

This is a combined trilogy of articles from the EBMRS Newsletter -

- a) BR Mineral Wagons 1945 to 1962
- b) Pre-Nationalisation mineral wagons on BR
- c) Further observations on steel mineral wagons

BRITISH RAILWAYS MINERAL WAGONS 1945(-ish!) TO 1962

Mineral; a mineral is a naturally occurring chemical compound, usually of crystalline form and abiogenic in origin.

Wagon; a rectangular-bodied vehicle on at least 4 wheels, used for the transportation of goods.

British Railways inherited a huge and motley collection of mineral wagons that had been pooled for war-time service, pretty much wooden-bodied and in a poor state of repair. A programme of mass replacement was started very soon after nationalisation, and these notes are barely a ‘toe in the water’ for the subject but illustrates the basic types. It will be obvious that the greater the number of new wagons over time, the fewer the old wooden wagons were to be seen and by the time of our model of Finchley the wooden wagons were very much in the minority.

This (very brief - !!) review covers the various diagrams, and I’ve also include here the precursors to the BR types, the steel versions as built for the LMS and LNER which were themselves influenced by the Ministry of Transport wagons. Most of the MoT versions are recorded from a 1954 survey. After the LMS and LNER wagons I’ve listed the hopper types then ‘standard’ types, listing the least numerous wagons first, building up to the almost ubiquitous diagram.

Where I’ve found information regarding models (4mm) and preservation I’ve included it, but please don’t take it for granted - I’m sure there’s more to it! - and some of the models will now only be available on the second-hand market.

LNER

Diagram	Not known	Total built	7,200
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16T rivetted steel with end door.

Some at least built by Teesside Bridge & Eng. From 1945.

Cambrian produce a kit C10.



LMS

Diagram	2106	Total built	1
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16T welded steel with end door.

Prototype built at Derby in 1945.

Diagram	2109	Total built	2,599
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16T welded steel with end door.

Built from 1946 in 2 lots. The shape of side doors varied, some flat, some with a raised ‘pyramid’ profile.

Diagram	2134	Total built	3,500
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16T welded steel or rivetted steel, with end door.

Built 1949 in 2 lots.





HOPPER WAGONS

Diagram	158	Total built	21
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20T welded steel hopper, for coke traffic. These were provided with a sheet bar.

A single lot built at Shildon, date of build is not specified but likely to be late-50s, and the running numbers are not recorded in the Lot Book!

No models or preservation I'm aware of.

Diagram	153	Total built	250
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20T welded steel hopper with disc brakes.

Built in 2 lots in 1960 and 1962 at Shildon, the Lot Book states they are 24.5T and 24T, not the 20T of the diagram!

No models or preservation I'm aware of.

Diagram	140	Total built	300
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13T wooden-bodied and wood sole bar hopper.

A single lot built in 1949 at Faverdale.

No models or preservation I'm aware of.

Diagram	150	Total built	500
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20T welded steel hopper, for coke traffic

Built in 2 lots in 1949 and 1950 at Shildon and Teesside Bridge. The second lot had steel raves.

No models or preservation I'm aware of.

Diagram	154	Total built	548
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24.5T welded steel hopper.

Built as 1 lot in 1962 at Shildon.

No models, 1 in preservation I'm aware of at Tanfield.



Diagram	152	Total built	550
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20T hopper.

This is a mixed bag, 250 welded steel, 300 rivetted, no raves but full-height sheeting and 279 were vacuum braked.

Built in 1958 at Shildon

Model - Hornby R6733, though none preserved

Diagram	144	Total built	650
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13T steel hopper. This is basically a D.142 but is a quarter inch taller!

Built in 2 lots in 1951 at RY Pickering (300) and Fairfields S&E (350)

No models or preservation I'm aware of.

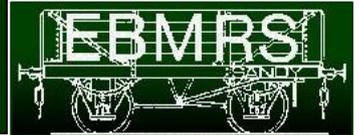


Diagram	149	Total built	1,000
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21T welded steel hopper.

Built in 1 lot at Shildon in 1958. These had roller bearings and self-contained buffers. 100 were vacuum braked.

No models but 2 in preservation I'm aware of.



Diagram	155	Total built	1,087
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24.5T welded steel hopper.

Built in 3 lots, year unknown, at Shildon (678) and Pressed Steel (100)

Diagram	151	Total built	1,150
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20T welded steel hopper.

Built in 7 lots between 1951 and 1957, all at Shildon. End raves were replaced by sheeting.

Model by Hornby, R6822, though none preserved.

Diagram	141	Total built	1,200
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21T steel hopper.

Built in 3 lots in 1949 between Cravens (500), Head Wrightson (500) and Teesside Bridge (200). Brake blocks only on one side.

No models, but 1 preserved at NRM Locomotion.



Diagram	145	Total built	1,400
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21T rivetted steel hopper. Very similar to D.141 but with a Morton brake.

Built in 2 lots in 1952 and 2 more in 1955 between Hurst Nelson (600) and Metropolitan Cammell (800).

No models or preservation I'm aware of.

Diagram	142	Total built	1,950
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13T steel hopper but with wooden bottom doors.

Built in 5 lots between 1949 and 1950 at Shildon (2 lots, 1,200), Fairfield's S&E (250), RY Pickering (250) and Cravens (250).

No models or preservation I'm aware of.

Diagram	143	Total built	2,750
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21T steel hopper, only minor differences to D. 141.

Built in 7 lots between 1949 and 1950 by Cravens (350), Head Wrightson (2 lots, 800), Teesside Bridge (150), Birmingham RCW (700), Metropolitan Cammell (500) and Butterley (250)

Model by Hornby, R6016. Nothing preserved I'm aware of.

Diagram	148	Total built	3,378
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24.5T welded steel hopper.

Built in 8 lots between 1953 and 1962, only 1 example built at Ashford, the remaining lots at Shildon.

Model by Accurascale, based on a preserved example. Whilst hoppers were most common in the north of England, the Accurascale notes state this type was used on Wellingborough to East London trains, so one for the Finchley branch?

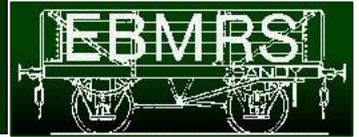


Diagram	146	Total built	16,800
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21T welded steel hopper

Built in 26 lots from 1952 to 1959 by 12 different builders. Standard hand lever brake.

Birmingham RCW 3 lots, 1,400. Butterley 1 lot, 200. Charles Roberts 1 lot, 1,150. Cravens 4 lots, 1,150. Fairfield S&E 2 lots, 1,150. Gloucester C&W 2 lots, 950. Head Wrightson 2 lots, 800. Hurst Nelson 2 lots, 950

Metropolitan Cammell 2 lots, 1,450 Pressed Steel 1 lot 2,950 Shildon 5 lots, 3,100 Standard 1 lot, 500.

One lot from Shildon's allocation was later converted for grain traffic from Millwall Dock to Welwyn

Model by Parkside, kit PA77. 21 preserved I'm aware of.



NON-HOPPER WAGONS

Diagram	116	Total built	100
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16T rivetted aluminium with end door.

Built at Shildon 1953 in 1 lot of 100

No models or preservation I'm aware of.

Diagram	113	Total built	305
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16T rivetted steel with end door. Ex-French government to a Hurst Nelson design.

