



LK1 Locomotive kit for the LMS Stanier Rebuilt Royal Scot 7P 4-6-0

This kit comprises a Comet loco chassis (code LCP1), a complete tender kit (code TK1) together with etched, cast and turned parts for the loco superstructure to enable you to produce a highly detailed scale model.

Instructions for assembly of the chassis and tender are contained within their separate packs. Instructions for the assembly of the body are given below and by reference to the illustrations as appropriate.

Brief Historical Notes

The original Royal Scots introduced in 1927 had done sterling service, being responsible for the premier express services on the Western Division until the introduction of the Stanier Pacifics. By the end of the thirties, they were due for boiler and cylinder replacements and suffering from leaky smokeboxes. Work on the rebuilt "Fury", which in effect became the first taper boiler Scot (6170 British Legion) and the successful rebuilding of Jubilees 5735 Comet and 5736 Phoenix led to the decision to rebuild the Scots similarly.

The changes were radical, consisting of the new 2A boiler together with the new cylinders having improved internal streamlining, and a double blast pipe and chimney. The cab, wheels and tender were retained. The tender was in any case a Stanier replacement for the smaller original. The rebuilt engines were almost three tons lighter giving them a greater route availability.

Early rebuilds had LMS black livery with straw lining and initially were devoid of smoke deflectors, later fitted to the whole class. In BR days, all received green livery with orange/black/orange lining.

Year of rebuilding		
Year	Locomotive	No Total
1943	6103/08/09/12/17/24/25/32/46	9 9
1944	6116/19/20/27/29/31/33/38/45	9 18
1945	6101/22/26/44/49/50/52/59/60/66/69	11 29
1946	6104/14/18/21/28/39/47/57/61/68	10 39
1947	6111/15/35	3 42
1948	46105/54/62/67	4 46
1949	46102/06/23/30/43/53	6 52
1950	46100/07/13/36/41/55	6 58
1951	46142/64	2 60
1952	46140/58/65	3 63
1953	46110/34/51/63	4 67
1954	46148/56	2 69
1955	46137	1 70

Parts List

- 1 Cab floor/inner sides/spectacle plate
- 2 Cab side overlays, L&R
- 3 Dragbeam and rear step unit
- 4 Rear step treads x2
- 5 Dragbeam overlay
- 6 Cab floor
- 7 Fall plate
- 8 Regulator handle
- 9 Cab roof shutter
- 10 Reversing rod
- 11 Sandbox filler support plates x4
- 12 Smokebox saddle rivet strips x2
- 13 Steam pipe base flange x2
- 14 Dummy front frames and guard irons, L&R
- 15 Front steps, L&R
- 16 Front step treads x2

Etchings

- 17 Front footplate drop steps, wide x2
- 18 Front footplate drop steps, narrow x2
- 19 Inside cylinder cover steps x2
- 20 AWS shield
- 21 Smoke deflectors, L&R
- 22 Smoke deflector joint plates, L&R
- 23 Smoke deflector running plate mounts x2
- 24 Smoke deflector intermediate straps x2
- 25 Smoke deflector top straps x2
- 26 Oil distribution box
- 27 Ejector pipe straps x4 (1 spare)
- 28 Coupling hook
- 29 Chassis fixing plate
- 30 Balance weights, front x2
- 31 Balance weights, centre x2
- 32 Balance weights, rear x2

White metal castings

- | | |
|---------------------------------------|-----------------------------------|
| Running plate | Oil junction boxes x2 |
| Firebox | Splasher oil boxes x2 |
| Boiler/smokebox | Lubricators x2 |
| Firebox backhead | Running plate sandboxes x2 |
| Screw reverser | Vacuum ejector |
| Cab roof | Smoke deflector hand hold cups x4 |
| Sandbox fillers x4 | Dome |
| Steam pipes x2 | Boiler top feed, early pattern |
| Centre cylinder piston tail rod cover | Boiler top feed, late pattern |
| AWS cylinder, large | Chimney |
| AWS cylinder, small | Smokebox door |

Lost wax castings

- | | |
|------------------------|-------------|
| Live steam injector | Buffers x2 |
| Exhaust steam injector | Vacuum pipe |

Turnings

- | | |
|----------------------|---|
| Safety valve x2 | Handrail knobs x18 (10 small, 8 medium) |
| Smokebox door handle | Whistle |

Hardware

M2 nuts and screws, 0.3mm, 0.45mm, 0.7mm and 0.9mm wire, loco pick-up set.

Construction Hints & Tips

General Preparation

The etched components can be gently brushed with a soft wire brush (e.g. suede brush) before removing them from the main frets to clean them. Use a sharp knife to separate parts as required - the component numbers are on the main frets. Use a fine needle file to clean off the holding tabs. Folds should be made with the half-etched line to the inside unless stated otherwise. Press out any rivet detail with the components resting face down on a sheet of lead or soft wood - we can recommend the "gravity driven" rivet forming tool sold by London Road Models for this operation.

The castings should have any part lines or flash removed using needle files and/or a sharp knife. Larger items can be cleaned with a soft brush or a fibreglass pencil. Take care not to bend or damage any fine detail. Check that parts such as the running plate and cab roof are straight - gentle finger pressure should be sufficient to correct any bends.

General Assembly

We strongly advocate soldered construction of the main body and chassis, with small components fixed using cyanoacrylate "super glue". If you are adept with a temperature controlled soldering iron, you might prefer to use soldered construction throughout. You should use "low melt" solder (70°) for white metal castings, and either 188° or the standard 224° "tinman's solder" for etchings and brass or nickel silver castings and turnings. Some will prefer paste flux, though phosphoric acid liquid flux has the advantage of helping the molten solder to run into a joint, and is essential when using low melt solder.

