7th Heaven

Aus7 Modellers Group Inc.

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In this Issue:

Straight Down the Line - Opinion

by Trevor Hodges

Aus7 Modellers Group 10th Birthday Celebrations

In the last issue of 7th Heaven (page 17), the executive canvassed the possibility of holding a 10th anniversary celebration to mark the Aus7 Modellers Group's 10th year since its formation in March 2004. Any such event would be most likely be held at about the same time as March/April Forum and would replace that event.

In spite of very little response to this announcement, we remain hopeful that it will be possible to mark the group's 10th anniversary in a suitable manner. We've decided that the cutoff date for offers of assistance, volunteers and suggestions will be the 2012 AGM at the Oct Forum. After this date we will make an assessment and decide how to proceed.

If you want to know how to help make this event a reality, there are two specific ways of getting involved:

- We need displays and layouts which can be put on show at the event. Any such displays or layouts need to have their own lighting and should ideally be able to be moved up and down stairs. To make the event worthwhile the executive feel that a minimum number of layouts need to be on display. If you have a layout available for display, or if you are currently building one, please contact a member of the executive and discuss the details.

- We need an organising committee to help organise the event. We feel that this committee should have at least two members who live in Sydney. Volunteers for a position on this committee will need internet access and the ability to communicate via emails. At least one executive member will be a member of this committee but we feel strongly that it should also contain some participants drawn from the general membership.

The executive have already spent quite a bit of time discussing different ideas, displays and cost structures for this event. We have taken an in principal decision to run an event of some sort; however we need solid commitments from members if these plans are to come to fruition. Various individuals have been approached to participate but we need to hear from everyone who would like to have some involvement.

Please don't hold back, thinking that someone else is bound to come forward to offer help. We need everyone to step up to the plate and help us put the very best O-scale railway modelling on display to both the modelling community and the broader public. If you have skills that you think might be useful, if you're willing to man a stand, if you have a layout we don't know about or if you're aiming to have one in operation by April 2014, please let us know and we will find a way you can help. All offers will be gratefully received and utilised.

The Aus7 Modellers Group 10th Anniversary Celebration is going to be an event to remember; please help your executive make this dream a reality.

Articles Needed

Please consider sharing your work with your fellow Aus7 members by telling us about your layout (planned or under construction), some rolling stock you have built, a kit you have modified, some materials or tools you have found useful, techniques that work for you or just send some photographs for the Showcase page. Don't think that your efforts are not good enough or not of interest to others. Send me something! Paul Chisholm – Editor

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On The Cover
John Parker's 40 class still displays the blue livery it acquired for Royal Train duty. In this issue John outlines how he converted this locomotive from an Atlas product to come up with a close representation of this pioneering NSWGR diesel.

Upgrading the Running on a Waratah/Haskell CPH

Part 1

Trevor Hodges

Background

A few years ago Paul Chisholm, the esteemed editor of 7th Heaven, and I were discussing the challenges of building a model of the iconic NSWGR CPH rail motor in 1:43.5. If I remember correctly this conversation took place at a Sydney AMRA exhibition as the two of us took a break from running trains on Stringybark Creek. We both agreed that a CPH would make a good candidate as a scratch building project and that it would also make sense for someone to put out a kit. Not too long after Paul and I had this chat the 1:48 VR DERM railcar was produced and it wasn't long before the Waratah Model Railway Co and Haskell announced they would be producing a ready to run, brass CPH. The models were delivered in the second half of 2010. I must admit to be being very pleased upon hearing that a r-t-r CPH was going to be produced. It would save me the time and effort of building one myself: time that could be devoted to models that would never be produced commercially, either r-t-r or in kit form. I also felt that this iconic model, especially in r-t-r form, was likely to draw new adherents to O-scale, never a bad outcome.

The Model

I was very impressed with my CPH upon first getting it out of the box. It certainly looked the part and I anticipated it doing sterling service on Queens Wharf and another layout I'm currently building. As always in this scale, I was struck by the volume and heft of the model and how this compared with the HO model I had owned of the same vehicle many years ago. My plan was that at exhibitions my CPH would replace the steam hauled CCA and FO carriages currently offered on passenger service by the railway commissioners. I do have one or two small niggles with the model – the pipework on the No 1 end is too proud of the body and the wheels are not to the correct profile for Finescale – however I felt these minor issues were of a secondary nature on a model that captured the look and spirit of the prototype in spades.

After I had finished merely admiring my new toy, I decided to give No 19 a test run and this is when I started to encounter what, for me, was a problem that went beyond the aesthetic. My layouts don't allow for a continuous run so I gave my CPH a test run, first on a short length of track then on my rolling road (photo 1).

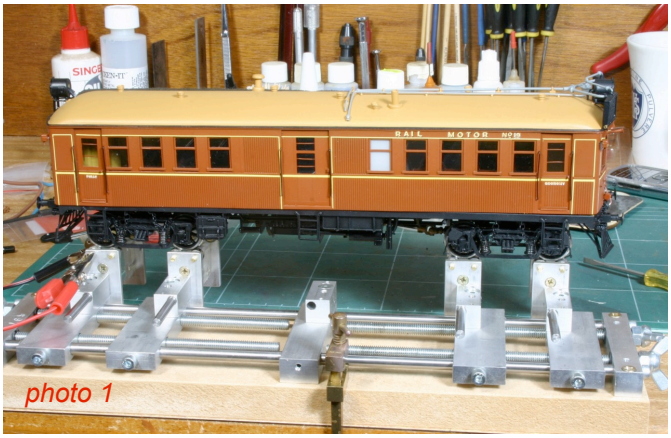


photo 1

This gadget allows me to closely watch the model run in place and what I saw bothered me. I ran the model using DC power in these initial tests but later I did install a cheap (non sound equipped) DCC decoder I have lying about to use for testing purposes and repeated the test to see how it would perform. The following is a list of running issues I noticed on my model:

- The universal drive shaft rotated concentrically with a sort of rolling motion.
- As power was applied, the body of my CPH would lurch noticeably to one side as resistance from the drive shaft transferred back to the body.
- The universal drive shaft would rotate for approximately half a turn then stop until enough power was applied for the motor to overcome the resistance it was encountering before the wheels began to turn. The first time I ran my CPH was on a short length of track under DC power and this stall caused me to crank the power up to such an extent that when the model finally did move it took off like a startled rabbit.
- When the model was in motion it had a slight "roll" as it moved along.

So what was I going to do about these problems? There was no way Waratah/Haskell was getting my CPH back – I'd fallen in love with the thing. So I did what I usually do under such circumstances: I packed my CPH away and put it in a cupboard. However fate took a hand and I stupidly agreed, at the urging of Peter Krause the proprietor of O-Aust, to apply to attend an exhibition with Queens Wharf in 2012. Three days at an exhibition hooking up and unhooking the screw link couplings on

my CCA and FO carriages was a prospect too onerous to be contemplated, so I decided that I was going to have to fix whatever was ailing my CPH and be quick about it. To be completely serious about it, I couldn't leave things as they were: CPH 19 had been purchased to run in revenue service on my layouts, not as a display model which spent its life in a glass cabinet where the running qualities of a model don't really matter. So I undertook to pull my CPH to pieces, analyse what the problems were and fix them.

The Challenge and the Disclaimer

I'll be the first to admit that when it comes to the running qualities of my models I'm fussy: I don't like lumpy running and I won't allow a model to run on one of my layouts until it behaves appropriately. This is especially important on an exhibition layout where the public has paid to see the trains run. I feel I owe it to the people who stop for a time to look at my layout at an exhibition to get my models running as smoothly as possible: an aim that is sometimes honoured more in the breach than the observance in spite of my best efforts. I expect my models to run smoothly when at a crawl, which is pretty much the only speed they get up to on my short, fiddle yard to terminus layouts. The requirement for smooth, slow running is especially needful when my stock is in the hands of guest operators who may not be familiar with their quirks and idiosyncrasies. I can't have a model stubbornly sit on the layout as power is applied, only to have it suddenly go haring off: my layouts aren't long enough to allow an inexperienced operator to react in time to such an event.

While I was determined to get my CPH to run as smoothly as possible, I wanted to achieve this outcome within a framework of aims that would provide direction and limit to the work. These aims were:

- I didn't want to replace and/or rebuild any of the major components of the model. The work needed to take place within the framework provided by the model itself, otherwise I could have saved myself quite a bit of money and simply scratch-built one to start with.
- Any changes I made needed to be as unobtrusive as possible.
- Changes would be made in a gradual, systematic fashion to ensure that problems contributing to the poor running were being fixed.
- The changes were going to be made using the tools and materials I had on hand or could easily access. I wanted other modellers to be able to do what I had done to achieve improved running, so I deliberately set out to avoid the use of specialist equipment like lathes and mills.

I feel I've managed to achieve most, if not all, of these aims. My CPH now runs beautifully. However be warned: while the changes outlined in these articles are not beyond the average modeller and cost a relatively modest amount of money, this is not what I would describe as a beginners project. Carrying out the work I describe here will likely void any warranty your CPH has with the manufacturer and I will not be held responsible if things don't turn out well for you. I don't consider myself a world class modeller, but I do have over 25 years experience of building kits, working with a soldering iron and drilling holes. If you've been fiddling round the edges of the slightly more challenging tasks any developing modeller faces in the hobby, this might be the perfect project that allows you to take the next step. It will also give you the perfect excuse to buy a few of those more specialist tools you've been thinking about getting for a while now. This is not a job you can complete successfully with a cordless drill and a rubber mallet, but the tools needed are all within what I would describe as the a standard tool kit required by any serious modeller.

