

7th Heaven

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Building 1919 - Century Models 19 Class Locomotive
Transition Links for Auto Couplers
Valley Heights - What Next?
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Decoders, LEDs and Speakers
Commercial News

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Straight Down the Line - Opinion

by Paul Chisholm

O Scale Needs You

In his article on pages 12 and 13 John Parker laments the lack of O scale exhibition layouts known to be under construction and destined to carry on the Binnabri, Arakoola and Valley Heights O scale banner amidst the proliferation of HO. These layouts have come, or soon will be, coming to the end of their exhibition life and unless there is some secret construction going on there will be no fine scale O gauge presence at exhibitions after a year or two. It is paradoxical that there are more fine loco, rolling stock and structure items available for the scale than ever before but these don't seem to be translated into layouts, home or exhibition, if the dearth of articles submitted to this magazine is any indication. Sure we saw some fine examples at the 10th Anniversary Expo last year but with one exception I don't recall any of them appearing at any other exhibition since.

There are probably a lot of reasons for this apparent lack of action, maybe financial, maybe doubt about ones own abilities to produce something of adequate quality or is it that we prefer to do our own thing without having to defer to others. It is this latter possibility that I want to address based on my own experience in the hope that it might encourage a few other groups to form and start work on that much needed exhibition layout.

I started HO modelling of NSWGR prototypes in my teenage years and for almost forty years worked in isolation, largely through choice and some of the reasons cited above. Then about ten years ago, after changing to O scale I was invited to join the group which was constructing Stringybark Creek and then later Arakoola. I wish I had done something like this a lot sooner. Not only have I learned a tremendous amount from the skill and advice of others but I have formed some great friendships that I feel extend beyond the common bond of O scale interest. Building the layouts and exhibiting them has brought huge satisfaction and latterly helped fill the retirement hours that a non golfing, non bowling, non musical type might find at their disposal. Who would have thought that getting together with these gents might bring about something as adventurous as taking a layout to the U.K.?

So, to get back to my original point. If you have ever considered getting involved with a group and building an exhibition layout don't be deterred by the perceived negatives as these are greatly outweighed by the positives and besides that O scale needs you.

The Arakoola guys have a few thoughts about another layout but we are not getting any younger and after two layouts such a project seems a bit daunting. So how about it? Especially you younger modellers out there. Start talking to some others at the next Forum, form a group and get something started so the space vacated by Valley Heights and Arakoola at the exhibitions is filled by O, not that smaller scale!

Aus7 Modellers Group Inc

P.O. Box 3404 Asquith NSW 2077

www.aus7modellersgroup.org

President

Trevor Hodges

trevorhodges@dodo.com.au

Secretary

Stephen Reynolds

spotsreynolds@iprimus.com.au

Treasurer

Anthony Furniss

anthonyfurniss@rocketmail.com

Vice President

John Parker

johnrbp@tpg.com.au

7th Heaven Editor

Paul Chisholm

paulchisholm@bigpond.com

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On The Cover

Trevor's 1919 graces our cover this issue. Inside in part 2 of his article he describes more of the build including the challenge of installing working inside motion.



You can read the first part of this series, where I describe the building of the tender for this locomotive project, in 7th Heaven issue 44. This part of the series will confine itself to the work of building the chassis of the locomotive and part 3 will describe constructing the body of the locomotive, painting and weathering.

As mentioned in the first part of this series, because I had purchased a set of PSM etches that provided a new chassis, footplate and cab for the assembled model, there were quite a number of parts from the original kit, both brass and cast resin, that became redundant. Prior to the replacement parts being removed from the etched sheet, the rivet detail needs to be punched out using some form of riveting tool. I used my NWSL riveter (photo 1) to punch the rivet heads out on the etches before I removed them from the sheet. The PSM frame etches are supplied as four parts, each frame being a sandwich of two separate layers, with tabs to guide the locating of the two halves before they are soldered together. After soldering the layers together I cleaned up the edges with files. Upon completing this initial work I set out the parts for the chassis and took a good close look at them (photo 2). In this photo I've placed the original Century Models frames in the top part of the photo along with the turned nylon frame spacers and the parts from the PSM etch, two frames and four frame spacers, in the lower half. The frames supplied with the kit are 1.55mm thick laser cut brass section designed to be held in alignment by the turned nylon spaces. Other kits I've seen have these nylon spacers replaced by brass versions. Small screws pass through holes in the frames from each side and into the spacers to hold them in alignment. The PSM replacement frames, aside from being more detailed with the incorporation of bolt head detail and being of a more accurate outline, are approximately half the thickness of those supplied in the kit. This is important and I will explain why later. The spacers make up into a

range of different angle and box sections and are soldered into place to hold the frames in alignment.

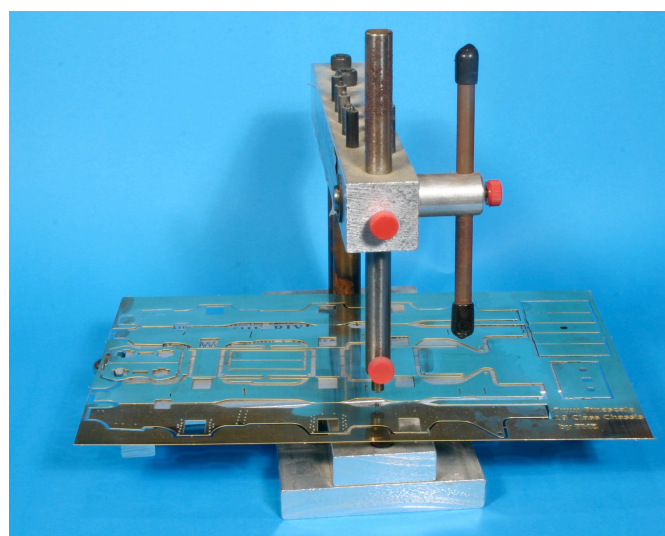


photo 1. rivet press

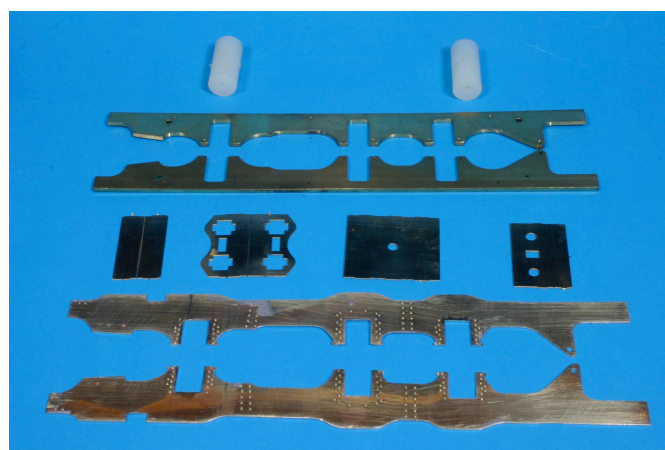


photo 2. original and replacement frames

Many locomotive kits in HO and O give you the option of cutting out the metal around the spot for the axle bushes, making it relatively easy to install sliding horn-guides for springing or compensation. The Century Models kit is provided with a springing system and as such the frames have 6 slots where the horn-blocks slide up and down. The PSM etch design assumes that you're going to install separate sprung/sliding horn-guides and the frames have large rectangular gaps where these are to be installed. You have to provide your own, 3rd party horn-guides. It's quite common practice in the UK for kit producers to leave it up to the modeller to provide their own 3rd party parts and additions. However this practice is quite uncommon in Australia, where the expectation of most kit purchasers is that the kit is provided complete with all necessary parts to produce a running locomotive. As I had always intended to install sprung horn guides, having the slots pre-etched saved me the trouble of cutting them out myself. However the horn-guides were going to impinge into an already tight fit for the inside motion, so I contacted David Peterson of DPMS and he provided me with some etched horn-guides (photo 3) that were relatively modest in cross section. I'm not sure what the commercial source of these is or whether they are still commercially available. DPMS is no longer trading so you would be best served by using horn-guides from Slaters (part number 7960B or 7960C) or Roxey Mouldings (part number 7A207) or any one of half a dozen commercial varieties available over the internet. I doubt that the horn-guides from Slaters or Roxey would be suitable if you wanted to install inside motion as the products from these companies are quite thick in cross section. However the products from these and other similar companies would be more than suitable for a chassis that was going to be built without working inside motion. The lack of inside motion would also allow for the fitting of the Slaters sprung plunger pickups supplied with the locomotive kit which was not possible in 1919 as there simply wasn't room between the frames for this method of power pickup.



photo 3. DPMS etched horn guides

At this point in the building process I did some calculations to determine the amount of space I had available between the frames to fit the inside motion into place. As sprung horn-guides were a given when using the PSM etches, every fraction of a millimetre was going to be crucial if I was going to fit the motion between the frames. If you compare the thickness of the original frames from the Century kit and the ones from the PSM etches (photo 4) you can see just how thick the originals on the right are. By using the etched, PSM frame replacements I regained about 1.6mm in space between the frames. This might not sound like much but every little bit helps. I won't go into great detail about the calculations I carried out but I think it's necessary to state up front that I'm no mathematics genius. I spent a lot of time with pencil, pad and calculator doing calculations and making drawings to ensure that things would fit. To start with they didn't: David had been correct, you can't fit working inside motion between the frames of a Century Models 19 class. But I wasn't really building a Century Models 19 class: I was actually semi-scratch building this loco using some Century parts, some PSM parts and a few I made myself. David also manufactured a crucial part for me that ensured the project turned out well which I'll come back to later. The absolutely fundamental, non-negotiable fact is that there is only 29mm available between the backs of the wheels in fine-scale rolling stock and locomotives. Unsurprisingly this is called the back to back measurement. The frames of a loco (if they have inside frames, some locos don't) sit between the wheels, therefore there is never going to be more than 29mm available to fit the frames, spacers and complicated additions like working inside motion. As the etched frames were approximately 0.8mm thick (remember there are two of these) and I needed to provide a modicum of clearance between the frames and the back of the wheels (say 0.10mm each side) this meant I had about 27.2 mm of available space between the frames: $29 - 1.8 = 27.2$. If I'd tried to do this project using the original frames I'd have started with about 1.6mm less space because the Century frames were twice as thick as the PSM etches at 1.55mm each. The turned nylon frame spacers supplied with the kit are only 23mm long, providing 4.7mm less space than I had available by using the etched replacements from PSM and doing my own set up. This would have been far too narrow to allow me to fit working inside motion.

