

BR Class 40 '40145'

AP



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Important functionality information

Please note, this information only applies to the 'Advanced' version of this loco.

- To make sure the engine sounds work correctly, please ensure that you restart the simulator before loading a scenario containing this locomotive. You will need to do this even if you are loading a scenario directly from the scenario editor.
- If you would like to save a scenario when using this locomotive and return to it at a later time, you must carry out the following procedure:

Saving the scenario

- 1) Come to a stop.
- 2) Press the 'S' key to move the Reverser into the 'Off' position.
- 3) Press the 'E' key to remove the master key.
- 4) Press the 'Ctrl+-' key to move to the other cab.
- 5) Press the 'Ctrl+B' key to switch in the battery isolation switch.
- 6) Save the scenario.

Resuming the scenario

- 1) Resume the scenario.
- 2) Press the 'Ctrl+B' key to switch out the battery isolation switch.
- 3) Press the 'Ctrl+-' key to move to the other cab.
- 4) Press the 'E' key to insert the master key.
- 5) Ensure the AWS change end switch is in the 'On' position.
- 6) Press the 'Q' key to reset the AWS self-test.

Technical information

Manufacturer	Vulcan Foundry/ Robert Stephenson and Hawthorns
Years built	1958 - 1962
Number built	200 (D200 - D399)
Engine	English Electric 16SVT MkII
Maximum speed	90mph (140km/h)
Coupling type	Screw
Length	21.18m
Height	3.91m
Width	2.74m
Weight	135 tonnes

Liveries

BR Blue 40145 '345' (Pre-TOPS number)

