



1023 - Victorian Railways/South Australian Railways AE 71ft 2nd class passenger car.

Requires either 4 or 6 wheel bogies to complete.

Thank you for purchasing this kit and I hope you get many hours of enjoyment from it. Chris Pearce (Spirit Design)



24 AE at Spencer Street Station Courtesy Mel Skinner

Basic history notes: When first built between 1906-1910 the cars were lavishly appointed with decorative bevel edge mirrors above the windows, polished woodwork and many gleaming brass fittings. However, in-service, these were troublesome to maintain and were quickly painted over. 1922-23 saw a further 4 built for joint-stock. The AE's were mainly used on chief corridor runs being the Sydney and Adelaide Expresses plus other important trains when warranted. For over 75 years, they have formed the backbone of the Victorian Railways First Class passenger service. The 'E-cars' eventually numbered 1-42. Car numbers 1, 3, 12 and 36 were air-conditioned in 1935/36, which altered their appearance greatly. Furthermore, car numbers 21, 26 and 34 were rebuilt into buffet cars Kiewa, Moyne and Taggerty respectively. AE's first ran on 6 wheel bogies but later some received 4 wheel units surplus when the SOP went to standard gauge. The kit is based on units running from the 1960s-until withdrawn and as such bogie choice will be the kit builder's discretion (see photos below or available on the web). Many have been retained in running order by preservations societies. Numberings: 1-4 VR, 5-10 V&SAR, 11-28 VR, 39-42 V&SAR.

The kit can be put together in under 3 hours (when pre-painted) over a week. Only minimal tools and basic/intermediate skills are all that is required to build a very accurate model of a VR AE passenger car. It is suggested that you read through the instructions first to become familiar with the components and the essence of construction. There are a few steps that require close attention and they are highlighted in ***bold and italics!*** Parts referred to in the text are marked **(P1), (P2)** etc.

Equipment & Materials:

Exacto knife (blade no 16 or similar), 800-grit aluminium oxide sandpaper, small flat needle file. Fast-drying wood glue like MDF PVA (which is sandable and goes off in under 5 minutes), Sellys 'Kwik Grip' water-based and super glue are the three required for completion (all recommended: usual disclaimers). Also available which aids in dropping precise amounts of glue into fine lines or droplets is the 'Ultra-Fine Glue Applicator' available separately from Spirit Design



General assembly instructions: The kit sides and end walls should be painted before assembly with only minor touch-ups needed after assembly (see painting general notes below). The reasoning behind this is that it's easy to paint the window frames whilst the components are still lying flat or in the lasered sheet. Decaling should commence once the carriage sides are dry. If you want to spray your entire undercarriage in one hit then decal after painting the underframe so that your masking won't peel the decals off. The roof, underframe and other components can be painted at any time. Any piece cut from the laser sheet should have the holding tag sanded slightly as there is always a slight bump when a knife cuts it free from the surrounding area.

Painting general:

The main laser etch should be **lightly coated** (2 passing light coats not 1 heavy one) with a pale grey primer, Tamiya Surface Primer is ideal for this step. This will enhance the top colours. Failure to do so will result in off looking colours.

Windows: please use the 'QuickMask' provided to get excellent results with this easy to use the product.

Steam Era passenger car red or similar: sides, end walls and doors

Humbrol 40 with a few drops of dark brown: window surrounds

Humbrol Matt 29, or pale grey for the 1960s: roof including clerestory parts, water hatches, vents and covers

Matt Black or Grimy Black: Vestibule end closures, underframe, generator, air reservoir, truss rods and generator stitch panel

Masking the window surrounds for painting: On a red-painted side, take the 'Quick Mask' sheet and peel the 'Smokey Grey' adhesive material off the backing paper whilst making sure the window inserts remain behind on the backing paper.

Hold the far left and right ends of the masking between your thumbs and fingers, and place it over the carriage side whilst looking through the window cutouts for alignment. The top row of window cutouts should be positioned so that edges match the window frames. You should now have a window frame exposed on two sides and a bottom for each window opening. Repeat for the other side. Once in position, apply pressure on the film over the window area with your finger. Do not rub, as it may distort the fine lines between the window pairs.

