

## **APPENDIX A**

### **LOW-FLOOR LIGHT RAIL VEHICLE (LF-LRV) DATABASE**

The axle arrangement code definitions are included in Appendix C.

## CATEGORY-1 LF-LRVs

**City/Authority:** Amsterdam/ GVBA  
(Netherlands)

**Manufacturers:** Bombardier (BN)  
Holec

**Vehicle Type:** 11G & 12G

**Category:** 1

**Ordered:** 45

**Year of Delivery:** 1989

### CHARACTERISTICS

Car Length: 25.63 m ( 84.1 ft)

Car Width: 2.35 m ( 7.7 ft)

Low Floor Area: 9%

Floor Height

High: 870 mm (34.3 in)

Low: 280 mm ( 11 in)

Weight: 36.9 tonnes ( 81,400 lbs)

Specific Weight: 613 kg/m<sup>2</sup> (126 lb/ft<sup>2</sup>)

Seats: 63

Standees: 90 @ 4 pass/m<sup>2</sup>

### CONSTRUCTION

Travel Direction: Bidirectional

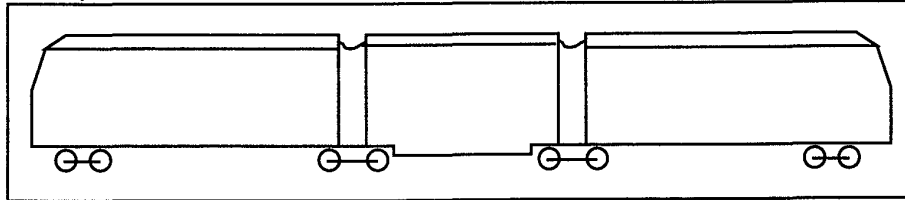
Doors: Three Double, One Single

Articulation: Supported

Body Material: N/A

Buff Load: 20 tonnes ( 44,100 lbs)

### Concept Schematic



### RUNNING GEAR

Axle Arrangement: Bo'Bo'Bo'Bo'

Power Wheel Diameter: 662 mm (26.1 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 662 mm (26.1 in)

Trailer Gear: N/A

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 25 m ( 82 ft)

Max Speed: 70 km/h ( 44 mph)

### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 8

Total Power: 308 kW ( 413 hp)

Specific Power: 8.3 kW/tonne ( 10.2 hp/ton)

### BRAKES

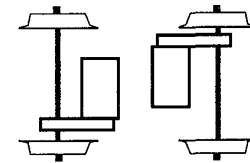
1. Regenerative
2. Eight Drum Hydraulic Friction
3. Eight Track Brakes

### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

### Powered Running Gear



### Trailing Running Gear

**City/Authority:** Antwerp/ De Lijn  
(Belgium)

**Manufacturers:** Bombardier (BN)

**Vehicle Type:** N/A

**Category:** 1

**Ordered:** 10

**Year of Delivery:** 1993

#### CHARACTERISTICS

Car Length: 29.28 m ( 96.1 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 10.1%

Floor Height

High: 860 mm (33.9 in)

Low: 350 mm (13.8 in)

Weight: 42 tonnes ( 92,600 lbs)

Specific Weight: 624 kg/m<sup>2</sup> (128 lb/ft<sup>2</sup>)

Seats: 69

Standees: 124 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: N/A

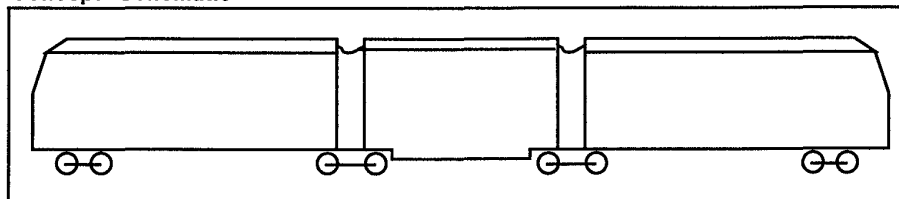
Doors: N/A

Articulation: Supported

Body Material: N/A

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: B'2'2'B'

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Conventional monomotor

Trailer Wheel Diameter: 680 mm (26.8 in)

Trailer Gear: Conventional two-axle

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: N/A

Max Speed: 80 km/h ( 50 mph)

#### PROPULSION

Propulsion Technology: N/A

Line Voltage: 600 V

Number of Motors: 2

Total Power: 432 kW ( 579 hp)

Specific Power: 10.3 kW/tonne ( 12.5 hp/ton)

#### BRAKES

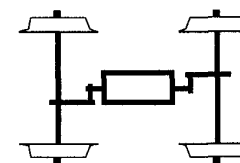
N/A

#### PRICE DATA

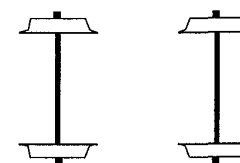
Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Basle/ BVB  
(Switzerland)

**Manufacturers:** Schindler (SIG)  
Siemens

**Vehicle Type:** Be 4/4

**Category:** 1

**Ordered:** 19

**Year of Delivery:** 1987

#### CHARACTERISTICS

Car Length: 25.4 m ( 83.3 ft)

Car Width: 2.2 m ( 7.2 ft)

Low Floor Area: 15%

Floor Height

High: 855 mm (33.7 in)

Low: 325 mm (12.8 in)

Weight: 31 tonnes ( 68,300 lbs)

Specific Weight: 555 kg/m<sup>2</sup> (114 lb/ft<sup>2</sup>)

Seats: 60

Standeers: 97 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

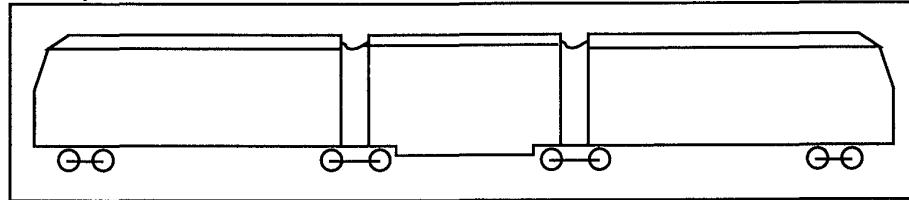
Doors: N/A

Articulation: N/A

Body Material: N/A

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: B'2'2'B'

Power Wheel Diameter: 670 mm (26.4 in)

Power Gear: Conventional monomotor

Trailer Wheel Diameter: 670 mm (26.4 in)

Trailer Gear: Conventional two-axle

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 12 m (39.4 ft)

Max Speed: 65 km/h ( 40 mph)

#### PROPULSION

Propulsion Technology: DC

Line Voltage: 600 V

Number of Motors: 2

Total Power: 300 kW ( 402 hp)

Specific Power: 9.7 kW/tonne ( 11.8 hp/ton)

#### BRAKES

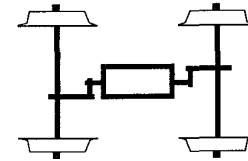
N/A

#### PRICE DATA

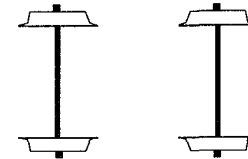
Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Freiburg  
(Germany)

**Manufacturers:** Duewag  
ABB

**Vehicle Type:** GT8D-MNZ

**Category:** 1

**Ordered:** 26

**Year of Delivery:** 1993

#### CHARACTERISTICS

Car Length: 33.09 m (108.6 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 48%

Floor Height

High: 560 mm ( 22 in)

Low: 290 mm (11.4 in)

Weight: 38.5 tonnes ( 84,900 lbs)

Specific Weight: 506 kg/m<sup>2</sup> (104 lb/ft<sup>2</sup>)

Seats: 84

Standees: 121 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

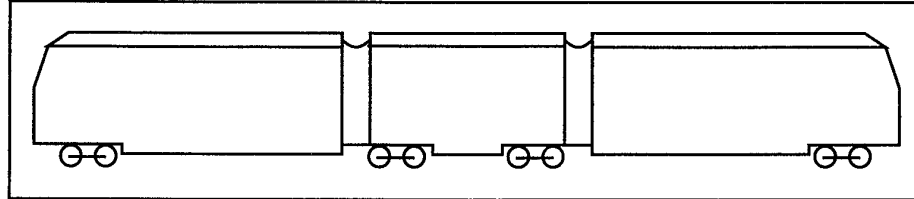
Doors: Four Double

Articulation: Floating

Body Material: Aluminum

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'Bo'Bo'Bo'

Power Wheel Diameter: 590 mm (23.2 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: N/A

Trailer Gear: N/A

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 19 m (62.3 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 750 V

Number of Motors: 8

Total Power: 640 kW ( 858 hp)

Specific Power: 16.6 kW/tonne ( 20.2 hp/ton)

#### BRAKES

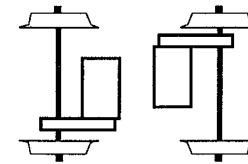
N/A

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear

**City/Authority:** Freiburg/ VAG  
(Germany)

**Manufacturers:** Duewag  
ABB

**Vehicle Type:** GT 8C

**Category:** 1

**Ordered:** 11

**Year of Delivery:** 1990

**CHARACTERISTICS**

Car Length: 32.84 m (107.7 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 9%

Floor Height

High: 910 mm (35.8 in)

Low: 270 mm (10.6 in)

Weight: 38.5 tonnes ( 84,900 lbs)

Specific Weight: 510 kg/m<sup>2</sup> (105 lb/ft<sup>2</sup>)

Seats: 84

Standees: 115 @ 4 pass/m<sup>2</sup>

**CONSTRUCTION**

Travel Direction: Unidirectional

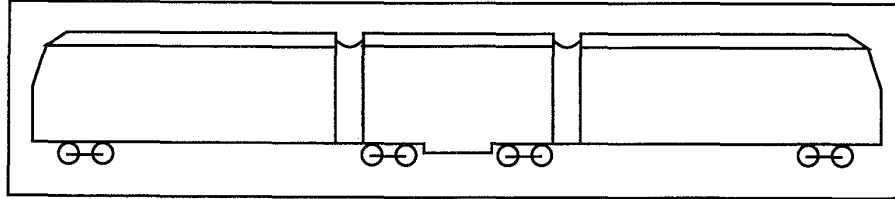
Doors: Five Double

Articulation: Floating

Body Material: N/A

Buff Load: N/A

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: B'B'B'B'

Power Wheel Diameter: 690 mm (27.2 in)

Power Gear: Conventional monomotor

Trailer Wheel Diameter: 690 mm (27.2 in)

Trailer Gear: N/A

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 25 m ( 82 ft)

Max Speed: 70 km/h ( 44 mph)

**PROPULSION**

Propulsion Technology: DC

Line Voltage: 750 V

Number of Motors: 4

Total Power: 600 kW ( 805 hp)

Specific Power: 15.6 kW/tonne ( 19 hp/ton)

**BRAKES**

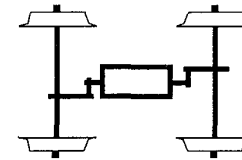
N/A

**PRICE DATA**

Cost Density: N/A

Vehicle Cost: N/A

**Powered Running Gear**



**Trailing Running Gear**

**City/Authority:** Mannheim  
(Germany)

**Manufacturers:** Duewag

**Vehicle Type:** N/A

**Category:** 1

**Ordered:** 23

**Year of Delivery:** 1991

#### CHARACTERISTICS

Car Length: 25.66 m ( 84.2 ft)

Car Width: 2.2 m ( 7.2 ft)

Low Floor Area: 8.9%

Floor Height

High: 889 mm ( 35 in)

Low: 353 mm (13.9 in)

Weight: 26 tonnes ( 57,300 lbs)

Specific Weight: 461 kg/m<sup>2</sup> ( 95 lb/ft<sup>2</sup>)

Seats: 54

Standees: 100 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

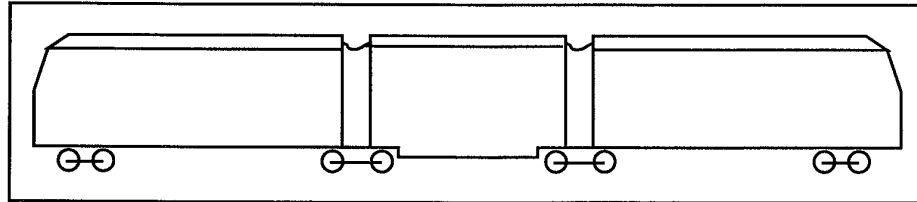
Doors: N/A

Articulation: N/A

Body Material: N/A

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: B'2'2'B'

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Conventional monomotor

Trailer Wheel Diameter: 680 mm (26.8 in)

Trailer Gear: Conventional two-axle

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 25 m ( 82 ft)

Max Speed: 60 km/h ( 37 mph)

#### PROPULSION

Propulsion Technology: DC

Line Voltage: 600 V

Number of Motors: 2

Total Power: 240 kW ( 322 hp)

Specific Power: 9.2 kW/tonne ( 11.2 hp/ton)

#### BRAKES

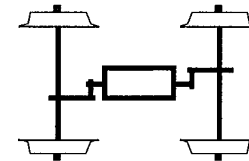
N/A

#### PRICE DATA

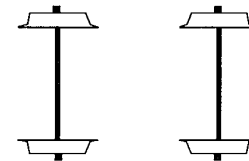
Cost Density: \$52,750 \$/DM/m<sup>2</sup>

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



City/Authority: Nantes/ SEMITAN  
(France)

Manufacturers: GEC Alsthom

Vehicle Type: N/A

Category: 1

Ordered: 34

Year of Delivery: 1992

#### CHARACTERISTICS

Car Length: 39.15 m (128.4 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 16.3%

Floor Height

High: 873 mm (34.4 in)

Low: 353 mm (13.9 in)

Weight: 51.9 tonnes ( 114,400 lbs)

Specific Weight: 576 kg/m<sup>2</sup> (119 lb/ft<sup>2</sup>)

Seats: 74

Standees: 178 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

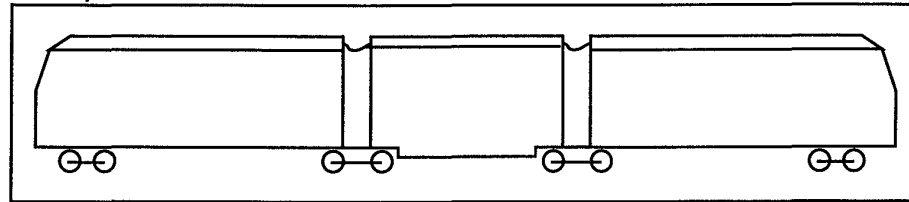
Doors: N/A

Articulation: N/A

Body Material: N/A

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: B'2'2'B'

Power Wheel Diameter: 660 mm ( 26 in)

Power Gear: Conventional monomotor

Trailer Wheel Diameter: 660 mm ( 26 in)

Trailer Gear: Conventional two-axle

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 25 m ( 82 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: DC

Line Voltage: 750 V

Number of Motors: 2

Total Power: 550 kW ( 738 hp)

Specific Power: 10.6 kW/tonne ( 12.9 hp/ton)

#### BRAKES

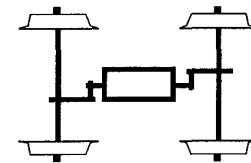
N/A

#### PRICE DATA

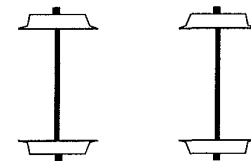
Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear





**City/Authority:** Nantes/ SEMITAN  
(France)

**Manufacturers:** GEC Alsthom  
De Dietrich

**Vehicle Type:** N/A

**Category:** 1

**Ordered:** 12

**Year of Delivery:** 1993

#### CHARACTERISTICS

Car Length: 39.15 m (128.4 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 17.5%

Floor Height

High: 850 mm (33.5 in)

Low: 350 mm (13.8 in)

Weight: 51.6 tonnes ( 113,800 lbs)

Specific Weight: 573 kg/m<sup>2</sup> (118 lb/ft<sup>2</sup>)

Seats: 74

Standees: 178 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

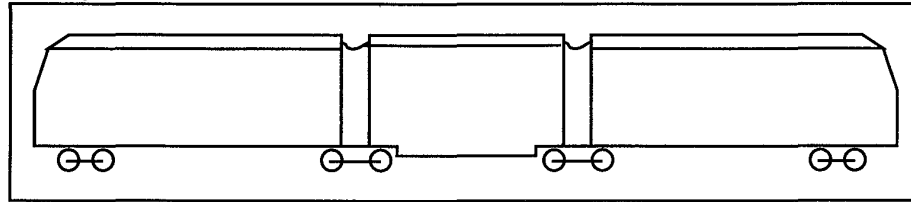
Doors: N/A

Articulation: N/A

Body Material: N/A

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: B'2'2'B'

Power Wheel Diameter: 660 mm ( 26 in)

Power Gear: Conventional monomotor

Trailer Wheel Diameter: 660 mm ( 26 in)

Trailer Gear: Conventional two-axle

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: N/A

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: DC

Line Voltage: 750 V

Number of Motors: 2

Total Power: 550 kW ( 738 hp)

Specific Power: 10.7 kW/tonne ( 13 hp/ton)

#### BRAKES

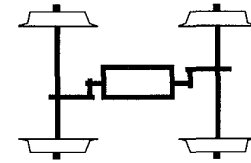
N/A

#### PRICE DATA

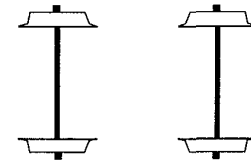
Cost Density: \$50,870 \$DM/m<sup>2</sup>

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Nurnberg  
(Germany)

**Manufacturers:** AEG (MAN)  
Duewag  
Siemens

**Vehicle Type:** N82

**Category:** 1

**Ordered:** 12

**Year of Delivery:** 1992

#### CHARACTERISTICS

Car Length: 26.08 m ( 85.6 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 9.3%

Floor Height

High: 880 mm (34.6 in)

Low: 284 mm (11.2 in)

Weight: 32.8 tonnes ( 72,300 lbs)

Specific Weight: 547 kg/m<sup>2</sup> (113 lb/ft<sup>2</sup>)

Seats: 51

Standees: 85 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

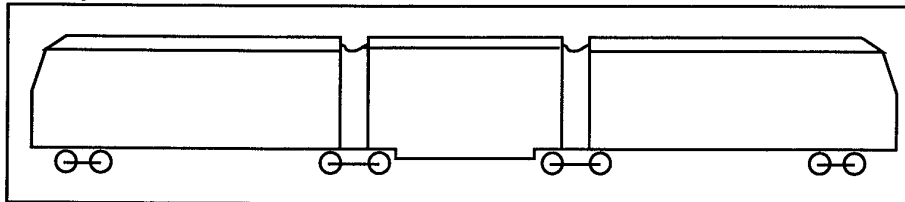
Doors: Four Double

Articulation: Floating

Body Material: Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: B'2'2'B'

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Conventional monomotor

Trailer Wheel Diameter: 680 mm (26.8 in)

Trailer Gear: Conventional two-axle

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 25 m ( 82 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: DC

Line Voltage: 600 V

Number of Motors: 2

Total Power: 240 kW ( 322 hp)

Specific Power: 7.3 kW/tonne ( 8.9 hp/ton)

#### BRAKES

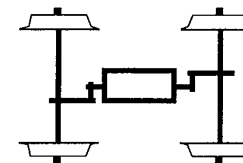
Regenerative

#### PRICE DATA

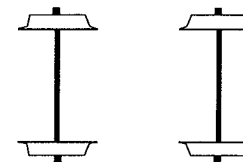
Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



City/Authority: **RBS**  
(Switzerland)

Manufacturers: **Schindler (SIG)**  
**SIG**  
**ABB**

Vehicle Type: **ABe4/8**

Category: **1**

Ordered: **23**

Year of Delivery: **1992**

#### CHARACTERISTICS

Car Length: 39.3 m (128.9 ft)

Car Width: 2.65 m ( 8.7 ft)

Low Floor Area: 50%

Floor Height

High: 830 mm (32.7 in)

Low: 390 mm (15.4 in)

Weight: 51 tonnes ( 112,400 lbs)

Specific Weight: 490 kg/m<sup>2</sup> (100 lb/ft<sup>2</sup>)

Seats: 120

Standees: 140 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: N/A

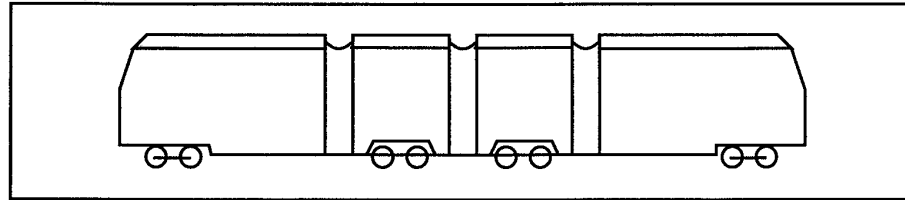
Doors: Four Double

Articulation: Non-Articulat

Body Material: N/A

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'2'2'Bo'

