

BR Iron Ore Tippler Underframe Parts Dia 1/180 and Dia 1/181 Unfitted High sided 9 feet wheelbase

WSio9_4

AVBIS Moving
Engineering Modelling closer to the prototype
in operation and appearance.



These notes are a product of their time - 1996/7.

A tippler photographed on a preserved railway (Cottesmore) which had come from a non mainline or internal user wagon, probably from Corby.

Assembly Suggestions

Please read through before proceeding

1. Clean up etching carefully so as not to bend parts, but to allow easy soldering. Remove parts as required, note the small parts are generally attached to a removable framework within the main chassis etchings.
2. The solebar parts fixed "on edge" should be fettled very gently to allow an even flow of solder. (You can glue the parts together if you wish but we do not recommend that form of construction).
3. Decide what details you are going to use. The variations are as follows:

Axleboxes, Three axlebox faces are supplied of attaching to a "block" with a hole for bearings in it. (Other variations in axleboxes cannot be etched onto a flat sheet.)

Buffers, (these are not supplied with the basic parts) With long buffers (20") you should use alternative coupling pocket and hook extension tube.

Solebar details i.e.

Bump stop for springs (etched fold up part 6) or tube section (not supplied)

Label clip, (possibly missing)

Wooden (?) block, (not always fitted ?)

Makers number plate (fixed in different locations)

Paint date plate - between Vee (one side only)

Spring hangers - etched parts as supplied or use castings ?

Stiffening ribs (previously thought universal on 10 feet wheelbase chassis does not appear universal after all (see notes))

Push out rivet details where this do not prevent details from fitting - probably some rivets at left hand side of solebar units.

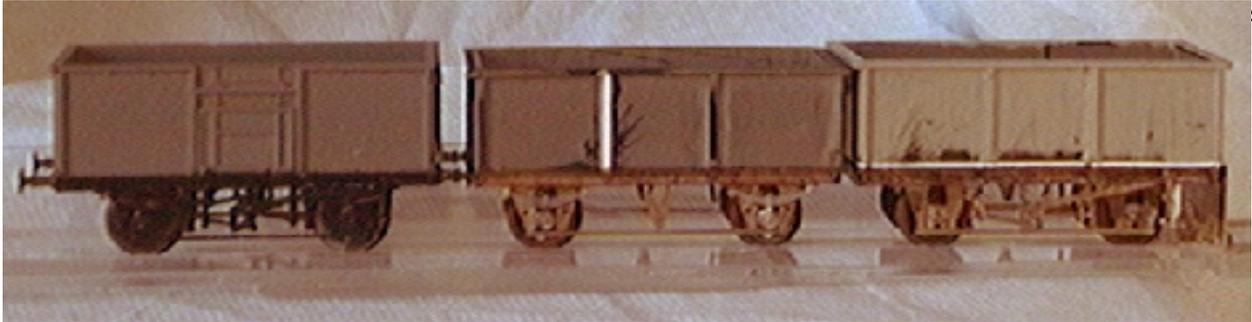
Axleguard details

How many holes in axleguards are required ? - if two make second hole at half etched point.

If sliding axleboxes are to be used cut out fixed part and add in oval slot section using part 16 on 9 feet wheelbase etch, or part 27 on 10 feet wheelbase etch.

On 9 feet wheelbase parts bearing part can be cut out and strengthening/bearing surface folded up along etched line in axleguard.

What you do will depend on which supplier or type of axleboxes you are using or if you are using sliding axleboxes.



Sample Iron Ore Tipplers under construction

Left LMS Diagram 2153 - standard mineral wagon body with welded doors, BR -D1/183 - low sided 10ft wb and BR- D1/180 high sided 9ft wb. BR wagons used MTK plastic bodies, cut down to correct length, high sided body formed using extra 040/1mm base.

Prepare those parts for fitting at the appropriate stage of construction.

5. Prepare the four main parts, top (3) and bottom (4) chassis parts and solebar & axlebox units (1).

Fold up top section Vees and middle bearers fold completely over brake lever guide support

Push our rivet details on lower chassis section (spring shoe fixings)

Add coupling pockets to headstock.

Fold up headstock sections on lower chassis part.

6. Attach details to solebar sections:

Wooden block(10), Label clip (19), Makers number plate (20), Paint date plate (5) (one side only)

Stiffening ribs (26) - for 10 ft only - fold up reverse to normal process - away from half etch

Note all details must not infringe top or bottom edge by half metal thickness this prevents solebars from being properly located in chassis framework.

7. Fold over axleguard units and top section of Vee hangers, fix in place. Both parts should have joggle of 1" backwards towards centre of vehicle just below the solebars. This can be done by squeezing between metal plates (.010" is three quarters of an inch - thickness of metal etchings supplied). This joggle can be important to free running using pinpoint bearings but it will depend on what combination of bearings and axles you are using.

Placed upside down fix the solebar sections (1) to the chassis top part(3), using the lower section to locate.

Fold brake lever guide support over to attach it to lower chassis framework.

Check if the solebars need fettling to fit between headstocks.

Fix the P shape brackets (11) to half etched lines on underside of top chassis framework.

Then fix lower chassis section in place(4).

(Optional fitting) Add spring shoes(9)

8. Add outer Vee lower section (2) after bending and folding over and fixing thickening washers.

Fold up thickening washer on brake lever and fold lever to shape.

Fold up brake lever guide (15) and attach to support bracket and axleguard.

Attach brake lever (12) to Vee (use rod not supplied).

9. Fold over and bend lifting link (18) to wrap around end of brake lever. Fix to Vee hanger using rod (not supplied).

Fit wheels (3 hole disc, 3feet 1 inch diameter) and bearings (not supplied) to allow for deciding location of brake blocks.

10. Make up push rod/brake block units (13, 7 & 14). Fold up spacers/strengtheners on push rods, sandwich brake shoe details and centre tumbler details.

