Advanced Decoder Programming using DecoderPro – by Jim Betz PCR - Iron Horse Express - 2013

You've changed the address – and maybe tweaked the start voltage … so what's next?

Prototypical Decoder Setup???

1) Motor Tuning – “Slow Start”
2) Speed Matching Locos
3) “Speed Classes”
4) Sound
5) Lighting Effects

How many decoder programming methods are there in this room?

These are <u>my</u> methods - I’m “into operations”.

My “test track setup”

- NCE PowerCab plus NCE USB Interface
- PCP mounted to board with track + terminal strip
- Track and wheel cleaning devices/products
- Laptop running LATEST version of DP3
- “The DCC Brakeman”
- Decoder Tester (NCE + ‘black box’)
- LED tester (‘black box’ #2)
- Clip leads (hook style – multiple colors/sizes)
- DC power pack (and Anderson PowerPoles)

Motor Tuning – "Slow Start"

- First Objective: to get the loco running "as smooth as silk".
- Second Objective: getting a slow speed movement that is "creepy".
- Third Objective: prototypical movement.
- Caveat: these are –my- methods and that's what I'm going to cover today.
- Set momentum to zero (CV 3 = 0, CV 4 = 0).
- Set loco to run with the 28 speed range Speed Table.
- Set lowest speed range to zero.
- Set the highest speed range to 180 (150? Lower?).
- Do a "Match Ends" and a "Write Changes".
- Save the roster entry – go to Programming on the Main (in DecoderPro).
- Running the loco in 128 speed step mode increase the speed "one bump at a time until it just starts moving. Note the speed step it is at.
- Use DecoderPro and set the lowest speed step to that number from #7 and redo the Match Ends and "write changes".
- Go from SS 0 to SS 1 and see if loco moves – if not redo step 8. If loco moves cut value in lowest range by half and retest. You are looking for the slowest setting that the loco will move – smooth and steady.
- Now comes the "tricky bit". Using Match Ends and changing the first range - adjust the second speed range so that it is "one or two numbers above the number you developed for the lowest speed range (in step 9). Then set the lowest range to ZERO and do a write changes. The result will be a sharp incline from range 1 to range 2 and a gentle incline from range 2 to range 28 (the highest).
- Run the loco and see if you like the way it runs. Redo step 10 until you have it running the way –you- want it to run.
- Set CV 3 (acceleration momentum) to 30. Set CV 4 (deceleration momentum) to 10.
- Let's Talk About Momentum – real locos don't accelerate fast. Ever. I prefer settings of 3 to 1 … or larger. At the same time many guys sort of "forget" and start to slow down too late. Hence my 3 times as much acceleration as deceleration momentum. However – ALL of my locos have some momentum.

Speed Matching Locos

- **Objective: get 2 or more locos running in a consist without any "rail grinding".**
- **Assumption: you have already gotten all locos running "as well as they can".**
- **Set up: a section of layout that is at least 10 feet long and where you can see the track and your computer running DecoderPro at the same time. It does not matter which DCC system you use to speed match them. It is better if you have a section of double track but that is not necessary. If they are sound it is better to mute the sound so you can hear the 'grinding' when it occurs. You will also need to use a throttle/cab capable of "one step at a time" speed changes. Use a "real" throttle to run the loco(s).**
- **Turn off momentum in all locos. Consist both/all and run them at speed step 1 and note which one is FASTEST. This will be your 'master'. Use 128 speed step mode.**
- **Using Decoder Pro and Programming On the Main adjust the speed of the slower loco(s) to match the faster one (the master) – at speed step 5 to 7. Run them back and forth and watch and adjust. If you are doing more than 2 locos it is often easier to adjust one at a time until they are matched.**
- **Now speed match them at the high end. You will usually find that if you use any speed step above 80 or 90 it is fast enough. I usually use the same loco that was the 'master' for the slow speed – but it is not a requirement.**
- **Now just operate the locos, in both directions, at 'every 10 speed steps' by going from 5 to 15 to 25 … etc. and then down from 80 to 70 to 60 … etc. Run them both coupled and uncoupled. What you are looking for (expecting) is that they will run up and down the speed range and be matched to each other. A certain amount of "coupler dance" is OK. If any of them is "grinding" you need to go back and revisit steps 2 and 3.**
- **Now re-add the momentum back in – the way that I do this is to go to the DecoderPro entry and write the momentums that were saved previously. And now you are ready to run the locos at a moderate speed and "slam them into the other direction". What you are looking for is that they drift to a stop, reverse, and accelerate away at the same time. If not adjust the acceleration first - then work on the deceleration (don't try to do both at once). Change speeds – test the momentum at slow, medium, and fast speeds. You want them to always drift to a stop, pause, and pull away in the opposite direction. Watch the couplers, listen for grinding. If you are using auto-reversing lighting watch the way the lights change.**
- **The final result should be locos that, when consisted and coupled, will operate at the "same" speed thru out the speed range – with no "rail grinding" and with only a minimum amount of "coupler dance".**