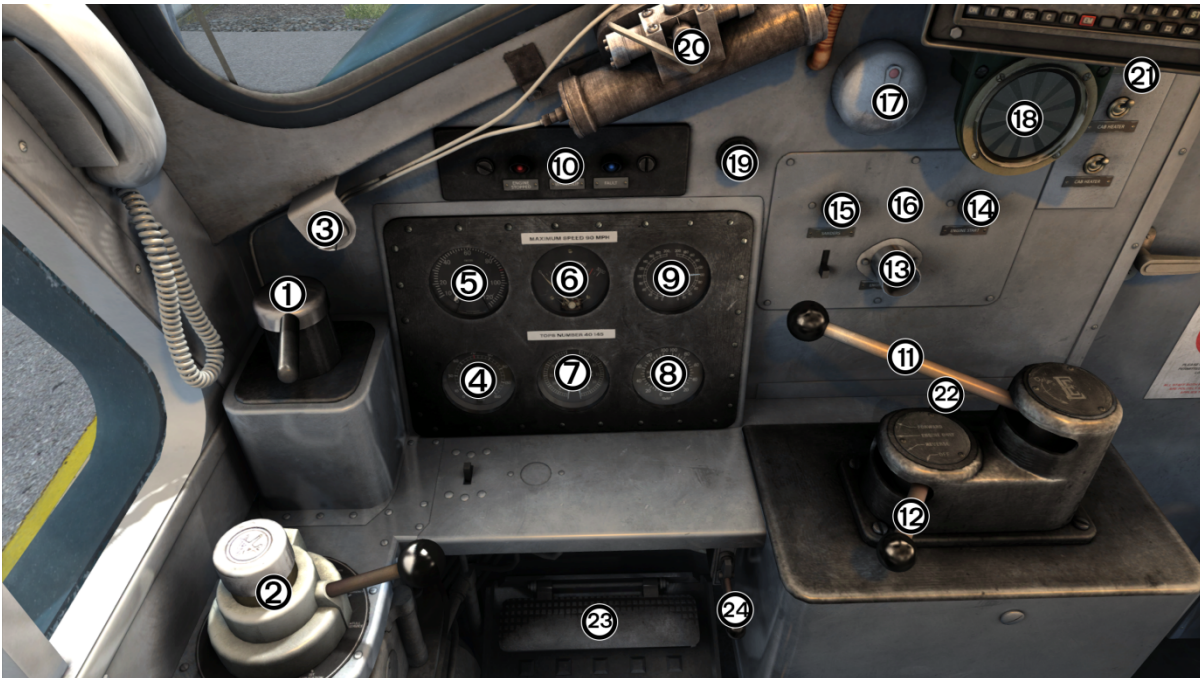


BR Large Logo Blue 40145



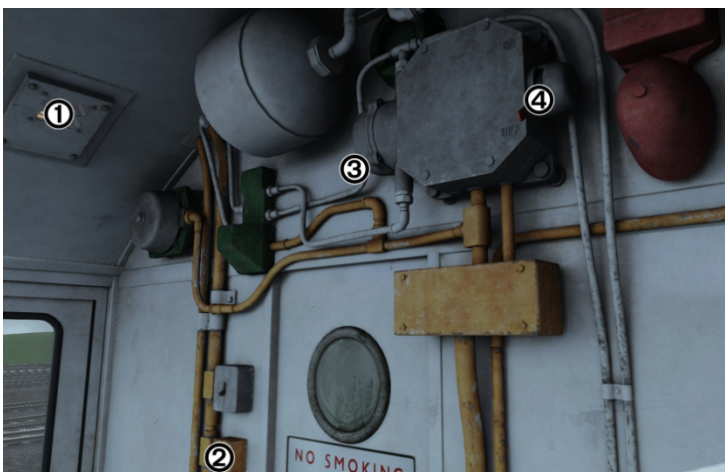
Cab guide

Driver's desk



- | | |
|---|--------------------------|
| 1 - Locomotive straight air brake | 13 - Engine stop button |
| 2 - Westinghouse (air and vacuum) train brake | 14 - Engine start button |
| 3 - Window wiper switch | 15 - Sander button |
| 4 - Brake pipe gauge | 16 - OTMR status light |
| 5 - Speedometer | 17 - AWS reset button |
| 6 - Ammeter | 18 - AWS sunflower |
| 7 - Vacuum brake gauge | 19 - Gauge dimmer switch |
| 8 - Locomotive brake cylinder gauge | 20 - Window wiper motor |
| 9 - Main air reservoir gauge | 21 - CSR radio |
| 10 - Driver's warning panel | 22 - Master key |
| 11 - Regulator | 23 - DSD pedal |
| 12 - Reverser | 24 - Horn |

Bulkhead wall



- 1 - Brake mode display
- 2 - Engine room light switch
- 3 - AWS isolator switch
- 4 - AWS change end switch

Keyboard controls

Non-standard keyboard controls are listed below. Most are only applicable to the 'Advanced' version:

Ctrl+N -	AWS Isolator Switch DOWN/UP
Ctrl+B -	BIS (Battery Isolation Switch) ON/OFF
L -	Cab light ON/OFF
Z -	Engine start button
. (full stop) -	Engine stop button
F -	Fill water tanks
/ -	Handbrake ON/OFF
Ctrl+U -	1 st headcode character DOWN
Shift+U -	1 st headcode character UP
Ctrl+I -	2 nd headcode character DOWN
Shift+I -	2 nd headcode character UP
Ctrl+O -	3 rd headcode character DOWN
Shift+O -	3 rd headcode character UP
Ctrl+P -	4 th headcode character DOWN
Shift+P -	4 th headcode character UP
Space -	Horn (low tone)
B -	Horn (high tone)
I -	Instrument lights switch ON/OFF
E -	Master key IN/OUT
Page Down -	Radiator shutters CLOSE
Page Up -	Radiator shutters OPEN
M -	Headlights ON/OFF
J -	Tail lights ON/OFF
R -	Train brake pin UP
End -	Water scoop LOWER
Home -	Water scoop RAISE
V -	Window wiper ON
Shift+V -	Window wiper OFF

Features

- Advanced and HUD versions
- Detailed internal & external audio
- Accurate performance physics
- Dynamic exhaust smoke
- Options screen
- Functional brake modes (air/vacuum/passenger/goods)
- Locomotive faults
- Steam heat boiler
- Cold start option
- Player changeable headcode blinds
- Finite sanders
- BIS (Battery Isolation Switch) functionality
- Working master key
- Prototypical reverser function
- AWS self-test
- Opening cab doors and windows
- Cab instrument lighting

