



## OPERATORS GUIDE

### **Default DCC Address for All Locomotives: 3 (no leading zeros)**

### **Decoder Reset: CV8 = 8**

Thank you for your purchase of the InterMountain Railway Company GP10 locomotive. Your locomotive is equipped with either a LokSound Select Sound decoder or a LokPilot non-sound decoder. Both utilize the 21-Pin MTC system. This guide directs you through basic operational and decoder functions for DCC operation. More in-depth information is available on our website in the regularly updated DCC Assistance section. Should you have any questions that are not answered in this guide or online, please feel free to contact InterMountain at the contact information listed above.

### **Removing and Operating your GP10 Locomotive**

Your locomotive is attached to the black plastic packaging via two Phillips head screws below the fuel tank. Removal of these screws can be done with a standard sized Phillips screwdriver.

We do not recommend operating your decoder equipped locomotive on analog DC track power. If you operate your locomotives on DC only and do not want to purchase a DCC system, please contact us to obtain a 21-pin DC plug that will allow the locomotive to operate properly with DC track power. Note that some lighting functions may not work correctly when the DC plug is used. If you decide to convert to DCC later, you can easily do so.

### **DCC Non-Sound Decoder Operation**

The non-sound DCC equipped locomotive responds to address 3 (no leading zeros) out of the box. Increase the speed on your DCC throttle and the locomotive should move in the direction your throttle is set for. The locomotive lighting is controlled by various function keys. Please see the table on the following page for the functions available in the non-sound decoder. Please verify that all lighting and motion is working properly before making any programming changes to the decoder. If you should have any issues, contact us.

### **DCC Sound Decoder Operation**

The DCC sound equipped locomotive responds to address 3 (no leading zeros) out of the box. Upon placing your locomotive on the track, you will not hear any sound. **You must press the F8 function key in order to get the locomotive's prime mover started.** As the prime mover is starting, your locomotive will not move even if you give it a speed command. A prototype locomotive cannot move until it is fully started and your model simulates this! After the prime mover settles into idle (20 seconds), you should be able to give it a speed command, hear the prime mover throttle up, hear the brakes release and watch it slowly move. If you reduce the speed to 0, you should hear the brake squeal as the locomotive comes to a stop. Press F8 again while the locomotive is in idle and the prime mover will shut-down. You'll hear the spitter valve releasing air for 1 minute after shut-down. A prototype locomotive's horn and bell can be operated when the prime mover is shut down as long as enough air is available. Your GP10 is no exception! Please see the table on the following page for all of the lighting and sound functions available in the sound decoder.

The F8 function key operation can be changed to allow track power to start the prime mover by setting CV32 to 2 FIRST, and then CV419 to 32.

The 20 second start-up delay can be removed by simply changing CV124 to 0. This will allow the locomotive to start moving immediately when the throttle is increased during the start-up sound sequence.

### **Sound and Non-Sound Decoder Extended Addressing:**

After you have verified that your locomotive operates properly on address 3, you'll want to give it an address other than 3. Today's DCC Systems give you the option to enter a 3 or 4 Digit Extended (long) Address. This is usually the cab number of the locomotive. Any address from 128 and above is considered by most DCC systems as a long address. If you want an address between 1-127, set it as a short address. Refer to your DCC System's manual for step-by-step guidance as to how to do this. Once you have set the new address, verify that all lighting and motion works properly before proceeding to any other programming.

### **Full Throttle Features – Sound Units Only**

Function 9 activates **Drive Hold**, allowing you to throttle the prime mover sound up or down while your locomotive maintains a constant speed. This helps to simulate pulling heavy "loaded" cars working independent of BEMF which can only adjust the prime mover sound based on how heavy the model train actually is, not by what is "loaded" in the cars.

Function 10 activates the **Independent Brake**. Just be sure to release the brakes before you try to move again!!

**Run 8** and **Coast** are also included in the decoder but are not mapped to a function key. Visit our website's DCC Assistance section for more information on mapping Run 8 and Coast.

For more information about all of the FULL THROTTLE features visit: <http://intermountain-railway.com/fullthrottle.html>

## Default DCC Decoder Function Table

Function Key	DCC Sound GP10	DCC Non-Sound GP10
F0 / Headlight	Nose Headlight (if equipped) / Rear Light [Directional]	Nose Headlight (if equipped) / Rear Light [Directional]
F1 / Bell	Bell (Steel Bell by Default)	N/A
F2 / Horn	Playable Air Horn (Nathan P3 by Default)	N/A
F3	Cab Headlight (GYRA Effect / Non-GYRA Effect) (if equipped)	Cab Headlight (if equipped) [Set CV113 = 159 for GYRA Light]*
F4	Marker Lights (if equipped)	N/A
F5	Number Board Lights	Number Board Lights
F6	Ditch Lights (if equipped) [Directional]	Ditch Lights (if equipped) [Directional]
F7	Dimmer	Dimmer
F8	Prime Mover Start-up / Shut-down (mute if moving)	Virtual Drive Sound (used when operating with a sound unit)
F9	Drive Hold	N/A
F10	Independent Brake	N/A
F11	Rotary Beacon (if equipped)	N/A
F12	Coupler	N/A
F13	Slow Spitter Valve	N/A
F15	Radiator Fan	N/A
F16	Spitters on Shutdown OFF	N/A
F17	Brake Set / Brake Release OFF	N/A
F18	Sanding Valve	N/A
F19	Short Air Let Off	N/A
F20	Compressor	N/A
F21	Handbrake Ratchet	N/A

