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NSWGR 'S' TYPE OPEN WAGON
1:43 KIT - GENERIC DESIGN

PROTOTYPE NOTES

The S wagon was the most common wagon type in service on the New South Wales railway system for a period of over 50 years.

The original S wagons were built between 1907 and 1921 but during the 1940's a replacement program was instituted with the ordering of 10,000 standard underframes and components from Commonwealth Engineering with the bodies from Clyde Workshops. They were delivered 1945-58 and were allocated various numbers.

The wagons had a steel underframe with a steel and wood composite body and a wood floor.

The kit is representative of the S wagon circa 1953.

KIT PARTS LIST

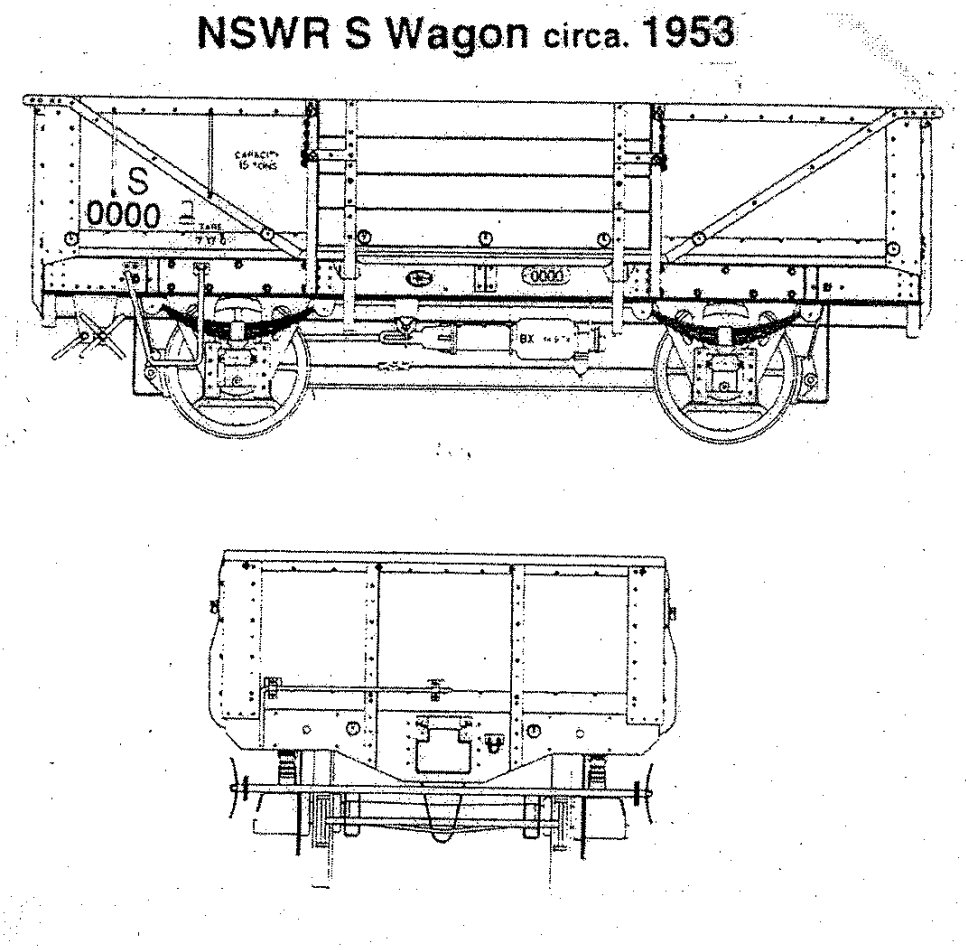
1 floor casting
2 end castings
2 side castings
2 lengths .020 x .125 plastic strip
4 axle box castings
4 brass bearings
2 wheel sets
1 brake cylinder
2 brake rigging vertical supports
4 brake shoes
2 yard brake brackets
2 yard brake spider wheels
2 grade control valves
2 train pipe hoses
18 tie down rings
1 length 0.25mm x 2 mm brass strip
brass wire 1.0mm
brass wire 0.8mm
brass wire 0.5mm
galvanised wire 0.8mm
1 sheet transfers