11. Start to make up safety loops, breaking tab and folding at etch marks. Move loops if necessary to fit track gauge/wheel standards.

12. Attach brake hangers (17) to upper chassis members after folding to shape, in line with wheel treads.

13. Attach push rod assembly to hangers and behind Vees (use rods not supplied). Finish safety loop assembly around push rods and fix to middle bearers.

- NB Nickel-silver is not very tolerant to more than 1 or 2 bending attempts and will break if too many bending tries are made.

14. Attach coupling hooks (24), make up top and bottom links (or use your preferred source) and make up the centre instanter link(21) . No provision has been made for any other coupling system.

15. Add buffers, axleboxes, springs.(not supplied)

NOTES

We suggest using some form of impact adhesive to attach wagon body as any small overflow of glue will look like the weld line around the body sides. The chassis floor framework has been made just a bit larger than the body to provide that small lip formed by this form of construction.

Any excessive heating of the chassis framework is likely to distort it, not allowing a body to sit properly. If uncertain about this fix the parts down to a flat panel in the inside of corners of the framework near buffer mounting points - use cheeseheads screws or bolts and washers.

If any corrections to the basic chassis need to be undertaken before adding details, make a block with two slots in it the width of the axleguards, at least 4 inches long (to allow for 12 feet wheelbase vehicles). This jig can then be used to approach the chassis construction from above.

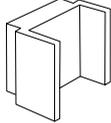
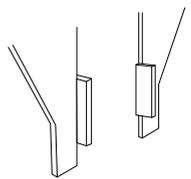
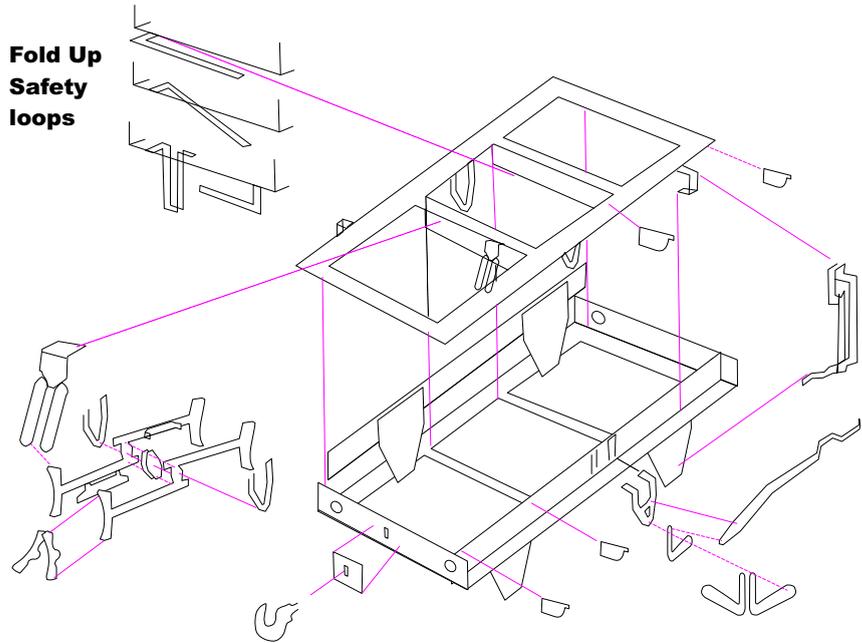
- NB. It is very difficult to undistort an assembled chassis. At best it may be fixed to a stronger flatter surface.

Many of the construction steps can be quite quick once the method has been absorbed.

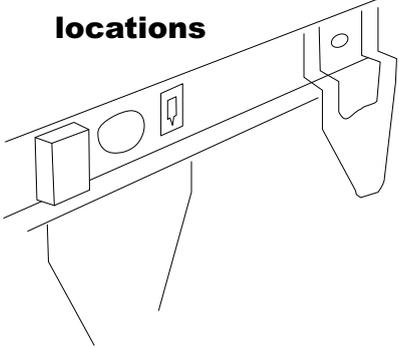
We would advise most model wagons to be weighed at at least 1.5 oz., preferably nearer to 2 oz. (This is still light compared to a cast white metal van kit). As most of the underside of the floor of the wagon is clear this should not present a particular problem to bring the wagon up to this weight. If it is use a false wagon floor and add weight in under the false floor.

- Alan Austin June 1997.

