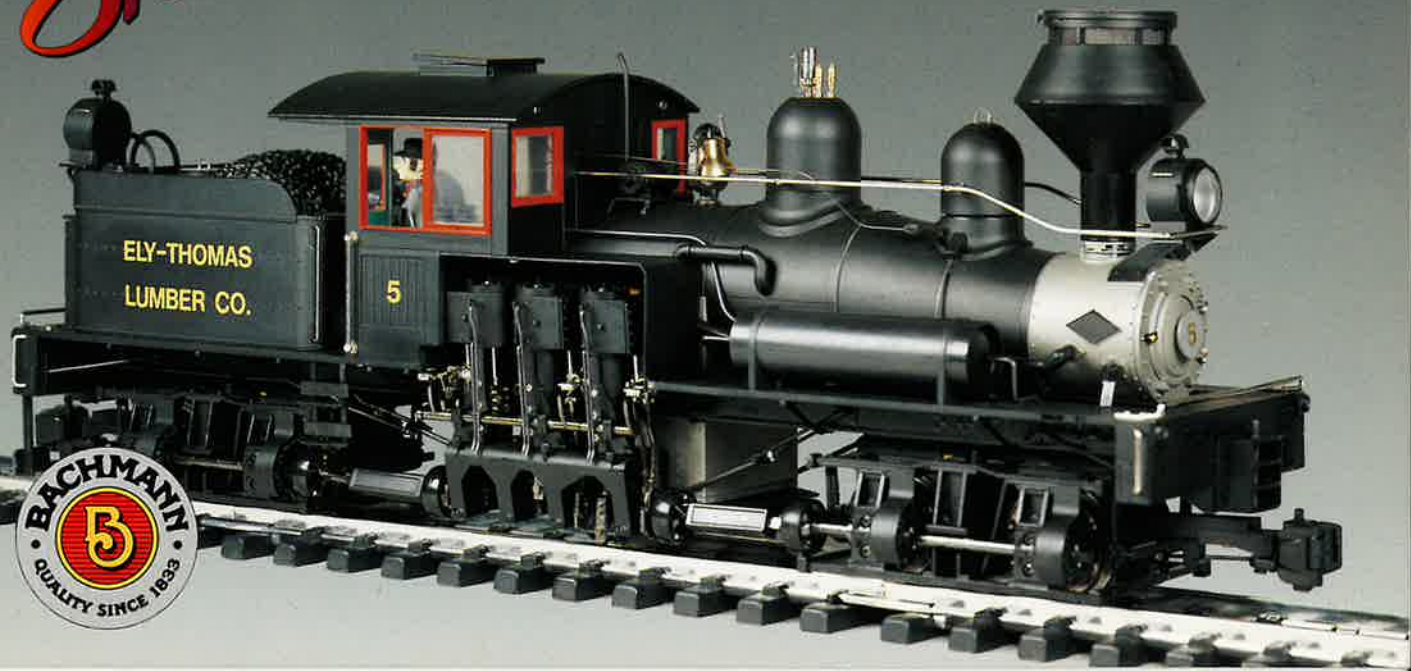


SpectrumTM

G Scale Two-Truck SHAY Operator's Manual



THANK YOU FOR PURCHASING THE BACHMANN SPECTRUM™ SHAY LOCOMOTIVE

This engine is one of the finest large scale model locomotives ever produced.
It's been built by railroaders for railroaders.

Your Bachmann Spectrum Shay has been designed to provide a lifetime of model railroading pleasure. However, like all precision instruments it must be properly maintained. PLEASE READ THIS MANUAL AND WATCH THE ENCLOSED VIDEO BEFORE OPERATING YOUR SHAY!

IMPORTANT!

YOUR SPECTRUM SHAY IS A PRECISION INSTRUMENT. IT IS IMPORTANT THAT YOU FOLLOW THE RECOMMENDED PROCEDURES FOR LUBRICATING THE MODEL SHAY BEFORE RUNNING IT FOR THE FIRST TIME.

FAILURE TO DO SO COULD CAUSE SERIOUS MECHANICAL PROBLEMS!

NOTE: KEEP YOUR ORIGINAL PACKAGING IN CASE YOU NEED TO RETURN YOUR SHAY TO BACHMANN FOR SERVICE.

THE PROTOTYPE FOR BACHMANN'S SPECTRUM™ SHAY

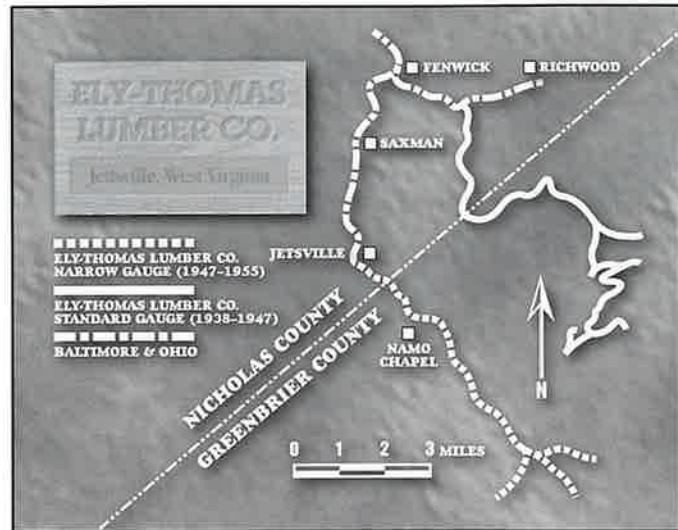
Our model is based on the Ely Thomas Lumber Company Shay locomotive number 5 as originally built by the Lima Locomotive Works. Number 5 is a 36 ton, 3 cylinder, two-truck, 3 foot gauge Shay.

She is similar to hundreds of stock model Shays that Lima sold throughout the world. Lima built number 5 in 1917 with construction number 2940.



