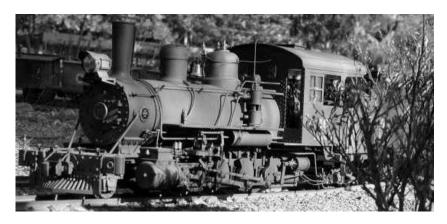# Bachmann Outside Frame Consolidation

16Bit

The Prototype

This locomotive was built at the Baldwin Works and was equipped with not very widespread Baker valve gear.

As far as is known, the locomotive was delivered to Mexico and somehow returned to the US after the age of steam had passed. The locomotive reflects a common type that was widely used.

Source: Wikipedia

Sound Project Information

All recordings come from locomotives which are close to the somewhat elusive prototype, among others from the Georgetown Loop RR. While recording the moving locomotive, special attention was given to recording the Baker valve gear. The characteristic sniffling sound of the valve gear is clearly audible.

The sound operates both the thundering highball and the light coasting on flat areas. Use function key F15 to switch between the two modes.

The sound project is developed for all Zimo MS decoders, and is not usable for MX decoders!
The decoder needs the software version 4.229 or higher. The sound project is based on the Zimo Advanced Standard.

FA7 and Servo 1 can operate multiple electric uncouplers. The Kadee electric uncoupler can simply plug in the Servo 1 socket.

Servo 2 operates a swinging bell

CVs 3, 4, 5, 154 and 158 are important for the sound project. Please change them only very carefully! The final speed should only be set with CV 57!
The turbo generator is activated by switching on lights. Its volume can be regulated with CV984.

The sound project does not use the Bachmann factory chuff cam trigger, but this can be added by setting CV 268 to a value of 1. The internal chuff trigger (CV267) is pre-adjusted to the ratio of 4 steam blasts by the number of sampled motor commutator sections. In this method, the locomotive motor is used as the chuff trigger. The user can optimize the chuffs by adjusting CV 267.

The function number is by default the same as function key. With the Zimo function key mapping, the complete function are easy changeable to another key.
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, you can map multiple functions to one only key!

After configuration it is recommended to protect the decoder against unintentional reprogramming by setting the programming lock CV 144 to value 192. Before a desired influence must first CV144 be set to 0!

Function	Installation	Function output	Sound effect
F0	Light on	FA 0v+0r	
F1	Bell		Bell
F2	Whistle l-l-s-l		Highway crossing signal
F3	Whistle		Long whistle
F4	Short whistle		Short whistle
F5	Cab light	FA 5	
F6	Smoke generator on heater, load controlled Also replaceable with Zimo blowing smoker	FA 6 heater 15 min timer against burnout Ventilator output for cam operated blower	
F7	Cylinder valve		Blow down
F8	Sound on / off		
F9	Rail squeal		Sound of wheels squealing on sharp curves
F10	Shoveling coal	FA 8 flickers automatically	Shoveling coal, firebox door
F11	Blower	Smoke ventilator is on	Steam blowing
F12	Coupler opening – loco moves back and forth	FA7 and servo 1 opens electrically	Uncoupling sound
F13	Coupling		Coupling sound
F14	Pop valve (safety valve)		Loud steam blast
F15	Full power / coasting		Switches between 2 sound modes
F16	Tunnel fader (muting)		Fade in or out in 2,5 sec
F17	Conductor		"All aboard!"
F18	Injector		Feeding water in the boiler
F19	Dual Westinghouse air pump fast		2 air pumps fast
F20	Steam blast		Loud steam blast
F21	Filling the tender with water		Water running
F26	Deaktivating Startwhistle		Startwhistle set off
F27	Vol -		quieter
F28	Vol +		louder

Random effect	Noise	Function
Z1	Dual air pump fast	Every time the loco stops
Z2	Dual air pump slow	Maintaining air pressure
Z3	Shoveling coal	FA8 flickering
Z4	Injector	Steam injects water into the boiler
Z5	Ashpan	
Z6	Blower	Ventilator blows smoke out of stack
Z7	Safety valve	Loud popping noise
Z8		