Advanced and HUD versions

Advanced

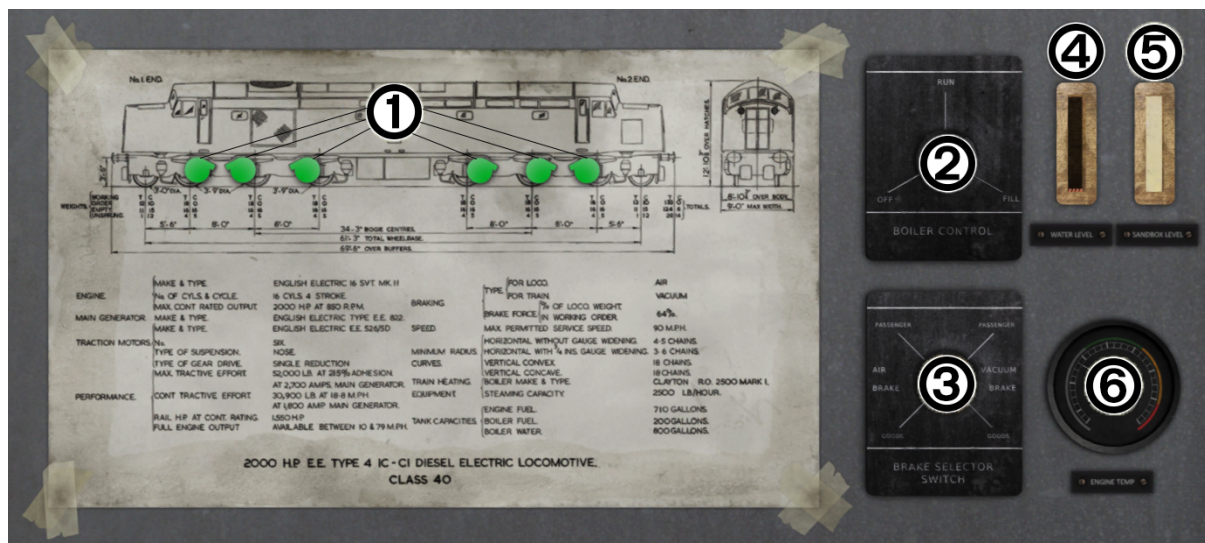
The 'advanced' version of 40145 is represented in the simulator with a suffix of 'ADV' and includes all of the features listed in this manual. Basic controls such as the throttle and brake can be controlled using the F4 HUD display but many other features cannot. The XBOX controller cannot be used at all.

HUD

The 'HUD' version of 40145 is greatly simplified and doesn't include any of the features listed below in this manual. It can be driven like any other diesel locomotive and is fully compatible with both the F4 HUD display and XBOX controller.

Options screen

If you press the left-hand arrow key whilst in the cab view, you will be presented with the options screen below which controls many of the features to be found on this locomotive:



1 - Traction motor status/isolation buttons

2 - Boiler control switch

3 - Brake mode selector switch

4 - Boiler water level gauge

5 - Sand box level

6 - Engine temperature gauge

Brake selector switch

The brake selector switch allows you to select different modes of braking, either 'Air' or 'Goods' and 'Passenger' or 'Goods'. It's very important you set this correctly as failing to do so may result in only the locomotive having functioning brakes.

The key thing to note before attempting to couple to any rolling stock is the brake type of the stock or the dominant brake type on a partly fitted train.

With this in mind, we can look at the Selector Switches which can be found on the options screen:



Dual Brake Selector

It should be stressed that Vacuum Passenger mode should always be selected when running light engine.

Dual Braked – Four brake options are available on the dual braked locomotive, which are 'Air Passenger', 'Air Goods', 'Vacuum Passenger' and 'Vacuum Goods'. All modes can be used to suit the locomotive's duties, taking into account the brake mode of stock and stock type.

Also, please note that brake modes can only be changed whilst disconnected from rolling stock. The correct procedure is to run to your stock in Vacuum Passenger mode. Then when stationary, change the brake mode to the required setting and couple.

Locomotive faults

Traction motor failure

This fault occurs when the locomotive amps have been pushed to their limits, for as little as 20 seconds. In order to prevent a flashover: 2600 amps or over may be used for a very brief period, 2000 – 2500 amps for up to 5 minutes, 1800 – 2000 for up to half an hour and 1800 or under can be used constantly.

