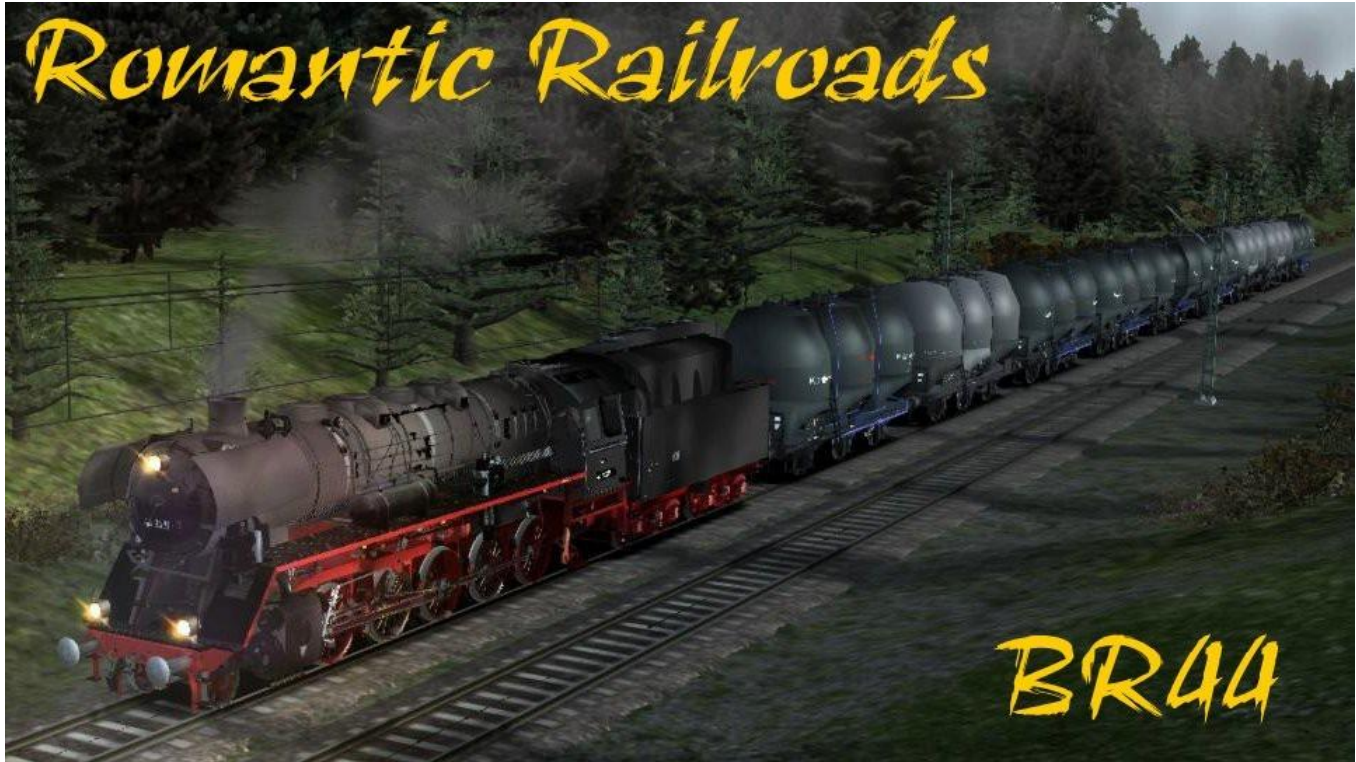


# Legends on rails

With the steam engine BR44 through era IV of railway history



## User Manual

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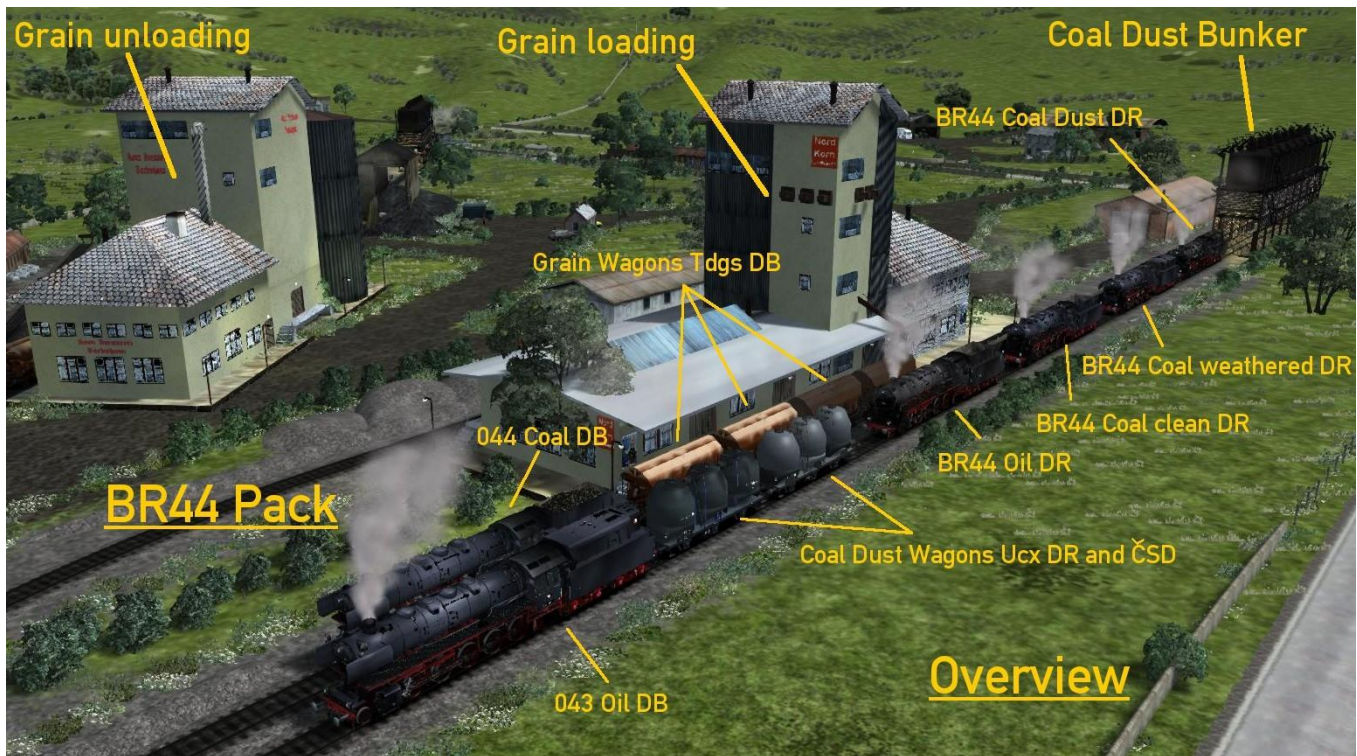
## "Railway History"

**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 – class BR44 XXX became 044 XXX-X with the DB in Western Germany, 44 XXX-X with the DR the GDR (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 BR44 class locomotives in this Add-On are numbered for Era IV.**

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



## BR44

The Class 44 (German: Baureihe 44 or BR 44) was a ten-coupled, heavy goods train steam locomotive built for the Deutsche Reichsbahn as a standard steam engine class. Its sub-class was G 56.20 and it had triple cylinders. It was intended for hauling goods trains of up to 1,200 tonnes (1,200 long tons; 1,300 short tons) on the routes through Germany's hilly regions and up to 600 tonnes (590 long tons; 660 short tons) on steep inclines.

