



[www.mth-railking.com](http://www.mth-railking.com)



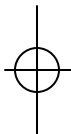
# OPERATING

## INSTRUCTIONS

PLEASE READ BEFORE USE

### RailKing® 4-6-0 Camelback

#### Freight Yard Sounds Operating Instructions



This RailKing 4-6-0 Camelback Steam Engine is produced in detailed Die-Cast Metal, operates on O-31 track, and contains state-of-the-art electronics with many built-in automatic features for incredibly realistic operation. Despite these advanced features, the locomotive is easy to operate with any compatible standard AC transformer (see the compatibility chart on page 16), and is completely compatible with most other 3-rail locomotives, rolling stock, and accessories.

This locomotive is equipped with Proto-Sound 2.0 with Digital Command System (DCS). This new system will allow you to operate your locomotive in Command mode (when used with the DCS Remote Control System, sold separately) or Conventional mode. Conventional operating features are described in the following pages, while the DCS operating features are covered in the set of operating instructions that accompanies the DCS equipment. Conventional Mode operation of this locomotive is much simpler than operation of original Proto-Sound engines. For your own safety and that of your equipment, please read the instructions before you operate this engine.



# Table of Contents

**Set-Up** .....

**Basic Operation**

Throttle .....

Operation Buttons .....

Volume Control .....

**Proto-Sound 2.0 Operation**

Activating Proto-Sound 2.0 Conventional Mode Features .....

Freight Yard Sounds (FYS) .....

Tips on Using FYS .....

Proto-Coupler® Operation .....

Speed Control .....

Lock into a Direction .....

Reset to Factory Defaults .....

Automatic Sounds .....

**Maintenance**

Lubrication and Greasing Instructions .....

Cleaning the Wheels, Tires and Track .....

Locomotive Traction Tire Replacement .....

Smoke Unit Maintenance .....

Locomotive Light Bulb Replacement .....

Self-Charging Battery Back-Up .....

Troubleshooting .....

Compatibility .....

Transformer Compatibility Chart .....

Additional Features with DCS Remote Control System .....

Service and Warranty Information

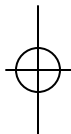
**CAUTION: Electrically Operated Product:**

Not recommended for children under 10 years of age. M.T.H. recon supervision with children ages 10 - 16. As with all electric products should be observed during handling and use to reduce the risk of elect

**⚠ WARNING: When using electrical products, ba precautions should be followed including the foll**

- Read this manual thoroughly before using this device.
- M.T.H. recommends that all users and persons supervising use exami transformer periodically for conditions that may result in the risk of shock, or injury to persons, such as damage to the primary cord, housing, output jacks or other parts. In the event such conditio transformer should not be used until properly repaired.
- As with all electrical appliances, this product should not be left in op unattended.

**If you have problems you cannot resolve by using these directions**





# Set Up

There are a few simple steps you must take before operating this RailKing steamer.

1. You should prime the operating smoke unit with smoke fluid before operating. Add 15-20 drops of smoke fluid through the smokestack, then gently blow into the stack to eliminate any air bubbles in the fluid. See Fig. 1.



Figure 1 - Priming Smoke Unit

2. If you choose not to prime the unit with fluid, turn the smoke unit switch located under the tender to the OFF position (Fig. 2). Running the engine without a primed smoke unit may cause damage. See the "ProtoSmoke Unit Operation" section of this book for more information on smoke unit maintenance.

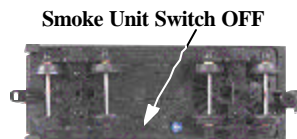
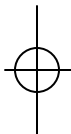


Figure 2 - NOT Priming Smoke Un

3. You should lubricate all side rods and linkage components and pickup rollers to prevent them from squeaking. Lightly grease the drive gears (marked "G" in Fig. 6 on page 11) to prevent them from squeaking. Use light household oil and follow the lubrication points marked "L" in Fig. 4 on p. 10. Do not over-oil. Use only a drop or two on each pivot point.
4. Put your engine on the track and insert the reverse unit plug that extends out of the tender into the receptacle at the back of the engine. **WARNING: DO NOT CONNECT THIS ENGINE TO A TENDER FROM ANOTHER ENGINE; IT MAY CAUSE SERIOUS DAMAGE.** Look at the bottom of the engine and tender where each will have a color-coded stamp. If they match you may connect those two pieces; if not, don't.

