Lionel
F3 A-B-A Diesel
Locomotive Set
Owner's Manual

featuring **TRAINmaster**
C·O·M·M·A·N·D

RailSounds 5.0

and

ODYSSEY SYSTEM

Congratulations!

Congratulations on your purchase of the Lionel F3 A-B-A diesel locomotive set! This set features a powered A-unit, a non-powered B-unit, and a non-powered A-unit. On the outside, these locomotives feature numerous prototypical details and expert decoration in your favorite livery. Inside the bodies, these locomotives are equipped with some of the most advanced sounds and controls in model railroading. This set is ready for duty on your layout.

Features of this locomotive set

- **TrainMaster Command Control equipped—able to run in the TrainMaster Command Control environment or in the conventional environment with only a standard transformer**
- **RailSounds 5.0 sound system with intelligible CrewTalk dialog and TowerCom announcements, each with different scenarios depending on whether the locomotive is in motion or stopped**
- **Odyssey System for speed control (powered A-unit only)**
- **Directional lighting including operating LED headlights**
- **Operating marker lights**
- **ElectroCouplers**
- **Dual powerful maintenance-free motors with momentum flywheels (powered A-unit only)**
- **Four traction tires (powered A-unit only)**
- **Fan-driven smoke units (in both A-units)**
- **Lighted number boards**
- **Lighted cab interior**
- **Minimum curve: O-31**

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Quick Start

Transformer operations

1. **Slide the Odyssey System switch to the NO ODY position to operate without speed control.** To operate your powered locomotive with speed control, slide the Odyssey System switch to the ODY position and refer to pages 17-20.

2. **Place your locomotive set on Lionel or Lionel-compatible O-31 or larger track.**

3. **Power your locomotive at 8-18 volts with your alternating current (AC) transformer.**

   Note! Do not power your locomotive set with a direct-current (DC) transformer. Damage to sensitive electronic components may occur.

4. **Wait three to eight seconds as your locomotive's headlight illuminates and the RailSounds sound system starts up.**

5. **Move 'em out! Press the DIRECTION button on your controller, then throttle up.**

TrainMaster Command Control operations

To operate your locomotive set in the Command Control environment, you need a Command Base (available separately, 6-12911) and a CAB-1 Remote Controller (available separately, 6-12868).

1. **Turn off track power and plug-in the Command Base.**

2. **Place your locomotive set on Lionel or Lionel-compatible O-31 or larger track.**

3. **Increase track voltage to full power (19 volts AC).**

   Note! Do not power your locomotive set with a direct-current (DC) transformer. Damage to sensitive electronic components may occur.

4. **Press ENG and 1 to address your locomotive set with your CAB-1 Remote Controller.**

5. **Throttle up and move 'em out.**

Conventional transformer operations

Conventional operations

Your locomotive set is capable of operating in the conventional environment with nothing more than a standard Lionel alternating-current (AC) transformer.

In the conventional environment, your powered A-unit locomotive cycles through a repeating pattern of operations: forward, neutral, reverse, neutral, and so on. To advance to the next operation, press the **DIRECTION** button on your transformer. Alternately, you could use the throttle to briefly turn off track power so that the locomotive advances to the next operation when power is restored.

Once you cycle the powered A-unit locomotive into forward or reverse, you control your locomotive set's speed by varying track voltage with the transformer's throttle. To increase the speed of the locomotive, you increase track voltage. To decrease the speed, you decrease track voltage. To stop the locomotive and to change directions (or to enter neutral), track voltage is turned off or interrupted.

Use the **HORN** and **BELL** buttons on your transformer (or separate buttons if your transformer is not equipped with these controls) to activate these features. Only the powered A-unit is equipped with sounds.

To experience all of your locomotive set's features, we recommend operating in the TrainMaster Command Control environment. With a simple one-wire connection, you can use the CAB-1 Remote Controller to access all of the functions of your locomotive set. Refer to pages 21-29 to see how to operate your locomotive set in the TrainMaster Command Control environment.

Conventional transformer operations

Operating your locomotive set in the conventional environment

1. **Slide the Odyssey System switch to the NO ODY position to operate without speed control.** To operate your locomotive with speed control, slide the Odyssey System switch to the ODY position and refer to pages 17-20.

   Note! Keep the Odyssey System switch in the NO ODY position when you are not running your locomotive with speed control.

2. **Place your locomotive set on Lionel or Lionel-compatible O-31 or larger track.** Be sure that the non-powered A-unit faces the rear of the train. The back-up light on the B-unit should face the rear of the train.

3. **Power your locomotive set at 8-18 volts with your alternating current (AC) transformer.**

   Caution! Power your locomotive set with an alternating-current (AC) transformer only. Powering your locomotive set with a direct-current (DC) transformer may result in damage to sensitive electronic components.

4. **Wait three to eight seconds as your locomotive's headlight illuminates and the RailSounds sound system starts up.**
   When the locomotive set has determined that a TrainMaster Command Base is not connected to the track, the locomotive set's headlight will illuminate and the RailSounds sound system will start. You are ready for operation in the conventional environment.

5. **Move 'em out!**
   Press the **DIRECTION** button on your transformer to sequence your powered A-unit locomotive through the repeating pattern of operations: forward, neutral, reverse, neutral, and so on. You may also briefly turn off track power to advance the locomotive set to the next operating state. Adjust the throttle until your locomotive set moves at your desired speed.

   Note! When placing your powered A-unit locomotive on your layout for the first time, it will start out in neutral. Thereafter, it will start in forward after every power interruption lasting five seconds or longer.

Use the **HORN** and **BELL** buttons on your transformer to activate those features on the powered A-unit locomotive. Refer to page 13 if your transformer is not equipped with those buttons.

Conventional transformer operations

Locking your powered A-unit locomotive into a single direction

When the Command reverse unit switch is in the RUN position, your powered A-unit locomotive sequences through a repeating pattern of operations: forward, neutral, reverse, neutral, and so on.

To "lock" your powered A-unit locomotive into a single direction (for example, to operate in forward only), you can deactivate the Command reverse unit's sequencing function. Refer to Figure 1 for the location of the Command reverse unit switch.

1. Use your transformer's **DIRECTION** button or interruptions in track power to get your powered A-unit locomotive moving in the desired direction or into neutral.

2. Slow the locomotive down without stopping (reduce the throttle without turning off track power).

3. Slide the Command reverse unit switch on the powered A-unit locomotive to the PGM position. At this point, the locomotive is "locked" into your chosen direction.

To restore the forward-neutral-reverse sequence, just slide the Command reverse unit switch back to the RUN position.

Note! Your locomotive will "reset" to forward after any power interruption lasting five seconds or longer, regardless of the direction you set.
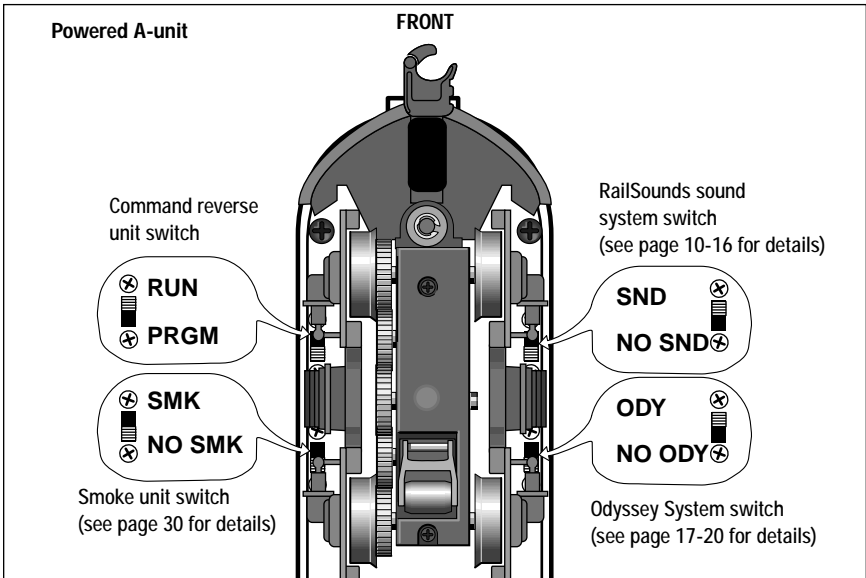
Figure 1. Switch locations

Conventional transformer operations

Coupling your locomotive set in the conventional environment

Each locomotive unit is equipped with one ElectroCoupler that is released by remote control at any point around your layout in the TrainMaster Command Control environment. The ElectroCouplers are located on the noses of the A-units and the rear of the B-unit.

