



Rail & Metro





Urban
Transport

UTO / Driverless

1435mm

Rail Gauge

2280

Passengers
for 6 car trainset

25kV AC

Overhead Collection system
through pantograph

- Unattended Train Operation (UTO)
- Advanced Train Control and Management System (TCMS)
- Designed for Stringent Specific Energy consumption (SEC)
- Designed for latest fire standard EN45545 – HL3
- Provision of on board OHE monitoring, Track monitoring system, Wheel profile monitoring and Axle bearing temperature monitoring

Train Formation	DMC – TC – MC – MC – TC - DMC (6 car Train)
Rail Gauge	1435mm
Operating Speed	80 Kmph, Design speed : 90 Kmph.
Passenger capacity	2280 Passengers for 6 car train set
Current Collection	25kV AC, Overhead Collection System (OHE) through Pantograph
Carbody	Stainless steel car body with 2J finish exterior and covered with colored graphic films.
Bogies	Two axle Bolsterless type bogie with primary helical coil spring and secondary air suspension and with thread brakes.
Propulsion System	State of the art 3 Phase Propulsion system with Induction motor Variable Voltage and Variable frequency(VVVF) control with regenerative braking.
Brake System	Regenerative Braking blended with pneumatic braking
Air-conditioner	Roof mounted Heating Ventilation and Air-conditioning system (HVAC)
Door System	Electrically operated bi-parting externally hung sliding type door
PA/PIS & CCTV System	Automatic Passenger announcement system , Digital Route map on each door, Passenger saloon surveillance system
Saloon Lighting	LED based lighting system with Intelligent Light Control (ILC) resulting in energy saving.
Interiors	Aesthetically appealing interiors with FRP panels, SS grab poles and grab rails, SS seats, floating floor with Rubber covering, Cycle parking facility etc

Customer
• MMRDA (MUMBAI) / DMRC

Basic Dimensions (in mm)

Car Type	Overall Length	Width	Height
DMC	22710	3200	3958
TC	22910	3200	4048
MC	22910	3200	3958

Urban
Transport



ATO / ATP with CBTC

1435mm

Rail Gauge

2068

Passengers
for 6 car trainset

750V DC

Third Rail Collection system

- Automatic Train Operation (ATO/ATP) with CBTC based train Control
- 750 V DC Third Rail Current Collection

Train Formation	DMC-TC-MC-MC-TC-DMC - 6 Car Train set
Rail Gauge	1435 mm
Operating Speed	85 kmph , Design speed 95 kmph
Passenger capacity	2068 Passengers for 6 Car trainset.
Current Collection	750 V DC Third Rail Current Collection
Carbody	Stainless Steel
Bogies	Two axle Bolsterless type bogie with primary helical coil spring and secondary air suspension with wheel mounted Disk brakes.
Propulsion System	3 phase propulsion system with Squirrel Cage type Induction motor Variable Voltage and Variable frequency(VVVF) control with regenerative braking.
Brake System	Regenerative Braking blended with pneumatic braking
Air-conditioning	Roof mounted Heating Ventilation and Air-conditioning system (HVAC)
Door System	Electrically Driven Externally Sliding Type
PA/PIS & CCTV System	Automatic Passenger announcement system , Digital Route map on each door, Passenger saloon surveillance system
Saloon Lighting	LED based lighting system with Intelligent Light Control (ILC) resulting in energy saving.
Interiors	Interiors with FRP panels, SS seats, floating floor with PVC floor covering

Customer

- Kolkata Metro Rail Corporation

Basic Dimensions (in mm)

Car Type	Overall Length	Width	Height
DMC	21050	2880	3848
TC	20800	2880	3848
MC	20800	2880	3848

Urban
Transport



ATO/ATP

1435mm

Rail Gauge

2004

Passengers
for 6 car trainset

750V DC

Third Rail Collection system

- ATO/ATP train operation
- 3 cars train Set basic configuration upgradable to 6 Car train sets
- 750 V DC Third Rail Current Collection

