Backyard Rails INC.
LARGE SCALE MODEL RAILROADS
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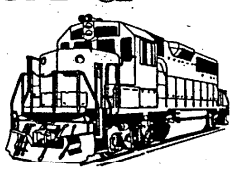
(608) 845-7777



F-7 POWERED DIESEL LOCOMOTIVE OWNER'S MANUAL

Congratulations on purchasing a diesel locomotive manufactured by Backyard Rails, Inc! We are confident that not only will the display of this locomotive bring you many favorable comments, but that the operation of it will be an enjoyable experience that will last for years. From all of us at Backyard Rails, we would like to thank you for your purchase.

In the following pages, please find information on:

(1) Uncrating (if your locomotive was shipped by common carrier)

(2) Initial set-up and items to check

(3) Starting and operating instructions

(4) Maintenance and break-in information

(5) Warranties

(6) Reference numbers

Also enclosed is a copy of the Owner's Manual for your engine supplied by the manufacturer, the Kohler Company.

Please read all literature provided before starting or operating your locomotive.

If you have any questions concerning the operation or maintenance of your locomotive, please call us at (608) 523-7777.

(1) UNCRATING

To uncrate and set up your locomotive, you will need:

1. 2 ex-football players to set the locomotive on the tracks.

2. an electric drill with a #2 phillips drywall screwdriver bit.

3. a 3/4-inch endwrench, for uncrating.

4. a 9/16-inch endwrench, socket, and a ratchet and extension, for installing the couplers.

5. and if you have a snowplow, a 7/16-inch endwrench.

6. the box shipped separately with additional parts for your locomotive.

Steps for uncrating are as follows:

1. Move the crate as close to the final location as possible. "Up" is marked on the crate sides, as is the proper location for lifting the crate with a fork lift. Remember that you'll need electricity for the drill.

2. Remove the top.

3. Remove the ends. At this point, you will need someone to hold the sides so that they don't fall against the locomotive.

4. Remove the sides.

5. Inspect the locomotive for any damage that may have occurred during shipping. If you see or suspect any damage, you will need to report it to the shipping company, as they are responsible for the locomotive once it leaves our shop.

6. Remove the bodyshell from the chassis. To do so:

   a. Unplug the electrical (trailer type) connector located under the bodyshell, just above the left front truck. You can pull the connector down so that it is just below the edge of the bodyshell, and then disconnect it.

   b. With one person at the front, and one at the rear, grasp the front and rear of the bodyshell. (Be careful not to grab or bump the railings as

they are fragile and damage easily.) Then lift the bodyshell up evenly from both ends at the same time.

c. Once the bodyshell is clear of the chassis, it can be put on a level surface by setting it carefully down on its step brackets.

d. To reinstall, place the shell on the chassis slowly, being careful that the hydraulic hose fits into the slot in the heat baffle. Plug the electrical connector back together and push it up underneath the bodyshell.

7. Unfasten the chassis from the bottom of the crate to which it is bolted by means of two 1/2-inch nuts located directly in front of and behind the lower ballast plate, which is in between the 2 fuel tank covers. Remove these 2 nuts with your 3/4-inch endwrench. Be patient and careful not to scratch anything with the wrench. These nuts took a while to put on, so they will take some time to remove.

8. With the nuts removed, remove the two metal brackets and 2 x 2's that are fastened to them.

9. The locomotive is now ready to be removed from the crate bottom. When lifting, make sure you clear the 2 bolts sticking up through the bottom of the crate. The locomotive can be lifted by the chassis side frames. Be careful not to damage the pilot or the cutting lever, if you ordered one as an option.

10. When setting the locomotive on the tracks, make sure that all the wheels align with the rails properly or you may damage the truck side frames.

11. Your locomotive is now uncrated and you are ready to proceed to Section #2 describing set-up procedures.

(2) INITIAL SET-UP AND ITEMS TO CHECK

All of us at Backyard Rails, Inc. have done our best to insure that your locomotive will look and operate at peak performance. But as we are only human, and may make an occasional mistake, we ask that you check your locomotive over carefully to make sure that nothing was forgotten, and that nothing came loose during the transit from our shop to your location.

