

N GAUGE MODULAR BOARD CONSTRUCTION MANUAL

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This Manual has been based on that supplied by Ian Redman of the West Sussex N Gauge Society. See <https://www.wsng.co.uk/Module%20Design.htm> for further details

1. INTRODUCTION

- 1.1. It is clear that, for an exhibition modular layout to operate effectively, it must all fit together in a standard form. It should be obvious that although your board is a masterpiece of modelling, if it is too long, a tunnel mouth too small, connections are different, or your method of operating interferes with the three running tracks, it will not be acceptable to the exhibition manager.
- 1.2. All references to 'club' or 'the club' or 'AMRC' mean Astolat Model Railway Circle.
- 1.3. The three continuous tracks which will run across ALL boards and be operated from one control position are referred to as "running tracks".
- 1.4. The running tracks will be at the front of the board as viewed by the visitors. The back of the board being where the private layouts are built, and the operators stand.
- 1.5. Astolat club members' own tracks are referred to as "private layouts".

- 1.6. All new boards offered for entry in the Astolat M.R.C. exhibition circuit must be built to ensure compatibility with other boards and will be checked and passed as suitable by the exhibition manager, or any persons appointed by the Club Committee, before being invited to exhibit.
- 1.7. Members may use multiples of boards to form their own layout. These layouts would only need to adhere to this criteria where they join to other members/club boards.
- 1.8. This guide refers to FRONT, LEFT and RIGHT - this orientation is as being viewed with the running lines closest

2. BASICS

- 2.1. Where boards carry scenery above the surface of the board, the sides of the scenery must be appropriately decorated. Scenery, tunnel mouths, bridges etc must not interfere with a wide range of running stock.
- 2.2. There will be no sharp edges or parts liable to injure persons handling the boards. It is advisable to construct a cover for use when transporting your board, particularly at exhibitions.

3. BOARD DIMENSIONS

- 3.1. The standard board size is 900mm x 600mm. Other board lengths will be considered but must conform to a 300mm grid. Board width will be a minimum of 300mm and a maximum of 900mm. Board connections will conform to the Club standard Universal Joining Face (see references). It follows that minimum board size is 300 x 300mm, with a suggested practical maximum single board size of 1200 x 900mm. Board height at the joining faces will be 100mm.
- 3.2. The height from the floor to the top surface of the board must be 914mm. The running tracks will be Peco Code 80 N Gauge track and laid directly onto this surface to ensure your running tracks will be the same height as everyone else's. You may use any other track system or gauge on the private layout section of the board.
- 3.3. Adjustable height legs must be provided to cater for uneven flooring and to adjust board height when connecting to other modular systems.
- 3.4. Each standard-length board must have provision for four legs to enable it to stand independently if required. The exact provision of legs required on individual boards will be determined by the arrangement of the particular exhibition layout design. Smaller boards, used as 'infill-connectors', will not require legs as they can be connected as 'bridges' between larger (legged) boards.
- 3.5. Board and running track diagrams are shown in section 6 below.

4. PHYSICAL CONNECTION BETWEEN BOARDS

- 4.1. **For connection to other Astolat club member boards:** standard club Universal Joining Faces must be used. These will be provided by the club at reasonable cost.
- 4.2. **For connection to boards from other exhibitors:** it is common practice in older existing modular layouts to use G clamps. These will be provided by the club when necessary. It is usual to use two G clamps for each joining board.
- 4.3. Because the club Universal Joining Face includes male and female pattern-makers dowels, the male dowel will need to be removable for connection to other board systems.

- 4.4. Looking from the FRONT of all boards, the joining face with the Male connectors is on the left-hand end, and with the Female connectors is always to the right.
- 4.5. There should be no wiring on the inside ends of the board which will impede the use of G clamps (the lower half of the Universal Joining Face is kept free of holes etc for this reason).
- 4.6. 75mm track pieces are inserted to connect the running lines across board joints. The track pieces with rail joiners will be provided by the club.

