Class 37 Locomotive

Volume 2

AP

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How to Install

1) Locate where you have downloaded this pack and unzip it. Information on how to do this can be found *here*.
2) Go to the location where you have extracted the files from the .zip file.
3) Now find the .exe file called 'Class 37 Locomotive Pack Vol 2'. Double-click this file.
4) Follow the steps and by the end of the process, the main part of this pack will have installed.
5) If you intend to use any of the included scenarios, make sure you have the freely available extra stock pack and relevant payware add-on packs listed on the product page installed so the scenarios function as intended.
6) To ensure the cab environment sounds as intended in this pack, please make sure that 'EFX' is ticked within your in-game Audio settings.

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Technical Information

Manufacturer	English Electric at Vulcan Foundry and Robert Stephenson and Hawthorns of Darlington
Years built	1960 - 1965
Number built	309
Engine	English Electric 12CSVT
Maximum speed	90 mph (145 km/h)
Length	61 ft 6 in (18.75 m)
Height	12 ft 9 in (3.89 m)
Width	8 ft 10.5 in (2.71 m)
Weight	106 t - 120 t

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Liveries

BR Green:

      with no yellow panel - *BR Green 1*

      with half yellow panel - *BR Green 2*

      with full yellow panel - *BR Green 3*

      with GSM-R - *BR Green (GSMR)*

BR Green (Modern with GSM-R) - *BR Green (GSMR)*

BR Blue:

        with pre-TOPS numbers - *BR Blue (Pre-TOPS)*

        with headcode box - *BR Blue 1*

        with domino marker lights - *BR Blue 2*

        with standard marker lights - *BR Blue 3*

        with standard markers lights & orange cant rail - *BR Blue 4*

BR Blue (Highland White Stripe) - *BR Blue (WH)*

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BR Blue (White Stripe):

      without orange cant rail- *BR Blue (WS)*

      with orange cant rail- *BR Blue (WS) 2*

BR Large Logo:

      without orange cant rail - *BR LL*

      with orange cant rail - *BR LL 2*

Ex-BR Large Logo - *Ex-BR LL*

BR Large Logo (Modern with GSM-R) - *BR LL 2 (GSMR)*

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BR Railfreight Red Stripe - *BR RF Red*

BR Railfreight - *BR RF*

BR Trainload

BR Departmental Grey - *BR Dep Grey*

BR Civil Engineers - *BR Civil Eng*

Police

InterCity Swallow - *ICS*

Transrail

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Ex-BR Civil Engineers - *Ex-BR Civil Eng (TR)*

Ex-BR Blue (Transrail) - *Ex-BR Blue (TR)*

Mainline Grey

Mainline

EW&S/EWS - *EWS*

West Coast Railway Company - *WCRC*

Network Rail:

    with original marker lights - *NR 1*

    with LED marker lights - *NR 2*

Direct Rail Services 1 - *DRS1*
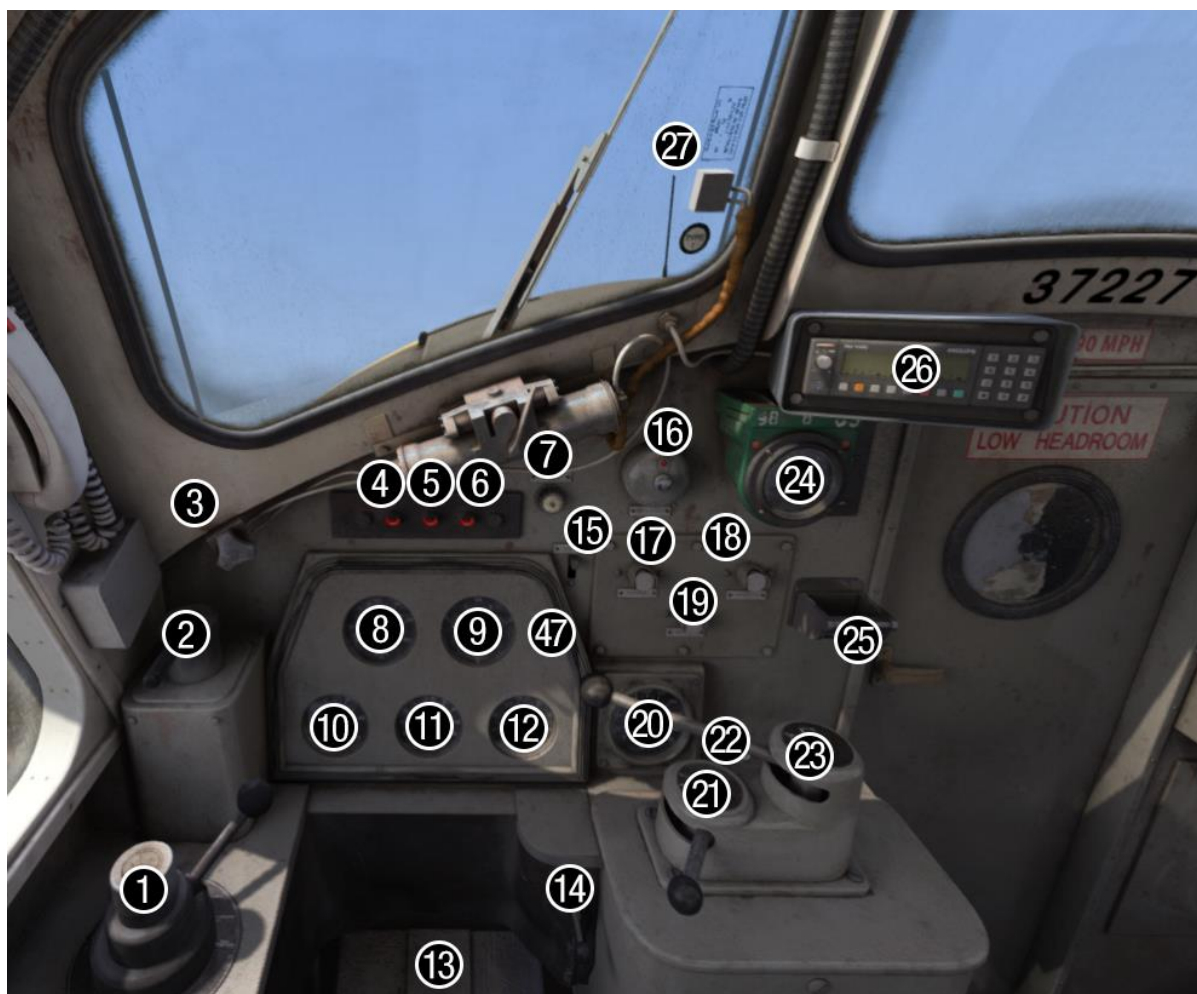
Direct Rail Services 2 - *DRS2*

