

TRAINSET DEPOT AUNRIHAR



BRIEF INTRODUCTION

- Foundation stone for the project of setting up of Trainset Depot at Aunrihar in Ghazipur district of U.P was laid by **Shri Manoj Sinha**, honorable minister of state for communication independent charge and minister of state of Railways on 9th OCT 2016 after approval of Layout plant.
- Scope of works including list of M&P with technical specification by NER in Sept 2016. Detailed estimate of the project was sanctioned in OCT 2016 for INR 123.26 crore (Civil INR 73.38 crore, MECH INR 22 crore, ELECT INR 8.15 Crore, S&T INR 4.25 Crore). The Depot has been planned for homing & maintenance of 16 Coach of DEMU/MEMU rakes.
- The Trainset Depot was inaugurated on 29th JAN 2019 by **Shri Manoj Sinha** (minister of state of Railways), two months before the schedule completion time.
- Facility include RCC building of 1552 m² floor area comprising administrative building (2X557 m2), Electric Substation 261 m2, Security block 117 m2 and toilet block 60 m2. Other facility includes a washing line of 370 m length with 2m wide catwalk on both side, a waste water treatment, recycling plant 126 m2 & solar power plant (440kwp). The Depot has been equipped with machinery & plant of the value INR 18 Crore, which include Pit Wheel Lathe, Computerized Load Box, Remote controlled 30T EOT cranes, synchronize 25T Coach lifting Jacks, Packaged Screw Air compressor with Dryer 500 cfm, Welding Machine, Various fixture, Tools and plant etc. Material storage system include heavy duty storage rake & caged bins. Material handling systems include hydraulic stacker, Fork Lift, Platform Truck, hand Pallet Truck etc.
- 101 Railway quarters provided, out of which 51 quarter given to Trainset Depot ARJ.



INFRASTRUCTURE

➤ **Total RCC Floor Area: -1552 m²**

- Admin Building- 1114 m²
- Electrical Sub Station- 261 m²
- Security Block- 117 m²
- Toilet Block- 60 m²

➤ **Admin Building Area: -1114 m²**

- Facility include Total no of: **(a)** Hall: 04 nos. (20x40 ft.) **(b)** Kitchen: 02 nos. (12x27 ft.)
(c) Room: 14 nos. (10x12 ft.) **(d)** Toilet: 02 nos. (20x20 ft.).

➤ **Security Block: -03 Rooms (11x14 ft.), Toilet (11x20 ft.).**

➤ **Toilet Block: -02 Nos.**

➤ **Parking Stand: - 02 Nos.**

➤ **Washing Line (Pit Line) -**

- **370 x 7.5 m** - 370 m length with 2 m wide catwalk on both side with OHE (suitable for 16 coaches of DEMU/MEMU rakes), 3-inch waste treated water pipe & 6-inch fresh water pipe is available.

➤ **Light Repair Shed -**

- 370 m length with two lines equipped with OHE, covered shed of clear height 6.75 m, Dimension (370x15m).

➤ **Heavy Repair Shed -**

- 100 m × 21 m dimension, there are two lines each has dug with 25m length, Clear height of shed at EOT crane is 9 m and overall clear height of shed is 12 m.

➤ **Service repair Building-**

- Dimension (110x21m), Machine available in service repair building: Drilling machine, 02 no Jib crane, 03-compressors, DM water plant, 04 nos. staff room, Grinder, Air drier test bench & Traction motor no load test machine.

➤ **Stores Building:**

- All stock, non-stock material and other material in total no. of 100 nos. caged bins.
- Tool Room-(Depot Made).

➤ **Pit Wheel Lathe & Load box Shed: -**

- Dimensions (40 x 18 x 07) m
- Two lines for Load box facility & Pit Wheel Lathe.

➤ **Sub Station: - 11kv/415v.**

➤ **Solar Power Plant- 440 kwp.**

➤ **Laboratory: -**In year 2022-2023 a laboratory established in Trainset Depot ARJ. In which following Machines are installed and commissioned.

- Master Controller Test Bench.
- Dissolve Gas Analyzer.
- Breakdown Voltage Test Machine.

➤ **ETP: -** ETP (Capacity-40KLD) installed in Trainset Depot/ ARJ.

Services provided

Link -1	ARJ	CPR	SV	JEA	NTV	BNY	GD	BRK
Day-1		05136 →						
Day-2			05145 →	05153 →	05375 →			
Day-3							05371 → 05372 ← 05373 → 05374 ← 01767 → 01768 ←	
Day-4				05377 → 05378 →	05376 →			
Day-5				05033 → 05034 →				
Day-6		05135 ←	05146 ←	05154 ←				
➤ Rakes Needed- 06 DEMU (Daily 01 rake needed).								

Link -2	ARJ	GCT	JNU	BCY	AMH	BSBS	PRRB	PYGS	BTT	AY
Day-1	ECR →	05133 → 05134 ← 05461 →		05428 →						
Day-2				05427 ←	ECR →	05195 → 05174 ←				
Day-3				ECR →		05173 → 05196 ← 05148 →				
Day-4									05425 → 05426 ←	
Day-5		05462 → 05143 → 05144 →		05147 →						
Day-6 / Day-7				05437 → 05438 →						
➤ Rakes Needed- 07 MEMU (Daily 01 rake needed).										

Link -3	ARJ	DIT	MAU	PRRB
	ECR →	05477 → 05478 →	05137 → 05138 →	
	ECR ←			

- Rakes Needed- 01 MEMU (Weekly).
- Total Rakes Needed – 06 DEMU + 08 MEMU = 14.

BASIC DETAILS OF RAKE

DEMU							
Sr.	DPC No	D.O.C	Type	Engine	Control system	Brake system	Bogie
01	158073/74	03.11.2015	1400 HP	CAT	BHEL/Conv.	E.P.	ICF
02	038021/22	25.06.2003		CIL	BHEL/Conv.	SA-9/A9	ICF
03	19007/08	10.11.2014		CIL	BHEL/Conv.	E.P.	ICF
04	19011/12	25.12.2015	1600 HP	CAT	MEDHA	E.P.	ICF
05	19013/14	10.01.2016		CAT	MEDHA	E.P.	ICF
06	19017/18	13.04.2016		CIL	MEDHA	E.P.	ICF
07	19019/20	21.06.2017		CIL	CGL	E.P.	ICF
08	188698/99	20.07.2017		CIL	MEDHA	E.P.	ICF
09	19023/24	24.10.2017		CIL	CGL	E.P.	ICF
10	19025/26	09.09.2018		CIL	MEDHA	E.P.	ICF
11	188374/75	06.12.2018		CIL	MEDHA	E.P.	ICF
MEMU							
Sr.	DPC No	D.O.C	Type	Traction Transformer	Control system	Brake system	Bogie
01	208271/72	05.09.2019	3 - PHASE	Siemens	MEDHA	E.P.	ICF
02	218115/16	19.02.2021		Siemens	MEDHA	E.P.	ICF
03	218113/14	14.04.2021		ABB	MEDHA	E.P.	ICF
04	198657/58	16.06.2021		Siemens	MEDHA	E.P.	ICF
05	228053/54	07.03.2023		BHEL	BHEL	E.P.	RCF
06	228057/58	28.08.2023		BHEL	BHEL	E.P.	RCF
07	238633/34	27.10.2023		Siemens	MEDHA	E.P.	RCF
08	238635/36	19.12.2023		Siemens	MEDHA	E.P.	RCF
09	238307/08	13.02.2024		BHEL	BHEL	E.P.	RCF
10	238309/10	15.03.2024		BHEL	BHEL	E.P.	RCF
11	238585/86	U/Comm.		BHEL	BHEL	E.P.	RCF
12	239029/30	U/Comm.		Siemens	MEDHA	E.P.	RCF

