



Complete kit to build a working (un-motorised) home or distant signal in any height up to 28ft. Some marking out, cutting and shaping of parts is required.

This kit represents one of the most distinctive signal designs, the North Eastern Railway's slotted post type. It was found mostly on the NER's Southern Division (effectively those lines in Yorkshire). Nearly all had been replaced by the end of steam, particularly by the tubular steel post type. Some may still be seen on the North Yorkshire Moors Railway.

Parts Supplied:

- S003K1 arm fret
- S0031 notched wooden post casting
- S003/4BW balance lever etch
- S003/4SP sector plate fret
- S007/2 post plates fret
- S009/4 ladder fret

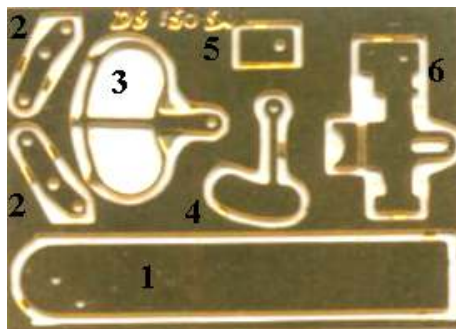
- S0044/1 platform etch
- SC003/2 finial casting
- SC008 lamp casting
- 30 x 0.6mm brass rod (arm spindle)
- 30mm x 26swg nickel silver wire (axle)
- 10 x 1.0mm brass rod (post peg)
- 3 off 150 x 0.31mm brass wire (operating rod, handrail, stanchions)
- 2 off etched brass washers
- Red, yellow and blue-green glazing Baseplate

ASSEMBLY INSTRUCTIONS

The test kit was built using 50W adjustable and low temperature soldering irons, 188°, 145° and 70° solders and liquid fluxes, minidrill and slitting disc, various files, pliers, drills etc, and small scissors for cutting out the parts. In these instructions left- and right-hand mean as viewed from the front of the signal. A selection of prototype photographs will help assembly.

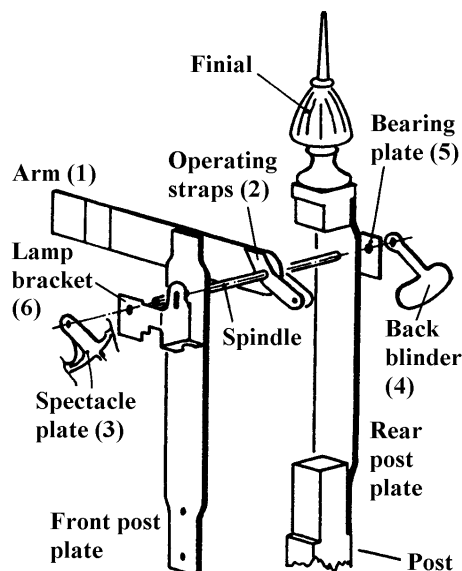
Burnish both sides of the frets before removing any parts, and tin the smaller parts before removal. Grip the etched parts in smooth pliers when filing off tags to avoid bending them.

The Signal Arm:



Key to parts on arm fret:

- 1. Arm
- 2. Operating straps
- 3. Spectacle plate
- 4. Back blinder
- 5. Rear bearing plate
- 6. Lamp bracket/front bearing plate



Open out the spindle hole in the arm (1), operating straps (2), spectacle plate (3), back blinder (4), bearing plate (5) and lamp bracket (6), all to 0.60mm (no.68). Remove the arm from the fret, and if required, cut a distant fishtail in it (the apex of the triangle being on the arm centreline, 3mm from the end). Drill a 0.60mm (no.73) hole at least 6mm deep in a flat wooden block. Place the 0.6mm spindle into the hole and drop the arm onto it, followed by an operating strap. Orient the arm and strap as shown in the drawing across, and solder (188°) the arm, strap and spindle together. Removing the spindle from the block, solder (145°) on the other strap, using a pin (or anything else that won't take solder) to align the operating rod holes.

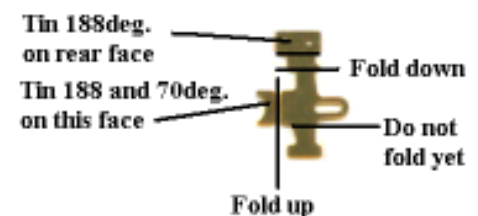
Remove the spectacle plate and back blinder from the fret. Together with the arm assembly, prime and paint them and glaze the spectacles (see Painting section below for details). When finished, do not clean the paint off the spindle - it will act as a solder mask later on.