Always carry out a dry run before soldering parts together. This will familiarise you with how they locate and enable you to check for alignment. A few assorted rubber bands and metal clips can be very useful. When satisfied with the dry fit, tack solder the parts together in just one spot using the minimum of flux, then make a final check that everything is "just so" before making good the joint.

You will need the following metric drills for the construction of this kit:

0.5 0.75 0.85 1.0 1.5 2.5

Suggested assembly sequence

Refer to sketch 1. Push out the rivet detail on the spectacle plate and cab returns (1) and drill the lower cab handrail holes to 0.85mm. Fold up the spectacle plate to 90° to the floor followed by the cab inner sides. Note the leading edges of the inner sides align inside and flush with the outer edges of the spectacle plate. Fold the cab doors out at right angles to the sides before folding back the cab return. Ensure the assembly is square, then reinforce all joints and folds with solder but leave clear the top 5mm (approximately) of the front corner pillars.

Refer to sketch 2. Ensure that the joint between the spectacle plate and the inner sides is flush, filing if necessary. Push out the rivet details on the cab side overlays (2L & 2R), but at this stage leave in place the strengthening for the beading around the rear cut out of the cab sides. Fold down to 90° the locating tabs at the top of the cab side pillars and position the cab side overlay up against the tabs and flush with the front of the spectacle plate. Tack solder through the holes provided and check the alignment, then complete the joint. Repeat for the other side then remove the locating tabs and file flush.

Fold up the rear step unit (3) as per sketch 3 and solder it in place below the cab, with the dragbeam flush with the back edge of the cab. Locate the upper step treads (4) and solder them in place. Solder on the dragbeam overlay (5), ensuring that the lower edge is accurately aligned.

Refer to sketch 1. Fold up the wheel covers in the cab floor (6) and locate the floor into the cab. Fold down the tabs at the front of the fall plate (7) and check that they will fit through the slots in the rear edge of the floor. Ensure there is enough clearance past the dragbeam for the fall plate to articulate, then remove the fall plate and store it for fitting later. Solder the floor in position through the holes in the cab base then file flush any excess solder under the cab.

Refer to sketch 4. Prepare the running plate casting to ensure it is flat, straight and free from any flash, and then drill out the holes as shown. Fit an M2x16 countersunk screw through the rear hole in the running plate, solder it in place and file smooth any excess solder.

Refer to sketch 5. Place the cab unit on the running plate and check for fit. The cabside overlays should just slide over the footplate, and with the cab sitting down flush the ends of the running plate valances on the cabside overlays should line up with the running plate casting. You might need to file the casting as indicated. The spectacle plate must butt up against the step in the casting as shown in sketch 4. Check the cab unit is vertical and correctly aligned then solder in place.

Refer to sketch 6. The fit of the firebox is crucial to the correct "look" of the engine. It should slope back 2° towards the spectacle plate and none of the ventilation holes should be obscured by the top of the casting. Some careful filing at the positions indicated is required, and consequently some filling, but a little care and patience at this stage will prove worthwhile. Tack solder the firebox in position, ensuring that it butts up against the spectacle plate and is centrally placed and parallel to the running plate.

Refer to sketch 7. Drill holes in the bottom of the cast top feed pipe covers on the boiler to 0.75mm and approximately 1.0mm deep to locate the wire which portrays the feed pipes. Chamfer the inside edge of the rear of the boiler casting slightly and check the fit to the firebox. If the boiler rocks on the centre splasher carefully file the semi-circular cut-out until a good fit is achieved. Drill out the hole in the bottom of the smokebox to 2.5mm then insert an M2 pan head screw from the inside, through the smokebox saddle and secure it with a nut from below. Align the boiler so that the cladding joints are in line with those on the firebox and the steam pipe mounting plates are equidistant from the sides of the saddle. When satisfied with the fit and alignment tighten the nut and complete the joints on the firebox and boiler, finally securing the screw head inside the smokebox with solder or adhesive.

This completes the basic body shell, and we suggest that at this stage it should be thoroughly washed to remove flux residues before checking whether there are any gaps which require filling with Milliput. It is advisable to build the loco chassis next so that any of the fettling of the body to ensure a good fit can be done without risk of damaging the smaller detail parts. Full instructions are provided in the individual packs. Note that you will need to trim the front of the chassis frames just ahead of the cylinders as indicated on the drawing in the frame pack.

Refer to sketch 7. Drill out the holes for the handrail knobs, ejector pipe straps and top feed pipe as shown. Drill out to 1.0mm for the safety valves and whistle mount.

Refer to sketch 8. Fit the firebox backhead, the screw reverser, and the regulator handle (8). Fit a short handrail knob to the hole in the cab return and fit the cab handrail using 0.45mm wire. With the wire vertical and the top beading of the cut out horizontal wrap the beading extensions around the wire and solder in place. Cut off the excess beading and the top of the wire. Check the fit of the cab roof and ensure that the tops of the window frames fit into the locations in the lower edge of the roof, then solder it in place. Fit the cab roof shutter (9).

Refer to sketch 9. Shape and fit the two top feed pipe extensions using 0.7mm wire. Assemble the sandbox fillers and support plates (11), taking the care to make two pairs of opposite handling, then fit them in place against the angled mounts in front of the leading and middle splashers. Fit the reversing rod (10) and the smokebox saddle rivet detail strips (12). Fit the steam pipes to their base plates (13) then fit them to the smokebox. Shape and fit the top feed

pipe extensions below the running plate using 0.7mm wire.

