

Class 319

Electric Multiple Unit

Volume 2



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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 319 EMU 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.

Technical Information

Manufacturer	British Rail Engineering Limited (BREL) York
Years built	1987 - 1990
Number built	86 (319001 - 319060) (319161 - 319186)
Traction motors	4 x GEC G315BZ
Maximum speed	100 mph (161 km/h)
Coupling type	Tightlock
Length	19.83m (DTCO / DTSO), 19.93m (MSO / TSOL)
Height	3.58 m
Width	2.82 m
Weight	140.3 t

Liveries

Network SouthEast 1 - *NSE1*



Network SouthEast 2:

with Network SouthEast logo - *NSE2*

with Network SouthCentral logo - *NSC*

with Connex South Central logo - *Ex-NSE2 (CX)*



Network SouthEast Revised 1 - *NSERev1*



Network SouthEast Revised 2 - *NSERev2*



Thameslink 'Graffiti' - TL Graf



Connex South Central:

with Connex South Central logo - CX

with South Central logo - Ex-CX (SC)



Connex South Central (Connections) - CX Con



Connex (Crèche) - CX Creche



Southern:

with Southern logo - *SN*

with First Capital Connect logo - *EX-SN (FCC)*



Thameslink:

with Thameslink logo - *TL1*

with First Capital Connect logo - *Ex-TL1 (FCC) 1*



Ex-Thameslink (First Capital Connect) - Ex-TL1 (FCC) 2



Thameslink Silver/Blue

with Thameslink logo - TL2

with First Capital Connect logo - Ex-TL2 (FCC)



