



**LCP9 Chassis pack for
LMS Compound 4P
4-4-0**

Components recommended to construct a complete chassis:
 4 off Markits 6"9" wheels (WH214)
 2 axles
 4 crankpins and washers (RM1)
 2 sets 14mm bogie wheels (WH33)
 Canon CA1620 motor, gearbox GB8/15

This etch contains sideframes, 00 spacers, brake gear, cylinders, and coupling and connecting rods to produce a chassis for use as a replacement for the Hornby model (see below). We recommend the Canon CA1620 motor with our gearbox GB8/15 for this model, and can supply these together with Markits driving and bogie wheels if required. EM spacers are also available separately, code LS10, as are P4 spacers (code LS60).

Note The Hornby model has a 40mm wheelbase, and this chassis has been designed to match. It is not suitable for scale models with a 38mm wheelbase.

Parts list - Etchings

- | | |
|----------------------------------|---------------------------------|
| 1. Frames x2 | 8. Cylinder stretcher |
| 2. 00 frame spacers x8 | 9. Slidebars x2 |
| 3. Long brake shoes - centre x2 | 10. Slidebar support bracket x2 |
| 4. Long brake shoes - front x2 | 11. Coupling rods x2 |
| 5. Short brake shoes - centre x2 | 12. Coupling rod overlays x2 |
| 6. Short brake shoes - rear x2 | 13. Connecting rods x2 |
| 7. Brake pull rods x2 | 14. Connecting rod overlays x2 |

Parts list - Castings

- | | |
|---------------------------------|---------------------------|
| Cylinder sides (1 of each hand) | Piston tail rod covers x2 |
| Brake cylinders x2 | Crossheads x2 |

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

Assembly Instructions

- Although designed primarily as a rigid chassis, compensation systems such as Perseverance, MJT or Sharman Wheels can easily be used if the hornways are cut out at the half-etched lines before starting 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.
- Select the appropriate frame spacers - the size and position of them will depend upon 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 to suit this and our gearbox GB8/15 and Canon CA1620 motor.
- 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.
- With the frames assembled, solder lengths of 0.7mm wire through the brake hanger holes then thread on and solder the front and rear brake shoes (4 & 6) in place. Drill the brake cylinders 0.75mm along the axis to accept the mounting tabs on the centre brake shoes (3 & 5). Thread one brake shoe onto the wire, fit the brake cylinder and then thread on the second brake shoe. You may need to trim the mounting tabs a little. Solder in place.

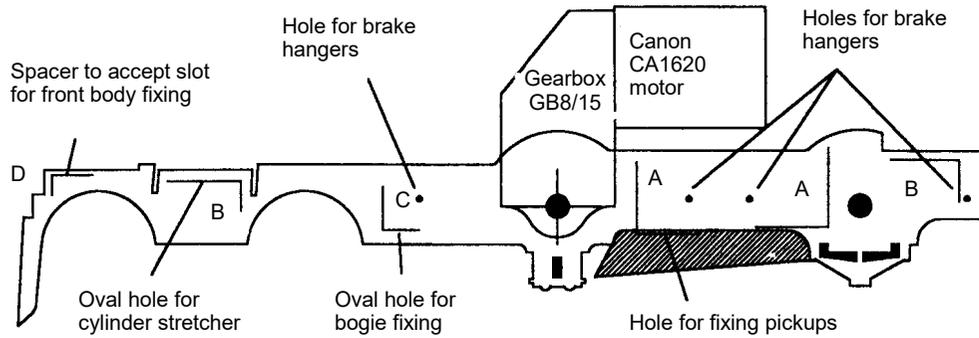
- Lengths of 0.7mm wire can be threaded through the bottom brake hanger holes and soldered in place. Do not add the brake pull rods yet - these fit outside the wheels and are best fitted later. Solder on the fixing nuts for the bogie, cylinder stretcher and pick-ups.
- Fold up the slidebars (9) as per the sketch and solder to the rear face of the cylinder stretcher (8), locating them in the rectangular etched holes. The cylinder assembly can now be folded up using the locating slots in the frames as a guide. Reinforce the bends with solder. Note that because the cylinders are inclined slightly the front and rear faces are not perpendicular to the centre stretcher
- With the cylinders temporarily bolted in position, locate the slidebar support brackets (10) in position and solder to the slidebars only. The slidebars can now be trimmed to length.

