



Peckett 0-6-0ST by Locos n Stuff

Chassis instructions

Before buying this kit you will have been asked what gauge you will using. The kit will be packed with the correct gearbox for 14 or 16.5mm gauge but those wishing to build a 21 inch Charles Nelson loco, 12mm gauge is closest, will have to build as if a 14mm loco with a different motor and gearbox which I can supply. Do not clean up the edges of the parts too much as this could be detrimental to the fit. Edges that show on the finished model can be filed smooth as they don't match up with other parts.

This chassis can be built rigid but compensation is built into the kit, so why not give it a try, you will get much better running and power pick up. If you want to go rigid, use the converters parts 6 and I will exchange the horn blocks for bushes.

If you wish to use plunger pick ups (not supplied), mark and drill the holes according to your type, prior to assembling the frames.

Frames

Locate and clean up the frames 1 & 2 and spacers and motor plate for your gauge 3, 4, 5 & 25. Push out the rivets in the frames, make an easing tool from scrap etch (see sketch) and use this to ease the slots if required. If building rigid, fit the converters behind the frames but only solder around each axle box area as the rest must be cut away to give access to the slots. A few passes

of a sharp knife will do this. If using compensation, solder the axle box thickeners 8 behind the rear axle cut outs.

Fold the top strip on the frames double and the small tag back up to 90°, solder in place. File off any of the fold that protrudes above the level of the frame top edge. Fold the spacers according to the sketches and test fit, they must engage fully in their slots. When happy, solder the front spacer 3 to one frame and the rear 5 to the other. Put the two halves together, check all is square and solder. Before going any further ensure that the frames are truly square in all directions and not twisted. Try on a flat surface to see if they rock and check with a square to ensure that the spacers are at 90°. If there are any problems, fix them now as twisted or out of line frames are no use to anyone.

Fold the top and bottom of the ash pan sides 9 towards the side with etched detail and fit centrally behind the opening between the rear and center axles, hard up against the folded over strip at the top of the frames. The horizontal line of rivets on the ash pan goes nearest the bottom. Ease the frames apart and spring the centre spacer 4 into position and solder in place. Make sure that it doesn't force the frames apart when fitted, trim the ends a little if it does. Add the rivet strips 14 flush with the frame ends. The motor plate 25 is best fitted after the horn blocks are fitted as it will make soldering difficult.

Horn blocks and compensation

Study the sketches for assembly of the horn blocks. You can use commercial horn block jigs if you have them, or the rigid converters in this kit double as a jig, but for this kit only, look at the sketches to see how it works. I chose to use High Level's Miniblocks in this kit rather than the standard ones, mainly for their size, the standard ones are visually too big for this engine. Fitting is the same as for the standard ones, see High Level's instructions which are included on this disc. If you wish to use commercial horn block jigs, you will need to skip forward to the section on coupling rods and assemble them first as they are required for use with the jigs.

The whole point of compensation is to create three load points for the frames which the wheels can adjust around to suit the track. The rear horn blocks are fixed and are two of the load points, the third is the centre of the front pivot,

see sketch for clarification. The rear axle uses horn blocks directly in the frames. This is for removal purposes only, they are fixed when in use.

Wrap a piece of 0.5mm wire around the two rear axle boxes so that when slid into the rear cut outs, the wires enter the two holes above. Solder the wires to the axle boxes. Fit these two axle boxes to the rear axle. Where the wires go through the holes in the tag, bend them slightly to keep them in place. Fit axle boxes and horn guides to the other two axles. If you have any springs that will fit on the axles between the horn blocks, these will help hold the guides in place during soldering. Don't try "fitting" the blocks to the guides at this point, a tight fit is best just now.

With the frames upside down, drop the axles in place and slip the converters 6 over the ends of the axle, they will only fit one way round. The rear axle is already square to the frames, just push a guide up to the frame and tack solder at one corner to hold it. Repeat with the other three guides. The guides must be vertical and touching the top of the cutout, which is at the bottom in this case as the frames are upside down. The converter will hold the axles at the right spacing so they should all come out square to the frames and spaced correctly. Remove the axle boxes and solder the guides fully in place without moving them. Hold the guides with the tip of a knife and solder the side opposite the tack you did earlier and they will remain in place. Any solder on the sliding parts of the guides will need removing prior to fitting the axle boxes.

