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5 Section 2.2: Maintenance Checklists for "A" Service Check

5.1 Sub-Section 2.2.1: "A" Service Checklist


Title : A Service Check list		Checklist No: 3B-02-02-01	
Note: This Checklist for 'A' Service Checks should be applied to the running distance or service time period elapsed, since the last Car Overhaul.		Running Distance	Service Time
Maintenance Interval:		Approx. 6Kkm	15 days
Maintenance Tolerance:		±1.0 kkm	Approx. ±1 days
Downtime	Man Power	Skill Requirements	
8 hours	10 persons per train	Mechanical & Electrical	
Train No.		Date and Time	
Checked by		Approved by	
Work Preparation			
1 Tools and Equipments Markers Multi-tester Torches Spanners Dust clothes Radio (3EA) Sandpapers Safety Helmet Safety Vest			

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Paint Brush (for VVVF Arc Shoot Clean)

Hand gloves


Task No	Equipment	Maintenance Actions	MWI No.	Car Applicability			Result	Remark
				DM	T	M		
Inspection (Without DC & AC Power)								
Work Preparation								
1. Wear the Safety Helmet For U/F Working								
2. Wear the Safety Vest								
3. Switch off all Units								
4. Isolate and earth the third rail power supply line								
Task 1. Underfloor Equipment's Condition Check								
1	Bogie	1 Visually check the following for damage and safety a. Lateral & Vertical Dampers, Anti-roll bar, Mono-link, Reaction arm, Lateral buffer stop, etc b. Earth cables (body/bogie and journal box/frame). c. Axle end earth cables. 3. Visually Check Journal box for mechanical damage or cracks. 4. Visually Check the safety of front covers and the integrity of the cover seal. 5. Visual Inspection of air spring ,check for damage,	3C-KM310-01	X	X	X		

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Task No	Equipment	Maintenance Actions	MWI No.	Car Applicability			Result	Remark
				DM	T	M		
		abrasions and audible signs of air leakage 6. Visual check leveling valves Installation rods for damage. Visually inspect brake calliper unit for damage and safety 7. Visual check of conical spring						
2	Driving Gear	Visual Inspection 1. The axle gearbox oil leakages and oil level 2. The axle gearbox for visible damage or any unusual phenomenon. 3. Visual inspection for any cracks on torque arm of spherical bearing.	3C-KM315-01	X		X		
3	Brake Pad	Check any damages.	3C-KM316-03	X	X	X		
4	Wheel set	[Axle] Visual inspection 1. The axles for any signs of corrosion, surface damage, poor paint adherence, blistered paint. 2. There is no debris lodged between the traction motors and motor axles.	3C-KM320-01	X	X	X		

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Task No	Equipment	Maintenance Actions	MWI No.	Car Applicability			Result	Remark
				DM	T	M		
		[Wheel] Inspection 1. Visually examine the wheel set for signs of movement between wheel & axle and for evidence of wheel overheating / derailment. In evidence of overheating wheel diameter, wheel back to back distance and wheel profile to be checked. 2. Visual check of wheel profile for any abnormalities						
5	Flange Lubricator System	Inspect the wheel flange lubricator system for wear and any abnormalities.	3C-KM336-01	X	X	X		
6	Front Automatic Coupler	1. Visual check for damage 2. Check the coupler head for damages, rust or sign of wear. 3. Visual check of tension spring, 4. Visual and audible check for Air pipe connection: Clean mouth pieces (socket and gasket) 5. Inspect supporting device for any defect 6. Visually check draft gear housing for any damages	3C-80421-01	X				
7	Intermediate Automatic Coupler (MC-MC)	1. Visual check for damage, without uncoupling 2. Visual check of tension spring, 3. Visual and audible check	3C-80422-01			X		