Colas Rail - *Colas*

Cab Guide

Driver's Side

1 - Train brake handle
2 - Loco brake handle
3 - Windscreen wiper switch (left)
4 - Engine stopped indicator light
5 - Wheelslip indicator light
6 - Fault indicator light
7 - Instrument light dimmer
8 - Speedometer
9 - Ammeter
10 - Brake pipe pressure gauge
11 - Vacuum brake pressure gauge
12 - Brake cylinder pressure gauge
13 - Deadman's pedal
14 - Horn

15 - Headlight switch
16 - AWS reset button
17 - Sander button
18 - Engine start button
19 - Engine stop button
20 - Main reservoir pressure gauge
21 - Reverser
22 - Master key
23 - Power handle
24 - AWS sunflower
25 - Ashtray
26 - NRN radio or GSM-R
27 - Radio antenna

Second Man's Side

28 - Horn

29 - Handbrake
30 - Train heat status indicator

Driver's Side Ceiling
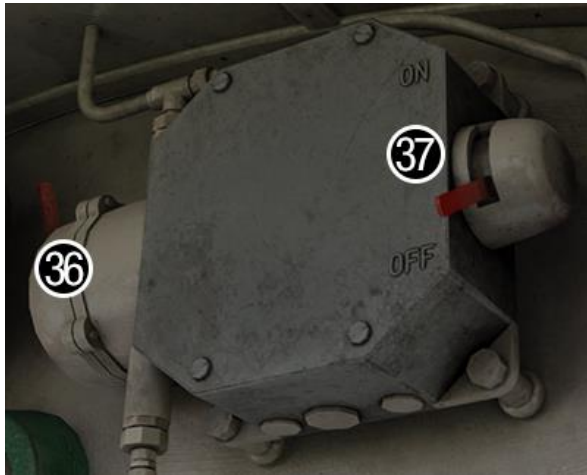
31 - Route indicator lights switch
32 - Tail light (A-side) switch
33 - Tail light (B-side) switch

34 - Instrument light switch
35 - Cab light switch

Back Wall

36 - AWS isolation switch
37 - Change end switch
38 - Battery ammeter (no.2 end only)
39 - Fire alarm test button (no.2 end only)
40 - Brake selector switch (no.2 end only)
41 - Compressor changeover switch (no.2 end only)

Keyboard Controls

Non-standard keyboard controls are listed below:

Ctrl+N -	AWS change end switch ON/OFF
Ctrl+A -	AWS isolation switch
Shift+Ctrl+B -	Brake type TREAD/DISC
L -	Cab light switch ON/OFF
Shift+C -	Clag Factor INCREASE
Ctrl+C -	Clag Factor DECREASE
E -	Deadman's pedal (DVD reset)
Ctrl+D -	Driver vigilance device (DVD) ON/OFF
Z -	Engine start button
Ctrl+Z -	Engine stop button
F -	Fire alarm test button
Ctrl+1 -	Headcode blind (1st character) UP
Ctrl+2 -	Headcode blind (1st character) DOWN
Ctrl+3 -	Headcode blind (2nd character) UP
Ctrl+4 -	Headcode blind (2nd character) DOWN
Ctrl+5 -	Headcode blind (3rd character) UP
Ctrl+6 -	Headcode blind (3rd character) DOWN
Ctrl+7 -	Headcode blind (4th character) UP
Ctrl+8 -	Headcode blind (4th character) DOWN
H -	Headlight switch ON/OFF
Space -	Horn (low tone)
B -	Horn (high tone)
I -	Instrument lights switch
Shift+W -	Master key IN/OUT
Shift+M -	Motor Factor INCREASE
Ctrl+M -	Motor Factor DECREASE
P -	Police siren ON/OFF (Police livery only)
J -	Route indicator lights switch
K -	Tail light (A-side) switch ON/OFF
Ctrl+K -	Tail light (B-side) switch ON/OFF
R -	Train brake handle shutdown pin IN/OUT
C -	Train length button
Ctrl+Numpad Enter -	Visual aids ON/OFF
V -	Windscreen wiper switch LEFT
Shift+V -	Windscreen wiper switch RIGHT

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Features

Detailed Variants

Despite all being members of the same class, there are many variations between each individual locomotive. We have researched to the best of our ability which variations apply to which locomotive and this is automatically applied in-game depending on locomotive number. Please find a comprehensive list below of the variations included.