Built in 6 lots in 1950, at Earlestown (3 lots, 180), New Cross Gate (3 lots, 125)

No models or preservation I'm aware of.

Diagram	101	Total built	500
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16T rivetted steel with end door. Ex-French government and Ministry of Transport.

Built as 1 lot by Cambrian W&E, recorded in a 1954 survey.

No models or preservation I'm aware of.

Diagram	103	Total built	800
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16T rivetted steel with end door. Ex-French government and Ministry of Transport.

Built by Cambrian W&E (650) and Metropolitan Cammell (150), recorded in a 1954 survey.

No models, 1 preserved at Foxfield Railway.



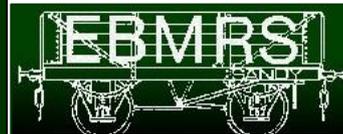


Diagram	110	Total built	1,000
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21T rivetted steel with end door.
 Built in 1 lot by Metropolitan Cammell in 1950.
 Model available from Parkside, kit PC03, one example preserved at Swindon & Cricklade Railway.



Diagram	118	Total built	1,245
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24.5T wagon with side and end door, with roller bearings and self-contained buffers.
 Built in 4 lots at Ashford (2 lots, 845) and Shildon (2 lots, 400) from 1959 to 1962.
 No models or preservation I'm aware of.

Diagram	107	Total built	1,500
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16T welded steel with end door.
 Built in 3 lots by P&W McLellan (500), Charles Roberts (500) and Birmingham RCW (500) all in 1950.
 No models or preservation I'm aware of.

Diagram	103/105	Total built	1,850
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16T rivetted steel with end door, ex-French government and Ministry of Transport.
 Built by Metropolitan Cammell, recorded in 1954 survey.
 No models or preservation I'm aware of.

Diagram	114	Total built	2,450
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A mixed bag if the logs are correct.
 The first lot is recorded as a 16T welded steel with end door, built at Derby in 1951. The first 100 are vacuum fitted version of D.111, the remaining 200 being unfitted.
 Bachmann offers a model of these, 37226 and 37228.
 The remainder are recorded as 24.5T welded steel with end door. Built in 3 lots at Shildon in 1953 and 1954.
 Parkside do a kit of this, kit PC04, and an example is preserved

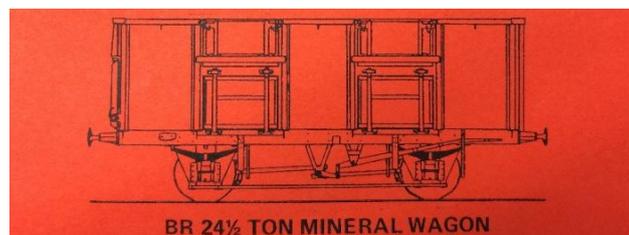


Diagram	120	Total built	2,450
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21T wagon, as D. 119 but fitted with SAB vacuum brake.
 Built at Derby in 2 lots in 1961/62.
 Both Hornby (R6070) and Slimlines (kit 473) provide models, and 6 examples are preserved.



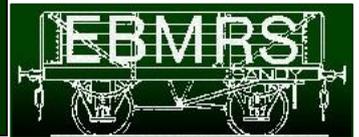


Diagram	119	Total built	2,500
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21T wagon with roller bearings, hydraulic buffers and manual changeover vacuum brake.

Built in 3 lots at Shildon (2 lots, 2,000) in 1961 and 1962, and at Derby (500) in 1962.

No models though similar to D.120 above, 6 examples preserved.



Diagram	106	Total built	2,800
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16T welded steel with end door. Believed to be an LMS design.

Built in 3 lots by Derbyshire C&W in 1950/51.

Models by Bachmann (37226D and 33752), 2 examples preserved, 1 of which at East Anglian Railway Museum.



Diagram	104	Total built	3,300
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16T welded steel with end door.

Built in 7 lots, the first 2 of which are recorded as part of the 1954 survey, from Derbyshire C&W (750) and Fairfields S&E (1,200). These 2 lots both feature 2 flap doors.

The remaining 5 lots were built in 1950 at Fairfields S&E (2 lots, 750), Derbyshire C&W (400), Cambrian W&E (100) and GR Turner (100).

Bachmann 37226 represents one of the 1954 survey models, but none preserved.

Diagram	111	Total built	4,400
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16 welded steel with end door. Only minor differences to D.108.

Built in 5 lots between 1950 and 1953 at Derby (2 lots, 1,500) and Shildon (3 lots, 2,900)

D.108 is well represented by models, but Bachman represent this diagram in a set of 3, 37225Y. None preserved.

Diagram	105	Total built	5,900
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16 rivetted steel with end door. Ex-French government and Ministry of Transport.

Recorded in the 1954 survey, built in 4 lots by Cambrian W&E (1,500), P&W McLellan (2,000), GR Turner (900) and Gloucester C&W (1,500).

No models or preservation I'm aware of.

EAST BEDS MODEL RAILWAY SOCIETY

Mineral Wagons on BR to 1962



Diagram	112	Total built	6,982
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16T open wagon (!). Ex-French government, to a Metropolitan Cammell design.
 Refurbished and Anglicised on repatriation as 1 lot, split between Earlestown (4,200) and New Cross Gate (2,782).
 Parkside produce a kit PC22, 4 preserved.



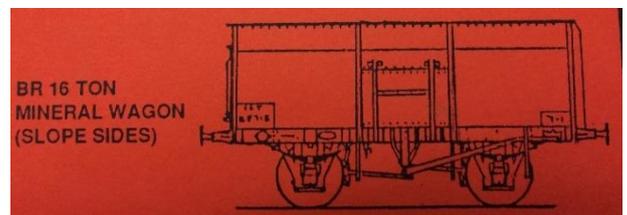
Diagram	117	Total built	8,250
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16T welded steel with end door. Minor differences to D.108, believed Morton brake.
 Ordered as 8 lots. Shildon built 1,500 in 1954, the remainder are dated 1957 - Pressed Steel (2 lots, 3,350, of which 2,350 were vacuum fitted), Derby (3 lots, 2,400, of which 500 vacuum fitted), and Central Wagon (2 lots, 1,000, of which 350 vacuum fitted).
 10 examples are preserved, and Bachmann produce models numbered for a Pressed Steel version (37226F), and a vacuum fitted Derby example (37225D)



Diagram	100	Total built	8,266
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16T rivetted steel with end door.
 6,374 recorded in the 1954 survey and the remainder built in 1950, across 6 builders in total.
 The early '1954' batch were built by Metropolitan Cammell (1,099), Charles Roberts (4,285), GR Turner (660) and P&W McLellan (330).



The 1950 batch were ordered as 1 lot, split between Earlestown (1,142) and New Cross Gate (750). The earliest batch from Earlestown is noted as ex-French government / Ministry of Transport.
 None preserved, but Parkside produce a kit PC27, and Bachmann produce models 37425A, 37450 and 37250F numbered for Charles Roberts examples, and 37425 based on a New Cross Gate example.

Diagram	109	Total built	15,982
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16T rivetted steel with end door; rivetted version of D.108.
 Ordered as 18 lots through 5 builders between 1950 and 1959. Built at Ashford (4 lots, 3,265), Cambrian W&E (3 lots, 4,350), Gloucester C&W (1 lot, 300), Hurst Nelson (9 lots, 6,067) and Metropolitan Cammell (1 lot, 2,000).
 Parkside produce a kit PC54, none preserved.

