



Prototype Information.

These tenders were ordered in 1947, being placed into service from 1952 onwards, as a result of wear and tear on the existing standard goods tenders, and it being considered more economical to build new, rather than repair. There were 201 ordered, and they were attached to all the standard goods classes, and also, later, some were used behind 35 class locomotives.

As many of the tenders were still in reasonably good condition when steam was withdrawn, some were recycled as water gins, and others converted to flat wagons for carrying rail in continuous welded lengths. In the former case, some were modified with welded water tanks occupying the coal space, giving a capacity of 7000 gallons, whereas others did not receive the additional tank. **Andian Models** is in the process of developing a “mod kit” to convert two of the kits to a pair of a water gins.

The rail wagons were created by removing the bodies, and welding two underframes together, and adding suitable bolsters and tie-downs to secure the load. They were later coded NDRF.

The Model

The kit is based on the Greg Edwards drawing, and also on measurements and detail information taken from the tender behind 5353 in the collection of the Dorrigo Steam Railway and Museum, to whom thanks a) for preserving it, and b) for making it available to us. We have made the kit as accurate as possible, but there are a number of necessary compromises. Firstly, the coupler and box are modified to use a standard Kadee coupler for compatibility with the majority of HO models, and the position of the tender floor is designed to be adjustable. This was done because the cab floor of the Footplate / DJH whitmetal kit appears to be too high, so it is possible to mount the tender floor in the high position so that the fall plate looks correct. If, however, you are going to couple it to a brass model, you will probably want to fix the floor in the lower position, as most of the brass models that we have checked appear to have the cab floor at a more correct level.

You also need to be aware of the electrical characteristics. As an all metal tender, it is electrically conductive, including the drawbar and coupler. The tender is designed to be electrically isolated from the rails (all wheels are insulated) but depending of the characteristics of its intended locomotive and whatever it will be coupled to (eg, double heading) you may need to insulate the tender from the locomotive, by substituting a non-conductive drawbar (eg, plastic) and insulating the fall plate by attaching a styrene shim.

The tender is also expected to be widely used with sound. It is possible to fit a large Tsunami decoder and a 23mm hi-bass speaker and box, but this leaves no room for the internal slope plates, so these are not included. If you wish to model the tender with a part load of coal, it will be necessary to fabricate the slope plates from styrene, or similar sheet material.

Important General Information

This is not a “shake the box” kit – it is intended for modellers with some experience of assembling etched brass kits. It is not hard to assemble, but is fiddly, and some parts are fragile

during assembly. Read these instructions several times, identifying the parts on the fret and understanding the order of construction before removing any parts from the fret.

In general, all folds on the brass are made with the half-etched fold line on the inside of fold, and most are made at 90°. The instructions will indicate which specific folds are other than this angle, and will also recommend where to run a bead of solder inside the fold for strength.

As far as possible, the tabs to hold each item to the fret are made where the item is full thickness, which makes cleaning up the tab relatively easy, but some have of necessity been used in half-etched areas. In this case, you will need to be careful when removing the part, and also when cleaning up the tab, as the metal is somewhat easily distorted.

The following procedure has been tested, but there is no reason why you should not do things in a different order, but ensure that you understand that some joints have to be made before others (such as the nuts soldered to the insides of the bogie bolsters), so you need to have a good idea of the expected outcome before proceeding.

Some parts are very fragile during assembly (eg. the ladder) but will become much more durable once installed.

Tools and Techniques

This kit is intended for those with some experience of soldering, and a successful outcome will depend on neat soldering. It is possible to assemble the kit using hard (normal electrical) solder, but as there are some laminations to be done, so solder paste may be your preference. In either case, ensure that the parts are retained in close contact, and that, in particular, the edges of the laminations are not spread.

As far as possible, holes have been provided on the “blind” side of the laminations which will allow hidden soldering, but do not apply too much pressure as the outer, cosmetic, layer is usually very thin and easily marked.

