Forney

16Bit

Prototype Informationen

The Forney is a supporting locomotive patented by Matthias N. Forney between 1861 and 1864. Forney locomotives have the following typical characteristics:

- Axle position 0-4-4 or 2-4-4, two driving axles and two supporting axles in the bogie.
- Originally no flanges on the rear driving axle.
- The operating stocks are stored on the supporting bogie.

Forney locomotives are known from the 2 foot railroads in the US state of Maine. However, they were also used with other gauges when tight curves and increased speed was required on less curvy sections.
Source: Wikipedia

Sound Project Information

The sound project reproduces the powerful exhaust stroke as well as light coasting in flat terrain. With the function key F15 you can switch between the two modes.

The sound project is based on the Zimo Advanced Standard for 16 bit MS decoders.
The decoder must have at least SW version 4.229.

The sound project is developed for the Zimo MS decoder, and works exclusively with this 16bit decoder type.

FA 7 and Servo 1 switch electric couplers when uncoupling. The electrical uncoupler from Kadee can simply be plugged into servo 1.

At servo 2 the synchronously swinging bell is programmed.
The lighting turns on the turbine generator and slowly dims. The volume is controlled by CV984.

CVs 3, 4, 5, 154 and 158 are relevant for this sound project. Changes can cause sound malfunctions! The maximum speed is limited with 57 only.

The sound project works with the virtual steam hammer, by detecting the speed of the engine. With CV267 this divider is set.

By default the function number is the same as the function key number. All functions can be assigned to other function keys with the Zimo input mapping. The function key number is entered as value into the CV400+Fu number, and the function key is already assigned. Attention, several functions can be assigned to the same function key this way! Please read the instructions on http://sound-design.white-stone.ch/Information.html

ATTENTION: After installation of the decoder a measurement run is useful -> CV # 302 = 75 .

Function	Installation	Function Output	Sound Effect
F0	Light on	FA 0v+0r	Dynamo
F1	Bell	Servo oscillates synchronously	Bell
F2	Whistle long-long-short-long		Before level crossing
F3	Whistle long		Whistle sounds as long as the function is active
F4	Whistle short		
F5	Light cab	FA 5	Dynamo
F6	Smoke generator on, load dependent. Can also be replaced by a Zimo smoke blower	FA 6 Heating, protection shutdown after 15 min Fan output for blower	
F7	Cylinder valve		Steam emitting
F8	Sound on/off		
F9	Curves squeak		Curves squeak
F10	Shovel coal	FA 8 flickers automatically	Shovels and door close
F11	Blower	Smoke fan on	Steam blowing
F12	Open clutch, locomotive back and forth		Uncoupling noise
F13	Coupling		Couplings hook loudly into each other
F14	Safety valve		Loud steam blowing
F15	Full power / coasting		Switch between the two sound modes
F16	Lower volume in tunnel (mute)		Volume down or up in 2.5 seconds
F17	Train driver		"All aboard!"
F18	Injector		Water is injected into the boiler
F19	Dual compound air pump, fast		Air pump
F20	Fill tender with water		Water splashes
F26	Switch off start whistle		No start whistle
F27	Vol -		Quieter
F28	Vol +		Louder

Random effect	Sound	
Z1	Dual compound air pump fast	Whenever the locomotive stops
Z2	Dual compound air pump slow	Hold air pressure
Z3	Shovel coal	FA8 flickers
Z4	Blower	Fan blows smoke out of the chimney
Z5	Injector	Water is injected into the boiler
Z6	Combustion chamber damper	Damper slams shut
Z7	Steam	
Z8	Safety valve	Loud blowing of safety valve

