

## Operating Characteristics

Max Speed Profile	110 mph
Design Speed Profile	110 mph
Wheel Arrangement	Bo-Bo
ETH Index	95
Minimum curve radius	80m
Brake force ratio	40 tonnes
Air & Electric Brake	Rheostatic
Couplings	Buckeyes and screw couplings
Length	18.80m
Height (pan down)	3.96m
Weight	84.5 tonnes
Route Availability	7
Numbering	All class 90s are now 90/0
Traction Motors	GEC G412CY / Continuous Rating 3730KW (5000hp)
Tractive effort	192 KN (58000 lbf)
Multiple working	TDM / Sanding equipment
Serviceable	<a href="#">See Current Fleet List</a>
Stored	<a href="#">See Current Fleet List</a>

## Testing & Commissioning

The class 90s were built as 4 axle Bo-Bo type locomotives with GEC designed engines with Thyristor control (see table above) and were built in Crewe by BREL under contract to GEC from 1985 through to 1990.

The delivery date for the class 90 fleet fell behind their original schedule date, which meant that they were subsequently late entering service and were released from Crewe between 1988 and 1990.



The first Class 90 to be released from Crewe for testing was 90001 in 1987, which was completed in 1988. Thereafter this 90 was allocated to Willesden depot.

The last Class 90 on the other hand to exit Crewe as new and be delivered was 90050 – this engine unfortunately suffered fire damage in 2004 whilst working an intermodal and was subsequently stored in Crewe until late 2023. At the time of writing, 90050 had become a static display at the Crewe Heritage Centre, in effect safeguarding its future.

The class 90s were publicly launched by the then Intercity in October 1989. Prior to the official launch, there were a handful of dedicated passenger and freight diagrams.

The first engine to work a passenger train was 90003 (pictured above when it arrived at Euston) on the 12th July 1988 having travelled from Preston to London Euston which went via the West Midlands area. However, it could be argued that 90005 was the first engine to work a service train as it was involved a VIP trip to Northampton when it was named "Financial Times" a few weeks earlier.

For further detailed information on the testing and commissioning of the Class 90s including pictures of 90001 on test, please go to the following link [http://www.traintesting.com/Class\\_90.htm](http://www.traintesting.com/Class_90.htm)

## Push-Pull Operations

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Whilst the 90s were under construction at Crewe, 52 Driving Van Trailers (DVTs) were being built at Derby from 1988 to compliment the class 90s - at the same time modifications were being made to the MK3 fleet.

The development of push-pull operations meant that compatible locos could operate in TDM mode, with traction power being derived from the engine. The introduction of this practice reduced the burden of having a large fleet of locomotives and hence the class 85s were withdrawn.



The first batch of DVTs were earmarked for the WCML with Inter-City, later becoming Virgin Trains. The introduction of Pendolinos and Voyagers meant that the WCML DVTs became surplus to requirements, and so a large proportion of these were transferred to the GEML to replace the aging DBSOs.



A second batch of DVTs was introduced in the late 1980's on the ECML to coincide with the building of the MK4 PUG door stock. The East Coast DVTs are still used today (2012) in push-pull mode with class 91s. It was not uncommon in earlier years to see various class 90s working alongside the 91s on push-pull services on the ECML due to poor availability of the 91s.

Since the introduction of the MK3 DVTs, a number of failures have occurred notably on the West Coast and Great Eastern which did seem to happen often, but not as much in 2011. This has resulted in trains being top & tailed on numerous occasions, not always with an electric loco and still occurs today in 2011.



One example of regular failure of DVTs came during the operation of the VXC diagram between Manchester and Birmingham which ran until August 2007. Also TDM issues still occur to this day (2012) over in Anglia as well as with Virgin Trains on WB64. Also, it was not uncommon back in the 1990s to see DVTs failing on the ECML resulting in engines topping DVTs and on the West Coast as well.

Jumping forward to the present day (2024), push-pull passenger operations with Class 90s and DVTs finished in Spring 2020, with the Great Eastern being the last area to see regular passenger use. However, 90001 and 90002 (which are now owned by LSL) do see passenger work on push-pull and loco-hauled stock from time to time, but they primarily work charter trains, although have been hired in to work service trains.

Aside from 90001 and 90002, the rest of active the fleet work freight trains for Freightliner. See the website for more details on the current operations of the Class 90 fleet.