GENERAL CONSTRUCTION ALIGNMENT DETAILS

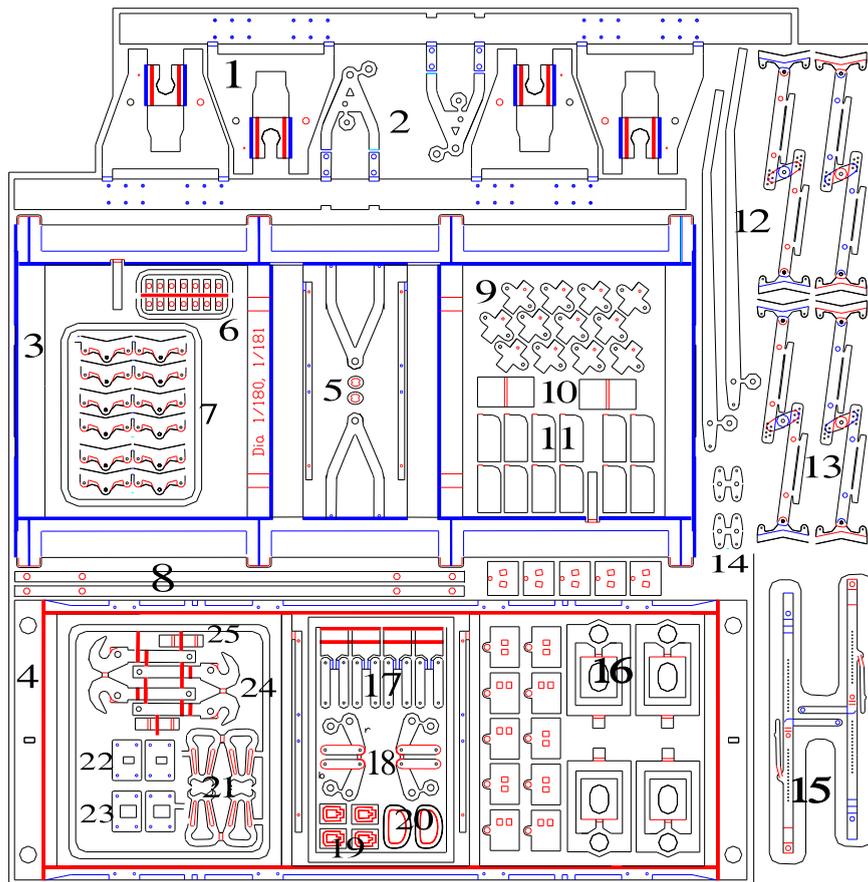


Usual Solebar detail locations



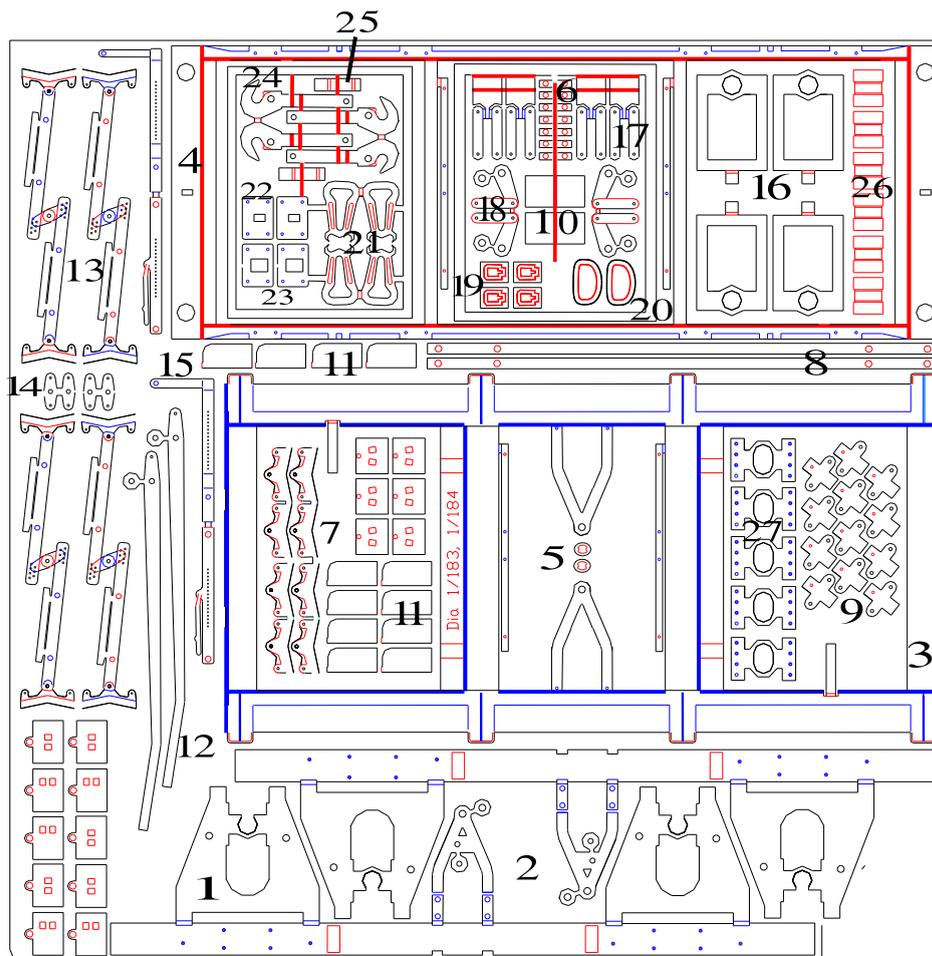
List of Items Supplied on 9 feet Wheelbase Etching.

Part Number / Description	Part Number/ Description	Part Number/ Description	Part Number / Description
1 - Solebar/Axleguard Unit	7- Brake Block details	13 - Push rods	19 - Label clip
2 - Outer Vee Lower Part	8 - Tie rods	14 - Tumbler	20 - Makers plate
3 - Upper Chassis part	9 - Etched spring shoes	15 - Brake Lever Guides	21 - Instanter link
4 - Lower Chassis part	10 - Wood block	16 - Sliding axlebox units	22 - Standard Drawbar plate
5 - Paint Date discs	11 - P shape brackets	17 - Brake hangers	23 - Extended Drawbar Plate
6 - Spring bump stops	12 - Brake Levers	18 - Lifting link	24 - Wagon hook
			25- Hook extension tube



List of Items Supplied on 10 feet Wheelbase Etching

Part Number / Description	Part Number/ Description	Part Number/ Description	Part Number / Description
1 - Solebar/Axleguard Unit	8 - Tie rods	15 - Brake Lever Guides	22 - Standard Drawbar Plate
2 - Outer Vee Lower Part	9 - Etched spring shoes	16 - Sliding axlebox units	23 - Extended Drawbar Plate
3 - Upper Chassis part	10 - Wood block	17 - Brake hangers	24 - Wagon hook
4 - Lower Chassis part	11 - P shape brackets	18 - Lifting link	25- Hook extension tube
5 - Paint Date discs	12 - Brake Levers	19 - Label clip	26 - Solebar ribs
6 - Spring bump stops	13 - Push rods	20 - Makers plate	27 - Axlebox guides
7- Brake Block details	14 - Tumbler	21 - Instanter link	