In order to contain costs as far as possible, simple double-sided etching has been used. This means that on occasions, rivets are represented by a dimple rather than by a raised rivet. The major examples of this are in the brackets that attach the tank to the underframe, and the brackets for the brake cylinders. If you are really fussy, you can drill these out and insert short lengths of wire to simulate a raised rivet, or use a rivet press to create a rivet at the indicated locations. In most cases, this will not be necessary, as the difference will be all but invisible at normal viewing distances. If you do decide to go down either of these paths, a number of spare dimples are etched into the fret offcuts for you to practice on.

No special tools are required – any modeller who has built a number of brass kits will have acquired an array of favourite tools and techniques. Only one jig is required, for building the ladder, and this is provided on the etch.

Assembly Procedure

1. Start the assembly with the underframe. Remove the main frame etch [1] from the fret. If you are going to address the indented rivets, there are 9 on this section, 3 on each of the airbrake brackets, do so now. Fold the two small “wings” either side of the mounting hole, and solder a brass M2 nut in the location of the drawbar pin. The nut

goes on the same side as the half-etched fold lines, and can be held in place by using one of the steel bolts. Make a good job of soldering the nuts to the frame, as they will not be accessible in the future. Remove the bolt, and replace it, including one of the “top hat” bushes, which will provide the pivot for the drawbar, and remove the surplus bolt. Leave the bolt (and bush) in place, to prevent the nut from falling off during subsequent soldering.

2. Fold the rest of the drawbar mount, drag beam and the buffer beam in the normal way with the fold lines inwards, and solder the “wings” of the drawbar to the frame to retain everything in place
3. Fold the sides 90°, but not the brake cylinder brackets. Remove the inner frame sides [2] and [3] from the fret, and solder, from the back, to the sides on the frame such that the brackets project below the bottom of the frame. Make sure the steps are at the drawbar end of the underframe, and that the half-etch fold lines for the steps are facing out (i.e. In the same direction as the rivet detail on the side members) Use lot of clamps (clothes pegs, etc.) and a straight piece of timber, such as a paddle pop stick, to keep the sides straight. Solder through the holes in the main etch, and before removing the clamps and straight edge, fold the brake cylinder mountings and the “wings” on that side 90°. Solder the ends of the wings to the base, and the corners for strength, and to maintain alignment. Repeat for the other side. Fold the bottom steps, and run a fillet of solder through the fold to add strength.
4. Add the pipes that lead from the front of the tender to just before the airbrake brackets. Use 0.4mm wire, bent to the template provided, and fix below the tender side rails, bending the holding brackets around the wire, and using an offcut of the etch as a spacer – see photo.

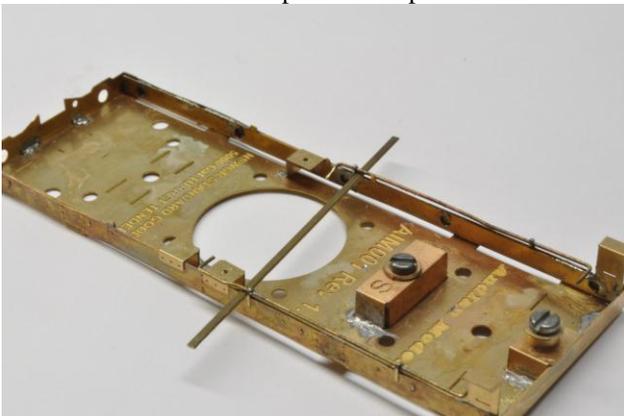


Photo 1

5. Remove the etched bogie bolsters [4] from the fret, fold the sides (long folds) and solder M2 brass nuts to the inside of the bogie bolsters, in the same way as the drawbar mounting. Note that one of the bolsters has an “S” etched into it. Trap the two etched washers [5] under the head of the bolt on the “S” (short) bolster, and solder these to the bolster. These washers will allow the bogie at that end to rock, to allow for undulations in the track. It is not important which end this bolster goes. Fold the ends and solder the completed bolster to the frame.
6. Remove the coupler pocket sides [6], base [7] and lid [8] from the fret. Solder an M2 nut to the base, using a plain bush, to act as the coupler pivot, and assemble the sides and base (the latter with the nut on the same side as the mounting tabs, and the half etched “dot” at the open

end. Solder the completed pocket to the underframe, and place the lid in a safe place for later.

