

**LF36 Frames for LNER
Gresley V2 2-6-2**

Components recommended to construct a complete chassis:

Motion set	LM36	Cylinders	LC4
Pony truck	LS3	Crossheads	LS9
Axleboxes	LS14		

6 Markits 6'2" 18-spoke drivers (WH210), 3 axles
6 crankpins and washers (RM2)
1 set 12mm 10-spoke pony truck wheels (WH31)
1 set 14mm 12-spoke trailing wheels (WH33B)
Gearbox GB5/20 & DE; or GB1/20 or GB3/20
Mashima 1628 motor

This etch contains sideframes, balance weights, brake shoes and brake pull rods to produce a basic 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 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 a Mashima MH1628 motor for this model, together with a gearbox GB5/20 and drive extender, or GB1/20 or GB3/20 and can supply all these except the motor together with Markits driving and carrying wheels if required.

As supplied the frames are suitable for the Bachmann model, but if using the newer body then modify the front of the frames as shown overleaf.

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. so as 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 only 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 in freely under gravity but must not show any fore and aft play which might cause the coupling rods to bind. This might sound daunting, but the patient builder will be rewarded with a chassis having superior ride, track holding and traction compared to an unsprung chassis.
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 - the size and position of them 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 buffer beam and a single bolt fixing under the cab, together with wiper pick-ups mounted below the chassis. A suitable layout of spacers is shown overleaf to suit this and our gearbox GB5 & DE or GB1 or GB3 and Mashima MH1628 motor.
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 5. 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

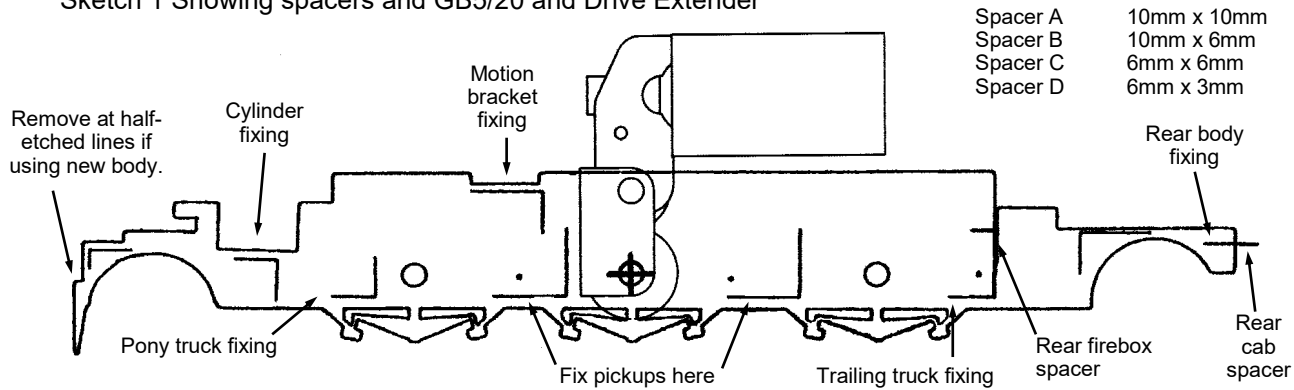
provided with them. If you are springing the chassis using our hornblocks please note that you will need a set of four turnings (code LS59) which are intended to locate in the hornway during this stage of assembly.

5. For a sprung chassis insert the spring and hornblock, ensuring that they are placed into their correct hornways only. Note that the grooves in the hornblock are not on the centre line, allowing 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 centre shackle should ensure that the bottom of the hornblock is slightly above the bottom edge of the chassis giving approximately 1.0mm 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 could become dislodged if there is too much downward travel.
6. Lengths of 0.7mm wire are threaded through the brake hanger holes in the chassis and soldered in place. The rear frame extensions are then soldered in place using the rear brake cross shaft to ensure alignment. Solder the brake overlays to the brake rear etches then thread on and solder in place. Thread 0.7mm wire through both sets of brake pull rods and through the bottom 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.
7. Solder on fixing nuts for cylinders, bogie, motion bracket and pick-ups as required. The position of the fixing nut for the motion bracket is crucial, since it must line up with the hole in the bracket itself. To ensure that it does, temporarily fit the bracket in position on the frames and bolt it in place before soldering the nut to the spacer.
8. Finally, the fitting and soldering in place of the rear cab spacer and the rear firebox spacer is carried out, checking the fit against the body and adjusting if required.

