

KEITH WILSON'S 5 INCH GAUGE REBUILT 'MERCHANT NAVY' ARIEL – LIST OF ERRORS

MJ Engineering Drawing List

Sheet No.	Contents
0	General Arrangement Drawing (full size)
1	Bogie and bogie mount details, bogie wheels and springing
2	Trailing and tender wheels, all axles, horn blocks, horn stays, couplings and buffers
3	Inside motion bracket, outside guide bar bracket, outside motion bracket
4	Frame stays, training truck stay, rear stay, springs, eccentrics and straps, return crank rod
5	Main frames, buffer beams, frame stretcher, smokebox saddle, lubricator tank
6	Coupling rods, connecting rode, crossheads, radius rods, expansion links
7	Inside motion layout, outside motion layout, weigh shafts, lifting levers, valve crosshead
8	Outside cylinder sections, bissell truck frame, pistons, valves
9	Inside cylinder sections, trailing bogie general arrangement
10	Smokebox, fire hole door, lubricator, front tubeplate, chimney
11	Main boiler drawings
12	Smokebox, superheater, safety valve, water gauge
13	Outer wrapper, regulator
14	Brake mechanism and parts, reversing gear
15	Reversing screw, rod, cab developments and parts
16	Cab general arrangement, grate
17	Ashpan, rear platform plates, centre platform plates, wind deflector
18	Boiler cleading, forward platform plates
19	Tender frames and buffer beams
20	Tender axle boxes, springs, brake parts
21	Tender brakes general arrangement and details
22	Details of tender, side, two end views and view on coal space
23	Details of baffle plates, (3) back and front plates, sole plates, main coal plate, well tank and sump. Steps, coal doors and main ladder and steps at rear plate
24	Details of front and rear coal plates, locations of baffle plates, tank sides, vacuum reservoirs, ejector vacuum reservoir covers, water filler cap

KEITH WILSON'S 5 INCH GAUGE REBUILT 'MERCHANT NAVY' ARIEL – LIST OF ERRORS

ERRORS DATABASE

KW = Keith Wilson, PL = Peter Lewis ref ME issue no./ page no.

TH = Tony Harmsworth see Rob Speare's Building Bulleid's Locos website:

http://www.bulleidlocos.org.uk/_mnRb/mnTonyHa.aspx

IT = Ian Tiplady, see Rob Speare's Building Bulleid's Locos website:

http://www.bulleidlocos.org.uk/_mnRb/mnlanT.aspx

JB = John Bradley, see Rob Speare's Building Bulleid's Locos website:

http://www.bulleidlocos.org.uk/_mnRb/mnJohnB.aspx

JH = James Holden, see Rob Speare's Building Bulleid's Locos website:

http://www.bulleidlocos.org.uk/_mnRb/mnJames.aspx

Keith Wilson's error list of 15th January 1995

Ariel sheet No.	Sub Assembly	Description	Reference	Corrected on MJ Engineering Dwg print as of 1/3/2014
1	Bogie	Holes in bogie side brackets should be $\frac{3}{32}$ " dia. NOT $\frac{13}{32}$ "	KW's List 15/1/1995, PL's notes #4153/p168	Yes
2	Wheels	Driving Wheel: $\frac{23}{32}$ " is overall width, PL's comment is the total thickness of the wheel itself is $\frac{11}{16}$ " making the overall length of the axles $5\frac{15}{16}$ " not the 6" shown	KW's List 15/1/1995, PL's notes #4155/p273	No
2	Axles	Trailing and tender axles show 4" between seats, this should be $4\frac{11}{16}$ "	KW's List 15/1/1995, PL's notes #4155/p273	Yes
3	Frames & Stays	Spring brackets are alleged to be too weak at end holes, it is suggested that a little bracket be silver brazed on the inside, also holes need opening out to allow spring bolts to move.	KW's List 15/1/1995, PL's notes #4153/p168	
3	Brackets	Mismatch of hole on stretcher behind drive centre, LHS, Note added to drawing	KW's List 15/1/1995	
3	Brackets	Bearings for expansion links to be drawn	KW's List 15/1/1995	
3	Brackets	Inside Motion Bracket, cross plates. At top, mix up in measurements. $\frac{17}{32}$ " dimension should be $\frac{17}{32}$ " radius from centre of $\frac{5}{16}$ " radius peculiar shaped hole.	KW's List 15/1/1995	Yes
4	Brackets	End Cap on Reversing Screw Bracket is shown with $\frac{1}{4}$ " hole, should be $\frac{5}{32}$ " to match screw.	KW's List 15/1/1995	Yes
4	Brackets	Reversing Screw bracket is for the WC/BoB not MN. This is the only drawing that I had. (Suggests that this list was written by Keith Wilson himself)	KW's List 15/1/1995. PL's notes #4153/p168	

