



Image: Reinerhaufe / Artyom Svetlov - Wikipedia

The ČKD ČME3 is a six-axle diesel–electric locomotive built by ČKD between 1967 and 1979. The class was used primarily for shunting and mainline duties. With over 8,000 produced during a production run of 31 years, it is one of the most produced locomotives in the world. Units have been operated by Russia and Belarus (as class ЧМЭ3, transliteration ChME3), as well as Ukraine (ЧМЕ3) and other ex-Soviet bloc countries, in Czechoslovakia (as class T669.0, T669.1 and T669.5, later as ŽSR 770 and ČD 770 in Slovakia and the Czech Republic), on industrial railways in Poland (S200), in Albania (HSH T669.1), Iraq (DES 3101), Syria (LDE 1500) and in India (DEC 120). One of the requirements set by the Soviet customers was that the design should be based on the locomotives supplied by the USA to the Soviet Union in 1944 under the Lend-Lease Act. Located underneath the front hood is the traction assembly – a K 6 S 310 DR diesel engine and a TD 802 traction generator – and auxiliary machinery powered by the diesel engine via a hydrodynamic transmission. Chillers and ventilators are located here as well. TE 006 traction motors are axle-mounted on the wheel sets. Located underneath the rear hood are batteries and a supply of sand.

Source: Wikipedia

Project settings and information:

ZIMO Project No.: B090

The project was realized in the new 16-bit technology for ZIMO MS decoders and is customized for the H0 model of Roco.

- The decoder must have at least software version 5.27.14.
- The decoder can be controlled using address 3
- To ensure the functionality of the project, CV values should only be changed very carefully.
- After importing the sound project, an automatic measurement run (CV #302 = 75 - forward or 76 - backward) can be performed. This serves as a basis for motor current consumption and for setting CVs #277 to 280, but not for improving driving characteristics.
- A reset can be carried out using CV #8 = 8.
- In case you want to adapt this project to the H0 model of Piko, please read the text at the end of this documentation.

Function keys:

Key	Function	Function output	Sound
F0	Headlights on / off	White lights (FO0fwd) on front in forward direction, White lights on short front end (FO0bwd) in backward direction	
F1	Red tail lights	FO1fwd / FO2bwd	
F2			Whistle
F3			4x Horn short (script 2)
F4			4x Horn long (script 3)
F5			Conductor's whistle
F6	Halfspeed and shunting + lights	FO6fwd + FO5bwd	
F7			Curve squeal (script 1)
F8			Sound on / off
F9			Mute
F10			Solo drive
F11			Heavy duty (script 5 + 6)
F12			Speed Lock
F13			Coupling / uncoupling
F14			Fan
F15			3x Whistle short
F16	Numberplate lights	FO4	
F17			Cab door open / close
F18	Cab light	FO3 (script 7)	
F19			Air drain
F20			Brake on / off
F21			Handbrake on / off
F22			Refuel
F23			Sanding
F24			Volume +
F25			Volume -
F26-F28	Free disposal		

Sound on/off on F8 corresponds to the ZIMO standard:

If you want to switch the sound with F1, you can swap the function keys as follows using CV programming:

- CV 401 = 8
- CV 408 = 1



Random generators:

Z1: Air drain

Modified CVs:

