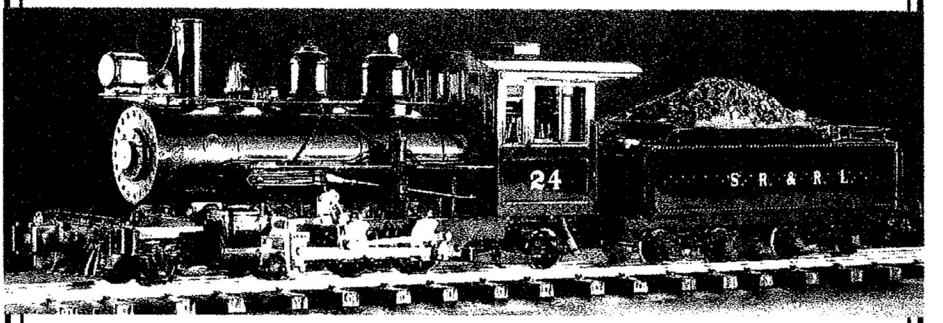
ROUNDHOUSE



Owners Handbook

For the S. R. & R. L. #24 Locomotive

INTRODUCTION

The Sandy River & Rangeley Lakes Railroad was a two foot gauge line in Franklin County, Maine, USA. Set in the hills and forests of this New England State, it was aptly named, "The Scenic Route".
Building started in the 187Os and the line reached its peak around the time of the First World War when it had some sixteen locomotives operating on the 113 miles of track that made up the system
Falling revenue during the late 1920s and the effects of the great depression forced the line to close in 1932 That was not the end however, tor the Railroad Commission ordered it to reopen the main line from Farmington to Phillips and a branch line from Strong to Carrabesset following reprsentations from local officials and business. The service recommenced on April 17th 1933, the first train hauled by No.24, but the hard times continued and eventually, in 1935 the line closed for the last time. In 1936 a public auction was held and the remaining equipment was sold, what wasn't sood was scrapped.
No 24 was the second largest locomotive bought by the company. It was built by Baldwin Locomotive Works in 1919 as works No.51804. It weighed in at 43.75 tons, was over 46 feet in length and had a tractive effort of 1O,115 lbs It cost the company $15,200 and proved to be an excellent piece of motive power.
When the line clesed in 1935, it was bought by a rail fan for a reported $250, however he later resold it for scrap
The Sandy River & Rangely Lakes Railroad has a fascinating history and is well documented. We recomend the following to those who would like to know more about this great narrow gauge line and its stock.

- Two Feet Between the Rails by Robert C. Jones, published by Sundance Books in two volumes.
- Main Two Foot Pictorial by Gary Kohler, published by Railhead Publications.
- Ride The Sandy River, a video by Steam Powered Video.

Operating Instructions

Read these instructions carefully before operating the locomotive

The following items are required for running this engine and are not
included with the model.

Fuel.	Butane gas. see 'Filling the gas tank' page 7
Water.	see 'Filling the boiler' page 6
Lubricating oil.	see 'Lubrication' page 6

SAFETY PRECAUTIONS

This is a working model locomotive using steam under pressure and highly flammable fuel. Provided it is operated with reasonable care and attention, no problems should arise.
It is intended for use out of doors and must only be operated in a well ventilated area.
Whilst the locomotive is in use, hot gasses are exhausted up the chimney and excess steam frequently blows off 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.
Follow manufacturers recommendations regarding the safe storage of Butane gas canisters.
Always have to hand either a fire extinguisher or wet cloth when operating the model.

CONTENTS

TOOL KIT

The following items are included with your locomotive.
One 60m1 bottle of special steam oil for use in the cylinder lubricator. One 60m1 syringe with plastic tube for filling the boiler with water.
One set of spare washers and '0' rings.
One water pump handle
One pair of protective gloves.
One cleaning duster.

RUNNING IN

All locomotives are extensively test run before leaving the factory, but they will still require a certain amount of running in, when new, to overcome initial tightness and allow valves etc. to 'bed in'.