Diagram	102	Total built	18,450
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16T welded steel with end door, ex-French government and Ministry of Transport.
 Recorded in the 1954 survey, as built by 5 builders. Royal Ordnance Woolwich (11,050), Royal Ordnance Dalmuir (4,500), Birmingham RCW (1,000), Fairfields S&E (500), and Teesside Bridge (1,400)
 Bachmann produced a number of models, 37377, 37253, 37250 and 37450. None preserved.

EAST BEDS MODEL RAILWAY SOCIETY

Mineral
Wagons on
BR to 1962



Diagram	None assigned	Total built	23,793
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16T rivetted steel.

Recorded in the 1954 survey, built by 15 companies. Birmingham RCW (5,412), Butterley (1,750), Cravens RCW (864), DG Hall (150), Derbyshire C&W (250), Fairfields S&E (650), GR Turner (803), Gloucester C&W (750), Head Wrightson (780), Hurst Nelson (1,888), P&W McLellan (1,350), RY Pickering (896), Royal Ordnance Dalmuir (4,370), Royal Ordnance Patricroft (2,080), Teesside Bridge & E (1,8100).

One example preserved, Bachmann models include 37427, 37400A, 37250A, 37426A, B & C, 37250E, 37377A & C

Diagram	108	Total built	206,444
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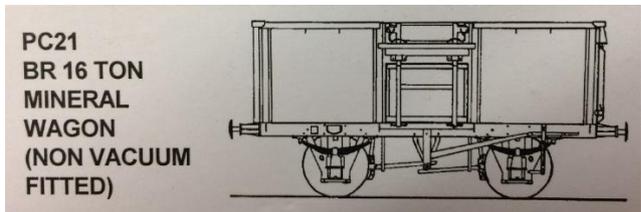
The big one!

16T Welded steel with end door but no bottom doors. Built between 1950 and 1959 by 17 builders allocated in 183 lots.

Birmingham RCW (15 lots, 17,850), Butterley (12 lots, 6,850), Cambrian W&E (13 lots, 8,600), Central Wagon (5 lots, 2,910), Charles Roberts (12 lots, 11,400), Cravens RCW (8 lots, 4,700), Derbyshire C&W (18 lots, 15,461), Fairfields S&E (7 lots, 5,450), GR Turner (6 lots, 1,450), Gloucester C&W (8 lots, 7,150), Head Wrightson (2 lots, 2,100), Hurst Nelson (2 lots, 1,233), Metropolitan Cammell (16 lots, 17,600),

P&W McLellan (13 lots, 11,200), Pressed Steel (22 lots, 71,000), RY Pickering (6 lots, 5,700), Teesside Bridge & E (18 lots, 15,790).

7,700 of the total were provided with vacuum brakes.



Some 99 are noted as preserved (though some are complete rust buckets) and unsurprisingly a large number of models are available. Dapol still produce the old Airfix kit, ref C37, which is reported as a good model. Parkside produce a kit PC21, and PC19 for the vacuum brake version, Hornby ref R243, and Bachmann produce a good number, including 33750, 33751 37078, 37225, 37227, 37250, 37251, 37252, 37253, 37254, 37375, 37377 and a host of -suffix variants



SUMMARY

Builder	Volume	Year	Order
Pressed Steel	77,709	Not recorded	26,108
Birmingham RCW	26,862	1954 survey	59,617
Metropolitan Cammell	26,449	1949	2,350
Shildon	21,324	1950	50,229
Derbyshire C&W	19,661	1951	16,511
Teesside Bridge & E	19,440	1952	21,750
Charles Roberts	17,335	1953	27,451
Cambrian W&E	15,700	1954	27,163
P & W McLellan	15,380	1955	23,851
Royal Ordnance Woolwich	11,050	1956	26,800
Hurst Nelson	10,738	1957	44,970
Gloucester C&W	10,650	1958	6,180
Fairfields S&E	10,200	1959	11,920
Butterley	9,050	1960	1,610
Cravens RCW	8,964	1961	2,085
Royal Ordnance Dalmuir	8,870	1962	4,206
Derby	7,150	Grand Total	352,801
R Y Pickering	7,146		
Earlestown	5,522		
Head Wrightson	4,980		
Ashford	4,111		
G R Turner	3,913		
Central Wagon	3,910		
New Cross Gate	3,657		
Royal Ordnance Patricroft	2,080		
Standard	500		
Faverdale	300		
D G Hall	150		
Grand Total	352,801		

So there you have it - a total of 28 builders, and over a third of a million wagons in 15 years or so, about 60 a day, almost a quarter from Pressed Steel!!

Almost 90% were 16T wagons, and of the hoppers most were operated in the north so virtually all in the south were 'standard' mineral wagons. The 24.5T versions seem to be mainly for power station traffic.

D.108 itself accounted for almost 7 out of 10 of all the new wagons, and if you are modelling in the late 1950s your layout should feature a good proportion of these and just a few of the others. I bet, like me, you ought to get rid of some oddments and replace them with Dapol or Parkside D. 108s!!

If anyone has made models of mineral wagons, with detailing and /or weathering, I'd be interested in a short review and picture to include here, please.

Sources, and much more information available at:

British Railways Wagons, Don Rowland

www.prsl.co.uk

www.ws.vintagecarriagestrust.org

There is also a book available on preserved wagons, published in February by ST Publications at £13

Size	End door	Open	Side & end door	Not noted	Hopper	Grand Total
13T					0.8%	0.8%
16T	79.1%	2.0%		6.7%		87.8%
20T					0.7%	0.7%
21T	0.3%			1.4%	6.6%	8.2%
24.5T	0.6%		0.4%		1.4%	2.4%
Grand Total	80.0%	2.0%	0.4%	8.1%	9.5%	100.0%

ST PUBLICATIONS



UK Preserved Wagons 2018

Includes all Preserved Standard Gauge Wagons
in Numerical Order & by Location

SPECIALIST TRANSPORT PUBLICATIONS

Spotting Books Made By Spotters!



PRE-NATIONALISATION MINERAL WAGONS OF BR

There can't be too many steam era layouts that don't have a mineral wagon or two, in fact most should have many! With the continuing publication of reference books we can get an ever-better picture of the types and uses of mineral wagons such that we could present a layout with a suitably varied selection of wagons, with big or subtle differences. This review is aimed at getting you (me!) to think about your wagons, rather than being a fully detailed listing.

The current series of books being published by David Larkin - The Acquired Wagons of British Railways - is an excellent resource, though it's known (as in many books) there are some typographical and presentational errors. As is oft quoted, data is best gathered from original sources or cross-checked with other published sources. Nevertheless, in my opinion the books are still superb, filled with great reference photos and information.

Volume 2 covers all-steel mineral wagons and volume 3 covers 13T wooden-bodied mineral wagons to the 1923 Railway Clearing House specification. In both books the wagons covered are those placed in the 'common pool' for operation, so certain types or operators' wagons are excluded. The books are apparently the result of decades of data collection by the author, but much original data is simply not available and so some details or identities will never be known.

