

The 4 Sub fleets

Background

The 1915 LSWR suburban d.c. electrification scheme was based on 3-car motor units that could operate in pairs. Later, as traffic grew, 2-car trailer units were sandwiched between them to make up 8-car trains on those routes where platform lengths permitted. Despite the obvious operational awkwardness of these arrangements, they were perpetuated by the Southern Railway as it extended d.c. electrification across its suburban network in the 1920s and early 1930s.

Some new 3-car suburban units were built in 1925 but most of the pre-war suburban fleet consisted of bodywork adapted from former LSWR, LBSCR or SECR rolling stock, much of which was mounted on newly-built 62ft underframes and with new driving cabs and guard's compartments. These underframes became the Southern's standard design for its non-corridor electric multiple units and those with pre-Grouping bodywork would later be rebuilt with new all-steel bodies.

The Southern's traction electrical equipment was originally supplied by Metropolitan-Vickers and used electro-magnetic control gear mounted at the rear of the motorman's compartment but from 1936 English Electric were appointed to supply a more modern design with electro-pneumatic control gear and resistance grids mounted beneath the underframe. The English Electric system was designed to be backwards-compatible with the earlier design so that both types could operate in multiple with no operational constraints.

The 4 Sub programme

By 1938 the Southern was starting to plan the renewal of its suburban fleet around the concept of operationally homogeneous 4-car units formed of two driving motor coaches flanking two trailers and designated 4 Sub

All the two-car trailer sets were to be eliminated. Cars on standard underframes would be marshalled into 3-car motor units to make them up to four cars and the remainder scrapped. Other 3-car units would be augmented with newly constructed trailers and, over a period of about ten years, all of the cars with pre-Grouping bodywork on SR standard underframes would be rebuilt with new bodies. To compensate for the depletion in the number of units in service during the rebuilding programme, and ultimately to replace stock unsuitable for rebuilding and to provide for increased peak traffic, 30 entirely new 4 Sub units would be built.

Wartime disruption

This re-formation and rebuilding programme was severely disrupted by the 1939-45 war and by subsequent severe shortages of skilled staff, materials and finance. Only one new unit was built before the Southern's workshops were diverted to constructing war materials with a further nine emerging in 1944-5, followed by trailers to augment the 1925-built 3-car units to 4 cars. These cars were built using traditional methods but they were the first to have wider bodies seating six a side.

The all steel 4 Sub units

By 1946 the Southern had set up a production line at its Eastleigh works to fabricate new all-steel bodies for its suburban electric fleet to a strikingly modern design developed by Oliver Bulleid, the Southern's Chief Mechanical Engineer and his assistant Lionel Lynes. The remaining 20 new units were built in 1946 and were followed by new trailers to augment the Southern's pre-war suburban units from three to four cars.

Even with the new production line the post-war 4 Subs were by no means homogeneous:-

- When construction of all-steel bodies for 4 Sub units commenced, no decision had been taken on whether to reinstate first-class travel, which had been suspended in the Southern's suburban area during the war. The early units therefore had one trailer with nine, instead of ten, compartments, six of which were wider for conversion to first class if and when required.
- all-compartment layouts were gradually superseded by saloons with centre gangways though every unit had at least one compartment trailer, usually a car that had been built earlier and used temporarily to augment a pre-war unit.
- some all-steel Sub cars were entirely new but most were rebuilds, with new bodies mounted on refurbished SR standard suburban underframes recovered from withdrawn pre-war units
- earlier units had type 339 motors, later builds had the self-ventilating 507 type with roof-mounted air intakes.
- a batch of units had grab handles above the cab windows and step plates over the buffers for the motorman to change the headcode stencil but photographic evidence suggests that this seemingly retrograde, if not downright dangerous, change was quickly reversed by retrofitting the usual hinged offside cab windows, though the grab rails and step plates remained in place on these units throughout their working lives.
- most 4 Subs were equipped with the SR's standard 8ft 9ins wheelbase 'Central' type of motor bogie but units 4667-4753 (and later 4754) had the 9ft wheelbase 'Eastern' type.

The full story is too complex to cover in these brief notes but is comprehensively covered in Volume I of David Brown's excellent book "Southern Electric".

The Eastleigh Model Rail kits

4364-series all steel 4 Sub

Units 4364-4369 are representative of earlier versions of the all-steel 4 Sub, with an all-compartment interior layout. One trailer had nine compartments, the other ten. Cab ends had external step plates and grab handles.

4621-series all steel 4 Sub

To the extent that there ever was such a thing as a standard all-steel 4 Sub, the units numbered 4621-4666 were it. They consisted of two 8-bay open (centre-gangwayed) motor coaches, one 10-bay open trailer and one 10-compartment trailer.