Fit horn blocks in the other four positions, they will be tight. Mark them all and the adjacent frame with indelible pen so that they won't get mixed up or go in the wrong way. I usually put one or two dots on the underside of the bearing, using different colours for each side. Remove the bearings one at a time and rub the sides on fine abrasive, equally each side until they fit smoothly and slide up and down. Replace and secure with 0.4mm wire before moving on to the next one. Once this is done, carefully ream out the axle holes until the axles fit smoothly. The axle should be able to twist vertically to the limits of the horn block movement, if they don't, it will be either the axle holes that are still a little tight or the horn blocks are too tight in the guides. This must be sorted out before you proceed. As a general rule, the horn blocks should drop into the guides under their own weight.

Fit the compensation pivots 17 over the edge of the centre spacer, positioning them around 10mm apart and solder in place. They are deliberately a tight fit and two spares are included just in case. Cut a length of 1mm bore tube to fit loosely between them and a length of 1mm rod 2mm longer. Fit these in place, slide the tube to one side and put a spot of oil in the gap at the other end the quickly solder the rod at that end. Repeat with the other end. Solder a 25mm length of 1mm rod centrally onto the tube from underneath.

Wheels and axles

Cut the axles to the required length, 29.5mm for 16.5mm gauge and 27.0mm for 14mm gauge. If building to a gauge smaller than 14mm, build as a 14mm loco but move the wheels closer together. File the extended ring away on the inside of all axle boxes plus an extra 0.5mm on the rear two, unless building to a gauge smaller than 14mm when no filing is required.

Fit the wheels and axle boxes. taking care not to mix up the axle boxes as they must go back in the same place. Set the wheels to your gauge, they must be an equal distance from the ends of the axles. The easiest way is to mark the center of each axle (or gearbox), then measure half the back to back measurement each way from this point and mark those. Set the wheels to these marks and they won't be far out and can be adjusted to be exact. For convenience, the motor assembly can be removed from the final drive by removing the one (14mm) or two (16.5mm) larger Phillips screws in the back of the final drive. Do not loose these as I can't replace them from stock and the supplier is in Australia.

No shims are required to remove side play inside the frames, this can be done from the outside. Test fit each axle in place, ensuring that they have around 1mm side play and that the two moving axles can still twist relative to the fixed one. Place the chassis on a flat surface and measure the height at each end of the chassis, they should be equal but probably won't be. Bend the compensation bar a little to correct the height and when happy, remove the axles again.

Cut the cranks 24 off the etch in sets of three, there are two extra sets just in case. Fold them in a zigzag, line up the holes and solder solid. Countersink the small hole on one side using a drill of around 2mm held in the fingers. Solder the 1mm screws into the holes and file the back flat. Open out the larger holes

until the cranks just push onto the axles and put to one side. Test fit to see if the axle shims 12 are required, they go between the horn block and the crank, you probably won't need them on the rear and centre axles, but the front needs to have less than 0.5mm side play so that nothing gets caught up by the crossheads.

A sneaky way to remove side play is to cut shims as shown in the sketch and fit them after assembly, they won't fall out as there is nothing to catch and they are a tight push fit. Don't let any Model Engineers see you doing this as it would not be considered good engineering practice. Bear in mind that the wheels are live, if the side play is excessive, a wheel may touch a horn block. Just one is not a problem as the frames are not powered, but going round curves can cause wheels to touch on both sides. The solution is to file a little more off the rear horn block face or add a shim behind the crank to reduce side play. If you have already fitted the cranks you can use the trick to add shims mentioned above. An old dodge for occasional shorts is to coat the face of the wheel boss where it touches the horn block with Araldite or a similar two part adhesive. This is very thin and hard wearing and will solve the problem for years but it will eventually wear through and short again.

