N Gauge Society Kit 38
BR Borail EB/MB/EC

B946192 BRV BR 50T Borail EB, vacuum braked with Bolsters (Diagram 1/483) at Goole 09/04/1978 © Paul Bartlett

Kit contains plastic parts, one-piece plastic bogies, wheels, couplings and transfers

To complete this kit you will need: Liquid Plastic Cement, Paint & Varnish

No Soldering Required

Getting Started

First, read the instructions thoroughly all the way through and be sure you are confident that you have identified all the parts. It is recommended that you adhere to the suggested order of assembly, though with experience, you may choose to deviate.

General Notes On Construction

Naturally, the N Gauge Society wants you to achieve the best results you can. These simple guidelines should help:

- Read the instructions through fully before you begin
- Use a sharp knife to separate the parts from the sprues
- Clean off any flash or moulding pips with sharp knife and wet ‘n’ dry sandpaper
- Check fit before gluing
- Use a small paint brush to sparingly apply liquid plastic cement when joining parts – *use glue in a well ventilated area*
- Photographs of the prototypes will help you

But above all .... TAKE YOUR TIME!!

References

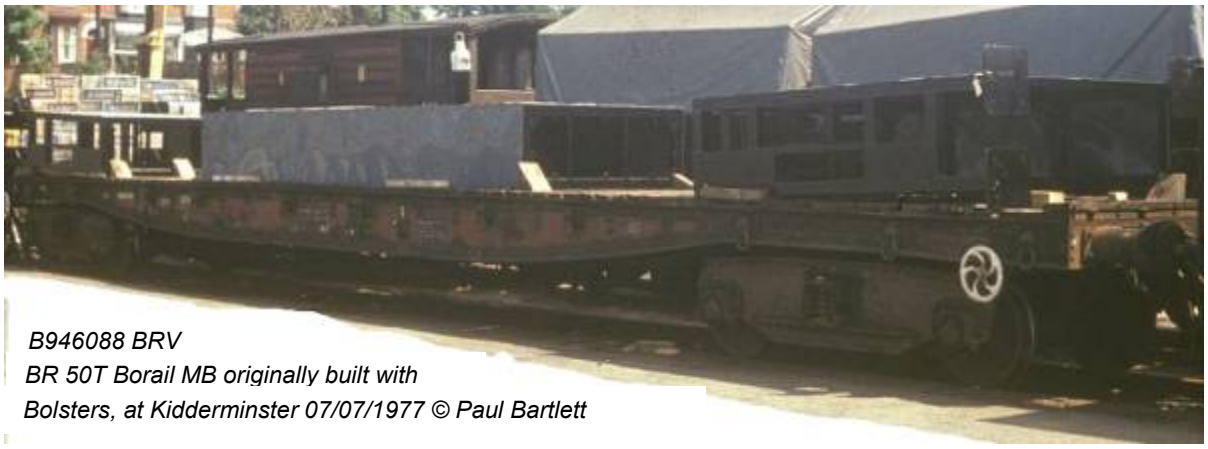
The following is not an exhaustive list, but gives typical examples of livery, condition and loads:

- *British Railway Goods Wagons In Colour* by Robert Hendry: P64 (lower)
- *British Railways Wagons (The First Half Million)* by Don Rowland: P91 Plate 91
- *Wagons Of The Final Years of British Railways (A Pictorial Study Of The 1962 – 1968 Period)* by David Larkin P66 (lower).

The Prototype

A Borail is a 'bogie rail' wagon as opposed to a Bobol ('bogie Bolster') although in practice their appearance and use seems to have little difference.

These large British Railways designed and built wagons are interesting in that the construction method changed from the traditional for bogie wagons of a Floor supported by truss girders to the use of fishbelly girders, a design already common in North America for many years previously.



B946088 BRV
BR 50T Borail MB originally built with Bolsters, at Kidderminster 07/07/1977 © Paul Bartlett

The Borail EC (Diagram 1/482, 30 wagons) had no Bolsters and was basically a long flat wagon for the conveyance of pre-stressed concrete beams. The Borail EB and Borail MB (Diagram 1/483, 105 wagons) were essentially the same wagon but fitted with Bolsters to carry the load.

