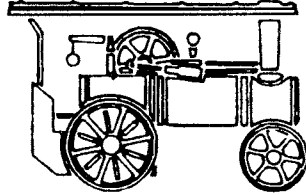


# **Mamod**



## **ASSEMBLY AND OPERATING INSTRUCTIONS**

### **ROADSTER MODEL SA1K**

#### **Mamod Limited**

UNIT 1A  
SUMMIT CRESCENT INDUSTRIAL ESTATE  
SMETHWICK, WARLEY  
WEST MIDLANDS B66 1BT  
Tel: 0121 500 6433  
Fax: 0121 500 6309  
E.Mail: [mamod@btinternet.com](mailto:mamod@btinternet.com)  
[www.btinternet.com/~mamod](http://www.btinternet.com/~mamod)  
[www.mamod.co.uk](http://www.mamod.co.uk)

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## ASSEMBLY INSTRUCTIONS - ROADSTER MODEL SA1K

Approximate time to complete kit - 2 1/2 hours

### Preparation

Cover table or work bench with old sheet or blanket then remove the kit from the packing, identifying each part from the sketch provided and laying out to one side of the work area.

You will need the following tools to construct the model:

- small screwdriver
- small hammer
- pliers
- 2 x 5 BA spanners
- tweezers

### Assembly Notes

1. Brass washers are used in the assembly to take up 'slack' in shafts and axles (i.e. limit side-to-side movement). As there may be slight differences between kits, the number of washers specified in each case may be increased, or decreased, to obtain the desired result.
2. While the axle/shaft end caps can be tapped on easily with a small hammer, they are more difficult to remove. To remove, prise the cap off carefully with a screwdriver.
3. To facilitate placing nuts on screws in awkward places use a pair of tweezers, or stick the nut to the tip of your fingers using a little vaseline.
4. LH and RH refers to left hand and right hand sides respectively, when viewed from rear of model.
5. All road wheels should be positioned with the short centre boss facing outward.

### Assembly procedure

1. Install boiler assembly with safety valve aperture upwards. Line up 2 threaded inserts at rear of boiler with holes in firebox cover, position dashboard (cut out portion at bottom and flat face towards front), and fix together with 2 x 6BA 5/16" screws. Before tightening screws ensure firebox cover is correctly seated between body flanges.
2. Identify LH and RH chassis frames and attach them using 5BA 3/16" screws/nuts to appropriate side of firebox assembly

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3. Take engine face assembly (includes reverse lever and steam pipes). Slip the brass gland nut onto the steam supply pipe (longest one). Push the 'O' ring into the threaded hole in the bottom rear of the boiler, gently push 'O' ring right to the bottom, where it will sit in the clearance groove. Push the steam pipe through the 'O' ring and loosely screw in the gland nut.
4. Using 2 x 6BA x 1/4 countersunk head screws/nuts, fix engine face assembly to outside of LH chassis frame. Now tighten gland nut at steam outlet on boiler.
5. Using 2 x 4BA screws, attach headlights to upper part of dashboard.
6. Position car body between chassis frames ensuring floor plate lies under RH side of dashboard, and fix to rear of chassis with 2 x 5BA 3/16" screw/nuts. Selecting LH and RH mudguards, now fix car body and mudguards to chassis and firebox assembly using following 5BA screws/nuts each side:
  - 2 nearest front 5/16"
  - next 1/4"
  - rear 3/16"
7. Take steering column and pass straight end through hole in tab in bottom RH side of firebox body and up through hole in dashboard.
8. Fix steering wheel over end of column, line up holes through steering wheel boss and column, and lock together by inserting 4BA grub screw. Lay model to one side while assembling front axles and steering link.
9. Select the two front stub axles and steering link and assemble as shown using a 5BA x 1/2" screw, spring washer, nut and locking nut at each end of link. Tighten first nut until all 'play' is removed from joint and there is slight resistance to turning. Then add locking nut tightening it down firmly on first nut (which should be prevented from turning by using a second spanner or pliers).
10. Attach completed front axle assembly to front of chassis frames using 5BA steering pivots (hexagonal headed) and suspension springs. Before entering pivots, however, first ensure cranked end of steering column is engaged in hole in RH end of steering link.
11. Check steering operation by turning steering wheel lock to lock. If wheel is difficult to turn, steering link end joints are too tight.

