Brassmasters Scale Models

www.brassmasters.co.uk

Detailing Kit for Bachmann MR/LMS 3F 0-6-0 Locomotive and Tender

Instructions

PO Box 1137 Sutton Coldfield B76 1FU

1 Introduction

1.1 The Easichas frames for Bachmann 3F locomotive, based on the original concept devised by John Brighton, have been specifically designed to allow easy conversion to EM or P4 gauge, which results in a fully sprung locomotive and tender. Furthermore, the basic conversion can be completed without the need to solder any of the main components together.

1.2 There are various levels of conversion with the builder choosing which, of any, additional detail required beyond the basic conversion.

1.3 Basic level of conversion makes use of:

fold up mainframes keep plate and ashpan with sprung bearings
fold up replacement tender frame with sprung bearings.

1.4 Further components are provided to add to the detail of the conversion. These are, working from the front:

capuchon for earlier Johnson chimney
loco guard irons
front footsteps fitted to some locos
replacement coupling rods
dummy weight shaft and lifting levers
replacement reach rod
sander operating linkage
replacement brake hangers and blocks
beading for rear splashers fitted to some locos
beading for lower half of cab fitted to some locos
replacement reversing lever
replacement tender footplate and hand rails
replacement tender brake gear
replacement tender guard irons
replacement tender coal rails
replacement tender frames, drag and buffer beams

1.5 The replacement set of frames buffer beam etc. replaces the lower half of the Bachmann tender giving the proper distance between the frames rather than the over wide ones on the Bachmann model.

1.6 Unfortunately it is not possible to re-use the Bachmann pick-ups on this EasiChas. However a suggested method for making pick-ups has been given, which has worked very successfully on the test build, although there are many other methods which the builder may prefer to use.

1.7 Suitable wheels are available from Alan Gibson and Ultrascale. Although they both do standard replacement wheel packs neither are suitable for the 3F EasiChas. This is because the EasiChas uses 1/8" axles. When purchasing wheels ensure that you state it is for the EasiChas and you will be given the correct wheels and axles. The Ultrascale set includes a new gear wheel.

2 General Notes

2.1 There are three etches, one for the Easichas for the loco and tender, one for the detailing kit for loco and tender and one for the replacement tender framer. Numbers shown in square brackets [ ] in the instructions refer to the etch (L or T for the Easichas etch, D for the detail etch and F for the replacement tender frames) and part numbers, e.g., [L2] is part 2 on the Easichas etch. The part number appears on the separate etch diagrams. Certain parts, e.g. bolts, wire, springs, are not numbered.

2.2 Some of the parts are small and easily damaged, so do please take care. Parts should be removed from the sheets as and when needed by use of a small scalpel etc., and the tabs and etch cusp removed with a small fine-cut file.

2.3 All folds and bends are made with the half-etched line on the inside unless otherwise stated.

2.4 On some parts it is necessary to emboss rivet / bolt heads from the reverse sides by use of a punch.

2.5 There are half etched test rivet holes on the back of the etch edging strip. Use these to get used to forming uniform rivets.

3 Dismantling the locomotive and tender

3.1 Tools Required

A selection of cross head and normal miniature screwdrivers
Small pliers
Small plastic bags and labels to identify parts & screws when dismantling
Small files
Soldering iron (for electrical connections)
A steel rule
Back to Back wheel gauge
Plastic solvent, superglue and epoxy resin (24 hour & 5 minute)

3.2 First with pliers pull out the electrical plug under the tender and release the loco from the tender by minipulating the drawbar, plug and wires .

3.3 In all cases bag and label all small parts and source of screws **as soon as removed** (they are all different) - trust us on this one!

Locomotive

3.4 Unclip the brake pull rods from each brake block hanger so that the pull assembly hinges on the rear brake cylinder cross shaft. Carefully unclip this cross shaft by springing open the side frames with pliers. Unless you are very careful the end pips will break off. Place brake pull asembly aside for further use.