External

Split box (headcode)

Centre box (headcode)

Split box (dominos)

Centre box (dominos)

Split box w/door (markers)

Split box w/door (markers/black)

Split box w/plate (markers)

Split box w/plate (markers/black)

Split box flush (markers)

Split box flush (markers/black)

Split box w/door (new markers)

Split box w/plate (new markers)

Centre box (markers)

Centre box (markers/black)

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Centre box flush (markers)

Centre box (new markers)

Centre box flush (new markers)

Centre box (LED markers)

Centre box flush (LED markers)

Centre box Laira

Flat front w/door

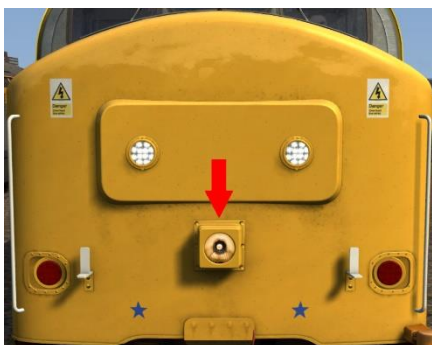**Flat front flush**

Flat front flush (LED markers)

Headlight centre 1

Headlight centre 2

Headlight centre 3

Headlight offset low

Headlight offset mid

Scottish headlight high

Scottish headlight mid

LED tail lights
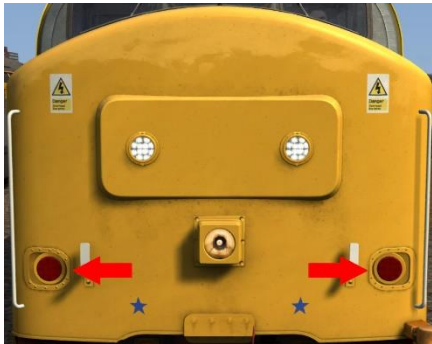
Frost grille

Outer snowploughs

Three-piece snowplough

Oval buffers

Square buffers

Round buffers

Round (large) buffers

Standard windows

Strengthened centre window

Strengthened windows

Roof horns

Nose horns

Original bufferbeam cowling

Fabricated bogies

Cast (CP7) bogies

Internal

Four coloured variations are supplied which are applied on a per livery basis. Class 37 cabs have gone through many variations, so these are by no means meant to be 100% realistic for the specific locomotive represented but are indicative of trends over the years that we found in our research.

As well as this, the NRN radio or GSM-R are present where applicable for each livery.

Finally, there are some functions/visual elements of the cab which can be turned on/off via the locomotive number. Information on how to do that can be found in the 'Numbering' section later in this manual.

Original cab (Early 1960s to early 1970s)

Blue cab (1970s liveries)

Blue cab with NRN radio
(EW&S, EWS & West Coast Railway Company liveries)

Grey cab with NRN radio (Early 1990s liveries)

Light grey cab (BR Blue 3 & BR Blue 4)

Light grey cab with NRN radio (pre-GSM-R modern liveries)

Light grey cab with GSM-R (GSM-R modern liveries)

Radio Electronic Token Block (RETB) unit (non-functioning)

Traction Physics

Great care has been taken to simulate the traction physics of this locomotive. When recording the sounds used in this pack, we also recorded the speedometer and ammeter and this information has been translated accordingly into Train Simulator. In the past, locomotives of this type have been plagued by a limitation where at speed, the amount of power being applied was not proportional to the power handle and as a result, you could happily maintain a high speed with not much power applied. Using our custom scripting, we bypass this limitation and ensure performance matches the real thing as closely as possible.

On top of this, field diverts have been implemented at the correct speeds of 26 mph & 49 mph. Field diverts allow the locomotive to maximise its acceleration as it gains speed. When these take place, the turbocharger briefly rises before falling back to normal. This is in response to the load being increased on the engine.

Realistic delay times between the power handle being moved and power being applied/removed are implemented. For example, when moving away from 'Off', it takes around 2 seconds for power to be applied, but after that, the response time is very quick. When removing power, there is around a 1 second delay, unless you move to 'Off', which removes power instantly.

Finally, unique to the unrefurbished examples included in this pack, it is possible to overload the generator by applying too much power at low speed. If this happens, power will automatically be cut and you will need to return the power handle to 'Off' before applying power again.

Brakes

Westinghouse Brake Handle

This locomotive is fitted with a dual-brake Westinghouse brake handle which has the following positions:

Release (0%) - This is a sprung load position and when using vacuum brakes, speeds up the exhausters to provide a quicker brake release.

Running (20%) - Brakes are fully released and the brake pipe pressure will read 5 bar.

1st Application (40%) - Minimum possible brake force. This equates to around 25% brake force. The brake pipe pressure will read 66.5 psi.

Service (40% to 68%) - Brake pipe pressure can be changed as desired between 48.5 & 66.5 psi.

Full Service (68%) - Maximum possible brake force. The brake pipe pressure will read 48.5.

Emergency (82%) - Maximum possible brake force applied quicker compared to 'Full Service'. The brake pipe pressure will read 0 psi.

Shutdown (100%) - Only accessible by raising the pin (**R** key), the brake handle must be placed in this position when shutting down the cab.

Brake Selector Switch

The brake selector switch on the back wall of the no.2 end cab allows you to choose either air or vacuum brake mode. On top of that, either passenger or goods timings can be selected. Goods timings are slower than passenger and are used when hauling certain wagons to avoid too much pressure on the couplings.