Power Wheel Diameter: 720 mm (28.3 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 720 mm (28.3 in)

Trailer Gear: Conventional two-axle

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: N/A

Max Speed: 90 km/h ( 56 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 1200 V

Number of Motors: 4

Total Power: 600 kW ( 805 hp)

Specific Power: 11.8 kW/tonne ( 14.3 hp/ton)

#### BRAKES

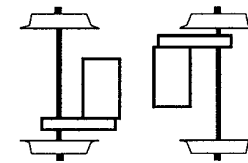
N/A

#### PRICE DATA

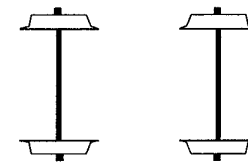
Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Sheffield/ SYST  
(United Kingdom)

**Manufacturers:** Duewag  
Siemens

**Vehicle Type:** GT 8

**Category:** 1

**Ordered:** 25

**Year of Delivery:** 1993

#### CHARACTERISTICS

Car Length: 34.75 m ( 114 ft)

Car Width: 2.65 m ( 8.7 ft)

Low Floor Area: 34%

Floor Height

High: 880 mm (34.6 in)

Low: 480 mm (18.9 in)

Weight: 46 tonnes ( 101,400 lbs)

Specific Weight: 500 kg/m<sup>2</sup> (102 lb/ft<sup>2</sup>)

Seats: 88

Standees: 150 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

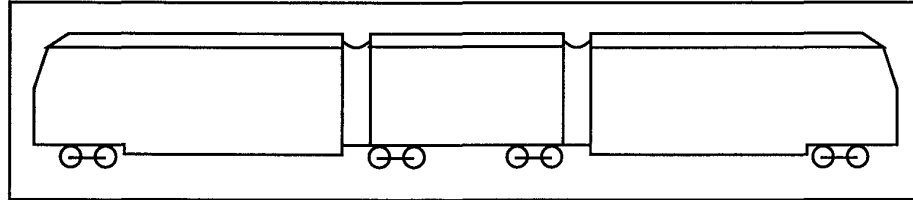
Doors: Four Double, One Single

Articulation: Floating

Body Material: Welded Corten-B Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: B'B'B'B'

Power Wheel Diameter: 670 mm (26.4 in)

Power Gear: Conventional monomotor

Trailer Wheel Diameter: N/A

Trailer Gear: N/A

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 25 m ( 82 ft)

Max Speed: 80 km/h ( 50 mph)

#### PROPULSION

Propulsion Technology: DC

Line Voltage: 750 V

Number of Motors: 4

Total Power: 1000 kW (1341 hp)

Specific Power: 21.7 kW/tonne (26.4 hp/ton)

#### BRAKES

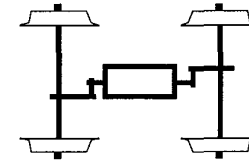
1. Combined Regenerative and Rheostatic
2. Spring-Applied Pneumatic
3. Track

#### PRICE DATA

Cost Density: \$53000 \$DM/m<sup>2</sup>

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear

**City/Authority:** Wurzburg  
(Germany)

**Manufacturers:** LHB  
Siemens

**Vehicle Type:** GT 8/8C

**Category:** 1

**Ordered:** 14

**Year of Delivery:** 1989

#### CHARACTERISTICS

Car Length: 32.6 m ( 107 ft)

Car Width: 2.4 m ( 7.9 ft)

Low Floor Area: 9.8%

Floor Height

High: 910 mm (35.8 in)

Low: 310 mm (12.2 in)

Weight: 42.5 tonnes ( 93,700 lbs)

Specific Weight: 543 kg/m<sup>2</sup> (111 lb/ft<sup>2</sup>)

Seats: 78

Standees: 125 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

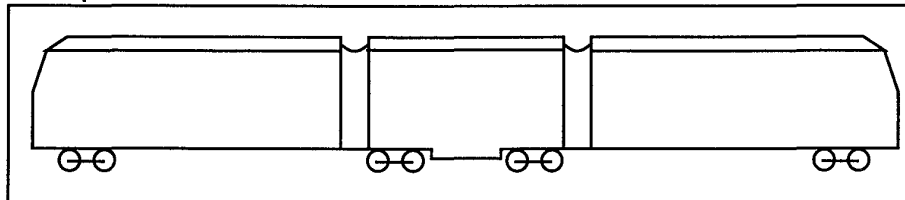
Doors: Five Double

Articulation: Floating

Body Material: N/A

Buff Load: 20 tonnes ( 44,100 lbs)

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: B'B'B'

Power Wheel Diameter: 690 mm (27.2 in)

Power Gear: Conventional monomotor

Trailer Wheel Diameter: 690 mm (27.2 in)

Trailer Gear: N/A

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 25 m ( 82 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: DC

Line Voltage: 750 V

Number of Motors: 4

Total Power: 648 kW ( 869 hp)

Specific Power: 15.2 kW/tonne ( 18.5 hp/ton)

#### BRAKES

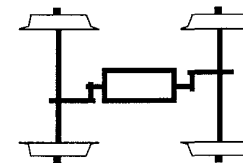
N/A

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear

## CATEGORY-2 LF-LRVs

**City/Authority:** Bern/ SVB  
(Switzerland)

**Manufacturers:** ACM Vevey  
Duewag  
ABB

**Vehicle Type:** Be4/8

**Category:** 2

**Ordered:** 12

**Year of Delivery:** 1989

### CHARACTERISTICS

Car Length: 31 m (101.7 ft)

Car Width: 2.2 m ( 7.2 ft)

Low Floor Area: 72.8%

Floor Height

High: 710 mm ( 28 in)

Low: 350 mm (13.8 in)

Weight: 34 tonnes ( 75,000 lbs)

Specific Weight: 499 kg/m<sup>2</sup> (102 lb/ft<sup>2</sup>)

Seats: 68

Standees: 109 @ 4 pass/m<sup>2</sup>

### CONSTRUCTION

Travel Direction: Unidirectional

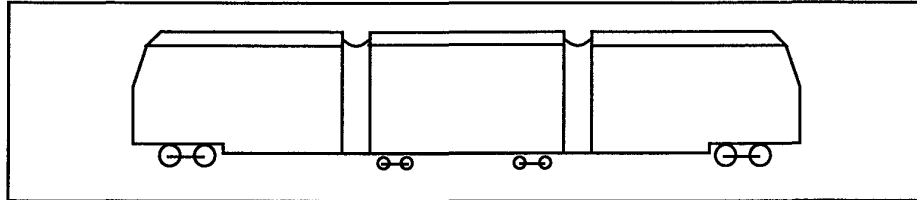
Doors: Six Double

Articulation: Floating

Body Material: Welded Grade 52 Steel

Buff Load: N/A

### Concept Schematic



### RUNNING GEAR

Axle Arrangement: B'2'2'B'

Power Wheel Diameter: 560 mm ( 22 in)

Power Gear: Conventional monomotor

Trailer Wheel Diameter: 410 mm (16.1 in)

Trailer Gear: Small wheel trailer truck

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 60 km/h ( 37 mph)

### PROPULSION

Propulsion Technology: DC

Line Voltage: 600 V

Number of Motors: 2

Total Power: 302 kW ( 405 hp)

Specific Power: 8.9 kW/tonne ( 10.8 hp/ton)

### BRAKES

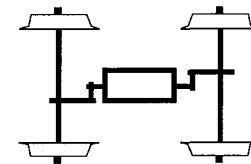
1. Hydraulic Disk
2. Rail Braking System

### PRICE DATA

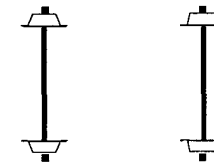
Cost Density: N/A

Vehicle Cost: \$SFr 3,000,000

### Powered Running Gear



### Trailing Running Gear



**City/Authority:** Bogestra/ Bochum  
(Germany)

**Manufacturers:** Duewag  
Siemens

**Vehicle Type:** MGT6D

**Category:** 2

**Ordered:** 43

**Year of Delivery:** 1992

#### CHARACTERISTICS

Car Length: 28.62 m ( 93.9 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 65%

Floor Height

High: 560 mm ( 22 in)

Low: 350 mm (13.8 in)

Weight: 32 tonnes ( 70,500 lbs)

Specific Weight: 486 kg/m<sup>2</sup> (100 lb/ft<sup>2</sup>)

Seats: 72

Standees: 100 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

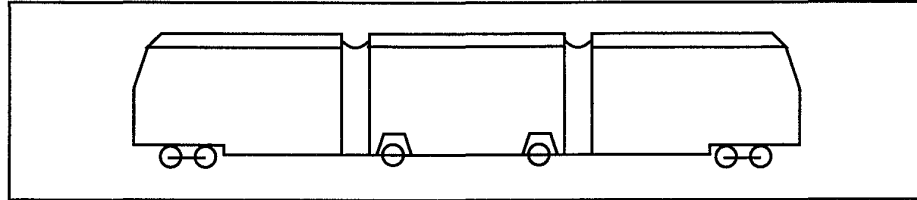
Doors: Three Double

Articulation: Floating

Body Material: Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'1'1'Bo'

Power Wheel Diameter: 575 mm (22.6 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 575 mm (22.6 in)

Trailer Gear: EEF wheelset

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 420 kW ( 563 hp)

Specific Power: 13.1 kW/tonne ( 16 hp/ton)

#### BRAKES

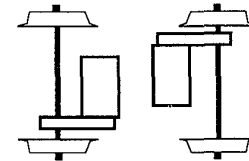
N/A

#### PRICE DATA

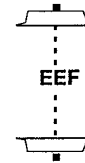
Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Bonn  
(Germany)

**Manufacturers:** Duewag  
Siemens

**Vehicle Type:** NGT6D

**Category:** 2

**Ordered:** 24

**Year of Delivery:** 1994

#### CHARACTERISTICS

Car Length: 28.62 m ( 93.9 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 65%

Floor Height

High: 560 mm ( 22 in)

Low: 350 mm (13.8 in)

Weight: 31.5 tonnes ( 69,400.lbs)

Specific Weight: 479 kg/m<sup>2</sup> ( 99 lb/ft<sup>2</sup>)

Seats: 72

Standeers: 100 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

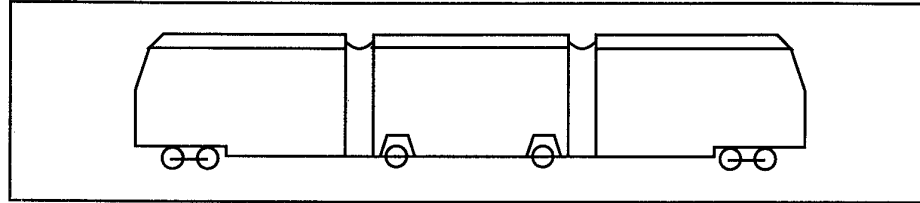
Doors: N/A

Articulation: N/A

Body Material: N/A

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'1'1'Bo'

Power Wheel Diameter: 600 mm (23.6 in)

Power Gear: Conventiqnal bi-motor

Trailer Wheel Diameter: 600 mm (23.6 in)

Trailer Gear: EEF wheelset

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 360 kW ( 483 hp)

Specific Power: 11.4 kW/tonne ( 13.9 hp/ton)

#### BRAKES

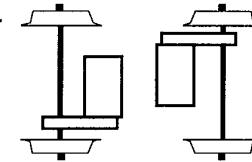
N/A

#### PRICE DATA

Cost Density: \$57,000 \$DM/m<sup>2</sup>

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear





**City/Authority:** Brandenburg  
(Germany)

**Manufacturers:** Duewag  
Siemens

**Vehicle Type:** MGT6D

**Category:** 2

**Ordered:** 4

**Year of Delivery:** N/A

#### CHARACTERISTICS

Car Length: 28.62 m ( 93.9 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 65%

Floor Height

High: 560 mm ( 22 in)

Low: 350 mm (13.8 in)

Weight: 32 tonnes ( 70,500 lbs)

Specific Weight: 486 kg/m<sup>2</sup> (100 lb/ft<sup>2</sup>)

Seats: 72

Standees: 100 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

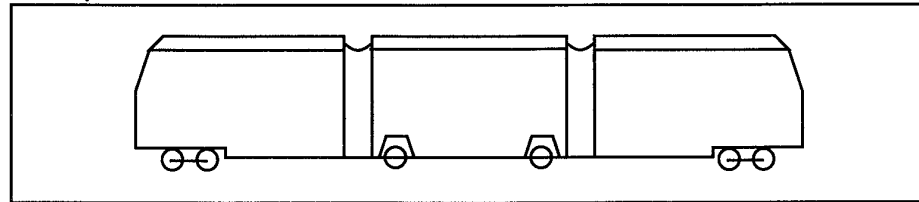
Doors: Three Double

Articulation: Floating

Body Material: Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'1'1'Bo'

Power Wheel Diameter: 575 mm (22.6 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 575 mm (22.6 in)

Trailer Gear: EEF wheelset

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 420 kW ( 563 hp)

Specific Power: 13.1 kW/tonne ( 16 hp/ton)

#### BRAKES

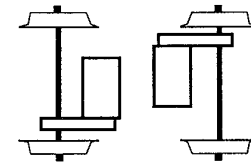
N/A

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Brno City Transport  
(Czech Rep.)

**Manufacturers:** CKD Tatra

**Vehicle Type:** RT6-N1

**Category:** 2

**Ordered:** 12

**Year of Delivery:** N/A

#### CHARACTERISTICS

Car Length: 26.28 m ( 86.2 ft)

Car Width: 2.44 m ( 8 ft)

Low Floor Area: 63%

Floor Height

High: 900 mm (35.4 in)

Low: 350 mm (13.8 in)

Weight: 32 tonnes ( 70,500 lbs)

Specific Weight: 499 kg/m<sup>2</sup> (102 lb/ft<sup>2</sup>)

Seats: 45

Standees: 93 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

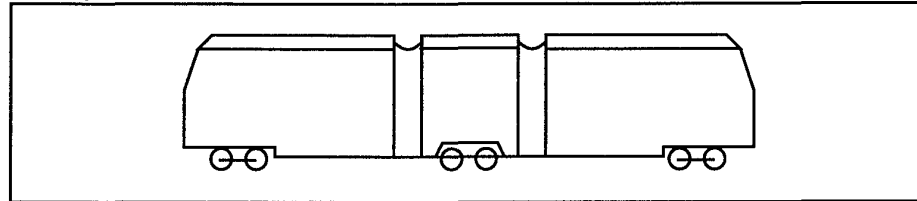
Doors: Four Double, Two Single

Articulation: Floating

Body Material: Welded Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'2Bo'

Power Wheel Diameter: 700 mm (27.6 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 700 mm (27.6 in)

Trailer Gear: Four independent wheel trailer truck

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 25 m ( 82 ft)

Max Speed: 80 km/h ( 50 mph)

#### PROPULSION

Propulsion Technology: DC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 380 kW ( 510 hp)

Specific Power: 11.9 kW/tonne ( 14.5 hp/ton)

#### BRAKES

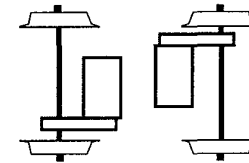
1. Regenerative
2. Hydraulic Disk
3. Rail Brakes

#### PRICE DATA

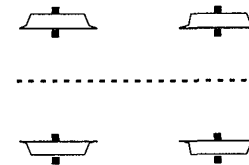
Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Buenos Aires  
(Argentina)

**Manufacturers:** Duewag  
Siemens  
GEC Alsthom  
CAF

**Vehicle Type:** N/A

**Category:** 2

**Ordered:** 9

**Year of Delivery:** 1994

**CHARACTERISTICS**

Car Length: 23.78 m ( 78 ft)

Car Width: 2.4 m ( 7.9 ft)

Low Floor Area: 62%

Floor Height

High: 560 mm ( 22 in)

Low: 350 mm (13.8 in)

Weight: 29.7 tonnes ( 65,500 lbs)

Specific Weight: 520 kg/m<sup>2</sup> (106 lb/ft<sup>2</sup>)

Seats: 65

Standees: 91 @ 4 pass/m<sup>2</sup>

**CONSTRUCTION**

Travel Direction: Unidirectional

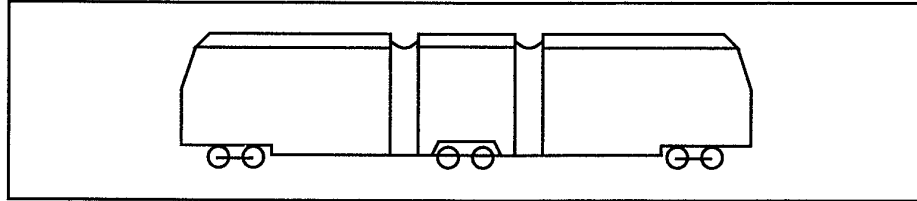
Doors: Four Double

Articulation: Floating

Body Material: N/A

Buff Load: N/A

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: Bo'2Bo'

Power Wheel Diameter: 590 mm (23.2 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 590 mm (23.2 in)

Trailer Gear: Four independent wheel trailer truck

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 25 m ( 82 ft)

Max Speed: 70 km/h ( 44 mph)

**PROPULSION**

Propulsion Technology: AC

Line Voltage: 750 V

Number of Motors: 4

Total Power: 360 kW ( 483 hp)

Specific Power: 12.1 kW/tonne ( 14.8 hp/ton)

**BRAKES**

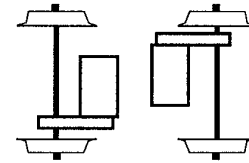
Rheostatic

**PRICE DATA**

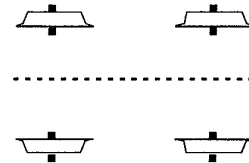
Cost Density: N/A

Vehicle Cost: N/A

**Powered Running Gear**



**Trailing Running Gear**



**City/Authority:** Cologne  
(Germany)

**Manufacturers:** Bombardier (Rotax)  
Kiepe  
GEC Alsthom

**Vehicle Type:** T

**Category:** 2

**Ordered:** 40

**Year of Delivery:** N/A

#### CHARACTERISTICS

Car Length: 26.8 m ( 87.9 ft)

Car Width: 2.65 m ( 8.7 ft)

Low Floor Area: 60%

Floor Height

High: 530 mm (20.9 in)

Low: 440 mm (17.3 in)

Weight: 34.7 tonnes ( 76,500 lbs)

Specific Weight: 489 kg/m<sup>2</sup> (100 lb/ft<sup>2</sup>)

Seats: 58

Standees: 136 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

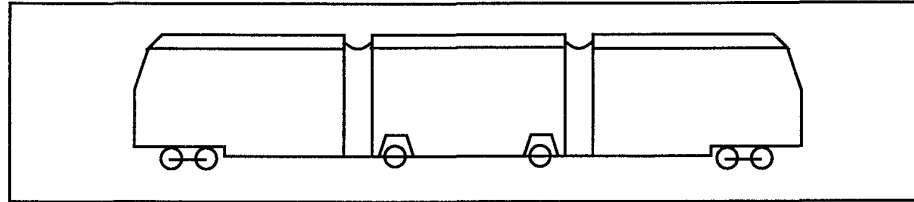
Doors: Three Double, One Single

Articulation: Floating

Body Material: Welded Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'1'1'Bo'

Power Wheel Diameter: 590 mm (23.2 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 590 mm (23.2 in)

Trailer Gear: Single-axle conventional wheelset  
steered by articulation

Track Gauge: 1435 mm ( 56.5 in)

Min Curve Radius: 20 m (65.6 ft)

Max Speed: 80 km/h ( 50 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 750 V

Number of Motors: 4

Total Power: 400 kW ( 536 hp)

Specific Power: 11.5 kW/tonne ( 14 hp/ton)

#### BRAKES

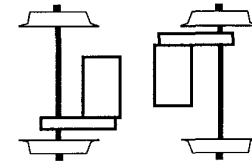
1. Combined Regenerative and Rheostatic
2. Rail Brakes
3. Disc Brakes

#### PRICE DATA

Cost Density: \$37,860 \$DM/m<sup>2</sup>

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Dresden  
(Germany)

**Manufacturers:** Duewag  
ABB

**Vehicle Type:** 6MGT

**Category:** 2

**Ordered:** 20

**Year of Delivery:** N/A

**CHARACTERISTICS**

Car Length: 40.5 m (132.9 ft)

Car Width: 2.4 m ( 7.9 ft)

Low Floor Area: 63.5%

Floor Height

High: 600 mm (23.6 in)

Low: 350 mm (13.8 in)

Weight: 42 tonnes ( 92,600 lbs)

Specific Weight: 432 kg/m<sup>2</sup> ( 88 lb/ft<sup>2</sup>)