The Post:

Warning: being cast in pewter, the post is easily melted or distorted. Handle it carefully, and ensure you have picked up the low-temperature (70°) iron before making any joints!

The post as supplied will build into a signal 28ft tall (height of arm centre line above rail level). If you require a shorter post, remove the excess from the bottom end of the post, thus preserving the post plate notches. Remove any flash and mould lines, and square the post ends. Always try to file along the length of the post rather than across it, so any file marks look like timber grain. Straighten the post using gentle finger pressure if it has become distorted.

Drill the centre of the post base 1.0mm (no.61) and solder in the 1.0mm brass rod strengthening peg. Tin the top and bottom of the inside of the slot plates with both 188° and 70° solders, including the side and top/bottom edges. Solder (188°) the bearing plate (5) to a post plate. Solder the plate to the post, using plenty of solder to fill any gaps, then file the excess away to give an invisible joint. This plate now becomes the rear post plate.

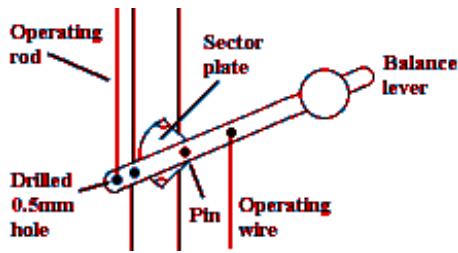


Tin the lamp bracket as shown above, but do not fold it to shape yet. Solder (188°) the bracket to the front post plate, as shown across, using a pin through the spindle holes to ensure correct alignment. Make the two folds in the bracket as shown.

Broach out the spindle holes in the post plates so the painted spindle moves freely in them. Place the spindle in the rear post plate, and drop on the front plate. If needed, file the bottom edge of the front plate so the spindle is

horizontal. Solder (70°) the front plate in place, filling and filing as before. Ease the lamp bracket angle so it does not foul the operating straps. You should now have a freely moving arm, trapped between the two post plates.

The Balance Lever:

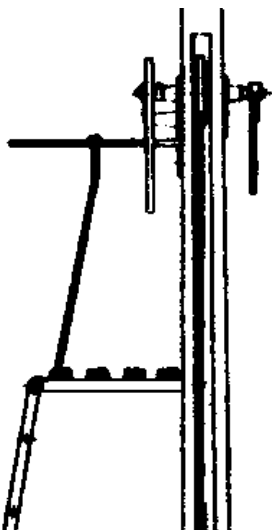


Drill a 0.50mm (no.76) hole at the very end of the balance lever as shown above. Without removing them from the fret, open out the holes in the etched brass washers to 0.50mm (no.76). Solder (188°) nickel silver wire axle vertically into one of the washers, then wiggle it to break the washer out of the etch, forming a headed "pin". Also break out the second washer.

Bend up the half-etched corners of the sector plate. Solder (70°) the flat rear surface to the right hand side of the post as shown above, so the horizontal centre line is 16mm (4") above the post bottom, and the "pin" hole just clears the post's rear face. [If the signal is to be installed in a "public" area, then solder it 20mm below the spindle centre line.] Pass the "pin" through the centre of the three original holes in the balance lever, then through the remaining washer. Push the "pin" through the sector plate hole, so the weight is to the rear of the post. Solder (70°) the "pin" to the post's rear face. Remove the excess wire and tidy up.

The Platform and Ladder:

Remember! On NER signals the platform and ladder are at the **front** of the post!



Drill a 0.40mm (no.78) hole at each end of the end platform tread (the one furthest from the mounting struts). File the insides of the struts until they will fit around the post front plate, 14mm below the spindle centre line. Securely clamp the post/plates joint, and solder (188°) the platform in place, with the rear tread butting against the front plate and the half-

etched side on top. The struts should be long enough for them to also be soldered to the rear post plate.

Use 145° solder for the rest of this section.

Solder two sloping 0.31mm brass wire stanchions into the holes previously drilled in the platform, as shown across. Bend another piece of 0.31mm wire around a 5mm drill - the natural spring of the wire will open it to the correct 7mm. Fit this handrail wire around the stanchions so the semicircle projects 3-4mm in front of them. Put a 90° bend in the left-hand leg of the handrail so the bent portion brushes against the front post plate's face, then solder this to the plate just below the lamp bracket plate. Also solder the handrail to the stanchions, ensuring it is horizontal. Remove the excess wire from the right-hand edge of the front plate. Cut the right-hand leg of the handrail so it reaches about half way to the front plate.