Tread Brake Simulation

By default in Train Simulator, braking performance is constant throughout the speed range so a full brake application at 70mph will have the same level of retardation than at 10mph. This is a fairly good representation of how disc brakes work but for stock with tread brakes, this is not so realistic.

As a result, this pack has scripted brake force to simulate the relatively poor performance at high speed, and the 'bite' at lower speeds where performance increases quite significantly. These tread brake physics are turned on by default as

most rolling stock these locomotives have hauled is fitted with this type of brake. If you are hauling disc braked stock such as Mk3 coaches, you can change the brake type by pressing **Shift+Ctrl+B**.

Also, please note that the rolling stock you are hauling must be especially adapted to work properly with our tread brake simulation. If it is not, the correct physics will still occur on the locomotive, and to some degree on the stock behind, except for the extra 'bite' at low speed.

Adhesion

Adhesion between a train's wheels and the rails plays a big part in allowing a train to accelerate or brake. Too little of it and the train will slip or slide. There are a myriad of factors that control the level of adhesion and we have attempted to simulate the most important of these to give a varied and realistic driving experience:

Season

Adhesion is generally good in dry conditions during summer and spring. Slightly decreased adhesion during winter to take account of the increased amount of moisture and possible ice on the rails due to cooler temperatures. Much decreased adhesion during autumn due to leaf mulch.

Weather

Adhesion decreases in wet weather, especially so when rain first starts falling before it has had a chance to clean the railhead. If rain is light, it will take longer for the railhead to be cleaned whereas heavy rain will clean it quicker, resulting in adhesion recovering sooner.

When using the drizzle weather pattern in our Sky & Weather Enhancement Pack, adhesion is particularly poor as the rain hasn't enough force to clean the railhead but still makes it sufficiently wet to worsen adhesion.

Time of Day

Adhesion will decrease somewhat after dusk as the air cools and dew is more likely to form on the railhead. This persists throughout the night until around an hour after sunrise when higher temperatures or the sun dry it out. In our simulation, this factor is reduced during summer to account for warmer temperatures, which on average result in less dew.

Tunnels

When adhesion is poor due to external factors such as weather or season, adhesion will generally improve upon entering a tunnel, which is not as susceptible to these factors. When adhesion is good during dry weather and outside of autumn, adhesion may decrease a little upon entering a tunnel due to their damp nature.

Wheelslip Protection (WSP)

Wheelslip protection is fitted to these locomotives which aids the driver during times of poor adhesion.

When wheelslip is encountered during acceleration, a two-stage process takes place:

1) Power is automatically reduced and the wheelslip indicator light illuminates in the cab.
2) Once the wheelslip stops, power is reapplied to the selected power handle setting and the wheelslip indication light extinguishes. If wheelslip reoccurs, the process starts again.

You must assess which power setting is most suitable for the conditions and balance the occurrence of wheelslip with the maximum possible rate of acceleration.

Cooling Fan Simulation

The distinctive sound and function of the cooling fan has been implemented. As-built in the 1960s, the fan was directly driven by the engine and always active. From the mid-1980s onwards though, a clutch was fitted to allow it to be thermostat operated and activate when the engine reached a certain temperature. These two modes have been implemented accordingly depending on the era of the livery you are driving.

How quickly the engine's temperature rises and how efficient the fan is at cooling it, primarily depends on the season but also on how hard the engine is being driven. For example, in the summer and with a lot of high speed running, you can expect it to be active a lot of the time. In contrast, during cooler months and with low speed running, it won't be active as much, especially in winter.

On top of this, to reflect the variable nature of each locomotive and its efficiency at cooling, each locomotive is given a random efficiency rating at the start of a scenario, just to provide even more variation.

Finally, the fan is fully animated and visible from the roof of the locomotive.

Gradients

By default in Train Simulator Classic, only gradients of 1 in 185 or steeper have a gravitational effect on a train and this is only suitably realistic on gradients of approximately 1 in 125 of steeper. This means on gradients shallower than 1 in 125, the train does not experience the gravitational forces upon it than it should.

With this information in hand, we have managed to get rid of this limitation by making the train invisibly power or brake itself to simulate the effect that gravity has where Train Simulator Classic by default doesn't do so. This is all invisible to you as the player so you won't suddenly find the power or brake handles moving without your say so, but it does mean you have to drive to the gradients of the route a lot more than before, just like a real driver, especially on mainline routes where gradients rarely reach the severity where Train Simulator Classic has them behave realistically. You will also now find that if trying to recreate real timetabled runs, your timings will much more closely match reality.

Dynamic Exhaust Effects

Dynamic exhaust effects mean that the exhaust reacts to what the engine is doing. For example, when on full power, the engine will produce more exhaust than it would when idling. Also, when revving up, exhaust thickens before thinning out when rpm settles. Equally, when revving down, exhaust thins. On top of that, when starting up, exhaust rises in sync with the sound of the engine revving up. Finally, in reality, the smokiness of each locomotive varies depending on how well maintained it is, so to represent this in the simulator, a random 'clag' factor is allocated to each locomotive which ranges from 1 to 10; 1 being the cleanest and 10 being the dirtiest. This can also be controlled on the player locomotive by using **Shift+C** & **Ctrl+C**.

Variable Power & Brake Performance

Any train driver will tell you that especially on older locomotives, braking and power performance can vary quite noticeably from locomotive to locomotive, despite being within the same class. We have simulated this variance by randomly allocating a 'Brake Factor' & 'Power Factor' every time you drive a locomotive in the simulator. This factor can reduce or increase performance by a maximum of 10% either way. There is no way of finding out what factor your locomotive has been allocated except for assessing its 'feel' when powering or braking; just like a real driver!