- **CAT: - Caterpillar.**
- **CIL: - Cummins India Ltd.**
- **CGL: - Crompton Greaves Ltd.**

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06	19017/18	13.04.2016		CIL	MEDHA	E.P.	ICF
07	19019/20	21.06.2017		CIL	CGL	E.P.	ICF
08	188698/99	20.07.2017		CIL	MEDHA	E.P.	ICF
09	19023/24	24.10.2017		CIL	CGL	E.P.	ICF
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Scope of Maintenance Schedule

➤ DEMU (1400 HP & 1600 HP):- (By RDSO)

- **Part-I:** Engine, Air Brake, Compressor, etc.
- **Part-II:** Electrical transmission and controls.
- **Part-III:** Coach body, Under frame, Bogie, Brake rigging etc.
- **Part-IV:** Carriage Electrical.
- **Part-V:** Schedule of Lavatory and Lavatory fittings.

- **Schedule wise periodicity of maintenance of Engine, Brakes, Compressor, Electric Transmission & Controls (Applicable to Part-I and Part-II): -**

Sr.	Type of schedule	Periodicity of Brakes, Compressor, Electrical Transmission & Controls	Periodicity of diesel engine			
			For Cummins engine		For Caterpillar engine	
			1400 HP model KTA50L	1600 HP model QSK50	1400HP model CAT 3508B	1600HP model CAT 3512C
1.	Trip Schedule	At the end of each trip Max. 15 days or EKM 3500	At the end of each trip Max. 15 days or EKM 3500		At the end of each trip max. 15 days or EKM 3500	
2.	Monthly	1 M ± 3 days (Also repeat Trip sch.)	1 M ± 3 days (Also repeat Trip sch.)		1 M ± 3 days (Also repeat Trip sch.)	
3.	Quarterly	3 M ± 7 days. (Also repeat Trip & 1M sch.)	3 M ± 7 days. (Also repeat Trip & 1M sch.)		3 M ± 7 days (Also repeat Trip & 1M sch.)	
4.	Half-yearly	6 M ± 10 days (Also repeat Trip, 1M & 3M sch.)	6 M ± 10 days (Also repeat Trip, 1M & 3M sch.)		6 M ± 10 days (Also repeat trip, 1M & 3M sch.)	
5.	9-Monthly	Repeat Trip, 1M & 3M sch.	Repeat Trip, 1M & 3M sch.		9 M ± 15 days Also repeat Trip, 1M & 3M sch.	
6.	12-Monthly	Repeat trip, 1M, 3M & 6M sch.	Repeat trip, 1M, 3M & 6M sch.		12 M ± 20 days Also repeat trip, 1M, 3M & 6M sch.	
7.	18-Monthly	18 M (for Compressor & Air dryer) (Also Repeat trip, 1M, 3M & 6M, *9M sch.)	D-Check: 18 M ± 30 days, (Also repeat trip, 1M, 3M & 6M 9M sch.)	18 M ± 30 days, (Also repeat trip, 1M, 3M & 6M 9M sch.)	18 M ± 30 days, (Also repeat trip, 1M, 3M, 6M & 9M sch.)	
8.	48-Monthly/ 4Y	For Air Dryer only. (in every 4 th Yearly Sch.)	--	--	--	
9.	54-Monthly	Repeat the above schedules	Repeat the above Schedule up to 54M. Carry out E-Check/POH of engine	(Repeat the above Schedule) Only injector to be replaced at 54M (Engine schedule Matching with 3 rd POH of DPC	Repeat the above Schedule up to 54M. Carry out 1st Top end Overhaul of engine.	
10.	Other Schedules	--	--	Repeat the above Schedules up to 108M or 9Y (Matching with 6 th POH of DPC)	1. 2nd Engine POH at 8Y. 2. 3rd Engine POH at 12Y 3. 4th Engine POH at 16Y.	

- **Periodicity of maintenance:-**

Sr.	Part-III	Part-IV	Part-V	Periodicity
1.	Primary Schedule	Primary Schedule	Primary Schedule	15 days/3500 km.
2.	Schedule 'A'	Monthly Schedule	Schedule 'A'	01 month ± 03 days.
3.	Schedule 'B'	Quarterly Schedule	Schedule 'B'	03 months ± 07 days.
4.	IOH	IOH	IOH	09 months ± 15 days.
5.	POH	POH	POH	18 months ± 30 days.

➤ MEMU (03-Phase) Schedule: -

- All Electrical, Air Brake Maintenance & Bogie.

Sr.	Type of Schedule	Periodicity
1.	TI	15 days
2.	IA	60 days
3.	IC	240 days
4.	POH	24 Months

