



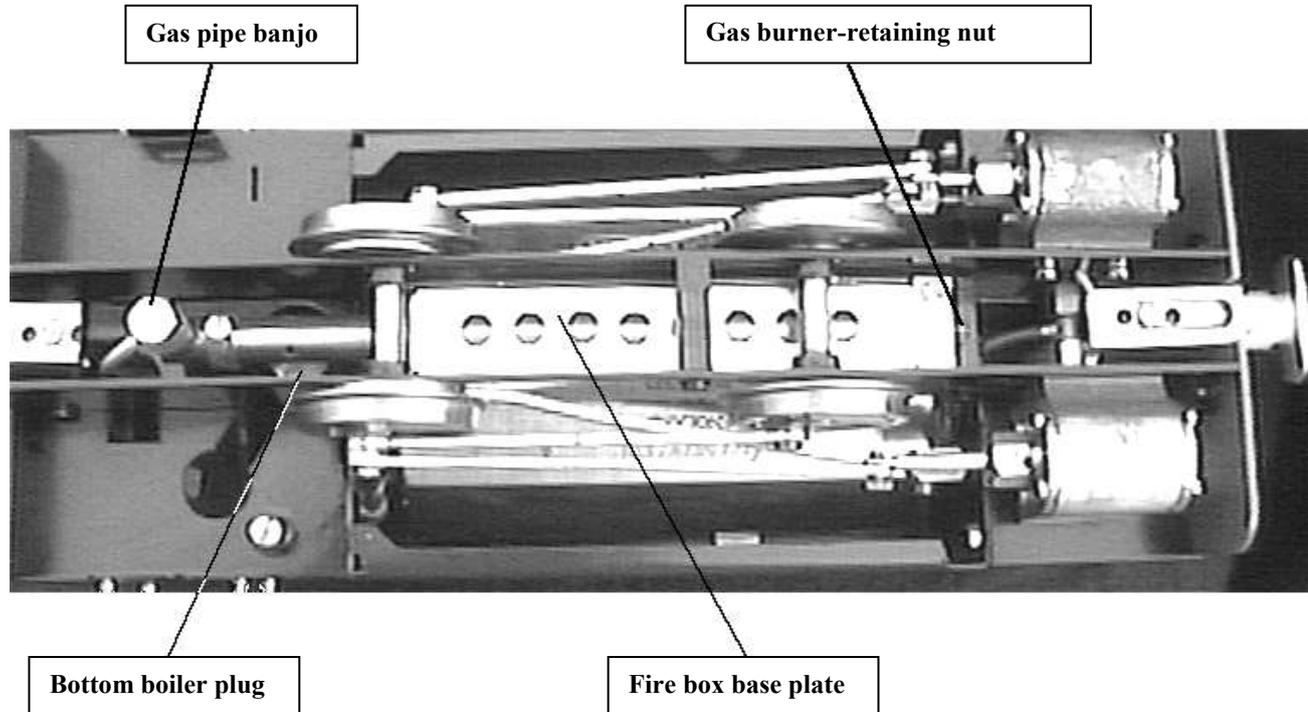
# 'Millie' Boiler Top Up System

## Version 2 Fitting Instructions (loco's above serial no. M0100)

Remove rear buffer beam which is held by two 6BA brass cheese head screws on its outer face.

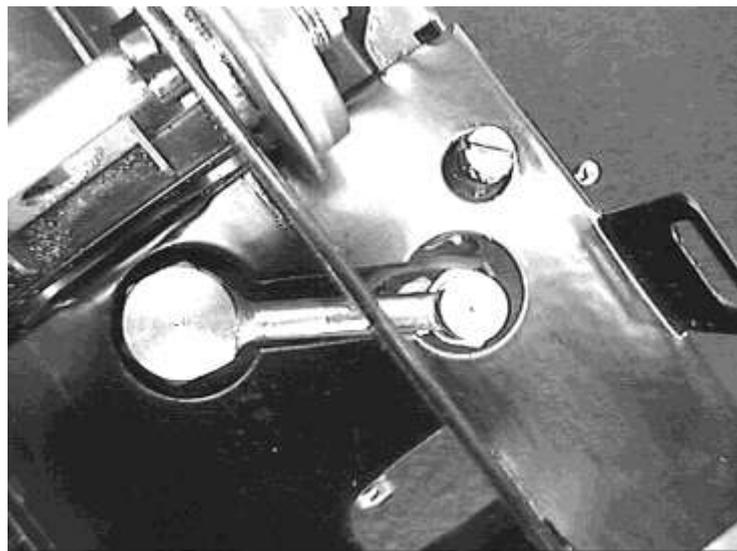
Slacken, but do not remove, the 6BA brass nut on the underside of the rear frame spacer directly beneath the gas tank. This will allow the gas tank to lift slightly and the rear cab sheet will slide off backwards.

If you have a full cab fitted, you must first remove the 8BA screw and nut that fastens the roof to the front spectacle plate.



Disconnect the gas pipe at the banjo fitting. Remove the 6BA gas tank retaining nut from under the rear frame spacer and carefully lift off the gas tank manoeuvring it so that the lower pipe connection to the gas burner passes up through the hole in the footplate.

The gas burner is held in place by a 4BA nut on the front end of the firebox on the underside of the loco. Remove this nut and slide the gas burner out of the back of the firebox. The base plate of the firebox will now be loose so can now be lifted out.



Using the box spanner provided, remove the plug from the bottom of the boiler through the hole in the rear footplate.