YOU WILL NEED TO SUPPLY

Couplers -(the kit has been designed to fit Kadee #804 or #805 couplers but feel free to substitute).
Some soft thin wire (0.4mm winding wire or fuse wire is ideal)
A sheet of V-Grove sheet styrene .020 thick & .125 (1/8) spacing - approx. 124mm x 60mm is required (optional)

TOOLS REQUIRED

Large files and needle files
Superglue
Pin vice and/or 'Dremel' and drills (0.5mm or #76 & 0.8mm or #67)
Soldering iron and resin cored solder
Craft knife, tweezers, small pliers, side cutters, scissors
Fine wet or dry paper
Small clamps or alligator clips
Modelling putty
Decal setting solution
Piece of glass or surface plate (steel)



ASSEMBLY

Note:
Read **ALL** instructions before commencing assembly to understand the correct sequence.

All flash on the castings should be removed before assembly.

Some castings may have air bubbles - these are easily puttied if desired and will not affect the end result.

Occasionally a casting may be warped. This problem is easily rectified by placing in hot water in a flat bottomed container for a couple of minutes and allowed to cool on a flat surface.

The instructions for the assembly of this kit assumes that the person assembling the kit has some basic kit building skills.

The quality of the finished product is dependant on the care taken in its assembly.

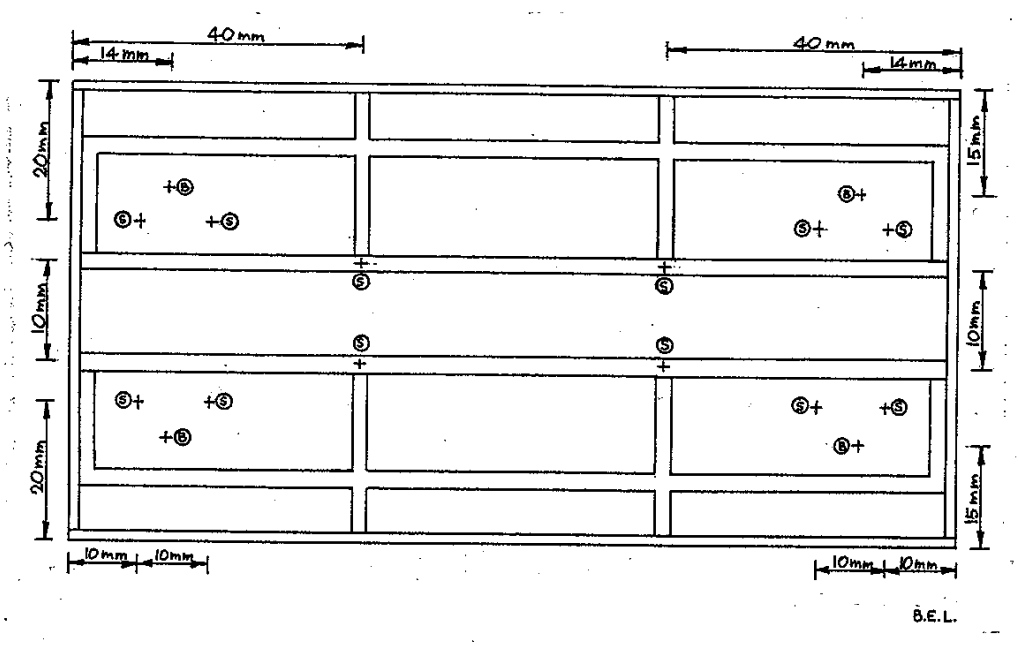
If you have any problems please feel free to contact O-Aust Kits direct.

It is recommended that the body castings be washed in warm water and liquid detergent, rinsed clean in warm water to remove mould release compound and air dried before commencing assembly.

