



DB 169 002-3

Model for MSTs – Version 1.00 – 2013/04/01

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DB 169002-03 for MSTs

1 Outline

2	The actual locomotive	2
2.1	The line of the Ammertal and company "L.A.G."	2
2.2	Pauline, successively LAG-2 / E69 02 / 169 002-03	2
2.3	Sources and bibliography	3
3	The model.....	4
3.1	States reproduced	4
3.2	Comments	4
4	Installation.....	5
4.1	The machine	5
4.2	The cab-view.....	5
4.3	The sounds	5
4.4	Version for MSTs or Bin-Patch	5
5	Driving procedures	7
5.1	General procedures.....	7
5.2	Special remarks concerning the braking	7
5.3	Remarks on the traction.....	8
6	Copyrights.....	9
7	Contributions.....	9
8	Acknowledgements	9
9	Tooling.....	10
10	Contact	10
11	History	11

2 The actual locomotive

2.1 The line of the Ammertal and company "L.A.G."

The Ammergaubahn (called originally "Ammertalbahn") is the name given to the line between Murnau and Oberammergau, a famous pilgrimage site. Its total length is 23.671 km. Its construction was completed in 1900, and was operated by the company "L.A.G" (Localbahn from Gesellschaft, München). Traction was first achieved by steam locomotives. The electrification was put in place as early as 1905, first by current 5.5 kV 15Hz, then 5 kV 16^{2/3}Hz. This electrification justified the construction of new multiple units and locomotives. Therefore, were born successively the LAG-1 to LAG - 5, later renumbered as the class 69. These five, all different machines were delivered from 1905 to 1930. In addition to their technical differences, these five machines also had dissimilar destinies and assignments. Each was given a first name (*Katharina, Pauline, Hermine, Johanna, Adolphine*).

The line was completely re-electrified with the standard current of the Deutsche Bundesbahn (15kV, 16^{2/3}Hz) in 1954. This allowed considering the use of other engines than the five initial electric locomotives on this line. At the same time, they were all adapted to this new current system, and some of them were affected during a few years to switching in the Heidelberg region.

Today, this line is still operated with modern railcars type 426. From the 1990s, she has been the modernized, track plans in the stations of the route being simplified, and some stations being transformed into simple stops.

2.2 Pauline, successively LAG-2 / E69 02 / 169 002-03

The LAG-2 locomotive was built by Krauss (serial number: EL3/08), and delivered in 1909. His command came in 1908, to strengthen the capacity of traction on the "Passion of Oberammergau" in 1910. The body of the machine was more massive and angular than that of the LAG-1. Its buffer length reached 7.35 meters, for a weight of 24 tons. The power of its electrical equipment reached power 252 kW, for a maximum speed of 40 km/h. His qualities were appreciated by the staff of the LAG.

June 2, 1921, the LAG-2 and the LAG-1 were severely damaged following a frontal clash. The machine was withdrawn from service during an extended period.

In 1938, the machine undergoes a complete reconstruction. Brown Boveri Construction provided the electrical part. Modified characteristics were as follows:

- Buffer length: 7.38 meters
- Maximum speed: 50 km/h
- Power: 352 kW

On the eve of WWII, and following the dismantling of the LAG, the machine was registered by the Deutsche Reichsbahn. At the end of the conflict, she joined the electric Park of the newly created Deutsche Bundesbahn with the other four E69.

In 1954, the machine was removed from its usual service. As the five E69, the Murnau-Oberammergau line was transformed to be feed by the usual current used by the DB, i.e. 15 kV, 16^{2/3}

Hz. The Ammergaubahn traffic was then assigned to an ET85 railcar. Two locomotives E62 and E69-05 were also used. At the same time, *Pauline* was transferred to Heidelberg to ensure switching service. She remained there until 1964, date at which it came back in Murnau. She assured part of the regular traffic until September 1981. She was then the oldest locomotive still in commercial service to the DB. Her final withdrawal from the DB inventories was issued in July 1982.

Fortunately, it served as a museum locomotive, hauling special trains, until 1997.

The machine is now at the Museum of the DB in Nuremberg.

2.3 Sources and bibliography

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3 The model

3.1 States reproduced

The model reproduces of machine 169 002-03 in two distinct States:

- Years 1976-1980 (*DB_169-002.eng*)
- Years 1980-1982 (*DB_169 - 002_A.eng*)

Both versions are differentiated by their markings, the color of the lanterns, and the power supply devices of the lanterns.

A “fantasy” version named *DB_169-002_PT37.eng* is proposed as a bonus. It is similar to the machine in its states of years 1976-1980, but the pantograph is tuned at 5.5 meters, so it can be used on the PT37 route.

3.2 Comments

It should be noted that equipment would be incorrect for a machine in the "Museum" state. Such a version may be proposed later on, together with a machine corresponding to the years prior to 1976 (before occultation of two of the four small lateral bays).

As for Pauline’s sisters, nothing is planned for the moment, but nothing is excluded either...