BR Iron Ore Tippler Underframe Parts

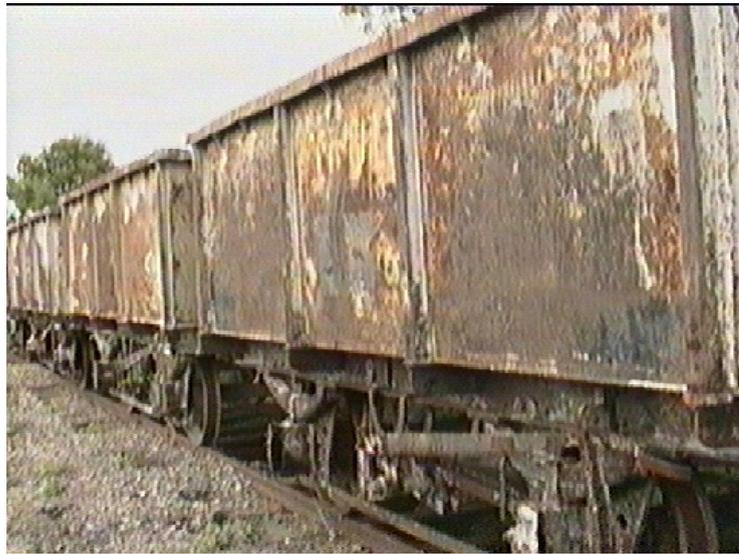
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Background Information

**Including Diagrams
BR d1/180, 1/181,
1/183, 1/184, 1/185,
1/073 (Sand Wagon)
& LMS Diagram 2153**

We are sorry but we cannot provide a full history of these wagons.

The following information comes mainly from two sources either Don Rowlands - British Railway Wagons - 1982 or Volume One of the BR Wagon book (An Illustrated History of BR Wagons Volume One, P Bartlett, D Larkin, T Mann, R Silsbury, A Ward - OPC 1985).



These sources contain a number of accidental errors or omissions. An article in Railway Modeller Page 306 - September 1981 by Keith Allen may also be helpful. We have not tried to reproduce any photographs from these references to avoid infringing copyright laws.

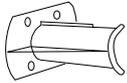
- The BR Iron Ore Tippler wagons appear to be a direct descendent of the LMS diagram 2153, the only identified picture of which is to be found on page 154 of Modellers Back Track - October-November 1991.
- The LMS wagon (LMS Wagons - Essery Volume One Page 178) entered traffic in 1949 so would not have been likely to carry an LMS grey livery but may well have been painted in LMS bauxite/BR fitted wagon colours when first introduced. The reference photograph shows end and bottom door stripes and lettering as used by BR but does not appear to carry a BR grey body colour.

The LMS diagram 2153 is a "standard" 16Ton Mineral wagon with a slightly different underframe. That is to say it has all the attributes of a BR welded body mineral wagon D1/108. It also has bottom doors and independent brakes of the pattern used on the BR Iron Ore Wagons. Reputedly the doors were all welded shut. The axleboxes are a heavy duty version of a standard LMS oil axlebox, 7 leaf springs sitting in pressed steel brackets resting directly onto the underside of the solebar and standard 3 link couplings and a tie bar between axleguards. Hence there are in fact some detail variations from the "standard" 16Ton mineral wagon in the underframe. It seems that all BR did with this design is omit the bottom, side and end doors, change the weight of the leaf springs, use different axleboxes (at least in some lots), and fit instanter couplings. The side door spring is of course omitted as there are no side doors to the wagon.

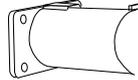
It is unclear from the photographs the exact pattern of axleguards used, but by this time the LMS were using plate axleguards for the heavier wagons so it seems reasonable to use the same axleguards as the BR wagon.

Sketches of the variety of fittings for Iron Ore Tipplers

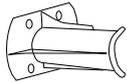
BR Standard Buffer Illustrations



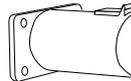
Ref: Plate 220 BR Wagons



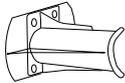
Ref: Plate 32 BR Wagons
- a self contained buffer



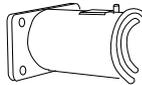
Ref: Plate 221 BR Wagons



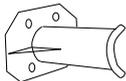
Ref: Plate 33 BR Wagons
- a self contained buffer



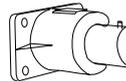
Ref: Plate 212 BR Wagons



Ref: Plate 37 BR Wagons
- Dowty self contained buffer

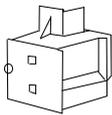


Ref: Plate 29 BR Wagons

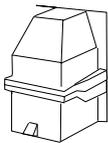


Ref: Plate 41 BR Wagons
- OLEO type - 20.5 inches

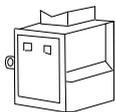
BR Standard Oil Axleboxes



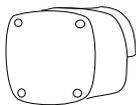
A Standard axlebox



A Standard 10 x 5 axlebox



Another standard axlebox

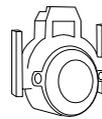


Athermos or Hybox axlebox

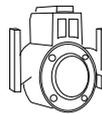
BR Standard Roller Bearing Axleboxes



An axlebox



SKF type axlebox



Timken/BR RIV type axlebox



Timken type axlebox
- with thickened casting/hood

The type of double link brake used on the LMS wagon is used by other companies - notably SR wagons but usually in conjunction with 4 or 8 shoe brakes. Charles Roberts of Horbury Junction, Wakefield built quite a number of internal use wagons of a similar kind with the unusual brake gear associated with the unfitted tippler wagon. These brakes may well be an ancestor of the brakes used on the later wagons of the 1950-1960 era by BR. Diagram 1/004 one of the Pig Iron wagon diagrams uses the same type of brake gear. There are other differences in Diagram 1/004 which make the Iron Ore underframes unsuitable, such as the deeper section solebar.