The first 10 examples were built in 1926. These engines had a somewhat higher steam consumption than the first ten units of the DRG Class 43 procured in parallel for comparison purposes, and which were equipped with two cylinders. Not until 1937 were further 44s procured, because by then the rising demands of rail transportation could be better met with a triple-cylinder configuration.

From 1926 to 1949, a total of 1,989 locomotives were manufactured. During the Second World War an austerity variant was built with simplified construction and delivery, known as the Class 44ÜK. This primarily used home-produced materials; components were simplified, both in manufacturing methods and design, or left out completely. The most striking features of the ÜK locomotives were the omission of the smoke deflectors (that from 44 013 was standard) and also the forward side windows of the driver's cab.

After the war, Class 44 locomotives remained with the following railway administrations:

- DB from September 1949: 1.242
- DR: 335
- PKP: 67 (classified as Ty4)
- ČSD: 3
- ÖBB: 11
- SNCF: 14 (classified as 150 X)
- SNCB: 1
- unknown: 74

The top speed of the standard variant was 80 km/h, the prototypes (44 001 to 44 010) were permitted to run at 70 km/h. The engine is designed as a 3-cylinder locomotive with one cylinder located in the middle. The outside cylinders drive the third axle, the inside one drives the second.

Standard 2'2' T 32 and 2'2' T 34 tenders were used. Both types held 10 tons of coal.

The Class 44 used a lot of steam and correspondingly large amounts of coal. In order to simplify the work and hold its power steady, 32 locomotives were converted to oil-firing by the DB in 1958 and 91 by the DR in 1963. With oil firing the viscous, heavy oil, almost solid when cold, is liquefied by a jet of steam, atomised and then combusted. The job of the stoker consists of starting the burner, greasing and pumping.

The DB's oil-fired locomotives ran under the classification 043 in the new EDP-generated numbering scheme of 1968 until they were retired. These numbers were spare because all DRG Class 43 engines belonged to the DR's fleet. The engines with grate firing were given the designation 044. The DR converted 20 locomotives to Wendler coal dust firing. These proved themselves well on the ramps of the Thuringian Forest with their precise firing. However no more locomotives were converted, as oil-firing was generally favoured because it enabled unrestricted operations.

Following the 1973 oil crisis, all oil-fired engines in the DR were reconverted to coal-firing, because they were indispensable for operations. They were given the old operating numbers that they had had before their modification to oil-firing. In the DB, they were not reconverted because they were soon due for retirement. The last coal-fired Class 44 locomotive with the DB was taken out of service in 1977 at the Gelsenkirchen-Bismarck shed. On its final journey, number 043 903-4 hauled train 81453 (consisting of a breakdown train equipment wagon) from Oldersum to Emden on 26 October 1977. It was the last schedule steam service in the Deutsche Bundesbahn.

At present there are still two working "44s" in the world. At the 'traditional locomotive shed' at Stassfurt (Traditionsbetriebswerk Staßfurt), stands number 44 1486, the only current representative of her class in Germany. In addition, number 44 1593 remains operational with the Veluwsche Stoomtrein Maatschappij (VSM) in Beekbergen, Netherlands.

The following non-working Class 44s can be visited in various German railway museums:

- 44 1093, owned by the DB Museum, in Arnstadt shed
- 44 1338, the former heating engine, in the Saxon Railway Museum (Sächsisches Eisenbahnmuseum) at Chemnitz-Hilbersdorf
- 44 404 (see section on Trial Locomotives) in the Darmstadt-Kranichstein Railway Museum



- 44 1558 in Gelsenkirchen-Bismarck
- 44 508 in the former satellite shed at Westerburg (Westerwald) Monuments include:
- 043 903 remains preserved as a monument on the railway forecourt in Emden
- 044 389-5 as a monument in Altenbeken.

**Technical Data for BR44 (Source Wikipedia a.o.):**

Quantity:	1989
Year(s) of manufacture:	1926–1949
Axle arrangement:	1'E h3
Type:	G 56.20
Gauge:	1435 mm (Standard)
Length over buffers:	22.620 mm
Hight:	4550 m
Service weight:	110,2 t
Adhesive weight:	95,9 t
Axle load:	19,3 t
Top speed:	forward 80 kph reverse 50 kph
Indicated Power:	1.405 kW (1910 PS)
Driving wheel diameter:	1.400 mm
Leading wheel diameter:	850 mm
No. of cylinders:	3
Cylinder bore:	550 mm
Piston stroke:	660 mm
Boiler Overpressure:	16,0 bar
Grate area:	4,55 m <sup>2</sup>
Superheater area:	100,00 m <sup>2</sup>
Evaporative heating area:	237,67 m <sup>2</sup>
Tender:	2'2' T32/34
Water capacity:	32/34 m <sup>3</sup>
Fuel:	10 t Kohle

Included in this BR44 Pack, the following locomotives and their tenders are available:



**44 1536-0 Deutsche Reichsbahn coal-fired, clean**



**44 2225-9 Deutsche Reichsbahn coal-fired, weathered**



**44 0093-3 Deutsche Reichsbahn oil-fired**





**44 9481-1 Deutsche Reichsbahn coal dust-fired**



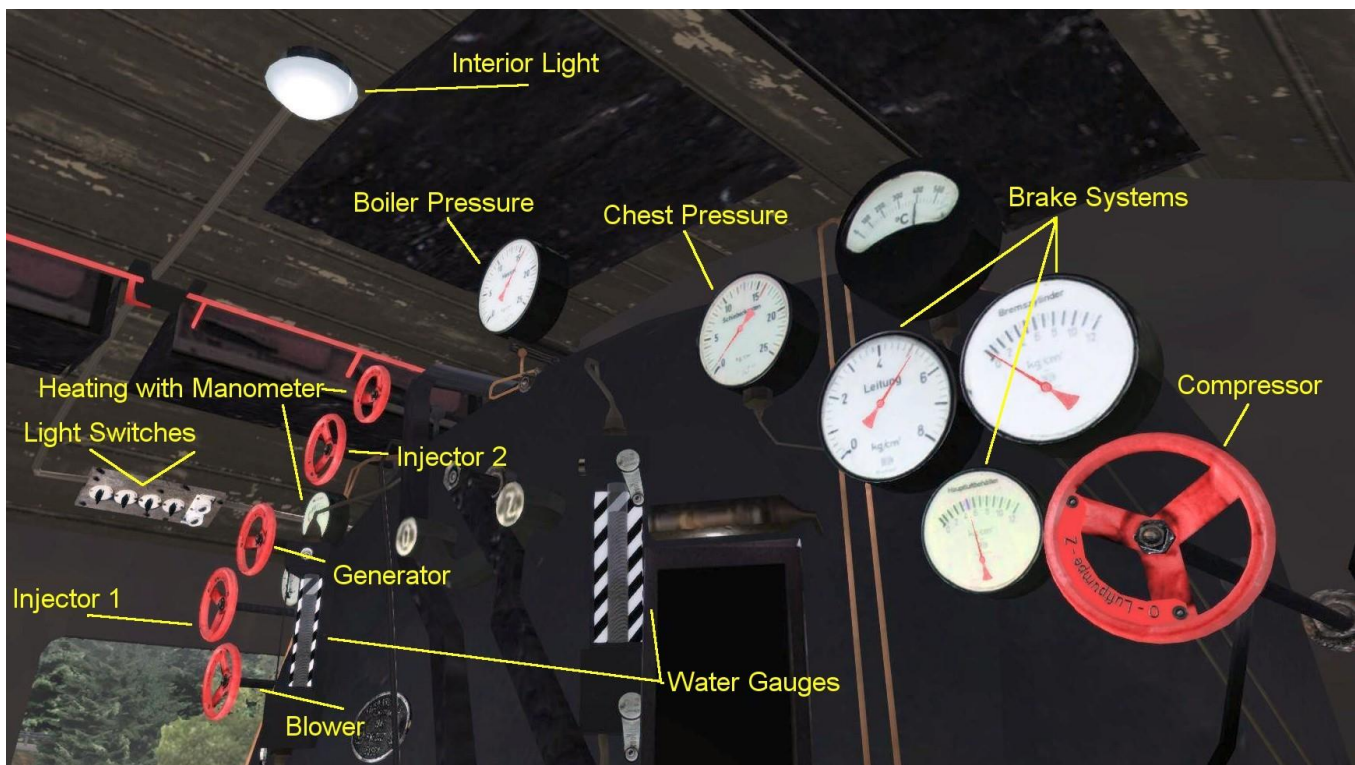
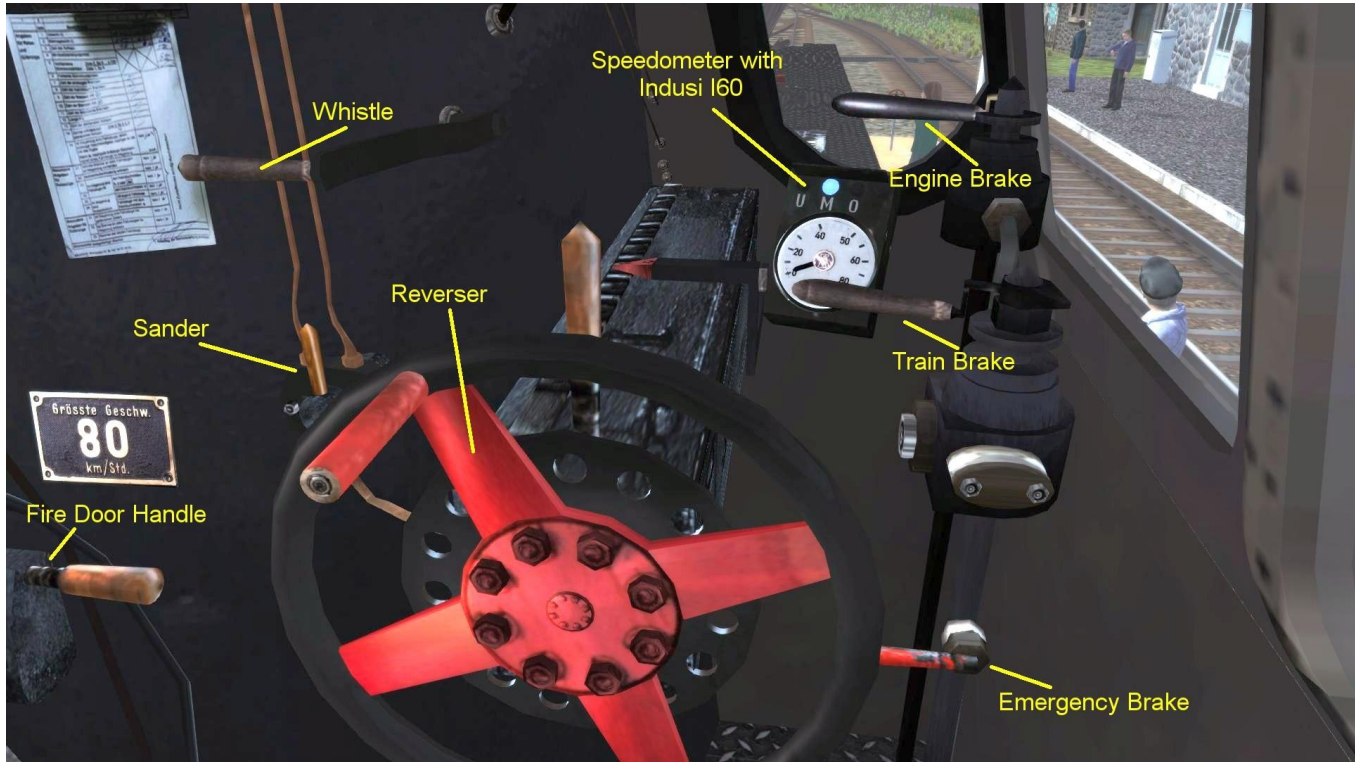
**044 113-9 Deutsche Bundesbahn coal-fired**