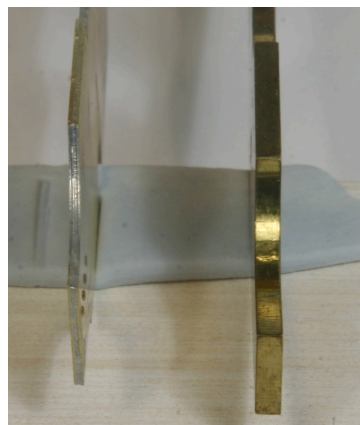


photo 4. comparative thickness of frames

I have some personal reservations about the chassis set up as supplied in the Century Models 19 class kits. It is possible to get them to run nicely by building them straight out of the box. I've seen examples of such loco builds running on other people's layouts. I know some of my readers will be thinking, "I've built a loco using this system, what's he worried about?". I would reply that I know of quite a few modellers, some of whom are experienced kit builders, who have struggled to the point of exasperation as they've tried to get Century Models 19 and 50 class locomotives to run well. By definition, the ones we see in public, running on layouts such as Arakoola or my own Queens Wharf, are bound to be those which have been successfully built, mostly straight out of the box. However this small number of sightings does not automatically mean there aren't a dozen half built ones sitting on shelves in modellers' workshops, forever consigned to the "too difficult to complete" pile. Thankfully Peter Krause, recent past CEO of O-Aust, has put some work into upgrading the chassis system in his more recent loco kits such as the 32. I trust this has improved things somewhat but as I have no experience of his updated system I can't comment. The secret to getting a sweet running locomotive from a kit (in any scale or prototype) is no secret at all, and the information about how to do so has been readily available for many years. If you're planning on building a locomotive kit (especially one you've paid upward of \$1700 for) then Iain Rice's book *Locomotive Kit Chassis Construction* (Wild Swan) is compulsory reading. Buy it, read it and follow the advice found therein. I will now get down off my soap box and get on with describing how I built 1919.

The first order of business in really coming to grips with constructing the chassis for a locomotive is the successful assembly of a set of perfectly matched side rods. The Century Models locomotive kit I used as the basis for this build is supplied with a perfectly adequate set of cast side rods. However I must confess to not really liking cast side rods. My main reservation about cast rods is that they require the drilling of a series of holes in them, normally using a jig. Using the system of sprung horn-blocks that I planned to incorporate into 1919 required that the side rods be employed as jigs to set up the spacing of the horn-blocks and wheels. For this reason the rods had to be perfectly matched to each other with the holes on each set aligning accurately. Because I don't have a great deal of faith in either my own (or anyone else's) ability to drill the holes in cast rods really accurately, when I can I opt to use etched rods. I had acquired a set of etched rods from PSM (photo 5). The photo shows one of the original cast variety from the kit at the top of the photo with the two sets of etched rods below. My preference for etched rods arises from them allowing me to remain in control of the process of assembling them: I'm not relying on someone else to have drilled the holes in the correct places. I find etched rods far more manageable and it is a fairly simple task to end up with a set of rods where the holes will be in the positions they're supposed to be. The etched side rods are formed from multiple layers of thin nickel silver etched parts. These are supplied in a sheet and each layer needs to be cut from this sheet and the layers soldered together. I undertook this job by the use of a section of scrap 12mm plywood as a base and some round cocktail sticks. Hardly a high tech operation but perfectly suitable for the task at hand.

Once the rods were assembled I cleaned up their edges with a range of files. The etched rods I used on 1919 employed a different system of retaining the rods on the threaded bolts that pass through the wheels to that supplied with the kit. The system supplied is the standard Slaters system of a turned brass bush with the rod retained with a nut and washer. The system I employed utilizes a steel, threaded top hat bush that is supplied over long and shortened by the modeller. This is screwed down onto the bolt from the outside of the rod and does away with the ugly and very prominent retaining nut. The holes in the new etched side rods were smaller than the cast set of rods supplied with the kit and this caused me some problems when I came to setting up the Hobby Holidays Master Chassis I use to ensure all the axles are in exact alignment in all planes. Because the axle blanks used in the Master Chassis are turned to accept standard Slaters brass bearings I had to have some new ones made to match the smaller holes of the etched side rods. So another call to David Peterson was made and he manufactured me a new set of axle blanks. As I now own my own lathe I would do this job myself if I were going through the same steps.

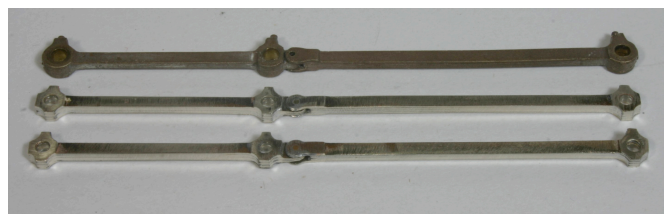


photo 5. comparison - cast and etched rods

The next order of business in constructing the chassis was to assemble the frames and here I ran into a problem. I assembled the frames using the spacers supplied with the PME etched sheet. I'm not exactly sure what first tipped me off to the problem but when I examined the etched spacers I found they were the wrong width and, in spite of being labelled FS, they were in fact the correct width for S7, approximately 1mm wider than required. I contacted David about this and he apologized and said something to the effect that "making your own spacers isn't that difficult". So I set to, pulling the chassis apart and making up a new set of spacers. I must admit to a bit of swearing as this job was carried out but I'm far too polite to have done this over the phone to David. While the frame spacers were really just a set of brass rectangles bent into a series of L and box shapes, because of the working inside motion, two of them had shaped holes etched into them where various bits of the motion passed through. So not only were the spacers used to "space" and hold the frames, they also played a vital role in holding in place, to a very fine set of specifications, all the various bits and pieces of the working motion. As I was working on producing the replacement spacers I decided that it was high time I took a close look at the parts for the inside motion.

The components for the inside motion were sourced from a Laurie Griffin kit which is supplied as a bag of cast, nickel silver parts for Stephenson's Inside motion (Part 12-6). You can see a short YouTube video of the motion installed and working in a locomotive at <https://>

www.youtube.com/watch?v=1ApPbkQaKCw. I spread the parts out on my workbench and took stock of what was included. It all looked very complicated but generally speaking, assembling the components was really just a matter of breaking the construction sequence down into a series of incremental steps. I did a lot of checking and calculating and came to two conclusions: 1) there still wasn't enough room to fit the components between the frames using the spacing of the mounting holes on the frame spacers as supplied in the PME etches: 2) The large crank castings, as supplied in the Laurie Griffin kit, were beyond my skill level to attach to the axle. After a couple more phone calls to David Peterson, and a lot of head scratching on my part, he agreed to mount the crank castings on the axle for me, so I sent the castings and one axle plus wheels off to him in the mail. Did I mention David and I live about 800km apart? Secondly I decided that the components would need to be squeezed more closely together in between the frames to get them to fit. So as I made the new frame spacers I shifted the mounting holes toward the centre by approximately 1.2mm (photo 6). This photo shows the original spacers on the right (note the solder on these from when they had been used in the first attempt at building the chassis) and the new, partially completed set on the left, made from 0.5mm K&S brass sheet. If you compare the two sets of spacers you will note the various holes (these being used to hold various parts of the motion) are ever so slightly shifted toward the centre on the set on the left. I finished the spacers off by cutting out the parts with a piercing saw and shaping the final holes with files. In attempting to mount the big cranks on the axle I'd sent David he discovered that he had to dispense with the castings from the motion kit and made up a set from scratch. This suited the process of getting the motion between FS frames as he made the new cranks slightly thinner and mounted them on the axle to match the new, more closely spaced holes on my scratch built spacers. The new cranked axle arrived in the mail and, I must say, he did a sterling job. When installed in the loco it turned perfectly and the loco operates flawlessly with this at its heart.

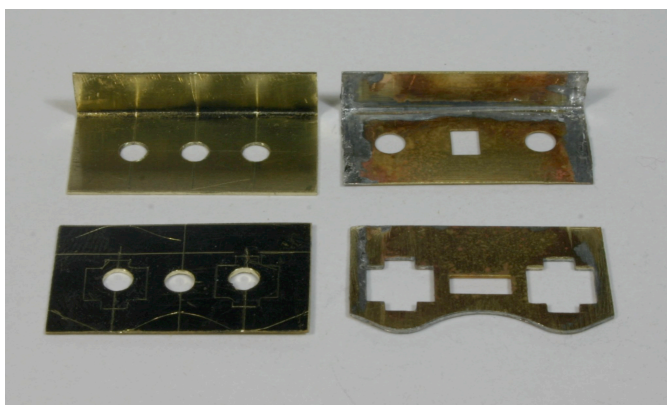


photo 6. original and replacement spacers

After I had the components in hand and was able to actually begin construction of the chassis I began by soldering in place the new frame spacers (photo 7). This photo shows the frames held together with the new spacers and various details included in the Laurie Griffin motion kit. The counter balance casting (photo 8) as supplied in the Century locomotive kit was also used in

the build however it was chopped up and used in a slightly altered form. Stephenson's inside motion is essentially made up of two sorts of moving parts: there are two large sets of paired cranks mounted on one of the locomotive's axles which are in turn attached to two large motion rods. In addition to these there are four smaller eccentrics sitting on the axle in between these large cranks. These four eccentrics provide a back and forth motion for two rocking arms. David also attached these to the main axle while he was mounting the new scratch built cranks. In the next photo (photo 9) I've test fitted the four bar motion brackets and cross slides for the two main cranks to be attached. In the following photo (photo 10) I've set out the rods as supplied in the kit to show the order in which these are attached to the cross slides. As this is a generic motion kit the wheel spacings of the loco being built determine the length of various parts of the motion being installed. It is up to the modeller to measure the distances the rods are required to travel, cut these to the required length and drill the holes in them to make the connections between the various parts.

This step in the construction sequence provided me with a great deal of heart burn as I measured 20 times and cut once. I was terribly worried that I'd cut the rods the wrong length or drill the required holes in the wrong places but it turned out fine and everything moved as it should when final installation occurred. The rods were trimmed to length, an 0.8mm hole drilled through them and the cross slides and then these parts were attached with a piece of 0.8mm brass wire. This was retained with solder with great care being taken not to solder the assembly up solid as the rods needed to pivot on the brass wire as it moved in the motion.



photo 7. frames and new spacers

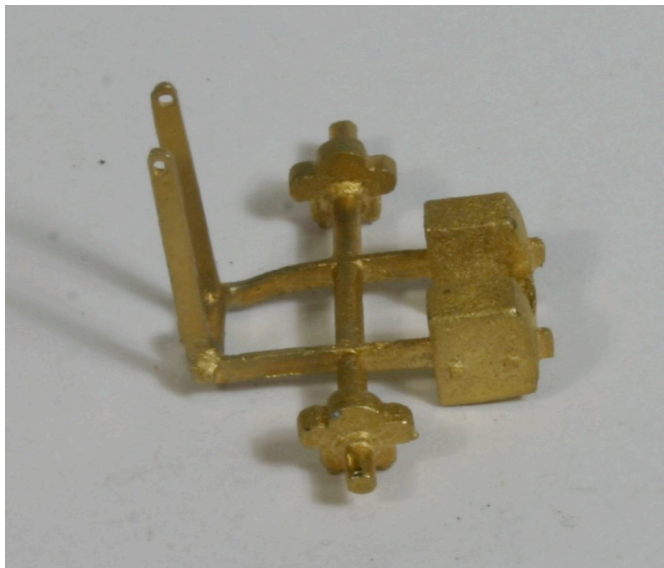


photo 8. counterweights

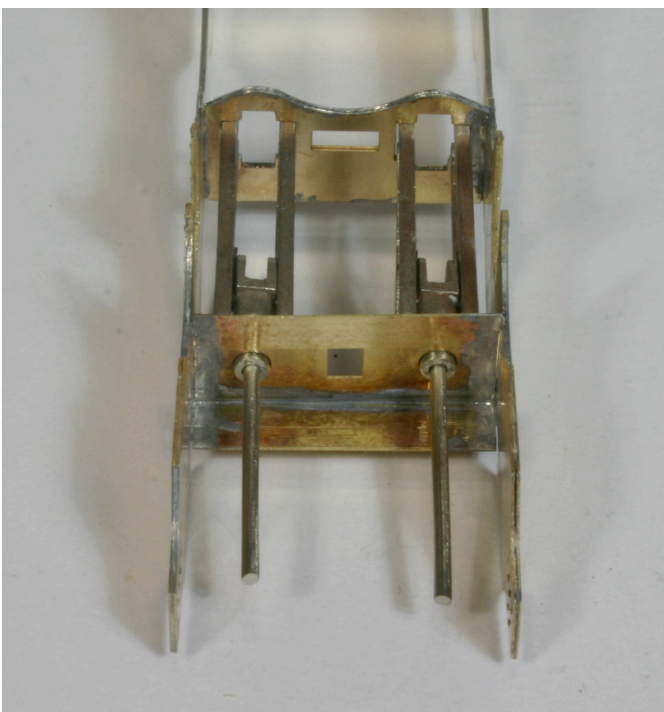


photo 9. front end slidebars



photo 10. piston rod and connecting rod assembly

I must confess that getting all the parts in the kit to operate smoothly was a very time consuming task with my fingers and files getting a real work out as I filed the parts, installed them to test and then pulled the whole lot apart again. Eventually I got the parts to the stage where I could install them permanently (photo 11) once they slid smoothly in relation to each other. The four smaller eccentric rods are supplied in two halves that have to be precisely set at the correct length to match the relative wheel spacings of the locomotive the modeller is building. Once I had determined the length

