eye	1
14	Airproof Gasket	1
15	Connector - Eye	1
16	Airproof Gasket	1
17	Main Body	1
18	O-Ring 14x2.2	1
19	Push rod Assy	1
20	Spring	1
21	Main Piston	1
22	Packing - Cup Repair Kit	1
23	Washer	1
24	Nut	1

Fig No.	Part Name	Qty/ Veh
25	Gasket	4
26	Nut	4
27	Shell Assy	1
28	Pipe Plug	1
29	O-Ring 12x2	1
30	Pipe Connector	1
31	Spring Hoop	1
32	Bleed Screw	1
33	Bleed Screw Cover	1
34	Exhaust Muffler	1
35	Rubber Pipe	1
36	Bolt	4
37	Packing Cup	2
38	O-Ring 19x2.5	1
39	Piston – Relay	1
40	Spring	1
41	Airproof Gasket	1
42	Body valve	1
43	Gasket	5
44	Bolt	5
45	Valve – Poppet	1
46	Spring	1
47	Airproof Gasket	1
48	Connector	1