Legends on rails

With the steam engine BR10 through era III of railway history

User Manual
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"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 Pack

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 21st 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.

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

- **Quantity:** 2
- **Year(s) of manufacture:** 1957
- **Axle arrangement:** 2'C1' h3 (4-6-2)
- **Type:** 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 m³ Oil with 10 001
  13.6 m³ 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:
Side Fireman 10 002 Oil fired

- Oil Pressure
- Soot Blower
- Burner Observation
- Oil On/Off
- Oil Amount
**Tender 10 001 Coal fired**

Coal Amount in Tender

Water Amount in Tender

Full

Empty

**Tender 10 002 Oil fired**

Oil Amount in Tender

Water Amount in Tender

Full

Empty
This **Romantic Railroads** class BR10 features a fully functional I60 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: http://en.wikipedia.org/wiki/Punktformige_Zugbeeinflussung
### Key Assignments and Special Conditions:

<table>
<thead>
<tr>
<th>Function</th>
<th>Key</th>
<th>Action</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulator</td>
<td>a</td>
<td>increase</td>
<td>faster</td>
</tr>
<tr>
<td>Regulator</td>
<td>d</td>
<td>decrease</td>
<td>slow down</td>
</tr>
<tr>
<td>Reverser</td>
<td>w</td>
<td>increase</td>
<td>In position 0 to 100 forward</td>
</tr>
<tr>
<td>Reverser</td>
<td>s</td>
<td>decrease</td>
<td>In position 0 to -100 reverse</td>
</tr>
<tr>
<td>Light</td>
<td>h</td>
<td></td>
<td>1x h = front white / rear red → forward</td>
</tr>
<tr>
<td>Light</td>
<td>Shift h</td>
<td></td>
<td>2x h = front red / rear white → reverse</td>
</tr>
<tr>
<td>Light</td>
<td>Shift h</td>
<td></td>
<td>As above, in reverse order</td>
</tr>
<tr>
<td>Fire door</td>
<td>f</td>
<td>open</td>
<td>Activate burner in oil-fired engines</td>
</tr>
<tr>
<td>Fire door</td>
<td>Shift f</td>
<td>close</td>
<td>Deactivate burner in oil-fired engines</td>
</tr>
<tr>
<td>Stoking rate</td>
<td>r</td>
<td>increase</td>
<td>This will set the amount of oil in these special engines</td>
</tr>
<tr>
<td>Stoking rate</td>
<td>Shift r</td>
<td>decrease</td>
<td>This will set the amount of oil in these special engines</td>
</tr>
<tr>
<td>Cylinder cocks</td>
<td>c</td>
<td>open/close</td>
<td>This lets water out of the cylinders</td>
</tr>
<tr>
<td>Maintenance-openings</td>
<td>z</td>
<td>open/close</td>
<td>open/close Water hatches on Tenders</td>
</tr>
<tr>
<td>Sliding window</td>
<td>v</td>
<td>open/close</td>
<td>open/close Sliding window</td>
</tr>
<tr>
<td>Taking coal</td>
<td>t</td>
<td>open</td>
<td>With this key you can fill tenders, if near transfer-points.</td>
</tr>
<tr>
<td>Taking water</td>
<td>Shift t</td>
<td>open</td>
<td>With this key you can fill tenders, if near transfer-points.</td>
</tr>
<tr>
<td>Smoke box</td>
<td>u</td>
<td>open/close</td>
<td>In external view you can see inside the smoke box.</td>
</tr>
<tr>
<td>Sander</td>
<td>x</td>
<td>open/close</td>
<td>In external view the sanding can be observed</td>
</tr>
<tr>
<td>Whistle</td>
<td>space</td>
<td></td>
<td>The length of the whistle-sound depends on the duration of the key press.</td>
</tr>
<tr>
<td>Whistle 2</td>
<td>b</td>
<td></td>
<td>Short attention-getter whistle</td>
</tr>
<tr>
<td>Blower</td>
<td>n</td>
<td>increase</td>
<td>This will increase the steam to the blower</td>
</tr>
<tr>
<td>Blower</td>
<td>Shift n</td>
<td>decrease</td>
<td>This will decrease the steam to the blower</td>
</tr>
<tr>
<td>Ashpan damper</td>
<td>m</td>
<td>open</td>
<td>Increases the fire amount by letting fresh air in.</td>
</tr>
<tr>
<td>Ashpan damper</td>
<td>Shift m</td>
<td>close</td>
<td>With open dampers, sparks can be observed in external view.</td>
</tr>
<tr>
<td>Water feed pump</td>
<td>o</td>
<td>open/close</td>
<td>Only the pump will be activated. The amount has to be set with key l / shift l.</td>
</tr>
<tr>
<td>Injector</td>
<td>i</td>
<td>open/close</td>
<td>Only the injector will be activated. The amount has to be set with key k / shift k.</td>
</tr>
<tr>
<td>Function</td>
<td>Action</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
<td>----------</td>
<td>---------------------------------</td>
<td></td>
</tr>
<tr>
<td>Feed Pump Rate</td>
<td>I</td>
<td>increase</td>
<td></td>
</tr>
<tr>
<td>Feed Pump Rate</td>
<td>Shift I</td>
<td>decrease</td>
<td></td>
</tr>
<tr>
<td>Injector Feed Rate</td>
<td>k</td>
<td>increase</td>
<td></td>
</tr>
<tr>
<td>Injector Feed Rate</td>
<td>Shift k</td>
<td>decrease</td>
<td></td>
</tr>
<tr>
<td>Train brake</td>
<td>;</td>
<td>increase</td>
<td></td>
</tr>
<tr>
<td>Train brake</td>
<td>;</td>
<td>decrease</td>
<td></td>
</tr>
<tr>
<td>Loco brake</td>
<td>[</td>
<td>increase</td>
<td></td>
</tr>
<tr>
<td>Loco brake</td>
<td>]</td>
<td>decrease</td>
<td></td>
</tr>
<tr>
<td>Instrument lights</td>
<td>- Minus</td>
<td>on / off</td>
<td></td>
</tr>
<tr>
<td>Interior lights</td>
<td>. Period</td>
<td>on / off</td>
<td></td>
</tr>
<tr>
<td>Generator</td>
<td>y</td>
<td>more steam</td>
<td></td>
</tr>
<tr>
<td>Generator</td>
<td>Shift y</td>
<td>less steam</td>
<td></td>
</tr>
<tr>
<td>Train modes</td>
<td>Page up</td>
<td>increase</td>
<td></td>
</tr>
<tr>
<td>Train modes</td>
<td>Page down</td>
<td>decrease</td>
<td></td>
</tr>
<tr>
<td>Acknowledge</td>
<td>Q</td>
<td>Standard as well as Expert</td>
<td></td>
</tr>
<tr>
<td>free</td>
<td>End</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Command 40</td>
<td>Del</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From "off" to "U 55" > "M 70" > "O 85"
From "O 85" > "M 70" > "U 55" to "off"
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 Railroads* 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 Railroads 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 firsts 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.
Now have a lot of fun using this Romantic Railroads Add-On for Train Simulator 2017 “Legends on rails”
References:

- 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:

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