D&RGW 50 / Davenport 2245

Photo Wikipedia

The Prototype

The Davenport Company built this small diesel mechanical locomotive with the number 2245.

The locomotive has a 4-speed gearbox, but on switcher duty at the D&RGW only the first gear was used. The loco was built in 1936 and has a D17000 engine without supercharging, made by Caterpillar. This large volume V8 with 22 liters of cubic capacity has a huge torque.

The locomotive was used at the Sumpter Valley RR and was then sold to the D&RGW, who used it as a switcher in Durango. After that the loco provided valuable service at the Roaring Camp & Big Trees Railroad, before it was added to the roster of the Colorado Railroad Museum.
Special thanks to the internet discussion forum “Davenport 2245”, and to Mike from crrm.org for their support.

Sound Project Information

This sound project is made with recordings of the original locomotive.

Note the small two-stroke engine which is used to start the diesel engine.

The locomotive emits a discreet diesel noise, which is drowned out by the loud beats of the cylinders when accelerating. A smoke generator will emit a lot of smoke for during these acceleration revs.

In order to hear these acceleration beats in your model, you have to abruptly increase the controller speed by one value. The amount by which the controller is abruptly increased results in the number of acceleration noises of the engine. Gently increasing the speed does not give an acceleration noise. Please note that the beating accelerating noise becomes puny the lower the value of CV 3 is. With a little experimentation one can make this effect nicely audible.

The CVs 3, 4, 5 and 57, 154 and 158 have values which are very important for the proper function of the sound project. Especially the CVs 3 and 4 have a considerable influence on how the sound unfolds! CV5 should always be at the maximum, otherwise sounds such as the wheels on the track will be cut out. The maximum speed is to be adjusted with CV 57. Throttling back using CV 57 also saves the motor from excessive voltage pulses. Please make changes to these CVs very carefully!

Users whose digital system does not have all 28 functions, or who wish to order functions differently on the keys, can easily assign functions to other keys, using the Zimo function key mapping.

Program the desired key number as your value in the CV 400+Fu number and the whole function is mapped to another key. Please take care, as it is possible to map multiple functions to the same key! Please read the instruction sheet http://sound-design.white-stone.ch/Information.html

Function	Installation	Function Output	Sound Effect
F0	Light on	FA 0v+0r	
F1	Bell		Bell
F2	Horn l-l-s-l	FA1 + FA 2 Ditch light	Highway crossing signal
F3	Horn l		Playable as long as the key is pressed
F4	Horn s		Short blast on the horn
F5	Cab light	FA 5	
F6	Smoke generator	FA 6 u 2 + fan	Typical diesel smoke effects
F7			
F8	Sound on / off		Start up and idling
F9	Wheels screeching on curves		Sound of Wheels screeching on curves
F10			
F11			
F12	Uncoupling	Servo 1 + 2	Uncoupling sound
F13	Coupling		Coupling sound
F14			
F15			
F16	Tunnel fader (muting)		Sound fades in or out in 2,5 sec
F17			
F18			
F19			
F20			

