
RAGSTONE MODELS

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MR/LMS 1532/1823/1833/2228 class 0-4-4T chassis

Version no: 1.0

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About this Kit

This kit covers the various Midland 0-4-4t locomotives built after 1880, with 5'3" driving wheels and 5ft 6in wheelbase bogie i.e. the 1532, 1823, 1833 and 2228 classes. It has been designed so that it can be used with various manufacturers' loco bodies, either to model a different prototype, to upgrade or convert them to S7 (when using the S7 version of the kit).

Basic inside motion parts are provided to fill the gap at the front of the frames, it is possible to add further parts to make fully working motion if you fancy the challenge.

There are a few extra castings required to complete (which if you are using the Slater's kit as a donor locomotive, are included in that). These are:

- Driving wheel springs
- Brake cylinder
- Reverser shaft bearings

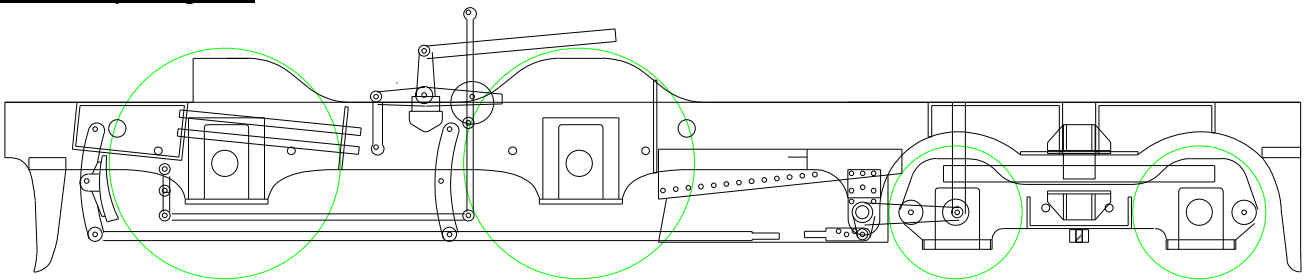
If building the S7 version make sure you use the appropriate parts from the supplement sheet, these are indicated in the parts list by an *

It is helpful to have a copy of "Midland Engines No.1" (Wild Swan 1999, ISBN 1 874103 50 X) available for reference when building this kit.

General

Carefully cut parts from the fret when required to avoid losing any of the very small parts (some spares are included so don't panic if there are parts left over). Once released from the fret carefully clean up the tags and cusp with a fine file, this will improve the appearance (and more importantly) the fit of the parts.

Assembly diagram



Mainframes

1. Remove frames (1) from fret, check fit with your body kit as 1262 & 1532 classes are slightly shorter than later locos so the frames will need approx. 1mm removed from each end. Half etch guide marks on the frames indicate this.
2. Form rivets and fit guard irons (2&3) to half etch rebates. These will need to be formed to shape, either now or later once the wheels are fitted.
3. Form rivets and fit brake shaft overlays (4) to the outside of the frames, note that the very fine curve faces to the rear to match the curve of the bogie wheel cut out.
4. Add lower fire box sides (16&17) using ½ etch line as a guide and ensure they do not obstruct location for spacer (11).

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5. Fit 4 bearings to the frames, flange outward. Sprung hornblocks can be fitted if required to one (rear) or both axles. The hornguide cut-outs are 10.5mm wide, which suits most makes, but if using 12mm wide ones, file to the ½ etch lines.
 6. Laminate slide bars (50) in pairs and clean up edges. Form rear fold on cylinder block (5) (check angle against ½ etch line on frames), form rivets on rear overlay (6) and fit to cylinder block with slidebars in place to ensure alignment. Fold front, again using ½ etch line on frames to check, form rivets on front overlay (7) and add to front of cylinder block.
 7. Form curves on cylinder block base (8) and add to bottom of block. Check fit of completed block in locating ½ etch on frames.
 8. Curve and fix flanges (10) to motion plate (9).
 9. Fold motor securing plate on rear of firebox spacer (11), this points to the back once assembled, it can be removed if you do not need/wish to use it.
 10. Form folds on forward bogie spacer (12) and rearward bogie spacer (13).
 11. Rear plate (14) fits between the frames once assembled, tight to spacer 13, with the locating hole orientated to suit the body being fitted (if not using the hole in 13 to secure the body).
 12. Bogie mount plate (15) fits to the bottom of the frames in the slot provided, with the ½ etch location lines (for spacers 12&13) pointing upwards. Add an 8ba bolt (or nut, depending on preference to the top surface before assembly).
 13. Assemble frames using cylinder block and prepared spacers 11, 12 & 13. The motion plate 9, bogie mount plate 15 and rear plate 14 can be added once you are happy that the assembly is square.
 14. Fit firebox front (18) and rear (19) in place between firebox sides.