Together, the two volumes cover some 167,300 builds, of which maybe 138,600 survived to be registered by British Railways. Future volumes are planned to cover pre-Grouping designs. It's a lot of wagons, and for all those layouts depicting early to mid-50s period trains I'll take a punt they have too large a proportion of BR-built 16T minerals.

Some brief guidance notes tell us:

- Steel minerals were renumbered to BR series from late 1949, and was a slow process
- LMS examples received a prefix M, LNER prefix E, SR prefix S and private owner prefix P. There were no GWR examples to the 1923 spec., but steel examples had the W prefix.
- Ex-LMS steel wagons were painted bauxite, ex-LNER steel wagons painted light grey, and Ministry of Transport (MOT) and Ministry of War Transport (MOWT) were also painted LMS bauxite. The ex-Private Owner wooden minerals were occasionally refurbished and appeared in grey with a black panel for the wagon number, but the number so treated were fewer than those remaining in their original livery.
- Many WW2 steel designs were later rebodied with BR Dia. 1/108 body panels with top-flap and end doors, and a number had bottom doors removed. (1/108 was THE standard mineral wagon)
- A plan was put in place in 1954 to identify & largely eliminate wagons with grease axleboxes by 1956, followed by a 1958 programme of wagon fleet reduction, so many early and non-standard types would have gone by 1960.
- As a general rule all 16T minerals lasted into the 1960s, WW2 designs were withdrawn between 1963 and 1967. The 1923 spec wooden wagons were gradually withdrawn during the 1950s, lasting to about 1963 - beyond this a number were retained for loco coal storage at depots.
- In the early 60s the first to go were Dia.1/100, LNER Dia. 188, Hurst Nelson MOWT, and the D1/1112 Metropolitan Cammel wagons that were initially sent to France.
- The records for 21T wagons in particular are lacking (the records used are from a 1962 wagon survey), and some LNER and earlier GWR records are missing too.

The 1923 RCH specification has some interesting observations, for instance, that steel underframes need to be efficiently painted to avoid deterioration, a wooden frame being easier to repair.



Despite such considerations we have seen that tens of thousands of steel mineral wagons were built later on, and they suffered more rot than wooden wagons with all the wet coal sitting on bare steel. There is a pdf of original notes and some good drawings available at www.cs.rhul.ac.uk but selected criteria are as follows for an 8 plank 12T wagon:

- 9' wheelbase and 16'6" over headstocks, 8'6" maximum width
- Planks were referred to as sheeting - sheeting was 15' outside, 14'7" inside measurements, but sheeting could be 2½" or 3" thick.
- Wooden underframes were to be of white oak or similar quality timber.
- Side doors, when down, could go no lower than 8½" above rail level
- Coupling links were to be fabricated from 1½" steel bar with 60-ton breaking point.
- Buffers to be 18" from headstock to buffer face, face to be 12" diameter.
- Oil axleboxes almost exclusively for 12T and larger, though exceptions for tipping wagons.
- Axles to be 5½" at the wheel boss, tapering to 4⅞" at the centre of the axle.

Despite criteria for dimensions and strength there was a good amount of leeway for each manufacturer to have their own house style above the solebar.

Wagon building from 1923 to 1930 amounted to between 3,000 and 4,000 each year for the 1923 wooden specification, then fell off completely for a couple of years; steel wagons amounted to about 180 per year in this period. From 1933 production picked up again - about 2,100 wooden wagons per year - but steel wagons started strongly and then tailed off as the war came closer. Again, very few wagons were delivered in 1940/41. Availability of materials during the war, plus approvals required from the Ministry, would have naturally impacted the build programme. But from 1942 matters were improving with 4,500 (mainly steel) wagons built around 1942/43 and then the Ministry stepped in with a large build programme. Around 82,000 Ministry steel wagons were built between 1944 and 1949, and the LMS and LNER were also authorised to build 7,500 wooden mineral wagons in 1945/46. Of those Ministry wagons, some 9,300 were sent to France to aid their economy, but were repatriated around 1951 as being unsuitable - too small - for the French.

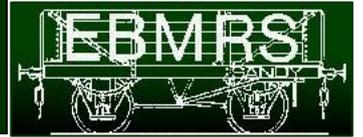
There were up to 50 businesses building wagons before the war, and one can see a pattern of wagons growing from 12T 7-plank to 13T 8-plank into the 1930s, and steel-built wagons growing from 14T to 16T and 20T. The LMS built (with some outside help) about 43,000 wagons (of which 6,500 were steel), Royal Ordnance factories built 22,000 steel wagons, Metropolitan Cammel built nearly 13,000 mostly steel wagons and these already add up to nearly half the overall total. Charles Roberts (12,500), LNER (10,800) and BRCW (9,500) were the next biggest producers and the remaining 1/3rd of production was spread between the others, a number of which produced 100 or fewer wagons. Only a few firms produced both steel and wooden wagons, most sticking to one type or the other.

Of the wooden wagons, some firms ordered as few as a single wagon, but Maltby Main Colliery ordered more than 1,300, Stewarts & Lloyds 930, Stanton Ironworks 600 and Denaby Main Colliery almost 500. Of the steel types, around 40 firms made mainly small orders of between 2 and 50 wagons, a couple of larger hire fleets but the vast majority were the Ministry wagons.

If one looks at all the model wagons available on the market, there's probably hundreds of private owner-liveried wagons available, so I've generally steered clear of reviewing those. However, I have compiled a selection of kits and some RTR as an overview of what's produced, both currently and on the second-hand market, mixed with some views of original wagons.

Private Owner 1923 specification

Parkside	PC75	5 plank	Parkside	PC69	7 plank	Parkside	PC73	7 plank fixed ends
----------	------	---------	----------	------	---------	----------	------	--------------------



		
Parkside PC71 8 plank	Slaters 4061 7 plank side & end doors	Slaters 4060 7 plank side door
		

I also found a 7 plank end door wagon by Ian Kirk, ref 8822. Cambrian also produce two underframe kits for those wishing to add their own body kits.

- Cambrian C035 Steel underframe 16'6"
- Cambrian C034 Wood underframe 16' 6"

For the railway companies themselves we can see a variety of Diagram numbers as an aid to identification of type.

Great Western Railway

The GWR had a broad range of steel wagons, many of which were allocated to loco coal duties and some dated back to about 1903.

These included diagrams N2, N19 to N24, N27 to N32 and N34, with N2 and N32 contributing more than half the total noted. Many N32 and N34 types were built for clients and rental.