Photograph by August A. Thieme

The Prototype

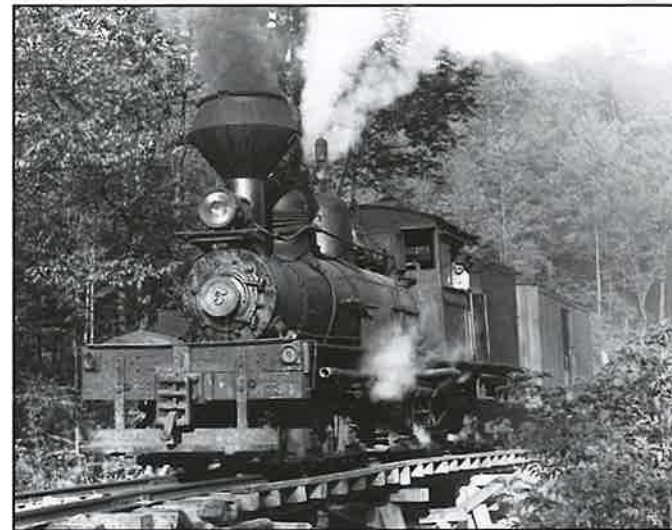


The Ely-Thomas Lumber Company was a logging outfit based in Fenwick, West Virginia. Number 5's 29 inch drivers and ten by ten cylinders made her ideally suited to the tasks she performed on the Ely-Thomas.

From 1947 to 1955 she hauled logs through the hills and hollows along Laurel Creek and Manns Run to Jetsville, West Virginia. At Jetsville the logs were transferred to a B & O standard gauge line that ran to the Ely-Thomas sawmill in Fenwick.

Ely-Thomas was number 5's third owner. Previously she had worked on the Pardee-Curtin Lumber Company and the West Virginia Midland. Like all Shay locomotives, the number 5's top speed rarely reached 15 miles per hour. But the sound she generated made her seem like she was going 80! In reality she was geared for power and traction rather than speed.

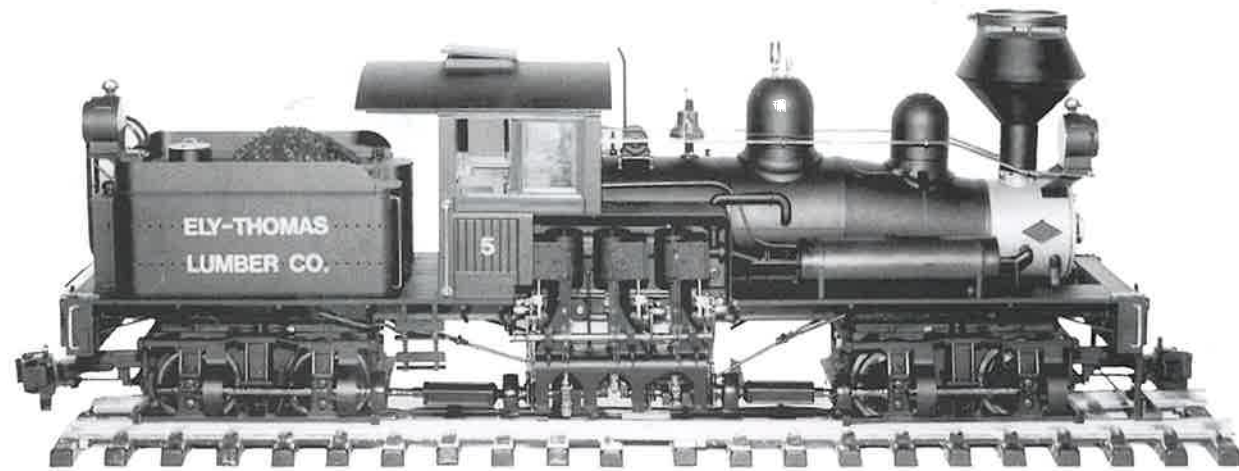
The number 5 underwent several modifications during her working life. The Bachmann Spectrum Shay is a model of number 5 as she was originally built. Her appearance changed dramatically by the time she retired in 1955.



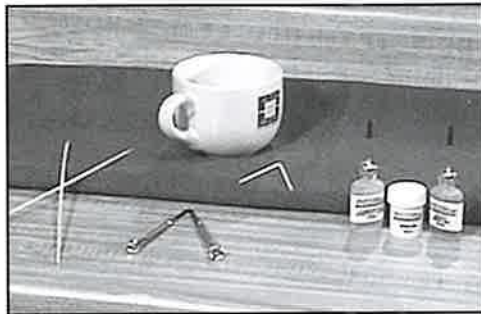
Photograph by August A. Thieme

THE BACHMANN SPECTRUM™ SHAY:

This accurate 1:20.3 model has numerous details and features found on the prototype and it performs as great as it looks...



- Accurate crown & pinion gears
- Complete power truck detail including brake shoe assemblies
- Cylinders with complete piston rod and valve gear
- Metal threaded truss rods
- Lots of boiler backhead details
- Firebox and ash pan that glow
- Cab interior light
- Operating cab hatch and windows
- Diode directional lighting for front and rear lights
- Field lubrication service plugs
- Accurately scaled rivet and bolt detail
- Chemically blackened wheels and handrails
- Machined brass pop valves and bell, brass plated whistle
- Operating smoke generator
- Diecast frame and motor mounts
- Each truck powered by a 5 pole can motor
- Two ball bearing races per axle
- Gear reduction for prototypical speeds
- All eight wheels powered
- Ready for after market sound systems



LUBRICATION

First, gather all of the items you will need to perform the lubrication procedure. You should work in a well lit area on a large sturdy work surface such as a work bench or kitchen table.

You will need...

- A cup or container to hold screws you remove
- A thick towel or piece of foam to act as a cushion for the Shay
- Tooth picks or thin wooden dowels
- The phillips head screw driver that came with your Shay

Use plastic compatible lubricants including gear oil, gear grease and conductive contact lubricant. We recommend that you use Bachmann's E-Z Lube lubricants available at your local hobby retailer.

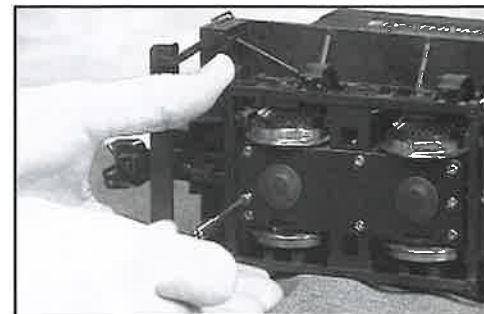


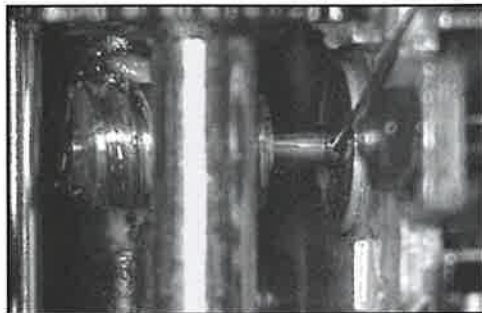
Prepare the Shay for lubrication by placing your towel or piece of foam on the work surface. Now gently lay the locomotive on its side so that the cylinders are facing upward towards the ceiling.