In addition, items that might require adjustment include:

Coupler height. The height of the couplers may need to be adjusted up or down to operate with other equipment at your track. To adjust the height, reposition the washers between the coupler and coupler mount until you have the proper height.

Main fuse. For transporting, the main fuse located on the inboard side of the fuse block, next to the battery, was removed and placed on the outboard side of the fuse block. Remove the outboard fuse and install it to the inside.

Fuel shutoff. The fuel shutoff valve, located just above the rear of the right front truck, was shut off for transporting. Locate the valve and turn it on.

Track gauge. The trucks on your locomotive were preset to your order, but can be reset to either 7 1/2- or 7 1/4-inch track by removing the truck side frames, then the wheel nuts and positioning the spacer washer inside of the wheel (for 7 1/2-inch tracks) or outside of it (for 7 1/4-inch tracks).

(3) STARTING AND OPERATING INSTRUCTIONS

Safety

This locomotive is only as safe as the operator. All of the safety devices in the world will not make this locomotive safe with a careless operator. The following is only a partial list of safety precautions. It is up to the operator to make sure that his/her locomotive is safe, and is operated in a safe manner.

Do not operate the locomotive if there is any erratic behavior or any part or system that is not working properly.

Never leave the engine of the locomotive running while unattended.

Always use safety chains or a permanently mounted link between the operator's car and the locomotive.

Make sure the couplers are operating properly.

Read and understand this Owner's Manual completely before operating the locomotive. Also, instruct anyone else about the operation of the locomotive, these safety precautions, and applicable track rules before allowing them to operate the locomotive.

Limit locomotive speed to allow for adequate stopping distance in normal and emergency situations. Instruct unfamiliar operators in what constitutes both normal and emergency stopping distances.

Insist that all passengers remain seated and that they keep hands and feet inside the lines of any rail car.

Do not operate the locomotive inside a building unless the building is properly vented.

Stop the engine when filling the fuel tank.

Do not start the locomotive if gas was spilled while refueling, until all liquid and fumes are gone.

Avoid operating the locomotive without the bodyshell in place, or without factory-installed parts.

Remove the controller from the locomotive when the locomotive is not in use.

Shut off the engine before turning the truck bypass valve if so equipped.

Before working on any electrical connection (such as removing the battery, etc.), detach the electronic servo control cable from the locomotive if so equipped.

Do not run the locomotive without the hydraulic cooling fan operating, or overheating may result.

Because of the fine scale construction of the bodyshell details, take care when removing and replacing the body to avoid damage to parts. When lifting the bodyshell, lift at each end. Do not lift using the railings or footboards. Before removing the bodyshell, be sure to disconnect the wires to the lights.

Standard Operating Features

Choke. The choke knob is located on the chassis under the left cab area. When starting a cold engine, it is recommended that the frame-mounted key start be used so that the operator can also operate the carburetor choke knob (pull out to choke). Choking may be necessary even in warmer weather (see the Kohler Owner's Manual enclosed).

Engine. See the Kohler Owner's Manual enclosed for specifications and for maintenance and warranty recommendations. For extended life of the engine, pay particular attention to oil and air cleaner recommendations. Contact your local Kohler Engine Dealer (see Yellow Pages) for help with parts and service. (Note that the oil drain tube on the engine is custom made.)

After running the engine at higher RPMs, allow time if possible for the engine to cool down at idle speed before turning the engine to the "off" position.

Lights. All lights will operate when the ignition is "on" if lights are plugged in. Optional light switches are located on the right front of the lower baldest plate or in the controller if so ordered. Fuses for the lights are in the fuse block located next to the battery. If the lights are not switchable and you wish to operate the locomotive without the lights on, disconnect the plug to the bodyshell.

Hydraulic cooling fan. All locomotives are equipped with an electrically operated hydraulic cooler located at the rear of the locomotive. This cooler is designed to operate when the key switches are in the "on" position. Do not operate the locomotive without this cooling fan operating, otherwise overheating will result.

Fuel tank. The fuel tank is located under the last exhaust fan cover, on the top of the locomotive. To open, move tab in and lift up on the grille. The gas tank cap is directly under

this grille. The tank holds 1 1/2 gallons of gas. Do not overfill. If a gas spill should occur, do not attempt to start the locomotive until all gas and fumes have dissipated.

