

K · L I N E ®

PO Box 2831 Chapel Hill NC 27515

919-942-1116

FAX: 919-929-4050

service@k-linetrains.com

www.k-linetrains.com

Steam Locomotive Instruction Sheet

Please note this instruction sheet is for a variety of engines that may include different features. Contact Customer Service for the latest information about your engine. While most K-LINE steam engines now feature a Lionel Command reverse unit and RailSounds sound system, some feature a conventional reverse unit with whistle and bell or whistle only. Please check the information on the outside of the box to determine which system you have.

Read this instruction manual thoroughly for important tips on operating and maintaining your locomotive. When properly cared for, it will last a lifetime.

Conventional Engine

Operation

Your steam engine features a solid-state, electronic reversing unit (E-unit), utilizing a state of the art, integrated circuit design. The E-unit operates as follows: Each time the power to the locomotive is interrupted, the E-unit changes states. This can be done by moving the transformer control to the off position, or pushing the direction button on your transformer (if the transformer is equipped with a direction button). The sequence of operation is forward-neutral-reverse-neutral-forward.

The engine can also be locked into any mode of operation by moving the Reverse On-Off Switch to the off position. This switch is located on the underside of the locomotive chassis. When the switch is moved to off, the locomotive will "lock" into the current mode of operation. For instance, if the engine is moving forward and track power is stopped and the switch is moved to off, the engine will remain in forward when power is reapplied. The engine can be locked in forward, neutral or reverse.

In addition, the Reversing Unit has a forward-reset feature. Should the engine sit without power from the track for a brief time, operation will resume in the forward direction upon being re-energized.

Whistle/Bell

This conventional locomotive may be equipped with a digital horn that operates at the push of the whistle/horn button on most transformers. If your locomotive is equipped with a bell feature, it can be activated using the bell button on your transformer. If your transformer is not equipped with a bell button, use a K-0952 controller.

Smoke

For the first fill with smoke fluid, use between 10 to 15 drops of smoke fluid. Use about 5 drops in subsequent uses. Add directly to the smoke stack. Be sure the fluid goes down the chimney tube.

It is very important to keep the heater element wet with some fluid. If the aroma changes from smoke to a slight burning smell, this is a sign the smoke fluid is running low. This could cause failure of the heater element.

Turn the smoke unit on and off using the slide switch under the engine. Switch to the off position if the locomotive is run without Smoke Fluid. While in neutral, the motor in the smoke generator will pulse on and off. This is done to protect the heater element.

Smoke Output in Conventional mode is dependent on transformer voltage. When running the engine alone, it will run at lower voltage and the smoke output will be low. To increase the smoke output, add more cars to the train, thereby increasing the voltage needed to run the train.

Cruise Control

This engine is equipped with K-LINE Cruise Control, an innovative feature that continually measures the speed of the engine and adjusts the motor power to compensate for changes in grade. With the Cruise Control active, the engine will maintain a nearly constant speed up and down hills, through switches and around curves.

When operating with conventional transformer control, the locomotive will speed up as the track voltage is increased, but not all the track power is sent directly to the motors. A portion is reserved and used only when more power is needed, as when climbing a hill. Simply set the transformer throttle so the train is moving the desired speed, and the Cruise Control will maintain that speed. You will notice that the engine will require more voltage to start moving. This is normal.

When running a Cruise Control equipped engine in a consist with other engines, it may be desirable to turn off the Cruise Control feature. In conventional transformer control, the Cruise Control feature can be disabled by moving the "Cruise ON/OFF" switch, located under the engine, to the off position. The feature can be turned back on by placing the switch in the "ON" position. The switch should only be moved when track power is off.

Transformer Operation (Non-command)

Place your engine on the track. This engine is designed to operate on 7-18 volts alternating current. Virtually all alternating current transformers are suitable, as well as the Lionel TrainMaster Command model railroad control system. NOTE: Do not power your locomotive with direct current (DC). Damage to electronic components may occur.