Disconnect the sliding universal shaft by lightly grasping the rear truck and turning it toward the ceiling. The shaft should come out of the sleeve easily. Do not force or yank these pieces.

Remove the truck cover plate screws. Grasp the truck firmly and carefully take out the screws with your screwdriver. Place the screws in your container to keep them from getting lost.

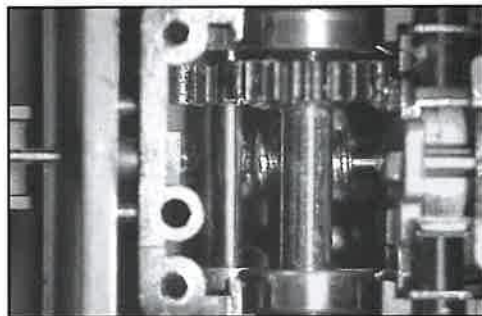
NOTE: For clarity, only one half of each power truck is shown. **Be sure to lubricate parts on both sides of each truck.**





Remove the truck cover plate. Carefully place the edge of your screwdriver behind the front brake beam and pry off the cover plate. Do not use excessive force.

WIPE OFF ANY EXCESS GREASE OR OIL FROM THE COVER PLATE. DO NOT REMOVE ANY OTHER PARTS!



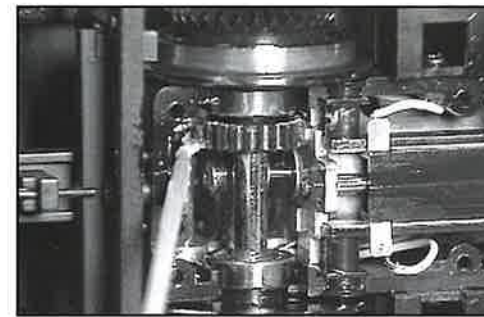
Lubricate the motor shaft bearing with one drop of heavy duty gear oil where it passes through the metal motor support housing. Place one drop of heavy duty gear oil on the worm gear also.

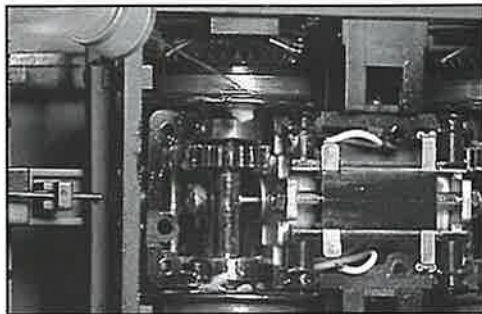
Lubricate the idler gear shafts. Put a single drop of heavy duty gear oil on all moving surfaces including the ends of each idler gear shaft and on the area where the gear sits on the shaft.

The rear idler gear shaft is located behind and below the primary gear on the rear axle. The front gear shaft is located in front of and below the primary gear on the front axle. There is an additional idler gear shaft located directly below both the front and rear axles. There are four idler gear shafts in each power truck.

Lubricate the primary gears with heavy duty gear grease. Use a thin wooden applicator or coffee stirrer to spread the grease on the front and rear primary gears working it well onto the entire part. Do not over pack. Running the Shay will spread the grease to the idler gears. **This lubrication is adequate for 10 to 20 hours of operation.**

Also put some gear grease behind each wheel to lubricate the ball bearing electrical pickups.



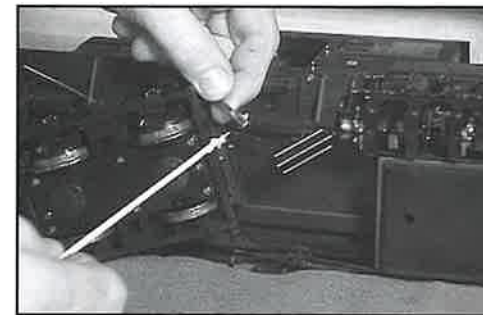


Now apply a drop of **Conductive Contact Lubricant to the back of each wheel.** This highly concentrated lubricant will enhance electrical conductivity and decrease the amp draw of your Shay. It will also increase the life of the heavy duty ball bearing electrical contacts and springs. **Important! Perform this electrical conduct maintenance every 5 to 6 hours of operation!**

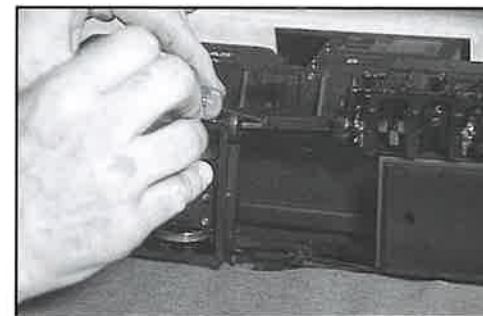


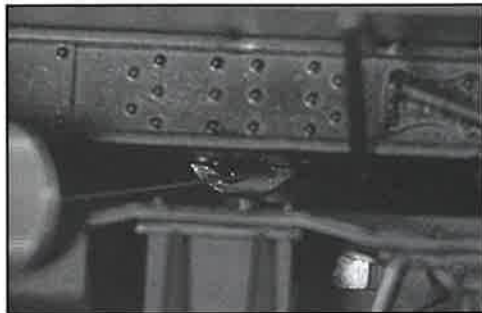
Replace the truck cover plate. Line up the middle holes on each end and tap gently on the plate to seat it properly. Replace the screws going evenly around the plate. Do not overtighten the screws, just snug them down so they can be easily removed.

Lubricate the universal driveshaft with gear grease. Then insert it into the sleeve by rotating the power truck gently. Work the shaft in and out. Remove any excess grease.

