

Instruction Manual GS-4 Daylight Live Steam Butane Fired



Southern Pacific GS-4 4-8-4 No. 4449



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 **ACCUCRAFT TRAINS**
MUSEUM QUALITY BRASS MODELS

GS-4 Daylight Live Steam – Butane Fired



Prototype Information:

Californians who witnessed the early runs of the Southern Pacific red, orange and black consists declared them to be “the most beautiful trains in the world”. The striping on locomotive, tender, and the length of the train presented a bright, cheery image to a nation emerging from the Great Depression.

In 1941, Lima built 28 GS4-class 4-8-4s, and were numbered from 4430 – 4457. No. 4449 was the only Daylight painted GS-class preserved after lying stationary for years in a park in Portland, Oregon, she was resurrected in red, white and blue livery in 1975 to pull the American Freedom Train around the U.S.A to commemorate the Bicentennial of American Independence.

Since then, the 4449 has been meticulously maintained. Today, the 4449 is occasionally run on special trips.



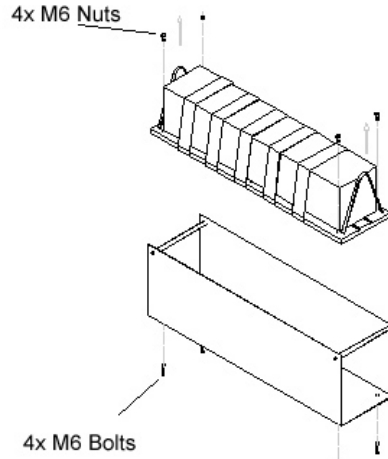
GS-4 Daylight Live Steam – Butane Fired



NOTES:



4. Place taped locomotive on a level 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. The tape cannot be re-used to re-pack the model. Use new packing tape if necessary.



General information About Accucraft GS-4 Daylight 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 GS4 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 GS-4 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 75 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 livesteam locomotive. 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 of 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.

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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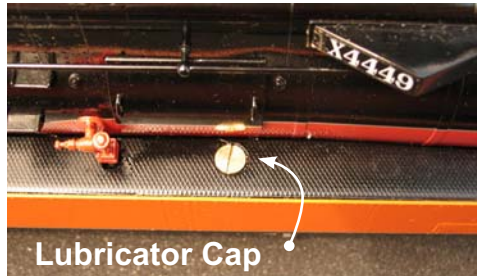


Operation

1. Oil all external moving parts of the engine and tender with 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.

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 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'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.

4. Unscrew the filler plug, which is at the top of the steam turret (atop of the boiler, inside the cab) and fill the boiler with water.

The water level will show in the sight glass on the boilers back head. Fill the boiler until the water reaches the top of the glass.



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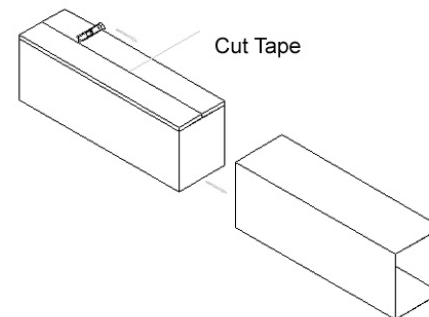
Accucraft locomotives are fine scale brass models with small parts. To provide maximum protection from shipping damage, we carefully pack the models in metal cases.

We ship via UPS with insurance coverage to its full value. Please contact UPS if package is damaged.

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

Please read the following directions before unpacking your locomotive.

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



2. Lift the metal case from the cardboard box.

3. The locomotive is firmly taped to a 1/2" wood board which is then fastened to the metal case with 4 M6 bolts. The bolts must be removed before lifting the locomotive with wood board from the metal case.

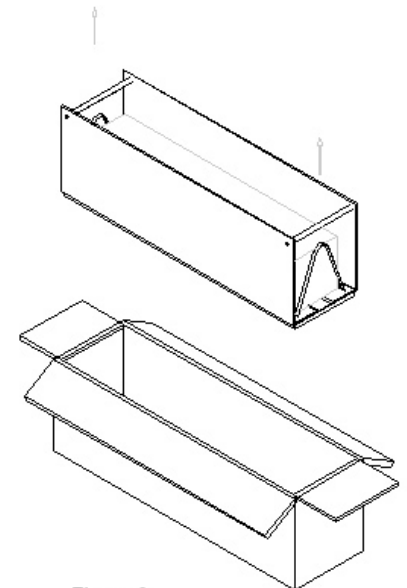


Figure 3



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°, 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, which 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 tank and the supply tank is cooler, gas will not transfer.