Disassembly and Initial Steps

In some ways the hardest step to take is the first one: actually picking up a screw driver and starting the task of disassembling the model. The first step you will probably want to take is to make up some sort of cradle in which to hold your CPH while you work on it upside down. In the photo (Photo 2) you can see the body of my CPH inverted and sitting safely in a foam cradle I made for this purpose. The foam was some off cuts I had laying about from a project I completed a few years ago. The foam was purchased from Clarke Rubber. These off cuts were cut to fit a base made from a piece of 6mm mdf that was also an off cut from another project. I won't bother providing dimensions: the cradle is wide enough and long enough to hold a 1:43.5 model safely while I work on it. I would strongly recommend that you make up something similar before you start this project because there is nothing worse than having a model roll off the workbench onto the floor. Trust me, I know this from past experience. Don't be tempted to rely on your old Peco HO/OO foam cradle: bite the bullet and make something suitable for O-scale models. Before commencing any work I would also recommend giving your CPH a test run to see if it exhibits any of the same running qualities as mine. If not you can happily run it on your layout.

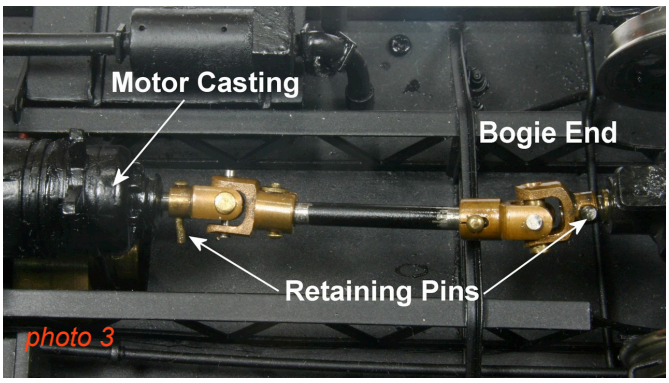

photo 2

There are eight small Phillips head screws holding the body to the chassis which you will need to locate in the four corners of the model. Avoid undoing the screws that hold interior details like the seats in place. The screws holding the body to the chassis are paired and are about 1.5cm from the ends of the vehicle. Retain these screws and set them aside. Carefully separate the body from the chassis with the body in your newly made foam cradle and the chassis sitting next to this. There are wires connecting the two parts of the model, you can cut these now and completely separate the two halves. Place the body in a safe place where it can't be harmed accidentally. I would recommend somewhere away from your workbench. I would also recommend removing the seat assemblies at this stage. These are mounted on two metal bases and secured in place with screws. When you have removed the seats make sure you find and safely store the eight brass packing rings and the screws. Set the seats aside but now would be a good time to think about whether you're going to put little people in your CPH. Get some suitable candidates and have them ready to install when you reassemble your model after the work is completed. You don't want to have to disassemble the model any more times that you really have to.

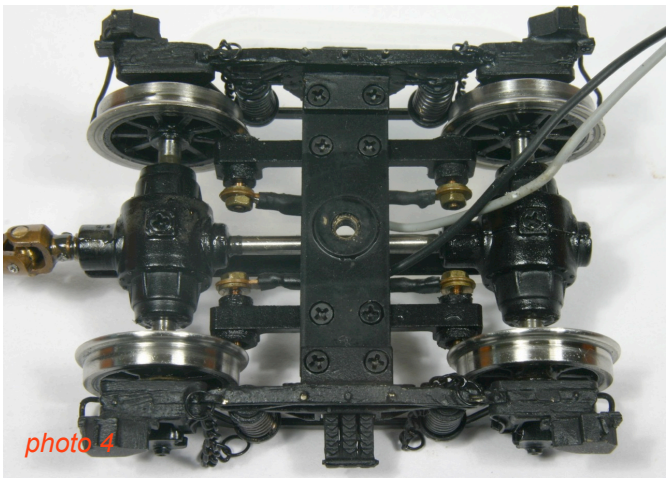
The first task to perform is to place some light lubricating oil on the motor shaft bearings. The motor is a good quality Japanese can motor and I know from experience that these can be supplied un-lubricated. I have no way of knowing whether the motor supplied in the CPH has been lubricated but it occurred to me that this is one small task that could easily have been overlooked at the factory. So before we do any more running or testing of the model, it would be wise to place a small dot of oil on the drive shafts at both ends of the motor where they emerge through the brass shaft bearings.

The Drive Mechanism

After getting the body separated from the chassis I took a really close look at the drive mechanism starting with the can motor and systematically examined every component through to where the wheels touch the rails. One of the unique features of this model is the way the motor bogie is driven by a rotating universal drive shaft as per the prototype. This was a feature I wanted to retain, if at all possible, in any upgrade I was going to carry out. However my instincts told me that this feature was also partially responsible for some of the running problems I had identified. I could see that the drive shaft supplied on the CPH (Photo 3) had quite a bit of "slop", which allowed it to rotate up to a half turn before engaging the gears in the motor bogie. Once power was applied you could see the drive shaft rotate as this slop was taken up and then it would stop as it met resistance from the gears and from the power pickups. Another problem I discovered in this area was where the drive shaft from the gearbox emerged from the motor casting. This shaft passed through a hole that was clearly too large for the 2mm diameter shaft, allowing it to float about and "skew" as it rotated. This would also help to explain the rotation/stall effect I could see as power was applied. This shaft needed some type of support in the form of a bearing if it was to function efficiently.



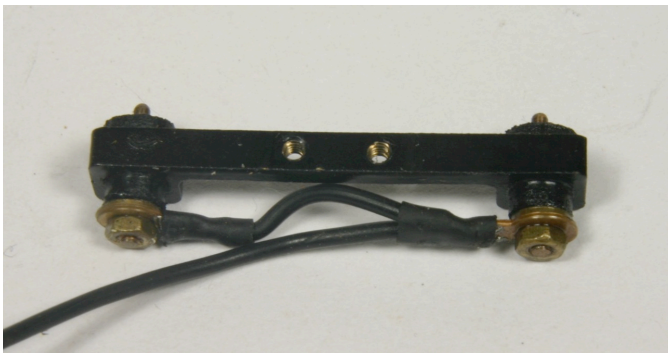
To carry out this upgrade on your CPH, you will need to separate the power bogie from the chassis and this requires detaching the universal drive shaft from the drive shafts that emerge from the motor casting and the power bogie. The simplest way to carry out this operation is to straighten the retaining pin that attaches the universal shaft to the solid shaft nearest the motor casting and sliding this out to allow the two shafts to be separated. The pin retaining the universal shaft at the power bogie end is a little more complicated to remove as it is a riveted in place. Before attempting to release the universal drive shaft from this end, separate the power bogie from the chassis by unscrewing the bogie mounting screw. Retain the screw and the spring in a safe place. With the bogie separated from the chassis (Photo 4) turn the wheels so that the shaft rotates and you can see the riveted end of the retaining pin clearly. You should be able to see a small dimple in the end of the pin. Gently file the end of this pin till it can slid free of the shaft. Separate the universal drive shaft from the power bogie. This pin can be replaced with a short length of .8mm brass wire at a later stage.



Power Pickup

With the power bogie sitting on my workbench as a separate unit I could now take a good close look at the power pickups to see whether they were having any adverse effect on the running. Power is picked up through all eight wheels and this is a state of affairs where the manufacturer is to be applauded. The pickups on each bogie – I'll refer to these as "power" and "trailing" – are both similar in nature but differ in application and as such require different solutions to reduce the amount of pressure being applied to the backs of the wheels. The pickups as supplied, in my humble opinion, are far too stiff, acting as a brake and providing unnecessary resistance to the motor.

The pickups on the power bogie (photo 5) are nice and robust and can quite easily be disassembled. I was able to retain these pickups as they did not interfere with the drive train changes I implemented later. However I decided to replace the factory installed springs with some softer, phosphor bronze springs. The springs I used were four from a set of KD O-scale couplers I happened to have on hand: the springs used to keep the jaws of the coupler closed. I disassembled the pickups (photo 6) and replaced the spring you can see in the photo with the phosphor bronze alternative.



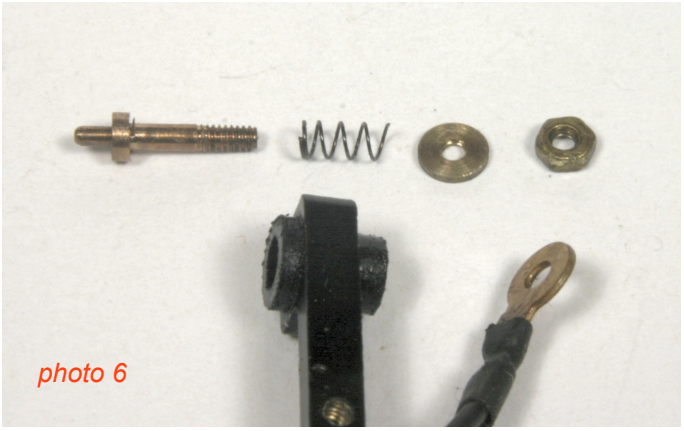


photo 6

On the trailing bogie the method of construction used in the pickups didn't allow for this easy replacement of the springs, so I had to change the method of power pick-up. My standard method of power pickup is phosphor bronze wire soldered to PCB sleeper material (photo 7) bearing lightly on the backs of the wheels. I discarded the factory supplied pickups, soldered some double sided PCB strip to the pickup mounting brackets and installed some new phosphor bronze pickup wire, suitably bent to shape. This is not as neat and elegant an arrangement as the original pickups, but it did lead to improved running. At this stage of the upgrade I was still hoping not to have to replace the drive mechanism. While I got improved running from reducing the resistance on the back of the wheels, it wasn't sufficient on its own to allow me to stop at this point. After test running I decided that the power bogie needed some radical changes, something I was hoping I could avoid.