these parts needed to be (there are four of these so eight parts in all) I drew out these spacings in pencil on a small piece of scrap plywood (photo 12). I drilled various holes in the ply where I could insert short lengths of brass 0.8mm wire to act as a retaining jig to keep the parts at the correct spacings as the rods were soldered up. I filed a half lap joint in each half of the rod and then soldered these together using the plywood jig to get the length correct and then assembled the motion prior to installation (photo 13). The hoops at the right hand end were retained on the eccentrics that David had installed on the axle for me by two lengths of brass wire. A lot of filing was required before these components would operate smoothly by rotating around the eccentrics on the axle. Eventually both assemblies were completed and installed on the axle.

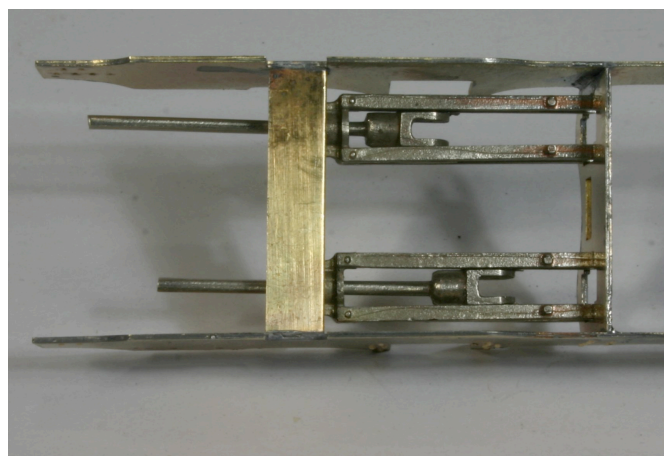


photo 11. slidebars

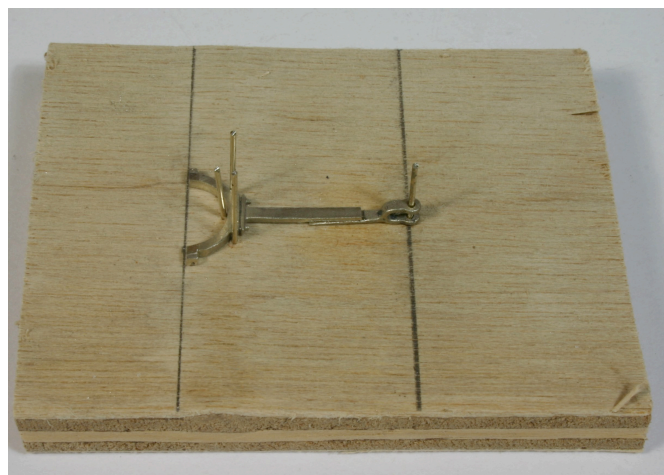


photo 12. jig

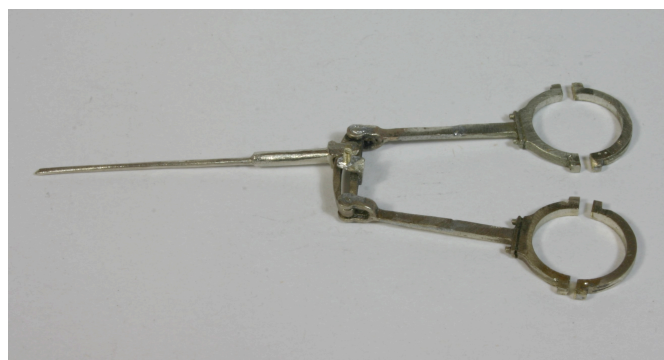


photo 13. piston rods

Once I had the inside motion components ready to fit I installed the horn-guides for the springing units. I used my Hobby Holidays Master Chassis jig for this job and this made the operation a breeze. The side rods were used as jigs to set the spacing of the axles and then it was a simple matter of soldering the guides into position using some ladies hair clips to hold them in place temporarily while soldering took place. After installing the horn-guides I test fitted the wheels into the chassis to check everything was operating freely and then commenced the final installation of the inside motion. After having assembled and pulled apart these components numerous times it was a relief to finally put them together for the final time. You can just see the tops of the large cranks David installed on the centre axle in the next photo (photo 14). You can also see the side rod retention system that I used on this loco. On the left the threaded retaining screws have been shortened and screwed into position and on the left I've deliberately left the screws at their original length to demonstrate how they are installed to retain the rods. After this photo was taken I shortened them and installed them for the final time. After all the fiddling and testing I'd done the final (permanent) installation of the inside motion went fairly smoothly. I installed all the components into the chassis in one go and I was convinced the whole lot would bind up and that I'd never get the loco to operate properly. However I crossed my fingers, installed the motor onto the driven axle and gave the chassis a test run. The Hobby Holidays Master Chassis can be configured as a static test bed and I hooked up the motor to a transformer with some alligator clips to give things a test (photo 15.). With no lubrication it ran beautifully, much to my surprise! What I see when I look at this photo is how little of the inside motion can be viewed from this angle. When the locomotive body is in place the view becomes even more restricted!

Because of the restrictions caused by filling the space between the frames with the working inside motion I had to install electrical pickups that fitted around this. I couldn't use the Slaters plunger pickups supplied in the loco kit as these impinge into the same space now filled with the motion. I soldered some double sided paxolin

circuit board to the inside of the frames in six spots and used these to attach phosphor bronze wire pickups bearing on the backs of the wheels. I finished up the chassis build by installing the counter weight casting supplied with the kit and attaching various detail components such as brake shoes. All this work was carried out in a very similar fashion to the process described in the instructions supplied with the locomotive kit.

It would pay to keep in mind that I hadn't installed inside working motion in a locomotive before I built 1919. I mention this to emphasize that we all start as beginners in this hobby on the various modelling tasks we undertake. Even if we're experienced in some aspects of the hobby, this doesn't mean we're experienced in all areas. There are always new things to learn. I must admit the central role David Peterson played in the successful outcome of 1919's construction. He provided me with guidance in key areas of the construction sequence and helped me enormously by manufacturing and fitting the large cranks and eccentrics to the axle and through providing me with advice in verbal, written and drawn form. I don't think I could have built 1919 without him.

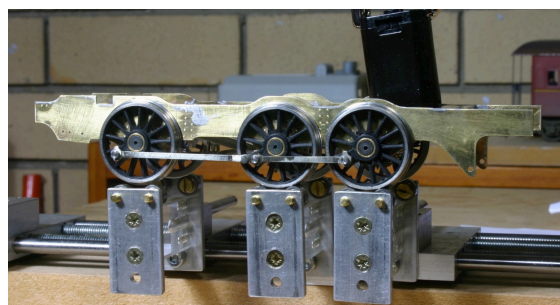


photo 15. running in

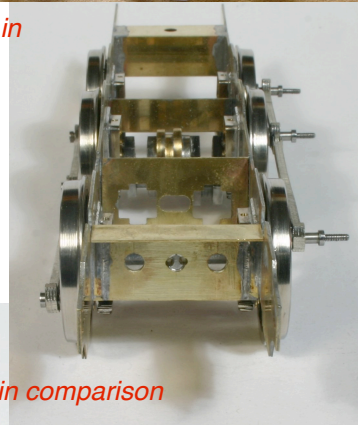


photo 14. crank pin comparison

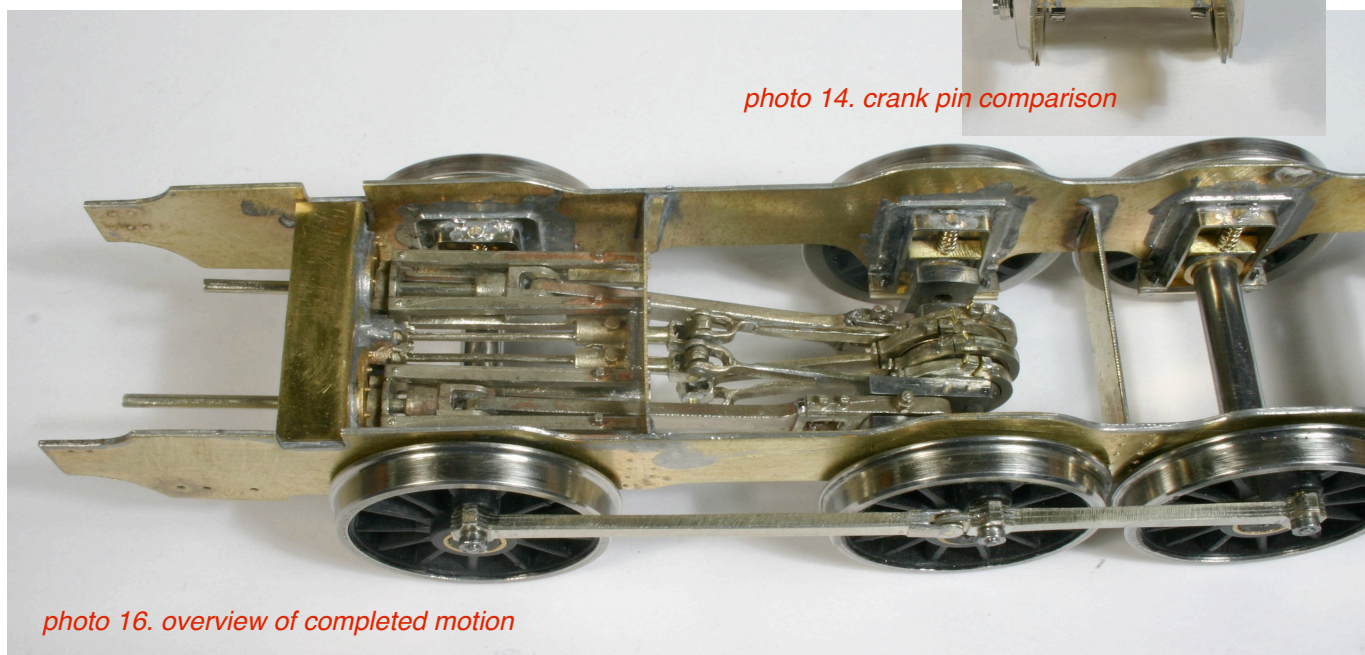
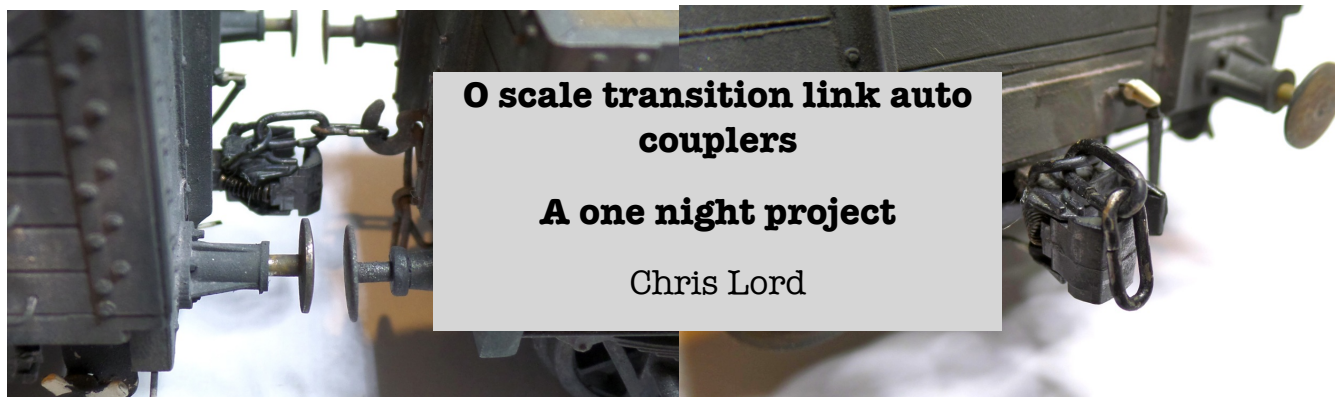


