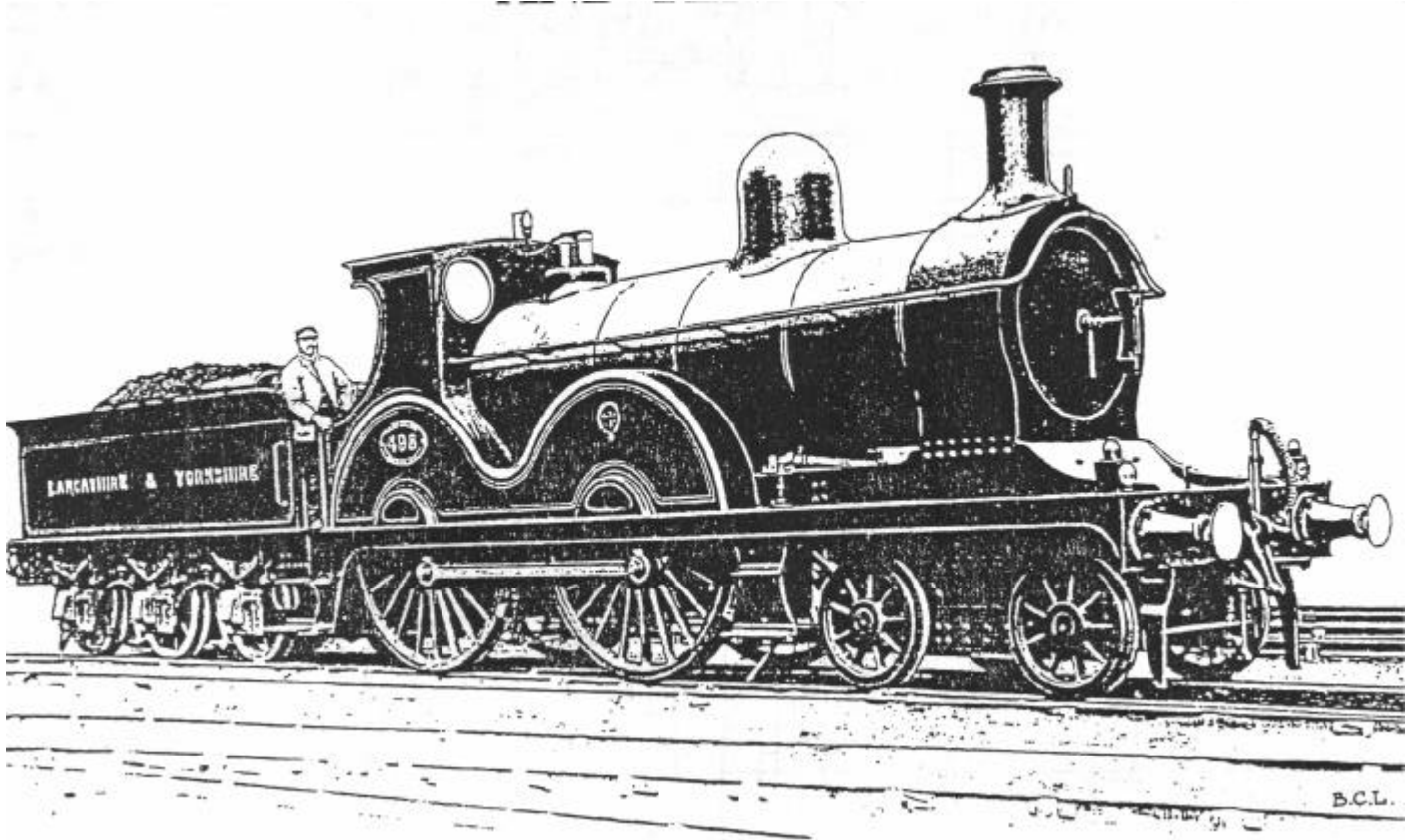


Aspinall 4-4-0 locomotive and tender



Prototype information

Introduced by Aspinall in 1891 these large locomotives were a smaller version of the Atlantic. They survived until the late 1920s when they were scrapped as part of the LMS standardisation policy. The Aspinall 440 was an imposing locomotive and was used for the acclaimed LYR transpennine express services of the Edwardian era. A fleet of 40 were built between 1891 and 1894. Over their life span various changes were made with different smokebox doors, buffers and tenders. Several members of the fleet were rebuilt with a Belpaire firebox, Schmidt superheater and extended fire boxes. At least one was rebuilt as an 4 cylinder compound. It is suggested that modellers undertake background reading to select which locomotive they wish to build.

References

The Lancashire and Yorkshire Railway in the 20th Century, E Mason

Required to complete

This model requires wheels, paint and transfers to complete. The locomotive driving wheels are 7' 3" twenty two spoke wheels, 3' nine spoke leading wheels and the tender 3' 7" 10 spoke wheels. The wheel stroke was 20" and the cylinder stroke 26". Suitable wheels are available from a number of specialist suppliers, we suggest Romford for OO and possibly EM and Ultrascale, Sharman or Alan Gibson for EM and 18.83. We recommend Precision Paint (LYR or LMS) and HMRS transfers (LMS). No LYR 4mm transfers exist for locomotives at the present time. If chosen, sprung pick ups and compensation components will be required. These may be obtained from Wizard Models 51L.

This locomotive project was commissioned by the Lancashire & Yorkshire Railway Society to celebrate the 150th anniversary of the founding of the railway.

If you have an interest in the Lancashire & Yorkshire Railway then the Lancashire and Yorkshire Railway Society exists for you. Two highly acclaimed Journals 'Platform' and 'Branchline' are produced several times a year with a bimonthly newsletter. The society may be contacted via the membership secretary, Ken Carter, 11 Waveney Close, Arnold, Nottingham, NG5 6QH, www.lyrs.org.uk. Please mention 51L if you contact the Society.