In the conventional environment, the ElectroCouplers will not open manually or by using a Remote-Control Track section. To couple your locomotive in the conventional environment, you must rely on a piece of rolling stock equipped with a magnetic coupler. Simply release the magnetic coupler and couple the rolling stock to the locomotive, even if the ElectroCoupler is closed.

Keep in mind that you may still make use of Lionel Remote-Control Track sections (6-65530 for O gauge; 6-12746 and 6-65149 for O-27 gauge; and 6-12020 for FasTrack layouts) with the magnetic couplers on the rolling stock. Place the trigger disc on the magnetic coupler over the central coil on the Remote-Control Track section, then press UNCOUPLE on the track section's controller. As illustrated in Figure 2, the magnetic field pulls the disc downward, releasing the coupler.

Remote-Control
Track Section
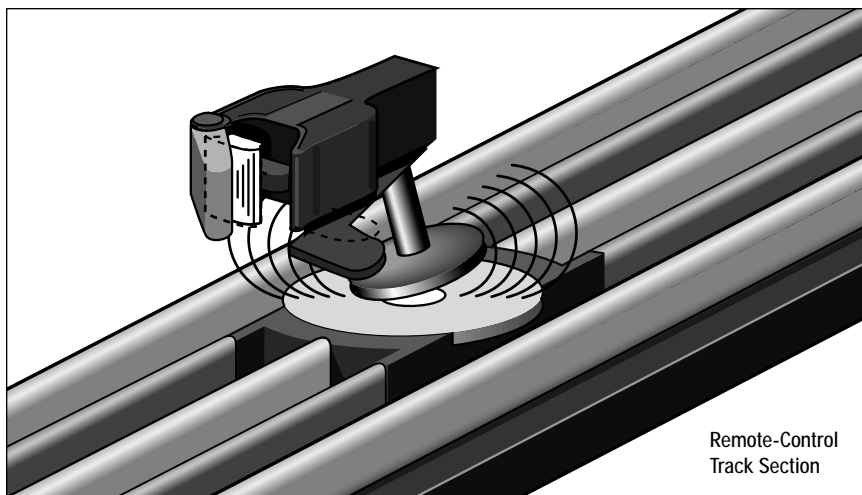
Figure 2. Magnetic coupler operation

RailSounds 5.0 sound system operations

RailSounds 5.0 sound system operations

Your powered A-unit locomotive is equipped with the Lionel RailSounds 5.0 sound system, the most realistic model railroad sound system in the world. The RailSounds sound system brings the sounds of the railroad to your layout through high quality sound recordings of real locomotives.

When you operate your powered A-unit locomotive in the conventional environment, you get the realistic sounds of the diesel motor, which automatically revs up as the speed of the locomotive increases. You can sound the locomotive's horn or activate the ringing of the mechanical bell. CrewTalk dialog and TowerCom announcements are triggered with the horn button on your controller. When you are through with operations and power down the track, your locomotive's RailSounds sound system starts a realistic shutdown sequence (a nine-volt alkaline battery is required, see page 10).

When you operate your powered A-unit locomotive in the TrainMaster Command Control environment, you get full control of the RailSounds 5.0 sound system. In addition to the horn and bell sounds, the locomotive's RPM sounds automatically rev up, and you can also set a particular RPM level using your CAB-1 Remote Controller. In the Command Control environment, the release of the ElectroCouplers is accompanied by a coupler release sound. Use the **BRAKE** button, and listen for the sound of squealing metal. You can also trigger CrewTalk dialog and TowerCom announcements, which simulate the interaction between the locomotive crew and the dispatcher. Whenever you choose to shutdown your locomotive, the realistic shutdown sequence commences (a nine-volt alkaline battery is required if track power is turned off, see page 10).

RailSounds 5.0 sound system operations

Installing the battery

While the RailSounds sound system is powered through the track, we recommend that you install a nine-volt alkaline battery in the powered A-unit locomotive to prevent the sound system from shutting down during track power interruptions (for example, at a switch or a dirty section of track). Follow these steps and refer to Figure 3 as you install the battery.

Note! If the RailSounds sound system turns off during interruptions in track power, you may need to replace the battery.

1. Carefully lift up and remove the rear roof-top hatch.

2. Remove the protective cover from the battery harness.

3. Snap the battery harness onto the nine-volt alkaline battery's terminals.

4. Slide the battery into the battery clip.
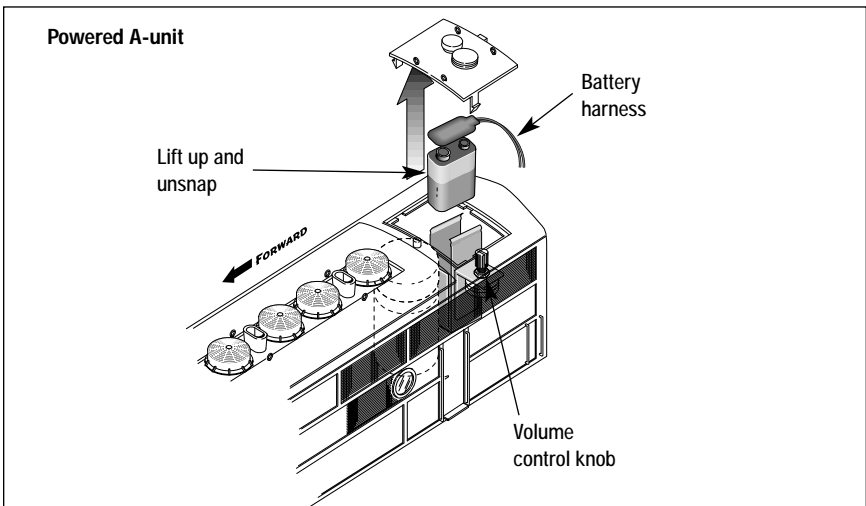
5. Replace the hatch.

Figure 3. Battery installation (powered A-unit locomotive only)

RailSounds 5.0 sound system operations

Using the RailSounds 5.0 sound system in the conventional environment

When you first power up your powered A-unit locomotive, you will hear the sounds of the locomotive at rest. As the locomotive set moves, the RPM sounds automatically increase with the locomotive's speed. In the conventional environment, the horn and bell sounds are activated by your transformer controls.

To silence the motor sounds, slide the RailSounds 5.0 sound system switch located on the underside of the powered A-unit locomotive to the SIGNALSOUNDS position before you power up the locomotive or after the locomotive has been powered down for a minimum of ten seconds. The horn and bell sounds will still be active. To adjust the volume, use the volume control knob located under the rear roof-top hatch of the powered A-unit locomotive. Refer to Figure 3 on page 10.

Note! For proper operation of the RailSounds 5.0 sound system during track power interruptions and for the locomotive shutdown sequence, you must install a nine-volt alkaline battery. See page 10.

In the conventional environment, you will experience several features of the RailSounds 5.0 sound system.

- **Eight levels of diesel motor RPM.** The level of diesel motor RPM automatically varies with your throttle adjustments.

- **MultiHorn.** A different horn sound at different speeds—a RailSounds sound system exclusive.

- **Mechanical bell.** Press **BELL** on your transformer to begin the effect, then press **BELL** a second time to discontinue the effect.

- **CrewTalk dialog and TowerCom announcements.** CrewTalk dialog is triggered by your transformer's **HORN** button.