Fuses. All standard fuses are located in the fuse block next to the battery. Optional electronic servo control is fused at the control box.

Bodyshell removal and installation. To remove or install the bodyshell:

1. Unplug the electrical (trailer type) connector located under the bodyshell, just above the left front truck. You can pull the connector down so that it is just below the edge of the bodyshell, and then disconnect it.

2. With one person at the front, and one at the rear, grasp the front and rear of the bodyshell. (Be careful not to grab or bump the railings as they are fragile and damage easily.) Then lift the bodyshell up evenly from both ends at the same time.

3. Once the bodyshell is clear of the chassis, it can be put on a level surface by setting it carefully down on its step brackets.

4. To reinstall, place the shell on the chassis slowly, being careful that the hydraulic hose fits into the slot in the heat baffle. Plug the electrical connector back together and push it up underneath the bodyshell.

Ignition switch. The main ignition switch is located on the chassis under the left cab area. In order to start the locomotive by this switch, the auxiliary switch must be in the "on" position. Also, in order to start the locomotive from any other switch, this main switch must be in the "on" position. When the locomotive is not in use, all switches should be turned off and the keys removed from the locomotive.

Manual control. If your locomotive is equipped with a manual control,. . . [to be written later].

Optional Operating Features

Electronic servo control.

CAUTION: any erratic behavior of the controls must be serviced immediately.

Location and fuses. The electronic control box for the servo control is located on the lower ballast and is fused at that location. If any accessory that draws power through the electronic control box should short out, it is possible that the fuse in the electronic control box will be blown. To replace this fuse, remove the fuse from the front panel of the control box.

Cable connection. To connect the controller or M-U cable to the locomotive, remove the plug cap and align the white spot on the cable plug toward the top. There are random splines on the plug to prevent improper insertion. When aligned, the plug will insert about 1/4 inch. Then turn the locking ring clockwise until it locks, to complete insertion. After removing the controller, replace the plug cap on the locomotive to prevent foreign material from getting into the plug.

Throttle knob. The throttle knob, located on the right side of the controller, is used to control locomotive power and to limit the maximum speed. It should be set to the level required for the power needed, and then left alone. It is not designed for continuous use like the throttle pedal on an automobile, although it can adjust to varying requirements while on the move. AVOID lugging the engine at low RPMs while running the locomotive. The hydraulic system will operate more efficiently and will dissipate more heat through the oil cooler at higher RPMs.

Reverser knob. The reverser knob, located in the center of the controller, controls the speed and direction of the locomotive. Turning the knob clockwise will cause the locomotive to move forward; turning the knob counterclockwise will cause it to reverse. The center position will stop the locomotive. Turn the knob slowly in either direction, allowing the servo on the pump time to react. If the knob is turned very quickly and held there, the servo will react in its own time. Because of this delay, sufficient stopping distance must be allowed. The reverser knob is proportional, meaning that the further the knob is turned in either direction from the center, the faster the speed of the locomotive.

Ignition switch. The controller key switch is used to start and stop the engine. In multiple unit running, this switch will stop all engines, but will only operate the starter on the trailing unit (other units must be started using the key switch located under the left cab area). BEFORE ATTEMPTING TO START THE ENGINE, both the controller key switch and the key switch on the frame must be in the center "on" position. Either key switch will operate the starter, but both switches must be turned "on" before the engine can start. If an emergency

should arise, turning off the ignition switch will stop the locomotive.

Horn. The horn button, located on the left side of the controller, is used to operate the locomotive's horns.

Synchronizer knob. The synchronizer knob, located on the chassis just above the rear of the right front truck, is used to adjust the neutral (stop) position of the locomotive if equipped with electronic servo control. To adjust start the locomotive and locate it on a clear section of track, with space in front and rear. Turn the knob slowly in either direction until the locomotive is in the neutral position.