ACCESS TO THE CONTROLS

For normal operation, all controls are accessible without the need to remove any part of the locomotive, however, to give access to the gas tank when filling, the cab roof hinges up from the front.
The gas regulator is accessible through the rear of the cab and on manual control engines, the steam regulator is accessible through the rear cab doorway and reversing lever through the right hand cab window.
The tender water pump is housed under the hinge up tool box lid.
The radio control receiver, batteries and switch are all housed in the tender and access to the receiver and batteries is gained by lifting the dummy coal load.

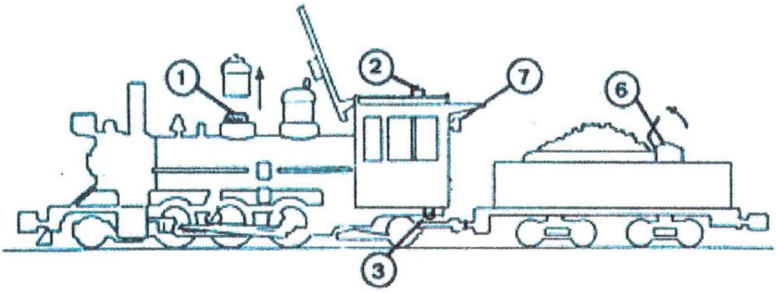
COUPLING ENGINE AND TENDER

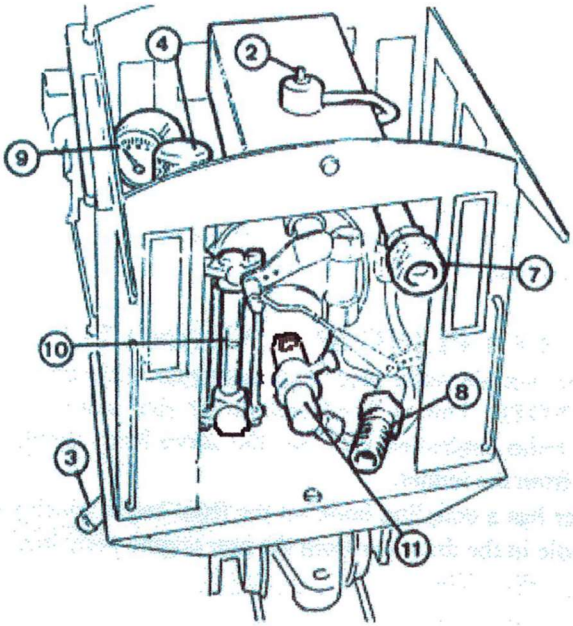
Couple the flexible water pipe from the tender to the union in the cab rear opening. **NOTE**: This is fitted with an 'O' ring and only need be finger tight. On radio controlled versions, the servo leads should be coupled to the leads from the tender.
The tender has a coupling hook on the front bogie which should be fitted into the hole in the draw bar from the rear engine pony truck.

IDENTIFICATION OF PARTS OF THE LOCOMOTIVE

Radio controlled version illustrated

1/ Boiler filler plug. 2/ Gas filler valve. 3/ Lubricator drain. 4/ Lubricator cap. 6/ Water pump. 7/ Gas regulator. 8/ Connector for flexible water pipe. 9/ Pressure gauge. 10/ Water gauge. 11/ Gas burner.





PREPARING FOR OPERATION

The locomotive must be serviced before being operated. It is important to perform all the following operations.

1) LUBRICATION

Regular lubrication of all working parts is important and should be carried out before each operating session. There are two types of lubrication required: The external moving linkages and bearings are lubricated with a medium oil such as motor engine oil and the internal steam mechanisms such as cylinders, pistons and valves are lubricated with a special steam oil that is mixed with the steam.

The steam oil is mixed with the steam in the displacement lubricator which is housed in the left hand side of the cab. Remove the knurled cap from the top and slacken the drain screw two or three turns at the bottom but do not remove it. Any water in the lubricator will run out through the drain screw. Tighten the drain screw and refill with the steam oil supplied, then replace the cap.

Take time filling the lubricator, especially when cold as the oil takes time to run down and may trap an air bubble.

Both cap and drain screw are fitted with '0' rings and need only be closed finger tight.

NOTE: Only special steam oil as supplied should be used in the lubricator and under no circumstances should ordinary oil be substituted, or damage may result.

2) FILLING THE BOILER

A syringe and plastic pipe are supplied for initial filling of the boiler.