5. ELECTRICAL CONNECTION BETWEEN BOARDS

- 5.1. Electrical connection between boards will be made using 6A pluggable connector blocks (8mm male spacing) s. The minimum is for six pins to be connected between boards to provide power to the three running lines separately. A male (plug) connector should be present on the LEFT side of the board via a fly lead (matching the male pattern-makers dowels and Rotolocks whilst a female should be present on the right. The male plug should be on a fly lead long enough to connect to an adjacent board's female socket.
- 5.2. The 3 running lines should be wired so that the rail closest to the FRONT of the board is +ve.
- 5.3. Further power/wiring requirements for private layouts are the responsibility of the board owner and **MUST BE FULLY ISOLATED** from the main running lines.
- 5.4. You must ensure that any wiring that might protrude beneath the board is properly clipped away.
- 5.5. All 250 volt or mains connections will be separated from the board and must be double insulated. An insulated floor mounted box, which can be closed, will be used to house mains transformers. The connections to the board will be by a plug and socket only. It is desirable to have fuses in the output circuit.

6. BOARD DIMENSION AND RUNNING TRACK DIAGRAMS

- 6.1. To be inserted.

7. RUNNING TRACK SPECIFICATIONS

- 7.1. Each running line is completely independent of any other (except on special exhibition, where loop-return or fiddle yard boards are used to complete an end-to-end layout). There will be no point-work or electrical connection between tracks 1,2. Track 3 may have point-work provided it is electrically isolated from the private layout.
- 7.2. A template is available from the club for accurate positioning of the running tracks at the end of each board.
- 7.3. All running tracks must be Peco N gauge Code 80 Streamline and must finish at 38mm from the board edge to accommodate the 75mm long piece of connecting track.
- 7.4. A further section of 40mm straight track, inboard of the connecting track, must be included before any running line is curved out of standard alignment.

- 7.5. Running track design is unencumbered between the 40mm straight end sections of fixed track, provided that the minimum radius for **any** running track curve is 400mm. The centre-to-centre dimensions of all adjacent running tracks must remain a minimum of 25mm at all times.
- 7.6. All running tracks are to be ballasted ensuring that the ballast is never higher than the top surface of the sleepers. This is so that older locos and rolling stock with deeper wheel flanges will still run properly.

8. PRIVATE TRACK AND SCENERY SPECIFICATIONS

- 8.1. Any design of track at any gauge will be acceptable on a private layout provided that the trackwork never impinges upon, and is fully independent/isolated of, the running lines.
- 8.2. Any private track or scenery alongside or over the running tracks must have the required clearance as shown on the attached diagrams in section 6.
- 8.3. The edge of any private layout item whether scenery, bridgework, trackwork or other items, must be set 5mm back from the board joint, so as not to interfere with adjacent connected boards, and be appropriately finished.

9. ITEMS PROVIDED BY THE CLUB

cost to be decided

Item	Description	Cost
Baseboard (900x600)	Complete kit of wooden parts	
Universal Joining Face Hardware	Southco connectors (1m, 1f) Pattern Makers dowels (1m, 1f)	£11.72 per pair - cost may vary based on order size
Board End Connecting Track	75mm sections of track with fishplates.	
Board End Electrical Connectors	a supply of 'Chocolate Block' pin and socket connectors will be available.	
Board End Track template	a template is available on loan from the club for accurate positioning of the running lines at the end of each board.	
Universal Joining Faces Construction Jig	A jig is available at the club to allow for accurate alignment of the parts of the UJF.	F.O.C. but must not leave the clubroom so all UJF construction must be done at the club.