First Capital Connect - FCC



Continental Airlines - Continental



First Capital Connect (Blue) - *FCC Blue*



First Capital Connect (White) - *FCC White*

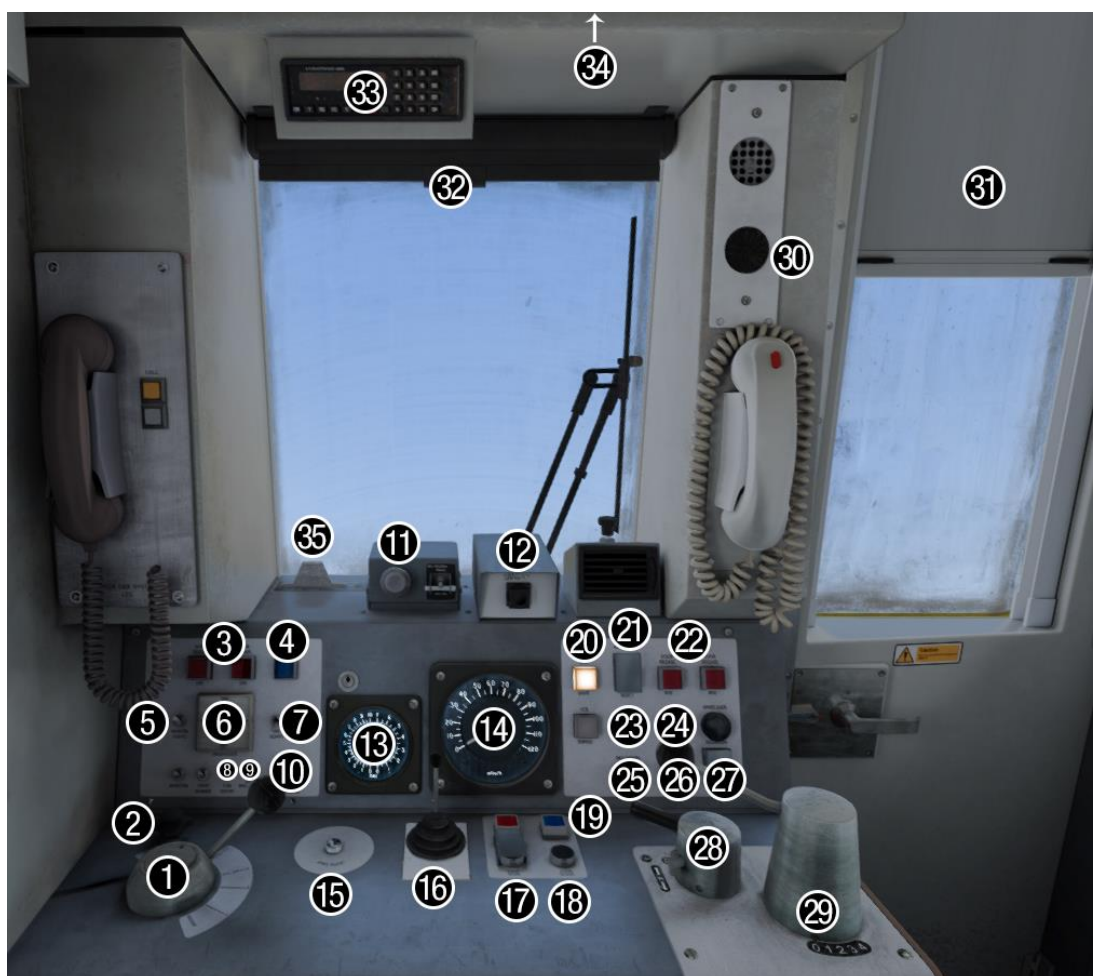


Thameslink Programme - *TL Prog*



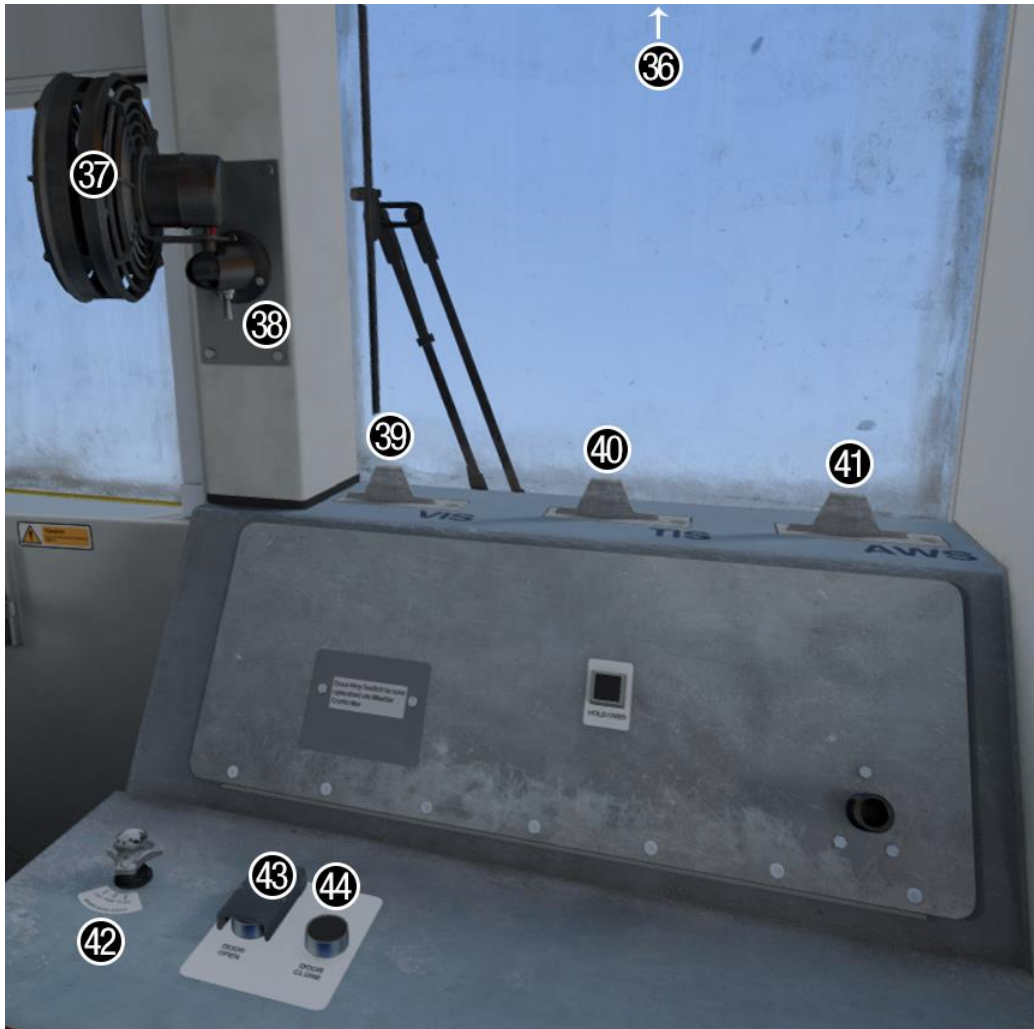
Cab Guide

Driver's Side



- | | |
|--|--|
| 1 - Brake handle | 19 - Driver to guard bell |
| 2 - Windscreen wiper switch (left) | 20 - Line light indicator |
| 3 - Door release buttons (left) | 21 - AC system select button |
| 4 - Door close button | 22 - Door release buttons (right) |
| 5 - Marker lights switch | 23 - Pantograph up/traction reset button |
| 6 - Headlights switch | 24 - AC/DC power mode indicator |
| 7 - Tail lights switch | 25 - Pantograph down/DC system select button |
| 8 - Cab light switch | 26 - Couple button |
| 9 - Destination indicator light switch | 27 - Uncouple button |
| 10 - Door interlock light | 28 - Master key/reverser |
| 11 - Driver's Reminder Appliance (DRA) | 29 - Power handle |
| 12 - Sander button | 30 - AWS sunflower |
| 13 - Main reservoir & brake cylinder gauge | 31 - Centre door blind |
| 14 - Speedometer | 32 - Driver's blind |
| 15 - AWS reset button | 33 - Cab Secure Radio (CSR) |
| 16 - Horn | 34 - Destination blind cupboard |
| 17 - Cab door open button (left) | 35 - Emergency Bypass Switch (EBS) |
| 18 - Cab door close button (left) | |