Image 1: The model of the 169 002-3 in its State from 1980 to 1982

4 Installation

4.1 The machine

Installation is performed by a *DB169002-03_100.exe* executable file, and ends with the display of this documentation. At the end of this procedure, the two machines are installed in the directory *DB_169002-3_VL* of your *TRAINSET*. No other directory of *MSTS* or element of your PC is amended.

4.2 The cab-view

The cab-view by *Blackman* is included with the machines. It has been slightly modified and extended: Darkening of the day view.

- Addition of the sanding control (active).
- Addition of the wiper on the front view.
- Adjustment of the parameters to match the settings of *.ENG* files.
- Night Version for circulation with the Bin-Patch.

If you do not use the Patch Bin, you can still select the day or night view manually before to start an activity. This can be done thanks to two *.bat* files, which are located in the directory of the machines (*DB_169002-3_VL*):

- To select the day view: use *_CAB_DAY.bat*
- To select the night view: use *_CAB_NIGHT.bat*.

For the moment, the pack does not include a cab-view for backward moves ("*_rv*" cab-view).

4.3 The sounds

A specific set of sounds is included in the pack. It is partly based on the sound files of *Hyglo* (1245 and 1042 sounds), who has authorized me to modify and disseminate them. The following table shows the correspondence between the original sounds of *Hyglo*, and the names used in the pack.

Sound of Hyglo	Original sound Pack	New name
1245_Tief.wav	1245	M_DB169_Basse.wav
x_Panto_ab.wav	1245	M_DB169_PantoBas.wav
x_Panto_auf.wav	1245	M_DB169_PantoHaut.wav
1245_Knarren.wav	1245	M_DB169_RoulementClic.wav
1042_Halt.wav	1042	M_DB169_SabotsFrein.wav
x_Hupe_kurz.wav	1245	M_DB169_Sifflet.wav
x_Hupe_lang.wav	1245	M_DB169_Sifflet.wav / M_DB169_SiffletLong.wav

Table 1 : Sounds of Hyglo

4.4 Version for MSTS or Bin-Patch

The pack offers two versions of the *.ENG* files:

- A version for *MSTS*. It is used by default after installation.
- A version for the *Bin-Patch*, which allows some gadgets, such as the very unnecessary additional *Lights* sections. This version must be enabled manually after installation.

Two *.bat* files are provided in the directory *DB_169002-3_VL*. They can be used to switch from one to the other version:

- *_ENG_MSTS.bat* activates the *.ENG* for *MSTS*.
- *_ENG_BinPatch.bat* activates the *.ENG* to the *Bin-Patch*.

On the version for Bin-Patch, the driver in the cabin rotates 180 degrees with the function *Mirror* (key 8).

5 Driving procedures

5.1 General procedures

The following table summarizes the steps and procedures to drive the machine.

Step	Command	Comment
Raise the pantograph	P	-
Release the brakes of loc.	^	At the beginning of the activity, loc. brakes are tight!
Release the train brakes	M	See the section dedicated to the braking system !
Initiate the forward	Z	-
Pass the notches / accelerate	(D)	The machine has 12 notches. Sand if necessary
Sanding	X	Restriction of speed steps
Activate the wipers	V	Only the front wiper is animated
Long whistle	Space	Three different whistles played randomly
Short whistle	(B)	A single short whistle
Pass the notches / slow	Q	-
Shake train brakes	ù	See the section dedicated to the braking system !
Tighten the brake of loc	\$	-
Lower the pantograph	P	-

Table 2: General procedures

5.2 Special remarks concerning the braking

5.2.1 Locomotive brake

The locomotive brake has only three positions to increase, release or keep its current torque value, to the means of the keys indicated in the [General conduct procedures](#).

Braking position	Comment
Released	Clamping pressure decreases slowly
Neutral point	Clamping pressure is kept constant to its last value
Continuous service	Clamping pressure grows slowly

Table 3: Positions of the train brake

The following recommendations should be followed:

- At the start of activities, the locomotive brakes are applied, and the manipulator position set to *Neutral point*. It is therefore mandatory to release locomotive brakes first.
- You should monitor the pressure gauge, to verify that the pressure corresponds to a clamp or a full release.
- En route, the manipulator of train brake should always be in the position *Released*.

5.2.2 Train brake

The configuration of the train brake reproduces a realistic behavior, but requires on the other hand a certain habit and sensitivity! This setting is most naturally described by the braking positions proposed, than by the commands to be applied to the keyboard. The table below summarizes these positions.

Braking position	Comment
Rapid release	Clamping pressure decreases rapidly
Release	Clamping pressure decreases slowly
Neutral point	Clamping pressure is kept constant to its last value
Continuous service	Clamping pressure grows slowly
Emergency	Clamping pressure is growing rapidly

Table 4: Positions of the train brake

The following recommendations should be followed:

- En route, the manipulator of train brake should always be in the position *Released*.
- Act on the manipulator by brief actions to move in a *Release* or *Continuous service* position. While operating, you should monitor the brake pressure gauge and the speed of the train. Return to the position *Neutral point* as soon as the pressure and deceleration reach the expected value.