Ashpan

15. Ashpan former 20 should be trimmed to the half etch lines if building a 32mm gauge chassis (leave as is for S7), but this is best done after ashpan proper is fitted as it is stronger then. Form rivets in securing brackets, then fold ends and securing brackets (see drawing for angles). Form rivets and curves on ashpan (21) so that it is a snug fit on the former. Fit completed assembly between firebox lower sides.

Motion

16. Laminate 2x reverser shaft balance weight (22) and add an overlay (23) to each side. Fit a short length of 1.0mm wire through the hole and trim this so that it protrudes approx. 0.5mm each side. Fit these to a 30mm length of 1.5mm rod, 8.5mm apart, with slightly more protruding on the reverser side. Locating blocks are included on the top of the frames, but proper bearing castings (not included) can be used, using the location marks and the blocks removed.
17. Lift links (24) fit between the arms of the balance weights with 1.0mm wire, hanging downwards.

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18. Laminate reverser crank (26) and form a yoke on the end of reverser rod (25) before laminating and fitting to crank with 1.0mm wire. This assembly locates on the end of the reverser shaft.

Details

19. Form rivets on bogie gusset plate (27) and fit to frames so that the slots align with the slots in the bogie bearing plate 15. Add angles (28) to these slots. Fit a 4mm length of 4mm tube to the bottom surface, using the alignment marks for positioning.

Brakegear

20. Laminate brake block (30 or 30a) to front face of brake hangars (29) then add a short length of 1.0mm wire through the hole. Trim flush on the rear and with 0.5mm protruding on the front. Fit 2x 38mm lengths of 0.9mm wire in the holes provided in the frames for brake hangar pivots. These should protrude equally each side. With the wheels temporarily in place to check clearances, fit brake hangar assemblies to the pivots and fit 41mm lengths of 0.9mm wire through the bottom holes of each pair.
21. In the S7 kit plain hangars (62) are also supplied which can be used with plastic brake blocks available from Slater's. These are available as a spare part from us, ref. 74306.
22. Fit brake shaft (from 1.2mm wire, 45mm long) through the brake shaft bearings, this should extend approx. 10mm on the handbrake side and 6mm on the brake cylinder side.
23. Laminate 2x brake crank (31), with the half etch facing each other. Be careful not to fill this slot as the pull rods locate in this later. A second one is required if building a handbrake only engine, otherwise laminate crank (32 or 33) depending on the orientation of brake cylinder on the engine being modelled. Note the 'T' mark on the frame which gives the centre lines of the brake cylinder. The appropriate cranks locate on the brake shaft 39mm apart (approx. 5.5mm from the frames).
24. Fit handbrake pull rods (35) to each side of hand brake crank (34). The pull rods locate in the slots on the bracket from spacer 12, with the crank attached to the end of the brake shaft.
25. Fitting pull rods (36) should be left until after completion of the chassis (you can't get the wheels out with them fitted!), but can be used to help align and fit pull rod ends (37) with adjuster casting to the brake cranks now.

Sandboxes

26. If appropriate for your loco (1823/33 & 2228 classes), fold up front sandboxes (38) and fit to frames with the straight edge facing back, top level with the top of the frames, 23.5mm forward of the rear driving axle centre line. For earlier locos (1262 & 1532 classes) an alternative front sandbox for fitting behind the front buffer beam is included in the S7 kit or available from us as a spare part, ref. 74305 if you have the standard kit.
27. Fold up rear sandboxes (39), add inspection overlay (40) to sloping face and fit to frames with flat face facing forward 21mm to rear of the driving axle centre line (note this may need to be increased slightly to avoid shorting on over scale wheel flanges).

28. Fit sand pipes from wire using photos as a guide to the shape

Drain valves

29. Drain valves rodding 41-45 can be fitted now or left until the loco has been track tested. Use 0.7mm wire to assemble this. Check the holes in the castings and drill if required, before fitting to the holes in the cylinder base, small curved outlet pipe pointing forwards.
30. Fit 0.7mm wire between the single (valve chest) drain valve and the hole in the RHS frame with link (43) closest to the frames and 1x link (44) loose on it.
31. Fit wire between each pair of drain valves, each with a link (44) on them. These links are fixed against the valves on the same side as the wire in the previous step and point downwards/rearwards. All three links 44 are joined by link (45).
32. Link 43 is fixed in line with link 44 but about 1mm in from the frames. Link 42 joins this link with rocker lever (41) fixed to a wire pivot just to the rear of the reverser shaft. This may need to be cranked at the top to clear the boiler, but as it's behind the tank it may be simpler to cut it off level with the top of the frames.

