LNER Black Duncan 4-4-0
Manufactured by: NB Models, 4 Earlston Way, CRAMLINGTON, NE23 3HP.
sales@nbmodels.com

The kit arrives in a sturdy box that will probably hold the model but models of this quality deserve a proper wooden carrying case. The instructions arrive separately and included is a letter with replacement parts that had been discovered to be incorrect.

That alone indicates to me that we are dealing with a quality manufacturer.

However, the drawing that accompanies it is to an odd scale of about 5.1mm to the foot. Fortunately, I was able to use my scanner and printer to get one, eventually, near enough to 7mm to the foot. What comes "in the box"?
A great many sheets of nickel silver etch, five of brass and a number of wrapped bundles of white metal castings that appear to be very well made. I transferred the contents of each package to small plastic bags so that I can find them easily. A bag containing many lost wax castings, a quantity of copper and brass wire, plus, brass rod and tube and a bag containing some finely etched works plates.

I have added the set of Harris castings, already partially turned up and the ABC gearbox/motor. The instructions are in a bound A4 booklet containing some prototype information, instructions, exploded diagrams, parts lists, numbered maps of the etch sheets and clear, graphic illustrations of the castings. Finally, there are two sheets of livery details. It is an impressive document. Nevertheless, it could be improved. The isometric diagrams would benefit from having the part numbers added. This would save the time of constantly referring between instructions, drawings, the etch maps and parts lists.

I usually start with the tender. This time I started with the connecting rods so that I could set up the frames in the Master Jig.

There are two main laminates per rod with extra laminates for the bosses on both sides. They differ from others I have experienced in that the bosses have a pair of "ears". Extensions of the etching that lines up with the top and bottom of the fluting. Once filed to shape with a fine
round file they blend in nicely, though removing excess solder from between them is not easy. I still have a little cleaning up and polishing to do but they are useable now for the chassis jig.

The rods were used to set the jig. It is important that both sets of rods are identical so both were used to check one another and set the jig.

The frames come in (for me) an usual format in that they have two integral spacers designed so that the frames fold up. It is important I think that bending bars of some description are used to ensure the bends are exactly parallel. I also opened out the bearing holes by clearing the cusp. This allowed just enough play to ensure that the bearings would not be a problem to line-up properly when soldered in the jig.

Once folded up, an engineer's square was used to make absolutely sure the folds were at 90° before running a fillet of solder into the fold to strengthen it. I think that separate side frames and conventional spacers would the better option. I feel that unless the builder has good bending bars, there is danger that the chassis will be twisted out of true.
I fitted two of the frame spacers temporarily and soldered in the bearings. Now the whole frame can be taken off the jig for the internal fittings to be assembled.

These start with the slide bars and cranks on the motion plate. These parts must be fitted while their mounting plates are separate from the frames. Some care is needed and the mounting holes for the slide bars in the motion plate need considerable fettling to get a good fit. Likewise, the pistons will need careful filing to ensure a good fit. The parts are both well designed and well fitting (in that they err on the side of being overlarge rather than too thin) and, I think, the inside valve gear could probably be made to operate. However, this job does not call for it or the attendant cranked axle. (Phew!!)

This sub-unit fits easily into its four slots in the frames.

Speaking of slots, I found it necessary to cut an L shaped slot in the frames to accept the part of the motion bracket that is fitted to the footplate (see later)

THE BODY
This is a complex set of etches and a good deal of fettling is required to ensure that the tabs go into the slots, which is how it should be of course. All parts need the cusps filling off or they will not fit. The standard of draughtsmanship and etching is very high. I have spent more time getting parts ready for assembly that actually assembling them but it pays off.
The parts for the footplate made ready for assembly. On reflection, it would have been easier to have fitted the nuts after assembly. A mixture of nickel silver and brass the parts fit well but need care to ensure a square basis upon which to build the rest of the body.

The footplate from top and bottom. The rear steps are inherently weak and were later strengthened with some scrap nickel silver. Later I will add some brass angle to the buffer beam and drag beam to strengthen them further.
Some of the parts for the body ready for assembly. As usual, I did as much work "in the flat" as possible but this is made harder because of the way the instructions are written. The exploded diagrams do not have any part numbers so one has constantly to refer to the written narrative and the etch sheet maps. Frustrating if, like me, one likes to build the kit my way and not always the designer's way.

The floor, centre left in the picture, has slots in which to fix the damper levers. Unfortunately, they have been etched on the wrong side of the cab. The damper levers come as a pair that fold up to fit in the slots so I soldered them to the floor in the correct place. They are now very slightly too high but who is going to notice?

The splashers and basic cab assembled. The footplate has supports built in to help in soldering the crank splashers, which are easier to fit that looks to be the case when starting. Once these splashers are fitted the support piece is removed. The driving wheel splashers fits perfectly.
The lubricator needs to be fitted long before the boiler and is made up from etch pieces, a lost wax casting (but a white metal one is also provided) and wire. The casting proved relatively easy to drill for the wires. The bar across the upper frames is part of the motion bracket. It is a tight fit with the lubricator but once soldered up fits well on the chassis. The hole in the bracket needs to be opened out on the slant to take the lever for the lubricator. The sand box covers are also lost wax castings.

The smoke box is easily soldered up around its formers and is a tight fit in the upper frames. Again, careful fettling of the base made for a good fit.

The bogie goes together easily, I added as much lead inside the frame as possible and the whole thing now weighs about 4oz. A decision was made in the interest of getting the job finished in time for a November show to fit Slater’s wheels instead.