7. Remove the main inner tank liner of the tender body [9] and the liner front [10] from the fret. Solder three M2 nuts to the holding tabs, again on the same side as the half-etch fold lines. Fold the two rear tabs slightly over 90°, and run a fillet of solder along the fold line. This will ensure that when the tank is installed on the underframe, and screwed in place, there is a little tension on the brackets to hold the tank firmly in contact with the underframe. Fold the two corners of the main liner at 90°, and tack solder the liner front to the open end to form a rectangle. Make sure the liner is not twisted – the top should be dead flat – and that the mounting tabs line up with the slots in the underframe. You will need to remove the bolts for this, but remember to replace them before doing any more soldering. When satisfied with the fit, finally solder the front corners and the front mounting bracket. Scrape or file off any surplus solder from the outside of this liner, as we will be laminating the detailed outer sides later, and any lumps or bumps will cause problems with getting everything flat.
8. Remove the tender back overlay [11] from the fret. Clamp it to the back of the liner. Once it is located exactly square, even both sides, and level at the bottom, ensure the holes for the marker lights and ladder line up. Solder using solder paste, or, if using hard solder, solder from the inside by soldering through the round holes in the inner liner. Avoid getting solder into the holes for details, such as the marker lights and ladder mountings.



Photo 2

9. Remove the front body overlay [12] from the fret. There are six rivets that are indented, three either side of the coal door opening, that you may wish to correct. Fold the “flap” at the bottom at 90° and solder on the liner using the same process as with the back overlay.
10. Remove the tender body sides [13] from the fret. There are several indented rivets in the bracket plates on the bottom of the sides. Correct these if desired, as previously described. Mark the position of the two rivets on the opposite (inside) of the forward extension, and solder the water valve brackets [14] inside the tender sides where these rivets would protrude through the bracket. Bend handrails from 0.25mm wire, and solder to the same side as the bracket, using the diagram for positioning. Solder the completed sides to the liner ensuring that nice square corners are achieved. It is important that the bottoms of the sides and the overlays line up, which will leave a small “step” at the top for locating the upper etching.
11. Remove the top body plate [15] from the fret. This should fit inside the outer side panel overlays and sit on top of the inner liner. Hold in place by wrapping several strips of

masking tape over the top of the body. Solder from the inside.

- Remove the turret coal bunker sides [16] from the fret. These are rather fragile, so consider reinforcing them with a strip of brass, 43mm long. Cut from the 1mm wide etch surround. Solder this inside the sides, about 1mm down from the top edge, and starting 7mm from the front. Test fit the turret sides to the top, and if excessively loose in the slots, also run two strips vertically down and across the middle of the two front locating tabs. Doing this will hold the sides to the the outside of the slots so as they are not visible when complete.



Photo 3

Firstly solder the inside back corner of one side. Then solder from the inside where the small tabs protrude through. Do not solder where the sides meet the filler hatch area, maintaining a clean sharp edge. At the front corner, ensure excess solder will not prevent the casting, to be installed later, from sitting flush

- Remove the turret rear [17] from the fret, and solder in place between the turret sides, again soldering from inside. A small fillet of solder inside the coal space between the turret sides and rear will strengthen the assembly.
- Remove the front footplate [18] from the fret. To mount in the lower position, remove the end extensions of the four legs, below the narrow section, but leave the narrow part to form a T shape in the legs. Fold these legs a bit over 90°. Insert the two tabs all the way into the front plate without bending them, and soldering from the inside, and the ends of the legs into the holes in the lower extension piece, soldering from below. To mount the footplate in the upper position, bend the two main tabs into a “Z” shape, and reinforce the narrow leg sections with solder, and install the same way. Doing this will result in the footplate being 2mm higher.