Refer to sketch 10. Push out the rivets in the dummy front frames (14 L&R) and fix them to the running plate. Fold up the front steps (15 L&R), fit the upper treads (16) and fix in place. You might wish to reinforce these using wire or thin strip.

If your model represents the early condition before the fitting of smoke deflectors fit the wide front footplate drop steps (17), otherwise fit the narrow ones (18) but note that these are handed. Bend down the sides of the cylinder cover steps (19) and fix in place. If the engine is to be fitted with AWS gear fit the coupling shield (20) to the mounting plate below the buffer beam, otherwise the latter should be removed. Fit the centre cylinder piston tail rod cover.

The remaining running plate details can be fitted in any order and located as shown in sketch 9. Fit the front oil boxes, lubricators, splasher oil boxes (location varied so check photos of your chosen loco), sand boxes and AWS tanks.

Refer to sketch 12. Drill out to 1.0mm the flange in front of the ejector casting to about 1.0mm deep. Drill to 0.5mm the centre of back face of the casting about 1.0mm deep. Hold the casting in place on the firebox and adjust the downpipe so that it arcs over the reversing rod then is vertical to pass through the hole in the running plate. Fit a short piece of 0.45mm wire into the 0.5mm hole. Feed the downpipe into its hole and the wire into the hole just below the spectacle window. Ensure that the casting is horizontal then fix it to the firebox and secure the wire and pipe. Make the ejector pipe from 0.9mm wire, bending one end to 90° to fit into the hole in the smokebox then cut it to length and fit into the hole at the front of the ejector casting. Secure with three of the fixing straps (27).

Refer to sketch 7. Fit the boiler handrail using short and medium handrail knobs. Clip off the file the back edge of the whistle mounting plate then fit the whistle to the plate and then to the firebox. Fit the safety valves, dome, early or late pattern top feed and the chimney.

Oil distributor box (26). We pay humble tribute to the genius of our etch designer for this masterful and thoroughly satisfying piece of construction. Refer to sketch 11 for assembly and fitting details.

Refer to sketch 13. On the back of each smoke deflector (21 L&R) mark the positions of the joint plates (22 L&R), the intermediate straps (24) and the top straps (25). These components align by reference to the rivet positions on the outer faces of the deflectors. Fit the joint plates then form the shape of the upper section of the deflectors to match the shape of the smokebox using a piece of dowel or the handle of a No 2 Exacto knife as a former. Fit the intermediate straps, leaving them at full length. Fit the top straps and the deflectors and adjust the angle of the intermediate straps so that they lightly spring against the smokebox then cut off any excess. You might prefer to set the deflectors aside and fix them in place after painting, or continue as described. Cut the cross piece from the top straps and bend these over the handrail to clench the smoke deflector in place. Fix with adhesive at the upper and lower running plate and the handrails.

Refer to sketch 14. Solder the pipes from the live steam (smaller) injector to the inside face of the dragbeam and the body of the injector against the nearside step. Cut a piece of 0.45mm wire to 15mm and bend the top 3mm to 90°. Solder this to the right side of the step in the footplate casting as shown. Drill the lug in the exhaust steam (larger) injector casting to 0.5mm then bend the upper pipe to 90° approximately 9mm from the injector body. Thread the injector onto the wire and secure with solder. Bend the downpipe as shown and solder against the step.

Refer to sketch 10. Fit the coupling hook (28), the buffers and the vacuum pipe.

Refer to sketch 17. Locate and fix the following parts to the smokebox door, but do not fix the

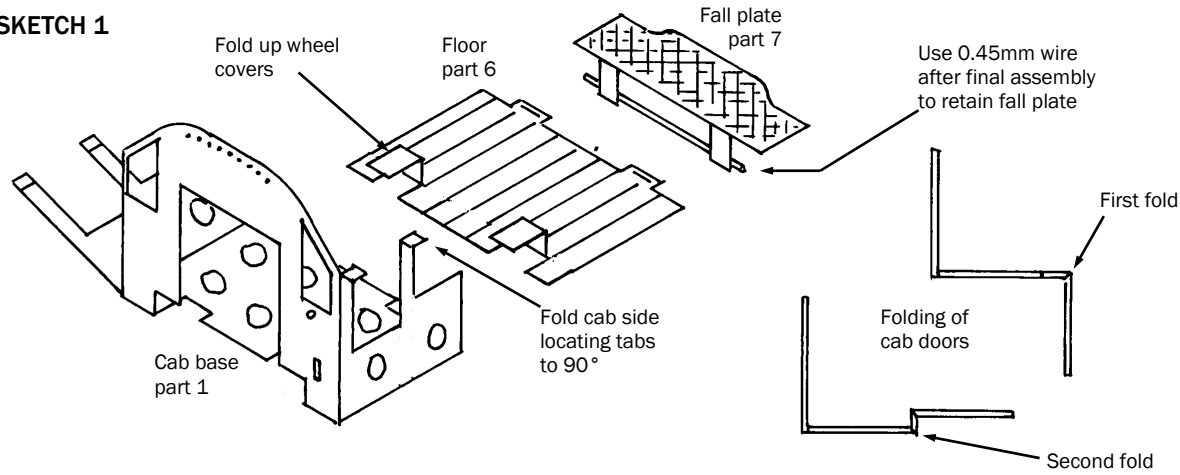
door to the smokebox at this stage: steam lance cock; smokebox door handle; short handrail knobs; and handrail from 0.45mm wire.