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

- **Shutdown sequence.** When you turn off track power, you have two seconds to power up again after you hear the reverse unit reset sound. If you do not restore power, you will hear the realistic diesel shutdown sequence. Because track power is off, a nine-volt battery is required for this sequence to function. Refer to Figure 3 on page 10.

RailSounds 5.0 sound system operations

Activating the CrewTalk dialog and TowerCom announcements in the conventional environment

In the conventional environment, CrewTalk dialog and TowerCom announcements are triggered by short whistle blasts and vary with the state of the locomotive.

- If the powered A-unit locomotive has been stopped for less than 15 seconds, a short whistle blast triggers a "please standby" dialog.

- If the powered A-unit locomotive has been stopped for longer than 15 seconds, a short whistle blast triggers a "cleared outbound" dialog.

- If the powered A-unit locomotive is moving, a short whistle blast triggers an "all clear ahead" dialog.

- If the powered A-unit locomotive is moving with the bell activated, a short whistle blast triggers a "slow to caution" dialog.

RailSounds 5.0 sound system operations

Installing a Lionel Sound Activation Button for conventional operation

If your transformer lacks **HORN** and **BELL** buttons, you will need to install Lionel no. 610-5906-001 Sound Activation Buttons (available separately) to activate the locomotive's horn and bell sounds.

   Connect the buttons as shown below. Be sure that all track power passes through the Sound Activation Button(s). Do not bypass the buttons.

For AC transformers lacking a bell button

Black wire

Common/Ground/U

Existing wire

POWER SUPPLY

Red wire

Power/A

LIONEL SOUND ACTIVATION BUTTON

Lionel no. 610-5906-001 Sound Activation Button for activating the bell
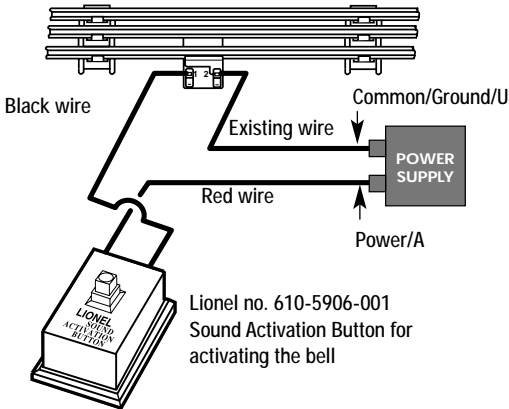
For AC transformers lacking bell and horn/whistle buttons

Red wire

Common/Ground/U

Existing wire

Red wire

POWER SUPPLY

Wire nut

Black wire

Power/A

Black wire

Lionel no. 610-5906-001 Sound Activation Button for activating the horn

LIONEL SOUND ACTIVATION BUTTON

LIONEL SOUND ACTIVATION BUTTON

Lionel no. 610-5906-001 Sound Activation Button for activating the bell
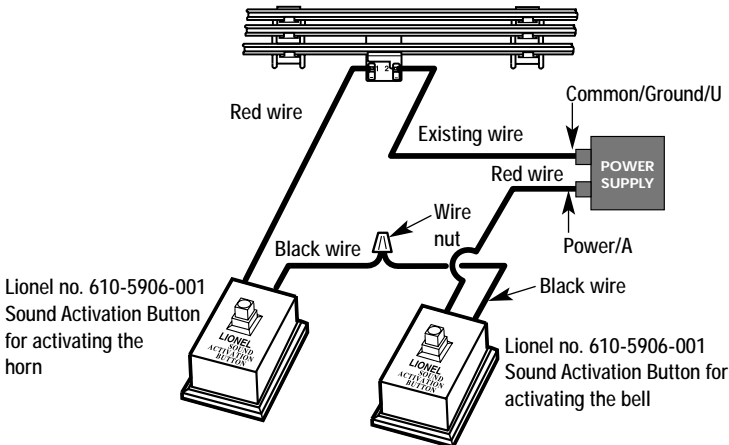
RailSounds 5.0 sound system operations

Using the RailSounds 5.0 sound system in the TrainMaster Command Control environment

To access all of the features of the RailSounds 5.0 sound system, you must operate your powered A-unit locomotive in the TrainMaster Command Control environment. The CAB-1 Remote Controller is required to activate features such as TowerCom announcements, CrewTalk communication, and coupler release sounds. Refer to pages 21-29 to learn how the RailSounds 5.0 sound system is integrated into TrainMaster Command Control operations.

Note! For proper operation of the RailSounds 5.0 sound system during track power interruptions and for the locomotive shutdown sequence, you must install a nine-volt alkaline battery. See page 10.

In the TrainMaster Command Control environment, you will experience all of the features of the RailSounds sound system.

- **Eight levels of diesel motor RPM.** Your CAB-1 Remote Controller throttle automatically determines the level of the diesel motor RPM. You may also set the RPM sounds to a particular level manually using your CAB-1 Remote Controller.

- **MultiHorn.** A different horn sound at different speeds—a RailSounds 5.0 sound system exclusive.

- **Mechanical bell.** Press **BELL** on your CAB-1 Remote Controller to begin the effect, then press **BELL** a second time to discontinue the effect.

- **Squealing brakes.** Press the **BRAKE** button and listen for the squealing of the locomotive's brakes as the locomotive slows down.

- **Coupler release sounds.** Use your CAB-1 Remote Controller to release an ElectroCoupler, and you get the sounds of the coupler opening.

- **CrewTalk dialog and TowerCom announcements.** Use your CAB-1 Remote Controller to trigger conversations between the dispatcher and locomotive engineer. You'll hear "hold for clearance," "cleared for departure," and many other exchanges. See pages 15 and 16.

- **Shutdown sequence.** When you turn off track power, you have two seconds to power up again after you hear the reverse unit reset sound. If you do not restore power, you will hear the realistic diesel shutdown sequence. Because track power is off, a nine-volt battery is required for this sequence to function. Refer to Figure 3 on page 10. You may also trigger the shutdown sequence without powering down the track using the **AUX1, 5** command when the locomotive is stopped and the diesel RPM sounds are at their lowest level.

RailSounds 5.0 sound system operations

Activating the CrewTalk dialog and TowerCom announcements in the Command Control environment

With the RailSounds 5.0 sound system, CrewTalk dialog and TowerCom announcements feature a variety of brief radio conversations between the engineer and dispatcher. All dialog is intelligible, and each comment is followed by at least one automatic response.

CrewTalk dialog is an engineer-initiated radio conversation with the dispatcher. TowerCom announcements are a dispatcher-initiated radio conversation with the engineer. Be sure to listen for the different combinations of words and phrases that comprise these exchanges.

Refer to Table 1 below for the dialog commands. The dialog in the table provides examples of the conversations you can trigger. The actual phrasing will vary.

Locomotive	Commands	Example dialog
Stopped	AUX1, 2	Crew: Can we go? Tower: No, please standby.
	AUX1, 7	Tower: Stand by for clearance. Crew: Roger.
	2	Crew: Can we go? Tower: Roger, you are clear.
	7	Tower: You are clear for departure. Crew: Roger, we are clear.
	AUX1, 5	Crew: Signing off! Shutdown sequence
Moving	AUX1, 2*	Crew: Train is arriving. Tower: Roger, you are clear inbound.
	AUX1, 7*	Tower: You are clear for arrival. Crew: Roger.
	2	Crew: Are we clear ahead? Tower: You are all clear.
	7	Tower: You are all clear. Crew: Roger.
	AUX1, 5	Tower: Come to an immediate stop. Crew: We are stopping now.
	5	Tower: Slow to caution speed. Crew: Roger, slowing now.

* Activating either **AUX1, 2** or **AUX1, 7** while the locomotive is in motion enables a "train has now arrived" conversation for 15 seconds. If the train stops within this time, pressing **2** or **7** will play this special conversation.