This type of brake gear seems to have been used in at least one other high capacity unfitted BR wagon D1/163 and may have been a "standard" for BR for their shorter wheelbase wagons

The "double link" is where the brake leverage applied seems to be "improved" by the loop transferring past the wagon centre line to a "lifting link". The lack of a cross shaft and the resulting independent brakes are said to be a restriction of the tippler mechanisms used to empty these vehicles but are not an explanation for the pig iron or hopper wagons. The cross shaft and other more complicated brakes would probably have fouled the tippler mechanisms in use at iron/steel works. Locking bars would clamp the axles of the wagons down to the track to hold the wagon in the tipped condition.

Less noticeable perhaps is the axleguard shape. Being a high capacity wagon (27 tons load) the journal is quoted as 10 by 5 inches. The axleguard is a plate type as used on later high capacity wagons, but without the riveted on strengtheners, it is provided with a wider flange or bearing surface than a standard axleguard. As in the case of many wagons the solebars were wider apart than traditional wagon design and this results in a 1" inward joggle in the axleguard just beneath the solebar.

The first series by BR Diagram 1/180 differed from the next series 1/181 by one-eighth of an inch in interior width and length - almost undetectable in any model. The later series evidently using thinner plate. One drawing we have of an unspecified wagon shows a 2.5 inch bevel between floor and sides of these wagons, internal dimensions equal to D1/180 but a body height of the next series 1/183. It is said that due to overloading or the potential to overload these wagons body interior height was reduced from 4 feet 11 $\frac{1}{4}$ " to 4 feet 7 $\frac{1}{4}$ " in D1/183 and subsequent diagrams. Diagram 1/183 also heralds a thinner end plate - reduced to $\frac{3}{16}$ " from $\frac{1}{4}$ ".

The last batch of D1/183 increases the wheelbase of these wagons to 10 feet from 9 feet (ref: BR Wagons), the previous 24 wagons being fitted with Hoffman axleboxes (Rowlands). It is unclear if these wagons were all fitted with an axleguard very similar, but different to the more usual heavy duty axleguards.

Lot No 3091 is more complicated. This is diagram 1/184. Rowlands appears to show all wagons being built with 8 shoe or clasp brake gear, journals of 9 by 5, and possibly an early version of the heavy duty axleguards. Two were said to have been built with vacuum brakes (Rowlands - Nos 386668 and 386669). On this matter BR Wagons suggests that this entire diagram had the original pattern of hand lever 4 shoe brakes fitted, and the almost standard heavy duty axleguard. Photographic evidence suggests this may only be applicable to the last batch of 420/450 wagons, leaving the first batches of 1030/1000 wagons having unfitted 8 shoe clasp brakes. BR were in transition at this time from unfitted to fitting vacuum brakes to all vehicles, so it is plausible wagons were made ready for vacuum brakes but without the full set of brake cylinders, pipes and so on.

Both sources however agree that the last batch - diagram 1/185 were vacuum fitted from new. This was the 8 shoe brake gear, twin brake cylinders and manual change-over levers for light/loaded braking and the "standard" heavy duty axleguard. A lamp bracket is fitted to the left hand stanchion at the end of this diagram and any fitted D1/184 wagons.

From photographic evidence it is now unclear if the small ribs seen in pairs between the lower and upper solebars on D1/185 were seen on D1/184 wagons and probably not at all on D1/183 10 foot wheelbase wagons.

This last diagram would be lettered 26 Tons to compensate for the additional chassis weight - probably all those of diagram 1/184 actually fitted with 8 shoe clasp brakes would be similarly lettered. It is known that these wagons, particularly the unfitted wagons underwent quite a number of changes in service. Some have lasted through 1995 in engineers use, by which time it is probable only vacuum fitted wagons remained. One of the main changes was the fitting of roller bearing axleboxes instead of the original oil boxes. Also those D1/184 prepared for vacuum brakes were so fitted at a later stage, though we are unable to qualify how many and exactly when this was done.

As more photographic evidence comes before us it would now appear that other non fitted BR wagons were fitted with the same type of brake gear. Other details to the chassis parts however limit the use of a tippler chassis unaltered for these other wagon diagrams. Diagrams 1/120 a 24Ton Covered Hopper, 1/163 a 25½ Ton ore hopper are ones we have now identified.

Painting, Lettering and Finishing.

The livery and branding changes are outlined in BR Wagons and by Keith Allen. It is believed that they all started in the standard grey livery for unfitted wagons and bauxite for the fitted vehicles with the box "IRON ORE TIPPLER" - in black with white lettering in the centre of each wagon. BR Wagons suggest that in 1965 the change to "CHALK" was made to 94 wagons and "SAND" to 91 wagons - this label continuing to the 1980's. Keith Allen suggests that lots 2988 and 3075 - a total of 500 wagons were labelled "Chalk Tippler" from new.

In the 1970's the "Stone" logo was introduced. When Mendip stone trains started to run the Dia.1/184 wagons (lot 3091) built with 8 shoe clasp brakes were fitted with vacuum cylinders and vacuum pipes - a simple and cheap improvement.

BR Wagons also suggest that few unfitted wagons were given TOPS codes until either being converted to Ingot wagons (SMO) or vacuum fitted wagons (MSV), those that were TOPS labelled were coded USO. As transferred to Engineers stock they were labelled ZKO.

As ingot wagons they were given a floor covering of ballast. To supervise the loading of ingots at first the practice of standing in the wagons was common but after a number of accidents this practice was banned. To help see these ingot wagons had crudely cut holes in their sides so that loading could be better supervised. As this modification was implemented the TOPS code was changed to SMO. Photographic evidence suggests that this rule was not always followed.