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Task No	Equipment	Maintenance Actions	MWI No.	Car Applicability			Result	Remark
				DM	T	M		
		for Air pipe connection, if leakage found the Clean mouth pieces (socket and gasket) 4. Inspect supporting device for any defect 5. Visually check draft gear housing for any damages						
8	Semi-permanent Coupler (Muff coupler)	1. Visual check for damage without uncoupling. 2. Visual and audible check for the air connectors. 3. Check the supporting device for its position and any damage, if any. 4. Visually check draft gear for any defect / damage 5. Check Muff coupling visually	3C-80423-01	X	X	X		
9	Filter Inductor	1. Check the mounting bolts and torque (343.35 Nm) 2. Check the mounting points for cracks or deformation. If there is any crack or deformation, repair it. 3. Check the main circuit cables HV512(L1), HV514(LL1), HV522(L2) and HV524(LL2) having any sign of insulation damage ,deformation or bend. 4. Check the safety earth cables having any sign of insulation damage. 5. Check the terminal covers	3C-152400-02	X		X		

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Task No	Equipment	Maintenance Actions	MWI No.	Car Applicability			Result	Remark
				DM	T	M		
		for cracks or deformation. If there is any crack or deformation, repair it. 6. Check the side covers for cracks or deformation. If there is any crack or deformation, repair it. 7. Check the frame covers for cracks or deformation. If there is any crack or deformation, repair it. 8. Check the side covers for blockages or clogging of foreign materials. If there is any blockage or clogging of foreign materials, remove it.						
10	Traction motor	1. Clean wire net filter of air Inlet box by stiff Nylon brush or blowing compressed air (4 bar) over it. 2. Check lead wire for damage, Inspection cover and motor exterior. 3. Check temperature sticker for any sign of overheating and presence of bad odour. 4. Visually Check grease leakage from bearing surface.	3C-80523-01	X		X		
11	Main Air Compressor VV120	Check if, 1. The level has fallen below the bottom mark on the oil sight glass 2. The level is so low that it	3C-KM1011-01-01		X			

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Task No	Equipment	Maintenance Actions	MWI No.	Car Applicability			Result	Remark
				DM	T	M		
		<p>may be expected by past experience to reach the bottom mark before the next maintenance appointment.</p> <p>3. Visual check fixation of compressor mounting bolts</p>						
12	Air Reservoir – Visual Inspection	<p>1. Inspect the air reservoir for outward damage.</p> <p>2. Exchange the air reservoir immediately if the inspection of the circumferential and longitudinal welds reveal any cracking.</p> <p>3. Check the reservoir connections. The fittings screwed into the reservoir connections must be either stainless steel or Galvanized steel. No other kind of fitting is allowed.</p> <p>4. Check any air leakage from the fittings connected to the reservoir by using soap water. Tighten the fittings immediately if there is air leak.</p> <p>5. The fasteners holding the air reservoir on board the vehicle must fit tightly. The strap holding the air reservoir must fit tightly.</p> <p>6. The water collected must be drained from the air reservoir by its water drain after specified time periods.</p>	3C-KM613-06	X	X	X		

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Task No	Equipment	Maintenance Actions	MWI No.	Car Applicability			Result	Remark
				DM	T	M		
13	Current Collector Device	1 Visual inspection of all components for damage and dirt. Clean the dirt 2 Wear inspection of the collector shoe 3 Check CCD fuse	3C-KM511-01	X		X		
Task 2. Cab								
15	Windscreen & wiper	1. Check the operation (Washing, Low & High speed, wash mode) 2. Check for glass view & scratch.		X				
16	Washer tank	1. Unscrew cap, and fill washer tank to the very top mark with the washing liquid 2. Screw on cap tight again by hand	3C-80247-08	X				
17	Air Horn	Check the operation (Dual tone)		X				
18	Sun Visor	Check functionality of sun visor		X				
19	Cab Side Door	1. Check for mounting of cab door limit switch. 2. With the cab side door closed and from inside the cab, check rotation the main lock handle on the cab side door between in and out. 3. Check that the door unlocks and can be opened into the cab. 4. Check that the main lock	3C-80820-01	X				

