

# **LIONEL** ELECTRIC **TRAINS** MODEL RAILROAD ACCESSORIES **LIONEL CORPORATION TINPLATE**

[www.lionelcorporation.com](http://www.lionelcorporation.com)

## **No. 384 Steam Freight/ Passenger Set**

**Operation Manual (3V PS2)**



PSA



FYS

**PLEASE READ BEFORE USE AND SAVE**

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## CAUTION: ELECTRICALLY OPERATED PRODUCT:

Recommended for Ages 14 and up. Not recommended for children under 14 years of age without adult supervision. As with all electric products, precautions should be observed during handling and use to prevent electric shock.

**WARNING:** When using electrical products, basic safety precautions should be followed including the following:

- Read this manual thoroughly before using this device.
- This device is not recommended for children under ten years of age without adult supervision.
- M.T.H.® recommends parents examine the toy transformer periodically for conditions that may result in the risk of fire, electric shock, or injury to persons, such as damage to the primary or output cord, plug blades, housing, screw terminals or other parts, and that, in an event such conditions exist, the transformer should not be used until properly repaired.
- This Z-1000™ Hobby Transformer Power Unit is intended to be used indoors. Do not use if water is present. Serious or fatal injury may result.
- Do not use this Z-1000™ Hobby Transformer Power Unit for other than its intended purpose. This unit was designed to operate with Z-Controller™ Control Unit.
- This Z-1000™ Hobby Transformer Power Unit was designed to operate on 120 volt, 60 Hertz power. Do not connect to any other source of power.
- Do not operate the Z-1000™ Hobby Transformer Power Unit with damaged cord, plug or case.
- To avoid the risk of electrical shock, do not disassemble the unit. There are no user serviceable parts inside. If damaged call M.T.H.® service for instructions.
- **CAUTION:** Do not operate your layout unattended. Obstructed accessories or stalled trains may overheat resulting in damage to your layout.
- If the circuit breaker trips, unplug the power cord from power source (electrical wall outlet), check your layout track and accessories for any short circuits, reset the circuit breaker, plug the power cord into the power source (electrical wall outlet), and resume operation.
- Unplug the Z-1000™ Hobby Transformer Power Unit from power source (electrical wall outlet) when not in use.

## Transformer Ratings:

Input: 120 VAC, 60 Hz Only. Output: Z-750: 21VAC 3.75A 78VA; Z-1000: 14VAC 80W or 18VAC 100W

This product may be protected by one or more of the following patents: 6,019,289; 6,280,278; 6,281,606; 6,291,263; 6,457,681; 6,491,263; 6,604,641; 6,619,594; 6,624,537; 6,655,640.

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# Set Up Checklist

- Assemble Std. Gauge 42 Track and Lock-on
- Connect the transformer
- Lubricate the engine
- Prime the Smoke Unit
- Place the engine and cars on the track and couple them together
- Check to see whether the battery needs to be charged for full sound effects
- Apply power to run as described in the Basic Operation section of these instructions.

## Set Includes

- Steam Locomotive and Tender
- 2 Cars



Receiver Remote

DCS Remote  
Commander Set (50-1033)



8 Pieces  
Std. Gauge RealTrax®



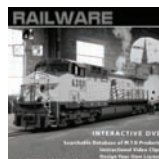
Z-500 Transformer



Wire harness



Std. Gauge  
Lighted Lock-On



DVD/CD-Rom

## Tools Needed



Optional Battery Charger (50-1019)



Pliers



Scissors



Phillips Screwdriver



Cotton Swab or Rag



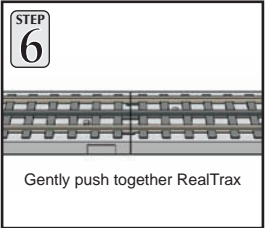
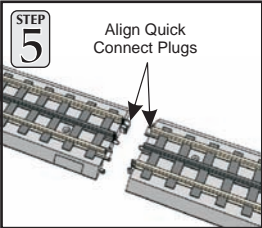
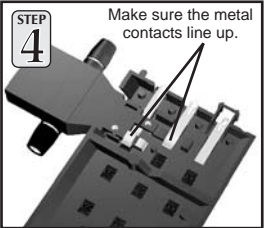
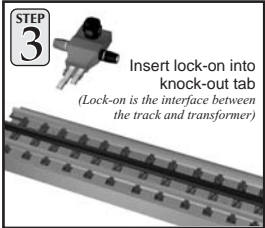
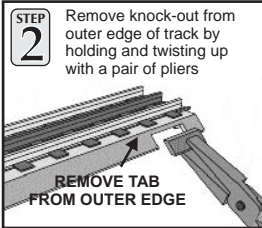
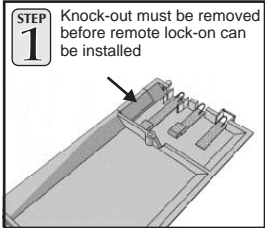
M.T.H. Maintenance Kit (30-50051)

**You can obtain replacement parts and replacement instructions from the M.T.H. Parts Department** (Order online: [www.mthtrains.com](http://www.mthtrains.com), e-mail: [parts@mth-railking.com](mailto:parts@mth-railking.com), Fax: 410-423-0009, Phone: 410-381-2580, Mail: 7020 Columbia Gateway Drive, Columbia MD 21046-1532 )

