



Pennsylvania K-4 'Pacific'

OPERATION AND MAINTENANCE INSTRUCTIONS

The Kohs & Company Pennsylvania K-4 locomotive is an exact scale replica of the original prototype. It is constructed of formed and fabricated brass and incorporates many scale operating features. Although the model is very sturdily built, the boiler, tender shell and particularly the detailing are very susceptible to damage by rough or careless handling. To prevent damage, please exercise great care in unpacking and handling the model. The locomotive is best handled by lifting under the front pilot beam and the rear cab deck. When touching the painted surfaces, it is advisable to wear the supplied gloves to protect the finish.

This locomotive model is designed to operate on Direct Current (DC) electricity. Any application of Alternating Current (AC) **WILL DESTROY THE INTERNAL ELECTRONIC COMPONENTS OF THIS MODEL**. Kohs & Company will not be responsible for damage caused by the application of AC power to the model. We will offer further power supply specification recommendations under the heading of 'Power Supply Requirements', please make note of the information offered.

Before unpacking, handling or operating your new model **PLEASE TAKE THE TIME TO FULLY READ THIS MANUAL**. This is a small investment in time to protect your substantial financial investment and to prevent unnecessary disappointment and frustration.

PREPARING THE LOCOMOTIVE FOR OPERATION

Although your K-4 was shipped ready to operate, a couple preventive maintenance precautions should be observed to ensure the smooth operation and longevity of the model. If loose fasteners are found on the packing materials please notify Kohs & Company immediately. First, make certain that all of the small fasteners used to assemble the running gear are snug and have not come loose during shipping. Secondly, the locomotive has been lightly lubricated during assembly and testing, while this will suffice for initial operation and break-in, you may wish to further lubricate the side rod assemblies by applying 1 or 2 drops of good quality fine oil to areas where moving parts are in contact with each other. Your local hobby dealer should be able to guide you in the selection of a suitable lubricant. Care must be taken to avoid soiling the surface of the sound cam located on the rear-most drive axle. Should this occur you will notice an alteration of the cuffing pattern heard during the operation of the locomotive. This situation can be corrected by carefully removing the lubricant using a cotton swab and alcohol.

LOCOMOTIVE AND TENDER CONNECTIONS

The locomotive and tender require that two pair of connectors be joined to allow the operation of the model. The connections are made by matching the shape of the connectors and firmly pressing them together while holding them by the black housings (it is not possible to incorrectly make these connections). With the connection made, the excess wire may be carefully pushed into the locomotive and tender. When disconnecting the locomotive from the tender, pull only on the housings - **Do Not Pull On The Wires!** It is advised that the wire connections be made with the locomotive and tender in place on the track, do not attempt to move the pair while connected together. (Refer to instruction insert for illustrations)

The stoker feed tube should be positioned inside the stoker feed-ramp receptacle under the cab when joining the locomotive and tender. The feed-ramp will swivel from side to side during operation to prevent binding. The rear cab deck apron should rest on the front edge of the tender deck when you are ready to operate. The drawbar on the locomotive should be lined up with the drawbar 'pocket' on the tender, the two units should then be firmly pushed together so that the drawbar will automatically lock in place. The triangular release below the drawbar on the tender should be oriented from side to side in the visible detente to allow it to completely lock. To disconnect, pull down on the triangular ring and separate the loco and tender. You must have patience to properly connect the loco and tender, there are many small detail items that may be otherwise damaged. (Refer to instruction insert for illustrations)

POWER SUPPLY REQUIREMENTS

Your Kohs & Company model is a Direct Current (DC) electric scale locomotive. **Do not attempt to use AC power as damage will occur.** The following criteria should be used when selecting your power supply:

- 1) Direct Current (DC) which is filtered
- 2) 0-18 volts (DC)
- 3) The **minimum** available current should be approximately 2.0A (more is better)

Should you choose to use a less expensive power supply or one which does not meet the above criteria, undesirable operating characteristics may result as well as possible damage to the electronics used in the model. If you have questions regarding your selection, do not hesitate to contact us for advise.