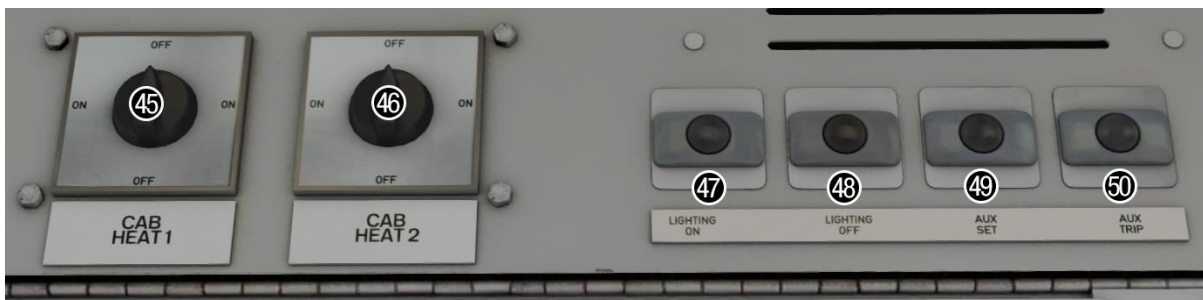
Non-driver's Side



- 36 - Headcode roller blind cupboard
- 37 - Fan
- 38 - Fan switch
- 39 - Vigilance Isolating Switch (VIS)
- 40 - Traction Interlock Switch (TIS)

- 41 - AWS Isolating Switch (AWS)
- 42 - Windscreen wiper switch (right)
- 43 - Cab door open button (right)
- 44 - Cab door close button (right)

Back Wall



- 45 - Cab fan heater switch
- 46 - Cab radiator switch
- 47 - Saloon lighting on button

- 48 - Saloon lighting off button
- 49 - Auxiliaries set button
- 50 - Auxiliaries trip button

Keyboard Controls

Non-standard keyboard controls are listed below:

Z -	Auxiliaries set button
Ctrl+Z -	Auxiliaries trip button
L -	Cab light button ON/OFF
E -	Deadman's pedal (DVD reset)
R -	Door close button
U -	Door release buttons (left)
O -	Door release buttons (right)
C -	Driver to guard bell
Y -	Driver reminder appliance (DRA) ON/OFF
Ctrl+D -	Driver vigilance device (DVD) ON/OFF
H -	Headlight switch CLOCKWISE
Shift+H -	Headlight switch ANTI-CLOCKWISE
Space -	Horn (low tone)
B -	Horn (high tone)
Shift+W -	Master key IN/OUT
Shift+P -	Pantograph down/DC system select button
P -	Pantograph up/traction reset button
Ctrl+R -	Passenger door operation toggle DOO/GO
Shift+M -	Saloon lighting OFF
M -	Saloon lighting ON
K -	Tail lights switch ON/OFF
Ctrl+Numpad Enter -	Visual aids ON/OFF
Shift+V -	Windscreen wiper switch LEFT
V -	Windscreen wiper switch RIGHT

Passenger View

Two main variants of passenger view are included. The first with 'as-built' seats and the second with sub-class 319/2 'Chapman' seats/ tables and 'lounge' area. On top of this, correct seat moquettes are offered with each livery.

Network SouthEast / Thameslink ' Graffiti' / Connex South Central / Southern / First Capital Connect (Blue & White)



Thameslink / Ex-Thameslink (First Capital Connect) / Thameslink Silver/Blue / Continental Airlines



Connex South Central (319/2) / Connex Crèche



Southern (319/2)



First Capital Connect / Thameslink Programme



Sub-class Differences

Many of the differences between each sub-class have been simulated and are automatically applied depending on the number of the unit. Please see below for the main characteristics of each sub-class:

Class 319/0

- No first class.

Class 319/1 (pre-1997)

- First class.
- Additional front-end deflector.
- 'Ding' style driver to guard bell compared to the 'ring' of other sub-classes.

Class 319/2

- Extended first class in the DTCO.
- Additional windows on TSOL for disabled toilet.
- 'Chapman' /2 seats and tables.
- 'Lounge' area in MSO.