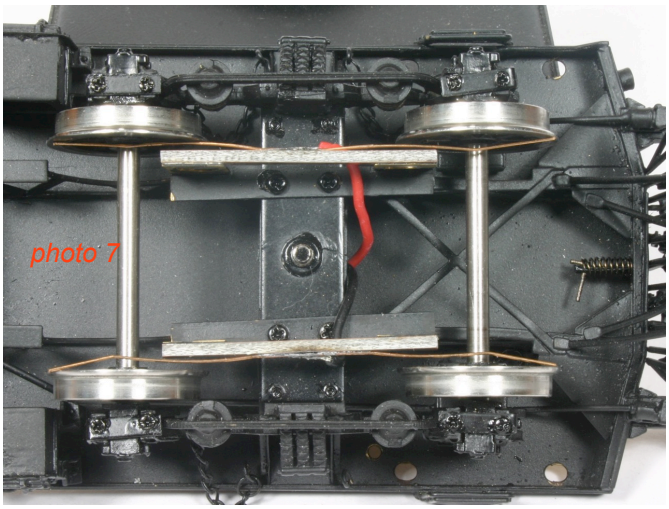


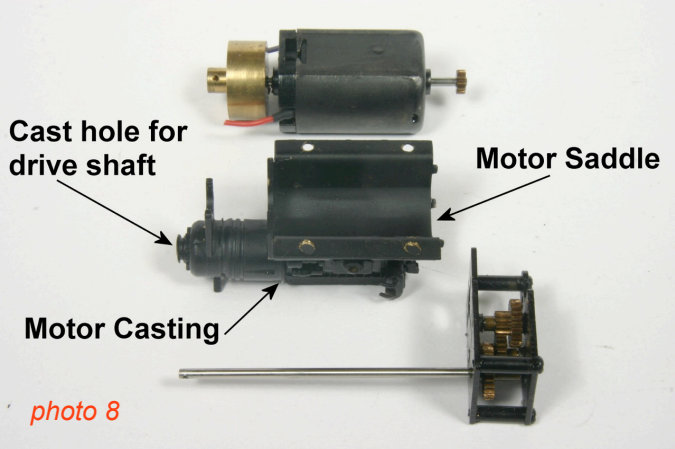
photo 7

Bearings and Drive Shafts

The motor for the CPH sits in a metal "saddle". This is attached to a motor casting that represents what exists on the prototype (photo 8). The motor drives an open frame gearbox which, in turn, rotates a 2mm diameter motor shaft passing through the bottom of the motor casting. The end of this shaft emerges through a cast hole in the end of this casting. I've arranged the components in the photo in their relative positions to make this clearer. I unscrewed the four retaining screws that hold the motor housing in place and removed the assembly from the chassis and found that the motor and gearbox were supposed to be retained with some super glue. While some of the glue was doing its job, I found that it was very easy to disassemble these components. Excess glue had dribbled down the side of the saddle that holds the motor in the correct relation to the gearbox and the tabs that sit proud of the saddle did not sit snugly into their allotted slots in the side of the gearbox. I cleaned up the excess glue and gently bent the saddle till the motor sat snugly in its correct position. I also did some careful filing to the locating tabs to ensure that they seated snugly into the slots in the side of the gearbox. Before the motor and gearbox is reassembled the next steps need to be carried out.

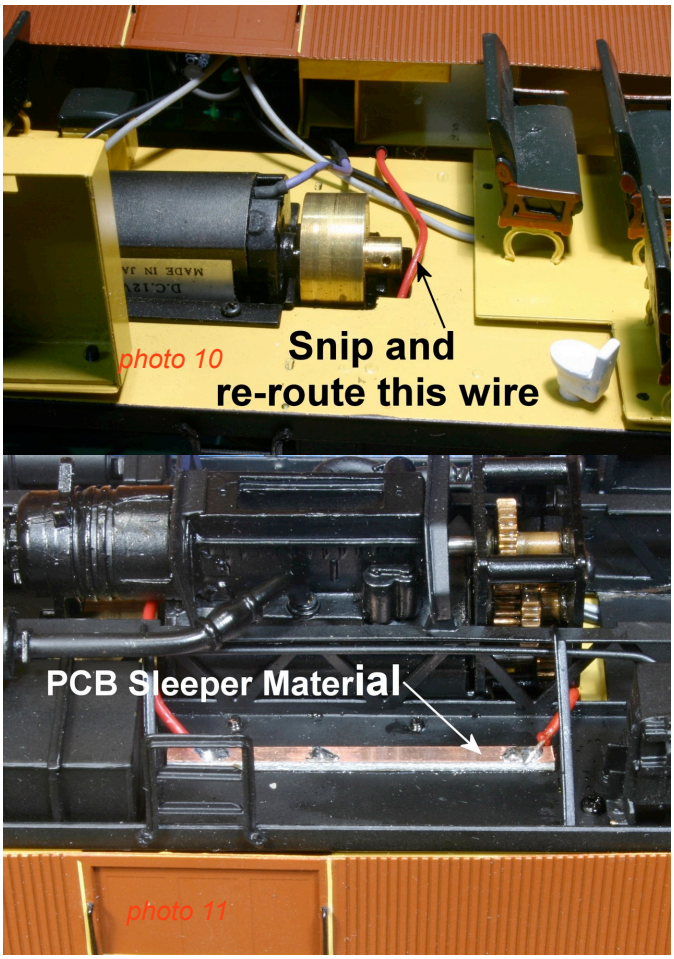
The hole that the shaft passes through in the motor casting is approximately 2.7mm in diameter, allowing the rotating drive shaft to slop about and skew out of

alignment. I looked around my parts drawers for a suitable piece of tube that could be used as a bearing for this shaft and decided that a Waratah Models brass top hat bearing would be suitable. With an outside diameter of 3mm and an inside diameter of approximately 2mm it was almost perfect. I drilled through the bearing using a 2mm drill bit so that the shaft could pass right through. With the motor and gearbox removed from the motor casting and saddle I carefully clamped the casting in my pillar drill clamp and drilled out the cast hole 3mm (1/8" will suffice) and checked that the bearing sat cleanly in the resulting hole (Photo 9). I drilled counter sunk the hole slightly with a larger diameter drill to allow the rim of the top hat to seat flush with the surface of the casting. After I had checked that the bearing was positioned correctly and that the motor shaft passed through and rotated freely, I retained the bearing with some Loctite 501. I then reassembled the motor/gearbox assembly by sparingly applying some super glue to both the motor saddle and the tabs that position the gearbox.



As I was about to reattach the motor assembly to the chassis, now was the time to re-route the red motor wire that passes through the hole near the brass flywheel (photo 10). The proximity of this wire to the flywheel might allow the wire to rub on the rotating flywheel, acting as a brake. I re-routed this wire by running it under the model, attaching it to a short strip of HO Clover House copper clad sleeper material (Photo 11). I glued the copper clad to the underside of the chassis and soldered another piece of red wire to the other end and ran this up past the gear box. An alternative method would be to run one piece of wire the whole way. I used the copper clad to ensure the wire never drooped down so it could be seen. Once this area is painted black this small change cannot be seen from normal viewing angles.

In part 2 of this series we'll take a look at upgrading the drive mechanism of the CPH.



Aus7 Modellers Group Membership

Membership of the Aus7 Modellers Group costs just $AU30 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 32a Hillview Street Hornsby Heights NSW 2077. You must be a financial member to vote at the AGM in October.

Building a "near enough" O Scale NSWGR 40 Class

John R B Parker

It was Martin Hartley (a member of the Aus7 Modellers Group) who first proposed that it should possible to turn the relatively inexpensive Atlas O Gauge RSD 4/5 into a 'near enough' O scale NSWGR 40 class. Martin's suggestion reflected the events of November 1950 when Australian General Electric Pty. Limited, the local agents for the American Locomotive Company (ALCO) presented a proposal to supply the NSWGR with ten 1600 hp diesels electrics based on their current production model RSC-3. On 1st March 1951 the order was formally placed with the Australian General Electric office and, subsequently with Alco. No comprehensive local specification had been nominated and it is presumed the builder used Alco specification E-l662-A which was the standard for other RSC-3 locomotives. There were some necessary modifications; the outline of the cab had to be altered to suit the New South Wales loading gauge, and also a rearrangement was required to the headstock of the units. This involved the removal of the side mounted steps and the addition of buffers. The locomotives were built at the Montreal Locomotive Works Ltd. an affiliate of ALCO. The fact that the locomotives were to be constructed in Canada, a Commonwealth country, was considered more politically palatable at the time.

The currently available O Gauge Atlas Trainmaster 2-rail RSD 4/5 model is built to a scale of 1:48 whilst our desire is to construct a model of the 40 class to a scale of 1:43.5, (or 7mm to 1 foot). A number of significant differences are immediately obvious when you compare the model of the RSD-4/5 to the Greg Edwards Datasheet for the 40 class. They include;

- The cab is completely wrong and will have to be replaced.
- Headlights, classification and marker lights bear no resemblance to the NSW version.
- Both ends of the footplate require major changes to eliminate the North American style of steps.
- The Long Hood on the RSD-4/5 is a scale 1 foot short.
- Handrails need to be removed.
- Bogie axle spacing differences.
- Fuel tank to be replaced with a 40 class style. Maximum possible length for the fuel tank is 86mm whereas an accurately scaled tank would be 98mm.

Obviously some compromises will be necessary, hence the description, a 'near enough' 40 class. The most significant compromise is the bogies. The two-motor model of the RSD 4/5 has bogies constructed with a spacing of a scale 5 feet between the first and second axle and 6 feet between the second and third axle whilst the 40 class has an equal axle spacing of 5 foot and 6 inches. In the interest of achieving an operable sound equipped model below the target price of $750 I decided to accept

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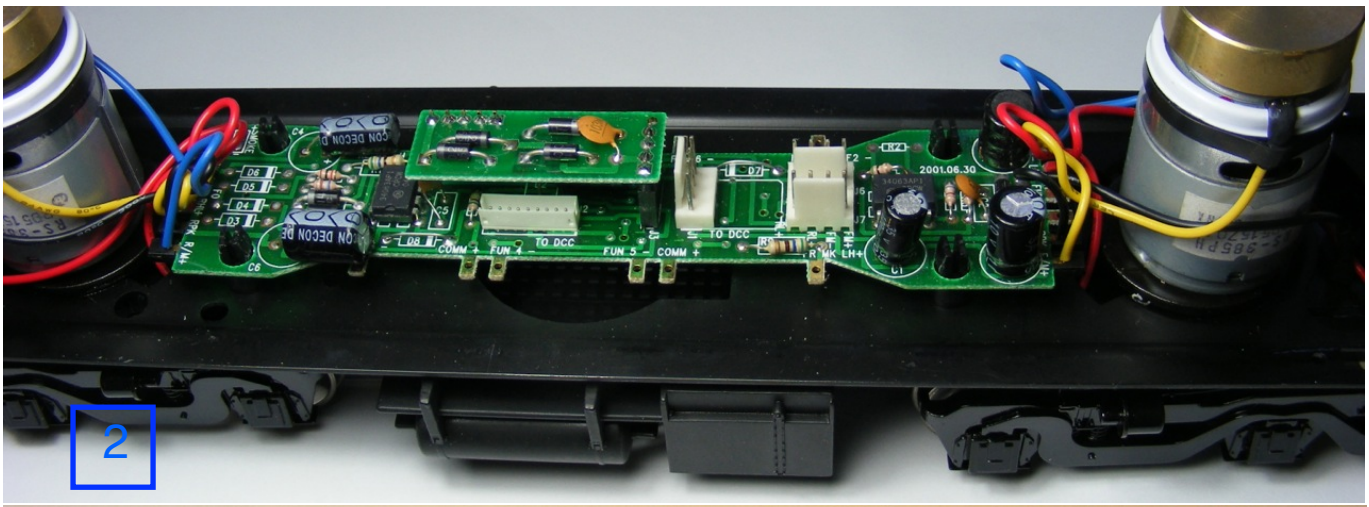
this compromise as all the other variations from accurate prototype dimensions are either relatively minor or could be solved by kit-bashing or scratch-building.

