

## History of GCR "Barnum" No.228, Open Tourist 3<sup>rd</sup> class Saloon (Rev8 Apr2020)

Acknowledgements: Author Clyde E. Pennington, Verifier and contributor John Quick and the many who have made this restoration possible.

This 3<sup>rd</sup> class Open Tourist Saloon was built at G.C.R.'s 'new' Carriage & Wagon Works at Dukinfield, Manchester, in 1910/11 to the design of John G. Robinson, Chief Mechanical Engineer (CME).

One of 32 built to this basic design within the one year. (3 survive in preservation)

G.C.R. Diagram No. was originally 5G1. This changed in June 1926 to 5C8

General Drg. 4096-C Underframe Drg. 3985-C Bogie Drg. 4077-AC

LNER code (from 1937c) 5067

Also known as: L.N.E.R. No.5228 and under British Railways - E5228E

**Note: GCR-RST will use the GCR number 228 and a build date of 1910 so that we, RST, our members and all other readers, have no confusion.**

Max Height (over water filler) 12' - 11<sup>3</sup>/<sub>4</sub>", Height (rail to roof) 12' - 9"

Width over body 9' - 0"

Length over body 60' - 0"

Length over headstock 59' - 11"

Length over buffers 63' - 7"

Bogie centers 41' - 6"

Bogie wheelbase 10' - 6"