Step 1 The corners of the sides and ends should be filed to a smooth surface to ensure a clean joint in the corners. Also file smooth the top surface, sides and ends of the floor casting. If necessary, after assembly of the body, fill and carefully sand the corners to produce a smooth joint.

Step 2 Before assembly of the sides, ends and floor, it is recommended that all the holes for shunters stirrup, brake gear, handrails, tie down rings, brake hoses etc be drilled.

Holes for later installation of the brake hangers (B) (0.8mm) and safety loops (S) (0.5mm) are located as shown on the following diagram:



For location of the hand rails, tie down rings, brake hoses etc, refer to the plan on Page 3.

If the wagon will be run without a load, scribe the door planks on the inside of the sides with a sharp knife.

Step 3 To make up the body, glue one side and one end together (the end inside the side), ensuring that the joint is square. This is easily done with the pieces upside down on the workbench. Repeat with the other side and end.

When the glue has set, make up into a complete body by gluing the remaining corners. Ensure the corners are square using the floor as a guide. Leave until completely set.

Step 4 Firstly, check that the dimensions of the floor casting match those of the assembled body (124mm x 60mm is the expectation but check the actual).

Make adjustments (+/-) to the floor casting where necessary, keeping in mind that any adjustments need to be made equally to each side/end.

Join the wagon body to the floor by inserting the floor casting into the sides/ends unit with the mounting block for the brake cylinder nearest to the shunters stirrup end (the holes for the shunters stirrups were drilled in step 1). Take care that the floor sits evenly within the sides/ends unit. When happy with the floor position (the bottom of the centre sills should be in line with the point at the bottom of each side of the coupler pocket), apply glue and hold firmly in place until the glue sets.

Step 5 Cut two lengths of .020" x.125" plastic strip to fit tightly between the buffer beams. Glue to the solebars flush with the inside face so that it projects over the outside face. This represents the steel channel used for the solebars.

Step 6 Insert he bearings into the axleboxes. It will be necessary to deepen the holes to accept the bearings using a 1/8” drill bit. A pin vice is recommended to hold the drill bit.

Step 7 On one side only glue two axleboxes to the inside of the solebar. The two axleboxes should be placed 70mm apart (centre to centre) representing the prototypical 10’ wheelbase and be equidistant from each end (the floor casting has locating lugs which will assist but check the accuracy, don't rely on the lugs). Ensure that they are vertical prior to fixing in place with superglue (a superglue gel would allow some working time for this step). Allow the glue to set completely.

Step 8 Place one wheelset in a fixed axlebox. Fit the other end into a loose axlebox and dry fit to ensure they are vertical and the wheels spin freely. If the wheels bind it will be necessary to shorten the axles by filing small and equal amounts from each end of the axle until the wheelset spins freely without any sideplay.

Ensure that the loose axlebox is exactly square with the fixed one. Glue in position with the wheelset in place. Repeat the process for the other wheelset.

Note: Before final gluing, stand on glass sheet to ensure all wheels are level. Pack down any axleguard until all wheels are level.

Step 9 The grade control valves are glued in place as indicated in the drawings on pages 3 & 8. The centre of the valve should be 51.5 mm from the outside of the shunters stirrup end (the holes for the shunters stirrups were drilled in step 1). They are joined by a length of 0.8mm brass wire.

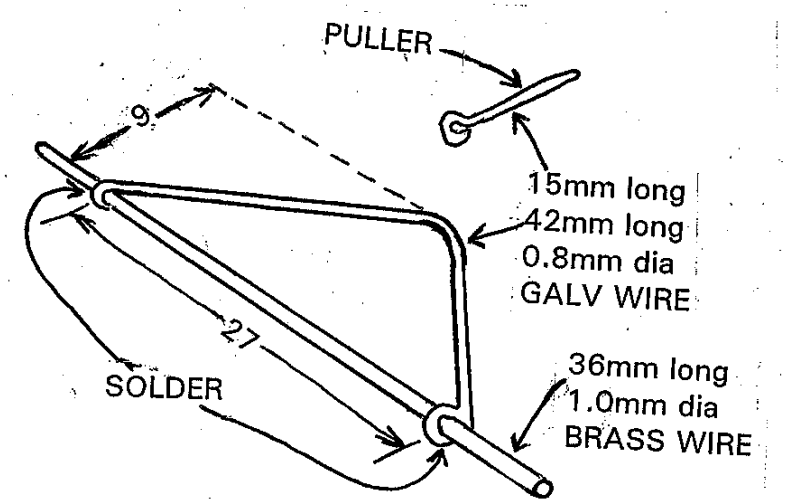
Step 10 Fit the brake rigging vertical supports to the two cross members on the brake cylinder side (where the mounting block is on the casting). Locating lugs are provided to assist in positioning these items. The support with four holes is