12. Install crankshaft from LH side of model, placing a nylon bush (flange outwards) each side of body in holes provided. Place 2 washers over shaft on RH end before adding flywheel (with drive band groove facing inward). Position flywheel to ensure only 0.5mm side-to-side movement of crankshaft, then tighten grub screw to lock to shaft.
13. Select cylinder/piston rod assembly, and after first entering big-end bearing over crankpin, attach cylinder to engine face using 5BA trunnion screw (hexagonal head) and spring with screw passing first through hole in reverse lever. Tighten the bolt firmly. (Note that spring pressure make it difficult to engage the screw thread initially, but this operation can be made easier if an assistant can push the screw against the cylinder face with an old ballpoint while the constructor uses a spanner on the hexagonal head).
14. Fit end cap to counter shaft followed by brass washers, then pass shaft from left to right of model through nylon bushes placed (flanges outward) in holes provided in chassis frames. Immediately adjacent to nylon bush on RH side, place further washer on shaft, then counter shaft pulley, with largest diameter groove facing inward, final washer, and then end cap.
15. Select spare wheel stub, place washer over stub then pass it from underneath and up through hole in rear of car body. Place further washer over stub, then fit spare wheel and secure with end cap.
16. Take seat assembly and, ensuring seat frame is properly located within groove at back and sides of seat, attach assembly to car body using 3 Starlock washers pushed down hard over projecting pegs. Starlock washers must be installed with flat face towards seat.
17. Fit end cap on rear axle followed by a wheel and brass spacing collar, then pass axle from LH to RH side of model through 2 nylon bushes located (flanges outwards) in holes at rear of chassis frames. Slide driven pulley (black), boss inwards, on RH end of axle positioning it to achieve approximately 0.5mm side-to-side axle movement, then locking with grub screw. Now slide driven rear wheel on to axle locking it with grub screw in same position relative to mudguard as LH rear wheel. Finally, fit cap on axle end.
18. Fit drive bands as follows:
  - small band- flywheel to large diameter track on countershaft pulley
  - large band- small diameter track on countershaft pulley to driven pulley on rear axle

19. Attach front wheels to stub axle shafts fitting a washer each side of wheel, and securing wheels to shafts with end caps.
20. Finally, to complete the model construction, screw safety valve with sealing washer (finger tight) into boiler, and install burner tray in its position under boiler.

