

Steam locomotive 498.022



Authors

Model, script, sounds, textures:

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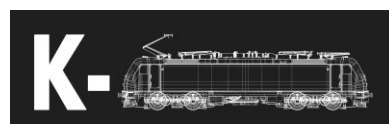
Others who have helped with facts and materials:

Vojtěch Raim, Jaroslav Kůfner, Martin Zlámal, Pavel Hořínek and others...

However the biggest thank you belongs to my beloved girlfriend.

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Description

Class 498.0 also called „Albatros“ is the first post-WWII fast steam locomotive made in Czechoslovakia. They were made during 1946-47 in Pilsen and there were 40 made engines.

They were gradually replaced by modernised class 498.1 and their service life ended with stopping passenger trains around Děčín, Tábor and other places. The last locomotives in service were 498.001 and 498.022. 498.022 still exists, however to this date it is waiting for a general repair.

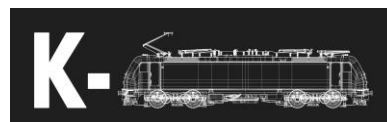
Max. speed	120 km/h
Power	1.86 MW
Weight	106 t
Track gauge	1435 mm
Wheels	2'D 1'

Concept of the model

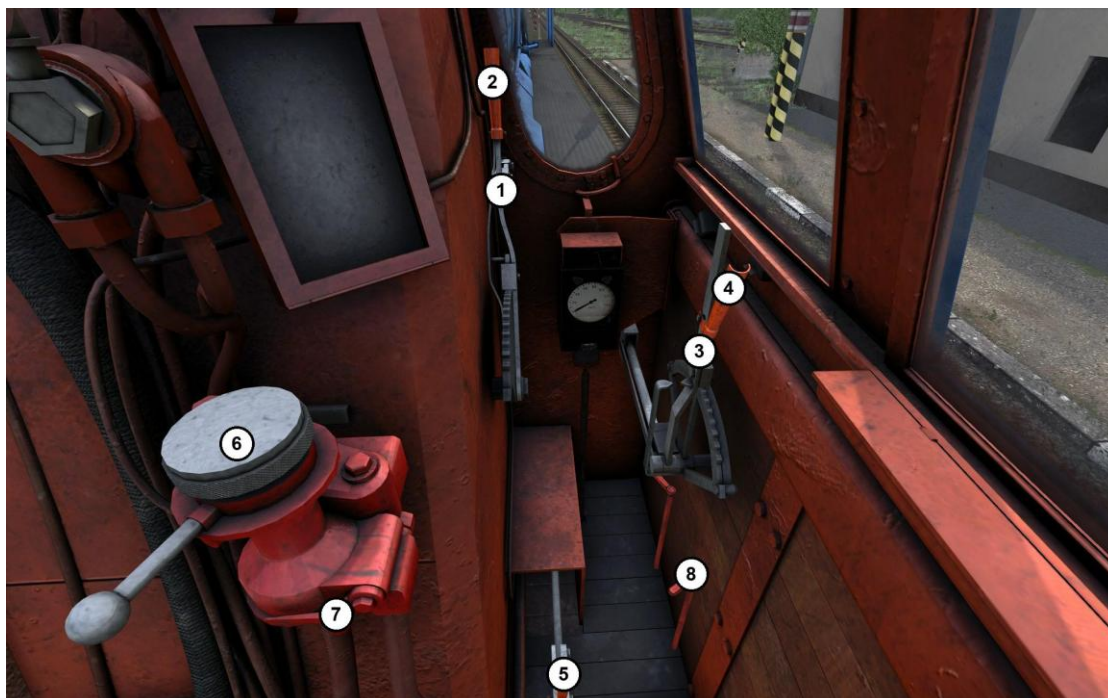
This model is designed for advanced to expert users. It is very detailed and has big hardware demands compared to the rest of available models. It is not expected to be 100% so there may be some things that vary from the reality. Some things and procedures could be simplified.