Under TOPS, they gained the code BRV. In the late 1970s, most were rebuilt with Y25C bogies, air brakes and low sides – this variant is covered by a N Gauge Society wagon kit 39 Mullet.

Wagon	Lot Number	Number Built	Numbers
Borail EC	3267	10	B946065-946074
	3334	20	B946210-946229
Borail EB / MB	3268	10	B946075-946114
	3333	95	B946115-946209

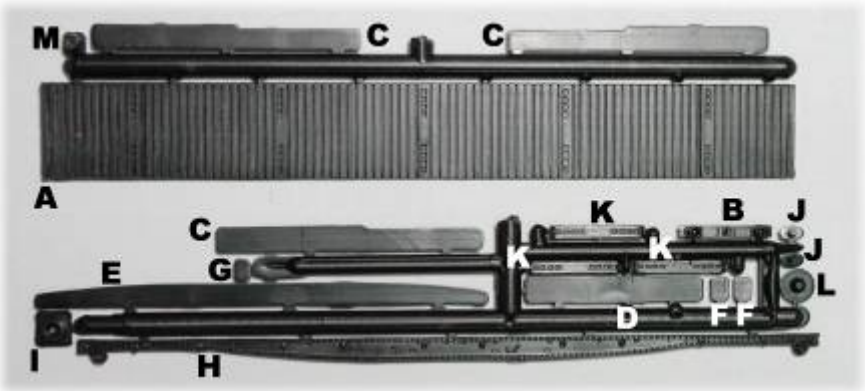
B946186 BRV BR 50T Borail MB vacuum brake with Bolsters (Diagram 1/483) built Derby 1961, seen at Workington 26/08/1979 © Paul Bartlett

The N Gauge Society is indebted to **Paul Bartlett** for permission to use his photographs – check out his web site **http://paulbartlett.zenfolio.com/** '*Paul Bartlett wagon photographs*' for more Borail images!

Parts

Part Number	Quantity	Description
A	1	Floor
B	2	Headstock
C	4	End Floor Side
D	2	End Floor Middle
E	2	Inner Truss Beam
F	4	Large Spacer
G	2	Small Spacer
H	2	Side
I	2	Bogie Pivot
J	4	Buffer
K	6	Bolster
L	2	Bogie Retainer
M	1	Vacuum Cylinder
N	2	Coupler Pocket
O	2	Coupler
P	2	Coupler Spring
Q	4	Wheetset
R	2	Bogie

Three sprues, bogies, a length of 0.33mm brass wire and a sheet of transfers are packaged with this kit. Use the following photograph and table to identify all the parts. Keep all the parts in a container or re-sealable bag to avoid loss and only remove parts from the sprues as you need them.



Construction

Only a few basic tools are required – a sharp craft knife, wet 'n' dry sandpaper, tweezers (preferably fine point), pliers, wire cutters and a small drill (with a selection of drill bits).

NOTE Some details are omitted from some diagrams for clarity.

Body

1. The body is best constructed 'upside-down'.

2. Attach the Headstocks (**Part B**) underneath the Floor (**Part A**) at the end. There is a lip underneath the Floor all the way round and the Headstocks should sit on the lip (**Figure 1**).

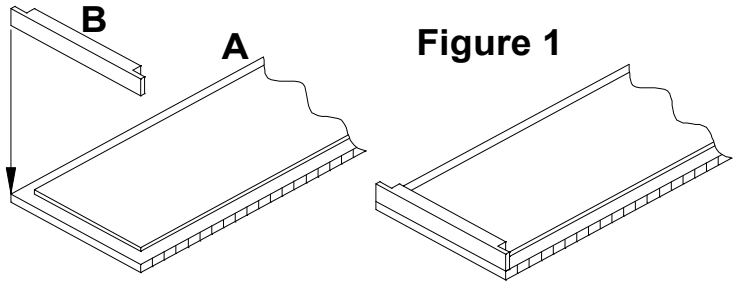


Figure 1

3. Place two End Floor Sides (**Part C**) either side of an End Floor Middle (**Part D**) on a flat surface as in **Figure 2** but DO NOT GLUE. Hold these three parts and test the fit of the Inner Truss Beams (**Part E**) – these should slide between Parts C and D up to the dotted line as shown in **Figure 3**. Note that the lip on 'curved' part of the Inner Truss Beams should face towards the outside of the wagon. If the fit is too tight, use a file or wet 'n' dry sandpaper to remove a little from the inner faces of Part D between the arrows as indicated in **Figure 4**.