KEITH WILSON'S 5 INCH GAUGE REBUILT 'MERCHANT NAVY' ARIEL – LIST OF ERRORS

4 & 14	Brackets	Reversing Screw bracket brake lugs for MNs are located at the centre not forward as shown, thus upper levers for brakes can all be identical	KW's List 15/1/1995, PL's notes #4153/p168	
4	Brackets	Same applies to outside motion brackets. <i>If anyone has the correct drawings for these I will redraw them (confirming it is Keith's list)</i>	KW's List 15/1/1995. PL's notes #4153/p168	
4	Stays	It is claimed that the middle frame stay is in fact upside down. <i>Looks OK to me, any ideas?</i>	KW's List 15/1/1995	Plan view is split to show from above and below
5	Smokebox	Distance from centre line of smokebox to centre line of motion shows 6¼" but should be 6¾"	KW's List 15/1/1995, PL's notes #4153/p168	Yes
5	Frames & Stays	Rivet holes in straight line on front buffer beam. They are not visible from front of loco, and are staggered for easier rivet clearance. <i>I certainly didn't alter the official drawing for fun.</i>	KW's List 15/1/1995	
5	Frames & Stays	The holes shown in the frames "to match inside motion bracket (L.H.S. shown)" are drawn 9/16" too far back	KW's List 15/1/1995	No?
5	Frames & Stays	A note re frame holes in common for some horns and brackets has been added to master drawings	KW's List 15/1/1995	
5	Frames & Stays	Running plates do not have cut-outs like the brackets do. Cut-outs on brackets are to clear bends.	KW's List 15/1/1995	
6	Motion work	Offset of fork/tongue joint on coupling rods not dimensioned: should be 3/64" off centre-line.	KW's List 15/1/1995, PL's notes #4155/p273	No
6	Motion work	Coupling rods not fluted on MN rebuilds, they were fish bellied without flutes, but are fluted as shown on the WC/BoB including rebuilds. Dimensions currently not available.	KW's List 15/1/1995, PL's notes #4155/p273	No, but OK as drawn for WC/BoB
6 & 7	Valve gear	Main Guide bars / Crossheads 1 ³ / ₁₆ " wide	KW's List 15/1/1995, PL's notes #4155/p273	Yes
6	Valve gear	Size of holes in Drop-Arm are wrong. Drill to clear studs, No. 39	KW's List 15/1/1995	Yes
7	Valve gear	Measurements of Weigh shaft alleged incorrect. Overall of assemblies ARE correct, but individual weigh shaft sections allow for trimming after silver-brazing. A note to this effect has been placed on the drawing. PL comments that 1/32" is "missing" across the width of the locomotive and possibly also another 1/32" in the length of the shaft	KW's List 15/1/1995, PL's notes #4155/p274	
7	Valve gear	It is suggested that excess swing is present on expansion links etc., but no figures are given. This valve gear layout was copied very carefully from the full-size valve gear drawings.	KW's List 15/1/1995	
7	Valve gear	Layout of outside valve gear; 2 ²⁷ / ₃₂ " should be 12 ¹⁷ / ₃₂ "	KW's List 15/1/1995	?