**OUTSOURCING AND INHOUSE MAINTENANCE PRACTICE DETAILS
DEMU**

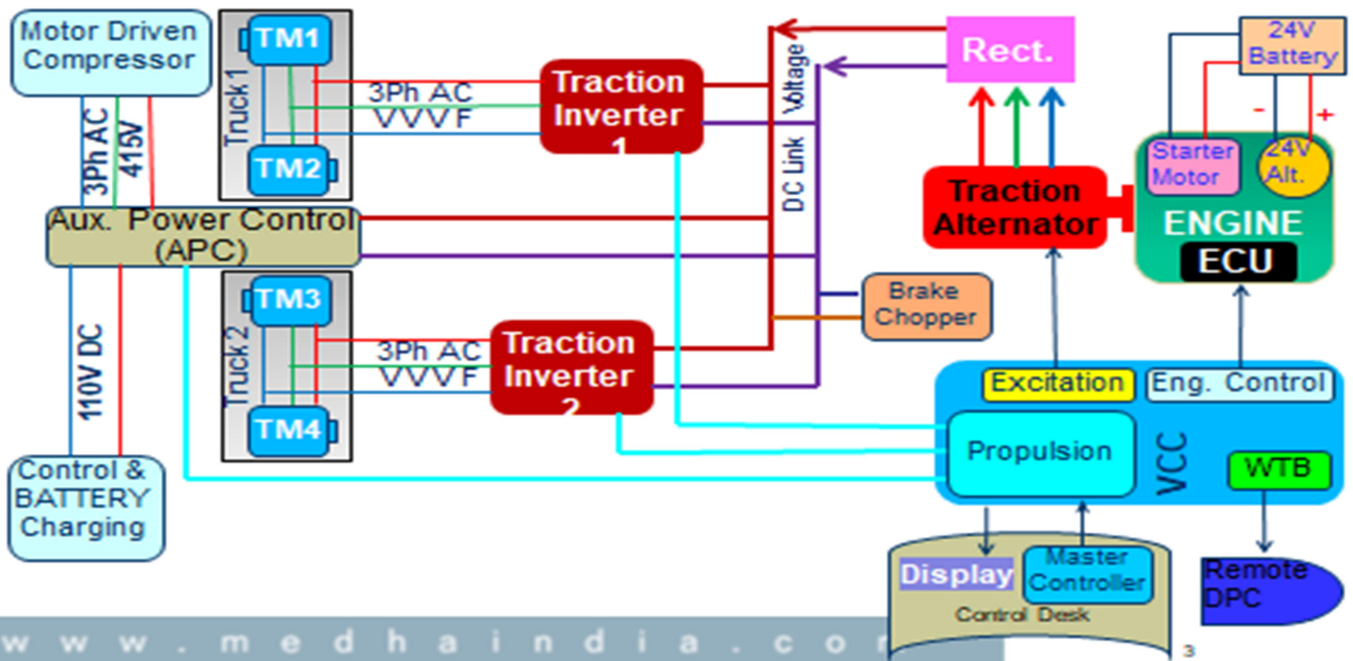
ALL RAKES		075/076 (158073/74)	19005/06 (038021/22)	19007/08	19011/12 & 19013/14	19017/18, 19021/22, 19025/26 & 188374/75	19019/20 & 19023/24
		1400 HP			1600 HP		
Engine	Make	CAT	CIL		CAT	CIL	
	Maintenance Practice	Maintenance done By Shed But Higher Schedule 18,000 Hrs done by OEM.	Maintenance done By Shed But Higher Schedule 18,000 Hrs done by OEM at IZNS.		Maintenance done By Shed But Higher Schedule 18,000 Hrs done by OEM.	Maintenance done By Shed But Higher Schedule 18,000 Hrs done by OEM at IZNS.	
Control	Type /Make	Conventional/ BHEL	Conventional/BHEL		IGBT/MEDHA		IGBT/CGL
	Maintenance Practice	Maintenance done By Shed.	Maintenance done By Shed.		Under AMC by OEM MEDHA.		Under AMC by OEM CGL.
Air Brake (Including Compressor & Air Dryer)	Type	EP	Conventional (SA-9/A9/DV)	EP	EP	EP	EP
	Maintenance Practice	Maintenance done By Shed.					
Bogie	Type	ICF					
	Maintenance Practice	Maintenance Schedule A, B & IOH done by Shed, POH by IZN workshop.					
Note: -Train lighting, PA/PIS and Camera maintained by TSD/ARJ staff.							

MEMU

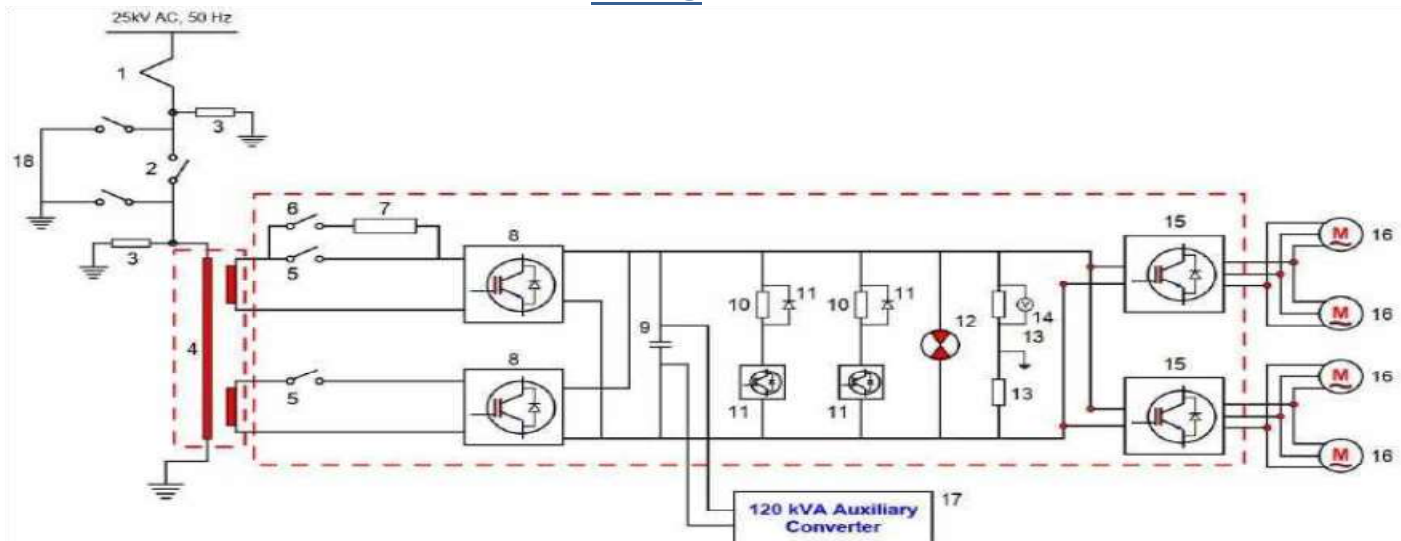
ALL RAKES		ICF Manufactured		RCF Manufactured			
		198657/58, 208271/72 218113/14, 218115/16		228053/54, 228057/58 238307/08, 238309/10		238633/34, 238635/36	
Pantograph, VCB, Main Transformer, Traction Motor	Maintenance Practice	Maintenance done By Shed.					
Control	Type /Make	MEDHA		BHEL		MEDHA	
	Maintenance Practice	Under AMC by OEM (MEDHA)		Under Warranty (BHEL)		Under Warranty (MEDHA)	
Air Brake (Including Compressor & Air Dryer)	Type	EP		EP		EP	
	Maintenance Practice	Maintenance done By Shed.					
Bogie	Type	ICF		RCF		RCF	
	Maintenance Practice	Maintenance Schedule A, B & IOH done by Shed, POH by GKP workshop.					
Note: -Train lighting, PA/PIS, Cab Air-Conditioning and CCTV-Camera maintained by TSD/ARJ staff.							