The boiler is filled with water through a plug under the front sand dome on top of the boiler. Lift off the outer dome then unscrew the large knurled plug and, using the syringe supplied, fill the boiler completely with water.

Distilled water (not de-ionised) is recommended as sold for battery topping up, but clean tap water can be used in soft water areas. The use of hot water from a kettle will speed up the steam raising process if desired.

There has to be a space above the water to allow steam to be raised so, insert the end of the plastic pipe into the boiler and withdraw 30ml of water with the syringe. Replace the plug finger tight followed by the outer dome.

A water gauge is fitted to the rear of the boiler to show the water level.

The water tank in the tender can also be filled at this point. Filling is done through the toolboxon the tender top, the lid of which hinges up. The hand pump will be also be seen under this lid.

3) FILLING THE GAS TANK

The filling of the gas tank should only be carried out in a well ventilated area, where there are no naked lights or other lighted locomotives close by. Ordinary Butane gas is used (as used in gas cigarette lighters), though for economy, the larger canisters as used for blow lamps etc. are better. The larger canisters require a special adapter to couple up to the filler valve on the locomotive and some brands are supplied with a small plastic adapter which does this job. If. however one is not available, a special brass adapter is obtainable from your local garden railway supplier or direct from **ROUNDHOUSE.**

Mixed gasses (60-40 Butane/Propane) are also available, but these should under no circumstances be used.

USE BUTANE ONLY.

Before attempting to fill the gas tank, make sure that the gas control valve is closed by turning it clockwise.

The filler valve for the gas tank is on top of the tank under the cab roof. Invert the gas canister and place its nozzle over the gas filler valve. Support the tank from underneath and press the canister down. The gas will be heard hissing as it enters the tank and a small amount will escape around the valve. This is quite normal and is the tank venting as the liquid enters. After about 20 to 30 seconds, liquid gas will emerge from the valve showing that the tank is full. Remove the canister immediately.

3) LIGHTING THE BURNER

WARNING: Before lighting read the section on gas system troubleshooting (page 12) and be aware of potential problems. If the gas system is not operating correctly, **shut it off immediately** or damage may result.

Move the locomotive to another location before lighting. Butane is heavier than air and small pockets of gas can collect around the locomotive during filling.

To light the burner, hold a lighted match or cigarette lighter over the top of the chimney and **slowly** open the gas regulator by turning it anti-clockwise. The gas should ignite almost immediately with a pop as the flame travels down the chimney and into the boiler tube. The burner should be audible but not too loud.

NOTE as stated above, the gas regulator should be opened slowly until the burner ignites. If opened too quickly, particularly when the engine is cold or if the gas tank has just been filled, it is possible that the flame may not travel back into the boiler flue but stay in the smokebox. If this should happen, the burner will sound quite different to normal and the blue flame will be visible in the smokebox if viewed

down the chimney from a safe height. Should this happen, turn off the gas immediately or damage may result and then re-light it. If the problem persists, and it is not possible to ignite the burner correctly, then a dirty jet should be suspected and cleaned as detailed on page 12.

For the first couple of minutes keep the burner on low. This is important, as until it warms up, the flame will be a little unstable and turning it up too much could cause it to go out. Also, with a completely full tank, liquid gas could be drawn off instead of vaporized gas, which can also extinguish the flame.

After a couple of minutes, the gas control valve can be opened more to speed up steam raising. Open the gas regulator slowly to about one full turn.

The full range of adjustment (closed to fully open) is achieved within the **first full rotation** of the gas regulator knob any more is unnecessary. It should not be opened more than this as it is possible to unscrew the spindle completely and release gas into the cab which is potentially dangerous.

RUNNING THE LOCOMOTIVE

When full working pressure has been reached (about 40psi), the safety valve will start to blow off steam. Steam generation can be controlled by the gas valve in the cab. If the safety valve blows off frequently during running, then too much steam is being produced, which wastes water and gas. Turning down the burner will decrease the amount of steam made. Conversely, if steam pressure is not maintained during a run, then the burner should be turned up. The art of balancing steam generation to the operational requirement by the adjustment of the gas control valve will quickly be learned. The gas tank has a duration of 15 to 25 minutes, and will vary depending on operating conditions.