The completed loco body can now be fitted to the chassis and coupled to the tender for test running before painting. The fall plate (7) should be refitted for this. Refer to sketch 16. The loco chassis is fixed to the body at the front and rear by M2 nuts on the fixing screws. At the rear, feed the tender drawbar (see tender instructions) through the slot in the dragbeam and locate it onto the rear chassis fixing screw, then fold up the chassis/drawbar fixing plate (29) and drop this over the screw and into the chassis frames, securing the assembly with an M2 nut.

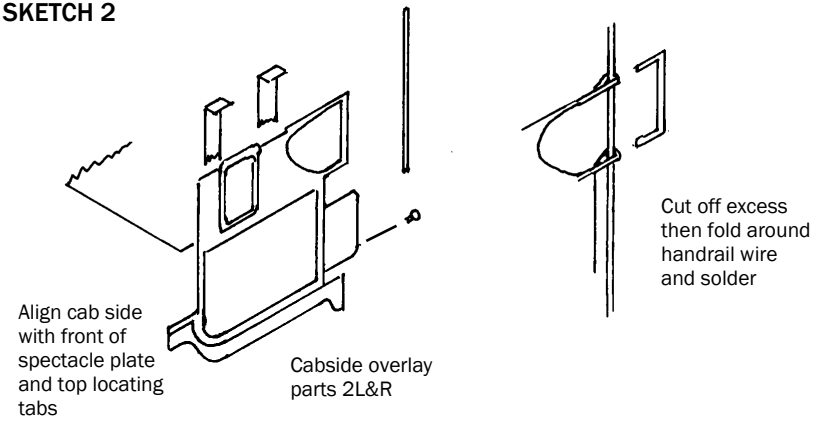
Pay special attention to clearances on your tightest curves - you may find some trimming of the front frames, front steps or cylinders is needed to prevent the bogie from fouling. Check also the loco/tender separation - we suggest you aim for no more than 0.5mm clearance on your tightest curve. We normally avoid accusations of "playing trains" at this stage by also carrying out haulage tests to determine how much weight needs to be added to pull your rake of superlative Comet coaching stock. This is best done by rolling sheet lead into a cylinder and inserting this via the smokebox into the boiler. When satisfied, the completed smokebox door can be fixed in position.

If you wish to include an additional detail (e.g. lamp irons) do so now before painting. The loco and tender bodies can now be washed thoroughly in hot water with a household cleaner such as "Jif", taking care not to damage any fine detail. Be sure to use a good etching primer to the key metal for the paint. We prefer to use cellulose based paint for the base colour and either enamel or acrylic paint for detailing, lining and weathering. After painting the final operation is to fix the smoke deflectors to the front of the running plate if you did not do so at step 18 above.