Input	Sound	
1		
2		
3		

Changed CV values used by the reset

CV# 3 = 20 Acceleration rate
CV# 4 = 17 Deceleration rate
CV# 5 = 0 Top speed
CV# 9 = 55 Motor control frequency
CV# 28 = 3 RailCom Configuration
CV# 33 = 0 Function mapp. F0f
CV# 34 = 0 Function mapp. F0r
CV# 35 = 0 Function mapp. F1
CV# 36 = 0 Function mapp. F2
CV# 37 = 0 Function mapp. F3
CV# 38 = 0 Function mapp. F4
CV# 39 = 0 Function mapp. F5
CV# 41 = 0 Function mapp. F7
CV# 42 = 0 Function mapp. F8
CV# 43 = 0 Function mapp. F9
CV# 44 = 0 Function mapp. F10
CV# 45 = 0 Function mapp. F11
CV# 46 = 4 Function mapp. F12
CV# 57 = 160 Motor regulation: voltage reference
CV# 60 = 212 Dimming general
CV# 63 = 51 Effects cycle
CV# 112 = 1 ZIMO configuration bits (binary)
CV# 114 = 188 Dim Mask FO0-FO6
CV# 115 = 76 Uncoupler control
CV# 116 = 167 Automatic uncouple
CV# 121 = 1 Exponential acceleration
CV# 122 = 1 Exponential deceleration
CV# 125 = 89 Effects F0 front
CV# 126 = 90 Effects F0 rear
CV# 131 = 88 Effects F5
CV# 132 = 72 Effects F6
CV# 137 = 177 Smoke generator at standstill
CV# 138 = 227 Smoke generator at cruising speed
CV# 139 = 255 Smoke generator at accelaration
CV# 152 = 63 Dim mask FO7-FO12, RiBi
CV# 153 = 20 Continue without signal
CV# 154 = 50 ZIMO configuration bits 2 (binary)
CV# 158 = 8 Several sound bits + RailCom variants
CV# 159 = 48 Effects F7
CV# 163 = 255 Servo 1 right stop
CV# 167 = 255 Servo 2 right stop
CV# 169 = 8 Servo 2 speed
CV# 181 = 12 Servo 1 - Function Assignment
CV# 182 = 201 Servo 2 - Function Assignment
CV# 190 = 6 Up-dimming time for FO
CV# 191 = 3 Down-dimming time for FO
CV# 201 = 44
CV# 202 = 44
CV# 203 = 44
CV# 204 = 44
CV# 267 = 103 Chuff sound rate
CV# 269 = 10 Steam, accented lead-chuff
CV# 272 = 120 Drainage time
CV# 273 = 7 Starting delay
CV# 274 = 150 min. drainage downtime [0.1s]
CV# 275 = 181 Volume with no load slow travel
CV# 276 = 181 Volume with no load speed run
CV# 281 = 2 Threshold for full acceleration sound
CV# 284 = 2 Threshold for noise reduction in delay
CV# 286 = 46 Volume reduced driving noise during deceleration
CV# 307 = 128 cornering squeal inputs
CV# 308 = 9 cornering squeal key
CV# 312 = 7 Drainage button
CV# 313 = 116 Mute button
CV# 314 = 25 Mute fade time
CV# 315 = 10 Random Z1 min interval
CV# 316 = 80 Random Z1 max interval
CV# 317 = 8 Random generator Z1 playback time
CV# 318 = 200 Random Z2 min interval
CV# 319 = 200 Random Z2 max interval
CV# 320 = 45 Random generator Z2 playback time
CV# 321 = 160 Random Z3 min interval
CV# 322 = 160 Random Z3 max interval
CV# 324 = 110 Random Z4 min interval
CV# 325 = 110 Random Z4 max interval
CV# 326 = 9 Random generator Z4 playback time
CV# 327 = 100 Random Z5 min interval
CV# 328 = 100 Random Z5 max interval
CV# 329 = 7 Random generator Z5 playback time
CV# 330 = 240 Random Z6 min interval
CV# 331 = 240 Random Z6 max interval
CV# 332 = 14 Random generator Z6 playback time
CV# 333 = 120 Random Z7 min interval
CV# 334 = 120 Random Z7 max interval
CV# 336 = 255 Random Z8 min interval
CV# 337 = 255 Random Z8 max interval
CV# 341 = 5 Switching input 1 Playback time
CV# 342 = 5 Switching input 2 Playback time
CV# 343 = 5 Switching input 3 Playback time
CV# 345 = 15 Sound-switch-key
CV# 346 = 2 Sound-switch-conditions
CV# 351 = 204 Smoke fan pwm at constant speed
CV# 353 = 25 Smoke heater max. operating time
CV# 355 = 77 Exhaust fan speed at standstill
CV# 376 = 181 Driving sound volume
CV# 392 = 5 Reed4 play time [s]
CV# 394 = 32 ZIMO configuration 4 (binary)
CV# 395 = 120 maximal volume
CV# 396 = 27 Volume decrease key
CV# 397 = 28 Volume increase key
CV# 430 = 22 ZIMO Mapping 1 F-key
CV# 455 = 1 ZIMO Mapping 5 M-key
CV# 508 = 0 ZIMO Mapping dimming value 1-key
CV# 509 = 0 ZIMO Mapping dimming value 2-key
CV# 510 = 0 ZIMO Mapping dimming value 3-key
CV# 511 = 0 ZIMO Mapping dimming value 4-key
CV# 512 = 0 ZIMO Mapping dimming value 5-key
CV# 516 = 70 F2 soundnumber
CV# 519 = 82 F3 soundnumber
CV# 521 = 8 F3 information on loop
CV# 522 = 83 F4 soundnumber
CV# 540 = 68 F10 soundnumber
CV# 541 = 23 F10 volume
CV# 542 = 8 F10 information on loop
CV# 543 = 66 F11 soundnumber
CV# 544 = 181 F11 volume
CV# 545 = 8 F11 information on loop
CV# 546 = 88 F12 soundnumber
CV# 549 = 87 F13 soundnumber
CV# 552 = 81 F14 soundnumber
CV# 554 = 8 F14 information on loop