Tare weight 34ton 10cwt 0q

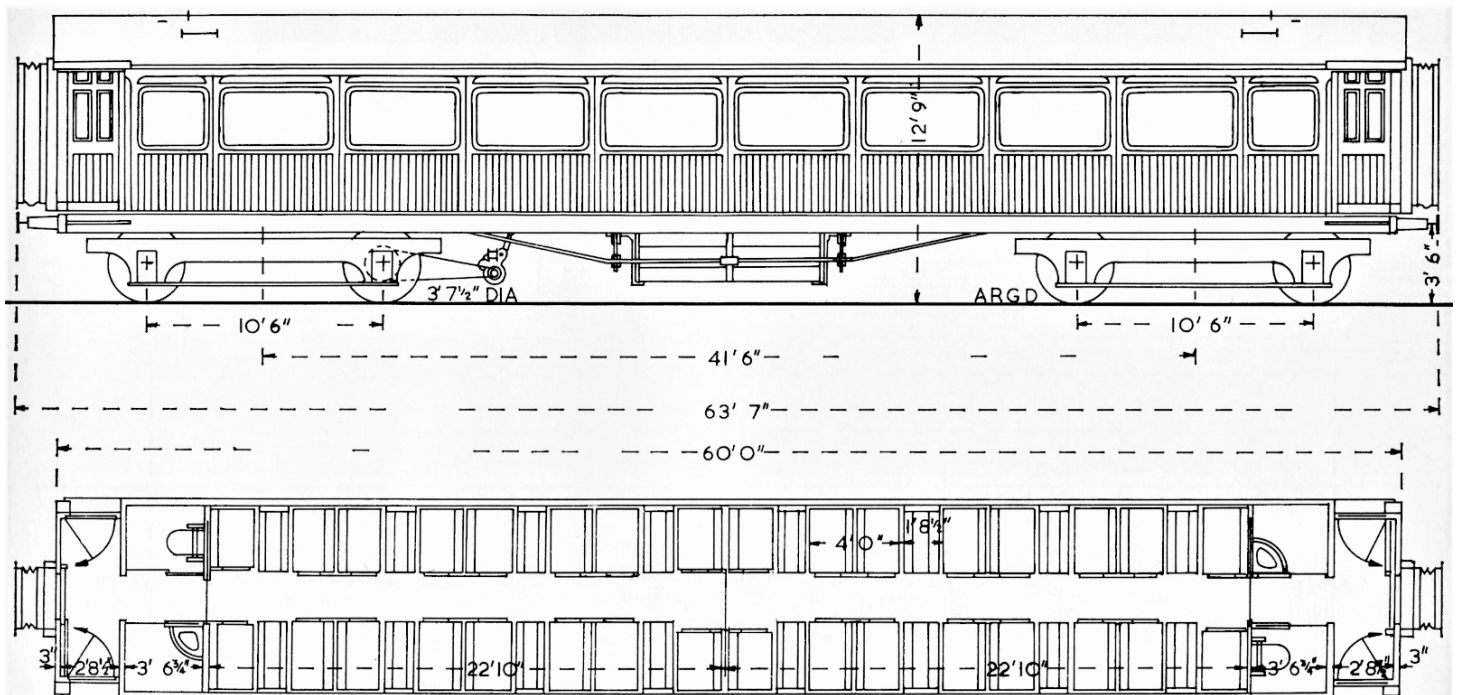
Seating capacity 64

The mainline pre-grouping companies mainly favoured the vacuum brake system, but some, the N.E.R. and G.E.R. for example, used the Westinghouse air brake. All the "Barnum" carriages were originally fitted with both types. This meant that other companies' passenger engines could take over a train of "Barnums" from a G.C.R. locomotive and work the train over their lines.

The Westinghouse brake system was removed from very many former G.C.R. carriages c.1930.

At certain times, "Barnums" were also used as dining cars. However, as they did not have matched cooking facilities, they would have to be coupled to a spare kitchen car, all of which would normally have been in regular use in the main line trains.

British standard corridor connections were fitted at both ends of the carriage.



"Barnum" Open Tourist Saloon Drawing: Courtesy of George Dow - Great Central Vol 3

The carriage was designed especially for 'General Express and Excursion' traffic and built to take full advantage of the generous gauge of the G.C.R. London Extension, which itself was designed to take continental traffic, via a Channel Tunnel, to the north of England.

Note: The G.C.R. had already built some 60'- 0" saloons but they were not "Barnums".

They gained the nickname “Barnums” because they had similar features to some of the vehicles that conveyed the Barnum and Bailey circus on a tour of this country at the turn of the 20<sup>th</sup> century. This circus train was built by W.R. Renshaw & Co. of Stoke-on-Trent. Apart from loading gauge modifications, they were of the type then used in the United States of America – This accounts for the American features of the G.C.R. design, such as match board sides (which G.C.R. later used on all its coaches), inward opening passenger doors, with full depth grab-rails on the doorways, and open saloons.

A progressive design when built, the structure was very simple, having a steel under-frame on which the teak clad body was mounted.

It rode so smoothly thanks to the extra-long Spencer patent floating bogie principle, for increased passenger comfort. Gresley had an almost similar system for his teak coaches.

No.228 was divided internally into two identical compartments or saloons.

The carriage was accessed at both ends, assisted by a step and two full length brass grab-rails, through a recessed inward opening door into an entrance vestibule, similar to ‘Pullman Cars’.

Adjacent each entrance vestibule, there was a toilet one side of the gangway and on the other side a separate wash-room facility, with both hot and cold water available, both having sliding doors. These cubicles had obscured glass windows with the G.C.R. coat of arms engraved into them, visible from the outside of the coach. Facing you, another sliding door gave access to the two open passenger saloons, each containing 32 seats and interconnected by another sliding door in the central partition, a feature that is now common on our modern railway coaching stock – previously, open coaches had only been used as ‘Dining Saloons’.

The passengers were seated in groups of four around a large table, and in order not to obstruct their access to and from the seats, the top of each table was made in three pieces and folded over to half the full width.

The carriage had a central corridor, and massive picture windows, four feet nine and a half inches long, (BR standard are four feet). Originally, the two diagonally opposite end windows or ‘falling lights’ in each saloon could be lowered down half the window depth, a feature which was new to this country but had been in general use on the continent.

The seats and backs were removable - in the summer ones of woven rattan cane were fitted, whilst in winter these were replaced with others covered with upholstery. (Note: For our GCR-RST restoration project these later removed ‘falling lights’ will not be re-installed, or the rattan summer seating provided).

The saloon interiors were finished in polished mahogany with white ceilings.

The carriages were steam heated, through storage heater units placed under every pair of seats.

Electric lighting was fitted throughout - There was an elaborate set of light fittings comprising, a two-shade suspended fitting at either end and 2 x three-shade suspended fittings in the middle of each saloon, as well as single units in the toilets, washrooms and entrance vestibules.

