Hornby Black Five detailing/upgrade kit

Hornby's DCC-ready Black Five is a good model that, with a little effort, can be transformed into an excellent one. The principal areas needing attention are the front frames and cylinders, the rear end under the cab, the coal space and the tender axleboxes. This kit provides a range of detailing components that will significantly enhance your Hornby model and enable you to produce an accurate portrayal of an individual locomotive. As you will see from the prototype notes below, there were many detail differences among the Black Fives and indeed Hornby themselves produce several boiler and tender variants. Make sure you have the right version before (intentionally or otherwise) you start rebuilding it into something else.

These detail parts will make a big difference to the appearance of the loco. But even if you retain Hornby's 00 gauge driving wheels, the model will look a lot better if you replace the bogie and tender wheels with the correct Stanier bevel-rim pattern, available from Alan Gibson or Sharman Wheels. You may also consider replacing the over-scale handrail knobs. Tim Shackleton's review of the Hornby Black Five in issue 138 of *Model Railway Journal* suggests other improvements you can make close-coupling the loco and tender, for instance, and thinning down the exposed edges of the tender side-sheets.

With any RTR upgrading exercise, however, there's a limit to how far you can go before building from a kit starts to seem like a more sensible option especially if you model in EM or P4. The perfectionist might well look at Hornby's Black Five and think about building a compensated chassis for it, or replacing the valve gear, or adding a fully riveted footplate. All these improvements are possible, but fall beyond the scope of this kit. So if this is the level of prototype fidelity you aspire to, we might just mention that Brassmasters already do a true finescale kit for the Black Five, from which most of the components in this detailing pack are derived . . .

Prototype notes

For a supposedly standardised class, there were an amazing number of variations among the Black Fives - and that's without considering the Caprotti locomotives and the unique Stephenson link engine. Moreover, engines built with one particular set of features often acquired different characteristics during works visits. If you are thinking of renumbering or modifying the Hornby model, we have listed the main points to be aware of. We have used LMS numbering throughout, except when referring to the 100 BR-built engines that were never in LMS ownership.

Wheelbase Nos 44658-767 had a longer wheelbase (27ft 6in rather than 27ft 2in).

Boiler Nos 5000-224 were built with short fireboxes, while the rest of the class had long fireboxes. Over a twenty-year period around 30 short-firebox engines (including Nos 5002/7/8/11/20/22/3/6/7/40/5/7/9/54/7-9/66/82/7/8/97/108/9/24/42/51/63/9/77/97) are known to have received the long-firebox pattern during heavy general repairs after modification, they were virtually identical to Nos 5225-499 and 4800-96, although a handful later reverted to short-firebox boilers. At least three long-firebox engines (Nos 45433/43/61) were subsequently rebuilt with short-firebox boilers. Long-wheelbase engines Nos 44658-767 had long-firebox boilers with a 4in longer smokebox the easiest way to identify them is by the teardrop-shaped cover of the 28-element superheater on the smokebox being below the handrails, and the forward-mounted top feed. Note that, in time, some standard-wheelbase Black Fives with central top feed acquired this type of superheater.

Dome (or lack of) and top feed Nos 5000-74 were built with domeless boilers what appears to be a "dome" on the centre boiler ring is actually the cover for the top feed. On 5020-69 the pipes to this top feed were prominent but on the others they were flush with the boiler cladding; Nos 5020-69 were quickly modified to conform with this style. A handful of domeless-boiler engines, usually but not exclusively from the Scottish Region, had a conventional top feed rather than the dome-shaped version. Most of the short-firebox, domeless-boiler engines were later rebuilt with a steam dome on the rear boiler ring and a top feed in a separate housing on the centre ring, where

the “dome” used to be. Boilers were routinely exchanged during works visits and the domeless boilers moved freely around between short-firebox engines Nos 5000-224; as far as we can trace, only around 35 locomotives seem never to have carried a domed boiler. All long-firebox engines had the steam dome on the rear boiler ring but, as built, the top feed could be either on the centre ring (Nos 5225-5499 and 4800-4996) or on the front boiler ring (all long-wheelbase Black Fives plus 4768-4799). There was much swapping of boilers over the lifetime of these engines, and many interesting anomalies, for instance, in BR days short-firebox engines Nos 45011/82/7 received long-firebox boilers with forward top feed. As always, look for visual confirmation of these features before choosing a number for your model.

Buffer beams these were plain on 5000-499 (apart from two prominent bolts on the outer ends). Engines numbered below 5000 had riveted bufferbeams but following accident damage, some locomotives from the original series also acquired this pattern. All tender buffer beams, however, were riveted. Many locomotives especially those allocated to Scottish sheds had two lines of vertical holes drilled into the buffer beams for use with snowplough fixings.

