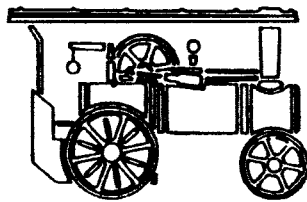


ASSEMBLY
AND
OPERATING
INSTRUCTIONS

FIRE ENGINE FEIK

Mamod
STEAM MODELS



[The Great Toy Steam Company LLC.](http://www.ministeam.com)

www.ministeam.com

ASSEMBLY INSTRUCTIONS - FIRE ENGINE FE1K

Approximate time to complete kit - 4 hours.

Preparation

Cover table or work bench with an old sheet or blanket. Using sketch provided, identify each part of the kit, but do not remove from packing until required for assembly. Note that some parts are located underneath sections in the packing material.

You will need the following tools to construct the model :

- small screwdriver
- small hammer
- pliers
- 2 x 5BA 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 the finger 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 through hole in front of firebox 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.
LH and RH Chassis Frames are underneath block containing the Ladder.
- 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 pass the 'O' ring right to the bottom, where it will sit in the clearance groove. Pass the steam pipe through the 'O' ring and loosely screw in the gland nut.

1

4. Using 2 x 6BA x 1/4 round head or countersunk screws/nuts, fix engine face assembly to outside of LH chassis frame. Now tighten gland nut at steam outlet on boiler.
5. Using 2 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 1/4" screws/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. Fit steering wheel over end of 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 or 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 remove piston rod. Select 5BA trunnion screw (hexagonal head) and spring, and enter screw with spring attached from right to left through hole in reverse lever then through large hole in engine face. Holding screw in against trunnion spring pressure so that a short length of thread projects beyond engine face, screw cylinder on to thread 2 complete turns only. Now replace piston rod in cylinder and turn crankshaft until crank pin is in 3 o'clock position, i.e. pin nearest rear of model. By fitting cylinder away from engine face but without using excessive force, slip big-end bearing over crank pin. Tighten trunnion screw firmly.
14. Fit end cap to counter shaft followed by brass washer, 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. Lay model to one side while preparing ladder mounting platform assembly.

15. Select ladder mounting platform and bracket and fix together with 3 x 6BA 3/16" screws/nuts.
16. Fasten ladder mounting platform assembly to fire engine body by means of 2 metal tags at front end (which pass through body and are then bent over), and 2 x 5BA 3/16" screws/nuts at rear end.
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 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 mudguards as LH side 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. Take hosereel platform/tube assembly and attach to body just forward of ladder platform using 4 x 6BA 3/16" screws/nuts.
21. Assemble ladder "support frame and bell bracket as shown.
 - Secure assembly to model (with bell bracket on LH side) .by passing free ends of support rods through holes in top edge of dashboard and fit 5BA nuts underneath.
22. Assemble bell and clapper to bell bracket using 6BA 1/4" screw/nut.
23. Take seat frame and attach to body with 2 x 6BA 3/16" screw/nut. Lay model to one side while preparing ladder assembly.
24. Fix ladder side to rungs with 6BA x 5/16" screws. Tighten when all rungs are fitted. This is best done on a flat surface to ensure sides are square. Fix ladder platform between cranked ends and slide through road wheel axle. Fit wheels and end caps.
25. Assemble extension ladder as previously described. Fit extension stop allowing the stop to pivot. The extension when assembled will slide inside the bottom section to the desired point.
26. Finally, to complete the model construction, screw safety valve with sealing washer (finger tight) into boiler, and instal burner tray in its position under boiler.

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.