Seats: 119

Standees: 150 @ 4 pass/m<sup>2</sup>

**CONSTRUCTION**

Travel Direction: Unidirectional

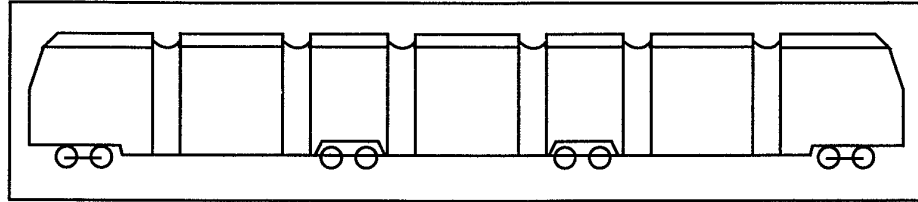
Doors: Four Double, One Single

Articulation: Floating

Body Material: N/A

Buff Load: N/A

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: Bo'22Bo'

Power Wheel Diameter: 590 mm (23.2 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 590 mm (23.2 in)

Trailer Gear: Four independent wheel trailer truck

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

**PROPULSION**

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 320 kW ( 429 hp)

Specific Power: 7.6 kW/tonne ( 9.3 hp/ton)

**BRAKES**

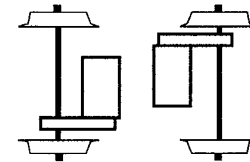
N/A

**PRICE DATA**

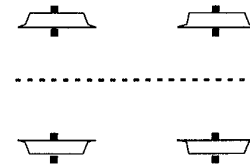
Cost Density: N/A

Vehicle Cost: N/A

**Powered Running Gear**



**Trailing Running Gear**



**City/Authority:** Dusseldorf  
(Germany)

**Manufacturers:** Duewag  
Siemens

**Vehicle Type:** NGT6D

**Category:** 2

**Ordered:** 10

**Year of Delivery:** N/A

#### CHARACTERISTICS

Car Length: 28.62 m ( 93.9 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 65%

Floor Height

High: 560 mm ( 22 in)

Low: 350 mm (13.8 in)

Weight: 31.5 tonnes ( 69,400 lbs)

Specific Weight: 479 kg/m<sup>2</sup> ( 99 lb/ft<sup>2</sup>)

Seats: 72

Standees: 100 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

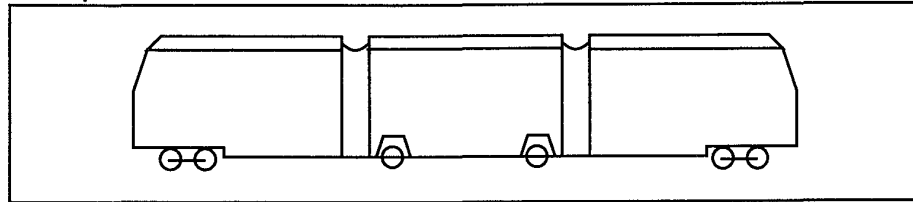
Doors: N/A

Articulation: N/A

Body Material: N/A

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'1'1'Bo'

Power Wheel Diameter: 600 mm (23.6 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 600 mm (23.6 in)

Trailer Gear: EEF wheelset

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 360 kW ( 483 hp)

Specific Power: 11.4 kW/tonne ( 13.9 hp/ton)

#### BRAKES

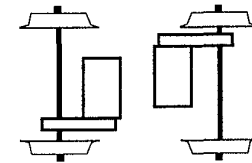
N/A

#### PRICE DATA

Cost Density: \$40,500 \$DM/m<sup>2</sup>

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Erfurt  
(Germany)

**Manufacturers:** Duewag  
Siemens

**Vehicle Type:** MGT6D

**Category:** 2

**Ordered:** 4

**Year of Delivery:** N/A

#### CHARACTERISTICS

Car Length: 28.62 m ( 93.9 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 65%

Floor Height  
High: 560 mm ( 22 in)  
Low: 350 mm (13.8 in)

Weight: 32 tonnes ( 70,500 lbs)

Specific Weight: 486 kg/m<sup>2</sup> (100 lb/ft<sup>2</sup>)

Seats: 72

Standees: 100 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

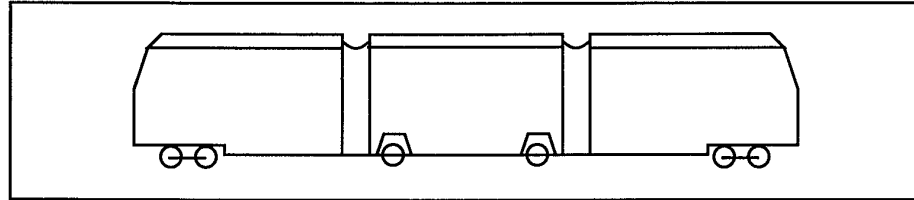
Doors: Three Double

Articulation: Floating

Body Material: Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'1'1'Bo'

Power Wheel Diameter: 575 mm (22.6 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 575 mm (22.6 in)

Trailer Gear: EEF wheelset

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 420 kW ( 563 hp)

Specific Power: 13.1 kW/tonne ( 16 hp/ton)

#### BRAKES

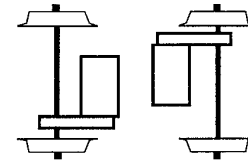
N/A

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Geneva  
(Switzerland)

**Manufacturers:** ACM Vevey

**Vehicle Type:** Be4/8 Intermediates

**Category:** 2

**Ordered:** 18

**Year of Delivery:** 1995

**CHARACTERISTICS**

Car Length: N/A

Car Width: N/A

Low Floor Area: N/A

Floor Height

High: N/A

Low: 350 mm (13.8 in)

Weight: N/A

Specific Weight: N/A

Seats: N/A

Standees: N/A

**CONSTRUCTION**

Travel Direction: Bidirectional

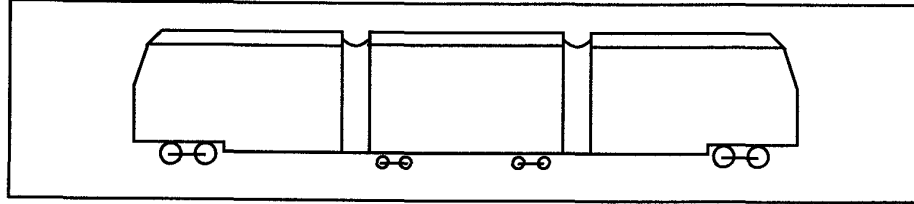
Doors: N/A

Articulation: Floating

Body Material: Welded Grade 52 Steel

Buff Load: N/A

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: N/A

Power Wheel Diameter: N/A

Power Gear: None

**Powered Running Gear**

Trailer Wheel Diameter: 410 mm (16.1 in)

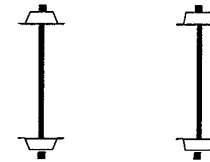
Trailer Gear: Small wheel trailer truck

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: N/A

Max Speed: N/A

**Trailing Running Gear**



**PROPULSION**

Propulsion Technology: N/A

Line Voltage: N/A V

Number of Motors: N/A

Total Power: N/A

Specific Power: N/A

**BRAKES**

N/A

**PRICE DATA**

Cost Density: N/A

Vehicle Cost: \$SFr1,330,000



**City/Authority:** Grenoble/ SEMITAG  
(France)

**Manufacturers:** GEC Alsthom  
De Dietrich

**Vehicle Type:** ZR 2000

**Category:** 2

**Ordered:** 38

**Year of Delivery:** 1997

**CHARACTERISTICS**

Car Length: 29.4 m ( 96.5 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 65%

Floor Height

High: 875 mm (34.4 in)

Low: 345 mm (13.6 in)

Weight: 43.9 tonnes ( 96,800 lbs)

Specific Weight: 649 kg/m<sup>2</sup> (134 lb/ft<sup>2</sup>)

Seats: 54

Standees: 120 @ 4 pass/m<sup>2</sup>

**CONSTRUCTION**

Travel Direction: Bidirectional

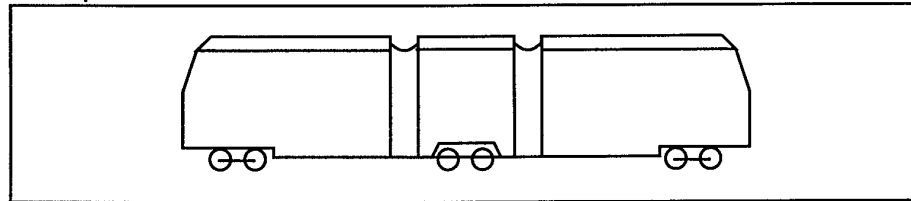
Doors: Four Double, One Single

Articulation: Floating

Body Material: N/A

Buff Load: N/A

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: B'2'B'

Power Wheel Diameter: 660 mm ( 26 in)

Power Gear: Conventional monomotor

Trailer Wheel Diameter: 660 mm ( 26 in)

Trailer Gear: Independent wheels on two cranked axle trailer truck

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 25 m ( 82 ft)

Max Speed: 70 km/h ( 44 mph)

**PROPULSION**

Propulsion Technology: DC

Line Voltage: 750 V

Number of Motors: 2

Total Power: 550 kW ( 738 hp)

Specific Power: 12.5 kW/tonne ( 15.3 hp/ton)

**BRAKES**

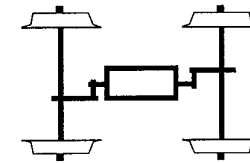
1. Regenerative
2. Hydraulic Disk
3. Magnetic Pads

**PRICE DATA**

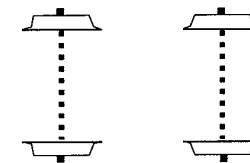
Cost Density: \$56,800 \$DM/m<sup>2</sup>

Vehicle Cost: N/A

**Powered Running Gear**



**Trailing Running Gear**



**City/Authority:** Geneva/ TPG  
(Switzerland)

**Manufacturers:** ACM Vevey  
Duewag  
ABB

**Vehicle Type:** Be4/6

**Category:** 2

**Ordered:** 46

**Year of Delivery:** 1984

**CHARACTERISTICS**

Car Length: 21 m ( 68.9 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 60.4%

Floor Height

High: 870 mm (34.3 in)

Low: 480 mm (18.9 in)

Weight: 27 tonnes ( 59,500 lbs)

Specific Weight: 559 kg/m<sup>2</sup> (115 lb/ft<sup>2</sup>)

Seats: 48

Standees: 88 @ 4 pass/m<sup>2</sup>

**CONSTRUCTION**

Travel Direction: Unidirectional

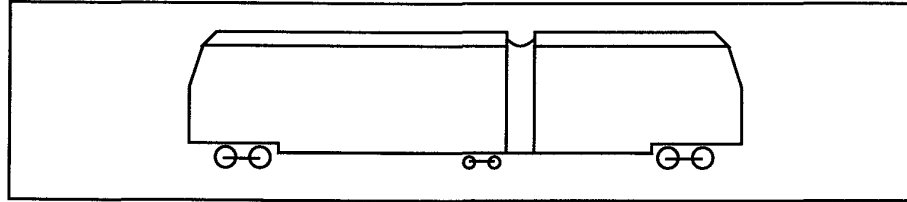
Doors: Four Double

Articulation: Floating

Body Material: Stainless Steel

Buff Load: N/A

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: B'2'B'

Power Wheel Diameter: 660 mm ( 26 in)

Power Gear: Conventional monomotor

Trailer Wheel Diameter: 375 mm (14.8 in)

Trailer Gear: Small wheel trailer truck

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 17.5 m (57.4 ft)

Max Speed: 60 km/h ( 37 mph)

**PROPULSION**

Propulsion Technology: DC

Line Voltage: 600 V

Number of Motors: 2

Total Power: 300 kW ( 402 hp)

Specific Power: 11.1 kW/tonne ( 13.5 hp/ton)

**BRAKES**

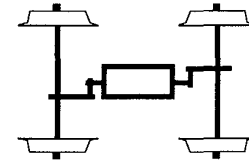
N/A

**PRICE DATA**

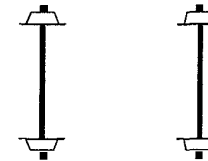
Cost Density: N/A

Vehicle Cost: \$US 2,350,000

**Powered Running Gear**



**Trailing Running Gear**



**City/Authority:** Grenoble/ SEMITAG  
(France)

**Manufacturers:** GEC Alsthom  
De Dietrich

**Vehicle Type:** ZR 2000

**Category:** 2

**Ordered:** 7

**Year of Delivery:** 1995

**CHARACTERISTICS**

Car Length: 29.4 m ( 96.5 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 65%

Floor Height

High: 875 mm (34.4 in)

Low: 345 mm (13.6 in)

Weight: 43.9 tonnes ( 96,800 lbs)

Specific Weight: 649 kg/m<sup>2</sup> (134 lb/ft<sup>2</sup>)

Seats: 54

Standees: 120 @ 4 pass/m<sup>2</sup>

**CONSTRUCTION**

Travel Direction: Bidirectional

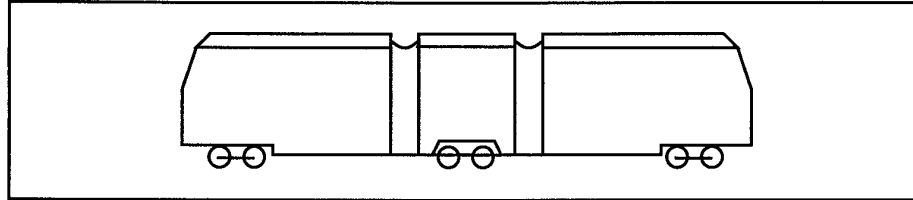
Doors: Four Double, One Single

Articulation: Floating

Body Material: N/A

Buff Load: N/A

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: B'2'B'

Power Wheel Diameter: 660 mm ( 26 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 660 mm ( 26 in)

Trailer Gear: Independent wheels on two cranked axle trailer truck

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 25 m ( 82 ft)

Max Speed: 70 km/h ( 44 mph)

**PROPULSION**

Propulsion Technology: AC

Line Voltage: 750 V

Number of Motors: 4

Total Power: 1000 kW (1341 hp)

Specific Power: 22.8 kW/tonne ( 27.7 hp/ton)

**BRAKES**

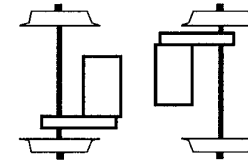
- 1. Regenerative
- 2. Hydraulic Disk
- 3. Magnetic Pads

**PRICE DATA**

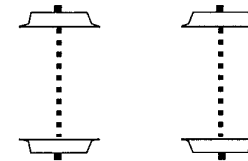
Cost Density: \$56,000 \$DM/m<sup>2</sup>

Vehicle Cost: \$FFr14,000,000

**Powered Running Gear**



**Trailing Running Gear**



**City/Authority:** Halle  
(Germany)

**Manufacturers:** Duewag  
Siemens  
AEG

**Vehicle Type:** MGT6D

**Category:** 2

**Ordered:** 14

**Year of Delivery:** 1992

#### CHARACTERISTICS

Car Length: 28.62 m ( 93.9 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 65%

Floor Height

High: 560 mm ( 22 in)

Low: 350 mm (13.8 in)

Weight: 32 tonnes ( 70,500 lbs)

Specific Weight: 486 kg/m<sup>2</sup> (100 lb/ft<sup>2</sup>)

Seats: 72

Standees: 100 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

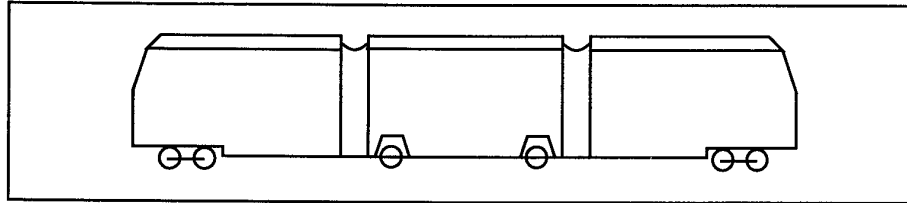
Doors: Three Double

Articulation: Floating

Body Material: Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'1'1'Bo'

Power Wheel Diameter: 575 mm (22.6 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 575 mm (22.6 in)

Trailer Gear: EEF wheelset

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 420 kW ( 563 hp)

Specific Power: 13.1 kW/tonne ( 16 hp/ton)

#### BRAKES

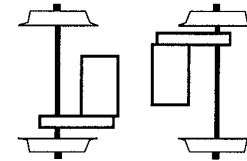
N/A

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Heidelberg  
(Germany)

**Manufacturers:** Duewag  
ABB

**Vehicle Type:** MGT6D

**Category:** 2

**Ordered:** 12

**Year of Delivery:** 1994

#### CHARACTERISTICS

Car Length: 28.93 m ( 94.9 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 63%

Floor Height

High: 540 mm (21.3 in)

Low: 350 mm (13.8 in)

Weight: 31.5 tonnes ( 69,400 lbs)

Specific Weight: 473 kg/m<sup>2</sup> ( 98 lb/ft<sup>2</sup>)

Seats: 64

Standees: 108 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

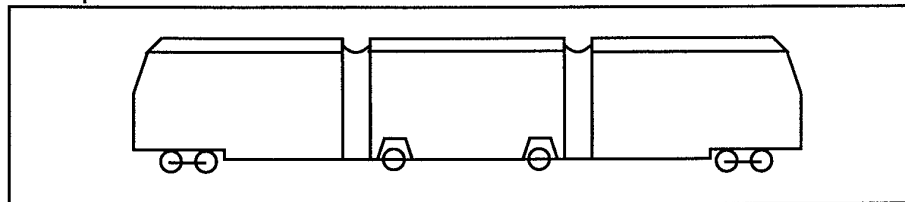
Doors: N/A

Articulation: N/A

Body Material: Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'1'1'Bo'

Power Wheel Diameter: 590 mm (23.2 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 590 mm (23.2 in)

Trailer Gear: EEF wheelset

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 320 kW ( 429 hp)

Specific Power: 10.2 kW/tonne ( 12.4 hp/ton)

#### BRAKES

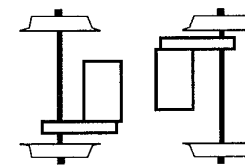
N/A

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Karlsruhe  
(Germany)

**Manufacturers:** Duewag  
ABB

**Vehicle Type:** 70D/N

**Category:** 2

**Ordered:** 20

**Year of Delivery:** 1994

#### CHARACTERISTICS

Car Length: 28.82 m ( 94.6 ft)

Car Width: 2.65 m ( 8.7 ft)

Low Floor Area: 61%

Floor Height

High: 580 mm (22.8 in)

Low: 390 mm (15.4 in)

Weight: 34.5 tonnes ( 76,100 lbs)

Specific Weight: 452 kg/m<sup>2</sup> ( 92 lb/ft<sup>2</sup>)

Seats: 91

Standees: 100 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

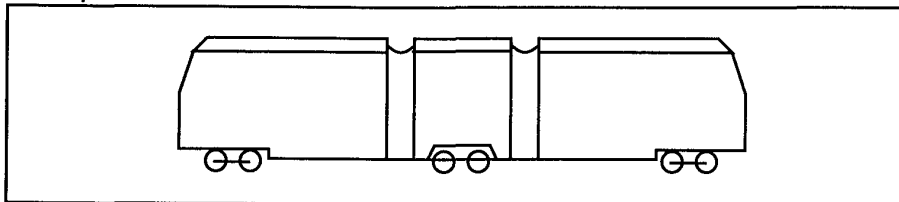
Doors: Four Double, One Single

Articulation: Supported

Body Material: N/A

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'2Bo'

Power Wheel Diameter: 590 mm (23.2 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 590 mm (23.2 in)

Trailer Gear: Four independent wheel trailer truck

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: N/A

Max Speed: 80 km/h ( 50 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 750 V

Number of Motors: 4

Total Power: 500 kW ( 671 hp)

Specific Power: 14.5 kW/tonne ( 17.6 hp/ton)

#### BRAKES

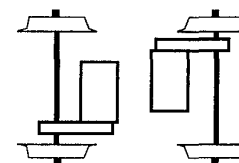
N/A

#### PRICE DATA

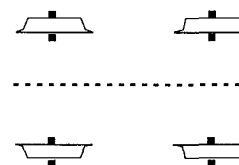
Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Kassel/ KVG  
(Germany)

**Manufacturers:** Duewag  
AEG-Westinghouse  
Siemens

**Vehicle Type:** NGT6C

**Category:** 2

**Ordered:** 25

**Year of Delivery:** 1990

**CHARACTERISTICS**

Car Length: 28.75 m ( 94.3 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 70%

Floor Height

High: 700 mm (27.6 in)

Low: 350 mm (13.8 in)

Weight: 30.2 tonnes ( 66,600 lbs)