Before commencing this conversion it is necessary to have an idea of exactly which 40 class is to be modelled. Suitable photographs and a copy of the 40 class datasheet enlarged to O scale (7mm) are essential. I modelled the 40 class as delivered with the original marker lights and un-modified radiators; this also narrowed the choice of colour scheme, which could be either Verdant Green as delivered, or Royal Blue, the livery worn by 4001 and 4002 during the 1954 Royal visit. Based on a particular photograph I decided to model 4002 in a fairly weathered state before its major overhaul and subsequent repainting in the familiar NSW tuscan colour scheme.

The next part is not for the faint hearted, we a going attack a perfectly good model with screwdrivers, saws, drills and abrasive materials as we chop away at all the bits of the RSD-4/5 that don't look like a 40 class. The Atlas model comes with adequate documentation complete with an exploded drawing so that it is easy to disassemble the model by removing the screws that affix the chassis to the body. The bogies remain attached to the chassis and do not need to be removed. It is then possible to separate the various components. We will put the chassis assembly to one side whilst we concentrate first on the cab and body.

Although of similar overall shape, the 40 class cab does not share any common components with the U. S. original so it is simpler to put the Atlas cab in the scrap-box and scratch-build a new cab from 1.0 and 1.5 mm sheet styrene. Photocopies made from the O scale version of the datasheet should be made of the two end faces of the cab and then glued to the styrene sheet with PVA or similar water soluble glue. It is necessary to also compare with the discarded cab to ensure that the new cab will fit on to the body in the same way as the original. The end pieces of the cab are then cut and shaped to match the drawing. A similar process can be followed to make the sides of the cab. After gluing the sides to the ends of the cab the last component to be fabricated is the roof; I used 1mm styrene, this can easily be fashioned into the desired curve if gluing and curving is carried out in stages. The individual parts of the cab are inexpensive so if your first attempt at building the cab is not entirely successful, try again! The window 'glass' will be glued in place after painting. When happy with your results it is a simple matter to remove any of the remaining photocopied drawings by immersion in water.

Before commencing modifications to the body, it is worth considering whether or not to remove the existing painted finish. I didn't and found that some portions of the original livery required multiple paint coats to achieve a satisfactory finish. If had to start again, I would



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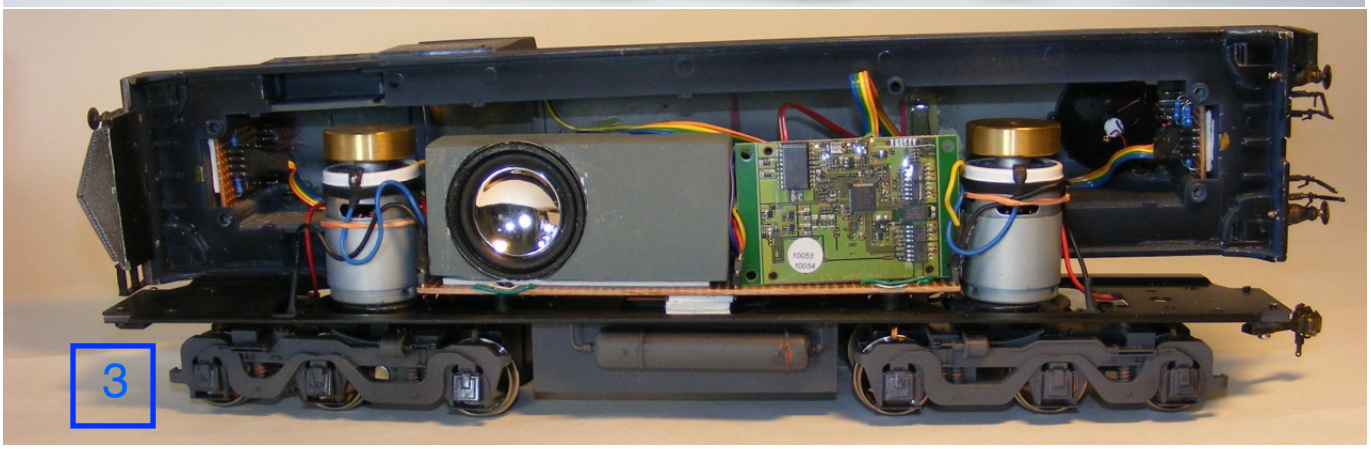
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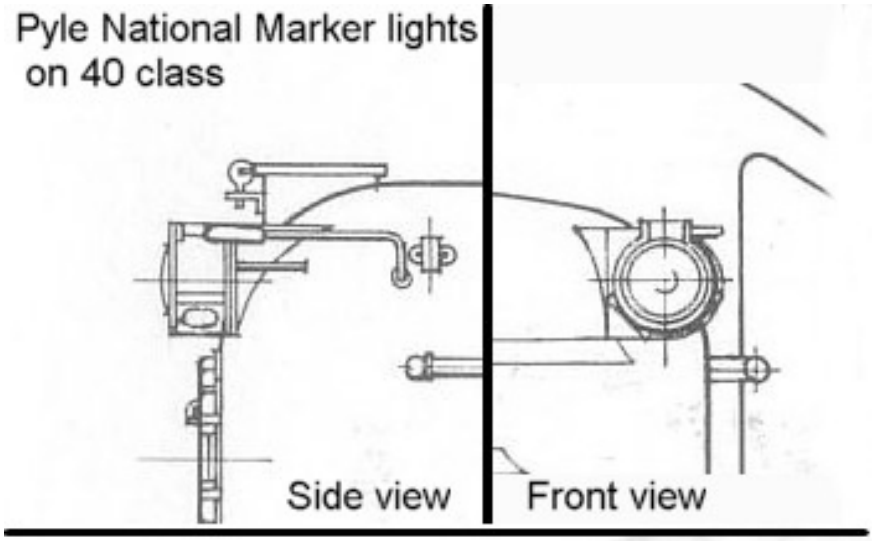
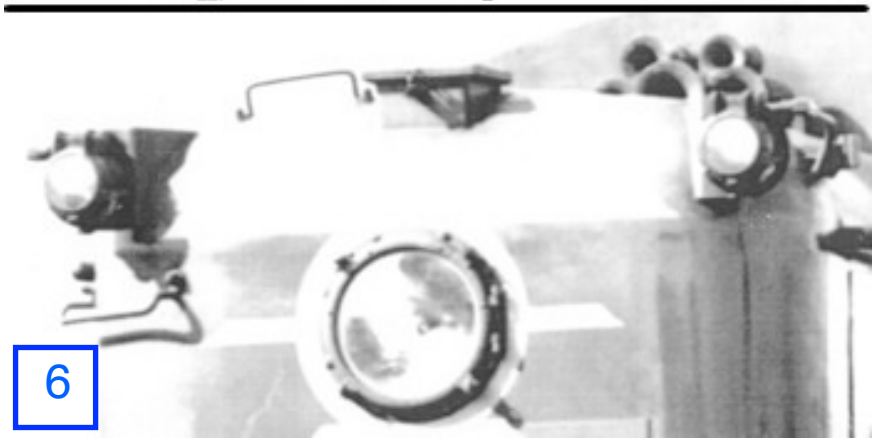
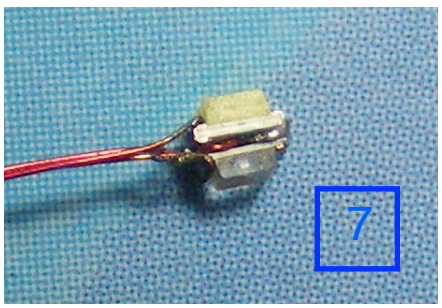
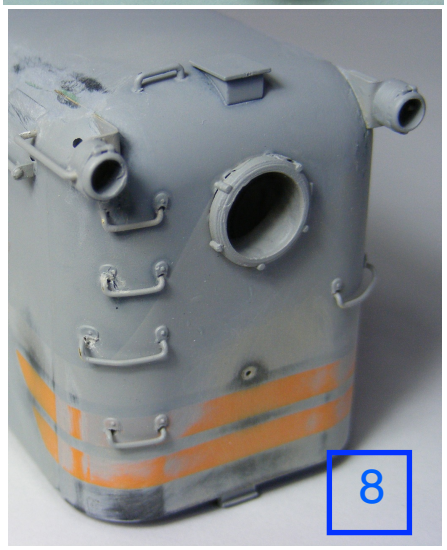
attempt to strip off the paint, but unfortunately that process can present it own set of problems. I will leave that decision up to you.