Each carriage had a dynamo, belt driven via a pulley on one bogie, which charged the batteries when moving above a certain speed, so that lights continued to operate when the train was stationary.

An electric bell push was installed in each saloon to summon an attendant.



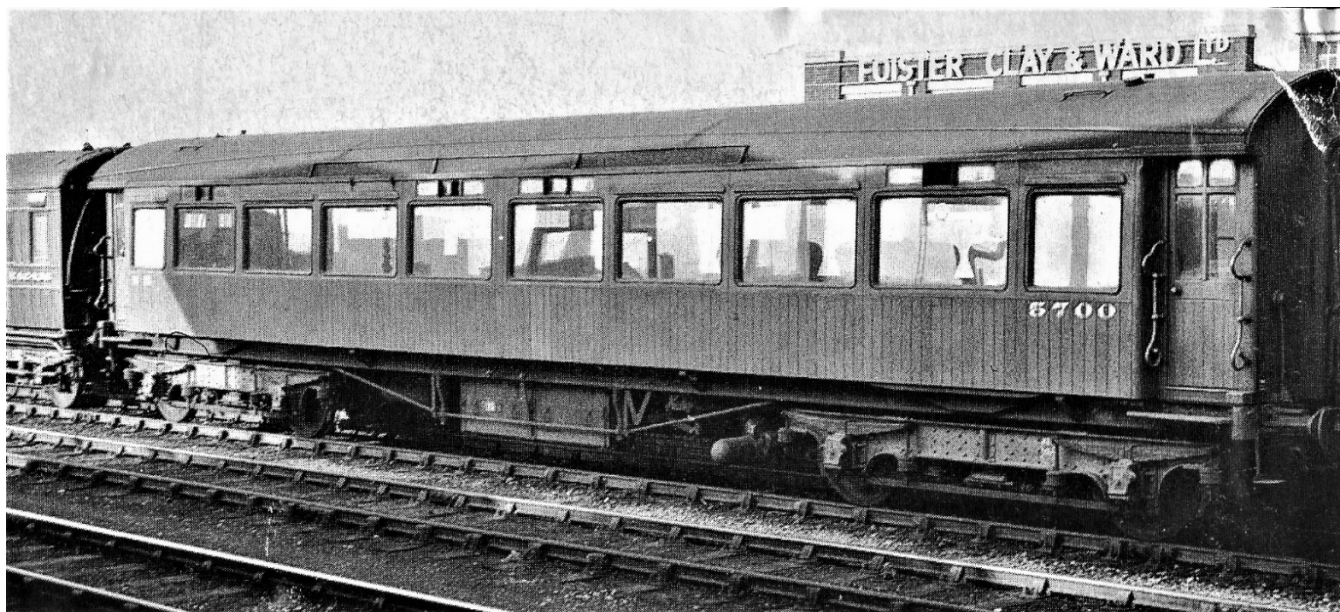
1910 - Identical GCR “Barnum” Open Tourist No.153 at Dukinfield, newly built. (Photo: J. Quick)

### Under G.C.R.

When new No.228 was allocated to Manchester, London Road on 'General Express and Excursion' duties. At some stage, either under G.C.R. or L.N.E.R., the buffers were modified from round, as on No.153 on page 2, to a far more robust elliptical shape.

Also note the brass grab-rail shape in that photo compared with the ornate grab-rails of No.5700 below. It is not known which type was originally fitted to No.228 and if replaced by the straight rail, when.

### Under L.N.E.R.



1948c - GCR "Barnum" No.5700 at Leicester Central. Note the ornate grab-rails and oval buffers. (Photo: J. Quick)

The carriage was modified by fitting sliding 'top lights' above the four corner windows of each saloon, as seen above, to increase ventilation and, assumedly, the 'falling lights' were removed at this time.

Rain-strips were fitted and destination board holders.

The carriage was renumbered 5228 and the raised brass lettering and numbering were removed.

Note: As L.N.E.R. used the same livery as the G.C.R., the carriage remained in varnished teak external finish.

### Under British Rail

No.228 survived into British Railways (BR) service, receiving its last works attention in 1954, and was sold on 3<sup>rd</sup> November 1956 to the Hull Docks Board Engineers, where it was 'found' in Hull's Alexandra Docks.