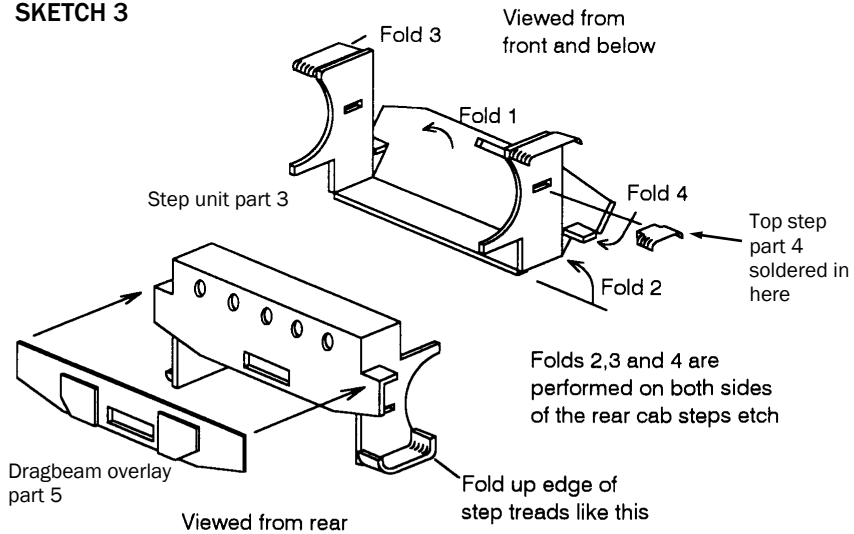
SKETCH 1



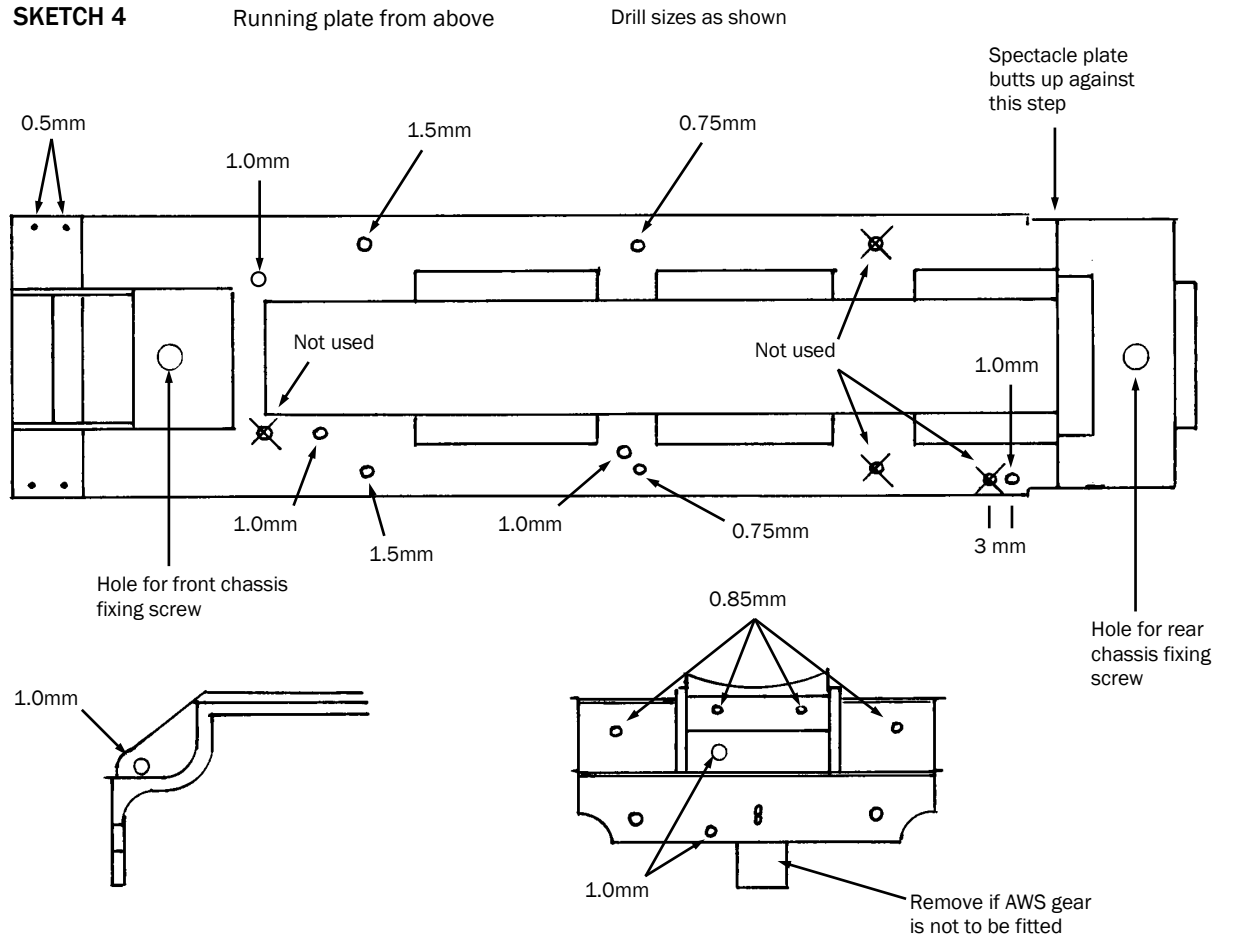
SKETCH 2



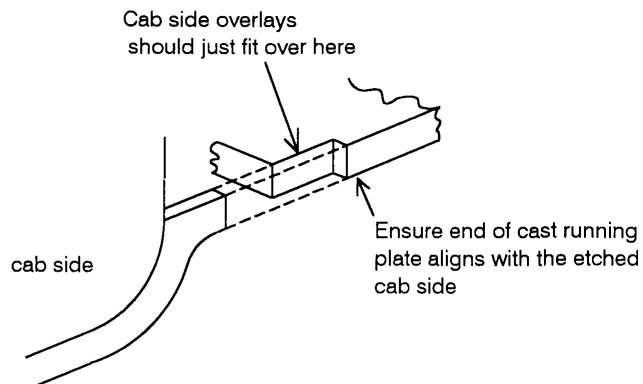
SKETCH 3



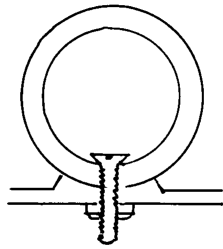
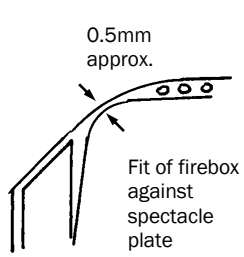
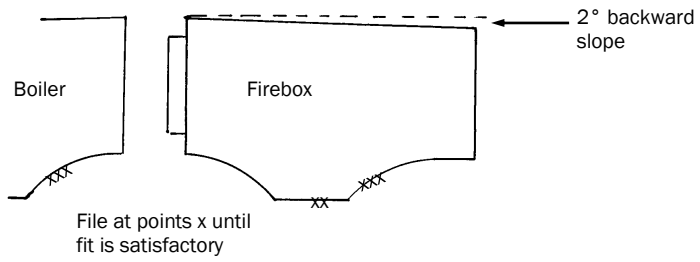
SKETCH 4



