

Spectrum[®]



1:20.3 Scale 4-4-0 Owners Manual

Thank you for purchasing Bachmann's *Spectrum*[®] Narrow Gauge, Baldwin 4-4-0

This locomotive continues Bachmann's tradition of producing the finest state-of-the-art, award-winning large scale locomotives ever made.

Your Bachmann *Spectrum*[®] locomotive 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 locomotive.

CAUTION

IT IS IMPORTANT THAT YOU FOLLOW THE RECOMMENDED PROCEDURES FOR LUBRICATING YOUR LOCOMOTIVE 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 LOCOMOTIVE TO BACHMANN FOR SERVICE.

4-4-0 HISTORY

Following the American Civil War, the reunited nation focused on the development and settlement of the areas West of the Allegheny Mountains and the Mississippi River. There was as strong movement towards a standardized track gauge for the railroads of the land, aimed at simplifying cross-country travel and transportation of goods. As the new standard gauge of 4' 8-1/2" began to take hold, a faction emerged promoting the cost-efficiency of 3' narrow gauge railroads.



Arguments were made for both points of view, but a single event in United States history gained international attention for the narrow gauge railroads. In 1876, the city of Philadelphia, the cradle of liberty, hosted an enormous Centennial Exhibition on the grounds of Fairmount Park. The Exhibition was to be a showcase of American industry and culture, and an opportunity for the United States to position itself as a world power in economics and politics.

The Exhibition also provided proponents of 3' narrow gauge railroads an opportunity to make their case. They argued that a narrow gauge railroad was cheaper to construct because it required less grading, and that the lighter rail and ties were less costly. The smaller engines and rolling stock were also touted as being less expensive than their standard gauge counterparts. It was advertised and promoted that a narrow gauge railroad could be built for one half the cost of a standard gauge line. Therefore, to facilitate the movement of people throughout the Exhibition grounds, a three-foot narrow gauge railroad was constructed. It was double-tracked for its entire 3.5-mile length and was made up almost wholly of curves and grades, in order to run near all the principal buildings on the Exhibition grounds.

This little railroad came to be known as the West End Passenger Railway. Several locomotive manufacturers, such as Danforth, Dixon and Porter Bell supplied motive power, but a pair of Baldwin locomotives, including a Class 8-18 C 4-4-0 named the "Schuylkill," were the standout performers. Along with a Baldwin Class 8-18 D 2-6-0, the "Schuylkill" 4-4-0 operated for 287 days of daily combined service hauling 4,000,000 of the Exhibition's 8,000,000 visitors for 16,000 passenger miles. The Bachmann *Spectrum*® Narrow Gauge 4-4-0 is based on a standard Baldwin catalog design from this period.

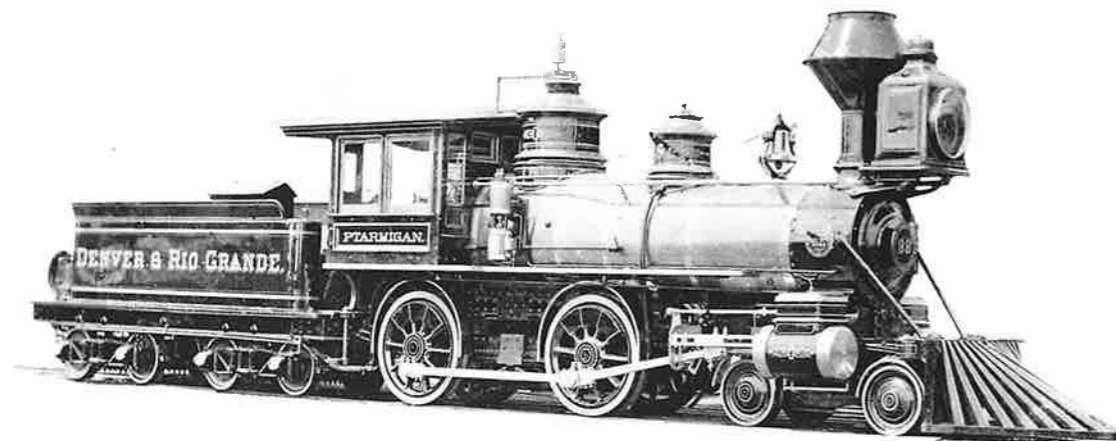
The 4-4-0 went on to play a key role in the development and growth of U.S. narrow gauge railroads. Because most narrow gauge lines were lightly constructed with a minimum amount of grading, they tended to follow the contours of the ground they were crossing. The 4-4-0 provided reliable freight and passenger service over these rough and haphazard rights of way. They normally ran at speeds of 15 to 20 miles per hour, but under ideal conditions, were capable of 35 to 40 miles per hour.

