



**UNION PACIFIC “FEF-3”
4-8-4 NORTHERN CLASS
STEAM LOCOMOTIVE**

OWNERS MANUAL



1:29 Scale

**USA TRAINS
662 CROSS STREET
MALDEN, MA 02148
USA
www.usatrains.com**



Dear Customer,

Congratulations on your purchase of the world's largest die-cast FEF-3 Northern steam locomotive.

The Engineering and Design staff at USA Trains has spent many hours reviewing blueprints and developing a steam locomotive that looks authentic and will provide you with many hours of operating enjoyment. We believe that our

customers deserve the high level of detail of this die-cast model and strive every day to provide you with the latest technologies that give more "realism" at a reasonable price. This locomotive will enhance the appearance of any modeler's railroad.

Please read the following instructions which will help you understand and operate the numerous features of this locomotive.

Happy Railroading
USA TRAINS

HISTORY OF THE UP FEF-3 4-8-4 NORTHERN CLASS LOCOMOTIVE

A total of 45 FEF Northern Class locomotives were built at the Alco shops between 1937 and 1944. The order consisted of 20 FEF-1's in 1937, 15 FEF-2's in 1939, and 10 FEF-3's in 1944.

After WWII coal supplies were affected by a series of strikes. In order to safeguard operations, Union Pacific converted the 800's to oil burning and a 6,000 U.S. gallon tank was fitted in the coal bunker.

These were the last steam locomotives delivered for the Union Pacific. The 844 is the last of the FEF-3 Class and is the longest continuously operating 4-8-4 locomotive in the world. It is the only locomotive never retired by a Class 1 Railroad.

It is stated that the Union Pacific FEF Series were designed to safely operate at 120mph (190 km/h). "No one really knows how fast the final 4-8-4 could go."

The accurate reproduction of this locomotive in its original body style by USA Trains will allow the modeler to have an authentic FEF-3 Northern operating on their model railroad.

SERVICING

This locomotive is built with pride by USA Trains and is covered by a limited warranty (See limited warranty below). Please follow these instructions carefully before sending your locomotive for service:

1. Return locomotive in its original wooden box with the proper foam inserts and then pack the original box in a proper shipping carton so it is well protected in shipment. The package must be fully insured and pre-paid. USA Trains is not responsible for damage or loss during shipment.

2. Include a note explaining the problem and servicing you need performed. Be sure to include your name, street address, (NO P.O. BOXES PLEASE) City, State, Country (if outside U.S.A) and zip code along with a daytime phone number including area code. If the locomotive service is not covered by warranty, a reasonable service fee will be charged. For any locomotives to be returned outside the continental U.S.A., please include \$450.00 U.S. currency to cover return postage.

3. For any warranty service include a copy of the invoice from authorized USA Trains dealer (see limited warranty below).

4. Ship your item to:

USA TRAINS
662 CROSS STREET
MALDEN, MA. 02148

LIMITED ONE YEAR WARRANTY

This USA Trains locomotive is warranted for one year from the date of purchase against defects in material or workmanship. We will repair or replace (at our option) the defective part without charge for parts or labor within one year of the original date of purchase provided the warranty registration card has been received by USA Trains and purchased from an authorized USA Trains dealer. This warranty does not cover items that have been abused or damaged by careless handling or improper operation such as a train derailment, modification or repair by non-factory technicians. Parts that "wear out" due to excessive use are also not covered under warranty. USA Trains reserves the right to determine "excessive use". Transportation costs incurred by the customer are not covered under this warranty.