Quartering

Assemble the quartering jig according to your gauge, see sketch. The axles must be ready to go, fitted with wheels, horn blocks, shims and gearbox. Solder a crank squarely to one end of each axle. The axles are silver steel which solders easily with ordinary flux and solder. Fit an axle into the jig, fit the second crank, aligning it in the jig. Oil behind the crank to stop it or the axle being soldered to the jig, flux the crank and solder from the outside. If you do accidentally solder the wrong bits to each other, just remove the parts, clean up and try again. The beauty of using a jig is that all three axles will come out with the same quartering, it might not be exactly 90° but they will all be the same, which is far more important.

Coupling and connecting rods

Study the sketch to see how the parts fit together. The coupling rod parts 19 and connecting rod parts 28 are laid out on the etch as they need to be used and are marked Left Side and Right Side. Remove the parts in threes, thread them onto a drill or broach, line them up and solder together. Clean off all the

tags after soldering. Repeat with the other sets of three, laying them out as they will fit together. Check that the lug with the hole in it fits in the fork in the other rod. It can be eased with fine abrasive folded double used in the fork. Assemble with a pin with a reduced head, oil the fork and solder at the rear and file almost flush.

Fit all three axles to the frames. The rear one is awkward as the gearbox gets in the way of seeing the wire holes. The easiest way is to cut the wires a little shorter on one side and fit the side with the long wires first. Retain the rear axle by bending the wire ends over and the others by fitting short lengths of 0.4mm wire through the retaining holes. High Level's instructions illustrate this.

Run a 1.5mm drill through the crankpin bush holes in the rods, then ease them a little more with broaches until the bushes fit easily. Check that the bushes will screw fully onto the screws then fit a washer onto each one. Do not use washers 21 as they were drawn too small, larger ones are supplied in with the crankpins. File a recess in the front face of the rods at the front crankpin position only until the head of the bush is flush with the face of the rod. Trim the length of the bush by fitting it into the rod, laying it face down and filing the bush almost flush from behind. This is required for clearance behind the crosshead. Fit the rods and bushes and test the rotation of the wheels by pushing along gently, stop if there is any binding. Check that the back of the hinge pin is not catching the centre crank and file it a little more if it is. If it is still binding, ease the bush holes a little more and try again. It must all rotate smoothly before moving on. Cut off the excess crankpin screws on the front and rear axles and file flush with the bushes.

Power pick ups

Most people use the wire back scratcher type which this kit is supplied with. Glue the PCB lengths side by side across the platforms on the front and centre spacers, flush with the front spacer, see sketch. 0.3mm PB wire is supplied for the front and centre wheels with 0.4mm for the rear wheels. Bend to shape and solder in place. Run insulated wires from the rear of the PCBs up to the motor. This should be enough to test run the chassis but will probably need tweaking a little to get the best performance.

Now is a good point to build the body, or at least enough to test fit on the chassis. Give it a good run before moving on.

Cylinders and motion brackets

Locate and fold the cylinders 10 and fit a 14mm length of 1 x 1.5mm tube flush with the front. Make sure you end up with a handed pair. Curve the wrapper around the ends by rolling it on a board. Do about a third at a time, holding it in place and soldering before doing the next third. Push out the bolt heads in the cylinder fronts 12 and rears 13. Solder in place lining up the square holes at the rear and fitting the fronts with the bolt heads oriented the same way. Trim the tube at the rear so that 3mm protrudes. Push out the bolt heads in the backing plates 11, fit over the three tags of the cylinders and trial fit on the frames. Open out the two holes in the bottom of the cylinder wrapper to at least 0.5mm and fiddle in a length of 0.4mm wire, see sketch. Pull the wire tight and solder it inside and cut the ends to 3mm long. Fit the turned collars onto the piston rod tubes flush with the rear cylinder face.