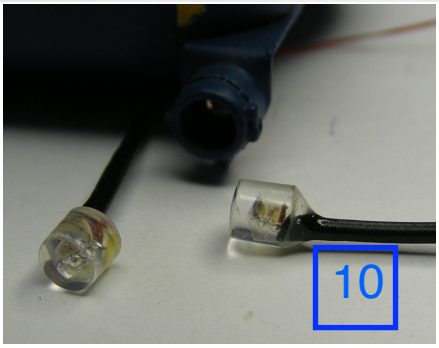
A step by step description of the body modifications is probably unnecessary, as the following photographs highlight the various modifications. The mounting of the marker lights presented the biggest challenge which was finally resolved by fabricating 'L' shaped brackets from brass which were then inserted into slots cut into the body moulding. The Pyle National Marker lights fitted to the 40 class were a distinctly different style to the

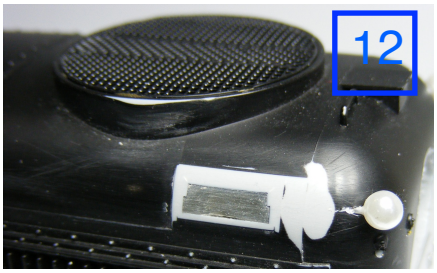












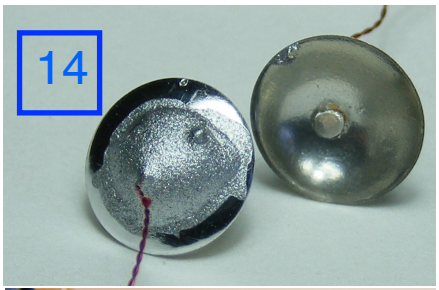
standard NSW marker light. Due in part to the availability of pre-wired surface mount LED's it is not too difficult to produce a reasonable replica by following the information in photographs and the extract from the Data Sheet. Multiple small holes should be drilled around the twin sealed beam headlights, which are an integral part of both ends of the body moulding. With reasonable care it is possible to use these mouldings to produce the marker light bodies. Retain the 4 individual clear lenses. From the rear of the lens a 2mm diameter hole should be drilled to a depth of about 3mm. The red/white LED assembly (Nanolight) is then inserted and glued in place with clear 5 minute epoxy. (Do not use 'super glue'). A shortened section from a standard NSW steam loco headlight provides the bezel for the headlight lens which is shown in photographs on the following pages.

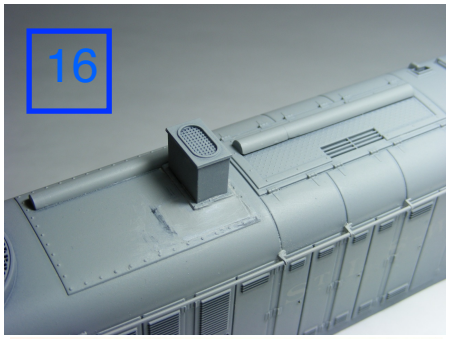
The four number classification boxes of the U.S designed prototypes do not belong on the NSW locomotive. The lenses can be removed and the rectangular openings filled with fast setting epoxy glue and plastic filler. The protruding box sections are removed by filing and then after the application of additional filler the surrounding area is smoothed with appropriate abrasive papers, sanding sticks and films.

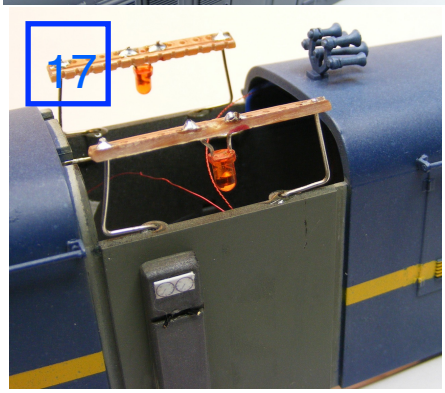
The headlights are fabricated from MV Products lenses. Drill a 1.5mm diameter hole from the rear, a white Nanolight can be inserted and glued in place; this effectively simulates the incandescent globes installed in the prototypes. An application of silver coloured paint easily repairs any possible damage caused by drilling through the reflective Mylar layer.

Soon after the introduction of the 40 class the first of many modifications were carried out. The most obvious was the repositioning of the exhaust. It is a fairly simple matter to cut the moulding, relocate the housing and fill the space with styrene and body filler. Note that in this photograph of the primed body it is obvious that further filling is required. The new hand rail positioned in the mounting brackets supplied as part of the O-Aust 40 class parts kit along with the horn cluster can also be seen.

Two 3mm Prototype White LED's provide the cab lightning. The simple mounting makes use of a one track wide section cut from matrix board. Also visible in the photograph is the minimal cab interior, the seat and crew members are later attached to the inside walls of the cab.

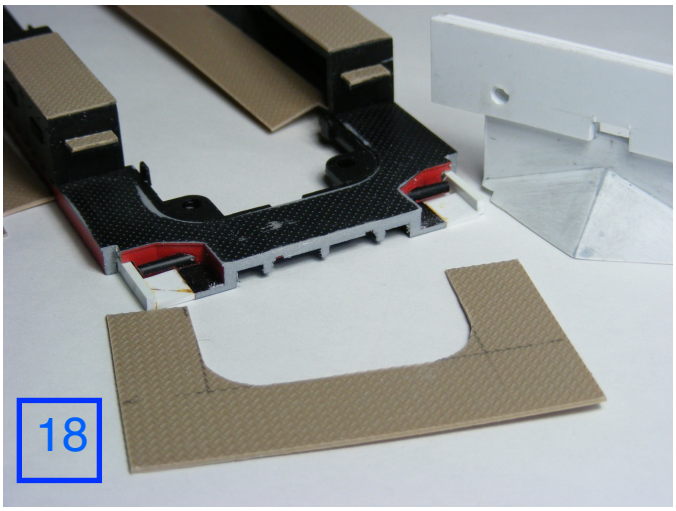


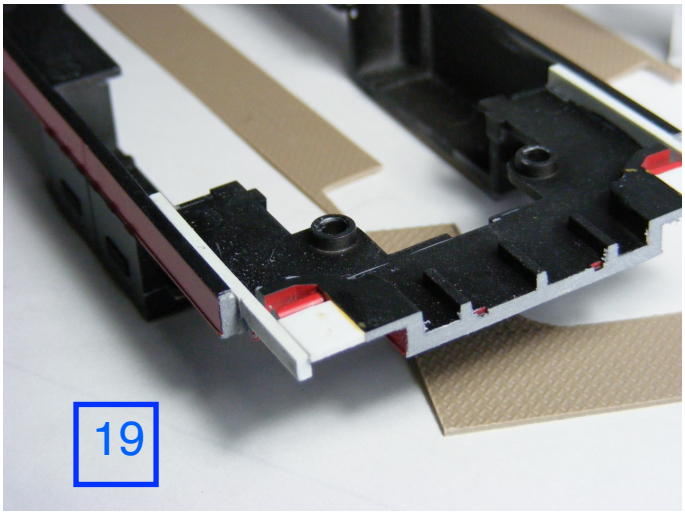




Following the adequate information provided by the Data Sheet, modifications can be made to the footplate. The photographs indicate the cut and re-build techniques used. In my case the small pieces of sheet styrene and styrene strips all came from the scrap box. Essential to the final finish of the footplate is a sheet of Slaters Plasticard, part # 0453 (HO Tread plate styrene sheet), which surprisingly even on this model, is still slightly over scale, but does seem to look the part. The location of the two identical light board assemblies can also be seen in the two photographs taken from underneath, note particularly the location of exhaust fan motor and how the Nanolights are connected to the PCB pins. The special insulation on the leads easily melts when soldering. Not included in the O-Aust kit are the four hand support posts mounted above the steps. These were made from brass wire and the rounded portion of a handrail mounting knob.

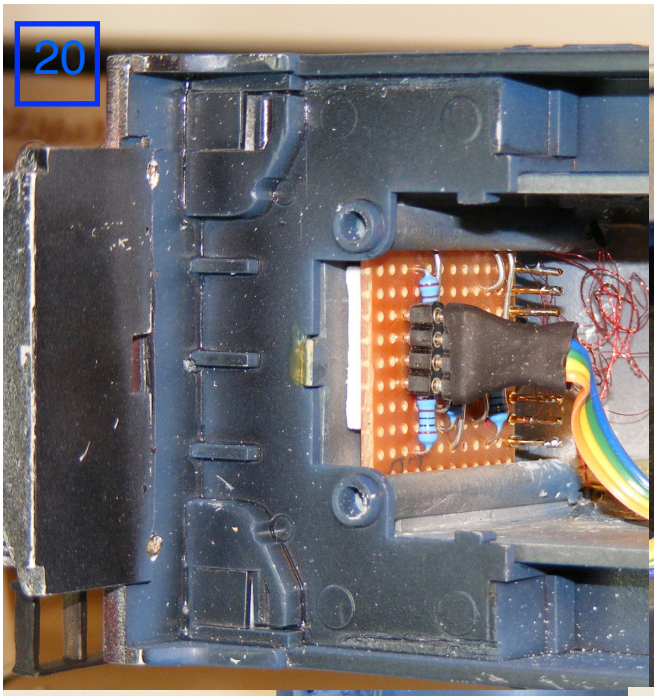
The addition of the DCC sound decoder, speakers and lighting requires the removal of all the Atlas Electronic assemblies. Matrix boards are used to simplify the wiring; the drawings indicate the location of the various components. Note on the matrix boards that the