Figure 2

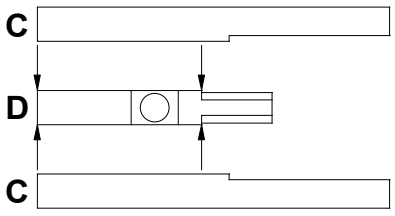
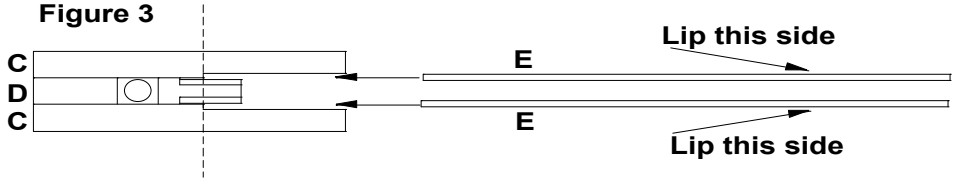
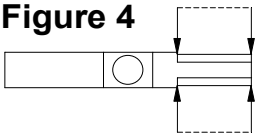


Figure 3



4. Repeat Step 3 until both Inner Truss Beams slide in without moving or distorting Part C, then glue the two End Floor Sides (**Part C**) either side of the End Floor Middle (**Part D**) as in **Figure 2** to form the End Floor Assembly. DO NOT GLUE the Inner Truss Beams at this

Figure 4

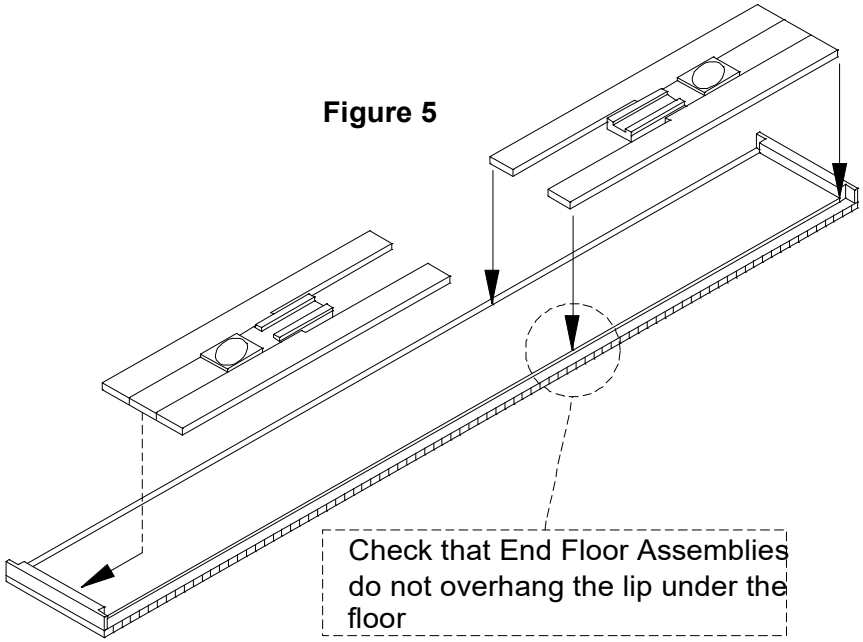


stage.

5. Repeat Steps 3 and 4 for the remaining End Floor Sides (**Part C**) and End Floor Middle (**Part D**).

6. Test fit the End Floor Assemblies under the Floor, butted up to the Headstock (**Figure 5**). Check that the sides of each End Floor Assembly do not hang over the lip that is under the Floor, as this will prevent the Sides (**Part H**) locating properly. If the End Floor Assemblies are slightly too wide, reduce their width equally by carefully rubbing their sides on wet 'n' dry sandpaper. When satisfied with the fit of the End Floor Assemblies, glue them under the Floor butted up to the Headstock.