Cambrian C064 N14 40T bogie loco coal, a big beast for big loco sheds



N27 Loco coal



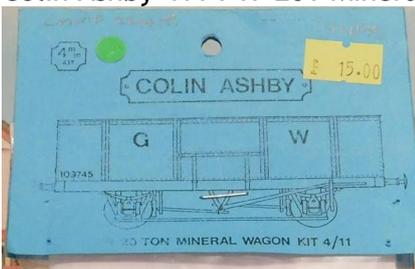
Cambrian C2 N30 10T loco coal



Cooper Craft 1002 N13 loco coal





<p>Stafford Road Works N28 Loco Coal body</p> 	<p>Stafford Road Works N23 Loco coal body</p> 	<p>Ian Kirk 8803 N23 loco coal</p> 
<p>Colin Ashby 411 P17 20T Mineral</p> 	<p>Stafford Road Works N34 Loco coal body</p> 	<p>N34 at Didcot</p> 

Further examples include -

Blacksmith 401011	Loco coal	N23/24/27/28/31/34	Loco coal
David Geen W/015	Loco coal	N6	Loco coal
Keyser / K's -	Loco coal	N11	Loco coal
Keyser / K's -	Loco coal	N24	Loco coal
Parkside -	Loco coal	N19	Loco coal - suggested new introduction
Keyser / K's	Mineral	?	Mineral wagon
Kirk - Colin Ashby	Mineral	P23	20T mineral D.P23

London, Midland & Scottish Railway

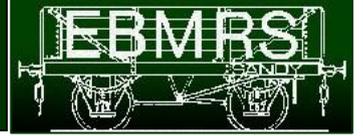
More than 36,000 wooden types were built to diagrams 1671, 2038, 2061 and 2102, with some of the Dia. 2061 moving to general goods use, noting that the Southern built 5,500 Dia. 2102 for the LMS. 5,500 steel types were to Dia. 1973, 2106, 2109 and 2134 with 850 loco coal to Dia. 1974

<p>Chivers RC440 1974 loco coal</p> 	<p>Cambrian C8 2109</p> 	
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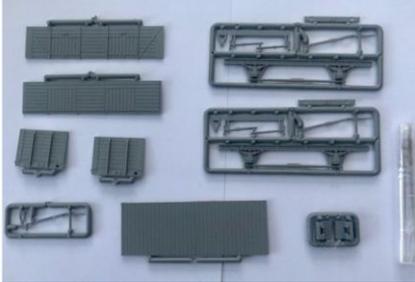
Also, ABS/Fourmost ref 655, Dia 2038 7 plank loco coal

London & North Eastern Railway

10,800 to diagrams 10 and 63 were built in-house, plus 1,850 to Dia. 192 built by the Southern Railway, all wooden wagons, and a further 8,500 steel wagons to Dia. 188, 125, 207 and 97, again some Dia. 188 also built by the Southern Railway. Some of the wooden wagons were reallocated to general goods use.



Chivers RC442 Dia77 loco coal



Ian Kirk 8804 Dia - likely Dia.77 8 plank 20T loco coal



Parkside PC31 Dia207 21T loco coal



Stafford Road Model Works Dia125 20T body to fit Dapol chassis



Cambrian C10 Dia188 16T



Dia 207



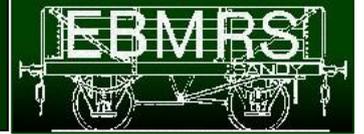
The Ian Kirk kit was also produced under the Colin Ashby label

This fine portrait appears to be of a LNER Dia 077 20T loco coal wagon.



Southern Railway

900 wooden wagons were built to diagrams 1384 and 1390, and fortunately I can cross-reference with Southern Wagons Pictorial (Mike King); withdrawals of Dia. 1384 started in 1952, with 40 of the



original 200 remaining at 1958 and just 6 by 1961. Dia.1390 were basically the same as the LNER Dia.192 built by the SR, and 81 of 100 were still in service in 1961. Intriguingly the 989 wagons of Dia. 1386 built by the Southern do not appear in the David Larkin books, for reasons I'll probably only discover years from now!

Chivers RC447 Dia1386 20T

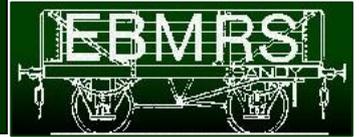


This appears to be the same wagon type as produced by Ian Kirk (ref 8824) & Colin Ashby

The remaining types of steel wagons that can be 'classified' are as follows, and these include the British Railways allocated diagrams 1/100 to 1/113. These were originally covered in my article on mineral wagons in Newsletter 24, but additional information came to light in the books mentioned.

British Railways allocated diagram numbers to the wagons built for the Ministries during and after the war and continued the numbering sequences when ordering its own wagons.

Type	Built for...	Number built	Years built
'Early' design	5 clients	21	1925 to 1936
Butterley design	13 clients	1,190	1935 to 1939
WW2 designs	24 clients	3,327	1939 to 1946
Hurst Nelson design	5 clients	612	1943 to 1945
Cambrian design	9 clients	445	1943 to 1945
		This example is a little worse for wear!	
Dia. 1/100 Charles Roberts	13 clients Ministry	11,123	1939 to 1947
Based on the Charles Roberts design with slope sides, the doors could be pressed steel, rivetted or welded. A separate numbering series was allocated to those returned from France, B197000 to B198891			



Parkside kit PC27



Bachmann produce, at least, models 37425 and 37-450 in BR livery



These Bachmann models all appear to be based on the Charles Roberts diagram 1/100 design, though the Boston Deep Sea Fishing wagon (top right) has different style doors, and the Stewarts & Lloyds wagon has none - these particular wagons were non-pool and so do not feature in the books.

Dia. 1/101 Hurst Nelson
Dia. 1/113 Hurst Nelson

Ministry
To France

680
208

1944 to 1945

The same wagon design, but 1/113 allocated to identify those repatriated with a separate numbering series too for the French wagons - 199000 to 199308 (as 208 wagons were noted as returned, I cannot confirm whether there was a printing error or perhaps a number range coincidence). These are similar to the earlier Hurst Nelson design noted in the table above. Rivetted body, pressed steel doors, double brakes

Dia. 1/102

Ministry

25,150

1946 to 1949

The same as 1/101 except a welded body and different doors

Bachmann models numbered as 1/102 include 37-250, 37-253.
However, 2 examples (37-377) appear to be wrongly numbered for 1/102, as they have flap doors on the model



Dia. 1/103

Ministry

5,750

1946 to 1948

Rivetted body and very similar to 1/101

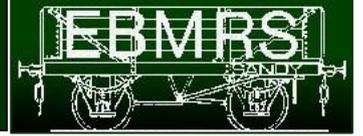
Dia. 1/104

Ministry

16,001

1948 to 1949

Welded version of 1/103 but the design has introduced flap doors above the side doors



Bachmann models include 37-226C and 37-377, but 37-250D is numbered as a 1/104 wagon and is modelled without flap doors when it should have them.



Dia. 1/105	Ministry	5,949	1948 to 1949
Riveted version of 1/104 with flap doors			
Dia. 1/112 Charles Roberts	Ministry	6.982	French repatriations
Different to other diagrams, straight-sided with cupboard-style doors, continental style buffers and axleboxes All built by Metropolitan-Cammell, a separate number series was issued - B190000 to B196999 Parkside kit PC22			

Wagons could come with all manner of door arrangements - I've counted 16 variations of numbers of end doors (none, one or both ends), bottom (up to 4 doors) or side doors (1,2 or 3 each side), when one includes the larger 21T minerals. Proportions of the volumes noted were thus:-

- Side, single end, bottom doors - 76% general use
- Side and single end doors - 7% general use, but many in south Wales
- 2 side, single end, no bottom doors - 7% general use
- Side doors only - 6% general use, but a large number for Stewarts & Lloyds Corby Steelworks traffic with its rotary tippler
- 2 side doors only - 3% general use
- 11 other variations, including:
 - End door only - less than 1%
 - End & bottom doors only - for end tipping e.g. at civic electricity & gas works
 - Side & bottom doors only - Often for loading into steam fishing boats, power stations
 - Likely concentrated in areas using coal drops





As well as the main 16 combinations of doors, there were further variations. The London trades had an agreement over the height of the wagon sides for workers unloading coal manually, so you can see some wagons with the 'London Plank', a reduced height plank above the side doors. Some of these wagons could be refurbished and a full height plank substituted. The London Plank was outnumbered by those with flap/cupboard doors which could be 1 or 2 planks. Some had low height doors, and any of the doors could be sealed shut dependant on the traffic it was assigned to work. Doors on some steel wagons were changed to differing styles. Coke wagons were no different but had the added variations of being up to 10 planks, or having 2 or 3 raves either fixed or removable, and some were conversions of minerals - even retaining a London Plank below the raves! Coke wagons amounted to around 1,200 of the 167,000.