5. Connect the draw bar between the engine and tender. If there are two holes in the draw bar, the hole located farthest from the tender is for the minimum track operation, such as O-31 circles of track. The second hole is for O-72 or larger operation.





## Basic Operation

**Throttle** - Throttle up the power to your track. Give about 10 enough power so that the engine's headlight shines brightly. Turn the engine into motion by either firmly pressing the Direction button on the transformer or remote once or dropping and advancing the throttle to move the engine in forward.

### Operation Buttons

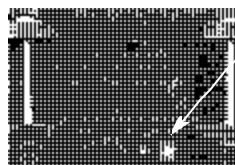
Use the operation buttons on your transformer as described below:

- **Whistle** - To sound the whistle, firmly press the Whistle button. The whistle will sound for as long as you continue to depress the button. The whistle has four different sounds depending on whether you hold the button for less than three seconds, four seconds, or five seconds or longer.

- **Bell** - To sound the bell, firmly press and release the Bell button. To ring the bell off, press and release the Bell button again. The bell will ring from the time you turn it on until you press and release the button again to turn it off.

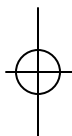
- **Direction** - Your train is programmed to start in neutral. The first press after neutral upon start-up is forward. Firmly press and release the Direction button to allow the engine to move forward. Just as you must turn an automobile between forward and reverse, this engine will not go from forward to reverse; it goes into neutral between directions. If the train has been moving forward, the first press of the Direction button will stop the train from forward into neutral, the second press will stop the train into reverse, the third press will stop the train back into neutral, and the fourth press will stop the train back into forward. To prevent high-speed start-ups, this engine is programmed to restart in 1 minute if the track voltage is turned off for 25 seconds or more.

**Volume Control** - To adjust the volume of all sounds made by this engine, turn the manual volume control knob located under the tender clockwise to increase the volume and counter-clockwise to decrease the volume (see Fig. 3).



Turn Clockwise to Increase Volume  
Turn Counter-clockwise to Decrease Volume

Figure 3 - Volume Control





# Proto-Sound 2.0 Operating Instructions

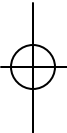
---

This manual contains the operating instructions for Proto-Sound 2.0 in conventional mode only. Instructions for accessing DCS command mode features accompany the DCS Remote Control System equipment.

Because Proto-Sound 2.0 is an all-new system developed by M.T.H.'s own research and development team, it operates differently from original Proto-Sound. Most Proto-Sound 2.0 features are automatically enabled, and Reset has been eliminated, so there is no need to program features as with original Proto-Sound. Although the new system is easier to operate than original Proto-Sound, you should read these instructions thoroughly before using Proto-Sound 2.0 features in order to prevent harm to yourself or your equipment.

## Activating Proto-Sound 2.0 Conventional Mode Features:

Proto-Sound 2.0 features are activated by sequences of Bell and Whistle button pushes described below. Please read the full descriptions of each feature before using it. To use these buttons to activate features rather than to blow the whistle or ring the bell, you should tap the buttons very quickly with a 1/2-second pause between button presses. You may need to practice your timing to make this work smoothly.



Timing Chart				
Tap Bell Quickly	1/2 Sec. Pause	Tap Whistle Quickly	1/2 Sec. Pause	Tap Whistle Quickly
Total Time Lapse: 1 1/2 Seconds				

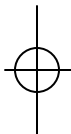
Feature to Be Activated	Button Code:
Freight Yard Sounds	1 Bell, 2 Whistles
Fire the Rear Coupler	1 Bell, 3 Whistles
Fire the Front Coupler	1 Bell, 4 Whistles
Speed Control On/Off	1 Whistle, 2 Bells (from Neutral only)
Lock into a Direction	1 Whistle, 3 Bells
Reset to Factory Defaults	1 Whistle, 5 Bells (from Neutral only)



**Freight Yard Sounds (FYS):**

Your engine is equipped with a sound package of freight yard you can play when you pull into a yard. Each sequence describes play as long as it is left on, randomly generating sounds, but be s approximately 30 seconds between the button pushes describe allow the FYS sufficient time to run through each sequence.

