



dovetail
GAMES

DB BR152



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1 Background

1.1 Loco

The BR152 was commissioned by Deutsche Bahn and built by Krauss-Maffei and Siemens in Munich and Uerdingen from 1995 - 2001. The first series of locomotives were delivered to Deutsche Bahn in March 1998 after years of testing. Used exclusively for freight, they are now used all over Germany with a little under 200 in service.

1.2 Design & Specification

Builder	Siemens
Locomotive Weight	86.7 tonnes
Vehicle Length	19.58m
Vehicle Width	3m
Vehicle Power	6,400 kw
Top Speed	140 km/h
Brake Types	Electric Regenerative Braking
Tractive Effort	300 kN

2 Rolling Stock

2.1 DB BR152



3 Driving the BR152







3.1 Cab Controls and image












- | | | | |
|----|-----------------|----|-----------------|
| 1 | PZB Override | 12 | Train Brake |
| 2 | PZB Free | 13 | Electric Brake |
| 3 | PZB Acknowledge | 14 | Direct Brake |
| 4 | Pantograph | 15 | Horn |
| 5 | Circuit Breaker | 16 | Wipers |
| 6 | AFB | 17 | Emergency Brake |
| 7 | Throttle | 18 | Sifa Reset |
| 8 | Reverser | | |
| 9 | Sander | | |
| 10 | Headlights | | |
| 11 | Cab Lights | | |



3.2 Keyboard Controls

Keys	Action
 	Decrease or Increase combined throttle and brake
 	Move reverser control backward or forward
 	Decrease or Increase the train brake

3.3 General Keyboard Controls

Key(s)	Action
	Load/unload freight
	Lights. Repeatedly pressing will cycle through headlight states where appropriate.
	Windscreen wipers. Press once to switch on and again to switch off.
	(Expert) Engine stop/start. By default engines will already be running at the start of a scenario. Press this button to stop and then again to restart the engine.
	(Expert) Sander. Causes sand to be laid on the rails next to the wheels to assist with adhesion. Press once to apply sand and again to stop.
	Horn.
  	Couple manually.

4 AFB Train Power Control

AFB stands for Automatische Fahr- und Bremssteuerung – or loosely translated in to English it means "Automatic Driving and Braking Control"

AFB allows the driver of the locomotive to set the target speed and then the computer in the locomotive will apply the throttle to obtain that speed and then keep applying throttle or brake in order to maintain it. You can almost think of it as a kind of cruise control for trains.

To operate AFB, simply follow these steps:

1. Set the AFB control to the desired speed. Note on the speedometer a small red triangle "bug" will slide around to the configured speed.
2. Release the brakes.
3. Move the throttle control to the desired level of acceleration. At this point the train will begin moving and accelerate to the configured speed.

All speed changes should be managed with the AFB control, simply change the target speed as required and the AFB Computer will apply throttle and brakes appropriately.

If you wish to come out of AFB control and return to manual control, simply set the target speed to 0km/h and then the throttle and brake controllers will return to normal manual functionality.

4.1 Key Controls

Function	Keyboard
Increase	Y
Decrease	C

5 SIFA

SIFA is short for Sicherheitsfahrerschaltung or “Safety Driving Switch”.

The SIFA vigilance alerter is disabled at startup, but can be activated or deactivated by pressing ‘Shift+Enter(Numpad)’. While activated the SIFA light on the cab dashboard is normally switched off. While the train is moving the driver is required to confirm an alarm every 30 seconds.

When the 30 second alarm is triggered the SIFA light on the cab dashboard will illuminate, after an additional 4 seconds an audible alert will sound. After a further 2.5 seconds the emergency brake will be applied. This can be avoided by acknowledging the alarm at any stage by pressing the ‘Enter(Numpad)’ key.

