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BEML LIMITED

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URBAN TRANSPORT - UTO/DRIVER LESS - 6 CAR TRAIN SETS

FEATURES

- 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

BRIEF SPECIFICATIONS

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 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 Heat 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

Basic Dimensions (in mm)

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

CUSTOMER

- Delhi Metro Rail Corporation Limited
- Mumbai Metro Region Development Authority



URBAN TRANSPORT - ATO/ATP WITH CBTC – 6 CAR TRAIN SETS

FEATURES

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

BRIEF SPECIFICATIONS

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	Squirrel Cage type 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-conditioning	Roof mounted Ventilation and Air-conditioning system (VAC)
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 grab poles and grab rails, SS seats, floating floor with Rubber covering.

Basic Dimensions (in mm)

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

CUSTOMER

- Kolkata Metro Rail Corporation Limited



URBAN TRANSPORT - ATO/ATP – 3 CAR / 6 CAR TRAIN SETS

FEATURES

- Automatic Train Operation / Automatic Train Protection (ATO/ATP)
- 3 cars train Set basic configuration upgradable to 6 Car train sets
- 750 V DC Third Rail Current Collection

BRIEF SPECIFICATIONS

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	85 kmph, Design Speed- 95 kmph
Passenger capacity	1004 Passengers for 3 Car 2068 Passengers for 6 Car
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	Squirrel Cage type 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 Heat 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 grab poles and grab, SS seats, floating floor with Rubber covering.

Basic Dimensions (in mm)

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

CUSTOMER

- Bangalore Metro Rail Corporation Limited



URBAN TRANSPORT - ATO/ATP – 4 CAR/ 6 CAR/ 8 CAR TRAIN SETS

FEATURES

- Automatic Train Operation / Automatic Train Protection (ATO/ATP)
- 4 cars basic configuration upgradable to 6 cars and 8 cars configuration

BRIEF SPECIFICATIONS

	BROAD GAUGE	STANDARD GAUGE
Train Formation	DT-M-M-DT - 4 Car train set DT-M-T-M-M-DT - 6 Car rain set DT-M-T-M-T-M-M-DT - 8 Car rain 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 Air spring and wheel mounted disk brakes
Propulsion System	Squirrel Cage type 3 phase Induction Motor with Induction motor Variable Voltage and Variable frequency(VVVF) control with regenerative braking.	
Brake System	Regenerative Braking blended with pneumatic braking	
Air-conditioning	Roof mounted Heat 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	Semi Nomax Honey Comb(GFRP), SS seats, floating floor with Rubber covering.	

Basic Dimensions (in mm)

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

CUSTOMERS

- Delhi Metro Rail Corporation Limited
- Jaipur Metro Rail Corporation Limited



SUB-URBAN TRANSPORT - STAINLESS STEEL AC EMU

FEATURES of SS AC EMU

- 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)

BRIEF SPECIFICATIONS

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 • 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

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

CUSTOMER

- Indian Railways



SUB-URBAN TRANSPORT - DIESEL EMU (DEMU)

Features of DEMU

- 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.

BRIEF SPECIFICATIONS

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	• 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	• 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

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

CUSTOMER

- Indian Railways



SUB-URBAN TRANSPORT - MAINLINE EMU (MEMU)

Features of MEMU

- 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 Lightings.

BRIEF SPECIFICATIONS

Max. Speed	100 kmph
Axle Load (max.)	20.32 Tonnes (Motor Coach) 16.25 Tonnes (Trailer Coach)
Braking System	Electro pneumatic Compressed Air Brake with bogie mounted Brake.
Bogie	Wheel Arrangement- Bo Bo TWO Stage suspension Primary / Helical & Secondary Air Spring
Propulsion System	<ul style="list-style-type: none"> • Line Supply Voltage 25 KV AC Single Phase • Control Equipment Permits Multiple Operations of Units • 4 Traction Motors of 167 KW each per motor coach System voltage
Passenger Capacity For 8 Car trainset	Standing - 1376 Seating - 680 Total - 2056
Unit Formation	1 Driving Motor Coach + 3 Trailer Coach
Rake formation	Combination of 2 Units in Mirror formation

Basic Dimensions (in mm)

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

CUSTOMER

- Indian Railways



8 W DIESEL ELECTRIC TOWER CAR (DETC)

FEATURES of DETC

- 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.