If you intend to use the large rectangular baseplate to mount the signal on the layout, first scribe a longitudinal centre line along it. Drill a 1.0mm (no.61) hole on this centre line, 20mm from one end. Place the post peg in the hole, orienting the post so the platform projects over the longer half of the baseplate, then solder (70°) the post in place, ensuring squareness in all three planes.

The ladder should be positioned to give a 1:6 slope. Measure the height in millimetres of the platform, divide by 6, and then add 6 to the result. This gives the distance of the ladder foot from the post's front face. 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 off the end of the ladder stiles, leaving a rung as the end edge. Place this on the baseplate at the distance found above. Cut the ladder to length - its top should rest against the platform's front edge. Solder it in place, with the half-etched side facing outwards.

If required, add pairs of ladder bracing struts made from surplus ladder stile or flattened brass wire. Solder them to the ladder (188°) and post (70°), joggling them to account for any width difference. Check their height and number with photographs. The ladder end joints should be on the outside of the stiles, and never exactly level with a rung.

The Lamp and Finial:

Use 70° solder for this section.

Remove any mould lines from the lamp and finial. Remove most of the casting sprue from the lamp base, leaving a 1mm long peg to fit in the lamp bracket's semicircular cutout. With the larger lamp lens facing you, file off the left-hand side of the rim cast on the base of the lamp. Solder the lamp to the bracket, with the larger lens to the front.

Solder the finial inside the post plates - it should be an exact fit.

Painting (1927 on):

Degrease the post and arm assemblies by washing in detergent water, rinsing and leaving to dry. Add a drop of oil to the front and rear arm bearings and the balance lever bearing. Spray overall with white car primer.

Detail paint as follows (but check with photographs as there is a lot of prototype variation):

Black: – post to just above the balance lever bracket (if the balance lever is just below the platform, then only the bottom 16mm of the post); whole balance lever assembly; ladder above the level of black on the post; any ladder bracing struts; handrail and stanchions, but not the platform; lamp bracket and front bearing plate; lamp; rear bearing plate; arm rear band/chevron; front chevron on a yellow distant arm.

Full-size arm painting templates:



These templates represent a new signal arm - over time, the band/chevron position and width varied greatly due to hand painting.

Red (home) or Yellow (distant): front and edges of the arm except the home's white band or distant's black chevron.

Silver: lamp lenses front and rear.

For a pre-1927 distant signal: proceed as above, but all parts listed as yellow were red, and the distant had a front white and rear black band, not chevrons.

Glaze the spectacles; use red (home) or yellow (distant) in the top aperture, and blue-green in the bottom one. (A pre-1927 distant had red in the top aperture.) The easiest method is to cut a piece of glazing 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.

The Operating Rod:

Blacken the 0.31mm brass wire operating rod, by either priming and painting black, using a permanent marker pen, or (preferably) a proprietary metal blackening solution. Make a small hook at the top of the wire. Insert the hook into the operating strap holes, from the front of the signal. Align the rod with the post, then make a shallow bend in the wire to take it over the right-hand side of the rearmost hole in the balance lever. With the arm horizontal and the balance lever below the horizontal, make a 90° bend in the wire and cut it so it will enter the hole, afterwards forming a hook to retain it.

Check for satisfactory arm operation. You may find that the rod flexes, rather than moving the arm. To prevent this, bend up one or more narrow U-shaped guides from surplus 0.31mm brass wire, and glue them in to pairs of holes drilled in the post's right-hand face, trapping

the operating wire in the bend. Small loco handrail knobs may be used instead, but remember to thread them onto the operating rod before making the lower bend.

If the weight of the balance lever is insufficient to keep the signal arm on, add a disc-shaped weight to the lever from lead sheet or scrap whitemetal.

The Spectacle Plate and Back Blinder:

Bend the rear piece of the lamp bracket towards the rear post plate. Open out the holes in the spectacle plate and back blinder so they are a sliding fit on the spindle. Adjust the position of the spectacle plate so the red (or yellow) and blue-green lenses cover the lamp lens in the on and off positions respectively. Glue the spectacle plate to the spindle.

Alter the angle of the back blinder paddle to its shaft by rotating it outwards slightly as shown. Place the back blinder on to the spindle, and adjust its position so it clears the rear lamp lens



with the arm on, but covers it when off. Glue the back blinder to the spindle. Trim off excess front and rear spindle length with the slitting disc, and tidy up the paint finish.

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