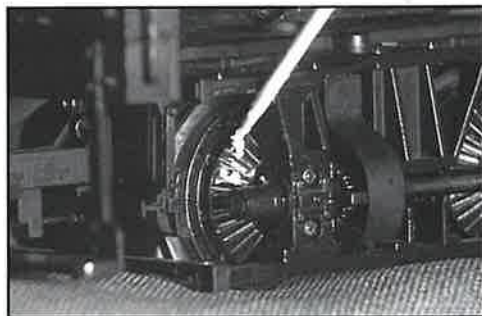


Add a small drop of heavy duty gear oil to the universal drive shaft. Then work the drive shaft in and out of the sleeve again.





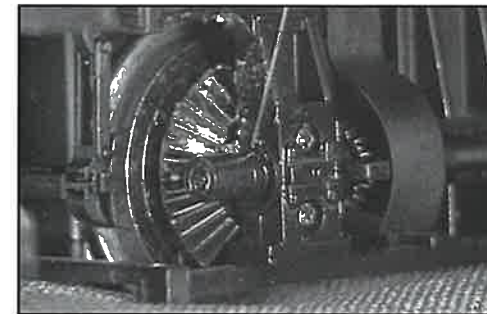
Apply heavy duty gear oil to the power truck bearing surface. This is the moon shaped part on the bolster located between the frame and the top of the power truck. Now return the Shay to an upright position.

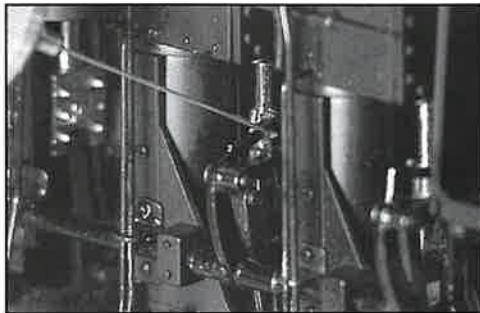


Lubricate the exposed crown gear using a moderate amount of gear grease. After running for a few minutes the grease will be distributed throughout the crown and pinion gears.

Put gear oil on the line shaft where it enters the journal boxes. Be sure to oil the front and rear journals both inside the gear cover and outside the gear cover.

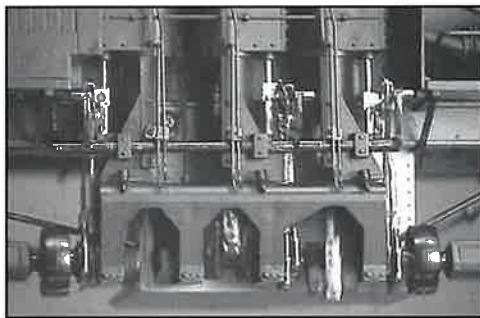
NOTE: REPEAT ALL OF THE PROCEDURES LISTED ABOVE ON THE OTHER POWER TRUCK





Lubricate the cylinders. Apply a small drop of heavy duty gear oil to all of the moving metal parts on the cylinder assembly. This includes all rivets, piston rods, valve gear and valve guides. **DO NOT OVER LUBRICATE.**

Oil the crank shaft. Using heavy duty gear oil apply a small drop to all areas of the exposed crank shaft. Be sure to include the connection between the universal shaft and the power truck drive line. Keep the crank shaft well lubricated.



YOUR SHAY IS NOW READY FOR TRACK TESTING. BACHMANN RECOMMENDS THAT YOU BREAK IT IN BY RUNNING AT MEDIUM SPEEDS WITH LITTLE OR NO LOAD FOR ITS INITIAL TEST RUN.

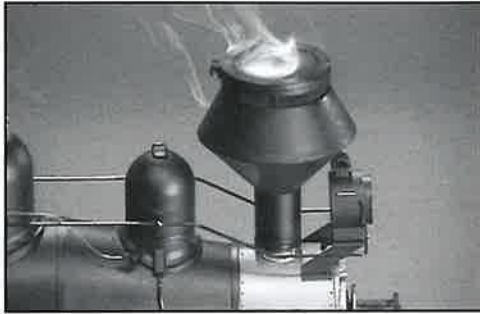
OPERATION

After following the recommended lubrication procedures your Shay is ready to provide you with years of pleasant operation. To maximize your operating enjoyment we suggest that you use a power supply with capacity of 2.5 amps or larger.

Enclosed with your Shay is a bag of scale logging and maintenance tools and detail parts. To place these items on your engine you must cut off the cast on pins. The engineer and fireman figures and siphon hose are packed separately. To remove the cab roof see the superstructure diagram for screw locations.

The Spectrum Shay is a precision model with hundreds of moving parts. Please handle it carefully. Always pick it up by grasping it under the frame on both ends. It is a heavy model so handle it accordingly.





SMOKE GENERATOR

To operate the smoke generator put 3 or 4 drops of smoke fluid down the smoke stack. The cinder screen is hinged to open easily. The on-off switch for the smoke generator is behind the smokebox door. If you operate the Shay without smoke fluid be sure to turn off the smoke generator. Failure to do so will burn out the unit.

It is not recommended to run your Shay with the smoke unit turned on above 16 volts. This may cause the smoke unit to burn out.

SOUND INSTALLATION

The Spectrum Shay is prewired to make the installation of after market sound systems easier. See the wiring and superstructure diagrams. To access the sound PC Board under the tender you need to...

- Remove the ladder from the tender by pulling out the bottom first, then the top.
- Remove the tender water hatch.
- Loosen the recessed phillips head screw inside the water hatch opening.
- Pull the rear of the tender up slightly and tilt the tender shell forward. Now carefully lift it straight up. For additional information, consult the manufacturer of your after market sound system.

CAUTION! THERE IS A LARGE LEAD WEIGHT INSIDE THE TENDER SHELL WHICH MAY FALL OUT WHEN THE SHELL IS LIFTED UP.



