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OPERATING INSTRUCTIONS

L&SWR ADAMS RADIAL TANK LOCOMOTIVE

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 all 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 the gloves provided 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.**
- 9. Failure to properly control the gas will result in over-heating the loco and will cause damage to the mechanics and the paintwork and will not be covered by warranty.**

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 such as 460 grade, 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

Positions of Fillers etc.

The gas inlet valve (1) is on the top of the gas tank filler turret and the gas control valve (2) is in the bunker. Both are accessed by lifting out the coal load. The gas tank has a small water bath which can be filled with **hand hot** water to promote better steaming in cold weather. The water should be not hotter and needs to be emptied at the end of a run (using the boiler syringe).

The lubricator (3) is in tank on the nearside of the cab. The filler cap has a slot 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, 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 (4) is on top of the steam turret on the boiler in the middle of the cab. The cab roof lifts up then tilts over sideways to give access to the water filler. Undo the slotted cap to fill with water. The loco is also supplied with an additional boiler top-up valve (Goodall valve) which is used when filling the boiler when in steam. The main steam regulator valve (5) is in the offside cab door and the boiler blow-down is behind the nearside cab step – ensure this is closed when filling the boiler!

The direction control (reverser) (6) is the lever by the nearside 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

The model is fitted with a water gauge with a blow-down; 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. 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 in cold weather.

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 backwards. 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. For longer running sessions it may be a good idea to bring the locomotive up to pressure and, having turned the gas off and extinguished the flame, re-gas the locomotive before firing it up and running – if this is done the boiler must be topped up during the run.

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. 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 on the gauge glass (7) – ideally use filtered rainwater or distilled water using the large syringe provided. Replace the 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

Pull open the smokebox door. 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 burner sound is heard. The smoke box door may be shut after about two minutes. Now leave the locomotive to raise steam until, the pressure gauge (8) shows at least 50psi.

Burner Air Control Ring

This is an adjustable air volume control (9) 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). If the gauge glass is hard to read, briefly opening the blow-down may cause the level to stabilise, the blow-down is behind the nearside cab step.

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 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.

End of Run

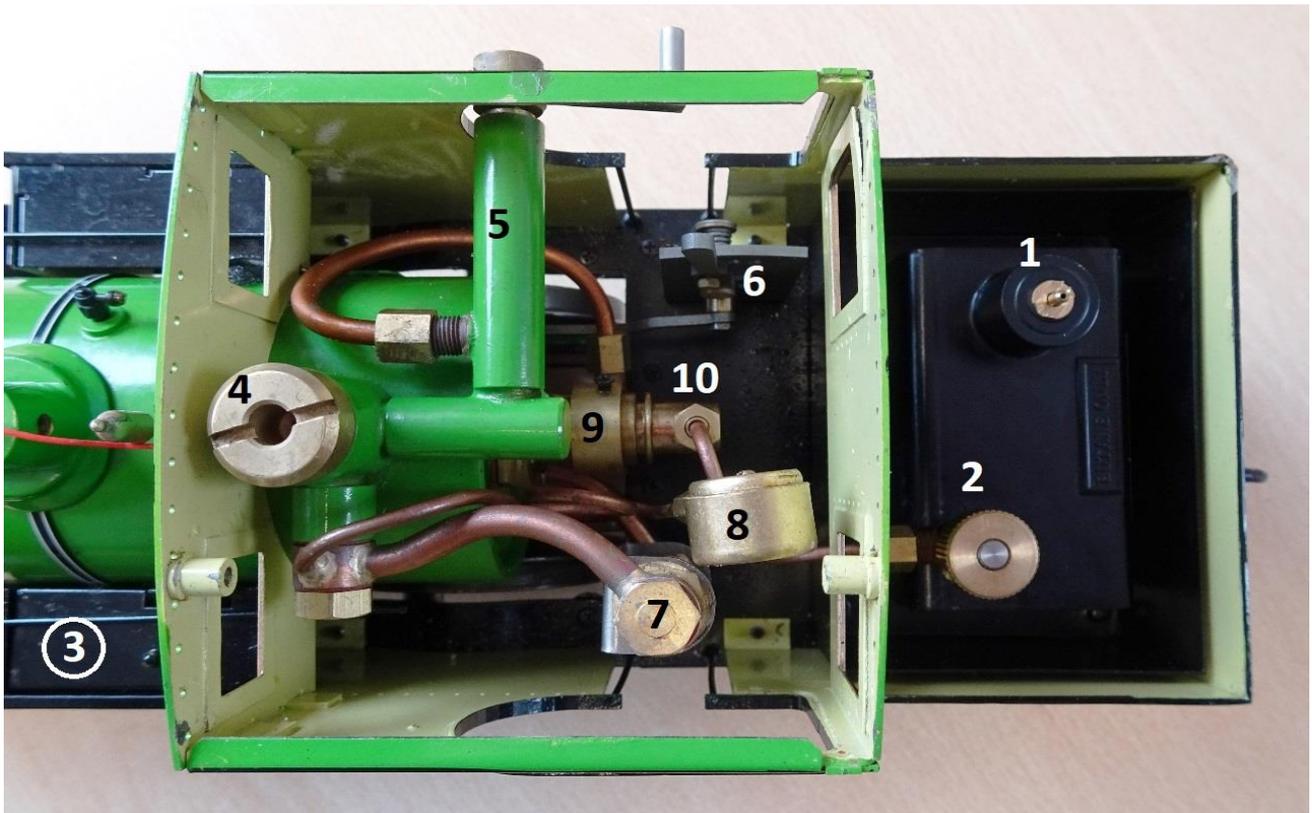
The locomotive should be allowed to cool and the boiler pressure to go down. When cool, gently release the water filler cap by about 2 turns to allow the boiler to have free breathing space and not to create a vacuum as it cools, it can now be drained via the gauge glass blow-down. Now clean the engine, check the motion and oil if necessary. The locomotive should always be put away in a clean condition. 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 (10) 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.