1. To cue the sound system to play the FYS, quickly but firmly button once followed by 2 quick taps of the Whistle butto engine is moving. Tap the buttons quickly but allow appro second between each press.
2. Press the Direction button or drop and advance the throttle c the engine. This will trigger the first sequence of FYS. The is temporarily disabled so that the train will not move as ; Direction button to trigger the sounds, and Proto-Sound 2.0 l operator control over the Whistle and Bell buttons until th sequence is complete.
3. After waiting about 30 seconds for that sequence to run Direction button again to trigger the second sequence of FYS
4. After about 30 seconds, press the Direction button again to third FYS sequence.
5. Again, after allowing about 30 seconds for that sequence to r Direction button one more time to trigger the fourth and sequence. The FYS will continue, and within a few seconds will start and move out on its own at the current throttle se same direction it was traveling when you began the sequence bell turns off, the operator regains control of the transforme whistle buttons and can ring the bell or blow the whistle as us

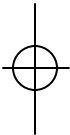


**RAILKING**



### Tips on Using FYS

- You can terminate FYS at anytime by turning off power to the track for 15 seconds.
- You do not have to be in Forward to use FYS. At the conclusion of the full sequence, the train will pull away from the station in whatever direction you were going when you activated the feature.
- You can use FYS even if you are double-heading with another engine. If the second engine is not equipped with FYS at all, you must remember not to leave the throttle at a high voltage level once you have stopped the engine to run the FYS. Otherwise, the engine without FYS will begin vibrating on the track as its motors strain to move the train, since they cannot be automatically disabled during the FYS cycle. If the second engine is an original Proto-Sound engine equipped with FYS, you may choose to disable it when used in double-heading operations, so you will not experience competing FYS sounds. To disable FYS in an original Proto-Sound engine, see the operating instructions for that engine.
- FYS can be triggered from Neutral. It will operate the same as if triggered while in motion except that, at the conclusion of the FYS, the engine will depart in the next direction of travel, as opposed to the direction it was traveling before entering Neutral.



### Proto-Coupler® Operation

This locomotive is equipped with a Proto-Coupler for remote uncoupling action. Because Proto-Couplers are controlled through the Proto-Sound 2.0 microprocessor, they do not require an uncoupling track section or modification to your layout to function. You can fire a coupler from neutral or while in motion. Use the code shown below (and in the chart on p. 5) to fire the coupler(s).

#### Rear Coupler:

To fire the rear coupler, quickly tap the Bell button once followed by three quick taps of the Whistle button, allowing approximately ½ second to lapse between each quick button press. The sound of the liftbar and air line depletion will play, and the knuckle will be released.



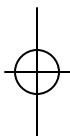


**Speed Control:**

M.T.H. engines equipped with Proto-Sound 2.0 have speed capabilities that allow the engine to maintain a constant speed down grades and around curves, much like an automobile control. You can add or drop cars on the run, and the engine maintain the speed you set.

While the engine is programmed to start with the speed control activated, you can opt to turn it off. This means the engine's speed will fall as it labors up a hill and increase as it travels downward. It is not affected by the addition or releasing of cars while on the run.

To turn speed control on and off, put the engine in neutral, then tap the transformer's Whistle button one time then quickly tap the Bell button two times, allowing approximately 1/2 second to lapse between each quick button press. Two whistle blasts will indicate that the engine has made the change. Repeat the 1 whistle, 2 bells code to return to the other condition. You will want to do this during the initial start-up upon start-up if you ever couple this engine to another engine that is equipped with speed control to avoid damaging the motors in the engine. Each time you shut down the engine completely, it will automatically turn speed control on.



RAILKING



Tap buttons quickly but allow 1/2 second between each press

**Note:** When speed control is turned off, the Proto-Sound 2.0 will limit the volume in order to operate more smoothly at lower voltages. Full volume is restored upon reactivating speed control.

**Lock into a Direction:**

You can lock your engine into a direction (forward, neutral, or reverse) so that it will not change directions. To do this, put the engine in the direction you want (or into neutral to lock it into neutral), run it at a slow crawl (as slowly as it will move without halting), and quickly tap the Whistle button once followed by three quick tap Bell button, allowing approximately 1/2 second to lapse between each quick button press. Two whistle blasts will indicate that the engine has made the change. The engine will not change direction (in





going into neutral) until you repeat the 1 whistle, 3 bells code to return the engine to its normal condition, even if the engine is kept without power for extended periods of time.