Some of the features:

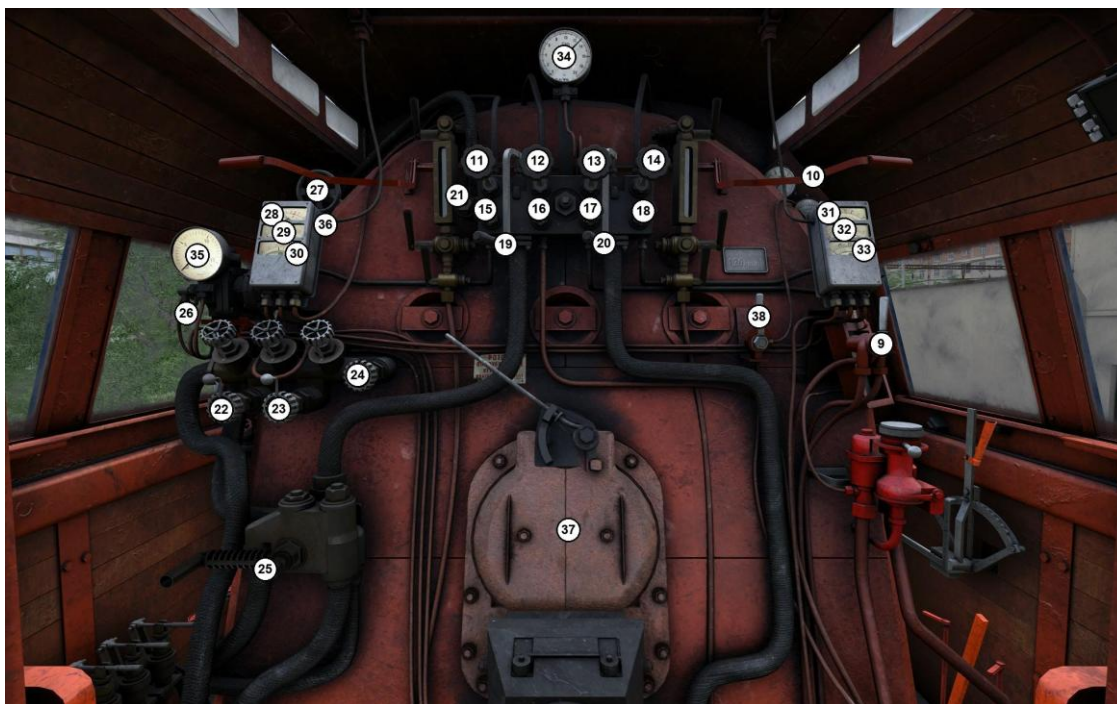
- Authentic 3D exterior and interior
- Authentic simulation of steam engine
- Simulated mechanical steam stoker
- Authentic traction and temperature simulation
- Banking mode compatible with other czech steam locomotives



Control elements



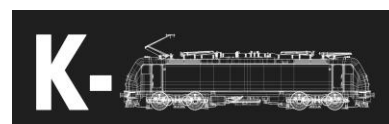
1	Regulator	A / D
2	Regulator notch	Q
3	Reverser	W / S
4	Reverser notch	E
5	Cylinder cocks	C
6	Škoda N/O brake lever	Ů / §
7	Brake cutout lever	
8	Water lever to the right injector	



9	Direct brake lever	Ú /)
10	Whistle	Space / B
11	Steam heating lever	
12	Blower	N / Shift + N
13	Steam generator	
14	Whistle valve	
15	Ejector	
16	Grease gun heating	
17	X	
18	Grease gun spray	
19	Steam intake lever of the left injector	
20	Steam intake lever of the right injector	
21	Steam valve to the mechanical stoker	
22	Mechanical stoker steam spray	
23	Mechanical stoker steam power	
24	Main trigger valve of the mechanical stoker	
25	Left injector main valve	
26	Direction valve of steam heating	
27	Compressor valve	
28	Manometer – mechanical stoker spray	
29	Manometer – mechanical stoker power	
30	Manometer - boiler	
31	Manometer – steam chest	
32	Manometer – chimney vakuum	
33	Pyrometer	
34	Boiler manometer	
35	Steam heating manometer	
36	Oil canisters	
37	Firebox doors	F
38	Sanding lever	X / Shift + X

Other shortcuts

Automatic fireman controls	Shift + 3 / Ctrl + 3
Brake mode change	Shift + 4
Simulation/train info	Shift + 5
Banking max speed change	Shift + 6 / Ctrl + 6
Banking trigger	Ctrl + Shift + 6
Tender refueling	Ctrl + Shift + R



Important procedures

Regulator

- Hold the regulator notch (key Q) to move the regulator
- Regulator controls steam flow from the boiler to the steam engines. However fully opened regulator does not always mean the maximal flow. The maximal flow can occur even before fully opening the regulator depending on the speed and steam pressure.

