



LIONEL

TRAINMASTER PROBLEM-SOLVING GUIDE

Questions on PowerHouse, PowerMaster, and CAB-1

EVERYTHING IS PLUGGED IN.
WHEN THROTTLE IS TURNED,
NOTHING
HAPPENS.

- CAB-1 HAS “FALLEN ASLEEP.”
PRESS ANY BUTTON ON THE CAB TO AWAKEN IT.
- THE BATTERIES MAY BE WEAK.
REPLACE WITH NEW ALKALINE BATTERIES.
- ENSURE THE CRYSTALS IN POWERMASTER AND CAB-1 ARE IN
PLACE AND SECURE.

THE BUTTONS ON CAB-1
WORK, BUT THE THROTTLE
DOESN'T.

- MAKE SURE THE BATTERIES ARE PROPERLY INSTALLED AND
SECURELY IN PLACE.
- THE BATTERIES ARE WEAK.
REPLACE WITH NEW ALKALINE BATTERIES.

THE BUTTONS ON CAB-1 DO
NOT WORK.
BATTERIES ARE GOOD.

- REMOVE ONE OF THE BATTERIES. WAIT 10 SECONDS.
REINSTALL THE BATTERY.

THE **HALT** BUTTON IS THE
ONLY BUTTON THAT WORKS
ON CAB-1 (THE RED LIGHT IS
NOT FLASHING ON POWER-
MASTER).

- SET POWERMASTER'S SWITCHES TO **RUN** AND **CONV.**
- READDRESS POWERMASTER.
- REPROGRAM POWERMASTER.

BELL AND WHISTLE/HORN
BUTTONS ARE REVERSED.

- CHECK WIRING FROM POWERMASTER TO THE TRACK.
WIRE FROM U GOES TO THE OUTSIDE RAIL.
WIRE FROM A GOES TO THE CENTER RAIL.
- CHECK POWERHOUSE PLUG.
REVERSE THE PLUG IF IT'S IN A NONPOLARIZED OUTLET.
- REVERSE WIRES FROM POWERMASTER IF IT'S CONNECTED TO A
POWER SUPPLY OTHER THAN POWERHOUSE.

LOCOMOTIVE CYCLES INTO NEUTRAL WHEN **BRAKE** IS HELD FOR A LENGTH OF TIME.

- SET STALL VOLTAGE FOR THE LOCOMOTIVE IN OPERATION. EACH LOCOMOTIVE MAY HAVE A DIFFERENT STALL LEVEL. SEE PAGE 8 OF THE LIONEL TRAINMASTER OWNERS MANUAL.

CAB-1 SEEMS TO HAVE LIMITED RANGE.

- EXTEND ANTENNA ON CAB-1.
- RELOCATE POWERMASTER. MAKE SURE IT'S NOT ON A METAL SURFACE.

LOCOMOTIVE OPERATION IS SLUGGISH IN RESPONSE TO THE THROTTLE.

- YOUR CAB-1 IS SET FOR **HIGH (H)** OR **MEDIUM (M)** MOMENTUM. SEE PAGE 9 OF THE OPERATING MANUAL FOR FURTHER DETAILS. SET YOUR CAB-1 TO **LOW (L)** FOR QUICK RESPONSE.

RAILSOUNDS DROPS OUT WHEN **DIRECTION** IS PRESSED.

- INSTALL A 9-VOLT ALKALINE BATTERY IN THE LOCOMOTIVE OR TENDER.

NO OUTPUT FROM POWERMASTER

- CHECK CONNECTIONS TO POWERMASTER.
- CHECK THE CIRCUIT BREAKER ON POWERHOUSE.

THERE IS NO SPEED CONTROL OF THE LOCOMOTIVE, FULL POWER TO THE TRACK, RED LIGHT FLASHING.

- CHECK THE **CMD/CONV** SWITCH ON POWERMASTER. MAKE SURE IT'S IN THE **CONV** SETTING.
- POWERMASTER MAY BE DEFECTIVE AND MAY NEED TO BE EXCHANGED.

POWERMASTER WILL NOT ACCEPT ID PROGRAMMING

- MAKE SURE THE **PROG/RUN** SWITCH IS IN THE **PROG** POSITION. PRESS **TR** ON CAB-1 AND THE DESIRED ADDRESS NUMBER. PRESS **SET** BUTTON. POWERMASTER SHOULD DISPLAY A FLASHING RED LIGHT. MOVE THE SWITCH TO THE **RUN** SETTING.