5.1 Key Controls

Function	Keyboard
Activate/Deactivate	Shift+Enter(Numpad)
Alarm Acknowledge	Enter(Numpad)

6 PZB Signalling System

PZB stands for Punktförmige Zugbeeinflussung, loosely translated to English this means “Spotwise Train Control”.

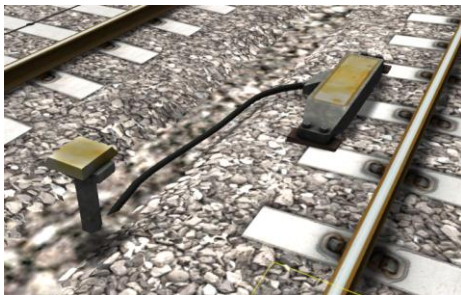
Safe distances between trains are managed conventionally through the use of block-based systems.

A given line is broken up in to a series of blocks, and trains are permitted (via green or yellow) signals to enter a block. While a train is present in a block the signal permitting entry is set to red, preventing any more trains from entering.

As railways have developed, more complex control systems and in-cab signalling have been implemented to improve the safety of the railways and to ensure that drivers are fully aware of what is happening around them by requiring them to react in certain ways according to what is happening.

PZB is a complex system and requires that you understand the varying speed limits and the requirement to respond promptly to the signalling system.

6.1 PZB Track Interface



The PZB system incorporates in-cab signalling, this is where the control desk has indicators, alarms and buttons that will react according to the signalling status on the railway. The mechanism by which this works is a series of “balise” magnets placed on the side of the track. An example of one of these magnets is shown in the image on the left.

6.2 Cab Controls

There are also three controls on the cab desk that you will need to use in order to interact with the PZB system. These three controls, to the left of the control desk, are:

Override
Release
Acknowledge

6.3 Key Controls

Function	Keyboard
Activate/Change Mode	Ctrl+Enter(Numpad)
Deactivate/Change Mode	Ctrl+Shift+Enter(Numpad)
Acknowledge	Page Down
Release	End
Override	Del