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Task No	Equipment	Maintenance Actions	MWI No.	Car Applicability			Result	Remark
				DM	T	M		
		springs back when the handle is released in the door open position. 5. Close the door and check that it closes correctly. 6. Check the door is getting manually operated. 7. Check the Two rollers connected with panel and those operate on the upper track rail. 8. Check the bottom guiders are operated on bottom rail simultaneously with the action of the two rollers. 9. Check the door can withstand rough handling including slam-open and slam close by operation and maintenance personnel. 10. Check the stoppers are possible to completely buff for opening power. 11. Check the Auto-Locking mechanism. 12. Check for play in doors. 13. Visually check if there are any damaged areas on the access panel. 14. Check door status on TCMS.						
20	Partition door	Check for proper operation, locking from both sides.						
Task 3. Interior								
21	Interior	Visual inspection on saloon		X	X	X		

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Task No	Equipment	Maintenance Actions	MWI No.	Car Applicability			Result	Remark
				DM	T	M		
	Facilities	interior (Strap hanger, Saloon light(100%) DIL, Speakers panel locking check Fire extinguisher, PIB, Passenger Seats, Draught screen, Gangway, Bulkhead panels, etc).						
22	Fire extinguisher	Check the fire extinguisher	3C-8023B-01	X	X	X		
Task 4. Exterior								
23	Windows	Check if the window glasses (Windscreen and Car body window glass) are broken or cracked, or the glazing sealing is damaged.	3C-80221-01	X	X	X		
Task 5. Roof								
24	VAC (Saloon & Cab)	1. With power applied to the electrical cubicle, check that there are NO faults in TCMS 2. Check that the sight glass is full (colour change). 3. Run the VAC in Normal AUTO mode and observe any unusual noise in any VAC 4. Operate VAC in Normal AUTO mode and physically check whether air conditioning appears to be normal. Also, check and record the temperature readings corresponding to each VAC from TCMS VDU. Check CAB VAC operations in all modes by operating Rotary	3C-191110-03 3C-192110-01	X X	X	X		

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Task No	Equipment	Maintenance Actions	MWI No.	Car Applicability			Result	Remark
				DM	T	M		
		switch						

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25	VAC (Saloon and Cab)	<ol style="list-style-type: none"> 1. Check the tray and drain under evaporator coil to see if any debris is found clean the drip tray and drain. 2. Check and clean if necessary drains in the condenser coil compartment 	3C-191110-04 3C-192110-02	X X	X X	X X		
26	Passenger Saloon Door	<ol style="list-style-type: none"> 1. Open/close the Passenger Saloon doors by pressing push buttons 2. Check the results on TCMS Display 3. While Opening and closing door, check from cab that doors open and close without obstruction 4. After opening of saloon door check all the inside and outside lamp. it should glow. 5. After closing of saloon door check all the inside and outside lamp. it should not glow. 	3C-80810-01	X	X	X		
27	PA & PIS	<ol style="list-style-type: none"> 1. TFT Display walk through test TFT Display – 18.5” – Functional test <ol style="list-style-type: none"> i. Go to the PAPIS HMI and select ‘START TFT TEST’ button in the ‘TESTING ADVANCED FUNCTIONS’ tab. ii. Check if TFT Display is emitting the test pattern. 2. Check PA/PIS, CCTV 	3C-KM-12-01-01	X	X	X		

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		<p>healthiness from PAPIS HMI by selecting 'DEVICE OVERVIEW ADVANCED FUNCTIONS' and by selecting one by one every individual subsystem of PAPIS/CCTV showing in the screen for every coach. If showing Green, it implies healthy, if showing Red, implies unhealthy and should be got attended.</p>						
28	PA & PIS	<p>1. Checking of manual announcement by MCP</p> <p>a. Press INT button on master MCP and check PA mode enable during PTT switch pressing</p> <p>b. Check announcement is executed from all loudspeakers (Internal and external) clearly</p> <p>2. Check on manual announcement by ACP</p> <p>a. Push PTT to speak to the microphone of ACP.</p> <p>b. Check announcement is executed from all internal loudspeakers at clearly.</p> <p>3. Check on Cab - Cab intercommunication by MCP</p> <p>a. Check that MCP becomes to CAB mode when the CREW CALL (C-C) button is pressed.</p> <p>b. CREW CALL button is blinking on MCP in leading (Occupied) and slave (that is non occupied) side</p>	3C-KM-12-01-02,03	X	X	X		