Table 1. CAB-1 Remote Controller dialog commands

RailSounds 5.0 sound system operations

RailSounds 5.0 sound system dialog on a round trip

Refer to Figure 4 for a sample dialog script for the locomotive's round trip.

TOWER-INITIATED DIALOG

AUX1, 7 - "Stand by."
7 - "You are clear."

5 - "Slow to caution speed."
AUX1, 5 - "Come to a full stop."

7 - "Welcome back, stand by."

7 - "All clear ahead."
AUX1, 7 - "You are clear inbound."

ENGINEER-INITIATED DIALOG

AUX1, 2 - "Are we clear?"/" No, stand by."
2 - "Can we go yet?"/"Yes, you are clear."

2 - "Still clear ahead?"/
"Roger, you are clear."

7 - "we have arrived and
we are standing by."

AUX1, 2 - "We are arriving,"/
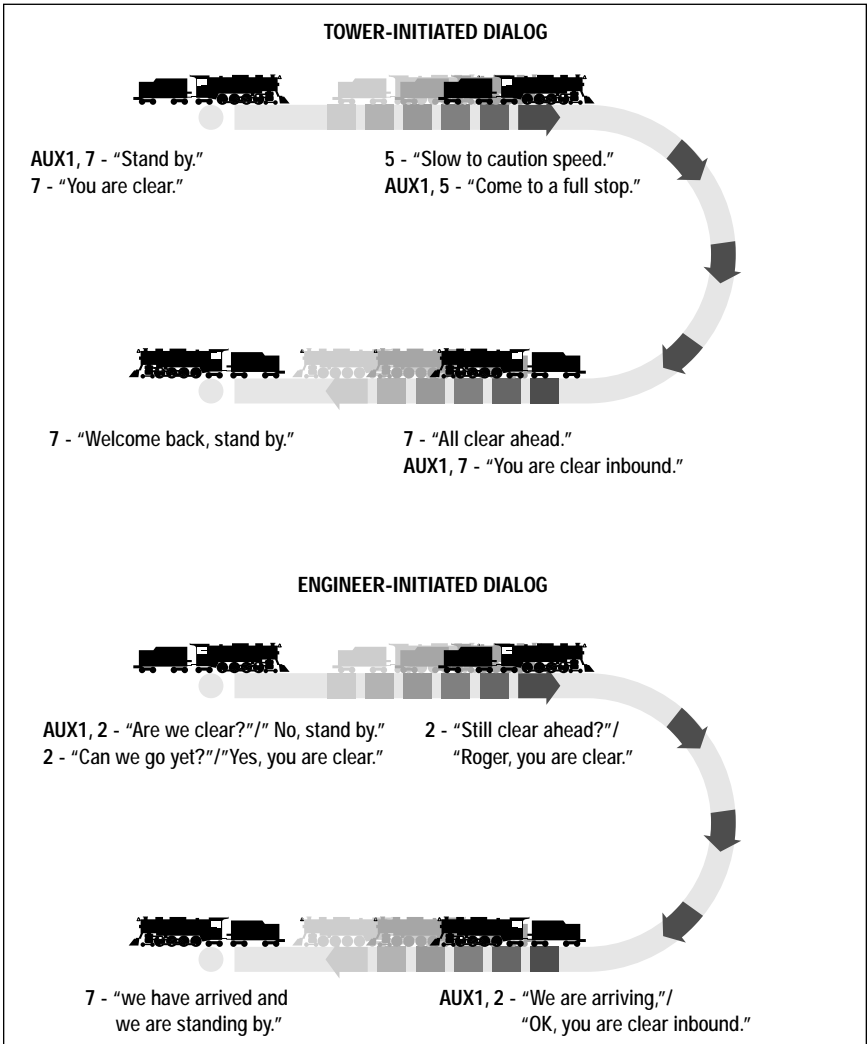"OK, you are clear inbound."

Figure 4. RailSounds 5.0 sound system dialog on a round trip

Odyssey System operations

Odyssey System operations

The Odyssey System is "cruise control" for your locomotives. Once the speed control is set, your locomotive set will maintain a constant speed, no matter what load is placed on the locomotive set or what grades you have on your layout. The Odyssey System also allows for extremely slow movement that will amaze any scale enthusiasts.

In the conventional environment, you activate the Odyssey System and set your locomotives to operate at one particular speed. Your locomotives maintain this speed until you turn off speed control or set a new speed.

In the Command Control environment, the Odyssey System is activated using your CAB-1 Remote Controller. When the Odyssey System is active, your locomotives will maintain this speed until you adjust the CAB-1 Remote Controller's throttle.

Note! In the conventional environment, keep the Odyssey System switch in the NO ODY position when you are not running your locomotive with speed control. If the Odyssey System switch remains in the ODY position, your locomotive may lock into an unwanted speed setting as you adjust your throttle to control train speed. This effect may be caused by variations in your power supply and/or conditions on your layout.

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Odyssey System operations

Activating the Odyssey System in the conventional environment

Follow these steps to activate your locomotives' speed control in the conventional environment.

1. Slide the Odyssey switch to the ODY position. Refer to Figure 1 on page 7 for the location of the switch.
2. Run the locomotive set at the desired speed for approximately five seconds.
3. Press and hold the **HORN** button on the transformer.
4. While holding the **HORN** button, increase the track voltage by at least three volts (at least a quarter turn).

The locomotives' speed will increase before returning to the initial speed. At this point, speed control is set. Increasing the throttle will not increase the speed of the locomotive; however, decreasing the throttle will decrease the speed of the locomotive.

Note! You may notice a slight delay between adjusting your transformer's throttle and the change in your locomotives' speed as the Odyssey System works to regulate the voltage to the motor. If you desire instantaneous response to throttle changes, turn off the Odyssey System.

Caution! In the conventional environment, the lights in the locomotive are connected directly to track power. To prolong the life of your lamps, do not exceed 14 to 16 volts for extended periods.

Odyssey System operations

Turning off the Odyssey System in the conventional environment

Follow these steps to turn off the Odyssey System in the conventional environment.

1. While the powered A-unit locomotive is in neutral, turn your controller up to the maximum power (no more than 19 volts), wait one second, then press and hold the horn button.

2. While holding the **HORN** button, slowly reduce the track voltage to approximately one-third or one-half of the full power.

3. Release the **HORN** button.

4. Move the locomotive in forward OR reverse. The locomotive set is now out of speed control mode.

Note! Sliding the Odyssey System switch to the NO ODY position will disable the Odyssey System. We recommend that you keep the Odyssey System switch in the NO ODY position unless you want to activate the locomotive's speed control.

Odyssey System operations

Odyssey System Command Control operation

When the Odyssey System is activated, changes in the speed of the powered A-unit locomotive will correspond to each signal from the Command Base. For example, when you address the locomotive and slowly turn the throttle knob, the first flash of the light on the Command Base corresponds to the first speed step, which is the slowest speed of the locomotive. The locomotive will maintain that speed until you increase or decrease the throttle.

In the TrainMaster Command Control environment, you can use your CAB-1 Remote Controller to turn the Odyssey System on or off. The position of the Odyssey System switch (see Figure 1 on page 7) is the Odyssey System default setting when you power up the locomotive. You can override the default setting with the following commands. The override settings will be cleared and the default setting will be restored when you power down the locomotive.

Do not wait longer than two or three seconds between pushing the buttons in each sequence. If the command is not accepted, repeat the sequence.

Note! The powered A-unit locomotive must be in "neutral" when you enable or disable the Odyssey System.

AUX 1 | BRAKE | 7 | BRAKE Turn off the Odyssey System.

Note! When you press **7**, you will trigger a TowerCom announcement. This has no impact on the Odyssey System function.

AUX 1 | BRAKE | 9 | BRAKE Turn on the Odyssey System.

Note! When you press **9**, you will activate the Air release sound and turn on the smoke unit (if it was off). This has no impact on the Odyssey System.