Reverser

- Hold the reverser notch (key E) to move the reverser
- Reverser controls how much steam and when is injected into the steam engines. Fully set reverser to either direction in higher speeds will cause pressure to build in the opposite direction to the movement, as the steam can't exit the cylinders so fast.

Cylinder cocks

- Cylinder cocks will force any condensed water out of the steam cylinders after longer stopped periods.

Left and right injectors

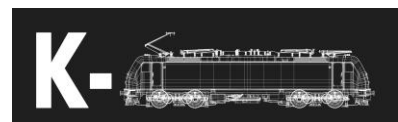
- Czech steam locomotives operate with two injectors. The left one is the primary one having higher water throughput and higher water temperature. The right one serves as a backup in either failure or when the left one can't inject enough water.
- Both injectors have their own steam lever on the main armature.
- Left injector has two other levers, near the floor, which control how much water and steam goes into the injector. The right injector has only water lever.
- The left injector is controlled by the main injector lever with multiple positions. The first position only allows water to flow. The following position opens the steam intake and makes the injector inject water into the boiler.
- While opening the injectors, it is necessary to only open them a bit and wait for the steam to catch with the water. Only after this happens and the sounds changes it is possible to fully open the injectors.

Water indicators

- Water indicators display water level in the boiler in the 70-90 % range. The displayed level can be different from the real level if the locomotive is in a gradient.
- It is possible to clean and test the indicators by closing both steam and boiler intake levers and opening the lowest exhaust lever.

Manual stoking

- It is possible to throw coal instead of using the mechanical stoker.
- First click on the coal in the tender and then click into the firebox to throw the coal inside.



Mechanical stoker

- Steam to the mechanical stoker flows from the main armature through one valve to the stoker control armature and another valve. It is necessary to open both valves.
- Stoker spray valve controls the amount of steam going into the spray exhaust. This controls the force with which the coal is supplied to the firebox.
- Stoker steam valve controls the amount of steam going into the stoker mechanism. This controls how much coal is going from the tender to the firebox.

Greasing

It is necessary to lubricate both the steam engine and the stick gearings. Steam engine is lubricated automatically while driving with the regulator opened. To lubricate the engine also while driving unpowered it is necessary to open the grease gun valve. In the winter it is also necessary to open the grease gun heating valve, as the oil could be cold and the consistency wouldn't be right.

It is also necessary to lubricate the stick gearings every +/- 50 kilometres. You can do this by clicking on the oil canisters on the left part of the boiler.

Automatic fireman

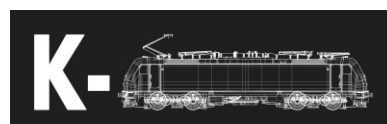
The model contains automatic fireman feature to simplify the gameplay if player doesn't want to do everything manually. The automatic fireman maintains the water level and coal amount.

The automatic fireman always wait until the water or coal level drops under the lower threshold and then supplies water or coal all the way to the upper threshold.

It is possible to enable/disable and switch modes by Shift + 3 and Ctrl + 3 shortcuts.

The automatic fireman also controls lubricating of the stick gearings and steam engine.

	Coal	Water	Dampers	Cooling
Small fire	20-30%	80-85%	Opened	15.5-15.1 bar
Medium fire	30-50%	80-85%	Opened	15.6-15.4 bar
Uphill	40-55%	82-87%	Opened	15.7-15.3 bar
Coasting	10-30%	80-85%	Depends on the pressure	15.5-15.1 bar
Still	10-25%	82-90%	Closed	Never



Banking

The locomotive is compatible with other czech steam engines for multi-engine drive. Press Ctrl + Shift + 6 to enable the feature. Shortcuts Shift + 6 and Ctrl + 6 control the max desired speed. The feature works in three different modes.

- Coasting
- Half power
- Full power

Horn signals to change the modes:

- Low brakes – 1x short (key B) – decreases the mode by one
- Full brakes – 3x short (3x key B) – stops any applied power
- Release brakes low – 1x long, 1x short (key Space, key B) – increases the mode by one
- Release brakes full – 1x long, 2x short (key Space, 2x key B) – locomotives apply full power

Preparation

- Open the compressor valve, wait after the main reservoir is filled, open the brake cutoff lever and fill the brake pipe.
- Increase the water amount in the boiler if needed.
- The coal level may or may not be sufficient depending on the train and route. If necessary throw some coal into the firebox.
- Turn on the steam generator and set the signal lights.
- If needed lubricate the wheel gearings by clicking on the oil containers.
- Open the grease gun valve before driving.

