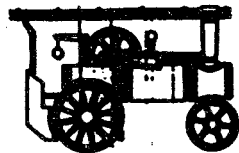


ASSEMBLY INSTRUCTIONS

LIMOUSINE MODEL SA1LK



Mamod
STEAM MODELS

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

www.ministeam.com

ASSEMBLY INSTRUCTIONS - LIMOUSINE MODEL SAILK

Approximate time to complete Kit - 3 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 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 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.

Continued

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2. Take engine face assembly (includes reverse lever and steam pipes). Slip the brass gland nut onto the steam supply pipe (longest one). Push the steam pipe through the 'O' ring, and loosely screw in the gland nut.
3. Identify LH and RH chassis frames and attach them using 5BA 3/16" screws/nuts to appropriate side of firebox assembly.
4. Using 2 x 6BA 1/4" COUNTERSUNK OR DOMED 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 4BA screws, attach windscreen and 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" 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 on tab in bottom RH side of firebox body and up through hole in dashboard.
8. Fit a steering wheel over end 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 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 makes 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 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 seat support, seat and spare wheel assembly.

15. Select spare wheel stub, place washer over stub then pass it from underneath and up through hole in rear of seat support. Place further washer over stub then fit spare wheel and secure with end cap.

16. Take a seat assembly ensuring seat frame is properly located within groove at back and sides of seat, and attach assembly to underside of seat support using 3 Starlock washers pushed down hard over projecting pegs. Starlock washer must be installed with flat face towards seat.

17. Fasten seat support to 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.

18. 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 mudguards as LH side rear wheel. Finally fit cap on axle end.

19. 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

20. Attach front wheels to stub axle shafts fitting a washer each side of wheel, and securing wheels to shafts with end caps.
21. Take second seat assembly, and following instructions above for fitting the first, attach it to body.
22. Assemble 2 pieces of roof using 2 x 5BA 3/16" black screws/nuts. Locate roof on model using 2 metal tags at rear (which enter corresponding slots in seat support) and support at front off top of wind-screen.
23. 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.

PARTS LIST
MODELS 1319 SAIL, 1403 SAIL

| | | | |
|----|--------------------------|----|--------------------------------|
| 1 | Firebox Body | 54 | Spare Wheel Stub |
| 2 | Boiler | 55 | Rear Roof Support |
| 3 | Firebox Cover | 56 | Seat or Ladder Bracket Support |
| 4 | Dashboard | 57 | Windscreen |
| 5 | 6BA x 5/16 X CH/HD Screw | 58 | Roof |
| *6 | 'O' Ring | | |
| *7 | Water Level Glass | | |
| *8 | Water Level Glass Frame | | |
| 9 | Boiler & Firebox Assy | | |
| 10 | R.H. Chassis Frame | | |
| 11 | L.H. Chassis Frame | | |
| 12 | Engine Face Assy | | |
| 13 | 'O' Ring (Steam Pipe) | | |
| 14 | Gland Nut | | |
| 15 | Headlamp | | |
| 16 | 4BA Screw | | |
| 17 | Body | | |
| 18 | R.H. Mudguard | | |
| 19 | L.H. Mudguard | | |
| 20 | Steering Column | | |
| 21 | Steering Wheel | | |
| 22 | Steering Wheel Cover | | |
| 23 | L.H. Stub Axle | | |
| 24 | R.H. Stub Axle | | |
| 25 | Steering Link | | |
| 26 | 5BA x 5/16 CH/HD Screw | | |
| 27 | 5BA Spring Washer | | |
| 28 | 5BA Nut | | |
| 29 | 5BA Steering Pivot Screw | | |
| 30 | Suspension Spring | | |
| 31 | Crankshaft | | |
| 32 | Nylon Brush | | |
| 33 | 5BA Nut | | |
| 34 | Flywheel | | |
| 35 | Cylinder/Piston Rod Assy | * | Factory Fitted |
| 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 | | |

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SAILK STEAM LIMOUSINE KIT

BAG LIST

Bag No 1 6BA

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

Spare Bag

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

Bag No 2 5BA

10 off 5BA x 3/16 Long Screw
2 off 5BA x 3/16 Long Screw (black)
2 off 5BA x 1/4 Long Screw
4 off 5BA 5/16 Long Screw
2 off 5BA x 1/2 Long Screw
24 off 5BA Nuts
2 off 5BA Spring Washers

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 Brush
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 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
6 off Starlock Washers
1 off Transfer (MAMOD)
1 off Transfer (WATER LEVEL)

Contents of bags may vary due to availability of parts

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.