When you first power up your track, the engine will wait 3 to 8 seconds as it listens for the digital language from the TrainMaster Command Base (sold separately). When it's determined that it's on a conventional (nonCommand) railroad, the headlights will illuminate and RailSounds will fire up. At this point the engine is in neutral. (This occurs when placing the locomotive on your railroad for the first time. Thereafter, it starts in forward after every three second power interrupt).

Get your locomotive moving. Press the DIR button on your transformer. This sequences the Lionel Command reverse unit to the next operating state. The reverse unit alternates between three states: forward, neutral and reverse.

Adjust track voltage until your locomotive moves at a desired speed. To increase speed, increase track voltage. To decrease speed, reduce voltage. To stop the locomotive, cut track power.

To select a single operating state (example forward only), you can deactivate the reverse unit's sequencing function. Get your locomotive moving in the desired direction and turn off track power. Slide the PROGRAM / RUN switch on the underside of the engine to PROGRAM. This will lock the engine in that that direction. Should the engine sit without power from the track for a brief time, operation will resume in the forward direction upon being re-energized.

Lionel RailSounds

Lionel RailSounds is the most realistic model railroad sound system in the world. This locomotive features digitally stored sounds from authentic steam engines for the ultimate in realism.

Begin by installing a 9-volt alkaline battery, if desired, in the tender. Some tenders have a removable coal load which snaps out, however, ones that do not have a removable load require the entire tender shell to be removed. Do this by removing the four screws at the corners of the chassis and carefully removing the shell. Connect the 9-volt battery to the battery clip and place the battery in the holder. Replace the coal load or body shell and reinsert the screws (if applicable). NOTE: Although track voltage powers RailSounds, the battery is required for uninterrupted operation while changing direction and shutdown sequences. Use only alkaline batteries; do not use heavy duty batteries.

Apply track power and RailSounds system delivers an authentic start-up sequence, followed by the sounds of the locomotive at rest. As the engine speed increases, chuffing begins, increasing with speed of the engine. Sounds return to idle only after the locomotive has come to a complete halt. To silence the chuffing (whistle and bell remain unaffected), slide the RailSounds switch from RS (RailSounds) to SS (SignalSounds) before powering up the locomotive. To re-activate the steam chuffing, return the switch to the RS position.

NOTE: Discontinue locomotive power for 10 seconds after changing the RailSounds RS/SS switch.

NOTE: If RailSounds drops out during track power interrupts, replace the battery. Recommended Brands: Duracell, Radio Shack or Energizer Alkaline. Do NOT use Ray-o-vac or Duracell Ultra.

Experiencing the range of RailSounds

With RailSounds, you experience the sounds of real railroading like never before. Simply put, it's the most sophisticated, authentic model railroad sound system in the world.

Variable chuff rate. Your engine speed determines the steam chuff rate.

MultiWhistle Press WSTL/HRN on your transformer to activate the different whistle every time; release it to discontinue.

Authentic bell. Press BELL on your transformer to begin the sound; press again to discontinue. Even the final hit is muted like the real thing.

Reverse unit reset sound. Power down your track, wait for 3-5 seconds and listen for the air release sound - that's the locomotive telling you its Lionel Command reverse unit has just reset to forward operation.

Shutdown sequence. No other model railroad sound system shuts down like RailSounds. Turn off track power, and after the air-release reset sound, you have 2 seconds to restart the locomotive. If you're done with operations, RailSounds will commence with an authentic shutdown sequence about 2 seconds after the air-release reset occurs.

NOTE: Battery must be installed for shutdown sequence.

Notes on RailSounds

Insert a screwdriver into the volume control knob on the underside of the tender or under the water hatch and turn slowly to adjust sound output. Do NOT force.

Listen for incidental locomotive sounds during RailSounds operation. They're automatic and authentic.

The 9-volt alkaline battery you installed ensures continuous engine sounds, even during short track-power interrupts.

