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4-8-4 NORTHERN Locomotive and Tender

With "MAGNE-TRACTION"®, Tender with whistle and
Sound of steam.

MAGNE-TRACTION®

This powerful locomotive is equipped with Magne-Traction®. The drive wheels are magnetically attracted to the track rails, gripping them securely. This enables the locomotive to pull heavier loads and climb steeper grades without slippage.

Care must be taken to prevent pins, paper clips, carpet tacks and other small iron objects from coming in contact with the underside of the locomotive because they will be picked up by the magnetized wheels, gears or axles. NOTE: Magne-Traction® is not effective on aluminum, brass or other non-ferrous track rails.

REVERSING THE LOCOMOTIVE

The locomotive is stopped, started and reversed by means of the reversing unit located inside the locomotive. The reversing unit is a three-position sequence relay which trips whenever current to the locomotive is interrupted. This can be done by operating the "direction" control on the transformer or by moving the transformer voltage control to the OFF position (and back on again etc.). The sequence of its operation is Forward, Neutral, Reverse, Neutral, etc.

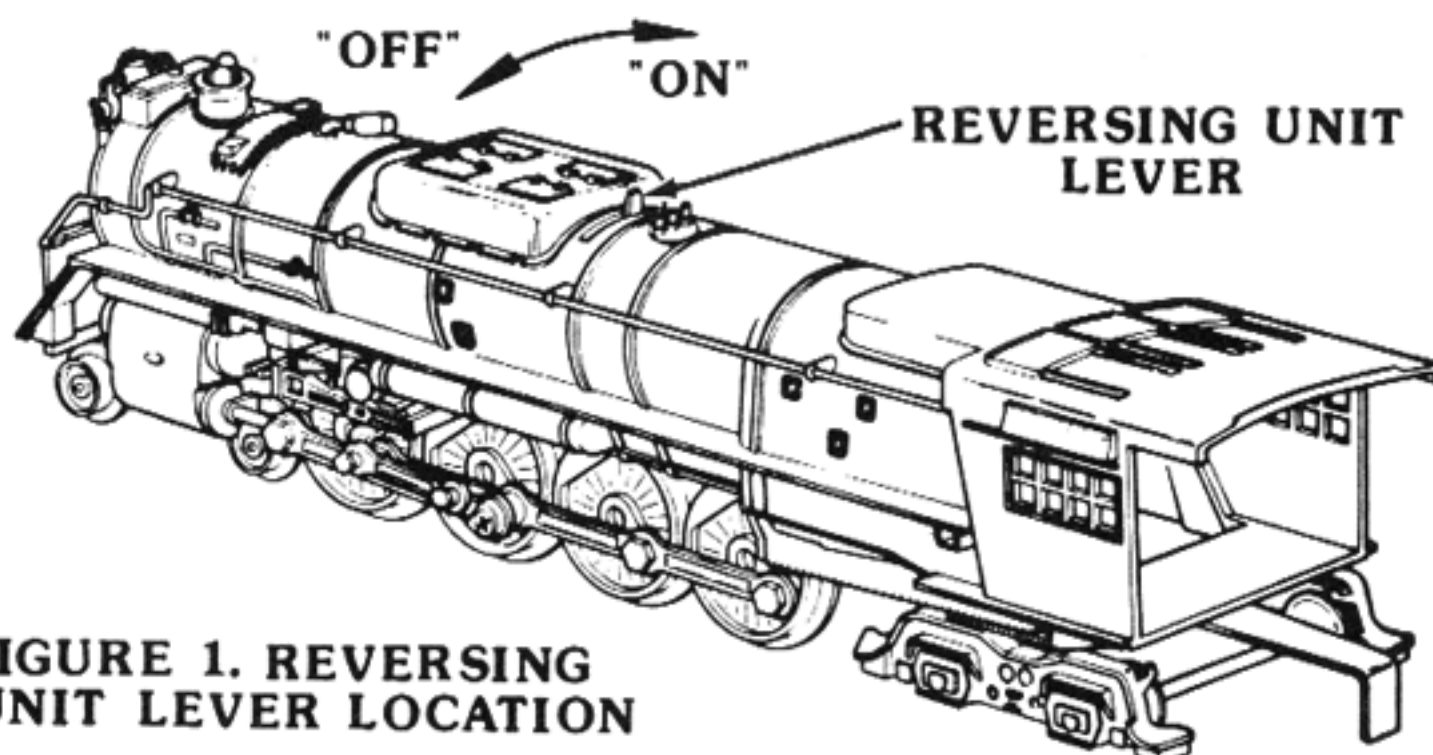


FIGURE 1. REVERSING
UNIT LEVER LOCATION

If you operate the train in one direction only, which is necessary if you have automatic stations or insulated blocks in your layout, you must disengage the reversing unit. This is done by moving the reversing unit lever to its OFF position. The reversing unit lever is located on the top of the locomotive boiler.