Over the years, the Baldwin 4-4-0 served narrow gauge lines throughout the world. Locomotives with a 4-4-0 wheel arrangement came to be known as "Americans," due to the fact that locomotives of this type were used more than any other in nearly every variety of service throughout the United States. The last narrow gauge locomotive that Baldwin built in the late 1940's was a 4-4-0 for shipment to Central America.



4-4-0 FEATURES

Your Bachmann 4-4-0 is a precision 1 to 20.3 scale model with features and details found on the prototype (see facing page).



Mechanical

- fully operating Stephenson valve gear with operating Johnson bar, reach bar and linkage
- metal frame
- precision 5-pole can motor
- prototypical, sprung axle bearings
- smoke generator with on-off switch

Exterior Detail

- brass plated metal whistle
- machined brass bell with metal clapper
- machined brass pop valves
- metal handrails and piping
- woodgrain detail on planking
- end beams with nut, bolt and washer detail
- scale coupler pockets
- fully detailed tender trucks with brake beams, hangers and shoes
- chemically-blackened, machined-metal wheels

Cab Detail and Lighting

- LED headlight
- load-synchronized LED's in firebox and ashpan for realistic fire glow
- complete backhead detail including steam gauge with piping, throttle, sight glass fittings, and operating firebox door
- engineer and fireman figures

Support Material

- comprehensive video on 4-4-0 history and model maintenance
- owners and maintenance manual

Note: For best performance and prototypical accuracy, this locomotive should be operated on curves with a minimum radius of five feet.

LUBRICATION PREPARATION

Gather all the items you'll need to perform the lubrication procedure. Then find a large, sturdy work surface to hold your locomotive. Your kitchen table or a workbench will do very well.

You will need:

- a thick towel or a piece of foam to act as a cushion for the locomotive
- a thin wooden applicator, tooth pick or coffee stirrer
- and the necessary lubricants.

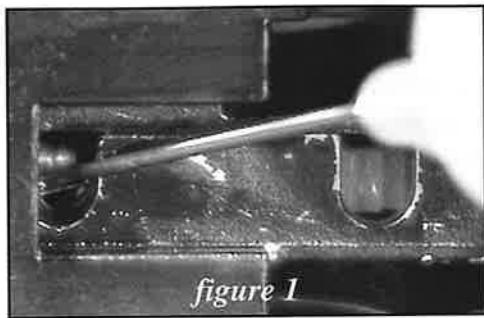


We recommend Bachmann's line of *E-Z Lube*[®] plastic-compatible lubricants. *E-Z Lube*[®] products are available at your local hobby retailer.

LUBRICATION PROCEDURES

We will be lubricating these areas: the gear box area; the driving wheel axles; the lead truck and valve gear on both sides of the boiler; as well as the complete Stephenson valve gear, underneath the locomotive frame and boiler. We will also lubricate the tender trucks, and apply conductive lubricant on each driving wheel and tender wheel axle to enhance electrical contact. Remember, all of the *Spectrum*[®] locomotive's parts and lubrication points can be seen in the exploded view diagrams included in this Owners Manual. Before you start, it's important to know that over-lubrication is more damaging to any locomotive than no lubrication at all.

We recommend using Bachmann *E-Z Lube*[®] plastic-compatible lubricants, available at your local hobby retailer, but other plastic compatible lubricants can be used as well.

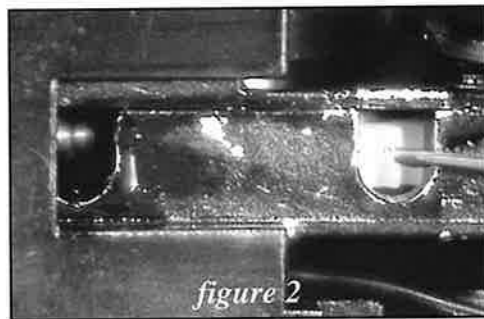


LUBRICATION PROCEDURES

With your towel or foam on the work surface, gently lay the locomotive and tender on its side, or, if using the foam packaging insert, upside down.

