

Instruction Manual



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



ACCUCRAFT
MODEL TRAINS



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 alcohol firing system has been designed to use denatured alcohol. Do not use an other fuel. Other fuel will create a dangerous condition, and will also damage the locomotive!
3. Always make sure the fire is out before refueling the locomotive. The Alcohol fire is nearly invisible so be absolutely sure that there is no flame burning around the engine when refueling is being done!
4. 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.

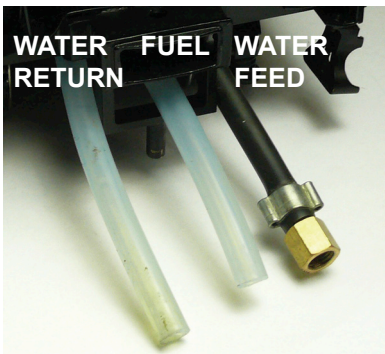
2. Place the engine and tender on the track and couple them together. Then connect the water feed, fuel and water return lines.

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.

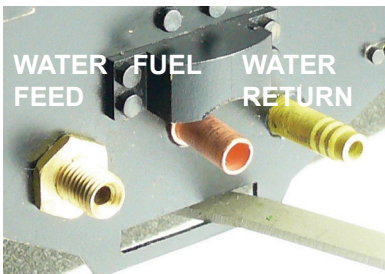


Remove the lubricator cap and draw out any water from the previous run with a syringe. Use only proper steam cylinder oil. Fill the lubricator, but leave a small air space between the oil and the cap.



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 denatured alcohol. The fuel tank is located in the tender beneath the coal bunker. Alcohol can be purchased at most home improvement stores.

The alcohol should be either Methyl alcohol or preferably Ethyl alcohol which will burn at a higher temperature, making the locomotive more efficient.

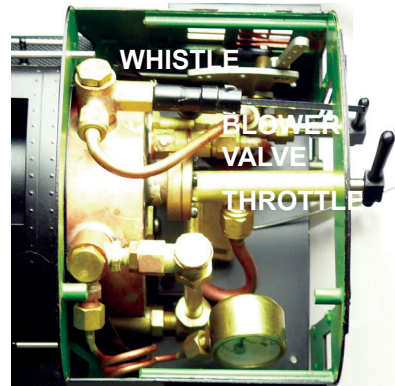
Use a syringe or a small funnel to fill the fuel tank with alcohol. The tank is designed to meter the fuel into the burner. It should saturate the wick material without leaking out over the top of the burner causing a puddle of alcohol under the locomotive. Completely clear up any split alcohol before attempting to light burner.

When fueling the locomotive the fuel valve should be shut. Replace filler cap immediately after filling tank. The alcohol will cause the O-ring to dry out, use a small drop of machine oil on the O-ring to keep it pliable.



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. Open the fuel valve on the tender 1/2 turn. Wait until the burner wicks are saturated with fuel. Open the fire door with the pull wire and light with a fire stick. 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.

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 buck 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.

Shutting down:

To shut the engine down, simply close the Fuel valve and use your CO2 tire inflator to extinguish the fire.

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!

After the fire is out 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

Because of the size of this 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 still warm. Wipe any grit and excess oil from the wheels and running.

The reversing lever will have to be modified so that it does not lock in position, but it must still have stops at either end of its throw for proper positioning of the reversing gear.



Installing / Replacing Wicks

Install the wick material first, THEN cut to length. The wick material is in 3 basic strands. Carefully unwind the 3 strands, then unwind each of these. Bunch them together until it is large enough and can be pushed all the way to the bottom of the burner tube. DO NOT PACK TIGHTLY. Material should just be retained in the tubes when inverted. Cut the wick off at 3/8" above the tube top. Then spread the top out similar to a flower arrangement.



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