Front steam-heat pipes Nos 5020-69 and 5075-224 did not have these when built, although some later gained them. Note that the flexible pipe was often removed during the summer months, although the valve remained in situ.

Tall chimneys Nos 5020-69 at first had taller chimneys than those fitted to the rest of the class, but by Nationalisation all had the standard chimney.

Balance weights - short-firebox engines originally had plain balance weights, while those on long-firebox engines were riveted.

Coupling rods Nos 5000-5471 were built with plain, fishbelly-section coupling rods. Nos 5472-99 and 44658-999 had the fluted pattern.

Vacuum pumps in pre-war years many engines had a pump driven off the left-hand crosshead. These were removed in the late 1930s.

Cab windows both the cab side windows on Nos 5000-499 could be opened. The forward window was mounted in a sliding frame. On later engines the forward window was fixed, the frame was omitted and the beading was changed from half-round with radiused bottom corners to flat with square bottom corners.

Names just four Black Fives (Nos 5154/6-8) carried names, although there have long been rumours that No 5155 was named *Queen¹s Highlander* (sometimes quoted as *Queen¹s Edinburgh*) between 1942 and 1944. The nameplates, with crests, were carried on a flat plate mounted over the centre driving wheel.

Speedometer in BR days many locomotives were fitted with a Smith Stone¹s speedometer, driven off the left-hand rear wheel.

AWS fittings by the late 1950s many engines had acquired BR-pattern AWS equipment, with small cylinders mounted on the footplate ahead of the cab and a bang plate below the buffer beam to protect the bogie-mounted receiver. The wiring was carried in a conduit running along the left-hand footplate valance.

Tenders the Black Fives ran with three types of tender. As built, Nos 5000-124 had riveted tenders, while 5225-499 and 4800-6 had welded tenders and the remainder had part-welded/part-riveted tenders. Some ran with the same tender all their lives, but many swapped with other types. Tender spring hangers could be either long or short. Part-welded tenders had rectangular vents instead of the usual mushroom pattern and some had roller-bearing axleboxes. The LMS built four self-weighing tenders for test purposes which, at different times, were attached to various Black Fives.

These notes are for your guidance only as always, check with dated photographs to see how your chosen loco looked at any given time. Almost any railway book or magazine published in the last sixty-odd years will contain at least one photograph of a Black Five but we can recommend the following sources of pictorial reference material:

J S Whiteley and G W Morrison The Power of the Black Fives (OPC, 1988)
R J Essery and D Jenkinson Illustrated History of LMS Locomotives, volume 5 (Silver Link, 1989)
A J Powell Stanier Locomotive Classes (Ian Allan, 1991)
Locomotive Illustrated No 6 (Ian Allan, 1976)
Model Railway Journal No 25 (1988)
British Railway Journal No 21 (1988)

Assembly hints

All parts in this kit can be fitted to the Hornby model using a two-part epoxy resin adhesive, such as Loctite Super Steel or Araldite Rapid. Use a spot of gel-type superglue for small components. No soldering is required, although you may prefer to solder the coping strip to the tender bulkhead. We assume you will be using photographs or scale drawings to confirm the location of parts, so no specific measurements have been included.

Fold lines are marked on the rear of the etch, as are the dimples for forming rivets on parts 4, 6, 11 and 14. If you don¹t have a riveting tool, lay the component face down on a flat piece of lead or hard rubber and gently impress the “rivet” with the point of a pair of dividers or compasses. Remove parts from the etched fret by laying it face down on a smooth, hard surface (such as a sheet of perspex or hardboard) and cutting through the tabs with a sharp craft knife or Stanley blade. Carefully file off the tabs, avoiding buckling the components. You may prefer to prime and paint them before attaching them to the model, which will make life easier (you could even spray the whole fret black before starting work). Pointed tweezers are the best tool to use for handling small parts. A number of spares have been included we know what happens to tiny components . . .

The castings may need a little cleaning-up to get rid of moulding flash. Emery-board nail files are fine for this, then finish off with fine wet and dry. Again, they can be painted before assembly. Acrylic car paint (satin black or matt black) is easy to use just put the parts to be painted in a jam-jar lid and spray from about nine inches away. When dry, turn them over and spray any bald patches.

Railway modelling isn¹t as inherently dangerous as snowboarding or bungee-jumping but it still has its hazards. Be careful when using sharp tools, always follow manufacturers¹ safety hints when handling adhesives and wear eye protection when working with power tools. Remember too that modifying your Hornby model in any significant way will almost certainly invalidate the manufacturer¹s guarantee. To preserve your rights, check it over mechanically and electrically and ensure it is well run-in before adding any detail parts.