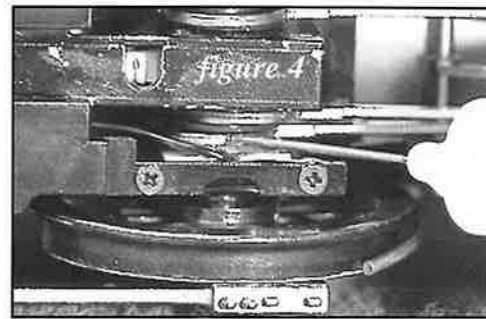
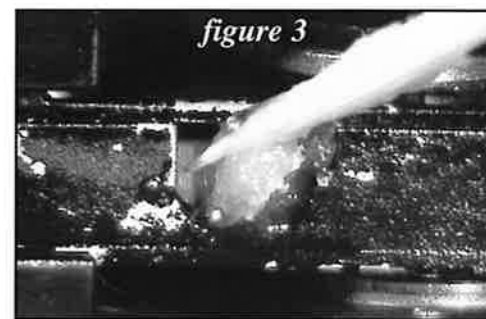
To begin, take your Bachmann *E-Z Lube*® Heavy Duty Gear Oil and place 1 or 2 drops on the motor drive shaft. You can reach it through the rear lubrication port on the bottom of the gearbox.¹

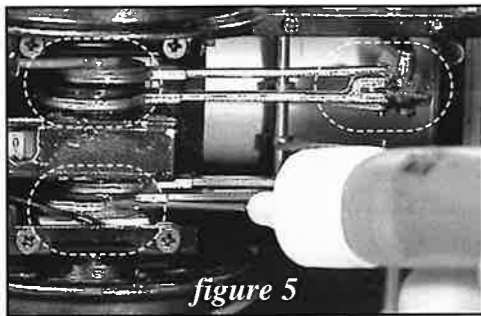
Next, put a drop or two of heavy-duty plastic compatible gear oil into the access port, just behind the front drive axle.²



While in this same area, place a small amount of *E-Z Lube*® Heavy Duty Gear Grease into the gearbox through the access hole and onto the main gear. This lubricant won't "sling off" or dissipate at high running temperatures. The best method to apply this material is by using a thin wooden applicator such as a toothpick or dowel.³

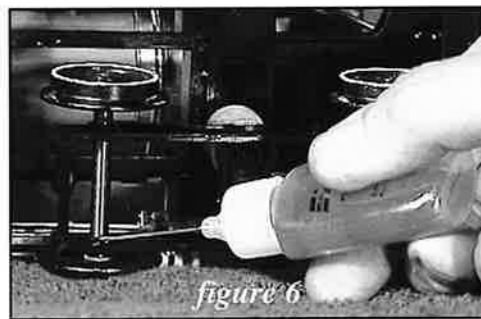
Going back to Heavy Gear Oil, put a drop of oil on each side of the sprung pillow block bearings, where each drive axle rests in the locomotive frame.⁴





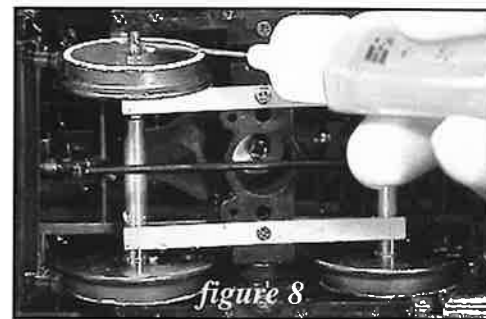
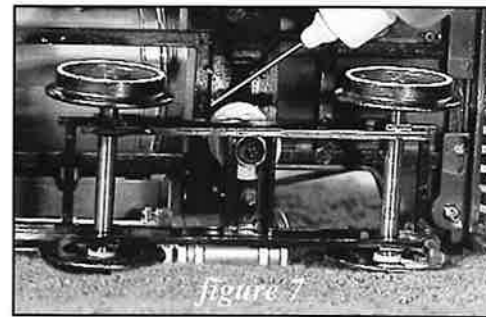
Then put a drop of oil on each of the bearing surfaces on the Stephenson valve gear, which is just next to, and in front of, the gearbox.⁵