SKETCH 5

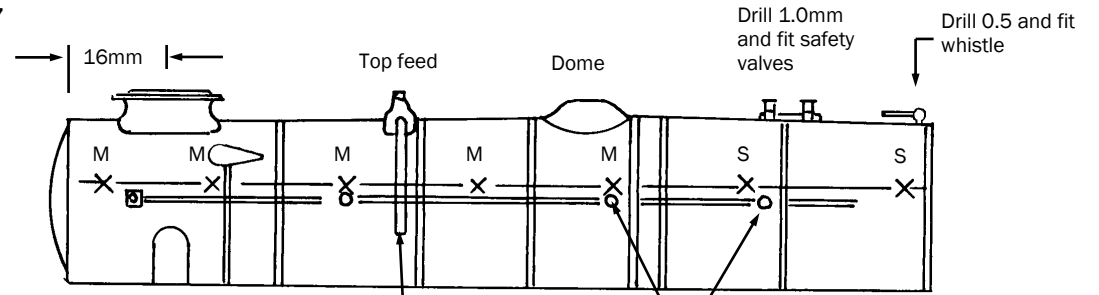


SKETCH 6



Clamp smokebox to saddle using M2 x 10mm pan head screw

SKETCH 7



Drill 0.85mm at positions X for handrail knobs

M medium handrail knobs

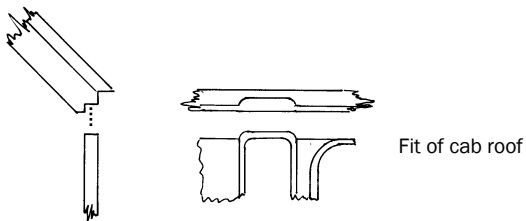
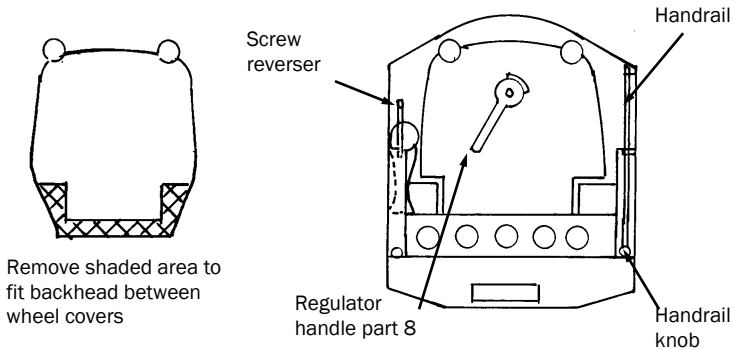
S short handrail knobs