This Bachmann model of a coke-conversion of a MOY mineral wagon is rather attractive, to my eye. Faded MOY livery, repaired planks, unpainted raves and the black panel with the new P prefix number all add to a model with some character. A photo of this wagon appears in the Volume 3 book in 1952 before the coke conversion, showing the original London Plank. Built by Charles Roberts in early 1938, originally MOY wagon number 9716. Withdrawal came in 1962.



And if one is really committed (or should be!), Rumney Models produce etched underframe kits for the late-40s design steel minerals with BR diagram numbers. I hope some of this is inspiring to model something with a touch of additional character - and if you've done so, perhaps you could be persuaded to share it here - even if it's only a photo!



FURTHER OBSERVATIONS ON STEEL MINERAL WAGONS

In looking at the variety of kits and ready-to-run models I have for this basic type of wagon, I became quite aware of how much I didn't know. I'd already presented a general overview of BR-built steel mineral wagons in Newsletter 24, and those that BR inherited in 1948 in issue 45 in a bit more detail, but what else is there?

I have books covering LMS, LNER and BR wagons, plus there's websites such as Paul Bartlett's photographs, and support notes on Rumney Models and Barrowmore Model Railway Club's web pages. The latter has many diagram books scanned, and so dimensional drawings can be reviewed. An appeal on Facebook found me a (mostly readable) copy of the 3 parts on mineral wagons published in Modellers Back Track in 1991, amongst other snippets.

The three principal books I've used are -

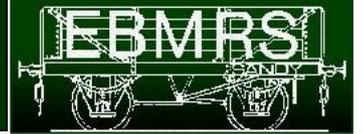
- An Illustrated History of BR Wagons, OPC 1985
- British Railways Wagons: the First Half Million, 1985
- The Acquired Wagons of British Railways Volume 2, OPC 2019

The first thing I'd say is that I was already aware the Acquired Wagons books have typographical errors. Secondly, the other two books were both produced in 1985 and also have errors and conflicting information! For example, in the Illustrated History one range of wagon numbers amounted to 150 wagons but the total is stated as 250. The conflicting information is with regard to diagram 108 and 109 wagons - in the First Half Million some are listed as diagram 108 (welded construction), whereas in the Illustrated History those same ranges are stated as diagram 109 (rivetted construction). This is partly qualified by a statement that some of the diagram 108 wagon build was allocated to Cambrian Wagon Works, which only ever produced rivetted wagons. Furthermore, many of the pre-Nationalisation wagons are quoted in the First Half Million as non-determined diagram types, but the other two books are specific about each type. More than once, the Modellers Back Track articles are stated as the best source of information. It's a bit of a minefield, and therefore, whatever I write from here on you should treat with caution!!! With some necessity, some of the information here is repeated from the first part of this article.

That has been the beginning of the story, and I next reviewed the drawings available on the Barrowmore site. One of the aspects I kept in mind was that although I would like the models to have some accuracy, reviewing for any potential refinements, the unavoidable fact is that they're running on 16.5mm track. If I can accept the 'narrow' gauge, then other minor discrepancies should be less important!!

Body style variances

The following table summarises the number of each wagon type by 4 blocks of basic body styles and the brake types (as built), where I have assigned a letter code to each style. These codes are used with the accompanying drawings or photos of each style. Following these tables there's a description of each type.

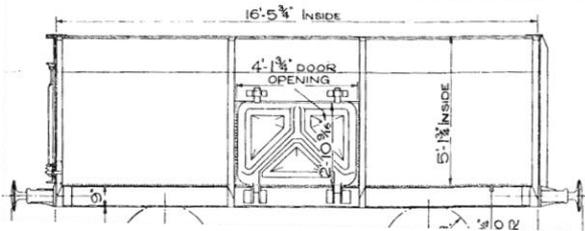


Riveted, plain top edge											
	Diagram	100	112	LNE 188	Hurst Nelson	101	103	104	105	108	109
Brakes	Double brake	11165	6982	7200	781	888	7272	1400	4727		500
	Morton									754	23075
	Vacuum clasp									44	
Doors	Body style	A	E	B	B	B	D	C	D	C	D
	Side doors	A	G	C	E	B	C	D	E	D	E
	End doors	A		F	H	B	C	D	D	D	C/D
	Top flap doors	No	No	No	No	No	No	Yes	Yes	Yes	Yes

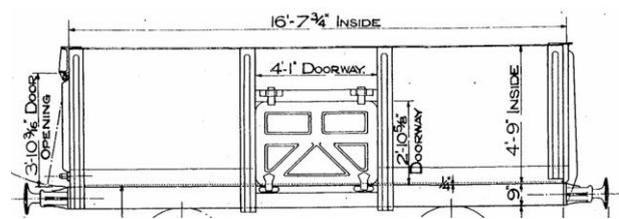
Welded, channel top edge												
	Diagram	LMS 2109	102	LMS 2134	104	106	108	109	111	114	116	117
Brakes	Double brake	2600	21600	3500	16350	2000	1300		1500			
	Double or Morton						3000					
	Morton					800	186061	1233	2900	200	100	74250
	Vacuum clasp						6300	206		100		1000
Doors	Body style	C	C	C	C	C	C	D	C	C	F	C
	Side doors	H	C/H	D	D	D	D	E	D	D	E	F
	End doors	G	C/G	E	D	E	D	C/D	E	E	D	E
	Top flap doors	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

BODY STYLES

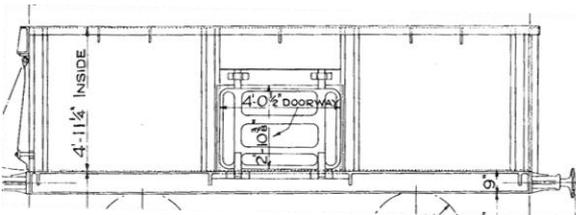
A Diagram 100



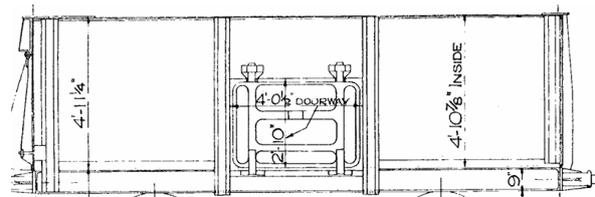
B Diagram LNE 188, 101/113, Hurst Nelson



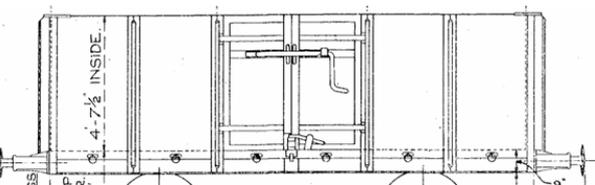
C Diagram LMS 2109, LMS 2134, 102, 104, 106, 108, 111, 114, 117



