

# BACHMANN®

## GE DASH 9 OPERATING INSTRUCTIONS



Large Scale Modern Diesel Locomotive  
*DCC Ready, RC Ready, Sound-Ready, and Onboard Battery-Ready*  
1:29 Scale

Congratulations on the purchase of your Bachmann Big Haulers® Dash 9 Diesel Locomotive! We want to ensure that you enjoy many years of operation with your new model. Please read these instructions carefully and in their entirety before running your locomotive to learn the best operational and maintenance practices for your Dash 9.

## THE PROTOTYPE

The General Electric Dash 9 locomotive was launched in 1993 as a successor to the popular Dash 8 series. It was the first GE road locomotive to arrive with the North American Safety Cab (or wide-cab) as a standard option and included many technological improvements over its predecessor. Regarded as one of the most popular diesel freight locomotives in North American history, the Dash 9 has found a home with almost every Class I railroad. More than 2,500 units have seen service in the United States alone, with further examples operating in Canada, Brazil, and as far afield as Australia. Today, the type continues to be one of the most prevalent modern diesel locomotives, and if you catch a road freight highballing on the mainline, there's a good chance it will feature a Dash 9.



## FEATURES

- advanced nonproprietary plug-and-play electronic printed circuit board to accommodate the control system of your choice, including conventional DC power, NMRA/NEM DCC, and/or RC track/battery operation
- 1:29 scale, 45mm gauge
- two three-axle ball-bearing power trucks
- two motors per truck with low amperage draw
- all-wheel pickup and all-wheel drive
- operating diesel smoke unit
- white LED directional headlights, front and rear
- lighted front ditch lights
- lighted front number boards
- interior cab lighting and interior cab details
- lighted porch, walkway and step safety lights
- solid-metal railings and lift rings
- opening side windows
- engineer figure installed inside cab
- windshield wipers, see-through steps, and MU hose detailing
- brass bell and brass Nathan K5LLA horn
- operating AAR knuckle couplers
- extra weight for better performance
- factory-installed speaker with wire pigtail to allow easy installation of optional aftermarket sound
- power cables on each end to allow for battery operation or RC control from trailing car
- prototype-specific cab profiles
- detailed, authentic paint schemes
- length: 32"
- runs best on 8' diameter curves or greater

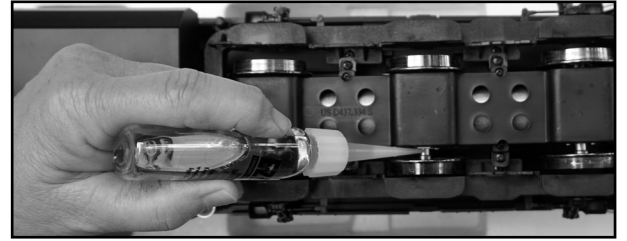
Each locomotive is shipped with several additional parts to be installed at the user's discretion. These parts include:

- a) sun shades
- b) wind deflectors
- c) small antenna and large antenna
- d) power plug connector that allows for trailing car battery operation or for two Dash 9s to be operated together
- e) smoke fluid
- f) PCB05 adapter board with wires

## LUBRICATION PROCEDURES

Just like the prototype, the key to optimum performance from your new locomotive is regularly scheduled maintenance and lubrication. Your locomotive's gearbox will have been factory-lubricated and will not require any additional lubrication prior to initial operation.

Over time, it is recommended that a drop of light gear oil be applied periodically to each axle's bearing where it enters the gearbox. This is best done by moving the axle to one side, adding a drop of oil, then moving the axle to the other side and adding another drop of oil. This should be repeated for each of the six axles at regular intervals based on the amount of operation your locomotive sees, to ensure continued smooth running.