10. OPERATING AT EXHIBITIONS

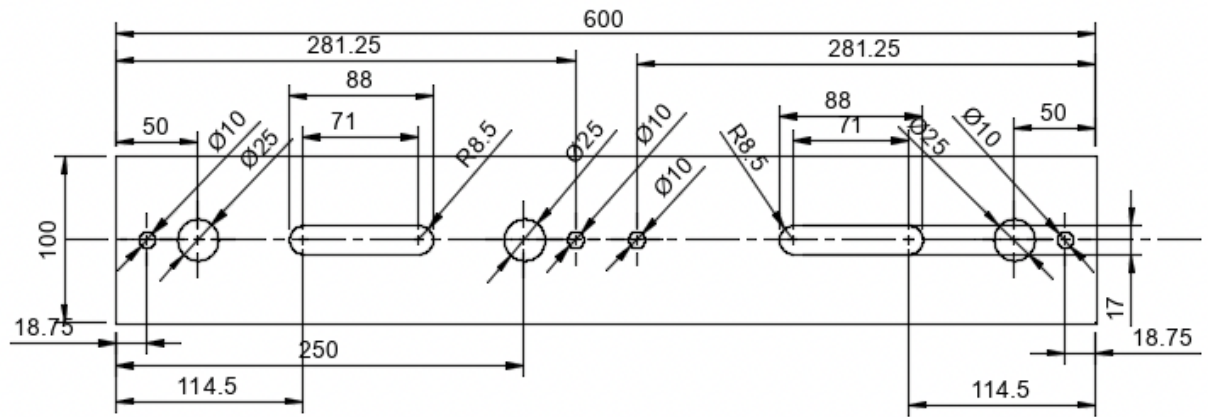
- 10.1. At exhibitions, the exhibition manager or any person appointed by him to do so, will have full control over all stock on the main running lines.
- 10.2. You are responsible for the operation of items on your private layout. Bear in mind that other operators need to be able to move and change stock on the running lines when you are not in attendance at your board. If you require your private layout to continue running while you are not in attendance, a full instruction manual must be provided with the board.

- 10.3. All boards must be provided with a diagram showing track isolation, switch operation, and power feed as necessary.
- 10.4. You are responsible providing for their own curtains
- 10.5. Curtains must be used at the front of the board finishing flush with the top board edge and 25mm from the floor (889mm finished size).

11. PRIVATE BOARDS ON TEST - (MOT)

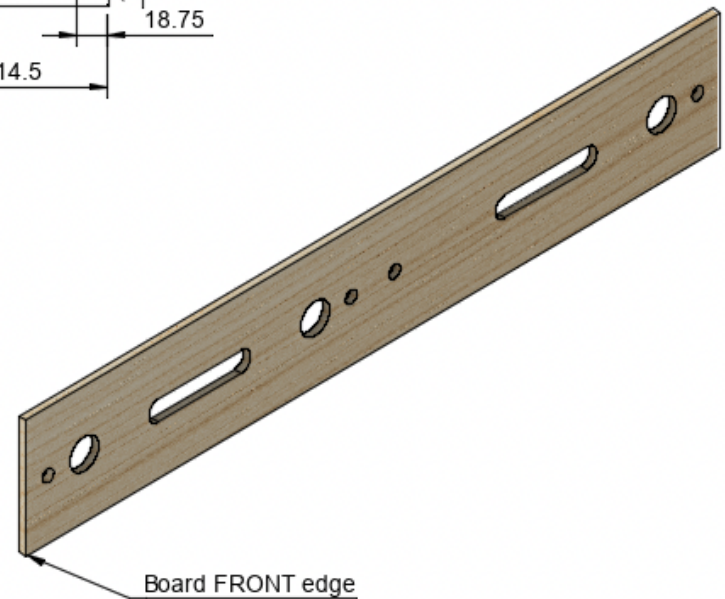
- 11.1. Before being invited to operate at exhibitions all boards will be checked by the exhibition manager or any persons appointed by the Club Committee, to ensure the above standards are met.
- 11.2. Existing boards will be treated the same way as new boards. You will be required to adhere to club standards if you wish to operate your boards in conjunction with other club members or at exhibitions.
- 11.3. The MOT is a two-stage process:
 - 11.3.1. Stage 1: All new boards will be offered for inspection when track work and all electrical wiring is completed, but before any ballast is applied to the tracks.
 - 11.3.2. Stage 2: New boards will be re-checked when all track ballast is completed, and all scenery is fully in place. Boards will be passed as fully compliant or, if they fail the MOT, advice will be offered, or help given if asked for.

12. REFERENCES



Cuts for board construction are omitted

Designed to use:
 SouthCo R2-0259-02 Latch
 SouthCo R2-0257-02 Receptacle



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