POWERMASTER IS PROGRAMMED BUT NOT OPERATING PROPERLY.

- MAKE SURE THE SWITCHES ARE IN THE **RUN** AND **CONV** SETTINGS.
- READDRESS POWERMASTER.
- PRESS **AUX1, 0** TO RESET POWERMASTER.

POWERMASTER'S GREEN LIGHT IS ON BUT THE UNIT IS

NOT OPERATING.

- READDRESS POWERMASTER.
- PRESS **AUX1, 0** TO RESET POWERMASTER.

THE GREEN LIGHT ON POWERMASTER IS FLASHING.

- CHECK FOR AN ELECTRICAL SHORT ON THE LAYOUT.
- RESET POWERMASTER.
- SWITCH OFF THE POWER SUPPLY TO POWERMASTER.
- REPROGRAM POWERMASTER.

USING A LIONEL ZW TRANSFORMER, ONLY 14 VOLTS GO TO THE TRACK.

- THERE IS TYPICALLY A 4-VOLT DROP WHEN A LIONEL ZW IS USED TO ELECTRIFY POWERMASTER.

THERE ARE MULTIPLE POWERMASTERS INSTALLED, AND ALL TRACKS/BLOCKS RESPOND SIMULTANEOUSLY.

- POWERMASTER IS PROGRAMMED AS **TR1** AT THE FACTORY. REPROGRAM THE ADDITIONAL POWERMASTERS WITH THEIR OWN ID NUMBERS (SEE PAGE 14 IN THE OPERATING MANUAL).
- MAKE SURE THE **PROG/RUN** SWITCH IS SET TO **RUN**.

WHEN MOVING FROM ONE BLOCK TO ANOTHER, THE LOCOMOTIVE CYCLES INTO NEUTRAL.

- JUST BEFORE ENTERING THE BLOCK, ADDRESS THE POWERMASTER CONTROLLING THAT BLOCK AND THROTTLE UP.
- CHECK PHASING OF EACH BLOCK WHEN INSTALLING (SEE PAGE 10 IN THE OPERATING MANUAL).

TRACK POWER WAS OKAY, BUT NOW IS ONLY AT HALF POWER.

- THE **SET** BUTTON WAS PRESSED. TURN THE THROTTLE DOWN (TO THE LEFT) ONE FULL REVOLUTION. PRESS THE **SET** BUTTON AGAIN. THIS SHOULD RESTORE FULL POWER TO THE TRACK. TO ENSURE THAT THE TRACK HAS A FULL POWER RANGE, PRESS THE **SET** BUTTON TWICE—ONE SECOND EACH—WITHOUT MOVING THE THROTTLE. RESET THE STALL VOLTAGE ON THE LOCOMOTIVE TO BE OPERATED.

Questions on Command Control

A COMMAND-EQUIPPED LOCOMOTIVE IS RUNNING AT FULL SPEED WITH NO THROTTLE RESPONSE.

- A POWERMASTER IN THE **CMD** SETTING WILL **NOT** GIVE YOU COMMAND CONTROL OF A COMMAND-EQUIPPED LOCOMOTIVE. FOR COMMAND CONTROL, INSTALL A COMMAND BASE. ONE COMMAND BASE WILL CONTROL YOUR ENTIRE LAYOUT (INCLUDING BLOCKS AND LOOPS) AS LONG AS THERE'S A COMMON CONNECTION TO ALL OUTSIDE RAILS.
- MAKE SURE THE BASE'S GREEN LIGHT IS ON AND THE RED LIGHT FLASHES WHEN YOU PRESS CAB-1 BUTTONS.

THE LOCOMOTIVE IS PROGRAMMED BUT WILL NOT MOVE.

- THE RED LIGHT ON THE BASE SHOULD FLASH.
- IF POWERMASTER'S GREEN LIGHT IS FLASHING, THERE'S AN ELECTRICAL SHORT AND NO POWER TO THE TRACK.
- BE SURE THE LOCOMOTIVE'S **PROG/RUN** SWITCH IS IN THE **RUN** POSITION.
- READDRESS THE LOCOMOTIVE.

THE LOCOMOTIVE DOES NOT MOVE WHEN THE THROTTLE IS INCREASED.

