ARMIG

Changes up to Version 5

As it says in my Editor's note in the ARMIG book "We are at the beginning of another design that should be as popular as the Project and DEE. We would like to develop the book as more ARMIGs are built. We know there will be areas that need clarification and correction in this book. If you build an ARMIG you might have notes, comments and pictures that will be useful to improve this book." This document summarizes those changes that I have incorporated in the book up to Version 5 dated October 2011. They are designed to help those who have earlier versions of the ARMIG book to update their copies. My thanks to all those who have helped find these changes. Please keep up the good work and help this book develop.

Martin Hulse *November 2011*

In summary the changes are:-

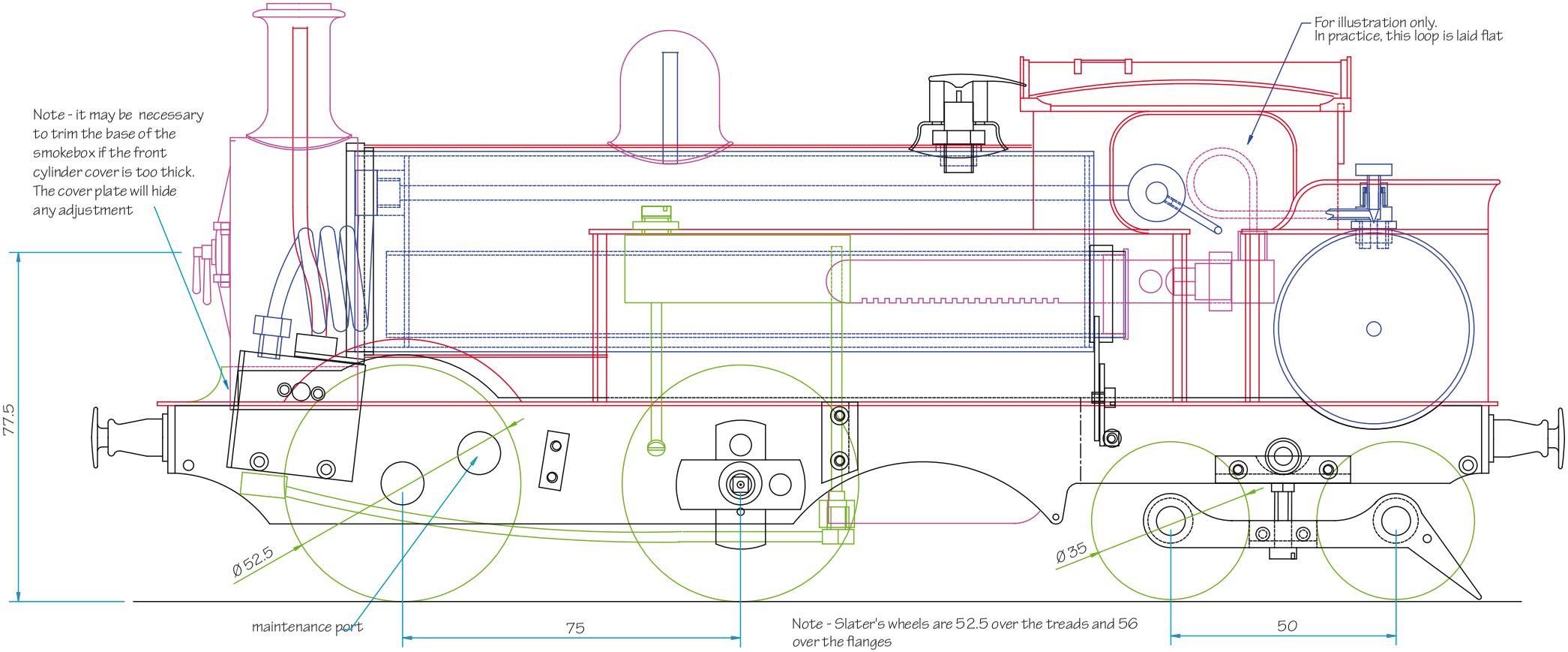
- Modified GA shows wheel diameters and part numbers.
- Parts list has been tidied up to include some omissions. New parts show the first version they appear as suffix to part number. Parts in italic are sub parts.
- An extra dimension has been added to the front of the mainframe 2_1 to locate the maintenance hole.
- The bogie pin diameter has been added to drawing 2-2.
- The lubricator drawing 2_4 has been revised to show all parts & subparts. Constructors should note the cut out on the lubricator feed pipe inside the tank. An assembly sketch shows how the pipework runs in relation to the sidetank and frame.
- The valves now have a slot for the drive rod, rather than being drilled. This should prevent valves being lifted off the port faces. See 3_1 part m/12.
- Plug for cylinder block part 5m/21 and dimension for manifold screw holes added to 3_2.
- Offset for connecting rod and note on fixing screws for trunk guide added to 4_5.
- More dimensions for safety valve & cover plus note on spring added to 5_4.
- Dimension errors & omissions corrected for boiler supports in 5_5
- Revised Supplier Appendix C shows what parts are currently available.