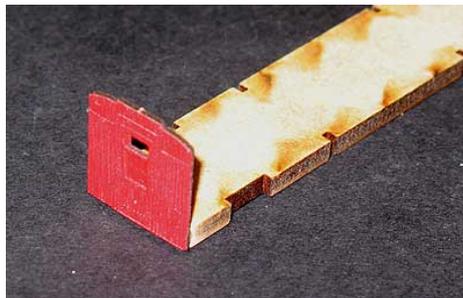
No paint should end up across the top of the window frame – see prototype photo above for reference.

Applying the paint window frame paint should be done with various light passes. Two passes facing the left, two towards the right and two facing down should be adequate. Once the paint has been applied, wait about 90 seconds at least and then gently peel the masking off at an angle and discard.

Assembly Instructions

Carriage body using painted parts from above:

1. Sand the MDF floor (**P1**) edges ever so slightly to remove the minor laser staining and to make the edges vertical. Turn the floor over so the marking 'U' shaped ones are facing the desk surface you are about to assemble on. These are the guides for the underframe
2. Glue a carriage end wall (**P2**) to the MDF floor (**P1**) keeping it square and vertical See Photo below

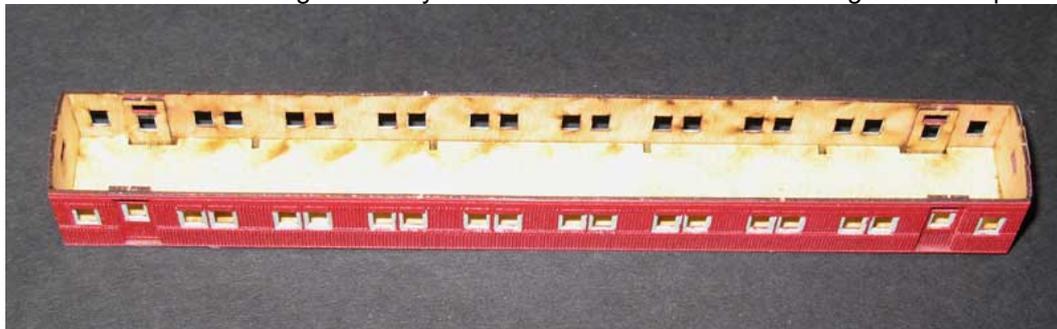


3. Glue doors (**P3**) in behind each opening of a carriage side (**P4**) & (**P6**). Make sure each door sits symmetrically around its opening. Its best viewed from the front of the carriage side to aid positioning. An

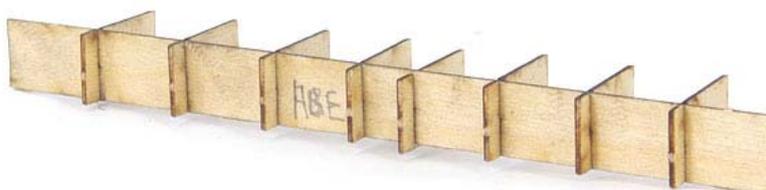
ABE carriage is shown below for clarity but it's the same for the BE. See Photo below



4. Glue a carriage side (**P4**) to the end wall edge (**P2**) and up against the MDF floor (**P1**), making sure the sidewall covers the end wall edge and stays in contact with the floor. Use weights or clamps if needed



5. Glue the other end wall (**P5**) to the above assembly making sure everything is straight and vertical
6. Repeat procedure for the other carriage sidewall (**P6**) as above. See photo above of completed body
7. When dry lightly sand the entire carriage base to make sure it is flat and square all round
8. Cut/snap off 2 windows 7mm high x106mm long from the clear celluloid. Use Selly's Kwik grip to glue these in behind the carriage sides. Make sure that the glue does not creep into the area shown in the window proper. There should be a dab of glue between each set of window compartments
9. Cut/snap off and glue 4 door glasses 6mm highx12mm long and glue in behind each door (**P3**)
10. Cut/snap off and glue 4 windows into the remaining single window openings at each carriage side end. These should be painted grey on the inside, as they are the toilet windows
11. Cut/snap off and glue 2 windows for the end door of the carriage ends (**P2**) & (**P5**)
12. Glue the partition units (**P14**) to the partition corridor (**P23**) using the slots provided. See the picture below
13. The partitions should line up in the middle of each set of windows. Glue once inside the carriage centrally when satisfied with the fit. ABE partitions are shown in the photo below for illustration purposes. The BE is basically the same



14. Add a minimum of 10 grams of weight to the floor using lead, nuts or discarded wagon weights. It is best to have the weight as close to the bogie pivot points for better running qualities