3.5 Unscrew the front and rear (below the cab floor hidden by wires) screws, pull the chassis vertically to remove the chassis from the body.

4 **Dismantling the tender**

4.1 Unscrew the two rear screws behind the buffers. The front is secured by two clips that extend vertically from the front tender bulkhead down through the tender floor/platform (chassis top). Some have suffered from stray glue so need pressure from below to free them. With the rear screws now removed lever up the rear of the tender and the front clips will release the body (the handrails 'flex' during this process).

4.2 Spring the tender side frames apart to release the brake pull rod assembly. Spring the tender side frames apart to release the wheels. Remove the rear tension lock coupling (put a screwdriver below it and twist) to reveal the screw holding the coupling pocket. Remove this and the guard irons. Remove the water scoop apparatus which is glued in place and unless you are using DCC all the 'gubbins' above the footplate.

4.3 Your loco and tender are now ready for conversion.

4.4 Wash your hands as you will have grease on them from stripping the chassis and the etches should be kept as clean as possible.

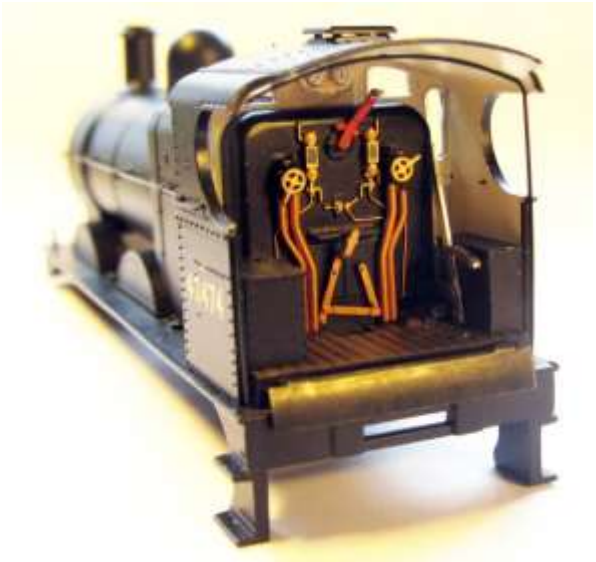
8 Detail Loco Components

8.1 Front footsteps (as fitted to some locos)

8.1.1 Bend the first bend from the top of the footstep backplate [D1] back on itself. Note bend line is on the outside. Bend the footstep back at 90 degrees at the second bend line. Ensure that the footstep fits up behind the footplate valance in the correct position.

8.1.2 Solder the upper footsteps [D2] and lower footsteps [D3] into the slots on the footstep backplate. Solder or glue the step backs [D4] and [D5] above the steps. Attach to the loco using cyanoacrylate glue or epoxy resin (see photo)

8.2 Dummy weightshaft and lifting levers



Important note: Weight shaft, reach rod and reversing lever.

Included in the additional loco components are dummy weightshaft and levers, replacement reach rod and replacement reversing lever. These can be assembled with the loco in forward gear on mid gear, by simply choosing the appropriate parts. However, due to the size and positioning of the boxes either side of the cab and the fact that the boiler backhead protrudes too far into the cab, fitting the reverser in forward gear fouls the controls on the backhead. This can be easily overcome by taking out the right hand side box and reducing its width by 2mm. Unfortunately, the moulded oil reservoir and pipes on the box need to be sanded off to fit either of the reversing levers as they are in the wrong position. Reducing the width of the box on the left hand side of the cab by 2mm gives a more balanced look and gives the correct distance between the boxes (see photo).

8.2.1 To fit the dummy weightshaft the footplate on the Bachmann body between the frames and between the leading and centre axle splashers needs to be removed. This is best done with a piercing saw after first splitting the body and footplate by undoing the screw under the smokebox and the cab floor, the cab handrails are glued into the cab front so carefully break the glue joint. (see photo)

8.2.2 Open up the holes in the weight shaft bracket components [D6, D11 –D15] to clear 0.7mm wire. Open up the holes in the lifting links [D8 and D9] to 0.5mm wire. Open up the holes in the weightshaft levers [D7] to clear 0.7mm at the large end and 0.5 mm at the small end.