Parts list
Etched fret

1a frame extensions and motion bracket, left
1b frame extensions and motion bracket, right
2 plain angle iron strip
3 riveted angle iron strip
4 front bulkhead overlay
5 buffer steps (6)
6 tender lifting lugs and base (2)
7 tender rear steps
8 lamp brackets including two for front bulkhead
9 coping strip for bulkhead
10 riveted front buffer beam
11 AWS bang plate
12 frame for dummy sliding window
13 reinforcing rings for front lifting point
14 front cylinder covers
15 tender rear guard irons

Castings
16 axle boxes (6)
17 springs (6)
18 whistle
19 safety valves (2)
20 speedometer
21 AWS cylinders large and small
22 relief valves (2)
23 drain cocks (2)
24 steam heat and vacuum pipes (loco and tender)
25 gravity lubricators (2)
26 live steam injector
27 exhaust steam injector
28 steam lance

Tender

Hornby[1]s spring and axlebox detail looks very insubstantial, and ideally should be replaced with the castings supplied. You can remove the moulded detail with a sharp blade, taking just a small slice off with each pass. If you are handy with a power tool you could use a miniature router to shave them off. When you have removed all the detail, file the surface smooth and fill any scars. Fit the cast springs and axleboxes (16 and 17) in exactly the same position as the originals.

The inside of Hornby[1]s “empty” tender is totally the wrong shape the bunker sides ought to slope inwards, there should be a hollow space behind the coal doors and there is no fire-iron tunnel. To disguise its inadequacies you can either coal it up to the limits of the loading gauge or make a cosmetic modification to the front bulkhead. If opting for the latter course, take the front bulkhead overlay (4) and punch out the rivet detail around the lifting rings, then use it as a template to trace the outline of the empty space behind the coal doors. On the model, this space is solid but there is a hollow behind the moulded front bulkhead. Using a 1mm bit, carefully drill around the edges of this space and open out with a sharp blade until you have a rectangular opening, then trim the edges off as neatly as you can. Gently form the coping strip (9) into a curve and then solder or glue it to the bulkhead overlay itself. Glue the competed assembly to the rear of the moulded bulkhead and align the outside edges. Later on you can coal up the tender to leave the top part of the dummy bulkhead exposed, while the bottom is buried in coal.

Choose the plain (2) or riveted (3) angle iron strip to suit the type of tender you have and glue it in place, inside the coping on the tender rear platform. Press out the rivets on the lifting lug bases

(6) and then glue them in the rear corners, butting up against the angle iron strip. The edge with three rivets goes across the tender, the four-rivet edge goes along the tender sides. Now glue the actual lifting lug to the base plate, parallel with the tender rear.

If you have a model with the all-welded type of tender, note that the rivets on the tender rear are incorrect and shouldn't be there. They can be scraped off with a sharp scalpel and the marks cleaned up with fine wet-and-dry paper. Leave the rivets on the rear tender steps, however. Then cut away the moulded steps (but not their riveted mounting strips) on the tender rear. Drill a 0.9mm hole centrally at the foot of each mounting strip and glue the new etched steps (7) in place. Fold the rear guard irons (15) down through 90o, put a slight joggle into them and locate the component on the small lug moulded on the rear of the tender keeper plate.

Add the small steps (5) to the tops of the tender buffers and replace the tender lamp brackets with the etched versions supplied (8). Two of these go on the tender front bulkhead, between the coal doors and the fire iron tunnel on the fireman's side they were used for carrying spare lamps. Fit the steam-heat and vacuum pipes (24) to the tender buffer beam.

Locomotive

All the extra parts can be fitted to the loco while the body and chassis are still in one piece. If you need to fit a DCC chip, do this before adding the detail parts this procedure is described in Hornby's instruction sheet.

If you want to replace the plain buffer beam on your model with the riveted overlay supplied, cut off the moulded buffers, the dummy coupling hook and the steam-heat and vacuum pipes. Add the riveted front buffer beam (10) and the vacuum/steam heat pipes (24). Replace the buffers if necessary Brassmasters can supply the correct LMS-pattern sprung loco buffers and add the small steps (5) to the buffer bodies. After adding the rivet detail, glue the AWS bang plate (11) to the bottom edge of the buffer beam. Note this plate is usually but not always slightly offset to the left (looking from the front of the loco) rather than being centred. Add the reinforcing rings for the front lifting points (13) to the front frames, above the running plate. Spot through with a 0.9mm drill, but be careful of those nicely printed works plates.

There are huge cut-outs in Hornby's cylinders to give clearance for operation on train-set curves, but this can easily be disguised. Turn the loco upside-down and remove the bogie. Fill the cut-outs in the cylinders by building up layers of 40thou Microstrip. Allow this to set thoroughly and then file the outside face so the shape blends in with the rest of the cylinders. Having added the rivet detail, glue the front cylinder covers (14) in place, aligned with the outside of the cylinder moulding and with the four rivets square-on and the hole at the bottom. Glue the cylinder relief valves (22) to this hole, drilling out to fit if necessary. Finally glue the drain cocks (23) in place along the bottom edge of the cylinders they can be reinforced from behind with short stubs of wire or Microstrip.

