



RAILKING 2-6-0 STEAM ENGINE OPERATING INSTRUCTIONS



Making the Most of Your Investment

Thank you for purchasing this RailKing Ready-to-Run Steam Engine Set. We at MTH Electric Trains take pride in manufacturing quality products like your set, and we hope that you will enjoy it for a long time. To ensure the maximum durability and pleasure from locomotive, rolling stock, track and transformer, please read all the way through the **Quick Start Basic Operating Instructions** you will find on pages []. Remember that a little attention to routine maintenance yields a maximum of trouble-free performance.

RAILKING

Table Of Contents

QUICK START - BASIC OPERATION(All 3-Rail Models)	3
PROTOSMOKE™ UNIT OPERATION	4
PROTOSOUNDS® OPERATING INSTRUCTIONS	5
ProtoSound® DCRU® Reverse Unit Operation (All 3-Rail Models)	5
Whistle Operation	6
Bell Operation	6
ProtoCoupler™ Operation	7
Enhanced Neutral Steam Sounds	8
Squeaking Brake Sounds	8
Tips On Using The Squeaking Brake Sounds	9
Freight Yard Sounds (FYS)	10
Activating and Triggering Freight Yard Sounds	10
Tips On Using FYS Features	15
Self-Recharging Battery Backup System	16
Replacing The ProtoSound® Battery	16
ProtoSound® Volume Adjustment	17
USING "RESET" TO PROGRAM PROTOSOUNDS™	18
Entering RESET Options	18
Setting The Engine Volume	19
Programming For A Separate Bell Button Controller	20
Programming For Squeaking Brake Operation	20
Programming For Whistle In Neutral Operation	21
Programming For ProtoCoupler™ Operation	22
Programming For FYS Operation	23
Activating Remote Lockout Control	23
ResettingAll ProtoSound® Options To Factory Default	24
REVERSE UNIT LOCK-OUT OPERATION	25
Locking The Engine Into Forward or Reverse	25
Unlocking The Engine	25
Locking The Engine Into Neutral	25
OIL & LUBRICATION INSTRUCTIONS	27
TRACTION TIRE REPLACEMENT INSTRUCTIONS	28
LIGHT BULB REMOVAL & REPLACEMENT	29
TROUBLE SHOOTING PROTOSOUND® PROBLEMS	30
ProtoSound® RESET Feature Chart	33
Transformer Wiring Chart	34
SERVICE AND WARRANTY INFORMATION	35
HOW TO GET SERVICE	35
LIMITED ONE YEAR WARRANTY	35

Compatibility

Our designers have sized the engine and tender to operate on any traditional 0-27 or larger O Gauge track system, including RiteTrax using any standard AC transformer including the Z-500 transformer packaged in your set. (See page [] for a complete list of compatible transformers as well as wiring instructions.) All RailKing products are compatible with most other 3-rail locomotives, rolling stock, and accessories.

Equipment Options

Your ready-to-run set features a 2-6-0 locomotive equipped with an operating headlight, electronic whistle, electronic reverse unit and ProtoSmoke® smoke system. All are simple and fun to operate. In addition to the locomotive, your set should also include a circle of RiteTrax® track (8 curved sections), a RiteTrax® lighted lock-on and wire harness set (for connecting the track to the transformer) and a 50-watt Z-500 transformer and controller.

You'll find complete instructions for choosing and setting up options in the following pages. If you don't read through the entire manual before starting to operate your equipment, be sure to check the **Quick Start Basic Operating Instructions**, which will give you the basics of the operating system.

Quick Start Operating Instructions

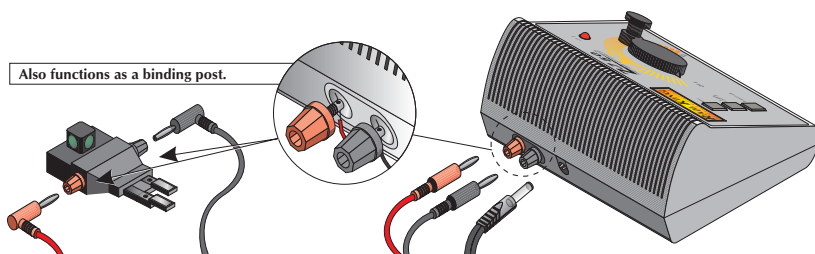
Track and Power

Although MTH Electric Trains manufactures its own track and transformers, you can run your locomotive on 0-27 or wider-radius O gauge track wired to draw power from any of the standard compatible AC transformers listed in the chart on page []. Be sure your track is in good condition—clean and securely connected—to keep the locomotive running and to prevent derailments. If you intend to utilize the RiteTrax® track sections included in the set, see the directions below.