The following pages show the changes - use them to update your copy of the ARMIG book.

Published By The Gauge '1' Model Railway Association

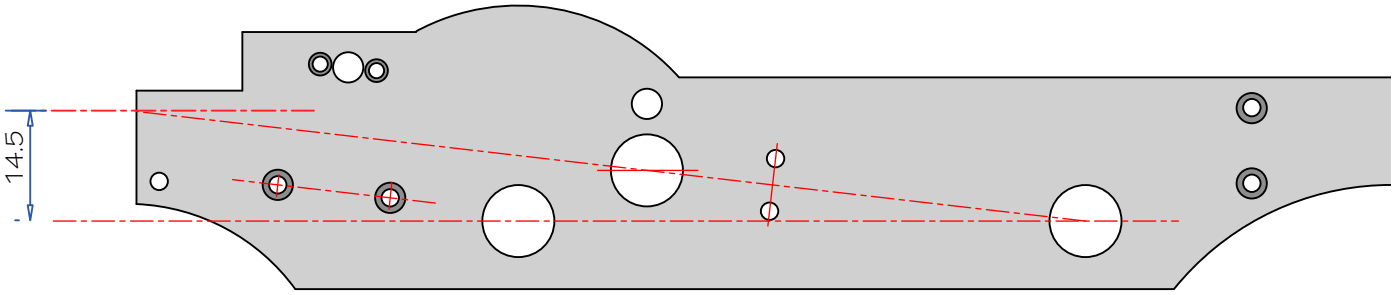
ARMIG General Arrangement V4

Changes from V1
1. Wheel diameter dimensions added.
2. Note on bogie wheel tread dimensions added.
3. Part numbers for wheels from Slaters & Walsall added.



Mainframes - part c/1

1.5mm mild steel
Make two
Remember they are handed after counter sinking



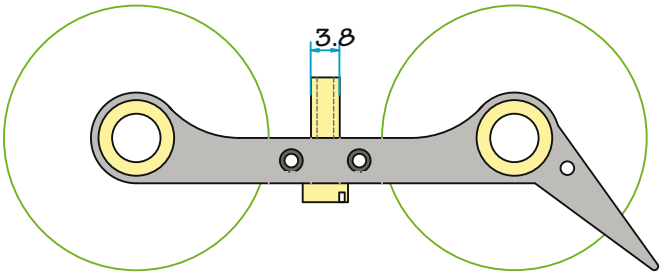
Changes from V1
1. Added 14.5 dimension to front of frame
- this locates the sloping centre line.

 Drawing 2_1 V3 dated 25 July 2011

Rear Bogie - part c/14

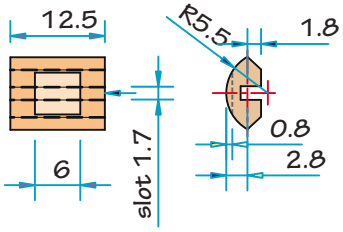
Frame material - mild steel sheet

Changes from V1 dated 5 March 2011
1. Added dia. for bogie pin



 Drawing 2_2 V3 dated 17 June 2011

Valves - part m/12



Make 2 valves from 11mm bronze or stainless steel round stock.
Valves are kept apart by 1mm vertical pin.
The back of the valve may need relieving to
provide slight clearance for the pin.
Valve slotted for drive rod - this is a change from original design
which was drilled.