TrainMaster Command Control operations

TrainMaster Command Control is the advanced model railroad control system from Lionel. To operate your locomotive set in the Command Control environment, you need a Command Base (available separately, 6-12911) and a CAB-1 Remote Controller (available separately, 6-12868).

Your commands are sent by the CAB-1 Remote Controller to the Command Base, which then translates the command into digital code. That code is sent through the outside rails to your locomotive, which will not respond until it recognizes its unique ID#. TrainMaster Command Control gives you the power to operate multiple Command-equipped locomotives on the same track at the same time.

Keep in mind that track power is like gasoline in the tank of a car—it gives you the power to go places, but it doesn't tell you where to go or how fast to get there.

Operating your locomotive set in the Command Control environment

1. **Turn off track power and plug-in the Command Base.** Be sure that the Command Base is connected to the outside rail or to the Common/Ground/U terminal on your track power supply.

2. **Place your locomotive set on Lionel or Lionel-compatible O-31 or larger track.** Be sure that the back-up light on the B-unit and the headlight on the non-powered A-unit face the rear of the train.

3. **Increase track voltage to full power (no more than 19 volts AC).** On PowerMasters, slide the CMD/CONV switch to CMD. Program Track Power Controllers to Command Control operation.

4. **To operate your locomotive as a lash-up,** press **TR** and **9** on your CAB-1 Remote Controller. To operate your locomotives individually, press **ENG** and enter **1** for the powered A-unit; **2** for the B-unit; and **3** for the non-powered A-unit.

   Note! To change the lash-up or individual ID#'s, refer to pages 27 and 28.

5. **Throttle up and move 'em out!** Your locomotive set will respond to every command from your CAB-1 Remote Controller.

TrainMaster Command Control operations

CAB-1 Remote Controller commands

The CAB-1 Remote Controller commands are detailed below. ***The corresponding RailSounds sound system effects are in bold italic type.***

COUPLER F Releases the front coupler.
Coupler release sound.

COUPLER R Releases the rear coupler.
Coupler release sound.

AUX 1 Activates the numeric keypad.
Air release sound.

AUX 2 Toggles the headlight on and off.

Accelerates the locomotive with a clockwise rotation. Decelerates the locomotive with a counter-clockwise rotation.

Shuts down all PowerMasters on your railroad. Stops all TrainMaster Command Control-equipped locomotives in operation. Use **HALT** only in emergency situations.

WSTL / HRN Activates the locomotive's horn. Release the button to discontinue the sound. ***Multihorn diesel horn sound.***

BELL Toggles the bell sound on and off. ***Mechanical bell sound.***

DIR Changes the locomotive's direction. The locomotive decelerates to a stop and continues in the opposite direction when you increase the throttle.
Air release sound.

BOOST Increases the locomotive's speed while the button is pressed. Release the button to return to the initial speed.

BRAKE Decreases the locomotive's speed while the button is pressed.
Squealing brake sounds.

See page 25 to change the momentum settings.

TrainMaster Command Control operations

CAB-1 Remote Controller numeric keypad commands

When you press the **AUX1** button on your CAB-1 Remote Controller, you turn the numeric keypad into ten command buttons. These commands are specific to your locomotive, and an overlay is included to help you learn these functions. After you press the **AUX1** button, you will be able to press any numbered button until you address a different Command Control equipped product. ***The corresponding RailSounds 5.0 sound system effects are in bold italic type.***

0 Stops and resets the locomotive. Resets the locomotive's direction to forward. ***Horn blows. RPM sounds return to automatic.***

1 Raises the volume of the RailSounds sound system background sounds, such as RPM sounds and let-off sounds. The horn, bell and dialog are unaffected. The default is full volume. The volume setting is retained when track power is turned off. ***Sound volume increases.***

2 Engineer begins radio dialog, dispatcher replies (see pages 15 and 16). ***CrewTalk communication.***

3 Enters manual RPM mode and increases the RailSounds sound system RPM level (see page 25). If the RailSounds sound system is shut down (see **5** key below), **AUX1**, **3** activates a full RailSounds sound system start-up while the locomotive is stopped after pressing **AUX1**, **5** with track power on.

4 Lowers the volume of the RailSounds sound system background sounds, such as RPM sounds and let-off sounds. The horn, bell, and dialog are unaffected. The volume setting is retained when track power is turned off. ***Sound volume decreases.***

5 Activates the RailSounds 5.0 sound system shutdown sequence when stopped. Activates the emergency stop feature while in motion. Note that in the shutdown sequence, the smoke unit does not turn off if it was already on. To turn off the smoke unit, press **AUX1**, **8** or use the smoke unit ON/OFF switch.

6 Enters manual RPM mode and lowers the RailSounds diesel motor RPM level (see page 25).

7 Dispatcher begins radio dialog, engineer replies (see pages 15 and 16). ***TowerCom announcement.***

8 Turns off the smoke unit. ***Air release sound.***

9 Turns on the smoke unit if the smoke unit switch is in the ON position. Be sure to add smoke fluid before turning on the smoke unit to prevent damage to your locomotive. ***Steam generator blow-off sound.***

Note! **AUX1**, **8** and **9** function only if the locomotive's smoke unit switch is in the ON position. Sounds will be active in both switch positions.

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TrainMaster Command Control operations

CAB-1 numeric keypad table

The **3**, **5**, and **6** keys on your CAB-1 can perform several different functions when controlling your locomotive. These functions include:

- Starting up and shutting down the engine sounds.
- Controlling the engine RPM sounds manually ("Manual RPM Mode").

If you press **AUX1** immediately before you press the **3**, **5** or **6** button, its function will be modified. The following table summarizes the functions of these CAB-1 Remote Controller buttons for your locomotive.

Key Command	RailSounds sound system
3	If the RailSounds sound system is shut down, engine sounds start up. If the RailSounds sound system is running, engine enters manual RPM mode and revs up RPM one level with each press.
AUX1, 3	(same as above)
5	If locomotive is stopped, engineer announces "shut down," engine sounds turn off. If the locomotive is moving, the dispatcher instructs, "Slow to caution speed."
AUX1, 5	If the locomotive is moving, the dispatcher instructs, "Emergency stop!"
6	If the locomotive is moving, engine enters manual RPM mode and revs down RPM one level with each press.
AUX1, 6	(same as above)

TrainMaster Command Control operations

Tuning your locomotive's performance

TrainMaster Command Control allows you to fine-tune the performance of your locomotive. Use your CAB-1 Remote Controller to make these adjustments.

Note!   These settings will be lost if you assign a new ID#.

RPM RUN LEVEL

Your locomotive has eight levels of RPM sounds, corresponding to the eight run levels in a real diesel locomotive. The three ways in which you can control your locomotive's RPM sounds are discussed below.

Automatic RPM Mode

In Automatic RPM Mode, your locomotive's RPM run level is controlled by movements of the throttle on your CAB-1 Remote Controller. A small clockwise motion of the throttle knob will cause the RPM sounds to ramp up one run level, while a small counter-clockwise motion of the throttle knob will cause the RPM sounds to ramp down one run level.

While the locomotive is ramping between run levels, it will ignore additional throttle movements. Once the RPMs have finished ramping to the next run level, additional throttle motions will again trigger another RPM ramp. This feature will allow you to "fine-tune" your RPM run level, regardless of the locomotive's speed, using only the throttle knob. This mode is the default setting for your locomotive on power up.

Manual RPM Mode

In Manual RPM Mode, you can set your locomotive's RPM run level to a constant value by pressing the **AUX1**, **3** or **AUX1**, **6** key sequences on your CAB-1 Remote Controller. When your locomotive is in this mode, its RPM run level will not vary with throttle movements or with the speed of the locomotive.

