

Instruction Manual



D&RGW K-37 LIVE STEAM



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 **ACCUCRAFT TRAINS**
MUSEUM QUALITY BRASS MODELS



Prototype Information

The K-37's were originally built as standard gauge 2-8-0's by Baldwin in 1902. Ten of these engines were converted to narrow gauge between 1928 to 1930 by the D&RGW. New chassis were created, and the boilers and tenders were used over again on the narrow gauge versions. D&RGW numbered these engines 490 to 499, and most survive today on display. These engines were not as popular as the K-36's. The reason for this was the K-36 was easier on the crews and the track as well. However in model form the K-37 is the largest locomotive that can be built in 1:20.3 scale. The huge boiler allows runs of well over an hour without ever injecting water. This new Live Steam version is also cross ported so that valve gear is in prototypical position for forward and reverse. This large model is extremely powerful, but unlike the prototype is very easy and rewarding to run.

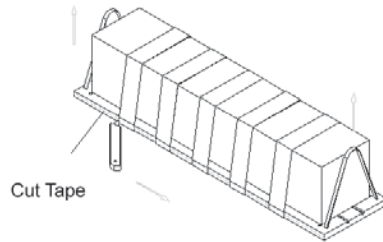


NOTES:



Please read following directions before unpacking your locomotive.

1. Remove foam around the locomotive. Slide the inner box cover to the side, and open the inside cardboard box with a cutting knife.



2. Place taped locomotive on a flat surface. Carefully cut the tape along the wood board side surface. Be sure to cut both sides of the wood board. Slowly lift the tape from the locomotive. Be very careful with small parts. Tape cannot be re-used to re-pack the model. Use new packing tape if necessary.



General information:

Operating a model live-steam locomotive is much different from running an electrically powered engine. It is a more hands-on and interactive experience. The locomotive must be periodically fueled, oiled and watered. As supplied the K-37 is manually controlled, which means that you must actually drive the locomotive using the controls in the cab, just as you would a full-size engine.

The performance of the engine is also unlike electric locomotives. The K-37 should pull a dozen or more standard-size freight cars on a good level track. Grades and sharp curves will diminish its capability. A good engineer will learn the engine's characteristics and idiosyncrasies over time to get the best performance and longest duration from it.

Safety:

For your safety, there are certain rules that should be observed, as follows:

1. The safety valve is under the steam dome. It has been set at the factory to release at around 60 pounds per square inch of pressure. **Never tamper with the safety valve.**

2. The firing system has been designed to use butane gas only. Do not

use any other gas (including propane or butane/propane mix), as the storage pressures can reach unsafe levels.

3. Always refuel the engine well away from other working live steam locomotives. The fuel filling system allows a small amount of the gas to bleed off as the fuel tank is being filled. A passing engine can ignite this bleed-off gas, causing a potentially hazardous situation.

4. When lighting up light your match first and then turn on the gas.

5. A steam engine gets very hot. Be very careful.

Carrying the engine:

The locomotive and tender should always be carried separately because of their weight. We suggest carrying the locomotive to the track by supporting it underneath the wheels with both hands, as opposed to lifting it by the pilot (which may not stand the stress) and rear beam. For general carrying, the engine can be carried on a carrying tray with handles.

A steam-locomotive engineer goes through a lighting-up ritual every time the engine is to be run. It is good to follow the same routine each time so that nothing is overlooked.