Refit the bogie. You will see there is an excessive amount of "daylight" above the bogie wheels, which will be exaggerated if you are using replacement scale wheels. The frame overlays (1) will disguise this. As etched, they are exactly to scale. To give adequate clearance for P4 wheels, we recommend you file back to the first half-etched arc on the reverse of the fret. If you are using EM or 00 finescale wheels, file the cutouts down to the second half-etched arc.

Decide now whether, at some future date, you will need to separate the loco body from the chassis. This is because the front frame extensions are etched in one piece integrally with the motion bracket. Two options are available fitting the etched components in one piece as supplied, or splitting them. Read the two following paragraphs and then decide.

The frame extensions also need to be joggled because the dummy front frames on the Hornby body are significantly wider than the chassis. Bend the motion bracket through 90o along the half-etched line, then bend the component into a u-shape along the fold line on the same side of the fret. Turn the part over, grip it in flat-nosed pliers tight up against the fold line and make a third 90o bend along the single half-etched line on this side. Once it has been formed, the front

frame/motion bracket can be carefully winkled in behind the slidebars. Its edge aligns with the triangular plates on the slidebars the motion bracket doesn't need to be glued to the slidebars but make sure it doesn't foul the valve gear. The top of the motion bracket should align with the bottom of the footplate but it doesn't really matter if there's daylight here. The forward part of the frames is tucked in behind the buffer beam and the curve on the running plate

We suggest you use a small amount of contact adhesive to glue the nickel-silver frame overlays to the front frames on the loco body there is no need to glue them to the chassis proper. The contact adhesive will allow you time to make adjustments and the bond will be relatively easy to break should you need to remove the chassis from the bodyshell. Alternatively, you can separate the motion bracket from the dummy front frames before fitting them to the loco one part goes on the chassis, the other half fits on to the loco body. This will simplify chassis removal. If taking this route, cut the parts from the fret and score a vertical line at the front of the cut-out for the cylinders. Build up the depth of the cut and then gently flex along the scored lines the components will soon snap in two. File the edges smooth and then glue the forward frame extension to the loco body, on the top of the existing dummy front frames. Joggle the other half of the overlay as described above and bend the motion bracket through 90°. Glue this half to the chassis, aligning it with the slidebars as before.

The remaining body detailing parts can be added in almost any order. If you are modelling one of the first 500 engines, glue the front window frames (12) in place over the clear glazing. Remove the whistle and safety valves and replace with the cast components supplied (18, 19). If your chosen locomotive has a speedometer (20), glue this to the underside of the cab on the left-hand side depending on the gauge you are modelling to, you may need to mount it on a small block of Plastikard to space it out to the correct position. If desired you can make a 4mm long speedo drive-crank from fret waste and glue or solder this (be careful!) to the rear crankpin nut, centred over the axle. If you arrange it so the crank is almost but not quite touching the back of the speedometer, it will look like the two parts are mechanically linked.

If you are modelling an AWS-fitted loco, the larger of the two cylinders (21) goes lengthways on the footplate beside the firebox, just ahead of the cab on the right-hand side. The smaller cylinder goes across the front of the cab on the left-hand side. Note the wiring conduit along the left-hand footplate valance on AWS-fitted locos. This can be represented by 0.33mm wire, with cleats from 10thou Microstrip.

There are two injectors (26 and 27), one for live steam and the other for exhaust steam. The larger one is the exhaust steam injector. This goes under the cab on the right-hand side, partly tucked in behind the step and at an angle of about 45°. It can be braced from behind with a short length of 40thou Microstrip note that the thicker, heavier-looking end faces the tender. The live-steam injector simply glues to the back of the left-hand cab step.

Moving to the opposite end of the loco, the small gravity lubricators (25) fit on the smokebox saddle, right at the front of the footplate. The steam lance fitting (28) goes on the right-hand side of the smokebox, level with the lower smokebox door hinge. On most Black Fives it is connected to a steam fitting just below the chimney the plumbing can be represented in 5amp fuse wire.

This completes the detailing/upgrading of your Hornby Black Five and we are sure you will be impressed by the results. We would encourage you to add as much extra detail as you like pipe runs, for instance, and perhaps cab fittings. A number of suitable components are available in the Brassmasters range but have not been included with this kit because not all modellers would wish to use them. Among these are cab handwheels (A071); flanges for 1.75² pipes (A072); flanges for pipes of various diameters (A073); cab falls plates in dimpled (A074) and chequer (A075) pattern; LMS cab doors (A076) and front and rear loco footsteps (A078).

For more information on prices and availability, visit our website at http://www.brassmasters.co.uk/