



## OPERATING INSTRUCTIONS

**IMPORTANT** read instructions carefully before operating locomotive.

This is a working model locomotive using steam under pressure (2½ BAR (40 psi)) and highly inflammable fuel. Provided it is operated with reasonable care and attention no problems should arise.

Whilst the locomotive is in use, hot gasses are exhausted up the chimney and excess steam will blow off frequently through the safety valve even when stationary, so operator and spectators should not bend over the model.

As you will appreciate, this is not a toy and is therefore unsuitable for young, unsupervised children.

All locomotives are test run before leaving our workshop, but will require a certain amount of running in when new to overcome initial stiffness. It is recommended that the model is run light to start with. Regular lubrication of all working parts is important and should be carried out at the beginning of each operating session.

### PREPARING THE LOCOMOTIVE

Remove the safety valve from the top of the rear dome on top of the boiler and using the syringe provided, fill the boiler completely, with clean water, then remove about 20-30 ml. This will ensure that there is an air space in the boiler for steam raising. Replace the safety valve, not forgetting the fibre washer. The use of hot water from a kettle will reduce the time taken to raise steam.

Fill the cylinder lubricator with the special steam oil supplied. The lubricator is in the top of the front steam dome and is opened by unscrewing the brass top off the dome. Replace the cap not forgetting the washer.

**NOTE** only special steam oil should be used in the lubricator, ordinary machine oil must NOT be used as they may cause internal damage.

Filling of the gas tank should only be carried out in a well ventilated area and where there are no naked lights, or other lighted locomotives close by. Ordinary Butane gas is used (as used in cigarette lighters), though for economy, the larger canisters as used on blowlamps etc. are better, though these will require a special filling adaptor (obtainable from Roundhouse or other garden railway suppliers). Mixed gasses (60-40 Butane/Propane) may be used and these are helpful in very cold weather. The pressure of the gas is affected by heat, the lower the temperature, the lower the pressure. Propane gives a higher pressure than Butane at any given temperature, so these mixes give a better pressure in low temperatures.

The filler valve is on the right hand tank top in front of the cab. Check that the gas control valve on the front of the right hand side tank is closed.

Invert the gas canister and place the nozzle onto the valve and, holding it vertical, press down. The gas will be heard hissing as it enters the tank and a small amount will escape around the valve, this is the tank venting as liquid is taken in. After about 15-20 seconds, liquid gas will emerge from the valve showing that the tank is full. Remove the canister immediately.

To light the burner, hold a lighted match or cigarette lighter over the top of the chimney and turn on the gas valve a little. The gas should ignite almost immediately with a pop, as the flame travels through the smokebox to the burner inside the boiler. The burner should be audible, but not too loud. For the first couple of minutes, keep the burner low. This is important, as until it warms up, the flame will be a little unstable and turning it up too much too soon could cause the burner to go out. Also with a completely full tank, liquid gas can be drawn off instead of vapourised gas which can also extinguish the flame.

After a couple of minutes, the control valve can be opened more to speed up steam raising.

When full pressure has been reached (about 2½BAR), the safety valve will start to blow off at regular intervals. Steam generation can be controlled by the gas control valve in the cab. If the safety valve is blowing off frequently during running, then too much steam is being made which is wasteful of both water and gas. Turning down the burner will increase the duration of the run. Conversely, if steam pressure is not being maintained during running then the burner should be turned up. The art of balancing steam generation to requirement by adjustment of the gas control valve will quickly be learned and will pay dividends in economy of fuel and length of run.

The gas tank may be replenished as required during the run, but do not let the water level drop below the bottom of the sight glass in the cab. Allowing the boiler to run dry can cause damage to the model.

Before the locomotive can move, it must be put into gear for the required direction. The valve gear is set by moving the locomotive manually for one turn of the wheels in the required direction.

Open the regulator slowly. On manual models this is on the right hand side of the front steam dome and on R/C models the left hand lever on the transmitter is used (down for close and up for open). Initially, a certain amount of water (priming) will be present and the model will move jerkily until this has been exhausted, some manual assistance may be necessary. When the cylinders have cleared, fine control of the speed can be had by the regulator.

To change direction, stop the locomotive by closing the regulator and manually move the model one turn of the wheels in the desired direction to set the valve gear.

At the end of an operating session, it is good practice to clean the locomotive with a soft cloth and lightly oil all bright metal parts to prevent rusting during periods of storage.

To renew the radio control batteries on the locomotive, remove the cab roof which is secured by four screws. To conserve battery life always switch off when not in use.