Specific Weight: 457 kg/m<sup>2</sup> ( 94 lb/ft<sup>2</sup>)

Seats: 80

Standees: 105 @ 4 pass/m<sup>2</sup>

**CONSTRUCTION**

Travel Direction: Unidirectional

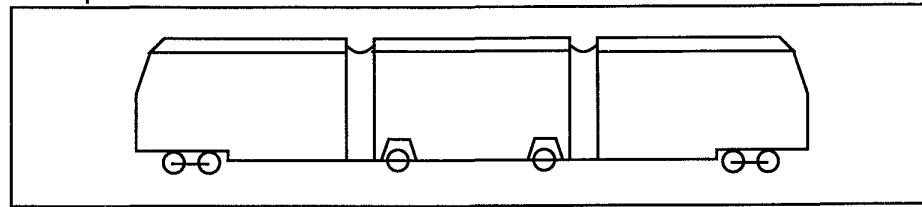
Doors: Four Double, One Single

Articulation: Floating

Body Material: Steel

Buff Load: N/A

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: B'1'1'B'

Power Wheel Diameter: 560 mm ( 22 in)

Power Gear: Conventional monomotor

Trailer Wheel Diameter: 560 mm ( 22 in)

Trailer Gear: EEF wheelset

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

**PROPULSION**

Propulsion Technology: DC

Line Voltage: 600 V

Number of Motors: 2

Total Power: 360 kW ( 483 hp)

Specific Power: 11.9 kW/tonne ( 14.5 hp/ton)

**BRAKES**

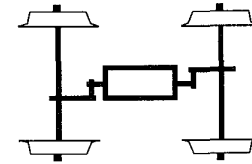
1. Hydraulic

**PRICE DATA**

Cost Density: \$33,000 \$DM/m<sup>2</sup>

Vehicle Cost: N/A

**Powered Running Gear**



**Trailing Running Gear**



**City/Authority:** Leipzig  
(Germany)

**Manufacturers:** Duewag  
ABB

**Vehicle Type:** 8NGT

**Category:** 2

**Ordered:** 25

**Year of Delivery:** 1994

**CHARACTERISTICS**

Car Length: 27.8 m ( 91.2 ft)

Car Width: 2.2 m ( 7.2 ft)

Low Floor Area: 61%

Floor Height

High: 560 mm ( 22 in)

Low: 300 mm (11.8 in)

Weight: 32 tonnes ( 70,500 lbs)

Specific Weight: 523 kg/m2 (107 lb/ft2)

Seats: 77

Standees: 104 @ 4 pass/m2

**CONSTRUCTION**

Travel Direction: N/A

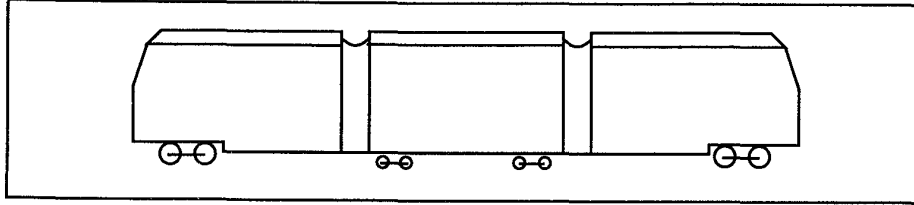
Doors: N/A

Articulation: N/A

Body Material: N/A

Buff Load: N/A

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: Bo'2'2'Bo'

Power Wheel Diameter: 590 mm (23.2 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 410 mm (16.1 in)

Trailer Gear: Small wheel trailer truck

Track Gauge: 1458 mm (57.4 in)

Min Curve Radius: N/A

Max Speed: 70 km/h ( 44 mph)

**PROPULSION**

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 320 kW ( 429 hp)

Specific Power: 10.0 kW/tonne ( 12.2 hp/ton)

**BRAKES**

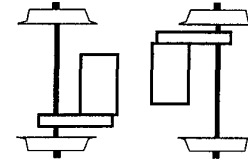
N/A

**PRICE DATA**

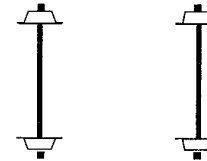
Cost Density: N/A

Vehicle Cost: N/A

**Powered Running Gear**



**Trailing Running Gear**





**City/Authority:** Magdeburg  
(Germany)

**Manufacturers:** LHB  
Deutsche Waggonbau AG  
ABB

**Vehicle Type:** NGT 8D

**Category:** 2

**Ordered:** 120

**Year of Delivery:** 1995

#### CHARACTERISTICS

Car Length: 29.0 m ( 95.1 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 60%

Floor Height

High: 570 mm (22.4 in)

Low: 350 mm (13.8 in)

Weight: 34 tonnes ( 75,000 lbs)

Specific Weight: 510 kg/m<sup>2</sup> (105 lb/ft<sup>2</sup>)

Seats: 71

Standees: 96 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

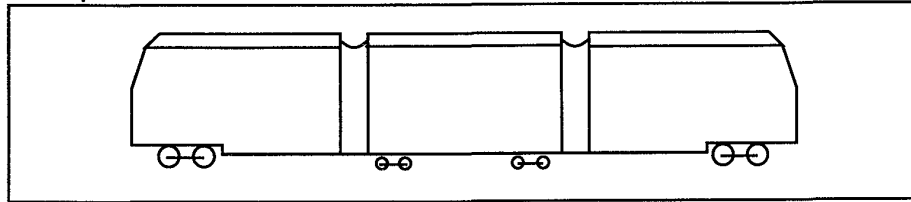
Doors: Three Double, Two Single

Articulation: Floating

Body Material: Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'2'2'Bo'

Power Wheel Diameter: 590 mm (23.2 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 410 mm (16.1 in)

Trailer Gear: Small wheel trailer truck

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: N/A

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 320 kW ( 429 hp)

Specific Power: 9.4 kW/tonne ( 11.4 hp/ton)

#### BRAKES

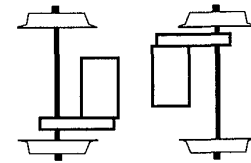
N/A

#### PRICE DATA

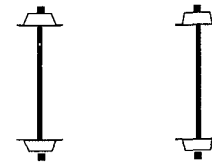
Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Mannheim  
(Germany)

**Manufacturers:** Duewag  
ABB

**Vehicle Type:** 6MGT

**Category:** 2

**Ordered:** 64

**Year of Delivery:** 1994

**CHARACTERISTICS**

Car Length: 29.9 m ( 98.1 ft)

Car Width: 2.4 m ( 7.9 ft)

Low Floor Area: 63.5%

Floor Height

High: 600 mm (23.6 in)

Low: 350 mm (13.8 in)

Weight: 33 tonnes ( 72,800 lbs)

Specific Weight: 460 kg/m<sup>2</sup> ( 94 lb/ft<sup>2</sup>)

Seats: 86

Standees: 104 @ 4 pass/m<sup>2</sup>

**CONSTRUCTION**

Travel Direction: Unidirectional

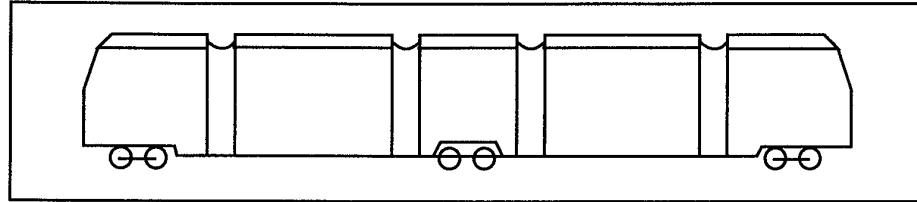
Doors: Four Double, One Single

Articulation: Floating

Body Material: N/A

Buff Load: N/A

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: Bo'2Bo'

Power Wheel Diameter: 590 mm (23.2 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 590 mm (23.2 in)

Trailer Gear: Four independent wheel trailer truck

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

**PROPULSION**

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 320 kW ( 429 hp)

Specific Power: 9.7 kW/tonne ( 11.8 hp/ton)

**BRAKES**

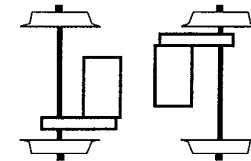
N/A

**PRICE DATA**

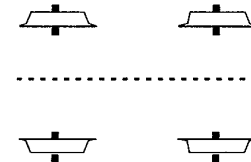
Cost Density: \$48,800 \$DM/m<sup>2</sup>

Vehicle Cost: N/A

**Powered Running Gear**



**Trailing Running Gear**



**City/Authority:** Mannheim  
(Germany)

**Manufacturers:** Duewag  
ABB

**Vehicle Type:** 6MGT

**Category:** 2

**Ordered:** 5

**Year of Delivery:** 1994

**CHARACTERISTICS**

Car Length: 40.5 m (132.9 ft)

Car Width: 2.4 m ( 7.9 ft)

Low Floor Area: 63.5%

Floor Height

High: 600 mm (23.6 in)

Low: 350 mm (13.8 in)

Weight: 42 tonnes ( 92,600 lbs)

Specific Weight: 432 kg/m<sup>2</sup> ( 88 lb/ft<sup>2</sup>)

Seats: 119

Standees: 150 @ 4 pass/m<sup>2</sup>

**CONSTRUCTION**

Travel Direction: Unidirectional

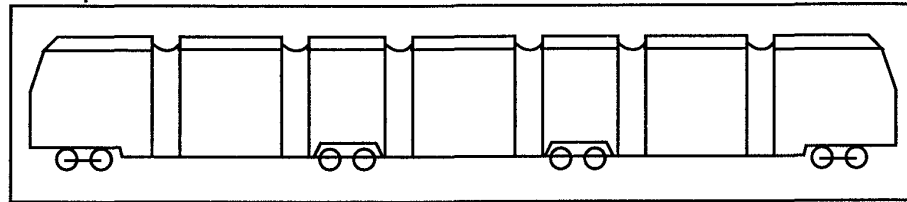
Doors: Four Double, One Single

Articulation: Floating

Body Material: N/A

Buff Load: N/A

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: Bo'22Bo'

Power Wheel Diameter: 590 mm (23.2 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 590 mm (23.2 in)

Trailer Gear: Four independent wheel trailer truck

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

**PROPULSION**

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 320 kW ( 429 hp)

Specific Power: 7.6 kW/tonne ( 9.3 hp/ton)

**BRAKES**

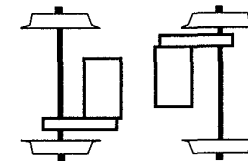
N/A

**PRICE DATA**

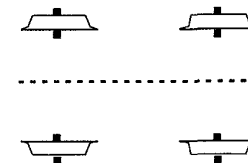
Cost Density: \$44,300 \$DM/m<sup>2</sup>

Vehicle Cost: N/A

**Powered Running Gear**



**Trailing Running Gear**



**City/Authority:** Mannheim  
(Germany)

**Manufacturers:** ABB Henschel  
LHB

**Vehicle Type:** 6NGT/ Variotram

**Category:** 2

**Ordered:** 2

**Year of Delivery:** 1996

**CHARACTERISTICS**

Car Length: N/A

Car Width: N/A

Low Floor Area: 70%

Floor Height

High: N/A

Low: 290 mm (11.4 in)

Weight: N/A

Specific Weight: N/A

Seats: N/A

Standees: N/A

**CONSTRUCTION**

Travel Direction: Unidirectional

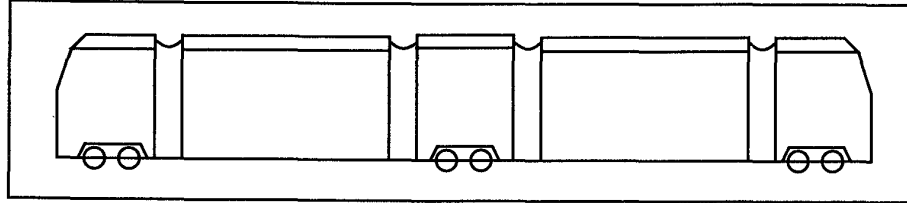
Doors: N/A

Articulation: Floating

Body Material: N/A

Buff Load: N/A

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: N/A

Power Wheel Diameter: N/A

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: N/A

Trailer Gear: Four independent wheel trailer truck

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: N/A

Max Speed: N/A

**PROPULSION**

Propulsion Technology: AC

Line Voltage: N/A

Number of Motors: N/A

Total Power: N/A

Specific Power: N/A

**BRAKES**

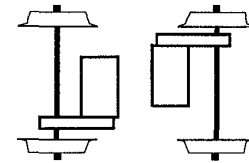
N/A

**PRICE DATA**

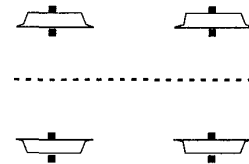
Cost Density: \$42,650 \$DM/m<sup>2</sup>

Vehicle Cost: N/A

**Powered Running Gear**



**Trailing Running Gear**



**City/Authority:** Mulheim  
(Germany)

**Manufacturers:** Duewag  
Siemens

**Vehicle Type:** MGT6D

**Category:** 2

**Ordered:** 4

**Year of Delivery:** N/A

#### CHARACTERISTICS

Car Length: 28.62 m ( 93.9 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 65%

Floor Height

High: 560 mm ( 22 in)

Low: 350 mm (13.8 in)

Weight: 32 tonnes ( 70,500 lbs)

Specific Weight: 486 kg/m<sup>2</sup> (100 lb/ft<sup>2</sup>)

Seats: 72

Standeers: 100 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

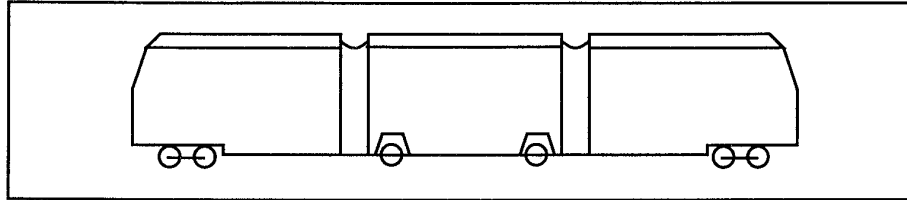
Doors: Three Double

Articulation: Floating

Body Material: Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'1'1'Bo'

Power Wheel Diameter: 575 mm (22.6 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 575 mm (22.6 in)

Trailer Gear: EEF wheelset

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 420 kW ( 563 hp)

Specific Power: 13.1 kW/tonne ( 16 hp/ton)

#### BRAKES

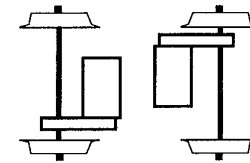
N/A

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Paris/ SEMITAG  
(France)

**Manufacturers:** GEC Alstom  
De Dietrich

**Vehicle Type:** ZR 2000

**Category:** 2

**Ordered:** 17

**Year of Delivery:** N/A

#### CHARACTERISTICS

Car Length: 29.4 m ( 96.5 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 65%

Floor Height

High: 875 mm (34.4 in)

Low: 345 mm (13.6 in)

Weight: 43.9 tonnes ( 96,800 lbs)

Specific Weight: 649 kg/m<sup>2</sup> (134 lb/ft<sup>2</sup>)

Seats: 54

Standees: 120 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

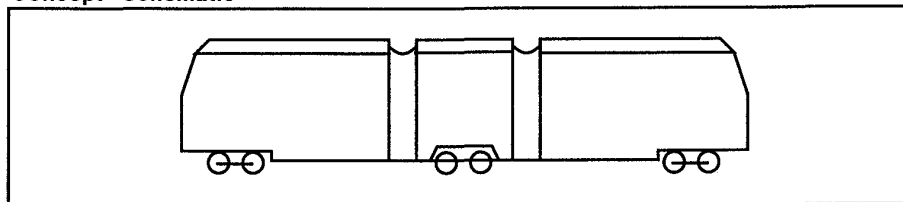
Doors: Four Double, One Single

Articulation: Floating

Body Material: N/A

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: B'2'B'

Power Wheel Diameter: 660 mm ( 26 in)

Power Gear: Conventional monomotor

Trailer Wheel Diameter: 660 mm ( 26 in)

Trailer Gear: Independent wheels on two cranked axle trailer truck

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 25 m ( 82 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: DC

Line Voltage: 750 V

Number of Motors: 2

Total Power: 550 kW ( 738 hp)

Specific Power: 12.5 kW/tonne ( 15.3 hp/ton)

#### BRAKES

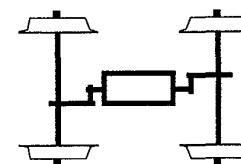
1. Regenerative
2. Hydraulic Disk
3. Magnetic Pads

#### PRICE DATA

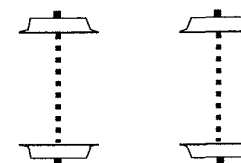
Cost Density: \$56,000 \$DM/m<sup>2</sup>

Vehicle Cost: \$US 2,400,000

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Portland  
(United States)

**Manufacturers:** Siemens- Duewag  
Siemens

**Vehicle Type:** N/A

**Category:** 2

**Ordered:** 46

**Year of Delivery:** 1995

**CHARACTERISTICS**

Car Length: 28.04 m ( 92 ft)

Car Width: 2.654 m ( 8.7 ft)

Low Floor Area: 66%

Floor Height

High: 980 mm (38.6 in)

Low: 355 mm ( 14 in)

Weight: 44 tonnes ( 97,000 lbs)

Specific Weight: 591 kg/m<sup>2</sup> (121 lb/ft<sup>2</sup>)

Seats: 72

Standees: 116 @ 4 pass/m<sup>2</sup>

**CONSTRUCTION**

Travel Direction: Bidirectional

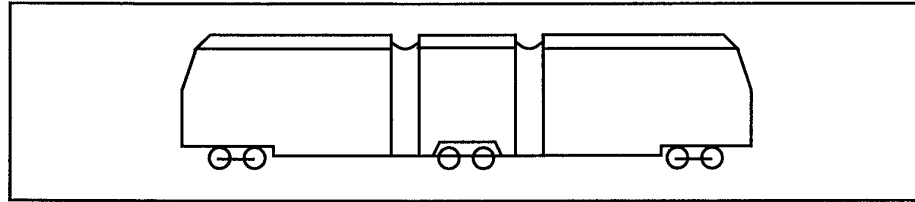
Doors: Four Double

Articulation: Floating

Body Material: Corten Steel

Buff Load: 78 tonnes ( 171,990 lbs)

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: Bo'2Bo'

Power Wheel Diameter: 711 mm ( 28 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 660 mm ( 26 in)

Trailer Gear: Independent wheels on two cranked axle trailer truck

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 25 m ( 82 ft)

Max Speed: 88 km/h ( 55 mph)

**PROPULSION**

Propulsion Technology: AC

Line Voltage: 750 V

Number of Motors: 4

Total Power: 560 kW ( 751 hp)

Specific Power: 12.7 kW/tonne ( 15.5 hp/ton)

**BRAKES**

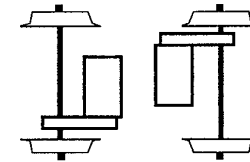
Hydraulic

**PRICE DATA**

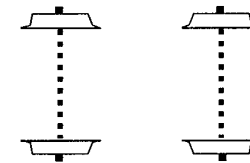
Cost Density: N/A

Vehicle Cost: US\$2,340,000

**Powered Running Gear**



**Trailing Running Gear**



City/Authority: Prototype  
(Czech Rep.)

