

## Instruction Manual



### CANADIAN PACIFIC ROYAL HUDSONS #2850 & #2860 LIVE STEAM - BUTANE FIRED



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 **ACCUCRAFT TRAINS**  
MUSEUM QUALITY BRASS MODELS

## C.P. Royal Hudson Live Steam - Butane Fired



Designed by Henry Bowen and introduced in 1937, the semi-streamlined Hudson was selected to haul the 1939 Royal Train that carried King George VI and Queen Elizabeth on their journey across Canada. No 2850 was chosen and was turned out in a spectacular Royal Blue and stainless steel livery to match the 12-coach blue and silver train.

So impressive was 2850's performance on the 3224 mile trip that Canadian Pacific applied to Buckingham Palace for permission to officially designate the class as Royal Hudson, a request that was granted. Subsequently all 45 members of the class carried a cast Royal crown on their front running board skirts. The Royal blue livery on 2850 only lasted for the seven months of the summer of 1939 and after exhibition at the New York World's Fair it was replaced by the standard passenger livery of maroon panels with grey boiler cladding and cylinder covers, which it has to be said is still a spectacular livery!

Although designed as express passenger engines and capable of over 90mph, the Royal Hudsons were also used extensively on freight duties, but it was on the prestigious, passenger trains such as the daily Dominion that they made a name for themselves with 1250 mile runs between Calgary and Ft. William (Thunder Bay). On the cross-country runs it was common to have several express reefers at the head end between the engine and baggage car.

The Royal Hudsons ran in service right up to the withdraw of steam by Canadian Pacific in the summer of 1960 when most of the class were scrapped. Happily four have survived to this day in preservation, including 2860 currently in steam in British Columbia.

Also a 2850 is preserved in its Tuscan and grey livery and has place of pride at the Canadian Railway Museum at Delson just outside Montreal.

DMK

Copies of the original locomotive drawings for building this model were provided by;  
The Canada Science and Technology Museum, Ottawa

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NOTES:

### NOTES:



### **General information about The Royal Hudson Model:**

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 butane firing system has been designed to use butane only. 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. You need to 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.

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### 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, domes, 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: 23 lbs  
Length: 20.26 in.  
Width: 4.16 in.  
Height: 6.10 in.

#### Tender Information:

Length: 15 in.  
Width: 3.75 in.  
Height: 6 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.

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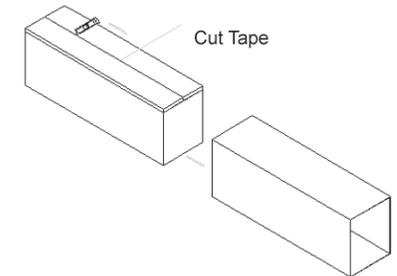
### Notes on Radio controls:

Although this locomotive 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 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.

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.



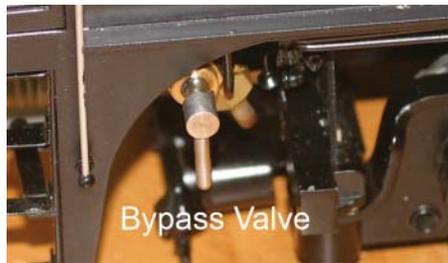
2. Lift the locomotive from the cardboard box.

3. 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.



### 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 right 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.

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.



### 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. The drawbar between the units has two holes. For tighter curves, use the rear hole. For wide-radius curves, the engine and tender can be coupled more closely together, using the front hole. 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 throttle 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.

5. The fuel 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.

They come with a nipple suitable for filler valve on the Royal Hudson gas tank. (Butane can also be purchased more economically in larger containers at camping supply store, 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 gas valve is closed.

You will hear the gas transferring and will see a little gas bleed 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 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 completely fill.

If you find that you are getting relatively short runs and there is still a lot of water left in the boiler, changes are that you didn't 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 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 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 20 psi (pounds per square inch) or so. The safety valve is set at 60 psi. When the pressure on the gauge reaches 50 psi, the engine can be 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.