Input	Sound	
1		
2		
3		

Changing CVs values used by the reset

CV# 1 = 3 Loco address
CV# 3 = 25 Acceleration rate
CV# 4 = 20 Deceleration rate
CV# 17 = 0 Extended Address High
CV# 18 = 0 Extended Address Low
CV# 28 = 3 RailCom Configuration
CV# 29 = 14 DCC configuration (binary)
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 = 143 Motor regulation: voltage reference
CV# 60 = 60 Dimming general
CV# 114 = 144 Dim Mask FO0-FO6
CV# 115 = 66 Uncoupler control
CV# 116 = 145 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 = 153 Smoke generator at standstill
CV# 138 = 204 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 = 18 ZIMO configuration bits 2 (binary)
CV# 158 = 8 Several sound bits + RailCom variants
CV# 159 = 48 Effects F7
CV# 160 = 8 Effects F8
CV# 163 = 255 Servo 1 right stop
CV# 167 = 255 Servo 2 right stop
CV# 181 = 12 Servo 1 - Function Assignment
CV# 182 = 201 Servo 2 - Function Assignment
CV# 190 = 5 Up-dimming time for FO
CV# 191 = 4 Down-dimming time for FO
CV# 201 = 44
CV# 202 = 44
CV# 203 = 22
CV# 204 = 22
CV# 269 = 10 Steam, accented lead-chuff
CV# 272 = 100 Drainage time
CV# 273 = 7 Starting delay
CV# 274 = 70 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 = 5 Threshold for full acceleration sound
CV# 284 = 5 Threshold for noise reduction in delay
CV# 286 = 91 Volume reduced driving noise during deceleration
CV# 296 = 60 Electromotor largest volume
CV# 297 = 15 Electromotor: begin of audible noise
CV# 298 = 4 Electromotor: begin of full volume
CV# 299 = 15 Electromotor noise depending on the speed of the pitch
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 = 1 Random Z1 min interval
CV# 316 = 20 Random Z1 max interval
CV# 317 = 15 Random generator Z1 playback time
CV# 318 = 120 Random Z2 min interval
CV# 319 = 120 Random Z2 max interval
CV# 320 = 60 Random generator Z2 playback time
CV# 321 = 100 Random Z3 min interval
CV# 322 = 100 Random Z3 max interval
CV# 323 = 20 Random generator Z3 playback time
CV# 324 = 120 Random Z4 min interval
CV# 325 = 120 Random Z4 max interval
CV# 326 = 25 Random generator Z4 playback time
CV# 327 = 40 Random Z5 min interval
CV# 329 = 1 Random generator Z5 playback time
CV# 330 = 140 Random Z6 min interval
CV# 331 = 140 Random Z6 max interval
CV# 332 = 13 Random generator Z6 playback time
CV# 333 = 255 Random Z7 min interval
CV# 334 = 255 Random Z7 max interval
CV# 335 = 12 Random generator Z7 playback time
CV# 336 = 40 Random Z8 min 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 = 32 Smoke heater max. operating time
CV# 373 = 64 Electromotor volume deceleration
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# 432 = 4 ZIMO Mapping 1 A1 forw.
CV# 434 = 4 ZIMO Mapping 1 A1 rev.
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 = 89 F2 soundnumber
CV# 519 = 90 F3 soundnumber
CV# 522 = 91 F4 soundnumber
CV# 540 = 102 F10 soundnumber
CV# 541 = 91 F10 volume
CV# 542 =   8 F10 information on loop
CV# 543 = 83 F11 soundnumber
CV# 544 = 181 F11 volume
CV# 545 = 72 F11 information on loop
CV# 546 = 105 F12 soundnumber
CV# 547 = 128 F12 volume
CV# 549 = 86 F13 soundnumber
CV# 552 = 84 F14 soundnumber
CV# 554 = 72 F14 information on loop
CV# 561 = 88 F17 soundnumber
CV# 562 = 181 F17 volume
CV# 564 = 103 F18 soundnumber
CV# 565 = 91 F18 volume
CV# 566 = 72 F18 information on loop
CV# 567 = 94 F19 soundnumber
CV# 568 = 64 F19 volume
CV# 569 =   8 F19 information on loop
CV# 573 = 66 soundnumber boilng
CV# 574 = 23 volume boiling
CV# 575 = 85 soundnumber change of direction
CV# 576 = 128 volume change of direction
CV# 577 = 95 soundnumber squeal
CV# 581 = 96 soundnumber starting whistle
CV# 583 = 81 Soundnumber drainage
CV# 585 = 82 Soundnumber electromotor
CV# 603 = 65 cornering squeal sound number
CV# 604 = 181 cornering squeal volume
CV# 673 = 104 F20 soundnumber
CV# 674 = 91 F20 volume
CV# 675 = 72 F20 information on loop
CV# 676 = 106 F21 soundnumber
CV# 678 =   8 F21 information on loop
CV# 732 = 105 Soundnumber trigger 4
CV# 733 =   9 Trigger 4 to FO
CV# 734 = 102 Soundnumber trigger 5
CV# 735 = 10 Trigger 5 to FO
CV# 736 = 83 Soundnumber trigger 6
CV# 737 = 255 Trigger 6 to FO
CV# 744 = 94 Soundnumber Z1
CV# 745 = 64 Volume Z1
CV# 746 =   8 Information on loop Z1
CV# 747 = 97 Soundnumber Z2
CV# 748 = 91 Volume Z2
CV# 749 =   8 Information on loop Z2
CV# 750 = 102 Soundnumber Z3
CV# 751 = 91 Volume Z3
CV# 752 = 72 Information on loop Z3
CV# 753 = 103 Soundnumber Z4
CV# 754 = 91 Volume Z4
CV# 755 = 72 Information on loop Z4
CV# 756 = 87 Soundnumber Z5
CV# 757 = 91 Volume Z5

CV# 758 =   8 Information on loop Z5
CV# 759 = 83 Soundnumber Z6
CV# 760 = 46 Volume Z6
CV# 761 =   8 Information on loop Z6
CV# 762 = 84 Soundnumber Z7
CV# 764 =   8 Information on loop Z7
CV# 766 = 128 Volume Z8
CV# 767 =   8 Information on loop Z8
CV# 984 = 181