

LMS, LNER and BR fitted underframes

Revision 2 – to include LNER Horsebox and CCT underframes

These instructions cover the following underframes:

2-331 9' LMS 8 Shoe Fitted Underframe for Association Banana van kit.
2-375 10' LMS 8 Shoe Fitted Underframe for NGS van kit

2-371 9' LNER 8 Shoe Fitted Underframe for Parkwood vans
2-372 10' LNER 8 Shoe Fitted Underframe for Parkwood vans
2-373 12' LNER 8 Shoe Fitted Underframe for Foxhunter Fish Van
2-320 15' LNER Style 8 Shoe Fitted Underframe for Chivers Fish Van
2-377 15' LNER Style 8 Shoe Fitted Underframe for Peco Plate Wagon
4-470 LNER Long CCT Fitted underframe for Chivers body
4-471 LNER Horsebox Fitted underframe for Chivers body

2-321 15' BR Style 8 Shoe Fitted Underframe for Chivers Fish Van
2-378 15' BR Style 8 Shoe Fitted Underframe for Peco Plate Wagon
2-323 18'6" BR Style 8 Shoe Fitted Underframe for Chivers Tube Van

2-605 LMS 8 shoe 11 ft Cattle Wagon Underframe
2-609 LNER 8 shoe 9 ft Fitted Wagon Underframe

Historical Notes

Following the grouping, the Big 4 companies largely adopted the RCH (Railway Clearing House) underframe as a standard for their short wheelbase unfitted wagon stock. However, for fitted stock this was not the case. Only the GWR adopted what was a standard RCH style 4-shoe underframe with vacuum cylinder added, the other three companies developing their own designs. The LMS produced a fitted design similar to the RCH unfitted, but with 8 shoe clasp brakes and short brake levers, utilising Morton brake linkage. It was almost exclusively built in 10' wheelbase with steel solebars, but the fitted banana and refrigerated vans were seen with both 9' and 10'6" examples.

The LNER also produced an 8 shoe design, but with offset V hangers together with linkage to avoid the need for the Morton linkage. This was built in 9' and 10' varieties for normal vans, 12' and 15' for fish vans, and other wheelbases for horseboxes and CCTs. Both wooden and steel solebars were used.

In addition to a 4-shoe fitted underframe, BR also used an 8 shoe version with unusually shaped V Hangers and brake levers.

Appropriate kits to use these underframes with are:

- NGS LMS Vans. These had 10' LMS fitted underframes. Various other LMS wagons and vans also had the same underframe.
- Parkwood LNER vans. These had both 9' and 10' LNER fitted underframes, with both wooden and steel solebars
- Foxhunter LNER Fish van. These had 12' LNER fitted underframes, with wooden solebars
- Chivers BR Fish van. These had 15' LNER fitted underframes, with steel solebars. Similar later BR built vans had a BR Style fitted underframe.
- 2mm Scale Association BR Banana van. LMS built examples had the 9' LMS fitted underframe
- Chivers BR Tube wagon. This had a 18'6" wheelbase fitted underframe
- Chivers LNER horsebox. This had a 14' underframe
- Chivers LNER Long CCT
- Peco plate wagon. Probably by chance, this represents an almost exact-scale 2mm plate wagon as built by the LMS, LNER and BR. In addition to an unfitted RCH style underframe (kit 2-376), both LNER and BR style 8 shoe fitted underframes were used.

Assembly instructions

Parts required

1 x	underframe etch.
4 x 2-041	Rolling stock axle bearing cups
2 x 2-209	6mm plain spoke wagon wheels (or similar according to prototype).
4 x 2-441	Ribbed wagon buffers (or similar according to prototype).
1 x 2-346	Turned brass vacuum cylinder

0.3mm brass or nickel silver rod
solder and tools

General

Certain parts of the etch are very delicate, and therefore care is needed when cutting both them and adjacent parts out. Spares are provided of certain small or delicate items.

Although it is possible to assemble the kit using superglue, for these instructions soldered construction is assumed.

Unless otherwise indicated, fold lines for 90 degree folds are on the inside of the fold, for 180 degree lines on the outside of the fold.