*PLEASE NOTE: We recommend that you use Bachmann's line of E-Z Lube® products which include #99984 Light Gear Oil, #99983 Heavy Gear Oil, #99982 Gear Grease, and #99981 Conductive Contact Lube. However, any plastic-compatible lubricants designed for model railroad applications can be used.*

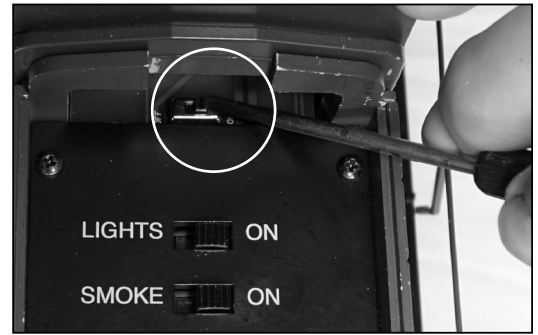
## ELECTRONICS, SMOKE/EXHAUST STACK PANEL SWITCHES

Your Dash 9 locomotive features totally isolated electronics, which allow for easy installation of the control system of your choice (see your hobby retailer for available options). Switches for toggling control options are found in two locations: under the smoke/exhaust stack panel along the roof of the locomotive, and on the main control board next to the plug-and-play circuit board. There are five switches under the Smoke/Exhaust Stack Panel. To access these switches, remove the panel by lifting it up from the front. The switches are labeled as follows:



- 1. Lights:** This switch controls the headlights, ditch lights, cab light, and number board lights. When set to **On** these lights are controlled by the device plugged into the plug-and-play circuit board. When set to **Off** all of these lights will be turned off.
- 2. Smoke:** This switch controls the operation of the smoke unit. When set to **On** the smoke unit is controlled by the device plugged into the plug-and-play circuit board. When set to **Off** the smoke unit is off and will not function. Please ensure that smoke fluid has been added to the smoke unit before turning this switch on.
- 3. Motor Switch:** This switch controls the motor. When set to **Off** the locomotive will not move, but other features, such as smoke or lighting, will continue to function while power is supplied, providing these functions have been switched to **On**.
- 4. Battery/Track Pickup Switch:** In the **Track** position, power is fed from the track to the electronics inside the locomotive. In the **Battery** position, all track connections are removed and power is fed either through the two screw terminals labeled INPUT BATT1 on the rear of the main circuit board or through the front or rear power plugs if your battery is located in a separate trailing car.
- 5. NMRA/Large Scale Polarity Switch:** In Large Scale, there are two conventions used to control the direction of the locomotive. For left rail positive control (most common), move the polarity switch to the **Large Scale** position. For right rail positive control, move the polarity switch to the **NMRA** position. If your locomotive operates in the reverse direction to other locomotives on your layout, place the polarity switch in the opposite position. The polarity switch is also active in battery mode to allow for a control unit to be placed in a trailing car. Please see the *Adding Aftermarket On-Board Battery/RC Operation* section for more information.

A sixth switch is used to control the safety lights. This is located next to the plug-and-play circuit board. The safety lights are the front and rear porch lights, the two side walkway lights, and the four step lights on the locomotive. On the prototype, these lights are normally left on, however, you can choose whether to keep them on or off while operating your model. When the switch is in the **On** position, the safety lights are controlled by the device installed in the plug-and-play circuit board. This switch can be toggled with a small screwdriver inserted forward of the other five switches as demonstrated in this photo.

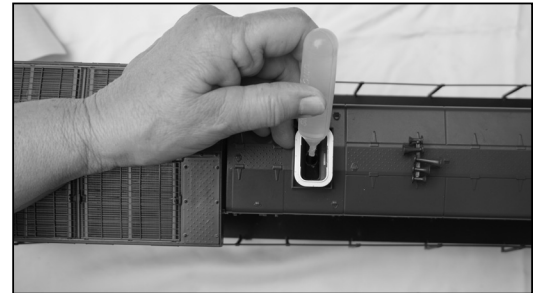


## SMOKE UNIT

The Bachmann Dash 9 comes with a fan-assisted smoke unit that has two parts; the smoke unit and the electronics which control the smoke unit.

To achieve the smoke effect you must add smoke fluid in the smoke unit cavity (the exhaust stack) and turn the smoke switch on. Do not overfill. We recommend using Bachmann #00251 Smoke Fluid, however, any brand of model railroading smoke fluid designed for use with Large Scale models will work.