Variable Traction Motor Volume

Much like described above in relation to exhaust, locomotives tend to vary in how loud their traction motors are. To simulate this, we have implemented a random 'motor factor' to each locomotive which ranges from 1 to 6; 1 being barely audible and 6 being very prominent. This can also be controlled on the player locomotive by using **Shift+M** and **Ctrl+M**.

Variable Turbo Volume

Yet another variation between locomotives is the volume of their turbocharger. To simulate this, we have implemented a random 'turbo factor' to each locomotive which ranges from 1 to 6; 1 being half the volume of 6. This can also be controlled on the player locomotive by using **Shift+T** and **Ctrl+T**.

Horn

Variants

Six horn variations are provided under the guise of 'Horn Factor'. Upon loading a scenario, your locomotive will be randomly allocated one of these horns. If you wish to change it, press **Shift+H** or **Ctrl+H**.

Please see below for a list of where we sourced each horn variant:

1 & **2** - 37674
3 & **4** - 37714
5 - 37116
6 – 37901

AI

To blow an AI train's horn in a scenario, you must edit the speed limit properties of the section of the track at which you would like the AI train to sound its horn. Please see below for instructions:

1) In the scenario editor, go to the location at which you would like the AI train's horn to sound, and press **Spacebar** 3 times. The track will now display a certain colour which represent its speed limit.

2) Go to the top-left-hand fly-out and click the 'Select' icon.

3) Hover your mouse over the piece of track where you like the AI horn to sound. A yellow border will appear around the track when it is selected.

4) Click and drag the yellow box in either direction until the measurement reading at the bottom of the screen says at least '1.0 metres'.
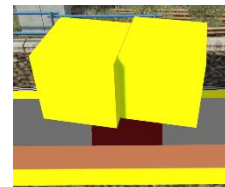
5) Go to the right-hand fly-out and change the two 'Speed Limit' values to '900'.

6) Click outside of any menus and the section of track you selected will now say 'Unspecified'. Any AI train which passes over this section of track will now blow its horn.

The manner in which the AI train blows its horn is randomly calculated each time, meaning no horn is ever the same. You may hear a single tone (any post-2007 liveries only), a two tone, a three tone, or now and then, even the infamous 'Ilkley Moor' sequence.

If you wish to be more specific in how and when the horn is sounded, please see the table below for values other than '900' which can be inputted in the speed limit field for different behaviour:

Speed Limit Value	Notes
900	Random number of tones
901	1 tone (low)
902	1 tone (high)
903	2 tone (low/high)
904	2 tone (high/low)
905	3 tone (low/high/low)
906	3 tone (high/low/high)
907	'Ilkley Moor' sequence
921	Same as 900 but 1 in 20 (5%) chance of horn sounding
922	Same as 900 but 1 in 16 (6.3%) chance of horn sounding
923	Same as 900 but 1 in 12 (8.3%) chance of horn sounding
924	Same as 900 but 1 in 8 (12.5%) chance of horn sounding
925	Same as 900 but 1 in 6 (16.6%) chance of horn sounding
926	Same as 900 but 1 in 4 (25%) chance of horn sounding
927	Same as 900 but 1 in 3 (33.3%) chance of horn sounding
928	Same as 900 but 1 in 2 (50%) chance of horn sounding
929	Same as 900 but 1 in 1.33 (75%) chance of horn sounding
930	Same as 900 but intended for use at platform ends*
931	Same as 921 but intended for use at platform ends*
932	Same as 922 but intended for use at platform ends*
933	Same as 923 but intended for use at platform ends*
934	Same as 924 but intended for use at platform ends*
935	Same as 925 but intended for use at platform ends*
936	Same as 926 but intended for use at platform ends*
937	Same as 927 but intended for use at platform ends*
938	Same as 928 but intended for use at platform ends*
939	Same as 929 but intended for use at platform ends*
940	Whistle boards**
950	Tunnels***

* **Platform ends** - Horn will sound only if train is travelling over 50mph, which at platforms of 12 car length of less, ensures that stopping trains do not sound their horn. Also, the point at which the train sounds its horn randomly varies from 1m to however fast the train is travelling. For example, if a train is passing at 125mph, the maximum possible distance it will sound its horn away from the trigger point is 125m. This simulates the propensity for drivers to sound their horn earlier if they are travelling at speed.

** **Whistle boards** - Intended for use at whistle boards. Pre-2007, trains sounded at least two tones at all times of day. From April 2007, following increasing concerns about noise, drivers were instructed to use only a single low tone and only between the hours of 07:00 & 23:00. This was later changed to between 06:00 & 23:59 in 2016.

To simulate this, any pre-2007 liveries will exhibit pre-2007 behaviour (at least two tones/no time restriction) and any post-2007 liveries will exhibit a hybrid of post-2007 & 2016 behaviour (single low tone/between 06:00 & 23:59 only). The point at which the horn sounds varies randomly from 1m to 40m away from the trigger point.

*** **Tunnels** - Historically, trains always blew their horn when entering & exiting tunnels to warn potential track workers of their presence. With increased health & safety regulations reducing the presence of track workers in 'live' tunnels, and to allay complaints of increasing noise pollution due to louder modern horns, this requirement was removed on Saturday 6th November 2004.

To simulate this, any pre-2004 liveries will sound at least two tones. The point at which the horn sounds varies randomly from 1m to 40m away from the trigger point.