- READDRESS THE LOCOMOTIVE.
- PRESS **BOOST**. IF THE LOCOMOTIVE MOVES, REPLACE THE BATTERIES IN CAB-1. (ALSO TRY THE **WHISTLE/HORN**. THE ADDRESSED LOCOMOTIVE WILL RESPOND.)

RAILSOUNDS ARE OFF OR NOT WORKING PROPERLY.

- SHUT OFF THE POWER TO THE TRACK FOR 10 SECONDS AFTER THE LAST SOUND IS HEARD. POWER UP THE TRACK. READDRESS THE LOCOMOTIVE. PRESS ANY BUTTON ON CAB-1. RAILSOUNDS SHOULD BE RESTORED.

A COMMAND-EQUIPPED LOCOMOTIVE DOES NOT OPERATE IN THE CONVENTIONAL MODE.

- SHUT OFF THE COMMAND BASE. UNPLUG ITS POWER SUPPLY. THE LOCOMOTIVE WILL TRY TO OPERATE IN COMMAND MODE IF IT HEARS A SIGNAL FROM THE COMMAND BASE.
- POWER UP THE TRACK. AFTER A 10-SECOND WAIT, THE LOCOMOTIVE WILL START UP IN NEUTRAL. THIS HAPPENS THE FIRST TIME AN LOCOMOTIVE IS STARTED UP AFTER LAST OPERATING IN THE COMMAND MODE. SUBSEQUENT TO THIS, THE LOCOMOTIVE WILL START UP IN FORWARD.

THERE IS NO NEUTRAL IN COMMAND CONTROL.

- THERE IS NO NEED FOR NEUTRAL IN COMMAND CONTROL. THE LOCOMOTIVE WILL CHANGE DIRECTIONS ONLY WHEN THE **DIR** BUTTON IS PRESSED. IN CONVENTIONAL MODE, THE LOCOMOTIVE WILL HAVE THE STANDARD FORWARD-NEUTRAL-REVERSE-NEUTRAL SEQUENCE.

THE LOCOMOTIVE WILL MOVE, STOP, MOVE AND

STOP.

- IF THE GREEN LIGHT IS FLASHING ON POWERMASTER, TOO MUCH POWER IS BEING DRAWN. REMOVE A LOCOMOTIVE FROM THE TRACK.
- IF POWERMASTER IS OKAY, CHECK FOR INTERFERENCE WITH THE COMMAND SIGNAL. SHUT OFF OTHER ELECTRICAL DEVICES, e.g. MICROWAVE, CB RADIO, AND REMOTE-CONTROL TOYS. RELOCATE THE COMMAND BASE.

THE RED LIGHT ON THE BASE DOES NOT FLASH WHEN A SIGNAL IS SENT.

- CHECK THE CRYSTALS IN THE BASE, POWERMASTER, AND CAB-1. MAKE SURE THEY ARE IN PLACE AND SECURE.
- ALL THE TRANSFORMERS AND THE BASE POWER SUPPLY SHOULD BE PLUGGED INTO THE SAME POWER STRIP, WHICH MUST BE PROPERLY GROUNDED.
- IF THE BASE IS LOCATED ON A METAL SURFACE, RELOCATE IT OR ELEVATE IT AT LEAST TWO FEET ABOVE THE SURFACE.

WORKING WITH A LASH-UP, THE CIRCUIT BREAKER ON POWERHOUSE KEEPS TRIPPING.

- YOU HAVE TOO MANY LOCOMOTIVES ON THE TRACK AND POWERHOUSE HAS BECOME OVERLOADED. REMOVE A LOCOMOTIVE.
- CREATE SMALLER ELECTRICAL BLOCKS AROUND YOUR LAYOUT, EACH WITH ITS OWN POWER SUPPLY. THE MORE POWER BLOCKS YOU HAVE, THE LESS OVERLOADED EACH POWER SUPPLY BECOMES.

RAILSOUNDS DOES NOT SOUND. TRIED MOVING THE SWITCHES AND NOTHING WORKS.

- THE RAILSOUNDS ON/OFF SWITCH SHOULD ONLY BE MOVED WHEN THE UNIT IS REMOVED FROM POWER FOR AT LEAST 10 SECONDS.
- CHECK THE VOLUME CONTROL KNOB. ROTATE TO THE FULL-ON POSITION.
- ADDRESS THE LOCOMOTIVE. PRESS **AUX1, 3** TO TURN THE SOUNDS BACK ON IF THEY WERE SHUT OFF BY USING **5**. PRESS **1** FOUR TIMES, TO TURN THE VOLUME TO FULL IF IT WAS LOWERED BY PRESSING **4**.

