**S Stock**

Sub-Surface Railway (Metropolitan, District, and Circle & Hammersmith Lines)

Built by Bombardier Transportation UK, Derby 2008-2014
Due to enter service in 2010
Maintained by Metronet Rail SSL (TfL Nominee)

**Principal characteristics (emerging design)**

- **Track gauge:** 4ft 8½ inches/1435mm
- **Current system:** 630v dc 3rd and 4th rail (capable of 750v operation), shoe gear fitted to DM and MS cars
- **Types of vehicle:** Driving Motor Car (DM), Non Driving Motor (M1, M2, MS), some Non Driving Motor cars are fitted with de-icing equipment (M2D)
- **Formation per unit:** 8 car or 7 car permanent formations
- **Formation per train (8):** DM/M1/M2/MS/M2/M1/DM
- **Formation per train (7):** DM/M1/M2/MS/M1/DM or DM/M1/MS/M2/M1/DM
- **Number of trains (Met):** 58 8 Car trains
- **Number of trains (C&H):** 53 7 Car trains
- **Number of trains (District):** 80 7 Car trains
- **Operation (Pre Migration):** Conventional OPO driving with doors operated by Train Operator in leading cab
- **Operation (Post Migration):** Full ATO
  - Non Automatic driving (Protected Manual (ATP))
  - Emergency driving (Restricted Manual)
  - One Person Operated
### Vehicle Details

Dimensions here are as designed in metric units. The drawings also show metric.

<table>
<thead>
<tr>
<th></th>
<th>DM</th>
<th>M1</th>
<th>M2</th>
<th>MS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length over body ends:</td>
<td>17439mm</td>
<td>15434mm</td>
<td>15434mm</td>
<td>15434mm</td>
</tr>
<tr>
<td>Width of body:</td>
<td>2820mm</td>
<td>2820mm</td>
<td>2820mm</td>
<td>2820mm</td>
</tr>
<tr>
<td>Width of body (over doors):</td>
<td>2920mm</td>
<td>2920mm</td>
<td>2920mm</td>
<td>2920mm</td>
</tr>
<tr>
<td>Car height:</td>
<td>3682mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tare weight of 8 car train:</td>
<td>242.6 tons</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tare weight of 7 car train:</td>
<td>213.7 tons</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passenger door open width (1st set):</td>
<td>1210mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passenger door open width (others):</td>
<td>1610mm</td>
<td></td>
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</tbody>
</table>

Estimated vehicles in stock: 382 382 249 382
Estimated grand total in stock: 1395

Car number series:
- **8 car trains (Deicers) start:** 21001DM-22001M1-23001M2-24001MS-24002MS-25002M2D-22002M1-21002DM
- **8 Car trains start:** 21057DM-22057M1-23057M2-24057MS-24058MS-23058M2-22058M1-21058DM
- **8 Car trains end:** 21115DM-22115M1-23115M2-24115MS-24116MS-23116M2-22116M1-21116DM
- **7 Car trains (Deicers) start:** 21301DM-22301M1-24301MS-24302MS-25302M2D-22302M1-21302DM
- **7 Car trains start:** 21387DM-22387M1-24387MS-24388MS-23388M2-22388M1-21388DM
- **7 Car trains end:** 21565DM-22565M1-24565MS-24566MS-23566M2-22566M1-21566DM

### Customer accommodation

Please note that standing capacity figures exclude seating capacity

<table>
<thead>
<tr>
<th></th>
<th>8 car train</th>
<th>7 car train</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seating capacity:</td>
<td>306 seats</td>
<td>256 seats</td>
</tr>
<tr>
<td>(including 50 tip-up seats)</td>
<td>(including 44 tip-up seats)</td>
<td></td>
</tr>
<tr>
<td>Standing capacities:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JTC (5 customers per m2)</td>
<td>853</td>
<td>778</td>
</tr>
<tr>
<td>Standing capacities:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crush standing capacity (7 customers per m2)</td>
<td>1218</td>
<td>1112</td>
</tr>
</tbody>
</table>
S7 DM Car:

S7 M1/M2 Car:

S7 MS Car:

S7 Complete Train:
Equipment details (emerging design)

Bodies: Constructed by using aluminium extrusions friction stir welded and huckbolted together. Exteriors painted in London Underground corporate red, white, and blue livery. Through Gangways provided between cars with internal and external bellows and overlapping sliding plates.

Bogies: Bombardier flexible frame

Couplers: LU Wedglock with pneumatic connections only on DM cars, semi permanent bolted flange between cars within a 7/8 car formation.

Traction System: Bombardier 3 phase AC with all axles motored and one inverter per car. M1 car converters are powered from the adjacent DM car high voltage supply, and M2 car converters are powered from the adjacent MS car high voltage supply.

Compressors: Knorr-Bremse oil free (reciprocating) with air drier.


ATO: Initially Conventional Tripcock protection.

ATP: Initially Conventional Tripcock protection.

Auxiliary power Supplies: Bombardier static converter, two 8 or 7 car train.

Saloon lighting: 21 fluorescent T5 Tubes via individual inverters per car.

Emergency lighting: Five battery-fed fluorescent T5 Tubes via individual inverters per car and normally forming part of the main saloon lighting.

HVAC: Single roof mounted saloon air conditioning module with dual refrigeration circuits supplying ceiling mounted air ducts. Separate module supplied on DM cars for cab air conditioning with fallback air conditioning from the saloon module. Internal and external smoke detection.

Passenger Information: An LED external facing front destination display with integrated train number display fitted to each Train front. An external facing side destination LED display fitted to each side of each Vehicle. Two double sided internal facing Saloon LED displays fitted in the outer vestibules of the Saloon.

CCTV: OPO TTCCTV displayed on 2 off 12" monitors in cab via microwave transmission. Saloon CCTV system viewable in cab when stationary and is recorded digitally.

Doors: Six pairs of electrically operated sliding doors, externally hung, and fitted with both obstacle detection and sensitive edge, threshold lighting when doors open.