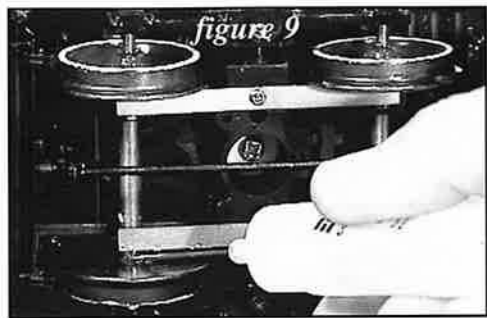
Moving on to the lead truck, add a drop or two of oil to each bearing surface, where the wheel axles pass through the truck side frames.⁶



And be sure not to forget the lead truck bolster, where it interfaces with the screw attaching it to the cylinder saddle and locomotive frame.⁷

Finally, put a drop of oil on the end of each axle on the tender truck wheel sets.⁸





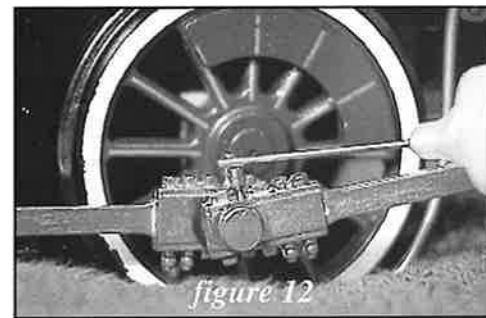
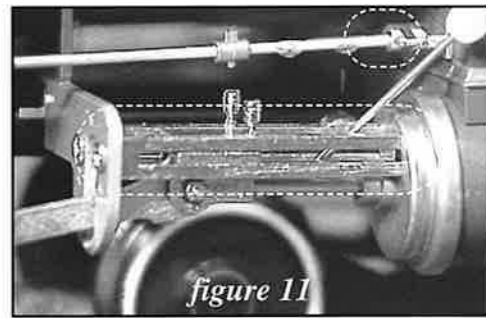
CONDUCTIVE LUBRICANT

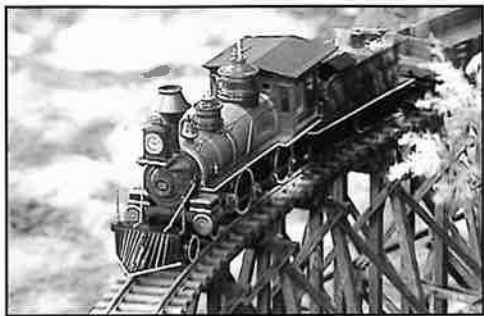
When operating outdoors, under high temperatures and other environmental conditions there is a lot of friction, wear and evaporation. Friction is metal's worst enemy. Bachmann *E-Z Lube*® Conductive Contact Lubricant enhances electrical conductivity, and will decrease the amp draw of your 4-4-0 locomotive. Just put one drop on the axle, behind each of the drive wheels, and each of the tender truck wheel sets, where it passes through the frame.⁹ Also put a small drop on each wheel tread.¹⁰

As a side note, you should perform this electrical conductive maintenance every 5 to 6 hours of operation or as needed.



Bring the locomotive and tender to an upright position and lubricate the valve rod, piston rod, valve guides¹¹ and crank pins¹² with a small drop of oil. Don't forget to do both sides of the locomotive, and remember, **DO NOT OVER LUBRICATE.**





Now your *Spectrum*® locomotive is ready for track testing and many years of pleasant enjoyment. To break in your 4-4-0 locomotive, we recommend that you run it with a light load at slow to medium speeds, checking to see that everything on the locomotive is operating properly. *This is the way prototype locomotives were brought into service.*

Don't forget to fill out your warranty card and send it in as soon as possible. And remember, the key to maintaining your *Spectrum*® locomotive for long life is to keep all the parts well lubricated.