If a flashover occurs, it is due to one of the above excessive stresses put on the traction motors. Any one of six can fail resulting in loss of tractive power and the need to isolate the now unusable motor. To isolate the motor, the engine must be shut down first and then on the options screen, the damaged motor will show red. Click the red motor and it should turn black. Now you have isolated that motor, you can start the engine and continue as normal.

Traction motors can be isolated even if they are healthy (green) by clicking on one with the engine off. They can also be reconnected once isolated by clicking them again.

High engine temperature

This fault occurs when the locomotive has been worked hard, usually at low speeds. The issue can be made worse if the radiator shutters are closed, which could lead to the warm engine room compartment circulating hot air through the cooling system.

Even with the radiator shutters open, you may still run into issues. In this instance the fault light in the cab will illuminate indicating the high temperature. At this point, the driver should reduce power and allow the engine to cool before attempting to apply power again. If the fault light is ignored and temperatures continue to rise, the engine will shut down upon reaching danger levels.

Once the engine shuts down, you must wait for the temperature to fall into the safe zone before restarting. The temperature gauge is visible in the options menu with the safe zone denoted as green.

Cold start

'Cold start' means that when you load the locomotive, it will be shut down and is not intended to be used when you start a scenario connected to rolling stock. This variant of 40145 can be found by selecting a loco in the scenario editor with the suffix, 'Cold'. Upon loading a cold 40145, the following procedures must be carried out to correctly start the locomotive:

No.2 end cab

- 1) Make sure you are in the no.2 end cab. You confirm this by looking at the sticker above the door to the nose in the centre of the cab.
- 2) Press the 'Ctrl+B' key to switch out the battery isolation switch. This will illuminate the 'Engine Stopped' and 'Fault' lights on the driver's warning panel. The 'Engine Stopped' light is illuminated because the engine is off and the 'Fault' light is illuminated because the engine requires priming before attempting to start.
- 3) Ensure the AWS isolator switch is in the up position.
- 4) Ensure the brake mode is set to 'Vac Pass' by using the options screen.

No.1 end cab

- 1) Press the 'Ctrl+-' key to move to the no.1 end cab.
- 2) Ensure the AWS Isolator Switch is in the up position.
- 3) Press the 'E' key to insert the master key.
- 4) Move the AWS change end switch up so it is in the 'On' position and press the 'Q' key to reset the AWS self-test.

Radiator shutters

The radiator shutters can be found on the outside of the locomotive at the no.1 end:



Closed



Open

In the winter months, it is recommended to have these closed ('Page Down' key) during start up to allow warm air to circulate within the engine compartment which speeds up the start. In summer however, it's best to keep them open ('Page Up' key). Once the locomotive has been idling for a few minutes, it's recommended that you open them regardless of season to prevent overheating once underway.

Return to the no.1 end cab

- 1)** Press the 'W' key to move the reverser to the 'Engine Only' position and allow the engine to prime for at least 60 seconds.
- 2)** Press and hold the engine start button by holding down the 'Z' key until the 'Engine Stopped' light extinguishes.
- 3)** After 20 to 30 seconds, the 'Fault' light will extinguish and sufficient air will have built up in the main reservoir.
- 4)** Move the handbrake to the 'Off' position by using the '/' key.

Preparing the locomotive

Please note, this only applies to the 'Advanced' version of this loco.

Trailing cab

Please follow these instructions in the opposite cab you intend to drive from:

- 1) Insert the master key by pressing the 'E' key. Please note that if the master key is inserted in the other cab, you must remove it from there before inserting it in this one. When removing it, the Reverser must be in the 'Off' position.
- 2) Ensure the locomotive straight air brake is fully released.
- 3) Ensure the train brake is in the 'Shut Down' position on a dual-braked locomotive and 'Running' on a vacuum-only locomotive.
- 4) Ensure the AWS isolator switch is in the up position.
- 5) Ensure the AWS change end switch is in the 'Off' position.
- 6) If running light engine, turn the tail lights on using the 'J' key.
- 7) Remove the master key pressing the 'E' key.

Driving cab

Switch cabs and follow these final instructions:

- 1) Insert the master key by pressing the 'E' key.
- 2) Ensure the AWS isolator switch is in the up position.
- 3) Ensure the AWS change end switch is in the 'On' position.
- 4) Press the 'Q' key to reset the AWS self-test.
- 5) Turn the marker lights on.
- 6) Ensure the brake mode is correct for the duties you are about to undertake.
- 7) If the train brake handle is in the 'Shut Down' position, lift up the pin holding it in place by holding the 'R' key and then at the same time, move the train brake handle to the 'Emergency' position by pressing the ';' key.