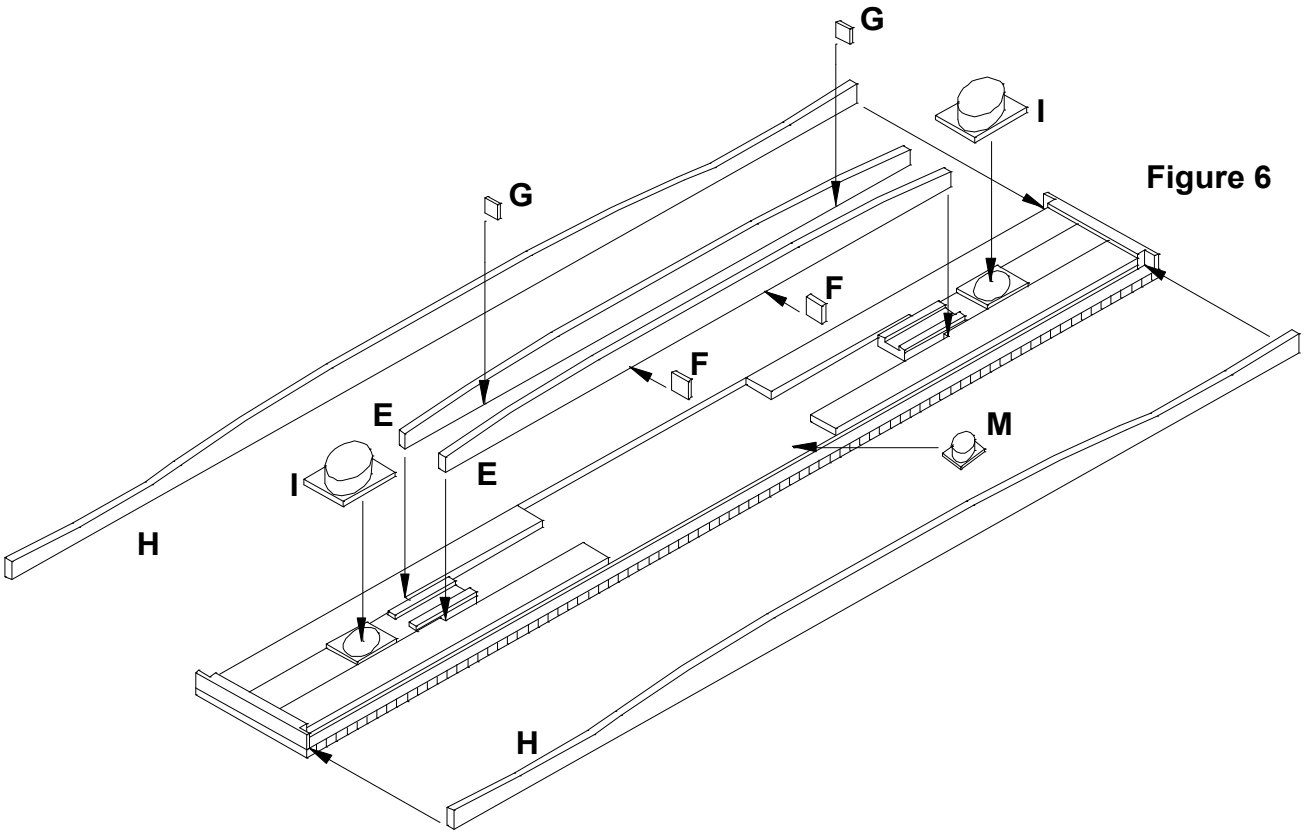
Figure 5



7. Test the fit of the Inner Truss Beams (**Part E**) under the Floor as in **Figure 6** with the lip on 'curved' part facing outwards. If they will not fit into the slots in the End Floor Assemblies, remove a small amount from the ends of the Inner Truss Beams using wet 'n' dry sandpaper. When satisfied with the fit of the Inner Truss Beams, glue them in place.