photo 16. overview of completed motion



O scale transition link auto couplers

A one night project

Chris Lord

Transition link couplers were used so that a non auto coupler fitted loco, wagon or carriage i.e. with a hook, three link or screw link could be coupled to a vehicle fitted with auto couplers. The makeup of a transition link coupler first is a D link to attach to the coupler head then a short centre link and finally a standard size link that will couple to the next vehicle.

What are our options in O scale? First the Waratah/ModelO Kits cast brass working and dummy scale couplers are available with an optional transition link. This is the closest to scale size version available but what if you have decided to use Kadee or Protocraft couplers on your equipment and would like to couple up to a loco that has only a correct to prototype hook coupling? There is no version of the other brands available with provision to install the required D link. This is the start of my little one night modelling project.

This project looks at the old style Kadee's, new generation Kadee AAR type O scale Couplers and the Protocraft scale operational coupler (see Trevor's review in issue 41). Not being an engineer I didn't measure the exact position of the holes drilled and anyway we're not doing an exact prototype install; just a representation that is usable on couplers that are not 100% scale anyway.

I started with the Kadee's, old and new and on inspection the original Kadee has very little area in which to provide a mounting. There is a small section behind the trip pin just before it steps to the shank that could be used. The new generation O scale version however has a nice area cast at the back of the head that could be used to mount the required D link and these couplers are a diecast metal so would be more than strong enough to cope with the load from a full train. With the old style Kadee start by drilling a pilot hole in the raised section just before the shank and then a 0.5 hole for the link with a pin vice.

Note that original Kadees are available in diecast or plastic and the plastic may melt if using a high speed rotary tool. This is where the modelling comes in and you need to check the length of the buffers used on your rolling stock and make a choice of a scale link available as a part from ModelOKits or to make your own link from brass or steel wire. Premade links are obtainable from Slaters. For the original Kadee's on an in service vehicle I made the first D link from brass wire a little over scale and soldered to the cross pin then the two links are standard size slaters links. This makes a very

usable coupling especially if using regularly when shunting with a shunters pole/hook.

The new gen Kadee's are a little easier and the Waratah "D" link set can be used. There are two options for mounting. First and most straight forward is to drill as before in the cast area behind the trip pin or second above the trip pin. This requires the trip pin to be moved down lower in its hole however this position looks much more realistic once you have drilled the 0.4 hole in the desired position take the D link. Test fit to get a nice position for the "D" links. A slight bend is made just past the eyelet so the link will sit flat above the coupler head. When happy with the position fit links as before to suit your required length or usage then fit a pin to the "D" link and solder in place.

The Protocraft coupler is a little more work and needs some care taken to preserve the operational characteristics.

As with the Kadee new gen coupler you can drill your mounting hole in two positions; in front of the locking pin or behind. Both options will be very close to the locking pin that secures the knuckle locking so care is required, also the coupler metal is quite hard and some use of a rotary tool with a die grinding bit is required to achieve nice operation of the "D" link, I use the Waratah links on the Protocraft couplers.

If choosing the position in front of the trip pin start with the rotary tool and make a hollow behind the knuckle head in preparation for the "D" link pin hole to be drilled. Using the "D" link as a guide test fit to the coupler head as you go so as not to remove excess material, next making sure the drilled hole position will just clear the locking pin drill at 0.4

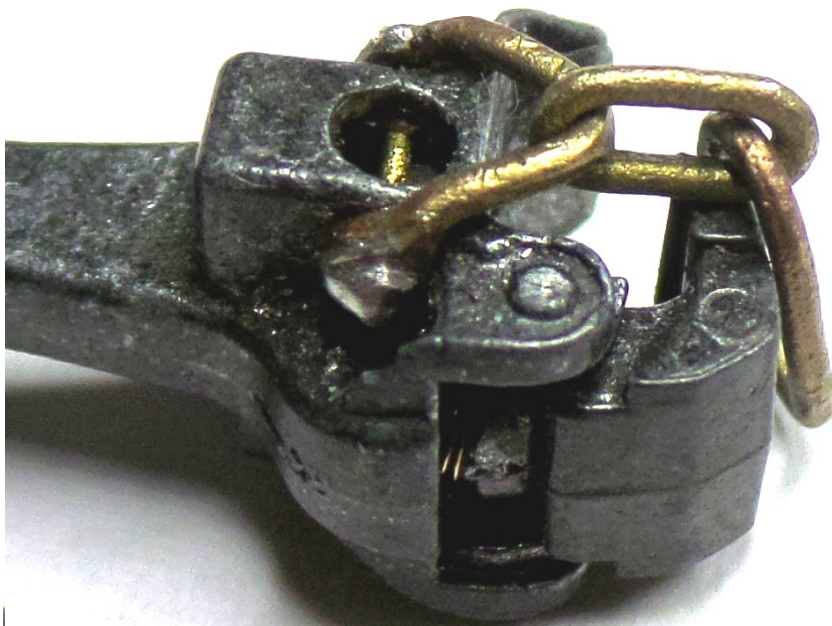
What if you are using the transition coupler on a loco and want a more scale look? This is where you can use the complete Waratah supplied transition link, a scale size D and short centre link with a large scale main link. The same location on the coupling is used for the D link pin. If you want to just mount for a prototype look you can use a scale link as the last link but if you would like to occasionally couple to a three link vehicle you can slightly oversize the last link for better working tolerances with your over size shunter's pole. Most auto couplers are located with the coupler knuckle placed slightly forward of the buffing surface for operational reasons so the scale centre link is not a problem when it comes to reaching the vehicle to be coupled.

The radius of the curves your model has to negotiate will need to be considered.

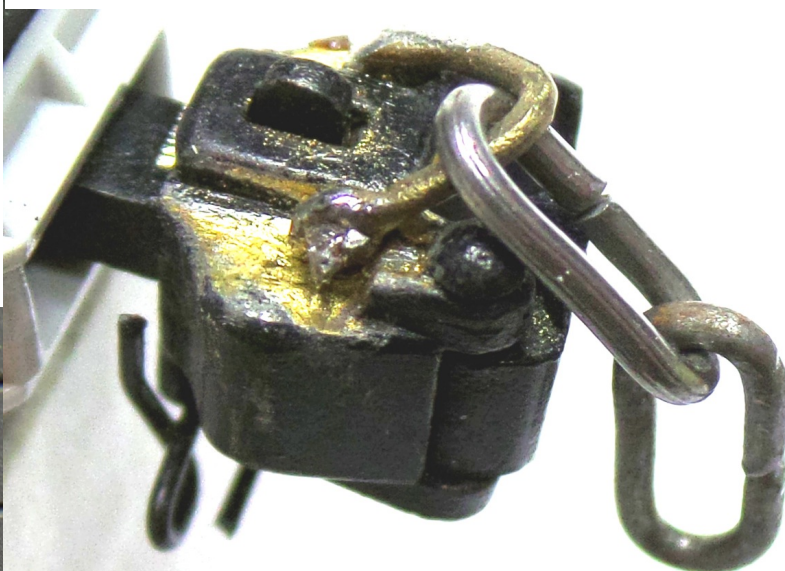
Links, what works best ? I have tried several combinations of brass /steel and it may be best to say the easiest to use are the ones where I have fitted a Slaters steel link as the final link as they can be use with a shunting hook, or the magnetic Protocraft uncoupling tool; something that can't be done with a brass link.

I have tested my couplers with some nice long and heavy trains with no failures of the links or coupler assemblies. See the photos for examples and mounting positions of "D" links.

After fitting I use Model Master Acrylic paint on the link with shades of dirty matt black and rust dry brushed on, chemical blackening may also be an option.



