

Joining Modules Together

Simon Elam and John Wilkes

The Oxford Group of Narrow Gauge Modellers spent much of the lockdown period building modules, and when the time came when we could meet up again, we sought to join them together to get a good long run. There are three parts to achieving this – physically joining the boards, electrical continuity, and joining the rails. We had done much planning for this, with Simon taking the lead role, including the production of a booklet on standards and practices we should follow – available on this page of the Oxfordshire Narrow Gauge Modellers website: <http://www.oxngm.org.uk/grouplayout.htm>

Joining The Boards

The modules we use are lightweight kits from Grange and Hodder, normally 900mm x 400mm, and have these been designed to be joined together. This is done with 8mm diameter wooden dowels fitting into appropriate holes on contiguous modules. These make sure that the modules are vertically and horizontally aligned. Care must obviously be taken to fit them accurately, which is helped by the baseboard ends supplied being predrilled with the appropriate holes.



Wooden dowels are useful to get horizontal and vertical positions correct

Additionally, we use adjustable latches that pull the modules tightly together, so that they are unable to separate. We do have some modules that do not have the wooden lugs, and the latches are used alone. Providing the latches are tight enough, this seems to work satisfactorily too.



Latches are used to clamp the modules together

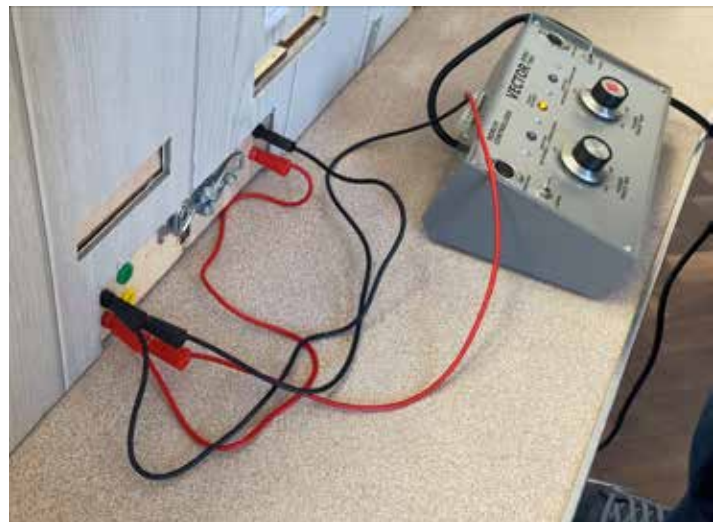
Electrical continuity

We look here at just the electrical connection between modules. Electrical rules that need to be followed within the module is a wholly different subject and we may look at that in a separate article.

When many modules are joined together, the length of the run can become quite long. So we need the electricity flow within and between modules to be as strong as possible. We have two sockets at each end of the module, joined together for each polarity. Modules are joined with leads plugged into the sockets. The ones we use are called “banana” plugs, which have a socket on the end of the plug to make them stackable. This means we can plug in a controller in any module to operate the trains.



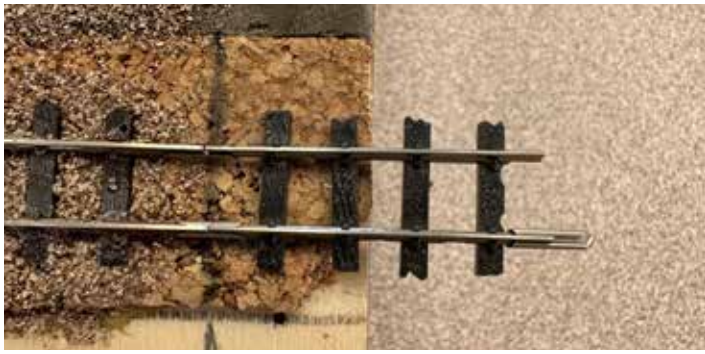
Banana plugs provide electrical continuity



A controller can be plugged in to run the trains

Joining the rails

The way we originally joined the rails was to use short lengths of track, requiring some consistent standards on each module. The track on each module ended 2 cms from the edge of the baseboard - the lengths of track to join them together being 4 cms long. Additionally, the ends of the track had to be in the same place on each module for them to line up properly. So each front rail had to be 17 cms from the front edge of the module. This method was chosen because it allowed us to



At first, we used a 4cms length of track to join modules

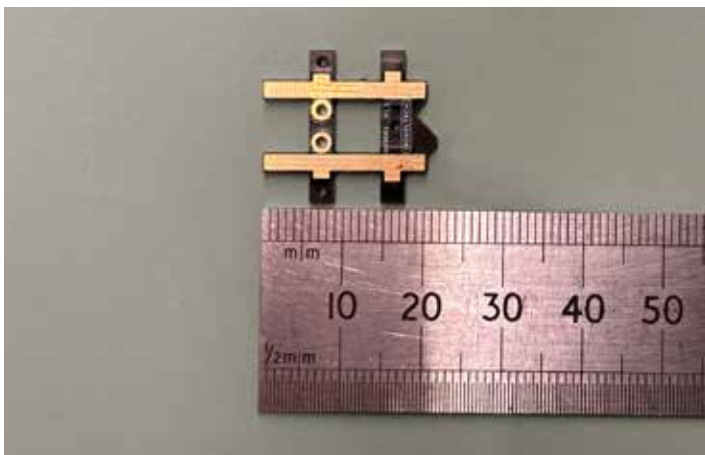
make progress on our modules even though we couldn't meet up during the pandemic.

We were pretty good at this, and we hoped that any small inaccuracies would be ironed out by the short piece of rail. In practice though, we found joining the modules rather fiddly and time consuming to do, taking about an hour at each operating session. Each piece of rail had to be a slightly different length, and often there would be a little fettling to do to make it work properly. This system will work ok when it's for your own layout and for specific joins, but the combination of lots of people and interchangeable modules makes it less practical. We did our first exhibition (our own Open Day in Stevenston) using this method successfully, but the experience showed us we needed a better solution.



The first time we successfully joined our modules

One of our group members, Barry, had experimented with ProTrack 009 rail aligners from Modeltech (<https://www.modeltech.uk>). They are a short piece of Printed Circuit Board (PCB) in the shape of track sleepers with a copper top, but no rail attached. They are just over 2 cms long and so suited our purpose very well as we were retro-fitting them to our modules.



ProTrack is a shaped PCB with a copper top



ProTrack in situ on modules

We made a template module to ensure there was consistency of positioning across all the other modules. This was a 10cms long baseboard of our usual 40cms module depth, with the track, including the Protrack joiners, positioned at the correct place. It is worth spending time making sure this is absolutely right. This template is then butted up to a module end, the Protrack joiner positioned on the module and secured. Short lengths of rail are then attached to the existing track with fishplates, and soldered in place on the Protrack. In our case, these were short 2 to 4 cms pieces of rail. If starting fresh, then a longer length of rail would be advisable. A track gauge is a very handy tool at this stage.



Using a template is a good idea to ensure consistency

It must be said that we found joining the modules together to be the most difficult part of building our modules. It required several attempts over many hours to get the conversion from our old method to the new method just right. Even getting the template correct wasn't without its challenges because the track needs to be in the same position on both side of the template.

Joining modules together is crucial, of course, so paying early attention to this and planning how to do it is important. Having said that, you can always change things, as we have!

List of components:-

- Latches
- Banana leads
- 4mm Sockets in red black
- ProTrack
- Self-tapping screws 1.2mm dia x 8mm long (for securing the ProTrack aligners)

A video on this article is available on the 009 Society YouTube channel. [📺](#)