Place Engine in Neutral     = **Two Whistle Blasts**  
 (indicates change is made)  
**Repeat to Return to Normal Condition**

Tap buttons quickly but allow 1/2 second between each press

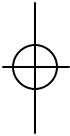
### Reset to Factory Defaults:

To override the settings you currently have assigned to the engine and reset it to its factory defaults, while in Neutral tap the Whistle button quickly once, followed by five quick taps of the Bell button, allowing approximately 1/2 second to lapse between each quick button press. Two whistle blasts will

Place Engine in Neutral       = **Two Whistle Blasts**  
 (indicates change is made)  
**Repeat to Return to Normal Condition**

Tap buttons quickly but allow 1/2 second between each press

indicate that the engine has made the change.



### Automatic Sounds:

Certain Proto-Sound 2.0 sound effects automatically play in programmed conventional mode conditions:

- Squealing Brakes play any time the engine's speed decreases rapidly.
- Cab Chatter plays at random intervals when the engine idles in neutral.
- Engine Start-up and Shut-down sounds play when the engine is initially powered on or is powered off for five seconds or more.



# Maintenance

## Lubrication and Greasing Instructions

The engine should be oiled and greased in order to run properly

You should regularly lubricate all side rods and linkage components pickup rollers to prevent them from squeaking. Use light house and follow the lubrication points marked "L" in Fig. 4. Do not use more than a drop or two on each pivot point.

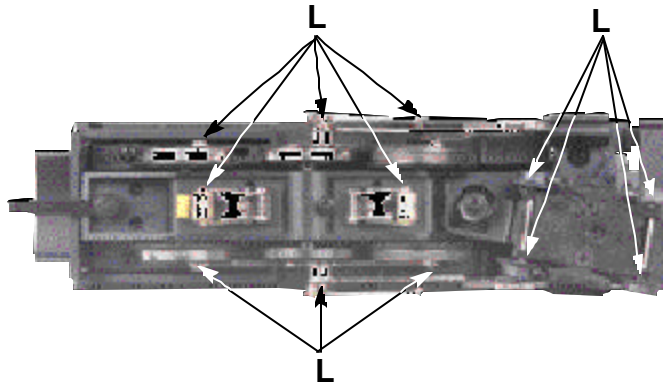
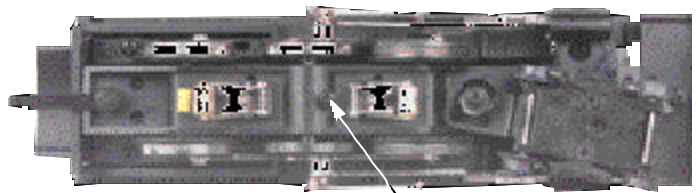


Figure 4 - Lubricating the Engine

The locomotive's internal gearing was greased at the factory and does not need additional grease until after 50 hours of operation or whichever comes first. To access the gear box, do the following:

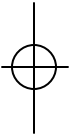
1. Remove screw from under center driver. (See Fig. 5)



Remove Screw to Lubricate Gear

Figure 5 - Accessing the Gear Box to Lubricate

2. Use a grease tube dispenser to put a small amount of lithium grease into the gearbox.
4. Make sure screw is tightly screwed back in its hole.



RAILKING



You should also lightly grease the leading and trailing locomotive truck tongues to enhance their ability to slide on the chassis. Follow the grease points shown on Fig. 6.

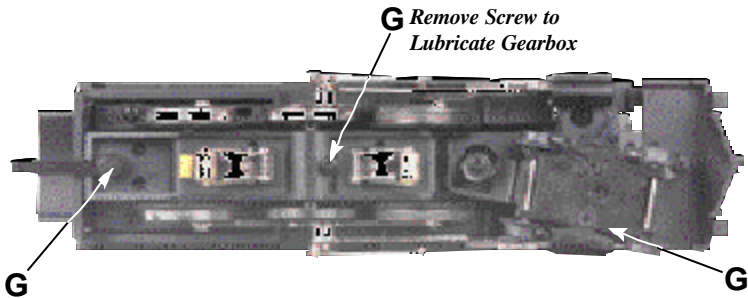


Figure 6 - Greasing the Engine

### Cleaning the Wheels, Tires and Track

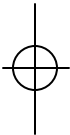
Periodically check the locomotive wheels and pickups for dirt and buildup, which can cause poor electrical contact and traction and prematurely wear out the neoprene traction tires. Wheels and tires can be cleaned using denatured alcohol (not rubbing alcohol), which can be found in home improvement stores, applied with a cotton swab.