KEITH WILSON'S 5 INCH GAUGE REBUILT 'MERCHANT NAVY' ARIEL – LIST OF ERRORS

7	Valve gear	3¼" drive centre to weigh shaft centre should be 3 ¹³ / ₆₄ "	KW's List 15/1/1995	Yes for Outside Motion layout but <u>NO</u> for Inside
7	Valve gear	Cut-out scallop on lower guide bars to clear crosshead	KW's List 15/1/1995	
8	Valve gear	<i>Valve rods, covers, glands, valve guide bars, have been at Model Engineer office for several years now, apparently lost.</i>	KW's List 15/1/1995	
8	Cylinders	Cylinder centres shown as 7½" should be 7 ¹ / ₁₆ "	KW's List 15/1/1995	Yes
8	Cylinders	Dimensions shown in little box for piston valves incorrect; outside valves should be 3" O/A with an inner portion 2 ³ / ₁₆ "; inside valve should be 2 ¹¹ / ₁₆ " O/A and inner portion 1 ⁷ / ₈ "	KW's List 15/1/1995	Yes
8	Trailing Truck	Bissel truck inside measurement shown as 2 ²¹ / ₃₂ ", should be 2½". Shown correctly at RH end of drawing	KW's List 15/1/1995	Yes
8	Cylinders	Outside cylinder casting very tight on machining allowances at 3" long; it is suggested that this be made 3 ⁷ / ₈ " long, which also gives better clearances for piston /covers	KW's List 15/1/1995, PL's notes #4155/p275	
9	Cylinders	Inside cylinder casting also tight on machining allowances at 3" long; it is suggested that this be made 3 ⁷ / ₈ " long, which also gives better clearances for piston/covers	KW's List 15/1/1995, PL's notes #4155/p275	
11	Boiler	Combustion chamber 3 ¹³ / ₁₆ " long; not 2 ¹³ / ₁₆ "	KW's List 15/1/1995, PL's notes #4153/p167	Yes
11 & 13	Boiler	Water gauge positions should be as on correction i.e. Sheet 13, not as on boiler drawing. <i>Boiler details are scattered over several sheets, naughty, but not my doing. Reference to this added to sheet 11.</i>	KW's List 15/1/1995, PL's notes #4153/p167	Yes
15	Valve gear	It is suggested that the reversing screw is too weak at ⁵ / ₃₂ " core diameter. This may well be so but it is "to scale". Could be made ⁹ / ₃₂ " O/D, with ³ / ₁₆ " core diam. If you do this, alter various bosses to suit.	KW's List 15/1/1995	No

KEITH WILSON'S 5 INCH GAUGE REBUILT 'MERCHANT NAVY' ARIEL – LIST OF ERRORS

Peter Lewis' articles in Model Engineer magazine describing his construction of Ariel

Issue	Page		Date	Year
4153	166	Front bogie, buffer beam, stretchers and motion brackets, main frames, suppliers	24-Aug	2001
4155	273	Discusses problems with the valve gear and cylinder components. Motion	21-Sep	2001
4157	378	Boiler	2-Nov	2001
4160	550	Tender. Sanding gear	4-Jan	2002
4162	652	Tender brakes	8-Feb	2002
4164	90	Brakes, tender platework	8-Mar	2002
4166	203	Lifting Device	5-Apr	2002
4179	345	Describes a double acting hand pump	4-Oct	2002

Peter Lewis' noted corrections (other than those mentioned in KW's list above)

Ariel sheet No.	Sub Assembly	Description	Reference	Corrected on MJ Engineering Dwg print as of 1/3/2014
2	Wheels	Reduced the bores of the main driving wheel from $\frac{3}{8}$ " down to $\frac{5}{16}$ " diameter and brought them in toward the centre by $\frac{1}{8}$ " - not sure what this means	PL's notes #4155/p273	
3	Bogie	Side control block on the outside should be $1\frac{1}{8}$ " not 1"	PL's notes #4153/p168	
3	Brackets	Guide bar support is $\frac{3}{32}$ " too low according to Ken Whittle	PL's notes #4153/p168	
3	Brackets	Outside Guide bar bracket Section C-C shows $1\frac{11}{16}$ " to centre line of cylinders. If so then this gives $7\frac{1}{8}$ " between centre lines of cylinders where as elsewhere it is shown as $7\frac{1}{16}$ " - ref. Fred Grosvenor	PL's notes #4153/p169	
4	Frames & Stays	PL reinforced the corner lugs of the stays which take the spring bolts except on the front stay (so as to clear the brake gear)	PL's notes #4153/p168	
4	Frames & Stays	The rear stay shows a $\frac{3}{4}$ " O/D bush, this should be tapped or have a captive nut fitted otherwise the boiler has to be taken off to remove the Bissel truck	PL's notes #4153/p168	
4	Frames & Stays	Frame stay at the trailing wheels should be dished to clear the boiler	PL's notes #4153/p168	
5	Frames & Stays	There are no cut-outs as shown on the drawing in the gussets behind the Buffer Beam, although these are covered by the front platform plates	PL's notes #4153/p168	