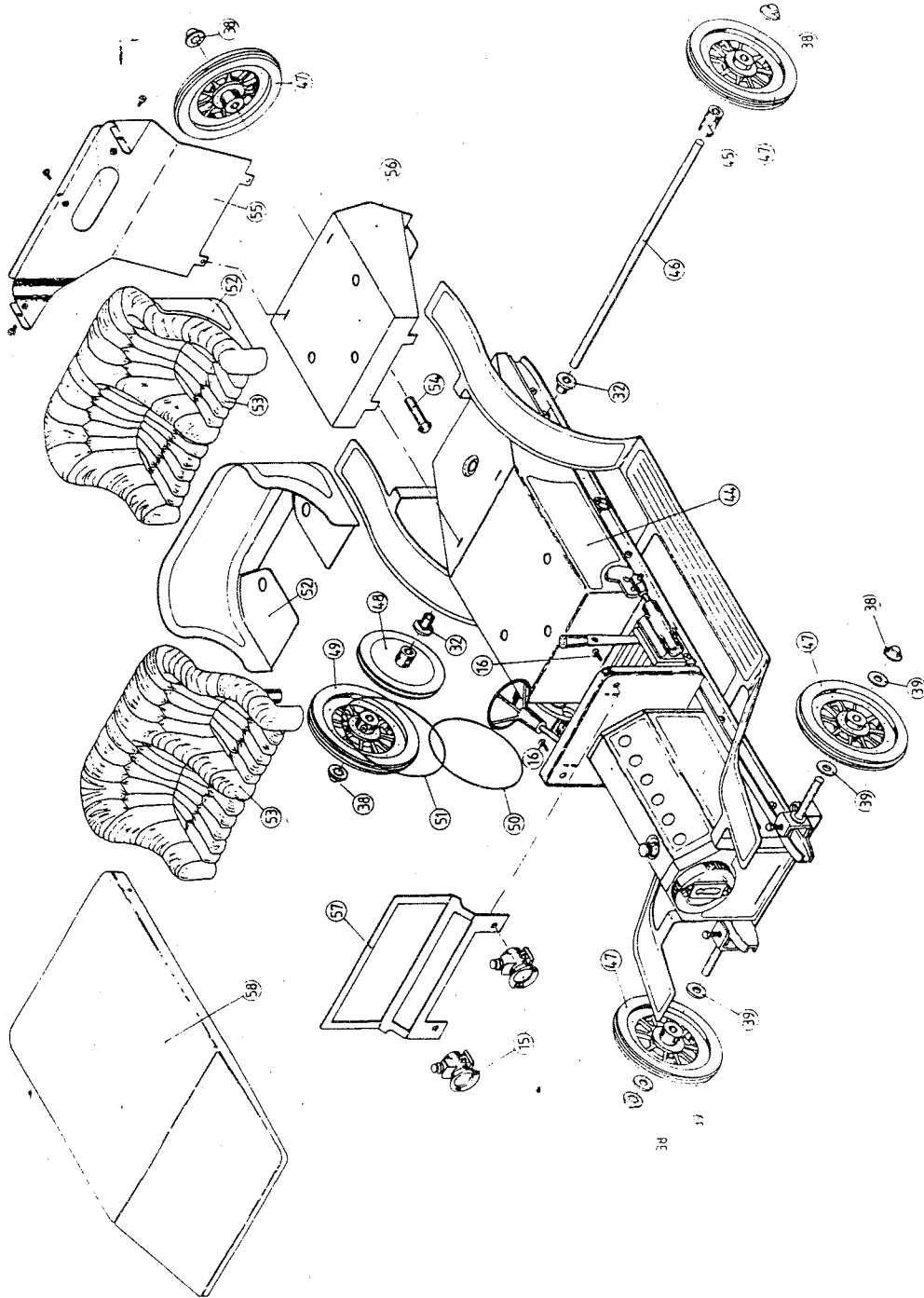
DO NOT remove the safety valve while there may still be pressure in the boiler

DO NOT refill the burner without first refilling the boiler.

DO NOT overfill the burner tray.

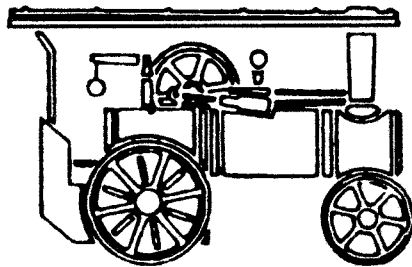
SAFETY Steam engines get hot.
DO NOT attempt to lift by bonnet.
Lift ONLY by front and rear mudguards.

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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

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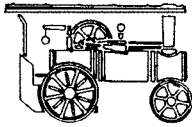
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STEAM MODELS



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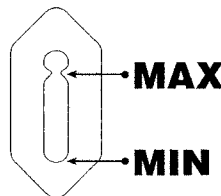
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Retain this section

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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www.ministeam.com