Manufacturers: CKD Tatra

Vehicle Type: RT6-N1

Category: 2

Ordered: 1

Year of Delivery: 1993

#### CHARACTERISTICS

Car Length: 26.28 m ( 86.2 ft)

Car Width: 2.44 m ( 8 ft)

Low Floor Area: 63%

Floor Height

High: 900 mm (35.4 in)

Low: 350 mm (13.8 in)

Weight: 32 tonnes ( 70,500 lbs)

Specific Weight: 499 kg/m<sup>2</sup> (102 lb/ft<sup>2</sup>)

Seats: 45

Standees: 93 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

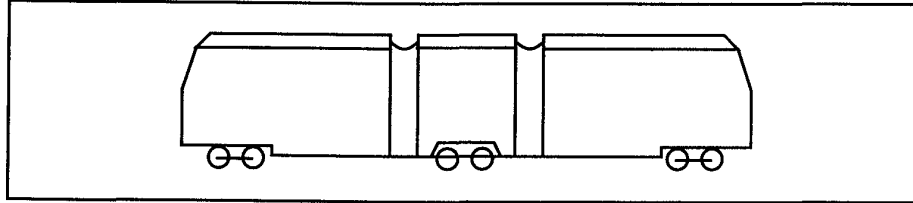
Doors: Four Double, Two Single

Articulation: Floating

Body Material: Welded Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'2Bo'

Power Wheel Diameter: 700 mm (27.6 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 700 mm (27.6 in)

Trailer Gear: Four independent wheel trailer truck

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 25 m ( 82 ft)

Max Speed: 80 km/h ( 50 mph)

#### PROPULSION

Propulsion Technology: DC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 380 kW ( 510 hp)

Specific Power: 11.9 kW/tonne ( 14.5 hp/ton)

#### BRAKES

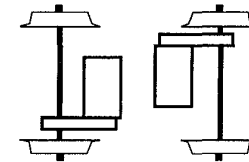
1. Regenerative
2. Hydraulic Disk
3. Rail Brakes

#### PRICE DATA

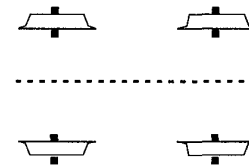
Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear





**City/Authority:** Rome/ ATAC  
(Italy)

**Manufacturers:** Socimi

**Vehicle Type:** T8000

**Category:** 2

**Ordered:** 34

**Year of Delivery:** 1990

#### CHARACTERISTICS

Car Length: 21.2 m ( 69.6 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 54%

Floor Height

High: 835 mm (32.9 in)

Low: 350 mm (13.8 in)

Weight: 29.7 tonnes ( 65,500 lbs)

Specific Weight: 609 kg/m<sup>2</sup> (125 lb/ft<sup>2</sup>)

Seats: 34

Standees: 101 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

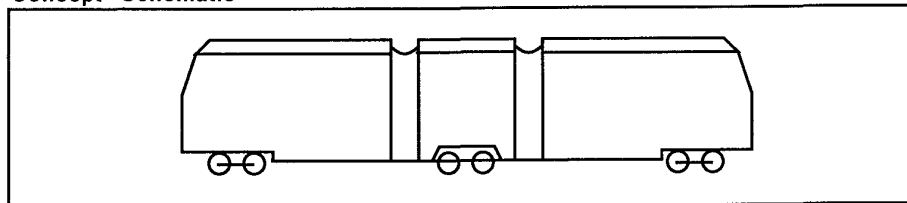
Doors: Four Double, One Single

Articulation: N/A

Body Material: N/A

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'2Bo'

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 680 mm (26.8 in)

Trailer Gear: Four independent wheel trailer truck

Track Gauge: 1445 mm (56.9 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 400 kW ( 536 hp)

Specific Power: 13.5 kW/tonne ( 16.4 hp/ton)

#### BRAKES

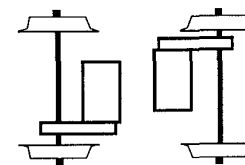
N/A

#### PRICE DATA

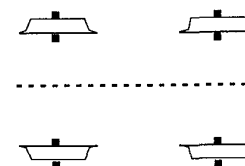
Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Rostock  
(Germany)

**Manufacturers:** Duewag  
ABB  
Siemens

**Vehicle Type:** 6NGTWDE

**Category:** 2

**Ordered:** 50

**Year of Delivery:** 1994

#### CHARACTERISTICS

Car Length: 30.4 m ( 99.7 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 50%

Floor Height

High: 560 mm ( 22 in)

Low: 350 mm (13.8 in)

Weight: 30.4 tonnes ( 67,000 lbs)

Specific Weight: 435 kg/m<sup>2</sup> ( 90 lb/ft<sup>2</sup>)

Seats: 91

Standees: 95 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

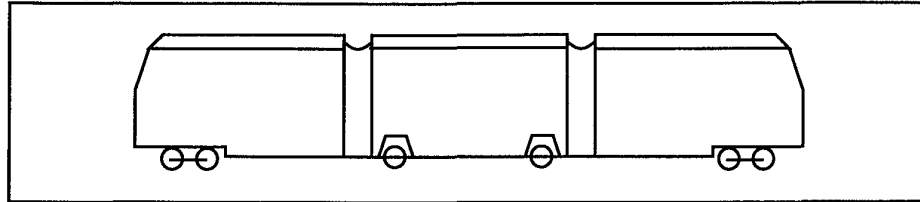
Doors: Three Double, Two Single

Articulation: Floating

Body Material: Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'1'1'Bo'

Power Wheel Diameter: 590 mm (23.2 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 590 mm (23.2 in)

Trailer Gear: EEF wheelset

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 320 kW ( 429 hp)

Specific Power: 10.5 kW/tonne ( 12.8 hp/ton)

#### BRAKES

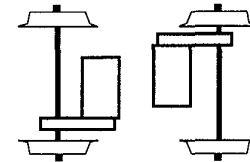
1. Electro-Hydraulic

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Rouen/ SEMITAG  
(France)

**Manufacturers:** GEC Alsthom  
De Dietrich

**Vehicle Type:** ZR 2000

**Category:** 2

**Ordered:** 28

**Year of Delivery:** 1993

#### CHARACTERISTICS

Car Length: 29.4 m ( 96.5 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 65%

Floor Height

High: 875 mm (34.4 in)

Low: 345 mm (13.6 in)

Weight: 43.9 tonnes ( 96,800 lbs)

Specific Weight: 649 kg/m<sup>2</sup> (134 lb/ft<sup>2</sup>)

Seats: 54

Standees: 120 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

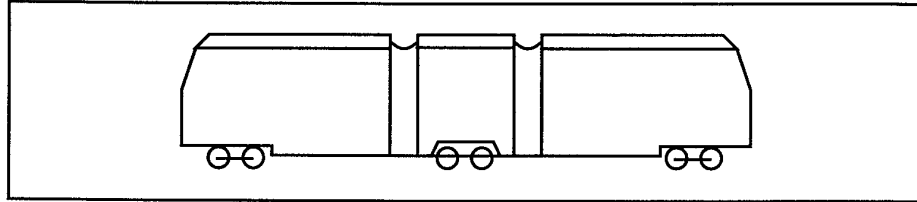
Doors: Four Double, One Single

Articulation: Floating

Body Material: N/A

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: B'2'B'

Power Wheel Diameter: 660 mm ( 26 in)

Power Gear: Conventional monomotor

Trailer Wheel Diameter: 660 mm ( 26 in)

Trailer Gear: Independent wheels on two cranked  
axle trailer truck

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 25 m ( 82 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: DC

Line Voltage: 750 V

Number of Motors: 2

Total Power: 550 kW ( 738 hp)

Specific Power: 12.5 kW/tonne ( 15.3 hp/ton)

#### BRAKES

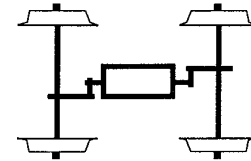
1. Regenerative
2. Hydraulic Disk
3. Magnetic Pads

#### PRICE DATA

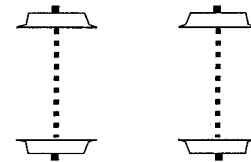
Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** St. Etienne/ STAS  
(France)

**Manufacturers:** GEC Alsthom  
ACM Vevey  
Duewag

**Vehicle Type:** Be4/6

**Category:** 2

**Ordered:** 25

**Year of Delivery:** 1991

#### CHARACTERISTICS

Car Length: 23.24 m ( 76.2 ft)

Car Width: 2.1 m ( 6.9 ft)

Low Floor Area: 59%

Floor Height

High: 710 mm ( 28 in)

Low: 350 mm (13.8 in)

Weight: 27.4 tonnes ( 60,400 lbs)

Specific Weight: 561 kg/m<sup>2</sup> (115 lb/ft<sup>2</sup>)

Seats: 43

Standees: 92 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

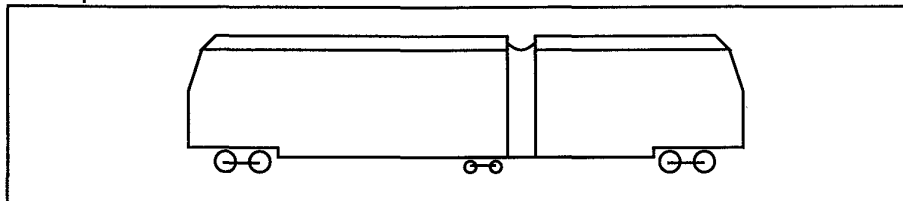
Doors: Four Double

Articulation: Floating

Body Material: Stainless Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: B'2'B'

Power Wheel Diameter: 560 mm ( 22 in)

Power Gear: Conventional monomotor

Trailer Wheel Diameter: 410 mm (16.1 in)

Trailer Gear: Small wheel trailer truck

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 18 m (59.1 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: DC

Line Voltage: 550 V

Number of Motors: 2

Total Power: 280 kW ( 375 hp)

Specific Power: 10.2 kW/tonne ( 12.4 hp/ton)

#### BRAKES

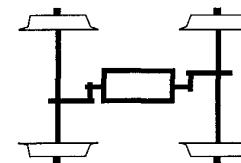
N/A

#### PRICE DATA

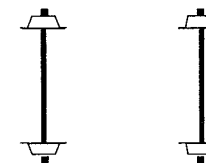
Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Swiss-Italian Railway/ FART  
(Switzerland)

**Manufacturers:** ACM Vevey  
ABB  
SIG

**Vehicle Type:** ABe4/6

**Category:** 2

**Ordered:** 12

**Year of Delivery:** 1992

#### CHARACTERISTICS

Car Length: 30.3 m ( 99.4 ft)

Car Width: 2.65 m ( 8.7 ft)

Low Floor Area: 60%

Floor Height

High: 900 mm (35.4 in)

Low: 530 mm (20.9 in)

Weight: 42.5 tonnes ( 93,700 lbs)

Specific Weight: 529 kg/m<sup>2</sup> (108 lb/ft<sup>2</sup>)

Seats: 82

Standeers: 70 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: N/A

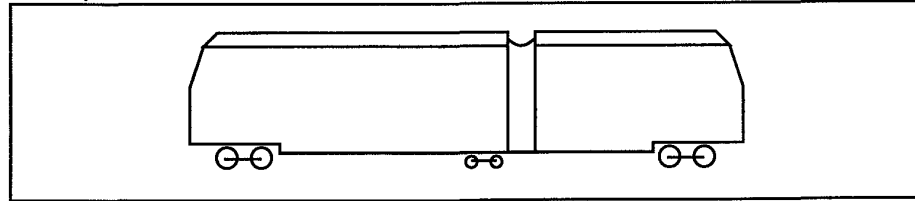
Doors: Two Double

Articulation: Floating

Body Material: N/A

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'2'Bo'

Power Wheel Diameter: 750 mm (29.5 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 600 mm (23.6 in)

Trailer Gear: Small wheel trailer truck

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: N/A

Max Speed: 80 km/h ( 50 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 1350 V

Number of Motors: 4

Total Power: 600 kW ( 805 hp)

Specific Power: 14.1 kW/tonne ( 17.2 hp/ton)

#### BRAKES

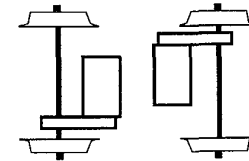
Electro-hydraulic

#### PRICE DATA

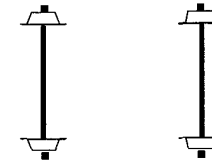
Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Turin/ ATM  
(Italy)

**Manufacturers:** Fiat (Firema)

**Vehicle Type:** 5000

**Category:** 2

**Ordered:** 54

**Year of Delivery:** 1989

#### CHARACTERISTICS

Car Length: 22.2 m ( 72.8 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 56%

Floor Height

High: 870 mm (34.3 in)

Low: 350 mm (13.8 in)

Weight: 30 tonnes ( 66,100 lbs)

Specific Weight: 588 kg/m<sup>2</sup> (121 lb/ft<sup>2</sup>)

Seats: 51

Standees: 92 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

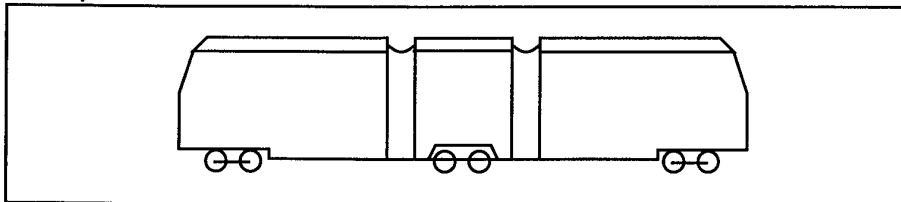
Doors: Four Double

Articulation: Supported

Body Material: N/A

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: B'2'B

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Conventional monomotor

Trailer Wheel Diameter: 680 mm (26.8 in)

Trailer Gear: Four independent wheel trailer truck

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 16 m (52.5 ft)

Max Speed: 60 km/h ( 37 mph)

#### PROPULSION

Propulsion Technology: DC

Line Voltage: 600 V

Number of Motors: 2

Total Power: 300 kW ( 402 hp)

Specific Power: 10.0 kW/tonne ( 12.2 hp/ton)

#### BRAKES

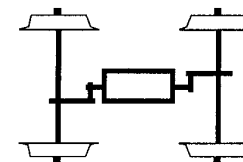
Regenerative

#### PRICE DATA

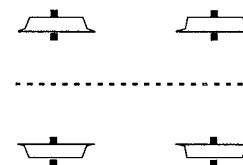
Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Val de Seine/ SEMITAG  
(France)

**Manufacturers:** GEC Alstom  
De Dietrich

**Vehicle Type:** ZR 2000

**Category:** 2

**Ordered:** 17

**Year of Delivery:** N/A

**CHARACTERISTICS**

Car Length: 29.4 m ( 96.5 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 65%

Floor Height

High: 875 mm (34.4 in)

Low: 345 mm (13.6 in)

Weight: 43.9 tonnes ( 96,800 lbs)

Specific Weight: 649 kg/m<sup>2</sup> (134 lb/ft<sup>2</sup>)

Seats: 54

Standees: 120 @ 4 pass/m<sup>2</sup>

**CONSTRUCTION**

Travel Direction: Bidirectional

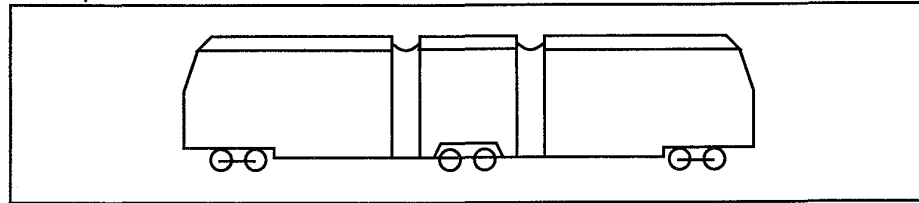
Doors: Four Double, One Single

Articulation: Floating

Body Material: N/A

Buff Load: N/A

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: B'2'B'

Power Wheel Diameter: 660 mm ( 26 in)

Power Gear: Conventional monomotor

Trailer Wheel Diameter: 660 mm ( 26 in)

Trailer Gear: Independent wheels on two cranked axle trailer truck

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 25 m ( 82 ft)

Max Speed: 70 km/h ( 44 mph)

**PROPULSION**

Propulsion Technology: DC

Line Voltage: 750 V

Number of Motors: 2

Total Power: 550 kW ( 738 hp)

Specific Power: 12.5 kW/tonne ( 15.3 hp/ton)

**BRAKES**

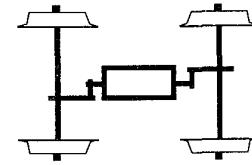
- 1. Regenerative
- 2. Hydraulic Disk
- 3. Magnetic Pads

**PRICE DATA**

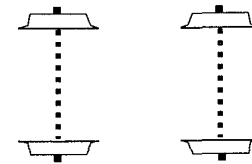
Cost Density: \$56,000 \$DM/m<sup>2</sup>

Vehicle Cost: N/A

**Powered Running Gear**



**Trailing Running Gear**



**City/Authority:** Valencia  
(Spain)

**Manufacturers:** Duewag  
Siemens  
GEC Alsthom  
CAF

**Vehicle Type:** N/A

**Category:** 2

**Ordered:** 24

**Year of Delivery:** 1994

#### CHARACTERISTICS

Car Length: 23.78 m ( 78 ft)

Car Width: 2.4 m ( 7.9 ft)

Low Floor Area: 62%

Floor Height

High: 560 mm ( 22 in)

Low: 350 mm (13.8 in)

Weight: 29.7 tonnes ( 65,500 lbs)

Specific Weight: 520 kg/m<sup>2</sup> (106 lb/ft<sup>2</sup>)

Seats: 65

Standees: 91 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

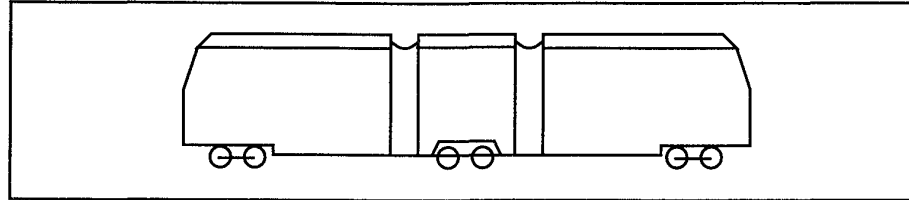
Doors: Four Double

Articulation: Floating

Body Material: Stainless Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'2Bo'

Power Wheel Diameter: 590 mm (23.2 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 590 mm (23.2 in)

Trailer Gear: Four independent wheel trailer truck

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 20 m (65.6 ft)

Max Speed: 65 km/h ( 40 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 750 V

Number of Motors: 4

Total Power: 360 kW ( 483 hp)

Specific Power: 12.1 kW/tonne ( 14.8 hp/ton)

#### BRAKES

Regenerative

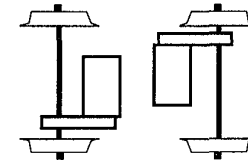
Electro-Hydraulic

#### PRICE DATA

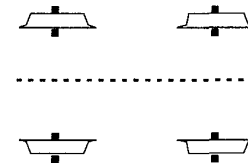
Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear





**City/Authority:** Vienna U-Bahn  
(Austria)

**Manufacturers:** Bombardier (Rotax)  
Duewag  
Kiepe  
Elin

**Vehicle Type:** T

**Category:** 2

**Ordered:** 68

**Year of Delivery:** 1992

#### CHARACTERISTICS

Car Length: 26.8 m ( 87.9 ft)

Car Width: 2.65 m ( 8.7 ft)

Low Floor Area: 60%

Floor Height

High: 530 mm (20.9 in)

Low: 440 mm (17.3 in)

Weight: 34.7 tonnes ( 76,500 lbs)

Specific Weight: 489 kg/m<sup>2</sup> (100 lb/ft<sup>2</sup>)

Seats: 58

Standees: 136 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

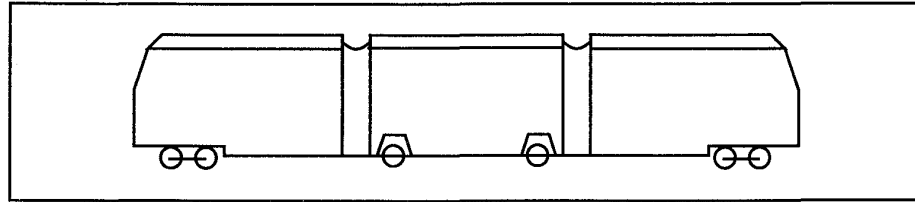
Doors: Three Double, One Single

Articulation: Floating

Body Material: Welded Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'1'1'Bo'

Power Wheel Diameter: 590 mm (23.2 in)

Power Gear: Conventional bi-motor

Trailer Wheel Diameter: 590 mm (23.2 in)

Trailer Gear: Single-axle conventional wheelset  
steered by articulation

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 20 m (65.6 ft)

Max Speed: 80 km/h ( 50 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 750 V

Number of Motors: 4

Total Power: 400 kW ( 536 hp)

Specific Power: 11.5 kW/tonne ( 14 hp/ton)

#### BRAKES

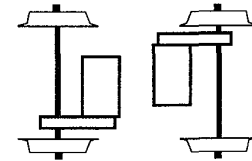
1. Combined Regenerative and Rheostatic
2. Rail Brakes
3. Disc Brakes

#### PRICE DATA

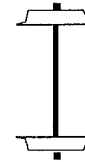
Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**CATEGORY-3 LF-LRVs**

**City/Authority:** Augsburg  
(Germany)

**Manufacturers:** AEG (MAN)  
Siemens  
AEG

**Vehicle Type:** GT6M

**Category:** 3

**Ordered:** 1

**Year of Delivery:** 1993

**CHARACTERISTICS**

Car Length: 26.5 m ( 86.9 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 300 mm (11.8 in)

Weight: 29.6 tonnes ( 65,300 lbs)

Specific Weight: 486 kg/m<sup>2</sup> (100 lb/ft<sup>2</sup>)