8. On each side (**Part H**) there are 2 lever plates 9mm from the centre. One should be removed on the left on one side and the right on the other, as they are the vacuum brake release levers which would be in line with the vacuum cylinder (**Part M**), though this is quite hard to do and not really visible on the completed model.

Figure 6



9. Test fit the Sides (**Part H**) as in **Figure 6** – they fit under the Floor, between the Headstocks butted against the End Floor Assemblies. If the Sides are slightly too wide (they are a tight fit between the Headstocks) then reduce their width equally by carefully rubbing their ends on wet 'n' dry sandpaper.

10. Two Small Spacers (**Part G**) can be fitted between the Inner Truss Beams (**Part E**) if necessary to keep them vertical when they are attached to the Floor as in **Figure 6**.

11. Four Large Spacers (**Part F**) can be fitted between the Inner Truss Beams (**Part E**)and the Sides (**Part H**) if necessary to keep them vertical when they are attached to the Floor as in **Figure 6**.

12. Fit the Bogie Pivots (**Part I**) over the raised locater on the End Floor Assemblies as shown in **Figure 6**.

13. The Buffers (**Part J**) glue into the buffer shanks moulded on the headstock (**Part B**). Note that you may find it easier to complete this step after painting as the buffers are a little fragile and may get damaged while handling the model to complete other steps.

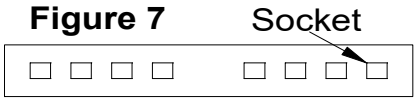
14. The Vacuum Cylinder (**Part M**) can be attached to the Floor between the Inner Truss Beams (**Part E**)and the Sides (**Part H**) as in **Figure 6**. It is not absolutely necessary to fit this part as once the wagon is on the track, it will not actually be visible.

Bolsters

15. If you are building a Borail EC (or a Borail EB/MC with Bolsters removed) then you do not need to fit the Bolsters (**Part K**) and can move on to the next section, although some did still use Bolster Pins in the sockets fitted in the wagon Floor, so if you wish to model a wagon in this arrangement, follow the notes in this section about fitting Bolster Pins.

16. Cut the 0.33mm diameter brass wire into 10mm lengths for the Bolster pins.

Figure 7



17. There are 4 small recessed squares on each side of the top of the Bolsters – these sockets held the Bolster pins which were equally spaced according to the width of the load (see **Figure 7** which is a view of the top of the Bolster). Use a 0.33mm drill bit to drill a pilot hole through the middle of 1 socket each side of the Bolster. The part of the Bolster under the top piece is only 0.8mm wide, so it is a little difficult to drill straight down without drilling out through the Bolster side. To avoid this as much as possible, hold the Bolster in a vice as show in **Figure 8**. If the drill bit does veer off line, the jaws of the vice will guide it back – you may find that the brass wire shows out of the side of the Bolster, but after the wire is secured in place, run a file over the wire to flatten it and after painting, it will not show.

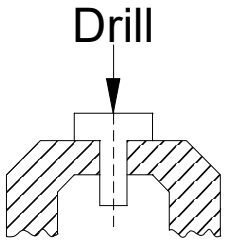


Figure 8

18. Feed the brass wire Bolster pins into the drilled holes in the Bolster until they are firmly held in place – a drop of super glue may be needed if they are a loose fit. Trim the wire so that it stands 6mm above the top of the Bolster.

19. Do not worry if some of the Bolster pins are not quite standing at 90° – photographic evidence suggests that they took quite a pounding from cranes such that a few pins out of true will be quite prototypical!

20. Glue the Bolsters to the Floor – they fit over the 5 socket plates on the Floor.

Bogies

21. This wagon is supplied with the N Gauge Society's own one-piece injection moulded bogies (thus enabling a smooth running and stable model) which only require couplings and wheels to be fitted.

22. If you wish to fit Microtrains couplers it is recommended they are mounted on the body, shimming if necessary to ensure the height is consistent with other rolling stock.