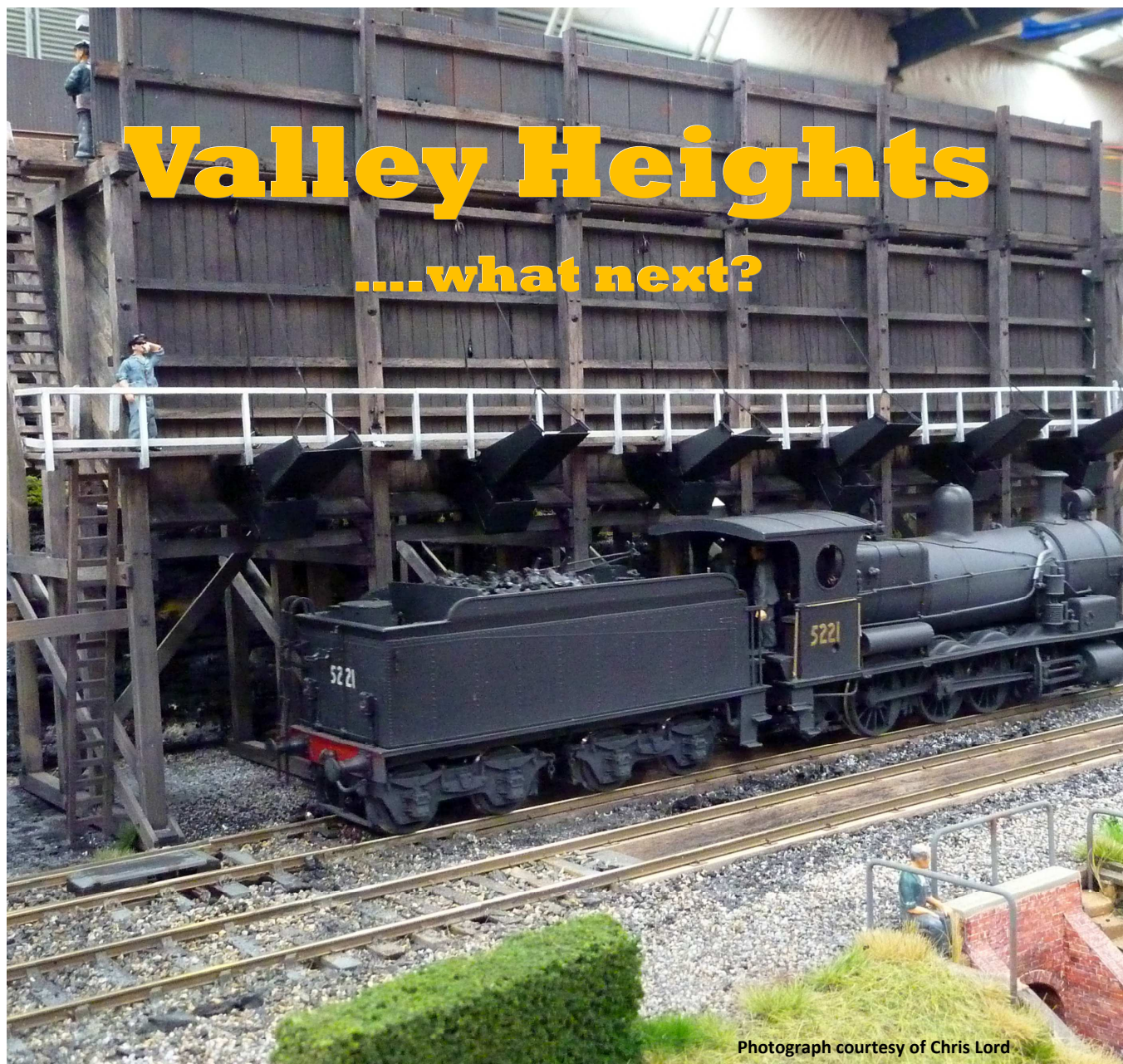
new gen Kadee



Protocraft



original Kadee



Photograph courtesy of Chris Lord

My O scale interpretation of the Valley Heights loco depot was always intended as an opportunity to trial some new and different construction methods. Although designed primarily as an exhibition layout I originally had some concern that it might not provide sufficient operating flexibility to interest the general public, or for that matter the knowledgeable critics. It is after all really just a visible fiddle yard!

Have you noticed how much space is taken up at any model railway exhibition by 'fiddle yards', those behind the scenes, off-stage areas that the public are not supposed to view? This has always bothered me so a loco depot seemed liked an obvious location for a small O scale layout. All the "fiddling" could then take place in full view.

The layout appeared in public for the first time at the Epping Model Railway Club's Exhibition held over the weekend of June 8-10 2013. The switchback trestle and associated coal stage proved to be a great attraction especially when operated with precision by Roger Porter. Most onlookers were also very tolerant of the fact that some of the operating locomotives may not have ever visited the prototype location.

It was of course one of the layouts featured at our own Aus7 ExpO held in March last year at The Casula Power House Arts Centre.

Its most recent appearance was at the Brickpit Stadium Thornleigh, as part of this year's Epping Model Railway Club's Queen's Birthday Exhibition. The note in the exhibition guide made it clear that this would

be the layout's final appearance on the exhibition scene.

So what happens next? That is an excellent question and the most immediate answer is; "I'm not sure".

This was my first attempt at building and exhibiting an exhibition layout in any scale and I found it to be both satisfying and rewarding, and yet a strangely lonely experience.

I originally commenced the whole Valley Heights saga to see if was possible for one person to build an O scale NSW standard gauge exhibition layout in a reasonably short time frame.

I also hoped that the series of articles in 7th Heaven might encourage others to follow. Unless there are a whole bunch of layouts being constructed in secret I clearly failed in that objective. Why?

Most, probably all, exhibition managers are really keen to encourage new exhibitors, there is also a real desire to promote the fact that a layout is appearing for the first time. There has never been a better time to exhibit an O scale layout particularly as many new HO layouts, built and exhibited by an individual are getting smaller. Linden Ford, a tiny new OO scale layout, based on the Inglenook principle was built primarily from recycled materials and operated by the owner's young son. This layout, small enough to fit on a standard desk was received with such acclaim that it won the award for the best new layout at the recent exhibition. It certainly proves that

layouts do not have to be large group efforts in order to have appeal. Even the smallest O scale layout will attract crowds of interested observers simply because of the size of the rolling stock. At the same exhibition there was considerable interest in the layout modules which Glenn Scott has built to promote the Model O Kits range of rolling stock and buildings.

Most are aware that the Arakoola group have accepted an invitation from the Gauge O Guild to participate in their 60th Anniversary next year at Telford in the U.K. Without Arakoola the local exhibition scene is likely to be devoid of any O scale layouts in 2016, surely we

are not going to leave the exhibition scene to be supported only by Model O Kits?

We desperately need some new O scale layouts to continue the promotion of this great hobby.

Over the years at both O scale Forums and in his writings Derek Cullen has provided plenty of ideas for small O scale layouts which I am sure that he would be delighted to see turned into reality, many of these are smaller than Valley Heights and should be achievable within 12 months.

I also seem to remember an idea for a circular layout: now that might be worth pursuing? What can you do?



Photograph courtesy of Chris Lord

LET THERE BE LIGHT! Roy Rumble

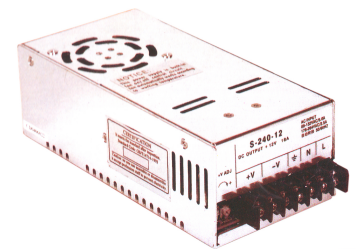
For four years or more Arakoola has been illuminated by traditional mini fluoro units, originally adequate for the occasion. With the advent of cheap LED lighting strips, recently it was decided to upgrade to LED's but much homework was needed as we found LED's are not simply LED's! For a start they are supplied in three basic colours. Then there are packets of LED's, strips of LED's and dozens of different variations.

We early on sought out experts on colours and found model railway people had long established the best and warmest light was a combination of cool white and warm white. Then you find suppliers can supply in regular lumens (light value) or ultra bright, mostly used for exterior applications. Then you find these 5 metre strips are made up with three LED's and resistors per section measuring 50mm. The cheapest way of purchasing is in rolls of 5 metres as purchasing by segment is about the same as buying a six pack of beer vs a slab, about triple the price for small lengths.



Just when you think you have all the information, if you read the small print you find you can only pull current through a maximum of 5 metres of strip as the tiny voltage "rails" along each segment will heat up and burn out if you try pulling big current from one end to the next. In our case nearly 11 metres from one end of Arakoola to the other.

Then you have to consider power supplies. We worked out we would need over 12 amps @ 12 volts to power the near 11 metres of LED's. This could be done dividing up the full length to be fed from both ends with 6 amp power supplies. But we found no manufacturer markets a 6amp power supply. Then advice given to me by an old hand is to allow a margin above maximum current to ensure the power supply doesn't overheat. We found that JAYCAR produce a series of 12 volt DC power supplies with 240 volt plug in to standard domestic supplies. We found JAYCAR sell a highly stable 18 amp switchmode power supply (MP-3250) giving us a 5 amp margin for our needs.



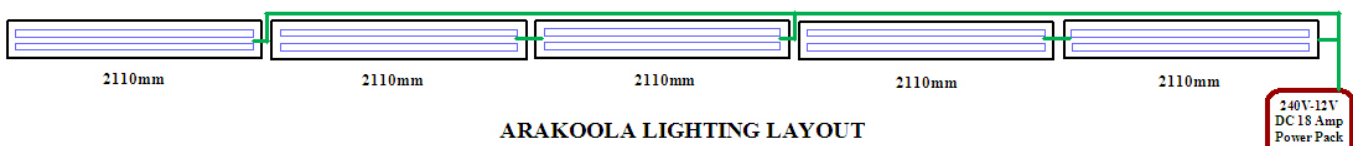
We decided to mount our LED strips on simple, light weight 19mm x 11mm timber strips pivoted on each end with an 18mm x 18mm right angle bracket, pivoting on a wood screw and then screwed onto the Arakoola pelmet out front. As you can see from the layout diagram, Arakoola has 5 sections of roof pelmets each measuring 2110mm long end-on-end.

As the blurb tells you NOT to provide power through more than 5 metres of strip, you will see from the diagram we provide power to modules 3 and 5 via a figure 8 cable and plugs which is held by double-sided tape on an adjacent side of the timber strip while power to modules 1 and 2 and 3 and 4 are powered through the normal internal strip rails and standard power interconnecting plugs so that when

the layout is disassembled it is a simple matter of unplugging all connectors and the pelmets packed away as normal.

The 18 amp 12V power supply is also adjustable via a tiny screw driver pot, however we found the adjustment is minimal, from 11volts up to just over 13 volts. The change in voltage has minimal change on the light value? JAYCAR offer a 2 year guarantee on the unit.

We saved on LED strips as the 5 metre strips were on special at JAYCAR saving about \$40. All up, completely built for less than \$500 providing a far superior light and brightness and adjustable direction with the pivoting timber strips. The system is pulling just over 12.5 amps at around 11 volts. There are now 630 LED's illuminating Arakoola.



Decoders, Light Emitting Diodes and Speakers

In many ways the choice of decoder is the obvious starting point. Some 11 years ago at the time of the foundation of the Aus7 Modellers Group there really was only one brand to consider if you wanted to add DCC, sound and lights to your O scale model and that was a Soundtraxx decoder. Soundtraxx, based in Durango, Colorado, in the U.S really started it all way back in 1990. This was of course well before the development of the now deservedly popular Soundtraxx Tsunami. Initially it was common to have to install two decoders, one to control the motor and lights and a second decoder for the sound. We were also limited to the control of motors which required less than 1 amp. Fortunately all of the kits for NSWGR steam locomotives then available used small modern motors. This would change later with the introduction of the O-Aust/Bergs kit for the NSWGR 48 class and its requirement for larger capacity decoders.

Early Soundtraxx
Tsunami decoder



DCC decoder developments since those early days have changed significantly with products now available from literally hundreds of manufacturers but for O scale application within Australia, based on features and availability, that list can easily be shortened to two, namely Throttle Up – Soundtraxx and ESU Loksound. The current Tsunami range of decoders from Soundtraxx provide an excellent solution for most of the available steam locomotive kits including the NSWGR 18, 19, 30, 30T, 32 and 50 classes. Unfortunately the whistles are a bit of a problem, the Tsunami Light Steam decoders together with the K27 and peanut whistles are probably the closest to the sounds of NSW steam.

Many of us have been using Soundtraxx Tsunami decoders for years and they have certainly proved to be a reliable and trouble free performer with motors which require not more than 1.1

amps. The only problem is that we had to accept a sound, particularly the whistle which was developed to accurately reflect the U.S .prototype. That works O.K but it is not an accurate representation of NSW sounds.