GENERAL MAINTENANCE INFORMATION

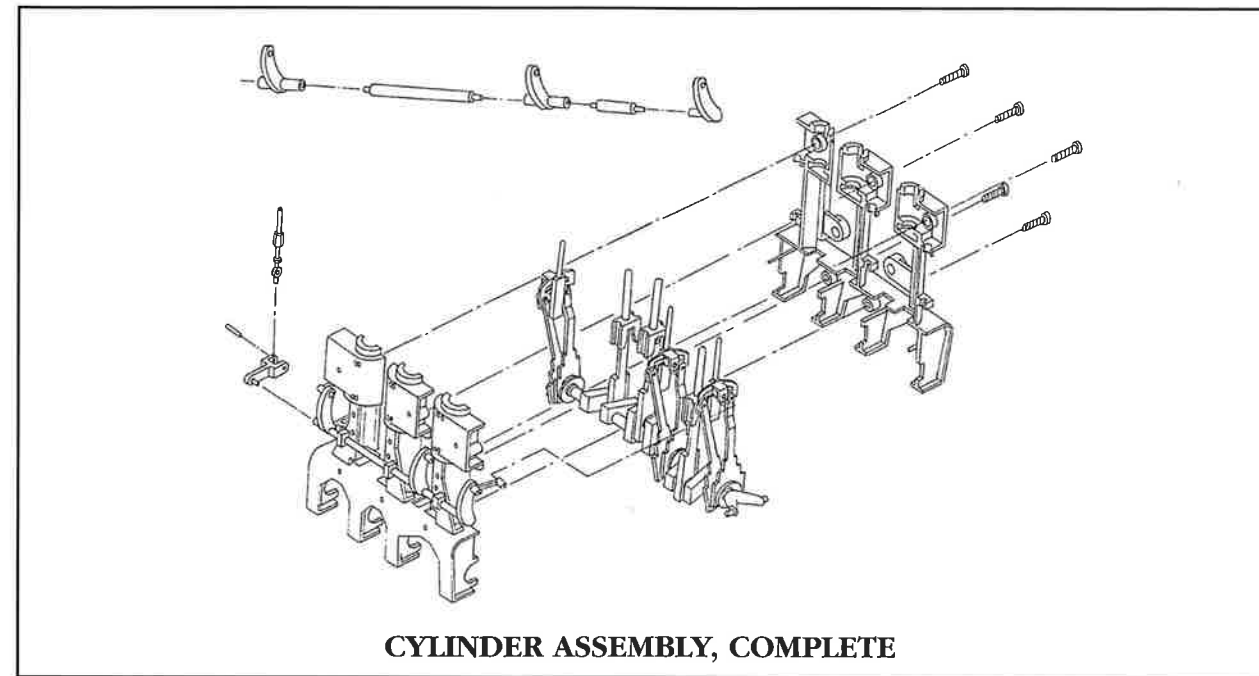
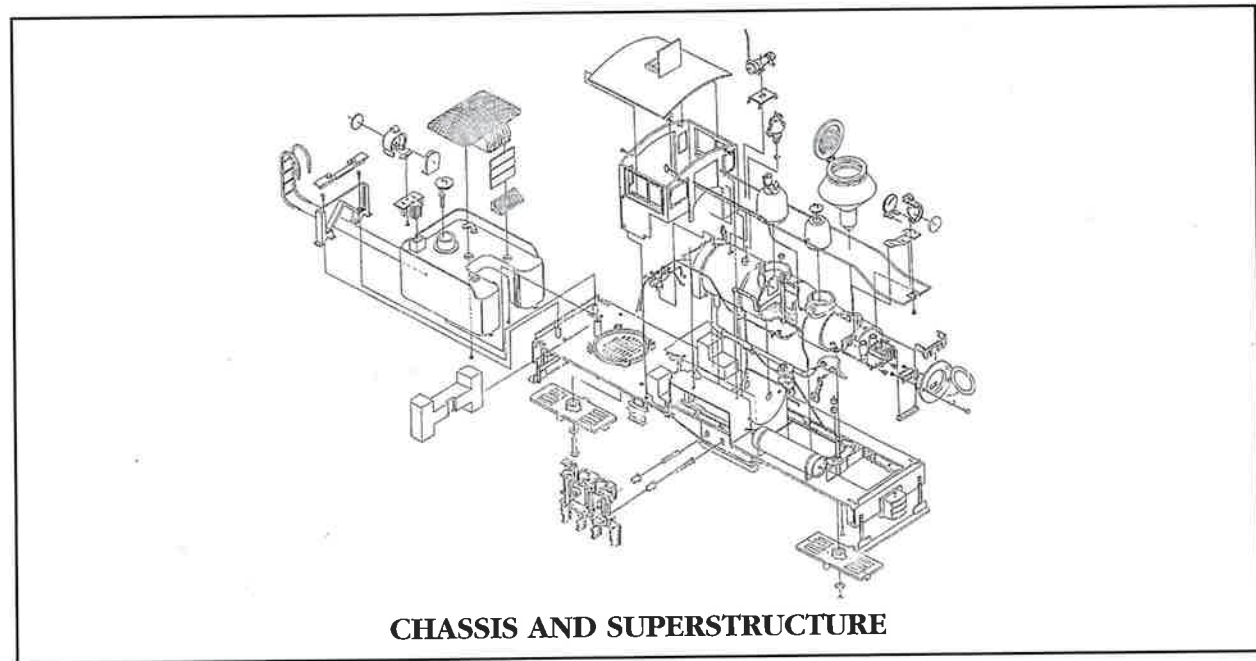
Lubricate your Shay regularly according to the schedules recommended in the lubrication section of this manual. However, remember that over lubricating can be worse than no lubrication at all. Set up a lubrication schedule and follow it just as you would do for your automobile.