Acknowledgments

We would like to thank the following for their help in the production of this kit, Peter Priestley, Barry C Lane, Alan Doherty; Frank Jones and Derek Evans for test building and drafting the instructions.

Parts list

Etches
Taper chimney
Dome
Ramsbottom safety valve
Sand box filler lids (2 off)
Whistle
Aspinall smoke box door
Smoke box door handle
Reverser screw
Boiler back plate, round type
Handrail knobs, medium (11 off)
Handrail knobs , short (3 off)
Piano front
Wash out plugs (5)
Tender tool boxes (2 off)
Tender axleboxes (6 off)
Vacuum pipes (2 off)
Length of wire, 0.33 mm diameter
Aspinall sprung buffers (May be exchanged for Hughes buffers on request, please send SAE and allow one week for return).
Main frame bearings (4 off)
Tender and bogie bearings (10 off)
8 BA nuts (5 off), bolts (4 off) and washers (2 off)
12 BA nuts and bolts (2 off)

Tools required

The following tools are suggestions only, and you will no doubt have your own preferences.

(For further details see www.51l.co.uk std tools brass)

25-60 watt soldering iron and 15-20 watt iron or temperature controlled iron for white metal castings.

Selection of files, (fine jewelers types are particularly useful)

Piece of plate glass for checking levels.

A small engineers square several sizes are useful

Selection of small drills and pin vice.

A set of frame assembly jigs for your chosen gauge.

Vice.

1200 grit wet and dry (Silicon carbide) paper

Additional tools that would be helpful:

Set rolling bars or metal rods of suitable diameter for forming tender top flares etc.

Riveting tool or a slightly blunted fine centre punch / scribe.

Pair of bending bars or a pair of cheap steel rules and small engineers clamps.

Permission from the domestic authorities to use the gas cooker, kitchen sink to anneal tender sides.