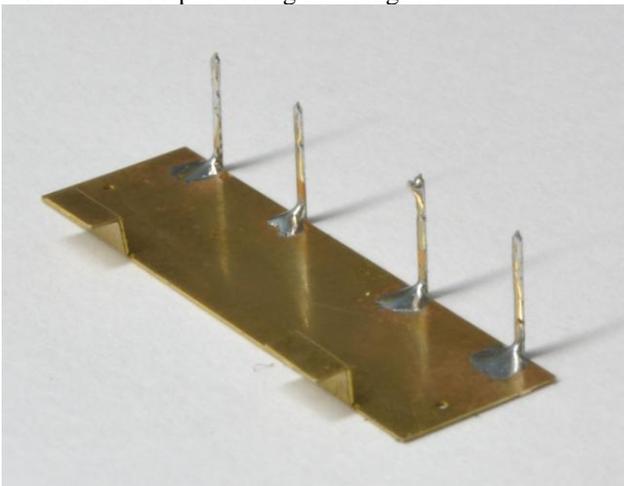


Photo 4

- Form two “L” shapes, 13.5mm x 2mm from 0.25mm wire and insert the long end through the brackets [14] and the corresponding holes in the footplate to form the injector water valves.
- Fold and install the shovelling plate [19]. Note that the fold to form the front lip is made with the half-etch line to the outside of the fold.

- Bend two “U” shaped handrails 3mm x 1.7mm x 3mm from 0.25mm wire. Solder the two toolbox doors [20] to the tender front, using the handrails to locate the doors.
- Bend the “U” shaped step 3mm x 3.5mm x 3mm and solder to the lower right of the tender front.



Photo 5

- Fold and solder the small bracket [21] to the tender front, inserting it from inside the coal space.
- Bend a slight “V” in the coal doors [22]. Remove the bar across the coal door aperture in the front plate, and install the coal door from the coal space.



Photo 6

- Remove and fold all the steps [23]. Insert the step through the slot and solder from the back while held with small clamp.
- Remove from the fret the two ladder stiles [24] and the ladder forming jig [25]. Fold the two sides of the jig at 90°. Fix the jig to a small block of timber for stability. Insert the two stiles into the slots in the jig ensuring the longer stile is on the correct side. The longer stile should end up on the inside of the tender when complete and in place.
- Cut 12 short lengths of 0.25mm brass wire for the rungs. Carefully insert these through the holes in the styles making them protrude past each side enough to solder. Solder the first rung, ensuring that everything is square. Move the ladder assembly either way in the jig to repeat the process for the additional rungs. Once the entire ladder has been soldered remove from the jig and snip off protruding wires and file flush with the sides of the styles. Temporarily fit the tender body to the underframe, and offer up the ladder to check the fit. Do not fix into place, as the ladder connects the body to the underframe. Remove the ladder and set aside in a safe place. Note that the ladder is quite flimsy until it is mounted, so take care with handling and storage.
- With the tender still attached to the underframe, bend the rear lamp brackets [26] at 90°, and run a fillet of solder into the fold line for strength. Fit to the top of the buffer beam, making sure not to solder the body to the underframe.
- Assemble the bogies - solder the pinpoint wheelbearings into the indents in the sides of the bolsters [27], with the pointed end of the bearing passing through the etch. Fold the ends of the bogie bolsters, and the “wings” of the

bolster centre strengthener [28] at 90°. Fix the strengthener inside the bolster, with the projections positioning the strengthener centrally in the bolster. Do not run a solder fillet into the bolster fold line at this stage.



Photo 7

26. Fit the wheelsets, and ensure that the bogie is square, Tweak as necessary, and when satisfied, run a fillet of solder inside the fold lines in the bolster to lock everything into place. Fit the side frame castings.
27. Clean out the holes in the handbrake gearbox and ratchet castings and Solder a short length of 0.4mm wire through the handbrake wheel [29], and the other end of this wire in the gearbox casting. Solder a 15mm length of 0.4mm wire to the gearbox, and thread the ratchet over this wire.