Fold the slide bar halves double and the motion bracket part to 90°, part 15. Solder all round and clean off the tags. Try for fit in the cylinders and frames, the bottom bar will foul the wire soldered into the bottom holes and will need a little trim to clear. Later they will be soldered into the cylinders and when finally fitted, the tags that go through the frames will be bent over a little to hold them in place. They will always be removable for maintenance or repairs if needed.

Connecting rods and crossheads

Solder together the layers of the connecting rods 20 and open out the holes to fit the bushes as you did before. Clean up the crosshead castings and try in the slide bars. The crosshead must fit without too much slop and slide smoothly the full length. The sliding area at the top and bottom can be eased with a fine file if you have one thin enough to fit, otherwise use abrasive paper folded double. The slide bars must also be checked to see that they are straight, smooth and clean. Once you start doing this, mark the parts so that they are only used as a matched set.

Test fit the rods in the crossheads. The end will need thinning a little to fit, file the rear only, not the front. Make sure that the rod can move up and down

sufficiently for operation. The pivot can be a reduced head pin (0.65mm hole) soldered at the rear or a 14BA screw (1mm hole) with the nut outside, see sketches. Test fit the cylinder, slide bars and crosshead/rod one side at a time, putting the rod loosely on the crankpin. The piston rod will need shortening to around 12mm or it will hit the front cylinder cover. If it all moves nicely, try the other side, then both together. Likely problems are sticky points on the slide bars caused by solder or the bars being bent or twisted. Check that the piston rod is dead true to the crosshead or it will force the crosshead to run crooked. If the crosshead hits the motion bracket, check that the motion bracket is square to the frames. If it is angled forward slightly, it will have the effect of shortening the available slide bar length.

When all is OK, fit the rods with bushes and try again, you may need a washer between the rod and the coupling rod bush. If all seems OK, fit the motor and try under power. Any minor tight spots will ease with time. You can speed up this process by "lubricating" with Brasso. This will wear the tight parts to a running fit very quickly. I would suggest five to ten minutes maximum then wash it off, oil and re-test.

If you find that it makes a horrible noise going forwards, that's the motor touching the cab front. Either attach the motor to the motor plate with silicon sealant or stick a pad of something to the top of the motor, I used a foam pad of the type used in card making.

Remaining parts

The brake gear is mostly not visible and can be left off if you wish but cosmetic rodding 18 is included. Fold the legs into a zigzag and attach to the half etched areas inside the frames. If you wish you can drill out the half etched dimples and add cross wires, but you will only see them from underneath. Builders using gauges less than 14mm will have to space the attachment points out from the frames as the rodding is set for 14 and 16.5mm gauges only and may foul the wheels, or leave it off entirely.

Bend the wires below the cylinders to point outwards, drill the holes in the drain cock linkages 23 to 0.5mm and fit on the wires. The top leg can be cut off flush with the frame top and attached to the back of the cylinder collar, or just left loose as you wish.

Parts list

Parts with L & R after their name are handed, parts with x2 or similar are multiples of the same part and are identical.

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| 1 - Left frame | 16 - Not used |
| 2 - Right frame | 17 - Compensation pivots x3 |
| 3 - Front spacer 14 & 16.5 | 18 - Brake rodding L & R |
| 4 - Center spacer 14 & 16.5 | 19 - Coupling rods 6 parts per side |
| 5 - Rear spacer 14 & 16.5 | 20 - Connecting rods 3 parts per side |
| 6 - Hornblock jig / rigid converter | 21 - Washers - Do not use |
| 7 - Axle shims x12 | 22 - Cab steps x2 |
| 8 - Rear axle box thickeners x2 | 23 - Drain cock linkage L & R |
| 9 - Ashpan sides L & R | 24 - Crank layers x24 |
| 10 - Cylinders x2 | 25 - Motor plate |
| 11 - Cylinder back plates x2 | 26 - Reverser frame |
| 12 - Cylinder front covers x2 | 27 - Reverser lever |
| 13 - Cylinder rear covers x2 | 28 - Regulator lever |
| 14 - Frame end rivet strips x6 | |
| 15 - Motion bracket / slide bars L & R | |

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