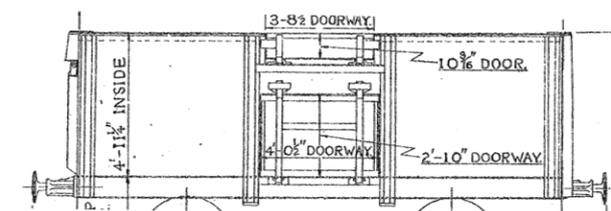
D Diagram 103, 105, 109



E Diagram 112



F Diagram 116



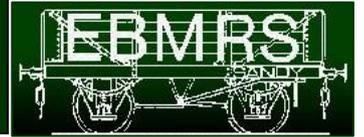
SIDE DOOR STYLES

A Diagram 100

B Diagram 101/113

C Diagram 102, 103, LNE188

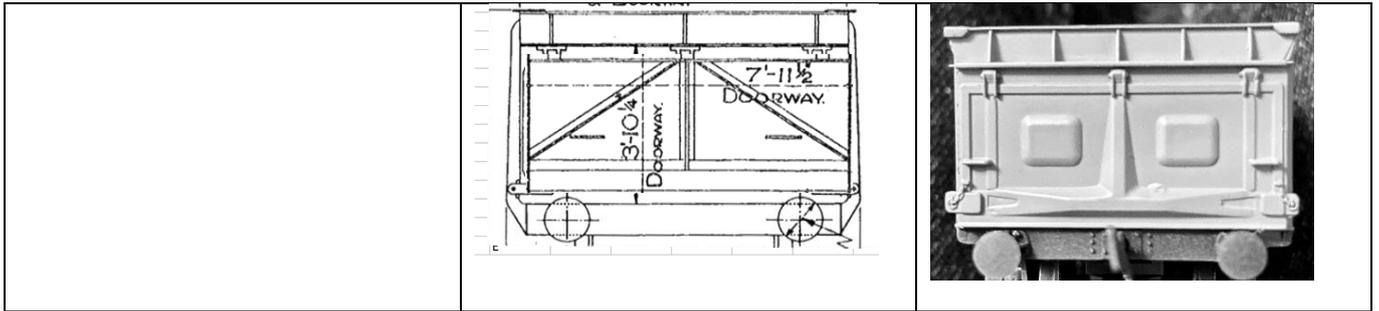
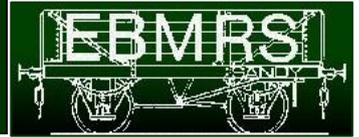
D Diagram LMS 2134, 104, 106, 108, 111, 114,



<p>4'-1 3/4" DOOR OPENING</p> <p>2'-10 3/4"</p>	<p>4'-1" DOORWAY</p> <p>2'-10 3/4" DOORWAY</p>	<p>4'-0 1/2" DOORWAY</p>	<p>3'-8 1/2" DOORWAY</p> <p>4'-0 1/2" DOORWAY</p> <p>2'-10 3/4" DOORWAY</p> <p>4'-0 1/2" DOORWAY</p>
<p>E Diagram 105, 109, 116, Hurst Nelson</p> <p>4'-0 1/2" DOORWAY</p> <p>2'-10"</p>	<p>F Diagram 117</p> <p>3'-8 1/2" DOORWAY</p> <p>2'-10 3/4" DOORWAY</p>	<p>G Diagram 112</p>	<p>H Diagram LMS 2109, 102</p>

The LMS 2134 wagons were built in 2 lots, of 1,900 and 1,600. Both lots had doors in the styles shown (above and on next page), but the 2nd lot had both end and side doors of rivetted constructions instead of welded - despite having welded bodies.

END DOOR STYLES		
<p>A Diagram 100</p> <p>4'-0 1/4" DOOR OPENING</p>	<p>B Diagram 101/113</p> <p>7'-11 1/2" INSIDE & DOORWAY</p> <p>3'-10 3/4" DOORWAY</p>	<p>C Diagram 102, 103</p> <p>3'-10 1/4" DOORWAY</p> <p>2' TOTAL HEIGHT</p>
<p>D Diagram LMS 2134, 104, 105, 108, 109, 116</p> <p>7'-11 1/2" DOORWAY</p> <p>3'-10 1/4" DOORWAY</p>	<p>E Diagram 106, 111, 114, 117</p> <p>7'-11 1/2" DOORWAY</p> <p>3'-10 1/4" DOORWAY</p>	<p>F Diagram LMS 2109, 102</p> <p>No drawing, so a picture from the Cambrian kit</p>
<p>G Diagram LMS 2109</p>	<p>H Diagram Hurst Nelson (my approximate drawing)</p>	<p>J Diagram 109</p> <p>No drawing, so a picture from a Bachmann wagon</p>



Comparing the diagrams

All are 9' wheelbase, 16'6" over headstocks and 19'6" over buffers.

Wheels

All are 3-hole disc, either 3'1" (12.33mm) or 3'1½" (12.5mm), so there's only 0.17mm variance. Romford and Gibson wheels are sold as 12mm, Hornby and Bachmann are sold as 12.6mm.

It was not unheard of to find a wagon emerging from works with one axle of 3-hole disc and one axle of spoked wheels.

Buffers

All are 13" heads

Bodywork

Internal lengths vary from 16'5 and a bit to 16'7¾" - only 0.85mm variance at 4mm scale - whilst widths are, to all intents and purposes, identical. Internal height is 4'9" to 4'11 5/16th, only a 0.75mm variance. Rivetted wagons had a thin lip to the top of the bodywork, welded wagons had a channel lip.

End doors

Vary only between 3'10" and 3'11" high, a negligible difference. Doors could be fabricated - either welded or rivetted - or pressed, of various patterns, and doors were often changed on works visits with whatever might be available, it seems.

Side Door opening

Widths are all either 4' or 4' 0½", heights between 2'10" and 2'10 5/8th. As with the end doors, they could be fabricated or pressed and interchangeable as above.

Flap Doors

All the same width. The height varied by only ½"

Aside from the diagrams 100 and 112, all that means (to my simple mind) that the basic dimensions of the 'box' are virtually indistinguishable from each other at 4mm scale, and it's then the individual styling that separates them.

Brakes



The Morton Brake was a design to utilise a brake lever on either side of the wagon, but the brake itself was fitted only on one side. On the opposite side, the brake lever operated a cam to reverse the direction of the operating bar beneath the wagon. The bar welded to the V above the cam was a common repair.

Double-braked meant there were independently operated brakes on each side of the wagon, so there was no cam and no connecting bar beneath the wagon - therefore you would (generally) find wagons with bottom doors were double-braked and those without bottom doors were Morton-braked.



The vacuum-braked examples seem to be pairs of brake shoes on each wheel operated by a vacuum cylinder via sets of pull rods - much more complex for modelling. This picture from Rumney Models shows a chassis and brakes under construction



Diagram 100

These are the slope-sided mineral wagons. It's a Charles Roberts design going back to 1939, at which point it's believed they were rated at 12T, but most subsequent production was rated at 14T and then updated to 16T. The side doors could be pressed or fabricated. These also had bottom doors. Around 2,400 were built for the private market, then from 1944 the Ministry of War Transport ordered up to 7,500, of which around 1,900 were initially deployed in France. Under British Railways ownership, those ordered by the MoWT retained their allocated number but with a B prefix. Those repatriated from France (in 1950) were numbered in the B190,000 range, and the ex-private wagons were allocated a P-prefix series number.