Parts on the etch are numbered. An enlarged picture of the etched fret is provided for clarification. Study this and the instructions carefully before beginning assembly.

Underframe Assembly

1. Cut out the underframe etch (part 1) from the fret. If the underframe is to be used with a body kit including bufferbeams, remove the inner bufferbeams from the etch, and shorten the underframe to match the body.
2. Bearing cups may be soldered in place before or after folding the underframe into a U section, according to preference. On the BR underframes, an inner set of V hangers are present which should be folded up before the sides. Fold up the underframe sides into a U shape, or you may choose to leave it flat until steps 4 and 5 have been completed. Fit the wheels into the underframe and adjust for free running without excessive slop. Remove the wheels.
3. If fitting DG or similar couplings, foldup boxes are provided as mounting points.
4. For kit 2-377, optional half-etched overlays are provided to model wagons fitted with plate axleguards. If required (only some wagons had them) cut out and solder over the RCH style axleguards.
5. Cut out the inner (part 3) and outer (part 4) solebar etches.
6. The outer solebar may be provided with a selection of drop bars. According to the prototype selected, remove those not required, and carefully bend those left into an S shape (see prototype photos).
7. On prototypes with footsteps or footboards, these are attached to the outer solebar and should be bent through 90 degrees now. This is best done using bending bars to produce a uniform effect,
8. On kits 2-377 and 2-378, triangular strengthening pieces need to be folded out 90 degrees on part 3.
9. Shorten the solebars to match the underframe length if needed. If cast axleboxes and springs are preferred, remove the etched ones provided. Now fit the inner and outer solebars to the underframe, using the bearing cups as locating lugs.
10. On the LNER underframe, an additional overlay (part 13) is provided if you are building a wooden solebar underframe. If required, solder this in place.
11. Fold up and solder the axlebox etches, file of the remaining tab, and locate in place. Ensure you have them nice and square. Spares are provided in the case of

- mishap. RCH split (part 5a) LMS/LNER open front (part 5b), and roller bearing (part 5c) types may be provided. Choose those appropriate to your prototype
12. On underframes with footboards, the upper footboards should now be added using the slots provided in the solebars.
 13. If bufferbeams are being fitted, fold up the inner bufferbeams on the underframe. Select square (part 6) or angle ended (part 7) steel bufferbeams as appropriate, and solder into place, ensuring they are accurately located over the buffer holes, and that the etched channel section faces inwards. If building an LNER wooden solebar underframe, use part 14 instead. This has end parts which are folded through 180 degrees to form the correct thickness of bufferbeam. After folding file the bufferbeam ends smooth. Detailing etches are also provided for the coupling hook and its mounting plate.
 14. Cut out and fold up the clasp brake etch (part 2), including the two centrally located tabs, and solder in place in the underframe. Note the tabs are handed to ensure correct orientation. Fold up the two brake stretchers (part 10) into an inverted top hat shape, and spring into place between the brake blocks.
 15. Insert the wheels, and check that they do not foul the brakegear. Remove them again.
 16. Solder the vacuum cylinder in the hole provided.
 17. Thread 0.3mm brass wire through the V Hangers, making sure you include the appropriate brake rodding (part 11) and vacuum cylinder linkage (part 9), and for the LNER underframes, V Hanger linkage (part 12) noting this goes on the side with 2 V Hangers. Leave sufficient rod protruding to attach the brake levers later. Carefully solder the various parts in place.
 18. Fold up the brake levers (parts 8). Small location pips are etched on the levers where bends are required. First form the main profile of the lever – guides are found on the etch to assist with this. Next fold up the brake lever ratchet into a box shape. Now solder the brake levers in place onto the rod protruding from the V hanger, and into the slots provided in the solebar. Trim off the excess brass rod.
 19. On the LNER horsebox underframe, fold up and fit the battery box

References

1. LNER wagons, Tatlow, Pendragon 1998
2. An Illustrated History of LMS wagons Vol 1 and 2, Essery, OPC 1981
3. The LMS wagon, Essery and Morgan, David and Charles 1977
4. Official Drawings of LMS wagons No 1 and No 2, Essery, Wild Swan Publications 1996