We suggest you assemble the bogie at this stage (see separate pack for instructions) at which point all parts can be washed to remove flux residues before proceeding further.
- Fix the cast cylinder side wrappers to the stretcher, noting that the small notch(es) in the sides should be at the top front: single notch to the nearside and double notch to the offside. Carefully file down the top of the side castings to ensure they are flush with the top outer edges of the etch. Fix the piston tail rod castings to the front of the cylinders. Trim back flush with the inside of the cylinder etch - you do not want to hit it with the piston rod.
- Solder the coupling rod overlays (12) to the plain inner rods (11) and the connecting rod overlays (14) to the backing rods (13). These operations are simplified if the crankpin holes are first drilled (1.2mm for Markits crankpins) and the overlays tinned along their length. Both the inner rod and the overlay can now be threaded onto the drill which will keep one end in alignment whilst the other end is squared up and the rods sweated together (see sketch).
- Assemble the connecting rods to the crossheads with the pins inserted from the back as per the sketch. Check the fit of the crossheads within the slidebars - you will probably find the top and bottom slots need widening slightly to obtain a good sliding fit.

Chassis, bogie and wheels can now be painted prior to final assembly. Note that when fitting the motion the connecting rod should be INSIDE the coupling rods. If using Markits wheels it is best to use a paper washer between the rod and the crankpin washer to prevent the rods being soldered to the crankpin. You will need two washers on the rear drivers to space out the coupling rods. With the driving wheels fitted the brake pull rods (7) can be fixed in place, making sure there is adequate clearance between the rods and the wheels

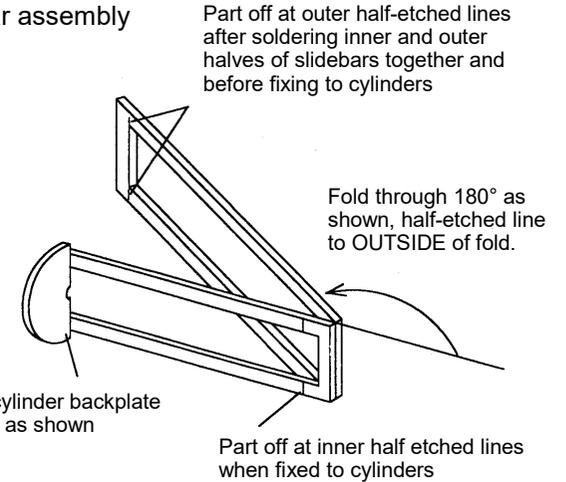
Our preference is for wiper pick-ups made from 26swg phosphor bronze wire as per the sketch. The wire is soldered to PCB strip which is bolted to a frame spacer. We recommend that, if possible, you arrange the pick-up to be "bolt on" since this allows for easy removal and adjustment of the wire wipers.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

Chassis assembly

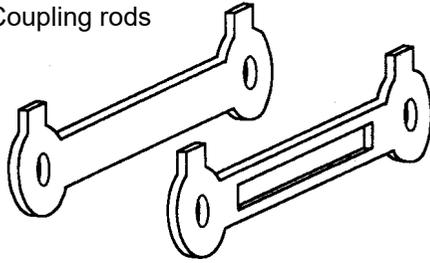


- Spacer A 10mm x 10mm
- Spacer B 10mm x 6mm
- Spacer C 6mm x 6mm
- Spacer D 6mm x 3mm

Slidebar assembly

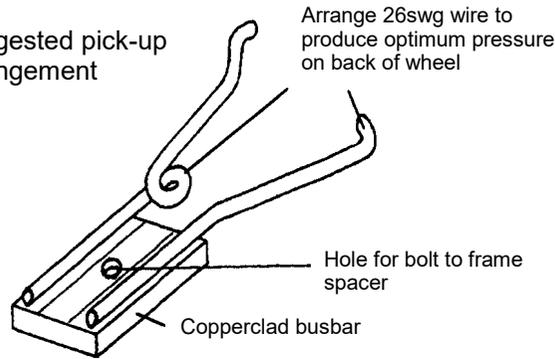


Coupling rods

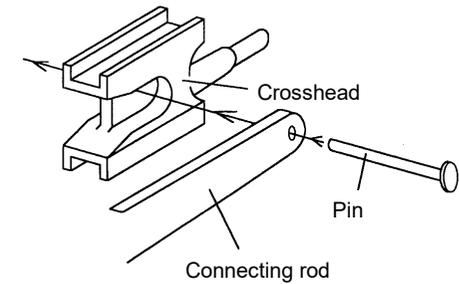


Solder overlay to back rod

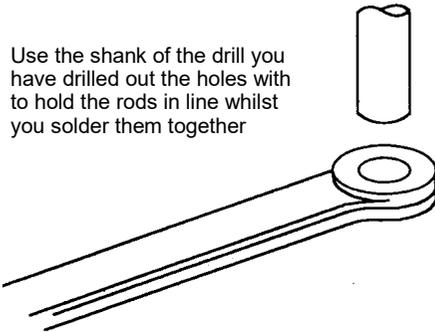
Suggested pick-up arrangement



Crosshead assembly sketch (viewed from the rear)



Use the shank of the drill you have drilled out the holes with to hold the rods in line whilst you solder them together



Schematic arrangement of brake gear