OUTSOURCING DETAILS

Sr.	Type		Description	Name of firm	CA value	CA validity
1	Control System	DEMU	"Comprehensive Annual Maintenance Contract for IGBT based DPC of 1600 HP AC-AC DEMU Fitted with CGPISL Electric of Varanasi division for period of Three years.	M/s CG Power And Industrial Solutions Limited	61,17,120.00	31.07.2024
2			Comprehensive AMC for IGBT based 1600 HP 3- phase DEMU/DPC Control System of M/s MEDHA make supplied as per Latest RDSO specification, Quantity-12 nos. DPCs for a period of three years	M/s MEDHA SERVO DRIVES PVT.LTD	3,12,24,681.39	26.08.2025
3		MEMU	Customized AMC/CMC for pre owned products- CAMC for IGBT Based MEMU at TSD/ARJ/BSB for three year.	M/s MEDHA SERVO DRIVES PVT.LTD	3,92,82,944.00	25.10.2026
4	Cleaning	DEMU & MEMU	Mechanized Cleaning (Interior & Exterior), watering & Padlocking etc. in 30 Coaches along with upper gear Passenger amenity maintenance work daily at W/pit and mechanized cleaning of Depot/ Shed premises, Pit lines/ARJ including Drains cleaning, Garbage disposal and Dry sweeping, toilet cleaning, gardening etc for the period of four years.	M/s Bhartiya Securities Services, Varanasi	2,82,34,106.08	17.05.2024
5	Bio Toilet Testing Lab		Supply, installation and commissioning of machine & equipments for setting up of in house testing facilities for the quality check of the effluent discharged from Bio-toilet at Trainset Depot aurinhar, Coaching Depot Varanasi city, Mau, Ballia on turnkey basis.	M/s Bhartiya Securities Services, Varanasi	23,00,252.00	31.07.2026
6	R.O	General	Maintenance of Five RO. Plants situated inside DEMU Shed Aunrihar For a Period of two year.	M/S shivani enterprises, mehnazpur, azamgarh	218390.00	21.03.2025



MEMU



1	Panto graph (in purchaser's scope)
2	Vacuum circuit breaker (VCB) (in purchaser's scope)
3	Surge arrester (in purchaser's scope)
4	Transformer
5	Converter contactor
6	Pre-charging contactor
7	Pre-charging resistor
8	Line converters (2 per Traction converter)
9	DCL capacitor bank

10	Brake Chopper Resistor
11	Brake Chopper IGBT with Freewheeling Diode
12	Voltage Indicator Lamp.
13	Earth Fault Detection Resistors.
14	Earth Fault Detection Voltage Sensor.
15	Motor Drive Converter (2 per Traction Converter)
16	Traction Motors.
17	120 kVA Auxiliary converter
18	HV Earthing switch (in purchaser's scope)

Component Detail of DEMU – 1400 HP

DPC No.			075/076 (158073/74)	19005/06 (038021/22)	19007/08
Load (DPC+TC)			08	08	08
Date of Commissioning			03.11.15	25.06.03	10.11.14
CODAL Life			25 year	25 year	25 year
Engine	Engine Make (No. of Cylinder)		CAT (08)	CIL (16)	CIL (16)
	Hydraulic Pump	Make	Rexroth (CAT)	Rexroth (CIL)	Rexroth (CIL)
		Drive (by Crank Shaft)	Gear	V-Belt	V-Belt
	Ventilation Fan	Make	Rexroth (CAT)	Rexroth (CIL)	Rexroth (CIL)
		Drive	Hydraulic	Hydraulic	Hydraulic
	Radiator Fan Motor	Make	Rexroth (CAT)	Rexroth (CIL)	Rexroth (CIL)
		Drive	Hydraulic	Hydraulic	Hydraulic
Electrical	Variety		AC-DC	AC-DC	AC-DC
	Traction Alt.		BHEL	BHEL	BHEL
	Control System		BHEL (Conventional)	BHEL (Conventional)	BHEL (Conventional)
	Traction Motor		BHEL/CGL	BHEL	BHEL/CGL
	Aux. Alternator		BHEL/EML	KEL	KEL
	RRU		BHEL/EML	KEL	KEL
	24 V Charging Alternator		CAT	CIL	CIL
Pneumatic	Brake System	Type	EP	Conventional	EP
		DPC	Escort, Escort	SA9, A9/DV	Escort, Escort
		TC	Escort & WSF	DV	Escort
	Air Drier		Faiveley	Prag Polymer	Trident
	Compressor	Make	ELGI (TRC-2507)	ELGI (TRC-2507)	ELGI (TRC-2507)
		Capacity	2600 LPM	2600 LPM	2600 LPM
		Drive	V-Belt	V-Belt	V-Belt
Bogie	Bogie	DPC	20.32 TON	20.32 TON	20.32 TON
		TC	16.25 TON	16.25 TON	16.25 TON
	Air Bellow	Make (Capacity-180 KN)	TAYAL, TMT, Continental, Resistoflex	TVS, Resistoflex, TAYAL, Continental, Firestone, TMT	TAYAL Resistoflex, Continental, TMT, Firestone, Trelliburg
	FIBA		Not Available	Not Available	Not Available
Mis. Electrical	Battery 110 V		06V-18nos. 120 Ah (VRLA)	06V-18nos. 120 Ah (VRLA)	06V-18nos. 120 Ah (VRLA)
	Battery 24 V		08V-03nos 500/450 Ah(LMLA)	08V-03nos 500/450 Ah(LMLA)	08V-03nos 500/450 Ah(LMLA)
	Master Controller		BHEL	BHEL	BHEL
	Speedo Meter		MEDHA	MEDHA	MEDHA
	PAPIS, Talk Back, Camera		Not Available	Not Available	Not Available
	Coupler		A,B,C,D,E	A,B,C,D,E	A,B,C,D,E

