Great Northern Railway(GNR) Composite Brake (D189) Coach Kit 4mm Scale ("OO" "EM" "P4" etc.)

Era 2
Pre-grouping

4mm Scale

Era 2 Livery

3D Printed Components

TK-GN04-D189

Diagram3D.com

Introduction

Contents of this kit

MDF Parts

SmartFrame
Upper and lower frame plus alignment clips.

MDF Parts

MDF parts are supplied pre-cut, partially attached to the panel which preserves their integrity and ensures that the right parts are present. Please do not separate the parts until it is time to use them.

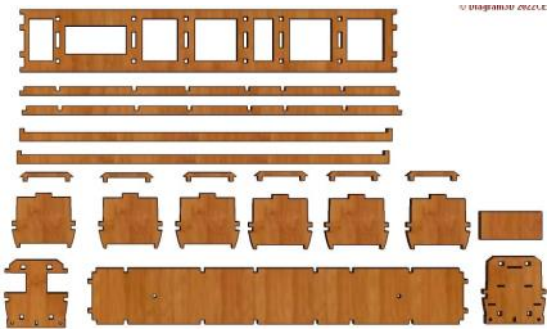
1x ceiling

2 x stretchers

2 x solebars

6 x roof support
1 x glazing stop
6 x plain partition

1 x guard end
1 x floor
1 x step end



Cardboard panels

The card panels are packaged within the ***SmartFrame*** for protection.

The card panels are identified by the printed legend on the panels e.g. "Side 1 of 2" etc.

Cardboard panels – a total of seven panels as described below:
There are four layers for the sides.

Layer	Description
Layer 1	Window Frames and droplights
Layer 2	Coach side
Layer 3	Middle and upper panelling
Layer 4	Lower panels beading detail

There are three layers for the ends.

Layer	Description
Layer 1	Brake End Outer, ducket (2)
Layer 2	Brake End panelling, ducket panelling, Coach End
Layer 3	Brake End beading, ducket beading, Coach End panelling, steps, ducket tops

3D printed Parts.

A 3D printed roof (PLA random colour) and two duckets (PLA random colour)

Glazing

Acrylic glazing bars are provided
2 x guard end glazing
2x ducket glazing
2 x long side glazing

Not included

Adhesive to attach the parts. PVA is recommended for the MDF parts.
Craft knife, Clamps, weights or other tools.
Paint and filler
Wheels, bearings, Buffers, couplings etc.

Intended Audience

This kit is intended to reduce the time, complication and labour associated with the construction of a detailed model of a carriage body using accurate pre-cut layers which can be conveniently assembled in the supplied SmartFrame without specialist knowledge to give the same quality, or better, as traditional methods.

***This is not a complete kit of parts.** The choice of underframe and other details is left to the modeller.*

Hints on assembly

Separate parts by cutting the reverse side of the fret.

Pre-assemble and check parts at each stage.

Seal Cardboard components.

Video and Gallery

Separating MDF components cleanly is more easily accomplished by completing the half etched portions on the reverse of the fret rather than cutting from the front.

Do not separate components from layers until assembly is complete or instructed to do so.

At each stage, once the required components have been separated from the frets, test the assembly without glue to ensure that the parts are trimmed correctly and fit properly before final assembly with adhesive.

Allow as much time as needed for the adhesive to set.

Fill any gaps and smooth surfaces for optimal results

It is advised that cardboard parts are sealed before assembly.

The assembly steps below are strong recommendations but should not be taken as definitive or prescriptive.

Current Documents

The current version of documentation for this and any other of our products can be downloaded from www.Diagram3D.com in PDF format.

Feedback

We welcome your comments and suggestions, especially images of models "in progress" or completed.