# Getting Started

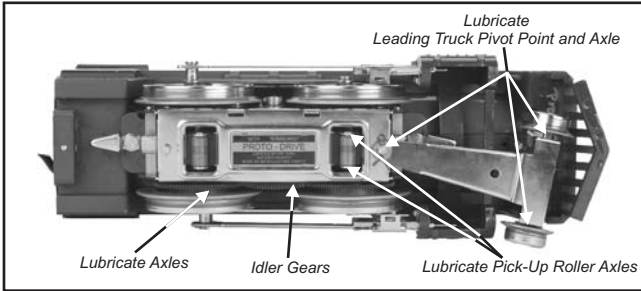
## Assembling RealTrax<sup>®</sup>

The quick connectors and built-in roadbed allow you to set up RealTrax anywhere, including carpeted surfaces.



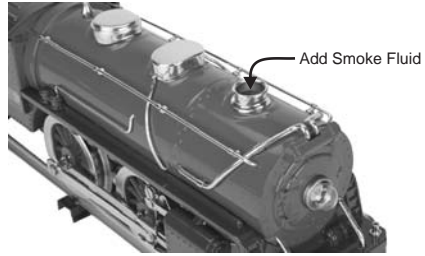
## Lubricating and Greasing the Engine

Before operating, lubricate all exposed moving parts using a multi-purpose oil (available with M.T.H.'s Maintenance Kit, sold separately) or a light household oil. Follow the lubrication points.



## Priming the Smoke Unit

When preparing to run this engine, add 15-20 drops of smoke fluid through the smokestack. We recommend M.T.H. ProtoSmoke™ fluids. Do not overfill the unit or the fluid may leak out and coat the interior engine components.



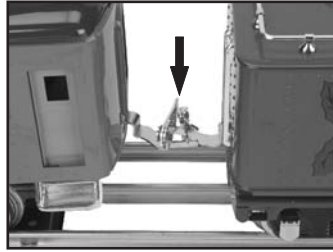
If you choose not to prime the unit with fluid, turn the smoke unit control located under the tender to the OFF position (Full Counter Clockwise Position). **Running the engine without a primed smoke unit may cause damage.** See the "ProtoSmoke Unit Operation" section of this book for more information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



**Running the engine without a primed smoke unit may cause damage**

## Coupling the Engine and Cars

**STEP 1** Position armature for proper operation by lifting up on the coupler latch arm making sure the couplers are together and then releasing the coupler latch arm.



## Checking the Battery

You may find, if your set was built several months before you set it up, that the rechargeable battery has run down and needs to be charged before operating. If you notice that the sounds are garbled, test and charge the engine as described in “Self-Charging Battery Back-Up” on page 15.

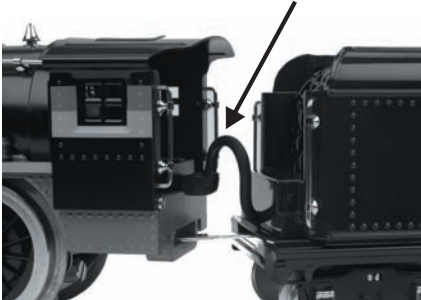
## Placing The Engine On The Track

Place the engine on the track, then insert the connecting plug that extends out of the tender into the receptacle at the back of the boiler cab, making sure the cable loops upward. (See Below) **WARNING. DO NOT CONNECT THIS BOILER TO A TENDER FROM ANOTHER TYPE OF ENGINE; IT MAY CAUSE SERIOUS DAMAGE.**

Connect the draw bar between the engine and tender

At this point, you are ready to begin running your engine.

Be sure that cable loops upward



Arrow will point upwards when plugged in correctly

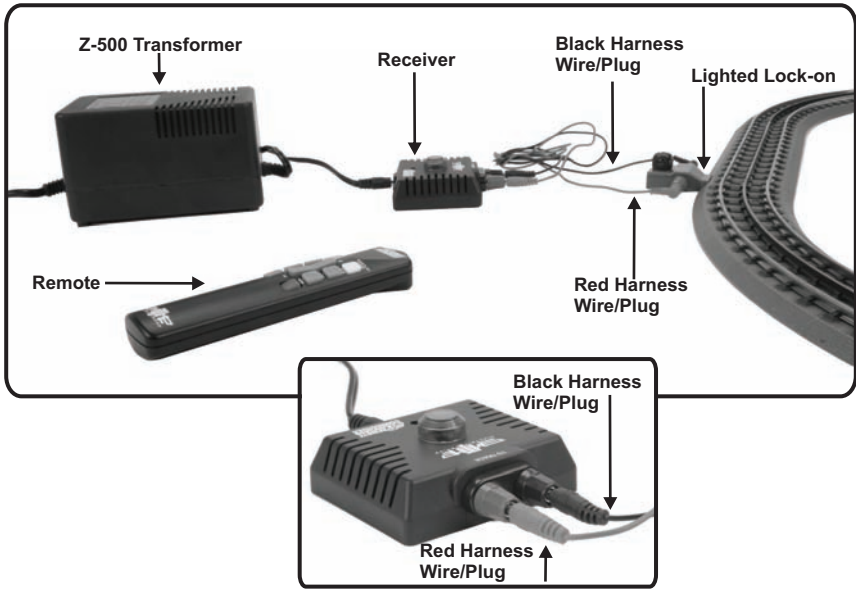
Connecting the tender and boiler.