The Great Toy Steam Company LLC.

www.ministeam.com

PARTS LIST
MODELS 1319 SAI, 1403 SAIL and 1404 FBI

1 Firebox Body	43 Safety Valve
2 Boiler	44 Chassis Assy
3 Firebox Cover	45 Spacing Collar
4 Dashboard	46 Rear Axle
5 6 BA x 5/16 CH/HD Screw	47 Road Wheel
•6 'O' Ring	48 Driven Pulley
•7 Water Level Glass	49 Driven Road Wheel
•8 Water Level Glass Frame	50 Small Drive Band
9 Boiler & Firebox' Assy	51 Large Drive Band
10 R.H. Chassis Frame	54 Spare Wheel Stub
11 L.H. Chassis Frame	55 Rear Roof Support
12 Engine Face Assy	56 Seat or Ladder Bracket Support
13 'O' Ring (Steam Pipe)	57 Windscreen
14 Gland Nut	59 Ladder Mounting Bracket
15 Headlamp	60 Hose Reel Platform
16 4 BA Screw	61 Hose Reel Roller
17 Body	62 Seat
18 R.H. Mudguard	63 Ladder Support Rod
19 L.H. Mudguard	64 5 BA Nut
20 Steering Column	65 Bell Clapper
21 Steering Wheel	66 Bell
22 Steering Wheel Cover	67 Bell Bracket
23 L.H. Stub Axle	68 L.H. Ladder Frame
24 R.H. Stub Axle	69 R.H. Ladder Frame
25 Steering Link	70 L.H. Ladder Extension Frame •
26 5 BA x 5/16 CH/HD Screw	71 R.H. Ladder Extension Frame
27 5 BA Spring Washer	72 Ladder Road Wheel
28 5 BA Nut	73 Ladder Road Wheel Axle
29 5 BA Steering Pivot Screw	74 Ladder Platform
30 Suspension Spring	75 Ladder Extension Stop
31 Crankshaft	76 Ladder Wing Nut
32 Nylon Bush	77 Hose
33 5 BA Nut	78 Hose Nozzle
34 Flywheel	79 Ladder Rung (Long) 11 off
35 Cylinder/Piston Rod Assy	80 Extension Ladder Rung (Short) 11 off
36 Trunnion Screw	•81 Hank Bush
37 Trunnion Spring	82 5BA x 5/16 screw.
38 Shaft End Cap	83 5 BA Washer
39 Shaft Washer	88 Ladder Support
40 Counter Shaft	89 Ladder Support Nuts
41 Counter Shaft Pulley	
42 Safety Valve Gasket	• Factory Fitted

**FEIK FIRE ENGINE KIT
BAG LIST**

BAG No.1 6BA

14 off 6BA x 3/16 Long Screw
2 off 6BA x 1/4 Long Screw (round head)
44 off 6BA x 5/16 Long Screw
14 off 6BA Nuts

BAG NO.3 4BA

2 off 4BA x 1/4 Long Screw
4 off 4BA x 1/4 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.5

1 off Item No. 23 LH Stub Axle
1 off Item No. 24 RH Stub Axle
2 off Item No. 29 Steering Pivot Screw
2 off Item No. 30 Suspension Spring
6 off Item No. 32 Nylon Bush
8 off Item No. 38 Shaft End Cap
15 off Item No. 39 Shaft Washer Brass
1 off Item No. 43 Safety Vale
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 Transfer (MAMOD)
1 off Transfer (WATER LEVEL)
2 off Item No. 63 Ladder Support Rod
1 off Item No. 65 Bell Clapper
1 off Item No. 67 Bell Bracket
1 off Item No. 75 Ladder Extension Stop
2 off Item No. 76 Ladder Wing Nut
1 off Item No. 77 Hose
1 off Item No. 78 Hose Nozzle
11 off Item No. 80 Short Ladder Rung
2 off Item No. 83 Silver washer for
extension stop
1 off Ladder Support Bar
2 off Ladder Support End Nuts