Whilst these tools are primarily intended for use by scenario creators, they can also be used by route editors to 'bake' these features into a route. The platform end, whistle board & tunnel values being of particular use in this respect.

Finally, due to the custom speed limits being of such a short distance, they do not affect AI train performance or appear as the current speed limit on the F3/F4 HUD. Also, assuming the route you are using is configured to only show signed speed limits (the majority do this), custom speed limits will not appear in the part of the F3/F4 HUD which shows forthcoming speed limit changes.

National Radio Network (NRN)

A simple representation of the NRN radio is simulated and is operational on pre-GSM-R liveries. To set the NRN zone, please follow the instructions below:

1) Turn the radio on by pressing the button below the volume control on the left-hand side of the console.
2) Enter the three-digit zone number by using the numpad.
3) To confirm this, press the green button below the British Rail arrows symbol. The NRN is now successfully set up.
4) If you see an NRN zone change sign (pictured below), you must change the zone number manually. Do this by simply entering the new three-digit zone number on top of the old one.

NRN zone placement in scenarios

NRN zones cover very large areas so it is entirely possible you will not change areas during a scenario but should you wish to do so, a sign is included in this pack and must be placed by the scenario author.

This sign can be found by selecting 'AP/Common' in the 'Object Set Filter' and browsing for 'AP NRN Sign' in the left-hand 'Track Infrastructure' fly-out. To place it, simply place the marker on the track your train will be passing through, double click the sign, and input the three-digit area number in the right-hand fly-out. Please note that this must be three-digits so zone 65 would be '065'.

Global System for Mobile Communication-Railway (GSM-R)

Beginning in 2013 and completed by 2016, Global System for Mobile Communication - Railway, more commonly known as GSM-R, replaced the existing National Radio Network (NRN) & Cab Secure Radio (CSR) systems. This communication system and its accompanying unit has been simulated to the best of our ability within the simulator. Please see below for how to register & deregister your train:

Registering

1) Move the reverser away from 'Off' or hold down either the 'Registration' or 'Accept' button for 5 seconds. The GSM-R unit will begin a boot up sequence.
2) When 'GSM-R GB' appears, the unit has successfully booted.
3) Press the 'Registration' button in the top right-hand corner.
4) Using the numerical keys, insert your 4-character train reporting number (headcode), followed by the signal number you are standing at in a 3-digit format. For example, signal WH84 would require you to enter '084'. If you wish to delete a character, press the 'x' button.
5) Press the '✓' button.
6) Registration will take a moment. Once it has completed, you will hear a double beep and the train reporting number will appear in the top right-hand corner of the display.

Deregistering - Method 1

If you are closing down the driving desk, use this method.

1) Move the reverser to 'Off'.
2) Deregistration will automatically begin and you will be given the opportunity for a short moment to retain the registration by pressing the '✓' button. Simply do nothing if you would like to continue with the deregistration.
3) Deregistration will take a moment. Once it has completed, the train reporting number will no longer be displayed.

Deregistering - Method 2

If you wish to keep the driving desk active after deregistering, use this method.

1) Press the 'Registration' button in the top right-hand corner.
2) A prompt will appear on the unit saying 'Confirm deregister?'.
3) Press the '✓' button.
4) Deregistration will take a moment. Once it has completed, the train reporting number will no longer be displayed.

Trailing Mode

To simulate this locomotive shut down in a consist or with the engine idling but not providing any power, we have provided a 'Trailing' version which can be found in the scenario editor with a '(Trail)' suffix.

By default, the engine will be idling but to have it shut down, add **;Dead=1** to the locomotive number.

Cold Start

'Cold Start' means the locomotive is in the following state when it loads:

- Main reservoir, brake cylinder pressures are 0.
- Engine is stopped
- Handbrake is applied

To prepare a locomotive from cold, please follow the instructions below:

1) Move to the no.2 end cab, which is the opposite end to the cooling fan.

2) Turn the master key in by pressing **Shift+W**.

3) Move the reverser to 'Engine Only' by pressing **W**. This will start the engine priming pump. Leave this running for 60 seconds.

4) Press and hold the engine start button until the engine fires and the engine stopped indicator light extinguishes. Look out for the copious amounts of exhaust and noise as the engine warms up!

5) Look at the battery ammeter on the back wall and check there is a positive charge.

6) Test the fire alarm by pressing the fire alarm test button on the back wall.

7) Lift the train brake handle brake pin by pressing **R** and at the same time, move the train brake handle to 'Full Service' (68%) by pressing **semi-colon**.

8) Now wait for the main reservoir to build to 80 psi.

9) Move the train brake handle to 'Running' (20%) and confirm the brakes are fully released.

10) Move the train brake handle to 'Full Service' (68%) and confirm the brakes are fully applied.

11) Release the handbrake by turning it in an anti-clockwise direction until it will turn no more.

After carrying out this procedure, your locomotive will be successfully prepared from cold.

Bits and Bobs

This section is dedicated to aspects of this pack that don't warrant a dedicated section but are still of note:

- A selection of 3D nameplates for 1990s onwards liveries.

- User changeable headcode blind on applicable liveries.

- Both inside and out, the locomotive's body rolls subtly from side to side (torque roll) whilst starting up and revving up.

- From the cab, the radio antenna on the nose wobbles whilst revving up.

- Compressor changeover switch on the backwall in the no.2 cab changes the compressor used when in vacuum mode. Not applicable for air mode as both compressors are then used.

- The backwalls of the no.1 & no.2 cabs are modelled differently to represent their differences.