Class 319/3 (post-1997)

- No first class.
- Additional front-end object deflector.
- 'Ding' style driver to guard bell compared to the 'ring' of other sub-classes.

Class 319/4 (post-1997)

- First class.

Pantographs

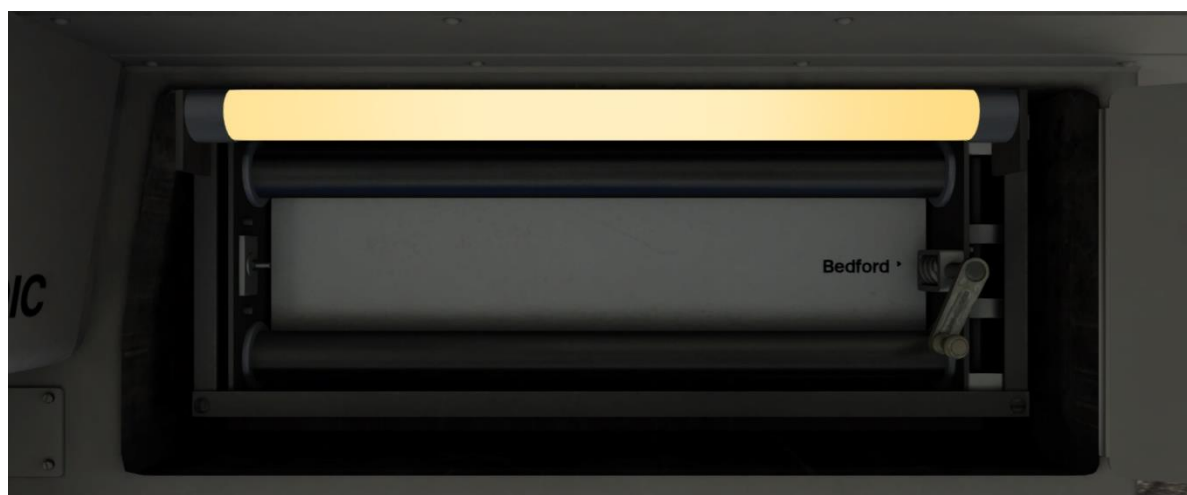
Class 319s use either the Stone Faiveley AMBR or Brecknell Willis high speed pantograph. Both of these are provided and are automatically applied to each individually numbered unit as per reality.



Left - Stone Faiveley AMBR

Right - Brecknell Willis high speed

Destination Roller Blind



The destination blind can be manually changed within the cab. To do this, open the cupboard door above the driver's desk, place the mouse over the crank and then click and drag in the direction you wish to move it. The further you drag, the faster the blind will wind. Once finished, close the cupboard door.

Please see below for a list of the available destinations and their relevant code if you wish to use them via the unit's number on an AI service:

a - Bedford	s - Farringdon	K - Dorking
b - St Pancras	t - City Thameslink	L - Epsom
c - Moorgate	u - Blackfriars	M - Epsom Downs
d - Brighton via Gatwick Airport	v - Elephant & Castle	N - Selhurst
e - London Bridge	w - Cricklewood	O - West Croydon
f - East Croydon	x - Kentish Town	P - Smitham
g - Redhill	y - Sevenoaks	Q - Caterham
h - Gatwick Airport	z - Orpington via Denmark Hill	R - Tattenham Corner
i - Three Bridges	A - Orpington via Herne Hill	S - Horsham
j - Haywards Heath	B - Flitwick	T - Guildford
k - Preston Park	C - Leagrave	U - Kings Cross Thameslink
l - Luton	D - Harpenden	V - Victoria via East Croydon
m - St. Albans City	E - Brighton via East Croydon	W - Watford Junction
n - Wimbledon	F - West Hampstead	X - Rugby
o - Wimbledon via Sutton	G - Kent House	Y - Not in Service
p - Sutton	H - Beckenham Junction	Z - Blank
q - Sutton via Mitcham Junction	I - Bromley South	
r - Sutton via Wimbledon	J - Victoria	

Headcode Roller Blind



On all Network SouthEast, Thameslink 'Graffiti', Connex South Central & Southern liveries, a headcode roller blind is fitted and can be manually changed within the cab. To do this, open the cupboard door above the second man's desk, place the mouse over the relevant crank and then click and drag in the direction you wish to move it. The further you drag, the faster the blind will wind. Once finished, close the cupboard door. Using the combination of both blinds, any number from 0 to 99 can be displayed.

Cab Secure Radio (CSR)



Bar actually being able to speak to the signalman, a fully functioning CSR unit is included in this pack. Introduced in the 1980s/1990s, this radio allows direct communication between the driver and signalman. Please see below on how to use it.