Occasional cleaning of the track will also help to ensure good electrical contact and to prolong the life of your engine's tires. To clean the track, use a clean rag and denatured alcohol (not rubbing alcohol). Unplug the transformer and wipe the rails of the track, turning the rag frequently to ensure that you are using clean cloth on the rails.

### 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, you may need to replace them at some point.

1. Remove the side rods (the rods that connect each drive wheel to the other) from the wheels in order to slip the new tire over the grooved drive wheel. This screw can be loosened with a 5mm nutdriver.
2. Make sure the old tire has been completely removed from the groove in the drive wheel, using a razor blade or small flathead screwdriver to pry away any remains.
3. Slip the new tire onto the wheel. You may find it useful to use two small





4. If you twist the tire while stretching it over the wheel, you must remove and reinstall the tire. Otherwise your engine will not be operating.
5. Make sure the tire is fully seated inside the groove. Use a razor to trim away any excess tire that doesn't seat itself inside properly.

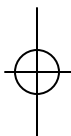
One set of replacement tires is included with the model. Additional tires are available directly from the M.T.H. Parts Department (phone: 410-423-0009; fax: 410-423-0009; e-mail: parts@mth-railking.com; mail: 702 Gateway Drive, Columbia MD 21046-1532).

### ProtoSmoke® Unit Operation

This steam locomotive contains a smoke unit that outputs smoke through the smokestack on the boiler of the engine. The smoke unit is a small heating element and wick that soaks up and then heats a smoke-based fluid that emits a harmless smoke. The smoke is then drawn out of the stack by a small electric fan.

With a few easy maintenance steps, you should enjoy trouble-free unit operation for years.

- When preparing to run this engine, add 15-20 drops of smoke fluid through the smokestack (see Fig. 1). We recommend ProtoSmoke, Seuthe, LGB, or LVTS fluids (a small amount of ProtoSmoke fluid is included). Do not overfill the unit or the fluid will leak out and coat the interior engine components.
- If you choose not to add the fluid (or have already added it and choose to run smoke-free), turn off the smoke unit switch located on the tender body (see Fig. 2). Failure either to add fluid to the unit or to turn it off may damage the smoke unit heating element and other material.
- When the smoke output while running the engine begins to diminish, add another 10-15 drops of smoke fluid or turn the smoke unit off.
- When storing the unit for long periods of time, you may want to add 15 drops of fluid to prevent the wick from drying out.
- After removing the engine from storage, add another 25 drops of fluid, letting the wick soak up the fluid for 15 minutes prior to operation.



RAILKING



If you experience poor or no smoke output when the smoke unit is on and has fluid, check the wick to see if it has become hard, blackened, and unabsorbent around the heating element. Remove the smoke unit inspection cover from the locomotive's body (see Fig. 8). After removing the chassis and inspection cover screws (see Fig 7), lift the inspection plate away and inspect the wick. If it is darkly discolored and hard, it should be replaced.

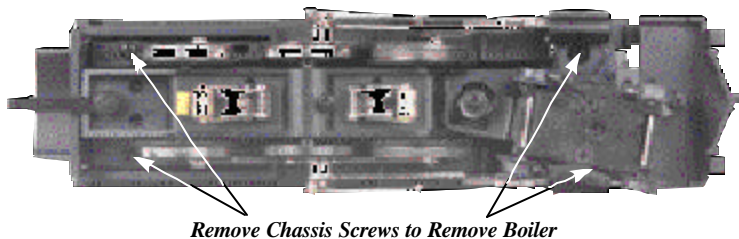


Figure 7 - Removing the Chassis



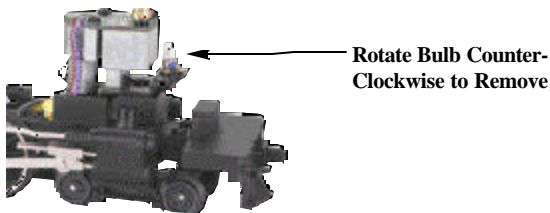
Figure 8 - Inspecting the Smoke Unit

You can obtain replacement parts and wick replacement instructions from the M.T.H. Parts Department.