 Drawing 3_1 V4 dated 21 August 2011

Parts lists

No.	ITEM	Qty	Drawing
	CHASSIS		
c/1	Main frames	1 Pair	2_1
c/2	Wheels Driver	2 axles	None
c/3	Wheels bogie	2 axles	None
c/4	Crank Axle	1	4_1
c/5	Bearings driver	4	2_1
c/6	Bearings bogie	4	2_2
c/7	Coupling rods	1 Pair	2_1
c/8	Mid stretcher	1	2_3
c/9	Bogie stretcher	1	2_3
c/10a	Lubricator	1	2_4
2c/10a	*tank body*	*1*	*2_4*
2c/10e	*drain plug*	*1*	*2_4*
2c/10f	*oil feed pipe*	*1*	*2_4*
2c/10g	*drain pipe*	*1*	*2_4*
2c/10h	*union nut*	*1*	*2_4*
2c/10i	*nipple*	*1*	*2_4*
2c/10j	*oil filler*	*1*	*2_4*
2c/10k	*end disks*	*2*	*2_4*
c/10c	Lubricator piping	1	2_4
2c/10m	*pipe*	*1*	*2_4*
2c/10n	*cylinder banjo*	*1*	*2_4*
2c/10o	*feed connector*	*1*	*2_4*
c/10d	Lube filler plug	1	2_4
2c/10d	*Body*	*1*	*2_4*
2c/10b	*Sealing washer*	*1*	*2_4*
c/10e	Locating nut	1 or 2	2_4
c/11	Buffer beam	1	2_2
c/11a	*Front stretcher*	*1*	*2_3*
c/12	Drag beam	1	2_2
c/12a	*Rear stretcher*	*1*	*2_3*
c/13	Buffers	4	None
c/14	Bogie frame	1	2_2
c/16	Bogie pivot	1	2_2
c/17	Coupling hooks	1 pair	None
c/18	Bogie pivot spring	1	None
c/19	Buffers	4	None
	MOTION		
m/1	Cylinder block	1	3_2
m/2	Front cover	1	3_1
m/3	Rear cover	1	3_1
m/3a	*Plate*	*1*	*3_1*
m/3b	*Cylinder boss*	*2*	*3_1*
m/3c	*Valve boss*	*1*	*3_1*
m/4	Trunk guides	2	4_2
m/5	Piston	2	3_3
m/5a	*Head*	*2*	*3_3*
m/5b	*Rod*	*2*	*3_3*
m/6	Xhead	2	3_3
m/7	Xhead pins	2	3_3
m/8	Valve rod	2	3_3
m/9	Valve knuckle	2	4_3
m/9a	*Fork*	*2*	*4_3*
m/9b	*Pin*	*2*	*4_3*
m/9c	*Knuckle*	*2*	*4_3*
m/10	Gland nuts p	2	3_1
m/11	Gland nuts v	2	3_1
m/12	Valve	2	3_1
m/13	Main steam con	1	2_4
m/13a	*Steam dryer coil*	*1*	*2_4*
m/13b	*Lock nut*	*1*	*2_4*
m/13c	*Banjo nut*	*1*	*2_4*
m/14	Eccentric	2	4_3
m/15	Strap	2	4_3
m/16	Conn rod	2	4_2
m17	S/chest pin	1	3_2
m/18	Valve drive rod	2	4_3
m/19	Motion Bracket	1	4_2
2m/20	Steam banjo screw	1	5_1
5m/21	Plug	2	3_2
	BOILER/BURNER		
b/1	Smokebox	1	5_3
b/2	Manif/ring	1	5_5
b/3	Chimney	1	5_3
b/4	Dome	1	5_3
b/5	Boiler	1	5_1 & 5_2
b/5a	*Shell and flue*	*1*	*5_1*
b/5b	*Take off bush*	*1*	*5_1*
b/5c	*Dome retainer*	*1*	*5_1*
b/5d	*Front tubeplate*	*1*	*5_2*
b/5e	*Rear tubeplate*	*1*	*5_2*
b/5f	*Standard bush*	*4*	*5_2*
b/5g	*Steam manifold*	*1*	*5_2*
b/6	P gauge	1	None
b/7	P G siphon	1	5_6
b/8	Rbtm sv cover	1	5_4
b/9	Burner	1	6_1
b/9a	*Tube & adapter*	*1*	*6_1*
b/9b	*Jet holder*	*1*	*6_1*
2b/9c	*Holder*	*1*	*6_1*
2b/9d	*Jet*	*1*	*6_1*
b/10	Gas tank	1	6_2
b/11	Safety valve	1	5_4
b/12	Enots/Rectus	1	None

No.	ITEM	Qty	Drawing
b/13	Gas valve (Control)	1	6_2
b/13a	*Needle valve*	*1*	*6_2*
b/13b	*Gland nut*	*1*	*6_2*
b/13c	*Valve body*	*1*	*6_2*
b/13d	*Pipe & nut*	*1*	*5_6*
b/14	Regulator	1	5_2
b/15	Gland nut	1	5_2
b/16	Clack valve	1	5_4
b/17	Rear boiler Support	1	5_5
b/17a	*Ring*	*1*	*5_5*
b/17b	*Support*	*1*	*5_5*
b/18	EWG Probe	1	App F
b/19	Water pipe	1	5_6
	PLATEWORK		
p/0	ETCH	1	None
p/1	Footplate	1	None
p/2	Side tanks	2	None
p/3	Rear tank	1	None
p/4	Cab	1	None
p/5	Steam reverser	1	None
p/6	Ash pan	1	None

See GA & elevation drawings for overall views that help towards platework. App B deals with modifying one commercial etch.

	FIXINGS	
f/1	10BA 1/4 csk screws	20 approx
f/2	9BA 1/4 csk screws	4
f/3	8BA 1/4 csk screws	12
f/4	8BA 1/4 chs screws	12
f/5	10BA 1/4 chs screws	2

csk = countersunk
chs = cheesehead

Parts are numbered, for example m/5. To make an ARMIG you will need to buy or make these items.

Some parts are built from a number of subparts, for example m/5 from m5/a & m5/b. This information is of more interest to constructors, and the text describes what to make and how to join the subparts to make the parts. If you buy the main part it would be prudent to check it includes the sub parts listed where these are detachable. In the parts list such parts have indented descriptions and are shown in italics.