Turning on and setting up

- 1) Press the 'ON' button and wait for 'AREA NOT SET' or 'RADIO LOST' to appear.
- 2) Press the 'AR' button.
- 3) Using the number keys, enter a 2-digit CSR area. If you make a typo, you can use '#' to erase the last digit. If using one of the included scenarios with this pack, the area number is given in the F1 briefing of the scenario.
- 4) Press the '*' button to validate the CSR area.
- 5) Wait for the area to register. It will appear on the left-hand side of the screen.
- 6) Press the 'T' button to test the connection. If all is well, 'TEST OK' will display for 5 seconds.

Registering your train

- 1) Press the 'SU' button.
- 2) Using the number keys, enter the number of the signal in front of you. This must be 4-digits so if the number is 55, this is input as 0055. If you make a typo, you can use '#' to erase the last digit.
- 3) Press the '*' button to validate the signal number.
- 4) Once the signal number is validated, the headcode of your train will appear on the right-hand side of the screen.

Contacting signalman at red signal

- 1) When standing at a red signal, press the 'SG' button.
- 2) 'AT SIG SENT' will appear when the message has been sent.
- 3) Soon after, the signalman will reply with 'WAIT'. This will always be the reply regardless of whether you can pass the signal or not so do still press 'Tab' if required.
- 4) To return to the previous screen, press the '#' button.

Emergency message

- 1) In case of an emergency, press the 'EM' button.
- 2) 'EMG SENT' will appear when the message has been sent.
- 3) To return to the previous screen, press the '#' button.

Lamp test

- 1) Hold the 'LT' button.
- 2) All display pixels and status lights will illuminate.
- 3) Release the 'LT' button.

Unit number display

- 1) Press the blank button between 'EM' and '*' buttons.
- 2) The unit number will be shown on the screen for a short time.

CSR area placement in scenarios



CSR works by allocating an area number to each signal box (or panel in larger signal boxes) so the driver is always in contact with the signalman signalling his train. As the train moves from one area to another, the CSR unit will automatically change area. Also accompanying these changes in area, are lineside signs which state the number of the new area. This sign is included in this pack and must be placed by the scenario author if the CSR areas are to function.

This sign can be found by selecting 'AP/Common' in the 'Object Set Filter' and browsing for 'AP CSR 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 area number in the right-hand fly-out. The area change will take place anywhere within 500m of this sign.

Driver Only Operation (DOO)

Full door control is featured in this pack to simulate 'DOO'. Please see below for what the relevant procedure is and how to change the type of operation whilst in-game:

Driver Only Operation (DOO)

- 1) Open the doors by pressing **T+U** (left-hand side) or **T+O** (right-hand side).
Alternatively, you can click the corresponding red buttons in the cab which have arrows pointing to the side the doors will open.
- 2) If at a platform, wait for the 'Platform Duties Complete' message to appear in the top-right corner and press **R** to close the doors. If not at a platform, press **R** whenever you wish.
- 3) Once the door interlock light illuminates, you may depart.

Guard Operation (GO)

- 1) Open the doors by pressing **T**.
- 2) Doors will be closed by the guard once passengers have finished boarding/alighting.
- 3) Once the door interlock light illuminates, the guard will give you two bells which you must acknowledge by also giving two bells. This can be carried out by pressing **C** twice.

How to Change Operation

This can be changed in-game by pressing **Ctrl+R** which will produce a visual message in the top-right hand corner of the screen to let you know which option you have selected.

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

Wheelslip protection aids the driver when powering or braking during times of poor adhesion.

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

- 1) The motors can be heard rising rapidly in pitch and power quickly falls to control the slip.
- 2) The motors revert to their normal pitch and power returns to the notch selected on the power handle.

As a driver, you must assess which power notch is most suitable for the conditions and balance the occurrence of wheelslip with the maximum possible rate of acceleration.

Wheelslide

When wheelslide is encountered during braking, a two-stage process takes place:

- 1) Brake pressure is automatically reduced to try and control the slide.
- 2) Once the slide stops, brake pressure is returned to the notch selected on the brake handle. If wheelslide reoccurs, the process starts again.

As a driver, you must resist the temptation to reduce the brake yourself as the wheelslip protection will offer the best braking performance.

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 or 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.

Neutral Section Functionality

The class 319 will react to the neutral sections available on the WCML Over Shap route. On top of this, they will also function with the neutral sections present in the three included scenarios for the London - Bedford route. These have been placed using our own markers and signage which are available in the 'AP/Common' object set filter folder.

Dual Voltage Functionality

Follow the instructions below to change the power source from AC (overhead wires) to DC (third rail) and vice versa.