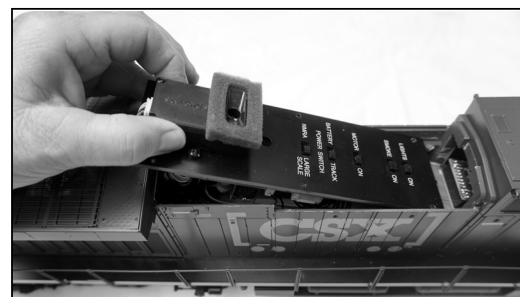
The smoke unit is designed to protect itself from overheating. After running for a while, it will shut off for a period of time and then restart itself. The air temperature that the locomotive is operating in affects the length of time between shut-offs. The hotter the air temperature, the more frequently the smoke unit will shut down to protect itself. The locomotive will not be affected during these shut-offs and will continue to run normally.



*Note: after adding smoke fluid to the locomotive, make sure to store your model in an upright position to avoid the fluid spilling on the locomotive surfaces.*

## PLUG-AND-PLAY CIRCUIT BOARD

This Bachmann Dash 9 locomotive comes equipped with a nonproprietary plug-and-play electronic circuit board. This is designed to accommodate your chosen aftermarket plug-and-play products. As delivered, the locomotive has a (DC) Jumper PC Board in this socket and will operate on standard DC-powered track setups without modification.

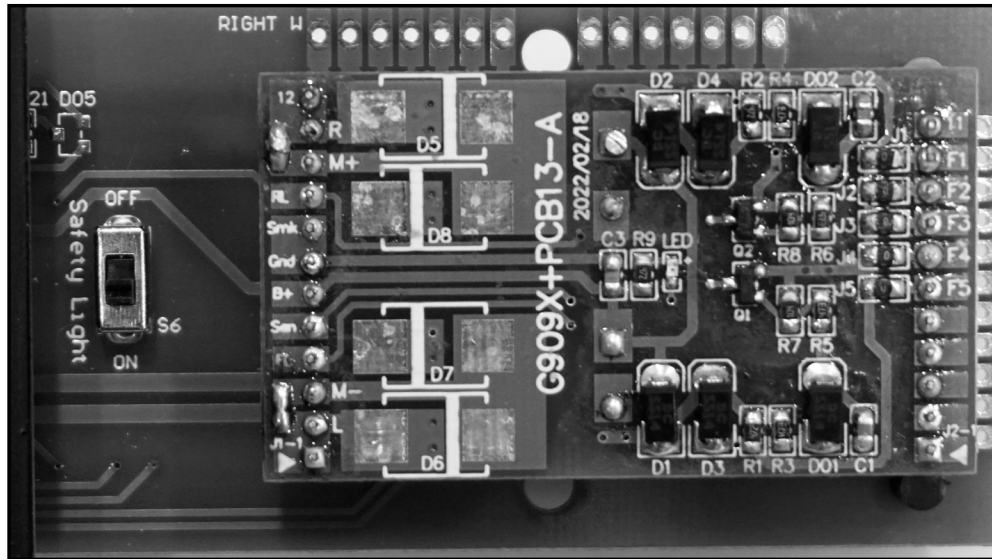


To access the circuit board, remove the 6 screws holding the switch panel and carefully lift it up, using the smoke unit, from the rear. If desired, you can unplug the various cables connected to the entire main board so that you can perform your installations on your workbench.

To reinstall the circuit board, connect all the cables, lift the rear of the board, and slide it forward to reinstall the six screws.

## PIN DEFINITIONS

Each pin on the plug-and-play circuit board has a defined purpose and is labeled on the socket under the (DC) Jumper PC Board. Each pin is also connected to a solder pad for use with systems that do not support a plug-and-play setup. The table below provides the purpose for each pin. The J2 row of pins has a blank key on either end of the row to help ensure that a plug-and-play device cannot be incorrectly inserted.

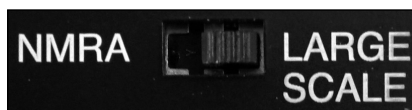


View with  
(DC) Jumper  
PC Board in place.