Notes on Radio control:

Although the GS-4 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 it must still have stops at either end of its throw for proper positioning of the reversing gear.

Technical Specifications:

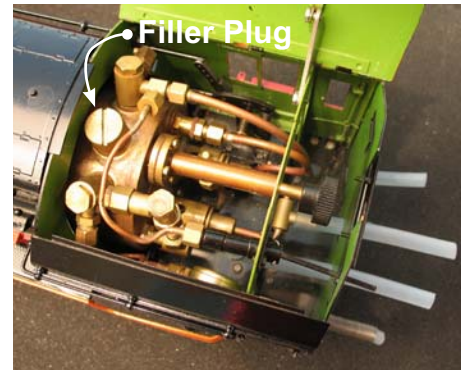
Scale/Gauge: 1:32, 45 mm Gauge
Total Weight: 13.7 Kg, 30.1 lbs.
Engine Length: 658 mm, 25.9 ins.
Engine Width: 110 mm, 4.3 ins.
Engine Height: 162 mm, 6.4 ins.
Tender Length: 450 mm, 17.7 ins.
Tender Width: 108 mm, 4.3 ins.
Tender Height: 150 mm, 5.9 ins.
Driver Wheels: Dia.63 mm, 2.5 ins.
Recommended radius: 3 M, 10 ft

*Be sure to leave at least a 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 ACUCRAFT PRODUCT.



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, cloud the water glass, and ultimately affect the performance of the engine.

5. Finally add fuel. Your GS-4 burns butane gas.

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.

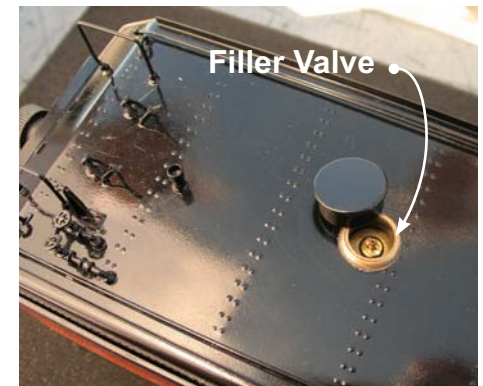
These come with a nipple suitable for the filler valve on the GS-4's gas tank. (Butane can also be purchased more economically in larger containers at camping-supply store, but these cans will require a special adapter for filling

the engine's tank.) simply press the nozzle of the butane canister hard onto the filler valve atop the tank, making sure that the control 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 provide, 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, changes are that you didn't fill the gas tank all the way.





Firing Up:

The engine's burner resides 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 75 psi. When the pressure on the gauge reaches 50 psi, the engine can be run.

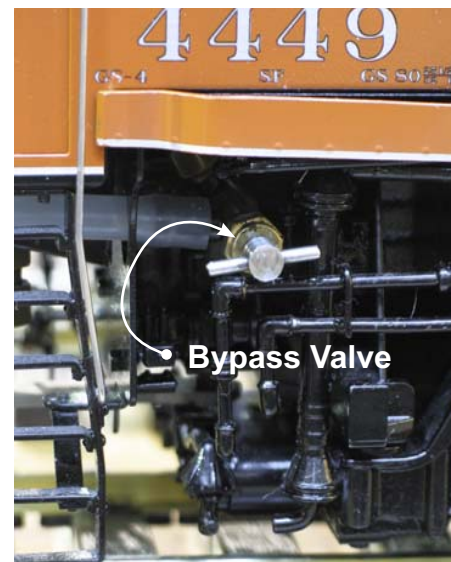


Axle Pump:

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 on the right side of the locomotive under the cab.

When the bypass valve is completely shut, the pump pumps the water into the locomotive. When the bypass valve is open, the pump will recirculate 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 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.