8.2.2 Take the weight shaft bracket [D6] and bend up the ends to 90 degrees.

8.2.3 Cut 3 pieces of 3/64" tube 4mm long. Assemble the weight shaft by pushing a 16 mm piece of 0.7mm wire through one end of the weightshaft bracket [D6], through a piece of tube, through one of the weightshaft levers [D7], through another piece of tube, through the second weightshaft lever [D7], through the last piece of tube and through the other end of the weightshaft bracket. The two out pieces of tube may need to be shortened slightly to fit. Make sure there is an equal length of wire protruding from each end.

8.2.4 The weightshaft assembly can be built with the loco in forward or mid gear.

If building in forward gear cut a piece of 1mm tube 4 mm long and assemble it between the smaller end of the weight shaft levers using a piece of 0.5mm wire.

If building in mid gear the tube needs to be 3.5mm long. Assemble the tube with the lifting links [D8 and D9] either end between the weightshaft levers using a piece of 0.5mm wire.

8.2.5 Fit the two washers [D10] over each end of the 0.5mm wire.

8.2.6 With the weightshaft bracket sitting on a flat surface rotate the lifting arms so that they are on the opposite side to the cut out section in the base of the bracket.

If the weightshaft is assembled in forward gear the small end of the weightshaft levers should also be resting on the flat surface. Solder up the weightshaft assembly in this position. (see photo left)

If the weightshaft is assembled in mid gear the small end of the weightshaft levers should be held off the flat surface by the lifting links. Solder up the weightshaft assembly in this position. (see photo right)

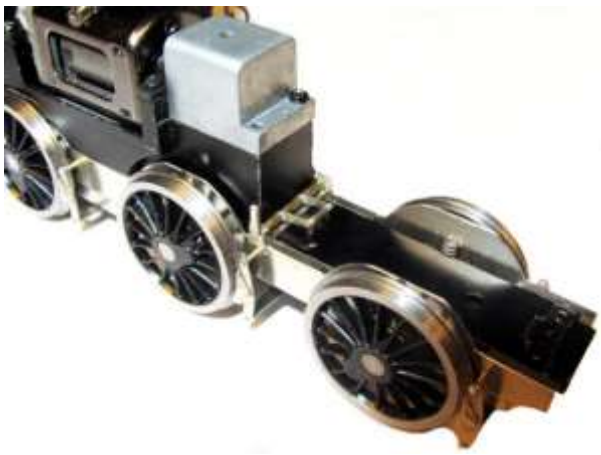
8.2.7 The rest of the weightshaft bracket may now be assembled. On the left hand end slide a weightshaft bearing middle [D11] over the end of the wire, followed by a weightshaft bearing outer [D12] and weightshaft bearing end [D13]. On the right hand end slide a weightshaft bearing middle [D11] over the end of the wire followed by weightshaft bearing outer [D12]

8.2.8 Solder the weightshaft bracket components together

8.2.9 Trim the 0.7mm flush with the end of the bearing at the non lever end but leave a short length of wire at the right hand for the lever. Trim the 0.5 mm wires to length.

8.2.10 Select the appropriate reach rod lever, [D14] for forward gear, [D15] for mid gear, place over the end of the weightshaft and with the Bachmann body in place, position the weightshaft assembly and lever in position (see photo)

8.2.11 Attach the reach rod lever to the inside of the plastic frame using cyanoacrylate glue or epoxy resin



8.2.12 Remove the weightshaft assembly, trim the wire at the lever end, then attach the weightshaft assembly to the top of the Bachmann chassis block using cyanoacrylate glue or epoxy resin ensuring it fits between the dummy frames on the Bachmann footplate when the body is replaced (see photo)

8.3 Dummy weightshaft and lifting levers – full weightshaft lever and weights

Unfortunately it is not possible to fit the complete weight shaft lever to the Bachmann model due to the chassis casting around the drive

gears. However for locos other than the Bachmann 3F components are included to build the full weightshaft lever and weights

8.3.1 Take the full weightshaft levers [D16] and solder two weights [D17] either side of each weightshaft lever, using short lengths of wire to aid alignment if necessary.