Bachmann and Parkside produce models; the Parkside kit has spare side doors of different patterns (A and D).

Diagram 112

Metropolitan Carriage & Wagon Co. built 7,000 of these wagons in 1944 to an individual design, all of which went to France and almost all repatriated in 1950, also then numbered in the B190,000 range. France didn't like them, principally all the British-built wagons were deemed too small once they'd managed their post-war economic recovery.

These had cupboard-style side doors only. It had an underframe of standard RCH design, but what's described as a 'decidedly French-style body', with various 'continental fittings' and screw couplings. Although the wagons went through a reconditioning at BR's works, some were still to be seen with their SNCF number and some of the continental fittings - one photo showing three conventional buffers and a single continental buffer, and lashing rings on the base of the body.

Parkside produce a kit.

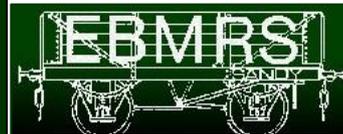
Diagram 101 and 113

Described as similar to the LNER D.188, with an underframe similar to the Diagram 100. 888 built in 1944-1945, 309 were sent to France and repatriated in 1950. For an unexplained reason the French vehicles were classed as Diagram 113, despite being the same as the Diagram 101. The 101s were numbered with a B prefix, and the 113s were numbered in the B190,000 range. These were built with pressed doors which had an appearance of being fabricated due to the narrow nature of the pressing.

No models available, but I ponder the possibility of adapting the Cambrian Diagram 188 kit.

LNER Diagram 188

The LNER was given authorisation from the Ministry of Transport to construct steel minerals. 7,200 examples were built by a number of contractors between 1945 and 1947. They retained their original number series after nationalisation but with an E prefix.



The side and end doors were a pressed design when built, and these also had bottom doors. Cambrian Models produce a kit.

LMS Diagrams 2106 and 2109

The LMS was also authorised to build mineral wagons. The D.2106 was the prototype (one built in 1946) and for the following 2,599 in 1946/1947 Diagram 2109 was allocated, despite it being the same design. M prefix was added to the running numbers.

Cambrian Models make a kit, which usefully has spare doors for pressed or fabricated design (styles H and D)

Diagram 102

A further example described as similar to the LNER Diagram 188, but in this case the body is of welded construction.

21,600 of these were built as a Ministry of Transport between 1946 and 1949, and the pressed doors varied dependant on manufacturer but equally may have been replaced by fabricated doors (D) later on.

Bachmann have produced a number of examples with fabricated or pressed end doors.

Diagram 103

A final example noted as similar to LNER diagram 188. This is of rivetted construction, and could have fabricated or pressed doors.

7,272 constructed to Ministry of Transport orders between 1946 and 1949, and numbered with a B prefix.

No models available unless one attempts a Diagram 188 conversion.

LMS Diagram 2134

This is basically the Diagram 2109 but with the addition of top-flap doors. 3,500 built to this diagram in 1948/1949.

Bachmann has produced a few with this identity, as they are basically very similar to the Diagrams 104/106/108.

Diagram 104

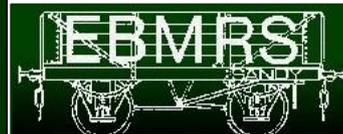
As just mentioned, these are very similar to the LMS diagram 2134. 16,500 were built from 1948 to Ministry of Transport orders, then in 1950 1,250 were built under British Railways orders.

Amusingly, although this diagram is for a welded body, 1,400 were built by Cambrian Wagon Works which built only rivetted wagons (does that make them a diagram 105? !!). Most ran with fabricated end doors, but some were seen with pressed doors. All were double-braked.

Bachmann has produced a few models numbered in this class.

Diagram 105

In 1948/49 some 4,727 were built to MoT orders. Suggested as a rivetted version of the D.106. Designed with fabricated doors but some seen with pressed doors.



No models that I'm aware of, but the Diagram 109 model by Accurascale, or Parkside kit, should be a good basis to work from.

Diagram 106

2,800 of these built in 1950 & 1951. This is basically a British Railways copy of the LMS Diagram 2134, so has a channel-topped body with top flap doors.

Bachmann has produced various examples.

Diagram 108

The Big One, with 200,000 examples constructed between 1950 and 1959.

Described as a Diagram 104 but without the bottom doors. Welded construction except, again, some were built by Cambrian Wagon Works and so were rivetted - which, as noted earlier, technically makes them a Diagram 109! Sources suggest that very few were ever seen with pressed doors.

Bachmann has produced a range of examples, Parkside has kits for Morton-braked and vacuum braked versions. Airfix/Dapol kit is for the standard Morton version.

Accurascale's range has vacuum and Morton examples, plus variations on doors, buffers and brake levers - some of which were a pressed design. The detail on these is superior to any of the others.

Ones to avoid (for Finchley) are the old Mainline mineral wagons, which were designed to fit a 10' wheelbase and consequently had a scale 17'6" body too. These could be more accurately classed as representing Diagram 1/099, a version of the mineral wagon introduced around 1968 on second-hand chassis.

Diagram 109

This is a rivetted version of the Diagram 108, also built between 1950 and 1959.

Strangely, some examples were built welded! The design shows fabricated doors, but it seems pressed doors were actually more usual.

Models are available through a Parkside kit, and Accurascale.

Diagram 111

This is suggested as identical to the Diagram 106 but without the bottom doors, and therefore also basically the same as the LMS Diagram 2134.

Some Bachmann models are numbered for this diagram.

Diagram 114

A further version of the Diagram 106, but designed as vacuum-fitted with clasp brakes - yet most were built unfitted. It has been suggested that despite British Railways' desire to work with the National Coal Board towards greater efficiency with fitted wagons, the NCB dragged its heels and British Railways then lost faith and what fitted wagons there were often worked in unfitted trains.

Some Bachmann models are numbered for this diagram.

Diagram 116

A vacuum brake fitted version of the 111, but of aluminium. Only 100 built, and the experiment was not continued.

Diagram 117



Principally the same as diagram 116 but with an additional 2 cubic feet capacity. Also fitted with hydraulic buffers. Some reportedly also fitted with clasp brakes but non-vacuum fitted.

It's worth making the observation that wet coal was acidic and would speed the rotting of the steel. A body would last perhaps 15 or so years before needing attention, so some of the older wagons could have large portions of the bodywork re-plated, so would display weld lines and different colourings. And if the body was too far gone, the chassis could receive a whole new body, usually of diagram 108 style - so an early rivetted wagon with no top flaps could reappear as standard welded version with flaps. A couple of Bachmann wagon numberings suggest they represent such examples. Furthermore, there was the rule that when viewing a wagon from the side with the brakes, the end door would be on the left. This was the rule generally, but it was not unknown for wagons to visit works and emerge with the body reversed!!

Finally, I've seen it asked what the inside of the wagons looked like. The answer given was to watch 'The Ladykillers', as these screenshots will attest! (some are from outtakes, found on youtube) I also found a couple of others in books. It's worth keeping your eyes peeled...