You should now be ready to move off. For information on how to do so, please see the [Driving guide](#) section below.

Driving guide

Please note, this only applies to the 'Advanced' version of this loco.

The following steps should allow you to drive 40145 in a proper manner:

- 1) Move the reverser to your desired direction of travel by pressing either the 'W' key for forward or the 'S' key for reverse.
- 2) Apply some power by pressing the 'A' key until you reach the required tractive effort to get your train on the move. At the same time, move the train brake handle to the 'release' position. Please note that when using the vacuum brakes, you can make the brakes release quicker by holding down the ';' key which speeds up the exhausters.
- 3) You may now increase power as you see fit, making sure to not place too much stress on the traction motors as described in the [Traction motor failure](#) section of this manual.
- 4) To brake the train using the dual train brake, you may make graduated applications and releases by moving the handle between notches 'running' and 'full service'. To brake the train using the vacuum train brake, simply move the brake handle into the apply section which will apply at a quicker rate the further you place it towards 'Emergency'. When you have reached your desired rate of braking, move the handle back to the 'Running' position which will hold the brake application. To release the brake, you will need to move the brake handle to the 'Release' position.
- 5) In the event of an emergency brake application, the locomotive will come to a stop where you must do the following to release the brakes. Move the reverser to 'Neutral', the power handle to '0%', the train brake handle to 'Emergency' and then you should be able release the brakes.

How to use in the scenario editor

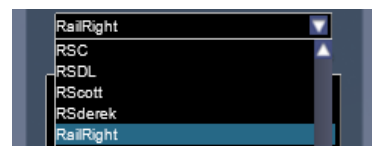
How to place

To place 40145 in the scenario editor, please follow the instructions below:

- 1) In the left-hand rolling stock fly-out, click the object set filter which looks like a blue box with an orange arrow to the right of it.



- 2) Go to the right-hand fly-out which should have appeared. Select 'RailRight' from the drop-down menu.



- 3) Tick the second box beside 'Class40Mainline'.



- 4) The two 40145 liveries and 'Cold'/'HUD' variants should now be visible in the left hand rolling stock fly-out.



Scenarios

[40] Radlett Rambler (Part 1)

Route = MML - London St Pancras to Bedford
 Track covered = Bedford - Radlett Stone Terminal
 Traction = 40145 '345' BR Blue
 Year = 2014
 Duration = 55 minutes



[40] Radlett Rambler (Part 2)

Route = MML - London St Pancras to Bedford
 Track covered = Radlett Stone Terminal - Bedford
 Traction = 40145 '345' BR Blue
 Year = 2014
 Duration = 45 minutes



[40] Thames Clyde Express (Part 1)

Route = MML - London St Pancras to Bedford
 Track covered = London St. Pancras - Bedford
 Traction = 40145 BR Large Logo Blue
 Year = 2008
 Duration = 1 hour



[40] Thames Clyde Express (Part 2)

Route = MML - London St Pancras to Bedford
 Track covered = Bedford - London St. Pancras
 Traction = 40145 BR Large Logo Blue
 Year = 2008
 Duration = 1 hours 5 minutes



Important note

There are two versions of each scenario:

- Prefix [40145ADV]: Uses the 'advanced' version of 40145
- Prefix [45145HUD]: Uses the 'HUD' version of 40145

Credits

We would like to thank the following individuals for their contribution to this add-on:

RailRight: Modelling and texturing

Waggonz: Scripting

Armstrong Powerhouse: Sounds and scenarios

Beta Testers: Darren Porter, Richard Fletcher, Thomas Harrison, Chris Harrison, Sean Harris, Jim Nobbs & The DTG testing team.

Special Thanks: Jordi Blumberg, Chris Gallagher & the Class 40 Preservation Society.

To find out more about 40145, along with her sister Class 40s in preservation and when you can see them in action, visit the Class 40 Preservation Society at:

<http://www.cfps.co.uk/>



CLASS 40 PRESERVATION SOCIETY
ESTABLISHED 1980