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PARTS LIST

MODELS 1319 SA1, 1403 SA1L and 1404 FE1

1	Firebox Body	54	Spare Wheel Stub
2	Boiler	55	Rear Roof Support
3	Firebox Cover	56	Seat or Ladder Bracket Supp
4	Dashboard	57	Windscreen
5	6 BA x 5/16 CH/HD Screw	58	Roof
*6	`O' Ring	59	Ladder Mounting Bracket
*7	Water Level Glass	60	Hose Reel Platform
*8	Water Level Glass Frame	61	Hose Reel Roller
9	Boiler & Firebox Assy	62	Seat
10	R.H. Chassis Frame	63	Ladder Support Rod
11	L.H. Chassis Frame	64	5 BA Nut
12	Engine Face Assy	65	Bell Clapper
13	`O' Ring (Steam Pipe)	66	Bell
14	Gland Nut	67	Bell Bracket
15	Headlamp	68	L.H. Ladder Frame
16	4 BA Screw	69	R.H. Ladder Frame
17	Body	70	L.H. Ladder Extension Frame
18	R.H. Mudguard	71	R.H. Ladder Extension Frame
19	L.H. Mudguard	72	Ladder Road Wheel
20	Steering Column	73	Ladder Road Wheel Axle
21	Steering Wheel	74	Ladder Platform
22	Steering Wheel Cover	75	Ladder Extension Stop
23	L.H. Stub Axle	76	Ladder Wing Nut
24	R.H. Stub Axle	77	Hose
25	Steering Link	78	Hose Nozzle
26	5 BA x 5/16 CH/HD Screw	79	Ladder Rung (Long) 11 off
27	5 BA Spring Washer	80	Extension Ladder Rung (shor 11 off
28	5 BA Nut		
29	5 BA Steering Pivot Screw	81	Hank Bush
30	Suspension Spring	82	5 BA x 3/8 CH/HD Screw
31	Crankshaft	83	5 BA Washer
32	Nylon Bush		
33	5 BA Nut		
34	Flywheel		
35	Cylinder/Piston Rod Assy		
36	Trunnion Screw		
37	Trunnion Spring		
38	Shaft End Cap		
39	Shaft Washer		
40	Counter Shaft		
41	Counter Shaft Pulley		
42	Safety Valve Gasket		
43	Safety Valve		
44	Chassis Assy		
45	Spacing Collar		
46	Rear Axle		
47	Road Wheel		
48	Driven Pulley		
49	Driven Road Wheel		
50	Small Drive Band		
51	Large Drive Band		
52	Seat Frame		
53	Padded Seat		

\* Factory Fitted

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SA 1K STEAM ROADSTER KIT

BAG LIST

Bag No 1 6BA

2 off 6BA x 5/16 Long Screw  
2 off 6BA x 1/4 C/sunk Screw  
2 off 6BA Nuts

Bag No 3 4BA

2 off 4BA x 1/4 Long Screw  
4 off 4BA x 3/16 Long Grub Screw

Bag No 4

1 off Item No.12 Engine Face Assembly  
1 off Item No.13 'O' Ring  
1 off Item No.14 Gland Nut  
1 off Item No.36 Trunnion Screw  
1 off Item No.37 Trunnion Spring

Bag No 2 5BA

8 off 5BA x 3/16 Long Screw  
2 off 5BA x 1/4 Long Screw  
4 off 5BA x 5/16 Long Screw  
2 off 5BA x 1/2 Long Screw  
20 off 5BA Nuts  
2 off 5BA Spring Washers

Spare Bag

2 off 6BA x 5/16 Long Screw  
2 off 5BA x 5/16 Long Screw  
2 off 4BA x 3/16 Long Screw  
4 off 6BA Nuts  
4 off 5BA Nuts

Bag no.5

1 off Item No. 23 LH Stub Axle  
1 off Item No. 24 RH Stub Axle  
2 off Item No. 29 5BA Steering Pivot Screw  
2 off Item No. 30 Suspension Spring  
6 off Item No. 32 Nylon Bush  
7 off Item No. 38 Shaft End Cap  
15 off Item No. 39 Shaft Washer (Brass)  
1 off Item No. 43 Safety Valve  
1 off Item No. 45 Spacing Collar  
1 off Item No. 50 Small Drive Band  
1 off Item No. 51 Large Drive Band  
1 off Item No. 54 Spare Wheel Stub  
3 off Starlock Washers  
1 off Transfer (MAMOD)  
1 off Transfer (WATER LEVEL)

Contents Of Bags May Vary Due To Availability Of parts.

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### OPERATING INSTRUCTIONS

Recommended for use under adult supervision

1. Remove safety valve and insert filler funnel. Depress cylinder away from engine frame and fill boiler up to level indicator on sight glass with clean hot water (a longer run will be obtained if hot water is used). Replace safety valve and, using fingers only, screw up tight. Should the water level fall below the bottom of sight glass, the burner must immediately be removed and the boiler refilled before further use.
2. Use only Mamod Solid Fuel with this engine. Place one layer of tablets flat in the tray. Light tablets from the front end and carefully slide the tray into firebox, from under-side.
3. Thoroughly oil all working parts (bearings, piston, etc.) with MEDIUM GRADE MOTOR OIL (SEA 10/30 or similar). The engine should also be oiled occasionally during each run.
4. When steam is up, the engine will start with a few turns of the flywheel. The engine will run in the direction the lever is pointing. Some water may be lost from around the cylinder while starting.