Longer track-power interruptions (including derailments) cause RailSounds to shut down after 7 seconds.

For even more authentic RailSounds effects, operate in TrainMaster Command environment.

TrainMaster Command Operations

The Command control environment

Lionel TrainMaster Command is the advanced model railroad control system from Lionel. TrainMaster Command gives you the power to operate multiple Command-equipped locomotives on the same track, at the same time. To operate in Command mode, you need a Command Base and a CAB-1 remote. These can be purchased from your retailer.

Place your engine on the track. Make sure track power is OFF before placing the engine and tender on the track. Make sure your Lionel Command Base is ON and its communications wire is connected to the COMMON post on your transformer or directly to the outer rail. Once positioned on the track, increase track voltage to FULL .

Address your engine using the CAB-1:

Press ENG, then 1 on the numeric keypad of your CAB-1 remote.

This command is sent by the CAB-1 to the Command Base, which then translates your command into digital code. That code is sent around your railroad's outside rails to the train. All Command-equipped engines listen to this digital communication, but they do not respond until they hear their individual ID number - in this case, 1. The digital language of TrainMaster Command - and not track power - controls the actions of Command equipped engines.

All Command-equipped engines come factory-programmed with an ID# of 1. See page 5 for information on changing this ID#.

Throttle up or press any command button on the CAB-1. Your engine will respond to every command.

Press AUX1 to activate numeric keypad.



Press AUX2 to turn headlight on and off.



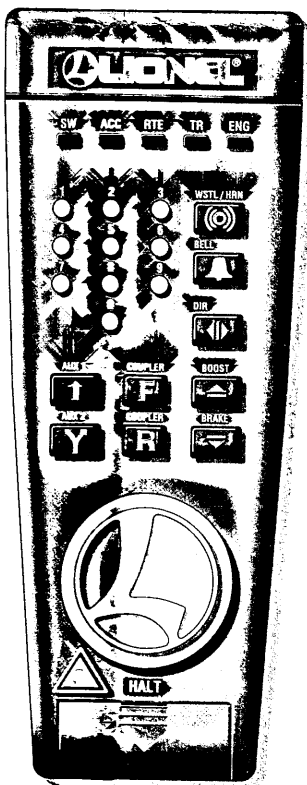
The rear of the tender is equipped with an Electrocoupler. Press Coupler R Button to release coupler and hear Coupler Release sounds. Coupler F Button will release the front coupler if equipped.



Press HALT to shut down all PowerMaster electrical outlets on your railroad. Stops all Command-equipped engines in operation.



Turn the THROTTLE to the right to accelerate, left to decelerate. Speed-dependent, variable steam chuffing is heard.



Press WSTL/HRN to activate whistle, release to discontinue.



Press BELL once to activate the bell, again to discontinue.



Press DIR - the locomotive decelerates to a complete stop; turn the throttle up, and the locomotive will accelerate in the new, opposite direction. There is no neutral state. Steam Air-Release Sound is heard.



Press and hold BOOST for extra power. Release BOOST and return to the engine's previous speed. Labored Chuff is heard.

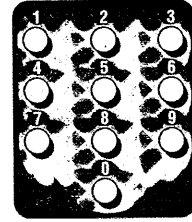


Press and hold BRAKE to slow down or stop. Release BRAKE and return to previous speed.

CAB-1 Commands

CAB-1 Numeric Keypad Commands

When you press the AUX1 on CAB-1, you turn the numeric keypad into 10 command buttons. The keypad lets you control extra command features (until you press any top row button).