Random effect	Sound	
Z1	Air blow out	
Z2		
Z3		
Z4		
Z5		
Z6		
Z7		
Z8		

Input	Sound	
1	Horn	
2	Bell	
3		

Changing CVs values used by the reset

CV# 3 = 28 Acceleration time
CV# 4 = 18 Delay time
CV# 14 = 67 Analog Function F0, F9-F12
CV# 17 = ---
CV# 29 = ---
CV# 35 = 0 Fu' Mapping F1
CV# 36 = 0 Fu' Mapping F2
CV# 37 = 0 Fu' mapping F3
CV# 38 = 0 Fu' Mapping F4
CV# 41 = 0 Fu' Mapping F7
CV# 42 = 0 Fu' Mapping F8
CV# 43 = 0 Fu' Mapping F9
CV# 44 = 0 Fu' Mapping F10
CV# 45 = 0 Fu' Mapping F11
CV# 46 = 0 Fu' Mapping F12
CV# 57 = 53 Motor reference voltage
CV# 60 = 135 General dimmer value
CV# 67 = 15 Characteristic curve 1
CV# 68 = 36 Characteristic curve 2
CV# 69 = 55 Characteristic curve 3
CV# 70 = 75 Characteristic curve 4
CV# 71 = 90 Characteristic curve 5
CV# 72 = 90 Characteristic curve 6
CV# 73 = 90 Characteristic curve 7
CV# 74 = 90 Characteristic curve 8
CV# 75 = 90 Characteristic curve 9
CV# 76 = 90 Characteristic curve 10
CV# 77 = 120 Characteristic curve 11
CV# 78 = 160 Characteristic curve 12
CV# 79 = 160 Characteristic curve 13
CV# 80 = 160 Characteristic curve 14
CV# 81 = 160 Characteristic curve 15
CV# 82 = 160 Characteristic curve 16
CV# 83 = 181 Characteristic curve 17
CV# 84 = 200 Characteristic curve 18
CV# 85 = 200 Characteristic curve 19
CV# 86 = 200 Characteristic curve 20
CV# 87 = 200 Characteristic curve 21
CV# 88 = 200 Characteristic curve 22
CV# 89 = 223 Characteristic curve 23
CV# 90 = 255 Characteristic curve 24
CV# 91 = 255 Characteristic curve 25
CV# 92 = 255 Characteristic curve 26
CV# 93 = 255 Characteristic curve 27
CV# 94 = 255 Characteristic curve 28
CV# 115 = 54 Coupling continuous/PWM
CV# 116 = 166 loco movement during uncoupling
CV# 124 = 0 switcher function config (binary)
CV# 132 = 80 Effects FA6
CV# 133 = 1 Smoke van on FA4 or FA10
CV# 136 = 24 RailCom Factor
CV# 137 = 100 Smoke PWM at standstill
CV# 138 = 160 Smoke PWM constant travel
CV# 139 = 255 Smoke PWM acceleration
CV# 154 = 2 ZIMO config 2 (binary)
CV# 160 = 48 Effects FA8
CV# 163 = 255 Servo 1 End re
CV# 167 = 255 Servo 2 End re
CV# 181 = 12 Servo 1 Func.key
CV# 182 = 12 Servo 2 Func.key
CV# 186 = 128 Special Panto 1
CV# 271 = 0 Steam beat overlap.
CV# 272 = 0 Blow-down duration [0,1s]
CV# 274 = 0 Min. standing time for blowdown. [0,1s]
CV# 275 = 181 Vol. Constant. slow
CV# 276 = 181 Vol. Constant. fast
CV# 283 = 181 Vol. during acceleration
CV# 286 = 198 Vol. during delay
CV# 287 = 70 brake squeal threshold
CV# 290 = 1 Thy pitch / FS mid.
CV# 291 = 120 Thy pitch max.
CV# 292 = 50 Thy running step mid.
CV# 293 = 0 Thy volume constant
CV# 294 = 150 Thy Vol. acceleration
CV# 295 = 0 Thy Vol. delay
CV# 296 = 0 EMotor Volume
CV# 297 = 0 EMotor min. running step
CV# 298 = 18 EMotor Vol. climbing
CV# 299 = 90 EMotor pitch climbing
CV# 312 = 0 Blow down keay
CV# 313 = 116 Mute-key
CV# 314 = 30 Mute fading time [0,1s]
CV# 351 = 70 Smoke-van PWM constant speed
CV# 353 = 51 Smoke max. time [25s]
CV# 355 = 35 Smoke-van PWM standing still
CV# 357 = 180 Thy FS / Vol. reduction.
CV# 358 = 20 Thy volume reduction. steepness
CV# 365 = 60 Upshift rpm for DIESEL engines with mech. transmission
CV# 372 = 255 EMotor Vol. acceleration.
CV# 376 = 128 Sound volume
CV# 395 = 110 Max volume
CV# 396 = 27 Quieter key
CV# 397 = 28 Louder key