Parts in Edition 1 of this ARMIG book had no numeric prefix. Parts introduced in subsequent Editions have a numeric prefix to show which Edition they first appeared in. For example 2c/10a. Mostly these correct errors of omission in documentation.

Drawings which have been revised have a new drawing number ending in V2, or V3, etc. and a new date plus some comments to describe the changes.

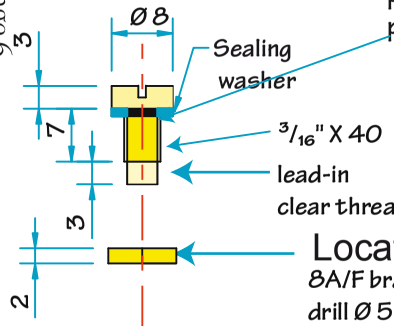
Both parts and their constituent subparts are shown on the relevant drawings, except:-

1. Those marked 'None' are items that will be probably be bought, not made.
2. Appendix B describes how to proceed from the W&C etch for parts p/n
3. Fixings are standard screws & nuts.

Lubricator Filler Plug - part c/10d

Comprises
part 2c/10d
part 2c/10b

Body make 1 from brass
Sealing washer - red fibre or PTFE or 'O' ring

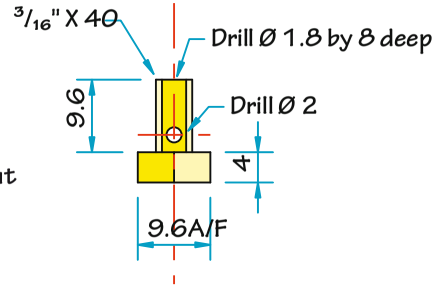


Locating Nut - part c/10e

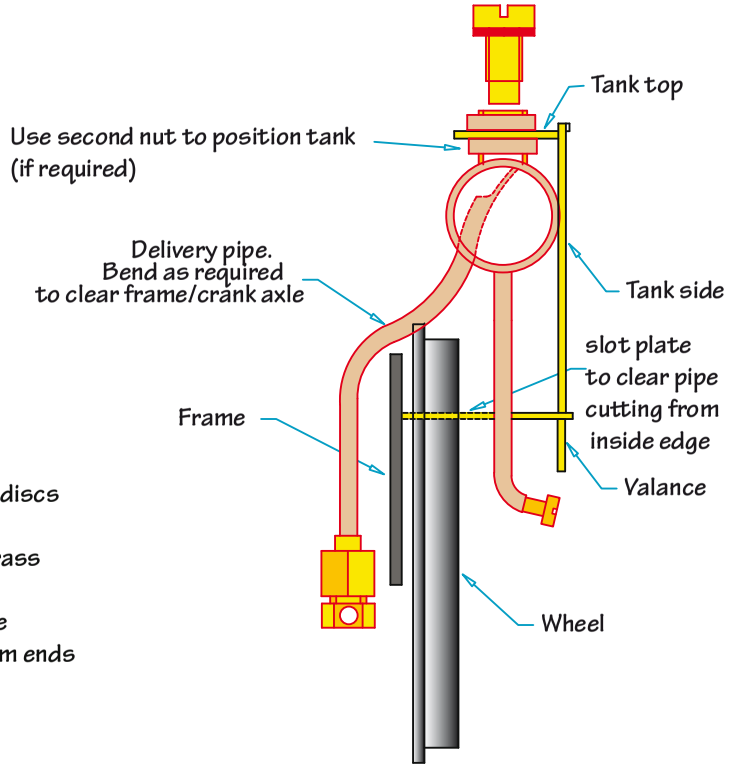
8A/F brass
drill Ø 5.6
tap 1/4" X 40
Note: Lubricator held into LH side tank by this nut
make two if height needs adjusting