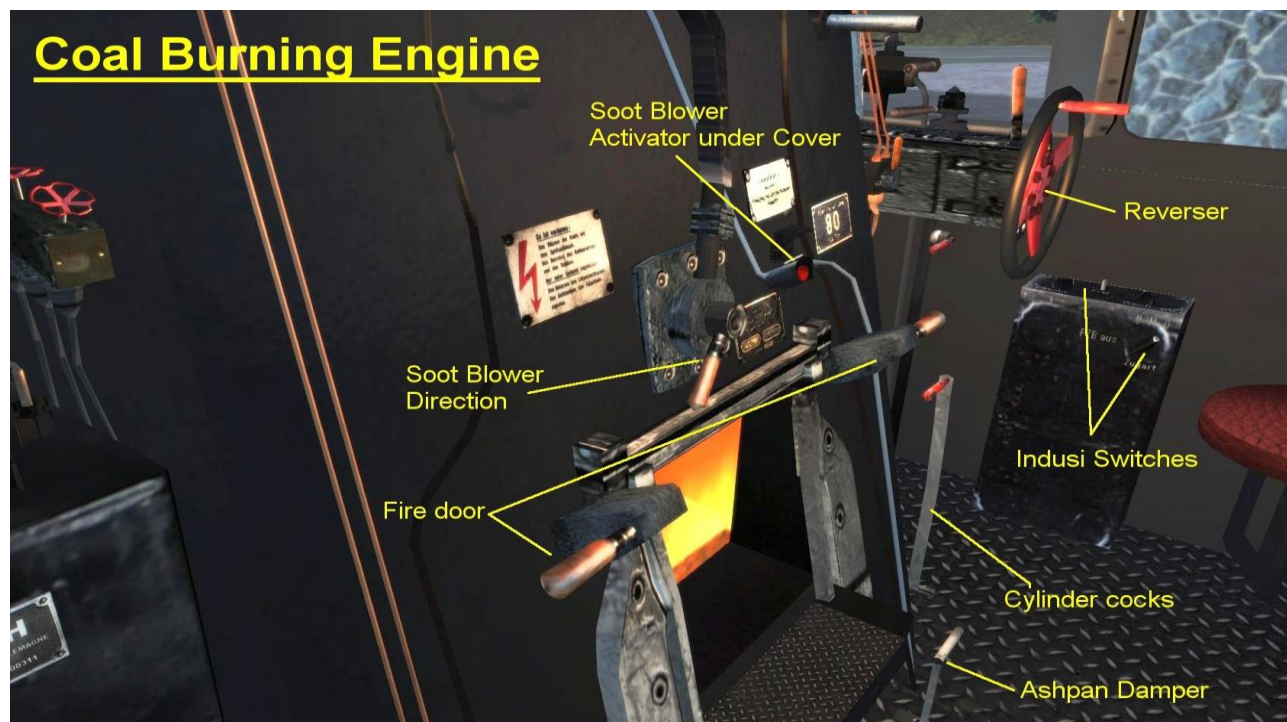
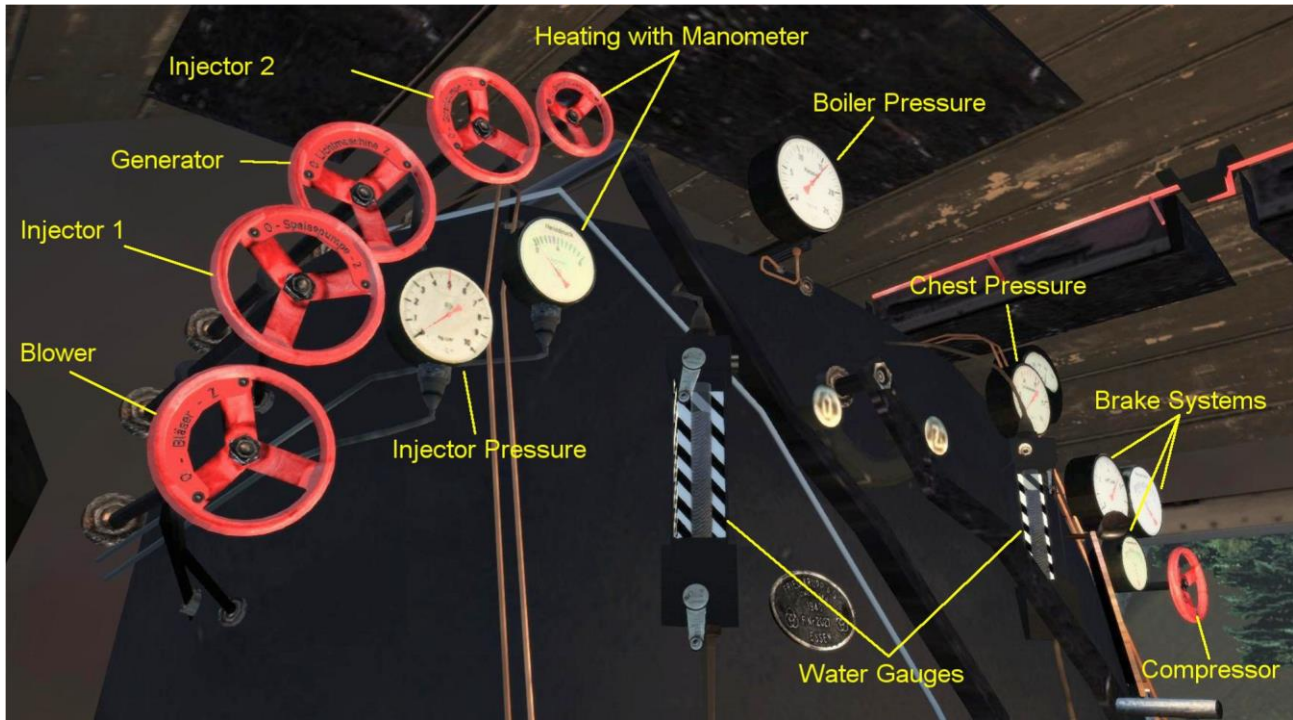