A number of fitted tipplers remain in engineers use today (1995). Other wagons have been sold to private companies. A number of unfitted wagons can be found in preservation at Cottesmore. In the 1980s a number of unfitted wagons were rebuilt as Steel Coil wagons (TOPS code SJO).

The 13 Ton Sand Tippler Wagons Diagrams 1/071, 1/072, 1/073.

Most of the Sand wagon series had a more traditional underframe, using Moreton brake gear on a 9 foot wheelbase chassis. One batch of 100 wagons diagram 1/073, lot number 2986 however has 10 foot wheelbase 8 shoe clasp brakes. The sand wagon uses the "standard" axleguard (as in 16 ton Mineral wagons). The major difference between the sand wagon and the iron ore tippler is that the body height is only 2 feet 6¹³/₁₆" or about 10.25mm in 4mm scale. The original diagrams showed tarpulin cover ties in two styles, which seem to have been lost in use possibly when they were transferred to engineering duties.

There are a number of other detail differences which would make a model of these wagons achievable from the same set of basic parts but only after further modifications.

Similar wagons in Industrial Use

Lancashire Steel operated a number of fitted tippler wagons. It is not known if these were identical to the BR wagons or if they were ever amalgamated into BR stock. We have seen one photograph of a Lancashire Steel wagon in a train heading for Lancashire on the former MR mainline in the Peak District. It is also believed that other internal user wagons were built unfitted for use in quarries though we have no details on this.

The basic concept of the Iron Ore Tippler has been reproduced in other wagons still in operation today (1996) but not in revenue earning service for British Railways. In February 1995, 200 wagons were delivered secondhand to the Appleby-Frodingham Steelworks complex from a nearby sand works. Their body is shorter on a similar 8 shoe - unfitted underframe whilst the side panels wrap around to form the wagon floor as the rebuilt 16 ton mineral wagon bodies were modified (known as re-plating)

One series of internal user wagons for steel works also has the same style chassis brake gear. These wagons were rated 31 Tons and had higher bodies with sloping sides reminiscent of NER wagon designs, a 10 feet wheelbase but a 17 feet 6 inch long body.



Tippler Wagon Details

We are unable to accurately detail which type of buffers or axleboxes any series of wagons had, or when any changes occurred to them. Many of these changes, including livery, would occur during routine services and are unrecorded. Hence we have left open the modellers options by not including either in the set of parts. The leaf springs were all 8 leaf construction on what may be best described as "pressed steel pads" which bear entirely on the underside of the solebar.

A short list of photographic references are:

BR Wagons:

- (1) Plate 25 - BR/RIV axlebox on BR 380088 on 26/8/1980 - Diagram 1/180
- (2) Plate 29 - BR F4 buffer on B384705 on 7/8/1980 - Diagram 1/183
- (3) Plate 41 - two buffer types (self contained), vacuum fitted with Instanter couplings - unidentified wagons on 4/10/1984 - Diagram probably 1/185
- (4) Plate 56 - Clasp brakes, fully fitted, heavy duty axleguards, SKF bearings on B385827 on 5/1/1979 - Diagram 1/184 (correct number ? or rebuild)
- (5) Plate 220 - MSO/Ingot Mould/ no holes, Instanter links, a type of standard buffer, two different roller bearing axleboxes, B381123, on 7/8/1980 - Diagram 1/180 high body series.

- (6) Plate 221 - Immaculate "as new", oil axleboxes, another type of standard buffer, 3 link couplings, B382833 - 9/5/1953 - Diagram 1/183 lower body series.
- (7) Plate 222 - Heavy duty axleguards, Timken axleboxes, double link brakes, self contained buffers, Instanter links, labelled 27 Tons, B387049, on 11/6/78 - Diagram 1/184.
- (8) Plate 223 - Hooded Timken roller bearings, 8 shoe clasp brakes, Dowty self contained buffers, probably Instanter couplings, labelled "Stone"/MSV B388404 on 8/5/79 - Diagram 1/185.

Rowlands:

- (9) Plate 52 - SKF roller bearings, B3823(4)1 on 12/4/64 - Diagram 1/183.
- (10) Plate 53 - Hybox axleboxes, Heavy Duty axleguards, clasp brakes - unfitted - B386358 on 11/10/69 - Diagram 1/184

Larkin - Standard BR Freight Wagons:

- (11) Page 16 - Timken axleboxes, Heavy duty axleguards, 8 shoe fitted, Instanter Links, self contained buffers, braces to headstock stunchions, B388639 - Diagram 1/185.

Keith Allen - Railway Modeller September 1981.

- (12) A 26 Ton ex-fully fitted tippler in private livery "Central Wagon Co" - Wigan- several photographs - Oleo buffers, instanter links, no vacuum pipes - May 1981 probably from Dia 1/185 possibly Dia 1/184.
- (13) A MSO, self contained buffers, 4 shoe independent brakes, instanter couplings, 10 foot wheelbase, heavy duty axleguards, roller bearing axleboxes on B 386786 - August 1980 - Diagram 1/184.
- (14) A MSO labelled "INGOT MOULD", no body modifications, Oleo buffers, 10 foot wheelbase, 4 shoe independent brakes, roller bearings, almost Heavy duty axleguards - undated - B 387588 - Diagram 1/183 Lot 3324.
- (15) A ZTO - ex chalk Tippler (according to Author), 9 foot wheelbase, BR square oil axleboxes, instanter links, BR standard buffers, B 747833 - Diagram 1/183 lot 2988.

Model Railway News - March 1966

- Page 134 - A photograph of a Lancashire Steel Liveried fitted (?) tippler wagon. Colour possibly mid grey (or bauxite ?), white (?) lettering No.15. Roller bearings, 10 foot wheelbase, Oleo buffers, instanter couplings.

Keith Allen - Railway Modeller June 1981.

