

# MKD 08

## BR 21.5 TON

### FLYASH HOPPER.

Wagon Kit

To cover Vacuum (CSV) and air braked types (CSA)



#### History.

Pulverised fuel ash (PFA), known as fly ash which is a by-product from the combustion process in coal fired power stations, and is also a useful product in the construction industry. So when the new power stations at Ratcliffe and West Burton were built the ash disposal system was built in and this necessitated the construction of a fleet of wagons to convey the fly ash in, so these special rail wagons were based on the 'Presflos' of the 1950's so the CSV and CSA wagon was born. These wagons are essentially a sealed pressurised vessel on wheels, the ash is loaded in through the top hatches using gravity and out through the bottom using pressurised air.

They were longer than the Presflos and could carry 22T and the discharge was now on the side of the hopper which meant that on one side of the wagon they had Morton type brakes and on the discharge side they were fitted with clasp brakes. The first batches of wagons were vacuum braked (late 64) then latter batches were air braked (1965-68). All of the vacuum braked wagons were condemned in 1986 and the air brakes ones have now all gone (2012). One of the problems with the fly ash wagon was a loss of pressure upon discharge which was caused by the tank hatch seals failing, so to identify which hatch had failed they painted a red and yellow square on the discharge side.



## Parts List.

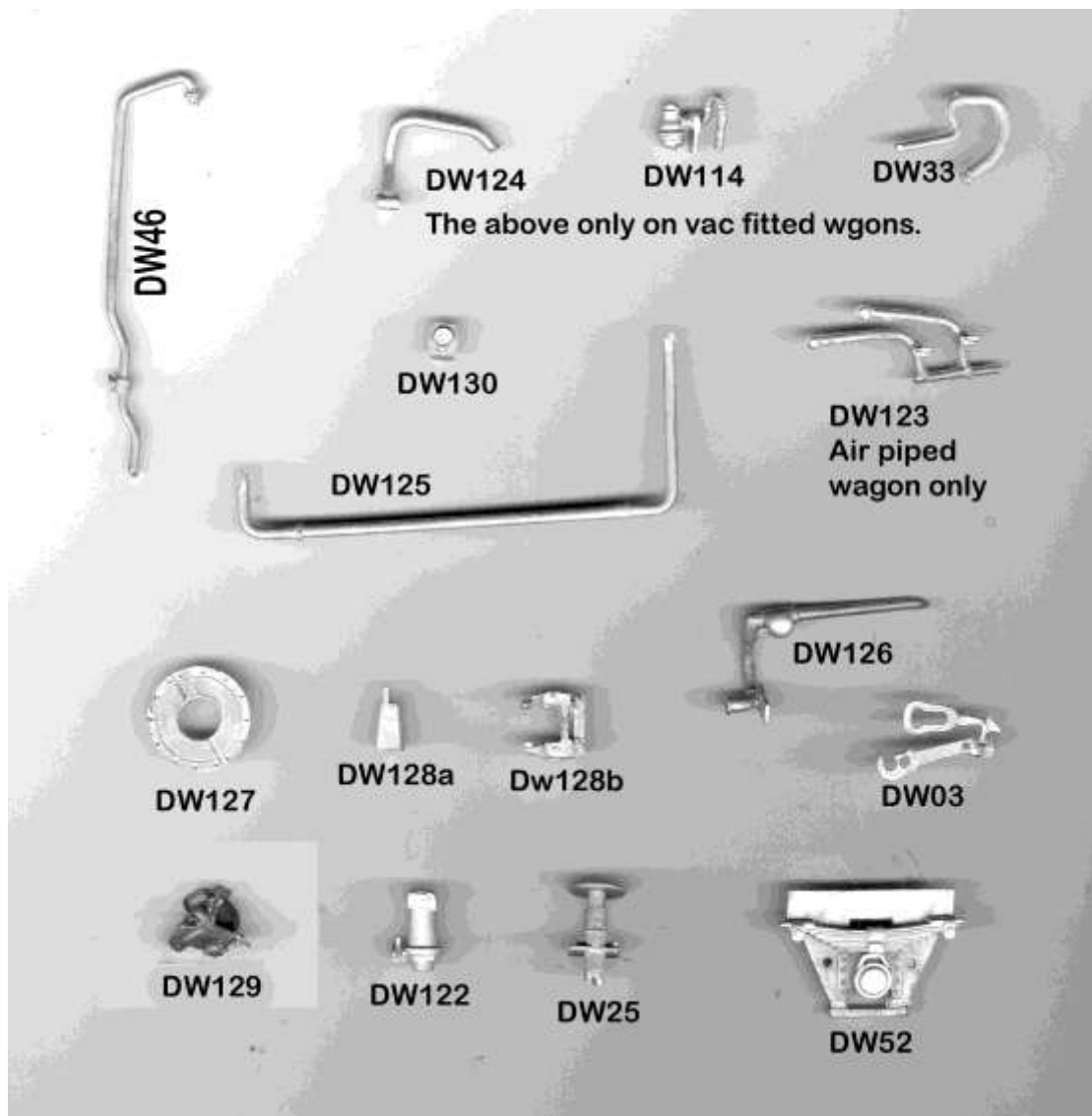
Etch,

2 x Coupling springs.  
4 x Coupling links.  
200mm of .7mm wire.

2 x split pins  
20mm of .5mm wire  
50mm of 1.2mm wire

W/M castings,

4 x Axle box (roller)	DW52	2 x Coupling sets	DW03
4 x Oleo buffer	DW25	2 x Air Pipes	DW123
2 x Vac pipe	DW33	1 x Discharge pipe	DW122
1 x Body gauge	DW130	2 x Tank hatches (LWB)	DW129
1 x Body Vac/air pipe	DW125	1 x Vac pipe lower	DW124
1 x Air supply pipe	DW126	1 x Vac control valve	DW114
2 x Clasp brake post	DW128a	2 x Clasp brake	DW128b
1 x Presflo Top Pipe	DW46	2 x Wheel inserts	DW127

