RAILKING®
By M.T.H. Electric Trains

MILLENNIUM SERIES

RAILKING GG1 ELECTRIC ENGINE OPERATING INSTRUCTIONS

Congratulations on your purchase of the RailKing® GG1 Electric Locomotive. The engine's die cast body and chassis are traditionally sized for operation on most O-31 Gauge track.

Operating and maintenance instructions are included on the following pages. Should the engine need additional service, it should be sent back to the factory located at the address on the back page.

OPERATING INSTRUCTIONS

The GG1 has been tested and greased before leaving the factory and is ready-to-run on your layout. The outside idler gears and pickup roller rivets should be lubricated with household oil to prevent squeaks and enhance performance. The open chassis area under the leading trucks should be greased to improve the swivel of the trucks (See Fig. 1)

Each locomotive is powered by two DC can motors with their voltage regulated by a QSI® DCRU® electronic reverse unit/

The reverse unit operates on a three sequence loop: Forward, Neutral, Reverse. The next phase in the loop is entered each time the transformer throttle is turned off as the unit enter the next phase in the sequence. A "clicking" sound from inside the cab will be heard each time this is done. Because the engines always start in neutral, the transformer throttle or directional button must be activated in order to get the engine to enter the forward phase. The reverse unit will reset to neutral after power has been shut down for three or more seconds allowing multiple GG1 engines to be operated together. If the engines should become unsynchronized during operation, simply turn the power off for three seconds to allow both reverse units to recycle.

Th reverse units can be locked into any of the three phases by entering the desired phase using the transformer throttle or directional button and then switching the ON/OFF switch located at the end of the locomotive (See Fig. 1) to the OFF position. To enter the normal phase again, simply turn the switch to the ON position. After an hour or more of nonuse, the reverse unit will cycle into any of the three positions and the ON/OFF switch must be set to operate correctly.

The locomotive comes equipped with an electronic horn inside the chassis. The horn is activated by operating the whistle controller on your transformer whenever power to the track is on. If the horn fails to operate, it may be necessary to reverse the leads from your transformer to the track.

MAINTENANCE INSTRUCTIONS

The locomotive is designed so that very little maintenance is required from the owner. It is recommended that all moving parts (idler, gears, pickup rollers and axles) be oiled ever 25 hours of operation. Bearing grease or a similar lubricant should be applied to the motor worm gear and the bronze drive gear inside the truck block after 50 hours of operation.

To add grease, remove the cab from the chassis by unscrewing its eight mounting screws (See Fig. 1). After removing the shell from the chassis, remove the pickup roller from each truck block. Then unscrew the large phillips screw located on the bottom of the truck block underneath where the pickup roller sits. Pull the motor away from the truck and lightly coat each gear with grease and reassemble.

If it becomes necessary to replace the rubber traction tires on the drive wheels, the following steps should be followed. First, remove the body and trucks from the chassis as indicated in the paragraph. Next, unscrew the truck sides from the truck. Cut or pry off the old traction tire (if it hasn't already broken) from the grooved channel in the drive wheels and stretch the replacement tire over the wheel and into the groove. Make sure the tire is not twisted and that there are no edges sticking outside of the groove as these will cause the engine to wobble during operation. It may be necessary to trim the edges of the tire with a razor so that it fits properly. Once the new tires are in place, reassemble the unit.

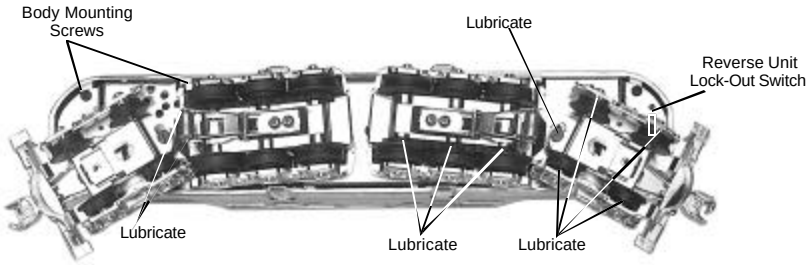

Fig. 1 Lubrication, Body Mount Screws, and Lock-Out Switch Locations

CARE AND MAINTENANCE OF THE GG1's GOLD PLATED FINISH

Routine maintenance of the gold plated finish requires only that the surfaces be wiped from time to time with a water-dampened, lint free cloth. This will keep this superb model of the GG1 in top show room condition.

TRANSFORMER WIRING CHART

The chart below lists many of the compatible transformers and how the terminals on these compatible transformers should be attached to your layout.

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
Cab-1/Powerma ster	A	U	0-18v	135V.A.	Electronic
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 (not recommended)	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
MTH Z4000	Red	Black	5-22v	390-Watt	Electronic

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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 unless it was purchased from Mike's Train House in Columbia, MD. Instead, follow the instructions below to obtain warranty service as our dealer network is not prepared to service the product under the terms of this warranty.

1. First, write, call, email or FAX MTH Electric Trains, 7020 Columbia Gateway Drive, Columbia, MD 21046, 410-381-2580 (FAX No. 410-423-0009), or on the internet at service@mth-railking.com or our web site, www.mthtrains.com, stating which product you have, when it was purchased and what seems to be the problem. You will be given a return authorization number to assure that your merchandise will be properly handled upon its receipt at MTH.

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, a copy of your sales receipt, the Return Authorization number and a full description of the problem, must be included to facilitate the repairs. Please include the description regardless of whether or not you discussed the problem with one of our service technicians when contacting MTH for your Return Authorization number.*

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

LIMITED ONE YEAR WARRANTY

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

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