KEITH WILSON'S 5 INCH GAUGE REBUILT 'MERCHANT NAVY' ARIEL – LIST OF ERRORS

5	Frames & Stays	Position of the holes LHS Motion Bracket are in the wrong position, they should be about 1½" forward of the position shown - is this the same as KW's error noted above?	PL's notes #4153/p169	
5	Frames & Stays	Holes for the Screw reverser bracket and the associated frame stay coincide requiring sorting out	PL's notes #4153/p169	
5	Frames & Stays	Rear doubling plate shown by the dotted line is correct as shown	PL's notes #4153/p169	
5	Smokebox	A circular hole has to filled in the front of the smokebox saddle in line with the inside valve spindle in order to remove it, otherwise to do so requires the saddle to be removed which means taking the cylinders off. - not sure what this means	PL's notes #4155/p274	
6	Motion work	PL added lubricator oiling turrets on the rear bush of the front coupling rods as per full size which were not shown on KW's drawings	PL's notes #4155/p273	
6	Motion work	The coupling rod bushes have the same radius all the way round and are not square shaped as shown	PL's notes #4155/p273	
6	Valve Gear	Inside combination lever as drawn is wrong handed	PL's notes #4155/p274	
6	Valve Gear	Suspension links need to be 1 ¹ / ₁₆ " overall width not 1" as drawn	PL's notes #4155/p274	
6	Motion work	KW designed his loco with a lubricator located behind the front buffer beam. PL (and TH) followed full size practice which has the lubricators located on the platform plates. In order to drive these lubricators a small shaft has to be added on the side nearest the frames on each outside expansion link. PL used a 6BA stud which could be locked up with nuts	PL's notes #4155/p274 TH's & JB's notes on Rob Speare's website	
6	Valve Gear	Inside valve crosshead is <u>not shown</u> on the drawings. TH had the same problem and designed the inside crosshead as per full size and at the request of John Steer at M.J. Engineering the drawing was added to the set - this has happened	PL's notes #4155/p274 TH's notes on Rob Speare's website	Yes
6	Valve Gear	Valve rods are also <u>not shown</u> on the drawings, PL made them with 6 ¹ / ₁₆ " long ³ / ₁₆ " diam. stainless steel	PL's notes #4155/p274	
8 & 9	Cylinders	the relief valves are so short that the springs are nearly coil bound	PL's notes #4155/p274	
8 & 9	Trailing Truck	Bissel truck frames are too wide PL ended up with 2 ⁹ / ₁₆ " over the frames	PL's notes #4157/p378	
8 & 9	Trailing Truck	Apparently the bissel truck axle boxes on the outside are not the correct shape	PL's notes #4157/p378	
11	Boiler	Turret feed bush in the wrong place	PL's notes #4153/p167	
11 & 13	Boiler	as drawn the boiler does not include a bush for the whistle	PL's notes #4157/p378	