**\*CV113 = 159 is for NON-SOUND unit only to change cab headlight to GYRA light effect.**

### Sound Volume CV Defaults Table:

Function	CV #	Range	GP10
Master Volume Control	63	0-192	180
<b>**** SET CV32 to 1 BEFORE CHANGING CV 257 THROUGH CV 511 ****</b>			
Prime Mover	259	0-128	128
Horn	275	0-128	128
Bell	283	0-128	50
Coupler	291	0-128	128
Air Compressor	307	0-128	50
Radiator Fan	315	0-128	50
Independent Brake	339	0-128	20
Brake Set / Brake Release	347	0-128	20
Sanding Valve	355	0-128	128
Short Air Let Off	363	0-128	128
Fast Spitter Valve	371	0-128	50
Slow Spitter Valve	387	0-128	50
Spitters on Shutdown	395	0-128	50
Air Reverse	403	0-128	50
Run 8	411	0-128	128
Coast	419	0-128	128
Handbrake Ratchet	427	0-128	128
Random Sounds	451	0-128	50
Brake Squeal	459	0-128	25

**Decoder Reset: CV8 = 8**

## CV48 Sound Selection Table:

The default horn in the GP10 locomotive is the Nathan P3. There are 12 other horns to choose from if you should prefer a different horn sound, or your prototype uses a different horn. The bell defaults to the standard EMD Steel Bell, however the Bronze bell is also included. These can all be changed with your DCC system. The value for CV48 is calculated by adding the values for the prime mover, the horn, and the bell sounds using the charts below.

As an example, the GP10 default values include: Prime Mover = 0, Horn = 3, Bell = 0 **Total = 0 + 3 + 0 = 3 (Default)**

**Track Power MUST be interrupted to the locomotive after changing the value of CV48.  
The locomotive can be simply rocked off one rail briefly to accomplish this task.**

DEFAULT	6
<b>Prime Movers</b>	<b>GP10</b>
0	4 Exhaust EMD 16 Cyl 567C - <b>(Default)</b>
<b>Horns</b>	<b>GP10</b>
0	Nathan K5LA
1	Nathan K3L
2	Nathan M3
3	Nathan P3 - <b>(Default)</b>
4	Nathan Old Cast P5
5	Leslie S5T
6	Leslie S3L
7	Leslie RS3L
8	Nathan K5H
9	Nathan K5LA
10	Nathan K3L
11	Nathan M3
12	Nathan P3
<b>Bells*</b>	<b>GP10</b>
0	Steel Bell - <b>(Default)</b>
64	Bronze Bell

**GP10 Locomotive Minimum Recommended Turn Radius: 18"**

**Decoder Reset: CV8 = 8**

## Troubleshooting

DCC equipped locomotives require very reliable electrical connections and contacts. If you are experiencing operating issues with your locomotive, the track and/or locomotive wheels might be dirty. Both of these items need to be cleaned thoroughly on a regular basis for reliable operation. Denatured alcohol works very well for these tasks.

DCC in general also requires plenty of power to the rails in all locations. If you have problem areas with any DCC locomotive, it may be beneficial to add more feeder wires in these locations. It is also recommended that the first feeder to the rails be within 6 feet of the command station. Items like turnouts and rail joints are never reliable for passing electrical current. Rail joints can be soldered and extra feeders can be wired to the track around turnouts to ensure reliable power distribution.

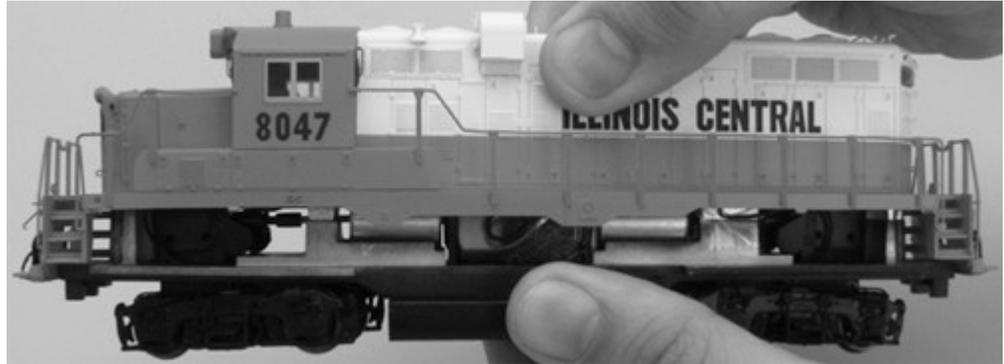
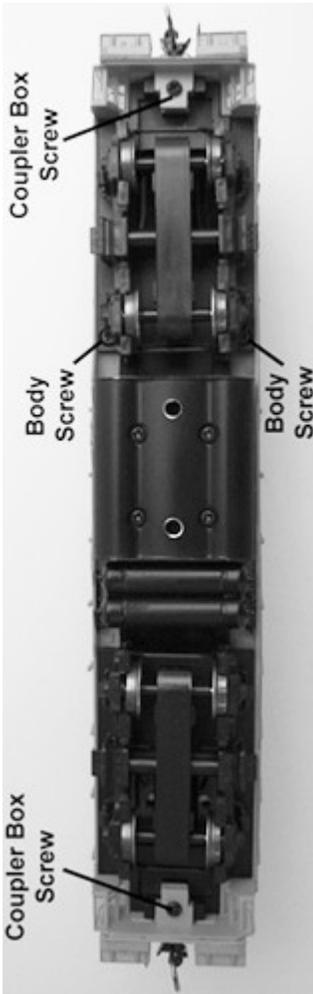
If the above is not improving the operation of your locomotive, check that the wires are properly soldered to the trucks on both sides. These wires are visible by looking behind the truck side frames. If any wire is detached, it needs to be soldered back on. You can do this yourself or send the locomotive in to us for the repair.

