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**OPERATING INSTRUCTIONS**

**“L&B LEW” MANUAL CONTROL**

**SAFETY FIRST**

**All our locomotives are safe to run, and will give many hours of pleasure, providing the following safety procedures are followed: -**

- 1. Please read the instructions thoroughly before running for the first time.**
- 2. Never let the engine run out of water.**
- 3. When refilling the gas, do not have any naked flame present, and NO SMOKING!**
- 4. Do not pick up the engine by the bodywork, chimney or boiler, especially when hot.**
- 5. Only pick up the engine by the buffer beams and, when hot, use old gloves or a cloth.**
- 6. Do not stand over the chimney. Ejected boiling water or steam may cause serious injury.**
- 7. Do not open the smoke box door while the engine is alight.**
- 8. Constant supervision of the boiler water level is imperative as the gas CAN outlast the water. Failure to do so will be treated as misuse and is not covered by the warranty. The boiler will require topping up about every 10 minutes.**

## **General Hints**

As with all operating machinery, whether model or full size, wear will occur. In the model steam locomotive much can be done to help prolong its life and decrease the amount of time required in the workshop for servicing.

Keep the engine as clean as possible, and the motion free from dirt and garden debris. The valve gear, axles and crank pins should be oiled sparingly with light oil, e.g. "3-in -1 Oil". Over-oiling attracts dirt and grit, which will increase wear.

Regularly check that all screws and motion bolts are firm. Do not over-tighten, as this strips threads and shears bolts. **When filling the lubricator, always use a high temperature steam oil; this is available from your dealer. FAILURE TO USE THE CORRECT GRADE OF OIL CAN LEAD TO BLOCKED STEAM PIPES, AND WILL INVALIDATE THE GUARANTEE.**

When running your engine avoid excessive speed and acceleration, both will cause premature wear in the valve gear. Prototypically, narrow gauge locomotives ran at a speed of between 10 and 20 M.P.H., and never exceeded 25 M.P.H.

## **Positions of Fillers and Drains etc.**

The cab roof lifts up then tilts over sideways to give access to all fillers.

*The gas inlet valve* is in the front near side corner of the cab, at the top of the gas tank turret. The gas control valve is attached to the filler turret, and can be operated through the left hand cab doorway.

*The lubricator* is in the offside of the cab, by the burner. The filler cap has a "T" bar in it to aid removal. The waste water is removed at the end of the run with the small syringe supplied with the small piece of plastic tube fitted. To drain, you must make sure there is no residual steam pressure in the steam line between the lubricator and the cylinders, as this could result in a steam blow back when the cap is removed. Close the steam regulator and put the loco into gear, this should allow any left-over steam to escape through the cylinders. Remove the cap, use the syringe suck out all condensed water and refill with the correct grade steam oil, and then replace the cap.

*The boiler water filler* is on top of the steam turret on the boiler in the middle of the cab. Undo the knurled cap to fill with water. As the loco is supplied with a Boiler Filler Cap, change the original brass topped cap with the one supplied loose with the loco. This one has a non return valve on the underside and is used when filling the boiler when in steam. The main steam regulator valve is the valve on the rear of the boiler-filling turret with the steel handle attached.

***The direction control*** is the lever forward of the offside cab door. To operate push the lever gently inwards and move to the desired direction. The control is “gated”, and will therefore hold itself in the full forward or reverse position.

### **Preparation for Running**

‘Lew’ is fitted with a water gauge; this allows the driver to keep the model in steam continuously for longer periods of time. This is done using the Boiler Top-up valve supplied with your loco. We have only supplied the valve as many customers now possess a pump bottle. Should you need a pump bottle you should be able to purchase one from your dealer.

Always service the engine in the following order; first gas, then oil then water. Although we recommend Butane gas, the system will also work with, and is safe for Butane/Propane mix gas.