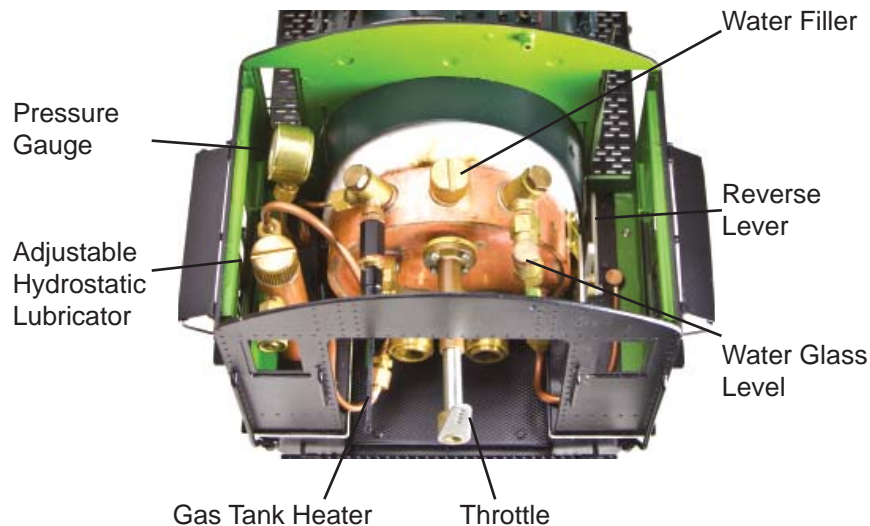


1. Oil all external moving parts of the engine and tender with a high grade, light weight machine oil like 3-in-1. Don't forget the wheel bearings in the pilot and trailing trucks, as well as those in the tender.

2. Place the engine and tender on the track and couple them together. There is a drawbar between the units that has two holes. For tighter curves use the outer hole. For wide-radius curves, the engine and tender can be coupled together using the inner hole. Insert the twin gas jets (at the end of the hose coming from the tender) into the backs of the burners, making sure they seat snugly.

3. The adjustable lubricator located in the cab ensures the cylinders and valves are properly lubricated inside. As the steam passes through it, a small amount will condense into water. This water will sink to the bottom of the lubricator, forcing a similar quantity of oil into the steam line and thus to the cylinders.

Remove the lubricator cap and draw out any water from previous run with a syringe. Use only proper steam cylinder oil. Fill the lubricator, but leave a small air space between the oil and the cap.



Technical Specifications:

Scale:	1:20.3 (15mm = 1'0")
Gauge:	N° 1 (45mm)
Wheel arrangement:	2-8-2
Boiler:	Double flue, gas fired, silver-soldered copper, blow off pressure, 60 psi
Boiler fittings:	Safety valve, throttle, blow down valve, water glass, pressure gauge
Fuel:	Butane gas
Cylinder lubrication:	Adjustable lubricator in the left side of cab
Cylinders:	Fixed cylinders, D-valves, exhaust through the stack
Valve gear:	Modified Walschaerts, controlled from the cab

Caution!

This model is an accurate replica of the original locomotive. It has sharp and moving parts. The locomotive drive rods are stainless steel with sharp edges.

OPERATORS MUST NOT COME IN CONTACT WITH A MODEL THAT IS BEING POWERED AT ANY TIME. UNDER NO CIRCUMSTANCES SHALL ACCUCRAFT TRAINS BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING IN REGARD TO ANY ACCUCRAFT PRODUCT.



Notes on radio control

Although the K-37 was designed as a manually controlled locomotive, there is no reason why radio control (R/C) cannot be fitted with some ingenuity. A two channel radio is all that's necessary, one for the throttle and one for the reversing lever. The gas valve should always be controlled manually. The reversing lever will have to be modified so that it does not lock in position, but must still have stops at either end of its throw for proper positioning of the reversing valve.



4. Unscrew the filler plug; which is at the top of the steam turret inside the cab and fill the boiler with water. The water level will show in the sight glass on the boiler's back head. Fill the boiler until the water reaches the top of the glass. (Arrow indicating area in picture below)

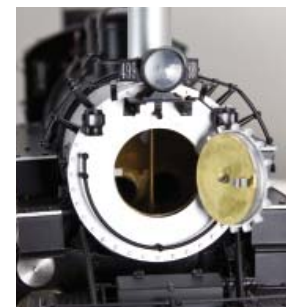
This is a BIG locomotive and it will take a lot of water. Do not overfill the boiler-there needs to be room above the water for steam to be formed. Use only distilled water in your engine's boiler. Tap water contains minerals that will leach out and ultimately affect the performance of the engine.

5. Finally add the fuel. Your K-37 burns butane gas. The gas tank is located in the tender beneath the dummy coal load. Remove the coal load with the ring provided. Butane gas can be purchased at the grocery store or at a tobacconist's as cigarette-lighter refills. These will come with a nipple suitable for the filler valve on the K-37's gas tank. (Butane can also be purchased more economically in larger containers at camping-supply stores, but these cans will require a special adapter for filling the engine's tank.) Simply press the nozzle of the butane canister hard onto the filler valve atop the tank, making sure that the control valve is closed. You will hear the gas transferring and will see a little gas bleeding out of the valve. The gas may tend to sputter

a little from time to time while filling. When the tank is full the gas will begin to sputter a lot and much more gas will escape the valve. When the gas tank is full you are then ready to fire up the engine. NOTE: Because of the size of this locomotive and the fact that it has two burners, a very large gas tank has been provided, which takes a while to fill completely. If you find that you are getting relatively short runs and there is still a lot of water left in the boiler, chances are that you did not fill the gas tank all the way.