KEITH WILSON'S 5 INCH GAUGE REBUILT 'MERCHANT NAVY' ARIEL – LIST OF ERRORS

11 & 13	Boiler	another omission is the front boiler support just before the smokebox	PL's notes #4157/p378	
11 & 13	Boiler	area of orifices in safety valves is too low according to Henry Greenly recommended sizing	PL's notes #4157/p379	
11 & 13	Boiler	pipe supplying steam to the blower runs down the outside of the boiler as per full size practice - this would lead to condensing in the pipe and blowing off a lot of water - could/should be internalised as per normal model engineering practice	PL's notes #4157/p379	
14	Brakes	KW omitted the two sand boxes which are very prominent on the full size loco	PL's notes #4157/p379	
15 & 16	Cab	KW's cab floor is apparently short without the required overlap at the back with all the angles fitted underneath - not sure quite what this means	PL's notes #4157/p379	
15 & 16	Cab	PL claims there is a discrepancy between the 9¼" cab support width shown on Sheet 15 and the 9⅜" cab width shown on Sheet 16. Also Sheet 22 shows the tender width is 9½" ie. does not match the cab. I doubt this is a problem as in the latter case allowance is made for the thickness of the angle reinforcing and casing	PL's notes #4160/p551	
18	Cleading	KW specified cleading bands 5/16" wide when they should be 3/16" when correctly scaled from full size.	PL's notes #4164/p91	
19	Tender	Sheet 19 shows the width over the axle box slots as 1½", but checking with the tender horns on sheet 20 this dimension should be 17/16"	PL's notes #4162/p652	
19	Tender	The width over the spring pockets is shown as 4¼" whereas it should be nearer 47/16"	PL's notes #4162/p652	
19	Tender	For the brake lever brackets the holes on the outer frames are drawn as 1/8" and drawn as 1/4" on the inner frames. These holes are dimensioned as 1/4" diam. On the outer frames. The brackets themselves show the dimension as 1/4".	PL's notes #4162/p653	No
19	Tender	The overall width of the brake lever bracket is 11/16" as per the space between the inside and outside frame plates, not the 11/32" shown on the bracket itself	PL's notes #4162/p653	No
19	Tender	The guard irons are fitted on the inside of the frames not the outside	PL's notes #4162/p653	
19?	Tender	There is a hole lower down to take the support from the rear ladder - ??	PL's notes #4162/p653	
19	Tender	On the "Top & Bottom Plates" there is more confusion, this time with the position of the 3/8" hole shown for the handbrake rod; the various views do not seem to tie up	PL's notes #4162/p653	
19	Tender	The wording that KW has shown against the "Carrier Plates" " <i>3 off as drawn and 1 off as drawn</i> " really fooled me for a while; it isn't the carrier plates but where the angle is fitted which varies. - This has largely been corrected on the latest issue of the drawings with the note saying " <i>3 off as drawn, 1 opp. hand. This item is 'handed' by angle only</i> "	PL's notes #4162/p653	Yes see variation in wording of note on drawing

KEITH WILSON'S 5 INCH GAUGE REBUILT 'MERCHANT NAVY' ARIEL – LIST OF ERRORS

19	Tender	Holes should also be shown in the inner end plates at the front for the bars to pass through to the loco.	PL's notes #4162/p653	No
19	Tender	PL made the tank brackets with a back so they could easily be fixed to the frames	PL's notes #4162/p653	
20	Tender	KW drew one single 'large' snubber to be located on the tender front buffer beam as per the full size WC/BoB design. The full-size MN had two smaller snubbers, one each on the tender and the loco.	PL's notes #4162/p653	
21	Tender	There is a discrepancy in the numbering of the brake parts through the drawings and articles; on view a part is No. 1 and on another it is No. 2	PL's notes #4162/p653	
21	Tender	The brake shaft arms <u>both</u> have the lug at the top, not just the upper one shown. The only difference between the arms is that the upper one has a hole at the end and the lower one has a cup at the end for the handbrake	PL's notes #4162/p653	No
20 & 21	Tender	The dimensions of the brake adjusters are suspect and lock nuts are needed at each end; left and right hand.	PL's notes #4162/p653	
20 & 21	Tender	PL fitted the carrier plates a little further apart than shown	PL's notes #4162/p653	
20	Tender	PL had to make the piston in two pieces, fit the seal then assemble the piston, ie. not the single piece casting as shown	PL's notes #4162/p653	
20	Tender	the length of the piston is not correct as shown, it has to be made to suit	PL's notes #4162/p653	
22	Tender	KW does not show the fall plate on Sheet 22.	PL's notes #4164/p90	
22	Tender	the overall width of the tender is show as two different dimensions on Sheet 22 ie. 9½" and 9 ⁷ / ₁₆ " although these dimensions are not at the cab floor level	PL's notes #4160/p551	
22	Tender	By its wheel base KW has indicated a 6,000 gallon tender, but the drawing (Sheet 22) shows it is a 5,250 gallon tender	PL's notes #4162/p652	
22 & 23	Tender	KW doesn't show the coal tray or shovelling plate which should protrude from the front bulkhead of the tender	PL's notes #4164/p90	
23	Tender	The angle fitted to the front of the Front Plate just below the level of the coal hole is not fitted on the full size loco tenders	PL's notes #4164/p90	
23	Tender	the section through the upper edge of the tank conflicts with that shown on Sheet 24	PL's notes #4164/p90	
23	Tender	PL fitted his tender with a double acting hand pump (described in #4179 / p345) connected to the loco through a ¼" pipe connected to a check valve fitted to the stalk from the blowdown valve	PL's notes #4164/p90	
24	Tender	the overall width of the outer edges of the outside cupboards has an error (see the front coal plate on Sheet 24)	PL's notes #4164/p90	