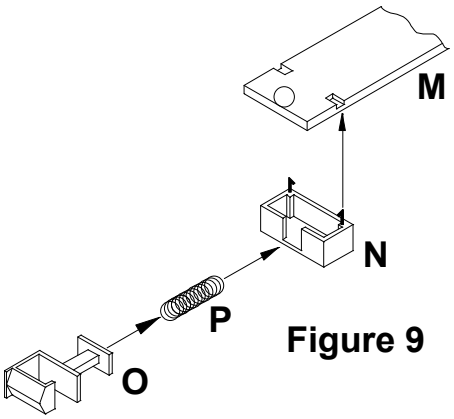


Figure 9

23. Place the Coupler Spring (**Part P**) in the Coupler Pocket (**Part N**), then add the Coupler (**Part O**) and carefully compress in (the small spigot on the back of the Coupler fits into the Coupler Spring). Be warned – the Coupler Springs do have tendency to spring out while doing this and the chances are you'll never find them wherever they have landed! To avoid losing the Coupler Spring, complete this step with the parts in a clear plastic bag. Alternatively, use a small spot of superglue to first glue the Coupler Spring to the small spigot on the Coupler.

24. Clip the Coupler Pocket to the underside of the coupler bar on the bogie (**Part M**), locating the hooks at the recess points (**Figure 9**).

25. Add the wheels to the bogies. place the end of one axle in an axle cup on one side, then place the other end over the axle cup on the opposite side. Use a small screwdriver to gently ease the bogie side away from the wheel until it drops into the axle cup.

26. Test run the bogie. If the wheels bind try squeezing the bogie side frames and rotating the wheels; alternatively if the wheel sets feel a little loose then remove, squeeze the frames gently, and replace.

27. The bogies are held in place with the Bogie Retainers (**Part L**). Use only the smallest amount of glue to attach a Bogie Retainer to avoid gluing the bogie itself to the wagon. Note that you may find it easier to complete this step after painting.

Painting And Transfers

28. The secret to a good finish is in preparation and planning ahead. Paint the wagon body and Bolsters British Railways bauxite; the wooden deck a light brown to represent unpainted wood. While the bogies are already black, they will benefit from a coat of matt black to remove the plastic finish. Pick out the spring on the bogie and the 4 brake wheels in white.

29. Give the wagon body a coat of gloss varnish as this will help the transfers to adhere.

30. For positioning transfers, it's best to use photographs of real wagons (see references), however, **Figure 10** is a guide to typical positioning. When built, the wagons would have carried the Wagon Code (for example, 'Borail E.B.), later on they would have received the TOPS Code BRV, and finally when in departmental service a few were coded YNV. Wagon numbers ('Numbersets') were usually on the left hand side. Both these were sometimes painted on a black background panel. Weight and Tare markings and Maintenance panels were placed towards the right, while other markings might be found in the middle. The letter E denoted 'Engineering' and would have been used with the YNV TOPS code.

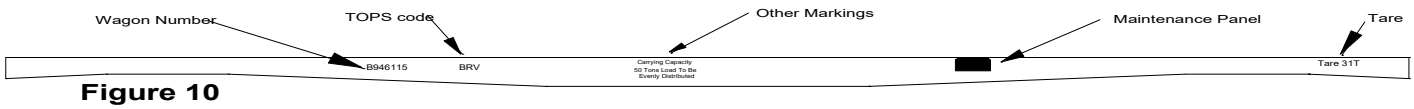


Figure 10

31. To apply the transfers, soak them in a dish of warm water for a few seconds, drain off the water, lay on a flat surface and then use the tip of a cocktail stick to check that the transfers will move free of the backing paper – if not, return to the water and repeat this step. Once the transfer moves, place it on the model and use the tip of the cocktail stick to hold one end to the model while pulling the backing sheet away with tweezers. There should be time to make a few adjustments as necessary.

32. Leave all the transfers to dry for half an hour and then apply a 'decal setting solution' (such as Micro-Sol) if required which will help the transfers to lie and form over detail such as planking and the corrugated ends. Then leave overnight before applying a coat of matt varnish to seal the transfers to the model.

Congratulations! Your model is now complete.