Facilities Available

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.,

BRIEF SPECIFICATIONS

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

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

CUSTOMERS

- Indian Railways
- Konkan Railway Corporation Limited



CATENARY MAINTENANCE VEHICLE (BROAD GAUGE & STANDARD GAUGE FOR METRO)

FEATURES

- Double power pack under Slung Diesel Engine
- Type-NT 855-5
- Power -2X285 HP @ 2100 rpm
- Fully Automatic Hydrodynamic Transmission

BRIEF SPECIFICATIONS

Max. Speed	65 kmph
Hauling Capacity	60.4 Tonnes (SG) /62.2T(BG),60 Tonnes-hauling a trailer wagon
Facilities Available	Drivers Cab at both ends, Staff cabins, Kitchenette, Workshop, Lifting & swiveling Platform (Hydraulic), Observation Dome, DG Sets, Cable Drum Mounting Brackets, OHE Mast Guides, Roof mounted Pantograph for checking OHE parameters, Intercom facility between Driver cab and lifting platform
Final drive	Axle mounted helical gear box (Double reduction)
Brakes	Compressed air brake with tread brake units applied on all wheels
Service Brakes	Gradual Application of gradual release type
Parking Brakes	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 fabricated frame

Basic Dimensions (in mm)

Track Gauge	1676mm/1435mm (BG/SG)
Length over body	21336
Width over body	3,150 mm/2900 mm (BG/SG)
Height	4,028 mm

CUSTOMERS

- Delhi Metro Rail Corporation Limited
- Mumbai Metro One Private Limited
- Delhi Airport Metro Express Private Limited
- Chennai Metro Rail Limited
- L&T Hyderabad Metro Rail Limited



CATENARY MAINTENANCE VEHICLE (CMV) WITH LIFTING PLATFORM & CRANE WITH INTERCHANGEABLE BASKET

FEATURES

- Engine : Dual power pack (under slung diesel engine)
- Type : 6H 1800 R81, Euro Stage IIIA Compliant
- Power : 2*422 HP @ 1800 rpm
- Transmission : Fully Automatic Hydrodynamic Transmission

BRIEF SPECIFICATIONS

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	62 T (BG) / 60T (SG) – 60T Trailer Wagon	
Brakes	Compressed air brake with tread brake units applied on all wheels	
Axles	<ul style="list-style-type: none"> • Two powered Axles and Two trailing Axles 	<ul style="list-style-type: none"> • 16 Tonnes Load capacity
Bogie	Two stage helical suspension with fabricated frame	
Final drive	Axle mounted helical gear box (Double reduction)	
Service Brakes	Gradual Application of gradual release type	
Parking Brakes	Spring loaded, Electrically / Pneumatically operated.	
Facilities Available	Drivers Cab at both ends, Material Cabin, Lifting & swiveling Platform (Hydraulic), Crane With interchangeable basket, 40 Kva 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.	

CUSTOMER

- Delhi Metro Rail Corporation Limited



8 WHEELER OHE CAR (DHTC)

FEATURES

- 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

Facilities Available

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

BRIEF SPECIFICATIONS

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	• Gradual application and gradual release type applied on all wheels
Parking Brakes	• Pneumatically operated
Axles	• Two powered Axles and Two trailing Axles • 16 Tonnes Load capacity
Bogie	Two stage helical suspension with box section fabricated frame

Basic Dimensions (in mm)

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

CUSTOMERS

- Indian Railways
- Rail Vikas Nigam Limited
- Mumbai Railway Vikas Corporation Limited
- L&T ECC



Aluminium Body Wagon (BOBRNAL)

FEATURES

- E3.2 tonne reduction in tare weight and increase in pay lead
- 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
- Lower maintenance cost due to higher corrosion and abrasion resistance property
- Lighter empty rakes running resulting in reduction in fuel consumption
- Paintless body
- Less lifecycle cost compared to conventional wagon
- Pneumatic operated bottom discharge doors.

BRIEF SPECIFICATIONS

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

CUSTOMER

- NALCO Limited



BRSTN WAGON

FEATURES

- 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 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

CUSTOMER

- Ministry of Defence



BOMN WAGON

FEATURES

- Welded structure made out of general purpose structural 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 brakes for parking on gradients.
- Transition type center Buffer (CBC) to enable the wagon to couple with other rolling stocks.
- Equipped with Loading flaps, Lashing chain & scotch blocks for securing Battle tanks during transportation.
- **Application:** Primarily used for transportation of Military Vehicles

Basic Dimensions (in mm)

Gauge	1676
Length overhead stock	18460
Length over coupling faces	19742
Overall width	3200
Floor height from RL	1275
Wheel base	2000
Wheel diameter	1000
Distance between bogies centers	13890
CBC coupler height from RL	1105
Axle load	20.32 Tonnes
Carrying capacity	35.85 Tonnes
Tare weight(estimated)	29.77 Tonnes
Gross weight	65.62 Tonnes

CUSTOMER

- Ministry of Defence