Please read these instructions before starting to build your model. Examine all the parts and familiarise yourself with their assembly. Remove any moulding flash and ensure all parts fit correctly. We suggest wet fine emery paper (1200 grit) may be useful to clean up flash marks. Carry out a dummy run before assembly. Assembly is best carried out using low melt solder or an epoxy resin such as Araldite. For small parts use Superglue. To obtain the best results a combination of several techniques will be needed.

Assembly

All fold lines on the inside of the fold. Note not all half etched lines are fold Lines. Numbers in brackets (L 1) refer to item numbers on the etched sheets.

Foot plate

Remove the foot plate (L 1) from the fret. Clean up all the cusp lines to give a series of clean straight edges. Using two straight edges (or a pair of bending bars) clamp the outside of the running plate and fold up each of the two splasher supports from the main foot plate. Rivet the front buffer beam (L 3) and the two frame extensions (L 5) while still flat in the etch. Remove the buffer beam and draw beam (L 4) (note the recess on the inside of the draw beam goes up against the foot plate) and solder to the foot plate in the half etched lines provided. Remove the valances (L 2) from the fret noting that these are handed. Clean up all the edges very carefully as these parts are quite delicate and one little kink will show up badly. Fold up the bottom step and run a fine fillet of solder into the joint. Remove steps (next to L 2) from the fret and solder in place on the rear step area of the valance. The tab goes through the slot provided and a good fillet of solder behind will allow you to file the rear portion flush. Try the valance for fit into the half etched line under the foot plate. It may be necessary to file a little from the rear of the valance to get a perfect fit. When ready, solder to the foot plate, starting from the centre to reduce expansion. Prepare the front steps (L 6). These are made up as the rear steps but the small return end fits under the foot plate, setting the steps back the correct distance. The centre of the steps' lines up with the pre marked hole designated for the sandbox cover. The whole foot plate should now sit straight and level on your plate glass. Clean up all joints and remove any flux residues. Fold the smokebox frame (L22) into a 'U' shape and lightly reinforce the inside angles with solder. Open out the hole in the base to clear the 10 BA thread and solder an 10 BA nut over the hole.

Chassis

Note there are 3 sizes of loco frame spacers, bogie chassis, cab floor and tender frame spacers supplied in the kit to suit 00, EM and 18.83 mm standards.

Remove and clean up parts (C 1), the side frames of the chassis. At this point it is important that you choose the form of electrical pickup you are going to use. If you decide to use plunger type pickups you will need to drill your chassis to accommodate them. You now must decide if you want to make up the chassis as a fixed wheel unit or with some form of compensation or springing and to fit the bearings or compensation units to suit. This is perhaps the best time to sweat together both pairs of coupling rods (C 8) and to open out the bearing holes to suit your crankpin bearings.

Just over the front bogie centre is some rivet details that need to be punched out. Take your frame assembly jigs and clamp the two frames together using your coupling rods to align them. Take the foot plate assembly and place a piece of thin paper on the underside between the front buffer beam and the 10 BA hole opened out above. Fit the chassis assembly in position over the paper and up against the front buffer beam (it may be necessary to carefully remove any excess solder from the front buffer beam! drag beam joints). Take spacer (C 5) and locate between the frames and up against the front buffer beam and the foot plate (this will give clearance for the screw coupling) and solder to the frames flush with the top of the frames but *not* to the buffer beam. Take frame spacer (C 3) and fold to a 'U' shape. Take an 10 BA screw and thread on an 10 BA nut, then the frame

spacer (C 3) with the base of the 'U' up against the nut and then another 10 BA nut to hold the spacer in place. Thread a third 10 BA nut on the screw, thread the screw through the foot plate into the nut in the smoke box, use the third nut to lock it in place against the paper and the bottom of the foot plate and use the other two nuts to adjust the spacer until it is flush with bottom edge of the frames. Remember that this spacer will provide the bearing surface for the front bogie so ensure that it is flush with the frames. When satisfied solder the spacer between the frames. *Sorry, but the above method sounds much more complicated than it really is -but it works!*