**043 469-6 Deutsche Bundesbahn oil-fired**

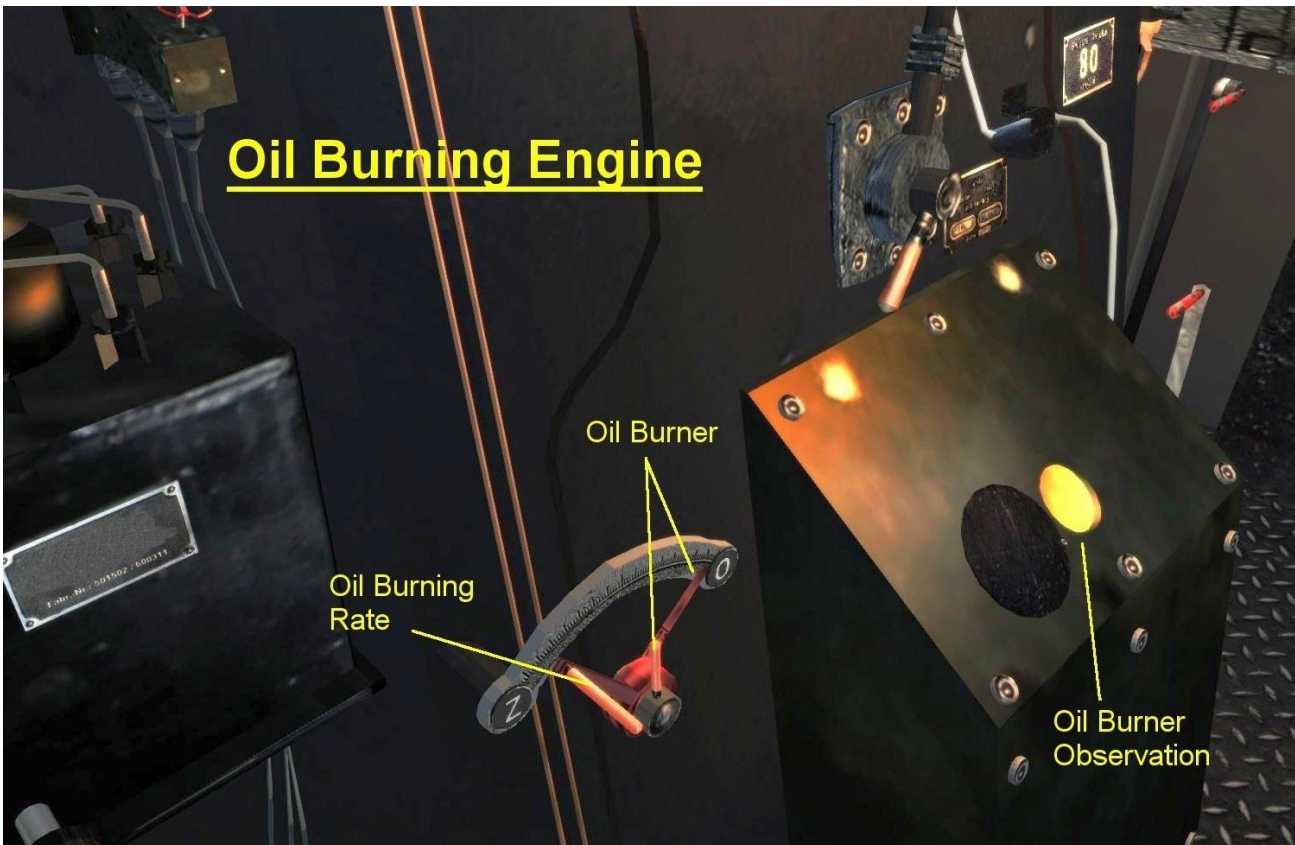


The cab controls and gauges are shown here in the cab views:

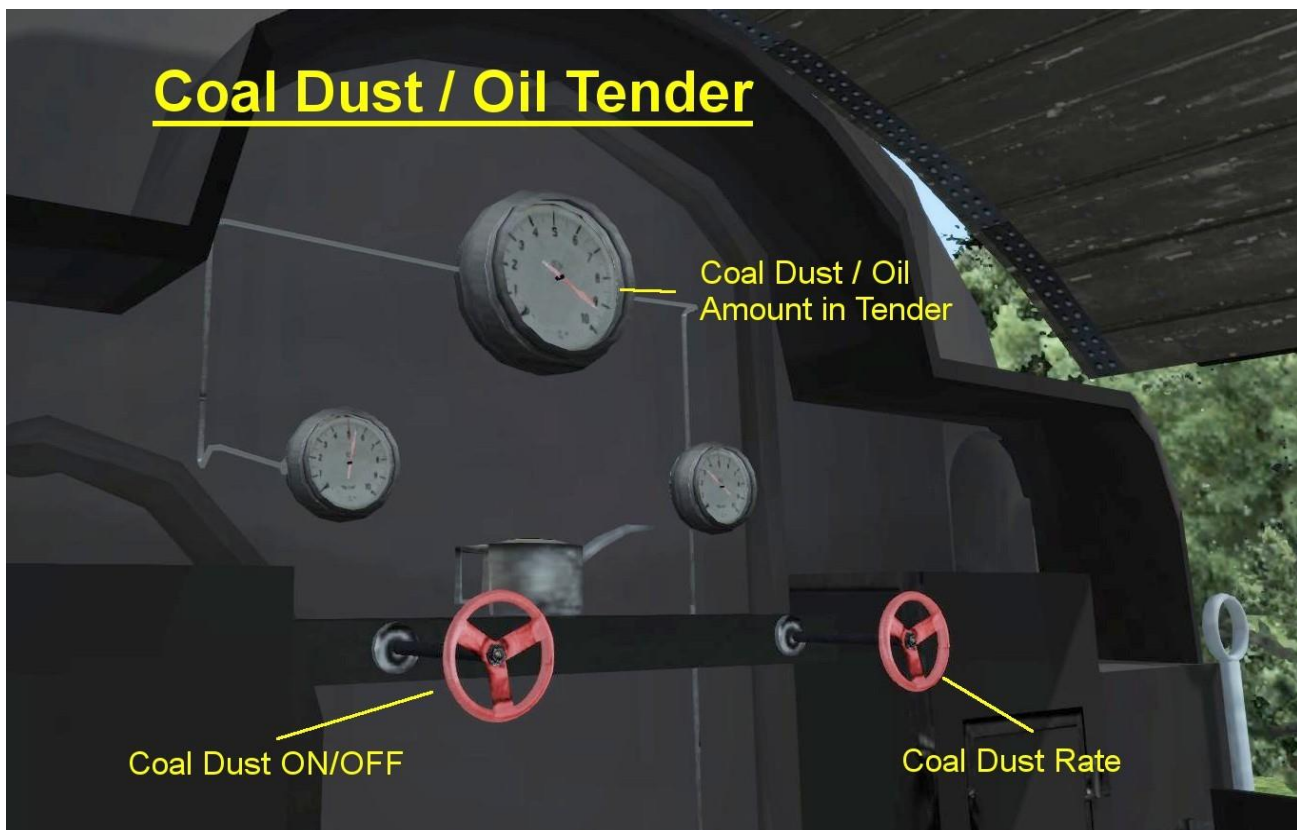
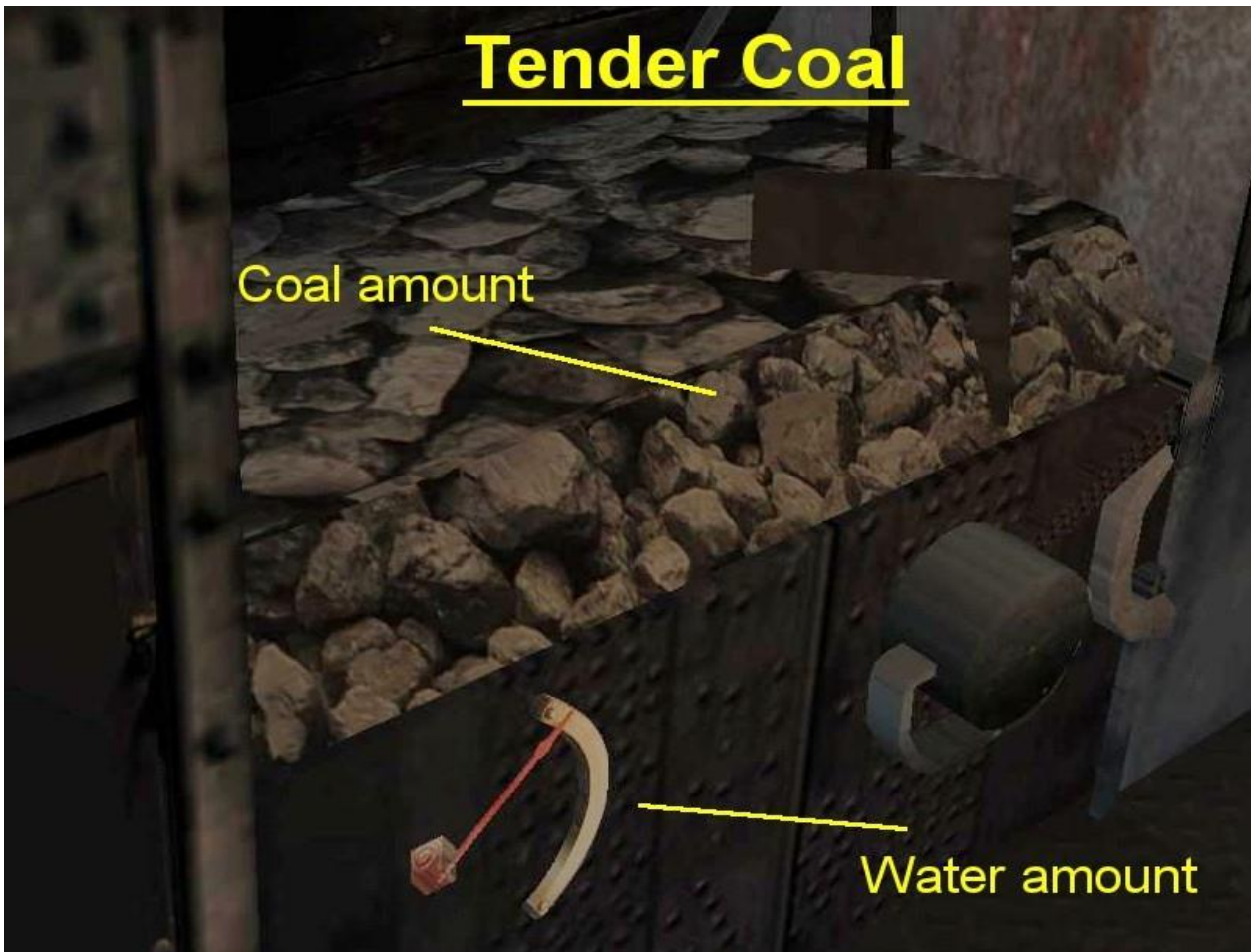