If you are having programming difficulties using the program track, remember that ESU LokSound decoders DO NOT require a program track booster! If you have a program track booster such as the PTB-100 or PowerPax in-line between your DCC system's program track outputs and program track, you must bypass it for programming ESU decoders on the program track. You should also use Direct Mode (DIR) programming. Visit our website's DCC Assistance Section for more information.

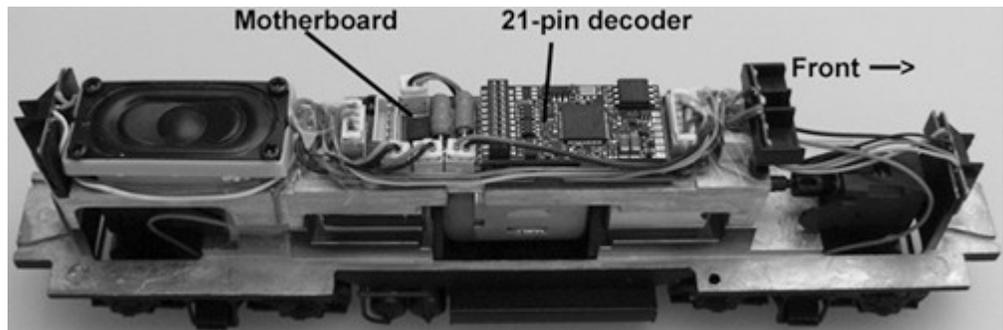
The ESU LokSound Select decoder's address and all CVs may be programmed on the mainline in OPS mode or on the program track in Direct Mode (DIR). Note that some systems may not be able to program CVs higher than 255. Should you have this issue, there is an alternate method. You can set CV96 to the hundreds digit of the CV number you're trying to program, set CV97 to the tens and units digits of the CV number you're trying to program. Set CV99 to the value that you're trying to program. Visit our website's DCC Assistance page for more information.

## GP10 Locomotive Shell Removal Instructions

1. Place the locomotive on a soft surface or foam cradle. Remove the front and rear Kadee® couplers from the locomotive by unscrewing the Phillips head screws. Gently slide the coupler box from the shell and frame. Keep the pieces together for re-assembly. Next remove the two body screws (Phillips head) located just behind the front truck on either edge of the chassis.
2. Pull upward on the shell using a steady controlled pressure. Be gentle and take your time to avoid damaging any of the locomotive details. Once the die-cast chassis begins to slide out from the shell, take care to guide the front and rear portions evenly. Do NOT wedge the chassis against the shell.



3. The chassis should slide out of the shell to reveal the mechanism and electronics. **Note that if your locomotive has one or more rooftop beacons, there are wires attaching the shell to the chassis. Be very careful not to pull on these wires!**



4. To reassemble the locomotive, place the shell over the drive mechanism and gently press downward and evenly until the shell snaps into place. Reassemble the two body screws, then slide the front and rear coupler boxes back into place and replace the screws.

## MAINTENANCE TASKS

Your InterMountain locomotive is designed to provide hours of enjoyment with little or no maintenance. On occasion the drive gear mechanisms should be lubricated. Utilize a plastic compatible lubricant such as Labelle® 107 Oil. To lubricate your locomotive place a few drops on the gears of the drive mechanism. Only a small amount is required.

**Service Needs:** Although rare, at some time you may require service for your locomotive. If you feel the need to send your locomotive in for repair, you do not need to contact us first. The instructions for sending your locomotive in for repair are located on our website: [intermountain-railway.com](http://intermountain-railway.com) under Customer Service and then Service and Repair.

Decoder related issues may be solvable by checking the links on our website under the DCC Assistance section. We regularly update this section to help you get the most out of your InterMountain locomotives. If you cannot find the answer to your specific issue, please contact us at: [intermountain@intermountain-railway.com](mailto:intermountain@intermountain-railway.com) or 303-772-1901.

**Resetting the decoder solves 95% of the decoder related issues we handle. Decoder Reset: CV 8 = 8**