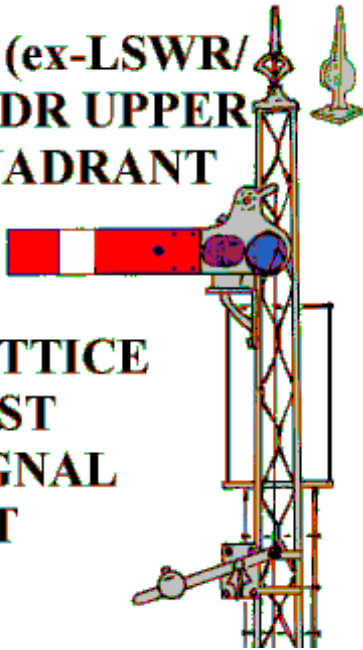


SR (ex-LSWR/ LCDR UPPER QUADRANT

LATTICE POST SIGNAL KIT



Complete kit to build a working (un-motorised) home or distant signal in any height up to 27ft. Some marking out, cutting and shaping of parts is required.

The typical London & South Western or London, Chatham & Dover Railway signal consisted of a lower quadrant arm on a lattice post, with a cruciform finial and round-case lamp, supplied by Stevens & Co. Post-Grouping, the Southern Railway modernised many of these signals by replacing the arm with the upper quadrant Westinghouse type. A square-case lamp was fitted at the same time. This type of post was also used for new installations and renewals until the advent of rail-built posts in the 1930s. Some examples remain in use today.

Parts supplied:

S012/1 arm etc fret
S7/02/2 lattice post & detail fret
S09/5 ladder fret
SC02 & SC017 finial castings
SC06 lamp casting
30mm x 2mm brass tube (arm bearing)
30 x 1.0mm brass rod (arm spindle)
30 x 0.9mm brass rod (balance weight axle)
30mm x 22swg nickel silver wire (crank axle)
100 and 4 off 50 x 0.45mm brass wire (operating wire, arm stop/corrugations, stanchions)
Red, yellow and blue-green glazing
Baseplate

ASSEMBLY INSTRUCTIONS

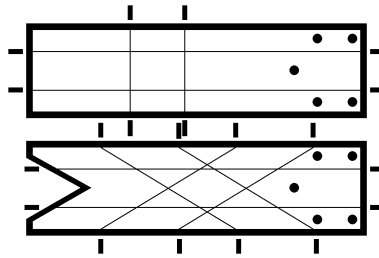
The test kit was built using 50W and 25W (low temperature) soldering irons, 188°, 145° and 70° solders and liquid fluxes, minidrill and slitting disc, various files, pliers, drills etc, and tinsnips and small scissors for cutting out the frets. In these instructions left- and right-hand mean as viewed from the front of the signal. A selection of prototype photographs will help assembly, and these should be easy to find, as this type of signal was very common.

Burnish the frets before removing parts, and tin small parts before removal. Parts 4-6, 11, 12 & 14 on the S012/1 fret are not required and may be discarded. Grip the etched parts in smooth pliers when removing tags to avoid bending them.

The Signal Arm:

Use 188° solder for this section.

Open out the spindle hole in the spectacle plate (3) to no.61 (1.0mm). Using the half-etched lines as a guide, scribe painting lines on both sides of the chosen arm – home (1) or distant (2):



To do the rear side, punch guide pips through from the front marks.

To model the earlier (prior to 1936) corrugated pattern of arm, deeply scribe the corrugations on to the front of the arm, using the horizontal half-etched marks as a guide, and solder two pieces of 0.45mm brass wire onto the rear face at the same distances from the top and bottom edges. Unless your prototype demands it, avoid modelling a corrugated distant arm - the rear is very difficult to paint!

Punch out the five bolt heads in the chosen arm, then solder it to the half-etched side of (3), ensuring the arm's half-etched bolt heads are on its front face. Remove some of the corrugation wires so the arm will fit to the plate. Solder the arm assembly to the 30 x 1.0mm brass rod spindle. To keep things square, drill a 1.0mm hole in a wood block, insert the spindle then drop the arm on to it face down. When soldering, avoid tilting the arm. Remove the excess front spindle and file it almost flush with the spectacle plate. Leave the excess rear material for now as a painting handle. Joggle the operating wire arm back 1mm so the operating wire will clear the spectacle plate.

The Post:

Use 188° solder, for this section, except where stated.

The post as supplied will build into a signal 27ft high. For a shorter post, build it to the full

height first, and cut to size afterwards.