Carriage Roof:

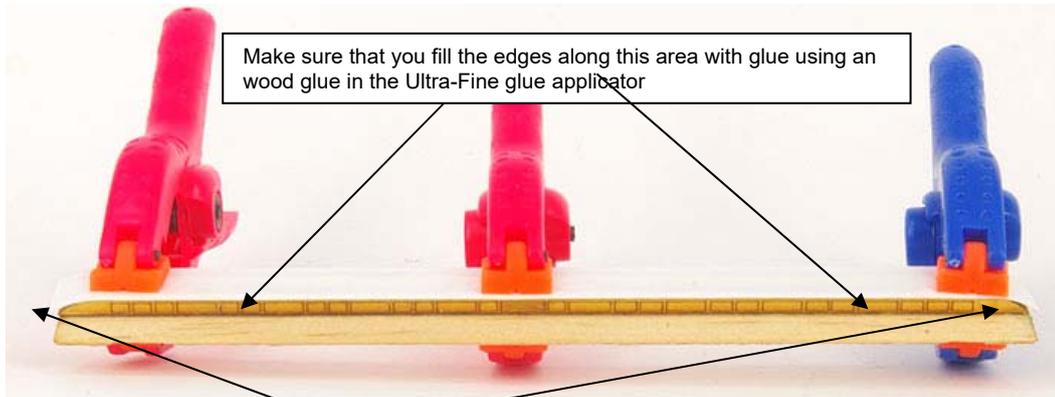
15. The main roof (**P10**) is milled from 'Clear Pine' and the edges are prone to damage before gluing into the semi-completed passenger carriage. Where the doors of the carriage butt up against the underside of the roof you may need to remove a small section of timber so that the roof sits snugly down in the carriage
16. Glue the clerestory side (**P9**) with its base unit (**P11**) making sure that the (**P11**) is glued centrally towards the top (rounded corners) of the (**P9**) or 4mm in from the edge. Repeat for the other side (**P9**). See photo below



17. Glue the entire complete clerestory section centrally along the main roof (**P10**) making sure that there is an even spacing around the sides. See photo below



18. The scored lines of the styrene roof (P12) face you when it is glued to the clerestory unit
19. Using a small jeweller's screwdriver as a forming tool, gently round over the 1st 8mm or so of the styrene clerestory roof section top (P12) to roughly match the completed shape of the unit above. This will aid in the styrene following the contour of the clerestory roofline when gluing. This can be easily achieved by pulling the screwdriver along the end as if you were curling ribbon for a present. Using Selley's Kwik Grip water-based glue smear the entire length of (P9, P11 assembled units). Make sure there is an even overhang on both sides and ends of the clerestory unit styrene in relation to the clerestory. Use clamps as per photos to help. Note the end curves of the styrene have not been glued as yet in the photo below



20. Using a toothpick, smear Super Glue Gel along the rounded ends of the clerestory section and using your fingers hold the rounded end down until bonded. Repeat for the other end and then put a large rubber band around the styrene section lengthways to hold the styrene to the curved ends
21. Glue the supplied card strip (P7) centrally to (P12) along with where the scribed line is etched. A spare is provided
22. Using the RHS side of the toilet window frame as a guide, drill a hole 0.5mm and space it 5mm in from the edge of the roof near the end wall (P2) and centrally between the outer roof edge and the clerestory side wall (P9). Repeat for the other torpedo vents. See the photo below for visual aid

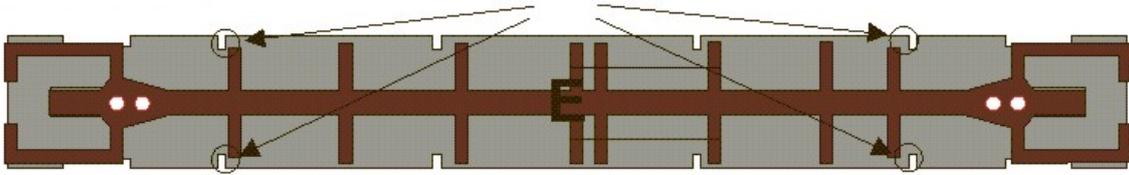


23. Cut the support leg and then glue the round water hatches (P15) and the small square roof hatches (P16) onto the outlines of the styrene roof (P12). Normal styrene glue will also do the job as it melts and bonds the timber to the styrene
24. Trial fit the roof into the carriage, make any adjustments deemed necessary for a nice fit
25. Paint the entire assembled roof, Humbrol Matt, no 29 before gluing into the completed carriage
26. When happy glue the complete roof into position and hold with rubber bands if necessary

