

With the steam engine BR10 through era III of railway history



User Manual

Index

Eras in railway history	3
Overview of the items in this Add-On	4
Technical Data	5
Control elements in Cab View	7
I60 (German Safety System)	10
Key Assignment and Special Conditions	12
Excessive Water	14
Boiler explosion	15
Open the smoke box door	16
1 st class Coach	17
Functional assets	18
Included Scenarios	18
Create your own Scenarios	19
References	21
Acknowledgements	21

"Railway History"

Short explanation of the eras in railway history, which are partly reflected in the different scenarios and liveries of the locomotives and freight wagons.

Era I: Early railway companies (until approx. 1925) Era II: State railways (approx. 1925 to 1945) Era III: Post-war period (1945 to 1968) Era IV: Computerised numbering of the vehicles (1968/1970 to approx. 1990) Era V: Innovations and union of DB and DR (approx. 1990 to approx. 2006) Era VI: New UIC numberings (locomotives have 12-digit numbers) (starting from approx. 2006)

The variants of the BR10 class locomotives in this Add-On are numbered for Era III.

Overview of the items in this *Romantic Railroads* Add-On.



BR10

The steam locomotives of DB Class 10 were express train locomotives with the Deutsche Bundesbahn (DB) in Germany after the Second World War. They were nicknamed 'Black Swans' or 'Sputniks'.

These newly designed locomotives were built by the firm of Krupp and delivered to the DB in 1957. The two examples of this class were given operating numbers 10 001 and 10 002. They had originally been seen as a replacement for the DRG Class 01 and Class 01.10. However, as a result of their late delivery, high axle load of over 22 tonnes (which restricted its use to only a few routes) and structural changes to rail operations, this plan did not come to fruition. Both engines were designed to greatly reduce maintenance and repair costs. They had a conical smoke box door and partial streamlining which protected the cylinders from dirt and from cooling too rapidly and, at the same time, was supposed to reduce wind resistance. The fully welded boiler was the same as the newly designed one used to rebuild the DRG Class 01.10 from 1953.

The two engines differed initially in their firing. Number 10 001 only had supplementary oil-firing to start with, thus relieving the stoker of up to 30% of his work, but was later converted so that it was fully oil-fired, as 10 002 had been from the outset.

Both vehicles were equipped with a newly designed tender of Class 2'2' T 40.

Locomotives 10 001 and 10 002 were only permitted to work on certain main lines as heavy express steam locomotives due to their axle load of 22 tonnes. Up to 1962 they were allocated to Bebra locomotive depot, before being transferred to Kassel depot where they worked alongside the DRG Class 01.10s until 20th March 1967 heading fast-stopping and express trains to and from Gießen. Number 10 001 hauled the E 387/388 (E 687/688) fast-stopping services to and from Münster almost without a break from 21th March 1967 to the beginning of

January 1968, and for one month even had special permission to continue as far as Rheine (which part of the route was only cleared for 20 tonne axle loads).

Locomotive 10 002 was retired after a side rod broke in January 1967 and number 10 001 was retired in June 1968.

No. 10 001 may be viewed at the German Steam Locomotive Museum (Deutsche Dampflokomotiv Museum) in Neuenmarkt-Wirsberg. No. 10 002 was scrapped in 1972 at the Offenburg repair shop.

The Class 10 was generally well-liked, especially by the staff at Kassel depot. Contrary to the claim commonly made in the literature that she was prone to damage, her long periods out of service were because spare parts were never available locally, unlike those of the Class 01.

Technical Data for BR10 (Source Wikipedia a.o.):

Quantity:	2
Year(s) of manufacture:	1957
Axle arrangement:	2'C1' h3 (4-6-2)
Туре:	S 36.22
Gauge:	1435 mm (Standard)
Length over buffers:	26.50 m
Height:	4.55 m
Service weight:	118.9 t
Adhesive weight:	64.7 t
Axle load:	22.4 t
Top speed:	fwd 140 km/h
Indicated Power:	1.839 kW (ca. 2500 hp)
Driving wheel diameter:	2.0 m
Leading wheel diameter:	1.0 m
No. of cylinders::	3
Cylinder bore:	480 mm
Piston stroke:	720 mm
Boiler Overpressure:	18.0 bar
Grate area:	4.29 m²
Superheater area:	105.70 m²
Evaporative heating area:	216.4 m²
Tender:	2'2' T40
Water capacity:	40 m³
Fuel:	9 t Coal and 4.5 m ³ Oil with 10 001 13.6 m ³ Oil with 10 002

Included in this BR10 Pack, the following locomotives and their tenders are available:



10 001 Deutsche Bundesbahn (DB) coal-fired



10 001 DB coal-fired. Tender open to be filled with coal and fresh water



10 002 Deutsche Bundesbahn (DB) oil-fired



10 002 DB oil-fired. Tender open to be filled with oil and fresh water

The cab controls and gauges are shown here in the cab views:













This Romantic Railroads class BR10 features a fully functional 160 system.

