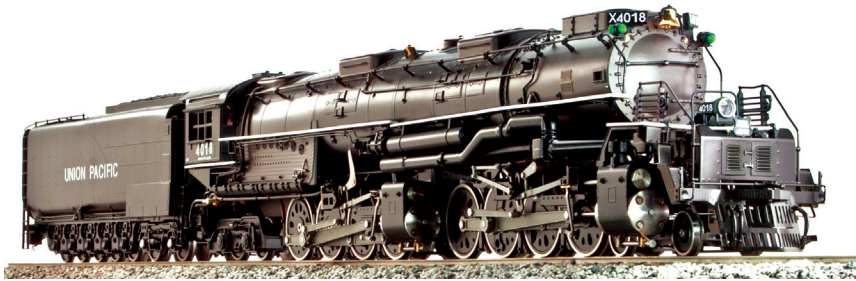




Instruction Manual



Union Pacific 4-8-8-4 Big Boy Live Steam



ACCUCRAFT TRAINS
MUSEUM QUALITY BRASS MODELS

Live Steam - Butane Fired



Prototype Information

The Union Pacific Big Boy is the largest steam locomotive ever conceived and built. There are not enough superlatives in the language to describe this locomotive. When the Big Boys were first introduced in 1941 they were the net result of all that had been learned about steam technology in the U.S. up to that time. The diesel locomotive became the main motive power for all railways in the U.S. after production of the Big Boys. There would still be more steam built for other railroads into the early 1950's but none would surpass the Big Boy. Great Britain, Europe and China continued to develop steam power long after the U.S. had gone to diesel, but nothing could match the size and brute horse power of the Big Boy. Not only were these locomotives the largest ever built but they were highly successful and reliable. The Big Boy moved monumental amounts of freight during their short 18 year working career and helped win World War 2. The entire first group of Big Boys ran over 1 million miles and the last group ran over 800,000 miles. In many peoples minds no other steam locomotive in history exemplifies the zenith of the builder's art of steam power more than a Big Boy. We are fortunate today that there is a high survival rate of Big Boys. With most famous steam locomotives that survive today we are lucky to have one example left on display or restored. In some cases many of the famous classes of locomotive have been scrapped and are now gone. The NYC Hudson and the Southern Pacific Mountain Class are two examples. Of the 25 Big Boy locomotives built 9 are still on display around the US. The locomotive numbers on the Accucraft models represent some of the surviving locomotives.



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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 engine 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 engine should pull a 30 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 are set differently. The main safety valves a top the boiler is set for 60lbs. More about the safety valves later.
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, then turn on the gas.
5. A steam engine gets hot. Be careful.
6. **This model is intended for collectors age 14 and above.**

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 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.

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Operation

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.

The Butane, water feed, and water return lines need to be connected from the tender to the locomotive. The center hose should go straight across to the center position on the locomotive. This is the butane connection. The water feed line will be the right side connection and the water by – pass return line is the left side connection. The hoses need to be slid on over the expanded portion of the fitting and the knurled ring tighten down over the hose and expanded portion of the fitting. This is most important on the right side water feed. This hose can have a great deal of pressure in it. When using the hand pump the pump has to pump at a higher pressure than what the boiler pressure is at that time. So you can pump as much as 100 lbs. per square inch through this right side line. The center fuel line has fairly low pressure as the Butane flows through it and the return line is only pumping at a few lbs. of pressure.

The adjustable lubricator is located in the cab (see figure 1). 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's cap and draw out any water from the previous run with a syringe. Fill the lubricator to the top with proper steam cylinder oil. Open valve. Two full turns at first to break engine in then cut back to one turn as needed.



This is a BIG locomotive and it will take a lot of water.

Do not over fill the boiler, there needs to be room above the water for steam to form.

Use only distilled water in your engines boiler. Tap water contains minerals and will leach out, could cloud the water glass, clog the axle pump



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and ultimately affect the performance of the engine.

Finally, add fuel. The gas tank is located in the tender beneath the Oil Bunker. Butane gas can be purchased at the grocery store or at a tobacconist's as cigarette-lighter refills.