### GENERAL HINTS

1. Before the first run flush out the boiler with warm water.
2. The engine should only be operated on a smooth and level surface (not carpet) and in a well ventilated place.
3. The engine may also be used to power other models. Always gear models to allow the engine to run fast.
4. After using the engine, drain all water from the boiler and exhaust chamber and oil all working parts.

DO NOT hold down the safety valve or tamper with it in any way.  
DO NOT remove the safety valve while there may still be pressure in the boiler  
DO NOT refill the burner without first refilling the boiler  
DO NOT overfill the burner tray

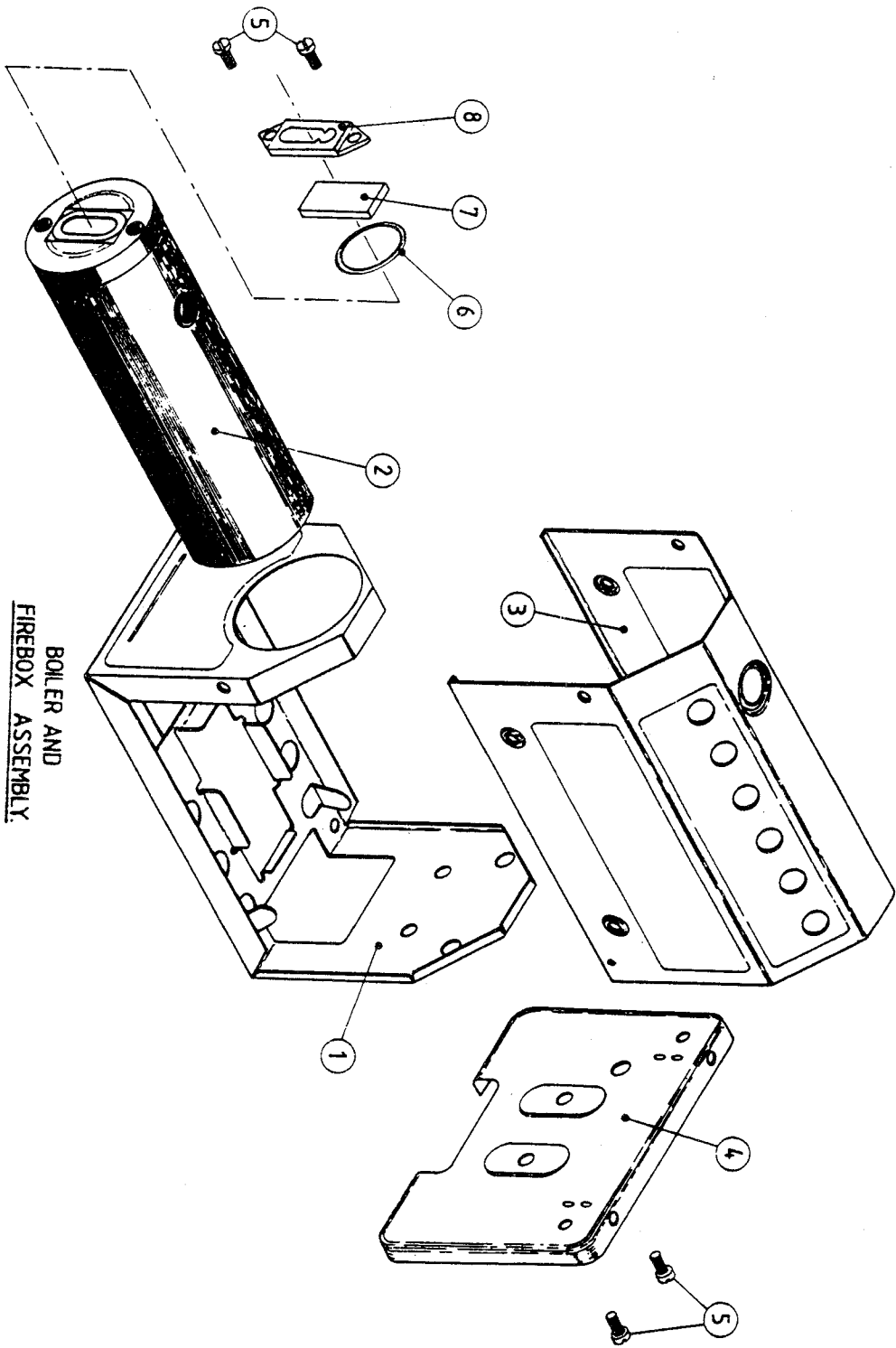
### SAFETY

Steam engines get hot.  
DO NOT attempt to lift by bonnet.  
LIFT ONLY by front and rear mudguards.