8.3.2 Follow 8.2..2 to 8.2.11 substituting [D16] for [D7]. Note – the weightshaft with weights [D16] are assembled in the weightshaft assembly with the bend downwards either side of the weightshaft

8.4 Replacement reach rod

8.4.1 With the body in position align the reach rod [D18] with the weightshaft reverser lever and trim to length. Attach the reach rod to the weightshaft reverser lever with solder or by using cyanoacrylate glue or epoxy resin, inserting a short length of 0.5mm wire in the hole and trimming to length afterwards (see photo)

8.5 Replacement reversing lever

8.5.1 Before starting, see note in section 8.2

8.5.2 Take the two halves of the reversing lever [D19 and D20] for the lever in forward gear, [D21 and D22] for the lever in mid gear, and solder them back to back.

8.5.3 Open out the hole where the reach rod is attached to the lever and insert a short piece of 0.5mm wire.

8.5.4 Remove right hand box from the cab. This is best done after removing the boiler and cab from the footplate (see 8.2.1) and remove the moulded oil boxes and pipes. Reduce the width by 2 mm by cutting with a piercing saw and finishing to size with files and emery paper. Reduce the size of the left hand box, but do not remove the moulded oil box and pipework

8.5.5 Attach the reversing lever to the right hand side box with the end of the quadrant 1mm in from the rear edge of the side box using cyanoacrylate glue or epoxy resin. (see photo). Trim reach rod to length.

8.5.6 Refit the boxes to the cab (see photo)

8.6 Cab beading

8.6.1 For those locos fitted with cab beading, carefully remove the plastic rivets around the front bottom and rear edge of the cab sides.

8.6.2 Attach the etched beading [D23] to the cab sides using cyanoacrylate glue or epoxy resin (see photo)

8.7 Rear splasher beading

8.7.1 For those locos fitted with splasher beading, attach the etched beading [D24] to the rear splashers using cyanoacrylate glue or epoxy resin.

8.8 Johnson chimney

8.8.1 Remove the plastic top to the chimney by filling away the raised rim, and continuing until the flat area is the same diameter as the capuchon.

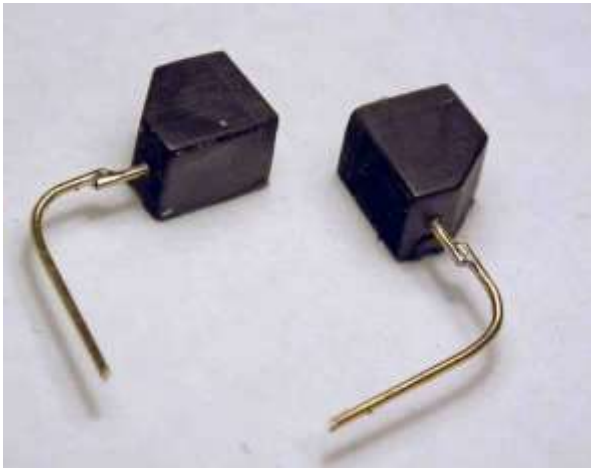
8.8.2 Solder the capuchon base [D25] to the chimney top [D26]. Carefully align the capuchon lip [D27] with the lip on the capuchon base and solder in place.

8.8.3 File the new chimney top to shape, before attaching to the plastic chimney using cyanoacrylate glue or epoxy resin (see photo)

8.9 Sander linkage

8.9.1 Push through the rivet from the back of the sander linkage [D28]

8.9.2 Referring to photos of the prototype, fix the linkage to the back of the right hand middle splasher using cyanoacrylate glue or epoxy resin. Trim the linkage where it protrudes inside the splasher (see photo). Note that photo shows sander linkage fitted before reverser lever.