MAINTAINANCE AND LUBRICATION

LUBRICATION

Your locomotive was lubricated at the factory and under normal operating conditions will not need to be lubricated during the first 50 hours of operation. The locomotive has three lubrication points. (See diagram below)

1. Siderod/valve gear lubrication.

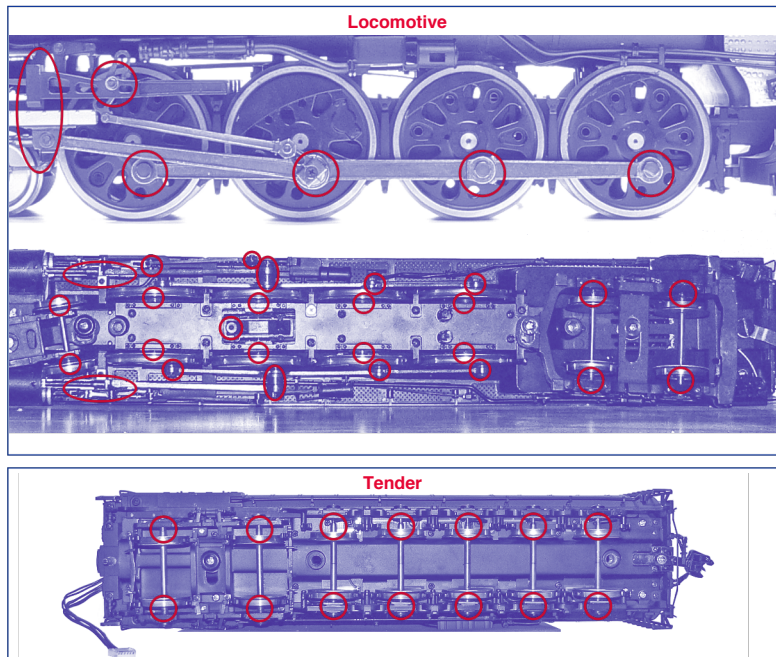
Periodically apply a few drops of light oil such as Hob-e-lube (#HL653) to each of the pivot points of each siderods. (See diagram below) Also, apply a light coat of oil to the valve gear so it slides back and forth freely.

2. Axle lubrication.

Two drops of oil should be placed on all eight contact points where drive wheel axles enter each gearbox. The same should be done for the locomotive pilot truck and trailing truck axles, as well as the tender truck axles.

3. Gearbox lubrication.

Under normal operating conditions, the gearbox should be lubricated after each 100 hours of operation by first removing the screw in the bottom of the gearbox (see diagram below for location of screw) and then applying moly grease by Hob-e-lube into the hole. As you apply grease into the hole, rotate the wheels to spread the grease onto all the gears.



FEATURES

FEF-3 Northern Locomotive Features:

- Highly detailed die-cast metal construction
- Factory installed Phoenix Sound system
- "DCC Ready" for easy DCC installation
- Operating smoke stack
- Operating brass whistle that emits smoke when whistle blows
- Steam cylinder smoke
- Delay start feature to allow sound system and smoke unit to operate before movement of locomotive
- Flashing warning light when whistle blows
- Operating headlight & cab light
- Operating auxiliary Mars light
- Illuminated marker lights
- Hidden front scale coupler that rotates open
- Die-cast drivers with stainless steel rims
- Roller bearing drive axles
- Metal drive rods
- Metal drawbar coupling between locomotive and tender
- Highly detailed metal piping
- Separately cast metal detail parts
- Metal hand rails
- Brass bell
- Detailed builders plate
- Wooden shipping box

FEF-3 Northern Tender Features:

- Highly detailed die-cast metal construction
- Operating back-up light on tender
- Illuminated marker lights
- Separately cast metal parts
- Operating coupler lift bar
- Opening water hatches
- Wooden shipping box

Overall length of Locomotive & Tender is 48 1/2 inches



OPERATION

POWER REQUIREMENTS

The locomotive is designed to operate on direct current (DC) with outputs of 0-24 volts. **DO NOT EXCEED 24 VOLTS DC.**

CONTROL SWITCHES

The locomotive contains individual ON/OFF switches to control the motors, lights, and smoke generators. The control switches are located under the roof hatches on side directly forward of the cab. (See photo 1)