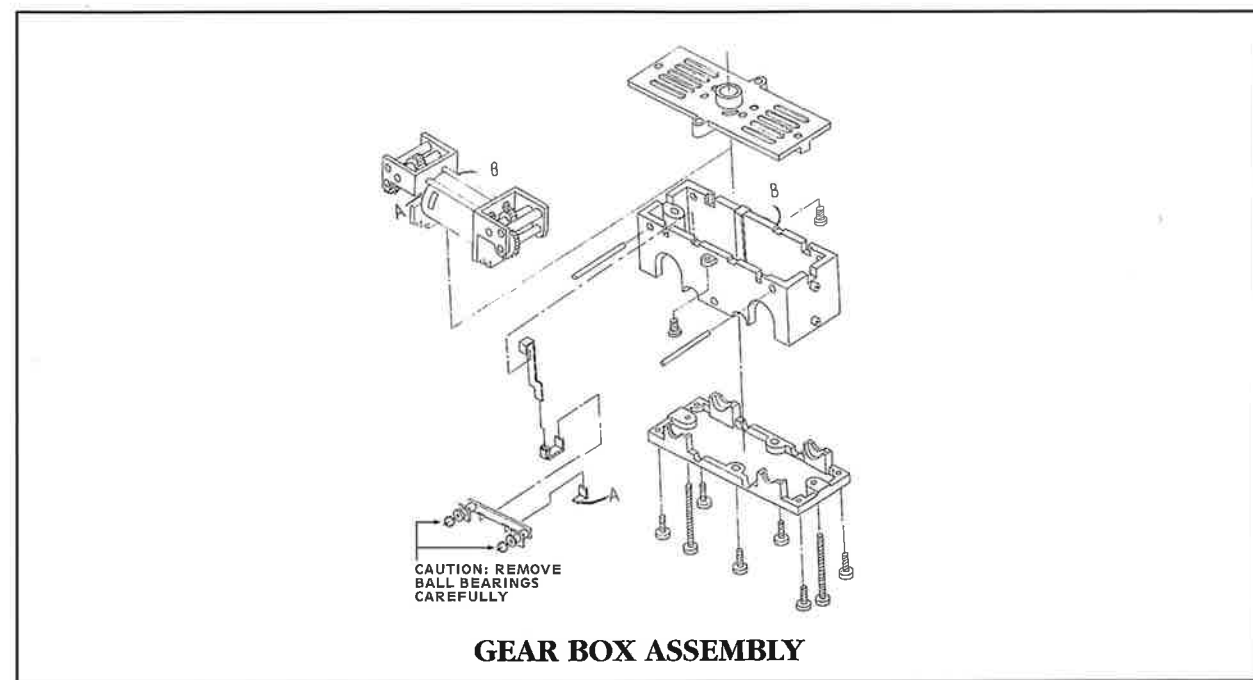
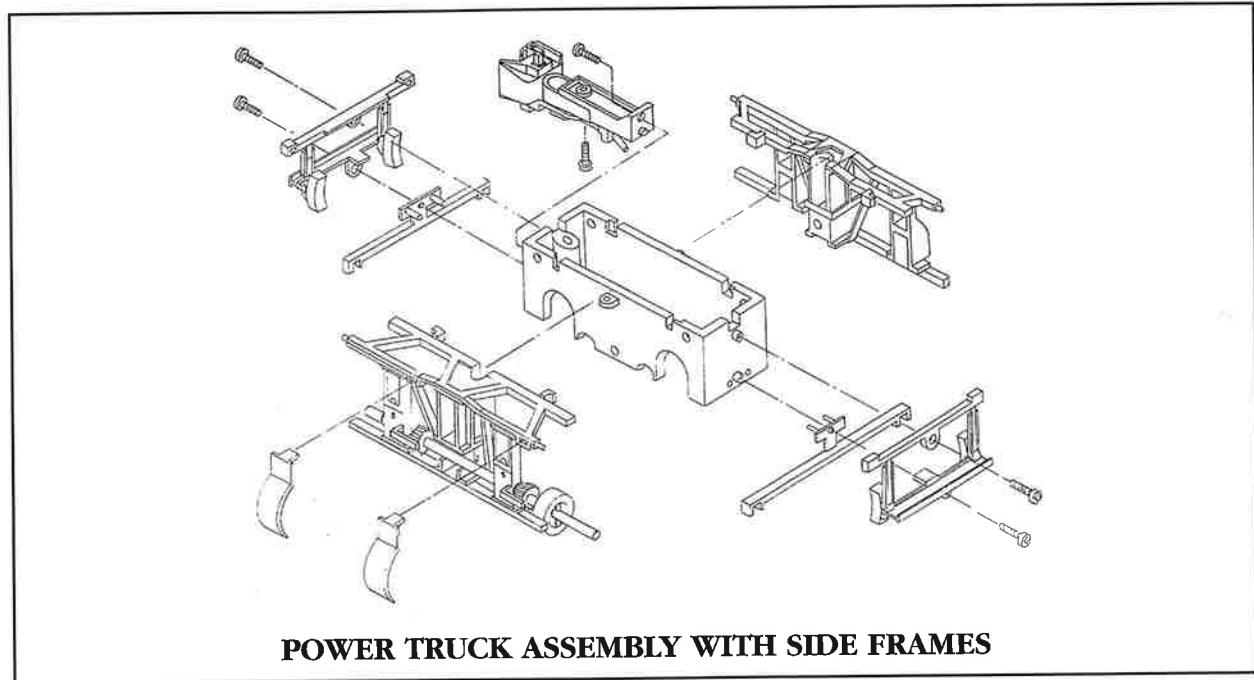
Clean with a soft lint free rag. Or use a new cosmetics brush that would be used to apply blush. Do not use any liquids or solvents to clean this locomotive. Do not leave your Shay outdoors overnight or in inclement weather.

