RAIL KING®
By MTH Electric Trains

RAILKING GS-4 STEAM ENGINE OPERATING INSTRUCTIONS

Thank you for purchasing the RailKing die-cast Gs-4 steam locomotive. The engine's die-cast body and tender are traditionally sized for operation on any O-27 or larger layout. The engine is compatible with any standard AC transformer and is completely compatible with most other 3-rail locomotives, rolling stock and accessories.

The locomotive and tender are equipped with an electronic whistle and electronic reverse unit that are simple and fun to operate. Each feature is described among the following pages which should be read before the engine is operated.

QUICK START - BASIC OPERATION

The RailKing Gs-4 contains state-of-the art electronics for incredibly realistic operation. Despite these advanced features, the Gs-4 is easy to operate with any compatible standard AC transformer. All models are equipped with an operating smoke system that ***should be primed with smoke fluid before operating***. Adding 15 -20 drops of fluid through the smoke stack should be sufficient. ***If you choose to not prime the units with fluid, turn the smoke unit switch located under the trailing truck to the OFF position***. (See Figure 1) This will prevent any damage from occurring to the smoke unit when running the engine without a primed smoke unit. For more information see the section on page 4 on Smoke Unit operation.

The Gs-4 is controlled by a ProtoSound® DCRU® electronic reverse unit. The reverse unit operates in the same manner that all reverse units function by using forward, neutral and reverse states that are entered each time the throttle is turned on and off or by using the transformer direction switch (if so equipped).

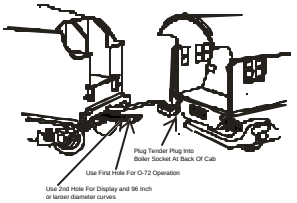


Figure 1: Pluggin in the tender harness

The reverse unit is designed to ignore dirty track, dead spots on switches or minor short circuits without disrupting the engine operation, even at slow, prototypical speeds. Before the engine can be operated however, the reverse unit plug that extends out of the tender must be inserted into the receptacle at the back of the boiler cab as seen in Figure 1. Once the plug is inserted, the throttle on the transformer can be advanced. You will see that only the engine's lights come on. The engine does not run. This is known as the RESET state. The ProtoSound® DCRU® will not power the motor until the throttle is turned OFF and then ON again. At this point, the engine will now function just like any other electronic or mechanical E-unit.

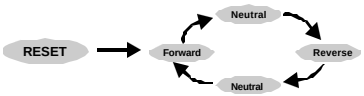


Figure 2: ProtoSound® DCRU® Cycle Phases

PROTOSMOKE™ UNIT OPERATION

The Gs-4 contains a self-powered smoke unit that outputs a steady stream of smoke through the smoke stack on the roof of the engine. The ON/OFF switch located next to the trailing truck must be in the ON position in order for the smoke unit to function. See Fig. 2 below.

The smoke unit is essentially a small heating element and wick which soaks up and then “cooks" a mineral oil-based fluid that omits a harmless smoke. The smoke is then forced out of the stack via a small electric fan which runs at a constant speed. However, the smoke intensity can be varied by increasing the transformer voltage setting. The higher the setting, the more intense the smoke output.

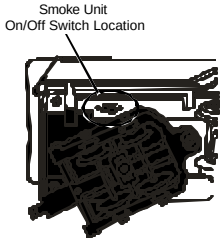


Figure 3: Smoke Unit Switch

For best results, we recommend that you add 15 - 20 drops of ProtoSmoke™, Seuthe, LGB or LVTS fluid before you run the engine. If you don’t choose to add the fluid, then the smoke unit switch should be turned off. Failure to either add the fluid or turn the switch off could lead to damage to the smoke unit heating element and or wicking. Add the fluid through the smoke stack hole as indicated in Figure 3. After adding the fluid, gently blow into the stack to eliminate any air bubbles. Do not overfill the unit as overfilling can cause the fluid to leak out and coat the interior engine components. When the smoke output begins to diminish while running the engine, an additional 10-15 drops of smoke fluid should be added or the smoke unit switch should be turned off.

When storing the engine for long periods of time, you may want to add at least 15 drops of fluid to keep the wick soaked with fluid and prevent it from drying out. After removing the engine from storage, it is advisable to add another 25 drops of fluid, letting the wick soak up the fluid for 15 minutes prior to operation.