KEITH WILSON'S 5 INCH GAUGE REBUILT 'MERCHANT NAVY' ARIEL – LIST OF ERRORS

Ian Tiplady's modification drawings

http://www.bulleidlocos.org.uk/_mnRb/mnlanT.aspx

- 1 [Bissel Truck, Boiler support and Bogie spring control bosses](#)
- 2 [Smokebox Saddle](#)
- 3 [Smokebox Door](#)
- 4 [Reversing Screw Bracket](#)
- 5 [Outside Motion Bracket](#)
- 6 [Slidebar Bracket](#)
- 7 [Platform Brackets](#)
- 8 [Cab Layout and Rubbing Plate \(Snubber\)](#)
- 9 [Transverse Cab Support Frames](#)
- 10 [Brake details sheet 1: Rear Brake Hanger & Platform Support, Boiler support Bracket](#)
- 11 [Brake Details sheet 2: Tie Rods, Main Pull Bar etc](#)

Ian Tiplady's noted corrections (other than those mentioned in KW's list above)

Ariel sheet No.	Sub Assembly	Description	Reference	Corrected on MJ Engineering Dwg print as of 1/3/2014
1	Bogie	IT redesigned the spring control bosses, they are more rounded and the spring control end cap is level, see IT's dwg no. 1	IT's notes on Rob Speare's website	
8	Trailing Truck	IT used castings to redesign the "welded" frame to look like a cast one see IT's dwg no. 1	IT's notes on Rob Speare's website	
12	Smokebox	IT replaced KW's smokebox design with his own of a single fabrication which bolts on top of the inside cylinder, see IT's dwg no. 2	IT's notes on Rob Speare's website	
10	Smokebox	IT followed the full size design for the smokebox door with a small flat section to the top and bottom of the door, thus making it more of an oval rather than an ellipse, see IT's dwg no. 3	IT's notes on Rob Speare's website	
7	Valve Gear	Another omission on KW's drawings is of the inside cylinder valve crosshead guide.	IT's notes on Rob Speare's website	no
3 & 4	Brackets	<i>IT redesigned the reversing screw and outside motion brackets to the MN design - see IT's dwg no.s 4 & 5 These modifications are not necessary if building a WC/BoB</i>	<i>IT's notes on Rob Speare's website</i>	

KEITH WILSON'S 5 INCH GAUGE REBUILT 'MERCHANT NAVY' ARIEL – LIST OF ERRORS

3	Brackets	IT included a design for the Expansion Link bearings (on the Outside Motion brackets?) which KW had omitted from his drawings - see IT's dwg no. 5	IT's notes on Rob Speare's website	
3	<i>Brackets</i>	<i>IT redesigned the Slide (Guide) Bar brackets to the MN design - see IT's dwg no. 6 These modifications are not necessary if building a WC/BoB</i>	<i>IT's notes on Rob Speare's website</i>	
Should be on 4	Brackets	IT redesigned the Platform Support bracket opposite the Reversing Screw Bracket to the MN design - see IT's dwg no. 7 As far as I can see KW omitted this bracket from his drawings & therefore is necessary for the WC/BoB design as well	IT's notes on Rob Speare's website	no
14	<i>Brackets</i>	<i>IT also redesigned the Rear Brake Hanger/Boiler Support bracket to MN design. These modifications are not necessary if building a WC/BoB</i>	<i>IT's notes on Rob Speare's website</i>	
16	Cab	IT redesigned the Cab Support structure from first hand observation, with it sitting on top of the bissel truck bearing beam and drag box rather than attached to the frames, see IT's dwg no. 8, as well as other modifications he details in his notes	IT's notes on Rob Speare's website	no
14	Brakes	KW's sheet 14 shows that 2 off 'Compensation Beam 1' are required when actually 4 are required, 2 each side held apart by a spacer.	IT's notes on Rob Speare's website	no
14	Brakes	KW's sheet 14 shows that the Front Lever, which is sandwiched between the compensation beam, although the profile is correct, the end view is not, see IT's sheet no. 10 (Brake Details sheet 1) for the correct view.	IT's notes on Rob Speare's website	no
14	Brakes	KW did not specify an offset in the Pull Bars so IT spaced his at $\frac{5}{8}$ " (the thickness of the wheel is shown as $\frac{9}{16}$ " which suggests $\frac{5}{8}$ " is a little skinny), $\frac{1}{32}$ " wider (not sure what IT meant with this last comment)	IT's notes on Rob Speare's website	no
14	Brakes	KW's sheet 14 shows 3 off Cross Rods (Tie Bars) are required when actually only 2 are required. The front one is in the right place, but the middle one goes through the top hole in 'Compensation Link 3' and the bottom end of the brake hanger lever (so this one needs $\frac{3}{16}$ " diam. ends not the $\frac{1}{8}$ " shown on KW's sheet). The rear cross rod is not used, see IT's sheet no. 11 (Brake Details sheet 2)	IT's notes on Rob Speare's website	no
14	Brakes	KW's sheet 14 omitted the brake adjuster in the Pull Rods between the now empty Cross Rod (Tie Rod) hole and centre hole of 'Link 3' (see IT's sheet no. 10 (Brake Details sheet 1)), shorten Pull Rod to this hole.	IT's notes on Rob Speare's website	no
14	brakes	IT also redesigned the Main Pull Bar, see Brake Details sheet 2, (IT dwg no. 11)	IT's notes on Rob Speare's website	