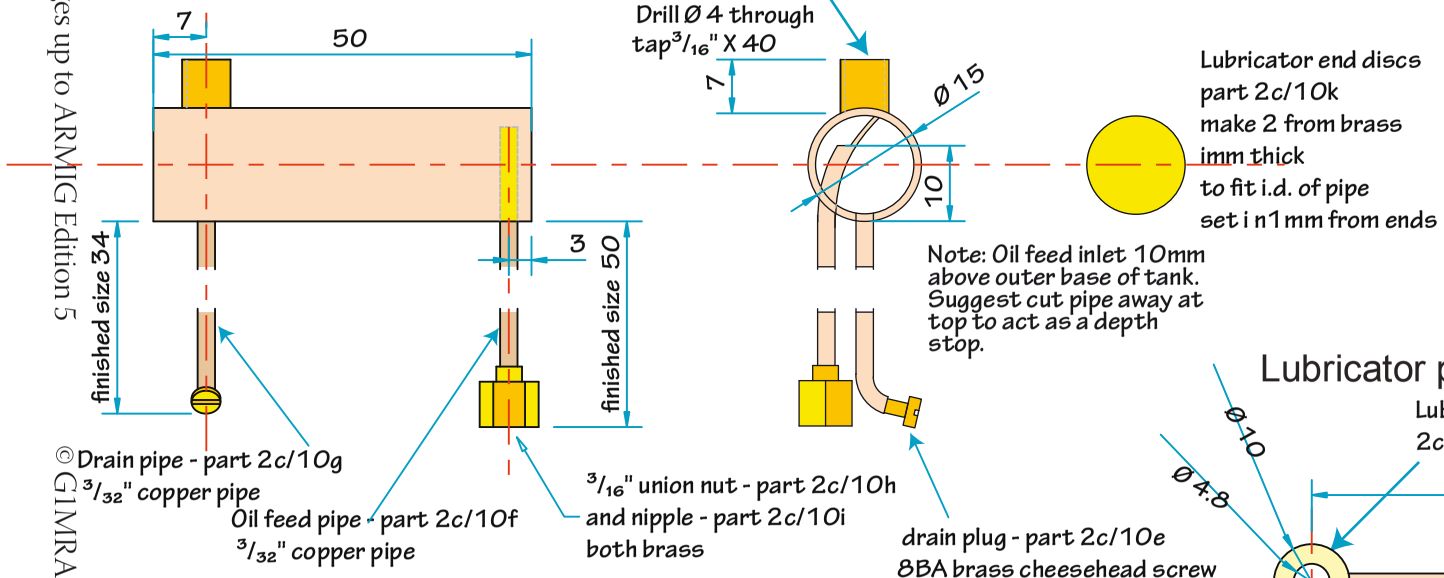
Lubricator Banjo Screw - part c/10b

material - brass



Changes from V1
1. Steam connection moved to 5_1
2. Subparts shown on all items
3. Oil feed inlet cut away to 10mm above tank base
4. Sketch below showing assembly added



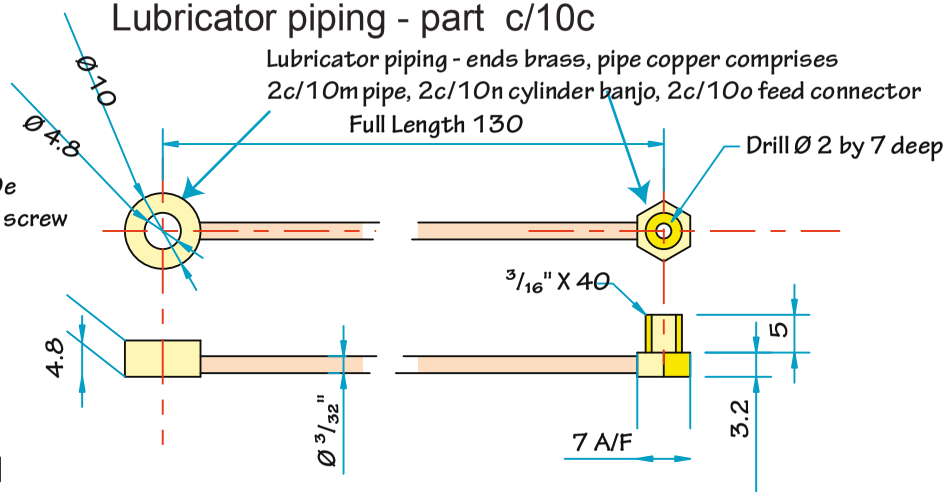


Lubricator end discs
part 2c/10k
make 2 from brass
1mm thick
to fit i.d. of pipe
set in 1mm from ends

Note: Oil feed inlet 10mm above outer base of tank. Suggest cut pipe away at top to act as a depth stop.

Lubricator piping - part c/10c

Lubricator piping - ends brass, pipe copper comprises
2c/10m pipe, 2c/10n cylinder banjo, 2c/10o feed connector

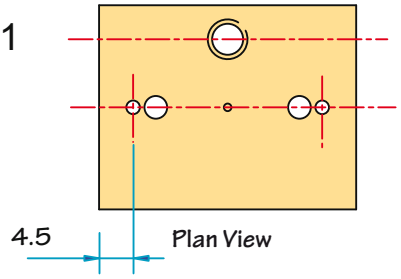


Lubricator Tank - part c/10a

comprises 2c/10a tank body - copper ex water pipe
2c/10g drain pipe, 2c/10f oil feed pipe - both copper pipes
2c/10e drain plug, 2c/10h union nut, 2c/10i nipple, 2c/10j oil filler - all brass
2c/10k end disks - brass