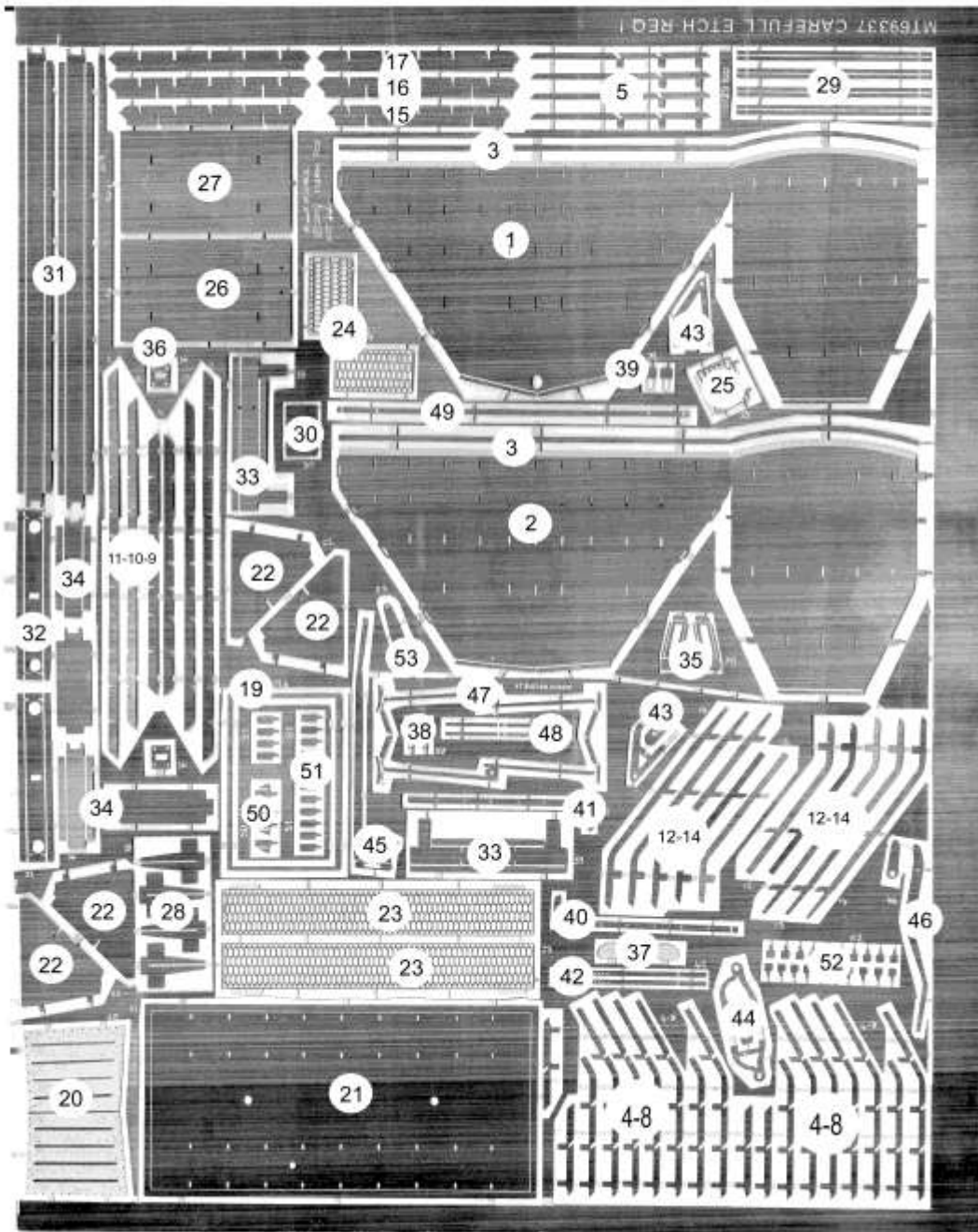


### Items needed to complete this kit,

Wheels 3'1" three hole disc Slater's ref 7122 or 3'1" three hole disc Welcome  
Wheels with ball races, ref WH3-1 (M&M can supply these if required, order  
online on the website [www.modelrailwaywagons.co.uk](http://www.modelrailwaywagons.co.uk) ) or contact direct  
using the enclosed card.

### Fly Ash Etch Parts List.

- |  |                                     |
|--|-------------------------------------|
| 1, Body side-end discharge                                     | 2, Body side-end                    |
| 3 Tank top beading   | 4-8, Body vertical ribs             |
| 9, Body side horizontal rib (lower)                            | 10, Body side rib (middle)          |
| 11, Body side rib (upper)                                      | 12, Body end vertical ribs (outer)  |
| 13, Body end vertical ribs (middle)                            | 14, Body end vertical ribs (centre) |
| 15, Body end horizontal (lower)                                | 16, Body end horizontal (middle)    |
| 17, Body end horizontal (upper)                                |                                     |
| 19, Tank lower strap   | 20, Tank base                       |
| 21, Tank roof  | 22, Tank end supports (handed)      |
| 23, Top walk way long  | 24, Top walkway short               |
| 25, Top walkway step   | 26, Chassis floor step end          |
| 27, Chassis floor other end                                    | 28, Lower rib 5 to solebar bracket  |
| 29, Rib 5 outer overlay  | 30, Info board                      |
| 31, Solebar  | 32, Buffer beam                     |
| 33, Inner chassis member (with brake support)                  |                                     |
| 34, Inner solebars   | 35, Chassis end steps (handed)      |
| 36, coupling pocket overlay                                    | 37, Makers plat backing             |