KEITH WILSON'S 5 INCH GAUGE REBUILT 'MERCHANT NAVY' ARIEL – LIST OF ERRORS

Corrections from other Ariel builders on Rob Speare's Bulleid web site

(other than those mentioned in the lists above)

Ariel sheet No.	Sub Assembly	Description	Reference	Corrected on MJ Engineering Dwg print as of 1/3/2014
8 & 9	Trailing Truck	John Bradley (JB) states that KW specified $\frac{3}{32}$ " thick plate for the Bissel Truck which was later amended to $\frac{1}{8}$ ". From my inspection of the ME notes and the MJ Engineering drawings it specifies $\frac{1}{16}$ " for the main body of the truck, then $\frac{1}{8}$ " for some elements and on the Suspension Beam that the $\frac{1}{8}$ " plate on the bottom has to be machined flat to $\frac{3}{32}$ "	John Bradley's notes on Rob Speare's website	
5	Frames & Stays	JB states that the Buffer Beam gussets as KW designed them had to be altered so that the buffers could be fitted	JB's notes on Rob Speare's website	
6 & 7	Valve Gear	JB states that KW did not do drawings for: Suspension Links, Combination Levers, Union Links, Valve Rods, Rear Valve Guide and Inside Front Valve Guide	JB's notes on Rob Speare's website	
13	Boiler	JB states that the Regulator body required "pruning" to get it and its operating rod in through the holes into the boiler	JB's notes on Rob Speare's website	on KW lists?
13	Boiler	JB states that the Regulator rod does not have adequate gland support surface to compensate for the straight-line pulling effect, as the gland requires regular packing adjustment	JB's notes on Rob Speare's website	
19 & 20	Tender	JB states that the design of the drawbar and safety links on the tender are not clear on KW's drawings	JB's notes on Rob Speare's website	
5	Frames & Stays	James Holden (JH) states that he doubled the frame thickness at the rear to support the weight of the fire box and cab	James Holden's notes on Rob Speare's website	
4	Frames & Stays	JH states that the rear Buffer Beams required extension with locations for connecting to the tender	JH's notes on Rob Speare's website	
11 & 13	Boiler	JH states that the boiler drawing is wrong for the inner and outer wrappers, being too short on overall length, so an extra width of material is needed here	JH's notes on Rob Speare's website	
	Various	JH stated that he needed photos & drawings from the NRM for: full size version of the cab layout, steam & vacuum pipe work on the back head, windshield canopy between loco and tender, steam generator parts, the whistle fabricated under the running boards, mechanical lubricators & linkage, sandboxes, bridging main frames, sand pipes with steam connections, lamps, flags, handrails or ladders. JH suggests that an extra 6 drawings should have been provided to cover all necessary items	JH's notes on Rob Speare's website	
3	Brackets	Outside Guide Bar Bracket - Section C-C distance to drive centre should be $11\frac{19}{32}$ " not $1\frac{19}{32}$ "	MKM review Mar 2014	