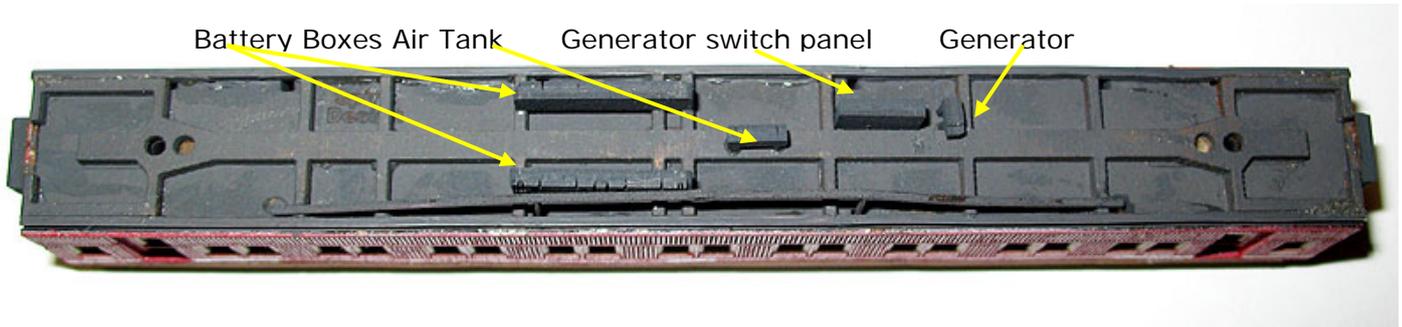
Carriage underframe and details:

27. Glue the underframe (P8) to the MDF floor. The two 'U' shaped markings are a guide to centralising it. **Note the underframe is slightly longer than the MDF floor, is fractionally shorter than the overall length of the carriage sides, and ends as a glued unit. Toothpicks can be used to align the holes in the underframe and floor. Also, trim the underframe as per the diagram below if using 6 wheel bogies. You do not need to do this if using 4 wheel bogies**

Note: The areas marked by the circle have had about 1mm shaved off to allow the 6-wheel MT 1018 bogies to clear the truss rods. Please make sure the that truss end at these points sits as low as possible into the MDF Floor.



28. Glue a 135mm 'U' channel (**P13**) up against the edge of the plywood underframe. The 'U' faces you when looking at the carriage from side-on. See the photo below.
29. Glue the battery boxes (**P17**) to the underframe where there two scored lines are provided. The rounded corners face away from the underframe. The details on the units should face towards you when the carriage is viewed from side on
30. Glue Generator switch panel (**P18**), Air reservoir (**P19**), and Generator (**P20**) See photo below
31. Glue the end wall door vestibules (**P22**) onto the carriage end walls where its outline is
32. Trial fit the truss rods (**P21**) into the MDF base. They should be pushed down until the sloped section just touches the underframe. When satisfied with the fit place a small dab of glue around each leg and where the sloped section touches the underframe. Note take care when doing this as they are fragile.



Above is a view of underframe details. Note one truss rod was removed for photographic purposes.

View of underframe details. The new underframe has 2 bogie holes at each end for 4 and 6 wheel bogies.