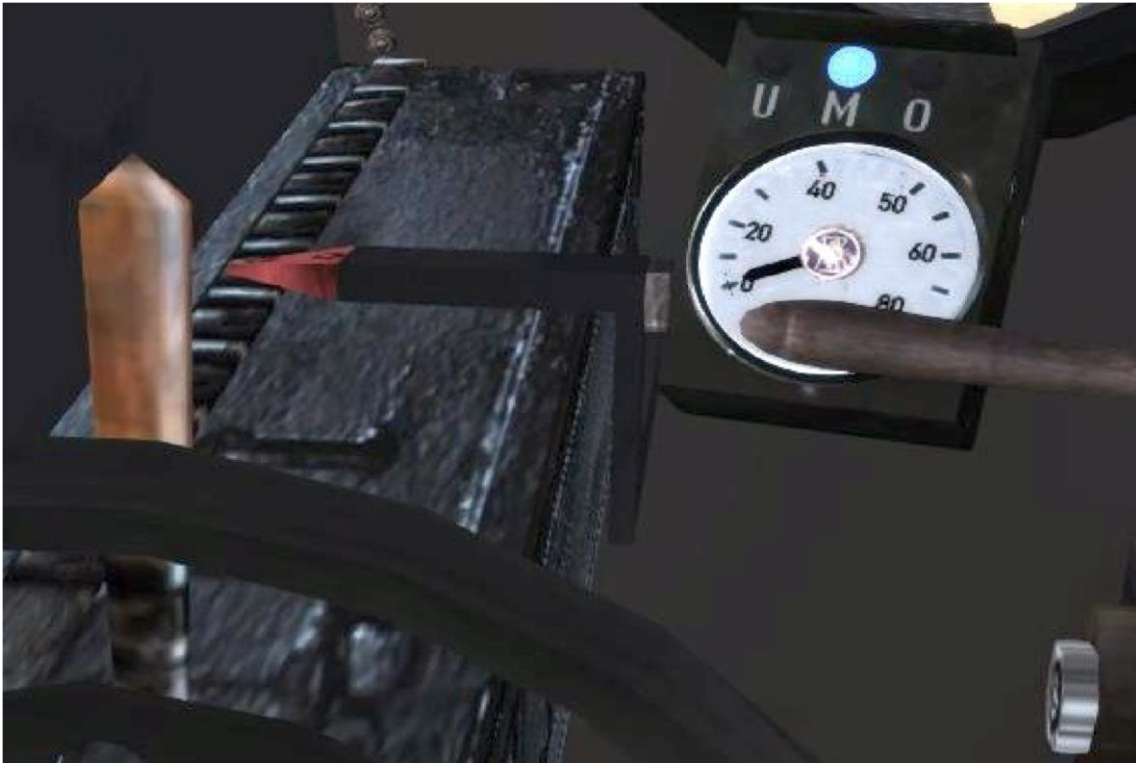












This **Romantic Railroads** class BR44 features a fully functional **I60** system.

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 is controlled as follows:

“**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'.

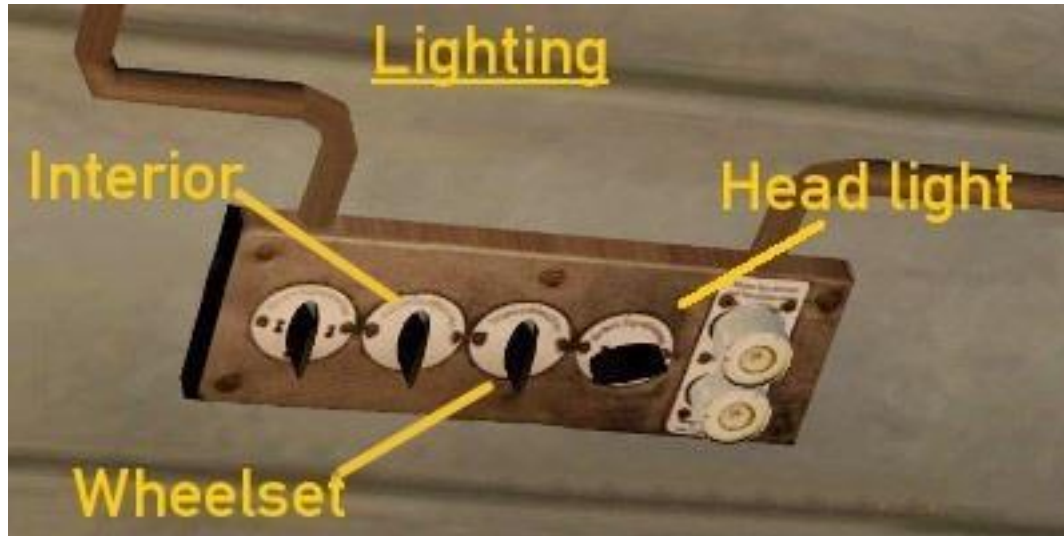
The very complex behaviour of this German safety system is described in more detail in different languages on the Internet.

