Heisler Geared Locomotive

Photo © Heinz Däppen

Prototype information

The Heisler locomotive was the last variant of the three major types of geared steam locomotive, Charles L. Heisler receiving a patent for the design in 1892 following the construction of a prototype in 1891. Somewhat similar to a Climax locomotive, Heisler's design featured two cylinders canted inwards at a 45 degree angle to form a 'vee-twin' arrangement. Power then went to a longitudinal driveshaft that drove the outboard axle on each powered truck. The inboard axle on each truck was then driven from the outboard one by external side (connecting) rods. The Heisler was the fastest of the geared steam locomotive designs, and yet was still claimed by its manufacturer to have the same low speed hauling ability. Heisler's were produced in both two and three truck variants in sizes ranging from 17 tons to 95 tons.

Source: Wikipedia

Sound project information

The decoder is programmed for using motor informations to the virtual chufftrigger also operating the fan blowing smoker.

The sound project is based on Zimo Advanced Standard. The decoder must have SW Version 33.14 or higher.

The older MX 690 can operate this sound project, but the number of simultaneous auxiliary sounds is limited with these older decoders.

Please operate the calibration run on a flat long track. Start with CV 302 Value 75

CVs 3, 4, 5, 57, 154 and 158 are important values for the sound project. Please change values very carefully!

Please look up the functions of each output in this manual and then connect the wires!!!!

By default the function number is the same as function key. All the functions can easily be assigned 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	Whistle l-l-s-l		Highway crossing signal
F3	Whistle long		Playable as long as you push
F4	Whistle stop		Whistle s-s-s
F5	Cab light	FA 5 dimmer activated	
F6	Smoke generator on heater ,load controlled	FA 6 load controlled by the loco	
F7	Cylinder valve		Blow down
F8	Sound on / off	FA 8 flickers automatically	Oilburner
F9	Wheels screeching on curves		Sound of Wheels screeching on curves
F10			
F11	Blower	Steam generator fan on at Fan out or FA 4 or FA10	Smooth steam blow
F12	Servo coupler opens and loco moves back and forth	FA7 for automatic uncoupler Servo out 1 for Kadee electric coupler #11220	Uncoupling noise
F13	Coupling		Coupling sound
F14	Pop valve (safety valve)		Loud steam blast
F15	Full power / coasting		Switch between 2 sound modes
F16	Tunnel fader (muting)		Sound fades in or out in 2,5 sec
F17	Injector feeds water into the boiler		Injector
F18	Filling water into tender		Water splashing
F19	Air pump fast		Steam powered air pump
F20	Air pump slow		Steam powered air pump
F21	Whistle with Echo		Whistle fare away w Echo

Random effect	Sound	Action
Z1	Compressor fast	Every time the locomotive comes to a standstill
Z2	Compressor slow	Maintaining air pressure
Z3	Shoveling coal	FA8 flickering
Z4	Blower	Fan blows smoke out of stack
Z5	Injector	Steam injects water into the boiler
Z6	Safety valve	Loud popping of valve