| 38, Lamp bracket   | 39, Load clip                       |
| 40, Ladder side (R/H)  | 41, Ladder side (L/H)               |
| 42, Brake pin down bars  | 43, V hanger off set                |
| 44, V hanger (non discharge side)                              |                                     |
| 45, Long brake lever (non discharge side)                      |                                     |
| 46, Brake lever (discharge side)                               |                                     |
| 47, Brake shoe-rig set (non discharge side)                    |                                     |
| 48, Brake shoe-rig safety straps                               |                                     |
| 49, axle box tie strip (non discharge side)                    |                                     |
| 50, Walkway supports long (ends handed)                        |                                     |
| 51, Walkway supports long                                      |                                     |
| 52, Walkway supports short                                     |                                     |
| 53, Brake hanger off set ( <b>not used only on prototype</b> ) |                                     |



### Hints and tips.

In order to build this kit you may find the following tools useful. A pair of tin snips or a Stanley knife to cut out the brass parts; Flat and round files and a centre punch or riveting tool; a bending jig or steel rules; a pair of parallel flat nosed pliers; a good soldering iron; solder and flux. You will find that the use of a low melting point solder and the use of Carr's fluxes is recommended. When cutting out the etched parts please do not cut off the tabs or the slots, the holding tabs are all half etched. Before construction, please refer to as many photos as possible.

