



Bachmann Industries, Inc.
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Customer Service Telephone 800-356-3910

SD-90 DIESEL LOCOMOTIVE INSTRUCTIONS

Thank you for purchasing a Williams by Bachmann® locomotive. This locomotive has been manufactured to provide years of use and enjoyment. Please follow the simple instructions below.

This locomotive has been greased and tested before leaving the factory. Before operating, please lightly lubricate the points shown in the diagram below. Do not over-lubricate and take extra care to avoid getting lubricants on the wheel surfaces or traction tires.

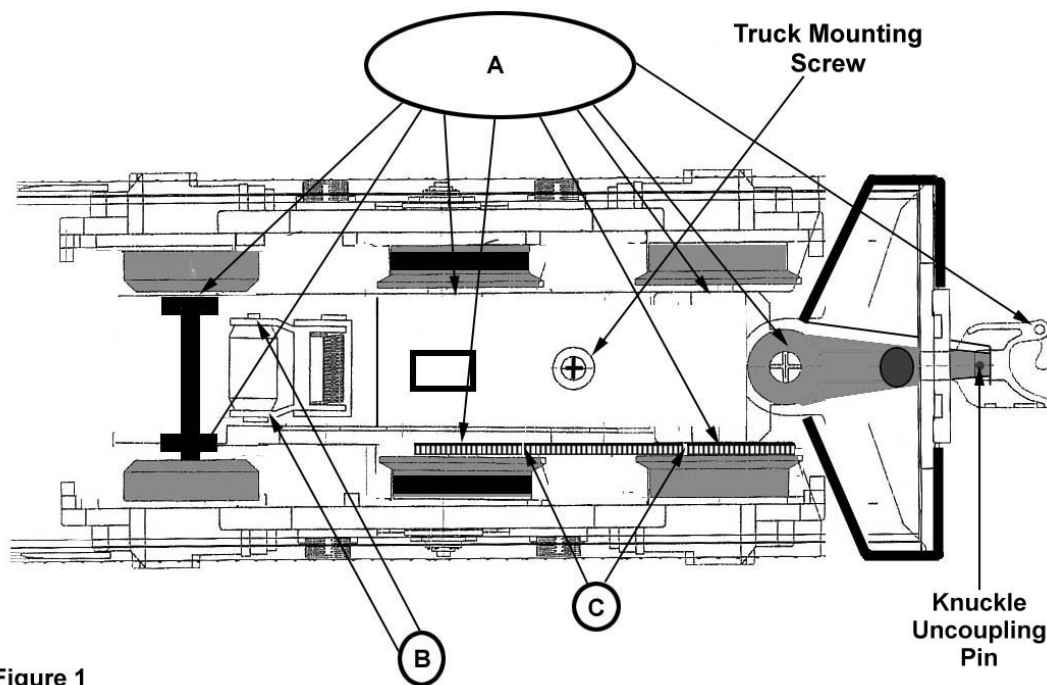


Figure 1

1. For the axles and coupler pivot points **Marked A**, we recommend that you lubricate with a small amount of light oil such as Bachmann E-Z Lube® #99984 Light Gear Oil. **Do not over-lubricate.**
2. For areas that require electrical flow, such as roller pick-ups **Marked B**, please use Bachmann E-Z Lube® #99981 Conductive Contact Lube. **Never use any Teflon® based oil on these areas because this type oil has insulating properties.**
3. For the gears **Marked C** we recommend that you lubricate with a small amount of heavy gear oil such as Bachmann E-Z Lube® #99983 Heavy Gear Oil. **Do not over-lubricate.**

OPERATION

After unpacking the locomotive, make sure that the uncoupling plunger is in the correct position with the pin inserted in the knuckle (see figure 1). Failure to do so will allow the uncoupling plunger to contact the center rail and a direct short will occur when power is applied to the track. We recommend using an AC hobby transformer with maximum voltage output of 18 VAC and a wattage rating of **at least 90 watts**.

Throttle Control

The throttle control will allow you to operate your train at a wide range of speeds. Slowly turn the control knob until you are familiar with the response of the locomotive that you are operating. Please note that our sound systems require 6 volts or greater to operate correctly.

Horn Operation

To operate the horn of your locomotive, simply depress the horn /whistle button on your transformer. Our True Blast™ Horns will play a 6 second sequence one time.

Bell Operation

To operate the bell on your locomotive, press and hold the bell button for one second. To stop the bell, press and hold the button for one second.

Direction Control

Williams reverse units sequence FORWARD, NEUTRAL, REVERSE, NEUTRAL, and again FORWARD. To sequence the reverse board, simply depress and hold the direction button, release the button 1 second after the train has come to a complete stop. **PLEASE NOTE:** If you do not wait for your train to come to a complete stop the reverse unit may not always sequence properly. After approximately 7 seconds without power, the reverse board will reset to FORWARD.