AC to DC

- 1) Ensure the reverser is in 'Neutral'.
- 2) Press the 'Pan Down/DC System Select' button and ensure it illuminates.
- 3) Press the 'Pan Up/Traction Reset' button.
- 4) If the line light is illuminated, you have successfully changed to DC.

DC to AC

- 1) Ensure the reverser is in 'Neutral'.
- 2) Press the 'AC System Select' button and ensure it illuminates.
- 3) Press the 'Pan Up/Traction Reset' button.
- 4) If the line light is illuminated, you have successfully changed to AC.

Variable Power & Brake Performance

Any train driver will tell you that especially on older stock, braking and power performance can vary quite noticeably from unit to unit, despite being within the same class. We have simulated this variance by randomly allocating a 'Brake Factor' & 'Power Factor' every time you drive a unit in the simulator. This factor can reduce or increase performance by a maximum of 8% either way. There is no way of finding out what factor your unit has been allocated except for assessing its 'feel' when powering or braking; just like a real driver!

Variable Traction Motor Volume

Class 319s are known for their loud traction motors but in reality, some are louder than others. To simulate this, we have implemented a random 'Motor Factor' to each motor bogie which ranges from 1 to 6; 1 being the quietest and 6 being the loudest. This can not be changed by the player.

Thrash Mode

If you are someone who likes to enjoy the passenger view as if the windows are open, you are in luck! We have provided a 'Thrash Mode' which simulates just this so you can listen to those traction motors in all their glory. This can be turned on and off by pressing **Ctrl+T**.

Isolation Switches



Isolation switches allow safety systems to be isolated in the event of a failure or emergency and these have been simulated. To activate one, you must first insert a master key into the corresponding lock and click the relevant flag. Please see below for a list of what each flag does:

- **EBS (Emergency Bypass Switch)** - Disables emergency brake.
- **VIS (Vigilance Isolating Switch)** - Disables the DVD (Driver Vigilance Device).
- **TIS (Traction Interlock Switch)** - Disables the traction interlock so you can obtain power without door interlock.
- **AWS (AWS Isolating Switch)** - Disables the AWS (Automatic Warning System).

Coupling Procedure

Please see below for how to couple to another unit in a realistic manner:

- 1) Approach the unit you are going to couple to at caution and come to a stop just short of it.
- 2) Select 'Notch 1' power and ease up to the unit. As soon as you have coupled, apply 'Step 3' brake and return the power handle to 'Off'.
- 3) To ensure the coupling is secure, you must perform a 'pull-away' test. To do this, select 'Reverse' on the reverser, 'Step 1' brake and apply 'Notch 1' on the power handle for a few seconds. If you do not move, the coupling has been successful.
- 4) Hold the 'Couple' button down on the cab desk for 5 seconds. This will connect the two units' air and electrical systems.

Arcing Pantograph



Special attention has been given to simulating arcing between the pantograph and overhead wire.

From one hour after sunrise to one hour after sunset on a dry day, there is only light arcing.

From one hour after sunset to one hour after sunrise, there is moderate arcing to simulate the moisture that tends to build up on the overhead wire once night falls. There is also moderate arcing when raining at any time of day.

During the winter, from one hour after sunset to one hour after sunrise, there is heavy arcing to simulate ice/frost that tends to build up on the overhead wire once night falls. There is also heavy arcing when snowing at any time of day during the winter.

Finally, arcing becomes more frequent as you gain speed.

When arcing, you will visually see it on the pantograph which illuminates the area around it to a varying degree with each arc. Please note that the illumination of the surrounding area will only occur after sunset and before sunrise. This is to avoid the unrealistic appearance of projected light in broad daylight.

You will also audibly hear it if the arcing is moderate or heavy.

Cold Start

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

- Main reservoir, brake cylinder pressures are 0.
- Auxiliaries are tripped
- Pantograph is down
- Saloon lighting is off

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

- 1) Hold the 'Aux Set' button down on the back wall of the cab for 5 seconds.
- 2) Turn the master key in by pressing **Shift+W**.
- 3) Move the reverser to 'Neutral' by pressing **S**.
- 4) Acknowledge the AWS self-test by pressing **Q**.
- 5) Press either the 'AC System Select' or 'DC System Select' button depending on whether you are below overhead wires (AC) or on the third rail (DC).
- 6) Press the 'Pan Up/Traction Reset' button. If on DC, power will be fed to the train and you will hear the main compressor activate. If on AC, the auxiliary compressor in the MSO will need to build up the air pressure to 5 bar before the pantograph can be raised. You can obtain updates on how this is progressing by pressing the 'Pan Up/Traction Reset' button. Once 5 bar has been reached, press 'Pan Up/Traction Reset' button and the pantograph will raise. Power will be fed to the train and you will hear the main compressor activate.
- 7) You must now wait for the main reservoir pressure to build to 6.5 bar. Once it has done so, you will be able to obtain a brake release.
- 8) If heading out in passenger service, turn the saloon lighting on by pressing **M** or the 'Lighting On' button on the back wall of the cab.

