

# TEJAS COACHES



**MANUFACTURED BY:  
RAIL COACH FACTORY, KAPURTHALA**

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**A. Type of coaches in Tejas Rake:**

Tejas rake consists of following three types of coaches:

- Executive AC chair car
- AC Chair Cars
- Power Cars

**B. Information about Layouts & General Installation:**

#	Coach Type	Layout Drg.	General Installation Drg.
1	LFCZAC Executive AC chair car	LZ90003	LZ90004
2	LSCZAC AC Chair Car	LZ90001	LZ90002
3	LWLRRM Power Car	LP90007	LP90008

### **C. Features of Tejas Coaches (200 KMPH Rakes):**

1. Fit to run at 200 kmph.
2. Electro-pneumatic assisted brakes
3. Automatic entrance plug type door
4. Improved Inter-car Gangway
5. Re-designed e-leather upholstery in seats
6. Improved lavatory -vacuum assisted flushing with bio-toilets (only 9 lavatories in complete rake are with vacuum assisted flushing, rest are normal flushing)
7. Infotainment system
8. Passenger information system and digital destination board & electronic passenger reservation chart integrated with the infotainment system (having LCD on the back of chairs)
9. Provision for Wi-Fi facility - system to be installed by Railways
10. Call bell
11. Fire and smoke detection system
12. Fire suppression system in power cars
13. Provision of CCTV Cameras
14. Improved aesthetics with new interior and exterior colour scheme presenting a futuristic look with the use of Vinyl sheets
15. Smart windows with automatic venetian blinds
16. Mobile laptop charging points through USB board provided on LCD screens of infotainment system
17. Provision of Wi-Fi facility
18. Integrated Braille displays
19. Bio-Vacuum toilets
20. Sensorised taps, flushing system, hand driers, tissue paper dispenser and soap dispenser for touch less experience of toilet use.
21. Water level indicators.

**D. Following are the details of main features of the Tejas coaches:**



**D.1 Electro Pneumatic Assisted Brake System**

To increase the maximum speed upto 200 kmph, existing Axle mounted disc brake system has been upgraded with:

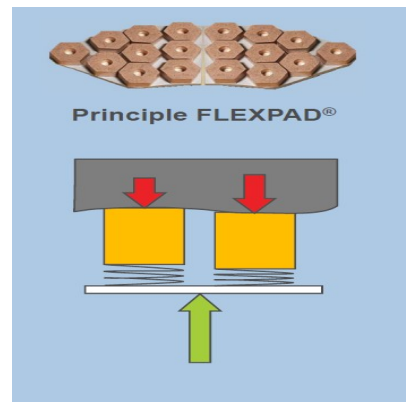
- Steel brake disc (in lieu of grey cast iron brake discs)
- Sintered brake pads (in place of composite brake pads)
- Additional EP assist brake system



Organic Pad



Sintered Pad



Functional Diagram

**D.2 Automatic entrance plug type door**

The Plug door system is simply formed by a door leaf, a drive unit mechanism located in the upper portal area and a component rack located at the rear side. The opening and closing movements of the doors are combined plug out/plug in and sliding movements.

The Automatic sliding Plug doors installed in the rake are controlled by centralized door control equipments via hardwired train lines installed in Guard's compartment. Guard panel have push buttons to activate the door



functional commands. Emergency door opening switch is also provided on the door. Train moves only after all the entrance doors are closed and entrance doors open only when train comes to a halt.

### **D.3 Passenger information system integrated with the infotainment system (LCD on the back of chairs)**

The complete rake is provided with infotainment system in the form of LCD screens mounted on the back of chairs. The infotainment system has features for displaying of recorded content like entertainment media, advertising, safety instructions etc. and can also be upgraded for live TV viewing. This infotainment system has also been provided with integrated GPS based passenger information system. For this, LCD screen has one separate channel for displaying the data from GPS based passenger information system. Moreover, USB charging facility has also been provided with each screen.



### **D.4 Improved Inter-car Gangway**

Improved dust sealed inter car gangways have been provided in these coaches. These gangways are fixed between two coaches as a single unit instead of conventional gangway vestibule where two separate units are fixed on adjacent coaches. Due to this, it has better sound levels, reduced dirt, sand and water ingress and better passenger safety and comfort.



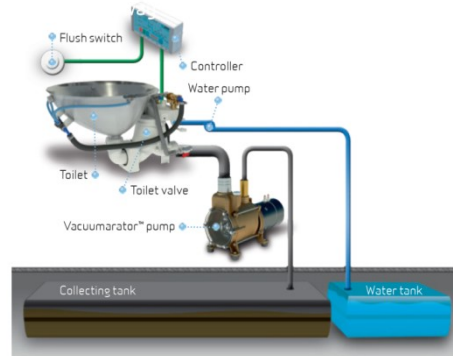
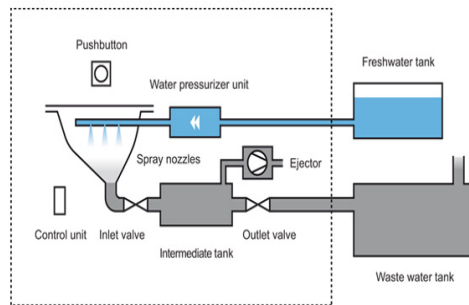
#### D.5 Re-designed E-leather upholstery in seats

Improved chair with e-leather (eco leather) as upholstery material has been provided in these coaches. In executive class chair cars, leg support has also been provided which are controlled by gas spring.