Uncoupling

This locomotive is equipped with operating knuckle couplers at both ends. To uncouple, position the uncoupling plunger over the center of electro-magnetic track uncoupling section and activate the magnet.

PERIODIC MAINTENANCE

Disassembly Instructions

For periodic maintenance, you will have to remove the body shell and motor trucks to gain access to the parts that require servicing. The body shell is attached with four screws on the bottom of the locomotive frame. The screws are located in each corner of the frame. After removing the body shell, unscrew the truck mounting screw shown in figure 1. This will allow you to disengage the motor from the truck assembly. When servicing is complete re-attach the motor to the truck. Make sure the worm gear is meshing with the truck gear before tightening the mounting screw completely. You can test this by rotating the flywheel on top of the motor and the wheels on the truck will turn. Re-attach body shell using care not to over-tighten the screws.

Lubrication

We recommend that you lubricate as directed on page 1 every 10 hours of operation. In addition, you also should check the motor gearbox every 25 hours. After gaining access to the gearbox as instructed above, you can inspect the gears and apply any necessary lubrication. We recommend Bachmann E-Z Lube® #99982 Grease, or equivalent.

Traction Tire Replacement

Our traction tires are very durable and should not need replacing very frequently. They should last hundreds of hours under normal conditions. If they wear out prematurely, check to make sure your track joints are tight. Gaps in your track can cause damage to the tires. To replace the traction tires follow the disassembly instructions above. Next remove the two screws that attach each sideframe. Remove old tire if present, clean wheel groove with any degreasing agent **making sure to follow the safety and handling instructions on the degreasing agent's bottle**. Wipe dry with paper towel or clean rag. Stretch the new traction tire over the wheel making sure that it does not twist and seats smoothly in the wheel groove. Re-attach the sideframes and re-assemble as directed above.

Light Bulb Replacement

This locomotive uses a 12 volt bayonet style bulb. The standard replacement bulb number is 53.



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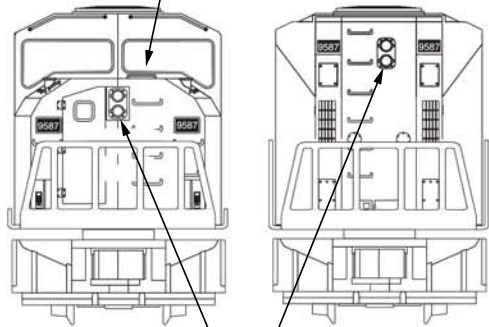
Part Number	Description	Number Used
SD-90 BODY & BODY PARTS		
804-M001R2	Metal Frame	1
<i>1-30080DPT</i>	<i>Screw (Mounts Body to Frame)</i>	4
804-01-01	Body Shell	1
322-02-01	Ornamental 5-Chime Horn	1
322-09-01	Headlight lens	2
804-X001, -X002, & -X003	Window Glass	1 set
345-03-01	Fuel Tank	2
<i>1-26060DPM</i>	<i>Screw (Mounts Fuel Tank to Frame)</i>	4
TRUCK PARTS		
322-E001	Powered Truck Assembly	2
293-M023FR1	Flanged Wheel	4
293-M024FR1	Flanged Wheel w/ groove	4
293-X003	Traction Tire	4
293-M029R5N	Axle	4
322-M013R1N	Axle for Helical Gear	2
322-08-03	Plastic Trailing Wheel	4
293-M012R5	Helical Gear	2
293-M025R3D	Wheel Gear	4
322-M007R3D	Spur Gear	2
322-M010R7N	Spur Gear Pin	2
1-351-40DFM	Truck Mounting screw	2
293-E001	Operating Coupler Assembly	2
322-04-01	Pilot	2
1-35060DFM	Pilot Mounting Screw	2
322-E003	Roller Pickup Assembly	2
322-08-01	Top Insulator for Roller Pickup	2
322-08-02	Bottom Insulator for Roller Pickup	2
322-05-01	Sideframe (Geared Side of Truck)	2
322-05-02	Sideframe (Non-Geared Side of Truck)	2
<i>1-35060DPM</i>	<i>Sideframe Mounting Screw</i>	8
MOTOR PARTS		
345-E001	Motor Assembly w/ Motor Mount	2
<i>293-10-01BR1</i>	<i>Motor Mount</i>	2
<i>322-M012R2</i>	<i>Grounding Plate</i>	2
<i>1-26060DPM</i>	<i>Motor Mount Screw- Large</i>	4
<i>1-30060DPM</i>	<i>Motor Mount Screw - Small</i>	2
ELECTRONICS		
00247	Reverse Board (available from your dealer)	1
00245	True Blast II - Diesel Version (available from your dealer)	1

See Diagram on opposite side for identification. Parts shown in Italics are not illustrated.