Train Formation	DMC-TC-DMC - 3 Car train set DMC-TC-MC-MC-TC-DMC - 6 car train set
Rail Gauge	1435 mm
Operating Speed	80 kmph, Design Speed- 90 kmph
Passenger capacity	1029 Passengers for 3 Car 2004 Passengers for 6 Car
Current Collection	750 V DC Third Rail Current Collection
Carbody	Stainless Steel
Bogies	Two axle Bolsterless type bogie with primary conical rubber spring and secondary air suspension with wheel mounted Disk brakes.
Propulsion System	3 phase propulsion system with Squirrel Cage type Induction motor Variable Voltage and Variable frequency(VVVF) control with regenerative braking.
Brake System	Regenerative Braking blended with pneumatic braking
Air-conditioner	Roof mounted Heating Ventilation and Air-conditioning system (HVAC)
Door System	Electrically Driven Externally Sliding Type
PA/PIS & CCTV System	Automatic Passenger announcement system , Passenger saloon surveillance system
Saloon Lighting	LED based lighting system with Intelligent Light Control (ILC) resulting in energy saving.
Interiors	Interiors with FRP panels, SS seats, floating floor with Rubber floor covering

Customer
• BANGALORE METRO RAIL CORPORATION

Basic Dimensions (in mm)

Car Type	Overall Length	Width	Height
DMC	21050	2880	3848
TC	20800	2880	3848
MC	20800	2880	3848

Urban
Transport



ATO/ATP

1676mm

Rail Gauge (BG)

2290

Passengers
for 6 car trainset

25kV AC

Overhead Collection system
through pantograph

- ATO/ATP train operation
- 4 cars basic configuration upgradable to 6 cars and 8 cars configuration

	BROAD GAUGE	STANDARD GAUGE
Train Formation	DT-M-M-DT - 4 Car train set DT-M-T-M-M-DT - 6 Car train set DT-M-T-M-T-M-M-DT - 8 Car train set	
Rail Gauge	1676 mm	1435 mm
Operating Speed	80 kmph, Design Speed – 90 kmph	85 kmph, Design Speed – 95 kmph
Passenger capacity	1,506 Passengers – 4 Car 2,290 Passengers – 6 car 3,074 Passengers – 8 Car	1,310 Passengers – 4 Car 1,990 Passengers – 6 Car 2,670 Passengers – 8 Car
Current Collection	25kV AC Single Phase 50 Hz through Overhead Pantograph	
Carbody	Stainless Steel	
Bogies	Bolsterless type bogie with conical bonded rubber spring and Air spring, Thread brake unit with double shoe.	Bolsterless type bogie with conical rubber Air spring and wheel mounted disk brakes
Propulsion System	3 phase propulsion system with Squirrel Cage type Induction motor Variable Voltage and Variable frequency(VVVF) control with regenerative braking.	
Brake System	Regenerative Braking blended with pneumatic braking	
Air-conditioning	Roof mounted Heating Ventilation and Air-conditioning system (HVAC)	
Door System	Electrically Driven Externally Sliding Type	
PA/PIS & CCTV System	Automatic Passenger announcement system , Digital Route map on each door, Passenger saloon surveillance system	
Saloon Lighting	LED based lighting system with Intelligent Light Control (ILC) resulting in energy saving.	
Interiors	Interiors with FRP panels, SS seats, floating floor with Rubber floor covering	

Customer
• DELHI METRO RAIL CORPORATION

Basic Dimensions (in mm)

Car type	Overall length	Width		Height	
		SG	BG	SG	BG
DMC	21640	2900	3200	4048	4048
TC	21340	2900	3200	4048	4048
MC	21340	2900	3200	4023	4008

SubUrban
Transport



Stainless Steel EMU

1676mm

Rail Gauge (BG)

4108

Passengers

25kV AC

Overhead Collection system
through pantograph

- Aesthetically Designed Interior FRP paneling.
- Windows-Wider horizontal sliding shutter type with toughened glass.
- Polycarbonate moulded seats.
- Compartment illumination with fluorescent light (110 V AC)
- FRP cab mask & Aesthetically designed doors
- Austenitic stainless steel car body (except Bolster region)

Max. Speed	105 kmph
Axle Load (Max)	20 Tonnes (Motor Coach)
	20 Tonnes (Trailer Coach)
Tare weight(max)	57 Tonnes (Motor Coach)
	34 Tonnes (Trailer Coach)
Braking System	Electro Pneumatic compressed Air Brake with bogie Mounted Brake Cylinder & graduate application & release system.
Bogie	Wheel Arrangement - Bo Bo I Two Stage Suspension – Primary /Helical & Secondary Air Spring
Electrical System	Overhead Traction: 25 kV AC Single Phase
	Control Equipment Permits Multiple Operations of Units
	4 Traction Motors of 167 KW each per motor coach
	System voltage <ul style="list-style-type: none">• 535 V DC for Traction Motors• 260 V AC for Auxiliary Circuits• 141 V AC for Lights and Fans• 110 V, 90 Ah , 5 hrs. rated battery for Emergency Lighting
Passenger Capacity	4108 (seating: 910 ; standing: 3198)
Unit Formation	Driving Motor Coach +1 Trailer coach with Ladies Compartment + 1 Trailer coach with Vendors Compartment

Customer

- INDIAN RAILWAYS

Basic Dimensions (in mm)

Track Gauge	1,676
Wheel diameter	952
Length over body	20,726
Width over body	3,658
Height from rail to top of roof	3,810

SubUrban
Transport



Diesel EMU (DEMU)

1676mm

Rail Gauge (BG)

- 557 V DC for traction motors
- 110 V DC for Lights , Fans & Control Circuit
- 110 V, 120 Ah, 10 hrs rated battery for emergency Lightings.