CV# 1 = 3 Loco address	CV# 452 = 68 ZIMO Mapping 4 A1 rev.
CV# 3 = 22 Acceleration rate	CV# 454 = 6 ZIMO Mapping 5 F-key
CV# 4 = 16 Deceleration rate	CV# 455 = 29 ZIMO Mapping 5 M-key
CV# 5 = 200 Top speed	CV# 456 = 38 ZIMO Mapping 5 A1 forw.
CV# 12 = 53 operating modes	CV# 458 = 37 ZIMO Mapping 5 A1 rev.
CV# 13 = 128 Analog functions F1-F8	CV# 460 = 6 ZIMO Mapping 6 F-key
CV# 28 = 3 RailCom Configuration	CV# 461 = 1 ZIMO Mapping 6 M-key
CV# 33 = 0 Function mapp. FOf	CV# 467 = 29 ZIMO Mapping 7 M-key
CV# 34 = 0 Function mapp. FOr	CV# 468 = 35 ZIMO Mapping 7 A1 forw.
CV# 57 = 120 Motor regulation: voltage reference	CV# 469 = 35 ZIMO Mapping 7 A2 forw.
CV# 60 = 90 Dimming general	CV# 470 = 35 ZIMO Mapping 7 A1 rev.
CV# 105 = 145 User Data 1	CV# 471 = 35 ZIMO Mapping 7 A2 rev.
CV# 115 = 70 Uncoupler control	CV# 473 = 1 ZIMO Mapping 8 M-key
CV# 116 = 166 Automatic uncouple	CV# 480 = 6 ZIMO Mapping 9 A1 forw.
CV# 125 = 88 Effects FOfront	CV# 481 = 7 ZIMO Mapping 9 A2 forw.
CV# 126 = 88 Effects FOrear	CV# 482 = 6 ZIMO Mapping 9 A1 rev.
CV# 127 = 88 Effects FO1	CV# 483 = 7 ZIMO Mapping 9 A2 rev.
CV# 128 = 88 Effects FO2	CV# 509 = 160 ZIMO Mapping dimming value 2-key
CV# 146 = 15 Gear backlash	CV# 510 = 120 ZIMO Mapping dimming value 3-key
CV# 147 = 160 Motor regulation: I value	CV# 512 = 96 ZIMO Mapping dimming value 5-key
CV# 148 = 100 Motor regulation: D value	CV# 516 = 8 F2 soundnumber
CV# 149 = 150 Motor regulation: P value	CV# 517 = 0 F2 volume
CV# 155 = 6 Half-speed key	CV# 525 = 9 F5 soundnumber
CV# 156 = 6 Shunting key accel./decel.	CV# 526 = 128 F5 volume
CV# 158 = 32 Several sound bits	CV# 549 = 39 F13 soundnumber
CV# 190 = 65 Up-dimming time for FO	CV# 550 = 91 F13 volume
CV# 191 = 20 Down-dimming time for FO	CV# 551 = 8 F13 information on loop
CV# 254 = 90 Project-ID	CV# 552 = 43 F14 soundnumber
CV# 255 = 1 Project-ID	CV# 553 = 64 F14 volume
CV# 256 = 1 Project-ID	CV# 554 = 72 F14 information on loop
CV# 265 = 101 Selection of the locomotive type	CV# 555 = 47 F15 soundnumber
CV# 273 = 16 Starting delay	CV# 556 = 0 F15 volume
CV# 284 = 10 Threshold for noise reduction in delay	CV# 561 = 12 F17 soundnumber
CV# 287 = 85 Threshold for brake squeal	CV# 562 = 91 F17 volume
CV# 288 = 85 Brake squeal time spent driving [0.1s]	CV# 563 = 8 F17 information on loop
CV# 296 = 150 Electromotor largest volume	CV# 567 = 46 F19 soundnumber
CV# 297 = 20 Electromotor: begin of audible noise	CV# 568 = 128 F19 volume
CV# 299 = 100 E-motor depending on speed of pitch	CV# 577 = 4 soundnumber squeal
CV# 313 = 109 Mute button	CV# 578 = 128 volume squeal
CV# 315 = 120 Random Z1 min interval	CV# 581 = 45 soundnumber starting whistle



CV# 316 = 150 Random Z1 max interval	CV# 582 = 181 volume starting whistle
CV# 317 = 1 Random generator Z1 playback time	CV# 585 = 41 Soundnumber electromotor
CV# 345 = 11 Sound-switch-key	CV# 586 = 0 Volume electromotor
CV# 346 = 1 Sound-switch-conditions	CV# 673 = 36 F20 soundnumber
CV# 347 = 10 Solo driving	CV# 674 = 181 F20 volume
CV# 348 = 22 Solo driving parameters (binary)	CV# 675 = 8 F20 information on loop
CV# 356 = 12 Speed Lock Key	CV# 676 = 38 F21 soundnumber
CV# 366 = 80 Turbo max. volume	CV# 677 = 64 F21 volume
CV# 367 = 150 Turbo dependency on speed	CV# 678 = 8 F21 information on loop
CV# 370 = 50 Turbo frequency increase	CV# 679 = 40 F22 soundnumber
CV# 371 = 30 Turbo frequency decrease	CV# 680 = 46 F22 volume
CV# 372 = 150 Electromotor volume acceleration	CV# 681 = 72 F22 information on loop
CV# 373 = 40 Electromotor volume deceleration	CV# 682 = 35 F23 soundnumber
CV# 390 = 150 Solo drive reduction of CV3/CV4	CV# 683 = 64 F23 volume
CV# 391 = 60 Solo drive raise threshold	CV# 684 = 72 F23 information on loop
CV# 395 = 85 Maximum volume for increase key	CV# 744 = 46 Soundnumber Z1
CV# 396 = 25 Volume decrease key	CV# 745 = 128 Volume Z1
CV# 397 = 24 Volume increase key	CV# 746 = 72 Information on loop Z1
CV# 430 = 29 ZIMO Mapping 1 F-key	CV# 768 = 32 Actual used steam/diesel-set
CV# 432 = 46 ZIMO Mapping 1 A1 forw.	CV# 844 = 255 Electromotor maximum pitch
CV# 434 = 47 ZIMO Mapping 1 A1 rev.	CV# 980 = 128 Script 1 volume sound 1
CV# 436 = 1 ZIMO Mapping 2 F-key	CV# 981 = 46 Script 1 volume sound 2
CV# 438 = 65 ZIMO Mapping 2 A1 forw.	CV# 982 = 0 Script 2 volume sound
CV# 440 = 66 ZIMO Mapping 2 A1 rev.	CV# 983 = 0 Script 3 volume sound
CV# 442 = 18 ZIMO Mapping 3 F-key	CV# 990 = 50 Script 6 Turbo sound sample
CV# 444 = 163 ZIMO Mapping 3 A1 forw.	CV# 991 = 55 Script 5 variable 3
CV# 446 = 163 ZIMO Mapping 3 A1 rev.	CV# 992 = 23 Script 5 variable 4
CV# 448 = 16 ZIMO Mapping 4 F-key	CV# 993 = 45 Script 7 timer
CV# 450 = 68 ZIMO Mapping 4 A1 forw.	