To enter Manual RPM Mode, press the **AUX1**, **3** key sequence while the locomotive is stopped, or press either the **AUX1**, **3** or **AUX1**, **6** key sequence while the locomotive is moving. Pressing **AUX1**, **3** will cause your locomotive to enter Manual RPM Mode and ramp up one RPM run level; pressing **AUX1**, **6** will cause your locomotive to enter Manual RPM Mode and ramp down one RPM run level. You may then press the **3** or **6** key additional times to ramp your locomotive's RPMs through all the run levels. Once you set your locomotive's RPM run level it will remain there until you change it with the **3** or **6** keys, or until you exit Manual RPM Mode.

You may cause your locomotive to exit Manual RPM Mode in several ways: reset the locomotive with **AUX1**, **0** key sequence; enter the shutdown sequence with the **AUX1**, **5** key sequence; or turn off the track power and allow the locomotive to reset.

Speed RPM Mode

In Speed RPM Mode, your locomotive's RPM run level is controlled only by the actual speed of the locomotive.

TrainMaster Command Control operations

Tuning your locomotive's performance (continued)

Speed RPM Mode (continued)

To enter Speed RPM Mode, press the **AUX1**, **BRAKE** key sequence while the locomotive is stopped. A distinctive "clunk" sound will be heard. Once your locomotive is in Speed RPM Mode, the RPMs will ramp up and down through its eight run levels depending on how fast the locomotive is moving on the track. (Note that this is how your locomotive's RPMs are controlled when it is running in Conventional Mode.)

To exit Speed RPM mode, reset the locomotive with **AUX1**, **0** key sequence or turn off the track power and allow the locomotive to reset.

MOMENTUM

The TrainMaster Command Control momentum feature simulates the labored performance of a locomotive pulling a light, moderate, or heavy load. Press **L**, **M**, or **H** (located under the removable panel on the CAB-1 Remote Controller) to adjust the momentum setting. For quicker response to your commands, press **L**, which is the factory default setting. Your locomotive will keep this setting until it is changed.

ADJUSTING THE SPEED

The **BRAKE** and **BOOST** buttons give you incremental control of your locomotive's speed while you press and hold these buttons, allowing you to make small, gradual adjustments around curves and over grades. The locomotive will resume its initial speed when the buttons are released. Listen for the squeal of your locomotive's brakes when you use the **BRAKE** button.

SOUND LEVEL

Press **AUX1**, **1** or **4** on your CAB-1 Remote Controller to raise and lower the volume of the background locomotive sounds, such as RPMs and air release or let-offs. The horn, bell and dialog will be unaffected. Note that this setting is preserved through power down and system reset. Remember that the sounds will be silent when you power up your locomotive if the sounds were turned down previously. To set the maximum volume of both the background and foreground sounds, we recommend that you adjust your locomotive's volume control knob (see Figure 1 on page 7 for the location).

SETTING THE MAXIMUM SPEED

You may use your CAB-1 Remote Controller to set your locomotive's maximum speed. This will prevent locomotives from derailing as a result of excessive speed.

1. With the Command reverse unit switch in the RUN position, address your locomotive by pressing **ENG** and entering the ID#.

2. Press **SET** on the CAB-1 Remote Controller. The headlight will flash.

3. Get your locomotive moving at your desired maximum speed.

4. Press **BOOST**.

The maximum speed has been set. To clear this setting, press **SET** and then **BOOST**, holding each button for one second.

TrainMaster Command Control operations

Tuning your locomotive's performance (continued)

SETTING THE MINIMUM SPEED

You may use your CAB-1 Remote Controller to set your locomotive's minimum, or stall, speed.

1. With the Command reverse unit switch in the RUN position, address your locomotive by pressing **ENG** and entering the ID#.

2. Press **SET** on the CAB-1 Remote Controller. The headlight will flash.

3. Get your locomotive moving at your desired minimum speed.

4. Press **SET** again. The locomotive will stop.

The next time you throttle up, your locomotive will start at the speed you set. To clear this setting, press **SET** twice, holding the button for one second each time.

Assigning new ID#'s to your locomotives

While you may oprate your locomotive set as a lash-up, you will want to give each unit a unique ID#. Each locomotive will respond to commands associated with its ID# while all other units will disregard these commands. This allows you to open the appropriate ElectroCouplers and set the directional lighting.

Note! To restore your locomotive set's functions, see page 29.

1. Slide the Command reverse unit switches on your locomotives to the PGM position. See pages 7, 32, and 33 for the locations of the Command reverse unit switches on each unit.

Note! Work with only one locomotive at a time.

2. Place the locomotive on the track.

3. Connect the Command Base and plug it in.

4. Power up the track.

5. Press **ENG**.

6. Enter the unique ID#. Choose any number from 1 to 99 that has not been assigned to another locomotive set (**ENG**). We recommend using a part of your locomotive's cab number.

7. Press **SET**. The locomotive's horn will sound or the lights will flash.

8. Slide the Command reverse unit switch back to the RUN position.

The locomotive's ID# has been set. Be sure to record the new ID# for your reference.

Repeat these steps for each locomotive.

TrainMaster Command Control operations

Building a lash-up

TrainMaster Command Control allows you to couple your Command Control-equipped locomotives together, forming a multiple unit lash-up. Just like with the real railroads, lash-ups allow you to pull longer trains and climb steeper grades. You will find that the lighting operates prototypically—the lead unit's headlight and interior lights are illuminated when the train is in forward, and the rear unit's headlight and interior lights are on when the train is in reverse. For more information, refer to your TrainMaster Command Control manual.

To build a lash-up, assign a unique engine (**ENG**) ID# to each unit. Arrange the units on the track and couple them together. The Command reverse units must be set to RUN/FORWARD.

Note! If you press a wrong button, start over with that particular unit. The assignment isn't saved until you press **SET**.

Start with the lead (front) unit

1. Press **TR** and enter your lash-up ID# (1-9) on your CAB-1 Remote Controller. No other lash-up or track should share this ID#.

2. Enter the unique ID# of the lead unit.

3. Press **F**.

4. Press **SET** on the CAB-1 Remote Controller.

Add the middle units, one at a time

1. Press **TR** and enter the lash-up ID# (1-9) on your CAB-1 Remote Controller.

2. Enter the unique ID# of the middle unit.

3. Press **SET** on the CAB-1 Remote Controller.

4. Repeat these steps for any additional middle units.

Complete the lash-up by adding the rear unit

1. Press **TR** and enter the lash-up ID# (1-9) on your CAB-1 Remote Controller.

2. Enter the unique ID# of the rear unit.

3. Press **R**.

4. Press **SET** on the CAB-1 Remote Controller.

You are now ready to operate your locomotive as a lash-up. Simply press **TR** and enter the lash-up ID#, then use your CAB-1 Remote Controller to operate your locomotives. To operate an individual unit within the lash-up, press **ENG** and enter the ID# for that particular unit.

TrainMaster Command Control operations

Reprogramming your locomotive set to restore features

If your locomotives are unresponsive to your commands in the TrainMaster Command Control environment, we recommend that you follow this procedure to reset your locomotive set.

1. Slide the Command reverse unit switch to the PGM position. See pages 7, 32, and 33 for the locations of the Command reverse unit switches on each unit.

   Note! Work with only one locomotive at a time.

2. Plug in and connect your Command Base.

3. Place your locomotive on the track, then power up the track.

4. Press **ENG** and enter the locomotive's ID#.

5. Press **SET**.

6. Press **ENG** and enter the locomotive's ID# again.

7. Press **AUX1**.

8. Enter **8** for this particular locomotive.

9. Turn off track power and wait ten seconds.

10. Slide the Command reverse unit switch back to the RUN position.

    Repeat these steps for each locomotive.

    At this point, your locomotive set has been reset. Restore power to the track and operate the locomotive as usual. Be sure to use the ID# entered in Step 4.

Note! This procedure does not reset the RailSounds sound system volume setting. See page 26.

Maintaining and servicing your locomotive set

Adding fluid to your locomotive's smoke generator

Both A-unit locomotives are equipped with a smoke generator that produces a safe, clean, white smoke during operation. In order to function, the smoke generator requires the periodic addition of Lionel smoke fluid. A small bottle of smoke fluid is included with your locomotive set.