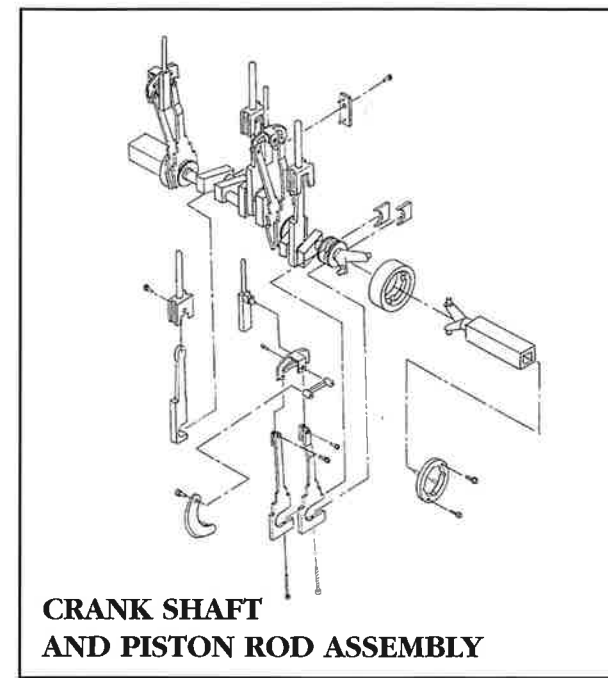
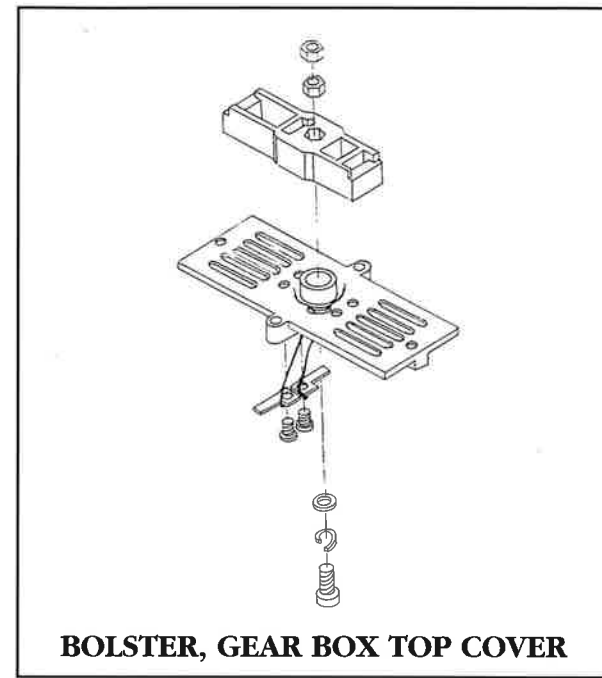
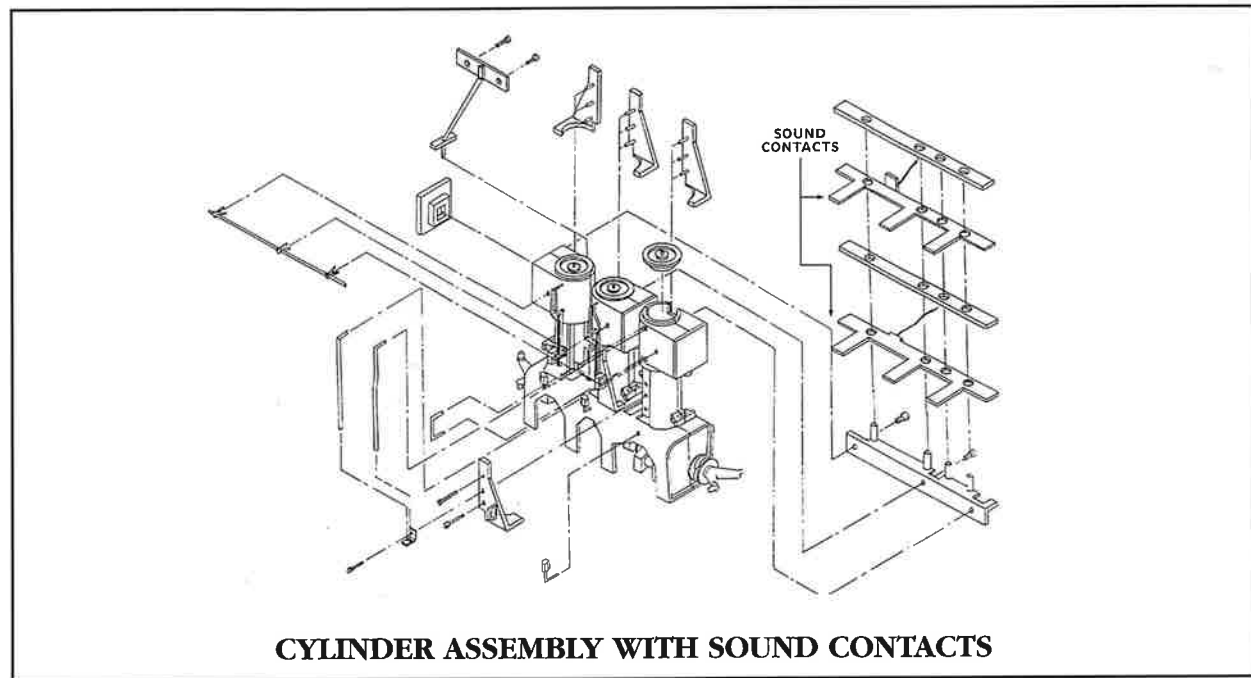
The heavy duty ball bearings and springs that provide electrical contact are subject to friction. It is unlikely that they will wear if lubricated regularly under normal operating conditions.

