

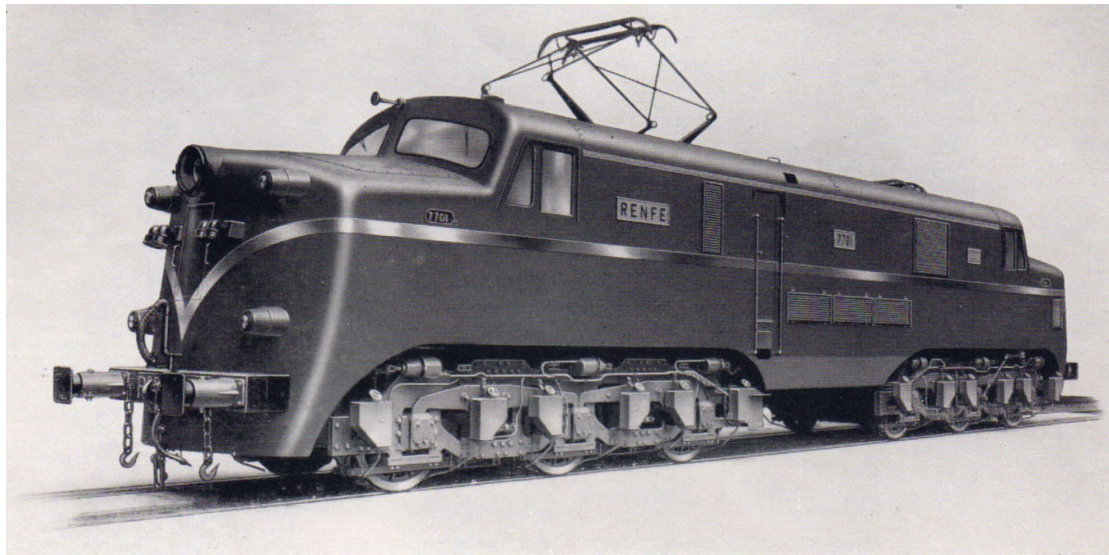
SPANISH NATIONAL RAILWAYS (R.E.N.F.E.)



5 ft. 6 in. Gauge

1952-55

Co-Co



H.P.	3000	Tractive Effort (Maximum).....	67,000 lb.
Traction Motors	6	Maximum Axleload	20 tons
Line Voltage	3000	Weight in Working Order	119.5 "
Tractive Effort (Continuous) at 36 m.p.h.	30,000 lb.		

The Spanish National Railways (R.E.N.F.E.) have an extensive plan for further main line electrification on the 3,000-volt D.C. system, particularly on the difficult and heavily graded routes of the old Northern Railway, and among the first sections to be dealt with were those from Gijon to Oviedo, Leon, and Ponferrada, and Santander to Alar.

To provide motive power for this scheme, contracts were awarded in 1950 and 1951 to the English Electric Co. Ltd., for 60 3,600 H.P, double bogie Co-Co type electric locomotives.

Collaborating with English Electric Co. Ltd., The Vulcan Foundry designed and manufactured the mechanical parts for these locomotives and they were all erected at Newton-le-Willows. Completion of the first one took place on April 29th 1952, and on that occasion it was inspected at Vulcan by representatives of the Spanish Government and many other visitors.

V U L C A N L O C O M O T I V E S



Inspection of the first R.E.N.F.E. Locomotive at The Vulcan Foundry

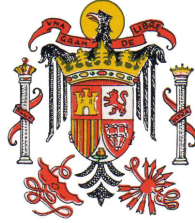
These electric locomotives are the most powerful so far built in the United Kingdom. In outward appearance and general design they are so similar however to those built for the Santos Jundiai Railway and described earlier on Page 85 that it is only necessary here to mention the points in which they differ from these latter.

Whereas the Brazilian locomotives were built for 5 ft. 3 in. gauge, that of the Spanish Railways is 5 ft. 6 in.; nevertheless, it was found possible slightly to reduce the weight, which is 119.5 tons in comparison with 125.

Whilst in both cases the six force-ventilated axle-hung, nose-suspended traction motors are virtually identical, the one-hour rating of those for the Spanish locomotives is raised from 500 H.P. to 600 H.P., thus giving a total one-hour H.P. rating of 3,600.

The braking arrangements for Spain are also slightly different. The Westinghouse vacuum-controlled air-brake equipment operates the train brakes by means of the driver's vacuum valve, whilst a proportional valve operates the locomotive air-brakes simultaneously. These latter can also be controlled separately by a self-lapping brake valve.

The total brake power amounts to 85% of the total weight, brake blocks being applied to both sides of each wheel.



One of the Locomotives in service in Spain

Arrangements for regenerative braking are also provided as in the case of the Brazilian locomotives.

The wheel centres are all of the cast steel S.C.O.A-P type, and whilst the first 20 locomotives were equipped with Timken roller-bearing axleboxes, the remaining forty are all provided with axleboxes of the Isothermos type.

Finish painted in grey-green with a stainless steel band and vermillion buffer beams, they were shipped for service to the port of Gijon in the province of Asturias.