Pin number J1	Purpose	Pin number J2	Purpose
12	Rail +		Solid Key
11	Rail +	11	Not used
10	Motor +	10	Front Number Boards
9	Rear Locomotive Headlight	9	Cab Light
8	Smoke Unit	8	Safety Lights
7	Locomotive Ground	7	Right Ditch Light
6	Locomotive Positive	6	Left Ditch Light
5	Not Used	5	Not Used
4	Front Locomotive Headlight	4	Not Used
3	Motor –	3	Speaker –
2	Rail –	2	Not Used
1	Rail –	1	Speaker +
			Solid Key

## TRACK-POWERED DC OPERATIONS

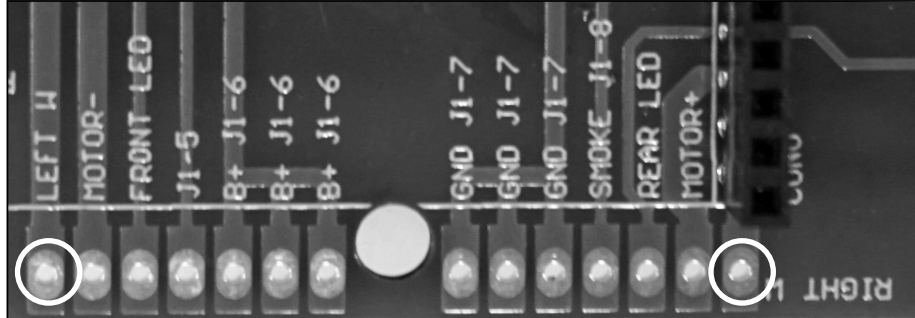
To operate your locomotive using track power, leave the (DC) Jumper PC Board in place, make sure that the motor switch is **On**, the pickup switch is in the **Track** position, and the **NMRA/Large Scale Polarity Switch** is set for its correct position (normally the **Large Scale** position for compatibility with G scale equipment from other manufacturers). In this mode, the locomotive headlight and rear light will be direction-dependent.



## ADDING AN AFTERMARKET SOUND SYSTEM

This locomotive has a speaker mounted underneath the radiator grille. If your sound system is designed for plug-and-play operation, remove the (DC) Jumper PC Board and plug in your sound system. If your sound system does not provide plug-and-play operation, continue to use the (DC) Jumper PC Board and connect the sound system wires to the solder pads labeled **Right W** and **Left W** on the right-hand side of the main PC board.

*Please note that to ensure proper operation, any device connected to the circuit board should have its ground connection made to the locomotive's ground using one of the GND J1-7 pins.*



## ADDING AFTERMARKET TRACK-POWERED NMRA DCC CONTROL

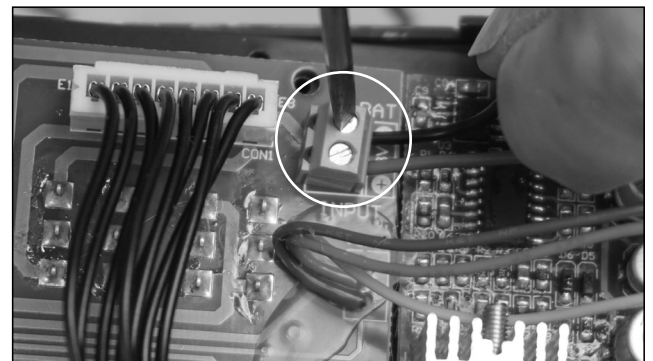
If your NMRA-compliant DCC decoder is designed for full plug-and-play operation with the plug-and-play circuit board, remove the (DC) Jumper PC Board and replace it with your plug-and-play decoder.



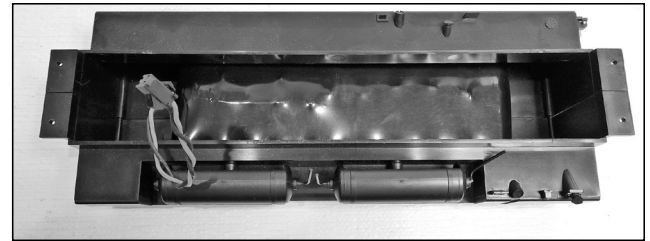
If your decoder is not designed for full plug-and-play operation, use the supplied Jumper PC Board with wires (shown here) and attach the wires to your decoder following the instructions that came with your decoder. Note: the decoder's + and - outputs must be connected to the Jumper PC Board's GND and B+ wires to allow the internal lighting to function properly.