1600 HP

1600 HP

Component Detail of 3-Phase MEMU

DMC No.			198657/58	208271/72	218113/14	218115/16	228053/54	228057/58	
Load (DMC+TC)			08	08	08	08	08	08	
Date of Commissioning			05.09.19	19.02.21	14.04.21	16.06.21	07.03.23	28.08.23	
CODAL Life			25 Years	25 Years	25 Years	25 Years	25 Years	25 Years	
Control System			MEDHA	MEDHA	MEDHA	MEDHA	BHEL	BHEL	
Electrical	Variety		AC-AC	AC-AC	AC-AC	AC-AC	AC-AC	AC-AC	
	Pantograph		Schunk	Schunk	Schunk	Schunk	Schunk	Schunk	
	VCB		Schneider	Schneider	Schneider	Schneider	AAL	AAL	
	Traction Transformer		Siemens	Siemens	ABB	Siemens	BHEL	BHEL	
	Line & Traction Converter (LTC)		MEDHA	MEDHA	MEDHA	MEDHA	BHEL	BHEL	
	Traction Motor		TSA / MEDHA	TSA / MEDHA	TSA / MEDHA	TSA / MEDHA	BHEL	BHEL	
	Auxiliary Converter Unit		MEDHA	MEDHA	MEDHA	MEDHA	BHEL	BHEL	
Pneumatic	Brake System	Type	EP	EP	EP	EP	EP	EP	
		DMC	KBIL, KBIL	ESCORT, ESCORT	KBIL, KBIL	ESCORT, ESCORT	KBIL, KBIL	KBIL, KBIL	
		TC	KBIL, ESCORT	KBIL, ESCORT	KBIL	ESCORT	KBIL	KBIL	
	AGTU	Air Drier	Faiveley	Faiveley	Faiveley	Faiveley	Trident	Trident	
		Compresso	Make	Faiveley	Faiveley	Faiveley	Faiveley	ELGI(RR-15070)	ELGI(RR-15070)
			Capacity	1400 LPM	1400 LPM	1400 LPM	1400 LPM	1400 LPM	1400 LPM
			Drive	Electric Motor	Electric Motor	Electric Motor	Electric Motor	Electric Motor	Electric Motor
Bogie	DPC		20.32 Ton	20.32 Ton	20.32 Ton	20.32 Ton	20.32 Ton	20.32 Ton	
	TC		20.32 Ton	20.32 Ton	20.32 Ton	20.32 Ton	20.32 Ton	20.32 Ton	
	Air Bellow	(Capcity-180 KN)	TVS, Resistoflex	TVS	TVS	TVS	Resistoflex	Resistoflex	
	FIBA		MEDHA (Sensor)	MEDHA (Sensor)	MEDHA (Sensor)	MEDHA (Sensor)	BHEL (Sensor)	BHEL (Sensor)	
Mis. Electrical	Battery 110 V		06-V, 18nos 120 Ah (VRLA)	06-V, 18nos 120 Ah (VRLA)	06-V, 18nos 120 Ah (VRLA)	06-V, 18nos 120 Ah (VRLA)	06-V, 18nos 120 Ah (VRLA)	06-V, 18nos 120 Ah (VRLA)	
	Master Controller		Schaltbau	Schaltbau	Schaltbau	Schaltbau	Schaltbau	Schaltbau	
	Speedo Meter		MEDHA	MEDHA	MEDHA	MEDHA	Telpro AAL	Telpro AAL	
	PAPIS/ Talk Back		MEDHA	MEDHA	MEDHA	MEDHA	IC Elect.	IC Elect.	
	Camera		Hik vision	Hik vision	Hik vision	Hik vision	Dahua	Dahua	
	Coupler		Harting A,G,P,F1,F2, D,C,B1,B2	Harting A,G,P,F1,F2, D,C, B1,B2	Harting A,G,P,F1,F2, D,C, B1,B2	Harting A,G,P,F1,F2,C ,B1,B2	Harting A, B, G, H, J, C, D	Harting A, B, G, H, J, C, D	

Component Detail of 3-Phase MEMU

DMC No.			238633/34	238635/36	238307/08	238309/10	
Load (DMC+TC)			08	08	08	08	
Date of Commissioning			27.10.23	19.12.23	13.02.24	15.03.24	
CODAL Life			25 Years	25 Years	25 Years	25 Years	
Control System			MEDHA	MEDHA	BHEL	BHEL	
Electrical	Variety		AC-AC	AC-AC	AC-AC	AC-AC	
	Pantograph		Schunk	Schunk	Schunk	Schunk	
	VCB		Schneider	Schneider	AAL	AAL	
	Traction Transformer		Siemens	Siemens	BHEL	BHEL	
	Line & Traction Converter (LTC)		MEDHA	MEDHA	BHEL	BHEL	
	Traction Motor		TSA/ MEDHA	TSA/ MEDHA	BHEL	BHEL	
	Auxiliary Converter Unit		MEDHA	MEDHA	BHEL	BHEL	
Pneumatic	Brake System	Type	EP	EP	EP	EP	
		DMC	KBIL KBIL	ESCORTS ESCORTS	ESCORTS ESCORTS	ESCORTS ESCORTS	
		TC	ESCORTS	ESCORTS	ESCORTS Faiveley	ESCORTS Faiveley	
	AGTU	Air Drier		Trident	Trident	Trident	Trident
		Compressor	Make	ELGI (RR-20070)	ELGI (RR-20070)	ELGI (RR-15070)	ELGI (RR-15070)
			Capacity	1750 LPM	1750 LPM	1750 LPM	1750 LPM
			Drive	Electric Motor	Electric Motor	Electric Motor	Electric Motor
Bogie	DPC		20.32 Ton	20.32 Ton	20.32 Ton	20.32 Ton	
	TC		20.32 Ton	20.32 Ton	20.32 Ton	20.32 Ton	
	Air Bellow	180KN	TVS, Awadh	TVS Resistoflex	TVS	TVS	
	FIBA		MEDHA (Sensor)	MEDHA (Sensor)	BHEL (Sensor)	BHEL (Sensor)	
Mis. Electrical	Battery 110 V		06-V, 18nos 120 Ah (VRLA)	06-V, 18nos 120 Ah (VRLA)	06-V, 18nos 120 Ah (VRLA)	06-V, 18nos 120 Ah (VRLA)	
	Master Controller		Schaltbau	Schaltbau	Schaltbau	Schaltbau	
	Speedo Meter		MEDHA	MEDHA	Telpro	Telpro	
	PAPIS/ Talk Back		MEDHA	MEDHA	IC Elect.	IC Elect.	
	Camera		Hik vision	Hik vision	Prozone	Prozone	
	Coupler		Harting A,G,P,F1,F2,C,B1,B2	Harting A,G,P,F1,F2,C,B1,B2	Harting J,H,G,P,B,A C,D	Harting J,H,G,P,B,A C,D	