Seats: 60

Standees: 103 @ 4 pass/m<sup>2</sup>

**CONSTRUCTION**

Travel Direction: Unidirectional

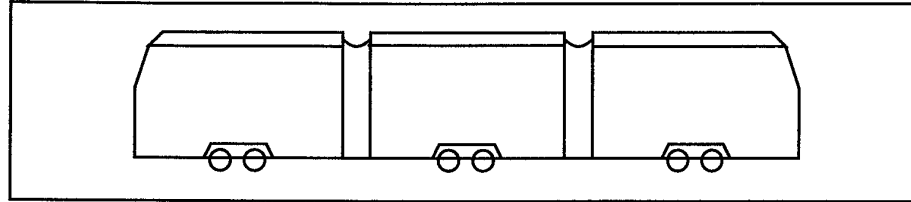
Doors: Four Double

Articulation: Floating

Body Material: Stainless Steel

Buff Load: 20 tonnes ( 44,100 lbs)

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: 1A'A1'A1'

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Independent wheels, one pair driven,  
one pair free-wheeling

Trailer Wheel Diameter: N/A

Trailer Gear: N/A

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

**PROPULSION**

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 3

Total Power: 252 kW ( 338 hp)

Specific Power: 8.5 kW/tonne ( 10.4 hp/ton)

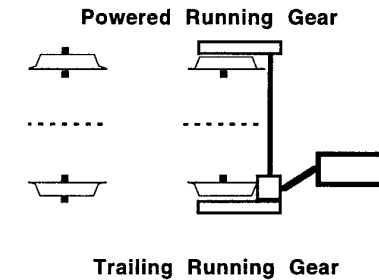
**BRAKES**

1. Regenerative
2. Spring Loaded Disc

**PRICE DATA**

Cost Density: N/A

Vehicle Cost: N/A



**City/Authority:** Berlin  
(Germany)

**Manufacturers:** AEG (MAN)

**Vehicle Type:** GT6N

**Category:** 3

**Ordered:** 120

**Year of Delivery:** 1994

#### CHARACTERISTICS

Car Length: 26.5 m ( 86.9 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 300 mm (11.8 in)

Weight: 26.8 tonnes ( 59,100 lbs)

Specific Weight: 440 kg/m<sup>2</sup> ( 91 lb/ft<sup>2</sup>)

Seats: 60

Standees: 103 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

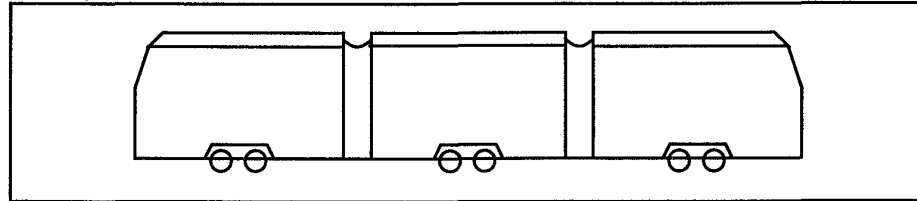
Doors: Four Double

Articulation: Floating

Body Material: Stainless Steel

Buff Load: 20 tonnes ( 44,100 lbs)

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: 1A'A1'A1'

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Independent wheels, one pair driven,  
one pair free-wheeling

Trailer Wheel Diameter: N/A

Trailer Gear: N/A

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 3

Total Power: 252 kW ( 338 hp)

Specific Power: 9.4 kW/tonne ( 11.4 hp/ton)

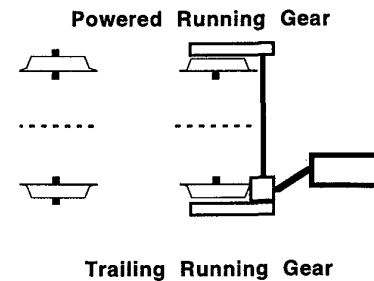
#### BRAKES

1. Regenerative
2. Spring Loaded Disc

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A



**City/Authority:** Bonn/SWB  
(Germany)

**Manufacturers:** German Consortium (VDV)

**Vehicle Type:** GTW-ZR

**Category:** 3

**Ordered:** 1

**Year of Delivery:** 1991

#### CHARACTERISTICS

Car Length: 20.19 m ( 66.2 ft)

Car Width: 2.4 m ( 7.9 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 290 mm (11.4 in)

Weight: 18.56 tonnes ( 40,900 lbs)

Specific Weight: 383 kg/m<sup>2</sup> ( 78 lb/ft<sup>2</sup>)

Seats: 51

Standees: 67 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

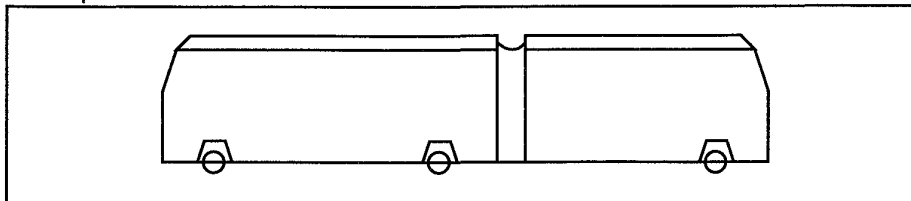
Doors: N/A

Articulation: N/A

Body Material: Aluminum

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: A'A'1'

Power Wheel Diameter: 560 mm ( 22 in)

Power Gear: Motored EEF self-steering wheelset

Trailer Wheel Diameter: 560 mm ( 22 in)

Trailer Gear: EEF wheelset

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 18 m (59.1 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 750 V

Number of Motors: 4

Total Power: 240 kW ( 322 hp)

Specific Power: 12.9 kW/tonne ( 15.7 hp/ton)

#### BRAKES

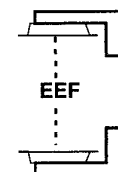
N/A

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Braunschweig  
(Germany)

**Manufacturers:** AEG (MAN)  
LHB

**Vehicle Type:** GT6N

**Category:** 3

**Ordered:** 11

**Year of Delivery:** N/A

#### CHARACTERISTICS

Car Length: 26.5 m ( 86.9 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 300 mm (11.8 in)

Weight: 26.8 tonnes ( 59,100 lbs)

Specific Weight: 440 kg/m<sup>2</sup> ( 91 lb/ft<sup>2</sup>)

Seats: 60

Standees: 103 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

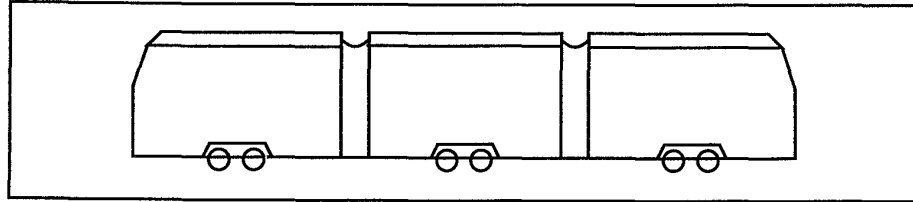
Doors: Four Double

Articulation: Floating

Body Material: Stainless Steel

Buff Load: 20 tonnes ( 44,100 lbs)

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: 1A'A1'A1'

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Independent wheels, one pair driven,  
one pair free-wheeling

Trailer Wheel Diameter: N/A

Trailer Gear: N/A

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 3

Total Power: 252 kW ( 338 hp)

Specific Power: 9.4 kW/tonne ( 11.4 hp/ton)

#### BRAKES

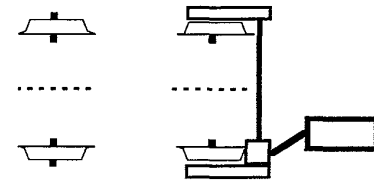
1. Regenerative
2. Spring Loaded Disc

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear

**City/Authority:** Bremen  
(Germany)

**Manufacturers:** AEG (MAN)  
AEG/Kiepe

**Vehicle Type:** GT6N

**Category:** 3

**Ordered:** 18

**Year of Delivery:** 1990

#### CHARACTERISTICS

Car Length: 26.5 m ( 86.9 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 300 mm (11.8 in)

Weight: 26.8 tonnes ( 59,100 lbs)

Specific Weight: 440 kg/m<sup>2</sup> ( 91 lb/ft<sup>2</sup>)

Seats: 60

Standees: 103 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

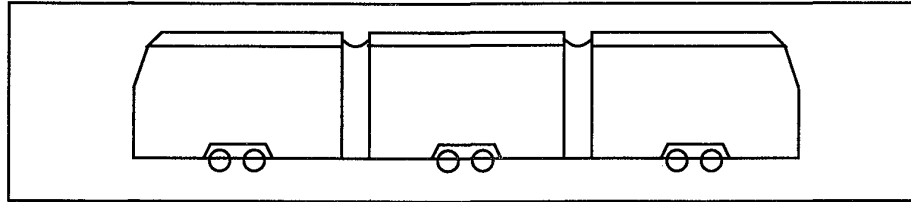
Doors: Four Double

Articulation: Floating

Body Material: Stainless Steel

Buff Load: 20 tonnes ( 44,100 lbs)

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: 1A'A1'A1'

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Independent wheels, one pair driven,  
one pair free-wheeling

Trailer Wheel Diameter: N/A

Trailer Gear: N/A

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 3

Total Power: 252 kW ( 338 hp)

Specific Power: 9.4 kW/tonne ( 11.4 hp/ton)

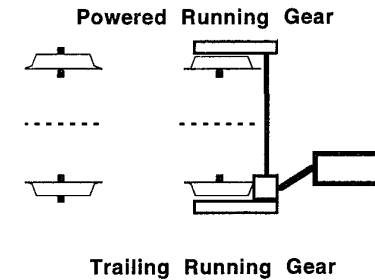
#### BRAKES

1. Regenerative
2. Spring Loaded Disc

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A



**City/Authority:** Bremen  
(Germany)

**Manufacturers:** AEG (MAN)  
AEG/Kiepe

**Vehicle Type:** GT8N

**Category:** 3

**Ordered:** 61

**Year of Delivery:** 1993

#### CHARACTERISTICS

Car Length: 35 m (114.8 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 300 mm (11.8 in)

Weight: 34 tonnes ( 75,000 lbs)

Specific Weight: 422 kg/m<sup>2</sup> ( 87 lb/ft<sup>2</sup>)

Seats: 89

Standees: 137 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

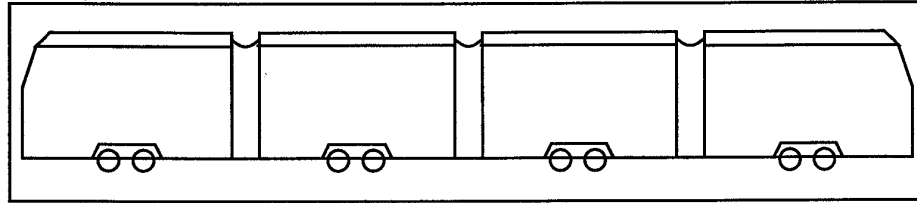
Doors: Five Double

Articulation: Floating

Body Material: Steel

Buff Load: 20 tonnes ( 44,100 lbs)

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: 1A'1A'1A'1A'

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Independent wheels, one pair driven,  
one pair free-wheeling

Trailer Wheel Diameter: 680 mm (26.8 in)

Trailer Gear: N/A

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 376 kW ( 504 hp)

Specific Power: 11.1 kW/tonne ( 13.4 hp/ton)

#### BRAKES

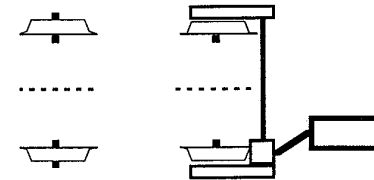
N/A

#### PRICE DATA

Cost Density: \$51,000 \$DM/m<sup>2</sup>

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear

**City/Authority:** Brussels (Belgium)

**Manufacturers:** Bombardier (BN)  
GEC Alstom  
ACEC Transport

**Vehicle Type:** TRAM2000

**Category:** 3

**Ordered:** 51

**Year of Delivery:** 1994

**CHARACTERISTICS**

Car Length: 22.8 m ( 74.8 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 350 mm (13.8 in)

Weight: 31.9 tonnes ( 70,300 lbs)

Specific Weight: 608 kg/m2 (125 lb/ft2)

Seats: 32

Standees: 95 @ 4 pass/m2

**CONSTRUCTION**

Travel Direction: Bidirectional

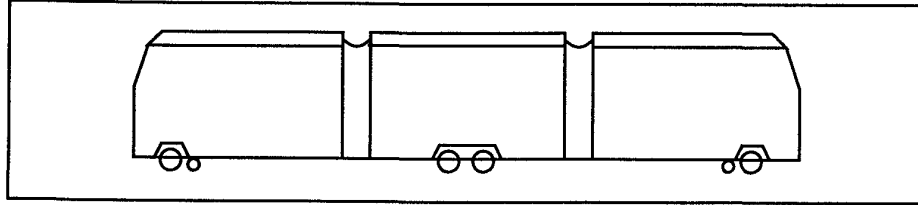
Doors: Two Double, Two Single

Articulation: Floating

Body Material: Bolted Aluminum w/Bonded Polyester

Buff Load: 40 tonnes ( 88,200 lbs)

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: A'1'Bo1'A'

Power Wheel Diameter: 640 mm (25.2 in)

Power Gear: Articulated truck frame, two large hub motor-driven wheels, two small guiding wheels

Trailer Wheel Diameter: 375 mm (14.8 in)

Trailer Gear: Middle truck has independent wheels with hub motors

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 17.5 m (57.4 ft)

Max Speed: 70 km/h ( 44 mph)

**PROPULSION**

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 8

Total Power: 352 kW ( 472 hp)

Specific Power: 11.0 kW/tonne ( 13.4 hp/ton)

**BRAKES**

- 1. Combined Regenerative/Rheostatic
- 2. Disc Brakes
- 3. Electro-Magnetic Track Brakes

**PRICE DATA**

Cost Density: \$58,500 \$DM/m<sup>2</sup>

Vehicle Cost: \$BF 1,235,000

**Powered Running Gear**



**Trailing Running Gear**





**City/Authority:** Chemnitz  
(Germany)

**Manufacturers:** ABB Henschel  
LHB

**Vehicle Type:** 6NGT/ Variotram

**Category:** 3

**Ordered:** 53

**Year of Delivery:** 1993

**CHARACTERISTICS**

Car Length: 30.9 m (101.4 ft)

Car Width: 2.65 m ( 8.7 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 290 mm (11.4 in)

Weight: 28.3 tonnes ( 62,400 lbs)

Specific Weight: 346 kg/m<sup>2</sup> ( 71 lb/ft<sup>2</sup>)

Seats: 88

Standees: 124 @ 4 pass/m<sup>2</sup>

**CONSTRUCTION**

Travel Direction: Unidirectional

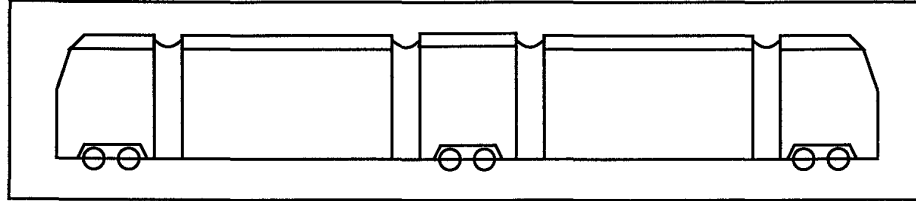
Doors: Six Double

Articulation: Floating

Body Material: N/A

Buff Load: 20 tonnes ( 44,100 lbs)

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: Bo'2'Bo'

Power Wheel Diameter: 630 mm (24.8 in)

Power Gear: Four hub motor-driven, independent wheels

Trailer Wheel Diameter: 630 mm (24.8 in)

Trailer Gear: Four independent wheel trailer truck

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 18 m (59.1 ft)

Max Speed: 70 km/h ( 44 mph)

**PROPULSION**

Propulsion Technology: AC

Line Voltage: 750 V

Number of Motors: 8

Total Power: 360 kW ( 483 hp)

Specific Power: 12.7 kW/tonne ( 15.5 hp/ton)

**BRAKES**

N/A

**PRICE DATA**

Cost Density: \$42,650 \$DM/m<sup>2</sup>

Vehicle Cost: \$US 2,060,000

**Powered Running Gear**



**Trailing Running Gear**



**City/Authority:** Dusseldorf/ RBG  
(Germany)

**Manufacturers:** German Consortium (VDV)

**Vehicle Type:** GTW-ER

**Category:** 3

**Ordered:** 1

**Year of Delivery:** 1991

#### CHARACTERISTICS

Car Length: 20.19 m ( 66.2 ft)

Car Width: 2.4 m ( 7.9 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 290 mm (11.4 in)

Weight: 17.75 tonnes ( 39,100 lbs)

Specific Weight: 366 kg/m<sup>2</sup> ( 75 lb/ft<sup>2</sup>)

Seats: 55

Standees: 59 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

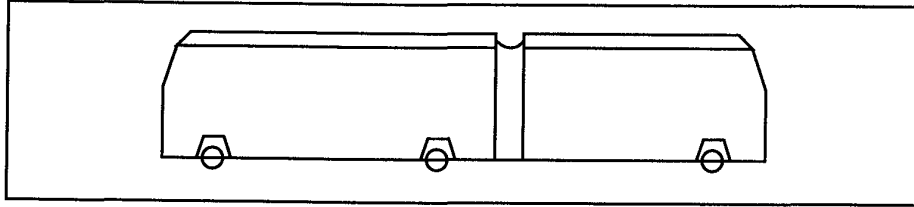
Doors: Two Double, One Single

Articulation: Floating

Body Material: Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: A'A'1'

Power Wheel Diameter: 560 mm ( 22 in)

Power Gear: Motored EEF self-steering wheelset

Trailer Wheel Diameter: 560 mm ( 22 in)

Trailer Gear: EEF wheelset

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 18 m (59.1 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 750 V

Number of Motors: 4

Total Power: 240 kW ( 322 hp)

Specific Power: 13.5 kW/tonne ( 16.5 hp/ton)

#### BRAKES

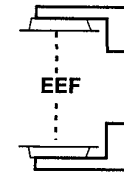
N/A

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Frankfurt am Main  
(Germany)

**Manufacturers:** Duewag  
Siemens

**Vehicle Type:** R3.1

**Category:** 3

**Ordered:** 20

**Year of Delivery:** 1993

#### CHARACTERISTICS

Car Length: 27.2 m ( 89.2 ft)

Car Width: 2.35 m ( 7.7 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 300 mm (11.8 in)

Weight: 33 tonnes ( 72,800 lbs)

Specific Weight: 516 kg/m<sup>2</sup> (106 lb/ft<sup>2</sup>)

Seats: 61

Standees: 109 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

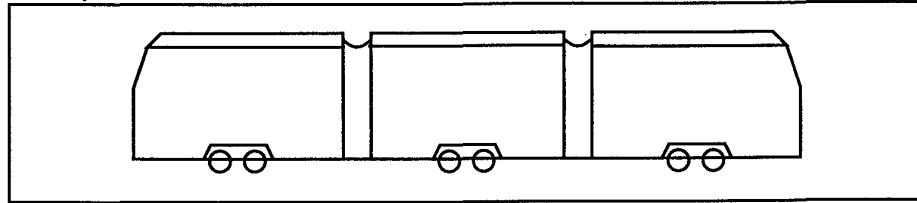
Doors: Four Double

Articulation: Floating

Body Material: Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'2'Bo'

Power Wheel Diameter: 740 mm (29.1 in)

Power Gear: Four hub motor-driven, independent wheels

Trailer Wheel Diameter: 590 mm (23.2 in)

Trailer Gear: Four independent wheel trailer truck

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 18 m (59.1 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 8

Total Power: 400 kW ( 536 hp)

Specific Power: 12.1 kW/tonne ( 14.7 hp/ton)

#### BRAKES

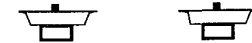
1. Combined Regenerative/Rheostatic
2. Hydraulic Disc Brakes
3. Electromagnetic Track Brakes

#### PRICE DATA

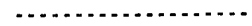
Cost Density: \$60,000 \$DM/m<sup>2</sup>

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Frankfurt-an-der-Oder (Germany)

**Manufacturers:** AEG (MAN) AEG/Kiepe

**Vehicle Type:** GT6N

**Category:** 3

**Ordered:** 13

**Year of Delivery:** N/A

**CHARACTERISTICS**

Car Length: 26.5 m ( 86.9 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 300 mm (11.8 in)

Weight: 26.8 tonnes ( 59,100 lbs)

Specific Weight: 440 kg/m2 ( 91 lb/ft2)

Seats: 60

Standees: 103 @ 4 pass/m2

**CONSTRUCTION**

Travel Direction: Unidirectional

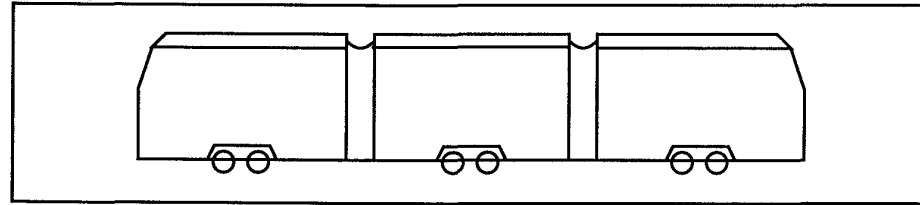
Doors: Four Double

Articulation: Floating

Body Material: Stainless Steel

Buff Load: 20 tonnes ( 44,100 lbs)