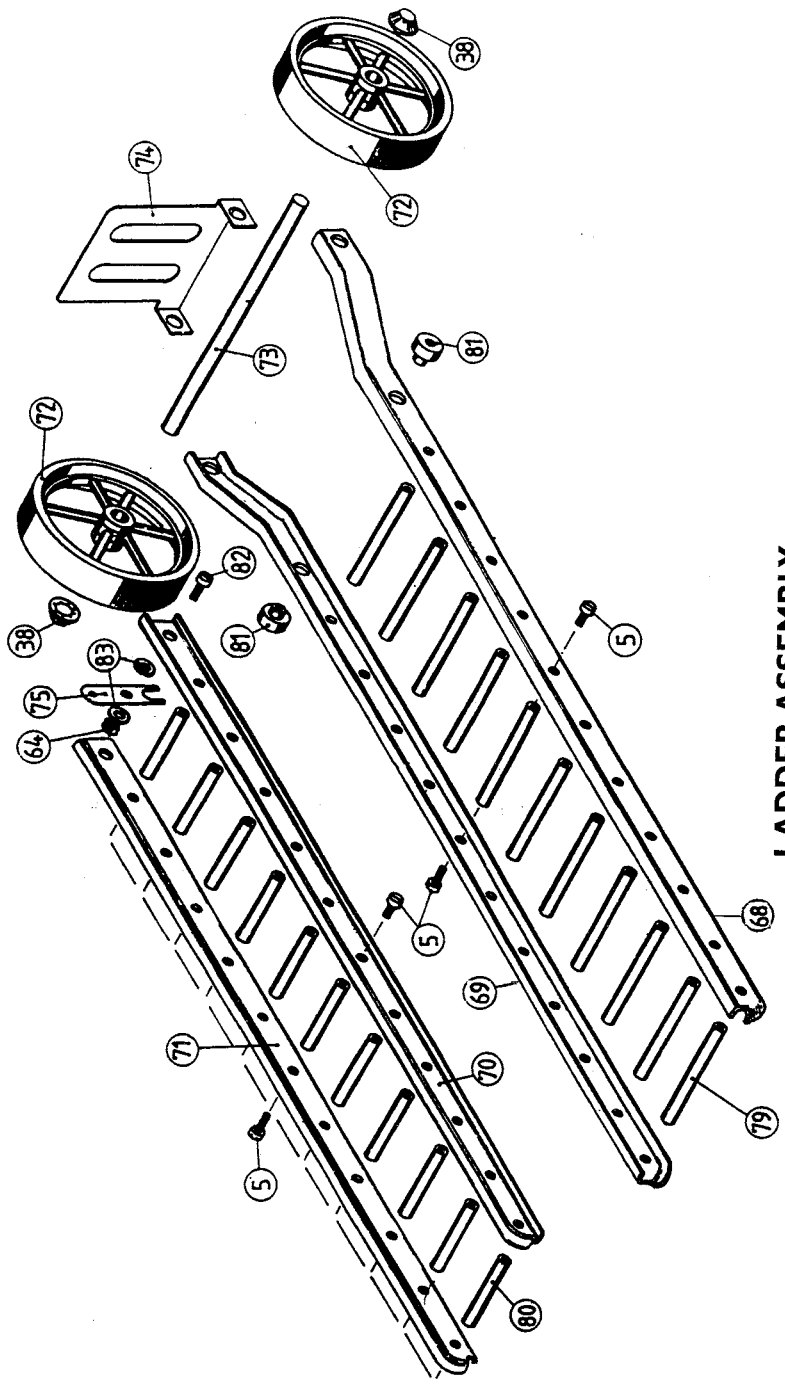
BAG No.2 5BA

12 off 5BA x 1/4 Long Screw
4 off 5BA x 5/16 Long Screw
2 Off 5BA x 1/2 Long Screw
28 off 5BA Nuts
2 off Spring Washers