Take a piece of thin paper and place in the angle between the drag beam and running plate. Take the rear frame spacer (C 2) bend up the two extensions, locate the small extension at the back of the spacer in the recess in the drag beam and solder to the chassis. Solder the remaining spacers (C 4) between the frames to suite your method of motorising. Fold up the brake bracket (C 7) and fit it under the rear cross member of the chassis with the narrow end facing forward. Assemble the brake links (C 16) on to two short lengths of wire and locate in the brake bracket refer to the G.A, inside the front cover. The ash pan (C 9) is then folded to fit between the frames. The front of the ash pan has a small step in it, this being the only difficult bit of folding to do. At this point you need to choose the motor and gearbox you are going to use, as you will need to make sure you have enough clearance around the ash pan. It is usefi.il to make a lead weight to fit inside the ash pan to give added weight to your loco. Open out the 4 brake holes in the frames and solder wire through to form the brake hangers, make up 4 pairs of brake shoe assemblies (C13 & C14) solder together and assemble onto the brake hanger wires in line with the wheel treads.

Bogie

Take the bogie frame (C 10) and carefully open out the slot to allow free lateral movement on an SBA screw. Open out the two centre holes in the side frame 14BA clearance and fold up the sides. Solder a 14BA screw in each hole with the head on the inside of the angle. Take the bogie outside frames (C 12), push out the rivets and open out the centre holes 14BA clearance. Open out the bearing holes and solder the 2mm bearings in place. Fit the outside frames over the 14BA screw and open out the bearing holes on the inside frame to allow some vertical movement of the outside frames. Solder the cross braces (Cli) in place on the inner bogie frame and trim to length. Fit the bogie wheels and the 14BA nuts, trim the screws to length and test run the bogie. When satisfied fit (with an 8BA washer

top and bottom of the bogie frame) to the chassis. Temporarily fit the driving wheels and coupling rods and test run the chassis (without the motor) for clearance etc.;

Cab

Locate the cab sides/splasher inners (L 8) to the running plate with the coupling rod cut-outs evenly spaced, solder in place. The cab front (L 9) should be trimmed to provide clearance for the wheels of your choice and it fits between the cab sides and should be level at the top. The half etched area should be on the inside of the cab. Check for level and squareness. Shape and fit the roof (L 10) and fit the reinforcing strip (L11) to the rear of the roof Solder the splasher outers (L13 In place (the 3 half etched dots indicate the front) Fit the cab beading (L15) onto the cab aperture and solder the handrail in place. Take cab inner splasher (L14) (2 oft) and bend to shape note the splasher as etched is the correct width for '00' the other etched lines are for 'EM' and 'P4'. Solder the splasher inside the cab side sheets flush with, but not to, the loco frames. Bend the cab floor (note-i Bend only) and solder between the loco frames.

Splashers

The splasher tops (Li2) are soldered flush with the top of the splasher outer (L13). It is useful to anneal the splasher tops by heating them until a dull red in a gas flame and then plunging them into cold water. Do this while they are still flat and thoroughly clean them before bending to the correct shape to fit the splasher profile. By annealing them you should find it easier to get the final shape. The half etched tab will need to be filed on the outer edge to the thickness of the cab side material to ensure a snug fit inside the cab. Solder the coupling rod splasher outer (L16) (4 off) to the running plate using a splasher top (Li7) as a guide. Curve the coupling rod splasher tops (L17) to match the splasher, trim to length and solder in place flush with the top of the coupling rod splasher. Fit the frame extensions (L 5) into the half etched slots in the running plate. Fit the reversing lever bracket (L 7) to the frame extension in front of the near side front splasher.