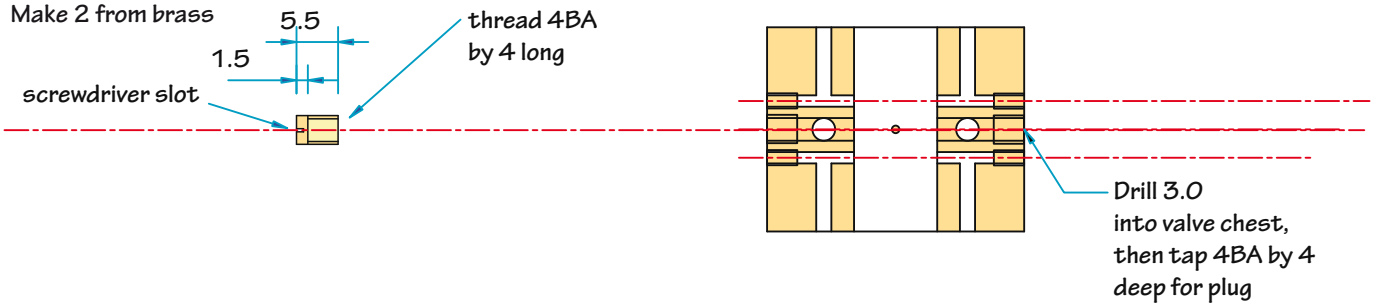
Cylinder Block - part m/1

Changes from V1
1. Dimension line added to show position of manifold screw drilling at V5
2. Exhaust port plug - part 5m/21 added at V5

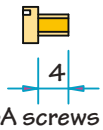


Exhaust port plug - part 5m/21

Make 2 from brass



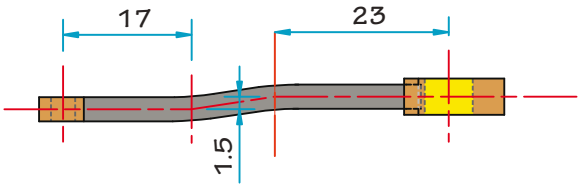
Motion Bracket - part m/19



4 off 8BA screws or bolts for fixing motion bracket to frame. Do not allow screw to penetrate bore of trunk guide

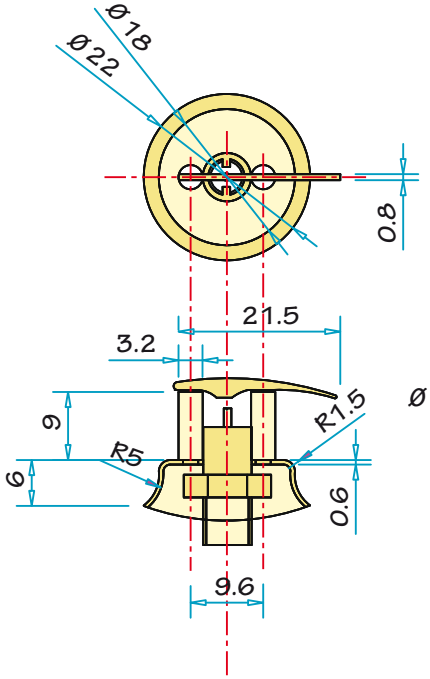
Connecting Rod - part m/16

Use silver solder to assemble components



Offset rod 1.5 as shown after assembly

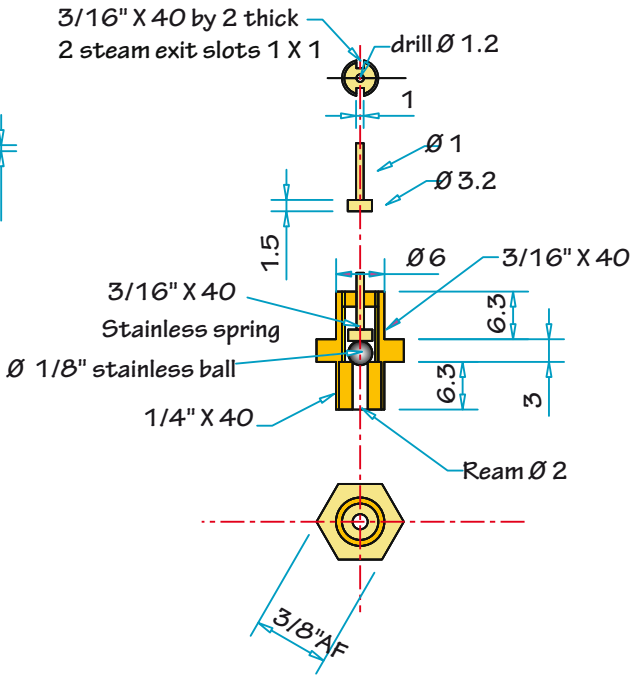
Ramsbottom cover - part b/8



Note: The Ramsbottom style cover is purely cosmetic and plays no part in the function of the safety valve

Safety valve - part b/11

make 1 from bronze or brass.