## D.6 Improved lavatory : vacuum assisted flushing with bio-toilets

Vacuum assisted flushing system with bio toilets was provided in some coaches. Due to vacuum assisted flushing, water consumption per flush is less and effectiveness of flushing is higher.



## D.7 Fire and smoke detection system

The complete rake has been provided with fire and smoke detection system. The system has smoke sampling points provided at various locations in the compartment area (8 nos), doorway area (2 nos) and electrical panel area (1 no.) Heat activated sensors are provided in all the 3 lavatories. On sensing of smoke/heat, depending upon the level of smoke, the system activates audio visual alarm and passenger announcement activation. After certain level/time automatic application of brake is initiated. A central monitoring system (CMS) is provided in each coach and a central monitoring unit (CMU) is mounted inside crew room of power car. The CMU displays the status of each coach of the rake.







## D.8 Fire suppression system in power cars

All the power cars in the rake have been provided with smoke detection and fire suppression system. The system consists of one number high pressure Nitrogen cylinder and 2 nos. water cylinders which are connected with 10 nos. of nozzles provided inside the generator room to disperse water mist. Heat and smoke detectors are installed above the generators. The detector control panel is provided inside the crew room. In case of smoke/fire, the alarm/buzzer is sounded and on detecting the fire, crew members are needed to operate a manually operated trigger valve for initiating suppression. Operating of trigger valve releases the high pressure nitrogen with water and water mist is discharged in engine compartment.



## D.9 Improved Toilets

Improved toilet system with touch-less fittings for water tap and soap dispensers have been provided for clean experience. Also the interior aesthetics have been improved substantially by marble paint finish with anti graffiti coating, gel coated wash basin shelf, new design dustbin, door latch activated light and lavatory engagement display.



#### **D.10 Provision of CCTV Cameras**

06 nos. of high resolution cameras (2 in passenger area, 2 nos. in each doorway area) have been provided. Cameras has night vision capability and facial recognition in low light condition. A network video recorder (NVR) has been provided in each coach with 2 TB hard disc capacity. The system has 30 days loop recording provision and works 24 hours per day. Additional 32GB SD card has also been provided to work as stand by to hard disk. In case of failure of camera/hard disc, indication is shown on NVR. Real time tagging of videos with speed, location and time through GPS antenna can also be done.



**E. List of specifications of new features:**

#	PL No.	Item	Spec/Drawing No.
1.	33635195	GPS based Passenger information system	<ul style="list-style-type: none"> <li>RDSO/PE/SPEC/AC/0087-2008(REV-1) &amp; RDSO/PE/TP/AC/0026-2015(REV-0)</li> </ul>
2.	33681879	CCTV system	<ul style="list-style-type: none"> <li>ICF MD-SPEC-269 REV-05</li> </ul>
3.	77070057	Fleet Graphic Film (Vinyl wrapping) on the exterior with anti graffiti measures	<ul style="list-style-type: none"> <li>RDSO/2010/CG-08</li> </ul>
4.	33691411	Fire and Smoke detection system	<ul style="list-style-type: none"> <li>RDSO/2008/CG-04 REV.03</li> </ul>
5.	33691400	Fire detection & Suppression system in Power car	<ul style="list-style-type: none"> <li>RDSO/2013/CG-06 (JUNE-2014)</li> </ul>
6.	33680115	Odour Control Dispensers in the Aisle	<ul style="list-style-type: none"> <li>RDSO/2008/CG-11</li> </ul>
7.	33566811	Improved Inter-car Gangway	<ul style="list-style-type: none"> <li>MDTS-22266</li> </ul>
8.	33611981 33612535 33614933	Improved lavatory -vacuum assisted flushing with bio-toilets	<ul style="list-style-type: none"> <li>MDTS-49281</li> </ul>
9.	33682215 33682227	Infotainment+LED Destination Board+PIS	<ul style="list-style-type: none"> <li>MDTS-24297</li> </ul>
10.	33502454 33502742	Electro-pneumatic assisted brakes	<ul style="list-style-type: none"> <li>MDTS-23265</li> </ul>
11.	33566823	Automatic entrance plug type door	<ul style="list-style-type: none"> <li>MDTS-25267</li> </ul>
12.	33560328 33560330	Smart windows with automatic venetian blinds	<ul style="list-style-type: none"> <li>MI006656</li> <li>MI006660</li> </ul>
13.	33565600	Automatic entrance door to AC area	<ul style="list-style-type: none"> <li>MDTS-25293</li> </ul>
14.	33593048	Water Level Indicator for overhead and unslung water tanks	<ul style="list-style-type: none"> <li>MDTS-16290</li> <li>MDTS-44296</li> </ul>
15.	33535425	Provision of PVC based film for coach interior of Tejas coaches	<ul style="list-style-type: none"> <li>MDTS-25305</li> </ul>

**F. Maintenance Manuals of following items are available with RCF:**

1. Fire and Smoke detection system
2. Fire detection & Suppression system in Power car
3. CCTV system
4. Automatic entrance plug type door

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