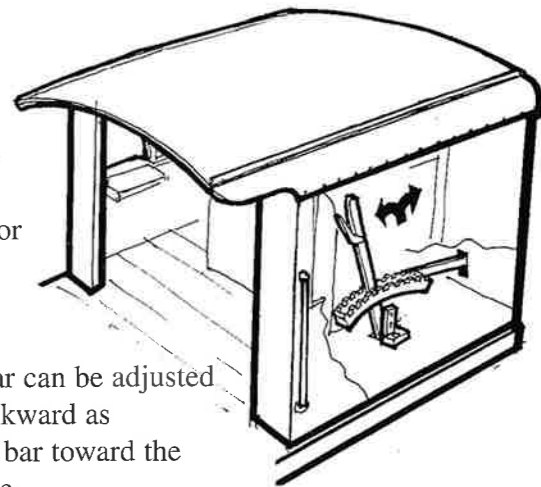
ENJOY YOUR BACHMANN *SPECTRUM*® LOCOMOTIVE, and be sure to check out the entire line of Bachmann Large Scale trains at your local hobby retailer.



OPERATION OF VALVE GEAR LINKAGE

The locomotive is equipped with a Johnson bar (reversing lever) that adjusts the valve linkage and valve stroke. *The adjustments are representational only, and do not affect the actual operation of the locomotive.*

To access and move the reversing lever, open the cab door on the engineer's side of the locomotive. Using your fingers inserted through the cab door and window (one each side), locate the Johnson bar. (See illustration with a cutaway view of the cab interior.) The Johnson bar can be adjusted by pulling up slightly and then moving it forward or backward as desired; the valve gear adjusts accordingly. (Moving the bar toward the smoke stack represents forward motion of the locomotive. Moving it toward the coal bunker represents reverse motion.) For the longest piston strokes, move the Johnson bar either all the way forward or back.



SMOKE GENERATOR

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

Also, it is not recommended to run your locomotive above 16 volts with the smoke unit turned on. This may cause the smoke unit to burn out.

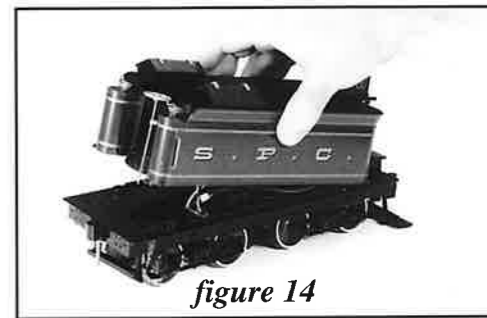
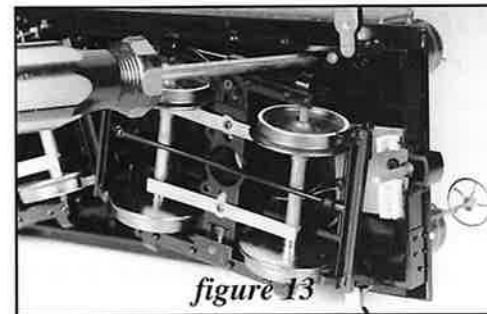
SOUND INSTALLATION

Your *Spectrum*® 4-4-0 locomotive is prewired to make installation of after market sound systems easier.

To access the sound PC Board under the tender shell, you need to:

- Loosen the two Phillips head screws located near the front corners on the underside of the tender.¹³
- Tilt the tender shell towards the back and pull forward to release assembly tabs on the rear.¹⁴

For additional information, consult the manufacturer of your after market sound system.



GENERAL MAINTENANCE

Lubricate your locomotive 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 your locomotive with a soft, lint-free cloth. 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 locomotive outdoors overnight or in inclement weather.

If your locomotive should need service contact our service department at:

Service Department

Bachmann Industries, Inc.

1400 East Erie Avenue

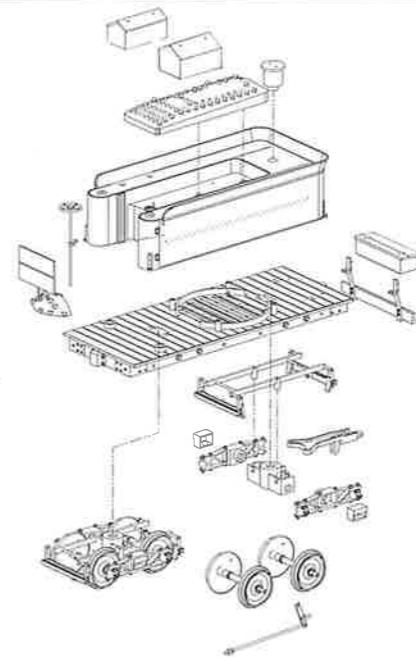
Philadelphia, Pennsylvania 19124

1-800-223-3364 (Large Scale)