2114

Passengers
for 8 car trainset

1400HP

Diesel Engine

MAX. Speed	110 kmph
Axle Load (max.)	20.32 Tonnes (Motor Coach) 16.25 Tonnes (Trailer Coach)
Braking System	Self Lapping Electro-Pneumatic (EP) Brake System
Bogie	Wheel Arrangement- Bo Bo TWO Stage suspension Primary / Helical & Secondary Air Spring
Propulsion System	<ul style="list-style-type: none">• Motive power of 1400 HP from Diesel Engine coupled to 3phase 415 Volt alternator• Control Equipment Permits Multiple Operations of Units
Passenger Capacity For 8 Car trainset	Standing - 1432 Seating - 682 Total - 2114
Unit Formation	<ul style="list-style-type: none">• Driving Power car (with Ladies & handicapped) + 2 Trailer coaches + 1 Trailer coach with Vendors Compartment - DEMU
Rake formation	Combination of 2 Units in Mirror formation

Customer

- INDIAN RAILWAYS

Basic Dimensions (in mm)

Track Gauge	1,676
Wheel diameter	952
Length over body	DPC - 21,417 ; TC-21,337
Width over body	3,245

SubUrban
Transport

Mainline EMU 3 Phase



1676mm

Rail Gauge (BG)

- 945 V 3Ph AC for Traction motors
- 415 V 3Ph AV for Compressor & Auxiliary circuits
- 110V DC for lights, fans & Controls
- 110V, 120Ah, 10 Hrs rated VRLA batteries for emergency lighting

2364

Passengers
for 8 car trainset

25kV AC

Overhead Collection system
through pantograph

Max Speed	120 KMPH
Axle Load (Max)	20.32 Tonnes (Motor Coach) 16.25 Tonnes (Trailer coach)
Braking System	Regenerative EP brake system interfaced with TCMS.
Bogie	Wheel Arrangement Bo-Bo Two stage suspension Primary/Helical & Secondary /Air spring
Propulsion System	<ul style="list-style-type: none">• Line supply voltage 25KV AC Single phase• Control equipment permits multiple operation of units• 3 phase propulsion system with microprocessor controlled IGBT based VVVF speed control of Traction motor.• 4 nos. of 3 phase Traction motors of 347KW each per motor coach• Modular Transformer & Modular compressor
Other Features	<ul style="list-style-type: none">• GPS based PA/PIS communication system• LED Lights for energy efficiency• Electrically operated wipers• Event Recorder for Continuous monitoring and automatic recording of train data.
Passenger Capacity for 8 Car Train set	Standing – 1754 Seating- 610 Total- 2364
Unit Formation	1 Driving Motor Coach+ 3 Trailer Coach
Rake Formation	Combination of 2 or more units Motor formation

Customer
• INDIAN RAILWAYS

Basic Dimensions (in mm)

Track Gauge	1,676
Wheel diameter	952
Length over body	21,337
Width over body	3,245

Maintenance Equipment



8W D ETC Diesel Electric Tower Car

1676mm

Rail Gauge (BG)

8W

340HP

@1800rpm -Diesel Engine

- Engine: Dual power pack (under slung diesel engine)
- Transmission : Traction Alternator along with Power Rectifier, two traction motors on each bogie (Three phase DC transmission system)
- Coupler: CBC coupler to RDSO spec. 56-BD-07.
- Brake System: Panel mounted air brake system
- Meant for periodic inspection, patrolling and maintenance of overhead equipment on electrified broad gauge rail routes
- Used to attend sites of breakdown of overhead equipment
- Capable of erecting and restoration of damaged small lengths of catenary and contact wires.