Make sure the locomotive is moving in the desired direction, stop it without operating the "direction" control (either turn down the power or hold the locomotive with hand) then move the reversing lever to OFF. If the reversing unit is disengaged while it is in the neutral position the locomotive will not run at all. Also because the reversing unit works partly by gravity it will not operate properly if the locomotive is held on its side or upside down.

SMOKE GENERATOR

The locomotive is equipped with the latest type smoke generator and is designed for use with Lionel No. 2909 smoke-producing fluid furnished in squeeze bottles. Place four to eight drops of smoke fluid in the smoke generator through the smokestack. Smoke will be emitted from the smokestack and from both steam exhaust ports after track power has been applied for a short time. More than eight drops of fluid may cause the generator to overflow and the fluid to spill from the locomotive. If the smoke generator should become flooded, invert the locomotive and drain the excess fluid through the smokestack.

Due to high smoke output, additional fluid must be added after extended high speed or high load runs. As smoke output decreases, add four drops of fluid at a time as required.

The high output smoke generator in your locomotive is protected from overheating by a fuse. To prevent the fuse from blowing, do not operate the locomotive in the "Neutral" reversing unit position for more than five minutes with the transformer handle set above half throttle. Replacement fuses can be installed by your local Authorized Lionel Approved Service Station.

The No. 2909 "Smoke Fluid" contains a light liquid petrolatum. Any stains can be removed with standard cleaning fluids.

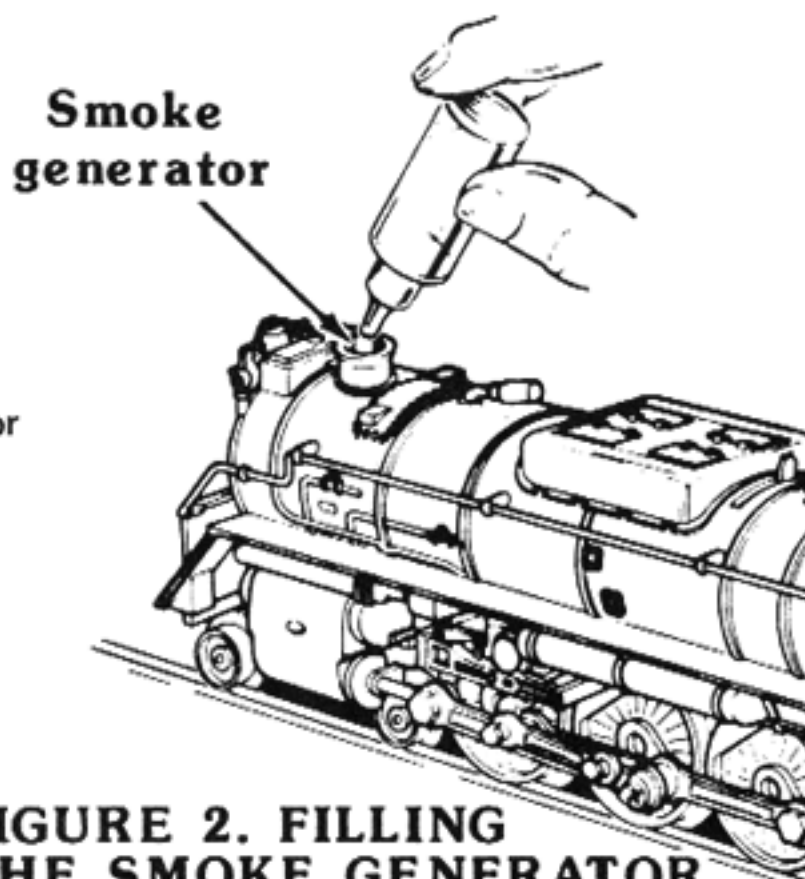


FIGURE 2. FILLING THE SMOKE GENERATOR

LUBRICATION, MAINTENANCE AND HEADLAMP REPLACEMENT

The moving parts of your locomotive such as gears, axles, side rods, and the motor armature shaft require periodic lubrication.