SMOKE UNIT MAINTENANCE

CAUTION: Operating the engine without smoke fluid and with the smoke unit switch in the ON position can damage your smoke unit wick, causing the wick to become hard, blackened and unabsorbant around the heating

element. When this occurs, it may be difficult for the wick to soak up the smoke fluid resulting in poor or no smoke output. If that occurs, we recommend that you inspect and/or replace the wick taking care to not run the engine without fluid in the future. You can inspect the wick to see if it needs replacement by removing the smoke unit inspection cover from the body as seen in Fig.4. After removing the chassis and inspection cover screws lift the inspection plate away and inspect the wick. If the wick is darkly discolored and hard, it should be replaced.

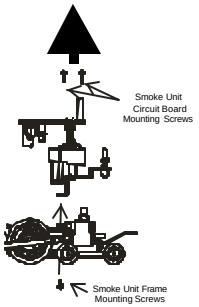


Figure 4: Inspecting The Smoke Unit

WHISTLE OPERATION

Your Gs-4 engine is equipped with an electronic whistle which can be activated anytime the engine is in forward, neutral or reverse by pressing the whistle button on your transformer. The whistle will continue to blow as long as the whistle button is depressed.

ACTIVATING LOCK-OUT CONTROL

Your Gs-4 engine features a function that allows the operator to "lock" the engine into forward, neutral or reverse. This is especially useful on layouts that feature "blocked" track sections. The lockout feature can be activated by sliding the switch on the bottom of the tender from the ON position to the OFF position once you enter the desired directional state you wish to "lock" the engine into (ie: forward, neutral or reverse).

Note: if the engine is locked out in any of the directional states and power to the track is turned off for an hour or more, the engine may reset to any directional state when power is reapplied to the track. Should this occur, it will be necessary to slide the switch back to the ON position and then "re-lock" the engine back into the desired directional state.

OIL & LUBRICATION INSTRUCTIONS

In order for the engine to perform correctly and quietly, it is important that the chassis be lubricated before operation. Lubrication should include all side rods and linkage components and pickup rollers to prevent them from squeaking. Use light household oil and follow the lubrication points marked “L" in Fig. 5 below.

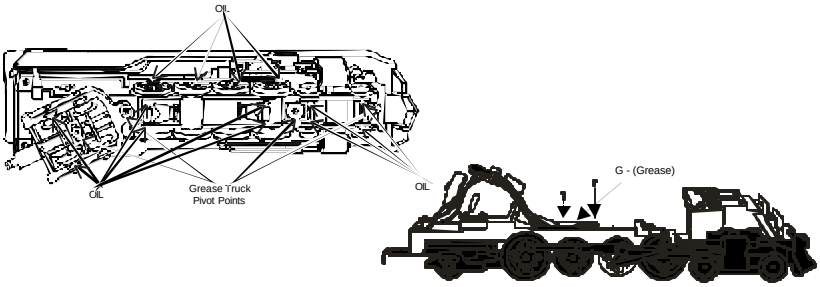


Figure 5: Lubircating Teh Chassis

The locomotive’s internal gearing has been greased at the factory and shouldn’t need additional grease until after 50 hours of operation or one year whichever comes first. Grease can be added by inserting grease into the gear box inside the locomotive chassis. In order to access the gear box, the boiler must be removed from the chassis by unscrewing the four chassis screws as seen in Figure 7 on page 6. Once the boiler is removed, the gear

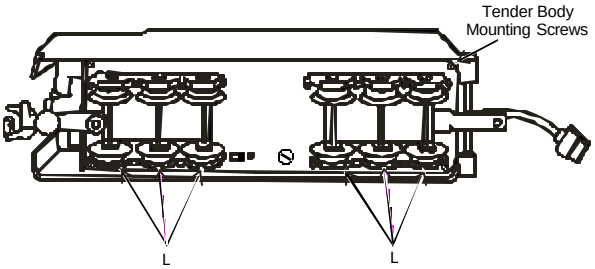


Figure 6: Lubricating The Tender

box can be opened up by unscrewing the two screws on the plate located in front of the motor. Grease can then be applied into the gear box using a grease tube dispenser.