5.3 Remarks on the traction

The machine has a limited power and adhesion. Nevertheless, they should allow the machine to achieve the same tasks as the one assigned to the actual locomotive:

- Haul two *Silberlingen* cars on Murnau-Oberammergau and return. Sanding may be necessary on the steepest sections of the line.
- Switching of heavier trains on flat zone or light gradient (typically: 7 to 8 unified cars of type “group 30”).

6 Copyrights

Small reminders, never superfluous, relating (among other things) to the emotional attachment of an author for his creations:

- The use of this model is free. Textures, 3D forms, cabin, sound files, documentation, elements of installation it contains are provided entirely free of charge. They may in no case be sold or be the subject of negotiations of a commercial nature.
- Please do not modify, reuse totally or partially the textures, 3D forms, cabin, sounds, documents and elements of installation outside the present pack without my explicit agreement.
- The dissemination of this pack or its content on other sites that <http://BB25187.eu> is not allowed without my agreement.

An excellent source should be read with the required attention:

<http://www.culture.gouv.fr/culture/infos-pratiques/droits/>

The authors of the model disclaim all liability for any damage caused by the installation or the use of this content on hardware, operating system, software or any component of the computer of the users. I reassure you this is very unlikely in a reasonable use!

7 Contributions

The table below summarizes the contributions of the authors.

Task	Authors
3D	BB25187, Jimidi
Textures	BB25187, Jimidi
Tuning of .ENG files	BJPaul, JLChauvin, Vapeur71, BB25187
Sounds	Hyglo, BB25187
Cab-view	Blackman, Vapeur71, BB25187
Documentation	BB25187
Installer	BB25187

Tableau 1: Contributions

8 Acknowledgements

I wish particularly to thank the following people:

- Christian, alias *Kriss44* who spent much time here are a few years to provide advice and to transmit his knowledge to make on the use of TSM.
- Michael, alias *Hyglo*, for the authorization to modify and redistribute his sound files.
- *Blackman*, for the authorization to modify and redistribute his cab-view.
- Christian, alias *Vapeur71* for the realization of the versions of the .ENG files for Bin-Patch, as well as for the modifications of the cab-view.

- Jean-Paul *BJPaul* alias for the General Setup of the .ENG files and in particular the physics of traction.
- Jean-Louis, alias *JL_Chauvin*, for the setting of the brakes in the .ENG files and cab-view.
- Jean-Michel, alias *Jimidi*, for his permission to use the very beautiful coupling its 050 - TQ, and for his many ideas and achievements. His tutorial on the design of textures was very helpful. Jean-Michel also modified the 3D of the PT37 “fantasy” version.
- Christian (*Vapeur71*), Daniel (*Ardennes*), Franck (*Franck95600*), Jean-Michel (*Jimidi*), Jean-Paul (*BJPaul*) and Philippe (*PhiGui*) for testing of the machines and their suggestions.
- The team of the *Activity Simulator World (ASW)* website, as well as the members of this forum, for their support.
- Generally, the authors of the used documentary elements, which constitute a real mine!

9 Tooling

The main tools used are listed in the table below.

Task	Tool
Initial 3D	TSM (Abacus)
3D – LODs	PolyMaster (Thopil)
Initial textures	Photoshop Elements (Adobe)
Textures – Conversion	TgaTools – MakeAceWin
Textures – Finitions	Savetex – Remiplt
Text edition (.ENG, .SMS, .BAT, ...)	Notepad++ (Don Ho / Notepad)
Text edition – Differences	CompareIt (GrigSoft)
Documentation	MS Office (Microsoft)
Installer	Install Creator Pro (ClickTeam)

Table 5: Tooling

10 Contact

See <http://BB25187.eu/>, or by private message (PM) forum [Activity Simulator World \(ASW\)](#).

11 History

Version	Date	Comments
Alpha-01	2011/09/21	Initial delivery
Alpha-02	2011/09/25	Improvement of the braking (<i>JL_Chauvin</i>) Bin-Patch version of the <i>.ENG</i> files (<i>Vapeur71</i>) Drafting of documentation in French Realization of the installer
Alpha-03	2011/09/26	Representation of machines with the 2 in front end Mechanical swivel 180 degrees with <i>Mirror</i> function Various improvements to the Bin-Patch (<i>Vapeur71</i>) Final integration of sounds Corrections in the documentation
Alpha-04	2011/09/28	Various small improvements Documentation translated in English Installer in three different languages Integration and adaptation of the cab-view
Beta-01	2011/10/01	Adjustment of a few parameters in <i>.ENG</i> files Minor updates to the documentation
Beta-02	2011/10/02	Consist "DB 169 002-3 Pauline 1976.con" fixed New specific shape file for inside view Marking BBC fixed Documentation updated
Beta-03	2011/10/18	Added fantasy version for PT37
Beta-04	2011/12/23	Modified animations to work around issues exposed in OpenRails version 0.6.2-779
Beta-05	2012/10/23	Modified pantograph part names to restore a proper functioning of the animations with Shape Viewer
1.00	2013/04/01	Updated textures with painted metal effects Added OpenRails <i>.ENG</i> files