PREPARING THE SOUND SYSTEM FOR OPERATION

The locomotive and tender contain a state-of-the-art sound/control/lighting system which digitally recreates actual locomotive sounds, provides automatic and manual control of all lighting functions and affords you automatic as well as manual control of the reverse-gear mechanism all using standard DC track power. While this system requires track voltage to actuate certain sounds and directional features, the actual power used to operate the system is supplied by the 9V batteries that are placed in the tender coal bunker during the operation of the locomotive. There is a wiring harness with battery connectors packed in the box along with the locomotive and tender. At the end of the wiring harness is a male plug which needs to be inserted into the receptacle located in the coal bunker of the tender, with this connection made, the coal load can be placed over the batteries to conceal their installation. When you unplug the batteries, do not pull on the wires, only the plug shell. **(Refer to instruction insert for illustrations)**

Note: If the ON/OFF switch located under the tender cistern hatch is left in the on position with the batteries installed, they will be drained whether the tender is connected to the locomotive or not. If the locomotive will not be operated for an extended period or will be in storage, it is highly recommended that the batteries be removed from the model.

To access the manual functions of the system, the supplied system controller needs to be wired in-line between your power supply and the track. There are four (4) screw terminals on the bottom of the control box, please refer to the instruction manual insert page for illustrations of the proper wire connections. There is an included 9V wall transformer to supply power for the control box, you will see the receptacle on the control box near where the wires for the transformer and track are connected.

OPERATING THE LOCOMOTIVE

The tender was shipped to you with a scale type coupler installed for display and operation, it may be replaced by a Kadee coupler if so desired. It is recommended that you operate the locomotive at a varying speeds and in both directions during the break-in period, the break-in period should last for a total of approximately 60 minutes (this may be accomplished on an incremental basis). This will help the drive system to 'run-in' resulting in smoother running characteristics.

You are now ready to put your locomotive into operation. To activate the sound system, locate the sound system switch under the water cistern hatch. Shortly after turning the system on you will hear the blowers activate. With the locomotive stationary you will hear, in addition to the blowers, the air compressors and pressure relief valves on an intermittent basis. The whistle and/or bell may be sounded at any time, when the system is turned on simply by touching the appropriate control button once to turn it on and again to turn it off.

When 'track' power is applied to the locomotive and as soon as the drivers begin to turn, the chuffing of the cylinder exhausts will start synchronized to the position of the crank pins. In normal operation all lighting and reverse-gear functions will happen automatically, if you choose to issue a manual command, you will need to continue manual commands unless you issue a 'Auto Reset' command, all command and button combinations are listed below.

HEADLIGHT - Headlight on/off

HEADLIGHT / ALT - Backup Light on/off

MARKER - Marker Lights on/off

AUX 1 - Cab Lights on/off

FORWARD - Reverse-gear Forward

FORWARD / ALT - Cylinder Blowout on/off

REVERSE - Reverse-gear in Reverse

REVERSE / ALT - Main Sounds on/off

BELL / ALT - Restore Auto Direction

AUX 3 - None

AUX 2 (AUX 1/ALT) - None

The sound portion of the system uses three speakers (two in loco and one in tender) and three audio amplifiers to produce the sound. Each amplifier has independent volume, bass and treble controls that are accessible through the tender cistern hatch and the arrangement of the controls is pictured on the Sound/Control System insert page included with these instructions. Using high or low extremes on these controls is not recommended as severe distortion will result in the sound

LOCOMOTIVE CARE AND MAINTENANCE

Routine maintenance consists of periodic lubrication as described under the heading 'Preparing For Operation' and replacement of the sound system batteries covered under the heading 'Sound System'. It is advisable to periodically check the tightness of the small fasteners used to assemble the side rods and other detailing to make certain that parts will not be lost. If the model will not be operated for an extended period of time, remove the batteries from the locomotive and sound controller.