e.g. English: [http://en.wikipedia.org/wiki/Punktformige\\_Zugbeeinflussung](http://en.wikipedia.org/wiki/Punktformige_Zugbeeinflussung)



**Generator and Light switches**

The interior lighting and the wheelset lights can only be switched on, when the generator is running.

**Key Assignments and Special Conditions:**

Function	Key	Action	Remarks
Regulator	<b>a</b>	increase	faster
Regulator	<b>d</b>	decrease	slow down
Reverser	<b>w</b>	increase	In position 0 to 100 forward
Reverser	<b>s</b>	decrease	In position 0 to -100 reverse
Light	<b>h</b>		1x h = front white / rear red → forward 2x h = front red / rear white → reverse
Light	<b>Shift h</b>		As above, in reverse order
Fire door	<b>f</b>	open	Activate burner in oil- and coal-dust-fired engines
Fire door	<b>Shift f</b>	close	Deactivate burner in oil- and coal-dust-fired engines
Stoking rate	<b>r</b>	increase	This will set the amount of oil and coal dust in these special engines
Stoking rate	<b>Shift r</b>	decrease	This will set the amount of oil and coal dust in these special engines
Cylinder cocks	<b>c</b>	open/close	
Maintenance openings	<b>z</b>	open/close	open/close flaps for braking sand on engines open/close Water hatches on Tenders
Sliding window	<b>v</b>	open/close	open/close Sliding window open/close cover lids on Tdgs wagons

<b>Taking coal Taking water</b>	<b>t</b>	open	With this key you can fill locos and tenders, if near transfer-points.
<b>Smoke box</b>	<b>u</b>	open/close	In external view you can see inside the smoke box.
<b>Sander</b>	<b>x</b>	open/close	In external view the sanding can be observed
<b>Whistle</b>	<b>space</b>		The length of the whistle-sound depends on the duration of the key press.
<b>Whistle 2</b>	<b>b</b>		Short attention-getter whistle
<b>Blower</b>	<b>n</b>	increase	
<b>Blower</b>	<b>Shift n</b>	decrease	
<b>Ashpan damper</b>	<b>m</b>	open	Increases the fire amount by letting fresh air in.
<b>Ashpan damper</b>	<b>Shift m</b>	close	With open dampers, sparks can be observed in external view.
<b>Water feed pump</b>	<b>o</b>	open/close	Only the pump will be activated. The amount has to be set with key l / shift l.
<b>Injector</b>	<b>i</b>	open/close	Only the injector will be activated. The amount has to be set with key k / shift k.
<b>Feed Pump Rate</b>	<b>l</b>	increase	
<b>Feed Pump Rate</b>	<b>Shift l</b>	decrease	
<b>Injector Feed Rate</b>	<b>k</b>	increase	
<b>Injector Feed Rate</b>	<b>Shift k</b>	decrease	
<b>Train brake</b>	<b>^</b>	increase	
<b>Train brake</b>	<b>;</b>	decrease	
<b>Loco brake</b>	<b>[</b>	increase	
<b>Loco brake</b>	<b>]</b>	decrease	
<b>Light engine wheelset</b>	<b>- Minus</b>	on / off	
<b>Interior lights</b>	<b>. Period</b>	on / off	Interior lights only switchable, when the generator is running (key y)
<b>Generator</b>	<b>y</b>	more steam	
<b>Generator</b>	<b>Shift y</b>	less steam	
<b>I60</b>			

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 Expert Functions when I60 is set to “on“:

### Priming:

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 BR44 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 BR44 simulation this boiler explosion looks like this after the emergency brake is used:



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



In addition to the described locomotives, suitable freight wagons from era III/IV are included in this **Romantic Railroads** pack. They use dynamic numbering:

Wheat/Corn wagons of the DB (Tdgs) in four variations:



Wagon dark brown with and without inscription „Getreide“ (wheat / corn)



Wagon light brown with and without inscription „Getreide“ (wheat / corn)

These wagons are enabled to open their top cover when using the BR44 or any other RomanticRR lokomotive in pressing **key „v“**.

Loading and Unloading possible when using the included assets (see further down for details).



In addition there are Coal Dust Transport wagons Ucx of the Deutsche Reichsbahn (DR) and the Czech Railway (CSD). Also these wagons use dynamic numbering:



Coal Dust Transport wagon Ucx of the DR



Coal Dust Transport wagon Ucx of the CSD



**Included in this pack of the BR44 there is a functional Coal Dust bunker used as transfer point to fill the tenders of the coal dust fires engines**



**It is very close to the original bunker from Bw Arnstadt, which unfortunately was torn down in the early seventies.**

Additional functional assets are the wheat/corn loading facility „Nordkorn“:



and the unloading facility „Kornbrennerei Bockshorn“:





The Tdgs wagons can use these assets to load and unload their wheat / corn:



There are three scenarios included in this **Romantic Railroads** Add-On pack.

Details of the BR44 scenarios:

## Berlin-Leipzig (KBS 250) - Route:

### Career Scenarios:

#### [R1] BR44 Wheat to the distillery

Your task today is to drive a steam engine class BR44 of the German Reichsbahn. Drive your train full of wheat safely to the distillery. There it will be transformed to finest Alcohol.