# Connecting the Transformer & Installing DCS Remote Commander Set

Your set comes with M.T.H.'s latest DCS System, the DCS Remote Commander. The DCS Remote Commander includes a handheld Remote which communicates with a Receiver powered by a UL approved Transformer to provide an easy-to-use, safe power source for your new train set. To install the DCS Remote Commander and Transformer please use the following instructions:

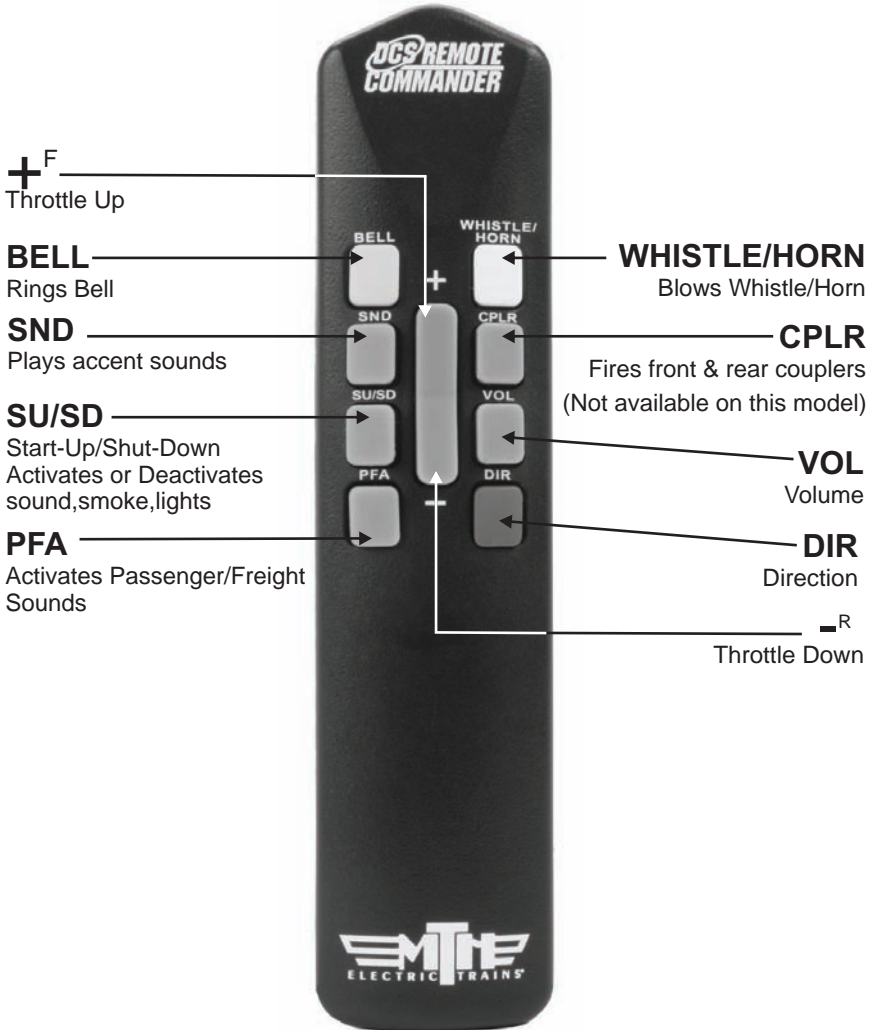
1. Ensure the Z-500 transformer is unplugged.
2. Install two AA batteries (not included) into the Remote. You will need a small screw driver.
3. Plug the Z-500 transformer barrel jack into the port labeled “Power” on the Receiver. Using the RealTrax Wire Harness plug the color-coded wires from the Receiver to the Lighted Lock-on.
4. Make sure that the engine and cars are properly assembled and coupled on the track and then plug the Z-500 transformer into any 110 volt AC wall outlet. You will know that you have power to the receiver and the track if you see the green LED atop the Receiver and the green light atop the Lighted Lock-on will come on. Subsequent pushes of any buttons on the remote will cause the green LED atop the Receiver to blink, indicating it is receiving the signal.

See Illustrations Below



## Basic Operation

After making sure everything is properly assembled, aim the Remote at the Receiver and press the SU/SD Button on the Remote. (\*\* NOTE - Because this is an infrared line-of-sight remote, you must aim the remote at the receiver in order to send signals to the track. \*\*). Once pressed the Engine start up sound will begin as well as the lights and smoke unit will turn on. Now press the + end of the Remote's Throttle Control and the train will start to move forward. Each time you press the + end of the Throttle Control the train will move faster and faster. Please see the Operating Buttons Using the Handheld Remote for more information on using the Remote to operate the train.



**Note: You cannot use this Remote and Receiver with pre-1997 versions of Proto-Sound™ or with Proto-One™, Proto-Plus™, Proto-Deluxe II™ engines, whatever the date.**



## Operation Buttons Using the Remote Handheld

**START UP/SHUT DOWN (SU/SD)**- Pressing this button will start your engine. Its lights, sound and smoke (if equipped) will turn on when pressed once and off when pressed again (if the train is already on).