8.10 Sandbox base and pipes

8.10.1 The Bachmann sandboxes are the correct shape. Note that they were quite wide extending beyond the face of the wheels (but clear of the coupling rods!). Take a sandbox washer [L12] and attach it to the bottom centre of the Bachmann sandbox using cyanoacrylate glue or epoxy resin. Drill a 0.4 mm hole through the centre of the washer and fit 0.45 mm wire to form the sand pipes. Shape to a 'J' configuration terminating just short of the centre wheels (all sandboxes operate on the centre driving wheel). Repeat for the other 3 sandboxes. On the prototype there was (a 'trap' just below the sandbox. This can be represented by a joint in the wire (refer to photos and drawings).

Note: this paragraph is best completed after all other construction work is complete as the sandpipes interfere with the removal of the wheelsets. See photo.

9 Additional tender components

9.1 Replacement brake gear

The Bachmann tender brake gear is moulded in line with the frames and is probably the weakest visual area of the model. Cut the brake gear away and clean up the cuts especially the inside of the 'D' cut-outs.

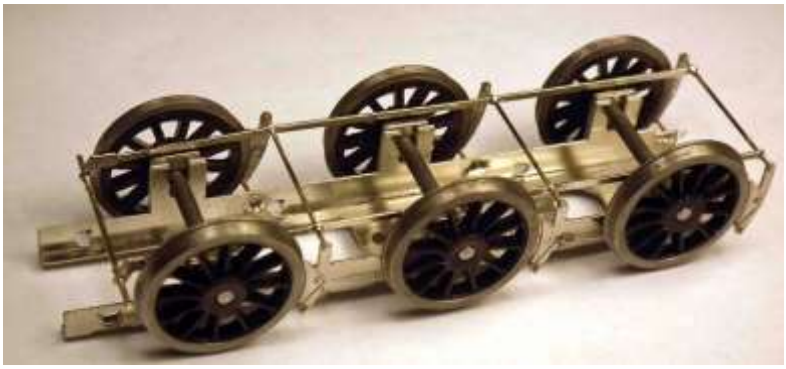
The replacement brake gear can be fitted to the EasiChas frames for EM and P4, and for 00 it can be fitted to the brake frame [D30] which also represents the tender tank.

9.1.1 For a 00 model fold up the sides of the brake frame [D30] to 90 degrees. With the tender wheels removed check in position. The rear fingers of the brake frame will need to be bent to clear the Bachmann guard irons.

For both 00 and EM/P4 the remaining instructions are the same.

9.1.2 Solder 'studs' of 0.7 mm wire to the hole in the centre of each brake block/hanger [D31] leaving 0.5mm protruding to represent the bolts, this is easiest to do with the brakes still attached to the carrier etch.

9.1.3 Solder 0.7 mm wire across the EasiChas frame/ brake frame so the ends are flush with the wheel faces, at this stage leave continuous across the frame.

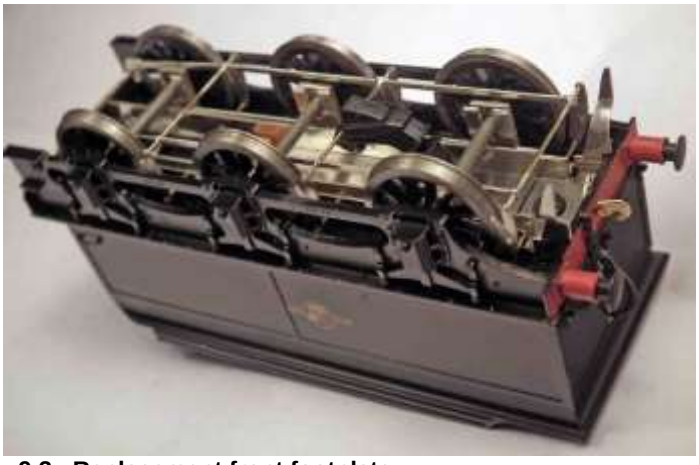


9.1.4 Remove the blocks & hanger assemblies from the etch carriers and solder to each wire cross shaft with the hanger 'short length up' in line with the wheels. Make sure that the brake blocks do not touch the wheels. Remember the wheels move up and down in the EasiChas.