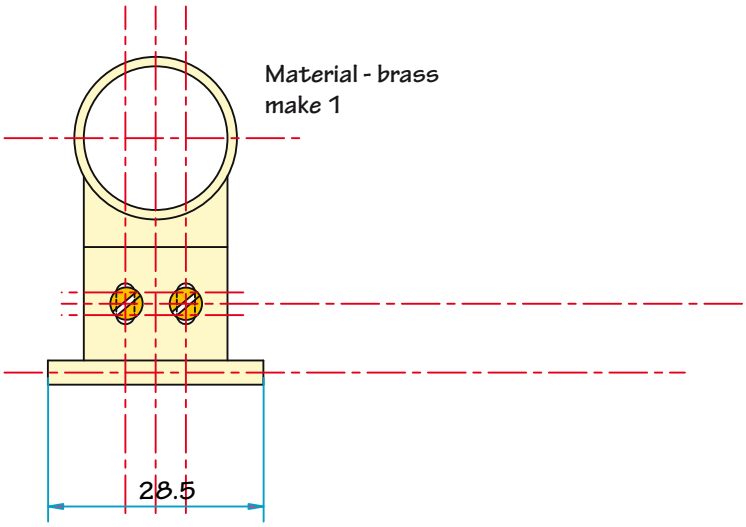
original stainless spring
used 3.0 O/D by 5 free length,
5 turns of wire
Ø 0.42 (26SWG)

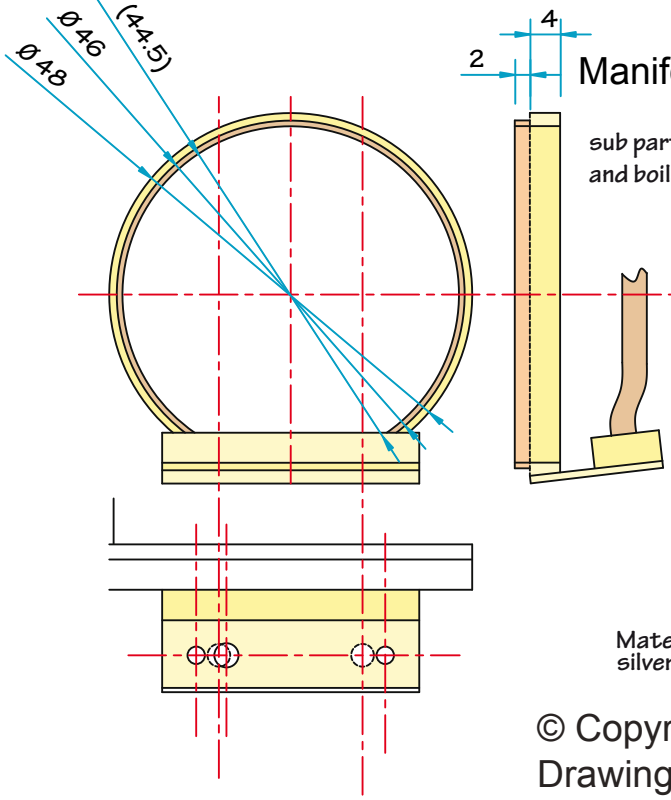
Changes from V1
1. Radii added to b/8 in V5
2. More dimensions plus note on spring added to b/11 in V5

 Drawing 5_4 V5 dated 13 September 2011

Rear Boiler Support ring - part b/17

sub parts flue ring- b/17a, sliding support - b/17b plus 2off 8BA X 3 cheesehead screws





Manifold and Boiler Support - part b/2

sub parts manifold - b/2a, plate- b/2b
and boiler support ring b/2c.

Changes from V1
1. Dimension line errors on b/2 corrected at V2
2. Width of b/17b restored as 28.5 at V5

Material - brass. All joints
silver soldered

Drawing 5_5 V5 dated 5 September 2011

APPENDIX C - Suppliers

Bob Carter, who handles Supplier Liason for G1MRA, has gone through the parts list carefully and checked with each supplier as to exactly what they have available at October 2011. The resulting list was published in G1MRA NL&J 231 on pages 60/61, and is reproduced below..