Some of the "Barnums" received crimson and cream livery under BR. This may possibly have included this carriage but cannot be confirmed, as no evidence has been found.

### Under Hull Docks Engineering Department.

After BR service, it was converted into a tomato-growing hothouse with three stoves, resulting in much damage to the woodwork due to fertilizer, heat and damp.

### Kim Booker & the 'GC Coach Group'

*1982 Extract from Quainton Road News No.46.*

The 'GC Coach Group' has unearthed two vehicles, both, of course, of G.C.R. origin. The first is an open saloon of the type nicknamed "Barnums", which they found at Hull's Alexandra Dock, in use as a greenhouse. It is complete, but the interior has been stripped out and the rotten wood flooring testifies to the effect on wood of some of the well-known brands of fertilizer! Much of the original panelling is intact and, fortunately, the roof is sound inside. They have not yet established the number of the vehicle.

A second G.C.R. carriage, an eight-compartment suburban coach, has also been located at the same docks, in use, latterly, as a paint store and, like the "Barnum", has been at Hull since the 1950s. It was built in the early 1900s and is similar to No.957 at Quainton. (*Note: This is believed to be GCR No.799 eight-compartment Suburban Third built 1905 also now based at Ruddington*).

Kim Brooker has been given the all-clear to bring these coaches to the site. He already has another G.C.R. coach, No.652, which he is working on at Banbury, pending moving it to Quainton. This is a ten-compartment vehicle of the 1913/15 period.

When redundant in 1979, No.228 was bought at auction for £350 by the 'GC Coach Group' and stored, along with other G.C.R. stock, on Chipping Camden airfield near Banbury.



### **Kim Booker's - Sale of stock auction, July 1997.**

Lot No. FE44V/5067 - latterly a greenhouse at Hull Docks still on own wheels.

Not sold at auction (even at £200).

October 1997 - No.228 was bought by Richard Tilden Smith.

Some internal and external replacement/restoration had been done previously by the 'GC Coach Group' but much of the underframe equipment was missing.

### **Phase one - The early days. (Photographs: R. Tilden Smith)**

A restoration project team was formed under Director Peter Wilson and Manager Arthur Barber, courtesy of the site management – Great Central Railway (Nottingham) Ltd.

Peter Wilson and his team undertook much of the early work, assisted by other interested GCR(N) members and associates. Around 1998/9 the team was reinforced by a further group from Nottingham Industrial Heritage Association (NIHA), who had been involved in the campaign to save the Nottingham Low Level Station and were looking for a permanent home for vintage signaling equipment and rail in their care.

### **Phase one continued - under GCR Rolling Stock Trust.**

1<sup>st</sup> January 2000 - No.228 was donated to GCR-RST by owner R. Tilden Smith

18<sup>th</sup> January 2000 - A separate group was officially formed, as a 'Private Company Limited by guarantee', transformed on 28<sup>th</sup> August 2000 into a stand-alone Charitable Trust, and named 'GCR Rolling Stock Trust' (GCR-RST), to specifically rescue, research, manage and eventually restore to operational condition, the rare or unique vintage GCR stock on the Ruddington site, under Chairman Richard Tilden Smith.



1997c - GCR "Barnum" No.228 at Ruddington.

**Restoration of "Barnum" No.228** - Started in the open throughout the winter of 1997/8, had cleaned and repainted externally the main frames, and removed all the paint and varnish from the teak and mahogany interior.

The group's original goal was to create a simple interior for GCR-RST's own "club" use, with a bar area, varnished woodwork, windows refitted with safety glass, inside and out refurbished and the whole re-roofed.

Having sourced a large quantity of teak – ex 'John Player & Sons' bonded warehouse fire doors - Peter Wilson and Tony Goodacre set about the mammoth task of machining new match boarding to replace the damaged or missing originals for both the exterior and interior in the on-site wood machine shop. Sourcing mouldings where possible, tooling-up - including purpose made profile cutters, to replicate original profiles, etc.



1996/7 - The existing diagonal flooring seen in the photo on page 4 was removed to expose the chassis framework for painting and, for simplicity, new boards were purchased and laid crosswise.



