Class 90 Electric Locomotive

For British Rail InterCity

Designed and built by BREL for British Rail, the Class 90 is a modern and efficient mixed traffic electric locomotive that uses developed state-of-the-art technology. Derived from the successful class 87 which first appeared in 1973, the class 90 incorporates a number of features designed to give high performance coupled with high reliability and availability. The maximum speed of 178 km/h meets the requirements of InterCity passenger service, whilst the high power output and separately-excited traction motors enable the locomotive to haul heavy freight trains.

The external features of the locomotive have been designed to give a clean, functional and streamlined appearance. The bogies are of the BREL BP9 design, giving a smooth ride and low maintenance requirements. Microprocessor controls are fitted, together with a maintenance diagnostic system. Thyristors are used to give smooth, stepless changes of both traction and dynamic braking current. Tractive effort is maximized through the use of a radar-based wheel creep control system.

The driving cab environment is of a high standard and features full air conditioning, noise insulation, diffused lighting and ergonomically designed driving consoles and seating, with driving positions situated at each cab door.

The class 90 locos are equipped with a Time-Division Multiplex system to enable remote control of the locomotive using the train lighting cables. Used in conjunction with the Driving Van Trailers also being built by BREL, this will allow high speed push-pull operation of InterCity trains, with resultant savings in track occupancy and the turnround of trains at termini.

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Data

Traffic type:	High speed passenger and freight
Description and wheel notation:	Bo-Bo electric locomotive
Traction supply:	25kV ac 50Hz overhead line
Length over buffers:	18800mm
Width over bodyside:	2696mm
Roof height (service condition):	3785mm
Bodyshell material:	Monocoque/steel
Bogie centres:	9982mm
Bogie wheelbase:	3280mm
Wheel diameter (new):	1150mm
Bogie type:	BREL BP9
Suspension:	Helical spring, hydraulic damping
Min. curve radius (horizontal):	80m
Min. curve radius (vertical):	200m
Weight in service condition:	85.5t
Continuous power rating:	3730kW
Power/weight ratio	43.62kW/t
Tractive effort (continuous rating):	94kN at 129km/h
Tractive effort (1 hour rating):	108kN at 123km/h
No. of traction motors, type & power:	4 x G412 CY of 932.5kW separately excited frame hung with flexible drive to axles
Traction systems by:	GEC
Control system type:	Microprocessor/Thyristor
Special features:	Thermal monitoring of traction motors Fault monitoring Speed pre-selection facility Push-pull control with TDM links
Power supply for train heating:	540kW
Current collection:	Single arm pantograph
Braking system:	Blended rheostatic/air, clasp blocks on treads
Brake force:	40t
Drawgear type:	Side buffers and drophead knuckle couplers
Max. speed:	178km/h
Built at:	BREL Crewe Works
No. of locos ordered:	50
Delivery commenced:	1987

About BREL

BREL is Britain's largest builder and repairer of railway rolling stock, with origins going back 150 years to the earliest days of public railway operation. The design and manufacture of vehicles of all kinds is carried out by BREL's New Construction Group, which can offer diesel and electric locomotives of the highest quality, for every application.

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