CV# 561 = 69 F17 soundnumber
CV# 562 = 181 F17 volume
CV# 563 = 8 F17 information on loop
CV# 564 = 74 F18 soundnumber
CV# 565 = 91 F18 volume
CV# 566 = 72 F18 information on loop
CV# 567 = 75 F19 soundnumber
CV# 569 = 8 F19 information on loop
CV# 575 = 65 soundnumber change of direction
CV# 576 = 128 volume change of direction
CV# 577 = 77 soundnumber squeal
CV# 581 = 79 soundnumber starting whistle
CV# 583 = 80 Soundnumber drainage
CV# 603 = 78 cornering squeal sound number
CV# 604 = 128 cornering squeal volume
CV# 673 = 86 F20 soundnumber
CV# 675 = 72 F20 information on loop
CV# 736 = 68 Soundnumber trigger 6
CV# 737 = 4 Trigger 6 to FO
CV# 744 = 75 Soundnumber Z1
CV# 745 = 91 Volume Z1
CV# 746 = 8 Information on loop Z1
CV# 747 = 76 Soundnumber Z2
CV# 748 = 64 Volume Z2
CV# 749 = 8 Information on loop Z2
CV# 750 = 68 Soundnumber Z3
CV# 751 = 32 Volume Z3
CV# 752 = 8 Information on loop Z3
CV# 753 = 66 Soundnumber Z4
CV# 754 = 181 Volume Z4
CV# 755 = 8 Information on loop Z4
CV# 756 = 74 Soundnumber Z5
CV# 757 = 64 Volume Z5
CV# 758 = 8 Information on loop Z5
CV# 759 = 81 Soundnumber Z6
CV# 761 = 8 Information on loop Z6
CV# 762 = 67 Soundnumber Z7
CV# 763 = 128 Volume Z7
CV# 764 = 8 Information on loop Z7
CV# 765 = 81 Soundnumber Z8
CV# 767 = 64 Information on loop Z8
CV# 984 = 181 Volume of the Generator