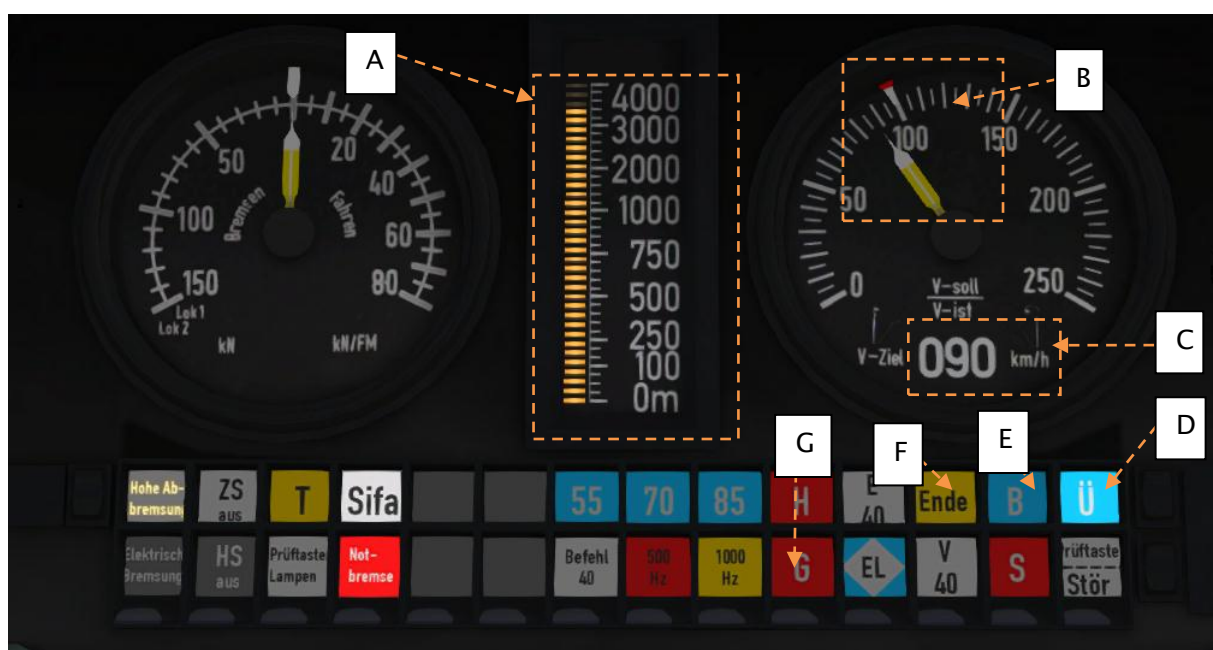
7 LZB

7.1 LZB

The restriction of conventional block signalling is the amount of time taken by trains to ensure they can stop from their first notification of a signal at danger. This affects the maximum speed that trains can operate and is in relation to the length of the block. Unfortunately while lengthening blocks can allow trains to run faster it means that fewer trains can run as the gaps between them get progressively longer.

The modern solution to this problem is to change from fixed block signalling to a dynamic sliding block that protects a range in front of the locomotive that is changing as the locomotive moves.

LZB is controlled by a central control station; each one monitors approximately 100 kilometres of line and informs the on-board LZB computer what speed limit is dynamically being imposed on. The following image shows the displays related to LZB functionality on the locomotive cab dashboard. Note that the displays are standard across all LZB capable locomotives.



In the above example, LZB has been enabled and we can see the following:

- A – Distance to next speed change.
- B – Target speed taking in to account LZB speed restrictions.
- C – Target speed in digit form.
- D – Indicator that LZB mode is enabled.
- E – Automatic Brake Intervention enabled if lit.
- F – LZB mode terminating if illuminated.
- G – Overspeed Indicator.



LZB is automatically enabled as you pass one of these LZB posts as shown in the picture on the left.

If PZB is being used then it is automatically disabled and LZB gets switched on automatically.

If your AFB control is set to 0 (disabled) then the LZB system is simply there to instruct you what to do. If AFB is being used then the target speed will be the lowest of your AFB setting and the current LZB speed restriction.

LZB mode will be automatically disabled when the train passes over an LZB termination balise, such as the one shown in the picture on the right. If PZB was enabled then it will be switched back on as the LZB system is switched off.



You get an in-cab warning that LZB mode is terminating approximately 1.7km before it actually ends with the “Ende” light illuminating and an audible alarm. This warning must be acknowledged by pressing the PZB Frei / Release button or the “End” key on the keyboard – if you do not and LZB Automatic Brake Intervention is enabled then the emergency brakes will be applied.

7.2 Key Controls

Function	Keyboard
Toggle Signalling	Ctrl+(Numpad +)
Toggle Intervention	Ctrl+Shift+(Numpad +)
Release	End

8 Scenarios

*****For driving tutorials, please visit the Academy from the main TS2015 menu screen*****

8.1 [152] Freight to Rosenheim

Your duty this sunny afternoon is to take a heavy rake of wagons between Munich East and Rosenheim. There are inspectors about, so watch your speed!

- **Duration** **40 Minutes**
- **Difficulty** **Medium**

8.2 [152] Rosenheim Night Freight

Drive a 120 km/h container train between Rosenheim and the yard at Munich East. You'll need to keep a watchful eye on the signals!

- **Duration** **55 Minutes**
- **Difficulty** **Hard**

8.3 [152] Wagon Transfer

The first snow of winter has arrived and it's not the nicest of mornings to be moving wagons around but that is what needs to be done. Starting at Berg am Laim your task this morning is to deliver a rake of wagons to Munich South from Trudering before the rush hour begins.

- **Duration** **20 Minutes**
- **Difficulty** **Hard**

9 Acknowledgements

Dovetail Games would like to thank the following people for their contribution to the development of the DB BR152.

Beta Testing Team
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