LOCOMOTIVE STOPS INSIDE A TUNNEL.

- THE COMMAND BASE'S COMMUNICATION IS BLOCKED BY THE METAL STRUCTURE USED TO CONSTRUCT THE TUNNEL. CONNECT A WIRE FROM THE TUNNEL'S WIRE CONSTRUCTION TO EARTH GROUND, OR SUSPEND A WIRE CONNECTED TO THE EARTH GROUND OVER THE RAIL (ABOVE THE LOCOMOTIVE). (EARTH GROUND CAN BE FOUND BY CONNECTING THE WIRE TO THE GROUND/GREEN TERMINAL OF THE ELECTRICAL OUTLET.)

HEADLIGHT AND TAILLIGHT HAVE GONE OUT.

THE BRAKING SOUND DOES NOT OPERATE. WHEN **BRAKE** IS PRESSED.

- PRESS **AUX2** ON THE CAB-1 KEYPAD. THIS SHOULD RESTORE THE HEADLIGHT AND TAILLIGHT FUNCTION. IF IT DOES NOT, THE BULBS HAVE EXPIRED AND NEED TO BE REPLACED.

HOW CAN I CHECK FOR COMMUNICATIONS ON MY LAYOUT?

- THE SENSOR IS OUT OF ADJUSTMENT. CONTACT LIONEL SERVICE.
- PLACE A COMMAND-EQUIPPED DIESEL LOCOMOTIVE ON THE LAYOUT. WITH THE LOCOMOTIVE MOVING AROUND THE LAYOUT, HOLD DOWN THE **HORN** BUTTON. LISTEN FOR ANY BREAKS IN THE HORN BLAST. NOTE THE AREA WHERE THE SIGNAL IS BROKEN.
- CHECK FOR ITEMS THAT MAY BE CAUSING INTERFERENCE, e.g., METAL SCREENS, OTHER ELECTRONIC DEVICES, INSULATED BLOCK NOT CONNECTED TO THE COMMON U TERMINAL OF THE COMMAND BASE.

Questions on LCRU2-equipped locomotives (8049 J, CV, GP-9)

WHEN I SET THE STALL VOLTAGE, THE HEADLIGHT FLASHES.

- THE NEW LCRU2 LOCOMOTIVES FEATURE A FLASHING LIGHT WHEN THE LOCOMOTIVE IS IN THE **SET** MODE. BOTH LOW AND HIGH VOLTAGES CAN BE SET.
TO SET THE LOW VOLTAGE, PRESS **SET**, LOWER THE VOLTAGE TO THE DESIRED LEVEL, AND PRESS **SET** AGAIN.
TO SET THE HIGH VOLTAGE, PRESS **SET**, ADD VOLTAGE TO THE DESIRED LEVEL, AND PRESS **BOOST**.
THE HEADLIGHT WILL FLASH IN BOTH CASES.

THE LOCOMOTIVE CAB LIGHT IS FLASHING.

- THE LCRU2 CAN PROGRAM THE LOCOMOTIVE TYPE: STEAM WITH OR WITHOUT RAILSOUNDS, DIESEL WITH CAB LIGHT, WITH OR WITHOUT RAILSOUNDS, AND DIESEL WITH STROBE LIGHT, WITH OR WITHOUT RAILSOUNDS.
THE LOCOMOTIVE TYPE IS SET AT THE FACTORY BUT CAN BE RESET IN THE PROGRAM MODE. CONTACT LIONEL SERVICE FOR THE PROPER SEQUENCE.

Creating a multi-locomotive lash-up

LOCOMOTIVES 2, 3, AND 4 ARE TO BE LASHED-UP:

LOCOMOTIVE 2 IN THE FRONT; LOCOMOTIVE 3 IN THE CENTER, AND LOCOMOTIVE 4 AT THE REAR *FACING THE REAR*. THE LASH-UP WILL BE CALLED **TRAIN 5**.

KEYSTROKES:

TR, 5, 2, F, SET (LOCOMOTIVE 2 HORN WILL SOUND).

TR, 5, 3, SET (LOCOMOTIVE 3 HORN WILL SOUND).