To add smoke fluid, press down and unscrew the cap of the smoke fluid bottle, then pierce the tip of the nozzle with a pin. Add 10 to 15 drops of fluid into the stack of your locomotive as illustrated in Figure 5. Power up your locomotive, and smoke production will start momentarily. Smoke production will start faster if you operate your locomotive at higher speeds. Smoke production is greatest at high voltages and when the locomotive pulls a heavy load. When smoke production decreases, add four to eight additional drops of smoke fluid.

If you prefer to operate your locomotives without smoke, locate the smoke unit switch on the underside of each locomotive and slide it to the NO SMK position. Refer to Figure 1 on page 7 and Figure 8 on page 33 for the location of this switch.

When the smoke unit switch is in the ON position, always keep a small amount of smoke fluid in the smoke unit. Operating your locomotive's smoke unit without smoke fluid will cause damage to the heating element.

Caution! Always operate your locomotive's smoke unit with the addition of smoke fluid to prevent damage to the heating element.
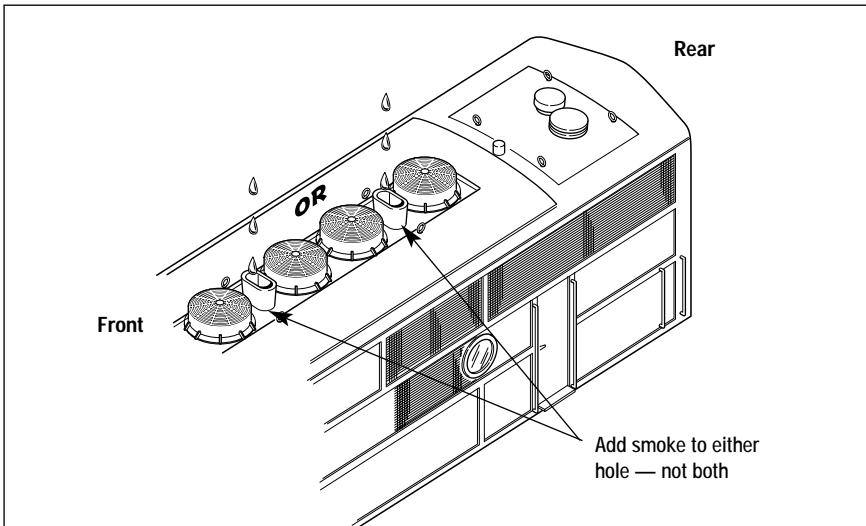

Figure 5. Adding smoke fluid

Maintaining and servicing your locomotive set

Lubricating your locomotive set

Help your Lionel locomotive set lead a long and productive life on your railroad by maintaining it properly. To keep your locomotive set lubricated, we recommend that you purchase a Lionel Lubrication and Maintenance Kit (6-62927), available from your authorized Lionel dealer.

When you find that the lubrication points illustrated in Figure 6, 7, and 8 appear dry, lubricate your locomotive set after you have removed any accumulated dirt and dust. There are two basic rules to keep in mind when you are lubricating your locomotive set: use only a small amount of lubrication and avoid getting grease or oil on your locomotive set's wheels, roller pick-ups, or the track.
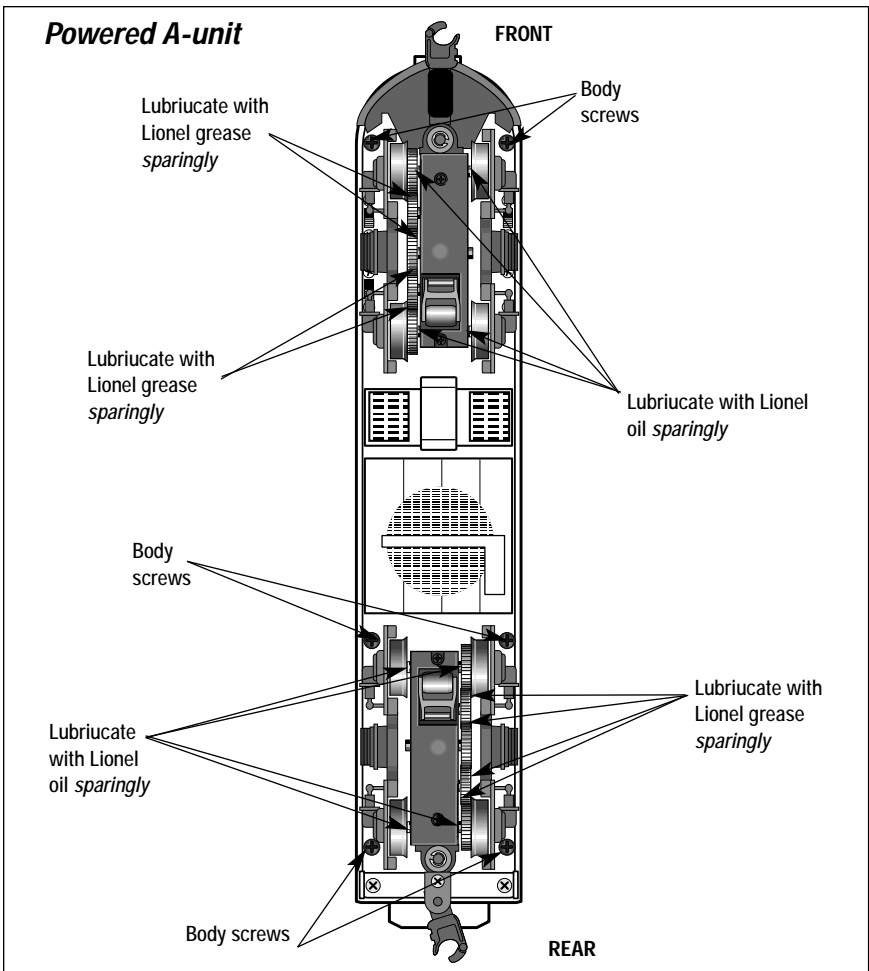

Figure 6. Lubricating the powered A-unit

Maintaining and servicing your locomotive set

Lubricating your locomotive set (continued)

Non-Powered B-unit

Front

Body screws

Lubricate with Lionel oil *sparingly*

RUN

PGM

Lubricate with Lionel oil *sparingly*

Lubricate with Lionel oil *sparingly*

Lubricate with Lionel oil *sparingly*

Body screws

Lubricate with Lionel oil *sparingly*
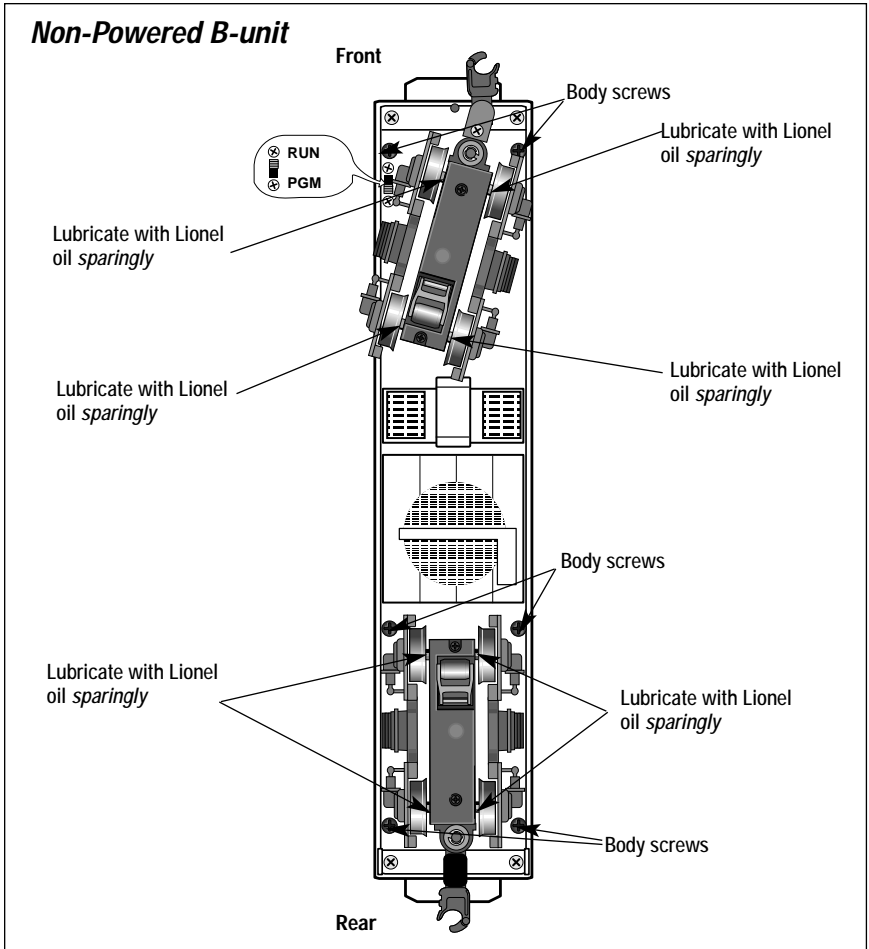
Lubricate with Lionel oil *sparingly*