9.1.5 Cut the upper shafts flush with the inside frames.

9.1.6 Place three cross shafts of 0.7 mm wire through each hanger and pull rod [D32]. Solder the wire to the bottom of the brake hangers. Position the pull rods just inside each wheel making sure they do not touch the wheels. Remember to allow for side play. Solder in place.

9.1.7 Cut a piece of 0.7mm wire to 24mm, open out the holes in the cross shaft activator angle and solder so the shaft fits between the plastic Bachmann tender side frames.



9.2 Water Scoop

9.2.1 Very few 3Fs were fitted with this apparatus, only those with a tender transferred from a passenger loco. You can tell from a photo if a scoop was fitted as there was an operating handle on the right hand side of the tender front sitting vertically behind the front vertical handrails (the left is the tender brake handle). The Bachmann plastic scoop is slightly over size and positioned too far forward on the RTR tender. As a result it fouls the centre brake cross shaft if re-fitted in the same position. If you wish to fit the scoop reduce the rear plastic mount by 2mm and fit at the rear of the EasiChas hole at a slight angle with the front 'mouth' just clear of the brake cross shaft. See photo.

9.3 Replacement front footplate

Note - If utilising the Brassmasters replacement tender frames, these should be built first before assembling the replacement front footplate.

9.3.1 After removing the tender body, remove the plastic Bachmann front footplate by prising the front footplate away from the tender frames using a thin blade (it may be necessary to cut through the pins holding the front footplate if the glue does not give way)

9.3.2 Bend up the back of the front footplate support [D33] and then bend in the two side pieces so that they are parallel to each other.

9.3.3 Solder two 12 BA nuts in the recesses in the top of the front footplate support base (see photo)

9.3.4 Curve the front footplate support front [D34] to match the curve on the underside of the front footplate [D34]. Ensure that it fits between the side pieces of the front footplate support [D33] before soldering it in place. (see photo)

9.3.5 If fitting the footplate to the Bachmann frames, with the Bachmann tender body in place on the Bachmann tender frames, position the front footplate hole jig [D36] at the front of the tender body. Drill two 1.3 mm holes in the Bachmann tender frames using the large holes in the centre of the jig, and four 0.5 mm holes for the hand rails using the holes in the outer edge of the jig.

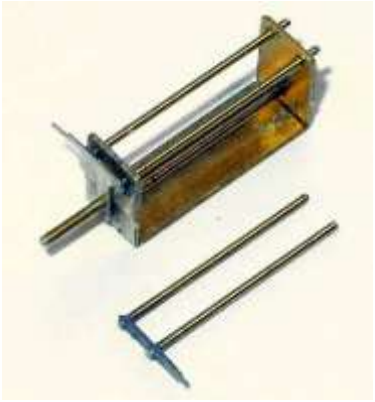
9.3.6 IMPORTANT - If fitting the footplate to the replacement tender frames, the two 12 BA x 1/8" screws must be reduced in length. Screw two 12 BA nuts onto the 12 screws and cut/file the screw thread flush with the face of the screw. (see photo)

9.3.7 Check that the new front footplate assembly fits to the Bachmann tender frames using two12 BA x 1/8" screws

9.3.8 If the tender that is being modelled has a water scoop fitted, drill a 0.5 mm hole in the front footplate [D35] where the inner half etched mark is and a 0.6 mm hole where the outer half etched mark is. (see photo)

9.3.9 Remove the front footplate support assembly and solder on the front footplate to the top.

9.3.10 Open out the holes in the end of the handrail jig [D37], the four outer holes and the two inner holes 0.5 mm, the central larger hole 0.6 mm, and bend up the ends to 90 degrees. A small piece of scrap etch can be soldered across the jig between the two outer holes and the single larger hole to act as a spacer and therefore make soldering the handrails to the handrail top support easier.