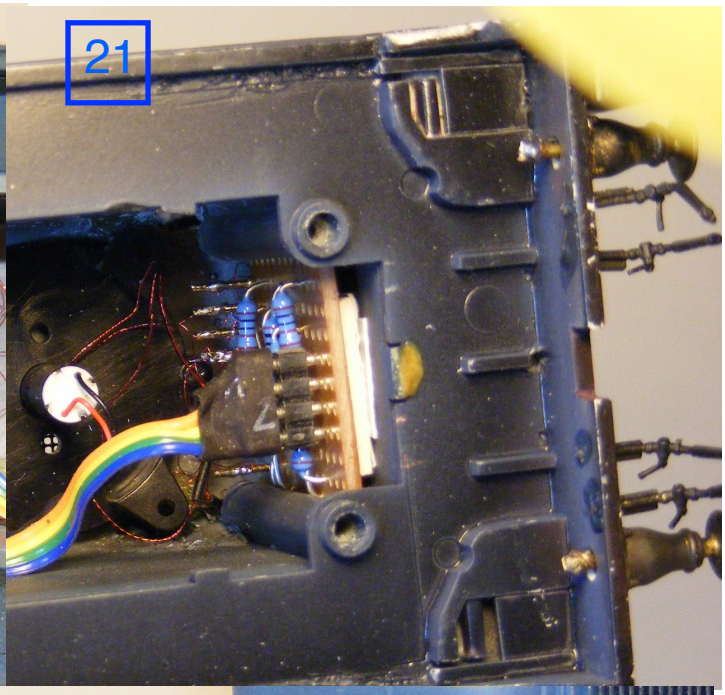


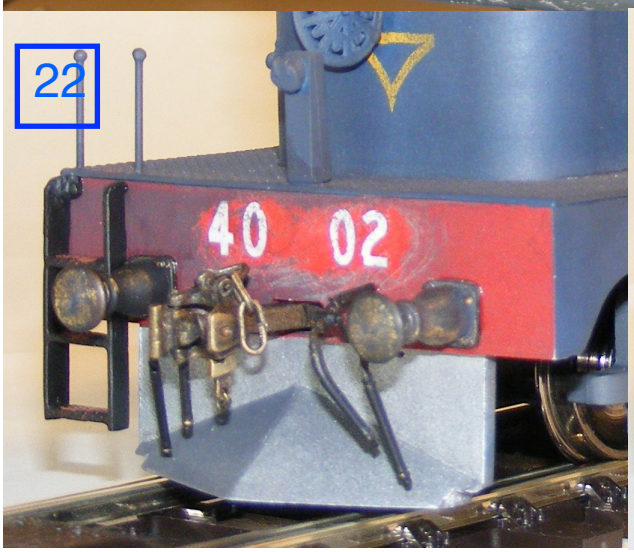


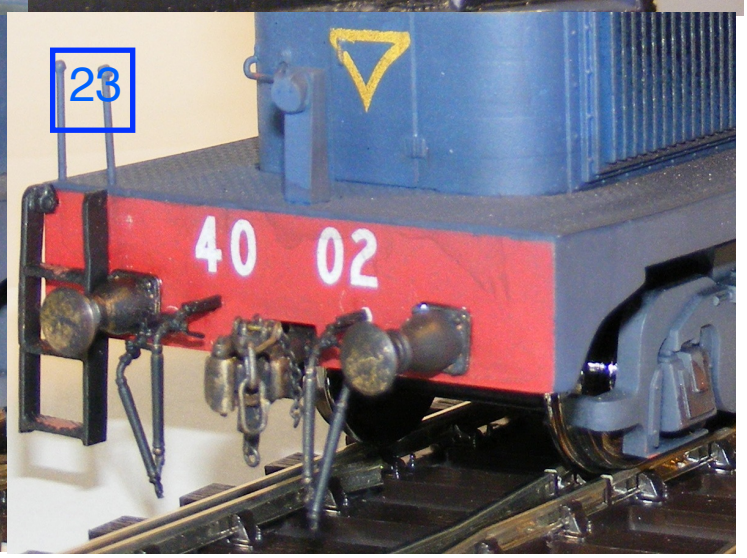
'double crosses' show where a cut needs to be made on the copper side of the printed circuit board and the square and rectangular boxes show the position of the many connection points made from the IC connection strip.

The two identical light boards (only one is shown) use 4 way pieces of connection strips and 8 PCB pins on which the Nanolights are terminated. The green wire links on the main board provide continuity for the tracks broken by the location of the 4 holes placed so that the assembly clips in the same location as the original Atlas board. The wiring diagram on the adjacent page

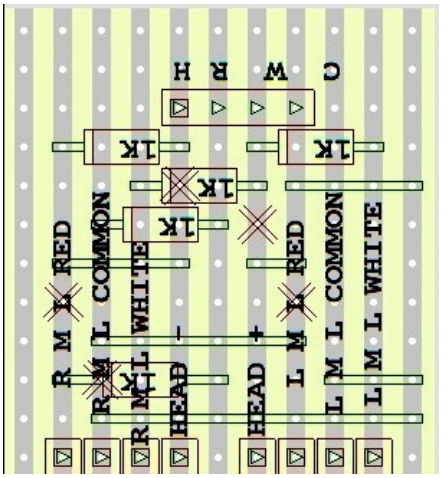


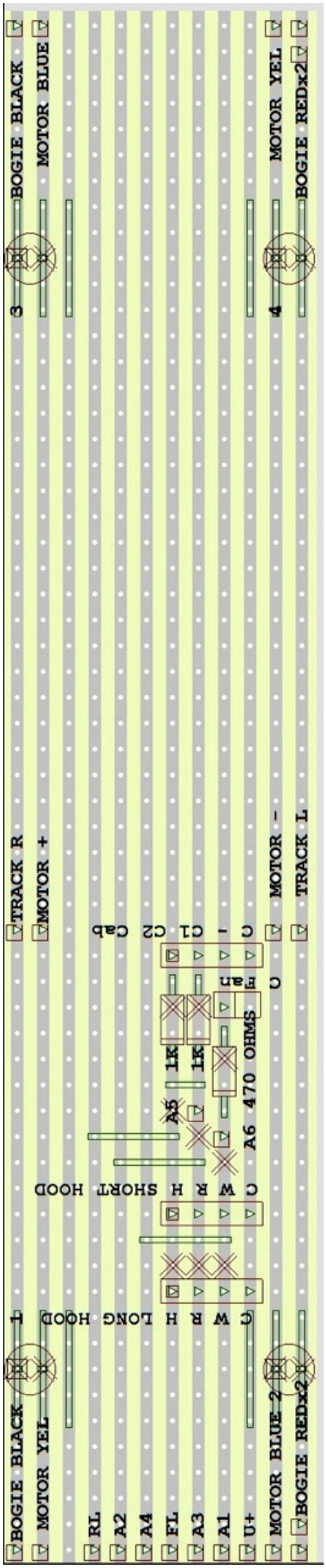






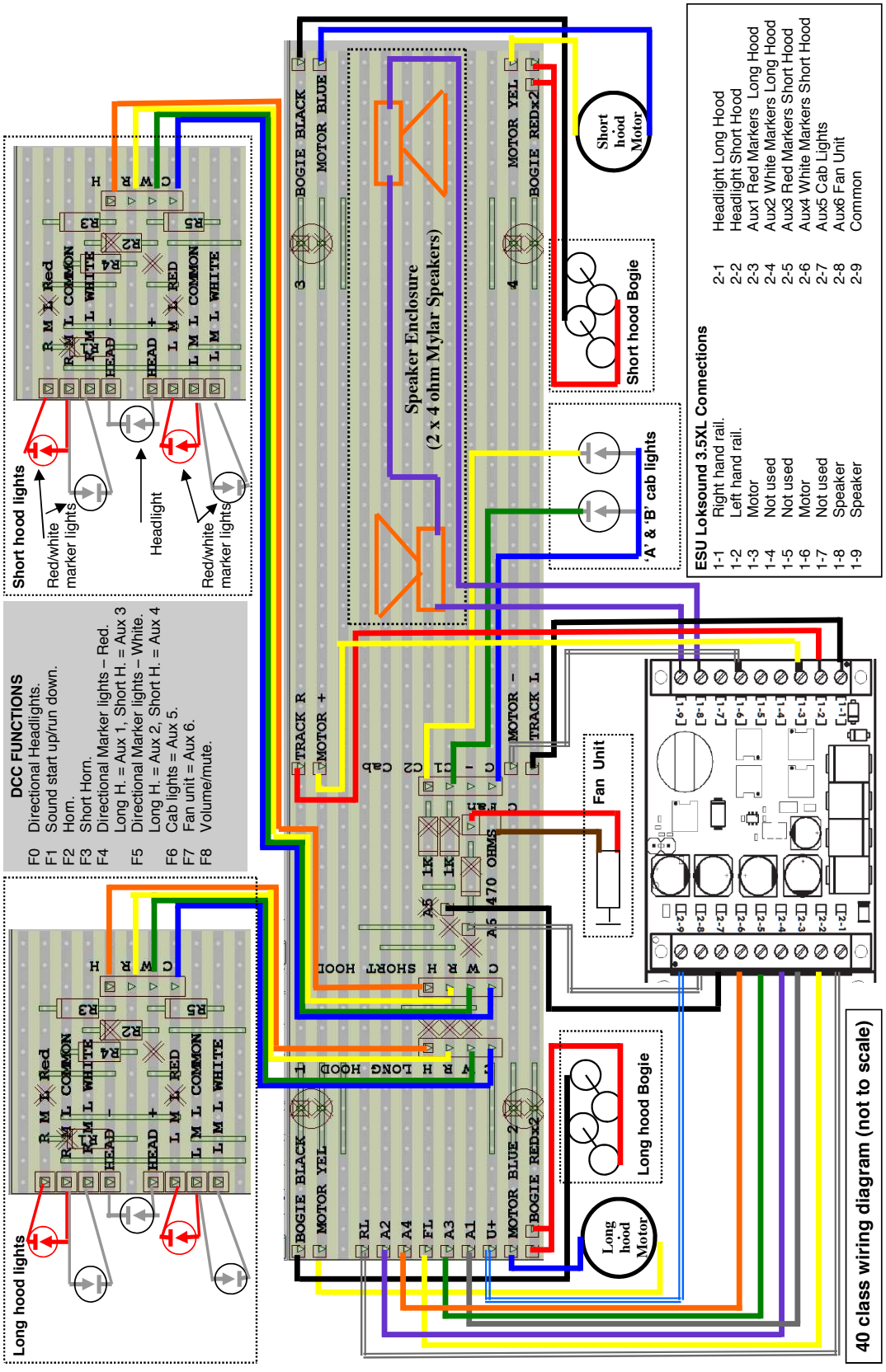
should be viewed in conjunction with the various photographs. The speaker box which houses the two 40mm diameter 4 ohm speakers was made from 3mm MDF (Craftwood). The speakers which are wired in series should be glued in place so that the box is essentially airtight. This does make a real difference in enhancing the bass response.