M&P and T&P Position

Sr.		Name	Make	Capacity/Spec.	Qty.	D.O.C
1	Pit Wheel Lathe		Hegenscheidt		1	21.06.2019
	Automatic Coach washing Plant (ACWP)		Inventa		1	08.02.2023
2	Heavy repair Section machine	EOT Crane	Unique	30/7.5 Ton.	2	28.12.2019
3		Jib Crane	Century	02 Ton.	2	09.01.2019
4		Synchronous lifting jack	Navyug	25 Ton.	2 set	11.02.2019
5	Material Handling Machine	Diesel Fork Lift Truck	Godrej	05 Ton.	2	01.03.2019,14.06.2023
6		Hydraulic Stacker	Godrej	1.5Ton.	1	01.03.2019
7		Platform Truck Battery operated	Godrej	02Ton.	2	01.03.2019
8		Hand Pallet Truck	Godrej	2.5Ton.	5	01.03.2019
9		Scissor Lift	V-Tech	320 Kg.	1	01.01.2022
10	Mill Wright Machine	Pillar drill machine	Batliboi	3-ph 440 V,2hp,5 speed.	1	19.01.2019
11		Pedestal grinder	Beston	3-ph 440 V, 2hp, 1200 rpm.	2	25.01.2019
12		Hydraulic pipe bending m/c	Rothenberger	0-180 degree.	1	01.04.2019
13		Pipe Threading Machine	Rex	I/P 1-ph 230 V	1	01.04.2019
14	Road Transport	TATA Truck	TATA Motor	10 Ton.	1	23.02.2018
15	Electrical Section Machine	Computerized load box for DEMU	AG Measurement	For DEMU (1400HP).	1	17.05.2019
16		Test CONSOL for DC traction motor	Sarola	I/P 3-ph 440 V, O/P 0-250V.	1	26.06.2019
17		Insulation Testing machine	Motwane	0-5 kv AC/DC.	1	19.06.2019
18		Induction Heater	Sarola	3-ph, 440v,08KVA.	1	21.06.2019
19		Portable centrifugal oil cleaning m/c	CBS	3-ph,440v,1000 LPH.	1	25.01.2019
20	Welding Machine	Portable Diesel ARC Welding M/C	ESAB	O/P-(i) 1-Ph,230V (2x2.5 KVA). (ii)3-Ph, 415 V, 10KVA . (iii)90V DC, 400Amp.	1	05.02.2019
21		MIG/MAG Welding Plant	Lincoln	I/P -3-ph 440 V, O/P- 650amp.	1	25.06.2019
22		MMA Welding Plant	Lincoln	I/P -3-ph 440 V, O/P- 40V-DC, 500A	2	02.05.2019
23	Battery Charger	Battery Charger for 110 v Batt.	Enertech	I/P 1-ph 240 V, O/P 110 v DC 45A.	1	09.09.2019
24		Battery Charger for 110 v Batt.	DeltronicsPower	I/P 1-ph 180-280V, O/P 110-150 V-DC, 60A.	2	29.04.2023
25		Battery Charger for 24 v Batt.	Equipmentcontrol	I/P 1-ph 230 V AC, O/P 24 V DC45A.	2	24.10.2023
26		Battery Charger for 24 v Batt.	Enertech	I/P 3-ph 440 V, O/P 24 V DC45A.	1	09.09.2019
27		Battery Charger for 24 v Batt.	Godrej	I/P 1-ph 220 V, O/P 24V DC,35A.	1	09.09.2019
28		Battery Charger for 36 v Batt.	Godrej	I/P 1-ph 220 V, O/P 36V DC,20A	2	09.09.2019
		Battery Charger for 110 v Batt.	Signotron	I/P 3-ph 350- 480 V, O/P 40-155 V DC 25A.	1	23.12.2023
29	Heating Oven	Electric Heating Drying Oven	Ador	3-ph, 440v,12kw,50-250 c.	1	22.04.2019
30		Portable Electric Drying Oven	Ador	1-ph,240v,0.5kw,50-250 c.	2	22.04.2019
31	Water Treatment Plant	Water treatment plant	Shree water	40 KLD.	1	27.02.2019
32		DM Plant	Shree water	01 cube m/hrs.	1	08.01.2019
33	Air Compressor	Electric air compressor	ATLAS	500 CFM.	1	09.01.2019
34		Electric air compressor	Kirlosker	120 CFM.	1	07.02.2023
35		Screw diesel air compressor	ATLAS	160 CFM.	1	12.01.2019
36	Single Car Test RIG		Escort		1	16.05.2019
37	Hot and Cold water jet cleaning m/c		Karcher	3-ph,440 V,0-150c,30-200B	1	28.02.2019
38	Gauges:- Digital flange thickness, Digital root wear, Tire wear measurement, Wheel distance measurement, Wheel diameter, Buffer height, Tire defect.		PIE		2 Nos. each	24.01.2019

LAB Facility/Test Bench: -

LAB Facility: -

(1) Dissolve gas analyzer. (2) Breakdown Voltage Test Machine. (3) Ultrasonic Test (UST) Machine.

Test Bench: -

(1) Master Controller Test Bench. (2) Duplex Check Valve Test Bench. (3) Main Air Compressor Test Bench.

(4) Air Spring Test Bench. (5) Air Drier Test Bench.

(6) Speedo Meter Test Bench.

Sanctioned M&P Program (PH-41)

(Amount in Thousands)

Sr.No.	Year Of Sanction	Short Name Of Work	Allocation	Last Sanc Cost	Expenditure up to date	Balance to complete	Now Anticipated TDC	%age Phy. Progress	Current Status
1	2021-22	Test Bench for Air Drier.	DF-3	755.200				-	Material received on dt-07.07.23. Commissioned on date-07.11.23. Bill passed on dt-24.01.24
2	2022-23	Test Bench for Brake Controller and EP Unit.	DF-3	1452.29				-	PO cancelled on date-29.01.2024. Retendering to be done.
3	2023-24	Supply and Commissioning of direct reading Ferro gram for wear debris analysis.	DRF	1154.23				-	PO cancelled on date-12.02.2024. Retendering to be done.
4	2023-24	Supply, installation and commissioning of machine & equipments for setting up of in house testing facilities for the quality check of the effluent discharged from Bio-toilet at Trainset Depot aurinhar, Coaching Depot Varanasi city, Mau, Ballia on turnkey basis.	DF-3	2300.252					Tender discharged on 22.12.23 . Retendering to be done.

Sanctioned Progress of LWP/PWP, (PH-42)

(Amount in Thousands)

Sr. No.	Year Of Sanction	Short Name Of Work	Allocation	Last Sanc Cost	Expenditure Up to Apr-23	Expenditure During 2022-2023	Expenditure Up to Date(In Thous)	%age Balance Till Date	Now Anticipated TDC	%age Phy. Progress	Current Status
1	2021-22	Provision of New Watering Hydrant at CI, ARJ and Dismantling, repair and relaying of existing Watering Hydrant at MUV, BCY and GCT	CAP	2970	NIL	478	478	00	:	100	Work started on 15.02.23 and completed on 15.12.23.
2	2023-24	Provision of New Store Depot at Trainset Depot ARJ.	CAP	19943.856							Under administrative approval of DRM sir since 23.01.2024.
3	2023-24	Provision of train passing office building at PRRB, BTT, CPJ, BUI and rooms at Trainset Depot ARJ of BSB Division.	CAP	24963.242							Detail estimate under A/C vetting since 06.12.23.