- (16) A fitted 10 foot wheelbase 13Ton Sand Tippler, Oleo buffers, 8 shoe clasp brakes, single brake cylinder, (no brake change over switch), rope tie dics (hooks fitted to other lots), screw couplings - B746847 Dia 1/073.

Model Railway News February 1967 Page 80.

- (17) Photograph of apparently new Dia 1/185, Oleo buffers, roller bearings, fully fitted 10 foot wheelbase, 8 shoe clasp brakes - included drawings have a number of flaws and should be discounted- B 3889??

Model Railway News March 1966 Page 134.

- (18) Undated photograph of apparently a Dia 1/185, Oleo buffers, roller bearings, fully fitted 10 foot wheelbase, 8 shoe clasp brakes - in a livery of Lancashire Steel. We are unable to provide any details - whether or not it was amalgamated into BR stock or was indeed ever a Dia 1/185 wagon.

Chenoa Publication - British Railway Wagons No.1 Opens and Hoppers editor Geoff Gamble.

- Page 46 - Dia 1/163 sand Hopper using same type of lifting link brake gear. Note however the outer Vee hanger fixing is different. (undated)
- (19) Page 51 A "Coil J" wagon B382254 formerly a D1/183 tippler of lot 2498. (undated) 9 feet wheelbase, oil boxes, instanter couplings, presumably wooden cradles for holding steel coils in place.
- (6) Page 52 - As reference Plate 6 above.
- (20) Page 54 - B384378 - of D1/183 lot 2730.(3rd September 1979) 9 feet wheelbase, unfitted, instanter coupling, two types of roller bearing axleboxes, lettered "INGOT MOULD", tops code MSO no visibility holes in sides.
- (21) Page 54 B387604 - of D1/183 (undated) 10 feet wheelbase, roller bearings, instanter couplings, independent brakes, Oleo buffers.The coupling hook appears to be extended by a sleeve (approximately 2.5 inches long) to compensate for long Oleo buffers.
- (22) Page 55 DB385955 - of D1/184 lot 3091 dated 1993. In engineers use coded ZKV. Fully fitted Oleo buffers, instanter couplings, roller bearings, solebar flanges clearly visible. Note lamp bracket on end - standard for fitted wagons.

- (23) Page 55 B386523 -of D1/184 lot 3091 dated November 1979. Lettered with Tops panel pool number 7637, coded MSV. Fully fitted different roller bearing axleboxes, Oleo buffers, instanter links . Note the coupling hook shape clearly differs from DB385955(above).

The photographic evidence thus supports the construction programme details.

- We are indebted to R Green, P Bason and P James for assisting us with details.

A listing of the original construction programme is as follows:-

Dia.	Lot	Total Built	Numbers	Date	Builder	Source	Notes	Ref.
1/180	2274	700	B380000-B380699	1951	Cravens	Rowlands	1, 6	1
1/180	2275	800	B380700-B381499	1951	Head Wrightson	Rowlands	1	5
1/181	2310	400	B381500-B381899	1951	Derby	Rowlands	1	
1/183	2498	1240	B381900-B383139	1953	Shildon	Rowlands	9	6, 9, 19
1/181	2601	500	B383140-B383639	1954	Shildon	Rowlands	1	
1/183	2730	1500	B383640-B385139	1953	Shildon	Rowlands	2, 6	2, 20
1/183	2844	500	B385140-B385639	1956	Derby	Rowlands		
1/183	2988	476	B747500-B747975	1957	Derby	Rowlands Allen	10	15
1/183	3075	24	B747976-B747999	1957	Derby	Rowlands Allen	2 10	
1/184	3091	28	B385640-B385667	1958	Derby	Rowlands BR Wagons	3, 4, 8 7	1 4
1/184	3091	2	B385668-B385669	1958	Derby	Rowlands	3, 8, 9	
1/184	3091	970	B385670-B386639	1958	Derby	Rowlands	3, 4, 8	4, 10, 22, 23
1/184	3091	450	B386639-B387089	1958	Derby	Rowlands	3/8/9	7, 13
1/183	3324	1000	B387090-B388089	1960	Derby	Rowlands BR Wagons Allen	7	21 11 14
1/185	3363	1000	B388090-B389089	1960	Derby	Rowlands BR Wagons Allen MRN	3, 4, 5, 8, 9 7	8, 11 11 12 ? 17

Notes:

Dia 1/184 the detailed number sequence does not appear to be reproduced accurately in the published accounts with the numbers said to be built, it is suggested the above would be the correct numbers.

1) High bodies, reminder wagons fitted with lower bodies.

- 2) Fitted with Hoffman axleboxes
- 3) Rated 26 tons
- 4) 8 shoe clasp brakes, later conversion to vacuum fitted.
- 5) Roller bearings
- 6) BR Wagons suggests built 1953.
- 7) BR Wagons indicates 10 feet wheel base
- 8) Possibly fitted with self contained buffers (Rowlands) and heavy duty axleguards.
- 9) Vacuum fitted from new.
- 10) Possibly all originally lettered "Chalk Tippler".

Also outline/detailed drawings were produced in Railway Modeller September 1963, Page 205, "An Open-Cast Ironstone Quarry" by C J Peacock.

There are numerous pictures of the tippers few of which supply good details about the wagons. You could look at some parts of the E S Tonks Ironstone Quarries of the Midlands books for some inspiration. In colour the book Steam Railways around Northamptonshire by Richard Colman and Joe Rajczonek (Wharton, Wellingborough) could prove useful.

The Model

Instead of providing a purpose built body it seemed sensible to AMBIS to use what products were already available. We examined two wagons - a Hornby Tippler body (labelled B&Q version) - available secondhand, cheaper than a boxed wagon in bauxite with TOPS codes (this may look a different body but we understand Hornby has only one mould), and the body kit once sold by MTK. Our assessment of both is given below.

More recently Bachmann have produced a ready to run wagon.

Hornby - B&Q body.