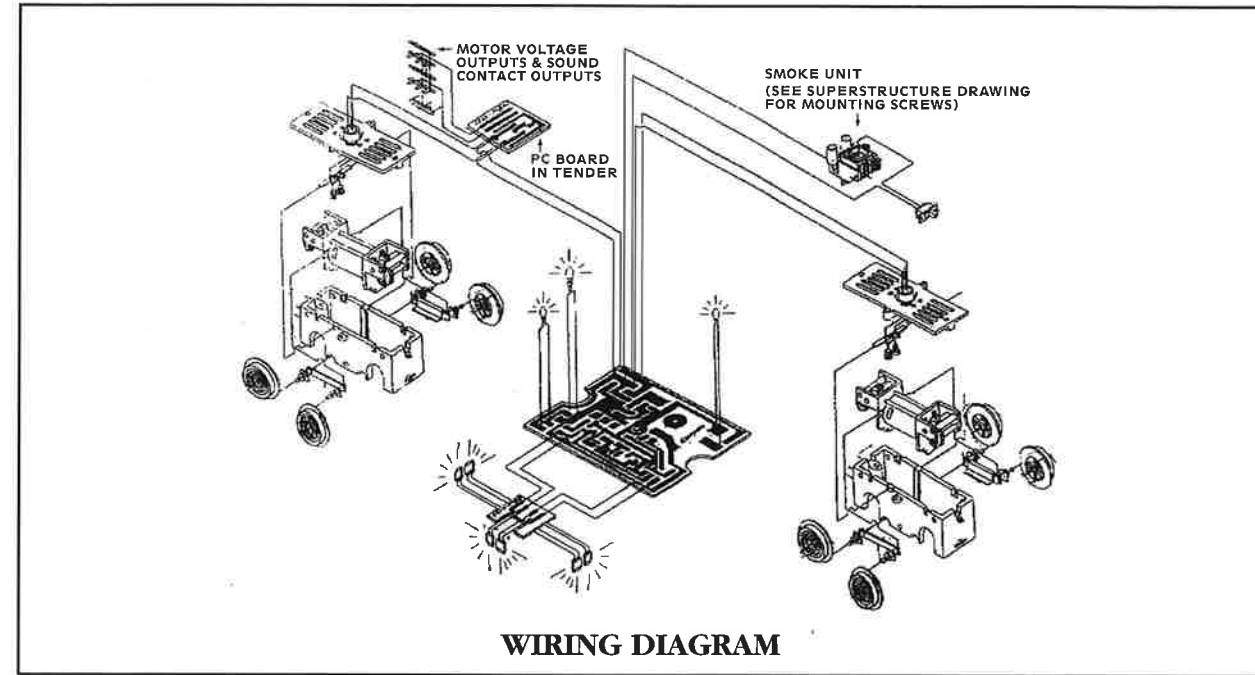
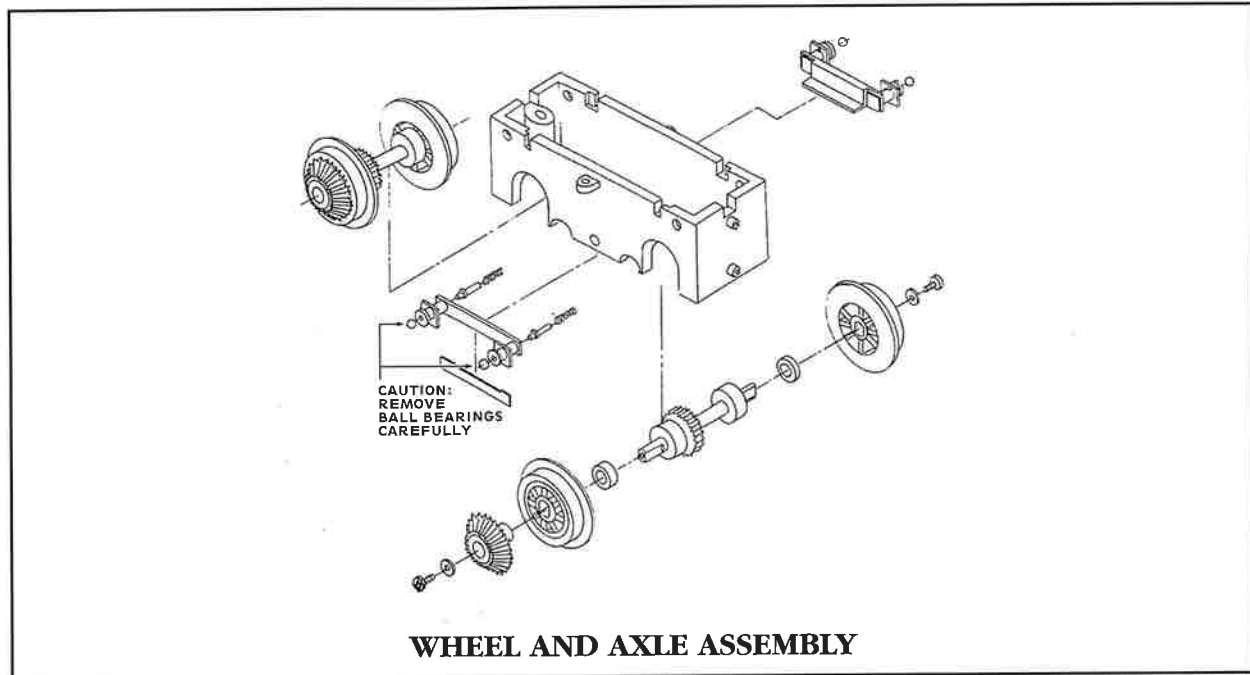
Be advised that to replace the ball bearings or electrical contact springs requires you to disassemble the power truck and remove the truck side frames and wheels. See the Gear Box Assembly, Power Truck Assembly, and Wheel and Axle Assembly diagrams. Extreme caution should be exercised as these ball bearings and springs are likely to become airborne, lost or misplaced. However, if they should require servicing we recommend that you send your power trucks to the service department at Bachmann Industries. The address is:

Service Department
Bachmann Industries
1400 East Erie Avenue
Philadelphia, Pennsylvania 19124
1-800-356-3910









EXCLUSIVE LIFETIME LIMITED WARRANTY

Bachmann Industries, inc. warrants that the mechanical components of this Bachmann Spectrum™ locomotive will be free of any defect or malfunction under normal use for the lifetime of the original purchaser and will remedy any mechanical components which prove to be thus malfunction. this warranty does not extend to: (1) any damage to the locomotive resulting from any improper or unreasonable use of the locomotive or from any use of the locomotive in any manner other than that for which it was intended, (2) any damage to the finish or casing of the locomotive, or (3) any other damage (except for damage resulting from a covered defect or malfunction) to the locomotive while in the possession of any consumer.

This warranty is given in lieu of all other express warranties. (All implied warranties, including but not limited to the implied warranties of merchant ability and fitness for a particular purpose shall expire one year from date of original purchase. Some states do not allow limitations on how long an implied warranty last, so the above limitation may not apply to you.) (Note: The foregoing limitation on implied warranties is proper under the Magnuson - Moss Warranty Act. See accompanying memorandum.) UNDER NO CIRCUMSTANCES SHALL BACHMANN BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING IN REGARD TO ANY BACHMANN SPECTRUM™ LOCOMOTIVE. Some states do not allow limitations or exclusions of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

In order to validate this warranty, the Owner Registration Card enclosed with your locomotive must be completed and mailed within ten (10) days after purchase of the train set to: Bachmann Industries, Inc., 1400 East Erie Avenue, Philadelphia, PA 19124, U.S.A. , Attn: Service Department. If warranty service on the locomotive is required within one year from the date of original purchase, please send the locomotive, postage prepaid, to: Bachmann Industries, Inc., 1400 East Erie Avenue, Philadelphia, PA 19124, U.S.A., Attn: Service Department. Also, please write a letter explaining the nature of your difficulty and enclosed it with the locomotive.

If warranty service is required after more than one year from the date of purchase, please send the locomotive, postage prepaid, with a check or money order in the amount of us \$25.00 (price applies to U.S.A. only) to cover return postage and handling to: Bachmann Industries, Inc., 1400 East Erie Avenue, Philadelphia, PA 19124, U.S.A., Attn: Service Department. Also please write a letter explaining the nature of your difficulty and enclose it with the locomotive.

In the event that you have any questions concerning the use and/ or care of this product, please write to:
Bachmann Industries, Inc., 1400 East Erie Avenue, PA 19124, U.S.A., Attn: Service Department.



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