- 0** Stops and resets the engine. Resets the direction to FORWARD.
- 1** Raises the volume of RailSounds.
- 2** CrewTalk is the sound of walkie-talkie communication.
- 3** Starts up RailSounds. Startup sequence commences. Steam Blowoff is heard if RailSounds is already on.
- 4** Lowers the volume of RailSounds.
- 5** Activates the RailSounds shutdown sequence. Just like the real thing, your locomotive must be idle for shutdown to occur. Press 5 to initiate the shutdown sequence. Steam shutdown commences. Remember, the horn and bell will not sound until you restart RailSounds.
- 6** Steam Release Sound.
- 7** TowerCom is an audible announcement from the tower.
- 8** Turns off the smoke unit.
- 9** Turns on the smoke unit. Hold down to momentarily increase smoke.

Tuning your locomotive's performance

Braking and Boosting

There's more to starting and stopping than just turning the CAB-1 throttle. Press and hold the BOOST or BRAKE command buttons - they give you a temporary change of speed and are the superior way to handle grades, momentary stops-and-starts and more. Plus, using BRAKE in the Command environment gives you a bonus RailSounds effect - the realistic sound of squealing brakes. When the button is released, the locomotive will return to its previous speed. Before the locomotive returns to its previous speed, any movement of the throttle will cause the engine to remain at its current speed.

Sound Quality

To achieve your preferred RailSounds master volume level, we recommend you use your volume control screw knob located on the underside of your engine. Turn the knob left or right to adjust the volume to your liking. For quick remote-control of volume below the master setting - for example, muting - use the CAB-1 numeric keypad's volume control. Press AUX1 and then 4 several times on the numeric keypad to lower overall RailSounds output. Press 1 to increase volume. The remote set volume will return to max each time the locomotive is powered up.

Cruise Control

This engine is equipped with K-LINE Cruise Control, an innovative new feature that continually measures the speed of the engine and adjusts the motor power to compensate for changes in grade. With the Cruise Control active, the engine will maintain a nearly constant speed up and down hills, through switches and around curves. The Cruise Control feature works when operating in Command Control operation.

When operating with Trainmaster Command Control, simply set the desired speed using the CAB-1 remote, and the locomotive will maintain that speed. For best results, the track voltage should be set to around 18 volts. There are some special commands that are used to make the unique Cruise Control features function with the Trainmaster system. The number of speed steps can be adjusted by pressing the following sequence on the CAB-1: DIR, BELL, AUX1, then either 1, 2 or 3. Each button should be held for one full second. This sets the number of steps between stopped and full speed. Press the Bell button again to turn off the bell.

Setting Speed Steps

32 Steps: DIR, BELL, AUX1, 1 (factory setting)

128 Steps: DIR, BELL, AUX1, 2

256 Steps: DIR, BELL, AUX1, 3

The 32 step setting is best for doubleheading with other TMCC engines. The 128 setting is best for normal operation, and the 256 setting is used for ultra precise speed setting. Note that when rotated slowly, each revolution of the CAB-1 throttle is equivalent to 30 speed steps, so changing the speed step setting will change the number of times the throttle has to be rotated to get to full speed.

Operating Consists: When running a Cruise Control equipped engine in a consist with other engines, it may be desirable to turn off the Cruise Control feature. The Cruise Control feature can be disabled by moving the "Cruise ON/OFF" switch, located under the engine, to the "OFF" position. The feature can be turned back on by placing the switch in the "ON" position. The switch should only be moved when track power is off.

In the TMCC mode, while the Cruise Control feature is disabled, the "stall speed" can be set by getting the engine moving, slowing the engine until it just stops, then pressing F, AUX1, F, AUX1. To remove the stall setting, press DIR, then press F, AUX1, F, AUX1. Setting the stall speed of all engines in a consist will make them all start at the same time. Cruise Control equipped engines cannot be programmed from the CAB-1 to run reversed in a consist.

Assigning your locomotive a new ID#

As your fleet of Command-equipped engines grows, new engines require different ID#. Choose from any between 2 and 99. Remember, all Command-equipped engines ship as ID#1.

We recommend that you choose an easy to remember ID# for your engine. Some possibilities are part of the engine road number, your age or any two digit number that is not used by another engine. If you like, write the number on a small piece of tape and put this on the bottom of the engine chassis to aid in remembering.