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. If this is not possible we recommend you join your local steam group of G1MRA where there will be many friendly members who will want to show you all the niceties of running your new locomotive. **HAPPY STEAMING!**

Identification of Controls and Fillers.



- | | |
|-------------------------------------|----------------------------|
| 1. Gas tank filler valve | 6. Reverse lever |
| 2. Gas regulator | 7. Water gauge |
| 3. Lubricator filler cap | 8. Pressure gauge |
| 4. Boiler water filler/top up valve | 9. Burner air control ring |
| 5. Steam regulator | 10. Gas jet |

Identification of Accessories.



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|---|
| A. Protective gloves |
| B. Boiler filling syringe |
| C. Small syringe with tubing for lubricator |
| D. Hex nut spinners for 2mm and 3mm hex bolts |
| E. Allen keys |
| F. Goodall/top up valve |

A bit of history

William Adams' 415 (later 0415) Class was based on his earlier LSWR 46 Class, with London suburban services in mind. The radial axlebox worked in a corresponding curved hornblock the centre of which was struck near the middle of the chassis and many tank engines so fitted earned the soubriquet 'Radial Tanks'. The enlarged coal bunker was also designed to incorporate a back tank for extra water storage in addition to the capacity of the side tanks. Production began in 1882 when a total of four engineering companies were contracted by the LSWR to construct the new class, which numbered 71 when production ceased in 1885. Our model is based on the Neilson batch, readily identified by the curvaceous frames in front of the smokebox.

Upon the appointment of Dugald Drummond the class was modified slightly, with the application of his lipped chimney in place of the stovepipe version that the locomotives were equipped with when built; in due course they also acquired Drummond boilers with the safety valves incorporated into the dome. Coal rails were added to the bunker in an attempt to increase capacity. The 0415's tenure on the London suburban services was relatively short-lived and with the introduction of Drummond's M7 class 0-4-4 tanks and electrification of the suburban railway network the class was generally removed to rural branch duties from 1895.

In 1903 two were allocated to Exmouth Junction shed for the Axminster to Lyme Regis service, joined in 1946 by a third example retrieved from the East Kent Railway. The three locomotives continued on the Lyme Regis branch after Nationalisation due to the lack of better motive power to cope with the curve restrictions in place on the line. By 1958 all three were showing their age, and the end finally came in 1961. However, the final example, No. 30583 (née 488), was purchased by the Bluebell Railway, chosen because of the three it was the only one retaining the original pattern of boiler, and preserved.



GUARANTEE

Accucraft UK Ltd will remedy any defect or malfunction occurring with this product during a two-year guarantee period from date of purchase. This guarantee does not extend to malfunctions or defects caused by damage or unreasonable use, including the failure to provide the correct types of lubrication and water or by not controlling the gas correctly.

If a claim is to be made within the two-year guarantee period, in the first instance, return both the product and guarantee card to your dealer. In the event of your problem not being able to be fixed by your dealer, he will contact us for advice. If necessary we will arrange for the product to be returned to our service department for repair.

This guarantee is quoted in addition to all legal rights of the purchaser under the Sale of Goods Act and shall expire two years from the date of purchase. Under no circumstances shall Accucraft UK Ltd be responsible for any consequential damages arising in regard to any Accucraft UK Ltd product.

CARE OF YOUR LOCOMOTIVE

- **Proper lubrication is most important but must not be overdone.**
- **Care should be taken when removing the loco from its packaging, as any levering action using projecting parts (e.g. buffers) may result in damage.**
- **Check with your dealer that these locomotives wheel standards are compatible with your track system. Ensure that your track is in good condition and well maintained.**
- **Keep the engine free of dust and dirt. Debris such as earth and gravel in the motion will lead to premature wear and failure.**
- **Always use steam oil in the lubricator, never ordinary household oil.**
- **Never light the burner without water in the boiler.**
- **Always control the gas correctly and do not have the fire too high so it goes into the smoke box and damages materials, paint, or wheel insulation.**

SAFETY

- **Always use this product in a well-ventilated area. Never get directly above the chimney, boiling water can sometimes be ejected from it.**
- **When in steam, and for some time afterwards the engine will be very hot. HANDLE WITH CARE.**
- **This model has many small parts and should be handled with care. It is not suitable for children under the age of 14 years old.**

**ACCUCRAFT UK LTD, UNIT 4, LONG MEADOW INDUSTRIAL ESTATE, PONTRILAS,
HEREFORDSHIRE. HR2 0UA.**

LOCOMOTIVE LOG BOOK

Loco Serial No: Boiler Serial No:

Gas Tank Serial No:

First Registered Owner:

Date Purchased:

Second Registered Owner:

Date Purchased:

WARNING! Please ensure that your dealer supplies you with both the inner (red) and outer (cardboard) boxes and all the associated packaging when you purchase an Accucraft model and that if warranty work should be required the model is re-packed accordingly before our carriers collect it. Failure to do this will attract a charge for any repairs not covered by the warranty as well as the cost of any additional packaging to ensure a safe return.