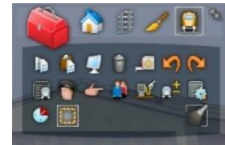
After carrying out this procedure, your unit will be successfully prepared from cold.

AI Horns

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:

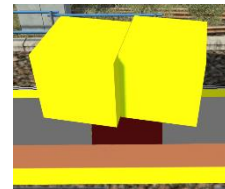
- 1) In the scenario editor, go to the location at which you would like the AI train's horn to sound, and press **Spacebar** 3 times. The track will now display a certain colour which represent its speed limit.

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

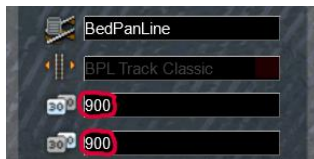


- 3) Hover your mouse over the piece of track where you like the AI horn to sound. A yellow border will appear around the track when it is selected.

- 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 or 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.

Bits and Bobs

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

- Cab doors can be opened and closed.
- Nameplates for Connex South Central, Connex Crèche, Southern, First Capital Connect & Thameslink Programme liveries.
- Power cannot be applied if the brake handle is in 'Step 2', 'Step 3' or 'Emergency'.
- If the brake handle is placed in 'Step 2', 'Step 3' or 'Emergency' whilst powering, power will be lost and you must return the power handle to 'Off' before being able to regain power.
- There is no increased brake pressure in 'Emergency'. This was a later addition which is featured in Volume 1 of this pack.
- 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 headlights and destination blind lights only provide illumination before sunrise and after sunset. This is to avoid the unrealistic appearance of projected light in broad daylight.
- Units not fitted with a wind block have a whistling sound in the cab at speed.
- A special 'bogie cam' is available if you switch to the right-hand 'head-out' view (**Shift+2 THEN Right Arrow**).
- To simulate the era of the included scenarios more accurately, scenario specific scenery has been created to represent Brighton station and the Ouse Valley Viaduct during refurbishment in the 1990s, the now demolished Brighton 'Pullman' works & Kings Cross Thameslink.
- Traditional spirax tick sound on TSOL car instead of the newer air hiss as heard in volume 1.
- Classic brake squeal sound which disappeared from these units in the early 2010s.
- Compressor momentarily rises in pitch when taking power; just like the real thing

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 'Neutral'. If not, press **S** and acknowledge the AWS self-test by pressing **Q**.
- 3) Turn off the tail lights by pressing **K**.
- 4) Turn on the headlights by pressing **H**.
- 5) If applicable, register the Cab Secure Radio.
- 6) If necessary, change the destination blind/display.
- 7) Check the door interlock light is illuminated.
- 8) If you have a proceed signal aspect, turn off the Driver's Reminder Appliance (DRA) by pressing **Y**.

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:

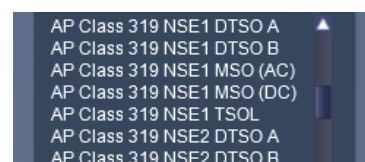
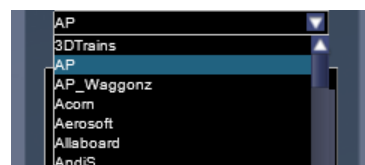
- 1) Move the reverser to your desired direction of travel by pressing either **W** for 'Forward' or **S** for 'Reverse'.
- 2) Move the brake handle to 'Step 1' by pressing **;**.
- 3) Move the power handle to 'Notch 2' by pressing **A**. At the same time, move the brake handle to 'Release' which will ensure you depart without rolling back.
- 4) From then on, increase power as you see fit.
- 5) To brake the train, you may make applications and releases by moving the handle between 'Step 1' and 'Full Service'. It is recommended you only use 'Full Service' as a last resort so as to ensure you always have more brake force available if required.
- 6) Just before coming to a stop, aim to have the brakes in 'Step 1' so as to provide a smooth 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 'Class319Pack01'.
- 10) The liveries should now be visible in the left hand rolling stock fly-out.



Formation

319/0, /3 or /4: DTCO + MSO + TSOL + DTSO

319/2: DTCO + TSOL + MSO + DTSO

Numbering

When placing in the scenario editor, you are able to control a number of features via the number of the unit. Please note that for the unit number itself, the only number you need to change is the MSO's, as other vehicles in the consist will automatically be numbered correctly.