By selecting one of the active train-modes "U 55", "M 70" or "O 85" you will also select all special functionalities (see below). You can only set the I60 modes or switch it off when the train is stopped. The 'Page up' and 'Page down' keys or the switch of the I60 Controller toggle these modes in sequence.



In steam engines, the I60 mode indicator is mounted above the speedometer. (see picture).

I60

PZB is short for *Punktförmige Zugbeeinflussung*, its function is more or less similar to the UK AWS function but the system continuously calculates the braking distance to the next signal at danger and if the train speed is too high to brake in time, the emergency brake is applied.

The I60 system is disabled at startup, but can be activated by pressing 'Page Up' or deactivated by pressing 'Page Down' (only at standstill). The system now is active for train type U 55. By pressing 'Page Up' again the train modes can be switched upwards to M 70 and finally to O 85. Pressing 'Page Down' will switch the reverse order.

The maximum speed of all train-modes are controlled as well and are:

"U 55" - 105 kph "M 70" - 125 kph "O 85" - 165 kph

There are three cab controls associated with the I60 system: Befehl40 / Override, Frei / Free and Wachsam / Acknowledge

When passing a distant signal set at warning, the yellow '1000' indicator will light up. The signal must be acknowledged, using the Acknowledge key 'Q' within 4 seconds after passing or the emergency brakes will be applied.

If it is required to pass a red signal, press and hold the Override key 'Del' before passing the signal. Make sure that the train speed is below 40 kph.

When starting the I60 system, the lights **O** and **M** flash alternatively to show the system is initialized. If there is no signal at danger ahead you may press the Free key 'End'.

The very complex behaviour of this German safety system is described in more detail in different languages on the Internet. e.g. English: <u>http://en.wikipedia.org/wiki/Punktformige_Zugbeeinflussung</u>

Function Key Action Remarks Regulator faster а increase Regulator d decrease slow down In position 0 to 100 forward Reverser increase W Reverser decrease In position 0 to -100 reverse S Light 1x h = front white / rear red \rightarrow forward h $2x h = front red / rear white \rightarrow reverse$ Light Shift h As above, in reverse order Fire door f open Activate burner in oil-fired engines **Fire door** Shift f Deactivate burner in oil-fired engines close Stoking rate increase This will set the amount of oil in these special r engines Stoking rate Shift r This will set the amount of oil in these special decrease engines Cylinder cocks С open/close This lets water out of the cylinders Maintenanceopen/close Water hatches on Tenders open/close Ζ openings Sliding window open/close open/close Sliding window V open/close windows on coaches Taking coal t With this key you can fill tenders, if near open **Taking water** transfer-points. In external view you can see inside the Smoke box u open/close smoke box. Sander In external view the sanding can be observed Χ open/close Whistle The length of the whistle-sound depends on space the duration of the key press. Whistle 2 b Short attention-getter whistle Blower This will increase the steam to the blower n increase Blower Shift n decrease This will decrease the steam to the blower Ashpan damper open Increases the fire amount by letting fresh air m in. Ashpan damper Shift m close With open dampers, sparks can be observed in external view. Water feed pump Only the pump will be activated. The amount 0 open/close has to be set with key I / shift I. Only the injector will be activated. The Injector i. open/close amount has to be set with key k / shift k.

Key Assignments and Special Conditions:

Feed Pump Rate	l I	increase	
Feed Pump Rate	Shift I	decrease	
Injector Feed Rate	k	increase	
Injector Feed Rate	Shift k	decrease	
Train brake	•	increase	
Train brake	;	decrease	
Loco brake	[increase	
Loco brake]	decrease	
Instrument lights	- Minus	on / off	
Interior lights	Period	on / off	
Generator	у	more steam	
Generator	Shift y	less steam	
160			
Train modes	Page up	increase	From "off" to "U 55" > "M 70" > "O 85"
Train modes	Page down	decrease	From "O 85" > "M 70" > "U 55" to "off"
Acknowledge	Q		Standard as well as Expert
free	End		
Command 40	Del		

Additional Functions when **I60** is set to "on" in one of the Train modes:

Excessive Water:

Should the boiler be overfilled with water, water may enter the cylinders. This phenomenon, which is known as priming, can cause damage to the cylinders, since water can't be compressed.

In the RomanticRR BR10 this behaviour has been implemented by scripting. It initiates emergency braking and the cylinder area is covered in steam:



This priming does not mean the end of the loco ride, just like in reality. The real crew had to replace cylinder relief washers or repair other minor damage.