### Locomotive Light Bulb Replacement

To replace the light bulb in the locomotive, follow these instructions and see the diagrams below: You can obtain replacement bulbs directly from the M.T.H. Parts Department.

Remove the locomotive boiler from its chassis as shown in Figure 7. Once the body has been removed, rotate the headlight bulb counter-clockwise as seen in



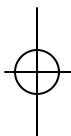


### Self-Charging Battery Back-Up

The special NiCad 7-cell 8.4v self-charging battery in this engine performance at any speed. It ensures that power to the sound remain on during directional changes, or when travelling over d switches. The self-charging battery system is automatically turn whenever track power is turned on or off.

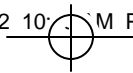
Track power (when applied) recharges the battery, which should to five years, and the special NiCad battery is a dry battery that leak or cause any damage to your engine. However, even this special will eventually wear down and need to be replaced. When your engine sounds seem distorted or garbled at low voltages silent when power from the transformer is turned off, test to determine whether it should be recharged or replaced.

- Put the engine in neutral and leave the track voltage at 12 minutes
- If the sounds are improved at the end of the 15-minute test battery charge has run down and can be recharged. Do this by engine in neutral with track voltage at 12 volts for 6-7 hours so can fully recharge (if your engine has a smoke unit, be sure off). Or you can remove the battery (as described below) and any standard slow charge battery recharger, following the directions.
- If the sounds are not improved at the end of the 15-minute test time to replace the battery (see directions below). Contact Parts Department (phone: 410-381-2580; e-mail: [rails@railking.com](mailto:rails@railking.com); mail: 7020 Columbia Gateway Drive, Columbia, MD 21046-1532) for a replacement battery. A standard 9v alkaline can be substituted until your replacement arrives, but since alkaline cannot be recharged, it will eventually wear down. Do NOT use a 7.2v battery like those found in most convenience stores.



RAILKING

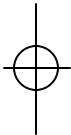




## Troubleshooting Proto-Sound® 2.0 Problems

Although Proto-Sound 2.0 has been designed and engineered for ease of use, you may have some questions during initial operation. The following table should answer most questions. If your problem cannot be resolved with this table, contact M.T.H. for assistance (telephone: 410-381-2580; fax: 410-423-0009; e-mail: [service@mth-railking.com](mailto:service@mth-railking.com), mail: 7020 Columbia Gateway Drive, Columbia MD 21046-1532).