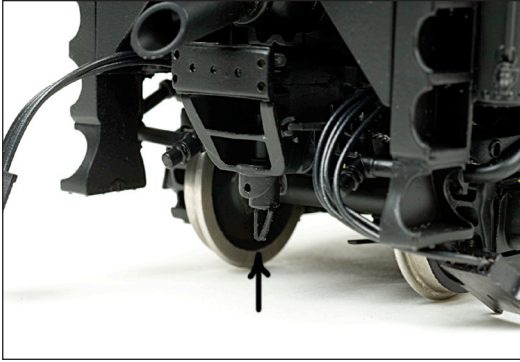
SERVICE

The Kohs & Company Pennsylvania K-4 comes with a limited lifetime warranty to the original owner. We will repair any model requiring service as a result of normal use, but not abuse. All of our guidelines for operation must be followed otherwise the warranty is voided. We will not replace consumable items such as light bulbs and batteries as a matter of course, but will make such items available to customers on a cost basis. If you have technical questions or questions regarding service, please contact us directly:

Phone 248-625-6396

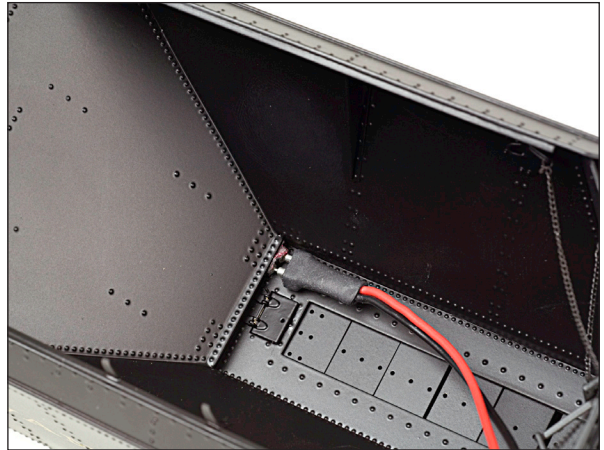
Fax 248-625-7994

E-mail tech@kohs.com



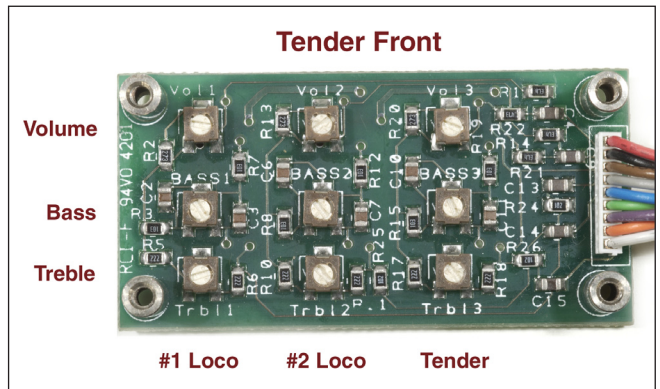
The photograph to the left shows the drawbar release hanging down under the operational buffer assembly. The prototypical double drawbar inserts into the two slots just above the release.

The Photograph to the right shows the sound system battery connection in the tender coal bunker, it is critical to observe proper polarity as marked, the batteries should be placed in the bunker and covered with the supplied coal load.



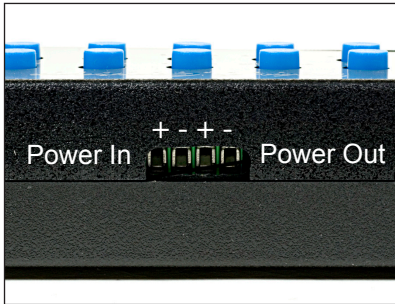
The photograph to the left shows the sound/control system on/off switch under the cistern hatch. The sound controls are accessed under the hatch to the right of the switch.

The image to the right illustrates the arrangement of the sound controls as though looking through the cistern hatch facing to the front of the locomotive. The controls should be adjusted using a small plastic screwdriver to prevent shorting the circuit board should you touch it during the adjustment.





Shown above is the completed connection of the locomotive and tender, notice the vertical position of the electrical connectors with their wide dimension oriented from side to side.



Pictured above is the sound system control box, in the left view the terminals and markings are visible, in the right view notice the 9V wall adapter transformer and connection location.

DCC Compatibility - The installed sound/control system is compatible with current DCC technology and there are connectors on the internal circuit boards to interface with DCC decoders. For more specific information on this connection process, please get in touch with us directly.

Rechargeable Batteries - Your Pennsylvania K-4 model was delivered ready to use normal alkaline ‘AA’ batteries for system power, the system does have a charger circuit built in to allow the use of rechargeable nickel-cadmium ‘AA’ batteries. A plastic shelled jumper must be installed on the main circuit board to activate this circuit. If you would like to employ nickel-cadmium batteries, get in touch for the details.