Body screws

Rear

Figure 7. Lubricating the non-powered B-unit

Maintaining and servicing your locomotive set

Lubricating your locomotive set (continued)

Non-Powered A-unit

Body screws

Lubriucate with Lionel oil *sparingly*

Body screws

Lubriucate with Lionel oil *sparingly*

NO SMK
SMK
PRGM
RUN

Body screws
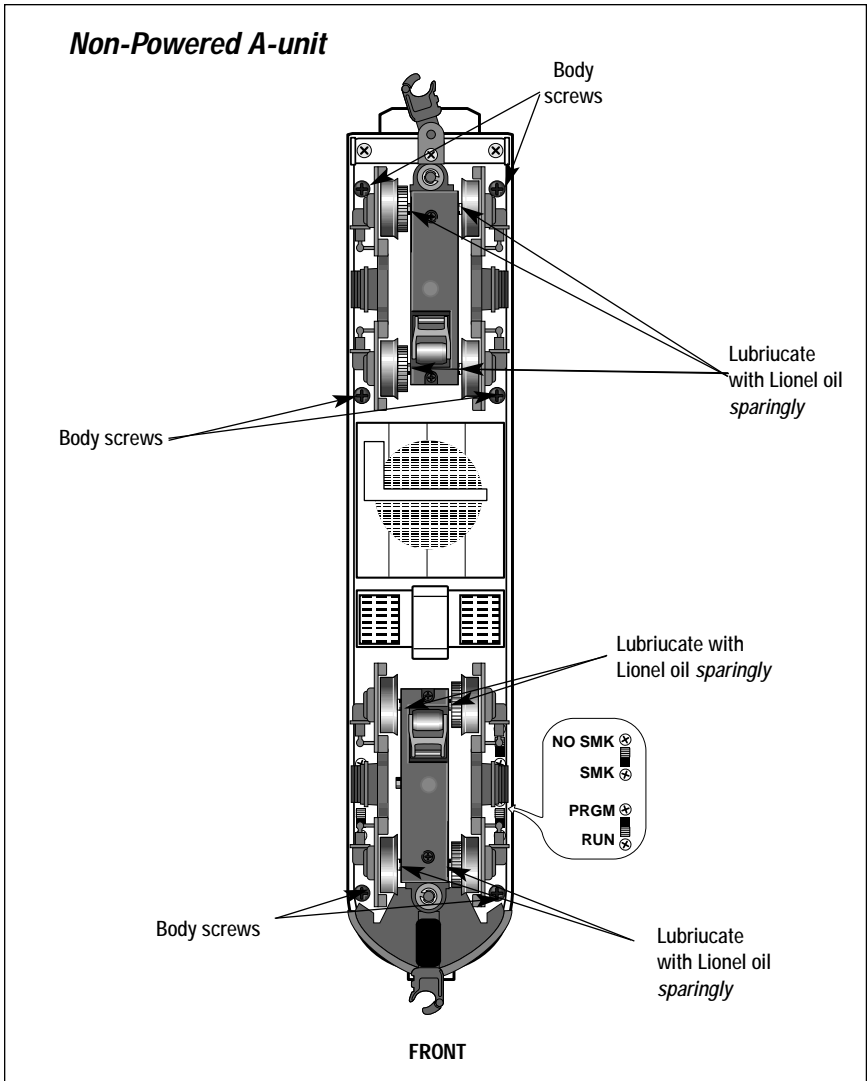
Lubriucate with Lionel oil *sparingly*

FRONT

Figure 8. Lubricating the non-powered A-unit

Maintaining and servicing your locomotive set

Replacing your locomotive set's LEDs and lamps

Your locomotive set is illuminated by several LEDs and lamps. While the LEDs are expected to last for the life of the locomotive set, you may find that the lamps may require replacement.

We recommend that you have the lamps serviced at an authorized Lionel Service Center. See the Lionel Service section on page 36 for more information.

Replacing the traction tires

Your powered A-unit locomotive is equipped with traction tires (Lionel part no. 610-4533-206 to increase the tractive effort of your locomotive set and allow it to pull more cars at once.

During the course of normal operations, the traction tires may become worn out. We recommend that you have the traction tires replaced by an authorized Lionel Service Center because the truck and side frames must be removed to access the wheels. See the Lionel Service section on page 36 for more information.

Notes

Limited Warranty/Lionel Service

This Lionel product, including all mechanical and electrical components, moving parts, motors and structural components, except for light bulbs, is warranted to the original consumer-purchaser, for **one year** against original defects in materials or workmanship when purchased through an authorized Lionel merchant.

This warranty does NOT cover normal wear and tear, light bulbs, defects appearing in the course of commercial use, or damage resulting from abuse or misuse of the product by the purchaser. Transfer of this product by the original consumer-purchaser to another person voids this warranty. Modification of this product voids this warranty.

Any warranted product which is defective in original materials or workmanship and is delivered by the original consumer-purchaser to Lionel L.L.C. or an authorized Lionel L.L.C. Service Center, together with proof of original purchase will, at the option of Lionel L.L.C., be repaired or replaced, without charge for parts or labor. In the event the defective product cannot be repaired, and a replacement is not available, a refund of the original purchase price will be granted. Any products on which warranty service is sought must be sent freight or postage prepaid, as transportation and shipping charges are not covered by the warranty.

In no event shall Lionel L.L.C. be liable for incidental or consequential damages.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.

This limited warranty gives you specific legal rights, and you may have other rights which vary from state to state.

Instructions for Obtaining Service

If service for this Lionel L.L.C. product is required, bring the item, along with your dated sales receipt and completed warranty information to the nearest Authorized Lionel Service Center. Your nearest Lionel Service Center can be found by calling 1-800-4-Lionel, or by accessing our Website at www.lionel.com.

If you prefer to send your product back to Lionel L.L.C. for repair in Michigan, you must first call 586-949-4100 or FAX 586-949-5429, or write to Customer Service, P.O. Box 748, New Baltimore, MI 48047-0748, stating what the item is, when it was purchased and what seems to be the problem. You will be sent a return authorization letter and label to ensure your merchandise will be properly handled upon receipt.

Once you have received your return authorization and label, make sure that the item is packed to prevent damage during shipping and handling. We suggest that you use the product's original packaging. This shipment must be prepaid and we recommend that it be insured.

Please make sure you have followed all of the above instructions carefully before returning any merchandise for service. You may choose to have your product repaired by one of our Authorized Lionel Service Centers after its warranty has expired. A reasonable service fee will be charged.

Warranty Information

Please complete the information below and keep it, along with your dated sales receipt. You must present this and your dated sales receipt when requesting warranty service.

Name _____

Address _____

Place of Purchase _____

Date of Purchase _____

Product Number _____

Product Description _____

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