Sound samples:

4 Bremse.wav	32 Horn_tief_2.52.wav
5 Horn_hoch_6.48.wav	33 Horn_tief_3.02.wav
6 Horn_tief_0.05.wav	35 Sanden.wav
7 Horn_tief_4.35.wav	36 Bremse_an-lösen_kurz.wav
8 Pfiff_hoch.wav	37 Luft_ablassen_01.wav
9 Schaffnerpfiff RückB_2_echo.wav	38 Handbremse_zu-auf.wav
10 An- Abkuppeln_Mittelpufferkupplung.wav	39 An-Abkuppeln.wav
11 Curve-squeal_short_02.wav	40 Tanken.wav
12 Führerstandstür_auf-zu.wav	43 Lüfter_mix.wav
13 Schienenknarren.wav	44 Bremse_lösen_lang.wav
26 Horn_hoch_0.98.wav	45 Bremse-lösen_Quietsch_04.wav
27 Horn_hoch_1.83.wav	46 Zisch_lang.wav
28 Horn_hoch_3.22.wav	47 3x-Pfiffe_hoch.wav

29 Horn_hoch_4.80.wav
30 Horn_tief_0.74.wav
31 Horn_tief_1.45.wav

48 Pfiff_hoch_0.45.wav
49 Stand-FS3.wav
50 Turbo_02.wav

Scripts:

Script 1: speed dependent curve squeal. Volume in CV #980 and CV #981.

Script 2: 4x horns short. Volume in CV #982.

Script 3: 4x horns long. Volume in CV #983.

Script 4: light dimming during diesel start.

Script 5: heavy haul power.

Script 6: turbo for heavy haul power.

Script 7: automatic shut down of cab light. Timer in CV #993.

Operation with mfx:

The project is equipped with mfx function symbols and prepared for the use of locomotive pictures: the mfx product number 23041 applies to the CSD T669. In order to ensure automatic registration with key symbols on an mfx-capable command station, the (DCC) CV# 12 must be programmed to the value 117.

CV-changes for Piko H0-model:

The H0-model of Piko uses different and less Function-Outputs (FO) for the lights:

- Head-lights and red tail lights are the same
- Shunting lights: FO3
- Number plates: FO6 and FO7
- The Piko model has no cab light

To make it as simple as possible, you must choose the Function-Outputs before you load the sound project into the decoder. This is possible by using ZIMO's "Sound Editor" program (former ZPP Konfig).

Please open the Advanced Mapping Window by clicking on "Tools" and "Function Mapping". You will find a list (in Groups) of functions with their F-keys:

Please choose the same F-key for the "Piko" named functions as they are for the "Roco" ones. Now choose by scrolling no F-key (empty fields) for all "Roco" functions and close the window by clicking on the "x" in the above right corner and "YES" in the small confirmation window. You have changed the functions from the Roco version to the Piko version.

It may be possible, that you will still have to change the speed parameters using CV 5, 6 and 57.

Coupling sound for SA3 coupler:

The coupling and uncoupling sound is played on the F-key F13. This is the sound of the European standard coupling. In case you want to change this sound for the Russian SA3 coupler, you need to program the following CVs:

- CV #549 from 39 to 10
- CV #550 from 91 to 128

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