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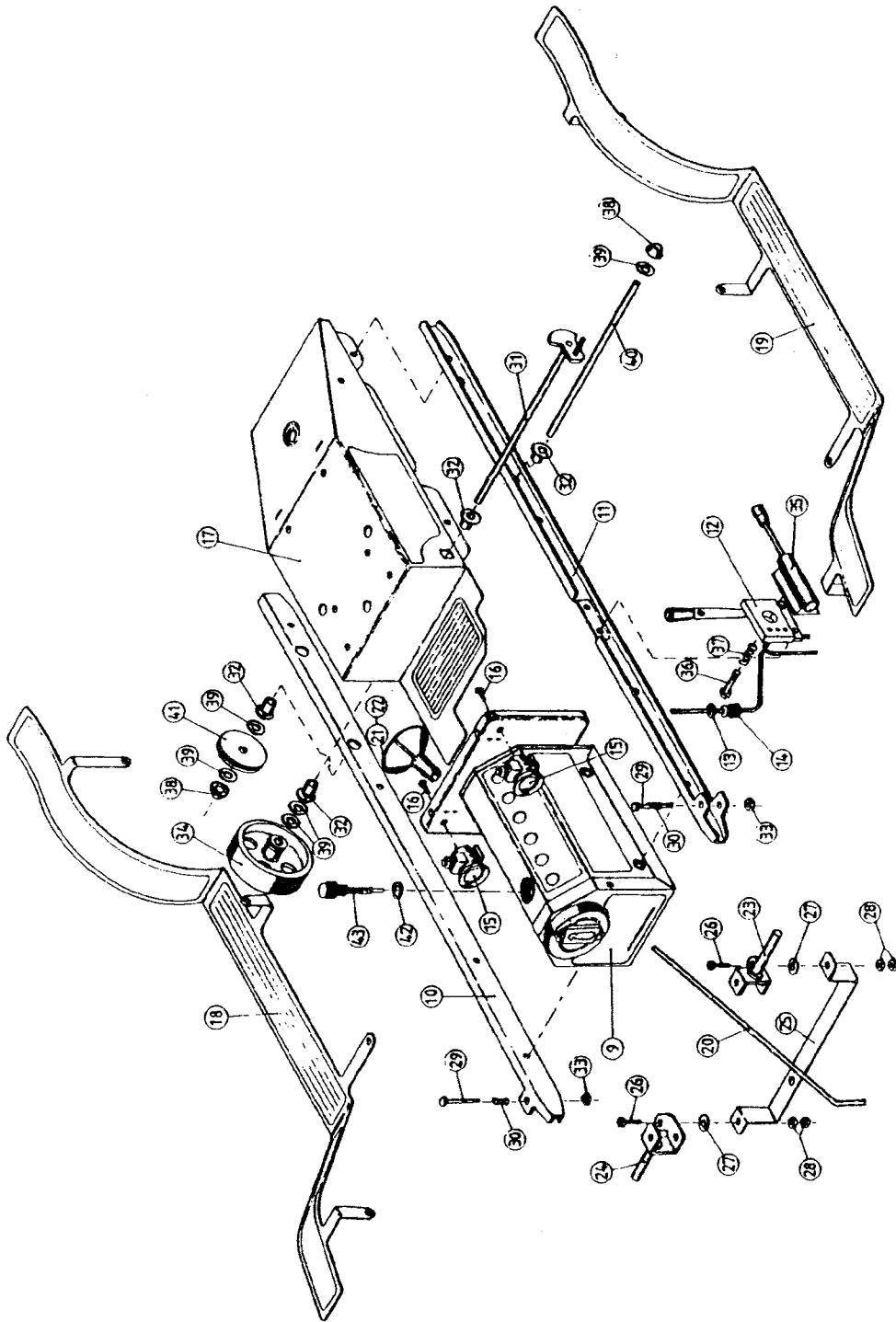