Part		Qty	Suppliers		
c/1	Main frames	1 pair	Model Engineers Laser	Peter Korzilius	
c/2	Wheels Driver	2 axles	Slaters Part No. S9863	Walsall Model Industries	
c/3	Wheels bogie	2 axles	Slaters Part No. S9842ST	Walsall Model Industries	
c/4	Crank Axle	2	Just The Ticket		
c/5	Bearings driver	4	Just The Ticket		
c/6	Bearings bogie	4	Just The Ticket		
c/7	Coupling rods	1 pair	Model Engineers Laser	Peter Korzilius	
c/8	Mid stretcher	1	Model Engineers Laser	Peter Korzilius	
c/9	Bogie stretcher	1	Model Engineers Laser	Peter Korzilius	
c/10	Lubricator	1	Just The Ticket		
c/11	Buffer beam	1	Model Engineers Laser	Wagon & Carriage Works	Peter Korzilius
c/12	Drag beam	1	Model Engineers Laser	Wagon & Carriage Works	Peter Korzilius
c/13	Buffers	4	Walsall Model Industries	Peter Korzilius	
c/14	Bogie frame	1	Model Engineers Laser	Peter Korzilius	
c/17	Coupling hooks	2	D Brutnell	Walsall Model Industries	Peter Korzilius
m/1	*Cylinder block	1	Just The Ticket		
m/2	Front cover	1	Just The Ticket		
m/3	Rear cover	1	Just The Ticket		
m/4	Trunk guides	2	Just The Ticket		
m/5	Piston	2	Just The Ticket		
m/6	Xhead	2	Just The Ticket		
m/7	Xhead pins	2	Just The Ticket		
m/8	Valve rod	2	Just The Ticket		
m/9	Valve knuckle	2	Just The Ticket		
m/10	Gland nuts p	2	Just The Ticket		
m/11	Gland nuts v	2	Just The Ticket		
m/12	Valve	2	Just The Ticket		
m/13	Main steam con	1	Just The Ticket		
m/14	Eccentric	2	Just The Tickett		
m/15	Strap	2	Just The Ticket		
m/16	Conn rod	2	Just The Ticket		
m/17	S/chest pin	1	Just The Ticket		
m/18	Valve drive rod	2	Just The Ticket		
p/1	Footplate	1	Wagon & Carriage Works	Model Engineers Laser	
p/2	Side tanks	2	Wagon & Carriage Works	Model Engineers Laser	
p/3	Rear tank	1	Wagon & Carriage Works	Model Engineers Laser	
p/4	Cab	1	Wagon & Carriage Works	Model Engineers Laser	
p/5	Steam reverser	1	D Brutnell	Wagon & Carriage	
b/1	Smokebox	1	Model Engineers Laser	Wagon & Carriage Works	Walsall Model Industries - smoke box door only
b/2	Manif/ring	1	Just The Ticket		
b/3	Chimney	1	Wagon & Carriage Works	Walsall Model Industries	
b/4	Dome	1	Walsall Model Industries		
b/5	Boiler	1	Just The Ticket		
b/6	P gauge	1	Just The Ticket	Walsall Model Industries	
b/8	Rbtm s/v cover	1	Walsall Model Industries		
b/9	Burner	1	Just The Ticket	Roundhouse	
b/10	Gas tank	1	Just The Ticket		
b/11	Safety valve	1	Just The Ticket		
b/12	Enots/Rectus	1	Just The Ticket	DJB Model Engineering	
b/13	Gas valve	1	Roundhouse	Brandbright	
b/18	Water level gauge	1	Peter Spoerer		

Just The Ticket report that they have almost everything in stock from other suppliers, as well as their own items. *Just The Ticket also offer an alternative single cylinder block for the HD1 variant.

Fixings are standard BA screws and nuts which are available from many suppliers so are not listed.

Address details at October 2011 are:-

Dave Brutnell	8 Broadwater Close, Staines Road, Wraysbury, Staines, Middx. TW19 5BZ Tel: 01784 482248 (evenings only)
Brandbright Ltd.	The Old School, Cromer Road, Bodham, Norfolk NR25 6QG Tel: 01263 588755
DJB Model Engineering Ltd.	17 Meadow Way, Bracknell, Berks. RG42 1UE Tel: 01344 423256
Just the Ticket	15 Hillside Drive, East Gomeldon, Salisbury, Wilts, SP4 6LF www.justtheticket.tv Tel: 01980 610058 E-mail: justtheticketeng@gmail.com
Peter Korzilius	Tel: 01935 872960 e-mail: peter.korzilius@googlemail.com
Roundhouse Engineering	Units 6-9, Churchill Business Park, Churchill Road, Wheatley, Doncaster DN1 2TF Tel: 01302 328035 E-mail: sales@roundhouseeng.com
Model Engineers Laser	www.modelengineerslaser.co.uk Tel: (01302) 337772.
Slaters	Temple Road, Matlock Bath, Matlock DE4 3PG Tel: 01629 583993
Peter Spoerer	The White Horse Works, Fakenham Road, Morton on the Hill, Norfolk, NR9 5SP Tel:- 01603 260562 www.peterspoerermodelengineer.com
Wagon & Carriage Works	P.O. BOX 7814, SLEAFORD, LINCS NG34 9WW Tel: 01529 469595 Email : wagonandcarriage@hotmail.co.uk www.wagonandcarriage.co.uk
Walsall Model Industries	Unit 16/17, Ashmore Industrial Estate, West Midlands, WS2 8HW. Short Acre Street, Walsall Tel/Fax 019 22 633718 www.walsallmodelindustries.co.uk E-mail: info@walsallmodelindustries.co.uk

Read the book carefully before purchasing to ensure that what you are ordering is compatible. Despite the general concept of a single design, there are some variations within the design. For instance, there are two wheel suppliers who use a different size of squared end. The crank axle needs to match the wheel set.

Some suppliers will have many or even most of the components, but you should be able to mix and match, provided that you are careful to specify your exact requirements.

Note that most of these have been mentioned where appropriate in the text, but this is an ever changing situation and you will need to keep yourself updated with the latest position.

End of changes at Version 5