Drivers Cab at both ends, Staff cabins, Workshop, Lifting & swiveling Platform (Hydraulic), Observation Dome, Battery Charger, DG Sets, Cable Drum Mounting Brackets, Roof mounted Pantograph for checking OHE parameters, Intercom facility between Driver cab and lifting platform, CCTV, Thermal Image Camera, Cabin Heater, etc.,

MAX. Speed	110 kmph
Axle Load (max.)	20.32 Tonnes
Braking System	Panel mounted Air brake system to RDSO spec. MP-0.01.00.19 (Rev-01)
Bogie	Wheel Arrangement- Bo Bo two Stage suspension Primary with Helical & Secondary with Air Spring
Propulsion System	<ul style="list-style-type: none">• Motive power of 340 HP @ 1800 RPM from Diesel Engine coupled to 3phase Traction alternator with power output of 230 kW.• 4 Traction Motors of 187 kW @ 1520 RPM per car.
Hauling Capacity	80.29 Tonnes self weight and 120 Tonnes trailing load
Engine	Two independent under slung naturally aspirated, turbo-charged and after cooled diesel engines.
Power	340HP @ 1800 rpm
Brakes	All wheels with clasp brakes (brake rigging)
Service Brakes	Pneumatic
Parking brakes	Pneumatically operated

Customer

- INDIAN RAILWAYS

Basic Dimensions (in mm)

Track Gauge	1676 (BG)
Wheel diameter	952
Wheel base	2896
Length over body	21336
Length over buffer	22296
Width over body	3250
Distance between Bogie centers	14783

Maintenance Equipment

A large, multi-colored maintenance vehicle, primarily red with yellow and blue horizontal stripes, is parked inside a vast industrial facility with a high, steel-truss roof. The vehicle features a prominent front grille with vertical bars, several large headlights, and a blue stripe along the top. It has a platform with railings on the side and a yellow and black striped safety barrier at the front. The vehicle is positioned on a concrete floor, and other industrial equipment is visible in the background.

CMV (Catenary Maintenance Vehicle)

1435mm

Rail Gauge (SG)

40T

Hauling Capacity (SG)

2*422HP

@1800rpm -Diesel Engine

Functions	<ul style="list-style-type: none">• Meant for periodic inspection, patrolling and maintenance of overhead equipment on electrified broad/standard gauge rail routes of Metro's.• Used to attend sites of breakdown of overhead equipment.• Capable of erecting and restoration of damaged small lengths of catenary and contact wires.• This CMV is suitable to use in under ground.	
Dimensions	<ul style="list-style-type: none">• Track gauge• Length• Width• Height	<ul style="list-style-type: none">• 1435mm (SG)• 21336mm (Over Body)• 2900mm• 3845mm
Max. Speed	65 Kmph	
Hauling Capacity	Fully loaded 40T Trailer Wagon	
Brakes	Compressed air brake with tread brake units applied on all wheels, gradual application & release	
Axles	<ul style="list-style-type: none">• Two powered Axles and Two trailing Axles• 16 Tonnes Load capacity	
Bogie	Two Axle Bogie with floating bolster suspension arrangement with primary & secondary as a helical coil spring	
Final drive	Axle mounted helical gear box (Double reduction)	
Crane with Interchangeable basket	Lifting capacity of hook 1T @ 5m distance & Basket load carrying capacity - 300kg + tools	
Lifting & Swiveling Platform	Low rasied, hydraulically lifted & electically swiveling with 500kg + tools lifting capacity	
Parking Brakes	Spring loaded, Electrically / Pneumatically operated.	
Facilities Available	Drivers Cab at both ends, material Cabin, 40Kva DG sets, Cable Drum Mounting Brackets, OHE Mast Guide device, Roof mounted Radiator and Pantograph for checking OHE parameters, Intercom facility between Driver cab and lifting platform, CCTV etc.	
Customers	Delhi Metro Rail Corporation, MMRC Lines	

Customer

- Delhi Metro Rail Corporation

- Engine : Dual power pack (under slung diesel engine)
- Type : 6H 1800 R81, Euro Stage IIIA Complaint
- Power : 2*422 HP @ 1800 rpm
- Transmission : 2*430HP, Powershift torque converter hydraulic

Maintenance
Equipment



8 Wheeler OHE CAR

1676mm

Rail Gauge (BG)

- Meant for periodic inspection, patrolling and maintenance of overhead equipment on electrified broad gauge rail routes
- Used to attend sites of breakdown of overhead equipment
- Capable of erecting and restoration of damaged small lengths of catenary and contact wires

62T

Hauling Capacity

- Drivers Cab at both ends
- Kitchenette
- Lifting & swiveling Platform (Hydraulic)
- Observation Dome
- Cable Drum Mounting Brackets
- Roof mounted Pantograph for checking OHE parameters
- Intercom facility between Driver cab and lifting platform
- Staff cabins
- Workshop
- DG Sets