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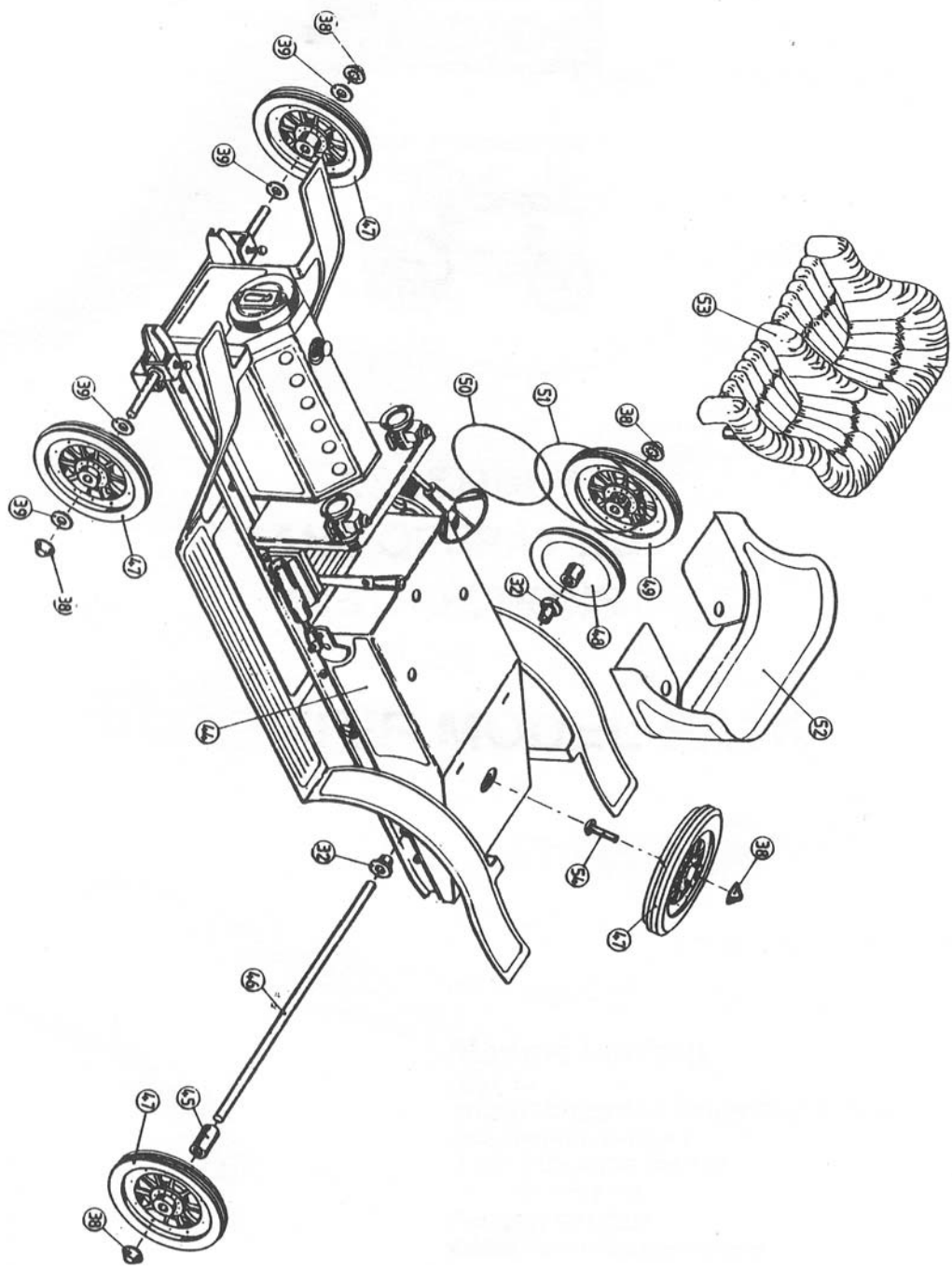
**BOILER AND  
FIREBOX  
ASSEMBLY.**