<b>Starting Up</b>	<b>Remedy</b>
When I first turn the power on, the engine will not begin to run. I have to turn the throttle off and then on again to get the engine to operate.	This is normal behavior. To prevent accidental high-speed start-ups, Proto-Sound 2.0 is programmed to start up in neutral anytime track power has been turned off for several seconds. See the "Basic Operation" section for more details.
<b>Whistle</b>	<b>Remedy</b>
When I press the whistle button, the bell comes on instead.	Reverse the transformer leads.
I can't get the whistle to blow when I press the whistle button.	You may be pressing the button too quickly. Try pressing the whistle button more slowly, taking approximately one full second to fully depress the button.
<b>Bell</b>	<b>Remedy</b>
When I press the whistle button, the bell sounds.	Reverse the transformer leads.
I can't get the bell to ring when I press the bell button.	You may be pressing the button too quickly. Try pressing the whistle button more slowly, taking approximately one full second to fully depress the button.
The bell won't work on a separate bell button.	Check the wiring of the separate button.
<b>Coupler</b>	<b>Remedy</b>
When I try to fire the coupler, FYS starts.	You are waiting too long between whistle button presses.
The Proto-Coupler won't let the engine uncouple on the fly.	Try lubricating the coupler knuckle and rivet with a dry graphite lubricant.
The coupler does not fire or stay coupled.	The coupler needs to be cleaned. Wipe with denatured alcohol (not rubbing alcohol) and let dry.
<b>Cab Chatter</b>	<b>Remedy</b>
Sometimes the Cab Chatter sounds don't play.	Cab Chatter plays only in neutral at random intervals.
<b>Lock-out</b>	<b>Remedy</b>
I can't get the engine to run after I power up the transformer. It sits still with the engine sounds running.	The engine is locked into the neutral position. Follow the procedure in the "Lock into a Direction" section.
The engine won't lock into forward, neutral, or reverse.	Engine speed must be below 10 scale mph (approx. 10 volts or less in conventional mode).
<b>Volume</b>	<b>Remedy</b>
The sounds seem distorted, especially when the whistle or bell is activated.	Proto-Sound 2.0 volume is set too high. Turn the volume control knob on the bottom of the chassis counter-clockwise to reduce the volume.
<b>Battery</b>	<b>Remedy</b>
The engine will not leave the initial neutral setting.	Check to be sure the battery is installed and fully charged. See the "Self-Charging Battery Back-Up" section.
I get no sounds when the engine shifts between directions.	The battery may be dead or need to be charged. See the "Self-Charging Battery Back-Up" section.
After I turn off my transformer, my engine continues to make sounds before quitting.	Proto-Sound 2.0 is designed to continue to sound for a few seconds after power to the track has been shut off.
<b>FYS</b>	<b>Remedy</b>
The FYS sounds occasionally repeat themselves.	Proto-Sound 2.0 has a built-in random number generator that randomly selects each sound clip to play. Because there are a limited number of sound clips available in each FYS sequence, it is probable that some of these sound clips will be repeated from time to time.
One in FYS, the engine doesn't go into reverse.	So that FYS effects can be as realistic as possible, Proto-Sound 2.0 disables the reversing unit whenever FYS is enabled. This way the engine remains still at its stop as the operator cycles through the FYS sequences.
When the FYS enters its last sequence the bell automatically comes on.	FYS is programmed to start ringing the bell at that point. After approximately 15 rings of the bell, it will automatically turn off.





### Compatibility

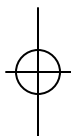
This engine will operate on any traditional O-31 or larger O scale system, including M.T.H.'s RealTrax® or ScaleTrax™ or traditi track. It is also compatible with most standard AC transformers. For a complete list of compatible transformers and wiring instru

### Transformer Compatibility and Wiring Chart

Note that many of the operational commands described in these require a bell button, so if your transformer does not have i button, you should consider adding one to get the full benefit of

Transformer Model	Center Rail	Outside Rail	Min/Max. Voltage	Power Rating
MTH Z-500	Red Terminal	Black Terminal	0-18v	50-Watt
MTH Z-750	Red Terminal	Black Terminal	0-21v	75-Watt
MTH Z-4000	Red Terminal	Black Terminal	0-22v	390-Watt
Lionel 1032	U	A	5-16v	90-Watt
Lionel 1032M	U	A	5-16v	90-Watt
Lionel 1033	U	A	5-16v	90-Watt
Lionel 1043	U	A	5-16v	90-Watt
Lionel 1043M	U	A	5-16v	90-Watt
Lionel 1044	U	A	5-16v	90-Watt
Lionel 1053	U	A	8-17v	60-Watt
Lionel 1063	U	A	8-17v	60-Watt
All-Trol	Left Terminal	Right Terminal	0-24v	300-Watt
Dallee Hostler	Left Terminal	Right Terminal		
Lionel LW	A	U	8-18v	75-Watt
Lionel KW	A or B	U	6-20v	190-Watt
Lionel MW	Outside Track Terminal	Inside Track Terminal	5-16v	50V.A.
Lionel RS-1	Red Terminal	Black Terminal	0-18v	50V.A.
Lionel RW	U	A	9-19v	110-Watt
Lionel SW	U	A	Unknown	130-Watt
Lionel TW	U	A	8-18v	175-Watt
Lionel ZW	A,B,C or D	U	8-20v	275-Watt
Lionel Post-War Celebration Series ZW	A,B,C or D	Common	0-20v	135/190 Watt