Original diagonal boarding removed and chassis painting completed ready for new flooring.



1997 - Job done, the GCR(N) team pose for a photo shoot.

September 1998 – 1910 built No.228 was moved from the yard into No.1 Engineering Shed to be joined circa 2003 by 1888 built MS&LR 6-wheeler No.946 - This illustrated the massive technology changes in 22 years.

1<sup>st</sup> January 2000 “Barnum” No.228 was donated by Richard Tilden Smith to the Trust.

2000 to 2005 - The external paneling, being loose and crudely nailed on in places using steel pins, was removed to reveal structural side framework and support defects, as well as rot. A sustainable teak-substitute, Orinoco, was obtained and machined for the upper panelling.

All was repaired/replaced, to facilitate the final re-boarding completion at a later date.



New support brackets were fitted.



John Bagshaw seen replacing side support and cladding backing timbers.

Wrought iron body securing bolts were cut by hand in preparation for the eventual lift.

The equally crudely fitted L.N.E.R. sliding ‘top lights’ visible in the page 4 photograph were taken out, so that restoration of both the interior and exterior will be in the original G.C.R. style, with varnished teak sides and raised brass numerals.





Richard Potter removing corroded end plate rivets assisted by Dave Epton.



Clyde Pennington, Colin White, Dave Ablitt, Richard Potter and Jim Kent – The ex NIHA team.

2006 to 2008 - The old roofing skin was stripped off and the main board area repaired, re skinned and sealed with several layers of protective paint. New ceiling hard board was profiled, fitted and painted. A roof section was deliberately left open and the internals unrestored at this stage to prevent the carriage being shunted into the yard and to illustrate its originally state - Covered space was at a premium even then.



2006c - Painted roof hoops and new roof support boarding



2008c – C. Pennington & J. Kent left painting 228 in No.1 shed.  
Note: few 'Health & Safety' worries then.

### **Phase two - 2011 to 2016.**

2011, with the arrival of volunteer carpenter Doug Atkins, No.228 was cleaned up internally, new access steps made, new electrics fitted and the carriage was re-utilised as the wood workshop for the MS&LR 6-wheeler No.946 rebuild, the GCR-RST archives cum office, and a general works and storage area.

During this time little physical restoration was carried out on No.228 itself, other than to make it fit for purpose. However, it was also agreed at this stage to restore No.228 to 'as built' running condition once restoration recommenced, with upholstery covered wooden (winter) seating, in anticipation of ultimately returning the carriage to revenue earning service.



2014 - Doug Atkins working on the last door for 946 in No.228's woodworking section



2014 – 228's General workshop, RST archives, office area and storage

(Photos: C Pennington)



### **Phase three (2017 to 2020)**

With the completion of MS&LR No.946 and the departure of Doug Atkins, part of the team concentrated on the conversion of Suburban No.799 into the planned GCR-RST storage facility. The transfer of stock and materials then commenced, to clear 228's internals and enable the internal restoration to continue - primarily by Peter Wilson and his team.



2019 "Barnum" No.228 in No.1 Engineering Shop (Photo: A. Coalwood).



2019 - Repanelled internals are almost completed (Photo: A. Coalwood).



2016 – 2019 Much work was undertaken to gather ‘Barnum Evidence’. The four on-site survivors were scrutinised in detail both internally and externally along with photographs, technical texts and the few surviving drawings, the team liaised with other Heritage Groups, visited the National Railway Museum in York and the Great Central Railway Society archives at their museum in Immingham, all to facilitate accurate restoration data.

Much was learnt but there remain many gaps, due primarily to the loss of most of the original Great Central records stored in their archives at Marylebone, following a WW2 bombing raid.

Electronic, photographic and paper records have been, and continue to be, created by the GCR-RST volunteers and restorers to record work progress, plus computer aided design employed on a wide range of activities.

Meanwhile, Peter Wilson and his group had made excellent progress on the internals. Much salvaged teak was re-worked to form the replacement match board panelling and fitted to both the exterior and interior, and final preparations to the partitions were well advanced in readiness for their sliding doors.