Setting Up the RiteTrax® Oval

Unlike other O Gauge track systems, each RiteTrax® track section features a realistic built-in roadbed base, solid nickel-silver track rails and realistic railroad ties all designed to give the owner an authentic looking track system. In addition, each RiteTrax® track section employs the use of quick-connect connectors instead of track pins or railjoiners to assemble the track sections to one another. The quick connectors and built-in base allow RiteTrax® track sections to be setup anywhere, including a carpeted surface without the need for track nails or the worry of carpet stains.

The lighted lockon included in your set snaps into any RiteTrax® track section roadbed and functions as the interface between the track and the transformer. Each RiteTrax® track section includes a “knock-out” in the roadbed that must be removed to reveal the opening for the lighted lockon. To remove this *knock-out* grab the *knock-out* with a pair of pliers and gently twist the *knock-out* until it snaps away from the



roadbed base. Once the *knock-out* has been removed, snap the lighted lockon into the roadbed taking care to make sure that the lockon arms snap into the roadbed electrical receptors. To complete the connection between the RiteTrax® track section and the transformer, simply plug in the color-coded wire harness that was included in your set.

Preparing the Locomotive

Before you fun your locomotive, you **must**• oil the locomotive and tender chassis and• prime the smoke element.

Oiling the locomotive and Tender

Before you run the locomotive and tender, use a light household or hobby oil to lubricate side rods, linkage components, and pick up rollers. Apply a small drop of oil (a pinpoint oiler will help place the right amount of oil where you need it) to each of the points indicated by an “L” in the diagrams in figures [] and []. You may also what to use either a locomotive repair cradle or an old towel folded over to provide a protective bed for the locomotive shell while you’re working on it.

Because the locomotives’s internal gearing has been greased at the factory, you shouldn’t need to add more grease until you have run the locomotive for 50 hours or owned it for a year, whichever comes first. See the section on lubrication, pages(s) [], for detail.

Priming the Smoke Element

All locomotive models are equipped with an operating smoke system that **must be primed with smoke fluid before operating** to prevent damage to the smoke element. Adding 20 to 25 drops of smoke fluid through the smoke stack should be sufficient.

If you don’t want to use the smoke, system, or if you don’t have smoke fluid on hand, but want to run your locomotive, turn the smoke unit switch to the OFF position. You will find the smoke unit switch under the trailing truck. (See figure [3] on page [4].) Turning the smoke unit switch to OFF will prevent damage to the un-primed smoke

unit while the locomotive is running. For more information, see the section on smoke unit operation on page [4].

Electronic Reverse Unit

Your RailKing 2-6-0 locomotive is controlled by an electronic reverse unit that operates in the same way that other reverse units do. That is, it uses forward, neutral, and reverse states and shifts from one state to the next in the sequences each time you turn the throttle off and on or use a transformer direction switch. Neutral states separate forward and reverse states, so you will always shift from forward or reverse to neutral, and must turn the throttle off and on or use the transformer direction switch twice to move from reverse to forward or vice versa.

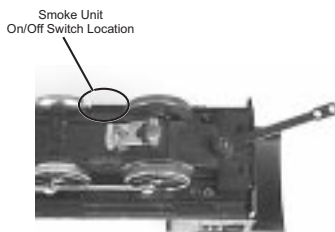


Figure 3: Smoke Unit Switch

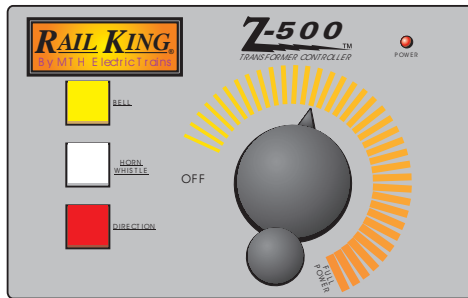
Now, **if you've lubricated the friction points and primed the smoke unit (or turned it off) as instructed above**, you're ready to start.

Starting to Roll

Advanced the transformer throttle. The locomotive's light will come on and the engine will slowly move out in the forward direction. Advancing the throttle further will allow the engine to pick up speed, reducing the throttle will slow the engine down. Turning the throttle off will park the engine into neutral.

Transformer Operation

The Z-500 provides the model railroad enthusiast with an easy to use, safe power source for AC-powered trains and accessories. Set up is quick and easy by following the setup diagram below.