SPARE BAG

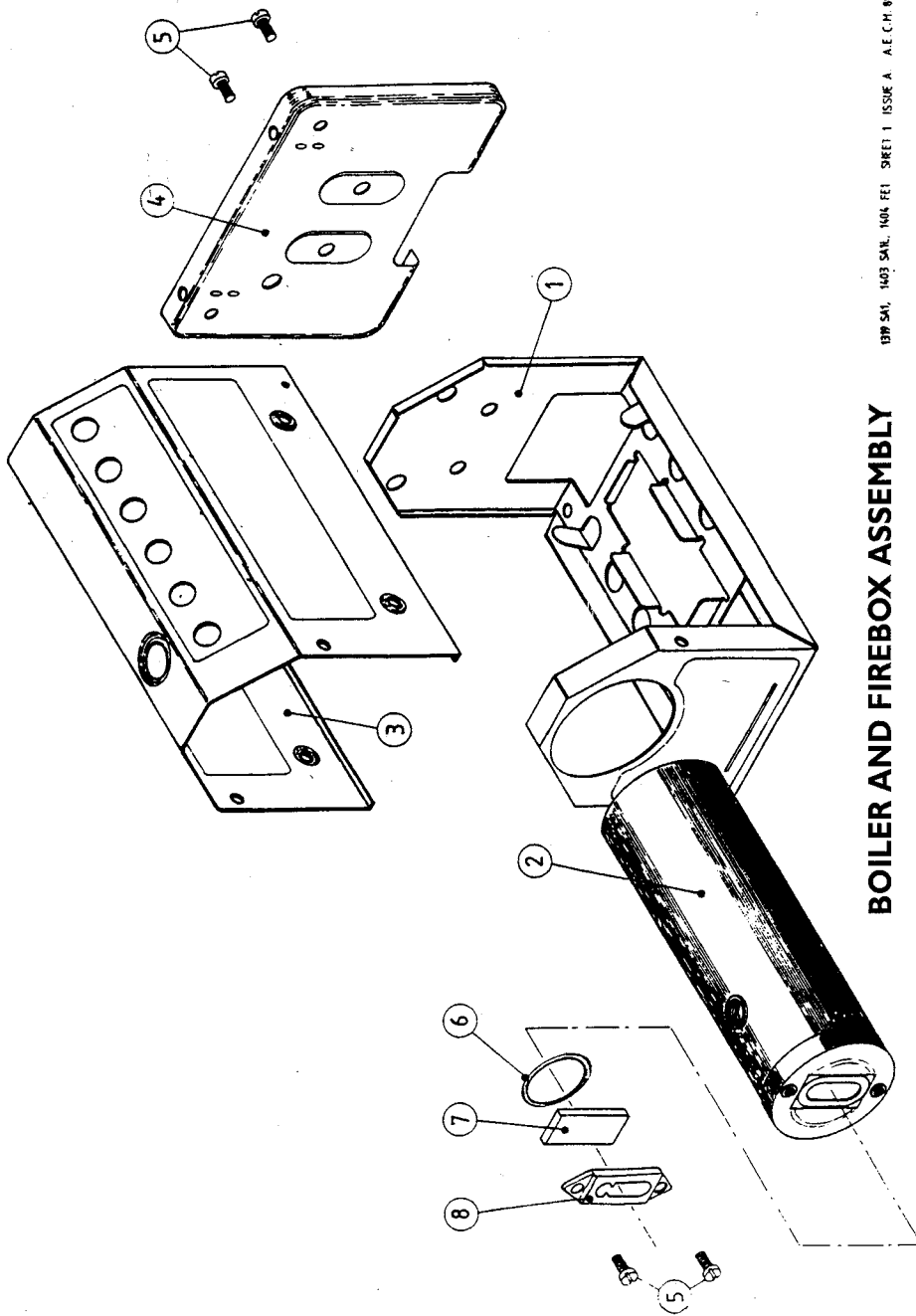
2 off 6BA x 5/16 Long Screw
2 off 5BA x 5/16 Long Screw
2 off 4BA x 1/4 Long Screw
4 off 6BA Nuts
4 off 5BA Nuts