When operating the train regularly, inspect these parts frequently to make sure they are not dry. Remove accumulations of dust and dirt. Also, clean and lubricate the locomotive after storage. Use only small quantities of lubricant with each application. DO NOT OVER LUBRICATE. Keep lubricant off motor brushes, wheel rims, track rails, and contact points.

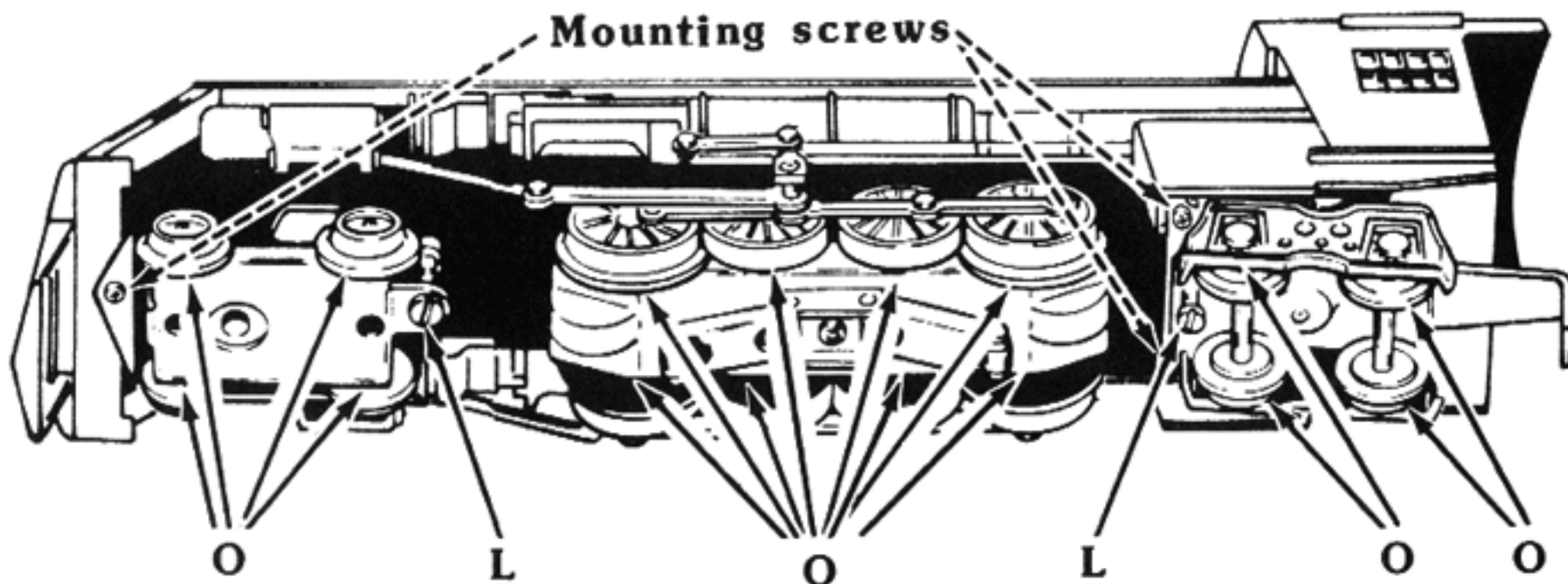
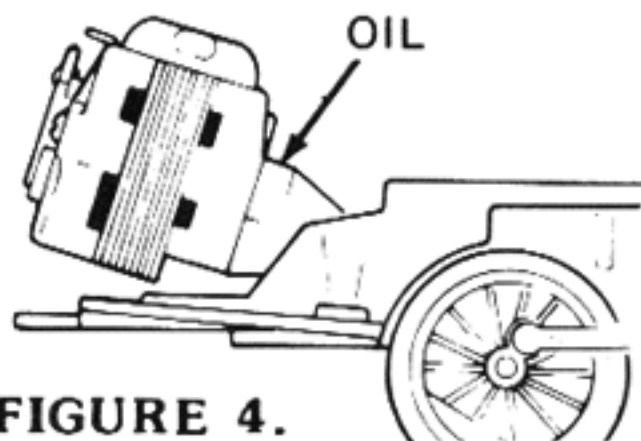


FIGURE 3. LOCOMOTIVE LUBRICATION POINTS. Use oil at points marked "O". Use lubricant at points marked "L".

