

Instruction Manual



**1:32 Scale
NORFOLK & WESTERN
4-8-4 J-CLASS #611, LIVE STEAM**



Prototype Background

Some would argue that the Norfolk & Western Railway's J-class represents the zenith of steam passenger locomotive development in the United States. The class was introduced towards the end of steam on U.S. railroads, but was designed and built without compromise to do the job in style. Conceived and assembled at N&W's East End Shops in Roanoke, Virginia between 1941 and 1950, these elegant 4-8-4s only ever numbered fourteen examples. The first five were streamlined from the outset, the next six examples only being thus fitted later due to wartime economies, while the final three once again emerging fully streamlined from the start. Unusually for a passenger design, the class were only equipped with 70 inch driving wheels, which required perfect balancing of the wheel sets and drive train and the adoption of light-weight rods to allow 100mph running. However, the relatively small drivers and 300psi boiler pressure gave a very high tractive effort, 80,000 pounds, making the J-class the most powerful 4-8-4s built without requiring a booster.

The class quickly gained a reputation for hauling heavy trains at high speeds with an enviable record of reliability, often accumulating 15,000 miles per month. Despite this, the writing was on the wall for steam. Towards the end of the 1950s, N&W began receiving more diesels with a view toward replacing their steam fleet. In 1959, J-class #611 hauled a last special – the remainder of the class were scrapped. N&W #611, however, was lucky, thanks partly to an accident in 1956 when the loco derailed at speed near Cedar, Virginia. Due to its consequent good condition following a rebuild, and partly to the efforts of the legendary railroad photographer O. Winston Link, #611 was given to the Virginia Museum of Transportation in Roanoke in 1960.

After twenty years of inactivity, #611 was taken to Birmingham, Alabama for overhaul at the Southern Railway's Norris Yard workshops, emerging in 1982 to haul specials on the newly created Norfolk Southern railroad until 1994. In 1995, after a serious accident related to Norfolk Southern's steam program, #611 was once again confined to the museum at Roanoke.

In 2014, the Virginia Museum of Transportation's "Fire Up 611" committee undertook efforts to rebuild and prepare this fine locomotive for service again. The #611 was moved to the North Carolina Transportation Museum's complex at Spencer, North Carolina, where the work was to be performed. In 2015 and 2016, to the delight of many thousands of fans and spectators, N&W #611 was active on several steam excursions under full steam!

Working together with the N&W Historical Society and the Virginia Museum of Transportation's Fire Up 611, Accucraft's 1:32 scale Norfolk & Western #611 represents an exceptionally accurate example of this fine locomotive.



General information

Operating a model live steam locomotive is much different from running an electrically powered engine. It is a more hands-on, interactive experience.

The locomotive must be periodically fueled, oiled and watered. As supplied, the locomotive 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 locomotive should pull a dozen or more standard-size freight cars on 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 valves have 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 hot, Be careful.

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 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.



Model Features:

This limited production model has been handcrafted for Accucraft Trains by BMMC, which is one of the most respected makers of large scale brass models. This museum quality model features:

- Detailed boiler with fittings, Skyline casting, pipes and handrails
- Operating steel drive rods, valve gear and cross heads
- Prototypical livery and lettering

Technical Specifications:

Scale/Gauge: 1:32, 45mm Gauge

Total Weight: 28.8 lbs

Length: 42 in.

Width: 4.25 in.

Height: 7 in.

Recommend Radius: 3M, 10ft.*

Boiler water capacity

to top of water glass: 450ml

Tender water capacity: 600ml

Alcohol tank capacity: 500ml

*Be sure to leave at least 3" clearance (measured from the inner rail) to allow for overhang.

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.

Preparing for operation:

1. Oil all external moving parts of the engine and tender with a high grade, lightweight 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. Don't over-oil; a tiny drop will do the job.

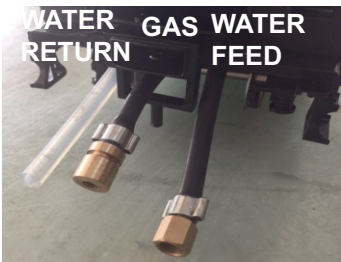
2. Place the engine and tender on the track and couple them together. Then connect the water feed, fuel and water return lines.

3. The displacement lubricator is disguised as an air tank under the left hand running board. This lubricator

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.

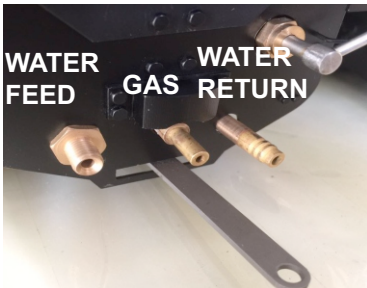


Remove the lubricator cap and draw out any water from the previous run with a syringe. Use only proper steam cylinder oil. Fill the lubricator, but leave a small air space between the oil and the cap.



4. Fill the tender with water. Open the bypass valve a little and pump water into the boiler. Fill the boiler until the water reaches the top of the glass.

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 form.



Use only distilled water in your engine's boiler. Tap water contains minerals that will leach out, cloud the water glass, and ultimately affect the

performance of the engine.

Your locomotive burns butane gas. The gas tank is located in the tender beneath the coal load. Remove the coal load with the ring provided. 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.



Firing Up:

Close the throttle and blower valve. Place the battery powered suction fan in the smoke stack, but do not turn it on yet. To light up, light a fire stick and hold it at the opened firebox door while simultaneously opening the gas valve in the tender very slowly until the gas ignites. Make sure the burner is lit by looking in the fire door, then immediately turn on the suction fan.



It will take approximately 7 minutes to raise pressure. Once the gauge reaches 20 lbs, you can shut off and remove suction fan from the stack and then turn on the engines internal blower. At this point steam will rise rapidly!

Condensation that has formed in the blower line will run out the bottom of the locomotive, and then the dry steam will blast up the stack creating a draft pulling the hot gases forward through the flues. When the gauge

reads 50 lbs. the engine is ready to run.

Drain Cocks:

This locomotive 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.



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, but the open drain cocks will minimize this. After a few moments, the engine

should take off on its own, moving away smoothly.

When the engine is running, the blower valve can be turned down but should be open whenever the engine is stopped.

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, meaning



that you’ll have to stay with the engine through the run if you want to change its speed or direction.

If you have a suitable track, the engine can be left to run on its own at a steady speed. Keep your eye on the water glass. With practice and good weather, steady runs of an hour or more are not uncommon for this engine.





Axle Pump:

This locomotive is equipped with an axle pump and bypass valve. The pump moves water from the tender to a check valve on the locomotive. The bypass valve is located on the back side of the locomotive under the cab. When the bypass valve is completely shut, water is pumped into the locomotive. When the bypass valve is open, the pump will re-circulate water back into the tender. With careful adjustment of this valve, the engine will always have enough water to keep running for long periods of time until the tender water tank needs to be refilled. The tender is also equipped with the hand pump, which needs to be used to prime the axle pump. Only two or three strokes are necessary to prime the pump.

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 still warm. Wipe any grit and excess oil from the wheels and running.

Shutting down:

To shut the engine down, simply close the gas valve .

Make sure the fire is completely out before turning off the steam blower if engine is standing still. This will minimize the chance of the paint getting scorched from any fire still burning in the firebox that is not vented!



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. This could cause dangerous pressure levels in the gas tank. The water should be comfortable enough to put your finger in.**

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.



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