**Throttle Control (+ and -)** (center rocker)- After **START UP**, quickly pressing and releasing the + end of the Throttle Control allows you to increase the speed of your locomotive in 1mph increments. Holding the + end of the Throttle Control down without releasing it will bring the engine up to top speed in about 7 seconds. Pressing and holding the – end of the Throttle Control for about 7 seconds will allow you to gradually bring your speed down until your engine reaches a complete stop. Quickly pressing and releasing the + or – end of the Throttle Control will increase or reduce your locomotives speed by 1 mph increments.

**PFA** – Pressing this button will activate the Passenger or Freight announcements on your engine. Pressing it again will shut the feature off. (See the instructions later in this manual for the PFA operational sequence.)

**BELL** – Pressing and releasing this button will turn on the bell sound in your engine. Press and release the button again to shut it off.

**Whistle/Horn** – Pressing and holding this button will play the whistle or horn sound on your engine. Release the button and whistle sound will decay just like the real thing. Also, depending upon how long you hold the button, once you release it the engine will play up to three different whistle endings

**CPLR** – Pressing the button will activate the coupler sound and functions. Within 2 seconds of pressing the CPLR button you must then press either the + (front coupler) or – (rear coupler). Doing so will trigger the coupler sound effect. (Not available on this model)

**VOL** – Selecting the volume button and then pressing either the + or – allows you to set your engine at any volume you desire.

**SND** – Pressing the sound button once will initiate a host of different idle sound effects on your engine. These randomly generated idle sound effects only work when the train is in a neutral or stopped position.

**DIR** – Pressing this button will bring your engine to a gradual stop and then sit at 0mph in the opposite direction it was traveling. After the engine has come to a complete stop, press the + end of the Throttle Control to start the engine moving in the opposite direction and to increase its speed.

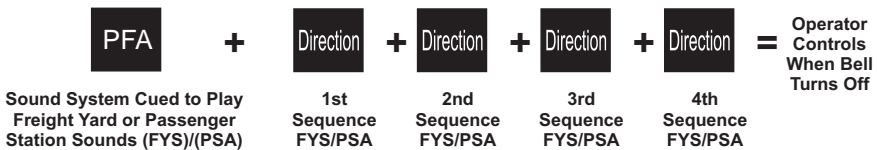
**Note:** If your locomotive is so equipped, the smoke unit is not controlled by this remote. In order to turn the smoke unit off/on you must first disconnect power from the track, manually turn the smoke unit control to the “OFF” or “ON” position, full counter-clockwise or some degree of clockwise position, and reapply power. (Small screwdriver may be required for this operation)

## Proto-Sound® 2.0 Operation

### Freight Yard Sounds (FYS) or Passenger Station Announcements (PSA):

Your engine is equipped with a sound package of either freight yard or passenger station sounds that you can play. **Each sequence described below will play as long as it is left on, randomly generating sounds, but be sure to allow approximately 30 seconds between the button pushes described below to allow the FYS/PSA sufficient time to run through each sequence.**

- To cue the sound system to play the FYS/PSA, press the PFA Button on the remote.
- Press the Direction button once to stop the engine. This will trigger the first sequence of FYS/PSA. The reverse unit is temporarily disabled so that the train will not move as you use the Direction button to trigger the sounds, and Proto-Sound® 2.0 has disabled operator control over the Horn/Whistle and Bell buttons until the full FYS/PSA sequence is complete.
- After waiting about 30 seconds for that sequence to run, press the Direction button again to trigger the second sequence of FYS/PSA.
- After about 30 seconds, press the Direction button again to trigger the third FYS/PSA sequence.
- Again, after allowing about 30 seconds for that sequence to run, press the Direction button one more time to trigger the fourth and final FYS/PSA sequence.
- The FYS/PSA will continue, and within a few seconds, the engine will start and move out on its own at the current throttle setting, in the same direction it was traveling when you began the sequence. Once the bell turns off, the operator regains control of the transformer's Bell and Horn/Whistle buttons and can ring the bell or blow the horn/whistle as usual.



### Tips on Using FYS/PSA

- You can terminate FYS/PSA at any time by pressing the PFA Button on the remote.
- You do not have to be in Forward to use FYS/PSA. 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.
- FYS/PSA can be triggered from Neutral. It will operate the same as if triggered while in motion except that, at the conclusion of the FYS/PSA, the engine will depart in the next direction of travel, as opposed to the direction it was traveling before entering Neutral.

### Proto-Coupler™ Operation (Not available on this model)

This locomotive is equipped with one or more coil-wound Proto-Couplers 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.

## Rear Coupler (Not available on this model)

To fire the rear coupler, press the CPLR Button on the remote and then press the – end of the throttle control. The sound of the liftbar and air line depletion will play, and the knuckle will be released.



## Front Coupler (Not available on this model)

To fire the front coupler (if your engine has one), press the CPLR Button on the remote and then press the + end of the throttle control. 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 control capabilities that allow the engine to maintain a constant speed up and down grades and around curves, much like an automobile cruise control. You can add or drop cars on the run, and the engine will maintain the speed you set.