The boiler should not be allowed to run dry, so always keep an eye on the water level as indicated by the boiler water gauge. Extra water can be pumped into the boiler at regular intervals to maintain the the level about 1/2 to 3/4 up the glass. The engine can be kept in steam indefinitely, by refilling the gas tank each time it becomes empty and keeping the boiler full of water by means of the tender hand pump, but, lubrication must not be forgotten.

The lubricator has a duration of around 30-40 minutes, so this must be drained and refilled with steam oil each time the gas tank is refilled.

DRIVING THE LOCOMOTIVE MANUALLY

On manually controlled locomotives, there are three main controls, all of which are housed in the cab.

1) The gas regulator, which should be used to control steam generation as

described earlier.
2) The reversing lever. This is in the left hand side of the cab and is moved fully forward for running in a forward direction and full back to run in the reverse direction. It should be parked in the centre (mid gear) when the locomotive is stationary for any length of time. When in mid gear position, the valve gear is effectively in neutral and the engine will not move under steam power.
3) The regulator. This is the main steam control valve and regulates the speed at which the engine will run. The regulator handle is situated in the rear cab doorway and is moved anti-clockwise to open and clockwise to close.
Using the reversing lever, select the desired direction of travel and open the regulator a little. Initially, there will be a certain amount of water in the pipes and cylinders which will exhaust through the chimney and, after a few moments, the engine will move jerkily, until this clears.
Once the parts have warmed up, the engine will move off steadily and it's speed can be controlled with the regulator. Subsequent starts will be quite smooth once the cylinders etc. have reached their normal operating temperature.
To reverse the locomotive, close the regulator to bring it to a halt, move the reversing lever over and open the regulator again.
The art of fine control will soon be learnt with a little practice.

DRIVING BY RADIO CONTROL

On a radio controlled model, speed and direction are controlled by moving the two levers on the transmitter supplied. The left hand lever operates the steam regulator, down for stop, up for go and the right hand lever operates the reversing valve gear, left for forward, right for reverse and centre for mid gear (neutral).
Switch on the transmitter with the switch in the centre of the front panel. The battery meter above should indicate that the batteries are OK.
Switch on the receiver on the locomotive with the switch on the front of the tender.
Select the desired direction of travel by holding the right hand lever fully over, then open the regulator a little by moving the left hand lever upwards slowly. The locomotive will now move off as described in the manual control section.
The art of fine control will soon be learnt with a little practice.
NOTE:
Always hold the reversing lever fully over in the required direction when the engine is moving. The model is fitted with a simplified Walschaerts type valve gear which is not suitable for 'notching up' (altering the cut off).
Always bring the locomotive to a halt by closing the regulator before changing direction.
If an emergency stop is required, simply release the reversing lever, which will

spring back into mid gear and halt the train, then close the regulator.
Always switch off the receiver and transmitter when not in use to preserve battery life.
It is good practice to switch on the transmitter before the receiver and switch off the receiver before the transmitter. In this way, the radio receiver is never on when the transmitter is switched off and so should always be under your control.
When the batteries are getting low, a poor signal between transmitter and receiver will result and control of the engine will become erratic. The transmitter batteries are housed in the back of the unit under a clip off panel. The receiver batteries are housed in the tender under the dummy coal or wood load.

STORAGE BETWEEN OPERATING SESSIONS

At the end of an operating session, it is good practice to clean the locomotive carefully with a clean soft cloth, and to oil all bright metal parts.
Do not leave fuel or water in the tanks or boiler for long periods.
Ensure all controls are closed and the valve gear in mid gear.
Ensure that radio control equipment is switched off and, if the engine is not to be used for some time, remove all batteries.
Periodically, wash off all traces of dirt and old oil from the moving parts with paraffin and apply fresh oil. This will stop the build up of dirt and grit

ALTERING WHEEL GAUGE

The wheels are set at the factory for the specified gauge however, for those who wish to alter this to run on other peoples railways or if you change the gauge of your track, they are easily reset with the aid of a conversion kit available separately.
The driving wheels are moveable on their axles and are locked in place by a small grub screw. They should be adjusted so that the "back to back" gauge supplied in the kit will just slip between their inner faces. Ensure that the wheels are evenly spaced relative to each side frame.
Do not over tighten the grub screws.
Pony truck wheels are swapped for those of the required gauge by removing the keeper plates, (single self tapping screw in each pony truck).
The tender bogies are swapped for those of the required gauge by removing the pivot screws from the underside of the tender frame (two self tapping screws).