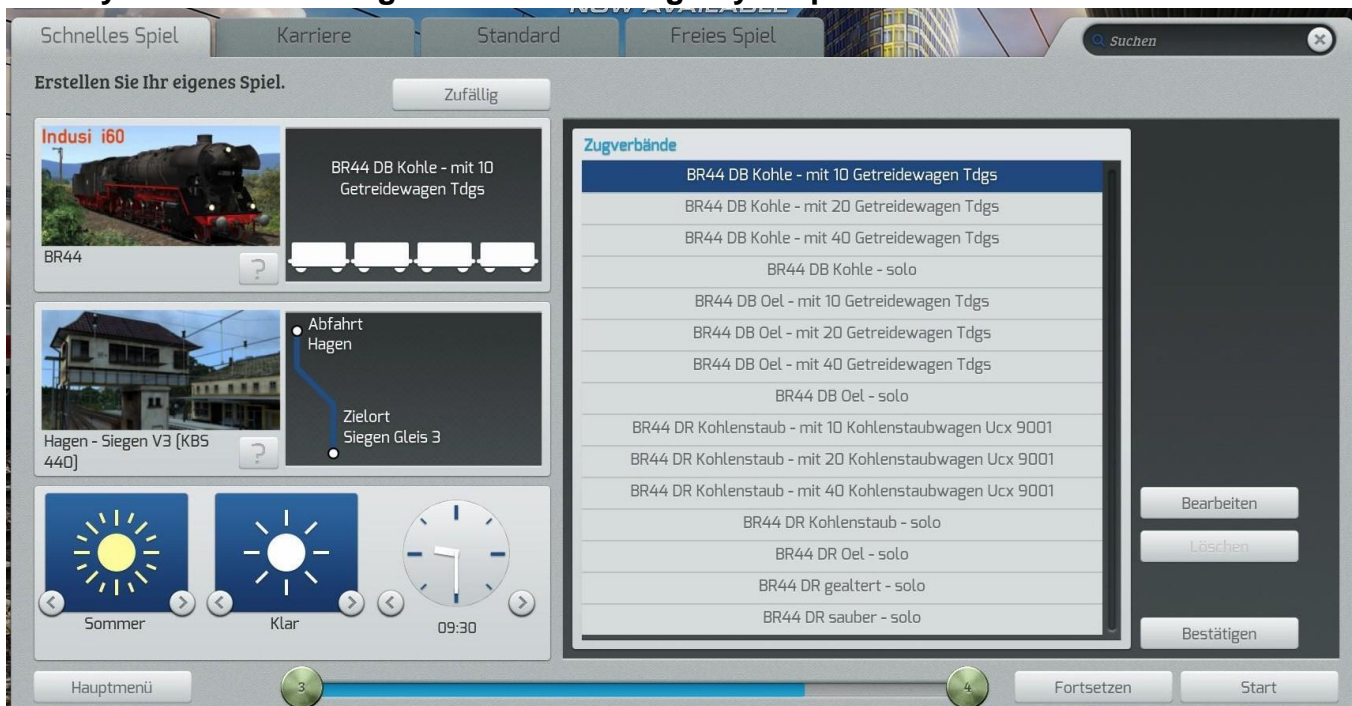
#### [R2] BR44 Coal Dust

Today you are driving a steam engine Class BR44 with coal dust burner. You have to fill up the tender with coal dust and then drive your train to its destination.

#### [R3] BR44 towing a BR44 out of service.

The Oil burning BR44 coupled to your rear needs to be towed to the maintenance facilities. Take the broken engine to the maintenance facilities in Lutherstadt Wittenberg.

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



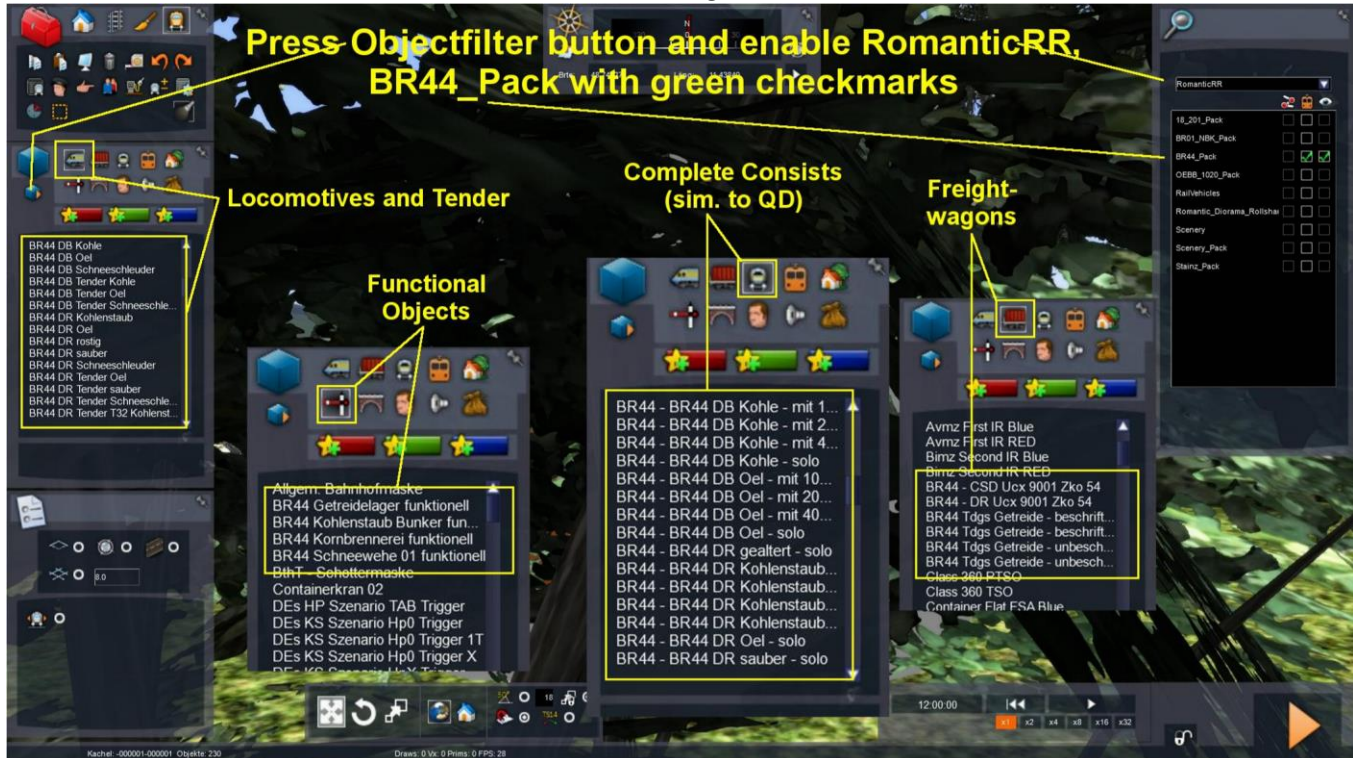


## Create your own scenarios:

Object filter **RomanticRR**:

- BR44\_Pack, enable by green check mark.

All steam locomotives, the freight wagons 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 2018 “Legends on rails“



**BR 44**

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- Verschiedene Artikel in sonstigen Büchern und Zeitschriften
- 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 BR44:

**Eisenbahnmuseum Arnstadt** (<http://www.ebm-arnstadt.de/>)

**Bayrisches Eisenbahnmuseum Nördlingen** (<http://www.bayerisches-eisenbahnmuseum.de/>)

**Dampflokwerk Meiningen** (<http://www.dampflokwerk.de/>)

Thorsten Gosny

Edward Gates (DTG)

## Note:

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