Replace it with the bottom water gauge fitting using the special bolt and copper washers. Note that all banjo bolts require two washers to seal correctly, one between the hexagon head of the bolt and the banjo, and the second between the other face of the banjo and the bush to which it is clamping. You will have to manoeuvre it into position and to make it easier, the rear foot plate can be pulled back a little until it disengages from the two chassis lugs in its front face. The larger end of the fitting should now just pass through the space between the footplate cut out and the bottom boiler bush. Don't forget to push the footplate back into position so that it locates on the chassis lugs and the two side tank location tabs. Ensure that the bottom gauge glass fitting is the correct way round with its open end facing up and the copper pipe lying in the slot in the footplate. Tighten the bolt with the box spanner whilst keeping the fitting within the cab floor cut out as shown in the picture.

### View of bottom water gauge fitting from below.

With the loco the right way up, fit the brass alignment rod supplied, into the bottom gauge glass fitting and make sure that it stands vertical when viewed from all sides. You can use the rod to align it, as the copper tube will bend quite easily. It may be necessary to bend the copper steam pipe from the lubricator to the regulator back a little to clear the gauge glass or its bottom gland nut.

If you have a pressure gauge fitted, remove it now at the banjo fitting into the top boiler turret.

Disconnect the steam pipe from the steam regulator and remove the top boiler turret complete with regulator using the box spanner.

Remove the regulator from the old turret. This is fitted with a small amount of thread sealer so may be a little tight to start off.

Using a new fibre washer(s) fit the regulator to the thread on the new steam turret so that the water filling connector faces out to the right hand side of the cab as shown in the diagram. Ensure that the steam take off from the regulator ends up pointing down to line up with the steam pipe connector. Two fibre washers are provided of different thickness to aid in this, or one of the fibre washers can be filed thinner by rubbing on a file or emery paper until correct position is achieved.



Fit the new turret to the top of the boiler with new copper sealing washers and tighten the top nut with the box spanner. Re-connect the steam pipe to the regulator.

Remove the brass blanking plug from the boiler bush to the left of the steam turret and replace it with the top water gauge fitting as shown in the diagram, using the banjo bolt and copper sealing washers. Remove the small brass plug from the top and, using the brass alignment rod again, pass it down through the top gauge glass fitting and align it so that the rod slips smoothly and easily down into the bottom fitting. The two must be aligned correctly, or damage to the glass will result.

Check that the glass will also slide smoothly and easily down through the top fitting and into the bottom fitting, if not use the brass alignment rod again until it does.

Once you are happy with the fit and alignment, carefully slip the glass tube down through the top fitting and slide the glands on in the following order – top 2 'O' rings - top gland nut, thread side up – bottom gland nut, thread side down – bottom 2 'O' rings. Now slide the glass right down into the bottom fitting.

Starting with the bottom fitting, push the gland nut over the 'O' rings and screw it onto the bottom fitting, nipping it up but not over tight.

Repeat for the top gland.

Screw the blanking plug into the top fitting not forgetting the sealing washer, and nip it up.

Take care when fitting and tightening any of these items, and hold the copper tubes to stop the fittings moving, or you may damage the glass tube.

If you had a pressure gauge, it can now be re-fitted.

Replace the gas burner by sliding it in from the back, not forgetting to slip the firebox bottom in place first. Make sure that the burner holes are to the top, then fit and tighten the 4BA nut to the front stud.

Replace the gas tank, threading the burner pipe down through the footplate hole and pushing the fixing stud down through the cab floor and rear frame spacer.

Carefully connect the gas pipe banjo fitting not forgetting the sealing washers and tighten it but do not over tighten.

If you have a full cab, it is better to leave the back and roof off until a steam test has been carried out.

If you have the standard open cab, this can be fitted now, by sliding it on with the bottom flanges between the gas tank and the cab floor.

Tighten the gas tank retaining nut and re-fit the rear buffer beam.

Prepare the loco for running but keep a careful eye on all the new fittings as pressure rises, checking for any water leaks. If any are evident, turn off the gas immediately, allow the loco to cool then carefully nip up the offending fitting a little and try again.

Fill the water bottle from your usual water supply.

To use the pump bottle, push the end of the plastic tube into the open end of the water filling valve on the right hand side of the turret whilst steadying the locomotive, but be careful what you touch if the engine is hot.

Pump the handle and this will inject water into the boiler.

You will usually see water and air bubbles passing down the sight glass as you pump so allow the level to settle after a few pumps.

Carefully pull the plastic pipe out of the water filling connector whilst still steadying the engine.

Sometimes, small particles of dirt will find their way in with the water and may cause the water filling connector to leak back a little when the pipe is removed. If this should happen, re-connect the pipe and give a further pump or two of water to clear it.

If all goes well, once you start running your loco you will see the water level in the gauge slowly dropping. Note that air bubbles may sometimes form in the gauge giving a false reading but these can be pushed out by connecting the pipe from the water pump to the water filling connector – and injecting some water.

It is better to pump small amounts of water into the boiler at frequent intervals rather than large amounts as the pressure drop will be much less and you will be back up to working pressure much quicker.

Aim to keep the water level between  $\frac{1}{2}$  and  $\frac{3}{4}$  up the gauge and re-fill the gas tank as detailed in the locomotive operating instructions whenever it is empty. In this way, you can keep the loco in steam and at working pressure as long as you like.

Don't forget to re-fill the displacement lubricator about every 30 minutes.