***To fill the gas tank:*** invert the gas can and apply the nipple to the gas inlet valve on the top of the tank turret. It is advisable to support the loco under the gas tank whilst filling, to prevent the engine tipping over. You will know when the tank is full; gas will blow back from the inlet valve in a strong jet. A small amount of gas and air will escape during filling, but the difference between this and when the tank is full is always clear. Always keep the gas can vertical when filling the gas tank.

***Filling the lubricator:*** As you will read in the instructions for the end of the run, the lubricator should be empty of oil and water. Remove the lubricator filler cap. We have supplied a long tool with a ‘T’ bar handle to aid in the removal of the lubricator cap; it has a cut out shape in the bottom end which fits over the ‘T’ bar on the lubricator cap. Fill up the lubricator with steam oil to about ¼ of an inch below the top. Leave the filler cap off for the present, so that any trapped air can escape. It can be refitted after you have filled up the boiler.

***To fill the boiler:*** remove the filler cap. Fill up the boiler to about ¾ full – ideally use filtered rainwater or distilled water using the large syringe provided. Replace the boiler filler cap, check that the lubricator does not need topping up, and then replace its filler cap also. Filler caps should be firm finger tight. They are sealed with a trapped ‘O’ ring and, therefore should not be over-tightened.

### **Lighting Up**

Open the smoke box door; this is done just as on a real locomotive. Hold the outer lever and un-screw the inner lever anti-clockwise until the outer lever can move freely. Rotate the outer lever through 90 degrees to allow the inner locking bar to align with the slots inside the smoke box. Now pull open the door, this could take a little practice to get used to the particular alignment for your loco. Light your lighter/match etc. and gently open the gas control valve until a gentle hiss is heard in the burner. Apply your light into the smokebox and the flame should ‘pop’ down the fire tube and ignite the burner inside the fire tube.

If the gas valve is opened too much the flame will not pop back; it will either fail to ignite, will roar in flame out of the smokebox, or there will be a ball of flame around the front of the engine, which will then blow the whole fire out (after giving the driver a fright)!

When the fire sound has stabilised, after about 30 seconds the gas can be turned up until a gentle roar is heard. The smoke box door may be shut after about two minutes. Now leave the locomotive to raise steam and let the locomotive raise at least 50 p.s.i.

### **Burner Air Control Ring**

This is an adjustable air volume control which is set at the factory. However variances in gas can give the need to either reduce or increase the air volume. To obtain a quieter softer flame use the nut spinner supplied, and move the ring forward slightly to reduce the air mix.

### **Running**

When the engine has raised about 50 psi you are ready to start running. It is advisable to run the engine in reverse first; it clears the condensed water from the cylinders best this way. Before commencing your first run of the day, it is advisable to put a cloth loosely over the chimney for a few minutes, as condensed water will be ejected from the chimney. This is quite normal; the motion of the engine will be jerky until all condensate has been ejected. **DO NOT stand over the chimney as ejected boiling water/steam could cause serious scalding.**

Place the direction lever into the reverse position, and then open the main steam valve. The engine should start to move off in the reverse direction. When starting from cold it will be jerky, this is normal, as it has to clear the condensate from the system. The more the main steam valve is opened, the faster the engine will go; our advice is to start slowly and learn the road with your engine

After a minute or so, remove the cloth and continue running. In running it is correct practice to balance the boiler pressure against the load being pulled and the track conditions. With a light load and level track the pressure may need to be only 30-40 p.s.i. therefore, turn the gas control down to keep this pressure. When running a heavy train with steep gradients, increase the pressure by turning up the gas.

The ideal running pressure can be learnt by experience and is one of the pleasures of running a live steam engine. There is no need to have the safety valve constantly blowing off (it is what its name implies – a safety vent for excess steam pressure).

When the gas runs out a complete gas, oil and water service must be done (remember GOW, also remember to shut the gas regulator before refilling, and **DO NOT** refill with gas near any other live steam loco).