In 2018, with the significant arrival of Mike Lang and his experienced Rothley Vehicle Preservation (RVP) Group colleagues, the team concentrated on, and accelerated, its “Barnum” restoration progress.

Much work was undertaken below the body of No.228, including in 2019, the jacking up of the body and subsequent removal of the bogies for despatch to Nemesis Rail Ltd., a railway maintenance and spot-hire company, based in the former British Railways wagon works on Derby Road, Burton upon Trent, Staffs. where they are undergoing heavy overhaul, under a very generous sponsorship arrangement brokered by Mike Lang. Mike has also done quite a lot of preparatory work at Burton. We would also record the excellent quality work on new part requirements by Gareth Davies of TAS Engineering Ltd. We would wish to acknowledge their substantial contributions - Together the two have reduced the rebuild of No.228 by perhaps years.....

The absence of the bogies allowed full access and close inspection of all areas of the underframe and associated parts, completion of the strengthening plate replacement under both access vestibules, finish painting of the frame and replacement or restoration and painting of most underframe parts, including steam pipework, buffering, battery boxes and much, much, more.

This in turn identified further corroded steel to be replaced, more painting etc.



2019-08-12 No.228's bogies were despatched to Nemesis Rail for restoration (Photo: A. Coalwood)

Full re-wiring is in progress, and repro lighting has been installed within both saloons.

2019/2020 The design requirements for the toilet and washroom compartments, their associated plumbing and, sanitary equipment are being finalised and materials sourced, as are the saloon seating and flooring designs.

The finished bogies (delayed by the Covid 19 virus outbreak) will hopefully be back at Ruddington in mid/late 2020. Once in place work can recommence within the body.

New vacuum brake cylinders are being sourced in 2020 to a design copied from the NRM “Barnum” No.666.



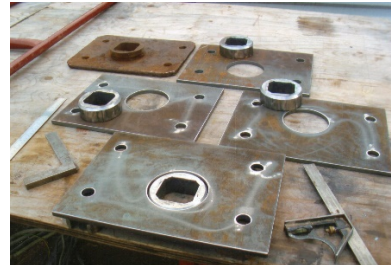
Below gives a small snapshot of just a few of the affected parts:-



Evidence of original small buffer bolt holes



Existing battery bracket parts



New buffer guide plates



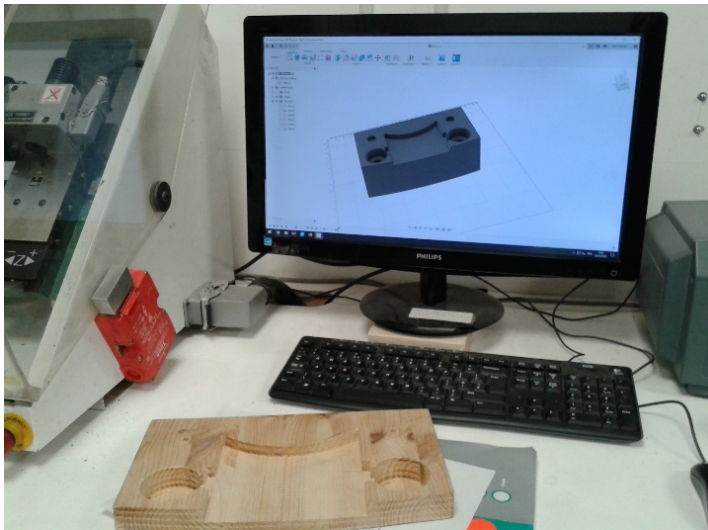
New steps



April 2019 - No.228's 1st Bogie is successfully extracted (photos :A. Coalwood)



July 2019 - No.228's 1st Bogie in yard showing typical damage



Computer aided design for "Barnum" Bogie Stabilising Blocks (Photos: K. Stimpson - January 2020)



July 2019 - No. 228 New Pipework and Underframe Preparation in progress (Photos: A. Coalwood)





February 2020 - No.228 Bogie restoration underway at Nemesis Rail (Photos: M. Lang)



Work in progress fabricating replacement spring locators (Photo: G Davies)



2020-04-23 Returned by TAS Engineering Ltd to Nemesis Rail Ltd with new spring locators in place (old metalwork behind) (Photos: G Davies)