9.3.11 For the hand rails on the brake handle side of the tender, cut three pieces of 0.5 mm wire 16 mm long and one piece of 0.6 mm wire 16 mm long. Thread the three 0.5 mm pieces of wire through the appropriate holes in the jig.

9.3.12 Open out the holes in the handrail top with brake handle [D38] and thread it over the three pieces of wire in the jig. Make sure that the top is correctly orientated for the left hand side of the tender looking forward. With a short piece of wire protruding from the top, solder the top to the ends of the wire. File off the wire flush with the top

9.3.13 Thread the fourth piece of wire through the jig and the handrail top and solder in place with 2 mm protruding through the top (see photo)

Note - Be careful when you remove the hand rail assemblies from the jig as they are quite delicate until they are fitted in place.

9.3.14 If the tender does not have a water scoop, cut two pieces of 0.5mm wire 16 mm long and thread through the top two holes in the handrail jig.

9.3.15 Open out the holes in the hand rail top [D39] and thread it over the two pieces of wire in the jig. Solder the top to the ends of the wire and file off the wire flush with the top

9.3.16 If the tender does have a water scoop, repeat 9.3.10 to 9.3.12, this time ensuring that the top is orientated for the right hand side of the tender

9.3.17 For the handbrake and water scoop handles cut a piece of 0.6mm wire 8.5 mm long. Bend over the last 2.5 mm at a right angle. Solder centrally to the top of the brake handle wire. Repeat for the water scoop handle if fitted.

9.3.18 The tops of the handrail are 14 mm above the tender frames. Drill a 0.45 mm hole in the front edge of the sides of the Bachmann tender top 14 mm from the bottom edge just over 1 mm deep.

9.3.19 If fitting to the Bachmann tender frames, extend the slots in the Bachmann tender frames that receive the hooks at the front of the tender top towards the rear of the tender so that the tender top can be inserted without tilting so far. This enables the top to be taken on and off without damaging the handrails.

9.3.20 If fitting to the Bachmann tender frames, screw the Bachmann tender top, using the original screws, and the new front footplate, using 12 BA screws, to the Bachmann tender frames. Take the handrail assembly with two rails, trim the wire to length, and fix in place in the Bachmann tender frame using cyanoacrylate glue or epoxy resin. For the handbrake/water scoop assemblies, solder to the front footplate. (see photo)

9.3.21 If fitting to the replacement tender frames, reduce the head diameter of the Bachmann body retaining screws by holding them in a pin chuck and rotating them against a file. Screw the tender top in place. Screw the new front footplate in place utilising the shortened 12 BA screws (see 9.3.3). take the handrail assemblies and solder in place in the tender frames