FUNCTIONS:

Bell: Press to activate, press again to deactivate.

Horn/Whistle: Press to activate.

Direction: Press to stop motion of train and press again to change direction

USING THE Z-500 WITH PROTOSOUND® EQUIPPED LOCOMOTIVES

Although the Z-500 was designed to provide the operator with plenty of power. MTH does not recommend leaving the engine in neutral with the power on and the throttle above the setting shown for an extended period of time. If you are recharging the battery found in ProtoSound® equipped engines while in the neutral position, MTH recommends the throttle be positioned as shown for optimum charging power.

Oil and Lubrication Instructions

Proper locomotive performance requires regular attention to lubrication.

Oil

Before operating the locomotive, apply a small drop of oil to side rod connections, linkage components, and pick up rollers. Use light household oil and apply sparingly only to the points indicated by “L” in

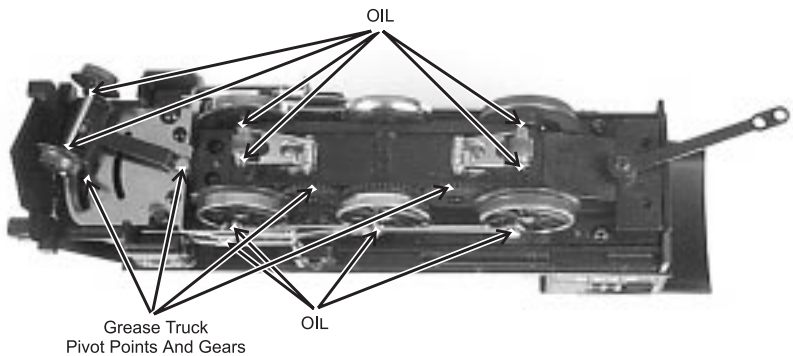


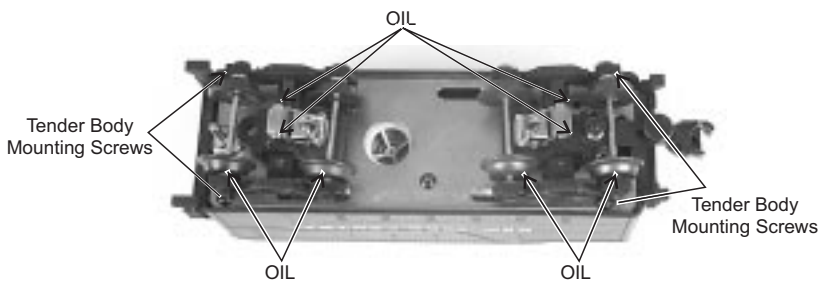
figure [8]. Wipe away any excess, especially if oil spills onto the finish of the locomotive and tender. To prevent accidental scratches or other damage to the locomotive and tender shells while you are working, you may want to place the locomotive and tender in a repair cradle or an old towel or other cloth folded to provide a firm but soft resting place.

Check the locomotive and tender oiling points periodically to be sure they are moving freely and quietly. If they are not, apply small amount of oil again. Also check locomotive and tender wheels for dirt build up that can cause performance problems. Such dirt build up can interfere with electrical contacts, reduce traction (especially on elevated track sections), and cause neoprene traction tires to wear out prematurely.

Grease

Your locomotive's internal gearing has been greased at the factory and should not need additional grease until you have run the locomotive for over 50 hours or owned it for a year, whichever comes first.

Add grease by inserting it into the gear box inside the locomotive chassis. To reach the gear box, remove the boiler from the chassis by unscrewing the four chassis screws as indicated in figure [10] on page [28]. Once you have removed the boiler, remove the two screws holding down the plate in front of the motor. Lift the plate and use a



grease tube dispenser to fill the gear box. Replace the plate and reinsert the two screws. Then fit the boiler back in place and reinsert the four chassis screws.

Finally, use a little grease to lubricate the locomotive's leading and trailing truck tongues so that they can slide easily on the chassis. See the points marked "G" in Figure [8] on page [27].

ProtoSmoke® Unit

Operation

The smoke of your RailKing 2-6-0 locomotive will put out a steady stream of smoke through the smokestack in the locomotive shell **if the unit has been properly primed with smoke fluid and the unit switch** (located next to the trailing truck, as indicated in figure [3]) **is turned to the ON position.**

Basically, the smoke unit consists of a small heating element and a wick that soaks up the mineral-oil-based smoke fluid. The heating element “cooks” the fluid to produce the steam of harmless smoke, while a small electric fan running at variable speeds (depending on the throttle setting) forces the smoke up through the smokestack. Because the fans runs at variable speeds, the amount of smoke increases as you increase the voltage setting.