In the simulation, you must regain a healthy water level by steam usage which is tolerated for the ride (optimal boiler fill below 1.0). Then the simulation assumes a successful repair and you can continue your ride.

Boiler Explosion:

It is unacceptable to drive a steam locomotive when the water level in the boiler is too low. If the water level falls below the safety level and the locomotive is still moving, a (usually fatal) boiler explosion may happen.

This will prevent the game from continuing.

In the RomanticRR BR10 simulation this boiler explosion looks like this after the emergency brake is applied:



With key "U" you can open the smoke box door of all engines to do more maintenance tasks.

With key "E" you can additionally open the front streamline shell of all engines to have better access to the cylinders.



In addition to the described locomotives, a first class coach from era III is included in this *Romantic Reilroads* pack. It uses dynamic numbering:



A Passenger View (key "5") is implemented.



These coaches are enabled to open their windows when using the BR10 or any other RomanticRR lokomotive in pressing key "v".

Included in this pack of the BR10 there are functional Coal Bunkers, Water Cranes, Oil Supply Cranes and a Water Tower used as transfer points to fill the Tenders.



There are four Career Scenarios included in this *Romantic Reilroads* Add-On pack.

Details of the BR10 scenarios:

Hamburg to Hanover - Route:

Career Scenarios:

[R1] Becoming friend with the DB class 10

Take your firsts steps with the steam engine 10 001. Take coal and fresh water and couple to your train

[R2] Now the Oil is burning

Do your first steps with oil burning 10 002 Fill your Tender with Oil and fresh Water and couple to your Train

[R3] Evening Journey in Autumn

Take the Steam Train to Hamburg Main Station You have to take fresh water for the empty tender

[R4] The Oil will make us go south

It's a Christmas special tour. Leave the beautiful station of Uelzen and enroute have some fresh water and oil to fill the tender.

Additionally, the engines and wagons can be used on any quick-drive enabled route already in different configurations according to your personal taste.

Create your own scenarios:

Object filter RomanticRR:

– BR10_Pack, can be enabled by green check mark.

All steam locomotives, the coaches and the functional assets are to be found under the icons: locomotives, wagons and track side infrastructure.

		P
	Brite: 51.11763 Láng: 6.22433	RomanticER
		2 <u>2</u> 2
	Ubject Filter to Romantickk	18_201_Pack
		BR01_NBK_Pack
		BR44_Pack
	Select	HSB1_Pack
****		NG_Meter_CH_Pack
BB10 001 DB	BRIUPack	NG_Meter_Pack
BR10 001 Tender Kohle Oel BR10 002 DB		RailNetwork
BR10 002 Tender Oel	Engines and Lender	RailVehicles
	BR10 001 upd BR10 002	Romantic_Diorama_Rollshai
	BITTO GOT UND BITTO GOZ	Scenery
		Stainz, Pack
		USNG1_Pack
1 A . A .		
× O 8.0		
	BR10 Kohlebansen	
• • • • • • • • • • • • • • • • • • •	BRID Kohebunker 1x funktionel Flements for Maintenance	
	BR10 Kollekuran animetri at	
	BRIO Vasekran Standard BRIO Vasekran Standard	
The state of the second	Marker - Al Spawn Point	
	Marker - Consist spawn Point 🔄 🏠 S S 🦉 🐏 O	x16 x32
and the second second	Markierung - Bahnsteig Markierung - Restimmungsoft	
Kachel: +000000+000000 Objekte:	201 Draws: 0 Vx: 0 Prims: 0 FPS: 191	

Now have a lot of fun using this *Romantic Reilroads* Add-On for Train Simulator 2017 "*Legends on rails*"





References:

- Jürgen-Ulrich Ebel: "Die Baureihe 10"; EK-Verlag, Freiburg 1998, ISBN 978-3-88255-101-3
- Jürgen-Ulrich Ebel: *Zugkraft für das Wirtschaftswunder*. 1. Aufl., DGEG Medien GmbH, 2009. ISBN 978-3-937189-37-6
- Thorsten Reichert: Mehr als Blechloks, Baureihe 10 in Eisenbahn Journal 5/2011 S. 16ff
- Hendrik Bloem, Fritz Wolff: Mythos Sputnik in Bahn Epoche 15, Sommer 2015, S. 40Ff
- Different Articles in various books and magazines
- Internet (Wikipedia Lizenz: http://creativecommons.org/licenses/by-sa/3.0)

Acknowledgements:

The author would like to thank the following people for their contribution to the development of the BR10:

Deutsches Dampflok Museum (http://www.dampflokmuseum.de/startseite/)

Edward Gates (DTG) for his excellent technical support.

Note:

Some pictures used are from the development phase and may differ from the final version.