

**LF16 Frames for Ivatt LMS
2MT 2-6-0**

Components recommended to construct a complete chassis:

Motion set LM16 Cylinders LC6
 Pony truck LS2 Crossheads LS8
 6 Markits 5'0" drivers (WH203), 3 axles
 6 crankpins and washers (RM2)
 3'0" 9 spoke bogie wheels (WH30)
 Canon CA1620 motor and gearbox GB8/15

This etch contains sideframes, brake shoes, brake pull rods, balance weights, motion brackets and cylinder stretchers to produce a chassis of the correct scale dimensions and appearance which can be used as a substitute for a kit or RTR chassis. Cylinders, motion, crossheads and pony truck to complete the chassis are all available from our range; see the panel above. A separate fret of 00 spacers is included, which can be exchanged for EM (LS10) or P4 (LS60) by returning them to us in a stamped, self-addressed envelope.

We recommend our gearbox GB8/15 with a Canon CA1620 motor for this model, and can supply these as well as Markits driving and bogie wheels.

As supplied the frames are suitable for the Bachmann model.

Please note that all bends should be made with the half-etched lines to the inside and reinforced with a fillet of solder.

Assembly Instructions

1. The frames may be assembled rigid, or with sprung axles using our hornblocks and springs (code LS55). If you wish to spring the chassis cut through the spring hangers using a piercing saw and remove them together with the centre portion of etch within the hornway. The sides of the hornways are etched at approximately 5.85mm wide to ensure that any slight variations in the width of the machined grooves in the hornblocks do not result in any one of them having a loose fit within the hornway. Each hornway must be carefully dressed with a file to achieve a good sliding fit to each hornblock, which should then be marked up or placed into a labelled bag to ensure it is assembled into the hornway to which it has been precisely matched. Take time and care over this stage, removing material slowly and from each face equally. The hornblock must drop freely under gravity but must not show any fore and aft play which might cause the coupling rods to bind.
2. For rigid axle assembly, carefully open out the axle bearing holes in the frames until the bearings are a close fit, ensuring the bearing flanges fit snugly against the frames. This is best done using a five-sided broach. If you are using our chassis jigs (see below), DO NOT solder the bearings in place at this stage. Open out the holes for the brake cross-shafts to 0.75mm.
3. Select the appropriate frame spacers - their size and position will depend on the siting of the body fixings and your preferred motor/gearbox and pick-up arrangements. Our own preferences are, where possible, for a tongue and slot fixing at the front bufferbeam and a single bolt fixing under the cab, together with wiper pick-ups mounted below the chassis. A suitable layout of spacers is shown in sketch 1 to suit this with a Canon CA1620 motor and our gearbox GB8/15.
4. If you are springing the chassis drill out the holes at each side of the hornways and those in the separate spring etches to 0.5mm, as shown in sketch 2. The frame spacers fold to right angles on the half-etched line. Solder your chosen ones to one of the frames, then assemble by clamping the other side frame to the first using the wheelsets to check alignment before soldering the second side frame. This crucial stage of the assembly can be achieved more easily and with greater accuracy by using our frame assembly jigs (code LS16 for 00, LS17 for EM and LS61 for P4). Full instructions are provided with them. If you are springing the chassis using our hornblocks please note that you will need a set of four turnings (code LS59) which are intended to locate in the hornways during this stage of the assembly.
5. For a sprung chassis insert the spring and hornblock, ensuring that they are placed into their correct hornways only. Note that the grooves on the hornblocks are not on the centre line. This allows you to choose a greater or lesser amount of sideplay on each axle. Use 0.45mm wire to locate the spring detail and solder in place using a minimum of flux. This captures the hornblock, and the protruding shackle should ensure that the bottom of the hornblock is slightly above the bottom of the chassis

giving approximately 1mm of movement only. Do not be tempted to file too much material from the top of the centre shackle. Greater travel should not be necessary and there is then a risk that the spring may become dislodged if there is too much downward travel.