For best results, we recommend that you insert 20 to 25 drops of ProtoSmoke® Seuthe, LGB, or LVTS fluid into the smokestack before you run your locomotive. **If you do not add the fluid, turn off the smoke unit by turning the switch located next to the trailing truck to the OFF position. If you do not add fluid or turn off the unit, you may damage the heating element or the wicking or both.**

After adding the 20 to 25 drops of smoke fluid through the smokestack, blow gently into the smokestack to eliminate air bubbles.

To prevent accidental overflows that could coat interior locomotive parts, do not overfill the smoke unit.

When you notice that smoke output starts to decrease as you are running the engine, add another 10 to 15 drops of fluid or turn off the smoke unit.

Before you store the engine for a long time, add at least 15 drops of smoke fluid to prevent the wick from drying out. Before running a locomotive you have been storing, add another 20-25 drops of smoke fluid and give the wick 15 minutes to soak up the fluid before you run the locomotive.

Maintenance

Caution: Running the smoke unit without fluid can damage the smoke unit wick and turn it hard, black, and incapable of absorbing smoke fluid, particularly around the heating element. If the wick can not absorb the smoke fluid, it can not produce the smoke properly. If your smoke unit stops producing smoke, even though you have added fluid and have turned the unit switch to ON, check for wick damage.

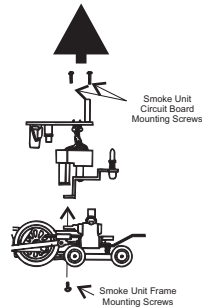


Figure 4: Inspecting The Smoke Unit

TRANSFORMER COMPATIBILITY AND WIRING CHART

ProtoSounds® is designed to work with any standard AC transformer that uses a "Pure Sine-Wave" format. The chart below lists the many Lionel® compatible transformers, such as the Lionel KW or ZW models. In addition, the chart details how the terminals on these compatible transformers should be attached to your layout. The Trainmaster system from Lionel® will not function correctly with ProtoSounds® without disrupting the sound effects. Therefore, whenever ProtoSounds® senses that the Trainmaster system is being used, it automatically disables ProtoSounds® sound effects. The operator retains control over the engine, but no sound effects will play.

Transformer Model	Center Rail	Outside Rail	Min/Max. Voltage	Power Rating	Transformer Type
Lionel 1032	U	A	5-16v*	90-Watt	Standard**
Lionel 1032M	U	A	5-16v*	90-Watt	Standard**
Lionel 1033	U	A	5-16v*	90-Watt	Standard**
Lionel 1043	U	A	5-16v*	90-Watt	Standard**
Lionel 1043M	U	A	5-16v*	90-Watt	Standard**
Lionel 1044	U	A	5-16v*	90-Watt	Standard**
Lionel 1053	U	A	8-17v	60-Watt	Standard**
Lionel 1063	U	A	8-17v	60-Watt	Standard**
All-Trol	Left Terminal	Right Terminal	0-24v	300-Watt	Electronic ^{AA}
Cab-1/Powermaster	A	U	0-18v	135V. A.	Electronic ^A
Dallee Hostler	Left Terminal	Right Terminal			
Lionel LW	A	U	8-18v	75-Watt	Standard**
Lionel KW	A or B	U	6-20v	190-Watt	Standard**
MRC Tech II	Left Terminal	2 nd From Left	0-15v*	40V. A.	Electronic
Lionel MW	Outside Track Terminal	Inside Track Terminal	5-16v*	50V. A.	Electronic
R. O. W.	Red Terminal	Black Terminal	0-24v	384-Watt	Standard**
Lionel RS-1	Red Terminal	Black Terminal	0-18v	50V. A.	Electronic
Lionel RW	U	A	9-19v	110-Watt	Standard**
Lionel SW	U	A	Unknown	130-Watt	Standard**
Lionel TW	U	A	8-18v	175-Watt	Standard**
Lionel ZW	A or D	U	8-20v	275-Watt	Standard**
Lionel Trainmaster	Red Terminal	Black Terminal	0-18v	135-Watt	Electronic
MTH Z-500	Red Terminal	Black Terminal		50-Watt	Electronic
MTH Z-750	Red Terminal	Black Terminal		75-Watt	Electronic
MTH Z-4000	Red Terminal	Black Terminal	0-22v	400-Watt	Electronic

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