- 1 second delay between train passing over AWS magnet and AWS warning sound occurring. The F3/F4 HUD will show the warning immediately so you must wait 1 second before trying to cancel it.

- The headlight only provides illumination before sunrise and after sunset. This is to avoid the unrealistic appearance of projected light in broad daylight.

- The compressor and cooling fan are audible from the no.1 cab and relay clicks/clunks are audible from the no.2 cab.

- Fire bell visibly vibrates when tested.

- As per reality, the speedometer needle wobbles when providing a reading.

- Opening cab doors and windows which are also visible from the outside.

- When driving in the summer or autumn, flies will periodically hit the windscreen and leave a splatter mark. They can be cleaned away by using the wipers.

- Snow clings to the bogies and grooves in the bodyside during the winter.

Setting up the Driver's Cab

Please follow the steps below to set up the cab so you are ready to move:

1) Ensure the master key is turned in. If not, press **Shift+W**.

2) Ensure the reverser is in 'Engine Only'. If not, press **W** to do so.

3) Move the AWS change end switch to 'ON' by pressing **Ctrl+N**. You must ensure the AWS change end switch in the other cab is set to 'OFF'. If it's not, you will receive a warning message.

4) Lift the train brake handle brake pin by pressing **R** and at the same time, move the train brake handle to 'Full Service' (68%) by pressing **semi-colon**.

5) Turn off the tail lights by pressing **K** and **Ctrl+K**.

6) Turn on the route indicator (marker) lights by pressing **J**.

7) Turn on the headlight by pressing **H**.

8) If applicable, register the NRN or GSM-R.

You should now be ready to move off. For information on this, please see below.

Driving Guide

The following steps should allow you to drive in a realistic and safe manner:

1) Move the reverser to your desired direction of travel by pressing either **W** for 'Forward' or **S** for 'Reverse'.

2) Move the brake handle to 'Running' by pressing **semi-colon**.

3) As soon as possible, move the power handle to 'On' (10%) by pressing **A**.

4) As soon as you observe a reading on the ammeter, you may increase power as you see fit. Be careful not to exceed 2600 amps otherwise you will overload the generator. If this happens, power automatically cuts and the fault light illuminates. To be able to take power again, move the power handle to 'Off' (0%) and ensure the fault light has extinguished.

5) When powering down to 'Off' (0%), it is good practice to pause for a few seconds in 'On' (10%) notch to allow the ammeter to drop.

6) To brake the train, use any 'Service' setting on the train brake handle between '1st Application' (40%) & 'Full Service' (68%). To provide a smooth stop, it is recommended to be in '1st Application' as you come to a stop.
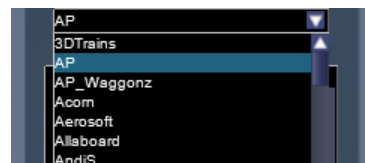
How to Use in the Scenario Editor

How to place

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

7) 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.
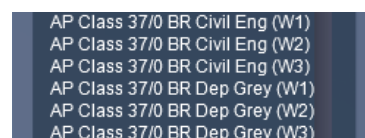
8) Go to the right-hand fly-out which should have appeared. Select 'AP' from the drop-down menu.

9) Tick the second & third box beside 'Class37Pack01'.

10) The liveries should now be visible in the left hand rolling stock fly-out.

Numbering

When placing in the scenario editor, you are able to control a number of features via the number of the locomotive.

Logos

You can add logos/decals by adding **;L=x** to the locomotive number. Please see below what to put as 'x' to receive your desired result on each livery:

- BR Blue: **1** = Scottie dog. **2** = Cockney sparrow.

- BR Large Logo: **1** = Scottie dog. **2** = Highland Rail. **3** = Welsh dragon.

- BR Railfreight: **1** = Thornaby kingfisher on engine room door.
  2 = Thornaby kingfisher above number.

- BR Trainload: **1** = Coal. **2** = Construction. **3** = Metals. **4** = Petroleum.
  5 = Railfreight Distribution.

- Colas Rail: **1** = Logo V1. **2** = Logo V2.

- EWS: **1** = EW&S. **2** = EWS.

Removing **;L=x** will remove the relevant logo/decal.

Numbers

On liveries where there are alternative numbering styles to the default, you can control these by adding **;N=x** to the locomotive number. Please see below for what to put as 'x' to receive your desired result on each livery:

- BR Railfreight: **1** = Large bodyside numbers. **2** = Large & small bodyside numbers.

- Colas Rail: **1** = Amended front number for 37099.

- Mainline: **1** = Large front numbers. **2** = Large front numbers in alternative position.

Nameplates

You can control the nameplate shown by adding **;NP=1** to the locomotive number. The simulator will automatically place the correct nameplate on the locomotive by looking at the number and livery. For 37114, 37229 & 37254, add **;NP=2** for a second nameplate variation. If a nameplate doesn't appear when you expect it to, it means that the relevant nameplate has not been modelled for this pack.

Removing **;NP=x** will remove any nameplates.

Plaques

You can control plaques shown by adding **;DP=x** to the locomotive number:

BR Trainload, InterCity Mainline, Mainline Grey & Transrail liveries

- Ripple Lane depot plaque. x =**1**
- Tinsley depot plaque. x =**2**
- Immingham depot plaque. x =**3**
- St. Blazey depot plaque. x =**4**
- Cardiff Canton depot plaque. x =**5**
- Eastfield depot plaque. x =**6**
- Motherwell depot plaque. x =**7**
- Buxton depot plaque. x =**8**
- Thornaby depot plaque. x =**9**
- Stewarts Lane depot plaque. x =**10**

In addition to these, the British Rail plaque can be shown by adding **;BR=1** to the locomotive number.