Lightly tin the lattice edges on all four post sides, on both sides of the fret. Cut out the two post halves, but don't bother filing off the remains of the tags - being staggered, they help in locating the post halves when soldering. Use flat-nosed pliers to correct any distortion caused by cutting out. Accurately fold each half-post to 90°, **with the half etch being on the inside**. Use bending bars if you have access to them. Solder along the inside of the bend to fill the gap as much as possible, although complete coverage is not vital at this stage.

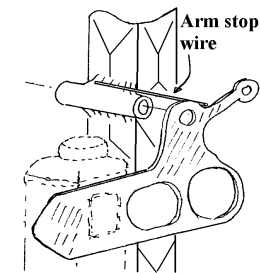


Bring the two half-posts together, and slip on the jig to hold them in place, ensuring the two halves are level. Solder the two long joints along the post, applying light pressure from pliers to help close the gap. When done, remove the locating jig and discard. Tidy up the joints, and file the top and bottom of the post level. Don't worry about any remaining small gaps along the post corners - these can be filled in before painting with 145° or 70° solders, which have better gap-filling properties than 188° solder.

Now is the time to cut the post to length if required, removing material from the bottom of the post, not the top.

If you intend to use the large rectangular baseplate to mount the signal on the layout, first scribe a longitudinal centre line along it. Solder the post around 25mm from one end of the baseplate, ensuring squareness in all planes.

Attach the 2mm arm bearing tube to the left-hand side of the post at right angles to the vertical post axis. The bearing's position below the post top seems to vary between 2.5-9mm, so check with photographs of your chosen prototype. Leave the bearing tube overlong at the rear, but use the minidrill and slitting disc to trim the front so it projects 1mm in front of the post.



Temporarily fit the arm spindle into its bearing, and solder a 0.45mm wire stop in the crook of the bearing/post joint, as shown. This will prevent

the arm falling below the horizontal. Use 145° solder for this, to stop the bearing tube unsoldering. Test for free operation of the arm - you may need to file down the top of the spectacle plate or the underside of the wire to achieve this.

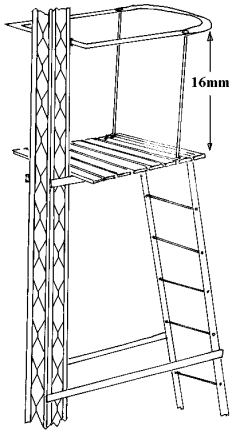
Cut off the bottom right-hand corner of the S012/1 fret to form a 6x5mm rectangle. Solder it to the front face of the post, so it completely

covers the area behind the right-hand spectacle.

The Platform and Ladder:

Use 188° solder for the start of this section.

Open out the holes on the end-but-one plank of the platform (15) to no.77 (0.45mm). Fill the other pair of holes with solder, and remove the handrail tag. The handrail needs to be 16mm above the platform, so add two overlength 0.45mm brass wire stanchions through the holes in the platform, with the half-etched side of the latter on top. To do this easily, take a 1/4" balsa block, lay the platform face down on it, drill two no.77 holes through the block using the holes in the platform as a template, insert the stanchions through the holes and solder in place.



Place the handrail over the stanchions, and solder it in place 16mm above the platform. Remove any excess wire with side cutters. As these will not cut exactly flush, a "bolt-head" is naturally left at each cut. Tin the platform tags and the handrail rear.

Now switch to 145° solder.

Bend in the two tags on the platform so they grip the post, then solder the handrail to the rear of the post so the **platform** is 32.5mm below the arm bearing centre line. Solder the tags to the post, noting that the nearest platform tread should not be soldered to the post, otherwise the platform will not be level. Some signals had an open back to the handrail, so remove this portion if required.

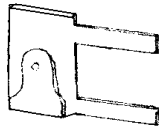
Use the minidrill and slitting disc to form a 10mm long channel in the baseplate, perpendicular to the centre line and 40mm from the post rear face. (If the post has been cut to a shorter height, the channel should be positioned to give a ladder slope around 1 in 7.) If not using the baseplate, solder pieces of scrap wire either side of the post which are long enough to reach the ladder end.

Cut the side stiles from the top end of the ladder, leaving a rung as the top edge. Cut the ladder to length, so its bottom end fits in the baseplate channel or can be soldered to the fixing wires. Solder the ladder top and bottom, with the half-etched side to the rear.

Add pairs of ladder bracing struts (17), checking their height and number with photographs; one pair halfway up the ladder is common. The ladder end joints should be on the outside of the stiles, and never exactly level with a rung. Remove any excess strut length and tidy up.

The Balance Weight and Post Fittings:

Use 188° solder for this section, except where stated.