Oil the linkage at every pivot point. To oil the motor, first remove the cab by unscrewing the three mounting screws as shown in figure 3. Locate the small hole in the die cast motor casting just below the field winding, as shown in figure 4. Place a drop or two of light machine oil every 4 to 6 hours of operation to avoid premature failure.



**FIGURE 4.
MOTOR LUBRICATION**

To replace the headlamp, first remove the screw, then pull off the boiler front (figure 5). Locate the defective lamp and remove by pulling the bulb straight up. Replace with lamp No. 19-300, available at your Authorized Lionel Service Station or direct from the factory. To order direct, write to Lionel Service, 26750 23 Mile Road, Mt. Clemens, Michigan, 48045.

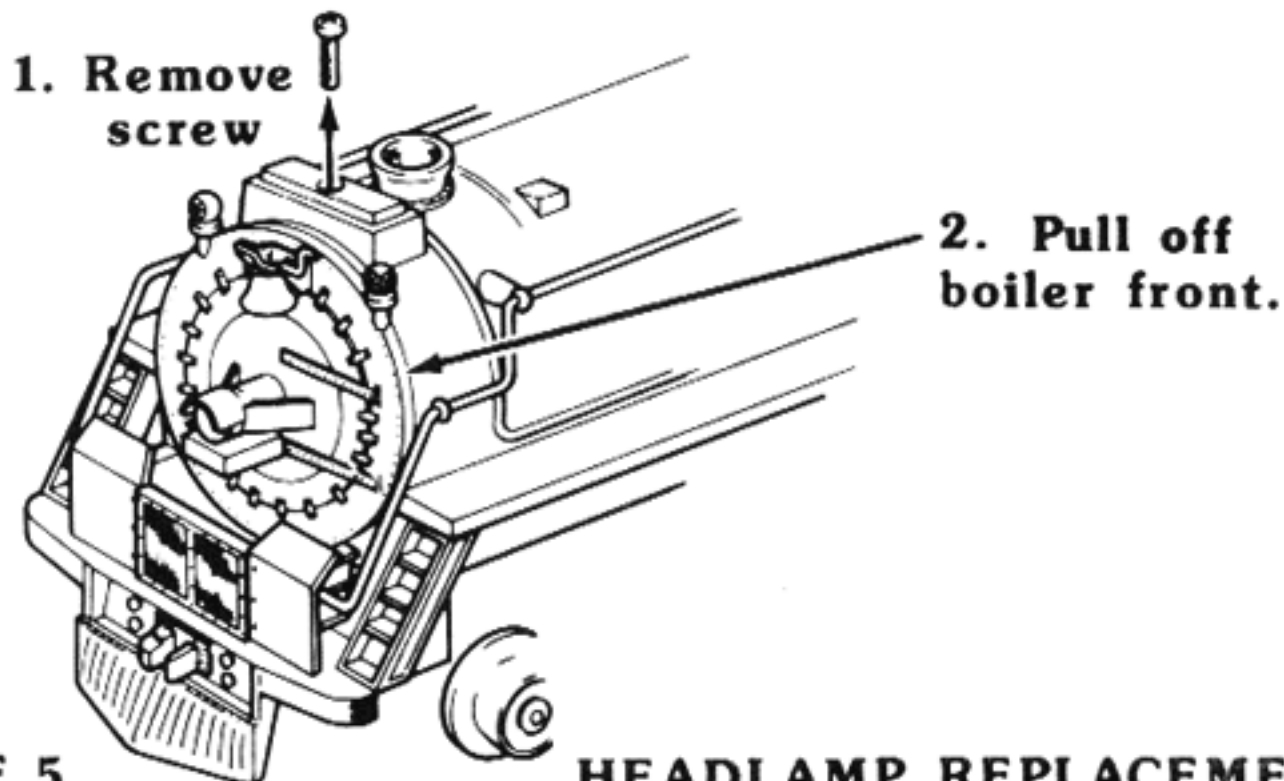
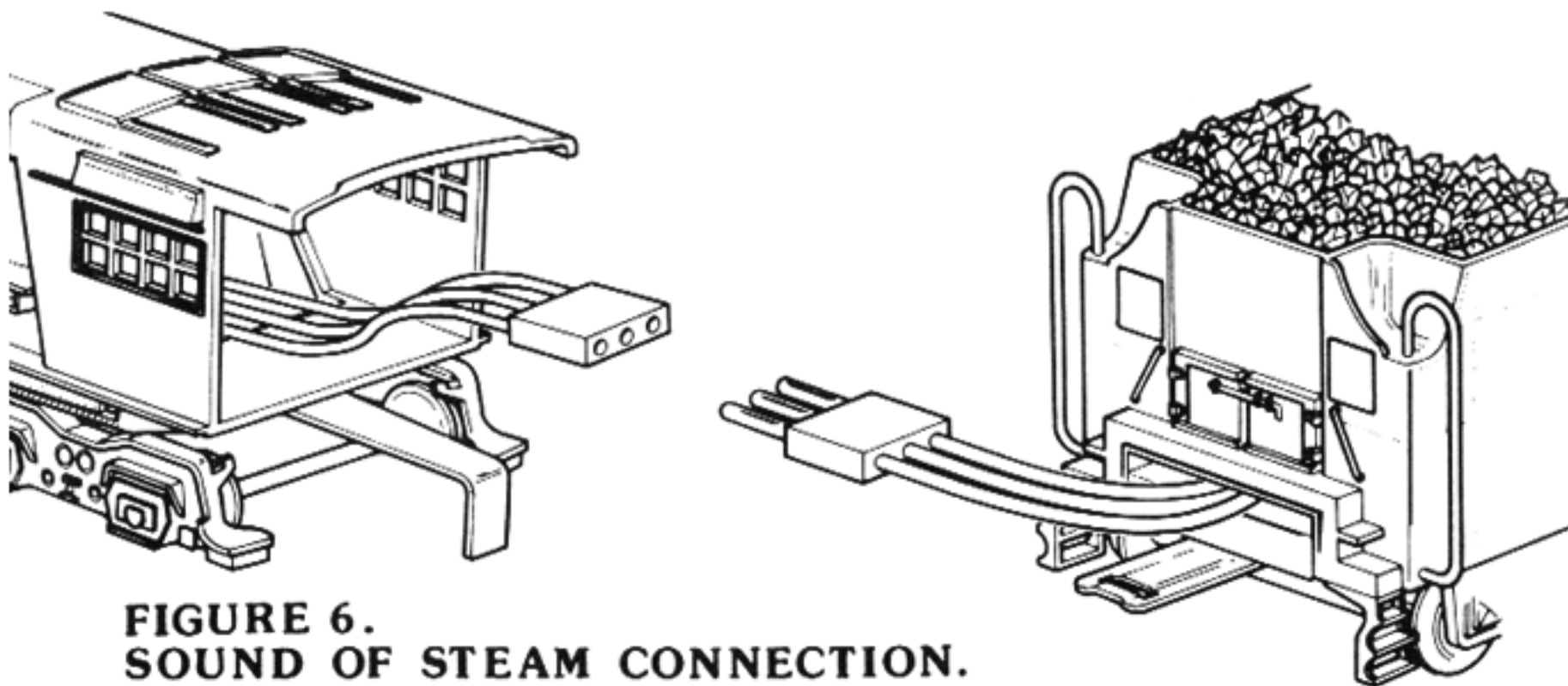