## Reset to Factory Defaults

From the factory your engine is set to run with the DCS Remote Commander System at the factory default. If for some reason your engine address changes, the engine must be reset to factory default in order to operate from your DCS Remote Commander. The factory defaults cannot be reset with a DCS Remote Commander, you must use a DCS system, a DCS Commander, or see your local dealer. When using a DCS Commander or a DCS System, follow the reset instructions in those device's operating manuals.

## Automatic Sounds

The following sound effects automatically play in your engine:

**Squealing Brakes:** This sound plays anytime the engine speed decreases rapidly.

**Cab Chatter:** This sound play when the engine idles in neutral.

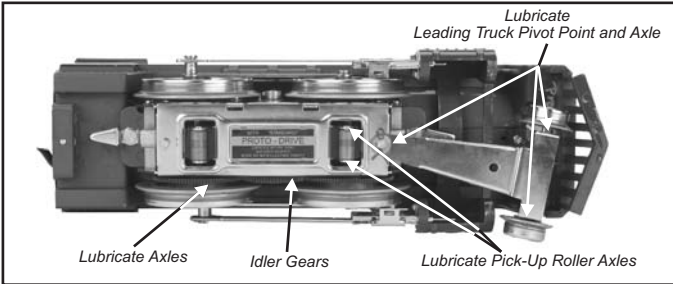
**Engine Start-up and Shut-down:** This sound plays when the engine is initially powered on or is powered off for five seconds or more.

# Maintenance

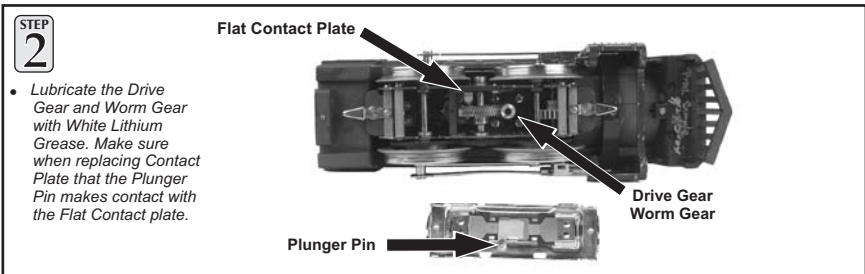
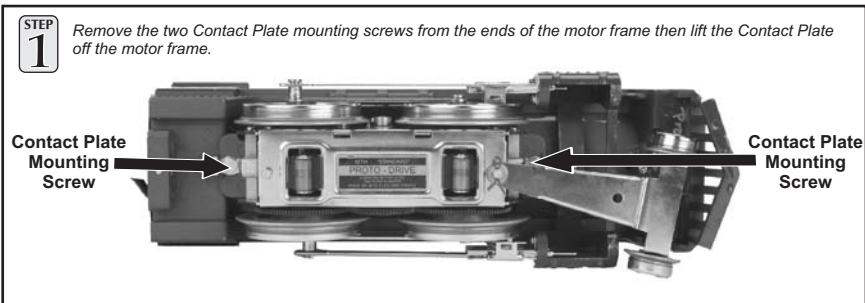
## Lubricating and Greasing Instructions

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

Regularly lubricate all axles and linkage components, including pickup roller axles, to prevent squeaking. Use light household oil, such as that found in M.T.H.'s maintenance kit. Do not over oil. Use only a drop or two on each pivot point.

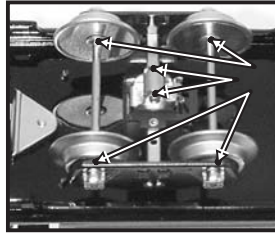


The locomotive's internal gearing was greased at the factory. Grease engine every 50 hours of use or at least once yearly if engine is not run. Use a lithium based grease and follow the greasing instructions.



## Car Lubrication

Use a light household oil for lubrication. Apply oil sparingly, using a toothpick or small applicator. Add a drop of oil to the axle holes in the front and rear of each wheel (see photo below). Wipe away excess oil with a cotton swab.



Lubricate pickup rollers, where axle meets wheel and where axle meets truck side.

## Cleaning the Wheels 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 (not rubbing) alcohol applied with a cotton swab.



To clean the track, use RailKing Track Cleaning

Fluid found in Maintenance Kit (30-50010) or denatured (not rubbing) alcohol and a clean rag. 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. Thereafter, keep an eye on the track and clean it when it gets dirty to ensure good electrical contact and to lengthen the life of the tires.

Clean any type of track with this heavy-duty track cleaning block (40-1099). Durable constructed from ABS plastic, the block includes a built-in cleaning pad. For really stubborn track, you can insert sandpaper into the block in just a few quick steps.



Track Cleaning Block (40-1099)

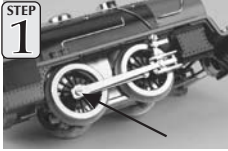


Maintenance Kit (30-50010)

## Traction Tire Replacement Instructions

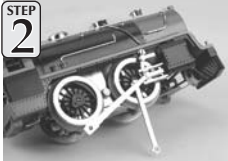
Your locomotive is equipped with two neoprene rubber traction tires on the rear set of flanged drivers. While these tires are extremely durable, they may occasionally need to be replaced.