\* Conventional Mode Only



**RAILKING**

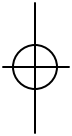




### **Additional Features Accessible with the DCS Remote Control System:**

While conventional mode operation of a Proto-Sound 2.0 engine yields wonderfully realistic sound and several train control features, command mode operation allows the user to access a world of command functions never before accessible to O Gauge railroaders. With the addition of the DCS Remote Control System (including a DCS remote handheld and Track Interface Unit) users gain many advanced features, including:

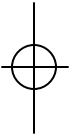
- DCS Proto-Speed Control - Establishes desired locomotive speed in scale miles per hour increments via a thumbwheel control and allows operator to set maximum speed and acceleration/deceleration rates
- ProtoSmoke® Variable Output Control - Controls how much smoke each engine outputs and matches smoke to locomotive speed
- Locomotive Lighting Control - Controls locomotive headlights, marker and interior lights, beacon lights, ditch lights, and MARS lights
- Emergency Stop - Single button push stops all Proto-Sound 2.0 trains but does not turn off the power
- One Touch Global Mute/UnMute - Single button mutes or unmutes all DCS-controlled locomotives' user-defined actions, including sound, lights, and smoke
- Proto-Dispatch Operation-Public Address-like feature allows users to speak through locomotive speaker during operation
- Proto-Cast-Allows users to play audio recordings through locomotive speaker during operation
- Proto-Doppler Sound Effects Set Up-Users can configure locomotive for Doppler Operation, including setting distance points for Doppler start, repeat, and stop modes
- Independent Volume Control of Engine Sounds, Bell, and Whistle for each Locomotive
- Control up to 50 different DCS-Equipped Locomotives at one time with multiple TIUs
- Proto-Effects™ Set Up - User can select individual Proto-Effects™ operations to be active or inactive, including cab chatter, train wreck sounds, coupler sounds, and wheel clickety-clack sounds
- Direction Control Set Up - can set initial individual start-up direction (start in forward or reverse) for double-heading operations
- Locomotive Consist Set-up - User can determine locomotive values for consist make-ups, allowing multiple locomotives belonging to a consist to operate together
- Query Locomotive Information - User can query locomotive programming to learn locomotive address and engine data information, including scale miles traveled
- User Can Query, Set and Operate Track and Accessory Interface Units for Programming Digital Command Operations for up to 250 Accessories and 250 Individual Switches
- User Can Script, Record and Playback Train Routes





Notes: \_\_\_\_\_

A series of horizontal lines for taking notes, starting from the line following the 'Notes:' label and extending to the bottom of the page.



**RAILKING**



Notes:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

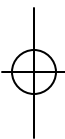
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_





# SERVICE & 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 permitted to service the product under the terms of this warranty.

1. First, write, call or FAX M.T.H. Electric Trains, 7020 Columbia Gateway, Columbia, MD 21046, (Tel: 410-381-2580; FAX: 410-423-0009; [service@meth-railking.com](mailto:service@meth-railking.com)), stating when it was purchased and what seems to be the problem. You will be given a return authorization number to ensure 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, e-mail address (if available), Return Authorization number, a copy of your sales receipt and a description of the problem must be included to facilitate the repairs. Please include a description regardless of whether you discussed the problem with one of our technicians when contacting M.T.H. for your Return Authorization number.
3. Please make sure you have followed the instructions carefully before returning your merchandise for service.

### Limited One-Year Warranty

All M.T.H. products purchased from an Authorized M.T.H. Train Merchant are covered by this warranty.

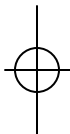
See our website at [www.mth-railking.com](http://www.mth-railking.com) or call 1-888-640-3700 to identify an Authorized M.T.H. Train Merchant near you.

M.T.H. products are warranted for one year from the date of purchase against defects in material or workmanship, excluding light bulbs and traction tires. We will replace (at our option) the defective part without charge for the parts or labor, if it is returned to M.T.H. Electric Trains within one year of the original date of purchase. This warranty does not cover damages caused by improper care, handling, or transportation costs incurred by the customer are not covered under this warranty.

Items sent for repair must be accompanied by a return authorization number, a description of the problem, and the original sales receipt from an Authorized M.T.H. Train Merchant which gives the date of purchase. Call 410-381-2580, fax 410-423-0009, or e-mail our Service Department at [service@meth-railking.com](mailto:service@meth-railking.com) to obtain a return authorization number.

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

Service Department



RAILKING