Firing up

The engine's burners reside at the back of the flues inside the boiler. Open the hinged smokebox door at the front of the engine. To light up, strike a match and hold it at the opened smokebox door while simultaneously opening the gas valve in the tender very slowly until the gas ignites. You should hear the gas coming into the burner. Opening the valve too wide or too fast may blow out the flame or cause the fire to burn in the smokebox.





The fire should flash back into the back of the flues with a quiet “pop”. If it wants to burn in the smokebox or in the forward part of the flues, slowly close the gas valve until it flashes back to the burner. Do not let the fire burn in the smokebox your engine will not run as it should and may be damaged. The object is to run the burner at the lowest setting possible to operate the engine, thereby increasing the efficiency of the engine and the duration of the run. You will get the hang of this with practice.

If a burner goes out while the engine is in operation (you should be able to tell by the sound of the fire or by sluggish performance) it must be manually relit. One burner will not automatically ignite the other. After another ten or twelve minutes, pressure on the pressure gauge should read about 20 psi (pounds per square inch) or so. The safety valve is set at 60 psi. The engine can be run when the pressure on the gauge reaches 40 psi.

Drain cocks

Unlike most small-scale live steam locomotives, your K-37 is fitted with working drain cocks on the cylinders. When first starting out, the cocks should be open (levers moved to “outside” positions). This will allow water in the cylinders to drain while the cylinders heat up to working temperature. As steam enters cold cylinders,

it condenses, so expect a fair amount of water to come out at the beginning of each run. Once the cylinders have warmed up, you can close the drain cocks. To close them, move the levers to the “up” position.



Drain Cock

Running

Move the reversing lever at the right side of the cab to the forward position. With the engine on the track and without a train, open the throttle. The engine may need to be pushed a little to overcome the steam condensing into water in the cold cylinders, however the opened drain cocks will minimize this. After a few moments the engine should take off on its own; moving away slowly.

Once the engine is running smoothly, a train can be coupled on and the run can proceed. Since all of the locomotive’s functions are controlled from the



cab, it can be driven like a full-size engine. If you have suitable track, the engine can be left to run on its own at a steady speed. Keep your eye on the water glass. When the water level reaches the bottom of the glass, shut the engine down and repeat the firing up process. With practice and good weather, steady runs of an hour or more are not uncommon for this engine.

Shutting down

To shut the engine down, simply close the gas valve and allow the engine to run off any residual steam. At the end of the run, open the blow down valve and leave it open. This will relieve the boiler of what little pressure remains and prevent a vacuum from forming inside the boiler that could draw lubricating oil into the boiler if the throttle valve is not fully closed. Because of the size of the engine blowing down could take several minutes.

After a day’s operation in the garden, you’ll probably find that your engine has a coating of oil all over it. This is steam-cylinder oil that has been exhausted from the stack. A simple wipe down with a dry cloth is all that’s necessary to restore the engine to pristine condition. This is best done while the engine is hot. Wipe any grit and excess oil from the wheels and running gear.

The boiler can be drained of water, or not, as you will. Leaving water in the boiler will not harm it. The lubricator can also be drained and refilled with steam oil in preparation for the next run.

Cold-weather running

The weather can dramatically affect the performance of your locomotive. Cold and wind can decrease efficiency to a disappointing level. Butane gas becomes liquid at 32°F and will not work. As it approaches 32°F, its pressure (and effectiveness) diminishes.

The coal compartment in the tender in which the gas tank resides can be filled with warm water in cooler weather. This will warm the gas in the tank and keep its pressure up; which will cause the engine to operate in a much livelier manner, much as it does in warm weather. If the water in the tank cools, just replace it with warmer water. Empty the tender at the end of the day’s run. Never put hot boiling water in the compartment. A tank heater is provided to warm water around the gas tank! See photo on page 3.

NOTE: the temperature of the fuel supply must always be higher than that of the engine’s gas tank. If you have warmed the engine’s tank and the supply tank is cooler; gas will not transfer.