TROUBLE SHOOTING & MAINTENANCE

On a working model of this nature, it is important to keep all working parts well lubricated.

STEAM LEAKS

With constant heating up, cooling down and the stresses of hard work, screws etc. can work loose so, it is good practice to check all fixings and cylinder screws regularly but remember, never over tighten.

The cylinders are fitted with '0' rings in the glands sealing both piston and valve rods. These can be adjusted with a spanner if steam leaks develop. They should only be tightened just enough to stop the leak, as over tightening will affect the running of the model.

REGULATOR NOT SHUTTING (R/C models)

The steam regulator seating and seal can, after a period of time become worn or compressed so that when the lever on the radio control is fully closed, the locomotive still moves. To overcome this, a trimmer is fitted to the transmitter. This is the small lever at the side of the main control lever and is set at the factory to the top of its slot. As wear takes place in the regulator, it can slowly be moved down the slot to compensate. When it reaches the bottom it is time to reset it to the top and adjust the linkage between the servo and the regulator in the cab. If adjustment does not cure this problem, the internal '0' ring is probably damaged and requires replacement. Contact the factory for further advice.

RADIO CONTROL

If the radio control gives problems, always check the batteries firstreplace a if in doubt. AA size batteries are used, four in the locomotive and eight in the transmitter. If problems occur whilst running the locomotive near other r/c engines, check that yours is on a different frequency.

To allow a number of locomotives to operate at the same time in close proximity, a range of crystals are available for different frequencies which can be purchased from any good model shop. Crystals operate in pairs, one in the transmitter and one in the receiver. They are clearly marked with the frequency and either TX or RX. When fitting, ensure that the one marked TX is fitted to the transmitter, and RX to the receiver. Two radio systems are currently in use, 40MHz FM and 75MHz AM. **ROUNDHOUSE** now only use 75MHz AM sets for USA and CANADA. Ensure that the replacement crystals are of the correct type. The receiver is housed in the

tender under the dummy coal load.
AM sets are colour coded for frequency, and are supplied with a coloured flag. FM sets do not have a colour code, nor are they supplied with a flag. It is common practice with these sets to attach a white marker to the aerial with the frequency or band number marked on in black.
Fort further details of the r/c equipment, refer to the manufacturers literature supplied.

GAS SYSTEM

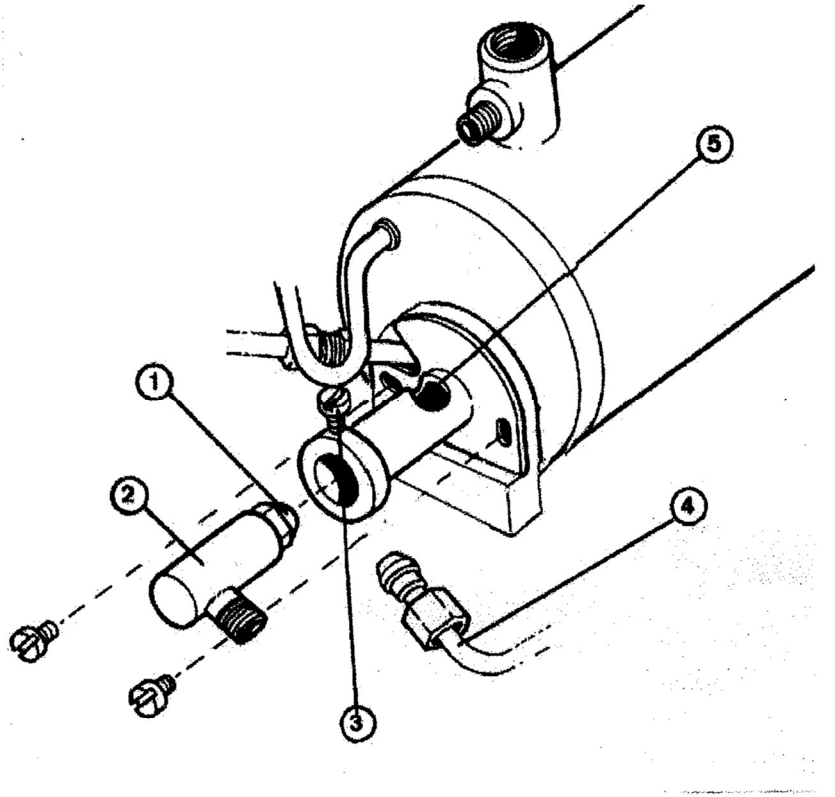
All **ROUNDHOUSE** locomotives are now fitted with our 'FG' type gas burner which is set up and fully tested at the factory.
This system is designed for use with Butane gas as stated earlier, though Iso-Butane, may also be used. Mixed gasses, i.e. Butane with a proportion of Propane mixed in, are available, but should not be used in this model as the pressure of the gas in the tank is much higher and it's burning properties somewhat different. Propane also requires a different fuel/air mixture to Butane, even when the two are mixed and this can cause the flame to become unstable and the burner to malfunction.