Drill 0.75mm

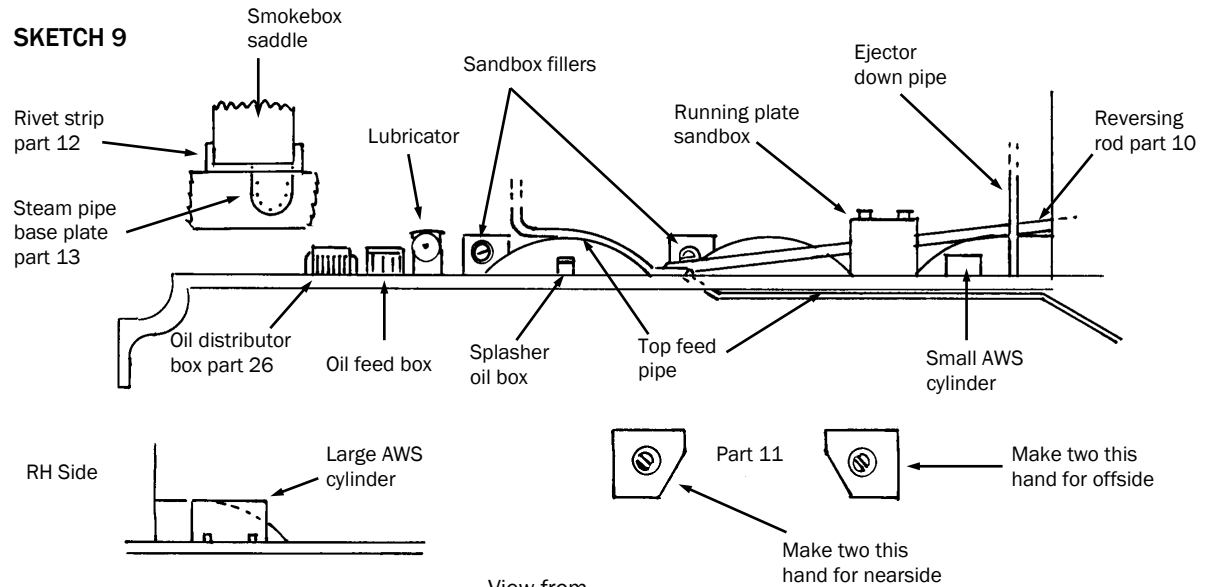
O drill 1.0mm for ejector pipe straps

Top feed pipe cover from below showing 0.75mm hole

SKETCH 8



SKETCH 9



Cut off excess to fit boiler

Shape to splasher

View from side

View from above

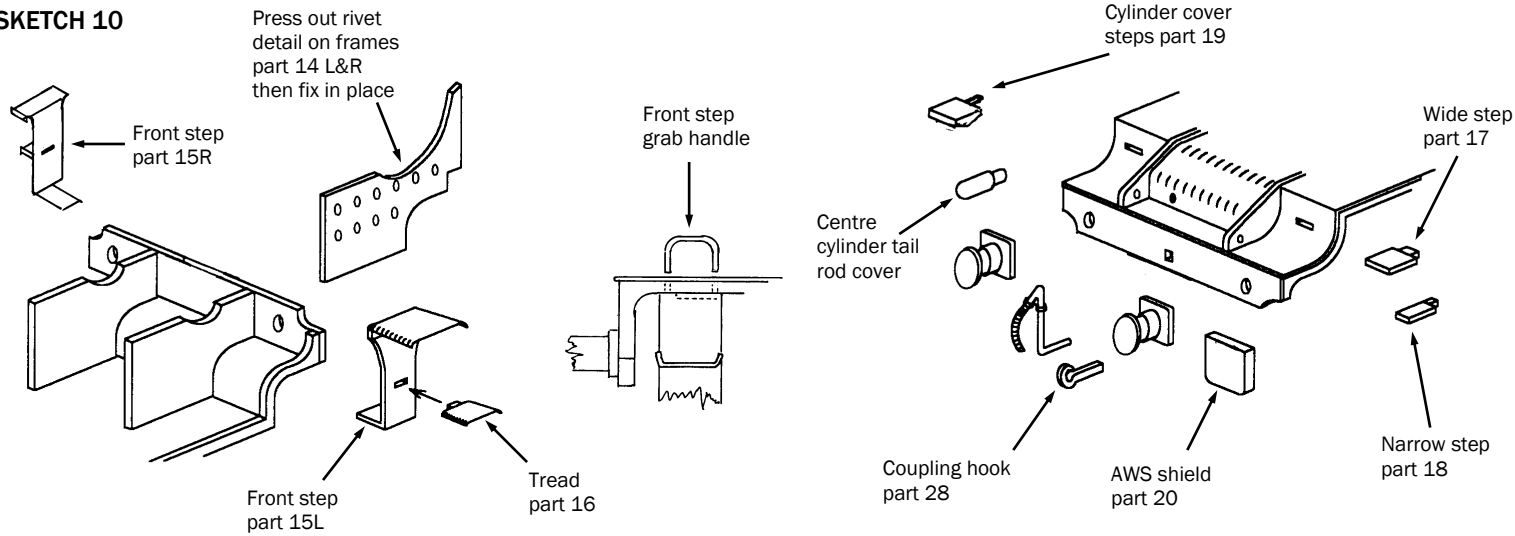
Top feed pipes

Cut off excess

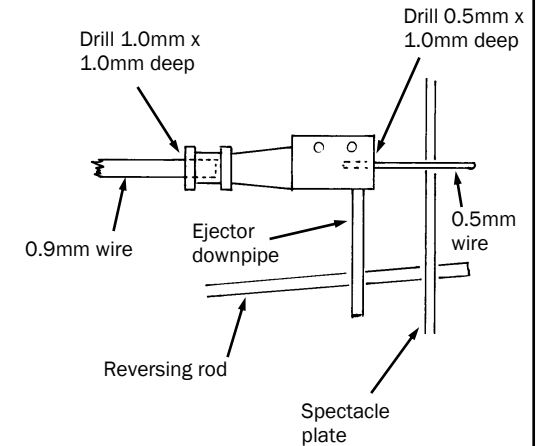
47mm

10mm

SKETCH 10

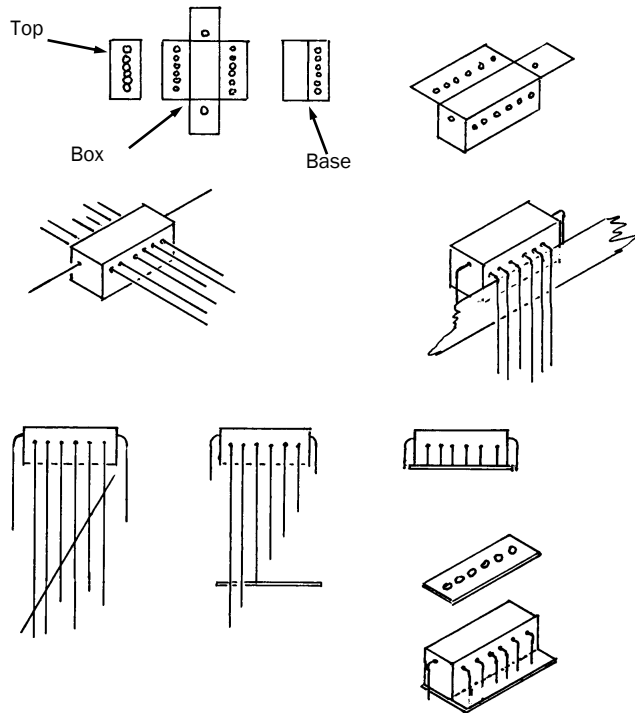


SKETCH 12



SKETCH 11

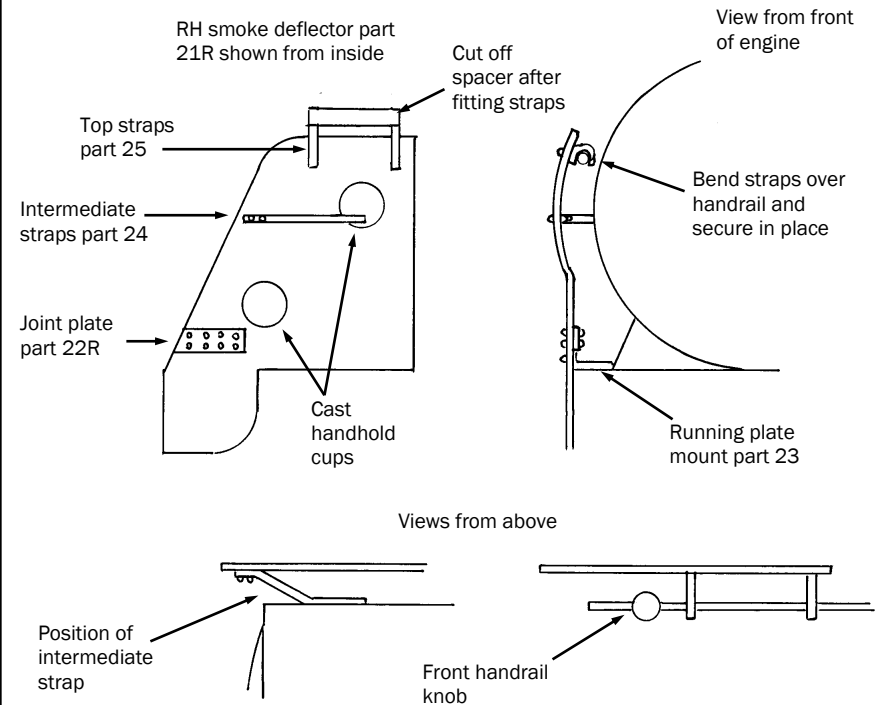
Oil distributor box



1. Fold up box.
2. Push lengths of 0.3mm wire through front and side holes and fix in place by filling the box with solder or glue.
3. Using a piece of scrap brass as a spacer bend down the wires then cut off the front ones at a steep angle.
4. Feed the wires one at a time into the holes in the base then solder or glue the base to the box.
5. Cut off excess wire at the back and sides of the box then file smooth under the base and fit the top.
6. Fix in place on the running plate 4mm in from the edge as shown in sketch 7.