positioned at the shunters stirrup end and the three holed one on the other end. Make sure that the holes are clear (0.8mm) before fitting.

Refer to the plan on page 7.

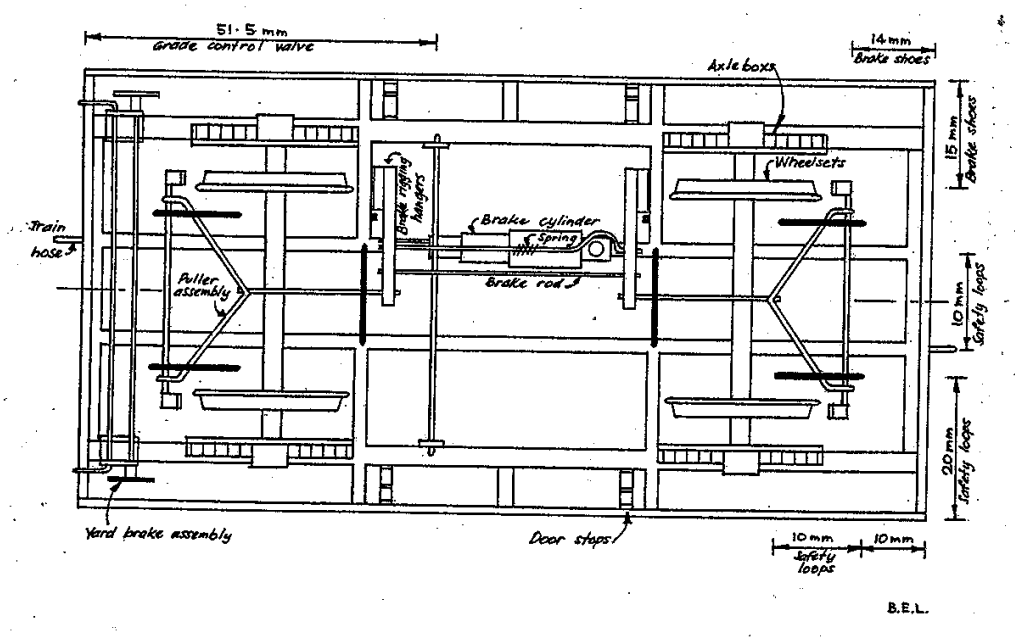
Step 11 Fit the brake cylinder to the chassis beam with the cylinder over the mounting block and pointing towards the shunters stirrup end. Link the brake cylinder to the fourth hole of the brake rigging vertical support with a piece of 0.8mm brass wire.

Step 12 A pair of subassemblies should be made next, as per the following diagram