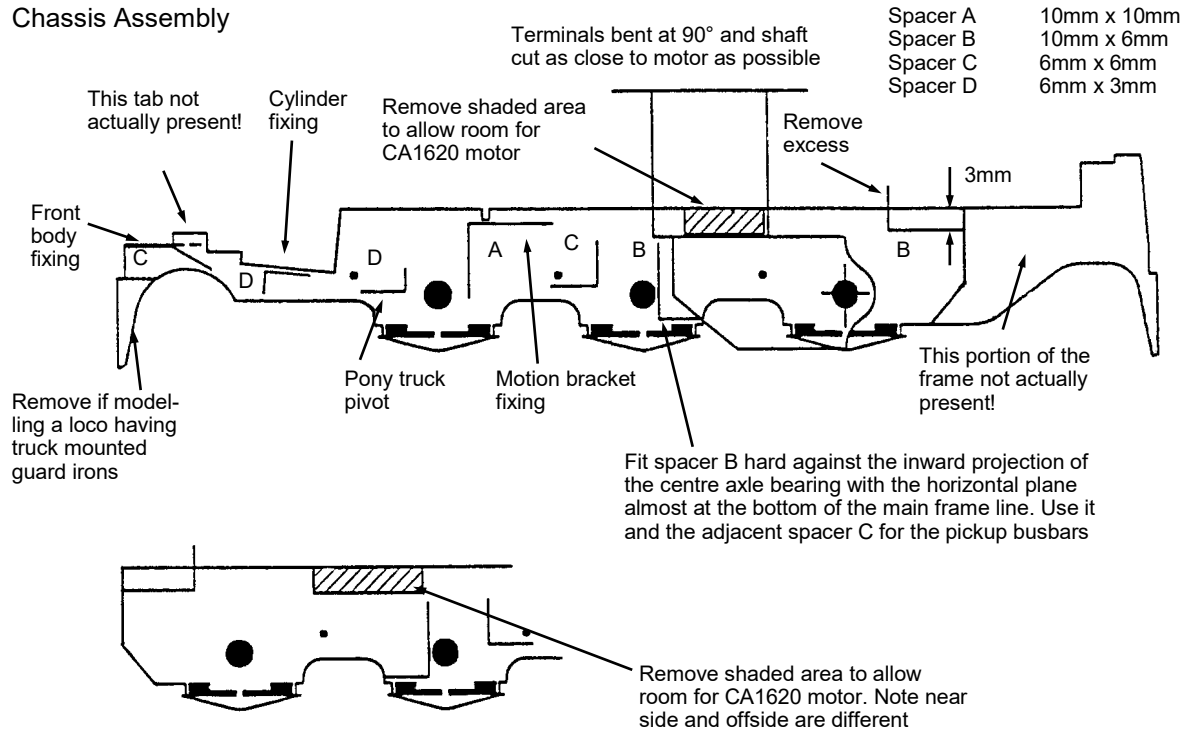
6. With the frames assembled, solder lengths of 0.7mm wire through the brake hanger holes. Solder the brake shoe overlays to the brake rear etches (see sketch 3) then thread on and solder in place. Their alignment is made easier if something of suitable thickness is used to space out the brake shoe from the frame, with a wheelset fitted to ensure correct spacing relative to the wheel treads.
7. Lengths of 0.7mm wire are next threaded through the bottom brake hanger holes on one side of the chassis, through both sets of brake pull rods and then through the second set of brake hangers. Solder the wire to the brake hangers, then slide the pull rods outwards to line up with the inner edges of the frames and solder them to the wire.
8. Finally, solder on M2.0 fixing nuts for cylinders, pony truck, motion bracket and pick-ups as required.

The chassis can now be washed to remove any flux residues, but before painting we suggest that you fit the cylinders, motion bracket and wheels and check the fit of the body. You may find some slight filing is required to obtain a perfect fit. If you next assemble the pony truck then the frames and pony truck can be painted together and left to harden whilst the motion is assembled.

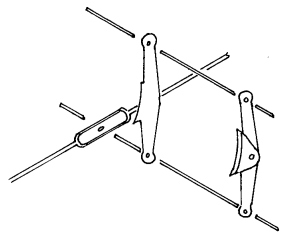
Our preference is for wiper pick-ups made from 26swg phosphor bronze wire as per sketch 4. The wire is soldered to PCB strip which is bolted to a frame spacer. We recommend that, if possible, you arrange the pick-up to be "bolt on" since this allows for easy removal and adjustment of the wire wipers. Pack LS23 provides all the necessary parts.

SKETCH 1

Chassis Assembly

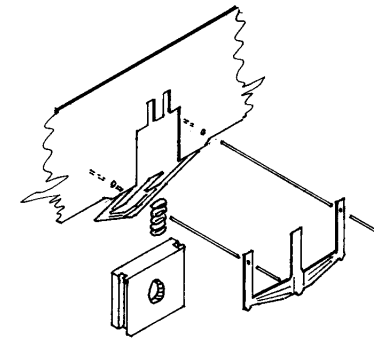


SKETCH 3



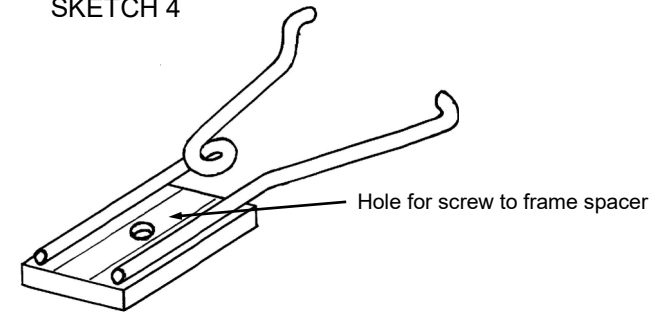
Brake overlays and pull rods

SKETCH 2



Fitting hornblocks

SKETCH 4



Suggested pickup arrangement, using 26swg wire soldered to copperclad busbar.

We can supply a pick-up set comprising wide track printed circuit strip, phosphor bronze wire, fixing nuts and bolts and insulated wire, code LS23.