Input	Sound	Time
1	Whistle	5 sec
2	Bell	5 sec
3		

Changing CVs values used by the reset

CV# 3 = 18 Acceleration rate
CV# 4 = 22 Deceleration rate
CV# 7 = ---
CV# 9 = 96 Motor control frequency
CV# 17 = ---
CV# 18 = ---
CV# 27 = 0 Asymmetrical stops (ABC)
CV# 29 = ---
CV# 32 = 16 Index page low
CV# 35 = 0 Function mapp. F1
CV# 36 = 12 Function mapp. F2
CV# 37 = 0 Function mapp. F3
CV# 38 = 0 Function mapp. F4
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# 49 = 0 HLU acceleration
CV# 50 = 0 HLU deceleration
CV# 51 = 20 HLU limit HU
CV# 52 = 40 HLU limit U
CV# 53 = 70 HLU limit UL
CV# 54 = 110 HLU limit L
CV# 55 = 180 HLU limit LF
CV# 57 = 80 Motor regulation: voltage reference
CV# 59 = 5 HLU delay
CV# 60 = 60 Dimming general
CV# 63 = 51 Effects cycle
CV# 65 = 10 Sub-Vers. Number
CV# 112 = 1 ZIMO configuration bits (binary)
CV# 114 = 128 Dim Mask FO0-FO6
CV# 115 = 66 Uncoupler control
CV# 116 = 145 Automatic uncouple
CV# 124 = 0 Shunting keys configuration (binary)
CV# 132 = 72 Effects F6
CV# 134 = 106 Asym. stopping (ABC)
CV# 137 = 153 Smoke generator at standstill
CV# 138 = 204 Smoke generator at cruising speed
CV# 139 = 255 Smoke generator at accelaration
CV# 141 = 0 constant braking distance distance
CV# 142 = 5 High speed correction with ABC
CV# 143 = 0 High speed correction with HLU
CV# 152 = 1 Dim mask FO7-FO12, RiBi
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# 181 = 12 Servo 1 - Function Assignment
CV# 265 = 1 Selection of the locomotive type
CV# 266 = 65 Total volume
CV# 267 = 80 Chuff sound rate
CV# 269 = 20 Steam, accented lead-chuff
CV# 274 = 60 min. drainage downtime [0.1s]
CV# 282 = 50 Duration of the acceleration noise [0.1s]
CV# 286 = 60 Volume reduced driving noise during deceleration
CV# 287 = 80 Threshold for brake squeal
CV# 301 = 13 Incremental/Decr. Programming of CV's
CV# 302 = 16 Test drive
CV# 303 = 21 Switching input 1-key/options
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 = 12 Random generator Z1 playback time
CV# 318 = 200 Random Z2 min interval
CV# 319 = 200 Random Z2 max interval
CV# 320 = 40 Random generator Z2 playback time
CV# 321 = 130 Random Z3 min interval
CV# 322 = 130 Random Z3 max interval
CV# 324 = 140 Random Z4 min interval
CV# 325 = 140 Random Z4 max interval
CV# 326 = 7 Random generator Z4 playback time
CV# 327 = 150 Random Z5 min interval
CV# 328 = 150 Random Z5 max interval
CV# 329 = 8 Random generator Z5 playback time
CV# 330 = 245 Random Z6 min interval
CV# 331 = 255 Random Z6 max interval
CV# 332 = 13 Random generator Z6 playback time
CV# 341 = 5 Switching input 1 Playback time
CV# 342 = 5 Switching input 2 Playback time
CV# 345 = 15 Sound-switch-key
CV# 351 = 204 Smoke fan pwm at constant speed
CV# 353 = 32 Smoke heater max. operating time
CV# 376 = 181 Driving sound volume
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# 513 = 42 F1 Soundnumber
CV# 514 = 128 F1 volume
CV# 515 = 8 F1 information on loop
CV# 537 = 31 F9 soundnumber
CV# 538 = 91 F9 volume
CV# 539 = 8 F9 information on loop
CV# 543 = 29 F11 soundnumber

CV# 544 = 128 F11 volume
CV# 545 = 8 F11 information on loop
CV# 546 = 41 F12 soundnumber
CV# 549 = 39 F13 soundnumber
CV# 550 = 181 F13 volume
CV# 552 = 25 F14 soundnumber
CV# 554 = 72 F14 information on loop
CV# 561 = 28 F17 soundnumber
CV# 562 = 128 F17 volume
CV# 563 = 8 F17 information on loop
CV# 564 = 36 F18 soundnumber
CV# 565 = 181 F18 volume
CV# 566 = 8 F18 information on loop
CV# 567 = 27 F19 soundnumber
CV# 568 = 91 F19 volume
CV# 569 = 8 F19 information on loop
CV# 574 = 32 volume boiling
CV# 575 = 38 soundnumber change of direction
CV# 577 = 26 soundnumber squeal
CV# 583 = 32 Soundnumber drainage
CV# 584 = 181 Volume dewatering
CV# 673 = 44 F20 soundnumber
CV# 674 = 128 F20 volume
CV# 675 = 8 F20 information on loop
CV# 736 = 29 Soundnumber trigger 6
CV# 737 = 255 Trigger 6 to FO
CV# 740 = 42 Soundnumber switching input 2
CV# 741 = 128 Volume switching input 2
CV# 744 = 27 Soundnumber Z1
CV# 745 = 91 Volume Z1
CV# 746 = 8 Information on loop Z1
CV# 747 = 44 Soundnumber Z2
CV# 748 = 128 Volume Z2
CV# 749 = 8 Information on loop Z2
CV# 753 = 29 Soundnumber Z4
CV# 754 = 128 Volume Z4
CV# 755 = 8 Information on loop Z4
CV# 756 = 28 Soundnumber Z5
CV# 757 = 128 Volume Z5
CV# 758 = 8 Information on loop Z5
CV# 759 = 25 Soundnumber Z6
CV# 761 = 8 Information on loop Z6