### Building instructions.

#### Chassis

1. Cut from the etch the two sole bars (31) and push out the rivet detail, two buffer beams (32), four inner solebar's (34), and the two cross beams (33) and clean up. Fold up to form a shallow U-shape, *Photo 1*.

**Note:- The solebar with the extra rivet detail in the centre section goes on the non discharge side and the bottom of the solebar has extra rivets.**

2. Take solebars and fit into buffer beams twist tabs to retain. Make sure all is square, solder up, cut off excess tabs and clean off flush.
3. Take the inner solebar (34) and fit into (33) solder up and remove tabs, then solder this assemble into the chassis assemble.
4. Bend down the tags on the inner cross members (33) solder bend line to strengthen as this will hold the brake shoe's later. *Photo2*.
5. Now take the end platforms (26 & 27), these fit to the chassis frame top with the ends level with the outside face of the buffer beam and make sure that the discharge solebar is towards you and the handrail platform end (26) is to the left when viewed from above and add the hand rails from .7mm wire. *Photo 3*.
6. Take the vac/air pipe casting (DW125), and fit to chassis top, between the inner ends of the end platforms, with the pipe on the non discharge side *Photo 4*. Now set this aside until you have built the body. **If you are building the vac fitted version then you will have to cut a gap in the above pipe 25mm from the Left hand end to be able to insert the lower vac pipe (DW124) later on.** *Photo 4*.

7. Cut out the main tank sides (1) & (2) from the etch, be careful not to cut off the tabs and slots.
8. Bend the bottom lips through to about 120°. *Photo 5.*
9. Bend body sides to shape, bend to a curve around a small dia. Bar. *Photo6.*
10. Locate tabs into slots twist tabs to retain; now you should have a basic box.
11. Make sure body is square and solder up seems, then cut of tabs and slots, clean up edges. *Photo 7.*
12. Now add to body side top / end strips (3) to the top of the body side in the half etched recesses. *Photo7.* Tip; - when soldering start at the bend and work outwards towards the ends and fill any gaps at ends.
13. Next, take the side vertical ribs (4-8) and fit into slots in tank side, twist tabs on inside to retain. *Photo 8.* Now fit the horizontal side ribs (9-11), these fit into the slots in (4-8). *Photo 9.* Now solder up the complete side then repeat with the other side. *Photo 9.*
14. Take the end vertical ribs (12-14), fit these into the slots in the wagon ends, twist to retain. *Photo10.* Now add the end horizontal ribs (15-16-17), (to get a snug fit you may need to trim at an angle some of the ends of the horizontal side ribs so as to get a nice corner). Check the fit of the tank end supports (22) (you will have to bend them to shape) into the bottom two ribs, now solder up the end, and then repeat with other end. When done dress the strapping at the corners to get a nice finish. *Photo 11.*
15. Take tank lower strap (19) and fit at tank base up against ribs, you may have to trim the ribs to length, best done with a slitting disk. *Photo 13.* Now take the tank base plate (20), bend along the centre line and solder to the flanges of the hopper bottom. *Photo 12.*
16. Now roll/bend the roof (21) to match the curve of the ends, Tin the underside edge of the roof all round, and then solder it to the tank body. Make sure that you fit it the correct way round with the roof hole towards you and the discharge hole towards you.
17. Take the four tank supports (22) and fit into the end ribs (15 & 16), Fit the tank assay into the chassis assay, the tabs should fit into the slots in the floors (26 & 27) twist tabs to retain and solder in place. *Photo 15.*
18. Take the side rib supports (28), bend these to shape and fit into the solebars and they go behind the long side ribs, solder in place. *Photo 14.*