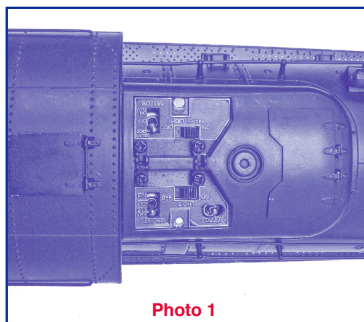
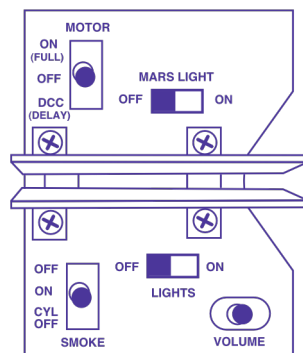


Photo 1



MOTOR SWITCH

The fireman's side hatch contains a 3 position switch to control the motors (center OFF, one side for ON (FULL) and the opposite side for DCC (DELAY) mode).

DCC (DELAY) MODE **FOR SLOW SPEED OPERATION ONLY-DO NOT EXCEED 24 VOLTS DC.**

The locomotive is equipped with a "delay feature". In the DCC mode position the delay feature is activated. This allows the sound and smoke units to start up before the locomotive begins to move. The loco begins to move slowly at approximately 8 volts. At this point the sound and smoke units are fully activated. The locomotive begins to move progressively faster as the voltage is turned up higher. The locomotive is DCC ready. In order to install a decoder you must remove the delay feature circuit. There are four terminal screws that need to be released in order to remove the four wires connecting the delay feature (see wiring diagram in Phoenix sound instructions manual). You are now ready to install a decoder of your choice to the locomotive. The circuit will allow the decoder to operate the motors and lights only. The sound and smoke units are connected to track power directly.

ON (FULL) MODE **FOR NORMAL SPEED OPERATION ONLY-DO NOT EXCEED 24 VOLTS DC.**

The motor ON (FULL) position allows direct track voltage to the motors. The locomotive will begin to move on the low voltage range of the power supply. The sound and smoke units will begin to function after the locomotive is moving. This mode also allows the motors to operate at the higher voltage range which in turn will allow the locomotive to run at higher speeds.

OPERATION

SMOKE GENERATOR SWITCH

The locomotive is equipped with three fan driven smoke generators that produce steam exhaust synchronized to the axle rotation of the driving wheels, whistle smoke when the whistle blows and steam cylinder smoke. The smoke generator requires periodic addition of smoke fluid in order to operate properly. To add smoke fluid, add approximately 40 drops of USA Trains smoke fluid (part number R50001) into smoke stack. Remember less is better - do not overfill the smoke unit and promptly wipe up any excess smoke fluid that may have spilled onto any painted surfaces. You can now begin operation. Smoke production will begin when the fluid becomes heated. It may take longer to generate the smoke if the unit is full. When the smoke chamber is empty, the smoke unit will shut down automatically until more fluid is added. The ON switch position allows operation of all 3 smoke generator fans. The CYL OFF shuts off the cylinder smoke only allowing the steam exhaust and whistle smoke to operate.

CAUTION! To prevent smoke generator burnout and to extend its life, never run the locomotive without smoke fluid in the smoke generator. If no smoke fluid is in the smoke generator, switch the smoke switch to the "OFF" position.

PHOENIX SOUND SYSTEM

CONTROL SWITCHES

Your locomotive is equipped with a Phoenix sound system from the factory. The locomotive contains a momentary toggle switch (see diagram on page 4) to increase/decrease the volume. To turn off the sound simply toggle the volume off. There is also a computer interface inside the body which allows you to customize your train sounds. You will have to remove the boiler shell to access the interface jack. Please refer to the Phoenix Sound owners manual for more information.

WHISTLE AND BELL OPERATION

The whistle and bell are activated by magnetic reed switches which are triggered by magnets placed along your track. These reed switches are located on the bottom of the locomotive. Magnets must be positioned inside the two rails of your track to line up with these reed switches to activate the bell or whistle. The whistle can also be activated by fluctuating the track voltage which will cause the whistle to blow.

STEAM SOUNDS

The sound of steam is automatically turned on upon movement of the locomotive and is synchronized to the axle rotation of the drive wheels.

For complete operating instructions and additional features, please refer to the Phoenix Sound handbook provided with your locomotive.