Destination

To apply a pre-set destination to a unit, you must change the first letter of the MSO number. See the 'Destination Roller Blind' section of this manual for the relevant letter.

Headcode

To apply a pre-set headcode to a unit, add **;HC=xx** to the MSO number. 'xx' can be any number between 0 & 99. Note that single digits are also valid so '4' doesn't have to be '04'.

Wind block

To add the wind block around the centre door of the cab, add **;W=1**.

Logos

You can control the logo shown on a whole unit by adding **;L=x** to the MSO number. Removing **;L=x** will remove all logos. Please see what to put as 'x' to receive your desired result on each livery:

- Network SouthEast: **NSE** = Network SouthEast. **NSC** = Network SouthCentral.
CX = Connex South Central
- Connex South Central: **CX** = Connex South Central. **SC** = South Central.
- Southern: **SN** = Southern. **FCC** = First Capital Connect.
- Thameslink: **TL** = Thameslink. **OTL** = Thameslink without website.
FCC = First Capital Connect.
- Thameslink Silver/Blue: **TL** = Thameslink. **FCC** = First Capital Connect.

Door buttons

You can control the type of door buttons fitted by adding **;D=x** to the MSO number:

- Old: x = old
- New: x = new

Pantograph

You can control the type of pantograph fitted by adding **;Pa=x** to the MSO number:

- Stone Faiveley AMBR: x = old
- Brecknell Willis high speed: x = new
- No pantograph: x = no

Cab Secure Radio (CSR)

To allow realistic configuration of the CSR unit in scenarios, **;CSR=DAASSSSTTTT** can be added to the driven vehicle (DTSO or DTCO). Please see below for what each sequence of letters represents:

- 'D' controls whether the CSR is already configured upon starting the scenario. Replace 'D' with '0' for no or '1' for yes.
- 'AA' is the 2-digit CSR area number required to set up the CSR at the start of the scenario. (eg. 75)
- 'SSSS' is the 4-digit signal number required to set up the CSR as the start of the scenario. (eg. 0439)
- 'TTTT' is the 4-character train reporting number of the train (eg. 1W40).

Power mode

You can control the default power mode of a unit by adding **;P=x** to the MSO number:

- AC (overhead wires): x = AC
- DC (third rail): x = DC

LED tail lights

You can add LED tail lights to a unit by adding **;TL=2** to the MSO number.

Cold start

To activate cold start mode on a player train, add **;Cold=1** to the number of the DTCO or DTSO which has the driver icon applied to it.

Reversing motor whine

When changing direction, the motors will make a distinctive high pitch whining sound that slowly fades away over time. After one reversal, this sound activates automatically but to enable it at the start of a scenario, add **;RW=1** to the MSO number. This is mostly intended to be used when a scenario starts at a terminus.

Example MSO number

Z319363;L=TL;D=old;Pa=new;P=DC;W=1;TL=2

Key:

Z - Destination

319363 - Unit number

;L=TL - Thameslink logo

;D=old - Old door buttons

;Pa=new = Brecknell Willis high speed pantograph

;P=DC - DC power is default power mode

;W=1 - Wind block

;TL=2 - LED tail lights

Scenarios

APC319: 1A55 10:50 Brighton - Victoria

Route = London to Brighton
Track covered = Brighton - Victoria
Traction = Connex South Central 319216 & 319215
Year = 1997
Duration = 50 minutes



APC319: 1M40 14:37 Gatwick Airport - Rugby

Route = London to Brighton
Track covered = Gatwick Airport - Clapham Junction
Traction = Connex South Central 319004
Year = 1999
Duration = 30 minutes



APC319: 1W17 07:02 Bedford - Brighton

Route = London to Brighton
Track covered = Streatham - Brighton
Traction = Thameslink 319456 & 319460
Year = 1999
Duration = 1 hour 10 minutes



APC319: 1T67 15:27 Bedford - Brighton

Route = MML - London to Bedford (AP)
Track covered = Bedford - Kings Cross Thameslink
Traction = Continental Airlines 319431 & Thameslink 319374
Year = 2004
Duration = 1 hour 5 minutes



APC319: 2G83 17:15 Moorgate - Bedford

Route = MML - London to Bedford (AP)
Track covered = Kings Cross Thameslink - Bedford
Traction = Network SouthEast 319163 & 319042
Year = 1994
Duration = 50 minutes



APC319: 2O77 14:43 St. Albans City - Sutton

Route = MML - London to Bedford (AP)
Track covered = St Albans - Kings Cross Thameslink
Traction = Ex-Thameslink 319375 & FCC (Blue) 319010
Year = 2007
Duration = 40 minutes



Credits

Jordi Blumberg - Modelling & texturing

Nicolas Schichan - Scripting

Thameslink - Assistance in recording sounds