"Speed Classes"

- **We all have a need to be able to just use our locos - regrettably it is not really realistic to set up your locomotive fleet so that "any loco can be used with any other". If you match by class you can make it easy to "deal with problems". It also makes having a helper district easy.**
- **The idea here is to –not- try to speed match all of your locos … but rather to separate them into 'meaningful' groups of locos (where each group is a "speed class"). This is not a new concept, it's actually just a refinement/re-focusing of the well known practice of "I use this A-B-B-A set for this train". But matching by class is more than simply matching Fs to Fs and GPs to GPs or creating a special set of locos for a special purpose/use.**
- **It is as simple as defining 'natural' groupings of locos that you will probably want to run together at some time – and you pick the groupings/classes! Some groupings you might consider are:**
- **1st Generation Road Diesels**
- **2nd Generation" Diesels**
- **Steam Switchers**
- **Passenger Power**
- **Helpers (with the road power they will be used with?)**
- **Heavy Steam**
- **Diesel Switchers**
- **etc., etc., etc.**
- **You should pick <u>YOUR</u> classes by "how –you- will use the locos". Some guys also have locos grouped by prototype RR (SP, GN, NYC, etc.).**
- **Then 'all' you do is to match locos by class. This does not mean that you can't just match up a particular set of locos – assuming that they will always be used together. But, when you do that you run the risk of "what happens when one loco in a set is out of service?" (and that always seems to happen in the middle of an Op session) … what you'd really like to be able to do is to "just know" which other loco(s) can be used with that "set". Speed matching by class allows you to do just that – to simply pick up another loco without having to worry about whether it is speed matched – because it already is matched.**

Sound

- Setting up the sound is a VERY personal –set- of choices. What I am going to talk about are what I feel are “prototypically correct simulations” … and how you adapt the sound for running on a layout with other operators in the room.
- Sound can be amazing – and it can be annoying! Too loud, too ‘cutesy’, too repetitive, ‘intrusive’, etc. You can also do what people often refer to as “scale sound” (aka “the 7 foot rule”).
- Can configuring sound be as simple as just selecting the whistle/horn, setting the bell ring rate, and the volume? Almost but not exactly. The trick is to set up certain sounds with specific/relative volumes – and then setting the overall system volume.

Steam Sound

- High Volume Sounds – Chuff, Whistle, and Blow Down
- Medium Volume Sounds – Bell
- Low Volume – all the rest
- Really Low (zero?) – Fireman Fred and other ‘cutesy/clever’ sounds.

Diesel Sound

- High Volume Sounds – Prime Mover/Exhaust, Horn
- Medium Volume Sounds – Bell
- Low Volume – all the rest
- Really Low (zero?) – Fireman Fred and other ‘cutesy/clever’ sounds.
- … any body notice this “looks a lot like the slide for steam”?

Scale Sound

- “Scale Sound” is carefully/cleverly setting your sound volumes so that they increase the sense of –distance- on your layout. If you are running your train “way over there” and the sound is loud enough that it is -noticed- by the guy standing here then the sound on your train is “too loud”. Do you want it so low that people standing right by your train don’t hear it? Of course not. But if you are on one end of the layout room and they are on the other end – they should have to actually try to hear your train.
- And when their train approaches your location you should start to notice it when it is “about 7 feet away”.
- And when a train passes in front of you – you should get that “it’s coming, it’s here, it’s going away” effect.

Lighting Effects and Options

- Prototypically accurate or not? (Do you even know what is prototypical?)
- Auto-reversing lights.
- Separate number boards? Class lights? Etc.
- Cab lights in locos?
- Passenger Cars? Cabeese? Markers?
- Prototype Rules and Regulations –vs- “Standard Practices” –vs- one offs/exceptions
- Step and Walkway Lights, Truck Lights, etc.
- Wiring, Decoder implementations
- LEDs, LEDs, LEDs, … LEDs !!!!!!!!!!!!!!!!!!!

Questions and answers?

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