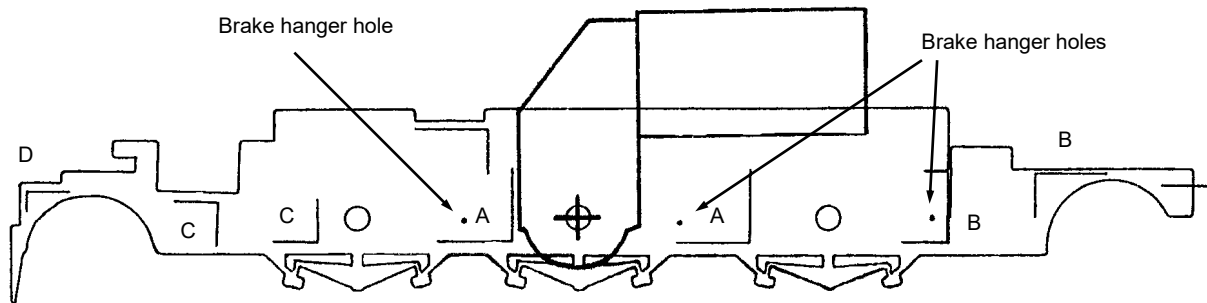
The chassis can now be washed to remove any flux residues, but before painting we suggest that you fit the cylinders, motion bracket and wheels and check the fit of the body. You may find some slight filing is required to obtain a perfect fit. If you next assemble the bogie then the frames and bogie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

Our preference is for wiper pick-ups made from 26 swg phosphor bronze wire as per the sketch. 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 parts.

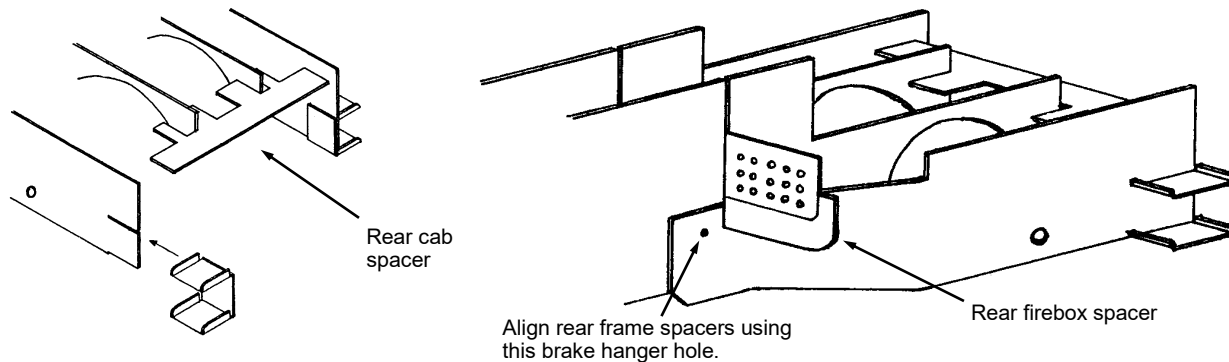
Sketch 1 Showing spacers and GB5/20 and Drive Extender



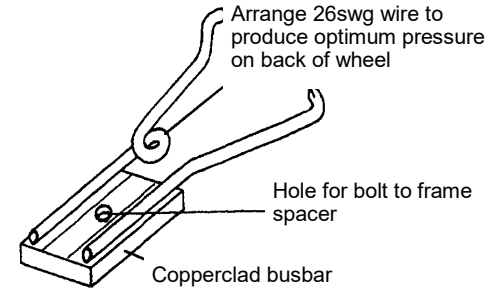
Sketch 2 Showing spacers and GB1/20 or GB3/20



Sketch 3 Exploded diagrams showing rear frame extensions, rear cab spacer, and rear firebox spacer.



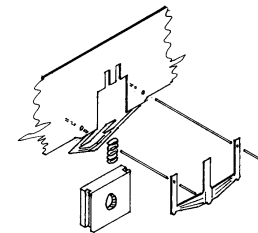
Sketch 6 Suggested Pickup Arrangement



We can supply a pickup set comprising wide track pcb, phosphor bronze wire, fixing nuts and bolts and insulated wire (code LS23).

For tender locos a second pickup set can be used in the tender and the current fed to the locomotive using our loco-tender connector pack (code LS24).

Sketch 5 Hornblock fixing



Sketch 4 Showing the angling of the rear frame extensions.