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: 1A'A1'A1'

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Independent wheels, one pair driven, one pair free-wheeling

Trailer Wheel Diameter: N/A

Trailer Gear: N/A

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

**PROPULSION**

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 3

Total Power: 252 kW ( 338 hp)

Specific Power: 9.4 kW/tonne ( 11.4 hp/ton)

**BRAKES**

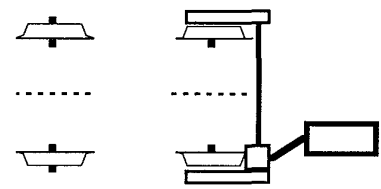
- 1. Regenerative
- 2. Spring Loaded Disc

**PRICE DATA**

Cost Density: N/A

Vehicle Cost: N/A

**Powered Running Gear**



**Trailing Running Gear**



**City/Authority:** Halle  
(Germany)

**Manufacturers:** AEG (MAN)  
AEG/Kiepe

**Vehicle Type:** GT6N

**Category:** 3

**Ordered:** 1

**Year of Delivery:** N/A

#### CHARACTERISTICS

Car Length: 26.5 m ( 86.9 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 300 mm (11.8 in)

Weight: 26.8 tonnes ( 59,100 lbs)

Specific Weight: 440 kg/m<sup>2</sup> ( 91 lb/ft<sup>2</sup>)

Seats: 60

Standees: 103 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

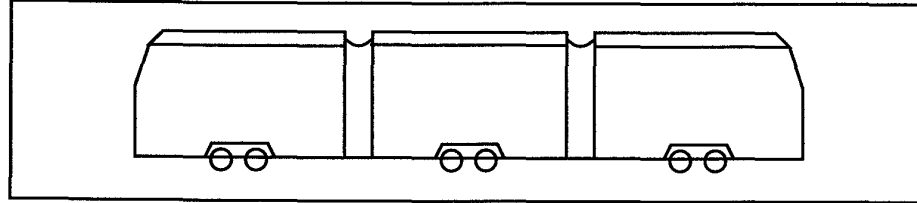
Doors: Four Double

Articulation: Floating

Body Material: Stainless Steel

Buff Load: 20 tonnes ( 44,100 lbs)

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: 1A'A1'A1'

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Independent wheels, one pair driven,  
one pair free-wheeling

Trailer Wheel Diameter: N/A

Trailer Gear: N/A

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 3

Total Power: 252 kW ( 338 hp)

Specific Power: 9.4 kW/tonne ( 11.4 hp/ton)

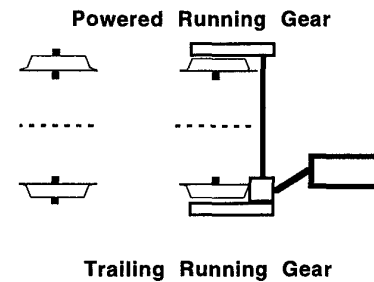
#### BRAKES

1. Regenerative
2. Spring Loaded Disc

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A



**City/Authority:** Jena  
(Germany)

**Manufacturers:** AEG (MAN)  
AEG/Kiepe

**Vehicle Type:** GT8N

**Category:** 3

**Ordered:** 10

**Year of Delivery:** N/A

#### CHARACTERISTICS

Car Length: 35 m (114.8 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 300 mm (11.8 in)

Weight: 34 tonnes ( 75,000 lbs)

Specific Weight: 422 kg/m<sup>2</sup> ( 87 lb/ft<sup>2</sup>)

Seats: 89

Standees: 137 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

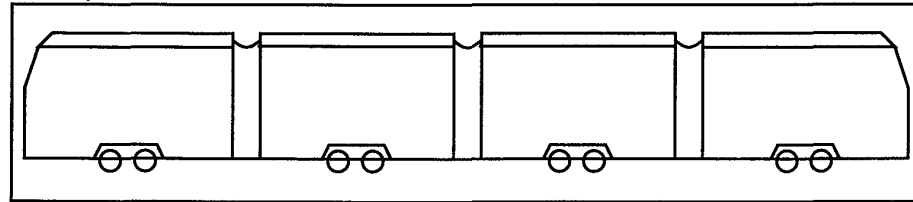
Doors: Five Double

Articulation: Floating

Body Material: Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: 1A'1A'1A'1A'

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Independent wheels, one pair driven,  
one pair free-wheeling

Trailer Wheel Diameter: 680 mm (26.8 in)

Trailer Gear: N/A

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 376 kW ( 504 hp)

Specific Power: 11.1 kW/tonne ( 13.4 hp/ton)

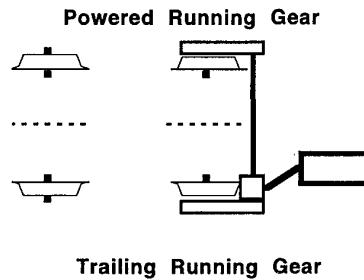
#### BRAKES

N/A

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A



**City/Authority:** Lille  
(France)

**Manufacturers:** Breda  
AEG-Westinghouse

**Vehicle Type:** VLC  
**Category:** 3  
**Ordered:** 24  
**Year of Delivery:** 1993

#### CHARACTERISTICS

Car Length: 29.9 m ( 98.1 ft)

Car Width: 2.4 m ( 7.9 ft)

Low Floor Area: 80%

Floor Height

High: 950 mm (37.4 in)

Low: 350 mm (13.8 in)

Weight: 40 tonnes ( 88,200 lbs)

Specific Weight: 557 kg/m<sup>2</sup> (114 lb/ft<sup>2</sup>)

Seats: 50

Standees: 118 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

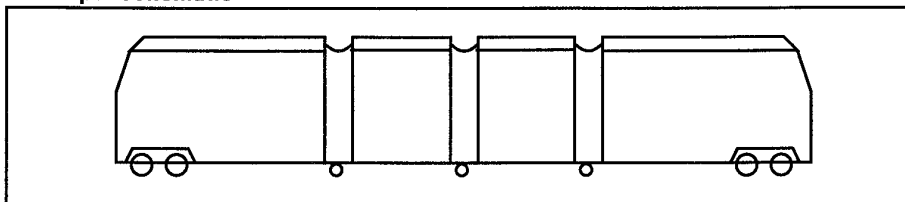
Doors: Four Double

Articulation: Supported

Body Material: Aluminum bolted onto a steel chassis

Buff Load: 50 tonnes ( 110,250 lbs)

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: B'1 1 1 B'

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Transverse-mounted motor drives both axles through parallel gears and cardan shaft

Trailer Wheel Diameter: 550 mm (21.7 in)

Trailer Gear: Single wheelset with small independent wheels built into articulation

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 25 m ( 82 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 2

Total Power: 410 kW ( 550 hp)

Specific Power: 10.3 kW/tonne ( 12.5 hp/ton)

#### BRAKES

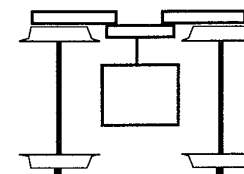
1. Regenerative
2. Electromagnetic Rail
3. Disc Brakes

#### PRICE DATA

Cost Density: \$42,700 \$DM/m<sup>2</sup>

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



-----



**City/Authority:** Mannheim/ MVG  
(Germany)

**Manufacturers:** German Consortium (VDV)

**Vehicle Type:** dGTW-ER

**Category:** 3

**Ordered:** 1

**Year of Delivery:** 1991

#### CHARACTERISTICS

Car Length: 26.69 m ( 87.6 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 290 mm (11.4 in)

Weight: 23.98 tonnes ( 52,900 lbs)

Specific Weight: 391 kg/m<sup>2</sup> ( 80 lb/ft<sup>2</sup>)

Seats: 74

Standees: 79 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

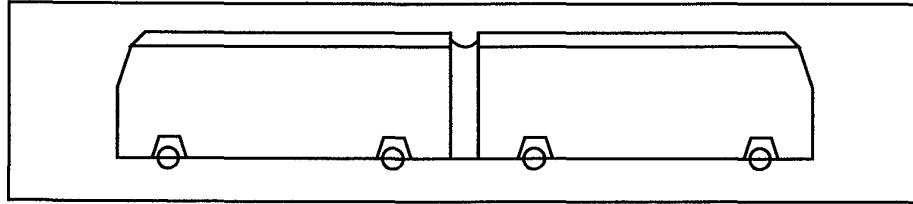
Doors: Three Double, One Single

Articulation: Floating

Body Material: Steel

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: A'A'A'1'

Power Wheel Diameter: 560 mm ( 22 in)

Power Gear: Motored EEF self-steering wheelset

Trailer Wheel Diameter: 560 mm ( 22 in)

Trailer Gear: EEF wheelset

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 750 V

Number of Motors: 4

Total Power: 240 kW ( 322 hp)

Specific Power: 10.0 kW/tonne ( 12.2 hp/ton)

#### BRAKES

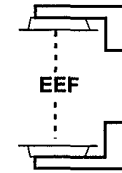
N/A

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear





**City/Authority:** Munich  
(Germany)

**Manufacturers:** AEG (MAN)  
Siemens  
AEG-Westinghouse

**Vehicle Type:** GT6N/ R1.1

**Category:** 3

**Ordered:** 3

**Year of Delivery:** 1990

#### CHARACTERISTICS

Car Length: 26.5 m ( 86.9 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 300 mm (11.8 in)

Weight: 29.5 tonnes ( 65,000 lbs)

Specific Weight: 484 kg/m<sup>2</sup> (100 lb/ft<sup>2</sup>)

Seats: 60

Standees: 103 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

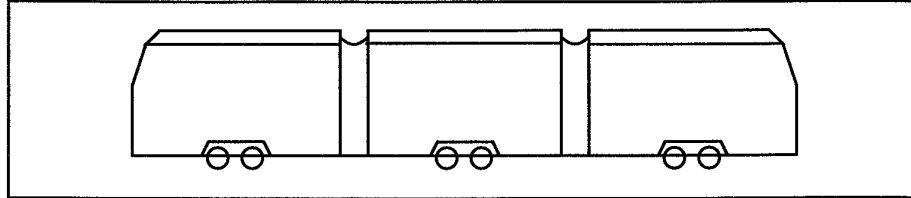
Doors: Four Double

Articulation: Floating

Body Material: Stainless Steel

Buff Load: 20 tonnes ( 44,100 lbs)

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: 1A'A1'A1'

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Independent wheels, one pair driven,  
one pair free-wheeling

Trailer Wheel Diameter: N/A

Trailer Gear: N/A

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 3

Total Power: 252 kW ( 338 hp)

Specific Power: 8.5 kW/tonne ( 10.4 hp/ton)

#### BRAKES

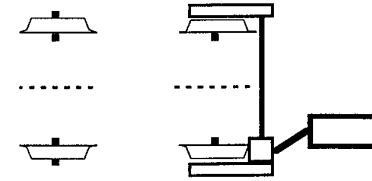
1. Regenerative
2. Spring Loaded Disc

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear

City/Authority: Munich  
(Germany)

Manufacturers: AEG (MAN)  
Siemens  
AEG Westinghouse

Vehicle Type: GT6N

Category: 3

Ordered: 70

Year of Delivery: 1994

#### CHARACTERISTICS

Car Length: 27.3 m ( 89.6 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 300 mm (11.8 in)

Weight: 29.4 tonnes ( 64,800 lbs)

Specific Weight: 468 kg/m<sup>2</sup> ( 96 lb/ft<sup>2</sup>)

Seats: 61

Standees: 110 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

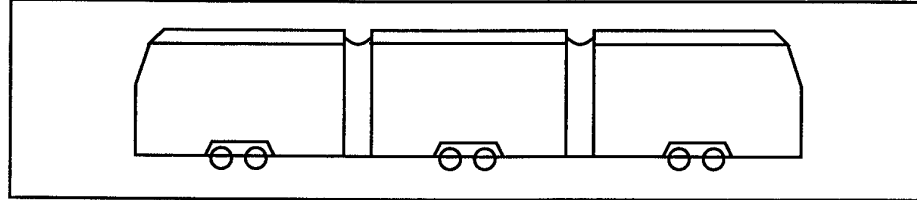
Doors: Four Double

Articulation: Floating

Body Material: Stainless Steel

Buff Load: 20 tonnes ( 44,100 lbs)

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: 1A'A1'A1'

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Independent wheels, one pair driven,  
one pair free-wheeling

Trailer Wheel Diameter: N/A

Trailer Gear: N/A

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 3

Total Power: 255 kW ( 342 hp)

Specific Power: 8.7 kW/tonne ( 10.6 hp/ton)

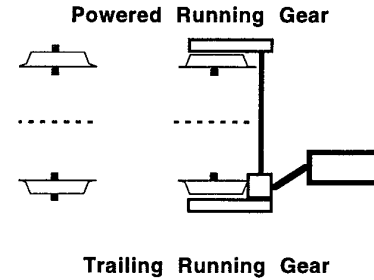
#### BRAKES

1. Regenerative
2. Spring Loaded Disc

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: \$DM3,420,000



City/Authority: Prototype

Manufacturers: Bombardier (BN)  
Holec

Vehicle Type: LRV2000

Category: 3

Ordered: 1

Year of Delivery: 1990

#### CHARACTERISTICS

Car Length: 20.2 m ( 66.3 ft)

Car Width: 2.47 m ( 8.1 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 350 mm (13.8 in)

Weight: 24 tonnes ( 52,900 lbs)

Specific Weight: 481 kg/m<sup>2</sup> ( 99 lb/ft<sup>2</sup>)

Seats: 44

Standees: 98 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

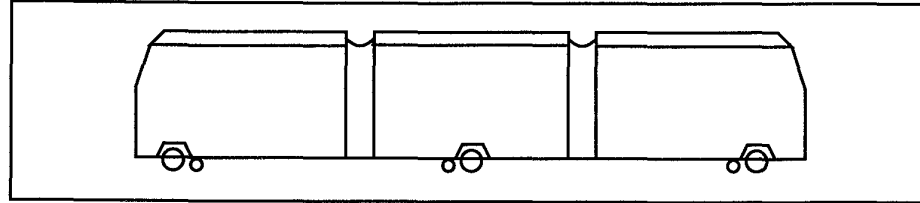
Doors: N/A

Articulation: N/A

Body Material: N/A

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: A'1'1'A'1'A'

Power Wheel Diameter: 675 mm (26.6 in)

Power Gear: Articulated truck frame, two large hub motor-driven wheels, two small guiding wheels

Trailer Wheel Diameter: 375 mm (14.8 in)

Trailer Gear: N/A

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: N/A

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 6

Total Power: 228 kW ( 306 hp)

Specific Power: 9.5 kW/tonne ( 11.6 hp/ton)

#### BRAKES

N/A

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear

**City/Authority:** Prototype

**Manufacturers:** Schindler (SIG)  
SIG  
ABB

**Vehicle Type:** Cobra 370

**Category:** 3

**Ordered:** 1

**Year of Delivery:** 1993

#### CHARACTERISTICS

Car Length: 24.5 m ( 80.4 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 100%

Floor Height

High: 370 mm (14.6 in)

Low: 320 mm (12.6 in)

Weight: 25 tonnes ( 55,100 lbs)

Specific Weight: 444 kg/m<sup>2</sup> ( 91 lb/ft<sup>2</sup>)

Seats: 59

Standees: 87 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

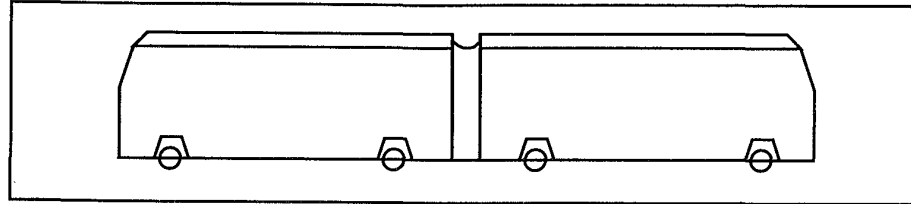
Doors: Four Double

Articulation: Floating

Body Material: Steel Bottom w/Aluminum

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: 'A'A'A'A'

Power Wheel Diameter: 560 mm ( 22 in)

Power Gear: Motor drives wheels on one side via cardan shafts

Trailer Wheel Diameter: 560 mm ( 22 in)

Trailer Gear: N/A

Track Gauge: 1000 mm ( 39.4 in)

Min Curve Radius: 11.8 m ( 38.7 ft)

Max Speed: 65 km/h ( 40 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 4

Total Power: 280 kW ( 375 hp)

Specific Power: 11.2 kW/tonne ( 13.6 hp/ton)

#### BRAKES

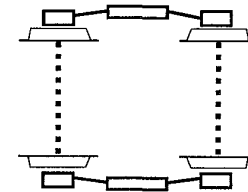
N/A

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear

**City/Authority:** Prototype (Milan)  
(Italy)

**Manufacturers:** Socimi

**Vehicle Type:** S-350LRV

**Category:** 3

**Ordered:** 1

**Year of Delivery:** 1989

#### CHARACTERISTICS

Car Length: 14 m ( 45.9 ft)

Car Width: 2.4 m ( 7.9 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 350 mm (13.8 in)

Weight: 10.5 tonnes ( 23,100 lbs)

Specific Weight: 312 kg/m<sup>2</sup> ( 64 lb/ft<sup>2</sup>)

Seats: 33

Standees: 49 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

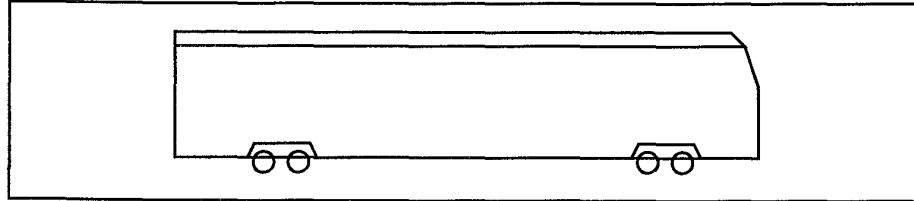
Doors: Three Double, One Single

Articulation: N/A

Body Material: N/A

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'Bo'

Power Wheel Diameter: 550 mm (21.7 in)

Power Gear: Independent wheels mounted on radial-arm axleboxes driven by motor via parallel gears

Trailer Wheel Diameter: N/A

Trailer Gear: N/A

Track Gauge: 1445 mm (56.9 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: DC

Line Voltage: 600 V

Number of Motors: 8

Total Power: 160 kW ( 215 hp)

Specific Power: 15.2 kW/tonne ( 18.6 hp/ton)

#### BRAKES

N/A

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear

**City/Authority:** Prototype (Rome)  
(Italy)

**Manufacturers:** Breda  
AEG-Westinghouse

**Vehicle Type:** VLC

**Category:** 3

**Ordered:** 1

**Year of Delivery:** 1990

#### CHARACTERISTICS

Car Length: 22 m ( 72.2 ft)

Car Width: 2.5 m ( 8.2 ft)

Low Floor Area: 75%

Floor Height

High: 950 mm (37.4 in)

Low: 350 mm (13.8 in)

Weight: 22 tonnes ( 48,500 lbs)

Specific Weight: 400 kg/m<sup>2</sup> ( 82 lb/ft<sup>2</sup>)

Seats: 36

Standees: 94 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

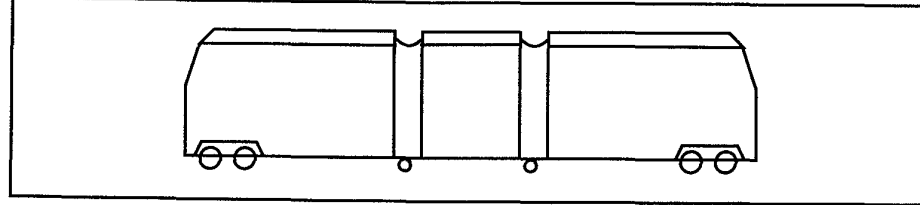
Doors: Three Double

Articulation: Supported

Body Material: Aluminum bolted onto a steel chassis

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: B'1 1 B'

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Transverse-mounted motor drives both axles through parallel gears and cardan shaft

Trailer Wheel Diameter: 500 mm (19.7 in)

Trailer Gear: Single wheelset with small independent wheels built into articulation

Track Gauge: 1445 mm (56.9 in)

Min Curve Radius: 20 m (65.6 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 2

Total Power: 410 kW ( 550 hp)

Specific Power: 18.6 kW/tonne ( 22.7 hp/ton)

#### BRAKES

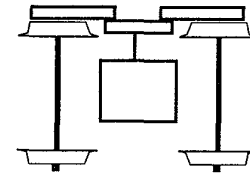
1. Regenerative
2. Electromagnetic Rail
3. Disc Brakes

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



.....