## ADDING AFTERMARKET ON-BOARD BATTERY/RC OPERATION

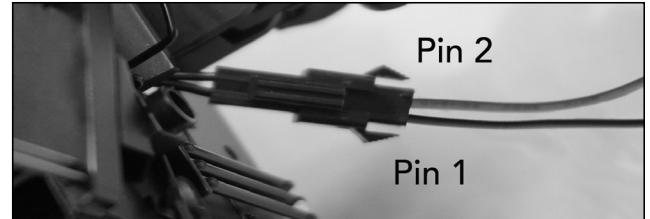
If your Battery/RC or DCC Direct (wirelessly transmitted DCC) system supports plug-and-play using the plug-and-play circuit board, remove the (DC) Jumper PC Board on the circuit board and replace it with the plug-and-play board of your choice. Connect the batteries to the BATT1 battery screw terminals on the locomotive's main circuit board and switch the **Track/Battery** pickup switch to **Battery**. Note: If your Battery/RC or DCC Direct system does not provide DC power to the locomotive's ground and B+ connections then it will be necessary to also connect the battery to the J1-7 GND and J1-6 B+ connections to power the locomotive's internal functions.



If you wish to house your batteries on the model, you can install them in the fuel tank underneath the locomotive. A convenient hole is provided to allow the wires from the battery to be connected to the main board without the need to remove the locomotive's shell.



You can also install your batteries in a separate trailing car and connect them to the locomotive using the power plugs next to the front and rear couplers. Pin 1 should be used for the negative connection and Pin 2 for the positive connection. Connecting two Dash 9 locomotives together using the supplied power plug connector cable will allow both to share their battery power.



If your Battery/RC system does not support plug-and-play operation, use the supplied Jumper PC board with wires and attach the wires to your Battery/RC or DCC Direct system following the instructions that came with your system. Note: The Battery/RC system's + and - outputs must be connected to the Jumper PC Board's GND and B+ wires to allow the internal lighting system to function properly.

Note: The **NMRA/Large Scale Polarity Switch** works in both track and battery modes. In **Battery** mode the battery terminals are connected to the Rail + and Rail - terminals on the circuit board (J1-1, 2 and J1-11, 12). *The polarity of these terminals can change by the position of the NMRA/Large Scale Polarity Switch. This means that any device plugged into the plug-and-play circuit board must protect itself from polarity reversals either through a diode or a rectifier.* Please refer to your after-market owner's manual for proper installation.

### TRAILING CAR CONTROL USING THE LOCOMOTIVE'S POWER PLUGS

The Bachmann Dash 9 locomotive has a power plug next to the front and rear coupler. These plugs can be used to provide battery power to the device in the locomotive's plug-and-play circuit board or allow full control of the locomotive using a control system in a trailing car. The locomotive's **Battery/Track** pickup switch must be set to **Battery** mode to allow for this style of operation



The **NMRA/Large Scale Polarity Switch** can be used to allow control in both elephant-style (same-direction-facing) and back-to-back operation when running multiple locomotives.

### HYBRID DRIVE OPERATION

Some control systems use a combination of onboard primary and backup power to provide the locomotive with the control signal being transmitted either through the track or via radio control. To install such systems, connect the onboard power ground terminal to J1-7 GND and the onboard power positive terminal to J1-6 B+. If desired, Pin J2-11 can be used to connect the switch to turn on and off the backup power source.

The remaining connections are through the plug-and-play circuit board. These systems also allow for the control signal to come either from the track or from a radio receiver. If using such a system, connect the radio receiver outputs to the BATT1 terminals, and use the **Track/Battery** pickup switch to select **Track** for track control or **Battery** for the radio signal.

### GENERAL MAINTENANCE AND SERVICE

By establishing regular lubrication and a general maintenance schedule, you can have a lifetime of fun, quality performance, and satisfaction with your locomotive. Do not use any liquids or solvents to clean this locomotive; use a soft, lint-free cloth or cosmetics brush. Also, don't leave your locomotive unattended outdoors overnight or in inclement weather.

*If your locomotive should need service, please note that our service department is not responsible for repairs to locomotives with aftermarket products installed in the locomotive's plug-and-play circuit board. Any locomotive requiring service should be returned to us as delivered, entirely in the original package AND with the factory-supplied (DC) Jumper PC Board plugged in the plug-and-play circuit board.*

Contact our service department at 215-533-1600  
or by email at [service@bachmanntrains.com](mailto:service@bachmanntrains.com).

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