

Brassmasters MR/LMS - Inside valve gear and connecting rods

This is the valve gear and connecting rods from our MR/LMS 0-6-0 4F kit, which enables modellers to construct inside “working” valve gear and connecting rods for other 0-6-0 chassis.

Introduction and general notes

This etch is designed for use in 00 – EM – 18.83 gauges; all parts of the valve gear and connecting rods are included to enable construction although some modifications may be necessary for closer than scale frames. The basic design follows the prototype as closely as possible and therefore some clearances in some cases are tight.

The spacers are designed to fit within the chassis frames and are as follows

18.83 =	15.3mm
EM =	14.00mm
00 =	12.00mm

It may be possible to reduce the width of the spacers to suit your own chassis, but again modifications will have to be made to some of the components.

Etchings

We have used nickel-silver throughout, since it is much easier than brass to solder and to paint.

Wherever possible we have included spares of some components to allow for those parts which generally hide in the carpet or as can happen with the inside valve be soldered up solid.

PLEASE READ

The instructions and drawings are a new departure for Brassmasters with the text being included within the drawings. Photographs have been taken of the construction of the test etches and although the test etch photographs show some minor variations they do show the construction of the model. They are available on the Brassmasters web site www.brassmasters.co.uk. Brass castings are used for the piston gland cover to allow sufficient heat to be used to fix in place when soldering.

A CD-rom of the construction and prototype photographs is also available for £3 inclusive of UK post and packing.

General

The chassis is built as normal, the slide bar inlay (25) along with the smokebox spacer (1) are fitted as shown in the drawings but the slide bar support spacer after being built up was left loose in the chassis it can be sprung quite easily from the chassis and you will probably keep need to removing this as you build up the connecting rods and the eccentric rods it is nigh on impossible to solder up all the forked joints if the spacer is left in the chassis it also gives you the chance to keep testing the free play in the rods. You can see

from the photos and drawings it looks quite complicated but in practice it is quite easy. Due to the way the slide bar support bracket locks into the chassis and if the crossheads slide freely in the slide bars it may be possible to leave this part loose along with the slide bars to facilitate removal of the whole lot if necessary.

The etch does not pretend to represent the actual working valve gear but is a simulated version designed to allow anyone building the kit to have moving parts between the chassis which closely represent the actual valve gear and connecting rods. The concept is not to split the axle for the cranks but by using a key along a brass tube to drive the cams; this allows the whole assembly to be continually tested to ensure it runs freely. In principle you can still build the valve gear up solid and allow the axles to revolve freely in the tube. For fully working inside motion the brass tube can be locked up with a pin through the tube into a hole in the axle or as we have done, soldered a 14BA nut into the key, cleaned it up to the shape of the key and used a 14BA bolt through the key and into a hole in the axle.

Building sequence

The building sequence which we have used is as follows:

Connecting rods check fit along with cam on the eccentrics building the brass tube and key, the brass tube to be just loose fit between the axle bearings. It may be the ideal moment to fit the 14BA nut at this time if going to use a bolt to locate the tube.

Build eccentric rods for the valve gear and forward and reverse gears both sides. We designed the spacers between all the parts of the valve assembly to use washers as supplied on the fret. However on the test model we used small pieces of tube for the spacers these were formed in a small mini drill to reduce to the correct length.

Note on both the eccentrics on the coupling rods and eccentric rods for the reverser the slots in the cam are opposed to each other this will give differential movement for both the connecting rods and reverser. The slots in the cams have been designed to fit either way, this is to help with spare parts as you can see from the parts, one set of the cams are in the shape of a cross this again is for spares just in case everything is soldered up solid. Please see drawing.

The cams are soldered up and held in place with a piece of 0.7mm wire in the countersunk holes this is more than sufficient you will find that some solder will run between the parts. Flood the outside of the cams with oil when soldering together to prevent everything from being soldered up solid. We have tried to include as many spare parts of the components as possible.

We hope you will enjoy building up the valve gear, but if you encounter any problems or have any queries we will be happy to help at our web site www.brassmasters.co.uk

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Please note – By using a CAD drawing package we have created a complete new etch for this valve gear, the etched parts are exactly the same as the kit but the part numbers do not correspond to the part numbers in the kit. Any reference to the part numbers or construction photographs on the web site or Cd rom will refer to the original kit, but the parts can be readily identified. The drawings included in this package have been prepared for this kit and uses the parts numbers in this list.

Parts List

1	Modified smokebox spacer	00-EM-18.83
2	Centre slide bar spacer	00-EM-18.83
3	Front overlay slide bar spacer	00-EM-18.83
3a	Front rocking lever bracket	
4	Rear overlay slide bar spacer	00-EM-18.83
4a	Suspension link bracket	
5	Connecting rod centre	
6	Connecting rods overlay	
7	Connecting rod driving cam centre	
8	Connecting rod driving cam outer	
9	Reversing shaft arms left and right (round)	
10	Reversing shaft balance weights (round)	
11	Reversing shaft arms left and right (square)	
12	Reversing shaft balance weights (square)	
13	Lifting links	
14	Expansion link left and right	
15	Rocking lever connecting link	
16	Suspension link left and right and spare	
17	Rocking lever left and right	
18	Rocking lever overlays	
19	Valve spindle connecting link left and right	
20	Valve spindle crosshead left and right	
21	Eccentric rods (backward and forward)	
22	Eccentric rod driving cam left and right outers	- 22a spare
23	Slide bars left and right	
24	Slide bar overlays	
25	Slide bar spacer chassis inlay left and right	
26	Simulated cranks	
27	Weight shaft brackets left or right dependant on drive	
28	Weight shaft brackets left or right dependant on drive	
29	Piston gland overlay	
30	Washers	

Brass Casting

1	Bc1	Crossheads	x	2
2	Bc2	Piston gland covers	x	2

White metal casting

1	Wmc1	Valve spindle guides	x	2
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Not supplied, as most modellers will have supplies of some of the materials required

1.00mm brass wire	x	3 inches
0.90mm brass wire	x	1 inch
0.70mm brass wire	x	6 inches
0.45mm brass wire	x	6 inches
1/8in inside dia. brass tube	x	1 inch
1.6mm o/d dia. brass tube	x	2 inches
1.2mm o/d dia. brass tube	x	3 inches