SmartFrame Preparation

(Applies to all versions of SmartFrame)

Attach the clips to the bottom section of the *SmartFrame as shown below:*

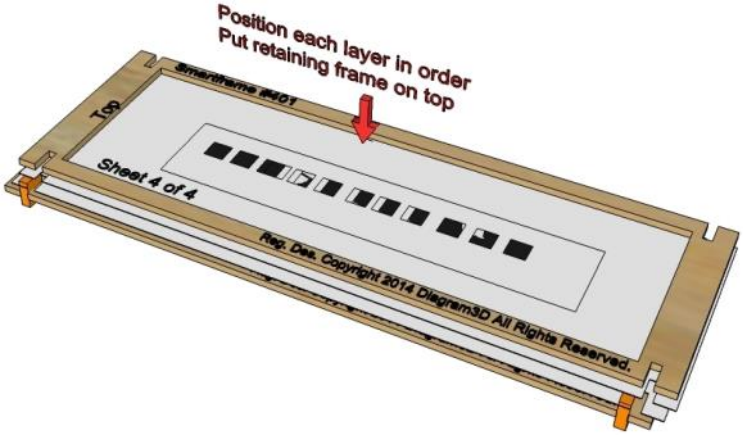
Total preparation and assembly time about 2 minutes.

Hint: Partially insert the clips into the slots and gently press the clips into position on each side. An extra clip is provided. Avoid excessive pressure. Visit our website for further constructional information including a video and gallery of models.

SmartFrame

General Hints on using the SmartFrame

The following diagram illustrates how to use the SmartFrame:



Position the layers of the same description in ascending order on the lower frame beginning with the first layer. The layers have the legend "1 of x", "2 of x" and so on.

Hint: Do not force the individual layers into position, assemble each layer at an angle so that one side is in position and then gently position the other side into place. When in position, extra pressure can be applied with rubber bands or "bulldog clips" on the ends of the frame.

Carriage Sides

Total preparation and assembly time about 5 minutes.

Allow sufficient time for the adhesive to dry thoroughly

There are four layers for the sides. Insert these into the *SmartFrame* in order as described above.

Layer	Description
Layer 1	Window Frames and droplights
Layer 2	Coach side
Layer 3	Middle and upper panelling
Layer 4	Lower panels beading detail

Apply adhesive and put aside until dry. Hint: The individual layers can be painted in advance to simulate the window frames, main body and lining detail. When thoroughly dry, detach the carriage sides using a sharp craft knife.

To form the tumblehome, use a section of tubing and gently roll the cardboard on a rubber mat or similar surface. Alternately the tumblehome can be formed by using finger-pressure against a suitably curved surface. Hint: Practice this on some scrap card first.

Carriage Ends

Total preparation and assembly time about 5 minutes.

Allow sufficient time for the adhesive to dry thoroughly

There are four layers for the ends.

Layer	Description
Layer 1	Brake End Outer, duckets
Layer 2	Brake End panelling, ducket panelling, Coach End
Layer 3	Brake Ends Beading, ducket beading, Coach End panelling, steps, ducket tops

Insert these layers into the *SmartFrame* in order as described above.Apply adhesive and put aside until dry. *Hint: The individual layers can be painted in advance.* The steps can now be detached and place into the pre-cut holes individually in one end. The other end has communication cord equipment. When thoroughly dry, detach the coach ends from the frame using a sharp craft knife

"Exploded" Diagram

The diagram shows the main components of this kit. The sides and ends are pre-printed and assembled as described above.

The body is assembled from MDF components.

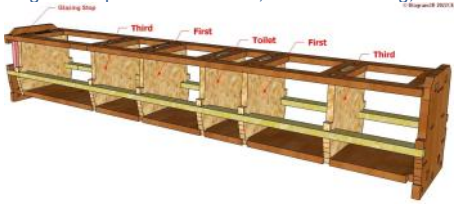
The roof and ducket is 3D printed.

MDF Body Shell

Total preparation and assembly time about 10-15 minutes.

Allow sufficient time for the adhesive to dry thoroughly

Insert the partitions into the floor and glue into position. When set, attach the ceiling, side stretchers and ends as shown below.



Hint: This is an appropriate time to paint and otherwise complete the interior of this model. Note: GNR third class compartments had green rep upholstery. First Class had Blue upholstery. Smoking compartments had "drab" upholstery according to contract specifications produced in the late 19th century.

Glazing & final asembly

Note that this vehicle is not symmetric over its length so there is only one way to position the roof.

Total preparation and assembly time about 20 minutes.

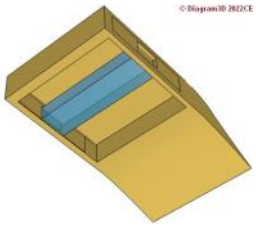
Allow sufficient time for the adhesive to dry thoroughly

Attach the sides to the body, taking care to align with the floor and allow to set.