Sweat the two balance levers (5a) together. Add weights (6a) either side to increase the thickness as desired. Open out the axle hole to no.65

(0.90mm), and the two operating wire holes to no.77 (0.45mm). Fold up the bracket (7), as shown, with the half-etched lines on the **inside** of the bends.

Insert the 0.9mm brass bearing wire, trapping the balance lever in the bracket so the weight is to the left of the post as shown on the heading drawing. Oil the lever bearing, and then solder (145°) the wire at the bracket hole front and rear faces. Remove excess wire and tidy up the joints.

Solder (145°) the bracket tags to the front of the post as shown in the heading drawing. The height varies between prototypes, so check with photographs, although it is usually within arm's reach of the platform, for greasing purposes.

Consider how the signal box wire would have approached the signal. Solder a crank (9) to the front of the bracket (8), using a nickel silver wire axle, so that when the bracket is soldered to the front or left-hand side of the post as appropriate, a horizontal pull on the lower lever will translate into a downwards pull on the other lever. Use one of the etched brass washers to space the crank off the bracket. There is no need to make the crank work, unless it is to form part of the eventual operating mechanism. Many SR signals had a pulley wheel (10) instead of a crank. [For a working crank/pulley, solder (188°) the axle into the bracket, add a brass washer, then the crank or pulley, a paper washer, then solder (145°) a second brass washer on top.] Finally, solder (145°) the bracket to the front or left-hand side of the post, so the lowest crank hole is just above baseplate/ground level, and the bolt-heads face outwards and are symmetrical about the post. Use pliers as a heat sink to stop the baseplate/post joint melting.

Add the track circuit plate (13) if needed (not on distant signals). Fill in the horizontal pair of half-etched holes, and centre it 91mm (13ft) above the baseplate/ground level.

The Lamp and Finial:

Use 70° solder or glue for this section.

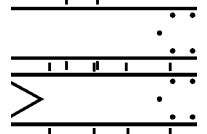
Remove any casting sprue and mould lines from the lamp and finial. Flatten the rear face of the lamp bracket's vertical side. Fix the bracket to the left-hand side of the post, so that in side view, the lamp body is in line with the post, and from the front, the lens falls behind the left-hand arm spectacle. Fix the appropriate finial to the post top (in the header drawing, the LSWR finial is the one attached to the post).

Painting:

Degrease the post and arm assemblies - wash in detergent water and leave to dry. Spray overall with white car primer, mounting the arm in its bearing to avoid painting the spindle and inside of the bearing tube. Detail paint as follows (but check with photographs as there is a lot of prototype variation):

Black (some parts pale grey in later BR days): - bottom 42mm of post including crank assembly; lamp and lamp bracket; arm bearing; finial; arm spectacle plate including V-shape on its reverse; arm rear band or chevron; front chevron on a distant arm.

Red or Yellow: front and edges of the arm except the home's white band or distant's black chevron. If the primer has filled your scribed guide lines, here is a full-size template for marking out again:



Silver: lamp lenses front and rear.

Glaze the spectacles; use red (home) or yellow (distant) in the left-hand aperture, and blue-green in the right-hand one. The easiest method is to cut a rectangle approximately to size so the whole of the aperture is covered, fix it in place using MSE's *GSA* adhesive or gloss varnish, and then trim the edges when set. Coat the front of the glazing with gloss varnish to give a better glass effect.

Fixing the Arm to the Post:

Use 145° solder for this section.

Ensure the spindle moves freely in its bearing - clean off any paint that might have crept in. Remove any excess bearing and spindle length with the slitting disc, but leave enough spindle protruding through the bearing to solder the back blinder on. Open out the hole in the back-blinder (18) to no.61 (1.0mm). Place an oiled paper washer over the spindle end, then solder on the back-blinder, with its reinforcing rib to the rear. Adjust its position so it just clears the lamp rear lens when the arm is horizontal, and push it sufficiently far on to the spindle to remove any fore and aft spindle motion. Wash off any surplus flux, then prime and paint black or pale grey as detailed above.

The Operating Wire:

Make a small hook in the top of the long 0.45mm brass wire. Measure the distance between the arm hole (arm horizontal) and the other balance lever hole (lever around 30° below the horizontal). With the short end of the hook facing you, bend the bottom of the wire 90° to the front at the measured distance, then trim the bent portion to 3mm in length. Put the hook in the arm hole so the wire is to the rear, then pass the bottom bend through the balance lever hole from the rear, forming a hook to retain it. You may need to joggle the wire to give clearance for it to pass behind the spectacle plate. Prime the wire and paint it black, or to avoid the risk of gumming up the

works with paint, use a permanent marker pen instead.

The signal may now be installed on the layout and connected to your chosen means of operation.

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