19. Now add the rib overlays (29), these go onto the outside of the of the long side ribs, bend to shape and solder on, trim any excess at ends. *Photo 14.*
20. Take the coupling pocket overlays (36) push out rivet detail and fit to the buffer beams, Fold up and fit the lamp brackets (38) to buffer beams, Also fit the oleo buffers, also fit the couplings (DW03 and links) to the buffer beams. *Photo 15.*
21. Next bend up and fit load clip (39), and makers plate back (37), to sole bar (check with photos as these varied in position). *Photo 16.*
22. Walkways, take the long (23) and short (24) walkways, lay on a flat surface in a rectangle and solder up. *Photo 17.* Now add step platform (25) to one of the ends, (do not cut of the two stubs as these bend down which provide it's legs), this solders under the walkways. *Photo 18.*
23. Now set the walk ways to one side while you fit all the supports to the tank top, Take the supports (note that they all have angled bases to match the roof profile), fit the short supports (52) into the inner rows of slots on the tank top. Next fit the 4 long corner posts (50) these are handed, bend to shape and fit in corners with the angle slopping inwards. Now fit the remaining post (51) to the remaining slots. *Photo 19.*
24. Now fit the top pipe casting into the hole in the roof and down the side. Now fit the walkway assemble to the roof fitting it on top of the supports, with the step platform to your left with the top pipe towards you. *Photo 20.*
25. Ladders ;- Tip to easy build, Take R/H ladder side (40) place on a scrap piece of wood and drill though rung holes with a .8mm drill into the wood fit .7mm wire in holes and solder up. *Photo21.* Now fit the ladder L/H side (41) over the wire rungs and spaced apart by 6mm and solder up. *Photo22.* Now cut of excess wire and clean up, bend the feet out and fit to wagon top and to platform, you may have to trim the length of the ladder supports to fit up against the platform. *Photo23.*
26. Now fit ladder handrails to wagon end, (check with photos as these varied with builds) these are bent up from .7mm wire. *Photo 24.*
27. Now take the chassis steps (35) (note these are handed), bend to shape and fit to the underside of the solebars at ladder end. *Photo 27.*
28. Glue the wheel insert casting (DW127) into one face of each wheel set and put aside to dry. *Photo25.*



29. Next take the axlebox castings (DW52) and drill out for your chosen bearings, also cut a slot in the back plate to clear the chassis cross member. *Photo26*. Now fit the wheel sets into the axleboxes then add to the chassis aligning with the rivet detail, with the flange of the wheel touching the x member, fix axle box in place, then bend down slightly the x member to clear the wheels. Also making sure that the wheel inserts are on the discharge side. *Photo 27*.
30. Take clasp posts (DW128a) and fix to clasp brakes (DW128b) the tab slots into the brake clasp, *Photo 28*, then fit to chassis on the discharge side with the brake pads each side of the wheel sets, *Photo29*.
31. Add info board (30) bend bottom lip and this fits on to top lip of solebar channel to body side, or to the underside of the channel lip, as in some photos the board is vertical and some the board is on a slope. Bend up the brake pin down bar (42) and fit to sole bars. Next take the V hanger with cross bar (43) and fit behind sole bar discharge side aligning with the rivet detail, then add the brake lever assy (46) from v hanger to brake pin down bar. *Photo31*.
32. Now fit the discharge pipe casting (DW122) and the air supply pipe (DW126) to discharge side and air pressure gauge (DW130) the short pipe is made from .5mm wire, as per *Photo32 & 36*.
33. Now take the brake etch (47) and fold on it's self solder together and fit to chassis on the mounting pads, Next add the off set V hanger (43) and fit behind sole bar to the left aligning with rivet detail. Add cross shaft between off set V hangers from 1.2mm wire. *Photo 33*.
34. Take central V hanger (44) bend on it self and then bend the rear part back so the holes align, *Photo 34*. Fit behind sole bar aligning with rivet detail, next take brake handle (45) and fit to v hanger and pin down bar, (**note that the bottom link of the lever goes behind the front part of the V hanger**), make pins from .7 & 1.2mm wire and add wire link in .7mm wire, from brake lever link to off set V hanger. Also fold up the two brake safety straps and fit over brakes as per, *Photo35*
35. If building the vacuum fitted version now fit the vac pipe lower (DW124) in the gap in the body vac air pipe and the tail goes behind the brake lever and in between the V hanger, Also add the vac control valve (DW114) at end of pipe and behind sole bar, (remove most of the curly pipe on the casting) *Photo 37*.
36. Now fit the vac pipes (DW33) or the air pipes (DW123) to the wagon ends and last but not least fit the two tank hatches (DW129) in the holes in the tank tops. *Photo 38*.
37. This completes the model for painting, the livery is just BR Bauxite with a red square to left and a yellow square to right painted on the discharge side of the wagon.