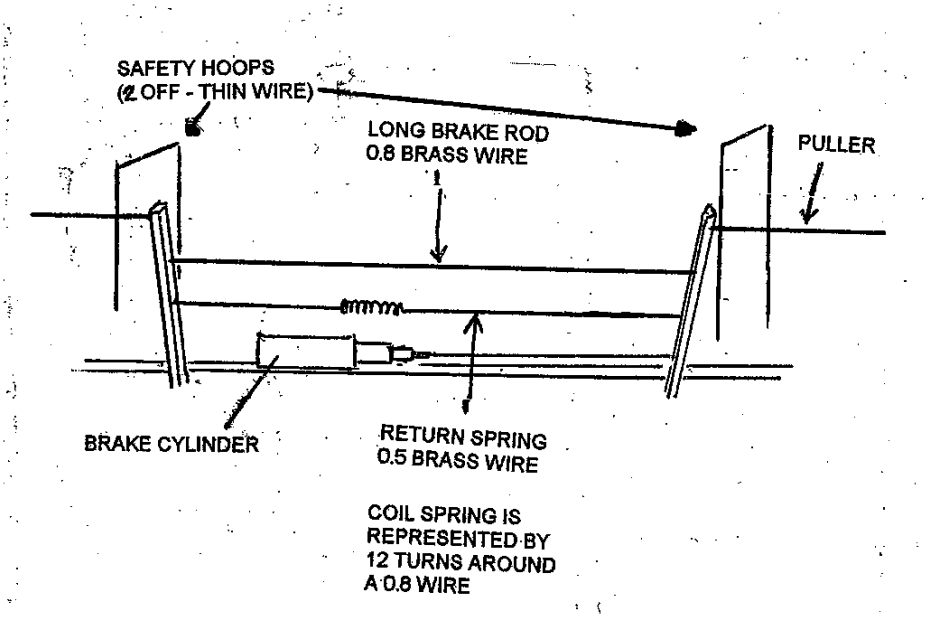


These are simple to make if a jig is constructed on a piece of scrap timber using the dimensions shown, and small nails as a guide to the bending and joining points. The “V” shaped piece can be made overlong and trimmed after completion. Solder in the marked places (a simple butt join will also suffice if the “wraparound” shown proves difficult to make).

Step 13 The next step is to fit the brake shoes. Use 0.8mm wire for the brake hangers. Adjust the length of each of the brake shoe hangers to the correct position relative to the wheels allowing some for the hole. 0.8mm holes were pre-drilled in the floor at Step 3. Slide the brake shoes onto the ends of the straight shafts of the subassemblies made in Step 12, but do not glue yet. Sit the brake hangers in the holes in the wagon floor outside the wheelsets and in line with the wheel treads and thread the puller (see diagram - Step 12) through the end hole of the adjacent brake rigging hanger. Adjust until satisfied with the register of each brake shoe with its attendant wheel as close as practical without touching when the wheels are spun. Glue all points of contact, i.e. the two brake shoes to the brake shoe hangers, the hangers in the floor and the puller in the "V' shaped assembly, trimming the puller when all has set.. Repeat the process with the other end. The following diagram shows the general arrangement:



Step 14 See the diagram (not to scale) for the addition of the long brake rod (0.8mm wire), return spring and two centre safety loops (0.5mm wire). The coil spring can be made separately using soft thin wire and threaded onto the return spring and tacked in place with superglue, or alternatively use a spare Kadee coupler spring. The centre safety loops are located either side of the brake rigging hangers and over the two puller rods. Holes (0.5mm) were pre-drilled at Step 3 These all should now be positioned.



The four safety loops for the brake puller assemblies outside each wheel should also be fitted. These take the form of an inverted "U" with right angled corners and are fitted into 0.5mm holes drilled in the floor at Step 3.

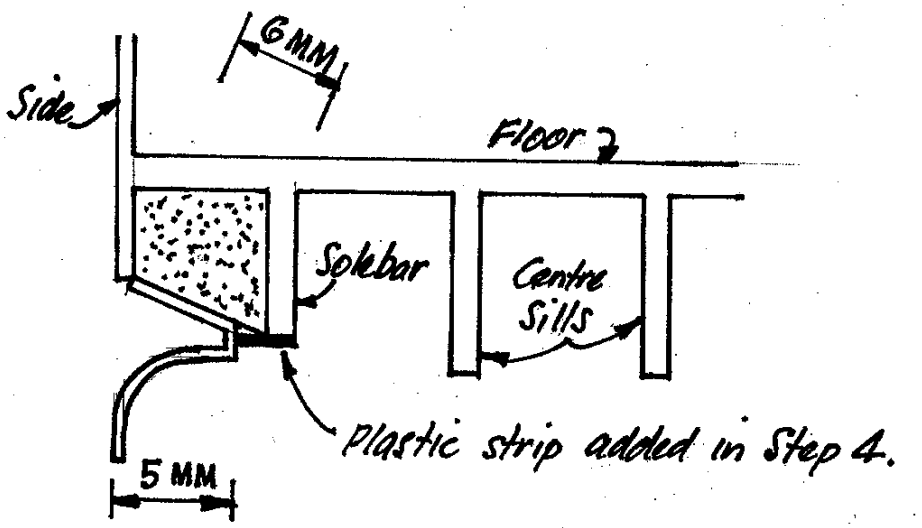
Step 15 The shunters stirrups are formed from 0.8mm brass wire and glued in the holes pre-drilled in Step 2