9.3.22 If fitted, fix the side plates [D40] to the hand rails.

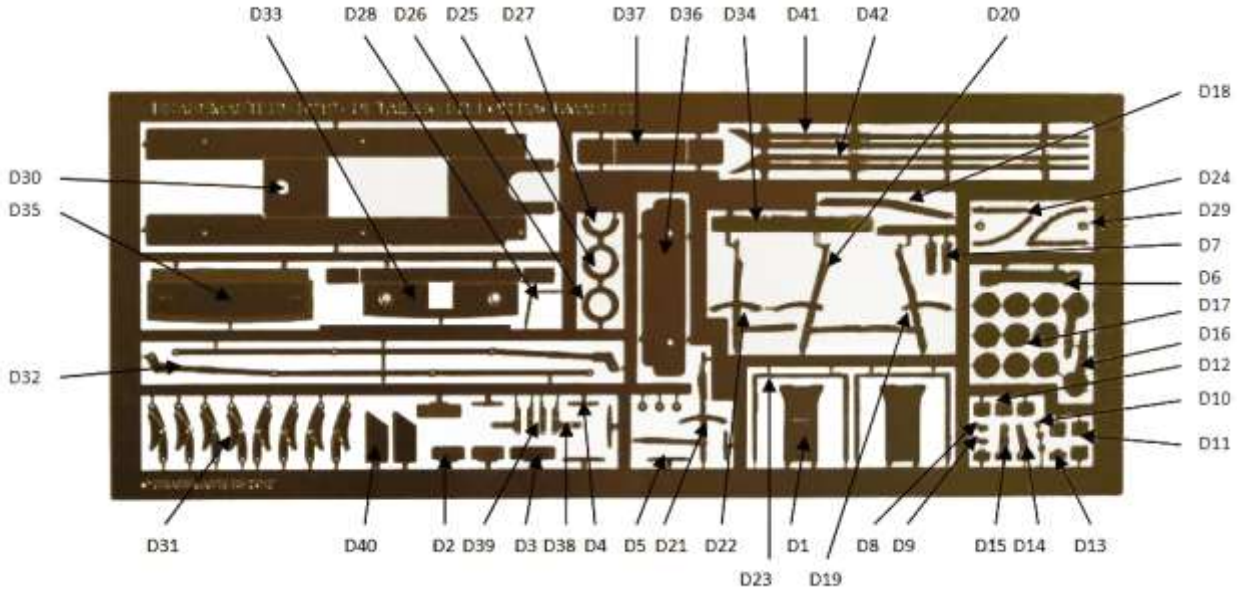
9.4 Tender coal rails

9.4.1 Carefully remove the Bachmann coal rails by cutting vertically down each side of the supports, down behind the front coal plate and horizontally across the curved end of the coal rail where it meets the tank top. (For added support of the curved end to the etched coal rails, cut the curved end level with the bottom of the bottom coal rail)

9.4.2 Cut and file the remains of the coal rails off the front of the supports but not coal plate. Gently file the remains of the coal rails off the coal plate until the replacement coal rails are in a straight line when resting against the supports and the coal plate. (If the small part of the curved rail was left at the back end, cut away the front part, so that the etched rail sits flush with the outside edge of the tender)

9.4.3 Reduce the width of the supports to match the uprights on the back of the coal rails [D41 and D42]

9.4.4 Attach the coal rails to the plastic uprights using cyanoacrylate glue or epoxy resin (see photo above)



Detailing Etch Component List

D1	front steps backplate (2)	D22	reversing lever right mid gear
D2	front steps top step (2)	D23	cab beading (2)
D3	front steps bottom step (2)	D24	splasher beading (2)
D4	front steps top step back (2)	D25	capuchon base
D5	front steps bottom step back (2)	D26	chimney top
D6	weightshaft bracket	D27	capuchon lip
D7	weightshaft lever (2)	D28	sander linkage
D8	lifting link front	D29	sandbox base (4)
D9	lifting link rear	D30	brake frame (for 00)
D10	lifting link washer (2)	D31	brake hangers
D11	weightshaft bearing centre (2)	D32	brake pull rods
D12	weightshaft bearing outer (2)	D33	front footplate support
D13	weightshaft bearing end	D34	front footplate support front
D14	reach rod lever forward gear	D35	front footplate
D15	reach rod lever mid gear	D36	front footplate hole jig
D16	weightshaft lever with weight (2)	D37	handrail jig
D17	weight (8)	D38	handrail top with brake handle (2)
D18	reach rod	D39	handrail top no brake handle
D19	reversing lever left forward gear	D40	side plate
D20	reversing lever right forward gear	D41	coal rail left
D21	reversing lever left mid gear	D42	coal rail right

Other components

0.7 mm brass wire	3/64” brass tube
0.6 mm brass wire	1.0 mm brass tube
0.5 mm brass wire	12 BA cheese head screws (2)
0.45 mm brass wire	12 BA nuts (2)