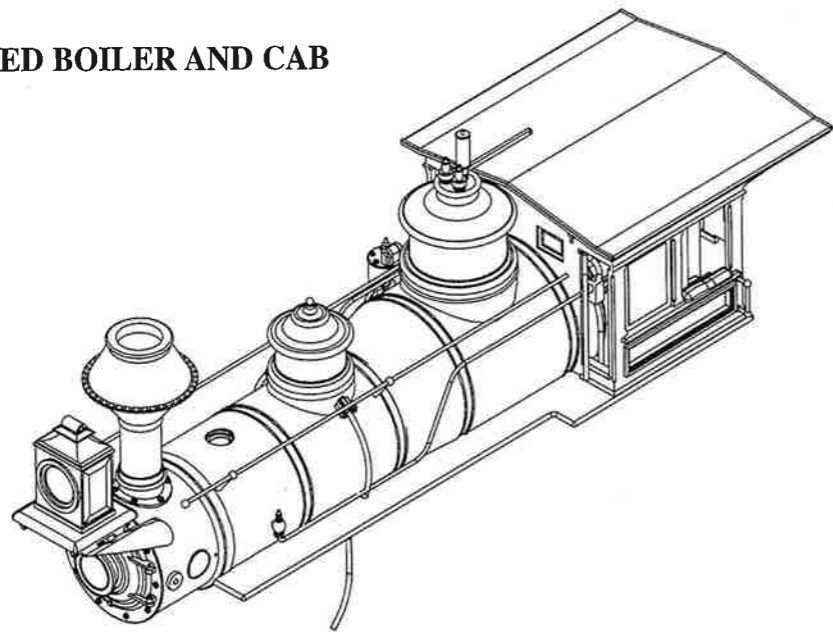
1-800-356-3910 (all other scales)