M-U option. If your locomotive is equipped with the M-U option and you wish to couple it to another locomotive that is similarly equipped : locate the first locomotive on a clear section of track, shut off its engine and remove its controller. Bring the second locomotive up to the rear of the front locomotive. Using the synchronizer knob slowly move the second locomotive forward until couplers are locked. Pin the couplers together. Shut off the engine on the second locomotive. Attach the M-U cable between the locomotives. Turn the key switch on the controller to the on position. Using the chassis key switch start the front locomotive. Adjust the synchronizer knob if necessary to reestablish the neutral position. Repeat with the second locomotive. Check forward and reverse operation and adjust synchronizers if necessary. Also check throttle and make sure all the fans are operating. You should now be ready to go if you experience any problems do not operate the locomotives until the problems are fixed.

Lights (except oscitrol). For units equipped with optional remote control light switches, just flip the assigned switch to the "on" position (away from you) to turn on the switchable lights. For units with optional chassis-mounted light switches, these are located on the right front of the lower baldest plate. All lights that are not switched will operate when the ignition is "on" if lights are plugged in. Fuses for the lights are in the fuse block next to the battery.

Oscitrol. For units equipped with this option, the electronic control box for the oscitrol is located in a small box mounted on the lower ballast plate. If the unit comes with optional electronic servo control, the oscitrol draws its power from the electronic control box for the servo. If the unit is manual control, then the oscitrol has its own fuse in the fuse block next to the battery.

Truck bypass valve. The bypass valve located under the hydraulic pump has a green handle and is used to allow

freewheeling of the locomotive.

To place the valve in the open position, shut off the engine and move the green handle so that it is perpendicular to the side of the locomotive. In this position, the locomotive can be moved from one location to another, and if the locomotive is started, it will not move on its own power.

To place the valve in the closed position, shut off the engine and move the green handle so that it is parallel to the side of the locomotive. In this position, the locomotive cannot be moved from one location to another, and if the locomotive is started, it will move on its own power.

Initial Start-up Procedures

Certain procedures should be followed at start-up:

1. Before starting your locomotive, read the Kohler Owner's Manual.

2. Check the engine oil level.

3. Check the hydraulic oil level.

4. Fill the fuel tank and make sure the fuel valve is turned on.

5. If the locomotive is equipped with an optional truck bypass valve, make sure the valve is in the desired position.

6. Make sure that both key switches are in the "on" position and both fans are operating, then follow the engine start-up procedure listed in the Kohler manual.

7. To choke, pull the choke knob out. AVOID excessive cranking of the electric starter as cautioned in the Kohler manual.

8. Once the locomotive is running, let it warm up a few minuets before operating.

9. Take short runs at first to make sure everything is functioning properly and to gain familiarity with the locomotive.

If you have <u>any</u> questions in regards to the operation of your locomotive, <u>do not operate it</u> until you have secured an answer either from your Backyard Rails or Kohler Owner's Manuals or by calling Backyard Rails at (608) 845-7777.

(4) MAINTENANCE AND BREAK-IN INFORMATION

This locomotive is designed to require a minimal amount of maintenance. The following should be used only as a guideline. It is up to the operator to set his/her own maintenance schedule based on his/her own use and on local environmental conditions.

Engine. See the Kohler Owner's Manual enclosed for specifications and for maintenance and warranty recommendations. For extended life of the engine, pay particular attention to oil and air cleaner recommendations. Contact your local Kohler Engine Dealer (see Yellow Pages) for help with parts and service. (Note that the oil drain tube on the engine is custom made.)

After running the engine at higher RPMs, allow time if possible for the engine to cool down at idle speed before turning the engine to the "off" position.

Hydraulic system. The oil level in the reservoir should be just above the bottom level of the plastic screen in the filler neck. It is not necessary to change the oil and filter unless parts are serviced or replaced in the hydraulic system. However, the oil level must be maintained and if the locomotive is subject to constant use, it is desirable to change the oil and filter every 24 months. The reservoir is drained by the drain cock, which is turned clockwise to open. Use transdraulic (not a brand name) type oil as is used in John Deere or International Harvester farm equipment. The filter is a 10-micron suction type oil filter. Oil and filters are available at auto or farm supply stores or at Backyard Rails, Inc.

Power trucks. Belt tension is properly adjusted before shipping. However, if adjustment becomes necessary, use the following procedure: Loosen the idler arm retaining bolt slightly, then adjust the idler arm tensioning bolt to the proper tension. Then retighten the arm retaining bolt. To check for proper belt tension, pinch the belt between the thumb and forefinger at a point midway between the lower span of belt, and twist the belt 1/4 turn. If properly adjusted, this 1/4 twist should take light to moderate finger pressure. Note: excessive belt tension will shorten axle bearing life, and is not good for belt engagement.