FIGURE 5.

HEADLAMP REPLACEMENT

SOUND OF STEAM



**FIGURE 6.
SOUND OF STEAM CONNECTION.**

The tender houses an electronic circuit and speaker which produce a realistic steam sound when the engine is running. The circuit receives power directly from the rails.

In order for the Sound of Steam (SOS) to operate, the wires coming from the cab of the locomotive must be connected to the wires coming from the tender. The connection is made by a three pin connector at the ends of each group of wires. The SOS should now operate whenever the engine is moving. If not, move the slide switch located on the underside of the tender. This switch is used to shut off the SOS unit, if so desired.

The steam sound is synchronized to the speed of the train. Starting the locomotive slowly will cause a low-volume hissing to be produced, which is rhythmically changed to a louder chugging sound as the speed is increased.

WHISTLE

The whistle sound is produced by an electronic circuit contained in the tender and is activated by a Transformer control.

FIGURE 7.

The whistle is actuated by the left hand lever on the 4090 type transformer. Connect your track to terminals U and A. If the whistle doesn't blow when you push the whistle lever, reverse the leads to the track.

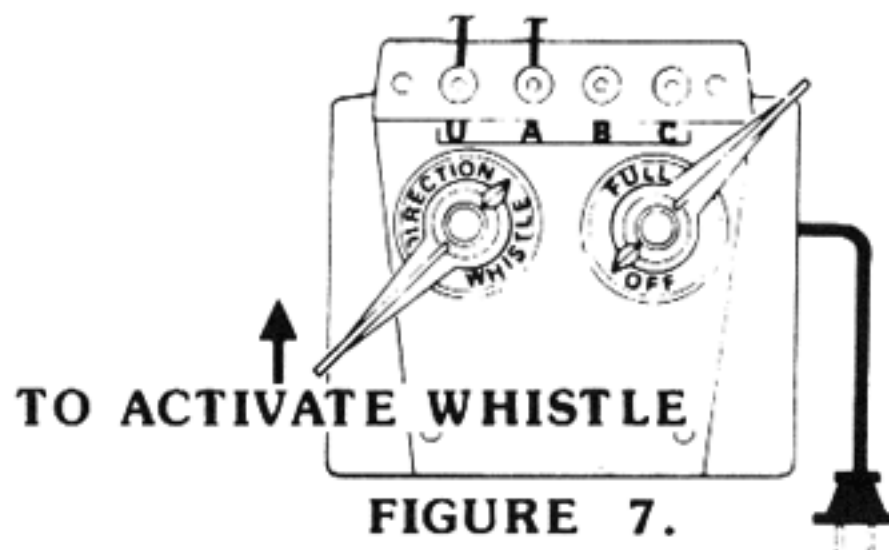


FIGURE 7.

TO ACTIVATE WHISTLE

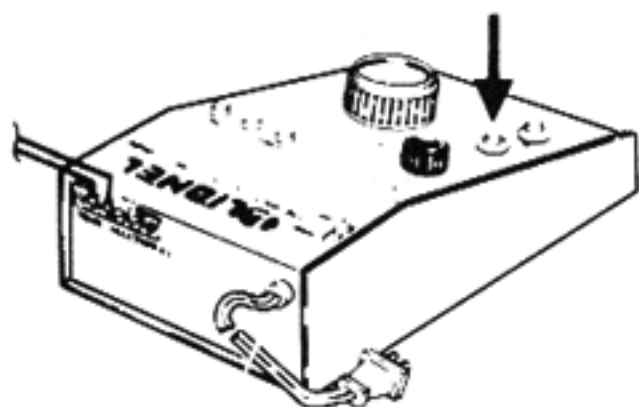


FIGURE 8.

FIGURE 8.

The whistle is actuated by pressing the "Whistle/Horn" button on the MW solid state transformer. Connect your track to the terminals marked "Track". If the whistle doesn't blow when you press the "Whistle/Horn" button, reverse the leads to the track.

Sometimes dirt or grease on the track, wheels, rollers, etc., may cause the whistle to blow intermittently. Cleaning the locomotive and layout should eliminate this problem.

IMPORTANT OPERATING TIPS

- A. **CAUTION:** You will note an adjustment screw under the rear truck assembly. This is a Factory adjustment. DO NOT READJUST or damage to the engine will occur.
- B. **TRACK MAINTENANCE:** For maximum operating efficiency, the track should be cleaned after every 8 hours of use or when pulling power diminishes. Use Lionel No. 6-2927 Lubrication and Maintenance kit available from your local Lionel dealer. Clean the track by applying a significant amount of track cleaning fluid with a soft cloth. Then, using the track eraser, take short strokes across the width of the track. Refer to the Maintenance kit for additional instructions.

SERVICE

If service is required within the warranty period, bring the item to the nearest authorized Lionel Trains - Service Center along with the warranty card.

If you prefer to send it back to the factory, you must first write to Lionel Trains Inc., Consumer Service Department, P.O. Box 748, Mt. Clemens, Michigan 48043, stating what the item is, when it was purchased and what seems to be the problem. You will be sent a return authorization and a label to assure your merchandise will be properly handled upon receipt.

CAUTION: Make sure the item is packed so as to prevent damage to the merchandise. The shipment must be prepaid and we recommend that it be insured.

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

This warranty gives you special legal rights and you may have others that vary from State to State.