2*285HP

@2100rpm -Diesel Engine

Max Speed	110 kmph
Hauling Capacity	62 Tonnes self weight and 60 Tonnes trailing load
Engine	Double power pack (Under Slung Diesel Engine)
Power	2*213 KW (2*285 hp) @2100 rpm
Transmission	Fully automatic hydrodynamic transmission
Final Drive	Axle mounted Helical Gear Box (Double Reduction)
Brakes	Compressed air brakes with thread brake units
Service Brakes	<ul style="list-style-type: none">• Gradual application and gradual release type applied on all wheels
Parking Brakes	<ul style="list-style-type: none">• Pneumatically operated
Axles	<ul style="list-style-type: none">• Two powered Axles and Two trailing Axles• 16 Tonnes Load capacity
Bogie	Two stage helical suspension with box section fabricated frame

Customer

- INDIAN RAILWAYS / L&T-ECC / RVNL / MRVC

Basic Dimensions (in mm)

Track Gauge	1,676
Length over body	21336
Width over body	3250
Height	4250

Wagons

BOBRNAL WAGON



1676mm

Rail Gauge (BG)

- E3.2 tonne reduction in tare weight and increase in pay load
- Higher pay and to tare ratio
- High speed CASNUB22 HS bogie
- Body structure with huck bolted
- Aluminum plates and extrusions
- Pneumatic operated bottom discharge doors
- Higher corrosion resistance

81.28T

Gross Load

- Lower maintenance cost due to higher corrosion and abrasion resistance property
- Lighter empty rakes running resulting in reduction in fuel consumption
- No painting
- Less lifecycle cost compared to conventional wagon
- Pneumatic operated bottom discharge doors.

20.32T

Axle Load

Customer

- NALCO

Gauge	1676 mm
Tare weight	22.4 Tonnes
Pay load	58.88 Tonnes
Gross load	81.28 Tonnes
Brake	Graduated release airbrake system with jaw type
	Slack adjuster and automatic load sensing device to cater for the brake power
	Requirement in empty and loaded condition

Basic Dimensions (in mm)

Volumetric Capacity	56.78 cu.m
Length over Coupling faces	10600
Overall Width	3500
Overall Height	3735
Wheel diameter	1000
Axle load	20.32 Tonnes

Wagons



BRSTN WAGON

1676mm

Rail Gauge (BG)

56.27T

Carrying Capacity

20.32T

Axle Load

Customer

• Ministry of Defence

- Heavy riveted/welded structure made out of general purpose structure steel
- CASNUM-22 NLB cast steel bogie with elastomeric pad to cater for dynamic shocks
- Single pipe graduated release air brake system
- Hand wheel type parking on gradients
- Transition type center buffer coupler (CBC) to enable the wagon to be couple with other rolling stocks
- Equipped with loading flaps, lashing chain, & scotch blocks for security battle tanks during transportation
- **Application:** Primarily used for transportation of military vehicles

Basic Dimensions (in mm)

Gauge	1676
Length overhead stock	13716
Length over coupling faces	14998
Width over body	3200
Bogie Wheel base	2000
Wheel diameter	1000
Distance between bogies centers	9144
CBC coupler height from RL	1105
Axle load	20.32 Tonnes
Carrying capacity	56.27 Tonnes
Tare weight(estimated)	25.01 Tonnes
Gross weight	81.28 Tonnes

- **1964** BEML was incorporated as Govt Enterprise under the administrative control of Ministry
- **2002** First to establish Metro Coach manufacturing facility in India
- **2004** First to Indigenously manufacture metro coach and supplied
- **2011** First to Indigenously design and manufacture Metro Trains
- **2012** First to Indigenously design and manufacture maintenance
- **2015** First to Indigenously manufacture and supply driverless
- **2020** First to Indigenously design and manufacture driverless

18000+

Passenger railway coaches supplied to Indian Railways

110+

Catenary Maintenance Vehicles delivered

1600+

Metro coaches have been delivered till date to various Indian Metro Corporations

300

3 Phase Main line Electrical Multiple Units are being commissioned





बी ई एम एल

beml

NEW FRONTIERS. NEW DREAMS

BEML LIMITED

Schedule 'A' Company under Ministry of Defence, GoI
Defence & Aerospace | Mining & Construction | Rail & Metro

Bangalore Complex, New Thippasandra,
Bengaluru - 560075

+91 80 2502 2643, 2534 6617
rj@beml.co.in | corpcomm@beml.co.in

www.bemlindia.in



A **Green** Company

95% Renewable
ENERGY