The hydraulic motors, when new, will go through a break-in period. This period will be evidenced by sluggish performance at higher speeds, and by loss of power after warm-up caused by expansion of parts in the tight new motors. The length of this period will vary depending upon tolerance variations within the motors. Loads and speeds should be minimized until performance improves. Continuing operation

under sluggish conditions will cause damage from overheated oil. Cooling periods between light running periods will provide for quick and damage-free break-in.

Grease zerks. There are 8 grease zerks on your locomotive: one on each axle (4), one on each truck support shaft (2), and one on each axle swivel shaft (2). To locate these zerks, remove the truck side frames held in place by 2 screws each and use a flashlight to locate all the zerks. Lubricate all zerks using a good quality, general purpose grease approximately every 25 hours of operation. Axles may require grease more frequently for locomotives run in sandy areas.

Bodyshell. The paint used on the bodyshell and detail parts takes approximately 30 days to cure or harden. Thus, during this period, avoid washing or rubbing the shell. You should be able to remove any smudges with a soft cloth.

In addition, this paint is not designed to have a high gloss, so waxing is not recommended. A small bottle of premixed paint will be sent to you at the time the locomotive is shipped to use in the event that touchup is required.

Maintenance checklist. The following is a list of some items each operator should check on his/her locomotive. Usage and local conditions will dictate maintenance frequency and other items needing checking.

1. Battery connections--check for tightness and corrosion.

2. Couplers--check mounting and operation.

3. Oil--check engine and hydraulic oil for proper levels.

4. Hoses--check hydraulic and fuel hoses for leaks and chafing.

5. Exhaust system--check for leaks and tightness.

6. Carburetor--check linkage to be sure choke and throttle are not loose and are operating smoothly; adjust as necessary after the engine is broken in (see Kohler Owner's Manual).

7. Trucks--check to be sure no parts are loose, and trucks are operating smoothly.

8. Bodyshell and detail parts--check for tightness.

9. Grease zerks--lubricate as necessary.

(5) WARRANTIES

The engine is warranted by Kohler (see Kohler Owner's Manual).

The hydraulic motors and pump are warranted against defects by their manufacturers for six months from the date you receive your locomotive. If these parts are found to be defective, they must be returned to Backyard Rails, Inc. within this 6-month period for repair or replacement.

All of the remaining components on the locomotive are warranted by Backyard Rails, Inc. for one year against defects in material or workmanship. If you believe any part (other than the engine, hydraulic motors, or pump) to be defective, call us to arrange for repair or replacement of the defective part.

This warranty does not include reimbursement for any costs for removing, shipping, or replacing parts on the locomotive.

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You are now ready to run! If you have any questions or suggestions, please let us know. You can call (608) 845-7777, or write to Backyard Rails, Inc., 6895 Paoli Rd., Paoli, WI 53508. And if you're ever in south-central Wisconsin, please call ahead for directions so you can stop in to see us.

We would also love to have you send us some photos of the locomotive running on your own track. We're able to take good close-ups of the locomotive here at the shop, but we lack chances to see it in operation with other equipment, owners/operators, passengers, and special track layouts. Any photos you send us would be much appreciated, and would be added to our permanent Company album. Thanks.

Happy railroading,

Roy Blair
President, Backyard Rails, Inc.

(6) REFERENCE NUMBERS

Owner's name: Ed Pruitt

Locomotive model and railroad name: F-7 Wellsville Addison & Galeton

Manufacture date: October 1991

Locomotive ID numbers:

Locomotive road number	2200
Backyard Rails serial number	109103

Equipment ID numbers:

Engine

Model number	M8S
Spec. number	301502
Serial number	2028203622

Hydraulic pump

Part (model) number	15-2077
Serial number	A-90-26-17314

Maintenance numbers:

Belt number	Gates #10408M20
Oil filter number	Grainger #1R412 or equivalent
Halogen bulb number	Backyard Rails #2-46
Hydraulic fluid	transdraulic