The extensions on the axles will need to be removed but this can be done before fitting the wheels. Just cut them off and clean up with a file.
In order to get the ABC motor and gearbox to fit it was necessary to carve a chunk out of the footplate under the cab. It is well hidden by the cab floor and gives plenty of room into which to fit the gear wheel. It would have been somewhat easier done before the cab was soldered in place.

I carved it out with an abrasive disc in the minidrill after carefully measuring it up. However, it was later modified when it became necessary to change the motor/gearbox because the gear wheel was on the other side.

The motor fitted easily into this space and consequently stands both vertically and clear the ash pan so....

I filled the ash pan with lead. There are three layers in the pan, the top one has a cut out to accommodate a gear wheel. The two pieces either side still leaves plenty of room for the motor.
Now up on its wheels with the brakes and connecting rods fitted it needs only running in before fitting the inside valve gear.

Next job was to tackle the boiler.

The boiler is a pretty standard item of an etched wrapper and spacers. I annealed it first then rolled it, taped up the joint with heat resistant tape and soldered in the front spacer. Once happy that it was square the joint can be edge soldered and the other
spacers fitted. It turned out to be 0.8mm too long, exactly the thickness of the nickel silver disk fitted to the smoke box. On the basis that no-one is going to be able to see the difference I fitted a piece of nickel silver to match the shape of cylinder head, soldered it to the smoke box and adjusted the holes in the footplate accordingly.

Now for the inside motion, which proved less problematic than I had anticipated.

It takes time to clean up all the many parts and partially assemble them as shewn here but it is time well spent. Be sure to get the valve gear eccentrics the right way round.

This picture shews the whole lot mocked up with an axle to make sure everything fitted before fitting it in the frames. All these parts are jointed with wire 'rivets' so that they move.
As yet nothing is fixed and it seems to operate well so I may leave it that way for ease of future maintenance. One rule that will have to be made for this engine is "not to remove the front driving axle" unless taking down the motion. It is quite a fiddle getting it all in place.

There is a great deal of external pipe work on this engine, some of it very fine.

The picture on the left shews lubricators with 0.35mm phosphor bronze wire fitted in carefully drilled 0.45mm holes. The other picture shews some of the piping that goes on top of the firebox.

The reversing weights are a cast white metal item but they broke very easily at the narrowest point. Repair was out of the question as was waiting for a replacement. Nice casting
but an inappropriate material in my view for the complexity of the part. I fabricated a new item from brass and nickel silver. It made fitting the item between the body frames easier because I could fit the reversing lever directly to the brass pivot.

Finally, the body is completed save for the back head and fitting the roof. The splasher steps were a real pain. The lost wax castings are nice but simply completely wrong. Filing the tiny parts to the correct shape was a real trial.

The instructions are silent on the lever protruding from the left hand splasher in front of the cab so I simply made up a set of levers to look like the drawings and pictures I have from some of the many spare parts among the etches. All that remains to do now is the back head, roof and the cab side power plate, then it will be ready for the painter.

The parts for the back head ready assembled to be fitted to the back head casting, which has been modified to fit the space. I also cut a piece of 5mm lead sheet to the same shape to fit behind the back head to increase the weight over the driving wheels.
These can be seen in this shot of the completed, but roofless, cab. The roof, which contains at least 11 parts in its simplest form, is a good example of the complexity of this model. The level of detail is very high and this behoves the modeller to take the time and trouble to build it properly. I also made it removable.

THE TENDER

Here are most of the parts prepared ready for assembly. The tender front needs several pieces adding to it that are easier to do 'in the flat'. I cut wide slots in the rear of the frames to ensure there was plenty of room to fit the buffers, which are steel turnings into which one solders some 0.9mm rod before fitting with cut down springs and bending the rod over to hold it in place. The really hard part was opening out the lost wax casting for the housing. There is very little to get a purchase on and quite a lot had to be removed to get the buffers to fit and slide properly.
The chassis is simple enough. Like the engine chassis, it is a fold-up etch. Personally, I would rather use a jig with separate sides and spacers but it works well enough. There is provision for compensation on two axles, I opened out the holes in the beams to take some brass tube into which the brass rod was fitted and soldered to the frames. It works well and is easily adjusted.

Here is the view from the underside. The chassis is a tight fit between the frames, so much so that it is necessary to ease them out to allow the wheels to revolve easily.

The footplate goes together very well, the parts being very accurately etched such that it is essential to file off the cusps.
The buffer beam and drag beam must be fitted first, the valances fit between them. All those bits shewn earlier and now (mostly) fitted together. The flaring round the sides is a thin etch designed to be soldered to a depression about a quarter of millimetre deep. I expected problems but the design is excellent and, with care, goes together very well. Still to be added are the coal rails. Three lengths of soft brass half round wire are provided but will need to be stretched straight before use. The instructions suggest that either the rails or plates are fitted. The pictures I have of Black Duncan have both, consequently, the carefully impressed bolt heads in the coal plate fixing brackets needed to be filed off. This view from the front shews how well the various parts fit together, though there are still some important parts to be fitted like the locker, toolbox and handbrake. I left out the sand boxes since there is no evidence that Black Duncan had them in BR days. The axle boxes need their lugs filing down to allow the chassis to fit.
The instructions suggest that the cross beam needs to be cut so that the chassis can be separated from the body. This is not necessary, simply solder the links to the brake rods in position but do not solder them to the rods. The chassis will slide under easily. The through pipes for vacuum and steam once fitted can be bent slightly to line up with their respective fittings on the buffer beam.

Getting it to run properly was a real trial. The clearances are very tight and shorts were legion until I had shaved lots of bits of different parts of the inner body. Also, since the frames are so wide there was no room for washers so the electrical paint rubbed off and caused failures. Nevertheless, an interesting build.
Despite an invitation, the manufacturer has declined to comment.