The chassis for this wagon is hopelessly wrong, and will have to be recycled. The body has an impression between the side stanchions of a few thousandths, which would need to be "filled". The end stanchions stop at the body side, whereas they should drop 6 inches to attach to the headstocks. The spacing of the end stanchions is also too wide. The body depth is only 17.85mm, making it short by at least 0.5mm (diagram 1/183 would be 4 foot 7 $\frac{3}{4}$ " or 18.58mm. In all quite a lot of work would be needed on this body.

ex-MTK body.

Made up from the parts available the body depth comes to 18.8mm - slightly too high for the lower body wagons at nearly 4 feet 8 $\frac{1}{2}$ ". With an extra floor of 40 thou plasticard it becomes 19.8mm or almost 4 feet 11 $\frac{1}{2}$ ". The headstocks are moulded as part of the end of the body, and being full width are too wide. The end stanchions are the full depth of the headstocks and are thus too long. This body seems to build to a length of about 66.7mm, whereas it should be 66mm long. The difference occurs between the centre side stanchions, and thus cannot be accommodated by reducing the ends.

Sources for Buffers and Axleboxes

These are suggestions as it is possible that new items that fit the requirements better have now been produced. In the main D&S (now working in 7mm scale only), Appleby Model Engineering (ceased trading), Kean Maygib, ABS, Alan Gibson and MJT supply these kinds of fittings. Some of the available buffers can be obtained as sprung versions, otherwise they are generally white metal

castings- MJT fits turned metal heads to his castings. AMBIS now includes on the underframe etchings three versions of the oil box cover used by BR.

A new supplier of a wide range of white metal cast buffers is Lanarkshire Model Supplies. (c2010)

Please refer to these suppliers for further details:

D&S used to supply packets of twelve 9 leaf springs with pressed steel pads. You may find this a close approximation of the correct type. If used the etched string hanger parts may be omitted from the construction schedule.

Appleby used to supply the "Hybox", Timken hooded, SKF and rectangular axleboxes and spindle and Oleo buffers.

Kean Maygib used to supply a SR buffer (no longer listed), possibly a type now available from Alan Gibson, which could be altered to the plainer type of buffer.

Both Kean Maygib and Alan Gibson supply RCH type buffers - ones with cast ribs, probably Alan Gibson can supply other suitable/convertible buffers.

ABS supplies are number of buffer types which may prove adaptable, look at LNWR, SR and other types don't look specifically for BR or RCH buffer types.

MJT can supply a variety of axlebox and buffer fittings including self contained and Oleo buffers.

The original oil 10*5 axlebox could be converted from an "Airfix" (now Dapol) 16Ton mineral wagon. This is available through the EMGS in white metal.

For vacuum fitted versions the ABS and MJT parts could be used for the vacuum cylinders.

Alan Gibson can supply lost wax (brass) vacuum pipes which should withstand use better than white metal versions (available from a number of suppliers).

You may decide building a body from sheet plastic and sections is the best method for you.

Suggested Modifications to ex-MTK body:

- Substitutite staunchions.

Use .005 plastic (Evergreen), and .75mm square section (Plastruct new range). Trim the .005 to 2mm width and add to bodywork. Fit the square section to centre of the .005" section.

- Reducing the MTK body length.

Remove a staunchion on either side of wagon. Cut out section to reduce length with a razor saw and add new staunchion over the cut line. Remove centre top lip bracket/strengthener and make new bracket (triangle of .005 plastic) under lip in the centre of the panel. Make new floor panel to suit high or low body sides (see later).

- Cutting off headstocks.

Remove headstocks, trimming back staunchions. Extend the staunchions to 2mm lower than floor (add these after fitting underframe to protect them).

The three different underframes for the Iron Ore Tippler Diagrams some details are incomplete but these outlines are to approximately 7mm to 1 foot scale.

Making Low Body Version

Shave off some of top lip to reduce body height. Make floor section to fit within body sides/ends.

Making High Body Version

Use .040 thou plastic sheet, 66 mm long but wider than base. Assemble sides and ends on top of floor section. When completely cured, trim floor section back to body side, reproducing stanchions in floor material (unless these have been removed). Where new stanchion is required assemble from parts as indicated above.

In addition to the notes below Bachman have announced a ready to run Iron Ore Tippler wagon, AMBIS has not yet seen any versions of this wagon.

Additional Notes for Parkside-Dundas Body Parts

In March 1998, Parkside-Dundas introduced their D1/185 Iron Ore Tippler (fitted) version wagon kit.

These notes reflect the additional possibilities than arise using the body for that kit with AMBIS chassis parts instead of the options previously available.

The body is in brown plastic of correct length, but includes mouldings for the headstocks with the wagon ends. On one stanchion at each end is moulded a lamp bracket. The body represents the low height version and would not be suitable for the earlier design without modifications already outlined for the other body sources, ex-MTK or Hornby.

Modifications to the Parkside Dundas Tippler Body.

Remove the lamp bracket from the stanchions as this was only applied to fitted wagons - we are unsure about 8 shoe braked wagons that were not vacuum fitted (small number of Diagram 1/184 wagons).

Remove the headstock parts of the moulding, leaving intact if possible the stanchion overhang on the headstocks. If these are accidentally removed, replace as suggested in the main guidance notes.

If a high body wagon is being modelled raise the wagon body height by using a floor of .040 plastic extending beyond the sides, cutting the stanchion extensions from the floor part for the sides and extend the end stanchions as indicated a scale 6 inches (2mm) over the headstocks.

Other General Suggestions.

For low sided wagon bodies make the wagon floor from metal sheet fitting inside the body sides (for all versions of the wagon body). This will give extra weight to the wagon and allow the chassis to be soldered to a flat surface (keep this away from plastic parts until soldering is finished), so reducing the possibility of the wagon warping during construction.

Alan Austin 8th May 1998.