Deployment

The 4 Sub fleet was deployed across the entire Southern suburban network. During the 1950s, they were displaced from some Eastern Section suburban routes where ten-car trains were introduced using EPB stock.

Because 4 Sub units of any age were compatible and could work in multiple with each other, 8-car peak formations could be any combination of pre- and post-war units, with Metrovick or with English Electric equipment.

As well at the quotidian task of operating the Southern's extensive suburban network, 4 Sub units had occasional outings to other destinations. Being compatible with the fleets used on stopping and semi-fast services on the main lines, they were sometimes used to strengthen longer distance services in multiple with 4 Lav or 2 Bil/2Hal units. They were also frequently used on busy summer weekends for trips to Brighton and other seaside destinations or for special services to race meetings, the Farnborough Air Show and other events.

The Eastleigh production line was to run until 1959, building the post-war fleets of 4 Sub and 2-Hal units, followed by Bulleid-type 4-EPBs, 2-EPBs and 2-Haps on reclaimed pre-war underframes to operate alongside all-new BR-designed types.

Unit and vehicle numbers - 4364 series

Date formed	Unit number	8 compt. motor	9 compt. trailer	10 compt. trailer	8 compt. motor	Wdn
3/48	4364	10914	11461	10196	10913	2/74
3/48	4365	10916	11462	10173	10915	2/69
3/48	4366	10918	11469	10172	10917	1/74
2/48	4367	10920	11470	10171	10919	10/73
1/48	4368	10922	11468	10170	10921	5/72
1/48	4369	10924	11466	10464	10923	10/73

These units were painted in post-war Southern Railway style when delivered but this was changed on first overhaul to the early BR standard livery with coach numbers prefixed and suffixed by 'S'.

Sources state that units 4367-4377 had external grab rails on one side only. However photographic evidence shows that units 4637-4369 had them on both sides

Unit and vehicle numbers - 4621 series

Date formed	Unit number	Saloon motor	Compartment trailer	Saloon trailer	Saloon motor	Wdn
5/49	4621	11302	8901	12361	11301	2/81
5/49	4622	11304	8902	12362	11303	5/74

5/49	4623	11306	8903	12363	11305	5/82
5/49	4624	11308	8904	12364	11307	4/76
6/49	4625	11309	8905	12365	11310	5.74
6/49	4626	11311	8906	12366	11312	10/82
6/49	4627	11313	8907	12367	11314	6/81
6/49	4628	11315	8908	12368	11316	6/81
7/49	4629	11318	8909	12369	11317	9/83
7/49	4630	11320	8910	12370	11319	5/83
7/49	4631	11322	8911	12371	11321	5/82
7/49	4632	11324	8912	12372	11323	6/81
7/49	4633	11326	8913	12373	11325	10/82
7/49	4634	11327	8914	12374	11328	5/74
8/49	4635	11329	8915	12375	11330	6/81
9/49	4636	11332	8916	12376	11331	6/81
9/49	4637	11334	8917	12377	11333	10/82
9/49	4638	11336	8918	12378	11335	6/81
9/49	4639	11338	8919	12379	11337	5/82
10/49	4640	11340	8920	12380	11339	11/73
10/49	4641	11342	8921	12381	11341	6/81
10/49	4642	11343	8922	12382	11344	5/73
10/49	4643	11345	8923	12383	11346	4/81
10/49	4644	11347	8924	12384	11348	4/76
11/49	4645	11349	8925	12385	11350	10/82
11/49	4646	11351	8926	12386	11352	4/76
11/49	4647	11354	8927	12387	11353	4/76
11/49	4648	11355	8928	12388	11356	6/81
11/49	4649	11357	8929	12389	11358	6/82
12/49	4650	11360	8930	12390	11359	6/81
12/49	4651	11362	8931	12391	11361	10/82
12/49	4652	11364	8932	12392	11363	4/61
12/49	4653	11366	8933	12393	11365	6/81
1/50	4654	11368	8934	12394	11367	10/82
1/50	4655	11370	8935	12395	11369	6/81
1/50	4656	11372	8936	12396	11371	10/82
1/50	4657	11374	8937	12397	11373	7/83

2/50	4658	11375	8938	12398	11376	10/82
2/50	4659	11377	8939	12399	11378	10/82
2/50	4660	11380	8940	12400	11379	4/83
2/50	4661	11382	8941	12401	11381	3/74
3/50	4662	11384	8942	12402	11383	2/79
3/50	4663	11385	8943	12403	11386	5/72
3/50	4664	11387	8944	12404	11388	11/80
3/50	4665	11389	8945	12405	11390	4/76
3/50	4666	11391	8946	12406	11392	5/83

Coach numbers had an S prefix and suffix.

Due to growing public concern about personal security in non-corridor compartments, most of the units that survived beyond 1976 were re-formed with a saloon trailer from a withdrawn unit in place of the compartment trailer for their last years of operation.