STEP  
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. These bolts can be loosened with a Flat Blade Screwdriver.
- Clean the groove using a cotton swab and denatured alcohol.

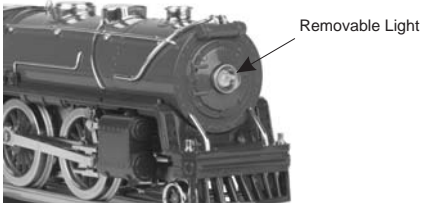
STEP  
2



- 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.
- Clean the groove using a cotton swab and denatured alcohol.
- Slip the new tire onto the wheel. You may find it useful to use two small flathead screwdrivers to stretch the tire over the wheel.
- If you twist the tire while stretching it over the wheel, you will need to remove and reinstall the tire. Otherwise your engine will wobble while operating.
- Make sure the tire is fully seated inside the groove. Use a razor blade to trim away any excess tire that doesn't seat itself inside the groove properly.

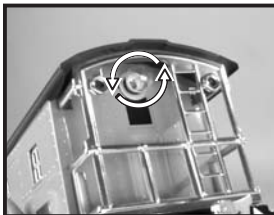
## Locomotive Light Bulb Replacement

Rotate the headlight bulb counter-clockwise to remove.



## Caboose Light Bulb Replacement

To replace light bulbs located at the ends of the caboose, simply unscrew the light bulb and replace with matching bulb.



You can obtain replacement bulbs directly from the M.T.H. Parts Department. (Order online: [www.mthtrains.com](http://www.mthtrains.com), e-mail: [parts@mth-railking.com](mailto:parts@mth-railking.com), Fax: 410-423-0009, Phone: 410-381-2580, Mail: 7020 Columbia Gateway Drive, Columbia MD 21046-1532)

## Passenger Car Light Bulb Replacement

To replace the interior light bulbs remove the screw in the center of the roof plate.



## ProtoSmoke™ Unit Operation

This Tinplate locomotive contains a Proto-Sound® 2.0 controlled smoke unit that outputs smoke through the smokestack on the roof of the engine. The smoke unit is essentially a small heating element and wick that soaks up and then heats a mineral oil-based fluid that emits smoke. The smoke is then forced out of the stack by a small electric fan. Smoke volume is controlled by the Proto-Sound® 2.0 system.



With a few easy maintenance steps, you should enjoy trouble-free smoke unit operation for years. When preparing to run this engine, add 15-20 drops of smoke fluid through the smokestack. We recommend M.T.H. ProtoSmoke™ fluids. Do not overfill the unit or the fluid may leak out and coat the interior engine components.

If you choose not to add the fluid (or have already added the fluid but choose to run smoke-free), turn off the smoke unit control (Full Counter Clockwise Position) located under the tender body. (See Page 5) **Failure either to add fluid to the unit or to turn it off may damage the smoke unit heating element and/or wicking materia**

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.

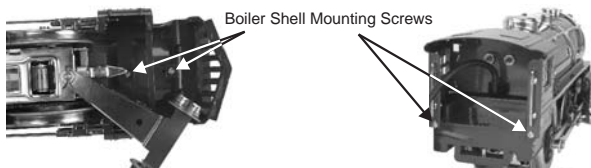
**ProtoSmoke™ Fluid:** ProtoSmoke is the recommended fluid for M.T.H. products and can be used in other manufacturers products as well. Choose from 12 different scents.



When storing the unit for long periods of time, you may want to add about 15 drops of fluid to prevent the wick from drying out.

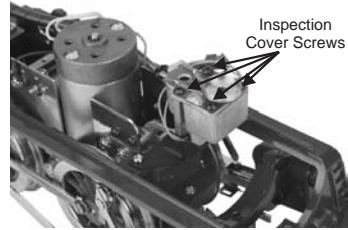
After removing the engine from storage, add another 25 drops of fluid, letting the wick soak up the fluid for 15 minutes prior to operation.

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. To remove the smoke unit you will first have to remove the boiler shell (by removing the boiler shell mounting screws shown below).





1. Once the boiler has been removed, locate the smoke unit assembly (see below).
2. Use a phillips head screwdriver to remove the inspection cover screws as seen on the right.
3. After removing the inspection cover, inspect the wick. If it is darkly discolored and hard, it should be replaced.



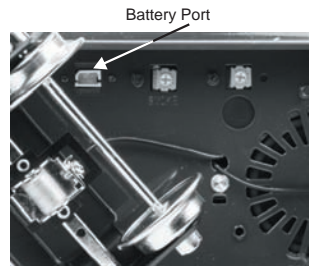
Replacement parts and wick replacement instructions are available directly from the M.T.H.

Parts Department.(Online: [www.mth-railking.com](http://www.mth-railking.com), e-mail: [parts@mth-railking.com](mailto:parts@mth-railking.com), Fax: 410-423-0009, Phone: 410-381-2500, Mail:7020 Columbia Gateway Drive, Columbia MD 21046-1532 )

## Self-Charging Battery Back-Up

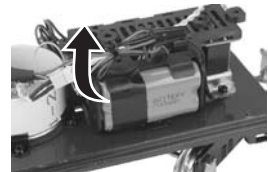
The special NiCad 2.4v self-charging battery recharges continuously during train operation and should last for up to five years. The battery is a dry battery that should not leak or cause any damage to your engine.