When the locomotive slows as the pressure falls at the end of a run, stop the engine. With the reverse lever in forward position so as to let any residual pressure in the steam pipes escape, make sure the steam regulator is fully shut, then gently open the lubricator filler cap and with the small syringe with the plastic tube on it suck out the condensed water. If you intend to continue running a complete fill of the lubricator will be required.

## Continuous Running

Running for longer periods of time than the normal, requires the use of the Boiler Filling System. This consists of a pump bottle with tube attached and a replacement boiler filler cap, which has a non-return valve on its underside. For the first fill service in the normal way. Then run for about 10 minutes, now have a look at the water level. You will probably need to pump some water into the boiler. Lift up and tilt over the cab roof to uncover the filler cap, place the tube in the hole and holding it in firmly, pump water into the boiler until the gauge glass is showing about  $\frac{3}{4}$  full. Keep an eye on the water gauge and try to run between  $\frac{1}{3}$  and  $\frac{3}{4}$  of a glass.

After another 10 minutes running you will need to refill the lubricator and top up the gas tank. Also check the water level and top up if necessary. Stop the loco in a convenient location, away from other locomotives and turn off the gas. Ensure the fire is completely out and then top up the gas tank. Blow around the engine so there is no residual gas about, then re-light the fire. To re-fill the lubricator, follow the instructions at the beginning of page 3. Keep an eye on the water level at all times and try to refill the gas tank and lubricator every 20 minutes to half an hour.

## Gauge Changing

All 'Lew' locomotives are supplied set to 45mm gauge, but a "gauge change" kit is supplied with each engine. This will allow you to run on either 32mm or 45mm gauge track. To change the gauge, lay the engine gently on its side, on a thick cloth, loosen all the grub screws in the boss on the back of the wheels using the Allen key provided. The axles are dimpled for each gauge, so you do not have to measure for the right gauge. Slide the wheels to the gauge required and tighten up the grub screws. **These should be checked as a routine at the start of each running session.** To change the pony trucks to 32mm gauge another set of wheels is supplied. With the nut runner supplied, undo the two hexagon bolts holding the rectangular axle carrier to the flat pony truck arm. Remove the complete wheel set assembly and replace with the desired set. Ensure the hexagon bolts are replaced firmly, but do not over tighten, you might strip the threads.

## End of Run

The locomotive should be allowed to cool and all boiler pressure to go down. When cool, gently release the water filler cap by about 2 turns to allow the boiler to have free breathing space and not to create a vacuum as it cools. Now clean the engine, check the motion and oil if necessary. The locomotive should always be put away in a clean condition as it attracts less dust and is always ready for the next run (or to be shown to an admiring friend). Always leave the lubricator and boiler filler caps loose and the main steam valve open so that the boiler will not be strained if subject to any temperature change. It is advisable to store the locomotive where any residual drips of oil or water do not matter.

## **Blocked Gas Jets**

If the gas jet becomes blocked with particles of dirt within the gas, the jet will have to be removed and cleaned. With a spanner or pliers carefully undo the pipe union on the gas control valve. Remove the pipe and jet holder assembly from the burner. Holding the jet holder gently in a vice, unscrew the jet. To clear, place the jet nozzle against the inverted gas can nozzle and clear the jet with a blast of gas. Under no circumstances use a pricker wire, this will damage the jet hole. Replace the jet in the jet holder, ideally using a thread sealant sparingly on the threads. Ensure it is tightened up firmly. Replace the assembly into the burner and re-connect the pipe to the control valve. Ensure this is done up tightly, test **CAREFULLY** for gas leaks, first with a 50/50 mixture of washing up liquid and water, and then if no bubbles are showing, with a flame and the gas “just on”. Tighten if required.

## **Wheel Insulation**

Due to heat problems the front pony truck wheel set is not factory insulated. However if you need full electrical insulation of all the wheels on your model we can supply you, free of charge on an exchange basis, a UK insulated set of front pony truck wheels. Please contact us if these are required.