Contents of bags may vary due to availability
of parts



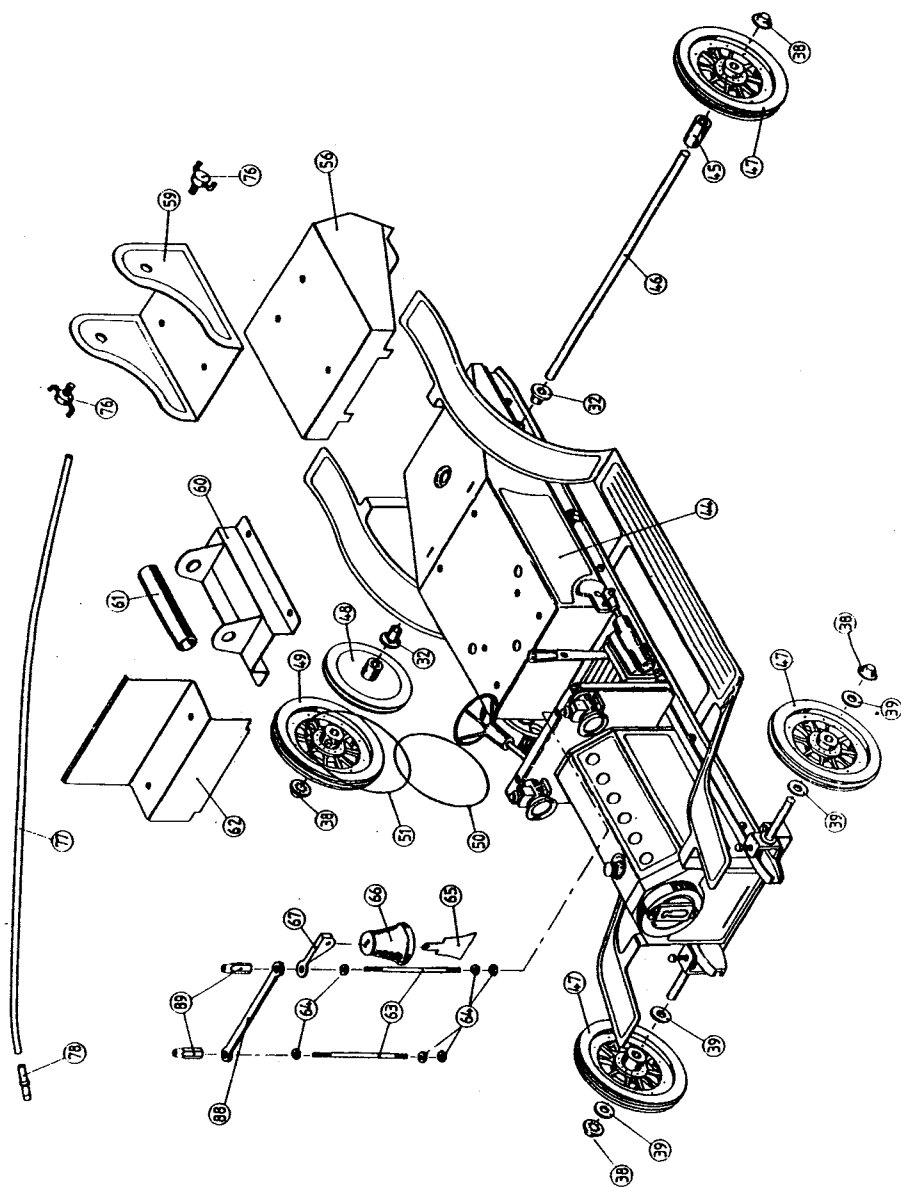
MAN. REL. SHEET 4, ISSUE A, AECCH 04

LADDER ASSEMBLY



BOILER AND FIREBOX ASSEMBLY

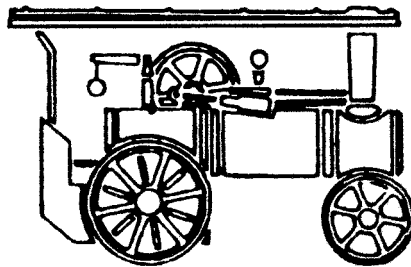
137P S&I, 1403 S&I, 1404 S&I, 1404 FEI, SHEET 1, ISSUE A, A.E.C.H. 08.



MINI STEAM ISSUE A ALL CH W

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

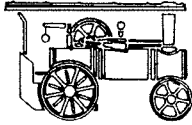
Fax: 0121 500 6309

Email: enquiries@mamod.co.uk
www.mamod.co.uk

L90

Mamod

STEAM MODELS



Mamod Limited

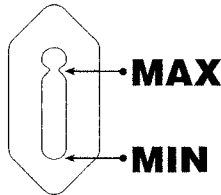
Unit 1A
Summit Crescent Ind Estate,
Smethwick, Warley,
West Midlands B66 1BT




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

The Great Toy Steam Company LLC.

www.ministeam.com