**Depending upon when your engine was built, it may need to be charged right out of the box.** If engine sounds seem distorted or garbled at low voltages or become silent when power from the transformer is turned off, test the battery to determine whether it should be recharged or replaced.



Battery Charger  
Item No. 50-1019

- **Test:** Put the engine in neutral and leave the track voltage at 10-12 volts (high enough for the lights to shine brightly) for 15 minutes.
- **Recharge:** If the sounds are improved at the end of the 15-minute test charge, the battery charge has run down and can be recharged. There are a number of ways you can do this:
  - Leave the engine in neutral with track voltage at 10-12 volts for 6-7 hours so the battery can fully recharge (if your engine has a smoke unit, be sure it is turned off).
  - Use M.T.H.'s battery recharger (Item No. 50-1019) (sold separately) that plugs into a wall outlet and a special port under the engine to recharge the battery overnight without leaving it on the track.
- **Replace:** If the sounds are not improved at the end of the 15-minute test charge, it is time to replace the battery, available through M.T.H. Parts. Remove the two phillips screws on the ends of the body shell and remove shell to gain access to the battery.



DO NOT substitute alkaline batteries for these NiCad batteries. Using alkaline batteries in this system can result in damage to the PS 2.0 circuit board and/or the batteries.

**\*\*Do not use alkaline batteries for testing or checking purposes for the 3-Volt PS2 boards. Using alkaline batteries will damage the 3-Volt battery charging circuit.\*\***



## Quick-Start DVD

The included Quick-Start DVD demonstrates the start-up and basic operation of this set as well as other information about model railroading. You may find it helpful to view the DVD before operating this set.

## RailWare Interactive DVD

M.T.H. provides a free RailWare DVD in each Ready-To-Run set. It is full of helpful information on M.T.H. product history, track planning software, a dealer finder, and information and video clips on Loco-Sound and Proto-Sound 2.0. Follow the directions below to use the DVD .

Minimum System Requirements: Pentium 100, 16MB RAM, Windows 95 or later, DVD drive, Sound Card, display properties set to greater than 256 colors. The DVD will not work on a Mac OS unless you run VirtualPC®.

## Running RR-Track Software

You may run the RR-Track software directly off of the DVD or you may install the software to your hard drive.

1. On the Desktop, click on the icon that says My Computer.
2. Find your DVD drive.
3. With the M.T.H. DVD in the drive, double click on the icon for the DVD drive.
4. Find the folder on the DVD entitled INSTALLATION.
5. Choose the folder inside entitled RRTRAXSETUP.
6. Run the file in that folder called SETUP.EXE and follow the directions it provides.

The program may ask you for a registration code. If it does type in "M.T.H." and it will run.

Additional track libraries can be obtained directly from RR-Track. See their website for more information [www.rrtrack.com](http://www.rrtrack.com).

## Installing Adobe Acrobat Software

To read some of the electronic documents included on the DVD , you will need to install the Adobe Acrobat Reader® if it is not already on your computer. To install the software:

1. On the Desktop, click on the icon that says My Computer.
2. Find your DVD drive.
3. With the MTH DVD in the drive, double click on the icon for the DVD drive.
4. Find the folder on the DVD entitled INSTALLATION.
5. Choose the folder inside entitled ACROBAT READER.

\*If you are running Windows 95, 98 or NT choose the folder 32 BIT. Run the file AR32E301.EXE and follow the directions it provides.

If you have problems you cannot resolve by using these directions, contact [custserv@mth-railking.com](mailto:custserv@mth-railking.com) or call 410-381-2580 for further help.

# 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 the initial operation. The following table should answer most questions. If your problem cannot be resolved with this table, contact M.T.H. for assistance (Order online: [www.mthtrains.com](http://www.mthtrains.com), e-mail: [parts@mth-railking.com](mailto:parts@mth-railking.com), Fax: 410-423-0009, Phone: 410-381-2580, 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>Horn</b>	<b>Remedy</b>
When I press the whistle button, the bell comes on instead.	Reverse the transformer leads.
I can't get the horn 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 bell 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/PSA starts.	You are waiting too long between whistle button presses.

<b>Cab Chatter</b>	<b>Remedy</b>
Sometimes the Cab Chatter sounds don't play.	Cab Chatter plays only in neutral.
<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/PSA</b>	<b>Remedy</b>
The FYS/PSA 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/ PSA sequence, it is probable that some of these sound clips will be repeated from time to time.

FYS/PSA	Remedy
Once in FYS/PSA, the engine doesn't go into reverse.	So that FYS/ PSA effects can be as realistic as possible, Proto-Sound® 2.0 disables the reversing unit whenever FYS/PSA is enabled. This way the engine remains still at its stop as the operator cycles through the FYS/PSA sequences.
When the FYS/PSA enters its last sequence the bell automatically comes on.	FYS/PSA is programmed to start ringing the bell at that point. After approximately 12 rings of the bell, it will automatically turn off.
When FYS/PSA is enabled, pressing the whistle and bell buttons has no effect.	Because FYS/PSA must control various effects in each sequence, Proto-Sound® 2.0 takes control of these sound effects until you exit FYS/PSA.
I push the direction button but the next sound clip in the sequence does not play or the engine does not come out of FYS/PSA after fourth press of the direction button.	Each FYS/PSA clip must play for approx. 30 seconds before FYS/PSA will advance to the next step in the FYS/PSA cycle. Wait at least 30 seconds in each FYS/PSA sound clip before pressing the direction button.