Paint the 3D printed ducket overlay with a suitable shade of "teak" - an orangey brown colour. The pre-printed overlay / panelling is attached to the outer surface.

As shown, the small glazing pieces snap into the 3D printed ducket lengthways.

Note: The ducket is now supplied with panelling so the panelling overlays are redundant.



Finally the ducket is attached to the centre of the vehicle. The curve of he ducket matches the tumblehome.

The long window glazing bars supplied fit into the slots (one per side) which are pre-cut into the partitions.

The end panels overlap the sides and fits into the recess in the roof under the moulded cornice. Attach the ends taking care to centralise these components with the roof.

Roof

Total preparation and assembly time about 15 minutes.

Allow sufficient time for the adhesive to dry thoroughly

The 3D printed roof is designed to fit over the ceiling and attach to the (optional) roof supports which locate in the ceiling. It is possible to make the roof removable.

The roof will need some cleaning up and final painting before installation.

Although positioning holes are provided for ventilators throughout, vehicles were fitted with alternate ventilators and lighting throughout their working lives and a reference photograph will assist in determining which, if any, of the ventilators should be used for a given era.

The cornices were originally "teak colour".

Underframe

The underframe is assembled by inserting the lugs on the solebars into the corresponding holes in the floor of the vehicle.

The bogies are assembled according to the instructions in the kit D3D-06 which is suitable for this vehicle.

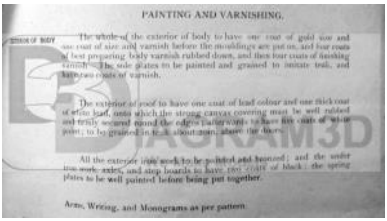
Suitable wheels for "OO" are D3D-02 (four axles Mansell wheels).

Historical Notes

This short 45 foot coach built to diagram 189 (D189) was one of several types which were designed by Howlden for the GNR in the late 1890's. 36 of these vehicles were in service in the early 20th century. The coach was a logical extension of existing design on the GNR. It had a wooden underframe. This vehicle is described in "Historic Carriage Drawings" Volume 1 by N. Campling. ISBN 1 899816 04 6 page 94.

Some example vehicle numbers for the GN period were

62, 98, 103 and 481 which became 4062… 4481 at grouping.


PAINTING AND VARNISHING.

The whole of the exterior of body to have one coat of gold size and one coat of size and varnish before the mouldings are put on, and four coats of best prepared body varnish rubbed down, and then four coats of finishing varnish; the side plates to be painted and grained to imitate teak, and have two coats of varnish.

The exterior of roof to have one coat of lead colour and one thick coat of white lead, onto which the strong canvas covering must be well rubbed and firmly secured round the edges before work to have six coats of white paint; to be grained in teak about 20in. above the eaves.

All the exterior iron work to be painted and lettered; and the under iron work, axles, and step boards to have two coats of black; the spring plates to be well painted before being put together.

Arms, Writing, and Monograms as per pattern.

According to contract specifications the underframe was painted "teak" colour, ironwork was black and the roof was painted white. However a section of the visible roofline was painted "teak" colour.

Depending on the frequency of washing the visible roof colour could be anything from "teak" to black, giving rise to various rumours about the colour of GNR roofs and the apparent discrepancy in colour between main line and suburban stock. After 1905 or thereabouts onwards roofs were painted white.

GNR livery was varnished teak with gold lettering and lining shaded blue. Earlier livery had the class designation with the GN crest in the lower panel of the door. In later years this was replaced by a large numeral. Eventually, post-grouping, the class designation numeral moved to the lower panel, the crest and lining was omitted for surviving stock. It was customary for a "pattern coach" to be provided for inspection by external contractors.

In 1896, Moore's Journal noted that GNR teak vehicles were of uniform colouring, unlike other companies that used varnished teak.

Underframe

This was a bogie coach. The diagram wheelbase was 28 feet 11½ inches between bogie centres. They were equipped with gas lighting, vacuum brakes and heating apparatus. Originally they were equipped with Fox's pattern bogies and later on with standard Gresley bogies

Finally…

Congratulations on completing this kit. We hope you enjoyed making it as much as we did.. If you enjoyed making this kit then take time to visit www.Diagram3D.com to find similar items. Our website has free downloads of historical information. Downloadable assembly instructions for all of our products

Email: info@Diagram3D.com E&OE document updated December 2025.