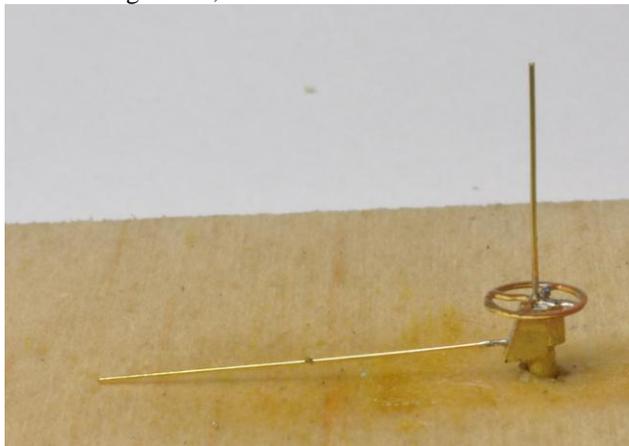


Photo 8

28. Separate the body and underframe, and fit the castings. The spigot on the handbrake gearbox fits the front plate of the tender, and the ratchet casting is fixed to the footplate.

29. Fix the equipment boxes inside the front corners of the coal space. You will probably need to clean up inside this corner from any projecting wires, spigots, etc, or remove some of the casting, to get a good fit. See photo for orientation.



Photo 9

30. Fit the toolbox and water filler to the rear deck. The spigot on the water filler goes in the hole in the deck, with the hinges towards the back of the tender. The position of the toolbox varied, but mainly seemed to be on the left hand side, hard up against the turret extensions, and sloping downwards towards the mid-line of the tender.
31. Drill out the holes in the junction boxes and marker lamps, and fix these to the back of the tender, using lengths of 0.25mm wire to act as the conduits. If you drill right through the junction boxes, and thread them onto wire, it will help position the junction boxes. Don't forget the conduit which runs the length of the tender, on the left hand side. Use short lengths of very fine wire – eg. the conductors from decoder wire – to form the brackets



Photo 10



Photo 11

32. Fix the brake cylinders to the underframe, followed by the triple valve. The latter goes on the left hand side behind the brake cylinder brackets, but ensure that there is sufficient bogie swing.
33. If required, remove the builders plates [30] from the fret and fix to the tender sides, using a photograph for position reference.
34. Flatten short lengths of 0.4mm wire with smooth-jawed pliers, and form the fireiron brackets on the left hand turret side – see Photo 6.
35. If you are going to fit electrical pickups, now is a good time. How you do this is up to you, as everybody has their preferred method. There is room to fit small pieces of printed circuit board to the tops of the bogies, allowing wipers to be fitted for all wheels. Holes are provided in the floor to allow wires through to the inside of the tender. An alternative might be to short out the wheels on one side, and make the whole tender “live” to that rail.
36. Fit a sound decoder and speaker if required. Holes between the footplate and the underframe allow wires to be fed forward to the locomotive.
37. You may wish to clean up and start painting at this stage, but remember the ladder has yet to be installed.
38. Assemble the tender. Install the coupler using the cylindrical bush and cover plate. You may need to clean

up the coupler to get a good fit. Install the drawbar [30] – a number of indents are supplied to enable you to choose a suitable pivot point at the locomotive end depending on what locomotive you use, and what spacing you want between it and the tender. Install the bogies, and attach the body to the underframe. Attach the ladder to the tender body – if you are careful, you can leave the bottom leg, that attaches to the buffer beam, either loose or very lightly attached to enable dismantling later on. Cut a piece of styrene or other suitable material to fit the turret and add a coal load.

39. Finalise the painting, weather suitably and place in service.

CONTENTS OF KIT

Main Etch

Wire:

- 0.25mm - 300mm (approx)
- 0.4mm - 100mm (approx)

Parts Bag:

- Brass castings - See Identification
- M2 x 6mm bolts - 7
- M2 brass nuts - 7
- Pinpoint bearings - 8
- Top-hat bush - 3
- Plain bush - 1
- Wheelsets - 4
- Coupler - 1