These come with a nipple suitable for the filler valve on the 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 splutter a lot and much more gas will escape the valve. When the gas tank is full you are 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 didn't fill the gas tank all the way. Now fill the tender with distilled water.

Firing Up

The engine's burners reside at the back of the flues inside the boiler. Open the hinged smokebox door at the back of the engine and you'll be able to see both flues.

To light up, strike a match and hold it at the open 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.

Don't let the fire burn in the smokebox your engine will not run as it should and may be damaged.

The fire should burn in crescent-shaped flames that should be clearly visible through the smokebox door. The flames should be bright blue and

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should burn steadily. If they sputter or look yellow or green, adjust the gas valve accordingly.

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'll get the hang of this with practice.

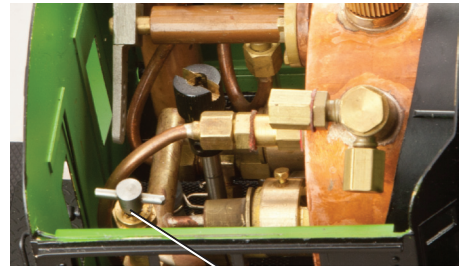
Make certain that both burners have ignited by looking down the flues at the fires. If only one burner is lit, simply strike another match and put the flame in the smokebox. This should ignite the second burner. If a burner goes out while the engine is in operation (you might be able to tell by the sound of the fire or by sluggish performance) it must be manually relit. One burner will not automatically ignite the other.

After ten or twelve minutes, pressure on the pressure gauge should read about 20psi (pounds per square inch) or so. The main safety valve is set at 65psi. When the pressure on the gauge reaches 50psi, the engine can be run.

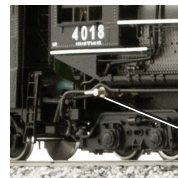
Axle Pump

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 in the cab.

When the bypass valve is completely shut, the pump pumps water 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.



Regulator valve



Bypass valve

A new feature on this articulated live steam locomotive is the front engine steam regulator valve. This valve allows you regulate the amount of steam to the rear engine if it starts to loose traction and slip. This control is located in the cab.



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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 blowdown valve and leave it open. This will relieve the boiler of what little pressure remains and prevent a vacuum from forming inside that could draw lubricating oil into the boiler if the throttle valve is not fully closed. 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 gear.

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°, its pressure (and effectiveness) diminishes.

The 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 more lively 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.

Note: the temperature of the fuel-supply-can must always be higher than that of the engine's gas tank. If you have warmed the engine's gas tank and the supply can is cooler, gas will not transfer. Never put hot water in the tender around the fuel tank.

Although the model 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.

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Technical Specifications

Scale/Gauge: 1/32, 45 mm Gauge

Length: 50.5 in.
Width: 4.25 in.
Height: 6.30 in.

Recommended radius: 3 M, 10 ft.

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

Caution!

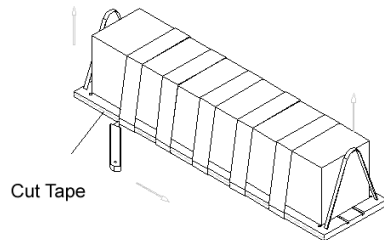
This model is an accurate replica of the original locomotive. It has sharp and moving parts. The locomotive drive rods are stainless steel with sharp edges. **AT ANY TIME, OPERATORS MUST NOT COME IN CONTACT WITH THE MODEL WHILE IT IS POWERED. UNDER NO CIRCUMSTANCES SHALL ACCUCRAFT TRAINS BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING IN REGARD TO ANY ACCUCRAFT PRODUCT.**

Accucraft Trains locomotives are fine scale brass models with small parts. To provide maximum protection from shipping damage, we carefully pack the models in metal cases. We ship via UPS with insurance coverage to its full value. Please contact UPS if package is damaged.

Each locomotive is packed under UPS guideline for shipping. We do not warrant any damage resulted from re-packaging by any party other than Accucraft Trains.

Please read following directions before unpacking your locomotive.

1. Lift the box from the cardboard box.
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.





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NOTES:



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