Overhead line warning stickers

For BR green livery, add **;OHL=1** to remove them or **;OHL=2** for two stickers on the front. Remove **;OHL=x** for one sticker on the front.

For BR blue livery, add **;OHL=1** for the newer style or **;OHL=2** for the original style. Remove **;OHL=x** for the older style.

For 1990s liveries which carried newer style stickers at some point, the older style overhead line warning stickers are applied by default. To change them to the newer style as seen from around 1998 onwards, add **;OHL=1** to the locomotive number.

Cold start

To activate cold start mode on a player train, add **;Cold=1** to the locomotive number.

Brake type physics

To apply disc brake physics, add **;BT=D** to the locomotive number.

NRN

To have the NRN radio already active when a scenario starts, add **;NRN=x** to the locomotive number. x = 3-digit NRN zone number.

Tail lamp

To add a tail lamp to the no. 1 end, add **;TL=1** to the locomotive number.
To add a tail lamp to the no. 2 end, add **;TL=2** to the locomotive number.

Variations configuration

All locomotive numbers have a **;Config=x** entry and this must be left alone to ensure the correct variations are applied to that numbered locomotive. If desired though, some of these variations can be overridden by adding further entries to the locomotive number. Please see below for more information:

Snowploughs

Add **;plough=x** to the locomotive number:

- No snowploughs. x = **none**
- Outer snowploughs. x = **outer**
- 3-piece snowplough. x = **full**

Buffers

Add **;buffers=x** to the locomotive number:

- Oval buffers. x = **oval**
- Square buffers. x = **square**
- Round buffers. x = **round_s**
- Round (large) buffers. x = **round**

Front

A large number of different front variations can be applied by adding **;no1front=x;no2front=x** to the locomotive number. Please see the table below for what to put as 'x' for the relevant front type:

Front type	'x'
Split box (headcode)	split_hco_door
Centre box (headcode)	hco
Split box (dominos)	split_hco_dom_door
Centre box (dominos)	hco_dom
Split box w/door (markers)	split_hc_door
Split box w/door (markers/black)	bsh_door
Split box w/plate (markers)	split_hc_flat
Split box w/plate (markers/black)	bsh_flat
Split box flush (markers)	split_hc
Split box flush (markers/black)	bsh
Split box w/door (new markers)	split_hc_door_2
Split box w/plate (new markers)	split_hc_flat_2
Centre box (markers)	unrefurb_hcbox
Centre box (markers/black)	bch_ur
Centre box flush (markers)	unrefurb_hcbox_flush
Centre box (new markers)	inset_hcbox2
Centre box flush (new markers)	inset_hcbox
Centre box (LED markers)	unrefurb_hcbox_led
Centre box flush (LED markers)	unrefurb_hcbox_flush_led
Centre box Laira	unrefurb_hcbox_laira
Flat front w/door	dug_lights_door_2
Flat front flush	dug_lights
Flat front flush (LED markers)	dug_lights_led

Headlight

The position and/or type of headlight can be changed by adding **;no1hl=x;no2hl=x** to the locomotive number. Please see the table below for what to put as 'x' for your headlight of choice:

Headlight type	'x'
Headlight centre 1	hc
Headlight centre 2	flat
Headlight centre 3	hclow
Headlight offset low	hclowoffset
Headlight offset mid	offset
Scottish headlight high	scot_mid
Scottish headlight mid	scot_low

Bogies

To change the bogie type from cast to fabricated or vice versa. Add **;bogie=x** to the locomotive number.

- Fabricated. x = **other**
- Cast (CP7). x = **cp7**

RETB

To add the RETB unit, add **;datacord=x** to the locomotive number.

- Add RETB unit. x = **retb**

Example locomotive number

37013;Config=Early90sUnrefurb;BR=1;DP=5;plough=full

Key:

37013 - Locomotive number

;BR=1 - British Rail plaque

;DP=5 = Cardiff Canton depot plaque

;plough=full - 3-piece snowplough

Scenarios

APC37: 1S76 14:20 Brighton - Glasgow Central
Route = London to Brighton
Track covered = Brighton - Redhill
Traction = Mainline Grey 37042
Year = 1996
Duration = 50 minutes

APC37: 7O54 09:25 Temple Mills - Three Bridges
Route = London to Brighton
Track covered = Redhill - Three Bridges Yard
Traction = Mainline 37216
Year = 1997
Duration = 40 minutes

APC37: 7Y94 09:36 Purley - Cliffe
Route = London to Brighton
Track covered = Salfords - Factory Junction (Clapham)
Traction = Civil Engineers 37013 & EW&S 37057
Year = 1998
Duration = 1 hour 5 minutes

APC37: 2D45 16:50 Norwich - Lowestoft
Route = Wherry Lines
Track covered = Norwich - Lowestoft
Traction = BR Trainload (Distribution) 37047
Year = 1994
Duration = 1 hour

APC37: 2D39 17:50 Lowestoft - Norwich
Route = Wherry Lines
Track covered = Lowestoft - Norwich
Traction = BR Trainload (Distribution) 37047
Year = 1994
Duration = 50 minutes

APC37: 5P11 16:33 Great Yarmouth - Norwich Crown Point
Route = Wherry Lines
Track covered = Great Yarmouth - Norwich Crown Point
Traction = BR Blue 37219
Year = 1990
Duration = 50 minutes

Credits

Nicolas Schichan - Scripting

Epping & Ongar Railway (37029) - Assistance in recording sounds