TR, 5, 4, DIR, R, SET (LOCOMOTIVE 4 HORN WILL SOUND).

TO CHECK YOUR LASH-UP:

PRESS **TR, 5**. LOCOMOTIVE 2 HEADLIGHT SHOULD BE ON.

PRESS **DIR**. LOCOMOTIVE 4 HEADLIGHT SHOULD BE ON.

PRESS **HORN**. LOCOMOTIVE 2 SHOULD SOUND ITS HORN.

TO REMOVE AN LOCOMOTIVE FROM THE LASH-UP

ASSIGN THAT LOCOMOTIVE TO **TR 0** BY PRESSING **TR, 0, 3, SET**.

LOCOMOTIVE 3 IS NOW REMOVED FROM THE LASH-UP TR5.

Easy programming with CAB-1

PROGRAMMING POWERMASTER:

1. TURN POWERMASTER POWER SUPPLY **ON**. THE GREEN LIGHT COMES ON.
2. MOVE THE POWERMASTER PROGRAM SWITCH TO **PROG**.
3. ON CAB-1, PRESS **TR** AND THE DESIRED ADDRESS NUMBER.
4. PRESS **SET** ON CAB-1. THE RED LIGHT ON POWERMASTER ILLUMINATES WHEN IT RECEIVES THE SIGNAL.
5. MOVE THE PROGRAM SWITCH TO THE **RUN** POSITION.
6. MOVE THE **CMD/CONV** SWITCH TO THE DESIRED POSITION. CHOOSE **CMD** FOR FULL 18 VOLTS. CHOOSE **CONV** FOR VARIABLE VOLTAGE.

PROGRAMMING LOCOMOTIVES IN COMMAND CONTROL:

1. APPLY POWER TO THE BASE. THE GREEN LIGHT COMES ON.
2. MOVE THE LOCOMOTIVE'S **PROGRAM/LOCK** SWITCH TO **PROGRAM**. PLACE THE LOCOMOTIVE ON THE TRACK.
3. TURN THE TRACK POWER **ON**.
4. ON CAB-1, PRESS **ENG** AND THE DESIRED LOCOMOTIVE NUMBER, 1 TO 99.
5. PRESS **SET**. THE LOCOMOTIVE HORN WILL SOUND TO INDICATE THE ACCEPTANCE OF THE SIGNAL (OR, IF THE LOCOMOTIVE DOES NOT HAVE RAILSOUNDS, THE HEADLIGHT WILL FLASH). THE RED LIGHT ON THE BASE WILL FLASH.
6. MOVE THE LOCOMOTIVE'S PROGRAM SWITCH TO THE **RUN** POSITION.
7. THE LOCOMOTIVE IS NOW READY TO RUN.

PROGRAMMING SC-1 SWITCH CONTROLLER (SWITCHES):

1. APPLY POWER TO THE BASE.
2. TURN THE SWITCH'S EXTERNAL POWER ON. THE SC-1'S GREEN LIGHT COMES ON.
3. MOVE THE SC-1'S PROGRAM SWITCH TO **PROG**.
4. ON CAB-1, PRESS **SW** AND THE FIRST NUMBER OF THE SWITCH TO BE ADDED TO THE SC-1. OTHER SWITCHES AUTOMATICALLY ARE NUMBERED IN SEQUENCE.
5. PRESS THE **SET** BUTTON FOR ABOUT ONE SECOND. THE RED LIGHT ON THE SC-1 COMES ON.
6. MOVE THE SWITCH TO THE **RUN** POSITION.

PROGRAMMING SC-1 SWITCH CONTROLLER (ACCESSORIES):

1. APPLY POWER TO THE BASE.
2. PLUG THE EXTERNAL POWER INTO THE SC-1. THE SC-1'S GREEN LIGHT COMES ON.
3. MOVE THE SC-1'S PROGRAM SWITCH TO **PROG**.
4. ON CAB-1, PRESS **ACC** AND THE FIRST NUMBER OF THE ACCESSORY TO BE ADDED TO THE SC-1. OTHER ACCESSORIES AUTOMATICALLY ARE NUMBERED IN SEQUENCE.
5. PRESS THE **SET** BUTTON FOR ABOUT ONE SECOND. THE RED LIGHT ON THE SC-1 COMES ON.
6. MOVE THE SWITCH TO THE **RUN** POSITION.