List of required components

- **Atlas** RSD 4/5 O gauge 2 rail locomotive
- **ESU** Loksound 3.5XL Decoder (#72507 Alco -244-12)
- 2 x 40mm 4 ohm speakers (**Jaycar** #AS 3028)
- Matrix Board (Vero) (**Jaycar** #HP 9544)
- 2 x 32 way IC Connecter strips (**Jaycar** #PI 6470)
- 1 pkt. of 50 x PCB Pins (**Jaycar** #HP-1250)
- 1 & 2 mm **Evergreen** styrene sheet
- **Slaters** HO Tread plate styrene sheet #0453
- **O-Aust** 40 class parts kit (consisting of mostly 48 class parts)
    - 3 x Handrail brackets/door pull sprues
    - 1 x Airline hose sprue
    - 1 x Steps sprue
    - 2 x Buffers sprue
    - 8 x MU Hoses
    - 2 x MU stands
    - 2 x 50 class headlamps
- 1 x 6 pack white Nanolights (2 required)
- 1 x 6 pack red/white Nanolights (4 required)
    - Both from **DCCconcepts** (necessary resistors are included)
- 2 x 3 mm prototype white LED's
- 2 x **MV Products** L-408 lens (or L-406 + brass tube)
- 1 geared motor 1.3v 540 rpm from **Runway 13**
- Speaker enclosure
- Miscellaneous bits and pieces from the 'it will come in handy one day', box.


40 class wiring diagram (not to scale)
ESU Loksound 3.5XL Connections
1-1 Right hand rail.
1-2 Left hand rail.
1-3 Motor
1-4 Not used
1-5 Not used
1-6 Motor
1-7 Not used
1-8 Speaker
1-9 Speaker
2-1 Headlight Long Hood
2-2 Headlight Short Hood
2-3 Aux1 Red Markers Long Hood
2-4 Aux2 White Markers Long Hood
2-5 Aux3 Red Markers Short Hood
2-6 Aux4 White Markers Short Hood
2-7 Aux5 Cab Lights
2-8 Aux6 Fan Unit
2-9 Common
DCC FUNCTIONS
F0 Directional Headlights.
F1 Sound start up/run down.
F2 Horn.
F3 Short Horn.
F4 Directional Marker lights – Red. Long H. = Aux 1, Short H. = Aux 3
F5 Directional Marker lights – White. Long H. = Aux 2, Short H. = Aux 4
F6 Cab lights = Aux 5.
F7 Fan unit = Aux 6.
F8 Volume/mute.
Short hood lights
Red/white marker lights
Headlight
Red/white marker lights
Long hood lights
Speaker Enclosure (2 x 4 ohm Mylar Speakers)
'A' & 'B' cab lights
Short hood Bogie
Long hood Bogie
Fan Unit
Short hood Motor
Long hood Motor
BOGIE BLACK
MOTOR BLUE
MOTOR YEL
BOGIE RED x2
TRACK R
TRACK L
MOTOR +
MOTOR -
470 OHMS
1K
1K

THE N.S.W.G.R. "D" WAGON IN 7MM SCALE

BY BRUCE LOVETT

THE PROTOTYPE

In the early days of the N.S.W.G.R. many of the senior mechanical staff were either English, had been educated in England or had worked on English railways. With this background, naturally, their designs for locomotives, carriages and goods rolling stock would have a distinctive English flavour.

The open wagon has been the mainstay of the goods rolling stock fleet, so much so, that when the N.S.W. railway system reached it's peak in 1956 with 26,534 goods vehicles on the books,16,616 were of the open type. In 1858 the Railway workshops built their first "D" wagons which were 15'0"long with 2'3" high sides. They were an immediate success and by 1885 , 3000 had been built and placed in service. The plan I have of this wagon shows the English influence as the wagon is fitted with hand operated long lever hand brakes and Cammell or parallel type buffers.

A number of versions were built over a long period of time in two, three, four and five plank versions, with the originals constructed with a wooden underframe and wooden body whilst the last versions had steel underframes, wooden bodies, Westinghouse air brakes and all versions had wooden floors. Strangely enough none of the versions fitted with Westinghouse air brakes appear to be fitted with grade control valves, according to the photos I have taken of most types.

Subsequent versions of the "D" wagon were fitted with the standard N.S.W.G.R. bottle type buffers and as far as I know were all fitted with the standard hook and three link coupler. With the introduction of the ubiquitous "S" open wagon in 1910 with a larger capacity and the "U" (later K) wagon with an even greater capacity in 1923, the "D" wagon in all it's many versions gradually fell from favour due to it's small capacity of 6 to 10 tons depending on type. However, the Railway, ever resourceful, re-coded a lot of the wagons in the "L" category and used them around engine sheds for collecting loco ashes, storing loco coal and many other uses around goods yards. They had long lives as I have photos of D 6784 taken at Chatswood in 1950 and D1063 at Taree in 1966. It is interesting to note that both vehicles had steel underframes and were fitted with four plank sides and ends.

THE MODEL

If you are a rivet counter, please stop reading NOW!

Recently, while browsing through an English magazine, I came across an advertisement for COOPER CRAFT O Gauge wagon kits. These were a Great Western Railway design for one, three, four, five and seven plank open wagons with steel underframes and wooden bodies. There was also a kit for an all steel loco coal open wagon. Unfortunately not suitable for kitbashing into an “S” truck. I was about to turn the page when the penny dropped! Didn't these look like a "D" open wagon and didn't I have some of these kits that I bought in a weak moment!

Out came the kits, my collection of official railway plans, photo albums and a 7mm scale rule. From the plan of the later four plank version, the "D" wagon had a 16'0" long body and measured 8'8" wide. The COOPER CRAFT wagons have a 16'0" long body, but are only 7'8" wide. This meant that that they were 1'0" (7mm in model form) narrower than the prototype “D” wagon. An "S" truck has a body 8'8" wide , so, if you were to couple an "S" and a "D" together the difference would be noticeable. Just make sure you don’t couple a "S" and a "D" together if you are really fussy. Fortunately the prototype and the kit both have the same wheelbase of 9'0". If by chance any rivet counters are still reading, you should stop NOW as we are going to press on regardless.

From the COOPER CRAFT range I decided to model the three, four and five plank versions for a bit of variety. However, on examining the five plank version I noticed

that the sides had diagonal braces at each end. Thoughts of carving away the beautifully moulded braces and bolt heads sent a shiver down my spine until I found a photo of a four plank version with braces, so, why not a five plank version with braces. Whew!

On opening the kit , check that all the pieces are there according to the plan, then wash them, the parts not the plan, in warm water and liquid detergent to remove the mould release compound, rinse in warm water and allow to air dry. The glue will stick better. Cut off the brake gear hangers from the solebars and set aside, they may come in handy for something else one day.

If you are fitting Kadee couplers, remove the coupler plates from the buffer beams with a sharp knife and fill the holes with modelling putty. Also, cut small pieces of Evergreen plastic No. 147, trim to size and glue into the ends of the buffer beams to convert them from channel to solid. When dry, smooth the modelling putty flush with the surface of the buffer beams. It is a lot easier to do these little jobs now than later when assembled. Believe me - I know!

I decided to fit Peco spoked wheels to these models as a pack of four wheels and two axles also includes four bearings. The fact that I had them in stock may have had some bearing. (No pun intended!)

Turn your attention now to the solebar / axleguard units from which you removed the excess brake gear hangers earlier. Chase out the holes in the axleguards with a No. 50 drill (or 2mm) and chamfer the holes with a No. 30 (or 3.5mm) drill. Makes fitting the bearings a lot easier. Press the bearings into place and if necessary, apply a spot of Supaglue in the holes to keep them in place.
The sides have scores on the inside to represent the door openings which appear rather light, so, these were cut deeper with a sharp knife and the tops of the sides cut into with a razor saw to emphasis the door openings. Assembly can now begin as per the directions using a good quality polystyrene cement.

Holding a side and end together while the glue sets is a lot easier with two small steel angle brackets measuring 75x75x12mm and six alligator clips or spring clothes pegs. Note: Check with your square that the brackets are exactly 90 degrees. Clamp the side to the bracket with the clips making sure the side is flush with the bottom of the bracket, apply glue to the mitred end, fit the end to the side and hold in place with further clips. There you are, a perfect 90 degree join. While the above glue is drying, use contact cement to fix the four steel weights in place in the underframe "box". This stops them rattling around later.

As per the directions assemble the sides, ends and floor and when dry , fit the underframe/box unit. When dry, fit the solebar / axleguard units with the wheels and test on a piece of glass or surface plate that all wheels are making contact before the glue sets. If fitting Kadees, the spaces behind the buffer beams require packing, so, to give the wagon more weight for better running, pieces of lead sheet were cut to size and fixed in place with contact cement. Further packing to bring it up to the required height was accomplished using 60 thou. styrene sheet also fixed in place with contact cement.

Kadee couplers were then test fitted with two 10 B.A. screws one behind the other in the coupler boxes after drilling and tapping the styrene packing pieces. The couplers were then removed for fitting later. Coupler lift rods, yard brake, brake cylinder, brake shoes, brake rods, air hoses and tie down rings were then fitted.

The coupler lift rod brackets are HO Scale handrail knobs, the return spring on the brake rod is a Kadee coupler spring, the tie down rings are Artsania or Billings model boat fittings brass eyebolts and the coupler lift chains are from the same source. Incidentally, have a look at these model ship ranges for they have all sorts of things that can be used for wagon loads such as lifeboats, winches, propellers etc..

To find out where everything fits underneath I used the plan from an O-AUST KITS "S" truck kit assembled earlier, or a Waratah Models “S” truck. Glue the door drop springs to the underframe channels in line with the vertical bumper strips on the doors. These are very delicate , so , be careful later when handling the wagon. If in doubt use brass strip instead. I decided to use the plastic buffers supplied with the kit as they were a shade shorter than the Cammell or bottle buffers currently available. These can now be glued in place. If you want to be authentic, glue a small piece of styrene sheet to the underframe on each side halfway along it's length under the door. This is the wagon number plate and after painting the entire wagon, the numbers need to be done in white.