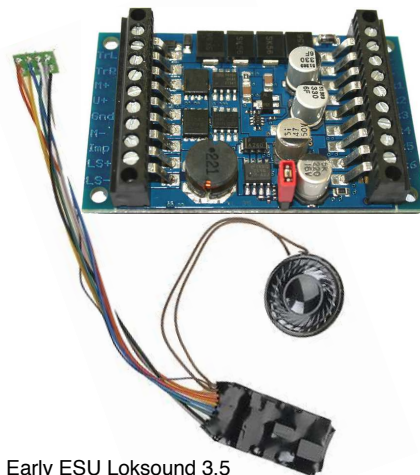
So for some time Soundtraxx ruled supreme until the arrival of ESU Loksound from Germany. This represented a major change for the hobby as for the first time we could purchase a decoder complete with sounds that were able to be replaced or edited. By 2014 the ESU Loksound range was in its fourth iteration with a 5th version due later this year. The ESU Loksound range have become the decoders of choice and so feature heavily in this article. Incidentally if you would like to have all the other DCC features but without sound then the ESU Lokpilot is for you. Apart from the fact it is silent all of the other features are similar to the ESU Loksound range.

This is not the usual step by step instruction intended to help you add DCC, sound and lights to a specific O scale model.

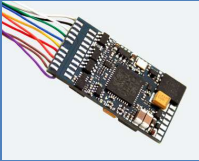
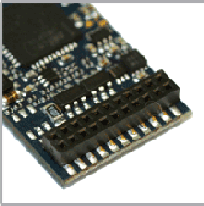

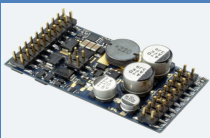
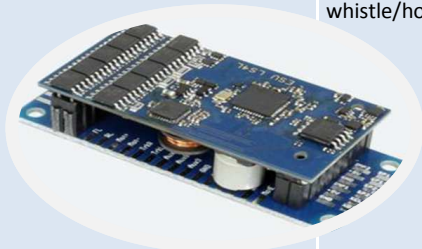

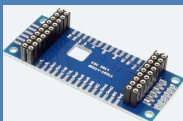
Instead these pages will concentrate on the general principles involved in selecting and installing the decoder, Light Emitting Diodes and speaker for any O scale model.

Keep your membership up to date so that you don't miss out on future articles covering both the Model O Kits NSWGR C36 class and the RTR Auscision NSWGR 45 class.

John R B Parker



Early ESU Loksound 3.5
and XL 3.5 decoders

Decoder Type	Price Range	Key Features	Suitable for	Sound Projects
Loksound Select 	A	Lowest cost Maximum 1.1 amps 6 functions Multiple horns/whistles Limited range of U.S. only sound projects Sound projects can only be replaced with other Loksound Select files and cannot be edited. 4-8 ohm speaker required. 30 x 15 x 5mm	Lowest cost installation in some steam locomotives. Usually not suitable for diesel installations due to the higher current required when stalled (wheels slipping).	Selection only possible within the Select range of sound projects. At the time of writing 35 projects are available, both steam and diesel, many provide multiple choice of prime mover and whistle/horn. Select Steam Loco collection provides a low cost solution for NSWGR 18 and 30 classes.
Loksound V4.0 	B	Maximum 1.1 amps 4 functions Best choice - 21 pin package Sound projects can be replaced with any Loksound or user developed sound projects and can be edited. 2 adaptor boards can extend functions to maximum of 6 or 10 respectively. (incl. servos) 4-8 ohm speaker required. 30 x 15 x 5 mm	Best solution for the current range of steam locomotive kits including the Model O Kits NSWGR AD 60 Garratt.	The complete range of Loksound sound projects are available, all can be edited. Decoders with customised sound projects are available from DCCSound and Railroad Model Craftsman to suit a number of locomotives.
Loksound XL V4.0 	E	Maximum 4 amps 10 functions, including servos. Sound projects can be replaced with any Loksound or user developed sound projects and can be edited. 13 watts audio output 4-8 ohm speaker required Screw or pin terminals 51 x 40 x 10 mm	Currently the decoder of choice for both kit built and RTR diesel locomotives. Very rugged and flexible, excellent running capabilities and sound output when equipped with suitable enclosure mounted speakers. The decoder is also capable of handling on board animation and steam or exhaust effects.	The complete range of Loksound sound projects are available, all can be edited. Decoders with customised sound projectors are available from DCCSound and Railroad Model Craftsman to suit a number of locomotives.
Loksound L Select 	C	ETA Q4 2015 Designed primarily for O scale Maximum 3 amps 9 functions, including 2 servos Multiple horns/whistles Limited range of U.S. only sound projects Sound projects can only be replaced by other Loksound Select files and cannot be edited. C/W plug-in connection board for custom use which could be used by RTR manufactures to provide a truly plug-in decoder option. 4-8 ohm speaker required 50 x 25 x 10 mm	This could become a good choice for lower cost diesel installations. 	Selection only possible within the Select range of sound projects. At the time of writing 35 projects are available, many provide multiple choice of prime mover and whistle/horn.
Loksound L V4.0  	D	ETA Q4 2015 Designed primarily for O scale Maximum 3 amps 9 functions, including 2 servos. Sound projects can be replaced with any Loksound or user developed sound projects and can be edited C/W plug-in connection board for custom use which could be used by RTR manufactures to provide a truly plug-in decoder option. 4-8 ohm speaker required 50 x 25 x 10 mm	Likely to become the decoder of choice for both kit built and RTR diesel locomotives. The main advantages will be the small size, that it is expected to cost less than the current XL V 4.0 and the fact that it will be pluggable.	The complete range of Loksound sound projects will be available, all can be edited. Decoders with customised sound projectors are expected to be available from DCCSound to suit a number of locomotives including the forthcoming Auscision NSWGR 45 class.

The ESU Loksound range will shortly be joined by two new models. The information included in the adjacent table is based on current information. It is a summary of the differences with suggestions for their most likely application in O scale models. Only the key features are mentioned, there is a large amount of additional information available on the ESU website. The price

range "A" to "E" is graduated alphabetically from the most economical to the most expensive. At the time of writing the range is:

A = \$128

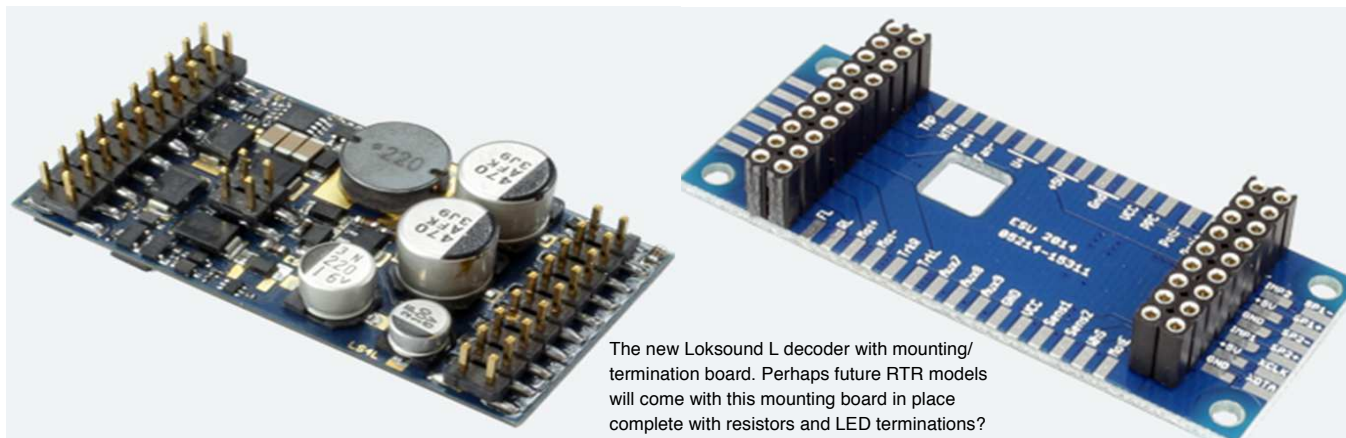
B = \$187

C = \$???

D = \$???

E = \$348

Prices for the soon to be released "L" series are currently unknown but based on information available they are likely to be within the range indicated. The new Loksound L Select and perhaps more significantly the Loksound L V4.0 is likely to become the new decoder of choice for O scale modellers.

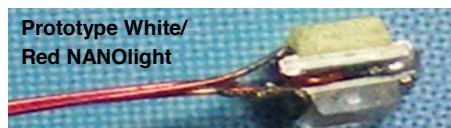


The new Loksound L decoder with mounting/termination board. Perhaps future RTR models will come with this mounting board in place complete with resistors and LED terminations?

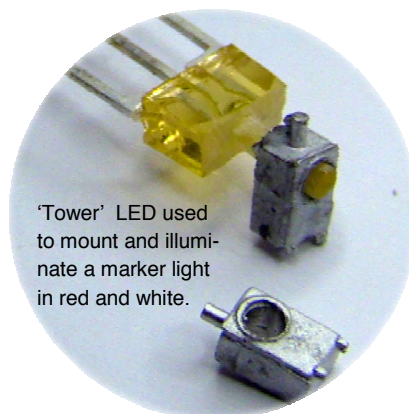
During the period that most are modelling real locomotives used incandescent globes for headlights, marker lights, and cab lighting, together with some limited use of kerosene lanterns. We could use incandescent globes in our models, not sure about kerosene that would be interesting? However neither would be a very good choice and are certainly not recommended.

Fortunately with the ongoing development of Light Emitting Diode (LED) technology, light effects have never been simpler to achieve.

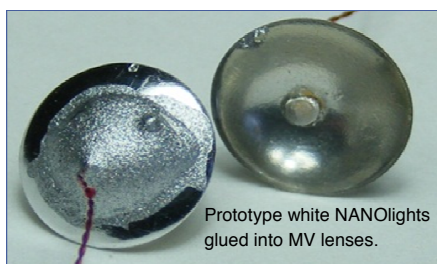
DCCconcepts is an excellent source for LEDs, all come conveniently packed with small current limiting resistors. The three most useful LED types are the standard 3mm LED, which is great for cab lights. Also available are the 2mm tower style and the very small wire terminated surface mount LEDs often known as NANOLights. Unless you are trying to replicate a modern sealed-beam style of headlight the 'prototype white' version should be selected. The tower style and the Nanolights are also available as red/white versions with a common anode. These are ideal for those difficult marker lights which in their prototype form included a single globe with red and white lenses which were rotated in place when needed.



Prototype White/Red NANOLight



'Tower' LED used to mount and illuminate a marker light in red and white.



Prototype white NANOLights glued into MV lenses.

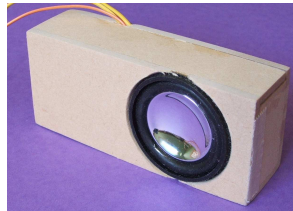


Prototype white NANOLights can also be mounted directly into a headlight casting.

Regretfully the speaker portion of our project is the one area that is sometimes overlooked. This is unfortunate as a good speaker and its enclosure can have a significant impact on the final outcome, particularly if the model is going to be operated in a relatively noisy exhibition environment. There are a few simple rules: Make sure the speaker has the same impedance as the decoder. In the examples we are using 4 ohms is preferred but up to 8 ohms is O.K. If you are using an older Loksound decoder such as the Loksound 3.5 then the speaker impedance must be 100 ohms or between 8 and 32 ohms for the Loksound XL 3.5. If you still have some available the best speaker, provided it will fit, is the 40mm 4 ohm speaker previously available from Jaycar as Part AS3028. Only one will be required but it must be mounted in a suitable enclosure.