## **Pony Truck Wheel Arch Covers**

These items are supplied for display purposes or when the model is being used on 32mm gauge and running over very large radius curves of above 2 metres. They cannot be used for 45mm gauge or tight radius curves of 32mm gauge.

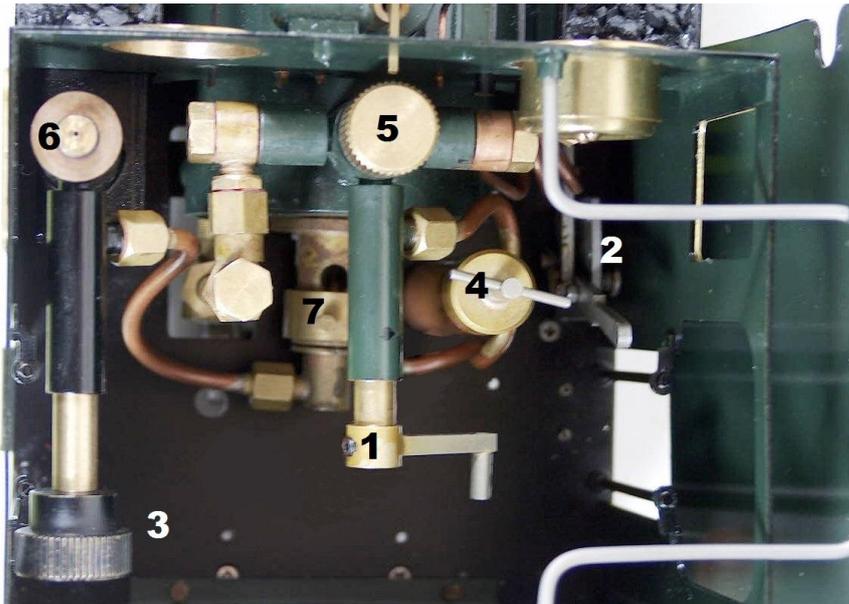
A set of four covers are supplied with the loco, one for each specific wheel arch. To fit them remove the M2 hex bolts from the fixing lugs and put carefully to one side. Fit the respective cover to the frame cut out with the fixing lugs to the inside of the frames and secure with the M2 hex bolts previously removed through the pre-drilled holes in the frames.

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As with all comprehensive models, we strongly recommend a full demonstration (by our agents) before purchase, enabling you to get the best out of your model right from the start.

*HAPPY STEAMING!*

## Identification of Controls and Fillers.



1. Steam regulator
2. Reverse lever
3. Gas regulator
4. Lubricator filler cap
5. Boiler water filler
6. Gas tank filler valve
7. Burner air control ring

## Identification of Accessories.



- A. Protective gloves
- B. Boiler filling syringe
- C. Small syringe with tubing for lubricator
- D. 32mm gauge wheel sets
- E. Lubricator cap removal tool
- F. Boiler top up valve
- G. Headlamp
- H. Hex nut spinners for 2mm and 3mm hex bolts
- I. Allen keys, 0.8mm for cranks and 1.5mm for wheels
- J. Front wheel arch cover plates
- K. Rear wheel arch cover plates

## The Accucraft L&B 'Lew'



Lew was built in 1925 to a similar design to the previous Manning Wardle locomotives constructed for the Lynton & Barnstaple Railway, the main difference being a redesigned cab to eliminate a smoke trap, and give more room to the crew.

Following the L & B tradition, she was named after one of the local rivers with a three-letter name. She was sold at auction along with other L&B equipment in November 1935, two months after the railway closed. However, she was purchased by the contractor dismantling the line and was used on these trains until July 1936. In September 1936, the loco sailed from Britain on the SS Sabor – believed to have been destined for a plantation in Brazil. Despite the efforts of many enthusiasts, no proof of the locomotive's current whereabouts or eventual fate has been discovered. The Ffestiniog Railway has recently completed a replica of the loco and christened it 'Lyd', thus continuing the tradition of three-letter river names and we are pleased to say that in association with the F.R. we will be producing a limited edition of this loco as well.