DB SA1, 1403 SA1, 1404 FE1 SHEET 1 ISSUE A A E C H 08



1319 SA1 1403 SAIL 1404 FET. SHEET 2 ISSUE A AECH 88

1387 S&I SHEET 3 ISSUE A A E C M 08

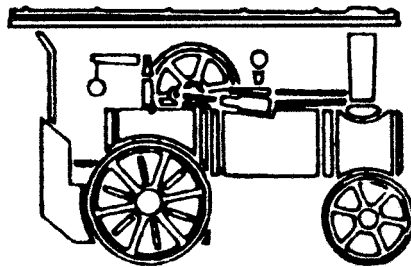


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# Mamod

## STEAM MODELS



### IMPORTANT

As all models are tested in accordance with GS/TUV Safety standards. It is the Company Policy not to exchange engines which have been fired. Any engines requiring repair in Warranty will be carried out quickly and efficiently.

### Mamod Limited

Unit 1A,  
Summit Crescent Ind. Estate,  
Smethwick, Warley,  
West Midlands B66 1BT

**Tel: 0121 500 6433**

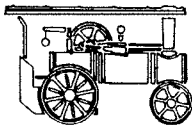
**Fax: 0121 500 6309**

Email: [enquiries@mamod.co.uk](mailto:enquiries@mamod.co.uk)  
[www.mamod.co.uk](http://www.mamod.co.uk)

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STEAM MODELS



**Mamod Limited**

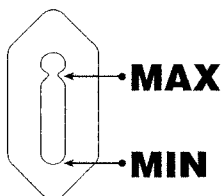
Unit 1A  
Summit Crescent Ind Estate,  
Smethwick, Warley,  
West Midlands B66 1BT




**Tel: 0121 500 6433**

**Fax: 0121 500 6309**

**Retain this section**

1. Suitable for Age 14+
2. Complies with BS 7328 1990
3. The model should only be filled to the maximum
4. The model should not be allowed to boil below the minimum, to prevent this happening remove solid fuel



5. Only the recommended solid fuel should be used
6. Under no condition should the safety valve be tampered with
7.  The screws attached to the cylinder, sight glass & fly wheel should be checked to ensure that they do not work loose
8.  The model will get hot and should only be handled by the following handling points  
SP2/SP4 Base Plate  
TE1 Canopy  
SR1 Front Wheels  
SW1/FE1/SA1/SA1L Mud guards
9.  Kits contain small parts and could be hazardous to small children. Care should be taken to prevent ingestion



**Detach this section**

**Customer Complaint Form**

*In the event of a complaint please return to the above address using the enclosed label with details of the complaint and your address recorded on this section the place of purchase and the date.*

Complaint .....

Your Address .....

Purchase Address ..... Date .....

ENG8/85

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