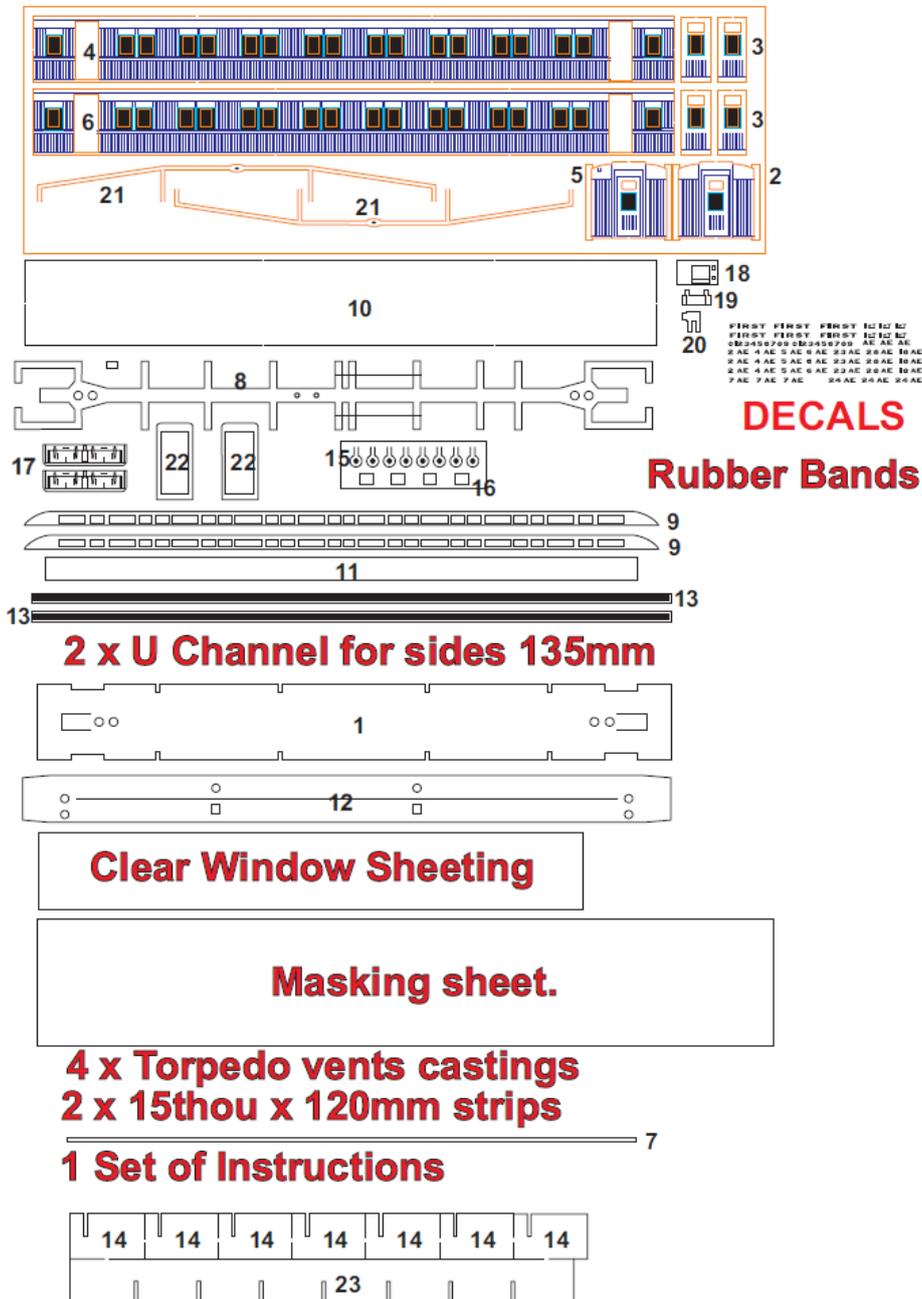
Completed roof before painting. Red indicates battery box location in the underframe in relation to roof orientation.



Completed N Scale Victorian Railways AE passenger car



30 AE at Spencer Street Station Courtesy Mel Skinner



Decals: Using the prototype photos above and the photo of the finished model, position the decals accordingly. In addition, you can make use of the spare BE sets from the numbers provided.

Weathering: Use pastels or paint to weather the carriage as per photos or to your liking. Do not forget the roof as smoke and diesel fumes stained it.

Bogies: Most builders have been using American Pullman cars (Lima etc.) and their 6-wheel bogie is a good match for the Victorian 'E-Car bogie. Micro trains also have the same bogie available no. 1018 'Commonwealth 6-wheel passenger car' available from Spirit Design. Note there are 2 bogie holes in the plywood underframe for both 4 and 6 wheel bogies. You will have to remove a section of the 1018 bogie to fit the Micro-Trains 1015 couplers that are body mounted to the floor.

Couplers: The best couplers to fit are Micro-Trains 1015s. Packing pieces can be made from scrap timber leftover from the kit if they are needed.

For more information and photos see www.spiritdesign.com.au, Rob O'Regan's website <http://www.robx1.net/> or Mark Bau's <http://www.victorianrailways.net/> or Peter Vincent's <http://www.pjv101.net/index.htm>.

Any alterations, suggestions or queries please contact me.

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