The next best is the slightly smaller 36mm 8 ohm speaker available from Jaycar as part AS3030. Provided there is sufficient space, two should be used wired in parallel to provide a total impedance of 4 ohms. They are best mounted in an enclosure but because of its construction these speakers can be mounted back to back without a separate box. Provided all the holes are sealed the speaker's moulded construction provides a reasonably effective enclosure.

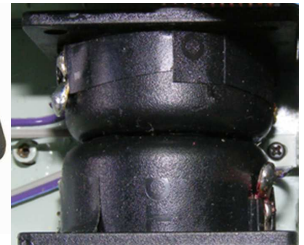
A number of suitable enclosures are available from Model O Kits or you can construct your own from 3 mm MDF or 2mm thick styrene. The aim is to ensure that there is no direct air path between the front and rear of the speaker cone.



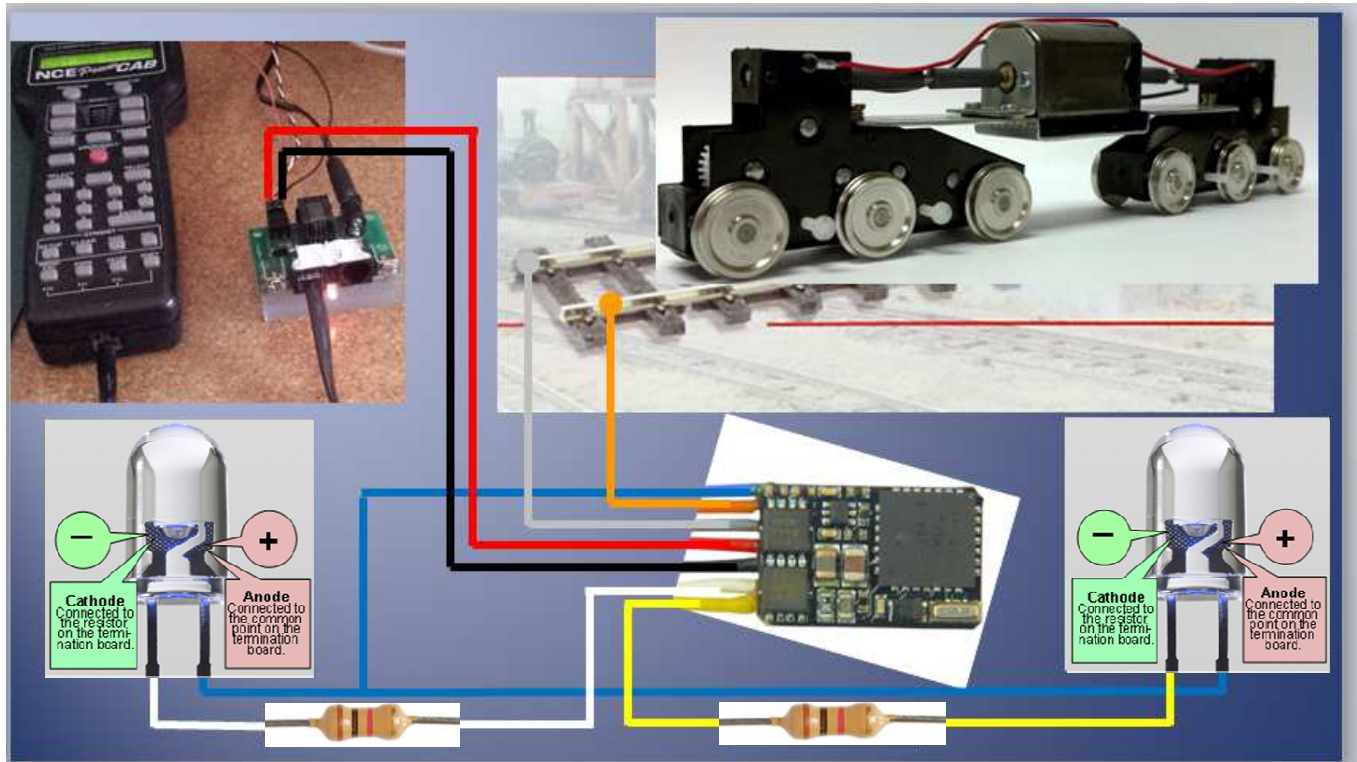
2 x Jaycar AS3028 in enclosure (48 class)
Loksound XL 3.5 Decoder



Jaycar AS3030



2 x Jaycar AS3030 in parallel (49 class)



Now we have the decoder, LEDs and the speaker we simply have to put it all together. If you are about to install DCC, lights and sound into an existing RTR DC model you might like to try out everything before actually opening up that pristine model to commence the modifications. This is easily done and it's also great way to become familiar with the various components. The example shown above represents a basic installation. For clarity only two functions are included (headlights) and the speaker with its additional wiring is not shown. The starting point is a DCC system and a piece track which is not connected to anything else. Make the following decoder connections:

- Red wire to one of the DCC systems track outputs (either one).
- Black wire to the other DCC system track output.
- Orange wire to one rail of the free standing piece of track.
- Grey wire to the other rail of the free standing piece of track.

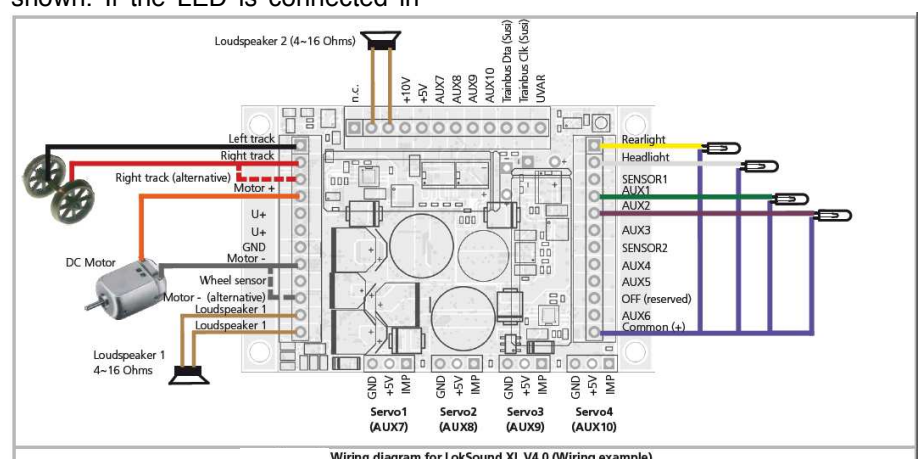
Place the DC locomotive on that same free standing piece of track and control it using the default address, '3' with your DCC cab. If the loco moves in the wrong direction simply interchange the grey and orange connections to the track. The LEDs for both headlights can now be connected. The LEDs are polarised, the anode with the longer lead, is connected to the blue wire which is positive. The 1000 ohms resistor, (1K) can be connected in series with either lead but it is usually easier to connect it in series with the cathode lead as shown. If the LED is connected in

the reverse direction it will not be damaged but it will not illuminate. However if the LED is connected without the resistor you will have to replace it.

The wiring diagram for a Loksound XL V4.0 is shown. This shows incandescent lamps which are really not recommended. They can be replaced with LEDs with the anodes connected to the "Common (+)" terminal and the other side being connected via a 1000 ohm resistor, (1K) to the Aux 2, Aux 1, Headlight and Rear light terminals respectively.

This YouTube clip shows the benefit of this external testing:

<https://www.youtube.com/watch?v=vnn70rn1zVQ>



Big River Models

Big River Models, 1/30 Todmorden Rd, Buttaba 2283, (02) 4975 5501, johnhalecrow3@bigpond.com, have passed on the news that the TAM sleeping car kits are now available for \$500 per kit. The aim has been to produce a kit which will "not end up in the too hard cupboard". Trying to achieve this ease of assembly has led to some revising of the moulds and production processes. The main body components, roof, sides, ends and chassis are one piece castings in polyurethane. Underfloor details, sprung vestibule connections, KD couplings, vents, door handrails, buffers etc. are all supplied, along with necessary hardware. Bogie side frames are cast in whitemetal and are assembled with an aluminium bolster which has been jig drilled and tapped. Axle boxes, springs, and brake shoes are all supplied as separate plastic mouldings. Big River's own fine scale wheel-sets with top-hat brass bearings to suit are also supplied.

Bergs Hobbies/ Haskell

Bergs Hobbies, 181 Church Street, Parramatta, NSW, 2150, Tel 02 9635 8618, <http://www.bergshobbies.com.au> & mail@bergshobbies.com in conjunction with Haskell Co Taiwan have announced they are jointly releasing a range of O-scale wheels made specifically for the NSW modeller. It is hoped these will be ready for release before the Liverpool exhibition. Two versions will be available: disc or spoked. Prices should be competitive with the range available from other manufacturers available to NSW modellers and they will have the correct number of spokes. The wheels have been manufactured to be generally compatible with FS standards.

Keiran Ryan Models

Keiran Ryan Models, 39 Coachwood Cres, Picton, NSW, 2571, (02) 46772462, krmmodels@gmail.com & www.7mmkitsnbits.com have announced that both the 20 class locomotive kit and a kit for the S008 NSW wheat silo should be available for sale during the latter part of this year. In addition, KRM will be releasing an updated 7mm signal kit, which can be fitted to either the left or right side of the post. A catch point indicator of etched parts is also being produced, along with a batch of etched cranks for points and signal rodding.

The instructions for the silo kit will be a pdf and power point file on an 8 Gig flash drive, with plenty of photos and information to assist the modeller to assemble the model.

ModelOKits

ModelOKits, PO Box 379, Sydney, NSW, 1700, (02) 97073390, 0404935663, <http://www.modelokits.com> & sales@modelokits.com have passed on the following information about their expanding range of models:

O-Aust - All locomotives, passenger carriages and wagons that are currently in production are now available from the ModelOKits website. Work is

progressing on the LFX and BX passenger carriage kits with a possible release date of the October Aus7 Forum. Work is progressing on the release of a commonwealth tender kit which should be available by the end of the year. The current plan is to re-run the R cars in 2016 but with etched components to replace some of the castings.

Waratah - The big news about the Waratah range is that ModelOKits have received stock of new CPH railmotors. Price is \$1649 and available now. Running numbers are 1, 18, 31 with match board sides and 13 and 33 in Masonite sides. Improvements have been made to lower the body over the bogies, some minor engineering work to prevent the sideways "wobble" and improve the running with changes to the drive shaft. The unit comes fitted with a DCC board to suit the new Loksound L decoder, but will also accommodate the standard V4 with some additional wiring. There are only a few PHG kits left from the recent re-run. It is hoped that the pilot for the HG guards wagons will be available for viewing at the Liverpool exhibition and the October Forum.

DJH - The 36 class pilot model should arrive the last week in July. Photos will be posted on the ModelOKits web-site. If the pilot is assessed as being sufficiently accurate they should be available prior to Liverpool exhibition.

ModelOKits now have in stock a range of the Auscision Trees (these are the larger HO varieties sold by Auscision and the O & G scale types) and some of the very last 49 class locomotives – one tuscan and one candy – for sale. Contact ModelOKits for pricing. As previously mentioned at the Aus7 Forum, ModelOKits will be opening a showroom at Yagoona in the coming months. Opening times will be advised in due course and announced on the website and at the Aus7 Forum.