After fitting the Kadee couplers the wagon is ready for the paint shop. The colour should be anywhere from a light to a medium grey as they were an old wagon and the paint had faded. Lettering from any decals alphabet range in white is suitable, but if unavailable you may be able to talk somebody into doing you a set on their computer. The TARE 8 tons , CAPY. 7.0.0. and number plates on the solebars will need to be hand done in white waterproof ink and a mapping pen. Sorry about that. Or maybe that friend with the computer……..

As all three versions we are modelling, the three, four and five plank, were randomly numbered and as previously mentioned I have photos of 1063 and 6784, anything in between would probably be acceptable. Another method of numbering is to start with the first number of 1063 or 6784 followed by the month and year you built the model, say 1092 or 6102. This means you built the model in September, 2012 or October, 2012. This is known as modellers license !

All that remains now is a THIN coat of clear flat polyurethane, such as Wattyl Instant Estapol Flat, sprayed over the entire model to dull everything down and protect the decals, some weathering, not too much, lubricate the bearings and couplers and place it in service to carry anything from loco ashes to farm machinery.

As mentioned earlier, the “D” wagon we are modelling from the Coopercraft kit is available in three, four and five plank versions. I have not included a plan of each version as it would take up three pages of this magazine. If you would like a free copy of the official N.S.W.G.R. plan of each version, I can be contacted through the editor.

Commercial News

Trevor Hodges

O-Aust

O-Aust Kits 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 the GSV assembly instructions were being finalised at the time this report was being written in early April. All components have been received from their respective manufacturers and the kits will be released as soon as the assembly instructions are finished. This kit represents O-Aust Kits first use of rapid prototyping to produce patterns. The components of the kit include polyurethane, pewter and lost wax brass castings. The bars are made up using an etched brass frame and brass wire. An etched brass jig is provided to align the bars during assembly. A kit of the 1959 version of the BSV will follow the release of the GSV.

Also ready for release as soon as the assembly instructions are finalised is the 1:48 VR ELX bogie open wagon. The body is a one piece polyurethane casting and detail parts are a mixture of pewter, lost wax brass and etched brass. The XCS bogies supplied with this kit are also available as a separate item.

A NSWR 3AG 6 wheel passenger bogie kit was released at the recent Aus7 O-Scale Modellers Forum. Only a small number of kits were initially produced as there was a fair degree of uncertainty about the level of demand. All kits have been sold and more are being produced.

O-Aust have produced sets of white metal air tanks, sand boxes and a smoke-box door for use on the Century Models 50 class locomotive. The combined weight of these is 111 grams and are intended to replace the steel weight in the boiler (as originally provided with the kit) which weighs 109 grams. This allows space in the boiler for a DCC decoder. Being unsure as to the level of demand only a small number of sets have been initially produced. More can be quickly produced if demand warrants.

After the release of the GSV the patterns for the EHO can be finalised and production will commence.

Waratah Model Railway Co

Waratah Model Railway Company, 149 Kyle Bay Rd, Kyle Bay, NSW, 2221 (02) 97851166 charris@nigelbowen.com.au and waratahmrc@optusnet.com.au have passed on the news that the BD will be out shortly. Customers will be advised of its arrival.

The HG is coming along and will be made available for the Forum later in the year. There will be four versions, with single passenger compartment, with single passenger compartment with centre window, with twin passenger compartment and finally as rebuilt with heavier draw-gear, cross braced exterior.

Waratah is currently developing its next bogie wagon, the TRC refrigerator van.

Bergs/Haskell/O-Aust Kits

The second pilot model of the NSWR 44 class locomotive has been received. After extensive research it has been modified and corrected by experts in the field before being sent back to the manufacturer in China for further upgrades. Extensive improvements to the mechanism have occurred to produce a smooth and quite drive train and this is in addition to suggestions made by the manufacturer.

The production models will be powered by a precision Japanese Sagami can motor with two flywheels driving all twelve wheels via six enclosed gearboxes. Electrical pickup will be from eight wheels and Australian designed DC and DCC power boards will come as standard to provide correctly coloured, directional headlights and marker lights during operation. The body will have the correct nose shape in the form of a CAD designed brass casting.

All of the prolonged research and development will now produce a model with world class performance, and electronics and available in the original 1957, 1960 and 1970 colour and detail versions in addition to a S.A.R. 930 Class version.

In light of the release of the KHIAC 44 class locomotive, Bergs/Haskell/O-Aust Kits have decided to contact each of their customers to determine their intentions with regard to orders. Should customers who have placed an order decide to cancel that order, they will be entitled to a 100% refund of the deposits paid. If the order is confirmed, but later cancelled, a fee of 20% will be deducted from the refund.

Bergs Hobbies/Haskell /O-Aus Kits wished to make it very clear that cancellation of the order will also involve a cancellation of the introductory price. Should a customer change their mind and want to re-activate their order, the price of the model will revert to the retail price of $2295.00. After cancellation, customer preference regarding version details and paint schemes will be subject to availability.

Ixion Models

Ixion Models, PO Box 303, Quakers Hill, NSW, 2763, Australia, (02) 9626 9273 or (02) 4957 415, info@ixionmodels.com and www.ixionmodels.com have passed on the the news that the brass model of the Manning Wardle 'H' Class 0-4-0ST was released in March, 2012 to acclaim from both Australian and overseas customers. Upon arrival Ixion found pleasantly to their surprise, that the firebox and smokebox doors both opened. At the time of writing (early April) there were only 4 black and 18 lined blue locos left in stock. They are suited to private and

industrial use - 1021 was one of a batch of 5 identical locos – with the others remaining in service with the NSW Public Works Dept and the Maritime Services Board at locations such as shunting duties on the Coffs Harbour jetty in the 1960s.

The 7mm scale RTR injection-moulded Hudswell Clarke final paint samples are due in mid April. Once the paint schemes are approved the production run will be commissioned. A factory-weathered sample has been ordered, and photos of all four versions (unlined black, lined maroon, lined green and weathered lined green) will be posted on the website as soon as they are received. The moulds have been retooled to remove the joins on the tank and bunker which can be seen in photos of the samples sent from the factory (see web site). These locos are eminently suitable for use on NSW layouts. Hudswell Clarke works no. 1530 was purchased for use at the Bunnerong Power Station in Sydney in 1926, before being sold to railway construction contractor J Kennaway. It finished its working life at the Wallarah Colliery at Catherine Hill Bay, south of Newcastle in the 1960s.

Ixion have announced that they have reduced the price of the On30 “Coffee Pots” by 46%. This reduces the price by $150 to $175.00. Enquire at any model shop where Ixion products are sold or order direct from the website.

David Peterson Modelling Services

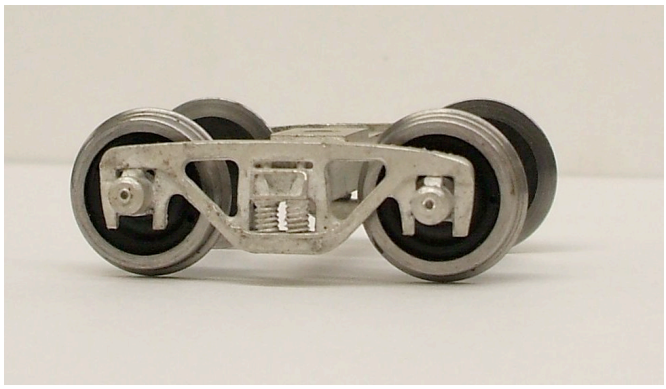
David Peterson Modelling Services, PO Box 644 St Ives, NSW 2075, Tel 61 2 9144 1521, Mob 0402 156 048, email dwpeterson@optusnet.com.au announced at the Aus7 Modellers Forum that there have been some delays to the production of their (Z)13 4-4-2T suburban tank locomotive kit due to unforeseen circumstances. In spite of this it is hoped that the kit will be ready for delivery by mid 2012. The instructions, construction methodology and materials the kit will be produced in are all of a similar standard to the earlier 12 class kit.

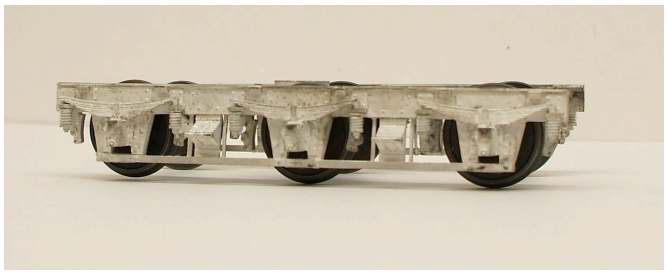
Also at the recent Forum DPMS announced that an addendum to the 12 class instructions had been prepared for release to purchasers of that kit. This material is to aid in construction of the kit and is available from DPMS upon request.

Graham Holland's 30T Kit

Peter Krause of O-Aust Kits has advised that he has recently been providing assistance to Graham Holland in order to get the 30T kit finalised. All patterns are complete and with the caster however availability has been slowed due to this manufacturer having decided to shift his operation from Christchurch to a less earthquake prone part of New Zealand. Once these parts start to become available, Graham should be in a position to start releasing kits to those who placed orders with him.

Graham has asked those who have placed orders with him, particularly those who have paid in full, to ensure that the contact details they supplied when placing their order are correct. If there is any doubt then please contact him or Peter Krause through O-Aust Kits email.





THANK YOU

We would like to take this opportunity to thank the attendees at the Forum held at Cammeray on the 24th March, 2012, for their expressions of encouragement and support and also to our customers who were unable to attend. Our joint project of a soon to be released brass O Gauge 7mm Scale N.S.W.G.R. 44 Class diesel loco has involved a tremendous amount of research and development from us and our friends over a long period and we have encountered a number of setbacks. We have persevered because our aim is to present to you, the customer, a smooth running, accurate and value for money model. Your continued support and encouragement will make this possible.

Peter Berg and Peter Krause.

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