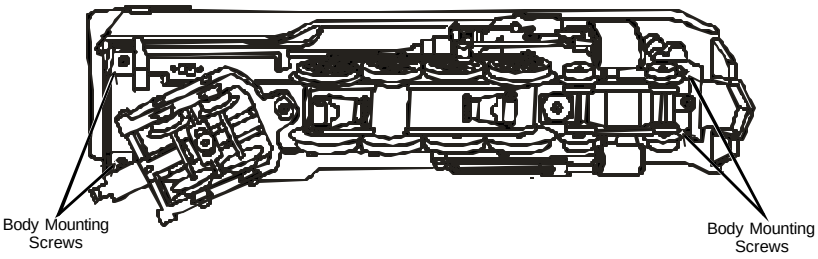
In addition to the internal gearing, it is a good idea to lubricate the leading and trailing locomotive truck "tongues" to enhance their ability to slide on the chassis. Follow the grease points as seen in Figure 5 on page 5.

Periodically, check the locomotive wheels and pickups for dirt buildup as this can significantly affect the engine's ability to perform properly. Dirty track and dirty wheels can cause both poor electrical contact as well as poor traction, especially on elevated track sections. Finally, dirt and oil build up can prematurely wear out the neoprene traction tires.

TRACTION TIRE REPLACEMENT INSTRUCTIONS

Your locomotive is equipped with two neoprene rubber traction tires on the rear set of flanged drivers. While these tires are extremely durable and long-lasting there may arise a time where they will need to be replaced. Should this occur, you will need to remove the side rods from the wheels in order to slip the new tire over the grooved drive wheel.

Before the new tire can be installed, you must make sure the old tire has been completely removed from the groove in the drive wheel. Use a razor



Fiugre 7: Removing The Boiler From The Chassis

blade or small flatblade screwdriver pry away any remains left from the old tire that may still be in the drive wheel groove. Once the old tire has been completely removed, slip the new tire onto the wheel. You may find it useful to use two small flatblade screwdrivers to assist you in stretching the tire over the wheel. Be careful to avoid twisting the tire when stretching it over the wheel. If a twist occurs, the tire will have to be removed and

reinstalled or a noticeable wobble in your engine will occur when operating the locomotive. In addition, it is important to make sure that the tire is fully seated inside the groove. Any portion of the tire extending out of the groove can cause the engine to wobble. A razor blade can be used to trim away any excess tire that doesn't't seat itself inside the groove properly.

Replacement tires are available directly from MTH Electric Trains.

HEADLIGHT REPLACEMENT

The locomotive's headlights are controlled by track voltage and will glow with greater intensity depending on the transformer voltage setting. The headlight can be easily removed from its lampholders should the bulb expire. To remove the bulb, follow the boiler removal instructions found in the Lubrication section on the proceeding pages. Once the cab has been separated from the chassis, gently unscrew the bulb from its socket. Replacement bulbs are available directly from MTH Electric Trains.

O-27 OPERATION

While the Gs-4 engine is more than capable of operating on O-27 curves and switches, you may find that certain light freight cars are prone to derailing when being pulled or pushed by the Gs-4 through O-27 switches. Should this occur, we suggest adding weight to the cars making them heavier and less likely to derail.

SERVICE AND WARRANTY INFORMATION

HOW TO GET SERVICE UNDER THE TERMS OF THE LIMITED ONE YEAR WARRANTY

For warranty repair, do not return your product to the place of purchase. Instead, follow the instructions below to obtain warranty service as our dealer network is not prepared to service the product under the terms of this warranty.

1. First, write, call or FAX MTH Electric Trains, 9693-A Gerwig Lane, Columbia, MD 21046, 410-381-2580 (FAX No. 410-381-6122), stating when it was purchased and what seems to be the problem. You will be given a return authorization number to assure that your merchandise will be properly handled upon its receipt.

2. CAUTION: Make sure the product is packed in its original factory packaging including its foam and plastic wrapping material so as to prevent damage to the merchandise. The shipment must be prepaid and we recommend that it be insured. *A cover letter, including your name, address, daytime phone number, Return Authorization number and a full description of the problem, must be included to facilitate the repairs. Please include the description regardless of whether you discussed the problem with one of our service technicians when contacting MTH for your Return Authorization number.*

3. Please make sure you have followed the instructions carefully before returning any merchandise for service.

LIMITED ONE YEAR WARRANTY

This item is warranted for one year from the date of purchase against defects in material or workmanship. We will repair or replace (at our option) the defective part without charge for parts or labor, if the item is returned to the address below within one year of the original date of purchase. This warranty does not cover items that have been abused or damaged by careless handling. Transportation costs incurred by the customer are not covered under this warranty.

This warranty gives you specific legal rights and you may have other rights which vary from state to state.