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		<p>c. Check that audible alarm is sounding in slave MCP.</p> <p>d. Press blinking button when the CREW CALL button is lit.</p> <p>e. Check that CAB/CAB intercommunication can be made.</p> <p>4. Check on Cab - Cab intercommunication by ACP</p> <p>a. Press CREW CALL (C-C) button on leading cab..</p> <p>b. C-C button is blinking on ACP in master and slave (non occupied) side.</p> <p>c. Check that audible alarm is sounding in slave (non occupied cab).</p> <p>d. Press blinking button when the C-C button is lit.</p> <p>e. Check that CAB/CAB intercommunication can be made.</p>						
29	PA & PIS	DVR Functional Test – CCTV test 1 Go to the HMI and check the view on each camera.	3C-KM-12-03-01	X				
30	Brake System-Brake Test	1. Check the Brake page on TCMS monitor 2. Inspect MR Pressure (8 to 10 bar) and BP pressure (5 bar) from gauges in the Cab. 3. Check the application and	3C-KM610-01	X	X	X		

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		release of Service Brake 4. Check the application and release of Emergency Brake, Emergency brake push button and BP drivers brake valve. 5. Check the Emergency brake application / release function test by EBPBs, DBV and TBC. Difference between TCMS and pressure gauge reading to be checked and recorded if any difference found there.						
31	Brake System- Visual Inspection	1. Check that brake equipment is working without any abnormal noise 2. Check that the connection of air hose (BC hose, Parking hose) is not detect any damage.	3C-KM610-02	X	X	X		
32	Leakage Test	1. Check that pressure in MR (through gauge in DM car) doesnot fall below 0.2 bar in 5min value. 2. Check the pressure on TCMS. If the pressure are different , it should be rectified.	3C-KM610-02	X	X	X		
33	VAC- Saloon	Fresh air filter cleaning	3C-191120-01	X	X	X		
34	VAC- Saloon	Return air filter cleaning	3C-191121-01	X	X	X		
35	VAC- Cab	Mixed air filter cleaning	3C-192120-01	X				
36	PAPIS- Cleaning	Clean with damp cloth the following PAPIS equipments 1. PEAU 2. PAD push button 3. Saloon camera	3C-KM-12-01-04,05 3C-KM-12-03-02	X	X	X		
37	PAPIS-	Clean with damp cloth the	3C-KM-12-01-	X				

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	Cleaning	following Papis equipments 1. PIS HMI 2. Microphone + PTT 3. Digital Video Recorder (DVR) 4. CCTV HMI	10,13 3C-KM-12-03-01,04					
38	TCMS	1. Check from TCMS display that there is no faulty equipment on the train. 2. Check door screen for faults and cutout switch position. 3. Check brake screens for brake controller and cutout switch. 4. Check powering screen for position of VVVF. 5. Check Auxiliary screen for APS position. 6. Perform on-board test for VVVF, APS, BECU, VAC, DCU, etc 7. Check and record saloon interior temperatures by running all VACs in Auto mode. 8. Function test through TCMS for Interior Saloon light.	-	X				
39	FDS	Check Train FDS status in FDS-HMI	-	X				
40	Electrical Jumper	Visually check for any abnormalities	-	X	X	X		
41	Exterior	Visually check for any abnormalities	-	X	X	X		
42	Under frame	Visually check all under frame equipment cover and their	-	X	X	X		

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	equipment	fixation						
43	Cab light & Console light	Check driving console light by operating Driving Console Light Switch	-	X				
44	Head light and Tail light	Check head lights by operating Head Light Switch (HLS). Check tail lights functionality	-	X				
45	Exterior Indicator	Check the function of Train Number Indicator(TNI) & Destination Indicator Front(DIF), Door Indicator Lamps	-	X	X	X		
46	Flasher Light	Check the flasher light function in MS FOR/REV & SCS cut-out mode.	-	X				