Additional information may be found online at: www.bachmanntrains.com

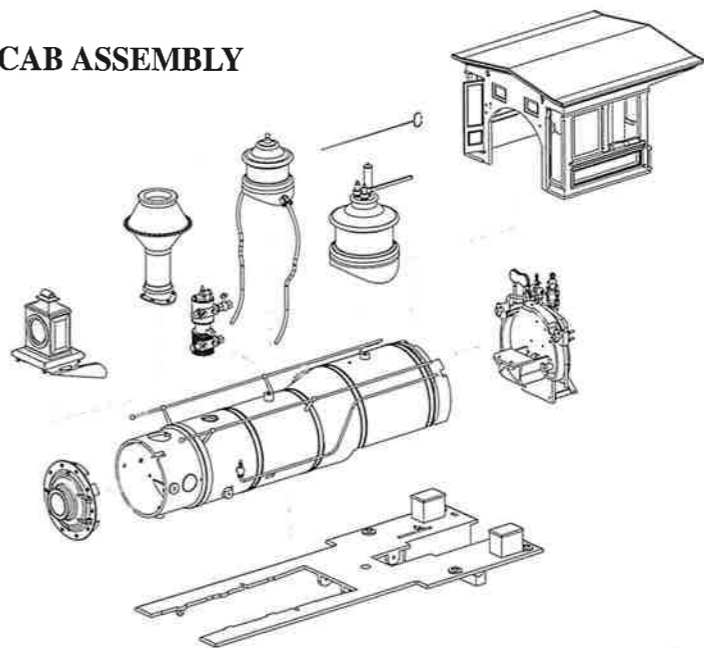
TENDER ASSEMBLY



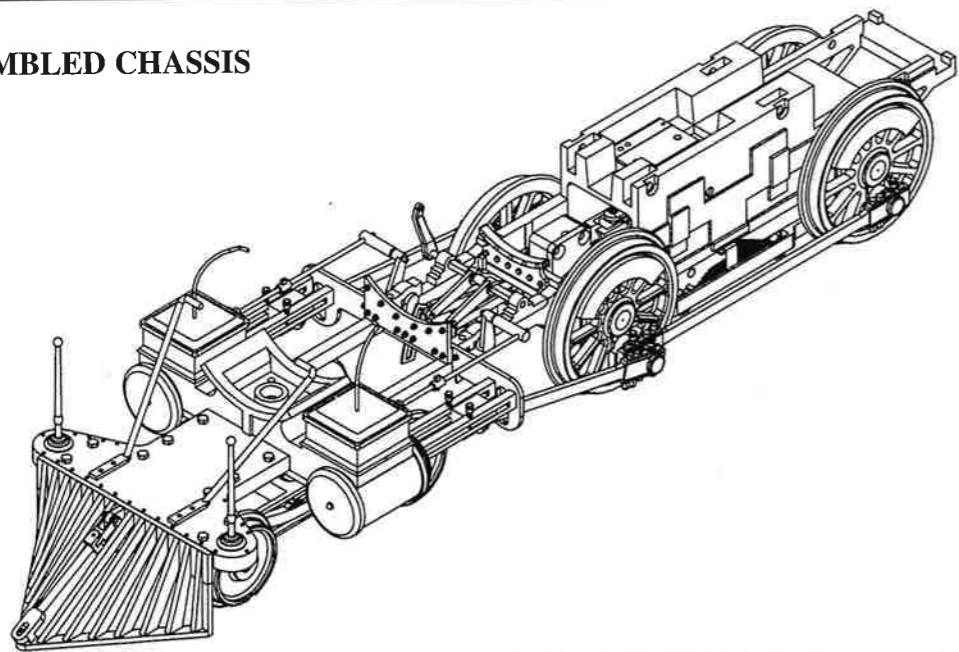
ASSEMBLED BOILER AND CAB



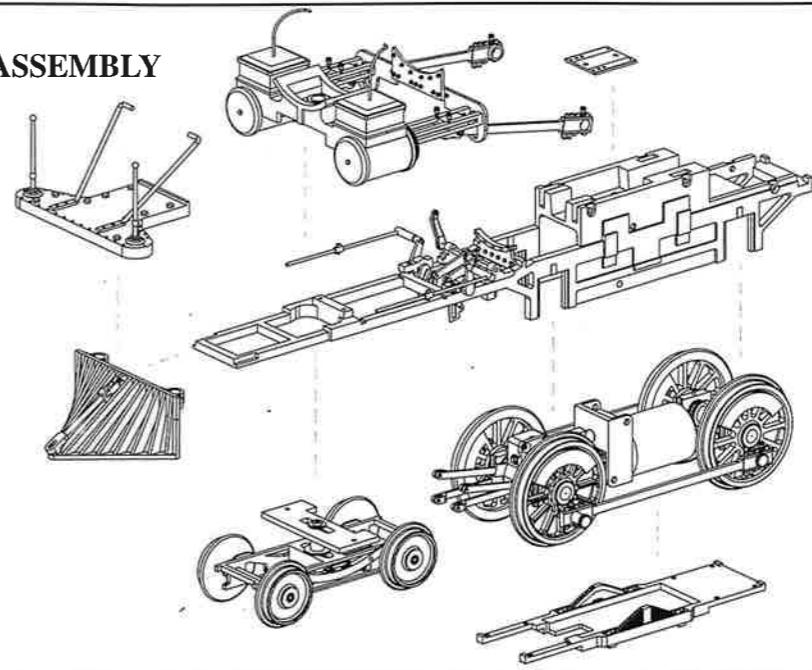
BOILER AND CAB ASSEMBLY



ASSEMBLED CHASSIS



CHASSIS ASSEMBLY



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 malfunctioning. This warranty does not extend to: (1) any damage to the locomotive resulting from any improper or unreasonable use of the locomotive (including failure to provide proper lubrication), 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 merchantability 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 lasts, so the above limitation may not apply to you.) **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 locomotive 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 enclose 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 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, Philadelphia, PA 19124, U.S.A., Attn: Service Department. Or contact us online at www.bachmanntrains.com.



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**UNITED KINGDOM:
BACHMANN INDUSTRIES
EUROPE, LTD.**

Moat Way, Barwell
Leicestershire LE9 8EY U.K.
Tel: 44-1455-841756
Fax: 44-1455-841787

4-4-0 LOCOMOTIVE

UNPACKING INSTRUCTIONS

1. LIFT OFF FOAM TOP.
2. REMOVE FOAM #1 BETWEEN LOCOMOTIVE & TENDER.
3. REMOVE FOAM #2 AND REMOVE TENDER.
4. CAREFULLY LIFT OUT THE LOCOMOTIVE WITH BOTH HEADS, PULLING BOTH FOAM BLOCKS #3 AND #4, FRONT AND REAR OF LOCOMOTIVE.