The tiny jet in these units can become blocked by small particles of dirt making the burner difficult to light, burn weakly at normal operating temperatures*, burn in the smokebox or fail completely. If any of these should happen, clean Out the jet as follows.
(* On very cold days, a burner may start off burning weakly due to the temperature of the gas but should increase to its normal level as the engine warms up. This is quite normal)
Carefully, disconnect the gas pipe from the jet block using a 2BA spanner.
Note when connecting or disconnecting the gas pipe and jet block, do not use excessive force. Always hold the end of the gas burner near the air holes to support it otherwise it is possible to cause damage by bending the body. Slacken the screw retaining the jet block and slide it out to the rear. Remove the jet from the jet block using a 4BA spanner. Wash out the jet in fast evaporating thinner (Cellulose or similar). Blow through the jet from the front or, if it is badly blocked, pass a length of fine fuse wire through it. Though the hole through the jet is tiny, if you hold it up to the light you should be able to see quite clearly if it is blocked or not. If in doubt fit a new jet. Reassemble in the reverse order, putting a small amount of PTFE tape round the threads of the jet. Ensure all connections are tight. When re-positioning the jet block in the burner, ensure that it is pushed in as far as it will go.

The gas regulator has a removable spindle and sealing gland that will require oiling from time to time if operation becomes either stiff or 'springy', causing difficulty in obtaining fine control over the burner. If you keep rotating the spindle in an anticlockwise direction, it will eventually screw right out and this must never be done when gas is present in the tank. As stated in the lighting instructions on page 7, the full range of adjustment for normal burner operation is achieved within the first full rotation of the regulator knob, and it should only be unscrewed more than this for maintenance purposes and when the tank is empty, and their are no naked lights nearby.

The spindle sealing gland is an '0' ring and is housed inside the hexagon gland nut, just below the gas control knob. To lubricate it, remove the knurled knob which is retained by a 4BA socket grub screw (.100" AF Allen key required) and run a drop of oil down the spindle. Replace the knob and screw the spindle in and out two or three turns to work the oil into the seal. This will usually have an immediate effect and the regulator should be smooth and free operation. If it is still a little stiff or 'springy', it may be necessary to repeat the operation or even remove the hexagon gland nut to gain full access to the '0' ring. Silicone lubricant, obtainable from car accessory shops, is very good for this application.

1/ Gas jet. 2/ Gas jet block. 3/ Gas jet block retaining screw. 4/ Gas pipe. 5/ Air holes



SERVICE AND PARTS

If any problems arise with this model which are not covered in these operating instructions or, spare parts are required, owners should first contact their local dealer.

Your **ROUNDHOUSE** dealer is;

If your dealer is unable to help you may contact the Factory directly:

Roundhouse Engineering Co. Ltd.
Units 6-7 Churchill Business Park.
Churchill Road.
Wheatley
Doncaster
Telephone: 01302 328035
Fax: 01302 761312
e-mail: support@roundhouse-eng.com

ROUNDHOUSE online *www.roundhouse-eng.com*

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