Boiler

This etch (L 18) comes ready rolled, ensure that the ends are completely square, otherwise your handrail knobs will not line up correctly. Solder the bottom edge of the boiler together. Take the boiler inner former (L19) and open out the centre hole 10BA clearance and solder an 10BA nut over the hole. Solder the full circle (L19) flush with the rear of the boiler wrapper. It may be necessary to carefully file the former to provide clearance for the wheels. Carefully form the boiler wrapper to match the contour of the splasher tops. Next take the widest of the overlays (L23) and solder to the front of the boiler to start the smokebox, keeping the front edge level. Take the second narrower overlay (L2 1) and repeat the last operation, leaving a step between first and second overlays. Solder the smokebox assembly (L22) to the boiler and file to correct shape before fitting the outer smokebox wrapper (L21), having formed it to shape. Offer up the boiler and smokebox assembly to the running plate / cab assembly. It may be necessary to carefully elongate the hole in the cab centre to level up the boiler on the foot plate. Also it may also be necessary to shorten the bogie fixing screw so that it does not foul the boiler assembly. When you are completely happy with your boiler you can start to add the chimney, dome, safety valve, valve chest etc.

Tender

Remove the tender foot plate (T 1) from the fret and clean up all the edges (*note the half etched lines are on the iop*) open out the 2 holes 10BA clearance and solder an 10BA nut over each. Take buffer beam (T 4)) from the rivet detail. Remove the draw beam (T 5) and the two tender mainframes (T 2). Bend up the lower steps and fit the steps (T 3) . Fit and solder the mainframes into the tabs in the foot plate. Check for squareness. Fit the two beams into place, making sure you fit the buffer beam to rear. Remove and fold the tender top (T 8) to shape. Fold up the coal chute (T 9) and solder into the tender top, noting that the front of the chute projects slightly through the opening in the tender front panel. Remove the tender sides (T 6) and the rear panel (T 7) from the fret. The tops of these need to be flared outwards. This can be achieved by annealing them and/or using a round bar of the correct diameter and your vice. This procedure has to be repeated with the three overlays (T10 & T11) before these are sweated into place on the sides and rear.

When complete the three pieces are added to the foot plate in the half etched slots provided. The rear corners will need to be cleaned up, filled with a solder fillet and filed into shape. The top can now be added and will make the whole structure strong and square. Fold the two cupboards (T12) and fit to the front, one each side of the coal chute opening. Take water filler side (T 14) bend to shape and solder around the side of filler base (T13).

Fit filler top (T15) to the assembly and try for fit with partition (T16). When satisfied fit and solder partition to tender top and sides. Fit the water filler assembly to the tender top referring to the General Arrangement drawing for position. Make up and fit handrails for the tender sides. Fit Handrail knobs to the tender backs and fit the handrail. Fit the tool boxes and water filler when you are happy with the finished tender. Add your buffers to the buffer beam taking care that no solder gets inside the buffer stocks.

Tender Chassis

Take the two mainframes (T17) and open out the 6 holes for the brake hanger wires. Place a thin piece of paper under the tender body. Clamp the frames together using your frame assembly jigs. Fold the two cross members (T19 & T20) and align with the 10BA holes in the tender floor. Solder them in place between the frames. Bend brake linkage bracket (T18) to a 'U' shape, and solder in the recess on the top of the tender frames (*the holes go to the front*). Fit the bearings of your choice in place. Fit the brake hanger wires to the chassis and assemble the brake shoes (T22 & T23) fitting the cross bars through holes provided. (*Note* thread 2 links (T24) onto the front cross bar) They are then connected by two lengths of wire from the front cross bar running to the back cross bar. Thread 2 links (T25) onto a length of wire and fit to the bracket (T18) and joint to the links (T24). Fit the body and wheels and test run your chassis.

Detailing

Now is the time to add all the handrails, sandbox covers etc. You will also need to make up an 'L' shaped bracket to represent the reversing lever on the left hand side of the boiler. This can easily be done from one of the many scrap pieces of etch. Finally, fit the backhead to the cab. It is useful to paint and put on all small fittings before fastening into the cab. Fit the whistle. Give all the parts a thorough cleaning before painting.

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