

CV settings

King class sound project by locomansounds

This project was set up with ESU software version 4.7.0.

We strongly recommend not to use any other version because this could affect sounds.

If possible, changes should be done only by using PoM (Programming on Main track).

Reset to default values:

Write value 8 to CV 8.

Then take the locomotive off the track for about 5 seconds.

Acceleration:

Is set by CV 3. Default is 100, lower values allow faster acceleration.

Acceleration in shunting mode is faster than in normal mode.

Please note: too low values might influence the sound flow in an undesired way.

Brake squeal:

After adjustment of CV 2 or CV 4, eventually the brake squeal needs to be readjusted.

CV 64 defines at which speed the brake squeal sound begins. Default value is 13. Higher values let the sound begin earlier (at higher speed), lower values later.

CV 65 defines at which speed the sound starts the "final" squeal sound sequence. Default value is 3. Higher values let the sound end earlier, maybe before the train has stopped, lower values let the sound end later, maybe after stopping.

There has to be a certain difference in the values of CVs 64 and 65, otherwise the brake squeal will not work properly.

Coupling:

see "Uncoupling" below.

Deceleration:

Is defined by CV 4 when F4 or F14 or F24 are *not* active. Default is 110 which gives a quite long brake distance if you do not use F4 for braking. Lower values will shorten it.

We recommend a high value in order to have prototypical behaviour.

Our iMPRESSIVE!dRIVE feature will give you longer braking times as usual when the throttle is just slightly reduced.

F4 / F14 / F24 will activate a *second brake parameter* which allows faster braking when active. The *second parameter is CV 179*: default is 50. Lower values will shorten brake distance. We recommend a value of 60 or 70 if your layout is big enough for that.

Undocumented codes for CV4:

255 -> braking time more than 3 minutes, even more if the throttle is not on zero.

All values above 249 will give longer braking time than documented by ESU.

All changes on these CVs might eventually affect the sync of the brake squeal, so see above.

Random sound volume:

The volume of all random sounds will automatically follow the volume of the respective user sounds. *An extra adjustment is not necessary.*

Random sounds:

Random sounds were programmed in a completely new way, for example to avoid too frequent noise from the safety valve and to equate their volumes with the usersounds.

Therefore CVs 61 and 62 which usually define the time between two random sounds are no longer suitable for an exact definition, but in principle they still work. Presets on these CVs are 180 and 240. If random sounds can be heard too often, just program higher values, or vice versa.

Start delay:

There are some prototypical delays before the locomotive will start. They can be switched off by setting CV 124 from 4 (start with delay) to 0 (start without delay).

We recommend not to do this as it effects the prototypical behaviour in a negative way.

Smoke generator (not pulsed):

Aux 2 is preset for a smoke generator.

Presets: *(first, set CV 31 =16 and CV 32 = 0)*

CV 286 = 18 = heat while locomotive stands.

CV 287 = 23 = heat while locomotive is driving slow.

CV 287 = 28 = heat while locomotive is driving fast.

You must adhere to the instructions in the manual of the smoke generator for proper settings.

Maximum possible values are 31 which means full track voltage for the smoke generator.

Start speed:

In order to let the locomotive start at higher speed, CV 2 can be set from 1 (default) to a value of 2 or 3.

We recommend not to do this as it effects the prototypical behaviour in a negative way

In this case the synchronisation of the chuffs will be affected, so you have to readjust it. Due to the fact that this strongly depends on brand, track voltage, gear, motor age and temperature and other things, we only can give you general values for the Hornby model (not for the Railroad series) as a base for your trials. *Eventually you have to do an automatic motor parameter adjustment (with CV 54 = 0 and F1 then on), **please refer to the ESU decoder manual before.***

We are not allowed to recommend removing the capacitor on the motor, although this gives better controllability of the motor.

For your trials, change values in steps of 1 or maximum 2.

let the loco warm up for at least 10 minutes beforehand.

Lower values = more chuffs.

CV 57 defines the time distance between 2 chuffs at throttle step 1 (from 28).

CV 58 defines the time distance between 2 chuffs at higher speed.

CV 249 limits the time distance between 2 chuffs at very high speed.

Default values: CV2 = 1 -> CV 57 = 189, CV 58 = 132, CV 249 = 30

Basic values if CV 2 = 2 -> CV 57 = 90, CV 58 = 37, CV 249 = 40

Basic values If CV 2 = 3 -> CV 57 = 63 CV 58 = 22, CV 249 = 40

Uncoupling:

This refers to the automatic coupling and uncoupling sequence (F6). Coupling sound only (F21) is not affected by that.

Default is uncoupling *with uncoupling shuffle*, CV 246 = 12.

The uncoupling shuffle is mandatory for some automatic uncoupler devices that only work correctly without any tension on the coupling.

To disable this feature you just have to set CV 246 = 0. All further settings are then no longer necessary. If the feature is active and you are experimenting, change the values in increments of 5 or 10.

CV 246 = speed during uncoupling shuffle. Depends on your model and your personal requirements.

CV 248 = push time towards train = preset to 80. Depends on your model and your personal requirements. Especially mechanical play in the transmission of the locomotive can cause differences here.

CV 247 = move time away from train = preset to 130. Depends on your model and your personal requirements.

In parallel, Aux 3 will be active. When you accelerate, or automatically after about 10 seconds, function goes off with a delay. This output is to be used for the uncoupling device.

Time settings on Aux 3 have to be set to requirements of uncoupler device!

Use of this feature is to your own risk because it strongly depends on specifications of the device!

Presets of Aux 3: *(first, set CV 31 =16 and CV 32 = 0)*

CV 292: power off delay, preset to 160 which means 4.1 seconds. For each 0.41 seconds more or less, the value has to be altered by 16 --> example: value 176 means $4.1 + 0.41 = 4.51$ seconds.

CV 293: function timeout, preset to 25 which means 10.24 seconds. For each 0.41 seconds more or less, the value has to be altered by 1 --> example: value 26 means $10.24 + 0.41 = 10.65$ seconds.

CV 294: output voltage, is set to 31 which means full track voltage as a default because most devices need that for proper function. Smaller values result in a relatively lower effective voltage.

You have to refer to the uncoupler device manual for proper settings.

Volumes:

You can change the volume of almost every sound.

Please refer to the ESU bulletin King class.

IMPORTANT: do not forget to write CV 31 = 16 and CV 32 = 1 (and then control it right away) before changing volume CVs, otherwise you will affect other functions in the wrong way.

For random sounds, adjustments are not necessary because they are changed automatically when the volume of the respective user sounds is adjusted, see above.