Step 1: Turn the Command Base ON and set the engine on the track.

Step 2: Slide the PROGRAM / RUN switch to PROGRAM, then power up.

Step 3: Turn track power on.

Step 4: Press ENG and new ID#.

Step 5: Press SET located under the removable cover.

Step 6: See the headlight flash and hear the horn blow; that's your signal that programming has been accepted.

Step 7: Set the PROGRAM / RUN switch to RUN.

Your engine remembers its ID# until you change it again.

Reprogramming your locomotive to restore features

Due to the inevitable derailments, static and the nature of electricity, it is possible that your engine could someday lose its setup program. The symptoms of this condition would be unresponsiveness in command mode. This can easily be remedied by "reprogramming" your engine using the following steps.

Step 1: Move switch on locomotive from RUN to PROGRAM.

Step 2: Turn on Command Base.

Step 3: Place locomotive on track, then turn on power to track.

Step 4: Press ENG then input locomotive ID#. Press SET.

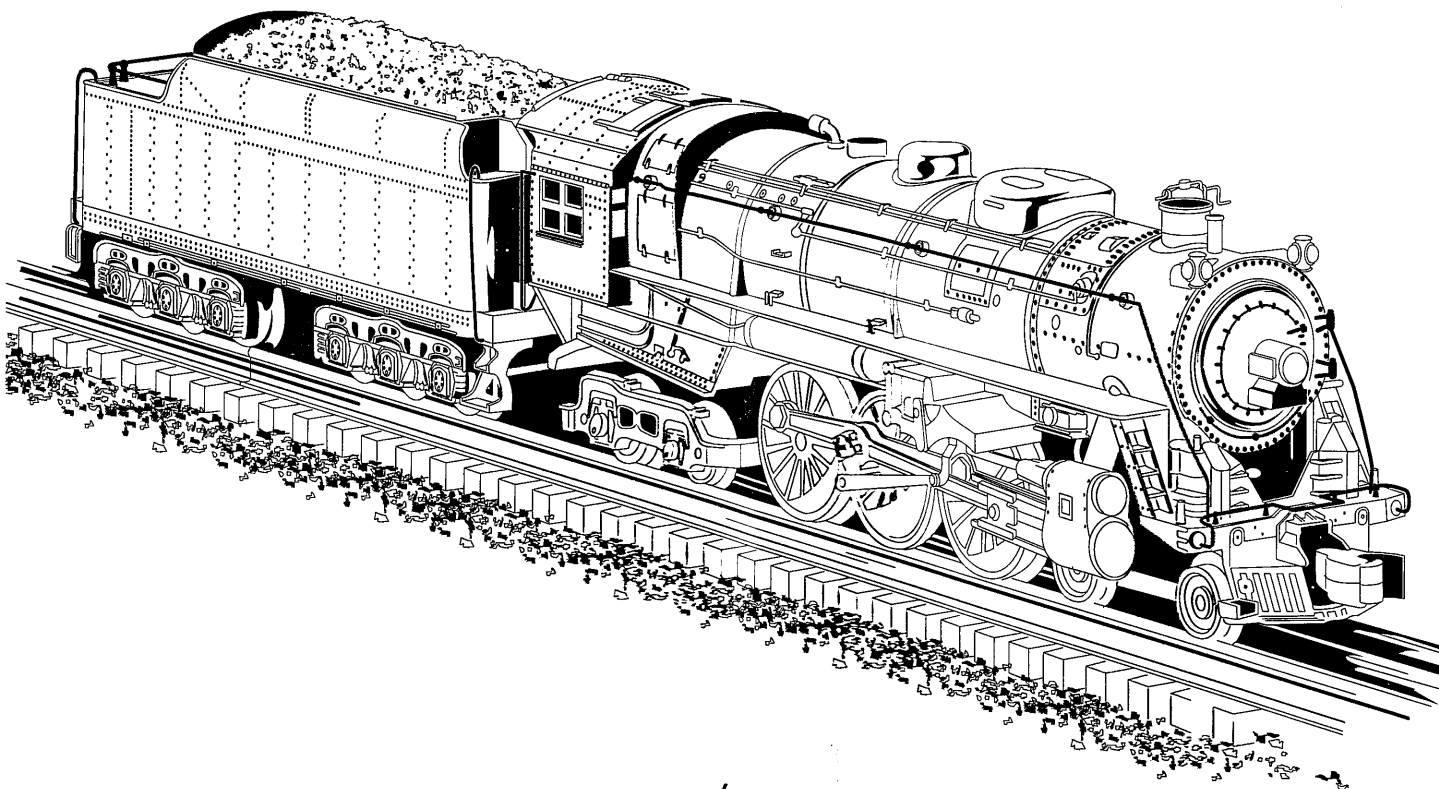
Step 5: Press AUX1, then press 4 to return engine to factory program settings.