Step 16 Handrails are formed from 0.5mm brass wire and fitted as per the diagram on page 3 in pre-drilled 0.5mm holes to the same end as the shunters stirrups were fitted. Slip a strip of card approximately 1.5 mm thick under each to ensure uniformity and superglue from the inside.

Step 17 The yard brake brackets are now fitted on the inside of the solebar. The ratchet handle is on the outside of the wagon and pointing to the end of the wagon (refer page 3 diagram). Use 0.5 mm wire for this handle and shaft, bending the wire to form the handle. A length of 0.8mm brass wire forms the yard brake shaft between the two spider wheels.

Step 18 The coupler release bars are now fitted as per the page 3 diagram using 0.5 mm brass wire. The brackets are formed from thin wire which is attached to the two pads provided at each end. You will also need to drill a hole in the vertical bracket for the bar to pass through.

Step 19 Make four door stops from 0.25mm x 2.0mm brass strip 15mm long as per the drawing below and glue with superglue, two to each side. to triangular shaped blocks in the underframe.



Step 20 Couplers of your choice should now be fitted as per the suppliers instructions (couplers are not supplied with this kit).

Step 21 The 18 tie down rings (7 each side and 2 each end) can now be fitted in predrilled 0.6mm holes (Step 3) at the points indicated in the diagram on page 3 (sides and ends). If you intend to fit the wagon with a tarpaulin, the rings should be fitted facing up as they would be pulled by ropes which can be fitted and tied as per the prototype. If the wagon is carrying an untarped load or is empty, the rings should be fitted hanging down.

Step 22 (OPTIONAL) Glue 0.020 V-Groove styrene sheet - 0.125 spacing (not supplied with kit) to the top of the floor casting to create a wooden floor appearance. Ensure that the sheet is trimmed to the exact size of the floor casting. It would not be necessary to include this step if you are planning to have a permanent load in this wagon when finished.

To add extra detail prior to fitting the sheet, use a very sharp scriber or pin to make four rows of indentations in line with the solebars and centre sills underneath, to represent the bolts holding each board in place.

Step 23 Drill suitable holes in the buffer beams between the coupler and angle iron then glue the train pipe hoses in place.

Step 24 The wagon is now ready for painting. Any medium to dark grey gloss paint that is plastic compatible is suitable.

Step 25 Transfers - Ensure the paint is thoroughly dry and dust free (NOTE: Transfers adhere better to a gloss surface).

Trim margins around letters and numbers as close as possible, place in warm water until transfer is almost ready to release from backing paper, then place on paper towel to absorb excess water. Wet area with decal setting solution, place transfer on model and slide transfer off backing paper into position. Apply decal setting solution over transfer, mop up excess solution with edge of kitchen paper and allow 24 hours drying time. To protect transfers and paintwork, spray a thin coat of clear flat (eg Testors dullcote) over the entire model. Allow 24 hours drying time.

Weathering to your requirements is recommended.

Note: Extra detail may be added as follows:

1) Fit lengths of very fine chain to the door locking pins as shown in the drawing on Page 3
2) Drill the four buffer mounting holes for each buffer in the buffer beams as shown in the drawing on Page 3.