RSP Proposal for 2024-25 (PH-41)

DEMU

Sr.	Item Description	Qty.	Cost/Qty.	Total Cost
1.	Complete Air Dryer (Trident).	2	180540.00	361080.00
2.	Twin Tower Regeneration Type Air Dryer, Make Prag. Polymer.	2	186440.00	372880.00
3.	Air Compressor, 2 Stage ELGI (RR-15070).	2	696699.00	1393398.00
4.	Air Compressor, 2 Stage ELGI (TRC-2507).	1	369303.00	369303.00
5.	E.P. Unit (Faiveley).	2	172752.00	345504.00
6.	Shorter Height EP Brake Controller (Escort).	1	301248.10	301248.10
7.	Fan, Ventilation (Elect. Medha) .	2	358159.50	716319.00
8.	Motor, Hydraulic.(CIL Part no.4347348)	2	518164.33	1036328.66
9.	Pump, Hydraulic. (CIL Part no.4347352)	2	575098.19	1150196.38
10.	Motor, Hydraulic. (CIL Part no.4347349)	2	535183.24	1070366.48
11.	Pump, Hydraulic. (CIL Part no.4347346)	2	1073198.04	2146396.08
12.	Radiator.	1	1210090.00	1210090.00
13.	Splitter gear box (1600 HP CGL DPC).	1	615370.00	615370.00
14.	Traction Alternator CGL type C1022TA for 1600 HP DEMU with mounting hardware but without rectifier and pulley arrangement. Make: CGL.	1	4723176.56	4723176.56
15.	Traction Motor (AC) CGL Type C1016TM For 1600 HP DEMU Firms offer, Make/Brand-CG.	2	4668602.74	9337205.48
16.	Master controller, type 9-MC-MUD18 for 1600HP DEMU.	1	236000.00	236000.00
17.	Supply and Installation of FIBA in 1600 HP coaches.	40	343000.00	13720000.00
Total				39104861.74

MEMU

Sr.	Item Description	Qty.	Cost/Qty.	Total Cost
1.	Pantograph complete.	1	864332.30	864332.30
2.	Traction transformer complete with cooling system & accessories (Traction Transformer -01 No, breather silica gel EM01MB 01No, pressure relief device, -- PSI, 2C 01No, oil pump model 151-5/2 01No, oil level indicator switch 02No, flow controller DN65 02No, suspension (dampers) 04No, external installation (cable assembly) 01No, temperature sensor PT100, 01No, heat exchanger with hinges (cooling unit) 01No.	1	5157780.00	5157780.00
3.	Vacuum circuit breaker with earthing switch.	1	345740.00	345740.00
4.	MEMU Traction motor with drive. Make: MEDHA.	2	4012000.00	8024000.00
5.	Set of 3 phase AC MEMU Inter Vehicle Coupler (Consisting of 09 items as per Annexure-A). Make: Harting or Medha.	2	1593000.00	3186000.00
6.	Under slung Cooling System for traction Transformer	1	768180.00	768180.00
7.	Transformer Oil Pump for 3 Phase MEMU, for ABB or Siemens makes Transformer.	2	46020.00	92040.00
8.	AGTU Complete (3 Phase MEMU Main Air Compressor.	1	1855235.58	1855235.58
9.	Brake Controller (Pneumatic) For 3 Phase MEMU.	1	177000.00	177000.00
10.	Pneumatic Brake Controller Type ES PCU-2.	2	220512.50	441025.00
11.	Electro Pneumatic Brake Unit 16 inches for Regenerative Brake.	2	196322.50	392645.00
Total				21303977.88

Unit Exchange List (DEMU)											
Section	Component Name				Type / Make		Running Unit	Spare Unit	Remark		
Mech.	Engine *	Radiator		Radiator Assembly		CAT-1600 HP		16	Nil		
						CIL 1600	LTA 1-4347658	12	1		
							LTA 2-4347659	12	Nil	1- RSP(24-25)	
							HTA 1-4346918	12	1		
							HTA 2-4346917/1	12	1		
						CAT-1400 HP		16	Nil		
		CIL-1400(2-type)(4968231)		16	2						
		Hyd. System (1600 HP)	CGL-CIL (04 DPC)	Splitter Gear Box		CIL	4	Nil	1- RSP(24-25)		
				Radiator Cooling System	Hyd. Pump	Rexroth	4	Nil			
					Hyd. Motor	Rexroth	8	Nil			
				Ventilation System	Hyd. Pump	Rexroth	4	Nil	2- RSP(24-25)		
					Hyd. Motor	Rexroth	8	Nil	2- RSP(24-25)		
				Radiator Cooling System	Hyd. Pump	Rexroth	8	Nil	2- RSP(24-25)		
			Hyd. Motor		Rexroth	16	Nil	2- RSP(24-25)			
			Vent. System	Elect. Motor		16	Nil	2- RSP(24-25)			
			Medha-CIL (08 DPC)	Radiator Cooling System	Hyd. Pump	Rexroth	4	Nil			
					Hyd. Motor	Rexroth	8	Nil			
				Ventilation System	Hyd. Pump	Rexroth	4	Nil			
					Hyd. Motor	Rexroth	8	Nil			
				Medha-CAT (04 DPC)	Radiator Cooling System	Hyd. Pump	Rexroth	4	Nil		
						Hyd. Motor	Rexroth	8	Nil		
			Ventilation System		Hyd. Pump	Rexroth	4	Nil			
					Hyd. Motor	Rexroth	8	Nil			
			Hyd. System (1400 HP)		BHEL-CAT (02 DPC)	Radiator	Hyd. Pump	Rexroth	2	Nil	
						Cooling System	Hyd. Motor	Rexroth	4	Nil	
		Ventilation System		Hyd. Pump		Rexroth	2	Nil			
				Hyd. Motor		Rexroth	4	Nil			
		BHEL-CIL (04 DPC)		Radiator		Hyd. Pump	Rexroth	4	3		
				Cooling System		Hyd. Motor	Rexroth	8	1		
				Ventilation System	Pump	Rexroth	4	1			
	Hyd. Motor				Rexroth	8	1				
	Pneumatic System			Compressor		TRC 2507	10	1	2- RSP(24-25)		
				Air Dryer		RR 15070	12	Nil	2- RSP(24-25)		
						Faiveley	6	2			
						Prag Polymer	10	1	2- RSP(24-25)		
					Trident	6	1	2- RSP(24-25)			
			Brake Controller		Escort	Long	9	Nil			
						Short	2	Nil	1- RSP(24-25)		
					KBI		8	1			
					WSF		3	1			
EP Unit			Faiveley	11	Nil	2- RSP(24-25)					
		Escort	44	2							
		KBI	28	Nil							
		WSF	15	Nil							
Elect.	03-Phase (1600 HP)		Medha	Traction Alternator		Medha	12	Nil			
				Rectifier		Medha	12	Nil			
				Traction Converter		Medha	24	Nil			
				Traction motor		Medha	48	-			
				APC		Medha	12	Nil			
				Master controller		Inder	12	Nil	1- RSP(24-25)		
			CGL	Traction Alternator		CGL	4	Nil	1- RSP(24-25)		
				Rectifier		CGL	4	Nil			
				Traction Converter		CGL	8	Nil			
				Traction motor		CGL	16	Nil	2- RSP(24-25)		
				Auxiliary alternator			4	Nil			
				Rectifier Unit (RRU)			4	3	Can be use in DEMU 1400hp		
				Master controller		Inder	4	Nil			
	Conventional (1400 HP)		BHEL	Traction Alternator		BHEL	6	Nil			
				Power Rectifier			6	Nil			
				Traction motor		BHEL	24	3			
				Auxiliary alternator			6	Nil			
				Rectifier Unit (RRU)			6	-			
				Master controller		BHEL	6	1			
		VRLA Battery (in Set)		110-Volt	22	4	Can be use in MEMU also				
		LMLA Battery (in Set)		24-Volt	22	1					
C&W	Bogie		Complete Bogie		DPC	44	Nil				
					TC	168	Nil				
			Bogie Frame		DPC	44	Nil				
					TC	168	Nil				
			Wheel set		DPC	88	Nil				
					TC	336	8				
			MSU			88	1	1 no.(1400HP)			
			Air spring 180 KN			424	-				
			Schaku Coupler			226	-				
			Cattle Guard			22	-				

