



District Line 'Q' Stock prototype notes

Background

London's sub-surface Metropolitan and Metropolitan District lines were originally operated by steam locomotives and, despite frequent open-air sections, were smoky, sulphurous and dirty.

The opening of the electrically-operated City and South London Railway in 1890 made it clear that competition from deep level tube lines with their smoke-free air, clean trains and brightly lit stations, posed a potent commercial threat, as did the spreading electric tramway networks in the suburbs.

Electrification was essential to survival but the Metropolitan District Railway, close to bankruptcy after its much-delayed completion the southern half of the Inner Circle, was in no position to fund the project from revenues.

In 1901 the Underground Electric Railway group of companies, headed by Charles Tyson Yerkes, an American financier with a colourful reputation from his involvement in the development of Chicago's street railways, took a controlling stake in the Metropolitan District Railway and financed its electrification, adopting the 600V D.C. four-rail system and Sprague-Thomson-Houston traction systems already in widespread use in the USA.

The District Railway's new fleet of electric multiple unit rolling stock closely followed contemporary American rapid transit practice with open saloons, passenger-operated sliding doors and clerestory roofs.

G stock (Q23)

In 1923 the Underground group ordered 50 new motor cars for the District Line. Built by the Gloucester Railway Carriage and Wagon Co., these new cars were equipped with motors and control gear taken from some of the Underground's original motor coaches which were converted to trailers to replace unsatisfactory cars of all-timber construction. This set a pattern for the District Line fleet for the next fifty years, with trains formed of a mixture of rolling stock of various vintages and styles.

Five years later, as part of a wider programme of fleet renewal, the second-hand traction equipment was replaced with the latest British-Thomson-Houston electro-magnetic control system and new traction motors were fitted.

K stock (Q27)

The centrepiece of the District Railway's 1928 fleet renewal programme was the procurement of a fleet of 101 new motor cars both to replace parts of the original fleet and to provide for network expansion. The new cars, built by the Birmingham Railway Carriage & Wagon Co. were tidier in appearance than the G class but retained the clerestory roof and American rapid-transit styling.

The new fleet had the same BTH traction equipment as the updated Q23 cars and the two types operated with each other and with older wooden-bodied trailers.

L stock (Q31)

A further tranche of eight motor and 37 trailer cars were added to the fleet to provide sufficient stock for the District Line extension from Barking to Upminster. Built by the Union Construction Co. of Feltham, they were generally similar to the K stock fleet.

M and N stock (Q35)

In 1933 the Underground group of companies, together with the hitherto independent Metropolitan Railway, bus operators and tramways, were amalgamated into the newly formed London Passenger Transport Board, who used the District Line's 'L' stock design as the basis for a new build of 28 cars for the Metropolitan's Hammersmith and City route. The 14 motor and 14 trailer cars were built by the Birmingham Railway Carriage & Wagon Co. and designated M stock. Unlike earlier sub-surface fleets, the M stock cars were fitted with EP brakes air-operated doors controlled by the guard and so operated in complete six-car trains.

A further 26 trailers built by Metro-Cammell, with hand-operated passenger doors and Westinghouse air brakes, became N stock.

Q38 and the formation of the Q stock fleet

As part of the 1935-40 New Works Programme, the London Passenger Transport Board embarked on a major upgrade to its sub-surface rolling stock fleet, ordering a grand total of 781 new cars, 573 for the Hammersmith & City and Metropolitan lines ('O' and 'P' stock) and 208 for the District Line (Q38 stock).

The new cars marked a radical departure from existing surface stock designs, leaving behind the American influenced styling of the District line fleet and the traditional compartment format of much of the Metropolitan stock in favour of clean, modern lines. The bodysides sloped inwards slightly above waist height and were attractively flared outwards above solebar level – an innovation that discouraged the dangerous habit of passengers attempting to board a train that was starting to move. Hopper ventilators above the windows were shielded by angled hoods.

The District Line's Q38 cars, built by the Gloucester Railway Carriage and Wagon Co. were made up of 183 trailers and just 25 motor cars, though the trailers were all designed to be converted to motor cars at a future date and therefore incorporated motorman's side doors at one end, sealed out of use and with the cab space incorporated into the passenger saloon.

The 'O' and 'P' fleets had a new design of 'Metadyne' traction control equipment and automatic couplings but the small fleet of 'Q' stock motor cars had the older electro-magnetic control system for compatibility with District line existing fleets of motor cars.

The 208 new cars, delivered between late 1938 and 1940, were part of a wider upgrade to the District line fleet with a view to eliminating the older wooden-bodied trailers and phasing out passenger-operated sliding doors. Initially the 'G' and 'K' class driving motors were upgraded with electro-pneumatic brakes and air-operated doors to operate with Q38 stock and were redesignated 'Q23' and 'Q27' respectively.

After the war the 'L' and 'N' fleets were also upgraded with electro-pneumatic brakes and air-operated doors and, together with the 'M' stock transferred from the Hammersmith & City line, converted to trailers to release Q38 trailers for conversion to driving motor cars, some to replace 'O' and 'P' stock war losses and most of the rest to join the expanding R stock fleet. However some Q38s, both driving motors and trailers, remained in the fleet until the end of Q stock operation on the District and East London lines.

In 1940 two of the former 'G' stock cars were upgraded to Q23 specification and modified with driving cabs at both ends for solo operation on the shuttle service linking Acton Town and South Acton stations.