Step 6: Turn off power to track, wait ten seconds.

Step 7: Remove locomotive from track, move switch from PROGRAM to RUN.

Step 8: Place locomotive back on track, turn power on to track.

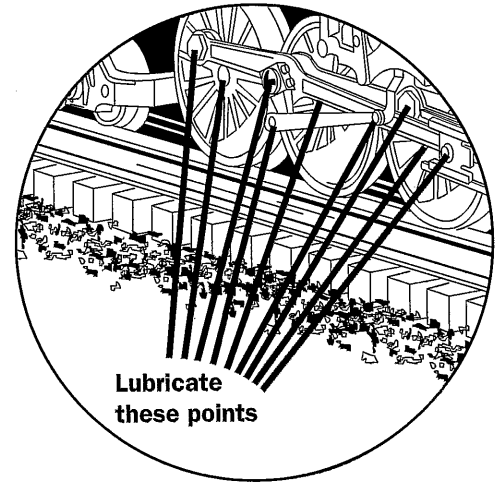
Step 9: Press ENG and ID#, then operate normally.



Engine Maintenance

Lubricating your locomotive

K-LINE steam engines are designed to prove years of quality operation with very little maintenance required. Using a small amount of light machine oil on the end of a toothpick, lubricate all points of linkage on the six drive wheels and all drive rods. Do not over oil. The more often the engine is run, the more often the drivers need to be lubricated. Remove any excess oil or grease, especially if it has come in contact with the traction surfaces of the wheels.



Smoke Unit

For the first fill with smoke fluid, use between 10 to 15 drops of smoke fluid. Use about 5 drops in subsequent uses. Add directly to the smoke stack. Be sure the fluid goes down the chimney tube.

It is very important to keep the heater element wet with some fluid. If the aroma changes from smoke to a slight burning smell, this is a sign the smoke fluid is running low. This could cause failure of the heater element.

Conventional Mode: Turn the smoke unit on and off using the slide switch under the cab of the engine. Switch to the off position if the locomotive is run without Smoke Fluid. While in neutral, the motor in the smoke generator will pulse on and off. This is done to protect the heater element.

Smoke Output in Conventional mode is dependent on transformer voltage. When running the engine alone, it will run at lower voltage and the smoke output will be low. To increase the smoke output, add more cars to the train, thereby increasing the voltage needed to run the train.

Command Mode: The smoke unit must be turned on using the slide switch under the cab of the engine for Command mode. When track power is applied, the smoke output is off until the engine is addressed. Any command sent to the engine turns on the smoke output. Smoke can be turned on and off using CAB-1 Commands (AUX 1, 8 = Off, AUX 1, 9 = On). Press AUX 1 and hold down 9 for a momentary boost of smoke output. Do not hold for more than 10 seconds.

When the engine is reset (AUX 1, 0) or the sounds turned off (AUX 1, 5), the smoke output is also turned off until the next command is sent to the engine.