* All Engine unit Exchange items are covered under incidental repair in OEM AMC.

Unit Exchange List (Three Phase MEMU)

Section	Category	Component Name	Type / Make	Running Unit	Spare Unit	Remark
Mech.	Pneumatic	Main Air Compressor	Faiveley	8	1	01- RSP (24-25)
			ELGI (15070)	8	Nil	
			ELGI (20070) OF	4	Nil	
		Air Dryer	Faiveley	8	Nil	
			Trident	12	Nil	
		Baby Compressor.	ELGI	20	2	
		Brake Controller.	Escort	10	Nil	01- RSP(24-25)
			KBI	10	Nil	01- RSP(24-25)
		EP Unit.	Escort	44	Nil	02- RSP(24-25)
			KBI	33	Nil	
			Faiveley	3	Nil	
Electrical		Pantograph complete.	Shunk	20	1	01- RSP(24-25)
		Vacuum Circuit Breaker (VCB) with Earthing switch.	Schneider	12	1	01- RSP(24-25)
			AAL	8	2	
		Traction Transformer Complete with Cooling System.	Siemens	10	Nil	01- RSP (24-25)
			ABB	2	Nil	
			BHEL	8	Nil	
		Under slung Cooling System for traction Transformer.	MEDHA	12	Nil	01- RSP (24-25)
			BHEL	8	Nil	
		Transformer Oil Pump for 3 Phase MEMU	MEDHA/Flow Oil	12	3	02- RSP (24-25)
			BHEL/NXL Flow	8	Nil	
		Set of 3 phase AC MEMU Inter Vehicle Coupler.	MEDHA/BHEL	70	Nil	02- RSP (24-25)
			MEDHA	12	1	
		Line & Traction Converter (LTC).	BHEL	8	Nil	
			MEDHA	48	2	02- RSP (24-25)
		Asynchronous Traction Motors (Axle hang nose suspended) .	BHEL	32	Nil	
			MEDHA	12	1	
		Auxiliary Converter Unit (ACU).	BHEL	8	Nil	
			Schalt Bau	20	1	
		Master controller.				
		VRLA Battery (in Set).	110-Volt	20	-	
C&W	Bogie	Complete Bogie.	DMC	40	Nil	
			TC	120	Nil	
		Bogie Frame.	DMC	40	Nil	
			TC	120	Nil	
		Wheel set .	DMC	80	Nil	
			TC	240	Nil	
		MSU		80	1	
		Air spring 180 KN .		320	3	Can be use in DEMU also
		Schaku Coupler.		140	5	
		Cattle Guard.		20	2	

MAN POWER POSITION

(A) C&W					
Sr.	Post	Grade Pay	Sanction	Actual	Shortage/Access
1	SSE	4600	6	3	-3
2	JE	4200	6	9	+3
3	MCM	4200	8	7	-1
4	Tech-I	2800	26	10	-16
5	Tech-II	2400	3	45	+42
6	Tech-III	1900	6	6	0
7	Helper	1800	28	23	-5
		Total	83	103	+20
(B) Electrical					
1	SSE	4600	6	2	-4
2	JE	4200	3	3	0
3	MCM	4200	8	1	-7
4	Tech-I	2800	13	1	-12
5	Tech-II	2400	2	0	-2
6	Tech-III	1900	3	0	-3
		Total	35	7	-28
(C) Ministerial					
1	OS	4200	1	0	-1
2	Sr. Clerk	2800	1	0	-1
3	Jr. Clerk	1900	1	1	0
		Total	3	1	-2
(D) Ancillary					
1	Machanist/Arj/Demu shed	2000	2	0	-2
2	Technician Grade-I Welder	2800	1	1	0
3	Technician Grade-III Welder	1900	1	0	-1
4	Vechile Driver Arj Demu shed	2000	2	0	-2
		Total	6	1	-5
		Grand Total	127	112	-15

WORK DONE IN YEAR (2021-2022), (2022-2023) & (2023-24)

- ‘**DEMU Control Room**’ is created in financial year 2021-22 to relay of failure message to concern supervisor so that failure time can be decrease and talk to all train passing staff before starting of rake where train is stabled at night.
- Online issuing of **Brake Power Certificate** started from dated 04.02.2022.
- **UST (Ultrasonic Testing)** of DEMU and MEMU has started in-house by Alok Rai JE(C&W). He got RDSO certification and got training from workshop.
- In financial year 2021-22, Two 3-Phase MEMU (MEDHA) rakes 218113/14 & 218115/16 has commissioned in Trainset Depot ARJ.
- In financial year 2022-23, one RCF 3-Phase MEMU rake 228053/54 of BHEL control system has commissioned in Trainset Depot ARJ.
- Compressor Test Bench is created in April-23.
- ACP model is created in April-23.
- Oil room created in April-23.
- Air Spring Test Bench is created in May-23.
- One RCF 3-Phase MEMU rake 228057/58 of BHEL control system has commissioned at Trainset Depot ARJ in Aug-23.
- Six RCF 3-Phase MEMU rake 238521/22, 238523/24, 238633/34, 238635/36, 38637/38 & 238639/40 of MEDHA control system has commissioned at Trainset Depot ARJ.
- Two RCF 3-Phase MEMU rake 238307/08 & 238309/10 of BHEL control system has commissioned at Trainset Depot ARJ in 2024.
- One RCF 3-Phase MEMU rake 238585/86 of BHEL control system and one RCF 3-Phase MEMU rake 239029/30 of MEDHA control system are under commissioning at Trainset Depot ARJ.

Green Initiatives for Sustainable Development

- Energy generation by 440 KWP shed roof mounted solar power plant.
- 40 KLD Waste Water Treatments and Recycling Plant.
- Natural daylight through UV protected polycarbonate sheeting.
- Natural ventilation through side louvers and 80 turbo vents.
- LED lighting for sheds, buildings and street lights.
- 400 Tree plantations done.