**City/Authority:** Prototype (Rome)  
(Italy)

**Manufacturers:** Socimi  
ABB

**Vehicle Type:** N/A

**Category:** 3

**Ordered:** 1

**Year of Delivery:** 1992

**CHARACTERISTICS**

Car Length: 22 m ( 72.2 ft)

Car Width: 2.4 m ( 7.9 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 350 mm (13.8 in)

Weight: 25 tonnes ( 55,100 lbs)

Specific Weight: 473 kg/m<sup>2</sup> ( 97 lb/ft<sup>2</sup>)

Seats: 36

Standees: 91 @ 4 pass/m<sup>2</sup>

**CONSTRUCTION**

Travel Direction: Bidirectional

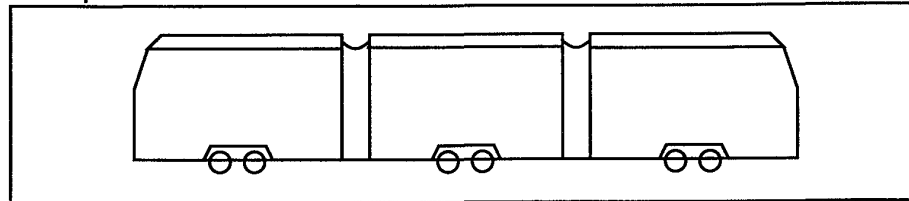
Doors: N/A

Articulation: N/A

Body Material: Welded Aluminum w/ Reinforced Plastic

Buff Load: N/A

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: BoBoBo

Power Wheel Diameter: 550 mm (21.7 in)

Power Gear: Independent wheels mounted on radial-arm axleboxes driven by motor via parallel gears

Trailer Wheel Diameter: N/A

Trailer Gear: N/A

Track Gauge: 1445 mm (56.9 in)

Min Curve Radius: N/A

Max Speed: 60 km/h ( 37 mph)

**PROPULSION**

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 12

Total Power: 294 kW ( 394 hp)

Specific Power: 11.8 kW/tonne ( 14.3 hp/ton)

**BRAKES**

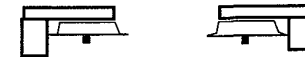
- 1. Regenerative
- 2. Hydraulic Disc Brakes
- 3. Electromagnetic Rail Brakes

**PRICE DATA**

Cost Density: N/A

Vehicle Cost: N/A

**Powered Running Gear**



**Trailing Running Gear**

**City/Authority:** Prototype (Turin)  
(Italy)

**Manufacturers:** Firema

**Vehicle Type:** Prototype

**Category:** 3

**Ordered:** 1

**Year of Delivery:** N/A

#### CHARACTERISTICS

Car Length: 22.2 m ( 72.8 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 350 mm (13.8 in)

Weight: 24 tonnes ( 52,900 lbs)

Specific Weight: 470 kg/m<sup>2</sup> ( 97 lb/ft<sup>2</sup>)

Seats: 55

Standeers: 88 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: N/A

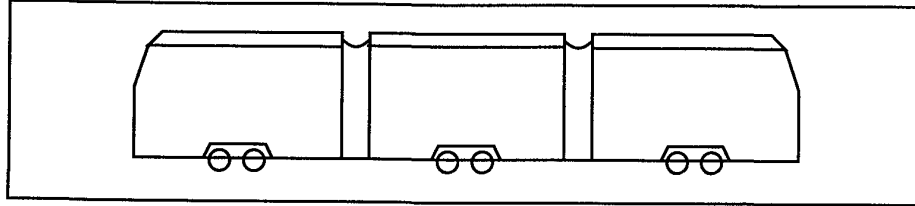
Doors: N/A

Articulation: N/A

Body Material: N/A

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: Bo'2'Bo'

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Unknown

Trailer Wheel Diameter: 680 mm (26.8 in)

Trailer Gear: Four independent wheel trailer truck

Track Gauge: 1445 mm (56.9 in)

Min Curve Radius: N/A

Max Speed: 90 km/h ( 56 mph)

#### PROPULSION

Propulsion Technology: DC

Line Voltage: 600 V

Number of Motors: 8

Total Power: 480 kW ( 644 hp)

Specific Power: 20.0 kW/tonne ( 24.3 hp/ton)

#### BRAKES

N/A

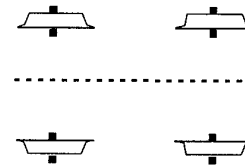
#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear

#### Trailing Running Gear





City/Authority: Strasbourg  
(France)

Manufacturers: ABB (Socimi)

Vehicle Type: Eurotram

Category: 3

Ordered: 26

Year of Delivery: 1994

#### CHARACTERISTICS

Car Length: 32.5 m (106.6 ft)

Car Width: 2.4 m ( 7.9 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 350 mm (13.8 in)

Weight: 29 tonnes ( 63,900 lbs)

Specific Weight: 372 kg/m<sup>2</sup> ( 76 lb/ft<sup>2</sup>)

Seats: 49

Standees: 164 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Bidirectional

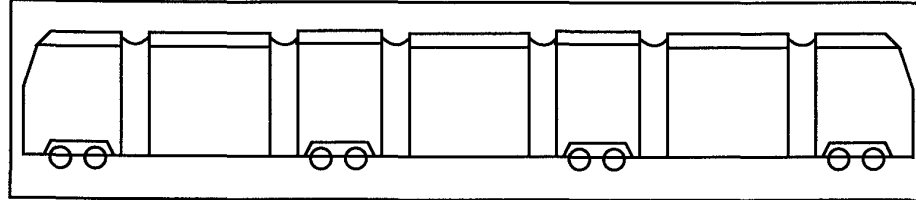
Doors: Six Double

Articulation: Floating

Body Material: Welded Aluminum w/ Reinforced Plastic

Buff Load: N/A

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: BoBoBo2

Power Wheel Diameter: 550 mm (21.7 in)

Power Gear: Independent wheels mounted on radial-arm axleboxes driven by motor via parallel gears

Trailer Wheel Diameter: 550 mm (21.7 in)

Trailer Gear: Four independent wheel trailer truck

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 25 m ( 82 ft)

Max Speed: 60 km/h ( 37 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 750 V

Number of Motors: 12

Total Power: 408 kW ( 547 hp)

Specific Power: 14.1 kW/tonne ( 17.1 hp/ton)

#### BRAKES

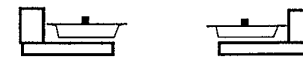
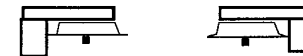
1. Regenerative
2. Hydraulic Disc Brakes
3. Electromagnetic Rail Brakes

#### PRICE DATA

Cost Density: \$58,000 \$DM/m<sup>2</sup>

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Vienna "A"  
(Austria)

**Manufacturers:** SGP  
Elin

**Vehicle Type:** ULF197-4

**Category:** 3

**Ordered:** 100

**Year of Delivery:** 1995

**CHARACTERISTICS**

Car Length: 23.61 m ( 77.5 ft)

Car Width: 2.4 m ( 7.9 ft)

Low Floor Area: 100%

Floor Height

High: 197 mm ( 7.8 in)

Low: 197 mm ( 7.8 in)

Weight: 23 tonnes ( 50,700 lbs)

Specific Weight: 406 kg/m<sup>2</sup> ( 83 lb/ft<sup>2</sup>)

Seats: 51

Standees: 100 @ 4 pass/m<sup>2</sup>

**CONSTRUCTION**

Travel Direction: Unidirectional

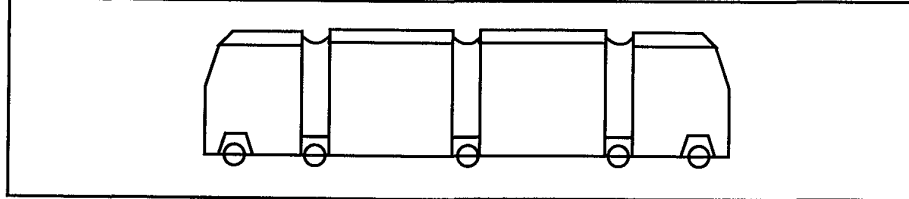
Doors: Four Double @ 152 mm (6")

Articulation: Supported

Body Material: N/A

Buff Load: 20 tonnes ( 44,100 lbs)

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: 1A'A'A'1

Power Wheel Diameter: 670 mm (26.4 in)

Power Gear: Vertically mounted motors driving independent wheels built into articulation portal

Trailer Wheel Diameter: 670 mm (26.4 in)

Trailer Gear: Single wheelset steered by the articulation

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 18 m (59.1 ft)

Max Speed: 70 km/h ( 44 mph)

**PROPULSION**

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 6

Total Power: 360 kW ( 483 hp)

Specific Power: 15.7 kW/tonne ( 19.1 hp/ton)

**BRAKES**

- 1. Dynamic
- 2. Electro-Hydraulic
- 3. Track Brakes

**PRICE DATA**

Cost Density: N/A

Vehicle Cost: N/A

**Powered Running Gear**



**Trailing Running Gear**



**City/Authority:** Vienna "A" Prototype  
(Austria)

**Manufacturers:** SGP  
Elin

**Vehicle Type:** ULF197-4

**Category:** 3

**Ordered:** 1

**Year of Delivery:** 1994

**CHARACTERISTICS**

Car Length: 23.61 m ( 77.5 ft)

Car Width: 2.4 m ( 7.9 ft)

Low Floor Area: 100%

Floor Height

High: 197 mm ( 7.8 in)

Low: 197 mm ( 7.8 in)

Weight: 23 tonnes ( 50,700 lbs)

Specific Weight: 406 kg/m<sup>2</sup> ( 83 lb/ft<sup>2</sup>)

Seats: 51

Standees: 100 @ 4 pass/m<sup>2</sup>

**CONSTRUCTION**

Travel Direction: Unidirectional

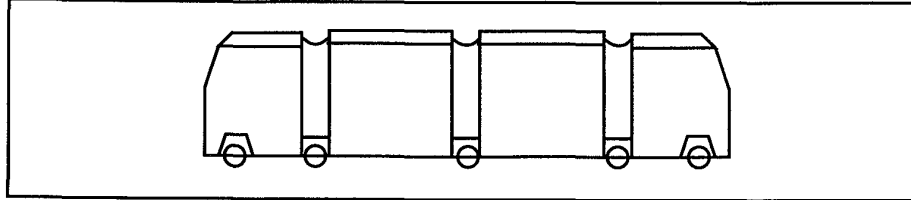
Doors: Four Double @ 152 mm (6")

Articulation: Supported

Body Material: N/A

Buff Load: 20 tonnes ( 44,100 lbs)

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: 1'A'A'A'1

Power Wheel Diameter: 670 mm (26.4 in)

Power Gear: Vertically mounted motors driving independent wheels built into articulation portal

Trailer Wheel Diameter: 670 mm (26.4 in)

Trailer Gear: Single wheelset steered by the articulation

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 18 m (59.1 ft)

Max Speed: 70 km/h ( 44 mph)

**PROPULSION**

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 6

Total Power: 360 kW ( 483 hp)

Specific Power: 15.7 kW/tonne ( 19.1 hp/ton)

**BRAKES**

1. Dynamic
2. Electro-Hydraulic
3. Track Brakes

**PRICE DATA**

Cost Density: N/A

Vehicle Cost: N/A

**Powered Running Gear**



**Trailing Running Gear**



**City/Authority:** Vienna "B"  
(Austria)

**Manufacturers:** SGP  
Elin

**Vehicle Type:** ULF197-6

**Category:** 3

**Ordered:** 50

**Year of Delivery:** 1995

#### CHARACTERISTICS

Car Length: 34.87 m (114.4 ft)

Car Width: 2.4 m ( 7.9 ft)

Low Floor Area: 100%

Floor Height

High: 197 mm ( 7.8 in)

Low: 197 mm ( 7.8 in)

Weight: 32.5 tonnes ( 71,600 lbs)

Specific Weight: 388 kg/m<sup>2</sup> ( 79 lb/ft<sup>2</sup>)

Seats: 79

Standees: 152 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

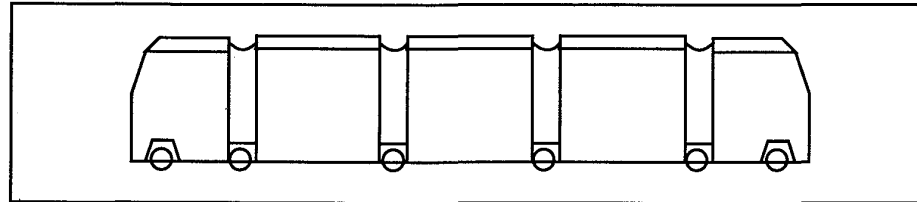
Doors: Seven Double @ 152 mm (6")

Articulation: Supported

Body Material: N/A

Buff Load: 20 tonnes ( 44,100 lbs)

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: 1'A'A'A'A'1'

Power Wheel Diameter: 670 mm (26.4 in)

Power Gear: Vertically mounted motors driving independent wheels built into articulation portal

Trailer Wheel Diameter: 670 mm (26.4 in)

Trailer Gear: Single wheelset steered by the articulation

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 18 m (59.1 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 8

Total Power: 480 kW ( 644 hp)

Specific Power: 14.8 kW/tonne ( 18 hp/ton)

#### BRAKES

1. Dynamic
2. Electro-Hydraulic
3. Track Brakes

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear



**City/Authority:** Vienna "B" Prototype  
(Austria)

**Manufacturers:** SGP  
Elin

**Vehicle Type:** ULF197-6

**Category:** 3

**Ordered:** 1

**Year of Delivery:** 1994

**CHARACTERISTICS**

Car Length: 34.87 m (114.4 ft)

Car Width: 2.4 m ( 7.9 ft)

Low Floor Area: 100%

Floor Height

High: 197 mm ( 7.8 in)

Low: 197 mm ( 7.8 in)

Weight: 32.5 tonnes ( 71,600 lbs)

Specific Weight: 388 kg/m<sup>2</sup> ( 79 lb/ft<sup>2</sup>)

Seats: 79

Standees: 152 @ 4 pass/m<sup>2</sup>

**CONSTRUCTION**

Travel Direction: Unidirectional

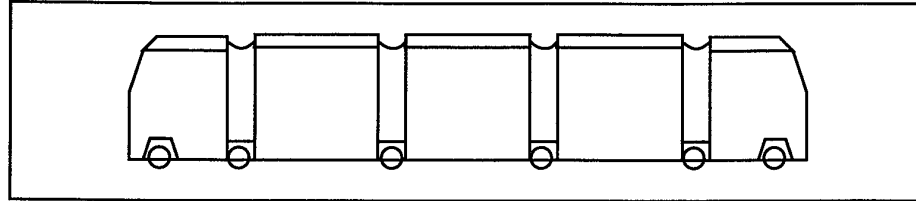
Doors: Seven Double @ 152 mm (6")

Articulation: Supported

Body Material: N/A

Buff Load: 20 tonnes ( 44,100 lbs)

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: 1'A'A'A'A'1

Power Wheel Diameter: 670 mm (26.4 in)

Power Gear: Vertically mounted motors driving independent wheels built into articulation portal

Trailer Wheel Diameter: 670 mm (26.4 in)

Trailer Gear: Single wheelset steered by the articulation

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 18 m (59.1 ft)

Max Speed: 70 km/h ( 44 mph)

**PROPULSION**

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 8

Total Power: 480 kW ( 644 hp)

Specific Power: 14.8 kW/tonne ( 18 hp/ton)

**BRAKES**

1. Dynamic
2. Electro-Hydraulic
3. Track Brakes

**PRICE DATA**

Cost Density: N/A

Vehicle Cost: N/A

**Powered Running Gear**



**Trailing Running Gear**



**City/Authority:** Wurzburg  
(Germany)

**Manufacturers:** LHB  
Siemens

**Vehicle Type:** GTW

**Category:** 3

**Ordered:** 20

**Year of Delivery:** N/A

**CHARACTERISTICS**

Car Length: 29.1 m ( 95.5 ft)

Car Width: 2.4 m ( 7.9 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 300 mm (11.8 in)

Weight: 35 tonnes ( 77,200 lbs)

Specific Weight: 501 kg/m<sup>2</sup> (102 lb/ft<sup>2</sup>)

Seats: 80

Standees: 100 @ 4 pass/m<sup>2</sup>

**CONSTRUCTION**

Travel Direction: N/A

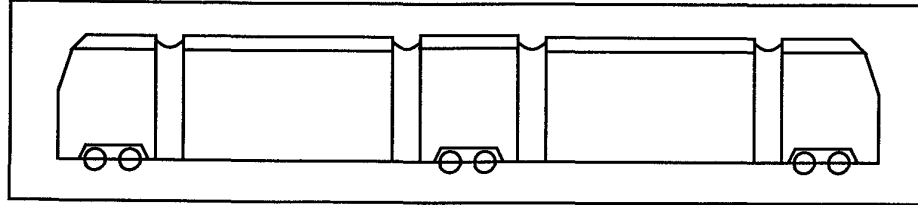
Doors: N/A

Articulation: Floating

Body Material: N/A

Buff Load: 20 tonnes ( 44,100 lbs)

**Concept Schematic**



**RUNNING GEAR**

Axle Arrangement: Bo'Bo'Bo'

Power Wheel Diameter: 690 mm (27.2 in)

Power Gear: Four hub motor-driven, independent wheels

Trailer Wheel Diameter: N/A

Trailer Gear: N/A

Track Gauge: 1000 mm (39.4 in)

Min Curve Radius: N/A

Max Speed: 80 km/h ( 50 mph)

**PROPULSION**

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 12

Total Power: 600 kW ( 805 hp)

Specific Power: 17.1 kW/tonne ( 20.9 hp/ton)

**BRAKES**

N/A

**PRICE DATA**

Cost Density: N/A

Vehicle Cost: N/A

**Powered Running Gear**



**Trailing Running Gear**

**City/Authority:** Zwickau  
(Germany)

**Manufacturers:** AEG (MAN)  
AEG/Kiepe

**Vehicle Type:** GT6N

**Category:** 3

**Ordered:** 12

**Year of Delivery:** N/A

#### CHARACTERISTICS

Car Length: 26.5 m ( 86.9 ft)

Car Width: 2.3 m ( 7.5 ft)

Low Floor Area: 100%

Floor Height

High: 350 mm (13.8 in)

Low: 300 mm (11.8 in)

Weight: 26.8 tonnes ( 59,100 lbs)

Specific Weight: 440 kg/m<sup>2</sup> ( 91 lb/ft<sup>2</sup>)

Seats: 60

Standees: 103 @ 4 pass/m<sup>2</sup>

#### CONSTRUCTION

Travel Direction: Unidirectional

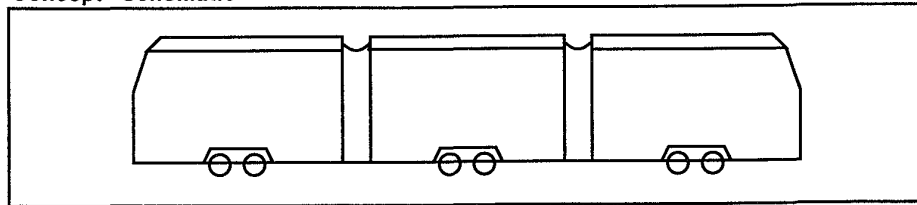
Doors: Four Double

Articulation: Floating

Body Material: Stainless Steel

Buff Load: 20 tonnes ( 44,100 lbs)

#### Concept Schematic



#### RUNNING GEAR

Axle Arrangement: 1A'A1'A1'

Power Wheel Diameter: 680 mm (26.8 in)

Power Gear: Independent wheels, one pair driven,  
one pair free-wheeling

Trailer Wheel Diameter: N/A

Trailer Gear: N/A

Track Gauge: 1435 mm (56.5 in)

Min Curve Radius: 15 m (49.2 ft)

Max Speed: 70 km/h ( 44 mph)

#### PROPULSION

Propulsion Technology: AC

Line Voltage: 600 V

Number of Motors: 3

Total Power: 252 kW ( 338 hp)

Specific Power: 9.4 kW/tonne ( 11.4 hp/ton)

#### BRAKES

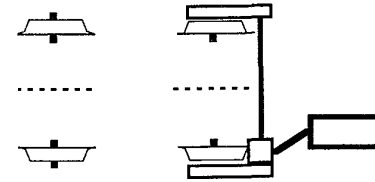
1. Regenerative
2. Spring Loaded Disc

#### PRICE DATA

Cost Density: N/A

Vehicle Cost: N/A

#### Powered Running Gear



#### Trailing Running Gear