SD-90 Parts Identification Chart

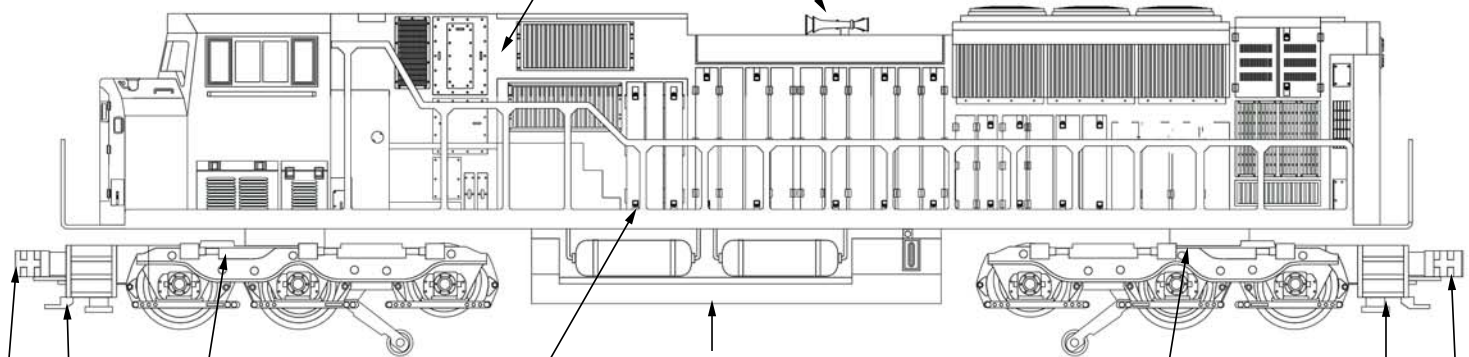
Window Glass
804-X001, X002, X003



Headlight
Lens 322-09-01

Body Shell
804-01-01

Ornamental 5-Chime Horn
322-02-01



Operating Coupler
Assembly (Complete)
293-E001

Pilot 322-04-01

Sideframe (Geared Side)
Left Front and Right Rear
322-05-01

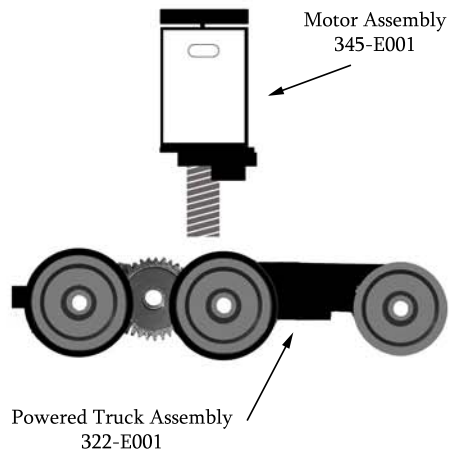
Frame
804-M001R2

Fuel Tank (2 pcs)
345-03-01

Sideframe (Non-Geared side)
Right Front and Left Rear
322-05-02

Operating Coupler
Assembly (Complete)
293-E001

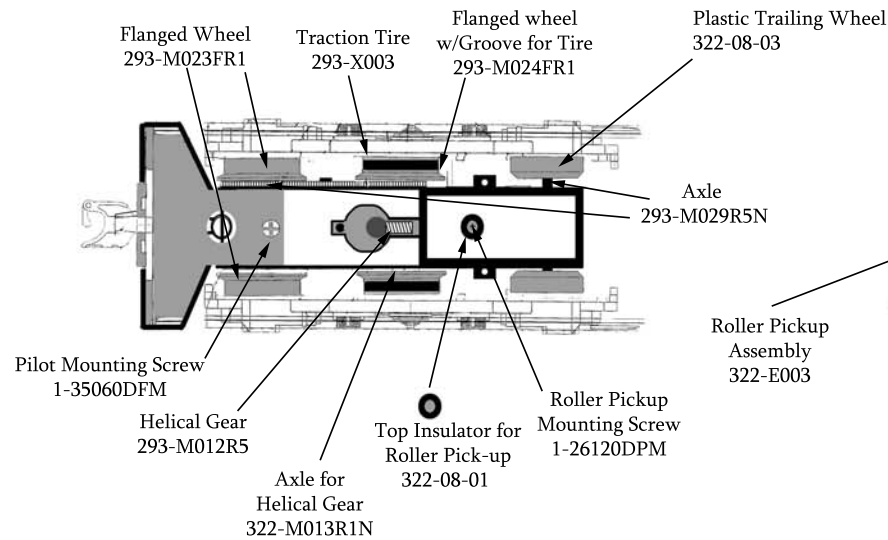
Pilot 322-04-01



Motor Assembly
345-E001

Powered Truck Assembly
322-E001

Truck - Top View



Truck - Bottom View