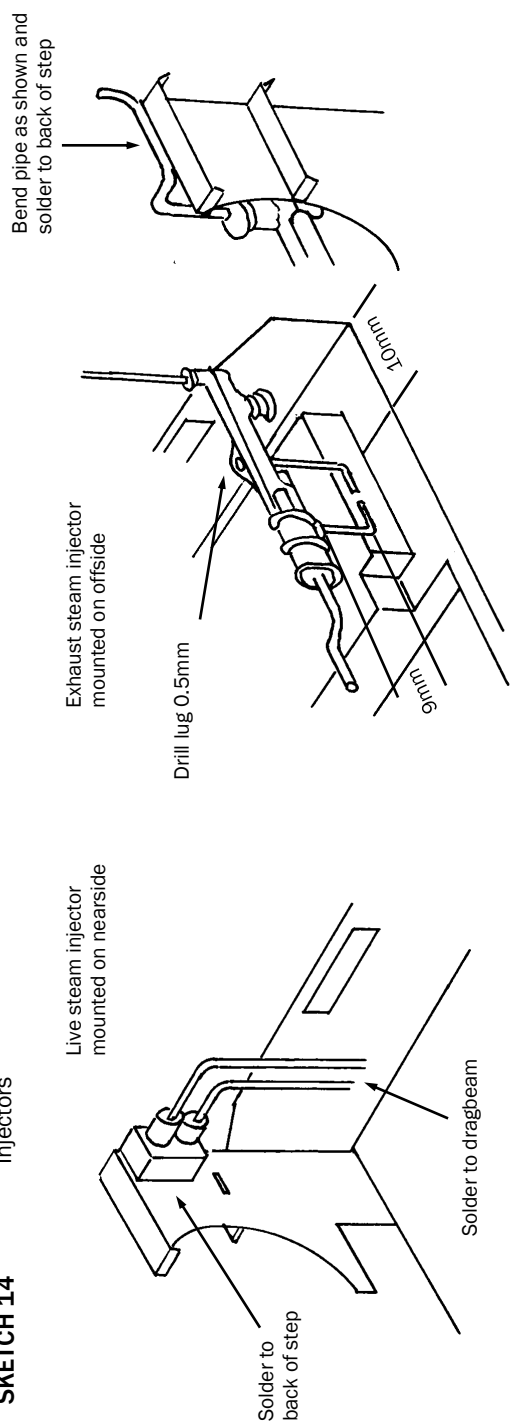
SKETCH 13

Smoke deflectors



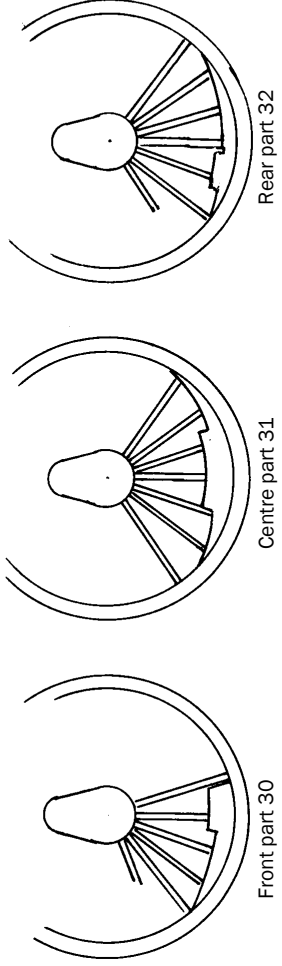
SKETCH 14

Injectors



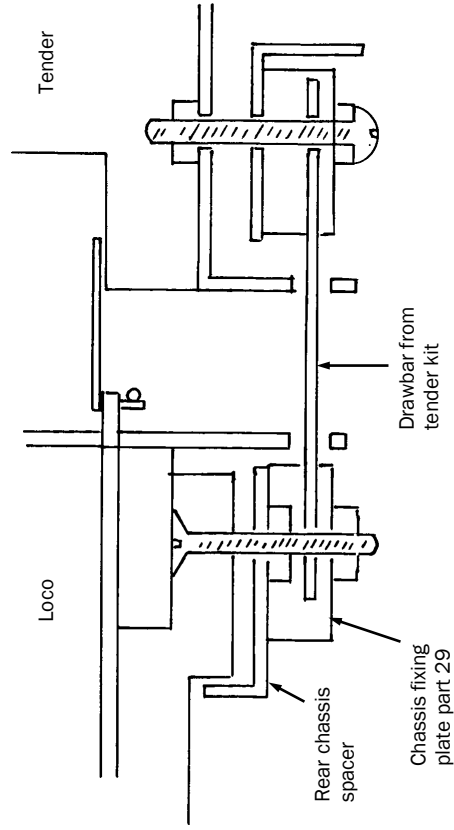
SKETCH 15

Balance weights



SKETCH 16

Drawbar



SKETCH 17