Coupling rods and balance weights

33. Laminate 2x coupling rod overlays (47) to coupling rod (46) and repeat with remaining parts. Add 2 x coupling rod boss overlay (48) to each rod and clean up coupling rod assemblies and drill to suit the crankpins being used.
34. Balance weights (49) should be fitted to wheels by referring to photos for exact position, generally the smallest are exactly 180 deg. opposite the crank on the leading wheels, the larger (2 different types) are offset slightly by 2/3 spokes under the crank.

Bogie

35. Fit spacer bar flanges (52) to the inside (numbered side of fret) of the bogie frames (51) and drill 1.2mm. Fold ends and add keep plates (54) to the half etch recesses on the outside and equalising beams (55) to the inside, aligned to the location marks above the bearing holes. Fit 4 turned bearings to these holes. If you want a bit of flexibility in the bogie, these holes can be elongated using the ½ etch guides.
36. Fold up bogie spacer (53) and assemble to side frames. Check assembly is square and add bar spacers from 1.2mm rod. Bogie centre pivot (56) can be fixed in place and side control provided by wire soldered in one pair of holes in part 53, or a more complex arrangement used, with the block sliding on two lengths of rod located in the ½ etch on the side frame, with springs between it and the bogie side. In this situation a washer (60) will need to be soldered to 56 using the location marks on it. Further washers (59 & 60) are provided to use as required.
37. Form rivets and fold bogie angle gussets (57) and add 2x gusset angle (58) before fitting over the outline marked on the bogie side frames.

Other items & finishing

38. Fit any additional parts not included in this kit, as mentioned in the introduction.

39. Holes for plunger pick-ups are provided in the main frames and should be opened out, if required, to suit the type you are using.
40. Now that assembly is complete, test chassis before painting (don't forget to add draincock gear if not done at steps 29-32). It's probably best to complete the body so that any issues can be addressed too.
41. Paint chassis (don't forget pull rods 36) and reassemble with wheels, motor & pick-ups. Pull rods (36) can now be fitted.

Parts List

Etch

1	Frames	31	Brake crank
2	Front guard irons	32	Brake crank - vertical steam cylinder
3	Rear guard irons	33	Brake crank - horizontal steam cylinder
4	Brake shaft bearing overlay	34	Handbrake crank
*5	Cylinder block	35	Handbrake pull rod
*6	Cylinder rear overlay	36	Brake pull rod
*7	cylinder front overlay	37	Pull rod ends
*8	Cylinder bottom	38	Front sandbox
*9	Motion plate	39	Rear sandbox
*10	Motion plate top/bottom flanges	40	Rear sandbox inspection cover
*11	Front of firebox spacer	41	Draincock rocker lever
*12	Forward bogie spacer	42	Draincock rod
*13	Rearward bogie spacer	43	Draincock link
*14	Rear frame strengthener	44	Draincock link
*15	Bogie bearing plate	45	Draincock link
16	Lower firebox side - left	46	Coupling Rod
17	Lower firebox side - right	47	Coupling Rod overlay
*18	Lower firebox front	48	Coupling Rod boss overlay
*19	Lower firebox rear	49	Balance weights
20	Ash pan former	50	Slidebars
21	Ash pan	51	Bogie side frames
22	Reverser shaft balance weight	52	Bogie spacer flange
23	Reverser shaft balance weight overlay	*53	Bogie stretcher
24	Lift link	54	Bogie axlebox keep
25	Reverser rod	55	Equalisation beam
26	Reverser crank	56	Centre pivot
27	Gusset back plate	57	Angle gusset
28	Gusset angle	58	Gusset angle
29	Brake hangars	59	Packing washers (thin)
30	Brake block overlay	60	Packing washers (thick)
30a	Brake block overlay – very early type	61	Front sandbox 1264/1532 class (S7 only)
		62	Brake hangar (S7 only)

S7 version - use the parts from the supplement sheet indicated above by an *

Castings and other parts

2x	Brake adjusters	1.5mm	Rod – approx. 35mm
5x	Drain valves	1.2mm	Rod – approx. 120mm
2x	Sandbox lids	0.9mm	Wire – approx. 300mm
1x	8ba nut/bolt & Spring	0.7mm	Wire – approx. 150mm
8x	Bearings	2x	4mm brass tube