Quvic Models

Quvic Models info@oaustkits.com.au, and via the web site at www.oaustkits.com.au, at PO Box 743, Albany Creek, Qld, 4035, mob 0419680584 or (07) 3298 6283 have advised that as of 22 May, 2015 the NSWGR portion of the O-Aust Kits and Century Models ranges are now part of the ModelOKits business. The remaining portion of the former O-Aust Kits business, namely the Victorian and Queensland prototypes, will continue to be available from Peter Krause for the foreseeable future under the brand name, Quvic Models. Contact details remain unchanged and the O-Aust Kits website will remain open until a new Quvic Models website is developed.

Work on the Quvic Models BB van and I/IA 4 wheel open wagon is progressing and production samples should be available sometime in August. It is hoped to get some long stalled Queensland prototype locomotive projects finalised over the next 12 months.



Big River Models TAM sleeping cars



ModelOKits NSWGR C36 locomotive pilot model



Bergs/Haskell wheel sets



Please

Don't let your membership lapse

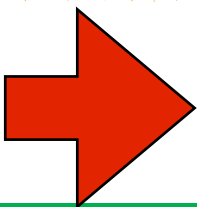
Membership of the Aus7 Modellers Group costs just \$AU35 per year.

Memberships are due for renewal by June 30th no matter what time of year you joined. Please forward payment to the Treasurer, Anthony Furniss at PO Box 3404 Asquith NSW 2077. You must be a financial member to vote at the AGM in October. For renewal and new membership forms follow the link on the Aus7 Blog at <http://aus7.org/2014/10/12/welcome/>

If membership is not renewed this is the last issue you will receive. To receive all four issues per year you need to renew before September.

Renewals can now be done through online banking. Deposit directly to the Aus7 account BSB 062-233 Account Number 1017 2076 Be sure to supply your name.

It's Not Too Late !!!



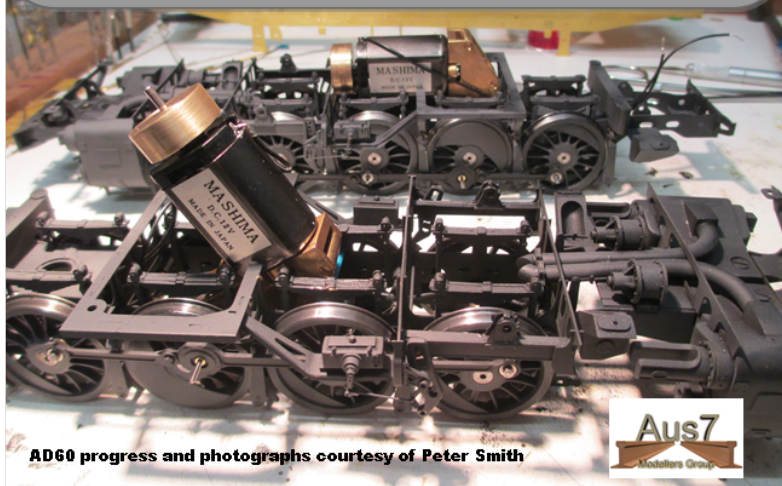
Saturday October 31, 2015

O Scale Modellers Forum

NORTH SYDNEY LEAGUES CLUB - NORTHS
12 Abbot Street Cammeray
9.00 am to 4.00 pm—Doors open 8.30 am

Specialist O scale traders
Featured speakers will cover a range of topics on both the prototype and O scale modelling including...
Resistance Soldering
Cut it out
What's New?

Annual Silent Auction
\$30 including tea/coffee
Lunch available in club bistro
Aus7 AGM
All are welcome - Come and share the progress on your latest project.



AD60 progress and photographs courtesy of Peter Smith



to give yourself the chance of winning a ModelOkits AD60 Garratt locomotive kit for just \$20.

Half the 200 tickets have already been sold so if you have been putting off buying one or two (or even more) don't delay.

All you have to do is deposit the money for however many tickets you want into the Arakoola account BSB 062 181 Acc No 1080 2591 - Arakoola Group then send an email to arakoola2telford@gmail.com and give your name and address for tickets to be posted out to you. Or send a cheque with your details to Arakoola PO Box 3404 Asquith NSW 2077

Your purchase will help the Arakoola guys get the layout to the Guildex exhibition at Telford in the U.K. in September 2016. To see more about this adventure go to their Blog at <https://arakoola2telford2016.wordpress.com/>

The raffle will be drawn at the Aus7 Forum advertised adjacent and the winner will be notified if not present.



Model O Kits is proud to announce our recent acquisition of



Fine Scale 1:43.5 (7mm) O Scale kits

The O-Aust kits range includes NSWGR locomotives, passenger carriages, 4 wheel and bogie wagons in 7mm O Gauge.

We are working on restocking & setting up the O-Aust range on our website www.modelokits.com

We would also like to thank Peter Krause for what he has done for the 7mm NSWGR scale over the past 15 years.

He has been a building block for developing the hobby to where it is today. Peter will continue to be involved for a while helping on the development of some of the promised projects and will be with us on our stand at Liverpool in October. We wish Peter all the best for the future

New Release

9000 GALLON TULLOCH TANKER WAGON

Now Available!

- Price \$350



19 Class Locomotive - \$1600



Now In Stock

32 class Locomotive - \$1700



BSV Bogie Sheep Wagon \$350



GSV Sheep Wagon - \$185



MHG Guards Van - \$350



BWH Bogie Wheat Hopper \$295



30 Class Tank locomotive - \$1500



FO Passenger Carriage - \$490



Our showroom at Yagoona opening soon. Please watch our website for details

Visit our new website & online store at www.modelokits.com

Now incorporating the full range of Waratah MRC, O-Aust Kits & Model O Kits products

Telephone: 0404 935 663 email: sales@modelokits.com

NEW

N.S.W.G.R 36 CLASS BELPAIRE LOCOMOTIVE

- Delivery September 2015
- Pre-production special now closed
- Price \$1,799 for limited additional stock
- build options available, please contact us



Photos of pilot model



See website for more photos!



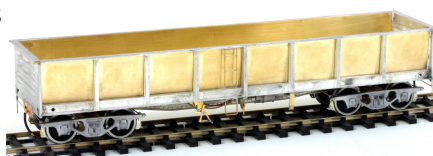
N.S.W.G.R (AD) 60 CLASS BEYER GARRATT

- Price \$2599.00
- limited additional kits in stock and available

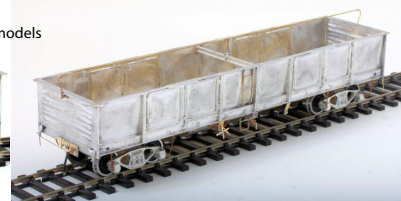


N.S.W.G.R G/GP WAGONS

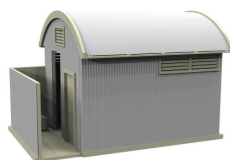
- GP Wagon includes 2AS bogies with wheels
- G Wagon includes 2BP bogies with wheels & tarp support pole
- Price \$179.00



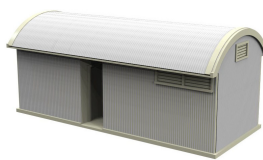
photos of pilot models



Quality scale cut kits and building materials for O scale (7mm/1:43.5) modellers



C2 Toilet Building



C2 Toilet with Lamp Room



Workshop Building



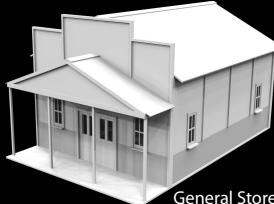
PC 1 Station Building Kit



Version A



Version B



General Store



Shop Front

Product Range

NSWGR PC-3 Station Building Kit	\$109.00	Timber Level Crossing	\$15.00
NSWGR PC-2 Station Building Kit	\$89.00	Card Level Crossing	\$13.00
NSWGR PC-1 Station Building Kit	\$49.00	Timber Platform Fascia kit	\$33.00
NSWGR Single Panel Hut Kit	\$10.00	Concrete Signal Box Kit	\$49.00
NSWGR Two Panel Hut Kit	\$13.00	Ash Timber Buffer Kit	\$19.00
NSWGR Three Panel Hut Kit	\$15.00	Small Concrete Water Tank Kit	\$12.00
Concrete Platform Fascia Kit	\$25.00	Corrugated Water Tank 1500mm Diameter Kit	\$9.00
6' Timber Palling Fence Kit	\$18.00	Corrugated Water Tank 2700mm Diameter Kit	\$10.00
Laser Cut Card Windows & Doors	\$17.00	Corrugated Water Tank 3400mm Diameter Kit	\$12.00
Corrugate Sheet (390mm x 208 mm x 0.25mm)	\$4.00 ea	Platform Seat - Version 1 Kit	\$5.00
Weatherboard Sheet (390mm x 208 mm x 0.25mm)	\$4.00 ea	Platform Seat - Version 2 Kit	\$5.00
Post & Rail Fence Kit	\$20.00	"No Way" Sign Pack of 4	\$4.00
Corrugated Iron Fence Kit	\$12.00	Various O Scale Waterslide Decals	\$10.00 - \$12.00

New Products

Petrol Station	\$89.00	Speaker Boxes - To suit Jaycar AS3030, AS3028 speakers	\$6.00
General Store	\$89.00	C2 Toilet Building	\$38.00
Workshop Building	\$79.00	C2 Toilet with Lamp Room	\$49.00
Weatherboard House Front Only	\$59.00	Shop Front	\$49.00

Visit us at www.modelokits.com Telephone: 0404 935 663 email: sales@modelokits.com

The Waratah Model Railway Company

Fine Scale 1:43.5 (7mm) O Scale kits

**MODEL
KITS**

specialists in O gauge model kits & accessories

2 Types Available

Matchboard Side - No. 1, No. 18 & No. 31

Flush / Masonite Side - No. 13 & No. 33

(all in Tuscan)

CPH RAILMOTOR - RERUN

In Stock Now

Now Available, Limited Numbers

Price \$1649

- Improved running - Modified height over bogies - DCC Board for 'Loksound L Decoder'



ULTIMATE "S" WAGON KIT

Introducing our high quality, highly detailed S wagon kit with injection moulded body components, our brass and white metal detail items and Waratah prototype wheel sets. Quality, detail and easy to assemble at a reduced price of: \$85.00. (Excludes buffers and couplers)

Price \$85 per kit

Available end of 2015



NSWGR BWF Wagon

In Stock Now - Price \$215



NSWGR RU Wagon

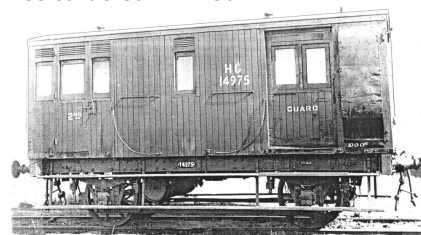
In Stock Now - Price \$165



N.S.W.G.R HG GUARDS VAN

- expected delivery Q3 2015

- Price to be confirmed



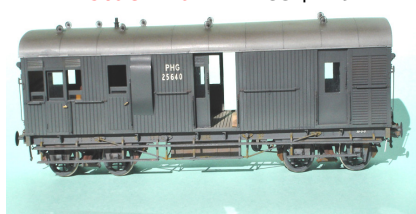
NSWGR ICV Wagon

In Stock Now - Price \$210



PHG Guards Van

In Stock Now - Price \$449



NSWGR BD Wagon

In Stock Now - Price \$215



Visit us at www.modelokits.com Telephone: 0404 935 663 email: sales@modelokits.com