# Compatibility

While this Ready-To-Run set is equipped with everything you need to operate it, the design allows flexibility. The train will operate on any traditional Std. Gauge 42 or larger track system. It is also compatible with most standard AC transformers, in addition to the hobby transformer packaged with your set.

## Transformer Compatibility and Wiring Chart

Note that many of the operational commands described in these instructions require a bell button, so if you are using a transformer other than the one included in this set and your transformer does not have its own bell button, you should consider adding one to get the full benefit of the system.

Transformer Model	Center Rail	Outside Rail	Min/Max. Voltage	Power Rating	Transformer Type
MTH Z-500	Red Terminal	Black Terminal	0-18v	50-Watt	Electronic
MTH Z-750	Red Terminal	Black Terminal	0-21v	75-Watt	Electronic
MTH Z-1000	Red Terminal	Black Terminal	0-14v 0-18v	80-Watt 100-Watt	Electronic
MTH Z-4000	Red Terminal	Black Terminal	0-22v	390-Watt	Electronic
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
Dallee Hostler	Left Terminal	Right Terminal			Electronic
Lionel LW	A	U	8-18v	75-Watt	Standard
Lionel KW	A or B	U	6-20v	190-Watt	Standard
Lionel MW	Outside Track Terminal	Inside Track Terminal	5-16v	50V.A.	Electronic
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,B,C or D	U	8-20v	275-Watt	Standard
Lionel Post-War Celebration Series ZW	A,B,C or D	Common	0-20v	135/190 Watt	Electronic

# Additional Features Accessible with the DCS Remote Control System: (additional equipment required)

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, Horn & 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-User 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

Operating instructions for all DCS Command features will accompany the DCS remote control equipment.

# Service & Warranty Information

## How to Get Service Under the Terms of the Limited One-Year Warranty

When you suspect an item is defective, please check the operator's manual for standard operation and trouble-shooting techniques that may correct the problem. Additional information may be found on the M.T.H. Website. Should you still require service, follow the instructions below to obtain warranty service.

First, e-mail, write, call or fax a M.T.H. Authorized Service Center (ASC) in your area to obtain Repair Authorization. You can find the list of ASCs on the M.T.H. Website, [www.mth-railking.com](http://www.mth-railking.com). Authorized Service Centers are required to make warranty repairs on items sold *only* from that store; all other repairs may-- or may not be done at the store's own discretion. If you did not purchase the item directly from the ASC, you will need to select a National Authorized Service Center (NASC). These centers are compensated by M.T.H. to perform warranty service for any customer whose repair qualifies for warranty service. A list of NASC retailers can be located on the M.T.H. Website or by calling 410-381-2580. Should the warranty no longer apply, you may choose either an ASC or NASC retailer to service your M.T.H. Product. A reasonable service fee will be charged.

**CAUTION:** Make sure the product is packed in its original factory packaging including its foam and plastic wrapping material to prevent damage to the merchandise. There is no need to return the entire set if only one of the components is in need of repair *unless otherwise instructed by the Service Center*. **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 (if required by the service center), a copy of your sales receipt 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 a service technician when contacting the Service Center for your Return Authorization.**

Please make sure you have followed the instructions carefully before returning any merchandise for service. Authorized M.T.H. Service Centers are independently owned and operated and are not agents or representatives of M.T.H. Electric Trains. M.T.H. assumes no responsibility, financial or otherwise, for material left in their possession, or work done, by privately owned M.T.H. Authorized Service Centers. If you need assistance at any time email MTH Service at [service@mth-railking.com](mailto:service@mth-railking.com), or call 410 381-2580.

## Limited One-Year Warranty

All M.T.H. products purchased from an Authorized M.T.H. Retailer are covered by this warranty. See our Website [www.mthtrains.com](http://www.mthtrains.com) to identify an M.T.H. Retailer near you.

M.T.H. products are warrantied for one year from the date of purchase against defects in material or workmanship, excluding wear items such as light bulbs, pick-up rollers, batteries, smoke unit wicks, and traction tires. We will repair, replace, or credit (at our option) the defective part without charge for the parts or labor, if the item is returned to an M.T.H. Authorized Service Center (ASC) or M.T.H. National Authorized Service Center (NASC) within one year of the original date of purchase. This warranty does not cover damages caused by improper care, handling, or use. 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 a **copy of the original sales receipt from an Authorized M.T.H. Train Merchant**, which gives the date of purchase. If you are sending this product to an Authorized Service Center, contact that Center for their return authorization.

This warranty gives you specific legal rights, and you may have other rights that vary from state to state. Specific questions regarding the warranty may be forwarded to M.T.H. Directly.

Service Department:  
M.T.H. Electric Trains  
7020 Columbia Gateway Drive  
Columbia MD 21046-1532